

SIEMENS

***HARDINGE VMCII SERIES
TECHNICAL DOCUMENTATION
For
MACHINE SPECIFIC FUNCTIONS
With
SINUMERIK 810D CCU1 SW3.3.18
& SHOPMILL SW5.3.09***

***Edition 02.2001
Revision D***

0

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1

Information

This technical guide has been written specifically for the VMCII series pre-production machine and is intended as reference information for the OEM only.

The information in this guide was correct at the time of printing. If any errors are found in this guide please contact Siemens so that corrections can be made and the corrected page(s) issued.

Version Update Information

<u>Revision</u>	<u>Release</u>	<u>Comments</u>
Preliminary	08.2000	Release for initial machine delivery to Hardinge, Elmira.
Evaluation	09.2000	Release for machine evaluation at Hardinge, Elmira.
A	10.2000	Release for pre-production to Hardinge Elmira, Taiwan & Siemens Taiwan.
B	11.2000	Release for pre-production to Hardinge Elmira, Taiwan & Siemens after initial production discussions.
C	01.2001	Release for initial machine startup at Hardinge Taiwan.
D	02.2001	Release for series production.

2

Circuit Diagrams

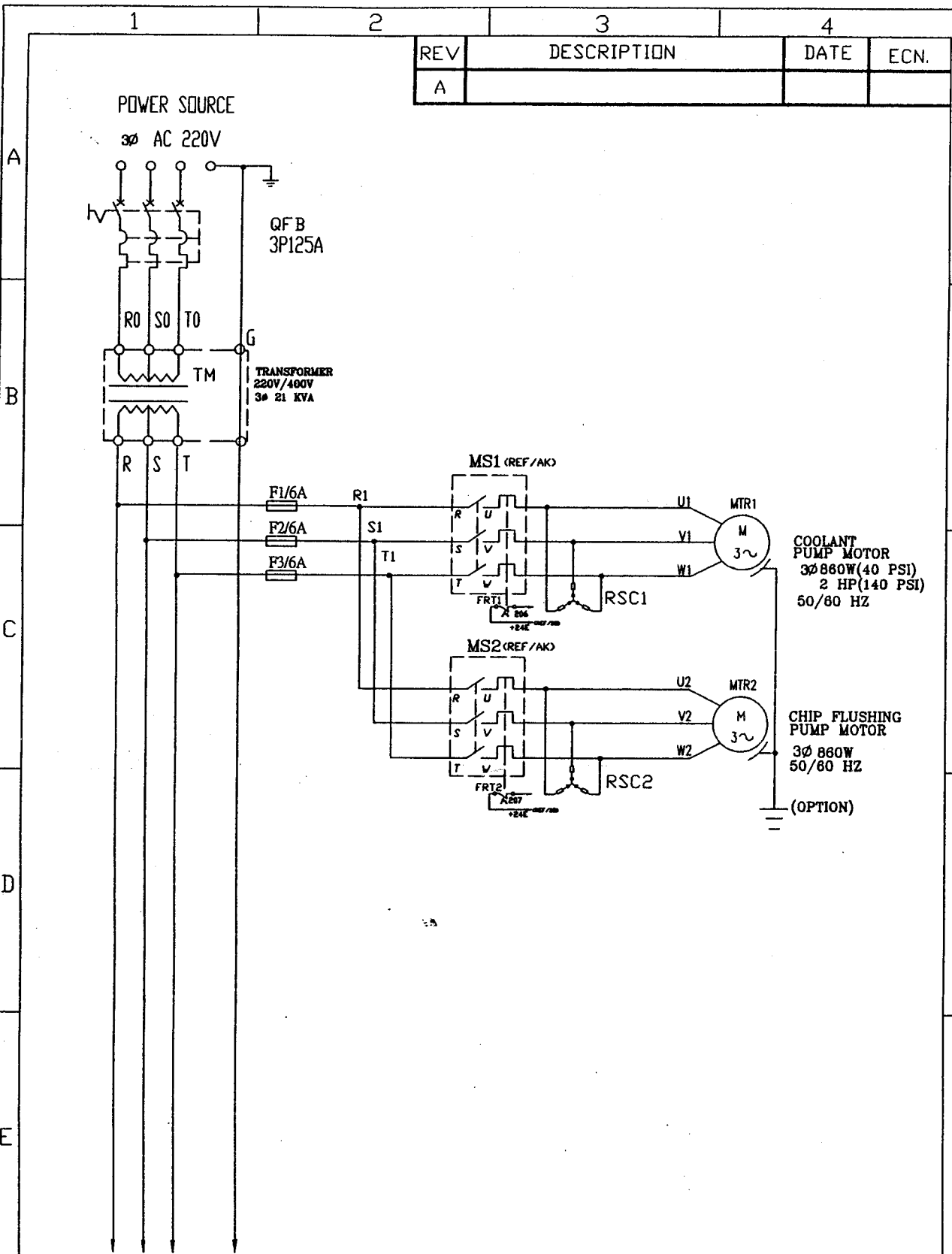


ELECTRICAL DIAGRAM

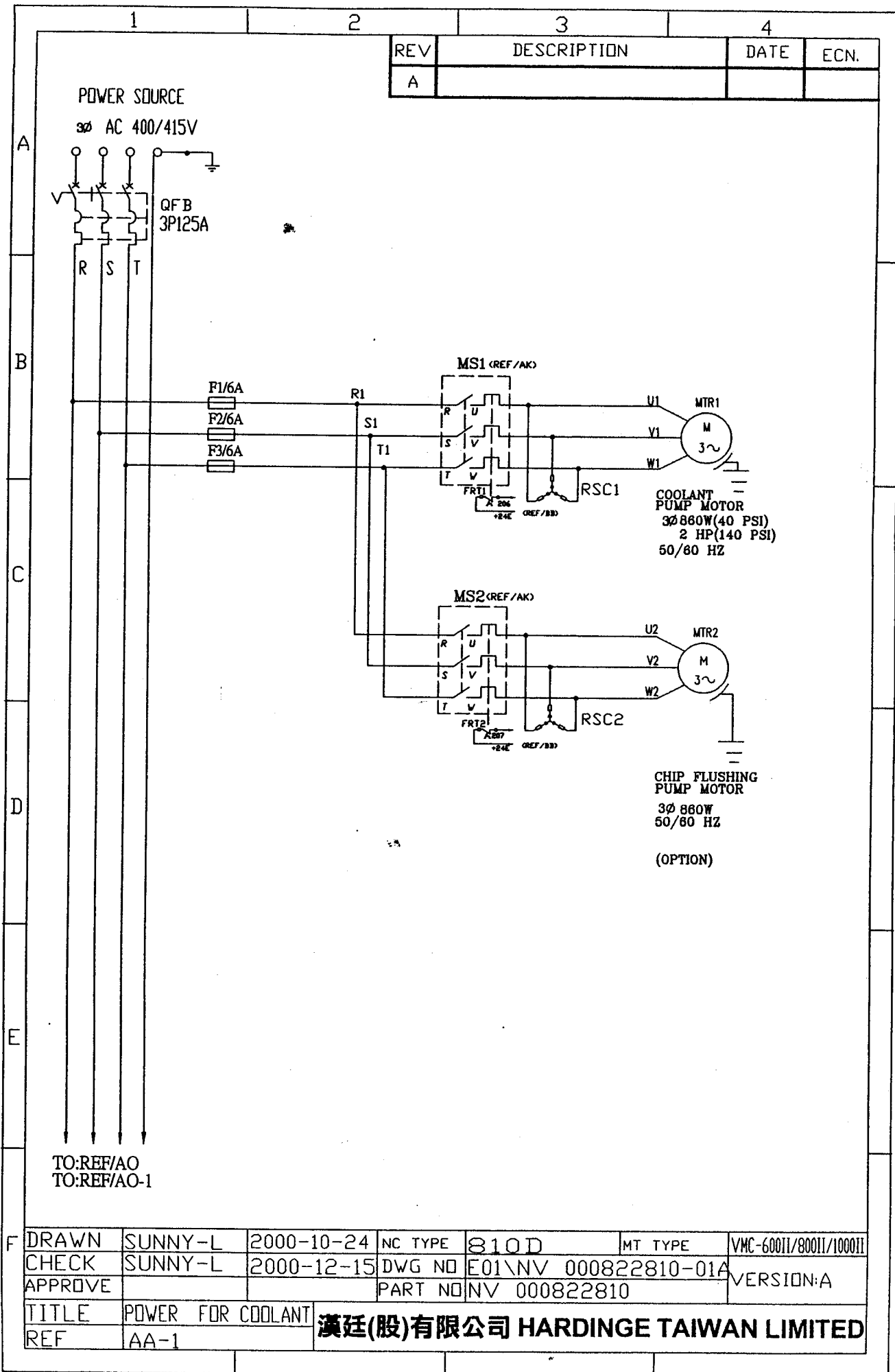
電 路 圖

Hardinge Taiwan
Precision Machinery Limited

PART NO: NV 000822810



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REV	DESCRIPTION	DATE	ECN.
A			
<p>POWER SOURCE 3Ø AC 220V</p> <p>QF B 3P125A</p> <p>TRANSFORMER 220V/480V 3Ø 21 KVA</p> <p>MS1 (REF/AK)</p> <p>MS2 (REF/AK)</p> <p>COOLANT PUMP MOTOR 3Ø 880W(40 PSI) 2 HP(140 PSI) 50/60 HZ</p> <p>CHIP FLUSHING PUMP MOTOR 3Ø 880W 50/60 HZ</p> <p>(OPTION)</p> <p>TO:REF/A0 TO:REF/A0-1</p>			
F	DRAWN	SUNNY-L	2000-10-24
	CHECK	SUNNY-L	2000-12-15
	APPROVE		
	TITLE	POWER FOR COOLANT	
	REF	AA	
	NC TYPE	810D	MT TYPE
	DWG NO	E01\NV 000822810-01	VERSION:A
	PART NO	NV 000822810	
	<p>漢廷(股)有限公司 HARDINGE TAIWAN LIMITED</p>		



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漢廷(股)有限公司 HARDINGE TAIWAN LIMITED

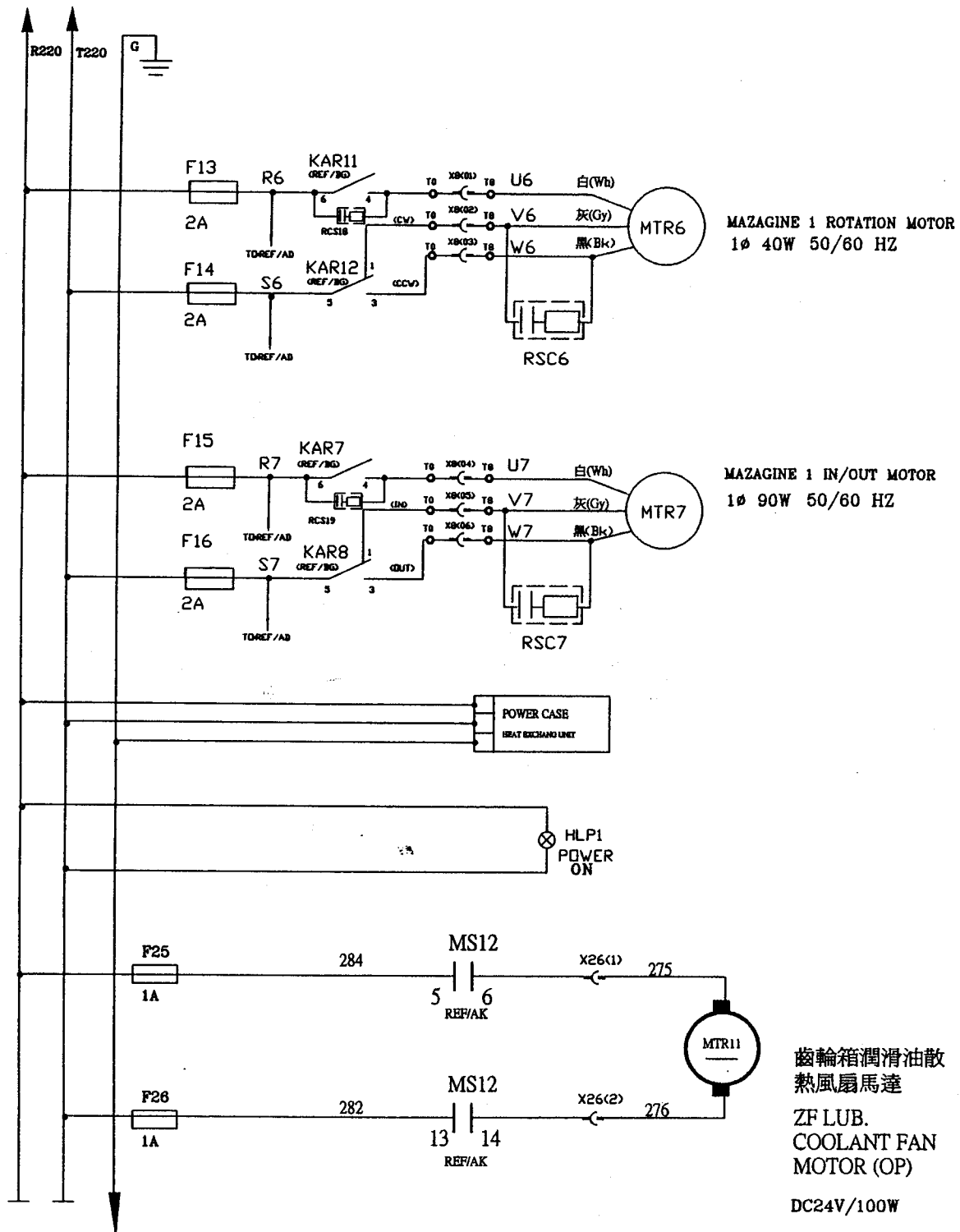
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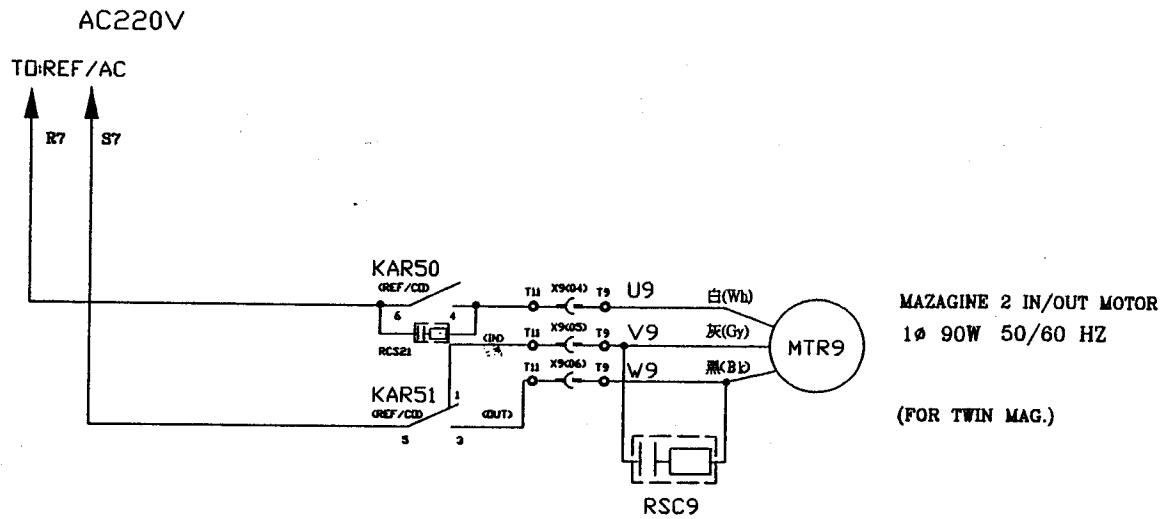
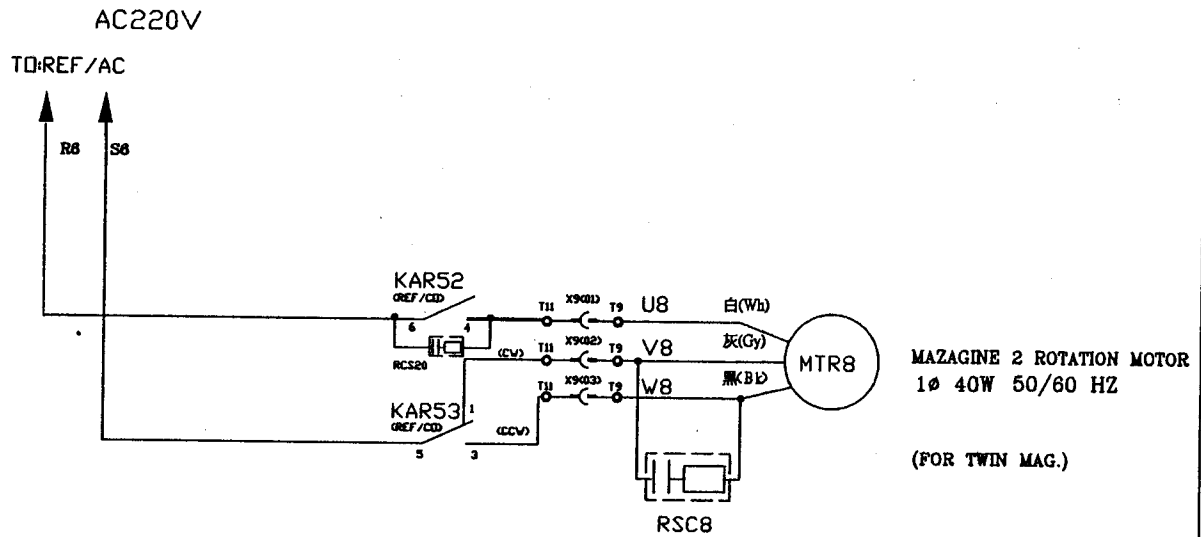
AC220V
TO:REF/AE

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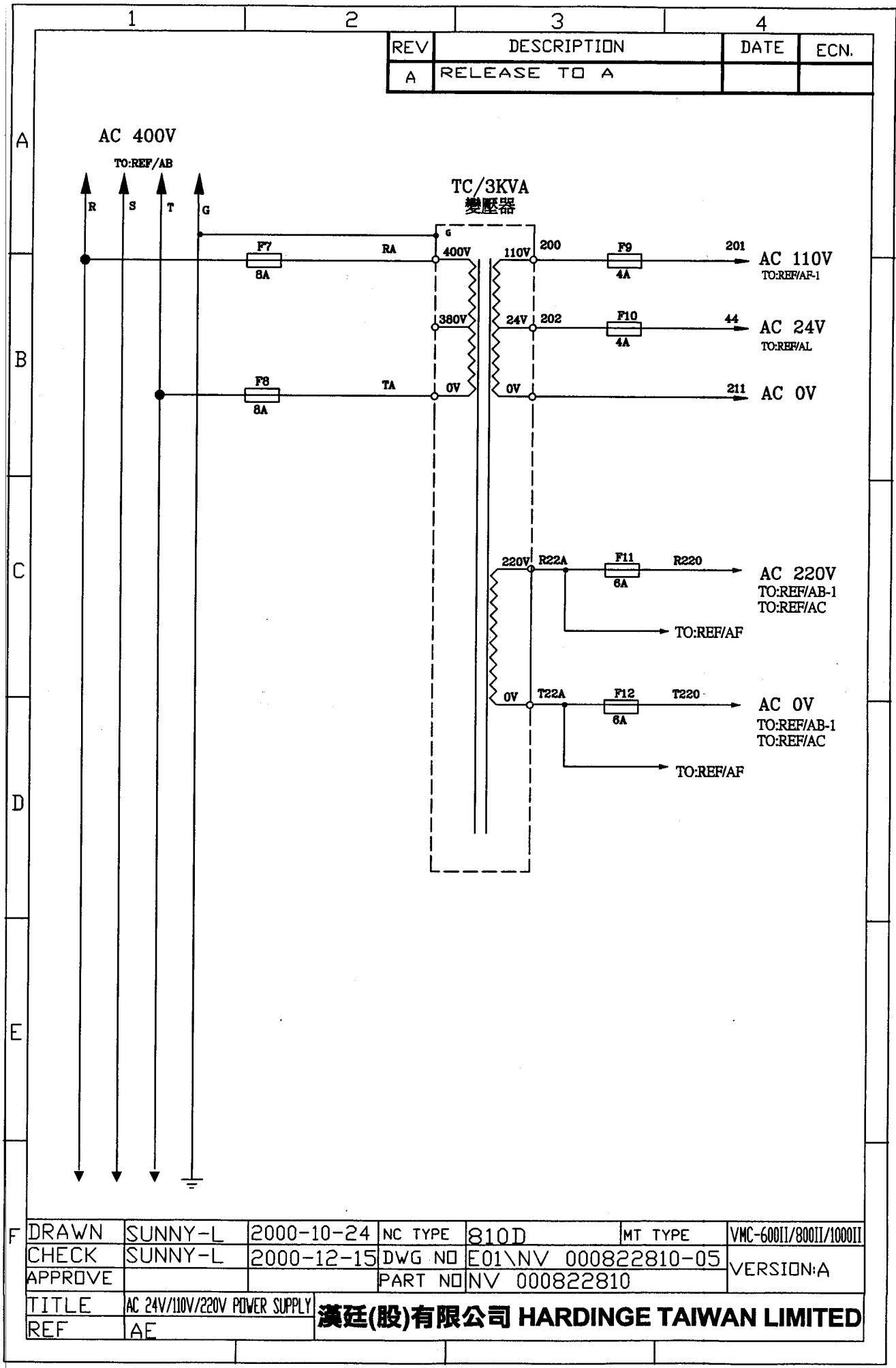


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CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-03	VERSION:A		
APPROVE			PART NO	NV 000822810			
TITLE	MAG. 1 MOTOR / ZF LUB. MOTOR		漢廷(股)有限公司 HARDINGE TAIWAN LIMITED				
REF	AC						

REV	DESCRIPTION	DATE	ECN.
A	RELEASE TO A		



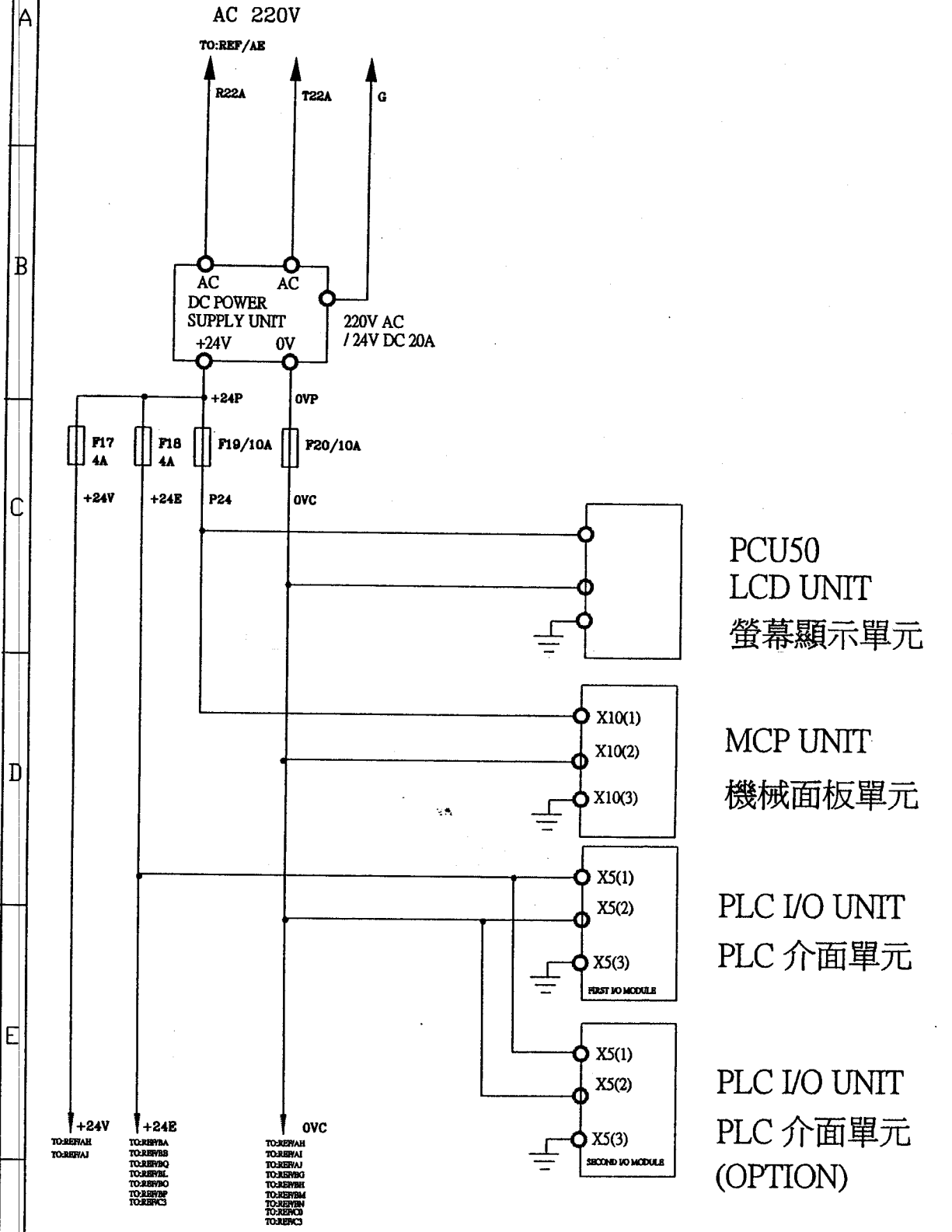
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CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-04	VERSION:A			
APPROVE			PART NO	NV 000822810				
TITLE	MAG. 2 MOTOR	漢廷(股)有限公司 HARDINGE TAIWAN LIMITED						
REF	AD							



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DRAWN	SUNNY-L	2000-10-24	NC TYPE	810D	MT TYPE	VMC-600II/800II/1000II	
CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-05	VERSION:A		
APPROVE			PART NO	NV 000822810			
TITLE	AC 24V/110V/220V POWER SUPPLY		漢廷(股)有限公司 HARDINGE TAIWAN LIMITED				
REF	AE						

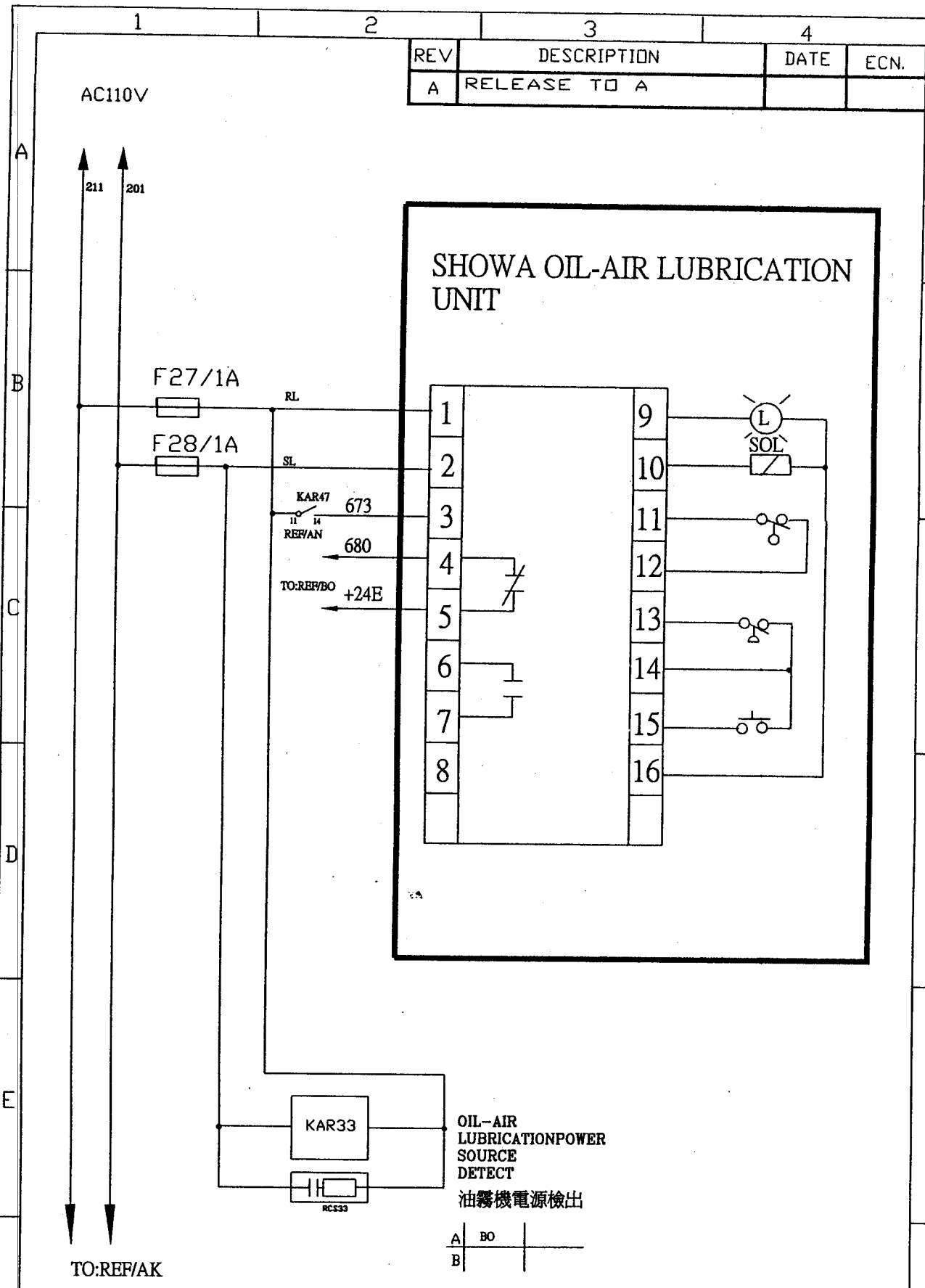
REV	DESCRIPTION	DATE	ECN.
A	RELEASE TO A		



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DRAWN	SUNNY-L	2000-10-24	NC TYPE	810D	MT TYPE	VMC-600II/800II/1000II
CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-06	VERSION:A	
APPROVE			PART NO	NV 000822810		
TITLE	DC POWER SUPPLY FOR PCU/MCP/ I/O					
REF	AF		漢廷(股)有限公司 HARDINGE TAIWAN LIMITED			

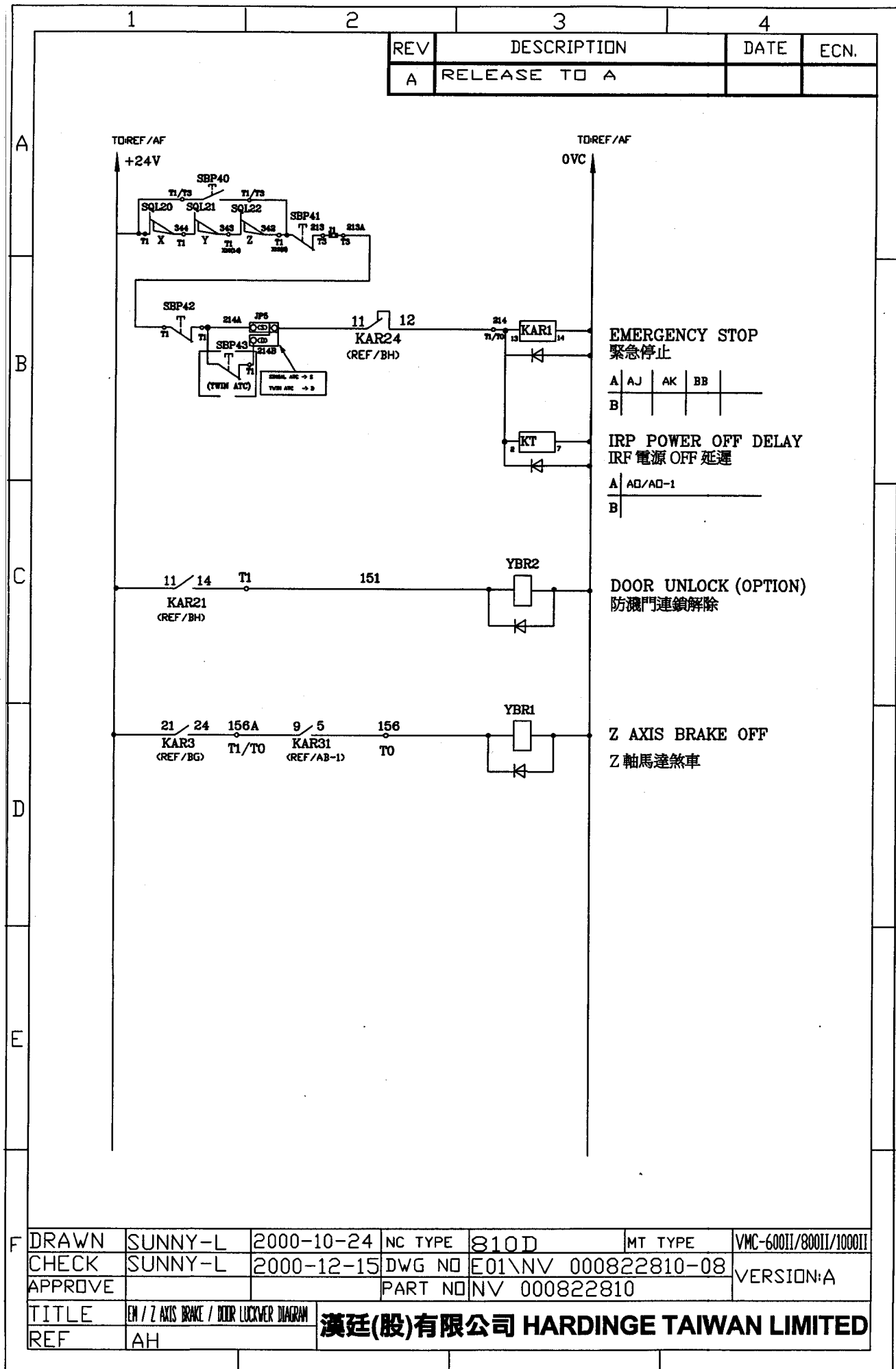
漢廷(股)有限公司 HARDINGE TAIWAN LIMITED



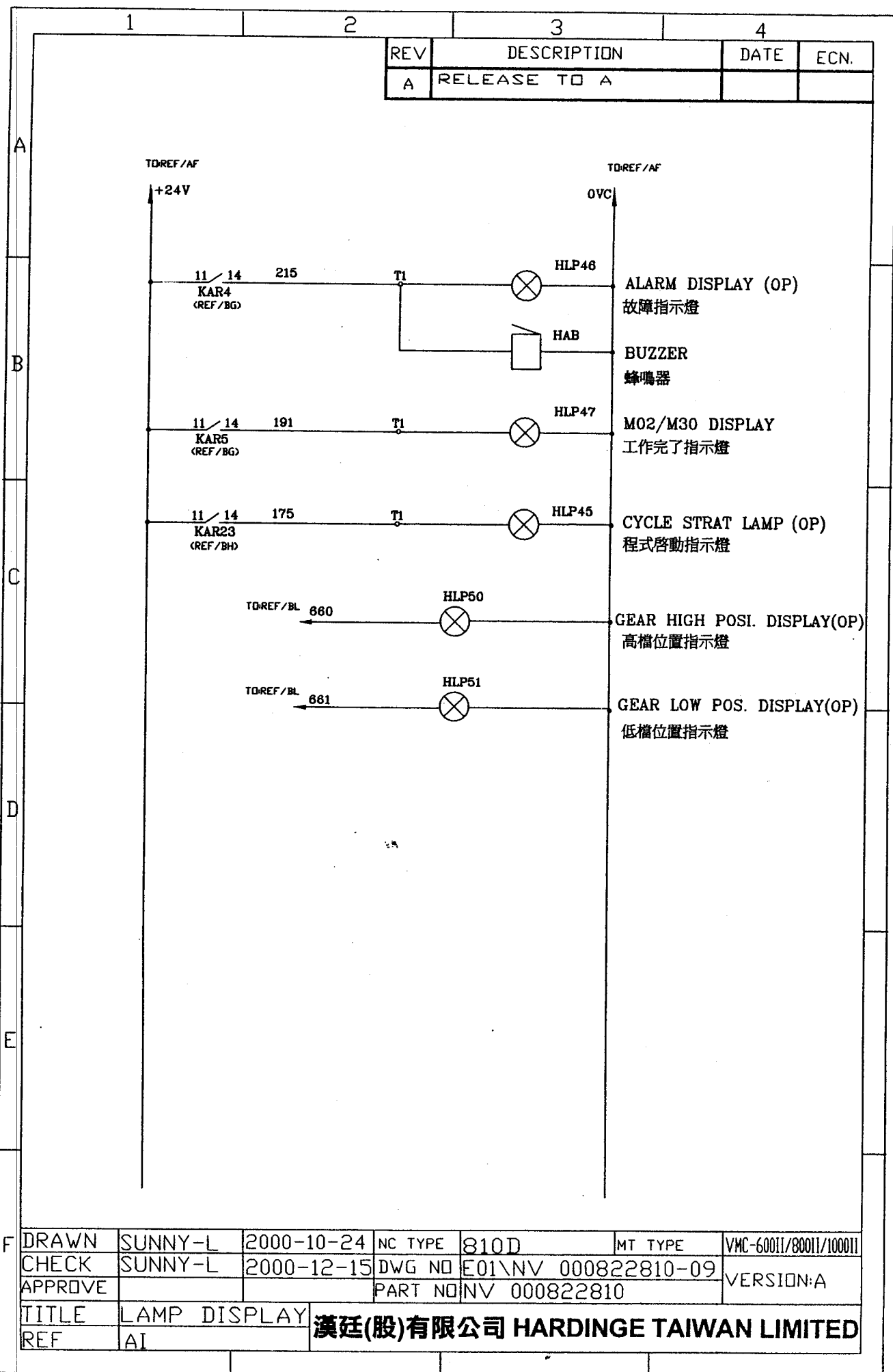
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A	RELEASE TO A		

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CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-07	VERSION:A	
APPROVE			PART NO	NV 000822810		
TITLE	OIL-AIR UNIT(SPD. 12K / 15K)		漢廷(股)有限公司 HARDINGE TAIWAN LIMITED			
REF	AF-1					



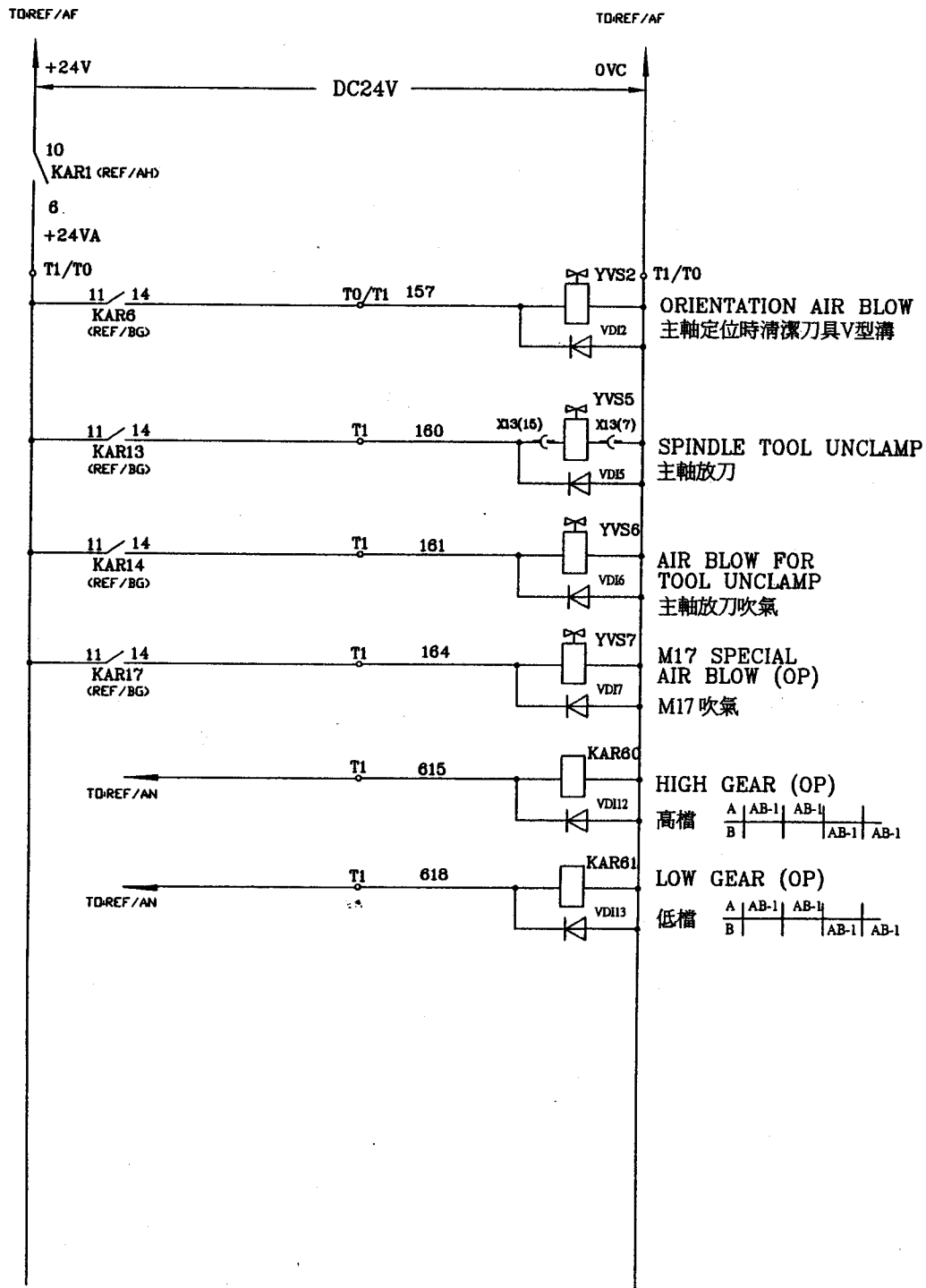
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	CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-08		VERSION: A
	APPROVE			PART NO	NV 000822810		
	TITLE		EN / Z AXIS BRAKE / DOOR LOCKER DIAGRAM		漢廷(股)有限公司 HARDINGE TAIWAN LIMITED		
	REF		AH				



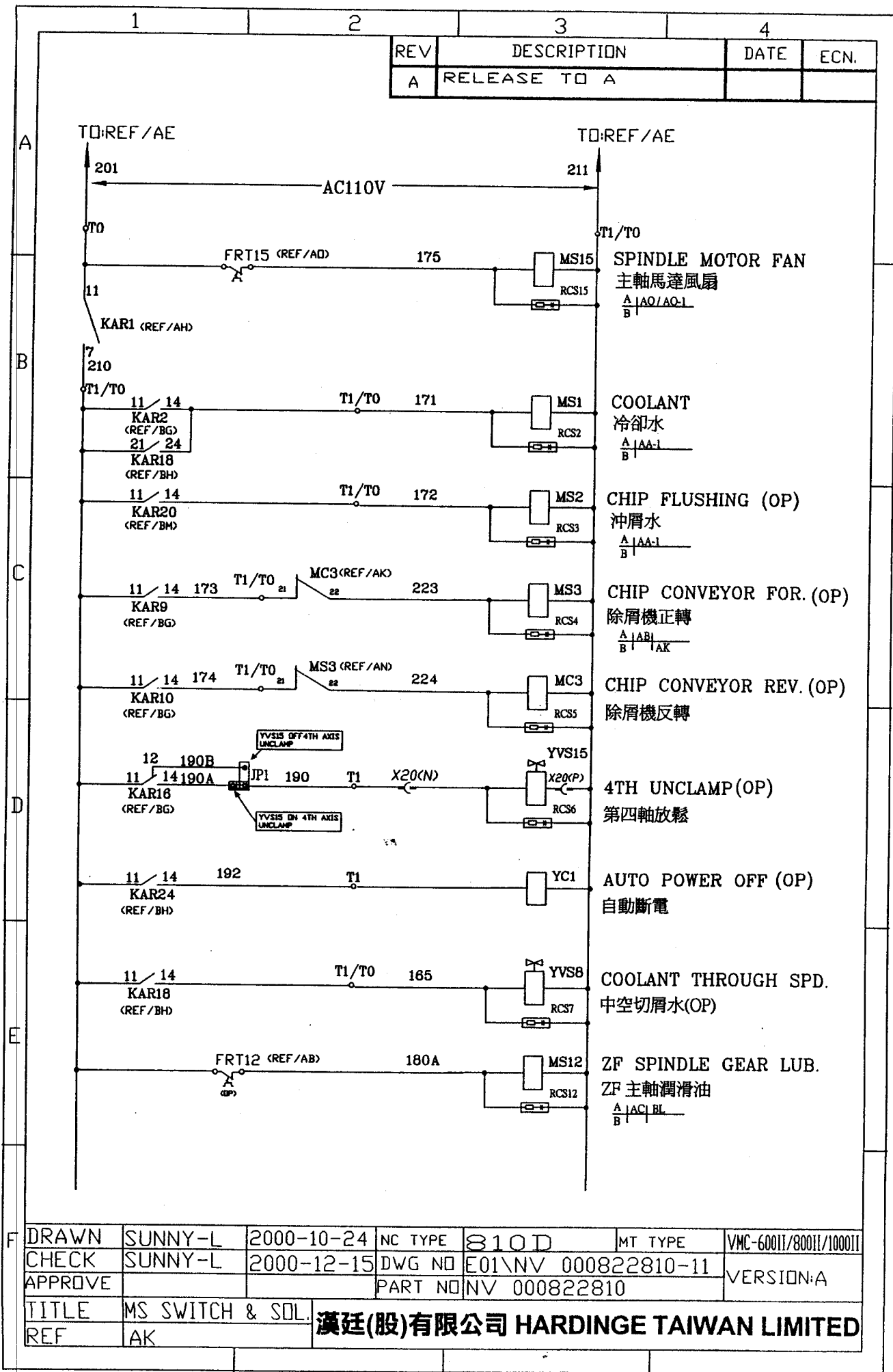
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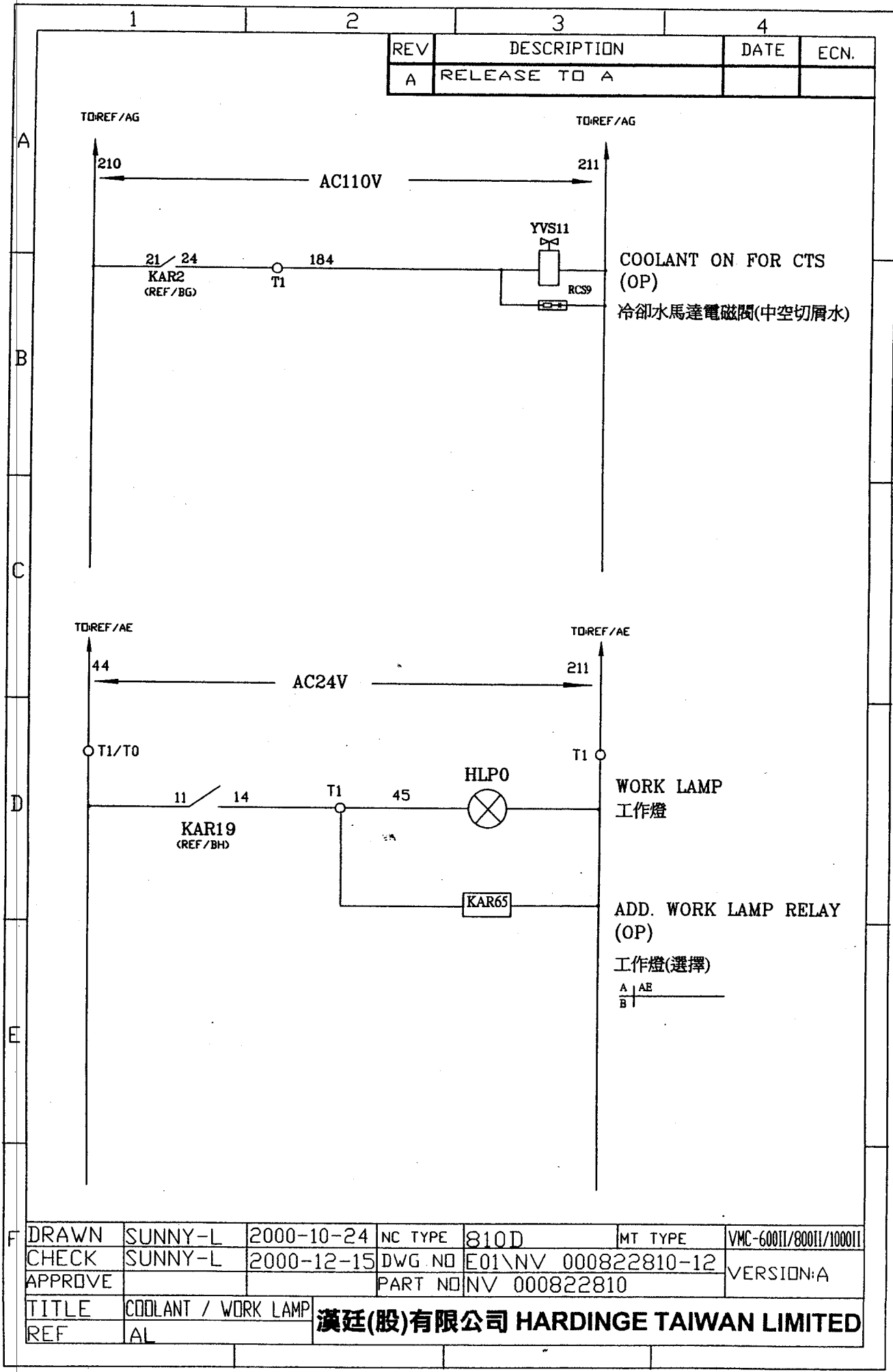
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CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-09	VERSION:A	
APPROVE			PART NO	NV 000822810		
TITLE	LAMP DISPLAY	漢廷(股)有限公司 HARDINGE TAIWAN LIMITED				
REF	AI					

REV	DESCRIPTION	DATE	ECN.
A	RELEASE TO A		



F	DRAWN	SUNNY-L	2000-10-24	NC TYPE	810D	MT TYPE	VMC-600II/800II/1000II
	CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-10		VERSION:A
	APPROVE			PART NO	NV 000822810		
	TITLE	SQL. POWER DIAGRAM		漢廷(股)有限公司 HARDINGE TAIWAN LIMITED			
	REF	AJ					





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		REV	DESCRIPTION
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KAR44
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M134 OUTPUT

M134 輸出

M136 OUTPUT

M136 輸出

M138 OUTPUT

M138 輸出

M190 OUTPUT

M190 輸出

M192 OUTPUT

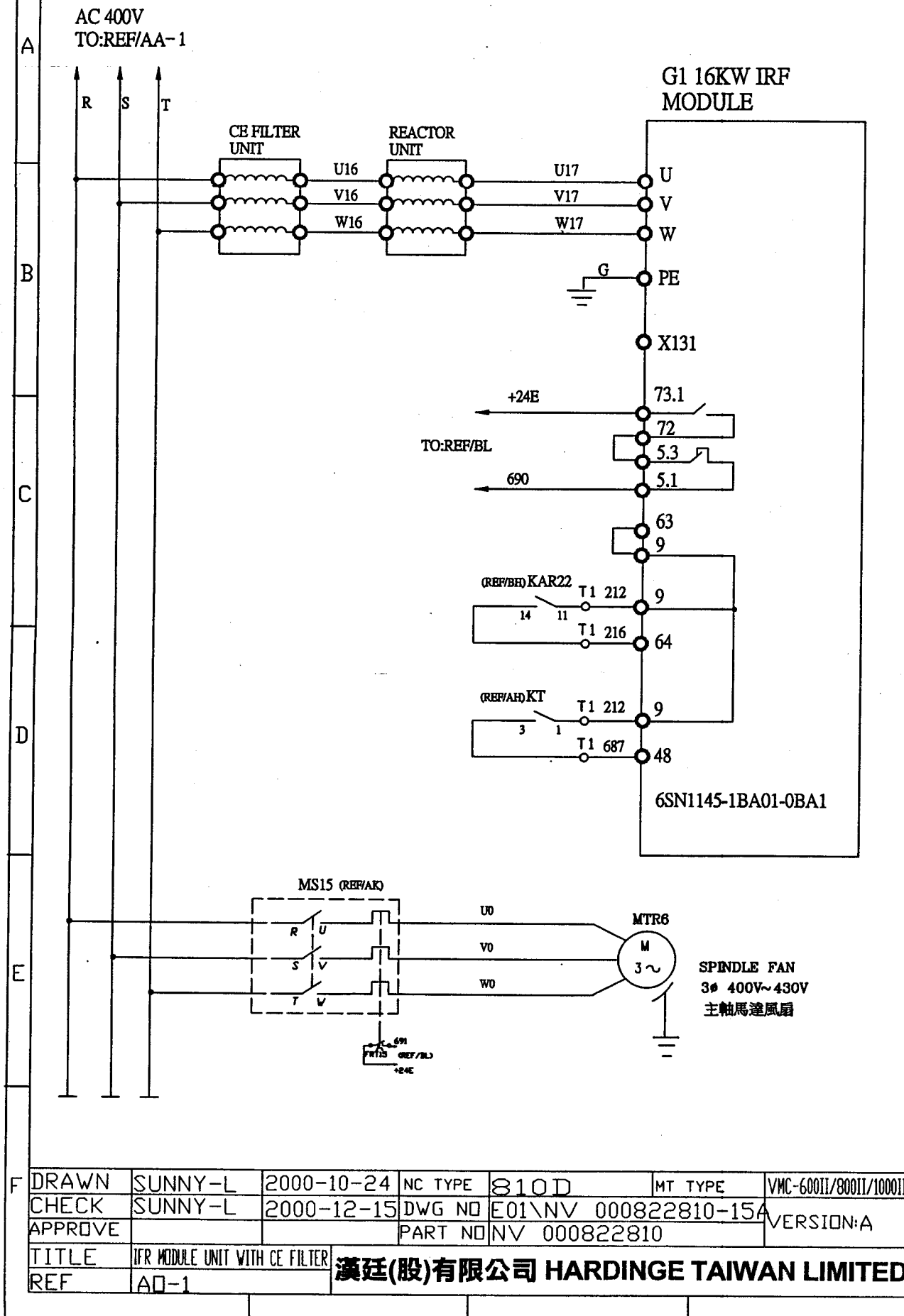
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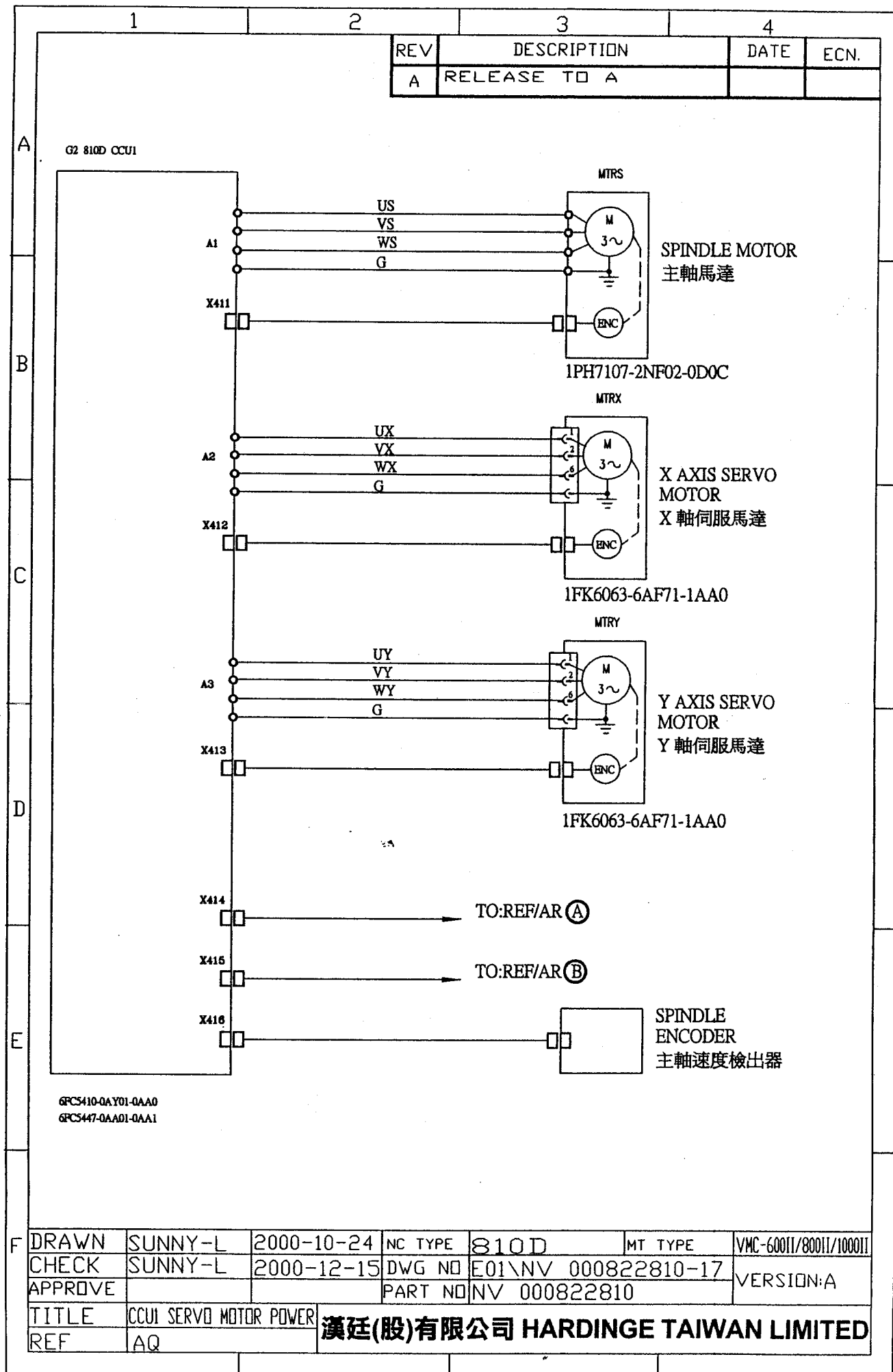
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CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-13		
APPROVE			PART NO	NV 000822810		
TITLE	M134 - M192 SPARE OUTPUT					
REF	AM					

漢廷(股)有限公司 HARDINGE TAIWAN LIMITED

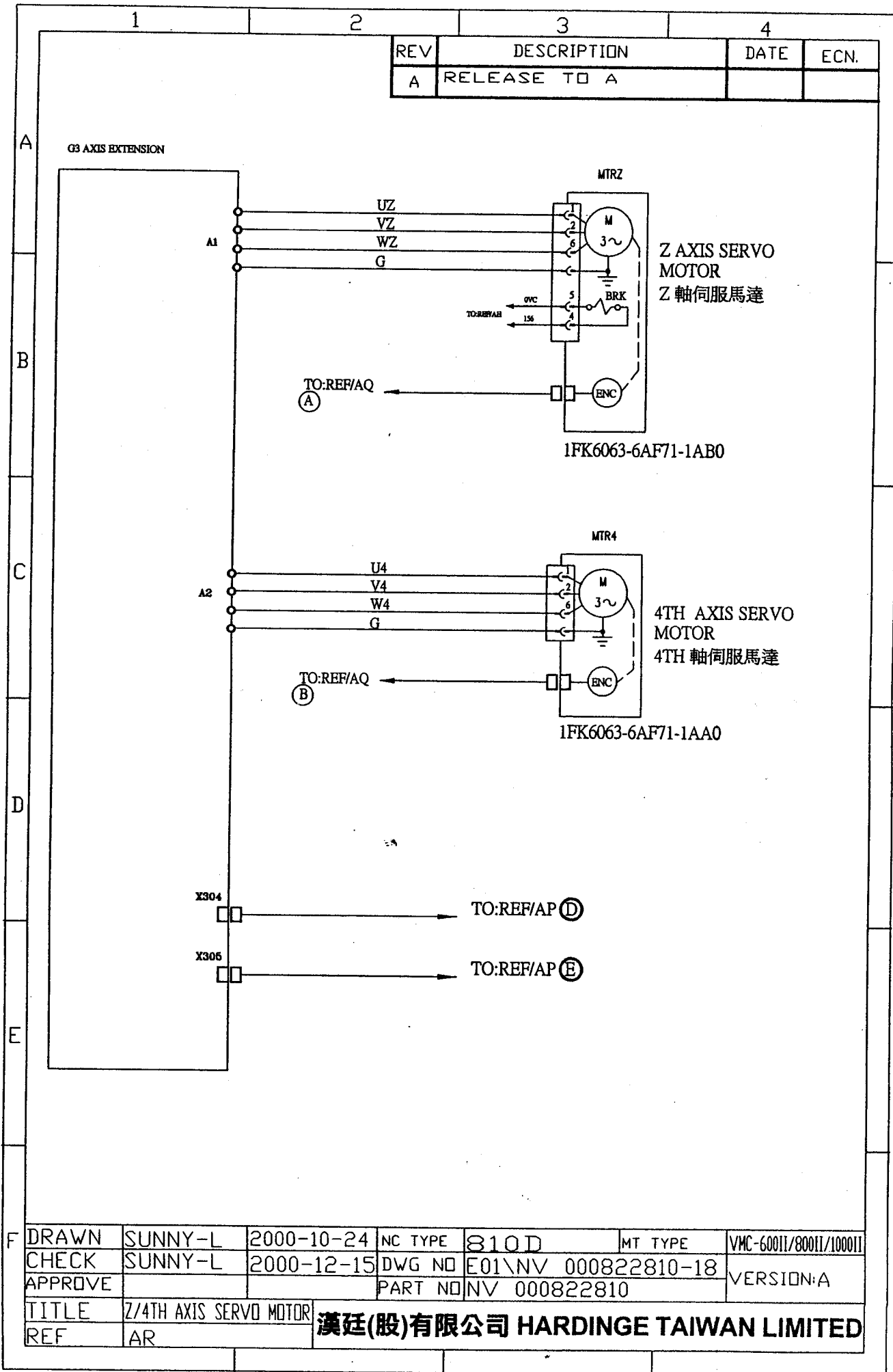
REV	DESCRIPTION	DATE	ECN.
A	RELEASE TO A		





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	CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-17	VERSION:A	
	APPROVE			PART NO	NV 000822810		
	TITLE	CCU1 SERVO MOTOR POWER			漢廷(股)有限公司 HARDINGE TAIWAN LIMITED		
	REF	AQ					

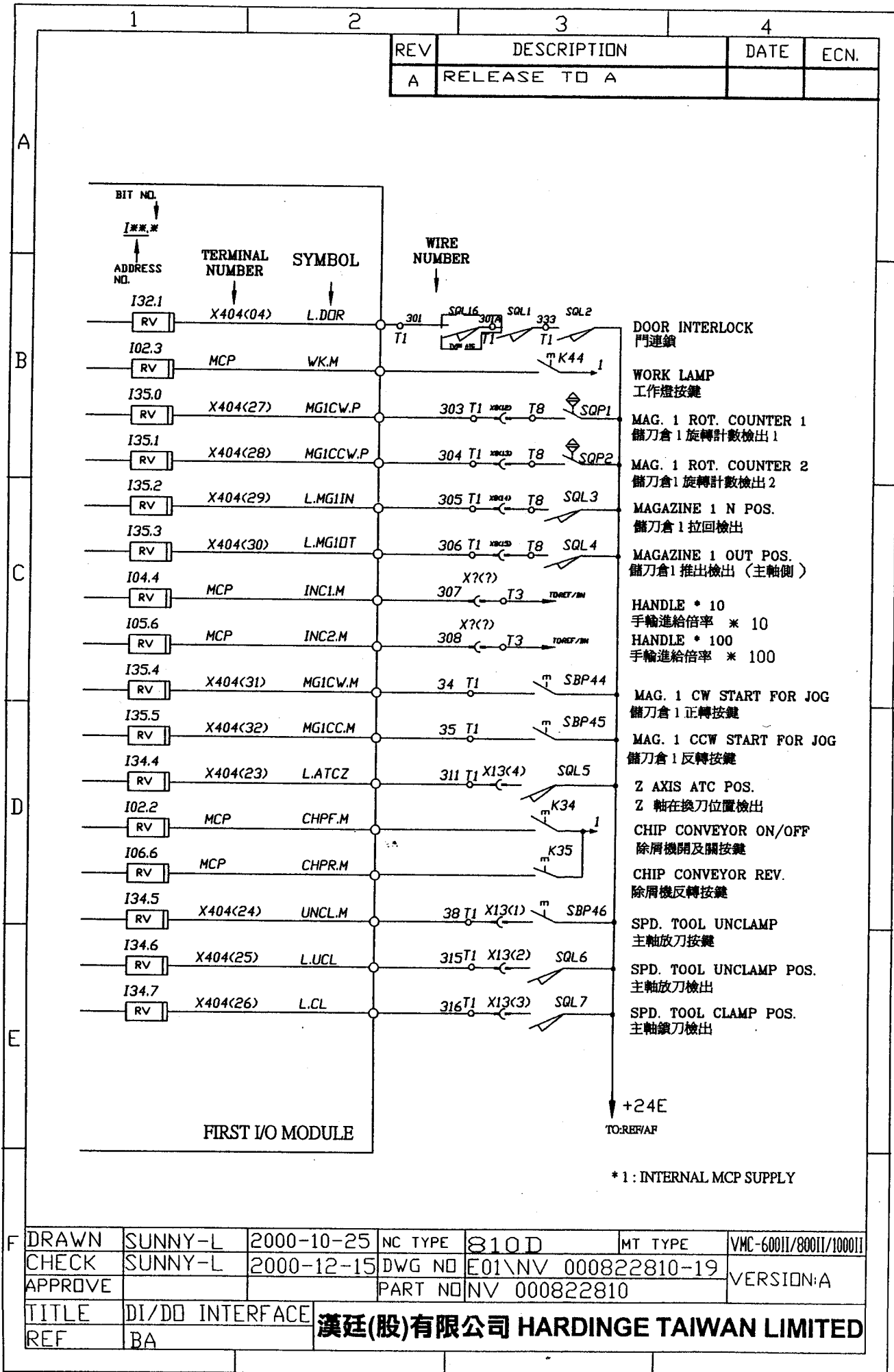
漢廷(股)有限公司 HARDINGE TAIWAN LIMITED



REV	DESCRIPTION	DATE	ECN.
A	RELEASE TO A		

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DRAWN	SUNNY-L	2000-10-24	NC TYPE	810D	MT TYPE	VMC-600II/800II/1000II
CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-18	VERSION:A	
APPROVE			PART NO	NV 000822810		
TITLE	Z/4TH AXIS SERVO MOTOR		漢廷(股)有限公司 HARDINGE TAIWAN LIMITED			
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漢廷(股)有限公司 HARDINGE TAIWAN LIMITED

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漢廷(股)有限公司 HARDINGE TAIWAN LIMITED

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漢廷(股)有限公司 HARDINGE TAIWAN LIMITED

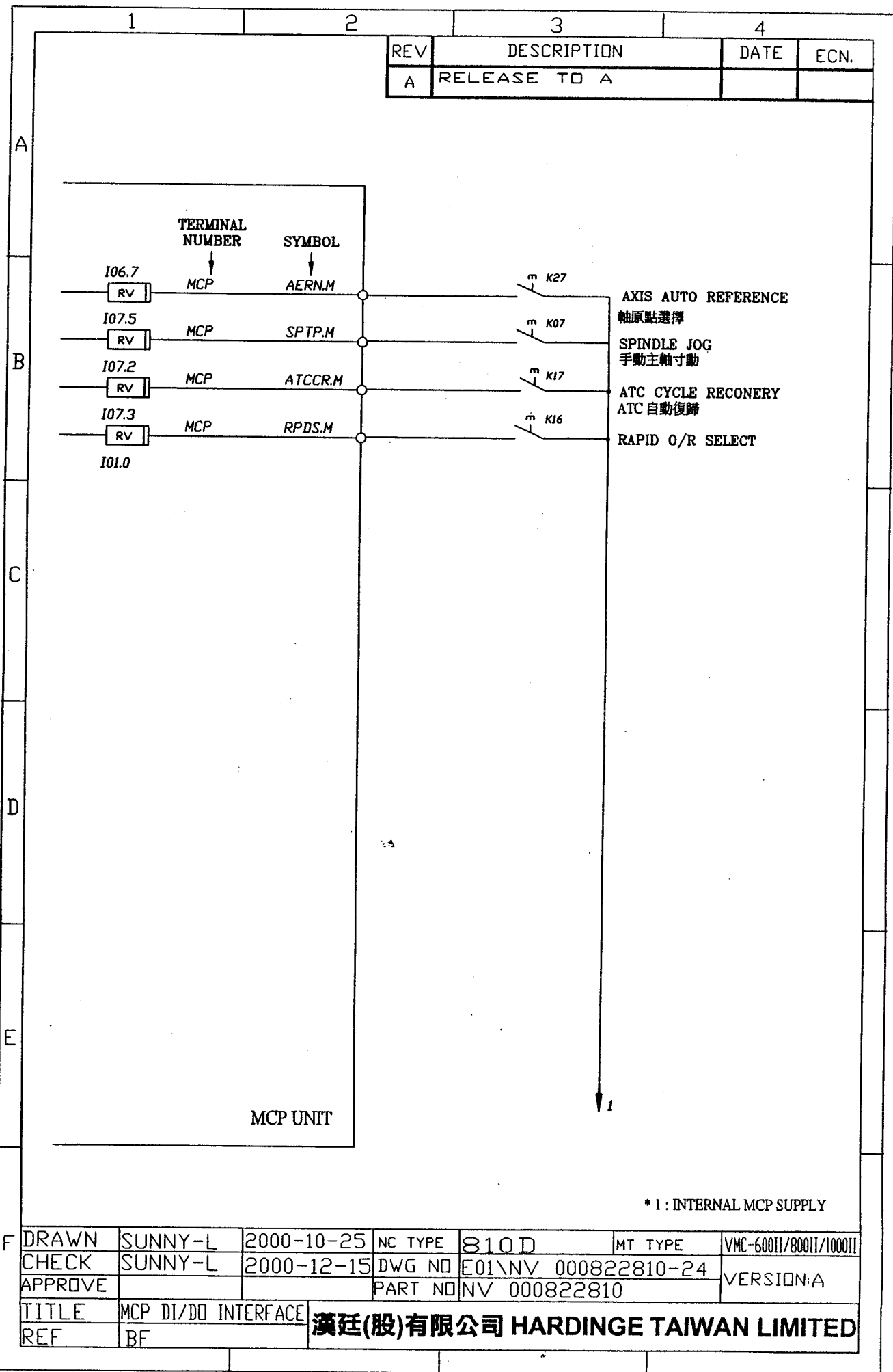
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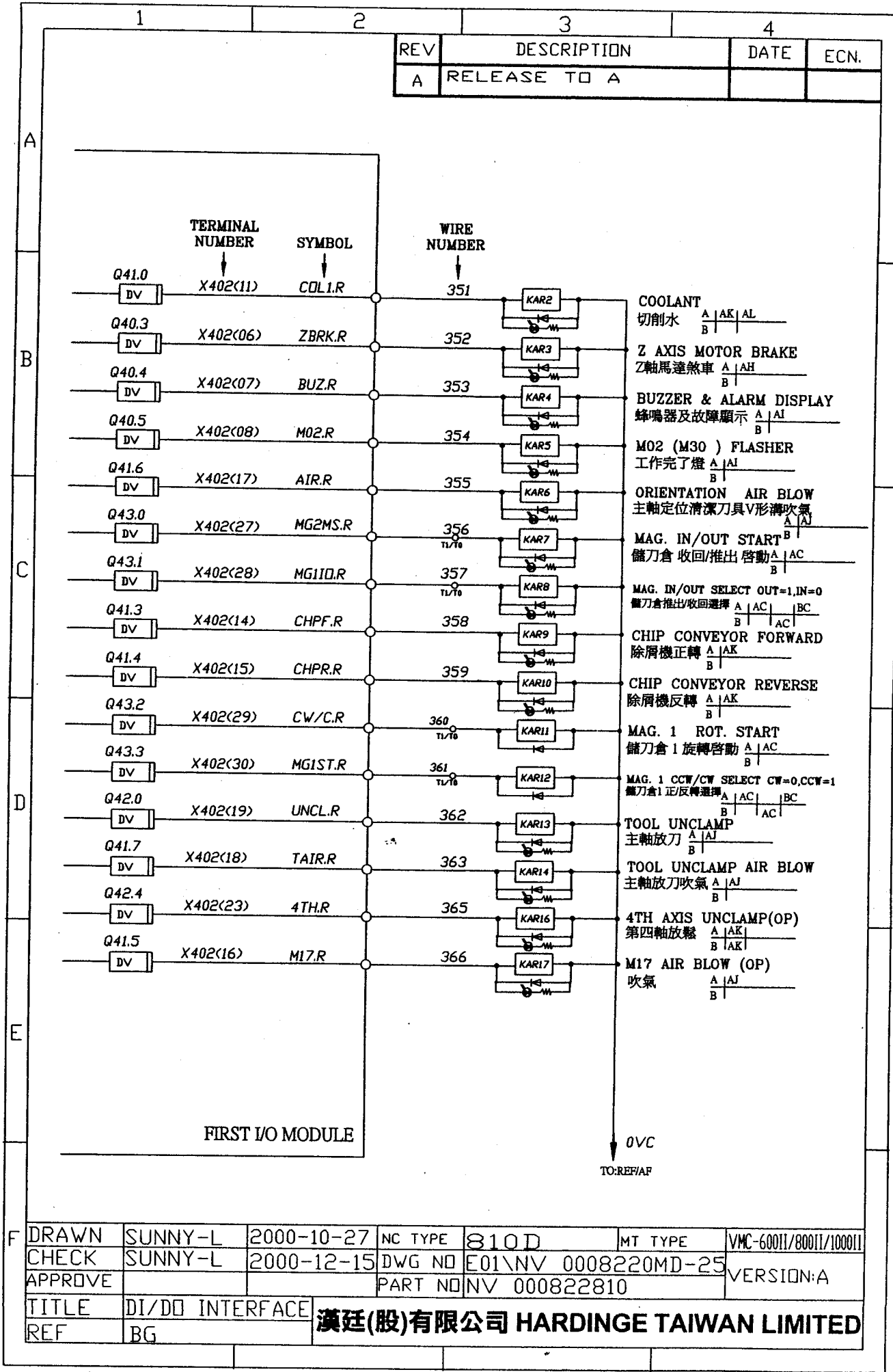
漢廷(股)有限公司 HARDINGE TAIWAN LIMITED



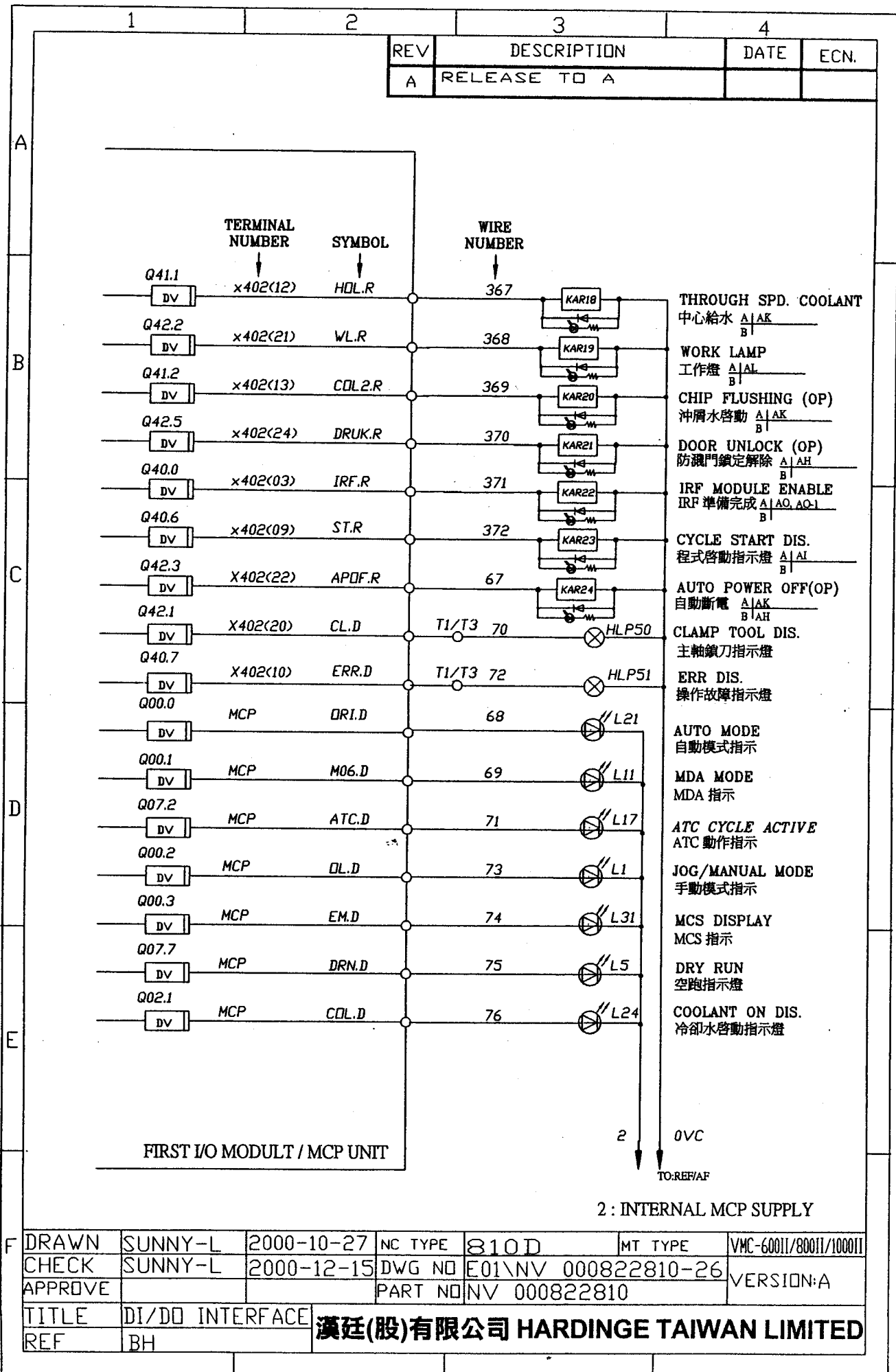
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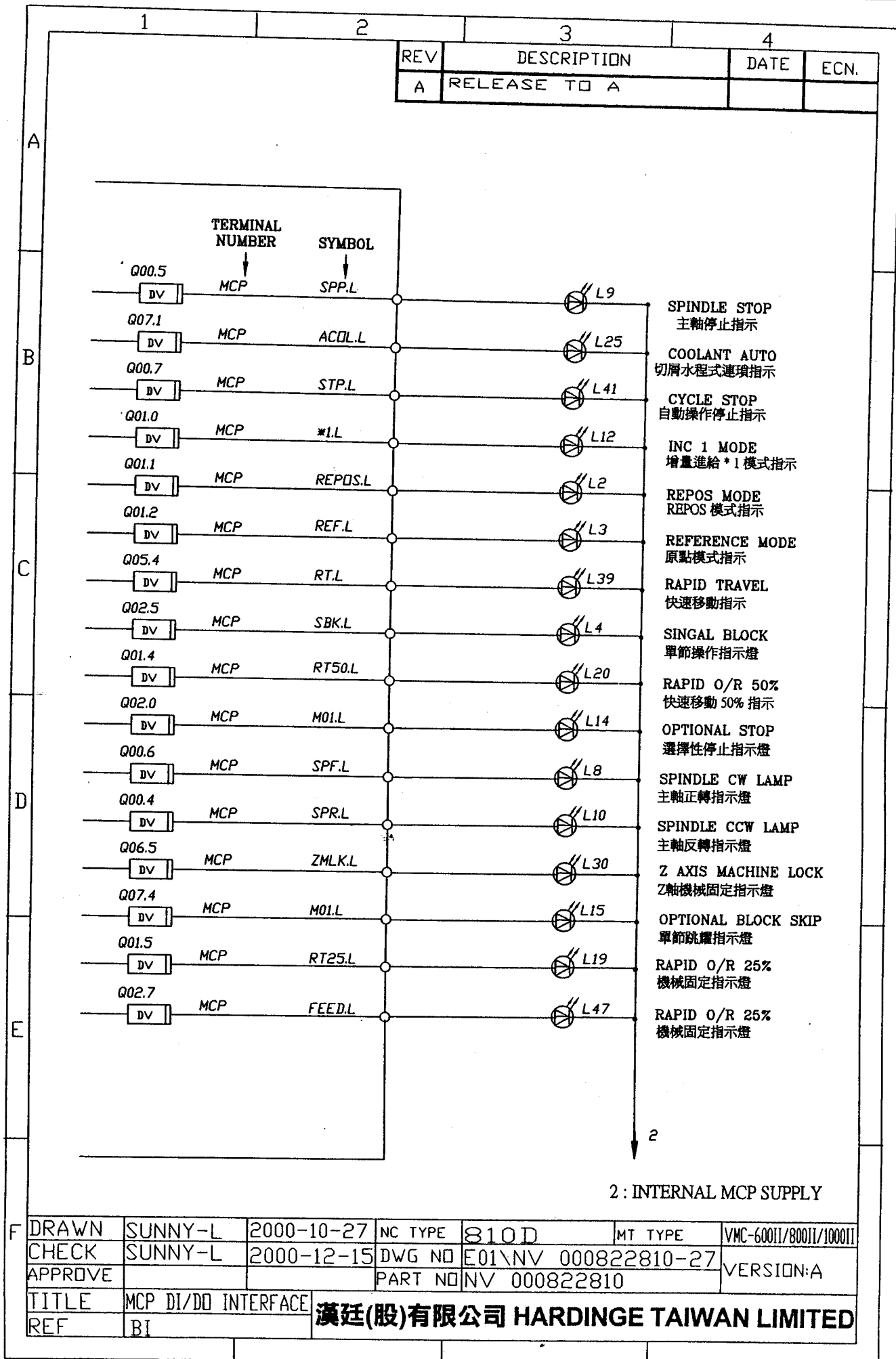
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CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-24	VERSION:A		
APPROVE			PART NO	NV 000822810			
TITLE	MCP DI/DO INTERFACE		漢廷(股)有限公司 HARDINGE TAIWAN LIMITED				
REF	BF						



漢廷(股)有限公司 HARDINGE TAIWAN LIMITED





DRAWN	SUNNY-L	2000-10-27	NC TYPE	810D	MT TYPE	VMC-600II/800II/1000II
CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-27		VERSION: A
APPROVE			PART NO	NV 000822810		
TITLE	MCP DI/DO INTERFACE					
REF	BI					

漢廷(股)有限公司 HARDINGE TAIWAN LIMITED

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REV	DESCRIPTION	DATE	ECN.
A	RELEASE TO A		

Q	DV	MCP	SYMBOL	L
Q01.6	DV	MCP	RT0/L	L18
Q01.7	DV	MCP	STL.L	L43
Q02.2	DV	MCP	CHIP.L	L34
Q02.6	DV	MCP	ALBZ.L	L46
Q04.5	DV	MCP	-Z.L	L49
Q04.7	DV	MCP	-4.L	L50
Q04.6	DV	MCP	+Y.L	L48
Q05.2	DV	MCP	-Y.L	L30
Q05.1	DV	MCP	+Z.L	L29
Q05.0	DV	MCP	+4.L	L28
Q05.3	DV	MCP	+X.L	L38
Q05.5	DV	MCP	-X.L	L40
Q05.7	DV	MCP	LAMP.L	L33
Q06.0	DV	MCP	*1000	L23
Q06.1	DV	MCP	*100	L22
Q06.2	DV	MCP	*10	L13

MCP UNIT

2 : INTERNAL MCP SUPPLY

<p>RAPID O/R 0% 快速移動0%指示</p> <p>CYCLE START 循環啟動指示</p> <p>CHIP CONVEYOR FORWARD 除削機正轉指示</p> <p>ALARM BUZZER RESET 蜂鳴器警報指示</p> <p>Z AXIS - JOG 手動Z軸 - 方向指示</p> <p>4TH AXIS - JOG 手動4TH軸 - 方向指示</p> <p>Y AXIS + JOG 手動Y軸 - 方向指示</p> <p>Y AXIS - JOG 手動Y軸 - 方向指示</p> <p>Z AXIS + JOG 手動Z軸 + 方向指示</p> <p>4 AXIS + JOG 手動4TH軸 + 方向指示</p> <p>X AXIS + JOG 手動X軸 + 方向指示</p> <p>X AXIS - JOG 手動X軸 - 方向指示</p> <p>LAMP TEST 工作燈指示</p> <p>INC. *1000 增量進給*1000</p> <p>INC*100 增量進給*100</p> <p>INC*10 增量進給*10</p>	<p>2</p>
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DRAWN	SUNNY-L	2000-10-27	NC TYPE	810D	MT TYPE	VMC-600II/800II/1000II
CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-28	VERSION:A	
APPROVE			PART NO	NV 000822810		
TITLE	MCP DI/DO INTERFACE					
REF	BS					

漢廷(股)有限公司 HARDINGE TAIWAN LIMITED

1	2	3	4
		REV	DESCRIPTION
		A	RELEASE TO A
		DATE	ECN.

TERMINAL NUMBER
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SYMBOL
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Q06.3	DV	MCP	M80.L			
Q06.4	DV	MCP	DNC.L			
Q06.6	DV	MCP	CHIPR.L			
Q06.7	DV	MCP	AREF.L			
Q07.0	DV	MCP	FLUSH.L			
Q07.3	DV	MCP	RT.L			
Q07.5	DV	MCP	MSPG.L			
Q07.6	DV	MCP	PRDT.L			
Q02.3	DV	MCP	WORK.L			
	DV					
	DV					
	DV					
	DV					
	DV					
	DV					
	DV					

MCP UNIT

L45					AUTO POWER OFF 自動斷電指示
L37					REMOTE ENABLE DNC 指示
L35					CHIP CONVEYOR REVERSE 除削機反轉指示
L27					AUTO REFERENCE 自動回原點指示
L26					FLUSH COOLANT 沖創指示
L16					RAPID TRAVEL O/R 快速移動指示
L7					SPINDLE JOG 主軸手動操作
L6					PROGRAM TEST 程式測試指示
L44					WORK LIGHT 工作燈顯示

2

2 : INTERNAL MCP SUPPLY

DRAWN	SUNNY-L	2000-10-27	NC TYPE	810D	MT TYPE	VMC-600II/800II/1000II
CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-29		VERSION: A
APPROVE			PART NO	NV 000822810		
TITLE	MCP DI/DO INTERFACE					
REF	BK					

漢廷(股)有限公司 HARDINGE TAIWAN LIMITED

REV	DESCRIPTION	DATE	ECN.
A	RELEASE TO A		

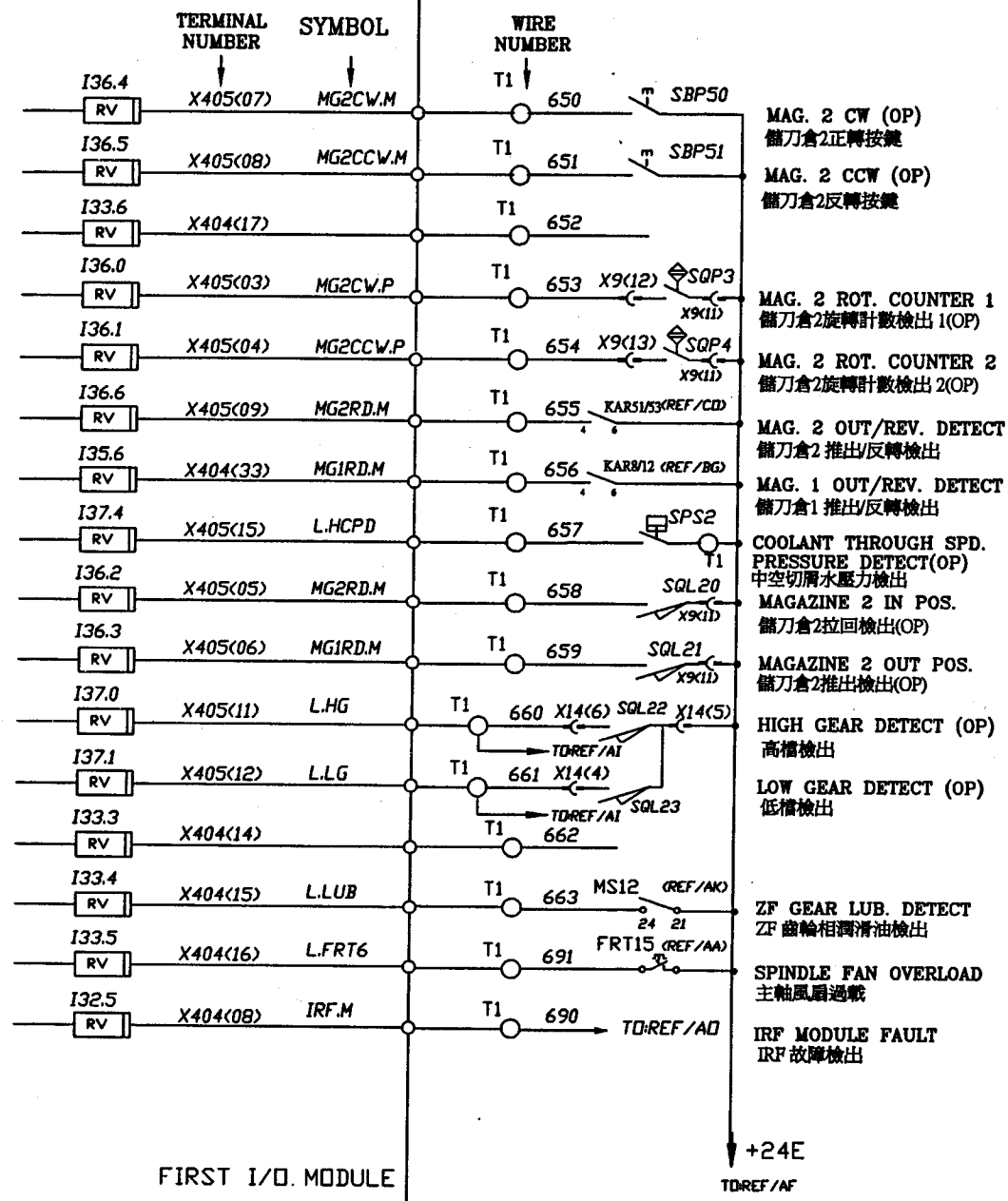
A

B

C

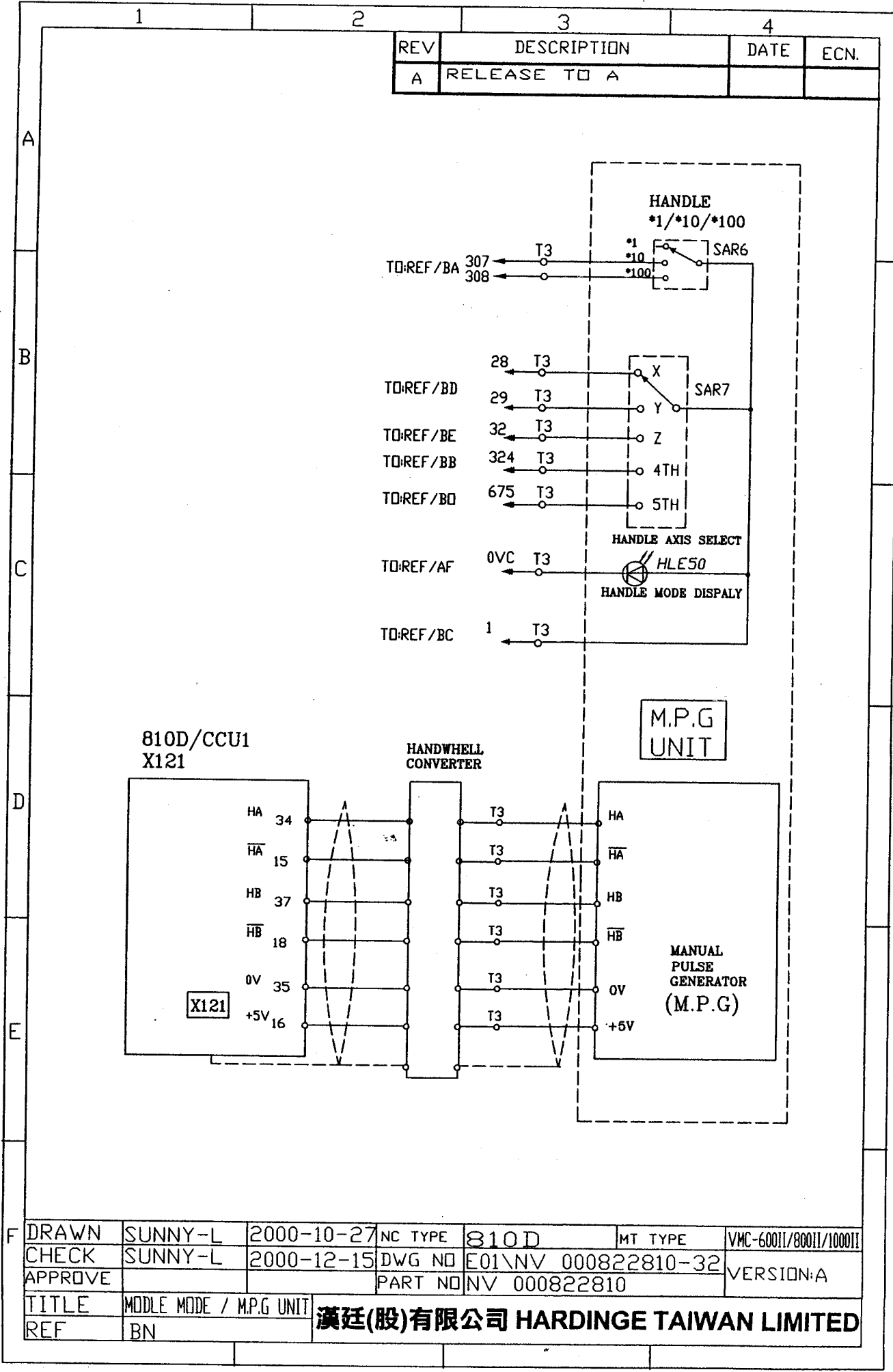
D

E



DRAWN	SUNNY-L	2000-10-28	NC TYPE	810D	MT TYPE	VMC-600II/800II/1000II		
CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-30	VERSION:A			
APPROVE			PART NO	NV 000822810				
TITLE	DI/DO INTERFACE	漢廷(股)有限公司 HARDINGE TAIWAN LIMITED						
REF	BL							

F	DRAWN	SUNNY-L	2000-10-27	NC TYPE	810D	MT TYPE	VMC-600II/800II/1000II	
	CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-31	VERSION: A		
	APPROVE			PART NO	NV 000822810			
	TITLE	DI/DD INTERFACE		漢廷(股)有限公司 HARDINGE TAIWAN LIMITED				
	REF	BM						

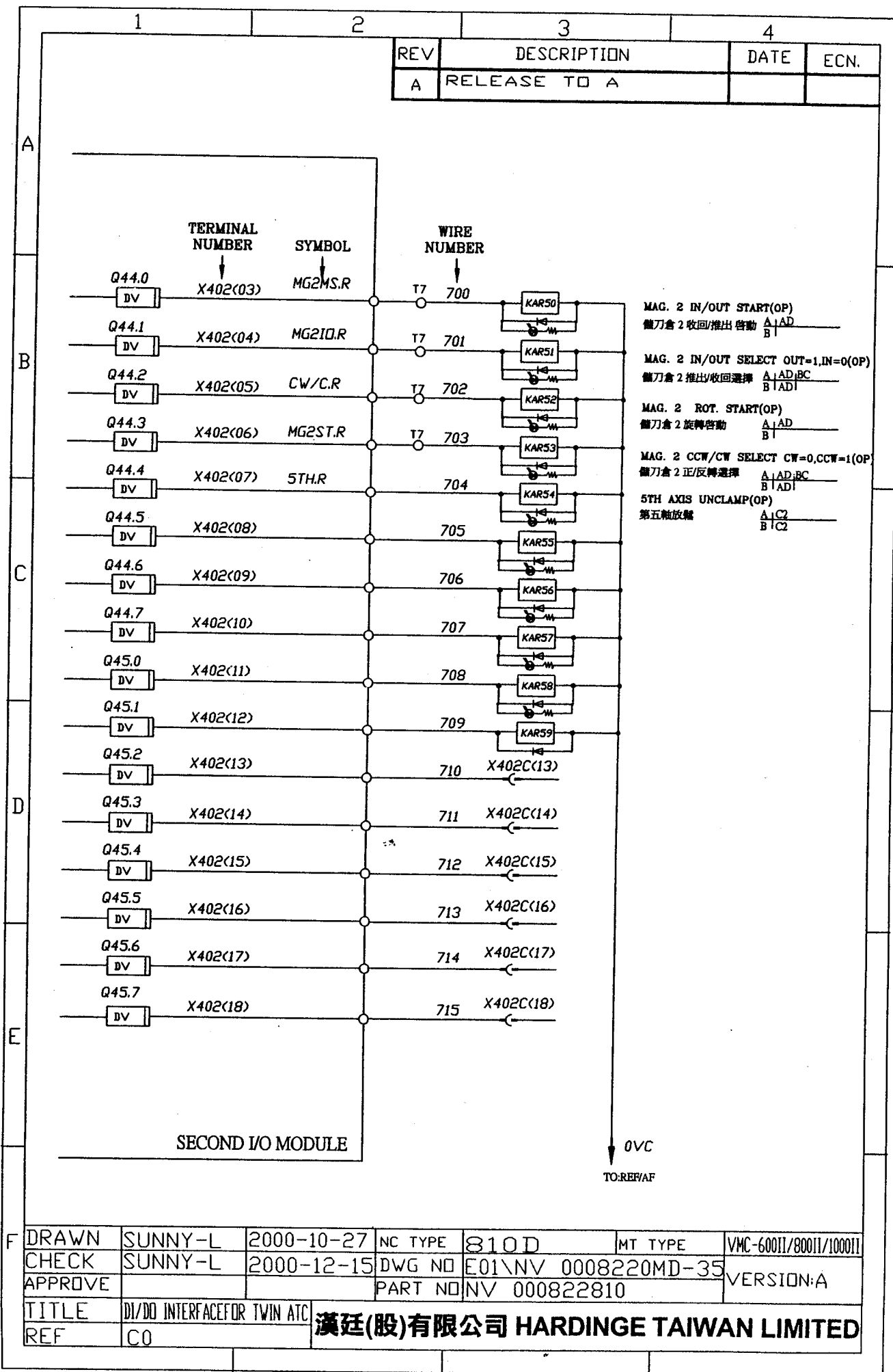


AF

A
B
C
D
E



漢廷(股)有限公司 HARDINGE TAIWAN LIMITED



F

DRAWN	SUNNY-L	2000-10-27	NC TYPE	810D	MT TYPE	VMC-600II/800II/1000II	
CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 0008220MD-35	VERSION:A		
APPROVE			PART NO	NV 000822810			
TITLE	DI/DO INTERFACEFOR TWIN ATC						
REF	C0						

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	Q	TERMINAL NUMBER	SYMBOL	WIRE NUMBER	X
B	Q46.0	X402(19)		716	X402C(19)
	Q46.1	X402(20)		717	X402C(20)
	Q46.2	X402(21)		718	X402C(21)
	Q46.3	X402(22)		719	X402C(22)
	Q46.4	X402(23)		720	X402C(23)
C	Q46.5	X402(24)		721	X402C(24)
	Q46.6	X402(25)		722	X402C(25)
	Q46.7	X402(26)		723	X402C(26)
	Q47.0	X402(27)		724	X402C(27)
	Q47.1	X402(28)		725	X402C(28)
D	Q47.2	X402(29)		726	X402C(29)
	Q47.3	X402(30)		727	X402C(30)
	Q47.4	X402(31)		728	X402C(31)
	Q47.5	X402(32)		729	X402C(32)
	Q47.6	X402(33)		730	X402C(33)
E	Q47.7	X402(34)		731	X402C(34)

SECOND I/O MODULE

F	DRAWN	SUNNY-L	2000-10-27	NC TYPE	810D	MT TYPE	VMC-600II/800II/1000II
	CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 0008220MD-36		
	APPROVE			PART NO	NV 000822810		VERSION:A
	TITLE	DI/DO INTERFACE	漢廷(股)有限公司 HARDINGE TAIWAN LIMITED				
	REF	C1					

1	2	3	4
REV		DESCRIPTION	DATE
A		RELEASE TO A	ECN.

T7

11

KAR50
(REF/CO)

14

750

12

751

14

751

14

752

11

KAR51
(REF/CO)

14

753

12

754

14

754

14

755

11

KAR52
(REF/CO)

14

756

12

757

14

757

14

758

11

KAR53
(REF/CO)

14

759

12

760

14

760

14

761

11

KAR54
(REF/CO)

14

762

12

763

14

763

14

764

T7

11

KAR55
(REF/CO)

14

765

12

766

14

766

14

767

11

KAR56
(REF/CO)

14

768

12

769

14

769

14

770

11

KAR57
(REF/CO)

14

771

12

772

14

772

14

773

11

KAR58
(REF/CO)

14

774

12

775

14

775

14

776

11

KAR59
(REF/CO)

14

777

12

778

14

778

14

779

DRAWN	SUNNY-L	2000-10-24	NC TYPE	810D	MT TYPE	VMC-60011/80011/100011
CHECK	SUNNY-L	2000-12-15	DWG NO	E01\NV 000822810-37	VERSION: A	
APPROVE			PART NO	NV 000822810		
TITLE	FREE RELAY OUTPUT					
REF	C2					

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3

PLC Program

OB1 - <offline>

"CYCLIC" Cyclic Organisation Block [System]

Name: Hardinge

Family: VMC

Author: MGS

Version: 1.0

Block version: 2

Time stamp Code: 03/12/01 10:07:23 AMAM

Interface: 05/09/00 06:22:45 PMPM

Lengths (block/logic/data): 01502 01332 00026

Address	Declaration	Name	Type	Start value	Comment
0.0	temp	OB1_EV_CLASS	BYTE		
1.0	temp	OB1_SCAN_1	BYTE		
2.0	temp	OB1_PRIORITY	BYTE		
3.0	temp	OB1_OB_NUMBR	BYTE		
4.0	temp	OB1_RESERVED_1	BYTE		
5.0	temp	OB1_RESERVED_2	BYTE		
6.0	temp	OB1_PREV_CYCLE	INT		
8.0	temp	OB1_MIN_CYCLE	INT		
10.0	temp	OB1_MAX_CYCLE	INT		
12.0	temp	OB1_DATE_TIME	DATE_AND_TIME		
20.0	temp	START_UP	BOOL		

Block: OB1 Cyclic Organisation Block

Network: 1 Basic Program Call

CALL FC 2 "GP BASE" -- Cyclic Basic Program [System]

Network: 2 Auxiliary Tool Change Magazine Control #1

```

L    PIB    35
T    MB    200
CALL FC    82      "ATC 1 AUTO ROTATION"    -- ATC #1 Automatic Rotation Control [User]
CALL FC    83      "ATC 1 MAN ROTATION"      -- ATC #1 Manual Rotation Control [User]
CALL FC    84      "ATC 1 ROTATION"          -- ATC #1 Rotation Motor Control [User]
L    MB    202
T    PQB    43

```

```

//      Jump FC86 ~ FC88 for 2nd Tool Magazine if option is not enabled.
//      Jump label "N2M1" = No 2nd Tool Magazine Auxiliary #1.

```

```

AN    DB20.DBX    8.7  "OPTIONS".Option_87    -- 2nd Tool Magazine Active
JC    N2M1
L    PIB    36
T    MB    201
CALL FC    86      "ATC 2 AUTO ROTATION"      -- ATC #2 Automatic Rotation Control [User]
CALL FC    87      "ATC 2 MAN ROTATION"        -- ATC #2 Manual Rotation Control [User]
CALL FC    88      "ATC 2 ROTATION"            -- ATC #2 Rotation Motor Control [User]
L    MB    203
T    PQB    72

```

N2M1: NOP 0

Network: 3 ShopMill Diagnostics

CALL FC 34 "CMM MONITOR" -- NCK Signal Monitor [ShopMill]

Network: 4 Machine Control Panel OP32S

```

//      Machine Control Panel FC24 must be called before ShopMill FC30
//      in order to avoid errors in MCP operation with ShopMill active!

```

```

CALL FC    24      "MCP OP32S"                -- MCP Signals for OP32S [System]
BAGNo      :=B#16#1
ChanNo     :=B#16#1
SpindleIFNo:=B#16#6
FeedHold   :=M99.5  "FC24 F HD BUFFER"        -- FC24 Feedhold Buffer
SpindleHold:=M99.6  "FC24 S HD BUFFER"        -- FC24 Spindle Hold Buffer
SpindleDir :=M99.7  "FC24 S DR BUFFER"        -- FC24 Spindle Direction Buffer

```

Network: 5 Basic ShopMill Program Call

```
L    #OB1_SCAN_1
L    1
==I
=    #START_UP

CALL FC    30          "CMM3"          -- FC Graph Group CMM3 [ShopMill]
INIT_SD:=#START_UP

CALL FC    90          "SHOPMILL SETUP" -- ShopMill Interface Setup [ShopMill]
SpindleIFNo:=B#16#6

CALL FB    110 , DB110 "TM STATUS TRANSFER" -- ShopMill Tool Management Status Transfer [ShopMill]
Prepare_IF1 :=
Change_IF1  :=
Load_IF1    :=
Unload_IF1  :=
Relocate_IF1:=
Load_IF2    :=
Unload_IF2  :=
Reset_IF    :=
```

Network: 6 Alarm Message Acknowledge

```
CALL FC    10          "ALM/MSGE"      -- Alarms & Messages [System]
ToUserIF:=TRUE
Quit       :=M17.0     "FAULT"         RESET" -- Fault Reset
```

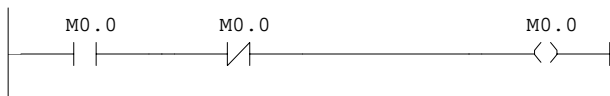
Network: 7 Auxiliary Tool Change Magazine Control #2

```
L    PIB    35
T    MB    200
CALL FC    82          "ATC 1 AUTO ROTATION" -- ATC #1 Automatic Rotation Control [User]
CALL FC    83          "ATC 1 MAN ROTATION"  -- ATC #1 Manual Rotation Control [User]
CALL FC    84          "ATC 1 ROTATION"      -- ATC #1 Rotation Motor Control [User]
L    MB    202
T    PQB    43
```

```
// Jump FC86 ~ FC88 for 2nd Tool Magazine if option is not enabled.
// Jump label "N2M2" = No 2nd Tool Magazine Auxiliary #2.
```

```
AN    DB20.DBX    8.7 "OPTIONS".Option_87 -- 2nd Tool Magazine Active
JC    N2M2
L    PIB    36
T    MB    201
CALL FC    86          "ATC 2 AUTO ROTATION" -- ATC #2 Automatic Rotation Control [User]
CALL FC    87          "ATC 2 MAN ROTATION"  -- ATC #2 Manual Rotation Control [User]
CALL FC    88          "ATC 2 ROTATION"      -- ATC #2 Rotation Motor Control [User]
L    MB    203
T    PQB    72
```

N2M2: NOP 0

Network: 8 Marker Always OFF**Symbol information**

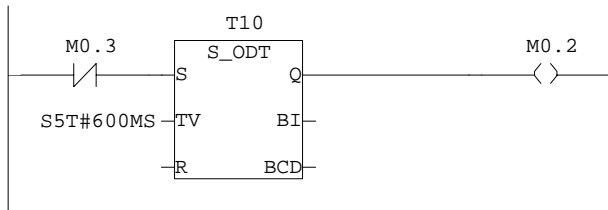
M0.0 OFF Marker Always Off

Network: 9 Marker Always ON

Symbol information

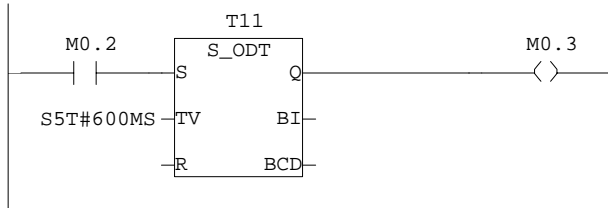
M0.1 ON Marker Always On

Network: 10 Oscillator Clock On

**Symbol information**

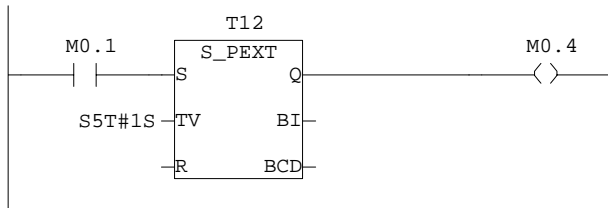
M0.3 CLCK OFF Clock Off
M0.2 CLOCK ON Clock On

Network: 11 Oscillator Clock Off

**Symbol information**

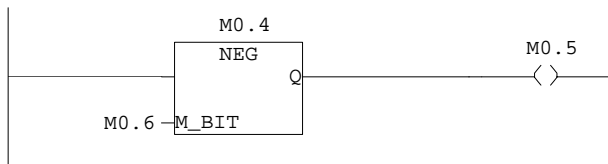
M0.2 CLOCK ON Clock On
M0.3 CLCK OFF Clock Off

Network: 12 PLC Start Extended Pulse

**Symbol information**

M0.1 ON Marker Always On
M0.4 PLC START EXT PLS PLC Start Extended Pulse

Network: 13 PLC Start Pulse

**Symbol information**

M0.4 PLC START EXT PLS PLC Start Extended Pulse
M0.6 PLC START REMEMBER PLC Start Remember
M0.5 PLC START PULSE PLC Start Pulse

Network: 14	NC & PLC General Control
-------------	--------------------------

CALL	FC	40	"NC RESET & E/STOP"	-- NC Reset & Emergency Stop Control [User]
CALL	FC	41	"NC MODE CONTROL"	-- NC Mode Control (CNC & ShopMill) [User]
CALL	FC	42	"NC FEED CONTROL"	-- NC General Feed Control [User]
CALL	FC	43	"NC EXTND M/H CODES"	-- NC Extended M-Code & H-Code Decoding Control [User]
CALL	FC	44	"NC RID CONTROL"	-- NC Read-In Disable Control [User]
CALL	FC	45	"NC START/STOP"	-- NC Cycle Start/Stop Control [User]
CALL	FC	46	"NC PGM CONTROL"	-- NC Program Control Functions [User]
CALL	FC	47	"NC AUXILIARY"	-- NC Auxiliary Functions [User]
CALL	FC	48	"AUTO REFERENCE"	-- NC Auto Reference Sequence [User]
CALL	FC	49	"SYNCH ACTIONS"	-- Synchronous Actions [User]

Network: 15	Axis & Spindle Control
-------------	------------------------

CALL	FC	50	"IRF CONTROL"	-- IRF Module Control & Monitoring [User]
CALL	FC	51	"X AXIS NC CONTROL"	-- X Axis NC Control & Monitoring [User]
CALL	FC	52	"Y AXIS NC CONTROL"	-- Y Axis NC Control & Monitoring [User]
CALL	FC	53	"Z AXIS NC CONTROL"	-- Z Axis NC Control & Monitoring [User]

// Jump FC54 & FC55 for 4th Axis if option is not enabled.
 // Jump label "N4AX" = No 4th Axis.

AN	DB20.DBX	8.5	"OPTIONS".Option_85	-- 4th Axis Active
JC	N4AX			
CALL	FC	54	"4 AXIS NC CONTROL"	-- 4 Axis NC Control & Monitoring (Option) [User]
CALL	FC	55	"4 AXIS CLAMP CONTROL"	-- 4 Axis Clamp/Unclamp Control (Option) [User]

N4AX: NOP 0

// Jump FC56 & FC57 for 5th Axis if option is not enabled.
 // Jump label "N5AX" = No 5th Axis.

AN	DB20.DBX	7.3	"OPTIONS".Option_73	-- 5th Axis Active
JC	N5AX			
CALL	FC	56	"5 AXIS NC CONTROL"	-- 5 Axis NC Control & Monitoring (Option) [User]
CALL	FC	57	"5 AXIS CLAMP CONTROL"	-- 5 Axis Clamp/Unclamp Control (Option) [User]
L	MB	203		
T	PQB	72		

N5AX: NOP 0

CALL	FC	60	"SPINDLE CONTROL"	-- Spindle Control & Monitoring [User]
------	----	----	-------------------	--

// Jump FC61 & FC62 for Spindle gear change if option is not enabled.
 // Jump label "NSGC" = No Spindle Gear Change.

AN	DB20.DBX	10.2	"OPTIONS".Option_102	-- Spindle with Gear Change (ZF Gearbox)
JC	NSGC			
CALL	FC	61	"SPINDLE GEAR CHANGE"	-- Spindle Gear Change Control (Option) [User]
CALL	FC	62	"SPINDLE GEAR PROMPT"	-- Spindle Gear Change Prompt (Option) [User]

NSGC: NOP 0

CALL	FC	65	"SPINDLE POWER MONITOR"	-- Spindle Power Monitor [User]
------	----	----	-------------------------	---------------------------------

Network: 16	General Machine Control
-------------	-------------------------

CALL	FC	70	"PNEUMATICS"	-- Control & Monitoring [User]
CALL	FC	71	"COOLANT"	-- Coolant Control & Monitoring [User]
CALL	FC	72	"CHIP CONVEYOR"	-- Chip Conveyor Control & Monitoring [User]
CALL	FC	73	"WORK LIGHT"	-- Work Light Control & Monitoring [User]
CALL	FC	74	"AUTO POWER OFF"	-- Auto Power Off Control & Monitoring [User]
CALL	FC	75	"MACHINE DOOR"	-- Machine Door Unlock Control [User]
CALL	FC	76	"AUXILIARY MONITOR"	-- Auxiliary AC Motor Control & Monitoring [User]
CALL	FC	77	"LUBRICATION MONITOR"	-- Axes Grease Lubrication Monitoring [User]
CALL	FC	78	"TOUCH PROBE ENABLE"	-- Touch Probe Enable [User]
CALL	FC	79	"FAULT/WARNING"	-- Fault/Warning Control & Monitoring [User]

Network: 17	Tool Changer Control
-------------	----------------------

L	PIB	35		
T	MB	200		
CALL	FC	80	"ATC GENERAL"	-- ATC General Control & Monitoring [User]
CALL	FC	81	"ATC TOOL SETUP"	-- ATC Tool Setup Control [User]
CALL	FC	82	"ATC 1 AUTO ROTATION"	-- ATC #1 Automatic Rotation Control [User]
CALL	FC	83	"ATC 1 MAN ROTATION"	-- ATC #1 Manual Rotation Control [User]
CALL	FC	84	"ATC 1 ROTATION"	-- ATC #1 Rotation Motor Control [User]
CALL	FC	85	"ATC 1 ADV/RET"	-- ATC #1 Advance/Retract Control [User]

L MB 202
T PQB 43

// Jump FC85 ~ FC89 for 2nd Tool Magazine if option is not enabled.
// Jump label "N2TM" = No 2nd Tool Magazine.

AN DB20.DBX 8.7 "OPTIONS".Option_87 -- 2nd Tool Magazine Active
JC N2TM
L PIB 36
T MB 201
CALL FC 86 "ATC 2 AUTO ROTATION" -- ATC #2 Automatic Rotation Control [User]
CALL FC 87 "ATC 2 MAN ROTATION" -- ATC #2 Manual Rotation Control [User]
CALL FC 88 "ATC 2 ROTATION" -- ATC #2 Rotation Motor Control [User]
CALL FC 89 "ATC 2 ADV/RET" -- ATC #2 Advance/Retract Control [User]
L MB 203
T PQB 72
N2TM: NOP 0

CALL FC 91 "ASUP CONTROL" -- ASUP Setup & Control [User]
CALL FC 92 "PLC/NC TRANSFER" -- PLC/NC Data Transfer [User]
CALL FC 93 "NCK GUD PTR SEARCH" -- NCK GUD Pointer Search for FB3 [User]

CALL FC 99 "TOOL CHANGE TIMEOUTS" -- Tool Change Function Timeout Monitoring [User]

Network: 18	Software Keyswitch Edit Protection Level Setting
-------------	--

CALL FC 95 "SW K/SWCH DATA TRN" -- Software Keyswitch Data Transfer [User]

Network: 19	Madico Pallet
-------------	---------------

// Jump FC96 for Madico Pallet if option is not enabled.
// Jump label "NMDP" = No MaDico Pallet

AN DB20.DBX 8.4 "OPTIONS".Option_84 -- Midaco Pallet System Active
JC NMDP
CALL FC 96 "MIDACO PALLET" -- Midaco Pallet Control [User]
NMDP: NOP 0

Network: 20	Customer Specific M-Codes
-------------	---------------------------

// Jump FC97 for Customer Specific M-Codes Group #1 if option is not enabled.
// Jump label "NCM1" = No Customer Specific M-Codes 1

AN DB20.DBX 9.3 "OPTIONS".Option_93 -- Customer Specific M-Codes Group #1 Active
JC NCM1
CALL FC 97 "CUSTOMER M CODES 1" -- Customer Specific M-Codes Group #1 [User]
NCM1: NOP 0

// Jump FC98 for Customer Specific M-Codes Group #2 if option is not enabled.
// Jump label "NCM2" = No Customer Specific M-Codes 2

AN DB20.DBX 9.4 "OPTIONS".Option_94 -- Customer Specific M-Codes Group #2 Active
JC NCM2
CALL FC 98 "CUSTOMER M CODES 2" -- Customer Specific M-Codes Group #2 [User]
NCM2: NOP 0

OB40 - <offline>

"INTERRUPT" Interrupt Organisation Block [System]

Name: Hardinge

Family: VMC

Author: MGS

Version: 1.0

Block version: 2

Time stamp Code: 12/11/00 07:28:55 PMPM

Interface: 03/21/00 11:01:39 AMAM

Lengths (block/logic/data): 00156 00016 00032

Address	Declaration	Name	Type	Start value	Comment
0.0	temp	OB40_EV_CLASS	BYTE		
1.0	temp	OB40_STRT_INF	BYTE		
2.0	temp	OB40_PRIORITY	BYTE		
3.0	temp	OB40_OB_NUMBR	BYTE		
4.0	temp	OB40_RESERVED_1	BYTE		
5.0	temp	OB40_MDL_ID	BYTE		
6.0	temp	OB40_MDL_ADDR	INT		
8.0	temp	OB40_POINT_ADDR	DWORD		
12.0	temp	OB40_DATE_TIME	DATE_AND_TIME		Belegung durch das Grundprogramm data for the Basicprogram
20.0	temp	GP_IRFromNCK	BOOL		Interrupt from NCK
20.1	temp	GP_TM	BOOL		Toolmanagment
22.0	temp	GP_InPosition	ARRAY[1..31]		
*0.1	temp		BOOL		
26.0	temp	GP_AuxFunction	ARRAY[1..10]		
*0.1	temp		BOOL		
28.0	temp	GP_FMBlock	ARRAY[1..10]		
*0.1	temp		BOOL		

Block: OB40 Interrupt Organisation Block

Network: 1 Basic Program Call

CALL FC 3 "GP ALARM"

-- Alarm Triggered Basic Program [System]

OB100 - <offline>

"STARTUP" Startup Organisation Block [System]

Name: Hardinge

Family: VMC

Author: MGS

Version: 1.0

Block version: 2

Time stamp Code: 03/09/01 10:21:46 AMAM

Interface: 03/21/00 11:01:39 AMAM

Lengths (block/logic/data): 00310 00192 00026

Address	Declaration	Name	Type	Start value	Comment
0.0	temp	OB100_EV_CLASS	BYTE		
1.0	temp	OB100_STRTUP	BYTE		
2.0	temp	OB100_PRIORITY	BYTE		
3.0	temp	OB100_OB_NUMBR	BYTE		
4.0	temp	OB100_RESERVED_1	BYTE		
5.0	temp	OB100_RESERVED_2	BYTE		
6.0	temp	OB100_STOP	WORD		
8.0	temp	OB100_RESERVED_3	WORD		
10.0	temp	OB100_RESERVED_4	WORD		
12.0	temp	OB100_DATE_TIME	DATE_AND_TIME		

Block: OB100 Startup Organisation Block

Network: 1 Basic ShopMill Program Call

// The FC100 parameter "RealMagLoc" is set to 40 for all ATC variants.

```
CALL FC 100 "TM CONFIGURATION" -- ShopMill Tool Management Configuration [ShopMill]
RealMagLoc:=40
```

Network: 2 Basic Program Call

```
// Changes for FB1 c/f standard Toolbox compiled version.
// "MCP1BusAdr" is set to 14 for 810D c/f 6 for 840D.
// "MCPMPI" is set to TRUE for 810D.
// "NCKomm" is set to TRUE for ShopMill & ASUP function.
```

```
CALL FB 1, DB7 "RUN UP" -- Startup Baseprogram [System]
MCPNum :=1
MCP1In :=P#I 0.0
MCP1Out :=P#Q 0.0
MCP1StatSend :=P#Q 8.0
MCP1StatRec :=P#Q 12.0
MCP1BusAdr :=14
MCP1Timeout :=S5T#700MS
MCP1Cycl :=S5T#200MS
MCP2In :=
MCP2Out :=
MCP2StatSend :=
MCP2StatRec :=
MCP2BusAdr :=
MCP2Timeout :=
MCP2Cycl :=
MCPMPI :=TRUE
MCP1Stop :=
MCP2Stop :=
MCP1NotSend :=
MCP2NotSend :=
BHG :=
BHGIN :=
BHGOOut :=
BHGStatSend :=
BHGStatRec :=
BHGINLen :=
BHGOOutLen :=
BHGTimeout :=
BHGCycl :=
BHGREcGDNo :=
BHGREcGBZNo :=
BHGREcObjNo :=
BHGSendGDNo :=
BHGSendGBZNo :=
BHGSendObjNo :=
BHGMPI :=
```



```
BHGStop      :=
BHGNotSend   :=
NCCyclTimeout :=S5T#200MS
NCRunupTimeout:=S5T#50S
ListMDecGrp  :=
NCKomm       :=TRUE
MMCToIF      :=
HWheelMMC    :=
MsgUser      :=
UserIR       :=
IRAuxfuT     :=
IRAuxfuH     :=
IRAuxfuE     :=
UserVersion  :=
MaxBAG       :=
MaxChan      :=
MaxAxis      :=
ActivChan    :=
ActivAxis    :=
UDInt        :=
UDHex        :=
UDReal       :=
```

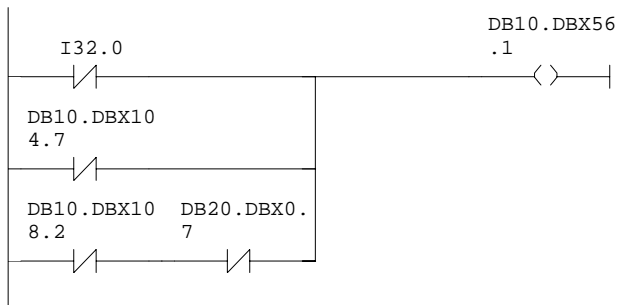
FC40 - <offline>

"NC RESET & E/STOP" NC Reset & Emergency Stop Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 1
Time stamp Code: 02/12/01 09:12:39 PMPM
Interface: 09/13/99 03:08:14 PMPM
Lengths (block/logic/data): 00248 00140 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

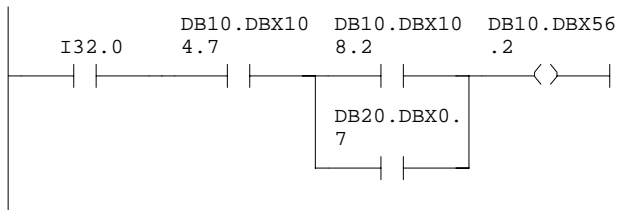
Block: FC40 Emergency Stop & NC Reset

Network: 1 NC Emergency Stop

**Symbol information**

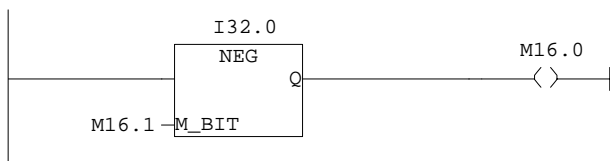
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 DB10.DBX104.7 "NC".Q_NCKready NCK CPU ready
 DB10.DBX108.2 "NC".Q_MMCMPIready MMC-CPU on MPI ready
 DB20.DBX0.7 "OPTIONS".Option_07 Emergency Stop is Not Triggered by HMI Failure Active
 DB10.DBX56.1 "NC".I_EMERGENCY Emergency stop

Network: 2 Emergency Stop Acknowledge

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 DB10.DBX104.7 "NC".Q_NCKready NCK CPU ready
 DB10.DBX108.2 "NC".Q_MMCMPIready MMC-CPU on MPI ready
 DB20.DBX0.7 "OPTIONS".Option_07 Emergency Stop is Not Triggered by HMI Failure Active
 DB10.DBX56.2 "NC".I_EMERGENCY_Ackn Acknowledge emergency stop

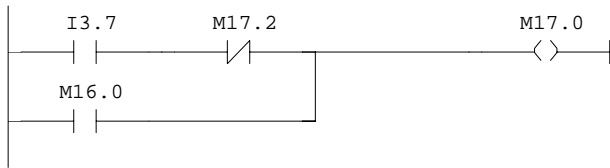
Network: 3 Emergency Stop Pulse



Symbol information

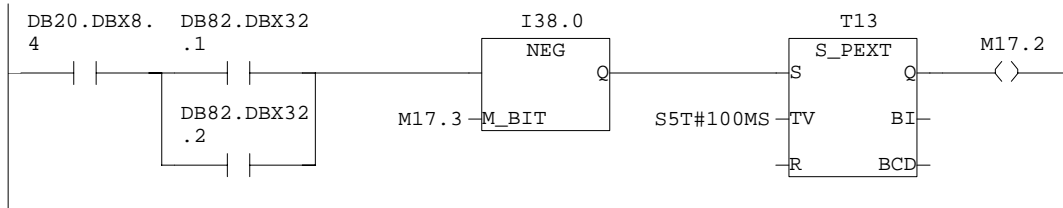
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M16.1	EMRG STOP REMEMBER	Emergency Stop Remember
M16.0	EMRG STOP PULSE	Emergency Stop Pulse

Network: 4	Error & Message Acknowledge
------------	-----------------------------

**Symbol information**

I3.7	NC RESET	MCP - NC Reset [K32]
M17.2	M PLT DR OP NR RQ	Midaco Pallet Door Open NC Reset Request
M16.0	EMRG STOP PULSE	Emergency Stop Pulse
M17.0	FAULT RESET	Fault Reset

Network: 5	Midaco Pallet Door Open NC Reset Request
------------	--

**Symbol information**

DB20.DBX8.4	"OPTIONS".Option_84	Midaco Pallet System Active
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped	
I38.0	MD PALLET DOOR LS	Midaco Pallet Door Limit Switch
M17.3	M PLT DR OP NR RM	Midaco Pallet Door Open NC Reset Remember
M17.2	M PLT DR OP NR RQ	Midaco Pallet Door Open NC Reset Request

Network: 6	Midaco Pallet Door Open NC Reset
------------	----------------------------------

AN	M	17.2	"M PLT DR OP NR RQ"	-- Midaco Pallet Door Open NC Reset Request
JC	NNCR			
A	M	0.1	"ON"	-- Marker Always On
=	I	3.7	"NC RESET"	-- MCP - NC Reset [K32]

NNCR: NOP 0

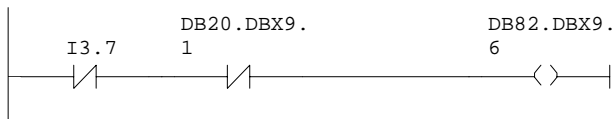
FC41 - <offline>

"NC MODE CONTROL" NC Mode Control (CNC & ShopMill) [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/11/01 08:54:25 PMPM
 Interface: 10/06/99 10:18:09 PMPM
Lengths (block/logic/data): 00750 00580 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC41 CNC & ShopMill Mode Selection

Network: 1 Switch Over from ShopMill to CNC ISO Operation Disable

**Symbol information**

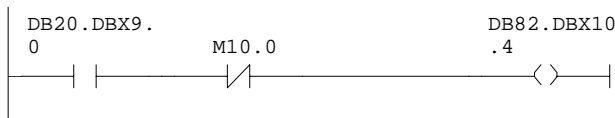
I3.7 NC RESET MCP - NC Reset [K32]
DB20.DBX9.1 "OPTIONS".Option_91 System Changeover to ISO with No [Reset] Key Interlock
DB82.DBX9.6 "SPS".CMM_IN.disable_cnc_standard disable cnc standard

Network: 2 ShopMill Operation Select

**Symbol information**

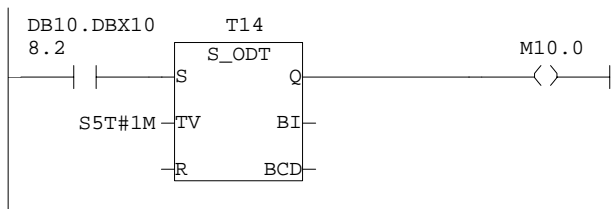
M0.1 ON Marker Always On
DB82.DBX9.7 "SPS".CMM_IN.cmm_activ_in_cnc_mode cmm-plc always activ

Network: 3 System Boot-Up in CNC ISO Interface

**Symbol information**

DB20.DBX9.0 "OPTIONS".Option_90 System Boot-Up in ISO Mode
M10.0 MMC B/UP COMP DLY MMC Boot-Up Complete with Delay
DB82.DBX10.4 "SPS".CMM_IN.boot_standard boot system in standard mode

Network: 4 System Boot-Up in ISO Complete with Delay

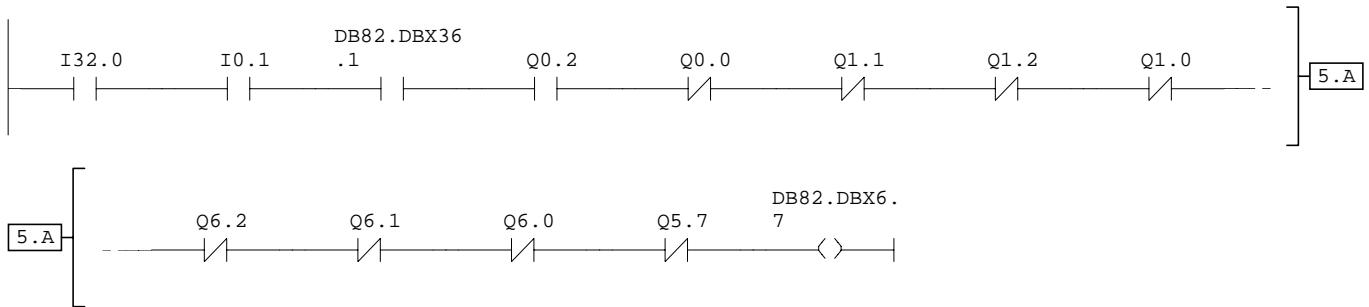


Symbol information

DB10.DBX108.2 "NC".Q_MMCMPIready MMC-CPU on MPI ready

M10.0 MMC B/UP COMP DLY MMC Boot-Up Complete with Delay

Network: 5 ShopMill MDA Mode Select



Symbol information

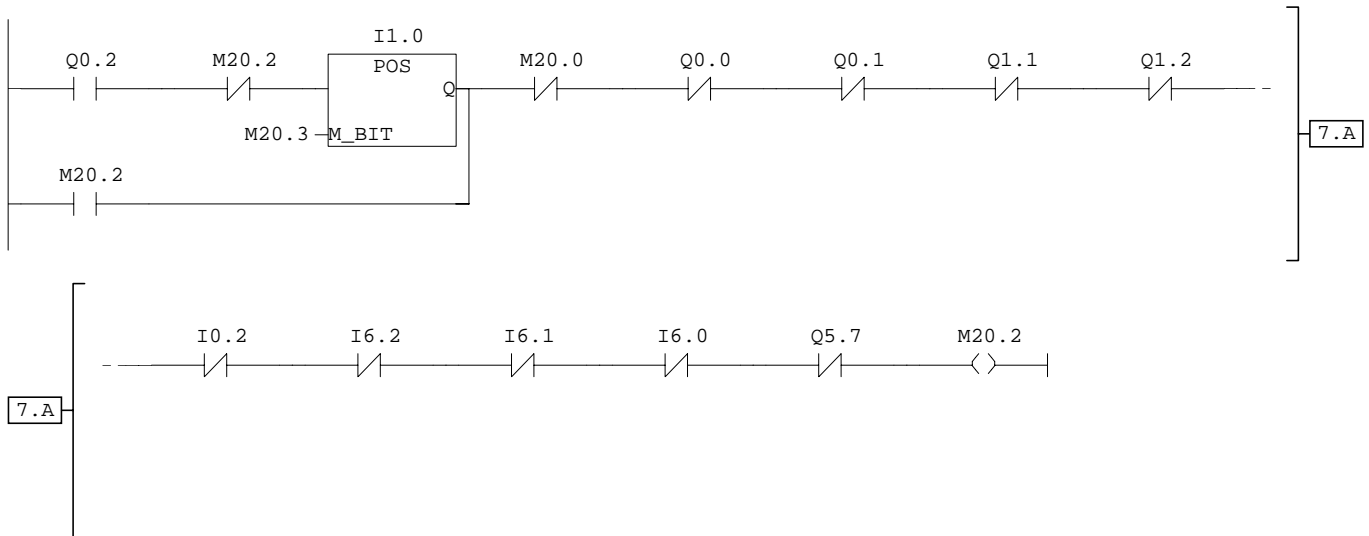
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I0.1	MDA MODE SELECT	MCP - MDA Mode Select [K11]
DB82.DBX36.1	"SPS".CMM_OUT.cmm_mmc_activ	cmm-mmc application activ
Q0.2	JOG MODE LED	MCP - Jog Mode LED [L1]
Q0.0	AUTO MODE LED	MCP - Auto Mode LED [L21]
Q1.1	REP MODE LED	MCP - Repos Mode LED [L2]
Q1.2	REF MODE LED	MCP - Reference Mode LED [L3]
Q1.0	INC1 MODE LED	MCP - Increment 1 Mode LED [L12]
Q6.2	INC2 MODE LED	MCP - Incremental 10 Mode LED [L13]
Q6.1	INC3 MODE LED	MCP - Incremental Mode 100 Mode LED [L22]
Q6.0	INC4 MODE LED	MCP - Incremental Mode 1000 Mode LED [L23]
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]
DB82.DBX6.7	"SPS".CMM_IN.sub_mode_mill.mda	

Network: 6 ShopMill MDA MCP LED

```
//      Jump MDA MCP LED if ISO interface is active.
//      Jump label "ISOA" = ISO Active.
```

```
AN      DB82.DBX   36.1  "SPS".CMM_OUT.cmm_mmc_activ -- cmm-mmc application activ
JC      ISOA
A       DB82.DBX   34.7  "SPS".CMM_OUT.sub_mode_mill.mda --
=       Q          0.1   "MDA MODE LED"                -- MCP - MDA Mode LED [L11]
ISOA: NOP 0
```

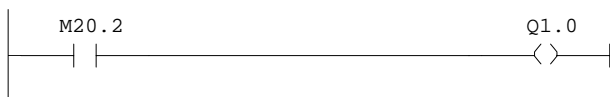
Network: 7 INC 1 Mode Select Buffer



Symbol information

Q0.2	JOG MODE LED	MCP - Jog Mode LED [L1]
M20.2	INC1 MODE SEL BFR	INC 1 Mode Select Buffer
I1.0	INC1 MODE SELECT	MCP - Increment 1 Mode Select [K12]
M20.3	INC1 MODE SEL REM	INC 1 Mode Select Remember
M20.0	INC1 MODE DES PLS	INC 1 Mode Deselect Pulse
Q0.0	AUTO MODE LED	MCP - Auto Mode LED [L21]
Q0.1	MDA MODE LED	MCP - MDA Mode LED [L11]
Q1.1	REP MODE LED	MCP - Repos Mode LED [L2]
Q1.2	REF MODE LED	MCP - Reference Mode LED [L3]
I0.2	JOG MODE SELECT	MCP - Jog Mode Select [K1]
I6.2	INC2 MODE SELECT	MCP - Incremental 10 Mode Select [K13]
I6.1	INC3 MODE SELECT	MCP - Incremental Mode 100 Mode Select [K22]
I6.0	INC4 MODE SELECT	MCP - Incremental Mode 1000 Mode Select [K23]
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]

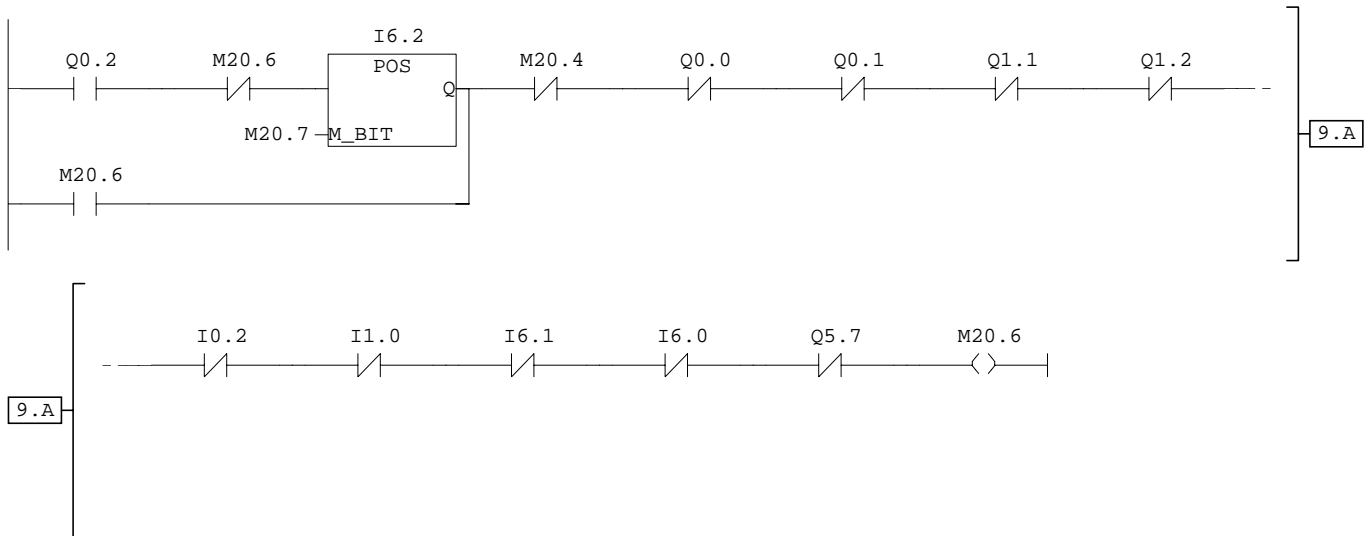
Network: 8 INC 1 Mode Select



Symbol information

M20.2	INC1 MODE SEL BFR	INC 1 Mode Select Buffer
Q1.0	INC1 MODE LED	MCP - Increment 1 Mode LED [L12]

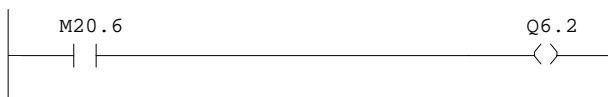
Network: 9 INC 10 Mode Select Buffer



Symbol information

Q0.2	JOG MODE LED	MCP - Jog Mode LED [L1]
M20.6	INC2 MODE SEL BFR	INC 10 Mode Select Buffer
I6.2	INC2 MODE SELECT	MCP - Incremental 10 Mode Select [K13]
M20.7	INC2 MODE SEL REM	INC 10 Mode Select Remember
M20.4	INC2 MODE DES PLS	INC 10 Mode Deselect Pulse
Q0.0	AUTO MODE LED	MCP - Auto Mode LED [L21]
Q0.1	MDA MODE LED	MCP - MDA Mode LED [L11]
Q1.1	REP MODE LED	MCP - Repos Mode LED [L2]
Q1.2	REF MODE LED	MCP - Reference Mode LED [L3]
I0.2	JOG MODE SELECT	MCP - Jog Mode Select [K1]
I1.0	INC1 MODE SELECT	MCP - Increment 1 Mode Select [K12]
I6.1	INC3 MODE SELECT	MCP - Incremental Mode 100 Mode Select [K22]
I6.0	INC4 MODE SELECT	MCP - Incremental Mode 1000 Mode Select [K23]
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]

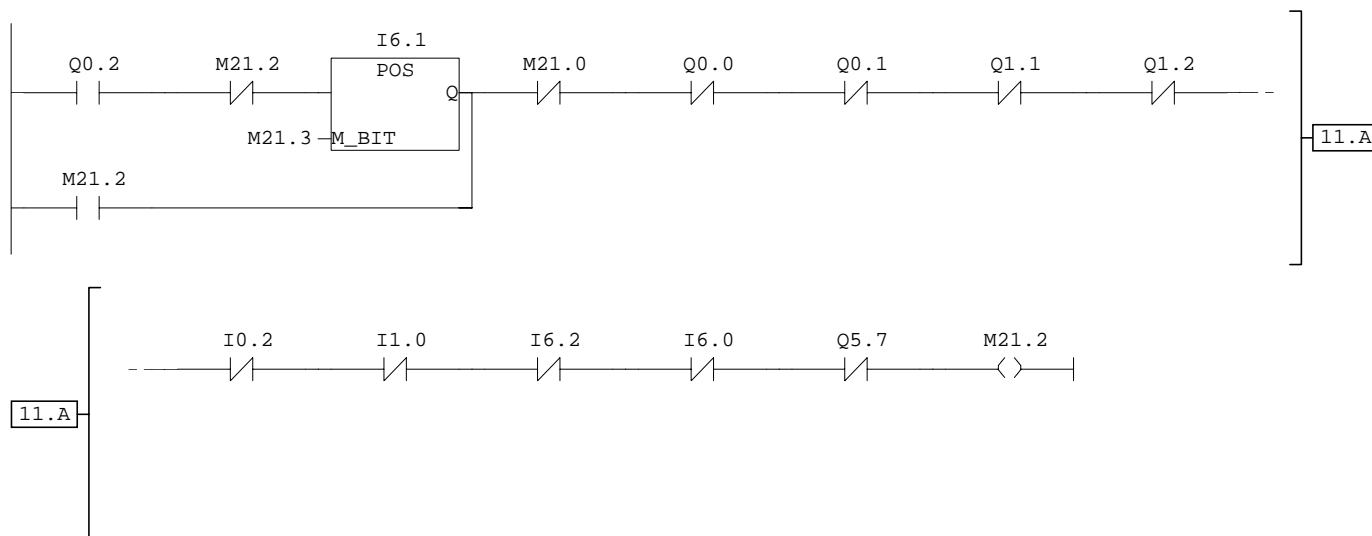
Network: 10 INC 10 Mode Select



Symbol information

M20.6	INC2 MODE SEL BFR	INC 10 Mode Select Buffer
Q6.2	INC2 MODE LED	MCP - Incremental 10 Mode LED [L13]

Network: 11 INC 100 Mode Select Buffer



Symbol information

Q0.2	JOG MODE LED	MCP - Jog Mode LED [L1]
M21.2	INC3 MODE SEL BFR	INC 100 Mode Select Buffer
I6.1	INC3 MODE SELECT	MCP - Incremental Mode 100 Mode Select [K22]
M21.3	INC3 MODE SEL REM	INC 100 Mode Select Remember
M21.0	INC3 MODE DES PLS	INC 100 Mode Deselect Pulse
Q0.0	AUTO MODE LED	MCP - Auto Mode LED [L21]
Q0.1	MDA MODE LED	MCP - MDA Mode LED [L11]
Q1.1	REP MODE LED	MCP - Repos Mode LED [L2]
Q1.2	REF MODE LED	MCP - Reference Mode LED [L3]
I0.2	JOG MODE SELECT	MCP - Jog Mode Select [K1]
I1.0	INC1 MODE SELECT	MCP - Increment 1 Mode Select [K12]
I6.2	INC2 MODE SELECT	MCP - Incremental 10 Mode Select [K13]
I6.0	INC4 MODE SELECT	MCP - Incremental Mode 1000 Mode Select [K23]
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]

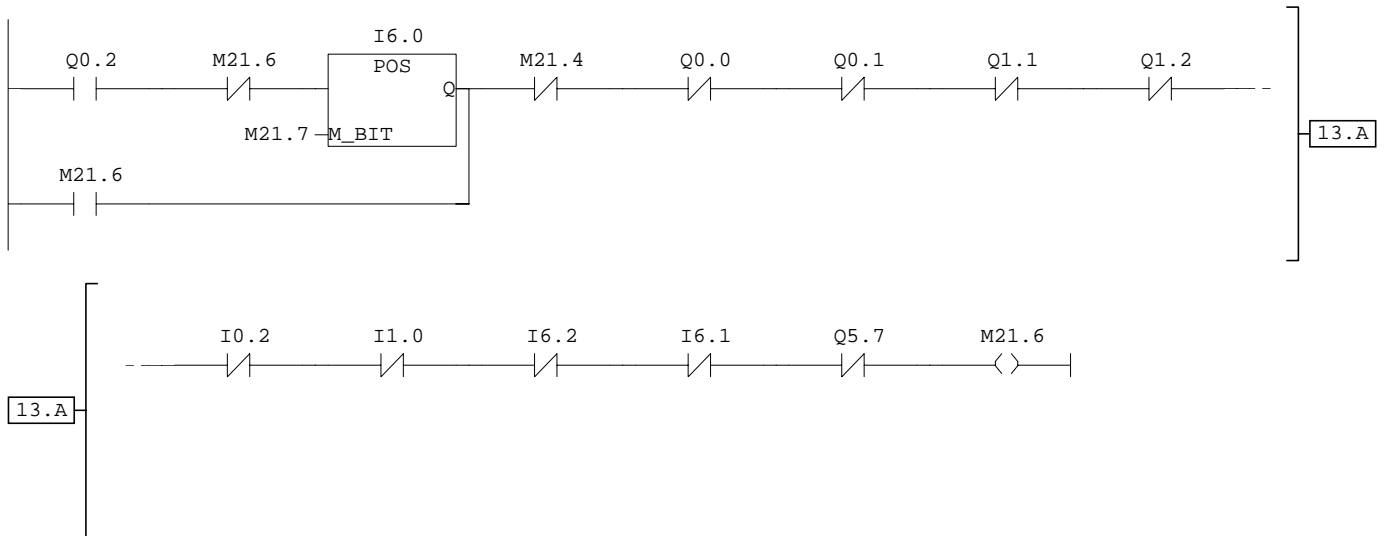
Network: 12 INC 100 Mode Select



Symbol information

M21.2	INC3 MODE SEL BFR	INC 100 Mode Select Buffer
Q6.1	INC3 MODE LED	MCP - Incremental Mode 100 Mode LED [L22]

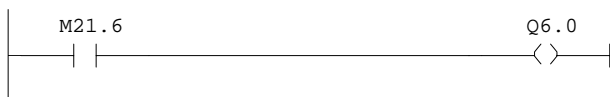
Network: 13 INC 1000 Mode Select Buffer



Symbol information

Q0.2	JOG MODE LED	MCP - Jog Mode LED [L1]
M21.6	INC4 MODE SEL BFR	INC 1000 Mode Select Buffer
I6.0	INC4 MODE SELECT	MCP - Incremental Mode 1000 Mode Select [K23]
M21.7	INC4 MODE SEL REM	INC 1000 Mode Select Remember
M21.4	INC4 MODE DES PLS	INC 1000 Mode Deselect Pulse
Q0.0	AUTO MODE LED	MCP - Auto Mode LED [L21]
Q0.1	MDA MODE LED	MCP - MDA Mode LED [L11]
Q1.1	REP MODE LED	MCP - Repos Mode LED [L2]
Q1.2	REF MODE LED	MCP - Reference Mode LED [L3]
I0.2	JOG MODE SELECT	MCP - Jog Mode Select [K1]
I1.0	INC1 MODE SELECT	MCP - Increment 1 Mode Select [K12]
I6.2	INC2 MODE SELECT	MCP - Incremental 10 Mode Select [K13]
I6.1	INC3 MODE SELECT	MCP - Incremental Mode 100 Mode Select [K22]
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]

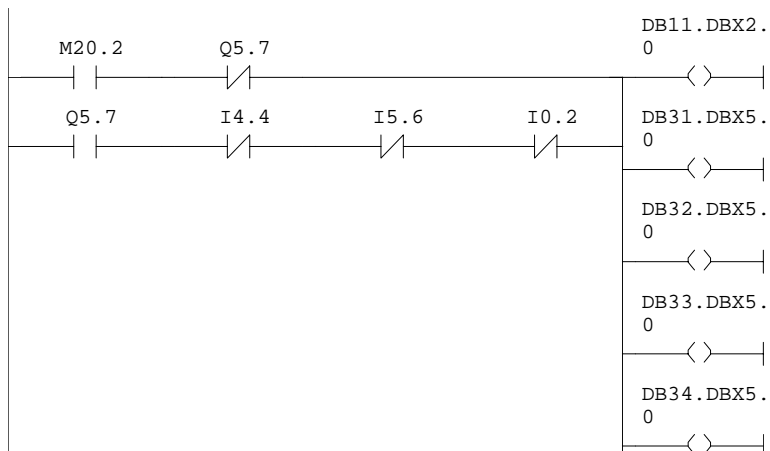
Network: 14 INC 1000 Mode Select



Symbol information

M21.6	INC4 MODE SEL BFR	INC 1000 Mode Select Buffer
Q6.0	INC4 MODE LED	MCP - Incremental Mode 1000 Mode LED [L23]

Network: 15 Axis Increment Mode 1 Selection



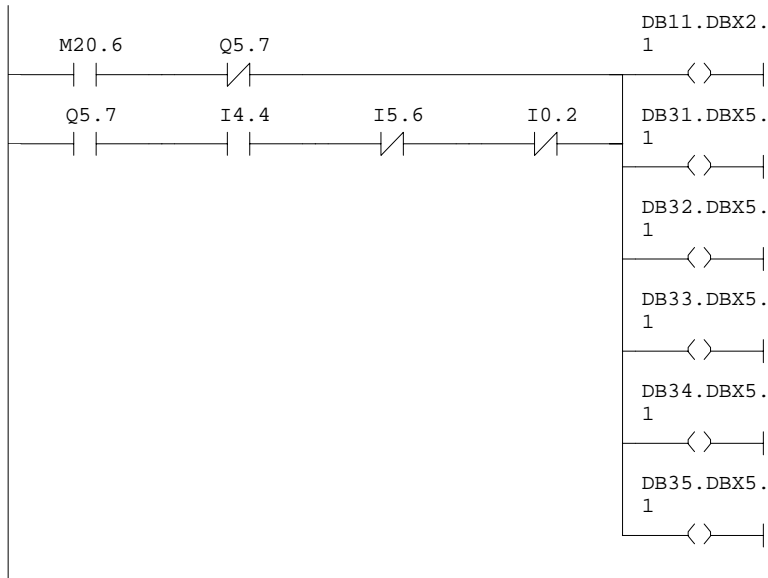
DB35.DBX5.
0

< >

Symbol information

M20.2	INC1 MODE SEL BFR	INC 1 Mode Select Buffer
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]
I4.4	MPG UNIT INC2 SEL	SAR6 - Remote HHU Increment 10 Select [X32/2]
I5.6	MPG UNIT INC3 SEL	SAR6 - Remote HHU Increment 100 Select [X32/3]
I0.2	JOG MODE SELECT	MCP - Jog Mode Select [K1]
DB11.DBX2.0	"OMG".Q_INC1	INC1
DB31.DBX5.0	"X AXIS".Q_INC1	INC1
DB32.DBX5.0	"Y AXIS".Q_INC1	INC1
DB33.DBX5.0	"Z AXIS".Q_INC1	INC1
DB34.DBX5.0	"4 AXIS".Q_INC1	INC1
DB35.DBX5.0	"5 AXIS".Q_INC1	INC1

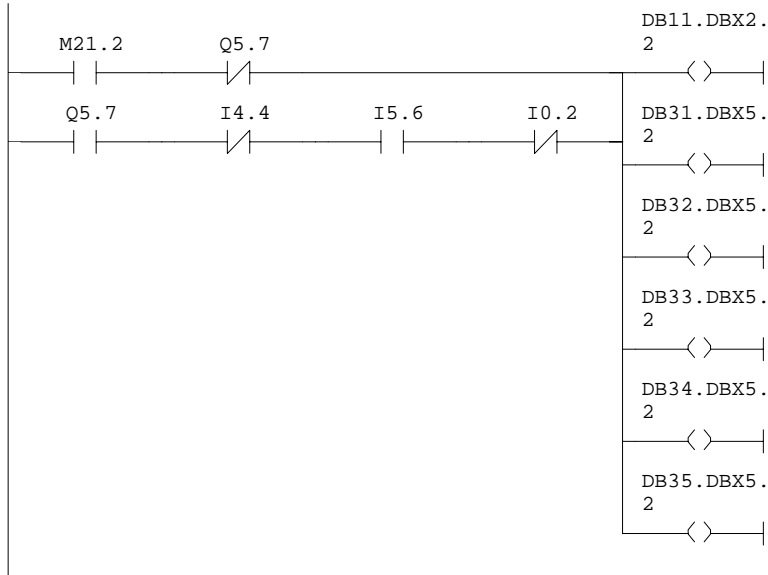
Network: 16 Axis Increment Mode 10 Selection



Symbol information

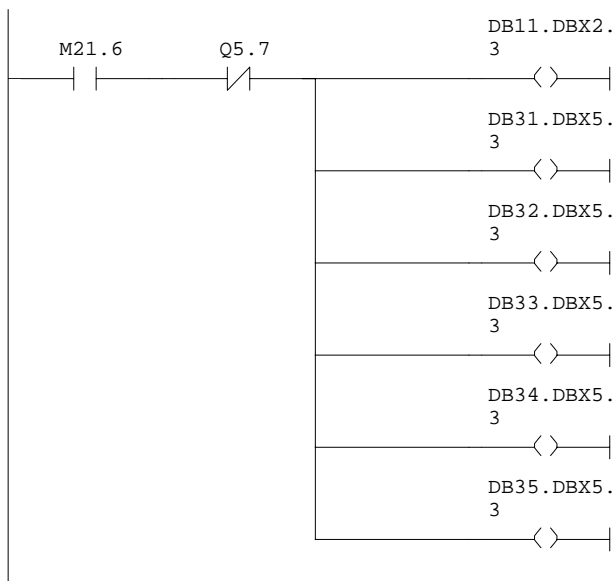
M20.6	INC2 MODE SEL BFR	INC 10 Mode Select Buffer
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]
I4.4	MPG UNIT INC2 SEL	SAR6 - Remote HHU Increment 10 Select [X32/2]
I5.6	MPG UNIT INC3 SEL	SAR6 - Remote HHU Increment 100 Select [X32/3]
I0.2	JOG MODE SELECT	MCP - Jog Mode Select [K1]
DB11.DBX2.1	"OMG".Q_INC10	INC10
DB31.DBX5.1	"X AXIS".Q_INC10	INC10
DB32.DBX5.1	"Y AXIS".Q_INC10	INC10
DB33.DBX5.1	"Z AXIS".Q_INC10	INC10
DB34.DBX5.1	"4 AXIS".Q_INC10	INC10
DB35.DBX5.1	"5 AXIS".Q_INC10	INC10

Network: 17	Axis Increment Mode 100 Selection
-------------	-----------------------------------

**Symbol information**

M21.2	INC3 MODE SEL BFR	INC 100 Mode Select Buffer
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]
I4.4	MPG UNIT INC2 SEL	SAR6 - Remote HHU Increment 10 Select [X32/2]
I5.6	MPG UNIT INC3 SEL	SAR6 - Remote HHU Increment 100 Select [X32/3]
I0.2	JOG MODE SELECT	MCP - Jog Mode Select [K1]
DB11.DBX2.2	"OMG".Q_INC100	INC100
DB31.DBX5.2	"X AXIS".Q_INC100	INC100
DB32.DBX5.2	"Y AXIS".Q_INC100	INC100
DB33.DBX5.2	"Z AXIS".Q_INC100	INC100
DB34.DBX5.2	"4 AXIS".Q_INC100	INC100
DB35.DBX5.2	"5 AXIS".Q_INC100	INC100

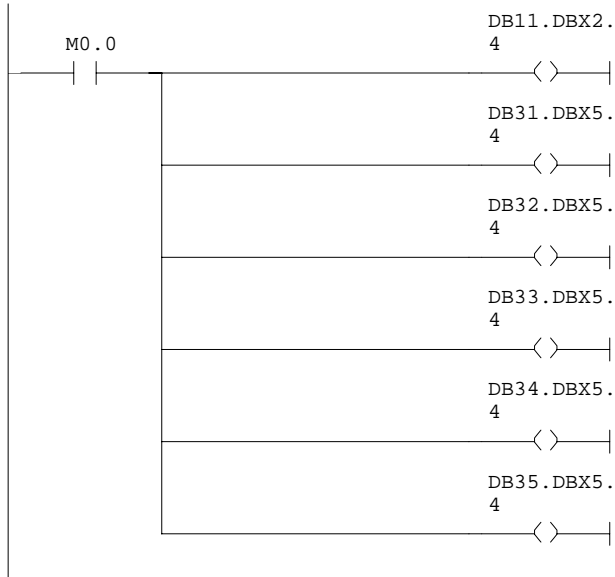
Network: 18	Axis Increment Mode 1000 Selection
-------------	------------------------------------

**Symbol information**

M21.6	INC4 MODE SEL BFR	INC 1000 Mode Select Buffer
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]
DB11.DBX2.3	"OMG".Q_INC1000	INC1000
DB31.DBX5.3	"X AXIS".Q_INC1000	INC1000
DB32.DBX5.3	"Y AXIS".Q_INC1000	INC1000

DB33.DBX5.3 "Z AXIS".Q_INC1000 INC1000
DB34.DBX5.3 "4 AXIS".Q_INC1000 INC1000
DB35.DBX5.3 "5 AXIS".Q_INC1000 INC1000

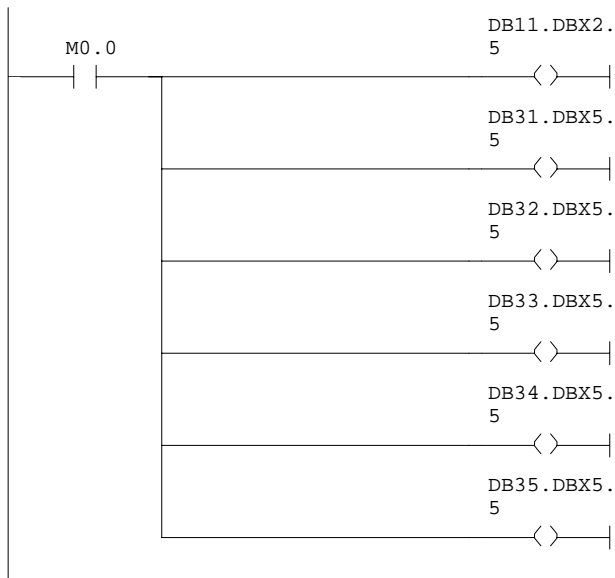
Network: 19 Axis Increment Mode 10000 Selection



Symbol information

M0.0	OFF	Marker Always Off
DB11.DBX2.4	"OMG".Q_INC10000	INC10000
DB31.DBX5.4	"X AXIS".Q_INC10000	INC10000
DB32.DBX5.4	"Y AXIS".Q_INC10000	INC10000
DB33.DBX5.4	"Z AXIS".Q_INC10000	INC10000
DB34.DBX5.4	"4 AXIS".Q_INC10000	INC10000
DB35.DBX5.4	"5 AXIS".Q_INC10000	INC10000

Network: 20 Axis Increment Mode VAR Selection



Symbol information

M0.0	OFF	Marker Always Off
DB11.DBX2.5	"OMG".Q_INCVAR	INC variable
DB31.DBX5.5	"X AXIS".Q_INCVAR	INC variable
DB32.DBX5.5	"Y AXIS".Q_INCVAR	INC variable
DB33.DBX5.5	"Z AXIS".Q_INCVAR	INC variable
DB34.DBX5.5	"4 AXIS".Q_INCVAR	INC variable

DB35.DBX5.5 "5 AXIS".Q_INCVar INC variable

Network: 21CNC ISO Teach-In Mode Select



Symbol information
M0.0 OFF Marker Always Off
DB11.DBX1.0 "OMG".Q_TEACHIN Machine function TEACH IN

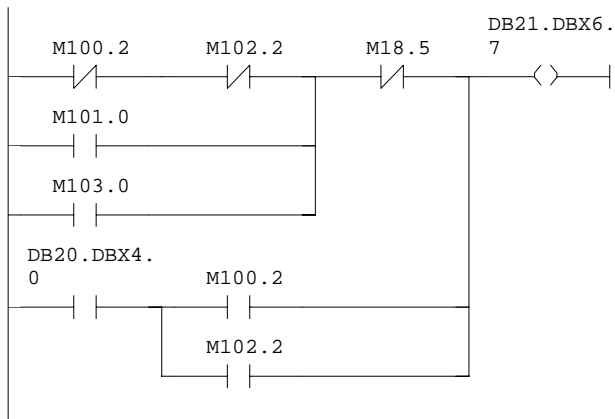
FC42 - <offline>

"NC FEED CONTROL" NC General Feed Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 1
Time stamp Code: 04/23/01 10:17:00 AMAM
Interface: 09/13/99 03:10:14 PMPM
Lengths (block/logic/data): 01384 01212 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC42 Channel Feed Specific Functions

Network: 1 Feed Override Active

**Symbol information**

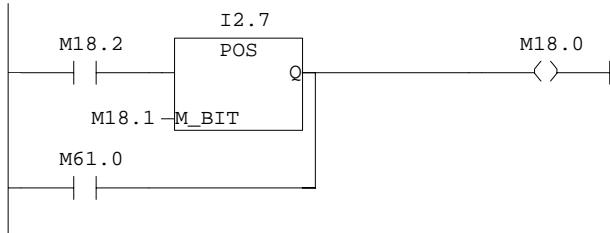
M100.2 T CHG CYC ACTIVE Tool Change Cycle Active
M102.2 T S/U CYC ACTIVE Tool Setup Cycle Active
M101.0 T CHG CYC INT'D Tool Change Cycle Interrupted
M103.0 T S/U CYC INT'D Tool Setup Cycle Interrupted
M18.5 FEED O/R DIS BFR Feed Override Active Disable Buffer
DB20.DBX4.0 "OPTIONS".Option_40 Feed Override for Tool Change Active
DB21.DBX6.7 "CHANNEL 1".Q_FD_ORA Feedrate override active

Network: 2 Rapid Override Active

**Symbol information**

M100.2 T CHG CYC ACTIVE Tool Change Cycle Active
M101.0 T CHG CYC INT'D Tool Change Cycle Interrupted
DB21.DBX6.6 "CHANNEL 1".Q_RT_ORA Rapid traverse override active

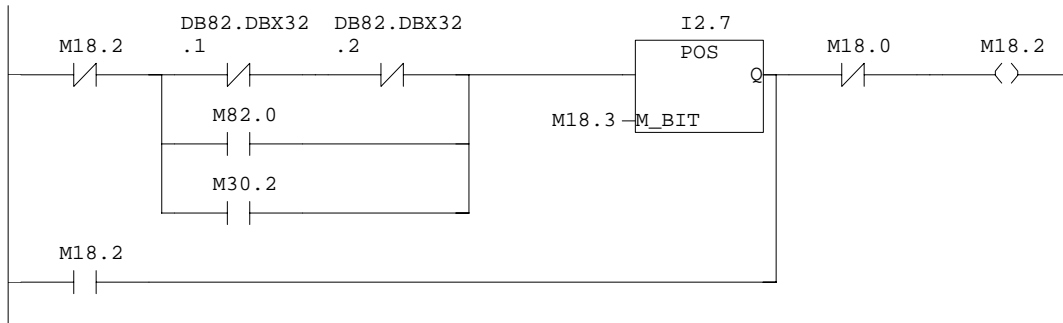
Network: 3 Feed Release Deselect (Feedhold)



Symbol information

M18.2	FEED REL	BUFFER	Feed Release Active Buffer
I2.7	FEEDHOLD	SELECT	MCP - Feedhold/Release Select [K47]
M18.1	FEED REL	DES REM	Feed Release Deselect Remember
M61.0	SP PWR LM F HD PLS	Spindle Power Limit Reached Feedhold Pulse	
M18.0	FEED REL	DES PLS	Feed Release Deselect Pulse

Network: 4 Feed Release



Symbol information

M18.2	FEED REL	BUFFER	Feed Release Active Buffer
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped		
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
M30.2	S BLOCK	SEL BFR	Single Block Select Buffer
I2.7	FEEDHOLD	SELECT	MCP - Feedhold/Release Select [K47]
M18.3	FEED REL	SEL REM	Feed Release Select Remember
M18.0	FEED REL	DES PLS	Feed Release Deselect Pulse

Network: 5 MCP Feedhold LED



Symbol information

M18.2	FEED REL	BUFFER	Feed Release Active Buffer
Q2.7	FEEDHOLD	LED	MCP - Feedhold LED [L47]

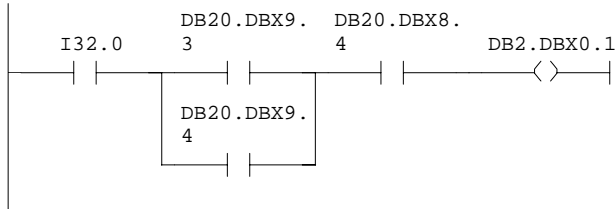
M18.2	FEED REL BUFFER	Feed Release Active Buffer
Q0.0	AUTO MODE LED	MCP - Auto Mode LED [L21]
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped	
DB20.DBX3.2	"OPTIONS".Option_32	Spindle Stops for [Feedhold] with Program Run in <Auto>
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
DB36.DBX84.3	"SPINDLE".I_Tapping	Tapping without compensating chuck
M18.4	SPIN STOP F/H REQ	Spindle Stop for Feedhold Request

Diagram 1: Ladder logic for the start of the machine. The circuit consists of two parallel normally open contacts labeled DB21.DBX20 0.0 and M18.5, followed by a series of three normally closed contacts labeled DB21.DBX20 0.1, I3.7, and M18.5. The output is represented by a coil symbol with the label M18.5.

```
DB21.DBX200.0 "CHANNEL 1".MDyn[48]
M18.5 FEED O/R DIS BFR Feed Override Active Disable Buffer
DB21.DBX200.1 "CHANNEL 1".MDyn[49]
I3.7 NC RESET MCP - NC Reset [K32]
```

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DB14	"OPTIONS".Option_140	Machine Type as VMC600II, VMC800II or VMC1000II
DB2.DBX0.0	"ALARM & MESSAGE".C1.FDD 5100xx[0]	Feed disable A.no.51000-510015

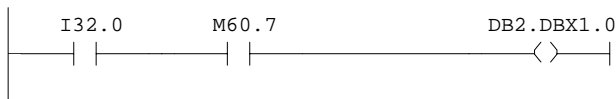
Network: 9 510001: NC Feed Disable for Pallet/M-Code Configuration Error



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX9.3	"OPTIONS".Option_93	Customer Specific M-Codes Group #1 Active
DB20.DBX9.4	"OPTIONS".Option_94	Customer Specific M-Codes Group #2 Active
DB20.DBX8.4	"OPTIONS".Option_84	Midaco Pallet System Active
DB2.DBX0.1	"ALARM & MESSAGE".C1.FDD_5100xx[1]	Feed disable A.no.51000-510015

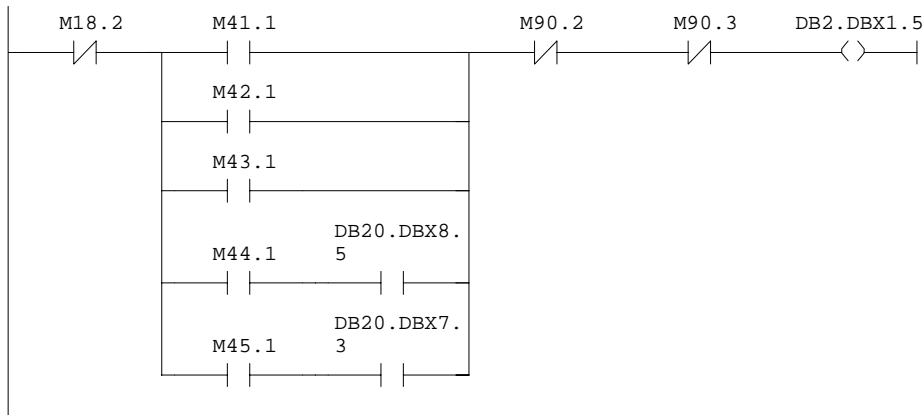
Network: 10 510008: NC Feed Disable for Spindle Power Monitor



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M60.7	SP POWER LMT RCH	Spindle Preset Power Monitor Limit Reached
DB2.DBX1.0	"ALARM & MESSAGE".C1.FDD_5100xx[8]	Feed disable A.no.51000-510015

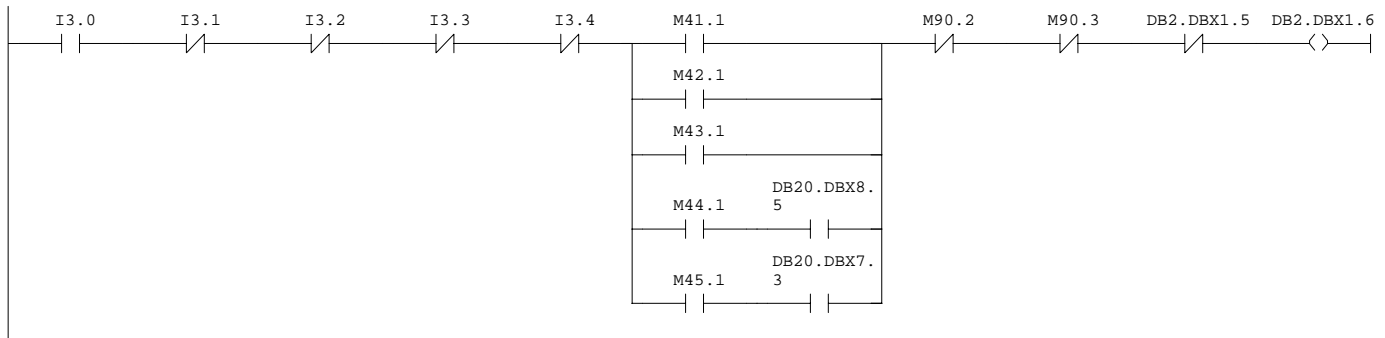
Network: 11 510013: NC Feed Disable for Feedhold



Symbol information

M18.2	FEED REL BUFFER	Feed Release Active Buffer
M41.1	X AXIS MOTION	X Axis Motion (+VE or -VE Command)
M42.1	Y AXIS MOTION	Y Axis Motion (+VE or -VE Command)
M43.1	Z AXIS MOTION	Z Axis Motion (+VE or -VE Command)
M44.1	4 AXIS MOTION	4 Axis Motion (+VE or -VE Command)
DB20.DBX8.5	"OPTIONS".Option_85	4th Axis Active
M45.1	5 AXIS MOTION	5 Axis Motion (+VE or -VE Command)
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
M90.2	MACHINE FAULT	Any Machine Fault
M90.3	MACHINE WARNING	Any Machine Warning
DB2.DBX1.5	"ALARM & MESSAGE".C1.FDD_5100xx[13]	Feed disable A.no.51000-510015

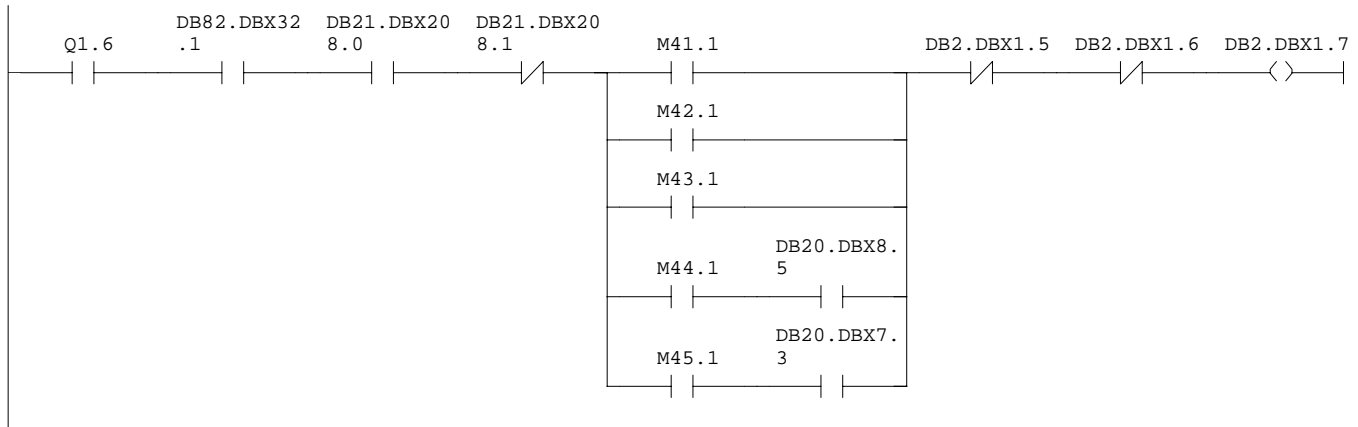
Network: 12 510014: NC Feed Disable for Feedrate at 0%



Symbol information

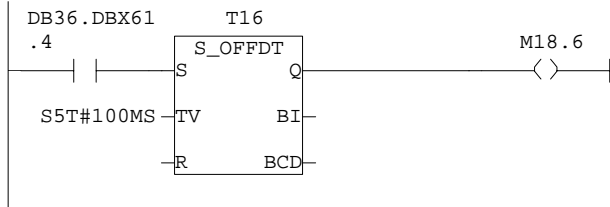
I3.0	FEEDRATE	OR BIT A	MCP/SAR1 - Feedrate Override Bit A
I3.1	FEEDRATE	OR BIT B	MCP/SAR1 - Feedrate Override Bit B
I3.2	FEEDRATE	OR BIT C	MCP/SAR1 - Feedrate Override Bit C
I3.3	FEEDRATE	OR BIT D	MCP/SAR1 - Feedrate Override Bit D
I3.4	FEEDRATE	OR BIT E	MCP/SAR1 - Feedrate Override Bit E
M41.1	X AXIS	MOTION	X Axis Motion (+VE or -VE Command)
M42.1	Y AXIS	MOTION	Y Axis Motion (+VE or -VE Command)
M43.1	Z AXIS	MOTION	Z Axis Motion (+VE or -VE Command)
M44.1	4 AXIS	MOTION	4 Axis Motion (+VE or -VE Command)
DB20.DBX8.5	"OPTIONS".Option_85		4th Axis Active
M45.1	5 AXIS	MOTION	5 Axis Motion (+VE or -VE Command)
DB20.DBX7.3	"OPTIONS".Option_73		5th Axis Active
M90.2	MACHINE	FAULT	Any Machine Fault
M90.3	MACHINE	WARNING	Any Machine Warning
DB2.DBX1.5	"ALARM & MESSAGE".C1.FDD_5100xx[13]		Feed disable A.no.51000-510015
DB2.DBX1.6	"ALARM & MESSAGE".C1.FDD_5100xx[14]		Feed disable A.no.51000-510015

Network: 13 510015: NC Feed Disable for Rapid Override at 0%

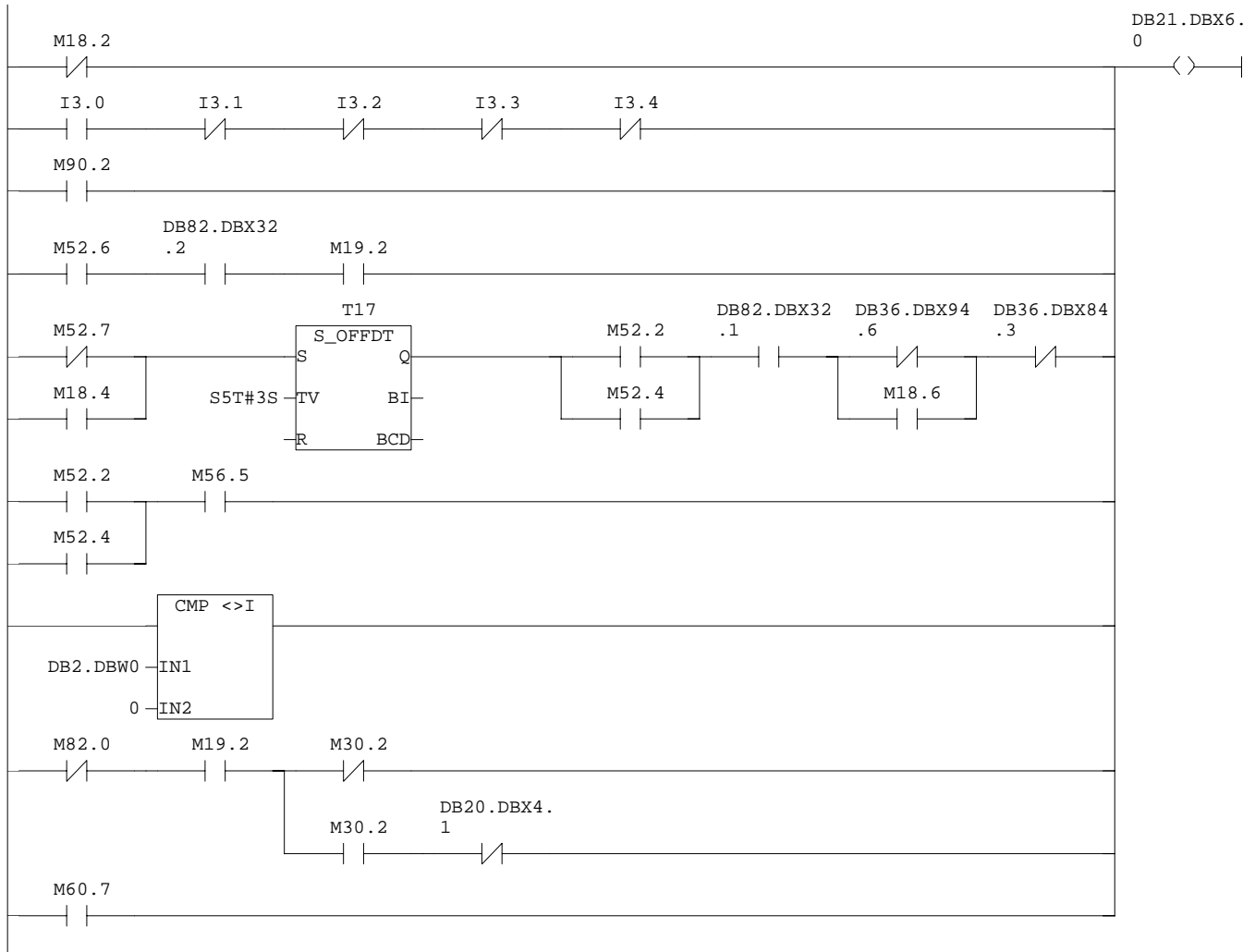


Symbol information

Q1.6	RAPID OR 0% LED	MCP - Rapid Override 0% LED [L18]
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
M41.1	X AXIS	MOTION
M42.1	Y AXIS	MOTION
M43.1	Z AXIS	MOTION
M44.1	4 AXIS	MOTION
DB20.DBX8.5	"OPTIONS".Option_85	4th Axis Active
M45.1	5 AXIS	MOTION
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
DB2.DBX1.5	"ALARM & MESSAGE".C1.FDD_5100xx[13]	Feed disable A.no.51000-510015
DB2.DBX1.6	"ALARM & MESSAGE".C1.FDD_5100xx[14]	Feed disable A.no.51000-510015
DB2.DBX1.7	"ALARM & MESSAGE".C1.FDD_5100xx[15]	Feed disable A.no.51000-510015

Network: 14 Spindle Stationary with Delay for Feed Release After Spin Start

Symbol information

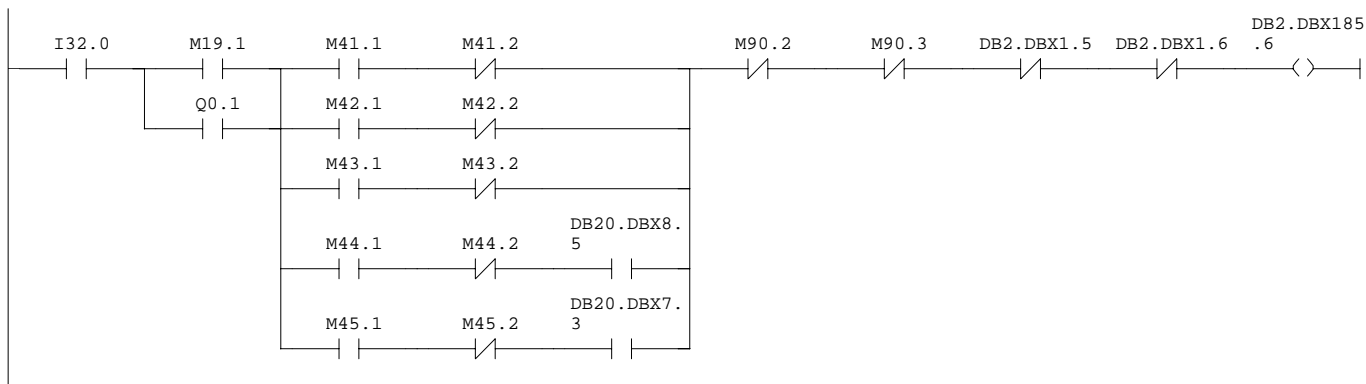
DB36.DBX61.4 "SPINDLE".I_Stat Axis/spindle stationary (n<nmin)
M18.6 FEED HOLD SP START Feedhold for Spindle Start

Network: 15 Channel Feed Disable

Symbol information

M18.2	FEED REL	BUFFER	Feed Release Active Buffer
I3.0	FEEDRATE	OR BIT A	MCP/SAR1 - Feedrate Override Bit A
I3.1	FEEDRATE	OR BIT B	MCP/SAR1 - Feedrate Override Bit B
I3.2	FEEDRATE	OR BIT C	MCP/SAR1 - Feedrate Override Bit C
I3.3	FEEDRATE	OR BIT D	MCP/SAR1 - Feedrate Override Bit D
I3.4	FEEDRATE	OR BIT E	MCP/SAR1 - Feedrate Override Bit E
M90.2	MACHINE	FAULT	Any Machine Fault
M52.6	SPINDLE	PGM INT	Spindle Stop Request for Program Interrupt
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped		
M19.2	AUTOMATIC	MODE	NC in Automatic Mode

M52.7	SPINDLE	RUN REQ	Spindle Auto/Manual Run Request
M18.4	SPIN STOP	F/H REQ	Spindle Stop for Feedhold Request
M52.2	SPINDLE	CW REQ	Spindle CW Request
M52.4	SPINDLE	CCW REQ	Spindle CCW Request
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
DB36.DBX94.6	"SPINDLE".I_NactNset	nact<nset	
M18.6	FEED HOLD	SP START	Feedhold for Spindle Start
DB36.DBX84.3	"SPINDLE".I_Tapping		Tapping without compensating chuck
M56.5	SPIN OSC	G/C R OD	Spindle Oscillation for Gear Change Request Off Delayed
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
M30.2	S BLOCK	SEL BFR	Single Block Select Buffer
DB20.DBX4.1	"OPTIONS".Option_41		Single Block Motion Allowed with Door Open Active
M60.7	SP POWER	LMT RCH	Spindle Preset Power Monitor Limit Reached
DB21.DBX6.0	"CHANNEL 1".Q_FDDisable		Feed disable

Network: 16 700046: Axes Not Referenced for Manual/MDA Traverse



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M19.1	JOG MODE ONLY	NC in Jog Mode Only
Q0.1	MDA MODE LED	MCP - MDA Mode LED [L11]
M41.1	X AXIS MOTION	X Axis Motion (+VE or -VE Command)
M41.2	X AXIS REFD	X Axis Referenced to Active Measuring System
M42.1	Y AXIS MOTION	Y Axis Motion (+VE or -VE Command)
M42.2	Y AXIS REFD	Y Axis Referenced to Active Measuring System
M43.1	Z AXIS MOTION	Z Axis Motion (+VE or -VE Command)
M43.2	Z AXIS REFD	Z Axis Referenced to Active Measuring System
M44.1	4 AXIS MOTION	4 Axis Motion (+VE or -VE Command)
M44.2	4 AXIS REFD	4 Axis Referenced to Active Measuring System
DB20.DBX8.5	"OPTIONS".Option_85	4th Axis Active
M45.1	5 AXIS MOTION	5 Axis Motion (+VE or -VE Command)
M45.2	5 AXIS REFD	5 Axis Referenced to Active Measuring System
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
M90.2	MACHINE FAULT	Any Machine Fault
M90.3	MACHINE WARNING	Any Machine Warning
DB2.DBX1.5	"ALARM & MESSAGE".C1.FDD_5100xx[13]	Feed disable A.no.51000-510015
DB2.DBX1.6	"ALARM & MESSAGE".C1.FDD_5100xx[14]	Feed disable A.no.51000-510015
DB2.DBX185.6	"ALARM & MESSAGE".A7000xx[46]	Alarm 700000-700063 (user area 0)

Network: 17 Channel & Axis Specific Feed Override

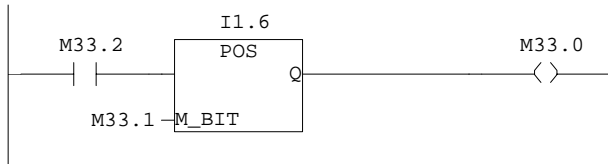
A	I	3.0	"FEEDRATE OR BIT A"	-- MCP/SAR1 - Feedrate Override Bit A
=	DB21.DBX	4.0		
=	DB31.DBX	0.0		
=	DB32.DBX	0.0		
=	DB33.DBX	0.0		
=	DB34.DBX	0.0		
A	I	3.1	"FEEDRATE OR BIT B"	-- MCP/SAR1 - Feedrate Override Bit B
=	DB21.DBX	4.1		
=	DB31.DBX	0.1		
=	DB32.DBX	0.1		
=	DB33.DBX	0.1		
=	DB34.DBX	0.1		
A	I	3.2	"FEEDRATE OR BIT C"	-- MCP/SAR1 - Feedrate Override Bit C
=	DB21.DBX	4.2		
=	DB31.DBX	0.2		
=	DB32.DBX	0.2		
=	DB33.DBX	0.2		
=	DB34.DBX	0.2		
A	I	3.3	"FEEDRATE OR BIT D"	-- MCP/SAR1 - Feedrate Override Bit D
=	DB21.DBX	4.3		

```

=      DB31.DBX      0.3
=      DB32.DBX      0.3
=      DB33.DBX      0.3
=      DB34.DBX      0.3
A      I      3.4      "FEEDRATE OR BIT E"      -- MCP/SAR1 - Feedrate Override Bit E
=      DB21.DBX      4.4
=      DB31.DBX      0.4
=      DB32.DBX      0.4
=      DB33.DBX      0.4
=      DB34.DBX      0.4

```

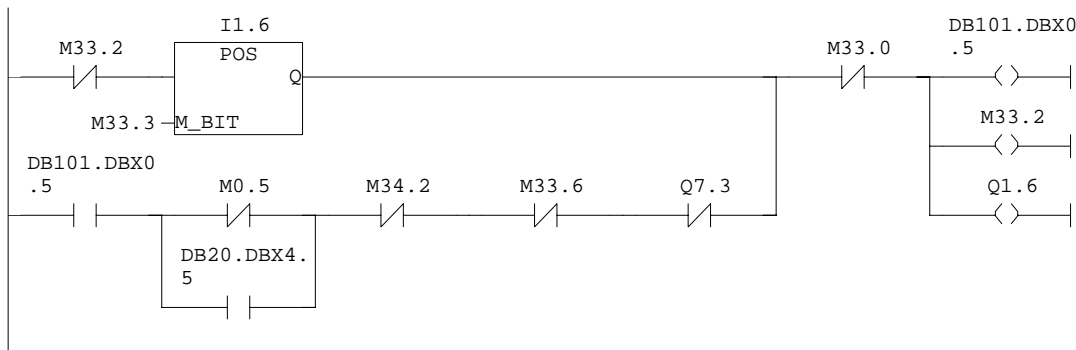
Network: 18 Rapid Override 0% Deselect



Symbol information

M33.2	ROV 0%	SEL BFR	Rapid Traverse Override 0% Select Buffer
I1.6	RAPID OR	0% SEL	MCP - Rapid Override 0% Select [K18]
M33.1	ROV 0%	DES REM	Rapid Traverse Override 0% Deselect Remember
M33.0	ROV 0%	DES PLS	Rapid Traverse Override 0% Deselect Pulse

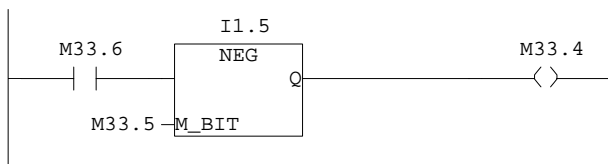
Network: 19 Rapid Override 0% Buffer



Symbol information

M33.2	ROV 0%	SEL BFR	Rapid Traverse Override 0% Select Buffer
I1.6	RAPID OR	0% SEL	MCP - Rapid Override 0% Select [K18]
M33.3	ROV 0%	SEL REM	Rapid Traverse Override 0% Select Remember
DB101.DBX0.5	"PGM CONTROL BUFFER".Rapid_0_Buffer		Program Control Rapid 0% Marker Buffer
M0.5	PLC START PULSE		PLC Start Pulse
DB20.DBX4.5	"OPTIONS".Option_45		Program Control Function Power Off Memory Active
M34.2	ROV 50%	SEL BFR	Rapid Traverse Override 50% Select Buffer
M33.6	ROV 20%	SEL BFR	Rapid Traverse Override 20% Select Buffer
Q7.3	RAPID OR	LED	MCP - Rapid Traverse Override LED [L16]
M33.0	ROV 0%	DES PLS	Rapid Traverse Override 0% Deselect Pulse
Q1.6	RAPID OR	0% LED	MCP - Rapid Override 0% LED [L18]

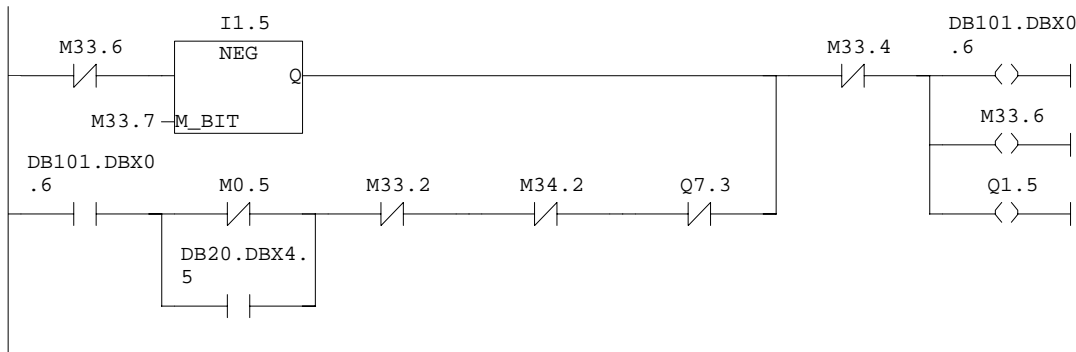
Network: 20 Rapid Override 20% Deselect



Symbol information

M33.6	ROV 20%	SEL BFR	Rapid Traverse Override 20% Select Buffer
I1.5	RAPID OR	20% SEL	MCP - Rapid Override 20% Select [K19]
M33.5	ROV 20%	DES REM	Rapid Traverse Override 20% Deselect Remember
M33.4	ROV 20%	DES PLS	Rapid Traverse Override 20% Deselect Pulse

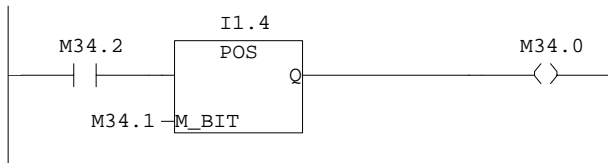
Network: 21 Rapid Override 20% Buffer



Symbol information

M33.6	ROV 20%	SEL BFR	Rapid Traverse Override 20% Select Buffer
I1.5	RAPID OR	20% SEL	MCP - Rapid Override 20% Select [K19]
M33.7	ROV 20%	SEL REM	Rapid Traverse Override 20% Select Remember
DB101.DBX0.6	"PGM CONTROL BUFFER".Rapid_20_Buffer		Program Control Rapid 20% Marker Buffer
M0.5	PLC START	PULSE	PLC Start Pulse
DB20.DBX4.5	"OPTIONS".Option_45		Program Control Function Power Off Memory Active
M33.2	ROV 0%	SEL BFR	Rapid Traverse Override 0% Select Buffer
M34.2	ROV 50%	SEL BFR	Rapid Traverse Override 50% Select Buffer
Q7.3	RAPID OR	LED	MCP - Rapid Traverse Override LED [L16]
M33.4	ROV 20%	DES PLS	Rapid Traverse Override 20% Deselect Pulse
Q1.5	RAPID OR	20% LED	MCP - Rapid Override 20% LED [L19]

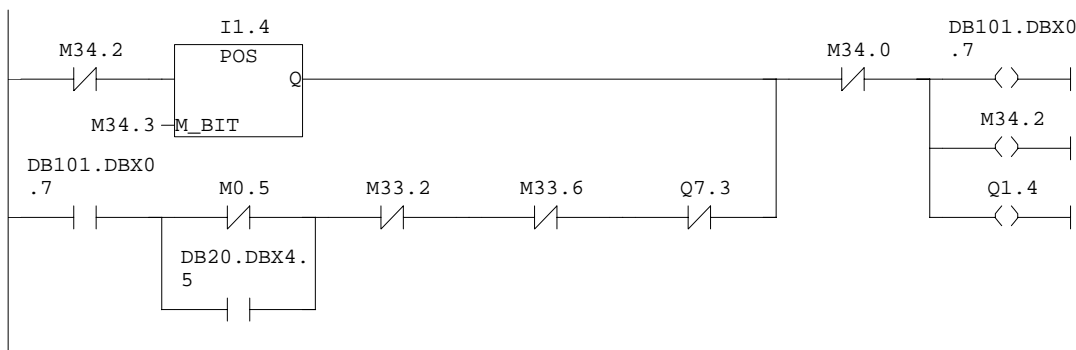
Network: 22 Rapid Override 50% Deselect



Symbol information

M34.2	ROV 50%	SEL BFR	Rapid Traverse Override 50% Select Buffer
I1.4	RAPID OR	50% SEL	MCP - Rapid Override 50% Select [K20]
M34.1	ROV 50%	DES REM	Rapid Traverse Override 50% Deselect Remember
M34.0	ROV 50%	DES PLS	Rapid Traverse Override 50% Deselect Pulse

Network: 23 Rapid Override 50% Buffer

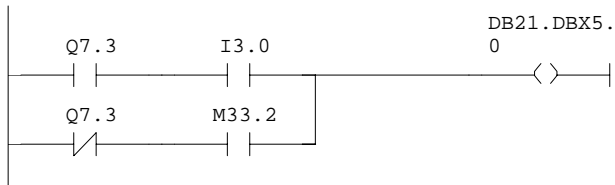


Symbol information

M34.2	ROV 50%	SEL BFR	Rapid Traverse Override 50% Select Buffer
I1.4	RAPID OR	50% SEL	MCP - Rapid Override 50% Select [K20]
M34.3	ROV 50%	SEL REM	Rapid Traverse Override 50% Select Remember
DB101.DBX0.7	"PGM CONTROL BUFFER".Rapid_50_Buffer		Program Control Rapid 50% Marker Buffer
M0.5	PLC START	PULSE	PLC Start Pulse
DB20.DBX4.5	"OPTIONS".Option_45		Program Control Function Power Off Memory Active

M33.2	ROV 0%	SEL BFR	Rapid Traverse Override 0% Select Buffer
M33.6	ROV 20%	SEL BFR	Rapid Traverse Override 20% Select Buffer
Q7.3	RAPID OR	LED	MCP - Rapid Traverse Override LED [L16]
M34.0	ROV 50%	DES PLS	Rapid Traverse Override 50% Deselect Pulse
Q1.4	RAPID OR	50% LED	MCP - Rapid Override 50% LED [L20]

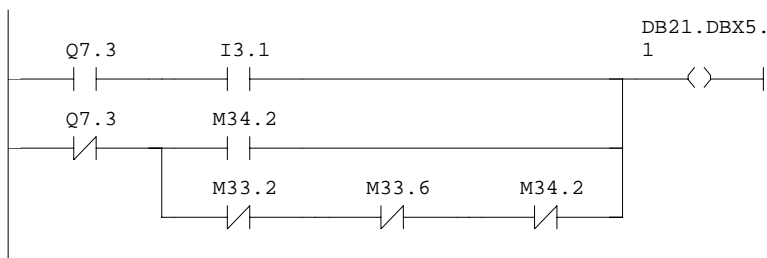
Network: 24 Rapid Traverse Override Bit A



Symbol information

Q7.3	RAPID OR	LED	MCP - Rapid Traverse Override LED [L16]
I3.0	FEEDRATE	OR BIT A	MCP/SAR1 - Feedrate Override Bit A
M33.2	ROV 0%	SEL BFR	Rapid Traverse Override 0% Select Buffer
DB21.DBX5.0	"CHANNEL 1".Q_RT_OR_A		Rapid traverse override bit A

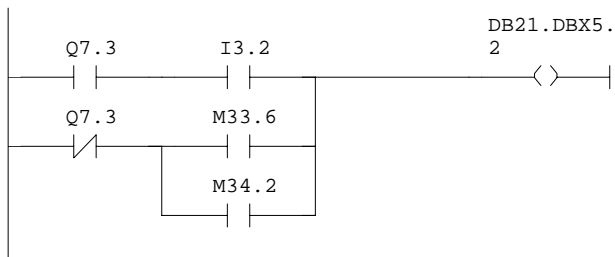
Network: 25 Rapid Traverse Override Bit B



Symbol information

Q7.3	RAPID OR	LED	MCP - Rapid Traverse Override LED [L16]
I3.1	FEEDRATE	OR BIT B	MCP/SAR1 - Feedrate Override Bit B
M34.2	ROV 50%	SEL BFR	Rapid Traverse Override 50% Select Buffer
M33.2	ROV 0%	SEL BFR	Rapid Traverse Override 0% Select Buffer
M33.6	ROV 20%	SEL BFR	Rapid Traverse Override 20% Select Buffer
DB21.DBX5.1	"CHANNEL 1".Q_RT_OR_B		Rapid traverse override bit B

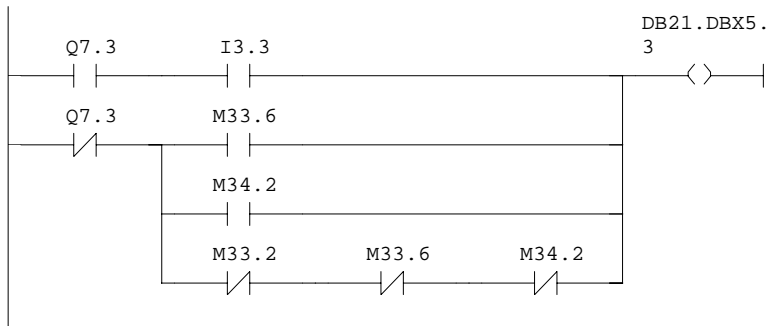
Network: 26 Rapid Traverse Override Bit C



Symbol information

Q7.3	RAPID OR	LED	MCP - Rapid Traverse Override LED [L16]
I3.2	FEEDRATE	OR BIT C	MCP/SAR1 - Feedrate Override Bit C
M33.6	ROV 20%	SEL BFR	Rapid Traverse Override 20% Select Buffer
M34.2	ROV 50%	SEL BFR	Rapid Traverse Override 50% Select Buffer
DB21.DBX5.2	"CHANNEL 1".Q_RT_OR_C		Rapid traverse override bit C

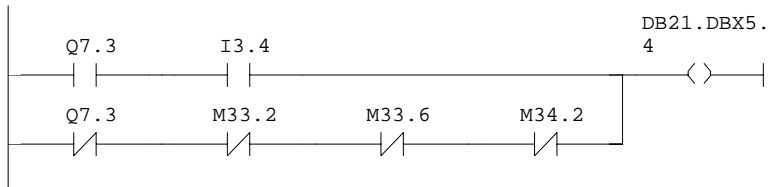
Network: 27 Rapid Traverse Override Bit D



Symbol information

Q7.3	RAPID OR	LED	MCP - Rapid Traverse Override LED [L16]
I3.3	FEEDRATE	OR BIT D	MCP/SAR1 - Feedrate Override Bit D
M33.6	ROV 20%	SEL BFR	Rapid Traverse Override 20% Select Buffer
M34.2	ROV 50%	SEL BFR	Rapid Traverse Override 50% Select Buffer
M33.2	ROV 0%	SEL BFR	Rapid Traverse Override 0% Select Buffer
DB21.DBX5.3	"CHANNEL 1".Q_RT_OR_D		Rapid traverse override bit D

Network: 28 Rapid Traverse Override Bit E



Symbol information

Q7.3	RAPID OR	LED	MCP - Rapid Traverse Override LED [L16]
I3.4	FEEDRATE	OR BIT E	MCP/SAR1 - Feedrate Override Bit E
M33.2	ROV 0%	SEL BFR	Rapid Traverse Override 0% Select Buffer
M33.6	ROV 20%	SEL BFR	Rapid Traverse Override 20% Select Buffer
M34.2	ROV 50%	SEL BFR	Rapid Traverse Override 50% Select Buffer
DB21.DBX5.4	"CHANNEL 1".Q_RT_OR_E		Rapid traverse override bit E

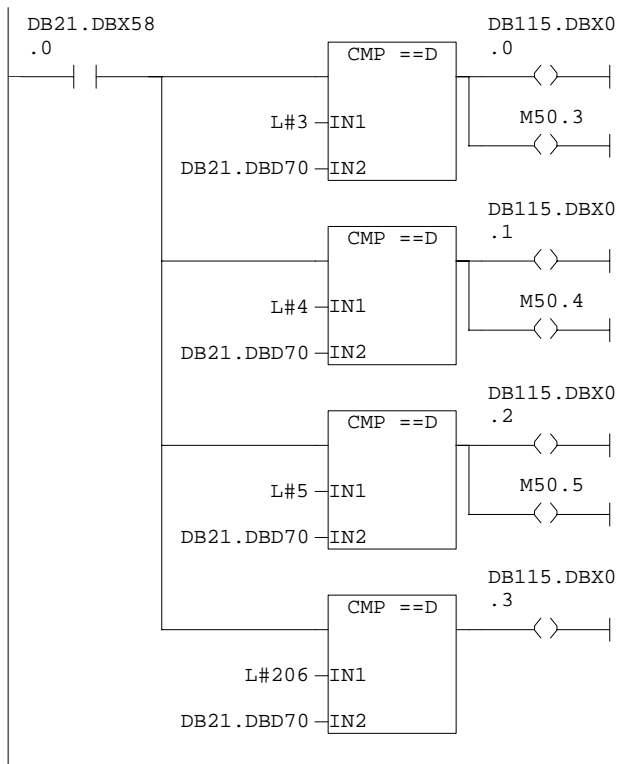
FC43 - <offline>

"NC EXTND M/H CODES" NC Extended M-Code & H-Code Decoding Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 2
Time stamp Code: 02/08/01 11:23:50 PMPM
Interface: 11/10/00 09:59:54 PMPM
Lengths (block/logic/data): 01392 01254 00002

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

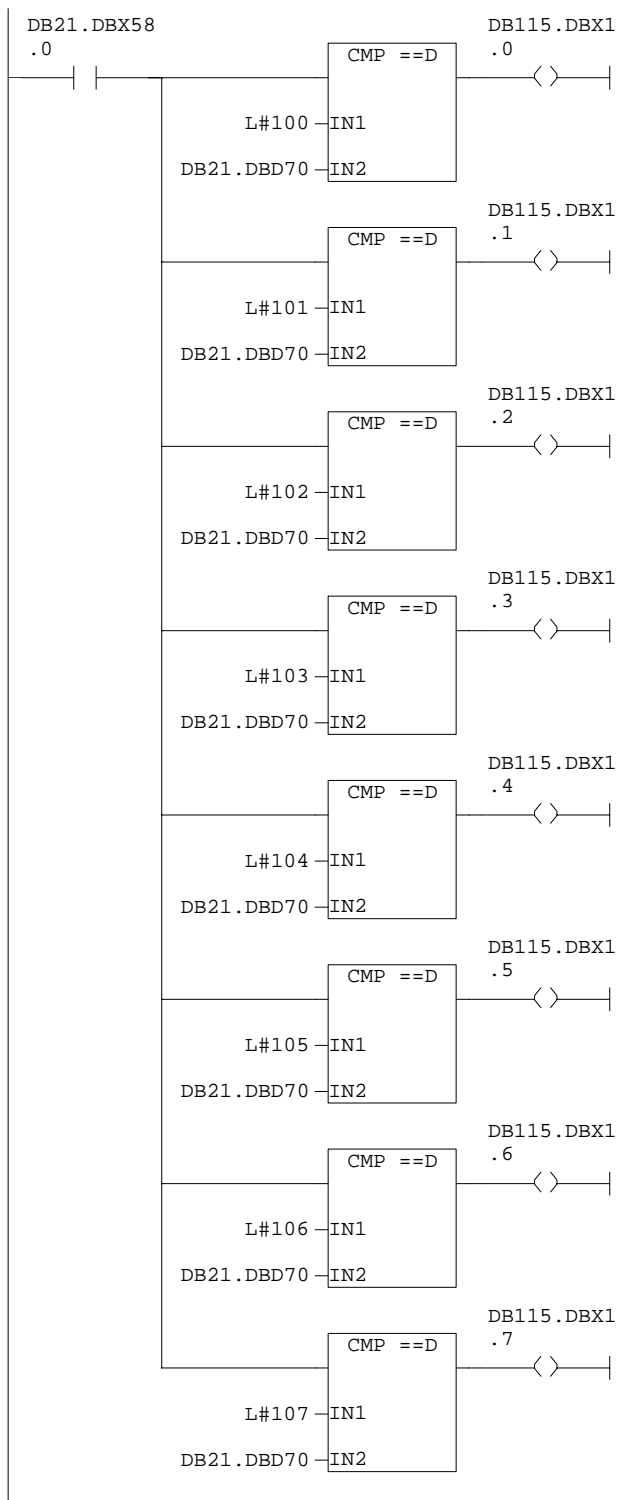
Block: FC43 Extended Decoding for Channel 1 M & H Codes

Network: 1 Channel 1 Extended Decoding for M3, M4, M5 & M206

**Symbol information**

DB21.DBX58.0	"CHANNEL 1".M1Change	M function 1 change
DB21.DBD70	"CHANNEL 1".M1	M function 1 (DInt)
DB115.DBX0.0	"EXTENDED M/H CODES".Extended_M03	Channel 1 Extended Decoding for M03
M50.3	SPINDLE M03 EXT	Spindle Extended Decoding for M3
DB115.DBX0.1	"EXTENDED M/H CODES".Extended_M04	Channel 1 Extended Decoding for M04
M50.4	SPINDLE M04 EXT	Spindle Extended Decoding for M4
DB115.DBX0.2	"EXTENDED M/H CODES".Extended_M05	Channel 1 Extended Decoding for M05
M50.5	SPINDLE M05 EXT	Spindle Extended Decoding for M5
DB115.DBX0.3	"EXTENDED M/H CODES".Extended_M206	Channel 1 Extended Decoding for M206

Network: 2 Channel 1 Extended Decoding for M100~M107

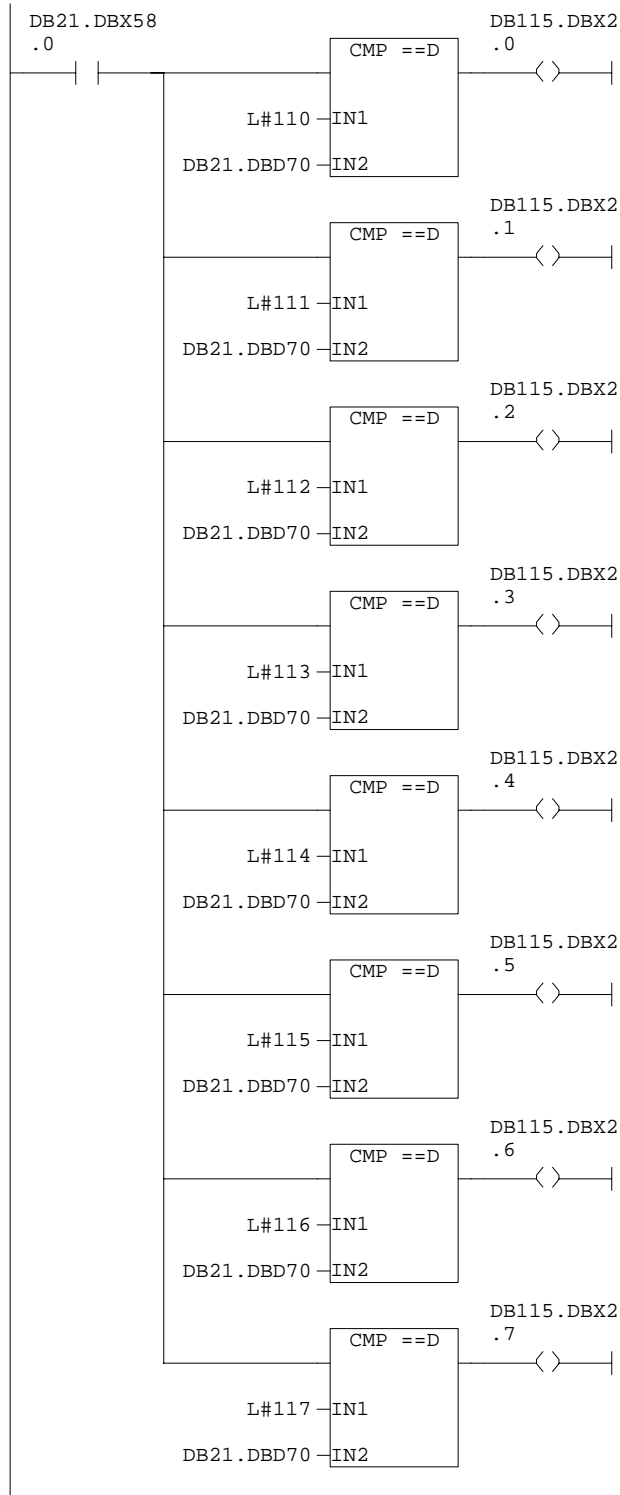


Symbol information

DB21.DBX58.0	"CHANNEL 1".M1Change	M function 1 change
DB21.DBD70	"CHANNEL 1".M1	M function 1 (DInt)
DB115.DBX1.0	"EXTENDED M/H CODES".Extended_M100	Channel 1 Extended Decoding for M100
DB115.DBX1.1	"EXTENDED M/H CODES".Extended_M101	Channel 1 Extended Decoding for M101
DB115.DBX1.2	"EXTENDED M/H CODES".Extended_M102	Channel 1 Extended Decoding for M102
DB115.DBX1.3	"EXTENDED M/H CODES".Extended_M103	Channel 1 Extended Decoding for M103
DB115.DBX1.4	"EXTENDED M/H CODES".Extended_M104	Channel 1 Extended Decoding for M104
DB115.DBX1.5	"EXTENDED M/H CODES".Extended_M105	Channel 1 Extended Decoding for M105
DB115.DBX1.6	"EXTENDED M/H CODES".Extended_M106	Channel 1 Extended Decoding for M106

DB115.DBX1.7 "EXTENDED M/H CODES".Extended_M107 Channel 1 Extended Decoding for M107

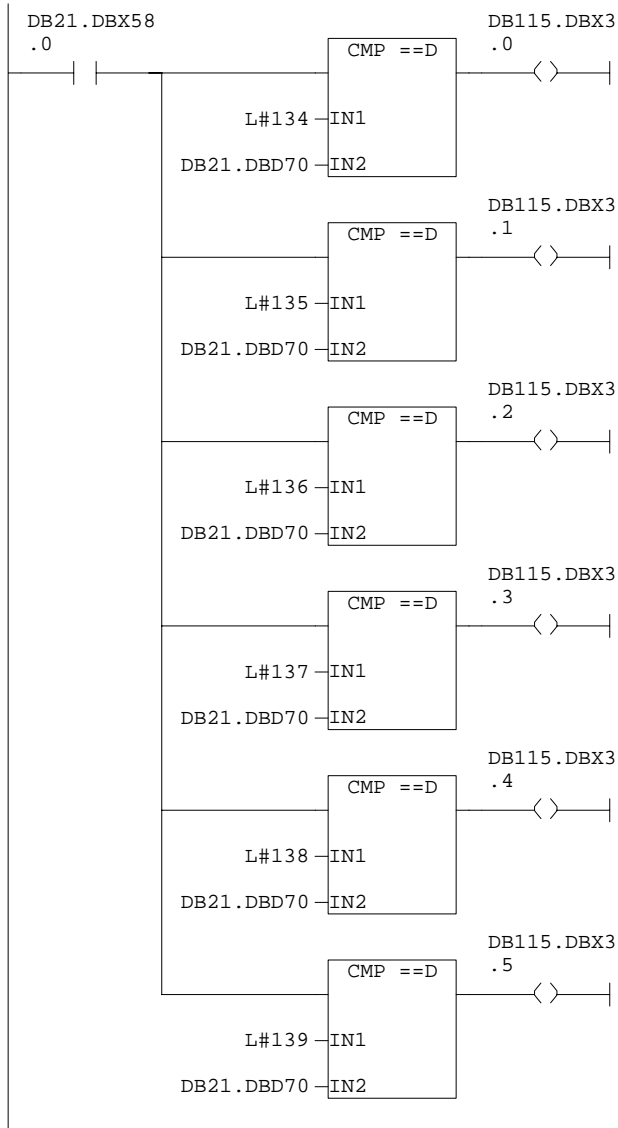
Network: 3 Channel 1 Extended Decoding for M110~M117

**Symbol information**

DB21.DBX58.0	"CHANNEL 1".M1Change	M function 1 change
DB21.DBD70	"CHANNEL 1".M1	M function 1 (DInt)
DB115.DBX2.0	"EXTENDED M/H CODES".Extended_M110	Channel 1 Extended Decoding for M110
DB115.DBX2.1	"EXTENDED M/H CODES".Extended_M111	Channel 1 Extended Decoding for M111
DB115.DBX2.2	"EXTENDED M/H CODES".Extended_M112	Channel 1 Extended Decoding for M112
DB115.DBX2.3	"EXTENDED M/H CODES".Extended_M113	Channel 1 Extended Decoding for M113
DB115.DBX2.4	"EXTENDED M/H CODES".Extended_M114	Channel 1 Extended Decoding for M114
DB115.DBX2.5	"EXTENDED M/H CODES".Extended_M115	Channel 1 Extended Decoding for M115

DB115.DBX2.6 "EXTENDED M/H CODES".Extended_M116 Channel 1 Extended Decoding for M116
 DB115.DBX2.7 "EXTENDED M/H CODES".Extended_M117 Channel 1 Extended Decoding for M117

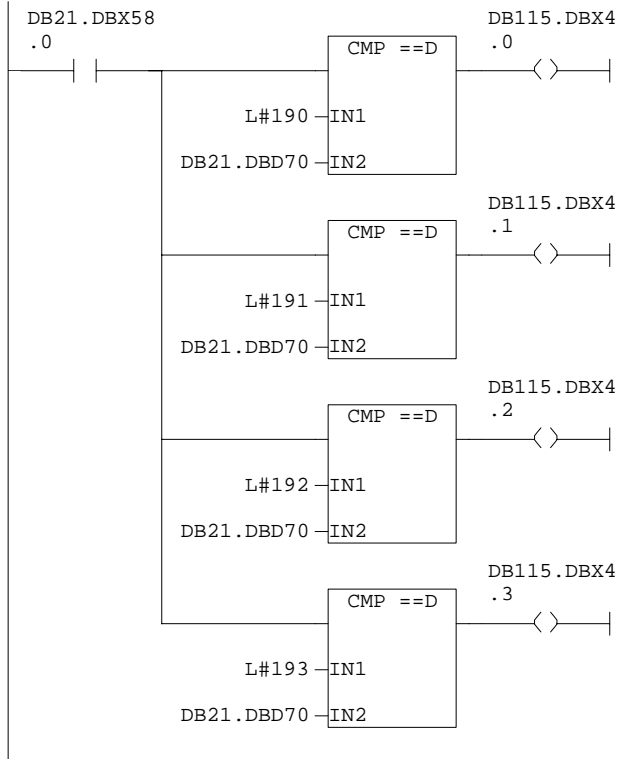
Network: 4 Channel 1 Extended Decoding for M134~M139



Symbol information

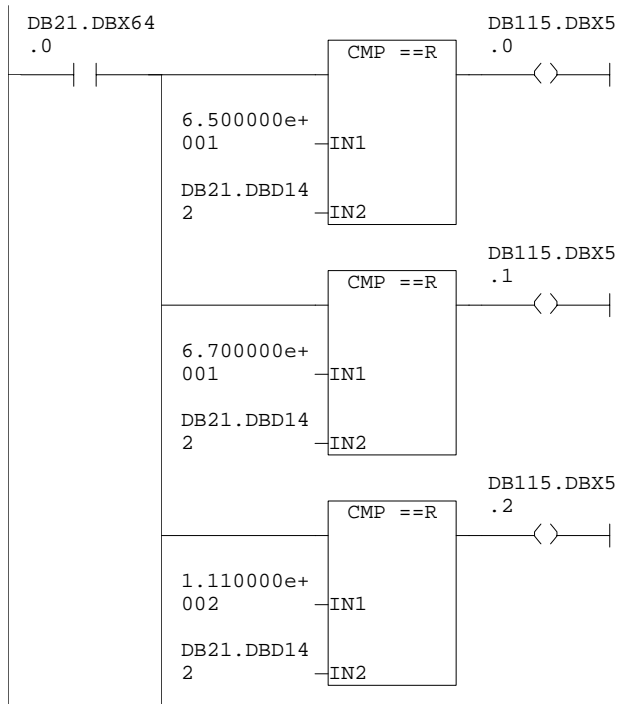
DB21.DBX58.0	"CHANNEL 1".M1Change	M function 1 change
DB21.DBD70	"CHANNEL 1".M1	M function 1 (DInt)
DB115.DBX3.0	"EXTENDED M/H CODES".Extended_M134	Channel 1 Extended Decoding for M134
DB115.DBX3.1	"EXTENDED M/H CODES".Extended_M135	Channel 1 Extended Decoding for M135
DB115.DBX3.2	"EXTENDED M/H CODES".Extended_M136	Channel 1 Extended Decoding for M136
DB115.DBX3.3	"EXTENDED M/H CODES".Extended_M137	Channel 1 Extended Decoding for M137
DB115.DBX3.4	"EXTENDED M/H CODES".Extended_M138	Channel 1 Extended Decoding for M138
DB115.DBX3.5	"EXTENDED M/H CODES".Extended_M139	Channel 1 Extended Decoding for M139

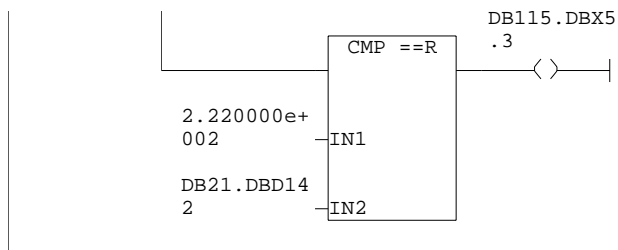
Network: 5 Channel 1 Extended Decoding for M190~M193

**Symbol information**

DB21.DBX58.0 "CHANNEL 1".M1Change M function 1 change
DB21.DBD70 "CHANNEL 1".M1 M function 1 (DInt)
DB115.DBX4.0 "EXTENDED M/H CODES".Extended_M190 Channel 1 Extended Decoding for M190
DB115.DBX4.1 "EXTENDED M/H CODES".Extended_M191 Channel 1 Extended Decoding for M191
DB115.DBX4.2 "EXTENDED M/H CODES".Extended_M192 Channel 1 Extended Decoding for M192
DB115.DBX4.3 "EXTENDED M/H CODES".Extended_M193 Channel 1 Extended Decoding for M193

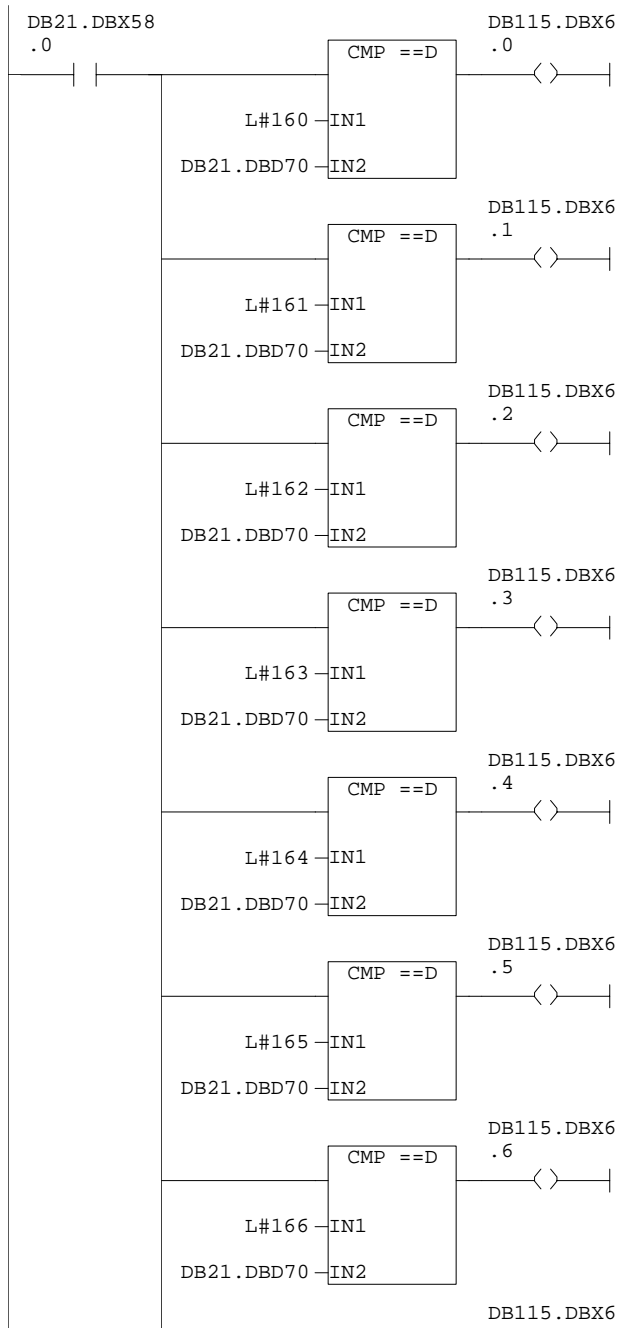
Network: 6 Channel 1 Extended Decoding for H65, H67, H111 & H222

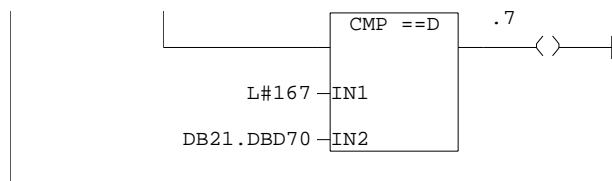


**Symbol information**

DB21.DBX64.0	"CHANNEL 1".H1Change	H function 1 change
DB21.DBD142	"CHANNEL 1".H1	H function 1 (REAL)
DB115.DBX5.0	"EXTENDED M/H CODES".Extended_H65	Channel 1 Extended Decoding for H65
DB115.DBX5.1	"EXTENDED M/H CODES".Extended_H67	Channel 1 Extended Decoding for H67
DB115.DBX5.2	"EXTENDED M/H CODES".Extended_H111	Channel 1 Extended Decoding for H111
DB115.DBX5.3	"EXTENDED M/H CODES".Extended_H222	Channel 1 Extended Decoding for H222

Network: 7	Channel 1 Extended Decoding for M160~M167
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**Symbol information**

DB21.DBX58.0	"CHANNEL 1".M1Change	M function 1 change
DB21.DBD70	"CHANNEL 1".M1	M function 1 (DInt)
DB115.DBX6.0	"EXTENDED M/H CODES".Extended_M160	Channel 1 Extended Decoding for M160
DB115.DBX6.1	"EXTENDED M/H CODES".Extended_M161	Channel 1 Extended Decoding for M161
DB115.DBX6.2	"EXTENDED M/H CODES".Extended_M162	Channel 1 Extended Decoding for M162
DB115.DBX6.3	"EXTENDED M/H CODES".Extended_M163	Channel 1 Extended Decoding for M163
DB115.DBX6.4	"EXTENDED M/H CODES".Extended_M164	Channel 1 Extended Decoding for M164
DB115.DBX6.5	"EXTENDED M/H CODES".Extended_M165	Channel 1 Extended Decoding for M165
DB115.DBX6.6	"EXTENDED M/H CODES".Extended_M166	Channel 1 Extended Decoding for M166
DB115.DBX6.7	"EXTENDED M/H CODES".Extended_M167	Channel 1 Extended Decoding for M167

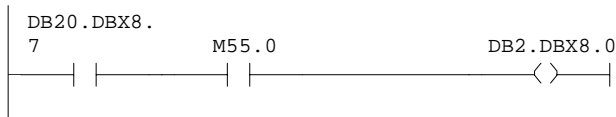
FC44 - <offline>

"NC RID CONTROL" NC Read-In Disable Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 2
Time stamp Code: 03/13/01 09:34:43 PMPM
Interface: 10/07/99 11:00:49 PMPM
Lengths (block/logic/data): 00702 00552 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

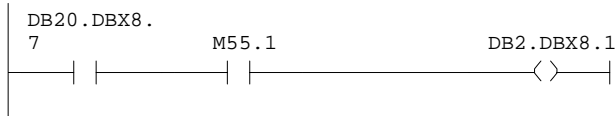
Block: FC44 Channel NC Read-In Disable

Network: 1 510216: Read-In Disable for Spindle Gear Change to High Gear

**Symbol information**

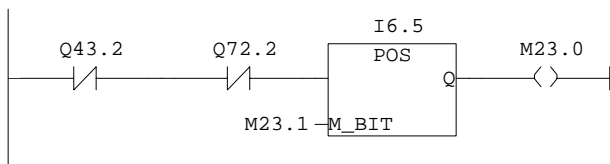
DB20.DBX8.7 "OPTIONS".Option_87 2nd Tool Magazine Active
M55.0 SP G/CHGE R 1 REQ Spindle Gear Change Range #1 (Low) Request
DB2.DBX8.0 "ALARM & MESSAGE".C1.RID_5102xx[16] Read-in disable A.no.510200-510231

Network: 2 510217: Read-In Disable for Spindle Gear Change to Low Gear

**Symbol information**

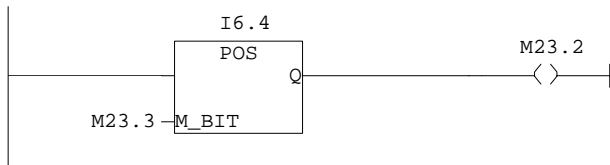
DB20.DBX8.7 "OPTIONS".Option_87 2nd Tool Magazine Active
M55.1 SP G/CHGE R 2 REQ Spindle Gear Change Range #2 (High) Request
DB2.DBX8.1 "ALARM & MESSAGE".C1.RID_5102xx[17] Read-in disable A.no.510200-510231

Network: 3 Tool Setup Cycle Tool-to-Tool Start Pulse

**Symbol information**

Q43.2 T MAG #1 ROT MTR KAR11/MTR6 - Tool Magazine #1 CW/CCW Rotation Motor
Q72.2 T MAG #2 ROT MTR KAR11/MTR6 - Tool Magazine #2 CW/CCW Rotation Motor
I6.5 TOOL/TOOL CYC SEL MCP - Tool to Tool Change Cycle Select [K36]
M23.1 TOOL/TOOL PB REM Tool to Tool Change Cycle Select Pushbutton Remember
M23.0 TOOL/TOOL PB PLS Tool to Tool Change Cycle Select Pushbutton Pulse

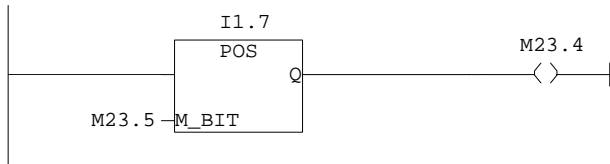
Network: 4 Tool Setup Cycle Tool-to-Magazine Start Pulse



Symbol information

I6.4	TOOL/MAG	CYC SEL	MCP - Tool to Magazine Cycle Select [K37]
M23.3	TOOL/MAG	PB REM	Tool to Magazine Cycle Select Pushbutton Remember
M23.2	TOOL/MAG	PB PLS	Tool to Magazine Cycle Select Pushbutton Pulse

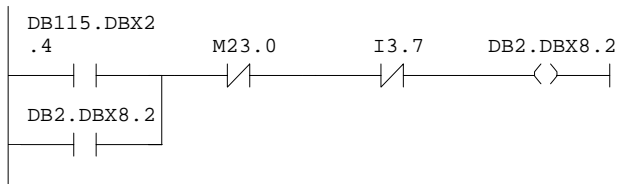
Network: 5 Tool Change Cycle Start Pulse



Symbol information

I1.7	NC CYCLE	START	MCP - NC Cycle Start [K43]
M23.5	CYC START	PB REM	Tool Change Cycle Start Pushbutton Remember
M23.4	CYC START	PB PLS	Tool Change Cycle Start Pushbutton Pulse

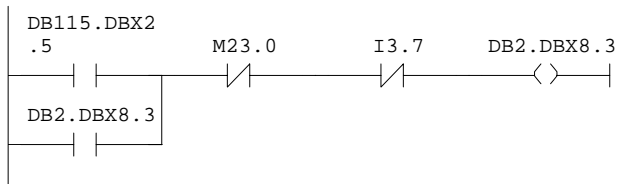
Network: 6 510218: Read-In Disable for Tool Setup Continue



Symbol information

DB115.DBX2.4	"EXTENDED M/H CODES".Extended_M114	Channel 1 Extended Decoding for M114
DB2.DBX8.2	"ALARM & MESSAGE".C1.RID_5102xx[18]	Read-in disable A.no.510200-510231
M23.0	TOOL/TOOL PB PLS	Tool to Tool Change Cycle Select Pushbutton Pulse
I3.7	NC RESET	MCP - NC Reset [K32]

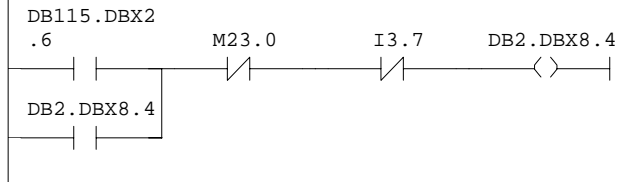
Network: 7 510219: Read-In Disable for Spindle Empty Continue (Tool Setup)



Symbol information

DB115.DBX2.5	"EXTENDED M/H CODES".Extended_M115	Channel 1 Extended Decoding for M115
DB2.DBX8.3	"ALARM & MESSAGE".C1.RID_5102xx[19]	Read-in disable A.no.510200-510231
M23.0	TOOL/TOOL PB PLS	Tool to Tool Change Cycle Select Pushbutton Pulse
I3.7	NC RESET	MCP - NC Reset [K32]

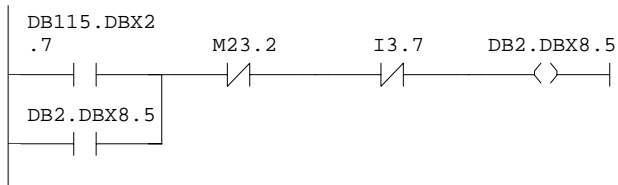
Network: 8 510220: Read-In Disable for Magazine Rotation Check



Symbol information

DB115.DBX2.6	"EXTENDED M/H CODES".Extended_M116	Channel 1 Extended Decoding for M116
DB2.DBX8.4	"ALARM & MESSAGE".C1.RID_5102xx[20]	Read-in disable A.no.510200-510231
M23.0	TOOL/TOOL PB PLS	Tool to Tool Change Cycle Select Pushbutton Pulse
I3.7	NC RESET	MCP - NC Reset [K32]

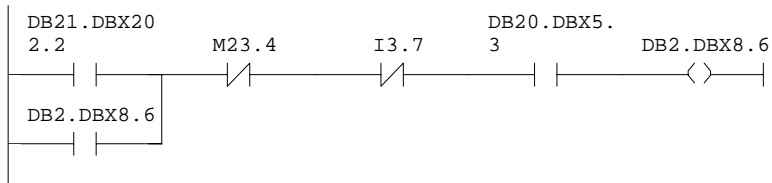
Network: 9 510221: Read-In Disable for Setup Tool-to-Magazine Continue



Symbol information

DB115.DBX2.7	"EXTENDED M/H CODES".Extended_M117	Channel 1 Extended Decoding for M117
DB2.DBX8.5	"ALARM & MESSAGE".C1.RID_5102xx[21]	Read-in disable A.no.510200-510231
M23.2	TOOL/MAG PB PLS	Tool to Magazine Cycle Select Pushbutton Pulse
I3.7	NC RESET	MCP - NC Reset [K32]

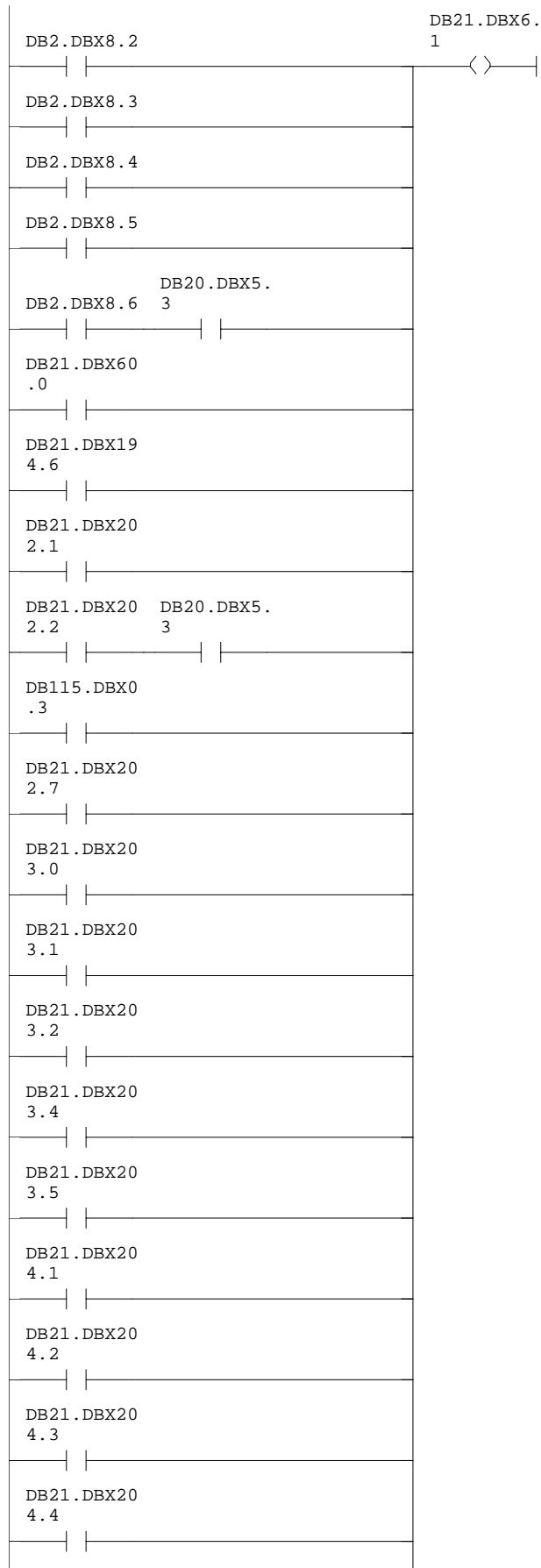
Network: 10 510222: Read-In Disable for Spindle Empty Continue (Tool Change)

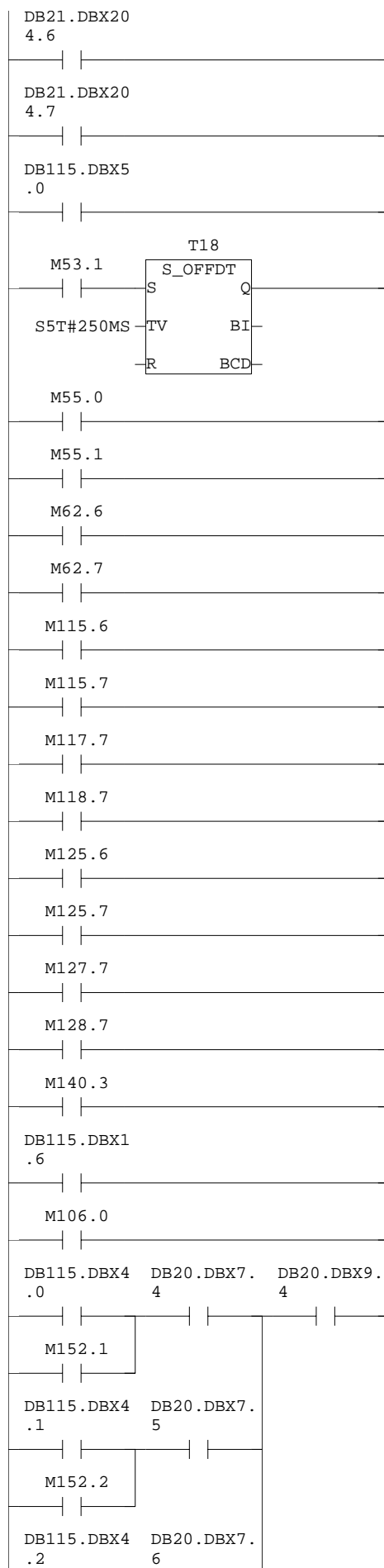


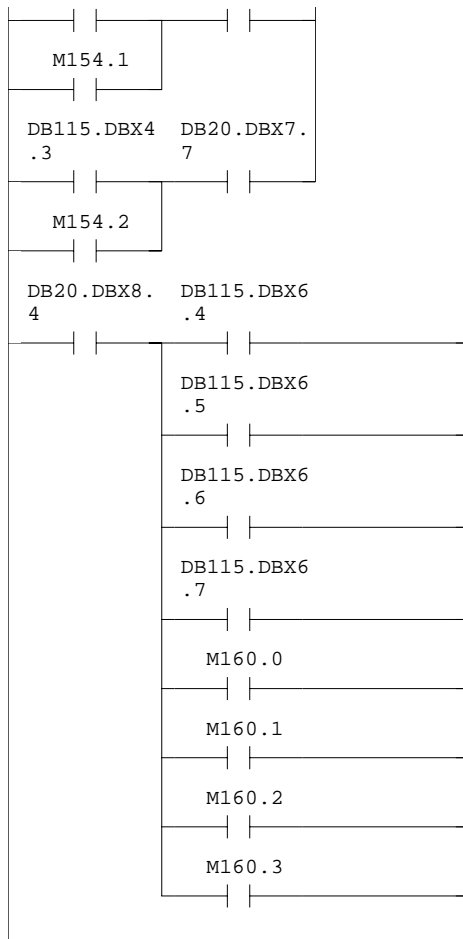
Symbol information

DB21.DBX20.2	"CHANNEL 1".MDyn[66]	
DB2.DBX8.6	"ALARM & MESSAGE".C1.RID_5102xx[22]	Read-in disable A.no.510200-510231
M23.4	CYC START PB PLS	Tool Change Cycle Start Pushbutton Pulse
I3.7	NC RESET	MCP - NC Reset [K32]
DB20.DBX5.3	"OPTIONS".Option_53	Tool Change Spindle Empty Check Message Enable

Network: 11	Channel 1 NC Read-In Disable
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Symbol information

DB2.DBX8.2	"ALARM & MESSAGE".C1.RID_5102xx[18]	Read-in disable A.no.510200-510231
DB2.DBX8.3	"ALARM & MESSAGE".C1.RID_5102xx[19]	Read-in disable A.no.510200-510231
DB2.DBX8.4	"ALARM & MESSAGE".C1.RID_5102xx[20]	Read-in disable A.no.510200-510231
DB2.DBX8.5	"ALARM & MESSAGE".C1.RID_5102xx[21]	Read-in disable A.no.510200-510231
DB2.DBX8.6	"ALARM & MESSAGE".C1.RID_5102xx[22]	Read-in disable A.no.510200-510231
DB20.DBX5.3	"OPTIONS".Option_53	Tool Change Spindle Empty Check Message Enable
DB21.DBX60.0	"CHANNEL 1".SlChange	S function 1 change
DB21.DBX194.6	"CHANNEL 1".MDyn[6]	
DB21.DBX202.1	"CHANNEL 1".MDyn[65]	
DB21.DBX202.2	"CHANNEL 1".MDyn[66]	
DB115.DBX0.3	"EXTENDED M/H CODES".Extended_M206	Channel 1 Extended Decoding for M206
DB21.DBX202.7	"CHANNEL 1".MDyn[71]	
DB21.DBX203.0	"CHANNEL 1".MDyn[72]	
DB21.DBX203.1	"CHANNEL 1".MDyn[73]	
DB21.DBX203.2	"CHANNEL 1".MDyn[74]	
DB21.DBX203.4	"CHANNEL 1".MDyn[76]	
DB21.DBX203.5	"CHANNEL 1".MDyn[77]	
DB21.DBX204.1	"CHANNEL 1".MDyn[81]	
DB21.DBX204.2	"CHANNEL 1".MDyn[82]	
DB21.DBX204.3	"CHANNEL 1".MDyn[83]	
DB21.DBX204.4	"CHANNEL 1".MDyn[84]	
DB21.DBX204.6	"CHANNEL 1".MDyn[86]	
DB21.DBX204.7	"CHANNEL 1".MDyn[87]	
DB115.DBX5.0	"EXTENDED M/H CODES".Extended_H65	Channel 1 Extended Decoding for H65
M53.1	SPIN ORT ACTIVE	Spindle Orientation Active
M55.0	SP G/CHGE R 1 REQ	Spindle Gear Change Range #1 (Low) Request
M55.1	SP G/CHGE R 2 REQ	Spindle Gear Change Range #2 (High) Request
M62.6	SPIN TOOL CLMP RID	Spindle Tool Unclamp NC Read-In Disable
M62.7	SPIN TOOL UCLP RID	Spindle Tool Clamp NC Read-In Disable
M115.6	T MAG #1 R O RID	Tool Magazine #1 Auto Rotation for Old Tool NC Read-In Disable
M115.7	T MAG #1 R N RID	Tool Magazine #1 Auto Rotation for New Tool NC Read-In Disable
M117.7	T MAG #1 RET RID	Tool Magazine #1 Retract NC Read-In Disable
M118.7	T MAG #1 ADV RID	Tool Magazine #1 Advance NC Read-In Disable
M125.6	T MAG #2 R O RID	Tool Magazine #2 Auto Rotation for Old Tool NC Read-In Disable
M125.7	T MAG #2 R N RID	Tool Magazine #2 Auto Rotation for New Tool NC Read-In Disable
M127.7	T MAG #2 RET RID	Tool Magazine #2 Retract NC Read-In Disable
M128.7	T MAG #2 ADV RID	Tool Magazine #2 Advance NC Read-In Disable
M140.3	VAR TRANS RID	Variable Transfer (FB3) NC Read-In Disable

DB115.DBX1.6	"EXTENDED M/H CODES".Extended_M106	Channel 1 Extended Decoding for M106
M106.0	T S/U MAG ROT RID	Tool Setup Magazine Rotation NC Read-In Disable
DB115.DBX4.0	"EXTENDED M/H CODES".Extended_M190	Channel 1 Extended Decoding for M190
M152.1	CUST M190 NC RID	Customer Specific M190 NC Read-In Disable
DB20.DBX7.4	"OPTIONS".Option_74	M190 Output with NC Read-In Disable
DB115.DBX4.1	"EXTENDED M/H CODES".Extended_M191	Channel 1 Extended Decoding for M191
M152.2	CUST M191 NC RID	Customer Specific M191 NC Read-In Disable
DB20.DBX7.5	"OPTIONS".Option_75	M191 with NC Read-In Disable
DB115.DBX4.2	"EXTENDED M/H CODES".Extended_M192	Channel 1 Extended Decoding for M192
M154.1	CUST M192 NC RID	Customer Specific M192 NC Read-In Disable
DB20.DBX7.6	"OPTIONS".Option_76	M192 Output with NC Read-In Disable
DB115.DBX4.3	"EXTENDED M/H CODES".Extended_M193	Channel 1 Extended Decoding for M193
M154.2	CUST M193 NC RID	Customer Specific M193 NC Read-In Disable
DB20.DBX7.7	"OPTIONS".Option_77	M193 with NC Read-In Disable
DB20.DBX9.4	"OPTIONS".Option_94	Customer Specific M-Codes Group #2 Active
DB20.DBX8.4	"OPTIONS".Option_84	Midaco Pallet System Active
DB115.DBX6.4	"EXTENDED M/H CODES".Extended_M164	Channel 1 Extended Decoding for M164
DB115.DBX6.5	"EXTENDED M/H CODES".Extended_M165	Channel 1 Extended Decoding for M165
DB115.DBX6.6	"EXTENDED M/H CODES".Extended_M166	Channel 1 Extended Decoding for M166
DB115.DBX6.7	"EXTENDED M/H CODES".Extended_M167	Channel 1 Extended Decoding for M167
M160.0	MD PALLET NC RID 1	Midaco Pallet NC Read-In Disable #1
M160.1	MD PALLET NC RID 2	Midaco Pallet NC Read-In Disable #2
M160.2	MD PALLET NC RID 3	Midaco Pallet NC Read-In Disable #3
M160.3	MD PALLET NC RID 4	Midaco Pallet NC Read-In Disable #4
DB21.DBX6.1	"CHANNEL 1".Q_RIdisable	Read-in disable

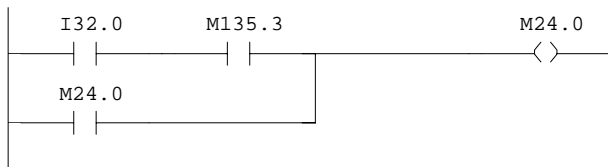
FC45 - <offline>

"NC START/STOP" NC Cycle Start/Stop Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 2
Time stamp Code: 02/12/01 09:37:57 AMAM
Interface: 10/07/99 06:03:28 AMAM
Lengths (block/logic/data): 00646 00490 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

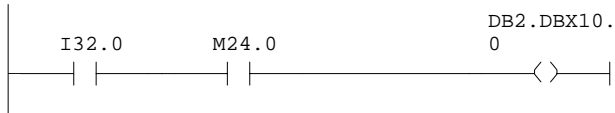
Block: FC45 NC Start/Stop & NC Start Disables

Network: 1 ASUP Interrupt Assignment Error Buffer

**Symbol information**

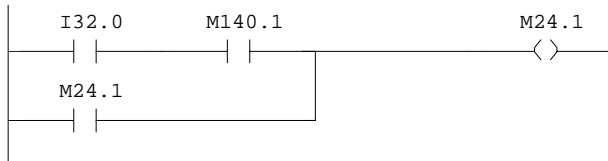
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
M135.3 PI SERV ASUP ERR PI Services ASUP Interrupt Setup Interrupt 8 Error
M24.0 ASUP ASGN ERR BFR ASUP Assignment Error Buffer

Network: 2 510300: NC Start Disable for ASUP Interrupt Assignment Error

**Symbol information**

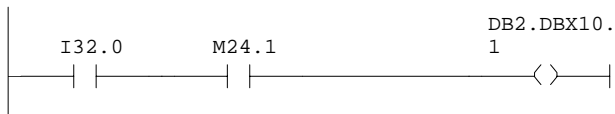
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
M24.0 ASUP ASGN ERR BFR ASUP Assignment Error Buffer
DB2.DBX10.0 "ALARM & MESSAGE".C1.NCSD_5103xx[0] NC start disable A.no.510300-510315

Network: 3 ATC Data Transfer Error Buffer

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
M140.1 VAR TRANS NC ERR Variable Transfer PLC to NC (FB3) Error
M24.1 ATC D TRN ERR BFR ATC Data Transfer Error Buffer

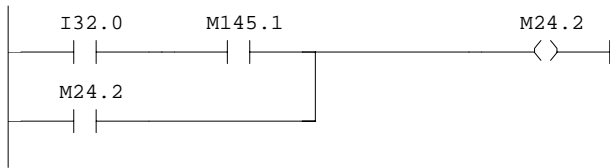
Network: 4 510301: NC Start Disable for ATC Data Transfer Error



Symbol information

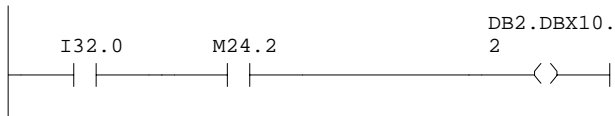
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M24.1	ATC D TRN ERR BFR	ATC Data Transfer Error Buffer
DB2.DBX10.1	"ALARM & MESSAGE".C1.NCSD_5103xx[1]	NC start disable A.no.510300-510315

Network: 5 GUD Pointer Address Get Function Buffer

**Symbol information**

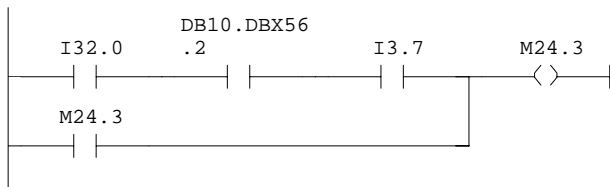
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M145.1	GET GUD ERROR 1	Get GUD Pointer Address with FB5 Error #1
M24.2	GUD ADDR ERR BFR	GUD Address Pointer Error Buffer

Network: 6 510302: NC Start Disable for GUD Pointer Address Get Function

**Symbol information**

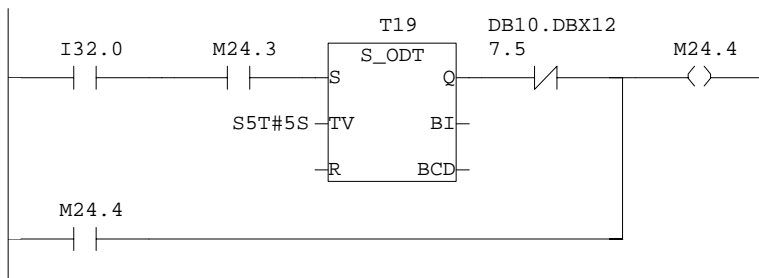
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M24.2	GUD ADDR ERR BFR	GUD Address Pointer Error Buffer
DB2.DBX10.2	"ALARM & MESSAGE".C1.NCSD_5103xx[2]	NC start disable A.no.510300-510315

Network: 7 E_ASUP Exucution Latch

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB10.DBX56.2	"NC".I_EMERGENCY_Ackn	Acknowledge emergency stop
I3.7	NC RESET	MCP - NC Reset [K32]
M24.3	SM EAS EX LATCH	ShopMill E_ASUP Execute Latch

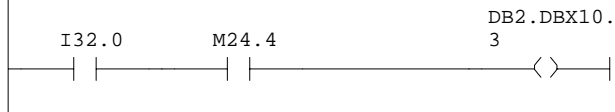
Network: 8 E_ASUP Not Executed Buffer

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M24.3	SM EAS EX LATCH	ShopMill E_ASUP Execute Latch
DB10.DBX127.5	"NC".I_Set_Inp30	Set digital NCK input 30

M24.4 SM EAS EX ERR BFR ShopMill E_ASUP Execute Error Buffer

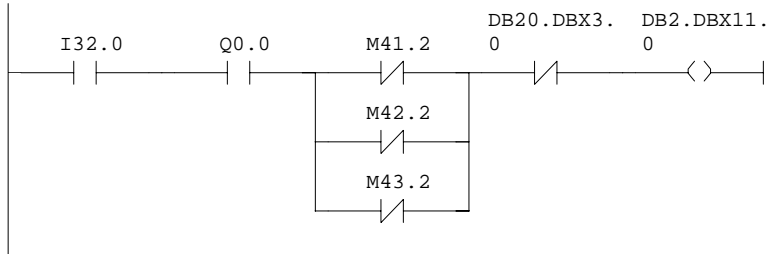
Network: 9 510303: NC Start Disable for E_ASUP Not Executed



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M24.4	SM EAS EX ERR BFR	ShopMill E_ASUP Execute Error Buffer
DB2.DBX10.3	"ALARM & MESSAGE".C1.NCSD_5103xx[3]	NC start disable A.no.510300-510315

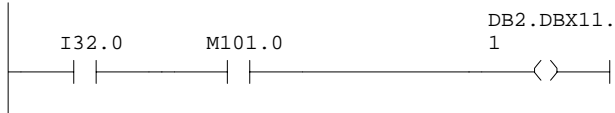
Network: 10 510308: NC Start Disable for Axes Not Referenced



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q0.0	AUTO MODE LED	MCP - Auto Mode LED [L21]
M41.2	X AXIS REFD	X Axis Referenced to Active Measuring System
M42.2	Y AXIS REFD	Y Axis Referenced to Active Measuring System
M43.2	Z AXIS REFD	Z Axis Referenced to Active Measuring System
DB20.DBX3.0	"OPTIONS".Option_30	Cycle Start with Axes Not Referenced Active
DB2.DBX11.0	"ALARM & MESSAGE".C1.NCSD_5103xx[8]	NC start disable A.no.510300-510315

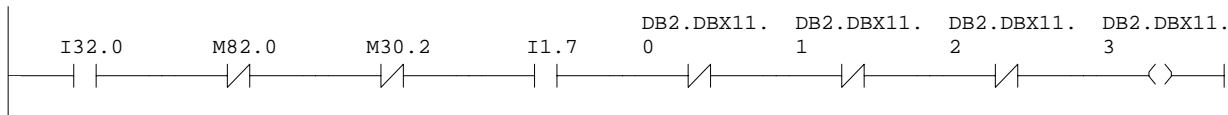
Network: 11 510309: NC Start Disable for Tool Change Interrupted



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M101.0	T CHG CYC INT'D	Tool Change Cycle Interrupted
DB2.DBX11.1	"ALARM & MESSAGE".C1.NCSD_5103xx[9]	NC start disable A.no.510300-510315

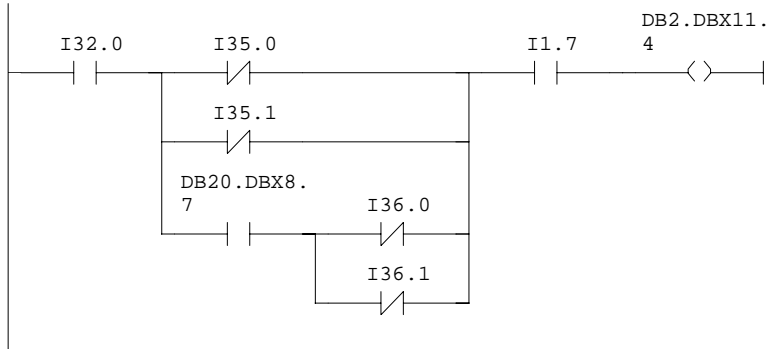
Network: 12 510311: NC Start Disable for Safety Door Open



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
M30.2	S BLOCK SEL BFR	Single Block Select Buffer
I1.7	NC CYCLE START	MCP - NC Cycle Start [K43]
DB2.DBX11.0	"ALARM & MESSAGE".C1.NCSD_5103xx[8]	NC start disable A.no.510300-510315
DB2.DBX11.1	"ALARM & MESSAGE".C1.NCSD_5103xx[9]	NC start disable A.no.510300-510315
DB2.DBX11.2	"ALARM & MESSAGE".C1.NCSD_5103xx[10]	NC start disable A.no.510300-510315
DB2.DBX11.3	"ALARM & MESSAGE".C1.NCSD_5103xx[11]	NC start disable A.no.510300-510315

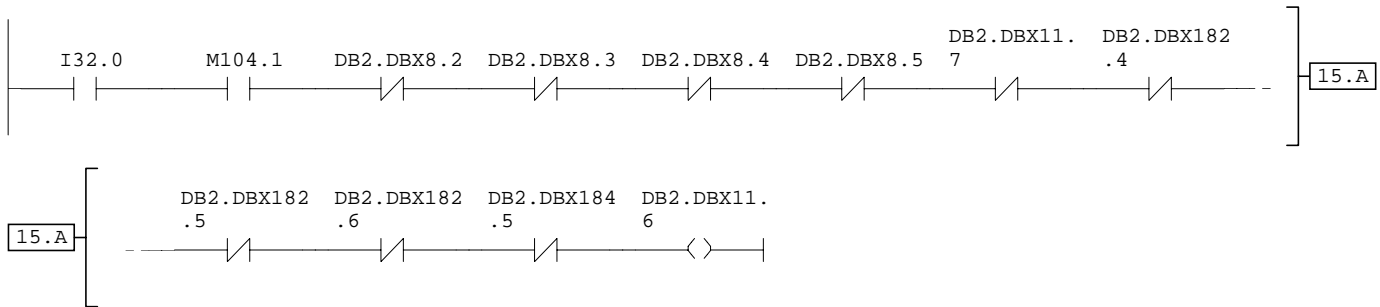
Network: 13	510312: NC Start Disable for Tool Magazine Out of Position
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**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I35.0	T MAG #1 CNT 1 PX	SQP1 - Tool Magazine #1 Rotation Count #1 Proximity
I35.1	T MAG #1 CNT 2 PX	SQP2 - Tool Magazine #1 Rotation Count #2 Proximity
DB20.DBX8.7	"OPTIONS".Option_87	2nd Tool Magazine Active
I36.0	T MAG #2 CNT 1 PX	SQP3 - Tool Magazine #2 Rotation Count #1 Proximity
I36.1	T MAG #2 CNT 2 PX	SQP4 - Tool Magazine #2 Rotation Count #2 Proximity
I1.7	NC CYCLE START	MCP - NC Cycle Start [K43]
DB2.DBX11.4	"ALARM & MESSAGE".C1.NCSD_5103xx[12]	NC start disable A.no.510300-510315

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M104.0	T S/U CYC MAG #1	Tool Setup Cycle Magazine #1
DB2.DBX8.2	"ALARM & MESSAGE".C1.RID_5102xx[18]	Read-in disable A.no.510200-510231
DB2.DBX8.3	"ALARM & MESSAGE".C1.RID_5102xx[19]	Read-in disable A.no.510200-510231
DB2.DBX8.4	"ALARM & MESSAGE".C1.RID_5102xx[20]	Read-in disable A.no.510200-510231
DB2.DBX8.5	"ALARM & MESSAGE".C1.RID_5102xx[21]	Read-in disable A.no.510200-510231
DB2.DBX11.7	"ALARM & MESSAGE".C1.NCSD_5103xx[15]	NC start disable A.no.510300-510315
DB2.DBX182.4	"ALARM & MESSAGE".A7000xx[20]	Alarm 700000-700063 (user area 0)
DB2.DBX182.5	"ALARM & MESSAGE".A7000xx[21]	Alarm 700000-700063 (user area 0)
DB2.DBX182.6	"ALARM & MESSAGE".A7000xx[22]	Alarm 700000-700063 (user area 0)
DB2.DBX184.5	"ALARM & MESSAGE".A7000xx[37]	Alarm 700000-700063 (user area 0)
DB2.DBX11.5	"ALARM & MESSAGE".C1.NCSD_5103xx[13]	NC start disable A.no.510300-510315

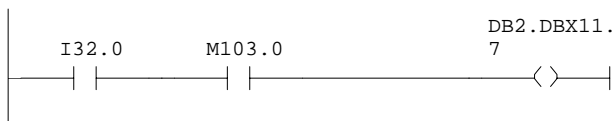
Network: 15 510314: NC Start Disable for Tool Magazine #2 Tool Setup



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M104.1	T S/U CYC MAG #2	Tool Setup Cycle Magazine #2
DB2.DBX8.2	"ALARM & MESSAGE".C1.RID_5102xx[18]	Read-in disable A.no.510200-510231
DB2.DBX8.3	"ALARM & MESSAGE".C1.RID_5102xx[19]	Read-in disable A.no.510200-510231
DB2.DBX8.4	"ALARM & MESSAGE".C1.RID_5102xx[20]	Read-in disable A.no.510200-510231
DB2.DBX8.5	"ALARM & MESSAGE".C1.RID_5102xx[21]	Read-in disable A.no.510200-510231
DB2.DBX11.7	"ALARM & MESSAGE".C1.NCSD_5103xx[15]	NC start disable A.no.510300-510315
DB2.DBX182.4	"ALARM & MESSAGE".A7000xx[20]	Alarm 700000-700063 (user area 0)
DB2.DBX182.5	"ALARM & MESSAGE".A7000xx[21]	Alarm 700000-700063 (user area 0)
DB2.DBX182.6	"ALARM & MESSAGE".A7000xx[22]	Alarm 700000-700063 (user area 0)
DB2.DBX184.5	"ALARM & MESSAGE".A7000xx[37]	Alarm 700000-700063 (user area 0)
DB2.DBX11.6	"ALARM & MESSAGE".C1.NCSD_5103xx[14]	NC start disable A.no.510300-510315

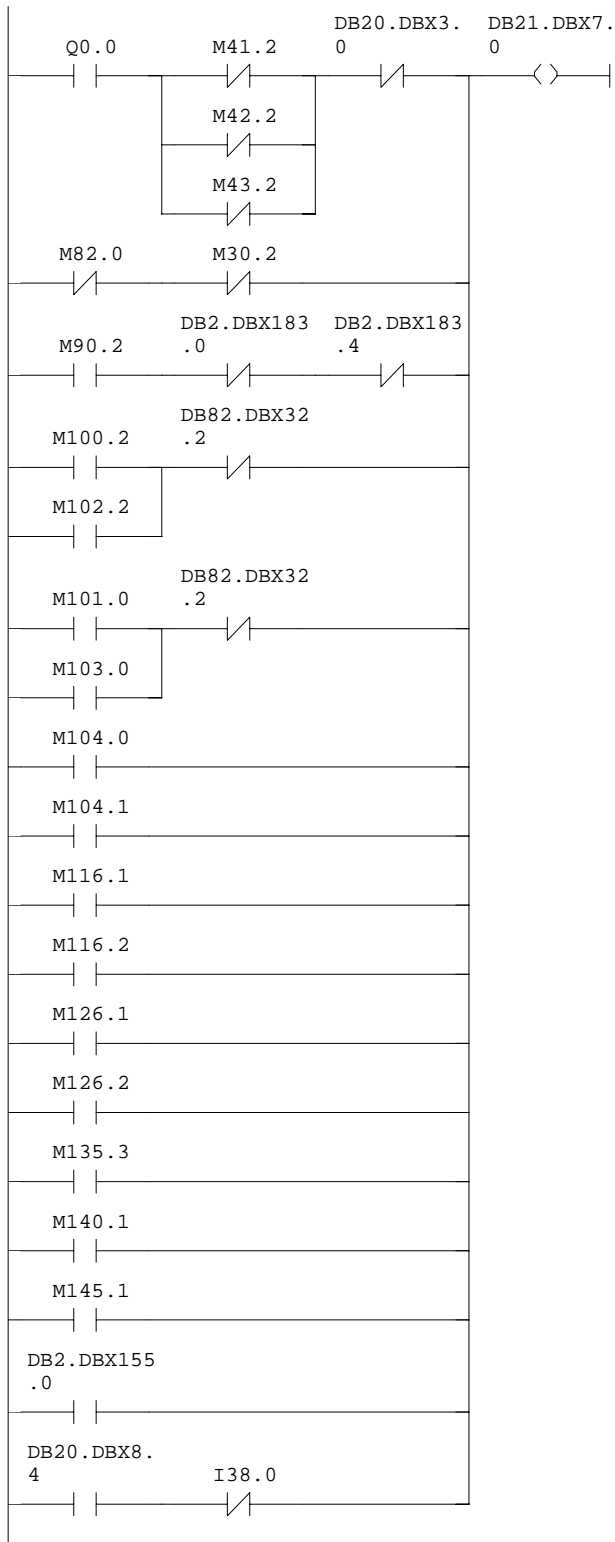
Network: 16 500315: NC Start Disable for Tool Setup Interrupted



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M103.0	T S/U CYC INT'D	Tool Setup Cycle Interrupted
DB2.DBX11.7	"ALARM & MESSAGE".C1.NCSD_5103xx[15]	NC start disable A.no.510300-510315

Network: 17 Channel General NC Start Disable

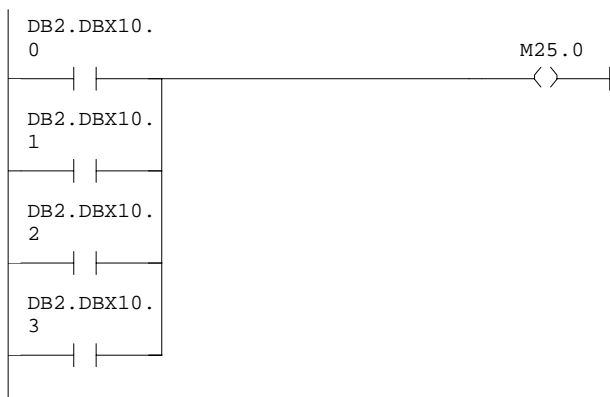
**Symbol information**

Q0.0	AUTO MODE LED
M41.2	X AXIS REFD
M42.2	Y AXIS REFD
M43.2	Z AXIS REFD
DB20.DBX3.0	"OPTIONS".Option_30
M82.0	M/C DOOR CLS BFR
M30.2	S BLOCK SEL BFR

MCP - Auto Mode LED [L21]
X Axis Referenced to Active Measuring System
Y Axis Referenced to Active Measuring System
Z Axis Referenced to Active Measuring System
Cycle Start with Axes Not Referenced Active
Machine Safety Door Close Buffer
Single Block Select Buffer

M90.2	MACHINE	FAULT	Any Machine Fault
DB2.DBX183.0	"ALARM & MESSAGE".A7000xx[24]		Alarm 700000-700063 (user area 0)
DB2.DBX183.4	"ALARM & MESSAGE".A7000xx[28]		Alarm 700000-700063 (user area 0)
M100.2	T CHG CYC	ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC	ACTIVE	Tool Setup Cycle Active
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped		
M101.0	T CHG CYC	INT'D	Tool Change Cycle Interrupted
M103.0	T S/U CYC	INT'D	Tool Setup Cycle Interrupted
M104.0	T S/U CYC	MAG #1	Tool Setup Cycle Magazine #1
M104.1	T S/U CYC	MAG #2	Tool Setup Cycle Magazine #2
M116.1	T MAG #1	M CW RQ	Tool Magazine #1 Manual CW Rotation Request
M116.2	T MAG #1	M CCW RQ	Tool Magazine #1 Manual Rotation Request
M126.1	T MAG #2	M CW RQ	Tool Magazine #2 Manual CW Rotation Request
M126.2	T MAG #2	M CCW RQ	Tool Magazine #2 Manual Rotation Request
M135.3	PI SERV	ASUP ERR	PI Services ASUP Interrupt Setup Interrupt 8 Error
M140.1	VAR TRANS	NC ERR	Variable Transfer PLC to NC (FB3) Error
M145.1	GET GUD	ERROR 1	Get GUD Pointer Address with FB5 Error #1
DB2.DBX155.0	"ALARM & MESSAGE"._6FdStop6006xx[8]		Feed stop axis/spindle 6
DB20.DBX8.4	"OPTIONS".Option_84		Midaco Pallet System Active
I38.0	MD PALLET	DOOR LS	Midaco Pallet Door Limit Switch
DB21.DBX7.0	"CHANNEL 1".Q_NCStartDisabl		NC start disable

Network: 18	NC Start Disable Fault
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**Symbol information**

DB2.DBX10.0	"ALARM & MESSAGE".C1.NCSD_5103xx[0]	NC start disable A.no.510300-510315
DB2.DBX10.1	"ALARM & MESSAGE".C1.NCSD_5103xx[1]	NC start disable A.no.510300-510315
DB2.DBX10.2	"ALARM & MESSAGE".C1.NCSD_5103xx[2]	NC start disable A.no.510300-510315
DB2.DBX10.3	"ALARM & MESSAGE".C1.NCSD_5103xx[3]	NC start disable A.no.510300-510315
M25.0	NC START DIS FLT	NC Start Disable Fault

FC46 - <offline>

"NC PGM CONTROL"NC Program Control Functions [User]

Name: HardingeFamily: VMC

Author: MGSVersion: 1.0

Block version: 2

Time stamp Code: 02/07/01 01:44:51 AMAM

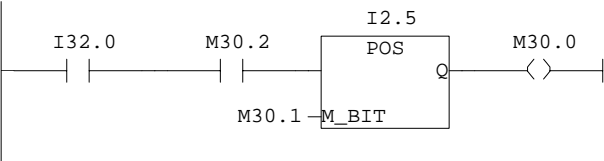
Interface: 11/04/99 12:01:52 PMPM

Lengths (block/logic/data): 00716 00554 00002

Address	Declaration	Name	Type	Start value	Comment
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	out				
	in_out				
	temp				

Block: FC46 NC Program Control

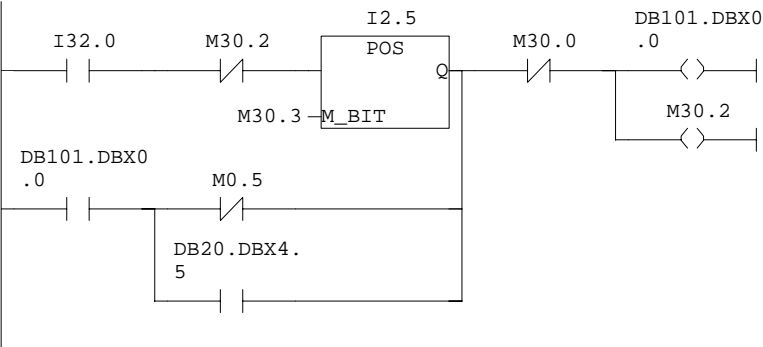
Network: 1Single Block Deselect



Symbol information

I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
M30.2	S BLOCK	SEL BFR	Single Block Select Buffer
I2.5	S/BLOCK	SELECT	MCP - Single Block Select [K4]
M30.1	S BLOCK	DES REM	Single Block Deselect Remember
M30.0	S BLOCK	DES PLS	Single Block Deselect Pulse

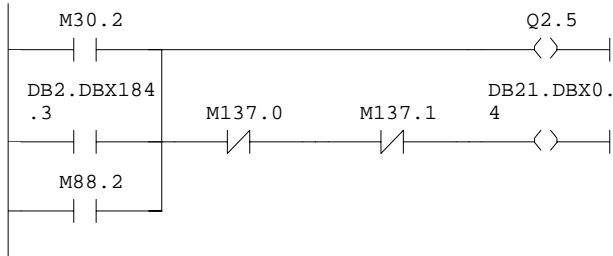
Network: 2Single Block Select Buffer



Symbol information

I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
M30.2	S BLOCK	SEL BFR	Single Block Select Buffer
I2.5	S/BLOCK	SELECT	MCP - Single Block Select [K4]
M30.3	S BLOCK	SEL REM	Single Block Select Remember
DB101.DBX0.0	"PGM CONTROL BUFFER".Single_Block_Buffer		Program Control Single Block Marker Buffer
M0.5	PLC START PULSE		PLC Start Pulse
DB20.DBX4.5	"OPTIONS".Option_45		Program Control Function Power Off Memory Active
M30.0	S BLOCK	DES PLS	Single Block Deselect Pulse

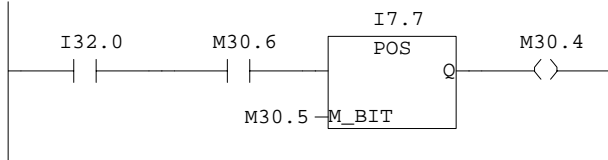
Network: 3 Single Block Active



Symbol information

M30.2	S BLOCK	SEL BFR	Single Block Select Buffer
DB2.DBX184.3	"ALARM & MESSAGE".A7000xx[35]	Alarm 700000-700063 (user area 0)	
M88.2	LUBE INT	MSG BFR	Lubrication Interval Message Buffer
Q2.5	S/BLOCK	LED	MCP - Single Block LED [L4]
M137.0	ASUP CALL	REQUEST	ASUP Call (FC9) Request
M137.1	ASUP CALL	ACTIVE	ASUP Call (FC9) Active
DB21.DBX0.4	"CHANNEL 1".Q_SBL		Activate single block

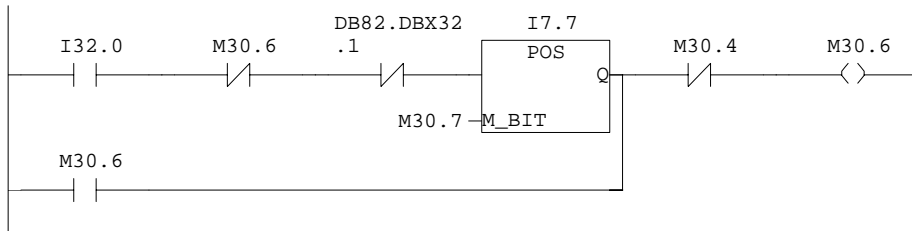
Network: 4 Dry Run Deselect



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M30.6	DRY RUN	SEL BFR Dry Run Select Buffer
I7.7	DRY RUN	SELECT MCP - Dry Run Select [K5]
M30.5	DRY RUN	DES REM Dry Run Deselect Remember
M30.4	DRY RUN	DES PLS Dry Run Deselect Pulse

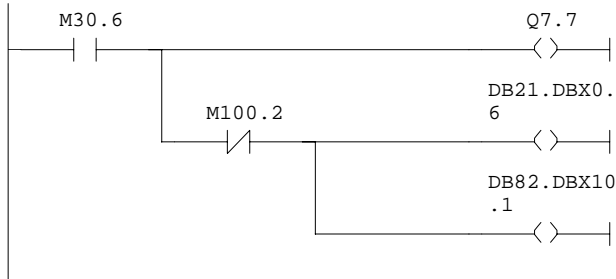
Network: 5 Dry Run Select Buffer



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M30.6	DRY RUN	SEL BFR Dry Run Select Buffer
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
I7.7	DRY RUN	SELECT MCP - Dry Run Select [K5]
M30.7	DRY RUN	SEL REM Dry Run Select Remember
M30.4	DRY RUN	DES PLS Dry Run Deselect Pulse

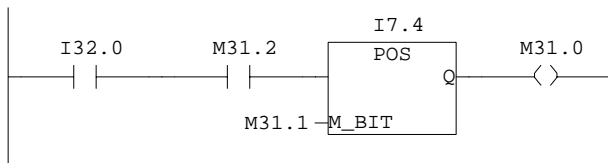
Network: 6 Dry Run Active



Symbol information

M30.6	DRY RUN	SEL BFR	Dry Run Select Buffer
Q7.7	DRY RUN	LED	MCP - Dry Run LED [L5]
M100.2	T CHG CYC	ACTIVE	Tool Change Cycle Active
DB21.DBX0.6	"CHANNEL 1".Q_DRY		Activate dry run feedrate
DB82.DBX10.1	"SPS".CMM_IN.dry_run_request		dry run request

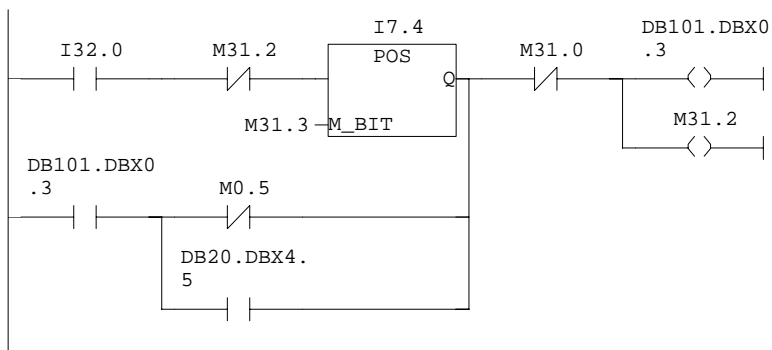
Network: 7 Block Skip Deselect



Symbol information

I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
M31.2	BLCK SKIP	SEL BFR	Block Skip Select Buffer
I7.4	BLCK SKIP	SELECT	MCP - Block Skip Select [K15]
M31.1	BLCK SKIP	DES REM	Block Skip Deselect Remember
M31.0	BLCK SKIP	DES PLS	Block Skip Deselect Pulse

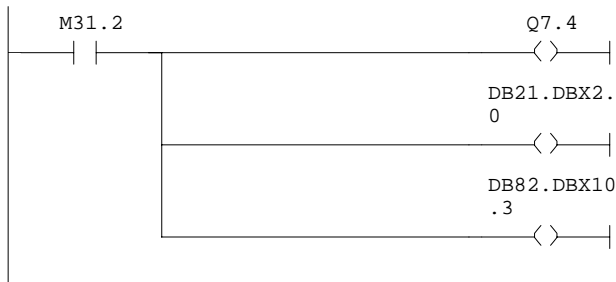
Network: 8 Block Skip Select Buffer



Symbol information

I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
M31.2	BLCK SKIP	SEL BFR	Block Skip Select Buffer
I7.4	BLCK SKIP	SELECT	MCP - Block Skip Select [K15]
M31.3	BCLCK SKIP	SEL REM	Block Skip Select Remember
DB101.DBX0.3	"PGM CONTROL BUFFER".Block_Skip_Buffer		Program Control Block Skip Marker Buffer
M0.5	PLC START	PULSE	PLC Start Pulse
DB20.DBX4.5	"OPTIONS".Option_45		Program Control Function Power Off Memory Active
M31.0	BLCK SKIP	DES PLS	Block Skip Deselect Pulse

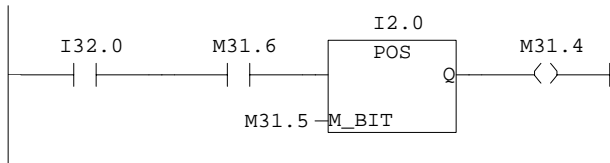
Network: 9 Block Skip Active



Symbol information

M31.2	BLCK SKIP SEL BFR	Block Skip Select Buffer
Q7.4	BLCK SKIP LED	MCP - Block Skip LED [L15]
DB21.DBX2.0	"CHANNEL 1".Q_SKP0	Activate skip block \0
DB82.DBX10.3	"SPS".CMM_IN.skip_block_request	skip block request

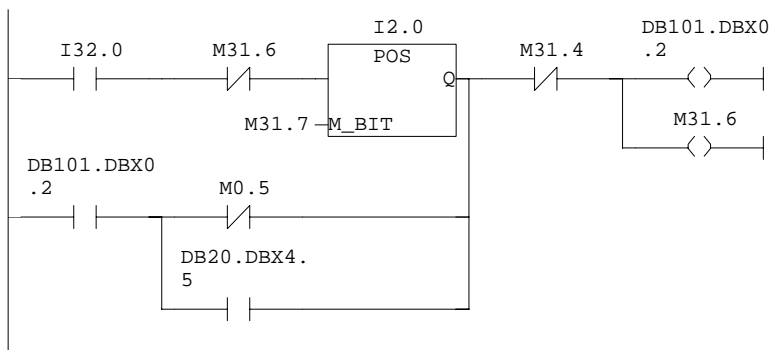
Network: 10 Optional Stop (M01) Deselect



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M31.6	OPT STOP SEL BFR	Optional Stop (M01) Select Buffer
I2.0	OPT STOP SELECT	MCP - Optional Stop Select [K14]
M31.5	OPT STOP DES REM	Optional Stop (M01) Deselect Remember
M31.4	OPT STOP DES PLS	Optional Stop (M01) Deselect Pulse

Network: 11 Optional Stop (M01) Select Buffer



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M31.6	OPT STOP SEL BFR	Optional Stop (M01) Select Buffer
I2.0	OPT STOP SELECT	MCP - Optional Stop Select [K14]
M31.7	OPT STOP SEL REM	Optional Stop (M01) Select Remember
DB101.DBX0.2	"PGM CONTROL BUFFER".Optional_Stop_Buffer	Program Control Optional Stop Marker Buffer
M0.5	PLC START PULSE	PLC Start Pulse
DB20.DBX4.5	"OPTIONS".Option_45	Program Control Function Power Off Memory Active
M31.4	OPT STOP DES PLS	Optional Stop (M01) Deselect Pulse

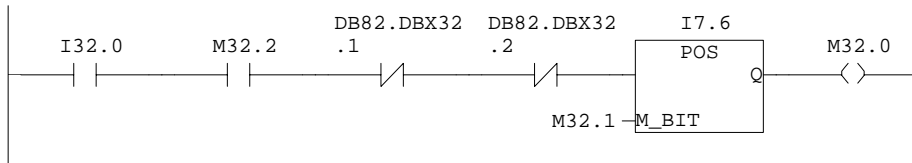
Network: 12 Optional Stop (M01) Active



Symbol information

M31.6	OPT STOP SEL BFR	Optional Stop (M01) Select Buffer
Q2.0	OPT STOP LED	MCP - Optional Stop LED [L14]
DB21.DBX0.5	"CHANNEL 1".Q_M01	Activate M01
DB82.DBX10.2	"SPS".CMM_IN.m01_request	m01 request

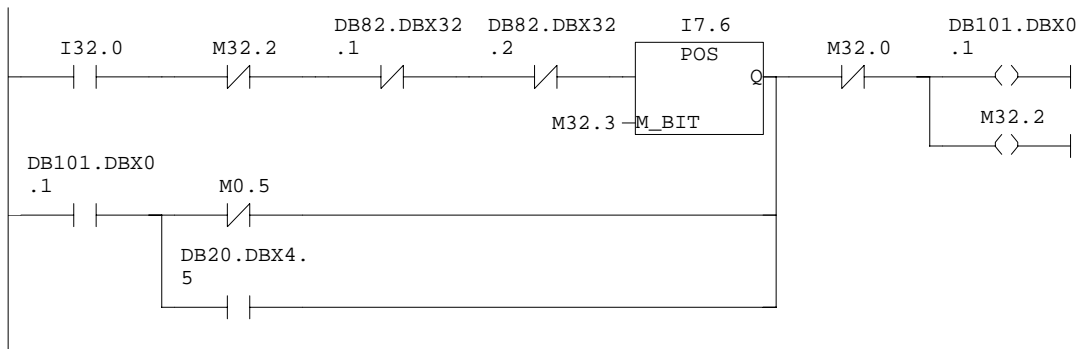
Network: 13 Program Test Deselect



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M32.2	PGM TEST SEL BFR	Program Test Select Buffer
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped	
I7.6	PGM TEST SELECT	MCP - Program Test Select [K6]
M32.1	PGM TEST DES REM	Program Test Deselect Remember
M32.0	PGM TEST DES PLS	Program Test Deselect Pulse

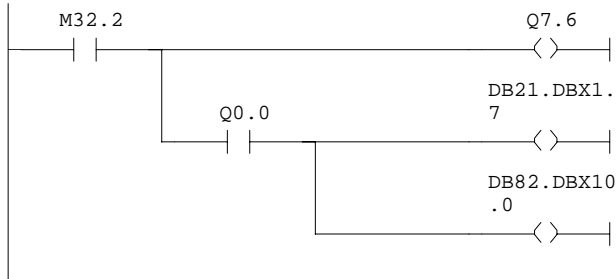
Network: 14 Program Test Select Buffer



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M32.2	PGM TEST SEL BFR	Program Test Select Buffer
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped	
I7.6	PGM TEST SELECT	MCP - Program Test Select [K6]
M32.3	PGM TEST SEL REM	Program Test Select Remember
DB101.DBX0.1	"PGM CONTROL BUFFER".Program_Test_Buffer	Program Control Program Test Marker Buffer
M0.5	PLC START PULSE	PLC Start Pulse
DB20.DBX4.5	"OPTIONS".Option_45	Program Control Function Power Off Memory Active
M32.0	PGM TEST DES PLS	Program Test Deselect Pulse

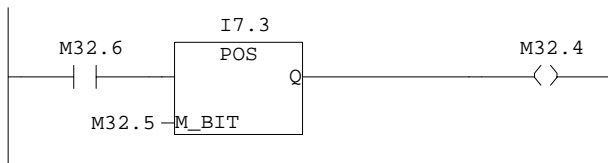
Network: 15 Program Test Active



Symbol information

M32.2	PGM TEST	SEL BFR	Program Test Select Buffer
Q7.6	PGM TEST	LED	MCP - Program Test LED [L6]
Q0.0	AUTO MODE	LED	MCP - Auto Mode LED [L21]
DB21.DBX1.7	"CHANNEL 1".Q_ProgTest		Activate program test
DB82.DBX10.0	"SPS".CMM_IN.program_test_request		program test request

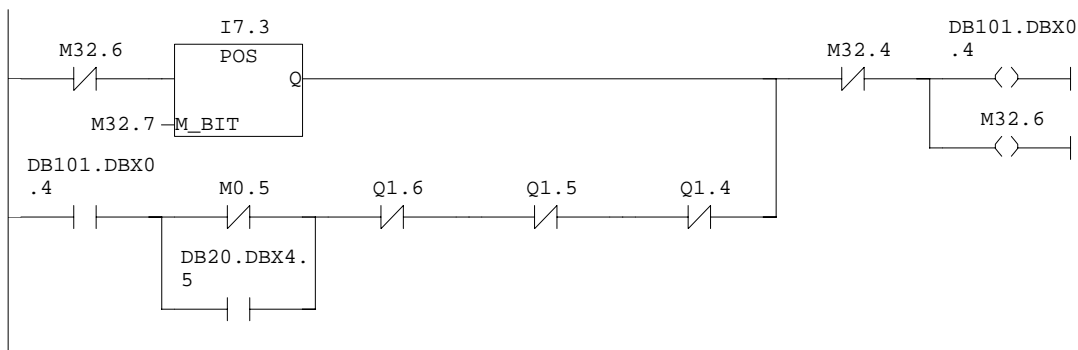
Network: 16 Rapid Override Deselect



Symbol information

M32.6	RAPID OR	SEL BFR	Rapid Traverse Override Select Buffer
I7.3	RAPID OR	SELECT	MCP - Rapid Traverse Override Select [K16]
M32.5	RAPID OR	DES REM	Rapid Traverse Override Deselect Remember
M32.4	RAPID OR	DES PLS	Rapid Traverse Override Deselect Pulse

Network: 17 Rapid Override Select Buffer

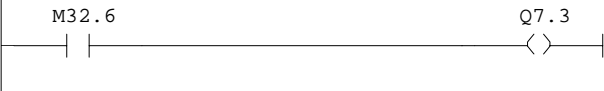


Symbol information

M32.6	RAPID OR	SEL BFR	Rapid Traverse Override Select Buffer
I7.3	RAPID OR	SELECT	MCP - Rapid Traverse Override Select [K16]
M32.7	RAPID OR	SEL REM	Rapid Traverse Override Select Remember
DB101.DBX0.4	"PGM CONTROL BUFFER".Rapid_Override_Buffer		Program Control Rapid Override Marker Buffer
M0.5	PLC START	PULSE	PLC Start Pulse
DB20.DBX4.5	"OPTIONS".Option_45		Program Control Function Power Off Memory Active
Q1.6	RAPID OR	0% LED	MCP - Rapid Override 0% LED [L18]
Q1.5	RAPID OR	20% LED	MCP - Rapid Override 20% LED [L19]
Q1.4	RAPID OR	50% LED	MCP - Rapid Override 50% LED [L20]
M32.4	RAPID OR	DES PLS	Rapid Traverse Override Deselect Pulse

Network: 18

Rapid Override Active MCP LED



Symbol information

M32.6	RAPID OR	SEL BFR	Rapid Traverse Override Select Buffer
Q7.3	RAPID OR	LED	MCP - Rapid Traverse Override LED [L16]

FC47 - <offline>

"NC AUXILIARY" NC Auxiliary Functions [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 2
Time stamp Code: 02/14/01 06:06:25 AMAM
Interface: 10/06/99 11:18:54 PMPM
Lengths (block/logic/data): 01484 01314 00002

Address	Declaration	Name	Type	Start value	Comment
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	out				
	in_out				
	temp				

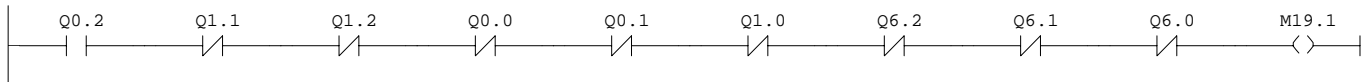
Block: FC47 NC Miscellaneous Functions

Network: 1 NC in Manual Mode

**Symbol information**

Q0.2	JOG MODE	LED	MCP - Jog Mode LED [L1]
M19.0	MANUAL	MODE	NC in Manual Mode

Network: 2 NC in Jog Mode Only

**Symbol information**

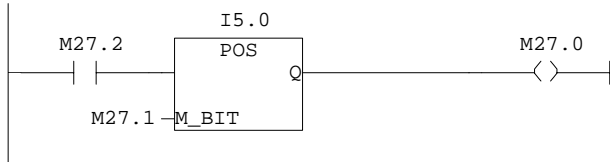
Q0.2	JOG MODE	LED	MCP - Jog Mode LED [L1]
Q1.1	REP MODE	LED	MCP - Repos Mode LED [L2]
Q1.2	REF MODE	LED	MCP - Reference Mode LED [L3]
Q0.0	AUTO MODE	LED	MCP - Auto Mode LED [L21]
Q0.1	MDA MODE	LED	MCP - MDA Mode LED [L11]
Q1.0	INC1 MODE	LED	MCP - Increment 1 Mode LED [L12]
Q6.2	INC2 MODE	LED	MCP - Incremental 10 Mode LED [L13]
Q6.1	INC3 MODE	LED	MCP - Incremental Mode 100 Mode LED [L22]
Q6.0	INC4 MODE	LED	MCP - Incremental Mode 1000 Mode LED [L23]
M19.1	JOG MODE	ONLY	NC in Jog Mode Only

Network: 3 NC in Automatic Mode

**Symbol information**

Q0.0	AUTO MODE	LED	MCP - Auto Mode LED [L21]
Q0.1	MDA MODE	LED	MCP - MDA Mode LED [L11]
M19.2	AUTOMATIC	MODE	NC in Automatic Mode

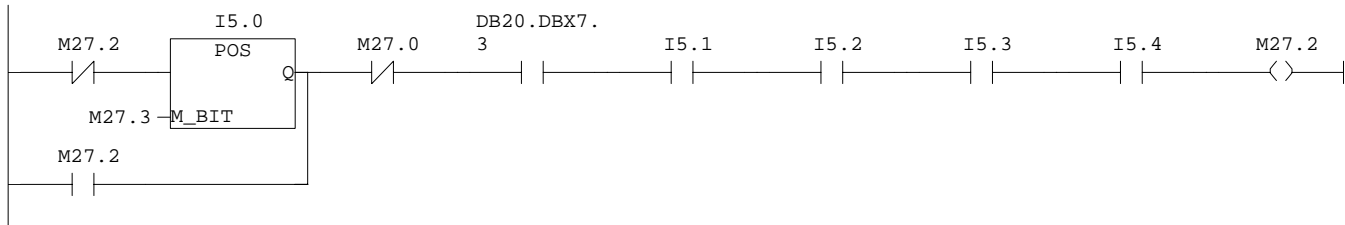
Network: 4 X Axis Deselect



Symbol information

M27.2	X AXIS	SEL BFR	X Axis Select Buffer
I5.0	4 AX +VE	X AX SEL MCP - 4 Axis +VE Jog or X Axis Select (5 Axis Variant)	[K28]
M27.1	X AXIS	DES REM	X Axis Deselect Remember
M27.0	X AXIS	DES BFR	X Axis Deselect Buffer

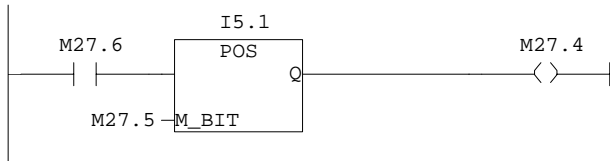
Network: 5 X Axis Select Buffer



Symbol information

M27.2	X AXIS	SEL BFR	X Axis Select Buffer
I5.0	4 AX +VE	X AX SEL MCP - 4 Axis +VE Jog or X Axis Select (5 Axis Variant)	[K28]
M27.3	X AXIS	SEL REM	X Axis Select Remember
M27.0	X AXIS	DES BFR	X Axis Deselect Buffer
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active	
I5.1	Z AX +VE	Y AX SEL MCP - Z Axis +VE Jog or Y Axis Select (5 Axis Variant)	[K29]
I5.2	Y AX -VE	Z AX SEL MCP - Y Axis -VE Jog or Z Axis Select (5 Axis Variant)	[K30]
I5.3	X AX +VE	4 AX SEL MCP - X Axis +VE Jog or 4 Axis Select (5 Axis Variant)	[K38]
I5.4	RAPID JOG	5 AX SEL MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant)	[K39]

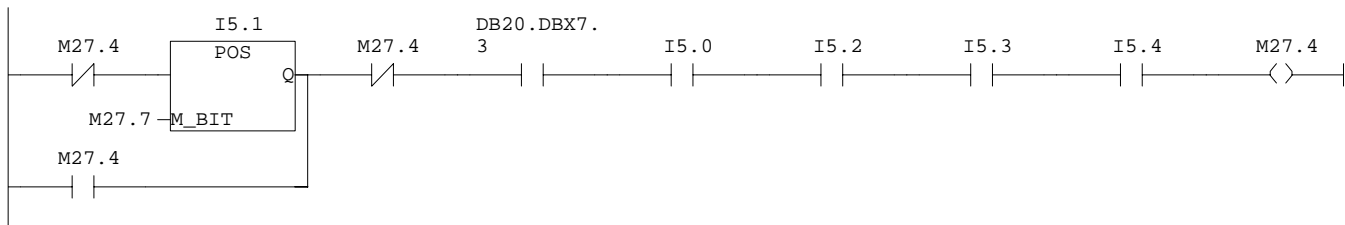
Network: 6 Y Axis Deselect



Symbol information

M27.6	Y AXIS	SEL BFR	Y Axis Select Buffer
I5.1	Z AX +VE	Y AX SEL MCP - Z Axis +VE Jog or Y Axis Select (5 Axis Variant)	[K29]
M27.5	Y AXIS	DES REM	Y Axis Deselect Remember
M27.4	Y AXIS	DES BFR	Y Axis Deselect Buffer

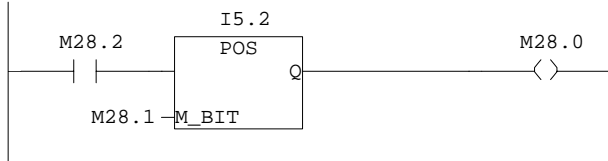
Network: 7 Y Axis Select Buffer



Symbol information

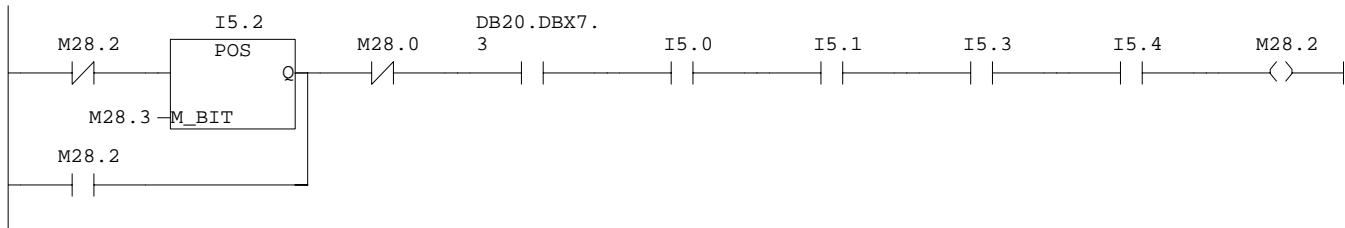
M27.4	Y AXIS	DES BFR	Y Axis Deselect Buffer
I5.1	Z AX +VE	Y AX SEL	MCP - Z Axis +VE Jog or Y Axis Select (5 Axis Variant) [K29]
M27.7	Y AXIS	SEL REM	Y Axis Select Remember
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active	
I5.0	4 AX +VE	X AX SEL	MCP - 4 Axis +VE Jog or X Axis Select (5 Axis Variant) [K28]
I5.2	Y AX -VE	Z AX SEL	MCP - Y Axis -VE Jog or Z Axis Select (5 Axis Variant) [K30]
I5.3	X AX +VE	4 AX SEL	MCP - X Axis +VE Jog or 4 Axis Select (5 Axis Variant) [K38]
I5.4	RAPID JOG	5 AX SEL	MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant) [K39]

Network: 8 Z Axis Deselect

**Symbol information**

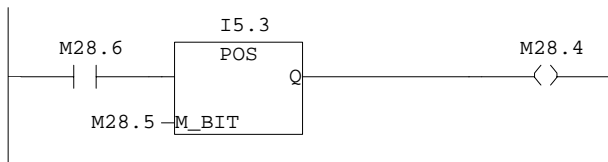
M28.2	Z AXIS	SEL BFR	Z Axis Select Buffer
I5.2	Y AX -VE	Z AX SEL	MCP - Y Axis -VE Jog or Z Axis Select (5 Axis Variant) [K30]
M28.1	Z AXIS	DES REM	Z Axis Deselect Remember
M28.0	Z AXIS	DES BFR	Z Axis Deselect Buffer

Network: 9 Z Axis Select Buffer

**Symbol information**

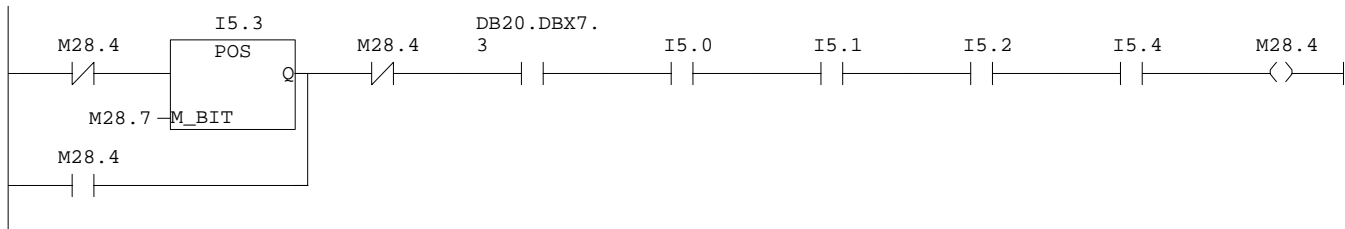
M28.2	Z AXIS	SEL BFR	Z Axis Select Buffer
I5.2	Y AX -VE	Z AX SEL	MCP - Y Axis -VE Jog or Z Axis Select (5 Axis Variant) [K30]
M28.3	Z AXIS	SEL REM	Z Axis Select Remember
M28.0	Z AXIS	DES BFR	Z Axis Deselect Buffer
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active	
I5.0	4 AX +VE	X AX SEL	MCP - 4 Axis +VE Jog or X Axis Select (5 Axis Variant) [K28]
I5.1	Z AX +VE	Y AX SEL	MCP - Z Axis +VE Jog or Y Axis Select (5 Axis Variant) [K29]
I5.3	X AX +VE	4 AX SEL	MCP - X Axis +VE Jog or 4 Axis Select (5 Axis Variant) [K38]
I5.4	RAPID JOG	5 AX SEL	MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant) [K39]

Network: 10 4 Axis Deselect

**Symbol information**

M28.6	4 AXIS	SEL BFR	4 Axis Select Buffer
I5.3	X AX +VE	4 AX SEL	MCP - X Axis +VE Jog or 4 Axis Select (5 Axis Variant) [K38]
M28.5	4 AXIS	DES REM	4 Axis Deselect Remember
M28.4	4 AXIS	DES BFR	4 Axis Deselect Buffer

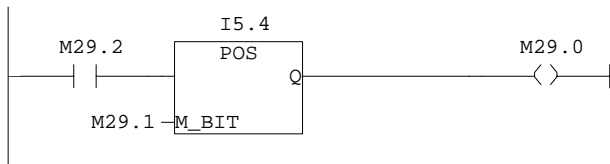
Network: 11 4 Axis Select Buffer



Symbol information

M28.4	4 AXIS	DES BFR	4 Axis Deselect Buffer
I5.3	X AX +VE	4 AX SEL	MCP - X Axis +VE Jog or 4 Axis Select (5 Axis Variant) [K38]
M28.7	4 AXIS	SEL REM	4 Axis Select Remember
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active	
I5.0	4 AX +VE	X AX SEL	MCP - 4 Axis +VE Jog or X Axis Select (5 Axis Variant) [K28]
I5.1	Z AX +VE	Y AX SEL	MCP - Z Axis +VE Jog or Y Axis Select (5 Axis Variant) [K29]
I5.2	Y AX -VE	Z AX SEL	MCP - Y Axis -VE Jog or Z Axis Select (5 Axis Variant) [K30]
I5.4	RAPID JOG	5 AX SEL	MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant) [K39]

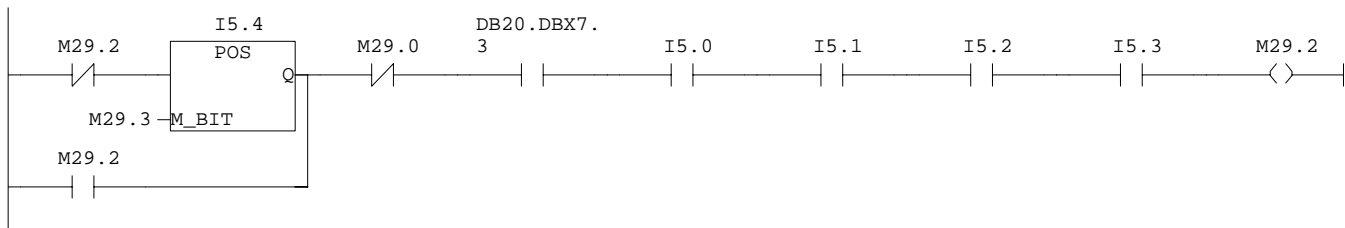
Network: 12 5 Axis Deselect



Symbol information

M29.2	5 AXIS	SEL BFR	5 Axis Select Buffer
I5.4	RAPID JOG	5 AX SEL	MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant) [K39]
M29.1	5 AXIS	DES REM	5 Axis Deselect Remember
M29.0	5 AXIS	DES BFR	5 Axis Deselect Buffer

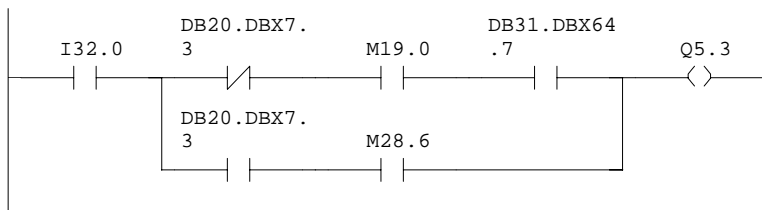
Network: 13 5 Axis Select Buffer



Symbol information

M29.2	5 AXIS	SEL BFR	5 Axis Select Buffer
I5.4	RAPID JOG	5 AX SEL	MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant) [K39]
M29.3	5 AXIS	SEL REM	5 Axis Select Remember
M29.0	5 AXIS	DES BFR	5 Axis Deselect Buffer
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active	
I5.0	4 AX +VE	X AX SEL	MCP - 4 Axis +VE Jog or X Axis Select (5 Axis Variant) [K28]
I5.1	Z AX +VE	Y AX SEL	MCP - Z Axis +VE Jog or Y Axis Select (5 Axis Variant) [K29]
I5.2	Y AX -VE	Z AX SEL	MCP - Y Axis -VE Jog or Z Axis Select (5 Axis Variant) [K30]
I5.3	X AX +VE	4 AX SEL	MCP - X Axis +VE Jog or 4 Axis Select (5 Axis Variant) [K38]

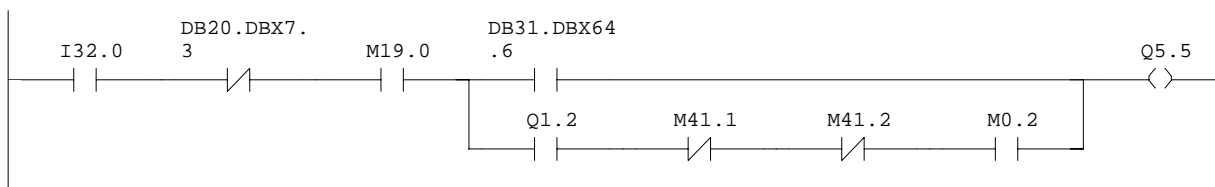
Network: 14 X Axis +VE or 4th Axis Select (5 Axis Variant) MCP LED



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
M19.0	MANUAL MODE	NC in Manual Mode
DB31.DBX64.7	"X AXIS".I_TCPlus	Traverse command plus
M28.6	4 AXIS SEL BFR	4 Axis Select Buffer
Q5.3	X AX +VE JOG LED	MCP - X Axis +VE Jog LED [L38]

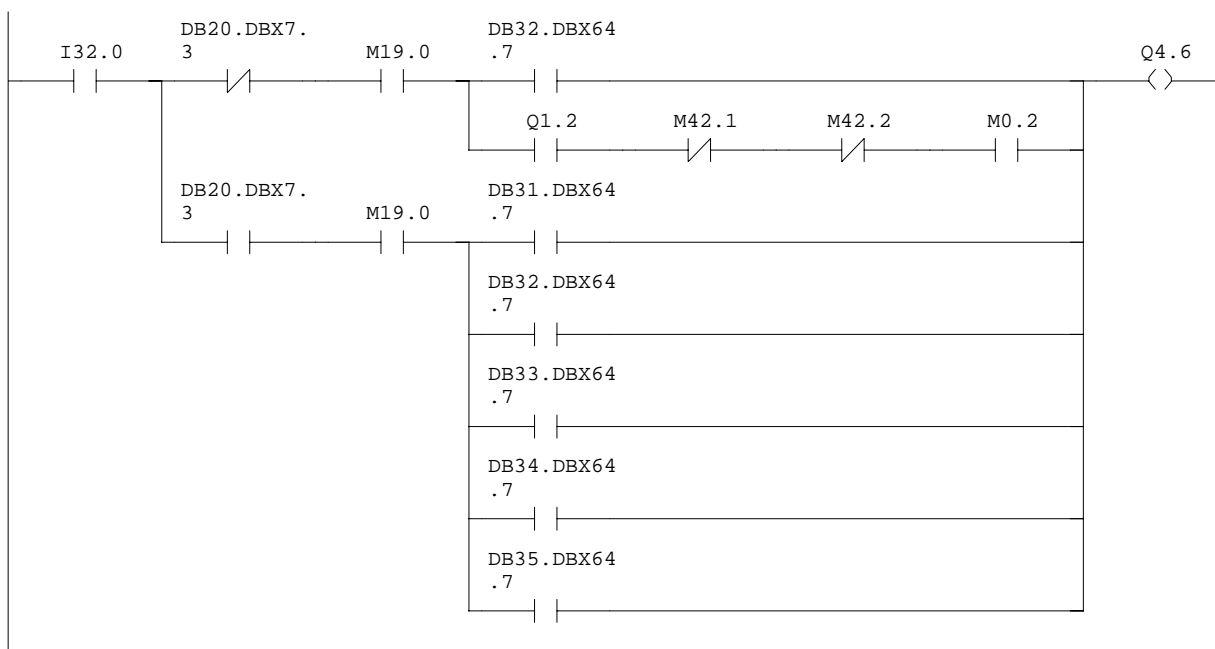
Network: 15 X Axis -VE or Not Used (5 Axis Variant) MCP LED



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
M19.0	MANUAL MODE	NC in Manual Mode
DB31.DBX64.6	"X AXIS".I_TCMinus	Traverse command minus
Q1.2	REF MODE LED	MCP - Reference Mode LED [L3]
M41.1	X AXIS MOTION	X Axis Motion (+VE or -VE Command)
M41.2	X AXIS REFD	X Axis Referenced to Active Measuring System
M0.2	CLOCK ON	Clock On
Q5.5	X AX -VE JOG LED	MCP - X Axis -VE Jog LED [L40]

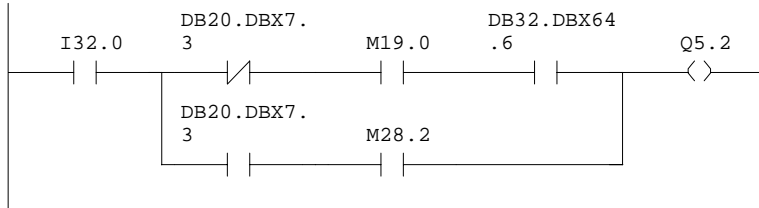
Network: 16 Y Axis +VE or Axis Jog Positive (5 Axis Variant) MCP LED



Symbol information

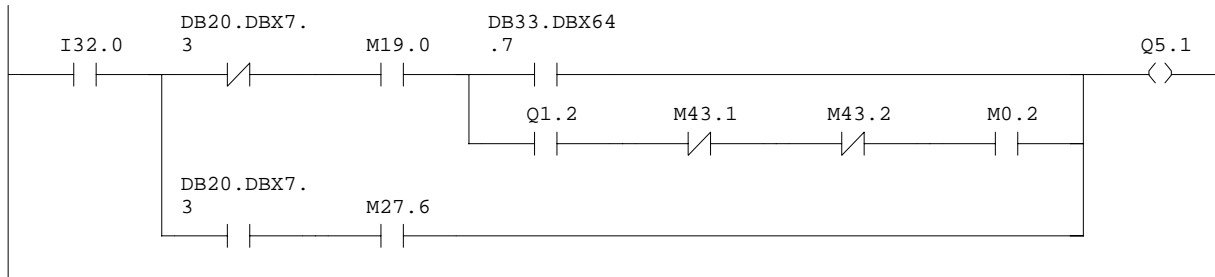
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
M19.0	MANUAL MODE	NC in Manual Mode
DB32.DBX64.7	"Y AXIS".I_TCPlus	Traverse command plus
Q1.2	REF MODE LED	MCP - Reference Mode LED [L3]
M42.1	Y AXIS MOTION	Y Axis Motion (+VE or -VE Command)
M42.2	Y AXIS REFD	Y Axis Referenced to Active Measuring System
M0.2	CLOCK ON	Clock On
DB31.DBX64.7	"X AXIS".I_TCPlus	Traverse command plus
DB33.DBX64.7	"Z AXIS".I_TCPlus	Traverse command plus
DB34.DBX64.7	"4 AXIS".I_TCPlus	Traverse command plus
DB35.DBX64.7	"5 AXIS".I_TCPlus	Traverse command plus
Q4.6	Y AX +VE JOG LED	MCP - Y Axis +VE Jog LED [L48]

Network: 17 Y Axis -VE or Z Axis Select (5 Axis Variant) MCP LED

**Symbol information**

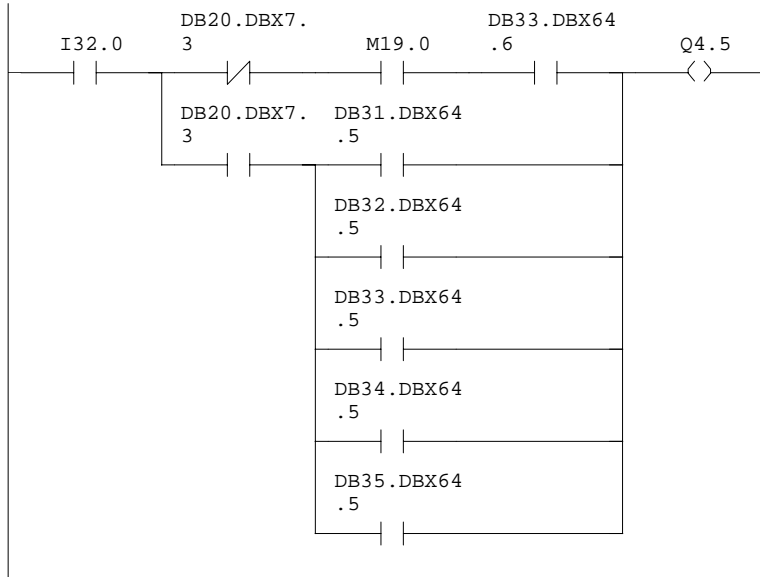
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
M19.0	MANUAL MODE	NC in Manual Mode
DB32.DBX64.6	"Y AXIS".I_TCMinus	Traverse command minus
M28.2	Z AXIS SEL BFR	Z Axis Select Buffer
Q5.2	Y AX -VE JOG LED	MCP - Y Axis -VE Jog LED [L30]

Network: 18 Z Axis +VE or Y Axis Select (5 Axis Variant) MCP LED

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
M19.0	MANUAL MODE	NC in Manual Mode
DB33.DBX64.7	"Z AXIS".I_TCPlus	Traverse command plus
Q1.2	REF MODE LED	MCP - Reference Mode LED [L3]
M43.1	Z AXIS MOTION	Z Axis Motion (+VE or -VE Command)
M43.2	Z AXIS REFD	Z Axis Referenced to Active Measuring System
M0.2	CLOCK ON	Clock On
M27.6	Y AXIS SEL BFR	Y Axis Select Buffer
Q5.1	Z AX +VE JOG LED	MCP - Z Axis +VE Jog LED [L29]

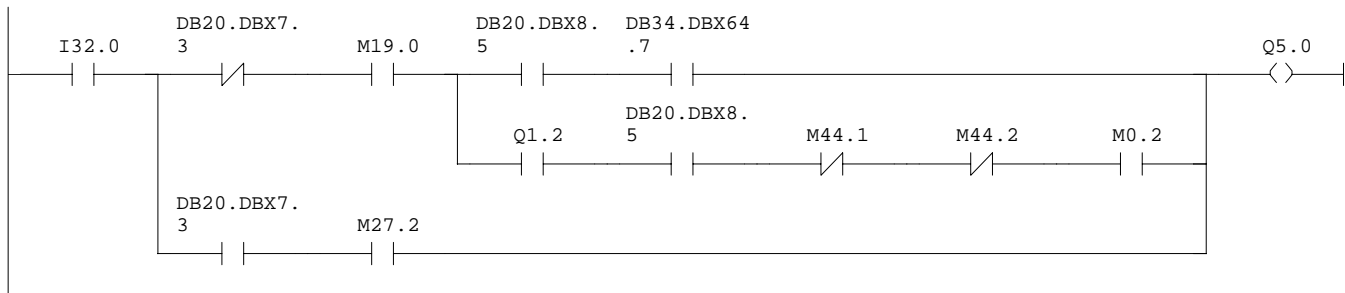
Network: 19 Z Axis -VE or Rapid Traverse (5 Axis Variant) MCP LED



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
M19.0	MANUAL MODE	NC in Manual Mode
DB33.DBX64.6	"Z AXIS".I_TCMinus	Traverse command minus
DB31.DBX64.5	"X AXIS".f64_5	
DB32.DBX64.5	"Y AXIS".f64_5	
DB33.DBX64.5	"Z AXIS".f64_5	
DB34.DBX64.5	"4 AXIS".f64_5	
DB35.DBX64.5	"5 AXIS".f64_5	
Q4.5	Z AX -VE JOG LED	MCP - Z Axis -VE Jog LED [L49]

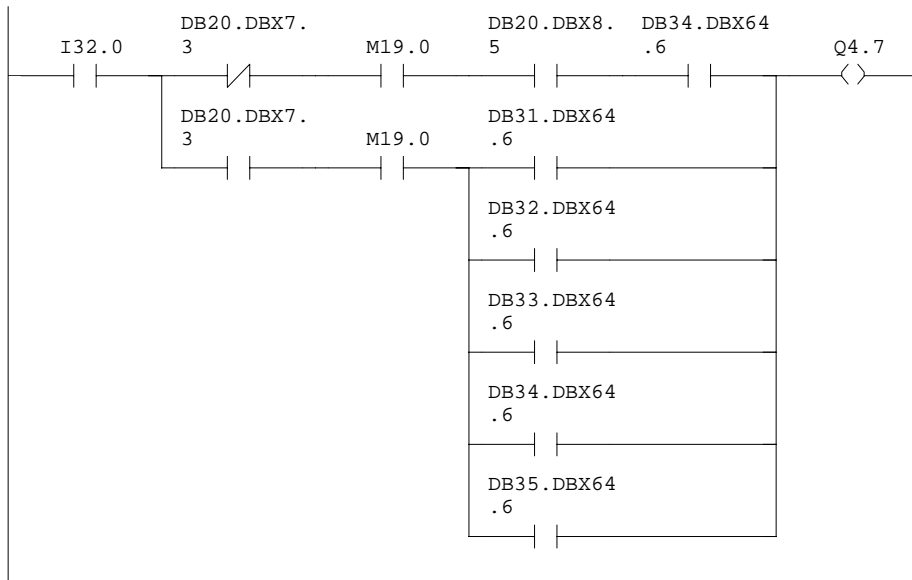
Network: 20 4 Axis +VE or X Axis Select (5 Axis Variant) MCP LED



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
M19.0	MANUAL MODE	NC in Manual Mode
DB20.DBX8.5	"OPTIONS".Option_85	4th Axis Active
DB34.DBX64.7	"4 AXIS".I_TCPlus	Traverse command plus
Q1.2	REF MODE LED	MCP - Reference Mode LED [L3]
M44.1	4 AXIS MOTION	4 Axis Motion (+VE or -VE Command)
M44.2	4 AXIS REFD	4 Axis Referenced to Active Measuring System
M0.2	CLOCK ON	Clock On
M27.2	X AXIS SEL BFR	X Axis Select Buffer
Q5.0	R AX +VE JOG LED	MCP - Rotary Axis +VE Jog LED [L28]

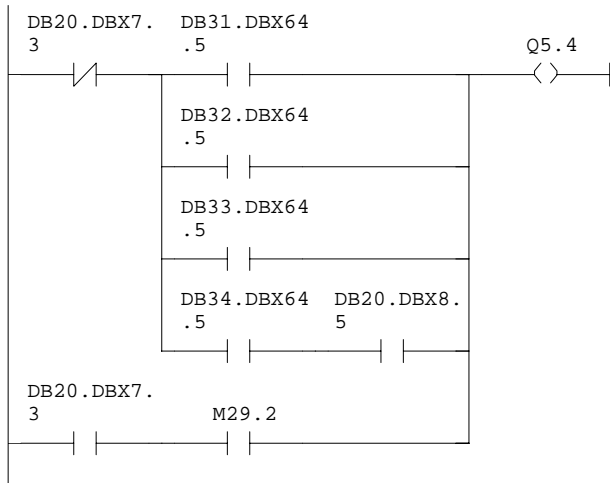
Network: 21 4 Axis -VE or Axis Jog Negative (5 Axis Variant) MCP LED



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
M19.0	MANUAL MODE	NC in Manual Mode
DB20.DBX8.5	"OPTIONS".Option_85	4th Axis Active
DB34.DBX64.6	"4 AXIS".I_TCMinus	Traverse command minus
DB31.DBX64.6	"X AXIS".I_TCMinus	Traverse command minus
DB32.DBX64.6	"Y AXIS".I_TCMinus	Traverse command minus
DB33.DBX64.6	"Z AXIS".I_TCMinus	Traverse command minus
DB35.DBX64.6	"5 AXIS".I_TCMinus	Traverse command minus
Q4.7	R AX -VE JOG LED	MCP - Rotary Axis -VE Jog LED [L50]

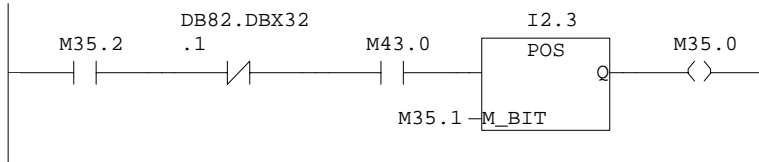
Network: 22 Rapid Traverse or 5 Axis Select (5 Axis Variant) MCP LED



Symbol information

DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
DB31.DBX64.5	"X AXIS".f64_5	
DB32.DBX64.5	"Y AXIS".f64_5	
DB33.DBX64.5	"Z AXIS".f64_5	
DB34.DBX64.5	"4 AXIS".f64_5	
DB20.DBX8.5	"OPTIONS".Option_85	4th Axis Active
M29.2	5 AXIS SEL BFR	5 Axis Select Buffer
Q5.4	RAPID TRAV LED	MCP - Rapid Traverse LED [L39]

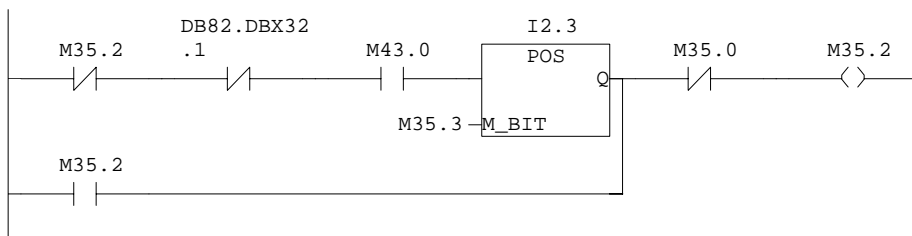
Network: 23 Z Lock Deselect



Symbol information

M35.2	Z LOCK	SEL BFR	Z Axis Lock Select Buffer
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
M43.0	Z AXIS	IN POSN	Z Axis In Position
I2.3	Z AX LOCK	SELECT	MCP - Z Axis Lock Select [K44]
M35.1	Z LOCK	DES REM	Z Axis Lock Deselect Remember
M35.0	Z LOCK	DES PLS	Z Axis Lock Deselect Pulse

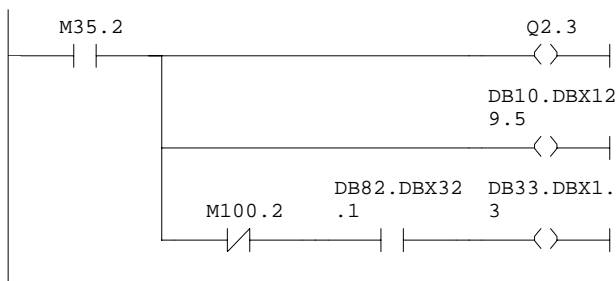
Network: 24 Z Lock Select



Symbol information

M35.2	Z LOCK	SEL BFR	Z Axis Lock Select Buffer
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
M43.0	Z AXIS	IN POSN	Z Axis In Position
I2.3	Z AX LOCK	SELECT	MCP - Z Axis Lock Select [K44]
M35.3	Z LOCK	SEL REM	Z Axis Lock Select Remember
M35.0	Z LOCK	DES PLS	Z Axis Lock Deselect Pulse

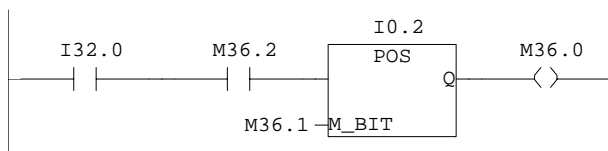
Network: 25 Z Lock Active (Digital Input 38)



Symbol information

M35.2	Z LOCK	SEL BFR	Z Axis Lock Select Buffer
Q2.3	Z AX LOCK	LED	MCP - Z Axis Lock LED [L44]
DB10.DBX129.5	"NC".I_Set_Inp38		Set digital NCK input 38
M100.2	T CHG CYC	ACTIVE	Tool Change Cycle Active
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
DB33.DBX1.3	"Z AXIS".Q_ASpDisable		Axis/spindle disable

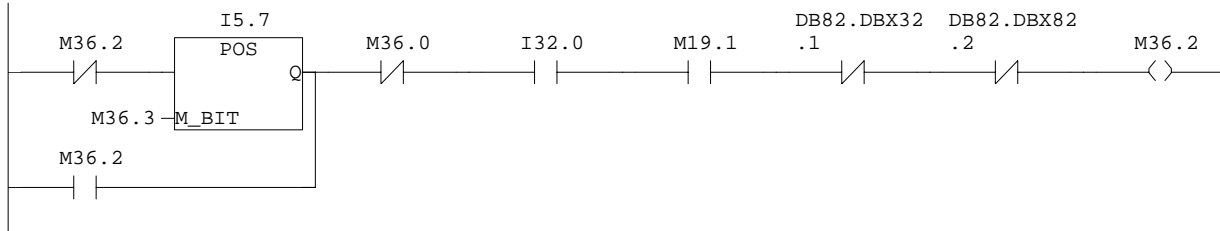
Network: 26 HHU Disable



Symbol information

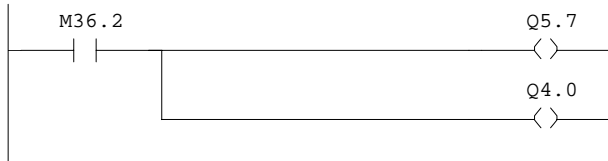
I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
M36.2	MPG ENBL	SEL BFR	MPG Enable Buffer
I0.2	JOG MODE	SELECT	MCP - Jog Mode Select [K1]
M36.1	MPG DSBL	REMEMBER	MPG Disable Remember
M36.0	MPG DSBL	PULSE	MPG Disable Pulse

Network: 27 HHU Enable

**Symbol information**

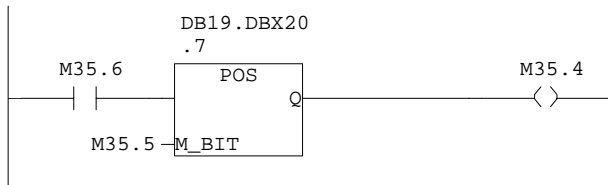
M36.2	MPG ENBL	SEL BFR	MPG Enable Buffer
I5.7	HHU ENBL	SELECT	MCP - HHU Enable Select [K33]
M36.3	MPG ENBL	REMEMBER	MPG Enable Remember
M36.0	MPG DSBL	PULSE	MPG Disable Pulse
I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
M19.1	JOG MODE	ONLY	NC in Jog Mode Only
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		

Network: 28 HHU Enable

**Symbol information**

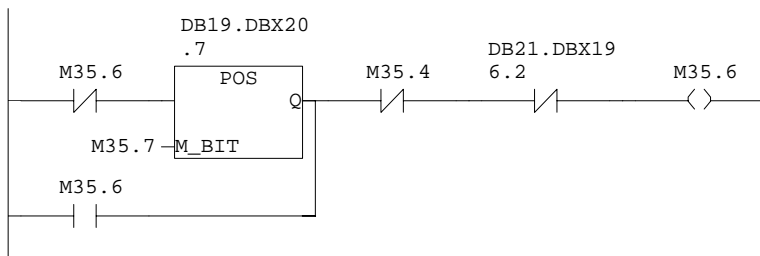
M36.2	MPG ENBL	SEL BFR	MPG Enable Buffer
Q5.7	HHU ENBL	LED	MCP - HHU Enable LED [L33]
Q4.0	HHU ENBL	LED LAMP	HHU - HHU Enable Lamp [X35/1]

Network: 29 WCS Display Deselect

**Symbol information**

M35.6	WCS DISP	ACTIVE	WCS Display Select Buffer
DB19.DBX20.7	"MMC SIGNALS".I_ActWCS Switchover MCS/WCS 0=MCS		
M35.5	WCS DISP	DES REM	WCS Display Deselect Remember
M35.4	WCS DISP	DES PLS	WCS Display Deselect Pulse

Network: 30 WCS Display Select



Symbol information

M35.6 WCS DISP ACTIVE WCS Display Select Buffer
 DB19.DBX20.7 "MMC SIGNALS".I_ActWCS Switchover MCS/WCS 0=MCS
 M35.7 WCS DISP SEL REM WCS Display Select Remember
 M35.4 WCS DISP DES PLS WCS Display Deselect Pulse
 DB21.DBX196.2 "CHANNEL 1".MDyn[18]

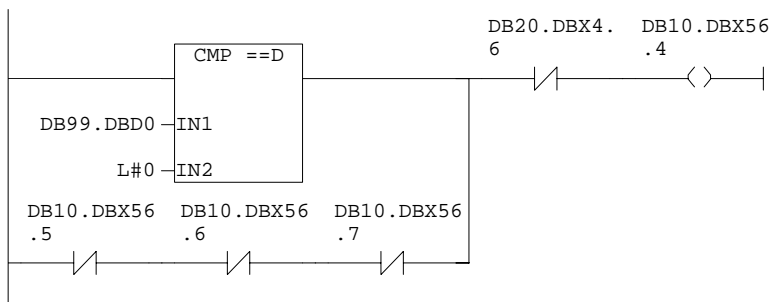
Network: 31 WCS Display Active



Symbol information

M35.6 WCS DISP ACTIVE WCS Display Select Buffer
 DB19.DBX0.7 "MMC SIGNALS".Q_ActWCS Actual value in WCS 0=MCS

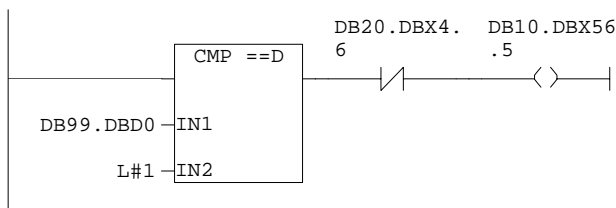
Network: 32 Keyswitch Position #0 (Access Level 7)



Symbol information

DB99.DBD0 "EDIT PROTECTION".EDIT_PROT_LEVEL Edit Protection Level Setting
 DB10.DBX56.5 "NC".I_Keyswitch1 Keyswitch position 1
 DB10.DBX56.6 "NC".I_Keyswitch2 Keyswitch position 2
 DB10.DBX56.7 "NC".I_Keyswitch3 Keyswitch position 3
 DB20.DBX4.6 "OPTIONS".Option_46 Soft Keyswitch Function Inactive
 DB10.DBX56.4 "NC".I_Keyswitch0 Keyswitch position 0

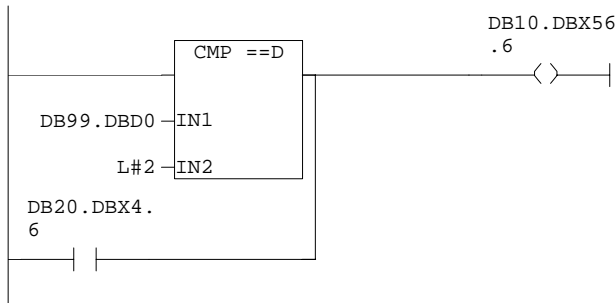
Network: 33 Keyswitch Position #1 (Access Level 6)



Symbol information

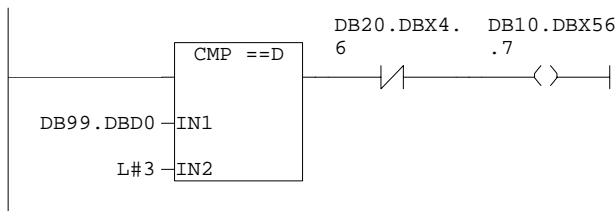
DB99.DBD0 "EDIT PROTECTION".EDIT_PROT_LEVEL Edit Protection Level Setting
 DB20.DBX4.6 "OPTIONS".Option_46 Soft Keyswitch Function Inactive
 DB10.DBX56.5 "NC".I_Keyswitch1 Keyswitch position 1

Network: 34 Keyswitch Position #2 (Access Level 5)

**Symbol information**

DB99.DBD0 "EDIT PROTECTION".EDIT_PROT_LEVEL Edit Protection Level Setting
 DB20.DBX4.6 "OPTIONS".Option_46 Soft Keyswitch Function Inactive
 DB10.DBX56.6 "NC".I_Keyswitch2 Keyswitch position 2

Network: 35 Keyswitch Position #3 (Access Level 4)

**Symbol information**

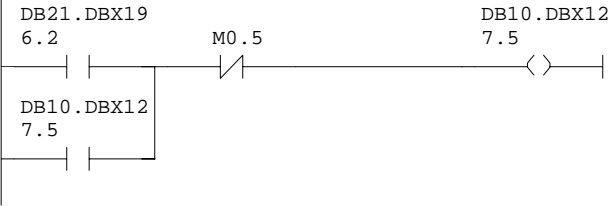
DB99.DBD0 "EDIT PROTECTION".EDIT_PROT_LEVEL Edit Protection Level Setting
 DB20.DBX4.6 "OPTIONS".Option_46 Soft Keyswitch Function Inactive
 DB10.DBX56.7 "NC".I_Keyswitch3 Keyswitch position 3

Network: 36 Internal Handwheel Assignment Disable

A	M	0.1	"ON"	-- Marker Always On
=	DB10.DBX	100.1	"NC".Q_Ax_B_HW1	-- Axis number for handwheel1 B
=	DB10.DBX	100.2	"NC".Q_Ax_C_HW1	-- Axis number for handwheel1 C
=	DB10.DBX	100.7	"NC".Q_Mach_Ax1	-- Machine axis
=	DB10.DBX	101.1	"NC".Q_Ax_B_HW2	-- Axis number for handwheel2 B
=	DB10.DBX	101.2	"NC".Q_Ax_C_HW2	-- Axis number for handwheel2 C
=	DB10.DBX	101.7	"NC".Q_Mach_Ax2	-- Machine axis
=	DB10.DBX	102.1	"NC".Q_Ax_B_HW3	-- Axis number for handwheel3 B
=	DB10.DBX	102.2	"NC".Q_Ax_C_HW3	-- Axis number for handwheel3 C
=	DB10.DBX	102.7	"NC".Q_Mach_Ax3	-- Machine axis
A	M	0.0	"OFF"	-- Marker Always Off
=	DB10.DBX	100.0	"NC".Q_Ax_I_HW1	-- Axis number for handwheel1 A
=	DB10.DBX	100.3	"NC".Q_Ax_D_HW1	-- Axis number for handwheel1 D
=	DB10.DBX	100.4	"NC".Q_Ax_Q_HW1	-- Axis number for handwheel1 E
=	DB10.DBX	100.5	"NC".Q_CHW_sel1	-- Contour handwheel selected
=	DB10.DBX	100.6	"NC".Q_HW_sel1	-- Handwheel selected
=	DB10.DBX	101.0	"NC".Q_Ax_I_HW2	-- Axis number for handwheel2 A
=	DB10.DBX	101.3	"NC".Q_Ax_D_HW2	-- Axis number for handwheel2 D
=	DB10.DBX	101.4	"NC".Q_Ax_Q_HW2	-- Axis number for handwheel2 E
=	DB10.DBX	101.5	"NC".Q_CHW_sel2	-- Contour handwheel selected
=	DB10.DBX	101.6	"NC".Q_HW_sel2	-- Handwheel selected
=	DB10.DBX	102.0	"NC".Q_Ax_I_HW3	-- Axis number for handwheel3 A
=	DB10.DBX	102.3	"NC".Q_Ax_D_HW3	-- Axis number for handwheel3 D
=	DB10.DBX	102.4	"NC".Q_Ax_Q_HW3	-- Axis number for handwheel3 E
=	DB10.DBX	102.5	"NC".Q_CHW_sel3	-- Contour handwheel selected
=	DB10.DBX	102.6	"NC".Q_HW_sel3	-- Handwheel selected

Network: 37

ASUP Initial Execution Remember



Symbol information

DB21.DBX196.2	"CHANNEL 1".MDyn[18]	
DB10.DBX127.5	"NC".I_Set_Inp30	Set digital NCK input 30
M0.5	PLC START PULSE	PLC Start Pulse

FC48 - <offline>

"AUTO REFERENCE" NC Auto Reference Sequence [User]

Name: Hardinge

Family: VMC

Author: MGS

Version: 1.0

Block version: 2

Time stamp Code: 03/11/01 07:07:29 PMPM

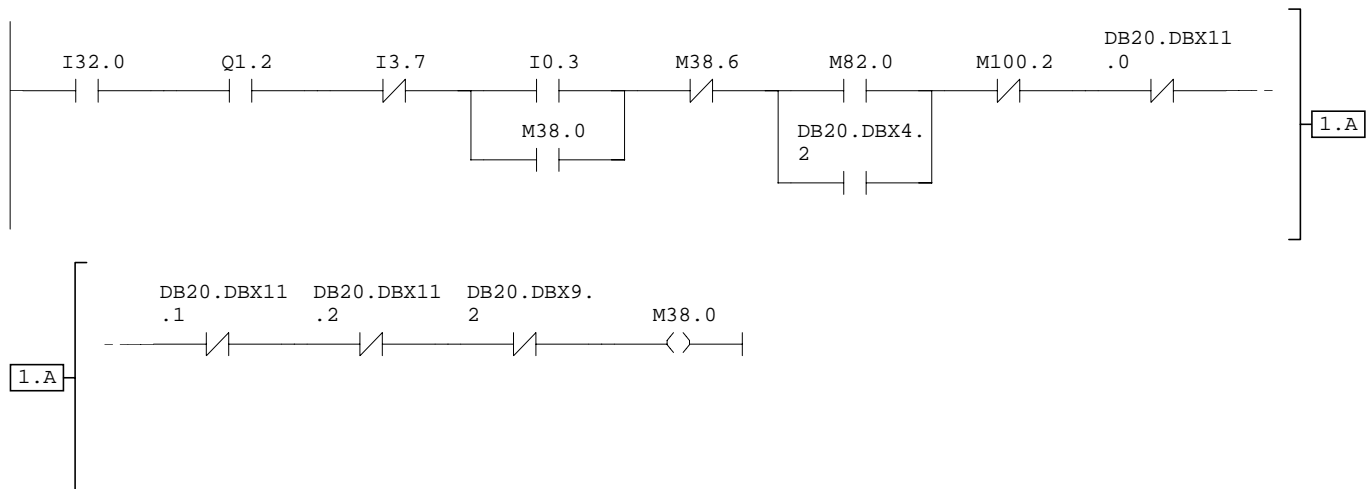
Interface: 10/06/99 11:18:54 PMPM

Lengths (block/logic/data): 00418 00248 00000

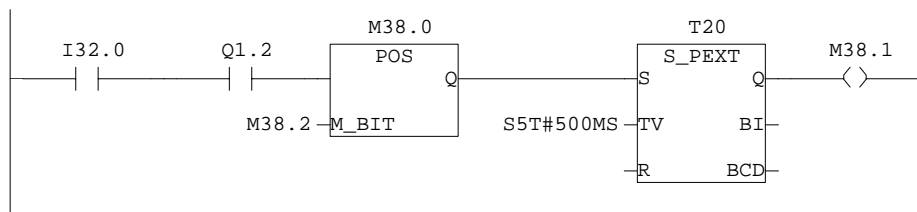
Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC48 Auto Reference Sequence Control

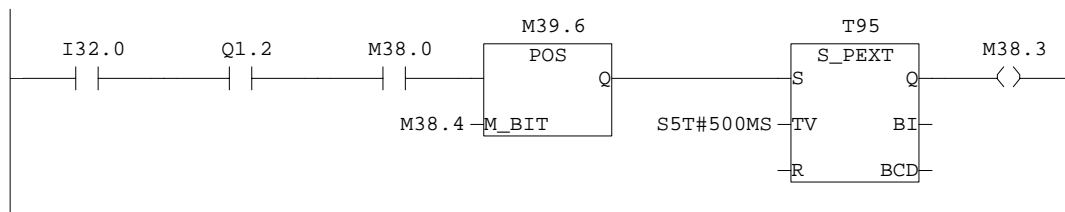
Network: 1 Auto Axes Reference Sequence Request



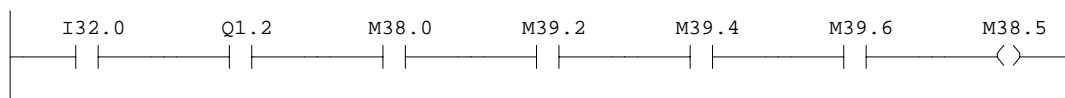
Network: 2 Auto Axes Reference Z Axis



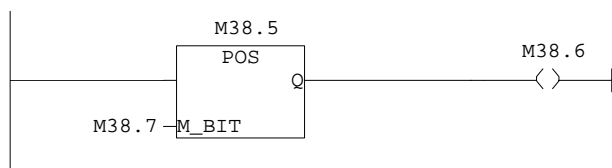
Network: 3 Auto Axes Reference X & Y Axes



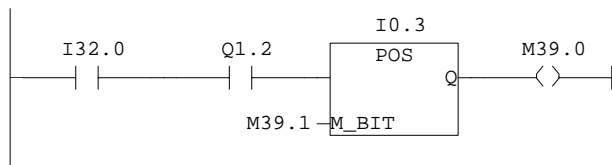
Network: 4 Auto Reference Complete



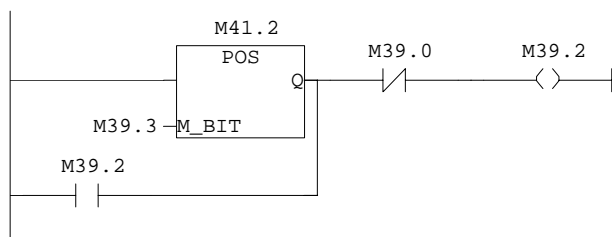
Network: 5 Auto Reference Complete Pulse



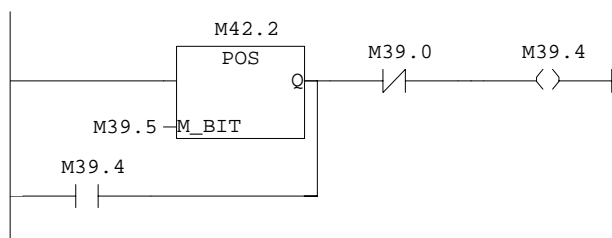
Network: 6 Auto Reference Start Pulse



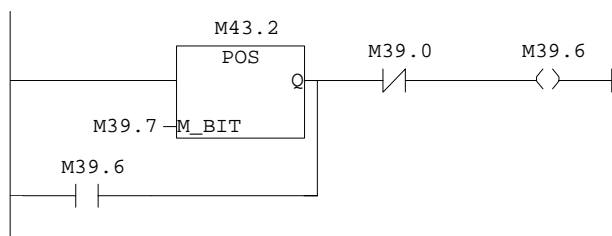
Network: 7 Auto Reference X Axis Complete



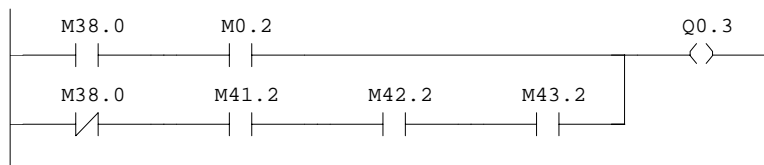
Network: 8 Auto Reference Y Axis Complete



Network: 9 Auto Reference Z Axis Complete



Network: 10 Auto Reference MCP LED



FC49 - <offline>

"SYNCH ACTIONS" Synchronous Actions [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/06/01 09:38:07 PMPM
 Interface: 10/06/99 11:18:54 PMPM
Lengths (block/logic/data): 00232 00062 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC49 Synchronous Actions

Network: 1 Execute M13 as M3+M8 with Synchronous Action via NCK Input

DB21.DBX19 DB10.DBX12
5.5 7.0
|-----<-----|

Symbol information

DB21.DBX195.5 "CHANNEL 1".MDyn[13]
DB10.DBX127.0 "NC".I_Set_Inp25 Set digital NCK input 25

Network: 2 Execute M14 as M4+M8 with Synchronous Action via NCK Input

DB21.DBX19 DB10.DBX12
5.6 7.1
|-----<-----|

Symbol information

DB21.DBX195.6 "CHANNEL 1".MDyn[14]
DB10.DBX127.1 "NC".I_Set_Inp26 Set digital NCK input 26

Network: 3 Execute M15 as M5+M9+M54 with Synchronous Action via NCK Input

DB21.DBX19 DB10.DBX12
5.7 7.2
|-----<-----|

Symbol information

DB21.DBX195.7 "CHANNEL 1".MDyn[15]
DB10.DBX127.2 "NC".I_Set_Inp27 Set digital NCK input 27

Network: 4 Execute M19 as SPOS=0 with Synchronous Action via NCK Input

DB21.DBX19 DB10.DBX12
6.3 7.3
|-----<-----|

Symbol information

DB21.DBX196.3 "CHANNEL 1".MDyn[19]
DB10.DBX127.3 "NC".I_Set_Inp28 Set digital NCK input 28

Network: 5

Execute M20 as M5 with Synchronous Action via NCK Input



Symbol information
DB21.DBX196.4 "CHANNEL 1".MDyn[20]
DB10.DBX127.4 "NC".I_Set_Inp29 Set digital NCK input 29

FC50 - <offline>

"IRF CONTROL" IRF Module Control & Monitoring [User]

Name: Hardinge

Family: VMC

Author: MGS

Version: 1.0

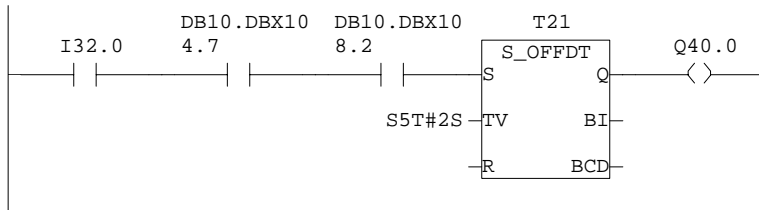
Block version: 2

Time stamp Code: 02/12/01 09:37:57 AMAM

Interface: 10/07/99 05:21:13 AMAM

Lengths (block/logic/data): 00206 00090 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

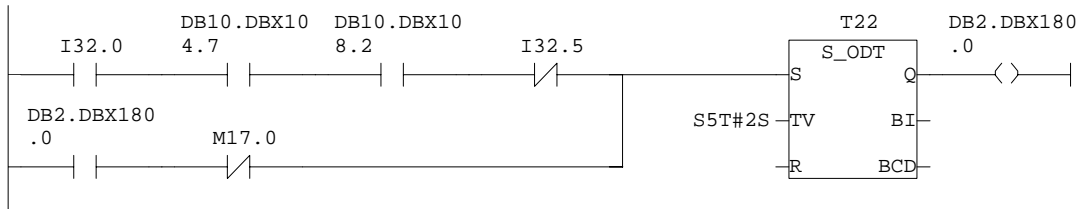
Block: FC50 IRF Module Control & Monitoring**Network: 1 IRF Module Drive Enable****Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

DB10.DBX104.7 "NC".Q_NCKready NCK CPU ready

DB10.DBX108.2 "NC".Q_MMCPiready MMC-CPU on MPI ready

Q40.0 IR MODULE DRV ENBL KAR22 - IRF Module Drive Enable

Network: 2 700000: IRF Module Fault**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

DB10.DBX104.7 "NC".Q_NCKready NCK CPU ready

DB10.DBX108.2 "NC".Q_MMCPiready MMC-CPU on MPI ready

I32.5 IR MODULE FAULT G1 - IRF Module Fault

DB2.DBX180.0 "ALARM & MESSAGE".A7000xx[0] Alarm 700000-700063 (user area 0)

M17.0 FAULT RESET Fault Reset

Network: 3 IRF Module Fault**Symbol information**

DB2.DBX180.0 "ALARM & MESSAGE".A7000xx[0] Alarm 700000-700063 (user area 0)

M40.0 IR MODUL FAULT IRF Module Fault

FC51 - <offline>

"X AXIS NC CONTROL" X Axis NC Control & Monitoring [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/12/01 04:20:17 AMAM
 Interface: 09/13/99 03:01:03 PMPM
Lengths (block/logic/data): 00602 00464 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC51 X Axis NC Control & Fault Monitoring

Network: 1 X Axis Motor (1st) Measuring System

**Symbol information**

DB20.DBX8.0 "OPTIONS".Option_80 X Axis 2nd Measuring System Active
DB31.DBX1.5 "X AXIS".Q_PosMeas1 Position measuring system 1

Network: 2 X Axis Direct (2nd) Measuring System

**Symbol information**

DB20.DBX8.0 "OPTIONS".Option_80 X Axis 2nd Measuring System Active
DB31.DBX1.6 "X AXIS".Q_PosMeas2 Position measuring system 2

Network: 3 X Axis Feed Override Active

**Symbol information**

DB21.DBX6.7 "CHANNEL 1".Q_FD_ORA Feedrate override active
DB31.DBX1.7 "X AXIS".Q_ORactive Override active

Network: 4 X Axis 1st Reference Point

**Symbol information**

M0.1 ON Marker Always On
DB31.DBX2.4 "X AXIS".Q_RefVal1 Reference point value 1

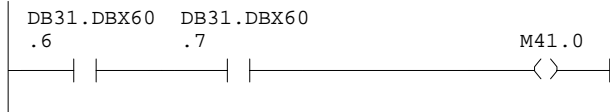
Network: 5 X Axis Reference Point



Symbol information

I34.0 X AXIS REF LS SQL8 - X Axis Reference Limit
 DB31.DBX12.7 "X AXIS".Q_DelayRef Delay reference point approach

Network: 6 X Axis In Position



Symbol information

DB31.DBX60.6 "X AXIS".I_ExactCoarse Position reached with exact stop coarse
 DB31.DBX60.7 "X AXIS".I_ExactFine Position reached with exact stop fine
 M41.0 X AXIS IN POSN X Axis In Position

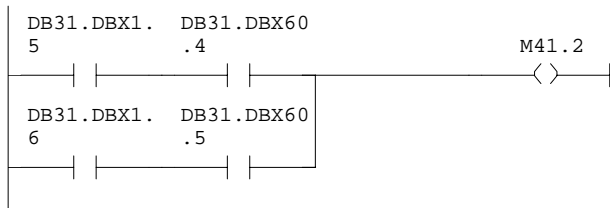
Network: 7 X Axis In Motion



Symbol information

DB31.DBX64.7 "X AXIS".I_TCPlus Traverse command plus
 DB31.DBX64.6 "X AXIS".I_TCMinus Traverse command minus
 M41.1 X AXIS MOTION X Axis Motion (+VE or -VE Command)

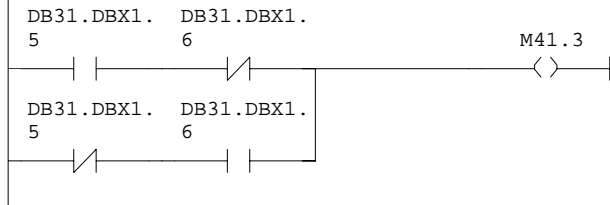
Network: 8 X Axis Referenced to Active Measuring System



Symbol information

DB31.DBX1.5 "X AXIS".Q_PosMeas1 Position measuring system 1
 DB31.DBX60.4 "X AXIS".I_RefSyn1 Referenced/synchronized 1
 DB31.DBX1.6 "X AXIS".Q_PosMeas2 Position measuring system 2
 DB31.DBX60.5 "X AXIS".I_RefSyn2 Referenced/synchronized 2
 M41.2 X AXIS REFD X Axis Referenced to Active Measuring System

Network: 9 X Axis 1st or 2nd Measuring System Active Only



Symbol information

DB31.DBX1.5 "X AXIS".Q_PosMeas1 Position measuring system 1
 DB31.DBX1.6 "X AXIS".Q_PosMeas2 Position measuring system 2
 M41.3 X AXIS MEAS OK X Axis Measuring System 1 or 2 Active Only

Network: 10 X Axis 2nd Soflimit Minus Active (Machine Setup Only)



Symbol information

DB20.DBX11.5 "OPTIONS".Option_115 X Axis -VE 2nd Softlimit Active for Machine Setup
 DB31.DBX12.2 "X AXIS".Q_SWLimit2Minus 2nd software limit switch minus

Network: 11 X Axis Software Pulse Enable



Symbol information

M0.1 ON Marker Always On
 DB31.DBX21.7 "X AXIS".Q_PulseEnable Pulse enable

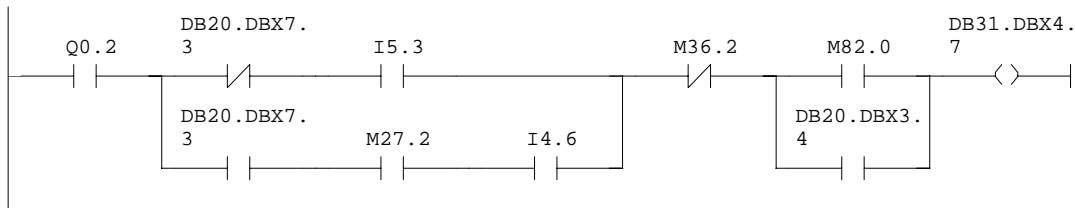
Network: 12 X Axis NC Contoller Enable



Symbol information

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 DB20.DBX11.0 "OPTIONS".Option_110 X Axis Disable for Machine Startup
 M41.3 X AXIS MEAS OK X Axis Measuring System 1 or 2 Active Only
 DB31.DBX93.5 "X AXIS".I_MotOK Drive ready
 DB31.DBX2.1 "X AXIS".Q_ContrEnable Controller enable

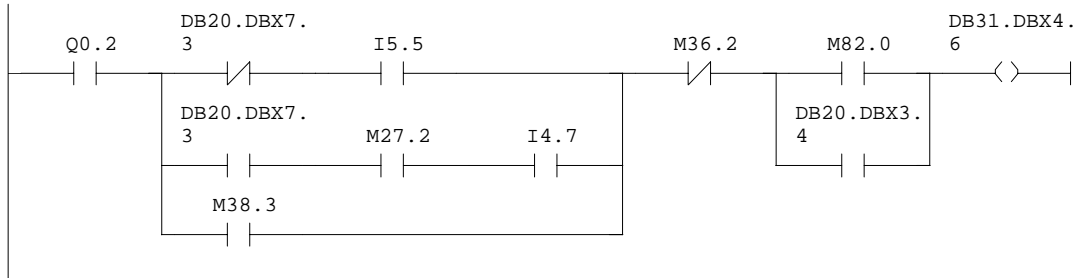
Network: 13 X Axis Jog +VE



Symbol information

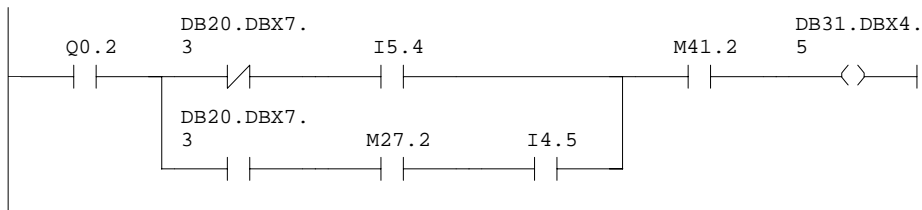
Q0.2	JOG MODE	LED	MCP - Jog Mode LED [L1]
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active	
I5.3	X AX +VE	4 AX SEL	MCP - X Axis +VE Jog or 4 Axis Select (5 Axis Variant) [K38]
M27.2	X AXIS	SEL BFR	X Axis Select Buffer
I4.6	Y AX +VE	JOG +VE	MCP - Y Axis +VE Jog or Axis Jog Positive (5 Axis Variant) [K48]
M36.2	MPG ENBL	SEL BFR	MPG Enable Buffer
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
DB20.DBX3.4	"OPTIONS".Option_34	Axis Jog from MCP with Door Open Active	
DB31.DBX4.7	"X AXIS".Q_Plus	Traversing key plus	

Network: 14 X Axis Jog -VE

**Symbol information**

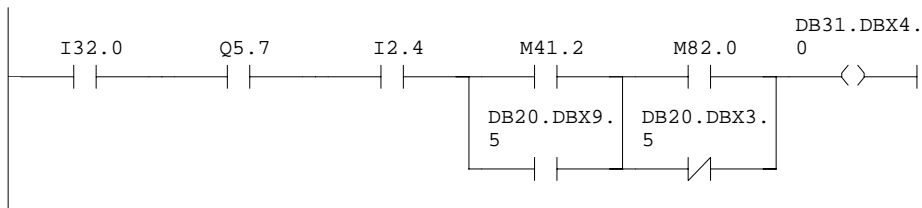
Q0.2	JOG MODE	LED	MCP - Jog Mode LED [L1]
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active	
I5.5	X AX -VE	NOT USED	MCP - X Axis -VE Jog or Not Used (5 Axis Variant) [K40]
M27.2	X AXIS	SEL BFR	X Axis Select Buffer
I4.7	4 AX -VE	JOG -VE	MCP - 4 Axis -VE Jog or Axis Jog Negative (5 Axis Variant) [K50]
M38.3	AUTO REF	XY AX RQ	Auto Reference X & Y Axes Request
M36.2	MPG ENBL	SEL BFR	MPG Enable Buffer
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
DB20.DBX3.4	"OPTIONS".Option_34	Axis Jog from MCP with Door Open Active	
DB31.DBX4.6	"X AXIS".Q_Minus	Traversing key minus	

Network: 15 X Axis Rapid Traverse

**Symbol information**

Q0.2	JOG MODE	LED	MCP - Jog Mode LED [L1]
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active	
I5.4	RAPID JOG 5 AX SEL	MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant) [K39]	
M27.2	X AXIS	SEL BFR	X Axis Select Buffer
I4.5	Z AX -VE	RAP JOG	MCP - Z Axis -VE Jog or Rapid Traverse (5 Axis Variant) [K49]
M41.2	X AXIS	REFD	X Axis Referenced to Active Measuring System
DB31.DBX4.5	"X AXIS".Q_RapidTrOR	Rapid traverse override	

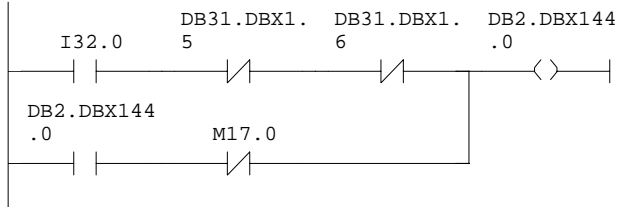
Network: 16 X Axis Handwheel Active



Symbol information

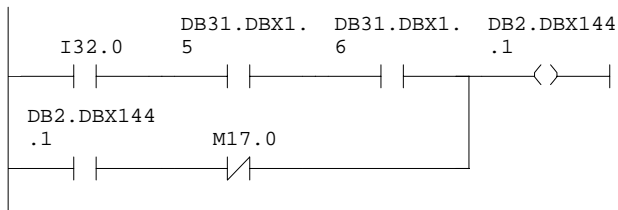
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]
I2.4	MPG UNIT X AX SEL	SAR7 - Remote HHU X Axis Select [X33/1]
M41.2	X AXIS REFD	X Axis Referenced to Active Measuring System
DB20.DBX9.5	"OPTIONS".Option_95	Handwheel Active Before Reference Point Approach
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
DB20.DBX3.5	"OPTIONS".Option_35	MPG with Door Open Inactive
DB31.DBX4.0	"X AXIS".Q_HW1	Activate handwheel 1

Network: 17 600100: X Axis No Measuring System Active

**Symbol information**

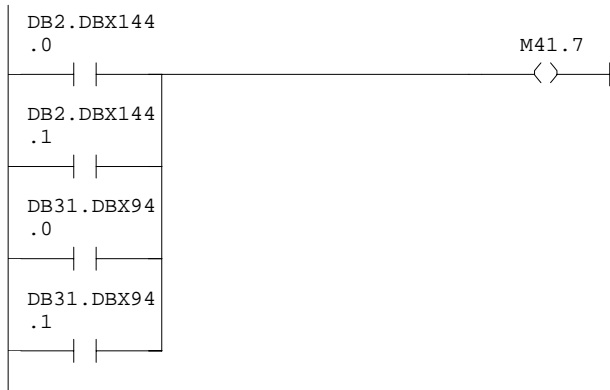
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB31.DBX1.5	"X AXIS".Q_PosMeas1	Position measuring system 1
DB31.DBX1.6	"X AXIS".Q_PosMeas2	Position measuring system 2
DB2.DBX144.0	"ALARM & MESSAGE"._1FdStop6001xx[0]	Feed stop axis/spindle 1
M17.0	FAULT RESET	Fault Reset

Network: 18 600101: X Axis Both Measuring Systems Active

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB31.DBX1.5	"X AXIS".Q_PosMeas1	Position measuring system 1
DB31.DBX1.6	"X AXIS".Q_PosMeas2	Position measuring system 2
DB2.DBX144.1	"ALARM & MESSAGE"._1FdStop6001xx[1]	Feed stop axis/spindle 1
M17.0	FAULT RESET	Fault Reset

Network: 19 X Axis Any Fault

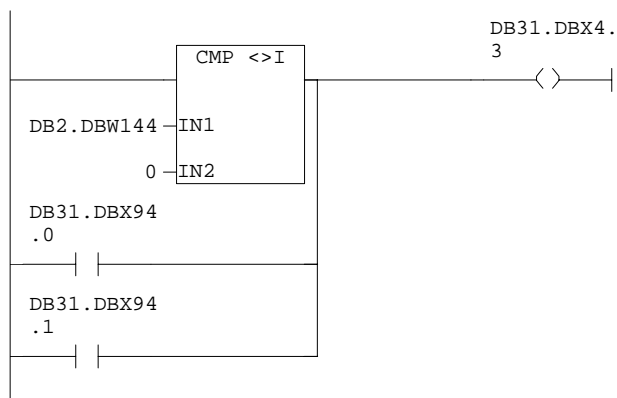
**Symbol information**

DB2.DBX144.0	"ALARM & MESSAGE"._1FdStop6001xx[0]	Feed stop axis/spindle 1
DB2.DBX144.1	"ALARM & MESSAGE"._1FdStop6001xx[1]	Feed stop axis/spindle 1
DB31.DBX94.0	"X AXIS".I_MTempWarn	Temperature prewarning motor

DB31.DBX94.1 "X AXIS".I_HTempWarn
M41.7 X AXIS FAULT

Temperature prewarning heat sink
X Axis Any Fault

Network: 20 X Axis Feedhold



Symbol information

DB31.DBX94.0 "X AXIS".I_MTempWarn Temperature prewarning motor
DB31.DBX94.1 "X AXIS".I_HTempWarn Temperature prewarning heat sink
DB31.DBX4.3 "X AXIS".Q_FDSpStop Feed stop/spindle stop

FC52 - <offline>

"Y AXIS NC CONTROL" Y Axis NC Control & Monitoring [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/12/01 04:20:44 AMAM
 Interface: 09/13/99 03:01:03 PMPM
Lengths (block/logic/data): 00602 00464 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC52 Y Axis NC Control & Fault Monitoring

Network: 1 Y Axis Motor (1st) Measuring System

**Symbol information**

DB20.DBX8.1 "OPTIONS".Option_81 Y Axis 2nd Measuring System Active
DB32.DBX1.5 "Y AXIS".Q_PosMeas1 Position measuring system 1

Network: 2 Y Axis Direct (2nd) Measuring System

**Symbol information**

DB20.DBX8.1 "OPTIONS".Option_81 Y Axis 2nd Measuring System Active
DB32.DBX1.6 "Y AXIS".Q_PosMeas2 Position measuring system 2

Network: 3 Y Axis Feed Override Active

**Symbol information**

DB21.DBX6.7 "CHANNEL 1".Q_FD_ORA Feedrate override active
DB32.DBX1.7 "Y AXIS".Q_ORactive Override active

Network: 4 Y Axis 1st Reference Point

**Symbol information**

M0.1 ON Marker Always On
DB32.DBX2.4 "Y AXIS".Q_RefVal1 Reference point value 1

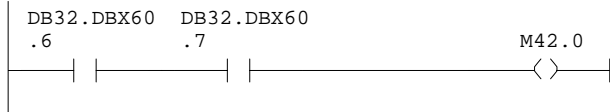
Network: 5 Y Axis Reference Point



Symbol information

I34.1 Y AXIS REF LS SQL9 - Y Axis Reference Limit
 DB32.DBX12.7 "Y AXIS".Q_DelayRef Delay reference point approach

Network: 6 Y Axis In Position



Symbol information

DB32.DBX60.6 "Y AXIS".I_ExactCoarse Position reached with exact stop coarse
 DB32.DBX60.7 "Y AXIS".I_ExactFine Position reached with exact stop fine
 M42.0 Y AXIS IN POSN Y Axis In Position

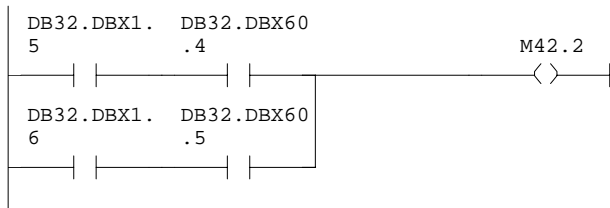
Network: 7 Y Axis In Motion



Symbol information

DB32.DBX64.7 "Y AXIS".I_TCPlus Traverse command plus
 DB32.DBX64.6 "Y AXIS".I_TCMinus Traverse command minus
 M42.1 Y AXIS MOTION Y Axis Motion (+VE or -VE Command)

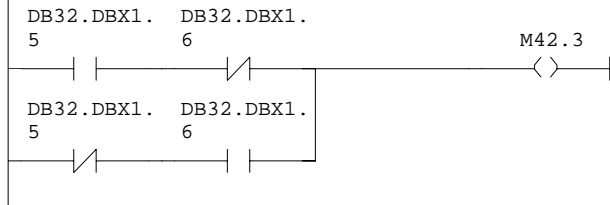
Network: 8 Y Axis Referenced to Active Measuring System



Symbol information

DB32.DBX1.5 "Y AXIS".Q_PosMeas1 Position measuring system 1
 DB32.DBX60.4 "Y AXIS".I_RefSyn1 Referenced/synchronized 1
 DB32.DBX1.6 "Y AXIS".Q_PosMeas2 Position measuring system 2
 DB32.DBX60.5 "Y AXIS".I_RefSyn2 Referenced/synchronized 2
 M42.2 Y AXIS REFD Y Axis Referenced to Active Measuring System

Network: 9 Y Axis 1st or 2nd Measuring System Active Only



Symbol information

DB32.DBX1.5 "Y AXIS".Q_PosMeas1 Position measuring system 1

DB32.DBX1.6 "Y AXIS".Q_PosMeas2 Position measuring system 2

M42.3 Y AXIS MEAS OK Y Axis Measuring System 1 or 2 Active Only

Network: 10 Y Axis 2nd Soflimit Plus Active (Machine Setup Only)



Symbol information

DB20.DBX11.6 "OPTIONS".Option_116 Y Axis +VE 2nd Softlimit Active for Machine Setup

DB32.DBX12.3 "Y AXIS".Q_SWLimit2Plus 2nd software limit switch plus

Network: 11 Y Axis Software Pulse Enable



Symbol information

M0.1 ON Marker Always On

DB32.DBX21.7 "Y AXIS".Q_PulseEnable Pulse enable

Network: 12 Y Axis NC Contoller Enable



Symbol information

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

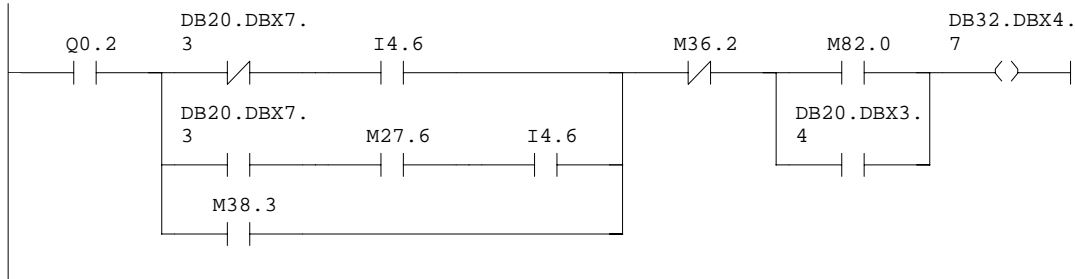
DB20.DBX11.1 "OPTIONS".Option_111 Y Axis Disable for Machine Startup

M42.3 Y AXIS MEAS OK Y Axis Measuring System 1 or 2 Active Only

DB32.DBX93.5 "Y AXIS".I_MotOK Drive ready

DB32.DBX2.1 "Y AXIS".Q_ContrEnable Controller enable

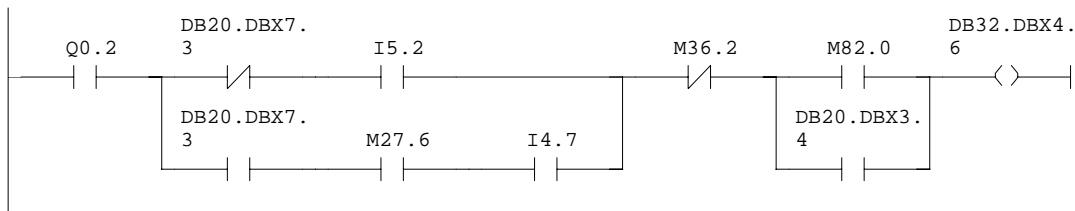
Network: 13 Y Axis Jog +VE



Symbol information

Q0.2	JOG MODE	LED	MCP - Jog Mode LED [L1]
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active	
I4.6	Y AX +VE	JOG +VE	MCP - Y Axis +VE Jog or Axis Jog Positive (5 Axis Variant) [K48]
M27.6	Y AXIS	SEL BFR	Y Axis Select Buffer
M38.3	AUTO REF	XY AX RQ	Auto Reference X & Y Axes Request
M36.2	MPG ENBL	SEL BFR	MPG Enable Buffer
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
DB20.DBX3.4	"OPTIONS".Option_34	Axis Jog from MCP with Door Open Active	
DB32.DBX4.7	"Y AXIS".Q_Plus	Traversing key plus	

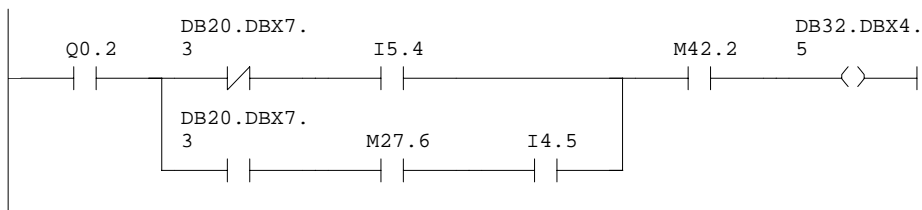
Network: 14 Y Axis Jog -VE



Symbol information

Q0.2	JOG MODE	LED	MCP - Jog Mode LED [L1]
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active	
I5.2	Y AX -VE	Z AX SEL	MCP - Y Axis -VE Jog or Z Axis Select (5 Axis Variant) [K30]
M27.6	Y AXIS	SEL BFR	Y Axis Select Buffer
I4.7	4 AX -VE	JOG -VE	MCP - 4 Axis -VE Jog or Axis Jog Negative (5 Axis Variant) [K50]
M36.2	MPG ENBL	SEL BFR	MPG Enable Buffer
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
DB20.DBX3.4	"OPTIONS".Option_34	Axis Jog from MCP with Door Open Active	
DB32.DBX4.6	"Y AXIS".Q_Minus	Traversing key minus	

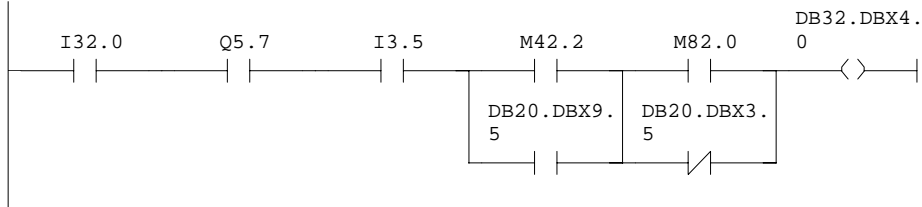
Network: 15 Y Axis Rapid Traverse



Symbol information

Q0.2	JOG MODE	LED	MCP - Jog Mode LED [L1]
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active	
I5.4	RAPID JOG	5 AX SEL	MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant) [K39]
M27.6	Y AXIS	SEL BFR	Y Axis Select Buffer
I4.5	Z AX -VE	RAP JOG	MCP - Z Axis -VE Jog or Rapid Traverse (5 Axis Variant) [K49]
M42.2	Y AXIS	REFD	Y Axis Referenced to Active Measuring System
DB32.DBX4.5	"Y AXIS".Q_RapidTrOR	Rapid traverse override	

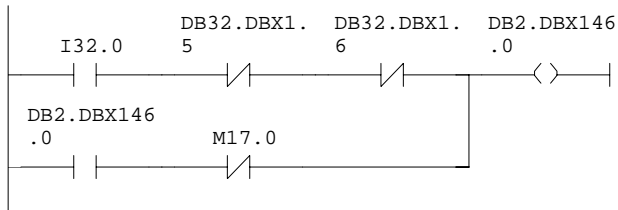
Network: 16 Y Axis Handwheel Active



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]
I3.5	MPG UNIT Y AX SEL	SAR7 - Remote HHU Y Axis Select [X33/2]
M42.2	Y AXIS REFD	Y Axis Referenced to Active Measuring System
DB20.DBX9.5	"OPTIONS".Option_95	Handwheel Active Before Reference Point Approach
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
DB20.DBX3.5	"OPTIONS".Option_35	MPG with Door Open Inactive
DB32.DBX4.0	"Y AXIS".Q_HW1	Activate handwheel 1

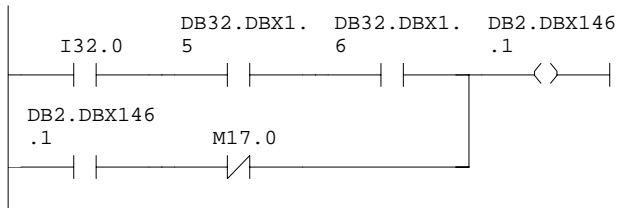
Network: 17 600200: Y Axis No Measuring System Active



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB32.DBX1.5	"Y AXIS".Q_PosMeas1	Position measuring system 1
DB32.DBX1.6	"Y AXIS".Q_PosMeas2	Position measuring system 2
DB2.DBX146.0	"ALARM & MESSAGE"._2FdStop6002xx[0]	Feed stop axis/spindle 2
M17.0	FAULT RESET	Fault Reset

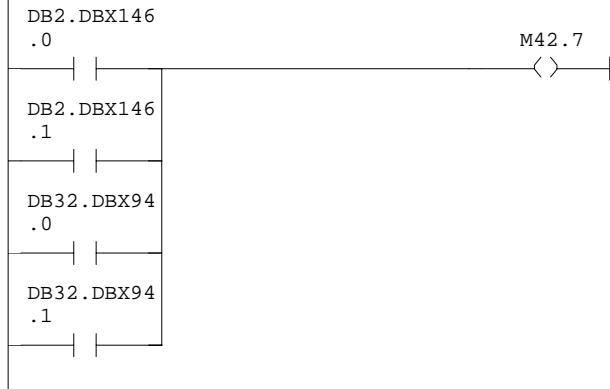
Network: 18 600201: Y Axis Both Measuring Systems Active



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB32.DBX1.5	"Y AXIS".Q_PosMeas1	Position measuring system 1
DB32.DBX1.6	"Y AXIS".Q_PosMeas2	Position measuring system 2
DB2.DBX146.1	"ALARM & MESSAGE"._2FdStop6002xx[1]	Feed stop axis/spindle 2
M17.0	FAULT RESET	Fault Reset

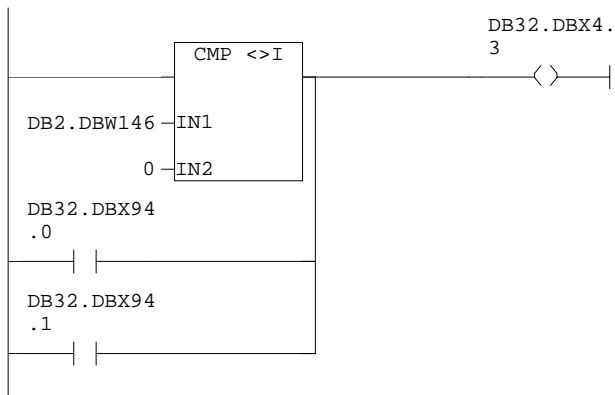
Network: 19 Y Axis Any Fault



Symbol information

DB2.DBX146.0	"ALARM & MESSAGE"._2FdStop6002xx[0]	Feed stop axis/spindle 2
DB2.DBX146.1	"ALARM & MESSAGE"._2FdStop6002xx[1]	Feed stop axis/spindle 2
DB32.DBX94.0	"Y AXIS".I_MTempWarn	Temperature prewarning motor
DB32.DBX94.1	"Y AXIS".I_HTempWarn	Temperature prewarning heat sink
M42.7	Y AXIS FAULT	Y Axis Any Fault

Network: 20 Y Axis Feedhold



Symbol information

DB32.DBX94.0	"Y AXIS".I_MTempWarn	Temperature prewarning motor
DB32.DBX94.1	"Y AXIS".I_HTempWarn	Temperature prewarning heat sink
DB32.DBX4.3	"Y AXIS".Q_FDSpStop	Feed stop/spindle stop

FC53 - <offline>

"Z AXIS NC CONTROL" Z Axis NC Control & Monitoring [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/12/01 04:21:03 AMAM
 Interface: 09/13/99 03:01:03 PMPM
Lengths (block/logic/data): 00834 00696 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC53 Z Axis NC Control & Fault Monitoring**Network: 1 Z Axis Motor (1st) Measuring System****Symbol information**

DB20.DBX8.2 "OPTIONS".Option_82 Z Axis 2nd Measuring System Active
DB33.DBX1.5 "Z AXIS".Q_PosMeas1 Position measuring system 1

Network: 2 Z Axis Direct (2nd) Measuring System**Symbol information**

DB20.DBX8.2 "OPTIONS".Option_82 Z Axis 2nd Measuring System Active
DB33.DBX1.6 "Z AXIS".Q_PosMeas2 Position measuring system 2

Network: 3 Z Axis Feed Override Active**Symbol information**

DB21.DBX6.7 "CHANNEL 1".Q_FD_ORA Feedrate override active
DB33.DBX1.7 "Z AXIS".Q_ORactive Override active

Network: 4 Z Axis 1st Reference Point**Symbol information**

M0.1 ON Marker Always On
DB33.DBX2.4 "Z AXIS".Q_RefVal1 Reference point value 1

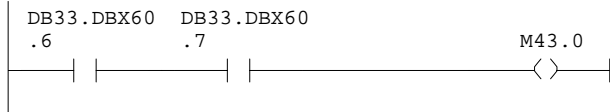
Network: 5 Z Axis Reference Point



Symbol information

I34.2 Z AXIS REF LS SQL10 - Z Axis Reference Limit
 DB33.DBX12.7 "Z AXIS".Q_DelayRef Delay reference point approach

Network: 6 Z Axis In Position



Symbol information

DB33.DBX60.6 "Z AXIS".I_ExactCoarse Position reached with exact stop coarse
 DB33.DBX60.7 "Z AXIS".I_ExactFine Position reached with exact stop fine
 M43.0 Z AXIS IN POSN Z Axis In Position

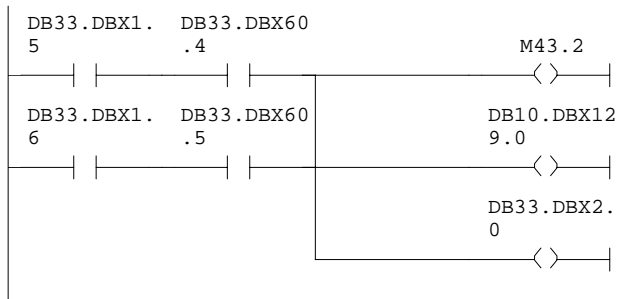
Network: 7 Z Axis In Motion



Symbol information

DB33.DBX64.7 "Z AXIS".I_TCPlus Traverse command plus
 DB33.DBX64.6 "Z AXIS".I_TCMinus Traverse command minus
 M43.1 Z AXIS MOTION Z Axis Motion (+VE or -VE Command)

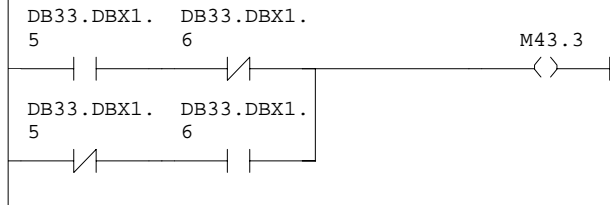
Network: 8 Z Axis Referenced to Active Measuring System (Digital Input 33)



Symbol information

DB33.DBX1.5 "Z AXIS".Q_PosMeas1 Position measuring system 1
 DB33.DBX60.4 "Z AXIS".I_RefSyn1 Referenced/synchronized 1
 DB33.DBX1.6 "Z AXIS".Q_PosMeas2 Position measuring system 2
 DB33.DBX60.5 "Z AXIS".I_RefSyn2 Referenced/synchronized 2
 M43.2 Z AXIS REFD Z Axis Referenced to Active Measuring System
 DB10.DBX129.0 "NC".I_Set_Inp33 Set digital NCK input 33
 DB33.DBX2.0 "Z AXIS".Q_SWCam SW cam activation

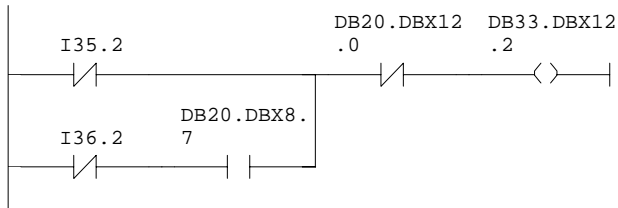
Network: 9 Z Axis 1st or 2nd Measuring System Active Only



Symbol information

DB33.DBX1.5 "Z AXIS".Q_PosMeas1 Position measuring system 1
 DB33.DBX1.6 "Z AXIS".Q_PosMeas2 Position measuring system 2
 M43.3 Z AXIS MEAS OK Z Axis Measuring System 1 or 2 Active Only

Network: 10 Z Axis 2nd Soflimit Minus Active



Symbol information

I35.2 T MAG #1 RET LS SQL3 - Tool Magazine #1 Retract (IN) Limit
 I36.2 T MAG #2 RET LS SQL20 - Tool Magazine #2 Retract (IN) Limit
 DB20.DBX8.7 "OPTIONS".Option_87 2nd Tool Magazine Active
 DB20.DBX12.0 "OPTIONS".Option_120 ATC Magazine Alarm Suppress for Machine Startup
 DB33.DBX12.2 "Z AXIS".Q_SWLimit2Minus 2nd software limit switch minus

Network: 11 Z Axis 2nd Soflimit Plus Active (Machine Setup Only)



Symbol information

DB20.DBX11.7 "OPTIONS".Option_117 Z Axis +VE 2nd Softlimit Active for Machine Setup
 DB33.DBX12.3 "Z AXIS".Q_SWLimit2Plus 2nd software limit switch plus

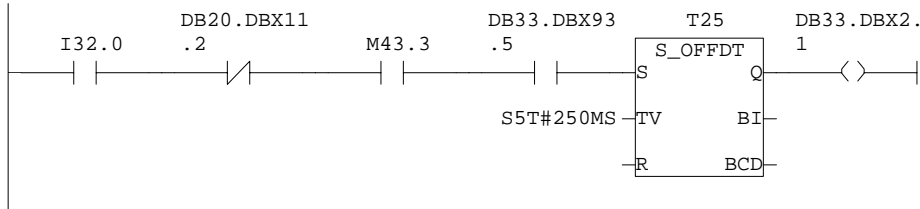
Network: 12 Z Axis Software Pulse Enable



Symbol information

M0.1 ON Marker Always On
 DB33.DBX21.7 "Z AXIS".Q_PulseEnable Pulse enable

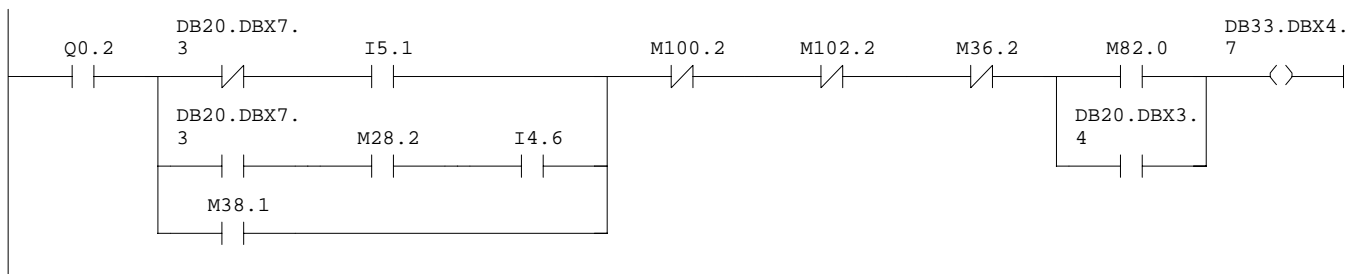
Network: 13 Z Axis NC Contoller Enable



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX11.2	"OPTIONS".Option_112	Z Axis Disable for Machine Startup
M43.3	Z AXIS MEAS OK	Z Axis Measuring System 1 or 2 Active Only
DB33.DBX93.5	"Z AXIS".I_MotOK	Drive ready
DB33.DBX2.1	"Z AXIS".Q_ContrEnable	Controller enable

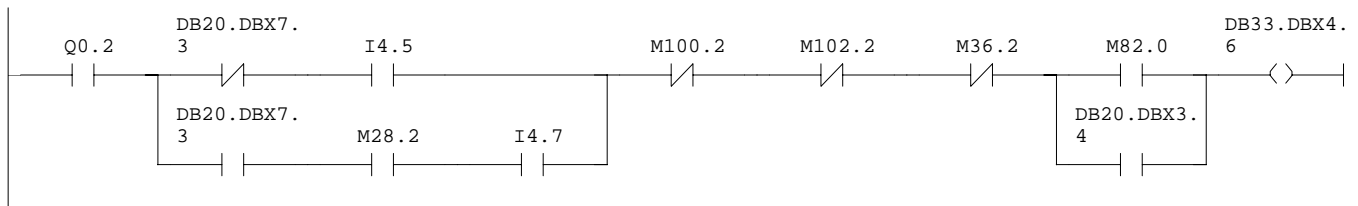
Network: 14 Z Axis Jog +VE



Symbol information

Q0.2	JOG MODE LED	MCP - Jog Mode LED [L1]
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
I5.1	Z AX +VE Y AX SEL	MCP - Z Axis +VE Jog or Y Axis Select (5 Axis Variant) [K29]
M28.2	Z AXIS SEL BFR	Z Axis Select Buffer
I4.6	Y AX +VE JOG +VE	MCP - Y Axis +VE Jog or Axis Jog Positive (5 Axis Variant) [K48]
M38.1	AUTO REF Z AX REQ	Auto Reference Z Axis Request
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M36.2	MPG ENBL SEL BFR	MPG Enable Buffer
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
DB20.DBX3.4	"OPTIONS".Option_34	Axis Jog from MCP with Door Open Active
DB33.DBX4.7	"Z AXIS".Q_Plus	Traversing key plus

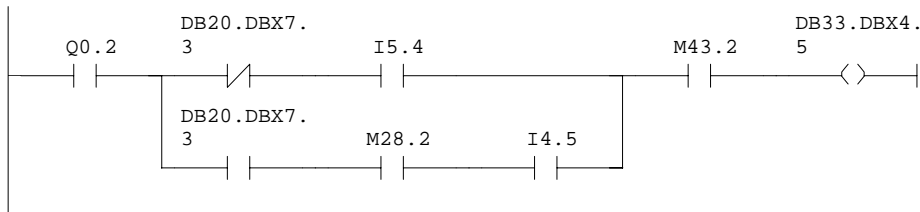
Network: 15 Z Axis Jog -VE



Symbol information

Q0.2	JOG MODE LED	MCP - Jog Mode LED [L1]
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
I4.5	Z AX -VE RAP JOG	MCP - Z Axis -VE Jog or Rapid Traverse (5 Axis Variant) [K49]
M28.2	Z AXIS SEL BFR	Z Axis Select Buffer
I4.7	4 AX -VE JOG -VE	MCP - 4 Axis -VE Jog or Axis Jog Negative (5 Axis Variant) [K50]
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M36.2	MPG ENBL SEL BFR	MPG Enable Buffer
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
DB20.DBX3.4	"OPTIONS".Option_34	Axis Jog from MCP with Door Open Active
DB33.DBX4.6	"Z AXIS".Q_Minus	Traversing key minus

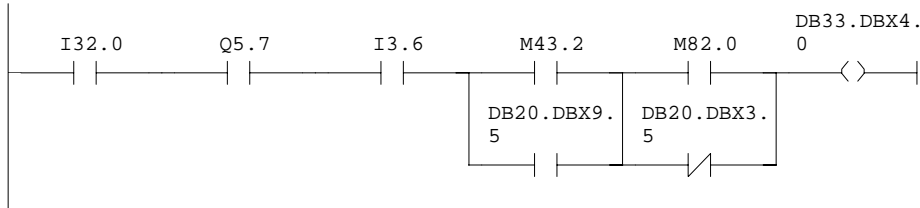
Network: 16 Z Axis Rapid Traverse



Symbol information

Q0.2	JOG MODE LED	MCP - Jog Mode LED [L1]
DB20.DBX7.3	"OPTIONS".Option_73	5th Axis Active
I5.4	RAPID JOG 5 AX SEL	MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant) [K39]
M28.2	Z AXIS SEL BFR	Z Axis Select Buffer
I4.5	Z AX -VE RAP JOG	MCP - Z Axis -VE Jog or Rapid Traverse (5 Axis Variant) [K49]
M43.2	Z AXIS REFD	Z Axis Referenced to Active Measuring System
DB33.DBX4.5	"Z AXIS".Q_RapidTrOR	Rapid traverse override

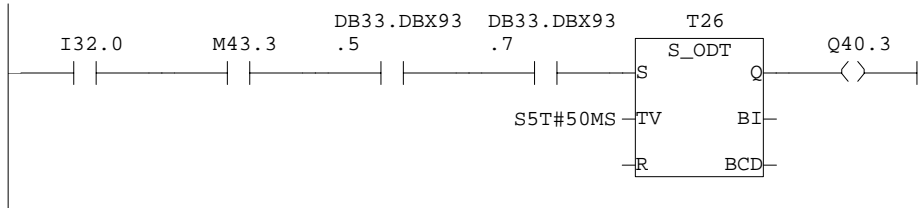
Network: 17 Z Axis Handwheel Active



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q5.7	HHU ENBL LED	MCP - HHU Enable LED [L33]
I3.6	MPG UNIT Z AX SEL	SAR7 - Remote HHU Z Axis Select [X34/1]
M43.2	Z AXIS REFD	Z Axis Referenced to Active Measuring System
DB20.DBX9.5	"OPTIONS".Option_95	Handwheel Active Before Reference Point Approach
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
DB20.DBX3.5	"OPTIONS".Option_35	MPG with Door Open Inactive
DB33.DBX4.0	"Z AXIS".Q_HW1	Activate handwheel 1

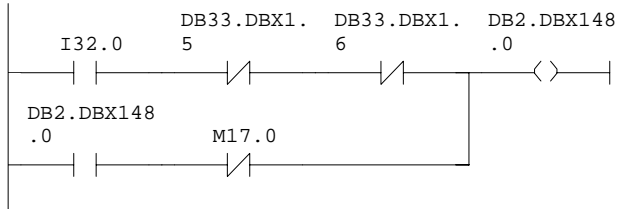
Network: 18 Z Axis Brake Solenoid & Motor Brake



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M43.3	Z AXIS MEAS OK	Z Axis Measuring System 1 or 2 Active Only
DB33.DBX93.5	"Z AXIS".I_MotOK	Drive ready
DB33.DBX93.7	"Z AXIS".I_PulseEnable	Pulses enabled
Q40.3	Z AX MTR BRAKE	KAR3/YBR1 - Z Axis Motor Brake

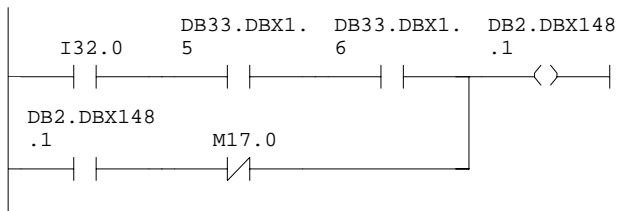
Network: 19 600300: Z Axis No Measuring System Active



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB33.DBX1.5	"Z AXIS".Q_PosMeas1	Position measuring system 1
DB33.DBX1.6	"Z AXIS".Q_PosMeas2	Position measuring system 2
DB2.DBX148.0	"ALARM & MESSAGE"._3FdStop6003xx[0]	Feed stop axis/spindle 3
M17.0	FAULT RESET	Fault Reset

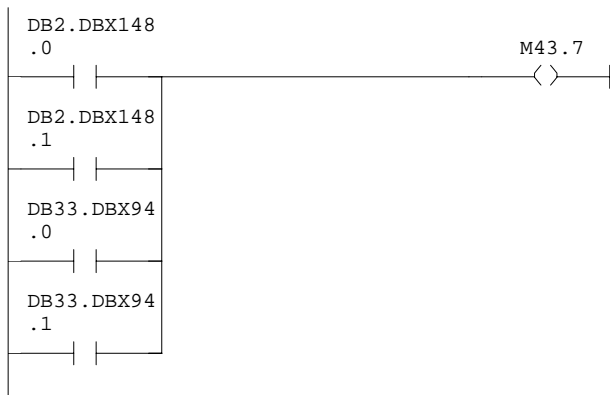
Network: 20 600301: Z Axis Both Measuring Systems Active



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB33.DBX1.5	"Z AXIS".Q_PosMeas1	Position measuring system 1
DB33.DBX1.6	"Z AXIS".Q_PosMeas2	Position measuring system 2
DB2.DBX148.1	"ALARM & MESSAGE"._3FdStop6003xx[1]	Feed stop axis/spindle 3
M17.0	FAULT RESET	Fault Reset

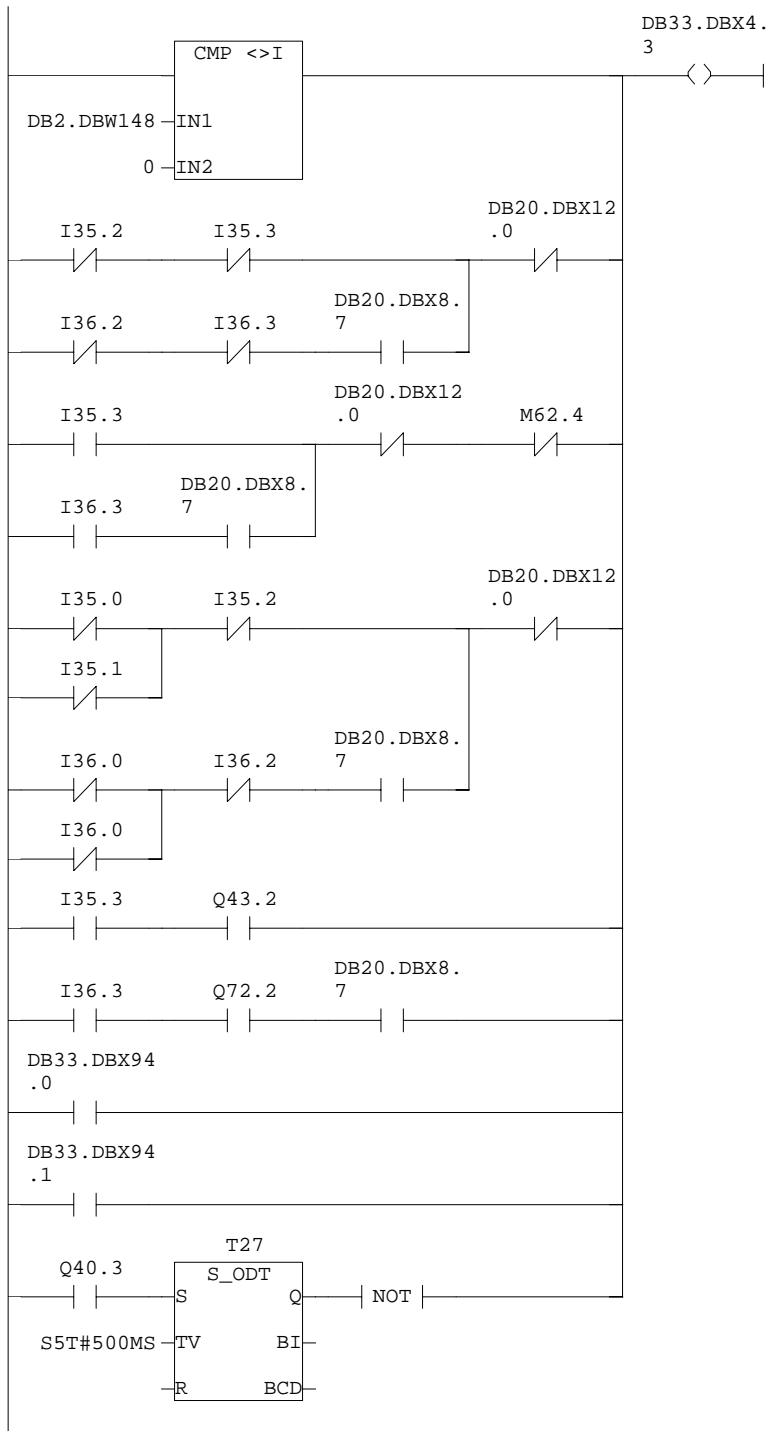
Network: 21 Z Axis Any Fault



Symbol information

DB2.DBX148.0	"ALARM & MESSAGE"._3FdStop6003xx[0]	Feed stop axis/spindle 3
DB2.DBX148.1	"ALARM & MESSAGE"._3FdStop6003xx[1]	Feed stop axis/spindle 3
DB33.DBX94.0	"Z AXIS".I_MTempWarn	Temperature prewarning motor
DB33.DBX94.1	"Z AXIS".I_HTempWarn	Temperature prewarning heat sink
M43.7	Z AXIS FAULT	Z Axis Any Fault

Network: 22 Z Axis Feedhold

**Symbol information**

I35.2	T MAG #1	RET LS	SQL3 - Tool Magazine #1 Retract (IN) Limit
I35.3	T MAG #1	ADV LS	SQL4 - Tool Magazine #1 Advance (OUT) Limit
I36.2	T MAG #2	RET LS	SQL20 - Tool Magazine #2 Retract (IN) Limit
I36.3	T MAG #2	ADV LS	SQL21 - Tool Magazine #2 Advance (OUT) Limit
DB20.DBX8.7	"OPTIONS".Option_87		2nd Tool Magazine Active
DB20.DBX12.0	"OPTIONS".Option_120		ATC Magazine Alarm Suppress for Machine Startup
M62.4	SPIN TOOL UNCLMP'D		Spindle Tool is Unclamped
I35.0	T MAG #1	CNT 1 PX	SQL1 - Tool Magazine #1 Rotation Count #1 Proximity
I35.1	T MAG #1	CNT 2 PX	SQL2 - Tool Magazine #1 Rotation Count #2 Proximity
I36.0	T MAG #2	CNT 1 PX	SQL3 - Tool Magazine #2 Rotation Count #1 Proximity
Q43.2	T MAG #1	ROT MTR	KAR11/MTR6 - Tool Magazine #1 CW/CCW Rotation Motor
Q72.2	T MAG #2	ROT MTR	KAR11/MTR6 - Tool Magazine #2 CW/CCW Rotation Motor

DB33.DBX94.0 "Z AXIS".I_MTempWarn Temperature prewarning motor
DB33.DBX94.1 "Z AXIS".I_HTempWarn Temperature prewarning heat sink
Q40.3 Z AX MTR BRAKE KAR3/YBR1 - Z Axis Motor Brake
DB33.DBX4.3 "Z AXIS".Q_FDSpStop Feed stop/spindle stop

FC54 - <offline>

"4 AXIS NC CONTROL" 4 Axis NC Control & Monitoring (Option) [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/14/01 01:01:08 AMAM
 Interface: 09/13/99 03:01:03 PMPM
Lengths (block/logic/data): 00768 00630 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC54 4 Axis NC Control & Fault Monitoring**Network: 1 4 Axis Motor (1st) Measuring System****Symbol information**

DB20.DBX8.3 "OPTIONS".Option_83 4th Axis 2nd Measuring System Active
DB34.DBX1.5 "4 AXIS".Q_PosMeas1 Position measuring system 1

Network: 2 4 Axis Direct (2nd) Measuring System**Symbol information**

DB20.DBX8.3 "OPTIONS".Option_83 4th Axis 2nd Measuring System Active
DB34.DBX1.6 "4 AXIS".Q_PosMeas2 Position measuring system 2

Network: 3 4 Axis Feed Override Active**Symbol information**

DB21.DBX6.7 "CHANNEL 1".Q_FD_ORA Feedrate override active
DB34.DBX1.7 "4 AXIS".Q_ORactive Override active

Network: 4 4 Axis 1st Reference Point**Symbol information**

M0.1 ON Marker Always On
DB34.DBX2.4 "4 AXIS".Q_RefVal1 Reference point value 1

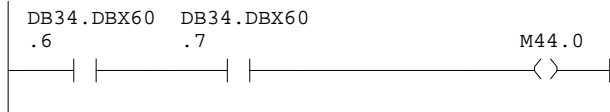
Network: 5 4 Axis Reference Point



Symbol information

I34.3 4 AXIS REF LS SQL11 - 4 Axis Reference Limit
 DB34.DBX12.7 "4 AXIS".Q_DelayRef Delay reference point approach

Network: 6 4 Axis In Position



Symbol information

DB34.DBX60.6 "4 AXIS".I_ExactCoarse Position reached with exact stop coarse
 DB34.DBX60.7 "4 AXIS".I_ExactFine Position reached with exact stop fine
 M44.0 4 AXIS IN POSN 4 Axis In Position

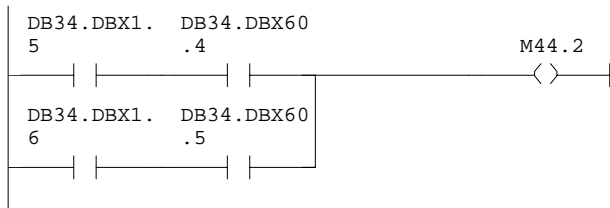
Network: 7 4 Axis In Motion



Symbol information

DB34.DBX64.7 "4 AXIS".I_TCPlus Traverse command plus
 DB34.DBX64.6 "4 AXIS".I_TCMinus Traverse command minus
 M44.1 4 AXIS MOTION 4 Axis Motion (+VE or -VE Command)

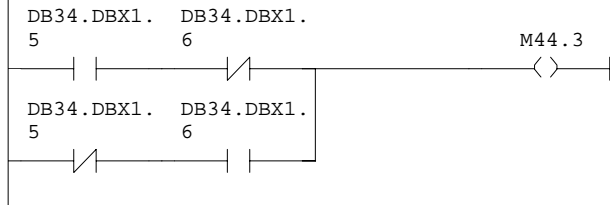
Network: 8 4 Axis Referenced to Active Measuring System



Symbol information

DB34.DBX1.5 "4 AXIS".Q_PosMeas1 Position measuring system 1
 DB34.DBX60.4 "4 AXIS".I_RefSyn1 Referenced/synchronized 1
 DB34.DBX1.6 "4 AXIS".Q_PosMeas2 Position measuring system 2
 DB34.DBX60.5 "4 AXIS".I_RefSyn2 Referenced/synchronized 2
 M44.2 4 AXIS REFD 4 Axis Referenced to Active Measuring System

Network: 9 4 Axis 1st or 2nd Measuring System Active Only



Symbol information

DB34.DBX1.5 "4 AXIS".Q_PosMeas1 Position measuring system 1
 DB34.DBX1.6 "4 AXIS".Q_PosMeas2 Position measuring system 2
 M44.3 4 AXIS MEAS OK 4 Axis Measuring System 1 or 2 Active Only

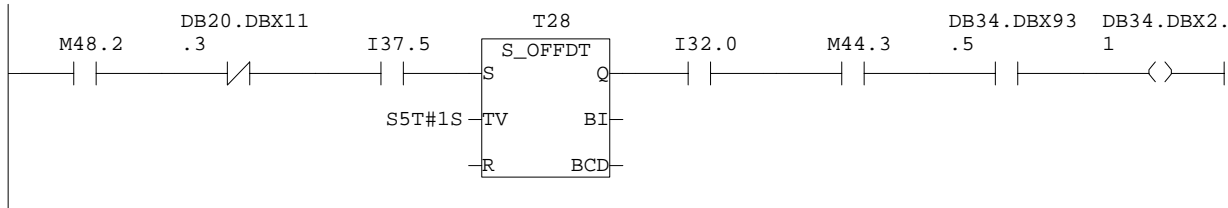
Network: 10 4 Axis Software Pulse Enable



Symbol information

M0.1 ON Marker Always On
 DB34.DBX21.7 "4 AXIS".Q_PulseEnable Pulse enable

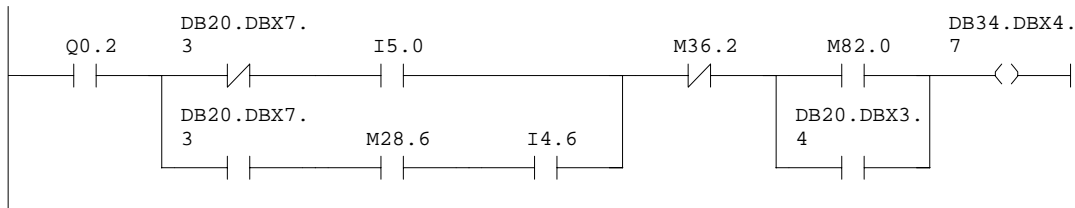
Network: 11 4 Axis NC Contoller Enable



Symbol information

M48.2 4 AXIS UCLP REQ 4 Axis Unlamp Request
 DB20.DBX11.3 "OPTIONS".Option_113 4 Axis Disable for Machine Startup
 I37.5 4 AXIS UCLP LS SQL15 - 4 Axis Unclamped Limit
 I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 M44.3 4 AXIS MEAS OK 4 Axis Measuring System 1 or 2 Active Only
 DB34.DBX93.5 "4 AXIS".I_MotOK Drive ready
 DB34.DBX2.1 "4 AXIS".Q_ContrEnable Controller enable

Network: 12 4 Axis Jog +VE

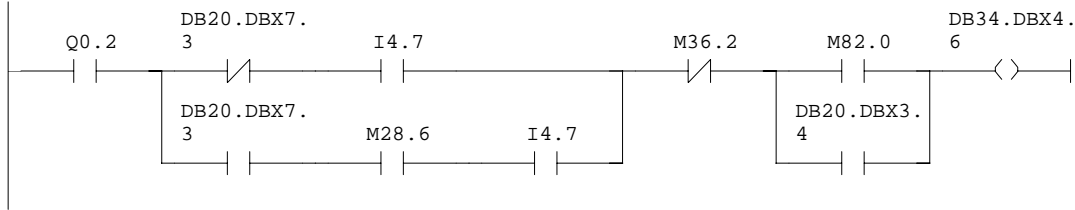


Symbol information

Q0.2 JOG MODE LED MCP - Jog Mode LED [L1]
 DB20.DBX7.3 "OPTIONS".Option_73 5th Axis Active
 I5.0 4 AX +VE X AX SEL MCP - 4 Axis +VE Jog or X Axis Select (5 Axis Variant) [K28]
 M28.6 4 AXIS SEL BFR 4 Axis Select Buffer
 I4.6 Y AX +VE JOG +VE MCP - Y Axis +VE Jog or Axis Jog Positive (5 Axis Variant) [K48]
 M36.2 MPG ENBL SEL BFR MPG Enable Buffer

M82.0 M/C DOOR CLS BFR Machine Safety Door Close Buffer
 DB20.DBX3.4 "OPTIONS".Option_34 Axis Jog from MCP with Door Open Active
 DB34.DBX4.7 "4 AXIS".Q_Plus Traversing key plus

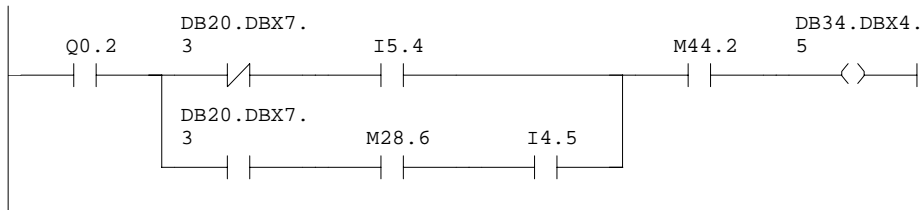
Network: 13 4 Axis Jog -VE



Symbol information

Q0.2 JOG MODE LED MCP - Jog Mode LED [L1]
 DB20.DBX7.3 "OPTIONS".Option_73 5th Axis Active
 I4.7 4 AX -VE JOG -VE MCP - 4 Axis -VE Jog or Axis Jog Negative (5 Axis Variant) [K50]
 M28.6 4 AXIS SEL BFR 4 Axis Select Buffer
 M36.2 MPG ENBL SEL BFR MPG Enable Buffer
 M82.0 M/C DOOR CLS BFR Machine Safety Door Close Buffer
 DB20.DBX3.4 "OPTIONS".Option_34 Axis Jog from MCP with Door Open Active
 DB34.DBX4.6 "4 AXIS".Q_Minus Traversing key minus

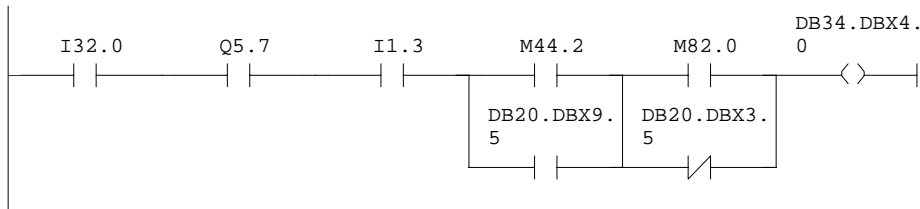
Network: 14 4 Axis Rapid Traverse



Symbol information

Q0.2 JOG MODE LED MCP - Jog Mode LED [L1]
 DB20.DBX7.3 "OPTIONS".Option_73 5th Axis Active
 I5.4 RAPID JOG 5 AX SEL MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant) [K39]
 M28.6 4 AXIS SEL BFR 4 Axis Select Buffer
 I4.5 Z AX -VE RAP JOG MCP - Z Axis -VE Jog or Rapid Traverse (5 Axis Variant) [K49]
 M44.2 4 AXIS REFD 4 Axis Referenced to Active Measuring System
 DB34.DBX4.5 "4 AXIS".Q_RapidTrOR Rapid traverse override

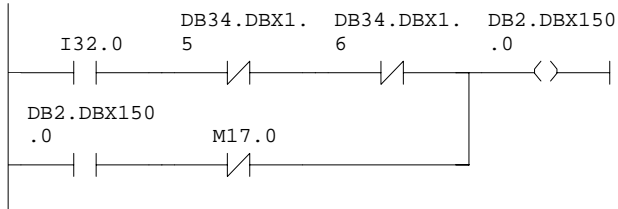
Network: 15 4 Axis Handwheel Active



Symbol information

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 Q5.7 HHU ENBL LED MCP - HHU Enable LED [L33]
 I1.3 MPG UNIT 4 AX SEL SAR7 - Remote HHU 4 Axis Select [X34/2]
 M44.2 4 AXIS REFD 4 Axis Referenced to Active Measuring System
 DB20.DBX9.5 "OPTIONS".Option_95 Handwheel Active Before Reference Point Approach
 M82.0 M/C DOOR CLS BFR Machine Safety Door Close Buffer
 DB20.DBX3.5 "OPTIONS".Option_35 MPG with Door Open Inactive
 DB34.DBX4.0 "4 AXIS".Q_HW1 Activate handwheel 1

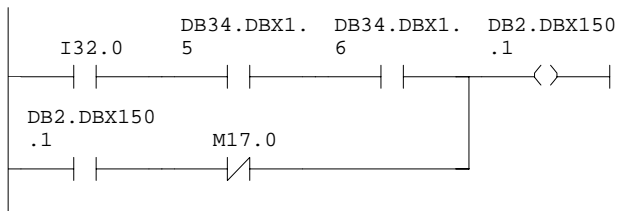
Network: 16 600400: 4 Axis No Measuring System Active



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB34.DBX1.5	"4 AXIS".Q_PosMeas1	Position measuring system 1
DB34.DBX1.6	"4 AXIS".Q_PosMeas2	Position measuring system 2
DB2.DBX150.0	"ALARM & MESSAGE"._4FdStop6004xx[0]	Feed stop axis/spindle 4
M17.0	FAULT RESET	Fault Reset

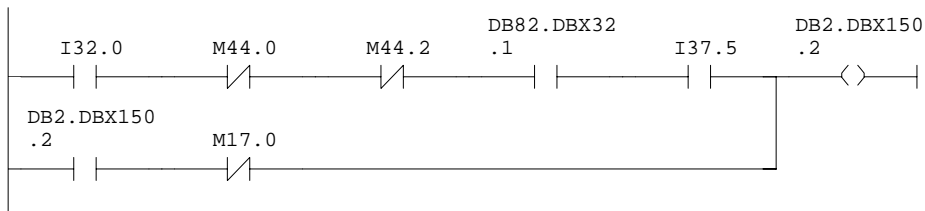
Network: 17 600401: 4 Axis Both Measuring Systems Active



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB34.DBX1.5	"4 AXIS".Q_PosMeas1	Position measuring system 1
DB34.DBX1.6	"4 AXIS".Q_PosMeas2	Position measuring system 2
DB2.DBX150.1	"ALARM & MESSAGE"._4FdStop6004xx[1]	Feed stop axis/spindle 4
M17.0	FAULT RESET	Fault Reset

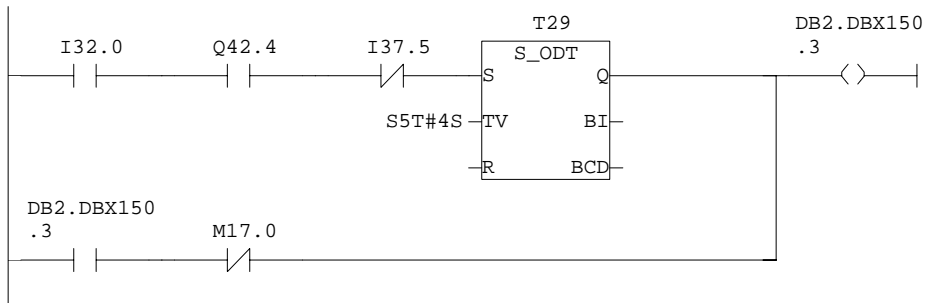
Network: 18 600402: 4 Axis Not Referenced for Program Move



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M44.0	4 AXIS IN POSN	4 Axis In Position
M44.2	4 AXIS REFD	4 Axis Referenced to Active Measuring System
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
I37.5	4 AXIS UCLP LS	SQL15 - 4 Axis Unclamped Limit
DB2.DBX150.2	"ALARM & MESSAGE"._4FdStop6004xx[2]	Feed stop axis/spindle 4
M17.0	FAULT RESET	Fault Reset

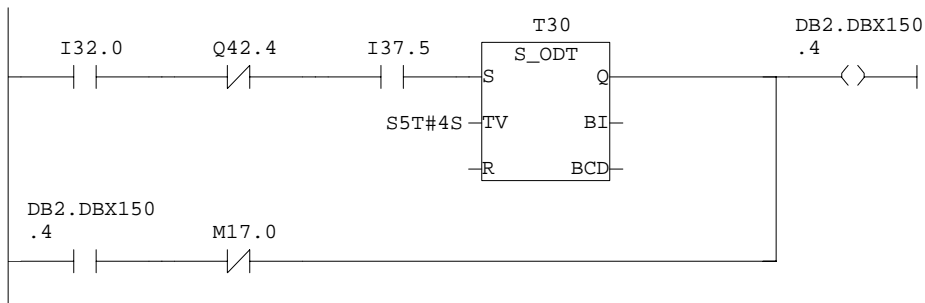
Network: 19 600403: 4 Axis Unclamp Timeout



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q42.4	4 AXIS UCLP SOL	KAR16/YVS15 - 4 Axis Unclamp Solenoid
I37.5	4 AXIS UCLP LS	SQL15 - 4 Axis Unclamped Limit
DB2.DBX150.3	"ALARM & MESSAGE"._4FdStop6004xx[3]	Feed stop axis/spindle 4
M17.0	FAULT RESET	Fault Reset

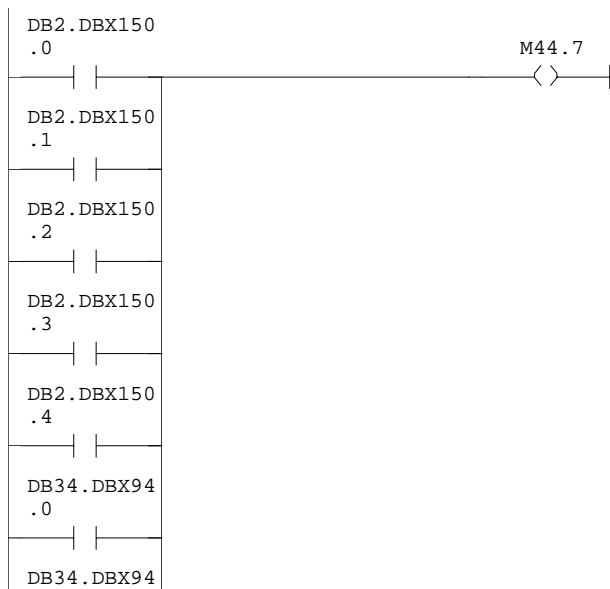
Network: 20 600403: 4 Axis Clamp Timeout

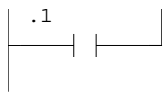


Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q42.4	4 AXIS UCLP SOL	KAR16/YVS15 - 4 Axis Unclamp Solenoid
I37.5	4 AXIS UCLP LS	SQL15 - 4 Axis Unclamped Limit
DB2.DBX150.4	"ALARM & MESSAGE"._4FdStop6004xx[4]	Feed stop axis/spindle 4
M17.0	FAULT RESET	Fault Reset

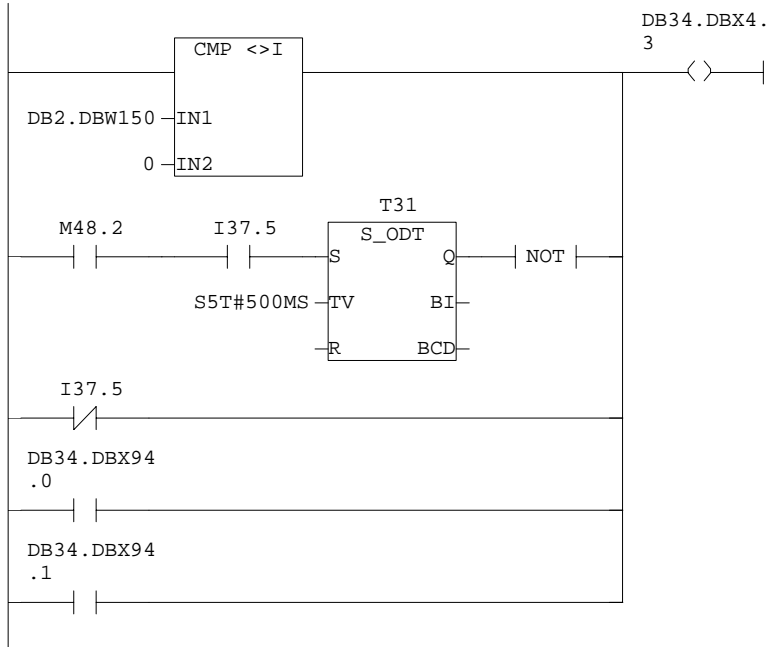
Network: 21 4 Axis Any Fault



**Symbol information**

DB2.DBX150.0	"ALARM & MESSAGE"._4FdStop6004xx[0]	Feed stop axis/spindle 4
DB2.DBX150.1	"ALARM & MESSAGE"._4FdStop6004xx[1]	Feed stop axis/spindle 4
DB2.DBX150.2	"ALARM & MESSAGE"._4FdStop6004xx[2]	Feed stop axis/spindle 4
DB2.DBX150.3	"ALARM & MESSAGE"._4FdStop6004xx[3]	Feed stop axis/spindle 4
DB2.DBX150.4	"ALARM & MESSAGE"._4FdStop6004xx[4]	Feed stop axis/spindle 4
DB34.DBX94.0	"4 AXIS".I_MTempWarn	Temperature prewarning motor
DB34.DBX94.1	"4 AXIS".I_HTempWarn	Temperature prewarning heat sink
M44.7	4 AXIS FAULT	4 Axis Any Fault

Network: 22	4 Axis Feedhold
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**Symbol information**

M48.2	4 AXIS	UCLP REQ	4 Axis Unlamp Request
I37.5	4 AXIS	UCLP LS	SQL15 - 4 Axis Unclamped Limit
DB34.DBX94.0	"4 AXIS".I_MTempWarn	Temperature prewarning motor	
DB34.DBX94.1	"4 AXIS".I_HTempWarn	Temperature prewarning heat sink	
DB34.DBX4.3	"4 AXIS".Q_FDSpStop	Feed stop/spindle stop	

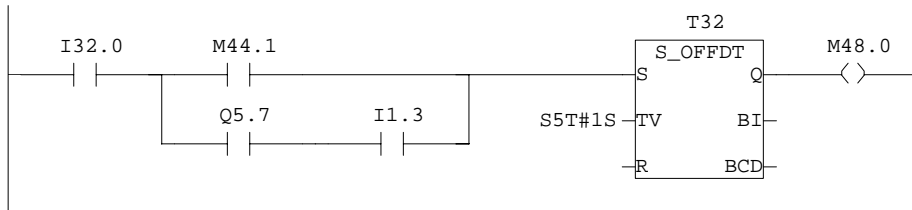
FC55 - <offline>

"4 AXIS CLAMP CONTROL" 4 Axis Clamp/Unclamp Control (Option) [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 1
Time stamp Code: 02/12/01 09:42:05 AMAM
Interface: 10/08/98 11:19:16 AMAM
Lengths (block/logic/data): 00220 00066 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

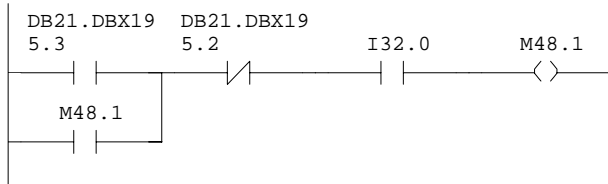
Block: FC55 4 Axis Clamp & Unclamp Control

Network: 1 4 Axis Automatic Unclamp Request

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
M44.1 4 AXIS MOTION 4 Axis Motion (+VE or -VE Command)
Q5.7 HHU ENBL LED MCP - HHU Enable LED [L33]
I1.3 MPG UNIT 4 AX SEL SAR7 - Remote HHU 4 Axis Select [X34/2]
M48.0 4 AX AUTO UCLP REQ 4 Axis Automatic Unclamp Request

Network: 2 4 Axis Manual Unclamp Request

**Symbol information**

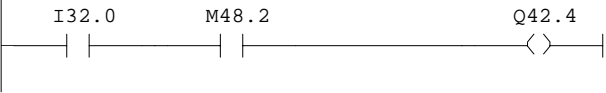
DB21.DBX195.3 "CHANNEL 1".MDyn[11]
M48.1 4 AX MANL UCLP REQ 4 Axis Manual Unclamp Request
DB21.DBX195.2 "CHANNEL 1".MDyn[10]
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

Network: 3 4 Axis Unclamp Request

**Symbol information**

M48.0 4 AX AUTO UCLP REQ 4 Axis Automatic Unclamp Request
M48.1 4 AX MANL UCLP REQ 4 Axis Manual Unclamp Request
M48.2 4 AXIS UCLP REQ 4 Axis Unclamp Request

Network: 44 Axis Unclamp Solenoid



Symbol information		
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M48.2	4 AXIS	UCLP REQ 4 Axis Unlamp Request
Q42.4	4 AXIS	UCLP SOL KAR16/YVS15 - 4 Axis Unclamp Solenoid

FC56 - <offline>

"5 AXIS NC CONTROL" 5 Axis NC Control & Monitoring (Option) [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/12/01 09:42:05 AMAM
 Interface: 09/13/99 03:01:03 PMPM
Lengths (block/logic/data): 00768 00630 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC56 5 Axis NC Control & Fault Monitoring

Network: 1 5 Axis Motor (1st) Measuring System

**Symbol information**

DB20.DBX7.2 "OPTIONS".Option_72 5th Axis 2nd Measuring System Active
DB35.DBX1.5 "5 AXIS".Q_PosMeas1 Position measuring system 1

Network: 2 5 Axis Direct (2nd) Measuring System

**Symbol information**

DB20.DBX7.2 "OPTIONS".Option_72 5th Axis 2nd Measuring System Active
DB35.DBX1.6 "5 AXIS".Q_PosMeas2 Position measuring system 2

Network: 3 5 Axis Feed Override Active

**Symbol information**

DB21.DBX6.7 "CHANNEL 1".Q_FD_ORA Feedrate override active
DB35.DBX1.7 "5 AXIS".Q_ORactive Override active

Network: 4 5 Axis 1st Reference Point

**Symbol information**

M0.1 ON Marker Always On
DB35.DBX2.4 "5 AXIS".Q_RefVal1 Reference point value 1

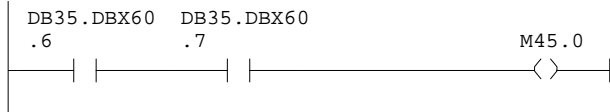
Network: 5 5 Axis Reference Point



Symbol information

I39.7 5 AXIS REF LS SQL30 - 5 Axis Reference Limit
 DB35.DBX12.7 "5 AXIS".Q_DelayRef Delay reference point approach

Network: 6 5 Axis In Position



Symbol information

DB35.DBX60.6 "5 AXIS".I_ExactCoarse Position reached with exact stop coarse
 DB35.DBX60.7 "5 AXIS".I_ExactFine Position reached with exact stop fine
 M45.0 5 AXIS IN POSN 5 Axis In Position

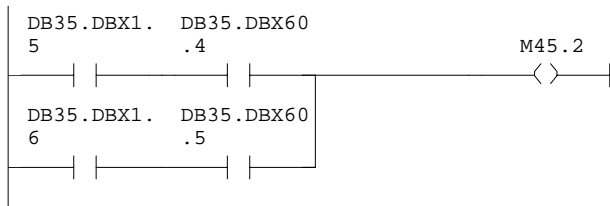
Network: 7 5 Axis In Motion



Symbol information

DB35.DBX64.7 "5 AXIS".I_TCPlus Traverse command plus
 DB35.DBX64.6 "5 AXIS".I_TCMinus Traverse command minus
 M45.1 5 AXIS MOTION 5 Axis Motion (+VE or -VE Command)

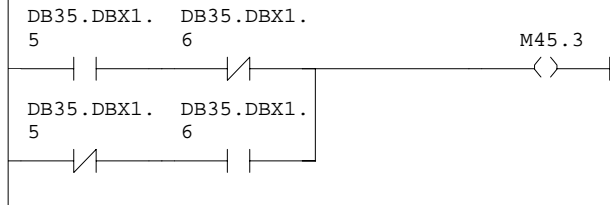
Network: 8 5 Axis Referenced to Active Measuring System



Symbol information

DB35.DBX1.5 "5 AXIS".Q_PosMeas1 Position measuring system 1
 DB35.DBX60.4 "5 AXIS".I_RefSyn1 Referenced/synchronized 1
 DB35.DBX1.6 "5 AXIS".Q_PosMeas2 Position measuring system 2
 DB35.DBX60.5 "5 AXIS".I_RefSyn2 Referenced/synchronized 2
 M45.2 5 AXIS REFD 5 Axis Referenced to Active Measuring System

Network: 9 5 Axis 1st or 2nd Measuring System Active Only



Symbol information

DB35.DBX1.5 "5 AXIS".Q_PosMeas1 Position measuring system 1
 DB35.DBX1.6 "5 AXIS".Q_PosMeas2 Position measuring system 2
 M45.3 5 AXIS MEAS OK 5 Axis Measuring System 1 or 2 Active Only

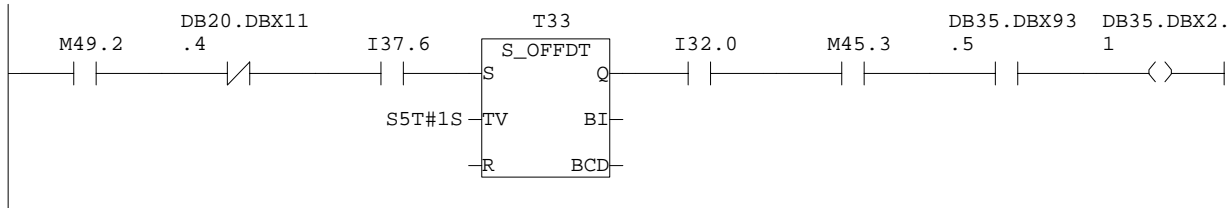
Network: 10 5 Axis Software Pulse Enable



Symbol information

M0.1 ON Marker Always On
 DB35.DBX21.7 "5 AXIS".Q_PulseEnable Pulse enable

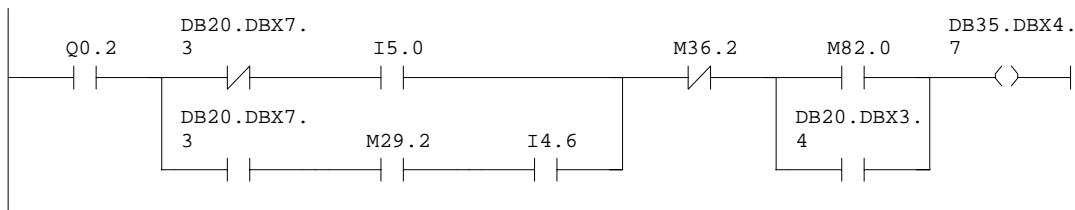
Network: 11 5 Axis NC Contoller Enable



Symbol information

M49.2 5 AXIS UCLP REQ 5 Axis Unlamp Request
 DB20.DBX11.4 "OPTIONS".Option_114 5 Axis Disable for Machine Startup
 I37.6 5 AXIS UCLP LS SQL31 - 5 Axis Unclamped Limit
 I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 M45.3 5 AXIS MEAS OK 5 Axis Measuring System 1 or 2 Active Only
 DB35.DBX93.5 "5 AXIS".I_MotOK Drive ready
 DB35.DBX2.1 "5 AXIS".Q_ContrEnable Controller enable

Network: 12 5 Axis Jog +VE

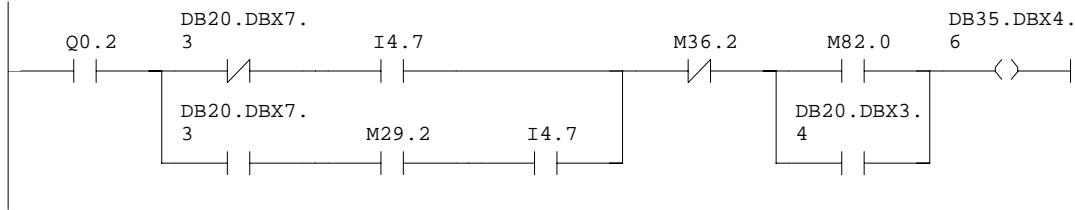


Symbol information

Q0.2 JOG MODE LED MCP - Jog Mode LED [L1]
 DB20.DBX7.3 "OPTIONS".Option_73 5th Axis Active
 I5.0 4 AX +VE X AX SEL MCP - 4 Axis +VE Jog or X Axis Select (5 Axis Variant) [K28]
 M29.2 5 AXIS SEL BFR 5 Axis Select Buffer
 I4.6 Y AX +VE JOG +VE MCP - Y Axis +VE Jog or Axis Jog Positive (5 Axis Variant) [K48]
 M36.2 MPG ENBL SEL BFR MPG Enable Buffer

M82.0 M/C DOOR CLS BFR Machine Safety Door Close Buffer
 DB20.DBX3.4 "OPTIONS".Option_34 Axis Jog from MCP with Door Open Active
 DB35.DBX4.7 "5 AXIS".Q_Plus Traversing key plus

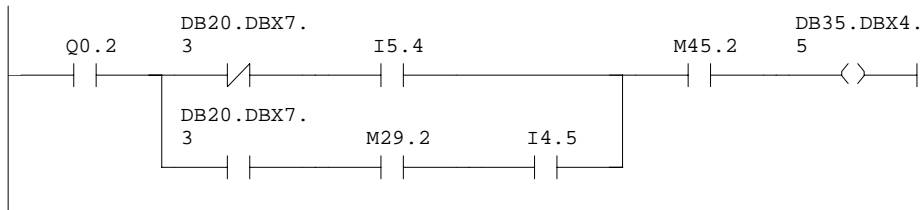
Network: 13 5 Axis Jog -VE



Symbol information

Q0.2 JOG MODE LED MCP - Jog Mode LED [L1]
 DB20.DBX7.3 "OPTIONS".Option_73 5th Axis Active
 I4.7 4 AX -VE JOG -VE MCP - 4 Axis -VE Jog or Axis Jog Negative (5 Axis Variant) [K50]
 M29.2 5 AXIS SEL BFR 5 Axis Select Buffer
 M36.2 MPG ENBL SEL BFR MPG Enable Buffer
 M82.0 M/C DOOR CLS BFR Machine Safety Door Close Buffer
 DB20.DBX3.4 "OPTIONS".Option_34 Axis Jog from MCP with Door Open Active
 DB35.DBX4.6 "5 AXIS".Q_Minus Traversing key minus

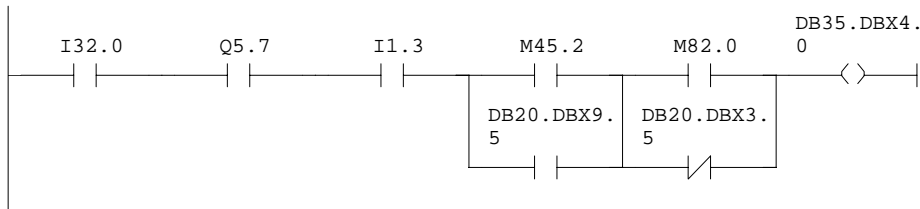
Network: 14 5 Axis Rapid Traverse



Symbol information

Q0.2 JOG MODE LED MCP - Jog Mode LED [L1]
 DB20.DBX7.3 "OPTIONS".Option_73 5th Axis Active
 I5.4 RAPID JOG 5 AX SEL MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant) [K39]
 M29.2 5 AXIS SEL BFR 5 Axis Select Buffer
 I4.5 Z AX -VE RAP JOG MCP - Z Axis -VE Jog or Rapid Traverse (5 Axis Variant) [K49]
 M45.2 5 AXIS REFD 5 Axis Referenced to Active Measuring System
 DB35.DBX4.5 "5 AXIS".Q_RapidTrOR Rapid traverse override

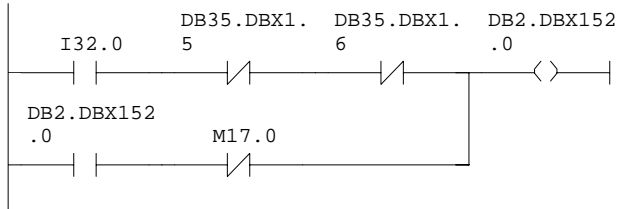
Network: 15 5 Axis Handwheel Active



Symbol information

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 Q5.7 HHU ENBL LED MCP - HHU Enable LED [L33]
 I1.3 MPG UNIT 4 AX SEL SAR7 - Remote HHU 4 Axis Select [X34/2]
 M45.2 5 AXIS REFD 5 Axis Referenced to Active Measuring System
 DB20.DBX9.5 "OPTIONS".Option_95 Handwheel Active Before Reference Point Approach
 M82.0 M/C DOOR CLS BFR Machine Safety Door Close Buffer
 DB20.DBX3.5 "OPTIONS".Option_35 MPG with Door Open Inactive
 DB35.DBX4.0 "5 AXIS".Q_HW1 Activate handwheel 1

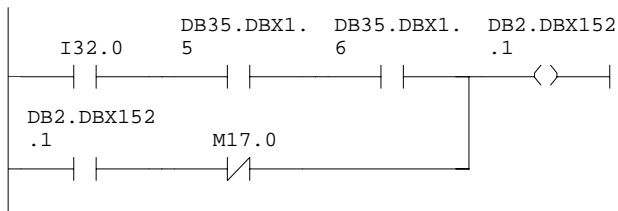
Network: 16 600500: 5 Axis No Measuring System Active



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB35.DBX1.5	"5 AXIS".Q_PosMeas1	Position measuring system 1
DB35.DBX1.6	"5 AXIS".Q_PosMeas2	Position measuring system 2
DB2.DBX152.0	"ALARM & MESSAGE"._5FdStop6005xx[0]	Feed stop axis/spindle 5
M17.0	FAULT RESET	Fault Reset

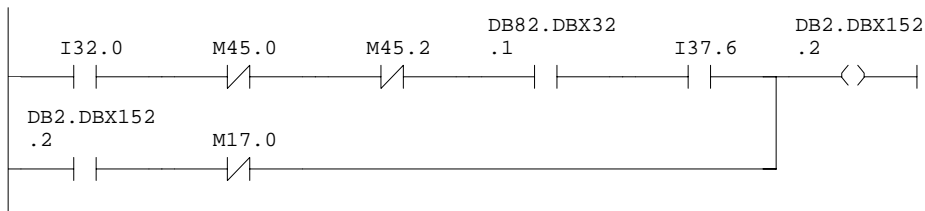
Network: 17 600501: 5 Axis Both Measuring Systems Active



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB35.DBX1.5	"5 AXIS".Q_PosMeas1	Position measuring system 1
DB35.DBX1.6	"5 AXIS".Q_PosMeas2	Position measuring system 2
DB2.DBX152.1	"ALARM & MESSAGE"._5FdStop6005xx[1]	Feed stop axis/spindle 5
M17.0	FAULT RESET	Fault Reset

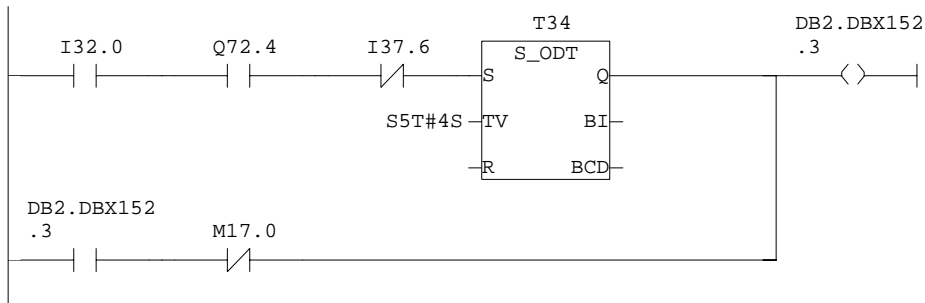
Network: 18 600502: 5 Axis Not Referenced for Program Move



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M45.0	5 AXIS IN POSN	5 Axis In Position
M45.2	5 AXIS REFD	5 Axis Referenced to Active Measuring System
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
I37.6	5 AXIS UCLP LS	SQL31 - 5 Axis Unclamped Limit
DB2.DBX152.2	"ALARM & MESSAGE"._5FdStop6005xx[2]	Feed stop axis/spindle 5
M17.0	FAULT RESET	Fault Reset

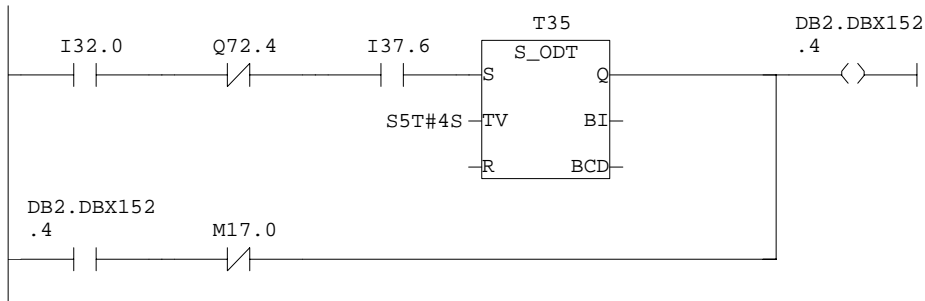
Network: 19 600503: 5 Axis Unclamp Timeout



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q72.4	5 AXIS UCLP SOL	KAR54/YVS16 - 5 Axis Unclamp Solenoid
I37.6	5 AXIS UCLP LS	SQL31 - 5 Axis Unclamped Limit
DB2.DBX152.3	"ALARM & MESSAGE"._5FdStop6005xx[3]	Feed stop axis/spindle 5
M17.0	FAULT RESET	Fault Reset

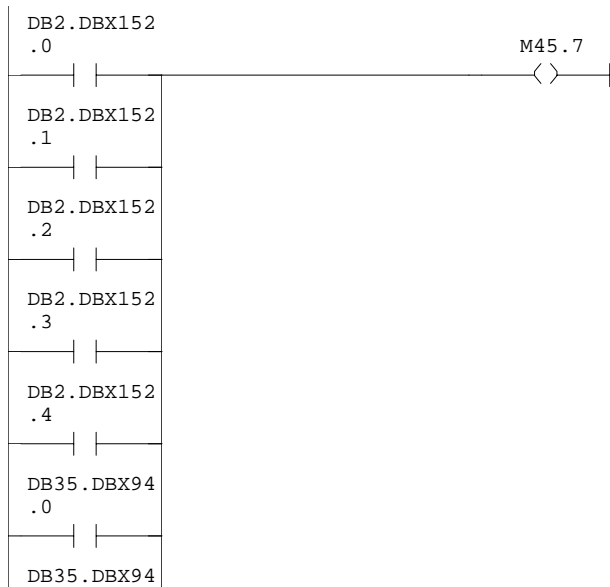
Network: 20 600503: 5 Axis Clamp Timeout

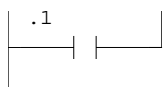


Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q72.4	5 AXIS UCLP SOL	KAR54/YVS16 - 5 Axis Unclamp Solenoid
I37.6	5 AXIS UCLP LS	SQL31 - 5 Axis Unclamped Limit
DB2.DBX152.4	"ALARM & MESSAGE"._5FdStop6005xx[4]	Feed stop axis/spindle 5
M17.0	FAULT RESET	Fault Reset

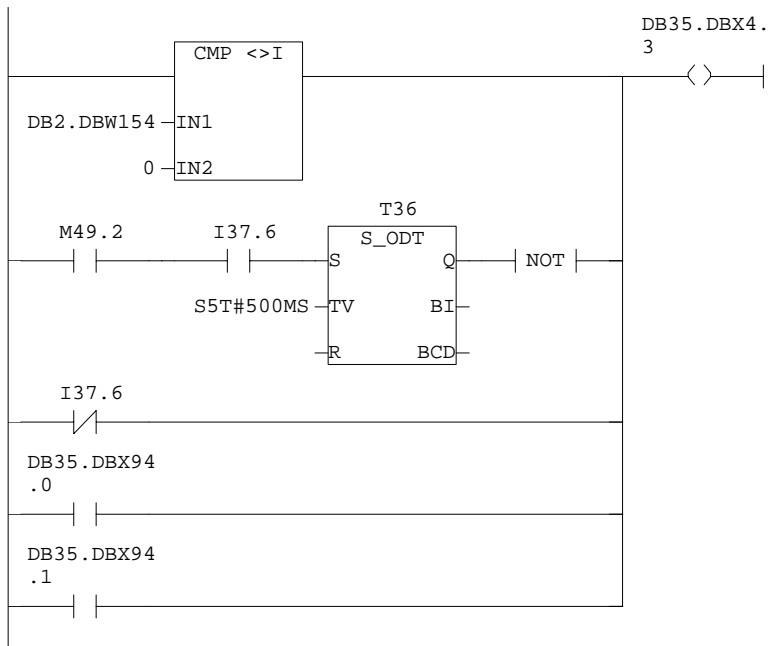
Network: 21 5 Axis Any Fault



**Symbol information**

DB2.DBX152.0	"ALARM & MESSAGE"._5FdStop6005xx[0]	Feed stop axis/spindle 5
DB2.DBX152.1	"ALARM & MESSAGE"._5FdStop6005xx[1]	Feed stop axis/spindle 5
DB2.DBX152.2	"ALARM & MESSAGE"._5FdStop6005xx[2]	Feed stop axis/spindle 5
DB2.DBX152.3	"ALARM & MESSAGE"._5FdStop6005xx[3]	Feed stop axis/spindle 5
DB2.DBX152.4	"ALARM & MESSAGE"._5FdStop6005xx[4]	Feed stop axis/spindle 5
DB35.DBX94.0	"5 AXIS".I_MTempWarn	Temperature prewarning motor
DB35.DBX94.1	"5 AXIS".I_HTempWarn	Temperature prewarning heat sink
M45.7	5 AXIS FAULT	5 Axis Any Fault

Network: 22	5 Axis Feedhold
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**Symbol information**

M49.2	5 AXIS	UCLP REQ	5 Axis Unlamp Request
I37.6	5 AXIS	UCLP LS	SQL31 - 5 Axis Unclamped Limit
DB35.DBX94.0	"5 AXIS".I_MTempWarn	Temperature prewarning motor	
DB35.DBX94.1	"5 AXIS".I_HTempWarn	Temperature prewarning heat sink	
DB35.DBX4.3	"5 AXIS".Q_FDSpStop	Feed stop/spindle stop	

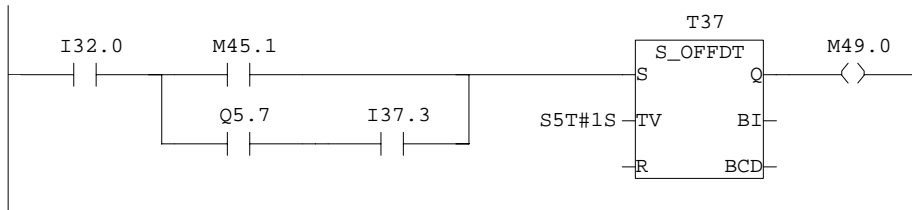
FC57 - <offline>

"5 AXIS CLAMP CONTROL" 5 Axis Clamp/Unclamp Control (Option) [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 1
Time stamp Code: 03/09/01 02:01:03 PMPM
Interface: 10/08/98 11:19:16 AMAM
Lengths (block/logic/data): 00220 00066 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

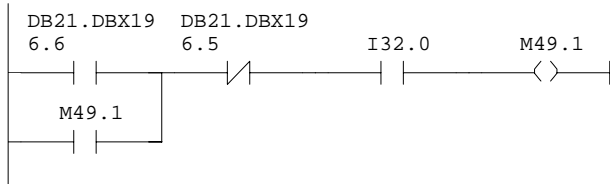
Block: FC57 5 Axis Clamp & Unclamp Control

Network: 1 5 Axis Automatic Unclamp Request

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
M45.1 5 AXIS MOTION 5 Axis Motion (+VE or -VE Command)
Q5.7 HHU ENBL LED MCP - HHU Enable LED [L33]
I37.3 REM HHU 5 AX SEL SAR7 - Remote HHU 5 Axis Select
M49.0 5 AX AUTO UCLP REQ 5 Axis Automatic Unclamp Request

Network: 2 5 Axis Manual Unclamp Request

**Symbol information**

M49.1 5 AX MANL UCLP REQ 5 Axis Manual Unclamp Request
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

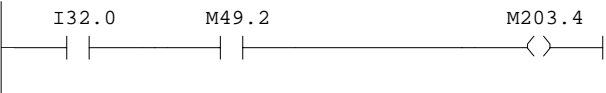
Network: 3 5 Axis Unclamp Request

**Symbol information**

M49.0 5 AX AUTO UCLP REQ 5 Axis Automatic Unclamp Request
M49.1 5 AX MANL UCLP REQ 5 Axis Manual Unclamp Request
M49.2 5 AXIS UCLP REQ 5 Axis Unclamp Request

Network: 4

5 Axis Unclamp Solenoid



Symbol information		
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M49.2	5 AXIS	UCLP REQ 5 Axis Unlamp Request
M203.4	5 AXIS	UC SL PQ KAR54/YVS16 - 5 Axis Unclamp Solenoid Peripheral Output

FC60 - <offline>

"SPINDLE CONTROL" Spindle Control & Monitoring [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 03/11/01 10:18:12 PMPM
 Interface: 10/27/98 12:04:55 PMPM
Lengths (block/logic/data): 01916 01736 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC60 Spindle NC Control

Network: 1 Spindle Motor (1st) Measuring System

**Symbol information**

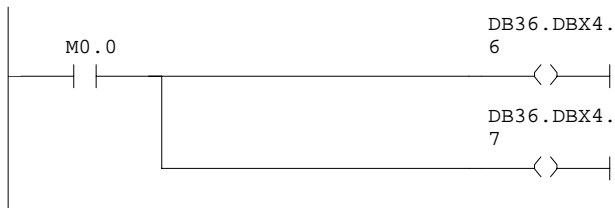
M0.0 OFF Marker Always Off
DB36.DBX1.5 "SPINDLE".Q_PosMeas1 Position measuring system 1

Network: 2 Spindle Direct (2nd) Measuring System

**Symbol information**

M0.1 ON Marker Always On
DB36.DBX1.6 "SPINDLE".Q_PosMeas2 Position measuring system 2

Network: 3 Spindle NC Jog Control Disable

**Symbol information**

M0.0 OFF Marker Always Off
DB36.DBX4.6 "SPINDLE".Q_Minus Traversing key minus
DB36.DBX4.7 "SPINDLE".Q_Plus Traversing key plus

Network: 4 Spindle Override Active



Symbol information

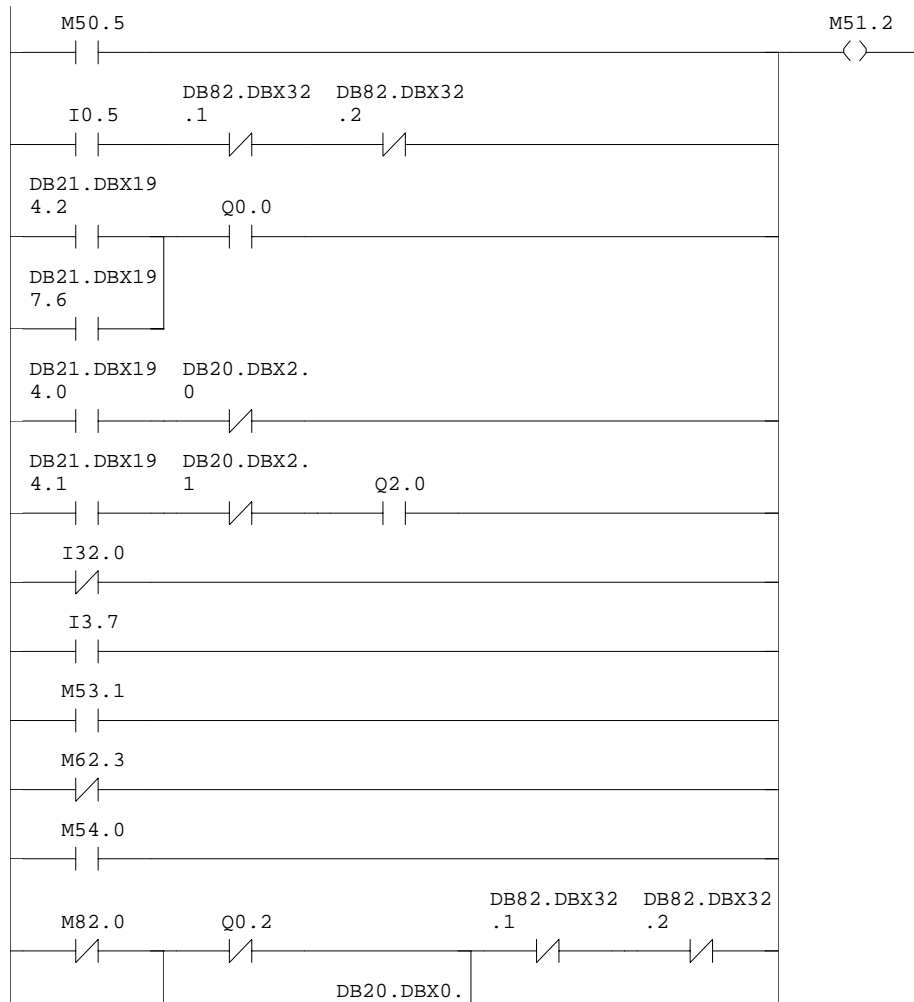
M0.1 ON Marker Always On
DB36.DBX1.7 "SPINDLE".Q_ORactive Override active

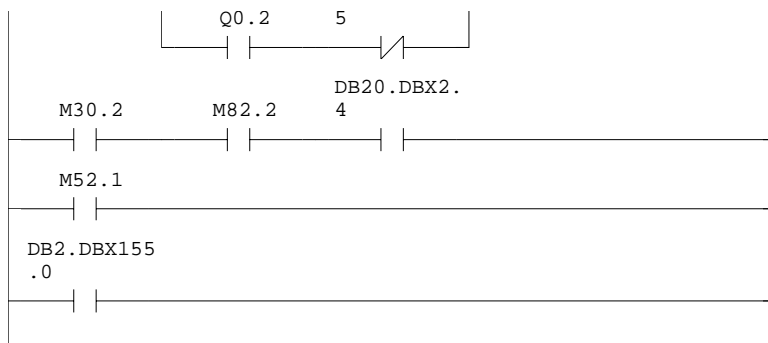
Network: 5 Spindle Override

A	I	4.0	"SPINDLE OR BIT A"	-- MCP/SAR2 - Spindle Override Bit A [X31/1]
=	DB36.DBX	19.0		
A	I	4.1	"SPINDLE OR BIT B"	-- MCP/SAR2 - Spindle Override Bit B [X31/2]
=	DB36.DBX	19.1		
A	I	4.2	"SPINDLE OR BIT C"	-- MCP/SAR2 - Spindle Override Bit C [X31/3]
=	DB36.DBX	19.2		
A	I	4.3	"SPINDLE OR BIT D"	-- MCP/SAR2 - Spindle Override Bit D [X32/1]
=	DB36.DBX	19.3		

Network: 6 Spindle Speed Programmed**Symbol information**

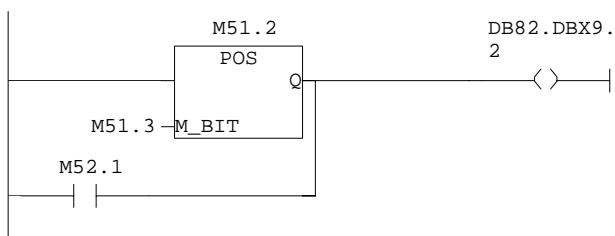
DB21.DBX60.0 "CHANNEL 1".S1Change S function 1 change
M51.0 SPINDLE SPD PGM Spindle Speed is Programmed (S-Code)

Network: 7 Spindle Stop Request

**Symbol information**

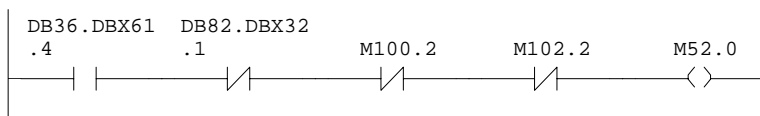
M50.5	SPINDLE	M05 EXT	Spindle Extended Decoding for M5
I0.5	SPIN STOP	SELECT	MCP - Spindle Stop Select [K9]
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped		
DB21.DBX194.2	"CHANNEL 1".MDyn[2]		
DB21.DBX197.6	"CHANNEL 1".MDyn[30]		
Q0.0	AUTO MODE	LED	MCP - Auto Mode LED [L21]
DB21.DBX194.0	"CHANNEL 1".MDyn[0]		
DB20.DBX2.0	"OPTIONS".Option_20		Spindle Does Not Stop With M00
DB21.DBX194.1	"CHANNEL 1".MDyn[1]		
DB20.DBX2.1	"OPTIONS".Option_21		Spindle Does Not Stop With M01
Q2.0	OPT STOP	LED	MCP - Optional Stop LED [L14]
I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
I3.7	NC RESET		MCP - NC Reset [K32]
M53.1	SPIN ORT	ACTIVE	Spindle Orientation Active
M62.3	SPIN TOOL	CLAMPED	Spindle Tool is Clamped
M54.0	SPINDLE	FAULT	Spindle Fault
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
Q0.2	JOG MODE	LED	MCP - Jog Mode LED [L1]
DB20.DBX0.5	"OPTIONS".Option_05		Spindle Run with Door Open in <Manual/Jog> Active
M30.2	S BLOCK	SEL BFR	Single Block Select Buffer
M82.2	M/C DOOR	OPEN PLS	Machine Safety Door Open Pulse
DB20.DBX2.4	"OPTIONS".Option_24		Spindle Stop After Door Open in Single Block
M52.1	SPINDLE	RIGD TAP	Spindle Operating with Rigid Tapping
DB2.DBX155.0	"ALARM & MESSAGE"._6FdStop6006xx[8]		Feed stop axis/spindle 6
M51.2	SPINDLE	STOP REQ	Spindle Stop Request

Network: 8 Spindle Stop Request to ShopMill

**Symbol information**

M51.2	SPINDLE	STOP REQ	Spindle Stop Request
M51.3	SPIN STOP	SM REM	Spindle Stop ShopMill Remember
M52.1	SPINDLE	RIGD TAP	Spindle Operating with Rigid Tapping
DB82.DBX9.2	"SPS".CMM_IN.spindle_stop request for spindle control		

Network: 9 Spindle Manual Start OK

**Symbol information**

DB36.DBX61.4	"SPINDLE".I_Stat		Axis/spindle stationary (n<nmin)
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
M100.2	T CHG CYC	ACTIVE	Tool Change Cycle Active

M102.2 T S/U CYC ACTIVE Tool Setup Cycle Active

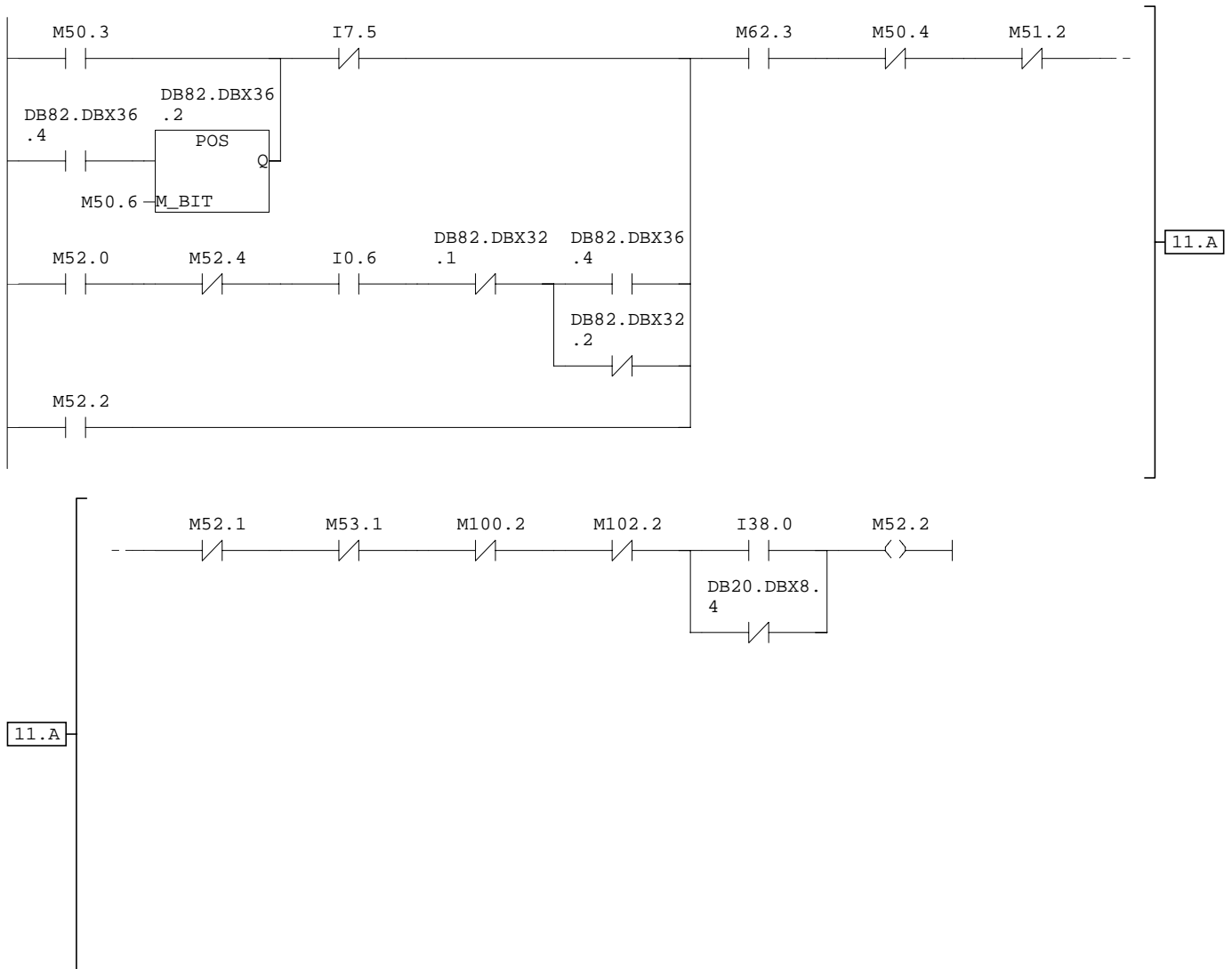
M52.0 SPINDLE MANL OK Spindle Manual Control OK

Network: 10 Spindle with Rigid Tapping Active



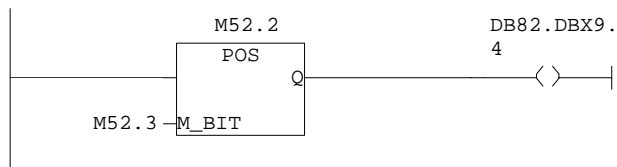
Symbol information
DB36.DBX84.3 "SPINDLE".I_Tapping Tapping without compensating chuck
M52.1 SPINDLE RIGD TAP Spindle Operating with Rigid Tapping

Network: 11 Spindle CW Request

**Symbol information**

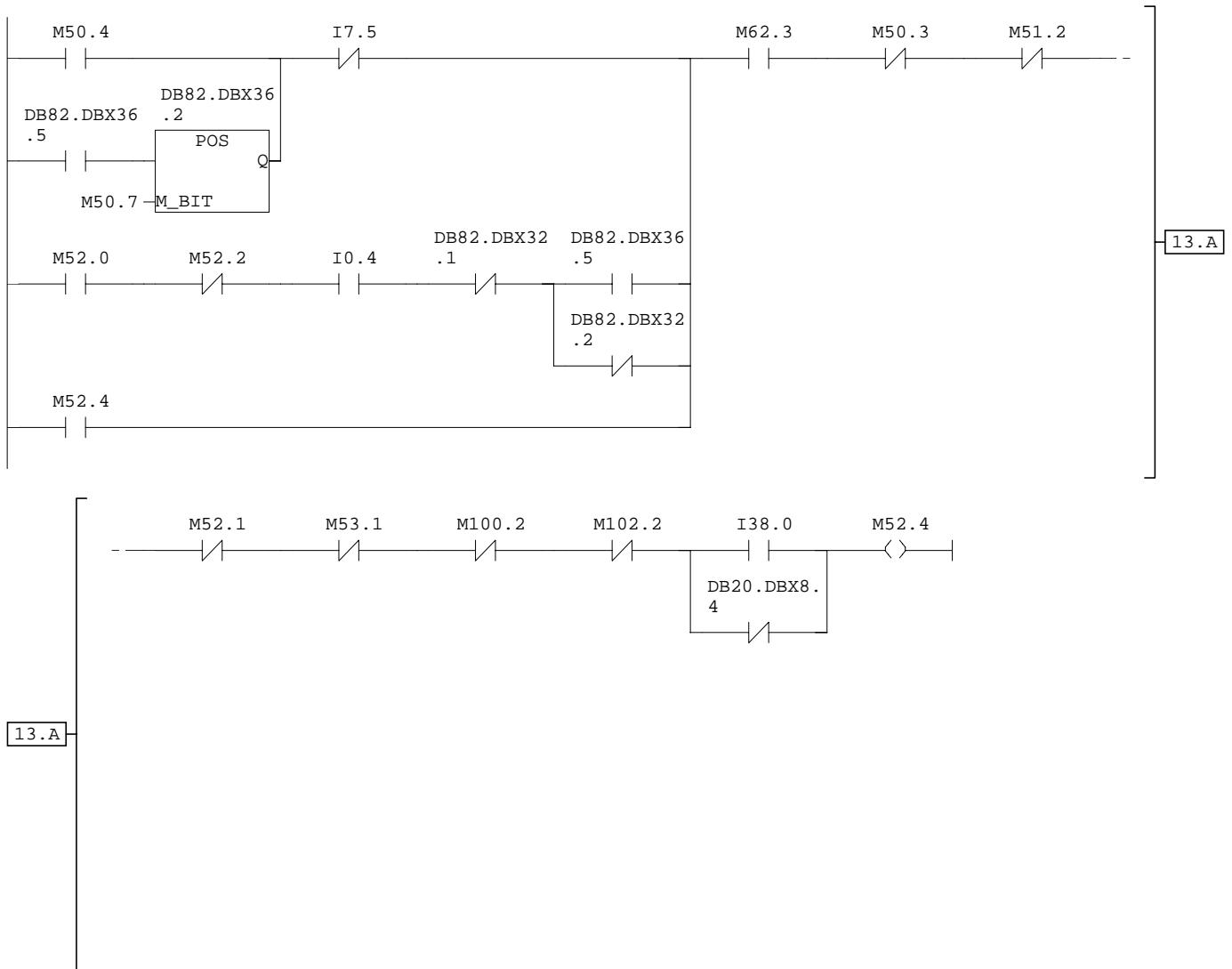
M50.3	SPINDLE	M03 EXT	Spindle Extended Decoding for M3
DB82.DBX36.4	"SPS".CMM_OUT.spindle_right		spindle direction right
DB82.DBX36.2	"SPS".CMM_OUT.spindle_start_req		spindle start requested (M3,M4)
M50.6	SP CW ST	SM RQ RM	Spindle CW Start ShopMill Remember
I7.5	SPINDLE	JOG	MCP - Spindle Jog [K7]
M52.0	SPINDLE	MANL OK	Spindle Manual Control OK
M52.4	SPINDLE	CCW REQ	Spindle CCW Request
I0.6	SPIN CW	RUN SEL	MCP - Spindle CW Run Select [K8]
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped		
M52.2	SPINDLE	CW REQ	Spindle CW Request
M62.3	SPIN TOOL	CLAMPED	Spindle Tool is Clamped
M50.4	SPINDLE	M04 EXT	Spindle Extended Decoding for M4
M51.2	SPINDLE	STOP REQ	Spindle Stop Request
M52.1	SPINDLE	RIGD TAP	Spindle Operating with Rigid Tapping
M53.1	SPIN ORT	ACTIVE	Spindle Orientation Active
M100.2	T CHG CYC	ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC	ACTIVE	Tool Setup Cycle Active
I38.0	MD PALLET DOOR	LS	Midaco Pallet Door Limit Switch
DB20.DBX8.4	"OPTIONS".Option_84		Midaco Pallet System Active

Network: 12 Spindle CW Request to ShopMill

**Symbol information**

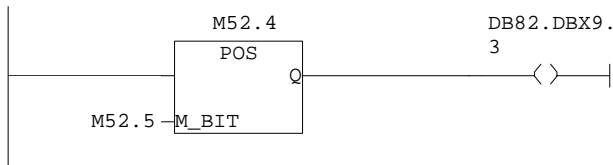
M52.2	SPINDLE	CW REQ	Spindle CW Request
M52.3	SPIN CW	SM REM	Spindle CW ShopMill Remember
DB82.DBX9.4	"SPS".CMM_IN.spindle_right	orientation request	request for spindle control

Network: 13 Spindle CCW Request

**Symbol information**

M50.4	SPINDLE	M04 EXT	Spindle Extended Decoding for M4
DB82.DBX36.5	"SPS".CMM_OUT.spindle_left		spindle direction left
DB82.DBX36.2	"SPS".CMM_OUT.spindle_start_req		spindle start requested (M3,M4)
M50.7	SP CCW ST SM RQ RM		Spindle CCW Start ShopMill Remember
I7.5	SPINDLE	JOG	MCP - Spindle Jog [K7]
M52.0	SPINDLE	MANL OK	Spindle Manual Control OK
M52.2	SPINDLE	CW REQ	Spindle CW Request
I0.4	SPIN CCW	RUN SEL	MCP - Spindle CCW Run Select [K10]
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped		
M52.4	SPINDLE	CCW REQ	Spindle CCW Request
M62.3	SPIN TOOL	CLAMPED	Spindle Tool is Clamped
M50.3	SPINDLE	M03 EXT	Spindle Extended Decoding for M3
M51.2	SPINDLE	STOP REQ	Spindle Stop Request
M52.1	SPINDLE	RIGD TAP	Spindle Operating with Rigid Tapping
M53.1	SPIN ORT	ACTIVE	Spindle Orientation Active
M100.2	T CHG CYC	ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC	ACTIVE	Tool Setup Cycle Active
I38.0	MD PALLET	DOOR LS	Midaco Pallet Door Limit Switch
DB20.DBX8.4	"OPTIONS".Option_84		Midaco Pallet System Active

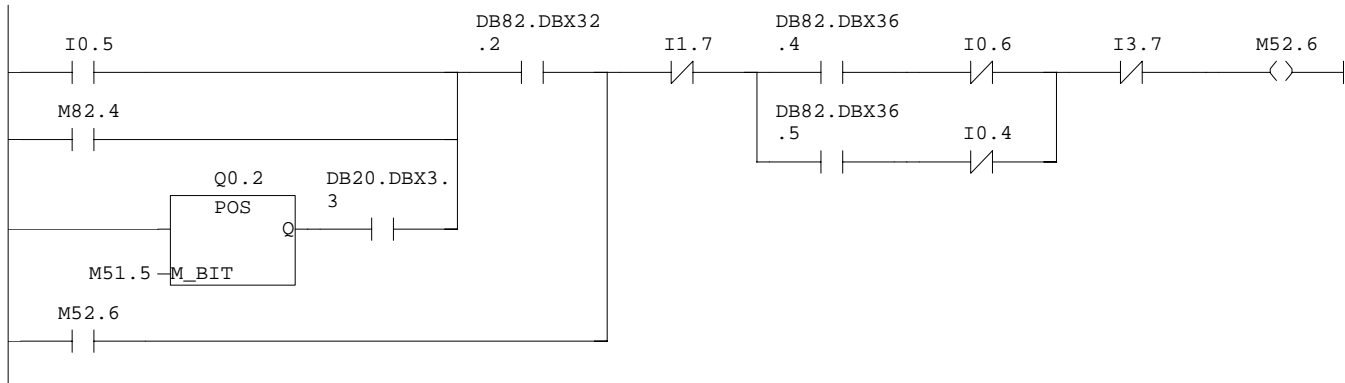
Network: 14 Spindle CCW Request to ShopMill



Symbol information

M52.4	SPINDLE	CCW REQ	Spindle CCW Request
M52.5	SPIN CCW	SM REM	Spindle CCW ShopMill Remember
DB82.DBX9.3	"SPS".CMM_IN.spindle_left		orientation request for spindle control

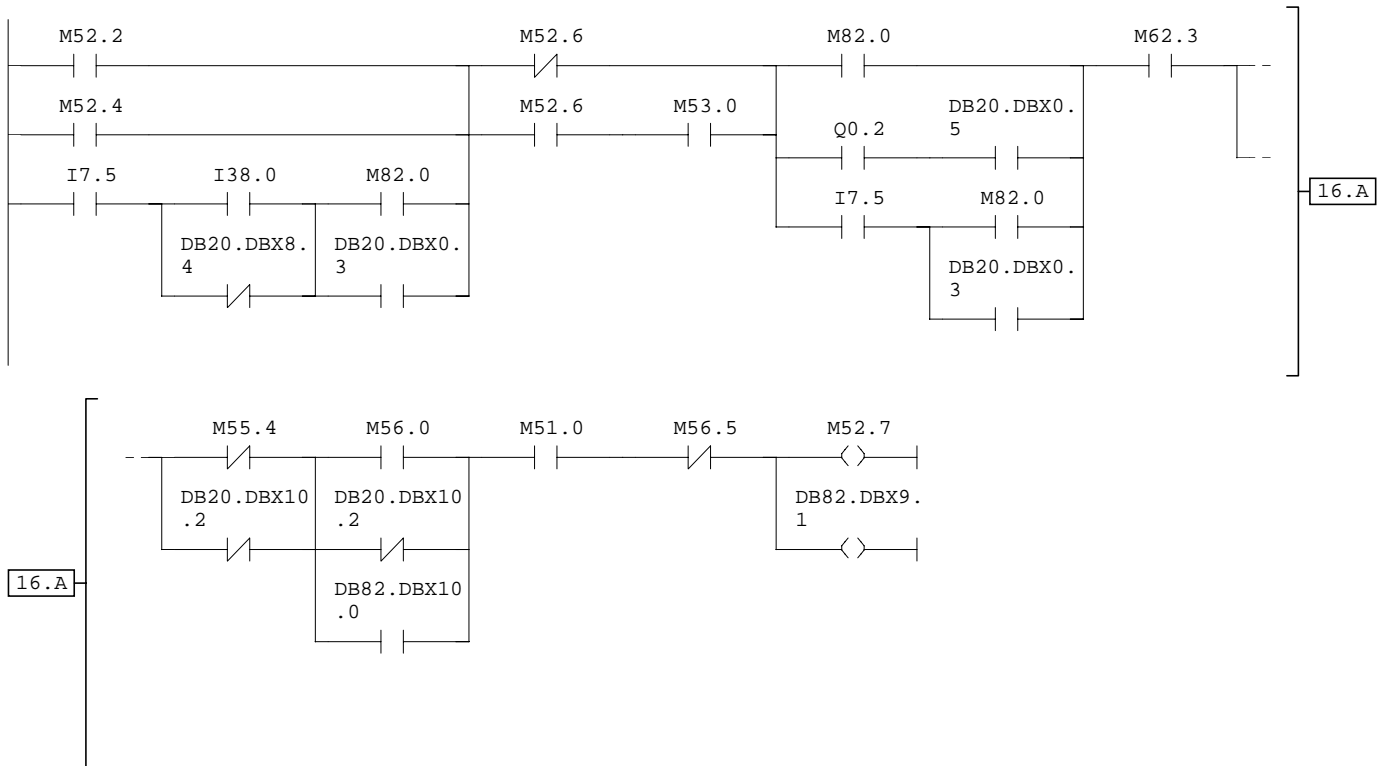
Network: 15 Spindle Stop for Programmed Interrupt



Symbol information

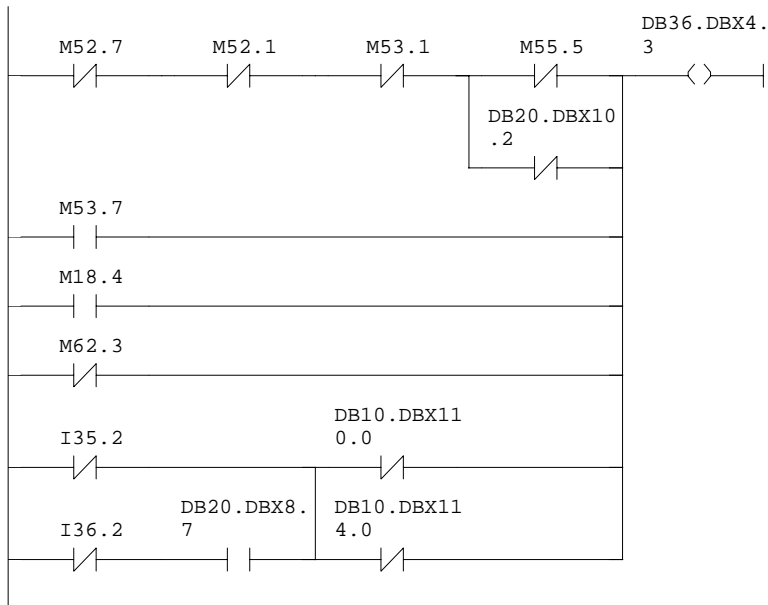
I0.5	SPIN STOP SELECT	MCP - Spindle Stop Select [K9]
M82.4	M/C DOOR OPEN PEXT	Machine Safety Door Open Extended Pulse for Spindle Stop
Q0.2	JOG MODE LED	MCP - Jog Mode LED [L1]
M51.5	SPIN STOP J MDE RM	Spindle Stop for Change to Jog Mode Remember
DB20.DBX3.3	"OPTIONS".Option_33	Spindle Stops for Mode Change <Auto> to <Jog>
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped	
M52.6	SPINDLE PGM INT	Spindle Stop Request for Program Interrupt
I1.7	NC CYCLE START	MCP - NC Cycle Start [K43]
DB82.DBX36.4	"SPS".CMM_OUT.spindle_right	spindle direction right
I0.6	SPIN CW RUN SEL	MCP - Spindle CW Run Select [K8]
DB82.DBX36.5	"SPS".CMM_OUT.spindle_left	spindle direction left
I0.4	SPIN CCW RUN SEL	MCP - Spindle CCW Run Select [K10]
I3.7	NC RESET	MCP - NC Reset [K32]

Network: 16 Spindle Any Run Request

**Symbol information**

M52.2	SPINDLE	CW REQ	Spindle CW Request
M52.4	SPINDLE	CCW REQ	Spindle CCW Request
I7.5	SPINDLE	JOG	MCP - Spindle Jog [K7]
I38.0	MD PALLET	DOOR LS	Midaco Pallet Door Limit Switch
DB20.DBX8.4	"OPTIONS".Option_84		Midaco Pallet System Active
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
DB20.DBX0.3	"OPTIONS".Option_03		Spindle Jog with Door Open Active
M52.6	SPINDLE	PGM INT	Spindle Stop Request for Program Interrupt
M53.0	SPINDLE	JOG REQ	Spindle Jog Request
Q0.2	JOG MODE	LED	MCP - Jog Mode LED [L1]
DB20.DBX0.5	"OPTIONS".Option_05		Spindle Run with Door Open in <Manual/Jog> Active
M62.3	SPIN TOOL	CLAMPED	Spindle Tool is Clamped
M55.4	SPIN STOP	G/C REQ	Spindle Stop for Gear Change Request
DB20.DBX10.2	"OPTIONS".Option_102		Spindle with Gear Change (ZF Gearbox)
M56.0	SPINDLE	IN GEAR	Spindle is in a Gear
DB82.DBX10.0	"SPS".CMM_IN.program_test_request		program test request
M51.0	SPINDLE	SPD PGM	Spindle Speed is Programmed (S-Code)
M56.5	SPIN OSC	G/C R OD	Spindle Oscillation for Gear Change Request Off Delayed
M52.7	SPINDLE	RUN REQ	Spindle Auto/Manual Run Request
DB82.DBX9.1	"SPS".CMM_IN.spindle_start		request for spindle control

Network: 17 Spindle General Feedhold



Symbol information

M52.7	SPINDLE RUN REQ	Spindle Auto/Manual Run Request
M52.1	SPINDLE RIGD TAP	Spindle Operating with Rigid Tapping
M53.1	SPIN ORT ACTIVE	Spindle Orientation Active
M55.5	SPIN OSC G/C REQ	Spindle Oscillation for Gear Change Request
DB20.DBX10.2	"OPTIONS".Option_102	Spindle with Gear Change (ZF Gearbox)
M53.7	SPINDLE HOLD REQ	Spindle Hold Position After Orientation Request
M18.4	SPIN STOP F/H REQ	Spindle Stop for Feedhold Request
M62.3	SPIN TOOL CLAMPED	Spindle Tool is Clamped
I35.2	T MAG #1 RET LS	SQL3 - Tool Magazine #1 Retract (IN) Limit
I36.2	T MAG #2 RET LS	SQL20 - Tool Magazine #2 Retract (IN) Limit
DB20.DBX8.7	"OPTIONS".Option_87	2nd Tool Magazine Active
DB10.DBX110.0	"NC".Q_SWCamMinus[0]	
DB10.DBX114.0	"NC".Q_SWCamPlus[0]	
DB36.DBX4.3	"SPINDLE".Q_FDSpStop	Feed stop/spindle stop

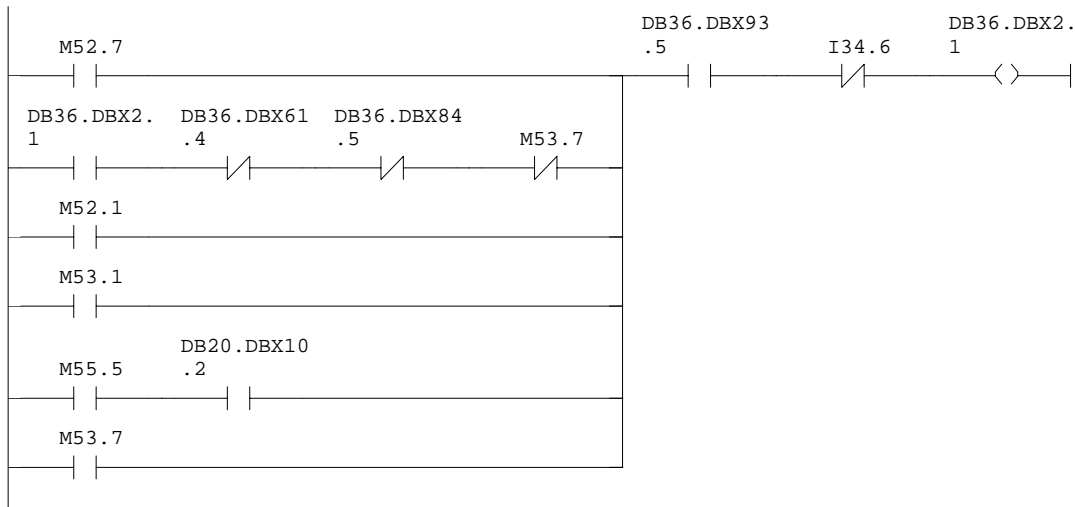
Network: 18 Spindle Software Pulse Enable



Symbol information

M0.1	ON	Marker Always On
DB36.DBX21.7	"SPINDLE".Q_PulseEnable	Pulse enable

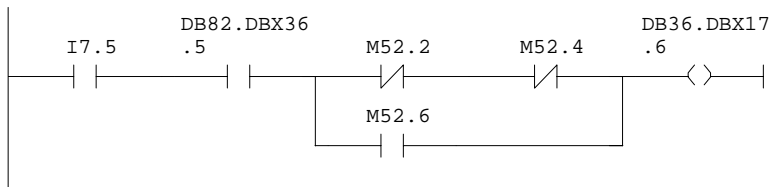
Network: 19 Spindle NC Controller Enable



Symbol information

M52.7	SPINDLE	RUN REQ	Spindle Auto/Manual Run Request
DB36.DBX2.1	"SPINDLE".Q_ContrEnable	Controller enable	
DB36.DBX61.4	"SPINDLE".I_Stat	Axis/spindle stationary (n<nmin)	
DB36.DBX84.5	"SPINDLE".I_PosMode	Positioning mode spindle active	
M53.7	SPINDLE	HOLD REQ	Spindle Hold Position After Orientation Request
M52.1	SPINDLE	RIGD TAP	Spindle Operating with Rigid Tapping
M53.1	SPIN ORT	ACTIVE	Spindle Orientation Active
M55.5	SPIN OSC	G/C REQ	Spindle Oscillation for Gear Change Request
DB20.DBX10.2	"OPTIONS".Option_102	Spindle with Gear Change (ZF Gearbox)	
DB36.DBX93.5	"SPINDLE".I_MotOK	Drive ready	
I34.6	SPIN TOOL UCLP LS	SQL6 - Spindle Tool Unclamped Limit	

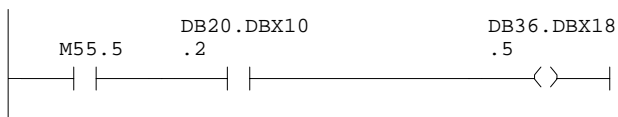
Network: 20 Spindle Command Invert



Symbol information

I7.5	SPINDLE	JOg	MCP - Spindle Jog [K7]
DB82.DBX36.5	"SPS".CMM_OUT.spindle_left	spindle direction left	
M52.2	SPINDLE	CW REQ	Spindle CW Request
M52.4	SPINDLE	CCW REQ	Spindle CCW Request
M52.6	SPINDLE	PGM INT	Spindle Stop Request for Program Interrupt
DB36.DBX17.6	"SPINDLE".Q_M3M4Inv	Invert M3/M4	

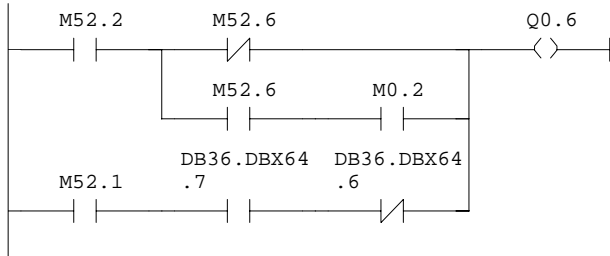
Network: 21 Spindle Oscillation



Symbol information

M55.5	SPIN OSC	G/C REQ	Spindle Oscillation for Gear Change Request
DB20.DBX10.2	"OPTIONS".Option_102	Spindle with Gear Change (ZF Gearbox)	
DB36.DBX18.5	"SPINDLE".Q_OscilSpeed	Oscillating speed	

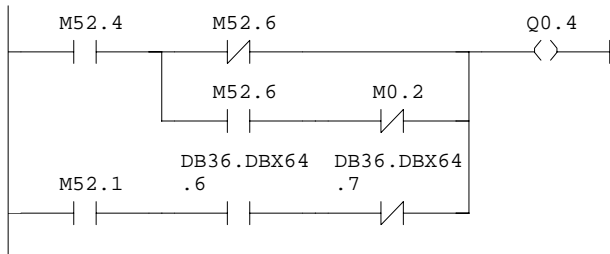
Network: 22 Spindle CW MCP LED



Symbol information

M52.2	SPINDLE	CW REQ	Spindle CW Request
M52.6	SPINDLE	PGM INT	Spindle Stop Request for Program Interrupt
M0.2	CLOCK ON		Clock On
M52.1	SPINDLE	RIGD TAP	Spindle Operating with Rigid Tapping
DB36.DBX64.7	"SPINDLE".I_TCPlus		Traverse command plus
DB36.DBX64.6	"SPINDLE".I_TCMinus		Traverse command minus
Q0.6	SPIN CW	RUN LED	MCP - Spindle CW Run LED [L8]

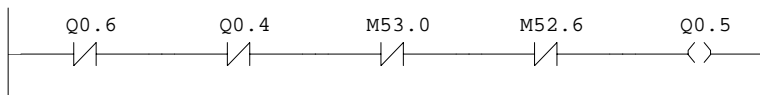
Network: 23 Spindle CCW MCP LED



Symbol information

M52.4	SPINDLE	CCW REQ	Spindle CCW Request
M52.6	SPINDLE	PGM INT	Spindle Stop Request for Program Interrupt
M0.2	CLOCK ON		Clock On
M52.1	SPINDLE	RIGD TAP	Spindle Operating with Rigid Tapping
DB36.DBX64.6	"SPINDLE".I_TCMinus		Traverse command minus
DB36.DBX64.7	"SPINDLE".I_TCPlus		Traverse command plus
Q0.4	SPIN CCW	RUN LED	MCP - Spindle CCW Run LED [L10]

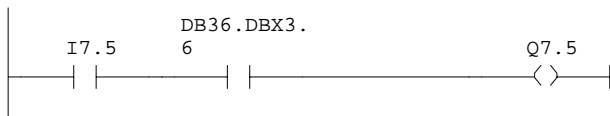
Network: 24 Spindle Stop MCP LED



Symbol information

Q0.6	SPIN CW	RUN LED	MCP - Spindle CW Run LED [L8]
Q0.4	SPIN CCW	RUN LED	MCP - Spindle CCW Run LED [L10]
M53.0	SPINDLE	JOG REQ	Spindle Jog Request
M52.6	SPINDLE	PGM INT	Spindle Stop Request for Program Interrupt
Q0.5	SPINDLE	STOP LED MCP	Spindle Stop LED [L9]

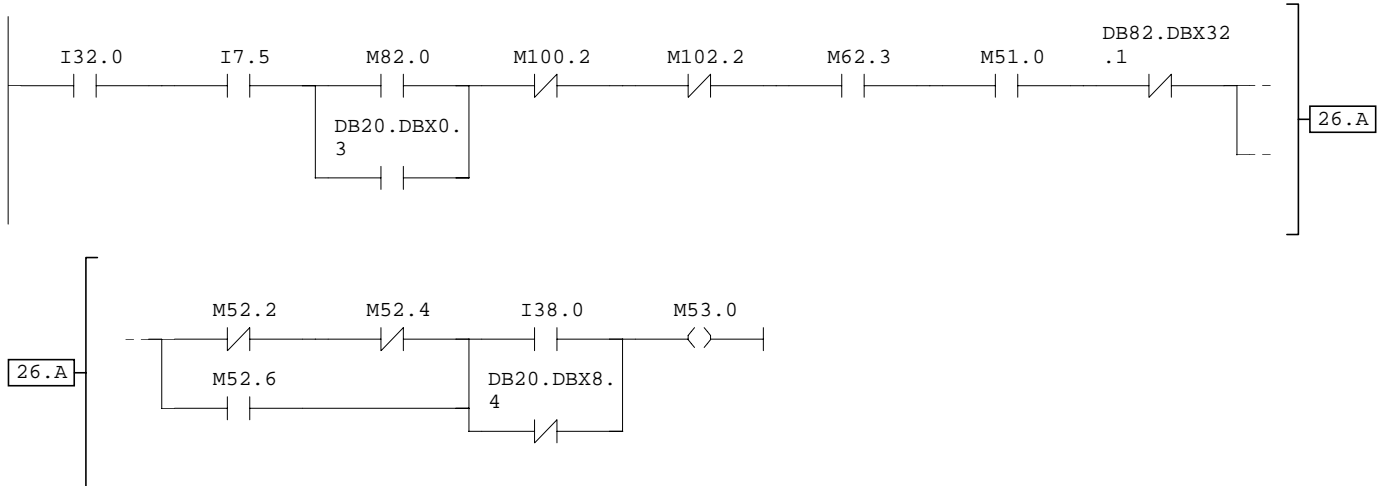
Network: 25 Spindle Jog MCP LED



Symbol information

I7.5	SPINDLE	JOG	MCP - Spindle Jog [K7]
DB36.DBX3.6	"SPINDLE".Q_VelocSpeedLimit	Velocity/spindle speed limitation	
Q7.5	SPINDLE	JOG LED	MCP - Spindle Jog LED [L7]

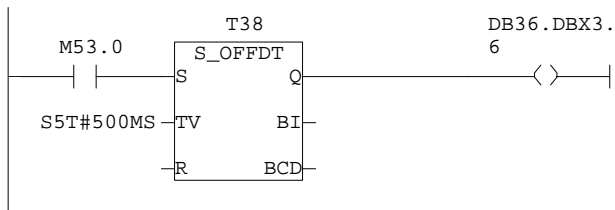
Network: 26 Spindle Jog Request



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I7.5	SPINDLE JOG	MCP - Spindle Jog [K7]
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
DB20.DBX0.3	"OPTIONS".Option_03	Spindle Jog with Door Open Active
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M62.3	SPIN TOOL CLAMPED	Spindle Tool is Clamped
M51.0	SPINDLE SPD PGM	Spindle Speed is Programmed (S-Code)
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
M52.2	SPINDLE CW REQ	Spindle CW Request
M52.4	SPINDLE CCW REQ	Spindle CCW Request
M52.6	SPINDLE PGM INT	Spindle Stop Request for Program Interrupt
I38.0	MD PALLET DOOR LS	Midaco Pallet Door Limit Switch
DB20.DBX8.4	"OPTIONS".Option_84	Midaco Pallet System Active
M53.0	SPINDLE JOG REQ	Spindle Jog Request

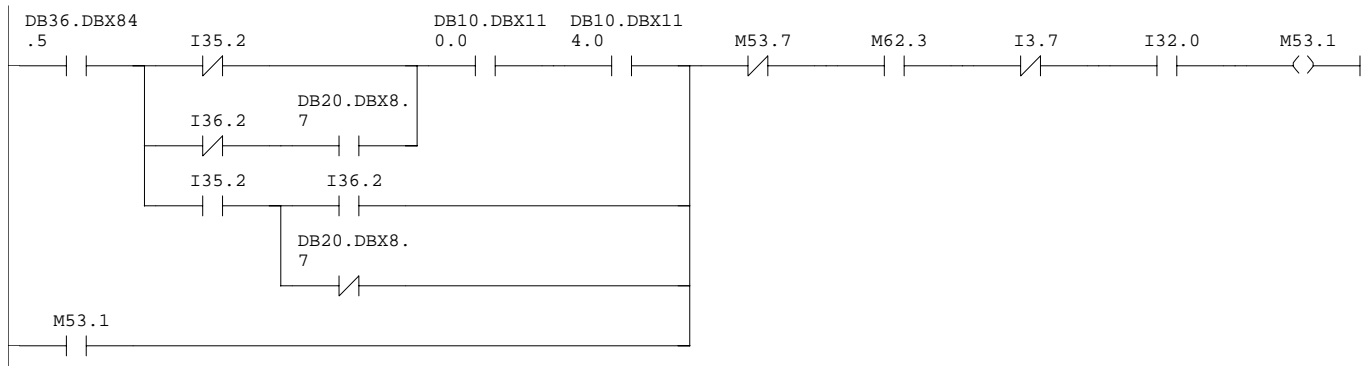
Network: 27 Spindle Speed Limitation (Spindle Jog)



Symbol information

M53.0	SPINDLE JOG REQ	Spindle Jog Request
DB36.DBX3.6	"SPINDLE".Q_VelocSpeedLimit	Velocity/spindle speed limitation

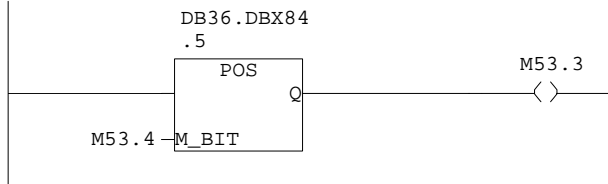
Network: 28 Spindle Orientation Active



Symbol information

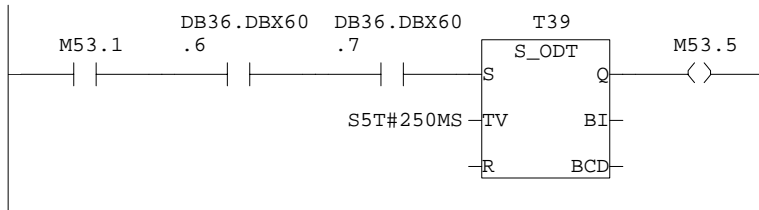
DB36.DBX84.5	"SPINDLE".I_PosMode	Positioning mode spindle active
I35.2	T MAG #1 RET LS	SQL3 - Tool Magazine #1 Retract (IN) Limit
I36.2	T MAG #2 RET LS	SQL20 - Tool Magazine #2 Retract (IN) Limit
DB20.DBX8.7	"OPTIONS".Option_87	2nd Tool Magazine Active
DB10.DBX110.0	"NC".Q_SWCamMinus[0]	
DB10.DBX114.0	"NC".Q_SWCamPlus[0]	
M53.1	SPIN ORT ACTIVE	Spindle Orientation Active
M53.7	SPINDLE HOLD REQ	Spindle Hold Position After Orientation Request
M62.3	SPIN TOOL CLAMPED	Spindle Tool is Clamped
I3.7	NC RESET	MCP - NC Reset [K32]
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)

Network: 29 Spindle Orientation Request Pulse

**Symbol information**

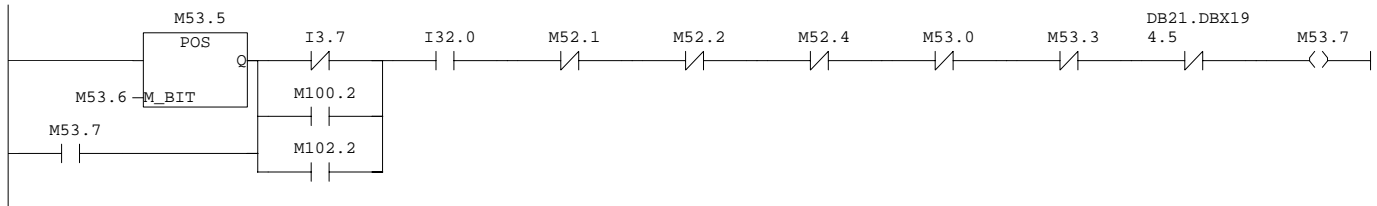
DB36.DBX84.5	"SPINDLE".I_PosMode	Positioning mode spindle active
M53.4	SPIN ORT REQ REM	Spindle Orientation Request Remember
M53.3	SPIN ORT REQ PLS	Spindle Orientation Request Pulse

Network: 30 Spindle Orientation Complete

**Symbol information**

M53.1	SPIN ORT ACTIVE	Spindle Orientation Active
DB36.DBX60.6	"SPINDLE".I_ExactCoarse	Position reached with exact stop coarse
DB36.DBX60.7	"SPINDLE".I_ExactFine	Position reached with exact stop fine
M53.5	SPINDLE ORT COMP	Spindle Orientation Complete

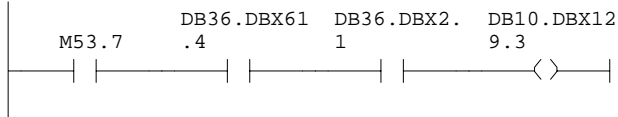
Network: 31 Spindle Enable with Feedhold for Orientation Request

**Symbol information**

M53.5	SPINDLE ORT COMP	Spindle Orientation Complete
M53.6	SPIN ORT COMP REM	Spindle Orientation Complete Remember
M53.7	SPINDLE HOLD REQ	Spindle Hold Position After Orientation Request
I3.7	NC RESET	MCP - NC Reset [K32]
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M52.1	SPINDLE RIGD TAP	Spindle Operating with Rigid Tapping
M52.2	SPINDLE CW REQ	Spindle CW Request
M52.4	SPINDLE CCW REQ	Spindle CCW Request
M53.0	SPINDLE JOG REQ	Spindle Jog Request

M53.3 SPIN ORT REQ PLS Spindle Orientation Request Pulse
 DB21.DBX194.5 "CHANNEL 1".MDyn[5]

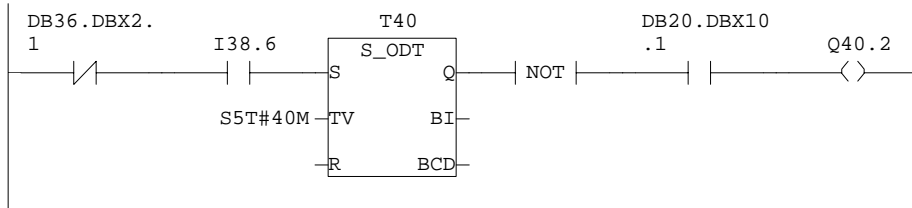
Network: 32 Spindle Oriented to NCK (Digital Input 36)



Symbol information

M53.7 SPINDLE HOLD REQ Spindle Hold Position After Orientation Request
 DB36.DBX61.4 "SPINDLE".I_Stat Axis/spindle stationary (n<nmin)
 DB36.DBX2.1 "SPINDLE".Q_ContrEnable Controller enable
 DB10.DBX129.3 "NC".I_Set_Inp36 Set digital NCK input 36

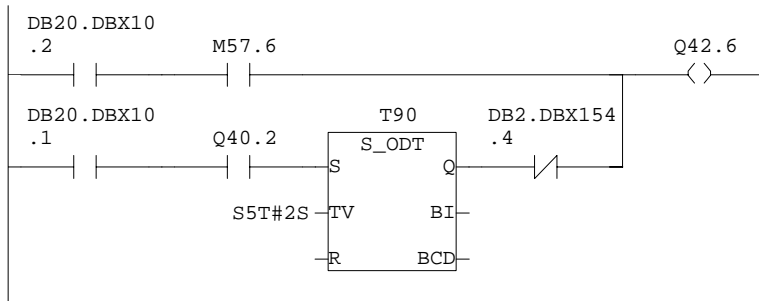
Network: 33 Spindle Oil/Air Lubrication Air Supply Solenoid (12000rpm Only)



Symbol information

DB36.DBX2.1 "SPINDLE".Q_ContrEnable Controller enable
 I38.6 SPIN LUBE O/A OK KAR33 - Spindle Oil/Air Lubrication System OK
 DB20.DBX10.1 "OPTIONS".Option_101 Single Speed 12,000rpm Spindle
 Q40.2 SPIN LUBE OIL SOL KAR47 - Spindle Oil/Air Lubrication Air Supply Solenoid

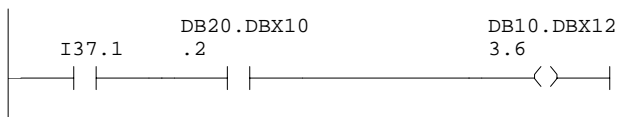
Network: 34 Spindle High Gear Motor or Oil/Air Lubrication System Unit



Symbol information

DB20.DBX10.2 "OPTIONS".Option_102 Spindle with Gear Change (ZF Gearbox)
 M57.6 SP GR HGH MTR BFR Spindle Gear High Motor Buffer
 DB20.DBX10.1 "OPTIONS".Option_101 Single Speed 12,000rpm Spindle
 Q40.2 SPIN LUBE OIL SOL KAR47 - Spindle Oil/Air Lubrication Air Supply Solenoid
 DB2.DBX154.4 "ALARM & MESSAGE"._6FdStop6006xx[4] Feed stop axis/spindle 6
 Q42.6 MULTI USE Q42.6 KAR45/KAR60 - Spindle Gear High Motor or Spindle Lubrication Oil /Air Unit

Network: 35 Spindle in Gear Range #1 (Low) to NCK Digital Input

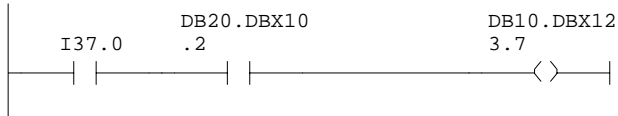


Symbol information

I37.1 SPIN GEAR LOW LS SQL23 - Spindle Low Gear Limit

DB20.DBX10.2 "OPTIONS".Option_102 Spindle with Gear Change (ZF Gearbox)
 DB10.DBX123.6 "NC".I_Set_Inp15 Set digital NCK input 15

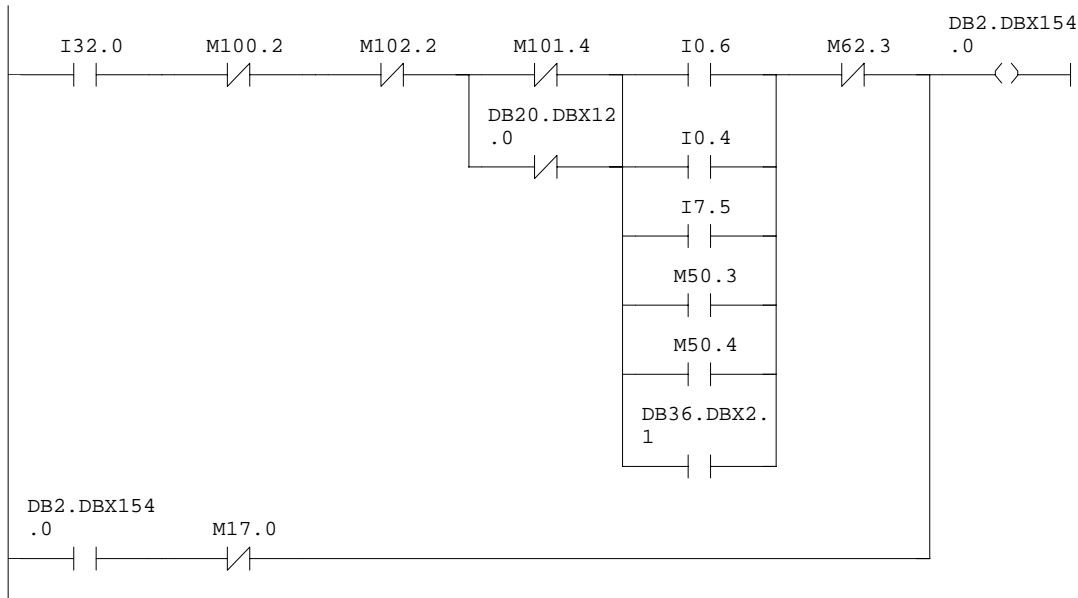
Network: 36 Spindle in Gear Range #2 (High) to NCK Digital Input



Symbol information

I37.0 SPIN GEAR HIGH LS SQL22 - Spindle High Gear Limit
 DB20.DBX10.2 "OPTIONS".Option_102 Spindle with Gear Change (ZF Gearbox)
 DB10.DBX123.7 "NC".I_Set_Inp16 Set digital NCK input 16

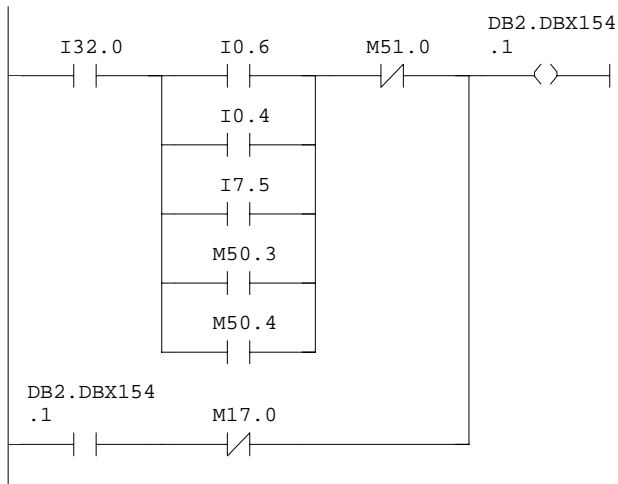
Network: 37 600600: Spindle Tool Not Clamped



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M101.4	T MAG FCT SETUP IL	Tool Magazine Function Setup Interlock
DB20.DBX12.0	"OPTIONS".Option_120	ATC Magazine Alarm Suppress for Machine Startup
I0.6	SPIN CW RUN SEL	MCP - Spindle CW Run Select [K8]
I0.4	SPIN CCW RUN SEL	MCP - Spindle CCW Run Select [K10]
I7.5	SPINDLE JOG	MCP - Spindle Jog [K7]
M50.3	SPINDLE M03 EXT	Spindle Extended Decoding for M3
M50.4	SPINDLE M04 EXT	Spindle Extended Decoding for M4
DB36.DBX2.1	"SPINDLE".Q_ContrEnable	Controller enable
M62.3	SPIN TOOL CLAMPED	Spindle Tool is Clamped
DB2.DBX154.0	"ALARM & MESSAGE"._6FdStop6006xx[0]	Feed stop axis/spindle 6
M17.0	FAULT RESET	Fault Reset

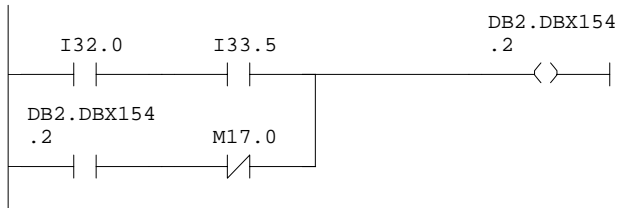
Network: 38 600601: No Spindle Speed Programmed



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I0.6	SPIN CW RUN SEL	MCP - Spindle CW Run Select [K8]
I0.4	SPIN CCW RUN SEL	MCP - Spindle CCW Run Select [K10]
I7.5	SPINDLE JOG	MCP - Spindle Jog [K7]
M50.3	SPINDLE M03 EXT	Spindle Extended Decoding for M3
M50.4	SPINDLE M04 EXT	Spindle Extended Decoding for M4
M51.0	SPINDLE SPD PGM	Spindle Speed is Programmed (S-Code)
DB2.DBX154.1	"ALARM & MESSAGE"._6FdStop6006xx[1]	Feed stop axis/spindle 6
M17.0	FAULT RESET	Fault Reset

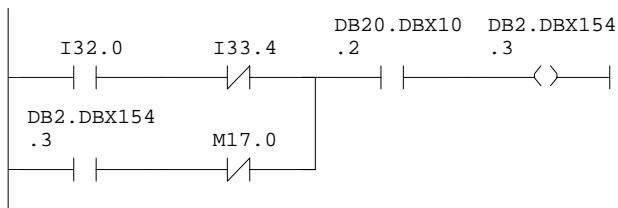
Network: 39 600602: Spindle Motor Fan Overload



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I33.5	SPIN FAN MTR TOL	FRT15 - Spindle Motor Fan Overload
DB2.DBX154.2	"ALARM & MESSAGE"._6FdStop6006xx[2]	Feed stop axis/spindle 6
M17.0	FAULT RESET	Fault Reset

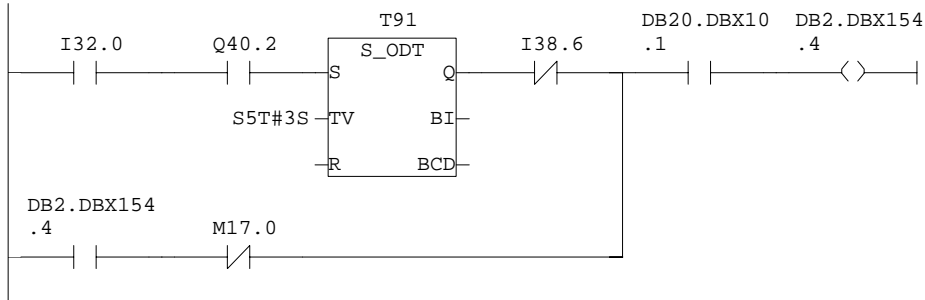
Network: 40 600603: Spindle ZF Gearbox Lubrication System Fault



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I33.4	ZF G/BOX LUBE DET	KAR32 - ZF Gearbox Lubrication Circuit Detect
DB2.DBX154.3	"ALARM & MESSAGE"._6FdStop6006xx[3]	Feed stop axis/spindle 6
M17.0	FAULT RESET	Fault Reset
DB20.DBX10.2	"OPTIONS".Option_102	Spindle with Gear Change (ZF Gearbox)

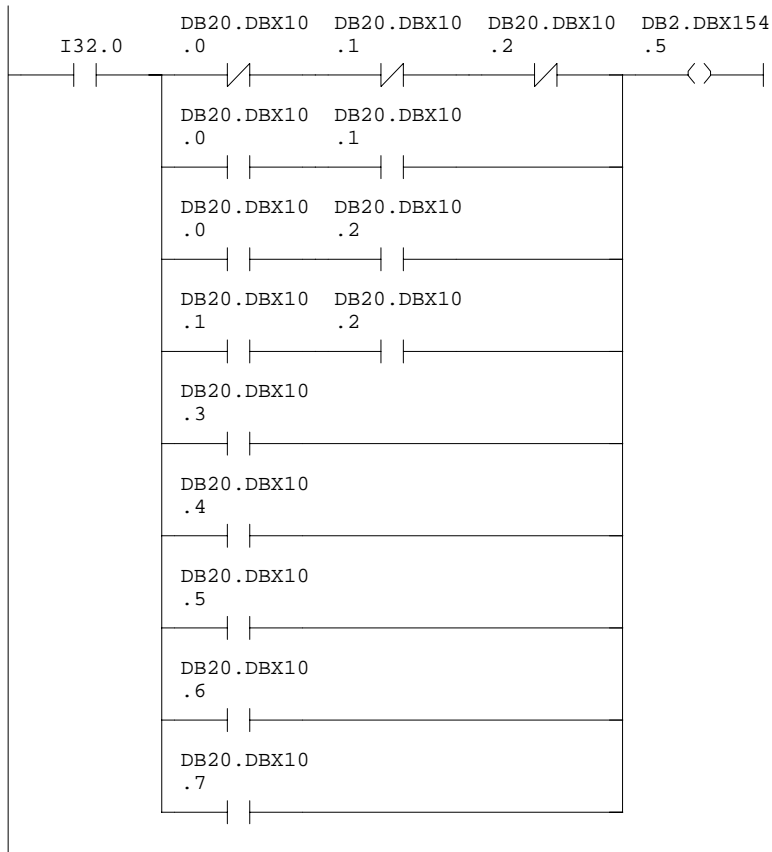
Network: 41 600604: Spindle Oil/Air Lubrication System Fault



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q40.2	SPIN LUBE OIL SOL	KAR47 - Spindle Oil/Air Lubrication Air Supply Solenoid
I38.6	SPIN LUBE O/A OK	KAR33 - Spindle Oil/Air Lubrication System OK
DB2.DBX154.4	"ALARM & MESSAGE"._6FdStop6006xx[4]	Feed stop axis/spindle 6
M17.0	FAULT RESET	Fault Reset
DB20.DBX10.1	"OPTIONS".Option_101	Single Speed 12,000rpm Spindle

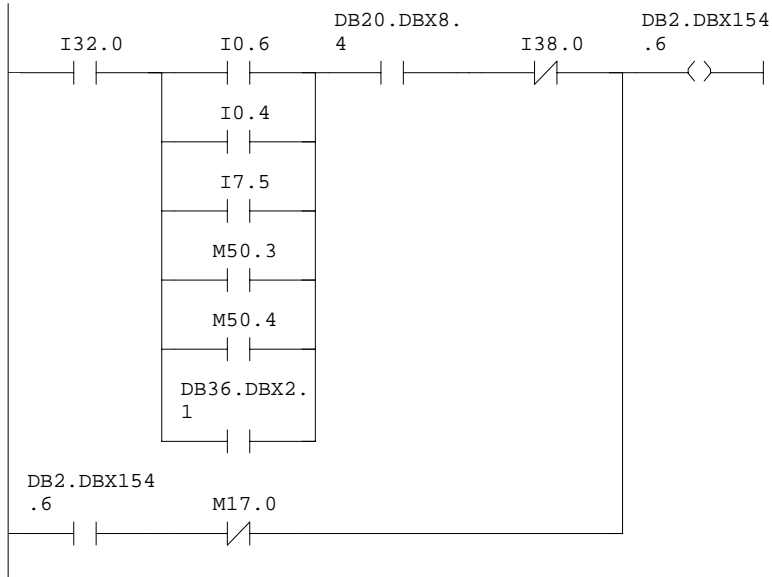
Network: 42 600605: Spindle Type Option Setting Error



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX10.0	"OPTIONS".Option_100	Single Speed 8,000rpm Spindle
DB20.DBX10.1	"OPTIONS".Option_101	Single Speed 12,000rpm Spindle
DB20.DBX10.2	"OPTIONS".Option_102	Spindle with Gear Change (ZF Gearbox)
DB20.DBX10.3	"OPTIONS".Option_103	Reserved - Do Not Use
DB20.DBX10.4	"OPTIONS".Option_104	Reserved - Do Not Use
DB20.DBX10.5	"OPTIONS".Option_105	Reserved - Do Not Use
DB20.DBX10.6	"OPTIONS".Option_106	Reserved - Do Not Use
DB20.DBX10.7	"OPTIONS".Option_107	Reserved - Do Not Use
DB2.DBX154.5	"ALARM & MESSAGE"._6FdStop6006xx[5]	Feed stop axis/spindle 6

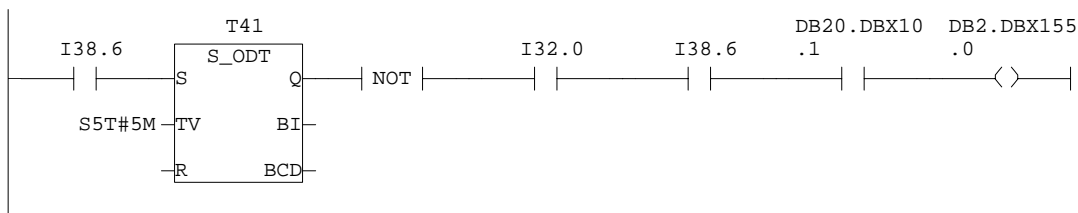
Network: 43 600606: Midaco Pallet Door Open



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I0.6	SPIN CW RUN SEL	MCP - Spindle CW Run Select [K8]
I0.4	SPIN CCW RUN SEL	MCP - Spindle CCW Run Select [K10]
I7.5	SPINDLE JOG	MCP - Spindle Jog [K7]
M50.3	SPINDLE M03 EXT	Spindle Extended Decoding for M3
M50.4	SPINDLE M04 EXT	Spindle Extended Decoding for M4
DB36.DBX2.1	"SPINDLE".Q_ContrEnable	Controller enable
DB20.DBX8.4	"OPTIONS".Option_84	Midaco Pallet System Active
I38.0	MD PALLET DOOR LS	Midaco Pallet Door Limit Switch
DB2.DBX154.6	"ALARM & MESSAGE"._6FdStop6006xx[6]	Feed stop axis/spindle 6
M17.0	FAULT RESET	Fault Reset

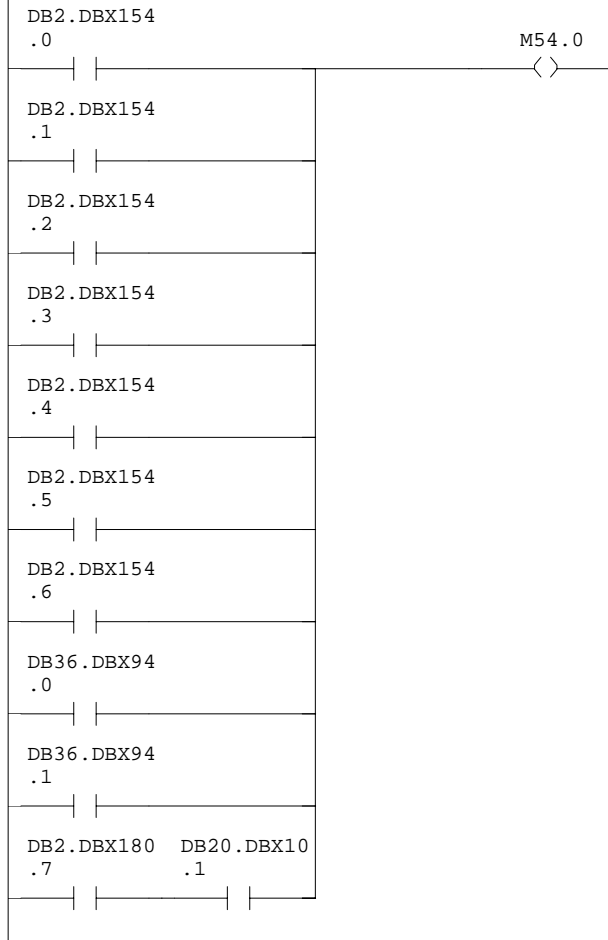
Network: 44 600608: Spindle Oil/Air Lubrication System Not Ready



Symbol information

I38.6	SPIN LUBE O/A OK	KAR33 - Spindle Oil/Air Lubrication System OK
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX10.1	"OPTIONS".Option_101	Single Speed 12,000rpm Spindle
DB2.DBX155.0	"ALARM & MESSAGE"._6FdStop6006xx[8]	Feed stop axis/spindle 6

Network: 45	Any Spindle Alarm
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**Symbol information**

DB2.DBX154.0	"ALARM & MESSAGE"._6FdStop6006xx[0]	Feed stop axis/spindle 6
DB2.DBX154.1	"ALARM & MESSAGE"._6FdStop6006xx[1]	Feed stop axis/spindle 6
DB2.DBX154.2	"ALARM & MESSAGE"._6FdStop6006xx[2]	Feed stop axis/spindle 6
DB2.DBX154.3	"ALARM & MESSAGE"._6FdStop6006xx[3]	Feed stop axis/spindle 6
DB2.DBX154.4	"ALARM & MESSAGE"._6FdStop6006xx[4]	Feed stop axis/spindle 6
DB2.DBX154.5	"ALARM & MESSAGE"._6FdStop6006xx[5]	Feed stop axis/spindle 6
DB2.DBX154.6	"ALARM & MESSAGE"._6FdStop6006xx[6]	Feed stop axis/spindle 6
DB36.DBX94.0	"SPINDLE".I_MTempWarn	Temperature prewarning motor
DB36.DBX94.1	"SPINDLE".I_HTempWarn	Temperature prewarning heat sink
DB2.DBX180.7	"ALARM & MESSAGE".A7000xx[7]	Alarm 700000-700063 (user area 0)
DB20.DBX10.1	"OPTIONS".Option_101	Single Speed 12,000rpm Spindle
M54.0	SPINDLE FAULT	Spindle Fault

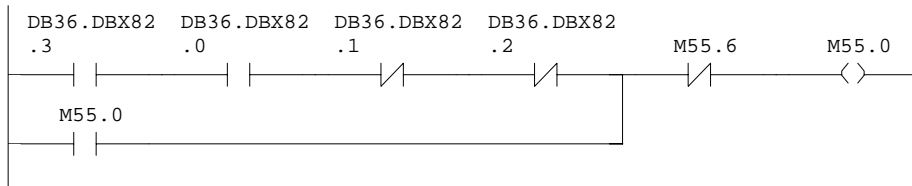
FC61 - <offline>

"SPINDLE GEAR CHANGE" Spindle Gear Change Control (Option) [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 03/26/01 10:10:52 PMPM
 Interface: 10/08/98 11:13:47 AMAM
Lengths (block/logic/data): 00662 00472 00002

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

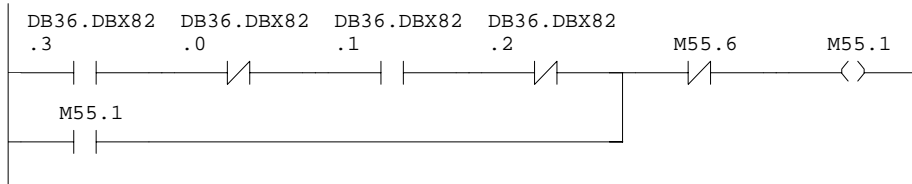
Block: FC61 Spindle Gear Change

Network: 1 Spindle Gear Change to Range #1 (Low) Request

**Symbol information**

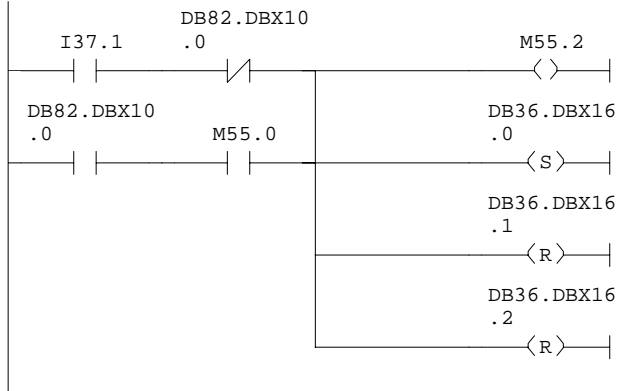
DB36.DBX82.3 "SPINDLE".I_GearChange Gear changeover
 DB36.DBX82.0 "SPINDLE".I_SetpGearA Setpoint gear stage A
 DB36.DBX82.1 "SPINDLE".I_SetpGearB Setpoint gear stage B
 DB36.DBX82.2 "SPINDLE".I_SetpGearC Setpoint gear stage C
 M55.0 SP G/CHGE R 1 REQ Spindle Gear Change Range #1 (Low) Request
 M55.6 SP G/CHGE CP PL DY Spindle Gear Change Complete Pulse Delayed

Network: 2 Spindle Gear Change to Range #2 (High) Request

**Symbol information**

DB36.DBX82.3 "SPINDLE".I_GearChange Gear changeover
 DB36.DBX82.0 "SPINDLE".I_SetpGearA Setpoint gear stage A
 DB36.DBX82.1 "SPINDLE".I_SetpGearB Setpoint gear stage B
 DB36.DBX82.2 "SPINDLE".I_SetpGearC Setpoint gear stage C
 M55.1 SP G/CHGE R 2 REQ Spindle Gear Change Range #2 (High) Request
 M55.6 SP G/CHGE CP PL DY Spindle Gear Change Complete Pulse Delayed

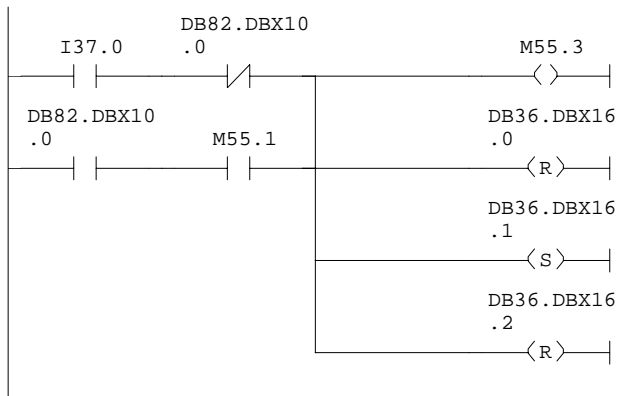
Network: 3 Spindle in Gear Range #1 (Low)



Symbol information

I37.1	SPIN GEAR LOW LS	SQL23 - Spindle Low Gear Limit
DB82.DBX10.0	"SPS".CMM_IN.program_test_request	program test request
M55.0	SP G/CHGE R 1 REQ	Spindle Gear Change Range #1 (Low) Request
M55.2	SPINDLE G/RNGE 1	Spindle in Gear Range #1 (Low)
DB36.DBX16.0	"SPINDLE".Q_ActGearA	Actual gear stage A
DB36.DBX16.1	"SPINDLE".Q_ActGearB	Actual gear stage B
DB36.DBX16.2	"SPINDLE".Q_ActGearC	Actual gear stage C

Network: 4 Spindle in Gear Range #2 (High)



Symbol information

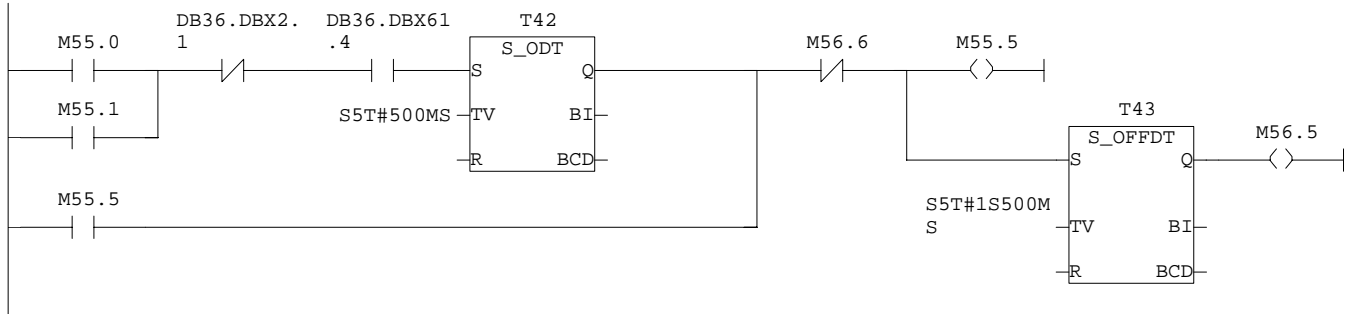
I37.0	SPIN GEAR HIGH LS	SQL22 - Spindle High Gear Limit
DB82.DBX10.0	"SPS".CMM_IN.program_test_request	program test request
M55.1	SP G/CHGE R 2 REQ	Spindle Gear Change Range #2 (High) Request
M55.3	SPINDLE G/RNGE 2	Spindle in Gear Range #2 (High)
DB36.DBX16.0	"SPINDLE".Q_ActGearA	Actual gear stage A
DB36.DBX16.1	"SPINDLE".Q_ActGearB	Actual gear stage B
DB36.DBX16.2	"SPINDLE".Q_ActGearC	Actual gear stage C

Network: 5 Spindle Stop for Gear Change Request

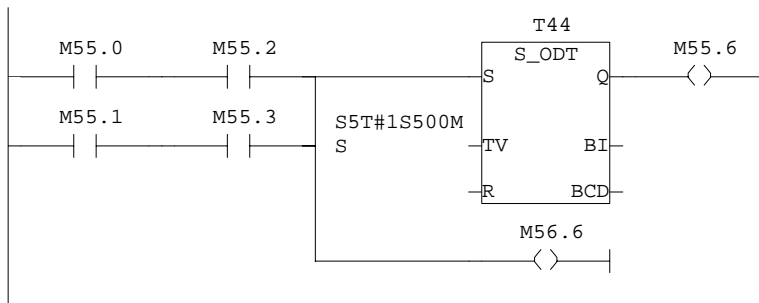


Symbol information

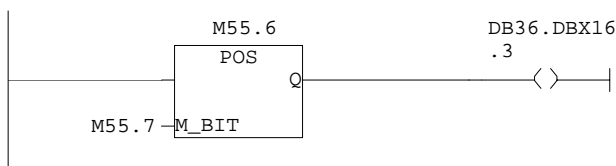
M55.0	SP G/CHGE R 1 REQ	Spindle Gear Change Range #1 (Low) Request
M55.1	SP G/CHGE R 2 REQ	Spindle Gear Change Range #2 (High) Request
M55.4	SPIN STOP G/C REQ	Spindle Stop for Gear Change Request

Network: 6 Spindle Oscillation for Gear Change Request

Symbol information

M55.0	SP G/CHGE R 1 REQ	Spindle Gear Change Range #1 (Low) Request
M55.1	SP G/CHGE R 2 REQ	Spindle Gear Change Range #2 (High) Request
DB36.DBX2.1	"SPINDLE".Q_ContrEnable	Controller enable
DB36.DBX61.4	"SPINDLE".I_Stat	Axis/spindle stationary (n<nmin)
M55.5	SPIN OSC G/C REQ	Spindle Oscillation for Gear Change Request
M56.6	SP G/CHGE COMP PLS	Spindle Gear Change Complete Pulse
M56.5	SPIN OSC G/C R OD	Spindle Oscillation for Gear Change Request Off Delayed

Network: 7 Spindle Gear Change Complete

Symbol information

M55.0	SP G/CHGE R 1 REQ	Spindle Gear Change Range #1 (Low) Request
M55.2	SPINDLE G/RNGE 1	Spindle in Gear Range #1 (Low)
M55.1	SP G/CHGE R 2 REQ	Spindle Gear Change Range #2 (High) Request
M55.3	SPINDLE G/RNGE 2	Spindle in Gear Range #2 (High)
M55.6	SP G/CHGE CP PL DY	Spindle Gear Change Complete Pulse Delayed
M56.6	SP G/CHGE COMP PLS	Spindle Gear Change Complete Pulse

Network: 8 Spindle Gear Change Complete to NC

Symbol information

M55.6	SP G/CHGE CP PL DY	Spindle Gear Change Complete Pulse Delayed
M55.7	SP G/CHGE COMP REM	Spindle Gear Change Complete Remember
DB36.DBX16.3	"SPINDLE".Q_GearChangeOv	Gear has changed over

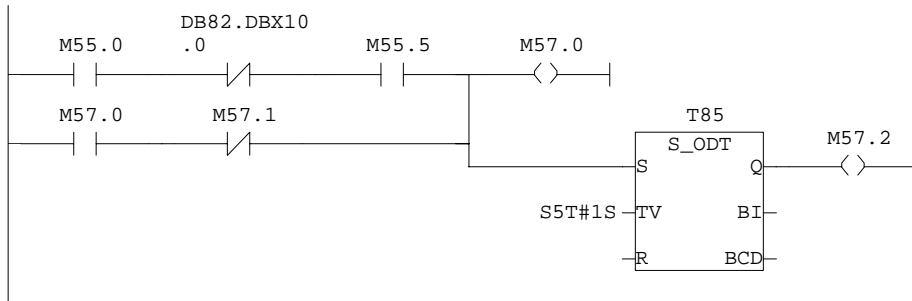
Network: 9 Spindle is in Gear



Symbol information

M55.2	SPINDLE	G/RNGE 1 Spindle in Gear Range #1 (Low)
M55.3	SPINDLE	G/RNGE 2 Spindle in Gear Range #2 (High)
M56.0	SPINDLE	IN GEAR Spindle is in a Gear

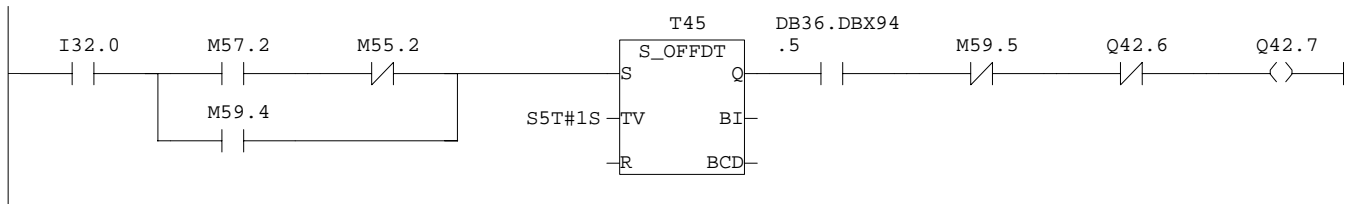
Network: 10 Spindle Gear Range #1 (Low) Motor Buffer



Symbol information

M55.0	SP G/CHGE R 1 REQ	Spindle Gear Change Range #1 (Low) Request
DB82.DBX10.0	"SPS".CMM_IN.program_test_request	program test request
M55.5	SPIN OSC G/C REQ	Spindle Oscillation for Gear Change Request
M57.0	SP G/R 1 BUFFER	Spindle Gear Range #1 (Low) Buffer
M57.1	SP G/R 2 BUFFER	Spindle Gear Range #2 (High) Buffer
M57.2	SP G/R 1 BFR DLY	Spindle Gear Range #1 (Low) Buffer Delay

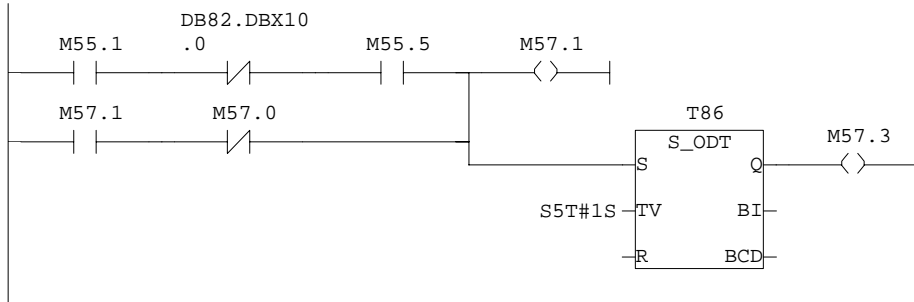
Network: 11 Spindle Gear Range #1 (Low) Motor



Symbol information

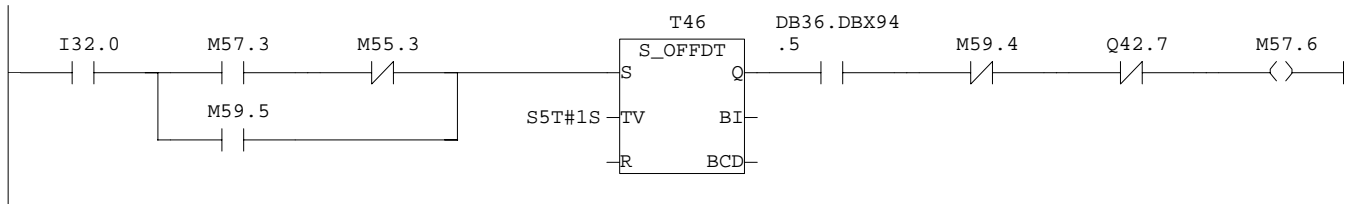
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M57.2	SP G/R 1 BFR DLY	Spindle Gear Range #1 (Low) Buffer Delay
M55.2	SPINDLE G/RNGE 1	Spindle in Gear Range #1 (Low)
M59.4	SP G/R 1 FORCE	Spindle Gear Range #1 (Low) Force for Gear Prompt
DB36.DBX94.5	"SPINDLE".I_NactNx	nact<nx
M59.5	SP G/R 2 FORCE	Spindle Gear Range #2 (High) Force for Gear Prompt
Q42.6	MULTI USE Q42.6	KAR45/KAR60 - Spindle Gear High Motor or Spindle Lubrication Oil/Air Unit
Q42.7	SPIN GEAR LOW MTR	KAR46/KAR61 - Spindle Gear Low Motor

Network: 12	Spindle Gear Range #2 (High) Motor Buffer
-------------	---

**Symbol information**

M55.1	SP G/CHGE R 2 REQ	Spindle Gear Change Range #2 (High) Request
DB82.DBX10.0	"SPS".CMM_IN.program_test_request	program test request
M55.5	SPIN OSC G/C REQ	Spindle Oscillation for Gear Change Request
M57.1	SP G/R 2 BUFFER	Spindle Gear Range #2 (High) Buffer
M57.0	SP G/R 1 BUFFER	Spindle Gear Range #1 (Low) Buffer
M57.3	SP G/R 2 BFR DLY	Spindle Gear Range #2 (High) Buffer Delay

Network: 13	Spindle Gear Range #2 (High) Motor
-------------	------------------------------------

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M57.3	SP G/R 2 BFR DLY	Spindle Gear Range #2 (High) Buffer Delay
M55.3	SPINDLE G/RNGE 2	Spindle in Gear Range #2 (High)
M59.5	SP G/R 2 FORCE	Spindle Gear Range #2 (High) Force for Gear Prompt
DB36.DBX94.5	"SPINDLE".I_NactNx	nact<nx
M59.4	SP G/R 1 FORCE	Spindle Gear Range #1 (Low) Force for Gear Prompt
Q42.7	SPIN GEAR LOW MTR	KAR46/KAR61 - Spindle Gear Low Motor
M57.6	SP GR HGH MTR BFR	Spindle Gear High Motor Buffer

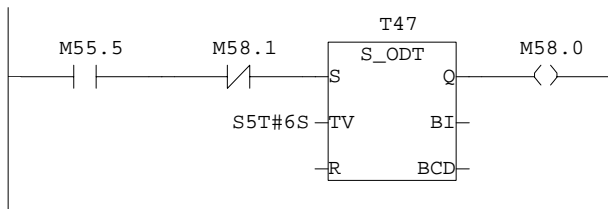
FC62 - <offline>

"SPINDLE GEAR PROMPT" Spindle Gear Change Prompt (Option) [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/09/01 03:12:40 AMAM
 Interface: 10/08/98 11:15:29 AMAM
Lengths (block/logic/data): 00196 00086 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

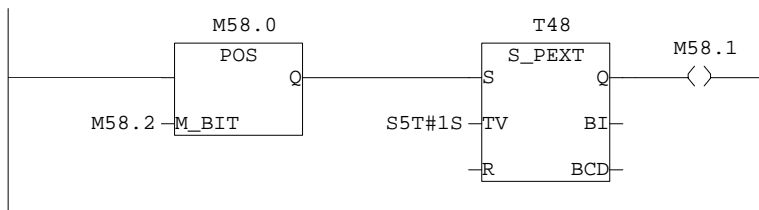
Block: FC62 Spindle Gear Prompt

Network: 1 Spindle Gear Change Prompt Request (After Delay Time Elapsed)

**Symbol information**

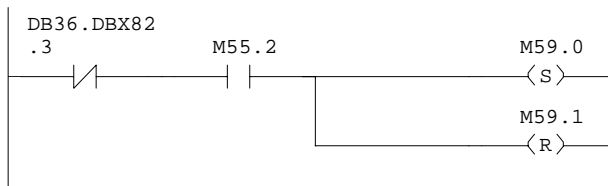
M55.5 SPIN OSC G/C REQ Spindle Oscillation for Gear Change Request
M58.1 SPIN G/P ACTIVE Spindle Gear Change Prompt Active
M58.0 SPIN G/P REQUEST Spindle Gear Change Prompt Request

Network: 2 Spindle Gear Change Prompt Active (With Preset Time for Prompt)

**Symbol information**

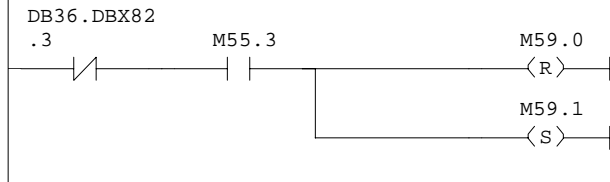
M58.0 SPIN G/P REQUEST Spindle Gear Change Prompt Request
M58.2 SPIN G/P ACT REM Spindle Gear Change Prompt Active Remember
M58.1 SPIN G/P ACTIVE Spindle Gear Change Prompt Active

Network: 3 Spindle Last Gear Range was #1 (Low)

**Symbol information**

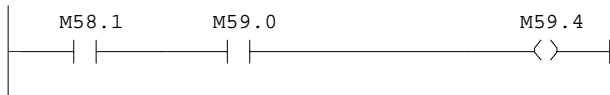
DB36.DBX82.3 "SPINDLE".I_GearChange Gear changeover
M55.2 SPINDLE G/RNGE 1 Spindle in Gear Range #1 (Low)
M59.0 SPIN LAST G/R = 1 Spindle Last Gear Range was Gear Range #1 (Low)
M59.1 SPIN LAST G/R = 2 Spindle Last Gear Range was Gear Range #2 (High)

Network: 4 Spindle Last Gear Range was #2 (High)

**Symbol information**

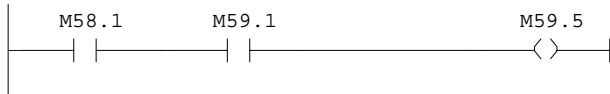
DB36.DBX82.3	"SPINDLE".I_GearChange	Gear changeover
M55.3	SPINDLE G/RNGE 2	Spindle in Gear Range #2 (High)
M59.0	SPIN LAST G/R = 1	Spindle Last Gear Range was Gear Range #1 (Low)
M59.1	SPIN LAST G/R = 2	Spindle Last Gear Range was Gear Range #2 (High)

Network: 5 Spindle Gear Change Unlock by Forcing Gear Range #1 (Low)

**Symbol information**

M58.1	SPIN G/P ACTIVE	Spindle Gear Change Prompt Active
M59.0	SPIN LAST G/R = 1	Spindle Last Gear Range was Gear Range #1 (Low)
M59.4	SP G/R 1 FORCE	Spindle Gear Range #1 (Low) Force for Gear Prompt

Network: 6 Spindle Gear Change Unlock by Forcing Gear Range #2 (High)

**Symbol information**

M58.1	SPIN G/P ACTIVE	Spindle Gear Change Prompt Active
M59.1	SPIN LAST G/R = 2	Spindle Last Gear Range was Gear Range #2 (High)
M59.5	SP G/R 2 FORCE	Spindle Gear Range #2 (High) Force for Gear Prompt

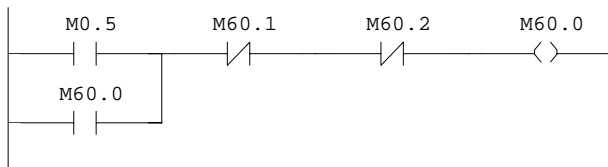
FC65 - <offline>

"SPINDLE POWER MONITOR" Spindle Power Monitor [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/12/01 09:46:31 AMAM
 Interface: 05/23/00 03:34:05 PMPM
Lengths (block/logic/data): 00688 00576 00006

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC65 Spindle Power Monitor

Network: 1 Read GUD Variable Pointer Address (FB5) Request #3

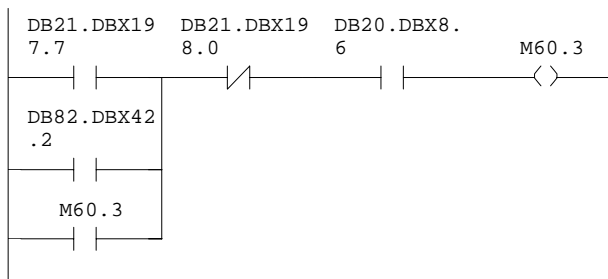
**Symbol information**

M0.5 PLC START PULSE PLC Start Pulse
M60.0 GET GUD ADR RQ 3 Get GUD Pointer Address with FB5 Request #3
M60.1 GET GUD ERROR 3 Get GUD Pointer Address with FB5 Error #3
M60.2 GET GUD DONE 3 Get GUD Pointer Address with FB5 Done #3

Network: 2 Read GUD Token Pointer for "SPINDLE POWER LIMIT"

CALL FB 5 , DB106	"GET GUD"	-- Read GUD Variable [System]
Req :=M60.0	"GET GUD ADR RQ 3"	-- Get GUD Pointer Address with FB5 Request #3
Addr := "GUD NAME DATA".SP_POWER_MON_LIMIT	P#DB98.DBX360.0	-- GUD Variable Name for Spindle Power Monitor Limit
Area :=B#16#0		
Unit :=B#16#1		
Index1 :=0		
Index2 :=0		
CnvtToken:=TRUE		
VarToken :=P#DB92.DBX90.0 BYTE 10		
Error :=M60.1	"GET GUD ERROR 3"	-- Get GUD Pointer Address with FB5 Error #3
Done :=M60.2	"GET GUD DONE 3"	-- Get GUD Pointer Address with FB5 Done #3
State :=DB98.DBW398	"GUD NAME DATA".FB5_STATE10	-- FB5 State 10
RD := "GUD NAME DATA".FB5_DUMMY10	"GUD NAME DATA".FB5_DUMMY10	-- FB5 Dummy Variable 10

Network: 3 Spindle Power Monitoring Active

**Symbol information**

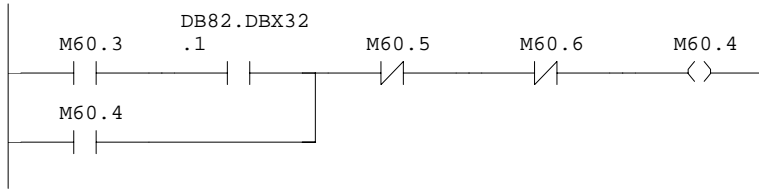
DB21.DBX197.7 "CHANNEL 1".MDyn[31]

```

DB82.DBX42.2  "SPS".CMM_OUT.tool_m_function.function_3_on
M60.3         SP POWER MON ACT           Spindle Power Monitor Active
DB21.DBX198.0 "CHANNEL 1".MDyn[32]
DB20.DBX8.6   "OPTIONS".Option_86       Spindle Power Monitor Active

```

Network: 4 Data Transfer of Variables NC -> PLC Request



Symbol information

```

M60.3         SP POWER MON ACT           Spindle Power Monitor Active
DB82.DBX32.1  "SPS".CMM_OUT.base_sig.nc_cycle_activ
M60.4         VAR TRANS PLC RQ 2         Variable Transfer NC to PLC (FB2) Request #2
M60.5         VAR TRANS PLC ER 2         Variable Transfer NC to PLC (FB2) Error #2
M60.6         VAR TRANS PLC DN 2         Variable Transfer NC to PLC (FB2) Done #2

```

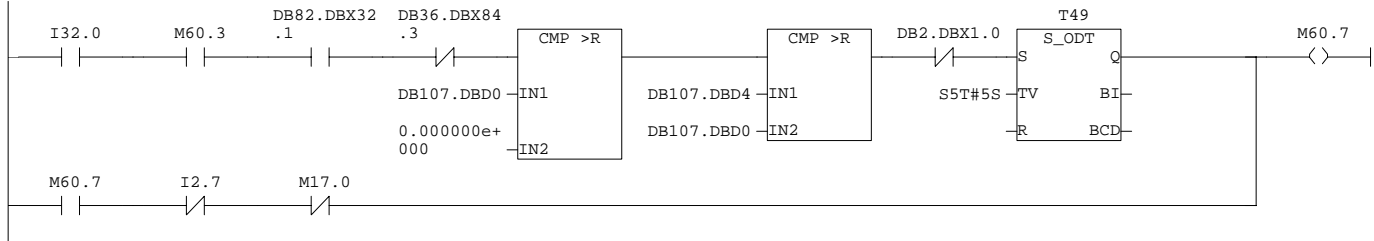
Network: 5 Data Transfer of Variables NC -> PLC with FB2

```

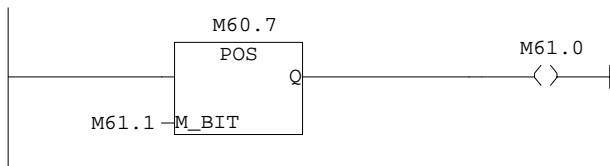
CALL FB      2 , DB108                    "GET VAR"           -- Read NC Variable [System]
Req          :=M60.4                      "VAR TRANS PLC RQ 2"  -- Variable Transfer NC to PLC (FB2)
                                           Request #2

NumVar :=2
Addr1  :=P#DB92.DBX90.0 BYTE 10
Unit1  :=
Column1:=
Line1  :=
Addr2  := "NC VAR".Cl_SSP_driveLoad1_16   P#DB105.DBX0.0      --
Unit2  :=
Column2:=
Line2  :=
Addr3  :=
Unit3  :=
Column3:=
Line3  :=
Addr4  :=
Unit4  :=
Column4:=
Line4  :=
Addr5  :=
Unit5  :=
Column5:=
Line5  :=
Addr6  :=
Unit6  :=
Column6:=
Line6  :=
Addr7  :=
Unit7  :=
Column7:=
Line7  :=
Addr8  :=
Unit8  :=
Column8:=
Line8  :=
Error  :=M60.5                            "VAR TRANS PLC ER 2"  -- Variable Transfer NC to PLC (FB2)
                                           Error #2
NDR     :=M60.6                            "VAR TRANS PLC DN 2"  -- Variable Transfer NC to PLC (FB2)
                                           Done #2
State   :=DB107.DBW8                      "SP POWER DATA".FB2_State -- FB2 State
RD1     := "SP POWER DATA".SP_POWER_PRESET "SP POWER DATA".SP_POWER_PRESET -- Spindle Power Preset Limit
RD2     := "SP POWER DATA".SP_POWER_ACTUAL "SP POWER DATA".SP_POWER_ACTUAL -- Spindle Actual Power
RD3     :=
RD4     :=
RD5     :=
RD6     :=
RD7     :=
RD8     :=

```

Network: 6 Spindle Preset Power Limit Exceeded

Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M60.3	SP POWER MON ACT	Spindle Power Monitor Active
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
DB36.DBX84.3	"SPINDLE".I_Tapping	Tapping without compensating chuck
DB107.DBD0	"SP POWER DATA".SP_POWER_PRESET	Spindle Power Preset Limit
DB107.DBD4	"SP POWER DATA".SP_POWER_ACTUAL	Spindle Actual Power
DB2.DBX1.0	"ALARM & MESSAGE".C1.FDD_5100xx[8]	Feed disable A.no.51000-510015
M60.7	SP POWER LMT RCH	Spindle Preset Power Monitor Limit Reached
I2.7	FEEDHOLD SELECT	MCP - Feedhold/Release Select [K47]
M17.0	FAULT RESET	Fault Reset

Network: 7 Spindle Preset Power Limit Exceeded Feedhold Pulse

Symbol information

M60.7	SP POWER LMT RCH	Spindle Preset Power Monitor Limit Reached
M61.1	SP PWR LM F HD REM	Spindle Power Limit Reached Feedhold Remember
M61.0	SP PWR LM F HD PLS	Spindle Power Limit Reached Feedhold Pulse

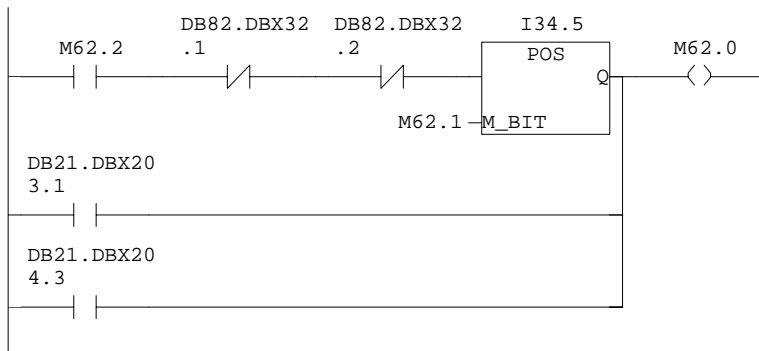
FC70 - <offline>

"PNEUMATICS" Control & Monitoring [User]
Name: Harding **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 2
Time stamp Code: 02/15/01 03:46:20 AMAM
Interface: 04/28/00 11:06:45 AMAM
Lengths (block/logic/data): 00664 00532 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

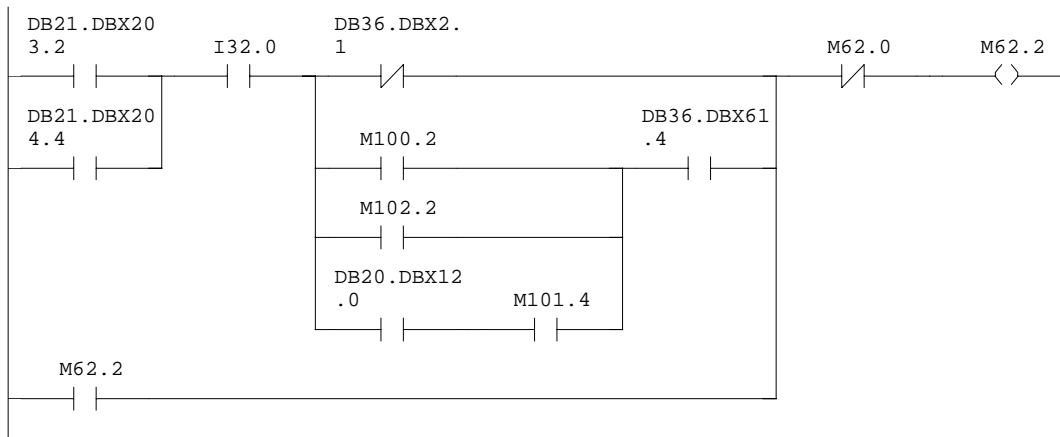
Block: FC70 Pneumatic Control & Monitoring

Network: 1 Spindle Tool Clamp Request

**Symbol information**

M62.2 SPIN TOOL UCLP REQ Spindle Tool Unclamp Request
 DB82.DBX32.1 "SPS".CMM_OUT.base_sig.nc_cycle_activ
 DB82.DBX32.2 "SPS".CMM_OUT.base_sig.nc_cycle_stopped
 I34.5 SPIN TOOL UCLP PB SBP46 - Spindle Tool Unclamp Pushbutton
 M62.1 SPIN TOOL CLMP REM Spindle Tool Clamp Remember
 DB21.DBX203.1 "CHANNEL 1".MDyn[73]
 DB21.DBX204.3 "CHANNEL 1".MDyn[83]
 M62.0 SPIN TOOL CLMP REQ Spindle Tool Clamp Request

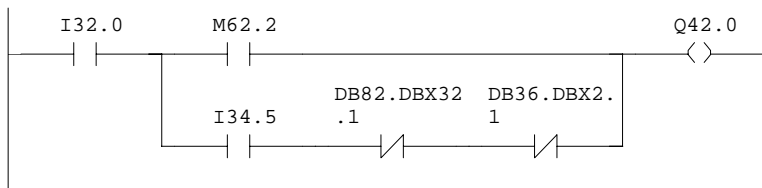
Network: 2 Spindle Tool Unclamp Request

**Symbol information**

DB21.DBX203.2 "CHANNEL 1".MDyn[74]
 DB21.DBX204.4 "CHANNEL 1".MDyn[84]
 I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 DB36.DBX2.1 "SPINDLE".Q_ContrEnable Controller enable

M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
DB20.DBX12.0	"OPTIONS".Option_120	ATC Magazine Alarm Suppress for Machine Startup
M101.4	T MAG FCT SETUP IL	Tool Magazine Function Setup Interlock
DB36.DBX61.4	"SPINDLE".I_Stat	Axis/spindle stationary (n<nmin)
M62.2	SPIN TOOL UCLP REQ	Spindle Tool Unclamp Request
M62.0	SPIN TOOL CLMP REQ	Spindle Tool Clamp Request

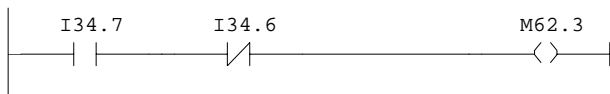
Network: 3 Spindle Tool Unclamp Solenoid



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M62.2	SPIN TOOL UCLP REQ	Spindle Tool Unclamp Request
I34.5	SPIN TOOL UCLP PB	SBP46 - Spindle Tool Unclamp Pushbutton
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
DB36.DBX2.1	"SPINDLE".Q_ContrEnable	Controller enable
Q42.0	SPIN TOOL UCLP SOL	KAR13/YVS5 - Spindle Tool Unclamp Solenoid

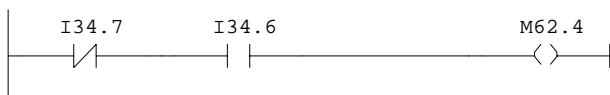
Network: 4 Spindle Tool is Clamped



Symbol information

I34.7	SPIN TOOL CLMP LS	SQL7 - Spindle Tool Clamped Limit
I34.6	SPIN TOOL UCLP LS	SQL6 - Spindle Tool Unclamped Limit
M62.3	SPIN TOOL CLAMPED	Spindle Tool is Clamped

Network: 5 Spindle Tool is Unclamped



Symbol information

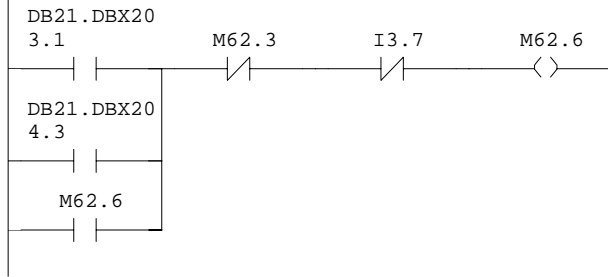
I34.7	SPIN TOOL CLMP LS	SQL7 - Spindle Tool Clamped Limit
I34.6	SPIN TOOL UCLP LS	SQL6 - Spindle Tool Unclamped Limit
M62.4	SPIN TOOL UNCLMP'D	Spindle Tool is Unclamped

Network: 6 Spindle Tool Clamp Lamp



Symbol information

M62.3	SPIN TOOL CLAMPED	Spindle Tool is Clamped
Q4.1	SPIN TOOL CLMP LMP HLP50	Spindle Tool Clamped Lamp [X35/2]

Network: 7 Spindle Tool Clamp NC Read-In Disable

Symbol information

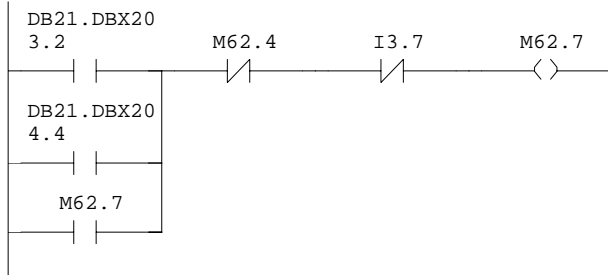
DB21.DBX203.1 "CHANNEL 1".MDyn[73]

DB21.DBX204.3 "CHANNEL 1".MDyn[83]

M62.6 SPIN TOOL CLMP RID Spindle Tool Unclamp NC Read-In Disable

M62.3 SPIN TOOL CLAMPED Spindle Tool is Clamped

I3.7 NC RESET MCP - NC Reset [K32]

Network: 8 Spindle Tool Unclamp NC Read-In Disable

Symbol information

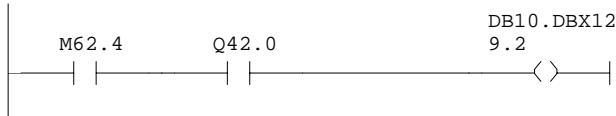
DB21.DBX203.2 "CHANNEL 1".MDyn[74]

DB21.DBX204.4 "CHANNEL 1".MDyn[84]

M62.7 SPIN TOOL UCLP RID Spindle Tool Clamp NC Read-In Disable

M62.4 SPIN TOOL UNCLMP'D Spindle Tool is Unclamped

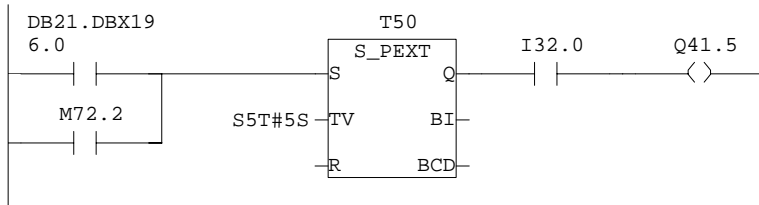
I3.7 NC RESET MCP - NC Reset [K32]

Network: 9 Spindle Tool Unclamped to NCK (Digital Input 35)

Symbol information

M62.4 SPIN TOOL UNCLMP'D Spindle Tool is Unclamped

Q42.0 SPIN TOOL UCLP SOL KAR13/YVS5 - Spindle Tool Unclamp Solenoid

DB10.DBX129.2 "NC".I_Set_Inp35 Set digital NCK input 35

Network: 10 Spindle Air Blast Solenoid


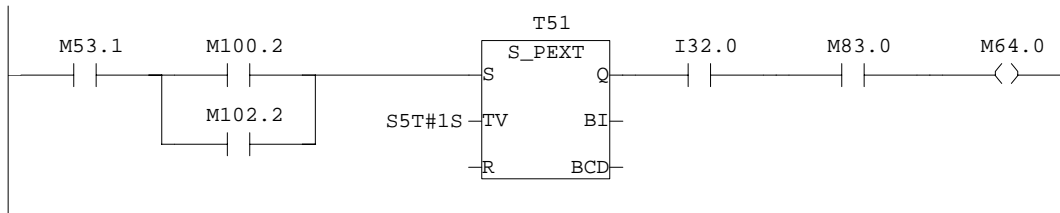
Symbol information

DB21.DBX196.0 "CHANNEL 1".MDyn[16]

M72.2 THRU COOL A/B REQ Through Spindle Coolant Off Air Blast Request

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

Q41.5 M17 AIR BLST SOL KAR17/YVS7 - M17 Air Blast Solenoid

Network: 11 Orientation Air Blast Request**Symbol information**

M53.1 SPIN ORT ACTIVE Spindle Orientation Active

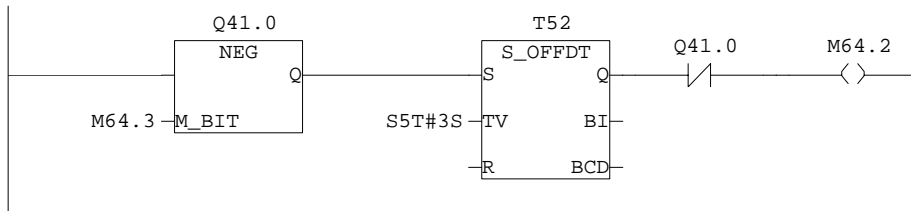
M100.2 T CHG CYC ACTIVE Tool Change Cycle Active

M102.2 T S/U CYC ACTIVE Tool Setup Cycle Active

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

M83.0 M/C DOOR T/C INT Machine Safety Door Tool Change Interrupt

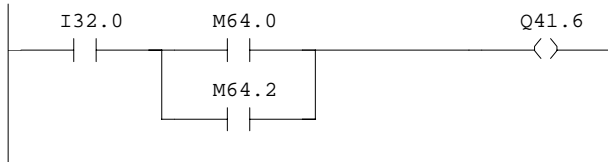
M64.0 ORT A/BL REQUEST Spindle Orientation Air Blast Request

Network: 12 Orientation Air Blast for Coolant Stop Request**Symbol information**

Q41.0 COOLANT PUMP MTR KAR2/MS1/MTR1/YVS11 - Coolant Pump Motor

M64.3 ORT A/BL C ST REM Spindle Orientation Air Blast for Coolant Stop Remember

M64.2 ORT A/BL C ST REQ Spindle Orientation Air Blast for Coolant Stop Request

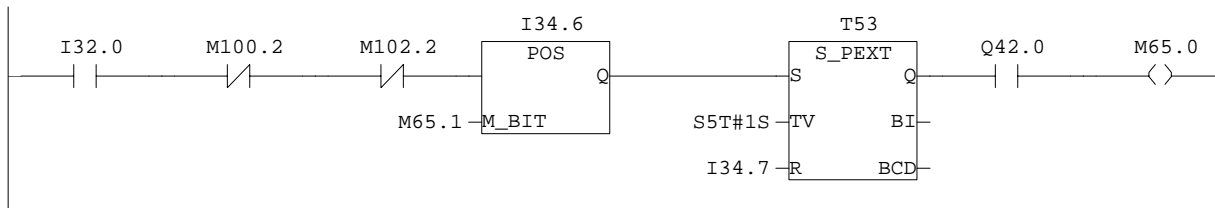
Network: 13 Orientation Air Blast Solenoid**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

M64.0 ORT A/BL REQUEST Spindle Orientation Air Blast Request

M64.2 ORT A/BL C ST REQ Spindle Orientation Air Blast for Coolant Stop Request

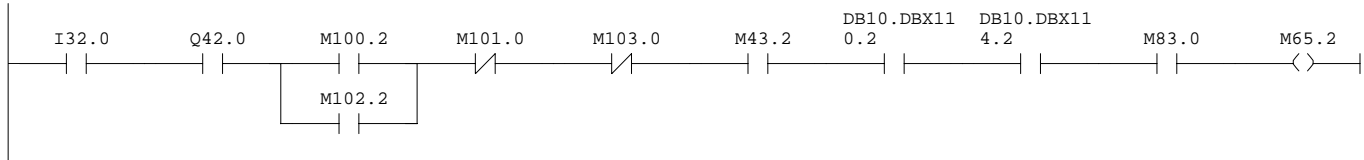
Q41.6 ORT AIR BLST SOL KAR6/YVS2 - Spindle Orientation Air Blast Solenoid

Network: 14 Spindle Tool Unclamp Air Blast for Manual Tool Change Request

Symbol information

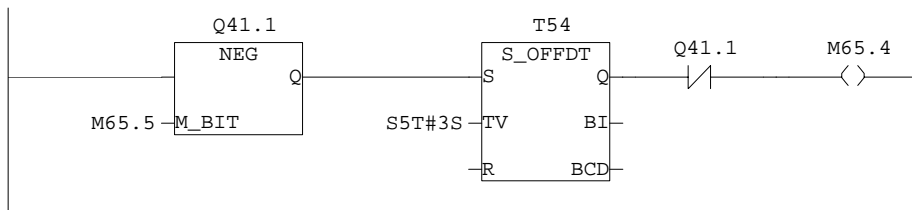
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
I34.6	SPIN TOOL UCLP LS	SQL6 - Spindle Tool Unclamped Limit
M65.1	SPIN A/BL M TC REM	Spindle Tool Air Blast for Manual T/Change Remember
I34.7	SPIN TOOL CLMP LS	SQL7 - Spindle Tool Clamped Limit
Q42.0	SPIN TOOL UCLP SOL	KAR13/YVS5 - Spindle Tool Unclamp Solenoid
M65.0	SPIN A/BL M TC REQ	Spindle Tool Air Blast for Manual T/Change Request

Network: 15 Spindle Tool Unclamp Air Blast for Tool Change Cycle Request

**Symbol information**

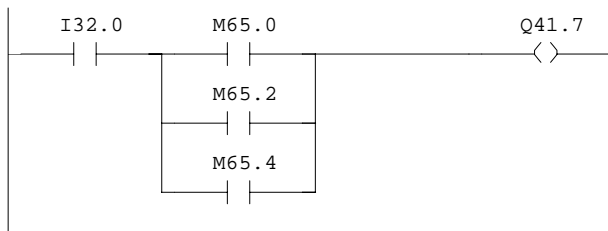
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q42.0	SPIN TOOL UCLP SOL	KAR13/YVS5 - Spindle Tool Unclamp Solenoid
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M101.0	T CHG CYC INT'D	Tool Change Cycle Interrupted
M103.0	T S/U CYC INT'D	Tool Setup Cycle Interrupted
M43.2	Z AXIS REFD	Z Axis Referenced to Active Measuring System
DB10.DBX110.2	"NC".Q_SWCamMinus[2]	
DB10.DBX114.2	"NC".Q_SWCamPlus[2]	
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
M65.2	SPIN A/BL A TC REQ	Spindle Tool Air Blast for Tool Change Cycle Request

Network: 16 Spindle Tool Unclamp Air Blast for Through Coolant Stop Request

**Symbol information**

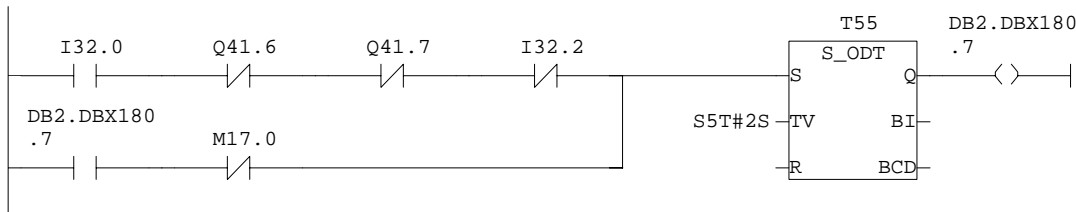
Q41.1	THRU SPIN COOL SOL	KAR18/YVS8 - Through Spindle Coolant Solenoid
M65.5	SPIN A/BL TC ST RM	Spindle Tool Air Blast for Through Coolant Stop Remember
M65.4	SPIN A/BL TC ST RQ	Spindle Tool Air Blast for Through Coolant Stop Request

Network: 17 Spindle Tool Unclamp Air Blast Solenoid

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M65.0	SPIN A/BL M TC REQ	Spindle Tool Air Blast for Manual T/Change Request
M65.2	SPIN A/BL A TC REQ	Spindle Tool Air Blast for Tool Change Cycle Request
M65.4	SPIN A/BL TC ST RQ	Spindle Tool Air Blast for Through Coolant Stop Request
Q41.7	SPIN AIR BLST SOL	KAR14/YVS6 - Spindle Tool Unclamp Air Blast Solenoid

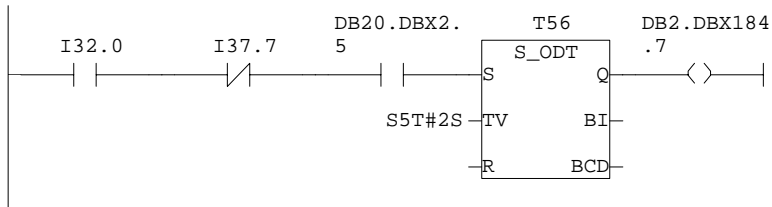
Network: 18 700007: System Air Pressure Fault



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q41.6	ORT AIR BLST SOL	KAR6/YVS2 - Spindle Orientation Air Blast Solenoid
Q41.7	SPIN AIR BLST SOL	KAR14/YVS6 - Spindle Tool Unclamp Air Blast Solenoid
I32.2	SYSTEM AIR PRS	SPS1 - System Air Pressure
DB2.DBX180.7	"ALARM & MESSAGE".A7000xx[7]	Alarm 700000-700063 (user area 0)
M17.0	FAULT RESET	Fault Reset

Network: 19 700039: Linear Scale Air Pressure Warning



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I37.7	LIN SCALE AIR PRS	SPS3 - Linear Scale Air Pressure
DB20.DBX2.5	"OPTIONS".Option_25	Linear Scale Air Pressure Fault Active
DB2.DBX184.7	"ALARM & MESSAGE".A7000xx[39]	Alarm 700000-700063 (user area 0)

Network: 20 Pneumatic System Fault



Symbol information

DB2.DBX180.7	"ALARM & MESSAGE".A7000xx[7]	Alarm 700000-700063 (user area 0)
M66.0	PNEUMATIC FAULT	Pneumatic System Fault

Network: 21 Pneumatic System Warning



Symbol information

DB2.DBX184.7	"ALARM & MESSAGE".A7000xx[39]	Alarm 700000-700063 (user area 0)
M66.1	PNEUMATIC WARNING	Pneumatic System Warning

FC71 - <offline>

"COOLANT" Coolant Control & Monitoring [User]

Name: Hardinge

Family: VMC

Author: MGS

Version: 1.0

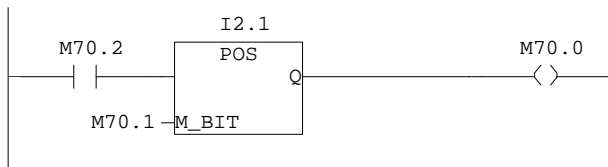
Block version: 2

Time stamp Code: 02/12/01 09:45:53 AMAM

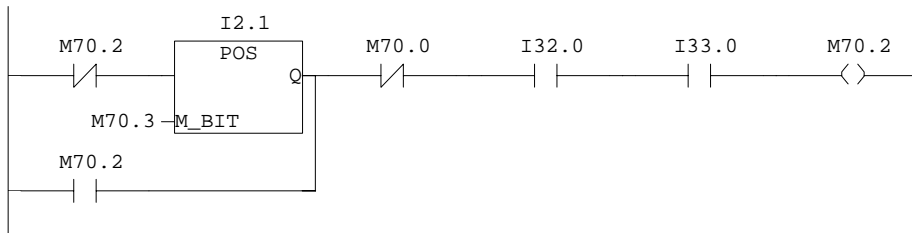
Interface: 04/27/00 04:31:47 PMPM

Lengths (block/logic/data): 00678 00548 00002

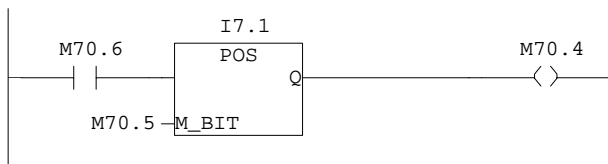
Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC71 Coolant Control & Monitoring**Network: 1 Coolant Manual Off Request****Symbol information**

M70.2	COOL MANL ON	Coolant Manual On
I2.1	COOLANT ON SEL	MCP - Coolant On/Off Select [K24]
M70.1	COOL MANL OFF REM	Coolant Manual Off Remember
M70.0	COOL MANL OFF	Coolant Manual Off

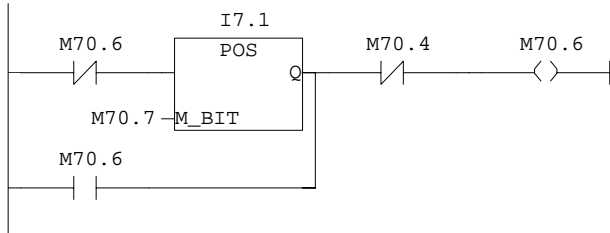
Network: 2 Coolant Manual On Buffer**Symbol information**

M70.2	COOL MANL ON	Coolant Manual On
I2.1	COOLANT ON SEL	MCP - Coolant On/Off Select [K24]
M70.3	COOL MANL ON REM	Coolant Manual On Remember
M70.0	COOL MANL OFF	Coolant Manual Off
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I33.0	COOLANT PUMP TOL FRT1	Coolant Pump Motor Overload

Network: 3 Coolant Auto Off**Symbol information**

M70.6	COOL AUTO ON	Coolant Automatic On
I7.1	COOLANT AUTO SEL	MCP - Coolant Auto Select [K25]
M70.5	COOL AUTO OFF REM	Coolant Automatic Off Remember
M70.4	COOL AUTO OFF	Coolant Automatic Off

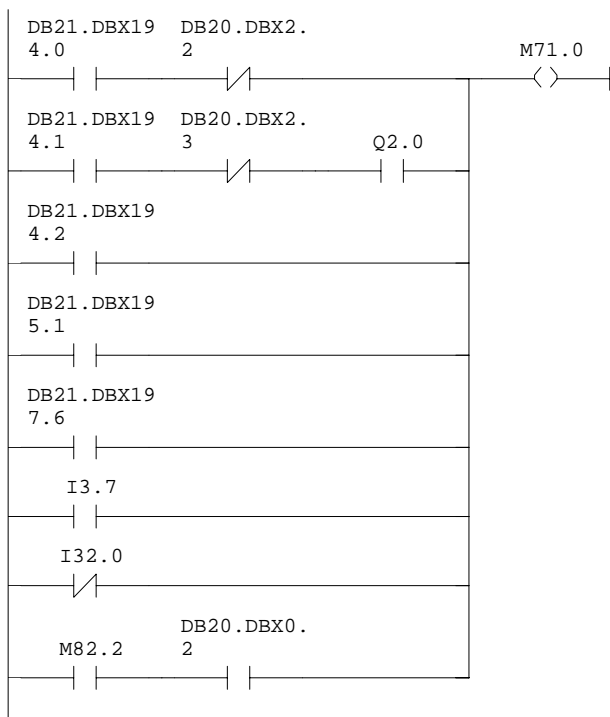
Network: 4 Coolant Auto On Buffer



Symbol information

M70.6	COOL AUTO ON	Coolant Automatic On
I7.1	COOLANT AUTO SEL	MCP - Coolant Auto Select [K25]
M70.7	COOL AUTO ON REM	Coolant Automatic On Remember
M70.4	COOL AUTO OFF	Coolant Automatic Off

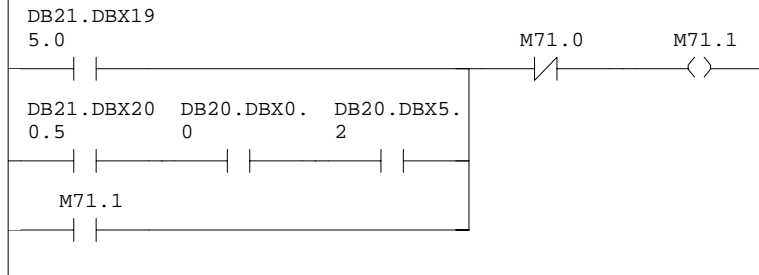
Network: 5 Coolant Off Request



Symbol information

DB21.DBX194.0	"CHANNEL 1".MDyn[0]	
DB20.DBX2.2	"OPTIONS".Option_22	Coolant Does Not Stop With M00
DB21.DBX194.1	"CHANNEL 1".MDyn[1]	
DB20.DBX2.3	"OPTIONS".Option_23	Coolant Does Not Stop With M01
Q2.0	OPT STOP LED	MCP - Optional Stop LED [L14]
DB21.DBX194.2	"CHANNEL 1".MDyn[2]	
DB21.DBX195.1	"CHANNEL 1".MDyn[9]	
DB21.DBX197.6	"CHANNEL 1".MDyn[30]	
I3.7	NC RESET	MCP - NC Reset [K32]
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M82.2	M/C DOOR OPEN PLS	Machine Safety Door Open Pulse
DB20.DBX0.2	"OPTIONS".Option_02	Coolant Active After Door Open Active
M71.0	COOL AUTO OFF REQ	Coolant Off Request

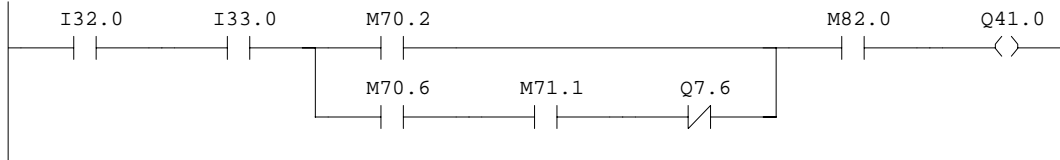
Network: 6 Coolant On Request



Symbol information

DB21.DBX195.0 "CHANNEL 1".MDyn[8]
 DB21.DBX200.5 "CHANNEL 1".MDyn[53]
 DB20.DBX0.0 "OPTIONS".Option_00 Through Spindle Coolant M53 Auto Trigger M8 Active
 DB20.DBX5.2 "OPTIONS".Option_52 Through Spindle Coolant Fitted
 M71.1 COOL AUTO ON REQ Coolant On Request
 M71.0 COOL AUTO OFF REQ Coolant Off Request

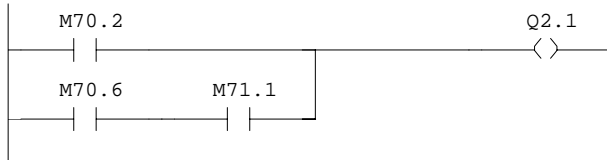
Network: 7 Coolant Pump Motor



Symbol information

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 I33.0 COOLANT PUMP TOL FRT1 - Coolant Pump Motor Overload
 M70.2 COOL MANL ON Coolant Manual On
 M70.6 COOL AUTO ON Coolant Automatic On
 M71.1 COOL AUTO ON REQ Coolant On Request
 Q7.6 PGM TEST LED MCP - Program Test LED [L6]
 M82.0 M/C DOOR CLS BFR Machine Safety Door Close Buffer
 Q41.0 COOLANT PUMP MTR KAR2/MS1/MTR1/YVS11 - Coolant Pump Motor

Network: 8 Coolant On MCP LED



Symbol information

M70.2 COOL MANL ON Coolant Manual On
 M70.6 COOL AUTO ON Coolant Automatic On
 M71.1 COOL AUTO ON REQ Coolant On Request
 Q2.1 COOLANT ON LED MCP - Coolant On/Off LED [L24]

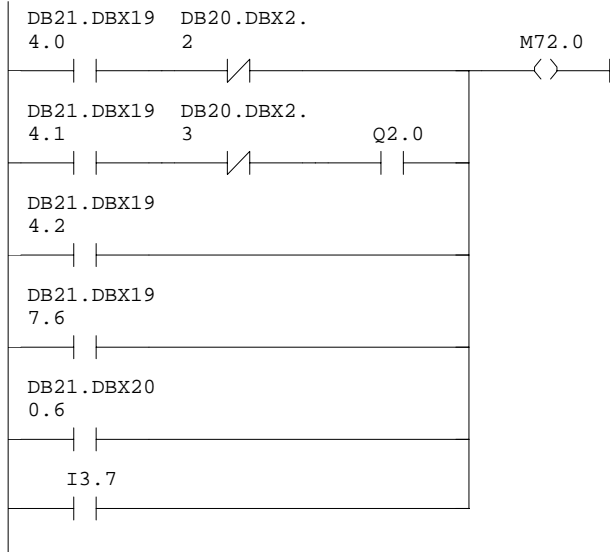
Network: 9 Coolant Auto MCP LED



Symbol information

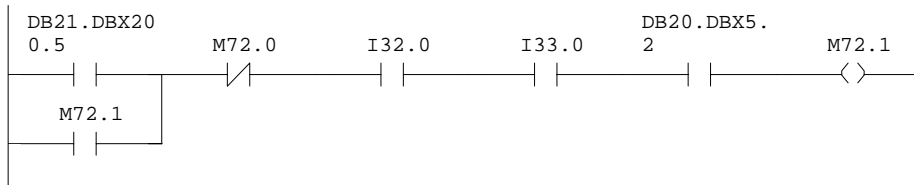
M70.6 COOL AUTO ON Coolant Automatic On
 Q7.1 COOLANT AUTO LED MCP - Coolant Auto LED [L25]

Network: 10	Through Spindle Coolant Off Request
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**Symbol information**

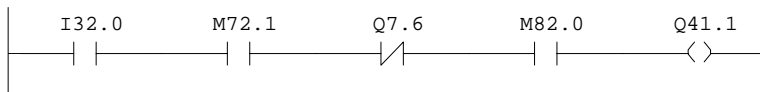
DB21.DBX194.0	"CHANNEL 1".MDyn[0]	
DB20.DBX2.2	"OPTIONS".Option_22	Coolant Does Not Stop With M00
DB21.DBX194.1	"CHANNEL 1".MDyn[1]	
DB20.DBX2.3	"OPTIONS".Option_23	Coolant Does Not Stop With M01
Q2.0	OPT STOP LED	MCP - Optional Stop LED [L14]
DB21.DBX194.2	"CHANNEL 1".MDyn[2]	
DB21.DBX197.6	"CHANNEL 1".MDyn[30]	
DB21.DBX200.6	"CHANNEL 1".MDyn[54]	
I3.7	NC RESET	MCP - NC Reset [K32]
M72.0	THRU COOL OFF REQ	Through Spindle Coolant Off Request

Network: 11	Through Spindle Coolant On Request
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**Symbol information**

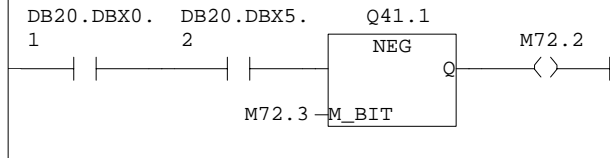
DB21.DBX200.5	"CHANNEL 1".MDyn[53]	
M72.1	THRU COOL ON REQ	Through Spindle Coolant On Request
M72.0	THRU COOL OFF REQ	Through Spindle Coolant Off Request
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I33.0	COOLANT PUMP TOL	FRT1 - Coolant Pump Motor Overload
DB20.DBX5.2	"OPTIONS".Option_52	Through Spindle Coolant Fitted

Network: 12	Through Spindle Coolant Solenoid
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**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M72.1	THRU COOL ON REQ	Through Spindle Coolant On Request
Q7.6	PGM TEST LED	MCP - Program Test LED [L6]
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
Q41.1	THRU SPIN COOL SOL	KAR18/YVS8 - Through Spindle Coolant Solenoid

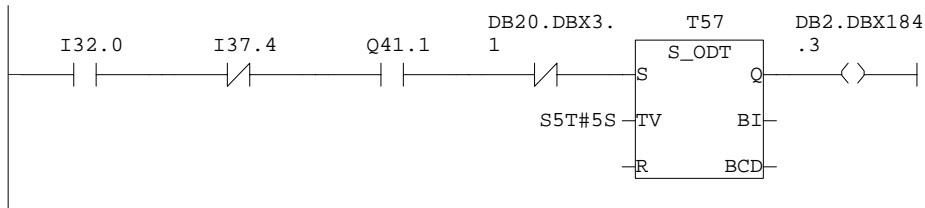
Network: 13 Through Spindle Coolant Off Air Blast Request



Symbol information

DB20.DBX0.1 "OPTIONS".Option_01 Spindle Airblow After Through Spindle Coolant Stop Active
 DB20.DBX5.2 "OPTIONS".Option_52 Through Spindle Coolant Fitted
 Q41.1 THRU SPIN COOL SOL KAR18/YVS8 - Through Spindle Coolant Solenoid
 M72.3 THRU COOL A/B REM Through Spindle Coolant Off Air Blast Remember
 M72.2 THRU COOL A/B REQ Through Spindle Coolant Off Air Blast Request

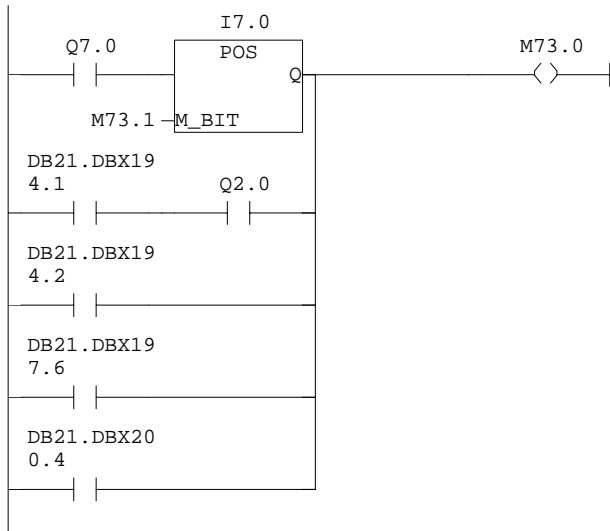
Network: 14 700035: Through Spindle Coolant Pressure Fault



Symbol information

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 I37.4 THRU SPIN COOL PRS SPS2 - Spindle Through Coolant Pressure
 Q41.1 THRU SPIN COOL SOL KAR18/YVS8 - Through Spindle Coolant Solenoid
 DB20.DBX3.1 "OPTIONS".Option_31 Spindle Through Coolant Pressure Fault Inactive
 DB2.DBX184.3 "ALARM & MESSAGE".A7000xx[35] Alarm 700000-700063 (user area 0)

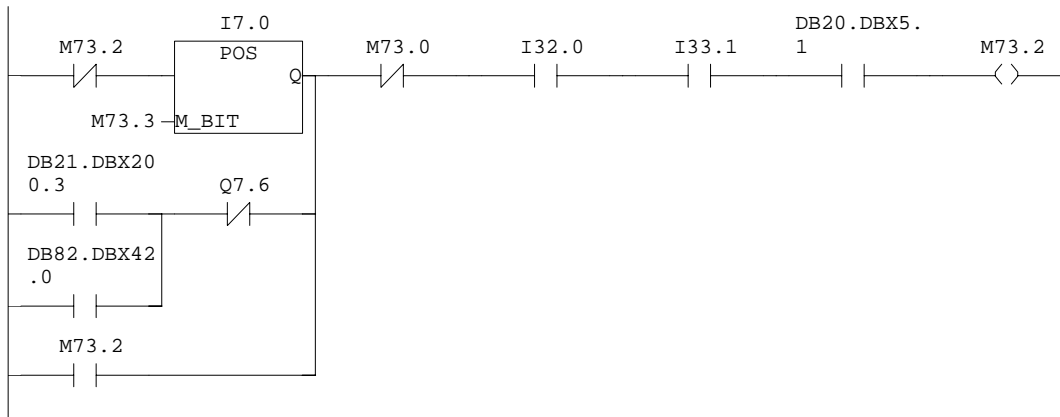
Network: 15 Chip Flushing Coolant Off Request



Symbol information

Q7.0 FLSH COOL LED MCP - Flushing Coolant On LED [L26]
 I7.0 FLSH COOL SELECT MCP - Flushing Coolant On/Off Select [K26]
 M73.1 CHIP COOL OFF REM Chip Flushing Coolant Off Remember
 DB21.DBX194.1 "CHANNEL 1".MDyn[1]
 Q2.0 OPT STOP LED MCP - Optional Stop LED [L14]
 DB21.DBX194.2 "CHANNEL 1".MDyn[2]
 DB21.DBX197.6 "CHANNEL 1".MDyn[30]
 DB21.DBX200.4 "CHANNEL 1".MDyn[52]
 M73.0 CHIP COOL OFF REQ Chip Flushing Coolant Off Request

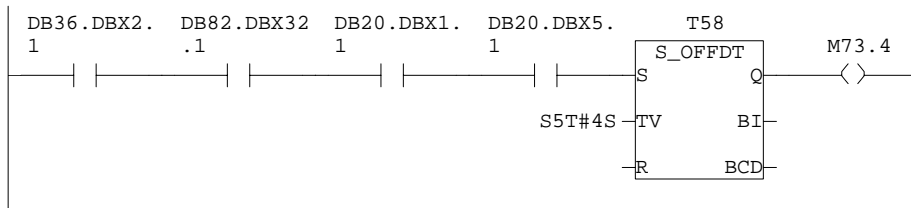
Network: 16 Chip Flushing Coolant On Request



Symbol information

M73.2	CHIP COOL ON REQ	Chip Flushing Coolant On Request
I7.0	FLSH COOL SELECT	MCP - Flushing Coolant On/Off Select [K26]
M73.3	CHIP COOL ON REM	Chip Flushing Coolant On Remember
DB21.DBX200.3	"CHANNEL 1".MDyn[51]	
DB82.DBX42.0	"SPS".CMM_OUT.tool_m_function.function_1_on	
Q7.6	PGM TEST LED	MCP - Program Test LED [L6]
M73.0	CHIP COOL OFF REQ	Chip Flushing Coolant Off Request
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I33.1	FLUSHING PUMP TOL	FRT2 - Flushing Pump Motor Overload
DB20.DBX5.1	"OPTIONS".Option_51	Chip Flushing Coolant Fitted

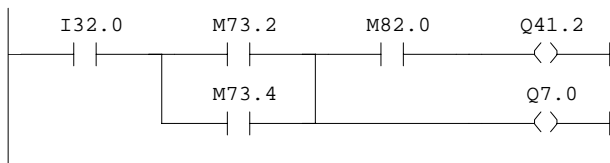
Network: 17 Chip Flushing Coolant On Request With Spindle Run



Symbol information

DB36.DBX2.1	"SPINDLE".Q_ContrEnable	Controller enable
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	Flushing Coolant Interlocked with Spindle Run Active
DB20.DBX1.1	"OPTIONS".Option_11	Chip Flushing Coolant Fitted
DB20.DBX5.1	"OPTIONS".Option_51	Chip Flushing Coolant Fitted
M73.4	CHIP COOL W SP REQ	Chip Flushing Coolant with Spindle Run Request

Network: 18 Chip Flushing Coolant Pump Motor



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M73.2	CHIP COOL ON REQ	Chip Flushing Coolant On Request
M73.4	CHIP COOL W SP REQ	Chip Flushing Coolant with Spindle Run Request
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
Q41.2	FLUSHING COOL MTR	KAR20/MS2/MTR2 - Chip Flushing Coolant Pump Motor
Q7.0	FLSH COOL LED	MCP - Flushing Coolant On LED [L26]



Symbol information

DB2.DBX181.2	"ALARM & MESSAGE".A7000xx[10]	Alarm 700000-700063 (user area 0)
M74.0	COOLANT FAULT	Coolant System Fault



Symbol information

DB2.DBX184.3	"ALARM & MESSAGE".A7000xx[35]	Alarm 700000-700063 (user area 0)
M74.1	COOLANT WARNING	Coolant System Warning

FC72 - <offline>

"CHIP CONVEYOR" Chip Conveyor Control & Monitoring [User]

Name: Hardinge Family: VMC

Author: MGS Version: 1.0

Block version: 2

Time stamp Code: 02/12/01 09:45:53 AMAM

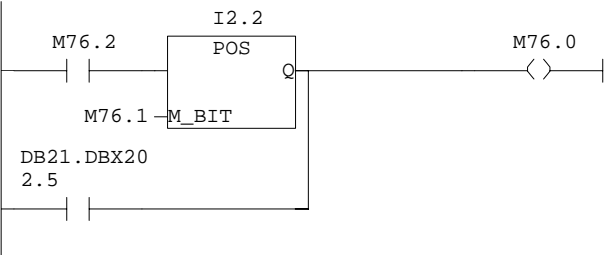
Interface: 04/27/00 04:31:47 PMPM

Lengths (block/logic/data): 00440 00318 00002

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC72 Chip Conveyor Control & Monitoring

Network: 1 Chip Conveyor Stop Request



Symbol information

M76.2 CHIP CONV FWD REQ Chip Conveyor Forward Request

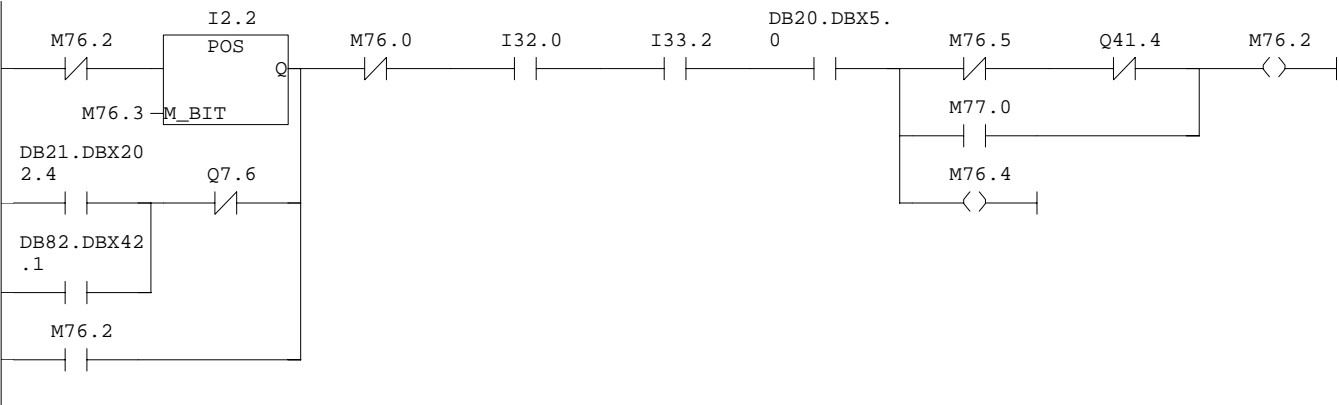
I2.2 CONVEYOR FWD SEL MCP - Chip Conveyor Forward/Off Select [K34]

M76.1 CHIP CONV OFF REM Chip Conveyor Off Remember

DB21.DBX202.5 "CHANNEL 1".MDyn[69]

M76.0 CHIP CONV OFF REQ Chip Conveyor Off Request

Network: 2 Chip Conveyor Forward Request



Symbol information

M76.2 CHIP CONV FWD REQ Chip Conveyor Forward Request

I2.2 CONVEYOR FWD SEL MCP - Chip Conveyor Forward/Off Select [K34]

M76.3 CHIP CONV FWD REM Chip Conveyor Forward Remember

DB21.DBX202.4 "CHANNEL 1".MDyn[68]

DB82.DBX42.1 "SPS".CMM_OUT.tool_m_function.function_2_on

Q7.6 PGM TEST LED MCP - Program Test LED [L6]

M76.0 CHIP CONV OFF REQ Chip Conveyor Off Request

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

I33.2 CHIP CONV MTR TOL FRT3 - Chip Conveyor Motor Overload

DB20.DBX5.0 "OPTIONS".Option_50 Chip Conveyor Fitted

M76.5 CHIP CONV REV REQ Chip Conveyor Reverse Request

Q41.4 CONV REV MOTOR KAR10/MC3/MTR3 - Chip Conveyor Reverse Motor

M77.0 CHIP CONV RV W FWD
M76.4 CHIP CONV FWD BFR

Chip Conveyor Reverse with Forward Active Request
Chip Conveyor Forward Request Buffer

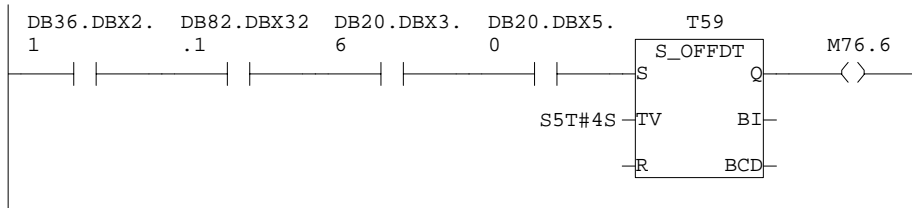
Network: 3 Chip Conveyor Reverse Request



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I33.2	CHIP CONV MTR TOL	FRT3 - Chip Conveyor Motor Overload
I6.6	CONVEYOR REV SEL	MCP - Chip Conveyor Reverse Select [K35]
M76.2	CHIP CONV FWD REQ	Chip Conveyor Forward Request
Q41.3	CONV FWD MOTOR	KAR9/MS3/MTR3 - Chip Conveyor Forward Motor
DB20.DBX5.0	"OPTIONS".Option_50	Chip Conveyor Fitted
M76.5	CHIP CONV REV REQ	Chip Conveyor Reverse Request

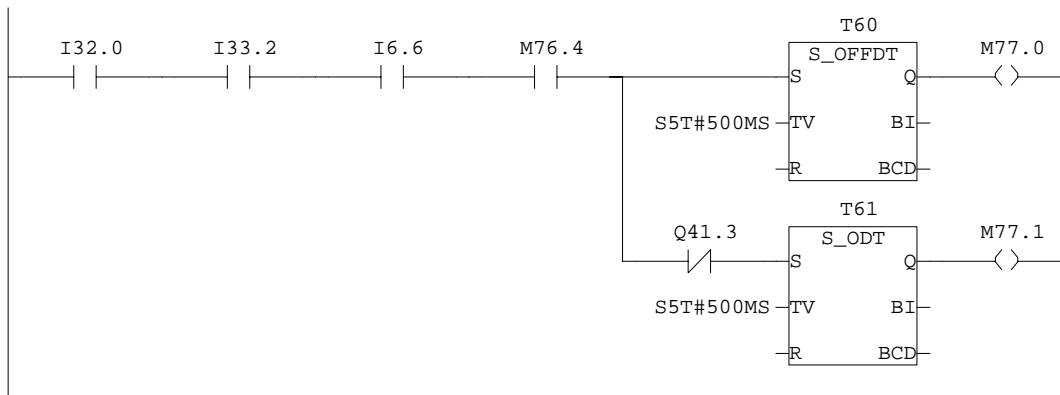
Network: 4 Chip Conveyor Forward with Spindle Run Request



Symbol information

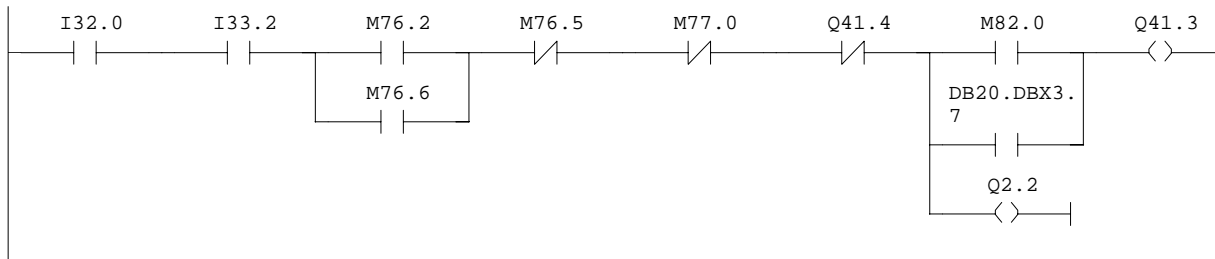
DB36.DBX2.1	"SPINDLE".Q_ContrEnable	Controller enable
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
DB20.DBX3.6	"OPTIONS".Option_36	Chip Conveyor Interlocked with Spindle Run Active
DB20.DBX5.0	"OPTIONS".Option_50	Chip Conveyor Fitted
M76.6	CHIP CONV W SP REQ	Chip Conveyor Forward with Spindle Run Request

Network: 5 Chip Conveyor Reverse Request with Forward Operation

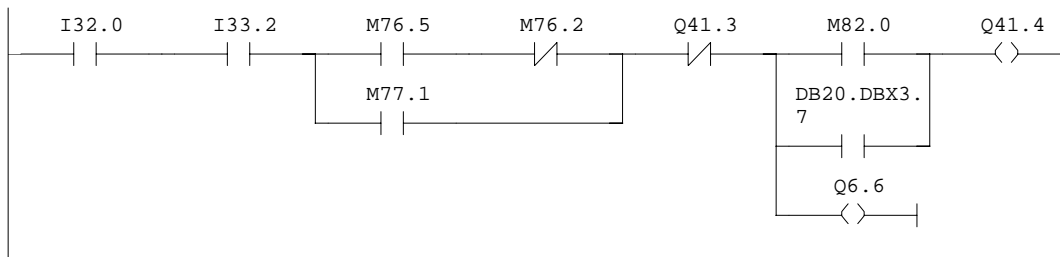


Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I33.2	CHIP CONV MTR TOL	FRT3 - Chip Conveyor Motor Overload
I6.6	CONVEYOR REV SEL	MCP - Chip Conveyor Reverse Select [K35]
M76.4	CHIP CONV FWD BFR	Chip Conveyor Forward Request Buffer
M77.0	CHIP CONV RV W FWD	Chip Conveyor Reverse with Forward Active Request
Q41.3	CONV FWD MOTOR	KAR9/MS3/MTR3 - Chip Conveyor Forward Motor
M77.1	CHIP CONV REV COMP	Chip Conveyor Reverse with Forward Active Complete

Network: 6 Chip Conveyor Forward Motor & MCP LED

Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I33.2	CHIP CONV MTR TOL	FRT3 - Chip Conveyor Motor Overload
M76.2	CHIP CONV FWD REQ	Chip Conveyor Forward Request
M76.6	CHIP CONV W SP REQ	Chip Conveyor Forward with Spindle Run Request
M76.5	CHIP CONV REV REQ	Chip Conveyor Reverse Request
M77.0	CHIP CONV RV W FWD	Chip Conveyor Reverse with Forward Active Request
Q41.4	CONV REV MOTOR	KAR10/MC3/MTR3 - Chip Conveyor Reverse Motor
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
DB20.DBX3.7	"OPTIONS".Option_37	Chip Conveyor Stops with Door Open
Q41.3	CONV FWD MOTOR	KAR9/MS3/MTR3 - Chip Conveyor Forward Motor
Q2.2	CONVEYOR FWD LED	MCP - Chip Conveyor Forward LED [L34]

Network: 7 Chip Conveyor Reverse Motor & MCP LED

Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
I33.2	CHIP CONV MTR TOL	FRT3 - Chip Conveyor Motor Overload
M76.5	CHIP CONV REV REQ	Chip Conveyor Reverse Request
M76.2	CHIP CONV FWD REQ	Chip Conveyor Forward Request
M77.1	CHIP CONV REV COMP	Chip Conveyor Reverse with Forward Active Complete
Q41.3	CONV FWD MOTOR	KAR9/MS3/MTR3 - Chip Conveyor Forward Motor
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
DB20.DBX3.7	"OPTIONS".Option_37	Chip Conveyor Stops with Door Open
Q41.4	CONV REV MOTOR	KAR10/MC3/MTR3 - Chip Conveyor Reverse Motor
Q6.6	CONVEYOR REV LED	MCP - Chip Conveyor Reverse LED [L35]

Network: 8 Chip Conveyor System Fault

Symbol information

M0.0	OFF	Marker Always Off
M77.6	CHIP CONV FAULT	Chip Conveyor System Fault

Network: 9 Chip Conveyor System Warning


Symbol information

M0.0	OFF	Marker Always Off
M77.7	CHIP CONV WARNING	Chip Conveyor System Warning

FC73 - <offline>

"WORK LIGHT" Work Light Control & Monitoring [User]

Name: Hardinge

Family: VMC

Author: MGS

Version: 1.0

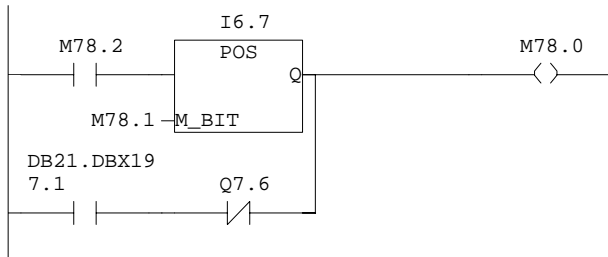
Block version: 2

Time stamp Code: 11/13/00 05:17:19 PMPM

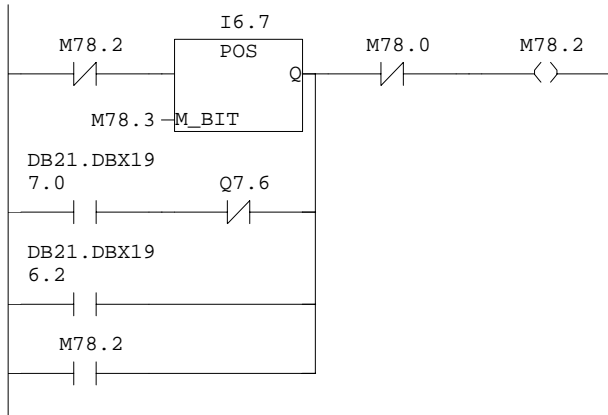
Interface: 04/27/00 04:31:47 PMPM

Lengths (block/logic/data): 00196 00074 00000

Address	Declaration	Name	Type	Start value	Comment
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	out				
	in_out				
	temp				

Block: FC73 Work Light Control & Monitoring**Network: 1 Work Light Off Request****Symbol information**

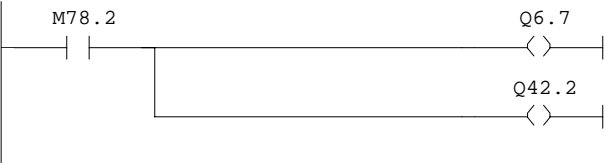
M78.2	WORK LGHT ON BFR	Work Light On Buffer
I6.7	WORK LGHT SELECT	MCP - Work Light On/Off Select [K27]
M78.1	WORK LGHT OFF REM	Work Light Off Remember
DB21.DBX19.1	"CHANNEL 1".MDyn[25]	
Q7.6	PGM TEST LED	MCP - Program Test LED [L6]
M78.0	WORK LGHT OFF REQ	Work Light Off Request

Network: 2 Work Light On Buffer**Symbol information**

M78.2	WORK LGHT ON BFR	Work Light On Buffer
I6.7	WORK LGHT SELECT	MCP - Work Light On/Off Select [K27]
M78.3	WORK LGHT ON REM	Work Light On Remember
DB21.DBX19.0	"CHANNEL 1".MDyn[24]	
Q7.6	PGM TEST LED	MCP - Program Test LED [L6]
DB21.DBX196.2	"CHANNEL 1".MDyn[18]	
M78.0	WORK LGHT OFF REQ	Work Light Off Request

Network: 3

Work Light



Symbol information			
M78.2	WORK LGHT ON BFR	Work Light On Buffer	
Q6.7	WORK LGHT LED	MCP - Work Light On LED [L27]	
Q42.2	WORK LIGHT	KAR19/HLP0/KAR65 - Work Light	

FC74 - <offline>

"AUTO POWER OFF" Auto Power Off Control & Monitoring [User]

Name: Hardinge

Family: VMC

Author: MGS

Version: 1.0

Block version: 2

Time stamp Code: 02/12/01 09:47:16 AMAM

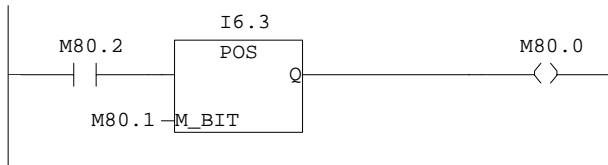
Interface: 05/04/00 04:24:35 PMPM

Lengths (block/logic/data): 00216 00116 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

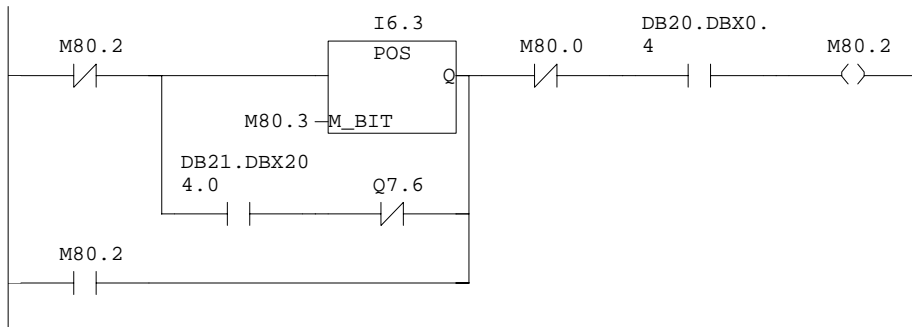
Block: FC74 Auto Power Off Control

Network: 1 Auto Power Off Deselect

**Symbol information**

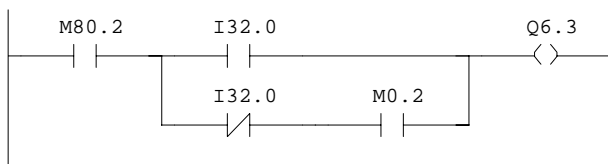
M80.2 A PWR OFF ACTIVE Auto Power Off Active
 I6.3 AUTO PWR OFF SEL MCP - Auto Power Off Select [K45]
 M80.1 A PWR OFF DES REM Auto Power Off Deselect Remember
 M80.0 A PWR OFF DES PLS Auto Power Off Deselect Pulse

Network: 2 Auto Power Off Select

**Symbol information**

M80.2 A PWR OFF ACTIVE Auto Power Off Active
 I6.3 AUTO PWR OFF SEL MCP - Auto Power Off Select [K45]
 M80.3 A PWR OFF SEL REM Auto Power Off Select Remember
 DB21.DBX204.0 "CHANNEL 1".MDyn[80]
 Q7.6 PGM TEST LED MCP - Program Test LED [L6]
 M80.0 A PWR OFF DES PLS Auto Power Off Deselect Pulse
 DB20.DBX0.4 "OPTIONS".Option_04 Auto Power Off Active

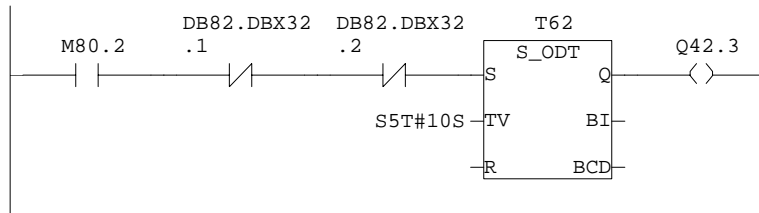
Network: 3 Auto Power Off MCP LED



Symbol information

M80.2	A PWR OFF ACTIVE	Auto Power Off Active
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M0.2	CLOCK ON	Clock On
Q6.3	AUTO PWR OFF LED	MCP - Auto Power Off LED [L45]

Network: 4	Auto Power Off
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**Symbol information**

M80.2	A PWR OFF ACTIVE	Auto Power Off Active
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped	
Q42.3	AUTO PWR OFF	KAR24/YC1 - Auto Power Off Control Relay

Network: 5	Auto Power Off Screen Save
------------	----------------------------

**Symbol information**

Q42.3	AUTO PWR OFF	KAR24/YC1 - Auto Power Off Control Relay
DB19.DBX0.1	"MMC SIGNALS".Q_SCDark	Screen darkening

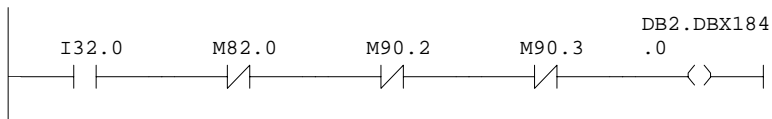
FC75 - <offline>

"MACHINE DOOR" Machine Door Unlock Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/12/01 09:13:33 PMPM
 Interface: 06/28/00 08:38:41 PMPM
Lengths (block/logic/data): 00314 00206 00002

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

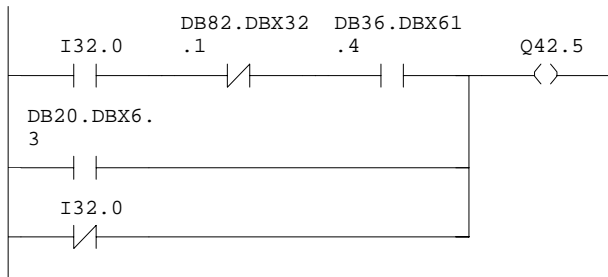
Block: FC75 Machine Door Unlock Control

Network: 1 700032: Machine Safety Door(s) Open

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
M90.2	MACHINE FAULT	Any Machine Fault
M90.3	MACHINE WARNING	Any Machine Warning
DB2.DBX184.0	"ALARM & MESSAGE".A7000xx[32]	Alarm 700000-700063 (user area 0)

Network: 2 Machine Safety Door Unlock Solenoid

**Symbol information**

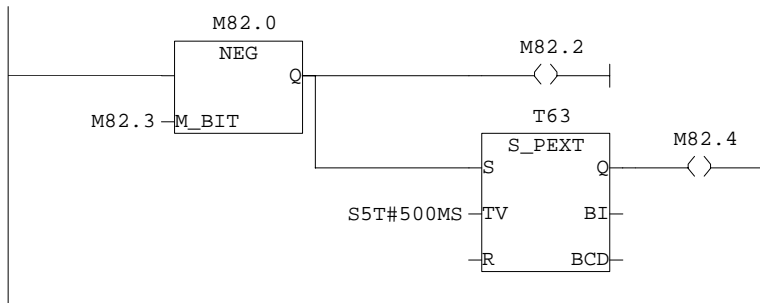
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
DB36.DBX61.4	"SPINDLE".I_Stat	Axis/spindle stationary (n<nmin)
DB20.DBX6.3	"OPTIONS".Option_63	Door Lock Inactive
Q42.5	MC DOOR UNLK SOL	KAR21/YBR2 - Machine Door Unlock Solenoid

Network: 3 Machine Safety Door Close Buffer

**Symbol information**

I32.1	MC DOOR INT LS	SQL 1/2/16 - Machine Door Interlock Limits
DB20.DBX2.7	"OPTIONS".Option_27	Door Interlock Inactive
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer

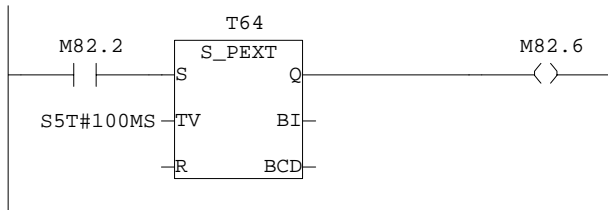
Network: 4 Machine Safety Door Open Pulse



Symbol information

M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
M82.3	M/C DOOR	OPEN REM	Machine Safety Door Open Remember
M82.2	M/C DOOR	OPEN PLS	Machine Safety Door Open Pulse
M82.4	M/C DOOR	OPEN PEXT	Machine Safety Door Open Extended Pulse for Spindle Stop

Network: 5 Machine Safety Door Open Cycle Stop Request



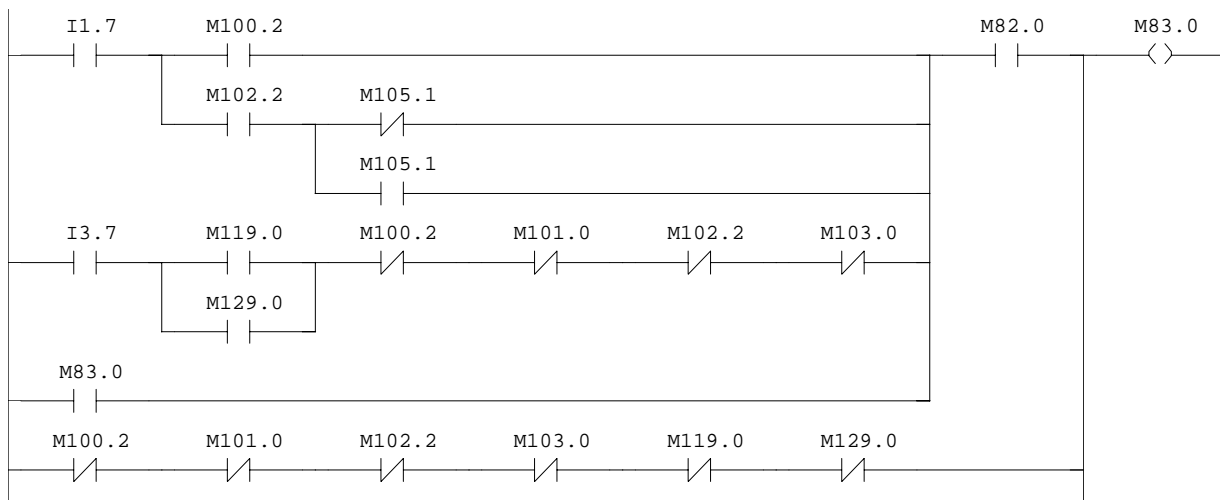
Symbol information

M82.2	M/C DOOR	OPEN PLS	Machine Safety Door Open Pulse
M82.6	M/C DOOR	OP CS RQ	Machine Safety Door Open Cycle Stop Request

Network: 6 Machine Safety Door Open Cycle Stop

AN	M	82.6	"M/C DOOR OP CS RQ"	-- Machine Safety Door Open Cycle Stop Request
JC	NCST			
A	M	0.0	"OFF"	-- Marker Always Off
=	I	0.7	"NC CYCLE STOP"	-- MCP - NC Cycle Stop [K41]
NCST: NOP 0				

Network: 7 Tool Change Cycle Interrupt with Door Open

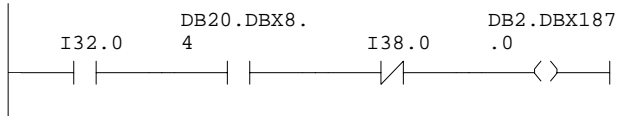


DB20.DBX2.
7

Symbol information

I1.7	NC CYCLE	START	MCP - NC Cycle Start [K43]
M100.2	T CHG CYC	ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC	ACTIVE	Tool Setup Cycle Active
M105.1	T S/U CYC	T/M ACT	Tool Setup Cycle Tool to Magazine Active
I3.7	NC RESET		MCP - NC Reset [K32]
M119.0	T MAG #1	ROT BFR	Tool Magazine #1 Rotation Buffer
M129.0	T MAG #2	ROT BFR	Tool Magazine #2 Rotation Buffer
M101.0	T CHG CYC	INT'D	Tool Change Cycle Interrupted
M103.0	T S/U CYC	INT'D	Tool Setup Cycle Interrupted
M83.0	M/C DOOR	T/C INT	Machine Safety Door Tool Change Interrupt
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
DB20.DBX2.7	"OPTIONS".Option_27		Door Interlock Inactive

Network: 8 700056: Midaco Pallet Door Open

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX8.4	"OPTIONS".Option_84	Midaco Pallet System Active
I38.0	MD PALLET DOOR LS	Midaco Pallet Door Limit Switch
DB2.DBX187.0	"ALARM & MESSAGE".A7000xx[56]	Alarm 700000-700063 (user area 0)

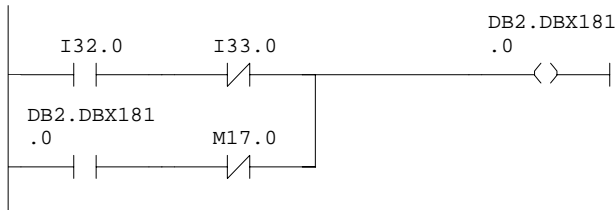
FC76 - <offline>

"AUXILIARY MONITOR" Auxiliary AC Motor Control & Monitoring [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 2
Time stamp Code: 01/17/01 04:11:37 AMAM
Interface: 04/28/00 09:47:00 AMAM
Lengths (block/logic/data): 00180 00076 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

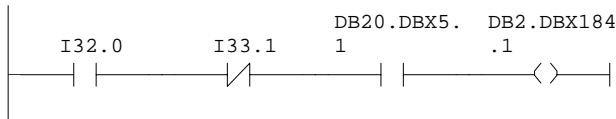
Block: FC76 Auxiliary AC Motor Monitoring

Network: 1 700008: Coolant Pump Motor Overload

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 I33.0 COOLANT PUMP TOL FRT1 - Coolant Pump Motor Overload
 DB2.DBX181.0 "ALARM & MESSAGE".A7000xx[8] Alarm 700000-700063 (user area 0)
 M17.0 FAULT RESET Fault Reset

Network: 2 700033: Chip Flushing Coolant Pump Motor Overload

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 I33.1 FLUSHING PUMP TOL FRT2 - Flushing Pump Motor Overload
 DB20.DBX5.1 "OPTIONS".Option_51 Chip Flushing Coolant Fitted
 DB2.DBX184.1 "ALARM & MESSAGE".A7000xx[33] Alarm 700000-700063 (user area 0)

Network: 3 700034: Chip Conveyor Motor Overload

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 I33.2 CHIP CONV MTR TOL FRT3 - Chip Conveyor Motor Overload
 DB20.DBX5.0 "OPTIONS".Option_50 Chip Conveyor Fitted
 DB2.DBX184.2 "ALARM & MESSAGE".A7000xx[34] Alarm 700000-700063 (user area 0)

Network: 4 Auxilairy AC Motor Fault
--

**Symbol information**

DB2.DBX181.0 "ALARM & MESSAGE".A7000xx[8] Alarm 700000-700063 (user area 0)
M85.0 AUX MOTOR FAULT Auxiliary AC Motor Fault

Network: 5 Auxiliary AC Motor Warning
--

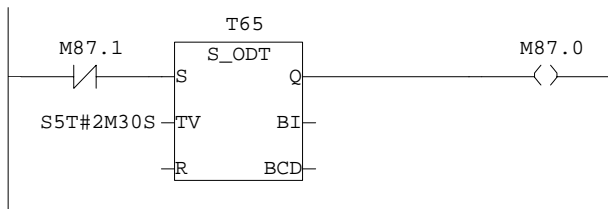
**Symbol information**

DB2.DBX184.1 "ALARM & MESSAGE".A7000xx[33] Alarm 700000-700063 (user area 0)
DB2.DBX184.2 "ALARM & MESSAGE".A7000xx[34] Alarm 700000-700063 (user area 0)
M85.1 AUX MOTOR WARNING Auxiliary AC Motor Warning

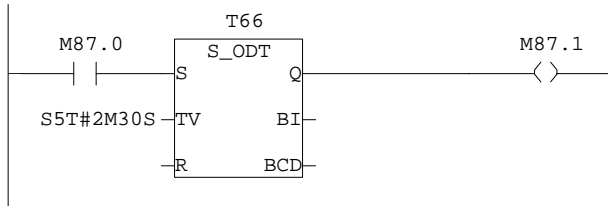
FC77 - <offline>

"LUBRICATION MONITOR" Axes Grease Lubrication Monitoring [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 01/18/01 01:43:05 AMAM
 Interface: 09/21/00 10:21:29 AMAM
Lengths (block/logic/data): 01164 01022 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC77 Lubrication Control & Monitoring**Network: 1 Lubrication Interval Oscillator Clock On****Symbol information**

M87.1 LUBE INT CLCK OFF Lubrication Interval Clock Off
 M87.0 LUBE INT CLCK ON Lubrication Interval Clock On

Network: 2 Lubrication Interval Oscillator Clock Off**Symbol information**

M87.0 LUBE INT CLCK ON Lubrication Interval Clock On
 M87.1 LUBE INT CLCK OFF Lubrication Interval Clock Off

Network: 3 Lubrication Interval Counter #1

```

A      I      32.0      "MASTR ON"          -- KAR1 - Master On (Not Emergency Stop)
A      M      87.0      "LUBE INT  CLCK ON"      -- Lubrication Interval Clock On
AN     M      88.1      "LUBE INT  COMP BFR"      -- Lubrication Interval Complete Buffer
A(
L      DB118.DBW      0  "LUBE INTERVAL COUNT".Lube_Count_1_Int -- Lubrication Interval Counter #1 (Integer)
L      DB118.DBW      18 "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
<=I
)
CU      C      11
BLD     101
AN      M      88.6      "LUBE INT  PLC STRT"      -- PLC Start Remember for Lubrication Interval
L      DB118.DBW      40 "LUBE INTERVAL COUNT".Lube_Count_1_BCD_Buffer -- Lubrication Interval Counter #1 (BCD)
                        ) Buffer
S      C      11
A      M      88.0      "LUBE INT  COMPLETE"      -- Lubrication Interval Complete
R      C      11
L      C      11
T      DB118.DBW      0  "LUBE INTERVAL COUNT".Lube_Count_1_Int -- Lubrication Interval Counter #1 (Integer)
LC      C      11
T      DB118.DBW      20 "LUBE INTERVAL COUNT".Lube_Count_1_BCD -- Lubrication Interval Counter #1 (BCD)
  
```

```
AN    M      88.6      "LUBE INT  PLC STRT"      -- PLC Start Remember for Lubrication Interval
JC    END1
L     DB118.DBW  20     "LUBE INTERVAL COUNT".Lube_Count_1_BCD -- Lubrication Interval Counter #1 (BCD)
T     DB118.DBW  40     "LUBE INTERVAL COUNT".Lube_Count_1_BCD_Buffer -- Lubrication Interval Counter #1 (BCD
                                ) Buffer
END1: NOP    0
```

Network: 4	Lubrication Interval Counter #2
------------	---------------------------------

```

A     I      32.0      "MASTR ON"      -- KAR1 - Master On (Not Emergency Stop)
A     M      87.0      "LUBE INT  CLCK ON"      -- Lubrication Interval Clock On
AN    M      88.1      "LUBE INT  COMP BFR"      -- Lubrication Interval Complete Buffer
A(
L     DB118.DBW  0      "LUBE INTERVAL COUNT".Lube_Count_1_Int -- Lubrication Interval Counter #1 (Integer)
L     DB118.DBW  18     "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
>=I
)
A(
L     DB118.DBW  2      "LUBE INTERVAL COUNT".Lube_Count_2_Int -- Lubrication Interval Counter #2 (Integer)
L     DB118.DBW  18     "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
<=I
)
CU    C      12
BLD   101
AN    M      88.6      "LUBE INT  PLC STRT"      -- PLC Start Remember for Lubrication Interval
L     DB118.DBW  42     "LUBE INTERVAL COUNT".Lube_Count_2_BCD_Buffer -- Lubrication Interval Counter #2 (BCD
                                ) Buffer
S     C      12
A     M      88.0      "LUBE INT  COMPLETE"      -- Lubrication Interval Complete
R     C      12
L     C      12
T     DB118.DBW  2      "LUBE INTERVAL COUNT".Lube_Count_2_Int -- Lubrication Interval Counter #2 (Integer)
LC    C      12
T     DB118.DBW  22     "LUBE INTERVAL COUNT".Lube_Count_2_BCD -- Lubrication Interval Counter #2 (BCD)

AN    M      88.6      "LUBE INT  PLC STRT"      -- PLC Start Remember for Lubrication Interval
JC    END2
L     DB118.DBW  22     "LUBE INTERVAL COUNT".Lube_Count_2_BCD -- Lubrication Interval Counter #2 (BCD)
T     DB118.DBW  42     "LUBE INTERVAL COUNT".Lube_Count_2_BCD_Buffer -- Lubrication Interval Counter #2 (BCD
                                ) Buffer
END2: NOP    0
```

Network: 5	Lubrication Interval Counter #3
------------	---------------------------------

```

A     I      32.0      "MASTR ON"      -- KAR1 - Master On (Not Emergency Stop)
A     M      87.0      "LUBE INT  CLCK ON"      -- Lubrication Interval Clock On
AN    M      88.1      "LUBE INT  COMP BFR"      -- Lubrication Interval Complete Buffer
A(
L     DB118.DBW  2      "LUBE INTERVAL COUNT".Lube_Count_2_Int -- Lubrication Interval Counter #2 (Integer)
L     DB118.DBW  18     "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
>=I
)
A(
L     DB118.DBW  4      "LUBE INTERVAL COUNT".Lube_Count_3_Int -- Lubrication Interval Counter #3 (Integer)
L     DB118.DBW  18     "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
<=I
)
CU    C      13
BLD   101
AN    M      88.6      "LUBE INT  PLC STRT"      -- PLC Start Remember for Lubrication Interval
L     DB118.DBW  44     "LUBE INTERVAL COUNT".Lube_Count_3_BCD_Buffer -- Lubrication Interval Counter #3 (BCD
                                ) Buffer
S     C      13
A     M      88.0      "LUBE INT  COMPLETE"      -- Lubrication Interval Complete
R     C      13
L     C      13
T     DB118.DBW  4      "LUBE INTERVAL COUNT".Lube_Count_3_Int -- Lubrication Interval Counter #3 (Integer)
LC    C      13
T     DB118.DBW  24     "LUBE INTERVAL COUNT".Lube_Count_3_BCD -- Lubrication Interval Counter #3 (BCD)

AN    M      88.6      "LUBE INT  PLC STRT"      -- PLC Start Remember for Lubrication Interval
JC    END3
L     DB118.DBW  24     "LUBE INTERVAL COUNT".Lube_Count_3_BCD -- Lubrication Interval Counter #3 (BCD)
T     DB118.DBW  44     "LUBE INTERVAL COUNT".Lube_Count_3_BCD_Buffer -- Lubrication Interval Counter #3 (BCD
                                ) Buffer
END3: NOP    0
```

Network: 6 Lubrication Interval Counter #4					
A	I	32.0	"MASTR ON"	-- KAR1 - Master On (Not Emergency Stop)	
A	M	87.0	"LUBE INT CLCK ON"	-- Lubrication Interval Clock On	
AN	M	88.1	"LUBE INT COMP BFR"	-- Lubrication Interval Complete Buffer	
A(
L	DB118.DBW	4	"LUBE INTERVAL COUNT".Lube_Count_3_Int	-- Lubrication Interval Counter #3 (Integer)	
L	DB118.DBW	18	"LUBE INTERVAL COUNT".Lube_Count_Interval	-- Lubrication Counter Interval	
>=I					
)					
A(
L	DB118.DBW	6	"LUBE INTERVAL COUNT".Lube_Count_4_Int	-- Lubrication Interval Counter #4 (Integer)	
L	DB118.DBW	18	"LUBE INTERVAL COUNT".Lube_Count_Interval	-- Lubrication Counter Interval	
<=I					
)					
CU	C	14			
BLD	101				
AN	M	88.6	"LUBE INT PLC STRT"	-- PLC Start Remember for Lubrication Interval	
L	DB118.DBW	46	"LUBE INTERVAL COUNT".Lube_Count_4_BCD_Buffer	-- Lubrication Interval Counter #4 (BCD) Buffer	
S	C	14			
A	M	88.0	"LUBE INT COMPLETE"	-- Lubrication Interval Complete	
R	C	14			
L	C	14			
T	DB118.DBW	6	"LUBE INTERVAL COUNT".Lube_Count_4_Int	-- Lubrication Interval Counter #4 (Integer)	
LC	C	14			
T	DB118.DBW	26	"LUBE INTERVAL COUNT".Lube_Count_4_BCD	-- Lubrication Interval Counter #4 (BCD)	
AN	M	88.6	"LUBE INT PLC STRT"	-- PLC Start Remember for Lubrication Interval	
JC	END4				
L	DB118.DBW	26	"LUBE INTERVAL COUNT".Lube_Count_4_BCD	-- Lubrication Interval Counter #4 (BCD)	
T	DB118.DBW	46	"LUBE INTERVAL COUNT".Lube_Count_4_BCD_Buffer	-- Lubrication Interval Counter #4 (BCD) Buffer	
END4: NOP	0				

Network: 7 Lubrication Interval Counter #5					
A	I	32.0	"MASTR ON"	-- KAR1 - Master On (Not Emergency Stop)	
A	M	87.0	"LUBE INT CLCK ON"	-- Lubrication Interval Clock On	
AN	M	88.1	"LUBE INT COMP BFR"	-- Lubrication Interval Complete Buffer	
A(
L	DB118.DBW	6	"LUBE INTERVAL COUNT".Lube_Count_4_Int	-- Lubrication Interval Counter #4 (Integer)	
L	DB118.DBW	18	"LUBE INTERVAL COUNT".Lube_Count_Interval	-- Lubrication Counter Interval	
>=I					
)					
A(
L	DB118.DBW	8	"LUBE INTERVAL COUNT".Lube_Count_5_Int	-- Lubrication Interval Counter #5 (Integer)	
L	DB118.DBW	18	"LUBE INTERVAL COUNT".Lube_Count_Interval	-- Lubrication Counter Interval	
<=I					
)					
CU	C	15			
BLD	101				
AN	M	88.6	"LUBE INT PLC STRT"	-- PLC Start Remember for Lubrication Interval	
L	DB118.DBW	48	"LUBE INTERVAL COUNT".Lube_Count_5_BCD_Buffer	-- Lubrication Interval Counter #5 (BCD) Buffer	
S	C	15			
A	M	88.0	"LUBE INT COMPLETE"	-- Lubrication Interval Complete	
R	C	15			
L	C	15			
T	DB118.DBW	8	"LUBE INTERVAL COUNT".Lube_Count_5_Int	-- Lubrication Interval Counter #5 (Integer)	
LC	C	15			
T	DB118.DBW	28	"LUBE INTERVAL COUNT".Lube_Count_5_BCD	-- Lubrication Interval Counter #5 (BCD)	
AN	M	88.6	"LUBE INT PLC STRT"	-- PLC Start Remember for Lubrication Interval	
JC	END5				
L	DB118.DBW	28	"LUBE INTERVAL COUNT".Lube_Count_5_BCD	-- Lubrication Interval Counter #5 (BCD)	
T	DB118.DBW	48	"LUBE INTERVAL COUNT".Lube_Count_5_BCD_Buffer	-- Lubrication Interval Counter #5 (BCD) Buffer	
END5: NOP	0				

Network: 8 Lubrication Interval Counter #6					
A	I	32.0	"MASTR ON"	-- KAR1 - Master On (Not Emergency Stop)	
A	M	87.0	"LUBE INT CLCK ON"	-- Lubrication Interval Clock On	
AN	M	88.1	"LUBE INT COMP BFR"	-- Lubrication Interval Complete Buffer	
A(
L	DB118.DBW	8	"LUBE INTERVAL COUNT".Lube_Count_5_Int	-- Lubrication Interval Counter #5 (Integer)	
L	DB118.DBW	18	"LUBE INTERVAL COUNT".Lube_Count_Interval	-- Lubrication Counter Interval	

```

>=I
)
A(
L    DB118.DBW    10  "LUBE INTERVAL COUNT".Lube_Count_6_Int -- Lubrication Interval Counter #6 (Integer)
L    DB118.DBW    18  "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
<=I
)
CU    C           16
BLD   101
AN    M           88.6  "LUBE INT  PLC STRT"          -- PLC Start Remember for Lubrication Interval
L    DB118.DBW    50  "LUBE INTERVAL COUNT".Lube_Count_6_BCD_Buffer -- Lubrication Interval Counter #6 (BCD
) Buffer
S     C           16
A     M           88.0  "LUBE INT  COMPLETE"          -- Lubrication Interval Complete
R     C           16
L     C           16
T     DB118.DBW    10  "LUBE INTERVAL COUNT".Lube_Count_6_Int -- Lubrication Interval Counter #6 (Integer)
LC    C           16
T     DB118.DBW    30  "LUBE INTERVAL COUNT".Lube_Count_6_BCD -- Lubrication Interval Counter #6 (BCD)

AN    M           88.6  "LUBE INT  PLC STRT"          -- PLC Start Remember for Lubrication Interval
JC    END6
L    DB118.DBW    30  "LUBE INTERVAL COUNT".Lube_Count_6_BCD -- Lubrication Interval Counter #6 (BCD)
T     DB118.DBW    50  "LUBE INTERVAL COUNT".Lube_Count_6_BCD_Buffer -- Lubrication Interval Counter #6 (BCD
) Buffer
END6: NOP    0

```

Network: 9	Lubrication Interval Counter #7
------------	---------------------------------

```

A     I           32.0  "MASTR ON"                    -- KAR1 - Master On (Not Emergency Stop)
A     M           87.0  "LUBE INT  CLCK ON"            -- Lubrication Interval Clock On
AN    M           88.1  "LUBE INT  COMP BFR"           -- Lubrication Interval Complete Buffer
A(
L     DB118.DBW    10  "LUBE INTERVAL COUNT".Lube_Count_6_Int -- Lubrication Interval Counter #6 (Integer)
L     DB118.DBW    18  "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
>=I
)
A(
L     DB118.DBW    12  "LUBE INTERVAL COUNT".Lube_Count_7_Int -- Lubrication Interval Counter #7 (Integer)
L     DB118.DBW    18  "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
<=I
)
CU    C           17
BLD   101
AN    M           88.6  "LUBE INT  PLC STRT"          -- PLC Start Remember for Lubrication Interval
L    DB118.DBW    52  "LUBE INTERVAL COUNT".Lube_Count_7_BCD_Buffer -- Lubrication Interval Counter #7 (BCD
) Buffer
S     C           17
A     M           88.0  "LUBE INT  COMPLETE"          -- Lubrication Interval Complete
R     C           17
L     C           17
T     DB118.DBW    12  "LUBE INTERVAL COUNT".Lube_Count_7_Int -- Lubrication Interval Counter #7 (Integer)
LC    C           17
T     DB118.DBW    32  "LUBE INTERVAL COUNT".Lube_Count_7_BCD -- Lubrication Interval Counter #7 (BCD)

AN    M           88.6  "LUBE INT  PLC STRT"          -- PLC Start Remember for Lubrication Interval
JC    END7
L    DB118.DBW    32  "LUBE INTERVAL COUNT".Lube_Count_7_BCD -- Lubrication Interval Counter #7 (BCD)
T     DB118.DBW    52  "LUBE INTERVAL COUNT".Lube_Count_7_BCD_Buffer -- Lubrication Interval Counter #7 (BCD
) Buffer
END7: NOP    0

```

Network: 10	Lubrication Interval Counter #8
-------------	---------------------------------

```

A     I           32.0  "MASTR ON"                    -- KAR1 - Master On (Not Emergency Stop)
A     M           87.0  "LUBE INT  CLCK ON"            -- Lubrication Interval Clock On
AN    M           88.1  "LUBE INT  COMP BFR"           -- Lubrication Interval Complete Buffer
A(
L     DB118.DBW    12  "LUBE INTERVAL COUNT".Lube_Count_7_Int -- Lubrication Interval Counter #7 (Integer)
L     DB118.DBW    18  "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
>=I
)
A(
L     DB118.DBW    14  "LUBE INTERVAL COUNT".Lube_Count_8_Int -- Lubrication Interval Counter #8 (Integer)
L     DB118.DBW    18  "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
<=I
)
CU    C           18
BLD   101
AN    M           88.6  "LUBE INT  PLC STRT"          -- PLC Start Remember for Lubrication Interval

```

```

L    DB118.DBW  54  "LUBE INTERVAL COUNT".Lube_Count_8_BCD_Buffer -- Lubrication Interval Counter #8 (BCD
) Buffer
S    C          18
A    M          88.0  "LUBE INT  COMPLETE"          -- Lubrication Interval Complete
R    C          18
L    C          18
T    DB118.DBW  14  "LUBE INTERVAL COUNT".Lube_Count_8_Int -- Lubrication Interval Counter #8 (Integer)
LC   C          18
T    DB118.DBW  34  "LUBE INTERVAL COUNT".Lube_Count_8_BCD -- Lubrication Interval Counter #8 (BCD)

AN   M          88.6  "LUBE INT  PLC STRT"          -- PLC Start Remember for Lubrication Interval
JC   END8
L    DB118.DBW  34  "LUBE INTERVAL COUNT".Lube_Count_8_BCD -- Lubrication Interval Counter #8 (BCD)
T    DB118.DBW  54  "LUBE INTERVAL COUNT".Lube_Count_8_BCD_Buffer -- Lubrication Interval Counter #8 (BCD
) Buffer
END8: NOP      0

```

Network: 11	Lubrication Interval Counter #9
-------------	---------------------------------

```

A    I          32.0  "MASTR ON"                    -- KAR1 - Master On (Not Emergency Stop)
A    M          87.0  "LUBE INT  CLCK ON"           -- Lubrication Interval Clock On
AN   M          88.1  "LUBE INT  COMP BFR"          -- Lubrication Interval Complete Buffer
A(
L    DB118.DBW  14  "LUBE INTERVAL COUNT".Lube_Count_8_Int -- Lubrication Interval Counter #8 (Integer)
L    DB118.DBW  18  "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
>=I
)
A(
L    DB118.DBW  16  "LUBE INTERVAL COUNT".Lube_Count_9_Int -- Lubrication Interval Counter #9 (Integer)
L    DB118.DBW  18  "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
<=I
)
CU   C          19
BLD  101
AN   M          88.6  "LUBE INT  PLC STRT"          -- PLC Start Remember for Lubrication Interval
L    DB118.DBW  56  "LUBE INTERVAL COUNT".Lube_Count_9_BCD_Buffer -- Lubrication Interval Counter #9 (BCD
) Buffer
S    C          19
A    M          88.0  "LUBE INT  COMPLETE"          -- Lubrication Interval Complete
R    C          19
L    C          19
T    DB118.DBW  16  "LUBE INTERVAL COUNT".Lube_Count_9_Int -- Lubrication Interval Counter #9 (Integer)
LC   C          19
T    DB118.DBW  36  "LUBE INTERVAL COUNT".Lube_Count_9_BCD -- Lubrication Interval Counter #9 (BCD)

AN   M          88.6  "LUBE INT  PLC STRT"          -- PLC Start Remember for Lubrication Interval
JC   END9
L    DB118.DBW  36  "LUBE INTERVAL COUNT".Lube_Count_9_BCD -- Lubrication Interval Counter #9 (BCD)
T    DB118.DBW  56  "LUBE INTERVAL COUNT".Lube_Count_9_BCD_Buffer -- Lubrication Interval Counter #9 (BCD
) Buffer
END9: NOP      0

```

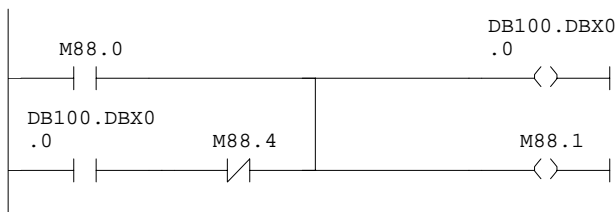
Network: 12	Lubrication Interval Complete & Reset
-------------	---------------------------------------

```

A    I          32.0  "MASTR ON"                    -- KAR1 - Master On (Not Emergency Stop)
A(
L    DB118.DBW  16  "LUBE INTERVAL COUNT".Lube_Count_9_Int -- Lubrication Interval Counter #9 (Integer)
L    DB118.DBW  18  "LUBE INTERVAL COUNT".Lube_Count_Interval -- Lubrication Counter Interval
>=I
)
=    M          88.0  "LUBE INT  COMPLETE"          -- Lubrication Interval Complete

```

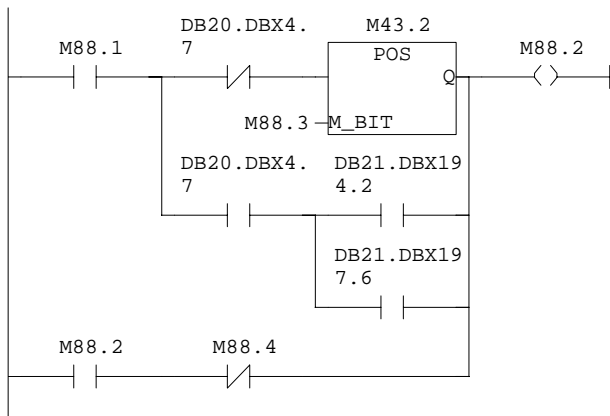
Network: 13	Axes Lubrication Interval Complete Buffer
-------------	---



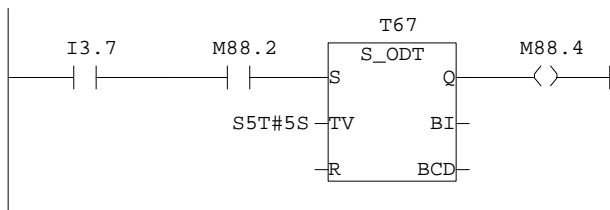
Symbol information

M88.0 LUBE INT COMPLETE Lubrication Interval Complete
DB100.DBX0.0 "AXES LUBE BUFFER".Lube_Limit_Buffer Axes Lubrication Time Limit Reached Buffer

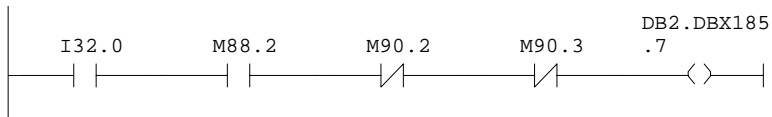
M88.4	LUBE INT	MSG RSET	Lubrication Interval Message Reset
M88.1	LUBE INT	COMP BFR	Lubrication Interval Complete Buffer

Network: 14 Axes Lubrication Interval Message Buffer

Symbol information

M88.1	LUBE INT	COMP BFR	Lubrication Interval Complete Buffer
DB20.DBX4.7	"OPTIONS".Option_47		Axis Lubrication Alarm with Z Axis Reference (0) or with M02/M30 (1)
M43.2	Z AXIS	REFD	Z Axis Referenced to Active Measuring System
M88.3	LUBE INT	Z RF REM	Lubrication Interval Message with Z Axis Reference Remember
DB21.DBX194.2	"CHANNEL 1".MDyn[2]		
DB21.DBX197.6	"CHANNEL 1".MDyn[30]		
M88.2	LUBE INT	MSG BFR	Lubrication Interval Message Buffer
M88.4	LUBE INT	MSG RSET	Lubrication Interval Message Reset

Network: 15 Axes Lubrication Interval Message Reset

Symbol information

I3.7	NC RESET	MCP - NC Reset [K32]
M88.2	LUBE INT	MSG BFR
M88.4	LUBE INT	MSG RSET

Network: 16 700047: Axes Lubrication Interval Message

Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M88.2	LUBE INT	MSG BFR
M90.2	MACHINE	FAULT
M90.3	MACHINE	WARNING
DB2.DBX185.7	"ALARM & MESSAGE".A7000xx[47]	Alarm 700000-700063 (user area 0)

Network: 17 Lubrication Interval PLC Startup Remember
--

**Symbol information**

M0.5 PLC START PULSE PLC Start Pulse

M88.6 LUBE INT PLC STRT PLC Start Remember for Lubrication Interval

FC78 - <offline>

"TOUCH PROBE ENABLE" Touch Probe Enable [User]

Name: Hardinge Family: VMC

Author: MGS Version: 1.0

Block version: 2

Time stamp Code: 02/12/01 04:07:11 AMAM

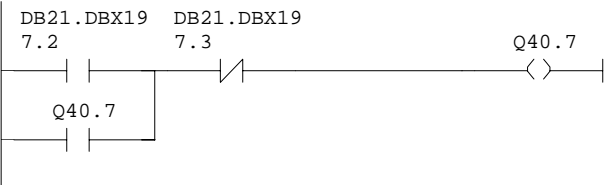
Interface: 01/16/01 01:53:39 AMAM

Lengths (block/logic/data): 00114 00022 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC78 Workpiece Touch Probe On/Off Control

Network: 1 Workpiece Touch Probe On/Off



Symbol information

DB21.DBX197.2 "CHANNEL 1".MDyn[26]

Q40.7 WP PROBE ENABLE KAR?? - Touch Probe Enable

DB21.DBX197.3 "CHANNEL 1".MDyn[27]

FC79 - <offline>

"FAULT/WARNING" Fault/Warning Control & Monitoring [User]

Name: Hardinge

Family: VMC

Author: MGS

Version: 1.0

Block version: 2

Time stamp Code: 02/14/01 06:01:44 AMAM

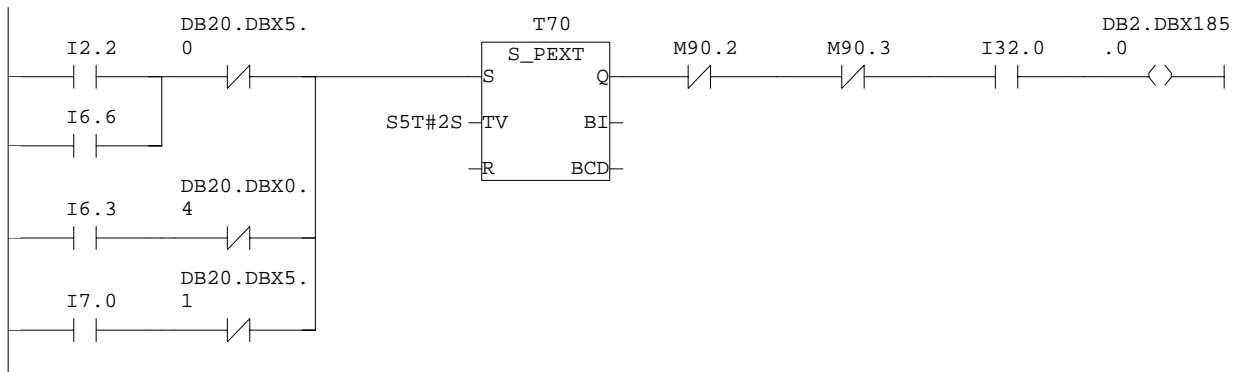
Interface: 10/07/99 09:36:34 PMPM

Lengths (block/logic/data): 00720 00592 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

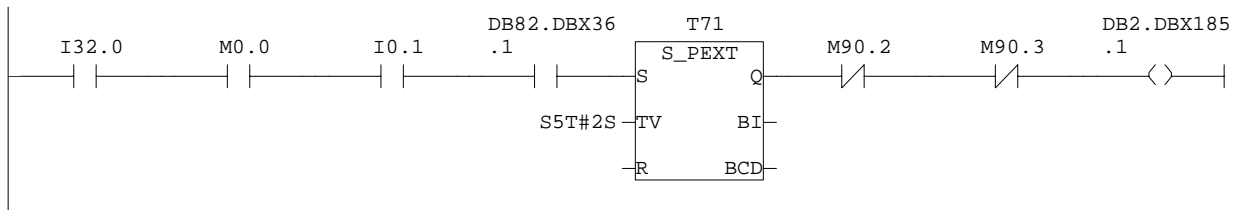
Block: FC79 General Machine Faults & Central Fault/Warning Control

Network: 1 700040: Option Not Enabled

**Symbol information**

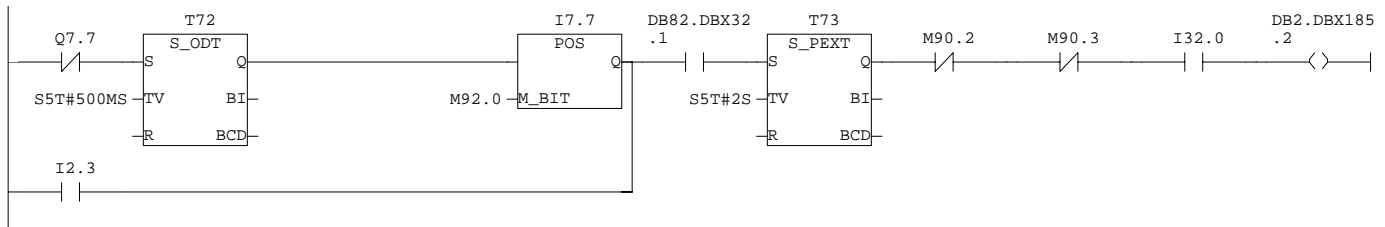
I2.2	CONVEYOR FWD SEL	MCP - Chip Conveyor Forward/Off Select [K34]
I6.6	CONVEYOR REV SEL	MCP - Chip Conveyor Reverse Select [K35]
DB20.DBX5.0	"OPTIONS".Option_50	Chip Conveyor Fitted
I6.3	AUTO PWR OFF SEL	MCP - Auto Power Off Select [K45]
DB20.DBX0.4	"OPTIONS".Option_04	Auto Power Off Active
I7.0	FLSH COOL SELECT	MCP - Flushing Coolant On/Off Select [K26]
DB20.DBX5.1	"OPTIONS".Option_51	Chip Flushing Coolant Fitted
M90.2	MACHINE FAULT	Any Machine Fault
M90.3	MACHINE WARNING	Any Machine Warning
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB2.DBX185.0	"ALARM & MESSAGE".A7000xx[40]	Alarm 700000-700063 (user area 0)

Network: 2 700041: Function Not Available with ShopMill (MDA from MCP Key)

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M0.0	OFF	Marker Always Off
I0.1	MDA MODE SELECT	MCP - MDA Mode Select [K11]
DB82.DBX36.1	"SPS".CMM_OUT.cmm_mmc_activ	cmm-mmc application activ
M90.2	MACHINE FAULT	Any Machine Fault
M90.3	MACHINE WARNING	Any Machine Warning
DB2.DBX185.1	"ALARM & MESSAGE".A7000xx[41]	Alarm 700000-700063 (user area 0)

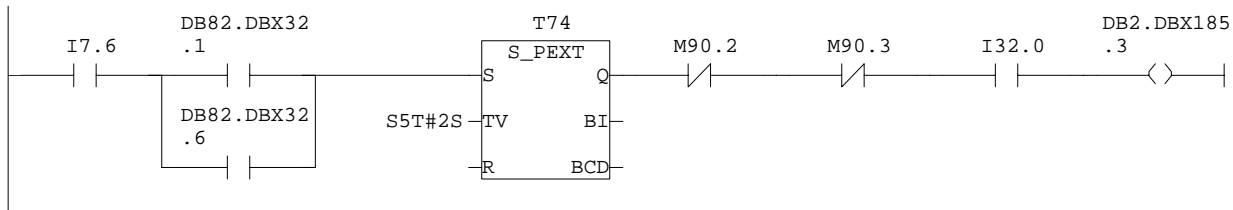
Network: 3 700042: Function Change Only in NC Stop or Reset



Symbol information

Q7.7	DRY RUN	LED	MCP - Dry Run LED [L5]
I7.7	DRY RUN	SELECT	MCP - Dry Run Select [K5]
M92.0	DRY RUN	MGE REM	Dry Run Message Remember
I2.3	Z AX LOCK	SELECT	MCP - Z Axis Lock Select [K44]
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
M90.2	MACHINE	FAULT	Any Machine Fault
M90.3	MACHINE	WARNING	Any Machine Warning
I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
DB2.DBX185.2	"ALARM & MESSAGE".A7000xx[42]		Alarm 700000-700063 (user area 0)

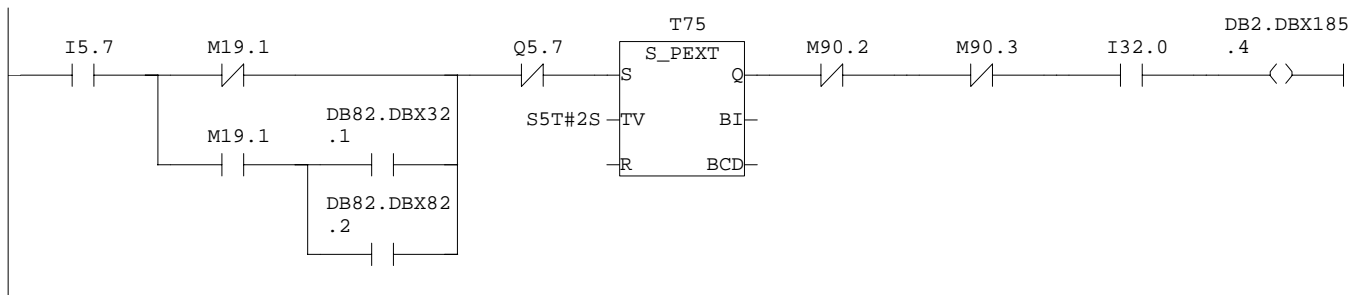
Network: 4 700043: Function Change Only in Reset



Symbol information

I7.6	PGM TEST	SELECT	MCP - Program Test Select [K6]
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
M90.2	MACHINE	FAULT	Any Machine Fault
M90.3	MACHINE	WARNING	Any Machine Warning
I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
DB2.DBX185.3	"ALARM & MESSAGE".A7000xx[43]		Alarm 700000-700063 (user area 0)

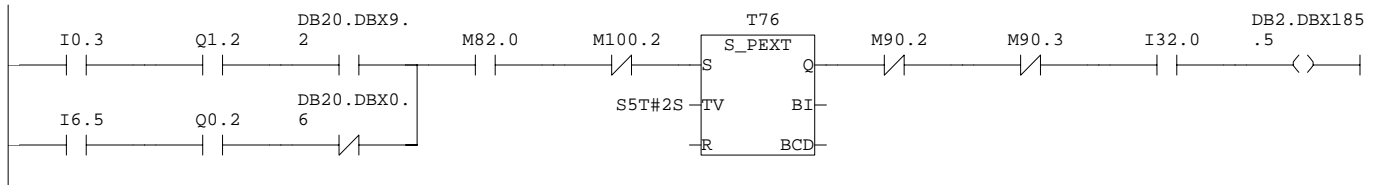
Network: 5 700044: HHU Enable Only in Manual Mode



Symbol information

I5.7	HHU ENBL	SELECT	MCP - HHU Enable Select [K33]
M19.1	JOG MODE	ONLY	NC in Jog Mode Only
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ		
Q5.7	HHU ENBL	LED	MCP - HHU Enable LED [L33]
M90.2	MACHINE	FAULT	Any Machine Fault
M90.3	MACHINE	WARNING	Any Machine Warning
I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
DB2.DBX185.4	"ALARM & MESSAGE".A7000xx[44]		Alarm 700000-700063 (user area 0)

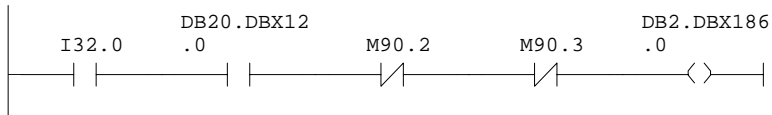
Network: 6 700045: Function Inactive



Symbol information

I0.3	AXES AUTO REF SEL	MCP - Axes Auto Reference Select [K31]
Q1.2	REF MODE LED	MCP - Reference Mode LED [L3]
DB20.DBX9.2	"OPTIONS".Option_92	Auto Reference Inactive
I6.5	TOOL/TOOL CYC SEL	MCP - Tool to Tool Change Cycle Select [K36]
Q0.2	JOG MODE LED	MCP - Jog Mode LED [L1]
DB20.DBX0.6	"OPTIONS".Option_06	Tool Setup Operation Active
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M90.2	MACHINE FAULT	Any Machine Fault
M90.3	MACHINE WARNING	Any Machine Warning
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB2.DBX185.5	"ALARM & MESSAGE".A7000xx[45]	Alarm 700000-700063 (user area 0)

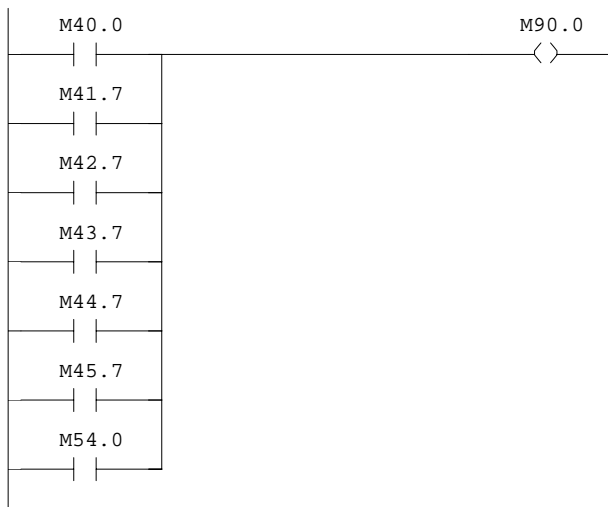
Network: 7 700048: ATC Magazine Startup Active Message



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB20.DBX12.0	"OPTIONS".Option_120	ATC Magazine Alarm Suppress for Machine Startup
M90.2	MACHINE FAULT	Any Machine Fault
M90.3	MACHINE WARNING	Any Machine Warning
DB2.DBX186.0	"ALARM & MESSAGE".A7000xx[48]	Alarm 700000-700063 (user area 0)

Network: 8 Axis/Spindle/IRF Module Fault

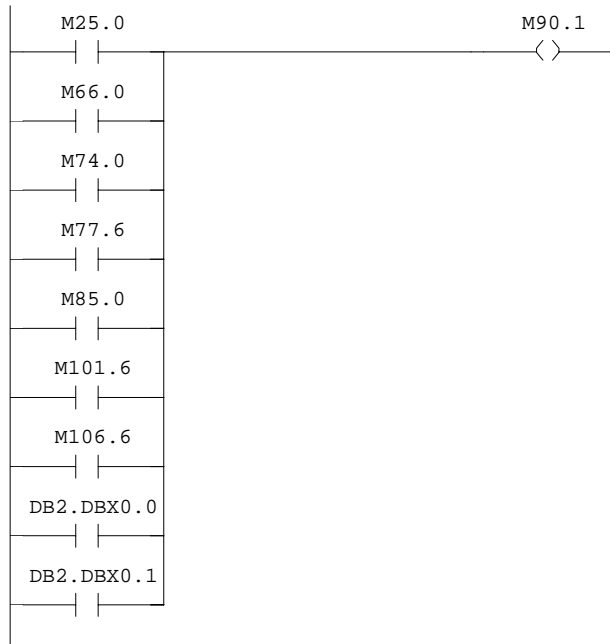


Symbol information

M40.0	IR MODUL FAULT	IRF Module Fault
M41.7	X AXIS FAULT	X Axis Any Fault
M42.7	Y AXIS FAULT	Y Axis Any Fault
M43.7	Z AXIS FAULT	Z Axis Any Fault
M44.7	4 AXIS FAULT	4 Axis Any Fault
M45.7	5 AXIS FAULT	5 Axis Any Fault
M54.0	SPINDLE FAULT	Spindle Fault

M90.0 AX/SP/611 FAULT Axis/Spindle/Simodrive Fault

Network: 9 General Machine Fault



Symbol information

M25.0	NC START DIS FLT	NC Start Disable Fault
M66.0	PNEUMATIC FAULT	Pneumatic System Fault
M74.0	COOLANT FAULT	Coolant System Fault
M77.6	CHIP CONV FAULT	Chip Conveyor System Fault
M85.0	AUX MOTOR FAULT	Auxiliary AC Motor Fault
M101.6	TOOL MAG FAULT	Tool Magazine Fault
M106.6	TOOL S/UP FAULT	Tool Magazine Setup Fault
DB2.DBX0.0	"ALARM & MESSAGE".C1.FDD_5100xx[0]	Feed disable A.no.51000-510015
DB2.DBX0.1	"ALARM & MESSAGE".C1.FDD_5100xx[1]	Feed disable A.no.51000-510015
M90.1	GENERAL FAULT	General Machine System Fault

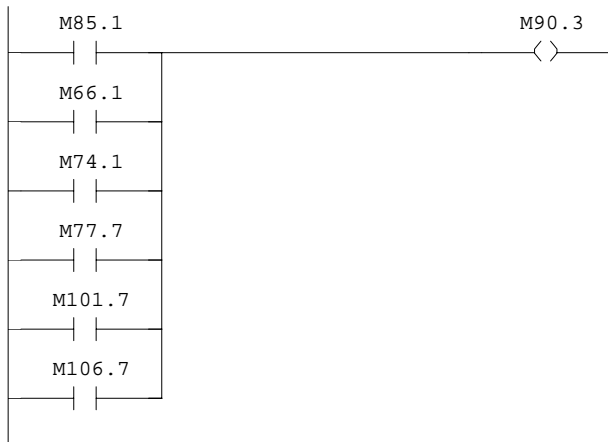
Network: 10 Machine Fault



Symbol information

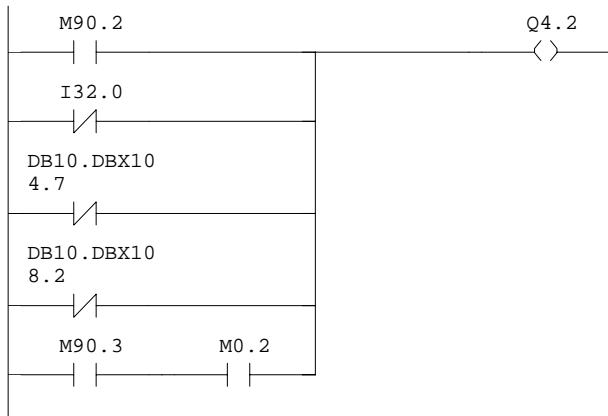
M90.0	AX/SP/611 FAULT	Axis/Spindle/Simodrive Fault
M90.1	GENERAL FAULT	General Machine System Fault
M90.2	MACHINE FAULT	Any Machine Fault

Network: 11	Machine Warning
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**Symbol information**

M85.1	AUX MOTOR	WARNING	Auxiliary AC Motor Warning
M66.1	PNEUMATIC	WARNING	Pneumatic System Warning
M74.1	COOLANT	WARNING	Coolant System Warning
M77.7	CHIP CONV	WARNING	Chip Conveyor System Warning
M101.7	TOOL MAG	WARNING	Tool Magazine Warning
M106.7	TOOL S/UP	WARNING	Tool Magazine Setup Warning
M90.3	MACHINE	WARNING	Any Machine Warning

Network: 12	Fault/Warning Lamp
-------------	--------------------

**Symbol information**

M90.2	MACHINE	FAULT	Any Machine Fault
I32.0	MASTR	ON	KAR1 - Master On (Not Emergency Stop)
DB10.DBX104.7	"NC".Q_NCK	ready	NCK CPU ready
DB10.DBX108.2	"NC".Q_MMCP	Iready	MMC-CPU on MPI ready
M90.3	MACHINE	WARNING	Any Machine Warning
M0.2	CLOCK	ON	Clock On
Q4.2	FLT/WARN	LAMP	HLP51 - Machine Fault/Warning Lamp [X35/3]

```

graph LR
    M91.1 --> POS[M90.2 POS]
    M91.2 --> NEG[M91.2 NEG]
    I32.0 --> AND1[AND]
    I3.7 --> AND1
    I2.6 --> AND2[AND]
    M91.0 --> AND2
    AND1 --> POS
    AND2 --> POS
    DB21.DBX19_4.2 --> AND3[AND]
    DB20.DBX1.0 --> AND3
    DB21.DBX19_7.6 --> AND3
    M91.0 --> AND4[AND]
    AND3 --> NEG
    AND4 --> NEG
    
```

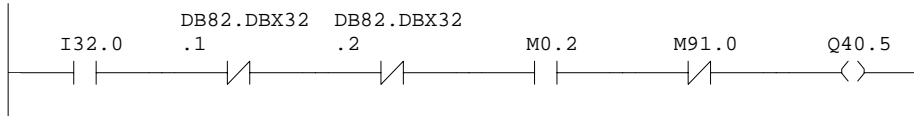
M90.2	MACHINE FAULT	Any Machine Fault
M91.1	ALARM BZR ON REM	Alarm Buzzer On Remember
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M91.2	ALARM BZR E/ST REM	Alarm Buzzer On for Emergency Stop Remember
DB21.DBX194.2	"CHANNEL 1".MDyn[2]	
DB21.DBX197.6	"CHANNEL 1".MDyn[30]	
DB20.DBX1.0	"OPTIONS".Option_10	Alarm Buzzer with Program End M02/M30 Active
M91.0	ALARM BZR ON BFR	Alarm Buzzer On Buffer
DB20.DBX1.2	"OPTIONS".Option_12	Alarm Buzzer with Emergency Stop Active
I3.7	NC RESET	MCP - NC Reset [K32]
M17.2	M PLT DR OP NR RQ	Midaco Pallet Door Open NC Reset Request
I2.6	BUZZER STOP	MCP - Alarm Buzzer & Tower Lamp Stop [K46]

The diagram shows a single horizontal line representing a power rail. On the left, there is a normally open contact labeled M91.0. On the right, there is a coil labeled Q2.6, represented by two parallel diagonal lines.

M91.0	ALARM BZR ON BFR	Alarm Buzzer On Buffer
Q2.6	BUZZER	STOP LED MCP - Alarm Buzzer & Tower Lamp Stop LED [L46]

M91.0	ALARM BZR ON BFR	Alarm Buzzer On Buffer
M0.2	CLOCK ON	Clock On
Q40.4	ALARM TWR LAMP	KAR4/HLP46/HAB - Alarm Tower Lamp (Red) & Buzzer

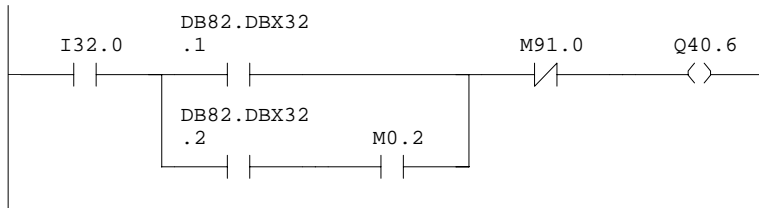
Network: 16 Machine Out-Of-Cycle Tower Lamp (Yellow)



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped	
M0.2	CLOCK ON	Clock On
M91.0	ALARM BZR ON BFR	Alarm Buzzer On Buffer
Q40.5	RESET TWR LAMP	KAR5/HLP47 - Reset Tower Lamp (Yellow)

Network: 17 Machine In Cycle Tower Lamp (Green)



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped	
M0.2	CLOCK ON	Clock On
M91.0	ALARM BZR ON BFR	Alarm Buzzer On Buffer
Q40.6	IN CYCLE TWR LAMP	KAR23/HLP45 - In Cycle Tower Lamp (Green)

FC80 - <offline>

"ATC GENERAL" ATC General Control & Monitoring [User]

Name: Hardinge

Family: VMC

Author: MGS

Version: 1.0

Block version: 2

Time stamp Code: 03/09/01 11:29:16 AMAM

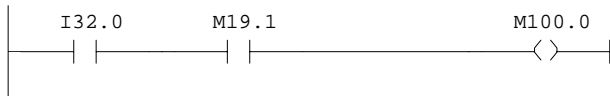
Interface: 05/01/00 11:05:40 AMAM

Lengths (block/logic/data): 00978 00838 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC80 Tool Magazine General Control

Network: 1 Tool Magazine(s) Manual OK

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

M19.1 JOG MODE ONLY NC in Jog Mode Only

M100.0 TOOL CHGE MANUAL Tool Change Manual Operation

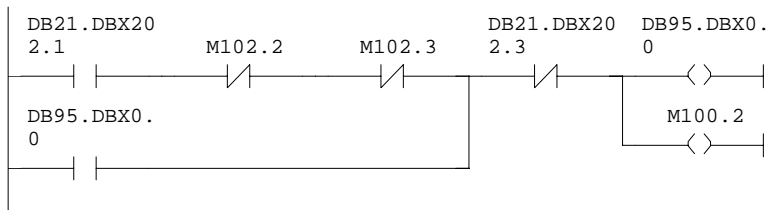
Network: 2 Tool Magazine(s) Auto OK

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

M100.1 TOOL CHGE AUTO Tool Change Automatic Operation

Network: 3 Tool Change Cycle Active

**Symbol information**

DB21.DBX202.1 "CHANNEL 1".MDyn[65]

M102.2 T S/U CYC ACTIVE

Tool Setup Cycle Active

M102.3 T S/U OPR ACTIVE

Tool Setup Operation Active

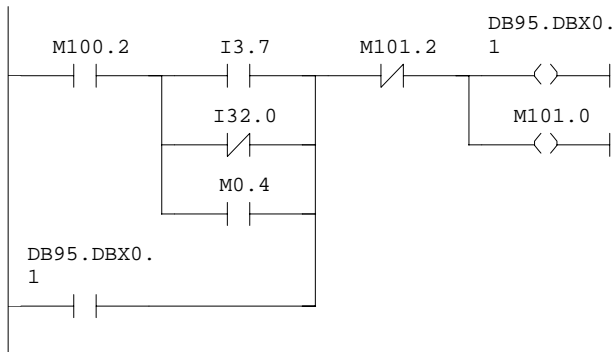
DB95.DBX0.0 "TC CYCLE BUFFER".Tool_Change_Active Tool Change Cycle Active

DB21.DBX202.3 "CHANNEL 1".MDyn[67]

M100.2 T CHG CYC ACTIVE

Tool Change Cycle Active

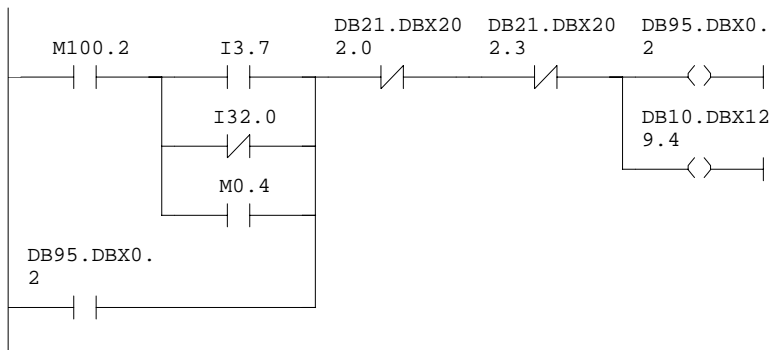
Network: 4 Tool Change Program Interrupted



Symbol information

M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
I3.7	NC RESET	MCP - NC Reset [K32]
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M0.4	PLC START EXT PLS	PLC Start Extended Pulse
DB95.DBX0.1	"TC CYCLE BUFFER".Tool_Change_Interrupt	Tool Change Cycle Interrupted Buffer
M101.2	T CHG CYC INT RSET	Tool Change Cycle Interrupt Reset
M101.0	T CHG CYC INT'D	Tool Change Cycle Interrupted

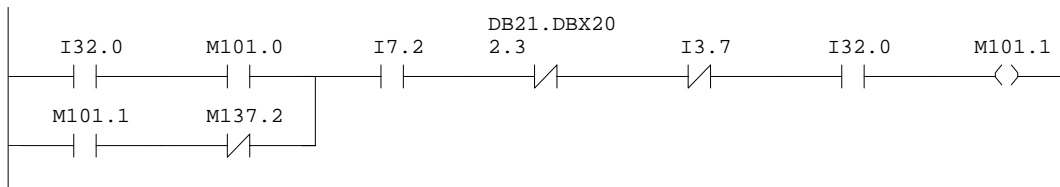
Network: 5 Tool Change Program Interrupted Remember (Digital Input 37)



Symbol information

M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
I3.7	NC RESET	MCP - NC Reset [K32]
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M0.4	PLC START EXT PLS	PLC Start Extended Pulse
DB95.DBX0.2	"TC CYCLE BUFFER".Tool_Change_Int_Rem	Tool Change Cycle Interrupted Remember
DB21.DBX20.2.0	"CHANNEL 1".MDyn[64]	
DB21.DBX20.2.3	"CHANNEL 1".MDyn[67]	
DB10.DBX12.9.4	"NC".I_Set_Inp37	Set digital NCK input 37

Network: 6 Tool Change Program Complete After Interrupt



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M101.0	T CHG CYC INT'D	Tool Change Cycle Interrupted
M101.1	T CHG CYC INT COMP	Tool Change Cycle Complete After Interrupt
M137.2	ASUP CALL DONE	ASUP Call (FC9) Done
I7.2	ATC CYCLE SELECT	MCP - ATC Cycle Select & Indication [K17]

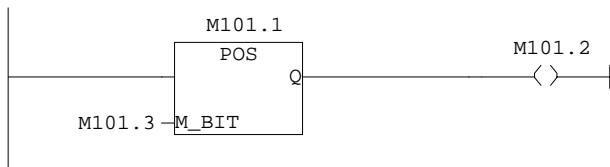
DB21.DBX202.3 "CHANNEL 1".MDyn[67]

I3.7

NC RESET

MCP - NC Reset [K32]

Network: 7 Tool Change Program Interrupt Reset

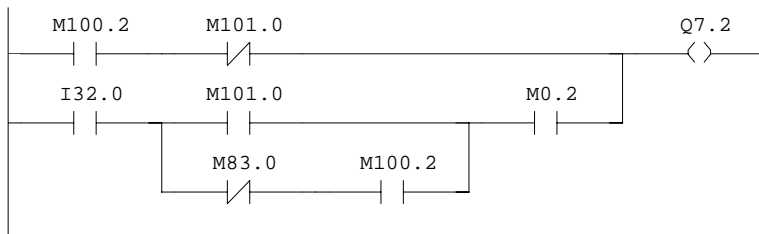
**Symbol information**

M101.1 T CHG CYC INT COMP Tool Change Cycle Complete After Interrupt

M101.3 T CHG CYC INT R RM Tool Change Cycle Interrupt Reset Remember

M101.2 T CHG CYC INT RSET Tool Change Cycle Interrupt Reset

Network: 8 Tool Change Cycle Active MCP LED

**Symbol information**

M100.2 T CHG CYC ACTIVE Tool Change Cycle Active

M101.0 T CHG CYC INT'D Tool Change Cycle Interrupt

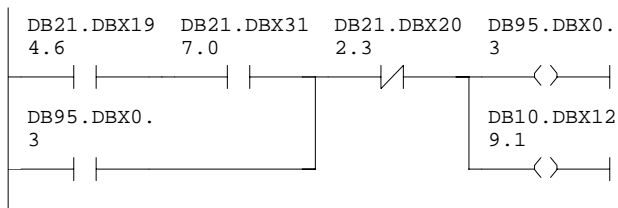
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

M83.0 M/C DOOR T/C INT Machine Safety Door Tool Change Interrupt

M0.2 CLOCK ON Clock On

Q7.2 ATC CYCLE LED MCP - ATC Cycle Select & Indication LED [L17]

Network: 9 Tool Change Cycle Called with ISO Dialect Active (Dig Input 34)

**Symbol information**

DB21.DBX194.6 "CHANNEL 1".MDyn[6]

DB21.DBX317.0 "CHANNEL 1".f317_0

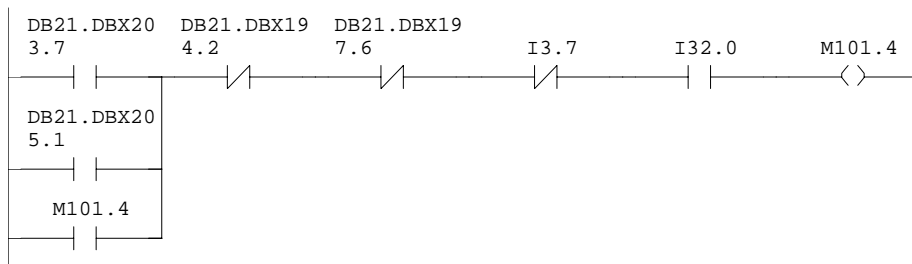
DB95.DBX0.3 "TC CYCLE BUFFER".Tool_Change_ISO_Dialect Tool Change Cycle Called with ISO Dialect Active

DB21.DBX202.3 "CHANNEL 1".MDyn[67]

DB10.DBX129.1 "NC".I_Set_Inp34

Set digital NCK input 34

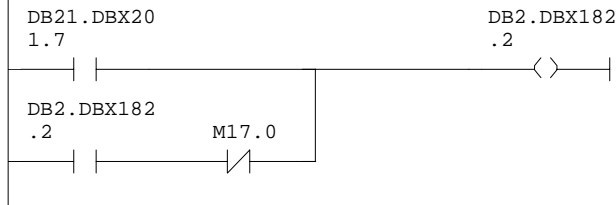
Network: 10 Tool Magazine Function Setup Interlock



Symbol information

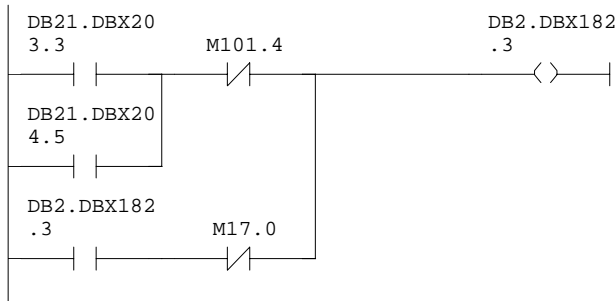
DB21.DBX203.7 "CHANNEL 1".MDyn[79]
 DB21.DBX205.1 "CHANNEL 1".MDyn[89]
 M101.4 T MAG FCT SETUP IL Tool Magazine Function Setup Interlock
 DB21.DBX194.2 "CHANNEL 1".MDyn[2]
 DB21.DBX197.6 "CHANNEL 1".MDyn[30]
 I3.7 NC RESET MCP - NC Reset [K32]
 I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)

Network: 11 700018: System Tool Data May Not Match Machine After Interrupt

**Symbol information**

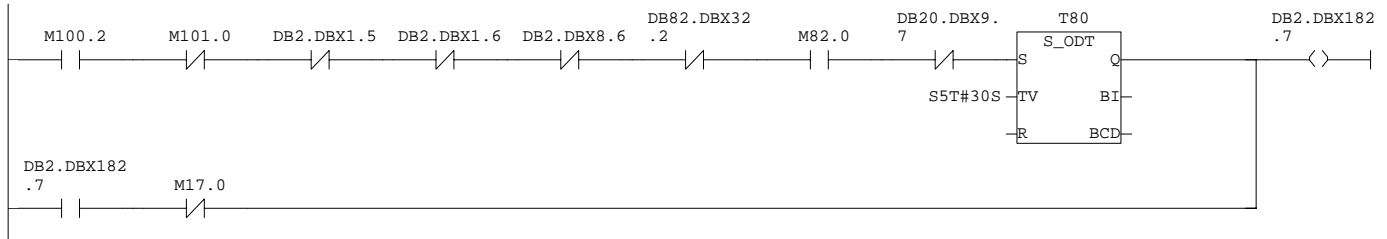
DB21.DBX201.7 "CHANNEL 1".MDyn[63]
 DB2.DBX182.2 "ALARM & MESSAGE".A7000xx[18] Alarm 700000-700063 (user area 0)
 M17.0 FAULT RESET Fault Reset

Network: 12 700019: Tool Magazine Not Preset

**Symbol information**

DB21.DBX203.3 "CHANNEL 1".MDyn[75]
 DB21.DBX204.5 "CHANNEL 1".MDyn[85]
 M101.4 T MAG FCT SETUP IL Tool Magazine Function Setup Interlock
 DB2.DBX182.3 "ALARM & MESSAGE".A7000xx[19] Alarm 700000-700063 (user area 0)
 M17.0 FAULT RESET Fault Reset

Network: 13 700023: Tool Change Cycle Timeout Fault

**Symbol information**

M100.2 T CHG CYC ACTIVE Tool Change Cycle Active
 M101.0 T CHG CYC INT'D Tool Change Cycle Interrupted
 DB2.DBX1.5 "ALARM & MESSAGE".C1.FDD_5100xx[13] Feed disable A.no.51000-510015
 DB2.DBX1.6 "ALARM & MESSAGE".C1.FDD_5100xx[14] Feed disable A.no.51000-510015
 DB2.DBX8.6 "ALARM & MESSAGE".C1.RID_5102xx[22] Read-in disable A.no.510200-510231
 DB82.DBX32.2 "SPS".CMM_OUT.base_sig.nc_cycle_stopped
 M82.0 M/C DOOR CLS BFR Machine Safety Door Close Buffer

DB20.DBX9.7 "OPTIONS".Option_97

DB2.DBX182.7 "ALARM & MESSAGE".A7000xx[23]

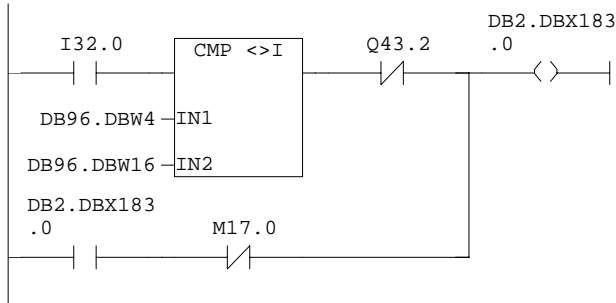
M17.0 FAULT RESET

Tool Change Cycle Timeout Fault Inactive

Alarm 700000-700063 (user area 0)

Fault Reset

Network: 14 700024: Tool Magazine #1 Count Value Error

**Symbol information**

I32.0 MASTR ON

DB96.DBW4 "ATC MAG 1 COUNT DATA".Mag_1_Count_1_INT Tool Magazine #1 Count #1 Value (INT)

DB96.DBW16 "ATC MAG 1 COUNT DATA".Mag_1_Count_2_INT Tool Magazine #1 Count #2 Value (INT)

Q43.2 T MAG #1 ROT MTR

KAR11/MTR6 - Tool Magazine #1 CW/CCW Rotation Motor

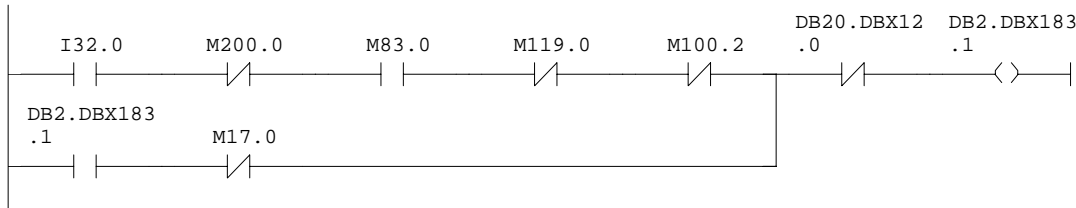
DB2.DBX183.0 "ALARM & MESSAGE".A7000xx[24]

Alarm 700000-700063 (user area 0)

M17.0 FAULT RESET

Fault Reset

Network: 15 700025: Tool Magazine #1 Count Switch #1 Error

**Symbol information**

I32.0 MASTR ON

KAR1 - Master On (Not Emergency Stop)

M200.0 T MAG #1 C1 PX PI

SQP1 - Tool Magazine #1 Rotation Count #1 Proximity Peripheral Input

M83.0 M/C DOOR T/C INT

Machine Safety Door Tool Change Interrupt

M119.0 T MAG #1 ROT BFR

Tool Magazine #1 Rotation Buffer

M100.2 T CHG CYC ACTIVE

Tool Change Cycle Active

DB2.DBX183.1 "ALARM & MESSAGE".A7000xx[25] Alarm 700000-700063 (user area 0)

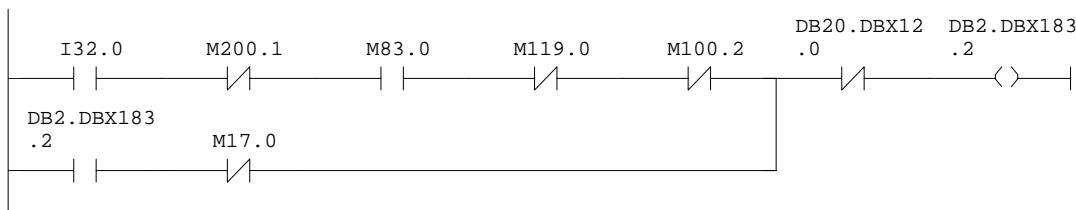
M17.0 FAULT RESET

Fault Reset

DB20.DBX12.0 "OPTIONS".Option_120

ATC Magazine Alarm Suppress for Machine Startup

Network: 16 700026: Tool Magazine #1 Count Switch #2 Error

**Symbol information**

I32.0 MASTR ON

KAR1 - Master On (Not Emergency Stop)

M200.1 T MAG #1 C2 PX PI

SQP2 - Tool Magazine #1 Rotation Count #2 Proximity Peripheral Input

M83.0 M/C DOOR T/C INT

Machine Safety Door Tool Change Interrupt

M119.0 T MAG #1 ROT BFR

Tool Magazine #1 Rotation Buffer

M100.2 T CHG CYC ACTIVE

Tool Change Cycle Active

DB2.DBX183.2 "ALARM & MESSAGE".A7000xx[26] Alarm 700000-700063 (user area 0)

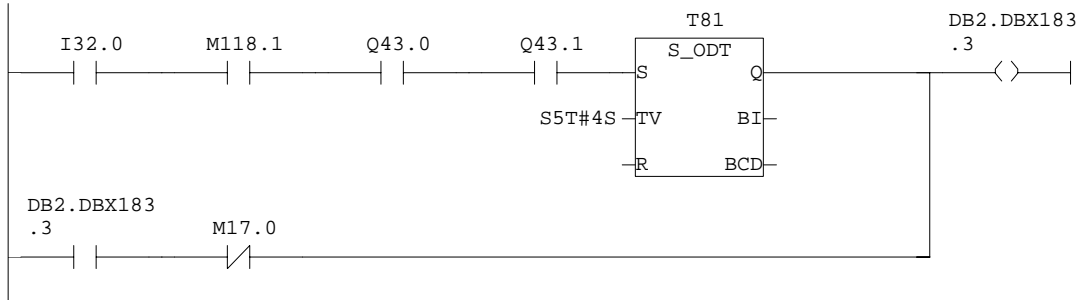
M17.0 FAULT RESET

Fault Reset

DB20.DBX12.0 "OPTIONS".Option_120

ATC Magazine Alarm Suppress for Machine Startup

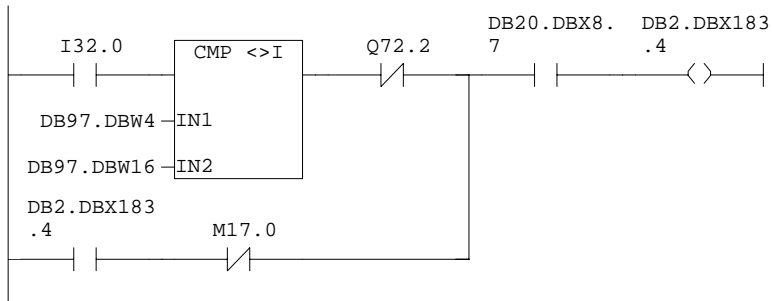
Network: 17 700027: Tool Magazine #1 Advance Timeout Fault



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M118.1	T MAG #1 ADV REQ	Tool Magazine #1 Advance Request
Q43.0	T MAG #1 A/R MTR	KAR7/MTR7 - Tool Magazine #1 Advance/Retract Motor
Q43.1	T MAG #1 ADV SEL	KAR8/MTR7 - Tool Magazine #1 Advance Select
DB2.DBX183.3	"ALARM & MESSAGE".A7000xx[27]	Alarm 700000-700063 (user area 0)
M17.0	FAULT RESET	Fault Reset

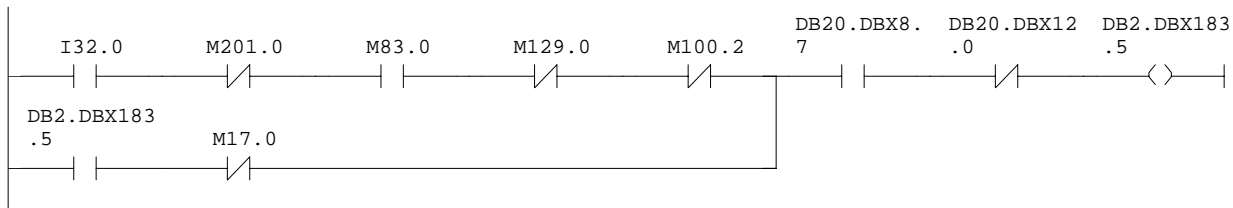
Network: 18 700028: Tool Magazine #2 Count Value Error



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB97.DBW4	"ATC MAG 2 COUNT DATA".Mag_2_Count_1_INT	Tool Magazine #2 Count #1 Value (INT)
DB97.DBW16	"ATC MAG 2 COUNT DATA".Mag_2_Count_2_INT	Tool Magazine #2 Count #2 Value (INT)
Q72.2	T MAG #2 ROT MTR	KAR11/MTR6 - Tool Magazine #2 CW/CCW Rotation Motor
DB2.DBX183.4	"ALARM & MESSAGE".A7000xx[28]	Alarm 700000-700063 (user area 0)
M17.0	FAULT RESET	Fault Reset
DB20.DBX8.7	"OPTIONS".Option_87	2nd Tool Magazine Active

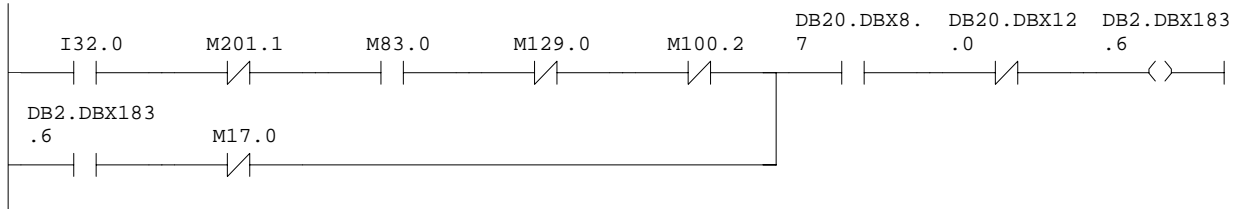
Network: 19 700029: Tool Magazine #2 Count Switch #1 Error



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M201.0	T MAG #2 C1 PX PI	SQP3 - Tool Magazine #2 Rotation Count #1 Proximity Peripheral Input
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
M129.0	T MAG #2 ROT BFR	Tool Magazine #2 Rotation Buffer
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
DB2.DBX183.5	"ALARM & MESSAGE".A7000xx[29]	Alarm 700000-700063 (user area 0)
M17.0	FAULT RESET	Fault Reset
DB20.DBX8.7	"OPTIONS".Option_87	2nd Tool Magazine Active
DB20.DBX12.0	"OPTIONS".Option_120	ATC Magazine Alarm Suppress for Machine Startup

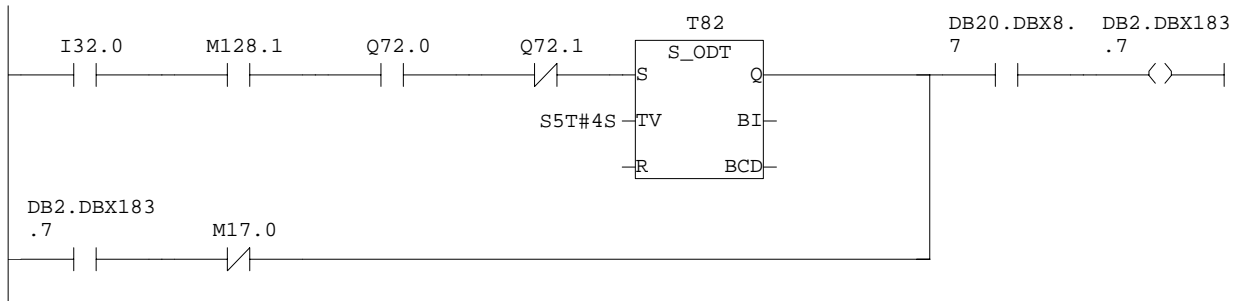
Network: 20 700030: Tool Magazine #2 Count Switch #2 Error



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M201.1	T MAG #2 C2 PX PI	SQP4 - Tool Magazine #2 Rotation Count #2 Proximity Peripheral Input
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
M129.0	T MAG #2 ROT BFR	Tool Magazine #2 Rotation Buffer
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
DB2.DBX183.6	"ALARM & MESSAGE".A7000xx[30]	Alarm 700000-700063 (user area 0)
M17.0	FAULT RESET	Fault Reset
DB20.DBX8.7	"OPTIONS".Option_87	2nd Tool Magazine Active
DB20.DBX12.0	"OPTIONS".Option_120	ATC Magazine Alarm Suppress for Machine Startup

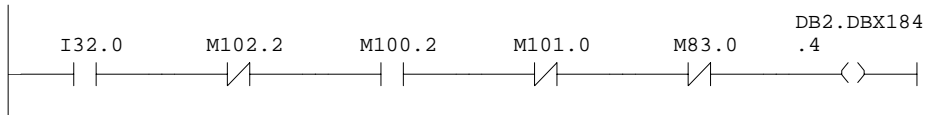
Network: 21 700031: Tool Magazine #2 Advance Timeout Fault



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M128.1	T MAG #2 ADV REQ	Tool Magazine #2 Advance Request
Q72.0	T MAG #2 A/R MTR	KAR7/MTR7 - Tool Magazine #2 Advance/Retract Motor
Q72.1	T MAG #2 RET SEL	KAR8/MTR7 - Tool Magazine #2 Retract Select
DB2.DBX183.7	"ALARM & MESSAGE".A7000xx[31]	Alarm 700000-700063 (user area 0)
M17.0	FAULT RESET	Fault Reset
DB20.DBX8.7	"OPTIONS".Option_87	2nd Tool Magazine Active

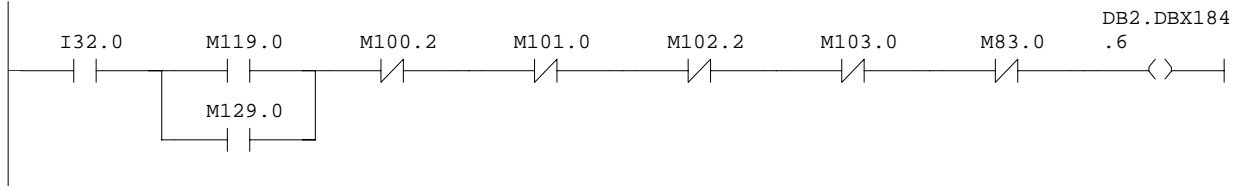
Network: 22 700036: Tool Change Cycle/Magazine Interrupted with Door(s) Open



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M101.0	T CHG CYC INT'D	Tool Change Cycle Interrupted
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
DB2.DBX184.4	"ALARM & MESSAGE".A7000xx[36]	Alarm 700000-700063 (user area 0)

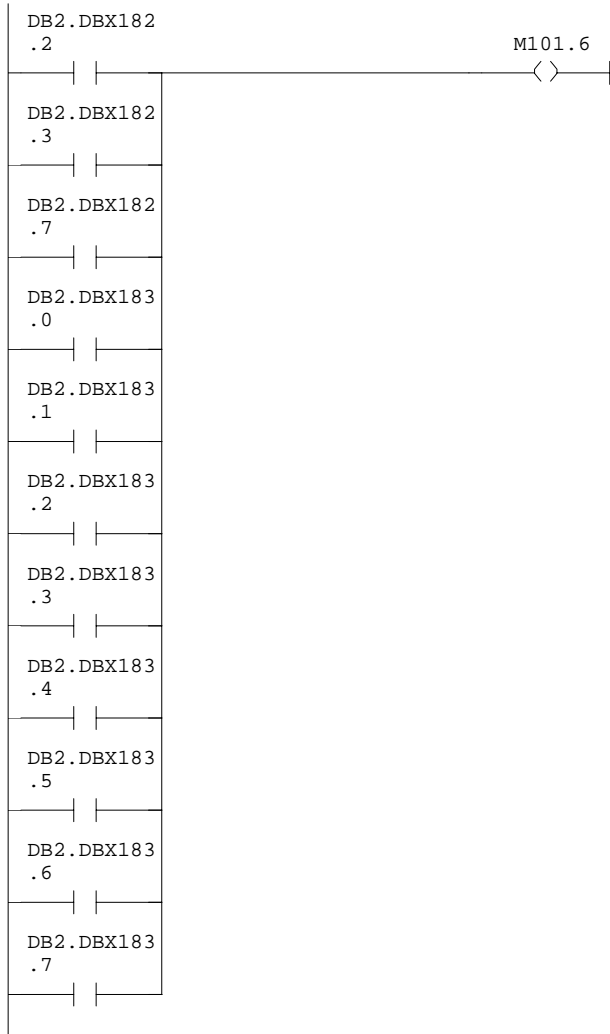
Network: 23 700038: Tool Change Cycle/Magazine Interrupted with Door(s) Open



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M119.0	T MAG #1 ROT BFR	Tool Magazine #1 Rotation Buffer
M129.0	T MAG #2 ROT BFR	Tool Magazine #2 Rotation Buffer
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M101.0	T CHG CYC INT'D	Tool Change Cycle Interrupted
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M103.0	T S/U CYC INT'D	Tool Setup Cycle Interrupted
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
DB2.DBX184.6	"ALARM & MESSAGE".A7000xx[38]	Alarm 700000-700063 (user area 0)

Network: 24 Tool Magazine Fault



Symbol information

DB2.DBX182.2	"ALARM & MESSAGE".A7000xx[18]	Alarm 700000-700063 (user area 0)
DB2.DBX182.3	"ALARM & MESSAGE".A7000xx[19]	Alarm 700000-700063 (user area 0)
DB2.DBX182.7	"ALARM & MESSAGE".A7000xx[23]	Alarm 700000-700063 (user area 0)
DB2.DBX183.0	"ALARM & MESSAGE".A7000xx[24]	Alarm 700000-700063 (user area 0)

DB2.DBX183.1 "ALARM & MESSAGE".A7000xx[25] Alarm 700000-700063 (user area 0)
DB2.DBX183.2 "ALARM & MESSAGE".A7000xx[26] Alarm 700000-700063 (user area 0)
DB2.DBX183.3 "ALARM & MESSAGE".A7000xx[27] Alarm 700000-700063 (user area 0)
DB2.DBX183.4 "ALARM & MESSAGE".A7000xx[28] Alarm 700000-700063 (user area 0)
DB2.DBX183.5 "ALARM & MESSAGE".A7000xx[29] Alarm 700000-700063 (user area 0)
DB2.DBX183.6 "ALARM & MESSAGE".A7000xx[30] Alarm 700000-700063 (user area 0)
DB2.DBX183.7 "ALARM & MESSAGE".A7000xx[31] Alarm 700000-700063 (user area 0)
M101.6 TOOL MAG FAULT Tool Magazine Fault

Network: 25 Tool Magazine Warning



Symbol information
M0.0 OFF Marker Always Off
M101.7 TOOL MAG WARNING Tool Magazine Warning

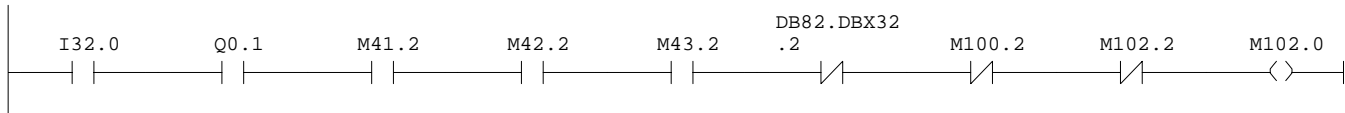
FC81 - <offline>

"ATC TOOL SETUP" ATC Tool Setup Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/14/01 06:07:14 AMAM
 Interface: 11/10/00 09:59:54 PMPM
Lengths (block/logic/data): 00982 00838 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

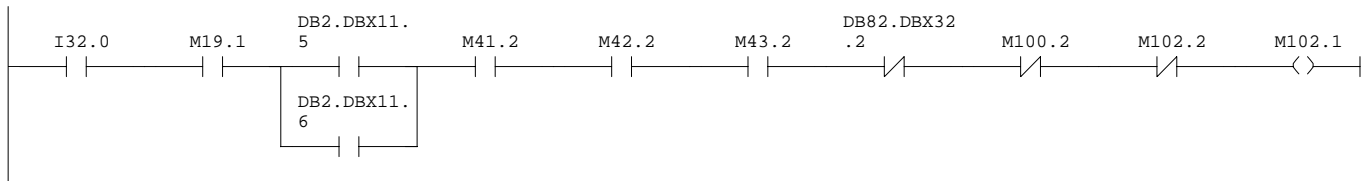
Block: FC81 ATC Tool Setup Control

Network: 1 Tool Setup Start OK

**Symbol information**

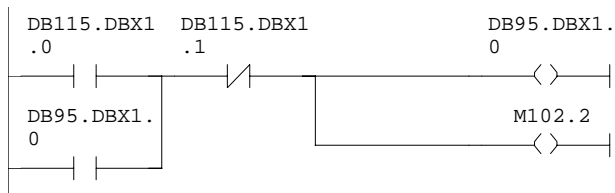
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q0.1	MDA MODE LED	MCP - MDA Mode LED [L11]
M41.2	X AXIS REFD	X Axis Referenced to Active Measuring System
M42.2	Y AXIS REFD	Y Axis Referenced to Active Measuring System
M43.2	Z AXIS REFD	Z Axis Referenced to Active Measuring System
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped	
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M102.0	T S/U CYC START OK	Tool Setup Cycle Start OK

Network: 2 Tool Setup Continue OK

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M19.1	JOG MODE ONLY	NC in Jog Mode Only
DB2.DBX11.5	"ALARM & MESSAGE".C1.NCSD_5103xx[13]	NC start disable A.no.510300-510315
DB2.DBX11.6	"ALARM & MESSAGE".C1.NCSD_5103xx[14]	NC start disable A.no.510300-510315
M41.2	X AXIS REFD	X Axis Referenced to Active Measuring System
M42.2	Y AXIS REFD	Y Axis Referenced to Active Measuring System
M43.2	Z AXIS REFD	Z Axis Referenced to Active Measuring System
DB82.DBX32.2	"SPS".CMM_OUT.base_sig.nc_cycle_stopped	
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M102.1	T S/U CYC CONT OK	Tool Setup Cycle Continue OK

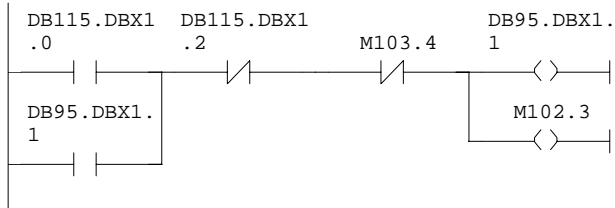
Network: 3 Tool Setup Cycle Active



Symbol information

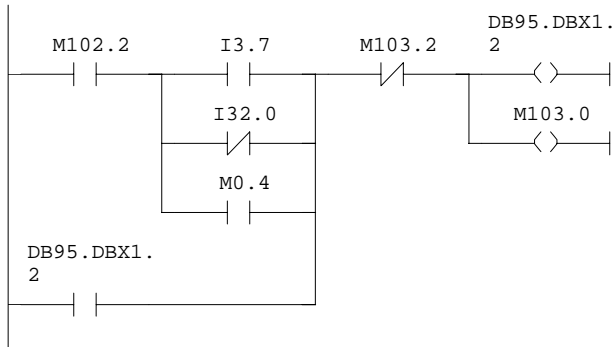
DB115.DBX1.0	"EXTENDED M/H CODES".Extended_M100	Channel 1 Extended Decoding for M100
DB95.DBX1.0	"TC CYCLE BUFFER".Tool_Setup_Cycle_Active	Tool Setup Cycle Active
DB115.DBX1.1	"EXTENDED M/H CODES".Extended_M101	Channel 1 Extended Decoding for M101
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active

Network: 4	Tool Setup Active
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**Symbol information**

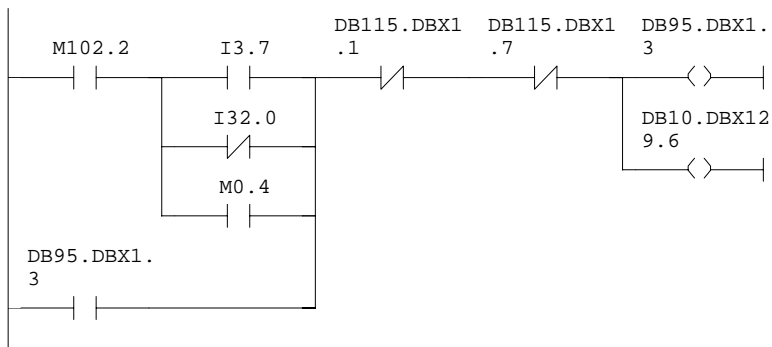
DB115.DBX1.0	"EXTENDED M/H CODES".Extended_M100	Channel 1 Extended Decoding for M100
DB95.DBX1.1	"TC CYCLE BUFFER".Tool_Setup_Active	Tool Setup Active
DB115.DBX1.2	"EXTENDED M/H CODES".Extended_M102	Channel 1 Extended Decoding for M102
M103.4	T S/U CYC T/T RSET	Tool Setup Cycle Tool to Tool Reset
M102.3	T S/U OPR ACTIVE	Tool Setup Operation Active

Network: 5	Tool Setup Cycle Interrupted
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**Symbol information**

M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
I3.7	NC RESET	MCP - NC Reset [K32]
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M0.4	PLC START EXT PLS	PLC Start Extended Pulse
DB95.DBX1.2	"TC CYCLE BUFFER".Tool_Setup_Interrupt	Tool Setup Cycle Interrupted Buffer
M103.2	T S/U CYC INT RSET	Tool Setup Cycle Interrupt Reset
M103.0	T S/U CYC INT'D	Tool Setup Cycle Interrupted

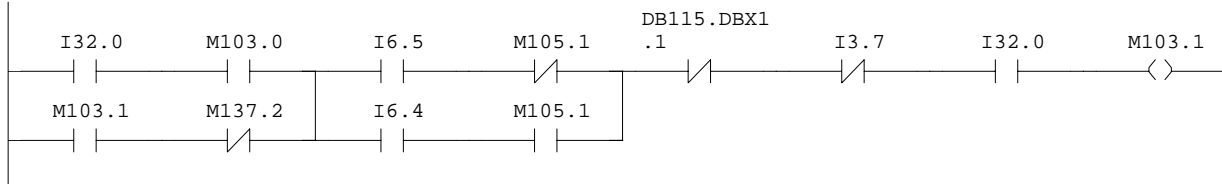
Network: 6	Tool Setup Cycle Interrupted Remember (Digital Input 39)
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Symbol information

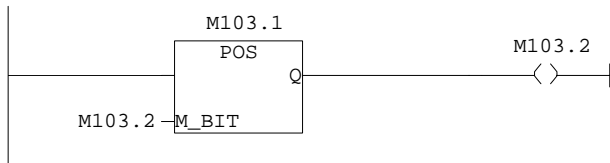
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
I3.7	NC RESET	MCP - NC Reset [K32]
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M0.4	PLC START EXT PLS	PLC Start Extended Pulse
DB95.DBX1.3	"TC CYCLE BUFFER".Tool_Setup_Int_Rem	Tool Setup Cycle Interrupted Remember
DB115.DBX1.1	"EXTENDED M/H CODES".Extended_M101	Channel 1 Extended Decoding for M101
DB115.DBX1.7	"EXTENDED M/H CODES".Extended_M107	Channel 1 Extended Decoding for M107
DB10.DBX129.6	"NC".I_Set_Inp39	Set digital NCK input 39

Network: 7 Tool Setup Cycle Complete After Interrupt

**Symbol information**

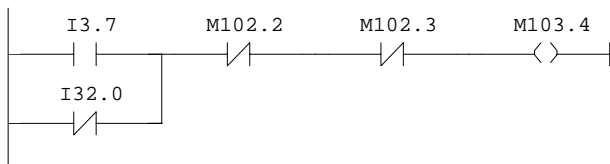
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M103.0	T S/U CYC INT'D	Tool Setup Cycle Interrupted
M103.1	T S/U CYC INT COMP	Tool Setup Cycle Complete After Interrupt
M137.2	ASUP CALL DONE	ASUP Call (FC9) Done
I6.5	TOOL/TOOL CYC SEL	MCP - Tool to Tool Change Cycle Select [K36]
M105.1	T S/U CYC T/M ACT	Tool Setup Cycle Tool to Magazine Active
I6.4	TOOL/MAG CYC SEL	MCP - Tool to Magazine Cycle Select [K37]
DB115.DBX1.1	"EXTENDED M/H CODES".Extended_M101	Channel 1 Extended Decoding for M101
I3.7	NC RESET	MCP - NC Reset [K32]

Network: 8 Tool Setup Cycle Interrupt Reset

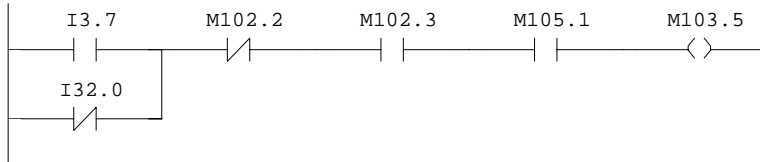
**Symbol information**

M103.1	T S/U CYC INT COMP	Tool Setup Cycle Complete After Interrupt
M103.2	T S/U CYC INT RSET	Tool Setup Cycle Interrupt Reset

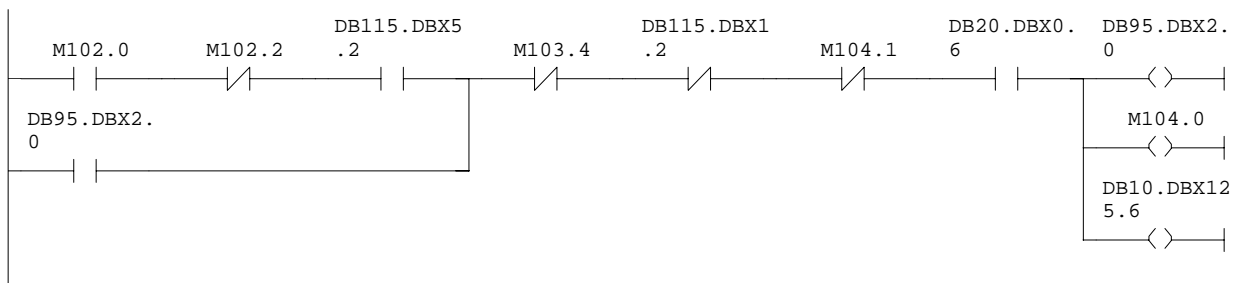
Network: 9 Tool Setup Reset for Tool-to-Tool

**Symbol information**

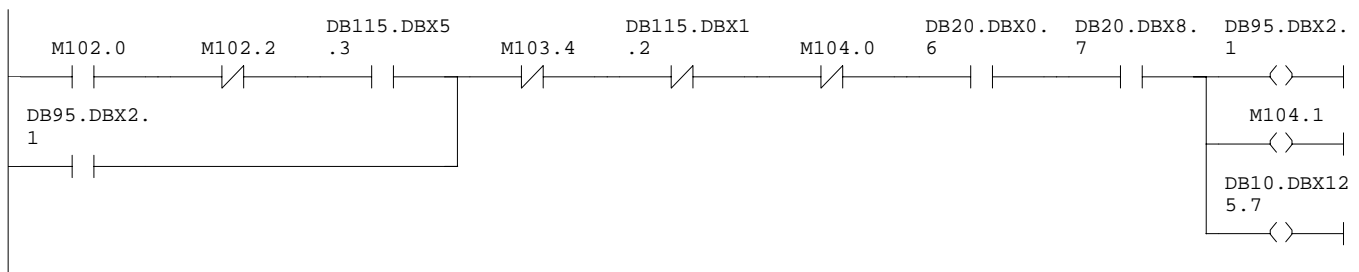
I3.7	NC RESET	MCP - NC Reset [K32]
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M102.3	T S/U OPR ACTIVE	Tool Setup Operation Active
M103.4	T S/U CYC T/T RSET	Tool Setup Cycle Tool to Tool Reset

Network: 10 Tool Setup Reset for Tool-to-Magazine

Symbol information

I3.7	NC RESET	MCP - NC Reset [K32]
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M102.3	T S/U OPR ACTIVE	Tool Setup Operation Active
M105.1	T S/U CYC T/M ACT	Tool Setup Cycle Tool to Magazine Active
M103.5	T S/U CYC T/M RSET	Tool Setup Cycle Tool to Magazine Reset

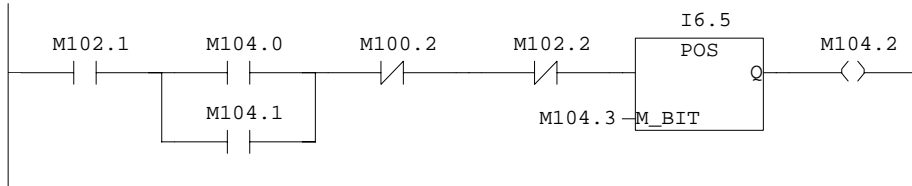
Network: 11 Tool Setup Cycle for Magazine #1 (Digital Input 23)

Symbol information

M102.0	T S/U CYC START OK	Tool Setup Cycle Start OK
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
DB115.DBX5.2	"EXTENDED M/H CODES".Extended_H111	Channel 1 Extended Decoding for H111
DB95.DBX2.0	"TC CYCLE BUFFER".Tool_Setup_Mag_1	Tool Setup Cycle for Magazine #1
M103.4	T S/U CYC T/T RSET	Tool Setup Cycle Tool to Tool Reset
DB115.DBX1.2	"EXTENDED M/H CODES".Extended_M102	Channel 1 Extended Decoding for M102
M104.1	T S/U CYC MAG #2	Tool Setup Cycle Magazine #2
DB20.DBX0.6	"OPTIONS".Option_06	Tool Setup Operation Active
M104.0	T S/U CYC MAG #1	Tool Setup Cycle Magazine #1
DB10.DBX12.5.6	"NC".I_Set_Inp23	Set digital NCK input 23

Network: 12 Tool Setup Cycle for Magazine #2 (Digital Input 24)

Symbol information

M102.0	T S/U CYC START OK	Tool Setup Cycle Start OK
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
DB115.DBX5.3	"EXTENDED M/H CODES".Extended_H222	Channel 1 Extended Decoding for H222
DB95.DBX2.1	"TC CYCLE BUFFER".Tool_Setup_Mag_2	Tool Setup Cycle for Magazine #2
M103.4	T S/U CYC T/T RSET	Tool Setup Cycle Tool to Tool Reset
DB115.DBX1.2	"EXTENDED M/H CODES".Extended_M102	Channel 1 Extended Decoding for M102
M104.0	T S/U CYC MAG #1	Tool Setup Cycle Magazine #1
DB20.DBX0.6	"OPTIONS".Option_06	Tool Setup Operation Active
DB20.DBX8.7	"OPTIONS".Option_87	2nd Tool Magazine Active
M104.1	T S/U CYC MAG #2	Tool Setup Cycle Magazine #2
DB10.DBX12.5.7	"NC".I_Set_Inp24	Set digital NCK input 24

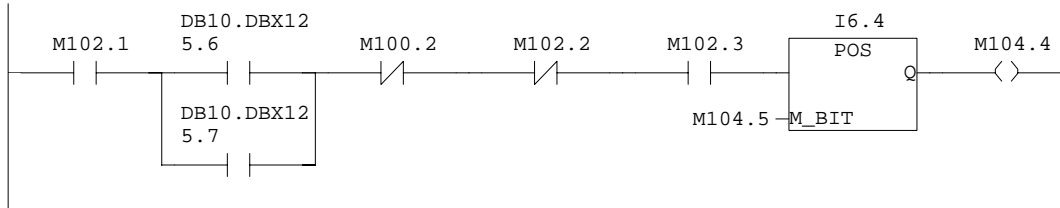
Network: 13 Tool Setup Cycle for Tool-to-Tool Change Request Pulse



Symbol information

M102.1	T S/U CYC CONT OK	Tool Setup Cycle Continue OK
M104.0	T S/U CYC MAG #1	Tool Setup Cycle Magazine #1
M104.1	T S/U CYC MAG #2	Tool Setup Cycle Magazine #2
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
I6.5	TOOL/TOOL CYC SEL	MCP - Tool to Tool Change Cycle Select [K36]
M104.3	T S/U CYC T/T R RM	Tool Setup Cycle Tool to Tool Request Remember
M104.2	T S/U CYC T/T R PL	Tool Setup Cycle Tool to Tool Request Pulse

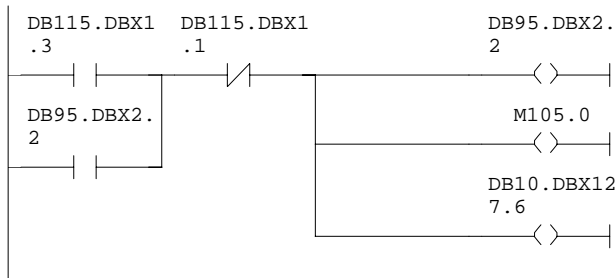
Network: 14 Tool Setup Cycle for Tool-to-Magazine Change Request Pulse



Symbol information

M102.1	T S/U CYC CONT OK	Tool Setup Cycle Continue OK
DB10.DBX125.6	"NC".I_Set_Inp23	Set digital NCK input 23
DB10.DBX125.7	"NC".I_Set_Inp24	Set digital NCK input 24
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M102.3	T S/U OPR ACTIVE	Tool Setup Operation Active
I6.4	TOOL/MAG CYC SEL	MCP - Tool to Magazine Cycle Select [K37]
M104.5	T S/U CYC T/M R RM	Tool Setup Cycle Tool to Magazine Request Remember
M104.4	T S/U CYC T/M R PL	Tool Setup Cycle Tool to Magazine Request Pulse

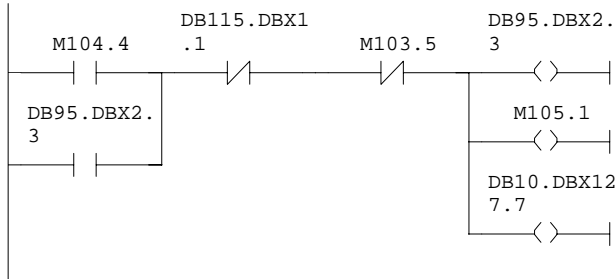
Network: 15 Tool Setup Cycle Tool-to-Tool Active (Digital Input 31)



Symbol information

DB115.DBX1.3	"EXTENDED M/H CODES".Extended_M103	Channel 1 Extended Decoding for M103
DB95.DBX2.2	"TC CYCLE BUFFER".Tool_To_Tool	Tool Setup Tool-to-Tool Routine
DB115.DBX1.1	"EXTENDED M/H CODES".Extended_M101	Channel 1 Extended Decoding for M101
M105.0	T S/U CYC T/T ACT	Tool Setup Cycle Tool to Tool Active
DB10.DBX127.6	"NC".I_Set_Inp31	Set digital NCK input 31

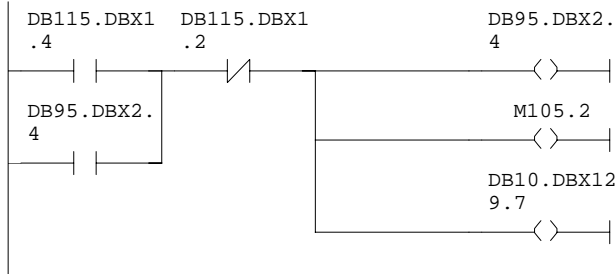
Network: 16 Tool Setup Cycle Tool-to-Magazine Active (Digital Input 32)



Symbol information

M104.4	T S/U CYC T/M R PL	Tool Setup Cycle Tool to Magazine Request Pulse
DB95.DBX2.3	"TC CYCLE BUFFER".Tool_To_Magazine	Tool Setup Tool-to-Magazine Routine
DB115.DBX1.1	"EXTENDED M/H CODES".Extended_M101	Channel 1 Extended Decoding for M101
M103.5	T S/U CYC T/M RSET	Tool Setup Cycle Tool to Magazine Reset
M105.1	T S/U CYC T/M ACT	Tool Setup Cycle Tool to Magazine Active
DB10.DBX12.7	"NC".I_Set_Inp32	Set digital NCK input 32

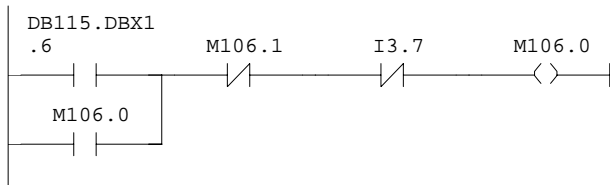
Network: 17 Tool Setup First Tool Loaded (Digital Input 40)



Symbol information

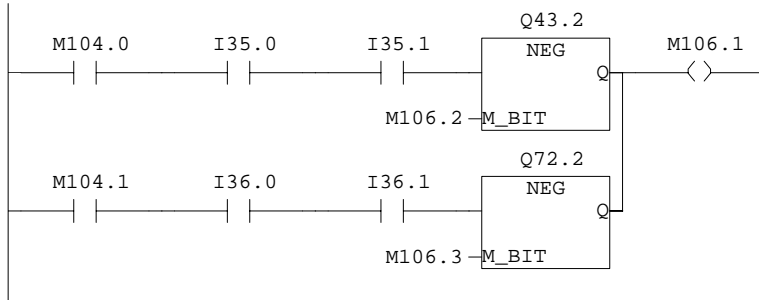
DB115.DBX1.4	"EXTENDED M/H CODES".Extended_M104	Channel 1 Extended Decoding for M104
DB95.DBX2.4	"TC CYCLE BUFFER".First_Tool_Loaded	Tool Setup First Tool Loaded
DB115.DBX1.2	"EXTENDED M/H CODES".Extended_M102	Channel 1 Extended Decoding for M102
M105.2	T S/U CYC 1ST T LD	Tool Setup Cycle 1st Selected Tool Loaded
DB10.DBX12.9	"NC".I_Set_Inp40	Set digital NCK input 40

Network: 18 Tool Setup Magazine Rotation NC Read-In Disable

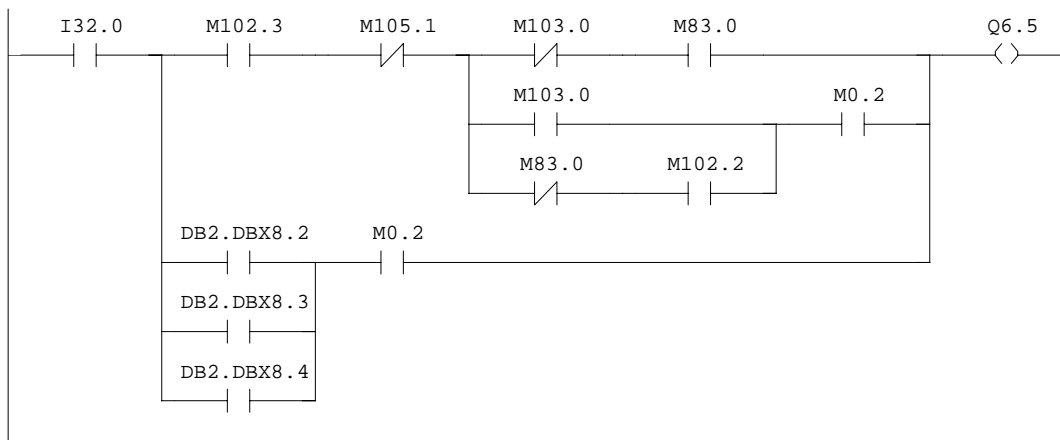


Symbol information

DB115.DBX1.6	"EXTENDED M/H CODES".Extended_M106	Channel 1 Extended Decoding for M106
M106.0	T S/U MAG ROT RID	Tool Setup Magazine Rotation NC Read-In Disable
M106.1	T S/U MAG ROT COMP	Tool Setup Magazine Rotation Complete
I3.7	NC RESET	MCP - NC Reset [K32]

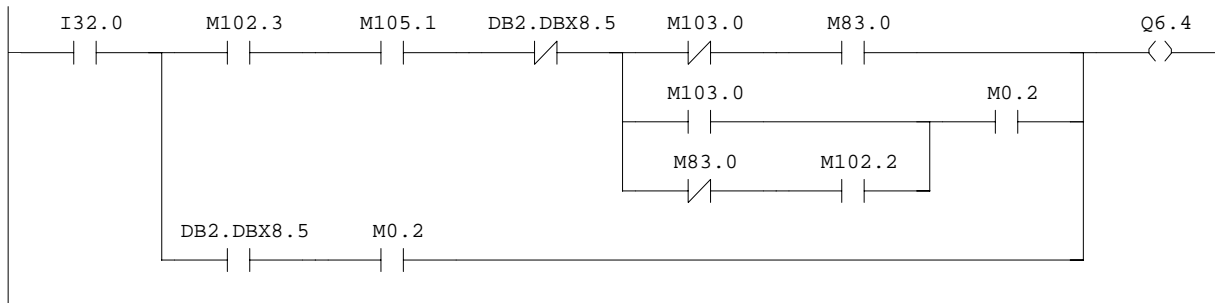
Network: 19 Tool Setup Magazine Rotation Complete

Symbol information

M104.0	T S/U CYC MAG #1	Tool Setup Cycle Magazine #1
I35.0	T MAG #1 CNT 1 PX SQP1	- Tool Magazine #1 Rotation Count #1 Proximity
I35.1	T MAG #1 CNT 2 PX SQP2	- Tool Magazine #1 Rotation Count #2 Proximity
Q43.2	T MAG #1 ROT MTR KAR11/MTR6	- Tool Magazine #1 CW/CCW Rotation Motor
M106.2	T S/U MG1 RT CP RM	Tool Setup Magazine #1 Rotation Complete Remember
M104.1	T S/U CYC MAG #2	Tool Setup Cycle Magazine #2
I36.0	T MAG #2 CNT 1 PX SQP3	- Tool Magazine #2 Rotation Count #1 Proximity
I36.1	T MAG #2 CNT 2 PX SQP4	- Tool Magazine #2 Rotation Count #2 Proximity
Q72.2	T MAG #2 ROT MTR KAR11/MTR6	- Tool Magazine #2 CW/CCW Rotation Motor
M106.3	T S/U MG2 RT CP RM	Tool Setup Magazine #2 Rotation Complete Remember
M106.1	T S/U MAG ROT COMP	Tool Setup Magazine Rotation Complete

Network: 20 Tool Setup Tool-to-Tool Cycle Active MCP LED

Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M102.3	T S/U OPR ACTIVE	Tool Setup Operation Active
M105.1	T S/U CYC T/M ACT	Tool Setup Cycle Tool to Magazine Active
M103.0	T S/U CYC INT'D	Tool Setup Cycle Interrupted
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M0.2	CLOCK ON	Clock On
DB2.DBX8.2	"ALARM & MESSAGE".C1.RID_5102xx[18]	Read-in disable A.no.510200-510231
DB2.DBX8.3	"ALARM & MESSAGE".C1.RID_5102xx[19]	Read-in disable A.no.510200-510231
DB2.DBX8.4	"ALARM & MESSAGE".C1.RID_5102xx[20]	Read-in disable A.no.510200-510231
Q6.5	TOOL/TOOL CYC LED	MCP - Tool to Tool Change Cycle LED [L36]

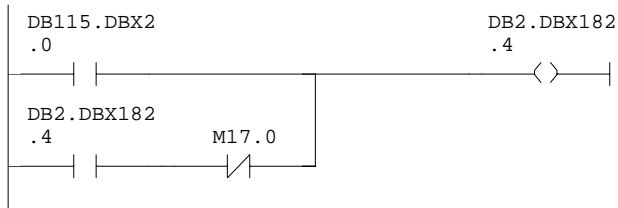
Network: 21 Tool Setup Tool-to-Magazine Cycle Active MCP LED



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M102.3	T S/U OPR ACTIVE	Tool Setup Operation Active
M105.1	T S/U CYC T/M ACT	Tool Setup Cycle Tool to Magazine Active
DB2.DBX8.5	"ALARM & MESSAGE".C1.RID_5102xx[21]	Read-in disable A.no.510200-510231
M103.0	T S/U CYC INT'D	Tool Setup Cycle Interrupted
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M0.2	CLOCK ON	Clock On
Q6.4	TOOL/MAG CYC LED	MCP - Tool to Magazine Cycle LED [L37]

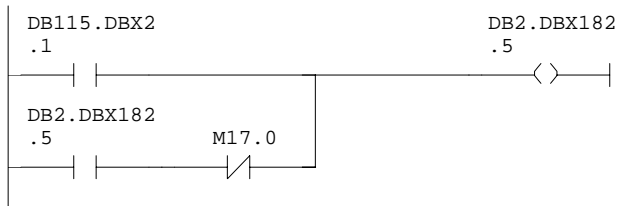
Network: 22 700020: Tool Setup Only with Programmed T0



Symbol information

DB115.DBX2.0	"EXTENDED M/H CODES".Extended_M110	Channel 1 Extended Decoding for M110
DB2.DBX182.4	"ALARM & MESSAGE".A7000xx[20]	Alarm 700000-700063 (user area 0)
M17.0	FAULT RESET	Fault Reset

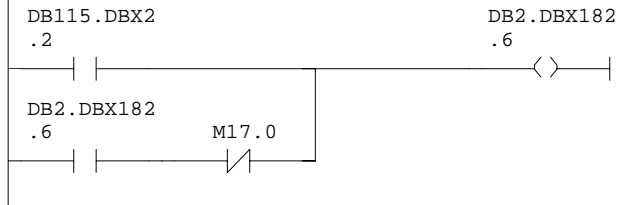
Network: 23 700021: Tool Setup 1st Selected Tool is Not Valid



Symbol information

DB115.DBX2.1	"EXTENDED M/H CODES".Extended_M111	Channel 1 Extended Decoding for M111
DB2.DBX182.5	"ALARM & MESSAGE".A7000xx[21]	Alarm 700000-700063 (user area 0)
M17.0	FAULT RESET	Fault Reset

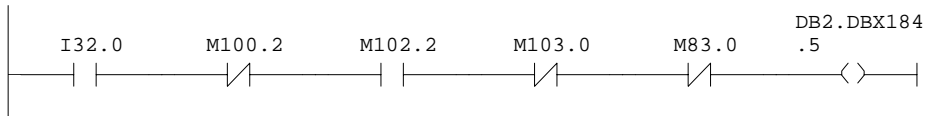
Network: 24 700022: Tool Setup 1st Selected Tool is Disabled



Symbol information

DB115.DBX2.2 "EXTENDED M/H CODES".Extended_M112 Channel 1 Extended Decoding for M112
DB2.DBX182.6 "ALARM & MESSAGE".A7000xx[22] Alarm 700000-700063 (user area 0)
M17.0 FAULT RESET Fault Reset

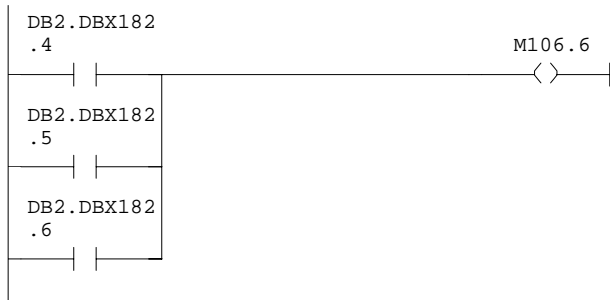
Network: 25 700037: Tool Setup Cycle/Magazine Interrupted with Door(s) Open



Symbol information

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
M100.2 T CHG CYC ACTIVE Tool Change Cycle Active
M102.2 T S/U CYC ACTIVE Tool Setup Cycle Active
M103.0 T S/U CYC INT'D Tool Setup Cycle Interrupted
M83.0 M/C DOOR T/C INT Machine Safety Door Tool Change Interrupt
DB2.DBX184.5 "ALARM & MESSAGE".A7000xx[37] Alarm 700000-700063 (user area 0)

Network: 26 Tool Magazine Setup Fault



Symbol information

DB2.DBX182.4 "ALARM & MESSAGE".A7000xx[20] Alarm 700000-700063 (user area 0)
DB2.DBX182.5 "ALARM & MESSAGE".A7000xx[21] Alarm 700000-700063 (user area 0)
DB2.DBX182.6 "ALARM & MESSAGE".A7000xx[22] Alarm 700000-700063 (user area 0)
M106.6 TOOL S/UP FAULT Tool Magazine Setup Fault

Network: 27 Tool Magazine Setup Warning



Symbol information

M0.0 OFF Marker Always Off
M106.7 TOOL S/UP WARNING Tool Magazine Setup Warning

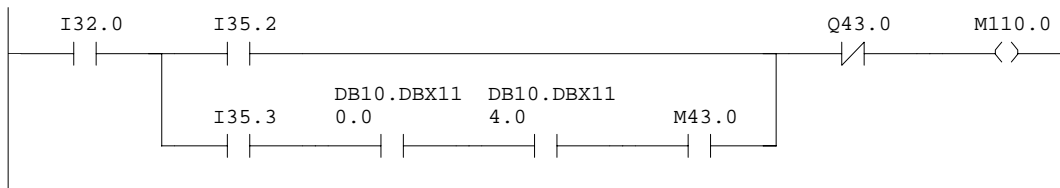
FC82 - <offline>

"ATC 1 AUTO ROTATION" ATC #1 Automatic Rotation Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 03/09/01 01:35:32 AMAM
 Interface: 05/17/00 01:42:50 PMPM
Lengths (block/logic/data): 01064 00902 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

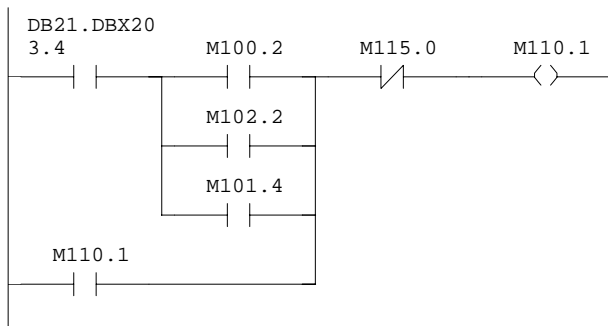
Block: FC82 Tool Magazine #1 Automatic Rotation Control

Network: 1 Tool Magazine #1 Auto Rotation OK

**Symbol information**

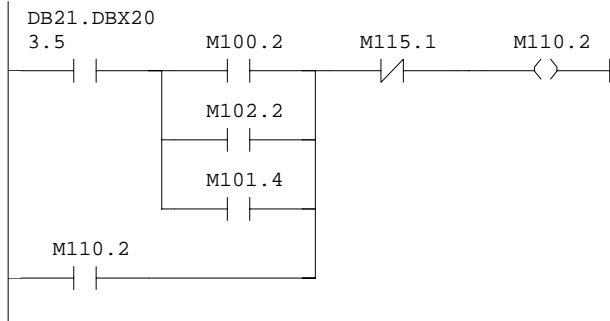
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
I35.2 T MAG #1 RET LS SQL3 - Tool Magazine #1 Retract (IN) Limit
I35.3 T MAG #1 ADV LS SQL4 - Tool Magazine #1 Advance (OUT) Limit
DB10.DBX110.0 "NC".Q_SWCamMinus[0]
DB10.DBX114.0 "NC".Q_SWCamPlus[0]
M43.0 Z AXIS IN POSN Z Axis In Position
Q43.0 T MAG #1 A/R MTR KAR7/MTR7 - Tool Magazine #1 Advance/Retract Motor
M110.0 T MAG #1 A ROT OK Tool Magazine #1 Auto Rotation OK

Network: 2 Tool Magazine #1 Auto Rotation Old Tool Active

**Symbol information**

DB21.DBX203.4 "CHANNEL 1".MDyn[76]
M100.2 T CHG CYC ACTIVE Tool Change Cycle Active
M102.2 T S/U CYC ACTIVE Tool Setup Cycle Active
M101.4 T MAG FCT SETUP IL Tool Magazine Function Setup Interlock
M110.1 T MAG #1 A RT OLD Tool Magazine #1 Auto Rotation Active for Old Tool
M115.0 T MAG #1 A R O CP Tool Magazine #1 Auto Rotation for Old Tool Complete

Network: 3 Tool Magazine #1 Auto Rotation New Tool Active

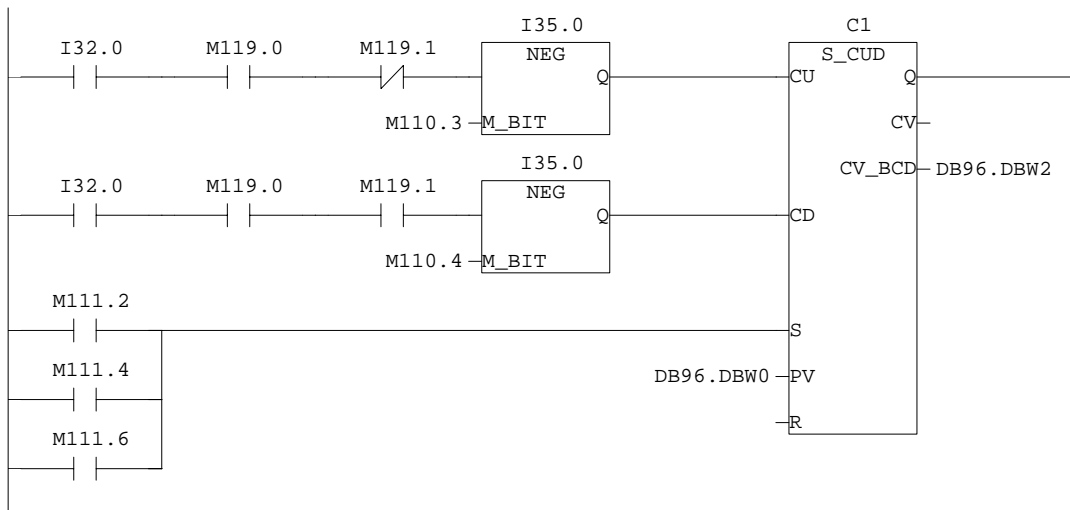


Symbol information

DB21.DBX203.5 "CHANNEL 1".MDyn[77]

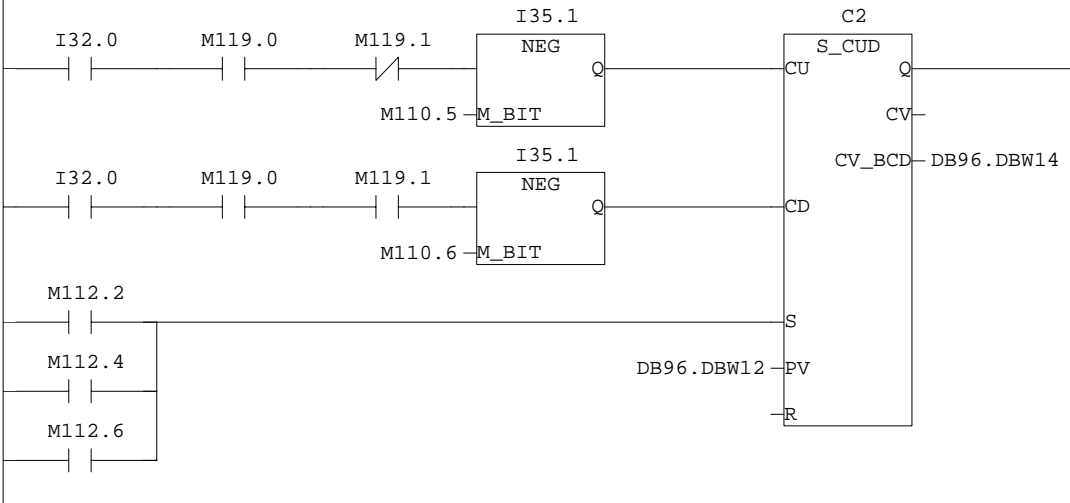
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M101.4	T MAG FCT SETUP IL	Tool Magazine Function Setup Interlock
M110.2	T MAG #1 A RT NEW	Tool Magazine #1 Auto Rotation Active for New Tool
M115.1	T MAG #1 A R N CP	Tool Magazine #1 Auto Rotation for New Tool Complete

Network: 4 Tool Magazine #1 Rotation Counter #1 (Main)



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M119.0	T MAG #1 ROT BFR	Tool Magazine #1 Rotation Buffer
M119.1	T MAG #1 CCW BFR	Tool Magazine #1 Rotation CCW Buffer
I35.0	T MAG #1 CNT 1 PX	SQPl - Tool Magazine #1 Rotation Count #1 Proximity
M110.3	T MAG #1 CW C1 RM	Tool Magazine #1 CW Count #1 Remember
M110.4	T MAG #1 CCW C1 R	Tool Magazine #1 CCW Count #1 Remember
M111.2	T MAG #1 REF1 1	Tool Magazine #1 Reference #1 to 1
M111.4	T MAG #1 C1 TO 1	Tool Magazine #1 Count Value #1 to 1
M111.6	T MAG #1 C1 TO 20	Tool Magazine #1 Count Value #1 to 20
DB96.DBW0	"ATC MAG 1 COUNT DATA".Mag_1_Count_1_Preset	Tool Magazine #1 Counter #1 Preset Value
DB96.DBW2	"ATC MAG 1 COUNT DATA".Mag_1_Count_1_BCD	Tool Magazine #1 Count #1 Value (BCD)



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M119.0	T MAG #1 ROT BFR	Tool Magazine #1 Rotation Buffer
M119.1	T MAG #1 CCW BFR	Tool Magazine #1 Rotation CCW Buffer
I35.1	T MAG #1 CNT 2 PX	SQP2 - Tool Magazine #1 Rotation Count #2 Proximity
M110.5	T MAG #1 CW C2 RM	Tool Magazine #1 CW Count #2 Remember
M110.6	T MAG #1 CCW C2 R	Tool Magazine #1 CCW Count #2 Remember
M112.2	T MAG #1 REF2 1	Tool Magazine #1 Reference #2 to 1
M112.4	T MAG #1 C2 TO 1	Tool Magazine #1 Count Value #2 to 1
M112.6	T MAG #1 C2 TO 20	Tool Magazine #1 Count Value #2 to 20
DB96.DBW12	"ATC MAG 1 COUNT DATA".Mag_1_Count_2_Preset	Tool Magazine #1 Counter #2 Preset Value
DB96.DBW14	"ATC MAG 1 COUNT DATA".Mag_1_Count_2_BCD	Tool Magazine #1 Count #2 Value (BCD)

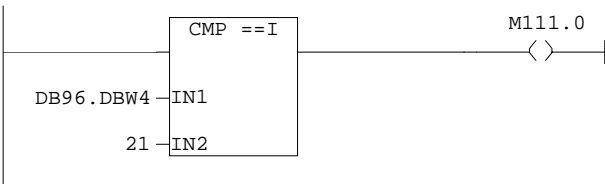
Network: 6	Tool Magazine #1	Count	#1 Value	BCD -> INT
0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
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65	0	0	0	0
66	0	0	0	0
67	0	0	0	0
68	0	0	0	0
69	0	0	0	0
70	0	0	0	0
71	0	0	0	0
72	0	0	0	0
73	0	0	0	0
74	0	0	0	0
75	0	0	0	0
76	0	0	0	0
77	0	0	0	0
78	0	0	0	0
79	0	0	0	0
80	0	0	0	0
81	0	0	0	0
82	0	0	0	0
83	0	0	0	0
84	0	0	0	0
85	0	0	0	0
86	0	0	0	0
87	0	0	0	0
88	0	0	0	0
89	0	0	0	0
90	0	0	0	0
91	0	0	0	0
92	0	0	0	0
93	0	0	0	0</

L	DB96.DBW	2	"ATC MAG 1 COUNT DATA".Mag_1_Count_1_BCD -- Tool Magazine #1 Count #1 Value (BCD)
BTI			
T	DB96.DBW	4	"ATC MAG 1 COUNT DATA".Mag_1_Count_1_INT -- Tool Magazine #1 Count #1 Value (INT)
NOP	0		

```
Network: 7      Tool Magazine #1 Count #2 Value BCD -> INT
```

L BTI T NOP	DB96.DBW 0	14 16	"ATC MAG 1 COUNT DATA".Mag_1_Count_2_BCD -- Tool Magazine #1 Count #2 Value (BCD) "ATC MAG 1 COUNT DATA".Mag_1_Count_2_INT -- Tool Magazine #1 Count #2 Value (INT)
----------------------	-------------------	--------------	--

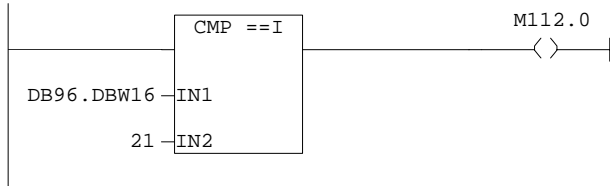
```
Network: 8      Tool Magazine #1 Counter #1 Value = 21
```



Symbol information

```
DB96.DBW4      "ATC MAG 1 COUNT DATA".Mag_1_Count_1_INT Tool Magazine #1 Count #1 Value (INT)
M111.0        T MAG #1   C1 = 21                        Tool Magazine #1 Count Value #1 = 21
```

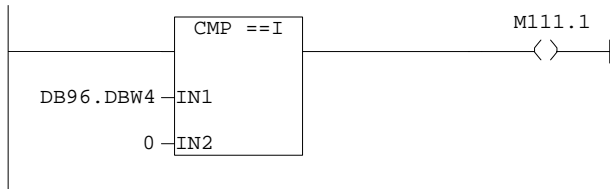
Network: 9 Tool Magazine #1 Counter #2 Value = 21



Symbol information

DB96.DBW16 "ATC MAG 1 COUNT DATA".Mag_1_Count_2_INT Tool Magazine #1 Count #2 Value (INT)
 M112.0 T MAG #1 C2 = 21 Tool Magazine #1 Count Value #2 = 21

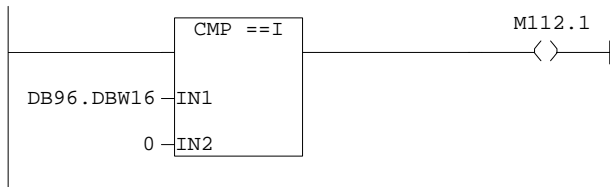
Network: 10 Tool Magazine #1 Counter #1 Value = 0



Symbol information

DB96.DBW4 "ATC MAG 1 COUNT DATA".Mag_1_Count_1_INT Tool Magazine #1 Count #1 Value (INT)
 M111.1 T MAG #1 C1 = 0 Tool Magazine #1 Count Value #1 = 0

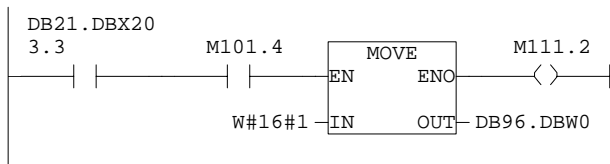
Network: 11 Tool Magazine #1 Counter #2 Value = 0



Symbol information

DB96.DBW16 "ATC MAG 1 COUNT DATA".Mag_1_Count_2_INT Tool Magazine #1 Count #2 Value (INT)
 M112.1 T MAG #1 C2 = 0 Tool Magazine #1 Count Value #2 = 0

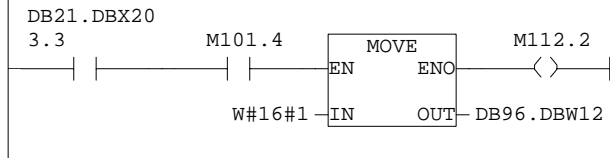
Network: 12 Tool Magazine #1 Counter #1 Preset to 1 (Reference)



Symbol information

DB21.DBX203.3 "CHANNEL 1".MDyn[75]
 M101.4 T MAG FCT SETUP IL Tool Magazine Function Setup Interlock
 DB96.DBW0 "ATC MAG 1 COUNT DATA".Mag_1_Count_1_Preset Tool Magazine #1 Counter #1 Preset Value
 M111.2 T MAG #1 REF1 1 Tool Magazine #1 Reference #1 to 1

Network: 13 Tool Magazine #1 Counter #2 Preset to 1 (Reference)



Symbol information

DB21.DBX203.3 "CHANNEL 1".MDyn[75]

M101.4 T MAG FCT SETUP IL

Tool Magazine Function Setup Interlock

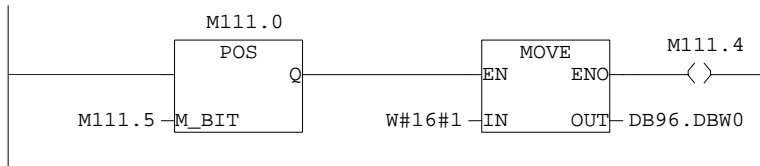
DB96.DBW12 "ATC MAG 1 COUNT DATA".Mag_1_Count_2_Preset

Tool Magazine #1 Counter #2 Preset Value

M112.2 T MAG #1 REF2 1

Tool Magazine #1 Reference #2 to 1

Network: 14 Tool Magazine #1 Counter #1 Rollover 21 -> 1



Symbol information

M111.0 T MAG #1 C1 = 21

Tool Magazine #1 Count Value #1 = 21

M111.5 T MAG #1 C1 1 REM

Tool Magazine #1 Count Value #1 to 1 Remember

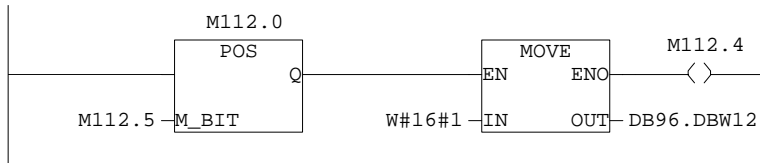
DB96.DBW0 "ATC MAG 1 COUNT DATA".Mag_1_Count_1_Preset

Tool Magazine #1 Counter #1 Preset Value

M111.4 T MAG #1 C1 TO 1

Tool Magazine #1 Count Value #1 to 1

Network: 15 Tool Magazine #1 Counter #2 Rollover 21 -> 1



Symbol information

M112.0 T MAG #1 C2 = 21

Tool Magazine #1 Count Value #2 = 21

M112.5 T MAG #1 C2 1 REM

Tool Magazine #1 Count Value #2 to 1 Remember

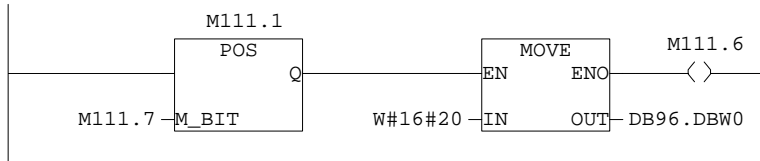
DB96.DBW12 "ATC MAG 1 COUNT DATA".Mag_1_Count_2_Preset

Tool Magazine #1 Counter #2 Preset Value

M112.4 T MAG #1 C2 TO 1

Tool Magazine #1 Count Value #2 to 1

Network: 16 Tool Magazine #1 Counter #1 Rollover 0 -> 20



Symbol information

M111.1 T MAG #1 C1 = 0

Tool Magazine #1 Count Value #1 = 0

M111.7 T MAG #1 C2 20 RM

Tool Magazine #1 Count Value #1 to 20 Remember

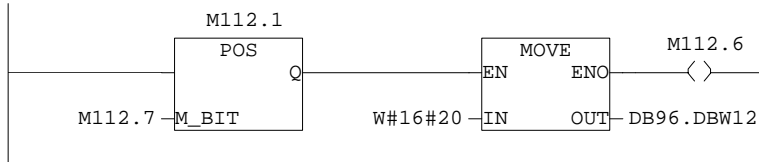
DB96.DBW0 "ATC MAG 1 COUNT DATA".Mag_1_Count_1_Preset

Tool Magazine #1 Counter #1 Preset Value

M111.6 T MAG #1 C1 TO 20

Tool Magazine #1 Count Value #1 to 20

Network: 17 Tool Magazine #1 Counter #2 Rollover 0 -> 20



Symbol information

M112.1	T MAG #1	C2 = 0	Tool Magazine #1 Count Value #2 = 0
M112.7	T MAG #1	C1 20 RM	Tool Magazine #1 Count Value #2 to 20 Remember
DB96.DBW12	"ATC MAG 1 COUNT DATA".Mag_1_Count_2_Preset		Tool Magazine #1 Counter #2 Preset Value
M112.6	T MAG #1	C2 TO 20	Tool Magazine #1 Count Value #2 to 20

Network: 18 Transfer Tool Management Data to Buffer

```

AN    DB21.DBX  202.1  "CHANNEL 1".MDyn[65]    --
JC    END

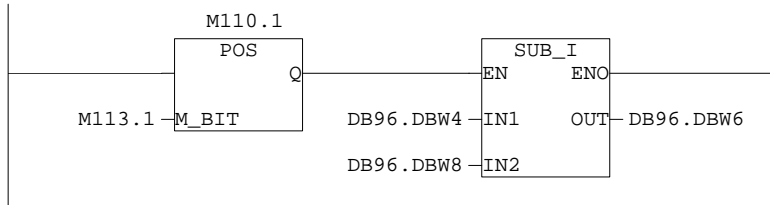
L     DB72.DBW  30     "TM SPINDLE DATA".IF[1].TLoc -- Location no. (target) for old tool
T     DB96.DBW   8     "ATC MAG 1 COUNT DATA".DB72_DBW30_Buffer_1 -- Tool Management Old Tool Location Buffer Magazine #1

L     DB72.DBW  26     "TM SPINDLE DATA".IF[1].SLoc -- Location no. (source) for new tool
T     DB96.DBW  10     "ATC MAG 1 COUNT DATA".DB72_DBW26_Buffer_1 -- Tool Management New Tool Location Buffer Magazine #1

```

END: NOP 0

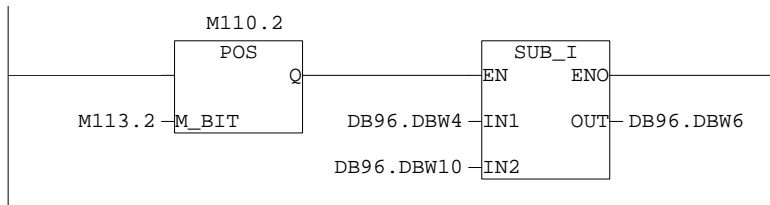
Network: 19 Tool Magazine #1 Difference for Old Tool = Actual - Old Nominal



Symbol information

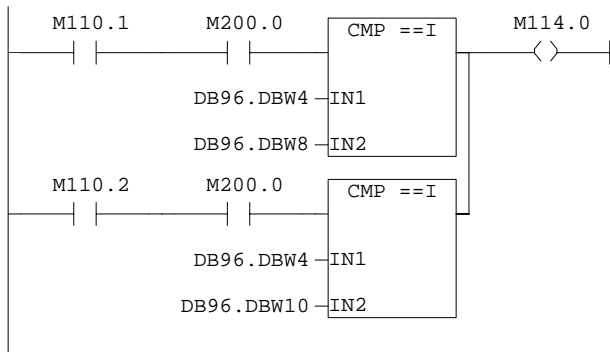
M110.1	T MAG #1	A RT OLD	Tool Magazine #1 Auto Rotation Active for Old Tool
M113.1	T MAG #1	A RO REM	Tool Magazine #1 Auto Rotation Active for Old Tool Remember
DB96.DBW4	"ATC MAG 1 COUNT DATA".Mag_1_Count_1_INT		Tool Magazine #1 Count #1 Value (INT)
DB96.DBW8	"ATC MAG 1 COUNT DATA".DB72_DBW30_Buffer_1		Tool Management Old Tool Location Buffer Magazine #1
DB96.DBW6	"ATC MAG 1 COUNT DATA".Mag_1_Diff		Tool Magazine #1 Difference (Actual - Nominal)

Network: 20 Tool Magazine #1 Difference for New Tool = Actual - New Nominal

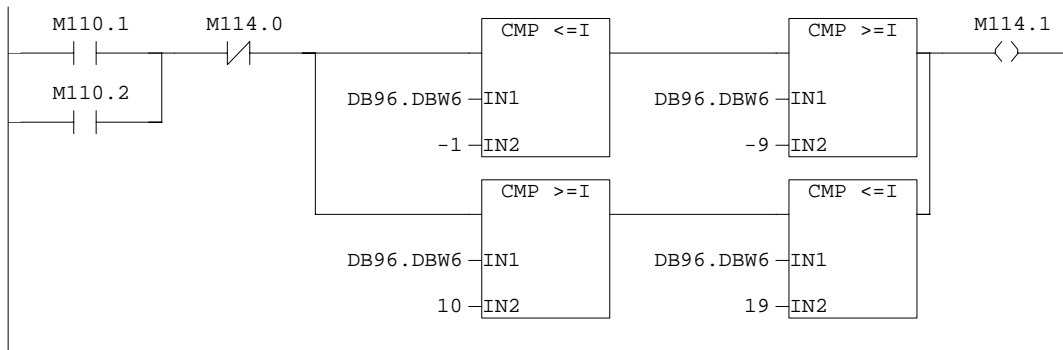


Symbol information

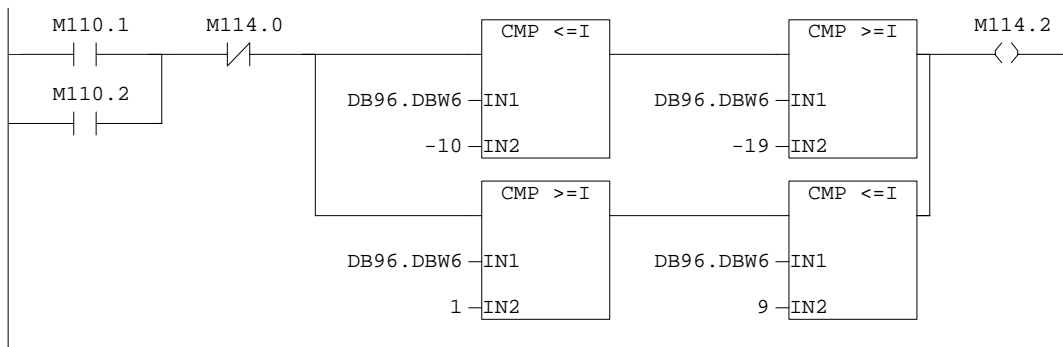
M110.2	T MAG #1	A RT NEW	Tool Magazine #1 Auto Rotation Active for New Tool
M113.2	T MAG #1	A RN REM	Tool Magazine #1 Auto Rotation Active for New Tool Remember
DB96.DBW4	"ATC MAG 1 COUNT DATA".Mag_1_Count_1_INT		Tool Magazine #1 Count #1 Value (INT)
DB96.DBW10	"ATC MAG 1 COUNT DATA".DB72_DBW26_Buffer_1		Tool Management New Tool Location Buffer Magazine #1
DB96.DBW6	"ATC MAG 1 COUNT DATA".Mag_1_Diff		Tool Magazine #1 Difference (Actual - Nominal)

Network: 21 Tool Magazine #1 In Position (Nominal = Actual)

Symbol information

M110.1	T MAG #1	A RT OLD	Tool Magazine #1 Auto Rotation Active for Old Tool
M200.0	T MAG #1	C1 PX PI	SQP1 - Tool Magazine #1 Rotation Count #1 Proximity Peripheral Input
DB96.DBW4	"ATC MAG 1 COUNT DATA".Mag_1_Count_1_INT		Tool Magazine #1 Count #1 Value (INT)
DB96.DBW8	"ATC MAG 1 COUNT DATA".DB72_DBW30_Buffer_1		Tool Management Old Tool Location Buffer Magazine #1
M110.2	T MAG #1	A RT NEW	Tool Magazine #1 Auto Rotation Active for New Tool
DB96.DBW10	"ATC MAG 1 COUNT DATA".DB72_DBW26_Buffer_1		Tool Management New Tool Location Buffer Magazine #1
M114.0	T MAG #1	ACT=NOM	Tool Magazine #1 Actual = Nominal Value

Network: 22 Tool Magazine #1 CW Auto Rotation Request

Symbol information

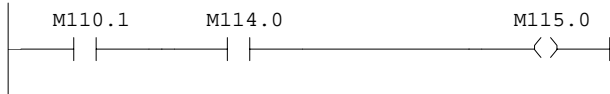
M110.1	T MAG #1	A RT OLD	Tool Magazine #1 Auto Rotation Active for Old Tool
M110.2	T MAG #1	A RT NEW	Tool Magazine #1 Auto Rotation Active for New Tool
M114.0	T MAG #1	ACT=NOM	Tool Magazine #1 Actual = Nominal Value
DB96.DBW6	"ATC MAG 1 COUNT DATA".Mag_1_Diff		Tool Magazine #1 Difference (Actual - Nominal)
M114.1	T MAG #1	A CW RQ	Tool Magazine #1 Auto CW Rotation Request

Network: 23 Tool Magazine #1 CCW Auto Rotation Request


Symbol information

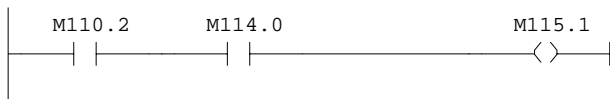
M110.1	T MAG #1	A RT OLD	Tool Magazine #1 Auto Rotation Active for Old Tool
M110.2	T MAG #1	A RT NEW	Tool Magazine #1 Auto Rotation Active for New Tool
M114.0	T MAG #1	ACT=NOM	Tool Magazine #1 Actual = Nominal Value
DB96.DBW6	"ATC MAG 1 COUNT DATA".Mag_1_Diff		Tool Magazine #1 Difference (Actual - Nominal)
M114.2	T MAG #1	A CCW RQ	Tool Magazine #1 Auto CCW Rotation Request

Network: 24	Tool Magazine #1 Auto Rotation Old Tool Complete
-------------	--

**Symbol information**

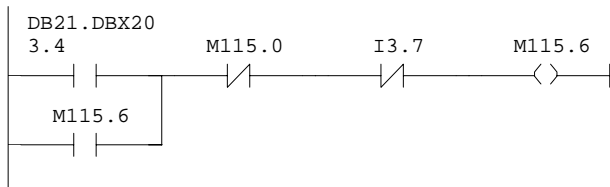
M110.1	T MAG #1	A RT OLD	Tool Magazine #1 Auto Rotation Active for Old Tool
M114.0	T MAG #1	ACT=NOM	Tool Magazine #1 Actual = Nominal Value
M115.0	T MAG #1	A R O CP	Tool Magazine #1 Auto Rotation for Old Tool Complete

Network: 25	Tool Magazine #1 Auto Rotation New Tool Complete
-------------	--

**Symbol information**

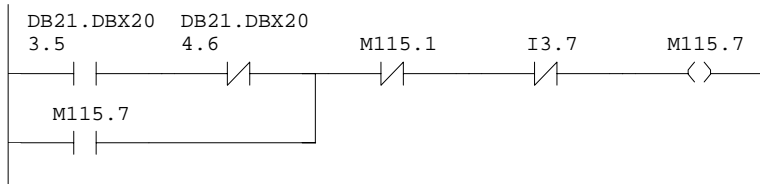
M110.2	T MAG #1	A RT NEW	Tool Magazine #1 Auto Rotation Active for New Tool
M114.0	T MAG #1	ACT=NOM	Tool Magazine #1 Actual = Nominal Value
M115.1	T MAG #1	A R N CP	Tool Magazine #1 Auto Rotation for New Tool Complete

Network: 26	Tool Magazine #1 Auto Rotation Old Tool NC Read-In Disable
-------------	--

**Symbol information**

DB21.DBX203.4	"CHANNEL 1".MDyn[76]		
M115.6	T MAG #1	R O RID	Tool Magazine #1 Auto Rotation for Old Tool NC Read-In Disable
M115.0	T MAG #1	A R O CP	Tool Magazine #1 Auto Rotation for Old Tool Complete
I3.7	NC RESET		MCP - NC Reset [K32]

Network: 27	Tool Magazine #1 Auto Rotation New Tool NC Read-In Disable
-------------	--

**Symbol information**

DB21.DBX203.5	"CHANNEL 1".MDyn[77]		
DB21.DBX204.6	"CHANNEL 1".MDyn[86]		
M115.7	T MAG #1	R N RID	Tool Magazine #1 Auto Rotation for New Tool NC Read-In Disable
M115.1	T MAG #1	A R N CP	Tool Magazine #1 Auto Rotation for New Tool Complete
I3.7	NC RESET		MCP - NC Reset [K32]

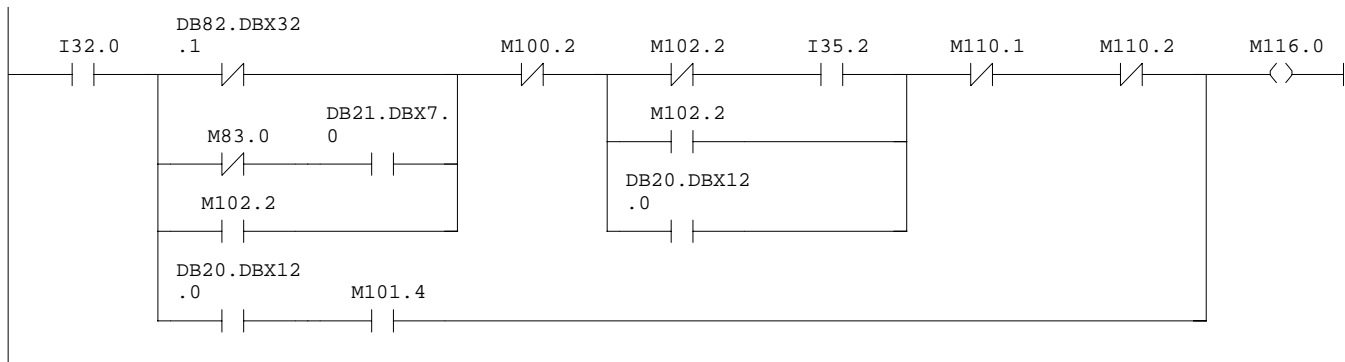
FC83 - <offline>

"ATC 1 MAN ROTATION" ATC #1 Manual Rotation Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 03/12/01 09:26:12 AMAM
 Interface: 11/16/99 02:14:04 PMPM
Lengths (block/logic/data): 00296 00192 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

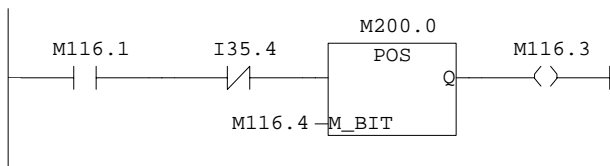
Block: FC83 Tool Magazine #1 Manual Rotation Control

Network: 1 Tool Magazine #1 Manual Rotation OK

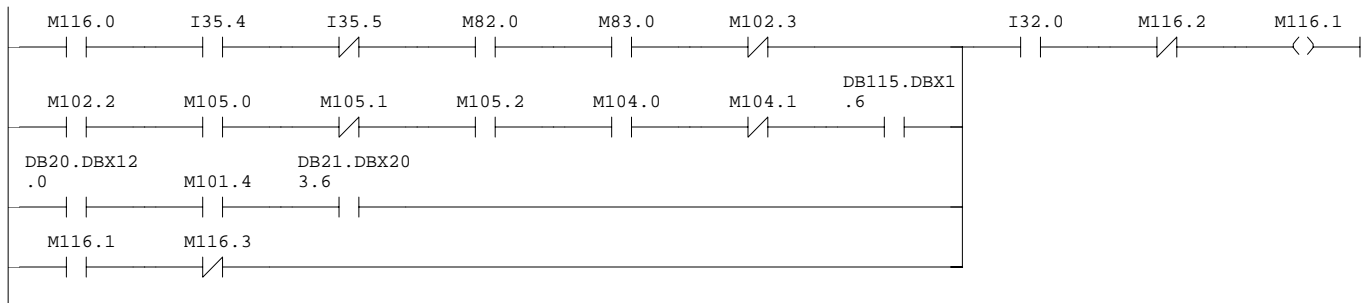
**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
DB21.DBX7.0	"CHANNEL 1".Q_NCStartDisabl	NC start disable
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
I35.2	T MAG #1 RET LS	SQL3 - Tool Magazine #1 Retract (IN) Limit
DB20.DBX12.0	"OPTIONS".Option_120	ATC Magazine Alarm Suppress for Machine Startup
M110.1	T MAG #1 A RT OLD	Tool Magazine #1 Auto Rotation Active for Old Tool
M110.2	T MAG #1 A RT NEW	Tool Magazine #1 Auto Rotation Active for New Tool
M101.4	T MAG FCT SETUP IL	Tool Magazine Function Setup Interlock
M116.0	T MAG #1 M ROT OK	Tool Magazine #1 Manual Rotation OK

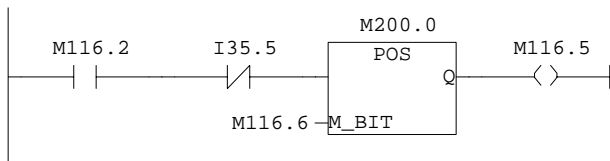
Network: 2 Tool Magazine #1 CW Manual Rotation Complete

**Symbol information**

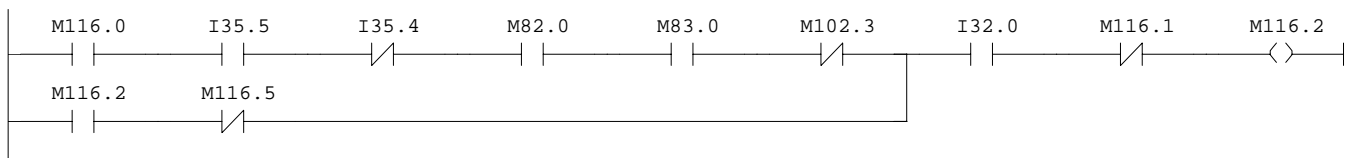
M116.1	T MAG #1 M CW RQ	Tool Magazine #1 Manual CW Rotation Request
I35.4	T MAG #1 J CW PB	SBP44 - Tool Magazine #1 Jog CW Pushbutton
M200.0	T MAG #1 C1 PX PI	SQL1 - Tool Magazine #1 Rotation Count #1 Proximity Peripheral Input
M116.4	T MAG #1 M CW RM	Tool Magazine #1 Manual CW Rotation Complete Remember
M116.3	T MAG #1 M CW CP	Tool Magazine #1 Manual CW Rotation Complete

Network: 3 Tool Magazine #1 CW Manual Rotation Request Buffer

Symbol information

M116.0	T MAG #1	M ROT OK	Tool Magazine #1 Manual Rotation OK
I35.4	T MAG #1	J CW PB	SBP44 - Tool Magazine #1 Jog CW Pushbutton
I35.5	T MAG #1	J CCW PB	SBP45 - Tool Magazine #1 Jog CCW Pushbutton
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
M83.0	M/C DOOR	T/C INT	Machine Safety Door Tool Change Interrupt
M102.3	T S/U OPR	ACTIVE	Tool Setup Operation Active
M102.2	T S/U CYC	ACTIVE	Tool Setup Cycle Active
M105.0	T S/U CYC	T/T ACT	Tool Setup Cycle Tool to Tool Active
M105.1	T S/U CYC	T/M ACT	Tool Setup Cycle Tool to Magazine Active
M105.2	T S/U CYC	1ST T LD	Tool Setup Cycle 1st Selected Tool Loaded
M104.0	T S/U CYC	MAG #1	Tool Setup Cycle Magazine #1
M104.1	T S/U CYC	MAG #2	Tool Setup Cycle Magazine #2
DB115.DBX1.6	"EXTENDED M/H CODES".Extended_M106		Channel 1 Extended Decoding for M106
DB20.DBX12.0	"OPTIONS".Option_120		ATC Magazine Alarm Suppress for Machine Startup
M101.4	T MAG FCT	SETUP IL	Tool Magazine Function Setup Interlock
DB21.DBX203.6	"CHANNEL 1".MDyn[78]		
M116.1	T MAG #1	M CW RQ	Tool Magazine #1 Manual CW Rotation Request
M116.3	T MAG #1	M CW CP	Tool Magazine #1 Manual CW Rotation Complete
I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
M116.2	T MAG #1	M CCW RQ	Tool Magazine #1 Manual Rotation Request

Network: 4 Tool Magazine #1 CCW Manual Rotation Complete

Symbol information

M116.2	T MAG #1	M CCW RQ	Tool Magazine #1 Manual Rotation Request
I35.5	T MAG #1	J CCW PB	SBP45 - Tool Magazine #1 Jog CCW Pushbutton
M200.0	T MAG #1	C1 PX PI SQP1	Tool Magazine #1 Rotation Count #1 Proximity Peripheral Input
M116.6	T MAG #1	M CCW RM	Tool Magazine #1 Manual CCW Rotation Complete Remember
M116.5	T MAG #1	M CCW CP	Tool Magazine #1 Manual CCW Rotation Complete

Network: 5 Tool Magazine #1 CCW Manual Rotation Request Buffer

Symbol information

M116.0	T MAG #1	M ROT OK	Tool Magazine #1 Manual Rotation OK
I35.5	T MAG #1	J CCW PB	SBP45 - Tool Magazine #1 Jog CCW Pushbutton
I35.4	T MAG #1	J CW PB	SBP44 - Tool Magazine #1 Jog CW Pushbutton
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
M83.0	M/C DOOR	T/C INT	Machine Safety Door Tool Change Interrupt
M102.3	T S/U OPR	ACTIVE	Tool Setup Operation Active
M116.2	T MAG #1	M CCW RQ	Tool Magazine #1 Manual Rotation Request

M116.5 T MAG #1 M CCW CP Tool Magazine #1 Manual CCW Rotation Complete
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
M116.1 T MAG #1 M CW RQ Tool Magazine #1 Manual CW Rotation Request

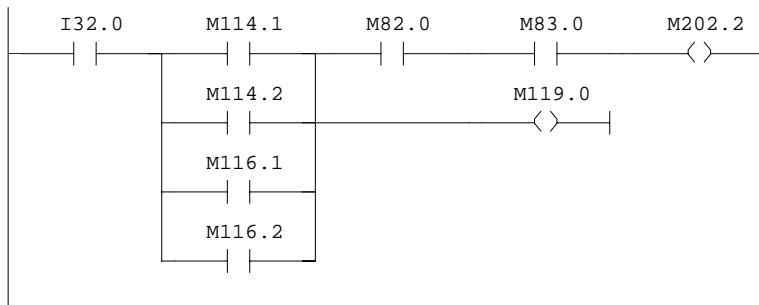
FC84 - <offline>

"ATC 1 ROTATION" ATC #1 Rotation Motor Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 03/08/01 10:30:12 AMAM
 Interface: 05/01/00 10:53:59 AMAM
Lengths (block/logic/data): 00166 00070 00002

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

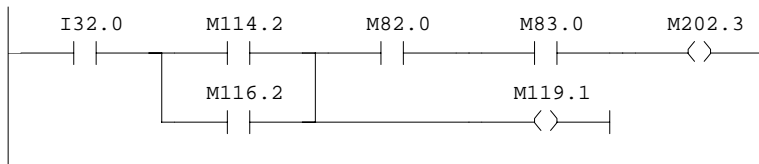
Block: FC84 Tool Magazine #1 Rotation Control

Network: 1 Tool Magazine #1 Rotation Motor

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M114.1	T MAG #1 A CW RQ	Tool Magazine #1 Auto CW Rotation Request
M114.2	T MAG #1 A CCW RQ	Tool Magazine #1 Auto CCW Rotation Request
M116.1	T MAG #1 M CW RQ	Tool Magazine #1 Manual CW Rotation Request
M116.2	T MAG #1 M CCW RQ	Tool Magazine #1 Manual Rotation Request
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
M202.2	T MAG #1 R MTR PQ	KAR11/MTR6 - Tool Magazine #1 CW/CCW Rotation Motor Peripheral Output
M119.0	T MAG #1 ROT BFR	Tool Magazine #1 Rotation Buffer

Network: 2 Tool Magazine #1 Rotation CCW Motor Select

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M114.2	T MAG #1 A CCW RQ	Tool Magazine #1 Auto CCW Rotation Request
M116.2	T MAG #1 M CCW RQ	Tool Magazine #1 Manual Rotation Request
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
M202.3	T MAG #1 CCW S PQ	KAR12/MTR6 - Tool Magazine #1 CCW Select Peripheral Output
M119.1	T MAG #1 CCW BFR	Tool Magazine #1 Rotation CCW Buffer

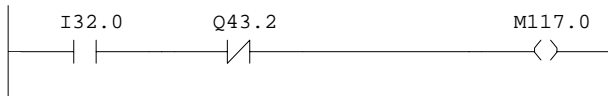
FC85 - <offline>

"ATC 1 ADV/RET" ATC #1 Advance/Retract Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 03/09/01 01:35:28 AMAM
 Interface: 12/18/99 10:58:01 PMPM
Lengths (block/logic/data): 00392 00280 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

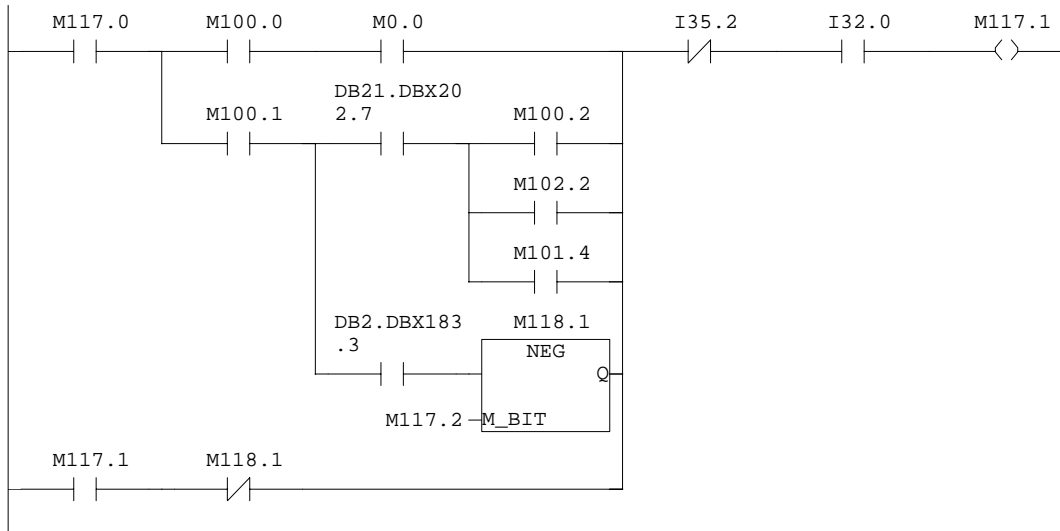
Block: FC85 Tool Magazine #1 Retract/Advance Control

Network: 1 Tool Magazine #1 Retract OK

**Symbol information**

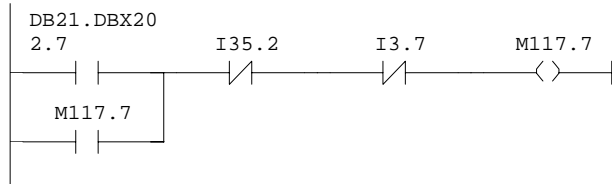
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
Q43.2 T MAG #1 ROT MTR KAR11/MTR6 - Tool Magazine #1 CW/CCW Rotation Motor
M117.0 T MAG #1 RET OK Tool Magazine #1 Retract OK

Network: 2 Tool Magazine #1 Retract Request

**Symbol information**

M117.0	T MAG #1 RET OK	Tool Magazine #1 Retract OK
M100.0	TOOL CHGE MANUAL	Tool Change Manual Operation
M0.0	OFF	Marker Always Off
M100.1	TOOL CHGE AUTO	Tool Change Automatic Operation
DB21.DBX202.7	"CHANNEL 1".MDyn[71]	
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M101.4	T MAG FCT SETUP IL	Tool Magazine Function Setup Interlock
DB2.DBX183.3	"ALARM & MESSAGE".A7000xx[27]	Alarm 700000-700063 (user area 0)
M118.1	T MAG #1 ADV REQ	Tool Magazine #1 Advance Request
M117.2	T MAG #1 E RT REM	Tool Magazine #1 Emergency Retract Remember
M117.1	T MAG #1 RET REQ	Tool Magazine #1 Retract Request
I35.2	T MAG #1 RET LS	SQL3 - Tool Magazine #1 Retract (IN) Limit
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)

Network: 3 Tool Magazine #1 Retract NC Read-In Disable

**Symbol information**

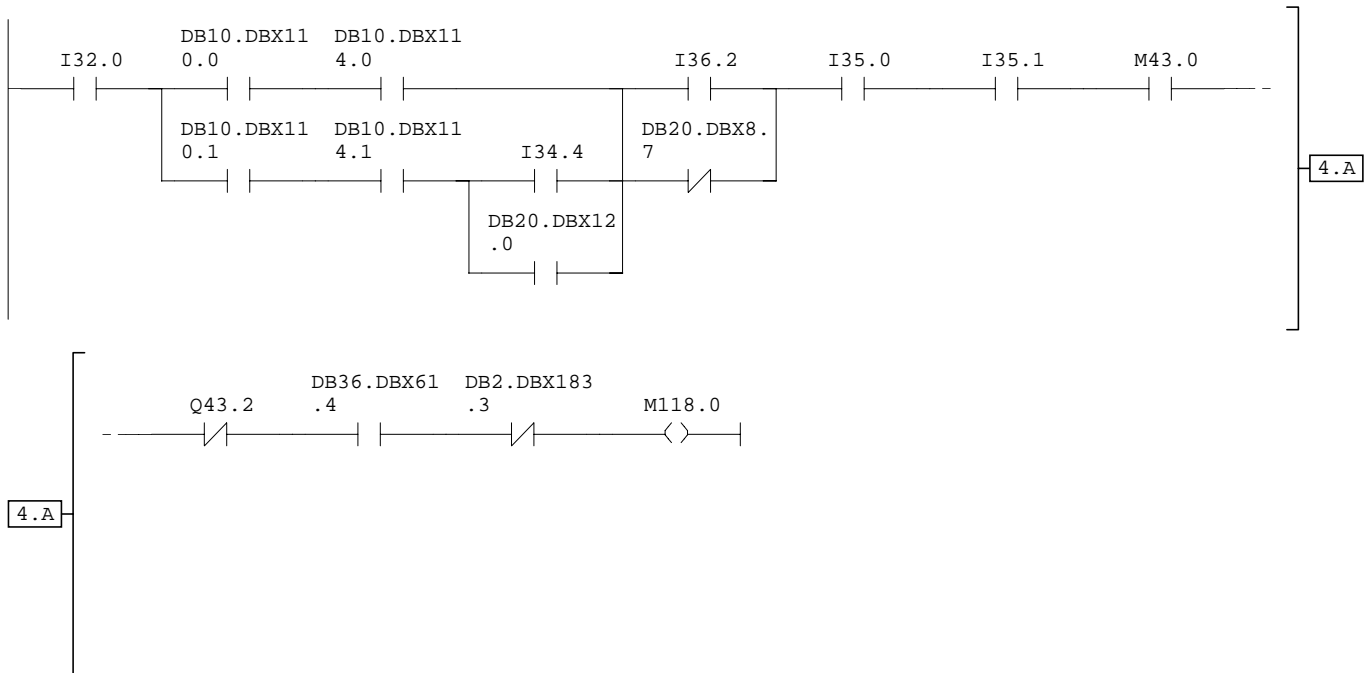
DB21.DBX202.7 "CHANNEL 1".MDyn[71]

M117.7 T MAG #1 RET RID Tool Magazine #1 Retract NC Read-In Disable

I35.2 T MAG #1 RET LS SQL3 - Tool Magazine #1 Retract (IN) Limit

I3.7 NC RESET MCP - NC Reset [K32]

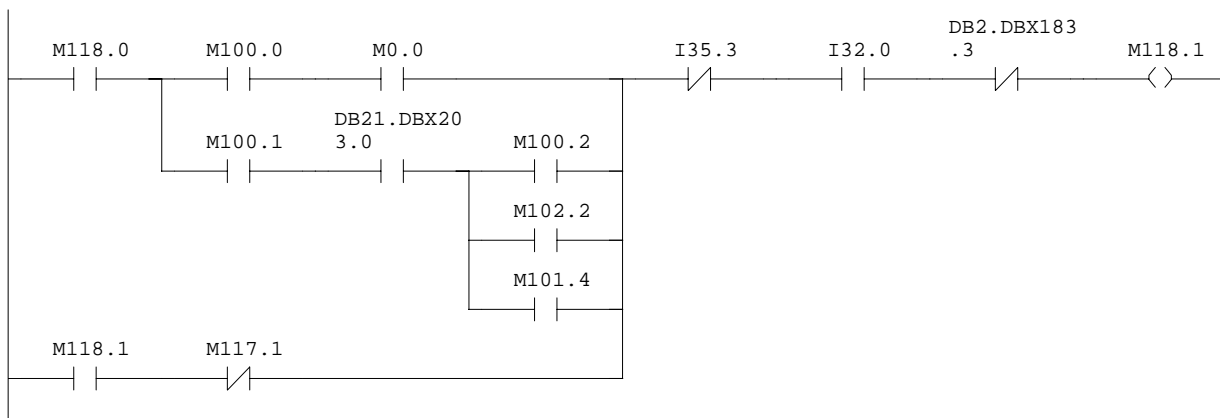
Network: 4 Tool Magazine #1 Advance OK



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB10.DBX110.0	"NC".Q_SWCamMinus[0]	
DB10.DBX114.0	"NC".Q_SWCamPlus[0]	
DB10.DBX110.1	"NC".Q_SWCamMinus[1]	
DB10.DBX114.1	"NC".Q_SWCamPlus[1]	
I34.4	Z AXIS ATC P LS	SQL5 - Z Axis ATC Position Limit
DB20.DBX12.0	"OPTIONS".Option_120	ATC Magazine Alarm Suppress for Machine Startup
I36.2	T MAG #2 RET LS	SQL20 - Tool Magazine #2 Retract (IN) Limit
DB20.DBX8.7	"OPTIONS".Option_87	2nd Tool Magazine Active
I35.0	T MAG #1 CNT 1 PX	SQLP1 - Tool Magazine #1 Rotation Count #1 Proximity
I35.1	T MAG #1 CNT 2 PX	SQLP2 - Tool Magazine #1 Rotation Count #2 Proximity
M43.0	Z AXIS IN POSN	Z Axis In Position
Q43.2	T MAG #1 ROT MTR	KAR11/MTR6 - Tool Magazine #1 CW/CCW Rotation Motor
DB36.DBX61.4	"SPINDLE".I_Stat	Axis/spindle stationary (n<nmin)
DB2.DBX183.3	"ALARM & MESSAGE".A7000xx[27]	Alarm 700000-700063 (user area 0)
M118.0	T MAG #1 ADV OK	Tool Magazine #1 Advance OK

Network: 5 Tool Magazine #1 Advance Request



Symbol information

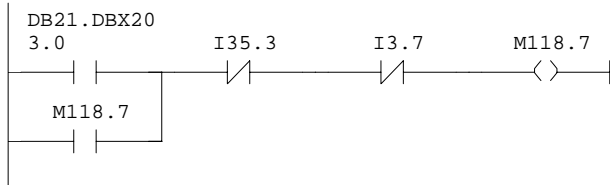
M118.0	T MAG #1 ADV OK	Tool Magazine #1 Advance OK
M100.0	TOOL CHGE MANUAL	Tool Change Manual Operation
M0.0	OFF	Marker Always Off
M100.1	TOOL CHGE AUTO	Tool Change Automatic Operation


```

DB21.DBX203.0 "CHANNEL 1".MDyn[72]
M100.2      T CHG CYC ACTIVE      Tool Change Cycle Active
M102.2      T S/U CYC ACTIVE      Tool Setup Cycle Active
M101.4      T MAG FCT SETUP IL    Tool Magazine Function Setup Interlock
M118.1      T MAG #1 ADV REQ      Tool Magazine #1 Advance Request
M117.1      T MAG #1 RET REQ      Tool Magazine #1 Retract Request
I35.3       T MAG #1 ADV LS       SQL4 - Tool Magazine #1 Advance (OUT) Limit
I32.0       MASTR ON             KAR1 - Master On (Not Emergency Stop)
DB2.DBX183.3 "ALARM & MESSAGE".A7000xx[27] Alarm 700000-700063 (user area 0)

```

Network: 6 Tool Magazine #1 Advance NC Read-In Disable



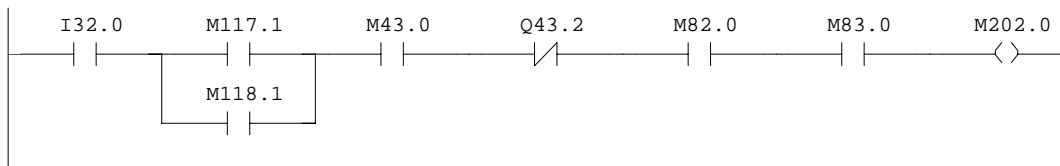
Symbol information

```

DB21.DBX203.0 "CHANNEL 1".MDyn[72]
M118.7      T MAG #1 ADV RID      Tool Magazine #1 Advance NC Read-In Disable
I35.3       T MAG #1 ADV LS       SQL4 - Tool Magazine #1 Advance (OUT) Limit
I3.7        NC RESET             MCP - NC Reset [K32]

```

Network: 7 Tool Magazine #1 Retract/Advance Motor



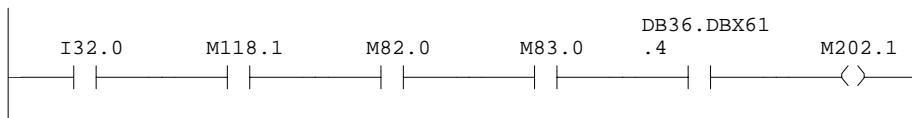
Symbol information

```

I32.0       MASTR ON             KAR1 - Master On (Not Emergency Stop)
M117.1      T MAG #1 RET REQ      Tool Magazine #1 Retract Request
M118.1      T MAG #1 ADV REQ      Tool Magazine #1 Advance Request
M43.0       Z AXIS               Z Axis In Position
Q43.2       T MAG #1 ROT MTR      KAR11/MTR6 - Tool Magazine #1 CW/CCW Rotation Motor
M82.0       M/C DOOR CLS BFR      Machine Safety Door Close Buffer
M83.0       M/C DOOR T/C INT      Machine Safety Door Tool Change Interrupt
M202.0      T MAG #1 AR MT PQ     KAR7/MTR7 - Tool Magazine #1 Advance/Retract Motor Peripheral Output

```

Network: 8 Tool Magazine #1 Advance Motor



Symbol information

```

I32.0       MASTR ON             KAR1 - Master On (Not Emergency Stop)
M118.1      T MAG #1 ADV REQ      Tool Magazine #1 Advance Request
M82.0       M/C DOOR CLS BFR      Machine Safety Door Close Buffer
M83.0       M/C DOOR T/C INT      Machine Safety Door Tool Change Interrupt
DB36.DBX61.4 "SPINDLE".I_Stat    Axis/spindle stationary (n<nmin)
M202.1      T MAG #1 AD SL PQ     KAR8/MTR7 - Tool Magazine #1 Advance Select Peripheral Output

```

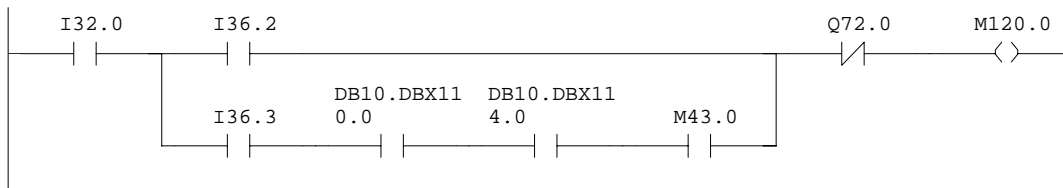
FC86 - <offline>

"ATC 2 AUTO ROTATION" ATC #2 Automatic Rotation Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 03/09/01 11:39:27 AMAM
 Interface: 05/17/00 01:42:50 PMPM
Lengths (block/logic/data): 01064 00902 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

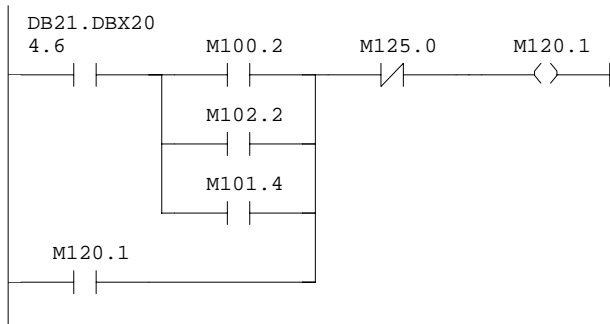
Block: FC86 Tool Magazine #2 Automatic Rotation Control

Network: 1 Tool Magazine #2 Auto Rotation OK

**Symbol information**

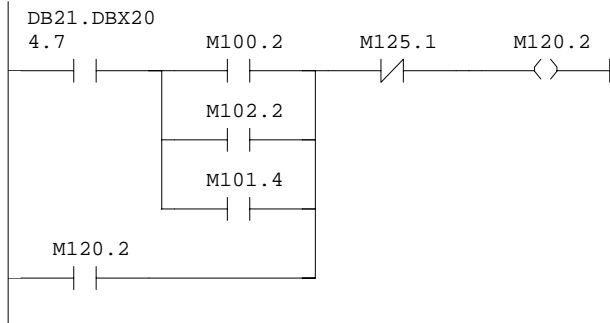
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
I36.2 T MAG #2 RET LS SQL20 - Tool Magazine #2 Retract (IN) Limit
I36.3 T MAG #2 ADV LS SQL21 - Tool Magazine #2 Advance (OUT) Limit
DB10.DBX110.0 "NC".Q_SWCamMinus[0]
DB10.DBX114.0 "NC".Q_SWCamPlus[0]
M43.0 Z AXIS IN POSN Z Axis In Position
Q72.0 T MAG #2 A/R MTR KAR7/MTR7 - Tool Magazine #2 Advance/Retract Motor
M120.0 T MAG #2 A ROT OK Tool Magazine #2 Auto Rotation OK

Network: 2 Tool Magazine #2 Auto Rotation Old Tool Active

**Symbol information**

DB21.DBX204.6 "CHANNEL 1".MDyn[86]
M100.2 T CHG CYC ACTIVE Tool Change Cycle Active
M102.2 T S/U CYC ACTIVE Tool Setup Cycle Active
M101.4 T MAG FCT SETUP IL Tool Magazine Function Setup Interlock
M120.1 T MAG #2 A RT OLD Tool Magazine #2 Auto Rotation Active for Old Tool
M125.0 T MAG #2 A R O CP Tool Magazine #2 Auto Rotation for Old Tool Complete

Network: 3 Tool Magazine #2 Auto Rotation New Tool Active

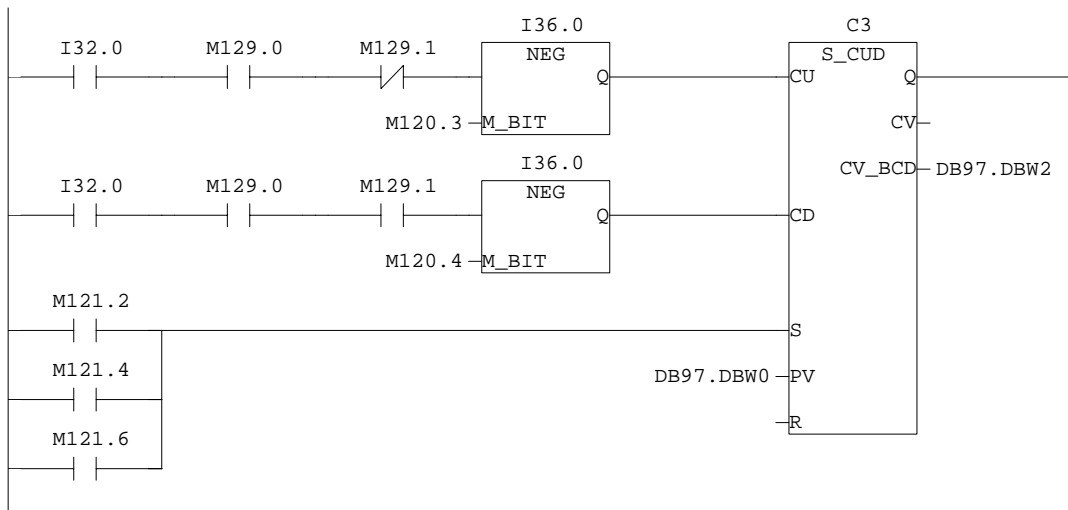


Symbol information

DB21.DBX204.7 "CHANNEL 1".MDyn[87]

M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M101.4	T MAG FCT SETUP IL	Tool Magazine Function Setup Interlock
M120.2	T MAG #2 A RT NEW	Tool Magazine #2 Auto Rotation Active for New Tool
M125.1	T MAG #2 A R N CP	Tool Magazine #2 Auto Rotation for New Tool Complete

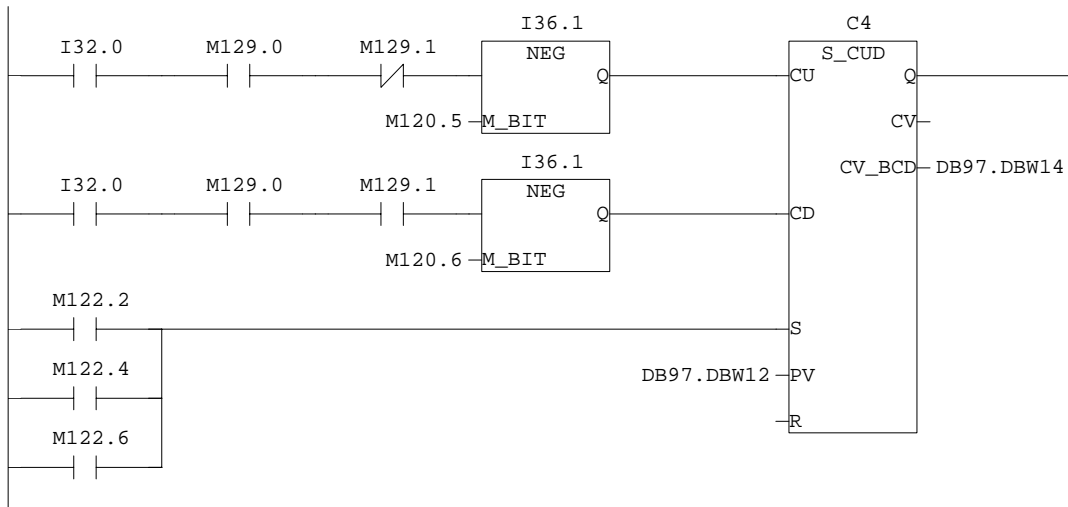
Network: 4 Tool Magazine #2 Rotation Counter #1 (Main)



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M129.0	T MAG #2 ROT BFR	Tool Magazine #2 Rotation Buffer
M129.1	T MAG #2 CCW BFR	Tool Magazine #2 Rotation CCW Buffer
I36.0	T MAG #2 CNT 1 PX	SQP3 - Tool Magazine #2 Rotation Count #1 Proximity
M120.3	T MAG #2 CW C1 RM	Tool Magazine #2 CW Count #1 Remember
M120.4	T MAG #2 CCW C1 R	Tool Magazine #2 CCW Count #1 Remember
M121.2	T MAG #2 REF1 21	Tool Magazine #2 Reference #1 to 21
M121.4	T MAG #2 C1 TO 21	Tool Magazine #2 Count Value #1 to 21
M121.6	T MAG #2 C1 TO 40	Tool Magazine #2 Count Value #1 to 40
DB97.DBW0	"ATC MAG 2 COUNT DATA".Mag_2_Count_1_Preset	Tool Magazine #2 Counter #1 Preset Value
DB97.DBW2	"ATC MAG 2 COUNT DATA".Mag_2_Count_1_BCD	Tool Magazine #2 Count #1 Value (BCD)

Network: 5 Tool Magazine #2 Rotation Counter #2 (Check)



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M129.0	T MAG #2 ROT BFR	Tool Magazine #2 Rotation Buffer
M129.1	T MAG #2 CCW BFR	Tool Magazine #2 Rotation CCW Buffer
I36.1	T MAG #2 CNT 2 PX	SQP4 - Tool Magazine #2 Rotation Count #2 Proximity
M120.5	T MAG #2 CW C2 RM	Tool Magazine #2 CW Count #2 Remember
M120.6	T MAG #2 CCW C2 R	Tool Magazine #2 CCW Count #2 Remember
M122.2	T MAG #2 REF2 21	Tool Magazine #2 Reference #2 to 21
M122.4	T MAG #2 C2 TO 21	Tool Magazine #2 Count Value #2 to 21
M122.6	T MAG #2 C2 TO 40	Tool Magazine #2 Count Value #2 to 40
DB97.DBW12	"ATC MAG 2 COUNT DATA".Mag_2_Count_2_Preset	Tool Magazine #2 Counter #2 Preset Value
DB97.DBW14	"ATC MAG 2 COUNT DATA".Mag_2_Count_2_BCD	Tool Magazine #2 Count #2 Value (BCD)

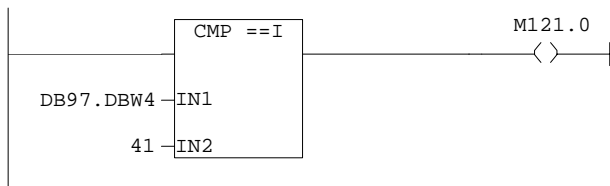
Network: 6 Tool Magazine #2 Count #1 Value BCD -> INT

L	DB97.DBW	2	"ATC MAG 2 COUNT DATA".Mag_2_Count_1_BCD -- Tool Magazine #2 Count #1 Value (BCD)
BTI			
T	DB97.DBW	4	"ATC MAG 2 COUNT DATA".Mag_2_Count_1_INT -- Tool Magazine #2 Count #1 Value (INT)
NOP	0		

Network: 7 Tool Magazine #2 Count #2 Value BCD -> INT

L	DB97.DBW	14	"ATC MAG 2 COUNT DATA".Mag_2_Count_2_BCD -- Tool Magazine #2 Count #2 Value (BCD)
BTI			
T	DB97.DBW	16	"ATC MAG 2 COUNT DATA".Mag_2_Count_2_INT -- Tool Magazine #2 Count #2 Value (INT)
NOP	0		

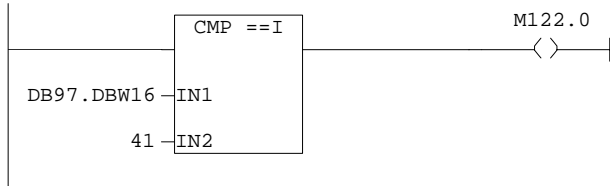
Network: 8 Tool Magazine #2 Counter #1 Value = 41



Symbol information

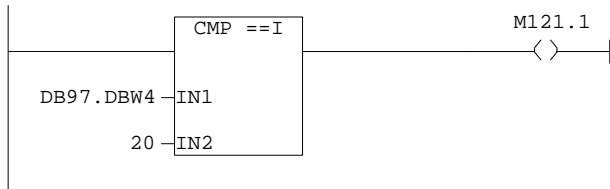
DB97.DBW4	"ATC MAG 2 COUNT DATA".Mag_2_Count_1_INT	Tool Magazine #2 Count #1 Value (INT)
M121.0	T MAG #2 C1 = 41	Tool Magazine #2 Count Value #1 = 41

Network: 9 Tool Magazine #2 Counter #2 Value = 41

**Symbol information**

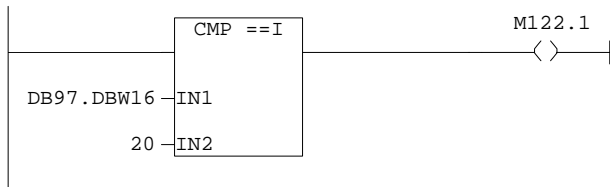
DB97.DBW16 "ATC MAG 2 COUNT DATA".Mag_2_Count_2_INT Tool Magazine #2 Count #2 Value (INT)
M122.0 T MAG #2 C2 = 41 Tool Magazine #2 Count Value #2 = 41

Network: 10 Tool Magazine #2 Counter #1 Value = 20

**Symbol information**

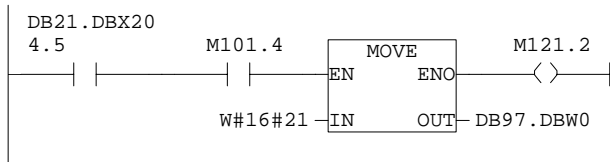
DB97.DBW4 "ATC MAG 2 COUNT DATA".Mag_2_Count_1_INT Tool Magazine #2 Count #1 Value (INT)
M121.1 T MAG #2 C1 = 20 Tool Magazine #2 Count Value #1 = 20

Network: 11 Tool Magazine #2 Counter #2 Value = 20

**Symbol information**

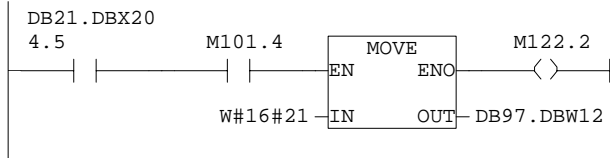
DB97.DBW16 "ATC MAG 2 COUNT DATA".Mag_2_Count_2_INT Tool Magazine #2 Count #2 Value (INT)
M122.1 T MAG #2 C2 = 20 Tool Magazine #2 Count Value #2 = 20

Network: 12 Tool Magazine #2 Counter #1 Preset to 21 (Reference)

**Symbol information**

DB21.DBX204.5 "CHANNEL 1".MDyn[85]
M101.4 T MAG FCT SETUP IL Tool Magazine Function Setup Interlock
DB97.DBW0 "ATC MAG 2 COUNT DATA".Mag_2_Count_1_Preset Tool Magazine #2 Counter #1 Preset Value
M121.2 T MAG #2 REF1 21 Tool Magazine #2 Reference #1 to 21

Network: 13 Tool Magazine #2 Counter #2 Preset to 21 (Reference)



Symbol information

DB21.DBX204.5 "CHANNEL 1".MDyn[85]

M101.4 T MAG FCT SETUP IL

Tool Magazine Function Setup Interlock

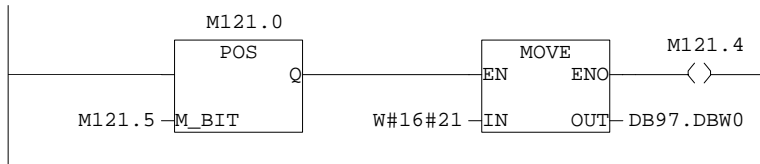
DB97.DBW12 "ATC MAG 2 COUNT DATA".Mag_2_Count_2_Preset

Tool Magazine #2 Counter #2 Preset Value

M122.2 T MAG #2 REF2 21

Tool Magazine #2 Reference #2 to 21

Network: 14 Tool Magazine #2 Counter #1 Rollover 41 -> 21



Symbol information

M121.0 T MAG #2 C1 = 41

Tool Magazine #2 Count Value #1 = 41

M121.5 T MAG #2 C1 1 REM

Tool Magazine #2 Count Value #1 to 21 Remember

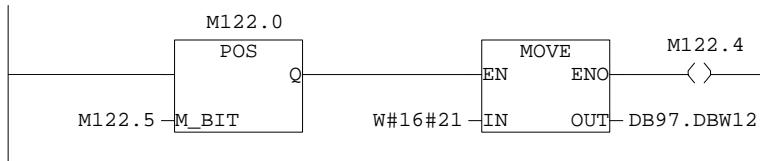
DB97.DBW0 "ATC MAG 2 COUNT DATA".Mag_2_Count_1_Preset

Tool Magazine #2 Counter #1 Preset Value

M121.4 T MAG #2 C1 TO 21

Tool Magazine #2 Count Value #1 to 21

Network: 15 Tool Magazine #2 Counter #2 Rollover 41 -> 21



Symbol information

M122.0 T MAG #2 C2 = 41

Tool Magazine #2 Count Value #2 = 41

M122.5 T MAG #2 C2 21 REM

Tool Magazine #2 Count Value #2 to 21 Remember

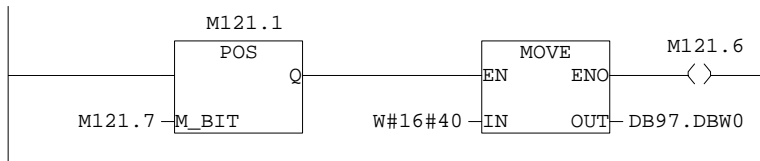
DB97.DBW12 "ATC MAG 2 COUNT DATA".Mag_2_Count_2_Preset

Tool Magazine #2 Counter #2 Preset Value

M122.4 T MAG #2 C2 TO 21

Tool Magazine #2 Count Value #2 to 21

Network: 16 Tool Magazine #2 Counter #1 Rollover 20 -> 40



Symbol information

M121.1 T MAG #2 C1 = 20

Tool Magazine #2 Count Value #1 = 20

M121.7 T MAG #2 C2 40 RM

Tool Magazine #2 Count Value #1 to 40 Remember

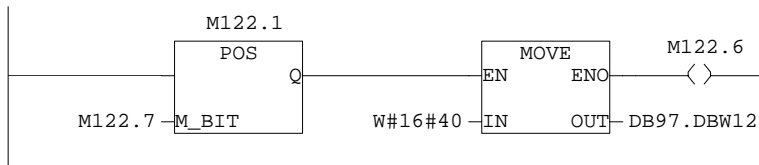
DB97.DBW0 "ATC MAG 2 COUNT DATA".Mag_2_Count_1_Preset

Tool Magazine #2 Counter #1 Preset Value

M121.6 T MAG #2 C1 TO 40

Tool Magazine #2 Count Value #1 to 40

Network: 17 Tool Magazine #2 Counter #2 Rollover 20 -> 40



Symbol information

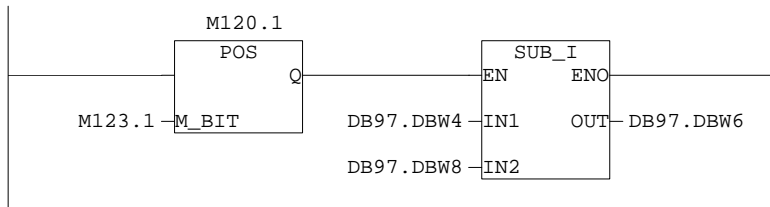
M122.1	T MAG #2	C2 = 20	Tool Magazine #2 Count Value #2 = 20
M122.7	T MAG #2	C1 40 RM	Tool Magazine #2 Count Value #2 to 40 Remember
DB97.DBW12	"ATC MAG 2 COUNT DATA".Mag_2_Count_2_Preset		Tool Magazine #2 Counter #2 Preset Value
M122.6	T MAG #2	C2 TO 40	Tool Magazine #2 Count Value #2 to 40

Network: 18 Transfer Tool Management Data to Buffer

AN	DB21.DBX	202.1	"CHANNEL 1".MDyn[65]	--
JC	END			
L	DB72.DBW	30	"TM SPINDLE DATA".IF[1].TLoc -- Location no. (target) for old tool	
T	DB97.DBW	8	"ATC MAG 2 COUNT DATA".DB72_DBW30_Buffer_2 -- Tool Management Old Tool Location Buffer Magazine #2	
L	DB72.DBW	26	"TM SPINDLE DATA".IF[1].SLoc -- Location no. (source) for new tool	
T	DB97.DBW	10	"ATC MAG 2 COUNT DATA".DB72_DBW26_Buffer_2 -- Tool Management New Tool Location Buffer Magazine #2	

END: NOP 0

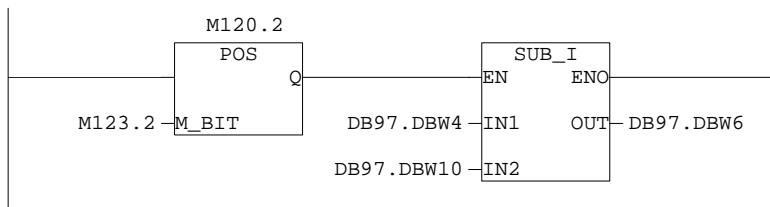
Network: 19 Tool Magazine #2 Difference for Old Tool = Actual - Old Nominal



Symbol information

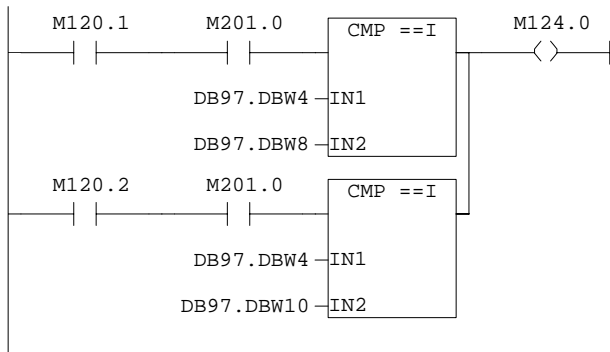
M120.1	T MAG #2	A RT OLD	Tool Magazine #2 Auto Rotation Active for Old Tool
M123.1	T MAG #2	A RO REM	Tool Magazine #2 Auto Rotation Active for Old Tool Remember
DB97.DBW4	"ATC MAG 2 COUNT DATA".Mag_2_Count_1_INT		Tool Magazine #2 Count #1 Value (INT)
DB97.DBW8	"ATC MAG 2 COUNT DATA".DB72_DBW30_Buffer_2		Tool Management Old Tool Location Buffer Magazine #2
DB97.DBW6	"ATC MAG 2 COUNT DATA".Mag_2_Diff		Tool Magazine #2 Difference (Actual - Nominal)

Network: 20 Tool Magazine #2 Difference for New Tool = Actual - New Nominal

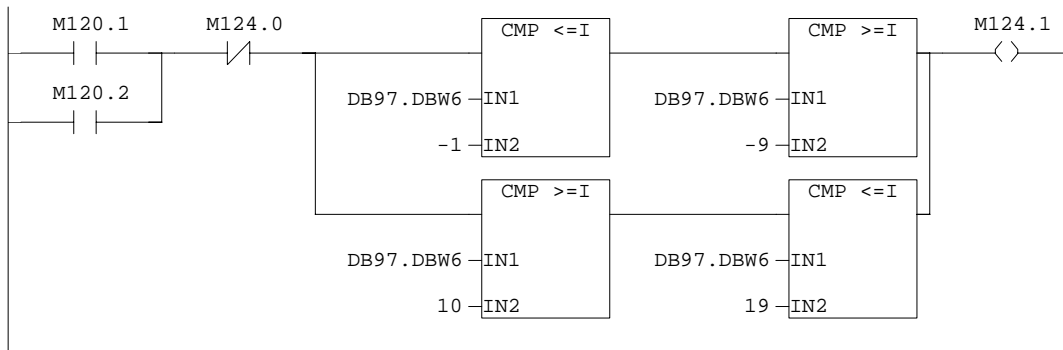


Symbol information

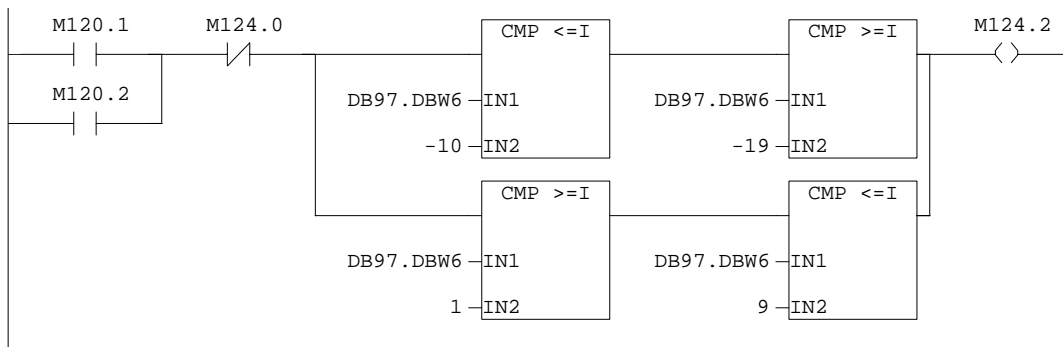
M120.2	T MAG #2	A RT NEW	Tool Magazine #2 Auto Rotation Active for New Tool
M123.2	T MAG #2	A RN REM	Tool Magazine #2 Auto Rotation Active for New Tool Remember
DB97.DBW4	"ATC MAG 2 COUNT DATA".Mag_2_Count_1_INT		Tool Magazine #2 Count #1 Value (INT)
DB97.DBW10	"ATC MAG 2 COUNT DATA".DB72_DBW26_Buffer_2		Tool Management New Tool Location Buffer Magazine #2
DB97.DBW6	"ATC MAG 2 COUNT DATA".Mag_2_Diff		Tool Magazine #2 Difference (Actual - Nominal)

Network: 21 Tool Magazine #2 In Position (Nominal = Actual)

Symbol information

M120.1	T MAG #2	A RT OLD	Tool Magazine #2 Auto Rotation Active for Old Tool
M201.0	T MAG #2	C1 PX PI	SQP3 - Tool Magazine #2 Rotation Count #1 Proximity Peripheral Input
DB97.DBW4	"ATC MAG 2 COUNT DATA".Mag_2_Count_1_INT		Tool Magazine #2 Count #1 Value (INT)
DB97.DBW8	"ATC MAG 2 COUNT DATA".DB72_DBW30_Buffer_2		Tool Management Old Tool Location Buffer Magazine #2
M120.2	T MAG #2	A RT NEW	Tool Magazine #2 Auto Rotation Active for New Tool
DB97.DBW10	"ATC MAG 2 COUNT DATA".DB72_DBW26_Buffer_2		Tool Management New Tool Location Buffer Magazine #2
M124.0	T MAG #2	ACT=NOM	Tool Magazine #2 Actual = Nominal Value

Network: 22 Tool Magazine #2 CW Auto Rotation Request

Symbol information

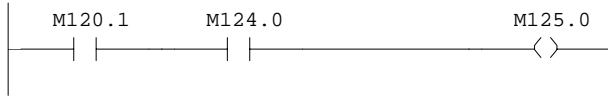
M120.1	T MAG #2	A RT OLD	Tool Magazine #2 Auto Rotation Active for Old Tool
M120.2	T MAG #2	A RT NEW	Tool Magazine #2 Auto Rotation Active for New Tool
M124.0	T MAG #2	ACT=NOM	Tool Magazine #2 Actual = Nominal Value
DB97.DBW6	"ATC MAG 2 COUNT DATA".Mag_2_Diff		Tool Magazine #2 Difference (Actual - Nominal)
M124.1	T MAG #2	A CW RQ	Tool Magazine #2 Auto CW Rotation Request

Network: 23 Tool Magazine #2 CCW Auto Rotation Request


Symbol information

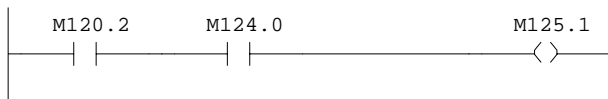
M120.1	T MAG #2	A RT OLD	Tool Magazine #2 Auto Rotation Active for Old Tool
M120.2	T MAG #2	A RT NEW	Tool Magazine #2 Auto Rotation Active for New Tool
M124.0	T MAG #2	ACT=NOM	Tool Magazine #2 Actual = Nominal Value
DB97.DBW6	"ATC MAG 2 COUNT DATA".Mag_2_Diff		Tool Magazine #2 Difference (Actual - Nominal)
M124.2	T MAG #2	A CCW RQ	Tool Magazine #2 Auto CCW Rotation Request

Network: 24	Tool Magazine #2 Auto Rotation Old Tool Complete
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**Symbol information**

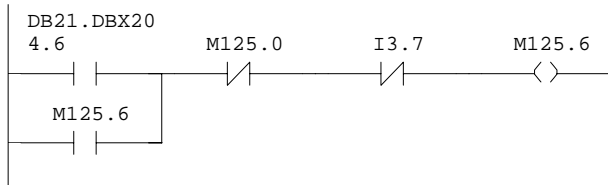
M120.1	T MAG #2	A RT OLD	Tool Magazine #2 Auto Rotation Active for Old Tool
M124.0	T MAG #2	ACT=NOM	Tool Magazine #2 Actual = Nominal Value
M125.0	T MAG #2	A R O CP	Tool Magazine #2 Auto Rotation for Old Tool Complete

Network: 25	Tool Magazine #2 Auto Rotation New Tool Complete
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**Symbol information**

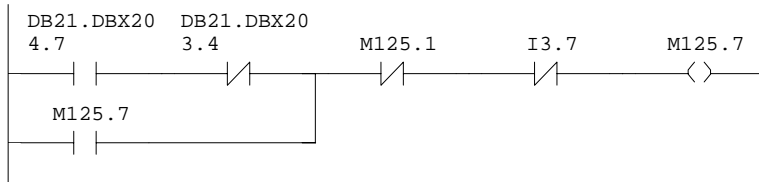
M120.2	T MAG #2	A RT NEW	Tool Magazine #2 Auto Rotation Active for New Tool
M124.0	T MAG #2	ACT=NOM	Tool Magazine #2 Actual = Nominal Value
M125.1	T MAG #2	A R N CP	Tool Magazine #2 Auto Rotation for New Tool Complete

Network: 26	Tool Magazine #2 Auto Rotation Old Tool NC Read-In Disable
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**Symbol information**

DB21.DBX204.6	"CHANNEL 1".MDyn[86]		
M125.6	T MAG #2	R O RID	Tool Magazine #2 Auto Rotation for Old Tool NC Read-In Disable
M125.0	T MAG #2	A R O CP	Tool Magazine #2 Auto Rotation for Old Tool Complete
I3.7	NC RESET		MCP - NC Reset [K32]

Network: 27	Tool Magazine #2 Auto Rotation New Tool NC Read-In Disable
-------------	--

**Symbol information**

DB21.DBX204.7	"CHANNEL 1".MDyn[87]		
DB21.DBX203.4	"CHANNEL 1".MDyn[76]		
M125.7	T MAG #2	R N RID	Tool Magazine #2 Auto Rotation for New Tool NC Read-In Disable
M125.1	T MAG #2	A R N CP	Tool Magazine #2 Auto Rotation for New Tool Complete
I3.7	NC RESET		MCP - NC Reset [K32]

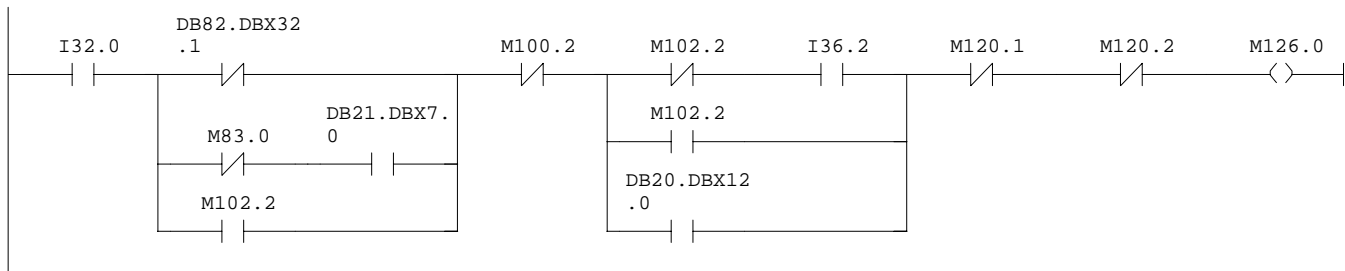
FC87 - <offline>

"ATC 2 MAN ROTATION" ATC #2 Manual Rotation Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 03/12/01 09:26:51 AMAM
 Interface: 11/16/99 02:14:04 PMPM
Lengths (block/logic/data): 00282 00178 00000

Address	Declaration	Name	Type	Start value	Comment
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	out				
	in_out				
	temp				

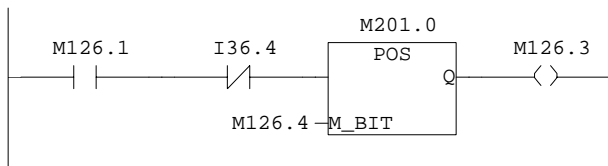
Block: FC87 Tool Magazine #2 Manual Rotation Control

Network: 1 Tool Magazine #2 Manual Rotation OK

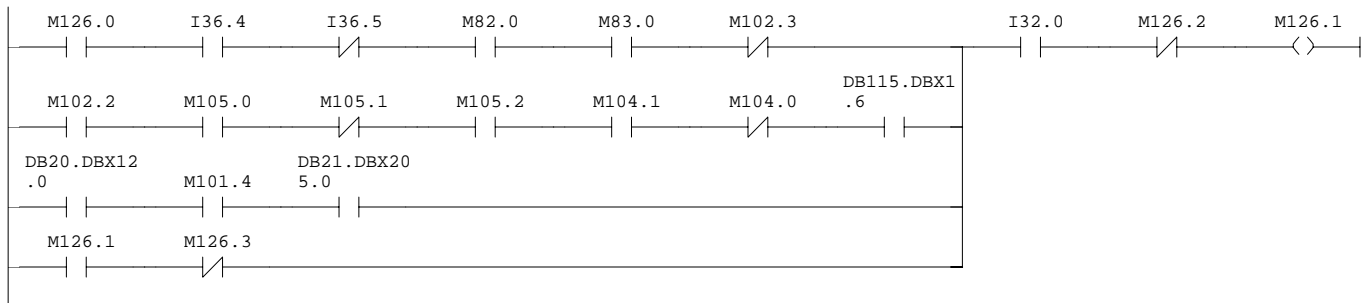
**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB82.DBX32.1	"SPS".CMM_OUT.base_sig.nc_cycle_activ	
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
DB21.DBX7.0	"CHANNEL 1".Q_NCstartDisabl	NC start disable
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
I36.2	T MAG #2 RET LS	SQL20 - Tool Magazine #2 Retract (IN) Limit
DB20.DBX12.0	"OPTIONS".Option_120	ATC Magazine Alarm Suppress for Machine Startup
M120.1	T MAG #2 A RT OLD	Tool Magazine #2 Auto Rotation Active for Old Tool
M120.2	T MAG #2 A RT NEW	Tool Magazine #2 Auto Rotation Active for New Tool
M126.0	T MAG #2 M ROT OK	Tool Magazine #2 Manual Rotation OK

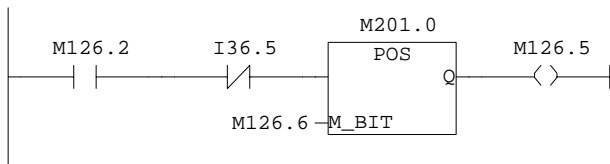
Network: 2 Tool Magazine #2 CW Manual Rotation Complete

**Symbol information**

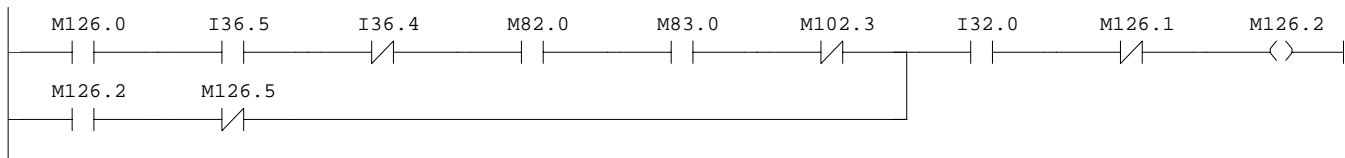
M126.1	T MAG #2 M CW RQ	Tool Magazine #2 Manual CW Rotation Request
I36.4	T MAG #2 J CW PB	SBP50 - Tool Magazine #2 Jog CW Pushbutton
M201.0	T MAG #2 C1 PX PI	SQL3 - Tool Magazine #2 Rotation Count #1 Proximity Peripheral Input
M126.4	T MAG #2 M CW RM	Tool Magazine #2 Manual CW Rotation Complete Remember
M126.3	T MAG #2 M CW CP	Tool Magazine #2 Manual CW Rotation Complete

Network: 3 Tool Magazine #2 CW Manual Rotation Request Buffer

Symbol information

M126.0	T MAG #2	M ROT OK	Tool Magazine #2 Manual Rotation OK
I36.4	T MAG #2	J CW PB	SBP50 - Tool Magazine #2 Jog CW Pushbutton
I36.5	T MAG #2	J CCW PB	SBP51 - Tool Magazine #2 Jog CCW Pushbutton
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
M83.0	M/C DOOR	T/C INT	Machine Safety Door Tool Change Interrupt
M102.3	T S/U OPR	ACTIVE	Tool Setup Operation Active
M102.2	T S/U CYC	ACTIVE	Tool Setup Cycle Active
M105.0	T S/U CYC	T/T ACT	Tool Setup Cycle Tool to Tool Active
M105.1	T S/U CYC	T/M ACT	Tool Setup Cycle Tool to Magazine Active
M105.2	T S/U CYC	1ST T LD	Tool Setup Cycle 1st Selected Tool Loaded
M104.1	T S/U CYC	MAG #2	Tool Setup Cycle Magazine #2
M104.0	T S/U CYC	MAG #1	Tool Setup Cycle Magazine #1
DB115.DBX1.6	"EXTENDED M/H CODES".Extended_M106		Channel 1 Extended Decoding for M106
DB20.DBX12.0	"OPTIONS".Option_120		ATC Magazine Alarm Suppress for Machine Startup
M101.4	T MAG FCT	SETUP IL	Tool Magazine Function Setup Interlock
DB21.DBX205.0	"CHANNEL 1".MDyn[88]		
M126.1	T MAG #2	M CW RQ	Tool Magazine #2 Manual CW Rotation Request
M126.3	T MAG #2	M CW CP	Tool Magazine #2 Manual CW Rotation Complete
I32.0	MASTR ON		KAR1 - Master On (Not Emergency Stop)
M126.2	T MAG #2	M CCW RQ	Tool Magazine #2 Manual Rotation Request

Network: 4 Tool Magazine #2 CCW Manual Rotation Complete

Symbol information

M126.2	T MAG #2	M CCW RQ	Tool Magazine #2 Manual Rotation Request
I36.5	T MAG #2	J CCW PB	SBP51 - Tool Magazine #2 Jog CCW Pushbutton
M201.0	T MAG #2	C1 PX PI SQP3	- Tool Magazine #2 Rotation Count #1 Proximity Peripheral Input
M126.6	T MAG #2	M CCW RM	Tool Magazine #2 Manual CCW Rotation Complete Remember
M126.5	T MAG #2	M CCW CP	Tool Magazine #2 Manual CCW Rotation Complete

Network: 5 Tool Magazine #2 CCW Manual Rotation Request Buffer

Symbol information

M126.0	T MAG #2	M ROT OK	Tool Magazine #2 Manual Rotation OK
I36.5	T MAG #2	J CCW PB	SBP51 - Tool Magazine #2 Jog CCW Pushbutton
I36.4	T MAG #2	J CW PB	SBP50 - Tool Magazine #2 Jog CW Pushbutton
M82.0	M/C DOOR	CLS BFR	Machine Safety Door Close Buffer
M83.0	M/C DOOR	T/C INT	Machine Safety Door Tool Change Interrupt
M102.3	T S/U OPR	ACTIVE	Tool Setup Operation Active
M126.2	T MAG #2	M CCW RQ	Tool Magazine #2 Manual Rotation Request

M126.5 T MAG #2 M CCW CP Tool Magazine #2 Manual CCW Rotation Complete
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
M126.1 T MAG #2 M CW RQ Tool Magazine #2 Manual CW Rotation Request

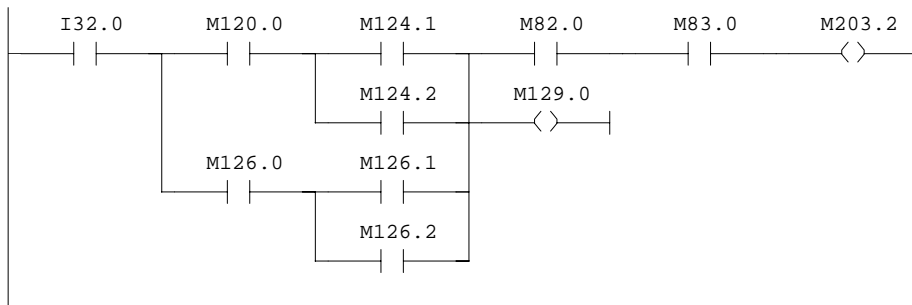
FC88 - <offline>

"ATC 2 ROTATION" ATC #2 Rotation Motor Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 2
Time stamp Code: 03/09/01 11:45:35 AMAM
Interface: 05/01/00 10:53:59 AMAM
Lengths (block/logic/data): 00184 00090 00002

Address	Declaration	Name	Type	Start value	Comment
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	out				
	in_out				
	temp				

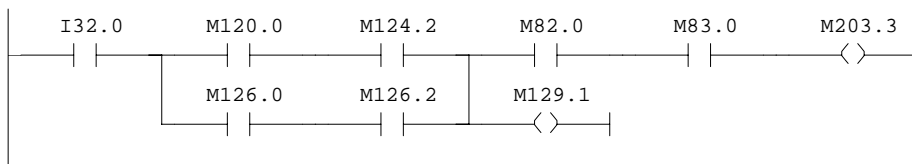
Block: FC88 Tool Magazine #2 Rotation Control

Network: 1 Tool Magazine #2 Rotation Motor

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M120.0	T MAG #2 A ROT OK	Tool Magazine #2 Auto Rotation OK
M124.1	T MAG #2 A CW RQ	Tool Magazine #2 Auto CW Rotation Request
M124.2	T MAG #2 A CCW RQ	Tool Magazine #2 Auto CCW Rotation Request
M126.0	T MAG #2 M ROT OK	Tool Magazine #2 Manual Rotation OK
M126.1	T MAG #2 M CW RQ	Tool Magazine #2 Manual CW Rotation Request
M126.2	T MAG #2 M CCW RQ	Tool Magazine #2 Manual Rotation Request
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
M203.2	T MAG #2 R MTR PQ	KAR11/MTR6 - Tool Magazine #2 CW/CCW Rotation Motor Peripheral Output
M129.0	T MAG #2 ROT BFR	Tool Magazine #2 Rotation Buffer

Network: 2 Tool Magazine #2 Rotation CCW Motor Select

**Symbol information**

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M120.0	T MAG #2 A ROT OK	Tool Magazine #2 Auto Rotation OK
M124.2	T MAG #2 A CCW RQ	Tool Magazine #2 Auto CCW Rotation Request
M126.0	T MAG #2 M ROT OK	Tool Magazine #2 Manual Rotation OK
M126.2	T MAG #2 M CCW RQ	Tool Magazine #2 Manual Rotation Request
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
M203.3	T MAG #2 CCW S PQ	KAR12/MTR6 - Tool Magazine #2 CCW Select Peripheral Output
M129.1	T MAG #2 CCW BFR	Tool Magazine #2 Rotation CCW Buffer

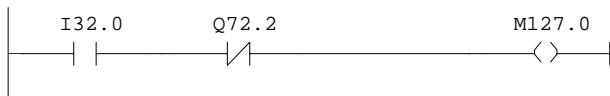
FC89 - <offline>

"ATC 2 ADV/RET" ATC #2 Advance/Retract Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 03/09/01 11:50:52 AMAM
 Interface: 12/18/99 10:58:01 PMPM
Lengths (block/logic/data): 00382 00270 00000

Address	Declaration	Name	Type	Start value	Comment
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	out				
	in_out				
	temp				

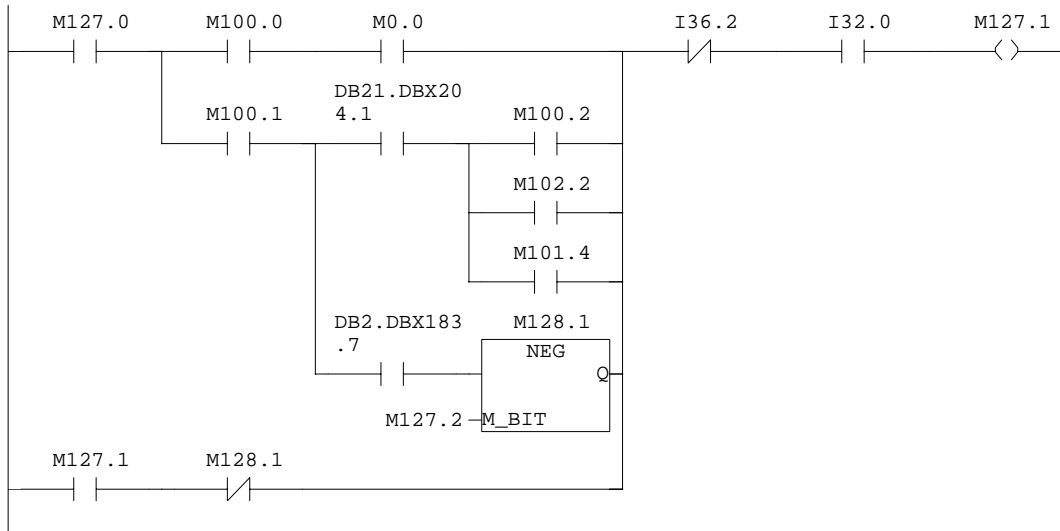
Block: FC89 Tool Magazine #2 Retract/Advance Control

Network: 1 Tool Magazine #2 Retract OK

**Symbol information**

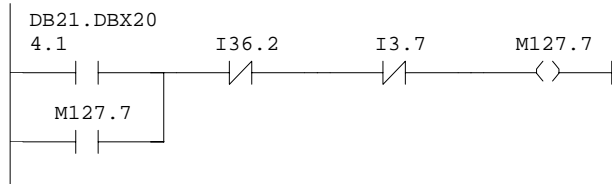
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
Q72.2 T MAG #2 ROT MTR KAR11/MTR6 - Tool Magazine #2 CW/CCW Rotation Motor
M127.0 T MAG #2 RET OK Tool Magazine #2 Retract OK

Network: 2 Tool Magazine #2 Retract Request

**Symbol information**

M127.0	T MAG #2 RET OK	Tool Magazine #2 Retract OK
M100.0	TOOL CHGE MANUAL	Tool Change Manual Operation
M0.0	OFF	Marker Always Off
M100.1	TOOL CHGE AUTO	Tool Change Automatic Operation
DB21.DBX204.1	"CHANNEL 1".MDyn[81]	
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M101.4	T MAG FCT SETUP IL	Tool Magazine Function Setup Interlock
DB2.DBX183.7	"ALARM & MESSAGE".A7000xx[31]	Alarm 700000-700063 (user area 0)
M128.1	T MAG #2 ADV REQ	Tool Magazine #2 Advance Request
M127.2	T MAG #2 E RT REM	Tool Magazine #2 Emergency Retract Remember
M127.1	T MAG #2 RET REQ	Tool Magazine #2 Retract Request
I36.2	T MAG #2 RET LS	SQL20 - Tool Magazine #2 Retract (IN) Limit
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)

Network: 3 Tool Magazine #2 Retract NC Read-In Disable

**Symbol information**

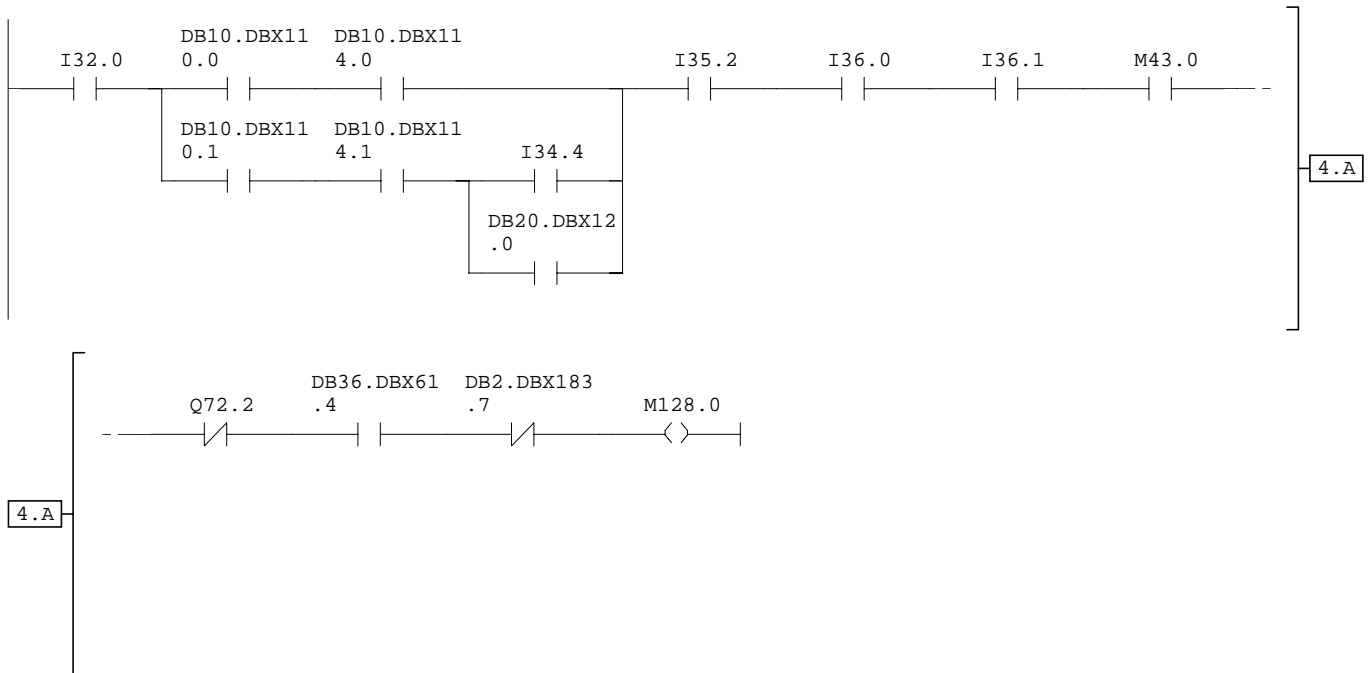
DB21.DBX204.1 "CHANNEL 1".MDyn[81]

M127.7 T MAG #2 RET RID Tool Magazine #2 Retract NC Read-In Disable

I36.2 T MAG #2 RET LS SQL20 - Tool Magazine #2 Retract (IN) Limit

I3.7 NC RESET MCP - NC Reset [K32]

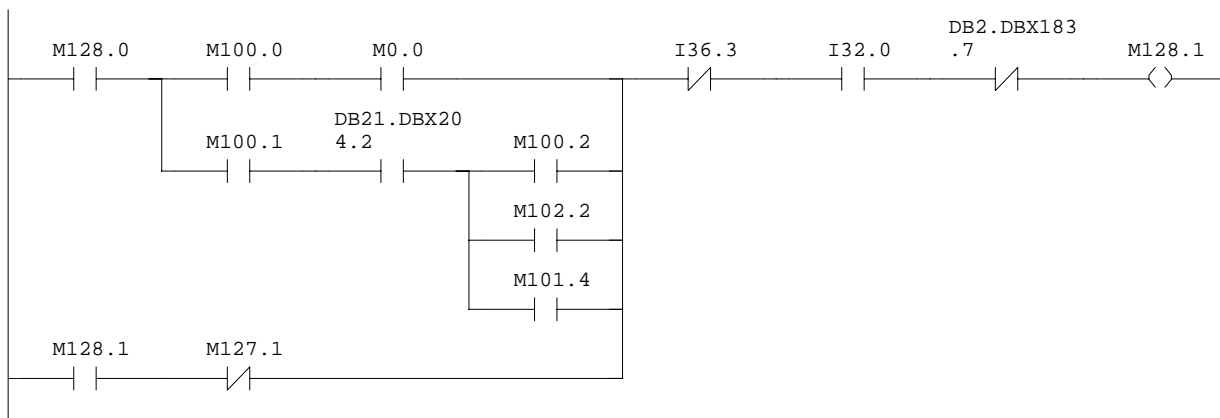
Network: 4 Tool Magazine #2 Advance OK



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB10.DBX110.0	"NC".Q_SWCamMinus[0]	
DB10.DBX114.0	"NC".Q_SWCamPlus[0]	
DB10.DBX110.1	"NC".Q_SWCamMinus[1]	
DB10.DBX114.1	"NC".Q_SWCamPlus[1]	
I34.4	Z AXIS ATC P LS	SQL5 - Z Axis ATC Position Limit
DB20.DBX12.0	"OPTIONS".Option_120	ATC Magazine Alarm Suppress for Machine Startup
I35.2	T MAG #1 RET LS	SQL3 - Tool Magazine #1 Retract (IN) Limit
I36.0	T MAG #2 CNT 1 PX	SQL3 - Tool Magazine #2 Rotation Count #1 Proximity
I36.1	T MAG #2 CNT 2 PX	SQL4 - Tool Magazine #2 Rotation Count #2 Proximity
M43.0	Z AXIS IN POSN	Z Axis In Position
Q72.2	T MAG #2 ROT MTR	KAR11/MTR6 - Tool Magazine #2 CW/CCW Rotation Motor
DB36.DBX61.4	"SPINDLE".I_Stat	Axis/spindle stationary (n<nmin)
DB2.DBX183.7	"ALARM & MESSAGE".A7000xx[31]	Alarm 700000-700063 (user area 0)
M128.0	T MAG #2 ADV OK	Tool Magazine #2 Advance OK

Network: 5 Tool Magazine #2 Advance Request

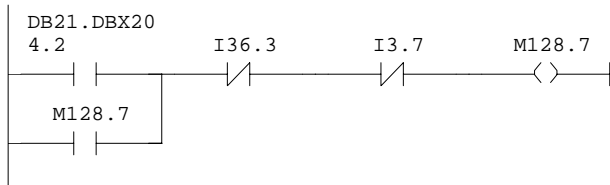


Symbol information

M128.0	T MAG #2 ADV OK	Tool Magazine #2 Advance OK
M100.0	TOOL CHGE MANUAL	Tool Change Manual Operation
M0.0	OFF	Marker Always Off
M100.1	TOOL CHGE AUTO	Tool Change Automatic Operation
DB21.DBX204.2	"CHANNEL 1".MDyn[82]	

M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M101.4	T MAG FCT SETUP IL	Tool Magazine Function Setup Interlock
M128.1	T MAG #2 ADV REQ	Tool Magazine #2 Advance Request
M127.1	T MAG #2 RET REQ	Tool Magazine #2 Retract Request
I36.3	T MAG #2 ADV LS	SQL21 - Tool Magazine #2 Advance (OUT) Limit
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
DB2.DBX183.7	"ALARM & MESSAGE".A7000xx[31]	Alarm 700000-700063 (user area 0)

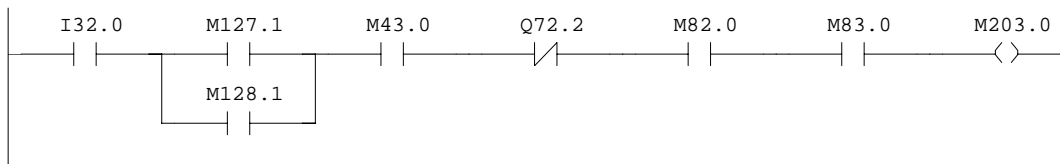
Network: 6 Tool Magazine #2 Advance NC Read-In Disable



Symbol information

DB21.DBX204.2	"CHANNEL 1".MDyn[82]	
M128.7	T MAG #2 ADV RID	Tool Magazine #2 Advance NC Read-In Disable
I36.3	T MAG #2 ADV LS	SQL21 - Tool Magazine #2 Advance (OUT) Limit
I3.7	NC RESET	MCP - NC Reset [K32]

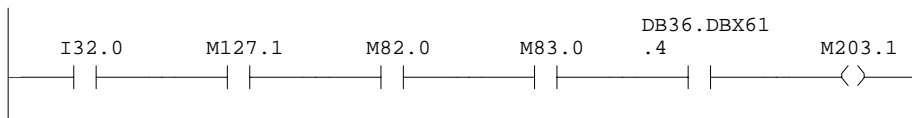
Network: 7 Tool Magazine #2 Retract/Advance Motor



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M127.1	T MAG #2 RET REQ	Tool Magazine #2 Retract Request
M128.1	T MAG #2 ADV REQ	Tool Magazine #2 Advance Request
M43.0	Z AXIS IN POSN	Z Axis In Position
Q72.2	T MAG #2 ROT MTR	KAR11/MTR6 - Tool Magazine #2 CW/CCW Rotation Motor
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
M203.0	T MAG #2 AR MT PQ	KAR7/MTR7 - Tool Magazine #2 Advance/Retract Motor Peripheral Output

Network: 8 Tool Magazine #2 Retract Motor



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M127.1	T MAG #2 RET REQ	Tool Magazine #2 Retract Request
M82.0	M/C DOOR CLS BFR	Machine Safety Door Close Buffer
M83.0	M/C DOOR T/C INT	Machine Safety Door Tool Change Interrupt
DB36.DBX61.4	"SPINDLE".I_Stat	Axis/spindle stationary (n<nmin)
M203.1	T MAG #2 RT MT PQ	KAR8/MTR7 - Tool Magazine #2 Retract Select Peripheral Output

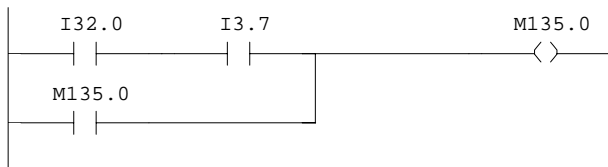
FC91 - <offline>

"ASUP CONTROL" ASUP Setup & Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 2
Time stamp Code: 02/10/01 02:38:36 AMAM
Interface: 01/19/00 10:17:52 AMAM
Lengths (block/logic/data): 00488 00352 00008

Address	Declaration	Name	Type	Start value	Comment
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	out				
	in_out				
	temp				

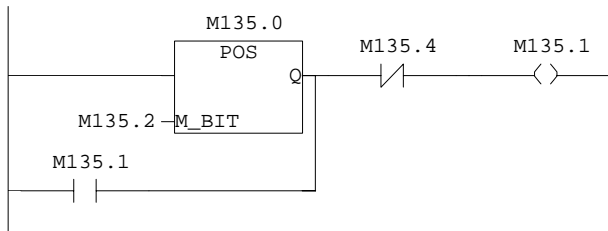
Block: FC91 ASUP Interrupt Setup & Run

Network: 1 NC Reset Latch

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
 I3.7 NC RESET MCP - NC Reset [K32]
 M135.0 PI SERV ASUP LAT PI Services ASUP Interrupt Setup Latch

Network: 2 PI Services (FB4) Request

**Symbol information**

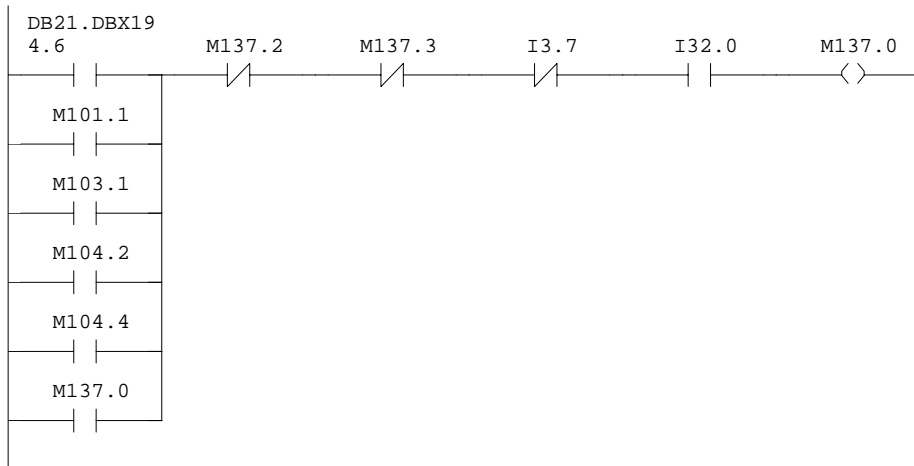
M135.0 PI SERV ASUP LAT PI Services ASUP Interrupt Setup Latch
 M135.2 PI SERV ASUP R R PI Services ASUP Interrupt Setup Request Remember
 M135.1 PI SERV ASUP REQ PI Services ASUP Interrupt Setup Request
 M135.4 PI SERV ASUP CMP PI Services ASUP Interrupt Setup Interrupt 8 Complete

Network: 3 PI Services (FB4) for Tool Change Program (Int 8)

```

CALL FB 4, DB90 "PI SERVICES 1" -- PI Services 1 [System]
Req :=M135.1 "PI SERV ASUP REQ" -- PI Services ASUP Interrupt Setup Request
PIService:="PI".ASUP P#DB16.DBX18.0 --
Unit :=1
Addr1 := "ASUP PGM".ASUP_Path P#DB91.DBX0.0 -- ASUP Program Path
Addr2 := "ASUP PGM".Tool_Change P#DB91.DBX34.0 -- Tool Change Part Program
Addr3 :=
Addr4 :=
WVar1 :=W#16#8
WVar2 :=W#16#1
WVar3 :=W#16#0
WVar4 :=W#16#0
WVar5 :=
WVar6 :=
WVar7 :=
WVar8 :=
WVar9 :=
WVar10 :=
  
```

Error	:=M135.3	"PI SERV ASUP ERR"	-- PI Services ASUP Interrupt Setup Interrup
Done	:=M135.4	t 8 Error "PI SERV ASUP CMP"	-- PI Services ASUP Interrupt Setup Interrup
State	:=DB91.DBW70	t 8 Complete "ASUP PGM".State_Int_8	-- State of FB4 for ASUP Interrupt Assign 8

Network: 4 ASUP Program Call Request

Symbol information

DB21.DBX194.6	"CHANNEL 1".MDyn[6]	
M101.1	T CHG CYC INT COMP	Tool Change Cycle Complete After Interrupt
M103.1	T S/U CYC INT COMP	Tool Setup Cycle Complete After Interrupt
M104.2	T S/U CYC T/T R PL	Tool Setup Cycle Tool to Tool Request Pulse
M104.4	T S/U CYC T/M R PL	Tool Setup Cycle Tool to Magazine Request Pulse
M137.0	ASUP CALL REQUEST	ASUP Call (FC9) Request
M137.2	ASUP CALL DONE	ASUP Call (FC9) Done
M137.3	ASUP CALL ERROR	ASUP Call (FC9) Error
I3.7	NC RESET	MCP - NC Reset [K32]
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)

Network: 5 ASUP Program Call (FC9)

CALL FC	9	"ASUP"	-- Asynchronous Subprograms [System]
Start	:=M137.0	"ASUP CALL REQUEST"	-- ASUP Call (FC9) Request
ChanNo	:=1		
IntNo	:=8		
Activ	:=M137.1	"ASUP CALL ACTIVE"	-- ASUP Call (FC9) Active
Done	:=M137.2	"ASUP CALL DONE"	-- ASUP Call (FC9) Done
Error	:=M137.3	"ASUP CALL ERROR"	-- ASUP Call (FC9) Error
StartErr	:=M137.4	"ASUP CALL STRT ERR"	-- ASUP Call (FC9) Start Error
Ref	:=DB91.DBW68	"ASUP PGM".ASUP_Ref	-- ASUP Call FC9 Reference Parameter

FC92 - <offline>

"PLC/NC TRANSFER" PLC/NC Data Transfer [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 01/17/01 08:15:20 AMAM
 Interface: 02/17/00 09:31:16 PMPM
Lengths (block/logic/data): 01024 00902 00006

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC92 Transfer Variables PLC -> NC**Network: 1 Old Tool Magazine Data Convert Integer -> Real**

L	DB72.DBW	28	"TM SPINDLE DATA".IF[1].TMag -- Magazine no. (target) for old tool
ITD			
T	DB93.DBD	0	"TOOL DATA TRANS".Old_Tool_Magazine_DI -- Old Tool Magazine Number (Double Integer)
L	DB93.DBD	0	"TOOL DATA TRANS".Old_Tool_Magazine_DI -- Old Tool Magazine Number (Double Integer)
DTR			
T	DB93.DBD	32	"TOOL DATA TRANS".Old_Tool_Magazine_R -- Old Tool Magazine Number (Real)

Network: 2 New Tool Magazine Data Convert Integer -> Real

L	DB72.DBW	24	"TM SPINDLE DATA".IF[1].SMag -- Magazine no. (source) for new tool
ITD			
T	DB93.DBD	4	"TOOL DATA TRANS".New_Tool_Magazine_DI -- New Tool Magazine Number (Double Integer)
L	DB93.DBD	4	"TOOL DATA TRANS".New_Tool_Magazine_DI -- New Tool Magazine Number (Double Integer)
DTR			
T	DB93.DBD	36	"TOOL DATA TRANS".New_Tool_Magazine_R -- New Tool Magazine Number (Real)

Network: 3 Old Tool Location Data Convert Integer -> Real

L	DB72.DBW	30	"TM SPINDLE DATA".IF[1].TLoc -- Location no. (target) for old tool
ITD			
T	DB93.DBD	8	"TOOL DATA TRANS".Old_Tool_Location_DI -- Old Tool Location (Double Integer)
L	DB93.DBD	8	"TOOL DATA TRANS".Old_Tool_Location_DI -- Old Tool Location (Double Integer)
DTR			
T	DB93.DBD	40	"TOOL DATA TRANS".Old_Tool_Location_R -- Old Tool Location (Real)

Network: 4 New Tool Location Data Convert Integer -> Real

L	DB72.DBW	26	"TM SPINDLE DATA".IF[1].SLoc -- Location no. (source) for new tool
ITD			
T	DB93.DBD	12	"TOOL DATA TRANS".New_Tool_Location_DI -- New Tool Location (Double Integer)
L	DB93.DBD	12	"TOOL DATA TRANS".New_Tool_Location_DI -- New Tool Location (Double Integer)
DTR			
T	DB93.DBD	44	"TOOL DATA TRANS".New_Tool_Location_R -- New Tool Location (Real)

Network: 5 Last Tool Number Convert Integer -> Real

AN	DB21.DBX	202.3	"CHANNEL 1".MDyn[67] --
JC	END		
L	DB72.DBW	44	"TM SPINDLE DATA".IF[1].T_no -- Tool new: T no.
ITD			
T	DB93.DBD	16	"TOOL DATA TRANS".Old_Tool_Number_DI -- Old Tool Number (Tool in Spindle) (Double Integer)
L	DB93.DBD	16	"TOOL DATA TRANS".Old_Tool_Number_DI -- Old Tool Number (Tool in Spindle) (Double Integer)
DTR			

T DB93.DBD 48 "TOOL DATA TRANS".Old_Tool_Number_R -- Old Tool Number (Tool in Spindle) (Real)
END: NOP 0

Network: 6 New Tool Number Convert Integer -> Real

L DB72.DBW 44 "TM SPINDLE DATA".IF[1].T_no -- Tool new: T no.
ITD
T DB93.DBD 20 "TOOL DATA TRANS".New_Tool_Number_DI -- New Tool Number (Double Integer)

L DB93.DBD 20 "TOOL DATA TRANS".New_Tool_Number_DI -- New Tool Number (Double Integer)
DTR
T DB93.DBD 52 "TOOL DATA TRANS".New_Tool_Number_R -- New Tool Number (Real)

Network: 7 PLC Counter #1 Convert Integer -> Real

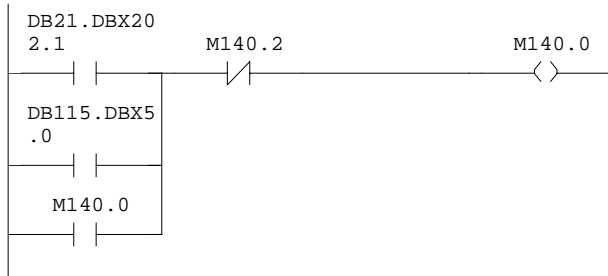
L DB96.DBW 4 "ATC MAG 1 COUNT DATA".Mag_1_Count_1_INT -- Tool Magazine #1 Count #1 Value (INT)
ITD
T DB93.DBD 24 "TOOL DATA TRANS".PLC_COUNTER_1_DI -- PLC Counter 1 (Double Integer)

L DB93.DBD 24 "TOOL DATA TRANS".PLC_COUNTER_1_DI -- PLC Counter 1 (Double Integer)
DTR
T DB93.DBD 56 "TOOL DATA TRANS".PLC_COUNTER_1_R -- PLC Counter 1 (Real)

Network: 8 PLC Counter #2 Convert Integer -> Real

L DB97.DBW 4 "ATC MAG 2 COUNT DATA".Mag_2_Count_1_INT -- Tool Magazine #2 Count #1 Value (INT)
ITD
T DB93.DBD 28 "TOOL DATA TRANS".PLC_COUNTER_2_DI -- PLC Counter 2 (Double Integer)

L DB93.DBD 28 "TOOL DATA TRANS".PLC_COUNTER_2_DI -- PLC Counter 2 (Double Integer)
DTR
T DB93.DBD 60 "TOOL DATA TRANS".PLC_COUNTER_2_R -- PLC Counter 2 (Real)

Network: 9 Data Transfer of Variables PLC -> NC Request**Symbol information**

DB21.DBX202.1 "CHANNEL 1".MDyn[65]
DB115.DBX5.0 "EXTENDED M/H CODES".Extended_H65 Channel 1 Extended Decoding for H65
M140.0 VAR TRANS NC REQ Variable Transfer PLC to NC (FB3) Request
M140.2 VAR TRANS NC DONE Variable Transfer PLC to NC (FB3) Done

Network: 10 Data Transfer of Variables PLC -> NC with FB3

CALL FB 3 , DB94 "PUT VAR" -- Write NC Variable [System]
Req :=M140.0 "VAR TRANS NC REQ" -- Variable Transfer PLC to NC
(FB3) Request

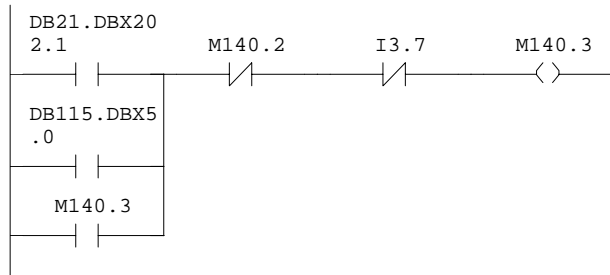
NumVar :=8
Addr1 :=P#DB92.DBX0.0 BYTE 10
Unit1 :=
Column1:=
Line1 :=
Addr2 :=P#DB92.DBX10.0 BYTE 10
Unit2 :=
Column2:=
Line2 :=
Addr3 :=P#DB92.DBX20.0 BYTE 10
Unit3 :=
Column3:=
Line3 :=
Addr4 :=P#DB92.DBX30.0 BYTE 10

```

Unit4 :=
Column4:=
Line4 :=
Addr5 :=P#DB92.DBX40.0 BYTE 10
Unit5 :=
Column5:=
Line5 :=
Addr6 :=P#DB92.DBX50.0 BYTE 10
Unit6 :=
Column6:=
Line6 :=
Addr7 :=P#DB92.DBX60.0 BYTE 10
Unit7 :=
Column7:=
Line7 :=
Addr8 :=P#DB92.DBX70.0 BYTE 10
Unit8 :=
Column8:=
Line8 :=
Error :=M140.1                "VAR TRANS NC ERR"          -- Variable Transfer PLC to NC
                                (FB3) Error
Done :=M140.2                "VAR TRANS NC DONE"        -- Variable Transfer PLC to NC
                                (FB3) Done
State :=DB93.DBW64           "TOOL DATA TRANS".FB3_State -- FB3 State
SD1 := "TOOL DATA TRANS".Old_Tool_Magazine_R "TOOL DATA TRANS".Old_Tool_Magazine_R -- Old Tool Magazine
                                Number (Real)
SD2 := "TOOL DATA TRANS".New_Tool_Magazine_R "TOOL DATA TRANS".New_Tool_Magazine_R -- New Tool Magazine
                                Number (Real)
SD3 := "TOOL DATA TRANS".Old_Tool_Location_R "TOOL DATA TRANS".Old_Tool_Location_R -- Old Tool Location
                                (Real)
SD4 := "TOOL DATA TRANS".New_Tool_Location_R "TOOL DATA TRANS".New_Tool_Location_R -- New Tool Location
                                (Real)
SD5 := "TOOL DATA TRANS".Old_Tool_Number_R "TOOL DATA TRANS".Old_Tool_Number_R -- Old Tool Number (To
                                ol in Spindle) (Real)
SD6 := "TOOL DATA TRANS".New_Tool_Number_R "TOOL DATA TRANS".New_Tool_Number_R -- New Tool Number (Re
                                al)
SD7 := "TOOL DATA TRANS".PLC_COUNTER_1_R "TOOL DATA TRANS".PLC_COUNTER_1_R -- PLC Counter 1 (Real)
SD8 := "TOOL DATA TRANS".PLC_COUNTER_2_R "TOOL DATA TRANS".PLC_COUNTER_2_R -- PLC Counter 2 (Real)

```

Network: 11	Data Transfer of Variables PLC -> NC NC Read-In Disable
-------------	---



Symbol information

DB21.DBX202.1	"CHANNEL 1".MDyn[65]	
DB115.DBX5.0	"EXTENDED M/H CODES".Extended_H65	Channel 1 Extended Decoding for H65
M140.3	VAR TRANS RID	Variable Transfer (FB3) NC Read-In Disable
M140.2	VAR TRANS NC DONE	Variable Transfer PLC to NC (FB3) Done
I3.7	NC RESET	MCP - NC Reset [K32]

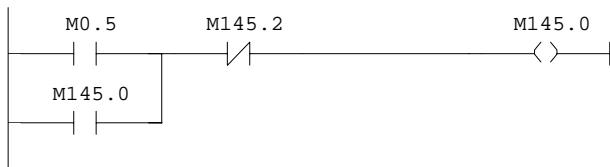
FC93 - <offline>

"NCK GUD PTR SEARCH" NCK GUD Pointer Search for FB3 [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 12/07/00 08:29:58 PMPM
 Interface: 05/23/00 03:34:05 PMPM
Lengths (block/logic/data): 01778 01666 00006

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC93 GUD Variable Get Function

Network: 1 Read GUD Variable Pointer Address (FB5) Request #1

**Symbol information**

M0.5 PLC START PULSE PLC Start Pulse
M145.0 GET GUD ADR RQ 1 Get GUD Pointer Address with FB5 Request #1
M145.2 GET GUD DONE 1 Get GUD Pointer Address with FB5 Done #1

Network: 2 Read GUD Token Pointer for "MAGAZINE OLD"

CALL FB 5 , DB120	"GET GUD"	-- Read GUD Variable [System]
Req :=M145.0	"GET GUD ADR RQ 1"	-- Get GUD Pointer Address with FB5 Request #1
Addr := "GUD NAME DATA".MAG_OLD	P#DB98.DBX0.0	-- GUD Variable Name for Magazine Old Data
Area :=B#16#0		
Unit :=B#16#1		
Index1 :=0		
Index2 :=0		
CnvtToken:=TRUE		
VarToken :=P#DB92.DBX0.0 BYTE 10		
Error :=M146.0	"GET GUD 1 ERROR"	-- Get GUD Pointer Address #1 with FB5 Error
Done :=M147.0	"GET GUD 1 DONE"	-- Get GUD Pointer Address #1 with FB5 Done
State :=DB98.DBW38	"GUD NAME DATA".FB5_STATE1	-- FB5 State 1
RD := "GUD NAME DATA".FB5_DUMMY1	"GUD NAME DATA".FB5_DUMMY1	-- FB5 Dummy Variable 1

Network: 3 Read GUD Token Pointer for "MAGAZINE NEW"

CALL FB 5 , DB121	"GET GUD"	-- Read GUD Variable [System]
Req :=M147.0	"GET GUD 1 DONE"	-- Get GUD Pointer Address #1 with FB5 Done
Addr := "GUD NAME DATA".MAG_NEW	P#DB98.DBX40.0	-- GUD Variable Name for Magazine New Data
Area :=B#16#0		
Unit :=B#16#1		
Index1 :=0		
Index2 :=0		
CnvtToken:=TRUE		
VarToken :=P#DB92.DBX10.0 BYTE 10		
Error :=M146.1	"GET GUD 2 ERROR"	-- Get GUD Pointer Address #2 with FB5 Error
Done :=M147.1	"GET GUD 2 DONE"	-- Get GUD Pointer Address #2 with FB5 Done
State :=DB98.DBW78	"GUD NAME DATA".FB5_STATE2	-- FB5 State 2
RD := "GUD NAME DATA".FB5_DUMMY2	"GUD NAME DATA".FB5_DUMMY2	-- FB5 Dummy Variable 2

Network: 4	Read GUD Token Pointer for "LOCATION OLD"
------------	---

```

CALL FB      5 , DB122      "GET GUD"          -- Read GUD Variable [System]
Req          :=M147.1      "GET GUD 2 DONE"      -- Get GUD Pointer Address #2 with FB5 D
                                   one
Addr         := "GUD NAME DATA".LOC_OLD      P#DB98.DBX80.0      -- GUD Variable Name for Location Old Da
                                   ta
Area         :=B#16#0
Unit         :=B#16#1
Index1       :=0
Index2       :=0
CnvtToken:=TRUE
VarToken    :=P#DB92.DBX20.0 BYTE 10
Error       :=M146.2      "GET GUD 3 ERROR"      -- Get GUD Pointer Address #3 with FB5 E
                                   rror
Done        :=M147.2      "GET GUD 3 DONE"      -- Get GUD Pointer Address #3 with FB5 D
                                   one
State       :=DB98.DBW118      "GUD NAME DATA".FB5_STATE3 -- FB5 State 3
RD          := "GUD NAME DATA".FB5_DUMMY3      "GUD NAME DATA".FB5_DUMMY3 -- FB5 Dummy Variable 3

```

Network: 5	Read GUD Token Pointer for "LOCATION NEW"
------------	---

```

CALL FB      5 , DB123      "GET GUD"          -- Read GUD Variable [System]
Req          :=M147.2      "GET GUD 3 DONE"      -- Get GUD Pointer Address #3 with FB5 D
                                   one
Addr         := "GUD NAME DATA".LOC_NEW      P#DB98.DBX120.0      -- GUD Variable Name for Location New Da
                                   ta
Area         :=B#16#0
Unit         :=B#16#1
Index1       :=0
Index2       :=0
CnvtToken:=TRUE
VarToken    :=P#DB92.DBX30.0 BYTE 10
Error       :=M146.3      "GET GUD 4 ERROR"      -- Get GUD Pointer Address #4 with FB5 E
                                   rror
Done        :=M147.3      "GET GUD 4 DONE"      -- Get GUD Pointer Address #4 with FB5 D
                                   one
State       :=DB98.DBW158      "GUD NAME DATA".FB5_STATE4 -- FB5 State 4
RD          := "GUD NAME DATA".FB5_DUMMY4      "GUD NAME DATA".FB5_DUMMY4 -- FB5 Dummy Variable 4

```

Network: 6	Read GUD Token Pointer for "TOOL OLD"
------------	---------------------------------------

```

CALL FB      5 , DB124      "GET GUD"          -- Read GUD Variable [System]
Req          :=M147.3      "GET GUD 4 DONE"      -- Get GUD Pointer Address #4 with FB5 D
                                   one
Addr         := "GUD NAME DATA".TOOL_OLD      P#DB98.DBX160.0      -- GUD Variable Name for Tool Old Data
Area         :=B#16#0
Unit         :=B#16#1
Index1       :=0
Index2       :=0
CnvtToken:=TRUE
VarToken    :=P#DB92.DBX40.0 BYTE 10
Error       :=M146.4      "GET GUD 5 ERROR"      -- Get GUD Pointer Address #5 with FB5 E
                                   rror
Done        :=M147.4      "GET GUD 5 DONE"      -- Get GUD Pointer Address #5 with FB5 D
                                   one
State       :=DB98.DBW198      "GUD NAME DATA".FB5_STATE5 -- FB5 State 5
RD          := "GUD NAME DATA".FB5_DUMMY5      "GUD NAME DATA".FB5_DUMMY5 -- FB5 Dummy Variable 5

```

Network: 7	Read GUD Token Pointer for "TOOL NEW"
------------	---------------------------------------

```

CALL FB      5 , DB125      "GET GUD"          -- Read GUD Variable [System]
Req          :=M147.4      "GET GUD 5 DONE"      -- Get GUD Pointer Address #5 with FB5 D
                                   one
Addr         := "GUD NAME DATA".TOOL_NEW      P#DB98.DBX200.0      -- GUD Variable Name for Tool New Data
Area         :=B#16#0
Unit         :=B#16#1
Index1       :=0
Index2       :=0
CnvtToken:=TRUE
VarToken    :=P#DB92.DBX50.0 BYTE 10
Error       :=M146.5      "GET GUD 6 ERROR"      -- Get GUD Pointer Address #6 with FB5 E
                                   rror

```



```

Done      :=M147.5      "GET GUD 6 DONE"      -- Get GUD Pointer Address #6 with FB5 D
State     :=DB98.DBW238  "GUD NAME DATA".FB5_STATE6 -- FB5 State 6
RD        := "GUD NAME DATA".FB5_DUMMY6 "GUD NAME DATA".FB5_DUMMY6 -- FB5 Dummy Variable 6

```

Network: 8	Read GUD Token Pointer for "PLC_COUNTER_1"
------------	--

```

CALL FB      5 , DB126      "GET GUD"      -- Read GUD Variable [System]
Req          :=M147.5      "GET GUD 6 DONE"  -- Get GUD Pointer Address #6 with FB5 D
one
Addr         := "GUD NAME DATA".COUNTER1  P#DB98.DBX240.0  -- GUD Variable Name for PLC Counter 1
Area         :=B#16#0
Unit         :=B#16#1
Index1       :=0
Index2       :=0
CnvtToken:=TRUE
VarToken    :=P#DB92.DBX60.0 BYTE 10
Error       :=M146.6      "GET GUD 7 ERROR"  -- Get GUD Pointer Address #7 with FB5 E
rror
Done        :=M147.6      "GET GUD 7 DONE"  -- Get GUD Pointer Address #7 with FB5 D
one
State       :=DB98.DBW278  "GUD NAME DATA".FB5_STATE7 -- FB5 State 7
RD          := "GUD NAME DATA".FB5_DUMMY7 "GUD NAME DATA".FB5_DUMMY7 -- FB5 Dummy Variable 7

```

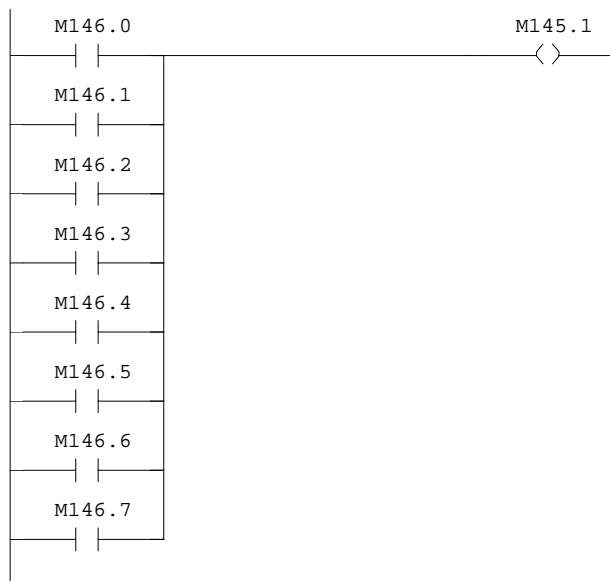
Network: 9	Read GUD Token Pointer for "PLC_COUNTER_2"
------------	--

```

CALL FB      5 , DB127      "GET GUD"      -- Read GUD Variable [System]
Req          :=M147.6      "GET GUD 7 DONE"  -- Get GUD Pointer Address #7 with FB5 D
one
Addr         := "GUD NAME DATA".COUNTER3  P#DB98.DBX280.0  -- GUD Variable Name for PLC Counter 3
Area         :=B#16#0
Unit         :=B#16#1
Index1       :=0
Index2       :=0
CnvtToken:=TRUE
VarToken    :=P#DB92.DBX70.0 BYTE 10
Error       :=M146.7      "GET GUD 8 ERROR"  -- Get GUD Pointer Address #8 with FB5 E
rror
Done        :=M147.7      "GET GUD 8 DONE"  -- Get GUD Pointer Address #8 with FB5 D
one
State       :=DB98.DBW318  "GUD NAME DATA".FB5_STATE8 -- FB5 State 8
RD          := "GUD NAME DATA".FB5_DUMMY8 "GUD NAME DATA".FB5_DUMMY8 -- FB5 Dummy Variable 8

```

Network: 10	Read GUD Variable Pointer Address (FB5) Request #1 Error
-------------	--



Symbol information

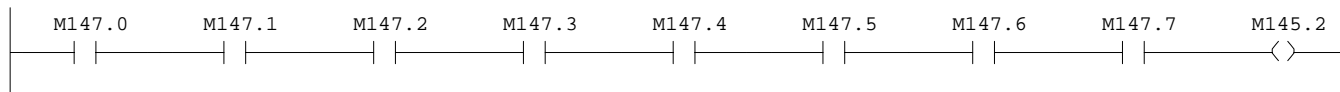
```

M146.0      GET GUD 1 ERROR      Get GUD Pointer Address #1 with FB5 Error
M146.1      GET GUD 2 ERROR      Get GUD Pointer Address #2 with FB5 Error

```

M146.2	GET GUD 3 ERROR	Get GUD Pointer Address #3 with FB5 Error
M146.3	GET GUD 4 ERROR	Get GUD Pointer Address #4 with FB5 Error
M146.4	GET GUD 5 ERROR	Get GUD Pointer Address #5 with FB5 Error
M146.5	GET GUD 6 ERROR	Get GUD Pointer Address #6 with FB5 Error
M146.6	GET GUD 7 ERROR	Get GUD Pointer Address #7 with FB5 Error
M146.7	GET GUD 8 ERROR	Get GUD Pointer Address #8 with FB5 Error
M145.1	GET GUD ERROR 1	Get GUD Pointer Address with FB5 Error #1

Network: 11	Read GUD Variable Pointer Address (FB5) Request #1 Done
-------------	---



Symbol information

M147.0	GET GUD 1 DONE	Get GUD Pointer Address #1 with FB5 Done
M147.1	GET GUD 2 DONE	Get GUD Pointer Address #2 with FB5 Done
M147.2	GET GUD 3 DONE	Get GUD Pointer Address #3 with FB5 Done
M147.3	GET GUD 4 DONE	Get GUD Pointer Address #4 with FB5 Done
M147.4	GET GUD 5 DONE	Get GUD Pointer Address #5 with FB5 Done
M147.5	GET GUD 6 DONE	Get GUD Pointer Address #6 with FB5 Done
M147.6	GET GUD 7 DONE	Get GUD Pointer Address #7 with FB5 Done
M147.7	GET GUD 8 DONE	Get GUD Pointer Address #8 with FB5 Done
M145.2	GET GUD DONE 1	Get GUD Pointer Address with FB5 Done #1

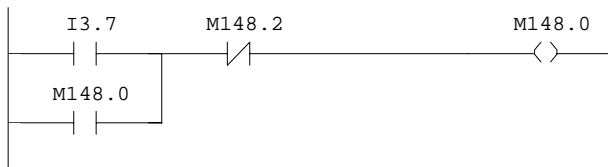
FC95 - <offline>

"SW K/SWCH DATA TRN" Software Keyswitch Data Transfer [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/07/01 10:53:21 PMPM
 Interface: 05/23/00 03:34:05 PMPM
Lengths (block/logic/data): 00482 00370 00006

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC95 NCK Keyswitch Edit Protection Level Data Transfer

Network: 1 Read GUD Variable Pointer Address (FB5) Request #2

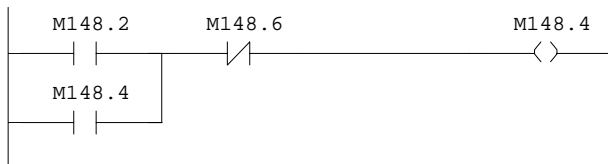
**Symbol information**

I3.7 NC RESET MCP - NC Reset [K32]
M148.0 GET GUD ADR RQ 2 Get GUD Pointer Address with FB5 Request #2
M148.2 GET GUD DONE 2 Get GUD Pointer Address with FB5 Done #2

Network: 2 Read GUD Token Pointer for "EDIT PROTECTION LEVEL"

CALL FB 5 , DB112	"GET GUD"	-- Read GUD Variable [System]
Req :=M148.0	"GET GUD ADR RQ 2"	-- Get GUD Pointer Address wi
	th FB5 Request #2	
Addr := "GUD NAME DATA".EDIT_PROTECTION_LEVEL	P#DB98.DBX320.0	-- GUD Variable Name for Edit
	Protection Level	
Area :=B#16#0		
Unit :=B#16#1		
Index1 :=0		
Index2 :=0		
CnvtToken:=TRUE		
VarToken :=P#DB92.DBX80.0 BYTE 10		
Error :=M148.1	"GET GUD ERROR 2"	-- Get GUD Pointer Address wi
	th FB5 Error #2	
Done :=M148.2	"GET GUD DONE 2"	-- Get GUD Pointer Address wi
	th FB5 Done #2	
State :=DB98.DBW358	"GUD NAME DATA".FB5_STATE9	-- FB5 State 9
RD := "GUD NAME DATA".FB5_DUMMY9	"GUD NAME DATA".FB5_DUMMY9	-- FB5 Dummy Variable 9

Network: 3 Data Transfer of Variables NC -> PLC Request

**Symbol information**

M148.2 GET GUD DONE 2 Get GUD Pointer Address with FB5 Done #2
M148.4 VAR TRANS PLC RQ 1 Variable Transfer NC to PLC (FB2) Request #1
M148.6 VAR TRANS PLC DN 1 Variable Transfer NC to PLC (FB2) Done #1

Network: 4 Data Transfer of Variables NC -> PLC with FB2

```
CALL FB      2 , DB113           "GET VAR"           -- Read NC Variable [System]
Req          :=M148.4            "VAR TRANS PLC RQ 1"      -- Variable Transfer NC to PLC (FB2
                                ) Request #1

NumVar :=1
Addr1  :=P#DB92.DBX80.0 BYTE 10
Unit1  :=
Column1:=
Line1  :=
Addr2  :=
Unit2  :=
Column2:=
Line2  :=
Addr3  :=
Unit3  :=
Column3:=
Line3  :=
Addr4  :=
Unit4  :=
Column4:=
Line4  :=
Addr5  :=
Unit5  :=
Column5:=
Line5  :=
Addr6  :=
Unit6  :=
Column6:=
Line6  :=
Addr7  :=
Unit7  :=
Column7:=
Line7  :=
Addr8  :=
Unit8  :=
Column8:=
Line8  :=
Error  :=M148.5                "VAR TRANS PLC ER 1"      -- Variable Transfer NC to PLC (FB2
                                ) Error #1
NDR    :=M148.6                "VAR TRANS PLC DN 1"      -- Variable Transfer NC to PLC (FB2
                                ) Done #1
State  :=DB99.DBW4             "EDIT PROTECTION".FB2_State -- FB2 State
RD1    :="EDIT PROTECTION".EDIT_PROT_LEVEL "EDIT PROTECTION".EDIT_PROT_LEVEL -- Edit Protection Level Set
                                ting
RD2    :=
RD3    :=
RD4    :=
RD5    :=
RD6    :=
RD7    :=
RD8    :=
```

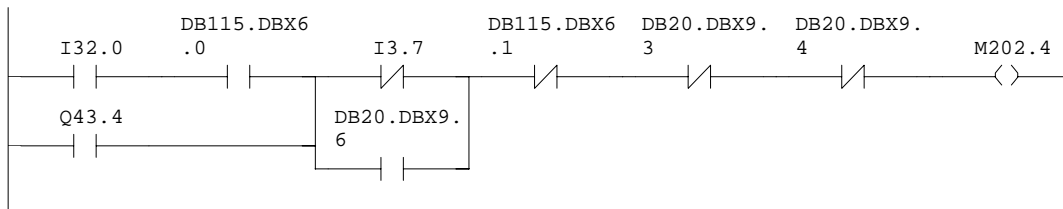
FC96 - <offline>

"MIDACO PALLET" Midaco Pallet Control [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 2
Time stamp Code: 03/09/01 01:58:40 PMPM
Interface: 02/08/01 09:42:14 PMPM
Lengths (block/logic/data): 00366 00258 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

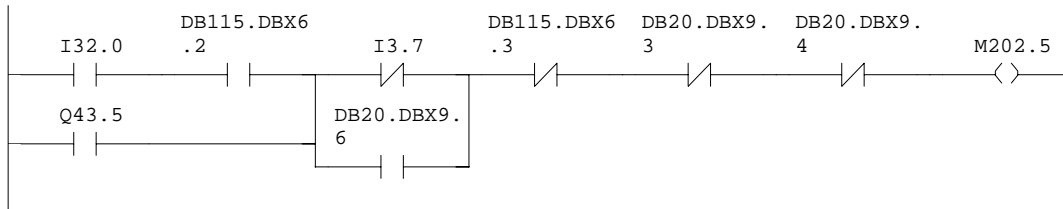
Block: FC96 Midaco Pallet Control

Network: 1 Midaco Pallet Function #1

**Symbol information**

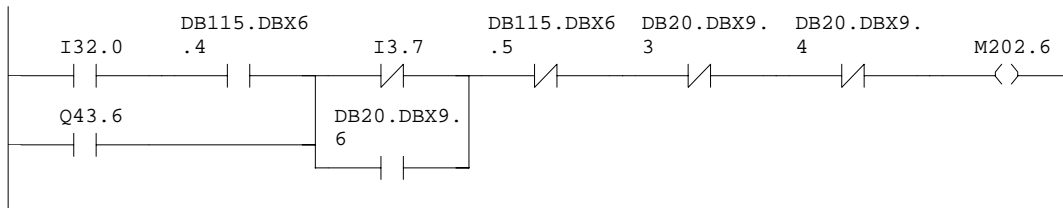
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
Q43.4 CUST SPEC M134 KAR42 - Customer Specific M-Code Output for M134
I3.7 NC RESET MCP - NC Reset [K32]
M202.4 CUST SPEC M134 PQ KAR42 - Customer Specific M-Code Output for M134 Peripheral Output

Network: 2 Midaco Pallet Function #2

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
Q43.5 CUST SPEC M136 KAR43 - Customer Specific M-Code Output for M136
I3.7 NC RESET MCP - NC Reset [K32]
M202.5 CUST SPEC M136 PQ KAR43 - Customer Specific M-Code Output for M136 Peripheral Output

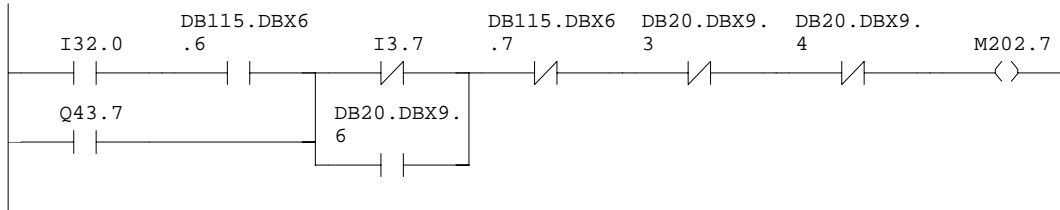
Network: 3 Midaco Pallet Function #3

**Symbol information**

I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
Q43.6 CUST SPEC M138 KAR45 - Customer Specific M-Code Output for M138
I3.7 NC RESET MCP - NC Reset [K32]

M202.6 CUST SPEC M138 PQ KAR45 - Customer Specific M-Code Output for M138 Peripheral Output

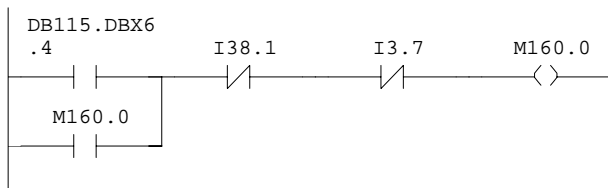
Network: 4 Midaco Pallet Function #4



Symbol information

I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q43.7	CUST SPEC M190	KAR40 - Customer Specific M-Code Output for M190
I3.7	NC RESET	MCP - NC Reset [K32]
M202.7	CUST SPEC M190 PQ	KAR40 - Customer Specific M-Code Output for M190 Peripheral Output

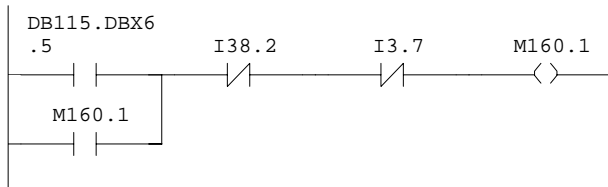
Network: 5 Midaco Pallet Function M164 NC Read-In Disable



Symbol information

M160.0	MD PALLET NC RID 1 Midaco Pallet NC Read-In Disable #1
I38.1	MD PALLET FCT 1 LS Midaco Pallet Function #1 Limit Switch
I3.7	NC RESET MCP - NC Reset [K32]

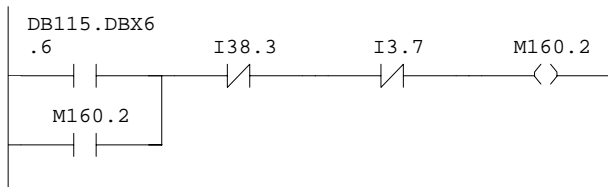
Network: 6 Midaco Pallet Function M165 NC Read-In Disable



Symbol information

M160.1	MD PALLET NC RID 2 Midaco Pallet NC Read-In Disable #2
I38.2	MD PALLET FCT 2 LS Midaco Pallet Function #2 Limit Switch
I3.7	NC RESET MCP - NC Reset [K32]

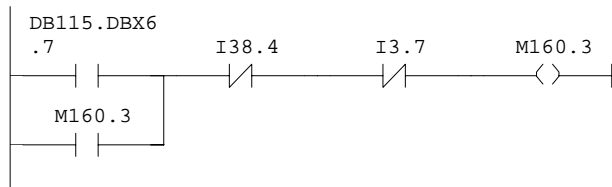
Network: 7 Midaco Pallet Function M166 NC Read-In Disable



Symbol information

M160.2	MD PALLET NC RID 3 Midaco Pallet NC Read-In Disable #3
I38.3	MD PALLET FCT 3 LS Midaco Pallet Function #3 Limit Switch
I3.7	NC RESET MCP - NC Reset [K32]

Network: 8	Midaco Pallet Function M167 NC Read-In Disable
------------	--

**Symbol information**

M160.3	MD PALLET NC RID 4 Midaco Pallet NC Read-In Disable #4
I38.4	MD PALLET FCT 4 LS Midaco Pallet Function #4 Limit Switch
I3.7	NC RESET MCP - NC Reset [K32]

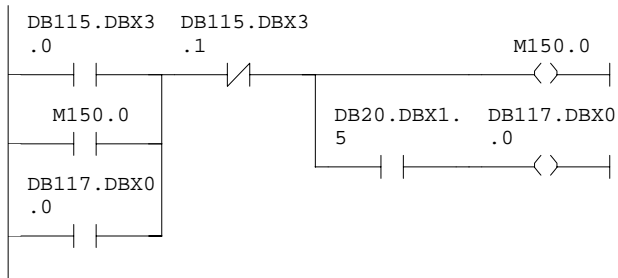
FC97 - <offline>

"CUSTOMER M CODES 1" Customer Specific M-Codes Group #1 [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 03/09/01 01:59:43 PMPM
 Interface: 10/23/00 11:54:04 AMAM
Lengths (block/logic/data): 00364 00224 00002

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

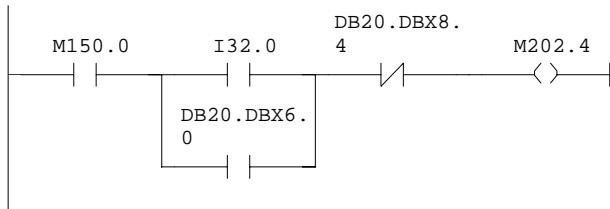
Block: FC97 Customer Specific M-Codes Group #1

Network: 1 Customer Specific M134

**Symbol information**

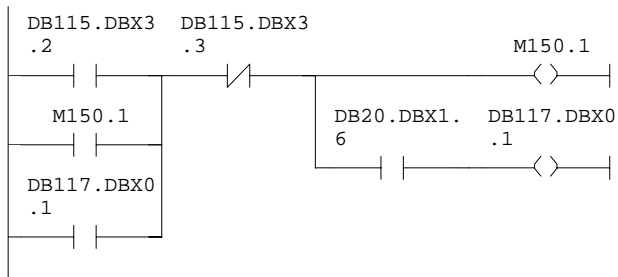
M150.0 CUST M134 BUFFER Customer Specific M134 Buffer

Network: 2 Customer Specific M134 Output

**Symbol information**

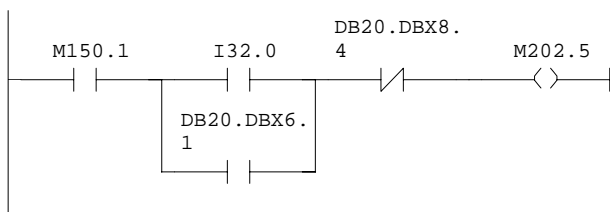
M150.0 CUST M134 BUFFER Customer Specific M134 Buffer
I32.0 MASTR ON KAR1 - Master On (Not Emergency Stop)
M202.4 CUST SPEC M134 PQ KAR42 - Customer Specific M-Code Output for M134 Peripheral Output

Network: 3 Customer Specific M136

**Symbol information**

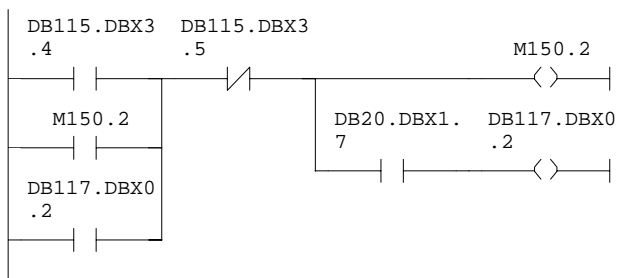
M150.1 CUST M136 BUFFER Customer Specific M136 Buffer

Network: 4 Customer Specific M136 Output

**Symbol information**

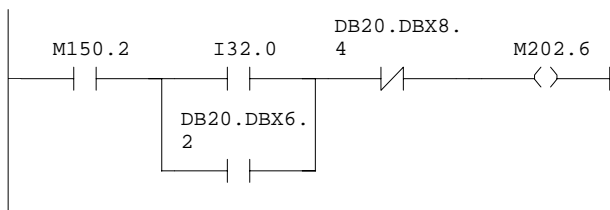
M150.1	CUST M136 BUFFER	Customer Specific M136 Buffer
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M202.5	CUST SPEC M136 PQ	KAR43 - Customer Specific M-Code Output for M136 Peripheral Output

Network: 5 Customer Specific M138

**Symbol information**

M150.2	CUST M138 BUFFER	Customer Specific M138 Buffer
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Network: 6 Customer Specific M138 Output

**Symbol information**

M150.2	CUST M138 BUFFER	Customer Specific M138 Buffer
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M202.6	CUST SPEC M138 PQ	KAR45 - Customer Specific M-Code Output for M138 Peripheral Output

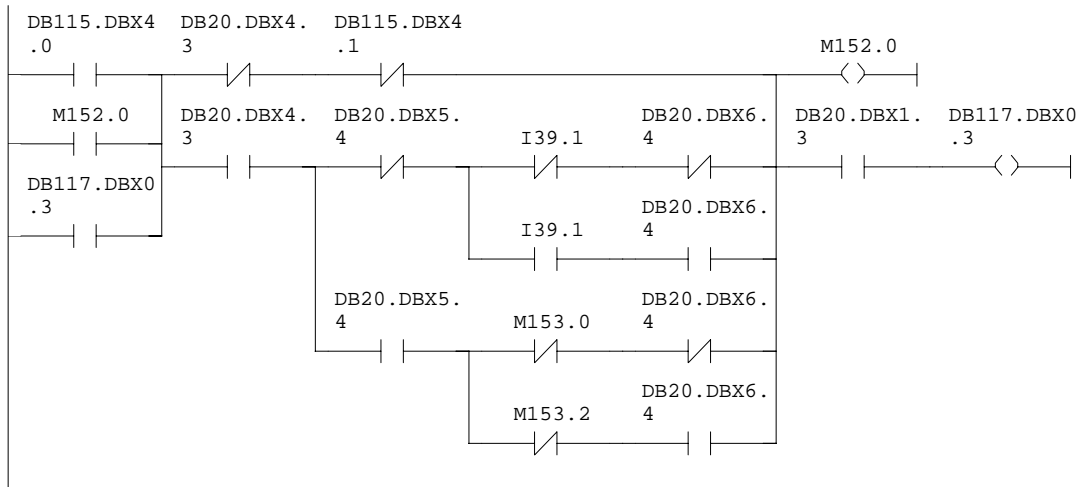
FC98 - <offline>

"CUSTOMER M CODES 2" Customer Specific M-Codes Group #2 [User]
Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
Block version: 2
Time stamp Code: 03/09/01 02:00:20 PMPM
Interface: 10/23/00 11:54:04 AMAM
Lengths (block/logic/data): 00878 00738 00002

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

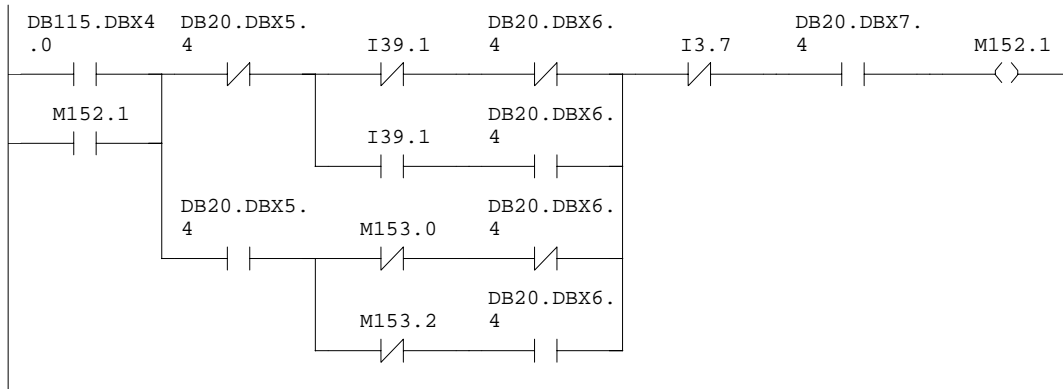
Block: FC98 Customer Specific M-Codes Group #2

Network: 1 Customer Specific M190

**Symbol information**

M152.0 CUST M190 BUFFER Customer Specific M190 Buffer
I39.1 CUST M190 FEEDBACK CS1 - Customer Specific M190 Feedback Signal
M153.0 CUST M190 POS EDGE Customer Specific M190 Positive Edge
M153.2 CUST M190 NEG EDGE Customer Specific M190 Negative Edge

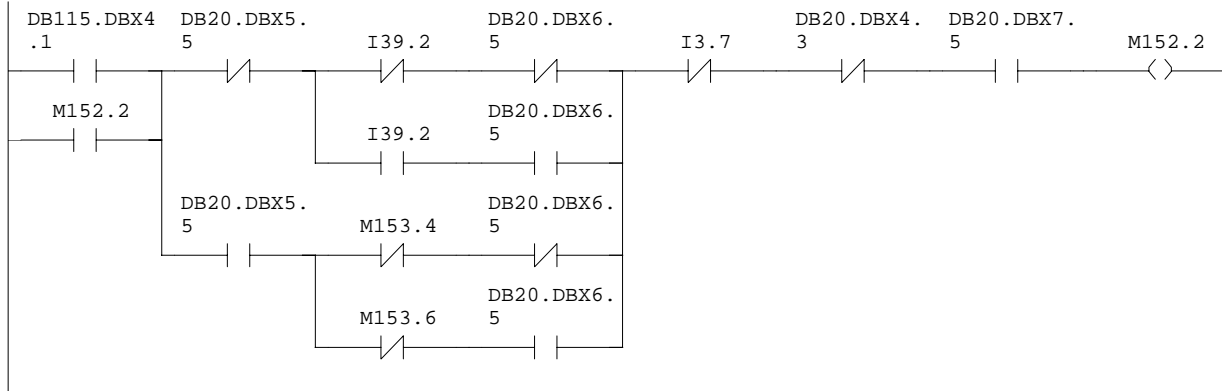
Network: 2 Customer Specific M190 NC Read-In Disable

**Symbol information**

M152.1 CUST M190 NC RID Customer Specific M190 NC Read-In Disable
I39.1 CUST M190 FEEDBACK CS1 - Customer Specific M190 Feedback Signal
M153.0 CUST M190 POS EDGE Customer Specific M190 Positive Edge
M153.2 CUST M190 NEG EDGE Customer Specific M190 Negative Edge

I3.7 NC RESET MCP - NC Reset [K32]

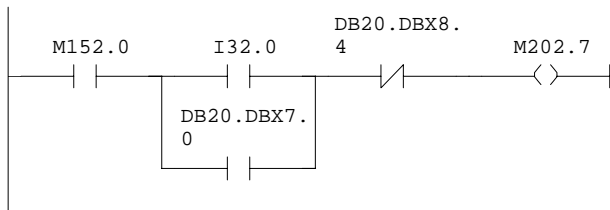
Network: 3 Customer Specific M191 NC Read-In Disable



Symbol information

M152.2	CUST M191 NC RID	Customer Specific M191 NC Read-In Disable
I39.2	CUST M191 FEEDBACK CS2	Customer Specific M191 Feedback Signal
M153.4	CUST M191 POS EDGE	Customer Specific M191 Positive Edge
M153.6	CUST M191 NEG EDGE	Customer Specific M191 Negative Edge
I3.7	NC RESET	MCP - NC Reset [K32]

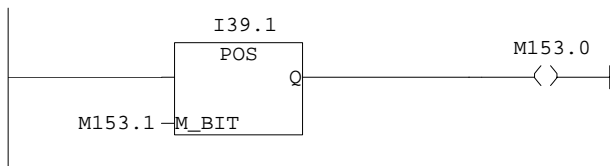
Network: 4 Customer Specific M190 Output



Symbol information

M152.0	CUST M190 BUFFER	Customer Specific M190 Buffer
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M202.7	CUST SPEC M190 PQ	KAR40 - Customer Specific M-Code Output for M190 Peripheral Output

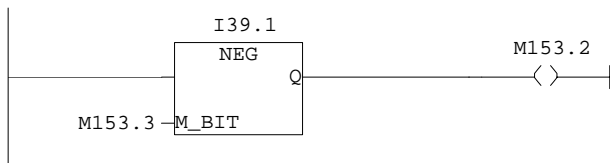
Network: 5 Leading Edge Detection for M190



Symbol information

I39.1	CUST M190 FEEDBACK CS1	Customer Specific M190 Feedback Signal
M153.1	CUST M190 POS REM	Customer Specific M190 Positive Edge Remember
M153.0	CUST M190 POS EDGE	Customer Specific M190 Positive Edge

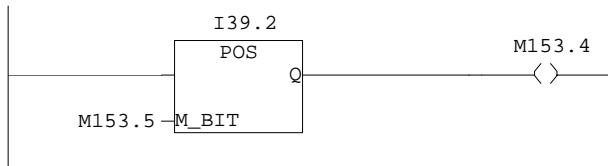
Network: 6 Trailing Edge Detection for M190



Symbol information

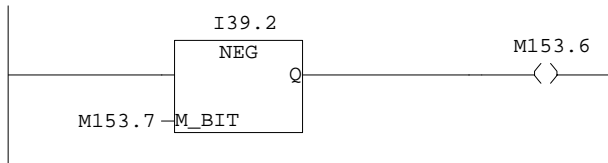
I39.1 CUST M190 FEEDBACK CS1 - Customer Specific M190 Feedback Signal
 M153.3 CUST M190 NEG REM Customer Specific M190 Negative Edge Remember
 M153.2 CUST M190 NEG EDGE Customer Specific M190 Negative Edge

Network: 7 Leading Edge Detection for M191

**Symbol information**

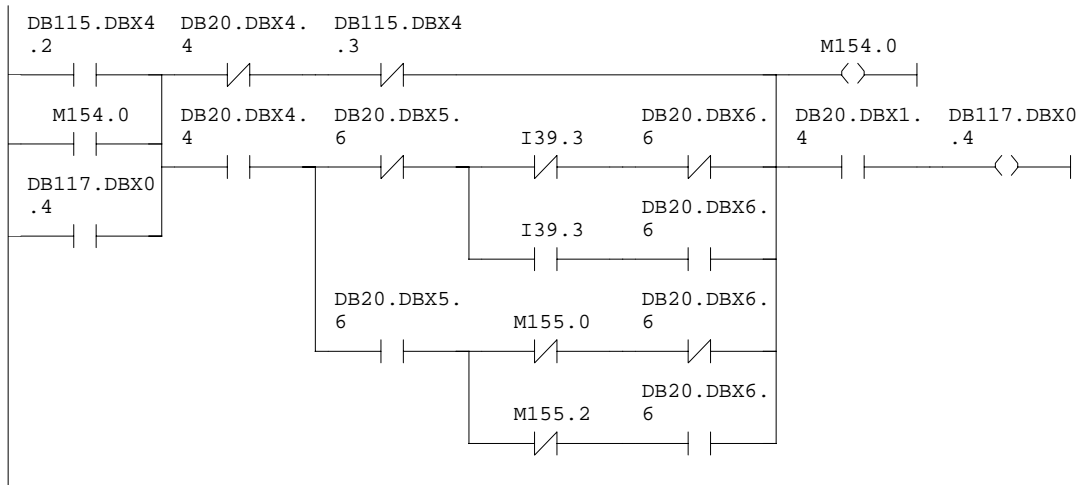
I39.2 CUST M191 FEEDBACK CS2 - Customer Specific M191 Feedback Signal
 M153.5 CUST M191 POS REM Customer Specific M191 Positive Edge Remember
 M153.4 CUST M191 POS EDGE Customer Specific M191 Positive Edge

Network: 8 Trailing Edge Detection for M191

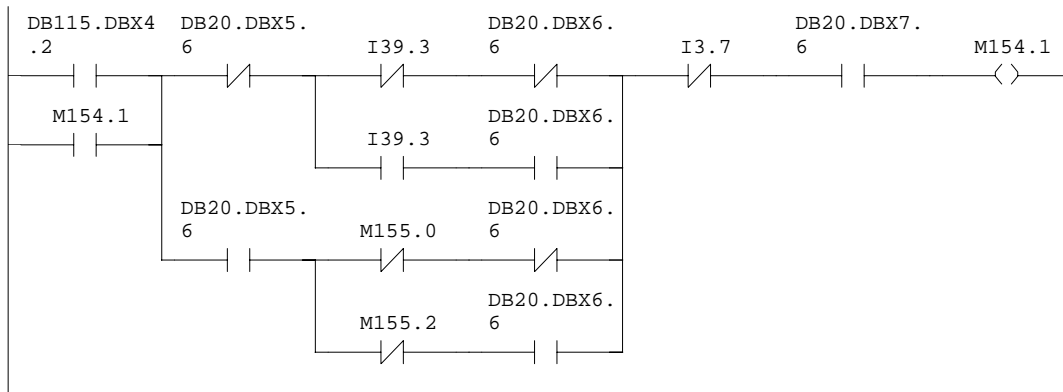
**Symbol information**

I39.2 CUST M191 FEEDBACK CS2 - Customer Specific M191 Feedback Signal
 M153.7 CUST M191 NEG REM Customer Specific M191 Negative Edge Remember
 M153.6 CUST M191 NEG EDGE Customer Specific M191 Negative Edge

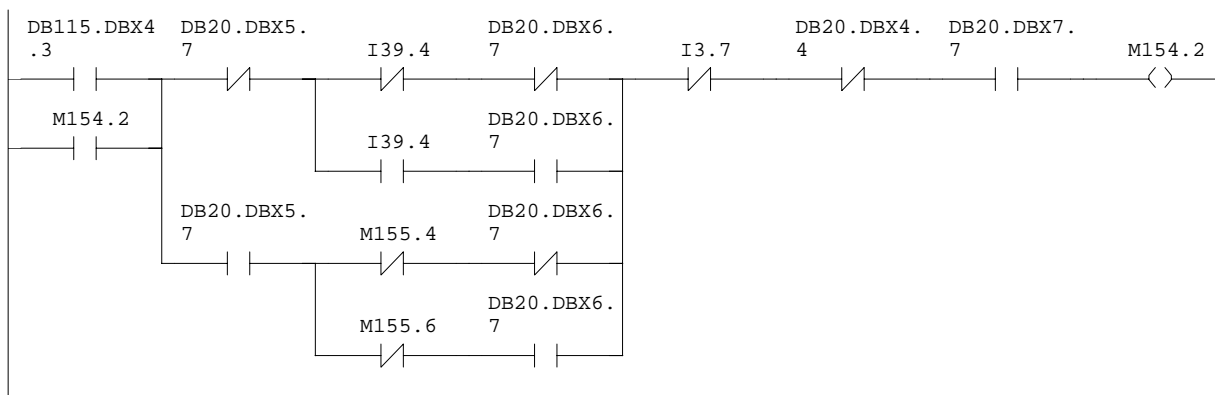
Network: 9 Customer Specific M192

**Symbol information**

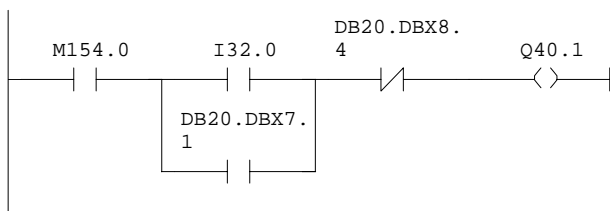
M154.0 CUST M192 BUFFER Customer Specific M192 Buffer
 I39.3 CUST M192 FEEDBACK CS3 - Customer Specific M192 Feedback Signal
 M155.0 CUST M192 POS EDGE Customer Specific M192 Positive Edge
 M155.2 CUST M192 NEG EDGE Customer Specific M192 Negative Edge

Network: 10 Customer Specific M192 NC Read-In Disable

Symbol information

M154.1	CUST M192 NC RID	Customer Specific M192 NC Read-In Disable
I39.3	CUST M192 FEEDBACK CS3	- Customer Specific M192 Feedback Signal
M155.0	CUST M192 POS EDGE	Customer Specific M192 Positive Edge
M155.2	CUST M192 NEG EDGE	Customer Specific M192 Negative Edge
I3.7	NC RESET	MCP - NC Reset [K32]

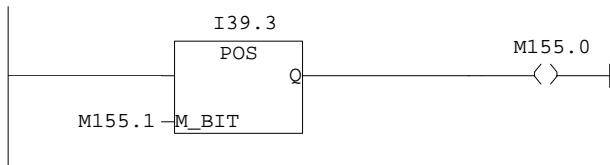
Network: 11 Customer Specific M193 NC Read-In Disable

Symbol information

M154.2	CUST M193 NC RID	Customer Specific M193 NC Read-In Disable
I39.4	CUST M193 FEEDBACK CS3	- Customer Specific M193 Feedback Signal
M155.4	CUST M193 POS EDGE	Customer Specific M193 Positive Edge
M155.6	CUST M193 NEG EDGE	Customer Specific M193 Negative Edge
I3.7	NC RESET	MCP - NC Reset [K32]

Network: 12 Customer Specific M192 Output

Symbol information

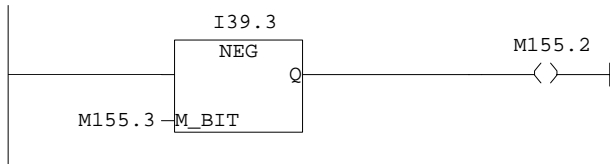
M154.0	CUST M192 BUFFER	Customer Specific M192 Buffer
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
Q40.1	CUST SPEC M192	KAR41 - Customer Specific M-Code Output for M192

Network: 13 Leading Edge Detection for M192

**Symbol information**

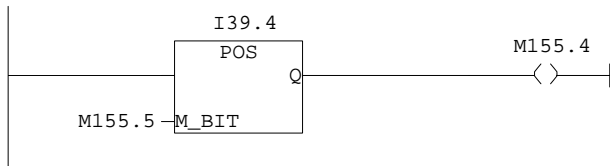
I39.3	CUST M192 FEEDBACK CS3 - Customer Specific M192 Feedback Signal
M155.1	CUST M192 POS REM Customer Specific M192 Positive Edge Remember
M155.0	CUST M192 POS EDGE Customer Specific M192 Positive Edge

Network: 14 Trailing Edge Detection for M192

**Symbol information**

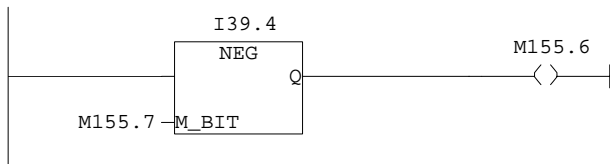
I39.3	CUST M192 FEEDBACK CS3 - Customer Specific M192 Feedback Signal
M155.3	CUST M192 NEG REM Customer Specific M192 Negative Edge Remember
M155.2	CUST M192 NEG EDGE Customer Specific M192 Negative Edge

Network: 15 Leading Edge Detection for M193

**Symbol information**

I39.4	CUST M193 FEEDBACK CS3 - Customer Specific M193 Feedback Signal
M155.5	CUST M193 POS REM Customer Specific M193 Positive Edge Remember
M155.4	CUST M193 POS EDGE Customer Specific M193 Positive Edge

Network: 16 Trailing Edge Detection for M193

**Symbol information**

I39.4	CUST M193 FEEDBACK CS3 - Customer Specific M193 Feedback Signal
M155.7	CUST M193 NEG REM Customer Specific M193 Negative Edge Remember
M155.6	CUST M193 NEG EDGE Customer Specific M193 Negative Edge

FC99 - <offline>

"TOOL CHANGE TIMEOUTS" Tool Change Function Timeout Monitoring [User]

Name: Hardinge

Family: VMC

Author: MGS

Version: 1.0

Block version: 2

Time stamp Code: 02/12/01 11:21:50 PMPM

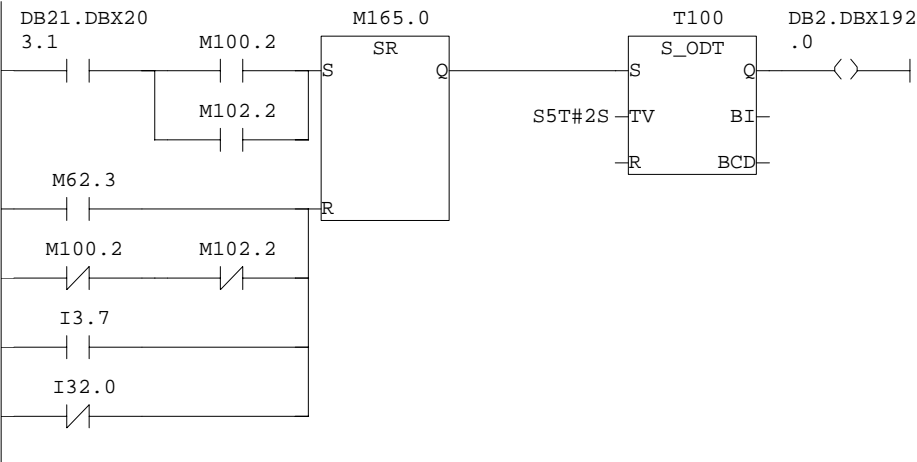
Interface: 01/29/01 06:24:36 PMPM

Lengths (block/logic/data): 00500 00398 00000

Address	Declaration	Name	Type	Start value	Comment
	in				
	out				
	in_out				
	temp				

Block: FC99 Machine Function Timeout Messages

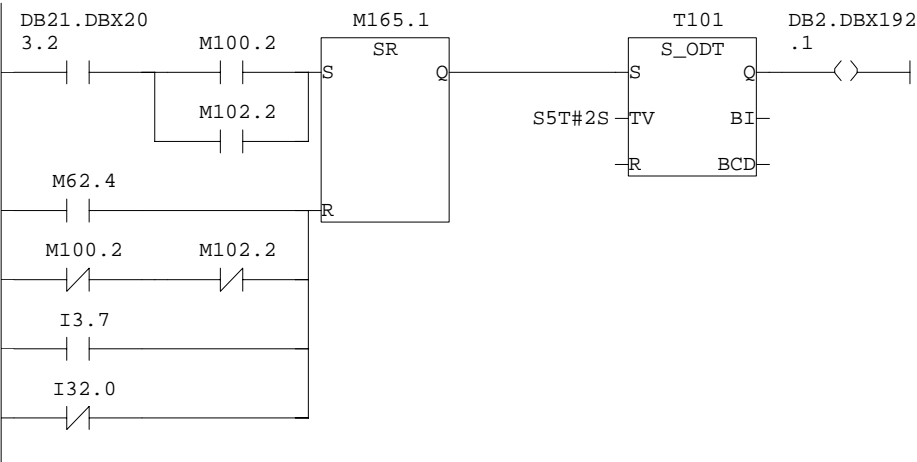
Network: 1 700132: Spindle Tool Clamp Timeout Message



Symbol information

DB21.DBX203.1	"CHANNEL 1".MDyn[73]	
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M102.2	T S/U CYC ACTIVE	Tool Setup Cycle Active
M62.3	SPIN TOOL CLAMPED	Spindle Tool is Clamped
I3.7	NC RESET	MCP - NC Reset [K32]
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M165.0	SP CL TO MSGE BFR	Spindle Tool Clamp Timeout Message Buffer
DB2.DBX192.0	"ALARM & MESSAGE".A7001xx[32]	Alarm 700100-700163 (user area 1)

Network: 2 700133: Spindle Tool Unclamp Timeout Message



Symbol information

DB21.DBX203.2 "CHANNEL 1".MDyn[74]

M100.2 T CHG CYC ACTIVE

Tool Change Cycle Active

M102.2 T S/U CYC ACTIVE

Tool Setup Cycle Active

M62.4 SPIN TOOL UNCLMP'D

Spindle Tool is Unclamped

I3.7 NC RESET

MCP - NC Reset [K32]

I32.0 MASTR ON

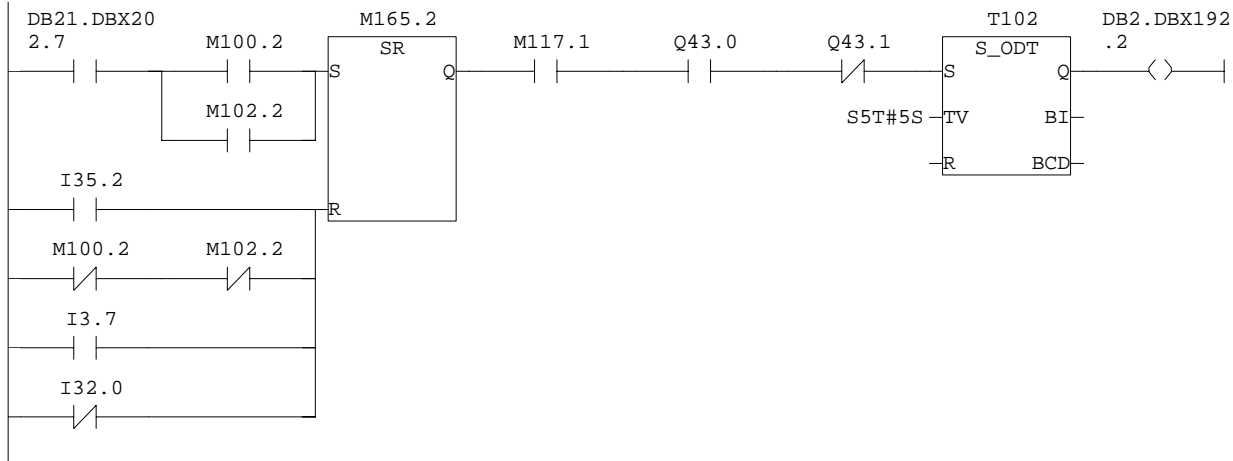
KAR1 - Master On (Not Emergency Stop)

M165.1 SP UC TO MSGE BFR

Spindle Tool Unclamp Timeout Message Buffer

DB2.DBX192.1 "ALARM & MESSAGE".A7001xx[33] Alarm 700100-700163 (user area 1)

Network: 3 700134: ATC Magazine #1 Retract Timeout Message

**Symbol information**

DB21.DBX202.7 "CHANNEL 1".MDyn[71]

M100.2 T CHG CYC ACTIVE

Tool Change Cycle Active

M102.2 T S/U CYC ACTIVE

Tool Setup Cycle Active

I35.2 T MAG #1 RET LS

SQL3 - Tool Magazine #1 Retract (IN) Limit

I3.7 NC RESET

MCP - NC Reset [K32]

I32.0 MASTR ON

KAR1 - Master On (Not Emergency Stop)

M165.2 ATC #1 RT MSGE BFR

ATC Magazine #1 Retract Timeout Message Buffer

M117.1 T MAG #1 RET REQ

Tool Magazine #1 Retract Request

Q43.0 T MAG #1 A/R MTR

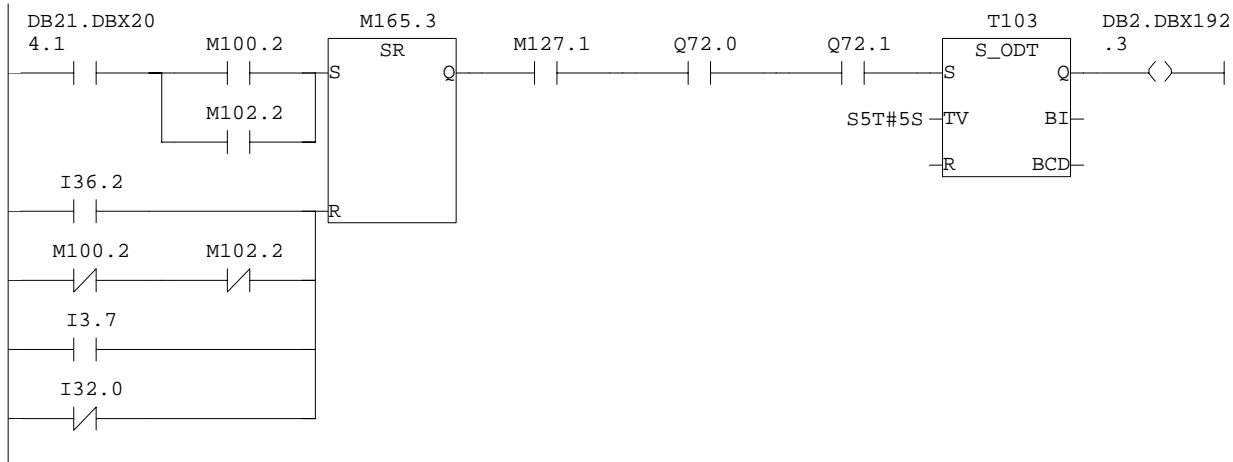
KAR7/MTR7 - Tool Magazine #1 Advance/Retract Motor

Q43.1 T MAG #1 ADV SEL

KAR8/MTR7 - Tool Magazine #1 Advance Select

DB2.DBX192.2 "ALARM & MESSAGE".A7001xx[34] Alarm 700100-700163 (user area 1)

Network: 4 700135: ATC Magazine #2 Retract Timeout Message

**Symbol information**

DB21.DBX204.1 "CHANNEL 1".MDyn[81]

M100.2 T CHG CYC ACTIVE

Tool Change Cycle Active

M102.2 T S/U CYC ACTIVE

Tool Setup Cycle Active

I36.2 T MAG #2 RET LS

SQL20 - Tool Magazine #2 Retract (IN) Limit

I3.7 NC RESET

MCP - NC Reset [K32]

Symbol information

DB21.DBX204.6	"CHANNEL 1".MDyn[86]	
DB21.DBX204.7	"CHANNEL 1".MDyn[87]	
M100.2	T CHG CYC ACTIVE	Tool Change Cycle Active
M125.0	T MAG #2 A R O CP	Tool Magazine #2 Auto Rotation for Old Tool Complete
M125.1	T MAG #2 A R N CP	Tool Magazine #2 Auto Rotation for New Tool Complete
I3.7	NC RESET	MCP - NC Reset [K32]
I32.0	MASTR ON	KAR1 - Master On (Not Emergency Stop)
M165.5	ATC #2 RO MSGE BFR	ATC Magazine #2 Rotation Timeout Message Buffer
M120.1	T MAG #2 A RT OLD	Tool Magazine #2 Auto Rotation Active for Old Tool
M120.2	T MAG #2 A RT NEW	Tool Magazine #2 Auto Rotation Active for New Tool
Q72.2	T MAG #2 ROT MTR	KAR11/MTR6 - Tool Magazine #2 CW/CCW Rotation Motor
DB2.DBX192.5	"ALARM & MESSAGE".A7001xx[37]	Alarm 700100-700163 (user area 1)

DB91 - <offline>

"ASUP PGM" ASUP Interrupt Program Paths [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 09/18/00 01:45:31 PMPM
 Interface: 05/19/00 03:56:31 PMPM
Lengths (block/logic/data): 00202 00074 00000

Block: DB91

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	ASUP_Path	STRING[32]	'/_N_CUS_DIR'	ASUP Program Path
+34.0	Tool_Change	STRING[32]	'_N_T_CHANGE_SPF'	Tool Change Part Program
+68.0	ASUP_Ref	WORD	W#16#0	ASUP Call FC9 Reference Parameter
+70.0	State_Int_8	WORD	W#16#0	State of FB4 for ASUP Interrupt Assign 8
=72.0		END_STRUCT		

DB92 - <offline>

"GUD ADDRESS" GUD Address for FB3 [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/07/01 10:46:02 PMPM
 Interface: 02/07/01 10:46:02 PMPM
Lengths (block/logic/data): 00390 00102 00000

Block: DB92

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	MAG_OLD_TOKEN_PTR1	BYTE	B#16#0	Token Address Pointer for Magazine Old Location Byte 1 of 10
+1.0	MAG_OLD_TOKEN_PTR2	BYTE	B#16#0	Token Address Pointer for Magazine Old Location Byte 2 of 10
+2.0	MAG_OLD_TOKEN_PTR3	BYTE	B#16#0	Token Address Pointer for Magazine Old Location Byte 3 of 10
+3.0	MAG_OLD_TOKEN_PTR4	BYTE	B#16#0	Token Address Pointer for Magazine Old Location Byte 4 of 10
+4.0	MAG_OLD_TOKEN_PTR5	BYTE	B#16#0	Token Address Pointer for Magazine Old Location Byte 5 of 10
+5.0	MAG_OLD_TOKEN_PTR6	BYTE	B#16#0	Token Address Pointer for Magazine Old Location Byte 6 of 10
+6.0	MAG_OLD_TOKEN_PTR7	BYTE	B#16#0	Token Address Pointer for Magazine Old Location Byte 7 of 10
+7.0	MAG_OLD_TOKEN_PTR8	BYTE	B#16#0	Token Address Pointer for Magazine Old Location Byte 8 of 10
+8.0	MAG_OLD_TOKEN_PTR9	BYTE	B#16#0	Token Address Pointer for Magazine Old Location Byte 9 of 10
+9.0	MAG_OLD_TOKEN_PTR10	BYTE	B#16#0	Token Address Pointer for Magazine Old Location Byte 10 of 10
+10.0	MAG_NEW_TOKEN_PTR1	BYTE	B#16#0	Token Address Pointer for Magazine New Location Byte 1 of 10
+11.0	MAG_NEW_TOKEN_PTR2	BYTE	B#16#0	Token Address Pointer for Magazine New Location Byte 2 of 10
+12.0	MAG_NEW_TOKEN_PTR3	BYTE	B#16#0	Token Address Pointer for Magazine New Location Byte 3 of 10
+13.0	MAG_NEW_TOKEN_PTR4	BYTE	B#16#0	Token Address Pointer for Magazine New Location Byte 4 of 10
+14.0	MAG_NEW_TOKEN_PTR5	BYTE	B#16#0	Token Address Pointer for Magazine New Location Byte 5 of 10
+15.0	MAG_NEW_TOKEN_PTR6	BYTE	B#16#0	Token Address Pointer for Magazine New Location Byte 6 of 10
+16.0	MAG_NEW_TOKEN_PTR7	BYTE	B#16#0	Token Address Pointer for Magazine New Location Byte 7 of 10
+17.0	MAG_NEW_TOKEN_PTR8	BYTE	B#16#0	Token Address Pointer for Magazine New Location Byte 8 of 10
+18.0	MAG_NEW_TOKEN_PTR9	BYTE	B#16#0	Token Address Pointer for Magazine New Location Byte 9 of 10
+19.0	MAG_NEW_TOKEN_PTR10	BYTE	B#16#0	Token Address Pointer for Magazine New Location Byte 10 of 10
+20.0	LOC_OLD_TOKEN_PTR1	BYTE	B#16#0	Token Address Pointer for Tool Location Old Byte 1 of 10
+21.0	LOC_OLD_TOKEN_PTR2	BYTE	B#16#0	Token Address Pointer for Tool Location Old Byte 2 of 10
+22.0	LOC_OLD_TOKEN_PTR3	BYTE	B#16#0	Token Address Pointer for Tool Location Old Byte 3 of 10
+23.0	LOC_OLD_TOKEN_PTR4	BYTE	B#16#0	Token Address Pointer for Tool Location Old Byte 4 of 10
+24.0	LOC_OLD_TOKEN_PTR5	BYTE	B#16#0	Token Address Pointer for Tool Location Old Byte 5 of 10
+25.0	LOC_OLD_TOKEN_PTR6	BYTE	B#16#0	Token Address Pointer for Tool Location Old Byte 6 of 10
+26.0	LOC_OLD_TOKEN_PTR7	BYTE	B#16#0	Token Address Pointer for Tool Location Old Byte 7 of 10
+27.0	LOC_OLD_TOKEN_PTR8	BYTE	B#16#0	Token Address Pointer for Tool Location Old Byte 8 of 10
+28.0	LOC_OLD_TOKEN_PTR9	BYTE	B#16#0	Token Address Pointer for Tool Location Old Byte 9 of 10
+29.0	LOC_OLD_TOKEN_PTR10	BYTE	B#16#0	Token Address Pointer for Tool Location Old Byte 10 of 10
+30.0	LOC_NEW_TOKEN_PTR1	BYTE	B#16#0	Token Address Pointer for Tool Location New Byte 1 of 10
+31.0	LOC_NEW_TOKEN_PTR2	BYTE	B#16#0	Token Address Pointer for Tool Location New Byte 2 of 10
+32.0	LOC_NEW_TOKEN_PTR3	BYTE	B#16#0	Token Address Pointer for Tool Location New Byte 3 of 10

Address	Name	Type	Start value	Comment
+33.0	LOC_NEW_TOKEN_PTR4	BYTE	B#16#0	Token Address Pointer for Tool Location New Byte 4 of 10
+34.0	LOC_NEW_TOKEN_PTR5	BYTE	B#16#0	Token Address Pointer for Tool Location New Byte 5 of 10
+35.0	LOC_NEW_TOKEN_PTR6	BYTE	B#16#0	Token Address Pointer for Tool Location New Byte 6 of 10
+36.0	LOC_NEW_TOKEN_PTR7	BYTE	B#16#0	Token Address Pointer for Tool Location New Byte 7 of 10
+37.0	LOC_NEW_TOKEN_PTR8	BYTE	B#16#0	Token Address Pointer for Tool Location New Byte 8 of 10
+38.0	LOC_NEW_TOKEN_PTR9	BYTE	B#16#0	Token Address Pointer for Tool Location New Byte 9 of 10
+39.0	LOC_NEW_TOKEN_PTR10	BYTE	B#16#0	Token Address Pointer for Tool Location New Byte 10 of 10
+40.0	TOOL_OLD_TOKEN_PTR1	BYTE	B#16#0	Token Address Pointer for Tool Number Old Byte 1 of 10
+41.0	TOOL_OLD_TOKEN_PTR2	BYTE	B#16#0	Token Address Pointer for Tool Number Old Byte 2 of 10
+42.0	TOOL_OLD_TOKEN_PTR3	BYTE	B#16#0	Token Address Pointer for Tool Number Old Byte 3 of 10
+43.0	TOOL_OLD_TOKEN_PTR4	BYTE	B#16#0	Token Address Pointer for Tool Number Old Byte 4 of 10
+44.0	TOOL_OLD_TOKEN_PTR5	BYTE	B#16#0	Token Address Pointer for Tool Number Old Byte 5 of 10
+45.0	TOOL_OLD_TOKEN_PTR6	BYTE	B#16#0	Token Address Pointer for Tool Number Old Byte 6 of 10
+46.0	TOOL_OLD_TOKEN_PTR7	BYTE	B#16#0	Token Address Pointer for Tool Number Old Byte 7 of 10
+47.0	TOOL_OLD_TOKEN_PTR8	BYTE	B#16#0	Token Address Pointer for Tool Number Old Byte 8 of 10
+48.0	TOOL_OLD_TOKEN_PTR9	BYTE	B#16#0	Token Address Pointer for Tool Number Old Byte 9 of 10
+49.0	TOOL_OLD_TOKEN_PTR10	BYTE	B#16#0	Token Address Pointer for Tool Number Old Byte 10 of 10
+50.0	TOOL_NEW_TOKEN_PTR1	BYTE	B#16#0	Token Address Pointer for Tool Number New Byte 1 of 10
+51.0	TOOL_NEW_TOKEN_PTR2	BYTE	B#16#0	Token Address Pointer for Tool Number New Byte 2 of 10
+52.0	TOOL_NEW_TOKEN_PTR3	BYTE	B#16#0	Token Address Pointer for Tool Number New Byte 3 of 10
+53.0	TOOL_NEW_TOKEN_PTR4	BYTE	B#16#0	Token Address Pointer for Tool Number New Byte 4 of 10
+54.0	TOOL_NEW_TOKEN_PTR5	BYTE	B#16#0	Token Address Pointer for Tool Number New Byte 5 of 10
+55.0	TOOL_NEW_TOKEN_PTR6	BYTE	B#16#0	Token Address Pointer for Tool Number New Byte 6 of 10
+56.0	TOOL_NEW_TOKEN_PTR7	BYTE	B#16#0	Token Address Pointer for Tool Number New Byte 7 of 10
+57.0	TOOL_NEW_TOKEN_PTR8	BYTE	B#16#0	Token Address Pointer for Tool Number New Byte 8 of 10
+58.0	TOOL_NEW_TOKEN_PTR9	BYTE	B#16#0	Token Address Pointer for Tool Number New Byte 9 of 10
+59.0	TOOL_NEW_TOKEN_PTR10	BYTE	B#16#0	Token Address Pointer for Tool Number New Byte 10 of 10
+60.0	COUNTER1_TOKEN_PTR1	BYTE	B#16#0	Token Address Pointer for PLC Counter 1 Byte 1 of 10
+61.0	COUNTER1_TOKEN_PTR2	BYTE	B#16#0	Token Address Pointer for PLC Counter 1 Byte 2 of 10
+62.0	COUNTER1_TOKEN_PTR3	BYTE	B#16#0	Token Address Pointer for PLC Counter 1 Byte 3 of 10
+63.0	COUNTER1_TOKEN_PTR4	BYTE	B#16#0	Token Address Pointer for PLC Counter 1 Byte 4 of 10
+64.0	COUNTER1_TOKEN_PTR5	BYTE	B#16#0	Token Address Pointer for PLC Counter 1 Byte 5 of 10
+65.0	COUNTER1_TOKEN_PTR6	BYTE	B#16#0	Token Address Pointer for PLC Counter 1 Byte 6 of 10
+66.0	COUNTER1_TOKEN_PTR7	BYTE	B#16#0	Token Address Pointer for PLC Counter 1 Byte 7 of 10
+67.0	COUNTER1_TOKEN_PTR8	BYTE	B#16#0	Token Address Pointer for PLC Counter 1 Byte 8 of 10
+68.0	COUNTER1_TOKEN_PTR9	BYTE	B#16#0	Token Address Pointer for PLC Counter 1 Byte 9 of 10
+69.0	COUNTER1_TOKEN_PTR10	BYTE	B#16#0	Token Address Pointer for PLC Counter 1 Byte 10 of 10
+70.0	COUNTER2_TOKEN_PTR1	BYTE	B#16#0	Token Address Pointer for PLC Counter 2 Byte 1 of 10
+71.0	COUNTER2_TOKEN_PTR2	BYTE	B#16#0	Token Address Pointer for PLC Counter 2 Byte 2 of 10
+72.0	COUNTER2_TOKEN_PTR3	BYTE	B#16#0	Token Address Pointer for PLC Counter 2 Byte 3 of 10
+73.0	COUNTER2_TOKEN_PTR4	BYTE	B#16#0	Token Address Pointer for PLC Counter 2 Byte 4 of 10

Address	Name	Type	Start value	Comment
+74.0	COUNTER2_TOKEN_PTR5	BYTE	B#16#0	Token Address Pointer for PLC Counter 2 Byte 5 of 10
+75.0	COUNTER2_TOKEN_PTR6	BYTE	B#16#0	Token Address Pointer for PLC Counter 2 Byte 6 of 10
+76.0	COUNTER2_TOKEN_PTR7	BYTE	B#16#0	Token Address Pointer for PLC Counter 2 Byte 7 of 10
+77.0	COUNTER2_TOKEN_PTR8	BYTE	B#16#0	Token Address Pointer for PLC Counter 2 Byte 8 of 10
+78.0	COUNTER2_TOKEN_PTR9	BYTE	B#16#0	Token Address Pointer for PLC Counter 2 Byte 9 of 10
+79.0	COUNTER2_TOKEN_PTR10	BYTE	B#16#0	Token Address Pointer for PLC Counter 2 Byte 10 of 10
+80.0	PROT_LEVEL_TOKEN_PTR1	BYTE	B#16#0	Token Address Pointer for Edit Protection Level Byte 1 of 10
+81.0	PROT_LEVEL_TOKEN_PTR2	BYTE	B#16#0	Token Address Pointer for Edit Protection Level Byte 2 of 10
+82.0	PROT_LEVEL_TOKEN_PTR3	BYTE	B#16#0	Token Address Pointer for Edit Protection Level Byte 3 of 10
+83.0	PROT_LEVEL_TOKEN_PTR4	BYTE	B#16#0	Token Address Pointer for Edit Protection Level Byte 4 of 10
+84.0	PROT_LEVEL_TOKEN_PTR5	BYTE	B#16#0	Token Address Pointer for Edit Protection Level Byte 5 of 10
+85.0	PROT_LEVEL_TOKEN_PTR6	BYTE	B#16#0	Token Address Pointer for Edit Protection Level Byte 6 of 10
+86.0	PROT_LEVEL_TOKEN_PTR7	BYTE	B#16#0	Token Address Pointer for Edit Protection Level Byte 7 of 10
+87.0	PROT_LEVEL_TOKEN_PTR8	BYTE	B#16#0	Token Address Pointer for Edit Protection Level Byte 8 of 10
+88.0	PROT_LEVEL_TOKEN_PTR9	BYTE	B#16#0	Token Address Pointer for Edit Protection Level Byte 9 of 10
+89.0	PROT_LEVEL_TOKEN_PTR10	BYTE	B#16#0	Token Address Pointer for Edit Protection Level Byte 10 of 10
+90.0	SP_PWR_LIMIT_TOKEN_PTR1	BYTE	B#16#0	Token Address Pointer for Spindle Power Monitor Limit Byte 1 of 10
+91.0	SP_PWR_LIMIT_TOKEN_PTR2	BYTE	B#16#0	Token Address Pointer for Spindle Power Monitor Limit Byte 2 of 10
+92.0	SP_PWR_LIMIT_TOKEN_PTR3	BYTE	B#16#0	Token Address Pointer for Spindle Power Monitor Limit Byte 3 of 10
+93.0	SP_PWR_LIMIT_TOKEN_PTR4	BYTE	B#16#0	Token Address Pointer for Spindle Power Monitor Limit Byte 4 of 10
+94.0	SP_PWR_LIMIT_TOKEN_PTR5	BYTE	B#16#0	Token Address Pointer for Spindle Power Monitor Limit Byte 5 of 10
+95.0	SP_PWR_LIMIT_TOKEN_PTR6	BYTE	B#16#0	Token Address Pointer for Spindle Power Monitor Limit Byte 6 of 10
+96.0	SP_PWR_LIMIT_TOKEN_PTR7	BYTE	B#16#0	Token Address Pointer for Spindle Power Monitor Limit Byte 7 of 10
+97.0	SP_PWR_LIMIT_TOKEN_PTR8	BYTE	B#16#0	Token Address Pointer for Spindle Power Monitor Limit Byte 8 of 10
+98.0	SP_PWR_LIMIT_TOKEN_PTR9	BYTE	B#16#0	Token Address Pointer for Spindle Power Monitor Limit Byte 9 of 10
+99.0	SP_PWR_LIMIT_TOKEN_PTR10	BYTE	B#16#0	Token Address Pointer for Spindle Power Monitor Limit Byte 10 of 10
=100.0		END_STRUCT		

DB93 - <offline>

"TOOL DATA TRANS" Tool Data Transfer to NC [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 11/15/00 04:22:38 PMPM
 Interface: 06/07/00 03:10:32 PMPM
Lengths (block/logic/data): 00190 00068 00000

Block: DB93

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	Old_Tool_Magazine_DI	DINT	L#0	Old Tool Magazine Number (Double Integer)
+4.0	New_Tool_Magazine_DI	DINT	L#0	New Tool Magazine Number (Double Integer)
+8.0	Old_Tool_Location_DI	DINT	L#0	Old Tool Location (Double Integer)
+12.0	New_Tool_Location_DI	DINT	L#0	New Tool Location (Double Integer)
+16.0	Old_Tool_Number_DI	DINT	L#0	Old Tool Number (Tool in Spindle) (Double Integer)
+20.0	New_Tool_Number_DI	DINT	L#0	New Tool Number (Double Integer)
+24.0	PLC_COUNTER_1_DI	DINT	L#0	PLC Counter 1 (Double Integer)
+28.0	PLC_COUNTER_2_DI	DINT	L#0	PLC Counter 2 (Double Integer)
+32.0	Old_Tool_Magazine_R	REAL	0.000000e+000	Old Tool Magazine Number (Real)
+36.0	New_Tool_Magazine_R	REAL	0.000000e+000	New Tool Magazine Number (Real)
+40.0	Old_Tool_Location_R	REAL	0.000000e+000	Old Tool Location (Real)
+44.0	New_Tool_Location_R	REAL	0.000000e+000	New Tool Location (Real)
+48.0	Old_Tool_Number_R	REAL	0.000000e+000	Old Tool Number (Tool in Spindle) (Real)
+52.0	New_Tool_Number_R	REAL	0.000000e+000	New Tool Number (Real)
+56.0	PLC_COUNTER_1_R	REAL	0.000000e+000	PLC Counter 1 (Real)
+60.0	PLC_COUNTER_2_R	REAL	0.000000e+000	PLC Counter 2 (Real)
+64.0	FB3_State	WORD	W#16#0	FB3 State
=66.0		END_STRUCT		

DB95 - <offline>

"TC CYCLE BUFFER" Tool Change Cycle Marker Buffer [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 11/15/00 10:36:33 AMAM
 Interface: 11/13/00 08:37:58 PMPM
Lengths (block/logic/data): 00136 00006 00000

Block: DB95

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	Tool_Change_Active	BOOL	FALSE	Tool Change Cycle Active
+0.1	Tool_Change_Interrupt	BOOL	FALSE	Tool Change Cycle Interrupted Buffer
+0.2	Tool_Change_Int_Rem	BOOL	FALSE	Tool Change Cycle Interrupted Remember
+0.3	Tool_Change_ISO_Dialect	BOOL	FALSE	Tool Change Cycle Called with ISO Dialect Active
+0.4	Reserved_04	BOOL	FALSE	
+0.5	Reserved_05	BOOL	FALSE	
+0.6	Reserved_06	BOOL	FALSE	
+0.7	Reserved_07	BOOL	FALSE	
+1.0	Tool_Setup_Cycle_Active	BOOL	FALSE	Tool Setup Cycle Active
+1.1	Tool_Setup_Active	BOOL	FALSE	Tool Setup Active
+1.2	Tool_Setup_Interrupt	BOOL	FALSE	Tool Setup Cycle Interrupted Buffer
+1.3	Tool_Setup_Int_Rem	BOOL	FALSE	Tool Setup Cycle Interrupted Remember
+1.4	Reserved_14	BOOL	FALSE	
+1.5	Reserved_15	BOOL	FALSE	
+1.6	Reserved_16	BOOL	FALSE	
+1.7	Reserved_17	BOOL	FALSE	
+2.0	Tool_Setup_Mag_1	BOOL	FALSE	Tool Setup Cycle for Magazine #1
+2.1	Tool_Setup_Mag_2	BOOL	FALSE	Tool Setup Cycle for Magazine #2
+2.2	Tool_To_Tool	BOOL	FALSE	Tool Setup Tool-to-Tool Routine
+2.3	Tool_To_Magazine	BOOL	FALSE	Tool Setup Tool-to-Magazine Routine
+2.4	First_Tool_Loaded	BOOL	FALSE	Tool Setup First Tool Loaded
=4.0		END_STRUCT		

DB96 - <offline>

"ATC MAG 1 COUNT DATA" ATC #1 Magazine Counter Data [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 09/18/00 01:46:14 PMPM
 Interface: 06/28/00 03:37:44 PMPM
Lengths (block/logic/data): 00126 00020 00000

Block: DB96

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	Mag_1_Count_1_Preset	INT	0	Tool Magazine #1 Counter #1 Preset Value
+2.0	Mag_1_Count_1_BCD	INT	0	Tool Magazine #1 Count #1 Value (BCD)
+4.0	Mag_1_Count_1_INT	INT	0	Tool Magazine #1 Count #1 Value (INT)
+6.0	Mag_1_Diff	INT	0	Tool Magazine #1 Difference (Actual - Nominal)
+8.0	DB72_DBW30_Buffer_1	INT	0	Tool Management Old Tool Location Buffer Magazine #1
+10.0	DB72_DBW26_Buffer_1	INT	0	Tool Management New Tool Location Buffer Magazine #1
+12.0	Mag_1_Count_2_Preset	INT	0	Tool Magazine #1 Counter #2 Preset Value
+14.0	Mag_1_Count_2_BCD	INT	0	Tool Magazine #1 Count #2 Value (BCD)
+16.0	Mag_1_Count_2_INT	INT	0	Tool Magazine #1 Count #2 Value (INT)
=18.0		END_STRUCT		

DB97 - <offline>

"ATC MAG 2 COUNT DATA" ATC #2 Magazine Counter Data [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 09/18/00 01:46:22 PMPM
 Interface: 06/28/00 03:37:44 PMPM
Lengths (block/logic/data): 00126 00020 00000

Block: DB97

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	Mag_2_Count_1_Preset	INT	0	Tool Magazine #2 Counter #1 Preset Value
+2.0	Mag_2_Count_1_BCD	INT	0	Tool Magazine #2 Count #1 Value (BCD)
+4.0	Mag_2_Count_1_INT	INT	0	Tool Magazine #2 Count #1 Value (INT)
+6.0	Mag_2_Diff	INT	0	Tool Magazine #2 Difference (Actual - Nominal)
+8.0	DB72_DBW30_Buffer_2	INT	0	Tool Management Old Tool Location Buffer Magazine # 2
+10.0	DB72_DBW26_Buffer_2	INT	0	Tool Management New Tool Location Buffer Magazine # 2
+12.0	Mag_2_Count_2_Preset	INT	0	Tool Magazine #2 Counter #2 Preset Value
+14.0	Mag_2_Count_2_BCD	INT	0	Tool Magazine #2 Count #2 Value (BCD)
+16.0	Mag_2_Count_2_INT	INT	0	Tool Magazine #2 Count #2 Value (INT)
=18.0		END_STRUCT		

DB98 - <offline>

"GUD NAME DATA" GUD Address Names for FB5 [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/08/01 12:50:05 AMAM
 Interface: 02/07/01 11:07:26 PMPM
Lengths (block/logic/data): 00690 00402 00000

Block: DB98

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	MAG_OLD	STRING[32]	'MAG_OLD'	GUD Variable Name for Magazine Old Data
+34.0	FB5_DUMMY1	DINT	L#0	FB5 Dummy Variable 1
+38.0	FB5_STATE1	WORD	W#16#0	FB5 State 1
+40.0	MAG_NEW	STRING[32]	'MAG_NEW'	GUD Variable Name for Magazine New Data
+74.0	FB5_DUMMY2	DINT	L#0	FB5 Dummy Variable 2
+78.0	FB5_STATE2	WORD	W#16#0	FB5 State 2
+80.0	LOC_OLD	STRING[32]	'LOC_OLD'	GUD Variable Name for Location Old Data
+114.0	FB5_DUMMY3	DINT	L#0	FB5 Dummy Variable 3
+118.0	FB5_STATE3	WORD	W#16#0	FB5 State 3
+120.0	LOC_NEW	STRING[32]	'LOC_NEW'	GUD Variable Name for Location New Data
+154.0	FB5_DUMMY4	DINT	L#0	FB5 Dummy Variable 4
+158.0	FB5_STATE4	WORD	W#16#0	FB5 State 4
+160.0	TOOL_OLD	STRING[32]	'TOOL_OLD'	GUD Variable Name for Tool Old Data
+194.0	FB5_DUMMY5	DINT	L#0	FB5 Dummy Variable 5
+198.0	FB5_STATE5	WORD	W#16#0	FB5 State 5
+200.0	TOOL_NEW	STRING[32]	'TOOL_NEW'	GUD Variable Name for Tool New Data
+234.0	FB5_DUMMY6	DINT	L#0	FB5 Dummy Variable 6
+238.0	FB5_STATE6	WORD	W#16#0	FB5 State 6
+240.0	COUNTER1	STRING[32]	'PLC_COUNTER_1'	GUD Variable Name for PLC Counter 1
+274.0	FB5_DUMMY7	DINT	L#0	FB5 Dummy Variable 7
+278.0	FB5_STATE7	WORD	W#16#0	FB5 State 7
+280.0	COUNTER3	STRING[32]	'PLC_COUNTER_3'	GUD Variable Name for PLC Counter 3
+314.0	FB5_DUMMY8	DINT	L#0	FB5 Dummy Variable 8
+318.0	FB5_STATE8	WORD	W#16#0	FB5 State 8
+320.0	EDIT_PROTECTION_LEVEL	STRING[32]	'EDIT_PROTECTION_LEVEL'	GUD Variable Name for Edit Protection Level
+354.0	FB5_DUMMY9	DINT	L#0	FB5 Dummy Variable 9
+358.0	FB5_STATE9	WORD	W#16#0	FB5 State 9
+360.0	SP_POWER_MON_LIMIT	STRING[32]	'SPINDLE_POWER_LIMIT'	GUD Variable Name for Spindle Power Monitor Limit
+394.0	FB5_DUMMY10	DINT	L#0	FB5 Dummy Variable 10
+398.0	FB5_STATE10	WORD	W#16#0	FB5 State 10
=400.0		END_STRUCT		

DB99 - <offline>

"EDIT PROTECTION" Software Keyswitch Edit Protection Level Data [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 12/11/00 07:29:37 PMPM
 Interface: 12/07/00 05:18:45 PMPM
Lengths (block/logic/data): 00100 00008 00000

Block: DB99

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	EDIT_PROT_LEVEL	DINT	L#0	Edit Protection Level Setting
+4.0	FB2_State	WORD	W#16#0	FB2 State
=6.0		END_STRUCT		

DB100 - <offline>

"AXES LUBE BUFFER" Axes Lubrication Marker Buffer [User]

Name: Hardinge

Author: MGS

Time stamp Code:

Lengths (block/logic/data): 00096 00004 00000

Family: VMC

Version: 1.0

Block version: 2

02/07/01 01:32:24 AMAM

Interface: 01/18/01 01:04:09 AMAM

Block: DB100

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	Lube_Limit_Buffer	BOOL	FALSE	Axes Lubrication Time Limit Reached Buffer
=2.0		END_STRUCT		

DB101 - <offline>

"PGM CONTROL BUFFER" Program Control Marker Buffer [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/07/01 01:38:42 AMAM
 Interface: 02/07/01 01:38:42 AMAM
Lengths (block/logic/data): 00108 00004 00000

Block: DB101

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	Single_Block_Buffer	BOOL	FALSE	Program Control Single Block Marker Buffer
+0.1	Program_Test_Buffer	BOOL	FALSE	Program Control Program Test Marker Buffer
+0.2	Optional_Stop_Buffer	BOOL	FALSE	Program Control Optional Stop Marker Buffer
+0.3	Block_Skip_Buffer	BOOL	FALSE	Program Control Block Skip Marker Buffer
+0.4	Rapid_Override_Buffer	BOOL	FALSE	Program Control Rapid Override Marker Buffer
+0.5	Rapid_0_Buffer	BOOL	FALSE	Program Control Rapid 0% Marker Buffer
+0.6	Rapid_20_Buffer	BOOL	FALSE	Program Control Rapid 20% Marker Buffer
+0.7	Rapid_50_Buffer	BOOL	FALSE	Program Control Rapid 50% Marker Buffer
=2.0		END_STRUCT		

DB105 - <offline>

"NC VAR" NC VAR Variables [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/08/01 09:40:02 PMPM
 Interface: 02/08/01 02:28:23 AMAM
Lengths (block/logic/data): 00130 00012 00000

Block: DB105

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	C1_SSP_driveLoad1_16	STRUCT		
+0.0	SYNTAX_ID	BYTE	B#16#82	
+1.0	bereich_u_einheit	BYTE	B#16#41	
+2.0	spalte	WORD	W#16#10	
+4.0	zeile	WORD	W#16#1	
+6.0	bausteintyp	BYTE	B#16#72	
+7.0	ZEILENZAHL	BYTE	B#16#1	
+8.0	typ	BYTE	B#16#F	
+9.0	laenge	BYTE	B#16#8	
=10.0		END_STRUCT		
=10.0		END_STRUCT		

DB107 - <offline>

"SP POWER DATA" Spindle Power Monitor Data [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 02/08/01 09:40:40 PMPM
 Interface: 02/07/01 11:16:38 PMPM
Lengths (block/logic/data): 00106 00012 00000

Block: DB107

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	SP_POWER_PRESET	REAL	0.000000e+000	Spindle Power Preset Limit
+4.0	SP_POWER_ACTUAL	REAL	0.000000e+000	Spindle Actual Power
+8.0	FB2_State	WORD	W#16#0	FB2 State
=10.0		END_STRUCT		

DB115 - <offline>

"EXTENDED M/H CODES"

NC Extended M-Code & H-Code Decoding Interface [User]

Name: Hardinge**Family:** VMC**Author:** MGS**Version:** 1.0**Block version:** 2**Time stamp Code:** 02/08/01 11:24:22 PMPM**Interface:** 02/08/01 09:56:51 PMPM**Lengths (block/logic/data):** 00210 00010 00000**Block:** DB115

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	Extended_M03	BOOL	FALSE	Channel 1 Extended Decoding for M03
+0.1	Extended_M04	BOOL	FALSE	Channel 1 Extended Decoding for M04
+0.2	Extended_M05	BOOL	FALSE	Channel 1 Extended Decoding for M05
+0.3	Extended_M206	BOOL	FALSE	Channel 1 Extended Decoding for M206
+0.4	Reserved_04	BOOL	FALSE	Not Used
+0.5	Reserved_05	BOOL	FALSE	Not Used
+0.6	Reserved_06	BOOL	FALSE	Not Used
+0.7	Reserved_07	BOOL	FALSE	Not Used
+1.0	Extended_M100	BOOL	FALSE	Channel 1 Extended Decoding for M100
+1.1	Extended_M101	BOOL	FALSE	Channel 1 Extended Decoding for M101
+1.2	Extended_M102	BOOL	FALSE	Channel 1 Extended Decoding for M102
+1.3	Extended_M103	BOOL	FALSE	Channel 1 Extended Decoding for M103
+1.4	Extended_M104	BOOL	FALSE	Channel 1 Extended Decoding for M104
+1.5	Extended_M105	BOOL	FALSE	Channel 1 Extended Decoding for M105
+1.6	Extended_M106	BOOL	FALSE	Channel 1 Extended Decoding for M106
+1.7	Extended_M107	BOOL	FALSE	Channel 1 Extended Decoding for M107
+2.0	Extended_M110	BOOL	FALSE	Channel 1 Extended Decoding for M110
+2.1	Extended_M111	BOOL	FALSE	Channel 1 Extended Decoding for M111
+2.2	Extended_M112	BOOL	FALSE	Channel 1 Extended Decoding for M112
+2.3	Extended_M113	BOOL	FALSE	Channel 1 Extended Decoding for M113
+2.4	Extended_M114	BOOL	FALSE	Channel 1 Extended Decoding for M114
+2.5	Extended_M115	BOOL	FALSE	Channel 1 Extended Decoding for M115
+2.6	Extended_M116	BOOL	FALSE	Channel 1 Extended Decoding for M116
+2.7	Extended_M117	BOOL	FALSE	Channel 1 Extended Decoding for M117
+3.0	Extended_M134	BOOL	FALSE	Channel 1 Extended Decoding for M134
+3.1	Extended_M135	BOOL	FALSE	Channel 1 Extended Decoding for M135
+3.2	Extended_M136	BOOL	FALSE	Channel 1 Extended Decoding for M136
+3.3	Extended_M137	BOOL	FALSE	Channel 1 Extended Decoding for M137
+3.4	Extended_M138	BOOL	FALSE	Channel 1 Extended Decoding for M138
+3.5	Extended_M139	BOOL	FALSE	Channel 1 Extended Decoding for M139
+3.6	Reserved_36	BOOL	FALSE	Not Used
+3.7	Reserved_37	BOOL	FALSE	Not Used
+4.0	Extended_M190	BOOL	FALSE	Channel 1 Extended Decoding for M190
+4.1	Extended_M191	BOOL	FALSE	Channel 1 Extended Decoding for M191
+4.2	Extended_M192	BOOL	FALSE	Channel 1 Extended Decoding for M192
+4.3	Extended_M193	BOOL	FALSE	Channel 1 Extended Decoding for M193
+4.4	Reserved_44	BOOL	FALSE	Not Used
+4.5	Reserved_45	BOOL	FALSE	Not Used
+4.6	Reserved_46	BOOL	FALSE	Not Used
+4.7	Reserved_47	BOOL	FALSE	Not Used
+5.0	Extended_H65	BOOL	FALSE	Channel 1 Extended Decoding for H65
+5.1	Extended_H67	BOOL	FALSE	Channel 1 Extended Decoding for H67
+5.2	Extended_H111	BOOL	FALSE	Channel 1 Extended Decoding for H111
+5.3	Extended_H222	BOOL	FALSE	Channel 1 Extended Decoding for H222
+5.4	Reserved_54	BOOL	FALSE	Not Used
+5.5	Reserved_55	BOOL	FALSE	Not Used
+5.6	Reserved_56	BOOL	FALSE	Not Used
+5.7	Reserved_57	BOOL	FALSE	Not Used
+6.0	Extended_M160	BOOL	FALSE	Channel 1 Extended Decoding for M160
+6.1	Extended_M161	BOOL	FALSE	Channel 1 Extended Decoding for M161
+6.2	Extended_M162	BOOL	FALSE	Channel 1 Extended Decoding for M162
+6.3	Extended_M163	BOOL	FALSE	Channel 1 Extended Decoding for M163
+6.4	Extended_M164	BOOL	FALSE	Channel 1 Extended Decoding for M164
+6.5	Extended_M165	BOOL	FALSE	Channel 1 Extended Decoding for M165
+6.6	Extended_M166	BOOL	FALSE	Channel 1 Extended Decoding for M166
+6.7	Extended_M167	BOOL	FALSE	Channel 1 Extended Decoding for M167
=8.0		END_STRUCT		

DB117 - <offline>

"CUST M CODE BUFFER" Customer Specific M-Code Marker Buffer [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 12/11/00 07:27:55 PMPM
 Interface: 11/15/00 09:18:17 PMPM
Lengths (block/logic/data): 00102 00004 00000

Block: DB117

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	M134_Buffer	BOOL	FALSE	Customer Specific M134 Buffer
+0.1	M136_Buffer	BOOL	FALSE	Customer Specific M136 Buffer
+0.2	M138_Buffer	BOOL	FALSE	Customer Specific M138 Buffer
+0.3	M190_Buffer	BOOL	FALSE	Customer Specific M190 Buffer
+0.4	M192_Buffer	BOOL	FALSE	Customer Specific M192 Buffer
=2.0		END_STRUCT		

DB118 - <offline>

"LUBE INTERVAL COUNT" Axes Grease Lubrication Count Data [User]

Name: Hardinge **Family:** VMC
Author: MGS **Version:** 1.0
 Block version: 2
Time stamp Code: 01/12/01 12:52:53 AMAM
 Interface: 01/12/01 12:52:53 AMAM
Lengths (block/logic/data): 00208 00060 00000

Block: DB118

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	Lube_Count_1_Int	WORD	W#16#0	Lubrication Interval Counter #1 (Integer)
+2.0	Lube_Count_2_Int	WORD	W#16#0	Lubrication Interval Counter #2 (Integer)
+4.0	Lube_Count_3_Int	WORD	W#16#0	Lubrication Interval Counter #3 (Integer)
+6.0	Lube_Count_4_Int	WORD	W#16#0	Lubrication Interval Counter #4 (Integer)
+8.0	Lube_Count_5_Int	WORD	W#16#0	Lubrication Interval Counter #5 (Integer)
+10.0	Lube_Count_6_Int	WORD	W#16#0	Lubrication Interval Counter #6 (Integer)
+12.0	Lube_Count_7_Int	WORD	W#16#0	Lubrication Interval Counter #7 (Integer)
+14.0	Lube_Count_8_Int	WORD	W#16#0	Lubrication Interval Counter #8 (Integer)
+16.0	Lube_Count_9_Int	WORD	W#16#0	Lubrication Interval Counter #9 (Integer)
+18.0	Lube_Count_Interval	WORD	W#16#800	Lubrication Counter Interval
+20.0	Lube_Count_1_BCD	WORD	W#16#0	Lubrication Interval Counter #1 (BCD)
+22.0	Lube_Count_2_BCD	WORD	W#16#0	Lubrication Interval Counter #2 (BCD)
+24.0	Lube_Count_3_BCD	WORD	W#16#0	Lubrication Interval Counter #3 (BCD)
+26.0	Lube_Count_4_BCD	WORD	W#16#0	Lubrication Interval Counter #4 (BCD)
+28.0	Lube_Count_5_BCD	WORD	W#16#0	Lubrication Interval Counter #5 (BCD)
+30.0	Lube_Count_6_BCD	WORD	W#16#0	Lubrication Interval Counter #6 (BCD)
+32.0	Lube_Count_7_BCD	WORD	W#16#0	Lubrication Interval Counter #7 (BCD)
+34.0	Lube_Count_8_BCD	WORD	W#16#0	Lubrication Interval Counter #8 (BCD)
+36.0	Lube_Count_9_BCD	WORD	W#16#0	Lubrication Interval Counter #9 (BCD)
+38.0	Dummy	WORD	W#16#0	Dummy Word
+40.0	Lube_Count_1_BCD_Buffer	WORD	W#16#0	Lubrication Interval Counter #1 (BCD) Buffer
+42.0	Lube_Count_2_BCD_Buffer	WORD	W#16#0	Lubrication Interval Counter #2 (BCD) Buffer
+44.0	Lube_Count_3_BCD_Buffer	WORD	W#16#0	Lubrication Interval Counter #3 (BCD) Buffer
+46.0	Lube_Count_4_BCD_Buffer	WORD	W#16#0	Lubrication Interval Counter #4 (BCD) Buffer
+48.0	Lube_Count_5_BCD_Buffer	WORD	W#16#0	Lubrication Interval Counter #5 (BCD) Buffer
+50.0	Lube_Count_6_BCD_Buffer	WORD	W#16#0	Lubrication Interval Counter #6 (BCD) Buffer
+52.0	Lube_Count_7_BCD_Buffer	WORD	W#16#0	Lubrication Interval Counter #7 (BCD) Buffer
+54.0	Lube_Count_8_BCD_Buffer	WORD	W#16#0	Lubrication Interval Counter #8 (BCD) Buffer
+56.0	Lube_Count_9_BCD_Buffer	WORD	W#16#0	Lubrication Interval Counter #9 (BCD) Buffer
=58.0		END_STRUCT		

UDT20 - <offline>

"OPTIONS LIST" Machine Options List [User]
Name: **Family:**
Author: **Version:** 0.1
Block version: 2
Time stamp Code: 02/20/01 03:55:23 PMPM
Interface: 02/13/01 12:56:51 AMAM
Lengths (block/logic/data): 00002 00002 00000

Address	Name	Type	Start value	Comment
0.0		STRUCT		
+0.0	Option_00	BOOL	FALSE	Through Spindle Coolant M53 Auto Trigger M8 Active
+0.1	Option_01	BOOL	FALSE	Spindle Airblow After Through Spindle Coolant Stop Active
+0.2	Option_02	BOOL	FALSE	Coolant Active After Door Open Active
+0.3	Option_03	BOOL	FALSE	Spindle Jog with Door Open Active
+0.4	Option_04	BOOL	FALSE	Auto Power Off Active
+0.5	Option_05	BOOL	FALSE	Spindle Run with Door Open in <Manual/Jog> Active
+0.6	Option_06	BOOL	FALSE	Tool Setup Operation Active
+0.7	Option_07	BOOL	FALSE	Emergency Stop is Not Triggered by HMI Failure Active
+1.0	Option_10	BOOL	FALSE	Alarm Buzzer with Program End M02/M30 Active
+1.1	Option_11	BOOL	FALSE	Flushing Coolant Interlocked with Spindle Run Active
+1.2	Option_12	BOOL	FALSE	Alarm Buzzer with Emergency Stop Active
+1.3	Option_13	BOOL	FALSE	M190 Output Remains "On" After Power On or NCK Reset
+1.4	Option_14	BOOL	FALSE	M192 Output Remains "On" After Power On or NCK Reset
+1.5	Option_15	BOOL	FALSE	M134 Output Remains "On" After Power On or NCK Reset
+1.6	Option_16	BOOL	FALSE	M136 Output Remains "On" After Power On or NCK Reset
+1.7	Option_17	BOOL	FALSE	M138 Output Remains "On" After Power On or NCK Reset
+2.0	Option_20	BOOL	FALSE	Spindle Does Not Stop With M00
+2.1	Option_21	BOOL	FALSE	Spindle Does Not Stop With M01
+2.2	Option_22	BOOL	FALSE	Coolant Does Not Stop With M00
+2.3	Option_23	BOOL	FALSE	Coolant Does Not Stop With M01
+2.4	Option_24	BOOL	FALSE	Spindle Stop After Door Open in Single Block
+2.5	Option_25	BOOL	FALSE	Linear Scale Air Pressure Fault Active
+2.6	Option_26	BOOL	FALSE	Spindle & Feedhold After Door Close in Single Block Inactive
+2.7	Option_27	BOOL	TRUE	Door Interlock Inactive
+3.0	Option_30	BOOL	FALSE	Cycle Start with Axes Not Referenced Active
+3.1	Option_31	BOOL	FALSE	Spindle Through Coolant Pressure Fault Inactive
+3.2	Option_32	BOOL	FALSE	Spindle Stops for [Feedhold] with Program Run in <Auto>
+3.3	Option_33	BOOL	FALSE	Spindle Stops for Mode Change <Auto> to <Jog>
+3.4	Option_34	BOOL	FALSE	Axis Jog from MCP with Door Open Active
+3.5	Option_35	BOOL	FALSE	MPG with Door Open Inactive
+3.6	Option_36	BOOL	FALSE	Chip Conveyor Interlocked with Spindle Run Active
+3.7	Option_37	BOOL	FALSE	Chip Conveyor Stops with Door Open
+4.0	Option_40	BOOL	TRUE	Feed Override for Tool Change Active
+4.1	Option_41	BOOL	FALSE	Single Block Motion Allowed with Door Open Active
+4.2	Option_42	BOOL	FALSE	Auto Reference with Door Open Active
+4.3	Option_43	BOOL	FALSE	M190 Switched Off with Limit Switch Feedback
+4.4	Option_44	BOOL	FALSE	M192 Switched Off with Limit Switch Feedback
+4.5	Option_45	BOOL	FALSE	Program Control Function Power Off Memory Active
+4.6	Option_46	BOOL	FALSE	Soft Keyswitch Function Inactive
+4.7	Option_47	BOOL	FALSE	Axis Lubrication Alarm with Z Axis Reference (0) or with M02/M30 (1)
+5.0	Option_50	BOOL	FALSE	Chip Conveyor Fitted
+5.1	Option_51	BOOL	FALSE	Chip Flushing Coolant Fitted
+5.2	Option_52	BOOL	FALSE	Through Spindle Coolant Fitted
+5.3	Option_53	BOOL	FALSE	Tool Change Spindle Empty Check Message Enable
+5.4	Option_54	BOOL	FALSE	M190 Output with Feedback for Edge Detection
+5.5	Option_55	BOOL	FALSE	M191 with Feedback for Edge Detection
+5.6	Option_56	BOOL	FALSE	M192 Output with Feedback for Edge Detection
+5.7	Option_57	BOOL	FALSE	M193 with Feedback for Edge Detection
+6.0	Option_60	BOOL	FALSE	M134 Remains On with Emergency Stop Active
+6.1	Option_61	BOOL	FALSE	M136 Remains On with Emergency Stop Active
+6.2	Option_62	BOOL	FALSE	M138 Remains On with Emergency Stop Active
+6.3	Option_63	BOOL	FALSE	Door Lock Inactive
+6.4	Option_64	BOOL	FALSE	M190 Output with Feedback for Logic Low or Trailing Edge Detection
+6.5	Option_65	BOOL	FALSE	M191 with Feedback for Logic Low or Trailing Edge Detection
+6.6	Option_66	BOOL	FALSE	M192 Output with Feedback for Logic Low or Trailing Edge Detection
+6.7	Option_67	BOOL	FALSE	M193 with Feedback for Logic Low or Trailing Edge Detection
+7.0	Option_70	BOOL	FALSE	M190 Remains On with Emergency Stop Active
+7.1	Option_71	BOOL	FALSE	M192 Remains On with Emergency Stop Active
+7.2	Option_72	BOOL	FALSE	5th Axis 2nd Measuring System Active
+7.3	Option_73	BOOL	FALSE	5th Axis Active
+7.4	Option_74	BOOL	FALSE	M190 Output with NC Read-In Disable
+7.5	Option_75	BOOL	FALSE	M191 with NC Read-In Disable
+7.6	Option_76	BOOL	FALSE	M192 Output with NC Read-In Disable
+7.7	Option_77	BOOL	FALSE	M193 with NC Read-In Disable
+8.0	Option_80	BOOL	FALSE	X Axis 2nd Measuring System Active
+8.1	Option_81	BOOL	FALSE	Y Axis 2nd Measuring System Active
+8.2	Option_82	BOOL	FALSE	Z Axis 2nd Measuring System Active
+8.3	Option_83	BOOL	FALSE	4th Axis 2nd Measuring System Active

Address	Name	Type	Start value	Comment
+8.4	Option_84	BOOL	FALSE	Midaco Pallet System Active
+8.5	Option_85	BOOL	FALSE	4th Axis Active
+8.6	Option_86	BOOL	FALSE	Spindle Power Monitor Active
+8.7	Option_87	BOOL	FALSE	2nd Tool Magazine Active
+9.0	Option_90	BOOL	TRUE	System Boot-Up in ISO Mode
+9.1	Option_91	BOOL	TRUE	System Changeover to ISO with No [Reset] Key Interlock
+9.2	Option_92	BOOL	FALSE	Auto Reference Inactive
+9.3	Option_93	BOOL	FALSE	Customer Specific M-Codes Group #1 Active
+9.4	Option_94	BOOL	FALSE	Customer Specific M-Codes Group #2 Active
+9.5	Option_95	BOOL	TRUE	Handwheel Active Before Reference Point Approach
+9.6	Option_96	BOOL	FALSE	Midaco Pallet [Reset] Not Active
+9.7	Option_97	BOOL	FALSE	Tool Change Cycle Timeout Fault Inactive
+10.0	Option_100	BOOL	TRUE	Single Speed 8,000rpm Spindle
+10.1	Option_101	BOOL	FALSE	Single Speed 12,000rpm Spindle
+10.2	Option_102	BOOL	FALSE	Spindle with Gear Change (ZF Gearbox)
+10.3	Option_103	BOOL	FALSE	Reserved - Do Not Use
+10.4	Option_104	BOOL	FALSE	Reserved - Do Not Use
+10.5	Option_105	BOOL	FALSE	Reserved - Do Not Use
+10.6	Option_106	BOOL	FALSE	Reserved - Do Not Use
+10.7	Option_107	BOOL	FALSE	Reserved - Do Not Use
+11.0	Option_110	BOOL	TRUE	X Axis Disable for Machine Startup
+11.1	Option_111	BOOL	TRUE	Y Axis Disable for Machine Startup
+11.2	Option_112	BOOL	TRUE	Z Axis Disable for Machine Startup
+11.3	Option_113	BOOL	TRUE	4 Axis Disable for Machine Startup
+11.4	Option_114	BOOL	TRUE	5 Axis Disable for Machine Startup
+11.5	Option_115	BOOL	TRUE	X Axis -VE 2nd Softlimit Active for Machine Setup
+11.6	Option_116	BOOL	TRUE	Y Axis +VE 2nd Softlimit Active for Machine Setup
+11.7	Option_117	BOOL	TRUE	Z Axis +VE 2nd Softlimit Active for Machine Setup
+12.0	Option_120	BOOL	TRUE	ATC Magazine Alarm Suppress for Machine Startup
+12.1	Option_121	BOOL	FALSE	No Function
+12.2	Option_122	BOOL	FALSE	No Function
+12.3	Option_123	BOOL	FALSE	No Function
+12.4	Option_124	BOOL	FALSE	No Function
+12.5	Option_125	BOOL	FALSE	No Function
+12.6	Option_126	BOOL	FALSE	No Function
+12.7	Option_127	BOOL	FALSE	No Function
+13.0	Option_130	BOOL	FALSE	No Function
+13.1	Option_131	BOOL	FALSE	No Function
+13.2	Option_132	BOOL	FALSE	No Function
+13.3	Option_133	BOOL	FALSE	No Function
+13.4	Option_134	BOOL	FALSE	No Function
+13.5	Option_135	BOOL	FALSE	No Function
+13.6	Option_136	BOOL	FALSE	No Function
+13.7	Option_137	BOOL	FALSE	No Function
+14.0	Option_140	REAL	0.000000e+000	Machine Type as VMC600II, VMC800II or VMC1000II
=18.0		END_STRUCT		

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PLC Cross Reference

Address	Symbol	Block	Type	Language	Details
I 0.0	AUTO MODE SELECT	OB100	R	STL	NW 2 S
I 0.1	MDA MODE SELECT	FC79	R	LAD	NW 2 /.
I 0.1	MDA MODE SELECT	FC41	R	LAD	NW 5 /.
I 0.2	JOG MODE SELECT	FC41	R	LAD	NW 11 /.
I 0.2	JOG MODE SELECT	FC41	R	LAD	NW 7 /.
I 0.2	JOG MODE SELECT	FC41	R	LAD	NW 15 /.
I 0.2	JOG MODE SELECT	FC41	R	LAD	NW 9 /.
I 0.2	JOG MODE SELECT	FC41	R	LAD	NW 13 /.
I 0.2	JOG MODE SELECT	FC47	R	LAD	NW 26 /.
I 0.2	JOG MODE SELECT	FC41	R	LAD	NW 16 /.
I 0.2	JOG MODE SELECT	FC41	R	LAD	NW 17 /.
I 0.3	AXES AUTO REF SEL	FC48	R	LAD	NW 1 /.
I 0.3	AXES AUTO REF SEL	FC48	R	LAD	NW 6 /.
I 0.3	AXES AUTO REF SEL	FC79	R	LAD	NW 6 /.
I 0.4	SPIN CCW RUN SEL	FC60	R	LAD	NW 37 /.
I 0.4	SPIN CCW RUN SEL	FC60	R	LAD	NW 13 /.
I 0.4	SPIN CCW RUN SEL	FC60	R	LAD	NW 43 /.
I 0.4	SPIN CCW RUN SEL	FC60	R	LAD	NW 15 /.
I 0.4	SPIN CCW RUN SEL	FC60	R	LAD	NW 38 /.
I 0.5	SPIN STOP SELECT	FC60	R	LAD	NW 15 /.
I 0.5	SPIN STOP SELECT	FC60	R	LAD	NW 7 /.
I 0.6	SPIN CW RUN SEL	FC60	R	LAD	NW 43 /.
I 0.6	SPIN CW RUN SEL	FC60	R	LAD	NW 38 /.
I 0.6	SPIN CW RUN SEL	FC60	R	LAD	NW 37 /.
I 0.6	SPIN CW RUN SEL	FC60	R	LAD	NW 11 /.
I 0.6	SPIN CW RUN SEL	FC60	R	LAD	NW 15 /.
I 0.7	NC CYCLE STOP	FC75	W	STL	NW 6 S
I 1.0	INCL MODE SELECT	FC41	R	LAD	NW 7 /.
I 1.0	INCL MODE SELECT	FC41	R	LAD	NW 13 /.
I 1.0	INCL MODE SELECT	FC41	R	LAD	NW 11 /.
I 1.0	INCL MODE SELECT	FC41	R	LAD	NW 9 /.
I 1.3	MPG UNIT 4 AX SEL	FC55	R	LAD	NW 1 /.
I 1.3	MPG UNIT 4 AX SEL	FC56	R	LAD	NW 15 /.
I 1.3	MPG UNIT 4 AX SEL	FC54	R	LAD	NW 15 /.
I 1.4	RAPID OR 50% SEL	FC42	R	LAD	NW 23 /.
I 1.4	RAPID OR 50% SEL	FC42	R	LAD	NW 22 /.
I 1.5	RAPID OR 20% SEL	FC42	R	LAD	NW 21 /.
I 1.5	RAPID OR 20% SEL	FC42	R	LAD	NW 20 /.
I 1.6	RAPID OR 0% SEL	FC42	R	LAD	NW 19 /.
I 1.6	RAPID OR 0% SEL	FC42	R	LAD	NW 18 /.
I 1.7	NC CYCLE START	FC60	R	LAD	NW 15 /.
I 1.7	NC CYCLE START	FC45	R	LAD	NW 13 /.
I 1.7	NC CYCLE START	FC44	R	LAD	NW 5 /.
I 1.7	NC CYCLE START	FC45	R	LAD	NW 12 /.
I 1.7	NC CYCLE START	FC75	R	LAD	NW 7 /.
I 2.0	OPT STOP SELECT	FC46	R	LAD	NW 11 /.
I 2.0	OPT STOP SELECT	FC46	R	LAD	NW 10 /.
I 2.1	COOLANT ON SEL	FC71	R	LAD	NW 1 /.
I 2.1	COOLANT ON SEL	FC71	R	LAD	NW 2 /.
I 2.2	CONVEYOR FWD SEL	FC72	R	LAD	NW 1 /.
I 2.2	CONVEYOR FWD SEL	FC79	R	LAD	NW 1 /.
I 2.2	CONVEYOR FWD SEL	FC72	R	LAD	NW 2 /.
I 2.3	Z AX LOCK SELECT	FC47	R	LAD	NW 24 /.
I 2.3	Z AX LOCK SELECT	FC79	R	LAD	NW 3 /.
I 2.3	Z AX LOCK SELECT	FC47	R	LAD	NW 23 /.
I 2.4	MPG UNIT X AX SEL	FC51	R	LAD	NW 16 /.
I 2.5	S/BLOCK SELECT	FC46	R	LAD	NW 2 /.
I 2.5	S/BLOCK SELECT	FC46	R	LAD	NW 1 /.
I 2.6	BUZZER STOP	FC79	R	LAD	NW 13 /.
I 2.7	FEEDHOLD SELECT	FC65	R	LAD	NW 6 /.
I 2.7	FEEDHOLD SELECT	FC42	R	LAD	NW 3 /.
I 2.7	FEEDHOLD SELECT	FC42	R	LAD	NW 4 /.
I 3.0	FEEDRATE OR BIT A	FC42	R	STL	NW 17 S
I 3.0	FEEDRATE OR BIT A	FC42	R	LAD	NW 12 /.
I 3.0	FEEDRATE OR BIT A	FC42	R	LAD	NW 24 /.
I 3.0	FEEDRATE OR BIT A	FC42	R	LAD	NW 15 /.
I 3.1	FEEDRATE OR BIT B	FC42	R	STL	NW 17 S

Address	Symbol	Block	Type	Language	Details
I 3.1	FEEDRATE OR BIT B	FC42	R	LAD	NW 15 /.
I 3.1	FEEDRATE OR BIT B	FC42	R	LAD	NW 25 /.
I 3.1	FEEDRATE OR BIT B	FC42	R	LAD	NW 12 /.
I 3.2	FEEDRATE OR BIT C	FC42	R	LAD	NW 12 /.
I 3.2	FEEDRATE OR BIT C	FC42	R	LAD	NW 15 /.
I 3.2	FEEDRATE OR BIT C	FC42	R	STL	NW 17 S
I 3.2	FEEDRATE OR BIT C	FC42	R	LAD	NW 26 /.
I 3.3	FEEDRATE OR BIT D	FC42	R	STL	NW 17 S
I 3.3	FEEDRATE OR BIT D	FC42	R	LAD	NW 12 /.
I 3.3	FEEDRATE OR BIT D	FC42	R	LAD	NW 27 /.
I 3.3	FEEDRATE OR BIT D	FC42	R	LAD	NW 15 /.
I 3.4	FEEDRATE OR BIT E	FC42	R	LAD	NW 28 /.
I 3.4	FEEDRATE OR BIT E	FC42	R	LAD	NW 15 /.
I 3.4	FEEDRATE OR BIT E	FC42	R	LAD	NW 12 /.
I 3.4	FEEDRATE OR BIT E	FC42	R	STL	NW 17 S
I 3.5	MPG UNIT Y AX SEL	FC52	R	LAD	NW 16 /.
I 3.6	MPG UNIT Z AX SEL	FC53	R	LAD	NW 17 /.
I 3.7	NC RESET	FC70	R	LAD	NW 7 /.
I 3.7	NC RESET	FC71	R	LAD	NW 10 /.
I 3.7	NC RESET	FC81	R	LAD	NW 5 /.
I 3.7	NC RESET	FC81	R	LAD	NW 7 /.
I 3.7	NC RESET	FC70	R	LAD	NW 8 /.
I 3.7	NC RESET	FC81	R	LAD	NW 6 /.
I 3.7	NC RESET	FC82	R	LAD	NW 26 /.
I 3.7	NC RESET	FC60	R	LAD	NW 7 /.
I 3.7	NC RESET	FC85	R	LAD	NW 3 /.
I 3.7	NC RESET	FC86	R	LAD	NW 26 /.
I 3.7	NC RESET	FC89	R	LAD	NW 6 /.
I 3.7	NC RESET	FC89	R	LAD	NW 3 /.
I 3.7	NC RESET	FC91	R	LAD	NW 4 /.
I 3.7	NC RESET	FC82	R	LAD	NW 27 /.
I 3.7	NC RESET	FC85	R	LAD	NW 6 /.
I 3.7	NC RESET	FC92	R	LAD	NW 11 /.
I 3.7	NC RESET	FC95	R	LAD	NW 1 /.
I 3.7	NC RESET	FC96	R	LAD	NW 8 /.
I 3.7	NC RESET	FC60	R	LAD	NW 15 /.
I 3.7	NC RESET	FC60	R	LAD	NW 28 /.
I 3.7	NC RESET	FC60	R	LAD	NW 31 /.
I 3.7	NC RESET	FC96	R	LAD	NW 7 /.
I 3.7	NC RESET	FC96	R	LAD	NW 6 /.
I 3.7	NC RESET	FC71	R	LAD	NW 5 /.
I 3.7	NC RESET	FC96	R	LAD	NW 5 /.
I 3.7	NC RESET	FC96	R	LAD	NW 4 /.
I 3.7	NC RESET	FC81	R	LAD	NW 9 /.
I 3.7	NC RESET	FC96	R	LAD	NW 3 /.
I 3.7	NC RESET	FC96	R	LAD	NW 2 /.
I 3.7	NC RESET	FC81	R	LAD	NW 10 /.
I 3.7	NC RESET	FC91	R	LAD	NW 1 /.
I 3.7	NC RESET	FC80	R	LAD	NW 10 /.
I 3.7	NC RESET	FC40	R	LAD	NW 4 /.
I 3.7	NC RESET	FC96	R	LAD	NW 1 /.
I 3.7	NC RESET	FC80	R	LAD	NW 4 /.
I 3.7	NC RESET	FC45	R	LAD	NW 7 /.
I 3.7	NC RESET	FC99	R	LAD	NW 3 /.
I 3.7	NC RESET	FC98	R	LAD	NW 11 /.
I 3.7	NC RESET	FC75	R	LAD	NW 7 /.
I 3.7	NC RESET	FC98	R	LAD	NW 3 /.
I 3.7	NC RESET	FC40	W	STL	NW 6 S
I 3.7	NC RESET	FC86	R	LAD	NW 27 /.
I 3.7	NC RESET	FC41	R	LAD	NW 1 /.
I 3.7	NC RESET	FC99	R	LAD	NW 5 /.
I 3.7	NC RESET	FC98	R	LAD	NW 10 /.
I 3.7	NC RESET	FC81	R	LAD	NW 18 /.
I 3.7	NC RESET	FC44	R	LAD	NW 6 /.
I 3.7	NC RESET	FC44	R	LAD	NW 7 /.
I 3.7	NC RESET	FC44	R	LAD	NW 8 /.
I 3.7	NC RESET	FC44	R	LAD	NW 9 /.

Address	Symbol	Block	Type	Language	Details
I 3.7	NC RESET	FC44	R	LAD	NW 10 /.
I 3.7	NC RESET	FC77	R	LAD	NW 15 /.
I 3.7	NC RESET	FC79	R	LAD	NW 13 /.
I 3.7	NC RESET	FC80	R	LAD	NW 6 /.
I 3.7	NC RESET	FC42	R	LAD	NW 7 /.
I 3.7	NC RESET	FC99	R	LAD	NW 6 /.
I 3.7	NC RESET	FC98	R	LAD	NW 2 /.
I 3.7	NC RESET	FC48	R	LAD	NW 1 /.
I 3.7	NC RESET	FC99	R	LAD	NW 4 /.
I 3.7	NC RESET	FC99	R	LAD	NW 1 /.
I 3.7	NC RESET	FC99	R	LAD	NW 2 /.
I 3.7	NC RESET	FC80	R	LAD	NW 5 /.
I 4.0	SPINDLE OR BIT A	FC60	R	STL	NW 5 S
I 4.1	SPINDLE OR BIT B	FC60	R	STL	NW 5 S
I 4.2	SPINDLE OR BIT C	FC60	R	STL	NW 5 S
I 4.3	SPINDLE OR BIT D	FC60	R	STL	NW 5 S
I 4.4	MPG UNIT INC2 SEL	FC41	R	LAD	NW 17 /.
I 4.4	MPG UNIT INC2 SEL	FC41	R	LAD	NW 16 /.
I 4.4	MPG UNIT INC2 SEL	FC41	R	LAD	NW 15 /.
I 4.5	Z AX -VE RAP JOG	FC56	R	LAD	NW 14 /.
I 4.5	Z AX -VE RAP JOG	FC51	R	LAD	NW 15 /.
I 4.5	Z AX -VE RAP JOG	FC53	R	LAD	NW 15 /.
I 4.5	Z AX -VE RAP JOG	FC52	R	LAD	NW 15 /.
I 4.5	Z AX -VE RAP JOG	FC53	R	LAD	NW 16 /.
I 4.5	Z AX -VE RAP JOG	FC54	R	LAD	NW 14 /.
I 4.6	Y AX +VE JOG +VE	FC53	R	LAD	NW 14 /.
I 4.6	Y AX +VE JOG +VE	FC52	R	LAD	NW 13 /.
I 4.6	Y AX +VE JOG +VE	FC51	R	LAD	NW 13 /.
I 4.6	Y AX +VE JOG +VE	FC54	R	LAD	NW 12 /.
I 4.6	Y AX +VE JOG +VE	FC52	R	LAD	NW 13 /.
I 4.6	Y AX +VE JOG +VE	FC56	R	LAD	NW 12 /.
I 4.7	4 AX -VE JOG -VE	FC56	R	LAD	NW 13 /.
I 4.7	4 AX -VE JOG -VE	FC52	R	LAD	NW 14 /.
I 4.7	4 AX -VE JOG -VE	FC54	R	LAD	NW 13 /.
I 4.7	4 AX -VE JOG -VE	FC56	R	LAD	NW 13 /.
I 4.7	4 AX -VE JOG -VE	FC51	R	LAD	NW 14 /.
I 4.7	4 AX -VE JOG -VE	FC54	R	LAD	NW 13 /.
I 4.7	4 AX -VE JOG -VE	FC53	R	LAD	NW 15 /.
I 5.0	4 AX +VE X AX SEL	FC54	R	LAD	NW 12 /.
I 5.0	4 AX +VE X AX SEL	FC47	R	LAD	NW 11 /.
I 5.0	4 AX +VE X AX SEL	FC47	R	LAD	NW 13 /.
I 5.0	4 AX +VE X AX SEL	FC56	R	LAD	NW 12 /.
I 5.0	4 AX +VE X AX SEL	FC47	R	LAD	NW 7 /.
I 5.0	4 AX +VE X AX SEL	FC47	R	LAD	NW 5 /.
I 5.0	4 AX +VE X AX SEL	FC47	R	LAD	NW 9 /.
I 5.0	4 AX +VE X AX SEL	FC47	R	LAD	NW 4 /.
I 5.1	Z AX +VE Y AX SEL	FC47	R	LAD	NW 6 /.
I 5.1	Z AX +VE Y AX SEL	FC47	R	LAD	NW 13 /.
I 5.1	Z AX +VE Y AX SEL	FC47	R	LAD	NW 5 /.
I 5.1	Z AX +VE Y AX SEL	FC47	R	LAD	NW 7 /.
I 5.1	Z AX +VE Y AX SEL	FC53	R	LAD	NW 14 /.
I 5.1	Z AX +VE Y AX SEL	FC47	R	LAD	NW 9 /.
I 5.1	Z AX +VE Y AX SEL	FC47	R	LAD	NW 11 /.
I 5.2	Y AX -VE Z AX SEL	FC47	R	LAD	NW 11 /.
I 5.2	Y AX -VE Z AX SEL	FC47	R	LAD	NW 13 /.
I 5.2	Y AX -VE Z AX SEL	FC52	R	LAD	NW 14 /.
I 5.2	Y AX -VE Z AX SEL	FC47	R	LAD	NW 8 /.
I 5.2	Y AX -VE Z AX SEL	FC47	R	LAD	NW 5 /.
I 5.2	Y AX -VE Z AX SEL	FC47	R	LAD	NW 7 /.
I 5.2	Y AX -VE Z AX SEL	FC47	R	LAD	NW 9 /.
I 5.3	X AX +VE 4 AX SEL	FC47	R	LAD	NW 13 /.
I 5.3	X AX +VE 4 AX SEL	FC47	R	LAD	NW 10 /.
I 5.3	X AX +VE 4 AX SEL	FC51	R	LAD	NW 13 /.
I 5.3	X AX +VE 4 AX SEL	FC47	R	LAD	NW 11 /.
I 5.3	X AX +VE 4 AX SEL	FC47	R	LAD	NW 9 /.
I 5.3	X AX +VE 4 AX SEL	FC47	R	LAD	NW 7 /.
I 5.3	X AX +VE 4 AX SEL	FC47	R	LAD	NW 5 /.

Address	Symbol	Block	Type	Language	Details
I 5.4	RAPID JOG 5 AX SEL	FC47	R	LAD	NW 9 /.
I 5.4	RAPID JOG 5 AX SEL	FC47	R	LAD	NW 13 /.
I 5.4	RAPID JOG 5 AX SEL	FC47	R	LAD	NW 12 /.
I 5.4	RAPID JOG 5 AX SEL	FC47	R	LAD	NW 11 /.
I 5.4	RAPID JOG 5 AX SEL	FC47	R	LAD	NW 7 /.
I 5.4	RAPID JOG 5 AX SEL	FC56	R	LAD	NW 14 /.
I 5.4	RAPID JOG 5 AX SEL	FC47	R	LAD	NW 5 /.
I 5.4	RAPID JOG 5 AX SEL	FC51	R	LAD	NW 15 /.
I 5.4	RAPID JOG 5 AX SEL	FC52	R	LAD	NW 15 /.
I 5.4	RAPID JOG 5 AX SEL	FC54	R	LAD	NW 14 /.
I 5.4	RAPID JOG 5 AX SEL	FC53	R	LAD	NW 16 /.
I 5.5	X AX -VE NOT USED	FC51	R	LAD	NW 14 /.
I 5.6	MPG UNIT INC3 SEL	FC41	R	LAD	NW 17 /.
I 5.6	MPG UNIT INC3 SEL	FC41	R	LAD	NW 16 /.
I 5.6	MPG UNIT INC3 SEL	FC41	R	LAD	NW 15 /.
I 5.7	HHU ENBL SELECT	FC79	R	LAD	NW 5 /.
I 5.7	HHU ENBL SELECT	FC47	R	LAD	NW 27 /.
I 6.0	INC4 MODE SELECT	FC41	R	LAD	NW 7 /.
I 6.0	INC4 MODE SELECT	FC41	R	LAD	NW 11 /.
I 6.0	INC4 MODE SELECT	FC41	R	LAD	NW 9 /.
I 6.0	INC4 MODE SELECT	FC41	R	LAD	NW 13 /.
I 6.1	INC3 MODE SELECT	FC41	R	LAD	NW 9 /.
I 6.1	INC3 MODE SELECT	FC41	R	LAD	NW 13 /.
I 6.1	INC3 MODE SELECT	FC41	R	LAD	NW 7 /.
I 6.1	INC3 MODE SELECT	FC41	R	LAD	NW 11 /.
I 6.2	INC2 MODE SELECT	FC41	R	LAD	NW 9 /.
I 6.2	INC2 MODE SELECT	FC41	R	LAD	NW 13 /.
I 6.2	INC2 MODE SELECT	FC41	R	LAD	NW 11 /.
I 6.2	INC2 MODE SELECT	FC41	R	LAD	NW 7 /.
I 6.3	AUTO PWR OFF SEL	FC74	R	LAD	NW 2 /.
I 6.3	AUTO PWR OFF SEL	FC79	R	LAD	NW 1 /.
I 6.3	AUTO PWR OFF SEL	FC74	R	LAD	NW 1 /.
I 6.4	TOOL/MAG CYC SEL	FC81	R	LAD	NW 7 /.
I 6.4	TOOL/MAG CYC SEL	FC81	R	LAD	NW 14 /.
I 6.4	TOOL/MAG CYC SEL	FC44	R	LAD	NW 4 /.
I 6.5	TOOL/TOOL CYC SEL	FC81	R	LAD	NW 7 /.
I 6.5	TOOL/TOOL CYC SEL	FC44	R	LAD	NW 3 /.
I 6.5	TOOL/TOOL CYC SEL	FC79	R	LAD	NW 6 /.
I 6.5	TOOL/TOOL CYC SEL	FC81	R	LAD	NW 13 /.
I 6.6	CONVEYOR REV SEL	FC72	R	LAD	NW 3 /.
I 6.6	CONVEYOR REV SEL	FC72	R	LAD	NW 5 /.
I 6.6	CONVEYOR REV SEL	FC79	R	LAD	NW 1 /.
I 6.7	WORK LGHT SELECT	FC73	R	LAD	NW 1 /.
I 6.7	WORK LGHT SELECT	FC73	R	LAD	NW 2 /.
I 7.0	FLSH COOL SELECT	FC71	R	LAD	NW 16 /.
I 7.0	FLSH COOL SELECT	FC71	R	LAD	NW 15 /.
I 7.0	FLSH COOL SELECT	FC79	R	LAD	NW 1 /.
I 7.1	COOLANT AUTO SEL	FC71	R	LAD	NW 4 /.
I 7.1	COOLANT AUTO SEL	FC71	R	LAD	NW 3 /.
I 7.2	ATC CYCLE SELECT	FC80	R	LAD	NW 6 /.
I 7.3	RAPID OR SELECT	FC46	R	LAD	NW 16 /.
I 7.3	RAPID OR SELECT	FC46	R	LAD	NW 17 /.
I 7.4	BLCK SKIP SELECT	FC46	R	LAD	NW 8 /.
I 7.4	BLCK SKIP SELECT	FC46	R	LAD	NW 7 /.
I 7.5	SPINDLE JOG	FC60	R	LAD	NW 13 /.
I 7.5	SPINDLE JOG	FC60	R	LAD	NW 16 /.
I 7.5	SPINDLE JOG	FC60	R	LAD	NW 16 /.
I 7.5	SPINDLE JOG	FC60	R	LAD	NW 37 /.
I 7.5	SPINDLE JOG	FC60	R	LAD	NW 38 /.
I 7.5	SPINDLE JOG	FC60	R	LAD	NW 43 /.
I 7.5	SPINDLE JOG	FC60	R	LAD	NW 11 /.
I 7.5	SPINDLE JOG	FC60	R	LAD	NW 20 /.
I 7.5	SPINDLE JOG	FC60	R	LAD	NW 25 /.
I 7.5	SPINDLE JOG	FC60	R	LAD	NW 26 /.
I 7.6	PGM TEST SELECT	FC46	R	LAD	NW 14 /.
I 7.6	PGM TEST SELECT	FC79	R	LAD	NW 4 /.
I 7.6	PGM TEST SELECT	FC46	R	LAD	NW 13 /.

Address		Symbol		Block	Type	Language	Details		
I	7.7	DRY RUN	SELECT	FC46	R	LAD	NW	5	/.
I	7.7	DRY RUN	SELECT	FC79	R	LAD	NW	3	/.
I	7.7	DRY RUN	SELECT	FC46	R	LAD	NW	4	/.
I	32.0	MASTR ON		FC54	R	LAD	NW	15	/.
I	32.0	MASTR ON		FC50	R	LAD	NW	1	/.
I	32.0	MASTR ON		FC87	R	LAD	NW	1	/.
I	32.0	MASTR ON		FC83	R	LAD	NW	1	/.
I	32.0	MASTR ON		FC86	R	LAD	NW	4	/.
I	32.0	MASTR ON		FC54	R	LAD	NW	17	/.
I	32.0	MASTR ON		FC82	R	LAD	NW	1	/.
I	32.0	MASTR ON		FC54	R	LAD	NW	11	/.
I	32.0	MASTR ON		FC45	R	LAD	NW	8	/.
I	32.0	MASTR ON		FC40	R	LAD	NW	3	/.
I	32.0	MASTR ON		FC40	R	LAD	NW	2	/.
I	32.0	MASTR ON		FC40	R	LAD	NW	1	/.
I	32.0	MASTR ON		FC47	R	LAD	NW	27	/.
I	32.0	MASTR ON		FC82	R	LAD	NW	4	/.
I	32.0	MASTR ON		FC45	R	LAD	NW	9	/.
I	32.0	MASTR ON		FC82	R	LAD	NW	4	/.
I	32.0	MASTR ON		FC54	R	LAD	NW	18	/.
I	32.0	MASTR ON		FC82	R	LAD	NW	5	/.
I	32.0	MASTR ON		FC55	R	LAD	NW	1	/.
I	32.0	MASTR ON		FC82	R	LAD	NW	5	/.
I	32.0	MASTR ON		FC45	R	LAD	NW	10	/.
I	32.0	MASTR ON		FC84	R	LAD	NW	1	/.
I	32.0	MASTR ON		FC47	R	LAD	NW	26	/.
I	32.0	MASTR ON		FC81	R	LAD	NW	1	/.
I	32.0	MASTR ON		FC55	R	LAD	NW	4	/.
I	32.0	MASTR ON		FC55	R	LAD	NW	2	/.
I	32.0	MASTR ON		FC99	R	LAD	NW	1	/.
I	32.0	MASTR ON		FC99	R	LAD	NW	2	/.
I	32.0	MASTR ON		FC56	R	LAD	NW	15	/.
I	32.0	MASTR ON		FC99	R	LAD	NW	3	/.
I	32.0	MASTR ON		FC47	R	LAD	NW	21	/.
I	32.0	MASTR ON		FC56	R	LAD	NW	18	/.
I	32.0	MASTR ON		FC56	R	LAD	NW	17	/.
I	32.0	MASTR ON		FC99	R	LAD	NW	4	/.
I	32.0	MASTR ON		FC56	R	LAD	NW	16	/.
I	32.0	MASTR ON		FC56	R	LAD	NW	20	/.
I	32.0	MASTR ON		FC99	R	LAD	NW	5	/.
I	32.0	MASTR ON		FC47	R	LAD	NW	20	/.
I	32.0	MASTR ON		FC99	R	LAD	NW	6	/.
I	32.0	MASTR ON		FC47	R	LAD	NW	19	/.
I	32.0	MASTR ON		FC45	R	LAD	NW	3	/.
I	32.0	MASTR ON		FC56	R	LAD	NW	19	/.
I	32.0	MASTR ON		FC45	R	LAD	NW	4	/.
I	32.0	MASTR ON		FC56	R	LAD	NW	11	/.
I	32.0	MASTR ON		FC45	R	LAD	NW	5	/.
I	32.0	MASTR ON		FC57	R	LAD	NW	4	/.
I	32.0	MASTR ON		FC57	R	LAD	NW	2	/.
I	32.0	MASTR ON		FC98	R	LAD	NW	4	/.
I	32.0	MASTR ON		FC54	R	LAD	NW	19	/.
I	32.0	MASTR ON		FC57	R	LAD	NW	1	/.
I	32.0	MASTR ON		FC60	R	LAD	NW	44	/.
I	32.0	MASTR ON		FC60	R	LAD	NW	43	/.
I	32.0	MASTR ON		FC60	R	LAD	NW	42	/.
I	32.0	MASTR ON		FC46	R	LAD	NW	2	/.
I	32.0	MASTR ON		FC60	R	LAD	NW	41	/.
I	32.0	MASTR ON		FC52	R	LAD	NW	17	/.
I	32.0	MASTR ON		FC60	R	LAD	NW	40	/.
I	32.0	MASTR ON		FC85	R	LAD	NW	7	/.
I	32.0	MASTR ON		FC60	R	LAD	NW	39	/.
I	32.0	MASTR ON		FC60	R	LAD	NW	38	/.
I	32.0	MASTR ON		FC98	R	LAD	NW	12	/.
I	32.0	MASTR ON		FC47	R	LAD	NW	18	/.
I	32.0	MASTR ON		FC60	R	LAD	NW	37	/.
I	32.0	MASTR ON		FC45	R	LAD	NW	6	/.

Address		Symbol	Block	Type	Language	Details		
I	32.0	MASTR ON	FC54	R	LAD	NW	20	/.
I	32.0	MASTR ON	FC60	R	LAD	NW	31	/.
I	32.0	MASTR ON	FC97	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC97	R	LAD	NW	4	/.
I	32.0	MASTR ON	FC97	R	LAD	NW	6	/.
I	32.0	MASTR ON	FC96	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC60	R	LAD	NW	28	/.
I	32.0	MASTR ON	FC60	R	LAD	NW	26	/.
I	32.0	MASTR ON	FC96	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC46	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC96	R	LAD	NW	3	/.
I	32.0	MASTR ON	FC41	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC96	R	LAD	NW	4	/.
I	32.0	MASTR ON	FC47	R	LAD	NW	17	/.
I	32.0	MASTR ON	FC45	R	LAD	NW	7	/.
I	32.0	MASTR ON	FC45	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC45	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC60	R	LAD	NW	7	/.
I	32.0	MASTR ON	FC61	R	LAD	NW	13	/.
I	32.0	MASTR ON	FC45	R	LAD	NW	16	/.
I	32.0	MASTR ON	FC61	R	LAD	NW	11	/.
I	32.0	MASTR ON	FC45	R	LAD	NW	15	/.
I	32.0	MASTR ON	FC65	R	LAD	NW	6	/.
I	32.0	MASTR ON	FC91	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC70	R	LAD	NW	19	/.
I	32.0	MASTR ON	FC91	R	LAD	NW	4	/.
I	32.0	MASTR ON	FC89	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC81	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC45	R	LAD	NW	13	/.
I	32.0	MASTR ON	FC70	R	LAD	NW	18	/.
I	32.0	MASTR ON	FC89	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC70	R	LAD	NW	17	/.
I	32.0	MASTR ON	FC70	R	LAD	NW	15	/.
I	32.0	MASTR ON	FC89	R	LAD	NW	4	/.
I	32.0	MASTR ON	FC70	R	LAD	NW	14	/.
I	32.0	MASTR ON	FC53	R	LAD	NW	13	/.
I	32.0	MASTR ON	FC70	R	LAD	NW	13	/.
I	32.0	MASTR ON	FC70	R	LAD	NW	11	/.
I	32.0	MASTR ON	FC70	R	LAD	NW	10	/.
I	32.0	MASTR ON	FC45	R	LAD	NW	14	/.
I	32.0	MASTR ON	FC46	R	LAD	NW	4	/.
I	32.0	MASTR ON	FC89	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC45	R	LAD	NW	11	/.
I	32.0	MASTR ON	FC70	R	LAD	NW	3	/.
I	32.0	MASTR ON	FC89	R	LAD	NW	7	/.
I	32.0	MASTR ON	FC70	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC89	R	LAD	NW	8	/.
I	32.0	MASTR ON	FC88	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC88	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC46	R	LAD	NW	7	/.
I	32.0	MASTR ON	FC71	R	LAD	NW	12	/.
I	32.0	MASTR ON	FC42	R	LAD	NW	16	/.
I	32.0	MASTR ON	FC71	R	LAD	NW	11	/.
I	32.0	MASTR ON	FC87	R	LAD	NW	3	/.
I	32.0	MASTR ON	FC71	R	LAD	NW	14	/.
I	32.0	MASTR ON	FC75	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC71	R	LAD	NW	16	/.
I	32.0	MASTR ON	FC87	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC86	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC71	R	LAD	NW	18	/.
I	32.0	MASTR ON	FC75	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC71	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC51	R	LAD	NW	17	/.
I	32.0	MASTR ON	FC71	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC86	R	LAD	NW	4	/.
I	32.0	MASTR ON	FC81	R	LAD	NW	21	/.
I	32.0	MASTR ON	FC86	R	LAD	NW	5	/.

Address		Symbol	Block	Type	Language	Details		
I	32.0	MASTR ON	FC71	R	LAD	NW	7	/.
I	32.0	MASTR ON	FC86	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC81	R	LAD	NW	20	/.
I	32.0	MASTR ON	FC72	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC85	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC53	R	LAD	NW	18	/.
I	32.0	MASTR ON	FC46	R	LAD	NW	13	/.
I	32.0	MASTR ON	FC53	R	LAD	NW	19	/.
I	32.0	MASTR ON	FC85	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC51	R	LAD	NW	16	/.
I	32.0	MASTR ON	FC72	R	LAD	NW	3	/.
I	32.0	MASTR ON	FC85	R	LAD	NW	4	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	17	/.
I	32.0	MASTR ON	FC72	R	LAD	NW	6	/.
I	32.0	MASTR ON	FC53	R	LAD	NW	20	/.
I	32.0	MASTR ON	FC51	R	LAD	NW	12	/.
I	32.0	MASTR ON	FC72	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC53	R	LAD	NW	17	/.
I	32.0	MASTR ON	FC77	R	LAD	NW	16	/.
I	32.0	MASTR ON	FC85	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC72	R	LAD	NW	7	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	16	/.
I	32.0	MASTR ON	FC77	R	LAD	NW	12	/.
I	32.0	MASTR ON	FC52	R	LAD	NW	18	/.
I	32.0	MASTR ON	FC85	R	LAD	NW	8	/.
I	32.0	MASTR ON	FC84	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC45	R	LAD	NW	12	/.
I	32.0	MASTR ON	FC52	R	LAD	NW	16	/.
I	32.0	MASTR ON	FC46	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC52	R	LAD	NW	12	/.
I	32.0	MASTR ON	FC83	R	LAD	NW	3	/.
I	32.0	MASTR ON	FC42	R	LAD	NW	8	/.
I	32.0	MASTR ON	FC42	R	LAD	NW	9	/.
I	32.0	MASTR ON	FC42	R	LAD	NW	10	/.
I	32.0	MASTR ON	FC83	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC74	R	LAD	NW	3	/.
I	32.0	MASTR ON	FC47	R	LAD	NW	16	/.
I	32.0	MASTR ON	FC81	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC46	R	LAD	NW	14	/.
I	32.0	MASTR ON	FC48	R	LAD	NW	6	/.
I	32.0	MASTR ON	FC74	R	LAD	NW	3	/.
I	32.0	MASTR ON	FC75	R	LAD	NW	8	/.
I	32.0	MASTR ON	FC81	R	LAD	NW	6	/.
I	32.0	MASTR ON	FC47	R	LAD	NW	15	/.
I	32.0	MASTR ON	FC81	R	LAD	NW	7	/.
I	32.0	MASTR ON	FC81	R	LAD	NW	7	/.
I	32.0	MASTR ON	FC81	R	LAD	NW	9	/.
I	32.0	MASTR ON	FC81	R	LAD	NW	10	/.
I	32.0	MASTR ON	FC51	R	LAD	NW	18	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	15	/.
I	32.0	MASTR ON	FC47	R	LAD	NW	14	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	16	/.
I	32.0	MASTR ON	FC75	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC46	R	LAD	NW	8	/.
I	32.0	MASTR ON	FC77	R	LAD	NW	11	/.
I	32.0	MASTR ON	FC77	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC76	R	LAD	NW	3	/.
I	32.0	MASTR ON	FC46	R	LAD	NW	11	/.
I	32.0	MASTR ON	FC48	R	LAD	NW	3	/.
I	32.0	MASTR ON	FC76	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	13	/.
I	32.0	MASTR ON	FC76	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC81	R	LAD	NW	25	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	13	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	4	/.

Address		Symbol	Block	Type	Language	Details		
I	32.0	MASTR ON	FC46	R	LAD	NW	10	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC77	R	LAD	NW	3	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	6	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	6	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	8	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	22	/.
I	32.0	MASTR ON	FC77	R	LAD	NW	4	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	10	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	14	/.
I	32.0	MASTR ON	FC48	R	LAD	NW	4	/.
I	32.0	MASTR ON	FC77	R	LAD	NW	8	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	17	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	12	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	18	/.
I	32.0	MASTR ON	FC77	R	LAD	NW	6	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	19	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	20	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	21	/.
I	32.0	MASTR ON	FC48	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC77	R	LAD	NW	7	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	3	/.
I	32.0	MASTR ON	FC80	R	LAD	NW	23	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	4	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	7	/.
I	32.0	MASTR ON	FC54	R	LAD	NW	16	/.
I	32.0	MASTR ON	FC48	R	LAD	NW	1	/.
I	32.0	MASTR ON	FC77	R	LAD	NW	10	/.
I	32.0	MASTR ON	FC77	R	LAD	NW	9	/.
I	32.0	MASTR ON	FC50	R	LAD	NW	2	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	5	/.
I	32.0	MASTR ON	FC79	R	LAD	NW	6	/.
I	32.1	MC DOOR INT LS	FC75	R	LAD	NW	3	/.
I	32.2	SYSTEM AIR PRS	FC70	R	LAD	NW	18	/.
I	32.5	IR MODULE FAULT	FC50	R	LAD	NW	2	/.
I	33.0	COOLANT PUMP TOL	FC71	R	LAD	NW	11	/.
I	33.0	COOLANT PUMP TOL	FC71	R	LAD	NW	7	/.
I	33.0	COOLANT PUMP TOL	FC71	R	LAD	NW	2	/.
I	33.0	COOLANT PUMP TOL	FC76	R	LAD	NW	1	/.
I	33.1	FLUSHING PUMP TOL	FC76	R	LAD	NW	2	/.
I	33.1	FLUSHING PUMP TOL	FC71	R	LAD	NW	16	/.
I	33.2	CHIP CONV MTR TOL	FC72	R	LAD	NW	2	/.
I	33.2	CHIP CONV MTR TOL	FC72	R	LAD	NW	3	/.
I	33.2	CHIP CONV MTR TOL	FC76	R	LAD	NW	3	/.
I	33.2	CHIP CONV MTR TOL	FC72	R	LAD	NW	7	/.
I	33.2	CHIP CONV MTR TOL	FC72	R	LAD	NW	5	/.
I	33.2	CHIP CONV MTR TOL	FC72	R	LAD	NW	6	/.
I	33.4	ZF G/BOX LUBE DET	FC60	R	LAD	NW	40	/.
I	33.5	SPIN FAN MTR TOL	FC60	R	LAD	NW	39	/.
I	34.0	X AXIS REF LS	FC51	R	LAD	NW	5	/.
I	34.1	Y AXIS REF LS	FC52	R	LAD	NW	5	/.
I	34.2	Z AXIS REF LS	FC53	R	LAD	NW	5	/.
I	34.3	4 AXIS REF LS	FC54	R	LAD	NW	5	/.
I	34.4	Z AXIS ATC P LS	FC85	R	LAD	NW	4	/.
I	34.4	Z AXIS ATC P LS	FC89	R	LAD	NW	4	/.
I	34.5	SPIN TOOL UCLP PB	FC70	R	LAD	NW	3	/.
I	34.5	SPIN TOOL UCLP PB	FC70	R	LAD	NW	1	/.
I	34.6	SPIN TOOL UCLP LS	FC70	R	LAD	NW	4	/.
I	34.6	SPIN TOOL UCLP LS	FC70	R	LAD	NW	5	/.
I	34.6	SPIN TOOL UCLP LS	FC60	R	LAD	NW	19	/.
I	34.6	SPIN TOOL UCLP LS	FC70	R	LAD	NW	14	/.
I	34.7	SPIN TOOL CLMP LS	FC70	R	LAD	NW	5	/.
I	34.7	SPIN TOOL CLMP LS	FC70	R	LAD	NW	4	/.
I	34.7	SPIN TOOL CLMP LS	FC70	R	LAD	NW	14	/.
I	35.0	T MAG #1 CNT 1 PX	FC45	R	LAD	NW	13	/.

Address		Symbol	Block		Type	Language	Details		
I	35.0	T MAG #1 CNT 1 PX	FC82	R	LAD	NW	4	/	
I	35.0	T MAG #1 CNT 1 PX	FC81	R	LAD	NW	19	/	
I	35.0	T MAG #1 CNT 1 PX	FC53	R	LAD	NW	22	/	
I	35.0	T MAG #1 CNT 1 PX	FC82	R	LAD	NW	4	/	
I	35.0	T MAG #1 CNT 1 PX	FC85	R	LAD	NW	4	/	
I	35.1	T MAG #1 CNT 2 PX	FC82	R	LAD	NW	5	/	
I	35.1	T MAG #1 CNT 2 PX	FC85	R	LAD	NW	4	/	
I	35.1	T MAG #1 CNT 2 PX	FC81	R	LAD	NW	19	/	
I	35.1	T MAG #1 CNT 2 PX	FC53	R	LAD	NW	22	/	
I	35.1	T MAG #1 CNT 2 PX	FC82	R	LAD	NW	5	/	
I	35.1	T MAG #1 CNT 2 PX	FC45	R	LAD	NW	13	/	
I	35.2	T MAG #1 RET LS	FC60	R	LAD	NW	28	/	
I	35.2	T MAG #1 RET LS	FC53	R	LAD	NW	10	/	
I	35.2	T MAG #1 RET LS	FC99	R	LAD	NW	3	/	
I	35.2	T MAG #1 RET LS	FC60	R	LAD	NW	17	/	
I	35.2	T MAG #1 RET LS	FC85	R	LAD	NW	2	/	
I	35.2	T MAG #1 RET LS	FC89	R	LAD	NW	4	/	
I	35.2	T MAG #1 RET LS	FC85	R	LAD	NW	3	/	
I	35.2	T MAG #1 RET LS	FC60	R	LAD	NW	28	/	
I	35.2	T MAG #1 RET LS	FC82	R	LAD	NW	1	/	
I	35.2	T MAG #1 RET LS	FC83	R	LAD	NW	1	/	
I	35.2	T MAG #1 RET LS	FC53	R	LAD	NW	22	/	
I	35.2	T MAG #1 RET LS	FC53	R	LAD	NW	22	/	
I	35.2	T MAG #1 RET LS	FC53	R	LAD	NW	22	/	
I	35.3	T MAG #1 ADV LS	FC53	R	LAD	NW	22	/	
I	35.3	T MAG #1 ADV LS	FC85	R	LAD	NW	6	/	
I	35.3	T MAG #1 ADV LS	FC53	R	LAD	NW	22	/	
I	35.3	T MAG #1 ADV LS	FC85	R	LAD	NW	5	/	
I	35.3	T MAG #1 ADV LS	FC53	R	LAD	NW	22	/	
I	35.3	T MAG #1 ADV LS	FC82	R	LAD	NW	1	/	
I	35.4	T MAG #1 J CW PB	FC83	R	LAD	NW	2	/	
I	35.4	T MAG #1 J CW PB	FC83	R	LAD	NW	3	/	
I	35.4	T MAG #1 J CW PB	FC83	R	LAD	NW	5	/	
I	35.5	T MAG #1 J CCW PB	FC83	R	LAD	NW	4	/	
I	35.5	T MAG #1 J CCW PB	FC83	R	LAD	NW	5	/	
I	35.5	T MAG #1 J CCW PB	FC83	R	LAD	NW	3	/	
I	36.0	T MAG #2 CNT 1 PX	FC81	R	LAD	NW	19	/	
I	36.0	T MAG #2 CNT 1 PX	FC45	R	LAD	NW	13	/	
I	36.0	T MAG #2 CNT 1 PX	FC89	R	LAD	NW	4	/	
I	36.0	T MAG #2 CNT 1 PX	FC86	R	LAD	NW	4	/	
I	36.0	T MAG #2 CNT 1 PX	FC53	R	LAD	NW	22	/	
I	36.0	T MAG #2 CNT 1 PX	FC86	R	LAD	NW	4	/	
I	36.0	T MAG #2 CNT 1 PX	FC53	R	LAD	NW	22	/	
I	36.1	T MAG #2 CNT 2 PX	FC86	R	LAD	NW	5	/	
I	36.1	T MAG #2 CNT 2 PX	FC89	R	LAD	NW	4	/	
I	36.1	T MAG #2 CNT 2 PX	FC45	R	LAD	NW	13	/	
I	36.1	T MAG #2 CNT 2 PX	FC86	R	LAD	NW	5	/	
I	36.1	T MAG #2 CNT 2 PX	FC81	R	LAD	NW	19	/	
I	36.2	T MAG #2 RET LS	FC89	R	LAD	NW	2	/	
I	36.2	T MAG #2 RET LS	FC99	R	LAD	NW	4	/	
I	36.2	T MAG #2 RET LS	FC89	R	LAD	NW	3	/	
I	36.2	T MAG #2 RET LS	FC53	R	LAD	NW	22	/	
I	36.2	T MAG #2 RET LS	FC53	R	LAD	NW	10	/	
I	36.2	T MAG #2 RET LS	FC86	R	LAD	NW	1	/	
I	36.2	T MAG #2 RET LS	FC87	R	LAD	NW	1	/	
I	36.2	T MAG #2 RET LS	FC60	R	LAD	NW	17	/	
I	36.2	T MAG #2 RET LS	FC53	R	LAD	NW	22	/	
I	36.2	T MAG #2 RET LS	FC60	R	LAD	NW	28	/	
I	36.2	T MAG #2 RET LS	FC60	R	LAD	NW	28	/	
I	36.2	T MAG #2 RET LS	FC85	R	LAD	NW	4	/	
I	36.3	T MAG #2 ADV LS	FC89	R	LAD	NW	6	/	
I	36.3	T MAG #2 ADV LS	FC89	R	LAD	NW	5	/	
I	36.3	T MAG #2 ADV LS	FC86	R	LAD	NW	1	/	
I	36.3	T MAG #2 ADV LS	FC53	R	LAD	NW	22	/	
I	36.3	T MAG #2 ADV LS	FC53	R	LAD	NW	22	/	
I	36.3	T MAG #2 ADV LS	FC53	R	LAD	NW	22	/	
I	36.3	T MAG #2 ADV LS	FC53	R	LAD	NW	22	/	
I	36.4	T MAG #2 J CW PB	FC87	R	LAD	NW	2	/	
I	36.4	T MAG #2 J CW PB	FC87	R	LAD	NW	5	/	

Address	Symbol	Block	Type	Language	Details
I 36.4	T MAG #2 J CW PB	FC87	R	LAD	NW 3 /.
I 36.5	T MAG #2 J CCW PB	FC87	R	LAD	NW 5 /.
I 36.5	T MAG #2 J CCW PB	FC87	R	LAD	NW 4 /.
I 36.5	T MAG #2 J CCW PB	FC87	R	LAD	NW 3 /.
I 37.0	SPIN GEAR HIGH LS	FC60	R	LAD	NW 36 /.
I 37.0	SPIN GEAR HIGH LS	FC61	R	LAD	NW 4 /.
I 37.1	SPIN GEAR LOW LS	FC60	R	LAD	NW 35 /.
I 37.1	SPIN GEAR LOW LS	FC61	R	LAD	NW 3 /.
I 37.3	REM HHU 5 AX SEL	FC57	R	LAD	NW 1 /.
I 37.4	THRU SPIN COOL PRS	FC71	R	LAD	NW 14 /.
I 37.5	4 AXIS UCLP LS	FC54	R	LAD	NW 22 /.
I 37.5	4 AXIS UCLP LS	FC54	R	LAD	NW 20 /.
I 37.5	4 AXIS UCLP LS	FC54	R	LAD	NW 19 /.
I 37.5	4 AXIS UCLP LS	FC54	R	LAD	NW 22 /.
I 37.5	4 AXIS UCLP LS	FC54	R	LAD	NW 11 /.
I 37.5	4 AXIS UCLP LS	FC54	R	LAD	NW 18 /.
I 37.6	5 AXIS UCLP LS	FC56	R	LAD	NW 18 /.
I 37.6	5 AXIS UCLP LS	FC56	R	LAD	NW 19 /.
I 37.6	5 AXIS UCLP LS	FC56	R	LAD	NW 20 /.
I 37.6	5 AXIS UCLP LS	FC56	R	LAD	NW 11 /.
I 37.6	5 AXIS UCLP LS	FC56	R	LAD	NW 22 /.
I 37.6	5 AXIS UCLP LS	FC56	R	LAD	NW 22 /.
I 37.7	LIN SCALE AIR PRS	FC70	R	LAD	NW 19 /.
I 38.0	MD PALLET DOOR LS	FC75	R	LAD	NW 8 /.
I 38.0	MD PALLET DOOR LS	FC60	R	LAD	NW 13 /.
I 38.0	MD PALLET DOOR LS	FC60	R	LAD	NW 11 /.
I 38.0	MD PALLET DOOR LS	FC40	R	LAD	NW 5 /.
I 38.0	MD PALLET DOOR LS	FC60	R	LAD	NW 26 /.
I 38.0	MD PALLET DOOR LS	FC60	R	LAD	NW 43 /.
I 38.0	MD PALLET DOOR LS	FC45	R	LAD	NW 17 /.
I 38.0	MD PALLET DOOR LS	FC60	R	LAD	NW 16 /.
I 38.1	MD PALLET FCT 1 LS	FC96	R	LAD	NW 5 /.
I 38.2	MD PALLET FCT 2 LS	FC96	R	LAD	NW 6 /.
I 38.3	MD PALLET FCT 3 LS	FC96	R	LAD	NW 7 /.
I 38.4	MD PALLET FCT 4 LS	FC96	R	LAD	NW 8 /.
I 38.6	SPIN LUBE O/A OK	FC60	R	LAD	NW 44 /.
I 38.6	SPIN LUBE O/A OK	FC60	R	LAD	NW 33 /.
I 38.6	SPIN LUBE O/A OK	FC60	R	LAD	NW 41 /.
I 38.6	SPIN LUBE O/A OK	FC60	R	LAD	NW 44 /.
I 39.1	CUST M190 FEEDBACK	FC98	R	LAD	NW 2 /.
I 39.1	CUST M190 FEEDBACK	FC98	R	LAD	NW 1 /.
I 39.1	CUST M190 FEEDBACK	FC98	R	LAD	NW 2 /.
I 39.1	CUST M190 FEEDBACK	FC98	R	LAD	NW 5 /.
I 39.1	CUST M190 FEEDBACK	FC98	R	LAD	NW 1 /.
I 39.1	CUST M190 FEEDBACK	FC98	R	LAD	NW 6 /.
I 39.2	CUST M191 FEEDBACK	FC98	R	LAD	NW 8 /.
I 39.2	CUST M191 FEEDBACK	FC98	R	LAD	NW 7 /.
I 39.2	CUST M191 FEEDBACK	FC98	R	LAD	NW 3 /.
I 39.2	CUST M191 FEEDBACK	FC98	R	LAD	NW 3 /.
I 39.3	CUST M192 FEEDBACK	FC98	R	LAD	NW 10 /.
I 39.3	CUST M192 FEEDBACK	FC98	R	LAD	NW 9 /.
I 39.3	CUST M192 FEEDBACK	FC98	R	LAD	NW 9 /.
I 39.3	CUST M192 FEEDBACK	FC98	R	LAD	NW 14 /.
I 39.3	CUST M192 FEEDBACK	FC98	R	LAD	NW 13 /.
I 39.3	CUST M192 FEEDBACK	FC98	R	LAD	NW 10 /.
I 39.4	CUST M193 FEEDBACK	FC98	R	LAD	NW 11 /.
I 39.4	CUST M193 FEEDBACK	FC98	R	LAD	NW 11 /.
I 39.4	CUST M193 FEEDBACK	FC98	R	LAD	NW 15 /.
I 39.4	CUST M193 FEEDBACK	FC98	R	LAD	NW 16 /.
I 39.7	5 AXIS REF LS	FC56	R	LAD	NW 5 /.
Q 0.0	AUTO MODE LED	OB100	R	STL	NW 2 S
Q 0.0	AUTO MODE LED	FC45	R	LAD	NW 17 /.
Q 0.0	AUTO MODE LED	FC60	R	LAD	NW 7 /.
Q 0.0	AUTO MODE LED	FC46	R	LAD	NW 15 /.
Q 0.0	AUTO MODE LED	FC41	R	LAD	NW 7 /.
Q 0.0	AUTO MODE LED	FC47	R	LAD	NW 3 /.
Q 0.0	AUTO MODE LED	FC45	R	LAD	NW 10 /.

Address	Symbol	Block	Type	Language	Details
Q 0.0	AUTO MODE LED	FC47	R	LAD	NW 2 /.
Q 0.0	AUTO MODE LED	FC41	R	LAD	NW 13 /.
Q 0.0	AUTO MODE LED	FC41	R	LAD	NW 11 /.
Q 0.0	AUTO MODE LED	FC41	R	LAD	NW 5 /.
Q 0.0	AUTO MODE LED	FC42	R	LAD	NW 6 /.
Q 0.0	AUTO MODE LED	FC41	R	LAD	NW 9 /.
Q 0.1	MDA MODE LED	FC41	W	LAD	NW 6 /.
Q 0.1	MDA MODE LED	FC41	R	LAD	NW 9 /.
Q 0.1	MDA MODE LED	FC41	R	LAD	NW 13 /.
Q 0.1	MDA MODE LED	FC81	R	LAD	NW 1 /.
Q 0.1	MDA MODE LED	FC42	R	LAD	NW 16 /.
Q 0.1	MDA MODE LED	FC47	R	LAD	NW 3 /.
Q 0.1	MDA MODE LED	FC47	R	LAD	NW 2 /.
Q 0.1	MDA MODE LED	FC41	R	LAD	NW 7 /.
Q 0.1	MDA MODE LED	FC41	R	LAD	NW 11 /.
Q 0.2	JOG MODE LED	FC60	R	LAD	NW 7 /.
Q 0.2	JOG MODE LED	FC41	R	LAD	NW 13 /.
Q 0.2	JOG MODE LED	FC52	R	LAD	NW 15 /.
Q 0.2	JOG MODE LED	FC41	R	LAD	NW 5 /.
Q 0.2	JOG MODE LED	FC60	R	LAD	NW 16 /.
Q 0.2	JOG MODE LED	FC60	R	LAD	NW 15 /.
Q 0.2	JOG MODE LED	FC52	R	LAD	NW 14 /.
Q 0.2	JOG MODE LED	FC60	R	LAD	NW 7 /.
Q 0.2	JOG MODE LED	FC41	R	LAD	NW 7 /.
Q 0.2	JOG MODE LED	FC47	R	LAD	NW 2 /.
Q 0.2	JOG MODE LED	FC41	R	LAD	NW 9 /.
Q 0.2	JOG MODE LED	FC53	R	LAD	NW 14 /.
Q 0.2	JOG MODE LED	FC51	R	LAD	NW 15 /.
Q 0.2	JOG MODE LED	FC52	R	LAD	NW 13 /.
Q 0.2	JOG MODE LED	FC51	R	LAD	NW 14 /.
Q 0.2	JOG MODE LED	FC54	R	LAD	NW 14 /.
Q 0.2	JOG MODE LED	FC54	R	LAD	NW 13 /.
Q 0.2	JOG MODE LED	FC54	R	LAD	NW 12 /.
Q 0.2	JOG MODE LED	FC51	R	LAD	NW 13 /.
Q 0.2	JOG MODE LED	FC53	R	LAD	NW 16 /.
Q 0.2	JOG MODE LED	FC56	R	LAD	NW 13 /.
Q 0.2	JOG MODE LED	FC56	R	LAD	NW 14 /.
Q 0.2	JOG MODE LED	FC41	R	LAD	NW 11 /.
Q 0.2	JOG MODE LED	FC47	R	LAD	NW 1 /.
Q 0.2	JOG MODE LED	FC53	R	LAD	NW 15 /.
Q 0.2	JOG MODE LED	FC56	R	LAD	NW 12 /.
Q 0.2	JOG MODE LED	FC79	R	LAD	NW 6 /.
Q 0.3	AXES HOME REF LED	FC48	W	LAD	NW 10 /.
Q 0.4	SPIN CCW RUN LED	FC60	R	LAD	NW 24 /.
Q 0.4	SPIN CCW RUN LED	FC60	W	LAD	NW 23 /.
Q 0.5	SPINDLE STOP LED	FC60	W	LAD	NW 24 /.
Q 0.6	SPIN CW RUN LED	FC60	R	LAD	NW 24 /.
Q 0.6	SPIN CW RUN LED	FC60	W	LAD	NW 22 /.
Q 1.0	INC1 MODE LED	FC41	W	LAD	NW 8 /.
Q 1.0	INC1 MODE LED	FC47	R	LAD	NW 2 /.
Q 1.0	INC1 MODE LED	FC41	R	LAD	NW 5 /.
Q 1.1	REP MODE LED	FC47	R	LAD	NW 2 /.
Q 1.1	REP MODE LED	FC41	R	LAD	NW 11 /.
Q 1.1	REP MODE LED	FC41	R	LAD	NW 5 /.
Q 1.1	REP MODE LED	FC41	R	LAD	NW 9 /.
Q 1.1	REP MODE LED	FC41	R	LAD	NW 13 /.
Q 1.1	REP MODE LED	FC41	R	LAD	NW 7 /.
Q 1.2	REF MODE LED	FC41	R	LAD	NW 13 /.
Q 1.2	REF MODE LED	FC48	R	LAD	NW 6 /.
Q 1.2	REF MODE LED	FC41	R	LAD	NW 9 /.
Q 1.2	REF MODE LED	FC48	R	LAD	NW 1 /.
Q 1.2	REF MODE LED	FC47	R	LAD	NW 15 /.
Q 1.2	REF MODE LED	FC79	R	LAD	NW 6 /.
Q 1.2	REF MODE LED	FC41	R	LAD	NW 11 /.
Q 1.2	REF MODE LED	FC48	R	LAD	NW 4 /.
Q 1.2	REF MODE LED	FC41	R	LAD	NW 7 /.
Q 1.2	REF MODE LED	FC47	R	LAD	NW 18 /.

Address	Symbol	Block	Type	Language	Details
Q 1.2	REF MODE LED	FC47	R	LAD	NW 20 /.
Q 1.2	REF MODE LED	FC47	R	LAD	NW 16 /.
Q 1.2	REF MODE LED	FC48	R	LAD	NW 3 /.
Q 1.2	REF MODE LED	FC48	R	LAD	NW 2 /.
Q 1.2	REF MODE LED	FC41	R	LAD	NW 5 /.
Q 1.2	REF MODE LED	FC47	R	LAD	NW 2 /.
Q 1.4	RAPID OR 50% LED	FC42	W	LAD	NW 23 /
Q 1.4	RAPID OR 50% LED	FC46	R	LAD	NW 17 /.
Q 1.5	RAPID OR 20% LED	FC46	R	LAD	NW 17 /.
Q 1.5	RAPID OR 20% LED	FC42	W	LAD	NW 21 /
Q 1.6	RAPID OR 0% LED	FC46	R	LAD	NW 17 /.
Q 1.6	RAPID OR 0% LED	FC42	W	LAD	NW 19 /
Q 1.6	RAPID OR 0% LED	FC42	R	LAD	NW 13 /.
Q 2.0	OPT STOP LED	FC71	R	LAD	NW 5 /.
Q 2.0	OPT STOP LED	FC71	R	LAD	NW 15 /.
Q 2.0	OPT STOP LED	FC46	W	LAD	NW 12 /
Q 2.0	OPT STOP LED	FC60	R	LAD	NW 7 /.
Q 2.0	OPT STOP LED	FC71	R	LAD	NW 10 /.
Q 2.1	COOLANT ON LED	FC71	W	LAD	NW 8 /
Q 2.2	CONVEYOR FWD LED	FC72	W	LAD	NW 6 /
Q 2.3	Z AX LOCK LED	FC47	W	LAD	NW 25 /
Q 2.5	S/BLOCK LED	FC46	W	LAD	NW 3 /
Q 2.6	BUZZER STOP LED	FC79	W	LAD	NW 14 /
Q 2.7	FEEDHOLD LED	FC42	W	LAD	NW 5 /
Q 4.0	HHU ENBL LED LAMP	FC47	W	LAD	NW 28 /
Q 4.1	SPIN TOOL CLMP LMP	FC70	W	LAD	NW 6 /
Q 4.2	FLT/WARN LAMP	FC79	W	LAD	NW 12 /
Q 4.5	Z AX -VE JOG LED	FC47	W	LAD	NW 19 /
Q 4.6	Y AX +VE JOG LED	FC47	W	LAD	NW 16 /
Q 4.7	R AX -VE JOG LED	FC47	W	LAD	NW 21 /
Q 5.0	R AX +VE JOG LED	FC47	W	LAD	NW 20 /
Q 5.1	Z AX +VE JOG LED	FC47	W	LAD	NW 18 /
Q 5.2	Y AX -VE JOG LED	FC47	W	LAD	NW 17 /
Q 5.3	X AX +VE JOG LED	FC47	W	LAD	NW 14 /
Q 5.4	RAPID TRAV LED	FC47	W	LAD	NW 22 /
Q 5.5	X AX -VE JOG LED	FC47	W	LAD	NW 15 /
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 9 /.
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 5 /.
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 18 /.
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 17 /.
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 17 /.
Q 5.7	HHU ENBL LED	FC57	R	LAD	NW 1 /.
Q 5.7	HHU ENBL LED	FC56	R	LAD	NW 15 /.
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 7 /.
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 15 /.
Q 5.7	HHU ENBL LED	FC55	R	LAD	NW 1 /.
Q 5.7	HHU ENBL LED	FC51	R	LAD	NW 16 /.
Q 5.7	HHU ENBL LED	FC47	W	LAD	NW 28 /
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 13 /.
Q 5.7	HHU ENBL LED	FC53	R	LAD	NW 17 /.
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 16 /.
Q 5.7	HHU ENBL LED	FC52	R	LAD	NW 16 /.
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 16 /.
Q 5.7	HHU ENBL LED	FC54	R	LAD	NW 15 /.
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 11 /.
Q 5.7	HHU ENBL LED	FC41	R	LAD	NW 15 /.
Q 5.7	HHU ENBL LED	FC79	R	LAD	NW 5 /.
Q 6.0	INC4 MODE LED	FC41	R	LAD	NW 5 /.
Q 6.0	INC4 MODE LED	FC47	R	LAD	NW 2 /.
Q 6.0	INC4 MODE LED	FC41	W	LAD	NW 14 /
Q 6.1	INC3 MODE LED	FC41	W	LAD	NW 12 /
Q 6.1	INC3 MODE LED	FC41	R	LAD	NW 5 /.
Q 6.1	INC3 MODE LED	FC47	R	LAD	NW 2 /.
Q 6.2	INC2 MODE LED	FC41	W	LAD	NW 10 /
Q 6.2	INC2 MODE LED	FC47	R	LAD	NW 2 /.
Q 6.2	INC2 MODE LED	FC41	R	LAD	NW 5 /.
Q 6.3	AUTO PWR OFF LED	FC74	W	LAD	NW 3 /

Address	Symbol	Block	Type	Language	Details
Q 6.4	TOOL/MAG CYC LED	FC81	W	LAD	NW 21 /
Q 6.5	TOOL/TOOL CYC LED	FC81	W	LAD	NW 20 /
Q 6.6	CONVEYOR REV LED	FC72	W	LAD	NW 7 /
Q 6.7	WORK LGHT LED	FC73	W	LAD	NW 3 /
Q 7.0	FLSH COOL LED	FC71	R	LAD	NW 15 /.
Q 7.0	FLSH COOL LED	FC71	W	LAD	NW 18 /
Q 7.1	COOLANT AUTO LED	FC71	W	LAD	NW 9 /
Q 7.2	ATC CYCLE LED	FC80	W	LAD	NW 8 /
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 19 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 23 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 24 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 24 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 25 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 21 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 25 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 26 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 26 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 27 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 27 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 28 /.
Q 7.3	RAPID OR LED	FC42	R	LAD	NW 28 /.
Q 7.3	RAPID OR LED	FC46	W	LAD	NW 18 /
Q 7.4	BLCK SKIP LED	FC46	W	LAD	NW 9 /
Q 7.5	SPINDLE JOG LED	FC60	W	LAD	NW 25 /
Q 7.6	PGM TEST LED	FC73	R	LAD	NW 1 /.
Q 7.6	PGM TEST LED	FC46	W	LAD	NW 15 /
Q 7.6	PGM TEST LED	FC72	R	LAD	NW 2 /.
Q 7.6	PGM TEST LED	FC71	R	LAD	NW 12 /.
Q 7.6	PGM TEST LED	FC71	R	LAD	NW 16 /.
Q 7.6	PGM TEST LED	FC71	R	LAD	NW 7 /.
Q 7.6	PGM TEST LED	FC73	R	LAD	NW 2 /.
Q 7.6	PGM TEST LED	FC74	R	LAD	NW 2 /.
Q 7.7	DRY RUN LED	FC46	W	LAD	NW 6 /
Q 7.7	DRY RUN LED	FC79	R	LAD	NW 3 /.
Q 8.0		OB100	R	STL	NW 2 S
Q 12.0		OB100	R	STL	NW 2 S
Q 40.0	IR MODULE DRV ENBL	FC50	W	LAD	NW 1 /
Q 40.1	CUST SPEC M192	FC98	W	LAD	NW 12 /
Q 40.2	SPIN LUBE OIL SOL	FC60	R	LAD	NW 41 /.
Q 40.2	SPIN LUBE OIL SOL	FC60	W	LAD	NW 33 /
Q 40.2	SPIN LUBE OIL SOL	FC60	R	LAD	NW 34 /.
Q 40.3	Z AX MTR BRAKE	FC53	R	LAD	NW 22 /.
Q 40.3	Z AX MTR BRAKE	FC53	W	LAD	NW 18 /
Q 40.4	ALARM TWR LAMP	FC79	W	LAD	NW 15 /
Q 40.5	RESET TWR LAMP	FC79	W	LAD	NW 16 /
Q 40.6	IN CYCLE TWR LAMP	FC79	W	LAD	NW 17 /
Q 40.7	WP PROBE ENABLE	FC78	W	LAD	NW 1 /
Q 40.7	WP PROBE ENABLE	FC78	R	LAD	NW 1 /.
Q 41.0	COOLANT PUMP MTR	FC70	R	LAD	NW 12 /.
Q 41.0	COOLANT PUMP MTR	FC71	W	LAD	NW 7 /
Q 41.0	COOLANT PUMP MTR	FC70	R	LAD	NW 12 /.
Q 41.1	THRU SPIN COOL SOL	FC71	R	LAD	NW 14 /.
Q 41.1	THRU SPIN COOL SOL	FC71	W	LAD	NW 12 /
Q 41.1	THRU SPIN COOL SOL	FC71	R	LAD	NW 13 /.
Q 41.1	THRU SPIN COOL SOL	FC70	R	LAD	NW 16 /.
Q 41.1	THRU SPIN COOL SOL	FC70	R	LAD	NW 16 /.
Q 41.2	FLUSHING COOL MTR	FC71	W	LAD	NW 18 /
Q 41.3	CONV FWD MOTOR	FC72	W	LAD	NW 6 /
Q 41.3	CONV FWD MOTOR	FC72	R	LAD	NW 7 /.
Q 41.3	CONV FWD MOTOR	FC72	R	LAD	NW 3 /.
Q 41.3	CONV FWD MOTOR	FC72	R	LAD	NW 5 /.
Q 41.4	CONV REV MOTOR	FC72	W	LAD	NW 7 /
Q 41.4	CONV REV MOTOR	FC72	R	LAD	NW 2 /.
Q 41.4	CONV REV MOTOR	FC72	R	LAD	NW 6 /.
Q 41.5	M17 AIR BLST SOL	FC70	W	LAD	NW 10 /
Q 41.6	ORT AIR BLST SOL	FC70	W	LAD	NW 13 /
Q 41.6	ORT AIR BLST SOL	FC70	R	LAD	NW 18 /.

Address	Symbol	Block	Type	Language	Details
Q 41.7	SPIN AIR BLST SOL	FC70	R	LAD	NW 18 /.
Q 41.7	SPIN AIR BLST SOL	FC70	W	LAD	NW 17 /
Q 42.0	SPIN TOOL UCLP SOL	FC70	R	LAD	NW 14 /.
Q 42.0	SPIN TOOL UCLP SOL	FC70	R	LAD	NW 15 /.
Q 42.0	SPIN TOOL UCLP SOL	FC70	R	LAD	NW 9 /.
Q 42.0	SPIN TOOL UCLP SOL	FC70	W	LAD	NW 3 /
Q 42.2	WORK LIGHT	FC73	W	LAD	NW 3 /
Q 42.3	AUTO PWR OFF	FC74	W	LAD	NW 4 /
Q 42.3	AUTO PWR OFF	FC74	R	LAD	NW 5 /.
Q 42.4	4 AXIS UCLP SOL	FC54	R	LAD	NW 20 /.
Q 42.4	4 AXIS UCLP SOL	FC55	W	LAD	NW 4 /
Q 42.4	4 AXIS UCLP SOL	FC54	R	LAD	NW 19 /.
Q 42.5	MC DOOR UNLK SOL	FC75	W	LAD	NW 2 /
Q 42.6	MULTI USE Q42.6	FC60	W	LAD	NW 34 /
Q 42.6	MULTI USE Q42.6	FC61	R	LAD	NW 11 /.
Q 42.7	SPIN GEAR LOW MTR	FC61	R	LAD	NW 13 /.
Q 42.7	SPIN GEAR LOW MTR	FC61	W	LAD	NW 11 /
Q 43.0	T MAG #1 A/R MTR	FC82	R	LAD	NW 1 /.
Q 43.0	T MAG #1 A/R MTR	FC80	R	LAD	NW 17 /.
Q 43.0	T MAG #1 A/R MTR	FC99	R	LAD	NW 3 /.
Q 43.1	T MAG #1 ADV SEL	FC80	R	LAD	NW 17 /.
Q 43.1	T MAG #1 ADV SEL	FC99	R	LAD	NW 3 /.
Q 43.2	T MAG #1 ROT MTR	FC53	R	LAD	NW 22 /.
Q 43.2	T MAG #1 ROT MTR	FC80	R	LAD	NW 14 /.
Q 43.2	T MAG #1 ROT MTR	FC85	R	LAD	NW 7 /.
Q 43.2	T MAG #1 ROT MTR	FC81	R	LAD	NW 19 /.
Q 43.2	T MAG #1 ROT MTR	FC44	R	LAD	NW 3 /.
Q 43.2	T MAG #1 ROT MTR	FC85	R	LAD	NW 1 /.
Q 43.2	T MAG #1 ROT MTR	FC99	R	LAD	NW 5 /.
Q 43.2	T MAG #1 ROT MTR	FC85	R	LAD	NW 4 /.
Q 43.4	CUST SPEC M134	FC96	R	LAD	NW 1 /.
Q 43.5	CUST SPEC M136	FC96	R	LAD	NW 2 /.
Q 43.6	CUST SPEC M138	FC96	R	LAD	NW 3 /.
Q 43.7	CUST SPEC M190	FC96	R	LAD	NW 4 /.
Q 72.0	T MAG #2 A/R MTR	FC80	R	LAD	NW 21 /.
Q 72.0	T MAG #2 A/R MTR	FC86	R	LAD	NW 1 /.
Q 72.0	T MAG #2 A/R MTR	FC99	R	LAD	NW 4 /.
Q 72.1	T MAG #2 RET SEL	FC80	R	LAD	NW 21 /.
Q 72.1	T MAG #2 RET SEL	FC99	R	LAD	NW 4 /.
Q 72.2	T MAG #2 ROT MTR	FC53	R	LAD	NW 22 /.
Q 72.2	T MAG #2 ROT MTR	FC80	R	LAD	NW 18 /.
Q 72.2	T MAG #2 ROT MTR	FC89	R	LAD	NW 1 /.
Q 72.2	T MAG #2 ROT MTR	FC81	R	LAD	NW 19 /.
Q 72.2	T MAG #2 ROT MTR	FC89	R	LAD	NW 7 /.
Q 72.2	T MAG #2 ROT MTR	FC89	R	LAD	NW 4 /.
Q 72.2	T MAG #2 ROT MTR	FC99	R	LAD	NW 6 /.
Q 72.2	T MAG #2 ROT MTR	FC44	R	LAD	NW 3 /.
Q 72.4	5 AXIS UCLP SOL	FC56	R	LAD	NW 20 /.
Q 72.4	5 AXIS UCLP SOL	FC56	R	LAD	NW 19 /.
M 0.0	OFF	FC72	R	LAD	NW 9 /.
M 0.0	OFF	FC72	R	LAD	NW 8 /.
M 0.0	OFF	FC41	R	LAD	NW 21 /.
M 0.0	OFF	FC75	R	STL	NW 6 S
M 0.0	OFF	FC41	R	LAD	NW 19 /.
M 0.0	OFF	FC41	R	LAD	NW 20 /.
M 0.0	OFF	FC60	R	LAD	NW 3 /.
M 0.0	OFF	FC89	R	LAD	NW 2 /.
M 0.0	OFF	FC60	R	LAD	NW 1 /.
M 0.0	OFF	FC47	R	STL	NW 36 S
M 0.0	OFF	FC85	R	LAD	NW 2 /.
M 0.0	OFF	OB1	R	LAD	NW 8 /.
M 0.0	OFF	FC89	R	LAD	NW 5 /.
M 0.0	OFF	FC81	R	LAD	NW 27 /.
M 0.0	OFF	FC79	R	LAD	NW 2 /.
M 0.0	OFF	FC80	R	LAD	NW 25 /.
M 0.0	OFF	OB1	R	LAD	NW 8 /.
M 0.0	OFF	OB1	W	LAD	NW 8 /

Address	Symbol	Block	Type	Language	Details
M 0.0	OFF	FC85	R	LAD	NW 5 /.
M 0.1	ON	FC53	R	LAD	NW 12 /.
M 0.1	ON	FC53	R	LAD	NW 4 /.
M 0.1	ON	FC56	R	LAD	NW 10 /.
M 0.1	ON	FC54	R	LAD	NW 4 /.
M 0.1	ON	FC54	R	LAD	NW 10 /.
M 0.1	ON	FC56	R	LAD	NW 4 /.
M 0.1	ON	FC60	R	LAD	NW 18 /.
M 0.1	ON	FC52	R	LAD	NW 4 /.
M 0.1	ON	FC60	R	LAD	NW 4 /.
M 0.1	ON	OB1	R	LAD	NW 9 /.
M 0.1	ON	FC51	R	LAD	NW 4 /.
M 0.1	ON	FC51	R	LAD	NW 11 /.
M 0.1	ON	FC52	R	LAD	NW 11 /.
M 0.1	ON	FC60	R	LAD	NW 2 /.
M 0.1	ON	FC41	R	LAD	NW 2 /.
M 0.1	ON	FC47	R	STL	NW 36 S
M 0.1	ON	OB1	W	LAD	NW 9 /.
M 0.1	ON	OB1	R	LAD	NW 9 /.
M 0.1	ON	FC40	R	STL	NW 6 S
M 0.1	ON	OB1	R	LAD	NW 12 /.
M 0.2	CLOCK ON	FC80	R	LAD	NW 8 /.
M 0.2	CLOCK ON	FC81	R	LAD	NW 20 /.
M 0.2	CLOCK ON	FC81	R	LAD	NW 21 /.
M 0.2	CLOCK ON	FC81	R	LAD	NW 20 /.
M 0.2	CLOCK ON	FC79	R	LAD	NW 16 /.
M 0.2	CLOCK ON	FC47	R	LAD	NW 15 /.
M 0.2	CLOCK ON	FC48	R	LAD	NW 10 /.
M 0.2	CLOCK ON	FC79	R	LAD	NW 12 /.
M 0.2	CLOCK ON	FC79	R	LAD	NW 15 /.
M 0.2	CLOCK ON	OB1	R	LAD	NW 11 /.
M 0.2	CLOCK ON	FC47	R	LAD	NW 20 /.
M 0.2	CLOCK ON	FC60	R	LAD	NW 22 /.
M 0.2	CLOCK ON	FC47	R	LAD	NW 18 /.
M 0.2	CLOCK ON	FC81	R	LAD	NW 21 /.
M 0.2	CLOCK ON	OB1	W	LAD	NW 10 /.
M 0.2	CLOCK ON	FC47	R	LAD	NW 16 /.
M 0.2	CLOCK ON	FC74	R	LAD	NW 3 /.
M 0.2	CLOCK ON	FC79	R	LAD	NW 17 /.
M 0.2	CLOCK ON	FC60	R	LAD	NW 23 /.
M 0.3	CLK OFF	OB1	R	LAD	NW 10 /.
M 0.3	CLK OFF	OB1	W	LAD	NW 11 /.
M 0.4	PLC START EXT PLS	FC80	R	LAD	NW 5 /.
M 0.4	PLC START EXT PLS	OB1	W	LAD	NW 12 /.
M 0.4	PLC START EXT PLS	OB1	R	LAD	NW 13 /.
M 0.4	PLC START EXT PLS	FC81	R	LAD	NW 5 /.
M 0.4	PLC START EXT PLS	FC80	R	LAD	NW 4 /.
M 0.4	PLC START EXT PLS	FC81	R	LAD	NW 6 /.
M 0.5	PLC START PULSE	FC46	R	LAD	NW 17 /.
M 0.5	PLC START PULSE	FC46	R	LAD	NW 2 /.
M 0.5	PLC START PULSE	FC42	R	LAD	NW 19 /.
M 0.5	PLC START PULSE	OB1	W	LAD	NW 13 /.
M 0.5	PLC START PULSE	FC42	R	LAD	NW 21 /.
M 0.5	PLC START PULSE	FC77	R	LAD	NW 17 /.
M 0.5	PLC START PULSE	FC46	R	LAD	NW 11 /.
M 0.5	PLC START PULSE	FC42	R	LAD	NW 23 /.
M 0.5	PLC START PULSE	FC93	R	LAD	NW 1 /.
M 0.5	PLC START PULSE	FC46	R	LAD	NW 14 /.
M 0.5	PLC START PULSE	FC65	R	LAD	NW 1 /.
M 0.5	PLC START PULSE	FC47	R	LAD	NW 37 /.
M 0.5	PLC START PULSE	FC46	R	LAD	NW 8 /.
M 0.6	PLC START REMEMBER	OB1	W	LAD	NW 13 /.
M 10.0	MMC B/UP COMP DLY	FC41	R	LAD	NW 3 /.
M 10.0	MMC B/UP COMP DLY	FC41	W	LAD	NW 4 /.
M 16.0	EMRG STOP PULSE	FC40	R	LAD	NW 4 /.
M 16.0	EMRG STOP PULSE	FC40	W	LAD	NW 3 /.
M 16.1	EMRG STOP REMEMBER	FC40	W	LAD	NW 3 /.

Address		Symbol		Block	Type	Language	Details		
M	17.0	FAULT	RESET	FC56	R	LAD	NW	19	/.
M	17.0	FAULT	RESET	FC51	R	LAD	NW	17	/.
M	17.0	FAULT	RESET	FC54	R	LAD	NW	18	/.
M	17.0	FAULT	RESET	FC54	R	LAD	NW	20	/.
M	17.0	FAULT	RESET	FC54	R	LAD	NW	17	/.
M	17.0	FAULT	RESET	FC54	R	LAD	NW	16	/.
M	17.0	FAULT	RESET	FC81	R	LAD	NW	22	/.
M	17.0	FAULT	RESET	FC81	R	LAD	NW	23	/.
M	17.0	FAULT	RESET	FC81	R	LAD	NW	24	/.
M	17.0	FAULT	RESET	FC53	R	LAD	NW	20	/.
M	17.0	FAULT	RESET	FC80	R	LAD	NW	11	/.
M	17.0	FAULT	RESET	FC80	R	LAD	NW	12	/.
M	17.0	FAULT	RESET	FC80	R	LAD	NW	13	/.
M	17.0	FAULT	RESET	FC80	R	LAD	NW	14	/.
M	17.0	FAULT	RESET	FC80	R	LAD	NW	15	/.
M	17.0	FAULT	RESET	FC80	R	LAD	NW	16	/.
M	17.0	FAULT	RESET	FC80	R	LAD	NW	17	/.
M	17.0	FAULT	RESET	FC80	R	LAD	NW	18	/.
M	17.0	FAULT	RESET	FC80	R	LAD	NW	19	/.
M	17.0	FAULT	RESET	FC80	R	LAD	NW	20	/.
M	17.0	FAULT	RESET	FC80	R	LAD	NW	21	/.
M	17.0	FAULT	RESET	FC53	R	LAD	NW	19	/.
M	17.0	FAULT	RESET	FC52	R	LAD	NW	18	/.
M	17.0	FAULT	RESET	FC52	R	LAD	NW	17	/.
M	17.0	FAULT	RESET	FC51	R	LAD	NW	18	/.
M	17.0	FAULT	RESET	FC56	R	LAD	NW	18	/.
M	17.0	FAULT	RESET	OB1	R	STL	NW	6	S
M	17.0	FAULT	RESET	FC56	R	LAD	NW	17	/.
M	17.0	FAULT	RESET	FC50	R	LAD	NW	2	/.
M	17.0	FAULT	RESET	FC56	R	LAD	NW	16	/.
M	17.0	FAULT	RESET	FC40	W	LAD	NW	4	/
M	17.0	FAULT	RESET	FC60	R	LAD	NW	43	/.
M	17.0	FAULT	RESET	FC76	R	LAD	NW	1	/.
M	17.0	FAULT	RESET	FC56	R	LAD	NW	20	/.
M	17.0	FAULT	RESET	FC54	R	LAD	NW	19	/.
M	17.0	FAULT	RESET	FC70	R	LAD	NW	18	/.
M	17.0	FAULT	RESET	FC65	R	LAD	NW	6	/.
M	17.0	FAULT	RESET	FC60	R	LAD	NW	41	/.
M	17.0	FAULT	RESET	FC60	R	LAD	NW	39	/.
M	17.0	FAULT	RESET	FC60	R	LAD	NW	37	/.
M	17.0	FAULT	RESET	FC60	R	LAD	NW	38	/.
M	17.0	FAULT	RESET	FC60	R	LAD	NW	40	/.
M	17.2	M PLT DR	OP NR RQ	FC40	R	LAD	NW	4	/.
M	17.2	M PLT DR	OP NR RQ	FC40	R	STL	NW	6	S
M	17.2	M PLT DR	OP NR RQ	FC40	W	LAD	NW	5	/
M	17.2	M PLT DR	OP NR RQ	FC79	R	LAD	NW	13	/.
M	17.3	M PLT DR	OP NR RM	FC40	W	LAD	NW	5	/
M	18.0	FEED REL	DES PLS	FC42	W	LAD	NW	3	/
M	18.0	FEED REL	DES PLS	FC42	R	LAD	NW	4	/.
M	18.1	FEED REL	DES REM	FC42	W	LAD	NW	3	/
M	18.2	FEED REL	BUFFER	FC42	R	LAD	NW	6	/.
M	18.2	FEED REL	BUFFER	FC42	R	LAD	NW	4	/.
M	18.2	FEED REL	BUFFER	FC42	R	LAD	NW	3	/.
M	18.2	FEED REL	BUFFER	FC42	R	LAD	NW	4	/.
M	18.2	FEED REL	BUFFER	FC42	R	LAD	NW	11	/.
M	18.2	FEED REL	BUFFER	FC42	W	LAD	NW	4	/
M	18.2	FEED REL	BUFFER	FC42	R	LAD	NW	5	/.
M	18.2	FEED REL	BUFFER	FC42	R	LAD	NW	15	/.
M	18.3	FEED REL	SEL REM	FC42	W	LAD	NW	4	/
M	18.4	SPIN STOP	F/H REQ	FC60	R	LAD	NW	17	/.
M	18.4	SPIN STOP	F/H REQ	FC42	W	LAD	NW	6	/
M	18.4	SPIN STOP	F/H REQ	FC42	R	LAD	NW	15	/.
M	18.5	FEED O/R	DIS BFR	FC42	R	LAD	NW	7	/.
M	18.5	FEED O/R	DIS BFR	FC42	R	LAD	NW	1	/.
M	18.5	FEED O/R	DIS BFR	FC42	W	LAD	NW	7	/
M	18.6	FEED HOLD	SP START	FC42	R	LAD	NW	15	/.
M	18.6	FEED HOLD	SP START	FC42	W	LAD	NW	14	/

Address		Symbol		Block	Type	Language	Details		
M	19.0	MANUAL	MODE	FC47	R	LAD	NW	19	/.
M	19.0	MANUAL	MODE	FC47	R	LAD	NW	16	/.
M	19.0	MANUAL	MODE	FC47	W	LAD	NW	1	/
M	19.0	MANUAL	MODE	FC47	R	LAD	NW	14	/.
M	19.0	MANUAL	MODE	FC47	R	LAD	NW	15	/.
M	19.0	MANUAL	MODE	FC47	R	LAD	NW	16	/.
M	19.0	MANUAL	MODE	FC47	R	LAD	NW	21	/.
M	19.0	MANUAL	MODE	FC47	R	LAD	NW	17	/.
M	19.0	MANUAL	MODE	FC47	R	LAD	NW	18	/.
M	19.0	MANUAL	MODE	FC47	R	LAD	NW	20	/.
M	19.0	MANUAL	MODE	FC47	R	LAD	NW	21	/.
M	19.1	JOG MODE	ONLY	FC80	R	LAD	NW	1	/.
M	19.1	JOG MODE	ONLY	FC47	R	LAD	NW	27	/.
M	19.1	JOG MODE	ONLY	FC81	R	LAD	NW	2	/.
M	19.1	JOG MODE	ONLY	FC79	R	LAD	NW	5	/.
M	19.1	JOG MODE	ONLY	FC79	R	LAD	NW	5	/.
M	19.1	JOG MODE	ONLY	FC47	W	LAD	NW	2	/
M	19.1	JOG MODE	ONLY	FC42	R	LAD	NW	16	/.
M	19.2	AUTOMATIC	MODE	FC42	R	LAD	NW	15	/.
M	19.2	AUTOMATIC	MODE	FC47	W	LAD	NW	3	/
M	19.2	AUTOMATIC	MODE	FC42	R	LAD	NW	15	/.
M	20.0	INC1 MODE	DES PLS	FC41	R	LAD	NW	7	/.
M	20.2	INC1 MODE	SEL BFR	FC41	R	LAD	NW	8	/.
M	20.2	INC1 MODE	SEL BFR	FC41	R	LAD	NW	15	/.
M	20.2	INC1 MODE	SEL BFR	FC41	W	LAD	NW	7	/
M	20.2	INC1 MODE	SEL BFR	FC41	R	LAD	NW	7	/.
M	20.2	INC1 MODE	SEL BFR	FC41	R	LAD	NW	7	/.
M	20.3	INC1 MODE	SEL REM	FC41	W	LAD	NW	7	/
M	20.4	INC2 MODE	DES PLS	FC41	R	LAD	NW	9	/.
M	20.6	INC2 MODE	SEL BFR	FC41	R	LAD	NW	10	/.
M	20.6	INC2 MODE	SEL BFR	FC41	R	LAD	NW	16	/.
M	20.6	INC2 MODE	SEL BFR	FC41	R	LAD	NW	9	/.
M	20.6	INC2 MODE	SEL BFR	FC41	W	LAD	NW	9	/
M	20.6	INC2 MODE	SEL BFR	FC41	R	LAD	NW	9	/.
M	20.7	INC2 MODE	SEL REM	FC41	W	LAD	NW	9	/
M	21.0	INC3 MODE	DES PLS	FC41	R	LAD	NW	11	/.
M	21.2	INC3 MODE	SEL BFR	FC41	R	LAD	NW	11	/.
M	21.2	INC3 MODE	SEL BFR	FC41	W	LAD	NW	11	/
M	21.2	INC3 MODE	SEL BFR	FC41	R	LAD	NW	11	/.
M	21.2	INC3 MODE	SEL BFR	FC41	R	LAD	NW	17	/.
M	21.2	INC3 MODE	SEL BFR	FC41	R	LAD	NW	12	/.
M	21.3	INC3 MODE	SEL REM	FC41	W	LAD	NW	11	/
M	21.4	INC4 MODE	DES PLS	FC41	R	LAD	NW	13	/.
M	21.6	INC4 MODE	SEL BFR	FC41	R	LAD	NW	18	/.
M	21.6	INC4 MODE	SEL BFR	FC41	R	LAD	NW	13	/.
M	21.6	INC4 MODE	SEL BFR	FC41	W	LAD	NW	13	/
M	21.6	INC4 MODE	SEL BFR	FC41	R	LAD	NW	13	/.
M	21.6	INC4 MODE	SEL BFR	FC41	R	LAD	NW	14	/.
M	21.7	INC4 MODE	SEL REM	FC41	W	LAD	NW	13	/
M	23.0	TOOL/TOOL	PB PLS	FC44	W	LAD	NW	3	/
M	23.0	TOOL/TOOL	PB PLS	FC44	R	LAD	NW	7	/.
M	23.0	TOOL/TOOL	PB PLS	FC44	R	LAD	NW	6	/.
M	23.0	TOOL/TOOL	PB PLS	FC44	R	LAD	NW	8	/.
M	23.1	TOOL/TOOL	PB REM	FC44	W	LAD	NW	3	/
M	23.2	TOOL/MAG	PB PLS	FC44	W	LAD	NW	4	/
M	23.2	TOOL/MAG	PB PLS	FC44	R	LAD	NW	9	/.
M	23.3	TOOL/MAG	PB REM	FC44	W	LAD	NW	4	/
M	23.4	CYC START	PB PLS	FC44	W	LAD	NW	5	/
M	23.4	CYC START	PB PLS	FC44	R	LAD	NW	10	/.
M	23.5	CYC START	PB REM	FC44	W	LAD	NW	5	/
M	24.0	ASUP ASGN	ERR BFR	FC45	R	LAD	NW	2	/.
M	24.0	ASUP ASGN	ERR BFR	FC45	W	LAD	NW	1	/
M	24.0	ASUP ASGN	ERR BFR	FC45	R	LAD	NW	1	/.
M	24.1	ATC D TRN	ERR BFR	FC45	R	LAD	NW	3	/.
M	24.1	ATC D TRN	ERR BFR	FC45	W	LAD	NW	3	/
M	24.1	ATC D TRN	ERR BFR	FC45	R	LAD	NW	4	/.
M	24.2	GUD ADDR	ERR BFR	FC45	R	LAD	NW	6	/.

Address		Symbol	Block	Type	Language	Details			
M	24.2	GUD ADDR ERR BFR	FC45	W	LAD	NW	5	/	
M	24.2	GUD ADDR ERR BFR	FC45	R	LAD	NW	5	/	
M	24.3	SM EAS EX LATCH	FC45	W	LAD	NW	7	/	
M	24.3	SM EAS EX LATCH	FC45	R	LAD	NW	7	/	
M	24.3	SM EAS EX LATCH	FC45	R	LAD	NW	8	/	
M	24.4	SM EAS EX ERR BFR	FC45	R	LAD	NW	9	/	
M	24.4	SM EAS EX ERR BFR	FC45	W	LAD	NW	8	/	
M	24.4	SM EAS EX ERR BFR	FC45	R	LAD	NW	8	/	
M	25.0	NC START DIS FLT	FC79	R	LAD	NW	9	/	
M	25.0	NC START DIS FLT	FC45	W	LAD	NW	18	/	
M	27.0	X AXIS DES BFR	FC47	W	LAD	NW	4	/	
M	27.0	X AXIS DES BFR	FC47	R	LAD	NW	5	/	
M	27.1	X AXIS DES REM	FC47	W	LAD	NW	4	/	
M	27.2	X AXIS SEL BFR	FC51	R	LAD	NW	15	/	
M	27.2	X AXIS SEL BFR	FC51	R	LAD	NW	14	/	
M	27.2	X AXIS SEL BFR	FC47	W	LAD	NW	5	/	
M	27.2	X AXIS SEL BFR	FC51	R	LAD	NW	13	/	
M	27.2	X AXIS SEL BFR	FC47	R	LAD	NW	5	/	
M	27.2	X AXIS SEL BFR	FC47	R	LAD	NW	20	/	
M	27.2	X AXIS SEL BFR	FC47	R	LAD	NW	5	/	
M	27.2	X AXIS SEL BFR	FC47	R	LAD	NW	4	/	
M	27.3	X AXIS SEL REM	FC47	W	LAD	NW	5	/	
M	27.4	Y AXIS DES BFR	FC47	R	LAD	NW	7	/	
M	27.4	Y AXIS DES BFR	FC47	R	LAD	NW	7	/	
M	27.4	Y AXIS DES BFR	FC47	W	LAD	NW	6	/	
M	27.4	Y AXIS DES BFR	FC47	W	LAD	NW	7	/	
M	27.4	Y AXIS DES BFR	FC47	R	LAD	NW	7	/	
M	27.5	Y AXIS DES REM	FC47	W	LAD	NW	6	/	
M	27.6	Y AXIS SEL BFR	FC52	R	LAD	NW	15	/	
M	27.6	Y AXIS SEL BFR	FC47	R	LAD	NW	18	/	
M	27.6	Y AXIS SEL BFR	FC52	R	LAD	NW	14	/	
M	27.6	Y AXIS SEL BFR	FC52	R	LAD	NW	13	/	
M	27.6	Y AXIS SEL BFR	FC47	R	LAD	NW	6	/	
M	27.7	Y AXIS SEL REM	FC47	W	LAD	NW	7	/	
M	28.0	Z AXIS DES BFR	FC47	R	LAD	NW	9	/	
M	28.0	Z AXIS DES BFR	FC47	W	LAD	NW	8	/	
M	28.1	Z AXIS DES REM	FC47	W	LAD	NW	8	/	
M	28.2	Z AXIS SEL BFR	FC47	R	LAD	NW	17	/	
M	28.2	Z AXIS SEL BFR	FC47	R	LAD	NW	9	/	
M	28.2	Z AXIS SEL BFR	FC47	W	LAD	NW	9	/	
M	28.2	Z AXIS SEL BFR	FC47	R	LAD	NW	9	/	
M	28.2	Z AXIS SEL BFR	FC47	R	LAD	NW	8	/	
M	28.2	Z AXIS SEL BFR	FC53	R	LAD	NW	14	/	
M	28.2	Z AXIS SEL BFR	FC53	R	LAD	NW	16	/	
M	28.2	Z AXIS SEL BFR	FC53	R	LAD	NW	15	/	
M	28.3	Z AXIS SEL REM	FC47	W	LAD	NW	9	/	
M	28.4	4 AXIS DES BFR	FC47	W	LAD	NW	11	/	
M	28.4	4 AXIS DES BFR	FC47	W	LAD	NW	10	/	
M	28.4	4 AXIS DES BFR	FC47	R	LAD	NW	11	/	
M	28.4	4 AXIS DES BFR	FC47	R	LAD	NW	11	/	
M	28.5	4 AXIS DES REM	FC47	W	LAD	NW	10	/	
M	28.6	4 AXIS SEL BFR	FC47	R	LAD	NW	10	/	
M	28.6	4 AXIS SEL BFR	FC54	R	LAD	NW	12	/	
M	28.6	4 AXIS SEL BFR	FC54	R	LAD	NW	14	/	
M	28.6	4 AXIS SEL BFR	FC47	R	LAD	NW	14	/	
M	28.6	4 AXIS SEL BFR	FC54	R	LAD	NW	13	/	
M	28.7	4 AXIS SEL REM	FC47	W	LAD	NW	11	/	
M	29.0	5 AXIS DES BFR	FC47	W	LAD	NW	12	/	
M	29.0	5 AXIS DES BFR	FC47	R	LAD	NW	13	/	
M	29.1	5 AXIS DES REM	FC47	W	LAD	NW	12	/	
M	29.2	5 AXIS SEL BFR	FC47	W	LAD	NW	13	/	
M	29.2	5 AXIS SEL BFR	FC47	R	LAD	NW	13	/	
M	29.2	5 AXIS SEL BFR	FC56	R	LAD	NW	14	/	
M	29.2	5 AXIS SEL BFR	FC56	R	LAD	NW	12	/	
M	29.2	5 AXIS SEL BFR	FC47	R	LAD	NW	13	/	
M	29.2	5 AXIS SEL BFR	FC47	R	LAD	NW	22	/	

Address	Symbol	Block	Type	Language	Details
M 29.2	5 AXIS SEL BFR	FC56	R	LAD	NW 13 /.
M 29.2	5 AXIS SEL BFR	FC47	R	LAD	NW 12 /.
M 29.3	5 AXIS SEL REM	FC47	W	LAD	NW 13 /
M 30.0	S BLOCK DES PLS	FC46	W	LAD	NW 1 /
M 30.0	S BLOCK DES PLS	FC46	R	LAD	NW 2 /.
M 30.1	S BLOCK DES REM	FC46	W	LAD	NW 1 /
M 30.2	S BLOCK SEL BFR	FC60	R	LAD	NW 7 /.
M 30.2	S BLOCK SEL BFR	FC45	R	LAD	NW 12 /.
M 30.2	S BLOCK SEL BFR	FC42	R	LAD	NW 4 /.
M 30.2	S BLOCK SEL BFR	FC42	R	LAD	NW 15 /.
M 30.2	S BLOCK SEL BFR	FC46	W	LAD	NW 2 /
M 30.2	S BLOCK SEL BFR	FC46	R	LAD	NW 3 /.
M 30.2	S BLOCK SEL BFR	FC46	R	LAD	NW 1 /.
M 30.2	S BLOCK SEL BFR	FC46	R	LAD	NW 2 /.
M 30.2	S BLOCK SEL BFR	FC45	R	LAD	NW 17 /.
M 30.2	S BLOCK SEL BFR	FC42	R	LAD	NW 15 /.
M 30.3	S BLOCK SEL REM	FC46	W	LAD	NW 2 /
M 30.4	DRY RUN DES PLS	FC46	R	LAD	NW 5 /.
M 30.4	DRY RUN DES PLS	FC46	W	LAD	NW 4 /
M 30.5	DRY RUN DES REM	FC46	W	LAD	NW 4 /
M 30.6	DRY RUN SEL BFR	FC46	R	LAD	NW 6 /.
M 30.6	DRY RUN SEL BFR	FC46	W	LAD	NW 5 /
M 30.6	DRY RUN SEL BFR	FC46	R	LAD	NW 5 /.
M 30.6	DRY RUN SEL BFR	FC46	R	LAD	NW 4 /.
M 30.6	DRY RUN SEL BFR	FC46	R	LAD	NW 5 /.
M 30.7	DRY RUN SEL REM	FC46	W	LAD	NW 5 /
M 31.0	BLCK SKIP DES PLS	FC46	W	LAD	NW 7 /
M 31.0	BLCK SKIP DES PLS	FC46	R	LAD	NW 8 /.
M 31.1	BLCK SKIP DES REM	FC46	W	LAD	NW 7 /
M 31.2	BLCK SKIP SEL BFR	FC46	R	LAD	NW 7 /.
M 31.2	BLCK SKIP SEL BFR	FC46	R	LAD	NW 9 /.
M 31.2	BLCK SKIP SEL BFR	FC46	W	LAD	NW 8 /
M 31.2	BLCK SKIP SEL BFR	FC46	R	LAD	NW 8 /.
M 31.3	BCLK SKIP SEL REM	FC46	W	LAD	NW 8 /
M 31.4	OPT STOP DES PLS	FC46	W	LAD	NW 10 /
M 31.4	OPT STOP DES PLS	FC46	R	LAD	NW 11 /.
M 31.5	OPT STOP DES REM	FC46	W	LAD	NW 10 /
M 31.6	OPT STOP SEL BFR	FC46	R	LAD	NW 11 /.
M 31.6	OPT STOP SEL BFR	FC46	R	LAD	NW 10 /.
M 31.6	OPT STOP SEL BFR	FC46	W	LAD	NW 11 /
M 31.6	OPT STOP SEL BFR	FC46	R	LAD	NW 12 /.
M 31.7	OPT STOP SEL REM	FC46	W	LAD	NW 11 /
M 32.0	PGM TEST DES PLS	FC46	R	LAD	NW 14 /.
M 32.0	PGM TEST DES PLS	FC46	W	LAD	NW 13 /
M 32.1	PGM TEST DES REM	FC46	W	LAD	NW 13 /
M 32.2	PGM TEST SEL BFR	FC46	R	LAD	NW 13 /.
M 32.2	PGM TEST SEL BFR	FC46	R	LAD	NW 14 /.
M 32.2	PGM TEST SEL BFR	FC46	W	LAD	NW 14 /
M 32.2	PGM TEST SEL BFR	FC46	R	LAD	NW 15 /.
M 32.3	PGM TEST SEL REM	FC46	W	LAD	NW 14 /
M 32.4	RAPID OR DES PLS	FC46	R	LAD	NW 17 /.
M 32.4	RAPID OR DES PLS	FC46	W	LAD	NW 16 /
M 32.5	RAPID OR DES REM	FC46	W	LAD	NW 16 /
M 32.6	RAPID OR SEL BFR	FC46	R	LAD	NW 17 /.
M 32.6	RAPID OR SEL BFR	FC46	R	LAD	NW 18 /.
M 32.6	RAPID OR SEL BFR	FC46	W	LAD	NW 17 /
M 32.6	RAPID OR SEL BFR	FC46	R	LAD	NW 16 /.
M 32.7	RAPID OR SEL REM	FC46	W	LAD	NW 17 /
M 33.0	ROV 0% DES PLS	FC42	W	LAD	NW 18 /
M 33.0	ROV 0% DES PLS	FC42	R	LAD	NW 19 /.
M 33.1	ROV 0% DES REM	FC42	W	LAD	NW 18 /
M 33.2	ROV 0% SEL BFR	FC42	R	LAD	NW 25 /.
M 33.2	ROV 0% SEL BFR	FC42	R	LAD	NW 18 /.
M 33.2	ROV 0% SEL BFR	FC42	R	LAD	NW 19 /.
M 33.2	ROV 0% SEL BFR	FC42	R	LAD	NW 21 /.
M 33.2	ROV 0% SEL BFR	FC42	R	LAD	NW 24 /.
M 33.2	ROV 0% SEL BFR	FC42	W	LAD	NW 19 /

Address	Symbol	Block	Type	Language	Details
M 33.2	ROV 0% SEL BFR	FC42	R	LAD	NW 28 /.
M 33.2	ROV 0% SEL BFR	FC42	R	LAD	NW 23 /.
M 33.2	ROV 0% SEL BFR	FC42	R	LAD	NW 27 /.
M 33.3	ROV 0% SEL REM	FC42	W	LAD	NW 19 /
M 33.4	ROV 20% DES PLS	FC42	R	LAD	NW 21 /.
M 33.4	ROV 20% DES PLS	FC42	W	LAD	NW 20 /
M 33.5	ROV 20% DES REM	FC42	W	LAD	NW 20 /
M 33.6	ROV 20% SEL BFR	FC42	R	LAD	NW 25 /.
M 33.6	ROV 20% SEL BFR	FC42	R	LAD	NW 20 /.
M 33.6	ROV 20% SEL BFR	FC42	R	LAD	NW 27 /.
M 33.6	ROV 20% SEL BFR	FC42	R	LAD	NW 23 /.
M 33.6	ROV 20% SEL BFR	FC42	R	LAD	NW 28 /.
M 33.6	ROV 20% SEL BFR	FC42	R	LAD	NW 19 /.
M 33.6	ROV 20% SEL BFR	FC42	R	LAD	NW 27 /.
M 33.6	ROV 20% SEL BFR	FC42	W	LAD	NW 21 /
M 33.6	ROV 20% SEL BFR	FC42	R	LAD	NW 26 /.
M 33.6	ROV 20% SEL BFR	FC42	R	LAD	NW 21 /.
M 33.7	ROV 20% SEL REM	FC42	W	LAD	NW 21 /
M 34.0	ROV 50% DES PLS	FC42	R	LAD	NW 23 /.
M 34.0	ROV 50% DES PLS	FC42	W	LAD	NW 22 /
M 34.1	ROV 50% DES REM	FC42	W	LAD	NW 22 /
M 34.2	ROV 50% SEL BFR	FC42	R	LAD	NW 22 /.
M 34.2	ROV 50% SEL BFR	FC42	R	LAD	NW 25 /.
M 34.2	ROV 50% SEL BFR	FC42	R	LAD	NW 28 /.
M 34.2	ROV 50% SEL BFR	FC42	R	LAD	NW 26 /.
M 34.2	ROV 50% SEL BFR	FC42	R	LAD	NW 21 /.
M 34.2	ROV 50% SEL BFR	FC42	R	LAD	NW 25 /.
M 34.2	ROV 50% SEL BFR	FC42	R	LAD	NW 19 /.
M 34.2	ROV 50% SEL BFR	FC42	R	LAD	NW 23 /.
M 34.2	ROV 50% SEL BFR	FC42	R	LAD	NW 27 /.
M 34.2	ROV 50% SEL BFR	FC42	R	LAD	NW 27 /.
M 34.2	ROV 50% SEL BFR	FC42	W	LAD	NW 23 /
M 34.3	ROV 50% SEL REM	FC42	W	LAD	NW 23 /
M 35.0	Z LOCK DES PLS	FC47	W	LAD	NW 23 /
M 35.0	Z LOCK DES PLS	FC47	R	LAD	NW 24 /.
M 35.1	Z LOCK DES REM	FC47	W	LAD	NW 23 /
M 35.2	Z LOCK SEL BFR	FC47	R	LAD	NW 23 /.
M 35.2	Z LOCK SEL BFR	FC47	R	LAD	NW 24 /.
M 35.2	Z LOCK SEL BFR	FC47	R	LAD	NW 24 /.
M 35.2	Z LOCK SEL BFR	FC47	R	LAD	NW 25 /.
M 35.2	Z LOCK SEL BFR	FC47	W	LAD	NW 24 /
M 35.3	Z LOCK SEL REM	FC47	W	LAD	NW 24 /
M 35.4	WCS DISP DES PLS	FC47	W	LAD	NW 29 /
M 35.4	WCS DISP DES PLS	FC47	R	LAD	NW 30 /.
M 35.5	WCS DISP DES REM	FC47	W	LAD	NW 29 /
M 35.6	WCS DISP ACTIVE	FC47	R	LAD	NW 31 /.
M 35.6	WCS DISP ACTIVE	FC47	R	LAD	NW 30 /.
M 35.6	WCS DISP ACTIVE	FC47	W	LAD	NW 30 /
M 35.6	WCS DISP ACTIVE	FC47	R	LAD	NW 29 /.
M 35.6	WCS DISP ACTIVE	FC47	R	LAD	NW 30 /.
M 35.7	WCS DISP SEL REM	FC47	W	LAD	NW 30 /
M 36.0	MPG DSBL PULSE	FC47	R	LAD	NW 27 /.
M 36.0	MPG DSBL PULSE	FC47	W	LAD	NW 26 /
M 36.1	MPG DSBL REMEMBER	FC47	W	LAD	NW 26 /
M 36.2	MPG ENBL SEL BFR	FC47	R	LAD	NW 27 /.
M 36.2	MPG ENBL SEL BFR	FC47	W	LAD	NW 27 /
M 36.2	MPG ENBL SEL BFR	FC47	R	LAD	NW 27 /.
M 36.2	MPG ENBL SEL BFR	FC47	R	LAD	NW 28 /.
M 36.2	MPG ENBL SEL BFR	FC51	R	LAD	NW 14 /.
M 36.2	MPG ENBL SEL BFR	FC53	R	LAD	NW 15 /.
M 36.2	MPG ENBL SEL BFR	FC47	R	LAD	NW 26 /.
M 36.2	MPG ENBL SEL BFR	FC54	R	LAD	NW 12 /.
M 36.2	MPG ENBL SEL BFR	FC52	R	LAD	NW 14 /.
M 36.2	MPG ENBL SEL BFR	FC52	R	LAD	NW 13 /.
M 36.2	MPG ENBL SEL BFR	FC54	R	LAD	NW 13 /.
M 36.2	MPG ENBL SEL BFR	FC53	R	LAD	NW 14 /.
M 36.2	MPG ENBL SEL BFR	FC51	R	LAD	NW 13 /.

Address	Symbol	Block	Type	Language	Details
M 36.2	MPG ENBL SEL BFR	FC56	R	LAD	NW 13 /.
M 36.2	MPG ENBL SEL BFR	FC56	R	LAD	NW 12 /.
M 36.3	MPG ENBL REMEMBER	FC47	W	LAD	NW 27 /
M 38.0	AUTO REF REQUEST	FC48	R	LAD	NW 1 /.
M 38.0	AUTO REF REQUEST	FC48	R	LAD	NW 4 /.
M 38.0	AUTO REF REQUEST	FC48	W	LAD	NW 1 /
M 38.0	AUTO REF REQUEST	FC48	R	LAD	NW 2 /.
M 38.0	AUTO REF REQUEST	FC48	R	LAD	NW 10 /.
M 38.0	AUTO REF REQUEST	FC48	R	LAD	NW 3 /.
M 38.0	AUTO REF REQUEST	FC48	R	LAD	NW 10 /.
M 38.1	AUTO REF Z AX REQ	FC48	W	LAD	NW 2 /
M 38.1	AUTO REF Z AX REQ	FC53	R	LAD	NW 14 /.
M 38.2	AUTO REF Z AX REM	FC48	W	LAD	NW 2 /
M 38.3	AUTO REF XY AX RQ	FC51	R	LAD	NW 14 /.
M 38.3	AUTO REF XY AX RQ	FC52	R	LAD	NW 13 /.
M 38.3	AUTO REF XY AX RQ	FC48	W	LAD	NW 3 /
M 38.4	AUTO REF XY AX RM	FC48	W	LAD	NW 3 /
M 38.5	AUTO REF COMPLETE	FC48	R	LAD	NW 5 /.
M 38.5	AUTO REF COMPLETE	FC48	W	LAD	NW 4 /
M 38.6	AUTO REF COMP PLS	FC48	W	LAD	NW 5 /
M 38.6	AUTO REF COMP PLS	FC48	R	LAD	NW 1 /.
M 38.7	AUTO REF COMP REM	FC48	W	LAD	NW 5 /
M 39.0	AUTO REF STRT PLS	FC48	W	LAD	NW 6 /
M 39.0	AUTO REF STRT PLS	FC48	R	LAD	NW 9 /.
M 39.0	AUTO REF STRT PLS	FC48	R	LAD	NW 7 /.
M 39.0	AUTO REF STRT PLS	FC48	R	LAD	NW 8 /.
M 39.1	AUTO REF STRT REM	FC48	W	LAD	NW 6 /
M 39.2	AUTO REF X COMP	FC48	R	LAD	NW 4 /.
M 39.2	AUTO REF X COMP	FC48	W	LAD	NW 7 /
M 39.2	AUTO REF X COMP	FC48	R	LAD	NW 7 /.
M 39.3	AUTO REF X CP REM	FC48	W	LAD	NW 7 /
M 39.4	AUTO REF Y COMP	FC48	R	LAD	NW 4 /.
M 39.4	AUTO REF Y COMP	FC48	R	LAD	NW 8 /.
M 39.4	AUTO REF Y COMP	FC48	W	LAD	NW 8 /
M 39.5	AUTO REF Y CP REM	FC48	W	LAD	NW 8 /
M 39.6	AUTO REF Z COMP	FC48	R	LAD	NW 9 /.
M 39.6	AUTO REF Z COMP	FC48	R	LAD	NW 3 /.
M 39.6	AUTO REF Z COMP	FC48	W	LAD	NW 9 /
M 39.6	AUTO REF Z COMP	FC48	R	LAD	NW 4 /.
M 39.7	AUTO REF Z CP REM	FC48	W	LAD	NW 9 /
M 40.0	IR MODUL FAULT	FC79	R	LAD	NW 8 /.
M 40.0	IR MODUL FAULT	FC50	W	LAD	NW 3 /
M 41.0	X AXIS IN POSN	FC51	W	LAD	NW 6 /
M 41.1	X AXIS MOTION	FC47	R	LAD	NW 15 /.
M 41.1	X AXIS MOTION	FC51	W	LAD	NW 7 /
M 41.1	X AXIS MOTION	FC42	R	LAD	NW 16 /.
M 41.1	X AXIS MOTION	FC42	R	LAD	NW 11 /.
M 41.1	X AXIS MOTION	FC42	R	LAD	NW 13 /.
M 41.1	X AXIS MOTION	FC42	R	LAD	NW 12 /.
M 41.2	X AXIS REFD	FC42	R	LAD	NW 16 /.
M 41.2	X AXIS REFD	FC48	R	LAD	NW 10 /.
M 41.2	X AXIS REFD	FC48	R	LAD	NW 7 /.
M 41.2	X AXIS REFD	FC81	R	LAD	NW 2 /.
M 41.2	X AXIS REFD	FC51	R	LAD	NW 15 /.
M 41.2	X AXIS REFD	FC51	W	LAD	NW 8 /
M 41.2	X AXIS REFD	FC81	R	LAD	NW 1 /.
M 41.2	X AXIS REFD	FC45	R	LAD	NW 17 /.
M 41.2	X AXIS REFD	FC51	R	LAD	NW 16 /.
M 41.2	X AXIS REFD	FC47	R	LAD	NW 15 /.
M 41.2	X AXIS REFD	FC45	R	LAD	NW 10 /.
M 41.3	X AXIS MEAS OK	FC51	R	LAD	NW 12 /.
M 41.3	X AXIS MEAS OK	FC51	W	LAD	NW 9 /
M 41.7	X AXIS FAULT	FC79	R	LAD	NW 8 /.
M 41.7	X AXIS FAULT	FC51	W	LAD	NW 19 /
M 42.0	Y AXIS IN POSN	FC52	W	LAD	NW 6 /
M 42.1	Y AXIS MOTION	FC42	R	LAD	NW 16 /.
M 42.1	Y AXIS MOTION	FC42	R	LAD	NW 11 /.

Address	Symbol	Block	Type	Language	Details
M 42.1	Y AXIS MOTION	FC47	R	LAD	NW 16 /.
M 42.1	Y AXIS MOTION	FC42	R	LAD	NW 12 /.
M 42.1	Y AXIS MOTION	FC42	R	LAD	NW 13 /.
M 42.1	Y AXIS MOTION	FC52	W	LAD	NW 7 /.
M 42.2	Y AXIS REFD	FC52	R	LAD	NW 16 /.
M 42.2	Y AXIS REFD	FC48	R	LAD	NW 10 /.
M 42.2	Y AXIS REFD	FC45	R	LAD	NW 17 /.
M 42.2	Y AXIS REFD	FC48	R	LAD	NW 8 /.
M 42.2	Y AXIS REFD	FC52	R	LAD	NW 15 /.
M 42.2	Y AXIS REFD	FC45	R	LAD	NW 10 /.
M 42.2	Y AXIS REFD	FC81	R	LAD	NW 1 /.
M 42.2	Y AXIS REFD	FC52	W	LAD	NW 8 /.
M 42.2	Y AXIS REFD	FC47	R	LAD	NW 16 /.
M 42.2	Y AXIS REFD	FC42	R	LAD	NW 16 /.
M 42.2	Y AXIS REFD	FC81	R	LAD	NW 2 /.
M 42.3	Y AXIS MEAS OK	FC52	R	LAD	NW 12 /.
M 42.3	Y AXIS MEAS OK	FC52	W	LAD	NW 9 /.
M 42.7	Y AXIS FAULT	FC79	R	LAD	NW 8 /.
M 42.7	Y AXIS FAULT	FC52	W	LAD	NW 19 /.
M 43.0	Z AXIS IN POSN	FC89	R	LAD	NW 4 /.
M 43.0	Z AXIS IN POSN	FC86	R	LAD	NW 1 /.
M 43.0	Z AXIS IN POSN	FC82	R	LAD	NW 1 /.
M 43.0	Z AXIS IN POSN	FC89	R	LAD	NW 7 /.
M 43.0	Z AXIS IN POSN	FC47	R	LAD	NW 24 /.
M 43.0	Z AXIS IN POSN	FC47	R	LAD	NW 23 /.
M 43.0	Z AXIS IN POSN	FC85	R	LAD	NW 7 /.
M 43.0	Z AXIS IN POSN	FC85	R	LAD	NW 4 /.
M 43.0	Z AXIS IN POSN	FC53	W	LAD	NW 6 /.
M 43.1	Z AXIS MOTION	FC42	R	LAD	NW 13 /.
M 43.1	Z AXIS MOTION	FC42	R	LAD	NW 12 /.
M 43.1	Z AXIS MOTION	FC42	R	LAD	NW 11 /.
M 43.1	Z AXIS MOTION	FC47	R	LAD	NW 18 /.
M 43.1	Z AXIS MOTION	FC53	W	LAD	NW 7 /.
M 43.1	Z AXIS MOTION	FC42	R	LAD	NW 16 /.
M 43.2	Z AXIS REFD	FC81	R	LAD	NW 2 /.
M 43.2	Z AXIS REFD	FC77	R	LAD	NW 14 /.
M 43.2	Z AXIS REFD	FC45	R	LAD	NW 17 /.
M 43.2	Z AXIS REFD	FC48	R	LAD	NW 9 /.
M 43.2	Z AXIS REFD	FC81	R	LAD	NW 1 /.
M 43.2	Z AXIS REFD	FC53	R	LAD	NW 17 /.
M 43.2	Z AXIS REFD	FC70	R	LAD	NW 15 /.
M 43.2	Z AXIS REFD	FC48	R	LAD	NW 10 /.
M 43.2	Z AXIS REFD	FC45	R	LAD	NW 10 /.
M 43.2	Z AXIS REFD	FC47	R	LAD	NW 18 /.
M 43.2	Z AXIS REFD	FC53	R	LAD	NW 16 /.
M 43.2	Z AXIS REFD	FC42	R	LAD	NW 16 /.
M 43.2	Z AXIS REFD	FC53	W	LAD	NW 8 /.
M 43.3	Z AXIS MEAS OK	FC53	R	LAD	NW 13 /.
M 43.3	Z AXIS MEAS OK	FC53	W	LAD	NW 9 /.
M 43.3	Z AXIS MEAS OK	FC53	R	LAD	NW 18 /.
M 43.7	Z AXIS FAULT	FC53	W	LAD	NW 21 /.
M 43.7	Z AXIS FAULT	FC79	R	LAD	NW 8 /.
M 44.0	4 AXIS IN POSN	FC54	R	LAD	NW 18 /.
M 44.0	4 AXIS IN POSN	FC54	W	LAD	NW 6 /.
M 44.1	4 AXIS MOTION	FC54	W	LAD	NW 7 /.
M 44.1	4 AXIS MOTION	FC47	R	LAD	NW 20 /.
M 44.1	4 AXIS MOTION	FC42	R	LAD	NW 12 /.
M 44.1	4 AXIS MOTION	FC55	R	LAD	NW 1 /.
M 44.1	4 AXIS MOTION	FC42	R	LAD	NW 13 /.
M 44.1	4 AXIS MOTION	FC42	R	LAD	NW 11 /.
M 44.1	4 AXIS MOTION	FC42	R	LAD	NW 16 /.
M 44.2	4 AXIS REFD	FC54	W	LAD	NW 8 /.
M 44.2	4 AXIS REFD	FC42	R	LAD	NW 16 /.
M 44.2	4 AXIS REFD	FC54	R	LAD	NW 15 /.
M 44.2	4 AXIS REFD	FC47	R	LAD	NW 20 /.
M 44.2	4 AXIS REFD	FC54	R	LAD	NW 14 /.
M 44.2	4 AXIS REFD	FC54	R	LAD	NW 18 /.

Address	Symbol	Block	Type	Language	Details
M 44.3	4 AXIS MEAS OK	FC54	W	LAD	NW 9 /
M 44.3	4 AXIS MEAS OK	FC54	R	LAD	NW 11 /.
M 44.7	4 AXIS FAULT	FC54	W	LAD	NW 21 /
M 44.7	4 AXIS FAULT	FC79	R	LAD	NW 8 /.
M 45.0	5 AXIS IN POSN	FC56	W	LAD	NW 6 /
M 45.0	5 AXIS IN POSN	FC56	R	LAD	NW 18 /.
M 45.1	5 AXIS MOTION	FC56	W	LAD	NW 7 /
M 45.1	5 AXIS MOTION	FC42	R	LAD	NW 12 /.
M 45.1	5 AXIS MOTION	FC42	R	LAD	NW 16 /.
M 45.1	5 AXIS MOTION	FC42	R	LAD	NW 11 /.
M 45.1	5 AXIS MOTION	FC42	R	LAD	NW 13 /.
M 45.1	5 AXIS MOTION	FC57	R	LAD	NW 1 /.
M 45.2	5 AXIS REFD	FC56	R	LAD	NW 15 /.
M 45.2	5 AXIS REFD	FC56	W	LAD	NW 8 /
M 45.2	5 AXIS REFD	FC42	R	LAD	NW 16 /.
M 45.2	5 AXIS REFD	FC56	R	LAD	NW 14 /.
M 45.2	5 AXIS REFD	FC56	R	LAD	NW 18 /.
M 45.3	5 AXIS MEAS OK	FC56	R	LAD	NW 11 /.
M 45.3	5 AXIS MEAS OK	FC56	W	LAD	NW 9 /
M 45.7	5 AXIS FAULT	FC79	R	LAD	NW 8 /.
M 45.7	5 AXIS FAULT	FC56	W	LAD	NW 21 /
M 48.0	4 AX AUTO UCLP REQ	FC55	R	LAD	NW 3 /.
M 48.0	4 AX AUTO UCLP REQ	FC55	W	LAD	NW 1 /
M 48.1	4 AX MANL UCLP REQ	FC55	W	LAD	NW 2 /
M 48.1	4 AX MANL UCLP REQ	FC55	R	LAD	NW 3 /.
M 48.1	4 AX MANL UCLP REQ	FC55	R	LAD	NW 2 /.
M 48.2	4 AXIS UCLP REQ	FC55	R	LAD	NW 4 /.
M 48.2	4 AXIS UCLP REQ	FC55	W	LAD	NW 3 /
M 48.2	4 AXIS UCLP REQ	FC54	R	LAD	NW 22 /.
M 48.2	4 AXIS UCLP REQ	FC54	R	LAD	NW 11 /.
M 49.0	5 AX AUTO UCLP REQ	FC57	R	LAD	NW 3 /.
M 49.0	5 AX AUTO UCLP REQ	FC57	W	LAD	NW 1 /
M 49.1	5 AX MANL UCLP REQ	FC57	R	LAD	NW 2 /.
M 49.1	5 AX MANL UCLP REQ	FC57	W	LAD	NW 2 /
M 49.1	5 AX MANL UCLP REQ	FC57	R	LAD	NW 3 /.
M 49.2	5 AXIS UCLP REQ	FC56	R	LAD	NW 11 /.
M 49.2	5 AXIS UCLP REQ	FC57	R	LAD	NW 4 /.
M 49.2	5 AXIS UCLP REQ	FC57	W	LAD	NW 3 /
M 49.2	5 AXIS UCLP REQ	FC56	R	LAD	NW 22 /.
M 50.3	SPINDLE M03 EXT	FC60	R	LAD	NW 11 /.
M 50.3	SPINDLE M03 EXT	FC60	R	LAD	NW 37 /.
M 50.3	SPINDLE M03 EXT	FC60	R	LAD	NW 13 /.
M 50.3	SPINDLE M03 EXT	FC43	W	LAD	NW 1 /
M 50.3	SPINDLE M03 EXT	FC60	R	LAD	NW 38 /.
M 50.3	SPINDLE M03 EXT	FC60	R	LAD	NW 43 /.
M 50.4	SPINDLE M04 EXT	FC60	R	LAD	NW 37 /.
M 50.4	SPINDLE M04 EXT	FC60	R	LAD	NW 43 /.
M 50.4	SPINDLE M04 EXT	FC60	R	LAD	NW 11 /.
M 50.4	SPINDLE M04 EXT	FC60	R	LAD	NW 13 /.
M 50.4	SPINDLE M04 EXT	FC43	W	LAD	NW 1 /
M 50.4	SPINDLE M04 EXT	FC60	R	LAD	NW 38 /.
M 50.5	SPINDLE M05 EXT	FC43	W	LAD	NW 1 /
M 50.5	SPINDLE M05 EXT	FC60	R	LAD	NW 7 /.
M 50.6	SP CW ST SM RQ RM	FC60	W	LAD	NW 11 /
M 50.7	SP CCW ST SM RQ RM	FC60	W	LAD	NW 13 /
M 51.0	SPINDLE SPD PGM	FC60	R	LAD	NW 26 /.
M 51.0	SPINDLE SPD PGM	FC60	R	LAD	NW 38 /.
M 51.0	SPINDLE SPD PGM	FC60	R	LAD	NW 16 /.
M 51.0	SPINDLE SPD PGM	FC60	R	LAD	NW 6 /.
M 51.0	SPINDLE SPD PGM	FC60	W	LAD	NW 6 /
M 51.2	SPINDLE STOP REQ	FC60	R	LAD	NW 8 /.
M 51.2	SPINDLE STOP REQ	FC60	W	LAD	NW 7 /
M 51.2	SPINDLE STOP REQ	FC60	R	LAD	NW 13 /.
M 51.2	SPINDLE STOP REQ	FC60	R	LAD	NW 11 /.
M 51.3	SPIN STOP SM REM	FC60	W	LAD	NW 8 /
M 51.5	SPIN STOP J MDE RM	FC60	W	LAD	NW 15 /
M 52.0	SPINDLE MANL OK	FC60	W	LAD	NW 9 /

Address		Symbol		Block	Type	Language	Details		
M	52.0	SPINDLE	MANL OK	FC60	R	LAD	NW	11	/.
M	52.0	SPINDLE	MANL OK	FC60	R	LAD	NW	13	/.
M	52.1	SPINDLE	RIGD TAP	FC60	R	LAD	NW	31	/.
M	52.1	SPINDLE	RIGD TAP	FC60	R	LAD	NW	7	/.
M	52.1	SPINDLE	RIGD TAP	FC60	R	LAD	NW	19	/.
M	52.1	SPINDLE	RIGD TAP	FC60	R	LAD	NW	22	/.
M	52.1	SPINDLE	RIGD TAP	FC60	R	LAD	NW	13	/.
M	52.1	SPINDLE	RIGD TAP	FC60	R	LAD	NW	11	/.
M	52.1	SPINDLE	RIGD TAP	FC60	R	LAD	NW	23	/.
M	52.1	SPINDLE	RIGD TAP	FC60	R	LAD	NW	17	/.
M	52.1	SPINDLE	RIGD TAP	FC60	R	LAD	NW	8	/.
M	52.1	SPINDLE	RIGD TAP	FC60	W	LAD	NW	10	/.
M	52.2	SPINDLE	CW REQ	FC42	R	LAD	NW	15	/.
M	52.2	SPINDLE	CW REQ	FC60	R	LAD	NW	13	/.
M	52.2	SPINDLE	CW REQ	FC60	R	LAD	NW	16	/.
M	52.2	SPINDLE	CW REQ	FC60	R	LAD	NW	20	/.
M	52.2	SPINDLE	CW REQ	FC42	R	LAD	NW	15	/.
M	52.2	SPINDLE	CW REQ	FC60	R	LAD	NW	12	/.
M	52.2	SPINDLE	CW REQ	FC60	R	LAD	NW	31	/.
M	52.2	SPINDLE	CW REQ	FC60	R	LAD	NW	11	/.
M	52.2	SPINDLE	CW REQ	FC60	W	LAD	NW	11	/.
M	52.2	SPINDLE	CW REQ	FC60	R	LAD	NW	26	/.
M	52.2	SPINDLE	CW REQ	FC60	R	LAD	NW	22	/.
M	52.3	SPIN CW	SM REM	FC60	W	LAD	NW	12	/.
M	52.4	SPINDLE	CCW REQ	FC60	R	LAD	NW	11	/.
M	52.4	SPINDLE	CCW REQ	FC42	R	LAD	NW	15	/.
M	52.4	SPINDLE	CCW REQ	FC42	R	LAD	NW	15	/.
M	52.4	SPINDLE	CCW REQ	FC60	R	LAD	NW	20	/.
M	52.4	SPINDLE	CCW REQ	FC60	R	LAD	NW	26	/.
M	52.4	SPINDLE	CCW REQ	FC60	R	LAD	NW	13	/.
M	52.4	SPINDLE	CCW REQ	FC60	R	LAD	NW	31	/.
M	52.4	SPINDLE	CCW REQ	FC60	W	LAD	NW	13	/.
M	52.4	SPINDLE	CCW REQ	FC60	R	LAD	NW	23	/.
M	52.4	SPINDLE	CCW REQ	FC60	R	LAD	NW	14	/.
M	52.4	SPINDLE	CCW REQ	FC60	R	LAD	NW	16	/.
M	52.5	SPIN CCW	SM REM	FC60	W	LAD	NW	14	/.
M	52.6	SPINDLE	PGM INT	FC60	R	LAD	NW	23	/.
M	52.6	SPINDLE	PGM INT	FC60	R	LAD	NW	22	/.
M	52.6	SPINDLE	PGM INT	FC60	R	LAD	NW	23	/.
M	52.6	SPINDLE	PGM INT	FC60	R	LAD	NW	24	/.
M	52.6	SPINDLE	PGM INT	FC60	R	LAD	NW	16	/.
M	52.6	SPINDLE	PGM INT	FC60	R	LAD	NW	16	/.
M	52.6	SPINDLE	PGM INT	FC60	R	LAD	NW	15	/.
M	52.6	SPINDLE	PGM INT	FC60	R	LAD	NW	22	/.
M	52.6	SPINDLE	PGM INT	FC60	R	LAD	NW	20	/.
M	52.6	SPINDLE	PGM INT	FC60	R	LAD	NW	26	/.
M	52.6	SPINDLE	PGM INT	FC42	R	LAD	NW	15	/.
M	52.6	SPINDLE	PGM INT	FC60	W	LAD	NW	15	/.
M	52.7	SPINDLE	RUN REQ	FC42	R	LAD	NW	15	/.
M	52.7	SPINDLE	RUN REQ	FC60	W	LAD	NW	16	/.
M	52.7	SPINDLE	RUN REQ	FC60	R	LAD	NW	17	/.
M	52.7	SPINDLE	RUN REQ	FC60	R	LAD	NW	19	/.
M	53.0	SPINDLE	JOG REQ	FC60	R	LAD	NW	24	/.
M	53.0	SPINDLE	JOG REQ	FC60	R	LAD	NW	27	/.
M	53.0	SPINDLE	JOG REQ	FC60	R	LAD	NW	16	/.
M	53.0	SPINDLE	JOG REQ	FC60	W	LAD	NW	26	/.
M	53.0	SPINDLE	JOG REQ	FC60	R	LAD	NW	31	/.
M	53.1	SPIN ORT	ACTIVE	FC60	R	LAD	NW	28	/.
M	53.1	SPIN ORT	ACTIVE	FC60	R	LAD	NW	19	/.
M	53.1	SPIN ORT	ACTIVE	FC60	R	LAD	NW	17	/.
M	53.1	SPIN ORT	ACTIVE	FC70	R	LAD	NW	11	/.
M	53.1	SPIN ORT	ACTIVE	FC60	R	LAD	NW	11	/.
M	53.1	SPIN ORT	ACTIVE	FC44	R	LAD	NW	11	/.
M	53.1	SPIN ORT	ACTIVE	FC60	R	LAD	NW	7	/.
M	53.1	SPIN ORT	ACTIVE	FC60	R	LAD	NW	30	/.
M	53.1	SPIN ORT	ACTIVE	FC60	R	LAD	NW	13	/.
M	53.1	SPIN ORT	ACTIVE	FC60	W	LAD	NW	28	/.

Address		Symbol	Block	Type	Language	Details		
M	53.3	SPIN ORT REQ PLS	FC60	W	LAD	NW	29	/
M	53.3	SPIN ORT REQ PLS	FC60	R	LAD	NW	31	/.
M	53.4	SPIN ORT REQ REM	FC60	W	LAD	NW	29	/
M	53.5	SPINDLE ORT COMP	FC60	R	LAD	NW	31	/.
M	53.5	SPINDLE ORT COMP	FC60	W	LAD	NW	30	/
M	53.6	SPIN ORT COMP REM	FC60	W	LAD	NW	31	/
M	53.7	SPINDLE HOLD REQ	FC60	W	LAD	NW	31	/
M	53.7	SPINDLE HOLD REQ	FC60	R	LAD	NW	17	/.
M	53.7	SPINDLE HOLD REQ	FC60	R	LAD	NW	19	/.
M	53.7	SPINDLE HOLD REQ	FC60	R	LAD	NW	28	/.
M	53.7	SPINDLE HOLD REQ	FC60	R	LAD	NW	19	/.
M	53.7	SPINDLE HOLD REQ	FC60	R	LAD	NW	31	/.
M	53.7	SPINDLE HOLD REQ	FC60	R	LAD	NW	32	/.
M	54.0	SPINDLE FAULT	FC79	R	LAD	NW	8	/.
M	54.0	SPINDLE FAULT	FC60	R	LAD	NW	7	/.
M	54.0	SPINDLE FAULT	FC60	W	LAD	NW	45	/
M	55.0	SP G/CHGE R 1 REQ	FC61	R	LAD	NW	1	/.
M	55.0	SP G/CHGE R 1 REQ	FC61	R	LAD	NW	3	/.
M	55.0	SP G/CHGE R 1 REQ	FC61	R	LAD	NW	10	/.
M	55.0	SP G/CHGE R 1 REQ	FC61	R	LAD	NW	5	/.
M	55.0	SP G/CHGE R 1 REQ	FC61	W	LAD	NW	1	/
M	55.0	SP G/CHGE R 1 REQ	FC44	R	LAD	NW	1	/.
M	55.0	SP G/CHGE R 1 REQ	FC44	R	LAD	NW	11	/.
M	55.0	SP G/CHGE R 1 REQ	FC61	R	LAD	NW	7	/.
M	55.0	SP G/CHGE R 1 REQ	FC61	R	LAD	NW	6	/.
M	55.1	SP G/CHGE R 2 REQ	FC61	R	LAD	NW	4	/.
M	55.1	SP G/CHGE R 2 REQ	FC61	R	LAD	NW	5	/.
M	55.1	SP G/CHGE R 2 REQ	FC44	R	LAD	NW	11	/.
M	55.1	SP G/CHGE R 2 REQ	FC61	W	LAD	NW	2	/
M	55.1	SP G/CHGE R 2 REQ	FC61	R	LAD	NW	7	/.
M	55.1	SP G/CHGE R 2 REQ	FC61	R	LAD	NW	6	/.
M	55.1	SP G/CHGE R 2 REQ	FC61	R	LAD	NW	2	/.
M	55.1	SP G/CHGE R 2 REQ	FC61	R	LAD	NW	12	/.
M	55.1	SP G/CHGE R 2 REQ	FC44	R	LAD	NW	2	/.
M	55.2	SPINDLE G/RNGE 1	FC62	R	LAD	NW	3	/.
M	55.2	SPINDLE G/RNGE 1	FC61	W	LAD	NW	3	/
M	55.2	SPINDLE G/RNGE 1	FC61	R	LAD	NW	7	/.
M	55.2	SPINDLE G/RNGE 1	FC61	R	LAD	NW	9	/.
M	55.2	SPINDLE G/RNGE 1	FC61	R	LAD	NW	11	/.
M	55.3	SPINDLE G/RNGE 2	FC61	W	LAD	NW	4	/
M	55.3	SPINDLE G/RNGE 2	FC61	R	LAD	NW	9	/.
M	55.3	SPINDLE G/RNGE 2	FC61	R	LAD	NW	13	/.
M	55.3	SPINDLE G/RNGE 2	FC62	R	LAD	NW	4	/.
M	55.3	SPINDLE G/RNGE 2	FC61	R	LAD	NW	7	/.
M	55.4	SPIN STOP G/C REQ	FC61	W	LAD	NW	5	/
M	55.4	SPIN STOP G/C REQ	FC60	R	LAD	NW	16	/.
M	55.5	SPIN OSC G/C REQ	FC61	R	LAD	NW	12	/.
M	55.5	SPIN OSC G/C REQ	FC60	R	LAD	NW	19	/.
M	55.5	SPIN OSC G/C REQ	FC62	R	LAD	NW	1	/.
M	55.5	SPIN OSC G/C REQ	FC61	R	LAD	NW	6	/.
M	55.5	SPIN OSC G/C REQ	FC60	R	LAD	NW	21	/.
M	55.5	SPIN OSC G/C REQ	FC61	R	LAD	NW	10	/.
M	55.5	SPIN OSC G/C REQ	FC60	R	LAD	NW	17	/.
M	55.5	SPIN OSC G/C REQ	FC61	W	LAD	NW	6	/
M	55.6	SP G/CHGE CP PL DY	FC61	R	LAD	NW	1	/.
M	55.6	SP G/CHGE CP PL DY	FC61	R	LAD	NW	2	/.
M	55.6	SP G/CHGE CP PL DY	FC61	R	LAD	NW	8	/.
M	55.6	SP G/CHGE CP PL DY	FC61	W	LAD	NW	7	/
M	55.7	SP G/CHGE COMP REM	FC61	W	LAD	NW	8	/
M	56.0	SPINDLE IN GEAR	FC61	W	LAD	NW	9	/
M	56.0	SPINDLE IN GEAR	FC60	R	LAD	NW	16	/.
M	56.5	SPIN OSC G/C R OD	FC60	R	LAD	NW	16	/.
M	56.5	SPIN OSC G/C R OD	FC42	R	LAD	NW	15	/.
M	56.5	SPIN OSC G/C R OD	FC61	W	LAD	NW	6	/
M	56.6	SP G/CHGE COMP PLS	FC61	W	LAD	NW	7	/
M	56.6	SP G/CHGE COMP PLS	FC61	R	LAD	NW	6	/.
M	57.0	SP G/R 1 BUFFER	FC61	R	LAD	NW	12	/.

Address	Symbol	Block	Type	Language	Details
M 57.0	SP G/R 1 BUFFER	FC61	R	LAD	NW 10 /.
M 57.0	SP G/R 1 BUFFER	FC61	W	LAD	NW 10 /
M 57.1	SP G/R 2 BUFFER	FC61	W	LAD	NW 12 /
M 57.1	SP G/R 2 BUFFER	FC61	R	LAD	NW 12 /.
M 57.1	SP G/R 2 BUFFER	FC61	R	LAD	NW 10 /.
M 57.2	SP G/R 1 BFR DLY	FC61	R	LAD	NW 11 /.
M 57.2	SP G/R 1 BFR DLY	FC61	W	LAD	NW 10 /
M 57.3	SP G/R 2 BFR DLY	FC61	W	LAD	NW 12 /
M 57.3	SP G/R 2 BFR DLY	FC61	R	LAD	NW 13 /.
M 57.6	SP GR HGH MTR BFR	FC61	W	LAD	NW 13 /
M 57.6	SP GR HGH MTR BFR	FC60	R	LAD	NW 34 /.
M 58.0	SPIN G/P REQUEST	FC62	W	LAD	NW 1 /
M 58.0	SPIN G/P REQUEST	FC62	R	LAD	NW 2 /.
M 58.1	SPIN G/P ACTIVE	FC62	R	LAD	NW 5 /.
M 58.1	SPIN G/P ACTIVE	FC62	R	LAD	NW 6 /.
M 58.1	SPIN G/P ACTIVE	FC62	W	LAD	NW 2 /
M 58.1	SPIN G/P ACTIVE	FC62	R	LAD	NW 1 /.
M 58.2	SPIN G/P ACT REM	FC62	W	LAD	NW 2 /
M 59.0	SPIN LAST G/R = 1	FC62	W	LAD	NW 4 /
M 59.0	SPIN LAST G/R = 1	FC62	R	LAD	NW 5 /.
M 59.0	SPIN LAST G/R = 1	FC62	W	LAD	NW 3 /
M 59.1	SPIN LAST G/R = 2	FC62	R	LAD	NW 6 /.
M 59.1	SPIN LAST G/R = 2	FC62	W	LAD	NW 4 /
M 59.1	SPIN LAST G/R = 2	FC62	W	LAD	NW 3 /
M 59.4	SP G/R 1 FORCE	FC61	R	LAD	NW 11 /.
M 59.4	SP G/R 1 FORCE	FC62	W	LAD	NW 5 /
M 59.4	SP G/R 1 FORCE	FC61	R	LAD	NW 13 /.
M 59.5	SP G/R 2 FORCE	FC61	R	LAD	NW 13 /.
M 59.5	SP G/R 2 FORCE	FC62	W	LAD	NW 6 /
M 59.5	SP G/R 2 FORCE	FC61	R	LAD	NW 11 /.
M 60.0	GET GUD ADR RQ 3	FC65	R	LAD	NW 2 /
M 60.0	GET GUD ADR RQ 3	FC65	R	LAD	NW 1 /.
M 60.0	GET GUD ADR RQ 3	FC65	W	LAD	NW 1 /
M 60.1	GET GUD ERROR 3	FC65	R	LAD	NW 1 /.
M 60.1	GET GUD ERROR 3	FC65	W	LAD	NW 2 /
M 60.2	GET GUD DONE 3	FC65	W	LAD	NW 2 /
M 60.2	GET GUD DONE 3	FC65	R	LAD	NW 1 /.
M 60.3	SP POWER MON ACT	FC65	R	LAD	NW 6 /.
M 60.3	SP POWER MON ACT	FC65	W	LAD	NW 3 /
M 60.3	SP POWER MON ACT	FC65	R	LAD	NW 3 /.
M 60.3	SP POWER MON ACT	FC65	R	LAD	NW 4 /.
M 60.4	VAR TRANS PLC RQ 2	FC65	R	LAD	NW 4 /.
M 60.4	VAR TRANS PLC RQ 2	FC65	W	LAD	NW 4 /
M 60.4	VAR TRANS PLC RQ 2	FC65	R	LAD	NW 5 /
M 60.5	VAR TRANS PLC ER 2	FC65	R	LAD	NW 4 /.
M 60.5	VAR TRANS PLC ER 2	FC65	W	LAD	NW 5 /
M 60.6	VAR TRANS PLC DN 2	FC65	W	LAD	NW 5 /
M 60.6	VAR TRANS PLC DN 2	FC65	R	LAD	NW 4 /.
M 60.7	SP POWER LMT RCH	FC65	W	LAD	NW 6 /
M 60.7	SP POWER LMT RCH	FC42	R	LAD	NW 15 /.
M 60.7	SP POWER LMT RCH	FC42	R	LAD	NW 10 /.
M 60.7	SP POWER LMT RCH	FC65	R	LAD	NW 7 /.
M 60.7	SP POWER LMT RCH	FC65	R	LAD	NW 6 /.
M 61.0	SP PWR LM F HD PLS	FC65	W	LAD	NW 7 /
M 61.0	SP PWR LM F HD PLS	FC42	R	LAD	NW 3 /.
M 61.1	SP PWR LM F HD REM	FC65	W	LAD	NW 7 /
M 62.0	SPIN TOOL CLMP REQ	FC70	W	LAD	NW 1 /
M 62.0	SPIN TOOL CLMP REQ	FC70	R	LAD	NW 2 /.
M 62.1	SPIN TOOL CLMP REM	FC70	W	LAD	NW 1 /
M 62.2	SPIN TOOL UCLP REQ	FC70	W	LAD	NW 2 /
M 62.2	SPIN TOOL UCLP REQ	FC70	R	LAD	NW 1 /.
M 62.2	SPIN TOOL UCLP REQ	FC70	R	LAD	NW 2 /.
M 62.2	SPIN TOOL UCLP REQ	FC70	R	LAD	NW 3 /.
M 62.3	SPIN TOOL CLAMPED	FC99	R	LAD	NW 1 /.
M 62.3	SPIN TOOL CLAMPED	FC60	R	LAD	NW 28 /.
M 62.3	SPIN TOOL CLAMPED	FC60	R	LAD	NW 26 /.
M 62.3	SPIN TOOL CLAMPED	FC70	W	LAD	NW 4 /

Address	Symbol	Block	Type	Language	Details
M 62.3	SPIN TOOL CLAMPED	FC60	R	LAD	NW 16 /.
M 62.3	SPIN TOOL CLAMPED	FC60	R	LAD	NW 7 /.
M 62.3	SPIN TOOL CLAMPED	FC60	R	LAD	NW 17 /.
M 62.3	SPIN TOOL CLAMPED	FC70	R	LAD	NW 7 /.
M 62.3	SPIN TOOL CLAMPED	FC70	R	LAD	NW 6 /.
M 62.3	SPIN TOOL CLAMPED	FC60	R	LAD	NW 11 /.
M 62.3	SPIN TOOL CLAMPED	FC60	R	LAD	NW 37 /.
M 62.3	SPIN TOOL CLAMPED	FC60	R	LAD	NW 13 /.
M 62.4	SPIN TOOL UNCLMP'D	FC53	R	LAD	NW 22 /.
M 62.4	SPIN TOOL UNCLMP'D	FC70	W	LAD	NW 5 /.
M 62.4	SPIN TOOL UNCLMP'D	FC70	R	LAD	NW 8 /.
M 62.4	SPIN TOOL UNCLMP'D	FC99	R	LAD	NW 2 /.
M 62.4	SPIN TOOL UNCLMP'D	FC70	R	LAD	NW 9 /.
M 62.6	SPIN TOOL CLMP RID	FC44	R	LAD	NW 11 /.
M 62.6	SPIN TOOL CLMP RID	FC70	R	LAD	NW 7 /.
M 62.6	SPIN TOOL CLMP RID	FC70	W	LAD	NW 7 /.
M 62.7	SPIN TOOL UCLP RID	FC70	W	LAD	NW 8 /.
M 62.7	SPIN TOOL UCLP RID	FC44	R	LAD	NW 11 /.
M 62.7	SPIN TOOL UCLP RID	FC70	R	LAD	NW 8 /.
M 64.0	ORT A/BL REQUEST	FC70	W	LAD	NW 11 /.
M 64.0	ORT A/BL REQUEST	FC70	R	LAD	NW 13 /.
M 64.2	ORT A/BL C ST REQ	FC70	R	LAD	NW 13 /.
M 64.2	ORT A/BL C ST REQ	FC70	W	LAD	NW 12 /.
M 64.3	ORT A/BL C ST REM	FC70	W	LAD	NW 12 /.
M 65.0	SPIN A/BL M TC REQ	FC70	R	LAD	NW 17 /.
M 65.0	SPIN A/BL M TC REQ	FC70	W	LAD	NW 14 /.
M 65.1	SPIN A/BL M TC REM	FC70	W	LAD	NW 14 /.
M 65.2	SPIN A/BL A TC REQ	FC70	R	LAD	NW 17 /.
M 65.2	SPIN A/BL A TC REQ	FC70	W	LAD	NW 15 /.
M 65.4	SPIN A/BL TC ST RQ	FC70	W	LAD	NW 16 /.
M 65.4	SPIN A/BL TC ST RQ	FC70	R	LAD	NW 17 /.
M 65.5	SPIN A/BL TC ST RM	FC70	W	LAD	NW 16 /.
M 66.0	PNEUMATIC FAULT	FC70	W	LAD	NW 20 /.
M 66.0	PNEUMATIC FAULT	FC79	R	LAD	NW 9 /.
M 66.1	PNEUMATIC WARNING	FC70	W	LAD	NW 21 /.
M 66.1	PNEUMATIC WARNING	FC79	R	LAD	NW 11 /.
M 70.0	COOL MANL OFF	FC71	R	LAD	NW 2 /.
M 70.0	COOL MANL OFF	FC71	W	LAD	NW 1 /.
M 70.1	COOL MANL OFF REM	FC71	W	LAD	NW 1 /.
M 70.2	COOL MANL ON	FC71	R	LAD	NW 1 /.
M 70.2	COOL MANL ON	FC71	R	LAD	NW 8 /.
M 70.2	COOL MANL ON	FC71	R	LAD	NW 7 /.
M 70.2	COOL MANL ON	FC71	R	LAD	NW 2 /.
M 70.2	COOL MANL ON	FC71	W	LAD	NW 2 /.
M 70.2	COOL MANL ON	FC71	R	LAD	NW 2 /.
M 70.3	COOL MANL ON REM	FC71	W	LAD	NW 2 /.
M 70.4	COOL AUTO OFF	FC71	W	LAD	NW 3 /.
M 70.4	COOL AUTO OFF	FC71	R	LAD	NW 4 /.
M 70.5	COOL AUTO OFF REM	FC71	W	LAD	NW 3 /.
M 70.6	COOL AUTO ON	FC71	R	LAD	NW 3 /.
M 70.6	COOL AUTO ON	FC71	R	LAD	NW 8 /.
M 70.6	COOL AUTO ON	FC71	R	LAD	NW 7 /.
M 70.6	COOL AUTO ON	FC71	W	LAD	NW 4 /.
M 70.6	COOL AUTO ON	FC71	R	LAD	NW 9 /.
M 70.6	COOL AUTO ON	FC71	R	LAD	NW 4 /.
M 70.6	COOL AUTO ON	FC71	R	LAD	NW 4 /.
M 70.7	COOL AUTO ON REM	FC71	W	LAD	NW 4 /.
M 71.0	COOL AUTO OFF REQ	FC71	W	LAD	NW 5 /.
M 71.0	COOL AUTO OFF REQ	FC71	R	LAD	NW 6 /.
M 71.1	COOL AUTO ON REQ	FC71	R	LAD	NW 8 /.
M 71.1	COOL AUTO ON REQ	FC71	W	LAD	NW 6 /.
M 71.1	COOL AUTO ON REQ	FC71	R	LAD	NW 7 /.
M 71.1	COOL AUTO ON REQ	FC71	R	LAD	NW 6 /.
M 72.0	THRU COOL OFF REQ	FC71	R	LAD	NW 11 /.
M 72.0	THRU COOL OFF REQ	FC71	W	LAD	NW 10 /.
M 72.1	THRU COOL ON REQ	FC71	R	LAD	NW 12 /.
M 72.1	THRU COOL ON REQ	FC71	W	LAD	NW 11 /.

Address	Symbol	Block	Type	Language	Details
M 72.1	THRU COOL ON REQ	FC71	R	LAD	NW 11 /
M 72.2	THRU COOL A/B REQ	FC71	W	LAD	NW 13 /
M 72.2	THRU COOL A/B REQ	FC70	R	LAD	NW 10 /
M 72.3	THRU COOL A/B REM	FC71	W	LAD	NW 13 /
M 73.0	CHIP COOL OFF REQ	FC71	R	LAD	NW 16 /
M 73.0	CHIP COOL OFF REQ	FC71	W	LAD	NW 15 /
M 73.1	CHIP COOL OFF REM	FC71	W	LAD	NW 15 /
M 73.2	CHIP COOL ON REQ	FC71	R	LAD	NW 16 /
M 73.2	CHIP COOL ON REQ	FC71	W	LAD	NW 16 /
M 73.2	CHIP COOL ON REQ	FC71	R	LAD	NW 18 /
M 73.2	CHIP COOL ON REQ	FC71	R	LAD	NW 16 /
M 73.3	CHIP COOL ON REM	FC71	W	LAD	NW 16 /
M 73.4	CHIP COOL W SP REQ	FC71	W	LAD	NW 17 /
M 73.4	CHIP COOL W SP REQ	FC71	R	LAD	NW 18 /
M 74.0	COOLANT FAULT	FC71	W	LAD	NW 19 /
M 74.0	COOLANT FAULT	FC79	R	LAD	NW 9 /
M 74.1	COOLANT WARNING	FC71	W	LAD	NW 20 /
M 74.1	COOLANT WARNING	FC79	R	LAD	NW 11 /
M 76.0	CHIP CONV OFF REQ	FC72	R	LAD	NW 2 /
M 76.0	CHIP CONV OFF REQ	FC72	W	LAD	NW 1 /
M 76.1	CHIP CONV OFF REM	FC72	W	LAD	NW 1 /
M 76.2	CHIP CONV FWD REQ	FC72	R	LAD	NW 3 /
M 76.2	CHIP CONV FWD REQ	FC72	R	LAD	NW 1 /
M 76.2	CHIP CONV FWD REQ	FC72	W	LAD	NW 2 /
M 76.2	CHIP CONV FWD REQ	FC72	R	LAD	NW 6 /
M 76.2	CHIP CONV FWD REQ	FC72	R	LAD	NW 7 /
M 76.2	CHIP CONV FWD REQ	FC72	R	LAD	NW 2 /
M 76.2	CHIP CONV FWD REQ	FC72	R	LAD	NW 2 /
M 76.3	CHIP CONV FWD REM	FC72	W	LAD	NW 2 /
M 76.4	CHIP CONV FWD BFR	FC72	W	LAD	NW 2 /
M 76.4	CHIP CONV FWD BFR	FC72	R	LAD	NW 5 /
M 76.5	CHIP CONV REV REQ	FC72	R	LAD	NW 2 /
M 76.5	CHIP CONV REV REQ	FC72	R	LAD	NW 7 /
M 76.5	CHIP CONV REV REQ	FC72	R	LAD	NW 6 /
M 76.5	CHIP CONV REV REQ	FC72	W	LAD	NW 3 /
M 76.6	CHIP CONV W SP REQ	FC72	R	LAD	NW 6 /
M 76.6	CHIP CONV W SP REQ	FC72	W	LAD	NW 4 /
M 77.0	CHIP CONV RV W FWD	FC72	R	LAD	NW 2 /
M 77.0	CHIP CONV RV W FWD	FC72	R	LAD	NW 6 /
M 77.0	CHIP CONV RV W FWD	FC72	W	LAD	NW 5 /
M 77.1	CHIP CONV REV COMP	FC72	W	LAD	NW 5 /
M 77.1	CHIP CONV REV COMP	FC72	R	LAD	NW 7 /
M 77.6	CHIP CONV FAULT	FC79	R	LAD	NW 9 /
M 77.6	CHIP CONV FAULT	FC72	W	LAD	NW 8 /
M 77.7	CHIP CONV WARNING	FC72	W	LAD	NW 9 /
M 77.7	CHIP CONV WARNING	FC79	R	LAD	NW 11 /
M 78.0	WORK LGHT OFF REQ	FC73	R	LAD	NW 2 /
M 78.0	WORK LGHT OFF REQ	FC73	W	LAD	NW 1 /
M 78.1	WORK LGHT OFF REM	FC73	W	LAD	NW 1 /
M 78.2	WORK LGHT ON BFR	FC73	R	LAD	NW 1 /
M 78.2	WORK LGHT ON BFR	FC73	R	LAD	NW 2 /
M 78.2	WORK LGHT ON BFR	FC73	R	LAD	NW 2 /
M 78.2	WORK LGHT ON BFR	FC73	W	LAD	NW 2 /
M 78.2	WORK LGHT ON BFR	FC73	R	LAD	NW 3 /
M 78.3	WORK LGHT ON REM	FC73	W	LAD	NW 2 /
M 80.0	A PWR OFF DES PLS	FC74	W	LAD	NW 1 /
M 80.0	A PWR OFF DES PLS	FC74	R	LAD	NW 2 /
M 80.1	A PWR OFF DES REM	FC74	W	LAD	NW 1 /
M 80.2	A PWR OFF ACTIVE	FC74	R	LAD	NW 1 /
M 80.2	A PWR OFF ACTIVE	FC74	R	LAD	NW 2 /
M 80.2	A PWR OFF ACTIVE	FC74	R	LAD	NW 3 /
M 80.2	A PWR OFF ACTIVE	FC74	W	LAD	NW 2 /
M 80.2	A PWR OFF ACTIVE	FC74	R	LAD	NW 4 /
M 80.2	A PWR OFF ACTIVE	FC74	R	LAD	NW 2 /
M 80.3	A PWR OFF SEL REM	FC74	W	LAD	NW 2 /
M 82.0	M/C DOOR CLS BFR	FC89	R	LAD	NW 8 /
M 82.0	M/C DOOR CLS BFR	FC60	R	LAD	NW 16 /

Address		Symbol	Block		Type	Language	Details		
M	82.0	M/C DOOR CLS BFR	FC60	R	LAD	NW	16	/	
M	82.0	M/C DOOR CLS BFR	FC80	R	LAD	NW	13	/	
M	82.0	M/C DOOR CLS BFR	FC60	R	LAD	NW	16	/	
M	82.0	M/C DOOR CLS BFR	FC54	R	LAD	NW	15	/	
M	82.0	M/C DOOR CLS BFR	FC45	R	LAD	NW	17	/	
M	82.0	M/C DOOR CLS BFR	FC54	R	LAD	NW	13	/	
M	82.0	M/C DOOR CLS BFR	FC42	R	LAD	NW	15	/	
M	82.0	M/C DOOR CLS BFR	FC84	R	LAD	NW	1	/	
M	82.0	M/C DOOR CLS BFR	FC89	R	LAD	NW	7	/	
M	82.0	M/C DOOR CLS BFR	FC83	R	LAD	NW	5	/	
M	82.0	M/C DOOR CLS BFR	FC45	R	LAD	NW	12	/	
M	82.0	M/C DOOR CLS BFR	FC84	R	LAD	NW	2	/	
M	82.0	M/C DOOR CLS BFR	FC54	R	LAD	NW	12	/	
M	82.0	M/C DOOR CLS BFR	FC60	R	LAD	NW	26	/	
M	82.0	M/C DOOR CLS BFR	FC42	R	LAD	NW	6	/	
M	82.0	M/C DOOR CLS BFR	FC56	R	LAD	NW	13	/	
M	82.0	M/C DOOR CLS BFR	FC83	R	LAD	NW	3	/	
M	82.0	M/C DOOR CLS BFR	FC56	R	LAD	NW	12	/	
M	82.0	M/C DOOR CLS BFR	FC42	R	LAD	NW	4	/	
M	82.0	M/C DOOR CLS BFR	FC56	R	LAD	NW	15	/	
M	82.0	M/C DOOR CLS BFR	FC88	R	LAD	NW	1	/	
M	82.0	M/C DOOR CLS BFR	FC71	R	LAD	NW	7	/	
M	82.0	M/C DOOR CLS BFR	FC88	R	LAD	NW	2	/	
M	82.0	M/C DOOR CLS BFR	FC60	R	LAD	NW	7	/	
M	82.0	M/C DOOR CLS BFR	FC75	R	LAD	NW	1	/	
M	82.0	M/C DOOR CLS BFR	FC75	W	LAD	NW	3	/	
M	82.0	M/C DOOR CLS BFR	FC75	R	LAD	NW	4	/	
M	82.0	M/C DOOR CLS BFR	FC87	R	LAD	NW	5	/	
M	82.0	M/C DOOR CLS BFR	FC75	R	LAD	NW	7	/	
M	82.0	M/C DOOR CLS BFR	FC52	R	LAD	NW	13	/	
M	82.0	M/C DOOR CLS BFR	FC72	R	LAD	NW	6	/	
M	82.0	M/C DOOR CLS BFR	FC72	R	LAD	NW	7	/	
M	82.0	M/C DOOR CLS BFR	FC79	R	LAD	NW	6	/	
M	82.0	M/C DOOR CLS BFR	FC53	R	LAD	NW	17	/	
M	82.0	M/C DOOR CLS BFR	FC51	R	LAD	NW	14	/	
M	82.0	M/C DOOR CLS BFR	FC85	R	LAD	NW	8	/	
M	82.0	M/C DOOR CLS BFR	FC53	R	LAD	NW	14	/	
M	82.0	M/C DOOR CLS BFR	FC48	R	LAD	NW	1	/	
M	82.0	M/C DOOR CLS BFR	FC87	R	LAD	NW	3	/	
M	82.0	M/C DOOR CLS BFR	FC52	R	LAD	NW	14	/	
M	82.0	M/C DOOR CLS BFR	FC53	R	LAD	NW	15	/	
M	82.0	M/C DOOR CLS BFR	FC71	R	LAD	NW	18	/	
M	82.0	M/C DOOR CLS BFR	FC85	R	LAD	NW	7	/	
M	82.0	M/C DOOR CLS BFR	FC71	R	LAD	NW	12	/	
M	82.0	M/C DOOR CLS BFR	FC51	R	LAD	NW	16	/	
M	82.0	M/C DOOR CLS BFR	FC52	R	LAD	NW	16	/	
M	82.0	M/C DOOR CLS BFR	FC51	R	LAD	NW	13	/	
M	82.2	M/C DOOR OPEN PLS	FC75	R	LAD	NW	5	/	
M	82.2	M/C DOOR OPEN PLS	FC60	R	LAD	NW	7	/	
M	82.2	M/C DOOR OPEN PLS	FC75	W	LAD	NW	4	/	
M	82.2	M/C DOOR OPEN PLS	FC71	R	LAD	NW	5	/	
M	82.3	M/C DOOR OPEN REM	FC75	W	LAD	NW	4	/	
M	82.4	M/C DOOR OPEN PEXT	FC60	R	LAD	NW	15	/	
M	82.4	M/C DOOR OPEN PEXT	FC75	W	LAD	NW	4	/	
M	82.6	M/C DOOR OP CS RQ	FC75	W	LAD	NW	5	/	
M	82.6	M/C DOOR OP CS RQ	FC75	R	STL	NW	6	S	
M	83.0	M/C DOOR T/C INT	FC80	R	LAD	NW	23	/	
M	83.0	M/C DOOR T/C INT	FC80	R	LAD	NW	22	/	
M	83.0	M/C DOOR T/C INT	FC83	R	LAD	NW	5	/	
M	83.0	M/C DOOR T/C INT	FC89	R	LAD	NW	8	/	
M	83.0	M/C DOOR T/C INT	FC81	R	LAD	NW	20	/	
M	83.0	M/C DOOR T/C INT	FC88	R	LAD	NW	2	/	
M	83.0	M/C DOOR T/C INT	FC80	R	LAD	NW	19	/	
M	83.0	M/C DOOR T/C INT	FC70	R	LAD	NW	11	/	
M	83.0	M/C DOOR T/C INT	FC85	R	LAD	NW	7	/	
M	83.0	M/C DOOR T/C INT	FC80	R	LAD	NW	15	/	
M	83.0	M/C DOOR T/C INT	FC80	R	LAD	NW	16	/	

Address		Symbol	Block	Type	Language	Details		
M	83.0	M/C DOOR T/C INT	FC80	R	LAD	NW	8	/.
M	83.0	M/C DOOR T/C INT	FC83	R	LAD	NW	3	/.
M	83.0	M/C DOOR T/C INT	FC84	R	LAD	NW	1	/.
M	83.0	M/C DOOR T/C INT	FC81	R	LAD	NW	21	/.
M	83.0	M/C DOOR T/C INT	FC81	R	LAD	NW	20	/.
M	83.0	M/C DOOR T/C INT	FC85	R	LAD	NW	8	/.
M	83.0	M/C DOOR T/C INT	FC89	R	LAD	NW	7	/.
M	83.0	M/C DOOR T/C INT	FC80	R	LAD	NW	20	/.
M	83.0	M/C DOOR T/C INT	FC75	R	LAD	NW	7	/.
M	83.0	M/C DOOR T/C INT	FC70	R	LAD	NW	15	/.
M	83.0	M/C DOOR T/C INT	FC87	R	LAD	NW	3	/.
M	83.0	M/C DOOR T/C INT	FC81	R	LAD	NW	25	/.
M	83.0	M/C DOOR T/C INT	FC84	R	LAD	NW	2	/.
M	83.0	M/C DOOR T/C INT	FC87	R	LAD	NW	1	/.
M	83.0	M/C DOOR T/C INT	FC75	W	LAD	NW	7	/
M	83.0	M/C DOOR T/C INT	FC87	R	LAD	NW	5	/.
M	83.0	M/C DOOR T/C INT	FC88	R	LAD	NW	1	/.
M	83.0	M/C DOOR T/C INT	FC81	R	LAD	NW	21	/.
M	83.0	M/C DOOR T/C INT	FC83	R	LAD	NW	1	/.
M	85.0	AUX MOTOR FAULT	FC79	R	LAD	NW	9	/.
M	85.0	AUX MOTOR FAULT	FC76	W	LAD	NW	4	/
M	85.1	AUX MOTOR WARNING	FC79	R	LAD	NW	11	/.
M	85.1	AUX MOTOR WARNING	FC76	W	LAD	NW	5	/
M	87.0	LUBE INT CLCK ON	FC77	R	LAD	NW	6	/.
M	87.0	LUBE INT CLCK ON	FC77	R	LAD	NW	3	/.
M	87.0	LUBE INT CLCK ON	FC77	W	LAD	NW	1	/
M	87.0	LUBE INT CLCK ON	FC77	R	LAD	NW	10	/.
M	87.0	LUBE INT CLCK ON	FC77	R	LAD	NW	7	/.
M	87.0	LUBE INT CLCK ON	FC77	R	LAD	NW	5	/.
M	87.0	LUBE INT CLCK ON	FC77	R	LAD	NW	9	/.
M	87.0	LUBE INT CLCK ON	FC77	R	LAD	NW	2	/.
M	87.0	LUBE INT CLCK ON	FC77	R	LAD	NW	8	/.
M	87.0	LUBE INT CLCK ON	FC77	R	LAD	NW	4	/.
M	87.0	LUBE INT CLCK ON	FC77	R	LAD	NW	11	/.
M	87.1	LUBE INT CLCK OFF	FC77	W	LAD	NW	2	/
M	87.1	LUBE INT CLCK OFF	FC77	R	LAD	NW	1	/.
M	88.0	LUBE INT COMPLETE	FC77	R	LAD	NW	6	/.
M	88.0	LUBE INT COMPLETE	FC77	R	LAD	NW	7	/.
M	88.0	LUBE INT COMPLETE	FC77	W	LAD	NW	12	/
M	88.0	LUBE INT COMPLETE	FC77	R	LAD	NW	13	/.
M	88.0	LUBE INT COMPLETE	FC77	R	LAD	NW	5	/.
M	88.0	LUBE INT COMPLETE	FC77	R	LAD	NW	9	/.
M	88.0	LUBE INT COMPLETE	FC77	R	LAD	NW	3	/.
M	88.0	LUBE INT COMPLETE	FC77	R	LAD	NW	4	/.
M	88.0	LUBE INT COMPLETE	FC77	R	LAD	NW	11	/.
M	88.0	LUBE INT COMPLETE	FC77	R	LAD	NW	10	/.
M	88.0	LUBE INT COMPLETE	FC77	R	LAD	NW	8	/.
M	88.1	LUBE INT COMP BFR	FC77	R	LAD	NW	6	/.
M	88.1	LUBE INT COMP BFR	FC77	W	LAD	NW	13	/
M	88.1	LUBE INT COMP BFR	FC77	R	LAD	NW	14	/.
M	88.1	LUBE INT COMP BFR	FC77	R	LAD	NW	11	/.
M	88.1	LUBE INT COMP BFR	FC77	R	LAD	NW	10	/.
M	88.1	LUBE INT COMP BFR	FC77	R	LAD	NW	7	/.
M	88.1	LUBE INT COMP BFR	FC77	R	LAD	NW	4	/.
M	88.1	LUBE INT COMP BFR	FC77	R	LAD	NW	9	/.
M	88.1	LUBE INT COMP BFR	FC77	R	LAD	NW	5	/.
M	88.1	LUBE INT COMP BFR	FC77	R	LAD	NW	3	/.
M	88.1	LUBE INT COMP BFR	FC77	R	LAD	NW	8	/.
M	88.2	LUBE INT MSG BFR	FC77	W	LAD	NW	14	/
M	88.2	LUBE INT MSG BFR	FC46	R	LAD	NW	3	/.
M	88.2	LUBE INT MSG BFR	FC77	R	LAD	NW	15	/.
M	88.2	LUBE INT MSG BFR	FC77	R	LAD	NW	14	/.
M	88.2	LUBE INT MSG BFR	FC77	R	LAD	NW	16	/.
M	88.3	LUBE INT Z RF REM	FC77	W	LAD	NW	14	/
M	88.4	LUBE INT MSG RSET	FC77	W	LAD	NW	15	/
M	88.4	LUBE INT MSG RSET	FC77	R	LAD	NW	14	/.
M	88.4	LUBE INT MSG RSET	FC77	R	LAD	NW	13	/.

Address		Symbol	Block	Type	Language	Details		
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	6	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	7	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	9	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	5	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	7	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	3	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	9	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	5	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	8	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	10	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	3	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	6	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	4	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	8	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	4	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	10	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	11	/.
M	88.6	LUBE INT PLC STRT	FC77	W	LAD	NW	17	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	11	/.
M	88.6	LUBE INT PLC STRT	FC77	R	LAD	NW	17	/.
M	90.0	AX/SP/611 FAULT	FC79	W	LAD	NW	8	/.
M	90.0	AX/SP/611 FAULT	FC79	R	LAD	NW	10	/.
M	90.1	GENERAL FAULT	FC79	R	LAD	NW	10	/.
M	90.1	GENERAL FAULT	FC79	W	LAD	NW	9	/.
M	90.2	MACHINE FAULT	FC79	R	LAD	NW	12	/.
M	90.2	MACHINE FAULT	FC42	R	LAD	NW	15	/.
M	90.2	MACHINE FAULT	FC79	R	LAD	NW	6	/.
M	90.2	MACHINE FAULT	FC45	R	LAD	NW	17	/.
M	90.2	MACHINE FAULT	FC79	R	LAD	NW	13	/.
M	90.2	MACHINE FAULT	FC79	R	LAD	NW	7	/.
M	90.2	MACHINE FAULT	FC79	W	LAD	NW	10	/.
M	90.2	MACHINE FAULT	FC79	R	LAD	NW	5	/.
M	90.2	MACHINE FAULT	FC42	R	LAD	NW	16	/.
M	90.2	MACHINE FAULT	FC77	R	LAD	NW	16	/.
M	90.2	MACHINE FAULT	FC79	R	LAD	NW	4	/.
M	90.2	MACHINE FAULT	FC79	R	LAD	NW	3	/.
M	90.2	MACHINE FAULT	FC79	R	LAD	NW	2	/.
M	90.2	MACHINE FAULT	FC42	R	LAD	NW	11	/.
M	90.2	MACHINE FAULT	FC79	R	LAD	NW	1	/.
M	90.2	MACHINE FAULT	FC42	R	LAD	NW	12	/.
M	90.2	MACHINE FAULT	FC75	R	LAD	NW	1	/.
M	90.3	MACHINE WARNING	FC75	R	LAD	NW	1	/.
M	90.3	MACHINE WARNING	FC42	R	LAD	NW	12	/.
M	90.3	MACHINE WARNING	FC79	R	LAD	NW	6	/.
M	90.3	MACHINE WARNING	FC79	R	LAD	NW	7	/.
M	90.3	MACHINE WARNING	FC42	R	LAD	NW	11	/.
M	90.3	MACHINE WARNING	FC79	R	LAD	NW	1	/.
M	90.3	MACHINE WARNING	FC79	R	LAD	NW	2	/.
M	90.3	MACHINE WARNING	FC79	R	LAD	NW	12	/.
M	90.3	MACHINE WARNING	FC79	W	LAD	NW	11	/.
M	90.3	MACHINE WARNING	FC77	R	LAD	NW	16	/.
M	90.3	MACHINE WARNING	FC79	R	LAD	NW	3	/.
M	90.3	MACHINE WARNING	FC42	R	LAD	NW	16	/.
M	90.3	MACHINE WARNING	FC79	R	LAD	NW	5	/.
M	90.3	MACHINE WARNING	FC79	R	LAD	NW	4	/.
M	91.0	ALARM BZR ON BFR	FC79	R	LAD	NW	17	/.
M	91.0	ALARM BZR ON BFR	FC79	R	LAD	NW	13	/.
M	91.0	ALARM BZR ON BFR	FC79	W	LAD	NW	13	/.
M	91.0	ALARM BZR ON BFR	FC79	R	LAD	NW	14	/.
M	91.0	ALARM BZR ON BFR	FC79	R	LAD	NW	16	/.
M	91.0	ALARM BZR ON BFR	FC79	R	LAD	NW	15	/.
M	91.1	ALARM BZR ON REM	FC79	W	LAD	NW	13	/.
M	91.2	ALARM BZR E/ST REM	FC79	W	LAD	NW	13	/.
M	92.0	DRY RUN MGE REM	FC79	W	LAD	NW	3	/.
M	99.5	FC24 F HD BUFFER	OB1	W	STL	NW	4	S
M	99.6	FC24 S HD BUFFER	OB1	W	STL	NW	4	S
M	99.7	FC24 S DR BUFFER	OB1	W	STL	NW	4	S

Address	Symbol	Block	Type	Language	Details
M 100.0	TOOL CHGE MANUAL	FC89	R	LAD	NW 2 /.
M 100.0	TOOL CHGE MANUAL	FC85	R	LAD	NW 5 /.
M 100.0	TOOL CHGE MANUAL	FC89	R	LAD	NW 5 /.
M 100.0	TOOL CHGE MANUAL	FC80	W	LAD	NW 1 /
M 100.0	TOOL CHGE MANUAL	FC85	R	LAD	NW 2 /.
M 100.1	TOOL CHGE AUTO	FC80	W	LAD	NW 2 /
M 100.1	TOOL CHGE AUTO	FC85	R	LAD	NW 2 /.
M 100.1	TOOL CHGE AUTO	FC85	R	LAD	NW 5 /.
M 100.1	TOOL CHGE AUTO	FC89	R	LAD	NW 2 /.
M 100.1	TOOL CHGE AUTO	FC89	R	LAD	NW 5 /.
M 100.2	T CHG CYC ACTIVE	FC80	R	LAD	NW 20 /.
M 100.2	T CHG CYC ACTIVE	FC79	R	LAD	NW 6 /.
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 6 /.
M 100.2	T CHG CYC ACTIVE	FC60	R	LAD	NW 9 /.
M 100.2	T CHG CYC ACTIVE	FC80	R	LAD	NW 16 /.
M 100.2	T CHG CYC ACTIVE	FC80	R	LAD	NW 13 /.
M 100.2	T CHG CYC ACTIVE	FC45	R	LAD	NW 17 /.
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 4 /.
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 3 /.
M 100.2	T CHG CYC ACTIVE	FC80	R	LAD	NW 8 /.
M 100.2	T CHG CYC ACTIVE	FC47	R	LAD	NW 25 /.
M 100.2	T CHG CYC ACTIVE	FC80	R	LAD	NW 15 /.
M 100.2	T CHG CYC ACTIVE	FC85	R	LAD	NW 5 /.
M 100.2	T CHG CYC ACTIVE	FC80	R	LAD	NW 23 /.
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 3 /.
M 100.2	T CHG CYC ACTIVE	FC53	R	LAD	NW 14 /.
M 100.2	T CHG CYC ACTIVE	FC85	R	LAD	NW 2 /.
M 100.2	T CHG CYC ACTIVE	FC80	R	LAD	NW 22 /.
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 6 /.
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 4 /.
M 100.2	T CHG CYC ACTIVE	FC60	R	LAD	NW 13 /.
M 100.2	T CHG CYC ACTIVE	FC46	R	LAD	NW 6 /.
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 5 /.
M 100.2	T CHG CYC ACTIVE	FC60	R	LAD	NW 11 /.
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 5 /.
M 100.2	T CHG CYC ACTIVE	FC80	R	LAD	NW 19 /.
M 100.2	T CHG CYC ACTIVE	FC60	R	LAD	NW 26 /.
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 2 /.
M 100.2	T CHG CYC ACTIVE	FC60	R	LAD	NW 31 /.
M 100.2	T CHG CYC ACTIVE	FC48	R	LAD	NW 1 /.
M 100.2	T CHG CYC ACTIVE	FC89	R	LAD	NW 5 /.
M 100.2	T CHG CYC ACTIVE	FC83	R	LAD	NW 1 /.
M 100.2	T CHG CYC ACTIVE	FC75	R	LAD	NW 7 /.
M 100.2	T CHG CYC ACTIVE	FC42	R	LAD	NW 2 /.
M 100.2	T CHG CYC ACTIVE	FC75	R	LAD	NW 7 /.
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 2 /.
M 100.2	T CHG CYC ACTIVE	FC82	R	LAD	NW 2 /.
M 100.2	T CHG CYC ACTIVE	FC87	R	LAD	NW 1 /.
M 100.2	T CHG CYC ACTIVE	FC80	R	LAD	NW 8 /.
M 100.2	T CHG CYC ACTIVE	FC86	R	LAD	NW 2 /.
M 100.2	T CHG CYC ACTIVE	FC80	R	LAD	NW 4 /.
M 100.2	T CHG CYC ACTIVE	FC42	R	LAD	NW 1 /.
M 100.2	T CHG CYC ACTIVE	FC70	R	LAD	NW 15 /.
M 100.2	T CHG CYC ACTIVE	FC80	W	LAD	NW 3 /
M 100.2	T CHG CYC ACTIVE	FC81	R	LAD	NW 13 /.
M 100.2	T CHG CYC ACTIVE	FC81	R	LAD	NW 1 /.
M 100.2	T CHG CYC ACTIVE	FC82	R	LAD	NW 3 /.
M 100.2	T CHG CYC ACTIVE	FC60	R	LAD	NW 37 /.
M 100.2	T CHG CYC ACTIVE	FC42	R	LAD	NW 1 /.
M 100.2	T CHG CYC ACTIVE	FC81	R	LAD	NW 25 /.
M 100.2	T CHG CYC ACTIVE	FC86	R	LAD	NW 3 /.
M 100.2	T CHG CYC ACTIVE	FC53	R	LAD	NW 15 /.
M 100.2	T CHG CYC ACTIVE	FC70	R	LAD	NW 11 /.
M 100.2	T CHG CYC ACTIVE	FC81	R	LAD	NW 14 /.
M 100.2	T CHG CYC ACTIVE	FC70	R	LAD	NW 2 /.
M 100.2	T CHG CYC ACTIVE	FC75	R	LAD	NW 7 /.
M 100.2	T CHG CYC ACTIVE	FC80	R	LAD	NW 5 /.

Address	Symbol	Block	Type	Language	Details
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 1 /
M 100.2	T CHG CYC ACTIVE	FC89	R	LAD	NW 2 /
M 100.2	T CHG CYC ACTIVE	FC81	R	LAD	NW 2 /
M 100.2	T CHG CYC ACTIVE	FC70	R	LAD	NW 14 /
M 100.2	T CHG CYC ACTIVE	FC99	R	LAD	NW 1 /
M 101.0	T CHG CYC INT'D	FC45	R	LAD	NW 17 /
M 101.0	T CHG CYC INT'D	FC45	R	LAD	NW 11 /
M 101.0	T CHG CYC INT'D	FC42	R	LAD	NW 1 /
M 101.0	T CHG CYC INT'D	FC70	R	LAD	NW 15 /
M 101.0	T CHG CYC INT'D	FC80	R	LAD	NW 8 /
M 101.0	T CHG CYC INT'D	FC80	R	LAD	NW 8 /
M 101.0	T CHG CYC INT'D	FC42	R	LAD	NW 2 /
M 101.0	T CHG CYC INT'D	FC80	R	LAD	NW 23 /
M 101.0	T CHG CYC INT'D	FC80	R	LAD	NW 6 /
M 101.0	T CHG CYC INT'D	FC80	R	LAD	NW 13 /
M 101.0	T CHG CYC INT'D	FC75	R	LAD	NW 7 /
M 101.0	T CHG CYC INT'D	FC75	R	LAD	NW 7 /
M 101.0	T CHG CYC INT'D	FC80	R	LAD	NW 22 /
M 101.0	T CHG CYC INT'D	FC80	W	LAD	NW 4 /
M 101.1	T CHG CYC INT COMP	FC80	W	LAD	NW 6 /
M 101.1	T CHG CYC INT COMP	FC91	R	LAD	NW 4 /
M 101.1	T CHG CYC INT COMP	FC80	R	LAD	NW 6 /
M 101.1	T CHG CYC INT COMP	FC80	R	LAD	NW 7 /
M 101.2	T CHG CYC INT RSET	FC80	W	LAD	NW 7 /
M 101.2	T CHG CYC INT RSET	FC80	R	LAD	NW 4 /
M 101.3	T CHG CYC INT R RM	FC80	W	LAD	NW 7 /
M 101.4	T MAG FCT SETUP IL	FC80	W	LAD	NW 10 /
M 101.4	T MAG FCT SETUP IL	FC82	R	LAD	NW 13 /
M 101.4	T MAG FCT SETUP IL	FC85	R	LAD	NW 2 /
M 101.4	T MAG FCT SETUP IL	FC80	R	LAD	NW 10 /
M 101.4	T MAG FCT SETUP IL	FC87	R	LAD	NW 3 /
M 101.4	T MAG FCT SETUP IL	FC80	R	LAD	NW 12 /
M 101.4	T MAG FCT SETUP IL	FC82	R	LAD	NW 12 /
M 101.4	T MAG FCT SETUP IL	FC83	R	LAD	NW 3 /
M 101.4	T MAG FCT SETUP IL	FC86	R	LAD	NW 13 /
M 101.4	T MAG FCT SETUP IL	FC85	R	LAD	NW 5 /
M 101.4	T MAG FCT SETUP IL	FC60	R	LAD	NW 37 /
M 101.4	T MAG FCT SETUP IL	FC89	R	LAD	NW 2 /
M 101.4	T MAG FCT SETUP IL	FC86	R	LAD	NW 3 /
M 101.4	T MAG FCT SETUP IL	FC82	R	LAD	NW 3 /
M 101.4	T MAG FCT SETUP IL	FC86	R	LAD	NW 2 /
M 101.4	T MAG FCT SETUP IL	FC82	R	LAD	NW 2 /
M 101.4	T MAG FCT SETUP IL	FC83	R	LAD	NW 1 /
M 101.4	T MAG FCT SETUP IL	FC89	R	LAD	NW 5 /
M 101.4	T MAG FCT SETUP IL	FC70	R	LAD	NW 2 /
M 101.4	T MAG FCT SETUP IL	FC86	R	LAD	NW 12 /
M 101.6	TOOL MAG FAULT	FC79	R	LAD	NW 9 /
M 101.6	TOOL MAG FAULT	FC80	W	LAD	NW 24 /
M 101.7	TOOL MAG WARNING	FC79	R	LAD	NW 11 /
M 101.7	TOOL MAG WARNING	FC80	W	LAD	NW 25 /
M 102.0	T S/U CYC START OK	FC81	R	LAD	NW 11 /
M 102.0	T S/U CYC START OK	FC81	R	LAD	NW 12 /
M 102.0	T S/U CYC START OK	FC81	W	LAD	NW 1 /
M 102.1	T S/U CYC CONT OK	FC81	R	LAD	NW 14 /
M 102.1	T S/U CYC CONT OK	FC81	R	LAD	NW 13 /
M 102.1	T S/U CYC CONT OK	FC81	W	LAD	NW 2 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 11 /
M 102.2	T S/U CYC ACTIVE	FC83	R	LAD	NW 3 /
M 102.2	T S/U CYC ACTIVE	FC86	R	LAD	NW 2 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 12 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 1 /
M 102.2	T S/U CYC ACTIVE	FC99	R	LAD	NW 4 /
M 102.2	T S/U CYC ACTIVE	FC70	R	LAD	NW 11 /
M 102.2	T S/U CYC ACTIVE	FC89	R	LAD	NW 2 /
M 102.2	T S/U CYC ACTIVE	FC75	R	LAD	NW 7 /
M 102.2	T S/U CYC ACTIVE	FC75	R	LAD	NW 7 /
M 102.2	T S/U CYC ACTIVE	FC80	R	LAD	NW 3 /

Address	Symbol	Block	Type	Language	Details
M 102.2	T S/U CYC ACTIVE	FC99	R	LAD	NW 3 /
M 102.2	T S/U CYC ACTIVE	FC60	R	LAD	NW 26 /
M 102.2	T S/U CYC ACTIVE	FC83	R	LAD	NW 1 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 25 /
M 102.2	T S/U CYC ACTIVE	FC60	R	LAD	NW 13 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 21 /
M 102.2	T S/U CYC ACTIVE	FC80	R	LAD	NW 23 /
M 102.2	T S/U CYC ACTIVE	FC87	R	LAD	NW 1 /
M 102.2	T S/U CYC ACTIVE	FC87	R	LAD	NW 1 /
M 102.2	T S/U CYC ACTIVE	FC85	R	LAD	NW 5 /
M 102.2	T S/U CYC ACTIVE	FC99	R	LAD	NW 4 /
M 102.2	T S/U CYC ACTIVE	FC82	R	LAD	NW 2 /
M 102.2	T S/U CYC ACTIVE	FC75	R	LAD	NW 7 /
M 102.2	T S/U CYC ACTIVE	FC70	R	LAD	NW 2 /
M 102.2	T S/U CYC ACTIVE	FC53	R	LAD	NW 14 /
M 102.2	T S/U CYC ACTIVE	FC99	R	LAD	NW 1 /
M 102.2	T S/U CYC ACTIVE	FC87	R	LAD	NW 1 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 20 /
M 102.2	T S/U CYC ACTIVE	FC70	R	LAD	NW 15 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 6 /
M 102.2	T S/U CYC ACTIVE	FC45	R	LAD	NW 17 /
M 102.2	T S/U CYC ACTIVE	FC86	R	LAD	NW 3 /
M 102.2	T S/U CYC ACTIVE	FC53	R	LAD	NW 15 /
M 102.2	T S/U CYC ACTIVE	FC42	R	LAD	NW 1 /
M 102.2	T S/U CYC ACTIVE	FC89	R	LAD	NW 5 /
M 102.2	T S/U CYC ACTIVE	FC42	R	LAD	NW 1 /
M 102.2	T S/U CYC ACTIVE	FC99	R	LAD	NW 2 /
M 102.2	T S/U CYC ACTIVE	FC83	R	LAD	NW 1 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 13 /
M 102.2	T S/U CYC ACTIVE	FC83	R	LAD	NW 1 /
M 102.2	T S/U CYC ACTIVE	FC99	R	LAD	NW 1 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 9 /
M 102.2	T S/U CYC ACTIVE	FC99	R	LAD	NW 2 /
M 102.2	T S/U CYC ACTIVE	FC70	R	LAD	NW 14 /
M 102.2	T S/U CYC ACTIVE	FC60	R	LAD	NW 9 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 2 /
M 102.2	T S/U CYC ACTIVE	FC80	R	LAD	NW 22 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 10 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 14 /
M 102.2	T S/U CYC ACTIVE	FC81	W	LAD	NW 3 /
M 102.2	T S/U CYC ACTIVE	FC81	R	LAD	NW 5 /
M 102.2	T S/U CYC ACTIVE	FC87	R	LAD	NW 3 /
M 102.2	T S/U CYC ACTIVE	FC60	R	LAD	NW 31 /
M 102.2	T S/U CYC ACTIVE	FC60	R	LAD	NW 11 /
M 102.2	T S/U CYC ACTIVE	FC99	R	LAD	NW 3 /
M 102.2	T S/U CYC ACTIVE	FC82	R	LAD	NW 3 /
M 102.2	T S/U CYC ACTIVE	FC60	R	LAD	NW 37 /
M 102.2	T S/U CYC ACTIVE	FC85	R	LAD	NW 2 /
M 102.3	T S/U OPR ACTIVE	FC83	R	LAD	NW 5 /
M 102.3	T S/U OPR ACTIVE	FC81	R	LAD	NW 10 /
M 102.3	T S/U OPR ACTIVE	FC87	R	LAD	NW 5 /
M 102.3	T S/U OPR ACTIVE	FC81	R	LAD	NW 20 /
M 102.3	T S/U OPR ACTIVE	FC87	R	LAD	NW 3 /
M 102.3	T S/U OPR ACTIVE	FC81	W	LAD	NW 4 /
M 102.3	T S/U OPR ACTIVE	FC80	R	LAD	NW 3 /
M 102.3	T S/U OPR ACTIVE	FC81	R	LAD	NW 21 /
M 102.3	T S/U OPR ACTIVE	FC83	R	LAD	NW 3 /
M 102.3	T S/U OPR ACTIVE	FC81	R	LAD	NW 9 /
M 102.3	T S/U OPR ACTIVE	FC81	R	LAD	NW 14 /
M 103.0	T S/U CYC INT'D	FC81	R	LAD	NW 25 /
M 103.0	T S/U CYC INT'D	FC75	R	LAD	NW 7 /
M 103.0	T S/U CYC INT'D	FC45	R	LAD	NW 16 /
M 103.0	T S/U CYC INT'D	FC70	R	LAD	NW 15 /
M 103.0	T S/U CYC INT'D	FC81	R	LAD	NW 21 /
M 103.0	T S/U CYC INT'D	FC45	R	LAD	NW 17 /
M 103.0	T S/U CYC INT'D	FC81	W	LAD	NW 5 /
M 103.0	T S/U CYC INT'D	FC81	R	LAD	NW 21 /

Address	Symbol	Block	Type	Language	Details
M 103.0	T S/U CYC INT'D	FC75	R	LAD	NW 7 /.
M 103.0	T S/U CYC INT'D	FC81	R	LAD	NW 20 /.
M 103.0	T S/U CYC INT'D	FC42	R	LAD	NW 1 /.
M 103.0	T S/U CYC INT'D	FC80	R	LAD	NW 23 /.
M 103.0	T S/U CYC INT'D	FC81	R	LAD	NW 20 /.
M 103.0	T S/U CYC INT'D	FC81	R	LAD	NW 7 /.
M 103.1	T S/U CYC INT COMP	FC81	W	LAD	NW 7 /.
M 103.1	T S/U CYC INT COMP	FC81	R	LAD	NW 8 /.
M 103.1	T S/U CYC INT COMP	FC91	R	LAD	NW 4 /.
M 103.1	T S/U CYC INT COMP	FC81	R	LAD	NW 7 /.
M 103.2	T S/U CYC INT RSET	FC81	W	LAD	NW 8 /.
M 103.2	T S/U CYC INT RSET	FC81	R	LAD	NW 5 /.
M 103.2	T S/U CYC INT RSET	FC81	W	LAD	NW 8 /.
M 103.4	T S/U CYC T/T RSET	FC81	R	LAD	NW 4 /.
M 103.4	T S/U CYC T/T RSET	FC81	R	LAD	NW 11 /.
M 103.4	T S/U CYC T/T RSET	FC81	R	LAD	NW 12 /.
M 103.4	T S/U CYC T/T RSET	FC81	W	LAD	NW 9 /.
M 103.5	T S/U CYC T/M RSET	FC81	W	LAD	NW 10 /.
M 103.5	T S/U CYC T/M RSET	FC81	R	LAD	NW 16 /.
M 104.0	T S/U CYC MAG #1	FC45	R	LAD	NW 17 /.
M 104.0	T S/U CYC MAG #1	FC83	R	LAD	NW 3 /.
M 104.0	T S/U CYC MAG #1	FC81	R	LAD	NW 19 /.
M 104.0	T S/U CYC MAG #1	FC81	R	LAD	NW 12 /.
M 104.0	T S/U CYC MAG #1	FC81	R	LAD	NW 13 /.
M 104.0	T S/U CYC MAG #1	FC81	W	LAD	NW 11 /.
M 104.0	T S/U CYC MAG #1	FC87	R	LAD	NW 3 /.
M 104.0	T S/U CYC MAG #1	FC45	R	LAD	NW 14 /.
M 104.1	T S/U CYC MAG #2	FC45	R	LAD	NW 17 /.
M 104.1	T S/U CYC MAG #2	FC81	W	LAD	NW 12 /.
M 104.1	T S/U CYC MAG #2	FC45	R	LAD	NW 15 /.
M 104.1	T S/U CYC MAG #2	FC81	R	LAD	NW 19 /.
M 104.1	T S/U CYC MAG #2	FC83	R	LAD	NW 3 /.
M 104.1	T S/U CYC MAG #2	FC81	R	LAD	NW 13 /.
M 104.1	T S/U CYC MAG #2	FC81	R	LAD	NW 11 /.
M 104.1	T S/U CYC MAG #2	FC87	R	LAD	NW 3 /.
M 104.2	T S/U CYC T/T R PL	FC91	R	LAD	NW 4 /.
M 104.2	T S/U CYC T/T R PL	FC81	W	LAD	NW 13 /.
M 104.3	T S/U CYC T/T R RM	FC81	W	LAD	NW 13 /.
M 104.4	T S/U CYC T/M R PL	FC81	R	LAD	NW 16 /.
M 104.4	T S/U CYC T/M R PL	FC91	R	LAD	NW 4 /.
M 104.4	T S/U CYC T/M R PL	FC81	W	LAD	NW 14 /.
M 104.5	T S/U CYC T/M R RM	FC81	W	LAD	NW 14 /.
M 105.0	T S/U CYC T/T ACT	FC83	R	LAD	NW 3 /.
M 105.0	T S/U CYC T/T ACT	FC81	W	LAD	NW 15 /.
M 105.0	T S/U CYC T/T ACT	FC87	R	LAD	NW 3 /.
M 105.1	T S/U CYC T/M ACT	FC81	R	LAD	NW 20 /.
M 105.1	T S/U CYC T/M ACT	FC75	R	LAD	NW 7 /.
M 105.1	T S/U CYC T/M ACT	FC81	W	LAD	NW 16 /.
M 105.1	T S/U CYC T/M ACT	FC87	R	LAD	NW 3 /.
M 105.1	T S/U CYC T/M ACT	FC81	R	LAD	NW 7 /.
M 105.1	T S/U CYC T/M ACT	FC81	R	LAD	NW 7 /.
M 105.1	T S/U CYC T/M ACT	FC75	R	LAD	NW 7 /.
M 105.1	T S/U CYC T/M ACT	FC83	R	LAD	NW 3 /.
M 105.1	T S/U CYC T/M ACT	FC81	R	LAD	NW 21 /.
M 105.1	T S/U CYC T/M ACT	FC81	R	LAD	NW 10 /.
M 105.2	T S/U CYC 1ST T LD	FC87	R	LAD	NW 3 /.
M 105.2	T S/U CYC 1ST T LD	FC81	W	LAD	NW 17 /.
M 105.2	T S/U CYC 1ST T LD	FC83	R	LAD	NW 3 /.
M 106.0	T S/U MAG ROT RID	FC81	R	LAD	NW 18 /.
M 106.0	T S/U MAG ROT RID	FC81	W	LAD	NW 18 /.
M 106.0	T S/U MAG ROT RID	FC44	R	LAD	NW 11 /.
M 106.1	T S/U MAG ROT COMP	FC81	R	LAD	NW 18 /.
M 106.1	T S/U MAG ROT COMP	FC81	W	LAD	NW 19 /.
M 106.2	T S/U MG1 RT CP RM	FC81	W	LAD	NW 19 /.
M 106.3	T S/U MG2 RT CP RM	FC81	W	LAD	NW 19 /.
M 106.6	TOOL S/UP FAULT	FC79	R	LAD	NW 9 /.
M 106.6	TOOL S/UP FAULT	FC81	W	LAD	NW 26 /.

Address	Symbol	Block	Type	Language	Details
M 106.7	TOOL S/UP WARNING	FC79	R	LAD	NW 11 /
M 106.7	TOOL S/UP WARNING	FC81	W	LAD	NW 27 /
M 110.0	T MAG #1 A ROT OK	FC82	W	LAD	NW 1 /
M 110.1	T MAG #1 A RT OLD	FC83	R	LAD	NW 1 /
M 110.1	T MAG #1 A RT OLD	FC82	R	LAD	NW 22 /
M 110.1	T MAG #1 A RT OLD	FC82	R	LAD	NW 19 /
M 110.1	T MAG #1 A RT OLD	FC82	R	LAD	NW 21 /
M 110.1	T MAG #1 A RT OLD	FC82	W	LAD	NW 2 /
M 110.1	T MAG #1 A RT OLD	FC82	R	LAD	NW 2 /
M 110.1	T MAG #1 A RT OLD	FC82	R	LAD	NW 23 /
M 110.1	T MAG #1 A RT OLD	FC99	R	LAD	NW 5 /
M 110.1	T MAG #1 A RT OLD	FC82	R	LAD	NW 24 /
M 110.2	T MAG #1 A RT NEW	FC82	W	LAD	NW 3 /
M 110.2	T MAG #1 A RT NEW	FC83	R	LAD	NW 1 /
M 110.2	T MAG #1 A RT NEW	FC82	R	LAD	NW 3 /
M 110.2	T MAG #1 A RT NEW	FC82	R	LAD	NW 23 /
M 110.2	T MAG #1 A RT NEW	FC82	R	LAD	NW 20 /
M 110.2	T MAG #1 A RT NEW	FC82	R	LAD	NW 25 /
M 110.2	T MAG #1 A RT NEW	FC82	R	LAD	NW 22 /
M 110.2	T MAG #1 A RT NEW	FC99	R	LAD	NW 5 /
M 110.2	T MAG #1 A RT NEW	FC82	R	LAD	NW 21 /
M 110.3	T MAG #1 CW C1 RM	FC82	W	LAD	NW 4 /
M 110.4	T MAG #1 CCW C1 R	FC82	W	LAD	NW 4 /
M 110.5	T MAG #1 CW C2 RM	FC82	W	LAD	NW 5 /
M 110.6	T MAG #1 CCW C2 R	FC82	W	LAD	NW 5 /
M 111.0	T MAG #1 C1 = 21	FC82	R	LAD	NW 14 /
M 111.0	T MAG #1 C1 = 21	FC82	W	LAD	NW 8 /
M 111.1	T MAG #1 C1 = 0	FC82	W	LAD	NW 10 /
M 111.1	T MAG #1 C1 = 0	FC82	R	LAD	NW 16 /
M 111.2	T MAG #1 REF1 1	FC82	R	LAD	NW 4 /
M 111.2	T MAG #1 REF1 1	FC82	W	LAD	NW 12 /
M 111.4	T MAG #1 C1 TO 1	FC82	R	LAD	NW 4 /
M 111.4	T MAG #1 C1 TO 1	FC82	W	LAD	NW 14 /
M 111.5	T MAG #1 C1 1 REM	FC82	W	LAD	NW 14 /
M 111.6	T MAG #1 C1 TO 20	FC82	W	LAD	NW 16 /
M 111.6	T MAG #1 C1 TO 20	FC82	R	LAD	NW 4 /
M 111.7	T MAG #1 C2 20 RM	FC82	W	LAD	NW 16 /
M 112.0	T MAG #1 C2 = 21	FC82	R	LAD	NW 15 /
M 112.0	T MAG #1 C2 = 21	FC82	W	LAD	NW 9 /
M 112.1	T MAG #1 C2 = 0	FC82	R	LAD	NW 17 /
M 112.1	T MAG #1 C2 = 0	FC82	W	LAD	NW 11 /
M 112.2	T MAG #1 REF2 1	FC82	W	LAD	NW 13 /
M 112.2	T MAG #1 REF2 1	FC82	R	LAD	NW 5 /
M 112.4	T MAG #1 C2 TO 1	FC82	W	LAD	NW 15 /
M 112.4	T MAG #1 C2 TO 1	FC82	R	LAD	NW 5 /
M 112.5	T MAG #1 C2 1 REM	FC82	W	LAD	NW 15 /
M 112.6	T MAG #1 C2 TO 20	FC82	W	LAD	NW 17 /
M 112.6	T MAG #1 C2 TO 20	FC82	R	LAD	NW 5 /
M 112.7	T MAG #1 C1 20 RM	FC82	W	LAD	NW 17 /
M 113.1	T MAG #1 A RO REM	FC82	W	LAD	NW 19 /
M 113.2	T MAG #1 A RN REM	FC82	W	LAD	NW 20 /
M 114.0	T MAG #1 ACT=NOM	FC82	R	LAD	NW 22 /
M 114.0	T MAG #1 ACT=NOM	FC82	R	LAD	NW 25 /
M 114.0	T MAG #1 ACT=NOM	FC82	W	LAD	NW 21 /
M 114.0	T MAG #1 ACT=NOM	FC82	R	LAD	NW 23 /
M 114.0	T MAG #1 ACT=NOM	FC82	R	LAD	NW 24 /
M 114.1	T MAG #1 A CW RQ	FC82	W	LAD	NW 22 /
M 114.1	T MAG #1 A CW RQ	FC84	R	LAD	NW 1 /
M 114.2	T MAG #1 A CCW RQ	FC82	W	LAD	NW 23 /
M 114.2	T MAG #1 A CCW RQ	FC84	R	LAD	NW 1 /
M 114.2	T MAG #1 A CCW RQ	FC84	R	LAD	NW 2 /
M 115.0	T MAG #1 A R O CP	FC82	W	LAD	NW 24 /
M 115.0	T MAG #1 A R O CP	FC82	R	LAD	NW 26 /
M 115.0	T MAG #1 A R O CP	FC99	R	LAD	NW 5 /
M 115.0	T MAG #1 A R O CP	FC82	R	LAD	NW 2 /
M 115.1	T MAG #1 A R N CP	FC99	R	LAD	NW 5 /
M 115.1	T MAG #1 A R N CP	FC82	R	LAD	NW 27 /

Address	Symbol	Block	Type	Language	Details
M 115.1	T MAG #1 A R N CP	FC82	W	LAD	NW 25 /
M 115.1	T MAG #1 A R N CP	FC82	R	LAD	NW 3 /.
M 115.6	T MAG #1 R O RID	FC82	W	LAD	NW 26 /
M 115.6	T MAG #1 R O RID	FC82	R	LAD	NW 26 /.
M 115.6	T MAG #1 R O RID	FC44	R	LAD	NW 11 /.
M 115.7	T MAG #1 R N RID	FC44	R	LAD	NW 11 /.
M 115.7	T MAG #1 R N RID	FC82	R	LAD	NW 27 /.
M 115.7	T MAG #1 R N RID	FC82	W	LAD	NW 27 /.
M 116.0	T MAG #1 M ROT OK	FC83	R	LAD	NW 5 /.
M 116.0	T MAG #1 M ROT OK	FC83	R	LAD	NW 3 /.
M 116.0	T MAG #1 M ROT OK	FC83	W	LAD	NW 1 /
M 116.1	T MAG #1 M CW RQ	FC83	W	LAD	NW 3 /
M 116.1	T MAG #1 M CW RQ	FC83	R	LAD	NW 2 /.
M 116.1	T MAG #1 M CW RQ	FC83	R	LAD	NW 5 /.
M 116.1	T MAG #1 M CW RQ	FC83	R	LAD	NW 3 /.
M 116.1	T MAG #1 M CW RQ	FC84	R	LAD	NW 1 /.
M 116.1	T MAG #1 M CW RQ	FC45	R	LAD	NW 17 /.
M 116.2	T MAG #1 M CCW RQ	FC83	R	LAD	NW 3 /.
M 116.2	T MAG #1 M CCW RQ	FC45	R	LAD	NW 17 /.
M 116.2	T MAG #1 M CCW RQ	FC83	W	LAD	NW 5 /
M 116.2	T MAG #1 M CCW RQ	FC83	R	LAD	NW 4 /.
M 116.2	T MAG #1 M CCW RQ	FC83	R	LAD	NW 5 /.
M 116.2	T MAG #1 M CCW RQ	FC84	R	LAD	NW 1 /.
M 116.2	T MAG #1 M CCW RQ	FC84	R	LAD	NW 2 /.
M 116.3	T MAG #1 M CW CP	FC83	W	LAD	NW 2 /
M 116.3	T MAG #1 M CW CP	FC83	R	LAD	NW 3 /.
M 116.4	T MAG #1 M CW RM	FC83	W	LAD	NW 2 /
M 116.5	T MAG #1 M CCW CP	FC83	R	LAD	NW 5 /.
M 116.5	T MAG #1 M CCW CP	FC83	W	LAD	NW 4 /
M 116.6	T MAG #1 M CCW RM	FC83	W	LAD	NW 4 /
M 117.0	T MAG #1 RET OK	FC85	W	LAD	NW 1 /
M 117.0	T MAG #1 RET OK	FC85	R	LAD	NW 2 /.
M 117.1	T MAG #1 RET REQ	FC85	R	LAD	NW 5 /.
M 117.1	T MAG #1 RET REQ	FC85	R	LAD	NW 7 /.
M 117.1	T MAG #1 RET REQ	FC85	R	LAD	NW 2 /.
M 117.1	T MAG #1 RET REQ	FC99	R	LAD	NW 3 /.
M 117.1	T MAG #1 RET REQ	FC85	W	LAD	NW 2 /
M 117.2	T MAG #1 E RT REM	FC85	W	LAD	NW 2 /
M 117.7	T MAG #1 RET RID	FC44	R	LAD	NW 11 /.
M 117.7	T MAG #1 RET RID	FC85	W	LAD	NW 3 /
M 117.7	T MAG #1 RET RID	FC85	R	LAD	NW 3 /.
M 118.0	T MAG #1 ADV OK	FC85	W	LAD	NW 4 /
M 118.0	T MAG #1 ADV OK	FC85	R	LAD	NW 5 /.
M 118.1	T MAG #1 ADV REQ	FC85	R	LAD	NW 7 /.
M 118.1	T MAG #1 ADV REQ	FC85	R	LAD	NW 5 /.
M 118.1	T MAG #1 ADV REQ	FC85	R	LAD	NW 2 /.
M 118.1	T MAG #1 ADV REQ	FC85	R	LAD	NW 8 /.
M 118.1	T MAG #1 ADV REQ	FC85	R	LAD	NW 2 /.
M 118.1	T MAG #1 ADV REQ	FC85	W	LAD	NW 5 /
M 118.1	T MAG #1 ADV REQ	FC80	R	LAD	NW 17 /.
M 118.7	T MAG #1 ADV RID	FC85	W	LAD	NW 6 /
M 118.7	T MAG #1 ADV RID	FC85	R	LAD	NW 6 /.
M 118.7	T MAG #1 ADV RID	FC44	R	LAD	NW 11 /.
M 119.0	T MAG #1 ROT BFR	FC80	R	LAD	NW 23 /.
M 119.0	T MAG #1 ROT BFR	FC80	R	LAD	NW 15 /.
M 119.0	T MAG #1 ROT BFR	FC75	R	LAD	NW 7 /.
M 119.0	T MAG #1 ROT BFR	FC75	R	LAD	NW 7 /.
M 119.0	T MAG #1 ROT BFR	FC82	R	LAD	NW 5 /.
M 119.0	T MAG #1 ROT BFR	FC82	R	LAD	NW 5 /.
M 119.0	T MAG #1 ROT BFR	FC82	R	LAD	NW 4 /.
M 119.0	T MAG #1 ROT BFR	FC82	R	LAD	NW 4 /.
M 119.0	T MAG #1 ROT BFR	FC84	W	LAD	NW 1 /
M 119.0	T MAG #1 ROT BFR	FC80	R	LAD	NW 16 /.
M 119.1	T MAG #1 CCW BFR	FC82	R	LAD	NW 4 /.
M 119.1	T MAG #1 CCW BFR	FC84	W	LAD	NW 2 /
M 119.1	T MAG #1 CCW BFR	FC82	R	LAD	NW 5 /.
M 119.1	T MAG #1 CCW BFR	FC82	R	LAD	NW 4 /.

Address	Symbol	Block	Type	Language	Details
M 119.1	T MAG #1 CCW BFR	FC82	R	LAD	NW 5 /
M 120.0	T MAG #2 A ROT OK	FC88	R	LAD	NW 1 /
M 120.0	T MAG #2 A ROT OK	FC88	R	LAD	NW 2 /
M 120.0	T MAG #2 A ROT OK	FC86	W	LAD	NW 1 /
M 120.1	T MAG #2 A RT OLD	FC86	R	LAD	NW 19 /
M 120.1	T MAG #2 A RT OLD	FC86	R	LAD	NW 23 /
M 120.1	T MAG #2 A RT OLD	FC87	R	LAD	NW 1 /
M 120.1	T MAG #2 A RT OLD	FC86	R	LAD	NW 21 /
M 120.1	T MAG #2 A RT OLD	FC86	R	LAD	NW 22 /
M 120.1	T MAG #2 A RT OLD	FC86	R	LAD	NW 24 /
M 120.1	T MAG #2 A RT OLD	FC99	R	LAD	NW 6 /
M 120.1	T MAG #2 A RT OLD	FC86	W	LAD	NW 2 /
M 120.1	T MAG #2 A RT OLD	FC86	R	LAD	NW 2 /
M 120.2	T MAG #2 A RT NEW	FC86	R	LAD	NW 3 /
M 120.2	T MAG #2 A RT NEW	FC86	W	LAD	NW 3 /
M 120.2	T MAG #2 A RT NEW	FC86	R	LAD	NW 21 /
M 120.2	T MAG #2 A RT NEW	FC86	R	LAD	NW 25 /
M 120.2	T MAG #2 A RT NEW	FC86	R	LAD	NW 20 /
M 120.2	T MAG #2 A RT NEW	FC86	R	LAD	NW 22 /
M 120.2	T MAG #2 A RT NEW	FC86	R	LAD	NW 23 /
M 120.2	T MAG #2 A RT NEW	FC99	R	LAD	NW 6 /
M 120.2	T MAG #2 A RT NEW	FC87	R	LAD	NW 1 /
M 120.3	T MAG #2 CW C1 RM	FC86	W	LAD	NW 4 /
M 120.4	T MAG #2 CCW C1 R	FC86	W	LAD	NW 4 /
M 120.5	T MAG #2 CW C2 RM	FC86	W	LAD	NW 5 /
M 120.6	T MAG #2 CCW C2 R	FC86	W	LAD	NW 5 /
M 121.0	T MAG #2 C1 = 41	FC86	W	LAD	NW 8 /
M 121.0	T MAG #2 C1 = 41	FC86	R	LAD	NW 14 /
M 121.1	T MAG #2 C1 = 20	FC86	W	LAD	NW 10 /
M 121.1	T MAG #2 C1 = 20	FC86	R	LAD	NW 16 /
M 121.2	T MAG #2 REF1 21	FC86	W	LAD	NW 12 /
M 121.2	T MAG #2 REF1 21	FC86	R	LAD	NW 4 /
M 121.4	T MAG #2 C1 TO 21	FC86	W	LAD	NW 14 /
M 121.4	T MAG #2 C1 TO 21	FC86	R	LAD	NW 4 /
M 121.5	T MAG #2 C1 1 REM	FC86	W	LAD	NW 14 /
M 121.6	T MAG #2 C1 TO 40	FC86	R	LAD	NW 4 /
M 121.6	T MAG #2 C1 TO 40	FC86	W	LAD	NW 16 /
M 121.7	T MAG #2 C2 40 RM	FC86	W	LAD	NW 16 /
M 122.0	T MAG #2 C2 = 41	FC86	R	LAD	NW 15 /
M 122.0	T MAG #2 C2 = 41	FC86	W	LAD	NW 9 /
M 122.1	T MAG #2 C2 = 20	FC86	R	LAD	NW 17 /
M 122.1	T MAG #2 C2 = 20	FC86	W	LAD	NW 11 /
M 122.2	T MAG #2 REF2 21	FC86	R	LAD	NW 5 /
M 122.2	T MAG #2 REF2 21	FC86	W	LAD	NW 13 /
M 122.4	T MAG #2 C2 TO 21	FC86	W	LAD	NW 15 /
M 122.4	T MAG #2 C2 TO 21	FC86	R	LAD	NW 5 /
M 122.5	T MAG #2 C2 21 REM	FC86	W	LAD	NW 15 /
M 122.6	T MAG #2 C2 TO 40	FC86	W	LAD	NW 17 /
M 122.6	T MAG #2 C2 TO 40	FC86	R	LAD	NW 5 /
M 122.7	T MAG #2 C1 40 RM	FC86	W	LAD	NW 17 /
M 123.1	T MAG #2 A RO REM	FC86	W	LAD	NW 19 /
M 123.2	T MAG #2 A RN REM	FC86	W	LAD	NW 20 /
M 124.0	T MAG #2 ACT=NOM	FC86	R	LAD	NW 23 /
M 124.0	T MAG #2 ACT=NOM	FC86	W	LAD	NW 21 /
M 124.0	T MAG #2 ACT=NOM	FC86	R	LAD	NW 22 /
M 124.0	T MAG #2 ACT=NOM	FC86	R	LAD	NW 24 /
M 124.0	T MAG #2 ACT=NOM	FC86	R	LAD	NW 25 /
M 124.1	T MAG #2 A CW RQ	FC88	R	LAD	NW 1 /
M 124.1	T MAG #2 A CW RQ	FC86	W	LAD	NW 22 /
M 124.2	T MAG #2 A CCW RQ	FC88	R	LAD	NW 2 /
M 124.2	T MAG #2 A CCW RQ	FC86	W	LAD	NW 23 /
M 124.2	T MAG #2 A CCW RQ	FC88	R	LAD	NW 1 /
M 125.0	T MAG #2 A R O CP	FC86	R	LAD	NW 2 /
M 125.0	T MAG #2 A R O CP	FC99	R	LAD	NW 6 /
M 125.0	T MAG #2 A R O CP	FC86	W	LAD	NW 24 /
M 125.0	T MAG #2 A R O CP	FC86	R	LAD	NW 26 /
M 125.1	T MAG #2 A R N CP	FC86	R	LAD	NW 27 /

Address	Symbol	Block	Type	Language	Details
M 125.1	T MAG #2 A R N CP	FC99	R	LAD	NW 6 /
M 125.1	T MAG #2 A R N CP	FC86	W	LAD	NW 25 /
M 125.1	T MAG #2 A R N CP	FC86	R	LAD	NW 3 /
M 125.6	T MAG #2 R O RID	FC86	R	LAD	NW 26 /
M 125.6	T MAG #2 R O RID	FC44	R	LAD	NW 11 /
M 125.6	T MAG #2 R O RID	FC86	W	LAD	NW 26 /
M 125.7	T MAG #2 R N RID	FC44	R	LAD	NW 11 /
M 125.7	T MAG #2 R N RID	FC86	R	LAD	NW 27 /
M 125.7	T MAG #2 R N RID	FC86	W	LAD	NW 27 /
M 126.0	T MAG #2 M ROT OK	FC88	R	LAD	NW 1 /
M 126.0	T MAG #2 M ROT OK	FC87	R	LAD	NW 5 /
M 126.0	T MAG #2 M ROT OK	FC87	R	LAD	NW 3 /
M 126.0	T MAG #2 M ROT OK	FC88	R	LAD	NW 2 /
M 126.0	T MAG #2 M ROT OK	FC87	W	LAD	NW 1 /
M 126.1	T MAG #2 M CW RQ	FC45	R	LAD	NW 17 /
M 126.1	T MAG #2 M CW RQ	FC87	W	LAD	NW 3 /
M 126.1	T MAG #2 M CW RQ	FC87	R	LAD	NW 2 /
M 126.1	T MAG #2 M CW RQ	FC87	R	LAD	NW 3 /
M 126.1	T MAG #2 M CW RQ	FC88	R	LAD	NW 1 /
M 126.1	T MAG #2 M CW RQ	FC87	R	LAD	NW 5 /
M 126.2	T MAG #2 M CCW RQ	FC45	R	LAD	NW 17 /
M 126.2	T MAG #2 M CCW RQ	FC88	R	LAD	NW 1 /
M 126.2	T MAG #2 M CCW RQ	FC88	R	LAD	NW 2 /
M 126.2	T MAG #2 M CCW RQ	FC87	R	LAD	NW 3 /
M 126.2	T MAG #2 M CCW RQ	FC87	W	LAD	NW 5 /
M 126.2	T MAG #2 M CCW RQ	FC87	R	LAD	NW 5 /
M 126.2	T MAG #2 M CCW RQ	FC87	R	LAD	NW 4 /
M 126.3	T MAG #2 M CW CP	FC87	W	LAD	NW 2 /
M 126.3	T MAG #2 M CW CP	FC87	R	LAD	NW 3 /
M 126.4	T MAG #2 M CW RM	FC87	W	LAD	NW 2 /
M 126.5	T MAG #2 M CCW CP	FC87	W	LAD	NW 4 /
M 126.5	T MAG #2 M CCW CP	FC87	R	LAD	NW 5 /
M 126.6	T MAG #2 M CCW RM	FC87	W	LAD	NW 4 /
M 127.0	T MAG #2 RET OK	FC89	R	LAD	NW 2 /
M 127.0	T MAG #2 RET OK	FC89	W	LAD	NW 1 /
M 127.1	T MAG #2 RET REQ	FC89	W	LAD	NW 2 /
M 127.1	T MAG #2 RET REQ	FC89	R	LAD	NW 7 /
M 127.1	T MAG #2 RET REQ	FC89	R	LAD	NW 8 /
M 127.1	T MAG #2 RET REQ	FC89	R	LAD	NW 2 /
M 127.1	T MAG #2 RET REQ	FC89	R	LAD	NW 5 /
M 127.1	T MAG #2 RET REQ	FC99	R	LAD	NW 4 /
M 127.2	T MAG #2 E RT REM	FC89	W	LAD	NW 2 /
M 127.7	T MAG #2 RET RID	FC44	R	LAD	NW 11 /
M 127.7	T MAG #2 RET RID	FC89	R	LAD	NW 3 /
M 127.7	T MAG #2 RET RID	FC89	W	LAD	NW 3 /
M 128.0	T MAG #2 ADV OK	FC89	W	LAD	NW 4 /
M 128.0	T MAG #2 ADV OK	FC89	R	LAD	NW 5 /
M 128.1	T MAG #2 ADV REQ	FC89	R	LAD	NW 5 /
M 128.1	T MAG #2 ADV REQ	FC80	R	LAD	NW 21 /
M 128.1	T MAG #2 ADV REQ	FC89	R	LAD	NW 7 /
M 128.1	T MAG #2 ADV REQ	FC89	R	LAD	NW 2 /
M 128.1	T MAG #2 ADV REQ	FC89	R	LAD	NW 2 /
M 128.1	T MAG #2 ADV REQ	FC89	W	LAD	NW 5 /
M 128.7	T MAG #2 ADV RID	FC44	R	LAD	NW 11 /
M 128.7	T MAG #2 ADV RID	FC89	W	LAD	NW 6 /
M 128.7	T MAG #2 ADV RID	FC89	R	LAD	NW 6 /
M 129.0	T MAG #2 ROT BFR	FC86	R	LAD	NW 5 /
M 129.0	T MAG #2 ROT BFR	FC86	R	LAD	NW 5 /
M 129.0	T MAG #2 ROT BFR	FC80	R	LAD	NW 23 /
M 129.0	T MAG #2 ROT BFR	FC86	R	LAD	NW 4 /
M 129.0	T MAG #2 ROT BFR	FC80	R	LAD	NW 20 /
M 129.0	T MAG #2 ROT BFR	FC75	R	LAD	NW 7 /
M 129.0	T MAG #2 ROT BFR	FC80	R	LAD	NW 19 /
M 129.0	T MAG #2 ROT BFR	FC88	W	LAD	NW 1 /
M 129.0	T MAG #2 ROT BFR	FC75	R	LAD	NW 7 /
M 129.0	T MAG #2 ROT BFR	FC86	R	LAD	NW 4 /
M 129.1	T MAG #2 CCW BFR	FC86	R	LAD	NW 5 /

Address	Symbol	Block	Type	Language	Details
M 129.1	T MAG #2 CCW BFR	FC88	W	LAD	NW 2 /
M 129.1	T MAG #2 CCW BFR	FC86	R	LAD	NW 4 /.
M 129.1	T MAG #2 CCW BFR	FC86	R	LAD	NW 5 /.
M 129.1	T MAG #2 CCW BFR	FC86	R	LAD	NW 4 /.
M 135.0	PI SERV ASUP LAT	FC91	W	LAD	NW 1 /
M 135.0	PI SERV ASUP LAT	FC91	R	LAD	NW 2 /.
M 135.0	PI SERV ASUP LAT	FC91	R	LAD	NW 1 /.
M 135.1	PI SERV ASUP REQ	FC91	R	LAD	NW 3 /
M 135.1	PI SERV ASUP REQ	FC91	W	LAD	NW 2 /
M 135.1	PI SERV ASUP REQ	FC91	R	LAD	NW 2 /.
M 135.2	PI SERV ASUP R R	FC91	W	LAD	NW 2 /
M 135.3	PI SERV ASUP ERR	FC45	R	LAD	NW 17 /.
M 135.3	PI SERV ASUP ERR	FC91	W	LAD	NW 3 /
M 135.3	PI SERV ASUP ERR	FC45	R	LAD	NW 1 /.
M 135.4	PI SERV ASUP CMP	FC91	R	LAD	NW 2 /.
M 135.4	PI SERV ASUP CMP	FC91	W	LAD	NW 3 /
M 137.0	ASUP CALL REQUEST	FC91	W	LAD	NW 4 /
M 137.0	ASUP CALL REQUEST	FC91	R	LAD	NW 4 /.
M 137.0	ASUP CALL REQUEST	FC46	R	LAD	NW 3 /.
M 137.0	ASUP CALL REQUEST	FC91	R	LAD	NW 5 /
M 137.1	ASUP CALL ACTIVE	FC91	W	LAD	NW 5 /
M 137.1	ASUP CALL ACTIVE	FC46	R	LAD	NW 3 /.
M 137.2	ASUP CALL DONE	FC81	R	LAD	NW 7 /.
M 137.2	ASUP CALL DONE	FC91	W	LAD	NW 5 /
M 137.2	ASUP CALL DONE	FC80	R	LAD	NW 6 /.
M 137.2	ASUP CALL DONE	FC91	R	LAD	NW 4 /.
M 137.3	ASUP CALL ERROR	FC91	R	LAD	NW 4 /.
M 137.3	ASUP CALL ERROR	FC91	W	LAD	NW 5 /
M 137.4	ASUP CALL STRT ERR	FC91	W	LAD	NW 5 /
M 140.0	VAR TRANS NC REQ	FC92	R	LAD	NW 10 /
M 140.0	VAR TRANS NC REQ	FC92	W	LAD	NW 9 /
M 140.0	VAR TRANS NC REQ	FC92	R	LAD	NW 9 /.
M 140.1	VAR TRANS NC ERR	FC92	W	LAD	NW 10 /
M 140.1	VAR TRANS NC ERR	FC45	R	LAD	NW 3 /.
M 140.1	VAR TRANS NC ERR	FC45	R	LAD	NW 17 /.
M 140.2	VAR TRANS NC DONE	FC92	W	LAD	NW 10 /
M 140.2	VAR TRANS NC DONE	FC92	R	LAD	NW 9 /.
M 140.2	VAR TRANS NC DONE	FC92	R	LAD	NW 11 /.
M 140.3	VAR TRANS RID	FC92	R	LAD	NW 11 /.
M 140.3	VAR TRANS RID	FC92	W	LAD	NW 11 /
M 140.3	VAR TRANS RID	FC44	R	LAD	NW 11 /.
M 145.0	GET GUD ADR RQ 1	FC93	W	LAD	NW 1 /
M 145.0	GET GUD ADR RQ 1	FC93	R	LAD	NW 1 /.
M 145.0	GET GUD ADR RQ 1	FC93	R	LAD	NW 2 /
M 145.1	GET GUD ERROR 1	FC45	R	LAD	NW 5 /.
M 145.1	GET GUD ERROR 1	FC93	W	LAD	NW 10 /
M 145.1	GET GUD ERROR 1	FC45	R	LAD	NW 17 /.
M 145.2	GET GUD DONE 1	FC93	W	LAD	NW 11 /
M 145.2	GET GUD DONE 1	FC93	R	LAD	NW 1 /.
M 146.0	GET GUD 1 ERROR	FC93	W	LAD	NW 2 /
M 146.0	GET GUD 1 ERROR	FC93	R	LAD	NW 10 /.
M 146.1	GET GUD 2 ERROR	FC93	R	LAD	NW 10 /.
M 146.1	GET GUD 2 ERROR	FC93	W	LAD	NW 3 /
M 146.2	GET GUD 3 ERROR	FC93	W	LAD	NW 4 /
M 146.2	GET GUD 3 ERROR	FC93	R	LAD	NW 10 /.
M 146.3	GET GUD 4 ERROR	FC93	R	LAD	NW 10 /.
M 146.3	GET GUD 4 ERROR	FC93	W	LAD	NW 5 /
M 146.4	GET GUD 5 ERROR	FC93	W	LAD	NW 6 /
M 146.4	GET GUD 5 ERROR	FC93	R	LAD	NW 10 /.
M 146.5	GET GUD 6 ERROR	FC93	W	LAD	NW 7 /
M 146.5	GET GUD 6 ERROR	FC93	R	LAD	NW 10 /.
M 146.6	GET GUD 7 ERROR	FC93	W	LAD	NW 8 /
M 146.6	GET GUD 7 ERROR	FC93	R	LAD	NW 10 /.
M 146.7	GET GUD 8 ERROR	FC93	W	LAD	NW 9 /
M 146.7	GET GUD 8 ERROR	FC93	R	LAD	NW 10 /.
M 147.0	GET GUD 1 DONE	FC93	R	LAD	NW 11 /.
M 147.0	GET GUD 1 DONE	FC93	R	LAD	NW 3 /

Address	Symbol	Block	Type	Language	Details
M 147.0	GET GUD 1 DONE	FC93	W	LAD	NW 2 /
M 147.1	GET GUD 2 DONE	FC93	R	LAD	NW 4 /
M 147.1	GET GUD 2 DONE	FC93	R	LAD	NW 11 /
M 147.1	GET GUD 2 DONE	FC93	W	LAD	NW 3 /
M 147.2	GET GUD 3 DONE	FC93	W	LAD	NW 4 /
M 147.2	GET GUD 3 DONE	FC93	R	LAD	NW 11 /
M 147.2	GET GUD 3 DONE	FC93	R	LAD	NW 5 /
M 147.3	GET GUD 4 DONE	FC93	R	LAD	NW 11 /
M 147.3	GET GUD 4 DONE	FC93	W	LAD	NW 5 /
M 147.3	GET GUD 4 DONE	FC93	R	LAD	NW 6 /
M 147.4	GET GUD 5 DONE	FC93	R	LAD	NW 11 /
M 147.4	GET GUD 5 DONE	FC93	R	LAD	NW 7 /
M 147.4	GET GUD 5 DONE	FC93	W	LAD	NW 6 /
M 147.5	GET GUD 6 DONE	FC93	W	LAD	NW 7 /
M 147.5	GET GUD 6 DONE	FC93	R	LAD	NW 11 /
M 147.5	GET GUD 6 DONE	FC93	R	LAD	NW 8 /
M 147.6	GET GUD 7 DONE	FC93	R	LAD	NW 9 /
M 147.6	GET GUD 7 DONE	FC93	R	LAD	NW 11 /
M 147.6	GET GUD 7 DONE	FC93	W	LAD	NW 8 /
M 147.7	GET GUD 8 DONE	FC93	W	LAD	NW 9 /
M 147.7	GET GUD 8 DONE	FC93	R	LAD	NW 11 /
M 148.0	GET GUD ADR RQ 2	FC95	R	LAD	NW 1 /
M 148.0	GET GUD ADR RQ 2	FC95	W	LAD	NW 1 /
M 148.0	GET GUD ADR RQ 2	FC95	R	LAD	NW 2 /
M 148.1	GET GUD ERROR 2	FC95	W	LAD	NW 2 /
M 148.2	GET GUD DONE 2	FC95	R	LAD	NW 1 /
M 148.2	GET GUD DONE 2	FC95	W	LAD	NW 2 /
M 148.2	GET GUD DONE 2	FC95	R	LAD	NW 3 /
M 148.4	VAR TRANS PLC RQ 1	FC95	R	LAD	NW 4 /
M 148.4	VAR TRANS PLC RQ 1	FC95	R	LAD	NW 3 /
M 148.4	VAR TRANS PLC RQ 1	FC95	W	LAD	NW 3 /
M 148.5	VAR TRANS PLC ER 1	FC95	W	LAD	NW 4 /
M 148.6	VAR TRANS PLC DN 1	FC95	R	LAD	NW 3 /
M 148.6	VAR TRANS PLC DN 1	FC95	W	LAD	NW 4 /
M 150.0	CUST M134 BUFFER	FC97	R	LAD	NW 2 /
M 150.0	CUST M134 BUFFER	FC97	R	LAD	NW 1 /
M 150.0	CUST M134 BUFFER	FC97	W	LAD	NW 1 /
M 150.1	CUST M136 BUFFER	FC97	R	LAD	NW 3 /
M 150.1	CUST M136 BUFFER	FC97	W	LAD	NW 3 /
M 150.1	CUST M136 BUFFER	FC97	R	LAD	NW 4 /
M 150.2	CUST M138 BUFFER	FC97	W	LAD	NW 5 /
M 150.2	CUST M138 BUFFER	FC97	R	LAD	NW 6 /
M 150.2	CUST M138 BUFFER	FC97	R	LAD	NW 5 /
M 152.0	CUST M190 BUFFER	FC98	W	LAD	NW 1 /
M 152.0	CUST M190 BUFFER	FC98	R	LAD	NW 4 /
M 152.0	CUST M190 BUFFER	FC98	R	LAD	NW 1 /
M 152.1	CUST M190 NC RID	FC98	W	LAD	NW 2 /
M 152.1	CUST M190 NC RID	FC98	R	LAD	NW 2 /
M 152.1	CUST M190 NC RID	FC44	R	LAD	NW 11 /
M 152.2	CUST M191 NC RID	FC98	W	LAD	NW 3 /
M 152.2	CUST M191 NC RID	FC98	R	LAD	NW 3 /
M 152.2	CUST M191 NC RID	FC44	R	LAD	NW 11 /
M 153.0	CUST M190 POS EDGE	FC98	R	LAD	NW 1 /
M 153.0	CUST M190 POS EDGE	FC98	W	LAD	NW 5 /
M 153.0	CUST M190 POS EDGE	FC98	R	LAD	NW 2 /
M 153.1	CUST M190 POS REM	FC98	W	LAD	NW 5 /
M 153.2	CUST M190 NEG EDGE	FC98	W	LAD	NW 6 /
M 153.2	CUST M190 NEG EDGE	FC98	R	LAD	NW 2 /
M 153.2	CUST M190 NEG EDGE	FC98	R	LAD	NW 1 /
M 153.3	CUST M190 NEG REM	FC98	W	LAD	NW 6 /
M 153.4	CUST M191 POS EDGE	FC98	R	LAD	NW 3 /
M 153.4	CUST M191 POS EDGE	FC98	W	LAD	NW 7 /
M 153.5	CUST M191 POS REM	FC98	W	LAD	NW 7 /
M 153.6	CUST M191 NEG EDGE	FC98	W	LAD	NW 8 /
M 153.6	CUST M191 NEG EDGE	FC98	R	LAD	NW 3 /
M 153.7	CUST M191 NEG REM	FC98	W	LAD	NW 8 /
M 154.0	CUST M192 BUFFER	FC98	R	LAD	NW 12 /

Address	Symbol	Block	Type	Language	Details
M 154.0	CUST M192 BUFFER	FC98	R	LAD	NW 9 /
M 154.0	CUST M192 BUFFER	FC98	W	LAD	NW 9 /
M 154.1	CUST M192 NC RID	FC44	R	LAD	NW 11 /
M 154.1	CUST M192 NC RID	FC98	W	LAD	NW 10 /
M 154.1	CUST M192 NC RID	FC98	R	LAD	NW 10 /
M 154.2	CUST M193 NC RID	FC44	R	LAD	NW 11 /
M 154.2	CUST M193 NC RID	FC98	R	LAD	NW 11 /
M 154.2	CUST M193 NC RID	FC98	W	LAD	NW 11 /
M 155.0	CUST M192 POS EDGE	FC98	R	LAD	NW 10 /
M 155.0	CUST M192 POS EDGE	FC98	W	LAD	NW 13 /
M 155.0	CUST M192 POS EDGE	FC98	R	LAD	NW 9 /
M 155.1	CUST M192 POS REM	FC98	W	LAD	NW 13 /
M 155.2	CUST M192 NEG EDGE	FC98	R	LAD	NW 10 /
M 155.2	CUST M192 NEG EDGE	FC98	R	LAD	NW 9 /
M 155.2	CUST M192 NEG EDGE	FC98	W	LAD	NW 14 /
M 155.3	CUST M192 NEG REM	FC98	W	LAD	NW 14 /
M 155.4	CUST M193 POS EDGE	FC98	R	LAD	NW 11 /
M 155.4	CUST M193 POS EDGE	FC98	W	LAD	NW 15 /
M 155.5	CUST M193 POS REM	FC98	W	LAD	NW 15 /
M 155.6	CUST M193 NEG EDGE	FC98	R	LAD	NW 11 /
M 155.6	CUST M193 NEG EDGE	FC98	W	LAD	NW 16 /
M 155.7	CUST M193 NEG REM	FC98	W	LAD	NW 16 /
M 160.0	MD PALLET NC RID 1	FC44	R	LAD	NW 11 /
M 160.0	MD PALLET NC RID 1	FC96	W	LAD	NW 5 /
M 160.0	MD PALLET NC RID 1	FC96	R	LAD	NW 5 /
M 160.1	MD PALLET NC RID 2	FC44	R	LAD	NW 11 /
M 160.1	MD PALLET NC RID 2	FC96	W	LAD	NW 6 /
M 160.1	MD PALLET NC RID 2	FC96	R	LAD	NW 6 /
M 160.2	MD PALLET NC RID 3	FC96	W	LAD	NW 7 /
M 160.2	MD PALLET NC RID 3	FC44	R	LAD	NW 11 /
M 160.2	MD PALLET NC RID 3	FC96	R	LAD	NW 7 /
M 160.3	MD PALLET NC RID 4	FC96	R	LAD	NW 8 /
M 160.3	MD PALLET NC RID 4	FC44	R	LAD	NW 11 /
M 160.3	MD PALLET NC RID 4	FC96	W	LAD	NW 8 /
M 165.0	SP CL TO MSGE BFR	FC99	W	LAD	NW 1 /
M 165.0	SP CL TO MSGE BFR	FC99	R	LAD	NW 1 /
M 165.0	SP CL TO MSGE BFR	FC99	W	LAD	NW 1 /
M 165.1	SP UC TO MSGE BFR	FC99	W	LAD	NW 2 /
M 165.1	SP UC TO MSGE BFR	FC99	W	LAD	NW 2 /
M 165.1	SP UC TO MSGE BFR	FC99	R	LAD	NW 2 /
M 165.2	ATC #1 RT MSGE BFR	FC99	W	LAD	NW 3 /
M 165.2	ATC #1 RT MSGE BFR	FC99	W	LAD	NW 3 /
M 165.2	ATC #1 RT MSGE BFR	FC99	R	LAD	NW 3 /
M 165.3	ATC #2 RT MSGE BFR	FC99	R	LAD	NW 4 /
M 165.3	ATC #2 RT MSGE BFR	FC99	W	LAD	NW 4 /
M 165.3	ATC #2 RT MSGE BFR	FC99	W	LAD	NW 4 /
M 165.4	ATC #1 RO MSGE BFR	FC99	R	LAD	NW 5 /
M 165.4	ATC #1 RO MSGE BFR	FC99	W	LAD	NW 5 /
M 165.4	ATC #1 RO MSGE BFR	FC99	W	LAD	NW 5 /
M 165.5	ATC #2 RO MSGE BFR	FC99	W	LAD	NW 6 /
M 165.5	ATC #2 RO MSGE BFR	FC99	R	LAD	NW 6 /
M 165.5	ATC #2 RO MSGE BFR	FC99	W	LAD	NW 6 /
M 200.0	T MAG #1 C1 PX PI	FC82	R	LAD	NW 21 /
M 200.0	T MAG #1 C1 PX PI	FC83	R	LAD	NW 4 /
M 200.0	T MAG #1 C1 PX PI	FC82	R	LAD	NW 21 /
M 200.0	T MAG #1 C1 PX PI	FC80	R	LAD	NW 15 /
M 200.0	T MAG #1 C1 PX PI	FC83	R	LAD	NW 2 /
M 200.1	T MAG #1 C2 PX PI	FC80	R	LAD	NW 16 /
M 201.0	T MAG #2 C1 PX PI	FC86	R	LAD	NW 21 /
M 201.0	T MAG #2 C1 PX PI	FC86	R	LAD	NW 21 /
M 201.0	T MAG #2 C1 PX PI	FC87	R	LAD	NW 4 /
M 201.0	T MAG #2 C1 PX PI	FC87	R	LAD	NW 2 /
M 201.0	T MAG #2 C1 PX PI	FC80	R	LAD	NW 19 /
M 201.1	T MAG #2 C2 PX PI	FC80	R	LAD	NW 20 /
M 202.0	T MAG #1 AR MT PQ	FC85	W	LAD	NW 7 /
M 202.1	T MAG #1 AD SL PQ	FC85	W	LAD	NW 8 /
M 202.2	T MAG #1 R MTR PQ	FC84	W	LAD	NW 1 /

Address	Symbol	Block	Type	Language	Details
M 202.3	T MAG #1 CCW S PQ	FC84	W	LAD	NW 2 /
M 202.4	CUST SPEC M134 PQ	FC97	W	LAD	NW 2 /
M 202.4	CUST SPEC M134 PQ	FC96	W	LAD	NW 1 /
M 202.5	CUST SPEC M136 PQ	FC97	W	LAD	NW 4 /
M 202.5	CUST SPEC M136 PQ	FC96	W	LAD	NW 2 /
M 202.6	CUST SPEC M138 PQ	FC96	W	LAD	NW 3 /
M 202.6	CUST SPEC M138 PQ	FC97	W	LAD	NW 6 /
M 202.7	CUST SPEC M190 PQ	FC96	W	LAD	NW 4 /
M 202.7	CUST SPEC M190 PQ	FC98	W	LAD	NW 4 /
M 203.0	T MAG #2 AR MT PQ	FC89	W	LAD	NW 7 /
M 203.1	T MAG #2 RT MT PQ	FC89	W	LAD	NW 8 /
M 203.2	T MAG #2 R MTR PQ	FC88	W	LAD	NW 1 /
M 203.3	T MAG #2 CCW S PQ	FC88	W	LAD	NW 2 /
M 203.4	5 AXIS UC SL PQ	FC57	W	LAD	NW 4 /
MB 200		OB1	W	STL	NW 2 S
MB 200		OB1	W	STL	NW 17 S
MB 200		OB1	W	STL	NW 7 S
MB 201		OB1	W	STL	NW 17 S
MB 201		OB1	W	STL	NW 7 S
MB 201		OB1	W	STL	NW 2 S
MB 202		OB1	R	STL	NW 7 S
MB 202		OB1	R	STL	NW 17 S
MB 202		OB1	R	STL	NW 2 S
MB 203		OB1	R	STL	NW 17 S
MB 203		OB1	R	STL	NW 2 S
MB 203		OB1	R	STL	NW 15 S
MB 203		OB1	R	STL	NW 7 S
DB2.DBX0.0	ALARM & MESSAGE.C1.FDD_5100xx[0]	FC42	W	LAD	NW 8 /
DB2.DBX0.0	ALARM & MESSAGE.C1.FDD_5100xx[0]	FC79	R	LAD	NW 9 /
DB2.DBX0.1	ALARM & MESSAGE.C1.FDD_5100xx[1]	FC79	R	LAD	NW 9 /
DB2.DBX0.1	ALARM & MESSAGE.C1.FDD_5100xx[1]	FC42	W	LAD	NW 9 /
DB2.DBX1.0	ALARM & MESSAGE.C1.FDD_5100xx[8]	FC42	W	LAD	NW 10 /
DB2.DBX1.0	ALARM & MESSAGE.C1.FDD_5100xx[8]	FC65	R	LAD	NW 6 /
DB2.DBX1.5	ALARM & MESSAGE.C1.FDD_5100xx[13]	FC42	R	LAD	NW 16 /
DB2.DBX1.5	ALARM & MESSAGE.C1.FDD_5100xx[13]	FC42	R	LAD	NW 13 /
DB2.DBX1.5	ALARM & MESSAGE.C1.FDD_5100xx[13]	FC80	R	LAD	NW 13 /
DB2.DBX1.5	ALARM & MESSAGE.C1.FDD_5100xx[13]	FC42	R	LAD	NW 12 /
DB2.DBX1.5	ALARM & MESSAGE.C1.FDD_5100xx[13]	FC42	W	LAD	NW 11 /
DB2.DBX1.6	ALARM & MESSAGE.C1.FDD_5100xx[14]	FC42	R	LAD	NW 13 /
DB2.DBX1.6	ALARM & MESSAGE.C1.FDD_5100xx[14]	FC42	W	LAD	NW 12 /
DB2.DBX1.6	ALARM & MESSAGE.C1.FDD_5100xx[14]	FC42	R	LAD	NW 16 /
DB2.DBX1.6	ALARM & MESSAGE.C1.FDD_5100xx[14]	FC80	R	LAD	NW 13 /
DB2.DBX1.7	ALARM & MESSAGE.C1.FDD_5100xx[15]	FC42	W	LAD	NW 13 /
DB2.DBX8.0	ALARM & MESSAGE.C1.RID_5102xx[16]	FC44	W	LAD	NW 1 /
DB2.DBX8.1	ALARM & MESSAGE.C1.RID_5102xx[17]	FC44	W	LAD	NW 2 /
DB2.DBX8.2	ALARM & MESSAGE.C1.RID_5102xx[18]	FC44	R	LAD	NW 6 /
DB2.DBX8.2	ALARM & MESSAGE.C1.RID_5102xx[18]	FC45	R	LAD	NW 15 /
DB2.DBX8.2	ALARM & MESSAGE.C1.RID_5102xx[18]	FC44	W	LAD	NW 6 /
DB2.DBX8.2	ALARM & MESSAGE.C1.RID_5102xx[18]	FC81	R	LAD	NW 20 /
DB2.DBX8.2	ALARM & MESSAGE.C1.RID_5102xx[18]	FC44	R	LAD	NW 11 /
DB2.DBX8.2	ALARM & MESSAGE.C1.RID_5102xx[18]	FC45	R	LAD	NW 14 /
DB2.DBX8.3	ALARM & MESSAGE.C1.RID_5102xx[19]	FC45	R	LAD	NW 15 /
DB2.DBX8.3	ALARM & MESSAGE.C1.RID_5102xx[19]	FC44	R	LAD	NW 7 /
DB2.DBX8.3	ALARM & MESSAGE.C1.RID_5102xx[19]	FC45	R	LAD	NW 14 /
DB2.DBX8.3	ALARM & MESSAGE.C1.RID_5102xx[19]	FC44	W	LAD	NW 7 /
DB2.DBX8.3	ALARM & MESSAGE.C1.RID_5102xx[19]	FC44	R	LAD	NW 11 /
DB2.DBX8.3	ALARM & MESSAGE.C1.RID_5102xx[19]	FC81	R	LAD	NW 20 /
DB2.DBX8.4	ALARM & MESSAGE.C1.RID_5102xx[20]	FC81	R	LAD	NW 20 /
DB2.DBX8.4	ALARM & MESSAGE.C1.RID_5102xx[20]	FC45	R	LAD	NW 14 /
DB2.DBX8.4	ALARM & MESSAGE.C1.RID_5102xx[20]	FC45	R	LAD	NW 15 /
DB2.DBX8.4	ALARM & MESSAGE.C1.RID_5102xx[20]	FC44	R	LAD	NW 11 /
DB2.DBX8.4	ALARM & MESSAGE.C1.RID_5102xx[20]	FC44	W	LAD	NW 8 /
DB2.DBX8.4	ALARM & MESSAGE.C1.RID_5102xx[20]	FC44	R	LAD	NW 8 /
DB2.DBX8.5	ALARM & MESSAGE.C1.RID_5102xx[21]	FC44	R	LAD	NW 11 /
DB2.DBX8.5	ALARM & MESSAGE.C1.RID_5102xx[21]	FC81	R	LAD	NW 21 /
DB2.DBX8.5	ALARM & MESSAGE.C1.RID_5102xx[21]	FC44	R	LAD	NW 9 /
DB2.DBX8.5	ALARM & MESSAGE.C1.RID_5102xx[21]	FC44	W	LAD	NW 9 /

Address	Symbol	Block	Type	Language	Details		
DB2.DBX8.5	ALARM & MESSAGE.C1.RID_5102xx[21]	FC45	R	LAD	NW	15	/.
DB2.DBX8.5	ALARM & MESSAGE.C1.RID_5102xx[21]	FC45	R	LAD	NW	14	/.
DB2.DBX8.5	ALARM & MESSAGE.C1.RID_5102xx[21]	FC81	R	LAD	NW	21	/.
DB2.DBX8.6	ALARM & MESSAGE.C1.RID_5102xx[22]	FC44	R	LAD	NW	11	/.
DB2.DBX8.6	ALARM & MESSAGE.C1.RID_5102xx[22]	FC44	R	LAD	NW	10	/.
DB2.DBX8.6	ALARM & MESSAGE.C1.RID_5102xx[22]	FC80	R	LAD	NW	13	/.
DB2.DBX8.6	ALARM & MESSAGE.C1.RID_5102xx[22]	FC44	W	LAD	NW	10	/.
DB2.DBX10.0	ALARM & MESSAGE.C1.NCSD_5103xx[0]	FC45	R	LAD	NW	18	/.
DB2.DBX10.0	ALARM & MESSAGE.C1.NCSD_5103xx[0]	FC45	W	LAD	NW	2	/.
DB2.DBX10.1	ALARM & MESSAGE.C1.NCSD_5103xx[1]	FC45	R	LAD	NW	18	/.
DB2.DBX10.1	ALARM & MESSAGE.C1.NCSD_5103xx[1]	FC45	W	LAD	NW	4	/.
DB2.DBX10.2	ALARM & MESSAGE.C1.NCSD_5103xx[2]	FC45	R	LAD	NW	18	/.
DB2.DBX10.2	ALARM & MESSAGE.C1.NCSD_5103xx[2]	FC45	W	LAD	NW	6	/.
DB2.DBX10.3	ALARM & MESSAGE.C1.NCSD_5103xx[3]	FC45	R	LAD	NW	18	/.
DB2.DBX10.3	ALARM & MESSAGE.C1.NCSD_5103xx[3]	FC45	W	LAD	NW	9	/.
DB2.DBX11.0	ALARM & MESSAGE.C1.NCSD_5103xx[8]	FC45	W	LAD	NW	10	/.
DB2.DBX11.0	ALARM & MESSAGE.C1.NCSD_5103xx[8]	FC45	R	LAD	NW	12	/.
DB2.DBX11.1	ALARM & MESSAGE.C1.NCSD_5103xx[9]	FC45	W	LAD	NW	11	/.
DB2.DBX11.1	ALARM & MESSAGE.C1.NCSD_5103xx[9]	FC45	R	LAD	NW	12	/.
DB2.DBX11.2	ALARM & MESSAGE.C1.NCSD_5103xx[10]	FC45	R	LAD	NW	12	/.
DB2.DBX11.3	ALARM & MESSAGE.C1.NCSD_5103xx[11]	FC45	W	LAD	NW	12	/.
DB2.DBX11.4	ALARM & MESSAGE.C1.NCSD_5103xx[12]	FC45	W	LAD	NW	13	/.
DB2.DBX11.5	ALARM & MESSAGE.C1.NCSD_5103xx[13]	FC81	R	LAD	NW	2	/.
DB2.DBX11.5	ALARM & MESSAGE.C1.NCSD_5103xx[13]	FC45	W	LAD	NW	14	/.
DB2.DBX11.6	ALARM & MESSAGE.C1.NCSD_5103xx[14]	FC81	R	LAD	NW	2	/.
DB2.DBX11.6	ALARM & MESSAGE.C1.NCSD_5103xx[14]	FC45	W	LAD	NW	15	/.
DB2.DBX11.7	ALARM & MESSAGE.C1.NCSD_5103xx[15]	FC45	W	LAD	NW	16	/.
DB2.DBX11.7	ALARM & MESSAGE.C1.NCSD_5103xx[15]	FC45	R	LAD	NW	15	/.
DB2.DBX11.7	ALARM & MESSAGE.C1.NCSD_5103xx[15]	FC45	R	LAD	NW	14	/.
DB2.DBX144.0	ALARM & MESSAGE._1FdStop6001xx[0]	FC51	W	LAD	NW	17	/.
DB2.DBX144.0	ALARM & MESSAGE._1FdStop6001xx[0]	FC51	R	LAD	NW	19	/.
DB2.DBX144.0	ALARM & MESSAGE._1FdStop6001xx[0]	FC51	R	LAD	NW	17	/.
DB2.DBX144.1	ALARM & MESSAGE._1FdStop6001xx[1]	FC51	W	LAD	NW	18	/.
DB2.DBX144.1	ALARM & MESSAGE._1FdStop6001xx[1]	FC51	R	LAD	NW	18	/.
DB2.DBX144.1	ALARM & MESSAGE._1FdStop6001xx[1]	FC51	R	LAD	NW	19	/.
DB2.DBX146.0	ALARM & MESSAGE._2FdStop6002xx[0]	FC52	R	LAD	NW	19	/.
DB2.DBX146.0	ALARM & MESSAGE._2FdStop6002xx[0]	FC52	R	LAD	NW	17	/.
DB2.DBX146.0	ALARM & MESSAGE._2FdStop6002xx[0]	FC52	W	LAD	NW	17	/.
DB2.DBX146.1	ALARM & MESSAGE._2FdStop6002xx[1]	FC52	W	LAD	NW	18	/.
DB2.DBX146.1	ALARM & MESSAGE._2FdStop6002xx[1]	FC52	R	LAD	NW	18	/.
DB2.DBX146.1	ALARM & MESSAGE._2FdStop6002xx[1]	FC52	R	LAD	NW	19	/.
DB2.DBX148.0	ALARM & MESSAGE._3FdStop6003xx[0]	FC53	R	LAD	NW	19	/.
DB2.DBX148.0	ALARM & MESSAGE._3FdStop6003xx[0]	FC53	R	LAD	NW	21	/.
DB2.DBX148.0	ALARM & MESSAGE._3FdStop6003xx[0]	FC53	W	LAD	NW	19	/.
DB2.DBX148.1	ALARM & MESSAGE._3FdStop6003xx[1]	FC53	W	LAD	NW	20	/.
DB2.DBX148.1	ALARM & MESSAGE._3FdStop6003xx[1]	FC53	R	LAD	NW	20	/.
DB2.DBX148.1	ALARM & MESSAGE._3FdStop6003xx[1]	FC53	R	LAD	NW	21	/.
DB2.DBX150.0	ALARM & MESSAGE._4FdStop6004xx[0]	FC54	R	LAD	NW	16	/.
DB2.DBX150.0	ALARM & MESSAGE._4FdStop6004xx[0]	FC54	W	LAD	NW	16	/.
DB2.DBX150.0	ALARM & MESSAGE._4FdStop6004xx[0]	FC54	R	LAD	NW	21	/.
DB2.DBX150.1	ALARM & MESSAGE._4FdStop6004xx[1]	FC54	W	LAD	NW	17	/.
DB2.DBX150.1	ALARM & MESSAGE._4FdStop6004xx[1]	FC54	R	LAD	NW	17	/.
DB2.DBX150.1	ALARM & MESSAGE._4FdStop6004xx[1]	FC54	R	LAD	NW	21	/.
DB2.DBX150.2	ALARM & MESSAGE._4FdStop6004xx[2]	FC54	W	LAD	NW	18	/.
DB2.DBX150.2	ALARM & MESSAGE._4FdStop6004xx[2]	FC54	R	LAD	NW	21	/.
DB2.DBX150.2	ALARM & MESSAGE._4FdStop6004xx[2]	FC54	R	LAD	NW	18	/.
DB2.DBX150.3	ALARM & MESSAGE._4FdStop6004xx[3]	FC54	R	LAD	NW	19	/.
DB2.DBX150.3	ALARM & MESSAGE._4FdStop6004xx[3]	FC54	R	LAD	NW	21	/.
DB2.DBX150.3	ALARM & MESSAGE._4FdStop6004xx[3]	FC54	W	LAD	NW	19	/.
DB2.DBX150.4	ALARM & MESSAGE._4FdStop6004xx[4]	FC54	R	LAD	NW	21	/.
DB2.DBX150.4	ALARM & MESSAGE._4FdStop6004xx[4]	FC54	R	LAD	NW	20	/.
DB2.DBX150.4	ALARM & MESSAGE._4FdStop6004xx[4]	FC54	W	LAD	NW	20	/.
DB2.DBX152.0	ALARM & MESSAGE._5FdStop6005xx[0]	FC56	W	LAD	NW	16	/.
DB2.DBX152.0	ALARM & MESSAGE._5FdStop6005xx[0]	FC56	R	LAD	NW	21	/.
DB2.DBX152.0	ALARM & MESSAGE._5FdStop6005xx[0]	FC56	R	LAD	NW	16	/.
DB2.DBX152.1	ALARM & MESSAGE._5FdStop6005xx[1]	FC56	R	LAD	NW	21	/.
DB2.DBX152.1	ALARM & MESSAGE._5FdStop6005xx[1]	FC56	R	LAD	NW	17	/.

Address	Symbol	Block	Type	Language	Details		
DB2.DBX152.1	ALARM & MESSAGE._5FdStop6005xx[1]	FC56	W	LAD	NW	17	/
DB2.DBX152.2	ALARM & MESSAGE._5FdStop6005xx[2]	FC56	R	LAD	NW	21	/
DB2.DBX152.2	ALARM & MESSAGE._5FdStop6005xx[2]	FC56	R	LAD	NW	18	/
DB2.DBX152.2	ALARM & MESSAGE._5FdStop6005xx[2]	FC56	W	LAD	NW	18	/
DB2.DBX152.3	ALARM & MESSAGE._5FdStop6005xx[3]	FC56	R	LAD	NW	19	/
DB2.DBX152.3	ALARM & MESSAGE._5FdStop6005xx[3]	FC56	W	LAD	NW	19	/
DB2.DBX152.3	ALARM & MESSAGE._5FdStop6005xx[3]	FC56	R	LAD	NW	21	/
DB2.DBX152.4	ALARM & MESSAGE._5FdStop6005xx[4]	FC56	R	LAD	NW	21	/
DB2.DBX152.4	ALARM & MESSAGE._5FdStop6005xx[4]	FC56	W	LAD	NW	20	/
DB2.DBX152.4	ALARM & MESSAGE._5FdStop6005xx[4]	FC56	R	LAD	NW	20	/
DB2.DBX154.0	ALARM & MESSAGE._6FdStop6006xx[0]	FC60	R	LAD	NW	37	/
DB2.DBX154.0	ALARM & MESSAGE._6FdStop6006xx[0]	FC60	R	LAD	NW	45	/
DB2.DBX154.0	ALARM & MESSAGE._6FdStop6006xx[0]	FC60	W	LAD	NW	37	/
DB2.DBX154.1	ALARM & MESSAGE._6FdStop6006xx[1]	FC60	R	LAD	NW	38	/
DB2.DBX154.1	ALARM & MESSAGE._6FdStop6006xx[1]	FC60	R	LAD	NW	45	/
DB2.DBX154.1	ALARM & MESSAGE._6FdStop6006xx[1]	FC60	W	LAD	NW	38	/
DB2.DBX154.2	ALARM & MESSAGE._6FdStop6006xx[2]	FC60	R	LAD	NW	45	/
DB2.DBX154.2	ALARM & MESSAGE._6FdStop6006xx[2]	FC60	R	LAD	NW	39	/
DB2.DBX154.2	ALARM & MESSAGE._6FdStop6006xx[2]	FC60	W	LAD	NW	39	/
DB2.DBX154.3	ALARM & MESSAGE._6FdStop6006xx[3]	FC60	W	LAD	NW	40	/
DB2.DBX154.3	ALARM & MESSAGE._6FdStop6006xx[3]	FC60	R	LAD	NW	45	/
DB2.DBX154.3	ALARM & MESSAGE._6FdStop6006xx[3]	FC60	R	LAD	NW	40	/
DB2.DBX154.4	ALARM & MESSAGE._6FdStop6006xx[4]	FC60	R	LAD	NW	41	/
DB2.DBX154.4	ALARM & MESSAGE._6FdStop6006xx[4]	FC60	W	LAD	NW	41	/
DB2.DBX154.4	ALARM & MESSAGE._6FdStop6006xx[4]	FC60	R	LAD	NW	45	/
DB2.DBX154.4	ALARM & MESSAGE._6FdStop6006xx[4]	FC60	R	LAD	NW	34	/
DB2.DBX154.5	ALARM & MESSAGE._6FdStop6006xx[5]	FC60	R	LAD	NW	45	/
DB2.DBX154.5	ALARM & MESSAGE._6FdStop6006xx[5]	FC60	W	LAD	NW	42	/
DB2.DBX154.6	ALARM & MESSAGE._6FdStop6006xx[6]	FC60	W	LAD	NW	43	/
DB2.DBX154.6	ALARM & MESSAGE._6FdStop6006xx[6]	FC60	R	LAD	NW	43	/
DB2.DBX154.6	ALARM & MESSAGE._6FdStop6006xx[6]	FC60	R	LAD	NW	45	/
DB2.DBX155.0	ALARM & MESSAGE._6FdStop6006xx[8]	FC45	R	LAD	NW	17	/
DB2.DBX155.0	ALARM & MESSAGE._6FdStop6006xx[8]	FC60	R	LAD	NW	7	/
DB2.DBX155.0	ALARM & MESSAGE._6FdStop6006xx[8]	FC60	W	LAD	NW	44	/
DB2.DBX180.0	ALARM & MESSAGE.A7000xx[0]	FC50	R	LAD	NW	3	/
DB2.DBX180.0	ALARM & MESSAGE.A7000xx[0]	FC50	W	LAD	NW	2	/
DB2.DBX180.0	ALARM & MESSAGE.A7000xx[0]	FC50	R	LAD	NW	2	/
DB2.DBX180.7	ALARM & MESSAGE.A7000xx[7]	FC70	R	LAD	NW	18	/
DB2.DBX180.7	ALARM & MESSAGE.A7000xx[7]	FC70	W	LAD	NW	18	/
DB2.DBX180.7	ALARM & MESSAGE.A7000xx[7]	FC70	R	LAD	NW	20	/
DB2.DBX180.7	ALARM & MESSAGE.A7000xx[7]	FC60	R	LAD	NW	45	/
DB2.DBX181.0	ALARM & MESSAGE.A7000xx[8]	FC76	R	LAD	NW	4	/
DB2.DBX181.0	ALARM & MESSAGE.A7000xx[8]	FC76	W	LAD	NW	1	/
DB2.DBX181.0	ALARM & MESSAGE.A7000xx[8]	FC76	R	LAD	NW	1	/
DB2.DBX181.2	ALARM & MESSAGE.A7000xx[10]	FC71	R	LAD	NW	19	/
DB2.DBX182.2	ALARM & MESSAGE.A7000xx[18]	FC80	R	LAD	NW	24	/
DB2.DBX182.2	ALARM & MESSAGE.A7000xx[18]	FC80	R	LAD	NW	11	/
DB2.DBX182.2	ALARM & MESSAGE.A7000xx[18]	FC80	W	LAD	NW	11	/
DB2.DBX182.3	ALARM & MESSAGE.A7000xx[19]	FC80	R	LAD	NW	24	/
DB2.DBX182.3	ALARM & MESSAGE.A7000xx[19]	FC80	W	LAD	NW	12	/
DB2.DBX182.3	ALARM & MESSAGE.A7000xx[19]	FC80	R	LAD	NW	12	/
DB2.DBX182.4	ALARM & MESSAGE.A7000xx[20]	FC45	R	LAD	NW	14	/
DB2.DBX182.4	ALARM & MESSAGE.A7000xx[20]	FC81	R	LAD	NW	26	/
DB2.DBX182.4	ALARM & MESSAGE.A7000xx[20]	FC45	R	LAD	NW	15	/
DB2.DBX182.4	ALARM & MESSAGE.A7000xx[20]	FC81	W	LAD	NW	22	/
DB2.DBX182.4	ALARM & MESSAGE.A7000xx[20]	FC81	R	LAD	NW	22	/
DB2.DBX182.5	ALARM & MESSAGE.A7000xx[21]	FC81	R	LAD	NW	26	/
DB2.DBX182.5	ALARM & MESSAGE.A7000xx[21]	FC81	W	LAD	NW	23	/
DB2.DBX182.5	ALARM & MESSAGE.A7000xx[21]	FC45	R	LAD	NW	15	/
DB2.DBX182.5	ALARM & MESSAGE.A7000xx[21]	FC81	R	LAD	NW	23	/
DB2.DBX182.5	ALARM & MESSAGE.A7000xx[21]	FC45	R	LAD	NW	14	/
DB2.DBX182.6	ALARM & MESSAGE.A7000xx[22]	FC45	R	LAD	NW	15	/
DB2.DBX182.6	ALARM & MESSAGE.A7000xx[22]	FC81	R	LAD	NW	26	/
DB2.DBX182.6	ALARM & MESSAGE.A7000xx[22]	FC45	R	LAD	NW	14	/
DB2.DBX182.6	ALARM & MESSAGE.A7000xx[22]	FC81	W	LAD	NW	24	/
DB2.DBX182.6	ALARM & MESSAGE.A7000xx[22]	FC81	R	LAD	NW	24	/
DB2.DBX182.7	ALARM & MESSAGE.A7000xx[23]	FC80	R	LAD	NW	24	/

Address	Symbol	Block	Type	Language	Details		
DB2.DBX182.7	ALARM & MESSAGE.A7000xx[23]	FC80	W	LAD	NW	13	/
DB2.DBX182.7	ALARM & MESSAGE.A7000xx[23]	FC80	R	LAD	NW	13	/.
DB2.DBX183.0	ALARM & MESSAGE.A7000xx[24]	FC45	R	LAD	NW	17	/.
DB2.DBX183.0	ALARM & MESSAGE.A7000xx[24]	FC80	W	LAD	NW	14	/
DB2.DBX183.0	ALARM & MESSAGE.A7000xx[24]	FC80	R	LAD	NW	24	/.
DB2.DBX183.0	ALARM & MESSAGE.A7000xx[24]	FC80	R	LAD	NW	14	/.
DB2.DBX183.1	ALARM & MESSAGE.A7000xx[25]	FC80	W	LAD	NW	15	/
DB2.DBX183.1	ALARM & MESSAGE.A7000xx[25]	FC80	R	LAD	NW	24	/.
DB2.DBX183.1	ALARM & MESSAGE.A7000xx[25]	FC80	R	LAD	NW	15	/.
DB2.DBX183.2	ALARM & MESSAGE.A7000xx[26]	FC80	R	LAD	NW	24	/.
DB2.DBX183.2	ALARM & MESSAGE.A7000xx[26]	FC80	R	LAD	NW	16	/.
DB2.DBX183.2	ALARM & MESSAGE.A7000xx[26]	FC80	W	LAD	NW	16	/
DB2.DBX183.3	ALARM & MESSAGE.A7000xx[27]	FC85	R	LAD	NW	4	/.
DB2.DBX183.3	ALARM & MESSAGE.A7000xx[27]	FC80	R	LAD	NW	17	/.
DB2.DBX183.3	ALARM & MESSAGE.A7000xx[27]	FC85	R	LAD	NW	5	/.
DB2.DBX183.3	ALARM & MESSAGE.A7000xx[27]	FC80	R	LAD	NW	24	/.
DB2.DBX183.3	ALARM & MESSAGE.A7000xx[27]	FC80	W	LAD	NW	17	/
DB2.DBX183.3	ALARM & MESSAGE.A7000xx[27]	FC85	R	LAD	NW	2	/.
DB2.DBX183.4	ALARM & MESSAGE.A7000xx[28]	FC45	R	LAD	NW	17	/.
DB2.DBX183.4	ALARM & MESSAGE.A7000xx[28]	FC80	W	LAD	NW	18	/
DB2.DBX183.4	ALARM & MESSAGE.A7000xx[28]	FC80	R	LAD	NW	24	/.
DB2.DBX183.4	ALARM & MESSAGE.A7000xx[28]	FC80	R	LAD	NW	18	/.
DB2.DBX183.5	ALARM & MESSAGE.A7000xx[29]	FC80	R	LAD	NW	19	/.
DB2.DBX183.5	ALARM & MESSAGE.A7000xx[29]	FC80	W	LAD	NW	19	/
DB2.DBX183.5	ALARM & MESSAGE.A7000xx[29]	FC80	R	LAD	NW	24	/.
DB2.DBX183.6	ALARM & MESSAGE.A7000xx[30]	FC80	R	LAD	NW	20	/.
DB2.DBX183.6	ALARM & MESSAGE.A7000xx[30]	FC80	W	LAD	NW	20	/
DB2.DBX183.6	ALARM & MESSAGE.A7000xx[30]	FC80	R	LAD	NW	24	/.
DB2.DBX183.7	ALARM & MESSAGE.A7000xx[31]	FC80	W	LAD	NW	21	/
DB2.DBX183.7	ALARM & MESSAGE.A7000xx[31]	FC89	R	LAD	NW	5	/.
DB2.DBX183.7	ALARM & MESSAGE.A7000xx[31]	FC89	R	LAD	NW	2	/.
DB2.DBX183.7	ALARM & MESSAGE.A7000xx[31]	FC89	R	LAD	NW	4	/.
DB2.DBX183.7	ALARM & MESSAGE.A7000xx[31]	FC80	R	LAD	NW	24	/.
DB2.DBX183.7	ALARM & MESSAGE.A7000xx[31]	FC80	R	LAD	NW	21	/.
DB2.DBX184.0	ALARM & MESSAGE.A7000xx[32]	FC75	W	LAD	NW	1	/
DB2.DBX184.1	ALARM & MESSAGE.A7000xx[33]	FC76	W	LAD	NW	2	/
DB2.DBX184.1	ALARM & MESSAGE.A7000xx[33]	FC76	R	LAD	NW	5	/.
DB2.DBX184.2	ALARM & MESSAGE.A7000xx[34]	FC76	R	LAD	NW	5	/.
DB2.DBX184.2	ALARM & MESSAGE.A7000xx[34]	FC76	W	LAD	NW	3	/
DB2.DBX184.3	ALARM & MESSAGE.A7000xx[35]	FC71	W	LAD	NW	14	/
DB2.DBX184.3	ALARM & MESSAGE.A7000xx[35]	FC46	R	LAD	NW	3	/.
DB2.DBX184.3	ALARM & MESSAGE.A7000xx[35]	FC71	R	LAD	NW	20	/.
DB2.DBX184.4	ALARM & MESSAGE.A7000xx[36]	FC80	W	LAD	NW	22	/
DB2.DBX184.5	ALARM & MESSAGE.A7000xx[37]	FC45	R	LAD	NW	15	/.
DB2.DBX184.5	ALARM & MESSAGE.A7000xx[37]	FC81	W	LAD	NW	25	/
DB2.DBX184.5	ALARM & MESSAGE.A7000xx[37]	FC45	R	LAD	NW	14	/.
DB2.DBX184.6	ALARM & MESSAGE.A7000xx[38]	FC80	W	LAD	NW	23	/
DB2.DBX184.7	ALARM & MESSAGE.A7000xx[39]	FC70	R	LAD	NW	21	/.
DB2.DBX184.7	ALARM & MESSAGE.A7000xx[39]	FC70	W	LAD	NW	19	/
DB2.DBX185.0	ALARM & MESSAGE.A7000xx[40]	FC79	W	LAD	NW	1	/
DB2.DBX185.1	ALARM & MESSAGE.A7000xx[41]	FC79	W	LAD	NW	2	/
DB2.DBX185.2	ALARM & MESSAGE.A7000xx[42]	FC79	W	LAD	NW	3	/
DB2.DBX185.3	ALARM & MESSAGE.A7000xx[43]	FC79	W	LAD	NW	4	/
DB2.DBX185.4	ALARM & MESSAGE.A7000xx[44]	FC79	W	LAD	NW	5	/
DB2.DBX185.5	ALARM & MESSAGE.A7000xx[45]	FC79	W	LAD	NW	6	/
DB2.DBX185.6	ALARM & MESSAGE.A7000xx[46]	FC42	W	LAD	NW	16	/
DB2.DBX185.7	ALARM & MESSAGE.A7000xx[47]	FC77	W	LAD	NW	16	/
DB2.DBX186.0	ALARM & MESSAGE.A7000xx[48]	FC79	W	LAD	NW	7	/
DB2.DBX187.0	ALARM & MESSAGE.A7000xx[56]	FC75	W	LAD	NW	8	/
DB2.DBX192.0	ALARM & MESSAGE.A7001xx[32]	FC99	W	LAD	NW	1	/
DB2.DBX192.1	ALARM & MESSAGE.A7001xx[33]	FC99	W	LAD	NW	2	/
DB2.DBX192.2	ALARM & MESSAGE.A7001xx[34]	FC99	W	LAD	NW	3	/
DB2.DBX192.3	ALARM & MESSAGE.A7001xx[35]	FC99	W	LAD	NW	4	/
DB2.DBX192.4	ALARM & MESSAGE.A7001xx[36]	FC99	W	LAD	NW	5	/
DB2.DBX192.5	ALARM & MESSAGE.A7001xx[37]	FC99	W	LAD	NW	6	/
DB5.DBX165.0		FB18	W	STL	NW	1	S
DB5.DBX165.0		FC1	R	STL	NW	1	S

Address	Symbol	Block	Type	Language	Details		
DB7.DBX116.0	GP STARTUP.IN41	FB2	R	STL	NW	1	S
DB7.DBX116.0	GP STARTUP.IN41	FB3	R	STL	NW	1	S
DB7.DBX116.0	GP STARTUP.IN41	FC2	R	STL	NW	1	S
DB7.DBX116.0	GP STARTUP.IN41	FB4	R	STL	NW	1	S
DB7.DBX116.0	GP STARTUP.IN41	FB7	R	STL	NW	1	S
DB7.DBX116.0	GP STARTUP.IN41	FB5	R	STL	NW	1	S
DB7.DBX116.1	GP STARTUP.IN42	FC2	R	STL	NW	1	S
DB7.DBX116.2	GP STARTUP.IN43	FC2	R	STL	NW	1	S
DB7.DBX120.0	GP STARTUP.IN45	FC3	R	STL	NW	1	S
DB8.DBX45.0		FB17	R	STL	NW	1	S
DB8.DBX45.0		FC9	R	STL	NW	1	S
DB8.DBX48.1		FC2	R	STL	NW	1	S
DB8.DBX48.1		FC2	W	STL	NW	1	S
DB8.DBX48.2		FC2	W	STL	NW	1	S
DB8.DBX49.0		FB1	R	STL	NW	1	S
DB8.DBX56.0		FC1	W	STL	NW	1	S
DB8.DBX56.0		FC1	W	STL	NW	1	S
DB10.DBX56.1	NC.I_EMERGENCY	FC40	W	LAD	NW	1	/
DB10.DBX56.2	NC.I_EMERGENCY_Ackn	FC45	R	LAD	NW	7	/
DB10.DBX56.2	NC.I_EMERGENCY_Ackn	FC40	W	LAD	NW	2	/
DB10.DBX56.4	NC.I_Keyswitch0	FC47	W	LAD	NW	32	/
DB10.DBX56.5	NC.I_Keyswitch1	FC47	W	LAD	NW	33	/
DB10.DBX56.5	NC.I_Keyswitch1	FC47	R	LAD	NW	32	/
DB10.DBX56.6	NC.I_Keyswitch2	FC47	R	LAD	NW	32	/
DB10.DBX56.6	NC.I_Keyswitch2	FC47	W	LAD	NW	34	/
DB10.DBX56.7	NC.I_Keyswitch3	FC47	W	LAD	NW	35	/
DB10.DBX56.7	NC.I_Keyswitch3	FC47	R	LAD	NW	32	/
DB10.DBX57.0	NC.I_IncInModeGroup	FC19	W	STL	NW	1	S
DB10.DBX57.0	NC.I_IncInModeGroup	FC24	W	STL	NW	1	S
DB10.DBX57.0	NC.I_IncInModeGroup	FC25	W	STL	NW	1	S
DB10.DBX57.0	NC.I_IncInModeGroup	FC26	W	STL	NW	1	S
DB10.DBX100.0	NC.Q_Ax_I_HW1	FC47	W	STL	NW	36	S
DB10.DBX100.1	NC.Q_Ax_B_HW1	FC47	W	STL	NW	36	S
DB10.DBX100.2	NC.Q_Ax_C_HW1	FC47	W	STL	NW	36	S
DB10.DBX100.3	NC.Q_Ax_D_HW1	FC47	W	STL	NW	36	S
DB10.DBX100.4	NC.Q_Ax_Q_HW1	FC47	W	STL	NW	36	S
DB10.DBX100.5	NC.Q_CHW_sel1	FC47	W	STL	NW	36	S
DB10.DBX100.6	NC.Q_HW_sel1	FC47	W	STL	NW	36	S
DB10.DBX100.7	NC.Q_Mach_Ax1	FC47	W	STL	NW	36	S
DB10.DBX101.0	NC.Q_Ax_I_HW2	FC47	W	STL	NW	36	S
DB10.DBX101.1	NC.Q_Ax_B_HW2	FC47	W	STL	NW	36	S
DB10.DBX101.2	NC.Q_Ax_C_HW2	FC47	W	STL	NW	36	S
DB10.DBX101.3	NC.Q_Ax_D_HW2	FC47	W	STL	NW	36	S
DB10.DBX101.4	NC.Q_Ax_Q_HW2	FC47	W	STL	NW	36	S
DB10.DBX101.5	NC.Q_CHW_sel2	FC47	W	STL	NW	36	S
DB10.DBX101.6	NC.Q_HW_sel2	FC47	W	STL	NW	36	S
DB10.DBX101.7	NC.Q_Mach_Ax2	FC47	W	STL	NW	36	S
DB10.DBX102.0	NC.Q_Ax_I_HW3	FC47	W	STL	NW	36	S
DB10.DBX102.1	NC.Q_Ax_B_HW3	FC47	W	STL	NW	36	S
DB10.DBX102.2	NC.Q_Ax_C_HW3	FC47	W	STL	NW	36	S
DB10.DBX102.3	NC.Q_Ax_D_HW3	FC47	W	STL	NW	36	S
DB10.DBX102.4	NC.Q_Ax_Q_HW3	FC47	W	STL	NW	36	S
DB10.DBX102.5	NC.Q_CHW_sel3	FC47	W	STL	NW	36	S
DB10.DBX102.6	NC.Q_HW_sel3	FC47	W	STL	NW	36	S
DB10.DBX102.7	NC.Q_Mach_Ax3	FC47	W	STL	NW	36	S
DB10.DBX104.7	NC.Q_NCKready	FB3	R	STL	NW	1	S
DB10.DBX104.7	NC.Q_NCKready	FC40	R	LAD	NW	1	/
DB10.DBX104.7	NC.Q_NCKready	FB7	R	STL	NW	1	S
DB10.DBX104.7	NC.Q_NCKready	FC79	R	LAD	NW	12	/
DB10.DBX104.7	NC.Q_NCKready	FC2	W	STL	NW	1	S
DB10.DBX104.7	NC.Q_NCKready	FB4	R	STL	NW	1	S
DB10.DBX104.7	NC.Q_NCKready	FC2	R	STL	NW	1	S
DB10.DBX104.7	NC.Q_NCKready	FB5	R	STL	NW	1	S
DB10.DBX104.7	NC.Q_NCKready	FC2	W	STL	NW	1	S
DB10.DBX104.7	NC.Q_NCKready	FC2	R	STL	NW	1	S
DB10.DBX104.7	NC.Q_NCKready	FC2	R	STL	NW	1	S
DB10.DBX104.7	NC.Q_NCKready	FC50	R	LAD	NW	2	/

Address	Symbol	Block	Type	Language	Details		
DB10.DBX104.7	NC.Q_NCKready	FC50	R	LAD	NW	1	/.
DB10.DBX104.7	NC.Q_NCKready	FC40	R	LAD	NW	2	/.
DB10.DBX104.7	NC.Q_NCKready	FB2	R	STL	NW	1	S
DB10.DBX105.0	NC	FC2	R	STL	NW	1	S
DB10.DBX105.0	NC	FB19	W	STL	NW	1	S
DB10.DBX108.2	NC.Q_MMCMPIready	FC79	R	LAD	NW	12	/.
DB10.DBX108.2	NC.Q_MMCMPIready	FC50	R	LAD	NW	1	/.
DB10.DBX108.2	NC.Q_MMCMPIready	FC41	R	LAD	NW	4	/.
DB10.DBX108.2	NC.Q_MMCMPIready	FC40	R	LAD	NW	2	/.
DB10.DBX108.2	NC.Q_MMCMPIready	FC50	R	LAD	NW	2	/.
DB10.DBX108.2	NC.Q_MMCMPIready	FC40	R	LAD	NW	1	/.
DB10.DBX110.0	NC.Q_SWCamMinus[0]	FC86	R	LAD	NW	1	/.
DB10.DBX110.0	NC.Q_SWCamMinus[0]	FC89	R	LAD	NW	4	/.
DB10.DBX110.0	NC.Q_SWCamMinus[0]	FC85	R	LAD	NW	4	/.
DB10.DBX110.0	NC.Q_SWCamMinus[0]	FC82	R	LAD	NW	1	/.
DB10.DBX110.0	NC.Q_SWCamMinus[0]	FC60	R	LAD	NW	17	/.
DB10.DBX110.0	NC.Q_SWCamMinus[0]	FC60	R	LAD	NW	28	/.
DB10.DBX110.1	NC.Q_SWCamMinus[1]	FC85	R	LAD	NW	4	/.
DB10.DBX110.1	NC.Q_SWCamMinus[1]	FC89	R	LAD	NW	4	/.
DB10.DBX110.2	NC.Q_SWCamMinus[2]	FC70	R	LAD	NW	15	/.
DB10.DBX114.0	NC.Q_SWCamPlus[0]	FC86	R	LAD	NW	1	/.
DB10.DBX114.0	NC.Q_SWCamPlus[0]	FC60	R	LAD	NW	28	/.
DB10.DBX114.0	NC.Q_SWCamPlus[0]	FC85	R	LAD	NW	4	/.
DB10.DBX114.0	NC.Q_SWCamPlus[0]	FC60	R	LAD	NW	17	/.
DB10.DBX114.0	NC.Q_SWCamPlus[0]	FC89	R	LAD	NW	4	/.
DB10.DBX114.0	NC.Q_SWCamPlus[0]	FC82	R	LAD	NW	1	/.
DB10.DBX114.1	NC.Q_SWCamPlus[1]	FC85	R	LAD	NW	4	/.
DB10.DBX114.1	NC.Q_SWCamPlus[1]	FC89	R	LAD	NW	4	/.
DB10.DBX114.2	NC.Q_SWCamPlus[2]	FC70	R	LAD	NW	15	/.
DB10.DBX123.6	NC.I_Set_Inp15	FC60	W	LAD	NW	35	/
DB10.DBX123.7	NC.I_Set_Inp16	FC60	W	LAD	NW	36	/
DB10.DBX124.2	NC.I_Disable_Inp19	FC31	W	STL	NW	1	S
DB10.DBX124.3	NC.I_Disable_Inp20	FC31	W	STL	NW	1	S
DB10.DBX124.4	NC.I_Disable_Inp21	FC31	W	STL	NW	1	S
DB10.DBX125.2	NC.I_Set_Inp19	FC31	W	STL	NW	1	S
DB10.DBX125.2	NC.I_Set_Inp19	FC31	W	STL	NW	1	S
DB10.DBX125.2	NC.I_Set_Inp19	FC31	W	STL	NW	1	S
DB10.DBX125.2	NC.I_Set_Inp19	FC31	W	STL	NW	1	S
DB10.DBX125.2	NC.I_Set_Inp19	FC31	W	STL	NW	1	S
DB10.DBX125.3	NC.I_Set_Inp20	FC31	W	STL	NW	1	S
DB10.DBX125.3	NC.I_Set_Inp20	FC31	W	STL	NW	1	S
DB10.DBX125.3	NC.I_Set_Inp20	FC31	W	STL	NW	1	S
DB10.DBX125.4	NC.I_Set_Inp21	FC31	W	STL	NW	1	S
DB10.DBX125.4	NC.I_Set_Inp21	FC31	W	STL	NW	1	S
DB10.DBX125.4	NC.I_Set_Inp21	FC31	W	STL	NW	1	S
DB10.DBX125.6	NC.I_Set_Inp23	FC81	W	LAD	NW	11	/
DB10.DBX125.6	NC.I_Set_Inp23	FC81	R	LAD	NW	14	/.
DB10.DBX125.7	NC.I_Set_Inp24	FC81	R	LAD	NW	14	/.
DB10.DBX125.7	NC.I_Set_Inp24	FC81	W	LAD	NW	12	/
DB10.DBX127.0	NC.I_Set_Inp25	FC49	W	LAD	NW	1	/
DB10.DBX127.1	NC.I_Set_Inp26	FC49	W	LAD	NW	2	/
DB10.DBX127.2	NC.I_Set_Inp27	FC49	W	LAD	NW	3	/
DB10.DBX127.3	NC.I_Set_Inp28	FC49	W	LAD	NW	4	/
DB10.DBX127.4	NC.I_Set_Inp29	FC49	W	LAD	NW	5	/
DB10.DBX127.5	NC.I_Set_Inp30	FC45	R	LAD	NW	8	/.
DB10.DBX127.5	NC.I_Set_Inp30	FC47	W	LAD	NW	37	/
DB10.DBX127.5	NC.I_Set_Inp30	FC47	R	LAD	NW	37	/.
DB10.DBX127.6	NC.I_Set_Inp31	FC81	W	LAD	NW	15	/
DB10.DBX127.7	NC.I_Set_Inp32	FC81	W	LAD	NW	16	/
DB10.DBX129.0	NC.I_Set_Inp33	FC53	W	LAD	NW	8	/
DB10.DBX129.1	NC.I_Set_Inp34	FC80	W	LAD	NW	9	/
DB10.DBX129.2	NC.I_Set_Inp35	FC70	W	LAD	NW	9	/
DB10.DBX129.3	NC.I_Set_Inp36	FC60	W	LAD	NW	32	/
DB10.DBX129.4	NC.I_Set_Inp37	FC80	W	LAD	NW	5	/
DB10.DBX129.5	NC.I_Set_Inp38	FC47	W	LAD	NW	25	/
DB10.DBX129.6	NC.I_Set_Inp39	FC81	W	LAD	NW	6	/
DB10.DBX129.7	NC.I_Set_Inp40	FC81	W	LAD	NW	17	/

[illegible]

Address	Symbol	Block	Type	Language	Details		
DB20.DBX0.6	OPTIONS.Option_06	FC81	R	LAD	NW	11	/.
DB20.DBX0.7	OPTIONS.Option_07	FC40	R	LAD	NW	2	/.
DB20.DBX0.7	OPTIONS.Option_07	FC40	R	LAD	NW	1	/.
DB20.DBX1.0	OPTIONS.Option_10	FC79	R	LAD	NW	13	/.
DB20.DBX1.1	OPTIONS.Option_11	FC71	R	LAD	NW	17	/.
DB20.DBX1.2	OPTIONS.Option_12	FC79	R	LAD	NW	13	/.
DB20.DBX1.3	OPTIONS.Option_13	FC98	R	LAD	NW	1	/.
DB20.DBX1.4	OPTIONS.Option_14	FC98	R	LAD	NW	9	/.
DB20.DBX1.5	OPTIONS.Option_15	FC97	R	LAD	NW	1	/.
DB20.DBX1.6	OPTIONS.Option_16	FC97	R	LAD	NW	3	/.
DB20.DBX1.7	OPTIONS.Option_17	FC97	R	LAD	NW	5	/.
DB20.DBX2.0	OPTIONS.Option_20	FC60	R	LAD	NW	7	/.
DB20.DBX2.1	OPTIONS.Option_21	FC60	R	LAD	NW	7	/.
DB20.DBX2.2	OPTIONS.Option_22	FC71	R	LAD	NW	10	/.
DB20.DBX2.2	OPTIONS.Option_22	FC71	R	LAD	NW	5	/.
DB20.DBX2.3	OPTIONS.Option_23	FC71	R	LAD	NW	10	/.
DB20.DBX2.3	OPTIONS.Option_23	FC71	R	LAD	NW	5	/.
DB20.DBX2.4	OPTIONS.Option_24	FC60	R	LAD	NW	7	/.
DB20.DBX2.5	OPTIONS.Option_25	FC70	R	LAD	NW	19	/.
DB20.DBX2.7	OPTIONS.Option_27	FC75	R	LAD	NW	3	/.
DB20.DBX2.7	OPTIONS.Option_27	FC75	R	LAD	NW	7	/.
DB20.DBX3.0	OPTIONS.Option_30	FC45	R	LAD	NW	10	/.
DB20.DBX3.0	OPTIONS.Option_30	FC45	R	LAD	NW	17	/.
DB20.DBX3.1	OPTIONS.Option_31	FC71	R	LAD	NW	14	/.
DB20.DBX3.2	OPTIONS.Option_32	FC42	R	LAD	NW	6	/.
DB20.DBX3.3	OPTIONS.Option_33	FC60	R	LAD	NW	15	/.
DB20.DBX3.4	OPTIONS.Option_34	FC52	R	LAD	NW	13	/.
DB20.DBX3.4	OPTIONS.Option_34	FC54	R	LAD	NW	12	/.
DB20.DBX3.4	OPTIONS.Option_34	FC53	R	LAD	NW	14	/.
DB20.DBX3.4	OPTIONS.Option_34	FC56	R	LAD	NW	13	/.
DB20.DBX3.4	OPTIONS.Option_34	FC53	R	LAD	NW	15	/.
DB20.DBX3.4	OPTIONS.Option_34	FC52	R	LAD	NW	14	/.
DB20.DBX3.4	OPTIONS.Option_34	FC51	R	LAD	NW	14	/.
DB20.DBX3.4	OPTIONS.Option_34	FC54	R	LAD	NW	13	/.
DB20.DBX3.4	OPTIONS.Option_34	FC51	R	LAD	NW	13	/.
DB20.DBX3.4	OPTIONS.Option_34	FC56	R	LAD	NW	12	/.
DB20.DBX3.5	OPTIONS.Option_35	FC52	R	LAD	NW	16	/.
DB20.DBX3.5	OPTIONS.Option_35	FC54	R	LAD	NW	15	/.
DB20.DBX3.5	OPTIONS.Option_35	FC51	R	LAD	NW	16	/.
DB20.DBX3.5	OPTIONS.Option_35	FC53	R	LAD	NW	17	/.
DB20.DBX3.5	OPTIONS.Option_35	FC56	R	LAD	NW	15	/.
DB20.DBX3.6	OPTIONS.Option_36	FC72	R	LAD	NW	4	/.
DB20.DBX3.7	OPTIONS.Option_37	FC72	R	LAD	NW	6	/.
DB20.DBX3.7	OPTIONS.Option_37	FC72	R	LAD	NW	7	/.
DB20.DBX4.0	OPTIONS.Option_40	FC42	R	LAD	NW	1	/.
DB20.DBX4.1	OPTIONS.Option_41	FC42	R	LAD	NW	15	/.
DB20.DBX4.2	OPTIONS.Option_42	FC48	R	LAD	NW	1	/.
DB20.DBX4.3	OPTIONS.Option_43	FC98	R	LAD	NW	3	/.
DB20.DBX4.3	OPTIONS.Option_43	FC98	R	LAD	NW	1	/.
DB20.DBX4.3	OPTIONS.Option_43	FC98	R	LAD	NW	1	/.
DB20.DBX4.4	OPTIONS.Option_44	FC98	R	LAD	NW	11	/.
DB20.DBX4.4	OPTIONS.Option_44	FC98	R	LAD	NW	9	/.
DB20.DBX4.4	OPTIONS.Option_44	FC98	R	LAD	NW	9	/.
DB20.DBX4.5	OPTIONS.Option_45	FC46	R	LAD	NW	11	/.
DB20.DBX4.5	OPTIONS.Option_45	FC46	R	LAD	NW	17	/.
DB20.DBX4.5	OPTIONS.Option_45	FC46	R	LAD	NW	14	/.
DB20.DBX4.5	OPTIONS.Option_45	FC42	R	LAD	NW	23	/.
DB20.DBX4.5	OPTIONS.Option_45	FC46	R	LAD	NW	2	/.
DB20.DBX4.5	OPTIONS.Option_45	FC42	R	LAD	NW	21	/.
DB20.DBX4.5	OPTIONS.Option_45	FC42	R	LAD	NW	19	/.
DB20.DBX4.5	OPTIONS.Option_45	FC46	R	LAD	NW	8	/.
DB20.DBX4.6	OPTIONS.Option_46	FC47	R	LAD	NW	34	/.
DB20.DBX4.6	OPTIONS.Option_46	FC47	R	LAD	NW	35	/.
DB20.DBX4.6	OPTIONS.Option_46	FC47	R	LAD	NW	33	/.
DB20.DBX4.6	OPTIONS.Option_46	FC47	R	LAD	NW	32	/.
DB20.DBX4.7	OPTIONS.Option_47	FC77	R	LAD	NW	14	/.
DB20.DBX4.7	OPTIONS.Option_47	FC77	R	LAD	NW	14	/.

Address	Symbol	Block	Type	Language	Details		
DB20.DBX5.0	OPTIONS.Option_50	FC72	R	LAD	NW	2	/.
DB20.DBX5.0	OPTIONS.Option_50	FC72	R	LAD	NW	4	/.
DB20.DBX5.0	OPTIONS.Option_50	FC79	R	LAD	NW	1	/.
DB20.DBX5.0	OPTIONS.Option_50	FC72	R	LAD	NW	3	/.
DB20.DBX5.0	OPTIONS.Option_50	FC76	R	LAD	NW	3	/.
DB20.DBX5.1	OPTIONS.Option_51	FC71	R	LAD	NW	17	/.
DB20.DBX5.1	OPTIONS.Option_51	FC79	R	LAD	NW	1	/.
DB20.DBX5.1	OPTIONS.Option_51	FC71	R	LAD	NW	16	/.
DB20.DBX5.1	OPTIONS.Option_51	FC76	R	LAD	NW	2	/.
DB20.DBX5.2	OPTIONS.Option_52	FC71	R	LAD	NW	6	/.
DB20.DBX5.2	OPTIONS.Option_52	FC71	R	LAD	NW	11	/.
DB20.DBX5.2	OPTIONS.Option_52	FC71	R	LAD	NW	13	/.
DB20.DBX5.3	OPTIONS.Option_53	FC44	R	LAD	NW	11	/.
DB20.DBX5.3	OPTIONS.Option_53	FC44	R	LAD	NW	10	/.
DB20.DBX5.3	OPTIONS.Option_53	FC44	R	LAD	NW	11	/.
DB20.DBX5.4	OPTIONS.Option_54	FC98	R	LAD	NW	2	/.
DB20.DBX5.4	OPTIONS.Option_54	FC98	R	LAD	NW	1	/.
DB20.DBX5.4	OPTIONS.Option_54	FC98	R	LAD	NW	2	/.
DB20.DBX5.4	OPTIONS.Option_54	FC98	R	LAD	NW	1	/.
DB20.DBX5.5	OPTIONS.Option_55	FC98	R	LAD	NW	3	/.
DB20.DBX5.5	OPTIONS.Option_55	FC98	R	LAD	NW	3	/.
DB20.DBX5.6	OPTIONS.Option_56	FC98	R	LAD	NW	9	/.
DB20.DBX5.6	OPTIONS.Option_56	FC98	R	LAD	NW	10	/.
DB20.DBX5.6	OPTIONS.Option_56	FC98	R	LAD	NW	10	/.
DB20.DBX5.6	OPTIONS.Option_56	FC98	R	LAD	NW	9	/.
DB20.DBX5.7	OPTIONS.Option_57	FC98	R	LAD	NW	11	/.
DB20.DBX5.7	OPTIONS.Option_57	FC98	R	LAD	NW	11	/.
DB20.DBX6.0	OPTIONS.Option_60	FC97	R	LAD	NW	2	/.
DB20.DBX6.1	OPTIONS.Option_61	FC97	R	LAD	NW	4	/.
DB20.DBX6.2	OPTIONS.Option_62	FC97	R	LAD	NW	6	/.
DB20.DBX6.3	OPTIONS.Option_63	FC75	R	LAD	NW	2	/.
DB20.DBX6.4	OPTIONS.Option_64	FC98	R	LAD	NW	2	/.
DB20.DBX6.4	OPTIONS.Option_64	FC98	R	LAD	NW	1	/.
DB20.DBX6.4	OPTIONS.Option_64	FC98	R	LAD	NW	1	/.
DB20.DBX6.4	OPTIONS.Option_64	FC98	R	LAD	NW	1	/.
DB20.DBX6.4	OPTIONS.Option_64	FC98	R	LAD	NW	2	/.
DB20.DBX6.4	OPTIONS.Option_64	FC98	R	LAD	NW	2	/.
DB20.DBX6.4	OPTIONS.Option_64	FC98	R	LAD	NW	2	/.
DB20.DBX6.4	OPTIONS.Option_64	FC98	R	LAD	NW	1	/.
DB20.DBX6.5	OPTIONS.Option_65	FC98	R	LAD	NW	3	/.
DB20.DBX6.5	OPTIONS.Option_65	FC98	R	LAD	NW	3	/.
DB20.DBX6.5	OPTIONS.Option_65	FC98	R	LAD	NW	3	/.
DB20.DBX6.5	OPTIONS.Option_65	FC98	R	LAD	NW	3	/.
DB20.DBX6.6	OPTIONS.Option_66	FC98	R	LAD	NW	9	/.
DB20.DBX6.6	OPTIONS.Option_66	FC98	R	LAD	NW	9	/.
DB20.DBX6.6	OPTIONS.Option_66	FC98	R	LAD	NW	10	/.
DB20.DBX6.6	OPTIONS.Option_66	FC98	R	LAD	NW	10	/.
DB20.DBX6.6	OPTIONS.Option_66	FC98	R	LAD	NW	10	/.
DB20.DBX6.6	OPTIONS.Option_66	FC98	R	LAD	NW	9	/.
DB20.DBX6.6	OPTIONS.Option_66	FC98	R	LAD	NW	10	/.
DB20.DBX6.6	OPTIONS.Option_66	FC98	R	LAD	NW	9	/.
DB20.DBX6.7	OPTIONS.Option_67	FC98	R	LAD	NW	11	/.
DB20.DBX6.7	OPTIONS.Option_67	FC98	R	LAD	NW	11	/.
DB20.DBX6.7	OPTIONS.Option_67	FC98	R	LAD	NW	11	/.
DB20.DBX6.7	OPTIONS.Option_67	FC98	R	LAD	NW	11	/.
DB20.DBX7.0	OPTIONS.Option_70	FC98	R	LAD	NW	4	/.
DB20.DBX7.1	OPTIONS.Option_71	FC98	R	LAD	NW	12	/.
DB20.DBX7.2	OPTIONS.Option_72	FC56	R	LAD	NW	1	/.
DB20.DBX7.2	OPTIONS.Option_72	FC56	R	LAD	NW	2	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	7	/.
DB20.DBX7.3	OPTIONS.Option_73	FC54	R	LAD	NW	13	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	5	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	9	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	11	/.
DB20.DBX7.3	OPTIONS.Option_73	FC54	R	LAD	NW	13	/.
DB20.DBX7.3	OPTIONS.Option_73	FC54	R	LAD	NW	14	/.
DB20.DBX7.3	OPTIONS.Option_73	FC54	R	LAD	NW	14	/.

Address	Symbol	Block	Type	Language	Details		
DB20.DBX7.3	OPTIONS.Option_73	FC51	R	LAD	NW	13	/.
DB20.DBX7.3	OPTIONS.Option_73	FC42	R	LAD	NW	11	/.
DB20.DBX7.3	OPTIONS.Option_73	FC53	R	LAD	NW	14	/.
DB20.DBX7.3	OPTIONS.Option_73	OB1	R	STL	NW	15	S
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	17	/.
DB20.DBX7.3	OPTIONS.Option_73	FC56	R	LAD	NW	14	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	13	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	20	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	21	/.
DB20.DBX7.3	OPTIONS.Option_73	FC53	R	LAD	NW	16	/.
DB20.DBX7.3	OPTIONS.Option_73	FC52	R	LAD	NW	13	/.
DB20.DBX7.3	OPTIONS.Option_73	FC53	R	LAD	NW	16	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	21	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	17	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	22	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	22	/.
DB20.DBX7.3	OPTIONS.Option_73	FC51	R	LAD	NW	15	/.
DB20.DBX7.3	OPTIONS.Option_73	FC54	R	LAD	NW	12	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	16	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	18	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	16	/.
DB20.DBX7.3	OPTIONS.Option_73	FC53	R	LAD	NW	14	/.
DB20.DBX7.3	OPTIONS.Option_73	FC51	R	LAD	NW	15	/.
DB20.DBX7.3	OPTIONS.Option_73	FC54	R	LAD	NW	12	/.
DB20.DBX7.3	OPTIONS.Option_73	FC56	R	LAD	NW	14	/.
DB20.DBX7.3	OPTIONS.Option_73	FC52	R	LAD	NW	14	/.
DB20.DBX7.3	OPTIONS.Option_73	FC56	R	LAD	NW	13	/.
DB20.DBX7.3	OPTIONS.Option_73	FC56	R	LAD	NW	13	/.
DB20.DBX7.3	OPTIONS.Option_73	FC42	R	LAD	NW	13	/.
DB20.DBX7.3	OPTIONS.Option_73	FC53	R	LAD	NW	15	/.
DB20.DBX7.3	OPTIONS.Option_73	FC51	R	LAD	NW	13	/.
DB20.DBX7.3	OPTIONS.Option_73	FC53	R	LAD	NW	15	/.
DB20.DBX7.3	OPTIONS.Option_73	FC42	R	LAD	NW	12	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	18	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	14	/.
DB20.DBX7.3	OPTIONS.Option_73	FC42	R	LAD	NW	16	/.
DB20.DBX7.3	OPTIONS.Option_73	FC56	R	LAD	NW	12	/.
DB20.DBX7.3	OPTIONS.Option_73	FC51	R	LAD	NW	14	/.
DB20.DBX7.3	OPTIONS.Option_73	FC51	R	LAD	NW	14	/.
DB20.DBX7.3	OPTIONS.Option_73	FC52	R	LAD	NW	14	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	19	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	14	/.
DB20.DBX7.3	OPTIONS.Option_73	FC52	R	LAD	NW	13	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	15	/.
DB20.DBX7.3	OPTIONS.Option_73	FC52	R	LAD	NW	15	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	19	/.
DB20.DBX7.3	OPTIONS.Option_73	FC47	R	LAD	NW	20	/.
DB20.DBX7.3	OPTIONS.Option_73	FC56	R	LAD	NW	12	/.
DB20.DBX7.3	OPTIONS.Option_73	FC52	R	LAD	NW	15	/.
DB20.DBX7.4	OPTIONS.Option_74	FC44	R	LAD	NW	11	/.
DB20.DBX7.4	OPTIONS.Option_74	FC98	R	LAD	NW	2	/.
DB20.DBX7.5	OPTIONS.Option_75	FC98	R	LAD	NW	3	/.
DB20.DBX7.5	OPTIONS.Option_75	FC44	R	LAD	NW	11	/.
DB20.DBX7.6	OPTIONS.Option_76	FC98	R	LAD	NW	10	/.
DB20.DBX7.6	OPTIONS.Option_76	FC44	R	LAD	NW	11	/.
DB20.DBX7.7	OPTIONS.Option_77	FC44	R	LAD	NW	11	/.
DB20.DBX7.7	OPTIONS.Option_77	FC98	R	LAD	NW	11	/.
DB20.DBX8.0	OPTIONS.Option_80	FC51	R	LAD	NW	2	/.
DB20.DBX8.0	OPTIONS.Option_80	FC51	R	LAD	NW	1	/.
DB20.DBX8.1	OPTIONS.Option_81	FC52	R	LAD	NW	1	/.
DB20.DBX8.1	OPTIONS.Option_81	FC52	R	LAD	NW	2	/.
DB20.DBX8.2	OPTIONS.Option_82	FC53	R	LAD	NW	1	/.
DB20.DBX8.2	OPTIONS.Option_82	FC53	R	LAD	NW	2	/.
DB20.DBX8.3	OPTIONS.Option_83	FC54	R	LAD	NW	1	/.
DB20.DBX8.3	OPTIONS.Option_83	FC54	R	LAD	NW	2	/.
DB20.DBX8.4	OPTIONS.Option_84	FC60	R	LAD	NW	16	/.
DB20.DBX8.4	OPTIONS.Option_84	FC98	R	LAD	NW	12	/.

Address	Symbol	Block	Type	Language	Details		
DB20.DBX8.4	OPTIONS.Option_84	FC97	R	LAD	NW	6	/.
DB20.DBX8.4	OPTIONS.Option_84	FC44	R	LAD	NW	11	/.
DB20.DBX8.4	OPTIONS.Option_84	OB1	R	STL	NW	19	S
DB20.DBX8.4	OPTIONS.Option_84	FC42	R	LAD	NW	9	/.
DB20.DBX8.4	OPTIONS.Option_84	FC97	R	LAD	NW	4	/.
DB20.DBX8.4	OPTIONS.Option_84	FC75	R	LAD	NW	8	/.
DB20.DBX8.4	OPTIONS.Option_84	FC60	R	LAD	NW	13	/.
DB20.DBX8.4	OPTIONS.Option_84	FC60	R	LAD	NW	43	/.
DB20.DBX8.4	OPTIONS.Option_84	FC45	R	LAD	NW	17	/.
DB20.DBX8.4	OPTIONS.Option_84	FC97	R	LAD	NW	2	/.
DB20.DBX8.4	OPTIONS.Option_84	FC60	R	LAD	NW	11	/.
DB20.DBX8.4	OPTIONS.Option_84	FC40	R	LAD	NW	5	/.
DB20.DBX8.4	OPTIONS.Option_84	FC98	R	LAD	NW	4	/.
DB20.DBX8.4	OPTIONS.Option_84	FC60	R	LAD	NW	26	/.
DB20.DBX8.5	OPTIONS.Option_85	FC42	R	LAD	NW	12	/.
DB20.DBX8.5	OPTIONS.Option_85	FC42	R	LAD	NW	16	/.
DB20.DBX8.5	OPTIONS.Option_85	FC47	R	LAD	NW	20	/.
DB20.DBX8.5	OPTIONS.Option_85	FC47	R	LAD	NW	20	/.
DB20.DBX8.5	OPTIONS.Option_85	FC47	R	LAD	NW	21	/.
DB20.DBX8.5	OPTIONS.Option_85	FC42	R	LAD	NW	11	/.
DB20.DBX8.5	OPTIONS.Option_85	FC47	R	LAD	NW	22	/.
DB20.DBX8.5	OPTIONS.Option_85	OB1	R	STL	NW	15	S
DB20.DBX8.5	OPTIONS.Option_85	FC42	R	LAD	NW	13	/.
DB20.DBX8.6	OPTIONS.Option_86	FC65	R	LAD	NW	3	/.
DB20.DBX8.7	OPTIONS.Option_87	OB1	R	STL	NW	17	S
DB20.DBX8.7	OPTIONS.Option_87	OB1	R	STL	NW	7	S
DB20.DBX8.7	OPTIONS.Option_87	FC53	R	LAD	NW	22	/.
DB20.DBX8.7	OPTIONS.Option_87	FC44	R	LAD	NW	2	/.
DB20.DBX8.7	OPTIONS.Option_87	FC45	R	LAD	NW	13	/.
DB20.DBX8.7	OPTIONS.Option_87	FC44	R	LAD	NW	1	/.
DB20.DBX8.7	OPTIONS.Option_87	FC80	R	LAD	NW	18	/.
DB20.DBX8.7	OPTIONS.Option_87	FC53	R	LAD	NW	22	/.
DB20.DBX8.7	OPTIONS.Option_87	FC85	R	LAD	NW	4	/.
DB20.DBX8.7	OPTIONS.Option_87	FC80	R	LAD	NW	19	/.
DB20.DBX8.7	OPTIONS.Option_87	FC53	R	LAD	NW	22	/.
DB20.DBX8.7	OPTIONS.Option_87	FC60	R	LAD	NW	17	/.
DB20.DBX8.7	OPTIONS.Option_87	OB1	R	STL	NW	2	S
DB20.DBX8.7	OPTIONS.Option_87	FC80	R	LAD	NW	21	/.
DB20.DBX8.7	OPTIONS.Option_87	FC81	R	LAD	NW	12	/.
DB20.DBX8.7	OPTIONS.Option_87	FC53	R	LAD	NW	10	/.
DB20.DBX8.7	OPTIONS.Option_87	FC80	R	LAD	NW	20	/.
DB20.DBX8.7	OPTIONS.Option_87	FC53	R	LAD	NW	22	/.
DB20.DBX8.7	OPTIONS.Option_87	FC60	R	LAD	NW	28	/.
DB20.DBX8.7	OPTIONS.Option_87	FC60	R	LAD	NW	28	/.
DB20.DBX9.0	OPTIONS.Option_90	FC41	R	LAD	NW	3	/.
DB20.DBX9.1	OPTIONS.Option_91	FC41	R	LAD	NW	1	/.
DB20.DBX9.2	OPTIONS.Option_92	FC48	R	LAD	NW	1	/.
DB20.DBX9.2	OPTIONS.Option_92	FC79	R	LAD	NW	6	/.
DB20.DBX9.3	OPTIONS.Option_93	FC96	R	LAD	NW	1	/.
DB20.DBX9.3	OPTIONS.Option_93	FC42	R	LAD	NW	9	/.
DB20.DBX9.3	OPTIONS.Option_93	FC96	R	LAD	NW	4	/.
DB20.DBX9.3	OPTIONS.Option_93	OB1	R	STL	NW	20	S
DB20.DBX9.3	OPTIONS.Option_93	FC96	R	LAD	NW	2	/.
DB20.DBX9.3	OPTIONS.Option_93	FC96	R	LAD	NW	3	/.
DB20.DBX9.4	OPTIONS.Option_94	FC96	R	LAD	NW	2	/.
DB20.DBX9.4	OPTIONS.Option_94	OB1	R	STL	NW	20	S
DB20.DBX9.4	OPTIONS.Option_94	FC44	R	LAD	NW	11	/.
DB20.DBX9.4	OPTIONS.Option_94	FC96	R	LAD	NW	3	/.
DB20.DBX9.4	OPTIONS.Option_94	FC96	R	LAD	NW	1	/.
DB20.DBX9.4	OPTIONS.Option_94	FC96	R	LAD	NW	4	/.
DB20.DBX9.4	OPTIONS.Option_94	FC42	R	LAD	NW	9	/.
DB20.DBX9.5	OPTIONS.Option_95	FC52	R	LAD	NW	16	/.
DB20.DBX9.5	OPTIONS.Option_95	FC53	R	LAD	NW	17	/.
DB20.DBX9.5	OPTIONS.Option_95	FC54	R	LAD	NW	15	/.
DB20.DBX9.5	OPTIONS.Option_95	FC56	R	LAD	NW	15	/.
DB20.DBX9.5	OPTIONS.Option_95	FC51	R	LAD	NW	16	/.
DB20.DBX9.6	OPTIONS.Option_96	FC96	R	LAD	NW	4	/.

Address	Symbol	Block	Type	Language	Details		
DB20.DBX9.6	OPTIONS.Option_96	FC96	R	LAD	NW	1	/
DB20.DBX9.6	OPTIONS.Option_96	FC96	R	LAD	NW	3	/
DB20.DBX9.6	OPTIONS.Option_96	FC96	R	LAD	NW	2	/
DB20.DBX9.7	OPTIONS.Option_97	FC80	R	LAD	NW	13	/
DB20.DBX10.0	OPTIONS.Option_100	FC60	R	LAD	NW	42	/
DB20.DBX10.0	OPTIONS.Option_100	FC60	R	LAD	NW	42	/
DB20.DBX10.0	OPTIONS.Option_100	FC60	R	LAD	NW	42	/
DB20.DBX10.1	OPTIONS.Option_101	FC60	R	LAD	NW	41	/
DB20.DBX10.1	OPTIONS.Option_101	FC60	R	LAD	NW	34	/
DB20.DBX10.1	OPTIONS.Option_101	FC60	R	LAD	NW	45	/
DB20.DBX10.1	OPTIONS.Option_101	FC60	R	LAD	NW	33	/
DB20.DBX10.1	OPTIONS.Option_101	FC60	R	LAD	NW	44	/
DB20.DBX10.1	OPTIONS.Option_101	FC60	R	LAD	NW	42	/
DB20.DBX10.1	OPTIONS.Option_101	FC60	R	LAD	NW	42	/
DB20.DBX10.1	OPTIONS.Option_101	FC60	R	LAD	NW	42	/
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	21	/
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	19	/
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	40	/
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	16	/
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	16	/
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	34	/
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	17	/
DB20.DBX10.2	OPTIONS.Option_102	OB1	R	STL	NW	15	S
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	42	/
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	42	/
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	42	/
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	35	/
DB20.DBX10.2	OPTIONS.Option_102	FC60	R	LAD	NW	36	/
DB20.DBX10.3	OPTIONS.Option_103	FC60	R	LAD	NW	42	/
DB20.DBX10.4	OPTIONS.Option_104	FC60	R	LAD	NW	42	/
DB20.DBX10.5	OPTIONS.Option_105	FC60	R	LAD	NW	42	/
DB20.DBX10.6	OPTIONS.Option_106	FC60	R	LAD	NW	42	/
DB20.DBX10.7	OPTIONS.Option_107	FC60	R	LAD	NW	42	/
DB20.DBX11.0	OPTIONS.Option_110	FC48	R	LAD	NW	1	/
DB20.DBX11.0	OPTIONS.Option_110	FC51	R	LAD	NW	12	/
DB20.DBX11.1	OPTIONS.Option_111	FC48	R	LAD	NW	1	/
DB20.DBX11.1	OPTIONS.Option_111	FC52	R	LAD	NW	12	/
DB20.DBX11.2	OPTIONS.Option_112	FC48	R	LAD	NW	1	/
DB20.DBX11.2	OPTIONS.Option_112	FC53	R	LAD	NW	13	/
DB20.DBX11.3	OPTIONS.Option_113	FC54	R	LAD	NW	11	/
DB20.DBX11.4	OPTIONS.Option_114	FC56	R	LAD	NW	11	/
DB20.DBX11.5	OPTIONS.Option_115	FC51	R	LAD	NW	10	/
DB20.DBX11.6	OPTIONS.Option_116	FC52	R	LAD	NW	10	/
DB20.DBX11.7	OPTIONS.Option_117	FC53	R	LAD	NW	11	/
DB20.DBX12.0	OPTIONS.Option_120	FC83	R	LAD	NW	1	/
DB20.DBX12.0	OPTIONS.Option_120	FC87	R	LAD	NW	3	/
DB20.DBX12.0	OPTIONS.Option_120	FC60	R	LAD	NW	37	/
DB20.DBX12.0	OPTIONS.Option_120	FC53	R	LAD	NW	22	/
DB20.DBX12.0	OPTIONS.Option_120	FC53	R	LAD	NW	22	/
DB20.DBX12.0	OPTIONS.Option_120	FC80	R	LAD	NW	20	/
DB20.DBX12.0	OPTIONS.Option_120	FC80	R	LAD	NW	19	/
DB20.DBX12.0	OPTIONS.Option_120	FC53	R	LAD	NW	10	/
DB20.DBX12.0	OPTIONS.Option_120	FC83	R	LAD	NW	1	/
DB20.DBX12.0	OPTIONS.Option_120	FC87	R	LAD	NW	1	/
DB20.DBX12.0	OPTIONS.Option_120	FC80	R	LAD	NW	15	/
DB20.DBX12.0	OPTIONS.Option_120	FC70	R	LAD	NW	2	/
DB20.DBX12.0	OPTIONS.Option_120	FC85	R	LAD	NW	4	/
DB20.DBX12.0	OPTIONS.Option_120	FC79	R	LAD	NW	7	/
DB20.DBX12.0	OPTIONS.Option_120	FC83	R	LAD	NW	3	/
DB20.DBX12.0	OPTIONS.Option_120	FC80	R	LAD	NW	16	/
DB20.DBX12.0	OPTIONS.Option_120	FC53	R	LAD	NW	22	/
DB20.DBX12.0	OPTIONS.Option_120	FC89	R	LAD	NW	4	/
DB21.DBX0.4	CHANNEL 1.Q_SBL	FC46	W	LAD	NW	3	/
DB21.DBX0.5	CHANNEL 1.Q_M01	FC46	W	LAD	NW	12	/
DB21.DBX0.6	CHANNEL 1.Q_DRY	FC46	W	LAD	NW	6	/
DB21.DBX1.7	CHANNEL 1.Q_ProgTest	FC46	W	LAD	NW	15	/
DB21.DBX2.0	CHANNEL 1.Q_SKP0	FC46	W	LAD	NW	9	/

Address	Symbol	Block	Type	Language	Details		
DB21.DBX4.0	CHANNEL 1	FC42	W	STL	NW	17	S
DB21.DBX4.1	CHANNEL 1	FC42	W	STL	NW	17	S
DB21.DBX4.2	CHANNEL 1	FC42	W	STL	NW	17	S
DB21.DBX4.3	CHANNEL 1	FC42	W	STL	NW	17	S
DB21.DBX4.4	CHANNEL 1	FC42	W	STL	NW	17	S
DB21.DBX5.0	CHANNEL 1.Q_RT_OR_A	FC42	W	LAD	NW	24	/
DB21.DBX5.1	CHANNEL 1.Q_RT_OR_B	FC42	W	LAD	NW	25	/
DB21.DBX5.2	CHANNEL 1.Q_RT_OR_C	FC42	W	LAD	NW	26	/
DB21.DBX5.3	CHANNEL 1.Q_RT_OR_D	FC42	W	LAD	NW	27	/
DB21.DBX5.4	CHANNEL 1.Q_RT_OR_E	FC42	W	LAD	NW	28	/
DB21.DBX6.0	CHANNEL 1.Q_FDdisable	FC42	W	LAD	NW	15	/
DB21.DBX6.1	CHANNEL 1.Q_RIdisable	FC44	W	LAD	NW	11	/
DB21.DBX6.6	CHANNEL 1.Q_RT_ORA	FC42	W	LAD	NW	2	/
DB21.DBX6.7	CHANNEL 1.Q_FD_ORA	FC52	R	LAD	NW	3	/.
DB21.DBX6.7	CHANNEL 1.Q_FD_ORA	FC53	R	LAD	NW	3	/.
DB21.DBX6.7	CHANNEL 1.Q_FD_ORA	FC56	R	LAD	NW	3	/.
DB21.DBX6.7	CHANNEL 1.Q_FD_ORA	FC42	W	LAD	NW	1	/
DB21.DBX6.7	CHANNEL 1.Q_FD_ORA	FC51	R	LAD	NW	3	/.
DB21.DBX6.7	CHANNEL 1.Q_FD_ORA	FC54	R	LAD	NW	3	/.
DB21.DBX7.0	CHANNEL 1.Q_NCStartDisabl	FC45	W	LAD	NW	17	/
DB21.DBX7.0	CHANNEL 1.Q_NCStartDisabl	FC87	R	LAD	NW	1	/.
DB21.DBX7.0	CHANNEL 1.Q_NCStartDisabl	FC83	R	LAD	NW	1	/.
DB21.DBX24.5	CHANNEL 1	FC31	W	STL	NW	1	S
DB21.DBX24.5	CHANNEL 1	FC31	W	STL	NW	1	S
DB21.DBX24.6	CHANNEL 1	FC31	W	STL	NW	1	S
DB21.DBX24.6	CHANNEL 1	FC31	W	STL	NW	1	S
DB21.DBX25.7	CHANNEL 1	FC31	W	STL	NW	1	S
DB21.DBX25.7	CHANNEL 1	FC31	W	STL	NW	1	S
DB21.DBX25.7	CHANNEL 1	FC31	W	STL	NW	1	S
DB21.DBX26.0	CHANNEL 1	FC31	W	STL	NW	1	S
DB21.DBX26.0	CHANNEL 1	FC31	W	STL	NW	1	S
DB21.DBX33.4	CHANNEL 1.I_BlockSearch	FC30	R	STL	NW	1	S
DB21.DBX35.4	CHANNEL 1.I_ProgrAborted	FC30	R	STL	NW	1	S
DB21.DBX35.4	CHANNEL 1.I_ProgrAborted	FC30	R	STL	NW	1	S
DB21.DBX35.7	CHANNEL 1.I_ChanReset	FC30	R	STL	NW	1	S
DB21.DBX35.7	CHANNEL 1.I_ChanReset	FC30	R	STL	NW	1	S
DB21.DBX58.0	CHANNEL 1.M1Change	FC43	R	LAD	NW	1	/.
DB21.DBX58.0	CHANNEL 1.M1Change	FC43	R	LAD	NW	3	/.
DB21.DBX58.0	CHANNEL 1.M1Change	FC43	R	LAD	NW	4	/.
DB21.DBX58.0	CHANNEL 1.M1Change	FC43	R	LAD	NW	5	/.
DB21.DBX58.0	CHANNEL 1.M1Change	FC43	R	LAD	NW	2	/.
DB21.DBX58.0	CHANNEL 1.M1Change	FC43	R	LAD	NW	7	/.
DB21.DBX60.0	CHANNEL 1.S1Change	FC60	R	LAD	NW	6	/.
DB21.DBX60.0	CHANNEL 1.S1Change	FC44	R	LAD	NW	11	/.
DB21.DBX64.0	CHANNEL 1.H1Change	FC43	R	LAD	NW	6	/.
DB21.DBX194.0	CHANNEL 1.MDyn[0]	FC71	R	LAD	NW	5	/.
DB21.DBX194.0	CHANNEL 1.MDyn[0]	FC60	R	LAD	NW	7	/.
DB21.DBX194.0	CHANNEL 1.MDyn[0]	FC71	R	LAD	NW	10	/.
DB21.DBX194.1	CHANNEL 1.MDyn[1]	FC60	R	LAD	NW	7	/.
DB21.DBX194.1	CHANNEL 1.MDyn[1]	FC71	R	LAD	NW	5	/.
DB21.DBX194.1	CHANNEL 1.MDyn[1]	FC71	R	LAD	NW	10	/.
DB21.DBX194.1	CHANNEL 1.MDyn[1]	FC71	R	LAD	NW	15	/.
DB21.DBX194.2	CHANNEL 1.MDyn[2]	FC71	R	LAD	NW	10	/.
DB21.DBX194.2	CHANNEL 1.MDyn[2]	FC80	R	LAD	NW	10	/.
DB21.DBX194.2	CHANNEL 1.MDyn[2]	FC71	R	LAD	NW	15	/.
DB21.DBX194.2	CHANNEL 1.MDyn[2]	FC71	R	LAD	NW	5	/.
DB21.DBX194.2	CHANNEL 1.MDyn[2]	FC60	R	LAD	NW	7	/.
DB21.DBX194.2	CHANNEL 1.MDyn[2]	FC79	R	LAD	NW	13	/.
DB21.DBX194.2	CHANNEL 1.MDyn[2]	FC77	R	LAD	NW	14	/.
DB21.DBX194.5	CHANNEL 1.MDyn[5]	FC60	R	LAD	NW	31	/.
DB21.DBX194.6	CHANNEL 1.MDyn[6]	FC80	R	LAD	NW	9	/.
DB21.DBX194.6	CHANNEL 1.MDyn[6]	FC44	R	LAD	NW	11	/.
DB21.DBX194.6	CHANNEL 1.MDyn[6]	FC91	R	LAD	NW	4	/.
DB21.DBX195.0	CHANNEL 1.MDyn[8]	FC71	R	LAD	NW	6	/.
DB21.DBX195.1	CHANNEL 1.MDyn[9]	FC71	R	LAD	NW	5	/.
DB21.DBX195.2	CHANNEL 1.MDyn[10]	FC55	R	LAD	NW	2	/.
DB21.DBX195.3	CHANNEL 1.MDyn[11]	FC55	R	LAD	NW	2	/.

Address	Symbol	Block	Type	Language	Details		
DB21.DBX195.5	CHANNEL 1.MDyn[13]	FC49	R	LAD	NW	1	/.
DB21.DBX195.6	CHANNEL 1.MDyn[14]	FC49	R	LAD	NW	2	/.
DB21.DBX195.7	CHANNEL 1.MDyn[15]	FC49	R	LAD	NW	3	/.
DB21.DBX196.0	CHANNEL 1.MDyn[16]	FC70	R	LAD	NW	10	/.
DB21.DBX196.2	CHANNEL 1.MDyn[18]	FC47	R	LAD	NW	37	/.
DB21.DBX196.2	CHANNEL 1.MDyn[18]	FC73	R	LAD	NW	2	/.
DB21.DBX196.2	CHANNEL 1.MDyn[18]	FC47	R	LAD	NW	30	/.
DB21.DBX196.3	CHANNEL 1.MDyn[19]	FC49	R	LAD	NW	4	/.
DB21.DBX196.4	CHANNEL 1.MDyn[20]	FC49	R	LAD	NW	5	/.
DB21.DBX196.5	CHANNEL 1.MDyn[21]	FC57	R	LAD	NW	2	/.
DB21.DBX196.6	CHANNEL 1.MDyn[22]	FC57	R	LAD	NW	2	/.
DB21.DBX197.0	CHANNEL 1.MDyn[24]	FC73	R	LAD	NW	2	/.
DB21.DBX197.1	CHANNEL 1.MDyn[25]	FC73	R	LAD	NW	1	/.
DB21.DBX197.2	CHANNEL 1.MDyn[26]	FC78	R	LAD	NW	1	/.
DB21.DBX197.3	CHANNEL 1.MDyn[27]	FC78	R	LAD	NW	1	/.
DB21.DBX197.6	CHANNEL 1.MDyn[30]	FC71	R	LAD	NW	5	/.
DB21.DBX197.6	CHANNEL 1.MDyn[30]	FC79	R	LAD	NW	13	/.
DB21.DBX197.6	CHANNEL 1.MDyn[30]	FC77	R	LAD	NW	14	/.
DB21.DBX197.6	CHANNEL 1.MDyn[30]	FC71	R	LAD	NW	15	/.
DB21.DBX197.6	CHANNEL 1.MDyn[30]	FC60	R	LAD	NW	7	/.
DB21.DBX197.6	CHANNEL 1.MDyn[30]	FC80	R	LAD	NW	10	/.
DB21.DBX197.6	CHANNEL 1.MDyn[30]	FC71	R	LAD	NW	10	/.
DB21.DBX197.7	CHANNEL 1.MDyn[31]	FC65	R	LAD	NW	3	/.
DB21.DBX198.0	CHANNEL 1.MDyn[32]	FC65	R	LAD	NW	3	/.
DB21.DBX200.0	CHANNEL 1.MDyn[48]	FC42	R	LAD	NW	7	/.
DB21.DBX200.1	CHANNEL 1.MDyn[49]	FC42	R	LAD	NW	7	/.
DB21.DBX200.3	CHANNEL 1.MDyn[51]	FC71	R	LAD	NW	16	/.
DB21.DBX200.4	CHANNEL 1.MDyn[52]	FC71	R	LAD	NW	15	/.
DB21.DBX200.5	CHANNEL 1.MDyn[53]	FC71	R	LAD	NW	11	/.
DB21.DBX200.5	CHANNEL 1.MDyn[53]	FC71	R	LAD	NW	6	/.
DB21.DBX200.6	CHANNEL 1.MDyn[54]	FC71	R	LAD	NW	10	/.
DB21.DBX201.7	CHANNEL 1.MDyn[63]	FC80	R	LAD	NW	11	/.
DB21.DBX202.0	CHANNEL 1.MDyn[64]	FC80	R	LAD	NW	5	/.
DB21.DBX202.1	CHANNEL 1.MDyn[65]	FC80	R	LAD	NW	3	/.
DB21.DBX202.1	CHANNEL 1.MDyn[65]	FC44	R	LAD	NW	11	/.
DB21.DBX202.1	CHANNEL 1.MDyn[65]	FC86	R	STL	NW	18	S
DB21.DBX202.1	CHANNEL 1.MDyn[65]	FC92	R	LAD	NW	11	/.
DB21.DBX202.1	CHANNEL 1.MDyn[65]	FC92	R	LAD	NW	9	/.
DB21.DBX202.1	CHANNEL 1.MDyn[65]	FC82	R	STL	NW	18	S
DB21.DBX202.2	CHANNEL 1.MDyn[66]	FC44	R	LAD	NW	10	/.
DB21.DBX202.2	CHANNEL 1.MDyn[66]	FC44	R	LAD	NW	11	/.
DB21.DBX202.3	CHANNEL 1.MDyn[67]	FC80	R	LAD	NW	6	/.
DB21.DBX202.3	CHANNEL 1.MDyn[67]	FC80	R	LAD	NW	9	/.
DB21.DBX202.3	CHANNEL 1.MDyn[67]	FC80	R	LAD	NW	5	/.
DB21.DBX202.3	CHANNEL 1.MDyn[67]	FC80	R	LAD	NW	3	/.
DB21.DBX202.3	CHANNEL 1.MDyn[67]	FC92	R	STL	NW	5	S
DB21.DBX202.4	CHANNEL 1.MDyn[68]	FC72	R	LAD	NW	2	/.
DB21.DBX202.5	CHANNEL 1.MDyn[69]	FC72	R	LAD	NW	1	/.
DB21.DBX202.7	CHANNEL 1.MDyn[71]	FC85	R	LAD	NW	3	/.
DB21.DBX202.7	CHANNEL 1.MDyn[71]	FC99	R	LAD	NW	3	/.
DB21.DBX202.7	CHANNEL 1.MDyn[71]	FC85	R	LAD	NW	2	/.
DB21.DBX202.7	CHANNEL 1.MDyn[71]	FC44	R	LAD	NW	11	/.
DB21.DBX203.0	CHANNEL 1.MDyn[72]	FC85	R	LAD	NW	5	/.
DB21.DBX203.0	CHANNEL 1.MDyn[72]	FC85	R	LAD	NW	6	/.
DB21.DBX203.0	CHANNEL 1.MDyn[72]	FC44	R	LAD	NW	11	/.
DB21.DBX203.1	CHANNEL 1.MDyn[73]	FC99	R	LAD	NW	1	/.
DB21.DBX203.1	CHANNEL 1.MDyn[73]	FC70	R	LAD	NW	1	/.
DB21.DBX203.1	CHANNEL 1.MDyn[73]	FC44	R	LAD	NW	11	/.
DB21.DBX203.1	CHANNEL 1.MDyn[73]	FC70	R	LAD	NW	7	/.
DB21.DBX203.2	CHANNEL 1.MDyn[74]	FC70	R	LAD	NW	2	/.
DB21.DBX203.2	CHANNEL 1.MDyn[74]	FC44	R	LAD	NW	11	/.
DB21.DBX203.2	CHANNEL 1.MDyn[74]	FC99	R	LAD	NW	2	/.
DB21.DBX203.2	CHANNEL 1.MDyn[74]	FC70	R	LAD	NW	8	/.
DB21.DBX203.3	CHANNEL 1.MDyn[75]	FC82	R	LAD	NW	12	/.
DB21.DBX203.3	CHANNEL 1.MDyn[75]	FC80	R	LAD	NW	12	/.
DB21.DBX203.3	CHANNEL 1.MDyn[75]	FC82	R	LAD	NW	13	/.
DB21.DBX203.4	CHANNEL 1.MDyn[76]	FC82	R	LAD	NW	26	/.

Address	Symbol	Block	Type	Language	Details		
DB21.DBX203.4	CHANNEL 1.MDyn[76]	FC86	R	LAD	NW	27	/.
DB21.DBX203.4	CHANNEL 1.MDyn[76]	FC99	R	LAD	NW	5	/.
DB21.DBX203.4	CHANNEL 1.MDyn[76]	FC82	R	LAD	NW	2	/.
DB21.DBX203.4	CHANNEL 1.MDyn[76]	FC44	R	LAD	NW	11	/.
DB21.DBX203.5	CHANNEL 1.MDyn[77]	FC99	R	LAD	NW	5	/.
DB21.DBX203.5	CHANNEL 1.MDyn[77]	FC44	R	LAD	NW	11	/.
DB21.DBX203.5	CHANNEL 1.MDyn[77]	FC82	R	LAD	NW	27	/.
DB21.DBX203.5	CHANNEL 1.MDyn[77]	FC82	R	LAD	NW	3	/.
DB21.DBX203.6	CHANNEL 1.MDyn[78]	FC83	R	LAD	NW	3	/.
DB21.DBX203.7	CHANNEL 1.MDyn[79]	FC80	R	LAD	NW	10	/.
DB21.DBX204.0	CHANNEL 1.MDyn[80]	FC74	R	LAD	NW	2	/.
DB21.DBX204.1	CHANNEL 1.MDyn[81]	FC99	R	LAD	NW	4	/.
DB21.DBX204.1	CHANNEL 1.MDyn[81]	FC89	R	LAD	NW	2	/.
DB21.DBX204.1	CHANNEL 1.MDyn[81]	FC89	R	LAD	NW	3	/.
DB21.DBX204.1	CHANNEL 1.MDyn[81]	FC44	R	LAD	NW	11	/.
DB21.DBX204.2	CHANNEL 1.MDyn[82]	FC89	R	LAD	NW	6	/.
DB21.DBX204.2	CHANNEL 1.MDyn[82]	FC44	R	LAD	NW	11	/.
DB21.DBX204.2	CHANNEL 1.MDyn[82]	FC89	R	LAD	NW	5	/.
DB21.DBX204.3	CHANNEL 1.MDyn[83]	FC44	R	LAD	NW	11	/.
DB21.DBX204.3	CHANNEL 1.MDyn[83]	FC70	R	LAD	NW	7	/.
DB21.DBX204.3	CHANNEL 1.MDyn[83]	FC70	R	LAD	NW	1	/.
DB21.DBX204.4	CHANNEL 1.MDyn[84]	FC44	R	LAD	NW	11	/.
DB21.DBX204.4	CHANNEL 1.MDyn[84]	FC70	R	LAD	NW	8	/.
DB21.DBX204.4	CHANNEL 1.MDyn[84]	FC70	R	LAD	NW	2	/.
DB21.DBX204.5	CHANNEL 1.MDyn[85]	FC86	R	LAD	NW	12	/.
DB21.DBX204.5	CHANNEL 1.MDyn[85]	FC86	R	LAD	NW	13	/.
DB21.DBX204.5	CHANNEL 1.MDyn[85]	FC80	R	LAD	NW	12	/.
DB21.DBX204.6	CHANNEL 1.MDyn[86]	FC99	R	LAD	NW	6	/.
DB21.DBX204.6	CHANNEL 1.MDyn[86]	FC44	R	LAD	NW	11	/.
DB21.DBX204.6	CHANNEL 1.MDyn[86]	FC86	R	LAD	NW	26	/.
DB21.DBX204.6	CHANNEL 1.MDyn[86]	FC86	R	LAD	NW	2	/.
DB21.DBX204.6	CHANNEL 1.MDyn[86]	FC82	R	LAD	NW	27	/.
DB21.DBX204.7	CHANNEL 1.MDyn[87]	FC86	R	LAD	NW	3	/.
DB21.DBX204.7	CHANNEL 1.MDyn[87]	FC44	R	LAD	NW	11	/.
DB21.DBX204.7	CHANNEL 1.MDyn[87]	FC86	R	LAD	NW	27	/.
DB21.DBX204.7	CHANNEL 1.MDyn[87]	FC99	R	LAD	NW	6	/.
DB21.DBX205.0	CHANNEL 1.MDyn[88]	FC87	R	LAD	NW	3	/.
DB21.DBX205.1	CHANNEL 1.MDyn[89]	FC80	R	LAD	NW	10	/.
DB21.DBX208.0	CHANNEL 1	FC42	R	LAD	NW	13	/.
DB21.DBX208.1	CHANNEL 1	FC42	R	LAD	NW	13	/.
DB21.DBX317.0	CHANNEL 1.f317_0	FC80	R	LAD	NW	9	/.
DB31.DBX0.0	X AXIS	FC42	W	STL	NW	17	S
DB31.DBX0.1	X AXIS	FC42	W	STL	NW	17	S
DB31.DBX0.2	X AXIS	FC42	W	STL	NW	17	S
DB31.DBX0.3	X AXIS	FC42	W	STL	NW	17	S
DB31.DBX0.4	X AXIS	FC42	W	STL	NW	17	S
DB31.DBX1.5	X AXIS.Q_PosMeas1	FC51	R	LAD	NW	17	/.
DB31.DBX1.5	X AXIS.Q_PosMeas1	FC51	R	LAD	NW	8	/.
DB31.DBX1.5	X AXIS.Q_PosMeas1	FC51	R	LAD	NW	9	/.
DB31.DBX1.5	X AXIS.Q_PosMeas1	FC51	R	LAD	NW	18	/.
DB31.DBX1.5	X AXIS.Q_PosMeas1	FC51	R	LAD	NW	9	/.
DB31.DBX1.5	X AXIS.Q_PosMeas1	FC51	W	LAD	NW	1	/
DB31.DBX1.6	X AXIS.Q_PosMeas2	FC51	W	LAD	NW	2	/
DB31.DBX1.6	X AXIS.Q_PosMeas2	FC51	R	LAD	NW	17	/.
DB31.DBX1.6	X AXIS.Q_PosMeas2	FC51	R	LAD	NW	9	/.
DB31.DBX1.6	X AXIS.Q_PosMeas2	FC51	R	LAD	NW	8	/.
DB31.DBX1.6	X AXIS.Q_PosMeas2	FC51	R	LAD	NW	18	/.
DB31.DBX1.6	X AXIS.Q_PosMeas2	FC51	R	LAD	NW	9	/.
DB31.DBX1.7	X AXIS.Q_ORactive	FC51	W	LAD	NW	3	/
DB31.DBX2.1	X AXIS.Q_ContrEnable	FC51	W	LAD	NW	12	/
DB31.DBX2.4	X AXIS.Q_RefVal1	FC51	W	LAD	NW	4	/
DB31.DBX4.0	X AXIS.Q_HW1	FC51	W	LAD	NW	16	/
DB31.DBX4.3	X AXIS.Q_FDSpStop	FC51	W	LAD	NW	20	/
DB31.DBX4.5	X AXIS.Q_RapidTrOR	FC51	W	LAD	NW	15	/
DB31.DBX4.6	X AXIS.Q_Minus	FC51	W	LAD	NW	14	/
DB31.DBX4.7	X AXIS.Q_Plus	FC51	W	LAD	NW	13	/
DB31.DBX5.0	X AXIS.Q_INC1	FC41	W	LAD	NW	15	/

Address	Symbol	Block	Type	Language	Details		
DB31.DBX5.1	X AXIS.Q_INC10	FC41	W	LAD	NW	16	/
DB31.DBX5.2	X AXIS.Q_INC100	FC41	W	LAD	NW	17	/
DB31.DBX5.3	X AXIS.Q_INC1000	FC41	W	LAD	NW	18	/
DB31.DBX5.4	X AXIS.Q_INC10000	FC41	W	LAD	NW	19	/
DB31.DBX5.5	X AXIS.Q_INCVAr	FC41	W	LAD	NW	20	/
DB31.DBX12.2	X AXIS.Q_SWLimit2Minus	FC51	W	LAD	NW	10	/
DB31.DBX12.7	X AXIS.Q_DelayRef	FC51	W	LAD	NW	5	/
DB31.DBX21.7	X AXIS.Q_PulseEnable	FC51	W	LAD	NW	11	/
DB31.DBX60.4	X AXIS.I_RefSyn1	FC51	R	LAD	NW	8	/.
DB31.DBX60.5	X AXIS.I_RefSyn2	FC51	R	LAD	NW	8	/.
DB31.DBX60.6	X AXIS.I_ExactCoarse	FC51	R	LAD	NW	6	/.
DB31.DBX60.7	X AXIS.I_ExactFine	FC51	R	LAD	NW	6	/.
DB31.DBX64.5	X AXIS.f64_5	FC47	R	LAD	NW	22	/.
DB31.DBX64.5	X AXIS.f64_5	FC47	R	LAD	NW	19	/.
DB31.DBX64.6	X AXIS.I_TCMinus	FC51	R	LAD	NW	7	/.
DB31.DBX64.6	X AXIS.I_TCMinus	FC47	R	LAD	NW	15	/.
DB31.DBX64.6	X AXIS.I_TCMinus	FC47	R	LAD	NW	21	/.
DB31.DBX64.7	X AXIS.I_TCPlus	FC51	R	LAD	NW	7	/.
DB31.DBX64.7	X AXIS.I_TCPlus	FC47	R	LAD	NW	16	/.
DB31.DBX64.7	X AXIS.I_TCPlus	FC47	R	LAD	NW	14	/.
DB31.DBX93.5	X AXIS.I_MotOK	FC51	R	LAD	NW	12	/.
DB31.DBX94.0	X AXIS.I_MTempWarn	FC51	R	LAD	NW	19	/.
DB31.DBX94.0	X AXIS.I_MTempWarn	FC51	R	LAD	NW	20	/.
DB31.DBX94.1	X AXIS.I_HTempWarn	FC51	R	LAD	NW	20	/.
DB31.DBX94.1	X AXIS.I_HTempWarn	FC51	R	LAD	NW	19	/.
DB32.DBX0.0	Y AXIS	FC42	W	STL	NW	17	S
DB32.DBX0.1	Y AXIS	FC42	W	STL	NW	17	S
DB32.DBX0.2	Y AXIS	FC42	W	STL	NW	17	S
DB32.DBX0.3	Y AXIS	FC42	W	STL	NW	17	S
DB32.DBX0.4	Y AXIS	FC42	W	STL	NW	17	S
DB32.DBX1.5	Y AXIS.Q_PosMeas1	FC52	R	LAD	NW	9	/.
DB32.DBX1.5	Y AXIS.Q_PosMeas1	FC52	W	LAD	NW	1	/
DB32.DBX1.5	Y AXIS.Q_PosMeas1	FC52	R	LAD	NW	9	/.
DB32.DBX1.5	Y AXIS.Q_PosMeas1	FC52	R	LAD	NW	17	/.
DB32.DBX1.5	Y AXIS.Q_PosMeas1	FC52	R	LAD	NW	18	/.
DB32.DBX1.5	Y AXIS.Q_PosMeas1	FC52	R	LAD	NW	8	/.
DB32.DBX1.6	Y AXIS.Q_PosMeas2	FC52	R	LAD	NW	8	/.
DB32.DBX1.6	Y AXIS.Q_PosMeas2	FC52	R	LAD	NW	17	/.
DB32.DBX1.6	Y AXIS.Q_PosMeas2	FC52	R	LAD	NW	18	/.
DB32.DBX1.6	Y AXIS.Q_PosMeas2	FC52	R	LAD	NW	9	/.
DB32.DBX1.6	Y AXIS.Q_PosMeas2	FC52	W	LAD	NW	2	/
DB32.DBX1.6	Y AXIS.Q_PosMeas2	FC52	R	LAD	NW	9	/.
DB32.DBX1.7	Y AXIS.Q_ORactive	FC52	W	LAD	NW	3	/
DB32.DBX2.1	Y AXIS.Q_ContrEnable	FC52	W	LAD	NW	12	/
DB32.DBX2.4	Y AXIS.Q_RefVal1	FC52	W	LAD	NW	4	/
DB32.DBX4.0	Y AXIS.Q_HW1	FC52	W	LAD	NW	16	/
DB32.DBX4.3	Y AXIS.Q_FDSpStop	FC52	W	LAD	NW	20	/
DB32.DBX4.5	Y AXIS.Q_RapidTrOR	FC52	W	LAD	NW	15	/
DB32.DBX4.6	Y AXIS.Q_Minus	FC52	W	LAD	NW	14	/
DB32.DBX4.7	Y AXIS.Q_Plus	FC52	W	LAD	NW	13	/
DB32.DBX5.0	Y AXIS.Q_INC1	FC41	W	LAD	NW	15	/
DB32.DBX5.1	Y AXIS.Q_INC10	FC41	W	LAD	NW	16	/
DB32.DBX5.2	Y AXIS.Q_INC100	FC41	W	LAD	NW	17	/
DB32.DBX5.3	Y AXIS.Q_INC1000	FC41	W	LAD	NW	18	/
DB32.DBX5.4	Y AXIS.Q_INC10000	FC41	W	LAD	NW	19	/
DB32.DBX5.5	Y AXIS.Q_INCVAr	FC41	W	LAD	NW	20	/
DB32.DBX12.3	Y AXIS.Q_SWLimit2Plus	FC52	W	LAD	NW	10	/
DB32.DBX12.7	Y AXIS.Q_DelayRef	FC52	W	LAD	NW	5	/
DB32.DBX21.7	Y AXIS.Q_PulseEnable	FC52	W	LAD	NW	11	/
DB32.DBX60.4	Y AXIS.I_RefSyn1	FC52	R	LAD	NW	8	/.
DB32.DBX60.5	Y AXIS.I_RefSyn2	FC52	R	LAD	NW	8	/.
DB32.DBX60.6	Y AXIS.I_ExactCoarse	FC52	R	LAD	NW	6	/.
DB32.DBX60.7	Y AXIS.I_ExactFine	FC52	R	LAD	NW	6	/.
DB32.DBX64.5	Y AXIS.f64_5	FC47	R	LAD	NW	19	/.
DB32.DBX64.5	Y AXIS.f64_5	FC47	R	LAD	NW	22	/.
DB32.DBX64.6	Y AXIS.I_TCMinus	FC47	R	LAD	NW	21	/.
DB32.DBX64.6	Y AXIS.I_TCMinus	FC47	R	LAD	NW	17	/.

Address	Symbol	Block	Type	Language	Details		
DB32.DBX64.6	Y AXIS.I_TCMinus	FC52	R	LAD	NW	7	/
DB32.DBX64.7	Y AXIS.I_TCPlus	FC47	R	LAD	NW	16	/
DB32.DBX64.7	Y AXIS.I_TCPlus	FC52	R	LAD	NW	7	/
DB32.DBX64.7	Y AXIS.I_TCPlus	FC47	R	LAD	NW	16	/
DB32.DBX93.5	Y AXIS.I_MotOK	FC52	R	LAD	NW	12	/
DB32.DBX94.0	Y AXIS.I_MTempWarn	FC52	R	LAD	NW	19	/
DB32.DBX94.0	Y AXIS.I_MTempWarn	FC52	R	LAD	NW	20	/
DB32.DBX94.1	Y AXIS.I_HTempWarn	FC52	R	LAD	NW	19	/
DB32.DBX94.1	Y AXIS.I_HTempWarn	FC52	R	LAD	NW	20	/
DB33.DBX0.0	Z AXIS	FC42	W	STL	NW	17	S
DB33.DBX0.1	Z AXIS	FC42	W	STL	NW	17	S
DB33.DBX0.2	Z AXIS	FC42	W	STL	NW	17	S
DB33.DBX0.3	Z AXIS	FC42	W	STL	NW	17	S
DB33.DBX0.4	Z AXIS	FC42	W	STL	NW	17	S
DB33.DBX1.3	Z AXIS.Q_ASpDisable	FC47	W	LAD	NW	25	/
DB33.DBX1.5	Z AXIS.Q_PosMeas1	FC53	W	LAD	NW	1	/
DB33.DBX1.5	Z AXIS.Q_PosMeas1	FC53	R	LAD	NW	8	/
DB33.DBX1.5	Z AXIS.Q_PosMeas1	FC53	R	LAD	NW	9	/
DB33.DBX1.5	Z AXIS.Q_PosMeas1	FC53	R	LAD	NW	9	/
DB33.DBX1.5	Z AXIS.Q_PosMeas1	FC53	R	LAD	NW	19	/
DB33.DBX1.5	Z AXIS.Q_PosMeas1	FC53	R	LAD	NW	20	/
DB33.DBX1.6	Z AXIS.Q_PosMeas2	FC53	R	LAD	NW	19	/
DB33.DBX1.6	Z AXIS.Q_PosMeas2	FC53	W	LAD	NW	2	/
DB33.DBX1.6	Z AXIS.Q_PosMeas2	FC53	R	LAD	NW	20	/
DB33.DBX1.6	Z AXIS.Q_PosMeas2	FC53	R	LAD	NW	9	/
DB33.DBX1.6	Z AXIS.Q_PosMeas2	FC53	R	LAD	NW	9	/
DB33.DBX1.6	Z AXIS.Q_PosMeas2	FC53	R	LAD	NW	8	/
DB33.DBX1.7	Z AXIS.Q_ORactive	FC53	W	LAD	NW	3	/
DB33.DBX2.0	Z AXIS.Q_SWCam	FC53	W	LAD	NW	8	/
DB33.DBX2.1	Z AXIS.Q_ContrEnable	FC53	W	LAD	NW	13	/
DB33.DBX2.4	Z AXIS.Q_RefVal1	FC53	W	LAD	NW	4	/
DB33.DBX4.0	Z AXIS.Q_HW1	FC53	W	LAD	NW	17	/
DB33.DBX4.3	Z AXIS.Q_FDSpStop	FC53	W	LAD	NW	22	/
DB33.DBX4.5	Z AXIS.Q_RapidTrOR	FC53	W	LAD	NW	16	/
DB33.DBX4.6	Z AXIS.Q_Minus	FC53	W	LAD	NW	15	/
DB33.DBX4.7	Z AXIS.Q_Plus	FC53	W	LAD	NW	14	/
DB33.DBX5.0	Z AXIS.Q_INC1	FC41	W	LAD	NW	15	/
DB33.DBX5.1	Z AXIS.Q_INC10	FC41	W	LAD	NW	16	/
DB33.DBX5.2	Z AXIS.Q_INC100	FC41	W	LAD	NW	17	/
DB33.DBX5.3	Z AXIS.Q_INC1000	FC41	W	LAD	NW	18	/
DB33.DBX5.4	Z AXIS.Q_INC10000	FC41	W	LAD	NW	19	/
DB33.DBX5.5	Z AXIS.Q_INCVari	FC41	W	LAD	NW	20	/
DB33.DBX12.2	Z AXIS.Q_SWLimit2Minus	FC53	W	LAD	NW	10	/
DB33.DBX12.3	Z AXIS.Q_SWLimit2Plus	FC53	W	LAD	NW	11	/
DB33.DBX12.7	Z AXIS.Q_DelayRef	FC53	W	LAD	NW	5	/
DB33.DBX21.7	Z AXIS.Q_PulseEnable	FC53	W	LAD	NW	12	/
DB33.DBX60.4	Z AXIS.I_RefSyn1	FC53	R	LAD	NW	8	/
DB33.DBX60.5	Z AXIS.I_RefSyn2	FC53	R	LAD	NW	8	/
DB33.DBX60.6	Z AXIS.I_ExactCoarse	FC53	R	LAD	NW	6	/
DB33.DBX60.7	Z AXIS.I_ExactFine	FC53	R	LAD	NW	6	/
DB33.DBX64.5	Z AXIS.f64_5	FC47	R	LAD	NW	19	/
DB33.DBX64.5	Z AXIS.f64_5	FC47	R	LAD	NW	22	/
DB33.DBX64.6	Z AXIS.I_TCMinus	FC53	R	LAD	NW	7	/
DB33.DBX64.6	Z AXIS.I_TCMinus	FC47	R	LAD	NW	19	/
DB33.DBX64.6	Z AXIS.I_TCMinus	FC47	R	LAD	NW	21	/
DB33.DBX64.7	Z AXIS.I_TCPlus	FC47	R	LAD	NW	18	/
DB33.DBX64.7	Z AXIS.I_TCPlus	FC47	R	LAD	NW	16	/
DB33.DBX64.7	Z AXIS.I_TCPlus	FC53	R	LAD	NW	7	/
DB33.DBX93.5	Z AXIS.I_MotOK	FC53	R	LAD	NW	18	/
DB33.DBX93.5	Z AXIS.I_MotOK	FC53	R	LAD	NW	13	/
DB33.DBX93.7	Z AXIS.I_PulseEnable	FC53	R	LAD	NW	18	/
DB33.DBX94.0	Z AXIS.I_MTempWarn	FC53	R	LAD	NW	21	/
DB33.DBX94.0	Z AXIS.I_MTempWarn	FC53	R	LAD	NW	22	/
DB33.DBX94.1	Z AXIS.I_HTempWarn	FC53	R	LAD	NW	22	/
DB33.DBX94.1	Z AXIS.I_HTempWarn	FC53	R	LAD	NW	21	/
DB34.DBX0.0	4 AXIS	FC42	W	STL	NW	17	S
DB34.DBX0.1	4 AXIS	FC42	W	STL	NW	17	S

Address	Symbol	Block	Type	Language	Details		
DB34.DBX0.2	4 AXIS	FC42	W	STL	NW	17	S
DB34.DBX0.3	4 AXIS	FC42	W	STL	NW	17	S
DB34.DBX0.4	4 AXIS	FC42	W	STL	NW	17	S
DB34.DBX1.5	4 AXIS.Q_PosMeas1	FC54	R	LAD	NW	8	/.
DB34.DBX1.5	4 AXIS.Q_PosMeas1	FC54	R	LAD	NW	16	/.
DB34.DBX1.5	4 AXIS.Q_PosMeas1	FC54	R	LAD	NW	9	/.
DB34.DBX1.5	4 AXIS.Q_PosMeas1	FC54	R	LAD	NW	17	/.
DB34.DBX1.5	4 AXIS.Q_PosMeas1	FC54	W	LAD	NW	1	/
DB34.DBX1.5	4 AXIS.Q_PosMeas1	FC54	R	LAD	NW	9	/.
DB34.DBX1.6	4 AXIS.Q_PosMeas2	FC54	W	LAD	NW	2	/
DB34.DBX1.6	4 AXIS.Q_PosMeas2	FC54	R	LAD	NW	9	/.
DB34.DBX1.6	4 AXIS.Q_PosMeas2	FC54	R	LAD	NW	8	/.
DB34.DBX1.6	4 AXIS.Q_PosMeas2	FC54	R	LAD	NW	9	/.
DB34.DBX1.6	4 AXIS.Q_PosMeas2	FC54	R	LAD	NW	17	/.
DB34.DBX1.6	4 AXIS.Q_PosMeas2	FC54	R	LAD	NW	16	/.
DB34.DBX1.7	4 AXIS.Q_ORactive	FC54	W	LAD	NW	3	/
DB34.DBX2.1	4 AXIS.Q_ContrEnable	FC54	W	LAD	NW	11	/
DB34.DBX2.4	4 AXIS.Q_RefVall	FC54	W	LAD	NW	4	/
DB34.DBX4.0	4 AXIS.Q_HW1	FC54	W	LAD	NW	15	/
DB34.DBX4.3	4 AXIS.Q_FDSpStop	FC54	W	LAD	NW	22	/
DB34.DBX4.5	4 AXIS.Q_RapidTrOR	FC54	W	LAD	NW	14	/
DB34.DBX4.6	4 AXIS.Q_Minus	FC54	W	LAD	NW	13	/
DB34.DBX4.7	4 AXIS.Q_Plus	FC54	W	LAD	NW	12	/
DB34.DBX5.0	4 AXIS.Q_INC1	FC41	W	LAD	NW	15	/
DB34.DBX5.1	4 AXIS.Q_INC10	FC41	W	LAD	NW	16	/
DB34.DBX5.2	4 AXIS.Q_INC100	FC41	W	LAD	NW	17	/
DB34.DBX5.3	4 AXIS.Q_INC1000	FC41	W	LAD	NW	18	/
DB34.DBX5.4	4 AXIS.Q_INC10000	FC41	W	LAD	NW	19	/
DB34.DBX5.5	4 AXIS.Q_INCVAR	FC41	W	LAD	NW	20	/
DB34.DBX12.7	4 AXIS.Q_DelayRef	FC54	W	LAD	NW	5	/
DB34.DBX21.7	4 AXIS.Q_PulseEnable	FC54	W	LAD	NW	10	/
DB34.DBX60.4	4 AXIS.I_RefSyn1	FC54	R	LAD	NW	8	/.
DB34.DBX60.5	4 AXIS.I_RefSyn2	FC54	R	LAD	NW	8	/.
DB34.DBX60.6	4 AXIS.I_ExactCoarse	FC54	R	LAD	NW	6	/.
DB34.DBX60.7	4 AXIS.I_ExactFine	FC54	R	LAD	NW	6	/.
DB34.DBX64.5	4 AXIS.f64_5	FC47	R	LAD	NW	19	/.
DB34.DBX64.5	4 AXIS.f64_5	FC47	R	LAD	NW	22	/.
DB34.DBX64.6	4 AXIS.I_TCMinus	FC47	R	LAD	NW	21	/.
DB34.DBX64.6	4 AXIS.I_TCMinus	FC47	R	LAD	NW	21	/.
DB34.DBX64.6	4 AXIS.I_TCMinus	FC54	R	LAD	NW	7	/.
DB34.DBX64.7	4 AXIS.I_TCPlus	FC47	R	LAD	NW	16	/.
DB34.DBX64.7	4 AXIS.I_TCPlus	FC54	R	LAD	NW	7	/.
DB34.DBX64.7	4 AXIS.I_TCPlus	FC47	R	LAD	NW	20	/.
DB34.DBX93.5	4 AXIS.I_MotOK	FC54	R	LAD	NW	11	/.
DB34.DBX94.0	4 AXIS.I_MTempWarn	FC54	R	LAD	NW	22	/.
DB34.DBX94.0	4 AXIS.I_MTempWarn	FC54	R	LAD	NW	21	/.
DB34.DBX94.1	4 AXIS.I_HTempWarn	FC54	R	LAD	NW	22	/.
DB34.DBX94.1	4 AXIS.I_HTempWarn	FC54	R	LAD	NW	21	/.
DB35.DBX1.5	5 AXIS.Q_PosMeas1	FC56	R	LAD	NW	9	/.
DB35.DBX1.5	5 AXIS.Q_PosMeas1	FC56	W	LAD	NW	1	/
DB35.DBX1.5	5 AXIS.Q_PosMeas1	FC56	R	LAD	NW	8	/.
DB35.DBX1.5	5 AXIS.Q_PosMeas1	FC56	R	LAD	NW	9	/.
DB35.DBX1.5	5 AXIS.Q_PosMeas1	FC56	R	LAD	NW	16	/.
DB35.DBX1.5	5 AXIS.Q_PosMeas1	FC56	R	LAD	NW	17	/.
DB35.DBX1.6	5 AXIS.Q_PosMeas2	FC56	W	LAD	NW	2	/
DB35.DBX1.6	5 AXIS.Q_PosMeas2	FC56	R	LAD	NW	9	/.
DB35.DBX1.6	5 AXIS.Q_PosMeas2	FC56	R	LAD	NW	16	/.
DB35.DBX1.6	5 AXIS.Q_PosMeas2	FC56	R	LAD	NW	17	/.
DB35.DBX1.6	5 AXIS.Q_PosMeas2	FC56	R	LAD	NW	8	/.
DB35.DBX1.6	5 AXIS.Q_PosMeas2	FC56	R	LAD	NW	9	/.
DB35.DBX1.7	5 AXIS.Q_ORactive	FC56	W	LAD	NW	3	/
DB35.DBX2.1	5 AXIS.Q_ContrEnable	FC56	W	LAD	NW	11	/
DB35.DBX2.4	5 AXIS.Q_RefVall	FC56	W	LAD	NW	4	/
DB35.DBX4.0	5 AXIS.Q_HW1	FC56	W	LAD	NW	15	/
DB35.DBX4.3	5 AXIS.Q_FDSpStop	FC56	W	LAD	NW	22	/
DB35.DBX4.5	5 AXIS.Q_RapidTrOR	FC56	W	LAD	NW	14	/
DB35.DBX4.6	5 AXIS.Q_Minus	FC56	W	LAD	NW	13	/

Address	Symbol	Block	Type	Language	Details		
DB35.DBX4.7	5 AXIS.Q_Plus	FC56	W	LAD	NW	12	/
DB35.DBX5.0	5 AXIS.Q_INC1	FC41	W	LAD	NW	15	/
DB35.DBX5.1	5 AXIS.Q_INC10	FC41	W	LAD	NW	16	/
DB35.DBX5.2	5 AXIS.Q_INC100	FC41	W	LAD	NW	17	/
DB35.DBX5.3	5 AXIS.Q_INC1000	FC41	W	LAD	NW	18	/
DB35.DBX5.4	5 AXIS.Q_INC10000	FC41	W	LAD	NW	19	/
DB35.DBX5.5	5 AXIS.Q_INCVar	FC41	W	LAD	NW	20	/
DB35.DBX12.7	5 AXIS.Q_DelayRef	FC56	W	LAD	NW	5	/
DB35.DBX21.7	5 AXIS.Q_PulseEnable	FC56	W	LAD	NW	10	/
DB35.DBX60.4	5 AXIS.I_RefSyn1	FC56	R	LAD	NW	8	/.
DB35.DBX60.5	5 AXIS.I_RefSyn2	FC56	R	LAD	NW	8	/.
DB35.DBX60.6	5 AXIS.I_ExactCoarse	FC56	R	LAD	NW	6	/.
DB35.DBX60.7	5 AXIS.I_ExactFine	FC56	R	LAD	NW	6	/.
DB35.DBX64.5	5 AXIS.f64_5	FC47	R	LAD	NW	19	/.
DB35.DBX64.6	5 AXIS.I_TCMinus	FC47	R	LAD	NW	21	/.
DB35.DBX64.6	5 AXIS.I_TCMinus	FC56	R	LAD	NW	7	/.
DB35.DBX64.7	5 AXIS.I_TCPlus	FC47	R	LAD	NW	16	/.
DB35.DBX64.7	5 AXIS.I_TCPlus	FC56	R	LAD	NW	7	/.
DB35.DBX93.5	5 AXIS.I_MotOK	FC56	R	LAD	NW	11	/.
DB35.DBX94.0	5 AXIS.I_MTempWarn	FC56	R	LAD	NW	22	/.
DB35.DBX94.0	5 AXIS.I_MTempWarn	FC56	R	LAD	NW	21	/.
DB35.DBX94.1	5 AXIS.I_HTempWarn	FC56	R	LAD	NW	22	/.
DB35.DBX94.1	5 AXIS.I_HTempWarn	FC56	R	LAD	NW	21	/.
DB36.DBX1.5	SPINDLE.Q_PosMeas1	FC60	W	LAD	NW	1	/
DB36.DBX1.6	SPINDLE.Q_PosMeas2	FC60	W	LAD	NW	2	/
DB36.DBX1.7	SPINDLE.Q_ORActive	FC60	W	LAD	NW	4	/
DB36.DBX2.1	SPINDLE.Q_ContrEnable	FC61	R	LAD	NW	6	/.
DB36.DBX2.1	SPINDLE.Q_ContrEnable	FC72	R	LAD	NW	4	/.
DB36.DBX2.1	SPINDLE.Q_ContrEnable	FC70	R	LAD	NW	2	/.
DB36.DBX2.1	SPINDLE.Q_ContrEnable	FC60	W	LAD	NW	19	/
DB36.DBX2.1	SPINDLE.Q_ContrEnable	FC60	R	LAD	NW	43	/.
DB36.DBX2.1	SPINDLE.Q_ContrEnable	FC60	R	LAD	NW	19	/.
DB36.DBX2.1	SPINDLE.Q_ContrEnable	FC71	R	LAD	NW	17	/.
DB36.DBX2.1	SPINDLE.Q_ContrEnable	FC60	R	LAD	NW	33	/.
DB36.DBX2.1	SPINDLE.Q_ContrEnable	FC60	R	LAD	NW	37	/.
DB36.DBX2.1	SPINDLE.Q_ContrEnable	FC60	R	LAD	NW	32	/.
DB36.DBX2.1	SPINDLE.Q_ContrEnable	FC70	R	LAD	NW	3	/.
DB36.DBX3.6	SPINDLE.Q_VelocSpeedLimit	FC60	R	LAD	NW	25	/.
DB36.DBX3.6	SPINDLE.Q_VelocSpeedLimit	FC60	W	LAD	NW	27	/
DB36.DBX4.3	SPINDLE.Q_FDSpStop	FC60	W	LAD	NW	17	/
DB36.DBX4.6	SPINDLE.Q_Minus	FC60	W	LAD	NW	3	/
DB36.DBX4.7	SPINDLE.Q_Plus	FC60	W	LAD	NW	3	/
DB36.DBX16.0	SPINDLE.Q_ActGearA	FC61	W	LAD	NW	4	/
DB36.DBX16.0	SPINDLE.Q_ActGearA	FC61	W	LAD	NW	3	/
DB36.DBX16.1	SPINDLE.Q_ActGearB	FC61	W	LAD	NW	4	/
DB36.DBX16.1	SPINDLE.Q_ActGearB	FC61	W	LAD	NW	3	/
DB36.DBX16.2	SPINDLE.Q_ActGearC	FC61	W	LAD	NW	3	/
DB36.DBX16.2	SPINDLE.Q_ActGearC	FC61	W	LAD	NW	4	/
DB36.DBX16.3	SPINDLE.Q_GearChangeOv	FC61	W	LAD	NW	8	/
DB36.DBX17.6	SPINDLE.Q_M3M4Inv	FC60	W	LAD	NW	20	/
DB36.DBX18.5	SPINDLE.Q_OscilSpeed	FC60	W	LAD	NW	21	/
DB36.DBX19.0	SPINDLE	FC60	W	STL	NW	5	S
DB36.DBX19.1	SPINDLE	FC60	W	STL	NW	5	S
DB36.DBX19.2	SPINDLE	FC60	W	STL	NW	5	S
DB36.DBX19.3	SPINDLE	FC60	W	STL	NW	5	S
DB36.DBX21.7	SPINDLE.Q_PulseEnable	FC60	W	LAD	NW	18	/
DB36.DBX60.6	SPINDLE.I_ExactCoarse	FC60	R	LAD	NW	30	/.
DB36.DBX60.7	SPINDLE.I_ExactFine	FC60	R	LAD	NW	30	/.
DB36.DBX61.4	SPINDLE.I_Stat	FC85	R	LAD	NW	8	/.
DB36.DBX61.4	SPINDLE.I_Stat	FC60	R	LAD	NW	32	/.
DB36.DBX61.4	SPINDLE.I_Stat	FC60	R	LAD	NW	9	/.
DB36.DBX61.4	SPINDLE.I_Stat	FC75	R	LAD	NW	2	/.
DB36.DBX61.4	SPINDLE.I_Stat	FC89	R	LAD	NW	4	/.
DB36.DBX61.4	SPINDLE.I_Stat	FC61	R	LAD	NW	6	/.
DB36.DBX61.4	SPINDLE.I_Stat	FC89	R	LAD	NW	8	/.
DB36.DBX61.4	SPINDLE.I_Stat	FC60	R	LAD	NW	19	/.
DB36.DBX61.4	SPINDLE.I_Stat	FC42	R	LAD	NW	14	/.

Address	Symbol	Block	Type	Language	Details		
DB36.DBX61.4	SPINDLE.I_Stat	FC85	R	LAD	NW	4	/.
DB36.DBX61.4	SPINDLE.I_Stat	FC70	R	LAD	NW	2	/.
DB36.DBX64.6	SPINDLE.I_TCMinus	FC60	R	LAD	NW	23	/.
DB36.DBX64.6	SPINDLE.I_TCMinus	FC60	R	LAD	NW	22	/.
DB36.DBX64.7	SPINDLE.I_TCPlus	FC60	R	LAD	NW	23	/.
DB36.DBX64.7	SPINDLE.I_TCPlus	FC60	R	LAD	NW	22	/.
DB36.DBX82.0	SPINDLE.I_SetpGearA	FC61	R	LAD	NW	2	/.
DB36.DBX82.0	SPINDLE.I_SetpGearA	FC61	R	LAD	NW	1	/.
DB36.DBX82.1	SPINDLE.I_SetpGearB	FC61	R	LAD	NW	1	/.
DB36.DBX82.1	SPINDLE.I_SetpGearB	FC61	R	LAD	NW	2	/.
DB36.DBX82.2	SPINDLE.I_SetpGearC	FC61	R	LAD	NW	1	/.
DB36.DBX82.2	SPINDLE.I_SetpGearC	FC61	R	LAD	NW	2	/.
DB36.DBX82.3	SPINDLE.I_GearChange	FC62	R	LAD	NW	4	/.
DB36.DBX82.3	SPINDLE.I_GearChange	FC62	R	LAD	NW	3	/.
DB36.DBX82.3	SPINDLE.I_GearChange	FC61	R	LAD	NW	2	/.
DB36.DBX82.3	SPINDLE.I_GearChange	FC61	R	LAD	NW	1	/.
DB36.DBX84.3	SPINDLE.I_Tapping	FC42	R	LAD	NW	15	/.
DB36.DBX84.3	SPINDLE.I_Tapping	FC65	R	LAD	NW	6	/.
DB36.DBX84.3	SPINDLE.I_Tapping	FC42	R	LAD	NW	6	/.
DB36.DBX84.3	SPINDLE.I_Tapping	FC60	R	LAD	NW	10	/.
DB36.DBX84.5	SPINDLE.I_PosMode	FC60	R	LAD	NW	28	/.
DB36.DBX84.5	SPINDLE.I_PosMode	FC60	R	LAD	NW	29	/.
DB36.DBX84.5	SPINDLE.I_PosMode	FC60	R	LAD	NW	19	/.
DB36.DBX93.5	SPINDLE.I_MotOK	FC60	R	LAD	NW	19	/.
DB36.DBX94.0	SPINDLE.I_MTempWarn	FC60	R	LAD	NW	45	/.
DB36.DBX94.1	SPINDLE.I_HTempWarn	FC60	R	LAD	NW	45	/.
DB36.DBX94.5	SPINDLE.I_NactNx	FC61	R	LAD	NW	11	/.
DB36.DBX94.5	SPINDLE.I_NactNx	FC61	R	LAD	NW	13	/.
DB36.DBX94.6	SPINDLE.I_NactNset	FC42	R	LAD	NW	15	/.
DB71.DBX0.0	TM LOAD/UNLOAD DATA.IFNo[1]	FB110	R	STL	NW	4	S
DB71.DBX0.0	TM LOAD/UNLOAD DATA.IFNo[1]	FB110	R	STL	NW	5	S
DB71.DBX0.0	TM LOAD/UNLOAD DATA.IFNo[1]	FB110	R	STL	NW	6	S
DB71.DBX0.1	TM LOAD/UNLOAD DATA.IFNo[2]	FB110	R	STL	NW	8	S
DB71.DBX0.1	TM LOAD/UNLOAD DATA.IFNo[2]	FB110	R	STL	NW	7	S
DB71.DBX4.0	TM LOAD/UNLOAD DATA.IF[1].Loading	FB110	R	STL	NW	4	S
DB71.DBX4.1	TM LOAD/UNLOAD DATA.IF[1].Unloading	FB110	R	STL	NW	5	S
DB71.DBX4.2	TM LOAD/UNLOAD DATA.IF[1].Reloading	FB110	R	STL	NW	6	S
DB71.DBX34.0	TM LOAD/UNLOAD DATA.IF[2].Loading	FB110	R	STL	NW	7	S
DB71.DBX34.1	TM LOAD/UNLOAD DATA.IF[2].Unloading	FB110	R	STL	NW	8	S
DB72.DBX0.0	TM SPINDLE DATA.IFNo[1]	FB110	R	STL	NW	2	S
DB72.DBX0.0	TM SPINDLE DATA.IFNo[1]	FB110	R	STL	NW	3	S
DB72.DBX4.1	TM SPINDLE DATA.IF[1].Perform	FB110	R	STL	NW	2	S
DB72.DBX4.1	TM SPINDLE DATA.IF[1].Perform	FB110	R	STL	NW	3	S
DB72.DBX4.2	TM SPINDLE DATA.IF[1].Prepare	FB110	R	STL	NW	2	S
DB72.DBX4.2	TM SPINDLE DATA.IF[1].Prepare	FB110	R	STL	NW	3	S
DB81.DBX4.4	MMC.MMC_M.start_search_set	FC32	R	STL	NW	1	S
DB81.DBX4.4	MMC.MMC_M.start_search_set	FC32	W	STL	NW	1	S
DB81.DBX4.4	MMC.MMC_M.start_search_set	FC32	W	STL	NW	1	S
DB81.DBX4.4	MMC.MMC_M.start_search_set	FC32	R	STL	NW	1	S
DB81.DBX4.4	MMC.MMC_M.start_search_set	FC32	R	STL	NW	1	S
DB81.DBX4.5	MMC.MMC_M.quit_message	FC31	W	STL	NW	1	S
DB81.DBX4.5	MMC.MMC_M.quit_message	FC31	W	STL	NW	1	S
DB81.DBX4.5	MMC.MMC_M.quit_message	FC31	W	STL	NW	1	S
DB81.DBX4.5	MMC.MMC_M.quit_message	FC31	R	STL	NW	1	S
DB81.DBX4.6	MMC.MMC_M.leave_cmm	FC30	R	STL	NW	1	S
DB81.DBX4.6	MMC.MMC_M.leave_cmm	FC30	R	STL	NW	1	S
DB81.DBX4.6	MMC.MMC_M.leave_cmm	FC30	R	STL	NW	1	S
DB81.DBX4.6	MMC.MMC_M.leave_cmm	FC30	R	STL	NW	1	S
DB81.DBX4.6	MMC.MMC_M.leave_cmm	FC30	W	STL	NW	1	S
DB81.DBX4.6	MMC.MMC_M.leave_cmm	FC30	R	STL	NW	1	S
DB81.DBX4.6	MMC.MMC_M.leave_cmm	FC30	W	STL	NW	1	S
DB81.DBX4.7	MMC.MMC_M.activate_cmm	FC30	R	STL	NW	1	S
DB81.DBX4.7	MMC.MMC_M.activate_cmm	FC30	W	STL	NW	1	S
DB81.DBX4.7	MMC.MMC_M.activate_cmm	FC30	W	STL	NW	1	S
DB81.DBX4.7	MMC.MMC_M.activate_cmm	FC30	R	STL	NW	1	S
DB81.DBX4.7	MMC.MMC_M.activate_cmm	FC30	R	STL	NW	1	S

Address	Symbol	Block	Type	Language	Details		
DB81.DBX4.7	MMC.MMC_M.activate_cmm	FC30	R	STL	NW	1	S
DB81.DBX4.7	MMC.MMC_M.activate_cmm	FC30	W	STL	NW	1	S
DB81.DBX4.7	MMC.MMC_M.activate_cmm	FC30	W	STL	NW	1	S
DB81.DBX4.7	MMC.MMC_M.activate_cmm	FC30	W	STL	NW	1	S
DB81.DBX5.1	MMC.MMC_M.start_asup	FC33	R	STL	NW	1	S
DB81.DBX5.1	MMC.MMC_M.start_asup	FC33	W	STL	NW	1	S
DB81.DBX5.2	MMC.MMC_M.start_reset	FC31	W	STL	NW	1	S
DB81.DBX5.2	MMC.MMC_M.start_reset	FC31	W	STL	NW	1	S
DB81.DBX5.2	MMC.MMC_M.start_reset	FC31	R	STL	NW	1	S
DB81.DBX5.3	MMC.MMC_M.start_search_set_sim	FC32	R	STL	NW	1	S
DB81.DBX5.3	MMC.MMC_M.start_search_set_sim	FC32	W	STL	NW	1	S
DB81.DBX5.3	MMC.MMC_M.start_search_set_sim	FC32	W	STL	NW	1	S
DB81.DBX5.3	MMC.MMC_M.start_search_set_sim	FC32	R	STL	NW	1	S
DB81.DBX5.4	MMC.MMC_M.start_up_activ	FC30	R	STL	NW	1	S
DB81.DBX5.4	MMC.MMC_M.start_up_activ	FC30	W	STL	NW	1	S
DB81.DBX5.4	MMC.MMC_M.start_up_activ	FC30	R	STL	NW	1	S
DB81.DBX5.4	MMC.MMC_M.start_up_activ	FC30	R	STL	NW	1	S
DB81.DBX5.4	MMC.MMC_M.start_up_activ	FC30	R	STL	NW	1	S
DB81.DBX5.4	MMC.MMC_M.start_up_activ	FC30	W	STL	NW	1	S
DB81.DBX8.0	MMC.MMC_S.start_mask.off	FC31	R	STL	NW	1	S
DB81.DBX8.0	MMC.MMC_S.start_mask.off	FC31	W	STL	NW	1	S
DB81.DBX8.1	MMC.MMC_S.start_mask.start_disabled	FC31	R	STL	NW	1	S
DB81.DBX8.1	MMC.MMC_S.start_mask.start_disabled	FC31	R	STL	NW	1	S
DB81.DBX8.1	MMC.MMC_S.start_mask.start_disabled	FC31	W	STL	NW	1	S
DB81.DBX8.5	MMC.MMC_S.start_mask.manual	FC32	R	STL	NW	1	S
DB81.DBX8.5	MMC.MMC_S.start_mask.manual	FC32	R	STL	NW	1	S
DB81.DBX8.6	MMC.MMC_S.start_mask.automatic	FC32	R	STL	NW	1	S
DB81.DBX8.6	MMC.MMC_S.start_mask.automatic	FC32	R	STL	NW	1	S
DB81.DBX9.0	MMC.MMC_S.start_mask.search_set	FC32	R	STL	NW	1	S
DB81.DBX9.0	MMC.MMC_S.start_mask.search_set	FC32	R	STL	NW	1	S
DB81.DBX9.0	MMC.MMC_S.start_mask.search_set	FC32	R	STL	NW	1	S
DB81.DBX9.0	MMC.MMC_S.start_mask.search_set	FC32	R	STL	NW	1	S
DB81.DBX9.0	MMC.MMC_S.start_mask.search_set	FC32	R	STL	NW	1	S
DB81.DBX10.1	MMC.MMC_S.clear_dist_search_set	FC32	W	STL	NW	1	S
DB81.DBX10.1	MMC.MMC_S.clear_dist_search_set	FC32	R	STL	NW	1	S
DB81.DBX10.1	MMC.MMC_S.clear_dist_search_set	FC32	R	STL	NW	1	S
DB81.DBX10.1	MMC.MMC_S.clear_dist_search_set	FC32	R	STL	NW	1	S
DB81.DBX10.1	MMC.MMC_S.clear_dist_search_set	FC32	W	STL	NW	1	S
DB81.DBX10.1	MMC.MMC_S.clear_dist_search_set	FC32	R	STL	NW	1	S
DB81.DBX10.1	MMC.MMC_S.clear_dist_search_set	FC32	R	STL	NW	1	S
DB81.DBX10.1	MMC.MMC_S.clear_dist_search_set	FC32	W	STL	NW	1	S
DB81.DBX10.2	MMC.MMC_S.PRg_selection_done	FC32	R	STL	NW	1	S
DB81.DBX10.2	MMC.MMC_S.PRg_selection_done	FC32	W	STL	NW	1	S
DB81.DBX10.3	MMC.MMC_S.ext_prog_sel	FC30	R	STL	NW	1	S
DB81.DBX20.3	MMC.MMC_S.MMC_SUBZ.skip_block_request	FC31	W	STL	NW	1	S
DB81.DBX20.3	MMC.MMC_S.MMC_SUBZ.skip_block_request	FC31	W	STL	NW	1	S
DB81.DBX20.3	MMC.MMC_S.MMC_SUBZ.skip_block_request	FC31	W	STL	NW	1	S
DB81.DBX20.3	MMC.MMC_S.MMC_SUBZ.skip_block_request	FC31	R	STL	NW	1	S
DB81.DBX20.3	MMC.MMC_S.MMC_SUBZ.skip_block_request	FC31	R	STL	NW	1	S
DB81.DBX20.4	MMC.MMC_S.MMC_SUBZ.mmc_start_up_done	FC30	R	STL	NW	1	S
DB81.DBX20.4	MMC.MMC_S.MMC_SUBZ.mmc_start_up_done	FC30	W	STL	NW	1	S
DB81.DBX20.4	MMC.MMC_S.MMC_SUBZ.mmc_start_up_done	FC30	W	STL	NW	1	S
DB81.DBX20.5	MMC.MMC_S.MMC_SUBZ.test_run_request	FC31	W	STL	NW	1	S
DB81.DBX20.5	MMC.MMC_S.MMC_SUBZ.test_run_request	FC31	R	STL	NW	1	S
DB81.DBX20.5	MMC.MMC_S.MMC_SUBZ.test_run_request	FC31	R	STL	NW	1	S
DB81.DBX20.5	MMC.MMC_S.MMC_SUBZ.test_run_request	FC31	W	STL	NW	1	S
DB81.DBX20.5	MMC.MMC_S.MMC_SUBZ.test_run_request	FC31	W	STL	NW	1	S
DB81.DBX20.5	MMC.MMC_S.MMC_SUBZ.test_run_request	FC31	W	STL	NW	1	S
DB81.DBX20.6	MMC.MMC_S.MMC_SUBZ.test_dry_run_request	FC31	W	STL	NW	1	S
DB81.DBX20.6	MMC.MMC_S.MMC_SUBZ.test_dry_run_request	FC31	W	STL	NW	1	S
DB81.DBX20.6	MMC.MMC_S.MMC_SUBZ.test_dry_run_request	FC31	R	STL	NW	1	S
DB81.DBX20.6	MMC.MMC_S.MMC_SUBZ.test_dry_run_request	FC31	R	STL	NW	1	S
DB81.DBX20.6	MMC.MMC_S.MMC_SUBZ.test_dry_run_request	FC31	W	STL	NW	1	S
DB81.DBX20.7	MMC.MMC_S.MMC_SUBZ.m01_request	FC31	W	STL	NW	1	S
DB81.DBX20.7	MMC.MMC_S.MMC_SUBZ.m01_request	FC31	W	STL	NW	1	S
DB81.DBX20.7	MMC.MMC_S.MMC_SUBZ.m01_request	FC31	W	STL	NW	1	S
DB81.DBX20.7	MMC.MMC_S.MMC_SUBZ.m01_request	FC31	R	STL	NW	1	S

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Address	Symbol	Block	Type	Language	Details	
DB81.DBX24.2	MMC.MMC_S.MMC_SUBZ.req_mode.program	FC31	R	STL	NW	1 S
DB81.DBX24.2	MMC.MMC_S.MMC_SUBZ.req_mode.program	FC31	W	STL	NW	1 S
DB81.DBX24.3	MMC.MMC_S.MMC_SUBZ.req_mode.messages	FC31	R	STL	NW	1 S
DB81.DBX24.3	MMC.MMC_S.MMC_SUBZ.req_mode.messages	FC31	W	STL	NW	1 S
DB81.DBX24.3	MMC.MMC_S.MMC_SUBZ.req_mode.messages	FC31	R	STL	NW	1 S
DB81.DBX24.3	MMC.MMC_S.MMC_SUBZ.req_mode.messages	FC31	W	STL	NW	1 S
DB81.DBX24.3	MMC.MMC_S.MMC_SUBZ.req_mode.messages	FC31	W	STL	NW	1 S
DB81.DBX24.4	MMC.MMC_S.MMC_SUBZ.req_mode.tool	FC31	R	STL	NW	1 S
DB81.DBX24.4	MMC.MMC_S.MMC_SUBZ.req_mode.tool	FC31	W	STL	NW	1 S
DB81.DBX24.4	MMC.MMC_S.MMC_SUBZ.req_mode.tool	FC31	W	STL	NW	1 S
DB81.DBX24.4	MMC.MMC_S.MMC_SUBZ.req_mode.tool	FC31	W	STL	NW	1 S
DB81.DBX24.4	MMC.MMC_S.MMC_SUBZ.req_mode.tool	FC31	R	STL	NW	1 S
DB81.DBX24.5	MMC.MMC_S.MMC_SUBZ.req_mode.directory	FC31	W	STL	NW	1 S
DB81.DBX24.5	MMC.MMC_S.MMC_SUBZ.req_mode.directory	FC31	R	STL	NW	1 S
DB81.DBX24.5	MMC.MMC_S.MMC_SUBZ.req_mode.directory	FC31	W	STL	NW	1 S
DB81.DBX24.5	MMC.MMC_S.MMC_SUBZ.req_mode.directory	FC31	W	STL	NW	1 S
DB81.DBX24.5	MMC.MMC_S.MMC_SUBZ.req_mode.directory	FC31	R	STL	NW	1 S
DB81.DBX24.6	MMC.MMC_S.MMC_SUBZ.req_mode.oem1	FC31	W	STL	NW	1 S
DB81.DBX24.6	MMC.MMC_S.MMC_SUBZ.req_mode.oem1	FC31	W	STL	NW	1 S
DB81.DBX24.6	MMC.MMC_S.MMC_SUBZ.req_mode.oem1	FC31	W	STL	NW	1 S
DB81.DBX24.6	MMC.MMC_S.MMC_SUBZ.req_mode.oem1	FC31	R	STL	NW	1 S
DB81.DBX24.6	MMC.MMC_S.MMC_SUBZ.req_mode.oem1	FC31	R	STL	NW	1 S
DB81.DBX24.6	MMC.MMC_S.MMC_SUBZ.req_mode.oem1	FC31	R	STL	NW	1 S
DB81.DBX24.7	MMC.MMC_S.MMC_SUBZ.req_mode.oem2	FC31	W	STL	NW	1 S
DB81.DBX24.7	MMC.MMC_S.MMC_SUBZ.req_mode.oem2	FC31	W	STL	NW	1 S
DB81.DBX24.7	MMC.MMC_S.MMC_SUBZ.req_mode.oem2	FC31	R	STL	NW	1 S
DB81.DBX24.7	MMC.MMC_S.MMC_SUBZ.req_mode.oem2	FC31	R	STL	NW	1 S
DB81.DBX24.7	MMC.MMC_S.MMC_SUBZ.req_mode.oem2	FC31	W	STL	NW	1 S
DB81.DBX25.0	MMC.MMC_S.MMC_SUBZ.req_mode.customer	FC31	R	STL	NW	1 S
DB81.DBX25.0	MMC.MMC_S.MMC_SUBZ.req_mode.customer	FC31	W	STL	NW	1 S
DB81.DBX25.0	MMC.MMC_S.MMC_SUBZ.req_mode.customer	FC31	W	STL	NW	1 S
DB81.DBX25.0	MMC.MMC_S.MMC_SUBZ.req_mode.customer	FC31	R	STL	NW	1 S
DB81.DBX25.0	MMC.MMC_S.MMC_SUBZ.req_mode.customer	FC31	W	STL	NW	1 S
DB81.DBX25.1	MMC.MMC_S.MMC_SUBZ.req_mode.mda	FC31	R	STL	NW	1 S
DB81.DBX25.1	MMC.MMC_S.MMC_SUBZ.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX25.1	MMC.MMC_S.MMC_SUBZ.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX25.1	MMC.MMC_S.MMC_SUBZ.req_mode.mda	FC31	R	STL	NW	1 S
DB81.DBX25.2	MMC.MMC_S.MMC_SUBZ.req_mode.auto_tool_mea	FC31	W	STL	NW	1 S
DB81.DBX25.2	MMC.MMC_S.MMC_SUBZ.req_mode.auto_tool_mea	FC31	R	STL	NW	1 S
DB81.DBX25.2	MMC.MMC_S.MMC_SUBZ.req_mode.auto_tool_mea	FC31	R	STL	NW	1 S
DB81.DBX25.2	MMC.MMC_S.MMC_SUBZ.req_mode.auto_tool_mea	FC31	W	STL	NW	1 S
DB81.DBX25.2	MMC.MMC_S.MMC_SUBZ.req_mode.auto_tool_mea	FC31	W	STL	NW	1 S
DB81.DBX30.0	MMC.PLC_M.disable_cnc_standard	FC31	W	STL	NW	1 S
DB81.DBX30.1	MMC.PLC_M.boot_standard	FC30	W	STL	NW	1 S
DB81.DBX30.2	MMC.PLC_M.transition_not_activ	FC33	W	STL	NW	1 S
DB81.DBX30.2	MMC.PLC_M.transition_not_activ	FC33	W	STL	NW	1 S
DB81.DBX30.2	MMC.PLC_M.transition_not_activ	FC33	W	STL	NW	1 S
DB81.DBX30.3	MMC.PLC_M.iso_search_set_started	FC30	W	STL	NW	1 S
DB81.DBX30.3	MMC.PLC_M.iso_search_set_started	FC30	W	STL	NW	1 S
DB81.DBX30.4	MMC.PLC_M.iso_program_started	FC30	W	STL	NW	1 S
DB81.DBX30.4	MMC.PLC_M.iso_program_started	FC30	W	STL	NW	1 S
DB81.DBX30.7	MMC.PLC_M.leave_cmm_quit	FC30	W	STL	NW	1 S
DB81.DBX30.7	MMC.PLC_M.leave_cmm_quit	FC30	W	STL	NW	1 S
DB81.DBX30.7	MMC.PLC_M.leave_cmm_quit	FC30	W	STL	NW	1 S
DB81.DBX30.7	MMC.PLC_M.leave_cmm_quit	FC30	W	STL	NW	1 S
DB81.DBX30.7	MMC.PLC_M.leave_cmm_quit	FC30	W	STL	NW	1 S
DB81.DBX30.7	MMC.PLC_M.leave_cmm_quit	FC30	W	STL	NW	1 S
DB81.DBX30.7	MMC.PLC_M.leave_cmm_quit	FC30	W	STL	NW	1 S
DB81.DBX30.7	MMC.PLC_M.leave_cmm_quit	FC30	W	STL	NW	1 S
DB81.DBX30.7	MMC.PLC_M.leave_cmm_quit	FC30	W	STL	NW	1 S
DB81.DBX31.0	MMC.PLC_M.cmm_activ	FC30	W	STL	NW	1 S
DB81.DBX31.0	MMC.PLC_M.cmm_activ	FC30	W	STL	NW	1 S
DB81.DBX31.0	MMC.PLC_M.cmm_activ	FC30	W	STL	NW	1 S
DB81.DBX31.0	MMC.PLC_M.cmm_activ	FC30	W	STL	NW	1 S
DB81.DBX31.0	MMC.PLC_M.cmm_activ	FC30	W	STL	NW	1 S
DB81.DBX31.0	MMC.PLC_M.cmm_activ	FC30	W	STL	NW	1 S
DB81.DBX31.0	MMC.PLC_M.cmm_activ	FC30	W	STL	NW	1 S

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DB81.DBX31.0	MMC.PLC_M.cmm_activ	FC30	W	STL	NW	1	S
DB81.DBX31.1	MMC.PLC_M.start_program	FC31	W	STL	NW	1	S
DB81.DBX31.1	MMC.PLC_M.start_program	FC31	W	STL	NW	1	S
DB81.DBX31.1	MMC.PLC_M.start_program	FC31	W	STL	NW	1	S
DB81.DBX31.2	MMC.PLC_M.search_set_ready	FC32	W	STL	NW	1	S
DB81.DBX31.2	MMC.PLC_M.search_set_ready	FC32	W	STL	NW	1	S
DB81.DBX31.2	MMC.PLC_M.search_set_ready	FC32	W	STL	NW	1	S
DB81.DBX31.3	MMC.PLC_M.search_set_finished	FC32	W	STL	NW	1	S
DB81.DBX31.3	MMC.PLC_M.search_set_finished	FC32	W	STL	NW	1	S
DB81.DBX31.3	MMC.PLC_M.search_set_finished	FC32	W	STL	NW	1	S
DB81.DBX31.4	MMC.PLC_M.search_set_sim_finished	FC32	W	STL	NW	1	S
DB81.DBX31.4	MMC.PLC_M.search_set_sim_finished	FC32	W	STL	NW	1	S
DB81.DBX31.4	MMC.PLC_M.search_set_sim_finished	FC32	W	STL	NW	1	S
DB81.DBX32.0	MMC.PLC_S.start_mask.off	FC32	W	STL	NW	1	S
DB81.DBX32.0	MMC.PLC_S.start_mask.off	FC32	W	STL	NW	1	S
DB81.DBX32.0	MMC.PLC_S.start_mask.off	FC32	W	STL	NW	1	S
DB81.DBX32.0	MMC.PLC_S.start_mask.off	FC32	W	STL	NW	1	S
DB81.DBX32.0	MMC.PLC_S.start_mask.off	FC32	W	STL	NW	1	S
DB81.DBX32.0	MMC.PLC_S.start_mask.off	FC32	W	STL	NW	1	S
DB81.DBX32.0	MMC.PLC_S.start_mask.off	FC32	W	STL	NW	1	S
DB81.DBX32.5	MMC.PLC_S.start_mask.manual	FC32	W	STL	NW	1	S
DB81.DBX32.5	MMC.PLC_S.start_mask.manual	FC32	R	STL	NW	1	S
DB81.DBX32.5	MMC.PLC_S.start_mask.manual	FC32	R	STL	NW	1	S
DB81.DBX32.5	MMC.PLC_S.start_mask.manual	FC32	W	STL	NW	1	S
DB81.DBX32.5	MMC.PLC_S.start_mask.manual	FC32	W	STL	NW	1	S
DB81.DBX32.6	MMC.PLC_S.start_mask.automatic	FC32	W	STL	NW	1	S
DB81.DBX32.6	MMC.PLC_S.start_mask.automatic	FC32	W	STL	NW	1	S
DB81.DBX32.6	MMC.PLC_S.start_mask.automatic	FC32	R	STL	NW	1	S
DB81.DBX32.6	MMC.PLC_S.start_mask.automatic	FC32	W	STL	NW	1	S
DB81.DBX33.0	MMC.PLC_S.start_mask.search_set	FC32	W	STL	NW	1	S
DB81.DBX33.0	MMC.PLC_S.start_mask.search_set	FC32	W	STL	NW	1	S
DB81.DBX33.0	MMC.PLC_S.start_mask.search_set	FC32	R	STL	NW	1	S
DB81.DBX33.0	MMC.PLC_S.start_mask.search_set	FC32	W	STL	NW	1	S
DB81.DBX33.0	MMC.PLC_S.start_mask.search_set	FC32	R	STL	NW	1	S
DB81.DBX40.0	MMC.PLC_S.program_extern_selected	FC32	W	STL	NW	1	S
DB81.DBX40.2	MMC.PLC_S.nc_stop	FC32	W	STL	NW	1	S
DB81.DBX40.2	MMC.PLC_S.nc_stop	FC32	W	STL	NW	1	S
DB81.DBX40.2	MMC.PLC_S.nc_stop	FC32	W	STL	NW	1	S
DB81.DBX40.2	MMC.PLC_S.nc_stop	FC32	W	STL	NW	1	S
DB81.DBX40.2	MMC.PLC_S.nc_stop	FC32	W	STL	NW	1	S
DB81.DBX40.2	MMC.PLC_S.nc_stop	FC32	W	STL	NW	1	S
DB81.DBX40.3	MMC.PLC_S.nc_start	FC32	W	STL	NW	1	S
DB81.DBX40.3	MMC.PLC_S.nc_start	FC32	W	STL	NW	1	S
DB81.DBX40.3	MMC.PLC_S.nc_start	FC32	W	STL	NW	1	S
DB81.DBX40.3	MMC.PLC_S.nc_start	FC32	W	STL	NW	1	S
DB81.DBX40.7	MMC.PLC_S.retreat	FC32	W	STL	NW	1	S
DB81.DBX40.7	MMC.PLC_S.retreat	FC32	W	STL	NW	1	S
DB81.DBX40.7	MMC.PLC_S.retreat	FC32	W	STL	NW	1	S
DB81.DBX40.7	MMC.PLC_S.retreat	FC32	W	STL	NW	1	S
DB81.DBX41.0	MMC.PLC_S.m02_aktiv	FC31	W	STL	NW	1	S
DB81.DBX43.0	MMC.PLC_S.spindle_programmed	FC31	W	STL	NW	1	S
DB81.DBX43.0	MMC.PLC_S.spindle_programmed	FC31	W	STL	NW	1	S
DB81.DBX43.0	MMC.PLC_S.spindle_programmed	FC31	W	STL	NW	1	S
DB81.DBX43.1	MMC.PLC_S.spindle_in_setpoint	FC31	W	STL	NW	1	S
DB81.DBX43.2	MMC.PLC_S.asup_activ	FC33	W	STL	NW	1	S
DB81.DBX43.2	MMC.PLC_S.asup_activ	FC33	W	STL	NW	1	S
DB81.DBX43.2	MMC.PLC_S.asup_activ	FC33	W	STL	NW	1	S
DB81.DBX43.3	MMC.PLC_S.no_tool_input	FC32	W	STL	NW	1	S
DB81.DBX43.3	MMC.PLC_S.no_tool_input	FC32	W	STL	NW	1	S
DB81.DBX43.3	MMC.PLC_S.no_tool_input	FC32	W	STL	NW	1	S
DB81.DBX43.3	MMC.PLC_S.no_tool_input	FC32	W	STL	NW	1	S
DB81.DBX43.4	MMC.PLC_S.no_offset_input	FC32	W	STL	NW	1	S
DB81.DBX43.4	MMC.PLC_S.no_offset_input	FC32	W	STL	NW	1	S
DB81.DBX43.4	MMC.PLC_S.no_offset_input	FC32	W	STL	NW	1	S
DB81.DBX43.4	MMC.PLC_S.no_offset_input	FC32	W	STL	NW	1	S
DB81.DBX43.5	MMC.PLC_S.no_preset_input	FC32	W	STL	NW	1	S
DB81.DBX43.5	MMC.PLC_S.no_preset_input	FC32	W	STL	NW	1	S

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Address	Symbol	Block	Type	Language	Details	
DB81.DBX49.0	MMC.PLC_S.req_mode.customer	FC31	W	STL	NW	1 S
DB81.DBX49.0	MMC.PLC_S.req_mode.customer	FC31	W	STL	NW	1 S
DB81.DBX49.0	MMC.PLC_S.req_mode.customer	FC31	W	STL	NW	1 S
DB81.DBX49.0	MMC.PLC_S.req_mode.customer	FC31	W	STL	NW	1 S
DB81.DBX49.0	MMC.PLC_S.req_mode.customer	FC31	W	STL	NW	1 S
DB81.DBX49.0	MMC.PLC_S.req_mode.customer	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.1	MMC.PLC_S.req_mode.mda	FC31	W	STL	NW	1 S
DB81.DBX49.2	MMC.PLC_S.req_mode.auto_tool_measure	FC31	W	STL	NW	1 S
DB81.DBX49.2	MMC.PLC_S.req_mode.auto_tool_measure	FC31	W	STL	NW	1 S
DB81.DBX49.2	MMC.PLC_S.req_mode.auto_tool_measure	FC31	W	STL	NW	1 S
DB81.DBX49.2	MMC.PLC_S.req_mode.auto_tool_measure	FC31	W	STL	NW	1 S
DB81.DBX49.2	MMC.PLC_S.req_mode.auto_tool_measure	FC31	W	STL	NW	1 S
DB81.DBX49.2	MMC.PLC_S.req_mode.auto_tool_measure	FC31	W	STL	NW	1 S
DB81.DBX49.2	MMC.PLC_S.req_mode.auto_tool_measure	FC31	W	STL	NW	1 S
DB81.DBX49.2	MMC.PLC_S.req_mode.auto_tool_measure	FC31	W	STL	NW	1 S
DB81.DBX49.2	MMC.PLC_S.req_mode.auto_tool_measure	FC31	W	STL	NW	1 S
DB81.DBX49.2	MMC.PLC_S.req_mode.auto_tool_measure	FC31	W	STL	NW	1 S
DB81.DBX49.2	MMC.PLC_S.req_mode.auto_tool_measure	FC31	W	STL	NW	1 S
DB82.DBX2.0	SPS.CMM_IN.base_sig.main_mode_mill.manual	FC35	W	STL	NW	1 S
DB82.DBX2.0	SPS.CMM_IN.base_sig.main_mode_mill.manual	FC31	R	STL	NW	1 S
DB82.DBX2.0	SPS.CMM_IN.base_sig.main_mode_mill.manual	FC31	R	STL	NW	1 S
DB82.DBX2.0	SPS.CMM_IN.base_sig.main_mode_mill.manual	FC31	R	STL	NW	1 S
DB82.DBX2.0	SPS.CMM_IN.base_sig.main_mode_mill.manual	FC31	W	STL	NW	1 S
DB82.DBX2.0	SPS.CMM_IN.base_sig.main_mode_mill.manual	FC31	R	STL	NW	1 S
DB82.DBX2.0	SPS.CMM_IN.base_sig.main_mode_mill.manual	FC31	R	STL	NW	1 S
DB82.DBX2.0	SPS.CMM_IN.base_sig.main_mode_mill.manual	FC35	W	STL	NW	1 S
DB82.DBX2.1	SPS.CMM_IN.base_sig.main_mode_mill.automa	FC31	R	STL	NW	1 S
DB82.DBX2.1	SPS.CMM_IN.base_sig.main_mode_mill.automa	FC31	R	STL	NW	1 S
DB82.DBX2.1	SPS.CMM_IN.base_sig.main_mode_mill.automa	FC31	W	STL	NW	1 S
DB82.DBX2.1	SPS.CMM_IN.base_sig.main_mode_mill.automa	FC35	W	STL	NW	1 S
DB82.DBX2.1	SPS.CMM_IN.base_sig.main_mode_mill.automa	FC31	R	STL	NW	1 S
DB82.DBX2.1	SPS.CMM_IN.base_sig.main_mode_mill.automa	FC35	W	STL	NW	1 S
DB82.DBX2.1	SPS.CMM_IN.base_sig.main_mode_mill.automa	FC31	R	STL	NW	1 S
DB82.DBX4.0	SPS.CMM_IN.base_sig.reset	FC31	R	STL	NW	1 S
DB82.DBX4.0	SPS.CMM_IN.base_sig.reset	FC35	W	STL	NW	1 S
DB82.DBX4.0	SPS.CMM_IN.base_sig.reset	FC31	R	STL	NW	1 S
DB82.DBX4.0	SPS.CMM_IN.base_sig.reset	FC31	R	STL	NW	1 S
DB82.DBX4.0	SPS.CMM_IN.base_sig.reset	FC35	W	STL	NW	1 S
DB82.DBX4.1	SPS.CMM_IN.base_sig.nc_cycle_start	FC35	W	STL	NW	1 S
DB82.DBX4.1	SPS.CMM_IN.base_sig.nc_cycle_start	FC31	R	STL	NW	1 S
DB82.DBX4.1	SPS.CMM_IN.base_sig.nc_cycle_start	FC32	R	STL	NW	1 S
DB82.DBX4.1	SPS.CMM_IN.base_sig.nc_cycle_start	FC32	R	STL	NW	1 S
DB82.DBX4.1	SPS.CMM_IN.base_sig.nc_cycle_start	FC32	R	STL	NW	1 S
DB82.DBX4.1	SPS.CMM_IN.base_sig.nc_cycle_start	FC35	W	STL	NW	1 S
DB82.DBX4.1	SPS.CMM_IN.base_sig.nc_cycle_start	FC31	R	STL	NW	1 S
DB82.DBX4.2	SPS.CMM_IN.base_sig.nc_cycle_stop	FC35	W	STL	NW	1 S
DB82.DBX4.2	SPS.CMM_IN.base_sig.nc_cycle_stop	FC31	R	STL	NW	1 S
DB82.DBX4.2	SPS.CMM_IN.base_sig.nc_cycle_stop	FC35	W	STL	NW	1 S
DB82.DBX4.2	SPS.CMM_IN.base_sig.nc_cycle_stop	FC31	R	STL	NW	1 S
DB82.DBX6.0	SPS.CMM_IN.sub_mode_mill.tool	FC31	R	STL	NW	1 S
DB82.DBX6.0	SPS.CMM_IN.sub_mode_mill.tool	FC31	W	STL	NW	1 S
DB82.DBX6.1	SPS.CMM_IN.sub_mode_mill.directory	FC31	R	STL	NW	1 S
DB82.DBX6.1	SPS.CMM_IN.sub_mode_mill.directory	FC31	W	STL	NW	1 S

Address	Symbol	Block	Type	Language	Details		
DB82.DBX6.2	SPS.CMM_IN.sub_mode_mill.messages	FC31	W	STL	NW	1	S
DB82.DBX6.2	SPS.CMM_IN.sub_mode_mill.messages	FC31	R	STL	NW	1	S
DB82.DBX6.3	SPS.CMM_IN.sub_mode_mill.program	FC31	W	STL	NW	1	S
DB82.DBX6.3	SPS.CMM_IN.sub_mode_mill.program	FC31	R	STL	NW	1	S
DB82.DBX6.4	SPS.CMM_IN.sub_mode_mill.oem1	FC31	R	STL	NW	1	S
DB82.DBX6.4	SPS.CMM_IN.sub_mode_mill.oem1	FC31	W	STL	NW	1	S
DB82.DBX6.5	SPS.CMM_IN.sub_mode_mill.oem2	FC31	R	STL	NW	1	S
DB82.DBX6.5	SPS.CMM_IN.sub_mode_mill.oem2	FC31	W	STL	NW	1	S
DB82.DBX6.6	SPS.CMM_IN.sub_mode_mill.customer	FC31	R	STL	NW	1	S
DB82.DBX6.6	SPS.CMM_IN.sub_mode_mill.customer	FC31	W	STL	NW	1	S
DB82.DBX6.7	SPS.CMM_IN.sub_mode_mill.mda	FC31	R	STL	NW	1	S
DB82.DBX6.7	SPS.CMM_IN.sub_mode_mill.mda	FC31	R	STL	NW	1	S
DB82.DBX6.7	SPS.CMM_IN.sub_mode_mill.mda	FC31	R	STL	NW	1	S
DB82.DBX6.7	SPS.CMM_IN.sub_mode_mill.mda	FC31	W	STL	NW	1	S
DB82.DBX6.7	SPS.CMM_IN.sub_mode_mill.mda	FC31	R	STL	NW	1	S
DB82.DBX6.7	SPS.CMM_IN.sub_mode_mill.mda	FC41	W	LAD	NW	5	/
DB82.DBX7.0	SPS.CMM_IN.sub_mode_mill.auto_tool_measur	FC31	W	STL	NW	1	S
DB82.DBX7.0	SPS.CMM_IN.sub_mode_mill.auto_tool_measur	FC31	R	STL	NW	1	S
DB82.DBX9.1	SPS.CMM_IN.spindle_start	FC31	R	STL	NW	1	S
DB82.DBX9.1	SPS.CMM_IN.spindle_start	FC31	R	STL	NW	1	S
DB82.DBX9.1	SPS.CMM_IN.spindle_start	FC60	W	LAD	NW	16	/
DB82.DBX9.2	SPS.CMM_IN.spindle_stop	FC60	W	LAD	NW	8	/
DB82.DBX9.2	SPS.CMM_IN.spindle_stop	FC31	R	STL	NW	1	S
DB82.DBX9.2	SPS.CMM_IN.spindle_stop	FC31	R	STL	NW	1	S
DB82.DBX9.3	SPS.CMM_IN.spindle_left	FC31	R	STL	NW	1	S
DB82.DBX9.3	SPS.CMM_IN.spindle_left	FC31	R	STL	NW	1	S
DB82.DBX9.3	SPS.CMM_IN.spindle_left	FC60	W	LAD	NW	14	/
DB82.DBX9.4	SPS.CMM_IN.spindle_right	FC31	R	STL	NW	1	S
DB82.DBX9.4	SPS.CMM_IN.spindle_right	FC60	W	LAD	NW	12	/
DB82.DBX9.4	SPS.CMM_IN.spindle_right	FC31	R	STL	NW	1	S
DB82.DBX9.5	SPS.CMM_IN.program_extern_selected	FC32	R	STL	NW	1	S
DB82.DBX9.5	SPS.CMM_IN.program_extern_selected	FC32	R	STL	NW	1	S
DB82.DBX9.6	SPS.CMM_IN.disable_cnc_standard	FC41	W	LAD	NW	1	/
DB82.DBX9.6	SPS.CMM_IN.disable_cnc_standard	FC31	R	STL	NW	1	S
DB82.DBX9.7	SPS.CMM_IN.cmm_activ_in_cnc_mode	FC41	W	LAD	NW	2	/
DB82.DBX9.7	SPS.CMM_IN.cmm_activ_in_cnc_mode	FC30	R	STL	NW	1	S
DB82.DBX9.7	SPS.CMM_IN.cmm_activ_in_cnc_mode	FC30	R	STL	NW	1	S
DB82.DBX9.7	SPS.CMM_IN.cmm_activ_in_cnc_mode	FC30	R	STL	NW	1	S
DB82.DBX10.0	SPS.CMM_IN.program_test_request	FC31	R	STL	NW	1	S
DB82.DBX10.0	SPS.CMM_IN.program_test_request	FC61	R	LAD	NW	4	/.
DB82.DBX10.0	SPS.CMM_IN.program_test_request	FC61	R	LAD	NW	4	/.
DB82.DBX10.0	SPS.CMM_IN.program_test_request	FC61	R	LAD	NW	10	/.
DB82.DBX10.0	SPS.CMM_IN.program_test_request	FC61	R	LAD	NW	12	/.
DB82.DBX10.0	SPS.CMM_IN.program_test_request	FC61	R	LAD	NW	3	/.
DB82.DBX10.0	SPS.CMM_IN.program_test_request	FC60	R	LAD	NW	16	/.
DB82.DBX10.0	SPS.CMM_IN.program_test_request	FC61	R	LAD	NW	3	/.
DB82.DBX10.0	SPS.CMM_IN.program_test_request	FC46	W	LAD	NW	15	/
DB82.DBX10.1	SPS.CMM_IN.dry_run_request	FC46	W	LAD	NW	6	/
DB82.DBX10.1	SPS.CMM_IN.dry_run_request	FC31	R	STL	NW	1	S
DB82.DBX10.2	SPS.CMM_IN.m01_request	FC31	R	STL	NW	1	S
DB82.DBX10.2	SPS.CMM_IN.m01_request	FC46	W	LAD	NW	12	/
DB82.DBX10.3	SPS.CMM_IN.skip_block_request	FC46	W	LAD	NW	9	/
DB82.DBX10.3	SPS.CMM_IN.skip_block_request	FC31	R	STL	NW	1	S
DB82.DBX10.4	SPS.CMM_IN.boot_standard	FC41	W	LAD	NW	3	/
DB82.DBX10.4	SPS.CMM_IN.boot_standard	FC30	R	STL	NW	1	S
DB82.DBX10.5	SPS.CMM_IN.nck_auto_req	FC32	R	STL	NW	1	S
DB82.DBX10.5	SPS.CMM_IN.nck_auto_req	FC32	R	STL	NW	1	S
DB82.DBX10.5	SPS.CMM_IN.nck_auto_req	FC32	R	STL	NW	1	S
DB82.DBX10.5	SPS.CMM_IN.nck_auto_req	FC32	R	STL	NW	1	S
DB82.DBX10.6	SPS.CMM_IN.spindle_act_m30_reset	FC31	R	STL	NW	1	S
DB82.DBX10.6	SPS.CMM_IN.spindle_act_m30_reset	FC31	R	STL	NW	1	S
DB82.DBX10.7	SPS.CMM_IN.ignore_nck_alarm	FC32	R	STL	NW	1	S
DB82.DBX30.0	SPS.CMM_OUT.base_sig.main_mode_mill.manua	FC31	W	STL	NW	1	S
DB82.DBX30.0	SPS.CMM_OUT.base_sig.main_mode_mill.manua	FC35	R	STL	NW	1	S
DB82.DBX30.0	SPS.CMM_OUT.base_sig.main_mode_mill.manua	FC35	R	STL	NW	1	S
DB82.DBX30.0	SPS.CMM_OUT.base_sig.main_mode_mill.manua	FC31	W	STL	NW	1	S
DB82.DBX30.0	SPS.CMM_OUT.base_sig.main_mode_mill.manua	FC31	W	STL	NW	1	S

Address	Symbol	Block	Type	Language	Details		
DB82.DBX30.0	SPS.CMM_OUT.base_sig.main_mode_mill.manua	FC31	W	STL	NW	1	S
DB82.DBX30.0	SPS.CMM_OUT.base_sig.main_mode_mill.manua	FC31	W	STL	NW	1	S
DB82.DBX30.0	SPS.CMM_OUT.base_sig.main_mode_mill.manua	FC31	W	STL	NW	1	S
DB82.DBX30.1	SPS.CMM_OUT.base_sig.main_mode_mill.autom	FC31	W	STL	NW	1	S
DB82.DBX30.1	SPS.CMM_OUT.base_sig.main_mode_mill.autom	FC35	R	STL	NW	1	S
DB82.DBX30.1	SPS.CMM_OUT.base_sig.main_mode_mill.autom	FC31	W	STL	NW	1	S
DB82.DBX30.1	SPS.CMM_OUT.base_sig.main_mode_mill.autom	FC35	R	STL	NW	1	S
DB82.DBX30.1	SPS.CMM_OUT.base_sig.main_mode_mill.autom	FC31	W	STL	NW	1	S
DB82.DBX30.1	SPS.CMM_OUT.base_sig.main_mode_mill.autom	FC31	W	STL	NW	1	S
DB82.DBX30.1	SPS.CMM_OUT.base_sig.main_mode_mill.autom	FC31	W	STL	NW	1	S
DB82.DBX30.1	SPS.CMM_OUT.base_sig.main_mode_mill.autom	FC31	W	STL	NW	1	S
DB82.DBX32.0	SPS.CMM_OUT.base_sig.reset	FC31	W	STL	NW	1	S
DB82.DBX32.0	SPS.CMM_OUT.base_sig.reset	FC31	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC32	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC47	R	LAD	NW	24	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC47	R	LAD	NW	23	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC42	R	LAD	NW	6	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC72	R	LAD	NW	4	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC31	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC35	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC31	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC47	R	LAD	NW	27	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC40	R	LAD	NW	5	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC60	R	LAD	NW	9	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC75	R	LAD	NW	2	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC87	R	LAD	NW	1	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC47	R	LAD	NW	25	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC60	R	LAD	NW	7	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC79	R	LAD	NW	5	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC42	R	LAD	NW	15	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC70	R	LAD	NW	3	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC32	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC46	R	LAD	NW	14	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC46	R	LAD	NW	5	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC70	R	LAD	NW	1	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC42	R	LAD	NW	4	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC83	R	LAD	NW	1	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC60	R	LAD	NW	7	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC42	R	LAD	NW	6	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC65	R	LAD	NW	6	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC54	R	LAD	NW	18	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC42	R	LAD	NW	13	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC79	R	LAD	NW	16	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC46	R	LAD	NW	13	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC79	R	LAD	NW	17	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC31	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC32	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC79	R	LAD	NW	4	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC79	R	LAD	NW	3	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC35	R	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC32	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC71	R	LAD	NW	17	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC32	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC60	R	LAD	NW	26	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC32	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC65	R	LAD	NW	4	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC32	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC60	R	LAD	NW	11	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC35	R	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC32	W	STL	NW	1	S
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC56	R	LAD	NW	18	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC74	R	LAD	NW	4	/.
DB82.DBX32.1	SPS.CMM_OUT.base_sig.nc_cycle_activ	FC60	R	LAD	NW	13	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC35	R	STL	NW	1	S
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC81	R	LAD	NW	2	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC32	W	STL	NW	1	S
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC35	W	STL	NW	1	S

Address	Symbol	Block	Type	Language	Details		
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC42	R	LAD	NW	15	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC70	R	LAD	NW	1	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC42	R	LAD	NW	6	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC35	R	STL	NW	1	S
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC32	W	STL	NW	1	S
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC42	R	LAD	NW	6	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC46	R	LAD	NW	14	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC45	R	LAD	NW	17	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC80	R	LAD	NW	13	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC32	W	STL	NW	1	S
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC79	R	LAD	NW	16	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC32	W	STL	NW	1	S
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC79	R	LAD	NW	17	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC60	R	LAD	NW	7	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC32	W	STL	NW	1	S
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC45	R	LAD	NW	17	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC46	R	LAD	NW	13	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC60	R	LAD	NW	15	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC60	R	LAD	NW	13	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC81	R	LAD	NW	1	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC42	R	LAD	NW	4	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC60	R	LAD	NW	7	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC74	R	LAD	NW	4	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC60	R	LAD	NW	11	/.
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC32	W	STL	NW	1	S
DB82.DBX32.2	SPS.CMM_OUT.base_sig.nc_cycle_stopped	FC40	R	LAD	NW	5	/.
DB82.DBX32.6	SPS	FC79	R	LAD	NW	4	/.
DB82.DBX34.0	SPS.CMM_OUT.sub_mode_mill.tool	FC31	W	STL	NW	1	S
DB82.DBX34.0	SPS.CMM_OUT.sub_mode_mill.tool	FC31	W	STL	NW	1	S
DB82.DBX34.0	SPS.CMM_OUT.sub_mode_mill.tool	FC31	W	STL	NW	1	S
DB82.DBX34.1	SPS.CMM_OUT.sub_mode_mill.directory	FC31	W	STL	NW	1	S
DB82.DBX34.1	SPS.CMM_OUT.sub_mode_mill.directory	FC31	W	STL	NW	1	S
DB82.DBX34.1	SPS.CMM_OUT.sub_mode_mill.directory	FC31	W	STL	NW	1	S
DB82.DBX34.2	SPS.CMM_OUT.sub_mode_mill.messages	FC31	W	STL	NW	1	S
DB82.DBX34.2	SPS.CMM_OUT.sub_mode_mill.messages	FC31	W	STL	NW	1	S
DB82.DBX34.2	SPS.CMM_OUT.sub_mode_mill.messages	FC31	W	STL	NW	1	S
DB82.DBX34.3	SPS.CMM_OUT.sub_mode_mill.program	FC31	W	STL	NW	1	S
DB82.DBX34.3	SPS.CMM_OUT.sub_mode_mill.program	FC31	W	STL	NW	1	S
DB82.DBX34.3	SPS.CMM_OUT.sub_mode_mill.program	FC31	W	STL	NW	1	S
DB82.DBX34.4	SPS.CMM_OUT.sub_mode_mill.oem1	FC31	W	STL	NW	1	S
DB82.DBX34.4	SPS.CMM_OUT.sub_mode_mill.oem1	FC31	W	STL	NW	1	S
DB82.DBX34.4	SPS.CMM_OUT.sub_mode_mill.oem1	FC31	W	STL	NW	1	S
DB82.DBX34.5	SPS.CMM_OUT.sub_mode_mill.oem2	FC31	W	STL	NW	1	S
DB82.DBX34.5	SPS.CMM_OUT.sub_mode_mill.oem2	FC31	W	STL	NW	1	S
DB82.DBX34.5	SPS.CMM_OUT.sub_mode_mill.oem2	FC31	W	STL	NW	1	S
DB82.DBX34.6	SPS.CMM_OUT.sub_mode_mill.customer	FC31	W	STL	NW	1	S
DB82.DBX34.6	SPS.CMM_OUT.sub_mode_mill.customer	FC31	W	STL	NW	1	S
DB82.DBX34.6	SPS.CMM_OUT.sub_mode_mill.customer	FC31	W	STL	NW	1	S
DB82.DBX34.7	SPS.CMM_OUT.sub_mode_mill.mda	FC31	W	STL	NW	1	S
DB82.DBX34.7	SPS.CMM_OUT.sub_mode_mill.mda	FC31	W	STL	NW	1	S
DB82.DBX34.7	SPS.CMM_OUT.sub_mode_mill.mda	FC41	R	LAD	NW	6	/.
DB82.DBX35.0	SPS.CMM_OUT.sub_mode_mill.auto_tool_measu	FC31	W	STL	NW	1	S
DB82.DBX35.0	SPS.CMM_OUT.sub_mode_mill.auto_tool_measu	FC31	W	STL	NW	1	S
DB82.DBX35.0	SPS.CMM_OUT.sub_mode_mill.auto_tool_measu	FC31	W	STL	NW	1	S
DB82.DBX36.0	SPS.CMM_OUT.cmm_plc_activ	FC30	W	STL	NW	1	S
DB82.DBX36.0	SPS.CMM_OUT.cmm_plc_activ	FC34	R	STL	NW	1	S
DB82.DBX36.0	SPS.CMM_OUT.cmm_plc_activ	FC30	W	STL	NW	1	S
DB82.DBX36.0	SPS.CMM_OUT.cmm_plc_activ	FC30	W	STL	NW	1	S
DB82.DBX36.1	SPS.CMM_OUT.cmm_mmc_activ	FC30	W	STL	NW	1	S
DB82.DBX36.1	SPS.CMM_OUT.cmm_mmc_activ	FC41	R	LAD	NW	6	/.
DB82.DBX36.1	SPS.CMM_OUT.cmm_mmc_activ	FC41	R	LAD	NW	5	/.
DB82.DBX36.1	SPS.CMM_OUT.cmm_mmc_activ	FC79	R	LAD	NW	2	/.
DB82.DBX36.1	SPS.CMM_OUT.cmm_mmc_activ	FC30	W	STL	NW	1	S
DB82.DBX36.1	SPS.CMM_OUT.cmm_mmc_activ	FC30	W	STL	NW	1	S
DB82.DBX36.2	SPS.CMM_OUT.spindle_start_req	FC31	W	STL	NW	1	S
DB82.DBX36.2	SPS.CMM_OUT.spindle_start_req	FC31	W	STL	NW	1	S

Address	Symbol	Block	Type	Language	Details		
DB82.DBX36.2	SPS.CMM_OUT.spindle_start_req	FC31	W	STL	NW	1	S
DB82.DBX36.2	SPS.CMM_OUT.spindle_start_req	FC60	R	LAD	NW	13	/.
DB82.DBX36.2	SPS.CMM_OUT.spindle_start_req	FC31	W	STL	NW	1	S
DB82.DBX36.2	SPS.CMM_OUT.spindle_start_req	FC60	R	LAD	NW	11	/.
DB82.DBX36.3	SPS.CMM_OUT.spindle_stop_req	FC31	W	STL	NW	1	S
DB82.DBX36.3	SPS.CMM_OUT.spindle_stop_req	FC31	W	STL	NW	1	S
DB82.DBX36.3	SPS.CMM_OUT.spindle_stop_req	FC31	W	STL	NW	1	S
DB82.DBX36.3	SPS.CMM_OUT.spindle_stop_req	FC31	W	STL	NW	1	S
DB82.DBX36.4	SPS.CMM_OUT.spindle_right	FC60	R	LAD	NW	11	/.
DB82.DBX36.4	SPS.CMM_OUT.spindle_right	FC60	R	LAD	NW	15	/.
DB82.DBX36.4	SPS.CMM_OUT.spindle_right	FC60	R	LAD	NW	11	/.
DB82.DBX36.4	SPS.CMM_OUT.spindle_right	FC31	W	STL	NW	1	S
DB82.DBX36.4	SPS.CMM_OUT.spindle_right	FC31	W	STL	NW	1	S
DB82.DBX36.4	SPS.CMM_OUT.spindle_right	FC31	W	STL	NW	1	S
DB82.DBX36.5	SPS.CMM_OUT.spindle_left	FC31	W	STL	NW	1	S
DB82.DBX36.5	SPS.CMM_OUT.spindle_left	FC31	W	STL	NW	1	S
DB82.DBX36.5	SPS.CMM_OUT.spindle_left	FC31	W	STL	NW	1	S
DB82.DBX36.5	SPS.CMM_OUT.spindle_left	FC60	R	LAD	NW	20	/.
DB82.DBX36.5	SPS.CMM_OUT.spindle_left	FC60	R	LAD	NW	15	/.
DB82.DBX36.5	SPS.CMM_OUT.spindle_left	FC60	R	LAD	NW	13	/.
DB82.DBX36.5	SPS.CMM_OUT.spindle_left	FC60	R	LAD	NW	13	/.
DB82.DBX36.6	SPS.CMM_OUT.set_spindle_halt	FC32	W	STL	NW	1	S
DB82.DBX36.6	SPS.CMM_OUT.set_spindle_halt	FC32	W	STL	NW	1	S
DB82.DBX36.6	SPS.CMM_OUT.set_spindle_halt	FC32	W	STL	NW	1	S
DB82.DBX36.6	SPS.CMM_OUT.set_spindle_halt	FC32	W	STL	NW	1	S
DB82.DBX36.6	SPS.CMM_OUT.set_spindle_halt	FC32	W	STL	NW	1	S
DB82.DBX36.6	SPS.CMM_OUT.set_spindle_halt	FC32	W	STL	NW	1	S
DB82.DBX36.7	SPS.CMM_OUT.ext_prog_sel	FC30	W	STL	NW	1	S
DB82.DBX37.0	SPS.CMM_OUT.program_selection_done	FC32	W	STL	NW	1	S
DB82.DBX37.0	SPS.CMM_OUT.program_selection_done	FC32	W	STL	NW	1	S
DB82.DBX37.1	SPS.CMM_OUT.program_test_activ	FC31	W	STL	NW	1	S
DB82.DBX37.1	SPS.CMM_OUT.program_test_activ	FC31	W	STL	NW	1	S
DB82.DBX37.1	SPS.CMM_OUT.program_test_activ	FC31	W	STL	NW	1	S
DB82.DBX37.1	SPS.CMM_OUT.program_test_activ	FC31	W	STL	NW	1	S
DB82.DBX37.2	SPS.CMM_OUT.dry_run_activ	FC31	W	STL	NW	1	S
DB82.DBX37.2	SPS.CMM_OUT.dry_run_activ	FC31	W	STL	NW	1	S
DB82.DBX37.2	SPS.CMM_OUT.dry_run_activ	FC31	W	STL	NW	1	S
DB82.DBX37.3	SPS.CMM_OUT.m01_activ	FC31	W	STL	NW	1	S
DB82.DBX37.3	SPS.CMM_OUT.m01_activ	FC31	W	STL	NW	1	S
DB82.DBX37.3	SPS.CMM_OUT.m01_activ	FC31	W	STL	NW	1	S
DB82.DBX37.4	SPS.CMM_OUT.skip_block_activ	FC31	W	STL	NW	1	S
DB82.DBX37.4	SPS.CMM_OUT.skip_block_activ	FC31	W	STL	NW	1	S
DB82.DBX37.4	SPS.CMM_OUT.skip_block_activ	FC31	W	STL	NW	1	S
DB82.DBX37.5	SPS.CMM_OUT.e_asup_activ	FC33	W	STL	NW	1	S
DB82.DBX37.5	SPS.CMM_OUT.e_asup_activ	FC33	W	STL	NW	1	S
DB82.DBX37.5	SPS.CMM_OUT.e_asup_activ	FC33	W	STL	NW	1	S
DB82.DBX37.6	SPS.CMM_OUT.e_s_asup_activ	FC33	W	STL	NW	1	S
DB82.DBX37.6	SPS.CMM_OUT.e_s_asup_activ	FC33	W	STL	NW	1	S
DB82.DBX37.6	SPS.CMM_OUT.e_s_asup_activ	FC33	W	STL	NW	1	S
DB82.DBX37.7	SPS.CMM_OUT.start_up_activ	FC30	W	STL	NW	1	S
DB82.DBX37.7	SPS.CMM_OUT.start_up_activ	FC30	W	STL	NW	1	S
DB82.DBX37.7	SPS.CMM_OUT.start_up_activ	FC30	W	STL	NW	1	S
DB82.DBX37.7	SPS.CMM_OUT.start_up_activ	FC30	W	STL	NW	1	S
DB82.DBX37.7	SPS.CMM_OUT.start_up_activ	FC30	W	STL	NW	1	S
DB82.DBX37.7	SPS.CMM_OUT.start_up_activ	FC30	W	STL	NW	1	S
DB82.DBX37.7	SPS.CMM_OUT.start_up_activ	FC30	W	STL	NW	1	S
DB82.DBX38.0	SPS.CMM_OUT.asup_ini_fin	FC33	W	STL	NW	1	S
DB82.DBX38.0	SPS.CMM_OUT.asup_ini_fin	FC33	W	STL	NW	1	S
DB82.DBX40.0	SPS.CMM_OUT.cycle_state.tool_change	FC32	W	STL	NW	1	S
DB82.DBX40.0	SPS.CMM_OUT.cycle_state.tool_change	FC32	W	STL	NW	1	S
DB82.DBX40.0	SPS.CMM_OUT.cycle_state.tool_change	FC32	W	STL	NW	1	S
DB82.DBX40.0	SPS.CMM_OUT.cycle_state.tool_change	FC32	W	STL	NW	1	S
DB82.DBX40.0	SPS.CMM_OUT.cycle_state.tool_change	FC32	W	STL	NW	1	S
DB82.DBX40.0	SPS.CMM_OUT.cycle_state.tool_change	FC32	W	STL	NW	1	S
DB82.DBX40.0	SPS.CMM_OUT.cycle_state.tool_change	FC32	W	STL	NW	1	S
DB82.DBX40.1	SPS.CMM_OUT.cycle_state.approach_range	FC32	W	STL	NW	1	S
DB82.DBX40.1	SPS.CMM_OUT.cycle_state.approach_range	FC32	W	STL	NW	1	S

Address	Symbol	Block	Type	Language	Details		
DB82.DBX40.1	SPS.CMM_OUT.cycle_state.approach_range	FC32	W	STL	NW	1	S
DB82.DBX40.1	SPS.CMM_OUT.cycle_state.approach_range	FC32	W	STL	NW	1	S
DB82.DBX40.1	SPS.CMM_OUT.cycle_state.approach_range	FC32	W	STL	NW	1	S
DB82.DBX40.1	SPS.CMM_OUT.cycle_state.approach_range	FC32	W	STL	NW	1	S
DB82.DBX40.1	SPS.CMM_OUT.cycle_state.approach_range	FC32	W	STL	NW	1	S
DB82.DBX40.2	SPS.CMM_OUT.cycle_state.retreat	FC32	W	STL	NW	1	S
DB82.DBX40.2	SPS.CMM_OUT.cycle_state.retreat	FC32	W	STL	NW	1	S
DB82.DBX40.2	SPS.CMM_OUT.cycle_state.retreat	FC32	W	STL	NW	1	S
DB82.DBX40.2	SPS.CMM_OUT.cycle_state.retreat	FC32	W	STL	NW	1	S
DB82.DBX40.2	SPS.CMM_OUT.cycle_state.retreat	FC32	W	STL	NW	1	S
DB82.DBX40.2	SPS.CMM_OUT.cycle_state.retreat	FC32	W	STL	NW	1	S
DB82.DBX40.2	SPS.CMM_OUT.cycle_state.retreat	FC32	W	STL	NW	1	S
DB82.DBX40.3	SPS.CMM_OUT.cycle_state.machining_process	FC32	W	STL	NW	1	S
DB82.DBX40.3	SPS.CMM_OUT.cycle_state.machining_process	FC32	W	STL	NW	1	S
DB82.DBX40.3	SPS.CMM_OUT.cycle_state.machining_process	FC32	W	STL	NW	1	S
DB82.DBX40.3	SPS.CMM_OUT.cycle_state.machining_process	FC32	W	STL	NW	1	S
DB82.DBX40.3	SPS.CMM_OUT.cycle_state.machining_process	FC32	W	STL	NW	1	S
DB82.DBX40.3	SPS.CMM_OUT.cycle_state.machining_process	FC32	W	STL	NW	1	S
DB82.DBX40.3	SPS.CMM_OUT.cycle_state.machining_process	FC32	W	STL	NW	1	S
DB82.DBX40.7	SPS.CMM_OUT.cycle_state.initialization	FC32	W	STL	NW	1	S
DB82.DBX40.7	SPS.CMM_OUT.cycle_state.initialization	FC32	W	STL	NW	1	S
DB82.DBX40.7	SPS.CMM_OUT.cycle_state.initialization	FC32	W	STL	NW	1	S
DB82.DBX40.7	SPS.CMM_OUT.cycle_state.initialization	FC32	W	STL	NW	1	S
DB82.DBX40.7	SPS.CMM_OUT.cycle_state.initialization	FC32	W	STL	NW	1	S
DB82.DBX40.7	SPS.CMM_OUT.cycle_state.initialization	FC32	W	STL	NW	1	S
DB82.DBX40.7	SPS.CMM_OUT.cycle_state.initialization	FC32	W	STL	NW	1	S
DB82.DBX42.0	SPS.CMM_OUT.tool_m_function.function_1_on	FC32	W	STL	NW	1	S
DB82.DBX42.0	SPS.CMM_OUT.tool_m_function.function_1_on	FC32	W	STL	NW	1	S
DB82.DBX42.0	SPS.CMM_OUT.tool_m_function.function_1_on	FC71	R	LAD	NW	16	/
DB82.DBX42.1	SPS.CMM_OUT.tool_m_function.function_2_on	FC72	R	LAD	NW	2	/
DB82.DBX42.1	SPS.CMM_OUT.tool_m_function.function_2_on	FC32	W	STL	NW	1	S
DB82.DBX42.1	SPS.CMM_OUT.tool_m_function.function_2_on	FC32	W	STL	NW	1	S
DB82.DBX42.2	SPS.CMM_OUT.tool_m_function.function_3_on	FC65	R	LAD	NW	3	/
DB82.DBX42.2	SPS.CMM_OUT.tool_m_function.function_3_on	FC32	W	STL	NW	1	S
DB82.DBX42.2	SPS.CMM_OUT.tool_m_function.function_3_on	FC32	W	STL	NW	1	S
DB82.DBX42.3	SPS.CMM_OUT.tool_m_function.function_4_on	FC32	W	STL	NW	1	S
DB82.DBX42.3	SPS.CMM_OUT.tool_m_function.function_4_on	FC32	W	STL	NW	1	S
DB82.DBX42.4	SPS.CMM_OUT.tool_m_function.function_1_ac	FC32	W	STL	NW	1	S
DB82.DBX42.4	SPS.CMM_OUT.tool_m_function.function_1_ac	FC32	W	STL	NW	1	S
DB82.DBX42.5	SPS.CMM_OUT.tool_m_function.function_2_ac	FC32	W	STL	NW	1	S
DB82.DBX42.5	SPS.CMM_OUT.tool_m_function.function_2_ac	FC32	W	STL	NW	1	S
DB82.DBX42.6	SPS.CMM_OUT.tool_m_function.function_3_ac	FC32	W	STL	NW	1	S
DB82.DBX42.6	SPS.CMM_OUT.tool_m_function.function_3_ac	FC32	W	STL	NW	1	S
DB82.DBX42.7	SPS.CMM_OUT.tool_m_function.function_4_ac	FC32	W	STL	NW	1	S
DB82.DBX42.7	SPS.CMM_OUT.tool_m_function.function_4_ac	FC32	W	STL	NW	1	S
DB82.DBX54.0	SPS.CMM_OUT.errors.asup_select_error	FC30	W	STL	NW	1	S
DB82.DBX54.0	SPS.CMM_OUT.errors.asup_select_error	FC30	W	STL	NW	1	S
DB82.DBX54.0	SPS.CMM_OUT.errors.asup_select_error	FC30	W	STL	NW	1	S
DB82.DBX60.0	SPS.nck_signal_monitor.monitor_on	FC34	R	STL	NW	1	S
DB82.DBX60.0	SPS.nck_signal_monitor.monitor_on	FC34	R	STL	NW	1	S
DB82.DBX60.1	SPS.nck_signal_monitor.monitor_initialize	FC34	R	STL	NW	1	S
DB82.DBX82.2	SPS	FC79	R	LAD	NW	5	/
DB82.DBX82.2	SPS	FC47	R	LAD	NW	27	/
DB4.DBB59		FB1	W	STL	NW	1	S
DB4.DBB59		FC10	R	STL	NW	1	S
DB4.DBB59		FC1	R	STL	NW	1	S
DB4.DBB59		FC1	R	STL	NW	1	S
DB4.DBB64		FC100	W	STL	NW	1	S
DB4.DBB67		FC100	W	STL	NW	2	S
DB4.DBB72		FC100	W	STL	NW	3	S
DB4.DBB77		FC100	W	STL	NW	4	S
DB4.DBB80		FC100	W	STL	NW	5	S
DB16.DBB18	PI.ASUP	FC35	R	STL	NW	1	S
DB16.DBB18	PI.ASUP	FC35	R	STL	NW	1	S
DB16.DBB18	PI.ASUP	FC91	R	LAD	NW	3	/
DB16.DBB18	PI.ASUP	FC35	R	STL	NW	1	S

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[illegible]

Address	Symbol	Block	Type	Language	Details		
DB74.DBW42		FC2	R	STL	NW	1	S
DB81.DBW6	MMC.MMC_S.sync_buffer	FC33	R	STL	NW	1	S
DB81.DBW6	MMC.MMC_S.sync_buffer	FC33	W	STL	NW	1	S
DB81.DBW6	MMC.MMC_S.sync_buffer	FC32	R	STL	NW	1	S
DB81.DBW6	MMC.MMC_S.sync_buffer	FC33	R	STL	NW	1	S
DB81.DBW28	MMC.MMC_S.MMC_SUBZ.mask_number	FC31	R	STL	NW	1	S
DB81.DBW34	MMC.PLC_S.sync_buffer	FC35	W	STL	NW	1	S
DB81.DBW34	MMC.PLC_S.sync_buffer	FC33	W	STL	NW	1	S
DB82.DBW44	SPS.CMM_OUT.mask_number	FC31	W	STL	NW	1	S
DB5.DBD196		FC35	R	STL	NW	1	S
DB5.DBD196		FC35	R	STL	NW	1	S
DB5.DBD196		FC35	R	STL	NW	1	S
DB5.DBD196		FC35	R	STL	NW	1	S
DB7.DBD146	GP STARTUP.STAT58	FC25	R	STL	NW	1	S
DB7.DBD146	GP STARTUP.STAT58	FC19	R	STL	NW	1	S
DB7.DBD146	GP STARTUP.STAT58	FC26	R	STL	NW	1	S
DB7.DBD146	GP STARTUP.STAT58	FC24	R	STL	NW	1	S
DB7.DBD150	GP STARTUP.STAT59	FC25	R	STL	NW	1	S
DB7.DBD150	GP STARTUP.STAT59	FC19	R	STL	NW	1	S
DB7.DBD150	GP STARTUP.STAT59	FC26	R	STL	NW	1	S
DB7.DBD150	GP STARTUP.STAT59	FC24	R	STL	NW	1	S
DB7.DBD154	GP STARTUP.STAT60	FC13	R	STL	NW	1	S
DB8.DBD32		FC10	R	STL	NW	1	S
DB8.DBD36		FC10	W	STL	NW	1	S
DB20.DBD14	OPTIONS.Option_140	FC42	R	LAD	NW	8	/
DB20.DBD14	OPTIONS.Option_140	FC42	R	LAD	NW	8	/
DB20.DBD14	OPTIONS.Option_140	FC42	R	LAD	NW	8	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	3	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	7	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	7	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	7	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	2	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	2	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	5	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	4	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	2	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	3	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	3	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	4	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	7	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	7	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	5	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	7	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	3	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	5	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	2	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	7	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	3	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	4	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	1	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	4	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	3	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	7	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	5	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	2	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	2	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	7	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	3	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	2	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	2	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	1	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	3	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	4	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	1	/
DB21.DBD70	CHANNEL 1.M1	FC43	R	LAD	NW	1	/
DB21.DBD142	CHANNEL 1.H1	FC43	R	LAD	NW	6	/
DB21.DBD142	CHANNEL 1.H1	FC43	R	LAD	NW	6	/

Address	Symbol	Block	Type	Language	Details		
DB21.DBD142	CHANNEL 1.H1	FC43	R	LAD	NW	6	/
DB21.DBD142	CHANNEL 1.H1	FC43	R	LAD	NW	6	/
DB 2	ALARM & MESSAGE	FC10	R	STL	NW	1	S
DB 2	ALARM & MESSAGE	FC10	R	STL	NW	1	S
DB 2	ALARM & MESSAGE	FC10	R	STL	NW	1	S
DB 2	ALARM & MESSAGE	FC10	R	STL	NW	1	S
DB 2	ALARM & MESSAGE	FC10	R	STL	NW	1	S
DB 2	ALARM & MESSAGE	FC10	R	STL	NW	1	S
DB 3	ALARM & MESSAGE	FC10	R	STL	NW	1	S
DB 3	ALARM & MESSAGE	FC10	R	STL	NW	1	S
DB 3	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 4	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 4	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 4	ALARM & MESSAGE	FC10	R	STL	NW	1	S
DB 4	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 4	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 4	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 4	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 4	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 4	ALARM & MESSAGE	FC10	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC4	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FB16	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FB1	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC2	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC2	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC3	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FB6	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC18	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC3	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC3	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC4	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FB16	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC21	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC14	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC21	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC14	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC14	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC16	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC8	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC21	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC14	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC15	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC21	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC9	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC14	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FB16	R	STL	NW	1	S
DB 5	ALARM & MESSAGE	FC6	R	STL	NW	1	S
DB 6	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 6	ALARM & MESSAGE	FC1	R	STL	NW	1	S
DB 6	ALARM & MESSAGE	FC11	R	STL	NW	1	S
DB 6	ALARM & MESSAGE	FC11	R	STL	NW	1	S

Address		Symbol	Block	Type	Language	Details	
DB	6		FC11	R	STL	NW	1 S
DB	6		FC11	R	STL	NW	1 S
DB	6		FB16	R	STL	NW	1 S
DB	6		FB1	R	STL	NW	1 S
DB	6		FC11	R	STL	NW	1 S
DB	6		FC3	R	STL	NW	1 S
DB	6		FC11	R	STL	NW	1 S
DB	6		FC3	R	STL	NW	1 S
DB	6		FC3	R	STL	NW	1 S
DB	6		FC11	R	STL	NW	1 S
DB	6		FC11	R	STL	NW	1 S
DB	6		FC3	R	STL	NW	1 S
DB	6		FC9	R	STL	NW	1 S
DB	6		FC11	R	STL	NW	1 S
DB	6		FC3	R	STL	NW	1 S
DB	7	GP STARTUP	FB16	R	STL	NW	1 S
DB	7	GP STARTUP	OB100	R	STL	NW	2 S
DB	7	GP STARTUP	FC14	R	STL	NW	1 S
DB	7	GP STARTUP	FC35	R	STL	NW	1 S
DB	7	GP STARTUP	FC35	R	STL	NW	1 S
DB	7	GP STARTUP	FC14	R	STL	NW	1 S
DB	7	GP STARTUP	FC35	R	STL	NW	1 S
DB	7	GP STARTUP	FC14	R	STL	NW	1 S
DB	7	GP STARTUP	FC13	R	STL	NW	1 S
DB	7	GP STARTUP	FC1	R	STL	NW	1 S
DB	7	GP STARTUP	FC35	R	STL	NW	1 S
DB	7	GP STARTUP	FC14	R	STL	NW	1 S
DB	7	GP STARTUP	FC14	R	STL	NW	1 S
DB	8		FC1	R	STL	NW	1 S
DB	8		FC14	R	STL	NW	1 S
DB	8		FC2	R	STL	NW	1 S
DB	8		FB16	R	STL	NW	1 S
DB	8		FC19	R	STL	NW	1 S
DB	8		FC10	R	STL	NW	1 S
DB	8		FC11	R	STL	NW	1 S
DB	8		FC2	R	STL	NW	1 S
DB	8		FC26	R	STL	NW	1 S
DB	8		FC2	R	STL	NW	1 S
DB	8		FC19	R	STL	NW	1 S
DB	8		FC24	R	STL	NW	1 S
DB	8		FC26	R	STL	NW	1 S
DB	8		FC1	R	STL	NW	1 S
DB	8		FC14	R	STL	NW	1 S
DB	8		FC2	R	STL	NW	1 S
DB	8		FC24	R	STL	NW	1 S
DB	8		FC25	R	STL	NW	1 S
DB	8		FC15	R	STL	NW	1 S
DB	8		FC25	R	STL	NW	1 S
DB	8		FB16	R	STL	NW	1 S
DB	8		FC1	R	STL	NW	1 S
DB	8		FC16	R	STL	NW	1 S
DB	8		FC18	R	STL	NW	1 S
DB	10	NC	FC1	R	STL	NW	1 S
DB	10	NC	FC2	R	STL	NW	1 S
DB	10	NC	FC25	R	STL	NW	1 S
DB	10	NC	FC1	R	STL	NW	1 S
DB	10	NC	FC14	R	STL	NW	1 S
DB	10	NC	FC14	R	STL	NW	1 S
DB	10	NC	FC19	R	STL	NW	1 S
DB	10	NC	FB16	R	STL	NW	1 S
DB	10	NC	FC35	R	STL	NW	1 S
DB	10	NC	FC14	R	STL	NW	1 S
DB	11	OMG	FC35	R	STL	NW	1 S
DB	11	OMG	FC26	R	STL	NW	1 S
DB	11	OMG	FC35	R	STL	NW	1 S
DB	11	OMG	FB16	R	STL	NW	1 S

Address		Symbol	Block	Type	Language	Details		
DB	11	OMG	FC19	R	STL	NW	1	S
DB	11	OMG	FC25	R	STL	NW	1	S
DB	11	OMG	FC24	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FC2	R	STL	NW	1	S
DB	15		FB3	R	STL	NW	1	S
DB	15		FB2	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FC2	R	STL	NW	1	S
DB	15		FB1	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FB5	R	STL	NW	1	S
DB	15		FB4	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FB7	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	15		FB6	R	STL	NW	1	S
DB	17		FC1	R	STL	NW	1	S
DB	19	MMC SIGNALS	FB16	R	STL	NW	1	S
DB	19	MMC SIGNALS	FC2	R	STL	NW	1	S
DB	20	OPTIONS	FC1	R	STL	NW	1	S
DB	20	OPTIONS	FC1	R	STL	NW	1	S
DB	73		FC7	R	STL	NW	1	S
DB	74		FC6	R	STL	NW	1	S
DB	74		FC22	R	STL	NW	1	S
DB	74		FC1	R	STL	NW	1	S
DB	74		FB19	R	STL	NW	1	S
DB	74		FC6	R	STL	NW	1	S
DB	74		FC8	R	STL	NW	1	S
DB	74		FC7	R	STL	NW	1	S
DB	74		FC1	R	STL	NW	1	S
DB	75		FC1	R	STL	NW	1	S
DB	75		FC11	R	STL	NW	1	S
DB	76		FC11	R	STL	NW	1	S
DB	76		FC11	R	STL	NW	1	S
DB	82	SPS	FC34	R	STL	NW	3	S
DB	82	SPS	FC34	R	STL	NW	3	S
T	10		OB1	R	LAD	NW	10	/.
T	10		OB1	W	LAD	NW	10	/
T	11		OB1	W	LAD	NW	11	/
T	11		OB1	R	LAD	NW	11	/.
T	12		OB1	W	LAD	NW	12	/
T	12		OB1	R	LAD	NW	12	/.
T	13		FC40	W	LAD	NW	5	/
T	13		FC40	R	LAD	NW	5	/.
T	14		FC41	R	LAD	NW	4	/.
T	14		FC41	W	LAD	NW	4	/
T	15		FC42	R	LAD	NW	6	/.
T	15		FC42	W	LAD	NW	6	/
T	16		FC42	W	LAD	NW	14	/
T	16		FC42	R	LAD	NW	14	/.
T	17		FC42	W	LAD	NW	15	/
T	17		FC42	R	LAD	NW	15	/.
T	18		FC44	W	LAD	NW	11	/
T	18		FC44	R	LAD	NW	11	/.
T	19		FC45	R	LAD	NW	8	/.
T	19		FC45	W	LAD	NW	8	/
T	20		FC48	R	LAD	NW	2	/.

Address		Symbol	Block	Type	Language	Details		
T	20		FC48	W	LAD	NW	2	/
T	21		FC50	R	LAD	NW	1	/.
T	21		FC50	W	LAD	NW	1	/
T	22		FC50	W	LAD	NW	2	/
T	22		FC50	R	LAD	NW	2	/.
T	25		FC53	R	LAD	NW	13	/.
T	25		FC53	W	LAD	NW	13	/
T	26		FC53	R	LAD	NW	18	/.
T	26		FC53	W	LAD	NW	18	/
T	27		FC53	W	LAD	NW	22	/
T	27		FC53	R	LAD	NW	22	/.
T	28		FC54	R	LAD	NW	11	/.
T	28		FC54	W	LAD	NW	11	/
T	29		FC54	W	LAD	NW	19	/
T	29		FC54	R	LAD	NW	19	/.
T	30		FC54	R	LAD	NW	20	/.
T	30		FC54	W	LAD	NW	20	/
T	31		FC54	R	LAD	NW	22	/.
T	31		FC54	W	LAD	NW	22	/
T	32		FC55	W	LAD	NW	1	/
T	32		FC55	R	LAD	NW	1	/.
T	33		FC56	W	LAD	NW	11	/
T	33		FC56	R	LAD	NW	11	/.
T	34		FC56	R	LAD	NW	19	/.
T	34		FC56	W	LAD	NW	19	/
T	35		FC56	W	LAD	NW	20	/
T	35		FC56	R	LAD	NW	20	/.
T	36		FC56	W	LAD	NW	22	/
T	36		FC56	R	LAD	NW	22	/.
T	37		FC57	W	LAD	NW	1	/
T	37		FC57	R	LAD	NW	1	/.
T	38		FC60	R	LAD	NW	27	/.
T	38		FC60	W	LAD	NW	27	/
T	39		FC60	W	LAD	NW	30	/
T	39		FC60	R	LAD	NW	30	/.
T	40		FC60	R	LAD	NW	33	/.
T	40		FC60	W	LAD	NW	33	/
T	41		FC60	R	LAD	NW	44	/.
T	41		FC60	W	LAD	NW	44	/
T	42		FC61	W	LAD	NW	6	/
T	42		FC61	R	LAD	NW	6	/.
T	43		FC61	W	LAD	NW	6	/
T	43		FC61	R	LAD	NW	6	/.
T	44		FC61	W	LAD	NW	7	/
T	44		FC61	R	LAD	NW	7	/.
T	45		FC61	W	LAD	NW	11	/
T	45		FC61	R	LAD	NW	11	/.
T	46		FC61	R	LAD	NW	13	/.
T	46		FC61	W	LAD	NW	13	/
T	47		FC62	W	LAD	NW	1	/
T	47		FC62	R	LAD	NW	1	/.
T	48		FC62	R	LAD	NW	2	/.
T	48		FC62	W	LAD	NW	2	/
T	49		FC65	W	LAD	NW	6	/
T	49		FC65	R	LAD	NW	6	/.
T	50		FC70	W	LAD	NW	10	/
T	50		FC70	R	LAD	NW	10	/.
T	51		FC70	W	LAD	NW	11	/
T	51		FC70	R	LAD	NW	11	/.
T	52		FC70	W	LAD	NW	12	/
T	52		FC70	R	LAD	NW	12	/.
T	53		FC70	W	LAD	NW	14	/
T	53		FC70	W	LAD	NW	14	/
T	53		FC70	R	LAD	NW	14	/.
T	54		FC70	R	LAD	NW	16	/.
T	54		FC70	W	LAD	NW	16	/
T	55		FC70	W	LAD	NW	18	/

Address		Symbol	Block	Type	Language	Details	
T	55		FC70	R	LAD	NW	18 /.
T	56		FC70	W	LAD	NW	19 /
T	56		FC70	R	LAD	NW	19 /.
T	57		FC71	R	LAD	NW	14 /.
T	57		FC71	W	LAD	NW	14 /
T	58		FC71	R	LAD	NW	17 /.
T	58		FC71	W	LAD	NW	17 /
T	59		FC72	W	LAD	NW	4 /
T	59		FC72	R	LAD	NW	4 /.
T	60		FC72	W	LAD	NW	5 /
T	60		FC72	R	LAD	NW	5 /.
T	61		FC72	R	LAD	NW	5 /.
T	61		FC72	W	LAD	NW	5 /
T	62		FC74	R	LAD	NW	4 /.
T	62		FC74	W	LAD	NW	4 /
T	63		FC75	W	LAD	NW	4 /
T	63		FC75	R	LAD	NW	4 /.
T	64		FC75	W	LAD	NW	5 /
T	64		FC75	R	LAD	NW	5 /.
T	65		FC77	W	LAD	NW	1 /
T	65		FC77	R	LAD	NW	1 /.
T	66		FC77	R	LAD	NW	2 /.
T	66		FC77	W	LAD	NW	2 /
T	67		FC77	W	LAD	NW	15 /
T	67		FC77	R	LAD	NW	15 /.
T	70		FC79	R	LAD	NW	1 /.
T	70		FC79	W	LAD	NW	1 /
T	71		FC79	R	LAD	NW	2 /.
T	71		FC79	W	LAD	NW	2 /
T	72		FC79	R	LAD	NW	3 /.
T	72		FC79	W	LAD	NW	3 /
T	73		FC79	W	LAD	NW	3 /
T	73		FC79	R	LAD	NW	3 /.
T	74		FC79	W	LAD	NW	4 /
T	74		FC79	R	LAD	NW	4 /.
T	75		FC79	W	LAD	NW	5 /
T	75		FC79	R	LAD	NW	5 /.
T	76		FC79	R	LAD	NW	6 /.
T	76		FC79	W	LAD	NW	6 /
T	80		FC80	R	LAD	NW	13 /.
T	80		FC80	W	LAD	NW	13 /
T	81		FC80	W	LAD	NW	17 /
T	81		FC80	R	LAD	NW	17 /.
T	82		FC80	W	LAD	NW	21 /
T	82		FC80	R	LAD	NW	21 /.
T	85		FC61	W	LAD	NW	10 /
T	85		FC61	R	LAD	NW	10 /.
T	86		FC61	W	LAD	NW	12 /
T	86		FC61	R	LAD	NW	12 /.
T	90		FC60	W	LAD	NW	34 /
T	90		FC60	R	LAD	NW	34 /.
T	91		FC60	R	LAD	NW	41 /.
T	91		FC60	W	LAD	NW	41 /
T	95		FC48	R	LAD	NW	3 /.
T	95		FC48	W	LAD	NW	3 /
T	100		FC99	R	LAD	NW	1 /.
T	100		FC99	W	LAD	NW	1 /
T	101		FC99	W	LAD	NW	2 /
T	101		FC99	R	LAD	NW	2 /.
T	102		FC99	R	LAD	NW	3 /.
T	102		FC99	W	LAD	NW	3 /
T	103		FC99	R	LAD	NW	4 /.
T	103		FC99	W	LAD	NW	4 /
T	104		FC99	R	LAD	NW	5 /.
T	104		FC99	W	LAD	NW	5 /
T	105		FC99	R	LAD	NW	6 /.
T	105		FC99	W	LAD	NW	6 /

Address	Symbol	Block	Type	Language	Details		
C	1	FC82	W	LAD	NW	4	/
C	1	FC82	W	LAD	NW	4	/
C	1	FC82	R	LAD	NW	4	/
C	1	FC82	W	LAD	NW	4	/
C	2	FC82	R	LAD	NW	5	/
C	2	FC82	W	LAD	NW	5	/
C	2	FC82	W	LAD	NW	5	/
C	2	FC82	W	LAD	NW	5	/
C	3	FC86	W	LAD	NW	4	/
C	3	FC86	W	LAD	NW	4	/
C	3	FC86	W	LAD	NW	4	/
C	3	FC86	R	LAD	NW	4	/
C	4	FC86	W	LAD	NW	5	/
C	4	FC86	R	LAD	NW	5	/
C	4	FC86	W	LAD	NW	5	/
C	4	FC86	W	LAD	NW	5	/
C	11	FC77	W	LAD	NW	3	/
C	11	FC77	R	LAD	NW	3	/
C	11	FC77	R	LAD	NW	3	/
C	11	FC77	W	LAD	NW	3	/
C	11	FC77	W	LAD	NW	3	/
C	12	FC77	R	LAD	NW	4	/
C	12	FC77	W	LAD	NW	4	/
C	12	FC77	W	LAD	NW	4	/
C	12	FC77	W	LAD	NW	4	/
C	12	FC77	R	LAD	NW	4	/
C	13	FC77	W	LAD	NW	5	/
C	13	FC77	R	LAD	NW	5	/
C	13	FC77	R	LAD	NW	5	/
C	13	FC77	W	LAD	NW	5	/
C	13	FC77	W	LAD	NW	5	/
C	14	FC77	W	LAD	NW	6	/
C	14	FC77	R	LAD	NW	6	/
C	14	FC77	R	LAD	NW	6	/
C	14	FC77	W	LAD	NW	6	/
C	14	FC77	W	LAD	NW	6	/
C	15	FC77	R	LAD	NW	7	/
C	15	FC77	R	LAD	NW	7	/
C	15	FC77	W	LAD	NW	7	/
C	15	FC77	W	LAD	NW	7	/
C	15	FC77	W	LAD	NW	7	/
C	16	FC77	W	LAD	NW	8	/
C	16	FC77	R	LAD	NW	8	/
C	16	FC77	W	LAD	NW	8	/
C	16	FC77	W	LAD	NW	8	/
C	16	FC77	R	LAD	NW	8	/
C	17	FC77	W	LAD	NW	9	/
C	17	FC77	R	LAD	NW	9	/
C	17	FC77	R	LAD	NW	9	/
C	17	FC77	W	LAD	NW	9	/
C	17	FC77	W	LAD	NW	9	/
C	18	FC77	R	LAD	NW	10	/
C	18	FC77	R	LAD	NW	10	/
C	18	FC77	W	LAD	NW	10	/
C	18	FC77	W	LAD	NW	10	/
C	18	FC77	W	LAD	NW	10	/
C	19	FC77	R	LAD	NW	11	/
C	19	FC77	R	LAD	NW	11	/
C	19	FC77	W	LAD	NW	11	/
C	19	FC77	W	LAD	NW	11	/

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PLC Symbols

Symbol	Address	Data Type	Comment
ALARM & MESSAGE	DB 2	UDT 2	Interface for Alarms & Messages [System]
GP STARTUP	DB 7	FB 1	Interface for Baseprogram Start-up [System]
NC	DB 10	UDT 10	Interface for NC [System]
OMG	DB 11	UDT 11	Interface for OMG [System]
PI	DB 16	DB 16	Interface for PI Services [System]
SPL	DB 18	DB 18	Interface for SPL Data Area [System]
MMC SIGNALS	DB 19	UDT 19	Interface for MMC Signals [System]
OPTIONS	DB 20	UDT 20	Machine Options [System]
CHANNEL 1	DB 21	UDT 21	Interface for Channel 1 [System]
X AXIS	DB 31	UDT 31	Interface for X Axis [System]
Y AXIS	DB 32	UDT 31	Interface for Y Axis [System]
Z AXIS	DB 33	UDT 31	Interface for Z Axis [System]
4 AXIS	DB 34	UDT 31	Interface for 4 Axis [System]
5 AXIS	DB 35	UDT 31	Interface for 5 Axis [System]
SPINDLE	DB 36	UDT 31	Interface for Spindle [System]
TM LOAD/UNLOAD DATA	DB 71	UDT 71	Interface for Tool Management Load/Unload [System]
TM SPINDLE DATA	DB 72	UDT 72	Interface for Tool Management Spindle [System]
MMC	DB 81	DB 81	Interface for MMC [ShopMill]
SPS	DB 82	DB 82	Interface for SPS [ShopMill]
CMM LOCAL	DB 83	DB 83	Interface for CMM Local [ShopMill]
CMM1 DATA	DB 84	DB 84	Interface for CMM1 Data [ShopMill]
CMM2 DATA	DB 85	DB 85	Interface for CMM2 Data [ShopMill]
CMM3 DATA	DB 86	DB 86	Interface for CMM3 Data [ShopMill]
CMM4 DATA	DB 87	DB 87	Interface for CMM4 Data [ShopMill]
PI INSTANCE	DB 88	FB 4	Interface for PI Services FB4 [ShopMill]
PI INSTANCE USER	DB 90	FB 4	PI Services (FB4 - ASUP) Instance Data Block [User]
ASUP PGM	DB 91	DB 91	ASUP Interrupt Program Paths [User]
GUD ADDRESS	DB 92	DB 92	GUD Address for FB3 [User]
TOOL DATA TRANS	DB 93	DB 93	Tool Data Transfer to NC [User]
DATA TRANS INSTANCE #1	DB 94	FB 3	Data Transfer PLC to NC (FB3) Instance Data Block #1 [User]
TC CYCLE BUFFER	DB 95	DB 95	Tool Change Cycle Marker Buffer [User]
ATC MAG 1 COUNT DATA	DB 96	DB 96	ATC #1 Magazine Counter Data [User]
ATC MAG 2 COUNT DATA	DB 97	DB 97	ATC #2 Magazine Counter Data [User]
GUD NAME DATA	DB 98	DB 98	GUD Address Names for FB5 [User]
EDIT PROTECTION	DB 99	DB 99	Software Keyswitch Edit Protection Level Data [User]
AXES LUBE BUFFER	DB 100	DB 100	Axes Lubrication Marker Buffer [User]
PGM CONTROL BUFFER	DB 101	DB 101	Program Control Marker Buffer [User]
NC VAR	DB 105	DB 105	NC VAR Variables [User]
GUD NAME INSTANCE 10	DB 106	FB 5	GUD Address Names Instance Data Block #10 [User]
SP POWER DATA	DB 107	DB 107	Spindle Power Monitor Data [User]
DATA TRANS INSTANCE #3	DB 108	FB 2	Data Transfer NC to PLC (FB2) Instance Data Block #3 [User]
FB110 INSTANCE	DB 110	FB 110	FB110 Instance Data Block [ShopMill]
GUD NAME INSTANCE 9	DB 112	FB 5	GUD Address Names Instance Data Block #9 [User]
DATA TRANS INSTANCE #2	DB 113	FB 2	Data Transfer NC to PLC (FB2) Instance Data Block #2 [User]
EXTENDED M/H CODES	DB 115	DB 115	NC Extended M-Code & H-Code Decoding Interface [User]
CUST M CODE BUFFER	DB 117	DB 117	Customer Specific M-Code Marker Buffer [User]
LUBE INTERVAL COUNT	DB 118	DB 118	Axes Grease Lubrication Count Data [User]
GUD NAME INSTANCE 1	DB 120	FB 5	GUD Address Names Instance Data Block #1 [User]
GUD NAME INSTANCE 2	DB 121	FB 5	GUD Address Names Instance Data Block #2 [User]

Symbol	Address	Data Type	Comment
GUD NAME INSTANCE 3	DB 122	FB 5	GUD Address Names Instance Data Block #3 [User]
GUD NAME INSTANCE 4	DB 123	FB 5	GUD Address Names Instance Data Block #4 [User]
GUD NAME INSTANCE 5	DB 124	FB 5	GUD Address Names Instance Data Block #5 [User]
GUD NAME INSTANCE 6	DB 125	FB 5	GUD Address Names Instance Data Block #6 [User]
GUD NAME INSTANCE 7	DB 126	FB 5	GUD Address Names Instance Data Block #7 [User]
GUD NAME INSTANCE 8	DB 127	FB 5	GUD Address Names Instance Data Block #8 [User]
RUN UP	FB 1	FB 1	Startup Baseprogram [System]
GET VAR	FB 2	FB 2	Read NC Variable [System]
PUT VAR	FB 3	FB 3	Write NC Variable [System]
PI SERVICES 1	FB 4	FB 4	PI Services 1 [System]
GET GUD	FB 5	FB 5	Read GUD Variable [System]
PI SERVICES 2	FB 7	FB 7	PI Services 2 [System]
HI GRAPH ERROR DIAG	FB 20	FB 20	HiGraph Error Diagnostic [System]
TM STATUS TRANSFER	FB 110	FB 110	ShopMill Tool Management Status Transfer [ShopMill]
GP BASE	FC 2	FC 2	Cyclic Basic Program [System]
GP ALARM	FC 3	FC 3	Alarm Triggered Basic Program [System]
TM REVOLVER	FC 7	FC 7	Tool Management Turret Control [System]
TM TRANSFER	FC 8	FC 8	Tool Management Transfer [System]
ASUP	FC 9	FC 9	Asynchronous Subprograms [System]
ALM/MSGE	FC 10	FC 10	Alarms & Messages [System]
HHU DISPLAY	FC 13	FC 13	Display Control for Handheld Unit [System]
LIN/ROT POS AXIS	FC 15	FC 15	Positioning of Linear and Rotary Axis [System]
PART POS AXIS	FC 16	FC 16	Positioning of Part Axis [System]
SP Y/D CHGE	FC 17	FC 17	Spindle Star / Delta Control [System]
POSITION AXIS	FC 18	FC 18	Position Axis (Spindle/Linear/Rotary/Part) [System]
MCP 19 INCH M	FC 19	FC 19	MCP Signals for 19" M Variant [System]
WRITE MESSAGE	FC 20	FC 20	Write Message to PLC Diagnostic Buffer [System]
QUICK DATA	FC 21	FC 21	Quick Data Channel [System]
TM DIRECTION	FC 22	FC 22	Tool Management Direction Control [System]
MCP OP32S	FC 24	FC 24	MCP Signals for OP32S [System]
MCP 19 INCH T	FC 25	FC 25	MCP Signals for 19" T Variant [System]
HPU	FC 26	FC 26	HPU Signals [System]
CMM3	FC 30	FC 30	FC Graph Group CMM3 [ShopMill]
CMM1	FC 31	FC 31	FC Graph Group CMM1 [ShopMill]
CMM2	FC 32	FC 32	FC Graph Group CMM2 [ShopMill]
CMM4	FC 33	FC 33	FC Graph Group CMM4 [ShopMill]
CMM MONITOR	FC 34	FC 34	NCK Signal Monitor [ShopMill]
CMM FUNCTIONS	FC 35	FC 35	CMM Functions [ShopMill]
NC RESET & E/STOP	FC 40	FC 40	NC Reset & Emergency Stop Control [User]
NC MODE CONTROL	FC 41	FC 41	NC Mode Control (CNC & ShopMill) [User]
NC FEED CONTROL	FC 42	FC 42	NC General Feed Control [User]
NC EXTND M/H CODES	FC 43	FC 43	NC Extended M-Code & H-Code Decoding Control [User]
NC RID CONTROL	FC 44	FC 44	NC Read-In Disable Control [User]
NC START/STOP	FC 45	FC 45	NC Cycle Start/Stop Control [User]
NC PGM CONTROL	FC 46	FC 46	NC Program Control Functions [User]
NC AUXILIARY	FC 47	FC 47	NC Auxiliary Functions [User]
AUTO REFERENCE	FC 48	FC 48	NC Auto Reference Sequence [User]
SYNCH ACTIONS	FC 49	FC 49	Synchronous Actions [User]
IRF CONTROL	FC 50	FC 50	IRF Module Control & Monitoring [User]

Symbol	Address	Data Type	Comment
X AXIS NC CONTROL	FC 51	FC 51	X Axis NC Control & Monitoring [User]
Y AXIS NC CONTROL	FC 52	FC 52	Y Axis NC Control & Monitoring [User]
Z AXIS NC CONTROL	FC 53	FC 53	Z Axis NC Control & Monitoring [User]
4 AXIS NC CONTROL	FC 54	FC 54	4 Axis NC Control & Monitoring (Option) [User]
4 AXIS CLAMP CONTROL	FC 55	FC 55	4 Axis Clamp/Unclamp Control (Option) [User]
5 AXIS NC CONTROL	FC 56	FC 56	5 Axis NC Control & Monitoring (Option) [User]
5 AXIS CLAMP CONTROL	FC 57	FC 57	5 Axis Clamp/Unclamp Control (Option) [User]
SPINDLE CONTROL	FC 60	FC 60	Spindle Control & Monitoring [User]
SPINDLE GEAR CHANGE	FC 61	FC 61	Spindle Gear Change Control (Option) [User]
SPINDLE GEAR PROMPT	FC 62	FC 62	Spindle Gear Change Prompt (Option) [User]
SPINDLE POWER MONITOR	FC 65	FC 65	Spindle Power Monitor [User]
PNEUMATICS	FC 70	FC 70	Control & Monitoring [User]
COOLANT	FC 71	FC 71	Coolant Control & Monitoring [User]
CHIP CONVEYOR	FC 72	FC 72	Chip Conveyor Control & Monitoring [User]
WORK LIGHT	FC 73	FC 73	Work Light Control & Monitoring [User]
AUTO POWER OFF	FC 74	FC 74	Auto Power Off Control & Monitoring [User]
MACHINE DOOR	FC 75	FC 75	Machine Door Unlock Control [User]
AUXILIARY MONITOR	FC 76	FC 76	Auxiliary AC Motor Control & Monitoring [User]
LUBRICATION MONITOR	FC 77	FC 77	Axes Grease Lubrication Monitoring [User]
TOUCH PROBE ENABLE	FC 78	FC 78	Touch Probe Enable [User]
FAULT/WARNING	FC 79	FC 79	Fault/Warning Control & Monitoring [User]
ATC GENERAL	FC 80	FC 80	ATC General Control & Monitoring [User]
ATC TOOL SETUP	FC 81	FC 81	ATC Tool Setup Control [User]
ATC 1 AUTO ROTATION	FC 82	FC 82	ATC #1 Automatic Rotation Control [User]
ATC 1 MAN ROTATION	FC 83	FC 83	ATC #1 Manual Rotation Control [User]
ATC 1 ROTATION	FC 84	FC 84	ATC #1 Rotation Motor Control [User]
ATC 1 ADV/RET	FC 85	FC 85	ATC #1 Advance/Retract Control [User]
ATC 2 AUTO ROTATION	FC 86	FC 86	ATC #2 Automatic Rotation Control [User]
ATC 2 MAN ROTATION	FC 87	FC 87	ATC #2 Manual Rotation Control [User]
ATC 2 ROTATION	FC 88	FC 88	ATC #2 Rotation Motor Control [User]
ATC 2 ADV/RET	FC 89	FC 89	ATC #2 Advance/Retract Control [User]
SHOPMILL SETUP	FC 90	FC 90	ShopMill Interface Setup [ShopMill]
ASUP CONTROL	FC 91	FC 91	ASUP Setup & Control [User]
PLC/NC TRANSFER	FC 92	FC 92	PLC/NC Data Transfer [User]
NCK GUD PTR SEARCH	FC 93	FC 93	NCK GUD Pointer Search for FB3 [User]
SW K/SWCH DATA TRN	FC 95	FC 95	Software Keyswitch Data Transfer [User]
MIDACO PALLET	FC 96	FC 96	Midaco Pallet Control [User]
CUSTOMER M CODES 1	FC 97	FC 97	Customer Specific M-Codes Group #1 [User]
CUSTOMER M CODES 2	FC 98	FC 98	Customer Specific M-Codes Group #2 [User]
TOOL CHANGE TIMEOUTS	FC 99	FC 99	Tool Change Function Timeout Monitoring [User]
TM CONFIGURATION	FC 100	FC 100	ShopMill Tool Management Configuration [ShopMill]
AUTO MODE SELECT	I 0.0	BOOL	MCP - Auto Mode Select [K21]
MDA MODE SELECT	I 0.1	BOOL	MCP - MDA Mode Select [K11]
JOG MODE SELECT	I 0.2	BOOL	MCP - Jog Mode Select [K1]
AXES AUTO REF SEL	I 0.3	BOOL	MCP - Axes Auto Reference Select [K31]
SPIN CCW RUN SEL	I 0.4	BOOL	MCP - Spindle CCW Run Select [K10]
SPIN STOP SELECT	I 0.5	BOOL	MCP - Spindle Stop Select [K9]
SPIN CW RUN SEL	I 0.6	BOOL	MCP - Spindle CW Run Select [K8]
NC CYCLE STOP	I 0.7	BOOL	MCP - NC Cycle Stop [K41]

Symbol	Address	Data Type	Comment
INC1 MODE SELECT	I 1.0	BOOL	MCP - Increment 1 Mode Select [K12]
REP MODE SELECT	I 1.1	BOOL	MCP - Repos Mode Select [K2]
REF MODE SELECT	I 1.2	BOOL	MCP - Reference Mode Select [K3]
MPG UNIT 4 AX SEL	I 1.3	BOOL	SAR7 - Remote HHU 4 Axis Select [X34/2]
RAPID OR 50% SEL	I 1.4	BOOL	MCP - Rapid Override 50% Select [K20]
RAPID OR 20% SEL	I 1.5	BOOL	MCP - Rapid Override 20% Select [K19]
RAPID OR 0% SEL	I 1.6	BOOL	MCP - Rapid Override 0% Select [K18]
NC CYCLE START	I 1.7	BOOL	MCP - NC Cycle Start [K43]
OPT STOP SELECT	I 2.0	BOOL	MCP - Optional Stop Select [K14]
COOLANT ON SEL	I 2.1	BOOL	MCP - Coolant On/Off Select [K24]
CONVEYOR FWD SEL	I 2.2	BOOL	MCP - Chip Conveyor Forward/Off Select [K34]
Z AX LOCK SELECT	I 2.3	BOOL	MCP - Z Axis Lock Select [K44]
MPG UNIT X AX SEL	I 2.4	BOOL	SAR7 - Remote HHU X Axis Select [X33/1]
S/BLOCK SELECT	I 2.5	BOOL	MCP - Single Block Select [K4]
BUZZER STOP	I 2.6	BOOL	MCP - Alarm Buzzer & Tower Lamp Stop [K46]
FEEDHOLD SELECT	I 2.7	BOOL	MCP - Feedhold/Release Select [K47]
FEEDRATE OR BIT A	I 3.0	BOOL	MCP/SAR1 - Feedrate Override Bit A
FEEDRATE OR BIT B	I 3.1	BOOL	MCP/SAR1 - Feedrate Override Bit B
FEEDRATE OR BIT C	I 3.2	BOOL	MCP/SAR1 - Feedrate Override Bit C
FEEDRATE OR BIT D	I 3.3	BOOL	MCP/SAR1 - Feedrate Override Bit D
FEEDRATE OR BIT E	I 3.4	BOOL	MCP/SAR1 - Feedrate Override Bit E
MPG UNIT Y AX SEL	I 3.5	BOOL	SAR7 - Remote HHU Y Axis Select [X33/2]
MPG UNIT Z AX SEL	I 3.6	BOOL	SAR7 - Remote HHU Z Axis Select [X34/1]
NC RESET	I 3.7	BOOL	MCP - NC Reset [K32]
SPINDLE OR BIT A	I 4.0	BOOL	MCP/SAR2 - Spindle Override Bit A [X31/1]
SPINDLE OR BIT B	I 4.1	BOOL	MCP/SAR2 - Spindle Override Bit B [X31/2]
SPINDLE OR BIT C	I 4.2	BOOL	MCP/SAR2 - Spindle Override Bit C [X31/3]
SPINDLE OR BIT D	I 4.3	BOOL	MCP/SAR2 - Spindle Override Bit D [X32/1]
MPG UNIT INC2 SEL	I 4.4	BOOL	SAR6 - Remote HHU Increment 10 Select [X32/2]
Z AX -VE RAP JOG	I 4.5	BOOL	MCP - Z Axis -VE Jog or Rapid Traverse (5 Axis Variant) [K49]
Y AX +VE JOG +VE	I 4.6	BOOL	MCP - Y Axis +VE Jog or Axis Jog Positive (5 Axis Variant) [K48]
4 AX -VE JOG -VE	I 4.7	BOOL	MCP - 4 Axis -VE Jog or Axis Jog Negative (5 Axis Variant) [K50]
4 AX +VE X AX SEL	I 5.0	BOOL	MCP - 4 Axis +VE Jog or X Axis Select (5 Axis Variant) [K28]
Z AX +VE Y AX SEL	I 5.1	BOOL	MCP - Z Axis +VE Jog or Y Axis Select (5 Axis Variant) [K29]
Y AX -VE Z AX SEL	I 5.2	BOOL	MCP - Y Axis -VE Jog or Z Axis Select (5 Axis Variant) [K30]
X AX +VE 4 AX SEL	I 5.3	BOOL	MCP - X Axis +VE Jog or 4 Axis Select (5 Axis Variant) [K38]
RAPID JOG 5 AX SEL	I 5.4	BOOL	MCP - Rapid Traverse or 5 Axis Select (5 Axis Variant) [K39]
X AX -VE NOT USED	I 5.5	BOOL	MCP - X Axis -VE Jog or Not Used (5 Axis Variant) [K40]
MPG UNIT INC3 SEL	I 5.6	BOOL	SAR6 - Remote HHU Increment 100 Select [X32/3]
HHU ENBL SELECT	I 5.7	BOOL	MCP - HHU Enable Select [K33]
INC4 MODE SELECT	I 6.0	BOOL	MCP - Incremental Mode 1000 Mode Select [K23]
INC3 MODE SELECT	I 6.1	BOOL	MCP - Incremental Mode 100 Mode Select [K22]
INC2 MODE SELECT	I 6.2	BOOL	MCP - Incremental 10 Mode Select [K13]
AUTO PWR OFF SEL	I 6.3	BOOL	MCP - Auto Power Off Select [K45]
TOOL/MAG CYC SEL	I 6.4	BOOL	MCP - Tool to Magazine Cycle Select [K37]
TOOL/TOOL CYC SEL	I 6.5	BOOL	MCP - Tool to Tool Change Cycle Select [K36]
CONVEYOR REV SEL	I 6.6	BOOL	MCP - Chip Conveyor Reverse Select [K35]
WORK LGHT SELECT	I 6.7	BOOL	MCP - Work Light On/Off Select [K27]
FLSH COOL SELECT	I 7.0	BOOL	MCP - Flushing Coolant On/Off Select [K26]

Symbol	Address	Data Type	Comment
COOLANT AUTO SEL	I 7.1	BOOL	MCP - Coolant Auto Select [K25]
ATC CYCLE SELECT	I 7.2	BOOL	MCP - ATC Cycle Select & Indication [K17]
RAPID OR SELECT	I 7.3	BOOL	MCP - Rapid Traverse Override Select [K16]
BLCK SKIP SELECT	I 7.4	BOOL	MCP - Block Skip Select [K15]
SPINDLE JOG	I 7.5	BOOL	MCP - Spindle Jog [K7]
PGM TEST SELECT	I 7.6	BOOL	MCP - Program Test Select [K6]
DRY RUN SELECT	I 7.7	BOOL	MCP - Dry Run Select [K5]
MASTR ON	I 32.0	BOOL	KAR1 - Master On (Not Emergency Stop)
MC DOOR INT LS	I 32.1	BOOL	SQL 1/2/16 - Machine Door Interlock Limits
SYSTEM AIR PRS	I 32.2	BOOL	SPS1 - System Air Pressure
IR MODULE FAULT	I 32.5	BOOL	G1 - IRF Module Fault
COOLANT PUMP TOL	I 33.0	BOOL	FRT1 - Coolant Pump Motor Overload
FLUSHING PUMP TOL	I 33.1	BOOL	FRT2 - Flushing Pump Motor Overload
CHIP CONV MTR TOL	I 33.2	BOOL	FRT3 - Chip Conveyor Motor Overload
ZF G/BOX LUBE DET	I 33.4	BOOL	KAR32 - ZF Gearbox Lubrication Circuit Detect
SPIN FAN MTR TOL	I 33.5	BOOL	FRT15 - Spindle Motor Fan Overload
X AXIS REF LS	I 34.0	BOOL	SQL8 - X Axis Reference Limit
Y AXIS REF LS	I 34.1	BOOL	SQL9 - Y Axis Reference Limit
Z AXIS REF LS	I 34.2	BOOL	SQL10 - Z Axis Reference Limit
4 AXIS REF LS	I 34.3	BOOL	SQL11 - 4 Axis Reference Limit
Z AXIS ATC P LS	I 34.4	BOOL	SQL5 - Z Axis ATC Position Limit
SPIN TOOL UCLP PB	I 34.5	BOOL	SBP46 - Spindle Tool Unclamp Pushbutton
SPIN TOOL UCLP LS	I 34.6	BOOL	SQL6 - Spindle Tool Unclamped Limit
SPIN TOOL CLMP LS	I 34.7	BOOL	SQL7 - Spindle Tool Clamped Limit
T MAG #1 CNT 1 PX	I 35.0	BOOL	SQLP1 - Tool Magazine #1 Rotation Count #1 Proximity
T MAG #1 CNT 2 PX	I 35.1	BOOL	SQLP2 - Tool Magazine #1 Rotation Count #2 Proximity
T MAG #1 RET LS	I 35.2	BOOL	SQL3 - Tool Magazine #1 Retract (IN) Limit
T MAG #1 ADV LS	I 35.3	BOOL	SQL4 - Tool Magazine #1 Advance (OUT) Limit
T MAG #1 J CW PB	I 35.4	BOOL	SBP44 - Tool Magazine #1 Jog CW Pushbutton
T MAG #1 J CCW PB	I 35.5	BOOL	SBP45 - Tool Magazine #1 Jog CCW Pushbutton
T MAG #1 RET CONT	I 35.6	BOOL	KAR8 - Magazine #1 Retract Auxiliary Contact
T MAG #2 CNT 1 PX	I 36.0	BOOL	SQLP3 - Tool Magazine #2 Rotation Count #1 Proximity
T MAG #2 CNT 2 PX	I 36.1	BOOL	SQLP4 - Tool Magazine #2 Rotation Count #2 Proximity
T MAG #2 RET LS	I 36.2	BOOL	SQL20 - Tool Magazine #2 Retract (IN) Limit
T MAG #2 ADV LS	I 36.3	BOOL	SQL21 - Tool Magazine #2 Advance (OUT) Limit
T MAG #2 J CW PB	I 36.4	BOOL	SBP50 - Tool Magazine #2 Jog CW Pushbutton
T MAG #2 J CCW PB	I 36.5	BOOL	SBP51 - Tool Magazine #2 Jog CCW Pushbutton
T MAG #2 RET CONT	I 36.6	BOOL	KAR41 - Magazine #2 Retract Auxiliary Contact
SPIN GEAR HIGH LS	I 37.0	BOOL	SQL22 - Spindle High Gear Limit
SPIN GEAR LOW LS	I 37.1	BOOL	SQL23 - Spindle Low Gear Limit
REM HHU 5 AX SEL	I 37.3	BOOL	SAR7 - Remote HHU 5 Axis Select
THRU SPIN COOL PRS	I 37.4	BOOL	SPS2 - Spindle Through Coolant Pressure
4 AXIS UCLP LS	I 37.5	BOOL	SQL15 - 4 Axis Unclamped Limit
5 AXIS UCLP LS	I 37.6	BOOL	SQL31 - 5 Axis Unclamped Limit
LIN SCALE AIR PRS	I 37.7	BOOL	SPS3 - Linear Scale Air Pressure
MD PALLET DOOR LS	I 38.0	BOOL	Midaco Pallet Door Limit Switch
MD PALLET FCT 1 LS	I 38.1	BOOL	Midaco Pallet Function #1 Limit Switch
MD PALLET FCT 2 LS	I 38.2	BOOL	Midaco Pallet Function #2 Limit Switch
MD PALLET FCT 3 LS	I 38.3	BOOL	Midaco Pallet Function #3 Limit Switch

Symbol	Address	Data Type	Comment
MD PALLET FCT 4 LS	I 38.4	BOOL	Midaco Pallet Function #4 Limit Switch
SPIN LUBE O/A OK	I 38.6	BOOL	KAR33 - Spindle Oil/Air Lubrication System OK
CUST M190 FEEDBACK	I 39.1	BOOL	CS1 - Customer Specific M190 Feedback Signal
CUST M191 FEEDBACK	I 39.2	BOOL	CS2 - Customer Specific M191 Feedback Signal
CUST M192 FEEDBACK	I 39.3	BOOL	CS3 - Customer Specific M192 Feedback Signal
CUST M193 FEEDBACK	I 39.4	BOOL	CS3 - Customer Specific M193 Feedback Signal
5 AXIS REF LS	I 39.7	BOOL	SQL30 - 5 Axis Reference Limit
OFF	M 0.0	BOOL	Marker Always Off
ON	M 0.1	BOOL	Marker Always On
CLOCK ON	M 0.2	BOOL	Clock On
CLCK OFF	M 0.3	BOOL	Clock Off
PLC START EXT PLS	M 0.4	BOOL	PLC Start Extended Pulse
PLC START PULSE	M 0.5	BOOL	PLC Start Pulse
PLC START REMEMBER	M 0.6	BOOL	PLC Start Remember
MMC B/UP COMP DLY	M 10.0	BOOL	MMC Boot-Up Complete with Delay
EMRG STOP PULSE	M 16.0	BOOL	Emergency Stop Pulse
EMRG STOP REMEMBER	M 16.1	BOOL	Emergency Stop Remember
FAULT RESET	M 17.0	BOOL	Fault Reset
M PLT DR OP NR RQ	M 17.2	BOOL	Midaco Pallet Door Open NC Reset Request
M PLT DR OP NR RM	M 17.3	BOOL	Midaco Pallet Door Open NC Reset Remember
FEED REL DES PLS	M 18.0	BOOL	Feed Release Deselect Pulse
FEED REL DES REM	M 18.1	BOOL	Feed Release Deselect Remember
FEED REL BUFFER	M 18.2	BOOL	Feed Release Active Buffer
FEED REL SEL REM	M 18.3	BOOL	Feed Release Select Remember
SPIN STOP F/H REQ	M 18.4	BOOL	Spindle Stop for Feedhold Request
FEED O/R DIS BFR	M 18.5	BOOL	Feed Override Active Disable Buffer
FEED HOLD SP START	M 18.6	BOOL	Feedhold for Spindle Start
MANUAL MODE	M 19.0	BOOL	NC in Manual Mode
JOG MODE ONLY	M 19.1	BOOL	NC in Jog Mode Only
AUTOMATIC MODE	M 19.2	BOOL	NC in Automatic Mode
INC1 MODE DES PLS	M 20.0	BOOL	INC 1 Mode Deselect Pulse
INC1 MODE SEL BFR	M 20.2	BOOL	INC 1 Mode Select Buffer
INC1 MODE SEL REM	M 20.3	BOOL	INC 1 Mode Select Remember
INC2 MODE DES PLS	M 20.4	BOOL	INC 10 Mode Deselect Pulse
INC2 MODE SEL BFR	M 20.6	BOOL	INC 10 Mode Select Buffer
INC2 MODE SEL REM	M 20.7	BOOL	INC 10 Mode Select Remember
INC3 MODE DES PLS	M 21.0	BOOL	INC 100 Mode Deselect Pulse
INC3 MODE SEL BFR	M 21.2	BOOL	INC 100 Mode Select Buffer
INC3 MODE SEL REM	M 21.3	BOOL	INC 100 Mode Select Remember
INC4 MODE DES PLS	M 21.4	BOOL	INC 1000 Mode Deselect Pulse
INC4 MODE SEL BFR	M 21.6	BOOL	INC 1000 Mode Select Buffer
INC4 MODE SEL REM	M 21.7	BOOL	INC 1000 Mode Select Remember
TOOL/TOOL PB PLS	M 23.0	BOOL	Tool to Tool Change Cycle Select Pushbutton Pulse
TOOL/TOOL PB REM	M 23.1	BOOL	Tool to Tool Change Cycle Select Pushbutton Remember
TOOL/MAG PB PLS	M 23.2	BOOL	Tool to Magazine Cycle Select Pushbutton Pulse
TOOL/MAG PB REM	M 23.3	BOOL	Tool to Magazine Cycle Select Pushbutton Remember
CYC START PB PLS	M 23.4	BOOL	Tool Change Cycle Start Pushbutton Pulse
CYC START PB REM	M 23.5	BOOL	Tool Change Cycle Start Pushbutton Remember
ASUP ASGN ERR BFR	M 24.0	BOOL	ASUP Assignment Error Buffer

Symbol	Address	Data Type	Comment
ATC D TRN ERR BFR	M 24.1	BOOL	ATC Data Transfer Error Buffer
GUD ADDR ERR BFR	M 24.2	BOOL	GUD Address Pointer Error Buffer
SM EAS EX LATCH	M 24.3	BOOL	ShopMill E_ASUP Execute Latch
SM EAS EX ERR BFR	M 24.4	BOOL	ShopMill E_ASUP Execute Error Buffer
NC START DIS FLT	M 25.0	BOOL	NC Start Disable Fault
X AXIS DES BFR	M 27.0	BOOL	X Axis Deselect Buffer
X AXIS DES REM	M 27.1	BOOL	X Axis Deselect Remember
X AXIS SEL BFR	M 27.2	BOOL	X Axis Select Buffer
X AXIS SEL REM	M 27.3	BOOL	X Axis Select Remember
Y AXIS DES BFR	M 27.4	BOOL	Y Axis Deselect Buffer
Y AXIS DES REM	M 27.5	BOOL	Y Axis Deselect Remember
Y AXIS SEL BFR	M 27.6	BOOL	Y Axis Select Buffer
Y AXIS SEL REM	M 27.7	BOOL	Y Axis Select Remember
Z AXIS DES BFR	M 28.0	BOOL	Z Axis Deselect Buffer
Z AXIS DES REM	M 28.1	BOOL	Z Axis Deselect Remember
Z AXIS SEL BFR	M 28.2	BOOL	Z Axis Select Buffer
Z AXIS SEL REM	M 28.3	BOOL	Z Axis Select Remember
4 AXIS DES BFR	M 28.4	BOOL	4 Axis Deselect Buffer
4 AXIS DES REM	M 28.5	BOOL	4 Axis Deselect Remember
4 AXIS SEL BFR	M 28.6	BOOL	4 Axis Select Buffer
4 AXIS SEL REM	M 28.7	BOOL	4 Axis Select Remember
5 AXIS DES BFR	M 29.0	BOOL	5 Axis Deselect Buffer
5 AXIS DES REM	M 29.1	BOOL	5 Axis Deselect Remember
5 AXIS SEL BFR	M 29.2	BOOL	5 Axis Select Buffer
5 AXIS SEL REM	M 29.3	BOOL	5 Axis Select Remember
S BLOCK DES PLS	M 30.0	BOOL	Single Block Deselect Pulse
S BLOCK DES REM	M 30.1	BOOL	Single Block Deselect Remember
S BLOCK SEL BFR	M 30.2	BOOL	Single Block Select Buffer
S BLOCK SEL REM	M 30.3	BOOL	Single Block Select Remember
DRY RUN DES PLS	M 30.4	BOOL	Dry Run Deselect Pulse
DRY RUN DES REM	M 30.5	BOOL	Dry Run Deselect Remember
DRY RUN SEL BFR	M 30.6	BOOL	Dry Run Select Buffer
DRY RUN SEL REM	M 30.7	BOOL	Dry Run Select Remember
BLCK SKIP DES PLS	M 31.0	BOOL	Block Skip Deselect Pulse
BLCK SKIP DES REM	M 31.1	BOOL	Block Skip Deselect Remember
BLCK SKIP SEL BFR	M 31.2	BOOL	Block Skip Select Buffer
BCLK SKIP SEL REM	M 31.3	BOOL	Block Skip Select Remember
OPT STOP DES PLS	M 31.4	BOOL	Optional Stop (M01) Deselect Pulse
OPT STOP DES REM	M 31.5	BOOL	Optional Stop (M01) Deselect Remember
OPT STOP SEL BFR	M 31.6	BOOL	Optional Stop (M01) Select Buffer
OPT STOP SEL REM	M 31.7	BOOL	Optional Stop (M01) Select Remember
PGM TEST DES PLS	M 32.0	BOOL	Program Test Deselect Pulse
PGM TEST DES REM	M 32.1	BOOL	Program Test Deselect Remember
PGM TEST SEL BFR	M 32.2	BOOL	Program Test Select Buffer
PGM TEST SEL REM	M 32.3	BOOL	Program Test Select Remember
RAPID OR DES PLS	M 32.4	BOOL	Rapid Traverse Override Deselect Pulse
RAPID OR DES REM	M 32.5	BOOL	Rapid Traverse Override Deselect Remember
RAPID OR SEL BFR	M 32.6	BOOL	Rapid Traverse Override Select Buffer
RAPID OR SEL REM	M 32.7	BOOL	Rapid Traverse Override Select Remember

Symbol	Address	Data Type	Comment
ROV 0% DES PLS	M 33.0	BOOL	Rapid Traverse Override 0% Deselect Pulse
ROV 0% DES REM	M 33.1	BOOL	Rapid Traverse Override 0% Deselect Remember
ROV 0% SEL BFR	M 33.2	BOOL	Rapid Traverse Override 0% Select Buffer
ROV 0% SEL REM	M 33.3	BOOL	Rapid Traverse Override 0% Select Remember
ROV 20% DES PLS	M 33.4	BOOL	Rapid Traverse Override 20% Deselect Pulse
ROV 20% DES REM	M 33.5	BOOL	Rapid Traverse Override 20% Deselect Remember
ROV 20% SEL BFR	M 33.6	BOOL	Rapid Traverse Override 20% Select Buffer
ROV 20% SEL REM	M 33.7	BOOL	Rapid Traverse Override 20% Select Remember
ROV 50% DES PLS	M 34.0	BOOL	Rapid Traverse Override 50% Deselect Pulse
ROV 50% DES REM	M 34.1	BOOL	Rapid Traverse Override 50% Deselect Remember
ROV 50% SEL BFR	M 34.2	BOOL	Rapid Traverse Override 50% Select Buffer
ROV 50% SEL REM	M 34.3	BOOL	Rapid Traverse Override 50% Select Remember
Z LOCK DES PLS	M 35.0	BOOL	Z Axis Lock Deselect Pulse
Z LOCK DES REM	M 35.1	BOOL	Z Axis Lock Deselect Remember
Z LOCK SEL BFR	M 35.2	BOOL	Z Axis Lock Select Buffer
Z LOCK SEL REM	M 35.3	BOOL	Z Axis Lock Select Remember
WCS DISP DES PLS	M 35.4	BOOL	WCS Display Deselect Pulse
WCS DISP DES REM	M 35.5	BOOL	WCS Display Deselect Remember
WCS DISP ACTIVE	M 35.6	BOOL	WCS Display Select Buffer
WCS DISP SEL REM	M 35.7	BOOL	WCS Display Select Remember
MPG DSBP PULSE	M 36.0	BOOL	MPG Disable Pulse
MPG DSBP REMEMBER	M 36.1	BOOL	MPG Disable Remember
MPG ENBL SEL BFR	M 36.2	BOOL	MPG Enable Buffer
MPG ENBL REMEMBER	M 36.3	BOOL	MPG Enable Remember
AUTO REF REQUEST	M 38.0	BOOL	Auto Reference Request
AUTO REF Z AX REQ	M 38.1	BOOL	Auto Reference Z Axis Request
AUTO REF Z AX REM	M 38.2	BOOL	Auto Reference Z Axis Remember
AUTO REF XY AX RQ	M 38.3	BOOL	Auto Reference X & Y Axes Request
AUTO REF XY AX RM	M 38.4	BOOL	Auto Reference X & Y Axes Remember
AUTO REF COMPLETE	M 38.5	BOOL	Auto Reference Complete
AUTO REF COMP PLS	M 38.6	BOOL	Auto Reference Complete Pulse
AUTO REF COMP REM	M 38.7	BOOL	Auto Reference Complete Remember
AUTO REF STRT PLS	M 39.0	BOOL	Auto Reference Start Pulse
AUTO REF STRT REM	M 39.1	BOOL	Auto Reference Start Remember
AUTO REF X COMP	M 39.2	BOOL	Auto Reference X Axis Complete
AUTO REF X CP REM	M 39.3	BOOL	Auto Reference X Axis Complete Remember
AUTO REF Y COMP	M 39.4	BOOL	Auto Reference Y Axis Complete
AUTO REF Y CP REM	M 39.5	BOOL	Auto Reference Y Axis Complete Remember
AUTO REF Z COMP	M 39.6	BOOL	Auto Reference Z Axis Complete
AUTO REF Z CP REM	M 39.7	BOOL	Auto Reference Z Axis Complete Remember
IR MODUL FAULT	M 40.0	BOOL	IRF Module Fault
X AXIS IN POSN	M 41.0	BOOL	X Axis In Position
X AXIS MOTION	M 41.1	BOOL	X Axis Motion (+VE or -VE Command)
X AXIS REFD	M 41.2	BOOL	X Axis Referenced to Active Measuring System
X AXIS MEAS OK	M 41.3	BOOL	X Axis Measuring System 1 or 2 Active Only
X AXIS FAULT	M 41.7	BOOL	X Axis Any Fault
Y AXIS IN POSN	M 42.0	BOOL	Y Axis In Position
Y AXIS MOTION	M 42.1	BOOL	Y Axis Motion (+VE or -VE Command)
Y AXIS REFD	M 42.2	BOOL	Y Axis Referenced to Active Measuring System

Symbol	Address	Data Type	Comment
Y AXIS MEAS OK	M 42.3	BOOL	Y Axis Measuring System 1 or 2 Active Only
Y AXIS FAULT	M 42.7	BOOL	Y Axis Any Fault
Z AXIS IN POSN	M 43.0	BOOL	Z Axis In Position
Z AXIS MOTION	M 43.1	BOOL	Z Axis Motion (+VE or -VE Command)
Z AXIS REFD	M 43.2	BOOL	Z Axis Referenced to Active Measuring System
Z AXIS MEAS OK	M 43.3	BOOL	Z Axis Measuring System 1 or 2 Active Only
Z AXIS FAULT	M 43.7	BOOL	Z Axis Any Fault
4 AXIS IN POSN	M 44.0	BOOL	4 Axis In Position
4 AXIS MOTION	M 44.1	BOOL	4 Axis Motion (+VE or -VE Command)
4 AXIS REFD	M 44.2	BOOL	4 Axis Referenced to Active Measuring System
4 AXIS MEAS OK	M 44.3	BOOL	4 Axis Measuring System 1 or 2 Active Only
4 AXIS FAULT	M 44.7	BOOL	4 Axis Any Fault
5 AXIS IN POSN	M 45.0	BOOL	5 Axis In Position
5 AXIS MOTION	M 45.1	BOOL	5 Axis Motion (+VE or -VE Command)
5 AXIS REFD	M 45.2	BOOL	5 Axis Referenced to Active Measuring System
5 AXIS MEAS OK	M 45.3	BOOL	5 Axis Measuring System 1 or 2 Active Only
5 AXIS FAULT	M 45.7	BOOL	5 Axis Any Fault
4 AX AUTO UCLP REQ	M 48.0	BOOL	4 Axis Automatic Unclamp Request
4 AX MANL UCLP REQ	M 48.1	BOOL	4 Axis Manual Unclamp Request
4 AXIS UCLP REQ	M 48.2	BOOL	4 Axis Unclamp Request
5 AX AUTO UCLP REQ	M 49.0	BOOL	5 Axis Automatic Unclamp Request
5 AX MANL UCLP REQ	M 49.1	BOOL	5 Axis Manual Unclamp Request
5 AXIS UCLP REQ	M 49.2	BOOL	5 Axis Unclamp Request
SPINDLE M03 EXT	M 50.3	BOOL	Spindle Extended Decoding for M3
SPINDLE M04 EXT	M 50.4	BOOL	Spindle Extended Decoding for M4
SPINDLE M05 EXT	M 50.5	BOOL	Spindle Extended Decoding for M5
SP CW ST SM RQ RM	M 50.6	BOOL	Spindle CW Start ShopMill Remember
SP CCW ST SM RQ RM	M 50.7	BOOL	Spindle CCW Start ShopMill Remember
SPINDLE SPD PGM	M 51.0	BOOL	Spindle Speed is Programmed (S-Code)
SPINDLE STOP REQ	M 51.2	BOOL	Spindle Stop Request
SPIN STOP SM REM	M 51.3	BOOL	Spindle Stop ShopMill Remember
SPIN STOP J MDE RM	M 51.5	BOOL	Spindle Stop for Change to Jog Mode Remember
SPINDLE MANL OK	M 52.0	BOOL	Spindle Manual Control OK
SPINDLE RIGD TAP	M 52.1	BOOL	Spindle Operating with Rigid Tapping
SPINDLE CW REQ	M 52.2	BOOL	Spindle CW Request
SPIN CW SM REM	M 52.3	BOOL	Spindle CW ShopMill Remember
SPINDLE CCW REQ	M 52.4	BOOL	Spindle CCW Request
SPIN CCW SM REM	M 52.5	BOOL	Spindle CCW ShopMill Remember
SPINDLE PGM INT	M 52.6	BOOL	Spindle Stop Request for Program Interrupt
SPINDLE RUN REQ	M 52.7	BOOL	Spindle Auto/Manual Run Request
SPINDLE JOG REQ	M 53.0	BOOL	Spindle Jog Request
SPIN ORT ACTIVE	M 53.1	BOOL	Spindle Orientation Active
SPIN ORT REQ PLS	M 53.3	BOOL	Spindle Orientation Request Pulse
SPIN ORT REQ REM	M 53.4	BOOL	Spindle Orientation Request Remember
SPINDLE ORT COMP	M 53.5	BOOL	Spindle Orientation Complete
SPIN ORT COMP REM	M 53.6	BOOL	Spindle Orientation Complete Remember
SPINDLE HOLD REQ	M 53.7	BOOL	Spindle Hold Position After Orientation Request
SPINDLE FAULT	M 54.0	BOOL	Spindle Fault
SP G/CHGE R 1 REQ	M 55.0	BOOL	Spindle Gear Change Range #1 (Low) Request

Symbol	Address	Data Type	Comment
SP G/CHGE R 2 REQ	M 55.1	BOOL	Spindle Gear Change Range #2 (High) Request
SPINDLE G/RNGE 1	M 55.2	BOOL	Spindle in Gear Range #1 (Low)
SPINDLE G/RNGE 2	M 55.3	BOOL	Spindle in Gear Range #2 (High)
SPIN STOP G/C REQ	M 55.4	BOOL	Spindle Stop for Gear Change Request
SPIN OSC G/C REQ	M 55.5	BOOL	Spindle Oscillation for Gear Change Request
SP G/CHGE CP PL DY	M 55.6	BOOL	Spindle Gear Change Complete Pulse Delayed
SP G/CHGE COMP REM	M 55.7	BOOL	Spindle Gear Change Complete Remember
SPINDLE IN GEAR	M 56.0	BOOL	Spindle is in a Gear
SPIN OSC G/C R OD	M 56.5	BOOL	Spindle Oscillation for Gear Change Request Off Delayed
SP G/CHGE COMP PLS	M 56.6	BOOL	Spindle Gear Change Complete Pulse
SP G/R 1 BUFFER	M 57.0	BOOL	Spindle Gear Range #1 (Low) Buffer
SP G/R 2 BUFFER	M 57.1	BOOL	Spindle Gear Range #2 (High) Buffer
SP G/R 1 BFR DLY	M 57.2	BOOL	Spindle Gear Range #1 (Low) Buffer Delay
SP G/R 2 BFR DLY	M 57.3	BOOL	Spindle Gear Range #2 (High) Buffer Delay
SP GR HGH MTR BFR	M 57.6	BOOL	Spindle Gear High Motor Buffer
SPIN G/P REQUEST	M 58.0	BOOL	Spindle Gear Change Prompt Request
SPIN G/P ACTIVE	M 58.1	BOOL	Spindle Gear Change Prompt Active
SPIN G/P ACT REM	M 58.2	BOOL	Spindle Gear Change Prompt Active Remember
SPIN LAST G/R = 1	M 59.0	BOOL	Spindle Last Gear Range was Gear Range #1 (Low)
SPIN LAST G/R = 2	M 59.1	BOOL	Spindle Last Gear Range was Gear Range #2 (High)
SP G/R 1 FORCE	M 59.4	BOOL	Spindle Gear Range #1 (Low) Force for Gear Prompt
SP G/R 2 FORCE	M 59.5	BOOL	Spindle Gear Range #2 (High) Force for Gear Prompt
GET GUD ADR RQ 3	M 60.0	BOOL	Get GUD Pointer Address with FB5 Request #3
GET GUD ERROR 3	M 60.1	BOOL	Get GUD Pointer Address with FB5 Error #3
GET GUD DONE 3	M 60.2	BOOL	Get GUD Pointer Address with FB5 Done #3
SP POWER MON ACT	M 60.3	BOOL	Spindle Power Monitor Active
VAR TRANS PLC RQ 2	M 60.4	BOOL	Variable Transfer NC to PLC (FB2) Request #2
VAR TRANS PLC ER 2	M 60.5	BOOL	Variable Transfer NC to PLC (FB2) Error #2
VAR TRANS PLC DN 2	M 60.6	BOOL	Variable Transfer NC to PLC (FB2) Done #2
SP POWER LMT RCH	M 60.7	BOOL	Spindle Preset Power Monitor Limit Reached
SP PWR LM F HD PLS	M 61.0	BOOL	Spindle Power Limit Reached Feedhold Pulse
SP PWR LM F HD REM	M 61.1	BOOL	Spindle Power Limit Reached Feedhold Remember
SPIN TOOL CLMP REQ	M 62.0	BOOL	Spindle Tool Clamp Request
SPIN TOOL CLMP REM	M 62.1	BOOL	Spindle Tool Clamp Remember
SPIN TOOL UCLP REQ	M 62.2	BOOL	Spindle Tool Unclamp Request
SPIN TOOL CLAMPED	M 62.3	BOOL	Spindle Tool is Clamped
SPIN TOOL UNCLMP'D	M 62.4	BOOL	Spindle Tool is Unclamped
SPIN TOOL CLMP RID	M 62.6	BOOL	Spindle Tool Unclamp NC Read-In Disable
SPIN TOOL UCLP RID	M 62.7	BOOL	Spindle Tool Clamp NC Read-In Disable
ORT A/BL REQUEST	M 64.0	BOOL	Spindle Orientation Air Blast Request
ORT A/BL C ST REQ	M 64.2	BOOL	Spindle Orientation Air Blast for Coolant Stop Request
ORT A/BL C ST REM	M 64.3	BOOL	Spindle Orientation Air Blast for Coolant Stop Remember
SPIN A/BL M TC REQ	M 65.0	BOOL	Spindle Tool Air Blast for Manual T/Change Request
SPIN A/BL M TC REM	M 65.1	BOOL	Spindle Tool Air Blast for Manual T/Change Remember
SPIN A/BL A TC REQ	M 65.2	BOOL	Spindle Tool Air Blast for Tool Change Cycle Request
SPIN A/BL TC ST RQ	M 65.4	BOOL	Spindle Tool Air Blast for Through Coolant Stop Request
SPIN A/BL TC ST RM	M 65.5	BOOL	Spindle Tool Air Blast for Through Coolant Stop Remember
PNEUMATIC FAULT	M 66.0	BOOL	Pneumatic System Fault
PNEUMATIC WARNING	M 66.1	BOOL	Pneumatic System Warning

Symbol	Address	Data Type	Comment
COOL MANL OFF	M 70.0	BOOL	Coolant Manual Off
COOL MANL OFF REM	M 70.1	BOOL	Coolant Manual Off Remember
COOL MANL ON	M 70.2	BOOL	Coolant Manual On
COOL MANL ON REM	M 70.3	BOOL	Coolant Manual On Remember
COOL AUTO OFF	M 70.4	BOOL	Coolant Automatic Off
COOL AUTO OFF REM	M 70.5	BOOL	Coolant Automatic Off Remember
COOL AUTO ON	M 70.6	BOOL	Coolant Automatic On
COOL AUTO ON REM	M 70.7	BOOL	Coolant Automatic On Remember
COOL AUTO OFF REQ	M 71.0	BOOL	Coolant Off Request
COOL AUTO ON REQ	M 71.1	BOOL	Coolant On Request
THRU COOL OFF REQ	M 72.0	BOOL	Through Spindle Coolant Off Request
THRU COOL ON REQ	M 72.1	BOOL	Through Spindle Coolant On Request
THRU COOL A/B REQ	M 72.2	BOOL	Through Spindle Coolant Off Air Blast Request
THRU COOL A/B REM	M 72.3	BOOL	Through Spindle Coolant Off Air Blast Remember
CHIP COOL OFF REQ	M 73.0	BOOL	Chip Flushing Coolant Off Request
CHIP COOL OFF REM	M 73.1	BOOL	Chip Flushing Coolant Off Remember
CHIP COOL ON REQ	M 73.2	BOOL	Chip Flushing Coolant On Request
CHIP COOL ON REM	M 73.3	BOOL	Chip Flushing Coolant On Remember
CHIP COOL W SP REQ	M 73.4	BOOL	Chip Flushing Coolant with Spindle Run Request
COOLANT FAULT	M 74.0	BOOL	Coolant System Fault
COOLANT WARNING	M 74.1	BOOL	Coolant System Warning
CHIP CONV OFF REQ	M 76.0	BOOL	Chip Conveyor Off Request
CHIP CONV OFF REM	M 76.1	BOOL	Chip Conveyor Off Remember
CHIP CONV FWD REQ	M 76.2	BOOL	Chip Conveyor Forward Request
CHIP CONV FWD REM	M 76.3	BOOL	Chip Conveyor Forward Remember
CHIP CONV FWD BFR	M 76.4	BOOL	Chip Conveyor Forward Request Buffer
CHIP CONV REV REQ	M 76.5	BOOL	Chip Conveyor Reverse Request
CHIP CONV W SP REQ	M 76.6	BOOL	Chip Conveyor Forward with Spindle Run Request
CHIP CONV RV W FWD	M 77.0	BOOL	Chip Conveyor Reverse with Forward Active Request
CHIP CONV REV COMP	M 77.1	BOOL	Chip Conveyor Reverse with Forward Active Complete
CHIP CONV FAULT	M 77.6	BOOL	Chip Conveyor System Fault
CHIP CONV WARNING	M 77.7	BOOL	Chip Conveyor System Warning
WORK LGHT OFF REQ	M 78.0	BOOL	Work Light Off Request
WORK LGHT OFF REM	M 78.1	BOOL	Work Light Off Remember
WORK LGHT ON BFR	M 78.2	BOOL	Work Light On Buffer
WORK LGHT ON REM	M 78.3	BOOL	Work Light On Remember
A PWR OFF DES PLS	M 80.0	BOOL	Auto Power Off Deselect Pulse
A PWR OFF DES REM	M 80.1	BOOL	Auto Power Off Deselect Remember
A PWR OFF ACTIVE	M 80.2	BOOL	Auto Power Off Active
A PWR OFF SEL REM	M 80.3	BOOL	Auto Power Off Select Remember
M/C DOOR CLS BFR	M 82.0	BOOL	Machine Safety Door Close Buffer
M/C DOOR OPEN PLS	M 82.2	BOOL	Machine Safety Door Open Pulse
M/C DOOR OPEN REM	M 82.3	BOOL	Machine Safety Door Open Remember
M/C DOOR OPEN PEXT	M 82.4	BOOL	Machine Safety Door Open Extended Pulse for Spindle Stop
M/C DOOR OP CS RQ	M 82.6	BOOL	Machine Safety Door Open Cycle Stop Request
M/C DOOR T/C INT	M 83.0	BOOL	Machine Safety Door Tool Change Interrupt
AUX MOTOR FAULT	M 85.0	BOOL	Auxiliary AC Motor Fault
AUX MOTOR WARNING	M 85.1	BOOL	Auxiliary AC Motor Warning
LUBE INT CLCK ON	M 87.0	BOOL	Lubrication Interval Clock On

Symbol	Address	Data Type	Comment
LUBE INT CLCK OFF	M 87.1	BOOL	Lubrication Interval Clock Off
LUBE INT COMPLETE	M 88.0	BOOL	Lubrication Interval Complete
LUBE INT COMP BFR	M 88.1	BOOL	Lubrication Interval Complete Buffer
LUBE INT MSG BFR	M 88.2	BOOL	Lubrication Interval Message Buffer
LUBE INT Z RF REM	M 88.3	BOOL	Lubrication Interval Message with Z Axis Reference Remember
LUBE INT MSG RSET	M 88.4	BOOL	Lubrication Interval Message Reset
LUBE INT PLC STRT	M 88.6	BOOL	PLC Start Remember for Lubrication Interval
AX/SP/611 FAULT	M 90.0	BOOL	Axis/Spindle/Simodrive Fault
GENERAL FAULT	M 90.1	BOOL	General Machine System Fault
MACHINE FAULT	M 90.2	BOOL	Any Machine Fault
MACHINE WARNING	M 90.3	BOOL	Any Machine Warning
ALARM BZR ON BFR	M 91.0	BOOL	Alarm Buzzer On Buffer
ALARM BZR ON REM	M 91.1	BOOL	Alarm Buzzer On Remember
ALARM BZR E/ST REM	M 91.2	BOOL	Alarm Buzzer On for Emergency Stop Remember
DRY RUN MGE REM	M 92.0	BOOL	Dry Run Message Remember
FC24 F HD BUFFER	M 99.5	BOOL	FC24 Feedhold Buffer
FC24 S HD BUFFER	M 99.6	BOOL	FC24 Spindle Hold Buffer
FC24 S DR BUFFER	M 99.7	BOOL	FC24 Spindle Direction Buffer
TOOL CHGE MANUAL	M 100.0	BOOL	Tool Change Manual Operation
TOOL CHGE AUTO	M 100.1	BOOL	Tool Change Automatic Operation
T CHG CYC ACTIVE	M 100.2	BOOL	Tool Change Cycle Active
T CHG CYC INT'D	M 101.0	BOOL	Tool Change Cycle Interrupted
T CHG CYC INT COMP	M 101.1	BOOL	Tool Change Cycle Complete After Interrupt
T CHG CYC INT RSET	M 101.2	BOOL	Tool Change Cycle Interrupt Reset
T CHG CYC INT R RM	M 101.3	BOOL	Tool Change Cycle Interrupt Reset Remember
T MAG FCT SETUP IL	M 101.4	BOOL	Tool Magazine Function Setup Interlock
TOOL MAG FAULT	M 101.6	BOOL	Tool Magazine Fault
TOOL MAG WARNING	M 101.7	BOOL	Tool Magazine Warning
T S/U CYC START OK	M 102.0	BOOL	Tool Setup Cycle Start OK
T S/U CYC CONT OK	M 102.1	BOOL	Tool Setup Cycle Continue OK
T S/U CYC ACTIVE	M 102.2	BOOL	Tool Setup Cycle Active
T S/U OPR ACTIVE	M 102.3	BOOL	Tool Setup Operation Active
T S/U CYC INT'D	M 103.0	BOOL	Tool Setup Cycle Interrupted
T S/U CYC INT COMP	M 103.1	BOOL	Tool Setup Cycle Complete After Interrupt
T S/U CYC INT RSET	M 103.2	BOOL	Tool Setup Cycle Interrupt Reset
T S/U CYC T/T RSET	M 103.4	BOOL	Tool Setup Cycle Tool to Tool Reset
T S/U CYC T/M RSET	M 103.5	BOOL	Tool Setup Cycle Tool to Magazine Reset
T S/U CYC MAG #1	M 104.0	BOOL	Tool Setup Cycle Magazine #1
T S/U CYC MAG #2	M 104.1	BOOL	Tool Setup Cycle Magazine #2
T S/U CYC T/T R PL	M 104.2	BOOL	Tool Setup Cycle Tool to Tool Request Pulse
T S/U CYC T/T R RM	M 104.3	BOOL	Tool Setup Cycle Tool to Tool Request Remember
T S/U CYC T/M R PL	M 104.4	BOOL	Tool Setup Cycle Tool to Magazine Request Pulse
T S/U CYC T/M R RM	M 104.5	BOOL	Tool Setup Cycle Tool to Magazine Request Remember
T S/U CYC T/T ACT	M 105.0	BOOL	Tool Setup Cycle Tool to Tool Active
T S/U CYC T/M ACT	M 105.1	BOOL	Tool Setup Cycle Tool to Magazine Active
T S/U CYC 1ST T LD	M 105.2	BOOL	Tool Setup Cycle 1st Selected Tool Loaded
T S/U MAG ROT RID	M 106.0	BOOL	Tool Setup Magazine Rotation NC Read-In Disable
T S/U MAG ROT COMP	M 106.1	BOOL	Tool Setup Magazine Rotation Complete
T S/U MG1 RT CP RM	M 106.2	BOOL	Tool Setup Magazine #1 Rotation Complete Remember

Symbol	Address	Data Type	Comment
T S/U MG2 RT CP RM	M 106.3	BOOL	Tool Setup Magazine #2 Rotation Complete Remember
TOOL S/UP FAULT	M 106.6	BOOL	Tool Magazine Setup Fault
TOOL S/UP WARNING	M 106.7	BOOL	Tool Magazine Setup Warning
T MAG #1 A ROT OK	M 110.0	BOOL	Tool Magazine #1 Auto Rotation OK
T MAG #1 A RT OLD	M 110.1	BOOL	Tool Magazine #1 Auto Rotation Active for Old Tool
T MAG #1 A RT NEW	M 110.2	BOOL	Tool Magazine #1 Auto Rotation Active for New Tool
T MAG #1 CW C1 RM	M 110.3	BOOL	Tool Magazine #1 CW Count #1 Remember
T MAG #1 CCW C1 R	M 110.4	BOOL	Tool Magazine #1 CCW Count #1 Remember
T MAG #1 CW C2 RM	M 110.5	BOOL	Tool Magazine #1 CW Count #2 Remember
T MAG #1 CCW C2 R	M 110.6	BOOL	Tool Magazine #1 CCW Count #2 Remember
T MAG #1 C1 = 21	M 111.0	BOOL	Tool Magazine #1 Count Value #1 = 21
T MAG #1 C1 = 0	M 111.1	BOOL	Tool Magazine #1 Count Value #1 = 0
T MAG #1 REF1 1	M 111.2	BOOL	Tool Magazine #1 Reference #1 to 1
T MAG #1 C1 TO 1	M 111.4	BOOL	Tool Magazine #1 Count Value #1 to 1
T MAG #1 C1 1 REM	M 111.5	BOOL	Tool Magazine #1 Count Value #1 to 1 Remember
T MAG #1 C1 TO 20	M 111.6	BOOL	Tool Magazine #1 Count Value #1 to 20
T MAG #1 C2 20 RM	M 111.7	BOOL	Tool Magazine #1 Count Value #1 to 20 Remember
T MAG #1 C2 = 21	M 112.0	BOOL	Tool Magazine #1 Count Value #2 = 21
T MAG #1 C2 = 0	M 112.1	BOOL	Tool Magazine #1 Count Value #2 = 0
T MAG #1 REF2 1	M 112.2	BOOL	Tool Magazine #1 Reference #2 to 1
T MAG #1 C2 TO 1	M 112.4	BOOL	Tool Magazine #1 Count Value #2 to 1
T MAG #1 C2 1 REM	M 112.5	BOOL	Tool Magazine #1 Count Value #2 to 1 Remember
T MAG #1 C2 TO 20	M 112.6	BOOL	Tool Magazine #1 Count Value #2 to 20
T MAG #1 C1 20 RM	M 112.7	BOOL	Tool Magazine #1 Count Value #2 to 20 Remember
T MAG #1 A RO REM	M 113.1	BOOL	Tool Magazine #1 Auto Rotation Active for Old Tool Remember
T MAG #1 A RN REM	M 113.2	BOOL	Tool Magazine #1 Auto Rotation Active for New Tool Remember
T MAG #1 ACT=NOM	M 114.0	BOOL	Tool Magazine #1 Actual = Nominal Value
T MAG #1 A CW RQ	M 114.1	BOOL	Tool Magazine #1 Auto CW Rotation Request
T MAG #1 A CCW RQ	M 114.2	BOOL	Tool Magazine #1 Auto CCW Rotation Request
T MAG #1 A R O CP	M 115.0	BOOL	Tool Magazine #1 Auto Rotation for Old Tool Complete
T MAG #1 A R N CP	M 115.1	BOOL	Tool Magazine #1 Auto Rotation for New Tool Complete
T MAG #1 R O RID	M 115.6	BOOL	Tool Magazine #1 Auto Rotation for Old Tool NC Read-In Disable
T MAG #1 R N RID	M 115.7	BOOL	Tool Magazine #1 Auto Rotation for New Tool NC Read-In Disable
T MAG #1 M ROT OK	M 116.0	BOOL	Tool Magazine #1 Manual Rotation OK
T MAG #1 M CW RQ	M 116.1	BOOL	Tool Magazine #1 Manual CW Rotation Request
T MAG #1 M CCW RQ	M 116.2	BOOL	Tool Magazine #1 Manual Rotation Request
T MAG #1 M CW CP	M 116.3	BOOL	Tool Magazine #1 Manual CW Rotation Complete
T MAG #1 M CW RM	M 116.4	BOOL	Tool Magazine #1 Manual CW Rotation Complete Remember
T MAG #1 M CCW CP	M 116.5	BOOL	Tool Magazine #1 Manual CCW Rotation Complete
T MAG #1 M CCW RM	M 116.6	BOOL	Tool Magazine #1 Manual CCW Rotation Complete Remember
T MAG #1 RET OK	M 117.0	BOOL	Tool Magazine #1 Retract OK
T MAG #1 RET REQ	M 117.1	BOOL	Tool Magazine #1 Retract Request
T MAG #1 E RT REM	M 117.2	BOOL	Tool Magazine #1 Emergency Retract Remember
T MAG #1 RET RID	M 117.7	BOOL	Tool Magazine #1 Retract NC Read-In Disable
T MAG #1 ADV OK	M 118.0	BOOL	Tool Magazine #1 Advance OK
T MAG #1 ADV REQ	M 118.1	BOOL	Tool Magazine #1 Advance Request
T MAG #1 ADV RID	M 118.7	BOOL	Tool Magazine #1 Advance NC Read-In Disable
T MAG #1 ROT BFR	M 119.0	BOOL	Tool Magazine #1 Rotation Buffer
T MAG #1 CCW BFR	M 119.1	BOOL	Tool Magazine #1 Rotation CCW Buffer

Symbol	Address	Data Type	Comment
T MAG #2 A ROT OK	M 120.0	BOOL	Tool Magazine #2 Auto Rotation OK
T MAG #2 A RT OLD	M 120.1	BOOL	Tool Magazine #2 Auto Rotation Active for Old Tool
T MAG #2 A RT NEW	M 120.2	BOOL	Tool Magazine #2 Auto Rotation Active for New Tool
T MAG #2 CW C1 RM	M 120.3	BOOL	Tool Magazine #2 CW Count #1 Remember
T MAG #2 CCW C1 R	M 120.4	BOOL	Tool Magazine #2 CCW Count #1 Remember
T MAG #2 CW C2 RM	M 120.5	BOOL	Tool Magazine #2 CW Count #2 Remember
T MAG #2 CCW C2 R	M 120.6	BOOL	Tool Magazine #2 CCW Count #2 Remember
T MAG #2 C1 = 41	M 121.0	BOOL	Tool Magazine #2 Count Value #1 = 41
T MAG #2 C1 = 20	M 121.1	BOOL	Tool Magazine #2 Count Value #1 = 20
T MAG #2 REF1 21	M 121.2	BOOL	Tool Magazine #2 Reference #1 to 21
T MAG #2 C1 TO 21	M 121.4	BOOL	Tool Magazine #2 Count Value #1 to 21
T MAG #2 C1 1 REM	M 121.5	BOOL	Tool Magazine #2 Count Value #1 to 21 Remember
T MAG #2 C1 TO 40	M 121.6	BOOL	Tool Magazine #2 Count Value #1 to 40
T MAG #2 C2 40 RM	M 121.7	BOOL	Tool Magazine #2 Count Value #1 to 40 Remember
T MAG #2 C2 = 41	M 122.0	BOOL	Tool Magazine #2 Count Value #2 = 41
T MAG #2 C2 = 20	M 122.1	BOOL	Tool Magazine #2 Count Value #2 = 20
T MAG #2 REF2 21	M 122.2	BOOL	Tool Magazine #2 Reference #2 to 21
T MAG #2 C2 TO 21	M 122.4	BOOL	Tool Magazine #2 Count Value #2 to 21
T MAG #2 C2 21 REM	M 122.5	BOOL	Tool Magazine #2 Count Value #2 to 21 Remember
T MAG #2 C2 TO 40	M 122.6	BOOL	Tool Magazine #2 Count Value #2 to 40
T MAG #2 C1 40 RM	M 122.7	BOOL	Tool Magazine #2 Count Value #2 to 40 Remember
T MAG #2 A RO REM	M 123.1	BOOL	Tool Magazine #2 Auto Rotation Active for Old Tool Remember
T MAG #2 A RN REM	M 123.2	BOOL	Tool Magazine #2 Auto Rotation Active for New Tool Remember
T MAG #2 ACT=NOM	M 124.0	BOOL	Tool Magazine #2 Actual = Nominal Value
T MAG #2 A CW RQ	M 124.1	BOOL	Tool Magazine #2 Auto CW Rotation Request
T MAG #2 A CCW RQ	M 124.2	BOOL	Tool Magazine #2 Auto CCW Rotation Request
T MAG #2 A R O CP	M 125.0	BOOL	Tool Magazine #2 Auto Rotation for Old Tool Complete
T MAG #2 A R N CP	M 125.1	BOOL	Tool Magazine #2 Auto Rotation for New Tool Complete
T MAG #2 R O RID	M 125.6	BOOL	Tool Magazine #2 Auto Rotation for Old Tool NC Read-In Disable
T MAG #2 R N RID	M 125.7	BOOL	Tool Magazine #2 Auto Rotation for New Tool NC Read-In Disable
T MAG #2 M ROT OK	M 126.0	BOOL	Tool Magazine #2 Manual Rotation OK
T MAG #2 M CW RQ	M 126.1	BOOL	Tool Magazine #2 Manual CW Rotation Request
T MAG #2 M CCW RQ	M 126.2	BOOL	Tool Magazine #2 Manual Rotation Request
T MAG #2 M CW CP	M 126.3	BOOL	Tool Magazine #2 Manual CW Rotation Complete
T MAG #2 M CW RM	M 126.4	BOOL	Tool Magazine #2 Manual CW Rotation Complete Remember
T MAG #2 M CCW CP	M 126.5	BOOL	Tool Magazine #2 Manual CCW Rotation Complete
T MAG #2 M CCW RM	M 126.6	BOOL	Tool Magazine #2 Manual CCW Rotation Complete Remember
T MAG #2 RET OK	M 127.0	BOOL	Tool Magazine #2 Retract OK
T MAG #2 RET REQ	M 127.1	BOOL	Tool Magazine #2 Retract Request
T MAG #2 E RT REM	M 127.2	BOOL	Tool Magazine #2 Emergency Retract Remember
T MAG #2 RET RID	M 127.7	BOOL	Tool Magazine #2 Retract NC Read-In Disable
T MAG #2 ADV OK	M 128.0	BOOL	Tool Magazine #2 Advance OK
T MAG #2 ADV REQ	M 128.1	BOOL	Tool Magazine #2 Advance Request
T MAG #2 ADV RID	M 128.7	BOOL	Tool Magazine #2 Advance NC Read-In Disable
T MAG #2 ROT BFR	M 129.0	BOOL	Tool Magazine #2 Rotation Buffer
T MAG #2 CCW BFR	M 129.1	BOOL	Tool Magazine #2 Rotation CCW Buffer
PI SERV ASUP LAT	M 135.0	BOOL	PI Services ASUP Interrupt Setup Latch
PI SERV ASUP REQ	M 135.1	BOOL	PI Services ASUP Interrupt Setup Request
PI SERV ASUP R R	M 135.2	BOOL	PI Services ASUP Interrupt Setup Request Remember

Symbol	Address	Data Type	Comment
PI SERV ASUP ERR	M 135.3	BOOL	PI Services ASUP Interrupt Setup Interrupt 8 Error
PI SERV ASUP CMP	M 135.4	BOOL	PI Services ASUP Interrupt Setup Interrupt 8 Complete
ASUP CALL REQUEST	M 137.0	BOOL	ASUP Call (FC9) Request
ASUP CALL ACTIVE	M 137.1	BOOL	ASUP Call (FC9) Active
ASUP CALL DONE	M 137.2	BOOL	ASUP Call (FC9) Done
ASUP CALL ERROR	M 137.3	BOOL	ASUP Call (FC9) Error
ASUP CALL STRT ERR	M 137.4	BOOL	ASUP Call (FC9) Start Error
VAR TRANS NC REQ	M 140.0	BOOL	Variable Transfer PLC to NC (FB3) Request
VAR TRANS NC ERR	M 140.1	BOOL	Variable Transfer PLC to NC (FB3) Error
VAR TRANS NC DONE	M 140.2	BOOL	Variable Transfer PLC to NC (FB3) Done
VAR TRANS RID	M 140.3	BOOL	Variable Transfer (FB3) NC Read-In Disable
GET GUD ADR RQ 1	M 145.0	BOOL	Get GUD Pointer Address with FB5 Request #1
GET GUD ERROR 1	M 145.1	BOOL	Get GUD Pointer Address with FB5 Error #1
GET GUD DONE 1	M 145.2	BOOL	Get GUD Pointer Address with FB5 Done #1
GET GUD 1 ERROR	M 146.0	BOOL	Get GUD Pointer Address #1 with FB5 Error
GET GUD 2 ERROR	M 146.1	BOOL	Get GUD Pointer Address #2 with FB5 Error
GET GUD 3 ERROR	M 146.2	BOOL	Get GUD Pointer Address #3 with FB5 Error
GET GUD 4 ERROR	M 146.3	BOOL	Get GUD Pointer Address #4 with FB5 Error
GET GUD 5 ERROR	M 146.4	BOOL	Get GUD Pointer Address #5 with FB5 Error
GET GUD 6 ERROR	M 146.5	BOOL	Get GUD Pointer Address #6 with FB5 Error
GET GUD 7 ERROR	M 146.6	BOOL	Get GUD Pointer Address #7 with FB5 Error
GET GUD 8 ERROR	M 146.7	BOOL	Get GUD Pointer Address #8 with FB5 Error
GET GUD 1 DONE	M 147.0	BOOL	Get GUD Pointer Address #1 with FB5 Done
GET GUD 2 DONE	M 147.1	BOOL	Get GUD Pointer Address #2 with FB5 Done
GET GUD 3 DONE	M 147.2	BOOL	Get GUD Pointer Address #3 with FB5 Done
GET GUD 4 DONE	M 147.3	BOOL	Get GUD Pointer Address #4 with FB5 Done
GET GUD 5 DONE	M 147.4	BOOL	Get GUD Pointer Address #5 with FB5 Done
GET GUD 6 DONE	M 147.5	BOOL	Get GUD Pointer Address #6 with FB5 Done
GET GUD 7 DONE	M 147.6	BOOL	Get GUD Pointer Address #7 with FB5 Done
GET GUD 8 DONE	M 147.7	BOOL	Get GUD Pointer Address #8 with FB5 Done
GET GUD ADR RQ 2	M 148.0	BOOL	Get GUD Pointer Address with FB5 Request #2
GET GUD ERROR 2	M 148.1	BOOL	Get GUD Pointer Address with FB5 Error #2
GET GUD DONE 2	M 148.2	BOOL	Get GUD Pointer Address with FB5 Done #2
VAR TRANS PLC RQ 1	M 148.4	BOOL	Variable Transfer NC to PLC (FB2) Request #1
VAR TRANS PLC ER 1	M 148.5	BOOL	Variable Transfer NC to PLC (FB2) Error #1
VAR TRANS PLC DN 1	M 148.6	BOOL	Variable Transfer NC to PLC (FB2) Done #1
CUST M134 BUFFER	M 150.0	BOOL	Customer Specific M134 Buffer
CUST M136 BUFFER	M 150.1	BOOL	Customer Specific M136 Buffer
CUST M138 BUFFER	M 150.2	BOOL	Customer Specific M138 Buffer
CUST M190 BUFFER	M 152.0	BOOL	Customer Specific M190 Buffer
CUST M190 NC RID	M 152.1	BOOL	Customer Specific M190 NC Read-In Disable
CUST M191 NC RID	M 152.2	BOOL	Customer Specific M191 NC Read-In Disable
CUST M190 POS EDGE	M 153.0	BOOL	Customer Specific M190 Positive Edge
CUST M190 POS REM	M 153.1	BOOL	Customer Specific M190 Positive Edge Remember
CUST M190 NEG EDGE	M 153.2	BOOL	Customer Specific M190 Negative Edge
CUST M190 NEG REM	M 153.3	BOOL	Customer Specific M190 Negative Edge Remember
CUST M191 POS EDGE	M 153.4	BOOL	Customer Specific M191 Positive Edge
CUST M191 POS REM	M 153.5	BOOL	Customer Specific M191 Positive Edge Remember
CUST M191 NEG EDGE	M 153.6	BOOL	Customer Specific M191 Negative Edge

Symbol	Address	Data Type	Comment
CUST M191 NEG REM	M 153.7	BOOL	Customer Specific M191 Negative Edge Remember
CUST M192 BUFFER	M 154.0	BOOL	Customer Specific M192 Buffer
CUST M192 NC RID	M 154.1	BOOL	Customer Specific M192 NC Read-In Disable
CUST M193 NC RID	M 154.2	BOOL	Customer Specific M193 NC Read-In Disable
CUST M192 POS EDGE	M 155.0	BOOL	Customer Specific M192 Positive Edge
CUST M192 POS REM	M 155.1	BOOL	Customer Specific M192 Positive Edge Remember
CUST M192 NEG EDGE	M 155.2	BOOL	Customer Specific M192 Negative Edge
CUST M192 NEG REM	M 155.3	BOOL	Customer Specific M192 Negative Edge Remember
CUST M193 POS EDGE	M 155.4	BOOL	Customer Specific M193 Positive Edge
CUST M193 POS REM	M 155.5	BOOL	Customer Specific M193 Positive Edge Remember
CUST M193 NEG EDGE	M 155.6	BOOL	Customer Specific M193 Negative Edge
CUST M193 NEG REM	M 155.7	BOOL	Customer Specific M193 Negative Edge Remember
MD PALLET NC RID 1	M 160.0	BOOL	Midaco Pallet NC Read-In Disable #1
MD PALLET NC RID 2	M 160.1	BOOL	Midaco Pallet NC Read-In Disable #2
MD PALLET NC RID 3	M 160.2	BOOL	Midaco Pallet NC Read-In Disable #3
MD PALLET NC RID 4	M 160.3	BOOL	Midaco Pallet NC Read-In Disable #4
SP CL TO MSGE BFR	M 165.0	BOOL	Spindle Tool Clamp Timeout Message Buffer
SP UC TO MSGE BFR	M 165.1	BOOL	Spindle Tool Unclamp Timeout Message Buffer
ATC #1 RT MSGE BFR	M 165.2	BOOL	ATC Magazine #1 Retract Timeout Message Buffer
ATC #2 RT MSGE BFR	M 165.3	BOOL	ATC Magazine #2 Retract Timeout Message Buffer
ATC #1 RO MSGE BFR	M 165.4	BOOL	ATC Magazine #1 Rotation Timeout Message Buffer
ATC #2 RO MSGE BFR	M 165.5	BOOL	ATC Magazine #2 Rotation Timeout Message Buffer
T MAG #1 C1 PX PI	M 200.0	BOOL	SQP1 - Tool Magazine #1 Rotation Count #1 Proximity Peripheral Input
T MAG #1 C2 PX PI	M 200.1	BOOL	SQP2 - Tool Magazine #1 Rotation Count #2 Proximity Peripheral Input
T MAG #2 C1 PX PI	M 201.0	BOOL	SQP3 - Tool Magazine #2 Rotation Count #1 Proximity Peripheral Input
T MAG #2 C2 PX PI	M 201.1	BOOL	SQP4 - Tool Magazine #2 Rotation Count #2 Proximity Peripheral Input
T MAG #1 AR MT PQ	M 202.0	BOOL	KAR7/MTR7 - Tool Magazine #1 Advance/Retract Motor Peripheral Output
T MAG #1 AD SL PQ	M 202.1	BOOL	KAR8/MTR7 - Tool Magazine #1 Advance Select Peripheral Output
T MAG #1 R MTR PQ	M 202.2	BOOL	KAR11/MTR6 - Tool Magazine #1 CW/CCW Rotation Motor Peripheral Output
T MAG #1 CCW S PQ	M 202.3	BOOL	KAR12/MTR6 - Tool Magazine #1 CCW Select Peripheral Output
CUST SPEC M134 PQ	M 202.4	BOOL	KAR42 - Customer Specific M-Code Output for M134 Peripheral Output
CUST SPEC M136 PQ	M 202.5	BOOL	KAR43 - Customer Specific M-Code Output for M136 Peripheral Output
CUST SPEC M138 PQ	M 202.6	BOOL	KAR45 - Customer Specific M-Code Output for M138 Peripheral Output
CUST SPEC M190 PQ	M 202.7	BOOL	KAR40 - Customer Specific M-Code Output for M190 Peripheral Output
T MAG #2 AR MT PQ	M 203.0	BOOL	KAR7/MTR7 - Tool Magazine #2 Advance/Retract Motor Peripheral Output
T MAG #2 RT MT PQ	M 203.1	BOOL	KAR8/MTR7 - Tool Magazine #2 Retract Select Peripheral Output
T MAG #2 R MTR PQ	M 203.2	BOOL	KAR11/MTR6 - Tool Magazine #2 CW/CCW Rotation Motor Peripheral Output
T MAG #2 CCW S PQ	M 203.3	BOOL	KAR12/MTR6 - Tool Magazine #2 CCW Select Peripheral Output
5 AXIS UC SL PQ	M 203.4	BOOL	KAR54/YVS16 - 5 Axis Unclamp Solenoid Peripheral Output
CYCLIC	OB 1	OB 1	Cyclic Organisation Block [System]
INTERRUPT	OB 40	OB 40	Interrupt Organisation Block [System]
STARTUP	OB 100	OB 100	Startup Organisation Block [System]
AUTO MODE LED	Q 0.0	BOOL	MCP - Auto Mode LED [L21]
MDA MODE LED	Q 0.1	BOOL	MCP - MDA Mode LED [L11]
JOG MODE LED	Q 0.2	BOOL	MCP - Jog Mode LED [L1]
AXES HOME REF LED	Q 0.3	BOOL	MCP - Axes Auto Reference LED [L31]
SPIN CCW RUN LED	Q 0.4	BOOL	MCP - Spindle CCW Run LED [L10]
SPINDLE STOP LED	Q 0.5	BOOL	MCP - Spindle Stop LED [L9]
SPIN CW RUN LED	Q 0.6	BOOL	MCP - Spindle CW Run LED [L8]

Symbol	Address	Data Type	Comment
NC CYCLE STOP LED	Q 0.7	BOOL	MCP - NC Cycle Stop LED [L41]
INC1 MODE LED	Q 1.0	BOOL	MCP - Increment 1 Mode LED [L12]
REP MODE LED	Q 1.1	BOOL	MCP - Repos Mode LED [L2]
REF MODE LED	Q 1.2	BOOL	MCP - Reference Mode LED [L3]
RAPID OR 50% LED	Q 1.4	BOOL	MCP - Rapid Override 50% LED [L20]
RAPID OR 20% LED	Q 1.5	BOOL	MCP - Rapid Override 20% LED [L19]
RAPID OR 0% LED	Q 1.6	BOOL	MCP - Rapid Override 0% LED [L18]
NC CYCLE STRT LED	Q 1.7	BOOL	MCP - NC Cycle Start LED [L43]
OPT STOP LED	Q 2.0	BOOL	MCP - Optional Stop LED [L14]
COOLANT ON LED	Q 2.1	BOOL	MCP - Coolant On/Off LED [L24]
CONVEYOR FWD LED	Q 2.2	BOOL	MCP - Chip Conveyor Forward LED [L34]
Z AX LOCK LED	Q 2.3	BOOL	MCP - Z Axis Lock LED [L44]
S/BLOCK LED	Q 2.5	BOOL	MCP - Single Block LED [L4]
BUZZER STOP LED	Q 2.6	BOOL	MCP - Alarm Buzzer & Tower Lamp Stop LED [L46]
FEEDHOLD LED	Q 2.7	BOOL	MCP - Feedhold LED [L47]
HHU ENBL LED LAMP	Q 4.0	BOOL	HHU - HHU Enable Lamp [X35/1]
SPIN TOOL CLMP LMP	Q 4.1	BOOL	HLP50 - Spindle Tool Clamped Lamp [X35/2]
FLT/WARN LAMP	Q 4.2	BOOL	HLP51 - Machine Fault/Warning Lamp [X35/3]
Z AX -VE JOG LED	Q 4.5	BOOL	MCP - Z Axis -VE Jog LED [L49]
Y AX +VE JOG LED	Q 4.6	BOOL	MCP - Y Axis +VE Jog LED [L48]
R AX -VE JOG LED	Q 4.7	BOOL	MCP - Rotary Axis -VE Jog LED [L50]
R AX +VE JOG LED	Q 5.0	BOOL	MCP - Rotary Axis +VE Jog LED [L28]
Z AX +VE JOG LED	Q 5.1	BOOL	MCP - Z Axis +VE Jog LED [L29]
Y AX -VE JOG LED	Q 5.2	BOOL	MCP - Y Axis -VE Jog LED [L30]
X AX +VE JOG LED	Q 5.3	BOOL	MCP - X Axis +VE Jog LED [L38]
RAPID TRAV LED	Q 5.4	BOOL	MCP - Rapid Traverse LED [L39]
X AX -VE JOG LED	Q 5.5	BOOL	MCP - X Axis -VE Jog LED [L40]
HHU ENBL LED	Q 5.7	BOOL	MCP - HHU Enable LED [L33]
INC4 MODE LED	Q 6.0	BOOL	MCP - Incremental Mode 1000 Mode LED [L23]
INC3 MODE LED	Q 6.1	BOOL	MCP - Incremental Mode 100 Mode LED [L22]
INC2 MODE LED	Q 6.2	BOOL	MCP - Incremental 10 Mode LED [L13]
AUTO PWR OFF LED	Q 6.3	BOOL	MCP - Auto Power Off LED [L45]
TOOL/MAG CYC LED	Q 6.4	BOOL	MCP - Tool to Magazine Cycle LED [L37]
TOOL/TOOL CYC LED	Q 6.5	BOOL	MCP - Tool to Tool Change Cycle LED [L36]
CONVEYOR REV LED	Q 6.6	BOOL	MCP - Chip Conveyor Reverse LED [L35]
WORK LGHT LED	Q 6.7	BOOL	MCP - Work Light On LED [L27]
FLSH COOL LED	Q 7.0	BOOL	MCP - Flushing Coolant On LED [L26]
COOLANT AUTO LED	Q 7.1	BOOL	MCP - Coolant Auto LED [L25]
ATC CYCLE LED	Q 7.2	BOOL	MCP - ATC Cycle Select & Indication LED [L17]
RAPID OR LED	Q 7.3	BOOL	MCP - Rapid Traverse Override LED [L16]
BLCK SKIP LED	Q 7.4	BOOL	MCP - Block Skip LED [L15]
SPINDLE JOG LED	Q 7.5	BOOL	MCP - Spindle Jog LED [L7]
PGM TEST LED	Q 7.6	BOOL	MCP - Program Test LED [L6]
DRY RUN LED	Q 7.7	BOOL	MCP - Dry Run LED [L5]
IR MODULE DRV ENBL	Q 40.0	BOOL	KAR22 - IRF Module Drive Enable
CUST SPEC M192	Q 40.1	BOOL	KAR41 - Customer Specific M-Code Output for M192
SPIN LUBE OIL SOL	Q 40.2	BOOL	KAR47 - Spindle Oil/Air Lubrication Air Supply Solenoid
Z AX MTR BRAKE	Q 40.3	BOOL	KAR3/YBR1 - Z Axis Motor Brake
ALARM TWR LAMP	Q 40.4	BOOL	KAR4/HLP46/HAB - Alarm Tower Lamp (Red) & Buzzer

Symbol	Address	Data Type	Comment
RESET TWR LAMP	Q 40.5	BOOL	KAR5/HLP47 - Reset Tower Lamp (Yellow)
IN CYCLE TWR LAMP	Q 40.6	BOOL	KAR23/HLP45 - In Cycle Tower Lamp (Green)
WP PROBE ENABLE	Q 40.7	BOOL	KAR?? - Touch Probe Enable
COOLANT PUMP MTR	Q 41.0	BOOL	KAR2/MS1/MTR1/YVS11 - Coolant Pump Motor
THRU SPIN COOL SOL	Q 41.1	BOOL	KAR18/YVS8 - Through Spindle Coolant Solenoid
FLUSHING COOL MTR	Q 41.2	BOOL	KAR20/MS2/MTR2 - Chip Flushing Coolant Pump Motor
CONV FWD MOTOR	Q 41.3	BOOL	KAR9/MS3/MTR3 - Chip Conveyor Forward Motor
CONV REV MOTOR	Q 41.4	BOOL	KAR10/MC3/MTR3 - Chip Conveyor Reverse Motor
M17 AIR BLST SOL	Q 41.5	BOOL	KAR17/YVS7 - M17 Air Blast Solenoid
ORT AIR BLST SOL	Q 41.6	BOOL	KAR6/YVS2 - Spindle Orientation Air Blast Solenoid
SPIN AIR BLST SOL	Q 41.7	BOOL	KAR14/YVS6 - Spindle Tool Unclamp Air Blast Solenoid
SPIN TOOL UCLP SOL	Q 42.0	BOOL	KAR13/YVS5 - Spindle Tool Unclamp Solenoid
WORK LIGHT	Q 42.2	BOOL	KAR19/HLP0/KAR65 - Work Light
AUTO PWR OFF	Q 42.3	BOOL	KAR24/YC1 - Auto Power Off Control Relay
4 AXIS UCLP SOL	Q 42.4	BOOL	KAR16/YVS15 - 4 Axis Unclamp Solenoid
MC DOOR UNLK SOL	Q 42.5	BOOL	KAR21/YBR2 - Machine Door Unlock Solenoid
MULTI USE Q42.6	Q 42.6	BOOL	KAR45/KAR60 - Spindle Gear High Motor or Spindle Lubrication Oil/Air Uni
SPIN GEAR LOW MTR	Q 42.7	BOOL	KAR46/KAR61 - Spindle Gear Low Motor
T MAG #1 A/R MTR	Q 43.0	BOOL	KAR7/MTR7 - Tool Magazine #1 Advance/Retract Motor
T MAG #1 ADV SEL	Q 43.1	BOOL	KAR8/MTR7 - Tool Magazine #1 Advance Select
T MAG #1 ROT MTR	Q 43.2	BOOL	KAR11/MTR6 - Tool Magazine #1 CW/CCW Rotation Motor
T MAG #1 CCW SEL	Q 43.3	BOOL	KAR12/MTR6 - Tool Magazine #1 CCW Select
CUST SPEC M134	Q 43.4	BOOL	KAR42 - Customer Specific M-Code Output for M134
CUST SPEC M136	Q 43.5	BOOL	KAR43 - Customer Specific M-Code Output for M136
CUST SPEC M138	Q 43.6	BOOL	KAR45 - Customer Specific M-Code Output for M138
CUST SPEC M190	Q 43.7	BOOL	KAR40 - Customer Specific M-Code Output for M190
T MAG #2 A/R MTR	Q 72.0	BOOL	KAR7/MTR7 - Tool Magazine #2 Advance/Retract Motor
T MAG #2 RET SEL	Q 72.1	BOOL	KAR8/MTR7 - Tool Magazine #2 Retract Select
T MAG #2 ROT MTR	Q 72.2	BOOL	KAR11/MTR6 - Tool Magazine #2 CW/CCW Rotation Motor
T MAG #2 CCW SEL	Q 72.3	BOOL	KAR12/MTR6 - Tool Magazine #2 CCW Select
5 AXIS UCLP SOL	Q 72.4	BOOL	KAR54/YVS16 - 5 Axis Unclamp Solenoid
BLKMOVE	SFC 20	SFC 20	Block move
FILL	SFC 21	SFC 21	Initialize a Memory Area

6

Machine Data

The following machine data printout is only a guide to the values in any given machine. It is also in Metric format. Any data with length units in [mm] will be converted to [inch] during a Metric/Inch changeover.

Machines fitted with linear scales will also have significant differences in some axis specific data settings.

03.03.08-CCU1	77	ph_km	570.871.9105.33.08		
Monitor Loader	20.03.00	01/03/00	010300	90008	56fc5e19
Monitor Loader	20.03.00	01/03/00	010300	90008	56fc5e19
S7 PLC-314 System	07.02.12	99/11/15	151199	00208	8f585800
PLC314-FB15 SI05.01.02	05.01.02	*99/03/19	70499	00208	80410ea6
PLC315-FB15 SI05.01.02	05.01.02	*99/03/19	70499	00208	632483ac
Monitor System	20.03.00	01/03/00	010300	90008	2dcd2bd8
Numeric Control	20.03.00	01/03/00	010300	90008	9e702efa
VSA/HSA System	01.02.02	17/03/98	170398	90008	833cb5c2
VSA Data Description	01.02.02	17/03/98	101197	90008	e468c9a2
VSA Default Data	01.02.02	17/03/98	101197	90008	dd0c652f
Inverter Codes	01.02.02	17/03/98	170398	90008	503f90bc
VSA Motor Codes	01.02.02	17/03/98	170398	90008	b4ab41f6
VSA Inverter Data	01.02.02	17/03/98	160398	90008	341163e6
VSA Motor Data	01.02.02	17/03/98	160398	90008	8b4e8d72
HSA Data Description	01.02.02	17/03/98	101197	90008	887238cb
HSA Default Data	01.02.02	17/03/98	101197	90008	4e2d9640
HSA Motor Codes	01.02.02	17/03/98	191197	90008	9287177f
HSA Inverter Data	01.02.02	17/03/98	160398	90008	4b7d2bf4
HSA Motor Data	01.02.02	17/03/98	160398	90008	3d2e8d97
Joblist for IBN	02.00.06	99/08/05	50899	90008	36020152
Joblist for IBN/KOMP	01.01.04	99/08/05	50899	90008	f488f3f8
Joblist for UPGRADE	01.01.04	99/08/05	50899	90008	7abe25a5
PLC Besy Stand:					
S7 PLC-314 System	07.02.12	99/11/15	151199	00208	8f585800

General Machine Data

N10000 \$MN_AXCONF_MACHAX_NAME_TAB[0]="X" '55b8
N10000 \$MN_AXCONF_MACHAX_NAME_TAB[1]="Y" '575c
N10000 \$MN_AXCONF_MACHAX_NAME_TAB[2]="Z" '5ab0
N10000 \$MN_AXCONF_MACHAX_NAME_TAB[3]="A" '5a6e
N10000 \$MN_AXCONF_MACHAX_NAME_TAB[4]="B" '57d4
N10000 \$MN_AXCONF_MACHAX_NAME_TAB[5]="SP" '5cce
N10010 \$MN_ASSIGN_CHAN_TO_MODE_GROUP[0]=1 '796c
N10050 \$MN_SYSCLOCK_CYCLE_TIME=0.0025 '6002
N10060 \$MN_POSCTRL_SYSCLOCK_TIME_RATIO=1 '743c
N10061 \$MN_POSCTRL_CYCLE_TIME=0.0025 '4e9c
N10062 \$MN_POSCTRL_CYCLE_DELAY=0 '488e
N10070 \$MN_IPO_SYSCLOCK_TIME_RATIO=5 '6a64
N10071 \$MN_IPO_CYCLE_TIME=0.0125 '4508
N10072 \$MN_COM_IPO_TIME_RATIO=1 '5390
N10080 \$MN_SYSCLOCK_SAMPL_TIME_RATIO=2 '70ba
N10082 \$MN_CTRLOUT_LEAD_TIME=45 '4930
N10083 \$MN_CTRLOUT_LEAD_TIME_MAX=40 '5134
N10087 \$MN_SERVO_FIFO_SIZE=2 '53f8
N10100 \$MN_PLC_CYCLIC_TIMEOUT=0.1 '4cbc
N10110 \$MN_PLC_CYCLE_TIME_AVERAGE=0.2 '58fe
N10120 \$MN_PLC_RUNNINGUP_TIMEOUT=50 '4a36
N10130 \$MN_TIME_LIMIT_NETTO_COM_TASK=0.005 '755c
N10131 \$MN_SUPPRESS_SCREEN_REFRESH=0 '6a48
N10132 \$MN_MMC_CMD_TIMEOUT=3 '4e56
N10134 \$MN_MM_NUM_MMC_UNITS=3 '4860
N10136 \$MN_DISPLAY_MODE_POSITION=0 '58ce
N10140 \$MN_TIME_LIMIT_NETTO_DRIVE_TASK=0.02 '684a
N10150 \$MN_PREP_DRIVE_TASK_CYCLE_RATIO=2 '6880
N10160 \$MN_PREP_COM_TASK_CYCLE_RATIO=3 '7b40
N10190 \$MN_TOOL_CHANGE_TIME=2.5 '4698
N10192 \$MN_GEAR_CHANGE_WAIT_TIME=10 '62fe
N10200 \$MN_INT_INCR_PER_MM=10000 '4f56
N10210 \$MN_INT_INCR_PER_DEG=10000 '550e
N10220 \$MN_SCALING_USER_DEF_MASK='H200' '775a
N10230 \$MN_SCALING_FACTORS_USER_DEF[0]=1 '81b2
N10230 \$MN_SCALING_FACTORS_USER_DEF[1]=1 '81e4
N10230 \$MN_SCALING_FACTORS_USER_DEF[2]=1 '824a
N10230 \$MN_SCALING_FACTORS_USER_DEF[3]=1 '831a
N10230 \$MN_SCALING_FACTORS_USER_DEF[4]=1 '81b6
N10230 \$MN_SCALING_FACTORS_USER_DEF[5]=1 '81ec
N10230 \$MN_SCALING_FACTORS_USER_DEF[6]=1 '825a
N10230 \$MN_SCALING_FACTORS_USER_DEF[7]=1 '833a
N10230 \$MN_SCALING_FACTORS_USER_DEF[8]=1 '81ba
N10230 \$MN_SCALING_FACTORS_USER_DEF[9]=16.66666667
'96dc
N10230 \$MN_SCALING_FACTORS_USER_DEF[10]=1 '8252
N10230 \$MN_SCALING_FACTORS_USER_DEF[11]=1 '82b6
N10230 \$MN_SCALING_FACTORS_USER_DEF[12]=1 '8382
N10230 \$MN_SCALING_FACTORS_USER_DEF[13]=1 '8522
N10240 \$MN_SCALING_SYSTEM_IS_METRIC=1 '6a78
N10250 \$MN_SCALING_VALUE_INCH=25.4 '53b0
N10260 \$MN_CONVERT_SCALING_SYSTEM=1 '6768
N10270 \$MN_POS_TAB_SCALING_SYSTEM=0 '67fc
N10290 \$MN_CC_TDA_PARAM_UNIT[0]=0 '4cd6
N10290 \$MN_CC_TDA_PARAM_UNIT[1]=0 '4d3a
N10290 \$MN_CC_TDA_PARAM_UNIT[2]=0 '4e06
N10290 \$MN_CC_TDA_PARAM_UNIT[3]=0 '4fa6
N10290 \$MN_CC_TDA_PARAM_UNIT[4]=0 '4cde
N10290 \$MN_CC_TDA_PARAM_UNIT[5]=0 '4d4a
N10290 \$MN_CC_TDA_PARAM_UNIT[6]=0 '4e26
N10290 \$MN_CC_TDA_PARAM_UNIT[7]=0 '4fe6
N10290 \$MN_CC_TDA_PARAM_UNIT[8]=0 '4ce6
N10290 \$MN_CC_TDA_PARAM_UNIT[9]=0 '4d5a
N10292 \$MN_CC_TOA_PARAM_UNIT[0]=0 '56d6
N10292 \$MN_CC_TOA_PARAM_UNIT[1]=0 '573a
N10292 \$MN_CC_TOA_PARAM_UNIT[2]=0 '5806
N10292 \$MN_CC_TOA_PARAM_UNIT[3]=0 '59a6
N10292 \$MN_CC_TOA_PARAM_UNIT[4]=0 '56de
N10292 \$MN_CC_TOA_PARAM_UNIT[5]=0 '574a
N10292 \$MN_CC_TOA_PARAM_UNIT[6]=0 '5826

N10292 \$MN_CC_TOA_PARAM_UNIT[7]=0 '59e6
N10292 \$MN_CC_TOA_PARAM_UNIT[8]=0 '56e6
N10292 \$MN_CC_TOA_PARAM_UNIT[9]=0 '575a
N10300 \$MN_FASTIO_ANA_NUM_INPUTS=0 '5a3e
N10310 \$MN_FASTIO_ANA_NUM_OUTPUTS=0 '586e
N10320 \$MN_FASTIO_ANA_INPUT_WEIGHT[0]=10000 '6bf0
N10320 \$MN_FASTIO_ANA_INPUT_WEIGHT[1]=10000 '6cb8
N10320 \$MN_FASTIO_ANA_INPUT_WEIGHT[2]=10000 '6e50
N10320 \$MN_FASTIO_ANA_INPUT_WEIGHT[3]=10000 '7190
N10320 \$MN_FASTIO_ANA_INPUT_WEIGHT[4]=10000 '6c00
N10320 \$MN_FASTIO_ANA_INPUT_WEIGHT[5]=10000 '6cd8
N10320 \$MN_FASTIO_ANA_INPUT_WEIGHT[6]=10000 '6e90
N10320 \$MN_FASTIO_ANA_INPUT_WEIGHT[7]=10000 '7210
N10330 \$MN_FASTIO_ANA_OUTPUT_WEIGHT[0]=10000 '6a9a
N10330 \$MN_FASTIO_ANA_OUTPUT_WEIGHT[1]=10000 '6acc
N10330 \$MN_FASTIO_ANA_OUTPUT_WEIGHT[2]=10000 '6b32
N10330 \$MN_FASTIO_ANA_OUTPUT_WEIGHT[3]=10000 '6c02
N10330 \$MN_FASTIO_ANA_OUTPUT_WEIGHT[4]=10000 '6a9e
N10330 \$MN_FASTIO_ANA_OUTPUT_WEIGHT[5]=10000 '6ad4
N10330 \$MN_FASTIO_ANA_OUTPUT_WEIGHT[6]=10000 '6b42
N10330 \$MN_FASTIO_ANA_OUTPUT_WEIGHT[7]=10000 '6c22
N10350 \$MN_FASTIO_DIG_NUM_INPUTS=5 '5950
N10360 \$MN_FASTIO_DIG_NUM_OUTPUTS=3 '5b80
N10361 \$MN_FASTIO_DIG_SHORT_CIRCUIT[0]='H0' '7d10
N10361 \$MN_FASTIO_DIG_SHORT_CIRCUIT[1]='H0' '7d42
N10361 \$MN_FASTIO_DIG_SHORT_CIRCUIT[2]='H0' '7da8
N10361 \$MN_FASTIO_DIG_SHORT_CIRCUIT[3]='H0' '7e78
N10361 \$MN_FASTIO_DIG_SHORT_CIRCUIT[4]='H0' '7d14
N10361 \$MN_FASTIO_DIG_SHORT_CIRCUIT[5]='H0' '7d4a
N10361 \$MN_FASTIO_DIG_SHORT_CIRCUIT[6]='H0' '7db8
N10361 \$MN_FASTIO_DIG_SHORT_CIRCUIT[7]='H0' '7e98
N10361 \$MN_FASTIO_DIG_SHORT_CIRCUIT[8]='H0' '7d18
N10361 \$MN_FASTIO_DIG_SHORT_CIRCUIT[9]='H0' '7d52
N10362 \$MN_HW_ASSIGN_ANA_FASTIN[0]='H1000000' '75c8
N10362 \$MN_HW_ASSIGN_ANA_FASTIN[1]='H1000000' '75fa
N10362 \$MN_HW_ASSIGN_ANA_FASTIN[2]='H1000000' '7660
N10362 \$MN_HW_ASSIGN_ANA_FASTIN[3]='H1000000' '7730
N10362 \$MN_HW_ASSIGN_ANA_FASTIN[4]='H1000000' '75cc
N10362 \$MN_HW_ASSIGN_ANA_FASTIN[5]='H1000000' '7602
N10362 \$MN_HW_ASSIGN_ANA_FASTIN[6]='H1000000' '7670
N10362 \$MN_HW_ASSIGN_ANA_FASTIN[7]='H1000000' '7750
N10364 \$MN_HW_ASSIGN_ANA_FASTOUT[0]='H1000000' '6ec8
N10364 \$MN_HW_ASSIGN_ANA_FASTOUT[1]='H1000000' '6f2c
N10364 \$MN_HW_ASSIGN_ANA_FASTOUT[2]='H1000000' '6ff8
N10364 \$MN_HW_ASSIGN_ANA_FASTOUT[3]='H1000000' '7198
N10364 \$MN_HW_ASSIGN_ANA_FASTOUT[4]='H1000000' '6ed0
N10364 \$MN_HW_ASSIGN_ANA_FASTOUT[5]='H1000000' '6f3c
N10364 \$MN_HW_ASSIGN_ANA_FASTOUT[6]='H1000000' '7018
N10364 \$MN_HW_ASSIGN_ANA_FASTOUT[7]='H1000000' '71d8
N10366 \$MN_HW_ASSIGN_DIG_FASTIN[0]='H1000000' '7a52
N10366 \$MN_HW_ASSIGN_DIG_FASTIN[1]='H1000000' '7a84
N10366 \$MN_HW_ASSIGN_DIG_FASTIN[2]='H1000000' '7aea
N10366 \$MN_HW_ASSIGN_DIG_FASTIN[3]='H1000000' '7bba
N10368 \$MN_HW_ASSIGN_DIG_FASTOUT[0]='H1000000' '733a
N10368 \$MN_HW_ASSIGN_DIG_FASTOUT[1]='H1000000' '739e
N10368 \$MN_HW_ASSIGN_DIG_FASTOUT[2]='H1000000' '746a
N10368 \$MN_HW_ASSIGN_DIG_FASTOUT[3]='H1000000' '760a
N10380 \$MN_HW_UPDATE_RATE_FASTIO[0]=2 '52ec
N10380 \$MN_HW_UPDATE_RATE_FASTIO[1]=2 '5350
N10380 \$MN_HW_UPDATE_RATE_FASTIO[2]=2 '541c
N10380 \$MN_HW_UPDATE_RATE_FASTIO[3]=2 '55bc
N10380 \$MN_HW_UPDATE_RATE_FASTIO[4]=3 '53c4
N10382 \$MN_HW_LEAD_TIME_FASTIO[0]=100 '5cb2
N10382 \$MN_HW_LEAD_TIME_FASTIO[1]=100 '5d7a
N10382 \$MN_HW_LEAD_TIME_FASTIO[2]=100 '5f12
N10382 \$MN_HW_LEAD_TIME_FASTIO[3]=100 '6252
N10382 \$MN_HW_LEAD_TIME_FASTIO[4]=100 '5cc2
N10384 \$MN_HW_CLOCKED_MODULE_MASK[0]='H0' '6f58
N10384 \$MN_HW_CLOCKED_MODULE_MASK[1]='H0' '6fee
N10384 \$MN_HW_CLOCKED_MODULE_MASK[2]='H0' '7120
N10384 \$MN_HW_CLOCKED_MODULE_MASK[3]='H0' '7390
N10384 \$MN_HW_CLOCKED_MODULE_MASK[4]='H0' '6f64


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N10394 $MN_PLCIO_NUM_BYTES_IN=0 '4ddc
N10395 $MN_PLCIO_LOGIC_ADDRESS_IN=0 '6870
N10396 $MN_PLCIO_NUM_BYTES_OUT=0 '5780
N10397 $MN_PLCIO_LOGIC_ADDRESS_OUT=0 '7368
N10450 $MN_SW_CAM_ASSIGN_TAB[0]=3 '6040
N10450 $MN_SW_CAM_ASSIGN_TAB[1]=3 '60a4
N10450 $MN_SW_CAM_ASSIGN_TAB[2]=3 '6170
N10450 $MN_SW_CAM_ASSIGN_TAB[3]=0 '61a8
N10450 $MN_SW_CAM_ASSIGN_TAB[4]=0 '5ee0
N10450 $MN_SW_CAM_ASSIGN_TAB[5]=0 '5f4c
N10450 $MN_SW_CAM_ASSIGN_TAB[6]=0 '6028
N10450 $MN_SW_CAM_ASSIGN_TAB[7]=0 '61e8
N10450 $MN_SW_CAM_ASSIGN_TAB[8]=0 '5ee8
N10450 $MN_SW_CAM_ASSIGN_TAB[9]=0 '5f5c
N10450 $MN_SW_CAM_ASSIGN_TAB[10]=0 '5f48
N10450 $MN_SW_CAM_ASSIGN_TAB[11]=0 '5fde
N10450 $MN_SW_CAM_ASSIGN_TAB[12]=0 '6110
N10450 $MN_SW_CAM_ASSIGN_TAB[13]=0 '6380
N10450 $MN_SW_CAM_ASSIGN_TAB[14]=0 '5f54
N10450 $MN_SW_CAM_ASSIGN_TAB[15]=0 '5ff6
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[0]=0 '63e2
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[1]=0 '6478
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[2]=0 '65aa
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[3]=0 '681a
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[4]=0 '63ee
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[5]=0 '6490
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[6]=0 '65da
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[7]=0 '687a
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[8]=0 '63fa
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[9]=0 '64a8
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[10]=0 '63b4
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[11]=0 '647c
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[12]=0 '6614
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[13]=0 '6954
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[14]=0 '63c4
N10460 $MN_SW_CAM_MINUS_LEAD_TIME[15]=0 '649c
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[0]=0 '60f4
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[1]=0 '6158
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[2]=0 '6224
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[3]=0 '63c4
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[4]=0 '60fc
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[5]=0 '6168
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[6]=0 '6244
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[7]=0 '6404
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[8]=0 '6104
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[9]=0 '6178
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[10]=0 '6164
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[11]=0 '61fa
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[12]=0 '632c
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[13]=0 '659c
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[14]=0 '6170
N10461 $MN_SW_CAM_PLUS_LEAD_TIME[15]=0 '6212
N10470 $MN_SW_CAM_ASSIGN_FASTOUT_1='H0' '775c
N10471 $MN_SW_CAM_ASSIGN_FASTOUT_2='H0' '788c
N10480 $MN_SW_CAM_TIMER_FASTOUT_MASK='H0' '7bbe
N10485 $MN_SW_CAM_MODE='H0' '4ad0
N10530 $MN_COMPAR_ASSIGN_ANA_INPUT_1[0]=0 '6a64
N10530 $MN_COMPAR_ASSIGN_ANA_INPUT_1[1]=0 '6ac8
N10530 $MN_COMPAR_ASSIGN_ANA_INPUT_1[2]=0 '6b94
N10530 $MN_COMPAR_ASSIGN_ANA_INPUT_1[3]=0 '6d34
N10530 $MN_COMPAR_ASSIGN_ANA_INPUT_1[4]=0 '6a6c
N10530 $MN_COMPAR_ASSIGN_ANA_INPUT_1[5]=0 '6ad8
N10530 $MN_COMPAR_ASSIGN_ANA_INPUT_1[6]=0 '6bb4
N10530 $MN_COMPAR_ASSIGN_ANA_INPUT_1[7]=0 '6d74
N10531 $MN_COMPAR_ASSIGN_ANA_INPUT_2[0]=0 '6c60
N10531 $MN_COMPAR_ASSIGN_ANA_INPUT_2[1]=0 '6cc4
N10531 $MN_COMPAR_ASSIGN_ANA_INPUT_2[2]=0 '6d90
N10531 $MN_COMPAR_ASSIGN_ANA_INPUT_2[3]=0 '6f30
N10531 $MN_COMPAR_ASSIGN_ANA_INPUT_2[4]=0 '6c68
N10531 $MN_COMPAR_ASSIGN_ANA_INPUT_2[5]=0 '6cd4
N10531 $MN_COMPAR_ASSIGN_ANA_INPUT_2[6]=0 '6db0
N10531 $MN_COMPAR_ASSIGN_ANA_INPUT_2[7]=0 '6f70
N10540 $MN_COMPAR_TYPE_1='H0' '3d38
N10541 $MN_COMPAR_TYPE_2='H0' '3f34
N10600 $MN_FRAME_ANGLE_INPUT_MODE=1 '4f82
N10602 $MN_FRAME_GEOAX_CHANGE_MODE=0 '6812
N10610 $MN_MIRROR_REF_AX=1 '3f36
N10612 $MN_MIRROR_TOGGLE=1 '4508
N10613 $MN_NCBFRAME_RESET_MASK='Hffff' '6da8
N10615 $MN_NCBFRAME_POWERON_MASK='H0' '7278
N10617 $MN_FRAME_SAVE_MASK='H0' '4c86
N10618 $MN_PROTAREA_GEOAX_CHANGE_MODE=0 '62be
N10620 $MN_EULER_ANGLE_NAME_TAB[0]='A2' '65aa
N10620 $MN_EULER_ANGLE_NAME_TAB[1]='B2' '6662
N10620 $MN_EULER_ANGLE_NAME_TAB[2]='C2' '67d8
N10630 $MN_NORMAL_VECTOR_NAME_TAB[0]='A4' '5fa4
N10630 $MN_NORMAL_VECTOR_NAME_TAB[1]='B4' '61cc
N10630 $MN_NORMAL_VECTOR_NAME_TAB[2]='C4' '662e
N10630 $MN_NORMAL_VECTOR_NAME_TAB[3]='A5' '64b4
N10630 $MN_NORMAL_VECTOR_NAME_TAB[4]='B5' '621a
N10630 $MN_NORMAL_VECTOR_NAME_TAB[5]='C5' '65ec
N10640 $MN_DIR_VECTOR_NAME_TAB[0]='A3' '6210
N10640 $MN_DIR_VECTOR_NAME_TAB[1]='B3' '64f0
N10640 $MN_DIR_VECTOR_NAME_TAB[2]='C3' '6ac8
N10650 $MN_IPO_PARAM_NAME_TAB[0]='I' '4eac
N10650 $MN_IPO_PARAM_NAME_TAB[1]='J' '5104
N10650 $MN_IPO_PARAM_NAME_TAB[2]='K' '55c6
N10652 $MN_CONTOUR_DEF_ANGLE_NAME='ANG' '6630
N10654 $MN_RADIUS_NAME='RND' '3840
N10656 $MN_CHAMFER_NAME='CHR' '4618
N10660 $MN_INTERMEDIATE_POINT_NAME_TAB[0]='I1' '68e0
N10660 $MN_INTERMEDIATE_POINT_NAME_TAB[1]='J1' '6c00
N10660 $MN_INTERMEDIATE_POINT_NAME_TAB[2]='K1' '7258
N10670 $MN_STAT_NAME='STAT' '4110
N10672 $MN_TU_NAME='TU' '2c2c
N10674 $MN_PO_WITHOUT_POLY=0 '48ec
N10700 $MN_PREPROCESSING_LEVEL=1 '521a
N10702 $MN_IGNORE_SINGLeBLOCK_MASK='H10' '765c
N10704 $MN_DRYRUN_MASK='H1' '3e6a
N10706 $MN_SLASH_MASK='H0' '478c
N10710 $MN_PROG_SD_RESET_SAVE_TAB[0]=0 '6e76
N10710 $MN_PROG_SD_RESET_SAVE_TAB[1]=0 '6f0c
N10710 $MN_PROG_SD_RESET_SAVE_TAB[2]=0 '703e
N10710 $MN_PROG_SD_RESET_SAVE_TAB[3]=0 '72ae
N10710 $MN_PROG_SD_RESET_SAVE_TAB[4]=0 '6e82
N10710 $MN_PROG_SD_RESET_SAVE_TAB[5]=0 '6f24
N10710 $MN_PROG_SD_RESET_SAVE_TAB[6]=0 '706e
N10710 $MN_PROG_SD_RESET_SAVE_TAB[7]=0 '730e
N10710 $MN_PROG_SD_RESET_SAVE_TAB[8]=0 '6e8e
N10710 $MN_PROG_SD_RESET_SAVE_TAB[9]=0 '6f3c
N10710 $MN_PROG_SD_RESET_SAVE_TAB[10]=0 '6e48
N10710 $MN_PROG_SD_RESET_SAVE_TAB[11]=0 '6f10
N10710 $MN_PROG_SD_RESET_SAVE_TAB[12]=0 '70a8
N10710 $MN_PROG_SD_RESET_SAVE_TAB[13]=0 '73e8
N10710 $MN_PROG_SD_RESET_SAVE_TAB[14]=0 '6e58
N10710 $MN_PROG_SD_RESET_SAVE_TAB[15]=0 '6f30
N10710 $MN_PROG_SD_RESET_SAVE_TAB[16]=0 '70e8
N10710 $MN_PROG_SD_RESET_SAVE_TAB[17]=0 '7468
N10710 $MN_PROG_SD_RESET_SAVE_TAB[18]=0 '6e68
N10710 $MN_PROG_SD_RESET_SAVE_TAB[19]=0 '6f50
N10710 $MN_PROG_SD_RESET_SAVE_TAB[20]=0 '6f7a
N10710 $MN_PROG_SD_RESET_SAVE_TAB[21]=0 '7042
N10710 $MN_PROG_SD_RESET_SAVE_TAB[22]=0 '71da
N10710 $MN_PROG_SD_RESET_SAVE_TAB[23]=0 '751a
N10710 $MN_PROG_SD_RESET_SAVE_TAB[24]=0 '6f8a
N10710 $MN_PROG_SD_RESET_SAVE_TAB[25]=0 '7062
N10710 $MN_PROG_SD_RESET_SAVE_TAB[26]=0 '721a
N10710 $MN_PROG_SD_RESET_SAVE_TAB[27]=0 '759a
N10710 $MN_PROG_SD_RESET_SAVE_TAB[28]=0 '6f9a
N10710 $MN_PROG_SD_RESET_SAVE_TAB[29]=0 '7082
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[0]='' '859c
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[1]='' '8632

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N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[2]=" '8764
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[3]=" '89d4
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[4]=" '85a8
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[5]=" '864a
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[6]=" '8794
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[7]=" '8a34
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[8]=" '85b4
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[9]=" '8662
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[10]=" '864e
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[11]=" '8716
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[12]=" '88ae
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[13]=" '8bee
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[14]=" '865e
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[15]=" '8736
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[16]=" '88ee
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[17]=" '8c6e
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[18]=" '866e
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[19]=" '8756
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N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[25]=" '8868
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[26]=" '8a20
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[27]=" '8da0
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N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[29]=" '8888
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[30]=" '89f0
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[31]=" '8ab8
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[32]=" '8c50
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[33]=" '8f90
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[34]=" '8a00
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[35]=" '8ad8
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N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[37]=" '9010
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[38]=" '8a10
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[39]=" '8af8
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[40]=" '85c4
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[41]=" '868c
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[42]=" '8824
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[43]=" '8b64
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N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[45]=" '86ac
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[46]=" '8864
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[47]=" '8be4
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[48]=" '85e4
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[49]=" '86cc
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[50]=" '8666
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[51]=" '872e
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[52]=" '88c6
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[53]=" '8c06
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[54]=" '8676
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[55]=" '874e
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[56]=" '8906
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[57]=" '8c86
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[58]=" '8686
N10712 $MN_NC_USER_CODE_CONF_NAME_TAB[59]=" '876e
N10715 $MN_M_NO_FCT_CYCLE[0]=-1 '5bba
N10716 $MN_M_NO_FCT_CYCLE_NAME[0]=" '6d16
N10717 $MN_T_NO_FCT_CYCLE_NAME=" '6326
N10720 $MN_OPERATING_MODE_DEFAULT[0]=7 '5f5c
N10722 $MN_AXCHANGE_MASK='H0' '4dbc
N10731 $MN_JOG_MODE_KEYS_EDGETRIGGRD=1 '71ba
N10760 $MN_G53_TOOLCORR=0 '49dc
N10780 $MN_UNLOCK_EDIT_MODESWITCH=0 '60a8
N10880 $MN_MM_EXTERN_CNC_SYSTEM=1 '5444
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[0]=" '789e
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[1]=" '7902
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[2]=" '79ce
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[3]=" '7b6e
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[4]=" '78a6
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[5]=" '7912
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[6]=" '79ee
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[7]=" '7bae
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[8]=" '78ae
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[9]=" '7922
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[10]=" '79ee
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[11]=" '7a84
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[12]=" '7bb6
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[13]=" '7e26
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[14]=" '79fa
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[15]=" '7a9c
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[16]=" '7be6
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N10882 $MN_NC_USER_EXTERN_GCODES_TAB[18]=" '7a06
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[19]=" '7ab4
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[20]=" '7aba
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[21]=" '7b50
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[22]=" '7c82
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N10882 $MN_NC_USER_EXTERN_GCODES_TAB[24]=" '7ac6
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N10882 $MN_NC_USER_EXTERN_GCODES_TAB[27]=" '7f52
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N10882 $MN_NC_USER_EXTERN_GCODES_TAB[30]=" '7c5a
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[31]=" '7cf0
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N10882 $MN_NC_USER_EXTERN_GCODES_TAB[33]=" '8092
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[34]=" '7c66
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[35]=" '7fd8
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N10882 $MN_NC_USER_EXTERN_GCODES_TAB[37]=" '80f2
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[38]=" '7c72
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N10882 $MN_NC_USER_EXTERN_GCODES_TAB[42]=" '7b5a
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N10882 $MN_NC_USER_EXTERN_GCODES_TAB[44]=" '799e
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N10882 $MN_NC_USER_EXTERN_GCODES_TAB[46]=" '7b8a
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[47]=" '7e2a
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[48]=" '79aa
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[49]=" '7a58
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N10882 $MN_NC_USER_EXTERN_GCODES_TAB[53]=" '7e36
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N10882 $MN_NC_USER_EXTERN_GCODES_TAB[55]=" '7aac
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[56]=" '7bf6
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[57]=" '7e96
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[58]=" '7a16
N10882 $MN_NC_USER_EXTERN_GCODES_TAB[59]=" '7ac4
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N10886 $MN_EXTERN_INCREMENT_SYSTEM=0 '535e
N10888 $MN_EXTERN_DIGITS_TOOL_NO=2 '5e86
N10890 $MN_EXTERN_TOOLPROG_MODE='H0' '5620
N10900 $MN_INDEX_AX_LENGTH_POS_TAB_1=0 '6260
N10910 $MN_INDEX_AX_POS_TAB_1[0]=0 '5d7e
N10910 $MN_INDEX_AX_POS_TAB_1[1]=0 '5e14
N10910 $MN_INDEX_AX_POS_TAB_1[2]=0 '5f46
N10910 $MN_INDEX_AX_POS_TAB_1[3]=0 '61b6
N10910 $MN_INDEX_AX_POS_TAB_1[4]=0 '5d8a
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N10910 $MN_INDEX_AX_POS_TAB_1[6]=0 '5f76
N10910 $MN_INDEX_AX_POS_TAB_1[7]=0 '6216
N10910 $MN_INDEX_AX_POS_TAB_1[8]=0 '5d96
N10910 $MN_INDEX_AX_POS_TAB_1[9]=0 '5e44

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 N10910 \$MN_INDEX_AX_POS_TAB_1[22]=0 '60e2
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 N11110 \$MN_AUXFU_GROUP_SPEC[1]='H21' '6860
 N11110 \$MN_AUXFU_GROUP_SPEC[2]='H41' '679e
 N11110 \$MN_AUXFU_GROUP_SPEC[3]='H41' '686e
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 N11110 \$MN_AUXFU_GROUP_SPEC[5]='H41' '6740
 N11110 \$MN_AUXFU_GROUP_SPEC[6]='H41' '67ae
 N11110 \$MN_AUXFU_GROUP_SPEC[7]='H41' '688e
 N11110 \$MN_AUXFU_GROUP_SPEC[8]='H41' '670e
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 N11110 \$MN_AUXFU_GROUP_SPEC[10]='H41' '625a
 N11110 \$MN_AUXFU_GROUP_SPEC[11]='H41' '62be
 N11110 \$MN_AUXFU_GROUP_SPEC[12]='H41' '638a
 N11110 \$MN_AUXFU_GROUP_SPEC[13]='H41' '652a
 N11110 \$MN_AUXFU_GROUP_SPEC[14]='H41' '6262
 N11110 \$MN_AUXFU_GROUP_SPEC[15]='H41' '62ce
 N11110 \$MN_AUXFU_GROUP_SPEC[16]='H41' '63aa
 N11110 \$MN_AUXFU_GROUP_SPEC[17]='H41' '656a
 N11110 \$MN_AUXFU_GROUP_SPEC[18]='H41' '626a
 N11110 \$MN_AUXFU_GROUP_SPEC[19]='H41' '62de
 N11110 \$MN_AUXFU_GROUP_SPEC[20]='H41' '62c0
 N11110 \$MN_AUXFU_GROUP_SPEC[21]='H41' '6324
 N11110 \$MN_AUXFU_GROUP_SPEC[22]='H41' '63f0
 N11110 \$MN_AUXFU_GROUP_SPEC[23]='H41' '6590
 N11110 \$MN_AUXFU_GROUP_SPEC[24]='H41' '62c8
 N11110 \$MN_AUXFU_GROUP_SPEC[25]='H41' '6334
 N11110 \$MN_AUXFU_GROUP_SPEC[26]='H41' '6410
 N11110 \$MN_AUXFU_GROUP_SPEC[27]='H41' '65d0
 N11110 \$MN_AUXFU_GROUP_SPEC[28]='H41' '62d0
 N11110 \$MN_AUXFU_GROUP_SPEC[29]='H41' '6344

N11110 \$MN_AUXFU_GROUP_SPEC[30]='H41' '6390
 N11110 \$MN_AUXFU_GROUP_SPEC[31]='H41' '63f4
 N11110 \$MN_AUXFU_GROUP_SPEC[32]='H41' '64c0
 N11110 \$MN_AUXFU_GROUP_SPEC[33]='H41' '6660
 N11110 \$MN_AUXFU_GROUP_SPEC[34]='H41' '6398
 N11110 \$MN_AUXFU_GROUP_SPEC[35]='H41' '6404
 N11110 \$MN_AUXFU_GROUP_SPEC[36]='H41' '64e0
 N11110 \$MN_AUXFU_GROUP_SPEC[37]='H41' '66a0
 N11110 \$MN_AUXFU_GROUP_SPEC[38]='H41' '63a0
 N11110 \$MN_AUXFU_GROUP_SPEC[39]='H41' '6414
 N11110 \$MN_AUXFU_GROUP_SPEC[40]='H41' '622c
 N11110 \$MN_AUXFU_GROUP_SPEC[41]='H41' '6290
 N11110 \$MN_AUXFU_GROUP_SPEC[42]='H41' '635c
 N11110 \$MN_AUXFU_GROUP_SPEC[43]='H41' '64fc
 N11110 \$MN_AUXFU_GROUP_SPEC[44]='H41' '6234
 N11110 \$MN_AUXFU_GROUP_SPEC[45]='H41' '62a0
 N11110 \$MN_AUXFU_GROUP_SPEC[46]='H41' '637c
 N11110 \$MN_AUXFU_GROUP_SPEC[47]='H41' '653c
 N11110 \$MN_AUXFU_GROUP_SPEC[48]='H41' '623c
 N11110 \$MN_AUXFU_GROUP_SPEC[49]='H41' '62b0
 N11110 \$MN_AUXFU_GROUP_SPEC[50]='H41' '6262
 N11110 \$MN_AUXFU_GROUP_SPEC[51]='H41' '62c6
 N11110 \$MN_AUXFU_GROUP_SPEC[52]='H41' '6392
 N11110 \$MN_AUXFU_GROUP_SPEC[53]='H41' '6532
 N11110 \$MN_AUXFU_GROUP_SPEC[54]='H41' '626a
 N11110 \$MN_AUXFU_GROUP_SPEC[55]='H41' '62d6
 N11110 \$MN_AUXFU_GROUP_SPEC[56]='H41' '63b2
 N11110 \$MN_AUXFU_GROUP_SPEC[57]='H41' '6572
 N11110 \$MN_AUXFU_GROUP_SPEC[58]='H41' '6272
 N11110 \$MN_AUXFU_GROUP_SPEC[59]='H41' '62e6
 N11110 \$MN_AUXFU_GROUP_SPEC[60]='H41' '62d0
 N11110 \$MN_AUXFU_GROUP_SPEC[61]='H41' '6334
 N11110 \$MN_AUXFU_GROUP_SPEC[62]='H41' '6400
 N11110 \$MN_AUXFU_GROUP_SPEC[63]='H41' '65a0
 N11120 \$MN_LUD_EXTENDED_SCOPE=0 '4726
 N11200 \$MN_INIT_MD='H0' '30f4
 N11210 \$MN_UPLOAD_MD_CHANGES_ONLY='H0' '5b74
 N11220 \$MN_INI_FILE_MODE=2 '3f68
 N11230 \$MN_MD_FILE_STYLE='H3' '480e
 N11280 \$MN_WPD_INI_MODE=0 '3f06
 N11300 \$MN_JOG_INC_MODE_LEVELTRIGGRD=0 '69f0
 N11310 \$MN_HANDWH_REVERSE=2 '4796
 N11320 \$MN_HANDWH_IMP_PER_LATCH[0]=1 '5a72
 N11320 \$MN_HANDWH_IMP_PER_LATCH[1]=1 '5aa4
 N11320 \$MN_HANDWH_IMP_PER_LATCH[2]=1 '5b0a
 N11330 \$MN_JOG_INCR_SIZE_TAB[0]=1 '5f46
 N11330 \$MN_JOG_INCR_SIZE_TAB[1]=10 '600a
 N11330 \$MN_JOG_INCR_SIZE_TAB[2]=100 '6166
 N11330 \$MN_JOG_INCR_SIZE_TAB[3]=1000 '63c6
 N11330 \$MN_JOG_INCR_SIZE_TAB[4]=10000 '612e
 N11340 \$MN_ENC_HANDWHEEL_SEGMENT_NR=1 '602e
 N11342 \$MN_ENC_HANDWHEEL_MODULE_NR=0 '5de2
 N11344 \$MN_ENC_HANDWHEEL_INPUT_NR=1 '56e0
 N11346 \$MN_HANDWH_TRUE_DISTANCE=1 '5226
 N11398 \$MN_AXIS_VAR_SERVER_SENSITIVE=0 '7958
 N11400 \$MN_TRACE_SELECT='H0' '373c
 N11410 \$MN_SUPPRESS_ALARM_MASK='H7' '63c8
 N11411 \$MN_ENABLE_ALARM_MASK='H0' '4d16
 N11412 \$MN_ALARM_REACTION_CHAN_NOREADY=0 '5fb0
 N11413 \$MN_ALARM_PAR_DISPLAY_TEXT=0 '457e
 N11420 \$MN_LEN_PROTOCOL_FILE=1 '4bb4
 N11450 \$MN_SEARCH_RUN_MODE='H5' '55bc
 N11460 \$MN_OSCILL_MODE_MASK='H0' '5a06
 N11500 \$MN_PREVENT_SYNACT_LOCK[0]=0 '618e
 N11500 \$MN_PREVENT_SYNACT_LOCK[1]=0 '6256
 N11600 \$MN_BAG_MASK='H0' '3e30
 N11602 \$MN_ASUP_START_MASK='H3' '509e
 N11604 \$MN_ASUP_START_PRIO_LEVEL='H64' '5c62
 N11610 \$MN_ASUP_EDITABLE=2 '32aa
 N11612 \$MN_ASUP_EDIT_PROTECTION_LEVEL=1 '6582
 N11640 \$MN_ENABLE_CHAN_AX_GAP='H0' '500c

N11700 \$MN_PERMISSIVE_FLASH_TAB[0]='H0' '6830
 N11700 \$MN_PERMISSIVE_FLASH_TAB[1]='H0' '6862
 N11700 \$MN_PERMISSIVE_FLASH_TAB[2]='H0' '68c8
 N11700 \$MN_PERMISSIVE_FLASH_TAB[3]='H0' '6998
 N11700 \$MN_PERMISSIVE_FLASH_TAB[4]='H0' '6834
 N11700 \$MN_PERMISSIVE_FLASH_TAB[5]='H0' '686a
 N12000 \$MN_OVR_AX_IS_GRAY_CODE=1 '65fc
 N12010 \$MN_OVR_FACTOR_AX_SPEED[0]=0 '5f4c
 N12010 \$MN_OVR_FACTOR_AX_SPEED[1]=0.01 '63e8
 N12010 \$MN_OVR_FACTOR_AX_SPEED[2]=0.02 '664c
 N12010 \$MN_OVR_FACTOR_AX_SPEED[3]=0.04 '6864
 N12010 \$MN_OVR_FACTOR_AX_SPEED[4]=0.06 '641c
 N12010 \$MN_OVR_FACTOR_AX_SPEED[5]=0.08 '63b4
 N12010 \$MN_OVR_FACTOR_AX_SPEED[6]=0.1 '652e
 N12010 \$MN_OVR_FACTOR_AX_SPEED[7]=0.2 '6914
 N12010 \$MN_OVR_FACTOR_AX_SPEED[8]=0.3 '63e4
 N12010 \$MN_OVR_FACTOR_AX_SPEED[9]=0.4 '6368
 N12010 \$MN_OVR_FACTOR_AX_SPEED[10]=0.5 '6334
 N12010 \$MN_OVR_FACTOR_AX_SPEED[11]=0.6 '6442
 N12010 \$MN_OVR_FACTOR_AX_SPEED[12]=0.7 '6668
 N12010 \$MN_OVR_FACTOR_AX_SPEED[13]=0.75 '6876
 N12010 \$MN_OVR_FACTOR_AX_SPEED[14]=0.8 '62d4
 N12010 \$MN_OVR_FACTOR_AX_SPEED[15]=0.85 '6448
 N12010 \$MN_OVR_FACTOR_AX_SPEED[16]=0.9 '63ec
 N12010 \$MN_OVR_FACTOR_AX_SPEED[17]=0.95 '660a
 N12010 \$MN_OVR_FACTOR_AX_SPEED[18]=1 '6278
 N12010 \$MN_OVR_FACTOR_AX_SPEED[19]=1.05 '6508
 N12010 \$MN_OVR_FACTOR_AX_SPEED[20]=1.1 '6584
 N12010 \$MN_OVR_FACTOR_AX_SPEED[21]=1.15 '66f4
 N12010 \$MN_OVR_FACTOR_AX_SPEED[22]=1.2 '66e8
 N12010 \$MN_OVR_FACTOR_AX_SPEED[23]=1.2 '67b8
 N12010 \$MN_OVR_FACTOR_AX_SPEED[24]=1.2 '6654
 N12010 \$MN_OVR_FACTOR_AX_SPEED[25]=1.2 '668a
 N12010 \$MN_OVR_FACTOR_AX_SPEED[26]=1.2 '66f8
 N12010 \$MN_OVR_FACTOR_AX_SPEED[27]=1.2 '67d8
 N12010 \$MN_OVR_FACTOR_AX_SPEED[28]=1.2 '6658
 N12010 \$MN_OVR_FACTOR_AX_SPEED[29]=1.2 '6692
 N12010 \$MN_OVR_FACTOR_AX_SPEED[30]=1.2 '6990
 N12020 \$MN_OVR_FEED_IS_GRAY_CODE=1 '6f7e
 N12030 \$MN_OVR_FACTOR_FEEDRATE[0]=0 '5f14
 N12030 \$MN_OVR_FACTOR_FEEDRATE[1]=0.01 '63b0
 N12030 \$MN_OVR_FACTOR_FEEDRATE[2]=0.02 '6614
 N12030 \$MN_OVR_FACTOR_FEEDRATE[3]=0.04 '682c
 N12030 \$MN_OVR_FACTOR_FEEDRATE[4]=0.06 '63e4
 N12030 \$MN_OVR_FACTOR_FEEDRATE[5]=0.08 '637c
 N12030 \$MN_OVR_FACTOR_FEEDRATE[6]=0.1 '64f6
 N12030 \$MN_OVR_FACTOR_FEEDRATE[7]=0.2 '68dc
 N12030 \$MN_OVR_FACTOR_FEEDRATE[8]=0.3 '63ac
 N12030 \$MN_OVR_FACTOR_FEEDRATE[9]=0.4 '6330
 N12030 \$MN_OVR_FACTOR_FEEDRATE[10]=0.5 '62fc
 N12030 \$MN_OVR_FACTOR_FEEDRATE[11]=0.6 '640a
 N12030 \$MN_OVR_FACTOR_FEEDRATE[12]=0.7 '6630
 N12030 \$MN_OVR_FACTOR_FEEDRATE[13]=0.75 '683e
 N12030 \$MN_OVR_FACTOR_FEEDRATE[14]=0.8 '629c
 N12030 \$MN_OVR_FACTOR_FEEDRATE[15]=0.85 '6410
 N12030 \$MN_OVR_FACTOR_FEEDRATE[16]=0.9 '63b4
 N12030 \$MN_OVR_FACTOR_FEEDRATE[17]=0.95 '65d2
 N12030 \$MN_OVR_FACTOR_FEEDRATE[18]=1 '6240
 N12030 \$MN_OVR_FACTOR_FEEDRATE[19]=1.05 '64d0
 N12030 \$MN_OVR_FACTOR_FEEDRATE[20]=1.1 '654c
 N12030 \$MN_OVR_FACTOR_FEEDRATE[21]=1.15 '66bc
 N12030 \$MN_OVR_FACTOR_FEEDRATE[22]=1.2 '66b0
 N12030 \$MN_OVR_FACTOR_FEEDRATE[23]=1.2 '6780
 N12030 \$MN_OVR_FACTOR_FEEDRATE[24]=1.2 '661c
 N12030 \$MN_OVR_FACTOR_FEEDRATE[25]=1.2 '6652
 N12030 \$MN_OVR_FACTOR_FEEDRATE[26]=1.2 '66c0
 N12030 \$MN_OVR_FACTOR_FEEDRATE[27]=1.2 '67a0
 N12030 \$MN_OVR_FACTOR_FEEDRATE[28]=1.2 '6620
 N12030 \$MN_OVR_FACTOR_FEEDRATE[29]=1.2 '665a
 N12030 \$MN_OVR_FACTOR_FEEDRATE[30]=1.2 '6958
 N12040 \$MN_OVR_RAPID_IS_GRAY_CODE=1 '6560

N12050 \$MN_OVR_FACTOR_RAPID_TRA[0]=0 '6c32	N12204 \$MN_PERMANENT_ROT_AX_FEED[0]=0 '4fde
N12050 \$MN_OVR_FACTOR_RAPID_TRA[1]=0.01 '6ea2	N12204 \$MN_PERMANENT_ROT_AX_FEED[1]=0 '5042
N12050 \$MN_OVR_FACTOR_RAPID_TRA[2]=0.02 '703a	N12204 \$MN_PERMANENT_ROT_AX_FEED[2]=0 '510e
N12050 \$MN_OVR_FACTOR_RAPID_TRA[3]=0.04 '6f4e	N12204 \$MN_PERMANENT_ROT_AX_FEED[3]=0 '52ae
N12050 \$MN_OVR_FACTOR_RAPID_TRA[4]=0.06 '6fd6	N12205 \$MN_PERMANENT_SPINDLE_FEED[0]=0 '482e
N12050 \$MN_OVR_FACTOR_RAPID_TRA[5]=0.08 '6e2c	N12205 \$MN_PERMANENT_SPINDLE_FEED[1]=0 '48c4
N12050 \$MN_OVR_FACTOR_RAPID_TRA[6]=0.1 '6e56	N12205 \$MN_PERMANENT_SPINDLE_FEED[2]=0 '49f6
N12050 \$MN_OVR_FACTOR_RAPID_TRA[7]=0.2 '7002	N12205 \$MN_PERMANENT_SPINDLE_FEED[3]=0 '4c66
N12050 \$MN_OVR_FACTOR_RAPID_TRA[8]=0.3 '7022	N13000 \$MN_DRIVE_IS_ACTIVE[0]=1 '4ce4
N12050 \$MN_OVR_FACTOR_RAPID_TRA[9]=0.4 '6d94	N13000 \$MN_DRIVE_IS_ACTIVE[1]=1 '4dac
N12050 \$MN_OVR_FACTOR_RAPID_TRA[10]=0.5 '7016	N13000 \$MN_DRIVE_IS_ACTIVE[2]=1 '4f44
N12050 \$MN_OVR_FACTOR_RAPID_TRA[11]=0.6 '71c4	N13000 \$MN_DRIVE_IS_ACTIVE[3]=1 '5284
N12050 \$MN_OVR_FACTOR_RAPID_TRA[12]=0.7 '7530	N13000 \$MN_DRIVE_IS_ACTIVE[4]=0 '4c5e
N12050 \$MN_OVR_FACTOR_RAPID_TRA[13]=0.75 '7878	N13000 \$MN_DRIVE_IS_ACTIVE[5]=0 '4d36
N12050 \$MN_OVR_FACTOR_RAPID_TRA[14]=0.8 '6f88	N13000 \$MN_DRIVE_IS_ACTIVE[6]=0 '4eee
N12050 \$MN_OVR_FACTOR_RAPID_TRA[15]=0.85 '719c	N13000 \$MN_DRIVE_IS_ACTIVE[7]=0 '526e
N12050 \$MN_OVR_FACTOR_RAPID_TRA[16]=0.9 '717e	N13000 \$MN_DRIVE_IS_ACTIVE[8]=0 '4c6e
N12050 \$MN_OVR_FACTOR_RAPID_TRA[17]=0.95 '74e6	N13000 \$MN_DRIVE_IS_ACTIVE[9]=0 '4d56
N12050 \$MN_OVR_FACTOR_RAPID_TRA[18]=1 '6daa	N13000 \$MN_DRIVE_IS_ACTIVE[10]=0 '4eaa
N12050 \$MN_OVR_FACTOR_RAPID_TRA[19]=1 '6e1e	N13000 \$MN_DRIVE_IS_ACTIVE[11]=0 '4edc
N12050 \$MN_OVR_FACTOR_RAPID_TRA[20]=1 '6e00	N13000 \$MN_DRIVE_IS_ACTIVE[12]=0 '4f42
N12050 \$MN_OVR_FACTOR_RAPID_TRA[21]=1 '6e64	N13000 \$MN_DRIVE_IS_ACTIVE[13]=0 '5012
N12050 \$MN_OVR_FACTOR_RAPID_TRA[22]=1 '6f30	N13000 \$MN_DRIVE_IS_ACTIVE[14]=0 '4eae
N12050 \$MN_OVR_FACTOR_RAPID_TRA[23]=1 '70d0	N13010 \$MN_DRIVE_LOGIC_NR[0]=6 '51d0
N12050 \$MN_OVR_FACTOR_RAPID_TRA[24]=1 '6e08	N13010 \$MN_DRIVE_LOGIC_NR[1]=1 '517a
N12050 \$MN_OVR_FACTOR_RAPID_TRA[25]=1 '6e74	N13010 \$MN_DRIVE_LOGIC_NR[2]=2 '5378
N12050 \$MN_OVR_FACTOR_RAPID_TRA[26]=1 '6f50	N13010 \$MN_DRIVE_LOGIC_NR[3]=3 '5788
N12050 \$MN_OVR_FACTOR_RAPID_TRA[27]=1 '7110	N13010 \$MN_DRIVE_LOGIC_NR[4]=4 '5094
N12050 \$MN_OVR_FACTOR_RAPID_TRA[28]=1 '6e10	N13010 \$MN_DRIVE_LOGIC_NR[5]=5 '51a2
N12050 \$MN_OVR_FACTOR_RAPID_TRA[29]=1 '6e84	N13010 \$MN_DRIVE_LOGIC_NR[6]=0 '5278
N12050 \$MN_OVR_FACTOR_RAPID_TRA[30]=1 '6ed0	N13010 \$MN_DRIVE_LOGIC_NR[7]=0 '5518
N12060 \$MN_OVR_SPIND_IS_GRAY_CODE=1 '6d88	N13010 \$MN_DRIVE_LOGIC_NR[8]=0 '5098
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[0]=0.5 '73ae	N13010 \$MN_DRIVE_LOGIC_NR[9]=0 '5146
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[1]=0.55 '74ae	N13010 \$MN_DRIVE_LOGIC_NR[10]=0 '5052
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[2]=0.6 '772e	N13010 \$MN_DRIVE_LOGIC_NR[11]=0 '511a
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[3]=0.65 '7a08	N13010 \$MN_DRIVE_LOGIC_NR[12]=0 '52b2
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[4]=0.7 '78f2	N13010 \$MN_DRIVE_LOGIC_NR[13]=0 '55f2
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[5]=0.75 '79fe	N13010 \$MN_DRIVE_LOGIC_NR[14]=0 '5062
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[6]=0.8 '74de	N13020 \$MN_DRIVE_INVERTER_CODE[0]='He' '5e4c
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[7]=0.85 '77e8	N13020 \$MN_DRIVE_INVERTER_CODE[1]='H13' '6314
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[8]=0.9 '73e6	N13020 \$MN_DRIVE_INVERTER_CODE[2]='H13' '64ac
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[9]=0.95 '74fe	N13020 \$MN_DRIVE_INVERTER_CODE[3]='H12' '664c
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[10]=1 '7046	N13020 \$MN_DRIVE_INVERTER_CODE[4]='H12' '60bc
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[11]=1.05 '74f2	N13020 \$MN_DRIVE_INVERTER_CODE[5]='H0' '5e9a
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[12]=1.1 '75e8	N13020 \$MN_DRIVE_INVERTER_CODE[6]='H0' '6052
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[13]=1.15 '79fc	N13020 \$MN_DRIVE_INVERTER_CODE[7]='H0' '63d2
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[14]=1.2 '73fe	N13020 \$MN_DRIVE_INVERTER_CODE[8]='H0' '5dd2
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[15]=1.2 '74d6	N13020 \$MN_DRIVE_INVERTER_CODE[9]='H0' '5eba
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[16]=1.2 '768e	N13020 \$MN_DRIVE_INVERTER_CODE[10]='H0' '61a6
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[17]=1.2 '7a0e	N13020 \$MN_DRIVE_INVERTER_CODE[11]='H0' '61d8
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[18]=1.2 '740e	N13020 \$MN_DRIVE_INVERTER_CODE[12]='H0' '623e
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[19]=1.2 '74f6	N13020 \$MN_DRIVE_INVERTER_CODE[13]='H0' '630e
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[20]=1.2 '7520	N13020 \$MN_DRIVE_INVERTER_CODE[14]='H0' '61aa
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[21]=1.2 '75e8	N13030 \$MN_DRIVE_MODULE_TYPE[0]=6 '4864
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[22]=1.2 '7780	N13030 \$MN_DRIVE_MODULE_TYPE[1]=6 '48c8
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[23]=1.2 '7ac0	N13030 \$MN_DRIVE_MODULE_TYPE[2]=6 '4994
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[24]=1.2 '7530	N13030 \$MN_DRIVE_MODULE_TYPE[3]=6 '4b34
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[25]=1.2 '7608	N13030 \$MN_DRIVE_MODULE_TYPE[4]=6 '486c
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[26]=1.2 '77c0	N13030 \$MN_DRIVE_MODULE_TYPE[5]=6 '48d8
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[27]=1.2 '7b40	N13030 \$MN_DRIVE_MODULE_TYPE[6]=1 '493e
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[28]=1.2 '7540	N13030 \$MN_DRIVE_MODULE_TYPE[7]=1 '4afe
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[29]=1.2 '7628	N13030 \$MN_DRIVE_MODULE_TYPE[8]=1 '47fe
N12070 \$MN_OVR_FACTOR_SPIND_SPEED[30]=1.2 '7790	N13030 \$MN_DRIVE_MODULE_TYPE[9]=1 '4872
N12080 \$MN_OVR_REFERENCE_IS_PROG_FEED=1 '7978	N13030 \$MN_DRIVE_MODULE_TYPE[10]=1 '4890
N12082 \$MN_OVR_REFERENCE_IS_MIN_FEED=0 '732e	N13030 \$MN_DRIVE_MODULE_TYPE[11]=1 '4926
N12100 \$MN_OVR_FACTOR_LIMIT_BIN=1.2 '62d0	N13030 \$MN_DRIVE_MODULE_TYPE[12]=1 '4a58
N12200 \$MN_RUN_OVERRIDE_0=0 '4b98	N13030 \$MN_DRIVE_MODULE_TYPE[13]=1 '4cc8
N12202 \$MN_PERMANENT_FEED[0]=0 '38be	N13030 \$MN_DRIVE_MODULE_TYPE[14]=1 '489c
N12202 \$MN_PERMANENT_FEED[1]=0 '3954	N13040 \$MN_DRIVE_TYPE[0]=2 '3158
N12202 \$MN_PERMANENT_FEED[2]=0 '3a86	N13040 \$MN_DRIVE_TYPE[1]=1 '3122
N12202 \$MN_PERMANENT_FEED[3]=0 '3cf6	N13040 \$MN_DRIVE_TYPE[2]=1 '3254

N13040 \$MN_DRIVE_TYPE[3]=1	'34c4	N18093 \$MN_MM_TYPE_CC_MAGLOC_PARAM[1]=3	'6e3a
N13040 \$MN_DRIVE_TYPE[4]=1	'3098	N18093 \$MN_MM_TYPE_CC_MAGLOC_PARAM[2]=3	'6fd2
N13040 \$MN_DRIVE_TYPE[5]=1	'313a	N18093 \$MN_MM_TYPE_CC_MAGLOC_PARAM[3]=3	'7312
N13040 \$MN_DRIVE_TYPE[6]=1	'3284	N18093 \$MN_MM_TYPE_CC_MAGLOC_PARAM[4]=3	'6d82
N13040 \$MN_DRIVE_TYPE[7]=1	'3524	N18093 \$MN_MM_TYPE_CC_MAGLOC_PARAM[5]=3	'6e5a
N13040 \$MN_DRIVE_TYPE[8]=1	'30a4	N18093 \$MN_MM_TYPE_CC_MAGLOC_PARAM[6]=3	'7012
N13040 \$MN_DRIVE_TYPE[9]=1	'3152	N18093 \$MN_MM_TYPE_CC_MAGLOC_PARAM[7]=3	'7392
N13040 \$MN_DRIVE_TYPE[10]=1	'3090	N18093 \$MN_MM_TYPE_CC_MAGLOC_PARAM[8]=3	'6d92
N13040 \$MN_DRIVE_TYPE[11]=1	'3158	N18093 \$MN_MM_TYPE_CC_MAGLOC_PARAM[9]=3	'6e7a
N13040 \$MN_DRIVE_TYPE[12]=1	'32f0	N18094 \$MN_MM_NUM_CC_TDA_PARAM=0	'4a2a
N13040 \$MN_DRIVE_TYPE[13]=1	'3630	N18095 \$MN_MM_TYPE_CC_TDA_PARAM[0]=4	'57c8
N13040 \$MN_DRIVE_TYPE[14]=1	'30a0	N18095 \$MN_MM_TYPE_CC_TDA_PARAM[1]=4	'57fa
N13100 \$MN_DRIVE_DIAGNOSIS[0]='H0'	'5538	N18095 \$MN_MM_TYPE_CC_TDA_PARAM[2]=4	'5860
N13100 \$MN_DRIVE_DIAGNOSIS[1]='H0'	'5600	N18095 \$MN_MM_TYPE_CC_TDA_PARAM[3]=4	'5930
N13100 \$MN_DRIVE_DIAGNOSIS[2]='H0'	'5798	N18095 \$MN_MM_TYPE_CC_TDA_PARAM[4]=4	'57cc
N13100 \$MN_DRIVE_DIAGNOSIS[3]='H0'	'5ad8	N18095 \$MN_MM_TYPE_CC_TDA_PARAM[5]=4	'5802
N13100 \$MN_DRIVE_DIAGNOSIS[4]='H0'	'5548	N18095 \$MN_MM_TYPE_CC_TDA_PARAM[6]=4	'5870
N13100 \$MN_DRIVE_DIAGNOSIS[5]='H0'	'5620	N18095 \$MN_MM_TYPE_CC_TDA_PARAM[7]=4	'5950
N13100 \$MN_DRIVE_DIAGNOSIS[6]='H1'	'580a	N18095 \$MN_MM_TYPE_CC_TDA_PARAM[8]=4	'57d0
N13100 \$MN_DRIVE_DIAGNOSIS[7]='H0'	'5b58	N18095 \$MN_MM_TYPE_CC_TDA_PARAM[9]=4	'580a
N13100 \$MN_DRIVE_DIAGNOSIS[8]='H0'	'5558	N18096 \$MN_MM_NUM_CC_TOA_PARAM=0	'520e
N13200 \$MN_MEAS_PROBE_LOW_ACTIVE[0]=1	'7080	N18097 \$MN_MM_TYPE_CC_TOA_PARAM[0]=4	'6334
N13200 \$MN_MEAS_PROBE_LOW_ACTIVE[1]=1	'70e4	N18097 \$MN_MM_TYPE_CC_TOA_PARAM[1]=4	'6366
N14504 \$MN_MAXNUM_USER_DATA_INT=0	'5044	N18097 \$MN_MM_TYPE_CC_TOA_PARAM[2]=4	'63cc
N14506 \$MN_MAXNUM_USER_DATA_HEX=14	'508c	N18097 \$MN_MM_TYPE_CC_TOA_PARAM[3]=4	'649c
N14508 \$MN_MAXNUM_USER_DATA_FLOAT=1	'57c4	N18097 \$MN_MM_TYPE_CC_TOA_PARAM[4]=4	'6338
N14510 \$MN_USER_DATA_INT[0]=0	'3cce	N18097 \$MN_MM_TYPE_CC_TOA_PARAM[5]=4	'636e
N14512 \$MN_USER_DATA_HEX[0]='H38'	'43e8	N18097 \$MN_MM_TYPE_CC_TOA_PARAM[6]=4	'63dc
N14512 \$MN_USER_DATA_HEX[1]='H0'	'42dc	N18097 \$MN_MM_TYPE_CC_TOA_PARAM[7]=4	'64bc
N14512 \$MN_USER_DATA_HEX[2]='H0'	'43a8	N18097 \$MN_MM_TYPE_CC_TOA_PARAM[8]=4	'633c
N14512 \$MN_USER_DATA_HEX[3]='H10'	'42f6	N18097 \$MN_MM_TYPE_CC_TOA_PARAM[9]=4	'6376
N14512 \$MN_USER_DATA_HEX[4]='H4'	'428c	N18098 \$MN_MM_NUM_CC_MON_PARAM=0	'5432
N14512 \$MN_USER_DATA_HEX[5]='H3'	'4724	N18099 \$MN_MM_TYPE_CC_MON_PARAM[0]=3	'67c0
N14512 \$MN_USER_DATA_HEX[6]='H0'	'43c8	N18099 \$MN_MM_TYPE_CC_MON_PARAM[1]=3	'67f2
N14512 \$MN_USER_DATA_HEX[7]='H0'	'4588	N18099 \$MN_MM_TYPE_CC_MON_PARAM[2]=3	'6858
N14512 \$MN_USER_DATA_HEX[8]='H0'	'4288	N18099 \$MN_MM_TYPE_CC_MON_PARAM[3]=3	'6928
N14512 \$MN_USER_DATA_HEX[9]='H0'	'42fc	N18099 \$MN_MM_TYPE_CC_MON_PARAM[4]=3	'67c4
N14512 \$MN_USER_DATA_HEX[10]='H1'	'4188	N18099 \$MN_MM_TYPE_CC_MON_PARAM[5]=3	'67fa
N14512 \$MN_USER_DATA_HEX[11]='H0'	'4156	N18099 \$MN_MM_TYPE_CC_MON_PARAM[6]=3	'6868
N14512 \$MN_USER_DATA_HEX[12]='H0'	'4288	N18099 \$MN_MM_TYPE_CC_MON_PARAM[7]=3	'6948
N14512 \$MN_USER_DATA_HEX[13]='H0'	'44f8	N18099 \$MN_MM_TYPE_CC_MON_PARAM[8]=3	'67c8
N14514 \$MN_USER_DATA_FLOAT[0]=600	'4bc8	N18099 \$MN_MM_TYPE_CC_MON_PARAM[9]=3	'6802
N14516 \$MN_USER_DATA_PLC_ALARM[0]='H0'	'562a	N18100 \$MN_MM_NUM_CUTTING_EDGES_IN_TOA=80	'6cea
N14516 \$MN_USER_DATA_PLC_ALARM[1]='H0'	'56f2	N18102 \$MN_MM_TYPE_OF_CUTTING_EDGE=0	'5b8a
N14516 \$MN_USER_DATA_PLC_ALARM[2]='H0'	'588a	N18104 \$MN_MM_NUM_TOOL_ADAPTER=-1	'4a28
N14516 \$MN_USER_DATA_PLC_ALARM[3]='H0'	'5bca	N18105 \$MN_MM_MAX_CUTTING_EDGE_NO=2	'5752
N17500 \$MN_MAXNUM_REPLACEMENT_TOOLS=5	'5e06	N18106 \$MN_MM_MAX_CUTTING_EDGE_PERTOOL=2	'645e
N18000 \$MN_VDI_UPDATE_IN_ONE_IPO_CYCLE=0	'65bc	N18108 \$MN_MM_NUM_SUMCORR=-1	'480e
N18040 \$MN_VERSION_INFO[0]="03.03.18-CCU1"	'6ad0	N18110 \$MN_MM_MAX_SUMCORR_PER_CUTTEDGE=1	'6506
N18040 \$MN_VERSION_INFO[1]="AH0 ph_km"	'6dec	N18112 \$MN_MM_KIND_OF_SUMCORR='H0'	'6638
N18040 \$MN_VERSION_INFO[2]="28/10/00 03:08:06"	'6abe	N18118 \$MN_MM_NUM_GUD_MODULES=7	'5036
N18050 \$MN_INFO_FREE_MEM_DYNAMIC=42312	'5b76	N18120 \$MN_MM_NUM_GUD_NAMES_NCK=400	'6208
N18060 \$MN_INFO_FREE_MEM_STATIC=962212	'5876	N18130 \$MN_MM_NUM_GUD_NAMES_CHAN=200	'5fc4
N18080 \$MN_MM_TOOL_MANAGEMENT_MASK='H2b'	'6ba0	N18140 \$MN_MM_NUM_GUD_NAMES_AXIS=0	'601a
N18082 \$MN_MM_NUM_TOOL=50	'390c	N18150 \$MN_MM_GUD_VALUES_MEM=75	'4b56
N18084 \$MN_MM_NUM_MAGAZINE=3	'3e5e	N18160 \$MN_MM_NUM_USER_MACROS=30	'5e58
N18086 \$MN_MM_NUM_MAGAZINE_LOCATION=43	'59e4	N18170 \$MN_MM_NUM_MAX_FUNC_NAMES=140	'5c7e
N18088 \$MN_MM_NUM_TOOL_CARRIER=0	'5468	N18180 \$MN_MM_NUM_MAX_FUNC_PARAM=1200	'5296
N18090 \$MN_MM_NUM_CC_MAGAZINE_PARAM=0	'5daa	N18190 \$MN_MM_NUM_PROTECT_AREA_NCK=0	'6010
N18091 \$MN_MM_TYPE_CC_MAGAZINE_PARAM[0]=3	'62d2	N18200 \$MN_MM_NUM_CCS_MAGAZINE_PARAM=0	'6212
N18091 \$MN_MM_TYPE_CC_MAGAZINE_PARAM[1]=3	'6336	N18201 \$MN_MM_TYPE_CCS_MAGAZINE_PARAM[0]=3	'76cc
N18091 \$MN_MM_TYPE_CC_MAGAZINE_PARAM[2]=3	'6402	N18201 \$MN_MM_TYPE_CCS_MAGAZINE_PARAM[1]=3	'7762
N18091 \$MN_MM_TYPE_CC_MAGAZINE_PARAM[3]=3	'65a2	N18201 \$MN_MM_TYPE_CCS_MAGAZINE_PARAM[2]=3	'7894
N18091 \$MN_MM_TYPE_CC_MAGAZINE_PARAM[4]=3	'62da	N18201 \$MN_MM_TYPE_CCS_MAGAZINE_PARAM[3]=3	'7b04
N18091 \$MN_MM_TYPE_CC_MAGAZINE_PARAM[5]=3	'6346	N18201 \$MN_MM_TYPE_CCS_MAGAZINE_PARAM[4]=3	'76d8
N18091 \$MN_MM_TYPE_CC_MAGAZINE_PARAM[6]=3	'6422	N18201 \$MN_MM_TYPE_CCS_MAGAZINE_PARAM[5]=3	'777a
N18091 \$MN_MM_TYPE_CC_MAGAZINE_PARAM[7]=3	'65e2	N18201 \$MN_MM_TYPE_CCS_MAGAZINE_PARAM[6]=3	'78c4
N18091 \$MN_MM_TYPE_CC_MAGAZINE_PARAM[8]=3	'62e2	N18201 \$MN_MM_TYPE_CCS_MAGAZINE_PARAM[7]=3	'7b64
N18091 \$MN_MM_TYPE_CC_MAGAZINE_PARAM[9]=3	'6356	N18201 \$MN_MM_TYPE_CCS_MAGAZINE_PARAM[8]=3	'76e4
N18092 \$MN_MM_NUM_CC_MAGLOC_PARAM=0	'6604	N18201 \$MN_MM_TYPE_CCS_MAGAZINE_PARAM[9]=3	'7792
N18093 \$MN_MM_TYPE_CC_MAGLOC_PARAM[0]=3	'6d72	N18202 \$MN_MM_NUM_CCS_MAGLOC_PARAM=0	'65f2

N18203	\$MN_MM_TYPE_CCS_MAGLOC_PARAM[0]=3	'7ba2	N18331	\$MN_MM_FLASHFILESYS_MEM[0]=0	'5c34
N18203	\$MN_MM_TYPE_CCS_MAGLOC_PARAM[1]=3	'7bd4	N18331	\$MN_MM_FLASHFILESYS_MEM[1]=0	'5cfc
N18203	\$MN_MM_TYPE_CCS_MAGLOC_PARAM[2]=3	'7c3a	N18331	\$MN_MM_FLASHFILESYS_MEM[2]=0	'5e94
N18203	\$MN_MM_TYPE_CCS_MAGLOC_PARAM[3]=3	'7d0a	N18331	\$MN_MM_FLASHFILESYS_MEM[3]=0	'61d4
N18203	\$MN_MM_TYPE_CCS_MAGLOC_PARAM[4]=3	'7ba6	N18331	\$MN_MM_FLASHFILESYS_MEM[4]=0	'5c44
N18203	\$MN_MM_TYPE_CCS_MAGLOC_PARAM[5]=3	'7bdc	N18331	\$MN_MM_FLASHFILESYS_MEM[5]=0	'5d1c
N18203	\$MN_MM_TYPE_CCS_MAGLOC_PARAM[6]=3	'7c4a	N18331	\$MN_MM_FLASHFILESYS_MEM[6]=0	'5ed4
N18203	\$MN_MM_TYPE_CCS_MAGLOC_PARAM[7]=3	'7d2a	N18331	\$MN_MM_FLASHFILESYS_MEM[7]=0	'6254
N18203	\$MN_MM_TYPE_CCS_MAGLOC_PARAM[8]=3	'7baa	N18342	\$MN_MM_CEC_MAX_POINTS[0]=0	'5bde
N18203	\$MN_MM_TYPE_CCS_MAGLOC_PARAM[9]=3	'7be4	N18342	\$MN_MM_CEC_MAX_POINTS[1]=0	'5c42
N18204	\$MN_MM_NUM_CCS_TDA_PARAM=0	'51e2	N18342	\$MN_MM_CEC_MAX_POINTS[2]=0	'5d0e
N18205	\$MN_MM_TYPE_CCS_TDA_PARAM[0]=4	'5e7e	N18342	\$MN_MM_CEC_MAX_POINTS[3]=0	'5eae
N18205	\$MN_MM_TYPE_CCS_TDA_PARAM[1]=4	'5ee2	N18342	\$MN_MM_CEC_MAX_POINTS[4]=0	'5be6
N18205	\$MN_MM_TYPE_CCS_TDA_PARAM[2]=4	'5fae	N18342	\$MN_MM_CEC_MAX_POINTS[5]=0	'5c52
N18205	\$MN_MM_TYPE_CCS_TDA_PARAM[3]=4	'614e	N18342	\$MN_MM_CEC_MAX_POINTS[6]=0	'5d2e
N18205	\$MN_MM_TYPE_CCS_TDA_PARAM[4]=4	'5e86	N18342	\$MN_MM_CEC_MAX_POINTS[7]=0	'5eee
N18205	\$MN_MM_TYPE_CCS_TDA_PARAM[5]=4	'5ef2	N18342	\$MN_MM_CEC_MAX_POINTS[8]=0	'5bee
N18205	\$MN_MM_TYPE_CCS_TDA_PARAM[6]=4	'5fce	N18342	\$MN_MM_CEC_MAX_POINTS[9]=0	'5c62
N18205	\$MN_MM_TYPE_CCS_TDA_PARAM[7]=4	'618e	N18342	\$MN_MM_CEC_MAX_POINTS[10]=0	'5c4e
N18205	\$MN_MM_TYPE_CCS_TDA_PARAM[8]=4	'5e8e	N18342	\$MN_MM_CEC_MAX_POINTS[11]=0	'5ce4
N18205	\$MN_MM_TYPE_CCS_TDA_PARAM[9]=4	'5f02	N18350	\$MN_MM_USER_FILE_MEM_MINIMUM=20	'68e0
N18206	\$MN_MM_NUM_CCS_TOA_PARAM=0	'5bfa	N18360	\$MN_MM_EXT_PROG_BUFFER_SIZE=50	'62a6
N18207	\$MN_MM_TYPE_CCS_TOA_PARAM[0]=4	'634e	N18362	\$MN_MM_EXT_PROG_NUM=1	'4a16
N18207	\$MN_MM_TYPE_CCS_TOA_PARAM[1]=4	'63b2	N18400	\$MN_MM_NUM_CURVE_TABS=0	'50c2
N18207	\$MN_MM_TYPE_CCS_TOA_PARAM[2]=4	'647e	N18402	\$MN_MM_NUM_CURVE_SEGMENTS=0	'5e34
N18207	\$MN_MM_TYPE_CCS_TOA_PARAM[3]=4	'661e	N18404	\$MN_MM_NUM_CURVE_POLYNOMS=0	'5d3c
N18207	\$MN_MM_TYPE_CCS_TOA_PARAM[4]=4	'6356	N18500	\$MN_MM_EXTCOM_TASK_STACK_SIZE=17	'7504
N18207	\$MN_MM_TYPE_CCS_TOA_PARAM[5]=4	'63c2	N18502	\$MN_MM_COM_TASK_STACK_SIZE=12	'7668
N18207	\$MN_MM_TYPE_CCS_TOA_PARAM[6]=4	'649e	N18510	\$MN_MM_SERVO_TASK_STACK_SIZE=8	'7aee
N18207	\$MN_MM_TYPE_CCS_TOA_PARAM[7]=4	'665e	N18520	\$MN_MM_DRIVE_TASK_STACK_SIZE=8	'70d0
N18207	\$MN_MM_TYPE_CCS_TOA_PARAM[8]=4	'635e	N18600	\$MN_MM_FRAME_FINE_TRANS=1	'4eee
N18207	\$MN_MM_TYPE_CCS_TOA_PARAM[9]=4	'63d2	N18601	\$MN_MM_NUM_GLOBAL_USER_FRAMES=0	'6526
N18208	\$MN_MM_NUM_CCS_MON_PARAM=0	'5c42	N18602	\$MN_MM_NUM_GLOBAL_BASE_FRAMES=0	'67e6
N18209	\$MN_MM_TYPE_CCS_MON_PARAM[0]=3	'64aa	N18700	\$MN_MM_SIZEOF_LINKVAR_DATA=0	'566c
N18209	\$MN_MM_TYPE_CCS_MON_PARAM[1]=3	'650e	N18800	\$MN_MM_EXTERN_LANGUAGE='H0'	'47d4
N18209	\$MN_MM_TYPE_CCS_MON_PARAM[2]=3	'65da	N19100	\$ON_NUM_AXES_IN_SYSTEM=6	'5e52
N18209	\$MN_MM_TYPE_CCS_MON_PARAM[3]=3	'677a	N19110	\$ON_NUM_IPO_AXES=4	'41ca
N18209	\$MN_MM_TYPE_CCS_MON_PARAM[4]=3	'64b2	N19130	\$ON_NUM_ABS_INC_REFP_AXES=0	'69ac
N18209	\$MN_MM_TYPE_CCS_MON_PARAM[5]=3	'651e	N19200	\$ON_NUM_CHANNELS=1	'42d0
N18209	\$MN_MM_TYPE_CCS_MON_PARAM[6]=3	'65fa	N19220	\$ON_NUM_MODE_GROUPS=1	'5034
N18209	\$MN_MM_TYPE_CCS_MON_PARAM[7]=3	'67ba	N19250	\$ON_USER_MEM_BUFFERED=6	'4d5a
N18209	\$MN_MM_TYPE_CCS_MON_PARAM[8]=3	'64ba	N19270	\$ON_PLC_USER_MEM_SIZE=3	'591c
N18209	\$MN_MM_TYPE_CCS_MON_PARAM[9]=3	'652e	N19280	\$ON_PLC_C_USER_MEM_SIZE=0	'5b7c
N18210	\$MN_MM_USER_MEM_DYNAMIC=3110	'582e	N19290	\$ON_PROFIBUS=0	'2f48
N18230	\$MN_MM_USER_MEM_BUFFERED=2000	'56f0	N19300	\$ON_COMP_MASK='H0'	'4a5e
N18240	\$MN_MM_LUD_HASH_TABLE_SIZE=11	'4f74	N19310	\$ON_AXIS_FUNCTION_MASK='H4'	'675e
N18242	\$MN_MM_MAX_SIZE_OF_LUD_VALUE=660	'65e4	N19320	\$ON_TECHNO_FUNCTION_MASK='H30090'	'690e
N18250	\$MN_MM_CHAN_HASH_TABLE_SIZE=7	'6422	N19330	\$ON_IPO_FUNCTION_MASK='H4'	'6786
N18260	\$MN_MM_NCK_HASH_TABLE_SIZE=1201	'5d34	N19334	\$ON_SYSTEM_FUNCTION_MASK='H0'	'6910
N18270	\$MN_MM_NUM_SUBDIR_PER_DIR=30	'5646	N19340	\$ON_PROG_MASK='H5'	'4c6e
N18280	\$MN_MM_NUM_FILES_PER_DIR=400	'5d0a	N19410	\$ON_TRAFO_TYPE_MASK='H0'	'4794
N18290	\$MN_MM_FILE_HASH_TABLE_SIZE=19	'5bda	N19500	\$ON_ASUP_MASK='H1'	'4056
N18300	\$MN_MM_DIR_HASH_TABLE_SIZE=7	'55b6	N19700	\$ON_ELEC_TRANSFER=0	'44dc
N18310	\$MN_MM_NUM_DIR_IN_FILESYSTEM=30	'5eaa	N19800	\$ON_EXTERN_LANGUAGE='H0'	'3f14
N18320	\$MN_MM_NUM_FILES_IN_FILESYSTEM=400	'7104			

General Setting Data

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N41010 $SN_JOG_VAR_INCR_SIZE=10 '5c44
N41050 $SN_JOG_CONT_MODE_LEVELTRIGGRD=1 '6f36
N41100 $SN_JOG_REV_IS_ACTIVE=0 '56a8
N41110 $SN_JOG_SET_VELO=5000 '4ec6
N41120 $SN_JOG_REV_SET_VELO=0 '5e84
N41130 $SN_JOG_ROT_AX_SET_VELO=0 '60dc
N41200 $SN_JOG_SPIND_SET_VELO=200 '5492
N41300 $SN_CEC_TABLE_ENABLE[0]=0 '51b2
N41300 $SN_CEC_TABLE_ENABLE[1]=0 '51e4
N41300 $SN_CEC_TABLE_ENABLE[2]=0 '524a
N41300 $SN_CEC_TABLE_ENABLE[3]=0 '531a
N41300 $SN_CEC_TABLE_ENABLE[4]=0 '51b6
N41300 $SN_CEC_TABLE_ENABLE[5]=0 '51ec
N41300 $SN_CEC_TABLE_ENABLE[6]=0 '525a
N41300 $SN_CEC_TABLE_ENABLE[7]=0 '533a
N41300 $SN_CEC_TABLE_ENABLE[8]=0 '51ba
N41300 $SN_CEC_TABLE_ENABLE[9]=0 '51f4
N41300 $SN_CEC_TABLE_ENABLE[10]=0 '52e8
N41300 $SN_CEC_TABLE_ENABLE[11]=0 '534c
N41310 $SN_CEC_TABLE_WEIGHT[0]=1 '55c4
N41310 $SN_CEC_TABLE_WEIGHT[1]=1 '55f6
N41310 $SN_CEC_TABLE_WEIGHT[2]=1 '565c
N41310 $SN_CEC_TABLE_WEIGHT[3]=1 '572c
N41310 $SN_CEC_TABLE_WEIGHT[4]=1 '55c8
N41310 $SN_CEC_TABLE_WEIGHT[5]=1 '55fe
N41310 $SN_CEC_TABLE_WEIGHT[6]=1 '566c
N41310 $SN_CEC_TABLE_WEIGHT[7]=1 '574c
N41310 $SN_CEC_TABLE_WEIGHT[8]=1 '55cc
N41310 $SN_CEC_TABLE_WEIGHT[9]=1 '5606
N41310 $SN_CEC_TABLE_WEIGHT[10]=1 '5664
N41310 $SN_CEC_TABLE_WEIGHT[11]=1 '56c8
N41500 $SN_SW_CAM_MINUS_POS_TAB_1[0]=1 '840a
N41500 $SN_SW_CAM_MINUS_POS_TAB_1[1]=-114.853 '8cca
N41500 $SN_SW_CAM_MINUS_POS_TAB_1[2]=-5 '8700
N41500 $SN_SW_CAM_MINUS_POS_TAB_1[3]=0 '87de
N41500 $SN_SW_CAM_MINUS_POS_TAB_1[4]=0 '83b2
N41500 $SN_SW_CAM_MINUS_POS_TAB_1[5]=0 '8454
N41500 $SN_SW_CAM_MINUS_POS_TAB_1[6]=0 '859e
N41500 $SN_SW_CAM_MINUS_POS_TAB_1[7]=0 '883e
N41501 $SN_SW_CAM_PLUS_POS_TAB_1[0]=-1 '6f94
N41501 $SN_SW_CAM_PLUS_POS_TAB_1[1]=-116.853 '7d44
N41501 $SN_SW_CAM_PLUS_POS_TAB_1[2]=-110.853 '7b70
N41501 $SN_SW_CAM_PLUS_POS_TAB_1[3]=0 '7176
N41501 $SN_SW_CAM_PLUS_POS_TAB_1[4]=0 '6eae
N41501 $SN_SW_CAM_PLUS_POS_TAB_1[5]=0 '6f1a
N41501 $SN_SW_CAM_PLUS_POS_TAB_1[6]=0 '6ff6
N41501 $SN_SW_CAM_PLUS_POS_TAB_1[7]=0 '71b6
N41502 $SN_SW_CAM_MINUS_POS_TAB_2[0]=0 '853c
N41502 $SN_SW_CAM_MINUS_POS_TAB_2[1]=0 '85d2
N41502 $SN_SW_CAM_MINUS_POS_TAB_2[2]=0 '8704
N41502 $SN_SW_CAM_MINUS_POS_TAB_2[3]=0 '8974
N41502 $SN_SW_CAM_MINUS_POS_TAB_2[4]=0 '8548
N41502 $SN_SW_CAM_MINUS_POS_TAB_2[5]=0 '85ea
N41502 $SN_SW_CAM_MINUS_POS_TAB_2[6]=0 '8734
N41502 $SN_SW_CAM_MINUS_POS_TAB_2[7]=0 '89d4
N41503 $SN_SW_CAM_PLUS_POS_TAB_2[0]=0 '72aa
N41503 $SN_SW_CAM_PLUS_POS_TAB_2[1]=0 '730e
N41503 $SN_SW_CAM_PLUS_POS_TAB_2[2]=0 '73da
N41503 $SN_SW_CAM_PLUS_POS_TAB_2[3]=0 '757a
N41503 $SN_SW_CAM_PLUS_POS_TAB_2[4]=0 '72b2
N41503 $SN_SW_CAM_PLUS_POS_TAB_2[5]=0 '731e
N41503 $SN_SW_CAM_PLUS_POS_TAB_2[6]=0 '73fa
N41503 $SN_SW_CAM_PLUS_POS_TAB_2[7]=0 '75ba
N41520 $SN_SW_CAM_MINUS_TIME_TAB_1[0]=0 '6e98
N41520 $SN_SW_CAM_MINUS_TIME_TAB_1[1]=0 '6f60
N41520 $SN_SW_CAM_MINUS_TIME_TAB_1[2]=0 '70f8
N41520 $SN_SW_CAM_MINUS_TIME_TAB_1[3]=0 '7438
N41520 $SN_SW_CAM_MINUS_TIME_TAB_1[4]=0 '6ea8
N41520 $SN_SW_CAM_MINUS_TIME_TAB_1[5]=0 '6f80
N41520 $SN_SW_CAM_MINUS_TIME_TAB_1[6]=0 '7138
N41520 $SN_SW_CAM_MINUS_TIME_TAB_1[7]=0 '74b8
N41521 $SN_SW_CAM_PLUS_TIME_TAB_1[0]=0 '72e6
N41521 $SN_SW_CAM_PLUS_TIME_TAB_1[1]=0 '737c
N41521 $SN_SW_CAM_PLUS_TIME_TAB_1[2]=0 '74ae
N41521 $SN_SW_CAM_PLUS_TIME_TAB_1[3]=0 '771e
N41521 $SN_SW_CAM_PLUS_TIME_TAB_1[4]=0 '72f2
N41521 $SN_SW_CAM_PLUS_TIME_TAB_1[5]=0 '7394
N41521 $SN_SW_CAM_PLUS_TIME_TAB_1[6]=0 '74de
N41521 $SN_SW_CAM_PLUS_TIME_TAB_1[7]=0 '777e
N41522 $SN_SW_CAM_MINUS_TIME_TAB_2[0]=0 '7094
N41522 $SN_SW_CAM_MINUS_TIME_TAB_2[1]=0 '715c
N41522 $SN_SW_CAM_MINUS_TIME_TAB_2[2]=0 '72f4
N41522 $SN_SW_CAM_MINUS_TIME_TAB_2[3]=0 '7634
N41522 $SN_SW_CAM_MINUS_TIME_TAB_2[4]=0 '70a4
N41522 $SN_SW_CAM_MINUS_TIME_TAB_2[5]=0 '717c
N41522 $SN_SW_CAM_MINUS_TIME_TAB_2[6]=0 '7334
N41522 $SN_SW_CAM_MINUS_TIME_TAB_2[7]=0 '76b4
N41523 $SN_SW_CAM_PLUS_TIME_TAB_2[0]=0 '75b8
N41523 $SN_SW_CAM_PLUS_TIME_TAB_2[1]=0 '764e
N41523 $SN_SW_CAM_PLUS_TIME_TAB_2[2]=0 '7780
N41523 $SN_SW_CAM_PLUS_TIME_TAB_2[3]=0 '79f0
N41523 $SN_SW_CAM_PLUS_TIME_TAB_2[4]=0 '75c4
N41523 $SN_SW_CAM_PLUS_TIME_TAB_2[5]=0 '7666
N41523 $SN_SW_CAM_PLUS_TIME_TAB_2[6]=0 '77b0
N41523 $SN_SW_CAM_PLUS_TIME_TAB_2[7]=0 '7a50
N41600 $SN_COMPAR_THRESHOLD_1[0]=0 '5352
N41600 $SN_COMPAR_THRESHOLD_1[1]=0 '53e8
N41600 $SN_COMPAR_THRESHOLD_1[2]=0 '551a
N41600 $SN_COMPAR_THRESHOLD_1[3]=0 '578a
N41600 $SN_COMPAR_THRESHOLD_1[4]=0 '535e
N41600 $SN_COMPAR_THRESHOLD_1[5]=0 '5400
N41600 $SN_COMPAR_THRESHOLD_1[6]=0 '554a
N41600 $SN_COMPAR_THRESHOLD_1[7]=0 '57ea
N41601 $SN_COMPAR_THRESHOLD_2[0]=0 '541c
N41601 $SN_COMPAR_THRESHOLD_2[1]=0 '54b2
N41601 $SN_COMPAR_THRESHOLD_2[2]=0 '55e4
N41601 $SN_COMPAR_THRESHOLD_2[3]=0 '5854
N41601 $SN_COMPAR_THRESHOLD_2[4]=0 '5428
N41601 $SN_COMPAR_THRESHOLD_2[5]=0 '54ca
N41601 $SN_COMPAR_THRESHOLD_2[6]=0 '5614
N41601 $SN_COMPAR_THRESHOLD_2[7]=0 '58b4
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Channel Machine Data

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N20000 $MC_CHAN_NAME="Hardinge VMC" '54ee
N20050 $MC_AXCONF_GEOAX_ASSIGN_TAB[0]=1 '73e8
N20050 $MC_AXCONF_GEOAX_ASSIGN_TAB[1]=2 '75e2
N20050 $MC_AXCONF_GEOAX_ASSIGN_TAB[2]=3 '79ea
N20060 $MC_AXCONF_GEOAX_NAME_TAB[0]="X" '609c
N20060 $MC_AXCONF_GEOAX_NAME_TAB[1]="Y" '61b4
N20060 $MC_AXCONF_GEOAX_NAME_TAB[2]="Z" '63ec
N20070 $MC_AXCONF_MACHAX_USED[0]=1 '50fc
N20070 $MC_AXCONF_MACHAX_USED[1]=2 '525e
N20070 $MC_AXCONF_MACHAX_USED[2]=3 '5530
N20070 $MC_AXCONF_MACHAX_USED[3]=4 '54d8
N20070 $MC_AXCONF_MACHAX_USED[4]=5 '5118
N20070 $MC_AXCONF_MACHAX_USED[5]=6 '5296
N20080 $MC_AXCONF_CHANAX_NAME_TAB[0]="X" '5c28
N20080 $MC_AXCONF_CHANAX_NAME_TAB[1]="Y" '5dcc
N20080 $MC_AXCONF_CHANAX_NAME_TAB[2]="Z" '6120
N20080 $MC_AXCONF_CHANAX_NAME_TAB[3]="A" '60de
N20080 $MC_AXCONF_CHANAX_NAME_TAB[4]="B" '5e44
N20080 $MC_AXCONF_CHANAX_NAME_TAB[5]="SP" '633e
N20090 $MC_SPIND_DEF_MASTER_SPIND=1 '5af4
N20094 $MC_SPIND_RIGID_TAPPING_M_NR=70 '6222
N20095 $MC_EXTERN_RIGID_TAPPING_M_NR=29 '66fa
N20096 $MC_T_M_ADDRESS_EXT_IS_SPINO=0 '692e
N20098 $MC_DISPLAY_AXIS[0]='Hfffffff' '6892
N20098 $MC_DISPLAY_AXIS[1]='Hfffffff' '68c4
N20098 $MC_DISPLAY_AXIS[2]='Hfffffff' '692a
N20098 $MC_DISPLAY_AXIS[3]='H0' '4bb2
N20098 $MC_DISPLAY_AXIS[4]='H0' '4a4e
N20098 $MC_DISPLAY_AXIS[5]='H0' '4a84
N20100 $MC_DIAMETER_AX_DEF="" '3dc8
N20110 $MC_RESET_MODE_MASK='H4051' '4c50
N20112 $MC_START_MODE_MASK='H400' '4e16
N20114 $MC_MODESWITCH_MASK='H0' '4ede
N20116 $MC_IGNORE_INHIBIT_ASUP='H10' '5d26
N20117 $MC_IGNORE_SINGLEBLOCK_ASUP='H10' '77b4
N20118 $MC_GEOAX_CHANGE_RESET=0 '50e6
N20120 $MC_TOOL_RESET_VALUE=0 '481c
N20121 $MC_TOOL_PRESEL_RESET_VALUE=0 '5d84
N20122 $MC_TOOL_RESET_NAME="" '495a
N20124 $MC_TOOL_MANAGEMENT_TOOLHOLDER=0 '5712
N20126 $MC_TOOL_CARRIER_RESET_VALUE=0 '66de
N20128 $MC_COLLECT_TOOL_CHANGE=0 '52e2
N20130 $MC_CUTTING_EDGE_RESET_VALUE=1 '6382
N20132 $MC_SUMCORR_RESET_VALUE=0 '59e2
N20140 $MC_TRAFO_RESET_VALUE=0 '4bf4
N20150 $MC_GCODE_RESET_VALUES[0]=1 '5a66
N20150 $MC_GCODE_RESET_VALUES[1]=0 '5a98
N20150 $MC_GCODE_RESET_VALUES[2]=0 '5bca
N20150 $MC_GCODE_RESET_VALUES[3]=1 '5e9e
N20150 $MC_GCODE_RESET_VALUES[4]=0 '5a0e
N20150 $MC_GCODE_RESET_VALUES[5]=1 '5b14
N20150 $MC_GCODE_RESET_VALUES[6]=1 '5c5e
N20150 $MC_GCODE_RESET_VALUES[7]=2 '5fca
N20150 $MC_GCODE_RESET_VALUES[8]=0 '5a1a
N20150 $MC_GCODE_RESET_VALUES[9]=1 '5b2c
N20150 $MC_GCODE_RESET_VALUES[10]=0 '59d4
N20150 $MC_GCODE_RESET_VALUES[11]=1 '5b32
N20150 $MC_GCODE_RESET_VALUES[12]=4 '5c40
N20150 $MC_GCODE_RESET_VALUES[13]=1 '600a
N20150 $MC_GCODE_RESET_VALUES[14]=2 '5bac
N20150 $MC_GCODE_RESET_VALUES[15]=3 '5ef4
N20150 $MC_GCODE_RESET_VALUES[16]=1 '5d0a
N20150 $MC_GCODE_RESET_VALUES[17]=1 '608a
N20150 $MC_GCODE_RESET_VALUES[18]=1 '5a8a
N20150 $MC_GCODE_RESET_VALUES[19]=1 '5b72
N20150 $MC_GCODE_RESET_VALUES[20]=2 '5cce
N20150 $MC_GCODE_RESET_VALUES[21]=1 '5c64
N20150 $MC_GCODE_RESET_VALUES[22]=1 '5dfc

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N20150 $MC_GCODE_RESET_VALUES[23]=2 '626e
N20150 $MC_GCODE_RESET_VALUES[24]=1 '5bac
N20150 $MC_GCODE_RESET_VALUES[25]=2 '5db6
N20150 $MC_GCODE_RESET_VALUES[26]=1 '5e3c
N20150 $MC_GCODE_RESET_VALUES[27]=1 '61bc
N20150 $MC_GCODE_RESET_VALUES[28]=1 '5bbc
N20150 $MC_GCODE_RESET_VALUES[29]=1 '5ca4
N20150 $MC_GCODE_RESET_VALUES[30]=1 '5e0c
N20150 $MC_GCODE_RESET_VALUES[31]=1 '5ed4
N20150 $MC_GCODE_RESET_VALUES[32]=1 '606c
N20150 $MC_GCODE_RESET_VALUES[33]=1 '63ac
N20150 $MC_GCODE_RESET_VALUES[34]=1 '5e1c
N20150 $MC_GCODE_RESET_VALUES[35]=1 '5ef4
N20150 $MC_GCODE_RESET_VALUES[36]=1 '60ac
N20150 $MC_GCODE_RESET_VALUES[37]=1 '642c
N20150 $MC_GCODE_RESET_VALUES[38]=1 '5e2c
N20150 $MC_GCODE_RESET_VALUES[39]=1 '5f14
N20150 $MC_GCODE_RESET_VALUES[40]=1 '59e0
N20150 $MC_GCODE_RESET_VALUES[41]=1 '5aa8
N20150 $MC_GCODE_RESET_VALUES[42]=1 '5c40
N20150 $MC_GCODE_RESET_VALUES[43]=1 '5f80
N20150 $MC_GCODE_RESET_VALUES[44]=1 '59f0
N20150 $MC_GCODE_RESET_VALUES[45]=1 '5ac8
N20150 $MC_GCODE_RESET_VALUES[46]=1 '5c80
N20150 $MC_GCODE_RESET_VALUES[47]=3 '63a2
N20150 $MC_GCODE_RESET_VALUES[48]=1 '5a00
N20150 $MC_GCODE_RESET_VALUES[49]=1 '5ae8
N20150 $MC_GCODE_RESET_VALUES[50]=1 '5a82
N20150 $MC_GCODE_RESET_VALUES[51]=1 '5b4a
N20150 $MC_GCODE_RESET_VALUES[52]=1 '5ce2
N20150 $MC_GCODE_RESET_VALUES[53]=1 '6022
N20150 $MC_GCODE_RESET_VALUES[54]=1 '5a92
N20150 $MC_GCODE_RESET_VALUES[55]=1 '5b6a
N20150 $MC_GCODE_RESET_VALUES[56]=1 '5d22
N20150 $MC_GCODE_RESET_VALUES[57]=1 '60a2
N20150 $MC_GCODE_RESET_VALUES[58]=1 '5aa2
N20150 $MC_GCODE_RESET_VALUES[59]=1 '5b8a
N20152 $MC_GCODE_RESET_MODE[0]=0 '5a30
N20152 $MC_GCODE_RESET_MODE[1]=0 '5a62
N20152 $MC_GCODE_RESET_MODE[2]=0 '5ac8
N20152 $MC_GCODE_RESET_MODE[3]=0 '5b98
N20152 $MC_GCODE_RESET_MODE[4]=0 '5a34
N20152 $MC_GCODE_RESET_MODE[5]=1 '5b32
N20152 $MC_GCODE_RESET_MODE[6]=0 '5ad8
N20152 $MC_GCODE_RESET_MODE[7]=0 '5bb8
N20152 $MC_GCODE_RESET_MODE[8]=0 '5a38
N20152 $MC_GCODE_RESET_MODE[9]=0 '5a72
N20152 $MC_GCODE_RESET_MODE[10]=0 '5b66
N20152 $MC_GCODE_RESET_MODE[11]=0 '5bca
N20152 $MC_GCODE_RESET_MODE[12]=0 '5c96
N20152 $MC_GCODE_RESET_MODE[13]=0 '5e36
N20152 $MC_GCODE_RESET_MODE[14]=0 '5b6e
N20152 $MC_GCODE_RESET_MODE[15]=0 '5bda
N20152 $MC_GCODE_RESET_MODE[16]=0 '5cb6
N20152 $MC_GCODE_RESET_MODE[17]=0 '5e76
N20152 $MC_GCODE_RESET_MODE[18]=0 '5b76
N20152 $MC_GCODE_RESET_MODE[19]=0 '5bea
N20152 $MC_GCODE_RESET_MODE[20]=0 '5bcc
N20152 $MC_GCODE_RESET_MODE[21]=0 '5c30
N20152 $MC_GCODE_RESET_MODE[22]=0 '5cfc
N20152 $MC_GCODE_RESET_MODE[23]=0 '5e9c
N20152 $MC_GCODE_RESET_MODE[24]=0 '5bd4
N20152 $MC_GCODE_RESET_MODE[25]=0 '5c40
N20152 $MC_GCODE_RESET_MODE[26]=0 '5d1c
N20152 $MC_GCODE_RESET_MODE[27]=0 '5edc
N20152 $MC_GCODE_RESET_MODE[28]=0 '5bdc
N20152 $MC_GCODE_RESET_MODE[29]=0 '5c50
N20152 $MC_GCODE_RESET_MODE[30]=0 '5c9c
N20152 $MC_GCODE_RESET_MODE[31]=0 '5d00
N20152 $MC_GCODE_RESET_MODE[32]=0 '5dcc

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N20152	\$MC_GCODE_RESET_MODE[33]=0	'5f6c	N20220	\$MC_CUTCOM_MAX_DISC=50	'4de6
N20152	\$MC_GCODE_RESET_MODE[34]=0	'5ca4	N20230	\$MC_CUTCOM_CURVE_INSERT_LIMIT=10	'7170
N20152	\$MC_GCODE_RESET_MODE[35]=0	'5d10	N20240	\$MC_CUTCOM_MAXNUM_CHECK_BLOCKS=4	'781a
N20152	\$MC_GCODE_RESET_MODE[36]=0	'5dec	N20250	\$MC_CUTCOM_MAXNUM_DUMMY_BLOCKS=5	'71e6
N20152	\$MC_GCODE_RESET_MODE[37]=0	'5fac	N20252	\$MC_CUTCOM_MAXNUM_SUPPR_BLOCKS=5	'7778
N20152	\$MC_GCODE_RESET_MODE[38]=0	'5cac	N20254	\$MC_ONLINE_CUTCOM_ENABLE=0	'5502
N20152	\$MC_GCODE_RESET_MODE[39]=0	'5d20	N20256	\$MC_CUTCOM_INTERS_POLY_ENABLE=1	'6dfa
N20152	\$MC_GCODE_RESET_MODE[40]=0	'5b38	N20260	\$MC_PATH_IPO_IS_ON_TCP=0	'64d0
N20152	\$MC_GCODE_RESET_MODE[41]=1	'5bce	N20262	\$MC_SPLINE_FEED_PRECISION=0.001	'602a
N20152	\$MC_GCODE_RESET_MODE[42]=0	'5c68	N20270	\$MC_CUTTING_EDGE_DEFAULT=1	'5242
N20152	\$MC_GCODE_RESET_MODE[43]=0	'5e08	N20272	\$MC_SUMCORR_DEFAULT=0	'4ca2
N20152	\$MC_GCODE_RESET_MODE[44]=0	'5b40	N20310	\$MC_TOOL_MANAGEMENT_MASK='H400b'	'6306
N20152	\$MC_GCODE_RESET_MODE[45]=0	'5bac	N20320	\$MC_TOOL_TIME_MONITOR_MASK='H1'	'6d9a
N20152	\$MC_GCODE_RESET_MODE[46]=0	'5c88	N20350	\$MC_TOOL_GRIND_AUTO_TMON=0	'5f26
N20152	\$MC_GCODE_RESET_MODE[47]=0	'5e48	N20360	\$MC_TOOL_PARAMETER_DEF_MASK='H0'	'6204
N20152	\$MC_GCODE_RESET_MODE[48]=0	'5b48	N20380	\$MC_TOOL_CORR_MODE_G43G44=0	'6152
N20152	\$MC_GCODE_RESET_MODE[49]=0	'5bbc	N20382	\$MC_TOOL_CORR_MOVE_MODE=0	'6640
N20152	\$MC_GCODE_RESET_MODE[50]=0	'5b6e	N20384	\$MC_TOOL_CORR_MULTIPLE_AXES=1	'5b78
N20152	\$MC_GCODE_RESET_MODE[51]=0	'5bd2	N20400	\$MC_LOOKAH_USE_VELO_NEXT_BLOCK=1	'7b36
N20152	\$MC_GCODE_RESET_MODE[52]=0	'5c9e	N20430	\$MC_LOOKAH_NUM_OVR_POINTS=1	'67e8
N20152	\$MC_GCODE_RESET_MODE[53]=0	'5e3e	N20440	\$MC_LOOKAH_OVR_POINTS[0]=1	'601c
N20152	\$MC_GCODE_RESET_MODE[54]=0	'5b76	N20440	\$MC_LOOKAH_OVR_POINTS[1]=0.2	'6416
N20152	\$MC_GCODE_RESET_MODE[55]=0	'5be2	N20450	\$MC_LOOKAH_RELIEVE_BLOCK_CYCLE=1	'6bcc
N20152	\$MC_GCODE_RESET_MODE[56]=0	'5cbe	N20460	\$MC_LOOKAH_SMOOTH_FACTOR=0	'59d8
N20152	\$MC_GCODE_RESET_MODE[57]=0	'5e7e	N20470	\$MC_CPREC_WITH_FFW=0	'47aa
N20152	\$MC_GCODE_RESET_MODE[58]=0	'5b7e	N20490	\$MC_IGNORE_OVL_FACTOR_FOR_ADIS=1	'729c
N20152	\$MC_GCODE_RESET_MODE[59]=0	'5bf2	N20500	\$MC_CONST_VELO_MIN_TIME=0	'4dce
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[0]=1	'72d6	N20600	\$MC_MAX_PATH_JERK=150	'443e
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[1]=1	'733a	N20602	\$MC_CURV_EFFECT_ON_PATH_ACCEL=0.8	'733a
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[2]=1	'7406	N20603	\$MC_CURV_EFFECT_ON_PATH_JERK=2	'774c
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[3]=2	'760c	N20610	\$MC_ADD_MOVE_ACCEL_RESERVE=0.2	'62de
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[4]=1	'72de	N20620	\$MC_HANDWH_GEOAX_MAX_INCR_SIZE=0	'7428
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[5]=2	'73b0	N20621	\$MC_HANDWH_ORIAX_MAX_INCR_SIZE=0	'765e
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[6]=1	'7426	N20622	\$MC_HANDWH_GEOAX_MAX_INCR_VSIZE=500	'79a6
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[7]=3	'771c	N20623	\$MC_HANDWH_ORIAX_MAX_INCR_VSIZE=0.01666666667	'959e
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[8]=1	'72b8	N20624	\$MC_HANDWH_CHAN_STOP_COND='H13ff'	'7bb0
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[9]=1	'735a	N20700	\$MC_REFP_NC_START_LOCK=0	'6478
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[10]=1	'7378	N20732	\$MC_EXTERN_G0_LINEAR_MODE=1	'59a0
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[11]=2	'74da	N20750	\$MC_ALLOW_G0_IN_G96=1	'5c92
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[12]=1	'7540	N20800	\$MC_SPF_END_TO_VDI=3	'4b20
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[13]=1	'77b0	N20850	\$MC_SPOS_TO_VDI=0	'4e0e
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[14]=3	'75f0	N21000	\$MC_CIRCLE_ERROR_CONST=0.01	'64be
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[15]=0	'73c2	N21010	\$MC_CIRCLE_ERROR_FACTOR=0.001	'5e4e
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[16]=1	'7570	N21020	\$MC_WORKAREA_WITH_TOOL_RADIUS=0	'72ce
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[17]=0	'77ac	N21090	\$MC_MAX_LEAD_ANGLE=80	'3dbe
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[18]=1	'7390	N21092	\$MC_MAX_TILT_ANGLE=180	'3fa8
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[19]=1	'743e	N21100	\$MC_ORIENTATION_IS_EULER=0	'5044
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[20]=1	'7444	N21102	\$MC_ORI_DEF_WITH_G_CODE=0	'6c66
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[21]=1	'74da	N21104	\$MC_ORI_IPO_WITH_G_CODE=0	'6efc
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[22]=1	'760c	N21108	\$MC_POLE_ORI_MODE=0	'427c
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[23]=1	'787c	N21110	\$MC_X_AXIS_IN_OLD_X_Z_PLANE=0	'53ae
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[24]=1	'7450	N21120	\$MC_ORIAX_TURN_TAB_1[0]=1	'5174
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[25]=1	'74f2	N21120	\$MC_ORIAX_TURN_TAB_1[1]=2	'533e
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[26]=1	'763c	N21120	\$MC_ORIAX_TURN_TAB_1[2]=3	'56e4
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[27]=1	'78dc	N21130	\$MC_ORIAX_TURN_TAB_2[0]=1	'537e
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[28]=1	'745c	N21130	\$MC_ORIAX_TURN_TAB_2[1]=2	'5540
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[29]=1	'750a	N21130	\$MC_ORIAX_TURN_TAB_2[2]=3	'58e6
N20154	\$MC_EXTERN_GCODE_RESET_VALUES[30]=1	'75e4	N21150	\$MC_JOG_VELO_RAPID_ORI[0]=1.666666667	'803c
N20160	\$MC_CUBIC_SPLINE_BLOCKS=8	'5ff0	N21150	\$MC_JOG_VELO_RAPID_ORI[1]=1.666666667	'80d2
N20170	\$MC_COMPRESS_BLOCK_PATH_LIMIT=25.4	'73e4	N21150	\$MC_JOG_VELO_RAPID_ORI[2]=1.666666667	'8204
N20172	\$MC_COMPRESS_VELO_TOL=50800	'5efe	N21155	\$MC_JOG_VELO_ORI[0]=0.3333333333	'8210
N20180	\$MC_TOCARR_ROT_ANGLE_INCR[0]=0	'6a88	N21155	\$MC_JOG_VELO_ORI[1]=0.3333333333	'8242
N20180	\$MC_TOCARR_ROT_ANGLE_INCR[1]=0	'6aec	N21155	\$MC_JOG_VELO_ORI[2]=0.3333333333	'82a8
N20182	\$MC_TOCARR_ROT_ANGLE_OFFSET[0]=0	'74d8	N21160	\$MC_JOG_VELO_RAPID_GEO[1]=10000	'66d0
N20182	\$MC_TOCARR_ROT_ANGLE_OFFSET[1]=0	'75a0	N21160	\$MC_JOG_VELO_RAPID_GEO[2]=10000	'6898
N20184	\$MC_TOCARR_BASE_FRAME_NUMBER=0	'5828	N21165	\$MC_JOG_VELO_GEO[0]=1000	'5fcc
N20200	\$MC_CHFRND_MAXNUM_DUMMY_BLOCKS=3	'6e96	N21165	\$MC_JOG_VELO_GEO[1]=1000	'5ffe
N20201	\$MC_CHFRND_MODE_MASK='H0'	'5e02	N21165	\$MC_JOG_VELO_GEO[2]=1000	'6064
N20202	\$MC_WAB_MAXNUM_DUMMY_BLOCKS=10	'6cf6	N21170	\$MC_ACCEL_ORI[0]=0.005555555556	'43f6
N20204	\$MC_WAB_CLEARANCE_TOLERANCE=0.01	'6524			
N20210	\$MC_CUTCOM_CORNER_LIMIT=100	'5d4c			

N21170	\$MC_ACCEL_ORI[1]=0.005555555556	'445a	N24002	\$MC_CHBFRAME_RESET_MASK='Hffff'	'6d7e
N21170	\$MC_ACCEL_ORI[2]=0.005555555556	'4526	N24004	\$MC_CHBFRAME_POWERON_MASK='H0'	'7382
N21200	\$MC_LIFTFAST_DIST=0.1	'4126	N24100	\$MC_TRAFO_TYPE_1=0	'3590
N21202	\$MC_LIFTFAST_WITH_MIRROR=0	'506e	N24110	\$MC_TRAFO_AXES_IN_1[0]=1	'4b36
N21210	\$MC_SETINT_ASSIGN_FASTIN='H1'	'69ec	N24110	\$MC_TRAFO_AXES_IN_1[1]=2	'4d30
N21220	\$MC_MULTFEED_ASSIGN_FASTIN='H0'	'6264	N24110	\$MC_TRAFO_AXES_IN_1[2]=3	'5138
N21230	\$MC_MULTFEED_STORE_MASK='H0'	'5af6	N24110	\$MC_TRAFO_AXES_IN_1[3]=4	'504c
N21500	\$MC_TRACLG_GRINDSPI_VERT_OFFSET=0	'775c	N24110	\$MC_TRAFO_AXES_IN_1[4]=5	'4b5e
N21501	\$MC_TRACLG_GRINDSPI_HOR_OFFSET=0	'74ba	N24110	\$MC_TRAFO_AXES_IN_1[5]=0	'4b88
N21502	\$MC_TRACLG_CTRLSPI_VERT_OFFSET=0	'6c2e	N24120	\$MC_TRAFO_GEOAX_ASSIGN_TAB_1[0]=0	'785c
N21504	\$MC_TRACLG_SUPPORT_VERT_OFFSET=0	'7030	N24120	\$MC_TRAFO_GEOAX_ASSIGN_TAB_1[1]=0	'788e
N21506	\$MC_TRACLG_SUPPORT_HOR_OFFSET=0	'6f48	N24120	\$MC_TRAFO_GEOAX_ASSIGN_TAB_1[2]=0	'78f4
N21508	\$MC_TRACLG_VERT_DIR_SUPPORTAX_1=1	'6838	N24200	\$MC_TRAFO_TYPE_2=0	'385a
N21510	\$MC_TRACLG_HOR_DIR_SUPPORTAX_1=0	'6c80	N24210	\$MC_TRAFO_AXES_IN_2[0]=1	'4d9a
N21512	\$MC_TRACLG_VERT_DIR_SUPPORTAX_2=0	'698e	N24210	\$MC_TRAFO_AXES_IN_2[1]=2	'4f94
N21514	\$MC_TRACLG_HOR_DIR_SUPPORTAX_2=1	'6d84	N24210	\$MC_TRAFO_AXES_IN_2[2]=3	'539c
N21516	\$MC_TRACLG_SUPPORT_LEAD_ANGLE=0	'6046	N24210	\$MC_TRAFO_AXES_IN_2[3]=4	'52b0
N21518	\$MC_TRACLG_CONTACT_UPPER_LIMIT=0	'6630	N24210	\$MC_TRAFO_AXES_IN_2[4]=5	'4dc2
N21520	\$MC_TRACLG_CONTACT_LOWER_LIMIT=0	'7074	N24210	\$MC_TRAFO_AXES_IN_2[5]=0	'4dec
N21522	\$MC_TRACLG_GRINDSPI_NR=2	'5792	N24220	\$MC_TRAFO_GEOAX_ASSIGN_TAB_2[0]=0	'7b26
N21524	\$MC_TRACLG_CTRLSPI_NR=1	'4bac	N24220	\$MC_TRAFO_GEOAX_ASSIGN_TAB_2[1]=0	'7b58
N21526	\$MC_TRACLG_G0_IS_SPECIAL=1	'5b12	N24220	\$MC_TRAFO_GEOAX_ASSIGN_TAB_2[2]=0	'7bbe
N22000	\$MC_AUXFU_ASSIGN_GROUP[0]=1	'62a0	N24300	\$MC_TRAFO_TYPE_3=0	'3e0a
N22010	\$MC_AUXFU_ASSIGN_TYPE[0]="	'56fa	N24310	\$MC_TRAFO_AXES_IN_3[0]=1	'527a
N22020	\$MC_AUXFU_ASSIGN_EXTENSION[0]=0	'6b40	N24310	\$MC_TRAFO_AXES_IN_3[1]=2	'5474
N22030	\$MC_AUXFU_ASSIGN_VALUE[0]=0	'5aee	N24310	\$MC_TRAFO_AXES_IN_3[2]=3	'587c
N22100	\$MC_AUXFU_QUICK_BLOCKCHANGE=0	'5eea	N24310	\$MC_TRAFO_AXES_IN_3[3]=4	'5790
N22110	\$MC_AUXFU_H_TYPE_INT=0	'4204	N24310	\$MC_TRAFO_AXES_IN_3[4]=5	'52a2
N22200	\$MC_AUXFU_M_SYNC_TYPE=0	'532c	N24310	\$MC_TRAFO_AXES_IN_3[5]=0	'52cc
N22210	\$MC_AUXFU_S_SYNC_TYPE=0	'575a	N24320	\$MC_TRAFO_GEOAX_ASSIGN_TAB_3[0]=0	'80d6
N22220	\$MC_AUXFU_T_SYNC_TYPE=0	'5338	N24320	\$MC_TRAFO_GEOAX_ASSIGN_TAB_3[1]=0	'8108
N22230	\$MC_AUXFU_H_SYNC_TYPE=0	'53f0	N24320	\$MC_TRAFO_GEOAX_ASSIGN_TAB_3[2]=0	'816e
N22240	\$MC_AUXFU_F_SYNC_TYPE=3	'56fc	N24400	\$MC_TRAFO_TYPE_4=0	'344e
N22250	\$MC_AUXFU_D_SYNC_TYPE=0	'52ba	N24410	\$MC_TRAFO_AXES_IN_4[0]=1	'4a22
N22252	\$MC_AUXFU_DL_SYNC_TYPE=0	'4b7a	N24410	\$MC_TRAFO_AXES_IN_4[1]=2	'4c1c
N22400	\$MC_S_VALUES_ACTIVE_AFTER_RESET=0	'6ffc	N24410	\$MC_TRAFO_AXES_IN_4[2]=3	'5024
N22410	\$MC_F_VALUES_ACTIVE_AFTER_RESET=0	'6a2e	N24410	\$MC_TRAFO_AXES_IN_4[3]=4	'4f38
N22420	\$MC_FGROUP_DEFAULT_AXES[0]=0	'51da	N24410	\$MC_TRAFO_AXES_IN_4[4]=5	'4a4a
N22420	\$MC_FGROUP_DEFAULT_AXES[1]=0	'52a2	N24410	\$MC_TRAFO_AXES_IN_4[5]=0	'4a74
N22420	\$MC_FGROUP_DEFAULT_AXES[2]=0	'543a	N24420	\$MC_TRAFO_GEOAX_ASSIGN_TAB_4[0]=0	'771a
N22420	\$MC_FGROUP_DEFAULT_AXES[3]=0	'577a	N24420	\$MC_TRAFO_GEOAX_ASSIGN_TAB_4[1]=0	'774c
N22420	\$MC_FGROUP_DEFAULT_AXES[4]=0	'51ea	N24420	\$MC_TRAFO_GEOAX_ASSIGN_TAB_4[2]=0	'77b2
N22420	\$MC_FGROUP_DEFAULT_AXES[5]=0	'52c2	N24430	\$MC_TRAFO_TYPE_5=0	'3658
N22420	\$MC_FGROUP_DEFAULT_AXES[6]=0	'547a	N24432	\$MC_TRAFO_AXES_IN_5[0]=1	'4cf4
N22420	\$MC_FGROUP_DEFAULT_AXES[7]=0	'57fa	N24432	\$MC_TRAFO_AXES_IN_5[1]=2	'4eee
N22510	\$MC_GCODE_GROUPS_TO_PLC[0]=1	'731e	N24432	\$MC_TRAFO_AXES_IN_5[2]=3	'52f6
N22510	\$MC_GCODE_GROUPS_TO_PLC[1]=0	'7350	N24432	\$MC_TRAFO_AXES_IN_5[3]=4	'520a
N22510	\$MC_GCODE_GROUPS_TO_PLC[2]=0	'74e8	N24432	\$MC_TRAFO_AXES_IN_5[4]=5	'4dlc
N22510	\$MC_GCODE_GROUPS_TO_PLC[3]=0	'7828	N24432	\$MC_TRAFO_AXES_IN_5[5]=0	'4d46
N22510	\$MC_GCODE_GROUPS_TO_PLC[4]=0	'7298	N24434	\$MC_TRAFO_GEOAX_ASSIGN_TAB_5[0]=0	'7894
N22510	\$MC_GCODE_GROUPS_TO_PLC[5]=0	'7370	N24434	\$MC_TRAFO_GEOAX_ASSIGN_TAB_5[1]=0	'78c6
N22510	\$MC_GCODE_GROUPS_TO_PLC[6]=0	'7528	N24434	\$MC_TRAFO_GEOAX_ASSIGN_TAB_5[2]=0	'792c
N22510	\$MC_GCODE_GROUPS_TO_PLC[7]=0	'78a8	N24440	\$MC_TRAFO_TYPE_6=0	'363e
N22512	\$MC_EXTERN_GCODE_GROUPS_TO_PLC[0]=0	'7d22	N24442	\$MC_TRAFO_AXES_IN_6[0]=1	'4c6c
N22512	\$MC_EXTERN_GCODE_GROUPS_TO_PLC[1]=0	'7db8	N24442	\$MC_TRAFO_AXES_IN_6[1]=2	'4e66
N22512	\$MC_EXTERN_GCODE_GROUPS_TO_PLC[2]=0	'7eea	N24442	\$MC_TRAFO_AXES_IN_6[2]=3	'526e
N22512	\$MC_EXTERN_GCODE_GROUPS_TO_PLC[3]=0	'815a	N24442	\$MC_TRAFO_AXES_IN_6[3]=4	'5182
N22512	\$MC_EXTERN_GCODE_GROUPS_TO_PLC[4]=0	'7d2e	N24442	\$MC_TRAFO_AXES_IN_6[4]=5	'4c94
N22512	\$MC_EXTERN_GCODE_GROUPS_TO_PLC[5]=0	'7dd0	N24442	\$MC_TRAFO_AXES_IN_6[5]=0	'4cbe
N22512	\$MC_EXTERN_GCODE_GROUPS_TO_PLC[6]=0	'7f1a	N24444	\$MC_TRAFO_GEOAX_ASSIGN_TAB_6[0]=0	'787a
N22512	\$MC_EXTERN_GCODE_GROUPS_TO_PLC[7]=0	'81ba	N24444	\$MC_TRAFO_GEOAX_ASSIGN_TAB_6[1]=0	'78ac
N22530	\$MC_TOCARR_CHANGE_M_CODE=0	'5c8c	N24444	\$MC_TRAFO_GEOAX_ASSIGN_TAB_6[2]=0	'7912
N22532	\$MC_GEOAX_CHANGE_M_CODE=0	'6138	N24450	\$MC_TRAFO_TYPE_7=0	'3914
N22534	\$MC_TRAFO_CHANGE_M_CODE=0	'5f94	N24452	\$MC_TRAFO_AXES_IN_7[0]=1	'4e62
N22550	\$MC_TOOL_CHANGE_MODE=1	'4a42	N24452	\$MC_TRAFO_AXES_IN_7[1]=2	'505c
N22560	\$MC_TOOL_CHANGE_M_CODE=206	'58d6	N24452	\$MC_TRAFO_AXES_IN_7[2]=3	'5464
N22562	\$MC_TOOL_CHANGE_ERROR_MODE='H0'	'6aa2	N24452	\$MC_TRAFO_AXES_IN_7[3]=4	'5378
N22900	\$MC_STROKE_CHECK_INSIDE=0	'6a42	N24452	\$MC_TRAFO_AXES_IN_7[4]=5	'4e8a
N22910	\$MC_WEIGHTING_FACTOR_FOR_SCALE=0	'7df8	N24452	\$MC_TRAFO_AXES_IN_7[5]=0	'4eb4
N22914	\$MC_AXES_SCALE_ENABLE=0	'4a5e	N24454	\$MC_TRAFO_GEOAX_ASSIGN_TAB_7[0]=0	'7b50
N24000	\$MC_FRAME_ADD_COMPONENTS=0	'4b98	N24454	\$MC_TRAFO_GEOAX_ASSIGN_TAB_7[1]=0	'7b82

N24454	\$MC_TRAFO_GEOAX_ASSIGN_TAB_7[2]=0	'7be8	N24674	\$MC_TRAFO5_BASE_ORIENT_2[1]=0	'6b22
N24460	\$MC_TRAFO_TYPE_8=0	'3502	N24674	\$MC_TRAFO5_BASE_ORIENT_2[2]=0	'6b88
N24462	\$MC_TRAFO_AXES_IN_8[0]=1	'4bd0	N24680	\$MC_TRAFO5_TOOL_VECTOR_2=2	'6526
N24462	\$MC_TRAFO_AXES_IN_8[1]=2	'4dca	N24685	\$MC_TRAFO5_ORIAX_ASSIGN_TAB_2[0]=0	'7d50
N24462	\$MC_TRAFO_AXES_IN_8[2]=3	'51d2	N24685	\$MC_TRAFO5_ORIAX_ASSIGN_TAB_2[1]=0	'7db4
N24462	\$MC_TRAFO_AXES_IN_8[3]=4	'50e6	N24685	\$MC_TRAFO5_ORIAX_ASSIGN_TAB_2[2]=0	'7e80
N24462	\$MC_TRAFO_AXES_IN_8[4]=5	'4bf8	N24700	\$MC_TRAANG_ANGLE_1=0	'443a
N24462	\$MC_TRAFO_AXES_IN_8[5]=0	'4c22	N24710	\$MC_TRAANG_BASE_TOOL_1[0]=0	'5d66
N24464	\$MC_TRAFO_GEOAX_ASSIGN_TAB_8[0]=0	'773e	N24710	\$MC_TRAANG_BASE_TOOL_1[1]=0	'5dfc
N24464	\$MC_TRAFO_GEOAX_ASSIGN_TAB_8[1]=0	'7770	N24710	\$MC_TRAANG_BASE_TOOL_1[2]=0	'5f2e
N24464	\$MC_TRAFO_GEOAX_ASSIGN_TAB_8[2]=0	'77d6	N24720	\$MC_TRAANG_PARALLEL_VELO_RES_1=0	'6f4e
N24500	\$MC_TRAFO5_PART_OFFSET_1[0]=0	'66e0	N24721	\$MC_TRAANG_PARALLEL_ACCEL_RES_1=0	'608c
N24500	\$MC_TRAFO5_PART_OFFSET_1[1]=0	'6712	N24750	\$MC_TRAANG_ANGLE_2=0	'44da
N24500	\$MC_TRAFO5_PART_OFFSET_1[2]=0	'6778	N24760	\$MC_TRAANG_BASE_TOOL_2[0]=0	'5e42
N24510	\$MC_TRAFO5_ROT_AX_OFFSET_1[0]=0	'6cec	N24760	\$MC_TRAANG_BASE_TOOL_2[1]=0	'5ed8
N24510	\$MC_TRAFO5_ROT_AX_OFFSET_1[1]=0	'6d82	N24760	\$MC_TRAANG_BASE_TOOL_2[2]=0	'600a
N24520	\$MC_TRAFO5_ROT_SIGN_IS_PLUS_1[0]=1	'7c7a	N24770	\$MC_TRAANG_PARALLEL_VELO_RES_2=0	'70a4
N24520	\$MC_TRAFO5_ROT_SIGN_IS_PLUS_1[1]=1	'7cde	N24771	\$MC_TRAANG_PARALLEL_ACCEL_RES_2=0	'6248
N24530	\$MC_TRAFO5_NON_POLE_LIMIT_1=2	'64d2	N24800	\$MC_TRACYL_ROT_AX_OFFSET_1=0	'5f3e
N24540	\$MC_TRAFO5_POLE_LIMIT_1=2	'4ebe	N24810	\$MC_TRACYL_ROT_SIGN_IS_PLUS_1=1	'70a4
N24550	\$MC_TRAFO5_BASE_TOOL_1[0]=0	'5d2a	N24820	\$MC_TRACYL_BASE_TOOL_1[0]=0	'588a
N24550	\$MC_TRAFO5_BASE_TOOL_1[1]=0	'5dc0	N24820	\$MC_TRACYL_BASE_TOOL_1[1]=0	'5920
N24550	\$MC_TRAFO5_BASE_TOOL_1[2]=0	'5ef2	N24820	\$MC_TRACYL_BASE_TOOL_1[2]=0	'5a52
N24560	\$MC_TRAFO5_JOINT_OFFSET_1[0]=0	'6eaa	N24850	\$MC_TRACYL_ROT_AX_OFFSET_2=0	'5fde
N24560	\$MC_TRAFO5_JOINT_OFFSET_1[1]=0	'6f0e	N24860	\$MC_TRACYL_ROT_SIGN_IS_PLUS_2=1	'72b2
N24560	\$MC_TRAFO5_JOINT_OFFSET_1[2]=0	'6fda	N24870	\$MC_TRACYL_BASE_TOOL_2[0]=0	'59e0
N24562	\$MC_TRAFO5_TOOL_ROT_AX_OFFSET_1[0]=0	'81c0	N24870	\$MC_TRACYL_BASE_TOOL_2[1]=0	'5a76
N24562	\$MC_TRAFO5_TOOL_ROT_AX_OFFSET_1[1]=0	'8288	N24870	\$MC_TRACYL_BASE_TOOL_2[2]=0	'5ba8
N24562	\$MC_TRAFO5_TOOL_ROT_AX_OFFSET_1[2]=0	'8420	N24900	\$MC_TRANSMIT_ROT_AX_OFFSET_1=0	'7264
N24564	\$MC_TRAFO5_NUTATOR_AX_ANGLE_1=45	'6722	N24910	\$MC_TRANSMIT_ROT_SIGN_IS_PLUS_1=1	'82e2
N24566	\$MC_TRAFO5_NUTATOR_VIRT_ORIAX_1=0	'6d54	N24911	\$MC_TRANSMIT_POLE_SIDE_FIX_1=0	'5dfc
N24570	\$MC_TRAFO5_AXIS1_1[0]=0	'4cf6	N24920	\$MC_TRANSMIT_BASE_TOOL_1[0]=0	'6cac
N24570	\$MC_TRAFO5_AXIS1_1[1]=0	'4d8c	N24920	\$MC_TRANSMIT_BASE_TOOL_1[1]=0	'6cde
N24570	\$MC_TRAFO5_AXIS1_1[2]=0	'4ebe	N24920	\$MC_TRANSMIT_BASE_TOOL_1[2]=0	'6d44
N24572	\$MC_TRAFO5_AXIS2_1[0]=0	'4f58	N24950	\$MC_TRANSMIT_ROT_AX_OFFSET_2=0	'73d0
N24572	\$MC_TRAFO5_AXIS2_1[1]=0	'4fee	N24960	\$MC_TRANSMIT_ROT_SIGN_IS_PLUS_2=1	'8424
N24572	\$MC_TRAFO5_AXIS2_1[2]=0	'5120	N24961	\$MC_TRANSMIT_POLE_SIDE_FIX_2=0	'5fa4
N24574	\$MC_TRAFO5_BASE_ORIENT_1[0]=0	'6806	N24970	\$MC_TRANSMIT_BASE_TOOL_2[0]=0	'6ece
N24574	\$MC_TRAFO5_BASE_ORIENT_1[1]=0	'6838	N24970	\$MC_TRANSMIT_BASE_TOOL_2[1]=0	'6f00
N24574	\$MC_TRAFO5_BASE_ORIENT_1[2]=0	'689e	N24970	\$MC_TRANSMIT_BASE_TOOL_2[2]=0	'6f66
N24580	\$MC_TRAFO5_TOOL_VECTOR_1=2	'623c	N24995	\$MC_TRACON_CHAIN_1[0]=0	'52fa
N24585	\$MC_TRAFO5_ORIAX_ASSIGN_TAB_1[0]=0	'7a00	N24995	\$MC_TRACON_CHAIN_1[1]=0	'5390
N24585	\$MC_TRAFO5_ORIAX_ASSIGN_TAB_1[1]=0	'7a64	N24995	\$MC_TRACON_CHAIN_1[2]=0	'54c2
N24585	\$MC_TRAFO5_ORIAX_ASSIGN_TAB_1[2]=0	'7b30	N24995	\$MC_TRACON_CHAIN_1[3]=0	'5732
N24600	\$MC_TRAFO5_PART_OFFSET_2[0]=0	'69ca	N24996	\$MC_TRACON_CHAIN_2[0]=0	'543c
N24600	\$MC_TRAFO5_PART_OFFSET_2[1]=0	'69fc	N24996	\$MC_TRACON_CHAIN_2[1]=0	'54d2
N24600	\$MC_TRAFO5_PART_OFFSET_2[2]=0	'6a62	N24996	\$MC_TRACON_CHAIN_2[2]=0	'5604
N24610	\$MC_TRAFO5_ROT_AX_OFFSET_2[0]=0	'6f0a	N24996	\$MC_TRACON_CHAIN_2[3]=0	'5874
N24610	\$MC_TRAFO5_ROT_AX_OFFSET_2[1]=0	'6fa0	N27800	\$MC_TECHNOLOGY_MODE=0	'4cf2
N24620	\$MC_TRAFO5_ROT_SIGN_IS_PLUS_2[0]=1	'7fca	N27860	\$MC_PROCESSTIMER_MODE='H2'	'559c
N24620	\$MC_TRAFO5_ROT_SIGN_IS_PLUS_2[1]=1	'802e	N27880	\$MC_PART_COUNTER='H3003'	'4c9e
N24630	\$MC_TRAFO5_NON_POLE_LIMIT_2=2	'6756	N27882	\$MC_PART_COUNTER_MCODE[0]=2	'626c
N24640	\$MC_TRAFO5_POLE_LIMIT_2=2	'5142	N27882	\$MC_PART_COUNTER_MCODE[1]=2	'6302
N24650	\$MC_TRAFO5_BASE_TOOL_2[0]=0	'5f48	N27882	\$MC_PART_COUNTER_MCODE[2]=58	'6420
N24650	\$MC_TRAFO5_BASE_TOOL_2[1]=0	'5fde	N27900	\$MC_REORG_LOG_LIMIT=1	'4ff2
N24650	\$MC_TRAFO5_BASE_TOOL_2[2]=0	'6110	N28000	\$MC_MM_REORG_LOG_FILE_MEM=75	'644a
N24660	\$MC_TRAFO5_JOINT_OFFSET_2[0]=0	'71fa	N28010	\$MC_MM_NUM_REORG_LUD_MODULES=10	'6a0c
N24660	\$MC_TRAFO5_JOINT_OFFSET_2[1]=0	'725e	N28020	\$MC_MM_NUM_LUD_NAMES_TOTAL=600	'5b8c
N24660	\$MC_TRAFO5_JOINT_OFFSET_2[2]=0	'732a	N28040	\$MC_MM_LUD_VALUES_MEM=12	'458e
N24662	\$MC_TRAFO5_TOOL_ROT_AX_OFFSET_2[0]=0	'8444	N28050	\$MC_MM_NUM_R_PARAM=100	'43f8
N24662	\$MC_TRAFO5_TOOL_ROT_AX_OFFSET_2[1]=0	'850c	N28060	\$MC_MM_IPO_BUFFER_SIZE=70	'4f04
N24662	\$MC_TRAFO5_TOOL_ROT_AX_OFFSET_2[2]=0	'86a4	N28070	\$MC_MM_NUM_BLOCKS_IN_PREP=40	'61e2
N24664	\$MC_TRAFO5_NUTATOR_AX_ANGLE_2=45	'6a72	N28080	\$MC_MM_NUM_USER_FRAMES=51	'528a
N24666	\$MC_TRAFO5_NUTATOR_VIRT_ORIAX_2=0	'6fd8	N28081	\$MC_MM_NUM_BASE_FRAMES=1	'4aa2
N24670	\$MC_TRAFO5_AXIS1_2[0]=0	'4f14	N28150	\$MC_MM_NUM_VDIVAR_ELEMENTS=0	'4b0a
N24670	\$MC_TRAFO5_AXIS1_2[1]=0	'4faa	N28160	\$MC_MM_NUM_LINKVAR_ELEMENTS=0	'53b6
N24670	\$MC_TRAFO5_AXIS1_2[2]=0	'50dc	N28200	\$MC_MM_NUM_PROTECT_AREA_CHAN=0	'6588
N24672	\$MC_TRAFO5_AXIS2_2[0]=0	'5176	N28210	\$MC_MM_NUM_PROTECT_AREA_ACTIVE=0	'643a
N24672	\$MC_TRAFO5_AXIS2_2[1]=0	'520c	N28250	\$MC_MM_NUM_SYNC_ELEMENTS=117	'5e04
N24672	\$MC_TRAFO5_AXIS2_2[2]=0	'533e	N28252	\$MC_MM_NUM_FCTDEF_ELEMENTS=3	'558c
N24674	\$MC_TRAFO5_BASE_ORIENT_2[0]=0	'6af0	N28254	\$MC_MM_NUM_AC_PARAM=50	'44f0

N28256 \$MC_MM_NUM_AC_MARKER=8 '4b34
N28258 \$MC_MM_NUM_AC_TIMER=2 '4524
N28500 \$MC_MM_PREP_TASK_STACK_SIZE=22 '6e98
N28510 \$MC_MM_IPO_TASK_STACK_SIZE=12 '6ca2

N28520 \$MC_MM_MAX_AXISPOLY_PER_BLOCK=1 '6d86
N28530 \$MC_MM_PATH_VELO_SEGMENTS=10 '6212
N28540 \$MC_MM_ARCLENGTH_SEGMENTS=10 '598c
N29000 \$OC_LOOKAH_NUM_CHECKED_BLOCKS=100 '7514

Channel Setting Data

N42000	\$\$SC_THREAD_START_ANGLE=0	'49c8	N42490	\$\$SC_CUTCOM_G40_STOPRE=0	'5740
N42010	\$\$SC_THREAD_RAMP_DISP[0]=-1	'4c1c	N42494	\$\$SC_CUTCOM_ACT_DEACT_CTRL=2222	'6b64
N42010	\$\$SC_THREAD_RAMP_DISP[1]=-1	'4c4e	N42500	\$\$SC_SD_MAX_PATH_ACCEL=10	'4b32
N42100	\$\$SC_DRY_RUN_FEED=10000	'3f6a	N42502	\$\$SC_IS_SD_MAX_PATH_ACCEL=0	'4f6e
N42110	\$\$SC_DEFAULT_FEED=0	'3198	N42510	\$\$SC_SD_MAX_PATH_JERK=100	'5074
N42140	\$\$SC_DEFAULT_SCALE_FACTOR_P=1	'5f84	N42512	\$\$SC_IS_SD_MAX_PATH_JERK=0	'4d58
N42440	\$\$SC_FRAME_OFFSET_INCR_PROG=0	'642c	N42600	\$\$SC_JOG_FEED_PER_REV_SOURCE=0	'7702
N42442	\$\$SC_TOOL_OFFSET_INCR_PROG=0	'747c	N42700	\$\$SC_EXT_PROG_PATH=""	'48aa
N42444	\$\$SC_TARGET_BLOCK_INCR_PROG=1	'6b5e	N42900	\$\$SC_MIRROR_TOOL_LENGTH=0	'562c
N42450	\$\$SC_CONTPREC=0.1	'3308	N42910	\$\$SC_MIRROR_TOOL_WEAR=0	'5ace
N42460	\$\$SC_MINFEED=60	'278a	N42920	\$\$SC_WEAR_SIGN_CUTPOS=0	'5c88
N42470	\$\$SC_CRIT_SPLINE_ANGLE=36	'51ae	N42930	\$\$SC_WEAR_SIGN=0	'449c
N42480	\$\$SC_STOP_CUTCOM_STOPRE=0	'6392	N42940	\$\$SC_TOOL_LENGTH_CONST=0	'5b5e
			N42950	\$\$SC_TOOL_LENGTH_TYPE=0	'4ab2
			N42980	\$\$SC_TOFRAME_MODE=3	'37ec

Axis Machine Data - X Axis

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N30100 $MA_CTRLOUT_SEGMENT_NR[0,AX1]=1 '6476
N30110 $MA_CTRLOUT_MODULE_NR[0,AX1]=1 '562a
N30120 $MA_CTRLOUT_NR[0,AX1]=1 '46f6
N30130 $MA_CTRLOUT_TYPE[0,AX1]=1 '4c0a
N30132 $MA_IS_VIRTUAL_AX[0,AX1]=0 '407c
N30200 $MA_NUM_ENCS[AX1]=1 '44fa
N30210 $MA_ENC_SEGMENT_NR[0,AX1]=1 '5676
N30210 $MA_ENC_SEGMENT_NR[1,AX1]=1 '570c
N30220 $MA_ENC_MODULE_NR[0,AX1]=1 '485e
N30220 $MA_ENC_MODULE_NR[1,AX1]=1 '48c2
N30230 $MA_ENC_INPUT_NR[0,AX1]=1 '4a46
N30230 $MA_ENC_INPUT_NR[1,AX1]=1 '4a78
N30240 $MA_ENC_TYPE[0,AX1]=1 '3c74
N30240 $MA_ENC_TYPE[1,AX1]=1 '3ca6
N30242 $MA_ENC_IS_INDEPENDENT[0,AX1]=0 '513c
N30242 $MA_ENC_IS_INDEPENDENT[1,AX1]=0 '51d2
N30250 $MA_ACT_POS_ABS[0,AX1]=85636454 '5550
N30250 $MA_ACT_POS_ABS[1,AX1]=0 '4c26
N30260 $MA_ABS_INC_RATIO[0,AX1]=4 '5390
N30260 $MA_ABS_INC_RATIO[1,AX1]=4 '53f4
N30300 $MA_IS_ROT_AX[AX1]=0 '41ba
N30310 $MA_ROT_IS_MODULO[AX1]=0 '543c
N30320 $MA_DISPLAY_IS_MODULO[AX1]=0 '573a
N30330 $MA_MODULO_RANGE[AX1]=360 '4e7c
N30350 $MA_SIMU_AX_VDI_OUTPUT[AX1]=0 '671e
N30450 $MA_IS_CONCURRENT_POS_AX[AX1]=0 '6cb8
N30500 $MA_INDEX_AX_ASSIGN_POS_TAB[AX1]=0 '6d86
N30501 $MA_INDEX_AX_NUMERATOR[AX1]=0 '4c80
N30502 $MA_INDEX_AX_DENOMINATOR[AX1]=1 '5d08
N30503 $MA_INDEX_AX_OFFSET[AX1]=0 '50d4
N30505 $MA_HIRTH_IS_ACTIVE[AX1]=0 '4b90
N30550 $MA_AXCONF_ASSIGN_MASTER_CHAN[AX1]=0 '7ad4
N30552 $MA_AUTO_GET_TYPE[AX1]=1 '48ea
N30600 $MA_FIX_POINT_POS[0,AX1]=0 '4d42
N30600 $MA_FIX_POINT_POS[1,AX1]=0 '4da6
N30800 $MA_WORKAREA_CHECK_TYPE[AX1]=0 '64a0
N31000 $MA_ENC_IS_LINEAR[0,AX1]=0 '44e0
N31000 $MA_ENC_IS_LINEAR[1,AX1]=1 '4576
N31010 $MA_ENC_GRID_POINT_DIST[0,AX1]=0.01 '667e
N31010 $MA_ENC_GRID_POINT_DIST[1,AX1]=0.01 '6746
N31020 $MA_ENC_RESOL[0,AX1]=2048 '4470
N31020 $MA_ENC_RESOL[1,AX1]=2048 '44d4
N31030 $MA_LEADSCREW_PITCH[AX1]=10 '4c96
N31040 $MA_ENC_IS_DIRECT[0,AX1]=0 '45ce
N31040 $MA_ENC_IS_DIRECT[1,AX1]=0 '4632
N31050 $MA_DRIVE_AX_RATIO_DENOM[0,AX1]=1 '599a
N31050 $MA_DRIVE_AX_RATIO_DENOM[1,AX1]=1 '59cc
N31050 $MA_DRIVE_AX_RATIO_DENOM[2,AX1]=1 '5a32
N31050 $MA_DRIVE_AX_RATIO_DENOM[3,AX1]=1 '5b02
N31050 $MA_DRIVE_AX_RATIO_DENOM[4,AX1]=1 '599e
N31050 $MA_DRIVE_AX_RATIO_DENOM[5,AX1]=1 '59d4
N31060 $MA_DRIVE_AX_RATIO_NUMERA[0,AX1]=1 '54ba
N31060 $MA_DRIVE_AX_RATIO_NUMERA[1,AX1]=1 '551e
N31060 $MA_DRIVE_AX_RATIO_NUMERA[2,AX1]=1 '55ea
N31060 $MA_DRIVE_AX_RATIO_NUMERA[3,AX1]=1 '578a
N31060 $MA_DRIVE_AX_RATIO_NUMERA[4,AX1]=1 '54c2
N31060 $MA_DRIVE_AX_RATIO_NUMERA[5,AX1]=1 '552e
N31070 $MA_DRIVE_ENC_RATIO_DENOM[0,AX1]=1 '5d96
N31070 $MA_DRIVE_ENC_RATIO_DENOM[1,AX1]=1 '5dfa
N31080 $MA_DRIVE_ENC_RATIO_NUMERA[0,AX1]=1 '5e50
N31080 $MA_DRIVE_ENC_RATIO_NUMERA[1,AX1]=1 '5ee6
N31090 $MA_JOG_INCR_WEIGHT[0,AX1]=0.001 '619c
N31090 $MA_JOG_INCR_WEIGHT[1,AX1]=0.00254 '6572
N31122 $MA_BERO_DELAY_TIME_PLUS[0,AX1]=0.00011 '692e
N31122 $MA_BERO_DELAY_TIME_PLUS[1,AX1]=0.00011 '6960
N31123 $MA_BERO_DELAY_TIME_MINUS[0,AX1]=7.8EX-05
'6fc0

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N31123 $MA_BERO_DELAY_TIME_MINUS[1,AX1]=7.8EX-05
'7024
N31200 $MA_SCALING_FACTOR_G70_G71[AX1]=25.4 '8214
N31500 $MA_AXIS_NUMBER_FOR_MONITORING[0,AX1]=0 '766a
N31510 $MA_OFFSETVALUE_FOR_MONITORING[0,AX1]=0 '726c
N31520 $MA_GAIN_FOR_MONITORING[0,AX1]=1 '7004
N32000 $MA_MAX_AX_VELO[AX1]=30000 '46fe
N32010 $MA_JOG_VELO_RAPID[AX1]=10000 '56fc
N32020 $MA_JOG_VELO[AX1]=5000 '49e6
N32040 $MA_JOG_REV_VELO_RAPID[AX1]=10 '6660
N32050 $MA_JOG_REV_VELO[AX1]=1 '593a
N32060 $MA_POS_AX_VELO[AX1]=10000 '4bbe
N32070 $MA_CORR_VELO[AX1]=50 '4976
N32074 $MA_FRAME_OR_CORRPOS_NOTALLOWED[AX1]='H0'
'94a4
N32080 $MA_HANDWH_MAX_INCR_SIZE[AX1]=0 '68a2
N32082 $MA_HANDWH_MAX_INCR_VELO_SIZE[AX1]=500 '7726
N32084 $MA_HANDWH_STOP_COND[AX1]='Hff' '6b82
N32090 $MA_HANDWH_VELO_OVERLAY_FACTOR[AX1]=0.5 '7d90
N32100 $MA_AX_MOTION_DIR[AX1]=1 '49a2
N32110 $MA_ENC_FEEDBACK_POL[0,AX1]=1 '613a
N32110 $MA_ENC_FEEDBACK_POL[1,AX1]=1 '616c
N32200 $MA_POSCTRL_GAIN[0,AX1]=5 '5316
N32200 $MA_POSCTRL_GAIN[1,AX1]=5 '5348
N32200 $MA_POSCTRL_GAIN[2,AX1]=5 '53ae
N32200 $MA_POSCTRL_GAIN[3,AX1]=1 '545e
N32200 $MA_POSCTRL_GAIN[4,AX1]=1 '52fa
N32200 $MA_POSCTRL_GAIN[5,AX1]=1 '5330
N32250 $MA_RATED_OUTVAL[0,AX1]=80 '40b0
N32260 $MA_RATED_VELO[0,AX1]=3000 '3bce
N32300 $MA_MAX_AX_ACCEL[AX1]=6.1 '5268
N32310 $MA_MAX_ACCEL_OVL_FACTOR[AX1]=1.2 '6d68
N32400 $MA_AX_JERK_ENABLE[AX1]=0 '4636
N32402 $MA_AX_JERK_MODE[AX1]=1 '4a7a
N32410 $MA_AX_JERK_TIME[AX1]=0.001 '4aa2
N32420 $MA_JOG_AND_POS_JERK_ENABLE[AX1]=1 '7be4
N32430 $MA_JOG_AND_POS_MAX_JERK[AX1]=60 '768c
N32431 $MA_MAX_AX_JERK[AX1]=60 '46c6
N32432 $MA_PATH_TRANS_JERK_LIM[AX1]=180 '5fbc
N32433 $MA_SOFT_ACCEL_FACTOR[AX1]=1 '64e8
N32434 $MA_G00_ACCEL_FACTOR[AX1]=1 '5c84
N32435 $MA_G00_JERK_FACTOR[AX1]=2 '61b2
N32440 $MA_LOOKAH_FREQUENCY[AX1]=100 '5482
N32450 $MA_BACKLASH[0,AX1]=0.003 '463e
N32450 $MA_BACKLASH[1,AX1]=0 '3e68
N32452 $MA_BACKLASH_FACTOR[0,AX1]=1 '570c
N32452 $MA_BACKLASH_FACTOR[1,AX1]=1 '57d4
N32452 $MA_BACKLASH_FACTOR[2,AX1]=1 '596c
N32452 $MA_BACKLASH_FACTOR[3,AX1]=1 '5cac
N32452 $MA_BACKLASH_FACTOR[4,AX1]=1 '571c
N32452 $MA_BACKLASH_FACTOR[5,AX1]=1 '57f4
N32460 $MA_TORQUE_OFFSET[0,AX1]=0 '45c2
N32490 $MA_FRICT_COMP_MODE[0,AX1]=1 '5656
N32500 $MA_FRICT_COMP_ENABLE[AX1]=0 '4ed0
N32510 $MA_FRICT_COMP_ADAPT_ENABLE[0,AX1]=0 '6416
N32520 $MA_FRICT_COMP_CONST_MAX[0,AX1]=0 '7386
N32530 $MA_FRICT_COMP_CONST_MIN[0,AX1]=0 '7716
N32540 $MA_FRICT_COMP_TIME[0,AX1]=0.015 '5358
N32550 $MA_FRICT_COMP_ACCEL1[0,AX1]=0 '54e8
N32560 $MA_FRICT_COMP_ACCEL2[0,AX1]=0 '56ee
N32570 $MA_FRICT_COMP_ACCEL3[0,AX1]=0 '5b0e
N32580 $MA_FRICT_COMP_INC_FACTOR[0,AX1]=0 '686e
N32610 $MA_VELO_FFW_WEIGHT[0,AX1]=1 '66a0
N32610 $MA_VELO_FFW_WEIGHT[1,AX1]=1 '6768
N32610 $MA_VELO_FFW_WEIGHT[2,AX1]=1 '6900
N32610 $MA_VELO_FFW_WEIGHT[3,AX1]=1 '6c40
N32610 $MA_VELO_FFW_WEIGHT[4,AX1]=1 '66b0
N32610 $MA_VELO_FFW_WEIGHT[5,AX1]=1 '6788
N32620 $MA_FFW_MODE[AX1]=3 '45de
N32630 $MA_FFW_ACTIVATION_MODE[AX1]=0 '681c

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N32650	\$MA_AX_INERTIA[AX1]=0	'38c0	N34300	\$MA_ENC_REFP_MARKER_DIST[0,AX1]=10	'72fc
N32700	\$MA_ENC_COMP_ENABLE[0,AX1]=1	'5cd6	N34300	\$MA_ENC_REFP_MARKER_DIST[1,AX1]=10	'732e
N32700	\$MA_ENC_COMP_ENABLE[1,AX1]=0	'5d08	N34310	\$MA_ENC_MARKER_INC[0,AX1]=0.02	'575e
N32710	\$MA_CEC_ENABLE[AX1]=0	'45aa	N34310	\$MA_ENC_MARKER_INC[1,AX1]=0.02	'57f4
N32711	\$MA_CEC_SCALING_SYSTEM_METRIC[AX1]=1	'8396	N34320	\$MA_ENC_INVERS[0,AX1]=0	'450a
N32720	\$MA_CEC_MAX_SUM[AX1]=1	'5924	N34320	\$MA_ENC_INVERS[1,AX1]=0	'45a0
N32730	\$MA_CEC_MAX_VELO[AX1]=10	'5dea	N34330	\$MA_REFP_STOP_AT_ABS_MARKER[0,AX1]=1	'8242
N32750	\$MA_TEMP_COMP_TYPE[AX1]='H0'	'505e	N34330	\$MA_REFP_STOP_AT_ABS_MARKER[1,AX1]=1	'830a
N32760	\$MA_COMP_ADD_VELO_FACTOR[AX1]=0.01	'7afe	N35000	\$MA_SPIND_ASSIGN_TO_MACHAX[AX1]=0	'72be
N32800	\$MA_EQUIV_CURRCTRL_TIME[0,AX1]=0.0005	'58d0	N35010	\$MA_GEAR_STEP_CHANGE_ENABLE[AX1]=0	'6a02
N32800	\$MA_EQUIV_CURRCTRL_TIME[1,AX1]=0.0005	'5998	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[0,AX1]=0	'7976
N32800	\$MA_EQUIV_CURRCTRL_TIME[2,AX1]=0.0005	'5b30	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[1,AX1]=0	'79da
N32800	\$MA_EQUIV_CURRCTRL_TIME[3,AX1]=0.0005	'5e70	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[2,AX1]=0	'7aa6
N32800	\$MA_EQUIV_CURRCTRL_TIME[4,AX1]=0.0005	'58e0	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[3,AX1]=0	'7c46
N32800	\$MA_EQUIV_CURRCTRL_TIME[5,AX1]=0.0005	'59b8	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[4,AX1]=0	'797e
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[0,AX1]=0.00245	'5b14	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[5,AX1]=0	'79ea
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[1,AX1]=0.00245	'5b46	N35020	\$MA_SPIND_DEFAULT_MODE[AX1]=0	'4ae0
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[2,AX1]=0.00245	'5bac	N35030	\$MA_SPIND_DEFAULT_ACT_MASK[AX1]='H0'	'64f0
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[3,AX1]=0.0025	'5bde	N35032	\$MA_SPIND_FUNC_RESET_MODE[AX1]='H0'	'6826
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[4,AX1]=0.0025	'5a7a	N35035	\$MA_SPIND_FUNCTION_MASK[AX1]='H10'	'684e
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[5,AX1]=0.0025	'5ab0	N35040	\$MA_SPIND_ACTIVE_AFTER_RESET[AX1]=0	'6880
N32900	\$MA_DYN_MATCH_ENABLE[AX1]=0	'4b16	N35100	\$MA_SPIND_VELO_LIMIT[AX1]=10000	'4e42
N32910	\$MA_DYN_MATCH_TIME[0,AX1]=0	'4226	N35110	\$MA_GEAR_STEP_MAX_VELO[0,AX1]=500	'5478
N32910	\$MA_DYN_MATCH_TIME[1,AX1]=0	'42bc	N35110	\$MA_GEAR_STEP_MAX_VELO[1,AX1]=500	'550e
N32910	\$MA_DYN_MATCH_TIME[2,AX1]=0	'43ee	N35110	\$MA_GEAR_STEP_MAX_VELO[2,AX1]=1000	'5660
N32910	\$MA_DYN_MATCH_TIME[3,AX1]=0	'465e	N35110	\$MA_GEAR_STEP_MAX_VELO[3,AX1]=2000	'599c
N32910	\$MA_DYN_MATCH_TIME[4,AX1]=0	'4232	N35110	\$MA_GEAR_STEP_MAX_VELO[4,AX1]=4000	'5448
N32910	\$MA_DYN_MATCH_TIME[5,AX1]=0	'42d4	N35110	\$MA_GEAR_STEP_MAX_VELO[5,AX1]=8000	'54f2
N32920	\$MA_AC_FILTER_TIME[AX1]=0	'415a	N35120	\$MA_GEAR_STEP_MIN_VELO[0,AX1]=50	'57ce
N32930	\$MA_POSCTRL_OUT_FILTER_ENABLE[AX1]=0	'6a04	N35120	\$MA_GEAR_STEP_MIN_VELO[1,AX1]=50	'5864
N32940	\$MA_POSCTRL_OUT_FILTER_TIME[AX1]=0	'68be	N35120	\$MA_GEAR_STEP_MIN_VELO[2,AX1]=400	'59ea
N32950	\$MA_POSCTRL_DAMPING[AX1]=0	'4ba8	N35120	\$MA_GEAR_STEP_MIN_VELO[3,AX1]=800	'5c62
N32960	\$MA_POSCTRL_ZERO_ZONE[0,AX1]=0	'63ce	N35120	\$MA_GEAR_STEP_MIN_VELO[4,AX1]=1500	'5968
N32960	\$MA_POSCTRL_ZERO_ZONE[1,AX1]=0	'6432	N35120	\$MA_GEAR_STEP_MIN_VELO[5,AX1]=3000	'5bc8
N33000	\$MA_FIPO_TYPE[AX1]=2	'3e12	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[0,AX1]=500	'6700
N33050	\$MA_LUBRICATION_DIST[AX1]=0	'4db2	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[1,AX1]=500	'6732
N33100	\$MA_COMPRESS_POS_TOL[AX1]=0.1	'7676	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[2,AX1]=1000	'6808
N34000	\$MA_REFP_CAM_IS_ACTIVE[AX1]=1	'5fb2	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[3,AX1]=2000	'6a70
N34010	\$MA_REFP_CAM_DIR_IS_MINUS[AX1]=1	'7242	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[4,AX1]=4000	'66bc
N34020	\$MA_REFP_VELO_SEARCH_CAM[AX1]=5000	'6a92	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[5,AX1]=8000	'6702
N34030	\$MA_REFP_MAX_CAM_DIST[AX1]=10000	'5ccc	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[0,AX1]=5	'68bc
N34040	\$MA_REFP_VELO_SEARCH_MARKER[0,AX1]=500	'747a	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[1,AX1]=5	'68ee
N34040	\$MA_REFP_VELO_SEARCH_MARKER[1,AX1]=250	'774a	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[2,AX1]=10	'6964
N34050	\$MA_REFP_SEARCH_MARKER_REVERSE[0,AX1]=0	'76aa	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[3,AX1]=20	'6bcc
N34050	\$MA_REFP_SEARCH_MARKER_REVERSE[1,AX1]=0	'7740	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[4,AX1]=40	'6818
N34060	\$MA_REFP_MAX_MARKER_DIST[0,AX1]=25	'6de4	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[5,AX1]=80	'685e
N34060	\$MA_REFP_MAX_MARKER_DIST[1,AX1]=25	'6e16	N35150	\$MA_SPIND_DES_VELO_TOL[AX1]=0.1	'5d94
N34070	\$MA_REFP_VELO_POS[AX1]=2000	'564e	N35160	\$MA_SPIND_EXTERN_VELO_LIMIT[AX1]=1000	'655a
N34080	\$MA_REFP_MOVE_DIST[0,AX1]=-66	'5566	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[0,AX1]=30	'6bce
N34080	\$MA_REFP_MOVE_DIST[1,AX1]=0	'4fc0	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[1,AX1]=30	'6c32
N34090	\$MA_REFP_MOVE_DIST_CORR[0,AX1]=0	'6b90	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[2,AX1]=25	'6ca2
N34090	\$MA_REFP_MOVE_DIST_CORR[1,AX1]=0	'6c58	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[3,AX1]=20	'6dce
N34092	\$MA_REFP_CAM_SHIFT[0,AX1]=0	'4f4c	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[4,AX1]=15	'6b14
N34092	\$MA_REFP_CAM_SHIFT[1,AX1]=0	'4fe2	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[5,AX1]=10	'6b0c
N34100	\$MA_REFP_SET_POS[0,AX1]=0	'579e	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[0,AX1]=30	'7a6e
N34100	\$MA_REFP_SET_POS[1,AX1]=0	'57d0	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[1,AX1]=30	'7b36
N34100	\$MA_REFP_SET_POS[2,AX1]=0	'5836	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[2,AX1]=25	'7b46
N34100	\$MA_REFP_SET_POS[3,AX1]=0	'5906	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[3,AX1]=20	'7d9e
N34102	\$MA_REFP_SYNC_ENCS[AX1]=0	'57b6	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[4,AX1]=15	'77c4
N34110	\$MA_REFP_CYCLE_NR[AX1]=1	'4ae4	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[5,AX1]=10	'77b4
N34120	\$MA_REFP_BERO_LOW_ACTIVE[AX1]=0	'6f6e	N35220	\$MA_ACCEL_REDUCTION_SPEED_POINT[AX1]=1	'6c64
N34200	\$MA_ENC_REFP_MODE[0,AX1]=1	'4d22	N35230	\$MA_ACCEL_REDUCTION_FACTOR[AX1]=0	'6146
N34200	\$MA_ENC_REFP_MODE[1,AX1]=1	'4d86	N35240	\$MA_ACCEL_TYPE_DRIVE[AX1]=0	'49a4
N34210	\$MA_ENC_REFP_STATE[0,AX1]=0	'4d28	N35242	\$MA_ACCEL_REDUCTION_TYPE[AX1]=1	'5560
N34210	\$MA_ENC_REFP_STATE[1,AX1]=0	'4dbe	N35300	\$MA_SPIND_POSCTRL_VELO[AX1]=500	'5ec0
N34220	\$MA_ENC_ABS_TURNS_MODULO[0,AX1]=4096	'74c0	N35310	\$MA_SPIND_POSIT_DELAY_TIME[0,AX1]=0	'641e
N34220	\$MA_ENC_ABS_TURNS_MODULO[1,AX1]=4096	'74f2	N35310	\$MA_SPIND_POSIT_DELAY_TIME[1,AX1]=0.05	'6806
N34230	\$MA_ENC_SERIAL_NUMBER[0,AX1]=0	'585c	N35310	\$MA_SPIND_POSIT_DELAY_TIME[2,AX1]=0.1	'6996
N34230	\$MA_ENC_SERIAL_NUMBER[1,AX1]=0	'58c0	N35310	\$MA_SPIND_POSIT_DELAY_TIME[3,AX1]=0.2	'6d9e
N34232	\$MA_EVERY_ENC_SERIAL_NUMBER[0,AX1]=1	'6aba	N35310	\$MA_SPIND_POSIT_DELAY_TIME[4,AX1]=0.4	'6722
N34232	\$MA_EVERY_ENC_SERIAL_NUMBER[1,AX1]=1	'6b82	N35310	\$MA_SPIND_POSIT_DELAY_TIME[5,AX1]=0.8	'67d4

N35350	\$MA_SPIND_POSITIONING_DIR[AX1]=3	'711e	N36302	\$MA_ENC_FREQ_LIMIT_LOW[1,AX1]=99.9	'6b92
N35400	\$MA_SPIND_OSCILL_DES_VELO[AX1]=500	'757e	N36310	\$MA_ENC_ZERO_MONITORING[0,AX1]=0	'71ce
N35410	\$MA_SPIND_OSCILL_ACCEL[AX1]=16	'64e0	N36310	\$MA_ENC_ZERO_MONITORING[1,AX1]=0	'7296
N35430	\$MA_SPIND_OSCILL_START_DIR[AX1]=0	'6b8e	N36400	\$MA_CONTOUR_TOL[AX1]=2	'4cf6
N35440	\$MA_SPIND_OSCILL_TIME_CW[AX1]=1	'6fa6	N36500	\$MA_ENC_CHANGE_TOL[AX1]=0	'5986
N35450	\$MA_SPIND_OSCILL_TIME_CCW[AX1]=0.5	'72f2	N36510	\$MA_ENC_DIFF_TOL[AX1]=0	'4fe4
N35500	\$MA_SPIND_ON_SPEED_AT_IPO_START[AX1]=1	'7784	N36520	\$MA_DES_VELO_LIMIT[AX1]=125	'538a
N35510	\$MA_SPIND_STOPPED_AT_IPO_START[AX1]=0	'76da	N36600	\$MA_BRAKE_MODE_CHOICE[AX1]=1	'55c4
N35590	\$MA_PARAMSET_CHANGE_ENABLE[AX1]=0	'5770	N36610	\$MA_AX_EMERGENCY_STOP_TIME[AX1]=0.05	'6546
N36000	\$MA_STOP_LIMIT_COARSE[AX1]=0.04	'6540	N36620	\$MA_SERVO_DISABLE_DELAY_TIME[AX1]=0.1	'727e
N36010	\$MA_STOP_LIMIT_FINE[AX1]=0.01	'577c	N36690	\$MA_AXIS_DIAGNOSIS[AX1]='H0'	'616c
N36012	\$MA_STOP_LIMIT_FACTOR[0,AX1]=1	'5d46	N36700	\$MA_DRIFT_ENABLE[AX1]=0	'405e
N36012	\$MA_STOP_LIMIT_FACTOR[1,AX1]=1	'5daa	N36710	\$MA_DRIFT_LIMIT[0,AX1]=0	'3a4a
N36012	\$MA_STOP_LIMIT_FACTOR[2,AX1]=1	'5e76	N36720	\$MA_DRIFT_VALUE[0,AX1]=0	'3be4
N36012	\$MA_STOP_LIMIT_FACTOR[3,AX1]=1	'6016	N36730	\$MA_DRIVE_SIGNAL_TRACKING[AX1]=0	'6c20
N36012	\$MA_STOP_LIMIT_FACTOR[4,AX1]=1	'5d4e	N36750	\$MA_AA_OFF_MODE[AX1]=0	'5252
N36012	\$MA_STOP_LIMIT_FACTOR[5,AX1]=1	'5dba	N37000	\$MA_FIXED_STOP_MODE[AX1]=0	'54e2
N36020	\$MA_POSITIONING_TIME[AX1]=1	'50d0	N37002	\$MA_FIXED_STOP_CONTROL[AX1]=0	'65c0
N36030	\$MA_STANDSTILL_POS_TOL[AX1]=0.2	'5f52	N37010	\$MA_FIXED_STOP_TORQUE_DEF[AX1]=5	'5c80
N36040	\$MA_STANDSTILL_DELAY_TIME[AX1]=0.4	'53f2	N37012	\$MA_FIXED_STOP_TORQUE_RAMP_TIME[AX1]=0	'6f74
N36042	\$MA_FOC_STANDSTILL_DELAY_TIME[AX1]=0.4	'6912	N37020	\$MA_FIXED_STOP_WINDOW_DEF[AX1]=1	'69b8
N36050	\$MA_CLAMP_POS_TOL[AX1]=0.5	'4e3a	N37030	\$MA_FIXED_STOP_THRESHOLD[AX1]=2	'5d38
N36060	\$MA_STANDSTILL_VELO_TOL[AX1]=5	'5a10	N37040	\$MA_FIXED_STOP_BY_SENSOR[AX1]=0	'694e
N36100	\$MA_POS_LIMIT_MINUS[AX1]=-2	'4e92	N37050	\$MA_FIXED_STOP_ALARM_MASK[AX1]=1	'67a0
N36110	\$MA_POS_LIMIT_PLUS[AX1]=602	'4732	N37052	\$MA_FIXED_STOP_ALARM_REACTION[AX1]='H0'	'764e
N36120	\$MA_POS_LIMIT_MINUS2[AX1]=-500	'53d2	N37060	\$MA_FIXED_STOP_ACKN_MASK[AX1]=0	'70c4
N36130	\$MA_POS_LIMIT_PLUS2[AX1]=0	'48f0	N37070	\$MA_FIXED_STOP_ANA_TORQUE[AX1]=5	'6130
N36200	\$MA_AX_VELO_LIMIT[0,AX1]=45000	'4634	N37080	\$MA_FOC_ACTIVATION_MODE[AX1]=0	'670c
N36200	\$MA_AX_VELO_LIMIT[1,AX1]=45000	'4698	N37100	\$MA_GANTRY_AXIS_TYPE[AX1]=0	'56f8
N36200	\$MA_AX_VELO_LIMIT[2,AX1]=45000	'4764	N37110	\$MA_GANTRY_POS_TOL_WARNING[AX1]=0	'77a0
N36200	\$MA_AX_VELO_LIMIT[3,AX1]=0	'46ac	N37120	\$MA_GANTRY_POS_TOL_ERROR[AX1]=0	'76fe
N36200	\$MA_AX_VELO_LIMIT[4,AX1]=0	'43e4	N37130	\$MA_GANTRY_POS_TOL_REF[AX1]=0	'6938
N36200	\$MA_AX_VELO_LIMIT[5,AX1]=0	'4450	N37140	\$MA_GANTRY_BREAK_UP[AX1]=0	'5d9c
N36210	\$MA_CTRLOUT_LIMIT[0,AX1]=110	'4932	N37400	\$MA_EPS_TLIFT_TANG_STEP[AX1]=5	'5aea
N36220	\$MA_CTRLOUT_LIMIT_TIME[0,AX1]=1	'52a2	N37402	\$MA_TANG_OFFSET[AX1]=0	'51d4
N36300	\$MA_ENC_FREQ_LIMIT[0,AX1]=300000	'5674	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[0,AX1]=121	'6dd4
N36300	\$MA_ENC_FREQ_LIMIT[1,AX1]=300000	'570a	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[1,AX1]=0	'6a26
N36302	\$MA_ENC_FREQ_LIMIT_LOW[0,AX1]=99.9	'6afc			

Axis Setting Data - X Axis

N43120	\$\$SA_DEFAULT_SCALE_FACTOR_AXIS[AX1]=1	'737a	N43500	\$\$SA_FIXED_STOP_SWITCH[AX1]=0	'5b9c
N43200	\$\$SA_SPIND_S[AX1]=0	'4032	N43510	\$\$SA_FIXED_STOP_TORQUE[AX1]=5	'52c0
N43202	\$\$SA_SPIND_CONSTCUT_S[AX1]=0	'686e	N43520	\$\$SA_FIXED_STOP_WINDOW[AX1]=1	'5ff8
N43210	\$\$SA_SPIND_MIN_VELO_G25[AX1]=0	'5ab6	N43700	\$\$SA_OSCILL_REVERSE_POS1[AX1]=0	'7052
N43220	\$\$SA_SPIND_MAX_VELO_G26[AX1]=1000	'59c2	N43710	\$\$SA_OSCILL_REVERSE_POS2[AX1]=0	'7150
N43230	\$\$SA_SPIND_MAX_VELO_LIMS[AX1]=100	'5b7a	N43720	\$\$SA_OSCILL_DWELL_TIME1[AX1]=0	'61aa
N43240	\$\$SA_M19_SPOS[AX1]=0	'4d08	N43730	\$\$SA_OSCILL_DWELL_TIME2[AX1]=0	'62e0
N43250	\$\$SA_M19_SPOSMODE[AX1]=0	'5444	N43740	\$\$SA_OSCILL_VELO[AX1]=0	'5078
N43300	\$\$SA_ASSIGN_FEED_PER_REV_SOURCE[AX1]=0	'8bd0	N43750	\$\$SA_OSCILL_NUM_SPARK_CYCLES[AX1]=0	'81cc
N43350	\$\$SA_AA_OFF_LIMIT[AX1]=100000000	'51d4	N43760	\$\$SA_OSCILL_END_POS[AX1]=0	'5c72
N43400	\$\$SA_WORKAREA_PLUS_ENABLE[AX1]=0	'69b0	N43770	\$\$SA_OSCILL_CTRL_MASK[AX1]='H0'	'6e7a
N43410	\$\$SA_WORKAREA_MINUS_ENABLE[AX1]=0	'6384	N43780	\$\$SA_OSCILL_IS_ACTIVE[AX1]=0	'6322
N43420	\$\$SA_WORKAREA_LIMIT_PLUS[AX1]=2000	'648c	N43900	\$\$SA_TEMP_COMP_ABS_VALUE[AX1]=0	'5baa
N43430	\$\$SA_WORKAREA_LIMIT_MINUS[AX1]=-2000	'6f08	N43910	\$\$SA_TEMP_COMP_SLOPE[AX1]=0	'549c
			N43920	\$\$SA_TEMP_COMP_REF_POSITION[AX1]=0	'6c48

Axis Machine Data - Y Axis

N30100 \$MA_CTRLOUT_SEGMENT_NR[0,AX2]=1 '65a8
N30110 \$MA_CTRLOUT_MODULE_NR[0,AX2]=2 '575c
N30120 \$MA_CTRLOUT_NR[0,AX2]=1 '4828
N30130 \$MA_CTRLOUT_TYPE[0,AX2]=1 '4c70
N30132 \$MA_IS_VIRTUAL_AX[0,AX2]=0 '4148
N30200 \$MA_NUM_ENCS[AX2]=1 '462c
N30210 \$MA_ENC_SEGMENT_NR[0,AX2]=1 '57a8
N30210 \$MA_ENC_SEGMENT_NR[1,AX2]=1 '583e
N30220 \$MA_ENC_MODULE_NR[0,AX2]=2 '4990
N30220 \$MA_ENC_MODULE_NR[1,AX2]=1 '498e
N30230 \$MA_ENC_INPUT_NR[0,AX2]=1 '4aac
N30230 \$MA_ENC_INPUT_NR[1,AX2]=1 '4ade
N30240 \$MA_ENC_TYPE[0,AX2]=1 '3cda
N30240 \$MA_ENC_TYPE[1,AX2]=1 '3d0c
N30242 \$MA_ENC_IS_INDEPENDENT[0,AX2]=0 '526e
N30242 \$MA_ENC_IS_INDEPENDENT[1,AX2]=0 '5304
N30250 \$MA_ACT_POS_ABS[0,AX2]=-82134849 '576e
N30250 \$MA_ACT_POS_ABS[1,AX2]=0 '4dbe
N30260 \$MA_ABS_INC_RATIO[0,AX2]=4 '545c
N30260 \$MA_ABS_INC_RATIO[1,AX2]=4 '54c0
N30300 \$MA_IS_ROT_AX[AX2]=0 '4352
N30310 \$MA_ROT_IS_MODULO[AX2]=0 '55d4
N30320 \$MA_DISPLAY_IS_MODULO[AX2]=0 '58d2
N30330 \$MA_MODULO_RANGE[AX2]=360 '4fae
N30350 \$MA_SIMU_AX_VDI_OUTPUT[AX2]=0 '6784
N30450 \$MA_IS_CONCURRENT_POS_AX[AX2]=0 '6dea
N30500 \$MA_INDEX_AX_ASSIGN_POS_TAB[AX2]=0 '6e52
N30501 \$MA_INDEX_AX_NUMERATOR[AX2]=0 '4ce6
N30502 \$MA_INDEX_AX_DENOMINATOR[AX2]=1 '5e3a
N30503 \$MA_INDEX_AX_OFFSET[AX2]=0 '51a0
N30505 \$MA_HIRTH_IS_ACTIVE[AX2]=0 '4c5c
N30550 \$MA_AXCONF_ASSIGN_MASTER_CHAN[AX2]=0 '7c6c
N30552 \$MA_AUTO_GET_TYPE[AX2]=1 '4a82
N30600 \$MA_FIX_POINT_POS[0,AX2]=0 '4e0e
N30600 \$MA_FIX_POINT_POS[1,AX2]=0 '4e72
N30800 \$MA_WORKAREA_CHECK_TYPE[AX2]=0 '656c
N31000 \$MA_ENC_IS_LINEAR[0,AX2]=0 '45ac
N31000 \$MA_ENC_IS_LINEAR[1,AX2]=1 '4642
N31010 \$MA_ENC_GRID_POINT_DIST[0,AX2]=0.01 '6816
N31010 \$MA_ENC_GRID_POINT_DIST[1,AX2]=0.01 '68de
N31020 \$MA_ENC_RESOL[0,AX2]=2048 '453c
N31020 \$MA_ENC_RESOL[1,AX2]=2048 '45a0
N31030 \$MA_LEADSCREW_PITCH[AX2]=10 '4d62
N31040 \$MA_ENC_IS_DIRECT[0,AX2]=0 '469a
N31040 \$MA_ENC_IS_DIRECT[1,AX2]=0 '46fe
N31050 \$MA_DRIVE_AX_RATIO_DENOM[0,AX2]=1 '5a00
N31050 \$MA_DRIVE_AX_RATIO_DENOM[1,AX2]=1 '5a32
N31050 \$MA_DRIVE_AX_RATIO_DENOM[2,AX2]=1 '5a98
N31050 \$MA_DRIVE_AX_RATIO_DENOM[3,AX2]=1 '5b68
N31050 \$MA_DRIVE_AX_RATIO_DENOM[4,AX2]=1 '5a04
N31050 \$MA_DRIVE_AX_RATIO_DENOM[5,AX2]=1 '5a3a
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[0,AX2]=1 '5586
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[1,AX2]=1 '55ea
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[2,AX2]=1 '56b6
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[3,AX2]=1 '5856
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[4,AX2]=1 '558e
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[5,AX2]=1 '55fa
N31070 \$MA_DRIVE_ENC_RATIO_DENOM[0,AX2]=1 '5e62
N31070 \$MA_DRIVE_ENC_RATIO_DENOM[1,AX2]=1 '5ec6
N31080 \$MA_DRIVE_ENC_RATIO_NUMERA[0,AX2]=1 '5f82
N31080 \$MA_DRIVE_ENC_RATIO_NUMERA[1,AX2]=1 '6018
N31090 \$MA_JOG_INCR_WEIGHT[0,AX2]=0.001 '6334
N31090 \$MA_JOG_INCR_WEIGHT[1,AX2]=0.00254 '670a
N31122 \$MA_BERO_DELAY_TIME_PLUS[0,AX2]=0.00011 '6994
N31122 \$MA_BERO_DELAY_TIME_PLUS[1,AX2]=0.00011 '69c6
N31123 \$MA_BERO_DELAY_TIME_MINUS[0,AX2]=7.8EX-05
'708c

N31123 \$MA_BERO_DELAY_TIME_MINUS[1,AX2]=7.8EX-05
'70f0
N31200 \$MA_SCALING_FACTOR_G70_G71[AX2]=25.4 '827a
N31500 \$MA_AXIS_NUMBER_FOR_MONITORING[0,AX2]=0 '779c
N31510 \$MA_OFFSETVALUE_FOR_MONITORING[0,AX2]=0 '739e
N31520 \$MA_GAIN_FOR_MONITORING[0,AX2]=1 '719c
N32000 \$MA_MAX_AX_VELO[AX2]=30000 '47ca
N32010 \$MA_JOG_VELO_RAPID[AX2]=10000 '5762
N32020 \$MA_JOG_VELO[AX2]=5000 '4b18
N32040 \$MA_JOG_REV_VELO_RAPID[AX2]=10 '66c6
N32050 \$MA_JOG_REV_VELO[AX2]=1 '5a6c
N32060 \$MA_POS_AX_VELO[AX2]=10000 '4c8a
N32070 \$MA_CORR_VELO[AX2]=50 '4b0e
N32074 \$MA_FRAME_OR_CORRPOS_NOTALLOWED[AX2]='H0'
'9570
N32080 \$MA_HANDWH_MAX_INCR_SIZE[AX2]=0 '69d4
N32082 \$MA_HANDWH_MAX_INCR_VELO_SIZE[AX2]=500 '78be
N32084 \$MA_HANDWH_STOP_COND[AX2]='Hff' '6cb4
N32090 \$MA_HANDWH_VELO_OVERLAY_FACTOR[AX2]=0.5 '7df6
N32100 \$MA_AX_MOTION_DIR[AX2]=1 '4b3a
N32110 \$MA_ENC_FEEDBACK_POL[0,AX2]=1 '61a0
N32110 \$MA_ENC_FEEDBACK_POL[1,AX2]=1 '61d2
N32200 \$MA_POSCTRL_GAIN[0,AX2]=4 '52a4
N32200 \$MA_POSCTRL_GAIN[1,AX2]=4 '52d6
N32200 \$MA_POSCTRL_GAIN[2,AX2]=4 '533c
N32200 \$MA_POSCTRL_GAIN[3,AX2]=1 '54c4
N32200 \$MA_POSCTRL_GAIN[4,AX2]=1 '5360
N32200 \$MA_POSCTRL_GAIN[5,AX2]=1 '5396
N32250 \$MA_RATED_OUTVAL[0,AX2]=80 '4116
N32260 \$MA_RATED_VELO[0,AX2]=3000 '3d00
N32300 \$MA_MAX_AX_ACCEL[AX2]=4.7 '57aa
N32310 \$MA_MAX_ACCEL_OVL_FACTOR[AX2]=1.2 '6e9a
N32400 \$MA_AX_JERK_ENABLE[AX2]=0 '469c
N32402 \$MA_AX_JERK_MODE[AX2]=1 '4bac
N32410 \$MA_AX_JERK_TIME[AX2]=0.001 '4bd4
N32420 \$MA_JOG_AND_POS_JERK_ENABLE[AX2]=1 '7cb0
N32430 \$MA_JOG_AND_POS_MAX_JERK[AX2]=20 '779e
N32431 \$MA_MAX_AX_JERK[AX2]=30 '4852
N32432 \$MA_PATH_TRANS_JERK_LIM[AX2]=90 '5ff8
N32433 \$MA_SOFT_ACCEL_FACTOR[AX2]=1 '6680
N32434 \$MA_G00_ACCEL_FACTOR[AX2]=1 '5db6
N32435 \$MA_G00_JERK_FACTOR[AX2]=2.67 '6d56
N32440 \$MA_LOOKAH_FREQUENCY[AX2]=100 '55b4
N32450 \$MA_BACKLASH[0,AX2]=0.007 '4724
N32450 \$MA_BACKLASH[1,AX2]=0 '3ece
N32452 \$MA_BACKLASH_FACTOR[0,AX2]=1 '58a4
N32452 \$MA_BACKLASH_FACTOR[1,AX2]=1 '596c
N32452 \$MA_BACKLASH_FACTOR[2,AX2]=1 '5b04
N32452 \$MA_BACKLASH_FACTOR[3,AX2]=1 '5e44
N32452 \$MA_BACKLASH_FACTOR[4,AX2]=1 '58b4
N32452 \$MA_BACKLASH_FACTOR[5,AX2]=1 '598c
N32460 \$MA_TORQUE_OFFSET[0,AX2]=0 '468e
N32490 \$MA_FRICT_COMP_MODE[0,AX2]=1 '57ee
N32500 \$MA_FRICT_COMP_ENABLE[AX2]=0 '5068
N32510 \$MA_FRICT_COMP_ADAPT_ENABLE[0,AX2]=0 '65ae
N32520 \$MA_FRICT_COMP_CONST_MAX[0,AX2]=0 '73ec
N32530 \$MA_FRICT_COMP_CONST_MIN[0,AX2]=0 '777c
N32540 \$MA_FRICT_COMP_TIME[0,AX2]=0.015 '54f0
N32550 \$MA_FRICT_COMP_ACCEL1[0,AX2]=0 '55b4
N32560 \$MA_FRICT_COMP_ACCEL2[0,AX2]=0 '57ba
N32570 \$MA_FRICT_COMP_ACCEL3[0,AX2]=0 '5bda
N32580 \$MA_FRICT_COMP_INC_FACTOR[0,AX2]=0 '693a
N32610 \$MA_VELO_FFW_WEIGHT[0,AX2]=1 '6838
N32610 \$MA_VELO_FFW_WEIGHT[1,AX2]=1 '6900
N32610 \$MA_VELO_FFW_WEIGHT[2,AX2]=1 '6a98
N32610 \$MA_VELO_FFW_WEIGHT[3,AX2]=1 '6dd8
N32610 \$MA_VELO_FFW_WEIGHT[4,AX2]=1 '6848
N32610 \$MA_VELO_FFW_WEIGHT[5,AX2]=1 '6920
N32620 \$MA_FFW_MODE[AX2]=3 '4710
N32630 \$MA_FFW_ACTIVATION_MODE[AX2]=0 '68e8

N32650	\$MA_AX_INERTIA[AX2]=0	'3926	N34300	\$MA_ENC_REFP_MARKER_DIST[0,AX2]=10	'7362
N32700	\$MA_ENC_COMP_ENABLE[0,AX2]=1	'5e6e	N34300	\$MA_ENC_REFP_MARKER_DIST[1,AX2]=10	'7394
N32700	\$MA_ENC_COMP_ENABLE[1,AX2]=0	'5ea0	N34310	\$MA_ENC_MARKER_INC[0,AX2]=0.02	'5890
N32710	\$MA_CEC_ENABLE[AX2]=0	'4610	N34310	\$MA_ENC_MARKER_INC[1,AX2]=0.02	'5926
N32711	\$MA_CEC_SCALING_SYSTEM_METRIC[AX2]=1	'852e	N34320	\$MA_ENC_INVERS[0,AX2]=0	'463c
N32720	\$MA_CEC_MAX_SUM[AX2]=1	'59f0	N34320	\$MA_ENC_INVERS[1,AX2]=0	'46d2
N32730	\$MA_CEC_MAX_VELO[AX2]=10	'5f1c	N34330	\$MA_REFP_STOP_AT_ABS_MARKER[0,AX2]=1	'83da
N32750	\$MA_TEMP_COMP_TYPE[AX2]='H0'	'50c4	N34330	\$MA_REFP_STOP_AT_ABS_MARKER[1,AX2]=1	'84a2
N32760	\$MA_COMP_ADD_VELO_FACTOR[AX2]=0.01	'7c30	N35000	\$MA_SPIND_ASSIGN_TO_MACHAX[AX2]=0	'7324
N32800	\$MA_EQUIV_CURRCTRL_TIME[0,AX2]=0.0005	'5a68	N35010	\$MA_GEAR_STEP_CHANGE_ENABLE[AX2]=0	'6ace
N32800	\$MA_EQUIV_CURRCTRL_TIME[1,AX2]=0.0005	'5b30	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[0,AX2]=0	'7a42
N32800	\$MA_EQUIV_CURRCTRL_TIME[2,AX2]=0.0005	'5cc8	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[1,AX2]=0	'7aa6
N32800	\$MA_EQUIV_CURRCTRL_TIME[3,AX2]=0.0005	'6008	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[2,AX2]=0	'7b72
N32800	\$MA_EQUIV_CURRCTRL_TIME[4,AX2]=0.0005	'5a78	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[3,AX2]=0	'7d12
N32800	\$MA_EQUIV_CURRCTRL_TIME[5,AX2]=0.0005	'5b50	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[4,AX2]=0	'7a4a
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[0,AX2]=0.00245	'5b7a	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[5,AX2]=0	'7ab6
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[1,AX2]=0.00245	'5bac	N35020	\$MA_SPIND_DEFAULT_MODE[AX2]=0	'4b46
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[2,AX2]=0.00245	'5c12	N35030	\$MA_SPIND_DEFAULT_ACT_MASK[AX2]='H0'	'6556
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[3,AX2]=0.0025	'5c44	N35032	\$MA_SPIND_FUNC_RESET_MODE[AX2]='H0'	'69be
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[4,AX2]=0.0025	'5ae0	N35035	\$MA_SPIND_FUNCTION_MASK[AX2]='H10'	'691a
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[5,AX2]=0.0025	'5b16	N35040	\$MA_SPIND_ACTIVE_AFTER_RESET[AX2]=0	'69b2
N32900	\$MA_DYN_MATCH_ENABLE[AX2]=0	'4c48	N35100	\$MA_SPIND_VELO_LIMIT[AX2]=10000	'4f74
N32910	\$MA_DYN_MATCH_TIME[0,AX2]=0	'4358	N35110	\$MA_GEAR_STEP_MAX_VELO[0,AX2]=500	'55aa
N32910	\$MA_DYN_MATCH_TIME[1,AX2]=0	'43ee	N35110	\$MA_GEAR_STEP_MAX_VELO[1,AX2]=500	'5640
N32910	\$MA_DYN_MATCH_TIME[2,AX2]=0	'4520	N35110	\$MA_GEAR_STEP_MAX_VELO[2,AX2]=1000	'5792
N32910	\$MA_DYN_MATCH_TIME[3,AX2]=0	'4790	N35110	\$MA_GEAR_STEP_MAX_VELO[3,AX2]=2000	'5ace
N32910	\$MA_DYN_MATCH_TIME[4,AX2]=0	'4364	N35110	\$MA_GEAR_STEP_MAX_VELO[4,AX2]=4000	'557a
N32910	\$MA_DYN_MATCH_TIME[5,AX2]=0	'4406	N35110	\$MA_GEAR_STEP_MAX_VELO[5,AX2]=8000	'562a
N32920	\$MA_AC_FILTER_TIME[AX2]=0	'41c0	N35120	\$MA_GEAR_STEP_MIN_VELO[0,AX2]=50	'5900
N32930	\$MA_POSCTRL_OUT_FILTER_ENABLE[AX2]=0	'6b9c	N35120	\$MA_GEAR_STEP_MIN_VELO[1,AX2]=50	'5996
N32940	\$MA_POSCTRL_OUT_FILTER_TIME[AX2]=0	'698a	N35120	\$MA_GEAR_STEP_MIN_VELO[2,AX2]=400	'5b1c
N32950	\$MA_POSCTRL_DAMPING[AX2]=0	'4c74	N35120	\$MA_GEAR_STEP_MIN_VELO[3,AX2]=800	'5d94
N32960	\$MA_POSCTRL_ZERO_ZONE[0,AX2]=0	'649a	N35120	\$MA_GEAR_STEP_MIN_VELO[4,AX2]=1500	'5a9a
N32960	\$MA_POSCTRL_ZERO_ZONE[1,AX2]=0	'64fe	N35120	\$MA_GEAR_STEP_MIN_VELO[5,AX2]=3000	'5cfa
N33000	\$MA_FIPO_TYPE[AX2]=2	'3faa	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[0,AX2]=500	'6766
N33050	\$MA_LUBRICATION_DIST[AX2]=0	'4ee4	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[1,AX2]=500	'6798
N33100	\$MA_COMPRESS_POS_TOL[AX2]=0.1	'77a8	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[2,AX2]=1000	'686e
N34000	\$MA_REFP_CAM_IS_ACTIVE[AX2]=1	'6018	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[3,AX2]=2000	'6ad6
N34010	\$MA_REFP_CAM_DIR_IS_MINUS[AX2]=0	'7344	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[4,AX2]=4000	'6722
N34020	\$MA_REFP_VELO_SEARCH_CAM[AX2]=5000	'6bc4	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[5,AX2]=8000	'6768
N34030	\$MA_REFP_MAX_CAM_DIST[AX2]=10000	'5e64	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[0,AX2]=5	'6922
N34040	\$MA_REFP_VELO_SEARCH_MARKER[0,AX2]=500	'7612	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[1,AX2]=5	'6954
N34040	\$MA_REFP_VELO_SEARCH_MARKER[1,AX2]=250	'78dc	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[2,AX2]=10	'69ca
N34050	\$MA_REFP_SEARCH_MARKER_REVERSE[0,AX2]=0	'77dc	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[3,AX2]=20	'6c32
N34050	\$MA_REFP_SEARCH_MARKER_REVERSE[1,AX2]=0	'7872	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[4,AX2]=40	'687e
N34060	\$MA_REFP_MAX_MARKER_DIST[0,AX2]=25	'6e4a	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[5,AX2]=80	'68c4
N34060	\$MA_REFP_MAX_MARKER_DIST[1,AX2]=25	'6e7c	N35150	\$MA_SPIND_DES_VELO_TOL[AX2]=0.1	'5dfa
N34070	\$MA_REFP_VELO_POS[AX2]=2000	'57e6	N35160	\$MA_SPIND_EXTERN_VELO_LIMIT[AX2]=1000	'6626
N34080	\$MA_REFP_MOVE_DIST[0,AX2]=59	'5226	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[0,AX2]=30	'6c9a
N34080	\$MA_REFP_MOVE_DIST[1,AX2]=0	'50f2	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[1,AX2]=30	'6cfe
N34090	\$MA_REFP_MOVE_DIST_CORR[0,AX2]=0	'6d28	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[2,AX2]=25	'6d6e
N34090	\$MA_REFP_MOVE_DIST_CORR[1,AX2]=0	'6df0	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[3,AX2]=20	'6e9a
N34092	\$MA_REFP_CAM_SHIFT[0,AX2]=0	'507e	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[4,AX2]=15	'6be0
N34092	\$MA_REFP_CAM_SHIFT[1,AX2]=0	'5114	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[5,AX2]=10	'6bd8
N34100	\$MA_REFP_SET_POS[0,AX2]=0	'5804	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[0,AX2]=30	'7c06
N34100	\$MA_REFP_SET_POS[1,AX2]=0	'5836	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[1,AX2]=30	'7cce
N34100	\$MA_REFP_SET_POS[2,AX2]=0	'589c	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[2,AX2]=25	'7cde
N34100	\$MA_REFP_SET_POS[3,AX2]=0	'596c	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[3,AX2]=20	'7f36
N34102	\$MA_REFP_SYNC_ENCS[AX2]=0	'581c	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[4,AX2]=15	'795c
N34110	\$MA_REFP_CYCLE_NR[AX2]=2	'4dae	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[5,AX2]=10	'794c
N34120	\$MA_REFP_BERO_LOW_ACTIVE[AX2]=0	'70a0	N35220	\$MA_ACCEL_REDUCTION_SPEED_POINT[AX2]=1	'6d30
N34200	\$MA_ENC_REFP_MODE[0,AX2]=1	'4dee	N35230	\$MA_ACCEL_REDUCTION_FACTOR[AX2]=0	'61ac
N34200	\$MA_ENC_REFP_MODE[1,AX2]=1	'4e52	N35240	\$MA_ACCEL_TYPE_DRIVE[AX2]=0	'4ad6
N34210	\$MA_ENC_REFP_STATE[0,AX2]=0	'4e5a	N35242	\$MA_ACCEL_REDUCTION_TYPE[AX2]=1	'5692
N34210	\$MA_ENC_REFP_STATE[1,AX2]=0	'4ef0	N35300	\$MA_SPIND_POSCTRL_VELO[AX2]=500	'5f26
N34220	\$MA_ENC_ABS_TURNS_MODULO[0,AX2]=4096	'7526	N35310	\$MA_SPIND_POSIT_DELAY_TIME[0,AX2]=0	'6550
N34220	\$MA_ENC_ABS_TURNS_MODULO[1,AX2]=4096	'7558	N35310	\$MA_SPIND_POSIT_DELAY_TIME[1,AX2]=0.05	'6938
N34230	\$MA_ENC_SERIAL_NUMBER[0,AX2]=0	'5928	N35310	\$MA_SPIND_POSIT_DELAY_TIME[2,AX2]=0.1	'6ac8
N34230	\$MA_ENC_SERIAL_NUMBER[1,AX2]=0	'598c	N35310	\$MA_SPIND_POSIT_DELAY_TIME[3,AX2]=0.2	'6ed0
N34232	\$MA_EVERY_ENC_SERIAL_NUMBER[0,AX2]=1	'6c52	N35310	\$MA_SPIND_POSIT_DELAY_TIME[4,AX2]=0.4	'6854
N34232	\$MA_EVERY_ENC_SERIAL_NUMBER[1,AX2]=1	'6d1a	N35310	\$MA_SPIND_POSIT_DELAY_TIME[5,AX2]=0.8	'6906

N35350	\$MA_SPIND_POSITIONING_DIR[AX2]=3	'72b6	N36302	\$MA_ENC_FREQ_LIMIT_LOW[1,AX2]=99.9	'6cc4
N35400	\$MA_SPIND_OSCILL_DES_VELO[AX2]=500	'7716	N36310	\$MA_ENC_ZERO_MONITORING[0,AX2]=0	'7366
N35410	\$MA_SPIND_OSCILL_ACCEL[AX2]=16	'6546	N36310	\$MA_ENC_ZERO_MONITORING[1,AX2]=0	'742e
N35430	\$MA_SPIND_OSCILL_START_DIR[AX2]=0	'6bf4	N36400	\$MA_CONTOUR_TOL[AX2]=2	'4dc2
N35440	\$MA_SPIND_OSCILL_TIME_CW[AX2]=1	'70d8	N36500	\$MA_ENC_CHANGE_TOL[AX2]=0	'59ec
N35450	\$MA_SPIND_OSCILL_TIME_CCW[AX2]=0.5	'748a	N36510	\$MA_ENC_DIFF_TOL[AX2]=0	'5116
N35500	\$MA_SPIND_ON_SPEED_AT_IPO_START[AX2]=1	'7850	N36520	\$MA_DES_VELO_LIMIT[AX2]=125	'53f0
N35510	\$MA_SPIND_STOPPED_AT_IPO_START[AX2]=0	'7740	N36600	\$MA_BRAKE_MODE_CHOICE[AX2]=1	'575c
N35590	\$MA_PARAMSET_CHANGE_ENABLE[AX2]=0	'57d6	N36610	\$MA_AX_EMERGENCY_STOP_TIME[AX2]=0.05	'65ac
N36000	\$MA_STOP_LIMIT_COARSE[AX2]=0.04	'66d8	N36620	\$MA_SERVO_DISABLE_DELAY_TIME[AX2]=0.1	'73b0
N36010	\$MA_STOP_LIMIT_FINE[AX2]=0.01	'5848	N36690	\$MA_AXIS_DIAGNOSIS[AX2]='H0'	'61d2
N36012	\$MA_STOP_LIMIT_FACTOR[0,AX2]=1	'5e12	N36700	\$MA_DRIFT_ENABLE[AX2]=0	'4190
N36012	\$MA_STOP_LIMIT_FACTOR[1,AX2]=1	'5e76	N36710	\$MA_DRIFT_LIMIT[0,AX2]=0	'3be2
N36012	\$MA_STOP_LIMIT_FACTOR[2,AX2]=1	'5f42	N36720	\$MA_DRIFT_VALUE[0,AX2]=0	'3d7c
N36012	\$MA_STOP_LIMIT_FACTOR[3,AX2]=1	'60e2	N36730	\$MA_DRIVE_SIGNAL_TRACKING[AX2]=0	'6db8
N36012	\$MA_STOP_LIMIT_FACTOR[4,AX2]=1	'5e1a	N36750	\$MA_AA_OFF_MODE[AX2]=0	'531e
N36012	\$MA_STOP_LIMIT_FACTOR[5,AX2]=1	'5e86	N37000	\$MA_FIXED_STOP_MODE[AX2]=0	'55ae
N36020	\$MA_POSITIONING_TIME[AX2]=1	'5202	N37002	\$MA_FIXED_STOP_CONTROL[AX2]=0	'6626
N36030	\$MA_STANDSTILL_POS_TOL[AX2]=0.2	'5fb8	N37010	\$MA_FIXED_STOP_TORQUE_DEF[AX2]=5	'5e18
N36040	\$MA_STANDSTILL_DELAY_TIME[AX2]=0.4	'558a	N37012	\$MA_FIXED_STOP_TORQUE_RAMP_TIME[AX2]=0	'7040
N36042	\$MA_FOC_STANDSTILL_DELAY_TIME[AX2]=0.4	'6aaa	N37020	\$MA_FIXED_STOP_WINDOW_DEF[AX2]=1	'6b50
N36050	\$MA_CLAMP_POS_TOL[AX2]=0.5	'4fd2	N37030	\$MA_FIXED_STOP_THRESHOLD[AX2]=2	'5e6a
N36060	\$MA_STANDSTILL_VELO_TOL[AX2]=5	'5adc	N37040	\$MA_FIXED_STOP_BY_SENSOR[AX2]=0	'6a80
N36100	\$MA_POS_LIMIT_MINUS[AX2]=-512	'52e8	N37050	\$MA_FIXED_STOP_ALARM_MASK[AX2]=1	'6938
N36110	\$MA_POS_LIMIT_PLUS[AX2]=2	'4598	N37052	\$MA_FIXED_STOP_ALARM_REACTION[AX2]='H0'	'77e6
N36120	\$MA_POS_LIMIT_MINUS2[AX2]=0	'5282	N37060	\$MA_FIXED_STOP_ACKN_MASK[AX2]=0	'71f6
N36130	\$MA_POS_LIMIT_PLUS2[AX2]=500	'4ae6	N37070	\$MA_FIXED_STOP_ANA_TORQUE[AX2]=5	'62c8
N36200	\$MA_AX_VELO_LIMIT[0,AX2]=45000	'4700	N37080	\$MA_FOC_ACTIVATION_MODE[AX2]=0	'67d8
N36200	\$MA_AX_VELO_LIMIT[1,AX2]=45000	'4764	N37100	\$MA_GANTRY_AXIS_TYPE[AX2]=0	'582a
N36200	\$MA_AX_VELO_LIMIT[2,AX2]=45000	'4830	N37110	\$MA_GANTRY_POS_TOL_WARNING[AX2]=0	'7806
N36200	\$MA_AX_VELO_LIMIT[3,AX2]=0	'4778	N37120	\$MA_GANTRY_POS_TOL_ERROR[AX2]=0	'7830
N36200	\$MA_AX_VELO_LIMIT[4,AX2]=0	'44b0	N37130	\$MA_GANTRY_POS_TOL_REF[AX2]=0	'699e
N36200	\$MA_AX_VELO_LIMIT[5,AX2]=0	'451c	N37140	\$MA_GANTRY_BREAK_UP[AX2]=0	'5e68
N36210	\$MA_CTRLOUT_LIMIT[0,AX2]=110	'49fe	N37400	\$MA_EPS_TLIFT_TANG_STEP[AX2]=5	'5bb6
N36220	\$MA_CTRLOUT_LIMIT_TIME[0,AX2]=1	'53d4	N37402	\$MA_TANG_OFFSET[AX2]=0	'52a0
N36300	\$MA_ENC_FREQ_LIMIT[0,AX2]=300000	'57a6	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[0,AX2]=71	'6ef8
N36300	\$MA_ENC_FREQ_LIMIT[1,AX2]=300000	'583c	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[1,AX2]=0	'6b58
N36302	\$MA_ENC_FREQ_LIMIT_LOW[0,AX2]=99.9	'6c2e			

Axis Setting Data - Y Axis

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N43120 $SA_DEFAULT_SCALE_FACTOR_AXIS[AX2]=1 '7512
N43200 $SA_SPIND_S[AX2]=0 '40fe
N43202 $SA_SPIND_CONSTCUT_S[AX2]=0 '69a0
N43210 $SA_SPIND_MIN_VELO_G25[AX2]=0 '5b1c
N43220 $SA_SPIND_MAX_VELO_G26[AX2]=1000 '5a28
N43230 $SA_SPIND_MAX_VELO_LIMS[AX2]=100 '5c46
N43240 $SA_M19_SPOS[AX2]=0 '4e3a
N43250 $SA_M19_SPOSMODE[AX2]=0 '5576
N43300 $SA_ASSIGN_FEED_PER_REV_SOURCE[AX2]=0 '8c36
N43350 $SA_AA_OFF_LIMIT[AX2]=100000000 '5306
N43400 $SA_WORKAREA_PLUS_ENABLE[AX2]=0 '6ae2
N43410 $SA_WORKAREA_MINUS_ENABLE[AX2]=0 '651c
N43420 $SA_WORKAREA_LIMIT_PLUS[AX2]=2000 '6558
N43430 $SA_WORKAREA_LIMIT_MINUS[AX2]=-2000 '703a
N43500 $SA_FIXED_STOP_SWITCH[AX2]=0 '5d34
N43510 $SA_FIXED_STOP_TORQUE[AX2]=5 '5458
N43520 $SA_FIXED_STOP_WINDOW[AX2]=1 '6190
N43700 $SA_OSCILL_REVERSE_POS1[AX2]=0 '711e
N43710 $SA_OSCILL_REVERSE_POS2[AX2]=0 '721c
N43720 $SA_OSCILL_DWELL_TIME1[AX2]=0 '6210
N43730 $SA_OSCILL_DWELL_TIME2[AX2]=0 '6346
N43740 $SA_OSCILL_VELO[AX2]=0 '5144
N43750 $SA_OSCILL_NUM_SPARK_CYCLES[AX2]=0 '8298
N43760 $SA_OSCILL_END_POS[AX2]=0 '5cd8
N43770 $SA_OSCILL_CTRL_MASK[AX2]='H0' '6fac
N43780 $SA_OSCILL_IS_ACTIVE[AX2]=0 '6454
N43900 $SA_TEMP_COMP_ABS_VALUE[AX2]=0 '5c76
N43910 $SA_TEMP_COMP_SLOPE[AX2]=0 '5568
N43920 $SA_TEMP_COMP_REF_POSITION[AX2]=0 '6cae
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Axis Machine Data - Z Axis

N30100 \$MA_CTRLOUT_SEGMENT_NR[0,AX3]=1 '6818
N30110 \$MA_CTRLOUT_MODULE_NR[0,AX3]=3 '59cc
N30120 \$MA_CTRLOUT_NR[0,AX3]=1 '4a98
N30130 \$MA_CTRLOUT_TYPE[0,AX3]=1 '4d40
N30132 \$MA_IS_VIRTUAL_AX[0,AX3]=0 '42e8
N30200 \$MA_NUM_ENCS[AX3]=1 '489c
N30210 \$MA_ENC_SEGMENT_NR[0,AX3]=1 '5a18
N30210 \$MA_ENC_SEGMENT_NR[1,AX3]=1 '5aae
N30220 \$MA_ENC_MODULE_NR[0,AX3]=3 '4c00
N30220 \$MA_ENC_MODULE_NR[1,AX3]=1 '4b2e
N30230 \$MA_ENC_INPUT_NR[0,AX3]=1 '4b7c
N30230 \$MA_ENC_INPUT_NR[1,AX3]=1 '4bae
N30240 \$MA_ENC_TYPE[0,AX3]=1 '3daa
N30240 \$MA_ENC_TYPE[1,AX3]=0 '3d14
N30242 \$MA_ENC_IS_INDEPENDENT[0,AX3]=0 '54de
N30242 \$MA_ENC_IS_INDEPENDENT[1,AX3]=0 '5574
N30250 \$MA_ACT_POS_ABS[0,AX3]=-2017 '59f0
N30250 \$MA_ACT_POS_ABS[1,AX3]=0 '50fe
N30260 \$MA_ABS_INC_RATIO[0,AX3]=4 '55fc
N30260 \$MA_ABS_INC_RATIO[1,AX3]=4 '5660
N30300 \$MA_IS_ROT_AX[AX3]=0 '4692
N30310 \$MA_ROT_IS_MODULO[AX3]=0 '5914
N30320 \$MA_DISPLAY_IS_MODULO[AX3]=0 '5c12
N30330 \$MA_MODULO_RANGE[AX3]=360 '521e
N30350 \$MA_SIMU_AX_VDI_OUTPUT[AX3]=0 '6854
N30450 \$MA_IS_CONCURRENT_POS_AX[AX3]=0 '705a
N30500 \$MA_INDEX_AX_ASSIGN_POS_TAB[AX3]=0 '6ff2
N30501 \$MA_INDEX_AX_NUMERATOR[AX3]=0 '4db6
N30502 \$MA_INDEX_AX_DENOMINATOR[AX3]=1 '60aa
N30503 \$MA_INDEX_AX_OFFSET[AX3]=0 '5340
N30505 \$MA_HIRTH_IS_ACTIVE[AX3]=0 '4dfc
N30550 \$MA_AXCONF_ASSIGN_MASTER_CHAN[AX3]=0 '7fac
N30552 \$MA_AUTO_GET_TYPE[AX3]=1 '4dc2
N30600 \$MA_FIX_POINT_POS[0,AX3]=0 '4fae
N30600 \$MA_FIX_POINT_POS[1,AX3]=-115.853 '5c94
N30800 \$MA_WORKAREA_CHECK_TYPE[AX3]=0 '670c
N31000 \$MA_ENC_IS_LINEAR[0,AX3]=0 '474c
N31000 \$MA_ENC_IS_LINEAR[1,AX3]=1 '47e2
N31010 \$MA_ENC_GRID_POINT_DIST[0,AX3]=0.01 '6b56
N31010 \$MA_ENC_GRID_POINT_DIST[1,AX3]=0.01 '6c1e
N31020 \$MA_ENC_RESOL[0,AX3]=2048 '46dc
N31020 \$MA_ENC_RESOL[1,AX3]=2048 '4740
N31030 \$MA_LEADSCREW_PITCH[AX3]=10 '4f02
N31040 \$MA_ENC_IS_DIRECT[0,AX3]=0 '483a
N31040 \$MA_ENC_IS_DIRECT[1,AX3]=0 '489e
N31050 \$MA_DRIVE_AX_RATIO_DENOM[0,AX3]=1 '5ad0
N31050 \$MA_DRIVE_AX_RATIO_DENOM[1,AX3]=1 '5b02
N31050 \$MA_DRIVE_AX_RATIO_DENOM[2,AX3]=1 '5b68
N31050 \$MA_DRIVE_AX_RATIO_DENOM[3,AX3]=1 '5c38
N31050 \$MA_DRIVE_AX_RATIO_DENOM[4,AX3]=1 '5ad4
N31050 \$MA_DRIVE_AX_RATIO_DENOM[5,AX3]=1 '5b0a
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[0,AX3]=1 '5726
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[1,AX3]=1 '578a
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[2,AX3]=1 '5856
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[3,AX3]=1 '59f6
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[4,AX3]=1 '572e
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[5,AX3]=1 '579a
N31070 \$MA_DRIVE_ENC_RATIO_DENOM[0,AX3]=1 '6002
N31070 \$MA_DRIVE_ENC_RATIO_DENOM[1,AX3]=1 '6066
N31080 \$MA_DRIVE_ENC_RATIO_NUMERA[0,AX3]=1 '61f2
N31080 \$MA_DRIVE_ENC_RATIO_NUMERA[1,AX3]=1 '6288
N31090 \$MA_JOG_INCR_WEIGHT[0,AX3]=0.001 '6674
N31090 \$MA_JOG_INCR_WEIGHT[1,AX3]=0.00254 '6a4a
N31122 \$MA_BERO_DELAY_TIME_PLUS[0,AX3]=0.00011 '6a64
N31122 \$MA_BERO_DELAY_TIME_PLUS[1,AX3]=0.00011 '6a96
N31123 \$MA_BERO_DELAY_TIME_MINUS[0,AX3]=7.8EX-05
'722c

N31123 \$MA_BERO_DELAY_TIME_MINUS[1,AX3]=7.8EX-05
'7290
N31200 \$MA_SCALING_FACTOR_G70_G71[AX3]=25.4 '834a
N31500 \$MA_AXIS_NUMBER_FOR_MONITORING[0,AX3]=0 '7a0c
N31510 \$MA_OFFSETVALUE_FOR_MONITORING[0,AX3]=0 '760e
N31520 \$MA_GAIN_FOR_MONITORING[0,AX3]=1 '74dc
N32000 \$MA_MAX_AX_VELO[AX3]=30000 '496a
N32010 \$MA_JOG_VELO_RAPID[AX3]=10000 '5832
N32020 \$MA_JOG_VELO[AX3]=5000 '4d88
N32040 \$MA_JOG_REV_VELO_RAPID[AX3]=10 '6796
N32050 \$MA_JOG_REV_VELO[AX3]=1 '5cdc
N32060 \$MA_POS_AX_VELO[AX3]=10000 '4e2a
N32070 \$MA_CORR_VELO[AX3]=50 '4e4e
N32074 \$MA_FRAME_OR_CORRPOS_NOTALLOWED[AX3]='H0'
'9710
N32080 \$MA_HANDWH_MAX_INCR_SIZE[AX3]=0 '6c44
N32082 \$MA_HANDWH_MAX_INCR_VELO_SIZE[AX3]=500 '7bfe
N32084 \$MA_HANDWH_STOP_COND[AX3]='Hff' '6f24
N32090 \$MA_HANDWH_VELO_OVERLAY_FACTOR[AX3]=0.5 '7ec6
N32100 \$MA_AX_MOTION_DIR[AX3]=-1 '4fea
N32110 \$MA_ENC_FEEDBACK_POL[0,AX3]=1 '6270
N32110 \$MA_ENC_FEEDBACK_POL[1,AX3]=1 '62a2
N32200 \$MA_POSCTRL_GAIN[0,AX3]=1 '542c
N32200 \$MA_POSCTRL_GAIN[1,AX3]=1 '545e
N32200 \$MA_POSCTRL_GAIN[2,AX3]=1 '54c4
N32200 \$MA_POSCTRL_GAIN[3,AX3]=1 '5594
N32200 \$MA_POSCTRL_GAIN[4,AX3]=1 '5430
N32200 \$MA_POSCTRL_GAIN[5,AX3]=1 '5466
N32250 \$MA_RATED_OUTVAL[0,AX3]=80 '41e6
N32260 \$MA_RATED_VELO[0,AX3]=3000 '3f70
N32300 \$MA_MAX_AX_ACCEL[AX3]=2.75 '5bac
N32310 \$MA_MAX_ACCEL_OVL_FACTOR[AX3]=1.2 '710a
N32400 \$MA_AX_JERK_ENABLE[AX3]=0 '476c
N32402 \$MA_AX_JERK_MODE[AX3]=1 '4e1c
N32410 \$MA_AX_JERK_TIME[AX3]=0.001 '4e44
N32420 \$MA_JOG_AND_POS_JERK_ENABLE[AX3]=1 '7e50
N32430 \$MA_JOG_AND_POS_MAX_JERK[AX3]=7.5 '7f2e
N32431 \$MA_MAX_AX_JERK[AX3]=7.5 '4c60
N32432 \$MA_PATH_TRANS_JERK_LIM[AX3]=75 '6352
N32433 \$MA_SOFT_ACCEL_FACTOR[AX3]=1 '69c0
N32434 \$MA_G00_ACCEL_FACTOR[AX3]=1 '6026
N32435 \$MA_G00_JERK_FACTOR[AX3]=10 '6418
N32440 \$MA_LOOKAH_FREQUENCY[AX3]=16 '595c
N32450 \$MA_BACKLASH[0,AX3]=0.005 '42bc
N32450 \$MA_BACKLASH[1,AX3]=0 '3f9e
N32452 \$MA_BACKLASH_FACTOR[0,AX3]=1 '5be4
N32452 \$MA_BACKLASH_FACTOR[1,AX3]=1 '5cac
N32452 \$MA_BACKLASH_FACTOR[2,AX3]=1 '5e44
N32452 \$MA_BACKLASH_FACTOR[3,AX3]=1 '6184
N32452 \$MA_BACKLASH_FACTOR[4,AX3]=1 '5bf4
N32452 \$MA_BACKLASH_FACTOR[5,AX3]=1 '5ccc
N32460 \$MA_TORQUE_OFFSET[0,AX3]=0 '482e
N32490 \$MA_FRICT_COMP_MODE[0,AX3]=1 '5b2e
N32500 \$MA_FRICT_COMP_ENABLE[AX3]=0 '53a8
N32510 \$MA_FRICT_COMP_ADAPT_ENABLE[0,AX3]=0 '68ee
N32520 \$MA_FRICT_COMP_CONST_MAX[0,AX3]=0 '74bc
N32530 \$MA_FRICT_COMP_CONST_MIN[0,AX3]=0 '784c
N32540 \$MA_FRICT_COMP_TIME[0,AX3]=0.015 '5830
N32550 \$MA_FRICT_COMP_ACCEL1[0,AX3]=0 '5754
N32560 \$MA_FRICT_COMP_ACCEL2[0,AX3]=0 '595a
N32570 \$MA_FRICT_COMP_ACCEL3[0,AX3]=0 '5d7a
N32580 \$MA_FRICT_COMP_INC_FACTOR[0,AX3]=0 '6ada
N32610 \$MA_VELO_FFW_WEIGHT[0,AX3]=1 '6b78
N32610 \$MA_VELO_FFW_WEIGHT[1,AX3]=1 '6c40
N32610 \$MA_VELO_FFW_WEIGHT[2,AX3]=1 '6dd8
N32610 \$MA_VELO_FFW_WEIGHT[3,AX3]=1 '7118
N32610 \$MA_VELO_FFW_WEIGHT[4,AX3]=1 '6b88
N32610 \$MA_VELO_FFW_WEIGHT[5,AX3]=1 '6c60
N32620 \$MA_FFW_MODE[AX3]=3 '4980
N32630 \$MA_FFW_ACTIVATION_MODE[AX3]=0 '6a88

N32650	\$MA_AX_INERTIA[AX3]=0	'39f6	N34300	\$MA_ENC_REFP_MARKER_DIST[0,AX3]=10	'7432
N32700	\$MA_ENC_COMP_ENABLE[0,AX3]=1	'61ae	N34300	\$MA_ENC_REFP_MARKER_DIST[1,AX3]=10	'7464
N32700	\$MA_ENC_COMP_ENABLE[1,AX3]=0	'61e0	N34310	\$MA_ENC_MARKER_INC[0,AX3]=0.02	'5b00
N32710	\$MA_CEC_ENABLE[AX3]=0	'46e0	N34310	\$MA_ENC_MARKER_INC[1,AX3]=0.02	'5b96
N32711	\$MA_CEC_SCALING_SYSTEM_METRIC[AX3]=1	'886e	N34320	\$MA_ENC_INVERS[0,AX3]=0	'48ac
N32720	\$MA_CEC_MAX_SUM[AX3]=1	'5b90	N34320	\$MA_ENC_INVERS[1,AX3]=0	'4942
N32730	\$MA_CEC_MAX_VELO[AX3]=10	'618c	N34330	\$MA_REFP_STOP_AT_ABS_MARKER[0,AX3]=1	'871a
N32750	\$MA_TEMP_COMP_TYPE[AX3]='H0'	'5194	N34330	\$MA_REFP_STOP_AT_ABS_MARKER[1,AX3]=1	'87e2
N32760	\$MA_COMP_ADD_VELO_FACTOR[AX3]=0.01	'7ea0	N35000	\$MA_SPIND_ASSIGN_TO_MACHAX[AX3]=0	'73f4
N32800	\$MA_EQUIV_CURRCTRL_TIME[0,AX3]=0.0005	'5da8	N35010	\$MA_GEAR_STEP_CHANGE_ENABLE[AX3]=0	'6c6e
N32800	\$MA_EQUIV_CURRCTRL_TIME[1,AX3]=0.0005	'5e70	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[0,AX3]=0	'7be2
N32800	\$MA_EQUIV_CURRCTRL_TIME[2,AX3]=0.0005	'6008	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[1,AX3]=0	'7c46
N32800	\$MA_EQUIV_CURRCTRL_TIME[3,AX3]=0.0005	'6348	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[2,AX3]=0	'7d12
N32800	\$MA_EQUIV_CURRCTRL_TIME[4,AX3]=0.0005	'5db8	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[3,AX3]=0	'7eb2
N32800	\$MA_EQUIV_CURRCTRL_TIME[5,AX3]=0.0005	'5e90	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[4,AX3]=0	'7bea
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[0,AX3]=0.00245	'5c4a	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[5,AX3]=0	'7c56
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[1,AX3]=0.00245	'5c7c	N35020	\$MA_SPIND_DEFAULT_MODE[AX3]=0	'4c16
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[2,AX3]=0.00245	'5ce2	N35030	\$MA_SPIND_DEFAULT_ACT_MASK[AX3]='H0'	'6626
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[3,AX3]=0.0025	'5d14	N35032	\$MA_SPIND_FUNC_RESET_MODE[AX3]='H0'	'6cfe
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[4,AX3]=0.0025	'5bb0	N35035	\$MA_SPIND_FUNCTION_MASK[AX3]='H10'	'6aba
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[5,AX3]=0.0025	'5be6	N35040	\$MA_SPIND_ACTIVE_AFTER_RESET[AX3]=0	'6c22
N32900	\$MA_DYN_MATCH_ENABLE[AX3]=0	'4eb8	N35100	\$MA_SPIND_VELO_LIMIT[AX3]=10000	'51e4
N32910	\$MA_DYN_MATCH_TIME[0,AX3]=0	'45c8	N35110	\$MA_GEAR_STEP_MAX_VELO[0,AX3]=500	'581a
N32910	\$MA_DYN_MATCH_TIME[1,AX3]=0	'465e	N35110	\$MA_GEAR_STEP_MAX_VELO[1,AX3]=500	'58b0
N32910	\$MA_DYN_MATCH_TIME[2,AX3]=0	'4790	N35110	\$MA_GEAR_STEP_MAX_VELO[2,AX3]=1000	'5a02
N32910	\$MA_DYN_MATCH_TIME[3,AX3]=0	'4a00	N35110	\$MA_GEAR_STEP_MAX_VELO[3,AX3]=2000	'5d3e
N32910	\$MA_DYN_MATCH_TIME[4,AX3]=0	'45d4	N35110	\$MA_GEAR_STEP_MAX_VELO[4,AX3]=4000	'57ea
N32910	\$MA_DYN_MATCH_TIME[5,AX3]=0	'4676	N35110	\$MA_GEAR_STEP_MAX_VELO[5,AX3]=8000	'5894
N32920	\$MA_AC_FILTER_TIME[AX3]=0	'4290	N35120	\$MA_GEAR_STEP_MIN_VELO[0,AX3]=50	'5b70
N32930	\$MA_POSCTRL_OUT_FILTER_ENABLE[AX3]=0	'6edc	N35120	\$MA_GEAR_STEP_MIN_VELO[1,AX3]=50	'5c06
N32940	\$MA_POSCTRL_OUT_FILTER_TIME[AX3]=0	'6b2a	N35120	\$MA_GEAR_STEP_MIN_VELO[2,AX3]=400	'5d8c
N32950	\$MA_POSCTRL_DAMPING[AX3]=0	'4e14	N35120	\$MA_GEAR_STEP_MIN_VELO[3,AX3]=800	'6004
N32960	\$MA_POSCTRL_ZERO_ZONE[0,AX3]=0	'663a	N35120	\$MA_GEAR_STEP_MIN_VELO[4,AX3]=1500	'5d0a
N32960	\$MA_POSCTRL_ZERO_ZONE[1,AX3]=0	'669e	N35120	\$MA_GEAR_STEP_MIN_VELO[5,AX3]=3000	'5f6a
N33000	\$MA_FIPO_TYPE[AX3]=2	'42ea	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[0,AX3]=500	'6836
N33050	\$MA_LUBRICATION_DIST[AX3]=0	'5154	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[1,AX3]=500	'6868
N33100	\$MA_COMPRESS_POS_TOL[AX3]=0.1	'7a18	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[2,AX3]=1000	'693e
N34000	\$MA_REFP_CAM_IS_ACTIVE[AX3]=1	'60e8	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[3,AX3]=2000	'6ba6
N34010	\$MA_REFP_CAM_DIR_IS_MINUS[AX3]=0	'7684	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[4,AX3]=4000	'67f2
N34020	\$MA_REFP_VELO_SEARCH_CAM[AX3]=5000	'6e34	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[5,AX3]=8000	'6838
N34030	\$MA_REFP_MAX_CAM_DIST[AX3]=10000	'61a4	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[0,AX3]=5	'69f2
N34040	\$MA_REFP_VELO_SEARCH_MARKER[0,AX3]=500	'7952	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[1,AX3]=5	'6a24
N34040	\$MA_REFP_VELO_SEARCH_MARKER[1,AX3]=250	'7c1c	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[2,AX3]=10	'6a9a
N34050	\$MA_REFP_SEARCH_MARKER_REVERSE[0,AX3]=0	'7a4c	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[3,AX3]=20	'6d02
N34050	\$MA_REFP_SEARCH_MARKER_REVERSE[1,AX3]=0	'7ae2	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[4,AX3]=40	'694e
N34060	\$MA_REFP_MAX_MARKER_DIST[0,AX3]=25	'6f1a	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[5,AX3]=80	'6994
N34060	\$MA_REFP_MAX_MARKER_DIST[1,AX3]=25	'6f4c	N35150	\$MA_SPIND_DES_VELO_TOL[AX3]=0.1	'5eca
N34070	\$MA_REFP_VELO_POS[AX3]=2000	'5b26	N35160	\$MA_SPIND_EXTERN_VELO_LIMIT[AX3]=1000	'67c6
N34080	\$MA_REFP_MOVE_DIST[0,AX3]=63.43	'5f28	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[0,AX3]=30	'6e3a
N34080	\$MA_REFP_MOVE_DIST[1,AX3]=0	'5362	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[1,AX3]=30	'6e9e
N34090	\$MA_REFP_MOVE_DIST_CORR[0,AX3]=0	'7068	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[2,AX3]=25	'6f0e
N34090	\$MA_REFP_MOVE_DIST_CORR[1,AX3]=0	'7130	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[3,AX3]=20	'703a
N34092	\$MA_REFP_CAM_SHIFT[0,AX3]=0	'52ee	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[4,AX3]=15	'6d80
N34092	\$MA_REFP_CAM_SHIFT[1,AX3]=0	'5384	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[5,AX3]=10	'6d78
N34100	\$MA_REFP_SET_POS[0,AX3]=0	'58d4	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[0,AX3]=30	'7f46
N34100	\$MA_REFP_SET_POS[1,AX3]=0	'5906	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[1,AX3]=30	'800e
N34100	\$MA_REFP_SET_POS[2,AX3]=0	'596c	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[2,AX3]=25	'801e
N34100	\$MA_REFP_SET_POS[3,AX3]=0	'5a3c	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[3,AX3]=20	'8276
N34102	\$MA_REFP_SYNC_ENCS[AX3]=0	'58ec	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[4,AX3]=15	'7c9c
N34110	\$MA_REFP_CYCLE_NR[AX3]=3	'535e	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[5,AX3]=10	'7c8c
N34120	\$MA_REFP_BERO_LOW_ACTIVE[AX3]=0	'7310	N35220	\$MA_ACCEL_REDUCTION_SPEED_POINT[AX3]=1	'6ed0
N34200	\$MA_ENC_REFP_MODE[0,AX3]=1	'4f8e	N35230	\$MA_ACCEL_REDUCTION_FACTOR[AX3]=0	'627c
N34200	\$MA_ENC_REFP_MODE[1,AX3]=1	'4ff2	N35240	\$MA_ACCEL_TYPE_DRIVE[AX3]=0	'4d46
N34210	\$MA_ENC_REFP_STATE[0,AX3]=0	'50ca	N35242	\$MA_ACCEL_REDUCTION_TYPE[AX3]=1	'5902
N34210	\$MA_ENC_REFP_STATE[1,AX3]=0	'5160	N35300	\$MA_SPIND_POSCTRL_VELO[AX3]=500	'5ff6
N34220	\$MA_ENC_ABS_TURNS_MODULO[0,AX3]=4096	'75f6	N35310	\$MA_SPIND_POSIT_DELAY_TIME[0,AX3]=0	'67c0
N34220	\$MA_ENC_ABS_TURNS_MODULO[1,AX3]=4096	'7628	N35310	\$MA_SPIND_POSIT_DELAY_TIME[1,AX3]=0.05	'6ba8
N34230	\$MA_ENC_SERIAL_NUMBER[0,AX3]=0	'5ac8	N35310	\$MA_SPIND_POSIT_DELAY_TIME[2,AX3]=0.1	'6d38
N34230	\$MA_ENC_SERIAL_NUMBER[1,AX3]=0	'5b2c	N35310	\$MA_SPIND_POSIT_DELAY_TIME[3,AX3]=0.2	'7140
N34232	\$MA_EVERY_ENC_SERIAL_NUMBER[0,AX3]=1	'6f92	N35310	\$MA_SPIND_POSIT_DELAY_TIME[4,AX3]=0.4	'6ac4
N34232	\$MA_EVERY_ENC_SERIAL_NUMBER[1,AX3]=1	'705a	N35310	\$MA_SPIND_POSIT_DELAY_TIME[5,AX3]=0.8	'6b76

N35350	\$MA_SPIND_POSITIONING_DIR[AX3]=3	'75f6	N36302	\$MA_ENC_FREQ_LIMIT_LOW[1,AX3]=99.9	'6f34
N35400	\$MA_SPIND_OSCILL_DES_VELO[AX3]=500	'7a56	N36310	\$MA_ENC_ZERO_MONITORING[0,AX3]=0	'76a6
N35410	\$MA_SPIND_OSCILL_ACCEL[AX3]=16	'6616	N36310	\$MA_ENC_ZERO_MONITORING[1,AX3]=0	'776e
N35430	\$MA_SPIND_OSCILL_START_DIR[AX3]=0	'6cc4	N36400	\$MA_CONTOUR_TOL[AX3]=2	'4f62
N35440	\$MA_SPIND_OSCILL_TIME_CW[AX3]=1	'7348	N36500	\$MA_ENC_CHANGE_TOL[AX3]=0	'5abc
N35450	\$MA_SPIND_OSCILL_TIME_CCW[AX3]=0.5	'77ca	N36510	\$MA_ENC_DIFF_TOL[AX3]=0	'5386
N35500	\$MA_SPIND_ON_SPEED_AT_IPO_START[AX3]=1	'79f0	N36520	\$MA_DES_VELO_LIMIT[AX3]=125	'54c0
N35510	\$MA_SPIND_STOPPED_AT_IPO_START[AX3]=0	'7810	N36600	\$MA_BRAKE_MODE_CHOICE[AX3]=1	'5a9c
N35590	\$MA_PARAMSET_CHANGE_ENABLE[AX3]=0	'58a6	N36610	\$MA_AX_EMERGENCY_STOP_TIME[AX3]=0.05	'667c
N36000	\$MA_STOP_LIMIT_COARSE[AX3]=0.04	'6a18	N36620	\$MA_SERVO_DISABLE_DELAY_TIME[AX3]=0.1	'7620
N36010	\$MA_STOP_LIMIT_FINE[AX3]=0.01	'59e8	N36690	\$MA_AXIS_DIAGNOSIS[AX3]='H0'	'62a2
N36012	\$MA_STOP_LIMIT_FACTOR[0,AX3]=1	'5fb2	N36700	\$MA_DRIFT_ENABLE[AX3]=0	'4400
N36012	\$MA_STOP_LIMIT_FACTOR[1,AX3]=1	'6016	N36710	\$MA_DRIFT_LIMIT[0,AX3]=0	'3f22
N36012	\$MA_STOP_LIMIT_FACTOR[2,AX3]=1	'60e2	N36720	\$MA_DRIFT_VALUE[0,AX3]=0	'40bc
N36012	\$MA_STOP_LIMIT_FACTOR[3,AX3]=1	'6282	N36730	\$MA_DRIVE_SIGNAL_TRACKING[AX3]=0	'70f8
N36012	\$MA_STOP_LIMIT_FACTOR[4,AX3]=1	'5fba	N36750	\$MA_AA_OFF_MODE[AX3]=0	'54be
N36012	\$MA_STOP_LIMIT_FACTOR[5,AX3]=1	'6026	N37000	\$MA_FIXED_STOP_MODE[AX3]=0	'574e
N36020	\$MA_POSITIONING_TIME[AX3]=1	'5472	N37002	\$MA_FIXED_STOP_CONTROL[AX3]=0	'66f6
N36030	\$MA_STANDSTILL_POS_TOL[AX3]=0.2	'6088	N37010	\$MA_FIXED_STOP_TORQUE_DEF[AX3]=5	'6158
N36040	\$MA_STANDSTILL_DELAY_TIME[AX3]=0.4	'58ca	N37012	\$MA_FIXED_STOP_TORQUE_RAMP_TIME[AX3]=0	'71e0
N36042	\$MA_FOC_STANDSTILL_DELAY_TIME[AX3]=0.4	'6dea	N37020	\$MA_FIXED_STOP_WINDOW_DEF[AX3]=1	'6e90
N36050	\$MA_CLAMP_POS_TOL[AX3]=0.5	'5312	N37030	\$MA_FIXED_STOP_THRESHOLD[AX3]=2	'60da
N36060	\$MA_STANDSTILL_VELO_TOL[AX3]=5	'5c7c	N37040	\$MA_FIXED_STOP_BY_SENSOR[AX3]=0	'6cf0
N36100	\$MA_POS_LIMIT_MINUS[AX3]=-512	'5488	N37050	\$MA_FIXED_STOP_ALARM_MASK[AX3]=1	'6c78
N36110	\$MA_POS_LIMIT_PLUS[AX3]=2	'4668	N37052	\$MA_FIXED_STOP_ALARM_REACTION[AX3]='H0'	'7b26
N36120	\$MA_POS_LIMIT_MINUS2[AX3]=-116.853	'5e24	N37060	\$MA_FIXED_STOP_ACKN_MASK[AX3]=0	'7466
N36130	\$MA_POS_LIMIT_PLUS2[AX3]=500	'4c86	N37070	\$MA_FIXED_STOP_ANA_TORQUE[AX3]=5	'6608
N36200	\$MA_AX_VELO_LIMIT[0,AX3]=45000	'48a0	N37080	\$MA_FOC_ACTIVATION_MODE[AX3]=0	'6978
N36200	\$MA_AX_VELO_LIMIT[1,AX3]=45000	'4904	N37100	\$MA_GANTRY_AXIS_TYPE[AX3]=0	'5a9a
N36200	\$MA_AX_VELO_LIMIT[2,AX3]=45000	'49d0	N37110	\$MA_GANTRY_POS_TOL_WARNING[AX3]=0	'78d6
N36200	\$MA_AX_VELO_LIMIT[3,AX3]=0	'4918	N37120	\$MA_GANTRY_POS_TOL_ERROR[AX3]=0	'7aa0
N36200	\$MA_AX_VELO_LIMIT[4,AX3]=0	'4650	N37130	\$MA_GANTRY_POS_TOL_REF[AX3]=0	'6a6e
N36200	\$MA_AX_VELO_LIMIT[5,AX3]=0	'46bc	N37140	\$MA_GANTRY_BREAK_UP[AX3]=0	'6008
N36210	\$MA_CTRLOUT_LIMIT[0,AX3]=110	'4b9e	N37400	\$MA_EPS_TLIFT_TANG_STEP[AX3]=5	'5d56
N36220	\$MA_CTRLOUT_LIMIT_TIME[0,AX3]=1	'5644	N37402	\$MA_TANG_OFFSET[AX3]=0	'5440
N36300	\$MA_ENC_FREQ_LIMIT[0,AX3]=300000	'5a16	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[0,AX3]=71	'7168
N36300	\$MA_ENC_FREQ_LIMIT[1,AX3]=300000	'5aac	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[1,AX3]=0	'6dc8
N36302	\$MA_ENC_FREQ_LIMIT_LOW[0,AX3]=99.9	'6e9e			

Axis Setting Data - Z Axis

N43120	\$\$SA_DEFAULT_SCALE_FACTOR_AXIS[AX3]=1	'7852	N43500	\$\$SA_FIXED_STOP_SWITCH[AX3]=0	'6074
N43200	\$\$SA_SPIND_S[AX3]=0	'429e	N43510	\$\$SA_FIXED_STOP_TORQUE[AX3]=5	'5798
N43202	\$\$SA_SPIND_CONSTCUT_S[AX3]=0	'6c10	N43520	\$\$SA_FIXED_STOP_WINDOW[AX3]=1	'64d0
N43210	\$\$SA_SPIND_MIN_VELO_G25[AX3]=0	'5bec	N43700	\$\$SA_OSCILL_REVERSE_POS1[AX3]=0	'72be
N43220	\$\$SA_SPIND_MAX_VELO_G26[AX3]=1000	'5af8	N43710	\$\$SA_OSCILL_REVERSE_POS2[AX3]=0	'73bc
N43230	\$\$SA_SPIND_MAX_VELO_LIMS[AX3]=100	'5de6	N43720	\$\$SA_OSCILL_DWELL_TIME1[AX3]=0	'62e0
N43240	\$\$SA_M19_SPOS[AX3]=0	'50aa	N43730	\$\$SA_OSCILL_DWELL_TIME2[AX3]=0	'6416
N43250	\$\$SA_M19_SPOSMODE[AX3]=0	'57e6	N43740	\$\$SA_OSCILL_VELO[AX3]=0	'52e4
N43300	\$\$SA_ASSIGN_FEED_PER_REV_SOURCE[AX3]=0	'8d06	N43750	\$\$SA_OSCILL_NUM_SPARK_CYCLES[AX3]=0	'8438
N43350	\$\$SA_AA_OFF_LIMIT[AX3]=100000000	'5576	N43760	\$\$SA_OSCILL_END_POS[AX3]=0	'5da8
N43400	\$\$SA_WORKAREA_PLUS_ENABLE[AX3]=0	'6d52	N43770	\$\$SA_OSCILL_CTRL_MASK[AX3]='H0'	'721c
N43410	\$\$SA_WORKAREA_MINUS_ENABLE[AX3]=0	'685c	N43780	\$\$SA_OSCILL_IS_ACTIVE[AX3]=0	'66c4
N43420	\$\$SA_WORKAREA_LIMIT_PLUS[AX3]=2000	'66f8	N43900	\$\$SA_TEMP_COMP_ABS_VALUE[AX3]=0	'5e16
N43430	\$\$SA_WORKAREA_LIMIT_MINUS[AX3]=-2000	'72aa	N43910	\$\$SA_TEMP_COMP_SLOPE[AX3]=0	'5708
			N43920	\$\$SA_TEMP_COMP_REF_POSITION[AX3]=0	'6d7e

Axis Machine Data - 4 Axis

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N30100 $MA_CTRLOUT_SEGMENT_NR[0,AX4]=1 '63ec
N30110 $MA_CTRLOUT_MODULE_NR[0,AX4]=4 '55a0
N30120 $MA_CTRLOUT_NR[0,AX4]=1 '466c
N30130 $MA_CTRLOUT_TYPE[0,AX4]=0 '4b14
N30132 $MA_IS_VIRTUAL_AX[0,AX4]=0 '4020
N30200 $MA_NUM_ENCS[AX4]=1 '4470
N30210 $MA_ENC_SEGMENT_NR[0,AX4]=1 '55ec
N30210 $MA_ENC_SEGMENT_NR[1,AX4]=1 '5682
N30220 $MA_ENC_MODULE_NR[0,AX4]=4 '47d4
N30220 $MA_ENC_MODULE_NR[1,AX4]=1 '4866
N30230 $MA_ENC_INPUT_NR[0,AX4]=1 '4a18
N30230 $MA_ENC_INPUT_NR[1,AX4]=1 '4a4a
N30240 $MA_ENC_TYPE[0,AX4]=0 '3b7e
N30240 $MA_ENC_TYPE[1,AX4]=0 '3bb0
N30242 $MA_ENC_IS_INDEPENDENT[0,AX4]=0 '50b2
N30242 $MA_ENC_IS_INDEPENDENT[1,AX4]=0 '5148
N30250 $MA_ACT_POS_ABS[0,AX4]=2647816 '567a
N30250 $MA_ACT_POS_ABS[1,AX4]=0 '4b6e
N30260 $MA_ABS_INC_RATIO[0,AX4]=4 '5334
N30260 $MA_ABS_INC_RATIO[1,AX4]=4 '5398
N30300 $MA_IS_ROT_AX[AX4]=1 '4198
N30310 $MA_ROT_IS_MODULO[AX4]=1 '541a
N30320 $MA_DISPLAY_IS_MODULO[AX4]=1 '5718
N30330 $MA_MODULO_RANGE[AX4]=360 '4df2
N30350 $MA_SIMU_AX_VDI_OUTPUT[AX4]=0 '66f0
N30450 $MA_IS_CONCURRENT_POS_AX[AX4]=0 '6c2e
N30500 $MA_INDEX_AX_ASSIGN_POS_TAB[AX4]=0 '6d2a
N30501 $MA_INDEX_AX_NUMERATOR[AX4]=0 '4c52
N30502 $MA_INDEX_AX_DENOMINATOR[AX4]=1 '5c7e
N30503 $MA_INDEX_AX_OFFSET[AX4]=0 '5078
N30505 $MA_HIRTH_IS_ACTIVE[AX4]=0 '4b34
N30550 $MA_AXCONF_ASSIGN_MASTER_CHAN[AX4]=0 '7alc
N30552 $MA_AUTO_GET_TYPE[AX4]=1 '4832
N30600 $MA_FIX_POINT_POS[0,AX4]=0 '4ce6
N30600 $MA_FIX_POINT_POS[1,AX4]=0 '4d4a
N30800 $MA_WORKAREA_CHECK_TYPE[AX4]=0 '6444
N31000 $MA_ENC_IS_LINEAR[0,AX4]=0 '4484
N31000 $MA_ENC_IS_LINEAR[1,AX4]=0 '44e8
N31010 $MA_ENC_GRID_POINT_DIST[0,AX4]=0.01 '65c6
N31010 $MA_ENC_GRID_POINT_DIST[1,AX4]=0.01 '668e
N31020 $MA_ENC_RESOL[0,AX4]=2048 '4414
N31020 $MA_ENC_RESOL[1,AX4]=2048 '4478
N31030 $MA_LEADSCREW_PITCH[AX4]=10 '4c3a
N31040 $MA_ENC_IS_DIRECT[0,AX4]=0 '4572
N31040 $MA_ENC_IS_DIRECT[1,AX4]=0 '45d6
N31050 $MA_DRIVE_AX_RATIO_DENOM[0,AX4]=1 '596c
N31050 $MA_DRIVE_AX_RATIO_DENOM[1,AX4]=1 '599e
N31050 $MA_DRIVE_AX_RATIO_DENOM[2,AX4]=1 '5a04
N31050 $MA_DRIVE_AX_RATIO_DENOM[3,AX4]=1 '5ad4
N31050 $MA_DRIVE_AX_RATIO_DENOM[4,AX4]=1 '5970
N31050 $MA_DRIVE_AX_RATIO_DENOM[5,AX4]=1 '59a6
N31060 $MA_DRIVE_AX_RATIO_NUMERA[0,AX4]=180 '555e
N31060 $MA_DRIVE_AX_RATIO_NUMERA[1,AX4]=180 '55c2
N31060 $MA_DRIVE_AX_RATIO_NUMERA[2,AX4]=180 '568e
N31060 $MA_DRIVE_AX_RATIO_NUMERA[3,AX4]=1 '572e
N31060 $MA_DRIVE_AX_RATIO_NUMERA[4,AX4]=1 '5466
N31060 $MA_DRIVE_AX_RATIO_NUMERA[5,AX4]=1 '54d2
N31070 $MA_DRIVE_ENC_RATIO_DENOM[0,AX4]=1 '5d3a
N31070 $MA_DRIVE_ENC_RATIO_DENOM[1,AX4]=1 '5d9e
N31080 $MA_DRIVE_ENC_RATIO_NUMERA[0,AX4]=1 '5dc6
N31080 $MA_DRIVE_ENC_RATIO_NUMERA[1,AX4]=1 '5e5c
N31090 $MA_JOG_INCR_WEIGHT[0,AX4]=0.001 '60e4
N31090 $MA_JOG_INCR_WEIGHT[1,AX4]=0.00254 '64ba
N31122 $MA_BERO_DELAY_TIME_PLUS[0,AX4]=0.00011 '6900
N31122 $MA_BERO_DELAY_TIME_PLUS[1,AX4]=0.00011 '6932
N31123 $MA_BERO_DELAY_TIME_MINUS[0,AX4]=7.8EX-05
'6f64

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N31123 $MA_BERO_DELAY_TIME_MINUS[1,AX4]=7.8EX-05
'6fc8
N31200 $MA_SCALING_FACTOR_G70_G71[AX4]=25.4 '81e6
N31500 $MA_AXIS_NUMBER_FOR_MONITORING[0,AX4]=0 '75e0
N31510 $MA_OFFSETVALUE_FOR_MONITORING[0,AX4]=0 '71e2
N31520 $MA_GAIN_FOR_MONITORING[0,AX4]=1 '6f4c
N32000 $MA_MAX_AX_VELO[AX4]=10 '43ec
N32010 $MA_JOG_VELO_RAPID[AX4]=5 '550e
N32020 $MA_JOG_VELO[AX4]=2 '4898
N32040 $MA_JOG_REV_VELO_RAPID[AX4]=1 '6602
N32050 $MA_JOG_REV_VELO[AX4]=1 '58b0
N32060 $MA_POS_AX_VELO[AX4]=1 '4982
N32070 $MA_CORR_VELO[AX4]=50 '48be
N32074 $MA_FRAME_OR_CORRPOS_NOTALLOWED[AX4]='H0'
'9448
N32080 $MA_HANDWH_MAX_INCR_SIZE[AX4]=0 '6818
N32082 $MA_HANDWH_MAX_INCR_VELO_SIZE[AX4]=1.388888889
'7e78
N32084 $MA_HANDWH_STOP_COND[AX4]='Hff' '6af8
N32090 $MA_HANDWH_VELO_OVERLAY_FACTOR[AX4]=0.5 '7d62
N32100 $MA_AX_MOTION_DIR[AX4]=1 '48ea
N32110 $MA_ENC_FEEDBACK_POL[0,AX4]=1 '610c
N32110 $MA_ENC_FEEDBACK_POL[1,AX4]=1 '613e
N32200 $MA_POSCTRL_GAIN[0,AX4]=1 '52c8
N32200 $MA_POSCTRL_GAIN[1,AX4]=1 '52fa
N32200 $MA_POSCTRL_GAIN[2,AX4]=1 '5360
N32200 $MA_POSCTRL_GAIN[3,AX4]=1 '5430
N32200 $MA_POSCTRL_GAIN[4,AX4]=1 '52cc
N32200 $MA_POSCTRL_GAIN[5,AX4]=1 '5302
N32250 $MA_RATED_OUTVAL[0,AX4]=80 '4082
N32260 $MA_RATED_VELO[0,AX4]=3000 '3b44
N32300 $MA_MAX_AX_ACCEL[AX4]=2.777777778 '7376
N32310 $MA_MAX_ACCEL_OVL_FACTOR[AX4]=1.2 '6cde
N32400 $MA_AX_JERK_ENABLE[AX4]=0 '4608
N32402 $MA_AX_JERK_MODE[AX4]=1 '49f0
N32410 $MA_AX_JERK_TIME[AX4]=0.001 '4a18
N32420 $MA_JOG_AND_POS_JERK_ENABLE[AX4]=0 '7b56
N32430 $MA_JOG_AND_POS_MAX_JERK[AX4]=2777.77778
'9bba
N32431 $MA_MAX_AX_JERK[AX4]=2777777.778 '6872
N32432 $MA_PATH_TRANS_JERK_LIM[AX4]=2777777.778 '813e
N32433 $MA_SOFT_ACCEL_FACTOR[AX4]=1 '6430
N32434 $MA_G00_ACCEL_FACTOR[AX4]=1 '5bfa
N32435 $MA_G00_JERK_FACTOR[AX4]=2 '6156
N32440 $MA_LOOKAH_FREQUENCY[AX4]=100 '53f8
N32450 $MA_BACKLASH[0,AX4]=0 '3e08
N32450 $MA_BACKLASH[1,AX4]=0 '3e3a
N32452 $MA_BACKLASH_FACTOR[0,AX4]=1 '5654
N32452 $MA_BACKLASH_FACTOR[1,AX4]=1 '571c
N32452 $MA_BACKLASH_FACTOR[2,AX4]=1 '58b4
N32452 $MA_BACKLASH_FACTOR[3,AX4]=1 '5bf4
N32452 $MA_BACKLASH_FACTOR[4,AX4]=1 '5664
N32452 $MA_BACKLASH_FACTOR[5,AX4]=1 '573c
N32460 $MA_TORQUE_OFFSET[0,AX4]=0 '4566
N32490 $MA_FRICT_COMP_MODE[0,AX4]=1 '559e
N32500 $MA_FRICT_COMP_ENABLE[AX4]=0 '4e18
N32510 $MA_FRICT_COMP_ADAPT_ENABLE[0,AX4]=0 '635e
N32520 $MA_FRICT_COMP_CONST_MAX[0,AX4]=0 '7358
N32530 $MA_FRICT_COMP_CONST_MIN[0,AX4]=0 '76e8
N32540 $MA_FRICT_COMP_TIME[0,AX4]=0.015 '52a0
N32550 $MA_FRICT_COMP_ACCEL1[0,AX4]=0 '548c
N32560 $MA_FRICT_COMP_ACCEL2[0,AX4]=0 '5692
N32570 $MA_FRICT_COMP_ACCEL3[0,AX4]=0 '5ab2
N32580 $MA_FRICT_COMP_INC_FACTOR[0,AX4]=0 '6812
N32610 $MA_VELO_FFW_WEIGHT[0,AX4]=1 '65e8
N32610 $MA_VELO_FFW_WEIGHT[1,AX4]=1 '66b0
N32610 $MA_VELO_FFW_WEIGHT[2,AX4]=1 '6848
N32610 $MA_VELO_FFW_WEIGHT[3,AX4]=1 '6b88
N32610 $MA_VELO_FFW_WEIGHT[4,AX4]=1 '65f8
N32610 $MA_VELO_FFW_WEIGHT[5,AX4]=1 '66d0

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N32620 \$MA_FFW_MODE[AX4]=1 '42e8
 N32630 \$MA_FFW_ACTIVATION_MODE[AX4]=1 '67f2
 N32650 \$MA_AX_INERTIA[AX4]=0 '3892
 N32700 \$MA_ENC_COMP_ENABLE[0,AX4]=0 '5b88
 N32700 \$MA_ENC_COMP_ENABLE[1,AX4]=0 '5c50
 N32710 \$MA_CEC_ENABLE[AX4]=0 '457c
 N32711 \$MA_CEC_SCALING_SYSTEM_METRIC[AX4]=1 '82de
 N32720 \$MA_CEC_MAX_SUM[AX4]=1 '58c8
 N32730 \$MA_CEC_MAX_VELO[AX4]=10 '5d60
 N32750 \$MA_TEMP_COMP_TYPE[AX4]='H0' '5030
 N32760 \$MA_COMP_ADD_VELO_FACTOR[AX4]=0.01 '7a74
 N32800 \$MA_EQUIV_CURRCTRL_TIME[0,AX4]=0.0005 '5818
 N32800 \$MA_EQUIV_CURRCTRL_TIME[1,AX4]=0.0005 '58e0
 N32800 \$MA_EQUIV_CURRCTRL_TIME[2,AX4]=0.0005 '5a78
 N32800 \$MA_EQUIV_CURRCTRL_TIME[3,AX4]=0.0005 '5db8
 N32800 \$MA_EQUIV_CURRCTRL_TIME[4,AX4]=0.0005 '5828
 N32800 \$MA_EQUIV_CURRCTRL_TIME[5,AX4]=0.0005 '5900
 N32810 \$MA_EQUIV_SPEEDCTRL_TIME[0,AX4]=0.00245 '5ae6
 N32810 \$MA_EQUIV_SPEEDCTRL_TIME[1,AX4]=0.0025 '5a7a
 N32810 \$MA_EQUIV_SPEEDCTRL_TIME[2,AX4]=0.0025 '5ae0
 N32810 \$MA_EQUIV_SPEEDCTRL_TIME[3,AX4]=0.0025 '5bb0
 N32810 \$MA_EQUIV_SPEEDCTRL_TIME[4,AX4]=0.0025 '5a4c
 N32810 \$MA_EQUIV_SPEEDCTRL_TIME[5,AX4]=0.0025 '5a82
 N32900 \$MA_DYN_MATCH_ENABLE[AX4]=0 '4a8c
 N32910 \$MA_DYN_MATCH_TIME[0,AX4]=0 '419c
 N32910 \$MA_DYN_MATCH_TIME[1,AX4]=0 '4232
 N32910 \$MA_DYN_MATCH_TIME[2,AX4]=0 '4364
 N32910 \$MA_DYN_MATCH_TIME[3,AX4]=0 '45d4
 N32910 \$MA_DYN_MATCH_TIME[4,AX4]=0 '41a8
 N32910 \$MA_DYN_MATCH_TIME[5,AX4]=0 '424a
 N32920 \$MA_AC_FILTER_TIME[AX4]=0 '412c
 N32930 \$MA_POSCTRL_OUT_FILTER_ENABLE[AX4]=0 '694c
 N32940 \$MA_POSCTRL_OUT_FILTER_TIME[AX4]=0 '6862
 N32950 \$MA_POSCTRL_DAMPING[AX4]=0 '4b4c
 N32960 \$MA_POSCTRL_ZERO_ZONE[0,AX4]=0 '6372
 N32960 \$MA_POSCTRL_ZERO_ZONE[1,AX4]=0 '63d6
 N33000 \$MA_FIPO_TYPE[AX4]=2 '3d5a
 N33050 \$MA_LUBRICATION_DIST[AX4]=999999 '5376
 N33100 \$MA_COMPRESS_POS_TOL[AX4]=0.1 '75ec
 N34000 \$MA_REFP_CAM_IS_ACTIVE[AX4]=1 '5f84
 N34010 \$MA_REFP_CAM_DIR_IS_MINUS[AX4]=0 '70f4
 N34020 \$MA_REFP_VELO_SEARCH_CAM[AX4]=2 '6944
 N34030 \$MA_REFP_MAX_CAM_DIST[AX4]=10000 '5c14
 N34040 \$MA_REFP_VELO_SEARCH_MARKER[0,AX4]=0.1 '7566
 N34040 \$MA_REFP_VELO_SEARCH_MARKER[1,AX4]=0.1 '762e
 N34050 \$MA_REFP_SEARCH_MARKER_REVERSE[0,AX4]=0 '7620
 N34050 \$MA_REFP_SEARCH_MARKER_REVERSE[1,AX4]=0 '76b6
 N34060 \$MA_REFP_MAX_MARKER_DIST[0,AX4]=20 '6d7c
 N34060 \$MA_REFP_MAX_MARKER_DIST[1,AX4]=20 '6dae
 N34070 \$MA_REFP_VELO_POS[AX4]=1 '5314
 N34080 \$MA_REFP_MOVE_DIST[0,AX4]=0 '4ea0
 N34080 \$MA_REFP_MOVE_DIST[1,AX4]=0 '4f36
 N34090 \$MA_REFP_MOVE_DIST_CORR[0,AX4]=0 '6ad8
 N34090 \$MA_REFP_MOVE_DIST_CORR[1,AX4]=0 '6ba0
 N34092 \$MA_REFP_CAM_SHIFT[0,AX4]=0 '4ec2
 N34092 \$MA_REFP_CAM_SHIFT[1,AX4]=0 '4f58
 N34100 \$MA_REFP_SET_POS[0,AX4]=0 '5770
 N34100 \$MA_REFP_SET_POS[1,AX4]=0 '57a2
 N34100 \$MA_REFP_SET_POS[2,AX4]=0 '5808
 N34100 \$MA_REFP_SET_POS[3,AX4]=0 '58d8
 N34102 \$MA_REFP_SYNC_ENCS[AX4]=0 '5788
 N34110 \$MA_REFP_CYCLE_NR[AX4]=4 '49a2
 N34120 \$MA_REFP_BERO_LOW_ACTIVE[AX4]=0 '6ee4
 N34200 \$MA_ENC_REFP_MODE[0,AX4]=1 '4cc6
 N34200 \$MA_ENC_REFP_MODE[1,AX4]=1 '4d2a
 N34210 \$MA_ENC_REFP_STATE[0,AX4]=0 '4c9e
 N34210 \$MA_ENC_REFP_STATE[1,AX4]=0 '4d34
 N34220 \$MA_ENC_ABS_TURNS_MODULO[0,AX4]=4096 '7492
 N34220 \$MA_ENC_ABS_TURNS_MODULO[1,AX4]=4096 '74c4
 N34230 \$MA_ENC_SERIAL_NUMBER[0,AX4]=0 '5800
 N34230 \$MA_ENC_SERIAL_NUMBER[1,AX4]=0 '5864
 N34232 \$MA_EVERY_ENC_SERIAL_NUMBER[0,AX4]=1 '6a02
 N34232 \$MA_EVERY_ENC_SERIAL_NUMBER[1,AX4]=1 '6aca
 N34300 \$MA_ENC_REFP_MARKER_DIST[0,AX4]=10 '72ce
 N34300 \$MA_ENC_REFP_MARKER_DIST[1,AX4]=10 '7300
 N34310 \$MA_ENC_MARKER_INC[0,AX4]=0.02 '56d4
 N34310 \$MA_ENC_MARKER_INC[1,AX4]=0.02 '576a
 N34320 \$MA_ENC_INVERS[0,AX4]=0 '4480
 N34320 \$MA_ENC_INVERS[1,AX4]=0 '4516
 N34330 \$MA_REFP_STOP_AT_ABS_MARKER[0,AX4]=1 '818a
 N34330 \$MA_REFP_STOP_AT_ABS_MARKER[1,AX4]=1 '8252
 N35000 \$MA_SPIND_ASSIGN_TO_MACHAX[AX4]=0 '7290
 N35010 \$MA_GEAR_STEP_CHANGE_ENABLE[AX4]=0 '69a6
 N35012 \$MA_GEAR_STEP_CHANGE_POSITION[0,AX4]=0 '791a
 N35012 \$MA_GEAR_STEP_CHANGE_POSITION[1,AX4]=0 '797e
 N35012 \$MA_GEAR_STEP_CHANGE_POSITION[2,AX4]=0 '7a4a
 N35012 \$MA_GEAR_STEP_CHANGE_POSITION[3,AX4]=0 '7bea
 N35012 \$MA_GEAR_STEP_CHANGE_POSITION[4,AX4]=0 '7922
 N35012 \$MA_GEAR_STEP_CHANGE_POSITION[5,AX4]=0 '798e
 N35020 \$MA_SPIND_DEFAULT_MODE[AX4]=0 '4ab2
 N35030 \$MA_SPIND_DEFAULT_ACT_MASK[AX4]='H0' '64c2
 N35032 \$MA_SPIND_FUNC_RESET_MODE[AX4]='H0' '676e
 N35035 \$MA_SPIND_FUNCTION_MASK[AX4]='H110' '67f2
 N35040 \$MA_SPIND_ACTIVE_AFTER_RESET[AX4]=0 '67f6
 N35100 \$MA_SPIND_VELO_LIMIT[AX4]=10000 '4db8
 N35110 \$MA_GEAR_STEP_MAX_VELO[0,AX4]=500 '53ee
 N35110 \$MA_GEAR_STEP_MAX_VELO[1,AX4]=500 '5484
 N35110 \$MA_GEAR_STEP_MAX_VELO[2,AX4]=1000 '55d6
 N35110 \$MA_GEAR_STEP_MAX_VELO[3,AX4]=2000 '5912
 N35110 \$MA_GEAR_STEP_MAX_VELO[4,AX4]=4000 '53be
 N35110 \$MA_GEAR_STEP_MAX_VELO[5,AX4]=8000 '5468
 N35120 \$MA_GEAR_STEP_MIN_VELO[0,AX4]=50 '5744
 N35120 \$MA_GEAR_STEP_MIN_VELO[1,AX4]=50 '57da
 N35120 \$MA_GEAR_STEP_MIN_VELO[2,AX4]=400 '5960
 N35120 \$MA_GEAR_STEP_MIN_VELO[3,AX4]=800 '5bd8
 N35120 \$MA_GEAR_STEP_MIN_VELO[4,AX4]=1500 '58de
 N35120 \$MA_GEAR_STEP_MIN_VELO[5,AX4]=3000 '5b3e
 N35130 \$MA_GEAR_STEP_MAX_VELO_LIMIT[0,AX4]=500 '66d2
 N35130 \$MA_GEAR_STEP_MAX_VELO_LIMIT[1,AX4]=500 '6704
 N35130 \$MA_GEAR_STEP_MAX_VELO_LIMIT[2,AX4]=1000 '67da
 N35130 \$MA_GEAR_STEP_MAX_VELO_LIMIT[3,AX4]=2000 '6a42
 N35130 \$MA_GEAR_STEP_MAX_VELO_LIMIT[4,AX4]=4000 '668e
 N35130 \$MA_GEAR_STEP_MAX_VELO_LIMIT[5,AX4]=8000 '66d4
 N35140 \$MA_GEAR_STEP_MIN_VELO_LIMIT[0,AX4]=5 '688e
 N35140 \$MA_GEAR_STEP_MIN_VELO_LIMIT[1,AX4]=5 '68c0
 N35140 \$MA_GEAR_STEP_MIN_VELO_LIMIT[2,AX4]=10 '6936
 N35140 \$MA_GEAR_STEP_MIN_VELO_LIMIT[3,AX4]=20 '6b9e
 N35140 \$MA_GEAR_STEP_MIN_VELO_LIMIT[4,AX4]=40 '67ea
 N35140 \$MA_GEAR_STEP_MIN_VELO_LIMIT[5,AX4]=80 '6830
 N35150 \$MA_SPIND_DES_VELO_TOL[AX4]=0.1 '5d66
 N35160 \$MA_SPIND_EXTERN_VELO_LIMIT[AX4]=1000 '64fe
 N35200 \$MA_GEAR_STEP_SPEEDCTRL_ACCEL[0,AX4]=30 '6b72
 N35200 \$MA_GEAR_STEP_SPEEDCTRL_ACCEL[1,AX4]=30 '6bd6
 N35200 \$MA_GEAR_STEP_SPEEDCTRL_ACCEL[2,AX4]=25 '6c46
 N35200 \$MA_GEAR_STEP_SPEEDCTRL_ACCEL[3,AX4]=20 '6d72
 N35200 \$MA_GEAR_STEP_SPEEDCTRL_ACCEL[4,AX4]=15 '6ab8
 N35200 \$MA_GEAR_STEP_SPEEDCTRL_ACCEL[5,AX4]=10 '6ab0
 N35210 \$MA_GEAR_STEP_POSCTRL_ACCEL[0,AX4]=30 '79b6
 N35210 \$MA_GEAR_STEP_POSCTRL_ACCEL[1,AX4]=30 '7a7e
 N35210 \$MA_GEAR_STEP_POSCTRL_ACCEL[2,AX4]=25 '7a8e
 N35210 \$MA_GEAR_STEP_POSCTRL_ACCEL[3,AX4]=20 '7ce6
 N35210 \$MA_GEAR_STEP_POSCTRL_ACCEL[4,AX4]=15 '770c
 N35210 \$MA_GEAR_STEP_POSCTRL_ACCEL[5,AX4]=10 '76fc
 N35220 \$MA_ACCEL_REDUCTION_SPEED_POINT[AX4]=1 '6c08
 N35230 \$MA_ACCEL_REDUCTION_FACTOR[AX4]=0 '6118
 N35240 \$MA_ACCEL_TYPE_DRIVE[AX4]=0 '491a
 N35242 \$MA_ACCEL_REDUCTION_TYPE[AX4]=1 '54d6
 N35300 \$MA_SPIND_POSCTRL_VELO[AX4]=500 '5e92
 N35310 \$MA_SPIND_POSIT_DELAY_TIME[0,AX4]=0 '6394
 N35310 \$MA_SPIND_POSIT_DELAY_TIME[1,AX4]=0.05 '677c
 N35310 \$MA_SPIND_POSIT_DELAY_TIME[2,AX4]=0.1 '690c
 N35310 \$MA_SPIND_POSIT_DELAY_TIME[3,AX4]=0.2 '6d14

N35310	\$MA_SPIND_POSIT_DELAY_TIME[4,AX4]=0.4	'6698	N36302	\$MA_ENC_FREQ_LIMIT_LOW[0,AX4]=99.9	'6a72
N35310	\$MA_SPIND_POSIT_DELAY_TIME[5,AX4]=0.8	'674a	N36302	\$MA_ENC_FREQ_LIMIT_LOW[1,AX4]=99.9	'6b08
N35350	\$MA_SPIND_POSITIONING_DIR[AX4]=3	'7066	N36310	\$MA_ENC_ZERO_MONITORING[0,AX4]=0	'7116
N35400	\$MA_SPIND_OSCILL_DES_VELO[AX4]=500	'74c6	N36310	\$MA_ENC_ZERO_MONITORING[1,AX4]=0	'71de
N35410	\$MA_SPIND_OSCILL_ACCEL[AX4]=16	'64b2	N36400	\$MA_CONTOUR_TOL[AX4]=1	'4c34
N35430	\$MA_SPIND_OSCILL_START_DIR[AX4]=0	'6b60	N36500	\$MA_ENC_CHANGE_TOL[AX4]=0.1	'5ad4
N35440	\$MA_SPIND_OSCILL_TIME_CW[AX4]=1	'6f1c	N36510	\$MA_ENC_DIFF_TOL[AX4]=0	'4f5a
N35450	\$MA_SPIND_OSCILL_TIME_CCW[AX4]=0.5	'723a	N36520	\$MA_DES_VELO_LIMIT[AX4]=125	'535c
N35500	\$MA_SPIND_ON_SPEED_AT_IPO_START[AX4]=1	'7728	N36600	\$MA_BRAKE_MODE_CHOICE[AX4]=1	'550c
N35510	\$MA_SPIND_STOPPED_AT_IPO_START[AX4]=0	'76ac	N36610	\$MA_AX_EMERGENCY_STOP_TIME[AX4]=0.05	'6518
N35590	\$MA_PARAMSET_CHANGE_ENABLE[AX4]=0	'5742	N36620	\$MA_SERVO_DISABLE_DELAY_TIME[AX4]=0.1	'71f4
N36000	\$MA_STOP_LIMIT_COARSE[AX4]=0.04	'6488	N36690	\$MA_AXIS_DIAGNOSIS[AX4]='H0'	'613e
N36010	\$MA_STOP_LIMIT_FINE[AX4]=0.01	'5720	N36700	\$MA_DRIFT_ENABLE[AX4]=0	'3fd4
N36012	\$MA_STOP_LIMIT_FACTOR[0,AX4]=1	'5cea	N36710	\$MA_DRIFT_LIMIT[0,AX4]=0	'3992
N36012	\$MA_STOP_LIMIT_FACTOR[1,AX4]=1	'5d4e	N36720	\$MA_DRIFT_VALUE[0,AX4]=0	'3b2c
N36012	\$MA_STOP_LIMIT_FACTOR[2,AX4]=1	'5e1a	N36730	\$MA_DRIVE_SIGNAL_TRACKING[AX4]=0	'6b68
N36012	\$MA_STOP_LIMIT_FACTOR[3,AX4]=1	'5fba	N36750	\$MA_AA_OFF_MODE[AX4]=0	'51f6
N36012	\$MA_STOP_LIMIT_FACTOR[4,AX4]=1	'5cf2	N37000	\$MA_FIXED_STOP_MODE[AX4]=0	'5486
N36012	\$MA_STOP_LIMIT_FACTOR[5,AX4]=1	'5d5e	N37002	\$MA_FIXED_STOP_CONTROL[AX4]=0	'6592
N36020	\$MA_POSITIONING_TIME[AX4]=1	'5046	N37010	\$MA_FIXED_STOP_TORQUE_DEF[AX4]=5	'5bc8
N36030	\$MA_STANDSTILL_POS_TOL[AX4]=0.2	'5f24	N37012	\$MA_FIXED_STOP_TORQUE_RAMP_TIME[AX4]=0	'6f18
N36040	\$MA_STANDSTILL_DELAY_TIME[AX4]=0.4	'533a	N37020	\$MA_FIXED_STOP_WINDOW_DEF[AX4]=1	'6900
N36042	\$MA_FOC_STANDSTILL_DELAY_TIME[AX4]=0.4	'685a	N37030	\$MA_FIXED_STOP_THRESHOLD[AX4]=2	'5cae
N36050	\$MA_CLAMP_POS_TOL[AX4]=0.5	'4d82	N37040	\$MA_FIXED_STOP_BY_SENSOR[AX4]=0	'68c4
N36060	\$MA_STANDSTILL_VELO_TOL[AX4]=5	'59b4	N37050	\$MA_FIXED_STOP_ALARM_MASK[AX4]=1	'66e8
N36100	\$MA_POS_LIMIT_MINUS[AX4]=-100000000	'512a	N37052	\$MA_FIXED_STOP_ALARM_REACTION[AX4]='H0'	'7596
N36110	\$MA_POS_LIMIT_PLUS[AX4]=100000000	'472c	N37060	\$MA_FIXED_STOP_ACKN_MASK[AX4]=0	'703a
N36120	\$MA_POS_LIMIT_MINUS2[AX4]=-100000000	'5600	N37070	\$MA_FIXED_STOP_ANA_TORQUE[AX4]=5	'6078
N36130	\$MA_POS_LIMIT_PLUS2[AX4]=100000000	'4c86	N37080	\$MA_FOC_ACTIVATION_MODE[AX4]=0	'66b0
N36200	\$MA_AX_VELO_LIMIT[0,AX4]=11	'4476	N37100	\$MA_GANTRY_AXIS_TYPE[AX4]=0	'566e
N36200	\$MA_AX_VELO_LIMIT[1,AX4]=11	'44da	N37110	\$MA_GANTRY_POS_TOL_WARNING[AX4]=0	'7772
N36200	\$MA_AX_VELO_LIMIT[2,AX4]=11	'45a6	N37120	\$MA_GANTRY_POS_TOL_ERROR[AX4]=0	'7674
N36200	\$MA_AX_VELO_LIMIT[3,AX4]=31.94444444	'4fac	N37130	\$MA_GANTRY_POS_TOL_REF[AX4]=0	'690a
N36200	\$MA_AX_VELO_LIMIT[4,AX4]=31.94444444	'4ce4	N37140	\$MA_GANTRY_BREAK_UP[AX4]=0	'5d40
N36200	\$MA_AX_VELO_LIMIT[5,AX4]=31.94444444	'4d50	N37400	\$MA_EPS_TLIFT_TANG_STEP[AX4]=5	'5a8e
N36210	\$MA_CTRLOUT_LIMIT[0,AX4]=110	'48d6	N37402	\$MA_TANG_OFFSET[AX4]=0	'5178
N36220	\$MA_CTRLOUT_LIMIT_TIME[0,AX4]=0	'51b4	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[0,AX4]=72	'6e6e
N36300	\$MA_ENC_FREQ_LIMIT[0,AX4]=300000	'55ea	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[1,AX4]=0	'699c
N36300	\$MA_ENC_FREQ_LIMIT[1,AX4]=300000	'5680			

Axis Setting Data - 4 Axis

N43120	\$\$SA_DEFAULT_SCALE_FACTOR_AXIS[AX4]=1	'72c2	N43500	\$\$SA_FIXED_STOP_SWITCH[AX4]=0	'5ae4
N43200	\$\$SA_SPIND_S[AX4]=0	'3fd6	N43510	\$\$SA_FIXED_STOP_TORQUE[AX4]=5	'5208
N43202	\$\$SA_SPIND_CONSTCUT_S[AX4]=0	'67e4	N43520	\$\$SA_FIXED_STOP_WINDOW[AX4]=1	'5f40
N43210	\$\$SA_SPIND_MIN_VELO_G25[AX4]=0	'5a88	N43700	\$\$SA_OSCILL_REVERSE_POS1[AX4]=0	'6ff6
N43220	\$\$SA_SPIND_MAX_VELO_G26[AX4]=1000	'5994	N43710	\$\$SA_OSCILL_REVERSE_POS2[AX4]=0	'70f4
N43230	\$\$SA_SPIND_MAX_VELO_LIMS[AX4]=100	'5b1e	N43720	\$\$SA_OSCILL_DWELL_TIME1[AX4]=0	'617c
N43240	\$\$SA_M19_SPOS[AX4]=0	'4c7e	N43730	\$\$SA_OSCILL_DWELL_TIME2[AX4]=0	'62b2
N43250	\$\$SA_M19_SPOSMODE[AX4]=0	'53ba	N43740	\$\$SA_OSCILL_VELO[AX4]=0	'501c
N43300	\$\$SA_ASSIGN_FEED_PER_REV_SOURCE[AX4]=0	'8ba2	N43750	\$\$SA_OSCILL_NUM_SPARK_CYCLES[AX4]=0	'8170
N43350	\$\$SA_AA_OFF_LIMIT[AX4]=100000000	'514a	N43760	\$\$SA_OSCILL_END_POS[AX4]=0	'5c44
N43400	\$\$SA_WORKAREA_PLUS_ENABLE[AX4]=0	'6926	N43770	\$\$SA_OSCILL_CTRL_MASK[AX4]='H0'	'6df0
N43410	\$\$SA_WORKAREA_MINUS_ENABLE[AX4]=0	'62cc	N43780	\$\$SA_OSCILL_IS_ACTIVE[AX4]=0	'6298
N43420	\$\$SA_WORKAREA_LIMIT_PLUS[AX4]=100000000	'65da	N43900	\$\$SA_TEMP_COMP_ABS_VALUE[AX4]=0	'5b4e
N43430	\$\$SA_WORKAREA_LIMIT_MINUS[AX4]=-100000000	'6fbc	N43910	\$\$SA_TEMP_COMP_SLOPE[AX4]=0	'5440
			N43920	\$\$SA_TEMP_COMP_REF_POSITION[AX4]=0	'6c1a

Axis Machine Data - 5 Axis

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N30100 $MA_CTRLOUT_SEGMENT_NR[0,AX5]=1 '648e
N30110 $MA_CTRLOUT_MODULE_NR[0,AX5]=5 '5642
N30120 $MA_CTRLOUT_NR[0,AX5]=1 '470e
N30130 $MA_CTRLOUT_TYPE[0,AX5]=0 '4b4a
N30132 $MA_IS_VIRTUAL_AX[0,AX5]=0 '408c
N30200 $MA_NUM_ENCS[AX5]=1 '4512
N30210 $MA_ENC_SEGMENT_NR[0,AX5]=1 '568e
N30210 $MA_ENC_SEGMENT_NR[1,AX5]=1 '5724
N30220 $MA_ENC_MODULE_NR[0,AX5]=5 '4876
N30220 $MA_ENC_MODULE_NR[1,AX5]=1 '48d2
N30230 $MA_ENC_INPUT_NR[0,AX5]=1 '4a4e
N30230 $MA_ENC_INPUT_NR[1,AX5]=1 '4a80
N30240 $MA_ENC_TYPE[0,AX5]=0 '3bb4
N30240 $MA_ENC_TYPE[1,AX5]=0 '3be6
N30242 $MA_ENC_IS_INDEPENDENT[0,AX5]=0 '5154
N30242 $MA_ENC_IS_INDEPENDENT[1,AX5]=0 '51ea
N30250 $MA_ACT_POS_ABS[0,AX5]=2647816 '5752
N30250 $MA_ACT_POS_ABS[1,AX5]=0 '4c46
N30260 $MA_ABS_INC_RATIO[0,AX5]=4 '53a0
N30260 $MA_ABS_INC_RATIO[1,AX5]=4 '5404
N30300 $MA_IS_ROT_AX[AX5]=1 '4270
N30310 $MA_ROT_IS_MODULO[AX5]=1 '54f2
N30320 $MA_DISPLAY_IS_MODULO[AX5]=1 '57f0
N30330 $MA_MODULO_RANGE[AX5]=360 '4e94
N30350 $MA_SIMU_AX_VDI_OUTPUT[AX5]=0 '6726
N30450 $MA_IS_CONCURRENT_POS_AX[AX5]=0 '6cd0
N30500 $MA_INDEX_AX_ASSIGN_POS_TAB[AX5]=0 '6d96
N30501 $MA_INDEX_AX_NUMERATOR[AX5]=0 '4c88
N30502 $MA_INDEX_AX_DENOMINATOR[AX5]=1 '5d20
N30503 $MA_INDEX_AX_OFFSET[AX5]=0 '50e4
N30505 $MA_HIRTH_IS_ACTIVE[AX5]=0 '4ba0
N30550 $MA_AXCONF_ASSIGN_MASTER_CHAN[AX5]=0 '7af4
N30552 $MA_AUTO_GET_TYPE[AX5]=1 '490a
N30600 $MA_FIX_POINT_POS[0,AX5]=0 '4d52
N30600 $MA_FIX_POINT_POS[1,AX5]=0 '4db6
N30800 $MA_WORKAREA_CHECK_TYPE[AX5]=0 '64b0
N31000 $MA_ENC_IS_LINEAR[0,AX5]=0 '44f0
N31000 $MA_ENC_IS_LINEAR[1,AX5]=0 '4554
N31010 $MA_ENC_GRID_POINT_DIST[0,AX5]=0.01 '669e
N31010 $MA_ENC_GRID_POINT_DIST[1,AX5]=0.01 '6766
N31020 $MA_ENC_RESOL[0,AX5]=2048 '4480
N31020 $MA_ENC_RESOL[1,AX5]=2048 '44e4
N31030 $MA_LEADSCREW_PITCH[AX5]=10 '4ca6
N31040 $MA_ENC_IS_DIRECT[0,AX5]=0 '45de
N31040 $MA_ENC_IS_DIRECT[1,AX5]=0 '4642
N31050 $MA_DRIVE_AX_RATIO_DENOM[0,AX5]=1 '59a2
N31050 $MA_DRIVE_AX_RATIO_DENOM[1,AX5]=1 '59d4
N31050 $MA_DRIVE_AX_RATIO_DENOM[2,AX5]=1 '5a3a
N31050 $MA_DRIVE_AX_RATIO_DENOM[3,AX5]=1 '5b0a
N31050 $MA_DRIVE_AX_RATIO_DENOM[4,AX5]=1 '59a6
N31050 $MA_DRIVE_AX_RATIO_DENOM[5,AX5]=1 '59dc
N31060 $MA_DRIVE_AX_RATIO_NUMERA[0,AX5]=180 '55ca
N31060 $MA_DRIVE_AX_RATIO_NUMERA[1,AX5]=180 '562e
N31060 $MA_DRIVE_AX_RATIO_NUMERA[2,AX5]=180 '56fa
N31060 $MA_DRIVE_AX_RATIO_NUMERA[3,AX5]=1 '579a
N31060 $MA_DRIVE_AX_RATIO_NUMERA[4,AX5]=1 '54d2
N31060 $MA_DRIVE_AX_RATIO_NUMERA[5,AX5]=1 '553e
N31070 $MA_DRIVE_ENC_RATIO_DENOM[0,AX5]=1 '5da6
N31070 $MA_DRIVE_ENC_RATIO_DENOM[1,AX5]=1 '5e0a
N31080 $MA_DRIVE_ENC_RATIO_NUMERA[0,AX5]=1 '5e68
N31080 $MA_DRIVE_ENC_RATIO_NUMERA[1,AX5]=1 '5efe
N31090 $MA_JOG_INCR_WEIGHT[0,AX5]=0.001 '61bc
N31090 $MA_JOG_INCR_WEIGHT[1,AX5]=0.00254 '6592
N31122 $MA_BERO_DELAY_TIME_PLUS[0,AX5]=0.00011 '6936
N31122 $MA_BERO_DELAY_TIME_PLUS[1,AX5]=0.00011 '6968
N31123 $MA_BERO_DELAY_TIME_MINUS[0,AX5]=7.8EX-05
'6fd0
N31123 $MA_BERO_DELAY_TIME_MINUS[1,AX5]=7.8EX-05
'7034
N31200 $MA_SCALING_FACTOR_G70_G71[AX5]=25.4 '821c
N31500 $MA_AXIS_NUMBER_FOR_MONITORING[0,AX5]=0 '7682
N31510 $MA_OFFSETVALUE_FOR_MONITORING[0,AX5]=0 '7284
N31520 $MA_GAIN_FOR_MONITORING[0,AX5]=1 '7024
N32000 $MA_MAX_AX_VELO[AX5]=10 '4458
N32010 $MA_JOG_VELO_RAPID[AX5]=5 '5544
N32020 $MA_JOG_VELO[AX5]=2 '493a
N32040 $MA_JOG_REV_VELO_RAPID[AX5]=1 '6638
N32050 $MA_JOG_REV_VELO[AX5]=1 '5952
N32060 $MA_POS_AX_VELO[AX5]=1 '49ee
N32070 $MA_CORR_VELO[AX5]=50 '4996
N32074 $MA_FRAME_OR_CORRPOS_NOTALLOWED[AX5]='H0'
'94b4
N32080 $MA_HANDWH_MAX_INCR_SIZE[AX5]=0 '68ba
N32082 $MA_HANDWH_MAX_INCR_VELO_SIZE[AX5]=1.388888889
'7f50
N32084 $MA_HANDWH_STOP_COND[AX5]='Hff' '6b9a
N32090 $MA_HANDWH_VELO_OVERLAY_FACTOR[AX5]=0.5 '7d98
N32100 $MA_AX_MOTION_DIR[AX5]=1 '49c2
N32110 $MA_ENC_FEEDBACK_POL[0,AX5]=1 '6142
N32110 $MA_ENC_FEEDBACK_POL[1,AX5]=1 '6174
N32200 $MA_POSCTRL_GAIN[0,AX5]=1 '52fe
N32200 $MA_POSCTRL_GAIN[1,AX5]=1 '5330
N32200 $MA_POSCTRL_GAIN[2,AX5]=1 '5396
N32200 $MA_POSCTRL_GAIN[3,AX5]=1 '5466
N32200 $MA_POSCTRL_GAIN[4,AX5]=1 '5302
N32200 $MA_POSCTRL_GAIN[5,AX5]=1 '5338
N32250 $MA_RATED_OUTVAL[0,AX5]=80 '40b8
N32260 $MA_RATED_VELO[0,AX5]=3000 '3be6
N32300 $MA_MAX_AX_ACCEL[AX5]=2.777777778 '7418
N32310 $MA_MAX_ACCEL_OVL_FACTOR[AX5]=1.2 '6d80
N32400 $MA_AX_JERK_ENABLE[AX5]=0 '463e
N32402 $MA_AX_JERK_MODE[AX5]=1 '4a92
N32410 $MA_AX_JERK_TIME[AX5]=0.001 '4aba
N32420 $MA_JOG_AND_POS_JERK_ENABLE[AX5]=0 '7bc2
N32430 $MA_JOG_AND_POS_MAX_JERK[AX5]=2777.777778
'9c5c
N32431 $MA_MAX_AX_JERK[AX5]=2777777.778 '68de
N32432 $MA_PATH_TRANS_JERK_LIM[AX5]=2777777.778 '81aa
N32433 $MA_SOFT_ACCEL_FACTOR[AX5]=1 '6508
N32434 $MA_G00_ACCEL_FACTOR[AX5]=1 '5c9c
N32435 $MA_G00_JERK_FACTOR[AX5]=2 '61c2
N32440 $MA_LOOKAH_FREQUENCY[AX5]=100 '549a
N32450 $MA_BACKLASH[0,AX5]=0 '3e3e
N32450 $MA_BACKLASH[1,AX5]=0 '3e70
N32452 $MA_BACKLASH_FACTOR[0,AX5]=1 '572c
N32452 $MA_BACKLASH_FACTOR[1,AX5]=1 '57f4
N32452 $MA_BACKLASH_FACTOR[2,AX5]=1 '598c
N32452 $MA_BACKLASH_FACTOR[3,AX5]=1 '5ccc
N32452 $MA_BACKLASH_FACTOR[4,AX5]=1 '573c
N32452 $MA_BACKLASH_FACTOR[5,AX5]=1 '5814
N32460 $MA_TORQUE_OFFSET[0,AX5]=0 '45d2
N32490 $MA_FRICT_COMP_MODE[0,AX5]=1 '5676
N32500 $MA_FRICT_COMP_ENABLE[AX5]=0 '4ef0
N32510 $MA_FRICT_COMP_ADAPT_ENABLE[0,AX5]=0 '6436
N32520 $MA_FRICT_COMP_CONST_MAX[0,AX5]=0 '738e
N32530 $MA_FRICT_COMP_CONST_MIN[0,AX5]=0 '771e
N32540 $MA_FRICT_COMP_TIME[0,AX5]=0.015 '5378
N32550 $MA_FRICT_COMP_ACCEL1[0,AX5]=0 '54f8
N32560 $MA_FRICT_COMP_ACCEL2[0,AX5]=0 '56fe
N32570 $MA_FRICT_COMP_ACCEL3[0,AX5]=0 '5b1e
N32580 $MA_FRICT_COMP_INC_FACTOR[0,AX5]=0 '687e
N32610 $MA_VELO_FFW_WEIGHT[0,AX5]=1 '66c0
N32610 $MA_VELO_FFW_WEIGHT[1,AX5]=1 '6788
N32610 $MA_VELO_FFW_WEIGHT[2,AX5]=1 '6920
N32610 $MA_VELO_FFW_WEIGHT[3,AX5]=1 '6c60
N32610 $MA_VELO_FFW_WEIGHT[4,AX5]=1 '66d0
N32610 $MA_VELO_FFW_WEIGHT[5,AX5]=1 '67a8

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N32620	\$MA_FFW_MODE[AX5]=1	'438a	N34232	\$MA_EVERY_ENC_SERIAL_NUMBER[0,AX5]=1	'6ada
N32630	\$MA_FFW_ACTIVATION_MODE[AX5]=1	'685e	N34232	\$MA_EVERY_ENC_SERIAL_NUMBER[1,AX5]=1	'6ba2
N32650	\$MA_AX_INERTIA[AX5]=0	'38c8	N34300	\$MA_ENC_REFP_MARKER_DIST[0,AX5]=10	'7304
N32700	\$MA_ENC_COMP_ENABLE[0,AX5]=0	'5c60	N34300	\$MA_ENC_REFP_MARKER_DIST[1,AX5]=10	'7336
N32700	\$MA_ENC_COMP_ENABLE[1,AX5]=0	'5d28	N34310	\$MA_ENC_MARKER_INC[0,AX5]=0.02	'5776
N32710	\$MA_CEC_ENABLE[AX5]=0	'45b2	N34310	\$MA_ENC_MARKER_INC[1,AX5]=0.02	'580c
N32711	\$MA_CEC_SCALING_SYSTEM_METRIC[AX5]=1	'83b6	N34320	\$MA_ENC_INVERS[0,AX5]=0	'4522
N32720	\$MA_CEC_MAX_SUM[AX5]=1	'5934	N34320	\$MA_ENC_INVERS[1,AX5]=0	'45b8
N32730	\$MA_CEC_MAX_VELO[AX5]=10	'5e02	N34330	\$MA_REFP_STOP_AT_ABS_MARKER[0,AX5]=1	'8262
N32750	\$MA_TEMP_COMP_TYPE[AX5]='H0'	'5066	N34330	\$MA_REFP_STOP_AT_ABS_MARKER[1,AX5]=1	'832a
N32760	\$MA_COMP_ADD_VELO_FACTOR[AX5]=0.01	'7b16	N35000	\$MA_SPIND_ASSIGN_TO_MACHAX[AX5]=0	'72c6
N32800	\$MA_EQUIV_CURRCTRL_TIME[0,AX5]=0.0005	'58f0	N35010	\$MA_GEAR_STEP_CHANGE_ENABLE[AX5]=0	'6a12
N32800	\$MA_EQUIV_CURRCTRL_TIME[1,AX5]=0.0005	'59b8	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[0,AX5]=0	'7986
N32800	\$MA_EQUIV_CURRCTRL_TIME[2,AX5]=0.0005	'5b50	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[1,AX5]=0	'79ea
N32800	\$MA_EQUIV_CURRCTRL_TIME[3,AX5]=0.0005	'5e90	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[2,AX5]=0	'7ab6
N32800	\$MA_EQUIV_CURRCTRL_TIME[4,AX5]=0.0005	'5900	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[3,AX5]=0	'7c56
N32800	\$MA_EQUIV_CURRCTRL_TIME[5,AX5]=0.0005	'59d8	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[4,AX5]=0	'798e
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[0,AX5]=0.00245	'5b1c	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[5,AX5]=0	'79fa
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[1,AX5]=0.0025	'5ab0	N35020	\$MA_SPIND_DEFAULT_MODE[AX5]=0	'4ae8
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[2,AX5]=0.0025	'5b16	N35030	\$MA_SPIND_DEFAULT_ACT_MASK[AX5]='H0'	'64f8
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[3,AX5]=0.0025	'5be6	N35032	\$MA_SPIND_FUNC_RESET_MODE[AX5]='H0'	'6846
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[4,AX5]=0.0025	'5a82	N35035	\$MA_SPIND_FUNCTION_MASK[AX5]='H110'	'685e
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[5,AX5]=0.0025	'5ab8	N35040	\$MA_SPIND_ACTIVE_AFTER_RESET[AX5]=0	'6898
N32900	\$MA_DYN_MATCH_ENABLE[AX5]=0	'4b2e	N35100	\$MA_SPIND_VELO_LIMIT[AX5]=10000	'4e5a
N32910	\$MA_DYN_MATCH_TIME[0,AX5]=0	'423e	N35110	\$MA_GEAR_STEP_MAX_VELO[0,AX5]=500	'5490
N32910	\$MA_DYN_MATCH_TIME[1,AX5]=0	'42d4	N35110	\$MA_GEAR_STEP_MAX_VELO[1,AX5]=500	'5526
N32910	\$MA_DYN_MATCH_TIME[2,AX5]=0	'4406	N35110	\$MA_GEAR_STEP_MAX_VELO[2,AX5]=1000	'5678
N32910	\$MA_DYN_MATCH_TIME[3,AX5]=0	'4676	N35110	\$MA_GEAR_STEP_MAX_VELO[3,AX5]=2000	'59b4
N32910	\$MA_DYN_MATCH_TIME[4,AX5]=0	'424a	N35110	\$MA_GEAR_STEP_MAX_VELO[4,AX5]=4000	'5460
N32910	\$MA_DYN_MATCH_TIME[5,AX5]=0	'42ec	N35110	\$MA_GEAR_STEP_MAX_VELO[5,AX5]=8000	'550a
N32920	\$MA_AC_FILTER_TIME[AX5]=0	'4162	N35120	\$MA_GEAR_STEP_MIN_VELO[0,AX5]=50	'57e6
N32930	\$MA_POSCTRL_OUT_FILTER_ENABLE[AX5]=0	'6a24	N35120	\$MA_GEAR_STEP_MIN_VELO[1,AX5]=50	'587c
N32940	\$MA_POSCTRL_OUT_FILTER_TIME[AX5]=0	'68ce	N35120	\$MA_GEAR_STEP_MIN_VELO[2,AX5]=400	'5a02
N32950	\$MA_POSCTRL_DAMPING[AX5]=0	'4bb8	N35120	\$MA_GEAR_STEP_MIN_VELO[3,AX5]=800	'5c7a
N32960	\$MA_POSCTRL_ZERO_ZONE[0,AX5]=0	'63de	N35120	\$MA_GEAR_STEP_MIN_VELO[4,AX5]=1500	'5980
N32960	\$MA_POSCTRL_ZERO_ZONE[1,AX5]=0	'6442	N35120	\$MA_GEAR_STEP_MIN_VELO[5,AX5]=3000	'5be0
N33000	\$MA_FIPO_TYPE[AX5]=2	'3e32	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[0,AX5]=500	'6708
N33050	\$MA_LUBRICATION_DIST[AX5]=999999	'5418	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[1,AX5]=500	'673a
N33100	\$MA_COMPRESS_POS_TOL[AX5]=0.1	'768e	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[2,AX5]=1000	'6810
N34000	\$MA_REFP_CAM_IS_ACTIVE[AX5]=1	'5fba	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[3,AX5]=2000	'6a78
N34010	\$MA_REFP_CAM_DIR_IS_MINUS[AX5]=0	'71cc	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[4,AX5]=4000	'66c4
N34020	\$MA_REFP_VELO_SEARCH_CAM[AX5]=2	'69e6	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[5,AX5]=8000	'670a
N34030	\$MA_REFP_MAX_CAM_DIST[AX5]=10000	'5cec	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[0,AX5]=5	'68c4
N34040	\$MA_REFP_VELO_SEARCH_MARKER[0,AX5]=0.1	'763e	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[1,AX5]=5	'68f6
N34040	\$MA_REFP_VELO_SEARCH_MARKER[1,AX5]=0.1	'7706	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[2,AX5]=10	'696c
N34050	\$MA_REFP_SEARCH_MARKER_REVERSE[0,AX5]=0	'76c2	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[3,AX5]=20	'6bd4
N34050	\$MA_REFP_SEARCH_MARKER_REVERSE[1,AX5]=0	'7758	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[4,AX5]=40	'6820
N34060	\$MA_REFP_MAX_MARKER_DIST[0,AX5]=20	'6db2	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[5,AX5]=80	'6866
N34060	\$MA_REFP_MAX_MARKER_DIST[1,AX5]=20	'6de4	N35150	\$MA_SPIND_DES_VELO_TOL[AX5]=0.1	'5d9c
N34070	\$MA_REFP_VELO_POS[AX5]=1	'53ec	N35160	\$MA_SPIND_EXTERN_VELO_LIMIT[AX5]=1000	'656a
N34080	\$MA_REFP_MOVE_DIST[0,AX5]=0	'4f42	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[0,AX5]=30	'6bde
N34080	\$MA_REFP_MOVE_DIST[1,AX5]=0	'4fd8	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[1,AX5]=30	'6c42
N34090	\$MA_REFP_MOVE_DIST_CORR[0,AX5]=0	'6bb0	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[2,AX5]=25	'6cb2
N34090	\$MA_REFP_MOVE_DIST_CORR[1,AX5]=0	'6c78	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[3,AX5]=20	'6dde
N34092	\$MA_REFP_CAM_SHIFT[0,AX5]=0	'4f64	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[4,AX5]=15	'6b24
N34092	\$MA_REFP_CAM_SHIFT[1,AX5]=0	'4ffa	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[5,AX5]=10	'6b1c
N34100	\$MA_REFP_SET_POS[0,AX5]=0	'57a6	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[0,AX5]=30	'7a8e
N34100	\$MA_REFP_SET_POS[1,AX5]=0	'57d8	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[1,AX5]=30	'7b56
N34100	\$MA_REFP_SET_POS[2,AX5]=0	'583e	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[2,AX5]=25	'7b66
N34100	\$MA_REFP_SET_POS[3,AX5]=0	'590e	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[3,AX5]=20	'7dbe
N34102	\$MA_REFP_SYNC_ENCS[AX5]=0	'57be	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[4,AX5]=15	'77e4
N34110	\$MA_REFP_CYCLE_NR[AX5]=4	'4a7a	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[5,AX5]=10	'77d4
N34120	\$MA_REFP_BERO_LOW_ACTIVE[AX5]=0	'6f86	N35220	\$MA_ACCEL_REDUCTION_SPEED_POINT[AX5]=1	'6c74
N34200	\$MA_ENC_REFP_MODE[0,AX5]=1	'4d32	N35230	\$MA_ACCEL_REDUCTION_FACTOR[AX5]=0	'614e
N34200	\$MA_ENC_REFP_MODE[1,AX5]=1	'4d96	N35240	\$MA_ACCEL_TYPE_DRIVE[AX5]=0	'49bc
N34210	\$MA_ENC_REFP_STATE[0,AX5]=0	'4d40	N35242	\$MA_ACCEL_REDUCTION_TYPE[AX5]=1	'5578
N34210	\$MA_ENC_REFP_STATE[1,AX5]=0	'4dd6	N35300	\$MA_SPIND_POSCTRL_VELO[AX5]=500	'5ec8
N34220	\$MA_ENC_ABS_TURNS_MODULO[0,AX5]=4096	'74c8	N35310	\$MA_SPIND_POSIT_DELAY_TIME[0,AX5]=0	'6436
N34220	\$MA_ENC_ABS_TURNS_MODULO[1,AX5]=4096	'74fa	N35310	\$MA_SPIND_POSIT_DELAY_TIME[1,AX5]=0.05	'681e
N34230	\$MA_ENC_SERIAL_NUMBER[0,AX5]=0	'586c	N35310	\$MA_SPIND_POSIT_DELAY_TIME[2,AX5]=0.1	'69ae
N34230	\$MA_ENC_SERIAL_NUMBER[1,AX5]=0	'58d0	N35310	\$MA_SPIND_POSIT_DELAY_TIME[3,AX5]=0.2	'6db6

N35310	\$MA_SPIND_POSIT_DELAY_TIME[4,AX5]=0.4	'673a	N36302	\$MA_ENC_FREQ_LIMIT_LOW[0,AX5]=99.9	'6b14
N35310	\$MA_SPIND_POSIT_DELAY_TIME[5,AX5]=0.8	'67ec	N36302	\$MA_ENC_FREQ_LIMIT_LOW[1,AX5]=99.9	'6baa
N35350	\$MA_SPIND_POSITIONING_DIR[AX5]=3	'713e	N36310	\$MA_ENC_ZERO_MONITORING[0,AX5]=0	'71ee
N35400	\$MA_SPIND_OSCILL_DES_VELO[AX5]=500	'759e	N36310	\$MA_ENC_ZERO_MONITORING[1,AX5]=0	'72b6
N35410	\$MA_SPIND_OSCILL_ACCEL[AX5]=16	'64e8	N36400	\$MA_CONTOUR_TOL[AX5]=1	'4ca0
N35430	\$MA_SPIND_OSCILL_START_DIR[AX5]=0	'6b96	N36500	\$MA_ENC_CHANGE_TOL[AX5]=0.1	'5b0a
N35440	\$MA_SPIND_OSCILL_TIME_CW[AX5]=1	'6fbe	N36510	\$MA_ENC_DIFF_TOL[AX5]=0	'4ffc
N35450	\$MA_SPIND_OSCILL_TIME_CCW[AX5]=0.5	'7312	N36520	\$MA_DES_VELO_LIMIT[AX5]=125	'5392
N35500	\$MA_SPIND_ON_SPEED_AT_IPO_START[AX5]=1	'7794	N36600	\$MA_BRAKE_MODE_CHOICE[AX5]=1	'55e4
N35510	\$MA_SPIND_STOPPED_AT_IPO_START[AX5]=0	'76e2	N36610	\$MA_AX_EMERGENCY_STOP_TIME[AX5]=0.05	'654e
N35590	\$MA_PARAMSET_CHANGE_ENABLE[AX5]=0	'5778	N36620	\$MA_SERVO_DISABLE_DELAY_TIME[AX5]=0.1	'7296
N36000	\$MA_STOP_LIMIT_COARSE[AX5]=0.04	'6560	N36690	\$MA_AXIS_DIAGNOSIS[AX5]='H0'	'6174
N36010	\$MA_STOP_LIMIT_FINE[AX5]=0.01	'578c	N36700	\$MA_DRIFT_ENABLE[AX5]=0	'4076
N36012	\$MA_STOP_LIMIT_FACTOR[0,AX5]=1	'5d56	N36710	\$MA_DRIFT_LIMIT[0,AX5]=0	'3a6a
N36012	\$MA_STOP_LIMIT_FACTOR[1,AX5]=1	'5dba	N36720	\$MA_DRIFT_VALUE[0,AX5]=0	'3c04
N36012	\$MA_STOP_LIMIT_FACTOR[2,AX5]=1	'5e86	N36730	\$MA_DRIVE_SIGNAL_TRACKING[AX5]=0	'6c40
N36012	\$MA_STOP_LIMIT_FACTOR[3,AX5]=1	'6026	N36750	\$MA_AA_OFF_MODE[AX5]=0	'5262
N36012	\$MA_STOP_LIMIT_FACTOR[4,AX5]=1	'5d5e	N37000	\$MA_FIXED_STOP_MODE[AX5]=0	'54f2
N36012	\$MA_STOP_LIMIT_FACTOR[5,AX5]=1	'5dca	N37002	\$MA_FIXED_STOP_CONTROL[AX5]=0	'65c8
N36020	\$MA_POSITIONING_TIME[AX5]=1	'50e8	N37010	\$MA_FIXED_STOP_TORQUE_DEF[AX5]=5	'5ca0
N36030	\$MA_STANDSTILL_POS_TOL[AX5]=0.2	'5f5a	N37012	\$MA_FIXED_STOP_TORQUE_RAMP_TIME[AX5]=0	'6f84
N36040	\$MA_STANDSTILL_DELAY_TIME[AX5]=0.4	'5412	N37020	\$MA_FIXED_STOP_WINDOW_DEF[AX5]=1	'69d8
N36042	\$MA_FOC_STANDSTILL_DELAY_TIME[AX5]=0.4	'6932	N37030	\$MA_FIXED_STOP_THRESHOLD[AX5]=2	'5d50
N36050	\$MA_CLAMP_POS_TOL[AX5]=0.5	'4e5a	N37040	\$MA_FIXED_STOP_BY_SENSOR[AX5]=0	'6966
N36060	\$MA_STANDSTILL_VELO_TOL[AX5]=5	'5a20	N37050	\$MA_FIXED_STOP_ALARM_MASK[AX5]=1	'67c0
N36100	\$MA_POS_LIMIT_MINUS[AX5]=-100000000	'5196	N37052	\$MA_FIXED_STOP_ALARM_REACTION[AX5]='H0'	'766e
N36110	\$MA_POS_LIMIT_PLUS[AX5]=100000000	'4762	N37060	\$MA_FIXED_STOP_ACKN_MASK[AX5]=0	'70dc
N36120	\$MA_POS_LIMIT_MINUS2[AX5]=-100000000	'56a2	N37070	\$MA_FIXED_STOP_ANA_TORQUE[AX5]=5	'6150
N36130	\$MA_POS_LIMIT_PLUS2[AX5]=100000000	'4cf2	N37080	\$MA_FOC_ACTIVATION_MODE[AX5]=0	'671c
N36200	\$MA_AX_VELO_LIMIT[0,AX5]=11	'44e2	N37100	\$MA_GANTRY_AXIS_TYPE[AX5]=0	'5710
N36200	\$MA_AX_VELO_LIMIT[1,AX5]=11	'4546	N37110	\$MA_GANTRY_POS_TOL_WARNING[AX5]=0	'77a8
N36200	\$MA_AX_VELO_LIMIT[2,AX5]=11	'4612	N37120	\$MA_GANTRY_POS_TOL_ERROR[AX5]=0	'7716
N36200	\$MA_AX_VELO_LIMIT[3,AX5]=31.94444444	'5018	N37130	\$MA_GANTRY_POS_TOL_REF[AX5]=0	'6940
N36200	\$MA_AX_VELO_LIMIT[4,AX5]=31.94444444	'4d50	N37140	\$MA_GANTRY_BREAK_UP[AX5]=0	'5dac
N36200	\$MA_AX_VELO_LIMIT[5,AX5]=31.94444444	'4dbc	N37400	\$MA_EPS_TLIFT_TANG_STEP[AX5]=5	'5afa
N36210	\$MA_CTRLOUT_LIMIT[0,AX5]=110	'4942	N37402	\$MA_TANG_OFFSET[AX5]=0	'51e4
N36220	\$MA_CTRLOUT_LIMIT_TIME[0,AX5]=0	'5256	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[0,AX5]=72	'6f10
N36300	\$MA_ENC_FREQ_LIMIT[0,AX5]=300000	'568c	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[1,AX5]=0	'6a3e
N36300	\$MA_ENC_FREQ_LIMIT[1,AX5]=300000	'5722			

Axis Setting Data - 5 Axis

N43120	\$\$SA_DEFAULT_SCALE_FACTOR_AXIS[AX5]=1	'739a	N43500	\$\$SA_FIXED_STOP_SWITCH[AX5]=0	'5bbc
N43200	\$\$SA_SPIND_S[AX5]=0	'4042	N43510	\$\$SA_FIXED_STOP_TORQUE[AX5]=5	'52e0
N43202	\$\$SA_SPIND_CONSTCUT_S[AX5]=0	'6886	N43520	\$\$SA_FIXED_STOP_WINDOW[AX5]=1	'6018
N43210	\$\$SA_SPIND_MIN_VELO_G25[AX5]=0	'5abe	N43700	\$\$SA_OSCILL_REVERSE_POS1[AX5]=0	'7062
N43220	\$\$SA_SPIND_MAX_VELO_G26[AX5]=8000	'5922	N43710	\$\$SA_OSCILL_REVERSE_POS2[AX5]=0	'7160
N43230	\$\$SA_SPIND_MAX_VELO_LIMS[AX5]=100	'5b8a	N43720	\$\$SA_OSCILL_DWELL_TIME1[AX5]=0	'61b2
N43240	\$\$SA_M19_SPOS[AX5]=0	'4d20	N43730	\$\$SA_OSCILL_DWELL_TIME2[AX5]=0	'62e8
N43250	\$\$SA_M19_SPOSMODE[AX5]=0	'545c	N43740	\$\$SA_OSCILL_VELO[AX5]=0	'5088
N43300	\$\$SA_ASSIGN_FEED_PER_REV_SOURCE[AX5]=0	'8bd8	N43750	\$\$SA_OSCILL_NUM_SPARK_CYCLES[AX5]=0	'81dc
N43350	\$\$SA_AA_OFF_LIMIT[AX5]=100000000	'51ec	N43760	\$\$SA_OSCILL_END_POS[AX5]=0	'5c7a
N43400	\$\$SA_WORKAREA_PLUS_ENABLE[AX5]=0	'69c8	N43770	\$\$SA_OSCILL_CTRL_MASK[AX5]='H0'	'6e92
N43410	\$\$SA_WORKAREA_MINUS_ENABLE[AX5]=0	'63a4	N43780	\$\$SA_OSCILL_IS_ACTIVE[AX5]=0	'633a
N43420	\$\$SA_WORKAREA_LIMIT_PLUS[AX5]=100000000	'6646	N43900	\$\$SA_TEMP_COMP_ABS_VALUE[AX5]=0	'5bba
N43430	\$\$SA_WORKAREA_LIMIT_MINUS[AX5]=-100000000	'705e	N43910	\$\$SA_TEMP_COMP_SLOPE[AX5]=0	'54ac
			N43920	\$\$SA_TEMP_COMP_REF_POSITION[AX5]=0	'6c50

Axis Machine Data - Spindle

N30100 \$MA_CTRLOUT_SEGMENT_NR[0,AX6]=1 '65d8
N30110 \$MA_CTRLOUT_MODULE_NR[0,AX6]=6 '578c
N30120 \$MA_CTRLOUT_NR[0,AX6]=1 '4858
N30130 \$MA_CTRLOUT_TYPE[0,AX6]=1 '4c80
N30132 \$MA_IS_VIRTUAL_AX[0,AX6]=0 '4168
N30200 \$MA_NUM_ENCS[AX6]=2 '4728
N30210 \$MA_ENC_SEGMENT_NR[0,AX6]=1 '57d8
N30210 \$MA_ENC_SEGMENT_NR[1,AX6]=1 '586e
N30220 \$MA_ENC_MODULE_NR[0,AX6]=6 '49c0
N30220 \$MA_ENC_MODULE_NR[1,AX6]=5 '49b6
N30230 \$MA_ENC_INPUT_NR[0,AX6]=1 '4abc
N30230 \$MA_ENC_INPUT_NR[1,AX6]=1 '4aee
N30240 \$MA_ENC_TYPE[0,AX6]=1 '3cea
N30240 \$MA_ENC_TYPE[1,AX6]=1 '3dlc
N30242 \$MA_ENC_IS_INDEPENDENT[0,AX6]=0 '529e
N30242 \$MA_ENC_IS_INDEPENDENT[1,AX6]=0 '5334
N30250 \$MA_ACT_POS_ABS[0,AX6]=103309 '55ac
N30250 \$MA_ACT_POS_ABS[1,AX6]=-14785 '55f8
N30260 \$MA_ABS_INC_RATIO[0,AX6]=4 '547c
N30260 \$MA_ABS_INC_RATIO[1,AX6]=4 '54e0
N30300 \$MA_IS_ROT_AX[AX6]=1 '4428
N30310 \$MA_ROT_IS_MODULO[AX6]=1 '56aa
N30320 \$MA_DISPLAY_IS_MODULO[AX6]=1 '59a8
N30330 \$MA_MODULO_RANGE[AX6]=360 '4fde
N30350 \$MA_SIMU_AX_VDI_OUTPUT[AX6]=0 '6794
N30450 \$MA_IS_CONCURRENT_POS_AX[AX6]=0 '6ela
N30500 \$MA_INDEX_AX_ASSIGN_POS_TAB[AX6]=0 '6e72
N30501 \$MA_INDEX_AX_NUMERATOR[AX6]=0 '4cf6
N30502 \$MA_INDEX_AX_DENOMINATOR[AX6]=1 '5e6a
N30503 \$MA_INDEX_AX_OFFSET[AX6]=0 '51c0
N30505 \$MA_HIRTH_IS_ACTIVE[AX6]=0 '4c7c
N30550 \$MA_AXCONF_ASSIGN_MASTER_CHAN[AX6]=0 '7cac
N30552 \$MA_AUTO_GET_TYPE[AX6]=1 '4ac2
N30600 \$MA_FIX_POINT_POS[0,AX6]=0 '4e2e
N30600 \$MA_FIX_POINT_POS[1,AX6]=0 '4e92
N30800 \$MA_WORKAREA_CHECK_TYPE[AX6]=0 '658c
N31000 \$MA_ENC_IS_LINEAR[0,AX6]=0 '45cc
N31000 \$MA_ENC_IS_LINEAR[1,AX6]=0 '4630
N31010 \$MA_ENC_GRID_POINT_DIST[0,AX6]=0.01 '6856
N31010 \$MA_ENC_GRID_POINT_DIST[1,AX6]=0.01 '691e
N31020 \$MA_ENC_RESOL[0,AX6]=2048 '455c
N31020 \$MA_ENC_RESOL[1,AX6]=1024 '4706
N31030 \$MA_LEADSCREW_PITCH[AX6]=10 '4d82
N31040 \$MA_ENC_IS_DIRECT[0,AX6]=0 '46ba
N31040 \$MA_ENC_IS_DIRECT[1,AX6]=1 '4750
N31050 \$MA_DRIVE_AX_RATIO_DENOM[0,AX6]=8 '5968
N31050 \$MA_DRIVE_AX_RATIO_DENOM[1,AX6]=8 '599a
N31050 \$MA_DRIVE_AX_RATIO_DENOM[2,AX6]=1 '5aa8
N31050 \$MA_DRIVE_AX_RATIO_DENOM[3,AX6]=1 '5b78
N31050 \$MA_DRIVE_AX_RATIO_DENOM[4,AX6]=1 '5a14
N31050 \$MA_DRIVE_AX_RATIO_DENOM[5,AX6]=1 '5a4a
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[0,AX6]=9 '55b6
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[1,AX6]=9 '561a
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[2,AX6]=1 '56d6
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[3,AX6]=1 '5876
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[4,AX6]=1 '55ae
N31060 \$MA_DRIVE_AX_RATIO_NUMERA[5,AX6]=1 '561a
N31070 \$MA_DRIVE_ENC_RATIO_DENOM[0,AX6]=1 '5e82
N31070 \$MA_DRIVE_ENC_RATIO_DENOM[1,AX6]=1 '5ee6
N31080 \$MA_DRIVE_ENC_RATIO_NUMERA[0,AX6]=1 '5fb2
N31080 \$MA_DRIVE_ENC_RATIO_NUMERA[1,AX6]=1 '6048
N31090 \$MA_JOG_INCR_WEIGHT[0,AX6]=0.001 '6374
N31090 \$MA_JOG_INCR_WEIGHT[1,AX6]=0.00254 '674a
N31122 \$MA_BERO_DELAY_TIME_PLUS[0,AX6]=0.00011 '69a4
N31122 \$MA_BERO_DELAY_TIME_PLUS[1,AX6]=0.00011 '69d6
N31123 \$MA_BERO_DELAY_TIME_MINUS[0,AX6]=7.8EX-05
'70ac

N31123 \$MA_BERO_DELAY_TIME_MINUS[1,AX6]=7.8EX-05
'7110
N31200 \$MA_SCALING_FACTOR_G70_G71[AX6]=25.4 '828a
N31500 \$MA_AXIS_NUMBER_FOR_MONITORING[0,AX6]=0 '77cc
N31510 \$MA_OFFSETVALUE_FOR_MONITORING[0,AX6]=0 '73ce
N31520 \$MA_GAIN_FOR_MONITORING[0,AX6]=1 '71dc
N32000 \$MA_MAX_AX_VELO[AX6]=27.77777778 '68b2
N32010 \$MA_JOG_VELO_RAPID[AX6]=27.77777778 '79b2
N32020 \$MA_JOG_VELO[AX6]=5.55555556 '5798
N32040 \$MA_JOG_REV_VELO_RAPID[AX6]=0.006944444444
'6f68
N32050 \$MA_JOG_REV_VELO[AX6]=0.001388888889 '67ea
N32060 \$MA_POS_AX_VELO[AX6]=10 '4b2a
N32070 \$MA_CORR_VELO[AX6]=50 '4b4e
N32074 \$MA_FRAME_OR_CORRPOS_NOTALLOWED[AX6]='H0'
'9590
N32080 \$MA_HANDWH_MAX_INCR_SIZE[AX6]=0 '6a04
N32082 \$MA_HANDWH_MAX_INCR_VELO_SIZE[AX6]=1.388888889
'8108
N32084 \$MA_HANDWH_STOP_COND[AX6]='Hff' '6ce4
N32090 \$MA_HANDWH_VELO_OVERLAY_FACTOR[AX6]=0.5 '7e06
N32100 \$MA_AX_MOTION_DIR[AX6]=-1 '4cea
N32110 \$MA_ENC_FEEDBACK_POL[0,AX6]=1 '61b0
N32110 \$MA_ENC_FEEDBACK_POL[1,AX6]=1 '61e2
N32200 \$MA_POSCTRL_GAIN[0,AX6]=1 '536c
N32200 \$MA_POSCTRL_GAIN[1,AX6]=1 '539e
N32200 \$MA_POSCTRL_GAIN[2,AX6]=1 '5404
N32200 \$MA_POSCTRL_GAIN[3,AX6]=1 '54d4
N32200 \$MA_POSCTRL_GAIN[4,AX6]=1 '5370
N32200 \$MA_POSCTRL_GAIN[5,AX6]=1 '53a6
N32250 \$MA_RATED_OUTVAL[0,AX6]=80 '4126
N32260 \$MA_RATED_VELO[0,AX6]=3000 '3d30
N32300 \$MA_MAX_AX_ACCEL[AX6]=2.77777778 '7562
N32310 \$MA_MAX_ACCEL_OVL_FACTOR[AX6]=1.2 '6eca
N32400 \$MA_AX_JERK_ENABLE[AX6]=0 '46ac
N32402 \$MA_AX_JERK_MODE[AX6]=1 '4bdc
N32410 \$MA_AX_JERK_TIME[AX6]=0.001 '4c04
N32420 \$MA_JOG_AND_POS_JERK_ENABLE[AX6]=0 '7c9e
N32430 \$MA_JOG_AND_POS_MAX_JERK[AX6]=2777.77778
'9da6
N32431 \$MA_MAX_AX_JERK[AX6]=2777777.778 '69ba
N32432 \$MA_PATH_TRANS_JERK_LIM[AX6]=2777777.778 '8286
N32433 \$MA_SOFT_ACCEL_FACTOR[AX6]=1 '66c0
N32434 \$MA_G00_ACCEL_FACTOR[AX6]=1 '5de6
N32435 \$MA_G00_JERK_FACTOR[AX6]=2 '629e
N32440 \$MA_LOOKAH_FREQUENCY[AX6]=100 '55e4
N32450 \$MA_BACKLASH[0,AX6]=0 '3eac
N32450 \$MA_BACKLASH[1,AX6]=0 '3ede
N32452 \$MA_BACKLASH_FACTOR[0,AX6]=1 '58e4
N32452 \$MA_BACKLASH_FACTOR[1,AX6]=1 '59ac
N32452 \$MA_BACKLASH_FACTOR[2,AX6]=1 '5b44
N32452 \$MA_BACKLASH_FACTOR[3,AX6]=1 '5e84
N32452 \$MA_BACKLASH_FACTOR[4,AX6]=1 '58f4
N32452 \$MA_BACKLASH_FACTOR[5,AX6]=1 '59cc
N32460 \$MA_TORQUE_OFFSET[0,AX6]=0 '46ae
N32490 \$MA_FRICT_COMP_MODE[0,AX6]=1 '582e
N32500 \$MA_FRICT_COMP_ENABLE[AX6]=0 '50a8
N32510 \$MA_FRICT_COMP_ADAPT_ENABLE[0,AX6]=0 '65ee
N32520 \$MA_FRICT_COMP_CONST_MAX[0,AX6]=0 '73fc
N32530 \$MA_FRICT_COMP_CONST_MIN[0,AX6]=0 '778c
N32540 \$MA_FRICT_COMP_TIME[0,AX6]=0.015 '5530
N32550 \$MA_FRICT_COMP_ACCEL1[0,AX6]=0 '55d4
N32560 \$MA_FRICT_COMP_ACCEL2[0,AX6]=0 '57da
N32570 \$MA_FRICT_COMP_ACCEL3[0,AX6]=0 '5bfa
N32580 \$MA_FRICT_COMP_INC_FACTOR[0,AX6]=0 '695a
N32610 \$MA_VELO_FFW_WEIGHT[0,AX6]=1 '6878
N32610 \$MA_VELO_FFW_WEIGHT[1,AX6]=1 '6940
N32610 \$MA_VELO_FFW_WEIGHT[2,AX6]=1 '6ad8
N32610 \$MA_VELO_FFW_WEIGHT[3,AX6]=1 '6e18
N32610 \$MA_VELO_FFW_WEIGHT[4,AX6]=1 '6888

N32610	\$MA_VELO_FFW_WEIGHT[5,AX6]=1	'6960	N34220	\$MA_ENC_ABS_TURNS_MODULO[0,AX6]=4096	'7536
N32620	\$MA_FFW_MODE[AX6]=1	'44d4	N34220	\$MA_ENC_ABS_TURNS_MODULO[1,AX6]=4096	'7568
N32630	\$MA_FFW_ACTIVATION_MODE[AX6]=1	'693a	N34230	\$MA_ENC_SERIAL_NUMBER[0,AX6]=0	'5948
N32650	\$MA_AX_INERTIA[AX6]=0	'3936	N34230	\$MA_ENC_SERIAL_NUMBER[1,AX6]=0	'59ac
N32700	\$MA_ENC_COMP_ENABLE[0,AX6]=0	'5e18	N34232	\$MA_EVERY_ENC_SERIAL_NUMBER[0,AX6]=1	'6c92
N32700	\$MA_ENC_COMP_ENABLE[1,AX6]=0	'5ee0	N34232	\$MA_EVERY_ENC_SERIAL_NUMBER[1,AX6]=1	'6d5a
N32710	\$MA_CEC_ENABLE[AX6]=0	'4620	N34300	\$MA_ENC_REFP_MARKER_DIST[0,AX6]=10	'7372
N32711	\$MA_CEC_SCALING_SYSTEM_METRIC[AX6]=1	'856e	N34300	\$MA_ENC_REFP_MARKER_DIST[1,AX6]=10	'73a4
N32720	\$MA_CEC_MAX_SUM[AX6]=1	'5a10	N34310	\$MA_ENC_MARKER_INC[0,AX6]=0.02	'58c0
N32730	\$MA_CEC_MAX_VELO[AX6]=10	'5f4c	N34310	\$MA_ENC_MARKER_INC[1,AX6]=0.02	'5956
N32750	\$MA_TEMP_COMP_TYPE[AX6]='H0'	'50d4	N34320	\$MA_ENC_INVERS[0,AX6]=0	'466c
N32760	\$MA_COMP_ADD_VELO_FACTOR[AX6]=0.01	'7c60	N34320	\$MA_ENC_INVERS[1,AX6]=0	'4702
N32800	\$MA_EQUIV_CURRCTRL_TIME[0,AX6]=0.0005	'5aa8	N34330	\$MA_REFP_STOP_AT_ABS_MARKER[0,AX6]=1	'841a
N32800	\$MA_EQUIV_CURRCTRL_TIME[1,AX6]=0.0005	'5b70	N34330	\$MA_REFP_STOP_AT_ABS_MARKER[1,AX6]=1	'84e2
N32800	\$MA_EQUIV_CURRCTRL_TIME[2,AX6]=0.0005	'5d08	N35000	\$MA_SPIND_ASSIGN_TO_MACHAX[AX6]=1	'73fc
N32800	\$MA_EQUIV_CURRCTRL_TIME[3,AX6]=0.0005	'6048	N35010	\$MA_GEAR_STEP_CHANGE_ENABLE[AX6]=0	'6aee
N32800	\$MA_EQUIV_CURRCTRL_TIME[4,AX6]=0.0005	'5ab8	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[0,AX6]=0	'7a62
N32800	\$MA_EQUIV_CURRCTRL_TIME[5,AX6]=0.0005	'5b90	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[1,AX6]=0	'7ac6
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[0,AX6]=0.00245	'5b8a	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[2,AX6]=0	'7b92
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[1,AX6]=0.0025	'5b1e	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[3,AX6]=0	'7d32
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[2,AX6]=0.0025	'5b84	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[4,AX6]=0	'7a6a
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[3,AX6]=0.0025	'5c54	N35012	\$MA_GEAR_STEP_CHANGE_POSITION[5,AX6]=0	'7ad6
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[4,AX6]=0.0025	'5af0	N35020	\$MA_SPIND_DEFAULT_MODE[AX6]=0	'4b56
N32810	\$MA_EQUIV_SPEEDCTRL_TIME[5,AX6]=0.0025	'5b26	N35030	\$MA_SPIND_DEFAULT_ACT_MASK[AX6]='H2'	'6696
N32900	\$MA_DYN_MATCH_ENABLE[AX6]=0	'4c78	N35032	\$MA_SPIND_FUNC_RESET_MODE[AX6]='H0'	'69fe
N32910	\$MA_DYN_MATCH_TIME[0,AX6]=0	'4388	N35035	\$MA_SPIND_FUNCTION_MASK[AX6]='H110'	'693a
N32910	\$MA_DYN_MATCH_TIME[1,AX6]=0	'441e	N35040	\$MA_SPIND_ACTIVE_AFTER_RESET[AX6]=1	'6a46
N32910	\$MA_DYN_MATCH_TIME[2,AX6]=0	'4550	N35100	\$MA_SPIND_VELO_LIMIT[AX6]=8100	'4f86
N32910	\$MA_DYN_MATCH_TIME[3,AX6]=0	'47c0	N35110	\$MA_GEAR_STEP_MAX_VELO[0,AX6]=8000	'55a6
N32910	\$MA_DYN_MATCH_TIME[4,AX6]=0	'4394	N35110	\$MA_GEAR_STEP_MAX_VELO[1,AX6]=8000	'563c
N32910	\$MA_DYN_MATCH_TIME[5,AX6]=0	'4436	N35110	\$MA_GEAR_STEP_MAX_VELO[2,AX6]=8000	'576e
N32920	\$MA_AC_FILTER_TIME[AX6]=0	'41d0	N35110	\$MA_GEAR_STEP_MAX_VELO[3,AX6]=2000	'5afe
N32930	\$MA_POSCTRL_OUT_FILTER_ENABLE[AX6]=0	'6bdc	N35110	\$MA_GEAR_STEP_MAX_VELO[4,AX6]=4000	'55aa
N32940	\$MA_POSCTRL_OUT_FILTER_TIME[AX6]=0	'69aa	N35110	\$MA_GEAR_STEP_MAX_VELO[5,AX6]=8000	'5654
N32950	\$MA_POSCTRL_DAMPING[AX6]=0	'4c94	N35120	\$MA_GEAR_STEP_MIN_VELO[0,AX6]=5	'58a0
N32960	\$MA_POSCTRL_ZERO_ZONE[0,AX6]=0	'64ba	N35120	\$MA_GEAR_STEP_MIN_VELO[1,AX6]=5	'5936
N32960	\$MA_POSCTRL_ZERO_ZONE[1,AX6]=0	'651e	N35120	\$MA_GEAR_STEP_MIN_VELO[2,AX6]=5	'5a68
N33000	\$MA_FIPO_TYPE[AX6]=2	'3fea	N35120	\$MA_GEAR_STEP_MIN_VELO[3,AX6]=800	'5dc4
N33050	\$MA_LUBRICATION_DIST[AX6]=100000000	'5338	N35120	\$MA_GEAR_STEP_MIN_VELO[4,AX6]=1500	'5aca
N33100	\$MA_COMPRESS_POS_TOL[AX6]=0.1	'77d8	N35120	\$MA_GEAR_STEP_MIN_VELO[5,AX6]=3000	'5d2a
N34000	\$MA_REFP_CAM_IS_ACTIVE[AX6]=1	'6028	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[0,AX6]=8000	'673e
N34010	\$MA_REFP_CAM_DIR_IS_MINUS[AX6]=0	'7384	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[1,AX6]=8000	'6770
N34020	\$MA_REFP_VELO_SEARCH_CAM[AX6]=13.88888889	'7754	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[2,AX6]=8000	'67d6
N34030	\$MA_REFP_MAX_CAM_DIST[AX6]=10000	'5ea4	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[3,AX6]=2000	'6ae6
N34040			N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[4,AX6]=4000	'6732
	\$MA_REFP_VELO_SEARCH_MARKER[0,AX6]=0.8333333333	'9adc	N35130	\$MA_GEAR_STEP_MAX_VELO_LIMIT[5,AX6]=8000	'6778
N34040			N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[0,AX6]=5	'6932
	\$MA_REFP_VELO_SEARCH_MARKER[1,AX6]=0.8333333333	'9ba4	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[1,AX6]=5	'6964
N34050	\$MA_REFP_SEARCH_MARKER_REVERSE[0,AX6]=0	'780c	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[2,AX6]=5	'69ca
N34050	\$MA_REFP_SEARCH_MARKER_REVERSE[1,AX6]=0	'78a2	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[3,AX6]=20	'6c42
N34060	\$MA_REFP_MAX_MARKER_DIST[0,AX6]=20	'6e20	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[4,AX6]=40	'688e
N34060	\$MA_REFP_MAX_MARKER_DIST[1,AX6]=3600	'732a	N35140	\$MA_GEAR_STEP_MIN_VELO_LIMIT[5,AX6]=80	'68d4
N34070	\$MA_REFP_VELO_POS[AX6]=27.77777778	'7f4e	N35150	\$MA_SPIND_DES_VELO_TOL[AX6]=1	'5d56
N34080	\$MA_REFP_MOVE_DIST[0,AX6]=0	'508c	N35160	\$MA_SPIND_EXTERN_VELO_LIMIT[AX6]=10	'64f6
N34080	\$MA_REFP_MOVE_DIST[1,AX6]=-46	'5572	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[0,AX6]=200	'6c7a
N34090	\$MA_REFP_MOVE_DIST_CORR[0,AX6]=0	'6d68	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[1,AX6]=200	'6cde
N34090	\$MA_REFP_MOVE_DIST_CORR[1,AX6]=0	'6e30	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[2,AX6]=25	'6d8e
N34092	\$MA_REFP_CAM_SHIFT[0,AX6]=0	'50ae	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[3,AX6]=20	'6eba
N34092	\$MA_REFP_CAM_SHIFT[1,AX6]=0	'5144	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[4,AX6]=15	'6c00
N34100	\$MA_REFP_SET_POS[0,AX6]=0	'5814	N35200	\$MA_GEAR_STEP_SPEEDCTRL_ACCEL[5,AX6]=10	'6bf8
N34100	\$MA_REFP_SET_POS[1,AX6]=0	'5846	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[0,AX6]=30	'7c46
N34100	\$MA_REFP_SET_POS[2,AX6]=0	'58ac	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[1,AX6]=30	'7d0e
N34100	\$MA_REFP_SET_POS[3,AX6]=0	'597c	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[2,AX6]=25	'7d1e
N34102	\$MA_REFP_SYNC_ENCS[AX6]=0	'582c	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[3,AX6]=20	'7f76
N34110	\$MA_REFP_CYCLE_NR[AX6]=5	'4cd4	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[4,AX6]=15	'799c
N34120	\$MA_REFP_BERO_LOW_ACTIVE[AX6]=0	'70d0	N35210	\$MA_GEAR_STEP_POSCTRL_ACCEL[5,AX6]=10	'798c
N34200	\$MA_ENC_REFP_MODE[0,AX6]=1	'4e0e	N35220	\$MA_ACCEL_REDUCTION_SPEED_POINT[AX6]=1	'6d50
N34200	\$MA_ENC_REFP_MODE[1,AX6]=1	'4e72	N35230	\$MA_ACCEL_REDUCTION_FACTOR[AX6]=0	'61bc
N34210	\$MA_ENC_REFP_STATE[0,AX6]=0	'4e8a	N35240	\$MA_ACCEL_TYPE_DRIVE[AX6]=0	'4b06
N34210	\$MA_ENC_REFP_STATE[1,AX6]=0	'4f20	N35242	\$MA_ACCEL_REDUCTION_TYPE[AX6]=1	'56c2
			N35300	\$MA_SPIND_POSCTRL_VELO[AX6]=100	'5f16

N35310	\$MA_SPIND_POSIT_DELAY_TIME[0,AX6]=0	'6580	N36300	\$MA_ENC_FREQ_LIMIT[0,AX6]=300000	'57d6
N35310	\$MA_SPIND_POSIT_DELAY_TIME[1,AX6]=0.05	'6968	N36300	\$MA_ENC_FREQ_LIMIT[1,AX6]=300000	'586c
N35310	\$MA_SPIND_POSIT_DELAY_TIME[2,AX6]=0.1	'6af8	N36302	\$MA_ENC_FREQ_LIMIT_LOW[0,AX6]=99.9	'6c5e
N35310	\$MA_SPIND_POSIT_DELAY_TIME[3,AX6]=0.2	'6f00	N36302	\$MA_ENC_FREQ_LIMIT_LOW[1,AX6]=99.9	'6cf4
N35310	\$MA_SPIND_POSIT_DELAY_TIME[4,AX6]=0.4	'6884	N36310	\$MA_ENC_ZERO_MONITORING[0,AX6]=0	'73a6
N35310	\$MA_SPIND_POSIT_DELAY_TIME[5,AX6]=0.8	'6936	N36310	\$MA_ENC_ZERO_MONITORING[1,AX6]=100	'75f4
N35350	\$MA_SPIND_POSITIONING_DIR[AX6]=3	'72f6	N36400	\$MA_CONTOUR_TOL[AX6]=360	'50f2
N35400	\$MA_SPIND_OSCILL_DES_VELO[AX6]=25	'7928	N36500	\$MA_ENC_CHANGE_TOL[AX6]=360	'60d4
N35410	\$MA_SPIND_OSCILL_ACCEL[AX6]=50	'64ce	N36510	\$MA_ENC_DIFF_TOL[AX6]=0	'5146
N35430	\$MA_SPIND_OSCILL_START_DIR[AX6]=3	'71a4	N36520	\$MA_DES_VELO_LIMIT[AX6]=125	'5400
N35440	\$MA_SPIND_OSCILL_TIME_CW[AX6]=0.75	'7a16	N36600	\$MA_BRAKE_MODE_CHOICE[AX6]=1	'579c
N35450	\$MA_SPIND_OSCILL_TIME_CCW[AX6]=0.25	'75fc	N36610	\$MA_AX_EMERGENCY_STOP_TIME[AX6]=0.05	'65bc
N35500	\$MA_SPIND_ON_SPEED_AT_IPO_START[AX6]=1	'7870	N36620	\$MA_SERVO_DISABLE_DELAY_TIME[AX6]=0.1	'73e0
N35510	\$MA_SPIND_STOPPED_AT_IPO_START[AX6]=0	'7750	N36690	\$MA_AXIS_DIAGNOSIS[AX6]='H0'	'61e2
N35590	\$MA_PARAMSET_CHANGE_ENABLE[AX6]=0	'57e6	N36700	\$MA_DRIFT_ENABLE[AX6]=0	'41c0
N36000	\$MA_STOP_LIMIT_COARSE[AX6]=0.04	'6718	N36710	\$MA_DRIFT_LIMIT[0,AX6]=0	'3c22
N36010	\$MA_STOP_LIMIT_FINE[AX6]=0.01	'5868	N36720	\$MA_DRIFT_VALUE[0,AX6]=0	'3dbc
N36012	\$MA_STOP_LIMIT_FACTOR[0,AX6]=1	'5e32	N36730	\$MA_DRIVE_SIGNAL_TRACKING[AX6]=0	'6df8
N36012	\$MA_STOP_LIMIT_FACTOR[1,AX6]=1	'5e96	N36750	\$MA_AA_OFF_MODE[AX6]=0	'533e
N36012	\$MA_STOP_LIMIT_FACTOR[2,AX6]=1	'5f62	N37000	\$MA_FIXED_STOP_MODE[AX6]=0	'55ce
N36012	\$MA_STOP_LIMIT_FACTOR[3,AX6]=1	'6102	N37002	\$MA_FIXED_STOP_CONTROL[AX6]=0	'6636
N36012	\$MA_STOP_LIMIT_FACTOR[4,AX6]=1	'5e3a	N37010	\$MA_FIXED_STOP_TORQUE_DEF[AX6]=5	'5e58
N36012	\$MA_STOP_LIMIT_FACTOR[5,AX6]=1	'5ea6	N37012	\$MA_FIXED_STOP_TORQUE_RAMP_TIME[AX6]=0	'7060
N36020	\$MA_POSITIONING_TIME[AX6]=1	'5232	N37020	\$MA_FIXED_STOP_WINDOW_DEF[AX6]=1	'6b90
N36030	\$MA_STANDSTILL_POS_TOL[AX6]=360	'6458	N37030	\$MA_FIXED_STOP_THRESHOLD[AX6]=2	'5e9a
N36040	\$MA_STANDSTILL_DELAY_TIME[AX6]=1	'534c	N37040	\$MA_FIXED_STOP_BY_SENSOR[AX6]=0	'6ab0
N36042	\$MA_FOC_STANDSTILL_DELAY_TIME[AX6]=0.4	'6aea	N37050	\$MA_FIXED_STOP_ALARM_MASK[AX6]=1	'6978
N36050	\$MA_CLAMP_POS_TOL[AX6]=4	'4cd4	N37052	\$MA_FIXED_STOP_ALARM_REACTION[AX6]='H0'	'7826
N36060	\$MA_STANDSTILL_VELO_TOL[AX6]=20	'5bba	N37060	\$MA_FIXED_STOP_ACKN_MASK[AX6]=0	'7226
N36100	\$MA_POS_LIMIT_MINUS[AX6]=-100000000	'5272	N37070	\$MA_FIXED_STOP_ANA_TORQUE[AX6]=5	'6308
N36110	\$MA_POS_LIMIT_PLUS[AX6]=100000000	'47d0	N37080	\$MA_FOC_ACTIVATION_MODE[AX6]=0	'67f8
N36120	\$MA_POS_LIMIT_MINUS2[AX6]=-100000000	'57ec	N37100	\$MA_GANTRY_AXIS_TYPE[AX6]=0	'585a
N36130	\$MA_POS_LIMIT_PLUS2[AX6]=100000000	'4dce	N37110	\$MA_GANTRY_POS_TOL_WARNING[AX6]=0	'7816
N36200	\$MA_AX_VELO_LIMIT[0,AX6]=8800	'4690	N37120	\$MA_GANTRY_POS_TOL_ERROR[AX6]=0	'7860
N36200	\$MA_AX_VELO_LIMIT[1,AX6]=8800	'46f4	N37130	\$MA_GANTRY_POS_TOL_REF[AX6]=0	'69ae
N36200	\$MA_AX_VELO_LIMIT[2,AX6]=8800	'47c0	N37140	\$MA_GANTRY_BREAK_UP[AX6]=0	'5e88
N36200	\$MA_AX_VELO_LIMIT[3,AX6]=31.94444444	'50f4	N37400	\$MA_EPS_TLIFT_TANG_STEP[AX6]=5	'5bd6
N36200	\$MA_AX_VELO_LIMIT[4,AX6]=31.94444444	'4e2c	N37402	\$MA_TANG_OFFSET[AX6]=0	'52c0
N36200	\$MA_AX_VELO_LIMIT[5,AX6]=31.94444444	'4e98	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[0,AX6]=0	'6af2
N36210	\$MA_CTRLOUT_LIMIT[0,AX6]=110	'4ale	N38000	\$MA_MM_ENC_COMP_MAX_POINTS[1,AX6]=0	'6b88
N36220	\$MA_CTRLOUT_LIMIT_TIME[0,AX6]=0	'53a0			

Axis Setting Data - Spindle

N43120	\$\$SA_DEFAULT_SCALE_FACTOR_AXIS[AX6]=1	'7552	N43500	\$\$SA_FIXED_STOP_SWITCH[AX6]=0	'5d74
N43200	\$\$SA_SPIND_S[AX6]=500	'4248	N43510	\$\$SA_FIXED_STOP_TORQUE[AX6]=5	'5498
N43202	\$\$SA_SPIND_CONSTCUT_S[AX6]=0	'69d0	N43520	\$\$SA_FIXED_STOP_WINDOW[AX6]=1	'61d0
N43210	\$\$SA_SPIND_MIN_VELO_G25[AX6]=0	'5b2c	N43700	\$\$SA_OSCILL_REVERSE_POS1[AX6]=0	'713e
N43220	\$\$SA_SPIND_MAX_VELO_G26[AX6]=8000	'5990	N43710	\$\$SA_OSCILL_REVERSE_POS2[AX6]=0	'723c
N43230	\$\$SA_SPIND_MAX_VELO_LIMS[AX6]=100	'5c66	N43720	\$\$SA_OSCILL_DWELL_TIME1[AX6]=0	'6220
N43240	\$\$SA_M19_SPOS[AX6]=0	'4e6a	N43730	\$\$SA_OSCILL_DWELL_TIME2[AX6]=0	'6356
N43250	\$\$SA_M19_SPOSMODE[AX6]=0	'55a6	N43740	\$\$SA_OSCILL_VELO[AX6]=0	'5164
N43300	\$\$SA_ASSIGN_FEED_PER_REV_SOURCE[AX6]=0	'8c46	N43750	\$\$SA_OSCILL_NUM_SPARK_CYCLES[AX6]=0	'82b8
N43350	\$\$SA_AA_OFF_LIMIT[AX6]=100000000	'5336	N43760	\$\$SA_OSCILL_END_POS[AX6]=0	'5ce8
N43400	\$\$SA_WORKAREA_PLUS_ENABLE[AX6]=0	'6b12	N43770	\$\$SA_OSCILL_CTRL_MASK[AX6]='H0'	'6fdc
N43410	\$\$SA_WORKAREA_MINUS_ENABLE[AX6]=0	'655c	N43780	\$\$SA_OSCILL_IS_ACTIVE[AX6]=0	'6484
N43420	\$\$SA_WORKAREA_LIMIT_PLUS[AX6]=100000000	'6722	N43900	\$\$SA_TEMP_COMP_ABS_VALUE[AX6]=0	'5c96
N43430	\$\$SA_WORKAREA_LIMIT_MINUS[AX6]=-100000000	'71a8	N43910	\$\$SA_TEMP_COMP_SLOPE[AX6]=0	'5588
			N43920	\$\$SA_TEMP_COMP_REF_POSITION[AX6]=0	'6cbe

**Display Machine Data
including ShopMill Data (CMM)**

\$MM_LCD_CONTRAST=8
\$MM_DISPLAY_TYPE=2
\$MM_DISPLAY_MODE=2
\$MM_FIRST_LANGUAGE=1
\$MM_DISPLAY_RESOLUTION=3
\$MM_PRG_DEFAULT_DIR=1
\$MM_DISPLAY_BLACK_TIME=0
\$MM_TABULATOR_SIZE=4
\$MM_KEYBOARD_TYPE=0
\$MM_KEYBOARD_STATE=0
\$MM_DISPLAY_RESOLUTION_INCH=4
\$MM_ACTION_LOG_MODE=0
\$MM_TECHNOLOGY=0
\$MM_EXPONENT_LIMIT=6
\$MM_EXPONENT_SCIENCE=1
\$MM_USER_CLASS_READ_TOA=7
\$MM_USER_CLASS_WRITE_TOA_GEO=7
\$MM_USER_CLASS_WRITE_TOA_WEAR=7
\$MM_USER_CLASS_WRITE_FINE=7
\$MM_USER_CLASS_WRITE_TOA_ADAPT=7
\$MM_USER_CLASS_WRITE_ZOA=7
\$MM_USER_CLASS_READ_GUD_LUD=7
\$MM_USER_CLASS_WRITE_GUD_LUD=7
\$MM_USER_CLASS_OVERSTORE_HIGH=7
\$MM_USER_CLASS_WRITE_PRG_CONDIT=7
\$MM_USER_CLASS_WRITE_SEA=7
\$MM_USER_CLASS_READ_PROGRAM=7
\$MM_USER_CLASS_WRITE_PROGRAM=7
\$MM_USER_CLASS_SELECT_PROGRAM=7
\$MM_USER_CLASS_TEACH_IN=7
\$MM_USER_CLASS_PRESET=7
\$MM_USER_CLASS_CLEAR_RPA=7
\$MM_USER_CLASS_WRITE_RPA=7
\$MM_USER_CLASS_SET_V24=7
\$MM_USER_CLASS_READ_IN=7
\$MM_USER_CLASS_READ_CST=7
\$MM_USER_CLASS_READ_CUS=7
\$MM_USER_CLASS_SHOW_SBL2=7
\$MM_USER_CLASS_READ_SYF=7
\$MM_USER_CLASS_READ_DEF=7
\$MM_USER_CLASS_READ_BD=3
\$MM_USER_CLASS_VERT_MODE_SK=2004318071
\$MM_USER_CLASS_TM_SKTLLIST=7
\$MM_USER_CLASS_TM_SKTOOLLOAD=7
\$MM_USER_CLASS_TM_SKTOOLUNLOAD=7
\$MM_USER_CLASS_TM_SKTOOLMOVE=7
\$MM_USER_CLASS_TM_SKMGLREPR2=7
\$MM_USER_CLASS_TM_SKMGLREPR3=7
\$MM_USER_CLASS_TM_SKNCNEWTTOOLE=7
\$MM_USER_CLASS_TM_SKNCDELTOOL=7
\$MM_USER_CLASS_TM_SKMGBUFFER=7
\$MM_USER_CLASS_TM_SKMGFIND=7
\$MM_USER_CLASS_TM_SKMGLISTPOS=7
\$MM_USER_CLASS_TM_SKMGNEXT=7
\$MM_USER_CLASS_TM_SKTLNEWTOOL=7
\$MM_USER_CLASS_TM_SKTLREPR1=7
\$MM_USER_CLASS_TM_SKTLREPR2=7
\$MM_USER_CLASS_TM_SKTLREPR3=7
\$MM_USER_CLASS_TM_SKFINDPLACE=7
\$MM_USER_CLASS_TM_SKACTPLACE=7
\$MM_USER_CLASS_TM_SKLDTOOLDAT=7
\$MM_V24_USER_XON=17
\$MM_V24_USER_XOFF=19
\$MM_V24_USER_EOF=0
\$MM_V24_USER_CONTROLS=192
\$MM_V24_USER_RTS=0
\$MM_V24_USER_BAUD=6

\$MM_V24_USER_DATABITS=1
\$MM_V24_USER_PARITY=0
\$MM_V24_USER_STOPBIT=0
\$MM_V24_USER_LINE=1
\$MM_V24_PRINTER_XON=17
\$MM_V24_PRINTER_XOFF=19
\$MM_V24_PRINTER_EOF=12
\$MM_V24_PRINTER_CONTROLS=76
\$MM_V24_PRINTER_RTS=0
\$MM_V24_PRINTER_BAUD=5
\$MM_V24_PRINTER_DATABITS=1
\$MM_V24_PRINTER_PARITY=0
\$MM_V24_PRINTER_STOPBIT=0
\$MM_V24_PRINTER_LINE=1
\$MM_V24_PG_PC_XON=17
\$MM_V24_PG_PC_XOFF=19
\$MM_V24_PG_PC_EOF=26
\$MM_V24_PG_PC_CONTROLS=144
\$MM_V24_PG_PC_RTS=0
\$MM_V24_PG_PC_BAUD=5
\$MM_V24_PG_PC_DATABITS=1
\$MM_V24_PG_PC_PARITY=0
\$MM_V24_PG_PC_STOPBIT=0
\$MM_V24_PG_PC_LINE=1
\$MM_TOOL_REF_GEO_AXIS1=0.000000
\$MM_TOOL_REF_GEO_AXIS2=0.000000
\$MM_TOOL_REF_GEO_AXIS3=0.000000
\$MM_TM_LOAD_PLACE=0
\$MM_TM_NUM_MAG=0
\$MM_TM_DEFAULT_TOOLSIZE=1111
\$MM_TM_KIND_OF_TOOLMANAGEMENT=0
\$MM_TM_DEFAULT_TOOLPLACESPEC=1
\$MM_TM_DEFAULT_TOOLTYPE=120
\$MM_TM_DEFAULT_TOOLSTATE=2
\$MM_TM_DEFAULT_DELETE_TOOL=0
\$MM_MA_ONLY_MKS_DIST_TO_GO=0
\$MM_MA_AXES_SHOW_GEO_FIRST=1
\$MM_MA_PRESET_MODE=1
\$MM_MA_MAX_SKP_LEVEL=1
\$MM_MA_COORDINATE_SYSTEM=0
\$MM_MA_SCRATCH_DEFAULT_MODE=0
\$MM_ACTIVATE_SEL_USER_DATA=1
\$MM_WRITE_TOA_FINE_LIMIT=0.000000
\$MM_WRITE_ZOA_FINE_LIMIT=0.000000
\$MM_PROGRAM_SETTINGS=0
\$MM_CONTOUR_END_TEXT=
\$MM_TO_TRACE=0
\$MM_TO_OPTION_MASK=1
\$MM_NC_PROPERTIES=255
\$MM_CTM_CYC_ROUGH_RELEASE_DIST=1.000000
\$MM_CTM_CYC_ROUGH_RELEASE_ANGLE=45.000000
\$MM_CTM_CYC_ROUGH_BLANC_OFFS=1.000000
\$MM_CTM_CYC_ROUGH_TRACE_ANGLE=5.000000
\$MM_CTM_CYC_ROUGH_MIN_REST_MAT1=50.000000
\$MM_CTM_CYC_ROUGH_MIN_REST_MAT2=50.000000
\$MM_CTM_SIMULATION_DEF_X=0
\$MM_CTM_SIMULATION_DEF_Y=0
\$MM_CTM_SIMULATION_DEF_VIS_AREA=0
\$MM_CTM_SIMULATION_MAX_X=0
\$MM_CTM_SIMULATION_MAX_Y=0
\$MM_CTM_SIMULATION_MAX_VIS_AREA=51
\$MM_CTM_SIMULATION_TIME_NEW_POS=100
\$MM_CTM_ENABLE_RAPID_FEED=1
\$MM_CTM_ENABLE_FEED_P_MIN=1
\$MM_CTM_SPEED_FIELD_DISPLAY_RES=0
\$MM_CTM_POS_COORDINATE_SYSTEM=2
\$MM_CTM_CROSS_AX_DIAMETER_ON=0
\$MM_CTM_TEACH_STORE_MANUAL_ABS=1
\$MM_CTM_TEACH_STORE_START_ABS=1
\$MM_CTM_TEACH_STORE_MANUAL_AUTO=1

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$MM_CTM_TEACH_HANDW_FEED=0
$MM_CTM_TEACH_HANDW_FEED_P_MIN=10.000000
$MM_CTM_TEACH_HANDW_FEED_P_REV=1.000000
$MM_CTM_ENABLE_C_AXIS=1
$MM_CTM_G91_DIAMETER_ON=0
$MM_CTM_CYCLE_SAFETY_CLEARANCE=1.000000
$MM_CTM_CYCLE_DWELL_TIME=-1.000000
$MM_CTM_ENABLE_REFPOINT=1
$MM_CTM_START_WITHOUT_REFPOINT=0
$MM_CTM_MODE_SELECT_BY_SOFTKEY=0
$MM_CTM_CUSTOMER_START_PICTURE=0
$MM_CTM_TRACE=0
$MM_CTM_COUNT_GEAR_STEPS=0
$MM_CTM_TOOL_INPUT_DIAM_ON=0
$MM_CTM_WEAR_INPUT_DIAM_ON=0
$MM_CTM_FIN_FEED_PERCENT=100
$MM_CTM_CYCLE_DWELL_TIME_SEC=1.000000
$MM_CTM_ANGLE_REFERENCE_AXIS=1
$MM_CTM_INC_DEC_FEED_PER_MIN=10.000000
$MM_CTM_INC_DEC_FEED_PER_ROT=0.100000
$MM_CTM_ENABLE_S_TOOL_TABLE=0
$MM_CTM_MAX_INP_FEED_P_MIN=2000.000000
$MM_CTM_MAX_INP_FEED_P_ROT=1.000000
$MM_CTM_MAX_TOOL_WEAR=1.000000
$MM_CTM_ENABLE_CALC_THREAD_PITCH=0
$MM_CTM_ENABLE_G_CODE_INPUT=0
$MM_CTM_ENABLE_CIRCLE_HOLE_CYCL=0
$MM_CTM_ENABLE_DRIVEN_TOOL=0
$MM_CTM_CIRC_TAP_DWELL_TIME_1=0.000000
$MM_CTM_CIRC_TAP_DWELL_TIME_2=0.000000
$MM_CTM_ROUGH_O_RELEASE_DIST=1.000000
$MM_CTM_ROUGH_I_RELEASE_DIST=0.500000
$MM_CMM_POS_COORDINATE_SYSTEM=0
$MM_CMM_TOOL_MANAGEMENT=4
$MM_CMM_TOOL_LIFE_CONTROL=1
$MM_CMM_ENABLE_A_AXIS=0
$MM_CMM_SPEED_FIELD_DISPLAY_RES=0
$MM_CMM_CYC_PECKING_DIST=1.000000
$MM_CMM_CYC_DRILL_RELEASE_DIST=0.100000
$MM_CMM_CYC_MIN_CONT_PO_TO_RAD=5
$MM_CMM_CYC_MAX_CONT_PO_TO_RAD=0.010000
$MM_CMM_CYC_DRILL_RELEASE_ANGLE=0.000000
$MM_CMM_ENABLE_PLANE_CHANGE=1
$MM_CMM_ENABLE_CUSTOMER_M_CODES=4
$MM_CMM_COUNT_GEAR_STEPS=0
$MM_CMM_TOOL_DISPLAY_IN_DIAM=0
$MM_CMM_MAX_INP_FEED_P_MIN=10000.000000
$MM_CMM_MAX_INP_FEED_P_ROT=10.000000
$MM_CMM_MAX_INP_FEED_P_TOOTH=5.000000
$MM_CMM_FOLLOW_ON_TOOL_ACTIVE=1
$MM_CMM_M_CODE_COOLANT_I_AND_II=4294967295
$MM_CMM_FACE_MILL_EFF_TOOL_DIAM=85.000000
$MM_CMM_START_RAD_CONTOUR_POCKE=-1.000000
$MM_CMM_FIXED_TOOL_PLACE=0
$MM_CMM_TOOL_LOAD_STATION=1
$MM_CMM_ENABLE_TOOL_MAGAZINE=1
$MM_CMM_CUSTOMER_START_PICTURE=1
$MM_CMM_DIRECTORY_SOFTKEY_PATH1=A:\
$MM_CMM_DIRECTORY_SOFTKEY_PATH2=" "
$MM_CMM_DIRECTORY_SOFTKEY_PATH3=" "
$MM_CMM_DIRECTORY_SOFTKEY_PATH4=" "
$MM_CMM_M_CODE_COOLANT_I=8
$MM_CMM_M_CODE_COOLANT_II=53
$MM_CMM_INDEX_AXIS_4=4
$MM_CMM_INDEX_AXIS_5=5
$MM_CMM_INDEX_SPINDLE=6
$MM_CMM_OPTION_MASK=5
$MM_CMM_ENABLE_B_AXIS=0
$MM_CMM_ENABLE_TRACYL=0
$MM_CMM_ENABLE_SWIVELLING_HEAD=1
$MM_CMM_MEAS_PROBE_INPUT=1

$MM_CMM_MEAS_T_PROBE_INPUT=0
$MM_CMM_MEASURING_DISTANCE=50.000000
$MM_CMM_MEAS_DIST_MAN=50.000000
$MM_CMM_MEAS_DIST_TOOL_LENGTH=50.000000
$MM_CMM_MEAS_DIST_TOOL_RADIUS=50.000000
$MM_CMM_MEASURING_FEED=250.000000
$MM_CMM_FEED_WITH_COLL_CTRL=1000.000000
$MM_CMM_POS_FEED_WITH_COLL_CTRL=1000.000000
$MM_CMM_MAX_CIRC_SPEED_ROT_SP=200.000000
$MM_CMM_MAX_SPIND_SPEED_ROT_SP=100.000000
$MM_CMM_MIN_FEED_ROT_SP=10.000000
$MM_CMM_MEAS_TOL_ROT_SP=0.100000
$MM_CMM_TOOL_PROBE_TYPE=101
$MM_CMM_TOOL_PROBE_ALLOW_AXIS=132
$MM_CMM_T_PROBE_DIAM_LENGTH_MEAS=0.000000
$MM_CMM_T_PROBE_DIAM_RAD_MEAS=12.700000
$MM_CMM_T_PROBE_DIST_RAD_MEAS=12.000000
$MM_CMM_T_PROBE_APPROACH_DIR=1
$MM_ST_INDEX_AXIS_4=5
$MM_ST_INDEX_SPINDLE_MAIN=3
$MM_ST_INDEX_SPINDLE_TOOL=4
$MM_ST_INDEX_SPINDLE_SUB=6
$MM_ST_GEAR_STEPS_SPINDLE_MAIN=0
$MM_ST_GEAR_STEPS_SPINDLE_TOOL=0
$MM_ST_GEAR_STEPS_SPINDLE_SUB=0
$MM_ST_MAGN_GLASS_POS_1=0.000000
$MM_ST_MAGN_GLASS_POS_2=0.000000
$MM_MD_TEXT_SWITCH=0
$MM_MD_NC_TEA_FILTER=0
$MM_MD_NC_TEA_IDX_LIMIT=0
$MM_MD_AX_TEA_FILTER=0
$MM_MD_AX_TEA_IDX_LIMIT=0
$MM_MD_CH_TEA_FILTER=0
$MM_MD_CH_TEA_IDX_LIMIT=0
$MM_MD_DRV_TEA_FILTER=0
$MM_MD_DRV_TEA_IDX_LIMIT=0
$MM_TRACE=0
$MM_SYS_CLOCK_SYNC_TIME=0
$MM_USER_CLASS_BASE_ZERO_OFF_PA=7
$MM_USER_CLASS_BASE_ZERO_OFF_MA=7
$MM_CTM_OPTION_MASK=0
$MM_LANGUAGE_SETTINGS=513
$MM_SW_OPTIONS=0
$MM_HMI_HELP_SYSTEMS=0

```


7

Interface Signals

Interface Signals

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4.1 Data modules

Module assignment	DB 1	Reserved for Siemens
	DB 2 to 4	PLC messages
	DB 5 to 8	Basic program
	DB 9	Interface for NC compile cycles
	DB 10	NCK interface
	DB 11	Mode group interface
	DB 12	Interface for computer link and transport system
	DB 13 to 14	Reserved for basic program
	DB 15	Basic program
	DB 16	PI service definitions
	DB 17	Version code
	DB 18	SPL interface (Safety Integrated)
	DB 19	MMC interface
	DB 20	PLC machine data
	DB 21 to 30	NC channel interface
	DB 31 to 61	Interface for axes/spindles
	DB 62 to 70	Unassigned
	DB 71 to 74	Tool management
	DB 75 to 76	M group decoding
	DB 77	Tool management buffer
	DB 78 to 80	Reserved for Siemens
	DB 81 to 89	See remarks concerning ShopMill, ManualTurn
	DB 81 to 127	Unassigned

Note:

Data modules of inactivated channels, axes/spindles, C programming, tool management can be assigned by the user.

ManualTurn

ManualTurn uses FCs 30 to 35 and DBs 81 to 87.

ManualTurn is a control unit for conventional cycle-controlled turning machines. The FCs and DBs can be used without any problem if the machine to be configured is not a turning machine with a maximum of 2 axes and one spindle. If the machine to be configured is such a machine and, in addition to CNC control, conventional operation is not excluded, the FCs and DBs should not be used.

ShopMill

ShopMill uses FCs 30 to 35 and DBs 81 to 88. ShopMill is a control unit for 2 1/2D milling machines in workshop operation. The FCs and DBs can be used without any problem if the machine to be configured is not a milling machine for 2 1/2D machining. If the machine to be configured is intended for such applications, the FCs and DBs should not be used.

Legend

- A "*" before the interface signals means that the function is active with signal ZERO.
- In Step7, DBB means data module byte
- In Step7, DBW means data module word (16 bits)
- In Step7, DBD means data module double word (32 bits)

4.2 Interface signals

General

In the following list of interface signals, a reference to relevant documentation is provided for every signal.

This reference specifies the section number or the short designation of the description of functions, please refer to

References: /FB/, xx, "yyy"

xx Short designation of individual description of functions (e.g.: /A2/)

yyy Name of description of functions (e.g.: "Various interface signals" or title of the guide)

Inverse signals

Signals marked with a "*" are so-called inverse signals. These signals initiate the appropriate function when a 0 signal appears rather than a 1 signal (e.g. MCP, byte n+2.0: *NC STOP).

4.2.1 Signals from/to machine control panel, M version

Signals from machine control panel (keys)								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
IB n + 0	Spindle speed override				Operating mode			
	D	C	B	A	JOG	TEACH IN	MDA	AUTO
IB n + 1	Machine function							
	REPOS	REF	var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
IB n + 2	Key-switch position 0	Key-switch position 2	Spindle start	*Spindle stop	Feed start	*Feed stop	NC Start	*NC Stop
IB n + 3		Key-switch position 1		Feedrate override				
	Reset		Single block	E	D	C	B	A
IB n + 4	Direction keys			Keyswitch position 3	Direction keys			
	+ R15	- R13	Rapid traverse R14		x R1	4th axis R4	7th axis R7	R10
IB n + 5	Axis selection							
	Y R2	Z R3	5th axis R5	Traverse command MCS/WCS R12	R11	R9	8th axis R8	6th axis R6
IB n + 6	Unassigned customer keys							
	T9	T10	T11	T12	T13	T14	T15	
IB n + 7	Unassigned customer keys							
	T1	T2	T3	T4	T5	T6	T7	T8

Signals to machine control panel (LEDs)								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
QB n + 0	Machine function				Operating mode			
	1000 INC	100 INC	10 INC	1 INC	JOG	TEACH IN	MDA	AUTO
QB n + 1	Feed start	*Feed stop	NC Start	*NC Stop	Machine function			
					REPOS	REF	var. INC	10000 INC
QB n + 2	Axis selection					Single block	Spindle start	*Spindle stop
	Direction key - R13	X R1	4th axis R4	7th axis R7	R10			
QB n + 3	Axis selection							
	Z R3	5th axis R5	Travel command MCS/WCS R12	R11	R9	8th axis R8	6th axis R6	Direction key + R15
QB n + 4	Unassigned customer keys							
	T9	T10	T11	T12	T13	T14	T15	R2
QB n + 5	Unassigned customer keys							
	T1	T2	T3	T4	T5	T6	T7	T8

Note

With the SINUMERIK 840D, the machine control panel is assigned to the input/output area by GP parameters; as a standard, initial address 0 is specified for the input and output areas.

With FM-NC, the initial address is set via the SDB 210. For the supplied SDB 210, initial address 120 is specified. If another initial address is desired, this must be specified via the STEP 7 Package Communication Configuration. Note that the GD parameters given automatically through Communication Configuration must be set on the machine control panel.

4.2.2 Signals from/to machine control panel, T version

Signals from machine control panel (keys)								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
IB n + 0	Spindle speed override				Operating mode			
	D	C	B	A	JOG	TEACH IN	MDA	AUTO
IB n + 1	Machine function							
	REPOS	REF	var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
IB n + 2	Keyswitch position 0	Keyswitch position 2	Spindle start	*Spindle stop	Feed start	*Feed stop	NC Start	*NC Stop
IB n + 3	Feed override							
	Reset	Keyswitch position 1	Single block	E	D	C	B	A
IB n + 4	Keyswitch position 3			Direction keys				
	R15	R13	R14		+Y R1	-Z R4	-C R7	R10
IB n + 5	Direction keys							
	+X R2	+C R3	Rapid traverse override R5	Travel command MCS/WCS R12	R11	-Y R9	-X R8	+Z R6
IB n + 6	Unassigned customer keys							
	T9	T10	T11	T12	T13	T14	T15	
IB n + 7	Unassigned customer keys							
	T1	T2	T3	T4	T5	T6	T7	T8

Signals to machine control panel (LEDs)								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
QB n + 0	Machine function				Operating mode			
	1000 INC	100 INC	10 INC	1 INC	JOG	TEACH IN	MDA	AUTO
QB n + 1	Feed start	*Feed stop	NC Start	*NC Stop	Machine function			
					REPOS	REF	var. INC	10000 INC
QB n + 2	Direction keys					Single block	Spindle start	*Spindle stop
	R13	+Y R1	-Z R4	-C R7	R10			
QB n + 3	Direction keys							
	R3	R5	Travel command MCS/WCS	R11	-Y R9	-X R8	+Z R6	R15

QB n + 4	Unassigned customer keys							Direction key +X R2
	T9	T10	T11	T12	T13	T14	T15	
QB n + 5	Unassigned customer keys							
	T1	T2	T3	T4	T5	T6	T7	T8

4.2.3 Signals from/to slimline machine control panel

Signals from slimline machine control panel (keys and switches)								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
IB n + 0	Spindle speed override				Operating mode			
	*NC Stop	SP -	SP 100%	SP +	SINGLEB	JOG	MDA	AUTOM.
IB n + 1	Spindle				Keyswitch	Machine function		
	NC Start	SP right	*SP Stop	SP left	SS 3	REF.	REPOS	Teach in
IB n + 2	Feedrate			Keyswitch	Machine functions			
	START	*STOP	var. INC	SS 0	1000 INC	100 INC	10 INC	1 INC
IB n + 3		Keyswitch		Feed override				
	RESET	SS 2	SS 1	E	D	C	B	A
IB n + 4	Direction keys			Optional customer keys				
	(+) R15	(-) R13	Rapid traverse R14	KT4	KT3	KT2	KT1	KT0
IB n + 5			Axis selection					
	T17	KT5	6	5	4	Z	Y	X
IB n + 6	Unassigned customer keys							
	T9	T10	T11	T12	T13	T14	T15	T16
IB n + 7	Unassigned customer keys							
	T1	T2	T3	T4	T5	T6	T7	T8

4 Interface Signals

Signals to slimline machine control panel (LEDs)								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
QB n + 0	Spindel speed override				Operating mode			
	NC Stop	SP -	SP 100 %	SP +	SINGLEB	JOG	MDA	AUTOM.
QB n + 1	Spindle				Unassigned	Machine function		
	NC Start	SP right	SP Stop	SP left		REF.	REPOS	Teach in
QB n + 2	Feedrate		var. INC	Unassigned	Machine functions			
	START	STOP			1000 INC	100 INC	10 INC	1 INC
QB n + 3	Unassigned							
	Unassigned	Unassigned	Unassigned	Unassigned	Unassigned	Unassigned	Unassigned	Unassigned
QB n + 4	Direction keys			Optional customer keys				
	(+) R15	(-) R13	Rapid traverse R14	KT4	KT3	KT2	KT1	KT0
QB n + 5	Axis selection							
	T17	KT5	6	5	4	Z	Y	X
QB n + 6	Unassigned customer keys							
	T9	T10	T11	T12	T13	T14	T15	T16
QB n + 7	Unassigned customer keys							
	T1	T2	T3	T4	T5	T6	T7	T8

4.2.4 Signals from/to handheld unit (HHU)

Signals from handheld unit (keys) (input display)								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
IB n + 0	Reserved							
IB n + 1	Reserved							
IB n + 2	T9	T7	T6	T5	T4	T3	T2	T1
IB n + 3	T16	T15	T14	T13	T12	T11	T10	T9
IB n + 4	T24	T23	T22	T21				
IB n + 5	Acknowledgement Digital display	Keyswitch	Rapid traverse/feed override switch					
			E	D	C	B	A	

Signals to handheld unit (LEDs) (Output display, LEDs)								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
QB n + 0	always 1							
QB n + 1	New data for selected line							Line selection
QB n + 2	L8	L7	L6	L5	L4	L3	L2	L1
QB n + 3	L16	L15	L14	L13	L12	L11	L10	L9
HHU digital display								
QB n + 4								
QB n + 5								
QB ...								
QB n + 18								
QB n + 19								

Note

With the SINUMERIK 840D, the handheld unit is connected to the OPI or MCP interface of the PLC.

The initial addresses of the input/output areas and the activation must be set via basic program parameter FB1. With the SINUMERIK 810D and FM-NC, the handheld unit is connected to the MPI interface of the PLC.

The initial addresses of the input/output areas as well as the number of bytes to be transferred must be specified via the STEP 7 Package Communication Configuration.

Note that the GD parameters given automatically through Communication Configuration must be set on the handheld unit.

The parameterization is described in the Installation and Start-Up Guide and in the Description of Functions P3 "Basic PLC program".

References: /BH/, "Operator Components Manual"

4.2.5 Signals from/to handheld programming unit (HPU)

Signals from machine control panel simulation Interface HPU→PLC								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
IB n + 0	Function key block							
	REF	TEACH	AUTO	MDA	JOG	QUIT	RESET	WCS/MCS
IB n + 1	Function key block							
		FCT15	FCT14	BigFct	FCT12	FCT11	INC	REPOS
IB n + 2	JOG keys positive direction							
		If 1: Ax1-Ax6= Ax7-Ax12	Ax6	Ax5	Ax4	Ax3	Ax2	Ax1
IB n + 3	JOG keys negative direction							
			Ax6	Ax5	Ax4	Ax3	Ax2	Ax1
IB n + 4	Shift keys							
	Signal	Diagno	Service	System	Param	Correct	Progr.	Mach.
IB n + 5	Shift keys							
	BF16	BF15	BF14	BF13	BF12	Step	Modify	Insert
IB n + 6	Start key block							
			VAL+	VAL-	SF2	SF1	START	STOP
IB n + 7								

Signals to machine control panel simulation Interface PLC→HPU								
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
QB n + 0	Function key block							
	REF	TEACH	AUTO	MDA	JOG	QUIT	RESET	WCS/MCS
QB n + 1	Function key block							
		FCT15	FCT14	BigFct	FCT12	FCT11	INC	REPOS
QB n + 2	JOG keys positive direction							
			Ax6	Ax5	Ax4	Ax3	Ax2	Ax1
QB n + 3	JOG keys negative direction							
			Ax6	Ax5	Ax4	Ax3	Ax2	Ax1
QB n + 4	Shift keys							
	Signal	Diagno	Service	System	Param	Correct	Progr.	Mach.
QB n + 5	Shift keys							
	BF16	BF15	BF14	BF13	BF12	Step	Modify	Insert
QB n + 6	Start key block							
			VAL+	VAL-	SF2	SF1	START	STOP
QB n + 7								

4.2.6 PLC messages (DB2)

DB2	Signals for PLC messages (PLC→MMC), /P3/							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	Channel 1							
0	510007	510006	510005	510004	510003	510002	510001	510000
	Feed disable (alarm no.: 510000-510015)							
1	510015	510014	510013	510012	510011	510010	510009	510008
2	Feed and read-in disable byte1 (alarm no.: 510100-510131)							
3	Feed and read-in disable byte 2 (alarm no.: 510108-510115)							
4	Feed and read-in disable byte 3 (alarm no.: 510116-510123)							
5	Feed and read-in disable byte 4 (alarm no.: 510124-510131)							
6	Read-in disable byte 1 (alarm no.: 510200-510207)							
7	Read-in disable byte 2 (alarm no.: 510208-510215)							
9	Read-in disable byte 3 (alarm no.: 510216-510223)							
9	Read-in disable byte 4 (alarm no.: 510224-510231)							
10	NC Start disable byte 1 (alarm no.: 510300-510307)							
11	NC Start disable byte 2 (alarm no.: 510308-510315)							
12	Feed stop GEOaxis 1 byte 1(alarm no.: 511100-511107)							
13	Feed stop GEOaxis 1 byte 2 (alarm no.: 511108-511115)							
14	Feed stop GEOaxis 2 byte 1 (alarm no.: 511200-511207)							
15	Feed stop GEOaxis 2 byte 2 (alarm no.: 511208-511215)							
16	Feed stop GEOaxis 3 byte 1 (alarm no.: 511300-511307)							
17	Feed stop GEOaxis 3 byte 2 (alarm no.: 511308-511315)							
	Channel 2							
18	520007	520006	520005	520004	520003	520002	520001	520000
	Feed disable (alarm no.: 520000-520015)							
19	520015	520014	520013	520012	520011	520010	520009	520008
20-23	Feed and read-in disable byte 1-4 (alarm no.: 520100-520131)							
24-27	Read-in disable byte 1-4 (alarm no.: 520200-520231)							
28-29	NC Start disable byte 1-2 (alarm no.: 520300-520315)							
30-31	Feed stop GEOaxis 1 byte 1-2 (alarm no.: 521100-521115)							
32-33	Feed stop GEOaxis 2 byte 1-2 (alarm no.: 521200-521215)							
34-35	Feed stop GEOaxis 3 byte 1-2 (alarm no.: 521300-521315)							
36-143	As from channel 3, please refer to the following table							

4 Interface Signals

Area	Address	Signal number
Channel 1, s. above	DBX 0.0 - DBX 11.7	510.000 - 510.231
Channel 1, geo axes	DBX 12.0 - DBX 17.7	511.100 - 511.315
Channel 2, s. above	DBX 18.0 - DBX 29.7	520.000 - 520.231
Channel 2, geo axes	DBX 30.0 - DBX 35.7	521.100 - 521.315
Channel 3	DBX 36.0 - DBX 47.7	530.000 - 530.231
Channel 3, geo axes	DBX 48.0 - DBX 53.7	531.100 - 531.315
Channel 4	DBX 54.0 - DBX 65.7	540.000 - 540.231
Channel 4, geo axes	DBX 66.0 - DBX 71.7	541.100 - 541.315
Channel 5	DBX 72.0 - DBX 83.7	550.000 - 550.231
Channel 5, geo axes	DBX 84.0 - DBX 89.7	551.100 - 551.315
Channel 6	DBX 90.0 - DBX 101.7	560.000 - 560.231
Channel 6, geo axes	DBX 102.0 - DBX 107.7	561.100 - 561.315
Channel 7	DBX 108.0 - DBX 119.7	570.000 - 570.231
Channel 7, geo axes	DBX 120.0 - DBX 125.7	571.100 - 571.315
Channel 8	DBX 126.0 - DBX 137.7	580.000 - 580.231
Channel 8, geo axes	DBX 138.0 - DBX 143.7	581.100 - 581.315
Channel 9, channel 10 in SW 5 not implemented		

	Axis/spindle							
144	600107	600106	600105	600104	600103	600102	600101	600100
	Feed stop/spindle stop (alarm no.: 600100-600015) for axis/spindle 1							
145	600115	600114	600113	600112	600111	600110	600109	600108
146-147	Feed stop/spindle stop (alarm no.: 600200-600215) for axis/spindle 2							
148-149	Feed stop/spindle stop (alarm no.: 600300-600315) for axis/spindle 3							
150-151	Feed stop/spindle stop (alarm no.: 600400-600415) for axis/spindle 4							
152-153	Feed stop/spindle stop (alarm no.: 600500-600515) for axis/spindle 5							
154-155	Feed stop/spindle stop (alarm no.: 600600-600615) for axis/spindle 6							
156-157	Feed stop/spindle stop (alarm no.: 600700-600715) for axis/spindle 7							
158-159	Feed stop/spindle stop (alarm no.: 600800-600815) for axis/spindle 8							
160-161	Feed stop/spindle stop (alarm no.: 600900-600915) for axis/spindle 9							
162-163	Feed stop/spindle stop (alarm no.: 601000-601015) for axis/spindle 10							
164-165	Feed stop/spindle stop (alarm no.: 601100-601115) for axis/spindle 11							
166-167	Feed stop/spindle stop (alarm no.: 601200-601215) for axis/spindle 12							
168-169	Feed stop/spindle stop (alarm no.: 601300-601315) for axis/spindle 13							
170-171	Feed stop/spindle stop (alarm no.: 601400-601415) for axis/spindle 14							
172-173	Feed stop/spindle stop (alarm no.: 601500-601515) for axis/spindle 15							
174-175	Feed stop/spindle stop (alarm no.: 601600-601615) for axis/spindle 16							
176-177	Feed stop/spindle stop (alarm no.: 601700-601715) for axis/spindle 17							
178-179	Feed stop/spindle stop (alarm no.: 601800-601815) for axis/spindle 18							
	Axes 19 -31 not implemented in SW 5							

	User area 0 Bytes 1 - 8							
180	700007	700006	700005	700004	700003	700002	700001	700000
...	User area 0 (alarm no.: 700000-700063)							
187	700063	700062	700061	700060	700059	700058	700057	700056
188-195	User area 1 Bytes 1 - 8 (alarm no.: 700100-700163)							
...								
372-379	User area 24 Bytes 1 - 8 (alarm no.: 702400-702463)							

Note

In DB2, the assignment is made between message/alarm number, text and area identifier. All alarm or message bits are automatically transferred to the user interface (channel, axis/spindle) through appropriate parameter settings. If these parameter settings are not made, the bit transfer must be programmed in the user program. The user interface can be further influenced after the block for the error/operational messages has been called. Only signals of the channels and axes declared in the NC machine data can be transferred and texts displayed.

The user must acknowledge all error messages generated. Operational messages are displayed only for as long as the relevant condition prevails.

The number of user areas can be parameterized via FB 1.

DB2/DB3 must be deleted after changing the configuration (FB1: MSGUser).

Definition of error and operational messages /P3/							
Byte no. of DB2 / Error message EM or operational message OM							
7 / EM	6 / EM	5 / OM	4 / OM	3 / EM	2 / EM	1 / OM	0 / EM
15 / OM	14 / EM	13 / OM	12 / EM	11 / OM	10 / EM	9 / OM	8 / OM
23 / OM	22 / OM	21 / EM	20 / EM	19 / OM	18 / EM	17 / OM	16 / EM
31 / OM	30 / EM	29 / OM	28 / EM	27 / OM	26 / OM	25 / EM	24 / EM
				35 / OM	34 / EM	33 / OM	32 / EM
151 / OM	150 / EM	149 / OM	148 / EM	147 / OM	146 / EM	145 / OM	144 / EM
159 / OM	158 / EM	157 / OM	156 / EM	155 / OM	154 / EM	153 / OM	152 / EM
187 / OM	186 / OM	185 / OM	184 / OM	183 / EM	182 / EM	181 / EM	180 / EM
195 / OM	194 / OM	193 / OM	192 / OM	191 / EM	190 / EM	189 / EM	188 / EM

Example

The alarms numbered from 510200 to 510207 can be generated via DB2, DBB6 (read-in disable channel 1). These alarms are defined as error messages as standard.

4.2.7 Signals from/to NC (DB 10)

On-board input and output signals from NCK

DB10	Signals to NC (PLC→NC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 0	Disabling of digital NCK inputs /A2/ (SW 2 and higher)							
	Digital inputs without hardware #)				On-board inputs §)			
	Input 8	Input 7	Input 6	Input 5	Input 4	Input 3	Input 2	Input 1
DBB 1	Setting of digital NCK inputs from PLC (SW 2 and higher)							
	Digital inputs without hardware #)				On-board inputs §)			
	Input 8	Input 7	Input 6	Input 5	Input 4	Input 3	Input 2	Input 1
DBB 2, 3 unas- signed								
DBB 4	Disabling of digital NCK outputs /A2/ (SW 2 and higher)							
	Digital outputs without hardware #)				On-board outputs §)			
	Output 8	Output 7	Output 6	Output 5	Output 4	Output 3	Output 2	Output 1
DBB 5	Overwrite screenform of digital NCK /A2/ outputs (SW 2 and higher)							
	Digital outputs without hardware #)				On-board outputs §)			
	Output 8	Output 7	Output 6	Output 5	Output 4	Output 3	Output 2	Output 1
DBB 6	Setting value of digital NCK outputs from PLC /A2/ (SW 2 and higher)							
	Digital outputs without hardware #)				On-board outputs §)			
	Output 8	Output 7	Output 6	Output 5	Output 4	Output 3	Output 2	Output 1
DBB 7	Input screenform of digital NCK outputs /A2/ (SW 2 and higher)							
	Digital outputs without hardware #)				On-board outputs §)			
	Output 8	Output 7	Output 6	Output 5	Output 4	Output 3	Output 2	Output 1
DBB 8-55	RESERVED							

Note

#) Bits 4-7 of the digital input and NCK outputs can be processed by the PLC even though there are no hardware I/Os available for this. Therefore, these bits can be used in addition to the information exchange between NCK and PLC.

§) On the 840D, the digital inputs and outputs 1 to 4 of the NCK are physically on-board. On the FM-NC, there are no hardware I/Os for bit 0 to bit 3. These can be processed by the PLC according to #).

The external I/O signals from the NCK have been shifted to the range starting with DBB122.

General signals to NCK

DB10	Signals to NC (PLC→NC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 56	Keyswitch /A2/ Position 3 Position 2 Position 1 Position 0					Acknowl. EMER- GENCY STOP /N2/	EMER- GENCY STOP /N2/	
DBB 57					PC shutdown			INC inputs in mode group area active
DBB 58 - 59								

External digital inputs of the NCK

DB10	Signals to NC (PLC -> NCK)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 122	Disable the external digital NCK inputs (SW 2 and higher) Input 16 Input 15 Input 14 Input 13 Input 12 Input 11 Input 10 Input 9							
DBB 123	Values from the PLC for the external digital NCK inputs (SW 2 and higher) Input 16 Input 15 Input 14 Input 13 Input 12 Input 11 Input 10 Input 9							
DBB 124	Disable the external digital NCK inputs (SW 2 and higher) Input 24 Input 23 Input 22 Input 21 Input 20 Input 19 Input 18 Input 17							
DBB 125	Values from the PLC for the external digital NCK inputs (SW 2 and higher) Input 24 Input 23 Input 22 Input 21 Input 20 Input 19 Input 18 Input 17							
DBB 126	Disable the external digital NCK inputs (SW 2 and higher) Input 32 Input 31 Input 30 Input 29 Input 28 Input 27 Input 26 Input 25							
DBB 127	Values from the PLC for the external digital NCK inputs (SW 2 and higher) Input 32 Input 31 Input 30 Input 29 Input 28 Input 27 Input 26 Input 25							
DBB 128	Disable the external digital NCK inputs (SW 2 and higher) Input 40 Input 39 Input 38 Input 37 Input 36 Input 35 Input 34 Input 33							
DBB 129	Values from the PLC for the external digital NCK inputs (SW 2 and higher) Input 40 Input 39 Input 38 Input 37 Input 36 Input 35 Input 34 Input 33							

External digital outputs of the NCK

DB10	Signals to NC (PLC -> NCK)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 130	Disable the external digital NCK outputs (SW 2 and higher)							
	Output 16	Output 15	Output 14	Output 13	Output 12	Output 11	Output 10	Output 9
DBB 131	Overwrite screenform for the external digital NCK outputs (SW 2 and higher)							
	Output 16	Output 15	Output 14	Output 13	Output 12	Output 11	Output 10	Output 9
DBB 132	Value from the PLC for the external digital NCK outputs (SW 2 and higher)							
	Output 16	Output 15	Output 14	Output 13	Output 12	Output 11	Output 10	Output 9
DBB 133	Default screenform for the external digital NCK outputs (SW 2 and higher)							
	Output 16	Output 15	Output 14	Output 13	Output 12	Output 11	Output 10	Output 9
DBB 134	Disable the external digital NCK outputs (SW 2 and higher)							
	Output 24	Output 23	Output 22	Output 21	Output 20	Output 19	Output 18	Output 17
DBB 135	Overwrite screenform for the external digital NCK outputs (SW 2 and higher)							
	Output 24	Output 23	Output 22	Output 21	Output 20	Output 19	Output 18	Output 17
DBB 136	Value from the PLC for the external digital NCK outputs (SW 2 and higher)							
	Output 24	Output 23	Output 22	Output 21	Output 20	Output 19	Output 18	Output 17
DBB 137	Default screenform for the external digital NCK outputs (SW 2 and higher)							
	Output 24	Output 23	Output 22	Output 21	Output 20	Output 19	Output 18	Output 17
DBB 138	Disable the external digital NCK outputs (SW 2 and higher)							
	Output 32	Output 31	Output 30	Output 29	Output 28	Output 27	Output 26	Output 25
DBB 139	Overwrite screenform for the external digital NCK outputs (SW 2 and higher)							
	Output 32	Output 31	Output 30	Output 29	Output 28	Output 27	Output 26	Output 25
DBB 140	Value from the PLC for the external digital NCK outputs (SW 2 and higher)							
	Output 32	Output 31	Output 30	Output 29	Output 28	Output 27	Output 26	Output 25
DBB 141	Default screenform for the external digital NCK outputs (SW 2 and higher)							
	Output 32	Output 31	Output 30	Output 29	Output 28	Output 27	Output 26	Output 25
DBB 142	Disable the external digital NCK outputs (SW 2 and higher)							
	Output 40	Output 39	Output 38	Output 37	Output 36	Output 35	Output 34	Output 33

DBB 143	Overwrite screenform for the external digital NCK outputs (SW 2 and higher)							
	Output 40	Output 39	Output 38	Output 37	Output 36	Output 35	Output 34	Output 33
DBB 144	Value from the PLC for the external digital NCK outputs (SW 2 and higher)							
	Output 40	Output 39	Output 38	Output 37	Output 36	Output 35	Output 34	Output 33
DBB 145	Default screenform for the external digital NCK outputs (SW 2 and higher)							
	Output 40	Output 39	Output 38	Output 37	Output 36	Output 35	Output 34	Output 33

Analog inputs of the NCK (external)

DB10	Signals to NC (PLC -> NCK)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 146	Disable the analog NCK inputs							
	Input 8	Input 7	Input 6	Input 5	Input 4	Input 3	Input 2	Input 1
DBB 147	Specified analog value for NCK from PLC							
	Input 8	Input 7	Input 6	Input 5	Input 4	Input 3	Input 2	Input 1
DBW 148	Setpoint from PLC for analog input 1 of NCK							
DBW 150	Setpoint from PLC for analog input 2 of NCK							
DBW 152	Setpoint from PLC for analog input 3 of NCK							
DBW 154	Setpoint from PLC for analog input 4 of NCK							
DBW 156	Setpoint from PLC for analog input 5 of NCK							
DBW 158	Setpoint from PLC for analog input 6 of NCK							
DBW 160	Setpoint from PLC for analog input 7 of NCK							
DBW 162	Setpoint from PLC for analog input 8 of NCK							
DBB 164,165	Unassigned							

Analog outputs of the NCK (external)

DB10	Signals to NCK (PLC -> NCK)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 166	Overwrite screenform for the analog NCK outputs							
	Output 8	Output 7	Output 6	Output 5	Output 4	Output 3	Output 2	Output 1
DBB 167	Default screenform for the analog NCK outputs							
	Output 8	Output 7	Output 6	Output 5	Output 4	Output 3	Output 2	Output 1
DBB 168	Disable the analog NCK outputs							
	Output 8	Output 7	Output 6	Output 5	Output 4	Output 3	Output 2	Output 1
DBB 169	RESERVED							
DBW 170	Setpoint from PLC for analog output 1 of NCK							
DBW 172	Setpoint from PLC for analog output 2 of NCK							
DBW 174	Setpoint from PLC for analog output 3 of NCK							
DBW 176	Setpoint from PLC for analog output 4 of NCK							
DBW 178	Setpoint from PLC for analog output 5 of NCK							
DBW 180	Setpoint from PLC for analog output 6 of NCK							
DBW 182	Setpoint from PLC for analog output 7 of NCK							
DBW 184	Setpoint from PLC for analog output 8 of NCK							

4.2.8 Signals from/to NCK/MMC

On-board NCK inputs and outputs

DB10	Signals from (NCK -> PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 60					Actual value of the digital ON-BOARD inputs of the NCK (SW 2 and higher) On-board inputs §)			
					Input 4	Input 3	Input 2	Input 1
DBB 61-63								
DBB 64	Setpoint for the digital outputs of the NCK without hardware				Setpoint for the digital on-board outputs of the NCK			
	Output 8	Output 7	Output 6	Output 5	Output 4	Output 3	Output 2	Output 1
DBB 65-67				Unassigned				
DBB 68	Handwheel 1 moved							
DBB 69	Handwheel 2 moved							
DBB 70	Handwheel 3 moved							
DBB 71	Modification counter inch/metric system of units							
DBB 72-96	Unassigned							

Note

#) Although no associated hardware I/Os exist, the PLC can process bits 4-7 of the digital inputs and NCK outputs. Consequently, these bits can also be used to transfer information between the NCK and the PLC.

§) The digital inputs and outputs 1 to 4 of the NCK exist as on-board hardware for the 840D. No hardware I/Os are available for bits 0-3 of the FM-NC. In accordance with #), these can be processed by the PLC.

4 Interface Signals

Selection/status signals from MMC

DB 10	Signals from NC (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 97 MMC--> PLC					Channel number for handwheel 1 /H1/ (SW 2 and higher)			
					D	C	B	A
DBB 98 MMC--> PLC					Channel number for handwheel 2 /H1/ (SW 2 and higher)			
					D	C	B	A
DBB 99 MMC--> PLC					Channel number for handwheel 3 /H1/ (SW 4.1 and higher)			
					D	C	B	A
DBB 100 MMC--> PLC	Axis number for handwheel 1 /H1/ (SW 2 and higher)							
	Machine axis	Handwheel selected	Contour handwheel	E	D	C	B	A
DBB 101 MMC--> PLC	Axis number for handwheel 2 /H1/ (SW 2 and higher)							
	Machine axis	Handwheel selected	Contour handwheel	E	D	C	B	A
DBB 102 MMC--> PLC	Axis number for handwheel 2/H1/ (SW 4.1 and higher)							
	Machine axis	Handwheel selected	Contour handwheel	E	D	C	B	A
DBB 103 MMC--> PLC	MMC-101/102 battery alarm	MMC temperature limit	AT box ready					

General signals from NCK

DB 10	Signals from NC (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 104	NCK CPU ready /A2/					HHU ready	MCP 2 ready	MCP 1 ready
DBB 105	Unassigned							
DBB 106							EMERGEN-CY STOP active /N2/	
DBB 107	Inch system	NCU-link active					Probe actuated /M4/	
							Probe 2	Probe 1
DBB 108	NC ready /A2/	Drive ready /FBA/	Drives in cyclic operation		MMC-CPU Ready (MMC to OPI) /A2/	MMC CPU Ready (MMC to MPI) /A2/	MMC2 CPU ready E_MMC2 Ready	

DBB 109	NCK battery alarm /A2/	Air temp. alarm /A2/	Heat sink temp. alarm NCU 573					NCK alarm present /A2/
DBB 110	Software cams minus (SW 2 and higher) /N3/ 7 6 5 4 3 2 1 0							
DBB 111	Software cams minus (SW 2 and higher) /N3/ 15 14 13 12 11 10 9 8							
DBB 112	Software cams minus (SW 4.1 and higher) /N3/ 23 22 21 20 19 18 17 16							
DBB 113	Software cams minus (SW 4.1 and higher) /N3/ 31 30 29 28 27 26 25 24							
DBB 114	Software cams plus (SW 2 and higher) /N3/ 7 6 5 4 3 2 1 0							
DBB 115	Software cams plus (SW 2 and higher) /N3/ 15 14 13 12 11 10 9 8							
DBB 116	Software cams plus (SW 4.1 and higher) /N3/ 23 22 21 20 19 18 17 16							
DBB 117	Software cams plus (SW 4.1 and higher) /N3/ 31 30 29 28 27 26 25 24							

Note

Concerning **NCK-CPU Ready (DBX 104.7)**:

This signal is the sign-of-life monitoring function for the NC. It must be included in the safety circuit of the machine.

Concerning **MMC-CPU1 READY (DBX 108.3 and DBX 108.2)**:

If the MMC is connected to the operator panel interface (X 101), bit 3 is set (default). When connecting to the PG MPI interface (X 122), bit 2 is set.

External digital input and output signals of the NCK

DB 10	Signals from NCK (NCK→PLC), /A2/ (SW2 and higher)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 186	Actual value of external digital NCK inputs							
	Input 16	Input 15	Input 14	Input 13	Input 12	Input 11	Input 10	Input 9
DBB 187	Actual value of external digital NCK inputs							
	Input 24	Input 23	Input 22	Input 21	Input 20	Input 19	Input 18	Input 17
DBB 188	Actual value of external digital NCK inputs							
	Input 32	Input 31	Input 30	Input 29	Input 28	Input 27	Input 26	Input 25
DBB 189	Actual value of external digital NCK inputs							
	Input 40	Input 39	Input 38	Input 37	Input 36	Input 35	Input 34	Input 33
DBB 190	NCK setpoint for external digital NCK outputs							
	Output 16	Output 15	Output 14	Output 13	Output 12	Output 11	Output 10	Output 9
DBB 191	NCK setpoint for external digital NCK outputs							
	Output 24	Output 23	Output 22	Output 21	Output 20	Output 19	Output 18	Output 17
DBB 192	NCK setpoint for external digital NCK outputs							
	Output 32	Output 31	Output 30	Output 29	Output 28	Output 27	Output 26	Output 25
DBB 193	NCK setpoint for external digital NCK outputs							
	Output 40	Output 39	Output 38	Output 37	Output 36	Output 35	Output 34	Output 33

Analog input and output signals of the NCK

DB 10	Signals from NCK (NCK→PLC), /A2/ (SW2 and higher)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBW 194	Actual value for analog input 1 of the NCK							
DBW 196	Actual value for analog input 2 of the NCK							
DBW 198	Actual value for analog input 3 of the NCK							
DBW 200	Actual value for analog input 4 of the NCK							
DBW 202	Actual value for analog input 5 of the NCK							
DBW 204	Actual value for analog input 6 of the NCK							
DBW 206	Actual value for analog input 7 of the NCK							
DBW 208	Actual value for analog input 8 of the NCK							
DBW 210	Setpoint for analog output 1 of the NCK							
DBW 212	Setpoint for analog output 2 of the NCK							
DBW 214	Setpoint for analog output 3 of the NCK							
DBW 216	Setpoint for analog output 4 of the NCK							
DBW 218	Setpoint for analog output 5 of the NCK							
DBW 220	Setpoint for analog output 6 of the NCK							
DBW 222	Setpoint for analog output 7 of the NCK							
DBW 224	Setpoint for analog output 8 of the NCK							

4.2.9 Signals from/to mode group (DB11)

Mode group-specific signals

DB 11	Signals to mode group 1 (PLC→NCK) /K1/							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 0	Mode group reset	Mode group stop Axes plus spindle	Mode group stop	Mode change disable		Operating mode		
						JOG	MDA	AUTO-MATIC
DBB 1	Single block					Machine function		
	Type A	Type B				REF	REPOS	TEACH IN
DBB 2	Machine function							
			var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
DBB 3								

Note

about **machine function**: machine function defined centrally when signal "INC inputs in mode group area active" (DB10.DBX57.0) is set.

DB 11	Signals from mode group 1 (NCK→PLC) /K1/							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 4 MMC--> PLC						Strobe mode		
						JOG	MDA	AUTOM.
DBB 5 MMC--> PLC						Strobe machine function		
						REF	REPOS	TEACH IN
DBB 6	All channels in reset state				Mode group ready	Active operating mode		
						JOG	MDA	AUTOM.
DBB 7					Digitizing	Active machine function		
						REF	REPOS	TEACH IN

DB 11	Signals to mode group 2 (PLC→NCK) /K1/							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 20	Mode group reset	Mode group stop Axes plus spindle	Mode group stop	Mode change disable		Operating mode		
						JOG	MDA	AUTO-MATIC
DBB 21	Single block					Machine function		
	Type A	Type B				REF	REPOS	TEACH IN
DBB 22	Machine function							
			var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
DBB 23	Unassigned							

Note

about **machine function**: machine function defined centrally when signal "INC inputs in mode group area active" (DB10.DBX57.0) is set.

DB 11	Signals from mode group 2 (NCK→PLC) /K1/							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 24 MMC→ PLC						Strobe mode		
						JOG	MDA	AUTO-MATIC
DBB 25 MMC→ PLC						Strobe machine function		
						REF	REPOS	TEACH IN
DBB 26	All channels in reset state				Mode group ready	Active operating mode		
						JOG	MDA	AUTO-MATIC
DBB 27					Digitizing /FBD/ (SW 2 and higher)	Active machine function		
						REF	REPOS	TEACH IN

Note

The other mode groups (mode group 3 to mode group 10) are also located in DB 11 with the following initial bytes:

Mode group 3: DBB 40	Mode group 7: DBB 120
Mode group 4: DBB 60	Mode group 8: DBB 140
Mode group 5: DBB 80	Mode group 9: DBB 160
Mode group 6: DBB 100	Mode group 10: DBB 180

4.2.10 Signals for Safety SPL (safe programmable logic)

Parameterization section

References: /FBSI/, SINUMERIK Safety Integrated

DB 18	Signals for Safety SPL (PLC → PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 0	INSEP valid (valid bit)							
	8th input byte	7th input byte	6th input byte	5th input byte	4th input byte	3rd input byte	2nd input byte	1st input byte
DBB 1								
DBB 2	OUTSEP valid (valid bit)							
	8th output byte	7th output byte	6th output byte	5th output byte	4th output byte	3rd output byte	2nd output byte	1st output byte
DBB 3								
DBW 4	INSEP_ADDR (address 1st input byte)							
DBW 6	INSEP_ADDR (address 2nd input byte)							
DBW 8	INSEP_ADDR (address 3rd input byte)							
DBW 10	INSEP_ADDR (address 4th input byte)							
DBW 12	INSEP_ADDR (address 5th input byte)							
DBW 14	INSEP_ADDR (address 6th input byte)							
DBW 16	INSEP_ADDR (address 7th input byte)							

DBW 18	INSEP_ADDR (address 8th input byte)							
DBW 20	OUTSEP_ADDR (address 1st output byte)							
DBW 22	OUTSEP_ADDR (address 2nd output byte)							
DBW 24	OUTSEP_ADDR (address 3rd output byte)							
DBW 26	OUTSEP_ADDR (address 4th output byte)							
DBW 28	OUTSEP_ADDR (address 5th output byte)							
DBW 30	OUTSEP_ADDR (address 6th output byte)							
DBW 32	OUTSEP_ADDR (address 7th output byte)							
DBW 34	OUTSEP_ADDR (address 8th output byte)							
DBB 36								SPL READY
DBB 37								

Data area / error

DB 18	Signals for Safety SPL (PLC ↔ NCK)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	Data area for SPL inputs/outputs							
DBD 38	SPL_DATA.INSEP [1..32]							
DBD 42	SPL_DATA.INSEP [33..64]							
DBD 46	SPL_DATA.OUTSEP [1..32]							
DBD 50	SPL_DATA.OUTSEP [33..64]							
	Data area for user SPL							
DBD 54	SPL_DATA.INSIP [1..32]							
DBD 58	SPL_DATA.INSIP [33..64]							

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DBD 62									SPL_DATA.OUTSIP [1..32]								
DBD 66									SPL_DATA.OUTSIP [33..64]								
DBD 70									SPL_DATA.MARKERSIP [1..32]								
DBD 74									SPL_DATA.MARKERSIP [33..64]								

	Difference in level between NCK - PLC for diagnostics																
DBD 78									SPL_DELTA.INSEP [1..32]								
DBD 82									SPL_DELTA.INSEP [33..64]								
DBD 86									SPL_DELTA.OUTSEP [1..32]								
DBD 90									SPL_DELTA.OUTSEP [33..64]								
DBD 94									SPL_DELTA.INSIP [1..32]								
DBD 98									SPL_DELTA.INSIP [33..64]								
DBD 102									SPL_DELTA.OUTSIP [1..32]								
DBD 106									SPL_DELTA.OUTSIP [33..64]								
DBD 110									SPL_DELTA.MARKERSIP [1..32]								
DBD 114									SPL_DELTA.MARKERSIP [33..64]								
DBD 118																	CMDSI
DBD 119																	
DBD 120	Error number 0 = no error 1 - 320 = Signal number starting from SPL_DATA.INSEP [1]																
DBD 124	Level indicator of cross-checking (diagnostics option: how many SPL signals currently differ in level)																

4.2.11 Signals from/to operator panel (DB 19)

DB 19	Signals to operator panel (PLC→MMC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 0	Actual value in WCS 0=MCS /A2/	Back up travel recorder		Clear recall alarms (MMC 103 only)	Clear cancel alarms (MMC 103 only)	Key disable /A2/	Screen darkening /A2/	Screen bright /A2/
DBB 1	Reserved							
DBW 2	Higraph first error display							
DBW 4	Higraph first error display							
DBB 6	Analog spindle 1, capacity in percent							
DBB 7	Analog spindle 2, capacity in percent							
DBB 8	Channel number of machine control panel to MMC							
DBB 9								
DBB 10	ShopMill control signal	Reserved for selection				Selection of tool offset	Selection of alarm area	Selection of program area
DBB 11	Reserved for selection							
DBB 12	V24 On /A2/	V24 Off /A2/	V24 External /A2/	V24 Stop /A2/	COM1 /A2/	COM2 /A2/		
DBB 13	Select /A2/	Load part program /A2/	Unload /A2/					
DBB 14	0=act. FS 1=pass. FS	V24 act. FS: Index of file to be transferred in the standard list. V24 pass. FS: Number of the control file for user file names.						
DBB 15	V24 act. FS: Index that specifies the axis, channel or tool no. V24 pass. FS: Index of the file to be transferred in the user list							
DBB 16	Part program handling: Number of the control file for user file names.							
DBB 17	Part program handling: Index of the file to be transferred in the user list							
DBB 18	Reserved (test automation)							
DBB 19	Reserved (signal counter)							

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DB 19	Signals from operator panel (MMC → PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 20	MCS/WCS Change-over /A2/	Simulation active /A2/		Recall alarm cleared MMC 103 /A2/	Cancel alarm cleared MMC 103 /A2/	Cancel key actuated /A2/	Screen is dark /A2/	
DBB 21								
DBB 22	Displayed channel number from the MMC /A2/							
DBB 23								
DBB 24	V24 status from PLC							
	V24 On /A2/	V24 Off /A2/	V24 External /A2/	V24 Stop /A2/	Com1 active /A2/	Com2 active /A2/	OK /A2/	Error /A2/
DBB 25	Error V24 /A2/							
DBB 26-27	Reserved							
DBB 28	Part program handling status /A2/							
	Select	Load	Unload		Active		OK	Error
DBB 29	Error program handling /A2/							
DBB 30-39	Reserved							
DBB 40	Mode group number /A2/							
DBB 41	Channel number (FC9: ChanNo) /A2/							
DBB 42								FC9: Start (Measure in Jog) /A2/
DBB 43								
PLC →MMC								
DBB 44								Mode change disable /A2/
DBB 45	FC9 out							
					StarErr	Error	Done	Activ
DBW 46	FC9: Ref							
DBW 48	Reserved							

	Interface 2nd MMC
DBB 50-99	Assignment as for DBB 0 to DBB 49 Switchover interface to MMC
DBW 100	ONL_REQUEST /B3/ Online request from MMC MMC writes its client identification as online request (bus type, MMC bus address)
DBW 102	ONL_CONFIRM /B3/ Acknowledgment from PLC to online request PLC writes MMC client identification as acknowledgment (bus type, MMC bus address).
DBW 104	PAR_CLIENT_IDENT /B3/ MMC writes its client identification (bus type, MMC bus address).
DBB 106	PAR_MMC_TYP /B3/ Example: Main / subordinate operator panel / server /...
DBB 107	PAR_MSTT_ADR /B3/ MMC writes address of MCP to be activated
DBB 108	PAR_STATUS /B3/ PLC writes online enable for MMC.
DBB 109	PAR_Z_INFO /B3/ PLC writes additional info about status
DBW 120	MMC1_CLIENT_IDENT /B3/ PLC writes PAR_CLIENT_IDENT to MMCx_CLIENT_IDENT when MMC goes online.
DBB 122	MMC1_TYP /B3/ PLC writes PAR_MMC_TYP to MMCx_TYP when MMC goes online.
DBB 123	MMC1_MSTT_ADR /B3/ PLC writes PAR_MSTT_ADR to MMCx_MSTT_ADR when MMC goes online.
DBB 124	MMC1_STATUS /B3/ Connection status, MMC and PLC alternately write their requests/acknowledgments
DBB 125	MMC1_Z_INFO /B3/ Additional info connection status (pos./neg. acknowledgment, error messages...)

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DBB 126			MMC1 CHANGE DENIED /B3/	MMC1 ACTIVE CHANGED /B3/	MMC1 ACTIVE PERM /B3/	MMC1 ACTIVE REQ /B3/	MMC1 MSTT SHIFT LOCK /B3/	MMC1 SHIFT LOCK /B3/
DBB 127-129	Reserved							

Online Interface MMC 2								
DBW 130	MMC2_CLIENT_IDENT /B3/ PLC writes PAR_CLIENT_IDENT to MMCx_CLIENT_IDENT when MMC goes online.							
DBB 132	MMC2_CLIENT_IDENT /B3/ PLC writes PAR_MMC_TYP to MMCx_TYP when MMC goes online.							
DBB 133	MMC2_MSTT_ADR /B3/ PLC writes PAR_MSTT_ADR to MMCx_MSTT_ADR when MMC goes online.							
DBB 134	MMC2_STATUS /B3/ Connection status, MMC and PLC alternately write their requests/acknowledgments							
DBB 135	MMC2_Z_INFO /B3/ Additional info connection status (pos./neg. acknowledgment, error messages...)							
DBB 136			MMC2 CHANGE DENIED /B3/	MMC2 ACTIVE CHANGED /B3/	MMC2 ACTIVE PERM /B3/	MMC2 ACTIVE REQ /B3/	MMC2 MSTT SHIFT LOCK /B3/	MMC2 SHIFT LOCK /B3/
DBB 137-139	Reserved							

4.2.12 PLC machine data

DB 20	PLC machine data (PLC→operator)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBW 0	INT values							
DBW								
DBW	INT values							
DBB	Bit arrays							
DBB								
DBB	Bit arrays							
DBD	REAL values							
DBD								
DBD	REAL values							

Note

The initial and end addresses of the PLC machine data areas depend on the respective length indications of the partial areas. In general, the integer values start with the data byte 0. The upper limit is determined by the corresponding length indication. In general, the following bit arrays (2-decade hexadecimal numbers on input) start with the following even address. The real values follow directly the bit arrays and also start with an even address.

4.2.13 Signals from/to NCK channel (DB 21 - 30)

DB 21 - 30	Signals to NCK channel (PLC→NCK)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 0		Activate dry run feedrate /V1/	Activate M01 /K1/	Activate single block /K1/	Activate DRF /H1/			Execution from external source
DBB 1	Activate program test /K1/	PLC action complete /K1/	CLC override /TE1/	CLC stop /TE1/	Time monitoring act. (tool management)	Synchronized action OFF	Enable protection zones /A3/	Activate referencing /R1/
DBB 2	Skip block /K1/							
	/7	/6	/5	/4	/3	/2	/1	/0
DBB 3	Nibbling and punching /N4/							
				Stroke delayed /N4/	Stroke not operating /N4/	Stroke suppression /N4/	Manual stroke enable /N4/	No stroke enable /N4/
DBB 4	Feedrate override /V1/							
	H	G	F	E	D	C	B	A
DBB 5	Rapid traverse override /V1/							
	H	G	F	E	D	C	B	A
DBB 6	Feedrate override active /V1/	Rapid traverse override active /V1/		Program level abort /K1/	Delete subroutine no. of passes	Delete distance-to-go /A2/	Read-in disable /K1/	Feed disable /V1/
DBB 7	Reset /K1/			NC Stop axes plus spindle /K1/	NC Stop /K1/	NC Stop to block limit /K1/	NC Start /K1/	NC Start disable /K1/
DBB 8	Activate machine-related protection area /A3/ (SW 2 and higher)							
	Area 8	Area 7	Area 6	Area 5	Area 4	Area 3	Area 2	Area 1
DBB 9	Activate machine-related protection area /A3/ (SW 2 and higher)							
							Area 10	Area 9
DBB 10	Activate channel-specific protection area /A3/ (SW 2 and higher)							
	Area 8	Area 7	Area 6	Area 5	Area 4	Area 3	Area 2	Area 1
DBB 11	Activate channel-specific protection area /A3/ (SW 2 and higher)							
							Area 10	Area 9

Note**on Feedrate override active (DBX6.7)**

even if feedrate override is not active (= 100 %), the setting 0% is effective.

on Feedrate override (DBB 4)

either 31 positions (Gray code) with 31 MD for % evaluation or 0-200% corresponding to the dual value in byte (201-255 ⇒ max. 200 %).

on Rapid traverse override (DBB 5)

either 31 positions (Gray code) with 31 MD for % evaluation or 0-100% corresponding to the dual value in byte (101-255 ⇒ max. 100 %).

on Activate single block (DBX0.4)

select variant via "Write variable".

on Delete distance-to-go (DBX6.2)

effects only path axes and not positioning axes

Control signals to geometry axes

DBB 12	Geometry axis 1							
	Traversing keys /H1/		Rapid traverse override /H1/	Traversing key disable /H1/	Feed stop /V1/	Activate handwheel /H1/		
	+	-				3	2	1
DBB 13	Geometry axis 1 machine function /H1/							
			Var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
DBB 14	OEM signals geometry axis 1							
DBB 15	Geometry axis 1							
DBB 16	Geometry axis 2							
	Traversing keys /H1/		Rapid traverse override /H1/	Traversing key disable /H1/	Feed stop /V1/	Activate handwheel /H1/		
	+	-				3	2	1
DBB 17	Geometry axis 2 machine function /H1/							
			Var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
DBB 18	OEM signals geometry axis 2							
DBB 19	Geometry axis 2							

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DBB 20	Geometry axis 3							
	Traversing keys /H1/		Rapid traverse override /H1/	Traversing key disable /H1/	Feed stop /V1/	Activate handwheel /H1/		
	+	-				3	2	1
DBB 21	Geometry axis 3 machine function /H1/							
			Var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
DBB 22	OEM signals geometry axis 3							
DBB 23	Geometry axis 3							

Note

about **machine function**: machine function only defined when signal "INC inputs in mode group area active" (DB10.DBX57.0) is not set.

Operating signals from MMC/status signals from NC channel

DB 21-30	Signals from NCK channel (NCK→PLC, MMC→PLC, PLC→NCK)							
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 24 MMC→ PLC		Dry run feedrate selected /V1/	M01 selected /K1/	Single block selected	DRF selected /H1/			Execution from external source selected
DBB 25 MMC→ PLC	Program test selected /K1/				Feedrate override for rapid traverse selected /V1/			
DBB 26 MMC→ PLC								Skip block selected /K1/ (SW 2 and higher)
DBB 27 MMC→ PLC	Reserved							
DBB 28 PLC→NCK	OEM channel signals							
DBB 29 PLC→NCK	Do not disable tool	Switch off wear monitoring	Switch off workpiece counter	Activate PTP motion	Activate fixed feed 4 /FBMA/ /V1/ (SW 4 and higher)	Activate fixed feed 3 /FBMA/ /V1/ (SW 4 and higher)	Activate fixed feed 2 /FBMA/ /V1/ (SW 4 and higher)	Activate fixed feed 1 /FBMA/ /V1/ (SW 4 and higher)
DBB 30 PLC→NCK	Activate contour handwheel							
				Neg. direction simulation contour handwheel	Simulation contour handwheel on	Handwheel 3	Handwheel 2	Handwheel 1
DBB 31 PLC→NCK	Reserved							
DBB 32 NCK→ PLC		Last action block active /K1/	M00/M01 active /K1/	Approach block active /K1/	Action block active /K1/			Execution from external source active
DBB 33 NCK→ PLC	Program test active /K1/	Transforma tion active /K1/M1	M02/M30 active /K1/	Block search active /K1/	Handwheel override active (SW 2 and higher) /H1/	Revolutio- nal feedrate active /V1/		Referencing active /R1/
DBB 34 NCK→ PLC	OEM channel signals feedback							

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DBB 35 NCK--> PLC	Channel status /K1/			Program status /K1/				
	Reset	Interrupted	Active	Aborted	Interrupted	Stopped	Waiting	Running
DBB 36 NCK--> PLC	NCK alarm with processing stop present /A2/	Channel-specific NCK alarm present /A2/	Channel ready for operation in SW version 4 and higher	Interrupt processing active /K1/	All axes stationary /B1/	All axes requiring reference points are referenced /R1/		
DBB 37 NCK--> PLC	Stop	Read-in	CLC	CLC	CLC	Contour handwheel active		
	at block end with SBL is suppressed	enable is ignored	stopped upper limit /TE1/	stopped lower limit /TE1/	active /TE1/	Handwheel 3 /H1/	Handwheel 2 /H1/	Handwheel 1 /H1/
DBB 38 NCK--> PLC	Nibbling and punching /N4/							
							Acknowledgement manual stroke enable /N4/	Stroke enable active /N4/
DBB 39 NCK--> PLC								Protection zones not guaranteed

Note

on **Feedrate override for rapid traverse selected (DBX25.3)**

Depending on this signal, the basic PLC program copies the feedrate override onto the rapid traverse override on the channel-specific interface.

On **Program test selected (DBX25.7)**

"Program test selected" means axis disable for all channel axes and spindles.

Status signals of geometry axes

DB 21 - 30	Signals from NCK channel (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 40	Geometry axis 1							
	Traverse command /H1/ plus	minus				Handwheel active /H1/ 3	2	1
DBB 41	Geometry axis 1 active machine function /H1/							
			Var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
DBB 42	OEM signals geometry axis 1							
DBB 43	Geometry axis 1							
DBB 44 MMC--> PLC								
DBB 46	Geometry axis 2							
	Traverse command /H1/ plus	minus				Handwheel active /H1/ 3	2	1
DBB 47	Geometry axis 2 active machine function /H1/							
			Var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
DBB 48	OEM signals geometry axis 2							
DBB 49	Geometry axis 2							
DBB 50 MMC--> PLC								
DBB 52	Geometry axis 3							
	Traverse command /H1/ plus	minus				Handwheel active /H1/ 3	2	1
DBB 53	Geometry axis 3 active machine function /H1/							
			Var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
DBB 54	OEM signals geometry axis 3							
DBB 55	Geometry axis 3							
DBB 56 MMC--> PLC								
DBB 57								

Change signals on auxiliary function transfer from NC channel

DB 21 - 30	Signals from NCK channel (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 58				M fct. 5 change /H2/	M fct. 4 change /H2/	M fct. 3 change /H2/	M fct. 2 change /H2/	M fct. 1 change /H2/
DBB 59				M fct. 5 not decoded	M fct. 4 not decoded	M fct. 3 not decoded	M fct. 2 not decoded	M fct. 1 not decoded
DBB 60		S fct. 3 quick	S fct. 2 quick	S fct. 1 quick		S fct. 3 change /H2/	S fct. 2 change /H2/	S fct. 1 change /H2/
DBB 61		T fct. 3 quick	T fct. 2 quick	T fct. 1 quick		T fct. 3 change/H2/ (SW 2 and higher)	T fct. 2 change/H2/ (SW 2 and higher)	T fct. 1 change /H2/
DBB 62		D fct. 1 quick	D fct. 1 quick	D fct. 1 quick		D fct. 3 change/H2/ (SW 2 and higher)	D fct. 2 change/H2/ (SW 2 and higher)	D fct. 1 change /H2/
DBB 63				DL fct. 1 quick				DL fct. change
DBB 64		H fct. 1 quick	H fct. 1 quick	H fct. 1 quick		H fct. 3 change /H2/	H fct. 2 change /H2/	H fct. 1 change /H2/
DBB 65			F fct. 6 change /H2/	F fct. 5 change /H2/	F fct. 4 change /H2/	F fct. 3 change /H2/	F fct. 2 change /H2/	F fct. 1 change /H2/
DBB 66				M fct. 5 quick	M fct. 4 quick	M fct. 3 quick	M fct. 2 quick	M fct. 1 quick
DBB 67			F fct. 6 quick	F fct. 5 quick	F fct. 4 quick	F fct. 3 quick	F fct. 2 quick	F fct. 1 quick

Note

For 10-decade T numbers, only the T fct. 1 change signal is available. For 5-decade D numbers, only the D fct. 1 change signal is available.

Transferred M/S functions

DB 21 - 30	Signals from NCK channel (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBW 68	Extended address M function 1 (binary) /H2/							
DBD 70								
			M function 1 (binary) /H2/					
DBW 74	Extended address M function 2 (binary) /H2/							
DBD 76	M function 2 (binary) /H2/							
DBW 80	Extended address M function 3 (binary) /H2/							
DBD 82	M function 3 (binary) /H2/							
DBW 86	Extended address M function 4 (binary) /H2/							
DBD 88	M function 4 (binary) /H2/							
DBW 92	Extended address M function 5 (binary) /H2/							
DBD 94	M function 5 (binary) /H2/							
DBW 98	Extended address S function 1 (binary) /H2/							
DBD 100	S function 1 (REAL format) /H2/							
DBW 104	Extended address S function 2 (binary) /H2/							
DBD 106	S function 2 (REAL format) /H2/							
DBW 110	Extended address S function 3 (binary) /H2/							
DBD 112	S function 3 (REAL format) /H2/							

Note

M functions are programmed in the part program in the INTEGER format (8 decades plus sign).

"REAL format" means: 24 bit mantissa and 8 bit exponent.

Transferred T/D/DL functions

DB 21 - 30	Signals from NCK channel (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBW 116	Extended address T function 1 (16 bit Int)							
DBW 118 DBD 118	T function 1 (binary) /H2/ For 8-decade T nos., T function 1 (32 bit DINT) is used in DBD 118 (see note)							
DBW 120	Extended address T function 2 (16 bit Int)							
DBW 122	T function 2 (Int)							
DBW 124	Extended address T function 3 (16 bit Int)							
DBW 126	T function 3 (Int)							
DBB 128								
DBB 129	D function 1 (binary) /H2/							
DBW 130 DBB 130	For 5-decade D nos., D function 1 (16 bit DINT) is used in DBD 130 (see note) Extended address D function 2 (8 bit Int)							
DBB 131	D function 2 (8 bit Int)							
DBB 132	Extended address D function 3 (8 bit Int)							
DBB 133	D function 3 (8 bit Int)							
DBW 134	Extended address DL function (16 bit Int)							
DBD 136	DL function (REAL)							

Note

With active tool management, programmed T functions are **not** output to the PLC.

8-decade T nos. are only available as T function 1

Programmed D functions with names (e.g. D=CUTEDGE_1) **cannot** be output in ASCII format to the PLC.

5-decade D nos. are only available as D function 1

The REAL format corresponds to floating point representation in STEP 7 (24 bit mantissa and 8 bit exponent). This floating point format supplies a maximum of 7 valid places.

Transferred H/F functions

DB 21 - 30	Signals from NCK channel (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBW 140	Extended address H function 1 (binary) /H2/							
DBD 142	H function 1 (REAL or Dint) /H2/							
DBW 146	Extended address H function 2 (binary) /H2/							
DBD 148	H function 2 (REAL or Dint) /H2/							
DBW 152	Extended address H function 3 (binary) /H2/							
DBD 154	H function 3 (REAL or Dint) /H2/							
DBW 158	Extended address F function 1 (binary) /H2/							
DBD 160	F function 1 (REAL format) /H2/							
DBW 164	Extended address F function 2 (binary) /H2/							
DBD 166	F function 2 (REAL format) /H2/							
DBW 170	Extended address F function 3 (binary) /H2/							
DBD 172	F function 3 (REAL format) /H2/							
DBW 176	Extended address F function 4 (binary) /H2/							
DBD 178	F function 4 (REAL format) /H2/							
DBW 182	Extended address F function 5 (binary) /H2/							
DBD 184	F function 5 (REAL format) /H2/							
DBW 188	Extended address F function 6 (binary) /H2/							
DBD 190	F function 6 (REAL format) /H2/							

Note

F functions are programmed in the part program in the REAL format.

The extended address of the F function contains an identifier with the following meaning:

0 = path feed,

1-31 = machine axis number for feed with positioning axes.

The H function data type is dependent on MD 22110: AUXFU_H_TYPE_INT.

Decoded M signals (M0 - M99)

DB 21 - 30	Signals from NCK channel (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 194	Dynamic M functions							
	M07	M06	M05 *	M04 *	M03 *	M02	M01	M00
DBB 195	Dynamic M functions /H2/							
	M15	M14	M13	M12	M11	M10	M09	M08
DBB 196	Dynamic M functions /H2/							
	M23	M22	M21	M20	M19	M18	M17	M16
DBB 197	Dynamic M functions /H2/							
	M31	M30	M29	M28	M27	M26	M25	M24
DBB 198	Dynamic M functions /H2/							
	M39	M38	M37	M36	M35	M34	M33	M32
DBB 199	Dynamic M functions /H2/							
	M47	M46	M45	M44	M43	M42	M41	M40
DBB 200	Dynamic M functions /H2/							
	M55	M54	M53	M52	M51	M50	M49	M48
DBB 201	Dynamic M functions /H2/							
	M63	M62	M61	M60	M59	M58	M57	M56
DBB 202	Dynamic M functions /H2/							
	M71	M70 *	M69	M68	M67	M66	M65	M64
DBB 203	Dynamic M functions /H2/							
	M79	M78	M77	M76	M75	M74	M73	M72
DBB 204	Dynamic M functions /H2/							
	M87	M86	M85	M84	M83	M82	M81	M80
DBB 205	Dynamic M functions /H2/							
	M95	M94	M93	M92	M91	M90	M89	M88
DBB 206	Dynamic M functions /H2/							
					M99	M98	M97	M96
DBB 207								

Note

M functions marked with * are not decoded in this bit array if a spindle is configured in the channel. In this case, these M functions are offered as extended M functions in DB21-30.DBB68 ff. and in the relevant axis DB DB31-61.DBB86 ff.

Dynamic M functions (M00 to M99) are decoded by the basic PLC program.

The PLC user must use dynamic M functions in order to generate static M functions.

Active G functions

DB 21 - 30	Signals from NCK channel (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 208	Number of active G function of G function group 1 (binary) /K1/							
DBB 209	Number of active G function of G function group 2 (binary) /K1/							
DBB 210	Number of active G function of G function group 3 (binary) /K1/							
DBB 211	Number of active G function of G function group 4 (binary) /K1/							
DBB 212	Number of active G function of G function group 5 (binary) /K1/							
DBB 213	Number of active G function of G function group 6 (binary) /K1/							
DBB 214	Number of active G function of G function group 7 (binary) /K1/							
DBB 215	Number of active G function of G function group 8 (binary) /K1/							
...								
DBB 270	Number of active G function of G function group n-1 (binary) /K1/							
DBB 271	Number of active G function of G function group n (binary) /K1/							

Note

The active G functions of the groups are updated each time a G function or a mnemonic identifier (e.g. SPLINE) is programmed.

G functions within a G group are output as binary value, starting with 1.

A G function with the value 0 means that no G function is active for this G group.

Signals for protection areas from NC channel

DB 21 - 30	Signals from NCK channel (NCK→PLC) (SW 2 and higher)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 272	Machine-related protection area preactivated /A3/							
	Area 8	Area 7	Area 6	Area 5	Area 4	Area 3	Area 2	Area 1
DBB 273	Machine-related protection area preactivated /A3/							
							Area 10	Area 9
DBB 274	Channel-specific protection area preactivated /A3/							
	Area 8	Area 7	Area 6	Area 5	Area 4	Area 3	Area 2	Area 1
DBB 275	Channel-specific protection area preactivated /A3/							
							Area 10	Area 9
DBB 276	Machine-related protection area violated /A3/							
	Area 8	Area 7	Area 6	Area 5	Area 4	Area 3	Area 2	Area 1

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DBB 277	Machine-related protection area violated /A3/							
							Area 10	Area 9
DBB 278	Channel-specific protection area violated /A3/							
	Area 8	Area 7	Area 6	Area 5	Area 4	Area 3	Area 2	Area 1
DBB 279	Channel-specific protection area violated /A3/							
							Area 10	Area 9

Instruction-controlled signals to NC channel

DB 21 - 30	Signals to NCK channel (NCK→PLC) (SW 4 and higher)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 280							Synch. action request to NCK	D number request to NCK
DBB 281							Synch. action request from NCK	
DBW 282	Assignment D1							
DBW 284	Assignment D2							
DBW 286	Assignment D3							
DBW 288	Assignment D4							
DBW 290	Assignment D5							
DBW 292	Assignment D6							
DBW 294	Assignment D7							
DBW 296	Assignment D8							
DBW 298	Assignment D9							
DBB 300	Disable synchronized actions /FBSY/							
	No. 8	No. 7	No. 6	No. 5	No. 4	No. 3	No. 2	No. 1
DBB 301	Disable synchronized actions /FBSY/							
	No. 16	No. 15	No. 14	No. 13	No. 12	No. 11	No. 10	No. 9
DBB 302	Disable synchronized actions /FBSY/							
	No. 24	No. 23	No. 22	No. 21	No. 20	No. 19	No. 18	No. 17
DBB 303	Disable synchronized actions /FBSY/							
	No. 32	No. 31	No. 30	No. 29	No. 28	No. 27	No. 26	No. 25
DBB 304	Disable synchronized actions /FBSY/							
	No. 40	No. 39	No. 38	No. 37	No. 36	No. 35	No. 34	No. 33
DBB 305	Disable synchronized actions /FBSY/							
	No. 48	No. 47	No. 46	No. 45	No. 44	No. 43	No. 42	No. 41

DBB 306	Disable synchronized actions /FBSY/							
	No. 56	No. 55	No. 54	No. 53	No. 52	No. 51	No. 50	No. 49
DBB 307	Disable synchronized actions /FBSY/							
	No. 64	No. 63	No. 62	No. 61	No. 60	No. 59	No. 58	No. 57

Note

The request signals are set by the user and reset by the basic program after transmission of the corresponding data.

Instruction-controlled signals from NC channel

DB 21 - 30	Signals from NCK channel (NCK→PLC) (SW 4 and higher)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 308	Disable synchronized actions /FBSY/							
	No. 8	No. 7	No. 6	No. 5	No. 4	No. 3	No. 2	No. 1
DBB 309	Disable synchronized actions /FBSY/							
	No. 16	No. 15	No. 14	No. 13	No. 12	No. 11	No. 10	No. 9
DBB 310	Disable synchronized actions /FBSY/							
	No. 24	No. 23	No. 22	No. 21	No. 20	No. 19	No. 18	No. 17
DBB 311	Disable synchronized actions /FBSY/							
	No. 32	No. 31	No. 30	No. 29	No. 28	No. 27	No. 26	No. 25
DBB 312	Disable synchronized actions /FBSY/							
	No. 40	No. 39	No. 38	No. 37	No. 36	No. 35	No. 34	No. 33
DBB 313	Disable synchronized actions /FBSY/							
	No. 48	No. 47	No. 46	No. 45	No. 44	No. 43	No. 42	No. 41
DBB 314	Disable synchronized actions /FBSY/							
	No. 56	No. 55	No. 54	No. 53	No. 52	No. 51	No. 50	No. 49
DBB 315	Disable synchronized actions /FBSY/							
	No. 64	No. 63	No. 62	No. 61	No. 60	No. 59	No. 58	No. 57
Cyclic	Signals interface NCK → PLC							
DBB 316	Active G functions							
								G00 *
DBB 317	Cartesian point-to-point motion							
	Tool missing	PTP motion active						External language mode active
DBB 318								
		Dryrun feedrate						ASUP stopped
DBB 319								

* applies to Geo axes only

Signals to orientation axes

DB 21 - 30	Signals to NCK channel (PLC→NCK)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 320	Traversing keys			Orientation axis 1				
	+	–	Rapid traverse override	Traversing key disable	Feed stop	Activate handwheel (bit value coding)		
	–	–						
DBB 321	Orientation axis 1							
DBB 322	OEM signals orientation axis 1							
DBB 323	Orientation axis 1							
DBB 324	Traversing keys			Orientation axis 2				
	+	–	Rapid traverse override	Traversing key disable	Feed stop	Activate handwheel (bit value coding)		
DBB 325	Orientation axis 2							
DBB 326	OEM signals orientation axis 2							
DBB 327	Orientation axis 2							
DBB 328	Traversing keys			Orientation axis 3				
	+	–	Rapid traverse override	Traversing key disable	Feed stop	Activate handwheel (bit value coding)		
DBB 329	Orientation axis 3							
DBB 330	OEM signals orientation axis 3							
DBB 331	Orientation axis 3							

Signals from orientation axes

DB 21 - 30	Signals from NCK channel (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 332	Orientation axis 1							
	Travel command plus	minus					Handwheel active (bit value coding)	
DBB 333	Orientation axis 1							
	Active machine function							
			var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
DBB 334	OEM signals orientation axis 1							
DBB 335	Orientation axis 1							
DBB 336	Orientation axis 2							
	Travel command plus	minus					Handwheel active (bit value coding)	
DBB 337	Orientation axis 2							
	Active machine function							
			var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
DBB 338	OEM signals orientation axis 2							
DBB 339	Orientation axis 2							
DBB 340	Orientation axis 3							
	Travel command plus	minus					Handwheel active (bit value coding)	
DBB 341	Orientation axis 3							
	Active machine function							
			var. INC	10000 INC	1000 INC	100 INC	10 INC	1 INC
DBB 342	OEM signals orientation axis 3							
DBB 343	Orientation axis 3							

Tool management functions from NC channel

DB 21 - 30	Signals from NCK channel (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Modification signals tool management functions								
DBB 344					Last replace- ment tool of tool group	Transfer to new replace- ment tool	Tool limit value reached	Tool pre- warning limit reached
DBB 345-347								
Transferred tool management functions								
DBD 348	T number for tool prewarning limit (DInt)							
DBD 352	T number for tool limit value (DInt)							
DBD 356	T number of new replacement tool (DInt)							
DBD 360	T number of last replacement tool (DInt)							

4.2.14 Signals from/to axis/spindle (PLC→NCK)

DB 31 -61	Signals to axis/spindle (PLC→NCK)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 0 Axis and spindle	Feedrate override /V1/ H G F E D C B A							
DBB 1 Axis and spindle	Override active /V1/	Position measuring system 2 /A2/	Position measuring system 1 /A2/	Follow-up mode /A2/	Axis/spindle disable /A2/	Sensor fixed stop /F1/ (SW 2 and higher)	Acknowl. fixed stop reached /F1/ (SW 2 and higher)	Drive test movement enable
DBB 2 Axis and spindle	Reference point value /R1/ 4 3 2 1				Clamping in progress /A3/	Delete distance-to-go/ spindle reset /A2, S1/	Controller enable /A2/	Cam activation /N3/ (SW 2 and higher)
DBB 3 Axis and spindle		Velocity/spindle speed limitation /A3/	Activate fixed feed 4 /FBMA/, /V1/ (SW 4 and higher)	Activate fixed feed 3 /FBMA/, /V1/ (SW 4 and higher)	Activate fixed feed 2 /FBMA/, /V1/ (SW 4 and higher)	Activate fixed feed 1 /FBMA/, /V1/ (SW 4 and higher)	Enable travel to fixed stop /F1/ SW 2 and higher)	Accept external ZO /K2/ (SW 2 and higher)
DBB 4 Axis and spindle	Traversing keys /H1/ plus minus		Rapid traverse override /H1/	Traversing key disable /H1/	Feed stop/spindle stop /A2/	Activate handwheel /H1/ 3 2 1		
DBB 5 Axis and spindle	Machine function /H1/ Var. INC 10000 INC 1000 INC 100 INC 10 INC 1 INC							
DBB 6 Axis and spindle	OEM axis signals							
DBB 7								
DBB 8	Request PLC axis/spindle /K5/			Activation signal with change of this byte /K5/	Allocate NC axis to channel /K5/ D C B A			

Note

DBX8.4: is automatically reset after assignment (SW 3.7, 4.2 and higher). For previous SW versions, the activation signal must be applied until the assignment is made (DBB68).

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DB 31-61	Continuation: Signals to axis/spindle (PLC → NCK)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 9					Parameter set Definition from NC disabled	Parameter block servo (SW4 and higher) /K2/ C B A		
DBB 10-11								
DBB 12 Axis	Delay reference point approach /R1/				2nd software limit switch /A3/ plus minus	Hardware limit switch /A3/ plus minus		
DBB 13-15								
DBB 16 Spindle	Delete S value /S1/	No n-monitoring when changing gear /S1/	Resyn-chronize spindle 1 /S1/	Resyn-chronize spindle 2 /S1/	Gear has changed over /S1/	Actual gear stage /S1/ C B A		
DBB 17 Spindle		Invert M3/M4 /S1/	Resyn-chronize spindle at pos. 2 /S1/	Resyn-chronize spindle at pos. 1 /S1/				Feedrate override f. spindle valid /S1/
DBB 18 Spindle	Setpoint rot. direct. /S1/ CCW CW		Oscillating speed /S1/	Oscillation via PLC /S1/				
DBB 19 Spindle	Spindle override /V1/ H G F E D C B A							
DBB 20 611D					Speed setpoint smoothing /A2/	Torque limit 2 /A2/	Ramp-function generator interface /A2/	Runup change-over U/f mode /DE1/
DBB 21 611D	Pulse enable /A2/	n controller integrator disable /A2/	Selecting motor /A2/	Motor selection /A2/ B A		Drive parameter set selection /A2/ C B A		
DBB 22 Safety Integr.				Speed limit bit value 1	Speed limit bit value 0		Deselect safe standstill	Deselect safe velocity and standstill

DB 31-61	Continuation: Signals to axis/spindle (PLC → NCK)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 23 Safety Integr.	Activate test stop		Activate end position pair 2			Transmission of bit value 2	Transmission of bit value 1	Transmission of bit value 0
DBB 24	Master/slave on	Bit value for CTRLOUT_changed: 1 0					(Stepper motor)	
		Change setpoint output assignment (for compile cycles)					Step mode fine/coarse	Rotation monitoring
DBB 25								
DBB 26 Grinding	Enable emergency retraction			Enable slave axis overlay				
DBB 27 Grinding								
DBB 28 Oscillation	PLC checks axis /P5/ (SW 2 and higher)	Stop /P5/ (SW 2 and higher)	Stop at next reversal point /P5/ (SW 2 and higher)	Change reversal point /P5/ (SW 2 and higher)	Set reversal point /P5/ (SW 2 and higher)			
DBB 29 Grinding			No auto sync	Start gantry synchronization run /G1/ (SW 2 and higher)				
DBB 30-31 Grinding								
DBB 32 Safety Integr.				Deselect external stop D	Deselect external stop C	Deselect external stop A		
DBB 33 Safety Integr.	Select override							
	Bit value 3	Bit value 2	Bit value 1	Bit value 0				
DBB 34								
DBB ...								
DBB 59								

4 Interface Signals

Note

The IS "Delete distance-to-go" (DBX2.2) is effective only for position axes on an axis-specific basis; the IS "Delete distance-to-go" (DB21-30, DB6.2) acts on a channel-specific basis. The IS "Spindle reset" (DXB2.2) acts on a spindle-specific basis.

Signals from axis/spindle

DB 31 -61		Signals from axis/spindle (NCK→PLC)							
Byte	Bit 7		Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 60 Axis and spindle	Position reached /B1/ with exact stop fine		with exact stop coarse	References/ synchronizes 2 /R1/	References/ synchronizes 1 /R1/	Encoder limit frequency exceeded 2 /A3/	Encoder limit frequency exceeded 1 /A3/	NCU_Link Axis active /B3/	Spindle /no axis /S1/
DBB 61 Axis and spindle	Current controller active /A2/		Speed controller active /A2/	Position controller active /A2/	Axis/spindle stationary (n < n _{min}) /A2/	Follow-up mode active /A2/	Axis ready /B3/	Axis container rotation active /B3/	Travel request /F1/
DBB 62			Force fixed stop limited /F1/ (SW 5.2)	Fixed stop reached /F1/ (SW 2 and higher)	Activate travel to fixed stop /F1/ (SW 2 and higher)	Measurement active	Revolutional feedrate active	Handwheel overlay active /H1/ (SW 2 and higher)	Software cams active /N3/ (SW 2 and higher)
DBB 63									
DBB 64 Axis and spindle	Traverse command /H1/ plus minus						Handwheel active /H1/ 3 2 1		
65 Axis and spindle	Active machine function /H1/ Var. INC 10000 INC 1000 INC 100 INC 10 INC 1 INC								
DBB 66 Axis and spindle	OEM axis signals (reserved)								
DBB 67									
DBB 68	PLC axis/spindle /K5/	Neutral axis/spindle /K5/	Axis replacement possible /K5/	New type requested by PLC /K5/	NC axis/spindle in channel /K5/ D C B A				
DBB 69	NCU number in NCU link network						Parameter block servo C B A		
DBB 70-71									
DBB 72									
DBB 73-75									

DB 31-61	Continuation: Signals from axis/spindle (NCK → PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 76 Axis	Rotary axis in position	Indexing axis in position /T1/	Positioning axis /P2/					Scratch pulse /A2/
DBB 77								
DBB 78 Axis								
			F function (REAL format) for positioning axis /V1/					
DBB 82 Spindle					Gear change- over /S1/	Setpoint gear stage /S1/		
						C	B	A
DBB 83 Spindle	Actual rotat. direction CW /S1/	Speed monitoring /W1/ (SW 2 and higher)	Spindle in setpoint range /S1/	Support area limits violated /S8/ (SW 2 and higher)	Geometry monitoring /W1/ (SW 2 and higher)	Set speed increased /S1/	Set speed limited /S1/	Speed limit exceeded /S1/
DBB 84 Spindle	Active spindle operating mode /S1/			Synchro- nous mode /S3/ (SW 2 and higher)	Tapping without compen- sating chuck /S1/	CLGON active /S8/ (SW 2 and higher)	SUG active (grinding wheel surface speed)	Const. cutting speed active
	Control mode	Oscillation mode	Positioning mode					
DBB 85 Spindle								
DBB 86 Spindle	M function (binary) for spindle /S1/							
DBD 88 Spindle								
			S function (floating-point) for spindle /S1/					
DBB 92 611D					Speed setpoint smoothing active /A2/	Torque limit 2 active /A2/	HLGSS active /A2/	Set-up mode active /A2/

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DB 31-61	Continuation: Signals from axis/spindle (NCK → PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 93 611D	Enable pulses /A2/	n controller integrator disabled /A2/	Drive ready /A2/	Active motor /A2/		Active drive parameter set /A2/		
				B	A	C	B	A
DBB 94 611D	Variable signaling fct. /A2/	n _{act} = n _{set} /A2/	n _{act} < n _x /A2/	n _{act} < n _{min} /A2/	Md < Mdx /A2/	Ramp-up complete /A2/	Temperature prewarning /A2/	
							Heat sink	Motor
DBB 95 611D								U _{DC-link} < alarm threshold /A2/
DBB 96	Master/ slave active /TE3/	Bit value for CTRLOUT_changed:						(Stepper motor) error rotation monitoring /S6/
		1	0					
		Change setpoint output assignment (for compile cycles)						
DBB 97								
DBB 98 Synchro- nous spindle	Emergency retraction active	Accelera- tion warning threshold reached	Speed warning threshold reached	Overlaid motion /S3/ (SW2 and higher)		Actual value coupling /S3/ (SW2 and higher)	Synchronism (SW 2 and higher) /S3/	
							coarse	fine
DBB 99 Synchro- nous spindle	Emergency retraction enabled	Max. acce- leration reached	Max. speed reached	Synchro- nization running	Axis acce- lating		Slave spindle active (SW 2 and higher) /S3/	Master spindle active (SW 2 and higher) /S3/
DBB 100 Grinding (SW 2 and higher)	Oscillation active /P5/	Oscillation motion active /P5/	Spark-out active /P5/	Error in oscillation /P5/	Oscillation cannot start /P5/			
DBB 101 Gantry (SW 2 and higher)	Gantry axis /G1/	Gantry leading axis /G1/	Gantry grouping is synchro- nous /G1/	Gantry synchro- nization run ready to start /G1/	Gantry warning limit exceeded /G1/	Gantry cut- off limit exceeded /G1/		
DBB 102, 103								
DBB 104 Grinding (SW2 and higher)	Active infeed axis /P5/							
	Axis 8	Axis 7	Axis 6	Axis 5	Axis 4	Axis 3	Axis 2	Axis 1

DB 31-61	Continuation: Signals from axis/spindle (NCK → PLC)							
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 105	Active infeed axis /P5/							
	Axis 16							Axis 9
DBB 106	Active infeed axis /P5/							
	Axis 24							Axis 17
DBB 107	Active infeed axis /P5/							
		Axis 31	Axis 30					Axis 25
DBB 108	SINUMERIK Safety Integrated //							
	Axis safely referenced					Delete pulses via external circuit		Safe speed or zero speed active
DBB 109	SINUMERIK Safety Integrated Actual position > cam position							
	SC 4-	SC 4+	SC 3-	SC 3+	SC 2-	SC 2+	SC 1-	SC 1+
DBB 110	SINUMERIK Safety Integrated							
			n < nx	Safe velocity active bit value 1	Safe velocity active bit value 0		Safe zero speed active	
DBB 111	Reserved for SINUMERIK Safety Integrated //							
	Stop E active	Stop D active	Stop C active	Stop A/B active				

4.2.15 Interface for loading/unloading magazine

DB 71	Interface for loading/unloading magazine (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 0	Interface (I) active							
	I8	I7	I6	I5	I4	I3	I2	I1
DBB 1	I16	I15	I14	I13	I12	I11	I10	I9
DBB 2,3								
DBB n	res.	res.	res.	NC program positions magazine	Position at loading point	Reload	Unload	Load
DBB n + 2	Assigned channel (8 bit Int)							
DBB n + 3	Tool management no. (8 bit Int)							
DBD n + 4	Unassigned parameter 1 (D word)							
DBD n + 8	Unassigned parameter 2 (D word)							
DBD n + 12	Unassigned parameter 3 (D word)							
DBW n + 16	Identification for loading/unloading station (Int), (fixed value 9999)							
DBW n + 18	No. of loading station (Int)							
DBW n + 20	Magazine no. (source) for unloading/reloading (Int)							
DBW n + 22	Location no. (source) for unloading/reloading (Int)							
DBW n + 24	Magazine no. (target) for loading/reloading/positioning (Int)							
DBW n + 26	Location no. (target) for loading/reloading/positioning (Int)							
DBW n + 28	Spare							

Initial addresses of the loading/unloading stations:

Loading/unloading station 1: n= 4
Loading/unloading station 2: n= 34

Loading/unloading station 3: n= 64
Loading/unloading station 4: n= 94

Load interface 1 is responsible for spindle loading and reloading of tools, for relocating tools and for positioning at any location (e.g. buffer). **References:** /FBW/, "Description of Functions, Tool Management"

4.2.16 Interface for spindle as change position

DB 72	Signals from spindle (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 0	Interface (I) active							
	I8	I7	I6	I5	I4	I3	I2	I1
DBB 1								
	I16	I15	I14	I13	I12	I11	I10	I9
DBB 2,3								
DBB n	res.	Replace manual tool	Replace manual tool.	OldT in buffer no. (n-42)	T0	Prepare change	Perform change (initiate: M06)	Compulsory change
DBB n + 1	Unassigned							
DBB n + 2	Assigned channel (8 bit Int)							
DBB n + 3	Tool management no. (8 bit Int)							
DBD n + 4	Unassigned parameter 1 (D word)							
DBD n + 8	Unassigned parameter 2 (D word)							
DBD n + 12	Unassigned parameter 3 (D word)							
DBW n + 16	Buffer identification (Int), (fixed value 9998) (corresponds to "Target position for new tool")							
DBW n + 18	Relative location (target) in the buffer (Int)							
DBW n + 20	Magazine no. (source) for new tool (Int)							

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DBW n + 22	Location no. (source) for new tool (Int)							
DBW n + 24	Magazine no. (target) for old tool (Int)							
DBW n + 26	Location no. (target) for old tool (Int)							
DBW n + 28	Tool new: location type (Int)							
DBW n + 30	Tool new: size left (Int)							
DBW n + 32	Tool new: size right (Int)							
DBW n + 34	Tool new: size top (Int)							
DBW n + 36	Tool new: size bottom (Int)							
DBB n + 38	Tool status for tool new							
	Tool was in use	Tool fixed location coded		Prewarning limit reached	Tool measured		Tool enabled	Active tool
DBW n + 40	Tool new: T no. (Int)							
DBW n + 42	If DBX (n+0.4) = 1, then buffer location of old tool is entered here.							
DBW n + 44	Spare							
DBW n + 46	Spare							
Initial addresses of the buffers: Spindle 1:n= 4 Spindle 2:n = 52								

References: /FBW/, "Description of Functions, Tool Management"

4.2.17 Interface for circular magazine

DB73	Signals from circular magazine (NCK→PLC)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB 0	Interface (I) active							
	I8	I7	I6	I5	I4	I3	I2	I1
DBB 1	I16	I15	I14	I13	I12	I11	I10	I9
DBB 2,3								
DBB n	res.	res.	res.	res.	T0	res.	Perform change (initiation: T no.)	Obligatory change
DBB n + 1	Unassigned							
DBB n + 2	Assigned channel (8 bit Int)							
DBB n + 3	Tool management no. (8 bit Int)							
DBD n + 4	Unassigned parameter 1 (D word)							
DBD n + 8	Unassigned parameter 2 (D word)							
DBD n + 12	Unassigned parameter 3 (D word)							
DBW n + 16	Reserved							
DBW n + 18	Reserved							
DBW n + 20	Circular magazine no. (Int)							
DBW n + 22	Location no. for new tool (Int)							
DBW n + 24	Reserved							
DBW n + 26	Location no. for old tool (Int)							
DBW n + 28	Tool new: location type (Int)							
DBW n + 30	Tool new: size left (Int)							

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DBW n + 32	Tool new: size right (Int)							
DBW n + 34	Tool new: size top (Int)							
DBW n + 36	Tool new: size bottom (Int)							
DBB n + 38	Tool status for tool new							
	Tool was in use	Tool fixed location coded		Prewarning limit reached	Tool measured		Tool enabled	Active tool
DBW n + 40	Tool new: T no. (Int)							
DBW n + 42	Spare							
Initial addresses of the circular magazines: circular magazine 1: n = 4 2: n = 48								

References: /FBW/, "Description of Functions, Tool Management"

4.2.18 Interface for buffer (tool management)

(available soon)

Note

On a tool change the PLC can detect whether a tool is about to be disabled because the tool life or workpiece counter has been exceeded. The signal "Prewarning limit reached" is scanned for this. The prewarning threshold must be set correspondingly.

DB77 is set up. However, its signals and data cannot yet be addressed in SW 5.1.

DB77	Buffer (tool management)							
Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
DBB n+0							Data not complete	Buffer occupied (ZWS)
DBB n+1								Request ZWS data
DBW n+2	Magazine no. of old location (Int)							
DBW n+4	Location no. of old location (Int)							
DBW n+6	Tool: Location type (Int)							
DBW n+8	Tool: Size left (Int)							
DBW n+10	Tool: Size right (Int)							

DBW n+12	Tool: Size above (Int)							
DBW n+14	Tool: Size below (Int)							
DBB n+16	Tool status for tool							
	Tool was in use	Tool fixed location coded		Pre-warning limit reached	Measure tool		Tool enabled	Active tool
DBB n+17	Tool status for tool							
DBW n+18	Tool: T No. (Int)							

Note

Initial addresses of the buffers:

Buffer 1: n = 0

2: n = 20

3: n = 40

...

m: n = (m-1)*20

4.2.19 Signals to/from ManualTurn

Note

Details for the listed signals are contained in

References: /FBMA/, Description of Functions ManualTurn

DB82	Signals to ManualTurn (input signals)		
Address	Name	Initial value	Comment
0.0	CTM_IN.mode	B#16#0	Special operating modes for ManualTurn
1.0	CTM_IN.feed_ovrd	B#16#0	Feed override switch
2.0	CTM_IN.spindle_ovrd	B#16#0	Spindle override switch
4.0	CTM_IN.nc_start.open	TRUE	NC Start, break contact element
4.1	CTM_IN.nc_start.close	FALSE	NC Start, make contact element
6.0	CTM_IN.nc_stop.open	TRUE	NC Stop, break contact element
6.1	CTM_IN.nc_stop.close	FALSE	NC Stop, make contact element
8.0	CTM_IN.spindle_start.open	TRUE	Spindle start, break contact element
8.1	CTM_IN.spindle_start.close	FALSE	Spindle start, make contact element
10.0	CTM_IN.spindle_stop.open	TRUE	Spindle stop, break contact element
10.1	CTM_IN.spindle_stop.close	FALSE	Spindle stop, make contact element
12.0	CTM_IN.spindle_left	FALSE	Spindle rotational direction, counterclockwise

4 Interface Signals

12.1	CTM_IN.spindle_right	FALSE	Spindle rotational direction, clockwise
12.2	CTM_IN.direction_xz_off	FALSE	Axis direction xz off
12.3	CTM_IN.x_plus	FALSE	1st geometry axis (X axis) in plus direction
12.4	CTM_IN.x_minus	FALSE	1st geometry axis (X axis) in minus direction
12.5	Reserved	-	-
12.6	Reserved	-	-
12.7	CTM_IN.z_plus	FALSE	3rd machine axis (Z axis) in plus direction
13.0	CTM_IN.z_minus	FALSE	3rd machine axis (Z axis) in minus direction
13.1	CTM_IN.direction_c_off	FALSE	Machine axis direction (C) off
13.2	Reserved	-	-
13.3	Reserved	-	-
13.4	CTM_IN.c_plus	FALSE	3rd machine axis (C axis) in plus direction
13.5	CTM_IN.c_minus	FALSE	3rd machine axis (C axis) in minus direction
13.6	CTM_IN.increment	FALSE	Increment on/off
13.7	CTM_IN.fix_feed1	FALSE	Fixed feedrate F1 on
14.0	CTM_IN.fix_feed2	FALSE	Fixed feedrate F2 on
14.1	CTM_IN.fix_feed3	FALSE	Fixed feedrate F3 on
14.2	CTM_IN.fix_feed4	FALSE	Fixed feedrate F4 on
14.3	CTM_IN.hand_wheel_1	FALSE	Handwheel factor 1 on/off
14.4	CTM_IN.hand_wheel_10	FALSE	Handwheel factor 10 on/off
14.5	CTM_IN.hand_wheel_100	FALSE	Handwheel factor 100 on/off
14.6	CTM_IN.contour_feed_plus	FALSE	Contour feedrate plus
14.7	CTM_IN.contour_feed_minus	FALSE	Contour feedrate minus
15.0	CTM_IN.contour_wheel	FALSE	Contour handwheel on/off
15.1	CTM_IN.x_wheel	FALSE	Handwheel for 1st geometry axis (X axis) on/off
15.2	Reserved	-	-
15.3	CTM_IN.z_wheel	FALSE	Handwheel for 3rd geometry axis (Z axis) on/off
15.4	CTM_IN.single_block	FALSE	Single block on/off
15.5	CTM_IN.teach_feed	FALSE	Teach In, feedrate (G01)
15.6	CTM_IN.teach_rapid	FALSE	Teach In, rapid traverse (G00)
15.7	Reserved	-	-
16.0	CTM_IN.jog_feed	FALSE	Setup feedrate (override is active)
16.1	CTM_IN.disable_popup	FALSE	Suppression of the pop-up alarm window
16.2	CTM_IN.disable_cnc_standard	FALSE	Switchover to standard CNC suppressed
16.3	CTM_IN.reset	FALSE	RESET
16.4	CTM_IN.disable_spindle_control	FALSE	Suppression of the ManualTurn spindle control
16.5	CTM_IN.reset_nc_start_dir_off	FALSE	Reset NC Start on selection of direction in operating mode MANUAL, SK STRAIGHT
17.0	CTM_IN.assign_contour_wheel	B#16#0	Assignment of contour handwheel to handwheel 1, 2, 3
18.0	CTM_IN.vconst_max_input_locked	FALSE	Enter disable speed limitation

18.1	CTM_IN.spdle_speed_input_locked	FALSE	Enter disable speed limitation
18.2	Reserved		
18.3	CTM_IN.spindle_speed_unit	FALSE	Unit of speed
18.4	CTM_IN.set_spindle_speed	FALSE	Accept speed value/unit
18.5	CTM_IN.start_spindle_asup	FALSE	Start asynchronous subroutine for external spindle control
22.0	CTM_IN.spindle_speed_value	B#116#0	Spindle speed or cutting speed
26.0	Reserved	-	-
30.0	Reserved	-	-
34.0	CTM_IN.teach.m_func	B#16#0	Teach buffer for M functions
36.0	Reserved	-	-
38.0	CTM_IN.teach.strobe	FALSE	Strobe for acceptance of the Teach buffer

DB82	Signals from ManualTurn (output signals)		
Address	Name	Initial value	Comment
40.0	CTM_OUT.ctm_activ	FALSE	ManualTurn active
40.1	CTM_OUT.x_plus	FALSE	1st geometry axis (X axis) in plus direction
40.2	CTM_OUT.x_minus	FALSE	1st geometry axis (X axis) in minus direction
40.3	Reserved	-	-
40.4	Reserved	-	-
40.5	z_plus	FALSE	3rd geometry axis (Z axis) in plus direction
40.6	z_minus	FALSE	3rd geometry axis (Z axis) in minus direction
40.7	Reserved	-	-
41.0	Reserved	-	-
41.1	CTM_OUT.c_plus	FALSE	3rd machine axis (C axis) in plus direction
41.2	CTM_OUT.c_minus	FALSE	3rd machine axis (C axis) in minus direction
41.3	CTM_OUT.spindle_right	FALSE	Spindle rot. direct. clockwise preselected
41.4	CTM_OUT.spindle_left	FALSE	Spindle rot. direct. counterclockw. presel.
41.5	CTM_OUT.nc_activ	FALSE	NC part program active
41.6	CTM_OUT.nc_stopped	FALSE	NC part program interrupt requested
41.7	CTM_OUT.spindle_activ	FALSE	Spindle running
42.0	CTM_OUT.spindle_stopped	FALSE	Spindle stop requested
42.1	CTM_OUT.hand_wheel_1	FALSE	Handwheel factor 1
42.2	CTM_OUT.hand_wheel_10	FALSE	Handwheel factor 10
42.3	CTM_OUT.hand_wheel_100	FALSE	Handwheel factor 100
42.4	CTM_OUT.contour_wheel	FALSE	Contour handwheel
42.5	CTM_OUT.x_wheel	FALSE	Handwheel for 1st geometry axis (X axis)
42.6	Reserved	-	-
42.7	CTM_OUT.z_wheel	FALSE	Handwheel for 3rd geometry axis (Z axis)
43.0	CTM_OUT.spindle_speed_set	FALSE	Speed value/unit accepted
43.1	CTM_OUT.single_block	FALSE	Single block selected
43.2	CTM_OUT.spindle_control_disabled	FALSE	Spindle control ManualTurn suppressed
43.3	CTM_OUT.teach_in_activ	FALSE	Teach In selected

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43.4	CTM_OUT.reset	FALSE	Reset pressed
43.5	CTM_OUT.reference_mode_selected	FALSE	Reference point approach selected
43.6	CTM_OUT.manual_mode_straight	FALSE	SK "STRAIGHT" selected in manual mode
43.7	CTM_OUT.manual_mode_conical	FALSE	SK "CONICAL" selected in manual mode
44.0	CTM_OUT.spindle_pos_mode_sel	FALSE	SK "ORIENTED SPINDLE STOP" is activated
45.0	CTM_OUT.active_mmc_mode	B#16#0	Active operating mode
46.0	Reserved	-	-
47.0	Reserved	-	-
48.0	Reserved	-	-
52.0	Reserved	-	-
56.0	Reserved	-	-
60.0	Reserved	-	-
64.0	CTM_OUT.errors.nc_start_error	FALSE	Error messages, NC Start key defective
64.1	CTM_OUT.errors.nc_stop_error	FALSE	Error messages, NC Stop key defective
64.2	CTM_OUT.errors.spindle_start_error	FALSE	Error messages, spindle start key defective
64.3	CTM_OUT.errors.spindle_stop_error	FALSE	Error messages, spindle stop key defective
64.5	Reserved	-	-
64.6	Reserved	-	-
64.7	Reserved	-	-
65.0	Reserved	-	-
65.1	Reserved	-	-
65.2	Reserved	-	-
66.0	Reserved	-	-
67.0	Reserved	-	-
68.0	Reserved	-	-
72.0	Reserved	-	-
76.0	nck_signal_monitor.monitor_on	FALSE	NCK signal monitor function active (input signal)
76.1	nck_signal_monitor.monitor_initialize	FALSE	Initialize data (input signal)
78.0	nck_signal_monitor.access_error[1].current_number	W#16#0	Current number of error message 1 (output signal)
80.0	nck_signal_monitor.access_error[1].db_number	B#16#0	DB number of error message 1 (output signal)
81.0	nck_signal_monitor.access_error[1].byte_number	B#16#0	Byte number of error message 1 (output signal)
82.0	nck_signal_monitor.access_error[1].bit_number	B#16#0	Bit number of error message 1 (output signal)
84.0	nck_signal_monitor.access_error[2].current_number	W#16#0	Current number of error message 2 (output signal)
86.0	nck_signal_monitor.access_error[2].db_number	B#16#0	DB number of error message 2 (output signal)
87.0	nck_signal_monitor.access_error[2].byte_number	B#16#0	Byte number of error message 2 (output signal)
88.0	nck_signal_monitor.access_error[2].bit_number	B#16#0	Bit number of error message 2 (output signal)
:		:	

192.0	nck_signal_monitor.access_error[20]. current_number	W#16#0	Current number of error message 20 (output signal)
194.0	nck_signal_monitor.access_error[20]. db_number	B#16#0	DB number of error message 20 (output signal)
195.0	nck_signal_monitor.access_error[20]. byte_number	B#16#0	Byte number of error message 20 (output signal)
196.0	nck_signal_monitor.access_error[20]. bit_number	B#16#0	Bit number of error message 20 (output signal)

4.2.20 Signals to/from ShopMill

Note

Details for the listed signals are contained in

References: /FBSP/, Description of Functions ShopMill

DB82	Signals to ShopMill (input signals)		
Address	Name	Initial value	Comment
0.0	CMM_IN.transfer_base_sig	B#16#0	Transmission mode for MCP signals
2.0	CMM_IN.base_sig.main_mode_mill.manual	FALSE	Manual ShopMill mode
2.1	CMM_IN.base_sig.main_mode_mill.automatic	FALSE	Automatic ShopMill mode
4.0	CMM_IN.base_sig.reset	FALSE	RESET for ShopMill
4.1	CMM_IN.base_sig.nc_cycle_start	FALSE	Cycle start
4.2	CMM_IN.base_sig.nc_cycle_stop	FALSE	Cycle stop
6.0	CMM_IN.sub_mode_mill.tool	FALSE	Tool operational area
6.1	CMM_IN.sub_mode_mill.directory	FALSE	Directory operational area
6.2	CMM_IN.sub_mode_mill.messages	FALSE	Alarms/messages operational area
6.3	CMM_IN.sub_mode_mill.program	FALSE	Program operational area
8.0	CMM_IN.spindle_interface_number	B#16#5	Assignment: spindle axis data block 4 or 5
9.1	CMM_IN.spindle_start	FALSE	Spindle start
9.2	CMM_IN.spindle_stop	FALSE	Spindle stop
9.3	CMM_IN.spindle_left	FALSE	Spindle rotational direction counterclockwise
9.4	CMM_IN.spindle_right	FALSE	Spindle rotational direction clockwise
9.5	CMM_IN.program_extern_selected	FALSE	Program selected in PLC
9.6	CMM_IN.disable_cnc_standard	FALSE	Disable switchover to standard CNC
9.7	CMM_IN.cmm_activ_in_cnc_mode	TRUE	ShopMill PLC active during the CNC standard operation
10.0	CMM_IN.program_test_request	FALSE	Select function Program test
10.1	CMM_IN.dry_run_request	FALSE	Select function Dry run
10.2	CMM_IN.m01_request	FALSE	Select function M01
10.3	CMM_IN.skip_block_request	FALSE	Select skip block function
10.4	CMM_IN.boot_standard	FALSE	System power-up in standard CNC user interface

DB82	Signals from ShopMill (output signals)		
Address	Name	Initial value	Comment
30.0	CMM_OUT.base_sig.main_mode_mill.manual	FALSE	Manual ShopMill mode
30.1	CMM_OUT.base_sig.main_mode_mill.automatic	FALSE	Automatic ShopMill mode
32.0	CMM_OUT.base_sig.reset	FALSE	Reset performed
32.1	CMM_OUT.base_sig.nc_cycle_activ	FALSE	Cycle active
32.2	CMM_OUT.base_sig.nc_cycle_stopped	FALSE	Cycle interrupted

34.0	CMM_OUT.sub_mode_mill.tool	FALSE	Tool operational area selected
34.1	CMM_OUT.sub_mode_mill.directory	FALSE	Directory operational area selected
34.2	CMM_OUT.sub_mode_mill.messages	FALSE	Alarms/messages operational area selected
34.3	CMM_OUT.sub_mode_mill.program	FALSE	Program operational area selected
36.0	CMM_OUT.cmm_plc_activ	FALSE	ShopMill PLC active
36.1	CMM_OUT.cmm_mmc_activ	FALSE	ShopMill user interface active
36.2	CMM_OUT.spindle_start_req	FALSE	Spindle start requested (M3/M4 output to spindle)
36.3	CMM_OUT.spindle_stop_req	FALSE	Spindle stop requested (M5 output to spindle)
36.4	CMM_OUT.spindle_right	FALSE	Spindle rot. direction clockwise preselected
36.5	CMM_OUT.spindle_left	FALSE	Spindle rot. direct. counterclockwise preselected
36.6	CMM_OUT.set_spindle_halt	FALSE	Spindle stop (request for PLC user program)
37.0	CMM_OUT.program_selection_done	FALSE	Acknowledgment from MMC that a program has been selected
37.1	CMM_OUT.program_test_active	FALSE	Function Program test is active
37.2	CMM_OUT.dry_run_active	FALSE	Function Dry Run is active
37.3	CMM_OUT.m01_active	FALSE	Function M01 is active
37.4	CMM_OUT.skip_block_activ	FALSE	Skip block function is active
37.5	CMM_OUT.e_asup_activ	FALSE	E_ASUP is active
37.6	CMM_OUT.e_s_asup_activ	FALSE	E_S_ASUP is active
40.0	CMM_OUT.cycle_state.tool_change	FALSE	Tool change active
40.1	CMM_OUT.cycle_state.approach_range	FALSE	Infeed range
40.2	CMM_OUT.cycle_state.retreat	FALSE	Retraction
40.3	CMM_OUT.cycle_state.machining_process	FALSE	Machining
40.7	CMM_OUT.cycle_state.initialization	FALSE	Program initialization
42.0	CMM_OUT.tool_m_function.function_1_on	FALSE	Switch on tool-specific M function 1
42.1	CMM_OUT.tool_m_function.function_2_on	FALSE	Switch on tool-specific M function 2
42.2	CMM_OUT.tool_m_function.function_3_on	FALSE	Switch on tool-specific M function 3
42.3	CMM_OUT.tool_m_function.function_4_on	FALSE	Switch on tool-specific M function 4
42.4	CMM_OUT.tool_m_function.function_1_activ	FALSE	Tool-specific M function 1 applies
42.5	CMM_OUT.tool_m_function.function_2_activ	FALSE	Tool-specific M function 2 applies
42.6	CMM_OUT.tool_m_function.function_3_activ	FALSE	Tool-specific M function 3 applies
42.7	CMM_OUT.tool_m_function.function_4_activ	FALSE	Tool-specific M function 4 applies
44	CMM_OUT.mask_number	W#16#0	Actual mask number of ShopMill
54.0	CMM_OUT.errors.asup_select_error	FALSE	The E_asup cycle could not be selected after control startup
60.0	nck_signal_monitor.monitor_on	FALSE	NCK signal monitor function active (input signal)
60.1	nck_signal_monitor.monitor_initialize	FALSE	Initialize data (input signal)
62.0	nck_signal_monitor.access_error[1].current_number	W#16#0	Current number of error message 1 (output signal)

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64.0	nck_signal_monitor.access_error[1].db_number	B#16#0	DB number of error message 1 (output signal)
65.0	nck_signal_monitor.access_error[1].byte_number	B#16#0	Byte number of error message 1 (output signal)
66.0	nck_signal_monitor.access_error[1].bit_number	B#16#0	Bit number of error message 1 (output signal)
68.0	nck_signal_monitor.access_error[2].current_number	W#16#0	Current number of error message 2 (output signal)
70.0	nck_signal_monitor.access_error[2].db_number	B#16#0	DB number of error message 2 (output signal)
71.0	nck_signal_monitor.access_error[2].byte_number	B#16#0	Byte number of error message 2 (output signal)
72.0	nck_signal_monitor.access_error[2].bit_number	B#16#0	Bit number of error message 2 (output signal)
		.	
176.0	nck_signal_monitor.access_error[20].current_number	W#16#0	Current number of error message 20 (output signal)
178.0	nck_signal_monitor.access_error[20].db_number	B#16#0	DB number of error message 20 (output signal)
179.0	nck_signal_monitor.access_error[20].byte_number	B#16#0	Byte number of error message 20 (output signal)
180.0	nck_signal_monitor.access_error[20].bit_number	B#16#0	Bit number of error message 20 (output signal)

4.2.21 NC signals influenced by the ManualTurn application

DB10	Signals to NC (PLC ---> NC)
Byte	Designation
DBB56 Bit7	Keyswitch setting 3 /A2/
DBB122, 123 Bits 0 to 7	External digital NCK inputs Inputs 9 to 16
DBB124, 125 Bits 0 to 7	External digital NCK inputs Inputs 17 to 24
DBB130, 131, 132, 133 Bits 0 to 7	External digital NCK outputs Outputs 17 to 24
DB11	Signals to mode groups (PLC--->NCK) /K1/
DBB0 Bit0 Bit1 Bit2	AUTOMATIC mode MDA mode JOG mode
DBB1 Bit0 Bit1 Bit2	TEACH IN machine function REPOS machine function REF machine function

DB21	Signals to NCK channel (PLC--->NCK)
Byte	Designation
DBB0 Bit3 Bit4 Bit5	Activate DRF /H1/ Activate single block /K1/ Activate M01 /K1/

Bit6	Activate dry run feedrate /V21/
DBB1 Bit6	PLC action terminated /K1/
Bit7	Activate program test /K1/
DBB4 / DBB5	Feedrate override / rapid traverse override /V1/
Bit0	A
Bit1	B
Bit2	C
Bit3	D
Bit4	E
Bit5	F
Bit6	G
Bit7	H
DBB6 Bit0 *)	Feed lock /V1/
Bit2	Delete distance-to-go /A2/
Bit4	Abort program level /K1/
Bit6 *)	Rapid traverse override active /V1/
Bit7	Feedrate override active /V1/
DBB7 Bit1	NC Start /K1/
Bit3	NC Stop /K1/
Bit7	Reset /K1/
DBB12, 16, 20	Geometry axis 1, 2, 3
Bit0	Activate handwheel 1 /H1/
Bit1	Activate handwheel 2 /H1/
Bit2	Activate handwheel 3 /H1/
Bit3 *)	Feed stop /V1/
Bit4 *)	Traversing key disable /H1/
Bit5	Rapid traverse override /H1/
Bit6	Traversing keys minus /H1/
Bit7	Traversing keys plus /H1/
DBB13, 17, 21	Geometry axis 1, 2, 3 machine functions /H1/
Bit0	1 INC
Bit1	10 INC
Bit2	100 INC
Bit3	1000 INC
Bit5	Var INC
Bit6	Continuous
DBB29 Bit0	Fixed feedrate F1 /V1/
Bit1	Fixed feedrate F2 /V1/
Bit2	Fixed feedrate F3 /V1/
Bit3	Fixed feedrate F4 /V1/
DBB30	
Bit0	Activate contour handwheel 1
Bit1	Activate contour handwheel 2
Bit2	Activate contour handwheel 3
Bit3	Contour handwheel simulation on
Bit4	Contour handwheel simulation negative direction

DB31-33	Signals to axis/spindle
DBB0, 19	Feedrate override spindle speed override /V1/
Bit0	A
Bit1	B
Bit2	C
Bit3	D
Bit4	E
Bit5	F
Bit6	G

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	Bit7	H
DBB1	Bit7	Correction active /V1/
DBB2	Bit2	Delete distance-to-go / reset spindle /A2,S1/
DBB4	Bit0 Bit1 Bit2 Bit3 *) Bit4 *) Bit5 Bit6 Bit7	Activate handwheel 1 /H1/ Activate handwheel 2 /H1/ Activate handwheel 3 /H1/ Feed stop / spindle stop /V1/ Traversing key disable /H1/ Rapid traverse override /H1/ Traversing keys minus /H1/ Traversing keys plus /H1/
DBB5	Bit0 Bit1 Bit2 Bit3 Bit5 Bit6	Machine functions /H1/ 1 INC 10 INC 100 INC 1000 INC Var. INC Continuous

DB33		Signals to axis/spindle
DBB3	Bit2 Bit3 Bit4 Bit5	Fixed feedrate F1 /V1/ Fixed feedrate F2 /V1/ Fixed feedrate F3 /V1/ Fixed feedrate F4 /V1/
DBB8	Bit0 Bit1 Bit2 Bit3 Bit4 Bit7	Assign NC axis - channel A Assign NC axis - channel B Assign NC axis - channel C Assign NC axis - channel D Activate assignment using positive edge Request PLC axis / spindle
DBB16	Bit7	Clear S value /S1/

4.2.22 NC signals influenced by the ShopMill application

DB10	Signals to NC (PLC--->NC)
Byte	Designation
DBB122, 123 Bits 0 to 7	External digital NCK inputs Inputs 9 to 16
DBB124, 125 Bits 0 to 7	External digital NCK inputs Inputs 17 to 24
DBB130, 131 Bits 0 to 7	External digital NCK outputs Outputs 9 to 16
DBB132, 133 Bits 0 to 7	External digital NCK outputs Outputs 17 to 24

DB11	Signals to mode groups (PLC--->NCK) /K1/
DBB0 Bit0 Bit1 Bit2	AUTOMATIC mode MDA mode JOG mode
DBB1 Bit0	TEACH IN machine function

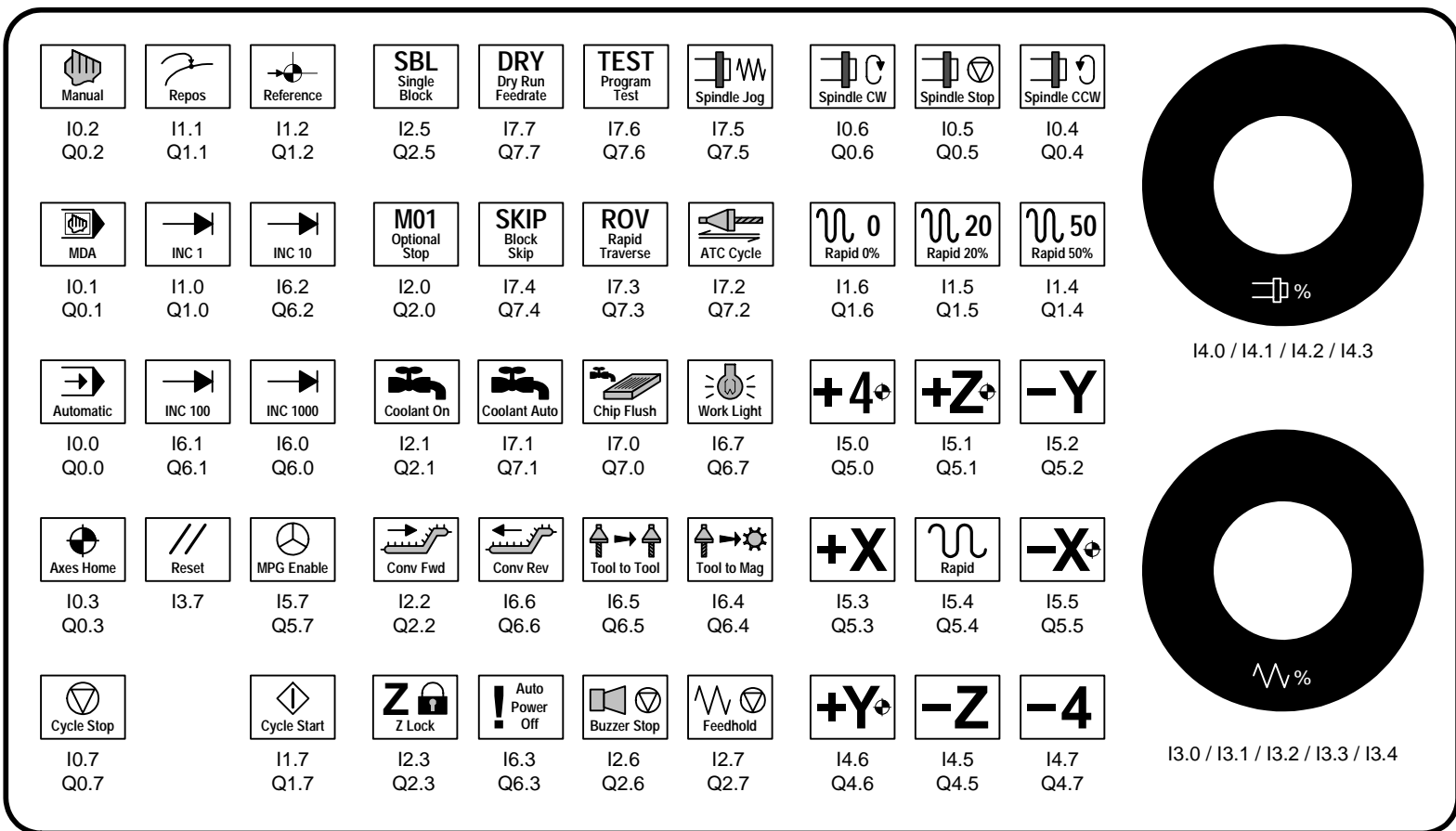
DB21	Signals to NCK channel (PLC--->NCK)
DBB0 Bit6	Activate dry run feedrate /V1/
DBB1 Bit7	Activate program test /K1/
DBB6 Bit2	Delete distance-to-go /A2/
DBB7 Bit1 Bit3 Bit7	NC Start /K1/ NC Stop /K1/ Reset /K1/



8

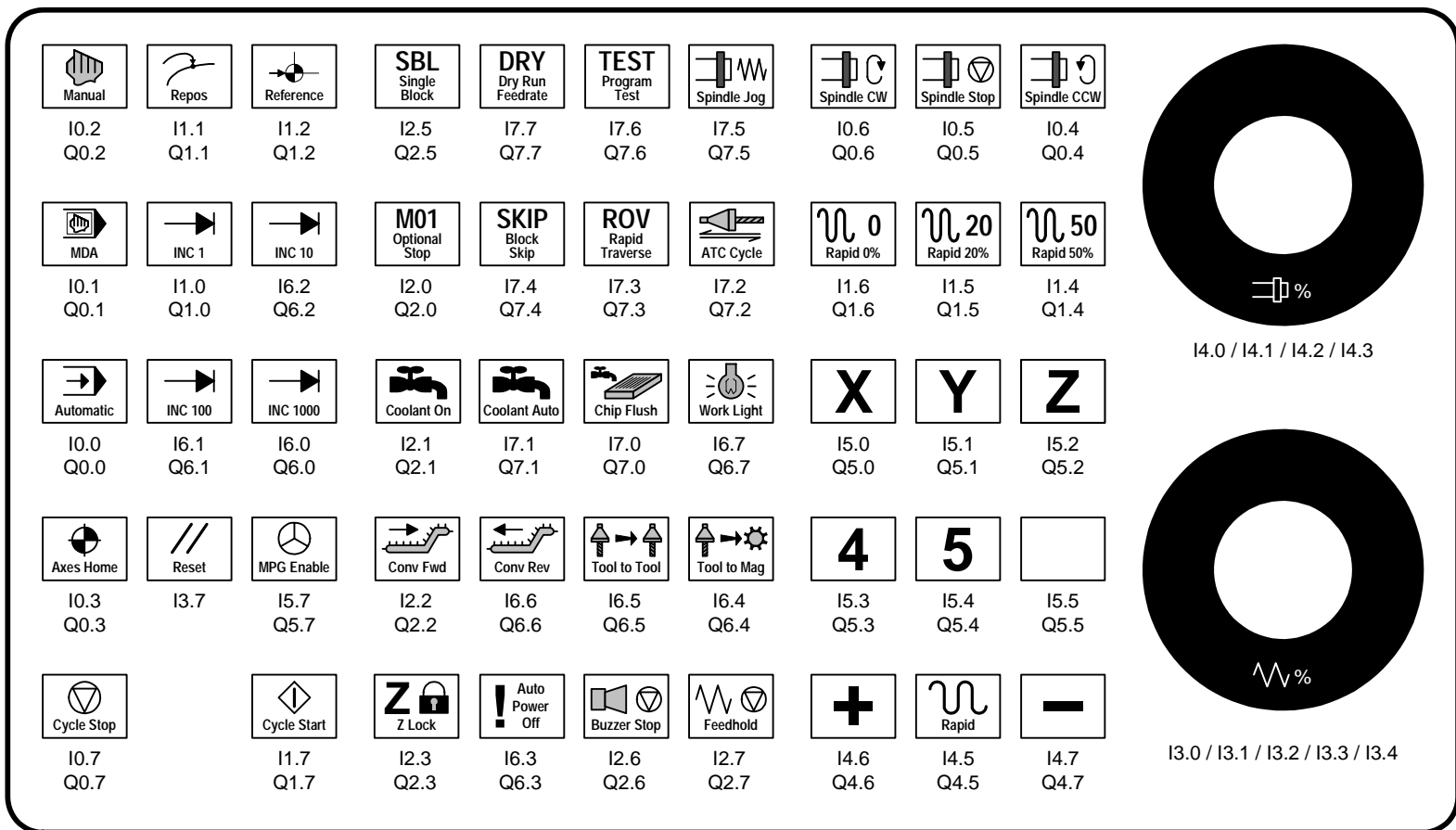
Machine Control Panel

3 or 4 Axis Machine Control Panel Layout with I/Q Addresses



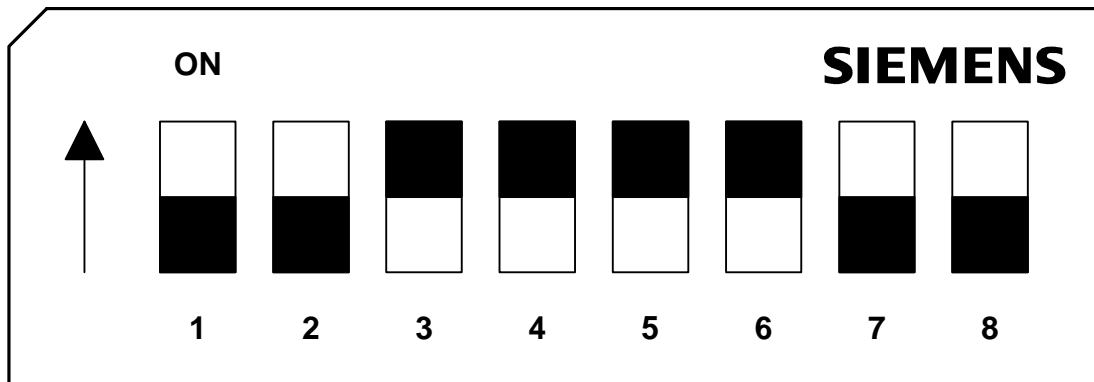
- MCP keys with input I0.7, I1.5 & I2.6 are default NC, all other keys are NO.
- MCP key in position I3.7 is not fitted with an LED.

5 Axis Machine Control Panel Layout with I/Q Addresses



- MCP keys with input I0.7, I1.5 & I2.6 are default NC, all other keys are NO.
- MCP key in position I3.7 is not fitted with an LED.

Machine Control Panel Dipswitch Settings



The OP323S Machine Control Panel dipswitch setting for the 810D must be set to the above settings in order to communicate correctly with the CCU.

The above settings are not the factory delivery defaults!

9

Tool Change/Setup Cycle

Tool change cycle version information & release date.

```
;Tool Change Cycle  
;HARDINGE.VMCII.MGS.V6 February 2001  
;
```

*Tool change cycle "Save" existing main program settings (i.e. G Codes, etc.)
"Single Block Off" & "Display Off".*

```
Proc T_Change Save Sblof Displof  
;
```

If a tool setup cycle is called the program jumps to the label "Tool_Setup" and is continued from that point. No tool change cycle is then executed.

```
;Interrogate for Tool Setup Cycle  
If ($A_IN[23]==TRUE) Or ($A_IN[24]==TRUE) Gotof Tool_Setup  
;
```

If Simulation, Block Search or Program Test is active bypass all actual tool change steps and only acknowledge the tool change to the NCK.

```
If $P_Sim Or $P_Search Or $P_IStest Gotof Sim_Search_Test_Active  
Stopre  
;
```

The required G Codes for tool change cycle are initialised as feedrate with address F (G1), block change without speed reduction (G64), distance & feedrate in/min (G700) or mm/min (G710), absolute dimensions (G90), feed per minute (G94), uniform feedrate (FNORM) and compressor off (COMPOF).

```
;Initialize G Codes  
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)  
G1 G64 G700 G90 G94 FNORM COMPOF  
Endif  
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)  
G1 G64 G710 G90 G94 FNORM COMPOF  
Endif  
;
```

The cycle interrogates the status of the tool change and if it was not completed the cycle will jump correctly to point where the interruption occurred. At the completion of each distinct stage of the cycle the pointer is updated with a step number, at the completion of the cycle the pointer is reset to 0. Tool Change uses the "TC_Status" pointer.

```
;Tool Change Status Pointer Interrogation  
If TC_Status==0 Gotof TC_Step1  
If TC_Status==1 Gotof TC_Step2  
If TC_Status==2 Gotof TC_Step11  
If TC_Status==11 Gotof TC_Step12  
If TC_Status==12 Gotof TC_Step13
```



```

If TC_Status==13 Gotof TC_Step14
If TC_Status==14 Gotof TC_Step15
If TC_Status==15 Gotof TC_Step21
If TC_Status==21 Gotof TC_Step22
If TC_Status==22 Gotof TC_Step23
If TC_Status==23 Gotof TC_Step24
If TC_Status==24 Gotof TC_Step31
If TC_Status==31 Gotof TC_Step32
If TC_Status==32 Gotof TC_Step33
If TC_Status==33 Gotof TC_Step34
If TC_Status==99 Gotof TC_Step99
Stopre
;

```

In “Step 1” “M65: triggers the data transfer of the magazine, tool location and tool number data to the NCK & “M206” acknowledges the tool change to the NCK. “M15” selects spindle stop and coolant off. “M73” confirms spindle tool clamped. M32 disables spindle power monitoring & M52 stops the flushing coolant flow. At the completion of this step the “TC_Status” pointer is set to “1”.

```

TC_Step1: ;Transfer Variables & Acknowledge Tool Change to NCK
M15 M65 M206 M73
M32 M52
Stopre
TC_Status=1
;

```

In “Step 2” the cycle determines and jumps to the correct routine based on the data transferred with “M65”. There are 4 distinct possibilities: 1) The tool is already in the spindle in which case the cycle jumps to the end without any actions, 2) There is no existing tool in the spindle so only the new tool is placed into the spindle, 3) With T0 the old tool only is replaced into the magazine & 4) A tool-to-tool change is completed. In the first two cases a jump is made to the “Tool_Retract” label and the Z axis is retracted to the tool magazine change position as a safety retract function. At the completion of this step the “TC_Status” pointer is set to “2”.

```

TC_Step2: ;Interrogate Tool Change Routine
D_Number=$P_Tool
;Tool Already in Spindle
If (Mag_New==Mag_Last) And (Loc_New==Loc_Last) Gotof Tool_Retract
;Tool Already in Spindle After Power On
If (Mag_New==0) And (Mag_Old==0) And (Loc_New==0) And (Loc_Old==0)
Gotof Tool_Retract
;
;Tool Change New Tool Only
If Loc_Old==0 Gotof TC_Step21
;

```

```
;Tool Change with T0
If Loc_New==0 Gotof TC_Step31
Stopre
TC_Status=2
;
```

The tool-to-tool change sequence is started from “Step 11”. “Step 11” indicates that this is routine “1”, step “1”. The two other distinct sequences are started with “Step 21” & “Step 31”.

```
;Tool Change Tool-to-Tool
```

In “Step 11” the Z axis is positioned to the tool change position with all offsets suppressed, the spindle is oriented & the tool magazine positioned at the old tool position. The cycle determines into which magazine the old tool is to be placed based on the global variable “Mag_Old”. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced before the cycle is continued. M19 is defined as a synchronous action for “SPOS=0”. As an auxiliary function the X & Y axes can be positioned to a preset position defined by “ATC_X_Safe_Pos” & “ATC_Y_Safe_Pos” respectively. The X & Y axes are only positioned if the function is enabled with “ATC_Axes_Safety_Position”, X & Y are referenced and all positions are within the softlimits & workarea limits. At the completion of this step the “TC_Status” pointer is set to “11”.

```
TC_Step11: ;Z to TC Posn, Sp Orient & Magazine to Old Tool Loc
```

```
If ($A_IN[33]==FALSE)
G74 Z=0
Endif
If ((Loc_Old<21) And (Loc_New<21))
G75 SUPA D0 FP=2 Z0 M19 M76
Endif
If ((Loc_Old<21) And (Loc_New>20))
G75 SUPA D0 FP=2 Z0 M19 M76 M87
Endif
If ((Loc_Old>20) And (Loc_New>20))
G75 SUPA D0 FP=2 Z0 M19 M86
Endif
If ((Loc_Old>20) And (Loc_New<21))
G75 SUPA D0 FP=2 Z0 M19 M86 M77
Endif
If (ATC_Axes_Safety_Position==TRUE)
If (($AA_REF[X]==TRUE) And ($AA_REF[Y]==TRUE))
If (ATC_X_Safe_Pos<$MA_POS_LIMIT_MINUS[AX1]) Gotof ATC_Safe_Invalid
If (ATC_X_Safe_Pos>$MA_POS_LIMIT_PLUS[AX1]) Gotof ATC_Safe_Invalid
If (ATC_Y_Safe_Pos<$MA_POS_LIMIT_MINUS[AX2]) Gotof ATC_Safe_Invalid
If (ATC_Y_Safe_Pos>$MA_POS_LIMIT_PLUS[AX2]) Gotof ATC_Safe_Invalid
```

```

If ($SA_WORKAREA_MINUS_ENABLE[AX1]==TRUE) And
(ATC_X_Safe_Pos<$SA_WORKAREA_LIMIT_MINUS[AX1]) Gotof
ATC_Safe_Invalid
If ($SA_WORKAREA_PLUS_ENABLE[AX1]==TRUE) And
(ATC_X_Safe_Pos>$SA_WORKAREA_LIMIT_PLUS[AX1]) Gotof
ATC_Safe_Invalid
If ($SA_WORKAREA_MINUS_ENABLE[AX2]==TRUE) And
(ATC_Y_Safe_Pos<$SA_WORKAREA_LIMIT_MINUS[AX2]) Gotof
ATC_Safe_Invalid
If ($SA_WORKAREA_PLUS_ENABLE[AX2]==TRUE) And
(ATC_Y_Safe_Pos>$SA_WORKAREA_LIMIT_PLUS[AX2]) Gotof
ATC_Safe_Invalid
G0 SUPA D0 X=ATC_X_Safe_Pos Y=ATC_Y_Safe_Pos
G1
ATC_Safe_Invalid:
Endif
Endif
M64
Stopre
TC_Status=11
;

```

In “Step 12” the magazine for the old tool is advanced. The correct magazine is determined with the global variable “Mag_Old”. An “M19” is added in case the cycle is interrupted during this step in which case the previous spindle orient would be lost. At the completion of this step the “TC_Status” pointer is set to “12”.

```

TC_Step12: ;Magazine Advance
If (Loc_Old<21)
If ($A_IN[37]==FALSE)
M19
Endif
M72
Endif
If (Loc_Old>20)
If ($A_IN[37]==FALSE)
M19
Endif
M82
Endif
Stopre
TC_Status=12
;

```

In “Step 13” the spindle tool is unclamped and the Z axis moved to the clearance position (i.e. clear of the tool in the magazine). Linear progressive feedrate with “FLIN” is used to smoothly move the Z axis off the tool taper. After the Z axis is

clear of the old tool the magazine containing the new tool is rotated to the new tool position. If the new tool is in the other magazine (twin magazine option only) the magazine containing the old tool is retracted and the magazine with the new tool advanced. The cycle determines the correct magazine to use with the global variable "Mag_New". If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced before the cycle is continued. At the completion of this step the "TC_Status" pointer is set to "13".

TC_Step13: ;Tool Unclamp, Z Tool Clearance & Mag to New Tool Loc

M74

If (\$A_IN[33]==FALSE)

G74 Z=0

Endif

If (\$MN_SCALING_SYSTEM_IS_METRIC==FALSE)

F100

SUPA D0 FLIN F1180 Z0

Endif

If (\$MN_SCALING_SYSTEM_IS_METRIC==TRUE)

F2500

SUPA D0 FLIN F30000 Z0

Endif

If (Loc_New<21)

If (Loc_Old<21)

M77

Endif

If (Loc_Old>20)

M73

M19

M77 M81

M72

Endif

Endif

If (Loc_New>20)

If (Loc_Old>20)

M87

Endif

If (Loc_Old<21)

M73

M19

M87 M71

M82

Endif

Endif

Stopre

TC_Status=13

;

In “Step 14” the tool is unclamped & the Z axis is moved to the tool change position to insert the new tool into the spindle taper. Linear progressive feedrate with “FLIN” is used to smoothly move the Z axis over the tool taper. The cycle reads the value directly from the machine. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced, the spindle tool is re-oriented & the tool unclamped again before the cycle is continued. At the completion of this step the “TC_Status” pointer is set to “14”.

TC_Step14: ;Z to TC Position

M74

If (\$A_IN[33]==FALSE)

G74 Z=0

Endif

If (\$A_IN[37]==TRUE)

Stopre

M64

If (\$MN_SCALING_SYSTEM_IS_METRIC==FALSE)

SUPA D0 FNORM F250 Z0

Endif

If (\$MN_SCALING_SYSTEM_IS_METRIC==TRUE)

SUPA D0 FNORM F6000 Z0

Endif

M73

If (Loc_New<21)

M19

Endif

If (Loc_New>20)

M19

Endif

M74

Endif

If (\$MN_SCALING_SYSTEM_IS_METRIC==FALSE)

F1180

SUPA D0 FLIN F100 Z=\$MA_FIX_POINT_POS[1,AX3]

Endif

If (\$MN_SCALING_SYSTEM_IS_METRIC==TRUE)

F30000

SUPA D0 FLIN F2500 Z=\$MA_FIX_POINT_POS[1,AX3]

Endif

Stopre

TC_Status=14

;

In “Step 15” the tool is clamped and the magazine retracted. After completion of this step the sequence is complete and the cycle jumps to the “Complete” label.

TC_Step15: ;Tool Clamp, Magazine Retract & Sp Orient Cancel

M73

```

M71 M81
M20
Stopre
Gotof Complete
Stopre
;

```

The new tool only (i.e. no tool in spindle) sequence is started from “Step 21”. “Step 21” indicates that this is routine “2”, step “1”.

```

;Tool Change New Tool Only

```

In “Step 21” the Z axis is positioned to the tool clearance position with all offsets suppressed, the spindle is oriented & the tool magazine positioned at the old tool position. The cycle determines from which magazine the new tool is to be taken from based on the global variable “Mag_New”. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced before the cycle is continued. As an auxiliary function the X & Y axes can be positioned to a preset position defined by “ATC_X_Safe_Pos” & “ATC_Y_Safe_Pos” respectively. The X & Y axes are only positioned if the function is enabled with “ATC_Axes_Safety_Position”, X & Y are referenced and all positions are within the softlimits & workarea limits. At the completion of this step the “TC_Status” pointer is set to “21”.

```

TC_Step21: ;Z to Clearance Posn, Sp Ort & Mag to New Tool Loc

```

```

TC_Status=15

```

```

M66

```

```

Stopre

```

```

If ($A_IN[33]==FALSE)

```

```

G74 Z=0

```

```

Endif

```

```

If (Loc_New<21)

```

```

G75 SUPA D0 FP=1 Z0 M19 M77

```

```

Endif

```

```

If (Loc_New>20)

```

```

G75 SUPA D0 FP=1 Z0 M19 M87

```

```

Endif

```

```

If (ATC_Axes_Safety_Position==TRUE)

```

```

If (($AA_REF[X]==TRUE) And ($AA_REF[Y]==TRUE))

```

```

If (ATC_X_Safe_Pos<$MA_POS_LIMIT_MINUS[AX1]) Gotof ATC_Safe_Invalid

```

```

If (ATC_X_Safe_Pos>$MA_POS_LIMIT_PLUS[AX1]) Gotof ATC_Safe_Invalid

```

```

If (ATC_Y_Safe_Pos<$MA_POS_LIMIT_MINUS[AX2]) Gotof ATC_Safe_Invalid

```

```

If (ATC_Y_Safe_Pos>$MA_POS_LIMIT_PLUS[AX2]) Gotof ATC_Safe_Invalid

```

```

If ($SA_WORKAREA_MINUS_ENABLE[AX1]==TRUE) And

```

```

(ATC_X_Safe_Pos<$SA_WORKAREA_LIMIT_MINUS[AX1]) Gotof

```

```

ATC_Safe_Invalid

```

```

If ($SA_WORKAREA_PLUS_ENABLE[AX1]==TRUE) And
(ATC_X_Safe_Pos>$SA_WORKAREA_LIMIT_PLUS[AX1]) Gotof
ATC_Safe_Invalid
If ($SA_WORKAREA_MINUS_ENABLE[AX2]==TRUE) And
(ATC_Y_Safe_Pos<$SA_WORKAREA_LIMIT_MINUS[AX2]) Gotof
ATC_Safe_Invalid
If ($SA_WORKAREA_PLUS_ENABLE[AX2]==TRUE) And
(ATC_Y_Safe_Pos>$SA_WORKAREA_LIMIT_PLUS[AX2]) Gotof
ATC_Safe_Invalid
G0 SUPA D0 X=ATC_X_Safe_Pos Y=ATC_Y_Safe_Pos
G1
ATC_Safe_Invalid:
Endif
Endif
Stopre
TC_Status=21
;

```

In “Step 22” the magazine for the new tool is advanced. The correct magazine is determined with the global variable “Mag_New”. Spindle unclamp with “M74” is output with “M72” in case any tool has been placed in the spindle by hand. An “M19” is added in case the cycle is interrupted during this step in which case the previous spindle orient would be lost. At the completion of this step the “TC_Status” pointer is set to “22”.

```

TC_Step22: ;Magazine Advance & Tool Unclamp
If (Loc_New<21)
M73
M19
M72 M74
Endif
If (Loc_New>20)
M73
M19
M82 M74
Endif
Stopre
TC_Status=22
;

```

In “Step 23” the tool is unclamped & the Z axis is moved to the tool change position to insert the new tool into the spindle taper. Linear progressive feedrate with “FLIN” is used to smoothly move the Z axis over the tool taper. The cycle reads the value directly from the machine data and converts it from metric to inch if necessary. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced, the spindle tool is re-oriented & the tool unclamped

again before the cycle is continued. At the completion of this step the “TC_Status” pointer is set to “23”.

```
TC_Step23: ;Z to TC Position
M74
If ($A_IN[33]==FALSE)
G74 Z=0
Endif
If ($A_IN[37]==TRUE)
Stopre
M64
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
SUPA D0 FNORM F250 Z0
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
SUPA D0 FNORM F6000 Z0
Endif
M73
If (Loc_New<21)
M19
Endif
If (Loc_New>20)
M19
Endif
M74
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
F1180
SUPA D0 FLIN F100 Z=$MA_FIX_POINT_POS[1,AX3]
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
F30000
SUPA D0 FLIN F2500 Z=$MA_FIX_POINT_POS[1,AX3]
Endif
Stopre
TC_Status=23
;
```

In “Step 24” the tool is clamped and the magazine retracted. After completion of this step the sequence is complete and the cycle jumps to the “Complete” label.

```
TC_Step24: ;Tool Clamp, Magazine Retract & Sp Orient Cancel
M73
M71 M81
M20
Stopre
Gotof Complete
Stopre
```


;

The tool change for T0 (i.e. old tool only back to the magazine) sequence is started from “Step 31”. “Step 31” indicates that this is routine “3”, step “1”.

;Tool Change with T0

In “Step 31” the Z axis is positioned to the tool change position with all offsets suppressed, the spindle is oriented & the tool magazine positioned at the old tool position. The cycle determines into which magazine the old tool is to be placed based on the global variable “Mag_Old”. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced before the cycle is continued. As an auxiliary function the X & Y axes can be positioned to a preset position defined by “ATC_X_Safe_Pos” & “ATC_Y_Safe_Pos” respectively. The X & Y axes are only positioned if the function is enabled with “ATC_Axes_Safety_Position”, X & Y are referenced and all positions are within the softlimits & workarea limits. At the completion of this step the “TC_Status” pointer is set to “31”.

TC_Step31: ;Z to TC Posn, Sp Orient & Magazine to Old Tool Loc

TC_Status=24

If (\$A_IN[33]==FALSE)

G74 Z=0

Endif

If (Loc_Old<21)

G75 SUPA D0 FP=2 Z0 M19 M76

Endif

If (Loc_Old>20)

G75 SUPA D0 FP=2 Z0 M19 M86

Endif

If (ATC_Axes_Safety_Position==TRUE)

If ((\$AA_REF[X]==TRUE) And (\$AA_REF[Y]==TRUE))

If (ATC_X_Safe_Pos<\$MA_POS_LIMIT_MINUS[AX1]) Gotof ATC_Safe_Invalid

If (ATC_X_Safe_Pos>\$MA_POS_LIMIT_PLUS[AX1]) Gotof ATC_Safe_Invalid

If (ATC_Y_Safe_Pos<\$MA_POS_LIMIT_MINUS[AX2]) Gotof ATC_Safe_Invalid

If (ATC_Y_Safe_Pos>\$MA_POS_LIMIT_PLUS[AX2]) Gotof ATC_Safe_Invalid

If (\$SA_WORKAREA_MINUS_ENABLE[AX1]==TRUE) And

(ATC_X_Safe_Pos<\$SA_WORKAREA_LIMIT_MINUS[AX1]) Gotof

ATC_Safe_Invalid

If (\$SA_WORKAREA_PLUS_ENABLE[AX1]==TRUE) And

(ATC_X_Safe_Pos>\$SA_WORKAREA_LIMIT_PLUS[AX1]) Gotof

ATC_Safe_Invalid

If (\$SA_WORKAREA_MINUS_ENABLE[AX2]==TRUE) And

(ATC_Y_Safe_Pos<\$SA_WORKAREA_LIMIT_MINUS[AX2]) Gotof

ATC_Safe_Invalid

If (\$SA_WORKAREA_PLUS_ENABLE[AX2]==TRUE) And

(ATC_Y_Safe_Pos>\$SA_WORKAREA_LIMIT_PLUS[AX2]) Gotof

ATC_Safe_Invalid

```

G0 SUPA D0 X=ATC_X_Safe_Pos Y=ATC_Y_Safe_Pos
G1
ATC_Safe_Invalid:
Endif
Endif
M64
Stopre
TC_Status=31
;

```

In "Step 32" the magazine for the old tool is advanced. The correct magazine is determined with the global variable "Mag_Old". An "M19" is added in case the cycle is interrupted during this step in which case the previous spindle orient would be lost. At the completion of this step the "TC_Status" pointer is set to "32".

```

TC_Step32: ; Magazine Advance

```

```

If (Loc_Old<21)
If ($A_IN[37]==FALSE)
M19
Endif
M72
Endif
If (Loc_Old>20)
If ($A_IN[37]==FALSE)
M19
Endif
M82
Endif
M64
Stopre
TC_Status=32
;

```

In "Step 33" the spindle tool is unclamped and the Z axis moved to the clearance position (i.e. clear of the tool in the magazine). Linear progressive feedrate with "FLIN" is used to smoothly move the Z axis off the tool taper. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced before the cycle is continued. At the completion of this step the "TC_Status" pointer is set to "33".

```

TC_Step33: ;Tool Unclamp & Z to Clearance Position

```

```

M74
If ($A_IN[33]==FALSE)
G74 Z=0
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
F100
SUPA D0 FLIN F1180 Z0

```

```

Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
F2500
SUPA D0 FLIN F30000 Z0
Endif
Stopre
TC_Status=33
;

```

In “Step 34” the spindle tool system is clamped (without any tool) and the magazine retracted. After completion of this step the sequence is continued with the “Complete” label.

```

TC_Step34: ;Tool Clamp, Magazine Retract & Sp Orient Cancel
M73
M71 M81
M20
Stopre
Gotof Complete
Stopre
;

```

In the case where the new & old tools are the same, i.e. no tool change takes place, the Z axis will retract to the magazine tool change position as a safety retract function.

```

Tool_Retract:
G75 SUPA D0 FP=2 Z0
;

```

After any of the 4 possible sequences determined at Step 2 the cycle is always picked-up at the common jump label “Complete” & the “TC_Status” pointer is now reset to “0”.

```

Complete:
;
TC_Status=0
;

```

The tool offsets must be suppressed with D0 during the tool change cycle so the original called offset, D1 or D2, is restored at the end of the cycle.

```

;Restore Programmed D Number After Tool Change Cycle
If (D_Number==1)
D1
Endif
If (D_Number==2)
D2
Endif
;

```

If tool monitoring is active for tool workpiece count the counter is decremented by 1 for the new tool.

;Interrogate Tool Monitoring Type & Decrement if Necessary

If (\$A_IN[38]==FALSE)

If (Tool_New>0)

Stopre

If (\$TC_TP9[Tool_New]==2)

Setpiece(1)

Endif

Endif

Endif

;

At the completion of the cycle the current new magazine "Mag_New" and tool location "Loc_New" are buffered into "Mag_Last" & "Loc_Last" as a comparison for the next cycle unless this is the first cycle after a power on with no new tool called. Tool change cycle is indicated as complete to the PLC with "M67".

If (Mag_New==0) And (Mag_Old==0) And (Loc_New==0) And (Loc_Old==0)

Gotof Update_Skip

Stopre

Mag_Last=Mag_New

Loc_Last=Loc_New

Update_Skip:

M67

;

Tool change cycle complete.

M17 ;Tool Change Cycle Complete

;

If Simulation, Block Search or Program Test is active the tool change is acknowledged to the NCK and the program ended.

Sim_Search_Test_Active:

M206

D1

M17 ;Tool Change Cycle Complete

Stopre

;

An exit from the tool change cycle is provided by entering "99" into the "TC_Status" parameter of GUD 2 in a case where auto recovery is not possible. In this case a jump is made to this label, and the current new magazine "Mag_New" and tool location "Loc_New" are buffered into "Mag_Last" & "Loc_Last" as a comparison for the next cycle. Tool change cycle is indicated as

complete to the PLC with “M67” and an alarm to warn that the tool change is incomplete is triggered with “M63”.

```
TC_Step99:
If (Mag_New==0) And (Mag_Old==0) And (Loc_New==0) And (Loc_Old==0)
Gotof Update_Skip
Stopre
Mag_Last=Mag_New
Loc_Last=Loc_New
Update_Skip:
TC_Status=0
M63 M67
M17 ;Tool Change Cycle Complete
Stopre
;
```

If a tool setup cycle is required from digital inputs 23 or 24 the tool change section of the cycle is not executed as a jump is made to the label “Tool_Setup”.

```
;Tool Change Cycle from This point Only Used for Tool Setup!
;Tool Setup Cycle
Tool_Setup:
;
```

The required G Codes for tool setup cycle are initialised as feedrate with address F (G1), block change without speed reduction (G64), distance & feedrate in /min (G700)or mm/min (G710), absolute dimensions (G90), feed per minute (G94), uniform feedrate (FNORM) and compressor off (COMPOF).

```
;Initialize G Codes
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
G1 G64 G700 G90 G94 FNORM COMPOF
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
G1 G64 G710 G90 G94 FNORM COMPOF
Endif
;
```

The cycle interrogates the status of the tool setup and if it was not completed the cycle will jump correctly to point where the interruption occurred. At the completion of each distinct stage of the cycle the pointer is updated with a step number, at the completion of the cycle the pointer is reset to 0. Tool Setup uses the “TS_Status” pointer.

```
;Tool Setup Status Pointer Interrogation
If TS_Status==0 Gotof TS_Step1
If TS_Status==1 Gotof TS_Step2
If TS_Status==2 Gotof TS_Step11
If TS_Status==11 Gotof TS_Step12
If TS_Status==12 Gotof TS_Step13
```

```

If TS_Status==13 Gotof TS_Step14
If TS_Status==14 Gotof TS_Step15
If TS_Status==15 Gotof TS_Step21
If TS_Status==21 Gotof TS_Step22
If TS_Status==22 Gotof TS_Step23
If TS_Status==23 Gotof TS_Step24
If TS_Status==24 Gotof TS_Step31
If TS_Status==31 Gotof TS_Step32
If TS_Status==32 Gotof TS_Step33
If TS_Status==33 Gotof TS_Step34
If TS_Status==99 Gotof TS_Step99
Stopre
;

```

The first stage of “Step 1” is to check that the spindle is empty. This is done by checking the internal tool number with the “\$P_Toolno” command. If the last programmed tool was T0 then \$P_Toolno will be 0 and a jump is made to the label “Spin_Tool_Is_0”, if not an alarm is output with “M110” and the cycle is aborted with “M101”.

```

Step1: ;Check Conditions for Tool Setup
;Check Current Spindle Tool
If ($A_IN[40]==FALSE)
If $P_Toolno==0 Gotof Spin_Tool_Is_0
Stopre
;Alarm if Spindle Tool is Not 0
M101
M110
M17
Endif
Stopre
;

```

The next stage of “Step 1” prompts the operator to check for cycle continuation, empty spindle & magazine rotation to 1st required tool with “M114”, “M115” & “M116”. If all this is checked OK the magazine location at the change position is checked to see that the tool exists. If the tool exists a jump is made to the label “Tool_Exist”, if not an alarm is output with “M111” & the cycle is aborted with “M101”.

```

Spin_Tool_Is_0:
;Tool Setup Check for 1st Selected Tool
If ($A_IN[40]==FALSE)
M114
Stopre
M115
Stopre
M116

```

```

Stopre
;Check Tool Number at Change Position Does Exist
H65
Stopre
If ($A_IN[23]==TRUE)
T_Num=PLC_Counter_1
T_Check=$TC_MPP6[1,T_Num]
Endif
If ($A_IN[24]==TRUE)
T_Num=PLC_Counter_3
T_Check=$TC_MPP6[1,T_Num]
Endif
If T_Check<>0 Gotof Tool_Exist
Stopre
;Alarm if Tool Number at Change Position Does Not Exist
M101
M111
M17
Stopre
;

```

At the next stage of "Step 1" the magazine location at the change position is checked to see that the tool is enabled. The current tool setup data is transferred to the NCK with "H65". If the tool is enabled a jump is made to the label "Tool_Enabled", if not an alarm is output with "M112" & the cycle is aborted with "M101".

```

Tool_Exist:
;Check Tool Number at Change Position is Disabled
H65
Stopre
If ($A_IN[23]==TRUE)
T_Num=PLC_Counter_1
T_Stat=$TC_TP8[$TC_MPP6[1,T_Num]]
Endif
If ($A_IN[24]==TRUE)
T_Num=PLC_Counter_3
T_Stat=$TC_TP8[$TC_MPP6[1,T_Num]]
Endif
If (T_Stat>127)
T_Stat=T_Stat-128
Endif
If (T_Stat>63)
T_Stat=T_Stat-64
Endif
If (T_Stat>31)
T_Stat=T_Stat-32

```

```

Endif
If (T_Stat>15)
T_Stat=T_Stat-16
Endif
If (T_Stat>7)
T_Stat=T_Stat-8
Endif
Stopre
If T_Stat<4 Gotof Tool_Enabled
Stopre
;Alarm if Tool Number at Change Position is Disabled
M101
M112
M17
Stopre
;

```

At the final stage of "Step 1" the required operation is interrogated. If the last tool is to be loaded to the magazine "M103" is output to latch the cycle. If a tool-to-tool cycle, including loading the 1st tool, is required "M100" is output to latch the cycle. At the completion of this step the "TS_Status" pointer is set to "1".

```

Tool_Enabled:
Stopre
M103
Endif
;Tool Setup Check for Next Tool
If ($A_IN[40]==TRUE) And ($A_IN[32]==FALSE)
M103
Endif
;Tool Setup Check for Last Tool
If ($A_IN[32]==TRUE)
M117
Stopre
Endif
M100
Stopre
TS_Status=1
;

```

In "Step 2" the cycle determines and jumps to the correct routine based on the selection made from the MCP. There are 3 distinct possibilities: 1) There is no tool in the spindle so the tool at the magazine change position is placed into the spindle, 2) The tool in the spindle is replaced back into the magazine & 3) A tool-to-tool change is completed to the next valid tool in the magazine. At the completion of this step the "TS_Status" pointer is set to "2".

TS_Step2: ;Interrogate Tool Setup Routine


```

;Tool Setup Tool-to-Spindle for 1st Selected Tool
If ($A_IN[31]==TRUE) And ($A_IN[40]==FALSE) Gotof TS_Step21
;
;Tool Setup for Tool-to-Magazine with Last Tool
If $A_IN[32]==TRUE Gotof TS_Step31
Stopre
TS_Status=2
;

```

The tool-to-tool change sequence is started from “Step 11”. “Step 11” indicates that this is routine “1”, step “1”. The two other distinct sequences are started with “Step 21” & “Step 31”.

```

;Tool Setup Tool-to-Tool

```

In “Step 11” the Z axis is positioned to the tool change position with all offsets suppressed & the spindle is oriented. The tool is placed back into the magazine position it was taken from. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced before the cycle is continued. “M19” is defined as a synchronous action for “SPOS=0”. At the completion of this step the “TS_Status” pointer is set to “11”.

```

TS_Step11: ;Z to TC Position & Spindle Orient

```

```

If ($A_IN[33]==FALSE)
G74 Z=0
Endif
If ($A_IN[23]==TRUE)
G75 SUPA D0 FP=2 Z0 M19
Endif
If ($A_IN[24]==TRUE)
G75 SUPA D0 FP=2 Z0 M19
Endif
M107
Stopre
TS_Status=11
;

```

In “Step 12” the magazine for the old tool is advanced. The correct magazine is determined with the digital input 23 or 24. An “M19” is added in case the cycle is interrupted during this step in which case the previous spindle orient would be lost. At the completion of this step the “TS_Status” pointer is set to “12”.

```

TS_Step12: ;Magazine Advance

```

```

If ($A_IN[23]==TRUE)
If ($A_IN[39]==FALSE)
M19
Endif
M72
Endif

```

```

If ($A_IN[24]==TRUE)
If ($A_IN[39]==FALSE)
M19
Endif
M82
Endif
Stopre
TS_Status=12
;

```

In “Step 13” the spindle tool is unclamped and the Z axis moved to the clearance position (i.e. clear of the tool in the magazine). Linear progressive feedrate with “FLIN” is used to smoothly move the Z axis off the tool taper. After the Z axis is clear of the tool the magazine is rotated by one position to the next tool position. If the next tool does not exist or is not enabled the magazine rotates one more tool and continues until a valid tool is found. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced before the cycle is continued. At the completion of this step the “TS_Status” pointer is set to “13”.

TS_Step13: ;Tool Unclamp, Z Tool Clearance & Mag to Next Tool Loc

```

M74
If ($A_IN[33]==FALSE)
G74 Z=0
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
F100
SUPA D0 FLIN F600 Z0
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
F2500
SUPA D0 FLIN F15000 Z0
Endif
Mag_Count=0
Stopre
Mag_Increment:
Mag_Count=Mag_Count+1
Stopre
If Mag_Count==21 Gotof TS_Step13_Complete
Stopre
M106
Stopre
H65
Stopre
If ($A_IN[23]==TRUE)
T_Num=PLC_Counter_1
T_Check=$TC_MPP6[1,T_Num]
Endif

```

```

If ($A_IN[24]==TRUE)
T_Num=PLC_Counter_3
T_Check=$TC_MPP6[1,T_Num]
Endif
Stopre
If T_Check==0 Gotob Mag_Increment
Stopre
If ($A_IN[23]==TRUE)
T_Num=PLC_Counter_1
T_Stat=$TC_TP8[$TC_MPP6[1,T_Num]]
Endif
If ($A_IN[24]==TRUE)
T_Num=PLC_Counter_3
T_Stat=$TC_TP8[$TC_MPP6[1,T_Num]]
Endif
If (T_Stat>127)
T_Stat=T_Stat-128
Endif
If (T_Stat>63)
T_Stat=T_Stat-64
Endif
If (T_Stat>31)
T_Stat=T_Stat-32
Endif
If (T_Stat>15)
T_Stat=T_Stat-16
Endif
If (T_Stat>7)
T_Stat=T_Stat-8
Endif
Stopre
If T_Stat>3 Gotob Mag_Increment
Stopre
TS_Step13_Complete:
TS_Status=13
;

```

In "Step 14" the tool is unclamped & the Z axis is moved to the tool change position to insert the next tool into the spindle taper. Linear progressive feedrate with "FLIN" is used to smoothly move the Z axis over the tool taper. The cycle reads the value directly from the machine data and converts it from metric to inch if necessary. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced, the spindle tool is re-oriented & the tool unclamped again before the cycle is continued. At the completion of this step the "TS_Status" pointer is set to "14".

TS_Step14: ;Z to TC Position

```

M74
If ($A_IN[33]==FALSE)
G74 Z=0
Endif
If ($A_IN[39]==TRUE)
Stopre
M107
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
SUPA D0 FNORM F250 Z0
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
SUPA D0 FNORM F6000 Z0
Endif
M73
If ($A_IN[23]==TRUE)
M19
Endif
If ($A_IN[24]==TRUE)
M19
Endif
M74
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
F600
SUPA D0 FLIN F100 Z=$MA_FIX_POINT_POS[1,AX3]
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
F15000
SUPA D0 FLIN F2500 Z=$MA_FIX_POINT_POS[1,AX3]
Endif
Stopre
TS_Status=14
;

```

In “Step 15” the tool is clamped and the magazine retracted. The tool is interrogated and the tool is called with “M206” to activate the tool in the spindle. After completion of this step the sequence is complete and the cycle jumps to the “Complete” label.

TS_Step15: ;Tool Clamp, Magazine Retract& Sp Orient Cancel

```

M73
M71 M81
M20
H65
Stopre
If (Mag_Count<21)
If ($A_IN[23]==TRUE)

```

```

T_Num=PLC_Counter_1
Stopre
T_Name=$TC_TP2[$TC_MPP6[1,T_Num]]
Stopre
T=T_Name
Stopre
M206
Stopre
Endif
If ($A_IN[24]==TRUE)
T_Num=PLC_Counter_3
Stopre
T_Name=$TC_TP2[$TC_MPP6[1,T_Num]]
Stopre
T=T_Name
Stopre
M206
Stopre
Endif
Endif
Stopre
Gotof Complete
Stopre
;

```

The 1st tool for setup (i.e. no tool in spindle) sequence is started from “Step 21”. “Step 21” indicates that this is routine “2”, step “1”.

;Tool Setup 1st Tool Only

In “Step 21” the Z axis is positioned to the tool clearance position with all offsets suppressed & the spindle is oriented. The cycle determines from which magazine the 1st tool is to be taken from based on the digital input 23 or 24. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced before the cycle is continued. At the completion of this step the “TS_Status” pointer is set to “21”.

TS_Step21: ;Z to Clearance Position & Spindle Orient

```

TS_Status=15
If ($A_IN[33]==FALSE)
G74 Z=0
Endif
If ($A_IN[23]==TRUE)
G75 SUPA D0 FP=1 Z0 M19
Endif
If ($A_IN[24]==TRUE)
G75 SUPA D0 FP=1 Z0 M19
Endif

```

```
Stopre
TS_Status=21
;
```

In “Step 22” the magazine for the 1st tool is advanced. Spindle unclamp with “M74” is output with “M72” in case any tool has been placed in the spindle by hand. An “M19” is added in case the cycle is interrupted during this step in which case the previous spindle orient would be lost. At the completion of this step the “TS_Status” pointer is set to “22”.

```
TS_Step22: ;Magazine Advance & Tool Unclamp
If ($A_IN[23]==TRUE)
M73
M19
M72 M74
Endif
If ($A_IN[24]==TRUE)
M73
M19
M82 M74
Endif
Stopre
TS_Status=22
;
```

In “Step 23” the tool is unclamped & the Z axis is moved to the tool change position to insert the 1st tool into the spindle taper. Linear progressive feedrate with “FLIN” is used to smoothly move the Z axis over the tool taper. The cycle reads the value directly from the machine data and converts it from metric to inch if necessary. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced, the spindle tool is re-oriented & the tool unclamped again before the cycle is continued. At the completion of this step the “TS_Status” pointer is set to “23”.

```
TS_Step23: ;Tool Unclamp & Z to TC Position
M74
If ($A_IN[33]==FALSE)
G74 Z=0
Endif
If ($A_IN[39]==TRUE)
Stopre
M107
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
SUPA D0 FNORM F250 Z0
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
SUPA D0 FNORM F6000 Z0
Endif
```

```

M73
If ($A_IN[23]==TRUE)
M19
Endif
If ($A_IN[24]==TRUE)
M19
Endif
M74
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
F600
SUPA D0 FLIN F100 Z=$MA_FIX_POINT_POS[1,AX3]
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
F15000
SUPA D0 FLIN F2500 Z=$MA_FIX_POINT_POS[1,AX3]
Endif
Stopre
TS_Status=23
;

```

In “Step 24” the tool is clamped and the magazine retracted. The tool is interrogated and the tool is called with “M206” to activate the tool in the spindle. After completion of this step the sequence is complete and the cycle jumps to the “Complete” label.

TS_Step24: ;Tool Clamp, Magazine Retract & Sp Orient Cancel

```

M73
M71 M81
M20
M104
H65
Stopre
If ($A_IN[23]==TRUE)
T_Num=PLC_Counter_1
Stopre
T_Name=$TC_TP2[$TC_MPP6[1,T_Num]]
Stopre
T=T_Name
Stopre
M206
Stopre
Endif
If ($A_IN[24]==TRUE)
T_Num=PLC_Counter_3
Stopre
T_Name=$TC_TP2[$TC_MPP6[1,T_Num]]

```

```

Stopre
T=T_Name
Stopre
M206
Stopre
Endif
Stopre
Gotof Complete
Stopre
;

```

The tool setup complete (i.e. last tool back to the magazine) sequence is started from "Step 31". "Step 31" indicates that this is routine "3", step "1".

;Tool Setup Tool-to-Magazine

In "Step 31" the spindle is oriented. The tool is placed back to the location that it was taken from. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced before the cycle is continued. At the completion of this step the "TS_Status" pointer is set to "31".

TS_Step31: ;Z to TC Posn & Spindle Orient

```

TS_Status=24
If ($A_IN[33]==FALSE)
G74 Z=0
Endif
If ($A_IN[23]==TRUE)
G75 SUPA D0 FP=2 Z0 M19
Endif
If ($A_IN[24]==TRUE)
G75 SUPA D0 FP=2 Z0 M19
Endif
M107
Stopre
TS_Status=31
;

```

In "Step 32" the magazine for the last tool is advanced. An "M19" is added in case the cycle is interrupted during this step in which case the previous spindle orient would be lost. At the completion of this step the "TS_Status" pointer is set to "32".

TS_Step32: ; Magazine Advance

```

If ($A_IN[23]==TRUE)
If ($A_IN[39]==FALSE)
M19
Endif
M72
Endif

```



```

If ($A_IN[24]==TRUE)
If ($A_IN[39]==FALSE)
M19
Endif
M82
Endif
M107
Stopre
TS_Status=32
;

```

In “Step 33” the spindle tool is unclamped and the Z axis moved to the clearance position (i.e. clear of the tool in the magazine). Linear progressive feedrate with “FLIN” is used to smoothly move the Z axis off the tool taper. If the cycle was interrupted at this step & NCK reset or power lost, the Z axis will be referenced before the cycle is continued. At the completion of this step the “TS_Status” pointer is set to “33”.

```

TS_Step33: ;Tool Unclamp & Z to Clearance Position
M74
If ($A_IN[33]==FALSE)
G74 Z=0
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
F100
SUPA D0 FLIN F600 Z0
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
F2500
SUPA D0 FLIN F15000 Z0
Endif
Stopre
TS_Status=33
;

```

In “Step 34” the spindle tool system is clamped (without any tool) and the magazine retracted. The “T0” is called with “M206” to clear the last active tool from the spindle. After completion of this step the sequence is continued with the “Complete” label.

```

TS_Step34: ;Tool Clamp, Magazine Retract & Sp Orient Cancel
M73
M71 M81
M20
Stopre
T0
Stopre
M206

```

```
Stopre  
Gotof Complete  
Stopre  
;
```

The tool setup cycle is complete and the "TS_Status" is reset to 0.

Complete:

```
;  
TS_Status=0  
;
```

After the 1st tool has been called "M102" is called to latch that the next tool setup with tool-to-tool will exchange tools.

If (\$A_IN[32]==TRUE)

M102

Endif

```
;
```

"M101" is called to end the tool setup operation.

M101

```
;
```

Tool setup cycle complete.

M17 ;Tool Setup Cycle Complete

```
;
```

An exit from the tool setup cycle is provided by entering "99" into the "TS_Status" parameter of GUD 2 in a case where auto recovery is not possible.

TS_Step99:

TS_Status=0

M101

M102

M17 ;Tool Setup Cycle Complete

10

Modified ShopMill & Miscellaneous Cycles

This section contains information on two separate program areas. The first area covers standard ShopMill cycles that have been modified by Siemens to enhance the operation of the system by the end-user. The second area is a listing of the cycles included to help with both operation and setup of the machine.

The changes to ShopMill cycles are clearly indicated with the details of why the changes have been made. Modifications are indicated in ***bold red italic text***.

ShopMill Standard Cycle E_TFS.SPF

In the following cycle the original text “M6” is replaced by “M306”. The M-Code M6 is used to trigger an ASUP in the PLC program and a different M-Code must be used by the E_TFS cycle. M6, which was previously defined as L6 in the SMAC macro definition file, has been changed to define M306 as T_CHANGE to mimic the original function.

The “Setpiece(1)” function for decrementing the tool life quantity is commented out and is now taken over by the T_CHANGE cycle.

```
PROC E_TFS(E_TTFS,INT _MODE) SBLOF
;V05.03.04 24.08.2000 Pe/Ka CMM-Werkzeugwechsel/Vorschub/Spindel-Zyklus
DEF INT
_TI,_TFI,_TYP,_M3_5,_M7_8,_M7_8_ALT=0,_I,_HND_ALT=0,_HND_NEU=0,_NPV,_MB
1,_MB2,_MB3,_MB4,_E_TC
DEF REAL _FAK1,_POS1,_POS2,_A1,_A2
DEF FRAME _FRAME
DEF BOOL
_T_NEU=FALSE,_TF_NEU=FALSE,_D_NEU=FALSE,_M_NEU=FALSE,_S_NEU=FALSE,_F_NE
U=FALSE
DEF AXIS _AX1,_AX2
IF(_T<>" ")
IF(_T=="0")
_TI=0
ELSE
_TI=GETT(_T,0)
ENDIF
IF(_MODE==2)
IF($TC_MPP6[9998,1]<>_TI)
_T_NEU=TRUE
_M_NEU=TRUE
ELSE
_D_NEU=TRUE
ENDIF
ELSE
IF($P_TOOLNO<>_TI)
_T_NEU=TRUE
_M_NEU=TRUE
ELSE
IF($P_TOOL<>_DD)
_D_NEU=TRUE
ENDIF
ENDIF
ENDIF
ENDIF
IF($MC_TOOL_CHANGE_MODE==1)AND(E_MD9667==1)AND(_TF<>" ")
_TFI=GETT(_TF,0)
IF(_TFI>0)
IF(_T_NEU)
IF(_TFI<>_TI)
_TF_NEU=TRUE
ENDIF
ELSE
```

```

IF(_TFI<>$P_TOOLNO)
  _TF_NEU=TRUE
ENDIF
ENDIF
ENDIF
ENDIF
IF(E_INIT)
  _M_NEU=TRUE _S_NEU=TRUE _F_NEU=TRUE
  E_INIT=FALSE
ELSE
  IF(_SA>0)
    _S_NEU=TRUE
  ENDIF
  IF(_FAA>0)
    _F_NEU=TRUE
  ENDIF
ENDIF
IF(_T==" ")OR(_TI==0)
  _M_NEU=FALSE
ENDIF
IF(_MODE==3)
  _TF_NEU=FALSE
  _M_NEU=FALSE
  _S_NEU=FALSE
  _F_NEU=FALSE
ENDIF
IF(_D_NEU)
  D=_DD
ENDIF
IF(NOT(_T_NEU OR _TF_NEU OR _M_NEU OR _S_NEU OR _F_NEU))
  RET
ENDIF
IF($P_SEARCH)
  _E_TC=E_TCS
ELSE
  _E_TC=E_TC
ENDIF
IF($P_GG[13]<3)
  _FAK1=1
IF($MN_SCALING_SYSTEM_IS_METRIC)
IF($P_GG[13]==1)
  _FAK1=1/$MN_SCALING_VALUE_INCH
ENDIF
ELSE
IF($P_GG[13]==2)
  _FAK1=$MN_SCALING_VALUE_INCH
ENDIF
ENDIF
ELSE
  _FAK1=1
ENDIF
N10 G0 AX[$P_AXN3]=AC($P_EP[$P_AXN3]*_FAK1)
IF(_T_NEU)
IF(_MODE==3)
E_L6=0
ELSE
E_L6=1

```

```

ENDIF
IF(_T<>" ")
IF($P_TOOLNO>0)AND($P_TOOL>0)
_M7_8_ALT=TRUNC($TC_DP25[$P_TOOLNO,1]/1024)MOD 4
ENDIF
IF(_MODE<>2)
OFFN=0
E_TS_OFFN=0
ENDIF
IF(_E_TC)
IF(E_TC_AX1_MODE[_E_TC]==2)AND(E_TC_AX1[_E_TC]<>" ")
_AX1=AXNAME(E_TC_AX1[_E_TC])
E_TC_A1=$P_EP[_AX1]
ENDIF
IF(E_TC_AX2_MODE[_E_TC]==2)AND(E_TC_AX2[_E_TC]<>" ")
_AX2=AXNAME(E_TC_AX2[_E_TC])
E_TC_A2=$P_EP[_AX2]
ENDIF
_A1=E_TC_A1
_A2=E_TC_A2
ENDIF
IF(E_TRA_AKT)
_FRAME=$P_PFRAME
_NPV=$P_GG[8]
TRAFOOF
_POS1=$P_EP[$P_AXN1]
_POS2=$P_EP[$P_AXN2]
ENDIF
IF(NOT $P_SEARCH)AND(NOT $P_ISTEST)AND(NOT $P_SIM)AND(NOT $P_DRYRUN)
;Modified for Hardinge VMC
;SETPIECE(1)
ENDIF
MCALL
$A_OUT[E_CS3]=0 $A_OUT[E_CS2]=0 $A_OUT[E_CS1]=0
IF(_TI== -1)
T=-1
ENDIF
_HND_ALT=0
_HND_NEU=0
IF(_HND_ALT)AND(_HND_NEU)
IF(_E_TC)
N100 TOOLCARR(3,_E_TC)
ENDIF
ELSE
IF(_HND_ALT)
IF(_E_TC)
N110 TOOLCARR(3,_E_TC)
ENDIF
ENDIF
IF(_HND_NEU)
IF($TC_MPP6[9998,1])
IF(_E_TC)
N120 TOOLCARR(2,_E_TC)
ENDIF
T0
IF($MC_TOOL_CHANGE_MODE==1)
;Modified for Hardinge VMC

```

M306

```
ENDIF
ENDIF
IF(_E_TC)
N130 TOOLCARR(3,_E_TC)
ENDIF
ENDIF
ENDIF
IF(NOT _HND_ALT)AND(NOT _HND_NEU)
IF($TC_MPP6[9998,1]<>_TI)
IF(_E_TC)
N140 TOOLCARR(2,_E_TC)
ENDIF
ENDIF
ENDIF
IF(_T=="0")
T0
ELSE
T=_T
ENDIF
IF($MC_TOOL_CHANGE_MODE==1)
;Modified for Hardinge VMC
M306
ENDIF
IF(_E_TC)AND(_A1<>E_A_NO_VAL)AND(_A2<>E_A_NO_VAL)
N150 E_SWIV_H(_E_TC,_A1,_A2)
ENDIF
IF(E_TRA_AKT)
N20 G0 AX[$P_AXN1]=AC(_POS1*_FAK1)
N30 G0 AX[$P_AXN2]=AC(_POS2*_FAK1)
TRACYL(E_TRA_D,E_TRA_AKT)
OFFN=E_TS_OFFN+E_TRA_OFFN
$P_PFRAME=_FRAME
N300 G[8]=_NPV
ENDIF
ELSE
_TI=$P_TOOLNO
_DD=$P_TOOL
ENDIF
D=_DD
E_L6=0
$A_OUT[E_CS3]=0 $A_OUT[E_CS2]=0 $A_OUT[E_CS1]=1
ELSE
_TI=$P_TOOLNO
_DD=$P_TOOL
IF(_TI==0)
_M_NEU=FALSE
ENDIF
ENDIF
IF(_M_NEU)
D1
_M3_5=TRUNC($P_AD[25]/256)MOD 4
IF(_E_TC)
IF(E_TC_SDIR[_E_TC]==1)AND(TOUPPER($TC_CARR23[_E_TC])<>"P")
IF(_M3_5==1)OR(_M3_5==2)
_M3_5=3-_M3_5
ENDIF
```



```

ENDIF
ENDIF
IF(_M3_5==1)
  _MB1=3
ELSE
  IF(_M3_5==2)
    _MB1=4
  ELSE
    _MB1=5
  ENDIF
ENDIF
ENDIF
_M7_8=TRUNC($P_AD[25]/1024)MOD 4
IF(( _M7_8 B_AND 3)==3)AND(E_MD9668>-1)
  _MB2=E_MD9668
  _MB3=0
ELSE
  IF(_M7_8 B_AND 1)
    _MB2=E_MD9680
  ELSE
    _MB2=0
  ENDIF
  IF(_M7_8 B_AND 2)
    _MB3=E_MD9681
  ELSE
    _MB3=0
  ENDIF
ENDIF
IF(_M7_8==0)AND(_M7_8_ALT)
  _MB2=9
  _MB3=0
ENDIF
_MB4=$P_AD[25] MOD 16
D=_DD
ENDIF
IF(_S_NEU)
  IF(_SA==2)
    D=_DD
    IF($P_TOOLR>0)
      IF($P_GG[13]==2)OR($P_GG[13]==4)
        _S=1000*_S/($PI*2*$P_TOOLR*_FAK1)
      ELSE
        _S=12*_S/($PI*2*$P_TOOLR*_FAK1)
      ENDIF
    ENDIF
    IF(_S>999999)
      _S=999999
    ENDIF
  ELSE
    GOTOF _FEHL2
  ENDIF
ENDIF
IF(_E_TC)
  IF(_S>E_TC_SMAX[_E_TC])AND( TOUPPER($TC_CARR23[_E_TC]) <> "P")
    _S=E_TC_SMAX[_E_TC]
  ENDIF
ENDIF
IF(_SA<1)OR(_SA>2)OR($P_S[0]==_S)
  _S=-1

```

```

ENDIF
ELSE
_S=-1
ENDIF
IF(_F_NEU)
CASE _FAA OF 1 GOTOF _M11 2 GOTOF _M12 3 GOTOF _M13 DEFAULT GOTOF _M10
_M12:
D1
IF($P_TOOLNO)
_TYP=$TC_DP1[$P_TOOLNO,$P_TOOL]
ELSE
_TYP=0
ENDIF
IF(_TYP<100)OR(_TYP>199) GOTOF _FEHL1
_I=_TEETH
D=_DD
IF(_I<=0) GOTOF _FEHL3
_F=_F*_I
_M13:
IF($P_GG[15]<>3)
G95
ENDIF
GOTOF _M10
_M11:
IF($P_GG[15]<>2)
G94
ENDIF
_M10:
IF(_FAA<1)OR(_FAA>3)OR(_F==$_P_F)
_F=-1
ENDIF
ELSE
_F=-1
ENDIF
IF(_M_NEU)
IF(_S>=0)
IF(_F>=0)
IF(_MB2)
IF(_MB2 AND _MB3)
S=_S F=_F M90=_MB4 M=_MB1 M=_MB2 M=_MB3
ELSE
S=_S F=_F M90=_MB4 M=_MB1 M=_MB2
ENDIF
ELSE
IF(_MB3)
S=_S F=_F M90=_MB4 M=_MB1 M=_MB3
ELSE
S=_S F=_F M90=_MB4 M=_MB1
ENDIF
ENDIF
ELSE
IF(_MB2)
IF(_MB2 AND _MB3)
S=_S M90=_MB4 M=_MB1 M=_MB2 M=_MB3
ELSE
S=_S M90=_MB4 M=_MB1 M=_MB2
ENDIF
ENDIF

```

```

ELSE
IF(_MB3)
S=_S M90=_MB4 M=_MB1 M=_MB3
ELSE
S=_S M90=_MB4 M=_MB1
ENDIF
ENDIF
ENDIF
ELSE
IF(_F>=0)
IF(_MB2)
IF(_MB2 AND _MB3)
F=_F M90=_MB4 M=_MB1 M=_MB2 M=_MB3
ELSE
F=_F M90=_MB4 M=_MB1 M=_MB2
ENDIF
ELSE
IF(_MB3)
F=_F M90=_MB4 M=_MB1 M=_MB3
ELSE
F=_F M90=_MB4 M=_MB1
ENDIF
ENDIF
ELSE
IF(_MB2)
IF(_MB2 AND _MB3)
M90=_MB4 M=_MB1 M=_MB2 M=_MB3
ELSE
M90=_MB4 M=_MB1 M=_MB2
ENDIF
ELSE
IF(_MB3)
M90=_MB4 M=_MB1 M=_MB3
ELSE
M90=_MB4 M=_MB1
ENDIF
ENDIF
ENDIF
ENDIF
ELSE
IF(_S>=0)
IF(_F>=0)
S=_S F=_F
ELSE
S=_S
ENDIF
ELSE
IF(_F>=0)
F=_F
ENDIF
ENDIF
ENDIF
IF(_TF_NEU)
IF($A_TOOLMLN[_TFI]>0)
T=_TF
ENDIF
ENDIF

```

```
RET
_FEHL1: STOPRE
SETAL(61216)
RET
_FEHL2: STOPRE
SETAL(61217)
RET
_FEHL3: STOPRE
SETAL(61218)
RET
_FEHL4: STOPRE
SETAL(61232)
RET
```

ShopMill Standard Cycle E_ASUP.SPF

In the following cycle the lines after “;Hardinge Specific Synchronous Actions” have been added. Specific machine data and an initial spindle speed are also set the first time E_ASUP is executed at start-up.

```
PROC E_ASUP
;V05.01.08 16.02.2000 Pe/Ka/Ev Asynchrones Unterprogramm CMM
ids=128 every $A_IN[19]==1 DO M5
ids=127 every $A_IN[20]==1 DO M3
ids=126 every $A_IN[21]==1 DO M4
;
;Hardinge Specific Synchronous Actions
ids=100 every $A_IN[25]==1 DO M3 M8
ids=101 every $A_IN[26]==1 DO M4 M8
ids=102 every $A_IN[27]==1 DO M5 M9 M54
ids=103 every $A_IN[28]==1 DO SPOS=0
ids=104 every $A_IN[29]==1 DO M5
;
;Initialise Startup Data
If ($A_IN[30]==FALSE)
;
;Initialise Spindle Speed
If ($A_IN[15]==TRUE)
S=SPIN_INIT_LG
Endif
If ($A_IN[16]==TRUE)
S=SPIN_INIT_HG
Endif
If (($A_IN[15]==FALSE) AND ($A_IN[16]==FALSE))
S=SPIN_INIT_LG
Endif
;
;Initialise Z Axis Setting Data
;Setting Data is not converted during Metric/Inch changeover!
;Data is always set in Metric units!
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
$SN_SW_CAM_MINUS_POS_TAB_1[0]=1
$SN_SW_CAM_MINUS_POS_TAB_1[1]=$MA_FIX_POINT_POS[1,AX3]*25.4+1
$SN_SW_CAM_MINUS_POS_TAB_1[2]=-5
$SN_SW_CAM_PLUS_POS_TAB_1[0]=-1
$SN_SW_CAM_PLUS_POS_TAB_1[1]=$MA_FIX_POINT_POS[1,AX3]*25.4-1
$SN_SW_CAM_PLUS_POS_TAB_1[2]=$MA_FIX_POINT_POS[1,AX3]*25.4+5
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
$SN_SW_CAM_MINUS_POS_TAB_1[0]=1
$SN_SW_CAM_MINUS_POS_TAB_1[1]=$MA_FIX_POINT_POS[1,AX3]+1
$SN_SW_CAM_MINUS_POS_TAB_1[2]=-5
$SN_SW_CAM_PLUS_POS_TAB_1[0]=-1
$SN_SW_CAM_PLUS_POS_TAB_1[1]=$MA_FIX_POINT_POS[1,AX3]-1
$SN_SW_CAM_PLUS_POS_TAB_1[2]=$MA_FIX_POINT_POS[1,AX3]+5
Endif
;
;Initialize Z Axis 2nd Softlimit
If ($MN_SCALING_SYSTEM_IS_METRIC==FALSE)
```

```
$MA_POS_LIMIT_MINUS2[AX3]=$MA_FIX_POINT_POS[1,AX3]-0.04
Endif
If ($MN_SCALING_SYSTEM_IS_METRIC==TRUE)
$MA_POS_LIMIT_MINUS2[AX3]=$MA_FIX_POINT_POS[1,AX3]-1
Endif
;
M18
Endif
;
M17
```

ShopMill Standard Definition SMAC.DEF

In the following definition the line “N20 DEFINE M6 AS L6” is changed to “N20 DEFINE M306 as T_CHANGE”. This change is related to the ShopMill cycle E_TFS which previously called L6 with M6 and have been changed to call T_CHANGE with M306. T_CHANGE is the tool change cycle.

```
;V05.03.01 20.06.2000 Pe/Ev CMM-Makrodefinitionsdatei
N10 DEFINE RL AS REAL
N11 DEFINE _TEETH AS $TC_DP24[$P_TOOLNO,1]
;Modified for Hardinge VMC
N20 DEFINE M306 AS T_CHANGE
N21 DEFINE E_TTFS AS STRING[20] _T,STRING[20] _TF,INT _DD,REAL _F,INT
_FAA,REAL _S,INT _SA
N22 DEFINE E_TTFFS AS STRING[20] _T,STRING[20] _TF,INT _DD,REAL _F,INT
_FAA,REAL _FZ,REAL _S,INT _SA
N23 DEFINE E_XY_0_4 AS REAL _X0,INT _X0A,REAL _Y0,INT _Y0A,REAL _X1,INT
_X1A,REAL _Y1,INT _Y1A,REAL _X2,INT _X2A,REAL _Y2,INT _Y2A,REAL _X3,INT
_X3A,REAL _Y3,INT _Y3A,REAL _X4,INT _X4A,REAL _Y4,INT _Y4A
N24 DEFINE E_XY_5_8 AS REAL _X5,INT _X5A,REAL _Y5,INT _Y5A,REAL _X6,INT
_X6A,REAL _Y6,INT _Y6A,REAL _X7,INT _X7A,REAL _Y7,INT _Y7A,REAL _X8,INT
_X8A,REAL _Y8,INT _Y8A
N25 DEFINE E_LA_0_3 AS REAL _L0,INT _L0A,REAL _A0,INT _A0A,REAL _L1,INT
_L1A,REAL _A1,INT _A1A,REAL _L2,INT _L2A,REAL _A2,INT _A2A,REAL _L3,INT
_L3A,REAL _A3,INT _A3A
N26 DEFINE E_LA_4_7 AS REAL _L4,INT _L4A,REAL _A4,INT _A4A,REAL _L5,INT
_L5A,REAL _A5,INT _A5A,REAL _L6,INT _L6A,REAL _A6,INT _A6A,REAL _L7,INT
_L7A,REAL _A7,INT _A7A
N27 DEFINE E_CP_M1 AS STRING[70] _NAME,INT _BA,REAL _R1,REAL _Z0,REAL
_Z1,INT _Z1A,REAL _DXY,REAL _DZ,REAL _UXY,REAL _UZ,REAL _X,REAL _Y,REAL
_FZ,INT _FZA,REAL _FZR,REAL _RP,REAL _SC,INT _DIR
N28 DEFINE E_CP_M2 AS STRING[21] _CHECK1,STRING[21] _CHECK2,INT _ST,INT
_METRIC,REAL _SCAL_XY,REAL _SCAL_Z,STRING[70] _NAME_DR
N29 DEFINE E_PO_M1 AS INT _BA,REAL _FZ,INT _FZA,REAL _FZR,REAL _Z0,INT
_Z0A,REAL _Z1,INT _Z1A,REAL _DZ
N30 DEFINE E_NO_VAL AS (1EX300)
N31 DEFINE E_FPT AS F=$TC_DP24[$P_TOOLNO,1]*
N32 DEFINE E_MAX AS 25
N33 DEFINE E_A_NO_VAL AS (999)
N40 DEFINE E_CS1 AS 14
N41 DEFINE E_CS2 AS 15
N42 DEFINE E_CS3 AS 16
N99 M30
```

Hardinge Specific Global Variable Definitions SGUD.DEF

The SGUD (Siemens Global User Data) are used to display user variables for the part counter & edit protection level. All the variables are displayed in Global User Data area #1.

```
;VMC User Display Definitions
DEF NCK INT PART_COUNT_ACTUAL
DEF NCK INT PART_COUNT_PRESET
DEF NCK REAL SPINDLE_POWER_LIMIT
DEF NCK INT EDIT_PROTECTION_LEVEL
DEF NCK BOOL ATC_AXES_SAFETY_POSITION
DEF NCK REAL ATC_X_SAFE_POS
DEF NCK REAL ATC_Y_SAFE_POS
M2
```

Hardinge Specific Global Variable Definitions MGUD.DEF

The MGUD (Machine Global User Data) are used to define variables for the tool change & tool setup cycle. All the variables are displayed in Global User Data area #2.

```
;VMC User Cycle Variable Definitions
DEF NCK REAL Mag_Old
DEF NCK REAL Mag_New
DEF NCK REAL Loc_Old
DEF NCK REAL Loc_New
DEF NCK REAL Tool_Old
DEF NCK REAL Tool_New
DEF NCK REAL Mag_Last
DEF NCK REAL Loc_Last
DEF NCK INT TC_Status
DEF NCK INT TS_Status
DEF NCK INT D_Number
DEF NCK INT T_Monitor
DEF NCK INT SPIN_INIT_LG
DEF NCK INT SPIN_INIT_HG
DEF NCK REAL PLC_COUNTER_1
DEF NCK REAL PLC_COUNTER_3
DEF NCK STRING[32] T_NAME
DEF NCK REAL T_NUM
DEF NCK REAL T_CHECK
DEF NCK REAL T_STAT
DEF NCK INT MAG_COUNT
M2
```


Hardinge Specific Macro Definitions MMAC.DEF

The MMAC (Machine Macros) are used to define specific user cycles to be run via an M Code instead of the actual cycle name.

```
;VMC User Macro Definitions
DEFINE M46 AS TIME_START
DEFINE M47 AS TIME_STOP
DEFINE M55 AS PART_RESET
DEFINE M56 AS PART_PRESET
DEFINE M57 AS PART_UPDATE
DEFINE ENGRAVE AS CYCLEGRA
M2
```

Hardinge Specific Machine Data Access Level Settings UMAC.DEF

The UMAC (User Macros) are used to define specific machine data with a different access level to the standard machine data access. This allows end-users access to these machine data only.

```
;VMC Machine Data Access Level Settings
REDEF $MN_USER_DATA_HEX APR 7 APW 3
REDEF $MC_GCODE_RESET_VALUES APR 7 APW 3
REDEF $MA_JOG_VELO_RAPID APR 7 APW 3
REDEF $MA_JOG_VELO APR 7 APW 3
REDEF $MA_REFP_MOVE_DIST APR 7 APW 3
REDEF $MA_POS_LIMIT_PLUS APR 7 APW 3
REDEF $MA_POS_LIMIT_MINUS APR 7 APW 3
M2
```

ASUP - User Repos Cycle

The user ASUP cycle is called in place of the system ASUP.SYF for Repos functions.

```
If $A_IN[38]==TRUE Gotof No_Repos  
Reposa  
No_Repos:  
Ret
```

M46 - Start Program Timer

An internal timer is started with the user cycle defined as M46. R parameters are used to store the time.

```
;Start Program Timer
;HARDINGE.VMCII.MGS.V1 July 2000
Proc Time_Start Sblof Displof
$AC_TIMER[1]=0
R91=$A_MSECOND
R92=$A_SECOND
R93=$A_MINUTE
R94=$A_HOUR
M17
```

M47 - Stop Program Timer

The internal timer started with the user cycle defined as M46 is stopped and the displayed with the user defined cycle as M47. R parameters are used to store the time.

```
;Stop Program Timer & Display Cycle Time
;HARDINGE.VMCII.MGS.V1 July 2000
Proc Time_Stop Sblof Displof
DEF REAL Hour, Minute, Second, Msecond
R90=$AC_TIMER[1]
Msecond=$A_MSECOND-R91
Second=$A_SECOND-R92
Minute=$A_MINUTE-R93
Hour=$A_HOUR-R94
IF Hour>=0 Gotof Continue
Hour=Hour+24
Continue: If Minute>=0 Gotof Continue
Hour=Hour-1
Minute=Minute+60
Continue: If Second>=0 Gotof Continue
Minute=Minute-1
Second=Second+60
Continue: If Msecond>=0 Gotof Continue
Second=Second-1
Msecond=Msecond+1000
Continue: If Hour==0 Gotof No_Hour
MSG("Cycle Time: "<<Hour<<"hr, "<<Minute<<"min, "<<Second<<"sec,
"<<Msecond<<"msec")
Gotof End
No_Hour: MSG("Cycle Time: "<<Minute<<"min, "<<Second<<"sec,
"<<Msecond<<"msec")
IF Minute==0 Gotof No_Minute
Gotof End
No_Minute: MSG("Cycle Time: "<<Second<<"sec, "<<Msecond<<"msec")
End: M0
M17
```

M55 - Workpiece Counter Reset

The system workpiece counter actual value displayed with the GUD "PART_COUNT_ACTUAL" is reset to 0 with the user cycle defined as M55.

```
;Part Counter Actual Value Reset
;HARDINGE.VMCII.MGS.V1 December 2000
Proc Part_Reset Sblof Displof
$AC_SPECIAL_PARTS=0
PART_COUNT_ACTUAL=$AC_SPECIAL_PARTS
M17
```

M56(n) - Workpiece Counter Preset

The system workpiece counter nominal value displayed with the GUD "PART_COUNT_PRESET" is preset to "n" with the user cycle defined as M56.

```
;Part Counter Required Value Preset
;HARDINGE.VMCII.MGS.V1 December 2000
PROC Part_Preset(INT REQ_PRESET) Sblof Displof
$AC_REQUIRED_PARTS=REQ_PRESET
PART_COUNT_PRESET=$AC_REQUIRED_PARTS
M17
```

M57 - Workpiece Counter Increment

The system workpiece counter is incremented and the display updated with the user cycle defined as M57.

```
;Part Counter Display Update
;HARDINGE.VMCII.MGS.V1 December 2000
Proc Part_Update Sblof Displof
M58
PART_COUNT_ACTUAL=$AC_SPECIAL_PARTS
PART_COUNT_PRESET=$AC_REQUIRED_PARTS
M17
```

Configure & Initialize Tool Magazine for Single Magazine with 20 Tools

```
;Tool Management Configuration & Initialization
;for Single 20 Tool Magazine
;HARDINGE.VMCII.MGS.V1 December 2000
;
;Define Local Variables
Def STRING[32] Name[21]
Def INT Pocket
Def INT T_Number
Def INT D_Num
Def INT L_Type
Def INT T_Type
Def INT Status
Stopre
;
;Initialise Variables
Pocket=1
D_Num=1
L_Type=1
T_Number=1
T_Type=120
Status=66
Name[1]="1 "
Name[2]="2 "
Name[3]="3 "
Name[4]="4 "
Name[5]="5 "
Name[6]="6 "
Name[7]="7 "
Name[8]="8 "
Name[9]="9 "
Name[10]="10 "
Name[11]="11 "
Name[12]="12 "
Name[13]="13 "
Name[14]="14 "
Name[15]="15 "
Name[16]="16 "
Name[17]="17 "
Name[18]="18 "
Name[19]="19 "
Name[20]="20 "
Stopre
;
;Delete Old Data
$TC_MAP1[0]=0
$TC_DP1[0,0]=0
;
;Magazine Name
$TC_MAP2[1]="VMCII Single Magazine"
;
;Type of Search Strategy
$TC_MAMP2=4097
;
;Definition of Magazines
```

```

;Real Magazine
$TC_MAP1[1]=1
$TC_MAP3[1]=17
$TC_MAP6[1]=1
$TC_MAP7[1]=20
;
;Buffer Magazine
$TC_MAP1[9998]=7
$TC_MAP3[9998]=17
$TC_MAP6[9998]=1
$TC_MAP7[9998]=1
;
;Load Magazine
$TC_MAP1[9999]=9
$TC_MAP3[9999]=17
$TC_MAP6[9999]=1
$TC_MAP7[9999]=2
;
;Locations of Real Magazine
;Magazine 1, Location No 1
$TC_MPP1[1,1]=1
$TC_MPP2[1,1]=1
$TC_MPP3[1,1]=0
$TC_MPP4[1,1]=2
$TC_MPP5[1,1]=1
;
;Magazine 1, Location No 2
$TC_MPP1[1,2]=1
$TC_MPP2[1,2]=1
$TC_MPP3[1,2]=0
$TC_MPP4[1,2]=2
$TC_MPP5[1,2]=2
;
;Magazine 1, Location No 3
$TC_MPP1[1,3]=1
$TC_MPP2[1,3]=1
$TC_MPP3[1,3]=0
$TC_MPP4[1,3]=2
$TC_MPP5[1,3]=3
;
;Magazine 1, Location No 4
$TC_MPP1[1,4]=1
$TC_MPP2[1,4]=1
$TC_MPP3[1,4]=0
$TC_MPP4[1,4]=2
$TC_MPP5[1,4]=4
;
;Magazine 1, Location No 5
$TC_MPP1[1,5]=1
$TC_MPP2[1,5]=1
$TC_MPP3[1,5]=0
$TC_MPP4[1,5]=2
$TC_MPP5[1,5]=5
;
;Magazine 1, Location No 6
$TC_MPP1[1,6]=1
$TC_MPP2[1,6]=1

```

```

$TC_MPP3[1,6]=0
$TC_MPP4[1,6]=2
$TC_MPP5[1,6]=6
;
;Magazine 1, Location No 7
$TC_MPP1[1,7]=1
$TC_MPP2[1,7]=1
$TC_MPP3[1,7]=0
$TC_MPP4[1,7]=2
$TC_MPP5[1,7]=7
;
;Magazine 1, Location No 8
$TC_MPP1[1,8]=1
$TC_MPP2[1,8]=1
$TC_MPP3[1,8]=0
$TC_MPP4[1,8]=2
$TC_MPP5[1,8]=8
;
;Magazine 1, Location No 9
$TC_MPP1[1,9]=1
$TC_MPP2[1,9]=1
$TC_MPP3[1,9]=0
$TC_MPP4[1,9]=2
$TC_MPP5[1,9]=9
;
;Magazine 1, Location No 10
$TC_MPP1[1,10]=1
$TC_MPP2[1,10]=1
$TC_MPP3[1,10]=0
$TC_MPP4[1,10]=2
$TC_MPP5[1,10]=10
;
;Magazine 1, Location No 11
$TC_MPP1[1,11]=1
$TC_MPP2[1,11]=1
$TC_MPP3[1,11]=0
$TC_MPP4[1,11]=2
$TC_MPP5[1,11]=11
;
;Magazine 1, Location No 12
$TC_MPP1[1,12]=1
$TC_MPP2[1,12]=1
$TC_MPP3[1,12]=0
$TC_MPP4[1,12]=2
$TC_MPP5[1,12]=12
;
;Magazine 1, Location No 13
$TC_MPP1[1,13]=1
$TC_MPP2[1,13]=1
$TC_MPP3[1,13]=0
$TC_MPP4[1,13]=2
$TC_MPP5[1,13]=13
;
;Magazine 1, Location No 14
$TC_MPP1[1,14]=1
$TC_MPP2[1,14]=1
$TC_MPP3[1,14]=0

```

```

$TC_MPP4[1,14]=2
$TC_MPP5[1,14]=14
;
;Magazine 1, Location No 15
$TC_MPP1[1,15]=1
$TC_MPP2[1,15]=1
$TC_MPP3[1,15]=0
$TC_MPP4[1,15]=2
$TC_MPP5[1,15]=15
;
;Magazine 1, Location No 16
$TC_MPP1[1,16]=1
$TC_MPP2[1,16]=1
$TC_MPP3[1,16]=0
$TC_MPP4[1,16]=2
$TC_MPP5[1,16]=16
;
;Magazine 1, Location No 17
$TC_MPP1[1,17]=1
$TC_MPP2[1,17]=1
$TC_MPP3[1,17]=0
$TC_MPP4[1,17]=2
$TC_MPP5[1,17]=17
;
;Magazine 1, Location No 18
$TC_MPP1[1,18]=1
$TC_MPP2[1,18]=1
$TC_MPP3[1,18]=0
$TC_MPP4[1,18]=2
$TC_MPP5[1,18]=18
;
;Magazine 1, Location No 19
$TC_MPP1[1,19]=1
$TC_MPP2[1,19]=1
$TC_MPP3[1,19]=0
$TC_MPP4[1,19]=2
$TC_MPP5[1,19]=19
;
;Magazine 1, Location No 20
$TC_MPP1[1,20]=1
$TC_MPP2[1,20]=1
$TC_MPP3[1,20]=0
$TC_MPP4[1,20]=2
$TC_MPP5[1,20]=20
;
;Locations of Buffer Magazine
;Spindle
$TC_MPP1[9998,1]=2
$TC_MPP2[9998,1]=0
$TC_MPP3[9998,1]=0
$TC_MPP4[9998,1]=2
$TC_MPP5[9998,1]=1
;
;Locations of Load Magazine
;1st Load Point
$TC_MPP1[9999,1]=7
$TC_MPP2[9999,1]=0

```



```

$TC_MPP3[9999,1]=0
$TC_MPP4[9999,1]=2
$TC_MPP5[9999,1]=1
;
;2nd Load Point
$TC_MPP1[9999,2]=7
$TC_MPP2[9999,2]=0
$TC_MPP3[9999,2]=0
$TC_MPP4[9999,2]=2
$TC_MPP5[9999,2]=2
;
;Distance to Change Position of Real Magazine
$TC_MDP2[1,1]=0
$TC_MDP1[1,1]=0
$TC_MDP1[1,2]=0
;
MSG("Configuration complete - press [Cycle Start] to continue")
M0
Stopre
MSG()
;
Data_Load:
$TC_DP1[T_Number,1]=T_Type
Stopre
$TC_TP1[T_Number]=D_Num
$TC_TP2[T_Number]=Name[T_Number]
$TC_TP7[T_Number]=L_Type
$TC_TP8[T_Number]=Status
Stopre
$TC_MPP6[1,Pocket]=T_Number
Stopre
;
Pocket=Pocket+1
T_Number=T_Number+1
Stopre
If Pocket<21 Gotob Data_Load
;
MSG("Initialization complete - press [Cycle Start] to continue")
M0
Stopre
MSG()
M2

```

Configure & Initialize Tool Magazine for Double Magazine with 40 Tools

```
;Tool Management Configuration & Initialization
;for Double 40 Tool Magazine
;HARDINGE.VMCII.MGS.V1 December 2000
;
;Define Local Variables
Def STRING[32] Name[41]
Def INT Pocket
Def INT T_Number
Def INT D_Num
Def INT L_Type
Def INT T_Type
Def INT Status
Stopre
;
;Initialise Variables
Pocket=1
D_Num=1
L_Type=1
T_Number=1
T_Type=120
Status=66
Name[1]="1 "
Name[2]="2 "
Name[3]="3 "
Name[4]="4 "
Name[5]="5 "
Name[6]="6 "
Name[7]="7 "
Name[8]="8 "
Name[9]="9 "
Name[10]="10 "
Name[11]="11 "
Name[12]="12 "
Name[13]="13 "
Name[14]="14 "
Name[15]="15 "
Name[16]="16 "
Name[17]="17 "
Name[18]="18 "
Name[19]="19 "
Name[20]="20 "
Name[21]="21 "
Name[22]="22 "
Name[23]="23 "
Name[24]="24 "
Name[25]="25 "
Name[26]="26 "
Name[27]="27 "
Name[28]="28 "
Name[29]="29 "
Name[30]="30 "
Name[31]="31 "
Name[32]="32 "
Name[33]="33 "
```

```

Name[34]="34"
Name[35]="35"
Name[36]="36"
Name[37]="37"
Name[38]="38"
Name[39]="39"
Name[40]="40"
Stopre
;
;Delete Old Data
$TC_MAP1[0]=0
$TC_DP1[0,0]=0
;
;Magazine Name
$TC_MAP2[1]="VMCII Twin Magazine"
;
;Type of Search Strategy
$TC_MAMP2=4097
;
;Definition of Magazines
;Real Magazine
$TC_MAP1[1]=1
$TC_MAP3[1]=17
$TC_MAP6[1]=1
$TC_MAP7[1]=40
;
;Buffer Magazine
$TC_MAP1[9998]=7
$TC_MAP3[9998]=17
$TC_MAP6[9998]=1
$TC_MAP7[9998]=1
;
;Load Magazine
$TC_MAP1[9999]=9
$TC_MAP3[9999]=17
$TC_MAP6[9999]=1
$TC_MAP7[9999]=2
;
;Locations of Real Magazine
;Magazine 1, Location No 1
$TC_MPP1[1,1]=1
$TC_MPP2[1,1]=1
$TC_MPP3[1,1]=0
$TC_MPP4[1,1]=2
$TC_MPP5[1,1]=1
;
;Magazine 1, Location No 2
$TC_MPP1[1,2]=1
$TC_MPP2[1,2]=1
$TC_MPP3[1,2]=0
$TC_MPP4[1,2]=2
$TC_MPP5[1,2]=2
;
;Magazine 1, Location No 3
$TC_MPP1[1,3]=1
$TC_MPP2[1,3]=1
$TC_MPP3[1,3]=0

```

```

$TC_MPP4[1,3]=2
$TC_MPP5[1,3]=3
;
;Magazine 1, Location No 4
$TC_MPP1[1,4]=1
$TC_MPP2[1,4]=1
$TC_MPP3[1,4]=0
$TC_MPP4[1,4]=2
$TC_MPP5[1,4]=4
;
;Magazine 1, Location No 5
$TC_MPP1[1,5]=1
$TC_MPP2[1,5]=1
$TC_MPP3[1,5]=0
$TC_MPP4[1,5]=2
$TC_MPP5[1,5]=5
;
;Magazine 1, Location No 6
$TC_MPP1[1,6]=1
$TC_MPP2[1,6]=1
$TC_MPP3[1,6]=0
$TC_MPP4[1,6]=2
$TC_MPP5[1,6]=6
;
;Magazine 1, Location No 7
$TC_MPP1[1,7]=1
$TC_MPP2[1,7]=1
$TC_MPP3[1,7]=0
$TC_MPP4[1,7]=2
$TC_MPP5[1,7]=7
;
;Magazine 1, Location No 8
$TC_MPP1[1,8]=1
$TC_MPP2[1,8]=1
$TC_MPP3[1,8]=0
$TC_MPP4[1,8]=2
$TC_MPP5[1,8]=8
;
;Magazine 1, Location No 9
$TC_MPP1[1,9]=1
$TC_MPP2[1,9]=1
$TC_MPP3[1,9]=0
$TC_MPP4[1,9]=2
$TC_MPP5[1,9]=9
;
;Magazine 1, Location No 10
$TC_MPP1[1,10]=1
$TC_MPP2[1,10]=1
$TC_MPP3[1,10]=0
$TC_MPP4[1,10]=2
$TC_MPP5[1,10]=10
;
;Magazine 1, Location No 11
$TC_MPP1[1,11]=1
$TC_MPP2[1,11]=1
$TC_MPP3[1,11]=0
$TC_MPP4[1,11]=2

```

```

$TC_MPP5[1,11]=11
;
;Magazine 1, Location No 12
$TC_MPP1[1,12]=1
$TC_MPP2[1,12]=1
$TC_MPP3[1,12]=0
$TC_MPP4[1,12]=2
$TC_MPP5[1,12]=12
;
;Magazine 1, Location No 13
$TC_MPP1[1,13]=1
$TC_MPP2[1,13]=1
$TC_MPP3[1,13]=0
$TC_MPP4[1,13]=2
$TC_MPP5[1,13]=13
;
;Magazine 1, Location No 14
$TC_MPP1[1,14]=1
$TC_MPP2[1,14]=1
$TC_MPP3[1,14]=0
$TC_MPP4[1,14]=2
$TC_MPP5[1,14]=14
;
;Magazine 1, Location No 15
$TC_MPP1[1,15]=1
$TC_MPP2[1,15]=1
$TC_MPP3[1,15]=0
$TC_MPP4[1,15]=2
$TC_MPP5[1,15]=15
;
;Magazine 1, Location No 16
$TC_MPP1[1,16]=1
$TC_MPP2[1,16]=1
$TC_MPP3[1,16]=0
$TC_MPP4[1,16]=2
$TC_MPP5[1,16]=16
;
;Magazine 1, Location No 17
$TC_MPP1[1,17]=1
$TC_MPP2[1,17]=1
$TC_MPP3[1,17]=0
$TC_MPP4[1,17]=2
$TC_MPP5[1,17]=17
;
;Magazine 1, Location No 18
$TC_MPP1[1,18]=1
$TC_MPP2[1,18]=1
$TC_MPP3[1,18]=0
$TC_MPP4[1,18]=2
$TC_MPP5[1,18]=18
;
;Magazine 1, Location No 19
$TC_MPP1[1,19]=1
$TC_MPP2[1,19]=1
$TC_MPP3[1,19]=0
$TC_MPP4[1,19]=2
$TC_MPP5[1,19]=19

```

```

;
;Magazine 1, Location No 20
$TC_MPP1[1,20]=1
$TC_MPP2[1,20]=1
$TC_MPP3[1,20]=0
$TC_MPP4[1,20]=2
$TC_MPP5[1,20]=20
;
;Magazine 1, Location No 21
$TC_MPP1[1,21]=1
$TC_MPP2[1,21]=1
$TC_MPP3[1,21]=0
$TC_MPP4[1,21]=2
$TC_MPP5[1,21]=21
;
;Magazine 1, Location No 22
$TC_MPP1[1,22]=1
$TC_MPP2[1,22]=1
$TC_MPP3[1,22]=0
$TC_MPP4[1,22]=2
$TC_MPP5[1,22]=22
;
;Magazine 1, Location No 23
$TC_MPP1[1,23]=1
$TC_MPP2[1,23]=1
$TC_MPP3[1,23]=0
$TC_MPP4[1,23]=2
$TC_MPP5[1,23]=23
;
;Magazine 1, Location No 24
$TC_MPP1[1,24]=1
$TC_MPP2[1,24]=1
$TC_MPP3[1,24]=0
$TC_MPP4[1,24]=2
$TC_MPP5[1,24]=24
;
;Magazine 1, Location No 25
$TC_MPP1[1,25]=1
$TC_MPP2[1,25]=1
$TC_MPP3[1,25]=0
$TC_MPP4[1,25]=2
$TC_MPP5[1,25]=25
;
;Magazine 1, Location No 26
$TC_MPP1[1,26]=1
$TC_MPP2[1,26]=1
$TC_MPP3[1,26]=0
$TC_MPP4[1,26]=2
$TC_MPP5[1,26]=26
;
;Magazine 1, Location No 27
$TC_MPP1[1,27]=1
$TC_MPP2[1,27]=1
$TC_MPP3[1,27]=0
$TC_MPP4[1,27]=2
$TC_MPP5[1,27]=27
;

```

```

;Magazine 1, Location No 28
$TC_MPP1[1,28]=1
$TC_MPP2[1,28]=1
$TC_MPP3[1,28]=0
$TC_MPP4[1,28]=2
$TC_MPP5[1,28]=28
;
;Magazine 1, Location No 29
$TC_MPP1[1,29]=1
$TC_MPP2[1,29]=1
$TC_MPP3[1,29]=0
$TC_MPP4[1,29]=2
$TC_MPP5[1,29]=29
;
;Magazine 1, Location No 30
$TC_MPP1[1,30]=1
$TC_MPP2[1,30]=1
$TC_MPP3[1,30]=0
$TC_MPP4[1,30]=2
$TC_MPP5[1,30]=30
;
;Magazine 1, Location No 31
$TC_MPP1[1,31]=1
$TC_MPP2[1,31]=1
$TC_MPP3[1,31]=0
$TC_MPP4[1,31]=2
$TC_MPP5[1,31]=31
;
;Magazine 1, Location No 32
$TC_MPP1[1,32]=1
$TC_MPP2[1,32]=1
$TC_MPP3[1,32]=0
$TC_MPP4[1,32]=2
$TC_MPP5[1,32]=32
;
;Magazine 1, Location No 33
$TC_MPP1[1,33]=1
$TC_MPP2[1,33]=1
$TC_MPP3[1,33]=0
$TC_MPP4[1,33]=2
$TC_MPP5[1,33]=33
;
;Magazine 1, Location No 34
$TC_MPP1[1,34]=1
$TC_MPP2[1,34]=1
$TC_MPP3[1,34]=0
$TC_MPP4[1,34]=2
$TC_MPP5[1,34]=34
;
;Magazine 1, Location No 35
$TC_MPP1[1,35]=1
$TC_MPP2[1,35]=1
$TC_MPP3[1,35]=0
$TC_MPP4[1,35]=2
$TC_MPP5[1,35]=35
;
;Magazine 1, Location No 36

```

```

$TC_MPP1[1,36]=1
$TC_MPP2[1,36]=1
$TC_MPP3[1,36]=0
$TC_MPP4[1,36]=2
$TC_MPP5[1,36]=36
;
;Magazine 1, Location No 37
$TC_MPP1[1,37]=1
$TC_MPP2[1,37]=1
$TC_MPP3[1,37]=0
$TC_MPP4[1,37]=2
$TC_MPP5[1,37]=37
;
;Magazine 1, Location No 38
$TC_MPP1[1,38]=1
$TC_MPP2[1,38]=1
$TC_MPP3[1,38]=0
$TC_MPP4[1,38]=2
$TC_MPP5[1,38]=38
;
;Magazine 1, Location No 39
$TC_MPP1[1,39]=1
$TC_MPP2[1,39]=1
$TC_MPP3[1,39]=0
$TC_MPP4[1,39]=2
$TC_MPP5[1,39]=39
;
;Magazine 1, Location No 40
$TC_MPP1[1,40]=1
$TC_MPP2[1,40]=1
$TC_MPP3[1,40]=0
$TC_MPP4[1,40]=2
$TC_MPP5[1,40]=40
;
;Locations of Buffer Magazine
;Spindle
$TC_MPP1[9998,1]=2
$TC_MPP2[9998,1]=0
$TC_MPP3[9998,1]=0
$TC_MPP4[9998,1]=2
$TC_MPP5[9998,1]=1
;
;Locations of Load Magazine
;1st Load Point
$TC_MPP1[9999,1]=7
$TC_MPP2[9999,1]=0
$TC_MPP3[9999,1]=0
$TC_MPP4[9999,1]=2
$TC_MPP5[9999,1]=1
;
;2nd Load Point
$TC_MPP1[9999,2]=7
$TC_MPP2[9999,2]=0
$TC_MPP3[9999,2]=0
$TC_MPP4[9999,2]=2
$TC_MPP5[9999,2]=2
;

```



```

;Distance to Change Position of Real Magazine
$TC_MDP2[1,1]=0
$TC_MDP1[1,1]=0
$TC_MDP1[1,2]=0
;
MSG("Configuration complete - press [Cycle Start] to continue")
M0
Stopre
MSG()
;
Data_Load:
$TC_DP1[T_Number,1]=T_Type
Stopre
$TC_TP1[T_Number]=D_Num
$TC_TP2[T_Number]=Name[T_Number]
$TC_TP7[T_Number]=L_Type
$TC_TP8[T_Number]=Status
Stopre
$TC_MPP6[1,Pocket]=T_Number
Stopre
;
Pocket=Pocket+1
T_Number=T_Number+1
Stopre
If Pocket<41 Gotob Data_Load
;
MSG("Initialization complete - press [Cycle Start] to continue")
M0
Stopre
MSG()
M2

```

11

Servo & Spindle Motor Specifications

Drehstrom-Servomotoren (Beschreibung siehe Seite 3)

Three-phase servomotors (Description on page 5)

Servomoteurs triphasés (Description, voir page 7)

Servomotores trifásicos (Descripción en la pág. 9)

Servomotori trifasi (Descrizione a pagina 11)

Trefas servomotorer (Beskrivning se sid 13)

Betriebsanleitung
Instructions

1FK6 03. - 1FK6 10.

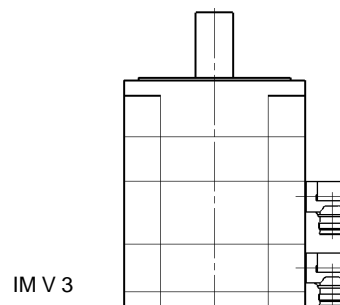
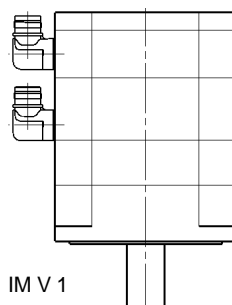
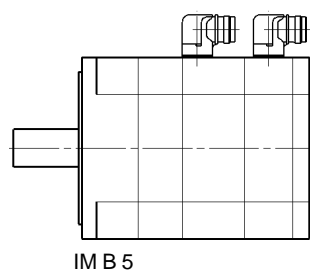
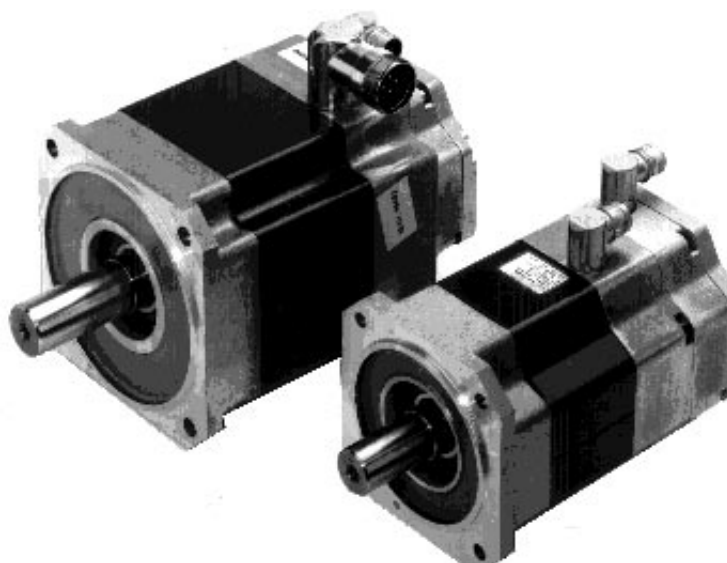


Fig. 1 Bauformen / Types of construction / Formes de construction / Formas constructivas / Forme costruttive / Konstruktionstyp



**Sicherheits- und Inbetriebnahmehinweise für umrichter-
gespeiste Niederspannungs - Drehstrom-
motoren** (gemäß Niederspannungsrichtlinie 73/23/EWG)

Typ:

**1FT, 1FV2, 1FK,
1PH, 1PA, 1PV**

1 Gefahr



Elektrische Motoren haben gefährliche, spannungsführende und rotierende Teile sowie möglicherweise heiße Oberflächen. Alle Arbeiten zum Transport, Anschluß, zur Inbetriebnahme und regelmäßige Instandhaltung sind von **qualifiziertem, verantwortlichem Fachpersonal** auszuführen (VDE 0105; IEC 364 beachten). Unsachgemäßes Verhalten kann schwere **Personen- und Sachschäden** verursachen. Die jeweils geltenden **nationalen, örtlichen und anlagespezifischen Bestimmungen und Erfordernisse** sind zu berücksichtigen. Warn- und Hinweisschilder am Motor sind unbedingt zu beachten.

2 Bestimmungsgemäße Verwendung

Diese Motoren sind für industrielle oder gewerbliche Anlagen bestimmt. Sie entsprechen den harmonisierten Normen der Reihe **EN60034 (VDE 0530)**. Der Einsatz im **Ex-Bereich** ist **verboten**, sofern nicht **ausdrücklich** hierfür vorgesehen (Zusatzhinweise beachten). Wenn im Sonderfall - bei Einsatz in **nicht** gewerblichen Anlagen - erhöhte Anforderungen gestellt werden (z. B. Berührungsschutz gegen Kinderfinger), sind diese Bedingungen bei der Aufstellung anlagenseitig zu gewährleisten.

Die Motoren sind für Umgebungstemperaturen von **-15°C bis +40°C** sowie Aufstellungshöhen **≤ 1000 m** über NN bemessen. Abweichende Angaben auf dem Leistungsschild **unbedingt** beachten. Die Bedingungen am Einsatzort müssen **allen** Leistungsschildangaben entsprechen.

Niederspannungsmotoren sind **Komponenten** zum Einbau in Maschinen im Sinne der Maschinenrichtlinie 89/392/EWG. Die **Inbetriebnahme** ist solange untersagt, bis die Konformität des Endproduktes mit dieser Richtlinie festgestellt ist (u. a. EN 60204-1 beachten).

Anlagen und Maschinen mit umrichter-
gespeisten Niederspannungs-
Drehstrommotoren müssen den Schutzanforderungen der EMV-
Richtlinie 89/336/EWG genügen. Die Durchführung der sachgerechten Installation liegt in der Verantwortung des Anlageerrichters. Die Signal- und Leistungsleitungen sind **geschirmt** auszuführen.

EMV-Hinweise des Umrichterherstellers sind zu beachten!

3 Transport, Einlagerung

Nach der Auslieferung festgestellte **Beschädigungen** dem Transportunternehmen sofort mitteilen; die **Inbetriebnahme** ist ggf. **auszuschließen**. Zum Transport nur die dafür vorgesehenen Öffnungen, Hebeösen, usw. benutzen. Eingeschraubte Transportösen fest anziehen. **Keine zusätzlichen** Lasten anbringen, Tragfähigkeit der Hebeeinrichtungen beachten.

Vorhandene **Transportsicherungen** vor Inbetriebnahme **entfernen und aufbewahren**. Werden Motoren eingelagert, auf eine **trockene, staubfreie und schwingungsarme** ($v_{eff} \leq 0,2 \text{ mm/s}$) Umgebung achten (Lagerstillstandsschäden).

Vor Inbetriebnahme **Isolationswiderstand** messen. Bei Werten $\leq 1 \text{ k}\Omega$ je Volt Bemessungsspannung Wicklung trocknen.

4 Aufstellung

Auf gleichmäßige Auflage, gute Fuß- bzw. Flanschbefestigung und genaue Ausrichtung bei direkter Kupplung achten (Verspannungen vermeiden). Läufer **von Hand** drehen, auf ungewöhnliche Schleifgeräusche achten.

Abtriebsselemente (Riemenscheibe, Kupplung ...) nur mit geeigneten Vorrichtungen auf- bzw. abziehen (ggf. thermisches Fügen, z. B. Erwärmen) und mit einem Berührungsschutz abdecken. Unzulässige Beanspruchungen (z. B. Riemenspannung) vermeiden (Katalog, Techn. Liste).

Der **Wuchtzustand** ist auf dem Wellenspiegel oder Leistungsschild angegeben (**H** = Halb-, **F** = Vollkeilwuchtung). Bei Montage des Abtriebsselementes auf Wuchtzustand achten (ISO 1940)!

Bei Halbkeilwuchtung ggf. den **überstehenden sichtbaren** Paßfederanteil abarbeiten. Die Konvektion bei selbstgeköhlten Motoren und die Belüftung bei belüfteten Motoren **nicht** behindern.

5 Elektrischer Anschluß

Alle Arbeiten dürfen nur von **qualifiziertem Fachpersonal** am **stillstehenden** Motor im **freigeschalteten** und **gegen Wiedereinschalten gesicherten** Zustand vorgenommen werden. Dies gilt auch für Hilfsstromkreise (z.B. Stillstandsheizung, Bremse, Geber).

Spannungsfreiheit prüfen!

VORSICHT: Die Motoren müssen an den zugehörigen Umrichtern betrieben werden. Ein Anschluß an das Drehstromnetz ist **nicht** erlaubt und kann zur Zerstörung des Motors führen!

Leistungsschildangaben sowie das Schaltbild im Klemmenkasten oder in der Betriebsanleitung beachten.

Kompatibilität von Geber- und Sensoriksignalen mit den Auswerteeinrichtungen überprüfen.




Geber und Sensoren enthalten meist **elektrostatisch gefährdete Bauteile (EGB)**; ggf. EGB-Schutzmaßnahmen beachten!

Demontage, Montage und Justage von Gebern nur nach den entsprechenden Anweisungen durchführen.

Der Anschluß muß so erfolgen, daß eine **dauerhaft sichere** elektrische Verbindung aufrecht erhalten wird (keine abstehenden Drahtenden); zugeordnete Kabelschuhe bzw. Aderendhülsen verwenden. Sichere **Schutzleiterverbindung** herstellen.

Tabelle: Anziehdrehmomente für Klemmenplatten-Anschlüsse

	Gewinde- Ø	M4	M5	M6	M8	M10
Anziehdrehmoment [Nm]		0,8...1,2	1,8...2,5	2,7...4	5,5...8	9...13

Bei Klemmenkastenanschluß auf **Mindestluftstrecken** von **5,5 mm** bei nicht isolierten unter Spannung stehenden Teilen achten!

Im Klemmenkasten bzw. Stecker dürfen sich **keine** Fremdkörper, Schmutz oder Feuchtigkeit befinden. Nicht benötigte Kabeleinführungsöffnungen und den Klemmenkasten selbst **staub-** und **wasserdicht** verschließen.

Für Anschluß und Installation von **Zubehör** (z.B. Tachogeneratoren, Impulsgeber, Bremsen, Temperatursensoren, Luftstromwächter ...) unbedingt die **entsprechenden Informationen beachten**, ggf. Anfrage beim Motorhersteller. Liegt für beschädigtes Zubehör keine Reparaturanweisung vor, so muß die Reparatur in einer SIEMENS-Fachwerkstatt erfolgen.

Bei Motoren mit Bremse vor der Inbetriebnahme die einwandfreie Funktion der Bremse prüfen.

6 Betrieb

Für den Probebetrieb ohne Abtriebsselemente **Paßfeder sichern**.

Drehrichtung im ungekuppelten Zustand **kontrollieren** (Abschnitt 5 beachten).

Schwingstärken $v_{eff} \leq 3,5 \text{ mm/s}$ sind im gekuppelten Betrieb meist unbedenklich (genauere Angaben siehe Betriebsanleitung).

Bei Veränderungen gegenüber dem Normalbetrieb (z.B. **erhöhte Temperaturen, Geräusche, Schwingungen**) ist im **Zweifelsfall** der Motor abzuschalten. Ursache ermitteln, eventuell Rücksprache mit dem Hersteller. Schutzeinrichtungen auch im Probebetrieb nicht außer Funktion setzen.

Bei starkem Schmutzanfall Luftwege regelmäßig reinigen.

Lager- bzw. Fettwechsel nach Herstellerangaben, spätestens jedoch nach 3 Jahren.

7 Weitere Informationen

Weitere Einzelheiten enthalten unsere Instandhaltungsanleitungen (deutsch/english). Sie werden Ihnen auf Wunsch unter Angabe des Typs und der Motor-Nummer zugeschickt.

Diese Sicherheits- und Inbetriebnahmehinweise sind aufzubewahren!



Safety and operating instructions for converter-fed low-voltage three-phase motors
in conformity with the low-voltage directive 73/23/EEC

Typ: 1FT, 1FV2, 1FK,
1PH, 1PA, 1PV

1 Danger



In operation, electric motors have hazardous, live and rotating parts, and possibly also hot surfaces. All operations serving transport, connection, commissioning and regular maintenance are to be carried out by **qualified, responsible technical personnel**. (Observe VDE 0105; IEC 364.) Improper conduct can cause severe **personal injury and damage to property**. The applicable **national, local and plant-specific specifications and codes of conduct** must be complied with. The warning and instruction plates on the motor must be complied with.

2 Intended use

These motors are intended for service in industrial and commercial installations. They comply with the harmonized standards of the series **EN60034 (VDE 0530)**. Their use **in areas exposed to explosion hazard is prohibited**, unless they are **expressly** supplied for this purpose (pay attention to additional notes). In special cases - where these motors are used in a **non-industrial environment** - extra safety precautions (such as touch protection for children) must be provided by the owner or user of the equipment during installation.

The motors are rated for ambient temperatures from **-15 °C to +40 °C** and for installation at altitudes of **≤ 1000 m** above sea level. If different information is given on the rating plate, **always** be sure to follow it. The conditions at the place of use must conform with **all** the rating plate data.

Low-voltage motors are **components** for installation in machines as defined by the machine directive 89/392/EEC. **Commissioning** is prohibited until such time as the end product has been proved to conform to the provisions of this directive 89/392/EEC, among other things. (Account is to be taken of EN 60204-1.)

Plants and machines equipped with converter-fed low-voltage three-phase motors must satisfy the requirements of the EMC directive 89/336/EEC.

Proper installation is the responsibility of the plant installer. The signal and power cables must be **shielded**.

Account is to be taken of the **converter manufacturer's EMC instructions**!

3 Transport, storage

Notify the transport company immediately of any **damage** discovered after delivery; if necessary the equipment is **not to be commissioned**. For transport, use only the openings, lifting eyes, etc., provided. Make sure that the lifting eyes are screwed tight. **Do not** attach any additional loads. Keep the lifting capacity of the hoisting gear in mind.

Before commissioning, **remove** shipping braces and **keep them in a safe place**. If motors are put into storage, make sure that they are kept in a **dry, dust-free and low-vibration** ($v_{eff} \leq 0.2 \text{ mm/s}$) environment (bearing standstill damage).

Measure the insulation resistance before putting the motors into operation for the first time. Dry out the winding if the insulation resistance is **≤ 1 kΩ** per volt of rated voltage value.

4 Installation

Make sure that the motor is properly supported, that the feet or flange are firmly fixed and that directly-coupled motors are in alignment (avoid distortion). Rotate rotor **by hand** to ensure that it does not rub against anything.

Always make use of suitable devices for fitting and removing drive elements (belt wheel, coupling ...) and heat or cool them as necessary. At all other times drive elements must be kept covered for the sake of touch protection. Avoid undue stressing (such as excessive belt tension). If in doubt, refer to the catalog or specification.

The **balance data** is given on the shaft end face or rating plate (**H** = half featherkey balancing, **F** = full featherkey balancing). Keep the balance in

mind when fitting the drive element (ISO1940)! With half featherkey balancing, cut off the **protruding end** of the featherkey if necessary. **Do not** impede free circulation of air around self-ventilated motors or through forced-ventilated motors.

5 Electrical connection

All work must be done only by **qualified technical personnel** on **disconnected** motors that are at **standstill** and have been **secured to prevent reconnection**. The same applies to auxiliary circuits (such as space heating, brake, transmitter).

Check that the equipment is dead!

CAUTION: The motors must be operated with the appropriate converters. Operation on the three-phase supply is **not** permitted and can destroy the motor!

Pay attention to the information given on the rating plate and in the circuit diagram in the terminal box or operating instructions.

Pay attention to compatibility between transmitter/sensor signals and the analyzer.



Transmitters and sensors may contain **electrostatically sensitive components (ESC)**; pay attention to ESC measures if applicable!

Disassembly, assembly and adjustment of transmitters must be carried out in accordance with the relevant instructions.

The connection must be made so that there is a permanent and safe electrical connection (no protruding wire ends). Make use of the cable lugs or end sleeve provided. Make a good and secure **protective conductor connection**.

Table: Tightening torques for terminal plate connections

Thread Ø	M4	M5	M6	M8	M10
Tightening torque [Nm]	0,8...1,2	1,8...2,5	2,7...4	5,5...8	9...13

For terminal box connection, make sure that the **clearances in air** between non-insulated live parts are **at least 5.5 mm!**

No foreign matter, dirt or moisture must be present in terminal boxes or plugs. Close unused openings for cable entry and the terminal boxes themselves in **adust-tight** and **waterproof** manner.

When connecting and installing **accessories** (e.g. tachometer generators, impulse transmitters, brakes, temperature sensors, airflow monitors ...), it is essential to **comply with the relevant information**, if necessary contact the motor manufacturer. If there are no instructions available for the repair of a damaged accessory, then the repair must be made in a SIEMENS specialist workshop.

Where motors are fitted with brakes, the brake must be checked for proper functioning before the motor is put into operation for the first time.

6 Operation

Secure featherkeys before the motor is tested by running it without drive elements. Check the direction of rotation with the motor uncoupled (refer to Section 5 above).

Vibration levels of $v_{eff} \leq 3.5 \text{ mm/s}$ most are acceptable in coupled operation (exactly information, see operating instruction).

In the event of changes in normal operating behaviour, such as **increased temperature, noise, vibration**, switch the motor off **if in doubt**. Find out the cause of the trouble; consult the manufacturer if necessary. Even when the motor is only on test, do not put safety equipment out of operation.

Where motors are operating in a dusty or dirty atmosphere, clean the air passages regularly.

Fit new bearings or replenish bearing grease at the intervals specified by the manufacturer, or not less frequently than every 3 years.

7 Further information

Further information is given in our maintenance instructions (ENG-LISH / GERMAN). If you write to us quoting the motor type and number, we shall be pleased to send you the appropriate maintenance instruction.

Keep these safety and operating instructions in a safe place!



Règles de sécurité relatives aux moteurs triphasés basse-tension alimentés par convertisseur statique
(selon Directive «Basse Tension» 73/23/CEE)

Type: 1FT, 1FV2, 1FK,
1PH, 1PA, 1PV

1 Danger



Les moteurs électriques comportent des pièces en rotation et/ou sous tension ; certaines de leur parties peuvent présenter des températures élevées. Seules des **personnes qualifiées et habilitées** doivent effectuer les travaux de manutention, de raccordement, de mise en service et d'entretien (se reporter à VDE 0105/CEI 364). Toute intervention contraire aux règles de l'art peut entraîner des **blessures graves et des dégâts matériels importants**. Les **prescriptions, règlements et exigences nationales, locales ou spécifiques à l'installation** doivent être respectés. Respecter impérativement les plaques indicatrices et d'avertissement apposées sur le moteur.

2 Utilisation conforme à la destination

Ces moteurs sont destinés à être utilisés dans des installations à caractère industriel ou artisanal. Ils répondent à la norme **EN 60034 (VDE 0530)**. L'utilisation en **zone Ex** (atmosphère explosible) est **inadmissible**, à moins que le moteur n'ait été **spécialement conçu** à cet effet. Dans ce cas, on tiendra compte des instructions et règles additionnelles. Dans les cas spéciaux de mise en œuvre dans une installation à vocation non-industrielle et non-artisanale entraînant des exigences plus sévères (par exemple protection contre le contact de doigts d'enfant), les mesures appropriées devront être prises au niveau de l'installation.

Les moteurs sont conçus pour une température ambiante comprise entre **- 15 °C et + 40 °C** et une altitude d'implantation **≤ 1 000 m**. D'éventuelles indications divergentes sur la plaque signalétique doivent **impérativement** être prises en compte. Les conditions d'exploitation doivent correspondre **en tout point** aux indications de la plaque signalétique.

Les moteurs basse tension sont des composants destinés à être **incorporés** dans des machines au sens de la Directive Machines 89/392/CEE. La **mise en service** est interdite tant que la conformité du produit final avec cette directive n'a pas été établie (se reporter à EN 60204-1).

Les installations ou machines comportant un moteur basse tension doivent satisfaire aux mesures de protection électromagnétique prescrites par la Directive CEM 89/336/CEE. L'installation conforme aux règles de l'art est de la responsabilité de l'installateur. Les câbles de signaux et de puissance doivent être **blindés**. Tenir compte des **indications** concernant la **CEM** fournies par le constructeur du convertisseur.

3 Manutention et entreposage

D'éventuels **dommages** constatés à la réception doivent être signalés immédiatement à l'entreprise de transport. Si nécessaire, la **mise en service** doit être **annulée**. La manutention doit être exécutée uniquement par les trous, oeillets et autres dispositifs prévus à cet effet. Les oeillets de manutention vissés seront resserrés avant de procéder à la manutention. **Aucune charge supplémentaire** ne doit être ajoutée au moteur. S'assurer que les dispositifs de levage sont adaptés au poids du moteur. Avant de procéder à la mise en service, **enlever les éléments d'immobilisation en cours de transport et les conserver** en un endroit approprié.

Lorsque le moteur doit être entreposé, veiller à ce que l'environnement soit **sec et non-poussièreux**. Le moteur ne doit pas être exposé à des **vibrations** ou secousses inadmissibles ($v_{eff} \leq 0,2$ mm/s) qui entraîneraient une détérioration des paliers. Avant mise en service, mesurer la résistance d'isolement. Lorsque la valeur mesurée est $\leq 1k\Omega$ par volt de tension assignée, sécher l'enroulement.

4 Installation

Veiller à une surface d'appui plane, une bonne fixation des pattes, ou, selon le cas, des brides, et à un alignement précis en cas d'accouplement direct (éviter tout forçage).

Faire tourner le rotor **à la main** pour détecter d'éventuels bruits de frottement. Emmancher et extraire les éléments d'accouplement (poules, accouplements, ...) avec des dispositifs appropriés (au besoin, chauffer ; recouvrir les pièces chaudes d'une protection contre le toucher). Éviter des tensions de courroies inadmissibles (catalogue, liste technique). **L'équilibrage** du moteur est indiqué en bout d'arbre ou sur la plaque signalétique (**H** = demi-clavette, **F** = clavette entière). Tenir compte du

type d'équilibrage lors du montage de l'accouplement (ISO1940). En cas d'équilibrage avec demi-clavette, enlever la partie **visible et faisant saillie** de la clavette. **Ne pas entraver le refroidissement** (circulation d'air/ventilation).

5 Raccordements électriques et mise en service

Le raccordement et la mise en service doivent être effectués uniquement par des **personnes qualifiées** et lorsque le moteur est **à l'arrêt, hors tension et consigné** contre toute remise sous tension intempestive. Les circuits auxiliaires doivent également se trouver hors tension et être protégés contre une remise sous tension intempestive (par ex. chauffages à l'arrêt, frein, capteur).

Vérifier l'absence de tension.

Avertissement : les moteurs doivent être alimentés par un convertisseur statique par un convertisseur statique associé. Le raccordement direct au réseau triphasé est inadmissible et peut entraîner la destruction du moteur.

Respecter les indications de la plaque signalétique et le schéma de raccordement collé dans la boîte à bornes ou donné aux instructions de service.

S'assurer que les signaux des capteurs sont compatibles avec les dispositifs d'évaluation.



Les **capteurs** peuvent comporter des **composants sensibles aux décharges électrostatiques (CSDE)** ; au besoin, prendre les mesures nécessaires.

Le démontage, le montage et le réglage des capteurs ne doivent être effectués que conformément aux instructions respectives.

Le raccordement doit être réalisé de manière à assurer un **contact électrique sûr et durable**. Éviter les bouts de fils dépassant ; utiliser des cosses ou embouts appropriés. Raccorder le **conducteur de protection** de manière fiable.

Tableau : couples de serrage des bornes

Ø filetage	M4	M5	M6	M8	M10
Couple de serrage [Nm]	0,8...1,2	1,8...2,5	2,7...4	5,5...8	9...13

Pour le raccordement par boîte à bornes, respecter une **distance dans l'air de 5,5 mm** aux parties nues sous tension.

La boîte à bornes ou le connecteur ne doivent contenir **ni corps étrangers, ni saleté, ni humidité**. Etancher les entrées de câble non-utilisées et la boîte à bornes contre l'eau et la poussière.

Pour l'installation et le raccordement d'**accessoires** (tels que génératrices tachymétriques, impulseurs, freins, détecteurs de température, contrôleurs de courant d'air ...), **respecter impérativement les instructions correspondantes**; le cas échéant, contacter le fabricant du moteur. Si aucune instruction de réparation n'existe pour un matériel endommagé, il faudra faire procéder à celle-ci dans un atelier SIEMENS. Avant mise en service de moteurs avec frein, s'assurer de l'état fonctionnel de ce dernier.

6 Exploitation

Marche d'essai sans accouplement uniquement après avoir **immobilisé la clavette**. Contrôler le **sens de rotation avant** de réaliser l'**accouplement** (voir point 5).

Des vibrations $v_{eff} \leq 3,5$ mm/s sont sans danger en service avec accouplement (ou instruction de service).

En cas de comportement anormal - par exemple **échauffement, bruits, vibrations** - couper la machine. Déterminer la cause de l'anomalie et, au besoin, contacter le fabricant. Les dispositifs de protection doivent être actifs en permanence, y compris lors de la marche d'essai. En présence de poussière abondante, nettoyer régulièrement le parcours de l'air de refroidissement.

Remplacer la graisse ou les roulements conformément aux indications du fabricant, et au plus tard après 3 ans.

7 Informations complémentaires

Pour de plus amples informations, se reporter aux instructions de maintenance (allemand/anglais). Celles-ci peuvent être commandées en indiquant le type et le numéro de la machine.

Conserver les présentes règles de sécurité.



Consignas de seguridad y de puesta en marcha para el servicio de motores trifásicos de baja tensión con alimentación por convertidor (según las Directivas para baja tensión 73/23/CEE)

1 Peligro



Los motores eléctricos tienen piezas peligrosas bajo tensión y en movimiento, así como posiblemente superficies a alta temperatura.

Todos los trabajos de transporte, conexión, puesta en marcha y mantenimiento periódico han de ser realizados por **personal especializado y cualificado responsable** (observar VDE 0105/IEC 364). Un comportamiento inadecuado puede producir **graves lesiones y daños materiales**. Deberán respetarse **las normas y disposiciones vigentes nacionales, locales y específicas de la aplicación**. Se deben tener sobre todo en cuenta las placas de aviso e informativas en el motor.

2 Utilización conforme

Estos motores están destinados a instalaciones técnicas o industriales. Cumplen con las normas armonizadas de la serie **EN 60034 (VDE 0530)**. Está **prohibida** su aplicación en **recintos expuestos al peligro de explosiones (Ex)** a no ser que se hayan destinado **expresamente** a este efecto (observar las indicaciones adicionales). Si en casos especiales, cuando se utilizan en recintos **no** industriales, se imponen exigencias de seguridad más severas (p. ej., protección contra contactos involuntarios con dedos de niño), la responsabilidad corre a cargo del instalador.

Los motores se han diseñado para temperaturas ambiente de **-15°C a +40°C** y una altura de instalación de hasta **1000 m.s.n.m.** Es **imprescindible** observar los datos en la placa de características en caso de divergencias. Las condiciones en el lugar de emplazamiento deben coincidir con **todas** las indicaciones en dicha placa.

Los motores de baja tensión son **componentes** para incorporar en máquinas según la Directiva para máquinas 89/392/CEE. Está prohibida la **puesta en marcha** hasta tanto no se haya comprobado que el producto final cumple con dicha Directiva (observar EN 60204-1).

Las instalaciones o máquinas con un motor trifásico de baja tensión y alimentación por convertidor, deben cumplir con las consignas de seguridad sobre compatibilidad electromagnética (Directiva EMV 89/336/CEE). El instalador responde del montaje conforme. Las líneas de señalización y de potencia deben tenderse **blindadas**. Deberán observarse las indicaciones del fabricante del convertidor respecto a la compatibilidad electromagnética.

3 Transporte, almacenamiento

Los **daños** constatados después del suministro han de comunicarse inmediatamente a la agencia de transporte; en caso dado habrá que impedir la puesta en marcha. Para el transporte se utilizarán únicamente las aberturas, cáncamos, etc., previstos al efecto. Apretar fuertemente los cáncamos utilizados para el transporte. No se ha de añadir ningún peso adicional y observar la capacidad de carga de los aparatos elevadores. Retirar los seguros de transporte que pudieran haber antes de la puesta en marcha y guardarlos. Si han de almacenarse los motores y para evitar daños de parada de los rodamientos, cuidar que el ambiente sea seco, libre de polvo y con pocas vibraciones ($v_{ef} \leq 0,2$ mm/s). Antes de la puesta en marcha medir la resistencia del aislamiento. Secar los devanados si los valores son ≤ 1 k Ω por V de tensión asignada.

4 Instalación

Cuidar que la conformación de los cimientos, la fijación de las patas y de las bridas sea óptima y que la alineación sea exacta en el caso de acoplamiento directo. (evitar las torsiones). Girar a mano el rotor y observar si se oyen ruidos de rozamiento anómalos.

Calar o extraer los elementos de transmisión (polea, acoplamiento ...) sólo con el dispositivo adecuado (caso dado en caliente) y cubrirlos con una protección contra contactos involuntarios. Evitar las tensiones inadmisibles en las correas (v. Catálogo, lista de datos técnicos).

En la superficie del eje o en la placa de características está indicado el **modo de equilibrado** (**H** = media chaveta, **F** = chaveta entera). Observar el modo de equilibrado al montar el elemento de transmisión (ISO1940). Si el equilibrado es con media chaveta, eliminar las partes

Tipo:

**1FT, 1FV2, 1FK,
1PH, 1PA, 1PV**

visibles de la chaveta que sobresalen.

No impedir la convección en los motores con ventilación propia y la ventilación en motores con ventilación independiente.

5 Conexión eléctrica

Todos los trabajos deben ser realizados únicamente por **personal cualificado** en motores **parados**, que han sido **aislados** de la red y **asegurados contra la reconexión (condenado)**. Esto rige también para los circuitos auxiliares (p. ej. la calefacción contra condensaciones, freno, transmisor).

¡Comprobar la ausencia de tensión!

ATENCIÓN: Los motores sólo se utilizarán con los convertidores correspondientes. **¡Es inadmisibile** la conexión a la red de corriente trifásica, lo cual podría destruir el motor!

Observar los datos en la placa de características, así como el esquema en la caja de bornes.

Comprobar la compatibilidad de las señales del emisor y de los sensores con los dispositivos de evaluación.



Los emisores y sensores pueden incluir piezas sensibles a las cargas electrostáticas. ¡Observar las medidas de protección contra perturbaciones electromagnéticas!

Realizar el montaje, el desmontaje y el ajuste de los transmisores sólo según las instrucciones correspondientes.

Las conexiones se realizarán de forma que quede asegurada una conexión eléctrica **fiable y duradera** (nada de extremos de hilos al aire); usar terminales de cable adecuados. Unir a un **conductor de protección**.

Tabla: Pares de apriete para las conexiones de la placa de bornes



Ø rosca	M4	M5	M6	M8	M10
Par de apriete [Nm]	0,8...1,2	1,8...2,5	2,7...4	5,5...8	9...13

Mantener las **distancias al aire mínimas** de **5,5 mm** para las piezas bajo tensión no aisladas al conectarlas en la caja de bornes.

En la caja de bornes y en los enchufes **no deben haber** cuerpos extraños, suciedad ni humedad. Los pasacables que no se necesiten, así como la caja en sí, deberán sellarse de forma **hermética al polvo y al agua**. Para conectar e instalar **accesorios** (p.ej. generadores de taquímetros, transmisores de impulsos, frenos, sensores térmicos, controladores de flujo de aire, etc.) deben tenerse sobre todo en cuenta **las informaciones pertinentes** o preguntarse al fabricante de los motores. Si no existe ninguna instrucción para reparar accesorios defectuosos, debe realizarse la reparación por un taller especializado de SIEMENS.

Comprobar el funcionamiento de los frenos antes de la puesta en marcha en los motores provistos de los mismos.

6 Servicio

Para la marcha de prueba sin elementos de transmisión **asegurar la chaveta** contra su desprendimiento accidental. **Controlar la dirección de giro** en estado sin acoplamiento (v. apartado 5).

Son despreciables las vibraciones $v_{ef} \leq 3,5$ mm/s en servicio con acoplamiento (o istruzioni per l'esercizio).

Si se observan divergencias durante el servicio respecto al servicio normal, p. ej. **temperatura elevada, ruidos, vibraciones**, deberá desconectarse el motor en **caso de duda**. Indagar la causa y en caso dado consultar con el fabricante.

No dejar fuera de servicio, ni durante la marcha de prueba, los dispositivos de protección.

Limpiar los conductos de aire periódicamente si hay mucha suciedad.

Reengrasar o reemplazar los rodamientos de acuerdo con las indicaciones del fabricante, a más tardar después de 3 años.

7 Otras informaciones

Para más detalles ver nuestras extensas Instrucciones de mantenimiento (en alemán/inglés). Con gusto se las enviaremos si nos indica el tipo y el número de su motor.

¡Guardar estas consignas de seguridad y de puesta en marcha!



Indicazioni di sicurezza e messa in servizio per motori trifasi di bassa tensione alimentati da convertitore (secondo Direttiva Bassa Tensione 73/23/CEE)

Tipo:

1FT, 1FV2, 1FK,
1PH, 1PA, 1PV

1 Pericolo



Le macchine in corrente continua hanno parti rotanti e in tensione anche da ferme nonché possibili superfici calde. Tutte le operazioni inerenti al trasporto, all'allacciamento, alla messa in servizio e alla regolare manutenzione devono essere eseguite da **personale responsabile qualificato** (osservare VDE 0105/IEC364). Un comportamento non conforme può **causare gravi danni personali e materiali**. Si devono considerare le **direttive e le richieste nazionali locali e specifiche di impianto** di volta in volta valide. Si deve assolutamente seguire quanto specificato in targhette di segnalazione e avvertimento apposte sulle macchine. E' assolutamente necessario attenersi alle indicazioni di sicurezza e alle avvertenze riportate sull'apposita segnaletica riguardante il motore.

2 Impiego conforme alla destinazione

Questi motori sono destinati a impianti industriali e commerciali. Essi rispondono alle norme armonizzate **EN 60034 (VDE 0530)**. E' **vietato** l'impiego in **ambienti Ex** se non espressamente previsto (Ved. note aggiuntive). Se in caso particolare - per impiego in impianti **non** commerciali - vengono posti maggiori requisiti (per protezione dal contatto, a prova di dito ecc.) queste condizioni devono essere garantite in fase di installazione dell'impianto.

I motori sono dimensionati per temperature ambiente da **-15°C a +40°C** e altezze di installazione **≤ 1000 m. s.l.m.** Fare **estrema** attenzione a dati differenti sulla targhetta. Le condizioni sul luogo di impiego devono corrispondere a **tutti** i dati di targa.

I motori di bassa tensione sono **componenti** per il montaggio in macchine nel senso della direttiva macchine 89/392/CEE. La **messa in servizio** non è possibile finché non è accertata la conformità del prodotto finale a questa direttiva (EN 60204-1).

Impianti o macchine con un motore in bassa tensione alimentato da convertitore devono soddisfare le esigenze di protezione della direttiva EMC 89/336/CEE. Per la corretta installazione (p.e. separazione di cavi di potenza e di segnale, cavi schermati ecc.) è responsabile il costruttore dell'impianto. I collegamenti di segnalamento e di portata devono essere **schermati**.

Osservare le istruzioni relative alla compatibilità elettromagnetica e le istruzioni del costruttore del convertitore.

3 Trasporto, immagazzinaggio

Comunicare subito al trasportatore danneggiamenti riscontrati alla consegna; si deve eventualmente **escludere la messa in servizio**. Utilizzare per il trasporto solo le aperture, i ganci di sollevamento ecc. appositamente previsti. Serrare completamente anelli di trasporto a vite. Essi sono dimensionati per il peso della macchina, non aggiungere altri pesi.

Se necessario, utilizzare mezzi di trasporto adatti sufficientemente dimensionati (p.e. conduzione a fune).

Se le macchine vengono immagazzinate, fare attenzione che l'ambiente sia asciutto, senza polvere e vibrazioni ($v_{eff} \leq 0,2 \text{ mm/s}$) (danni da fermo dei cuscinetti). Con tempi di immagazzinaggio prolungati si riduce la durata del grasso.

Prima della messa in servizio misurare la resistenza di isolamento. Per valori $\leq 1 \text{ k}\Omega$ per ogni Volt di tensione nominale essiccare l'avvolgimento.

4 Installazione

Provvedere ad un supporto uniforme, buon fissaggio di piedini e flange e al corretto allineamento per accoppiamento diretto. (Evitare tensioni) Far girare a mano il rotore, facendo attenzione a rumori di strisciamento insoliti. Applicare o togliere gli elementi di comando (puleggia, giunto ...) solo con appositi dispositivi (p.e. riscaldamento) e dotarli di protezione dal contatto. Evitare sollecitazioni inammissibili (p.e. tensione cinghe) (catalogo, listino tecnico).

La **condizione di equilibratura** è indicata sull'albero o sulla targhetta (**H** = equilibratura con mezza chiave, **F** = equilibratura con chiave intera). Fare attenzione alla condizione di equilibratura nel montaggio dell'elemento di comando (ISO 1940)!

Per equilibratura con mezza chiave asportare la parte visibile soprastante. Non ostacolare la convezione nei motori autoraffreddati e la ventilazione in quelli ventilati.

5 Allacciamento elettrico e messa in servizio

Tutte le operazioni devono essere eseguite solo da **personale tecnico qualificato a macchina** ferma in condizioni di assenza di collegamento e di sicurezza dalla reinserzione. Ciò vale anche per circuiti ausiliari (p.e. scaldiglie anticondensa, freno, datore).

Controllare che non vi sia tensione!

ATTENZIONE: i motori devono funzionare con i corrispondenti convertitori. **Non** è consentito l'allacciamento alla rete trifase perché può provocare la distruzione del motore! Fare attenzione ai dati di targa e allo schema nella morsettiera o nelle istruzioni di servizio.

Se necessario verificare la compatibilità di segnali di sensori e datori mediante un dispositivo di valutazione!



I datori e i sensori possono contenere **componenti a rischio elettrostatico**; osservare eventualmente le misure di protezione EMC!

Effettuare qualsiasi lavoro di smontaggio, montaggio e riparazione sui datori tenendo conto esclusivamente delle relative indicazioni.

L'allacciamento deve avvenire in modo tale che venga mantenuto un collegamento elettrico costantemente sicuro (nessuna estremità di filo sporgente); utilizzare capicorda oppure boccole. Stabilire un sicuro collegamento del conduttore di protezione.

Tabella: coppie di serraggio nominali per allacciamento su basetta

Filettatura Ø	M4	M5	M6	M8	M10
Coppia di serraggio nominale [Nm]	0,8...1,2	1,8...2,5	2,7...4	5,5...8	9...13

Per allacciamento a morsettiera fare attenzione alla **distanza minima** di **5,5 mm** per parti non isolate sotto tensione.

Nella morsettiera o nella spina **non** vi devono essere corpi estranei, sporcizia o umidità. Chiudere le entrate cavo non necessarie e la morsettiera stessa in modo **stagno alla polvere e all'acqua**.

Per la prova senza elementi di comando assicurare la chiave.

Per l'allacciamento e l'installazione di **accessori** (p.e. dinamo tachimetriche, generatori di impulsi, freni, sensori di temperatura, controllori di flusso, apparecchi di controllo spazzole ...) osservare assolutamente le relative informazioni, facendo eventualmente richiesta al costruttore della macchina. Per il collegamento e l'installazione degli **accessori** (per es. dinamo tachimetriche, generatori di impulsi, freni, termosensori, apparecchi per il controllo automatico della corrente d'aria ...) è assolutamente necessario **osservare le relative informazioni**, oppure rivolgersi al produttore dei motori stessi ... Nel caso in cui non fossero state fornite indicazioni per la riparazione di accessori danneggiati, i lavori di riparazione devono essere effettuati presso uno stabilimento abilitato SIEMENS.

Per motore con freno, prima della messa in servizio, controllare che lo stesso funzioni perfettamente.

6 Funzionamento

Per la prova senza elementi di comando **assicurare la chiave**.

Controllare il senso di rotazione con macchina disaccoppiata (ved. par. 5).

Intensità di vibrazione $v_{eff} \leq 3,5 \text{ mm/s}$ non sono pericolose con macchina accoppiata (o istruzioni per l'esercizio). In caso di variazioni rispetto al funzionamento normale - **p.e. elevate temperature, vibrazioni** - si deve nel dubbio disinserire il motore. Determinare la causa eventualmente consultando il costruttore. Non mettere fuori servizio le apparecchiature di protezione anche in prova.

Pulire regolarmente le condotte dell'aria in caso di forte sporcizia. Sostituzione cuscinetti o grasso secondo indicazioni del costruttore, max. però dopo 3 anni.

7 Informazioni aggiuntive

Ulteriori particolari sono contenuti nelle ns. dettagliate istruzioni di servizio e manutenzione (tedesco/inglese). A richiesta Vi saranno inviate indicando tipo e numero di matricola della motore.

Queste informazioni di sicurezza devono essere conservate!



Säkerhets- och idrifttagningsanvisningar för omriktarmatade lågspännings-trefasmotorer
(enl. lågspänningsdirektivet 73/23/EEC)

Typ:

1FT, 1FV2, 1FK,
1PH, 1PA, 1PV

1 Fara



Elektriska motorer har farliga spänningsförande och roterande delar samt ibland heta ytor. Allt arbete i samband med transport, anslutning idrifttagning och regelbundet underhåll av sådana motorer måste utföras av **kvalificerad yrkespersonal** (VDE 0105; IEC 364). Osakunnigt arbete kan medföra allvarliga **person- och materialskador**. Följ gällande **nationella, lokala och anläggningsspecifika** föreskrifter. Varnings- och hänvisningsskyltar på motorn skall tvunget beaktas.

2 Ändamålsenlig användning

Dessa motorer är avsedda för industriell eller yrkesmässig användning. De uppfyller kraven i de harmoniserade standarderna **EN60034 (VDE 0530)**. Användning i **explosionshotade områden** är förbjuden, såvida detta inte är uttryckligen angivet (se kompletterande instruktion). Om motorerna i speciella fall installeras för icke yrkesmässig användning gäller skärpta krav (t.ex. beröringsskydd för barn), som i så fall måste uppfyllas på systemsidan i samband med installationen. Motorerna är dimensionerade för omgivningstemperaturer mellan **-15 °C och +40 °C** och installationshöjd ≤ 1000 möh. Följ **ovillkorligen** avvikande uppgifter på märkskylten. Förhållandena på installationsplatsen måste stämma överens med **alla** uppgifter på märkskylten.

Lågspänningsmotorer är **bestandsdelar** för montering i maskiner enligt maskindirektivet 89/392/EEC. De får **inte tas i drift** förrän slutproduktens överensstämmelse med detta direktiv har fastställts (beakta EN 60204-1).

Anläggningar och maskiner med omriktarmatade trefasmotorer för lågspänning måste tillfredsställa EMK-direktivet 89/336/EEC. Det åligger användaren att utföra installationen korrekt. Signal- och effektledningarna måste tvunget varaskärmade.

Följ **EMK-föreskrifterna från tillverkaren av omriktaren!**

3 Transport, förvaring

Underrätta omedelbart transportföretaget om **skador** upptäcks efter leveransen. Sådana skador kan behöva **åtgärdas innan motorn får sättas i drift**. Använd vid transport de öppningar, lyftöglor o. dyl. som är avsedda för detta. Dra åt iskruvade transportöglor ordentligt. Se till att lyftdonen har erforderlig bärfkraft.

Avlägsna **transportsäkringar** före idrifttagningen. Ev. förvaring av motorerna kräver ett **torrt, dammfritt** och vibrationsfritt ($v_{eff} \leq 0,2$ mm/s) utrymme (risk för stilleståndsskador vid förvaring). Mätisolationsmotståndet innan motorn sätts i drift. Vid värdens ≤ 1 kOhm per volt märkspänning måste lindningarna torka.

4 Uppställning

Motorn måste ställas på ett jämnt underlag för fot- eller flänsmontering och riktas upp omsorgsfullt vid direkt koppling till en driven axel (inga mekaniska spänningar!). Vrid runt rotorn **för hand** och lyssna efter abnorma skrapljud.

Montera och ta av drivorgan (remskiva, koppling etc.) med lämpliga verktyg (ev. med termisk montering, t.ex. uppvärmning) och förse dem med beröringsskydd. Undvik otillåtna påfrestningar (t.ex. remspänningen, se katalog och tekniska data).

Tänk på **balanseringsstatus** när drivorgan monteras! Detta finns angivet på axeltappens ände (**H** = halv balansering, **F** = hel balansering). Vid balansering med halv kil skall den utskjutande, synliga delen av kilen slipas ned.

Hindra inte värmeavgången från egenkylda motorer (ISO 1940). Hindra inte ventilationen av flätkylda motorer.

5 Elektriskanslutning

Allt arbete skall utföras av **kvalificerad yrkespersonal** med motorn **stillastående**, skild från strömkällan och låst mot återinkoppling. Detta gäller även hjälpströmkretsar (t.ex. stilleståndsuppvärmning, broms, givare).

Kontrollera strömlösheten!

OBS: Motorerna måste köras med de omriktare som hör till. Anslutning till trefasnät tillåts ej och kan medföra att motorn förstörs.

Ge akt på effektuppgifterna samt kopplingsschemat i uttagslådan.

Kontrollera om nödvändigt kompatibiliteten hos givar- och sensorsignaler med analysanordningarna.



Givare och sensorer kan innehålla **elektrostatiskt hotade komponenter (EHK)**; följ i förekommande fall EHK-föreskrifterna!

Demontage, montering samt justering av givare får endast genomföras i enlighet med motsvarande anvisningar.

Anslutningen måste göras så att man får en varaktig, pålitlig förbindelse (inga utstickande trådändar). Använd tillhörande kabelskor och ändhylsor. Ordna ordentlig förbindelse till skyddsledare.

Tabell: Åtdragningsmoment för plintanslutningar

Gängdiam.	M4	M5	M6	M8	M10
Åtdragningsmoment [Nm]	0,8...1,2	1,8...2,5	2,7...4	5,5...8	9...13



Ga akt på **minimigapet 5,5 mm** mellan oisolerade detaljer vid anslutning till uttagslåda.

I uttagslådan får det inte förekomma främmande partiklar, smuts eller fukt. Försegla kabelgenomföringshål och själva uttagslådan dammtätt och vattentätt.

Vid anslutning och installation av **tillbehör** (t.ex. hastighetsgeneratorer, impulsgivare, bromsar, temperatursensorer, luftflödesvakter ...) skall **tillhörande information** tvunget **beaktas**, och vid behov skall motortillverkaren kontaktas. Om inga reparationsanvisningar föreligger till defekta tillbehör, så måste reparationen genomföras i en SIEMENS-specialverkstad.

Innan motorer med broms tas i drift måste man kontrollera att bromsen fungerar som den skall.

6 Drift

Fixera axelkilen före provkörning utan drivorgan. Kontrollera **rotationsriktningen** innan drivorgan monteras (se avsnitt 5).

Vibrationsamplituder $v_{eff} \leq 3,5$ mm/s är godtagbara vid körning med drivorgan monterade (eller se driftsinstruktioner).

Stäng av motorn vid **misstanke** att den fungerar onormalt - t.ex. **höjd temperatur, buller, vibrationer**. Fastställ orsaken. Ta ev. kontakt med tillverkaren. Skyddsanordningar får aldrig sättas ur funktion, inte heller vid provkörning.

Rengör luftkanalerna regelbundet om föroreningar förekommer.

Lager- och fettbyte enligt tillverkarens uppgifter, dock senast efter 3 år.

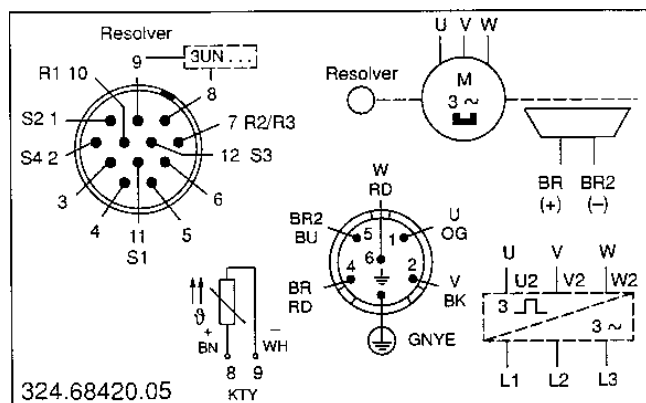
7 Övrig information

Ytterligare detaljer finns i våra underhållsinstruktioner (TYSKA/ENGELSKA), som kan erhållas på beställning. Ange motortypen och motornumret.

Förvara dessa säkerhets- och idrifttagningsanvisningar på säkert ställe!

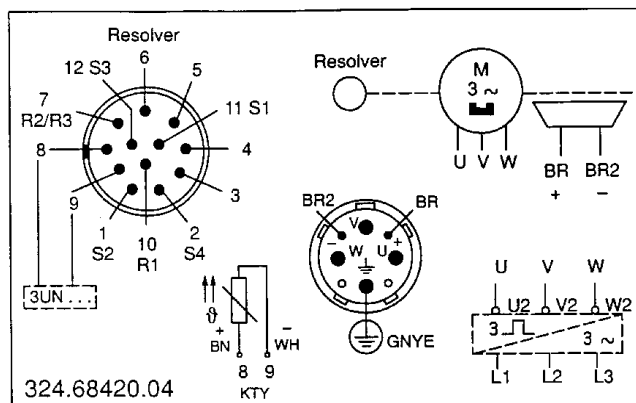
1FK6 03. - 1FK6 100

Resolver



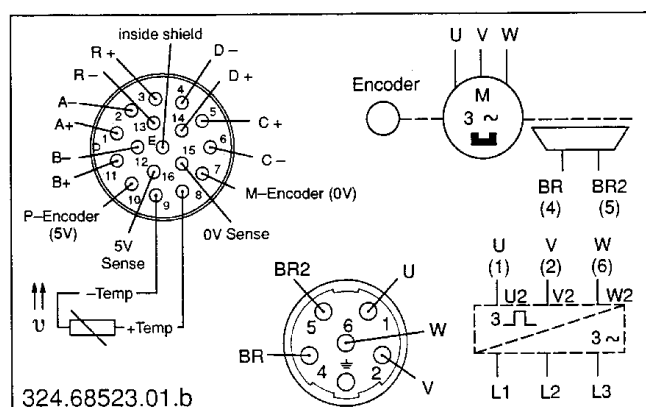
1FK6 101 / 1FK6 103

Resolver



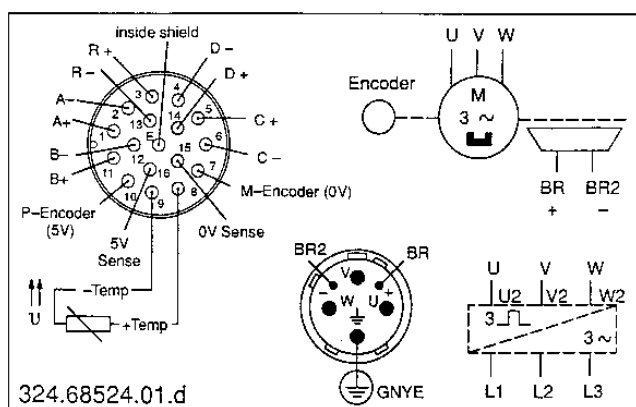
1FK6 04. - 1FK6 100

Encoder (ERN)



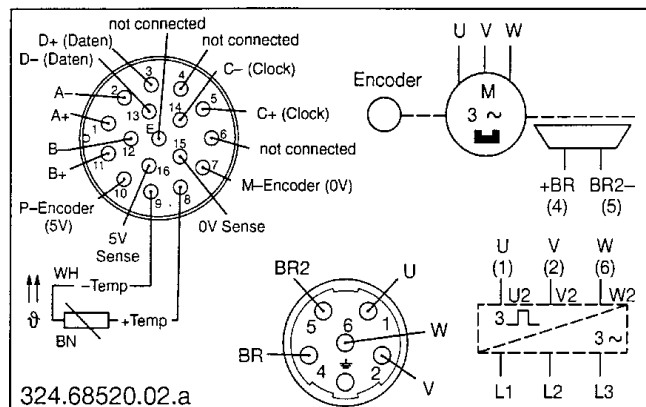
1FK6 101 / 1FK6 103

Encoder (ERN)



1FK6 04. - 1FK6 100

Encoder (EQN)



1FK6 101 / 1FK6 103

Encoder (EQN)

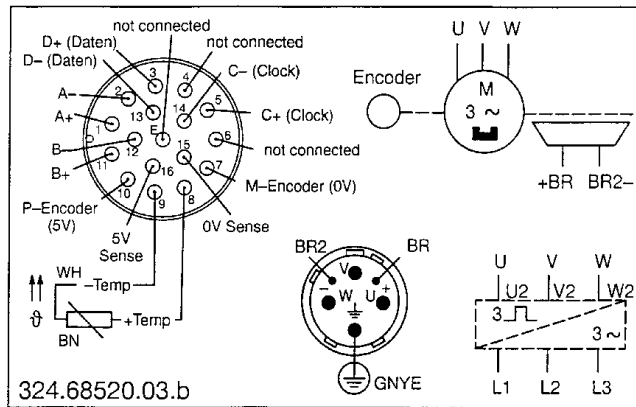


Fig. 2 Schaltung / Circuitry / Schémas de raccordement / Circuito / Circuito / Uppkoppling

Allgemeiner Hinweis



Zu beachten sind die Angaben und Anweisungen in allen gelieferten Betriebs- und sonstigen Anleitungen.

Dies ist zur Vermeidung von **Gefahren** und **Schäden** unerlässlich!

Eine zusätzliche Sicherheitsinformation (gelb) liegt bei, die ergänzende Angaben zur Sicherheit für elektrische Betriebsmittel enthält. Diese Sicherheitsinformation ist deshalb auch eine Ergänzung für alle weiteren noch gelieferten Betriebs- und sonstigen Anleitungen.

Weiterhin sind die jeweils geltenden **nationalen, örtlichen und anlagespezifischen Bestimmungen und Erfordernisse** zu berücksichtigen.

Sonderausführungen (inklusive Anschlußtechnik) und **Bauvarianten** können in technischen Details abweichen! Bei eventuellen Unklarheiten wird dringend empfohlen, unter Angabe von Typbezeichnung und Fabriknummer beim Hersteller rückzufragen, oder die Instandhaltungsarbeiten von einem der SIEMENS - Servicezentren durchführen zu lassen.

1 Beschreibung

1.1 Anwendungsbereich

Bestimmungsgemäße Verwendung: Die 1FK6-Motoren sind insbesondere als Antriebe für Handhabungsgeräte, Portale, Robotik, Holzbearbeitung, Standard-Werkzeugmaschinen und ähnliches konzipiert.

Sie können in überdachten Räumen mit normalen klimatischen Bedingungen aufgestellt werden. Die Motoren sind für Umgebungstemperaturen von -15°C bis +40°C ausgelegt.

Meßflächenschalldruckpegel(nach DIN EN 21 680 Teil 1) **bei einem Drehzahlbereich von 0 bis 3000 /min**

1FK6 03. - 04.	ca. 55 dB(A)
1FK6 06.	ca. 65 dB(A)
1FK6 08. - 10.	ca. 70 dB(A)

1.2 Arbeitsweise und Aufbau

Die 1FK6-Motoren sind dauermagneterregte Drehstrom-Synchron-Motoren zum Betrieb an motorgesteuerten Pulswechselrichtern nach dem Sinusstromprinzip.

Sie zeichnen sich durch hohe Dynamik und einen großen Drehzahlstellbereich aus.

In der dreisträngigen Ständerwicklung ist als Motorschutz ein **Temperatursensor** eingebracht.

Das eingebaute **Gebersystem** dient zur Lage- und Drehzahlerkennung des Motors und kann auch als Lagegeber für die NC-Steuerung eingesetzt werden. Abhängig von den Genauigkeitsanforderungen ist entweder ein **Resolver** oder **ab 1FK604. ein Encoder** (optisches Gebersystem) eingebaut.

Zusätzliche Ein- bzw. Anbauten (nach Bestellung) im Lieferumfang enthalten

- Ruhestromhaltebremse;

2 Betrieb

2.1 Transport, Lagern

Wird ein Motor nach Lieferung nicht gleich in Betrieb genommen, so ist er in einem trockenen, staub- und erschütterungsfreien Raum zu lagern.

2.2 Aufstellung

Leistungsschildangaben hinsichtlich Bauform und Schutzart (IP64) beachten und Übereinstimmung mit den Verhältnissen am Einbauort prüfen!

HINWEIS: Bei Maschinen mit Wellenende nach oben muß gewährleistet sein, daß keine Flüssigkeit (Wasser, Bohr- oder Kühlemulsion,...) in das obere Lager eindringen kann.

Die Montage des Motors muß ohne Schläge und Druck auf das Wellenende erfolgen!

Der Anbau muß so erfolgen, daß eine ausreichende Verlustwärmeabfuhr gewährleistet ist.

Die Anschraubflansche der 1FK6-Motoren für motorseitige Befestigung sind für Innensechskantschrauben ausgelegt.



Vorsicht Verbrennungsgefahr!

An den Motoren können hohe Oberflächentemperaturen von über 100°C auftreten.

Es dürfen dort keine temperaturempfindlichen Teile, wie z. B. normale Leitungen oder elektronische Bauteile, anliegen oder befestigt werden.

Bei Bedarf Berührungsschutzmaßnahmen vorsehen!

Das **Systemschwingungsverhalten am Einsatzort**, bedingt durch Abtriebsselemente, Anbauverhältnisse, Ausrichtung und Aufstellung sowie durch Einflüsse von Fremdschwingungen, kann zur Erhöhung der Schwingwerte am Motor führen. Mit Rücksicht auf eine einwandfreie Funktion des Motors und eine lange Lagerlebensdauer sollen die angegebenen Schwingwerte in Fig. 5 nicht überschritten werden. Unter Umständen kann ein komplettes Auswuchten des Läufers mit dem Abtriebsselement erforderlich sein.

2.3 Abtriebsselemente, Wuchtung

Das Auf- und Abziehen von Abtriebsselementen (z.B. Kupplungsscheibe, Riemenscheibe, Zahnrad, ...) ist mit geeigneten Vorrichtungen auszuführen. Hierzu Gewinde im Wellenende benutzen (s. Fig. 6).



Zu beachten sind die allgemein erforderlichen Maßnahmen für den Berührungsschutz der Abtriebsselemente.

Die zulässige Quer- und Axialkräfte sind den Diagrammen in der Projektierungsanleitung zu entnehmen (ggf. Anfrage in Zweigniederlassungen oder Herstellerwerk).

Wenn Axialkräfte in Richtung des Motors wirken, muß das Abtriebsselement an der Wellenschulter anliegen. Bei Bedarf ist eine Distanzhülse vorzusehen!



Bei Motoren mit integrierter Bremse sind keine axialen Kräfte zulässig!

Die Motoren sind standardmäßig in **Halbkeilwuchtung** ausgeführt!

Bei Montage des Abtriebsselementes auf entsprechende Auswuchtart des Motorläufers achten!

2.4 Elektrischer Anschluß



Alle Arbeiten nur im spannungslosen Zustand der Anlage vornehmen. Wegen der eingebauten Dauermagnete liegt bei rotierendem Läufer an den Motoranschlüssen Spannung an.

Der Motor ist gemäß dem Schaltbild nach Fig. 2 anzuschließen.

Grundsätzlich ist beim Anschließen zu beachten, daß

- die Anschlußleitungen der Verwendungsart, den auftretenden Spannungen und Stromstärken angepaßt
- ausreichend bemessene Anschlußleitungen, Verdreh-, Zug- und Schubentlastung sowie Knickschutz für die Anschlußleitungen vorgesehen sind und
- der Schutzleiter an angeschlossen ist
- der Buchsenstecker gut fluchtend in die Codiernut eingeführt wird
- die Überwurfmutter des Buchsensteckers von Hand fest angezogen wird, damit die Kontaktgabe und Dichtheit gewährleistet ist;

Verdrehbarkeit von Leistungs- und Signalstecker (s. Fig. 4)

Leistungsstecker

Der Leistungsstecker läßt sich von der Ausgangsstellung (Abgangsrichtung BS) um 270° im Uhrzeigersinn verdrehen.

Signalstecker

1FK6 03. ... 1FK6 08.: Der Signalstecker läßt sich um 180° gegen den Uhrzeigersinn und um 90° im Uhrzeigersinn verdrehen.

1FK6 10.: Der Signalstecker läßt sich **nur** um jeweils 90° verdrehen;

HINWEIS: Es ist darauf zu achten, daß der zulässige Schwenkbereich (s. Fig. 4) nicht überschritten wird.

Die endgültige Abgangsstellung ist einmalig einzustellen (max. 5 Verdrehungen zulässig).

Das Verdrehen ist mit einem auf das Steckergewinde passenden Gegenstecker durchzuführen.

HINWEIS: Die Verdrehbarkeit der Stecker ist durch einen Anschlag festgelegt! Um ein Überdrehen zu vermeiden sind max. zul. Verdrehmomente nicht zu überschreiten (s. Fig. 4).

Die Anschlußleitungen sind gegen Zug- und Biegung zu sichern. Dauerkräfte auf die Stecker sind nicht zulässig!

2.4.1 Leistungsanschluß

Leistungs- und Bremsenanschluß erfolgen über den Leistungsstecker.



Ein direkter Anschluß an das Drehstromnetz ist nicht erlaubt und führt zur Zerstörung des Motors. Auf richtige Phasenfolge ist zu achten!

Der Motor darf nur mit einem leistungsmäßig abgestimmten Pulswechselrichter betrieben werden.

2.4.2 Signalanschluß

Das Gebersystem und der Temperatursensor werden standardmäßig über den Signalstecker verbunden. Zu beachten sind Leistungsschild- und Schaltbildangaben (s. Fig. 2).

2.4.3 Bremsenanschluß

Der Bremsenanschluß erfolgt über den Leistungsstecker. Die Dauermagnet-Haltebremse arbeitet nach dem Ruhestromprinzip. Sie öffnet bei Anlegen einer Gleichspannung von $24\text{ V} \pm 10\%$. Die Spannung muß innerhalb des angegebenen Toleranzbereichs liegen, da sonst die Betriebssicherheit gefährdet ist. Bei eingeschaltetem Motor muß die Bremse immer erregt, d. h. geöffnet sein. Beim Ausschalten der Bremse (entregen) oder bei Stromausfall wird die Bremsennabe vom Magnetkörper angezogen und dadurch die Motorwelle festgehalten.

HINWEIS: Bei Stromausfall können die Motoren über die Widerstands-Kurzschlußbremse gebremst werden. Der Kurzschlußstrom ist hierbei über die Widerstände R_{opt} zu schalten, s. Projektierungsanleitung.

2.5 Inbetriebnahme

Vor Inbetriebnahme ist zu prüfen ob

- der Läufer ohne anzustreifen gedreht werden kann (ggf. Bremse öffnen)
- der Motor ordnungsgemäß montiert und ausgerichtet ist
- die Abtriebsselemente richtige Einstellbedingungen haben (z. B. Riemen- spannung bei Riementrieb, ...)
- alle elektrische Anschlüsse sowie Verbindungselemente nach Vor- schrift angezogen und ausgeführt sind
- der Schutzleiter bzw. die Schutzerdung ordnungsgemäß hergestellt ist
- eventuell vorhandenen Zusatzeinrichtungen (Bremse, ...) funktionsfä- hig sind
- Berührungsschutzmaßnahmen für bewegte und spannungsführende Teile getroffen sind
- die Grenzdrehzahl n_{max} , falls angegeben (s. Leistungsschild), nicht überschritten werden kann;

HINWEIS: Die Grenzdrehzahl n_{max} ist die höchste kurzzeitig zulässige Betriebsdrehzahl.



Nach dem Anbau der Motoren ist die Bremse (falls vorhanden) auf ihre einwandfreie Funktion zu prüfen!

Die Bremse ist nur für eine begrenzte Anzahl von Notbremsungen ausgelegt. Der Einsatz als Arbeitsbremse ist nicht zulässig.

Diese Aufzählung kann nicht vollständig sein. Zusätzliche Prüfungen sind gegebenenfalls nötig.

Einrichtarbeiten

Wenn der Motorläufer bei abgeschaltetem Motor gedreht werden soll, ist die Bremse an Spannung (Gleichspannung von $24\text{ V} \pm 10\%$, Polarität beachten!) zu legen, d. h. die Bremse ist zu öffnen.

3 Instandhaltung/Entsorgung

Sicherheitsmaßnahmen



Vor Beginn jeder Arbeit am Motor oder Gerät, besonders aber vor dem Öffnen von Abdeckungen aktiver Teile, muß der Motor vorschriftsmäßig freigeschaltet sein. Neben den Hauptstromkreisen ist dabei auch auf eventu- ell vorhandene Zusatz- oder Hilfsstromkreise zu achten! Die üblichen „5 Sicherheitsregeln“ lauten hierbei z. B. nach DIN VDE 0105:

- Freischalten
- Gegen Wiedereinschalten sichern
- Spannungsfreiheit feststellen
- Erden und Kurzschließen
- Benachbarte unter Spannung stehende Teile abdecken oder abschranken.

Diese zuvor genannten Maßnahmen dürfen erst dann zurück- genommen werden, wenn die Instandhaltungsarbeiten abge- schlossen sind und der Motor vollständig montiert ist.



Alle Arbeiten nur im spannungslosen Zustand der Anlage vornehmen! Wegen der eingebauten Dauermagnete liegt bei rotierendem Läufer an den Motoranschlüssen Spannung an.

Lagerwechsel, Fettsorte

Für die Motoren wird empfohlen, die Lager nach etwa 20 000 Betriebs- stunden, jedoch spätestens nach 5 Jahren zu erneuern.

Die Motoren haben lebensdauergeschmierte Lager mit radialer Lagerluft C3 und beidseitigen Dicht- bzw. Deckscheiben. Die Lager müssen für den Temperaturbereich von -15°C bis $+150^{\circ}\text{C}$ geeignet sein.

Fettsorte der Standardmotoren: UNIREX N3 (Fa. Esso); Ersatz- fette müssen der DIN 51825/K3N genügen.

HINWEIS: Beim Lagerwechsel sollten gut abdichtende Lager ent- sprechend den eingebauten Lagern verwendet werden. Lagerbe- schriftung und -anordnung von AS und BS - Lager beachten!

Es wird empfohlen, Ersatzlager im Herstellerwerk nachzubestellen damit Besonderheiten wie Lagerluft und/oder Werkstoff der Dichtscheiben berücksichtigt werden.

Hinweis zur Instandhaltung

Wir empfehlen die Instandhaltungsarbeiten von einem der SIEMENS-Servicezentren durchführen zu lassen!

Eine Instandhaltungsanleitung mit ausführlichen Hinweisen für Qualifiziertes Personal (Definition für Fachkräfte s. DIN VDE 0105 oder IEC 364) kann im Herstellerwerk, unter der

Bestellnummer **610.43 431.02** bezogen werden!
Sprachenausführung: Deutsch - Englisch

Diese Instandhaltungsanleitung enthält Hinweise zu Demon- tage/Montage

- der Gebersysteme Resolver, Encoder
- des Motorläufers mit Lagerwechsel
- des Motorläufers mit Lagerwechsel bei Motoren mit Bremse
- Justage von Resolver, Encoder;

Hinweis zur Entsorgung

Die Geberelektronik ist fachgerecht als Elektronik-Schrott zu entsorgen.

General information



All information and instructions contained in instruction manuals or any other instructions supplied must be observed.

This is indispensable for the avoidance of **risk and damage!**

An additional safety information sheet is enclosed (yellow) which provides supplementary information on the safety of electrical machinery and equipment. This safety information is therefore also intended to supplement all other instruction manuals or any other instructions supplied.

Furthermore, the applicable **national, local and plant-specific requirements and regulations** must be observed!

The technical specifications of **special versions** (including connections) and **design variations** may differ from those specified! If you have any doubts whatsoever, we strongly advise that you consult the manufacturer, giving details of type designation and serial number, or that you have the service work carried out by a SIEMENS Service Center.



Caution: Fire hazard!

The surfaces of the motors can reach high temperatures of over 100°C. No temperature-sensitive items such as normal wires or electronic components should be touching or attached to these surfaces. If necessary, take precautions to prevent contact!

The system vibration behaviour on site caused by drive elements, mounting conditions, alignment and installation and by vibration influences from an external source may increase the vibration values of the motor. With a view to correct functioning of the motor and long bearing life, the vibration values shown in Fig. 5 must not be exceeded. Complete balancing of the rotor together with the drive element may possibly be necessary.

2.3 Drive components, balancing

The fitting and removal of drive components (e.g. coupling disc, belt pulley, gearwheel, etc.) must be carried out with suitable equipment. Use the threaded hole provided in the end of the shaft (see Fig. 6)



The general safety precautions regarding prevention of contact with the drive components must be observed.

The permissible transverse and axial forces are specified in the diagrams included in the design selection manual (if necessary, consult your local regional office or the manufacturer).

If axial forces act towards the motor, the drive component must rest against the shoulder of the shaft. If necessary, fit a spacer bush!



There must be no axial forces acting on motors with an integral brake!

Standard motors are supplied balanced with **half featherkey**.

When fitting drive components, check for matching rotor balance specifications!

1 Description

1.1 Range of applications

Intended use: The 1FK6 motors are designed in particular to be used as drive units for manipulators, portals, robots, wood processing systems, standard machine tools and the like. They can be installed in roofed-over areas with normal climatic conditions. The motors are designed for ambient temperatures of -15°C to +40°C.

Measuring-surface sound-pressure level (to DIN EN 21 680 Part 1) **for a speed range from 0 to 3000 rpm**

1FK6 03. - 04.	approx. 55 dB(A)
1FK6 06.	approx. 65 dB(A)
1FK6 08. - 10.	approx. 70 dB(A)

1.2 Mode of operation and construction

The 1FK6 motors are permanent-field three-phase AC synchronous motors for operation with motor-controlled pulse-width-modulation inverters according to the sinusoidal current principle. They are characterised by good dynamics and a wide speed range.

There is a **temperature sensor** incorporated in the three-phase motor stator winding which acts as a motor protector.

The **integral sensor system** serves for detection of the rotor position and motor speed and can also be used as a position sensor for NC control. Depending on the accuracy requirements of the particular application, either a **resolver** or, as of **1FK6 04.**, an **encoder** (optical sensor system) is installed.

Additional fittings and attachments (to order) included in the scope of supply

- Fail-safe holding brake;

2 Operation

2.1 Transportation, storage

If a motor is not put into service immediately on receipt, it should be stored in a dry and dust-free room where it will not be subjected to shocks.

2.2 Installation

Take note of the information regarding type of construction and degree of protection (IP 64) given on the rating plate and check that these specifications match the site conditions!

NOTE: In the case of machines where the shaft end points upwards, it is imperative to ensure that no liquid (water, machining coolant, etc.) can penetrate the top bearing.

Never strike or exert pressure on the end of the shaft when installing the motor!

The motor must be fitted in such a way that heat loss can be adequately dissipated.

The bolt-on flange of the 1FK6 motors is designed for hexagonal socket-head bolts (for mounting on motor side).

2.4 Electrical connections



The system must be disconnected from the power supply before any work is carried out! Due to the fact that the motors contain permanent magnets, a voltage is generated at the motor terminals when the rotor is turned.

The motor must be connected up as shown in the circuit diagram in Fig. 2.

Basic rules for connecting motors:

- the connecting leads should be suitable for the type of use, as well as the voltages and amperages concerned.
- the connecting leads should be of sufficient length, and should be secured against twisting, tensional stress and kinking.
- the protective earth must be connected to the terminal marked
- the male connector engages properly in the keying slot, and that
- the connector union nut is hand-tight to ensure proper electrical contact and that the connection is properly sealed.

Rotatability of power and signal connectors (s. Fig. 4)

Power connector

The power connector can be rotated clockwise through 270° from the initial position (outgoing direction N-end).

Signal connector

1FK6 03. ... 1FK6 08. :the signal connector can be rotated anti-clockwise through 180° and clockwise through 90°.

1FK6 10. :the signal connector can **only** be rotated through 90°.

NOTE: it must be ensured that the range of rotation (see Fig. 4) is not exceeded.

The final outgoing position must be set once (max. 5 rotations permitted)

The connectors must be rotated using a mating connector attached to the connector thread.

NOTE: the rotatability of the connectors is limited by a stop. **The max. permissible torque moment must not be exceeded** in order to prevent overspeed (see Fig. 4).

The connection leads must be secured against bending and tensile forces.

The connectors must not be subjected to permanent forces!

2.4.1 Power connections

The power and brake is connected via a plug.



Direct connection to the three-phase AC supply is not allowed and will lead to the destruction of the motor. Check for correct phase sequence!

The motor may only be operated from a properly matched pulse-width-modulation inverter.

2.4.2 Signal connection

The **sensor system** and **temperature sensor** are connected via the standard signal connector. Take note of the specifications on the rating plate and the circuit diagram. (see Fig. 2)

2.4.3 Brake connections

The brake is connected via the power connector. The fail-safe permanent-magnet holding brake operates according to the closed-circuit principle. It is released when a current of 24 V DC \pm 10% is applied. The voltage must be between the specified tolerance limits, otherwise reliable operation may be at risk. When the motor is switched on, the brake must always be energized, i.e. released. When the brake is switched off (de-energized), or if there is a power failure, the brake hub is pulled towards the magnet, thus preventing the motor shaft from moving.

NOTE: In the event of a **power failure**, the motors can be decelerated by means of rheostatic-plug braking. In this case, the short-circuit current must be connected across the R_{opt} **resistors**, see the design selection manual.

2.5 Commissioning

Before putting the motor into operation, check that

- the rotor can be turned without touching the stator (release brake if necessary);
- the motor is properly fixed and aligned;
- the drive components are correctly adjusted (e.g. belt tension on belt drive, etc.);
- all electrical connections and connectors match the specifications and are properly tightened;
- the protective earth is properly connected;
- all attachments (brake,...) are operational
- appropriate measures have been taken to prevent contact with moving and live parts
- the maximum speed n_{max} , if specified (see rating plate), cannot be exceeded

NOTE: The maximum speed n_{max} is the maximum operating speed permissible for a short period.



After installing the motor, check that the brake (if fitted) works properly!

The brake is only designed to carry out a limited number of emergency braking operations. It must not be used as a regular service brake.

This list may be incomplete. Other checks may also be necessary.

Adjustments

If the rotor needs to be turned while the motor is switched off, the brake must be energized (24 V DC \pm 10%, check for correct polarity!), i.e. the brake must be released.

3 Maintenance/disposal

Safety precautions



Before carrying out any work on the motor or unit, and especially before uncovering live parts, disconnect the motor from the power supply.

Remember to disconnect any supplementary or auxiliary circuits as well as the main circuits.

The standard "5 safety rules" according to DIN VDE 0105 apply:

- Disconnect from the power supply
- Secure against reconnection
- Check that equipment is dead
- Earth and short-circuit
- Cover or screen off all live adjacent parts

The above actions may only be reversed when all repair work has been completed and the motor has been completely re-assembled.



The system must be disconnected from the power supply before any work is carried out! Due to the fact that the motors contain permanent magnets, a voltage is generated at the motor terminals when the rotor is turned.

Replacing the bearings, types of grease

We recommend that the bearings be replaced after approx. 20,000 hours of operation or after 5 years at the latest. The motors have permanently lubricated bearings with radial clearance C3 and **seals or covers** at both ends. The bearings must be suitable for operation at temperatures between -15°C and +150°C.

Types of grease for standard motors: UNIREX N3 (Esso); replacement grease must conform to DIN 51825/K3N.

NOTE: When replacing bearings, the new bearings should have **good seals which match the quality of the original bearings. Check the bearing inscription and orientation of D-end and N-end bearings!**

We recommend that replacement bearings be ordered from the manufacturer so that special requirements such as bearing clearance and/or seal material can be taken into account.

Note on Maintenance

We recommend that repair work be carried out by a SIEMENS Service Center!

A maintenance manual with detailed instructions for qualified personnel (for definition of qualified personnel, see DIN VDE 0105 or IEC 364) can be ordered from the manufacturer under

Order No. **610.43 431.02**
Edition: GERMAN-ENGLISH

This maintenance manual contains instructions for removing/ installing

- the resolver and encoder sensor systems
- the motor rotor, including bearing replacement
- the motor rotor, including bearing replacement for motors with brake
- adjustment of the resolver, encoder.

Note on Disposal

The electronic sensor components must be disposed of correctly as electronic scrap.

Remarque générale

Afin d'assurer la **protection des personnes** et d'éviter tout **dégât matériel**, il est impératif de respecter les indications et consignes contenues dans toutes les instructions de service et dans tous les autres éléments de documentation transmis avec le produit.

Les informations jointes (sur papier jaune) relatives à la sécurité aux matériels électriques sont applicables en complément de l'ensemble de la documentation.

Toutes les prescriptions et exigences nationales, locales ou spécifiques à l'installation doivent être respectées.

Les machines de **réalisation spéciale** (y compris connectique) et les variantes peuvent différer sur des points de détail techniques. En cas de doute à ce sujet, il est instamment recommandé de contacter l'agence Siemens compétente en indiquant la désignation de type et le numéro de fabrication, ou de recourir aux centres de S.A.V. Siemens pour effectuer les travaux de maintenance.

La bride de fixation des moteurs 1FK6 est conçue pour des vis à 6 pans creux (pour une fixation par le côté moteur).

**Avertissement : risque de brûlures !**

La surface de la machine peut être portée à des températures supérieures à 100°C. Aucun élément sensible à la chaleur tel que câble normal, composant électronique, ..., ne doit donc reposer ou être fixé à la surface de la machine. Au besoin, prendre des mesures de protection contre le contact.

Différents facteurs (accouplement, support, fixations, alignement, vibrations d'origine externes) sont susceptibles d'entraîner une détérioration du comportement vibratoire du moteur sur le site. Dans l'intérêt d'un fonctionnement correct du moteur et d'une longue durée de vie des paliers, les valeurs de vibrations indiquées au tableau de la Fig. 5 ne devraient pas être dépassées. Le cas échéant, il faudra procéder à un équilibrage complet du rotor avec organe de transmission monté.

1 Description

1.1 Domaine d'utilisation

Utilisation conforme : les moteurs 1FT6 sont principalement destinés à l'entraînement de manipulateurs, de robots, de dispositifs de chargement, de machines à bois, de machines-outils standard et d'équipements similaires.

Ils peuvent être implantés dans des locaux abrités à atmosphère normale et sont conçus pour des températures ambiantes comprises entre -15°C et +40°C.

Niveau de pression acoustique mesuré sur une surface de référence (selon DIN EN 21 680 partie 1) pour une plage de vitesse de 0 à 3000 tr/min

1FK6 03. - 04..	env. 55 dB(A)
1FK6 06.	env. 65 dB(A)
1FK6 08. - 10.	env. 70 dB(A)

1.2 Constitution et mode de fonctionnement

Les moteurs 1FK6 sont des moteurs triphasés synchrones à excitation par aimants permanents. Ils sont destinés à être alimentés par un convertisseur indirect à onduleur MLI piloté par le moteur et délivrant un courant de forme sinusoïdale.

Les moteurs 1FK6 sont caractérisés par leur dynamique élevée et par leur plage de vitesse étendue.

La surveillance de température (protection thermique) est assurée par une sonde thermométrique disposée dans l'enroulement triphasé du moteur.

Le capteur incorporé sert à la saisie de la vitesse de rotation et de la position du rotor et peut également être utilisé en tant que capteur de position pour la commande CN. En fonction de la précision requise, le capteur est soit un résolveur, soit, à partir du **1FK604..**, un codeur (capteur optique).

Éléments additionnels incorporés ou rapportés, compris dans les fournitures du moteur (selon commande) :

- frein à serrage en absence de courant ;

2 Exploitation

2.1 Transport / manutention, stockage

Les moteurs qui ne sont pas mis en service directement après livraison seront entreposés dans un local sec, à l'abri des poussières et des vibrations.

2.2 Mise en place

Contrôler les indications de la plaque signalétique concernant la forme de construction et le degré de protection (IP 64). Vérifier que les caractéristiques du moteur correspondent bien aux conditions au lieu d'implantation.

NOTA Sur les machines à bout d'arbre vers le haut, protéger le palier supérieur contre la pénétration de liquide (eau, liquide d'arrosage, ...). Réaliser le montage du moteur sans donner de coups ni exercer de pression sur le bout d'arbre.

Les moteurs doivent être installés de manière à obtenir une évacuation suffisante de la chaleur dissipée.

2.3 Organes de transmission, équilibrage

Le montage et le démontage des organes de transmission (par ex. plateaux d'accouplement, poulies, roues dentées, ...) ne doivent être réalisés qu'avec des dispositifs appropriés. Utiliser le taraudage en bout d'arbre (Fig. 6).



Au niveau des organes de transmission, prendre les mesures habituelles de protection des personnes contre l'accès aux pièces en mouvement.

Les efforts axiaux et radiaux admissibles sont indiqués dans les diagrammes du manuel de configuration (consulter éventuellement l'agence Siemens locale ou l'usine).

Lorsque des efforts axiaux sont exercés en direction du moteur, l'organe de transmission devra prendre appui contre un épaulement de l'arbre. Si nécessaire, intercaler une douille entretoise.



Les moteurs avec frein incorporé n'admettent aucun effort axial.

Les moteurs en version standard ont fait l'objet d'un équilibrage dynamique avec demi-clavette.

Lors du montage de l'organe de transmission, veiller à ce que le type d'équilibrage de ce dernier corresponde à celui du rotor.


2.4 Raccordement électrique



N'intervenir sur la machine que lorsque l'installation est hors tension. L'excitation par aimants permanents donne naissance à une tension aux bornes du moteur lorsqu'on fait tourner le rotor.

Effectuer le raccordement du moteur conformément au schéma des connexions de la Fig. 2.

Lors du raccordement, veiller aux points suivants :

- les câbles de raccordement sont conformes à l'utilisation et sont dimensionnés en fonction des tensions et intensités en présence,
- la longueur des câbles de raccordement est suffisante; des arrêts de traction adéquats ont été mis en place, ainsi que des dispositifs de protection des conducteurs contre la torsion et le pliage,
- le conducteur de protection est raccordé à la borne ;
- la fiche du connecteur est correctement introduite sur l'embase (la nervure de la fiche doit être parfaitement positionnée dans la rainure de l'embase)
- l'écrou chapeau de la fiche est bien serré à la main, garantissant ainsi le bon contact et l'étanchéité ;

Orientabilité des connecteurs de puissance et pour signaux (cf. Fig. 4)

Connecteur de puissance

A partir de sa position de base (départ du câble en direction du côté N), le connecteur de puissance peut être tourné de 270° dans le sens des aiguilles d'une montre.

Connecteur pour signaux

1FK6 03. ... 1FK6 08. : le connecteur pour signaux peut être tourné de 180° dans le sens des aiguilles d'une montre et de 90° dans le sens inverse.

1FK6 10. : le connecteur pour signaux ne peut être tourné que de 90° dans les deux sens.

NOTA : Veiller à ne pas dépasser l'angle de pivotement autorisé (cf. Fig. 4).

La position définitive est à régler une fois pour toute (5 pivotements maximum sont admis).

Tourner l'embase du connecteur en se servant de la fiche mobile vissée sur l'embase.

NOTA : L'angle de pivotement des connecteurs est limité par une butée. Pour éviter d'aller au-delà de cette butée, ne pas exercer de couple supérieur au couple de rotation admissible (cf. Fig. 4).

Les câbles de branchement seront fixés de manière à empêcher l'exercice d'efforts de traction et de flexion sur les connecteurs. Les connecteurs ne doivent pas être soumis à des efforts permanents.

2.4.1 Raccordement de l'alimentation

Le raccordement de l'alimentation est réalisé par le connecteur de puissance.



Le raccordement direct au réseau est inadmissible et entraînerait la destruction du moteur. Respecter l'ordre des phases.

Le moteur doit impérativement être alimenté par un convertisseur indirect à onduleur MLI de puissance adéquate.

2.4.2 Raccordement des conducteurs de signaux

En version standard, le raccordement du capteur et de la sonde de température s'effectue par l'intermédiaire du connecteur pour signaux. Respecter les indications de la plaque signalétique et du schéma des connexions (cf. Fig. 2).

2.4.3 Raccordement du frein

Le raccordement du frein s'effectue par l'intermédiaire du connecteur de puissance.

Le frein de blocage à aimants permanents est à serrage en absence de courant. Il se desserre en lui appliquant une tension continue de 24 V ± 10 %. La tension doit se trouver à l'intérieur de la plage de tolérance indiquée afin d'assurer la sûreté de fonctionnement. Lorsque le moteur est en marche, le frein doit toujours être desserré, c'est-à-dire alimenté. Lorsque l'on coupe l'alimentation du frein ou en cas de panne de courant, l'aimant permanent attire le moyeu du frein, ce qui a pour effet de bloquer l'arbre du moteur.

NOTA En cas de coupure de courant, le moteur peut être freiné par mise en court-circuit sur résistance. Le courant de freinage doit être appliqué aux résistances R_{opt} . (voir manuel de configuration).

2.5 Mise en service

Avant mise en service, vérifier les points suivants:

- le rotor peut être tourné sans qu'il frotte (le cas échéant, ouvrir le frein),
- le moteur est monté et aligné correctement,
- les organes de transmission sont correctement réglés (par ex. tension de courroie),
- toutes les connexions électriques sont réalisées conformément aux prescriptions, et les vis des bornes sont serrées aux couples prescrits,
- le conducteur de protection est bien raccordé et/ou la mise à la terre de protection est réalisée correctement,
- les dispositifs additionnels éventuels (frein, ...) sont opérationnels,
- les mesures de protection des personnes contre l'accès aux parties actives (sous tension) ou en mouvement ont été prises,
- la vitesse maximale n_{maxi} (lorsqu'elle est indiquée, voir plaque signalétique) ne doit pas être dépassée.

NOTA La vitesse maximale n_{maxi} est la vitesse maximale admissible temporairement en service.



Après montage de la machine, s'assurer que le frein (si présent) est en bon état de fonctionnement.

Le frein est conçu pour un nombre limité d'arrêts d'urgence. Il ne doit pas être utilisé comme frein de service.

La présente énumération ne peut être exhaustive. Des contrôles supplémentaires peuvent s'avérer nécessaires.

Travaux de réglage

Lorsqu'il est nécessaire de faire tourner le rotor d'un moteur hors tension, desserrer d'abord le frein en lui appliquant sa tension d'alimentation (tension continue 24 V ± 10 %, respecter les polarités).

3 Maintenance/Récupération

Mesures de sécurité



Avant toute intervention sur le moteur, notamment avant d'ouvrir ou d'enlever les recouvrements des parties actives, il est indispensable de mettre le moteur hors tension conformément aux règlements de sécurité. En plus des circuits principaux, ne pas oublier les éventuels circuits auxiliaires et additionnels.

Les "5 règles de sécurité" (par exemple selon DIN VDE 0105) sont applicables :

- mettre hors tension
- condamner les appareils (contre le réenclenchement)
- vérifier l'absence de tension
- mettre à la terre et court-circuiter
- recouvrir les parties actives voisines ou en barrer l'accès.

Ces mesures de sécurité ne doivent être supprimées qu'à l'issue de l'intervention de maintenance et lorsque tous les éléments du moteur sont remontés.



N'intervenir sur le moteur que lorsque l'installation est hors tension. L'excitation par aimants permanents donne naissance à une tension aux bornes du moteur lorsqu'on fait tourner le rotor.

Remplacement des roulements, type de graisse

Il est recommandé de remplacer les roulements après environ 20 000 heures de service et au plus tard après 5 ans.

Il est fait usage de roulements graissés à vie, à jeu radial C3, comportant de part et d'autre un déflecteur étanche ou de protection. Ils doivent être utilisables à des températures comprises entre -15 °C et +150 °C.

Type de graisse pour les moteurs standard : UNIREX N3 (Esso) ; les graisses de substitution doivent correspondre à DIN 51825/K3N.

NOTA Les roulements neufs doivent correspondre aux roulements d'origine et présenter une étanchéité élevée. Faire attention au marquage et à la disposition des roulements côtés D et N.

Il est recommandé de commander les roulements de rechange à l'usine d'origine du moteur pour être sûr qu'ils ont les mêmes caractéristiques (par ex. jeu radial, matériau des déflecteurs).

Remarque concernant la maintenance

Il est recommandé de faire exécuter tous les travaux de maintenance par un centre de S.A.V. Siemens.

Des instructions de maintenance détaillées pour personnel qualifié (définition du personnel qualifié, voir CEI 364 ou DIN VDE 0105) peuvent être commandées à l'usine d'origine sous la référence

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Ces instructions de maintenance comportent les instructions nécessaires au démontage/montage :

- des capteurs (résolveur, codeur)
- du rotor du moteur avec remplacement des roulements
- du rotor du moteur avec remplacement des roulements pour les moteurs avec frein
- pour le réglage du résolveur, du codeur

Remarque concernant la récupération

L'électronique du capteur doit être éliminée selon les règles de l'art concernant les déchets électroniques.

Indicación general



Observar las indicaciones e instrucciones en la documentación de servicio u otra suministrada.

Esto es indispensable para evitar **peligros y daños**.

Se adjunta información adicional de seguridad (amarilla) con datos suplementarios sobre la seguridad de máquinas y aparatos eléctricos. Por tanto, estas instrucciones de seguridad son un complemento de todas las instrucciones de servicio y otras suministradas.

Se han de observar adicionalmente las **prescripciones y requisitos locales, nacionales o específicos de la instalación**.

Las **ejecuciones especiales** (incl. el sistema de conexión) y las **variantes** pueden diferir en detalles técnicos respecto a estas instrucciones. En caso de duda se recomienda encarecidamente consultar al fabricante indicando la designación del tipo y el número de serie, o encomendar a un centro de servicio de SIEMENS los trabajos de mantenimiento.



¡Atención: Peligro de quemaduras!

La temperatura superficial del motor puede superar los 100°C. No sujetar ni apoyar allí partes sensibles al calor tales como cables normales o componentes electrónicos.

Tomar las medidas pertinentes de protección contra contactos involuntarios.

¡El **comportamiento vibratorio del sistema** en el lugar de aplicación, que depende de los elementos de transmisión, de las condiciones de montaje, de la alineación y del emplazamiento, así como de las influencias de vibraciones externas, pueden incrementar las vibraciones en el motor. Para que sea correcto el funcionamiento del motor y una larga vida útil de los rodamientos, no se deben sobrepasar en el motor los valores vibratorios indicados en la Fig. 5. En algunos casos puede ser necesario equilibrar completamente los rotores con el elemento u órgano de transmisión montado.

1 Descripción

1.1 Campo de aplicación

Utilización conforme: Los motores 1FK6 se han concebido especialmente como accionamientos para manipuladores, pórticos (Gantry), robots, herramientas madereras, máquinas herramienta estándar u otros equipos similares.

Se pueden instalar en recintos bajo techo, con condiciones climáticas normales. Los motores se han diseñado para temperaturas ambiente de -15°C hasta +40°C.

Nivel de presión acústica (según DIN EN 21 680, parte 1) y margen de velocidad de 0 a 3000 r./min

1FK6 03.-04. aprox. 55 dB(A)

1FK6 06. aprox. 65 dB(A)

1FK6 08.-10. aprox. 70 dB(A)

1.2 Funcionamiento y montaje

Los motores 1FK6 son trifásicos, sincrónicos, con excitación por imanes permanentes para operar, alimentados por onduladores (inversores) PWM controlados por el captador del motor, siguiendo el principio de corriente sinusoidal.

Se caracterizan por tener alta dinámica y un amplio margen de velocidades. En el devanado triple del estator hay un sensor de temperatura para proteger el motor.

El sistema captador incorporado sirve para captar la posición y la velocidad del motor y también puede utilizarse como captador de posición para el control numérico (CN). En dependencia de las exigencias de precisión, hay incorporado un resolvióer o, a partir de la versión **1FK604.**, un encoder (captador óptico).

Suplementos y accesorios adicionales (se han de pedir) contenidos en el volumen de suministro.

- Freno de retención con circuito normalmente cerrado

2 Servicio

2.1 Transporte y almacenamiento

Si un motor no se pone en servicio inmediatamente después del suministro habrá que almacenarlo en un recinto seco y libre de polvo y trepidaciones.

2.2 Instalación

¡Observar la forma constructiva y el grado de protección indicados en la placa de características (IP64), verificando que coincidan con las condiciones reinantes en el lugar de montaje!

INDICACION: Hay que garantizar que no penetre humedad (agua, taladrina, refrigerante, etc.) al cojinete superior de las máquinas que tengan el eje en posición vertical.

El motor se montará sin golpear ni someter a presión el extremo del eje. Al instalar hay que cuidar que haya suficiente disipación del calor de pérdidas.

La brida de los motores 1FK6 para su sujeción por el lado del motor, se ha concebido para tornillos con hexágono interior (Allen).

2.3 Elementos de acoplamiento, equilibrado

Para calar o extraer los elementos de acoplamiento (p. ej., discos de acoplamiento, poleas, ruedas dentadas, etc.) se usarán únicamente los dispositivos extractores adecuados. Emplear para ello la rosca practicada en el extremo del eje (v. Fig. 6).



Se han de observar las medidas requeridas para proteger los elementos de acoplamiento contra contactos accidentales.

Las fuerzas axiales y radiales admisibles se indican en los diagramas incluidos en las Instrucciones de proyecto (consultar en las sucursales de SIEMENS o en la fábrica).

Si las fuerzas axiales actúan en dirección hacia el motor, el elemento de acoplamiento debe apoyarse en el resalte del eje. Si se requiere, usar un casquillo distanciador.



¡En los motores con freno integrado no se admiten fuerzas axiales!

En forma estándar, se ha practicado el equilibrado dinámico de los motores con media chaveta.

¡Al montar el elemento de acoplamiento observar que el rotor tenga la clase de equilibrado correspondiente!


2.4 Conexión eléctrica



Todos los trabajos se han de realizar en estado libre de tensión. Cuando gira el rotor hay tensión en los terminales del motor, inducida por los imanes permanentes.

El motor se conectará según las indicaciones de la Fig. 2.

Al conectar hay que tener en cuenta por principio que:

- los cables de conexión coincidan con la aplicación, las tensiones y las corrientes esperadas.
- se hayan previsto cables suficientemente dimensionados, descargas de torsión, tracción y presión así como protecciones contra dobleces.
- esté conectado el conductor de protección a 
- el conector hembra esté alineado correctamente con la ranura de codificación.
- la tuerca de sujeción del conector esté bien apretada (a mano) para garantizar la estanqueidad y el contacto.

Girabilidad de los conectores de energía y para señales (v. Fig. 4)
Conector de energía

El conector de energía puede girarse en sentido horario hasta 270° partiendo de la posición inicial (dirección de salida lado N).

Conector para señales

1FK6 03. ... 1FK6 08.: El conector para señales puede girarse 180° en sentido antihorario y 90° en sentido horario.

1FK6 10.: El conector para señales sólo puede girarse 90°.

INDICACION: Cuidar que no se sobrepase el margen de girabilidad admisible (v. Fig. 4).

La posición de salida definitiva se fijará una sola vez (se permiten hasta 5 giros).

Los conectores se girarán utilizando un conector de acoplamiento enroscado en los mismos.

INDICACION: Un tope limita la girabilidad del conector. Para evitar dañar la rosca no debe sobrepasarse el par de apriete máximo admisible (Fig. 4).

Los cables de conexión se asegurarán contra dobleces y fuerzas de tracción inadmisibles.

¡Es inadmisibles someter los conectores a esfuerzos permanentes!

2.4.1 Conexión de energía

La alimentación se conecta a través del conector de energía.



No se admite conectar directamente a la red trifásica; esto conduciría a la destrucción del motor.

Observar que sea correcta la secuencia de las fases.

El motor sólo se ha de operar con un ondulator PWM que esté en condiciones de suministrar la potencia requerida.

2.4.2 Conexión de las señales

El sistema captador y el sensor de temperatura se conectan de forma estándar a través del conector para señales. Observar las indicaciones en la placa de características y en el esquema (v. Fig. 2).

2.4.3 Conexión de los frenos

Los frenos se conectan a través del conector de potencia.

El freno de retención de imanes permanentes funciona con circuito normalmente cerrado. Se abre al aplicar una tensión de 24 V c.c. $\pm 10\%$. La tensión ha de encontrarse dentro del margen de tolerancia indicado pues, de lo contrario, corre peligro la seguridad de operación. Mientras esté conectado el motor deberá estar excitado el freno, es decir, abierto. Al desconectar el freno (desexcitar) o al fallar la alimentación, el cubo del freno será atraído por el electroimán, deteniendo el eje del motor.

INDICACION: Si falla la alimentación los motores se pueden frenar usando frenado por las resistencias de cortocircuito. La corriente de cortocircuito se ha de maniobrar a través de las resistencias R_{opt} . V. las Instrucciones de proyecto.

2.5 Puesta en servicio

Antes de la puesta en servicio verificar que:

- El rotor se pueda girar sin rozamientos (dado el caso, soltar el freno).
- El motor esté montado y alineado correctamente.
- Los elementos de accionamiento tengan el ajuste adecuado (p. ej., las tensiones de las correas, etc.).
- Todas las conexiones eléctricas y los elementos de unión están bien ejecutados y apretados.
- Se conectó el conector de protección o se efectuó la puesta a tierra de protección en forma correcta.
- Los dispositivos auxiliares presentes (tales como frenos, etc.) están en condiciones de operar.
- Se han tomado medidas de protección contra contactos involuntarios en las partes que están en movimiento o sometidas a tensión.
- No sea posible superar la velocidad máxima $n_{m\acute{a}x.}$ en el caso de que se haya indicado (ver la placa de características).

INDICACION: La velocidad máxima $n_{m\acute{a}x.}$ es la velocidad de servicio máxima admisible durante breves períodos.



Tras montar los motores hay que verificar el funcionamiento correcto del freno (de haberlo).

El freno se ha diseñado sólo para una cantidad determinada de frenados de emergencia. Es inadmisibles aplicarlo como freno de servicio.

Es imposible enumerar aquí todos los casos posibles. Puede hacer falta realizar pruebas adicionales.

Ajustes

Para mover el rotor con el motor desconectado, aplicar tensión al freno (tensión continua de 24V $\pm 10\%$; observar la polaridad), es decir, abrirlo.

3 Mantenimiento / Eliminación

Medidas de seguridad



Antes de iniciar cualquier trabajo en el motor o en el equipo, pero especialmente antes de abrir las cubiertas de partes activas, hay que desconectar el motor de acuerdo con las prescripciones. Además de los circuitos principales hay que observar los auxiliares o adicionales que pudieran existir.

Aquí rigen las 5 reglas de seguridad usuales, p. ej., según DIN VDE 0105:

- Desconectar
- Asegurar contra la reconexión
- Verificar la ausencia de tensión
- Poner a tierra y cortocircuitar
- Cubrir o encerrar las partes vecinas sometidas a tensión

Las medidas aquí mencionadas han de permanecer hasta que hayan finalizado los trabajos de mantenimiento y se haya montado el motor por completo.

Todos los trabajos se han de realizar en estado libre de tensión. Cuando gira el rotor hay tensión en los terminales del motor, inducida por los imanes permanentes.

Cambio de rodamientos y tipos de grasa

Para los motores se recomienda cambiar los rodamientos tras 20.000 horas de servicio o, a más tardar, cada 5 años.

Los motores tienen rodamientos con lubricación suficiente para toda su vida útil, juego radial interno C3 y discos de junta o tapas en ambos lados. Los rodamientos han de resistir temperaturas desde -15°C hasta +150°C.

Clase de grasa para los motores estándar: UNIREX N3 (marca ESSO); otras grasas deberán cumplir la norma DIN 51825/K3N.

INDICACION: Al efectuar el cambio se utilizarán rodamientos con buena hermeticidad equivalentes a los rodamientos incorporados. Observar la rotulación y la disposición de los rodamientos de los lados N y D.

Se recomienda pedir al fabricante los rodamientos de repuesto para que se cumplan las características especiales, tales como el juego interno de los rodamientos y/o el material de los anillos de junta.

Indicación para el mantenimiento

Recomendamos que los trabajos de mantenimiento se confíen a un centro de servicio de SIEMENS.

Hay unas instrucciones de mantenimiento que incluyen indicaciones extensas para el personal cualificado (respecto a la definición de personal especializado véase DIN VDE 0105 ó CEI/IEC 364) que se pueden pedir al fabricante.

Referencia: **610.43 431.02**

Versión alemana - inglesa

Estas Instrucciones contienen las indicaciones necesarias para el montaje y desmontaje de:

- Los sistemas captador: resólver, encoder
- El rotor con cambio de rodamientos
- El rotor con cambio de rodamientos, para motores con freno
- Ajuste del resólver, encoder

Indicación para la eliminación

Los componentes electrónicos del sistema captador se eliminarán correctamente como desechos electrónicos.

Note generali

Onde evitare pericoli e danni si prega di attenersi alle indicazioni contenute in tutte le istruzioni d'uso e di altro tipo fornite.

In allegato vengono fornite ulteriori avvertenze di sicurezza (in giallo), contenenti indicazioni relative alla sicurezza di macchine e apparecchi elettrici. Tali informazioni sulla sicurezza costituiscono un'integrazione a tutte le altre istruzioni d'uso e di altro tipo.

Attenersi alle norme e ai requisiti nazionali, locali e specifici dell'impianto.

Le esecuzioni speciali e le varianti costruttive possono discostarsi in alcuni particolari tecnici. In caso di dubbio, si prega di rivolgersi al costruttore, indicando il tipo e il numero di matricola, oppure far eseguire i lavori di manutenzione da un centro di service della Siemens.

1 Descrizione

1.1 Campo d'impiego

Uso appropriato: i motori 1FK6 sono concepiti soprattutto come azionamenti per manipolatori, portali, robot, apparecchiature per la lavorazione del legno, macchine utensili standard e simili. Possono essere installati in ambienti chiusi con condizioni ambientali normali, e sono adatti per temperature ambiente da -15° C a +40° C.

Livello di pressione acustica delle superfici di misura (sec. DIN EN 21680 parte 1) con numero di giri fra 0 e 3000/min.

1FK6 03. - 04.	ca. 55 dB (A)
1FK6 06.	ca. 65 dB (A)
1FK6 08. - 10.	ca. 70 dB (A)

1.2 Modo di funzionamento e costruzione

I motori 1FK6 sono motori sincroni a eccitazione permanente, adatti per l'impiego su convertitori di frequenza comandati da motore secondo il principio di corrente sinusoidale.

Sono caratterizzati da un'elevata dinamicità e da un ampio campo di regolazione della velocità.

Come protezione del motore, nell'avvolgimento statorico a tre fasi è integrato un **termosensore**.

Il **trasduttore** integrato serve per il riconoscimento della posizione e della velocità del motore e può essere impiegato anche come trasduttore di posizione per il controllo NC. A seconda della precisione necessaria, è integrato un **resolver** o **≥ 1FK6 04. un encoder** (sistema ottico).

Della fornitura fanno parte anche i seguenti elementi integrati o annessi (su ordinazione):

- Freno di arresto per corrente di riposo;

2 Esercizio

2.1 Trasporto, immagazzinaggio

Se, dopo la consegna, il motore non viene messo in funzione subito, immagazzinarlo immediatamente in un luogo asciutto, esente da polvere e da vibrazioni.

2.2 Installazione

Osservare le indicazioni riportate nelle targhette per la forma costruttiva e il grado di protezione (IP 64) e verificarne la corrispondenza con le condizioni presenti nel luogo di installazione.

NOTA: nel caso di macchine con estremità d'albero rivolta verso l'alto, accertarsi che nessun tipo di liquido possa infiltrarsi nel cuscinetto superiore (acqua, emulsione di foratura e di raffreddamento...). Montare il motore senza dare colpi o esercitare pressione sull'estremità d'albero.

Il motore deve essere montato in modo tale da garantire un'adeguata dissipazione del calore. Le flange a vite dei motori 1FK6 per il fissaggio laterale degli stessi sono dimensionate per viti a testa cilindrica con esagono incassato.



Attenzione. Pericolo di ustioni!

Sulle superfici dei motori possono svilupparsi temperature superiori ai 100° C. Per questo motivo non devono esservi appoggiate o fissate parti sensibili alla temperatura, quali per es. normali conduttori o componenti elettronici.

Se necessario, adottare misure di protezione contro i contatti.

Le vibrazioni del sistema sul luogo d'impiego, dovute agli elementi condotti, alle condizioni di montaggio, all'allineamento e all'installazione, come pure alla presenza di vibrazioni esterne, possono condurre a un aumento dei valori di vibrazione del motore. Per assicurare un funzionamento ottimale del motore e una lunga durata dei cuscinetti, non devono essere superati i valori di vibrazione riportati nella fig. 5. Può rendersi eventualmente necessaria una riequilibratura completa del rotore assieme all'elemento condotto.

2.3 Elementi condotti, equilibratura

L'applicazione e l'estrazione degli elementi d'azionamento (per es. semigiunto, pulegge, ruote dentate, ...) vanno eseguite con attrezzi adatti. Utilizzare a questo scopo il foro filettato sull'estremità d'albero. (fig. 6).



Osservare le misure di sicurezza generali per la protezione degli elementi condotti contro i contatti.

Le forze trasversali ed assiali ammesse sono riportate nei diagrammi contenuti nelle istruzioni di progettazione (in caso di necessità rivolgersi alla filiale di zona o allo stabilimento di produzione).

Se in direzione del motore sono attive forze assiali, l'elemento condotto deve appoggiarsi alla spalla dell'albero. Se necessario utilizzare una bussola distanziatrice.



I motori con freno integrato non devono essere esposti a forze assiali!

I motori in esecuzione standard sono equilibrati dinamicamente con mezza chiave.


2.4 Collegamento elettrico



Tutti i lavori sulla macchina vanno effettuati in assenza di tensione. A causa del magnete permanente integrato, i collegamenti del motore sono in tensione quando il rotore è in funzione.

L'allacciamento del motore deve essere realizzato come indicato in fig. 2.

Al momento di realizzare il collegamento assicurarsi che:

- i cavi di collegamento siano adatti all'impiego previsto, alle tensioni e forze di corrente presenti,
- siano previsti cavi di collegamento, morsetti antitorsione, antitiro e antispinga adeguatamente dimensionati come pure protezioni anti piega per i conduttori stessi,
- il conduttore protettivo sia collegato a .
- il connettore sia introdotto perpendicolarmente nella cava codificata.
- il dado a risvolto del connettore venga serrato a fondo manualmente, al fine di garantire buon contatto e l'ermeticità.

Rotazione del connettore di potenza e di segnale (ved. fig. 4)
Connettore di potenza

Il connettore di potenza può ruotare di 270° in senso orario partendo dalla posizione iniziale (direzione di uscita lato B)

Connettore di segnali

1FK6 03. ... 1FK6 08.: è possibile far ruotare il connettore di segnali di 180° in senso antiorario e di 90° in senso orario.

1FK6 10.: è possibile far ruotare il connettore di segnali soltanto di 90°.

NOTA: Accertarsi che non venga superato il campo di oscillazione consentito (ved. fig. 4)

La posizione d'uscita definitiva può essere impostata una sola volta (consentite al massimo 5 rotazioni).

Per effettuare la rotazione utilizzare un connettore d'accoppiamento adatto al connettore.

Nota: la rotazione del connettore viene bloccata da uno scatto. Per evitare di oltrepassare tale soglia non superare il momento torcente max consentito (ved. fig. 4).

Proteggere i cavi di collegamento da torsioni e trazioni.
Sul connettore non sono ammesse forze permanenti.

2.4.1 Collegamento dell'alimentazione

Il collegamento dell'alimentazione viene eseguito mediante connettore.



Il collegamento diretto con la rete a corrente trifase non è consentito e causa la distruzione del motore. Verificare che la sequenza di fase sia corretta.

Il motore deve essere messo in funzione solo con un convertitore di frequenza con potenza sintonizzata.

2.4.2 Collegamento segnali

Il **trasduttore e il sensore di temperatura** devono essere collegati mediante la spina per segnali. Attenersi alle indicazioni riportate sulla targhetta e negli schemi circuitali.

2.4.3 Collegamento del freno

Il freno viene collegato mediante la spina di potenza.

Il freno d'arresto a magnete permanente è del tipo fail-safe.

Esso apre se viene applicata una tensione continua di $24\text{ V} \pm 10\%$. La tensione deve trovarsi all'interno del campo di tolleranza previsto, altrimenti viene compromessa la sicurezza d'esercizio. Con il motore inserito il freno deve sempre essere eccitato, cioè aperto. Con il freno disinserito (non eccitato) oppure in caso di mancanza di tensione, il magnete attira il mozzo del freno e blocca in tal modo l'albero motore.

AVVISO: In caso di mancanza di corrente è possibile frenare i motori con la frenatura a resistenza ai cortocircuiti. La corrente di cortocircuito viene applicata attraverso le resistenze R_{ott} (ved. le istruzioni di progettazione).

2.5 Messa in servizio

Prima della messa in servizio è necessario verificare quanto segue:

- il rotore deve poter ruotare senza sfiorare (se necessario aprire il freno).
- il motore deve essere montato ed equilibrato correttamente
- gli elementi condotti devono essere messi a punto correttamente (per es. tensione della cinghia in caso di trasmissione a cinghia; ...)
- tutti i collegamenti elettrici e gli elementi di collegamento devono essere eseguiti e serrati con cura
- il conduttore protettivo e il conduttore di messa a terra devono essere collegati correttamente
- eventuali dispositivi ausiliari (freno, ...) devono essere funzionanti
- devono essere state adottate misure protettive contro i contatti con parti in movimento e in tensione
- la velocità limite, se indicata, non deve essere superata (ved. i dati indicati sulla targhetta).

NOTA: Il numero di giri massimo n_{max} è il massimo numero di giri consentito solo per un breve periodo di esercizio.



Dopo aver montato il motore, assicurarsi che il freno (se previsto) funzioni perfettamente.

Il freno è adatto solo per un numero limitato di frenate d'emergenza. L'impiego come freno di lavoro non è quindi consentito.

Il presente elenco di verifiche non può essere completo; possono quindi rendersi eventualmente necessarie ulteriori verifiche.

Lavori di messa a punto

Se il rotore deve essere ruotato con il motore disinserito, è necessario inserire, cioè aprire il freno (tensione continua di $24\text{ V} \pm 10\%$, fare attenzione alla giusta polarità).

3 Manutenzione/Smaltimento

Misure di sicurezza



Prima di iniziare qualsiasi lavoro sui motori, e soprattutto prima di aprire le coperture di parti attive, togliere la tensione al motore procedendo come prescritto. Oltre ai circuiti principali è necessario prestare attenzione anche a eventuali circuiti ausiliari o supplementari.

Le "5 regole di sicurezza", per es. sec. DIN VDE 0105 sono:

- togliere la tensione
- bloccare la reinserzione
- verificare l'assenza di tensione
- effettuare la messa a terra e cortocircuitare
- coprire o separare parti adiacenti in tensione.

Tali misure di sicurezza possono essere abbandonate solo a lavori di manutenzione terminati e dopo che il motore è stato rimontato completamente.



Eseguire i lavori a motore disinserito. A causa del magnete permanente integrato i collegamenti del motore sono in tensione quando il motore è in funzione.

Sostituzione dei cuscinetti, tipo di grasso

Per i motori si consiglia di sostituire i cuscinetti dopo circa 20.000 ore operative, comunque al più tardi dopo 3 anni.

I motori sono dotati di cuscinetti con ingrassaggio a lunga durata e con gioco del cuscinetto C3 e dischi di tenuta e di copertura. I cuscinetti devono essere adatti per un campo di temperature da -15°C a $+150^\circ\text{C}$.

Tipo di grasso dei motori standard: UNIREX N3 (ditta Esso); altri grassi devono soddisfare le norme DIN 51825/K3N.

NOTA: Per la sostituzione dei cuscinetti utilizzare solo cuscinetti a buona tenuta simili ai cuscinetti originali. Fare attenzione alle indicazioni e alla posizione dei cuscinetti lato A e lato B.

Si consiglia di ordinare i cuscinetti presso il costruttore, in modo che vengano rispettate particolarità quali il gioco del cuscinetto e/o il materiale dei dischi di tenuta.

Note sulla manutenzione

Si consiglia di far eseguire i lavori di manutenzione da un centro di service della SIEMENS.

Il manuale per la manutenzione con istruzioni specifiche per personale qualificato (per la definizione di personale qualificato ved.

DIN VDE 0105 o IEC 364) può essere richiesto presso il costruttore, con il seguente numero d'ordinazione:

610.43 431.02 in lingua: tedesco - inglese

Le istruzioni per la manutenzione contengono indicazioni relative al montaggio/smontaggio:

- dei trasduttori resolver e encoder
- del rotore del motore con sostituzione dei cuscinetti
- del rotore del motore con sostituzione dei cuscinetti nei motori con freno e
- relative all'aggiustaggio di resolver ed encoder.

Nota per lo smaltimento

Per assicurare uno smaltimento corretto l'elettronica del trasduttore deve essere trattata come rifiuto elettrico.

Allmänna anvisningar

Följ alla uppgifter och anvisningar i alla levererade driftsinstruktioner och annan dokumentation. För undvikande av **risker** och **skador** är detta ett oundgängligt krav!

Den medföljande extra säkerhetsinformationen (gul) innehåller kompletterande säkerhetsuppgifter för elektriska drivanordningar. Denna säkerhetsinformation är därför även en komplettering för alla andra levererade driftsinstruktioner och annan dokumentation.

Dessutom gäller givetvis alla nationella, lokala och systemspecifika bestämmelser och krav.

Specialutförande (inklusive anslutningsteknik) och **varianter** kan avvika i tekniska detaljer! Tag därför kontakt med tillverkaren vid eventuella oklarheter och uppge därvid typbeteckning och fabriksnummer eller låt en av Siemens servicecentraler utföra reparationen.

1 Beskrivning

1.1 Användningsområde

Ändamålsenlig användning: Motorerna 1FK6 är framför allt avsedda som drivmotorer för hanteringsinstrument, portaler, robotar, träbearbetning, standardverktygsmaskiner och liknande.

De kan installeras i utrymmen under tak med normala klimatförhållanden. Motorerna är konstruerade för omgivningstemperaturer mellan -15°C och +40°C.

Ljudtrycksnivå (enligt DIN EN 21 680 del 1) vid varvtalsområde mellan 0 och 3000/min.

1FK6 03. - 04.	ca 55 dB(A)
1FK6 06.	ca 65 dB(A)
1FK6 08. - 10.	ca 70 dB(A)

1.2 Funktionssätt och konstruktion

1FK6-motorerna är permanentmagnetiserade trefas synkronmotorer för drift med motorstyrda pulsväxleriktare enligt sinusströmprincipen. De kännetecknas av hög dynamik och ett brett varvtalsområde. I motorstatorns trefasiga lindning finns en **temperatursensor** inbyggd som motorskydd.

Det inbyggda **givarsystemet** används för läges- och varvtalsindikering av motorn och kan också utnyttjas som lägesgivare för NC-styrningen. Beroende på noggrannhetskraven finns antingen **en resolver** eller **fr.o.m. 1FK6 04. en encoder** (optiskt givarsystem) inbyggd.

Ytterligare in- eller påmonterade apparater (enl. beställning) som ingår i leveransen

- Hållbroms enl. vilostömsprincipen;

2 Drift

2.1 Transport, lagring

Om en motor inte tas i drift omedelbart efter leveransen, skall den förvaras i ett torrt, damm- och vibrationsfritt utrymme.

2.2 Installation

Kontrollera att märkskyltens uppgifter rörande modell och kapslingsklass (IP64) stämmer överens med förhållandena på installationsplatsen!

OBSERVERA: För maskiner med axeltappen vänd uppåt måste man säkerställa att ingen vätska (vatten, borr- eller kylvätska,...) kan tränga in i det övre lagret.

Motorn måste monteras utan slag och tryck mot axeltappen!

Motorn måste placeras så att man erhåller tillfredsställande avgång av förlustvärme.

1FK6-motorernas påskruvningsfläns för fastsättning på motorsidan är konstruerad för insexskruvar.



Varning för bränningsfara!

På motorernas mantelyta kan det uppstå höga temperaturer, över 100°C. Därför får inga temperaturkänsliga detaljer, t.ex. normala ledningar eller elektroniska komponenter, ligga an mot eller fästas på motorn. **Montera beröringsskydd vid behov!**

Systemvibrationer vid installationsplatsen som kan vållas av drivdon, monteringsförhållanden, uppriktning och installation av motorerna samt påverkan av externa vibrationer, kan medföra att motorn utsätts för högre vibrationsvärden. Med hänsyn till motorns funktion och lagrens livslängd bör vibrationsvärdena i Fig. 5 inte överskridas. I vissa fall kan det bli nödvändigt att balansera motorn komplett med drivdonet.

2.3 Drivdon, balansering

Drivdon (t.ex. kopplingsskiva, remskiva, kugghjul,...) skall sättas på och dras av med lämpliga verktyg. Använd gängen i axeltappen (se Fig. 6).



Vidta alla allmänt erforderliga åtgärder för beröringsskydd av drivdonen.

Tillåtna tvär- och axialkrafter anges i diagrammen i projekteringsanvisningen (kan erhållas på begäran från Siemens lokalkontor eller från fabriken).

Om det förekommer axialkrafter i motorns riktning måste drivdonet ligga an mot axelns ansats. Montera distanshylsa vid behov!



På motorer med inbyggd broms tillåts inga axiella krafter!

Motorerna är som standard dynamiskt balanserade med **halv kil!**

Ge akt på rotns balanseringstyp när drivdonet monteras!


2.4 Elektrisk anslutning



Alla arbeten skall utföras med anläggningen strömlös. På grund av den inbyggda permanentmagneten ligger det spänning på motoranslutningarna när rotn roterar.

Anslut motorn enligt kopplingsschema Fig. 2.

Vid anslutning måste man i princip se till att

- anslutningsledningarna är anpassade till användningstypen, förekommande spänningar och strömstyrkor,
- anslutningsledningarna är ordentligt dimensionerade och försedda med förvidnings-, drag- och skjutavlastning samt knäckskydd,
- skyddsledaren är ansluten till jord ,
- kontaktdonet förs in rakt och korrekt i kodningsspåret,
- kontaktdonets huvmutter dras åt ordentligt för hand, så att man får en ordentlig och tät anslutning.

Nätkontaktens och signaldonets vridbarhet (se Fig. 4)

Nätkontakt

Nätkontakten låter sig vridas medurs 270° från utgångsläget (utgångsriktning BS).

Signaldon

1FK6 03. ... 1FK6 08. : Signaldonet låter sig vridas 180° moturs och 90° medurs.

1FK6 10. : Signaldonet låter sig **bara** vridas 90° åt båda håll.

OBSERVERA: Man skall se till att det tillåtna svängningsområdet (se Fig. 4) inte överskrids.

Det slutgiltiga utgångsläget skall ställas in en gång för alla (max 5 vridningar tillåtna).

Vridningen skall utföras med en till kontaktgängen passande motkontakt.

OBSERVERA: Kontaktens vridbarhet är fastlagd genom ett anslag! För att undvika en förvridning får max. tillåtna vridningsmoment inte överskridas (se Fig. 4).

Anslutningsledningarna skall säkras mot dragning och böjning. Kontakten får inte stå under kontinuerlig kraftpåverkan.

2.4.1 Strömförsörjning

Strömförsörjnings- och bromsanslutning sker över nätkontakten-stiftdonet.



Direkt anslutning till trefasnätet är ej tillåten och medför att motorn förstörs.

Ge akt på att det är rätt fasföljd!

Motorn får bara köras med en pulsåxeltaktare med lämplig uteffekt.

2.4.2 Signalanslutning

Givarsystemet och temperatursensorn ansluts som standard via signaldonet. Ge akt på uppgifterna på märkskylten och i kopplingsschemat (se Fig. 2).

2.4.3 Bromsanslutning

Bromsen ansluts via stiftdonet för strömförsörjningen.

Hållbromsen med permanentmagnet fungerar enligt vilostömsprincipen. Den öppnas när en likspänning på 24V $\pm 10\%$ läggs an. Spänningen måste ligga inom angivet toleransområde, eftersom driftsäkerheten annars äventyras. När motorn är inkopplad måste bromsen alltid vara magnetiserad, d.v.s. öppen. När bromsen kopplas ifrån (avmagnetiseras), eller vid strömavbrott, dras bromsnavet in mot magnetkroppen och håller därigenom fast motoraxeln.

OBSERVERA: Vid strömavbrott kan motorerna bromsas genom motståndskortslutningsbromsning. Kortslutningsströmmen skall då kopplas via motståndet R_{opt} , se projekteringsanvisningen.

2.5 Idrifttagande

Kontrollera före idrifttagandet att

- rotorn kan vridas runt utan att skrapa emot någonstans (lossa ev. bromsen)
- motorn är korrekt monterad och riktad
- drivdonen har rätt inställningsförhållande (t.ex. remspänningen vid remdrift,...)
- alla elektriska anslutningar och förbindelseelement är åtdragna och utförda enligt föreskrift
- skyddsledare resp. skyddsjordning utförts korrekt
- eventuellt förekommande tillsatser (broms, ...) är funktionsdugliga
- beröringsskydd har ordnats för rörliga och spänningsförande detaljer
- maximivärtalet n_{max} , om sådant angivits (se märkskylten), ej kan överskridas

OBSERVERA: Maximivärtalet n_{max} är det högsta arbetsvarvtal som tillåts under kort tid.



Kontrollera att bromsen (om sådan förekommer) fungerar ordentligt när motorerna har monterats.

Bromsen är bara dimensionerad för ett begränsat antal nödbromsningar. Den får inte användas som arbetsbroms.

Denna uppräkningslista kan ej vara fullständig. Ytterligare kontroller kan eföras.

Riggningsarbeten

Om motors rotor skall vridas när motorn har fränkopplats, måste det ligga spänning på bromsen (likspänning på 24V $\pm 10\%$, ge akt på polariteten!), d.v.s. bromsen skall lossas.

3 Underhåll/avfallshantering

Säkerhetsåtgärder



Innan något arbete på maskinen eller utrustningen påbörjas, framför allt innan skyddet över aktiva delar öppnas, måste motorn vara skild från nätet enligt gällande föreskrifter. Uppmärksamma förutom huvudströmkretsarna även eventuellt befintliga tillsats- eller hjälpströmkretsar.

De vanligaste "5 säkerhetsreglerna" är därvid enligt DIN VDE 0105:

- Fränkoppling
- Säkring gentemot återinkoppling
- Fastställ spänningslöshet
- Jorda och kortslut
- Täck över eller spärra av intilliggande delar som fortfarande står under spänning

Ovannämnda åtgärder får inte återställas förrän underhållsarbetena är avslutade och motorn är fullständigt monterad.



Alla arbeten skall utföras med anläggningen strömlös. På grund av den inbyggda permanentmagneten ligger det spänning på motoranslutningarna när rotorn roterar.

Lagerbyte, fettsorter

För motorerna rekommenderas att lagret byts ut efter ca 20000 driftstimmar, dock senast efter 5 år.

Motorerna har permanentmagnetslager med radiellt lagerglapp C3 samt tätnings- och täckbrickor på båda sidor. Lagren måste vara lämpliga för temperaturområdet -15 °C till +150 °C.

Fettsorter för standardmotorer: UNIREX N3 (fabr. Esso); utbytesfett måste tillfredsställa kraven i DIN 51825/K3N.

OBSERVERA: Vid lagerbyte bör man använda väl tätade lager som motsvarar de ursprungliga. Ge akt på texten på lagren och placeringen på A-sidan eller B-sidan!

Det är lämpligt att efterbeställa reservlager från fabriken, så att speciella egenskaper såsom lagerglapp och /eller tätningsbrickornas material beaktas.

Anvisning rörande underhåll

Vi rekommenderar att alla underhållsarbeten utförs av ett av SIE-MENS servicecentra.

En underhållsinstruktion med utförliga anvisningar för kvalificerad personal (definition enligt DIN VDE 0105 eller IEC 364) kan erhållas från fabriken under

Beställningsnummer 610.43.431.02

Språkversion: tyska - engelska

Denna underhållsinstruktion innehåller anvisningar rörande isärtagning/montering av

- givarsystem resolver, encoder
- motorrotorn med lagerbyte
- motorrotorn med lagerbyte på motorer med broms
- justering av resolver, encoder

Anvisning till avfallshantering

Givarelektroniken skall som avfall behandlas i enlighet med reglerna för elektronikskrot.

ANHANG / APPENDIX / ANNEXE / ANEXO / APPENDICE / BILAGA

DEUTSCH

Ersatzteile, Fig. 3 vom Werk lieferbar
(siehe Bestellbeispiel)

- 1.00 Lagerung AS, komplett**
 - Sicherungsring
 - Federscheibe
 - Paßscheibe
 - Wälzlager
 - Hülse für Radial-Wellendichtring
 - Wellendichtring
- 2.00 Bremse, komplett**
 - Filzring (1FK604. - 1FK610.)
 - Sprengring (1FK608. - 1FK610.)
 - Schrauben mit Sicherungskleber beschichtet
- 3.00 Läufer, komplett**
- 4.00 Ständer, komplett**
- 6.00 Lagerung BS, komplett**
 - Lagerschild BS, vollständig
 - Deckel für Signalstecker
 - Wälzlager
 - Sicherungsring (1FK606. - 1FK610.)
 - O-Ring (1FK604. - 1FK610.)
 - Flachdichtung (1FK6032)
- 8.00 Einbauten**
 - .10 Resolver, vollständig
 - Scheibe (1FK606. - 1FK610.)
 - .20 Deckel für Resolver
 - .30 Encoder
 - Leitung
 - Drehmomentstütze
 - Unterlegscheibe (1FK604.)
 - .40 Deckel für Encoder

Normteile sind nach Abmessung, Werkstoff und Oberfläche im freien Handel zu beziehen.

ENGLISH

Spare parts, Fig. 3, available ex works
(See ordering example)

- 1.00 D-end bearing system, complete**
 - lock washer
 - spring washer
 - adjusting washer
 - antifriction bearing
 - sleeve for radial shaft seal
 - shaft seal
- 2.00 Brake, complete**
 - felt ring (1FK604. - 1FK610.)
 - snap ring (1FK608. - 1FK610.)
 - bolts coated with locking adhesive
- 3.00 Rotor, complete**
- 4.00 Stator, complete**
- 6.00 N-end bearing system, complete**
 - N-end bearing plate, complete
 - cover for signal connector
 - antifriction bearing
 - lock washer (1FK606. - 1FK610.)
 - O ring (1FK604. - 1FK610.)
 - flat seal (1FK6032)
- 8.00 Installation parts**
 - .10 Resolver, complete
 - washer (1FK606. - 1FK610.)
 - .20 Cover for resolver
 - .30 Encoder
 - cable
 - torque reaction support
 - shim (1FK604.)
 - .40 Cover for encoder

Standard commercially available parts are to be purchased in accordance with the specified dimensions, material and surface finish.

FRANÇAIS

Pièces de rechange, Fig. 3, livrables par l'usine
(voir exemple de commande)

- 1.00 Palier côté D, complet**
 - Circlips
 - Rondelle élastique
 - Rondelle d'ajustement
 - Roulement
 - Douille pour bague d'étanchéité
 - Bague d'étanchéité
- 2.00 Frein, complet**
 - Bague en feutre (1FK604. - 1FK610.)
 - Jonc d'arrêt (1FK608. - 1FK610.)
 - Vis enduites de colle de blocage
- 3.00 Rotor, complet**
- 4.00 Stator, complet**
- 6.00 Palier côté N, complet**
 - Flasque-palier côté N, complet
 - Couvercle pour connecteur pour signaux
 - Roulement
 - Circlips (1FK606. - 1FK610.)
 - Joint torique (1FK604. - 1FK610.)
 - Joint plat (1FK6032)
- 8.00 Eléments incorporés**
 - .10 Résolveur, complet
 - rondelle (1FK606. - 1FK610.)
 - .20 Couvercle pour résolveur
 - .30 Codeur
 - câble
 - arrêt en rotation
 - rondelle (1FK604.)
 - .40 Couvercle pour codeur

Les **pièces normalisées** peuvent être obtenues dans le commerce d'après leurs dimensions, le matériau et l'état de surface.

Bestellbeispiel

Ordering example:

Exemple de commande

Ejemplo de pedido

Esempio d'ordine

Beställexempel:

EWN:

Lagerung BS, komplett 6.00

1FK6 083-6AF71-1TH0

Nr. E 68 523101001

ESPAÑOL

Piezas de repuesto, Fig. 3, suministrables desde fábrica (v. ejemplo de pedido-pág. 15)

- 1.00 Rodamientos lado D, completo**
 - Anillo de retención
 - Arandela flexible
 - Chaveta
 - Rodamiento
 - Casquillo para el retén radial
 - Retén (anillo en V)
- 2.00 Freno, completo**
 - Anillo de fieltro (1FK6 04. - 1FK6 10.)
 - Anillo de sujeción (1FK6 08.-1FK6 10.)
 - Tornillos con capa de pegamento
- 3.00 Rotor, completo**
- 4.00 Estator, completo**
- 6.00 Rodamientos lado N, completo**
 - Escudo portacojinetes lado N, completo
 - Tapa para conector para señales
 - Rodamiento
 - Anillo de retención (1FK606.-1FK6 10.)
 - Anillo toroidal (1FK6 04. - 1FK6 10.)
 - Junta plana (1FK6 032)
- 8.00 Componentes**
 .10 Resólver, completo
 - Disco (1FK6 06. - 1FK6 10.)
 .20 Tapa para resólver
 .30 Encoder
 - Cable
 - Brazo de reacción
 - Arandela (1FK6 04.)
 .40 Tapa para el encoder

Las **piezas homologadas** pueden adquirirse en el mercado indicando dimensiones, material y superficie.

ITALIANO

Parti di ricambi, fig. 3 fornibili dalla fabbrica (ved. esempio d'ordine -pagina 15)

- 1.00 Cuscinetti lato A, completi**
 - Anello d'arresto
 - Rondella elastica
 - Spessore d'aggiustaggio
 - Cuscinetto a rotolamento
 - Bussola per guarnizione dell'albero radiale
 - Guarnizione dell'albero
- 2.00 Freno completo**
 - Anello di feltro (1FK604. -1FK610)
 - Anello elastico (1FK608 - 1fk610)
 - Viti rivestite di adesivo di sicurezza
- 3.00 Rotore completo**
- 4.00 Statore completo**
- 6.00 Cuscinetti lato B, completi**
 - Scudo di supporto lato B, completo
 - Coperchio per connettore di segnali
 - Cuscinetto a rotolamento
 - Anello d'arresto (1FK606 - 1FK610)
 - O-Ring (1FK6032)
 - Guarnizione piatta
- 8.00 Elementi a incasso**
 .10 Resolver, completo
 - rondella (1FK6 06. - 1FK6 10.)
 .20 Coperchio per resolver
 .30 Encoder
 - Cavo
 - Supporto coppia serraggio
 - Rosetta piana (1FK604.)
 .40 Coperchio per encoder

Componenti conformi ai criteri standard di dimensione, materiale e superficie si trovano in commercio.

SVENSKA

Reservdelar, Fig. 3 kan levereras från fabriken (se beställningsexempel -se sid15)

- 1.00 Lager AS, komplett**
 - Låsring
 - Fjäderbricka
 - Styrbricka
 - Rullager
 - Hylsa för radiell axelpackring
 - Axelpackring
- 2.00 Broms, komplett**
 - Filtring (1FK604. - 1FK6 10.)
 - Stoppring (1FK608. - 1FK6 10.)
 - Skruvar beskiktade med låsmedel
- 3.00 Rotor, komplett**
- 4.00 Stator, komplett**
- 6.00 Lager BS, komplett**
 - Lagersköld BS, fullständig
 - Lock för signaldon
 - Rullager
 - Låsring (1FK606. - 1FK6 10.)
 - O-ring (1FK6 04. - 1FK6 10.)
 - Flatpackning (1FK6032)
- 8.00 Inmonteringar**
 .10 Resolver, fullständig
 - Bricka (1FK6 06. - 1FK6 10.)
 .20 Lock för resolver
 .30 Encoder
 - Ledning
 - Vridmomentstöd
 - Underläggsbricka (1FK604.)
 .40 Lock för encoder

Normdelar erhålls i öppna handeln efter det att dimension, ämne och yta fastställts.

1FK6 03. - 10. Resolver

1FK6 04. - 10. ERN/EQN

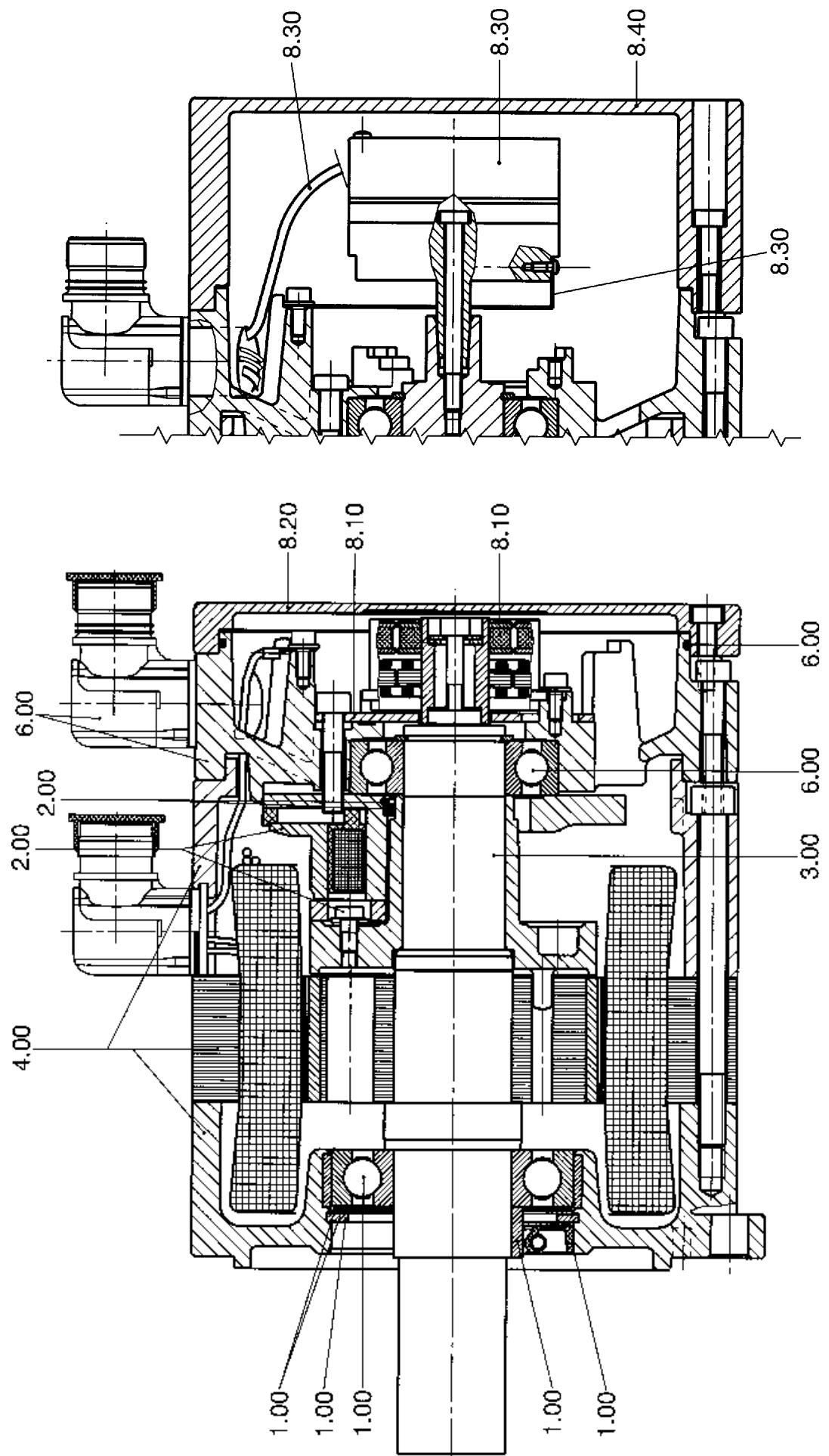
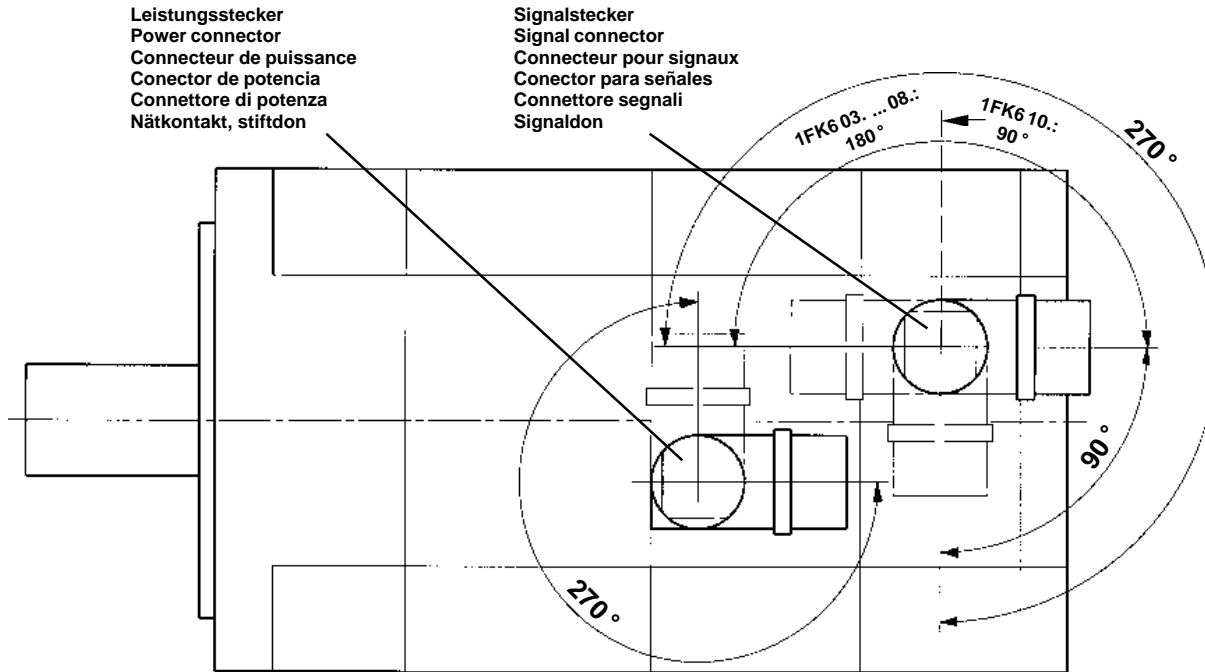


Fig. 3 Ersatzteile / Spare parts / Pièces de rechange / Piezas de repuesto / Parti di ricambio / Reservdelar



max. zulässige Verdrehmomente $M_{\max.}$ / max. permissible torque moment $M_{\max.}$ / Couple de rotation admissible $M_{\max.}$
 par de apriete máx. admisible $M_{\max.}$ / Momento torcente max. consentito $M_{\max.}$ / max. tillåtna vridmoment $M_{\max.}$

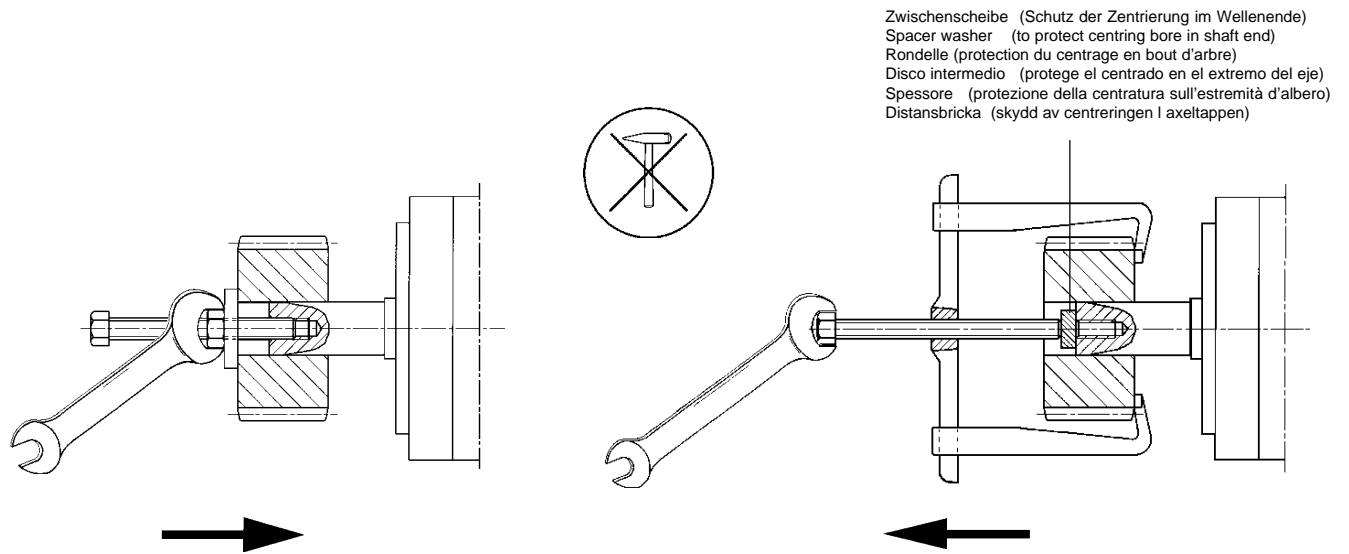
Steckergröße / Connector size
 Connecteur taille / Tamaño conector
 Grandezza connettore / Stiftdotsstorlek

Leistungstecker / Power connector :	1FK6 03. ... 1FK6 100:	1	$M_{\max.} = 8 \text{ Nm}$
Connecteur de puissance / Conector de potencia:	1FK6 101 / 1FK6 103:	1,5	$M_{\max.} = 20 \text{ Nm}$
Connettore di potenza / Nätkontakt, stiftdon:			
Signalstecker / Signal connector			$M_{\max.} = 8 \text{ Nm}$
Connecteur pour signaux / Conector para señales			
Connettore segnali / Signaldon			

Fig. 4 Verdrehbarkeit der Stecker/Rotability of power and signal connectors/Orientabilité des connecteurs
 Girabilidad de los conectores de potencia y para señales/Rotazione del connettore/Stiftdots vridbarhet

Schwingfrequenz Oscillation frequency Fréquence Frecuencia Frequenza di vibrazione Vibrationsfrekvens	Schwingwerte Vibration values Vibrations Valores de vibración Valori di vibrazione Vibrationsvärden	
< 6,3 Hz	Schwingweg / Vibration displacement Déplacement / Elongación Ampiezza di oscillazione / Vibrationssträcka	$s \leq 0,16 \text{ mm}$
6,3 - 63 Hz	Schwinggeschwindigkeit / Vibration velocity Vitesse / Velocidad Velocità di vibrazione / Vibrationshastighet	$v_{\text{eff}} \leq 4,5 \text{ mm/s}$
> 63 Hz	Schwingbeschleunigung / Vibration acceleration Accélération / Aceleración Accelerazione di vibrazione / Vibrationsökning	$a \leq 2,55 \text{ m/s}^2$

Fig. 5 Zulässige immittierte Schwingungen / Permissible immitted vibrations
 Valeurs admissibles des vibrations d'origine extérieure / Vibraciones máximas inmitidas
 Vibrazioni immesse consentite / Tillåtna avgivna vibrationer



Zum Aufziehen von Abtriebsselementen (Kupplung, Zahnrad, Riemenscheibe usw.), Gewinde im Wellenende benutzen und - sofern möglich - Abtriebsselemente nach Bedarf erwärmen. Zum Abziehen geeignete Vorrichtung verwenden. Es dürfen beim Auf- und Abziehen keine Schläge (z.B. mit Hammer oder ähnlichem) oder größere als die laut Katalog zulässigen radialen oder axialen Kräfte über das Wellenende auf die Motorlager übertragen werden.

Use the tapped hole provided in the end of the shaft for fitting drive components such as couplings, gearwheels, belt pulleys, etc. and, if possible, heat the components as necessary. Use a suitable puller tool for removing the components. Do not strike the components, e.g. with a hammer or similar tool, when fitting or removing them and do not exert more than the maximum value of radial or axial force - according to the catalog - transmitted to the motor bearings through the shaft extension.

Pour monter les organes de transmission (accouplements, roues dentées, poulies à courroie, etc.), utiliser le taraudage du bout d'arbre. Au besoin et lorsque cela est possible, chauffer les organes de transmission. Pour le démontage, utiliser un dispositif approprié. Aucun coup (par ex. marteau) supérieur aux efforts axiaux et radiaux admissibles mentionnés au catalogue ne doit être transmis par l'arbre aux roulements en cours de montage ou de démontage.

Para calar los elementos de accionamiento (acoplamiento, rueda dentada, polea, etc.) utilizar la rosca en el extremo del eje y - siempre que sea posible - calentar convenientemente dichos elementos. Utilizar el dispositivo adecuado para la extracción. Durante las operaciones de calado o extracción no golpear (p. ej. con martillo o similar) ni ejercer sobre los rodamientos del motor a través del extremo del eje fuerzas axiales o radiales superiores a las admisibles según catálogo.

Per calettare gli elementi condotti (giunti, ruota dentata, puleggia, ecc.), utilizzare il foro filettato nell'estremità d'albero e, se possibile, riscaldarli. Per l'estrazione vanno adoperati attrezzi adatti. Evitare colpi o martellate ed evitare che dall'estremità dell'albero vengano trasmesse ai cuscinetti forze radiali o assiali maggiori di quelle consentite sec. il catalogo.

Använd axeltappens gänga vid pådragning av drivdon (koppling, kugghjul, remskiva etc) och värme om möjligt upp drivdonen om så behövs. Använd lämpliga verktyg för avdragningen. Några slag (t.ex. med hammare e.dyl.) får aldrig förekomma vid på- och avdragning, och radiella och axiella krafter som är större än de som anges i katalogen får inte överföras till motorlagren via axeltappen.

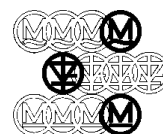
Fig. 6 Auf- und Abziehen von Abtriebsselementen / Pressing on and pulling off drive elements
Emmanchement et extraction d'organes de transmission / Calado y extracción de elementos de accionamiento
Calettamento ed estrazione degli elementi condotti / På- och avdragning av drivdon

Geschäftsgebiet Drehzahlveränderbare Antriebe / Variable - Speed Drives

D-97615 Bad Neustadt an der Saale

Änderungen vorbehalten / Subject to change without prior notice / Sous réserve de modifications
Sujeto a modificaciones/ Con riserva di eventuali modifiche/ Förbehåll för ändringar

Siemens Aktiengesellschaft



**Antriebstechnik
mit System**

Bestell-Nr. / Order No.: 610.43 430.21
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Fremdbelüftete Drehstrommotoren für Hauptspindelantriebe

(Beschreibung s. Seite 2)

Betriebsanleitung
Instructions

Separately-Ventilated Three-Phase Motors for Main Spindle Drives

(Description on page 5)

Moteurs triphasés à ventilation séparée pour entraînement de broches

(Description voir page 8)

Motores trifásicos con ventilación independiente para accionamientos de cabezal

(Descripción en la pág. 11)

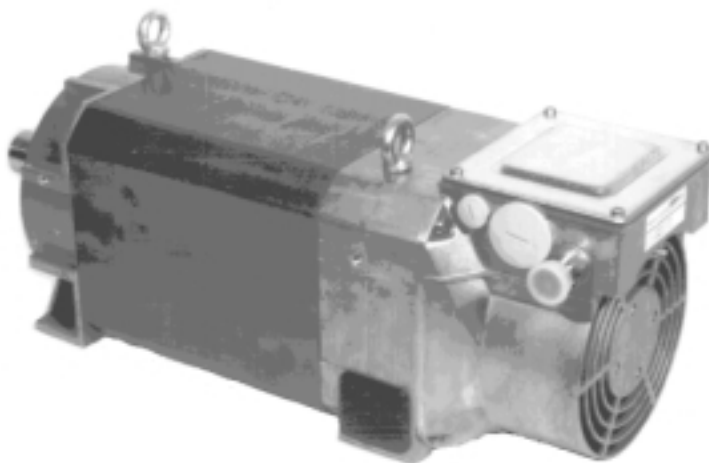
Motori trifasi a ventilazione esterna per azionamento mandrino

(Descrizione a pagina 14)

Trefasmotorer med separat fläkt för drivanordningar med huvudspindel

(Beskrivning se sida 17)

1PH7



Bauformen:

Die lieferbaren Bauformen nach EN 60034-7 (bzw. IEC 34-7) sind im Katalog aufgeführt. Die zutreffende Bauform ist auf dem Leistungsschild angegeben.

Types of construction:

The available types of construction in conformity with EN 60034-7 (or IEC 34-7) are listed in the catalog. The type of construction is given on the rating plate.

Formes de construction :

Les formes de construction disponibles selon EN 60034-7 (CEI 34-7) sont indiquées au catalogue. La forme de construction pour le moteur considéré est indiquée sur la plaque signalétique.

Modelos:

Los modelos suministrables conforme a EN 60034-7 (o IEC 34-7) se indican en el catálogo. El modelo correspondiente se indica en la placa de características

Forma costruttiva:

Le forme costruttive disponibili secondo EN 60034-7 sono riportate nel catalogo. La relativa forma costruttiva è riportata sulla targhetta.

Konstruktionstyp:

De konstruktionstyper enligt EN 60034-7 (resp. IEC 34-7) som kan levereras finns uppförda i katalogen. Den tillämpliga konstruktionstypen finns angiven på märkplåten.

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2.1 Transport, Lagern	2
2.2 Aufstellung	2
2.3 Wuchtung, Abtriebsselemente	2
2.4 Elektrischer Anschluß	3
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3 Instandhaltung	3
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Sicherheits- und Inbetriebnahmehinweise für umrichter gespeiste Niederspannungs - Drehstrommotoren
(gemäß Niederspannungsrichtlinie 73/23/EWG)

Gefahr



Elektrische Motoren haben gefährliche, spannungsführende und rotierende Teile sowie möglicherweise heiße Oberflächen. Alle Arbeiten zum Transport, Anschluß, zur Inbetriebnahme und regelmäßige Instandhaltung sind von **qualifiziertem, verantwortlichem Fachpersonal** auszuführen (VDE 0105; IEC 364 beachten). Unsachgemäßes Verhalten kann schwere **Personen- und Sachschäden** verursachen. Die jeweils geltenden **nationalen, örtlichen und anlagenspezifischen Bestimmungen und Erfordernisse** sind zu berücksichtigen.

Sonderausführungen und **Bauvarianten** können in technischen Details abweichen! Bei eventuellen Unklarheiten wird dringend empfohlen, unter Angabe von **Typbezeichnung und Fabriknummer** (No E ... , s. Leistungsschild) beim Hersteller rückzufragen, oder die Instandhaltungsarbeiten von einem der SIEMENS - Servicezentren durchführen zu lassen.

1 Bestimmungsgemäße Verwendung

Diese Motoren sind für industrielle oder gewerbliche Anlagen bestimmt. Sie entsprechen den harmonisierten Normen der Reihe **EN60034 (VDE 0530)**. Der Einsatz im **Ex-Bereich** ist **verboten**, sofern nicht **ausdrücklich** hierfür vorgesehen (Zusatzhinweise beachten). Wenn im Sonderfall - bei Einsatz in **nicht** gewerblichen Anlagen - erhöhte Anforderungen gestellt werden (z. B. Berührungsschutz gegen Kinderfinger), sind diese Bedingungen bei der Aufstellung anlagenseitig zu gewährleisten.

Die Motoren sind für Umgebungstemperaturen von **-15°C bis +40°C** sowie Aufstellungshöhen **≤ 1000 m** über NN bemessen. Abweichende Angaben auf dem Leistungsschild **unbedingt** beachten. Die Bedingungen am Einsatzort müssen **allen** Leistungsschildangaben entsprechen.

Sie können in überdachten Räumen bei staubiger oder feuchter Umgebung und **normalen klimatischen Bedingungen** aufgestellt werden.

Bei Verwendung des Motors in **korrosionsgefährdeter Umgebung** ist dieser zusätzlich mit einem Korrosionsschutzanstrich zu versehen.

Niederspannungsmotoren sind **Komponenten** zum Einbau in Maschinen im Sinne der Maschinenrichtlinie 89/392/EWG. Die **Inbetriebnahme** ist solange untersagt, bis die Konformität des Endproduktes mit dieser Richtlinie festgestellt ist, u. a. (EN 60204-1 beachten).

Anlagen und Maschinen mit umrichter gespeisten Niederspannungs-Drehstrommotoren müssen den Schutzanforderungen der EMV-Richtlinie 89/336/EWG genügen. Die Durchführung der sachgerechten Installation liegt in der Verantwortung des Anlageerrichters. **Die Signal- und Leistungsleitungen zum Motor sind geschirmt** auszuführen.

Die Hinweise des Umrichterherstellers zur EMV-gerechten Installation sind zu beachten!

Meßflächenschalldruckpegel (DIN EN 21 680 Teil 1)

1PH7 10.	ca. 73 dB(A)
1PH7 13.	ca. 73 dB(A)
1PH7 16.	ca. 74 dB(A)

2 Betrieb

2.1 Transport, Lagern

Beim Transport sind alle vorhandenen Hebeösen zu benutzen.

Keine zusätzlichen Lasten anbringen, Tragfähigkeit der Hebeeinrichtungen beachten.

Wird ein Motor nach Lieferung nicht gleich in Betrieb genommen, so ist er in einem trockenen, staub- und erschütterungsfreien Raum zu lagern. Eingeschraubte Transportösen fest anziehen.

2.2 Aufstellung

Leistungsschildangaben hinsichtlich Bauform und Schutzart beachten und Übereinstimmung mit den Verhältnissen am Einbauort prüfen!

Eingeschraubte Hebeösen sind nach dem Aufstellen fest anzuziehen oder zu entfernen! Anordnung der Hebeösen s. Fig. 9 .

Die Motoren müssen so aufgestellt werden, daß die Kühlluft ungehindert zu- und abströmen kann und der Mindestabstand **s** der Zu- und Abluftöffnungen zu benachbarten Bauteilen eingehalten wird (Fig. 4)! Erwärmte Abluft darf nicht wieder angesaugt werden.

Die Montage des Motors muß ohne Schläge und Druck auf das Wellenende erfolgen!

Die zum Festschrauben des Motors abgenommenen Abdeckungen (6.30) müssen vor Inbetriebnahme wieder angebracht werden. Der Pfeil muß nach oben zeigen (s. Fig. 1) .

Wird der Motor waagrecht mit Klemmenkasten nach oben oder senkrecht mit Wellenende nach unten angebaut muß der Schutzstopfen (Fig. 1) entfernt werden.

Zulässige immittierte Schwingungen

Das **Systemschwingungsverhalten am Einsatzort**, bedingt durch Abtriebsselemente, Anbauverhältnisse, Ausrichtung und Aufstellung sowie durch Einflüsse von Fremdschwingungen, kann zur Erhöhung der Schwingwerte am Motor führen. Mit Rücksicht auf eine einwandfreie Funktion des Motors und eine lange Lagerlebensdauer sollen die angegebenen Schwingwerte in Fig. 7 nicht überschritten werden. Unter Umständen kann ein komplettes Auswuchten des Läufers mit dem Abtriebsselement erforderlich sein.

2.3 Wuchtung, Abtriebsselemente

Das Auf- und Abziehen von Abtriebsselementen (z.B. Kupplungsscheibe, Zahnrad, Riemenscheibe, ...) ist grundsätzlich mit geeigneten Vorrichtungen auszuführen.

Hierzu Gewinde im Wellenende benutzen .

Standardmäßig sind die Läufer mit einer halben Paßfeder (EN60034/VDE 0530) dynamisch ausgewuchtet.

HINWEIS: Kennzeichnung der Auswuchtart am Wellenspiegel beachten!

(F = Auswuchtung mit **voller** Paßfeder-Sonderausführung)

(H = Auswuchtung mit **halber** Paßfeder)

Bei Montage des Abtriebsselementes auf entsprechende Auswuchtart achten!

Die Abtriebsselemente müssen ihrerseits nach ISO1940 gewuchtet sein!



Zu beachten sind die allgemein erforderlichen Maßnahmen für den Berührungsschutz der Abtriebs Elemente. Wird ein Motor ohne Abtriebs Element in Betrieb genommen, so ist die Paßfeder gegen Herausschleudern zu sichern.

Die zulässigen Quer- und Axialkräfte sind den Diagrammen in der Projektierungsanleitung zu entnehmen (ggf. Anfrage in Zweigniederlassungen oder Herstellerwerk).

Bei Veränderungen gegenüber dem Normalbetrieb - z.B. **erhöhte Temperaturen, Geräusche, Schwingungen** - ist im **Zweifelsfall** der Motor abzuschalten. Ursache ermitteln, eventuell Rücksprache mit dem Hersteller. Schutzeinrichtungen auch im Probebetrieb nicht außer Funktion setzen.


Bei starkem Schmutzanfall Luftwege regelmäßig reinigen.

2.4 Elektrischer Anschluß



Alle Arbeiten dürfen nur von **qualifiziertem Fachpersonal** an dem **stillstehenden** Motor im **freigeschalteten** und **gegen Wiedereinschalten gesicherten** Zustand vorgenommen werden. Dies gilt auch für Nebenstromkreise (z.B. Fremdlüfteraggregat).

Grundsätzlich ist beim Anschließen zu beachten, daß

- die Anschlußleitungen, der Verwendungsart und den auftretenden Spannungen und Stromstärken angepaßt sind (s. Fig. 5) ,
- ausreichend bemessene Anschlußleitungen, Verdreh- , Zug- und Schubentlastung sowie Knickschutz für die Anschlußleitungen vorgesehen sind und
- der Schutzleiter an  angeschlossen ist.

Bei Klemmenkastenanschluß ist zu beachten, daß

- die Leitungsenden nur soweit abisoliert sind, daß die Isolierung nahezu bis zum Kabelschuh bzw. Klemme reicht
- die Größe der Kabelschuhe an den Abmessungen der Klemmbrettanschlüsse und dem Querschnitt der Netzleitung angepaßt sind
- der Schutzleiter angeschlossen ist
- das Klemmenkastennere sauber und frei von Leitungsresten ist
- alle Schraubenverbindungen der elektrischen Anschlüsse - Klemmenbrettanschlüsse (außer Klemmenleisten) nach vorgegebenen Anziehdrehmomenten angezogen sind, siehe Fig. 5
- sowohl beim Anschließen wie auch beim evtl. Umsetzen innerer Verbindungsleitungen ist auf die Einhaltung der Mindestluftstrecken nach Fig. 5 zu achten
- die Mindestluftstrecken bei nicht isolierten unter Spannung stehender Teile eingehalten sind. Auf abstehende Drahtenden ist zu achten
- unbenutzte Einführungen verschlossen und die Verschlußelemente fest und dicht eingeschraubt sind
- zur Aufrechterhaltung der Schutzart alle Dichtflächen des Klemmenkastens ordnungsgemäß beschaffen sind
- die Isolierfolie vorhanden ist
- Kontraktierung der Leitungsschirme gegeben ist;



Die Isolierfolie im Klemmenkasten Fig. 5 dient zum Schutz gegen Spannungsüberschlag zum Deckel und darf deshalb nicht entfernt werden!

2.4.1 Leistungsanschluß

Der Motor ist gemäß dem mitgelieferten Schaltbild anzuschließen. Leistungsschilddaten beachten!



Ein direkter Anschluß an das Drehstromnetz ist nicht erlaubt und führt zur Zerstörung des Motors.

Auf richtige Phasenfolge ist zu achten!

Der Motor darf nur mit einem leistungsmäßig abgestimmten Umrichter betrieben werden.

2.4.2 Impulsgeber und Temperatursensor

Der Anschluß erfolgt über den am Klemmenkasten angebauten Flanschstecker mit Kontaktstiften.

2.4.3 Fremdlüfteraggregat

Leistungsschildangaben und Betriebsanleitung für Lüfteraggregat (s. Fig 10) beachten !

Es ist eine Schutzschaltung vorzusehen, die das Einschalten der Hauptmaschine verhindert, wenn das Lüfteraggregat nicht in Betrieb ist!

2.5 Inbetriebnahme



Vorsicht Verbrennungsgefahr!

An den Motoren können hohe Oberflächentemperaturen von über 80°C auftreten.

**Es dürfen dort keine temperaturempfindlichen Teile, wie z. B. normale Leitungen oder elektronische Bauteile, anliegen oder befestigt werden.
Bei Bedarf Berührungsschutzmaßnahmen vorsehen!**

Vor Inbetriebnahme ist zu prüfen ob:

- der Läufer ohne anzustreifen gedreht werden kann
- der Motor ordnungsgemäß montiert und ausgerichtet ist
- die Abtriebs Elemente richtige Einstellbedingungen haben (z. B. Riemen Spannung bei Riemenantrieb; ...) und das Abtriebs Element für die Einsatzbedingungen geeignet ist
- alle elektrischen Anschlüsse sowie Befestigungsschrauben und Verbindungselemente nach Vorschrift angezogen und ausgeführt sind
- der Schutzleiteranschluß ordnungsgemäß angeschlossen ist
- Berührungsschutzmaßnahmen für bewegte und spannungsführende Teile getroffen sind
- die Grenzdrehzahl n_{max} (s. Leistungsschild) nicht überschritten wird;

HINWEIS: Die Grenzdrehzahl n_{max} ist die höchste kurzzeitig zulässige Betriebsdrehzahl.

3 Instandhaltung



Sicherheitsmaßnahmen

Vor Beginn jeder Arbeit an der Anlage, besonders aber vor dem Öffnen von Abdeckungen aktiver Teile, muß der Motor vorschriftsmäßig freigeschaltet sein. Neben den Hauptstromkreisen ist dabei auch auf eventuell vorhandene Zusatz- oder Hilfsstromkreise zu achten.

Die üblichen "5 Sicherheitsregeln" lauten hierbei z. B. nach DIN VDE 0105:

- Freischalten
- Gegen Wiedereinschalten sichern
- Spannungsfreiheit feststellen
- Erden und Kurzschließen
- Benachbarte unter Spannung stehende Teile abdecken oder abschränken.

Diese zuvor genannten Maßnahmen dürfen erst dann zurückgenommen werden, wenn die Instandhaltungsarbeiten abgeschlossen sind und der Motor vollständig montiert ist.

3.1 Demontage / Montage der Geber



Vorsicht! Gebersysteme mit integrierter Elektronik (optische Geber, Rotorlagegeber, Zahnradgeber, ...) sind elektrostatisch gefährdete Bauelemente und Baugruppen (EGB).

Bei Arbeiten an EGB-Bauelementen ist zu beachten, daß

- der Arbeitsplatz geerdet ist
- ein direktes Anfassen der Steckerpins vermieden wird
- beim Berühren keine elektrostatische Ladung übertragen wird (unmittelbar vor Berührung leitfähigen Gegenstand anfassen, ...)
- beim Transport geeignete Verpackung verwendet wird (Schachtel aus Wellpappe, leitfähige Kunststoffbeutel - keine normalen Kunststoffbeutel, kein Styropor, ...);

Hinweis zur Geberdemontage / -montage

- Klemmenkastendeckel abschrauben und Motorleitungen, sowie Temperatursensorleitungen an Klemmenleiste abklemmen (Fig. 5)
- Fremdlüfteraggregat und Geberdeckel abschrauben;

3.1.1 Demontage / Montage ERN1387 und ROD431

(s. Fig. 1 und Fig. 2)

Demontage

- Steckerabdeckung ausschnappen
- Stecker mit Signalsteckerleitung abziehen
- Schrauben (8.10a) für Drehmomentstütze und Geberschraube (8.10b) herausdrehen, ggf. Mitdrehen des Motorläufers verhindern
- Gewindestift z. B. DIN 913-M5x30 (s. Fig. 2) zum Schutz der Zentrierung in das Motorwellenende einschrauben und den Geber durch Eindrehen einer Schraube M6 abdrücken;

Montage

- Drehmomentstütze an Geber anschrauben (Abstand zwischen Drehmomentstütze und Geber beachten) und Schrauben sichern, z. B. mit Loctite 243
- Geber mit montierter Drehmomentstütze auf den Konus des Motorläufers aufsetzen und Schraube eindrehen, max. Anziehdrehmoment beachten, ggf. Mitdrehen des Motorläufers verhindern
- Drehmomentstütze an Lagerschild befestigen, radialen Ausschlag am Geber beachten
- Metallhülse der Steckerleitung eindrücken
- Stecker einstecken
- Deckel einschnappen;

3.1.2 Demontage / Montage Resolver Size 21

(s. Fig. 3)

Demontage

- Zwischenstecker abziehen
- Schrauben herausdrehen und Resolver-Ständer abnehmen
- Schraube M5x48 entfernen, Resolver-Läufer abnehmen; ggf. Mitdrehen des Motorläufers verhindern

Montage

- Resolver-Läufer aufstecken und Schraube M5x48 eindrehen, max. Anziehdrehmoment beachten!
- Resolver-Ständer montieren und mit Schrauben befestigen
- Zwischenstecker zusammenstecken;

3.2 Lagerwechsel, Schmierung

3.2.1 Lagerwechselfrist

HINWEIS: Bei Dauerbetrieb sollte die max. Dauerdrehzahl n_{s1} nicht überschritten werden. (s. Fig. 8)

Bei **normalen Betriebsbedingungen** werden für die Lager der 1PH7-Motoren Lagerwechselfristen t_{LW} nach Fig. 8 empfohlen. Die angegebenen Betriebsstunden gelten für waagrechte Einbaulage, Kühlmitteltemperaturen von +30°C, Lagertemperaturen von +100°C, und Schwingungen gemäß der Schwingstärkestufe R nach DIN VDE530 Teil 14. Die mittlere Betriebsdrehzahl n_m ist bei wechselnden Motordrehzahlen abzuschätzen.

Bei **besonderen Betriebsbedingungen**, z. B. senkrechter Motoreinbaulage, bei überwiegendem Betrieb oberhalb von 75% der Grenzdrehzahl n_{max} , großen Schwingungs- und Stoßbelastungen, häufigem Reversierbetrieb, ... reduzieren sich die Lagerwechselfristen t_{LW} bis zu 50%. Treten dauernd höhere Lagertemperaturen als +100°C auf, ist die Lagerwechselfrist pro 15°K Temperaturerhöhung zu halbieren.

Nach den angegebenen Betriebsstunden wird empfohlen die Lager AS und BS zu erneuern, jedoch spätestens nach 3 Jahren.

3.2.2 Demontage / Montage des Motors

Demontage

Bei Demontage ursprüngliche Lage der Teile zueinander markieren (z. B. mit Farbstift, Reißnadel), um die spätere Montage zu vereinfachen. Geberdemontage s. Abschnitt 3.1. Lagerschildschrauben auf der B-Seite herausdrehen, danach BS-Lagerschild vorsichtig abnehmen. Schleuderscheibe vom A-seitigen Wellenbund durch Zurückschieben entfernen. Läufer aus dem Motor herausziehen. Wälzlager mit geeigneter Vorrichtung abziehen.

Montage

Abgezogene Wälzlager **nicht** wieder verwenden. Wälzlager gleichmäßig auf 80-100°C erwärmen und aufschieben, dabei muß sichergestellt sein, daß der Lagerinnenring an der Wellenschulter **anliegt!** Harte Schläge (z. B. mit einem Hammer, ...) sind hierbei zu unterlassen! Motorläufer in den Ständer einführen. BS-Lager mit Wellenfeder, ohne zu verkanten, in den B-seitigen Flansch einsetzen und Schrauben anziehen. Schleuderscheibe (Gammaringgehäuse 9RB... ohne Dichtlippe) mit geeigneter Hülse auf Maß **X** aufdrücken (s. Fig. 4). **Bei der Demontage beschädigte Schleuderscheiben nicht mehr verwenden!**

Lagereinlauf

Nach dem Lagerwechsel sollen die Wälzlager einlaufen, damit sich das Fett gleichmäßig verteilen kann. Hierbei sollten erstmalig die Motoren kontinuierlich von 0 bis ca. 75% der Grenzdrehzahl n_{max} innerhalb von 15 Minuten hochgefahren werden.

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Safety and operating instructions for converter-fed low-voltage three-phase motors
(in conformity with the low-voltage directive 73/23/EEC)

Danger



In operation, electric motors have hazardous, live and rotating parts, and possibly also hot surfaces. All operations serving transport, connection, commissioning and regular maintenance are to be carried out by **qualified, responsible technical personnel**. (Observe VDE 0105; IEC 364.) Improper conduct can cause severe **personal injury and damage to property**. The applicable **national, local and plant-specific specifications and codes of conduct** must be complied with.

Special and modified versions may differ with regard to technical details! If anything is unclear, you are urged to contact the manufacturer, quoting the type designation and serial number (No. E ..., see rating plate) or to have the repair work carried out by a Siemens service centre.

1 Intended use

These motors are intended for service in industrial and commercial installations. They comply with the harmonized standards of the series **EN60034 (VDE 0530)**. Their use **in areas exposed to explosion hazard is prohibited**, unless they are **expressly** supplied for this purpose (pay attention to additional notes). In special cases - where these motors are used in a **non-industrial** environment - extra safety precautions (such as touch protection for children) must be provided by the owner or user of the equipment during installation.

The motors are rated for ambient temperatures from **-15 °C to +40 °C** and for installation at altitudes of **≤ 1000 m** above sea level. If different information is given on the rating plate, **always** be sure to follow it. The conditions at the place of use must conform with **all** the rating plate data.

They can be installed in roofed-over areas with dusty or damp environment and **normal climatic conditions**. If the motor is used in **corrosive environments**, it must be given a coat of corrosion-proof paint.

Low-voltage motors are **components** for installation in machines as defined by the machine directive 89/392/EEC. **Commissioning** is prohibited until such time as the end product has been proved to conform to the provisions of this directive 89/392/EEC, among other things. (Account is to be taken of EN 60204-1.)

Plants and machines equipped with converter-fed low-voltage three-phase motors must satisfy the requirements of the EMC directive 89/336/EEC. Proper installation is the responsibility of the plant installer. **Signal and power cables** to the motor must be **screened**. Account is to be taken of the **converter manufacturer's EMC instructions**!

Measuring surface sound pressure level (DIN EN 21 680 Part 1)	
1PH7 10.	approx. 73 dB(A)
1PH7 13.	approx. 73 dB(A)
1PH7 16.	approx. 74 dB(A)

2 Operation

2.1 Transport, storage

All the lifting eye-bolts provided should be used during transport. **Do not attach any additional loads.** Pay attention to the lifting capacity of the hoist.

If the motor is not started up immediately on delivery, it must be stored in a dry room where it is safe from dust and vibrations. Thoroughly tighten all screwed-in lifting eye-bolts.

2.2 Installation

Always heed the rating plate markings concerning the type of construction and the protection class, and verify their conformance with the conditions on the actual installation site!

If the **lifting eye-bolts** have been **screwed in**, they must either be tightened or removed after the motor has been installed! The lifting eye arrangement is shown in Fig. 9.

The motors must be installed in such a way that the cooling air can flow in and out unhindered. It is essential to observe the minimum distance **s** between the inlet and outlet air openings and the neighbouring components (Fig. 4)! Hot outlet air must not be drawn in again.

The motor must be assembled without subjecting the end of the shaft to knocks or pressure!

The cover plates (6.30) which are removed in order to screw the motor tight must be re-fitted before the motor is started up! The arrow must point upwards (Fig. 1).

If the motor is mounted horizontally with the terminal box at the top or vertically with the shaft end downwards, the plug (Fig. 1) must be removed.

Permissible vibrations

The **site vibration response of the system**, which is determined by the output elements, the mounting conditions, the alignment, the installation and the effects of external vibrations, may cause the vibration values at the motor to increase. In the interests of reliable motor operation and a long bearing service life, the vibration values specified in Fig. 7 should not be exceeded. Under certain circumstances, the rotor may need to be fully balanced with the output element.

2.3 Balancing, output elements

Suitable devices should always be used to push on or pull off the output elements (e.g. the coupler disk, gear wheel or belt pulley). The thread in the end of the shaft should be used for this purpose.

The rotors are balanced dynamically with a half featherkey as standard (EN 60034/VDE 0530).

NOTE: The balancing method is marked on the shaft end face!
(F = Balancing with full featherkey)
(H = Balancing with half featherkey)

When the output element is assembled, be careful to use the correct balancing method!

The output elements for their part must be balanced in conformity with ISO 1940!



The output elements must incorporate the usual shock protection measures.
If a motor without output elements is started up, the featherkey must be prevented from being spun out.

The permissible transverse and axial forces are shown on the graphs in the Project Planning Instructions (please ask your Regional Office or the manufacturer for further details if necessary).

If there is a change in the normal operating conditions, such as **increased temperature, noise** and/or **vibration**, be sure to switch the motor off **in case of doubt**. Find out what has caused the change and consult the manufacturer if necessary. Do not disable any protective devices even in test operation.

If there are heavy deposits of dirt, clean the air channels regularly.

2.4 Electrical connections



All work must be carried out by qualified technicians with the motor at standstill, disconnected and secured against reconnection. This also applies to the auxiliary circuits (such as separately driven fan unit).

General connection instructions:

- The connecting leads must be suitable for the type of application and for the anticipated currents and voltages,
- The connecting leads, the strain relief device and the devices which protect against rotation and transverse forces must be adequately dimensioned, and the connecting leads must be prevented from kinking,
- The PE conductor must be connected to \perp .

Instructions for connecting the terminal box:

- The ends of the leads must not be stripped farther than necessary, i.e. the insulation must extend almost up to the cable lug or the terminal,
- The size of the cable lugs must be matched to the dimensions of the terminal board connections and the cross-section of the mains cable,
- The PE conductor must be connected,
- The inside of the terminal box must be kept clean and free from cable residues,
- All the screws and bolts of the electrical connections on the terminal boards (but not the terminal blocks) must be tightened to the specified torques (see Fig. 5),
- The minimum clearances in air specified in Fig. 5 must be observed, both when connecting and when re-arranging internal connecting leads,
- The minimum clearances in air must be observed for live, non-insulated parts. Attention must be paid to protruding wire ends,
- Any entries which are not in use must be sealed and the sealing elements screwed in firmly and tightly,
- All the sealing surfaces of the terminal box must be in good condition, to ensure that the requirements of the protection class are satisfied!
- The insulating foil is present,
- Allowance is made for contraction of the cable screens.



The insulating foil in the terminal box (Fig. 5) serves to prevent arcing to the cover and must therefore not be removed!

2.4.1 Power connection

The power must be connected via the terminal box. Pay attention to the information given on the rating plate!



The three-phase system must never be connected directly, since this will cause the motor to be damaged beyond repair.

The correct phase sequence is vital!

The motor must always be operated with a converter with a suitable power output.

2.4.2 Pulse encoder and temperature sensor

The pulse encoder and the temperature sensor are connected by means of the flange-mounting connector with pins, which is integrated in the terminal box.

2.4.3 Separate fan set

Note the information given on the rating plate and in the operating instructions accompanying the separate fan set (Fig. 10)!

An interlock circuit must be provided to prevent the main machine from being switched on unless the fan set is in operation!

2.5 Start-up



Caution - high temperatures!

High temperatures in excess of 80 °C may occur on the motor surfaces.

No temperature-sensitive parts, such as ordinary leads or electronic components, must be touching or fixed to these surfaces.

Protection must be provided against electric shock if necessary!

The following checks must be carried out prior to start-up:

- The rotor must be able to turn freely,
- The motor must be properly assembled and aligned,
- The output elements must be set correctly (e.g. belt tension of belt drive) and be suitable for the intended field service conditions,
- All the electrical connections, the fixing screws and the connecting elements must be designed and tightened in accordance with the specified values,
- The PE conductor must be properly connected,
- Protection must be provided against electric shock for moving and live parts,
- The limit speed n_{max} (see rating plate) must not be exceeded.

3 Repair

Safety precautions



The motor must be isolated in accordance with the pertinent standards before any work is carried out on the system, and especially before the covers of the core-and-winding assemblies are opened. Any auxiliary circuits must be isolated in addition to the main circuits.

The usual „5 rules of safety“ apply, e. g. as set out in DIN VDE 0106:

- Isolate,
- Prevent from restarting,
- Verify isolation from supply,
- Earth and short-circuit,
- Cover or safeguard any neighbouring live parts.

These measures must not be reversed until all the repair work has been completed and the motor fully assembled.

3.1 Disassembly/assembly of the encoders



Caution! Encoder systems containing integrated electronics (optical encoders, rotor position encoders, gear wheel encoders, etc.) are electrostatically sensitive devices (ESDs).

The following rules must be observed when working on ESDs:

- The place of work must be earthed,
- The connector pins must not be touched directly,
- No electrostatic charge must be transferred on contact (a conductive object should be touched immediately before such contact is made, for example),
- Suitable packaging must be used for transport (corrugated cardboard boxes, conductive plastic bags - not ordinary plastic bags, polystyrene, etc.).

Instructions for disassembling/assembling the encoders

- Unscrew the cover of the terminal box and disconnect the motor leads and temperature sensor leads from the terminal block (Fig. 5),
- Unscrew the separate fan set and the encoder cover.

3.1.1 Disassembly/assembly of ERN1387 and ROD431

(see Fig. 1 and Fig. 2)

Disassembly

- Remove the snap-on cover,
- Remove the connector with the signal connector lead,
- Undo the screws (8.10a) for the torque arm and the encoder screw (8.10b); the motor rotor must be prevented from turning at the same time,
- Screw a grub screw, e.g. DIN 913-M5x30 (see Fig. 2), into the end of the shaft to protect the centring bore and force off the encoder by screwing in an M6 screw.

Assembly

- Screw the torque arm to the encoder (leaving a sufficient distance between the torque arm and the encoder) and lock the screws, e.g. with Loctite 243,
- Position the encoder and the assembled torque arm on the taper of the motor rotor and screw in the screw; note the maximum tightening torque. The motor rotor must be prevented from turning at the same time.
- Fasten the torque arm to the end shield and note the radial runout on the encoder,
- Press in the metal sleeve of the signal connector lead
- Plug in the connector,
- Snap on the cover.

3.1.2 Disassembly/assembly of the resolver, size 21

(see Fig. 3)

Disassembly

- Remove the adapter plug,
- Undo the screws and remove the resolver stator,
- Remove the screws (M5x48) and remove the resolver rotor; the motor rotor must be prevented from turning at the same time.

Assembly

- Fit the resolver rotor and then screw in the screw (M5x48). Note the maximum tightening torque!
- Assemble the resolver stator and fasten with the screws,
- Insert the adapter plug.

3.2 Changing bearings, lubrication

3.2.1 Bearing replacement intervals

NOTE: The limit speed n_{s1} must not be exceeded during continuous operation (see Fig. 8).

Under normal operating conditions, the replacement intervals t_{LW} specified in Fig. 8 are recommended for the bearings of the 1PH7 motors.

The specified operating hours apply to a horizontal position, a coolant temperature of +30 °C, a storage temperature of +100 °C and vibrations in accordance with vibration severity grade R (DIN VDE 530 Part 14). The mean operating speed n_m must be estimated if the motor speed varies.

Under abnormal conditions, e.g. a vertical position, operating speed mostly above 75 % of the limit speed n_{max} , severe vibration and impact loads, frequent reversing, etc., the bearing replacement intervals t_{LW} must be reduced by up to 50 %.

If the storage temperature exceeds +100 °C for a prolonged period of time, the bearing replacement intervals must be halved for each additional 15 °C.

Renewal of the D-end and ND-end bearings is recommended after the specified number of operating hours, and at the latest after 3 years.

3.2.2 Disassembly/assembly of the motor

Disassembly

When disassembling the motor, mark the original positions of the parts in relation to one another (e.g. with a marker pen or a drawing pin), in order to simplify re-assembly. Please refer to section 3.1 for the encoder disassembly procedure.

Undo the screws in the ND-end shield, then carefully remove this shield.

Remove the grease slinger from the D-end shaft shoulder by sliding it back.

Pull the rotor out of the motor. Pull off the rolling contact bearings using a suitable device.

Assembly

Do not re-use the rolling contact bearings after they have been pulled off.

Heat the new bearings evenly to between 80 and 100 °C and push them on, making sure that the inner ring is flush with the shaft shoulder! Hard blows (such as with a hammer) must be avoided!

Insert the motor rotor in the stator.

Fit the ND-end bearing (with shaft spring) into the ND-end flange without canting it. Tighten the screws.

Press on grease slinger (gamma ring housing **9RB...** without sealing lip) with suitable sleeve to dimension **X** (see Fig 4).

Grease slingers damaged in disassembly must not be re-used!

Running in the bearings

After new bearings have been fitted, they should be run in to distribute the grease evenly. This entails accelerating the motor steadily from 0 to about 75% of its limit speed n_{max} over a of 15-minute period.

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Règles de sécurité relatives aux moteurs triphasés basse tension alimentés par convertisseurs statiques (selon Directive "Basse Tension" 73/23/CEE).

**Danger**

Les moteurs électriques comportent des pièces en rotation et/ou sous tension : certaines de leur parties peuvent présenter des températures élevées. Seules des personnes qualifiées et habilitées doivent effectuer les travaux de manutention, de raccordement, de mise en service et d'entretien (se reporter à VDE 0105/CEI 364). Toute intervention contraire aux règles de l'art peut entraîner des blessures graves et des dégâts matériels importants. Les prescriptions, règlements et exigences nationales, locales ou spécifiques à l'installation doivent être respectés.

Les machines de **réalisation spéciale** (version, forme de construction) peuvent différer quant aux détails techniques. En cas de doute à ce sujet, il est instamment recommandé de contacter l'agence Siemens compétente en indiquant la **désignation de type** et le **numéro de fabrication** (N° E..., voir plaque signalétique), ou de recourir aux centres de S.A.V. Siemens pour effectuer les travaux de maintenance.

1 Utilisation conforme à la destination

Ces moteurs sont destinés à être utilisés dans des installations de grande et petite industrie. Ils répondent à la norme **EN 60034 (VDE 0530)**. L'utilisation en **zone Ex** (atmosphère explosible) est **interdite**, à moins que le moteur n'ait été **spécialement conçu** à cet effet. Dans ce cas, on tiendra compte des instructions et règles additionnelles. Dans les cas spéciaux de mise en œuvre dans une installation non-industrielle entraînant des exigences plus sévères (par exemple protection contre le contrat de doigts d'enfant), les mesures appropriées devront être prises au niveau de l'installation.

Les moteurs sont conçus pour une température ambiante comprise entre **-15 °C et +40 °C** et une altitude d'implantation $\leq 1\,000\text{ m}$. D'éventuelles indications divergentes sur la plaque signalétique doivent **impérativement** être prises en compte. Les conditions d'exploitation doivent correspondre **en tout point** aux indications de la plaque signalétique.

Ils peuvent être installés dans des locaux sous abri, en environnements poussiéreux ou humides et dans des **conditions climatiques normales**. En cas d'utilisation **en environnement propice à la corrosion**, le moteur devra être pourvu d'une peinture anticorrosion.

Les moteurs basse tension sont des **composants** destinés à être incorporés dans des machines au sens de la **Directive Machines 89/392/CEE**. La **mise en service** est interdite tant que la conformité du produit final avec cette directive n'a pas été établie (se reporter à EN 60204-1).

Les installations ou machines comportant des moteurs triphasés basse tension alimentés par convertisseurs statiques doivent satisfaire aux mesures de protection électromagnétique prescrites par la Directive CEM 89/336/CEE. L'installation conforme aux règles de l'art est de la responsabilité de l'installateur. **Les câbles de signaux et câbles d'énergie** menant au moteur doivent être **blindés**.

On tiendra également compte des indications en matière de CEM fournies par le fabricant du convertisseur.

Niveau de pression acoustique (DIN EN 21 680 partie 1)

1PH7 10.	env. 73 dB(A)
1PH7 13.	env. 73 dB(A)
1PH7 16.	env. 74 dB(A)

2 Exploitation

2.1 Manutention, stockage

Pour la manutention, utiliser tous les oeilletons de levage disponibles sur le moteur.

Ne pas **accrocher de charges supplémentaires**, tenir compte de la force portante des moyens de levage.

Si le moteur n'est pas mis immédiatement en service après sa livraison, il faudra le stocker dans un local sec, exempt de poussière et de vibration. Serrer les oeilletons de levage visés.

2.2 Installation

Respecter les indications de la plaque signalétique concernant la forme de construction et le degré de protection ; vérifier qu'elles coïncident avec les conditions régnant sur le site !

Après l'installation, serrer ou enlever **les oeilletons de levage visés**. Disposition des oeilletons de levage, voir fig. 9.

Les moteurs doivent être installés de façon que l'air de refroidissement puisse circuler sans entrave et que la distance minimale **s** des ouvertures d'arrivée et de sortie d'air par rapport aux pièces voisines soit respectée (fig. 4) !

L'air chaud de sortie ne doit pas être réaspiré.

Effectuer le montage du moteur sans donner de coups ni exercer de pression sur le bout d'arbre !

Avant la mise en service, remettre en place les couvercles (6.30) qui avaient été enlevés pour la fixation du moteur.

La flèche doit être dirigée vers le haut (voir fig. 1).

Si le moteur est installé à axe horizontal avec boîte à bornes en haut ou à axe horizontal avec bout d'arbre en bas, le bouchon protecteur (fig. 1) doit être retiré.

Vibrations externes admissibles

Le comportement vibratoire au lieu d'installation, conditionné par les organes de transmission, les conditions de fixation, l'alignement et l'influence des vibrations externes, peut conduire à une augmentation des valeurs de vibrations sur le moteur. Dans l'intérêt d'un fonctionnement correct du moteur et d'une longue durée de vie des paliers, les valeurs de vibrations indiquées à la figure 7 ne devraient pas être dépassées. Le cas échéant, il faudra procéder à un équilibrage complet du rotor avec organe de transmission monté.

2.3 Equilibrage, organes de transmission

L'emmanchement et l'extraction des organes de transmission (demi-accouplements, poulies, roues dentées,...) devront se faire avec les dispositifs appropriés.

Utiliser le trou taraudé en bout d'arbre.

En version standard, les rotors ont fait l'objet d'un équilibrage dynamique avec demi-clavette (EN 60034/VDE 0530).

NOTA: Le type d'équilibrage est indiqué par un marquage en bout d'arbre :

(F = équilibrage avec clavette **entière** version spéciale)

(H = équilibrage avec **demi-clavette**)

Lors du montage de l'organe de transmission, veiller à ce que le type d'équilibrage de ce dernier corresponde à celui du rotor.

Les organes de transmission doivent être équilibrés en conformité avec LSD 1940.



Prendre les mesures habituelles de protection des personnes contre l'accès aux parties en mouvement au niveau des organes de transmission.

Lorsqu'un moteur est mis en marche sans organes de transmission, prendre les mesures nécessaires afin d'empêcher que la clavette ne soit éjectée de l'arbre par force centrifuge.

Les efforts transversaux et axiaux admissibles sont donnés dans les diagrammes des instructions de conception (à demander auprès de l'agence Siemens ou à l'usine).

En cas de divergence par rapport aux conditions normales - ex. **surchauffe, bruit, vibrations** - on coupera le moteur par mesure de sécurité. Déterminer la cause en consultant éventuellement le constructeur. Ne pas mettre hors service les dispositifs de protection, même en marche d'essai.


En cas d'encrassement important, nettoyer régulièrement les circuits de circulation d'air.

2.4 Raccordement électrique



Le raccordement et la mise en service doivent être effectués uniquement par des **personnes qualifiées** et lorsque le moteur est à l'**arrêt, hors tension et consigné** contre toute remise sous tension intempestive. Ceci s'applique aussi aux circuits auxiliaires (par ex. motoventilateur).

Point à observer pour le raccordement :

- les câbles de branchement, le mode d'utilisation ainsi que les tensions et courant doivent convenir (voir fig. 5) ;
- les câbles de branchement doivent présenter une section suffisante et être pourvus des dispositifs d'arrêt de traction, d'antitorsion et d'antipliage ;
- le conducteur de protection doit être raccordé à la borne .

Pour les raccordements dans la boîte à bornes, veiller à ce :

- les extrémités des câbles ne soient dénudées que sur la longueur nécessaire, de façon que l'isolation parvienne presque jusqu'à la cosse ou à la borne ;
- que la taille des cosses soit adaptée aux dimensions des bornes et à la section des conducteurs ;
- le conducteur de protection soit raccordé ;
- l'intérieur de la boîte à bornes soit propre et débarrassé des déchets de câbles ;
- les assemblages vissés des connexions électriques sur la planche à bornes (sauf réglette à bornes) soit serrés avec le couple requis (voir fig. 5) ;
- les distances minimales dans l'air soit respectées pour le raccordement et pour le déplacement éventuel de câbles de liaison interne ; voir fig. 5 ;
- les distances minimales dans l'air des parties actives non isolées soit respectées ; veiller aux brins et aux extrémités de fils en saillie ;
- les entrées de câbles inutilisées soient obturées et que les bouchons soient vissés à fond et de façon étanche ;
- toutes les surfaces d'étanchéité de la boîte à bornes présentent l'aspect requis pour assurer le degré de protection ;
- le film isolant soit en place ;
- les écrans et blindages de câbles soit connectés.



Le film isolant dans la boîte à bornes (fig. 5) est destiné à empêcher les amorçages avec le couvercle et ne doit par conséquent pas être retiré !

2.4.1 Raccordement des câbles de puissance

Effectuer le raccordement du moteur en se conformant au schéma fourni.

Respecter les indications de la plaque signalétique !



Le branchement direct sur le réseau triphasé n'est pas autorisé et entraîne la destruction du moteur.

Veiller à l'ordre correct des phases !

Le moteur ne doit être alimenté que par un convertisseur de fréquence de puissance adapté.

2.4.2 Générateur d'impulsions et sonde de température

Leur raccordement s'effectue moyennant le connecteur (embase mâle) fixé sur la boîte à bornes.

2.4.3 Motoventilateur

Respecter les indications figurant sur la plaque signalétique et dans les instructions de service du motoventilateur (voir fig. 10) !

Prévoir un montage de sécurité empêchant la mise en marche du moteur principal lorsque le motoventilateur n'est pas en service !

2.5 Mise en service



Avertissement : danger de brûlures !

La surface des moteurs peut présenter des températures élevées supérieures à 80°C.

Aucuns éléments sensibles à la température tels que câbles normaux ou composants électroniques ne doivent reposer ou être fixés à la surface des moteurs.

Au besoin prendre des mesures de protection contre le contact !

Avant mise en service, vérifier les points suivants :

- le rotor peut être tourné sans qu'il frotte,
- le moteur est monté et aligné correctement,
- les organes de transmission sont correctement réglés (par ex. tension de courroie) et bien choisis pour l'emploi,
- les connexions électriques sont réalisées conformément aux prescriptions, et les vis des bornes et de fixation sont serrées aux couples prescrits,
- le conducteur de protection est bien raccordé,
- les mesures de protection des personnes contre l'accès aux parties actives (sous tension) ou en mouvement ont été prises,
- la vitesse limite n_{\max} (voir plaque signalétique) ne doit pas être dépassée.

NOTA : la vitesse limite n_{\max} est la vitesse de service maximale temporaire.

3 Maintenance

Mesures de sécurité



Avant toute intervention sur la machine, notamment avant d'ouvrir ou d'enlever les recouvrements des parties actives, il est indispensable de mettre le moteur hors tension conformément aux règlements de sécurité. En plus des circuits principaux, ne pas oublier les éventuels circuits auxiliaires et additionnels.

Les "5 règles de sécurité" (par exemple selon DIN VDE 0105) sont applicables :

- mettre hors tension
- condamner les appareils (contre le réenclenchement)
- vérifier l'absence de tension
- mettre à la terre et court-circuiter
- recouvrir les parties actives voisines ou en barrer l'accès.

Ces mesures de sécurité ne doivent être supprimées qu'à l'issue de l'intervention de maintenance et lorsque tous les éléments du moteur sont remontés.

3.1 Démontage/montage des capteurs



Avertissement ! Les capteurs à électronique intégrés (capteurs optiques, capteurs de position du rotor, roue phonique,...) sont des composants et modules sensibles aux décharges électrostatiques (CSDE).

Lors de la manipulation de ces composants CSDE, il faut veiller aux points suivants :

- le poste de travail doit être mis à la terre
- ne pas toucher directement les broches de connecteur
- ne pas transmettre d'électricité statique en les touchant (toucher auparavant une structure conductrice de l'électricité,...)
- effectuer le transport dans les emballages appropriés (boîte en carton ondulée, sachet en plastique conducteur - pas de sachet plastique normal, ni de polystyrène,...).

Indications pour le démontage/montage des capteurs

- Déposer le couvercle de la boîte à bornes et débrancher les conducteurs du moteur ainsi que les conducteurs de la sonde de température au niveau du bornier (fig. 5)
- Déposer le motoventilateur et le couvercle du capteur.

3.1.1 Démontage/montage ERN1387 et ROD431

(voir fig. 1 et fig. 2)

Démontage

- Déboîter le couvercle du connecteur
- Débrancher le connecteur du câble de signaux
- Défaire les vis (8.10a) de l'arrêt en rotation ainsi que la vis (8.10b) de fixation du capteur ; retenir éventuellement le rotor
- A titre de protection du centrage, visser une vis sans tête, ex. M5x30 DIN 913 (voir fig. 2) dans le trou taraudé du bout d'arbre et extraire le capteur au moyen d'une vis M6.

Montage

- Fixer l'arrêt en rotation sur le capteur au moyen de vis (respecter l'espacement entre arrêt en rotation et capteur) et bloquer les vis, par exemple au moyen de vernis Loctite 243
- Engager le capteur avec l'arrêt en rotation monté sur la portée conique du rotor de moteur et le fixer au moyen de la vis ; respecter le couple de serrage maximal. Retenir éventuellement le rotor du moteur
- Fixer l'arrêt en rotation sur le flasque palier
- Enfoncer la bague métallique du câble de connecteur
- Enficher le connecteur
- Remettre en place le couvercle.

3.1.2 Démontage/montage résolveur taille 21 (voir fig. 3)

Démontage

- Débrancher le connecteur intermédiaire
- Défaire les vis et déposer le stator du résolveur
- Défaire la vis M5x48 et déposer le rotor du résolveur, retenir éventuellement le rotor du moteur.

Montage

- Monter le rotor du résolveur sur le bout d'arbre et serrer la vis M5x48 !
Respecter le couple maximal de serrage !
- Monter le stator du résolveur et le fixer par vis
- Enficher le connecteur intermédiaire.

3.2 Remplacement des roulements, graissage

3.2.1 Périodicité de remplacement des roulements

NOTA : En service continu, la vitesse maximale de service continu n_{st} ne devrait pas être dépassé (voir fig. 8).

Dans les **conditions de service normales**, les intervalles de remplacement des roulements t_{LW} tels que définis fig. 8 sont recommandés pour les roulements des moteurs 1PH7.

Le nombre d'heures de fonctionnement indiqué s'entend pour une position de montage horizontale, une température d'air de refroidissement de + 30°C, une température de palier de + 100°C et des vibrations du degré d'intensité vibratoire R selon DIN VDE 530 partie 14. Dans le cas de vitesse variable, la vitesse de service moyenne n_m devra être estimée.

Dans les **conditions de service spéciales**, par exemple montage à axe vertical, fonctionnement très fréquent au dessus de 75 % de la vitesse limite n_{max} , sollicitations importantes de vibrations et de chocs, inversions fréquentes du sens de marche,... Les périodes indiquées de remplacement des roulements t_{LW} peuvent se réduire de près de 50 %.

Si les paliers sont portés en permanence à des températures supérieures à + 100°C, l'intervalle de remplacement des roulements devra être divisé par deux par tranche de 15°C au dessus des 100°C.

Le remplacement des roulements côté D et N est recommandé après le nombre d'heures de fonctionnement indiqué, et au plus tard après 3 ans.

3.2.2 Démontage/montage du moteur

Démontage

Avant de procéder au démontage, repérer la position mutuelle des pièces (par ex. avec crayon de couleur, point à tracer), pour faciliter le remontage. Démontage du capteur, voir chapitre 3.1.

Défaire les vis du flasque-palier côté N, puis détacher avec précaution le flasque-palier côté N.

Démonter le déflecteur du bout d'arbre côté D en le repoussant vers l'arrière.

Sortir le rotor du moteur. Extraire les roulements avec les dispositifs appropriés.

Montage

Ne pas réutiliser les roulements après leur extraction.

Echauffer régulièrement les roulements à 80-100°C, puis les emmancher sur l'arbre en veillant à ce que la bague intérieure vienne en appui contre l'épaule de l'arbre !

Ne pas donner de coups (par ex. avec un marteau) !

Engager le rotor du moteur dans le stator.

Remonter le flasque côté N en veillant à ce que le roulement s'engage correctement dans le logement (ne pas oublier la rondelle ressort dans le fond du logement !), puis serrer les vis.


Mettre en place le déflecteur (boîtier de joint d'étanchéité **9RB**... sans lèvres d'étanchéité) et le repousser au moyen d'un fourreau approprié jusqu'à obtenir la cote **X** (voir fig. 4).

Ne pas réutiliser les déflecteurs qui ont été endommagés au démontage !

Rodage des roulements.

Après le remplacement des roulements, il y a lieu de procéder à un rodage assurant la répartition régulière de la graisse. Ce rodage consiste à faire monter progressivement la vitesse du moteur de 0 à environ 75 % de la vitesse limite n_{max} en l'espace de 15 minutes.

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 **Consignas de seguridad y de puesta en marcha para el servicio de motores trifásicos de baja tensión con alimentación por convertidor** (según las Directivas para baja tensión 73/23/CEE)

Peligro



Los motores eléctricos tienen piezas peligrosas bajo tensión y en movimiento, así como posiblemente superficies a alta temperatura. Todos los trabajos de transporte, conexión, puesta en marcha y mantenimiento periódico han de ser realizados por **personal especializado y cualificado responsable** (observar VDE 0105/IEC 364). Un comportamiento inadecuado puede producir **graves lesiones y daños materiales**. Deberán respetarse las **normas y disposiciones vigentes nacionales, locales y específicas de la aplicación**.

Pueden diferir los detalles técnicos de las **ejecuciones especiales y variantes**. En caso de dudas, es perentorio dirigirse al fabricante indicando la **designación de tipo y el número de serie** (No E ..., v. placa de características) o dejar que el servicio técnico de SIEMENS efectúe los trabajos de conservación.

1 Utilización conforme

Estos motores están destinados a instalaciones técnicas o industriales. Cumplen con las normas armonizadas de la serie **EN 60034 (VDE 0530)**. Está **prohibida** su aplicación en **recintos expuestos al peligro de explosiones (Ex)** a no ser que se hayan destinado **expresamente** a este efecto (observar las indicaciones adicionales). Si en casos especiales, cuando se utilizan en recintos **no** industriales, se imponen exigencias de seguridad más severas (p. ej., protección contra contactos involuntarios con dedos de niño), la responsabilidad corre a cargo del instalador.

Los motores se han diseñado para temperaturas ambiente de **-15°C a +40°C** y una altura de instalación de hasta **1000 m.s.n.m.** Es **imprescindible** observar los datos en la placa de características en caso de divergencias. Las condiciones en el lugar de emplazamiento deben coincidir con **todas** las indicaciones en dicha placa. Pueden instalarse en recintos cubiertos en entornos polvorientos o húmedos y **condiciones ambientales normales**. Los motores utilizados en entornos expuestos al **peligro de corrosión** deberán llevar una capa anticorrosiva adicional.

Los motores de baja tensión son **componentes** para incorporar en máquinas según la Directiva para máquinas 89/392/CEE. Está prohibida la **puesta en marcha** hasta tanto no se haya comprobado que el producto final cumple con dicha Directiva (observar EN 60204-1).

Las instalaciones o máquinas con un motor trifásico de baja tensión y alimentación por convertidor, deben cumplir con las consignas de seguridad sobre compatibilidad electromagnética (Directiva EMV 89/336/CEE). El instalador responde del montaje conforme. **Los cables de señal y de potencia** hacia el motor deberán ser **apantallados**.

Deberán observarse las indicaciones del fabricante del convertidor respecto a la compatibilidad electromagnética.

Nivel de presión acústica (DIN EN 21 680, parte 1)

1PH7 10.	aprox.	73 dB(A)
1PH7 13.	aprox.	73 dB(A)
1PH7 16.	aprox.	74 dB(A)

2 Servicio

2.1 Transporte, almacenamiento

Durante el transporte se utilizarán todos los cáncamos disponibles. **No añadir ningún peso adicional** y observar la capacidad de carga de los dispositivos de elevación.

Si un motor no se pone en servicio inmediatamente después del suministro habrá que almacenarlo en un recinto seco libre de polvo y de trepidaciones. Apretar fuertemente los cáncamos utilizados para el transporte.

2.2 Emplazamiento

¡Observar las indicaciones en la placa de características respecto a la forma constructiva y el grado de protección, verificando que coincidan con las condiciones reinantes en el lugar de montaje!

Los **cáncamos atornillados** se apretarán o retirarán después de la instalación. Para la disposición de los cáncamos v. la Fig. 9.

Los motores se instalarán de forma que el aire refrigerante pueda circular libremente. Mantener la distancia mínima **s** de las aberturas de entrada y salida del aire respecto a las partes contiguas (Fig. 4). Está prohibido volver a aspirar el aire de escape caliente.

¡El motor se montará sin golpear ni someter a presión el extremo del eje!

Las cubiertas (6.30) retiradas para atornillar el motor deberán volverse a colocar antes de la puesta en servicio. La flecha debe indicar hacia arriba (v. Fig. 1).

Si el motor se instala de forma horizontal con la caja de bornes hacia arriba, o de forma vertical con el extremo del eje hacia abajo, retirar el tapón de protección (Fig. 1).

Vibraciones admisibles

Es posible que, debido al comportamiento de los órganos de transmisión, las condiciones de montaje, el ajuste, la instalación y las vibraciones ajenas, aumenten las **vibraciones del motor en el lugar de emplazamiento**. Con vistas a un funcionamiento correcto del motor y una larga vida útil, no deberán sobrepasarse los valores indicados en la Fig. 7. Bajo ciertas circunstancias pudiera ser necesario volver a equilibrar completamente el rotor junto con el órgano de transmisión montado en su eje de salida.

2.3 Equilibrado, órganos de transmisión

Se han de calar y extraer los órganos de transmisión (acoplamientos, poleas, ruedas dentadas, ...) por principio con el dispositivo adecuado. Utilizar a este fin la rosca en la punta del eje.

Los rotores están equilibrados dinámicamente con media chaveta (EN 60034/VDE 0530) de manera estándar.

INDICACION: El tipo de equilibrado está marcado en el extremo del eje (lado frontal del eje):

(F = equilibrado con chaveta **entera**, ejecución especial)

(H = equilibrado con **media** chaveta)

¡Al montar el órgano de transmisión observar que sea adecuado el tipo de equilibrado!

¡Los órganos de transmisión, por su parte, deberán estar equilibrados conforme ISO 1940!



Se observarán las medidas generales necesarias para la protección contra contactos involuntarios de los órganos de transmisión.

Si se pone en marcha un motor sin órgano de transmisión, habrá que asegurar la chaveta para que no salga proyectada por la fuerza centrífuga.

En los diagramas de las Instrucciones de proyecto y selección se indican las fuerzas transversales y axiales admisibles (en caso dado, consultar con el representante local o con fábrica).

Si cambian las condiciones de servicio normales, p. ej. **aumenta la temperatura, o hay ruidos, vibraciones**, desconectar el motor **en caso de duda**. Indagar la causa, en caso dado consultar el fabricante. No desactivar los dispositivos de protección ni siquiera durante el servicio de prueba. Si hay mucha suciedad limpiar periódicamente los canales de aire.

2.4 Conexiones eléctricas



Todos los trabajos deben ser realizados únicamente por **personal cualificado** en motores **parados**, que han sido **aislados** de la red y **asegurados contra la reconexión (condenado)**. Esto rige también para los circuitos auxiliares (p. ej. grupo motoventilador separado).

Al conectar hay que tener en cuenta por principio que:

- Los cables de conexión sean compatibles con la aplicación, las tensiones y las corrientes previstas (v. Fig. 5).
- Se hayan previsto cables de calibre suficiente y que también se hayan tomado las medidas necesarias para aliviar todos los esfuerzos de torsión, tracción y presión, así como para una protección contra dobleces en el cable.
- Esté conectado el conductor de protección a \oplus .

Si la conexión es en la caja de bornes, observar que:

- El extremo del cable sólo se haya pelado hasta el terminal o el borne.
- El tamaño de los terminales del cable sea adecuado a las dimensiones de los bornes del regletero y la sección del cable de conexión.
- Esté conectado el conductor de protección.
- El interior de la caja de bornes esté limpio y libre de restos de cables.
- Los terminales eléctricos roscados y los bornes de conexión (exceptuando los de los regleteros) estén apretados con el par prescrito, v. la Fig. 5.
- Se mantengan las distancias mínimas de aislamiento al aire indicadas en la Fig. 5 tanto al conectar como al cambiar de posición a cables internos.
- Se mantengan las distancias mínimas de aislamiento al aire para las partes sometidas a tensión que no estén aisladas. Prestar atención a extremos sobresalientes de cables.
- Estén selladas las entradas no utilizadas y que los elementos de obturación estén apretados y herméticamente enroscados.
- Todas las superficies de junta de la caja de bornes se hayan acondicionado convenientemente para conservar el grado de protección.
- Se disponga de lámina aislante.
- El buen contacto de los apantallamientos.



¡La lámina aislante en la caja de bornes Fig. 5 sirve para evitar descargas eléctricas a la tapa, por lo que no debe retirarse!

2.4.1 Conexión de energía

El motor se conecta de acuerdo con el esquema incluido en el suministro. ¡Observar los datos de la placa de características!



¡No se admite conectar directamente a la red trifásica; esto conduciría a la destrucción del motor.

Observar que sea correcta la secuencia de fases.

El motor solo debe alimentarse desde un equipo convertidor de potencia adecuado.

2.4.2 Captador y termistor

Se conectan a través del conector de brida montado en la caja de bornes.

2.4.3 Grupo motoventilador separado

Observar las indicaciones en la placa de características y las instrucciones de servicio para grupos motoventiladores (v. Fig. 10). ¡Deberá preverse un circuito de protección que evite la conexión de la máquina principal cuando no esté en servicio el grupo motoventilador!

2.5 Puesta en servicio



¡Atención, peligro de quemaduras!
La temperatura en la superficie de los motores puede superar los 80 °C.
No sujetar ni apoyar allí las partes sensibles al calor tales como cables normales o componentes electrónicos.
¡Si fuese necesario, tomar las medidas pertinentes de protección contra contactos involuntarios!

Antes de la puesta en servicio se comprobará si

- el rotor puede girarse sin que roce
 - el motor está alineado y montado correctamente
 - los órganos de transmisión están ajustados correctamente (p. ej., la tensión de la correa en caso de accionamiento por correa, ...) y que el órgano de transmisión es el adecuado para la aplicación prevista
 - todas las conexiones eléctricas, así como los tornillos y elementos de unión están apretados y ejecutados según las disposiciones
 - la conexión del conductor de protección se ha establecido de acuerdo a las prescripciones
 - se han tomado las medidas necesarias contra contactos involuntarios de piezas en movimiento y bajo tensión
 - no se sobrepasa la velocidad límite (v. placa de características).
- INDICACION:** La velocidad límite $n_{\text{máx}}$ es la velocidad de servicio máxima admisible durante cortos períodos.

3 Mantenimiento

Medidas de seguridad



Antes de comenzar cualquier trabajo en el motor o en el aparato y, especialmente, antes de abrir las cubiertas de las partes activas, debe desconectarse según las prescripciones. Tener en cuenta los circuitos adicionales o auxiliares que pudieran haber junto con los circuitos principales.

Las "5 reglas de seguridad" usuales según, p. ej., DIN VDE 0105 son:

- Desconectar y seccionar
- Asegurar contra la reconexión
- Comprobar la ausencia de tensión
- Poner a tierra y cortocircuitar
- Cubrir o encerrar las partes contiguas sometidas a tensión.

Estas medidas han de permanecer hasta que hayan finalizado los trabajos de mantenimiento y se haya montado el motor por completo.

3.1 Montaje / desmontaje de los captadores



¡Atención! Los sistemas captadores de velocidad y posición con componentes electrónicos integrados (captadores ópticos, de posición del rotor, con rueda dentada, ...) son dispositivos sensibles a descargas electrostáticas.

Cuando se trabaja con dichos dispositivos deberá cuidarse de que:

- esté puesto a tierra el lugar de trabajo
- se evite tocar directamente las clavijas de los conectores
- no se transmita ninguna carga electrostática cuando se tocan (tocar un objeto conductor inmediatamente antes, ...)
- se utilice material adecuado durante el transporte (caja de cartón ondulado, bolsa de plástico conductor; no utilizar bolsas de plástico normales, ni estereopor, ...)

Indicaciones sobre el montaje / desmontaje del captador;

- Desatornillar la tapa de la caja de bornes y desconectar los cables del motor y de los termosensores en la regleta de bornes (Fig. 5)
- Desatornillar el grupo motoventilador independiente y la tapa del captador.

3.1.1 Montaje / desmontaje ERN1387 y ROD431

(v. Figs. 1 y 2)

Desmontaje

- Desenchajar la tapa
- Desenchufar el conector y los cables de señal
- Desatornillar los tornillos (8.10a) del brazo de reacción y el tornillo (8.10b); si hace falta, evitar que gire al mismo tiempo el rotor del motor
- Para proteger el agujero de centrado, atornillar un prisionero, p. ej. DIN 913-M5x30 (v. Fig. 2) en el extremo del eje y extraer el captador introduciendo un tornillo M6

Montaje

- Atornillar el brazo de reacción al captador (observar la distancia entre el inmovilizador y el captador) y asegurar los tornillos, p. ej. con LOCTITE 243
- Situar el captador con el brazo de reacción incorporado sobre el cono del rotor del motor y apretar el tornillo observando el par de apriete; si hace falta, evitar que gire al mismo tiempo el rotor del motor
- Fijar el brazo de reacción al escudo portacojinetes; observar la desviación radial
- Insertar el casquillo de metal en el cable de conexión
- Enchufar el conector
- Encajar la tapa.

3.1.2 Montaje/desmontaje, resolver del tamaño 21

(v. Fig. 3)

Desmontaje

- Desenchufar el conector intermedio
- Soltar los tornillos y retirar el estator del resolver
- Quitar el tornillo M5x48. Retirar el rotor del resolver; si hace falta, evitar que gire al mismo tiempo el rotor del motor

Montaje

- Posicionar el rotor del resolver y fijarlo con el tornillo M5x48 observando el par de apriete máximo
- Montar el estator del resolver y fijarlo con tornillos
- Montar el conector intermedio

3.2.2 Montaje / desmontaje del motor

Desmontaje

Al desmontar el motor marcar la disposición original de las piezas (p. ej., con lapiz de color, chinchetas), para simplificar el montaje posterior. Para el desmontaje del captador, v. 3.1.

Soltar los tornillos de la tapa y del escudo portacojinetes del lado N; seguidamente retirar con cuidado el escudo portacojinetes del lado N.

Retirar el disco centrifugador de aceite del resalte del eje del lado D empujándolo.

Sacar el rotor del motor. Extraer los rodamientos con un dispositivo adecuado.

Montaje

No utilizar de nuevo los rodamientos una vez extraídos.

¡Calor (80°C ... 100°C) los rodamientos cuidando que el anillo interior del rodamiento esté a **ras** con el resalte del eje!

Son inadmisibles los golpes fuertes (p. ej. con un martillo, ...).

Introducir el rotor en la carcasa.

Colocar los rodamientos lado N, junto con el resorte, en la brida del lado N, sin inclinarlo. Apretar los tornillos

Encajar el disco centrifugador de aceite (compuesto de un retén con caja metálica **9RB...** al que se le ha quitado la parte de goma) con un casquillo adecuado en la cota **X** (v. Fig. 4).

¡No volver a utilizar los discos centrifugadores de aceite dañados durante el desmontaje!

Nueva puesta en marcha de los rodamientos

Después de cambiar los rodamientos, ponerlos en marcha para distribuir uniformemente la grasa en los mismos. A este efecto acelerar los motores por primera vez, sin interrupción, desde 0 hasta un 75 % de la velocidad límite $n_{\text{máx}}$ en el transcurso de 15 minutos.

3.2 Cambio de los rodamientos, lubricación

3.2.1 Intervalos para cambiar los rodamientos

INDICACION: En servicio permanente no debe superarse la velocidad permanente máx. n_{s1} (v. Fig. 8).

Bajo **condiciones normales de servicio** se recomienda el intervalo indicado en la Fig. 8 para cambiar los rodamientos de los motores 1PH7. Las horas de servicio que se indican rigen para montaje horizontal del motor, temperaturas del medio refrigerante de +30°C, temperaturas de almacenamiento de +100°C y cargas por vibraciones según el nivel R de DIN VDE530, parte 14. Se calculará la velocidad media n_m si la velocidad del motor varía.

Bajo **condiciones de servicio particulares**, p. ej., montaje vertical, servicio preponderantemente superior al 75 % de la velocidad límite $n_{\text{máx}}$, con grandes cargas por vibraciones y choques, así como con muchas inversiones del sentido de giro, se reducen hasta un 50% los intervalos para cambiar los rodamientos (t_{LW}).

Si la temperatura en los rodamientos siempre supera los +100 °C, deberán reducirse en un 50 % los intervalos para el cambio de rodamientos t_{LW} por cada 15 °C de temperatura en exceso.

Se recomienda cambiar los rodamientos de los lados D y N después de las horas de servicio indicadas pero, a más tardar, transcurridos 3 años.

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! Avvisi di sicurezza ed indicazioni per l'avviamento di motori trifasi a bassa tensione alimentati da convertitori.

(secondo Direttiva Bassa Tensione 73/23 /CEE)

Pericolo



Le macchine in corrente continua hanno parti rotanti e in tensione anche da ferme, nonché possibili superfici calde. Tutte le operazioni inerenti il trasporto, l'allacciamento, l'avviamento e la regolare manutenzione devono essere eseguite da **personale responsabile qualificato** (osservare VDE 0105/IEC364). Un comportamento non conforme può **causare gravi danni e lesioni**.

Sono da consultare e tenere in considerazione le **direttive ed i requisiti nazionali, locali e specifici di impianto** vigenti.

Sono possibili variazioni delle caratteristiche tecniche **per forme costruttive speciali e varianti** di tipo. Per chiarire eventuali problemi, consigliamo di rivolgersi al costruttore della macchina, indicando sempre il **tipo di macchina** ed il **numero di fabbrica** (No. E, ... v. targhetta) oppure di far eseguire i lavori di manutenzione da uno dei centri di assistenza e servizio specializzati della SIEMENS.

1 Tipo di impiego

Questi motori sono destinati ad impianti industriali e commerciali. Essi rispondono alle norme armonizzate **EN 60034 (VDE 0530)**. E' **vietato** l'impiego in **ambienti Ex** se non espressamente previsto (v. note aggiuntive).

Se - in casi particolari - vengono richiesti, per l'impiego in impianti **non** commerciali, ulteriori requisiti (ad es.: protezione da contatti per mano di bambini), tali condizioni devono essere garantite in fase di messa in posa dell'impianto.

I motori sono dimensionati per una temperatura ambiente da **-15°C a +40°C** e per altitudini di montaggio **≤ 1000 m. s.l.m.** Fare **estrema** attenzione ad eventuali dati sulla targhetta. Le condizioni sul luogo di impiego devono corrispondere ai dati riportati sulla targa in ogni singolo punto.

I motori sono concepiti per funzionare al coperto in ambienti umidi o polverosi e in condizioni climatiche normali. Nel caso il motore venga utilizzato in ambienti a rischio di corrosione, è necessario proteggerlo con un'ulteriore vernice anti-corrosiva.

I motori in bassa tensione sono **componenti** per il montaggio in macchine ai sensi della direttiva macchine 89/392/CEE. Il loro **avviamento** non è consentito finché non sia stata accertata la conformità del prodotto finale a detta direttiva (v. anche: EN 60204-1)

Impianti o macchine con un motore in bassa tensione alimentato da convertitore devono soddisfare le esigenze di protezione della direttiva EMC 89/336/CEE. Per la corretta messa in posa (p.e. separazione di cavi di potenza e di segnale, cavi schermati ecc.) è responsabile il costruttore dell'impianto. I cavi di segnale non schermati devono essere possibilmente corti e spiralati.

Osservare le istruzioni relative alla compatibilità elettromagnetica e le istruzioni del costruttore del convertitore.

Livello di pressione sonora sulla superficie di misura
(DIN EN 21 680 Parte 1)

1PH7 10.	ca. 73 dB(A)
1PH7 13.	ca. 73 dB(A)
1PH7 16.	ca. 74 dB(A)

2 Funzionamento

2.1 Trasporto, Magazzinaggio

Devono essere utilizzati tutti gli anelli previsti per il trasporto (fig.2).

Non caricare con ulteriori pesi, osservare la portata dei meccanismi di sollevamento.

I motori che non vengono messi in servizio immediatamente dopo il trasporto, vanno tenuti in magazzino, in un ambiente secco e protetto da polvere e vibrazioni. Gli anelli di trasporto avvitati devono essere accuratamente fissati.

2.2 Messa in posa

Attenersi alle indicazioni riportate sulla targhetta relative alla forma costruttiva ed al tipo di protezione ed assicurarsi che le condizioni sul luogo della messa in posa corrispondano a dette indicazioni.

Dopo la messa in posa gli anelli di sollevamento avvitati devono venire o accuratamente fissati oppure asportati. Per la disposizione dei golfari di sollevamento v. fig. 9.

I motori vanno installati in modo da non ostacolare la circolazione dell'aria di raffreddamento in entrata e uscita. Deve essere rispettata la distanza minima tra i componenti della macchina e le fessure di entrata e uscita dell'aria (fig.4)! Non è consentito riaspirare l'aria calda di scarico.

Eseguire il montaggio del motore senza dare colpi o esercitare pressione sull'estremità dell'albero!

Le piastre di copertura (6.30) smontate per poter eseguire l'avvitamento del motore devono essere riapplicate prima dell'avviamento della macchina.

La freccia deve essere puntata verso l'alto (v. fig. 1).

Se si intende installare un motore in orizzontale con la morsettiera verso l'alto, o in verticale con l'estremità dell'albero verso il basso, è necessario togliere il tappo di protezione (v. fig.1).

Immissione di vibrazioni consentita

Il comportamento del sistema, in fatto di vibrazioni, sul luogo di utilizzo - vibrazioni dovute agli elementi in uscita, alle condizioni di montaggio, alla messa in posa, all'allineamento ed all'influsso di eventuali vibrazioni esterne - può condurre ad un aumento delle vibrazioni del motore stesso. Per garantire il funzionamento ottimale del motore e una lunga durata dei cuscinetti, non devono essere superati i valori di vibrazione indicati nella fig.7. In alcuni casi può rendersi necessaria una riequilibratura completa del rotore con l'elemento in uscita.

2.3 Equilibratura, elementi in uscita

Il calettamento e l'estrazione degli elementi in uscita (per es. disco d'innesto, ruota dentata, puleggia ecc.) vanno eseguiti con attrezzi adatti.

A tale scopo utilizzare il filetto all'estremità dell'albero (v. fig. 12).

I rotorii vengono forniti con un'equilibratura dinamica standard a mezza chiavetta (EN60034/VDE 0530).

NOTA: Osservare il tipo di equilibratura sulla faccia dell'albero!

(F = equilibratura con chiavetta **piena**/esecuzione speciale)

(H = equilibratura con **mezza** chiavetta)

Durante il montaggio dell'elemento in uscita, tenere presente il tipo di equilibratura!

Anche gli elementi in uscita devono venir precedentemente sottoposti ad equilibratura secondo ISO1940!



Attenersi alle misure generali di sicurezza per la protezione degli elementi in uscita contro contatti accidentali. Se un motore viene avviato senza l'elemento in uscita, la chiavetta deve essere protetta contro l'espulsione!

Le forze trasversali ed assiali consentite sono riportate nei diagrammi delle istruzioni di progettazione. Richiedere eventuali informazioni presso la filiale di zona o presso il costruttore.


Se si verificano variazioni rispetto al normale funzionamento - ad es. temperature più alte, rumori o vibrazioni - **in caso di dubbio** sull'origine di tale variazione spegnere il motore. Indagare sulle cause ed eventualmente consultare il produttore. Non disinserire i dispositivi di protezione neanche durante le prove di funzionamento. In caso di presenza di forti residui di sporcizia effettuare regolarmente una pulizia delle vie di circolazione dell'aria.

2.4 Collegamento elettrico



Tutti i lavori devono essere eseguiti soltanto da personale specializzato qualificato sul motore fermo, disinserito e assicurato contro un riavviamento accidentale. Tale regola vale anche per i circuiti secondari (ad es.: gruppi ventilatori esterni).

Quando si effettua il collegamento assicurarsi

- che i conduttori di collegamento siano adatti all'impiego previsto ed ai tipi di tensione e di corrente presenti (v. fig. 5).
- che siano previsti conduttori di collegamento di dimensioni adeguate nonché un'adeguata protezione contro torsioni, trazione, spinta e deformazioni.
- che il conduttore di protezione sia collegato a terra 

Effettuando il collegamento alla morsettiera è da osservare quanto segue:

- le estremità dei conduttori devono essere spellate in modo che l'isolamento raggiunga appena il capocorda o il morsetto
- la grandezza dei capicorda deve corrispondere alle dimensioni dei morsetti utilizzati sul portamorsetti ed alla sezione del cavo di rete
- il conduttore di protezione deve essere collegato
- l'interno della morsettiera deve essere pulito e privo di residui di conduttori
- tutti gli attacchi a vite dei collegamenti elettrici/ del portamorsetti (escl. le morsettiere) devono essere serrati con le coppie di serraggio indicate nella fig. 5
- i valori minimi di traferro (fig. 5) devono essere rispettati sia per l'allacciamento che per l'eventuale sostituzione dei collegamenti interni
- per le parti non isolate sotto tensione vanno rispettati i valori minimi di traferro - fare attenzione ad eventuali fili sporgenti
- imbocchi non utilizzati devono essere chiusi e gli elementi di chiusura devono essere avvitati correttamente per garantire una buona tenuta.
- tutte le superfici di tenuta della scatola morsetti devono essere in perfette condizioni per garantire il grado di protezione.
- che la lamina isolante sia al suo posto
- le schermature dei cavi devono essere in trazione



La lamina isolante nella scatola morsetti fig. 5 serve a proteggere da scariche elettriche sul coperchio e pertanto non deve assolutamente essere asportata!

2.4.1 Collegamento dell'alimentazione

Il motore deve essere collegato rispettando lo schema elettrico fornito insieme al prodotto. Osservare i dati di funzionamento indicati sull'apposita targhetta!



Non è consentito collegare il motore direttamente alla rete trifase. Tale collegamento provoca la distruzione del motore!

Assicurarsi che la sequenza delle fasi sia corretta!

Il motore deve entrare in funzione solo se provvisto di un convertitore di frequenza con potenza idonea.

2.4.2 Collegamento trasduttore e sensore termico

Il trasduttore ed il sensore termico vengono collegati tramite il connettore a flangia con spine di contatto situate sulla scatola morsetti.

2.4.3 Gruppo ventilatore esterno

Osservare le indicazioni sulla targhetta (v. fig. 10) e le istruzioni per l'uso del gruppo ventilatore esterno!

Deve essere previsto un dispositivo di protezione che impedisca l'avviamento della macchina principale quando il gruppo ventilatore esterno non è in funzione!

2.5 Messa in servizio



Attenzione! Pericolo di ustioni!

Sulla superficie dei motori possono svilupparsi temperature superiori a 80°C.

Non posare né fissare parti sensibili ad alte temperature, come ad esempio conduttori normali o componenti elettronici. Adottare eventualmente misure di protezione contro contatti accidentali!

Prima dell'avviamento è necessario verificare quanto segue:

- il rotore deve ruotare perfettamente senza sfiorare altre superfici
- il motore deve essere montato ed allineato a regola d'arte
- gli elementi in uscita (ad es. cinghia nel caso di trasmissione a cinghia,...) devono essere regolati correttamente ed adatti all'impiego previsto
- tutti i collegamenti elettrici devono essere effettuati e tutte le viti di fissaggio ed i giunti devono essere serrati come prescritto
- il conduttore di protezione deve essere collegato correttamente
- devono essere previste idonee misure di protezione contro i contatti accidentali con le parti in movimento e sotto tensione.
- il limite del numero di giri n_{max} non deve essere superato.

NOTA: Il limite del numero di giri n_{max} è inteso come valore massimo, consentito soltanto per un breve periodo di esercizio.

3 Manutenzione

Misure generali di sicurezza



Prima di iniziare qualsiasi lavoro sulla macchina, e soprattutto prima di togliere le coperture di parti attive, è assolutamente necessario scollegare il motore come prescritto. Oltre ai circuiti principali bisogna fare attenzione anche a circuiti ausiliari o supplementari eventualmente presenti.

Le "5 regole per la sicurezza" sec. DIN VDE 0105 sono:

- disinserire la macchina
- proteggerla contro la reinserzione
- verificare l'assenza di tensione
- effettuare la messa a terra e cortocircuitare
- coprire o separare parti sotto tensione situate nelle vicinanze

Le sopracitate misure generali di sicurezza sono da osservarsi fino a quando non siano stati portati a termine i lavori di manutenzione ed il motore non sia stato rimontato completamente.

3.1 Montaggio/smontaggio del trasduttore



Attenzione! I sistemi encoder con componenti elettronici integrati (encoder ottici, trasduttori di posizione rotore, datori a ruota dentata ecc.) sono elementi sottoposti al pericolo di scariche elettrostatiche (EMC).

Se è necessario effettuare lavori su tali elementi, va osservato quanto segue:

- il posto di lavoro deve essere messo a terra
- va evitato il contatto diretto con le spine del connettore
- immediatamente prima del contatto con l'elemento sensibile, toccare un oggetto conduttivo per evitare di trasmettere cariche elettrostatiche
- per il trasporto devono essere utilizzati solo imballaggi adatti allo scopo (scatole di cartone ondulato, sacchetti in materiale conduttivo). **Non** utilizzare normali sacchetti di plastica o confezioni in polistirolo!

Nota su montaggio e smontaggio del trasduttore

- svitare il coperchio della scatola morsetti e sganciare sia i conduttori del motore che i conduttori dei sensori di temperatura sulla morsettiera (fig. 5)
- smontare l'unità ventilatore ed il coperchio

3.1.1 Montaggio / smontaggio di ERN 1387 e di ROD

431 (v. Fig. 1 e Fig. 2)

Smontaggio

- asportare il coperchio del connettore
- staccare il connettore insieme al cavo del connettore segnali
- allentare e rimuovere la vite per il braccio di reazione (8.10a) e la vite del trasduttore (8.10b) ed evitare che ruoti anche il rotore
- inserire un perno filettato, per es. DIN 913-M5x30, (v. fig.2) nell'estremità dell'albero per assicurarne il centraggio e premere il trasduttore utilizzando una vite M6.

Montaggio

- fissare il braccio di reazione sul trasduttore tramite le viti (osservando la distanza tra il braccio di reazione e il trasduttore) e fissare le viti, per es. con Loctite 243
- applicare il trasduttore con il braccio di reazione precedentemente montato sul cono del rotore ed avvitare con la vite; attenersi alle coppie di serraggio max. prescritte ed evitare che ruoti anche il rotore.
- fissare il braccio di reazione allo scudo ed osservare il valore di scostamento radiale del trasduttore.
- premere la bussola di metallo del cavo del connettore
- inserire il connettore
- avvitare il coperchio.

3.1.2 Montaggio/smottaggio del Resolver Size 21

(v. Fig.3)

Smontaggio

- staccare il connettore intermedio
- allentare e rimuovere le viti e togliere lo statore del resolver
- rimuovere la vite M5x48 e togliere il rotore del resolver assicurandosi che non si giri anche il rotore del motore.

Montaggio

- applicare il rotore del resolver e serrare la vite M5x48; attenersi alle coppie di serraggio max. prescritte!
- montare lo statore del resolver e fissarlo con le viti
- montare il connettore intermedio .

3.2 Sostituzione dei cuscinetti, lubrificazione**3.2.1 Intervalli per la sostituzione dei cuscinetti**

Nota: In funzionamento continuo non deve essere superato il 75% del valore limite del numero di giri n_{s1} (v. fig. 8).

In condizioni di esercizio normali si consiglia di sostituire i cuscinetti dei motori 1PH7 dopo l'intervallo t_{LW} (v. fig.8).

Le ore di esercizio indicate sono intese per la posizione di montaggio orizzontale, per temperature medie del refrigerante di +30°C e dei cuscinetti di +100°C e per vibrazioni di livello R secondo DIN VDE530 Parte 14. Per impieghi del motore con un numero di giri variabile è necessario determinare approssimativamente il numero medio di giri d'esercizio n_m .

In condizioni di esercizio particolari, ad es. posizione di montaggio verticale, con esercizio prevalentemente oltre i 75% dei giri max. n_{max} , sollecitazioni elevate da vibrazione ed urti, frequenti inversioni di marcia ecc., gli intervalli per la sostituzione dei cuscinetti si riducono fino al 50% dell'intervallo normale t_{LW} .
Per il funzionamento con temperature di cuscinetto permanentemente superiori a +100°C, l'intervallo di sostituzione si riduce della metà per ogni aumento di temperatura di 15°K.

Suggeriamo di sostituire i cuscinetti lato A e B dopo le ore di esercizio consigliate o comunque al più tardi dopo 3 anni.

3.2.2 Montaggio/smottaggio del motore**Smontaggio**

Per facilitare il rimontaggio, contrassegnare durante lo smontaggio la posizione di origine delle parti (per es. con matita colorata, puntina ecc.).

Per lo smontaggio del trasduttore cfr. 3.1.

Allentare e rimuovere le viti dello scudo lato B e togliere con cautela lo scudo lato B.

Rimuovere il disco a movimento centrifugo dall'albero lato A spingendolo indietro.

Staccare il rotore dal motore. Estrarre il cuscinetto a rotolamento con un attrezzo adatto .

Montaggio

I cuscinetti a rotolamento estratti **non** devono più essere riutilizzati! Scaldare il cuscinetto a rotolamento in modo uniforme fino ad 80°C e non oltre i 100°C e spostarlo, assicurandosi che questo sia ben **allineato** e a contatto con il passaggio dell'albero!

Non dare colpi o martellate!

Inserire il rotore del motore nello statore.

Inserire il cuscinetto lato B con molla ondulata nella flangia del lato B senza inclinare e serrare le viti.

Premere il disco rotante (involucro ad anello gamma 9RB... senza labbro di tenuta) con bussola adeguata procedendo come indicato nella fig. 4 (distanza X).

Non utilizzare più dischi rotanti danneggiati!

Rodaggio dei cuscinetti

Per distribuire uniformemente il grasso nei cuscinetti nuovi, è necessaria una fase di rodaggio. Al primo avviamento i motori devono quindi essere accelerati progressivamente, entro un intervallo di tempo di 15 minuti ,da 0 a un numero di giri pari a circa il 75% dei giri limite max.

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Säkerhets- och idrifttagningsanvisningar för omriktarmatade lågspännings-trefasmotorer (enl. lågspänningsdirektivet 73/23/EEC)



Fara

Elektriska motorer har farliga spänningsförändringar och roterande delar samt ibland heta ytor. Allt arbete i samband med transport, anslutning, idrifttagning och regelbundet underhåll av sådana motorer måste utföras av **kvalificerad yrkespersonal** (VDE 0105; IEC 364). Osakkunnigt arbete kan medföra allvarliga **person- och materialskador**. Följ gällande **nationella, lokala och anläggningsspecifika föreskrifter**.

Specialutföranden och modellvarianter kan avvika i tekniska detaljer! Om någon som helst osäkerhet skulle råda, så försumma inte att ta kontakt med tillverkaren och uppgä därvid **typbeteckningen och fabriksnumret** (No E ..., se märkskylten), eller anläta en av SIEMENS servicecentraler för underhållsarbetet.

1 Ändamålsenlig användning

Dessa motorer är avsedda för industriell eller yrkesmässig användning. De uppfyller kraven i de harmoniserade standarderna EN60034 (VDE 0530). Användning i explosionshotade områden är förbjuden, såvida detta inte är uttryckligen angivet (se kompletterande instruktion). Om motorerna i speciella fall installeras för icke yrkesmässig användning gäller skärpta krav (t.ex. beröringsskydd för barn), som i så fall måste uppfyllas på systemsidan i samband med installationen.

Motorerna är dimensionerade för omgivningstemperaturer mellan **-15 °C och +40 °C** och installationshöjd **≤ 1000 möh**. Följ ovillkorligen avvikande uppgifter på märkskylten. Förhållandena på installationsplatsen måste stämma överens med alla uppgifter på märkskylten.

Motorerna kan installeras i lokaler med tak med dammig och fuktig omgivning och normala klimatvillkor. Om motorn används i en korrosiv omgivning skall den dessutom förses med korrosionsskyddsfärg.

Lågspänningsmotorer är beståndsdelar för montering i maskiner enligt maskindirektivet 89/392/EEC. De får inte tas i drift förrän slutprodukten överensstämmer med detta direktiv har fastställts (iaktta EN 60204-1).

Anläggningar och maskiner med omriktarmatade trefasmotorer för lågspänning måste tillfredsställa EMK-direktivet 89/336/EEC. Det åligger användaren att utföra installationen korrekt. Signal- och effektledningar till motorn skall vara avskärmade.

Följ vid installationen EMK-föreskrifterna från tillverkaren av omriktaren!

Ljudtrycksnivå	(DIN EN 21 680 del 1)
1PH7 10.	ca 73 dB(A)
1PH7 13.	ca 73 dB(A)
1PH7 16.	ca 74 dB(A)

2 Drift

2.1 Transport och förvaring

Använd alla lyftöglor när motorn transporteras.

Fäst inga ytterligare laster, iaktta lyftanordningens bärförmåga.

Om en motor inte sätts i drift omedelbart efter leveransen, så skall den förvaras i ett torrt, damm- och vibrationsfritt utrymme. Dra åt påskruvade transportöglor ordentligt.

2.2 Installation

Kontrollera att märkskyltens uppgifter rörande konstruktionstyp och kapslingsklass stämmer med de förhållanden som gäller på installationsplatsen och respektera dem.

Iskruvade lyftöglor skall dras åt ordentligt eller tas bort efter installationen! Lyftöglornas placering se Fig. 9.

Motorerna måste installeras så att kylluften kan cirkulera fritt. Minimiavståndet **s** mellan luftintag/-utsläpp och angränsande delar (Fig. 4) får inte underskridas!

Uppvärmad frånluft får inte kunna sugas in igen.

Undvik slag och tryck mot axeltappen när motorn monteras!

De täckplåtar (6.30) som måste tas av när motorn skall skruvas fast måste sättas tillbaka innan den tas i drift.

Pilen måste visa uppåt (se Fig. 1).

Monteras motorn vågrätt med kopplingslådan uppåt eller lodrätt med axeltappen nedåt måste skyddsproppen (Fig. 1) tas bort.

Tillåtna vibrationer

Systembetingade vibrationer vid installationsplatsen vållade av drivdon, monteringsförhållanden, uppriktning och installation samt externt alstrade vibrationer kan öka motorns vibrationsvärden. Dessa får inte överskrida de värden som anges i Fig. 7, om man är angelägen att motorn skall fungera felfritt under en lång livstid. Ev. kan ombalansering av rotn med monterat drivdon erfordras.

2.3 Balansering, drivdon

Använd alltid lämpligt verktyg vid på- och avdragnings av drivdon (t.ex. kopplingsskiva, kugghjul, remskiva, etc.).

Använd gängen i axeltappen.

I standardutförandet är rotn dynamiskt balanserad med halv kil (EN60034/VDE 0630).

OBS: Iaktta balanseringstypen som finns angiven på änden av axeltappen!

(F = Balansering med **hel** kil - specialutförande)

(H = Balansering med **halv** kil)

Ge akt på balanseringstypen då drivdonet monteras!

Drivdonen måste vara balanserade för deras del enligt ISO1940!



Vidtag sedvanliga åtgärder för beröringsskydd av drivdonen.

Om en motor tas i drift utan drivdon, så måste kilen fixeras så att den inte kan kastas ut.

Tillåtna krafter i radiell och axiell led framgår av diagrammen i projekteringsinstruktionen (ta kontakt med leverantören eller fabriken i tveksamma fall!).

Vid förändringar från normaldriften - t.ex. förhöjd temperatur, ovanliga ljud, vibrationer - skall motorn kopplas från i tveksamma fall. Ta reda på orsaken, ta eventuellt kontakt med tillverkaren. Skyddsanordningar får inte ens i provdrift sättas ur funktion.


Rengör luftvägarna regelbundet i smutsig miljö.

2.4 Elektrisk anslutning




Alla arbeten får endast utföras med stillastående motor som är frikopplad och säkrad mot återinkoppling och av kvalificerad fackpersonal. Detta gäller också för shuntkretsar (t.ex. separat fläktaggregat).

Kom alltid ihåg följande när en motor skall anslutas:

- Ledningarna måste vara anpassade till tillämpningen samt förekommande spänningar och strömstyrkor (se Fig.5);
- Ledningarna måste ha tillräcklig dimension, vara skyddade mot förvriddning, drag- och skjutpåkänningar och monterade så att de inte kan knäckas.
- Skyddsledaren måste anslutas till jorduttaget  .

Vid anslutning till uttagsslåda, kom ihåg att:

- Ledningsändarna skall vara aviserade så långt att isoleringen når nästan ända fram till kabelskon eller plinten;
- Kabelskornas storlek skall vara anpassad till plintanslutningarna och nåtledarens dimension;
- Skyddsledaren skall vara ansluten;
- Insidan av uttagsslådan måste vara ren och fri från ledningsrester;
- Alla skruvförband vid elanslutningar och plintar (ej kontaktraden för hjälpledare) måste vara åtdragna med föreskrivna moment, se Fig. 5;
- Både vid anslutningen och vid ev. omplacering av inre förbindelseledningar gäller föreskrifterna om minsta luftgap enl. Fig. 5;
- Minsta tillåtna luftgap för oisolerade delar som står under spänning får inte underskridas. Se upp för utstickande ledningsändar!
- Outnyttjade genomföringar skall vara tillslutna med förseglingsdetaljer, som skall vara ordentligt fastskruvade.
- För att kapslingsklassen skall gälla måste alla tätningsytor i uttagsslådan hålla föreskriven kvalitet.
- Isoleringsfolie måste finnas.
- Ledningsskärmar måste vara jordade.

 **Isoleringsfolien i uttagsslådan Fig. 5 tjänar som skydd mot spänningsöverslag till locket och får därför inte avlägsnas!**

2.4.1 Strömförsörjning

Motorn skall anslutas enligt medlevererat kopplingsschema. Iaktta data på märkskylten!

 **Direkt anslutning till trefasnätet är inte tillåten och medför att motorn förstörs.**

Se till att det blir rätt fasföljd!

Motorn får bara matas av en omriktare med lämpligt avpassad effekt.

2.4.2 Impulsgivare och temperatursensor


Anslutningen sker med den till uttagsslådan monterade flänskontakten med konaktstift.

2.4.3 Separatfläkt

Respektrea uppgifterna på märkskylten och bruksanvisningen för fläktaggregatet (se Fig. 10)!

Det måste finnas en skyddskoppling som förhindrar att huvudmaskinen kopplas till när fläktaggregatet inte är i drift!

2.5 Idrifttagning


 **OBS Risk för brännskador!**
På motorernas yta kan det förekomma temperaturer över 80 °C.
Inga temperaturkänsliga detaljer, t.ex. normala ledningar eller elektroniska komponenter, får läggas på eller fästas vid motorn.
Ordna beröringsskydd vid behov!

Innan motorn tas i drift, kontrollera:

- att rotorn kan vridas runt utan att skrapa emot;
- att motorn är korrekt monterad och uppriktad;
- att drivdonen är rätt inställda (t.ex. att drivremmar har rätt remspänning) och att drivdonet är lämpat för användningsvillkoren
- att alla elektriska anslutningar samt fästskravar och förbindelsedetaljer är åtdragna och utförda enligt föreskrift;
- att skyddsledaren är ordentligt ansluten;

- att rörliga och spänningsförande detaljer försetts med beröringsskydd;
 - att gränsvarvtalet n_{max} (se märkskylten) inte överskrids
- OBS:** Gränsvarvtalet n_{max} är det högsta driftsvarvtal som kan tillåtas under kort tid.

3 Underhåll**Säkerhetsåtgärder**


 **Motorn måste skiljas från nätet enligt föreskrift innan något arbete på motorn eller apparaten påbörjas, framför allt innan man öppnar skydden över spänningsförande detaljer. Förutom huvudströmkretsarna skall också ev. sidokretsar eller hjälpkretsar vara fränkopplade.**

Här gäller de sedvanliga „5 säkerhetsreglerna“ t.ex. enl. DIN VDE 0105:

- Fränkoppling
- Säkra mot återinkoppling
- Fastställ att ingen spänning förekommer
- Jorda och kortslut
- Täck över eller spärra av angränsande detaljer som har spänning pålagd.

Ovan beskrivna åtgärder får inte upphävas förrän servicearbetet är avslutat och motorn är fullständigt monterad.

3.1 Isärtagning/montering av givarna

 **OBS! Givarsystem med inbyggd elektronik (optiska givare, rotorlägesgivare, kugghjulsgivare) är elektrostatiskt hotade komponenter och konstruktionsgrupper (EHK).**

Vid arbete med EHK-komponenter måste man tänka på att:

- arbetsplatsen skall vara jordad;
- ej fatta i kontaktstiften med fingrarna;
- ingen elektrostatisk laddning får överföras vid beröring (berör ett ledande föremål omedelbart innan...)
- använda lämplig förpackning vid transport (kartong av wellpapp, elektriskt ledande plastpåse - inga vanliga plastpåsar, ingen frigolit,).

Observera vid isärtagning/montering av givarna:

- Skruva av locket till uttagsslådan och lossa motorledningarna liksom ledningarna till temperatursensorerna från kontaktraden (Fig. 5).
- Skruva bort det separata fläktaggregatet och givarlocket.

3.1.1 Isärtagning/Montering ERN1387 och ROD431

(se Fig. 1 och Fig. 2)

Isärtagning

- Lossa snäppfästet på stickkontaktens kåpa.
- Dra ur signalledningens stickkontakt.
- Skruva ur skruvarna (8.10a) till momentstaget och skruven (8.10b) till givaren. Förhindra att rotorn vrids med, om så behövs.
- Skruva i en pinnbult t.ex. DIN 913-M5x30 (se Fig. 2) för att skydda centreringen i axeltappen och tryck loss givaren genom att skruva i en skruv M6.

Montering

- Skruva fast momentstaget på givaren. (Ge akt på avståndet mellan momentstaget och givaren) och fixera skruvarna, t.ex. med Loctite 243.
- Sätt givaren med monterat momentstag på motorrotorns kon och skruva i skruven. OBS max. åtdragningsmoment. Förhindra att rotorn vrids med, om så behövs.
- Sätt fast momentstaget på lagerskölden, kontrollera det radiella kastet på givaren.
- Tryck in kontaktledningens metallhylsa.
- Sätt i stickkontakten.
- Sätt fast locket med snäppfästet.

3.1.2 Isärtagning/montering resolver Size 21

(se Fig. 3)

Isärtagning

- Dra av adaptorn.
- Skruva ur skruvarna och ta av resolver-statorn.
- Ta bort skruven M5x48, ta av resolver-rotorn. Förhindra att motorrotorn vrids med, om så behövs.

Montering

- Sätt på resolver-rotorn och skruva i skruven M5x48. OBS max. åtdragningsmoment!
- Montera resolver-statorn och sätt fast den med skruvarna.
- Sätt tillbaka adaptorn.

3.2 Lagerbyte, smörjning

3.2.1 Lagerbytesintervall

OBS: Vid kontinuerlig drift bör det max. kontinuerliga varvtalet n_{s1} ej överskridas (se Fig. 8).

Vid **normala driftsförhållanden** rekommenderas lagerbytesintervallet t_{LW} enligt Fig. 8 för lagren i 1PH7-motorerna.

Angivet antal driftstimmar gäller för vågrät montering, kylvätsketemperatur +30 °C, lagertemperatur +100 °C och vibrationer enl. vibrationsklass R i DIN VDE530, del 14. Vid olika motorvarvtal får man uppskatta det genomsnittliga arbetsvarvtalet n_m .

Vid **speciella driftsförhållanden** - t.ex. lodrät montering, mest drift över 75% av gränsvarvtalet n_{max} , stora vibrations- och stötblastningar, ofta återkommande reverseringsdrift, etc. - reduceras lagerbytesintervallet t_{LW} med upp till 50 %.

Om lagertemperaturer högre än +100 °C förekommer, så skall lagerbytesintervallet halveras för varje ökningssteg på 15 °K.

Lagren på A-sidan och B-sidan bör bytas efter angivet antal driftstimmar, dock senast efter 3 år.

3.2.2 Isärtagning/montering av motorn

Isärtagning

Märk ut de olika delarnas inbördes placering innan motorn tas isär, så går det lättare att sätta ihop den igen. Det kan man t.ex. göra med färgpenna eller ritsnål. Avmontering av givaren se avsnitt 3.1.

Skruva ur skruvarna i lagerskölden på B-sidan och ta sedan försiktigt av lagerskölden på denna sida.

Ta bort centrifugalbrickan från axelansatsen på A-sidan genom att skjuta bakåt.

Dra ut rotorn ur motorn. Dra av rullningslagren med lämpligt verktyg.

Montering

Avdragna rullningslager får inte användas igen.

Värm upp lagren likformigt till c:a 80-100 °C och skjut på dem, därvid måste man se till att lagrets innerring ligger an mot axeltappens kant!

Inga hårda slag med hammare el. dyl!

För in motorrotorn i statorn.

Sätt B-sidans lager med axelkil, så att det hamnar precis rakt i flänsen på B-sidan och dra åt skruvarna.

Tryck med lämplig hylsa på centrifugalbrickan (gammaringshus **9RB...** utan tätningssläpp) till mått **X** (se Fig. 4)

Använd inte centrifugalbrickor som skadats vid isärtagningen!

Inkörning av lagren

Efter lagerbytet bör rullningslagren köras in, så att fett fördelas likformigt. Det gör man genom att på 15 minuter accelerera motorn efterhand från varvtal 0 till 75% av gränsvarvtalet n_{max} .

ANHANG / APPENDIX / APPENDICE / ANEXO / APPENDICE / BILAGA

DEUTSCH

Ersatzteile (Fig. 1), vom Werk lieferbar
(siehe Bestellbeispiel)

1.00 Lagerung AS, komplett

- Lagerkappe AS
- Schleuderscheibe
- Wälzlager
- O-Ring
- Schraube

3.00 Läufer, komplett

4.00 Ständer, komplett

6.00 Lagerung BS, komplett

- .10 Lagerschild
 - Lagerschild
 - Schrauben
 - O-Ring
- .20 Lagerung
 - Wälzlager
 - Wellfeder
- .30 Dichtung
 - Dichtung
 - Stopfen

7.00 Belüftung und Klemmenkasten, komplett

8.00 Einbauten

- .10 Geber, komplett
 - Geber
 - Schrauben
 - Drehmomentstütze
- .20 Leitung, komplett
 - Leitungen mit Isolierkörper
 - Einbaudose
- .30 Geberdeckel
 - Deckel
 - Schrauben
 - O-Ring

Normteile sind nach Abmessung, Werkstoff und Oberfläche im freien Handel zu beziehen.

ENGLISH

Spare parts (Fig. 1) available from the factory
(see ordering example)

1.00 D-end bearing, complete

- Bearing cap, D-end
- Grease slinger
- Rolling-contact bearing
- O-ring
- Screw

3.00 Rotor, complete

4.00 Stator, complete

6.00 ND-end bearing, complete

- .10 End shield
 - End shield
 - Screws
 - O-ring
- .20 Bearing
 - Rolling-contact bearing
 - Leaf spring
- .30 Seal
 - Seal
 - Plug

7.00 Fan unit and terminal box, complete

8.00 Built-in devices

- .10 Encoder, complete
 - Encoder
 - Screws
 - Torque arm
- .20 Lead, complete
 - Leads with insulation
 - Mounting socket
- .30 Encoder cover
 - Cover
 - Screws
 - O-ring

Standard parts are obtainable from the trade according to dimensions, material and surface finish.

FRANCAIS

Pièces de rechange (Fig. 1), livrables par l'usine
(voir exemple de commande)

1.00 Palier côté D, complet

- couvercle de palier côté D
- déflecteur
- roulement
- joint torique
- vis

3.00 Rotor, complet

4.00 Stator, complet

6.00 Palier côté N, complet

- .10 Flasque-palier
 - flasque-palier
 - vis
 - joint torique
- .20 Palier
 - roulement
 - rondelle élastique ondulée
- .30 Joint
 - joint
 - bouchon

7.00 Ventilation et boîte à bornes, complètes

8.00 Eléments incorporés

- .10 Capteur, complet
 - capteur
 - vis
 - arrêt en rotation
- .20 Câble, complet
 - câbles avec corps isolant
 - embase de connecteur
- .30 Couvercle de capteur
 - couvercle
 - vis
 - joint torique

Les pièces normalisées peuvent être obtenues dans le commerce d'après leur dimension, la matière et l'état de surface.

ESPAÑOL

Piezas de repuesto (Fig. 1), suministro desde fábrica (v. ejemplo de pedido)

1.00 Rodamientos lado D, completo

- tapa del rodamiento D
- disco centrifugador
- rodamiento
- junta toroidal
- tornillo

3.00 Rotor, completo

4.00 Estator, completo

6.00 Rodamientos lado N, completo

- .10 Escudo portacojinetes
 - escudo portacojinetes
 - tornillos
 - junta toroidal
- .20 Rodamientos
 - rodamientos
 - resorte
- .30 Sello
 - sello
 - tapón

7.00 Sistema de ventilación y caja de bornes, completo

8.00 Dispositivos

- .10 Captador, completo
 - captador
 - tornillos
 - brazo de reacción
- .20 Cables, completo
 - cables con cuerpo aislante
 - caja de conector
- .30 Tapa del captador
 - tapa
 - tornillos
 - junta toroidal

Las **piezas estándar** se comprarán en comercios del ramo según las dimensiones, material y superficie especificados.

ITALIANO

Pezzi di ricambio (fig. 1) da ordinare al costruttore
(v. esempio d'ordine)

1.00 Cuscinetti lato A completi

- Copricuscinetto lato A
- Dischi a movimento centrifugo
- Cuscinetto a rotolamento
- O-Ring (anche: anello torico)
- Vite

3.00 Rotore completo

4.00 Statore completo

6.00 Cuscinetti lato B, completi

- .10 Scudo B
 - Scudo
 - Viti
 - O-Ring (anche: anello torico)
- .20 Cuscinetto
 - Cuscinetto a rotolamento
 - Molla ondulata
- .30 Guarnizione
 - Guarnizione
 - Tappo

7.00 Sistema di ventilazione e cassetta morsetti completi

8.00 Elementi ad incasso

- .10 Trasduttore completo
 - Trasduttore
 - Viti
 - Staffa per attacco molla
- .20 Cavo completo
 - Cavo con corpo isolante
 - Presa ad incasso
- .30 Coperchio del trasduttore
 - Coperchio
 - Viti
 - O-Ring (anche: anello torico)

Componenti conformi ai criteri **standard** di dimensione, materiale e superficie si trovano in commercio.

SVENSKA

Reservdelar (Fig. 1), som kan erhållas från tillverkaren (se beställningsexempel)

1.00 Lagring AS, komplett

- lagersköld AS
- centrifugalbricka
- rullningslager
- O-ring
- skruv

3.00 Rotor, komplett

4.00 Stator, komplett

6.00 Lagring BS, komplett

- .10 lagersköld
 - lagersköld
 - skruvar
 - O-ring
- .20 lagring
 - rullningslager
 - axelkil
- .30 packning
 - packning
 - propp

7.00 Ventilation och uttagslåda, komplett

8.00 Inbyggingsdelar

- .10 givare, komplett
 - givare
 - skruvar
 - momentstag
- .20 ledning, komplett
 - ledningar med isolering
 - inbyggnadsuttag
- .30 givarlock
 - lock
 - skruvar
 - O-ring

Standarddetaljer med önskade dimensioner, material och yta kan erhållas i öppna handeln.

Bestellbeispiel / Ordering example:
Exemple de commande / Ejemplo de pedido:
Esempio d'ordine / Beställ exempel:

1PH7 131-4CF 40 - 0AA01
Nr. E 6K 6 76553 01 005
1.00 Lagerung AS, komplett

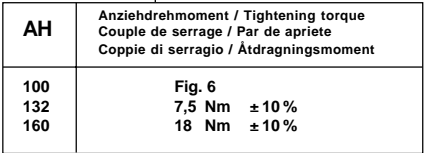


Fig. 1 PH7 IM B3

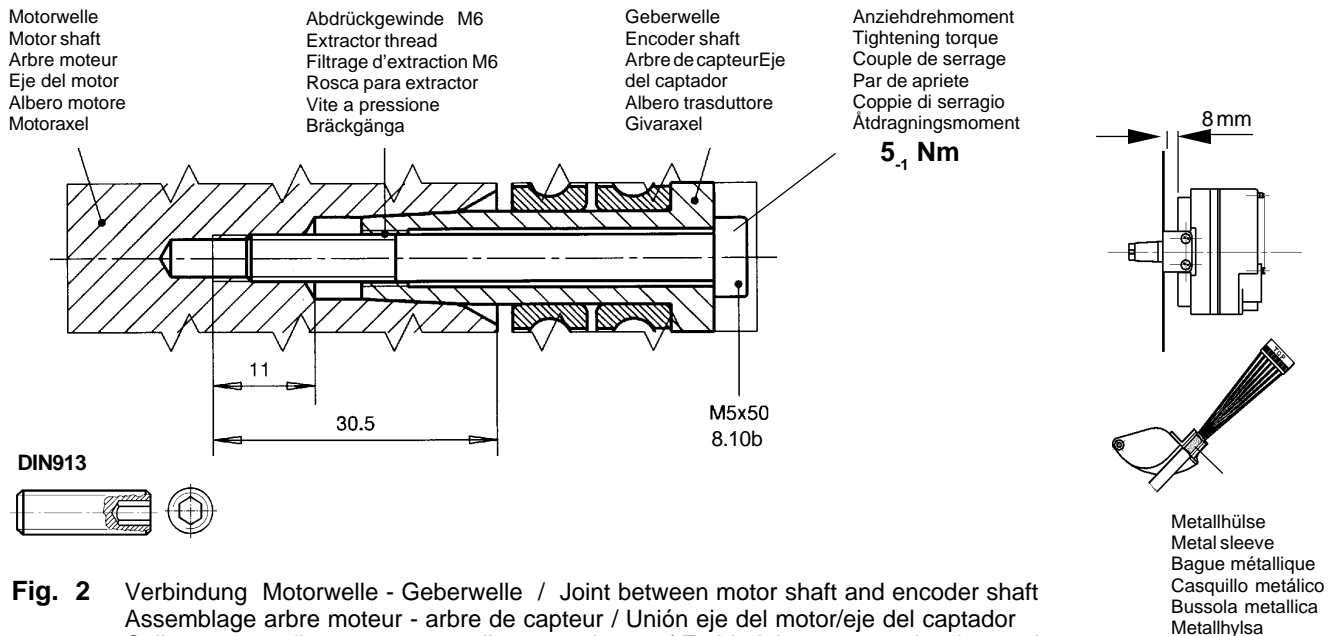


Fig. 2 Verbindung Motorwelle - Geberwelle / Joint between motor shaft and encoder shaft
Assemblage arbre moteur - arbre de capteur / Unión eje del motor/eje del captador
Collegamento albero motore - albero trasduttore / Förbindelse motoraxel - givaraxel

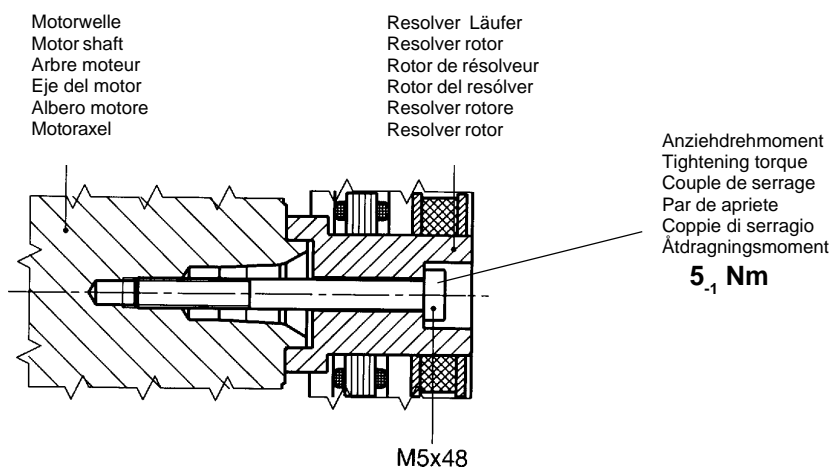


Fig. 3 Verbindung Motorwelle - Resolver Läufer / Joint between motor shaft and resolver rotor
Assemblage arbre moteur - rotor de résolveur / Unión eje del motor/rotor del resólvor
Collegamento albero motore - resolver rotore / Förbindelse motoraxel - resolver rotor

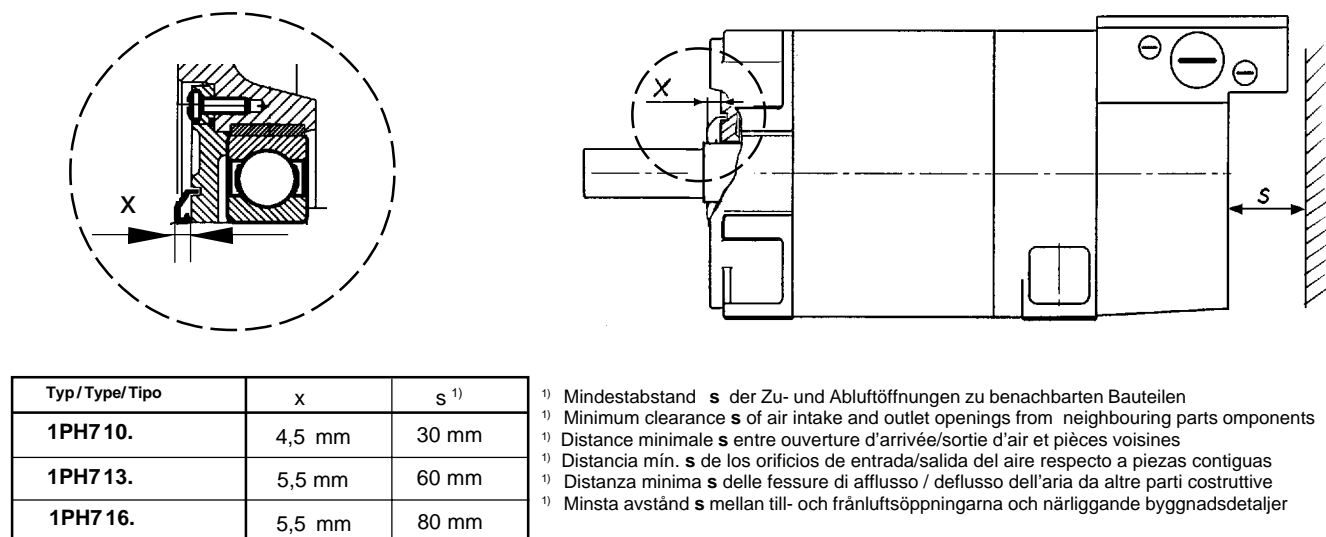
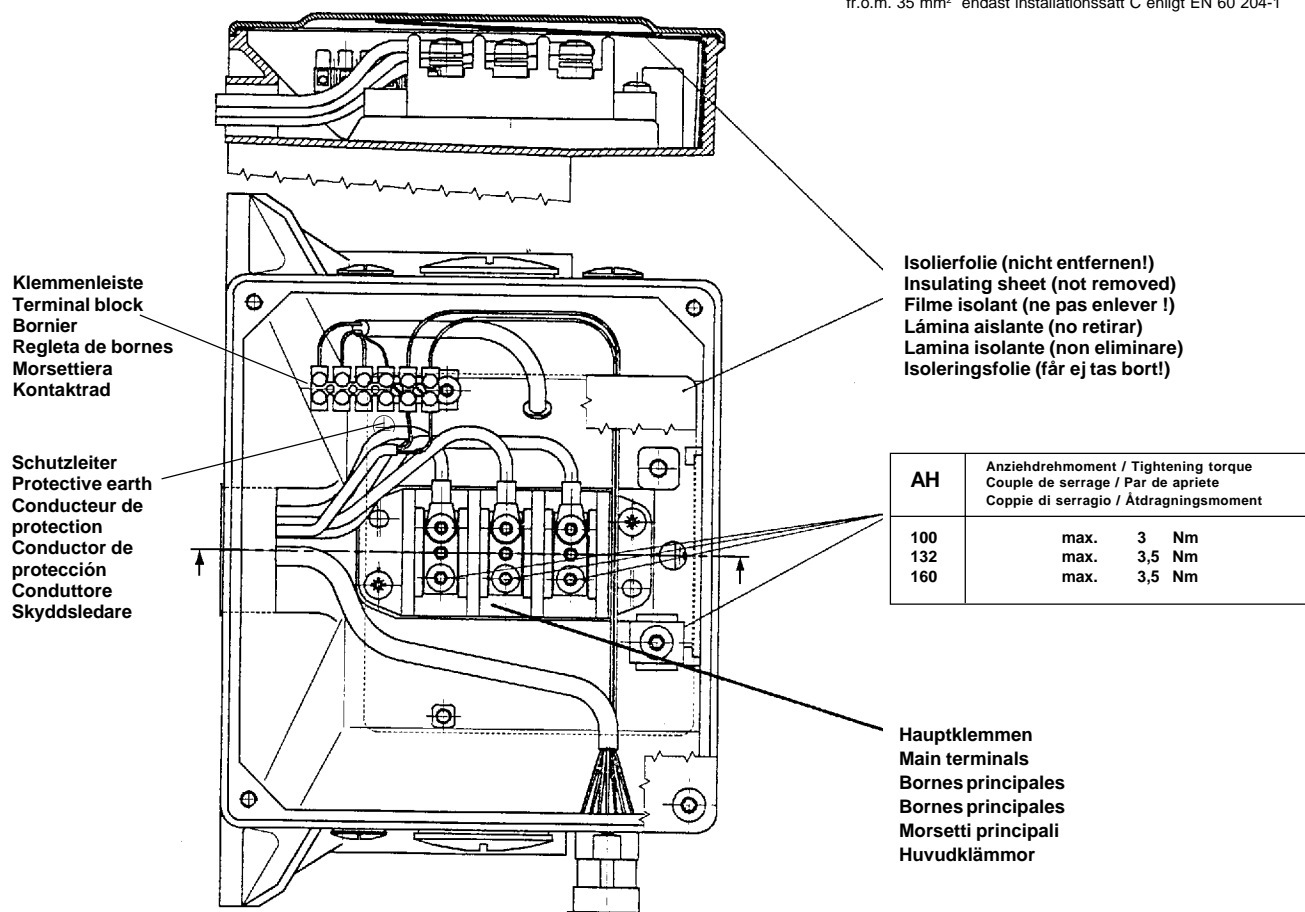


Fig. 4 Mindestabstand/Einbau Gammaring / Minimum clearance/gamma ring fitting
Distance minimale/Montage du déflecteur / Distancia mínima/montaje del retén
Distanza minima/montaggio anello-gamma / Minsta avstånd/montering av gammaring

Typ / Type/ Tipo		1PH7 10.	1PH7 13.	1PH7 16.
Hauptklemmen Main terminals Bornes principales Morsetti principali Huvudklämmor	Anzahl x Größe / Quantity x Size Nombre x Taille / Cantidad x Tamaño Quantità x Grandezza / Antal x Storlek	6 x M5	6 x M6	6 x M6
	Anziehdrehmoment / Tightening torque Couple de serrage / Par de apriete Coppia di serraggio / Åtdragningsmoment	1,8 ... 2,5 Nm	2,7 ... 4 Nm	2,7 ... 4 Nm
	für Leiterquerschnitt max. For conductor cross-sections up to pour une section des conducteurs maximale Para una sección máxima de los conductores de Per sezione conduttore max. För ledararea max.	25 mm ²	35 mm ²	50 mm ² (*)
	Max. Belastbarkeit ⁽¹⁾ / Maximum current carrying ⁽¹⁾ Intensité maximale ⁽¹⁾ / Carga máxima ⁽¹⁾ Carico massimo ⁽¹⁾ / Max. belastning ⁽¹⁾	67 A	83 A	123 A ^(*)
Schutzleiter-Anschluß PE connection Raccord pour conducteur de protection Terminal para el conductor de protección Collegamento conduttore di protezione Skyddsledaranslutning	Größe / Size Taille / Tamaño Grandezza / Storlek	M5	M6	M6
	Kabelschuhbreite max. Maximum cable lug width Largeur maximale de la cosse Anchura máxima del terminal del cable Larghezza capocorda max. Kabelskons bredd max.	12 mm	15 mm	15 mm

(1) nach EN 60 204-1 Installationsart B2 / According to EN 60 204 - 1 type of installation B2
selon EN 60 204 - 1 type d'installation B2 / Según EN 60 204-1 modo de instalación B2
secondo EN 60 204 - 1 installazione di tipo B2 / enligt EN 60204 - 1 installationssätt B2

(*) ab 35 mm² nur Installationsart C nach EN 60 204-1
from 35 mm² only type of installation C according to EN 60 204-1
pour ≥ 35 mm², seulement type d'installation C selon EN 60 204-1
a partir de 35 mm² sólo el modo de instalación C según EN 60 204-1
a partire da 35 mm² solo installazioni di tipo C secondo EN 60 204-1
fr.o.m. 35 mm² endast installationssätt C enligt EN 60 204-1



max. Klemmenspannung / Max. terminal voltage / Tension maxi. aux bornes Tensión máxima en bornes / Tensione max. morsetti / Max. försörjningsspänning	< 600 V	< 1000 V
Mindestluftstrecke / Min. clearance in air / Distance min. dans l'air Distancia mínima en el aire / Traferro minimo / Minsta luftgap	5,5 mm	8 mm

Fig. 5 Elektrischer Anschluß / Electrical connections / Raccordement électrique
Conexión eléctrica / Collegamento elettrico / Elektrisk anslutning

Anziehdrehmomente für Schraubenverbindungen (nicht für elektrische Anschlüsse)
Tightening torques for screwed connections (not for electrical connections)
Couples de serrage des assemblages vissés (ne concerne pas les connexions électriques)
Pares de apriete para uniones atornilladas (no para conexiones eléctricas)
Coppie di serraggio per viti di attacco (non per allacciamenti elettrici)
Åtdragningsmoment för skruvförband (ej för elektriska anslutningar)

Bei Festigkeitsklassen **8.8** und **8** oder höher nach DIN ISO 898
 For strength classes **8.8** and **8** or higher to DIN ISO 898
 Classe de résistance **8.8** et **8** ou supérieure selon DIN ISO 898
 Para clases de resistencia **8.8** y **8** o más altas según DIN ISO 898.
 Per classi di resistenza **8.8** e **8** o maggiori sec. DIN ISO 898
 Hållfasthetsklasserna **8.8** och **8** eller högre enl. DIN ISO 898


	Gewinde-Ø / Thread-Ø Ø du filetage / Ø de la rosca Filetto-Ø / Gängdimeter	M4	M5	M6	M8	M10	M12	M16
	Anziehdrehmoment Tightening torque Couple de serrage Par de apriete Coppia di serraggio Åtdragningsmoment [N m]	3	5	9	24	42	70	165
Toleranz / Tolerance Tolérance / Tolerancia Tolleranza / Tolerans ± 10%								

Fig. 6 Anziehdrehmoment (Die obigen Anziehdrehmomente gelten soweit keine anderen Werte angegeben sind!)

Tightening torque (The above values of tightening torque are applicable unless alternative values are given elsewhere.)

Couple de serrage (Les couples de serrage indiqués ci-dessus sont valables pour autant qu'aucune valeur spécifique ne soit donnée.)

Par de apriete (Estos pares de apriete rigen mientras no se indiquen otros.)

Coppie di serraggio (Le coppie di serraggio indicate qui di sopra sono valide se non sono indicati altri valori.)

Åtdragningsmoment (Ovanstående åtdragningsmoment gäller om ej andra värden angivits!)

Schwingfrequenz Oscillation frequency Fréquence de vibration Frecuencia Frequenza di oscillazione Vibrationsfrekvens	Schwingwerte Vibration values Vibrations Valores de vibración Valori delle oscillazioni Vibrationsvärden
< 6,3 Hz	Schwingweg / Vibration displacement Déplacement / Elongación Ampiezza di oscillazione / Vibrationssträcka s ≤ 0,16 mm
6,3 - 63 Hz	Schwinggeschwindigkeit / Vibration velocity Vitesse de vibration / Velocidad Velocità di oscillazione / Vibrationshastighet v _{eff} ≤ 4,5 mm/s
> 63 Hz	Schwingbeschleunigung / Vibration acceleration Accélération / Aceleración Accelerazione di oscillazione / Vibrationsökning a ≤ 2,55 m/s²

Fig. 7 Immittierte Schwingwerte

Vibration values
 Vibrations
 Valores de vibración
 Valori delle oscillazioni
 Vibrationsvärden

Typ/Type /Tipo	Querkraft-Ausführung / Transverse-force version / Exécution à effort transversal / Fuerza transversal / Esecuzione-forza trasversale / Utförande med radiell kraft			
1PH7 10.	$n_m \leq 2500$	$2500 < n_m < 6000$	$n_{s1} \leq 5500$	
1PH7 13.	$n_m \leq 2000$	$2000 < n_m < 5500$	$n_{s1} \leq 4500$	
1PH7 16. n_m, n_{s1} [1/min]	$n_m \leq 1500$	$1500 < n_m < 4500$	$n_{s1} \leq 3700$	
t_{Lw} [h]	16 000	8 000	8 000	

n_m : mittlere Betriebsdrehzahl in 1/min ; es wird Drehzahlspiel vorausgesetzt !

n_m : mean operating speed in rpm; some speed fluctuation is assumed!

n_m : vitesse moyenne de service en tr/min ; il est supposé que la vitesse varie de façon cyclique !

n_m : velocidad de servicio media en 1/min; se suponen intervalos a diferentes velocidades!

n_m : numero medio di giri d'esercizio compiuti in 1/min dando per acquisito il gioco di velocità

n_m : medelvarvtal vid drift i 1/min ; det förutsätts att varvtalet varierar!

n_{s1} : max. Dauerdrehzahl in 1/min

n_{s1} : max. continuous speed in rpm

n_{s1} : vitesse maxi. en service continu en tr/min.

n_{s1} : velocidad permanente máx. en 1/min

n_{s1} : numero massimo di giri compiuti in esercizio continuo in 1/min

n_{s1} : max kontinuerligt varvtal i 1/min

t_{Lw} : Lagerwechselfrist in Betriebsstunden

t_{Lw} : Intervalle de remplacement des roulements en heures de service

t_{Lw} : Intervallo in ore di esercizio per la sostituzione del cuscinetto

t_{Lw} : Bearing replacement interval in operating hours

t_{Lw} : Intervalo para el cambio de rodamientos en horas de servicio

t_{Lw} : Lagerbytesintervall i driftstimmar

Fig. 8 Empfohlene Lagerwechselfrist t_{Lw} / Recommended replacement interval t_{Lw}
Intervalles de remplacement des roulements t_{Lw} / Intervalos recomendados para cambiar los rodamientos t_{Lw}
Intervallo t_{Lw} consigliato per la sostituzione di cuscinetti / Rekommenderat intervall för lagerbyte t_{Lw}

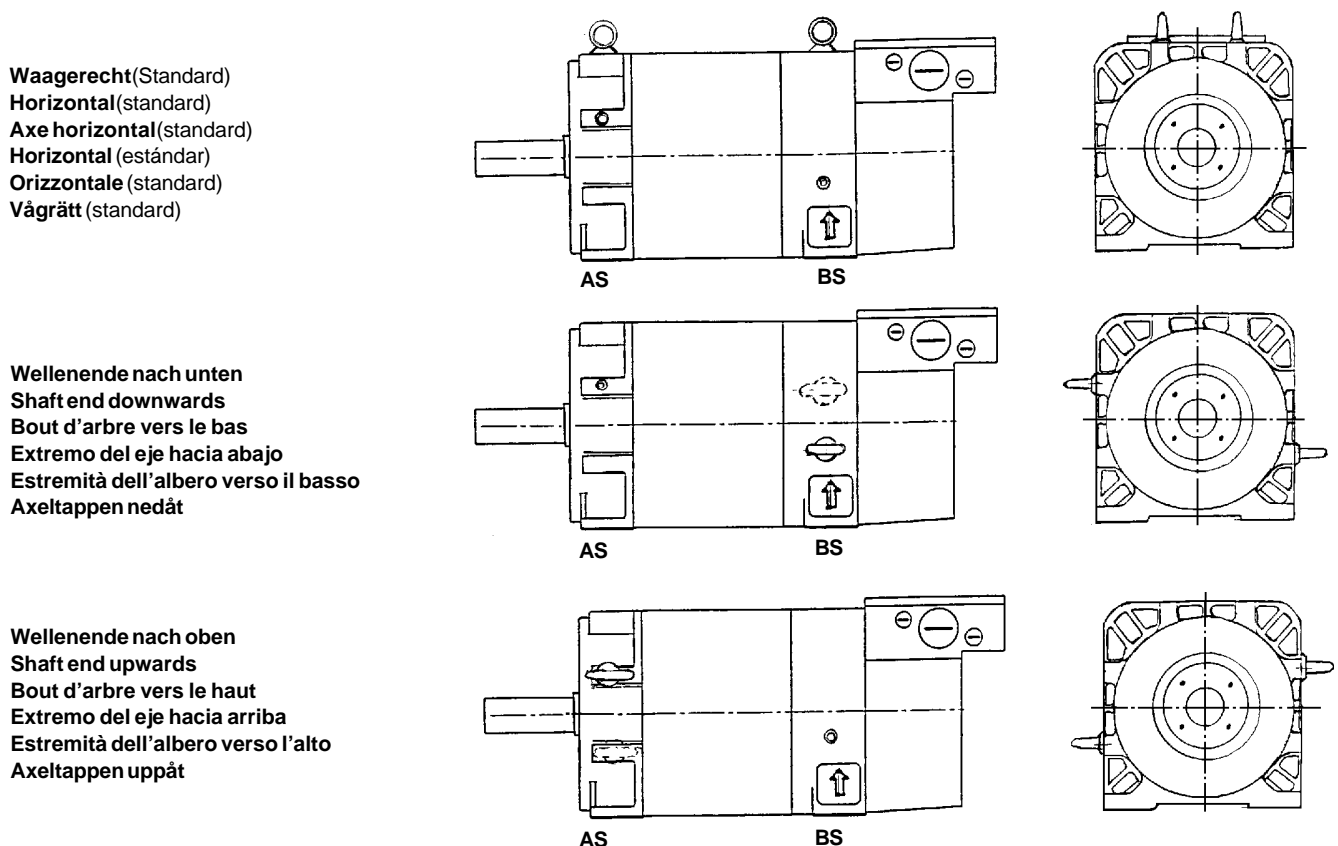


Fig. 9 Anordnung der Hebeösen / Lifting eye arrangement
Disposition des oeilletons de levage / Disposición de los cáncamos
Disposizione dei golfari di sollevamento / Placering av lyftöglorna

Fremdbelüftung W2D... für Motoren 1PH7

1 Sicherheitshinweise / Bestimmungsgemäße Verwendung

ebm-Erzeugnisse sind keine gebrauchsfertigen Produkte, sondern Einbaugeräte, die erst im eingebauten Zustand in Betrieb genommen werden dürfen. Sie dürfen nicht in explosionsfähiger oder mit chemischen Zusätzen verunreinigter Umgebung und nur in dem von ebm spezifizierten Temperaturbereich betrieben werden. Außerdem sind sie zum Betrieb unter normalen Einsatzbedingungen, bei denen es keine Ablagerung leitfähigen Materials gibt, vorgesehen.

Die Lüftermotoren sind mit Netzspannung zu versorgen.

ebm-Fremdbelüftungseinheiten sind dazu bestimmt, im Dauerbetrieb (S1) Umgebungsluft zu fördern. Dabei darf die Steuerung keine extremen Schaltbetriebe zulassen.

Einbau, Inbetriebnahme und elektrische Installation darf nur von dafür geschultem Fachpersonal vorgenommen werden.

Zur Montage der Belüftungsbaugruppe müssen geeignete Befestigungsmittel verwendet werden. Der elektrische Anschluß ist nach dem vorgegebenen elektrischen Schaltbild vorzunehmen.

Die Verwendung einer Motorschutzeinrichtung mit allpoliger Abschaltung zum Schutz gegen unsachgemäßen Gebrauch (Blockierfall) ist sicherzustellen und die ordnungsgemäße Funktion im eingebautem Zustand zu beurteilen.

Anschlußleitungen dürfen keiner unzulässigen Zugbeanspruchung ausgesetzt werden.

2 Lagerung

Um einen einwandfreien Betrieb und eine möglichst lange Lebensdauer zu gewährleisten sollten extreme Belastungen, sowie eine empfohlene Aufbewahrungsdauer von größer einem Jahr vermieden werden.

Extreme Belastungen sind beispielsweise: Einwirkung von Staub, Feuchtigkeit und aggressiven chemischen Substanzen, sowie Einwirkung von großer Hitze oder Kälte oder hoher Luftfeuchtigkeit.

3 Instandhaltung

Der Ventilator innerhalb der Fremdbelüftungseinheit ist durch die Verwendung von speziellen Lagerfetten wartungsfrei. Bei Wartungsarbeiten an der Fremdbelüftungseinheit wie dem Reinigen der Ventilatorflügel, muß der Ventilator still stehen und der Stromkreis der Fremdbelüftungseinheit unterbrochen und gegen Wiedereinschalten gesichert sein.

Die Reinigung des Ventilators sollte mit einem dafür geeigneten Tuch oder einer Bürste erfolgen, ohne das dabei Feuchtigkeit in den Innenraum des Motors gelangen kann.

Achtung: Bei zu starker Krafteinwirkung können die Ventilatorflügel beschädigt werden. Dies muß vermieden werden !

4 Inbetriebnahme

Vor der Inbetriebnahme müssen alle sicherheitstechnisch und funktional relevanten Details überprüft werden. Hierzu wird im folgenden in Form einer Aufzählung eine kurze Hilfestellung gegeben, die jedoch keinen Anspruch auf Vollständigkeit erhebt:

- Vergleich der Daten der Fremdbelüftungseinheit mit den Anschlußdaten. Die Fremdbelüftungseinheit darf nicht angeschlossen werden, wenn die Anschlußdaten von den Daten der Fremdbelüftungseinheit in der Art abweichen, daß daraus eine Überlastung resultiert.
- Überprüfung der Montage (z. B. richtiger Einbau bezüglich Drehrichtung) und der elektrischen Installation (z. B. der Anbringung des Schutzleiters) der Fremdbelüftungseinheit inklusive Zubehör.

- Überprüfung der Montage und der elektrischen Installation von sicherheitsrelevanten Bauteilen wie beispielsweise Motorschutzschaltern, Schutzgittern und dergleichen.
- Entfernung von Teilen, die sich im Förderbereich des Ventilators bzw. im Bereich des Ventilatorflügels befinden.

5 Ersatzteile für Klemmkästen

Sollte es zum Verlust von Sonderschrauben oder zum Bruch des Klemmsteins kommen, so kann von der

Fa. ebm Werke GmbH & Co.

Bachmühle 2

D - 74 673 Mulfingen

Tel.: 0 79 38 / 81-0

Fax: 0 79 38 / 81-110

je Motorenbaugröße ein Satz mit Ersatzteilen bezogen werden. Enthalten sind darin alle Torxschrauben, die keine Normteile sind, sowie das Klemmbrett bezogen auf die jeweilige Motorenbaugröße.

Motorenbaugröße	ebm-Type	ebm-Bestell-Nr.
	Fremdbelüftungshaube	Ersatzteile
1PH7		
Achshöhe AH100	W2D160	61017-1-7612
Achshöhe AH132	W2D210	61018-1-7612
Achshöhe AH160	W2D250	"

Die aktuellen Preise werden auf Anfrage von unseren Verkaufssachbearbeitern genannt.

Versand und Lieferung ausschließlich per Nachnahme.

Separate Fan Unit W2D... for Motors 1PH7

1 Safety notes/intended use

ebm products are not supplied ready for use, but are intended for fitting in other equipment. They must not be put into operation until after fitting. They must not be used in areas exposed to explosion hazard or areas where the environment is polluted by chemical additives and must only be operated in the ebm-specified temperature range. They are intended for operation under normal conditions in which there are no deposits of conductive material.

The fan motors must be supplied with line voltage.

ebm separate fan units are intended to deliver environmental air in continuous operation (S1). The control device must not allow excessively frequent switching.

Fitting, electrical installation and start-up must be performed by trained technicians only.

Suitable fixing materials must be used for fitting the fan unit. The electrical connections must be as shown in the existing circuit diagram.

The use of a motor protection device with all-pole disconnection as safeguard against improper use (rotor locking) must be ensured, and proper functioning must be tested in the built-in state.

Connecting leads must not be subjected to excessive tensile strain.

2 Bearings

To ensure perfect operation and the longest possible service life, extreme loads should be avoided and the recommended maximum storage period of 1 year should not be exceeded.

Examples of extreme loads are: the effects of dust, moisture and aggressive chemical substances, as well as the effects of extreme heat/cold or high humidity.

3 Repair

Thanks to the special bearing greases used, the fan inside the separately fan unit is maintenance-free. When maintenance work is carried out on the unit, such as cleaning the fan blades, the fan must be at standstill and the power must be disconnected and secured against reconnection.

The fan should be cleaned with a suitable cloth or brush in such a way as to prevent moisture getting inside the motor.

Warning: If too much force is used, the fan blades can be damaged. This must be avoided!

4 Start-up

All details concerning safety and proper functioning must be checked prior to start-up. The following list of checks is intended as a reminder, but makes no claim to completeness:

- Compare the specification data of the separate fan unit with the connection data. The separate fan unit must not be connected if the connection data and the separate fan unit data deviate in such a way as to cause overloading.
- Check the mounting (e.g. correct mounting with respect to direction of rotation) and the electrical installation (e.g. protective earth conductor connected) of the separate fan unit, including accessories.
- Check the mounting and the electrical installation of parts with a safety function, such as protective circuit-breakers, safety grilles, and the like.
- Remove parts located in the fan delivery zone or in the vicinity of the fan blades.

5 Spare parts for terminal box

If special screws are lost or the terminal block is broken, a set of spare parts for the size of motor concerned can be ordered from

ebm Werke GmbH & Co.

Bachmühle 2

D - 74 673 Muldingen

Tel.: (++49) 7938-81-0

Fax: (++49) 7938-81-110

The set contains all torx screws that are not standard parts, as well as the terminal block for the given motor size.

Motor size	ebm-type separate fan unit	ebm order No. spare parts
1PH7		
Shaft height AH100	W2D160	61017-1-7612
Shaft height AH132	W2D210	61018-1-7612
Shaft height AH160	W2D250	"

Please contact our sales assistants for information on current prices. Dispatch is on a cash-on-delivery basis only.

Motoventilateur W2D... pour moteurs 1PH7

1 Consignes de sécurité/Utilisation conforme à la destination

Les produits ebm ne sont pas des produits finis prêts à l'usage, mais sont des appareils à incorporer qui ne doivent être mis en service qu'à l'état incorporé. Ils ne doivent pas être utilisés dans les atmosphères explosibles ou polluées de substances chimiques, et ne doivent fonctionner que dans la plage de température spécifiée par ebm. Par ailleurs, ils sont prévus pour le fonctionnement dans les conditions normales, dans lesquelles il ne se produit pas de dépôt de matières conductrices.

Les motoventilateurs doivent être alimentés en tension du réseau.

Les motoventilateurs **ebm** sont destinés à faire circuler de l'air en service continu (S1). La commande ne doit pas tolérer un service intermittent à fréquence de commutation élevée.

Le montage, la mise en service et l'installation électrique ne doivent être effectués que par du personnel formé à cet effet.

La fixation du motoventilateur doit être réalisée avec des moyens appropriés. Le raccordement électrique sera effectué en conformité avec le schéma électrique fourni.

On prévoira un dispositif de protection du moteur à coupure omnipolaire assurant par exemple la protection en cas de blocage, et on en vérifiera le fonctionnement correct à l'état monté.

Les câbles de raccordement ne doivent pas être exposés à des efforts de traction exagérés.

2 Paliers

Afin d'assurer un fonctionnement correct et une durée de vie la plus longue possible, il convient d'éviter les contraintes extrêmes ainsi qu'un entreposage d'une durée supérieure à un an.

Les contraintes extrêmes sont par exemple les effets de la poussière, de l'humidité, de substances chimiques agressives ainsi que d'une grande chaleur ou d'un grand froid.

3 Maintenance

Le ventilateur est exempt d'entretien en raison de l'utilisation de graisse à roulement spécial. Pour les interventions d'entretien sur le motoventilateur, tel que le nettoyage des pales, le ventilateur doit être arrêté et le circuit d'alimentation du motoventilateur doit être ouvert et condamné pour empêcher la mise sous tension.

Pour nettoyer le ventilateur, on utilisera un chiffon ou une brosse, en veillant à ce qu'il ne pénètre pas d'humidité à l'intérieur du moteur.

Attention ! Sous l'effet d'un trop grand effort, les pales du ventilateur peuvent être endommagées. Ceci doit être évité à tout prix !

4 Mise en service

Avant la mise en service, il faut vérifier tous les détails affectant la sécurité et le fonctionnement. Vous trouverez ci-après, à titre d'aide, une énumération qui ne prétend pas être exhaustive.

- Comparer les caractéristiques du motoventilateur avec les caractéristiques du réseau. Il ne faut pas raccorder le motoventilateur si ses caractéristiques s'écartent de celles du réseau à tel point qu'il en résulterait une surcharge.
- Vérifier le montage (notamment en ce qui concerne le sens de rotation) et l'installation électrique (par ex. branchement du conducteur de protection) du motoventilateur et des accessoires.
- Vérifier le montage et l'installation électrique des constituants de sécurité tels que le disjoncteur moteur, les grillages de protection et autres.
- Enlever les corps étrangers qui se trouvent dans le canal d'aspiration et de refoulement du ventilateur ainsi que dans la zone de la roue du ventilateur.

5 Pièces de rechange pour boîte à bornes

En cas de perte de vis spéciales ou de rupture d'une borne, il est possible de se procurer auprès de la société

**Fa. ebm Werke GmbH & Co.
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Tél.: (++)49 7938/81-0

Fax: (++)49 7938/81-110

un jeu de pièces de rechange pour la taille du moteur considérée. Ce jeu comprend toutes les vis à empreinte Torx qui ne sont pas des pièces normalisées, ainsi que la planche à bornes pour la taille de moteur considéré.

Moteurs de 1PH7	Type ebm du capot du motoventilateur	Réf. ebm des pièces
Hauteur d'axe AH100	W2D160	61017-1-7612
Hauteur d'axe AH132	W2D210	61018-1-7612
Hauteur d'axe AH160	W2D250	"

Les prix des pièces de rechange seront communiqués sur demande par notre service commercial.

Expédition et livraison uniquement par paiement à la réception.

Ventilación independiente W2D... para motores 1PH7

1 Indicaciones de seguridad/utilización conforme

Los productos de la marca ebm no son productos listos para su empleo, sino que son aparatos que se han de incorporar antes de ponerlos en servicio. No deben operarse en entornos expuestos al peligro de explosiones o contaminados con aditivos químicos y sólo pueden ponerse en funcionamiento bajo las temperaturas especificadas por ebm. Además están previstos para su utilización bajo condiciones normales de servicio, donde no hayan depósitos de material conductor.

Los motores de los ventiladores han de conectarse a la red.

Los grupos motoventiladores separados **ebm** sirven para impulsar aire ambiente en servicio permanente (S1). Durante el servicio el control debe evitar toda maniobra extrema.

El montaje, la puesta en marcha y la instalación eléctrica la efectuará sólo personal cualificado especializado en esta materia.

Para montar el grupo motoventilador se utilizarán los medios de fijación adecuados. La conexión eléctrica se efectuará siguiendo el esquema prescrito.

Se cuidará de incorporar un guardamotor con desconexión de todos los polos como protección contra la utilización indebida (bloqueo) y se comprobará su funcionamiento correcto después de haberlo montado.

Los cables de conexión no deben ser sometidos a fuerzas de tracción inadmisibles.

2 Almacenamiento

Para asegurar el funcionamiento perfecto y garantizar una vida útil larga deberán evitarse las solicitaciones extremas así como tiempos de almacenamiento superiores a un año.

Son solicitaciones extremas p. ej.: polvo, humedad y sustancias químicas agresivas, así como la exposición a altas y bajas temperaturas o a una alta humedad atmosférica.

3 Mantenimiento

El ventilador en el grupo motoventilador separado es libre de mantenimiento debido a que se ha usado grasa de rodamientos especial. Cuando se efectúan los trabajos de mantenimiento en el grupo motoventilador, así como al limpiar los álabes, deberá estar parado el ventilador y se habrá desconectado el circuito de corriente del grupo habiéndolo asegurado contra la reconexión.

El ventilador se limpiará con un trapo o un cepillo adecuado cuidando que no penetre humedad en el motor.

Importante: ¡No ejercer demasiada presión ya que hay peligro de que se estropeen los álabes del ventilador!

4 Puesta en marcha

Antes de la puesta en marcha se comprobarán todos los detalles relativos a la seguridad y funcionales. A continuación ofrecemos una pequeña ayuda en forma de una lista que no pretendemos sea completa:

- Comparar los datos del grupo motoventilador separado con los datos de conexión. Es inadmisibile conectar el grupo motoventilador si los datos de conexión difieren de los datos del grupo motoventilador de tal manera, que pudiera resultar una sobrecarga.
- Comprobar el montaje (p. ej. el correcto montaje en lo que respecta a la dirección de giro) y la instalación eléctrica (p. ej. la colocación del conductor de protección) del grupo motoventilador, incl. accesorios.
- Comprobar el montaje y la instalación eléctrica de piezas que garanticen la seguridad tales como los guardamotores, las rejillas de protección y similares.
- Retirar todas las piezas que puedan ser aspiradas e impulsadas por el ventilador así como todas las que estén cerca de los álabes.

5 Piezas de repuesto para las cajas de bornes

En caso de pérdida de tornillos especiales o si se quiebra la regleta de bornes puede pedirse a

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un juego de piezas de repuesto, disponible para cada tamaño de motor. Este paquete contiene todos los tornillos Torx que no sean piezas estándar, así como el tablero de bornes correspondiente a cada tamaño de motor.

Tamaño del motor	Caperuza de ventilador tipo ebm	Referencia ebm Piezas de repuesto
1PH7		
Altura del eje AH100	W2D160	61017-1-7612
Altura del eje AH132	W2D210	61018-1-7612
Altura del eje AH160	W2D250	"

Pueden consultarse los precios corrientes en nuestra oficina de ventas.

El suministro y envío es exclusivamente contra reembolso.

Ventilazione esterna W2D ... per motori 1PH7**1 Avvertenze di sicurezza / Uso appropriato**

I prodotti della Ebm non sono dispositivi pronti per l'uso, ma apparecchiature a incasso che possono essere messe in funzione soltanto dopo essere state opportunamente montate. Non devono essere collocate in ambienti con pericolo di esplosioni o contaminati da sostanze chimiche e possono essere esposte soltanto alle temperature ambiente indicate dalla Ebm. Inoltre possono essere impiegate in condizioni standard che non richiedano lo stoccaggio di materiali conduttori.

Alimentare i motori del ventilatore con tensione di rete.

Le unità di ventilazione esterna servono a ventilare l'ambiente durante l'esercizio continuo (S1). In tal caso il comando non ammette manovre estreme.

Le operazioni di montaggio, messa in servizio e allacciamento alla rete elettrica devono essere eseguite da personale qualificato.

Il montaggio del dispositivo di ventilazione richiede l'impiego di elementi di fissaggio adeguati. L'allacciamento alla rete elettrica deve essere realizzato secondo le indicazioni contenute nello schema elettrico.

E' necessario garantire l'impiego di un dispositivo di protezione del motore con disinserzione universale contro usi impropri (in caso di arresto) e una valutazione del suo funzionamento dopo averlo opportunamente montato.

I cavi di connessione non devono essere esposti a carichi non ammessi.

2 Immagazzinaggio

Per garantire il perfetto funzionamento e la lunga durata del dispositivo è necessario evitare carichi estremi e tempi di immagazzinaggio che superano i dodici mesi.

Con carichi estremi si intende ad esempio l'esposizione alla polvere, all'umidità e a sostanze chimiche corrosive, oltre che al caldo o freddo eccessivi e a elevati tassi di umidità.

3 Manutenzione

Grazie all'impiego di speciali grassi per cuscinetti il ventilatore dell'unità di ventilazione esterna non richiede alcuna manutenzione. Prima di eseguire lavori di manutenzione sull'unità di ventilazione (ripulitura delle alette del ventilatore) è opportuno accertarsi che il ventilatore sia fermo, che l'unità di ventilazione esterna non sia collegata alla rete e che non sia possibile una reinserzione accidentale.

Per ripulire il ventilatore utilizzare stracci o spazzole adatti. Evitare l'infiltrazione di umidità nel motore.

Attenzione! Una pressione eccessiva potrebbe danneggiare le alette del ventilatore. Procedere quindi con estrema cautela.

4 Messa in servizio

Prima di procedere alla messa in servizio è necessario verificare tutti i dettagli tecnici relativi alla sicurezza e al funzionamento del dispositivo. Il breve elenco che segue è da intendersi solo come supporto non come enumerazione esaustiva delle operazioni da eseguire:

- confrontare i dati dell'unità di ventilazione esterna con quelli dell'allacciamento. L'unità di ventilazione esterna non deve essere allacciata alla rete se i dati di quest'ultima differiscono dai dati dell'unità di ventilazione in misura tale da generare sovraccarichi
- verificare che il montaggio (ad es. in relazione alla direzione di rotazione) e l'installazione elettrica (ad es. l'impiego di conduttori di protezione) dell'unità di ventilazione e dei relativi accessori siano stati eseguiti correttamente
- verificare che il montaggio e l'installazione dei componenti rilevanti per la sicurezza (ad es. interruttori di protezione del motore, griglie protettive e simili) siano stati eseguiti correttamente
- rimuovere le parti che si trovano nell'area di canalizzazione o sulle alette del ventilatore.

5 Pezzi di ricambio per morsettiere

In caso di perdita di viti speciali o rottura di parti di bloccaggio è possibile ordinare alla

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un set di pezzi di ricambio diversi a seconda della grandezza costruttiva del motore. Il set contiene tutte le viti Torx (pezzi non standard) e un portamorsetto diverso a seconda della grandezza costruttiva del motore.

Grandezza costruttiva	tipo emb di sfogo d'aria dell'unità ventilazione esterna	Nr. di ordinazione ebm per pezzi di ricambio
1PH7		
Altezza asse AH100	W2D160	61017-1-7612
Altezza asse AH132	W2D210	61018-1-7612
Altezza asse AH160	W2D250	"

I prezzi applicati attualmente possono essere richiesti ai responsabili delle vendite.

Spedizione e fornitura soltanto su indicazione del cognome.

Separat fläkt W2D... för motorer 1PH7

1 Säkerhetsanvisningar/ändamålsenlig användning

ebm-produkter är inga produkter färdiga att användas, utan instrument som byggs in och först i monterat tillstånd får tas idrift. De får inte drivas i områden med explosionsrisk eller förorenade av kemiska substanser och endast i det av ebm definierade temperaturområdet. Dessutom är de avsedda för drift under normala villkor under vilka inga ledande material kan avsätta sig.

Fläktmotorerna skall försörjas med nätspänning.

ebm separata fläktenheter är avsedda att transportera omgivningsluft i kontinuerlig drift (S1). Därvid får styrningen inte tillåta några extrema kopplingar.

Montering, idrifttagande och elektrisk installation får endast göras av här för skolad fackpersonal.

För montering av alla fläktar måste lämpliga befästningsanordningar användas. Den elektriska anslutningen måste göras i enlighet med det fastställda elektriska kopplingsschemat.

Det skall säkerställas att det finns en motorskyddsanordning med fränkoppling av alla poler till skydd mot osakkunnig användning (blockering) och kontrolleras att den fungerar ordentligt när den är monterad.

Anslutningsledningarna får inte utsättas för otillåten dragspänning.

2 Förvaring

För att garantera en oklanderlig drift och så lång livslängd som möjligt skall extrema belastningar och en längre lagringstid än den rekommenderade på ett år undvikas.

Extrema belastningar är till exempel: Påverkan av damm, fukt och aggressiva kemiska substanser liksom inverkan av kraftig hetta eller kyla eller hög luftfuktighet.

3 Underhåll

Ventilatorn inom fläktenheten är underhållsfri genom användandet av speciella lagerfetter. Vid underhållsarbeten på den separata fläktenheten som rengöring av fläktbladen, måste ventilatorn stå still och fläktenhetens strömkrets bruten och säkrad mot återinkoppling. Rengöringen av ventilatorn skall ske med en lämplig trasa eller borste utan att fuktighet kan komma in i motorns inre.

Viktigt: Ventilatorbladen kan skadas om man använder för stor kraft. Detta måste undvikas!

4 Idrifttagning

Före idrifttagandet måste alla säkerhetstekniska och funktionsrelevanta detaljer kontrolleras.

Nedan finns ett hjälpmedel i form av en lista, som dock inte gör anspråk på att vara fullständig:

- Jämför den separata fläktenhetens data med anslutningsdata. Den separata fläktenheten får inte anslutas om dess data avviker från anslutningsdata på ett sådant sätt att en överbelastning kunde bli resultatet.
- Kontrollera monteringen av den separata fläktenheten med tillbehör (t.ex. vad beträffar rotationsriktningen) och den elektriska installationen (t.ex. skyddsledarens anslutning).
- Kontrollera monteringen och den elektriska installationen av säkerhetsrelevanta byggnadsdelar som till exempel motorbrytare, skyddsgaller och liknande.
- Avlägsna delar som finns inom ventilatorns matningsområde resp. inom fläktbladens område.

5 Reservdelar till uttagslådor

I fall av förlust av specialskravar eller vid brott på uttagsplattan så kan allt efter motorstorlek en sats med reservdelar erhållas från

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I satsen ingår alla torxskruvar, som inte är normdelar, liksom uttagsplattan passande till den aktuella motorstorleken.

Motorstorlek	ebm-typ separat fläkt-	ebm-best.nr reservdelar
1PH7	kåpa	
Axelhöjd AH100	W2D160	61017-1-7612
Axelhöjd AH132	W2D210	61018-1-7612
Axelhöjd AH160	W2D250	"

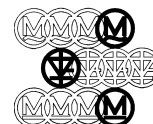
De aktuella priserna erhålls vid efterfrågan hos försäljningsavdelningen. Försändelse och leverans endast mot postförskott.

Geschäftsgebiet Drehzahlveränderbare Antriebe / Variable - Speed Drives

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