

YCM

OPERATING MANUAL
WITH SYMBOLIC PANEL

YCM-FV125A

(FANUC 18M/18iM/21iM/MXP-100i/MXP-200i)

VERTICAL MACHINING CENTER

OPVMCP01E

R013

General

This operation manual is provided for those persons who have to operate the machine :

YCM - V / TCV / FV / FP / RV / MV / TV / XV Series

FANUC (18M / 18iM / 21iM / MXP-100i / MXP-200i)

This manual describes specifically the basic operating function on the main control panel and for those NC operation functions such as the operation of CRT , MDI , programming , alarm messages and parameter setting , etc. Please refer to the FANUC 18M/18iM/21iM/MXP-100i /MXP-200i series manual.

Some of the parts program examples are enclosed within this manual to assist the operator for whom is the new hand for the NC machine.

Any machine side alarm occurred during the process , say for example 1001,1002.....etc. Please refer to the trouble shooting in the electric manual. Meanwhile , the electric manual also provides special data setting “ KEEP RELAY ” to enable the machine perform in different way for which according to the demand of user.

Any suggestion for modification of this manual , please let us know and we will improve our products as well as the manual constantly.

YEONG CHIN MACHINERY INDUSTRIES
CNC TECHNICS

CONTENTS

1. Operational safety	1-1
1.1 Operational safety for CNC machine	1-1
1.2 Tips for high speed machining	1-2
2. Operation panel	2-1
2.1 Panel layout	2-1
2.1.1 9" CRT/MDI panel for 18M(Symbolic panel)	2-1
9" CRT/MDI panel for 18M(English panel)	2-1-1
2.1.2 Correspondence between English key and Symbolic key (Series 16,18,20,21)	2-2
2.1.3 YCM-V/RV/MV/TV Series operator's panel (A Type)	2-3
YCM-TCV/FV/FP Series operator's panel (B Type)	2-3-1
2.1.4 MPG (Manual Pulse Generator)	2-4
2.1.5 Magazine panel (30T/40T/#50 24T)	2-4
2.2 Standard function	2-5
2.2.1 POWER ON	2-5
2.2.2 POWER OFF	2-5
2.2.3 TOOL UNCLAMP/CLAMP	2-5
2.2.4 DRY RUN	2-5
2.2.5 SINGLE BLOCK	2-6
2.2.6 BLOCK SKIP	2-6
2.2.7 OPTIONAL STOP	2-6
2.2.8 MACHINE LOCK	2-6
2.2.9 MODE SELECT SWITCH	2-7
2.2.10 FEEDRATE OVERRIDE	2-7
2.2.11 FLOOD COOLANT	2-8
2.2.12 BOTH HAND	2-8
2.2.13 MAG FORWARD (20T)	2-8
2.2.14 MAG BACKWAED (20T)	2-8
2.2.15 POT VERTICAL (24T/30T/40T)	2-8
2.2.16 MANUAL ATC (24T/30T/40T)	2-9
2.2.17 MAG INDEX(20T/24T)	2-9
2.2.18 CYCLE START	2-9
2.2.19 CYCLE STOP (FEED HOLD)	2-9
2.2.20 EMERGENCY	2-9
2.2.21 SPINDLE OVERRIDE	2-10
2.2.22 SPINDLE C.CW	2-10
2.2.23 SPINDLE C.W	2-10

2.2.24 SPINDLE ORIENTATION	2-10
2.2.25 SPINDLE STOP.....	2-10
2.2.26 RAPID OVERRIDE	2-11
2.2.27 O.T RELEASE	2-11
2.2.28 JOG FEEDRATE.....	2-11
2.2.29 JOG BUTTON.....	2-11
2.2.30 RAPID.....	2-12
2.2.31 MEMORY PROTECT KEY	2-12
2.2.32 WORK LIGHT	2-12
2.2.33 NEXT TOOL DISPLAY.....	2-12
2.2.34 SPINDLE TOOL DISPLAY.....	2-12
2.2.35 AXIS SELECTOR SWITCH	2-13
2.2.36 SELECTOR SWITCH OF FEEDRATE RATIO	2-13
2.2.37 MPG (MANUAL PULSE GENERATOR)	2-13
2.2.38 CONVEYOR FORWARD (V65A/V85A/ V105A/FV56T/FV56A OPTION).....	2-13
2.2.39 CONVEYOR REVERSE (V65A/V85A/V105A OPTION)	2-13
2.2.40 AIR BLAST.....	2-14
2.2.41 MAG C.W(30T/40T).....	2-14
2.2.42 MAG C.C.W(30T/40T).....	2-14
2.2.43 SPINDLE LOAD METER.....	2-14
2.2.44 CONVEYOR STOP/REVERSE (FV56T/FV56A OPTION).....	2-14
2.2.45 RUSH CHIPS	2-14
2.3 Software operator's panel	2-15
2.3.1 MAN.ABS (MANUAL ABSOLUTE).....	2-15
2.3.2 MST-LOCK(M.S.T LOCK).....	2-15
2.3.3 Z-NEG(Z AXIS NEGLECT)	2-15
2.3.4 F1-DIG(F1 DIGIT).....	2-15
2.3.5 TL-RTN(TOOL RETURN)	2-15
2.4 Optional function	2-16
2.4.1 PROGRAM RESTART	2-16
2.4.2 HANDLE INTERRUPT	2-16
2.4.3 PLAY BACK(TEACH IN HANDLE /TEACH IN JOG).....	2-16
2.4.4 MANUAL LINE/CIRCULAR INTERPOLATION	2-17
2.4.5 TOOL WITHDRAW	2-17
2.4.6 TOOL RETRACE	2-17
2.4.7 OIL HOLE.....	2-17
2.4.8 AUTO DOOR.....	2-17

2.4.9 POWER OFF.....	2-18
2.4.10 MACRO INTERRUPT.....	2-18
2.5 APC function	2-18
2.5.1 FOR TCV51T APC	2-18
2.5.1.1 PALLET UNCL.....	2-18
2.5.1.2 APC STANDBY.....	2-18
2.5.2 FOR V56A AND V56T APC	2-19
2.5.2.1 APC DOOR.....	2-19
2.5.2.2 PALLET UNCL.....	2-19
2.5.2.3 APC STANDBY.....	2-19
2.5.3 FOR TCV51A APC	2-19
2.5.3.1 APC STANDBY.....	2-19
3. Procedure of starting and stopping the machine.....	3-1
3.1 Daily maintenance	3-1
3.2 Procedure of starting.....	3-3
3.3 Procedure of stopping	3-4
3.4 Replacing CNC battey for memory back-up.....	3-5
3.5 Replace battery for absolute pulse coder.....	3-6
4. Manual operation.....	4-1
4.1 Axis feed.....	4-1
4.1.1 Jog feed	4-1
4.1.2 Handle feed	4-2
4.2 Zero return.....	4-2
4.3 Spindle start and stop	4-3
4.3.1 Spindle start by MDI	4-3
4.3.2 Spindle start by JOG	4-3
4.3.3 Spindle stop	4-3
4.4 Magazine side tool remove and install	4-4
4.4.1 From spindle side	4-4
4.4.2 From magazine side (20T).....	4-4
4.4.3 From magazine side (24T/30T/40T)	4-5
4.4.4 Special tools (30T/40T)	4-5
5. Automatic operation	5-1
5.1 Operation mode	5-1
5.1.1 Memory operation (MEM).....	5-1
5.1.2 MDI operation	5-1
5.2 Stopping automatic operation.....	5-1
5.2.1 Stopping by command.....	5-1
5.2.2 Stopping by manual.....	5-1
6. Program example.....	6-1
6.1 Example 1.....	6-1
6.2 Example 2.....	6-2
7. M function list	7-1

8. High speed machining function	8-1
8.1 AI advanced preview control (AI-APC)	8-1
8.1.1 Command format	8-1
8.1.2 Effective functions	8-2
8.2 AI contour control (AICC).....	8-2
8.2.1 Command format	8-2
8.2.2 Effective functions	8-2
8.3 AI NANO contour control (AI NANO CC).....	8-3
8.3.1 Command format	8-3
8.3.2 Effective functions	8-3
8.4 High precision contour control (HPCC)	8-3
8.4.1 Command format	8-3
8.4.2 Effective functions	8-4
8.5 AI NANO high precision contour control (AI NANO HPCC)	8-4
8.5.1 Command format	8-4
8.5.2 Effective functions	8-4
8.6 NURBS Function.....	8-5
8.6.1 NURBS interpolation.....	8-5
8.6.2 NC part-program for current mold machining	8-5
8.6.3 New mold machining with NURBS interpolation.....	8-6
8.6.4 NURBS widely used in the latest CADS.....	8-7
8.6.5 Feedrate control of NURBS interpolation....	8-7
8.6.6 Reduction of cycle time by NURBS interpolation.....	8-8
8.6.7 Reduction of program size by NURBS interpolation.....	8-8
8.7 Specifications list	8-9
8.8 Conditions to enter high speed machining function	8-13
8.9 Alarm.....	8-14
A. Appendix	A.1-1
A.1 Safe-guards (Flow chart)	A.1-1
A.2 Automatic tool length measurement.....	A.2-1
A.2.1 Set up.....	A.2-1
A.2.2 Program format	A.2-3
A.2.3 MACRO variable.....	A.2-3
A.2.4 Related parameter	A.2-3
A.2.5 MACRO body.....	A.2-4
A.2.6 Program example.....	A.2-5

A.2.6.1 The positive tool length measure	A.2-5
A.2.6.2 The negative tool length measure	A.2-4
A.3 Automatic pallet exchange.....	A.3-1
A.3.1 Shuttle type.....	A.3-1
A.3.1.1 RACK TYPE	A.3-1
A.3.1.1.1 APC layout.....	A.3-1
A.3.1.1.2 The procedure to set the coordinate of the APC reference point... A.3-2	
A.3.1.1.3 M code.....	A.3-3
A.3.1.1.4 APC MACRO program	A.3-3
A.3.1.1.5 Manual operation.....	A.3-5
A.3.1.1.6 Auto operation	A.3-6
A.3.1.2 ARM TYPE.....	A.3-7
A.3.1.2.1 APC layout.....	A.3-7
A.3.1.2.2 The procedure to set the coordinate of the APC reference point.....	A.3-8
A.3.1.2.3 M code.....	A.3-9
A.3.1.2.4 APC MACRO program	A.3-9
A.3.1.2.5 Auto operation	A.3-11
A.3.1.2.6 To excluded interrupt.....	A.3-11
A.3.2 Rotary type	A.3-12
A.3.2.1 APC layout.....	A.3-12
A.3.2.2 The procedure to set the coordinate of the APC reference point..... A.3-13	
A.3.2.3 M code.....	A.3-13
A.3.2.4 Manual operation	A.3-13
A.3.2.5 Auto operation	A.3-13
A.3.3 PMM Axis Rotary type.....	A.3-14
A.3.3.1 APC layout.....	A.3-14
A.3.3.2 The procedure to set the coordinate of the APC reference point..... A.3-14	
A.3.3.3 M code.....	A.3-14
A.3.3.4 Manual operation	A.3-15
A.3.3.5 Auto operation	A.3-15
A.3.4 CAM-TYPE Rotary	A.3-16
A.3.4.1 APC layout.....	A.3-16
A.3.4.2 M code.....	A.3-16
A.3.4.3 Manual operation	A.3-16
A.3.4.4 Auto operation	A.3-17

A.4 CYTEC ADMONITION.....	A.4-1
A.4.1 CyCon2 OPERATION METHOD.....	A.4-1
A.4.2 CyCon2 SETTING METHOD	A.4-2
A.4.2.1 Clamp tool parameter setting	A.4-2
A.4.2.2 Release tool parameter setting	A.4-2
A.4.2.3 Other parameter setting	A.4-2
A.4.3 CyCon2 REVEAL SIGNAL.....	A.4-3
A.5 HOW TO USE INTELLIGENCE COOLANT NOZZLE FUNCTION.....	A.5-1
A.5.1 THE DESCRIPTION OF FUNCTION	A.5-1
A.5.2 APPLICATION	A.5-1
A.5.3 TROUBLE SHOOTING.....	A.5-2
A.5.4 OPERATION METHOD	A.5-2
A.6 SPINDLE WARM UP SETTING	A.6-1
A.7 OIL AIR LUBE SYSTEM UNIT SETTING.....	A.7-1