

LARGE DIAMETER / HEAVY TOOL FUNCTION For Vertical Machines

1. Meltas M600 & Fanuc 16i/18i or later models

2. MINIMUM LADDER VERSION REQUIRED

2.1 Meltas M600

VM/KCV/MCV/DGM/GC-1 From April, 2000 onward
Ladder version (VR1C-09 & UP)

2.2 Fanuc 16i/18i

VM/KCV/MCV/DGM From April, 2000 onward
Ladder version (VI1B-08 & UP)

3. ENABLE FUNCTION

Meltas:PLC PLC 250024-7 [0:OFF/1:ON]

Fanuc:PMC PMC keep relay K24-7 [0:OFF/1:ON]

4. ORIGINAL AND NEW PROGRAMMING PROCEDURE

4.1 Original Procedure

T (A) : Call Tool (A)
;
M6 : Change Tool (A) to spindle
T (B) : Call Tool (B) Large Diameter Tool
;
M6 : Change Tool (B) to spindle
; **DO NOT CALL NEXT TOOL**
M6 : Move tool (B) back to magazine
T (C) : Call Tool (C)
M6 : Change Tool (C) to spindle
T (D) : Call Tool (D)

4.2 New Procedure

You must type 1 into the "D" command column for
Meltas or into the "AUX" command column for Fanuc
For whichever tool # is LARGE DIAMETER

T (A) : Call Tool (A)
;
M6 ; Change Tool (A) to spindle
T (B) ; Call Tool (B) Large Diameter Tool
;
M6 ; Change Tool (B) Large Diameter Tool to spindle
T (C) ; Call Tool (C) But MG does not Rotate
; Tool # is only registered in the memory
;
M6 : Tool (B) moves to magazine
 Tool (C) moves to waiting position &
 Change Tool (C) to spindle
T (D) : Call Tool (D)

5. ATC SPEED (For Heavy Tool)

5.1 M16: Slow Speed designation

M6: Tool change signal

5.2 When You Type 2 into "D" or "AUX" command column the Machine automatically selects M16, slow swiveling speed even if M6 Is only called in the program.

6. FOR LARGE DIAMETER AND HEAVY TOOL

6.2 If you Type 3 in "AUX" or "D" command column, The tools will be handled as large-diameter and also the slow swiveling speed will be instructed without using M16 command in the program.

NOTE: When using these functions the program can be written without the consideration of special format or m-codes being used. Only the set-up of the tool register will control how the machine will handle the ATC operation.

7. OPERATIONAL CAUTIONS

- 7.1 POTS TO EITHER SIDE OF A LARGE DIAMETER TOOL MUST BE EMPTY, AND THE TOOL REGISTER MUST HAVE A "0" T# FOR THESE POTS.
- 7.2 IF YOU SINGLE BLOCK RUN A LARGE DIAMETER TOOL USE CAUTION BECAUSE WHEN A LARGE DIAMETER TOOL IS BEING PUT AWAY, ONE PUSH ON THE CYCLE START BUTTON WILL OPERATE THE ATC 2 TIMES, ONCE TO PUT AWAY THE LARGE DIAMETER TOOL THEN AGAIN TO LOAD THE NEXT TOOL TO THE SPINDLE.
- 7.3 THE USE OF THE LARGE DIAMETER TOOL FUNCTION MUST ONLY BE USED IN THE MEMORY MODE. IT WILL NOT WORK PROPERLY FROM MDI MODE UNLESS THE FOLLOWING STEPS ARE FOLLOWED.
- 7.4 IF A LARGE DIAMETER TOOL MUST BE CALLED TO THE SPINDLE FOR CUTTER OR INSERT REPLACEMENT, IT CAN BE DONE USING MDI BUT AFTER CALLING THE TOOL TO THE SPINDLE IT MUST BE RETURNED TO THE MAGAZINE BEFORE ROTATING THE MAGAZINE TO CALL ANOTHER TOOL. THIS CAN BE DONE BY EITHER USING THE ATC BUTTON OR MDI M6.

Fanuc

Use the AUX column following the Tool No. (TOOL) in the registration screen.

Tool

Magazine 1

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The screenshot displays a registration screen with a table of tool data and a control panel at the bottom. An arrow points from the text above to the 'AUX' column of the table.

TOOL	TOOL NO.	AUX	TOOL	TOOL NO.	AUX
1	99	00	18	0	00
2	12	00	19	10	00
3	13	00	20	11	00
4	14	00			
5	15	00			
6	16	00			
7	17	00			
8	18	00			
9	19	00			
10	20	00			
11	21	00			
12	22	00			
13	23	00			
14	24	00			
15	25	00			
16	26	00			
17	27	00			

At the bottom of the screen, there is a control panel with several buttons. The visible buttons include 'MAG1', 'CLEAR', and 'SET'. A status bar at the bottom right shows '13:28:28'.

Note:

Construction of the screen may change in the development of each software.

Construction of the screen may vary depending on the MDI unit used.

Mitsubishi M600 series

Use the D column following the Tool No. in the Tool Registration screen.

Tool registration Monitor Setup Edit Diagnos Mainte

Magaz No. 1

Pot	Tool No.	-D	Pot	Tool No.	-D	Spindle	Wait	Tool No.	-D
1	191		17	9999		0 0	M	30	
2	282		18	0 0		191	T	0	
3	393		19	0 0					
4	494		20	0 0					
5	0 0								
6	0 0								
7	0 0								
8	0 0								
9	0 0								
10	0 0								
11	0 0								
12	0 0								
13	0 0								
14	15 0								
15	0 0								
16	0 0								

PLC command: 0

RDY:MEM : 12:12 ▶

Pot No.	Spindle standby	Manual value	Magazn clear	Magazn 1			
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%
O1002;
(LARGE DIAMETER/HEAVY TOOL FUNCTION TEST);
(SET T2 AS LARGE DIAMETER AND T4 AS HEAVY)
T1;
M6;
T2;
G4P5000;
M6; ← T2 is loaded into spindle and T1 is in pot for T2
T3; ← The magazine does not rotate and T3 is remembered by the control
G4P5000;
M6; ← T2 is put away and magazine rotates to T3 and then loads into
spindle
T4;
G4P5000;
M6; ← At execution of M6 the ATC is slowed to speed set by M16
automatically
T5;
G4P5000;
M6; ← The ATC speed again is slow to remove heavy tool from spindle.
G4P5000;
M2;
%