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⚠ WARNING

7. Please use the appropriate power cable. Use of an inappropriate cable can cause fire or electric shock. Please refer to "About power cable" with respect to power cable.
8. Please do not be electrified in the state of removing the back board. It may cause fire or electric shock.
9. Do not disassemble, repair or modify CNC Simulator. It may cause fire or electric shock.
10. If you notice any abnormal status such as abnormal noise, abnormal odor, smoke, in energized state CNC Simulator, shut it off at once. These faults can cause fire and breakdown. It may cause fire or electric shock.

NOTE

Since CNC Simulator is a precision instrument, please carefully handle. Do not subject the unit to strong shocks, or fall.

SAFETY PRECAUTIONS FOR REPLACING THE MEMORY BACKUP BATTERY AND FAN MOTORS

This section describes the safety precautions related to the replacing the memory backup battery and fan motors. Replacing work must be undertaken only by a qualified technician.

⚠ WARNING

1. When replacing a battery and fan motors, please be sure to disconnect the power cable from CNC Simulator. Otherwise, electric shock and breakdown can occur.
2. Be careful not to damage internal cables of CNC Simulator. Otherwise, fire, electrical shock and failure can occur.
3. When working, wear suitable clothes with safety taken into account. Otherwise, injury and electrical shock can occur.
4. Do not work with your wet hands. Otherwise, electrical shock and damage to electrical circuits can occur.
5. Using other than the recommended lithium battery may result in the battery exploding. Replace the battery only with the specified lithium battery (A02B-0323-K102).

EMC PRECAUTIONS

This section describes the EMC precautions related of CNC Simulator.

NOTE

1. CNC Simulator is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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FANUC CNC Simulator

1.1 OVERVIEW

FANUC CNC Simulator (called CNC Simulator below) can be training the operation and the program of CNC with an actual unit.

1.1.1 Features

- Ready for use without setup and usable immediately
- Mill and Lathe system switchable on one simulator
- MANUAL GUIDE *i* installed for easy programming
- Equipped with E-stop switch, manual pulse generator and universal power unit

Basic operation and movement are the same as other CNC of FANUC, refer to various manuals of CNC. The manuals related to Series 0i- MODEL F are described as an example.

Table 1.1 (a) Related manuals

Manual name	Specification number
DESCRIPTIONS	B-64602EN
CONNECTION MANUAL (FUNCTION)	B-64603EN -1
OPERATOR'S MANUAL (Common to Lathe System/Machining Center System)	B-64604EN
OPERATOR'S MANUAL (For Lathe System)	B-64604EN-1
OPERATOR'S MANUAL (For Machining Center System)	B-64604ENA-2
PARAMETER MANUAL	B-64610EN
PMC	
PMC PROGRAMMING MANUAL	B-64513EN
Operation guidance function	
MANUAL GUIDE <i>i</i> (Common to Lathe System/Machining Center System) OPERATOR'S MANUAL	B-63874EN
MANUAL GUIDE <i>i</i> (For Machining Center System) OPERATOR'S MANUAL	B-63874EN -2

1.1.2 Constraints on the specification

- Since CNC of CNC simulator is exclusive goods, it cannot be used by attaching it to the machine.
- CNC simulator cannot add the number of axes and optional functions.
- The servo and spindle motors cannot be connected with CNC Simulator, and cannot be moved.
(Use the drawing function of MANUAL GUIDE *i* for the confirmation of the made program.)
- As for CNC Simulator, the necessary parameters for the basic operation are set automatically. However, the parameters set beforehand automatically might be insufficient according to the function to use. For this case, adding sets the necessary parameters, and confirms the function. It is similar for the PMC sequence program.

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⚠ WARNING

When the program made by CNC Simulator executes an actual machine, never attempt to machine a workpiece without first checking the operation of the machine. Before starting a production run, ensure that the machine is operating correctly by performing a trial run using, for example, the single block, feedrate override, or machine lock function or by operating the machine with neither a tool nor workpiece mounted. Failure to confirm the correct operation of the machine may result in the machine behaving unexpectedly, possibly causing damage to the workpiece and/or machine itself, or injury to the user.

1.2 HARDWARE SPECIFICATIONS

1.2.1 Environmental Conditions outside CNC Simulator

CNC Simulator cannot be used in machine shop environments because it is designed by assuming the use in office environments.

The following table lists the environmental conditions required to CNC Simulator.

Table 1.2.1 (a) Environmental Conditions

Ambient temperature of CNC Simulator	Operating	0°C ~ 40°C
	Nonoperating (including storage and transportation)	-20°C ~ 60°C
Humidity	Normal	75%RH or less, no condensation
	Short period (less than 1 month)	95%RH or less, no condensation
Vibration	Operating	4.9m/s ² (0.5G) or less
	Nonoperating (including storage and transportation)	9.8m/s ² (1.0G) or less
Environment		office environments

1.2.2 Hardware specifications of CNC Simulator

The following table lists the hardware specifications of CNC Simulator. Please particular attention to the input rating.

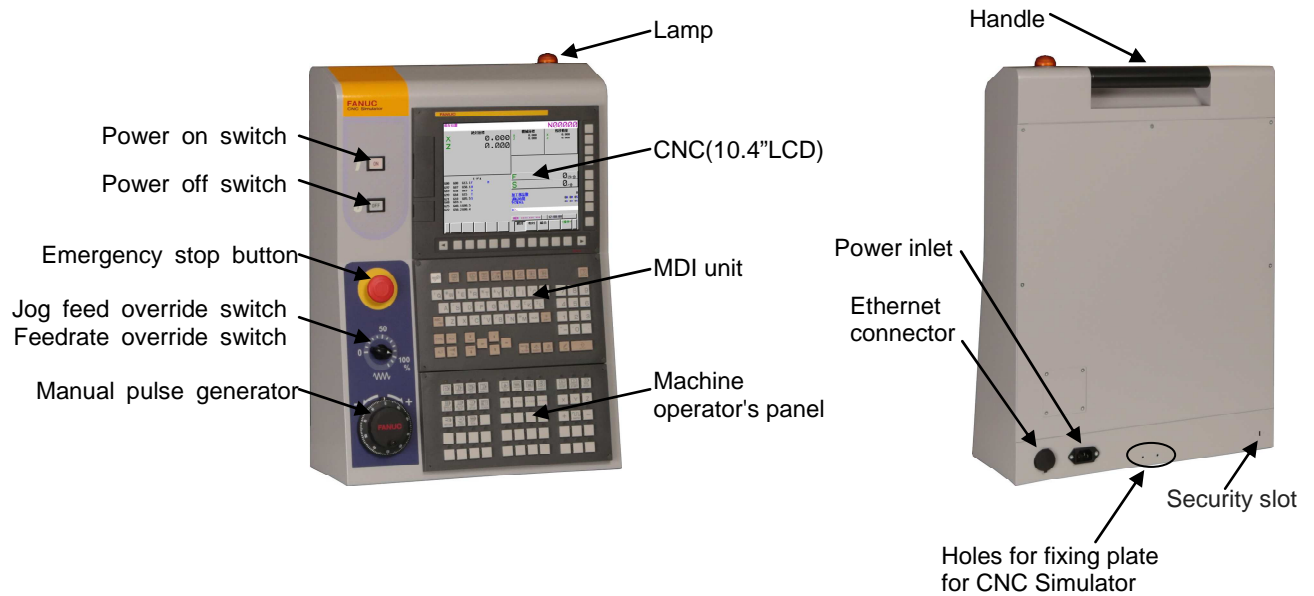
Table 1.2.2 (a) Hardware Specifications

Ordering Code	A02B-0158-B100
Dimensions	421mm x 220mm x 608mm(W x D x H)
Weight	11.5kg
Input Rating	AC100V to AC240V, 0.8A to 0.4A, 50/60Hz
Power Consumption	40W
Power Inlet	IEC-60320-C13
Display	10.4"LCD
Operating part	MDI unit, Machine operator's panel, Emergency stop button, Manual pulse generator, Override switch
Input and Output Media	USB memory, CF card
Communication Interface	Ethernet (10BASE-T/100BASE-TX, With auto-negotiation function)

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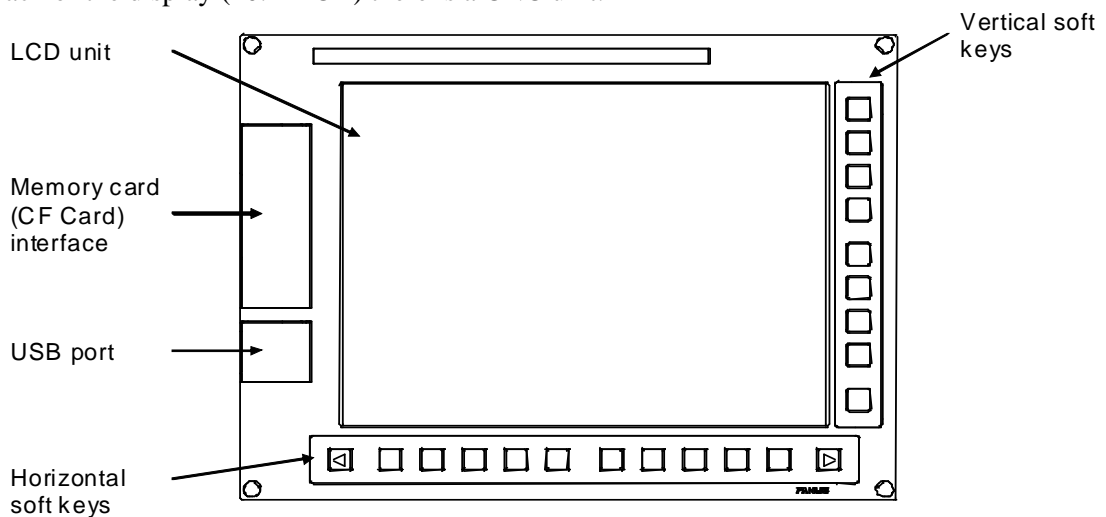
Others	Security slot: for a security cable Fixing plate for CNC Simulator: Please use when there is a possibility of rollover or fall of CNC Simulator.
Note	Cannot connect motor units. External interface available on CNC Simulator is the only Ethernet interface. Other external interface on the CNC unit is not available. Ethernet cable can be up to 100 m long. Please do not use the long cable more than necessary. Please use shielded cable if noisy environment.

1.2.3 CNC Simulator body



1.2.4 Display unit

On the back of the display (10.4"LCD) there is a CNC unit.



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NOTE

1. This USB port is dedicated to a USB memory. Do not connect other USB devices to the port. It is not guaranteed that every commercially available USB memory can operate normally. For example, a USB memory with a security function does not operate.
2. In LCD, some of their pixels may fail to light or stay constantly lighting because of their characteristics. Please be forewarned that these phenomena are not faults.

By pressing a soft key on MDI unit after a function key, the corresponding screen of the function can be displayed.

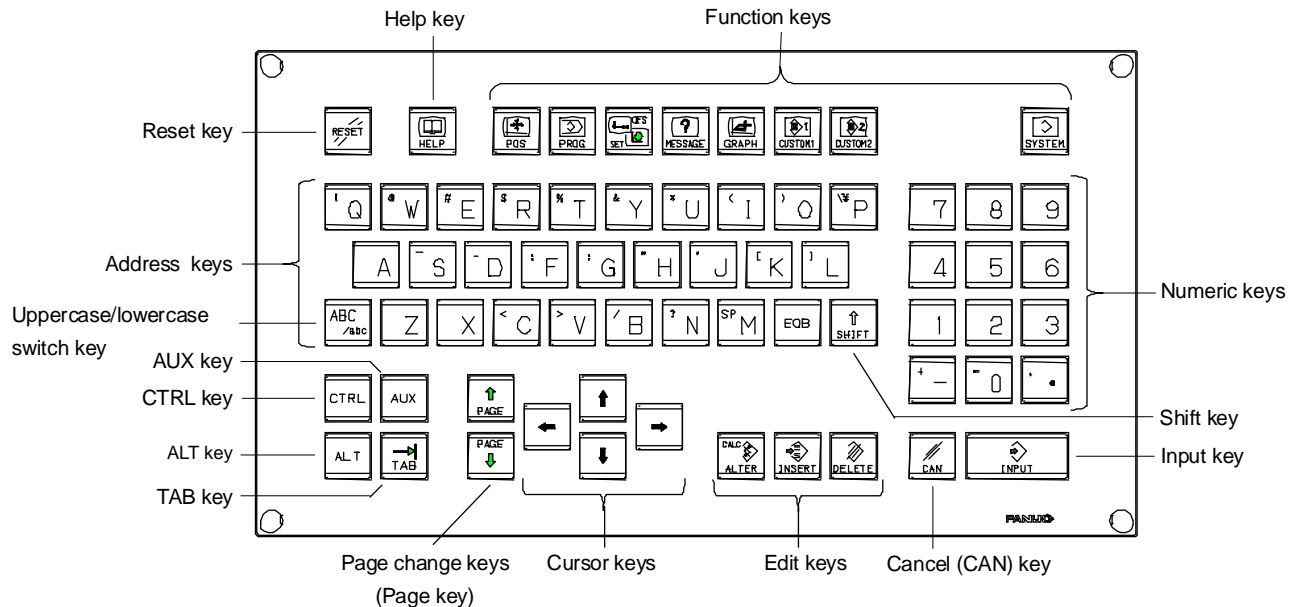
Continuous menu key: displays the next menu soft keys.

Return menu key : returns the soft keys to the above menu indication.

If you want to display the next menu of soft keys of each screen, press the continuation menu key . If you want to return to the menu screen selection, press the return menu key .

1.2.5 MDI unit

MDI unit is QWERTY key type.



The major keys to use in MDI unit are described below.

Table 1.2.5 (a) The major keys to use in MDI unit

Name	Explanation
RESET key	Press this key to reset the CNC, to cancel an alarm, etc.
INPUT key	To set the data in the key input buffer to the offset register, etc., press the <INPUT> key. This key is equivalent to the [INPUT] key of the soft keys, and either can be pressed to produce the same result.
CANCEL (CAN) key	Press this key to delete the last character or symbol input to the key input buffer.

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Name	Explanation
Edit keys	Press these keys when editing the program. <ALTER> : ALTER <INSERT> : INSERT <DELETE> : DELETE
Function keys	Press these keys to switch display screens for each function. POS : Press this key to display the position screen. PROG : Press this key to display the program screen. OFS/SET : Press this key to display the offset/setting screen. SYSTEM : Press this key to display the system screen. MESSAGE : Press this key to display the message screen. GRAPH : Press this key to display the MANUAL GUIDE <i>i</i> .

1.2.6 Machine Operator's Panel

The configuration of the machine operating part

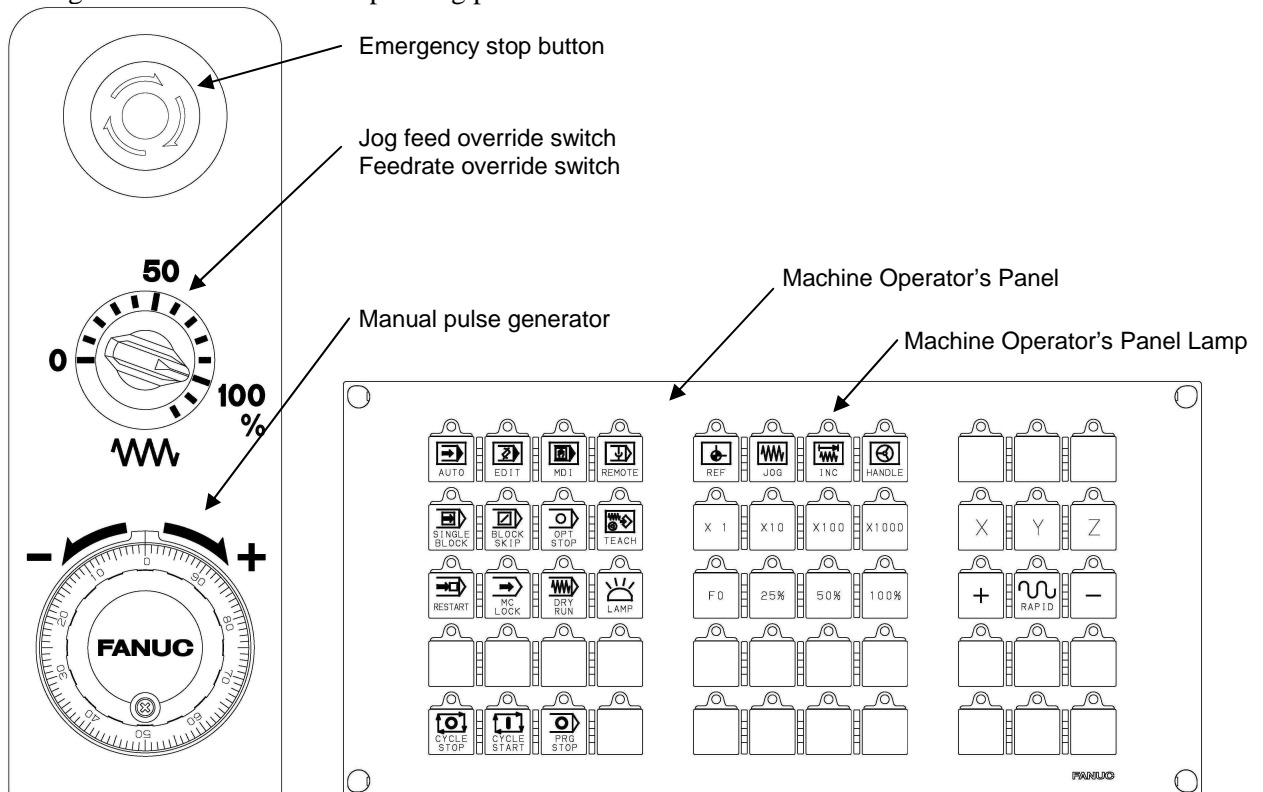


Table 1.2.6 (a) Machine operator's panel

Key	Description	Usage	Lamp
AUTO	Memory operation	Press this key in case of Memory operation.	Turning on the lamp when entering Memory operation mode
EDIT	Memory edit	Press this key in case of Memory edit.	Turning on the lamp when entering Memory edit mode.
MDI	Manual data input	Press this key in case of Manual data input.	Turning on the lamp when entering Manual data input mode.
REMOTE	DNC operation	Press this key in case of DNC operation in memory card.	Turning on the lamp when entering DNC operation mode.
REF	Manual reference	Press this key in case of	Turning on the lamp when entering

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Key	Description	Usage	Lamp
	traverse rate	feed at Rapid traverse speed.	this key.
CYCLE STOP	Feed hold	Press this key in case of pausing Program operation.	Blinking when entering Feed hold state.
CYCLE START	Cycle start	Press this key in case of starting Automatic operation (Cycle start).	Turning on the lamp when entering Cycle start state.
PRG STOP	Program stop	-	Blinking when entering Automatic operation stop state by M00.

1.2.7 About power cable

FANUC is preparing power cables of the following as the option. In areas where plug shape and the rating voltage of the cable do not fit, you cannot use these power cables.

In that case, you must prepare a conversion adapter or a power cable itself. If you will select a power cable by yourself, prepare a cable that adapted to the supply voltage on your region and the input rating of CNC Simulator.

Table 1.2.7 (a) Specification of power cables

Ordering Code	Electrical Ratings		The power supply side plug	CNC Simulator side inlet
	Voltage	Current		
A02B-0158-J001#US	125V	7A	Type-B (NEMA5-15P) 	(IEC-60320-C13) 
A02B-0158-J001#EU	250V	6A	Type-E/F (CEE7/7) 	

WARNING



Please use the appropriate power cable. Use of an inappropriate cable can cause fire or electric shock.

1.3 SYSTEM CONFIGURATION

1.3.1 System type



When powering on CNC Simulator, two types of Lathe system and Machining center system can be selected by the following operation.

1) Starting up as Lathe system type





Power on with MDI keys  +  pressing. The simulator will be up as Lathe system.

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


2) Starting up as Machining center system type

Power on with MDI keys  +  pressing. It will be up as Machining center system.

NOTE

1. In the case of starting up with the keys  +  or  +  pressing, please continue to push the MDI keys until the following screen appears.





2. The factory default of CNC Simulator is Lathe system. In the case of attempting to use the simulator as Machining center system, please power up it with MDI keys  +  pressing. It will set up as Machining center system. After that, if the system is not changed, the operation of  +  or  +  is not needed.

Supplementary note)


In this manual, the following notations are used.




- 1) Factory default
It is the state of Factory default. Initial parameters are set up, and sample data for Lathe system is being preinstalled to CNC Simulator.
- 2) Initial state
It is the state of installing the initial parameters.





(Concretely, it means the state of turning on the simulator with MDI keys  +  or

 +  pressing. Sample data is not being installed.)

- 3) System switching operation

It is to execute the two operations of powering on the simulator and pressing MDI keys  +

 or  +  at the same time.

3. When System switching operation is executed, the data such as programs, parameters, offset, macro variables stored in the internal memory of CNC unit is cleared. That means it becomes Initial state. Before System switching operation, please back up the data. Please refer to the section "Backing up CNC data" for more information.
4. The backed-up data can be restored to the same system of when the data was backed up. For example, the data backed-up from Lathe system can be restored into CNC Simulator which is running as Lathe system, and the state goes back to a backed-up time point. Please refer to "Restoring CNC data".
5. Please do not restore the data for Lathe system to CNC Simulator which is running as Machining center system. The simulator won't start up. In that case, please power off and on with the keys  +  or  +  pressing, and go back it to Initial state.

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1.3.2 Machine configuration

Machine configuration of each CNC Simulator system CNC is as follows.

Table 1.3.2 (a) Machine configuration

System type	Number of paths	Number of feed axes	Number of spindle axes
Lathe system	1-path	2 axes(X axis,Z axis)	1 spindle
Machining center system	1-path	3 axes(X axis,Y axis,Z axis)	1 spindle

NOTE

Number of feed axes and spindle axes is the number of axes on simulation. You cannot actually rotate servo and spindle motors.

1.4 SOFTWARE SPECIFICATIONS

1.4.1 List of Specification

Features supported by CNC Simulator are shown in the following table. Meaning of the symbols is as follows.

- ✓ : Without adding to parameters and signals, it will be available.
- * : By setting parameters and signals, it will be available. (If you make a system switching, the parameters will return to the initial state.)
For example, in case of using the extended axis names, it will be available by setting the parameter.
- : Unavailable

Table 1.4.1 (a) List of Specification

Item	Specifications	T	M
Controlled axis			
Axis name	X,Z	✓	-
	X,Y,Z	-	✓
Axis name expansion	Max 3 characters	*	*
Arbitrary axis name setting		✓	✓
High precision oscillation function		✓	✓
Increment system	IS-A, IS-B Initial setting is IS-B.	✓	✓
Inch/metric conversion	Initial setting is metric.	✓	✓
Interlock	All axes/each axis/each direction/block start/cutting block start	*	*
All-axis Machine Lock		✓	✓
Each-axis Machine Lock		*	*
Emergency stop		✓	✓
Overtravel		*	*
Stored stroke check 1		✓	✓
Stored stroke check 2,3		*	*
Mirror image		*	*
Chamfering on/off		✓	✓
Operation			
Automatic operation (memory)		✓	✓
MDI operation		✓	✓
DNC operation with memory card		✓	✓
Schedule function		✓	✓

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Item	Specifications	T	M
Automatic corner override		-	✓
Scaling		-	✓
Coordinate system rotation		✓	✓
3-dimensional coordinate system conversion		-	✓
Programmable mirror image		✓	✓
Figure copying		-	✓
G code preventing buffering		✓	✓
Coordinate system shift		✓	-

Guidance function

MANUAL GUIDE <i>i</i>		✓	✓
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Auxiliary/Spindle speed function

Auxiliary function	M8 digit	✓	✓
Auxiliary function lock		*	*
High-speed M/S/T/B interface		*	*
Auxiliary function output in moving axis		*	*
Spindle speed function	S5 digit	✓	✓
Spindle override		*	*
Rigid tapping		✓	✓

Tool function/Tool compensation

Tool function	T6+2(Tool selection + Tool offset number)	✓	-
	T8 digit	-	✓
Tool offset pairs	32-pairs	✓	✓
Tool offset memory C	Distinction between geometry and wear, or between cutter and tool length compensation.	-	✓
Tool length offset		-	✓
Tool offset		✓	✓
Tool radius/Tool nose radius compensation		✓	✓
Tool geometry/wear compensation		✓	-

Editing operation

Part program storage size	512Kbyte	✓	✓
Number of registerable programs	400 programs	✓	✓
Part program editing		✓	✓
Program protect		✓	✓
Password function		✓	✓
Playback		✓	✓
Background editing		✓	✓
Multi part program editing		✓	✓
High speed program management		*	*

Setting and display

Status display		✓	✓
Clock function		✓	✓
Current position display		✓	✓
Program comment display		✓	✓
Parameter setting and display		✓	✓
Parameter check sum function		*	*
Alarm display		✓	✓
Alarm history display		✓	✓
Operation history display		✓	✓
Run hour and parts count display		✓	✓

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Item	Specifications	T	M
Actual cutting feedrate display		✓	✓
Display of spindle speed and T code at all screens		✓	✓
Directory display of floppy cassette		✓	✓
Software operator's panel		✓	✓
Software operator's panel general purpose switch		✓	✓
Multi-language display	English	✓	✓
	Japanese (Chinese character)	✓	✓
	German	✓	✓
	French	✓	✓
	Spanish	✓	✓
	Italian	✓	✓
	Chinese (Traditional Chinese)	✓	✓
	Chinese (Simplified Chinese)	✓	✓
	Korean	✓	✓
	Portuguese	✓	✓
	Dutch	✓	✓
	Danish	✓	✓
	Swedish	✓	✓
	Hungarian	✓	✓
	Czech	✓	✓
	Polish	✓	✓
	Russian	✓	✓
	Turkish	✓	✓
	Romanian	✓	✓
Bulgarian	✓	✓	
Slovak	✓	✓	
Finnish	✓	✓	
Vietnamese	✓	✓	
Indonesian	✓	✓	
Dynamic display language switching		✓	✓
Data protection key	4 types	*	*
Erase CRT screen display		✓	✓
Help function		✓	✓
Self-diagnosis function		✓	✓
Display of hardware and software configuration		✓	✓
CNC screen display	CNC Application Development Kit (A08B-9010-J555#ZZ12) is necessary.	*	*
Dual screen of CNC screen display function		✓	✓

Data input/output

Memory card input/output		✓	✓
USB memory input/output	Initial setting is Memory card input/output.	*	*
Screen hard copy		✓	✓

Interface function

Embedded Ethernet		✓	✓
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PMC

PMC function	24,000 steps	✓	✓
Ladder Dividing Management Function		*	*

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Item	Specifications	T	M
Multi-language display of signal comment		✓	✓
Extended PMC ladder instruction function		✓	✓
PMC Function block function		✓	✓

Others

Status output signal	NC ready, servo ready, etc.	✓	✓
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NOTE

The above list, such as acceleration/deceleration, also includes features that are not able to confirm its effect in CNC Simulator.

1.4.2 G code that can be commanded

G code that can be commanded by CNC Simulator, are as follows.

Table 1.4.2 (a) G code list

Function	G code	
	T (G code system A)	M
Positioning (rapid traverse)	G00	G00
Linear interpolation (cutting feed)	G01	G01
Circular interpolation CW	G02	G02
Helical interpolation CW	-	G02
Circular interpolation CCW	G03	G03
Helical interpolation CCW	-	G03
Dwell	G04	G04
G code preventing buffering	G04.1	G04.1
AI contour control	G05.1	G05.1
AI contour control (advanced preview control compatible command)	G08	G08
Exact stop	G09	G09
Programmable data input	G10	G10
Tool retract and recover	G10.6	G10.6
Programmable data input mode cancel	G11	G11
Polar coordinates command cancel	-	G15
Polar coordinates command	-	G16
Plane selection	G18	G17/ G18/G19
Input in inch	G20	G20
Input in mm	G21	G21
Stored stroke check function on	G22	G22
Stored stroke check function off	G23	G23
Reference position return check	G27	G27
Automatic return to reference position	G28	G28
In-position check disable reference position return	G28.2	G28.2
Movement from reference position	G29	G29
2nd, 3rd and 4th reference position return	G30	G30
In-position check disable 2nd, 3rd, or 4th reference position return	G30.2	G30.2
Skip function	G31	G31
Threading	G32	G33
Variable lead threading	G34	-
Circular threading CW	G35	-
Circular threading CCW	G36	-

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Function	G code	
	T (G code system A)	M
Tool radius/tool nose radius compensation : preserve vector	G38	G38
Tool radius/tool nose radius compensation : corner circular interpolation	G39	G39
Tool radius/tool nose radius compensation : cancel	G40	G40
Tool radius/tool nose radius compensation : left	G41	G41
Tool radius/tool nose radius compensation : right	G42	G42
Tool length compensation +	-	G43
Tool length compensation -	-	G44
Tool offset : increase	-	G45
Tool offset : decrease	-	G46
Tool offset : double increase	-	G47
Tool offset : double decrease	-	G48
Tool length compensation cancel	-	G49
Scaling cancel	-	G50
Coordinate system setting or max spindle speed clamp	G50	-
Programmable mirror image cancel	G50.1	G50.1
Workpiece coordinate system preset	G50.3	-
Auxiliary function output in moving axis	G50.9	G50.9
Scaling	-	G51
Programmable mirror image	G51.1	G51.1
Local coordinate system setting	G52	G52
Machine coordinate system setting	G53	G53
Workpiece coordinate system 1~6 selection	G54~G59	G54~G59
Single direction positioning	-	G60
Exact stop mode	G61	G61
Automatic corner override	-	G62
Tapping mode	G63	G63
Cutting mode	G64	G64
Macro call	G65	G65
Macro modal call A	G66	G66
Macro modal call B	G66.1	G66.1
Macro modal call A/B cancel	G67	G67
Coordinate system rotation start or 3-dimensional coordinate conversion mode on	-	G68
Coordinate system rotation start	G68.1	-
Coordinate system rotation cancel or 3-dimensional coordinate conversion mode off	-	G69
Coordinate system rotation cancel	G69.1	-
Finishing cycle	G70	-
Stock removal in turning	G71	-
Stock removal in facing	G72	-
Outer diameter/internal diameter drilling cycle	G75	-
Figure copying (rotary copy)	-	G72.1
Figure copying (linear copy)	-	G72.2
Peck drilling cycle	-	G73
Pattern repeating cycle	G73	-
Left-handed tapping cycle/Left-handed rigid tapping cycle	-	G74
End face peck drilling cycle	G74	-
Fine boring cycle	-	G76
Multiple-thread cutting cycle	G76	-
Canned cycle cancel	G80	G80

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Function	G code	
	T (G code system A)	M
Drilling cycle or spot boring cycle	-	G81
High precision oscillation function	G81.1	G81.1
Drilling cycle or counter boring cycle	-	G82
Peck drilling cycle	-	G83
Cycle for face drilling	G83	-
High-speed peck drilling cycle	G83.5	-
Peck drilling cycle	G83.6	-
Tapping cycle/Rigid tapping cycle	-	G84
Cycle for face tapping/ Cycle for face rigid tapping	G84	-
Boring cycle	-	G85
Cycle for face boring	G85	-
Boring cycle	-	G86
Back boring cycle	-	G87
Cycle for side drilling	G87	-
High-speed peck drilling cycle	G87.5	-
Peck drilling cycle	G87.6	-
Boring cycle	-	G88
Cycle for side tapping/ Cycle for side rigid tapping	G88	-
Boring cycle	-	G89
Cycle for side boring	G89	-
Absolute programming	-	G90
Outer diameter/internal diameter cutting cycle	G90	-
Incremental programming	-	G91
Checking the maximum incremental amount specified	G91.1	G91.1
Setting for workpiece coordinate system or clamp at maximum spindle speed	-	G92
Threading cycle	G92	-
Workpiece coordinate system preset	-	G92.1
Feed per minute	-	G94
End face turning cycle	G94	-
Feed per revolution	-	G95
Constant surface speed control	G96	G96
Constant surface speed control cancel	G97	G97
Canned cycle : return to initial level	-	G98
Feed per minute	G98	-
Canned cycle : return to R point level	-	G99
Feed per revolution	G99	-

NOTE

The above list, such as AI contour control (G05.1), also includes the G code that cannot be confirmed the effect in CNC Simulator.

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1.4.3 Initial setting parameters

When shipping from the factory, the following values for the initial setting parameters are set. If you make the system switching operation also, the initial setting parameters will be returned to the following values.

NOTE

When in parameters of the axial type, that value is listed only one, please interpret as the same value to all axes are set.

Table 1.4.3 (a) Initial setting parameters list

Parameter No.	Meaning of parameters	T	M
No.20	Input/output device selection, or interface number for a foreground input device	4	4
No.101#0	The number of stop bits 0: 1 1: 2	1	1
No.101#7	Feed before and after the data at data output 0: Output 1: Not output	1	1
No.103	Baud rate	10	10
No.138#5	The schedule operation function is: 0: Disabled. 1: Enabled.	1	1
No.138#7	DNC operation from the memory card and external device subprogram call from the memory card are: 0: Not performed. 1: Performed.	1	1
No.313#0	NC data output function is: 0: Disabled. 1: Enabled.	1	1
No.1005#3	When a reference position is already set: 0: Manual reference position return is performed with deceleration dogs. 1: Manual reference position return is performed using rapid traverse without deceleration dogs, or manual reference position return is performed with deceleration dogs, depending on the setting of bit 7 (SJZ) of parameter No.0002.	1	1
No.1006#3	The move command for each axis is based on: 0: Radius specification 1: Diameter specification	X=1 Z=0	X=0 Y=0 Z=0
No.1020	Program axis name for each axis	X=88 Z=90	X=88 Y=89 Z=90
No.1022	Setting of each axis in the basic coordinate system	X=1 Z=3	X=1 Y=2 Z=3
No.1320	Coordinate value I of stored stroke check 1 in the positive direction on each axis	999999.0	999999.0
No.1321	Coordinate value I of stored stroke check 1 in the negative direction on each axis	-999999.0	-999999.0

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Parameter No.	Meaning of parameters	T	M
No.25650#0	High precision oscillation function is 0: Disabled. 1: Enabled.	1	1
No.27003#0	The machining center machine 0: Does not include the X-axis, Y-axis, and Z-axis 1: Includes the X-axis, Y-axis, and Z-axis	-	1
No.27004#0	Hole machining, facing, contouring, pocketing, grooving, and XY plane figures are 0: Not displayed. 1: displayed.	-	1
No.27060#1	During roughing and bottom finishing 0: The top of an island is not machined. 1: Machining is performed by controlling the depth of cut.	1	1
No.27096#4	Outer thread milling cycle is : 0: Not available. 1: Available.	-	1
No.27120#1	In the turning cycle input screen, the tab of [RESID MACH] is : 0: Not displayed. 1: Displayed.	1	-
No.27310#2	The coordinate axis name of animation drawing is : 0: Not displayed (conventional specification). 1: Displayed (new specification).	1	1
No.27310#7	In machining simulation (tool path), the tool path is : 0: Deleted after enlargement, reduction, movement, or rotation. (conventional specification) 1: Not deleted after enlargement, reduction, movement, or rotation. (new specification)	1	1
No.27311#1	If the workpiece coordinate is changed in performing machining simulation, the drawing is : 0: Performed on the same workpiece coordinate as one on the top of simulation. 1: performed on it.	-	1

1.4.4 Auxiliary function

The other M codes except them return a completion signal immediately without any action in a ladder program.

Fig.1.4.4 (a) Auxiliary functions

M code	Function Description	Usage
M00	Program stop	M00 suspends program execution. The program is resumed by pressing CYCLE START key on Machine operator's panel.
M01	Optional program stop	M01 suspends program execution. The program is resumed by pressing CYCLE START key on Machine operator's panel. M01 becomes active when OPT STOP key is only pressed, and this is the difference from M00.
M02	End of program	M02 indicates the end of a program. The execution point of a program goes back the beginning.
M03	Forward spindle rotation	M03 is a command to rotate a spindle clockwise.
M04	Reverse spindle rotation	M04 is a command to rotate a spindle counterclockwise.

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M05	Spindle stopped	M05 is a command to stop a spindle.
M29	Rigid tapping mode	M29 starts Rigid tapping mode. It can be used together with spindle control.
M30	End of tape	M30 indicates the end of a program. The execution point of a program goes back the beginning.

1.4.5 User application

The following functions cannot be used.

- Macro Executor
- C Language Executor
- FANUC PICTURE

1.5 MULTI-LANGUAGE DISPLAY

CNC Simulator supports 24 languages (Refer to Table 1.4.1 (a)). English is pre-selected in Factory default and Initial state. The other languages can be switched by the following procedures.

- Procedure






1. Press the function key .
2. Press the return menu key , and press the continuous menu key  four times. The soft key [LANGUAGE] will appear.
3. Press the soft key [LANGUAGE]. The following menu appears.



Fig.1.5 (a) Language screen

4. Move the cursor on the desired language by using the cursor keys   (There are three pages of the language list).
5. Press the soft key [(OPRT)], and then [APPLY]. A language will be changed to the desired one.

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2

ADDITIONAL INFORMATION

2.1 BACKING UP AND RESTORING CNC DATA

CNC Simulator becomes Initial state by System switching operation. It is recommended to back up the data like programs and parameters before System switching operation.

2.1.1 Selecting External I/O device


CNC data can be backed up to Memory card and USB memory, and the two devices can be selected by Setting screen. The default is the setting of Memory card, and the value “4” is pre-set to I/O channel parameter. If attempting USB memory, please change as follows.

NOTE

The following shows the procedure from the point of when CNC Simulator just turns on. In the case of having operated something after the power-on, the procedures for finding the desired Setting screen may be different from the following.

- Procedure

1. Enter MDI mode.

2. Press the function key  .

3. Press the return menu key  , and then the soft key [SETTING]. The following screen appears.

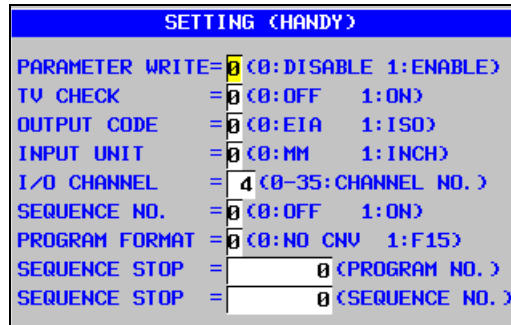


Fig.2.1.1 (a) Setting screen

4. Input the value “17” to I/O channel.

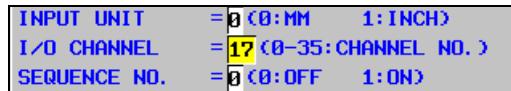


Fig.2.1.1 (b) Setting screen




Then, CNC data can be transferred from I/O to USB memory.

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2.1.2 Backing up CNC data

The data of CNC Simulator can be backed up by CNC data output function. The back up of SRAM data, user data (PMC ladder program etc.) and text data (parameters, program, etc.) can be executed in one operation.

- Procedure

1. Enter EDIT mode.
2. Press the function key , and then the continuous menu key  twice. The soft key [ALL I/O] appears.
3. Press the soft key [ALL I/O], and the continuous menu key  three times. The soft key [ALL DATA] appears.
4. Then press the soft key [ALL DATA]. The following screen will appear.
(In the case of selecting USB memory, DEVICE NAME will show “USB MEMORY”.)

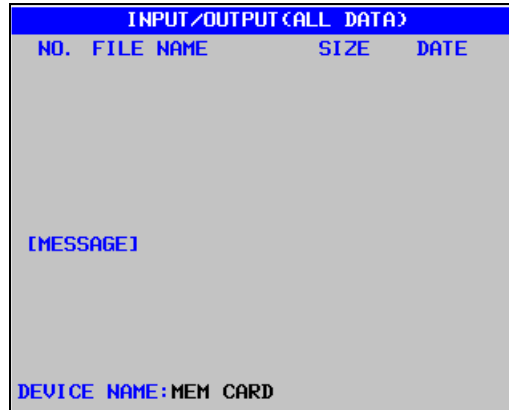


Fig.2.1.2 (a) Input/output (all data) screen

5. Press the soft key [(OPRT)], and then the soft key [F OUTPUT]. The following message will appear.

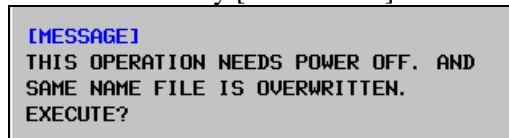


Fig.2.1.2 (b) Input/output (all data) screen

6. Press the soft key [EXEC]. The output of text data will start.
7. When completing the output of all text data, the following message appears. Here, please turn OFF and ON.

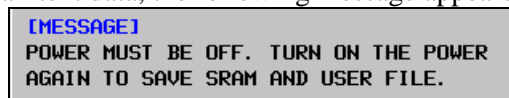


Fig.2.1.2 (c) Input/output (all data) screen

8. SRAM data and user data will be outputted automatically just after power-on.
9. When completing the output of all SRAM data and user data, CNC Simulator will start up. Please do not pull out Memory card until it.

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2.1.3 Restoring CNC data

This section describes the procedure to restore the data that was backed up by the NC data output function. In this section describes the procedure to restore the following 3 data as an example.

- Program
- Parameter
- Offset


2.1.3.1 Inputting a program

- Procedure

1. Enter the EDIT mode.
2. Press the function key , and press the continuous menu key  twice, the soft key [ALL I/O] appears.
3. Press the soft key [ALL I/O], the following screen appears.



INPUT/OUTPUT (PROGRAM)			
NO.	FILE NAME	SIZE	DATE
*0001	TOOLOFST. TXT	2K	2015-09-01
0002	CNC-PARA. TXT	355K	2015-09-01
0003	PMC1_PRM. TXT	248K	2015-09-01
0004	ALL-FLDR. TXT	137B	2015-09-01
0005	MACRO. TXT	16K	2015-09-01
[PROGRAM]			

Fig.2.1.3.1 (a) INPUT/OUTPUT (PROGRAM) Screen

4. Press the soft key [(OPRT)], and press the continuous menu key  once, the soft key [ALL INPUT] appears.
5. Press the soft key [ALL INPUT], the soft key [EXEC] appears. Press the soft key [EXEC], this starts inputting a program file "ALL-FLDR.TXT" automatically.

2.1.3.2 Inputting a parameter

- Procedure

1. Enter the MDI mode.
2. Press the function key .
3. Press the return menu key , and press the soft key [SETTING], the following screen appears.

SETTING (HANDY)	
PARAMETER WRITE=	0 (0: DISABLE 1: ENABLE)
TV CHECK	= 0 (0: OFF 1: ON)
OUTPUT CODE	= 0 (0: EIA 1: ISO)
INPUT UNIT	= 0 (0: MM 1: INCH)
I/O CHANNEL	= 4 (0-35: CHANNEL NO.)
SEQUENCE NO.	= 0 (0: OFF 1: ON)
PROGRAM FORMAT	= 0 (0: NO CNV 1: F15)
SEQUENCE STOP	= 0 (PROGRAM NO.)
SEQUENCE STOP	= 0 (SEQUENCE NO.)

Fig.2.1.3.2 (a) SETTING Screen

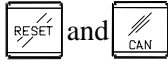
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4. Enter "1" to PARAMETER WRITE.

```
PARAMETER WRITE=1 (0:DISABLE 1:ENABLE)
TU CHECK       =0 (0:OFF  1:ON)
```

Fig.2.1.3.2 (b) SETTING Screen

5. Alarm "SW0100 PARAMETER ENABLE SWITCH ON" occurs. To cancel this alarm, press the MDI key



at the same time.

6. Enter the EDIT mode.

7. Press the function key , and press the continuous menu key twice, the soft key [ALL I/O] appears.

8. Press the soft key [ALL I/O], the soft key [PARAMETER] appears. Press the soft key [PARAMETER], the following screen appears.

INPUT/OUTPUT (PARAMETER)			
NO.	FILE NAME	SIZE	DATE
0001	TOOLOFST.TXT	2K	2015-09-01
0002	CNC-PARA.TXT	355K	2015-09-01
0003	PMC1_PRM.TXT	248K	2015-09-01
0004	ALL-FLDR.TXT	137B	2015-09-01
0005	MACRO.TXT	16K	2015-09-01
0006	EXT_WKZ.TXT	119B	2015-09-01
0007	OPRT_HIS.TXT	3K	2015-09-01
0008	MAINTINF.TXT	2K	2015-09-01
0009	MAINTENA.TXT	3B	2015-09-01
0010	SYS-CONF.TXT	2K	2015-09-01
0011	SV_SP_ID.TXT	53B	2015-09-01

Fig.2.1.3.2 (c) INPUT/OUTPUT (PARAMETER) Screen

9. Press the soft key [(OPRT)], the soft key [F INPUT], the soft key [EXEC] appears. Press the soft key [EXEC], this starts inputting a parameter file "CNC-PARA.TXT" automatically.

2.1.3.3 Inputting a offset

- Procedure

1. Enter the MDI mode.

2. Press the function key , press the continuous menu key twice, the soft key [ALL I/O] appears.

3. Press the soft key [ALL I/O], the soft key [OFFSET] appears. Press the soft key [OFFSET], the following screen appears.

INPUT/OUTPUT (OFFSET)			
NO.	FILE NAME	SIZE	DATE
0001	TOOLOFST.TXT	2K	2015-09-01
0002	CNC-PARA.TXT	355K	2015-09-01
0003	PMC1_PRM.TXT	248K	2015-09-01
0004	ALL-FLDR.TXT	137B	2015-09-01
0005	MACRO.TXT	16K	2015-09-01
0006	EXT_WKZ.TXT	119B	2015-09-01
0007	OPRT_HIS.TXT	3K	2015-09-01
0008	MAINTINF.TXT	2K	2015-09-01
0009	MAINTENA.TXT	3B	2015-09-01
0010	SYS-CONF.TXT	2K	2015-09-01
0011	SV_SP_ID.TXT	53B	2015-09-01

Fig.2.1.3.3 (a) INPUT/OUTPUT (OFFSET) Screen

4. Press the soft key [(OPRT)], the soft key [F INPUT], the soft key [EXEC] appears. Press the soft key [EXEC], this starts inputting an offset file "TOOLOFST.TXT" automatically.

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NOTE

There are more method for backing up and restoring CNC data. Please refer to the following manual.

OPERATOR'S MANUAL(Common to Lathe System / Machining Center System)(B-64604EN)
 III. OPERATION
 8 DATA INPUT/OUTPUT

2.2 BACKUP CD

The backup CD (ordering code: A02B-0158-J010#ZZ11) which contains a sample program or a backup data is provided for CNC Simulator as an option. It is not necessary to purchase this backup CD for each CNC Simulator. But it is recommended that purchase this backup CD for a user group for an accident.

2.2.1 Contents of the backup CD

Contents of the backup CD are the followings;

- ¥PMC_sample
 - SIML**.MEM : Sample PMC Sequence Program (*1)
 - SIMI**.MEM : Sample I/O configuration (*2)

** means edition number. ** is 01 for the 1st edition.
- ¥T_sample
 - T_PROG.TXT : Sample part program for Lathe System (*3)
 - T_TLDB.TXT : Sample tool data for Lathe System (*3)
 - T_TLOF.TXT : Sample tool offset data for Lathe System (*3)
- ¥M_sample
 - M_PROG.TXT : Sample part program for Machining Center System (*4)
 - M_TLDB.TXT : Sample tool data for Machining Center System (*4)
 - M_TLOF.TXT : Sample tool offset data for Machining Center System (*4)
- ¥manual
 - CNC_Simulator-Text_e.ppt : CNC Simulator Text (English)
 - CNC_Simulator-Text_j.ppt : CNC Simulator Text (Japanese)
 - CNC_Simulator-Operator's Manual_e.pdf : CNC Simulator Operator's Manual (English)
 - CNC_Simulator-Operator's Manual_j.pdf : CNC Simulator Operator's Manual (Japanese)
- ¥(Root folder)
 - readme_e.txt : Explanation of backup CD (English)
 - readme_j.txt : Explanation of backup CD (Japanese)

NOTE

1. *1,*2,*3 : This data has been entered in CNC Simulator at the factory.
2. *4 : This data has not been entered in CNC Simulator at the factory.
3. *1,*2 : This data will not be deleted by system changing operation.
4. *3,*4 : This data will be deleted by system changing operation.



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2.2.2 Details

2.2.2.1 PMC Sequence Program

To return the PMC sequence program to the factory default settings, copy the SIML**.MEM in the backup folder to memory card or USB memory, and input it to CNC.

- Input procedure

1. Press the function key , the continuous menu key , the soft key [PMC CONFIG] appears.
2. Press the soft key [PMC CONFIG], the soft key [SETTING] appears. Press the soft key [SETTING], the following screen appears.

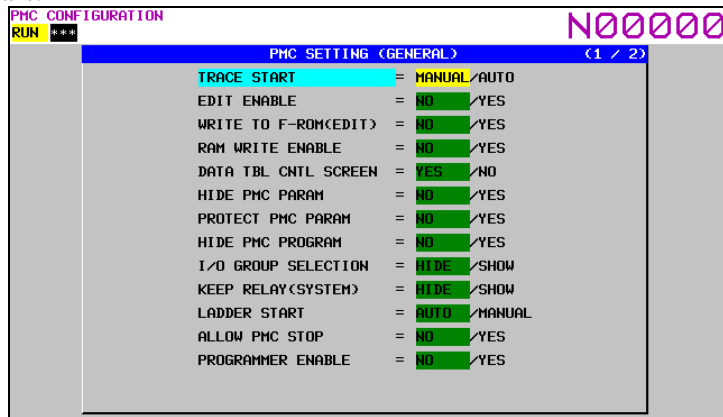


Fig.2.2.2.1 (a) PMC SETTING (GENERAL) screen

3. Select the "YES" for PROGRAMMER ENABLE.

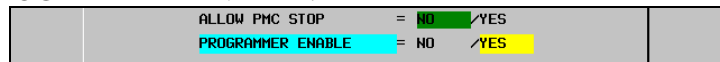



Fig.2.2.2.1 (b) PMC SETTING (GENERAL) screen

4. Press the return menu key , the soft key [PMC MAINTEN] appears.
5. Press the soft key [PMC MAINTEN], press the soft key [I/O], the following screen appears.

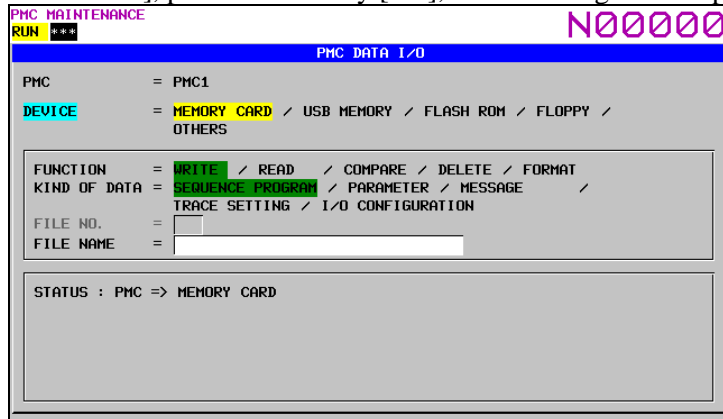


Fig.2.2.2.1 (c) PMC DATA I/O screen

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6. Select “MEMORY CARD” for DEVICE (select “USB MEMORY” for DEVICE when USB memory is used), select “READ” for FUNCTION, input “SIML**.MEM” for FILE NAME.

```

PMC = PMC1
DEVICE = MEMORY CARD / USB MEMORY / FLASH ROM / FLOPPY / OTHERS
FUNCTION = WRITE / READ / COMPARE / DELETE / FORMAT
KIND OF DATA = SEQUENCE PROGRAM / PARAMETER / MESSAGE / TRACE SETTING / I/O CONFIGURATION
FILE NO. = 
FILE NAME = SIML01.MEM
  
```

Fig.2.2.2.1 (d) PMC DATA I/O screen

7. Press the soft key [EXEC], the soft key [EXEC] appears again for confirmation. Press the soft key [EXEC], this starts reading a PMC sequence program “SIML**.MEM”.
8. After reading, PMC alarm “WN09 SEQUENCE PROGRAM IS NOT WRITTEN TO FLASH ROM(PMC1)” occurs. Continue the subsequent operations.
9. Select “FLASH ROM” for DEVICE, select “WRITE” for FUNCTION, and select “SEQUENCE PROGRAM” for KIND OF DATA to the PMC DATA I/O screen. (Refer to the . Fig.2.2.2.1 (c))

```

PMC = PMC1
DEVICE = MEMORY CARD / USB MEMORY / FLASH ROM / FLOPPY / OTHERS
FUNCTION = WRITE / READ / COMPARE
KIND OF DATA = SEQUENCE PROGRAM / MESSAGE / I/O CONFIGURATION
FILE NO. = 
FILE NAME = 
  
```

Fig.2.2.2.1 (e) PMC DATA I/O screen

10. Press the soft key [EXEC], this completes writing the PMC sequence program in flash ROM.
11. PMC is stop at this point, so execute subsequent operations to start PMC.
12. After the writing to flash ROM is completed, press the return menu key twice, the soft key [PMC CONFIG] appears. Press the soft key [PMC CONFIG].
13. The Soft key [PMCSTATUS] appears. Press the soft key [PMCSTATUS], and press the soft key [(OPRT)].
14. Press the soft key [RUN], the soft key [YES] appears. Press the soft key [YES]. this starts PMC.

2.2.2.2 I/O configuration

To return the I/O configuration to the factory default settings, copy the SIMI**.MEM in the backup folder to memory card or USB memory, and input it to CNC.

- Input Procedure

1. Until PMC DATA I/O screen (Refer to the Fig.2.2.2.1 (c)) is displayed, operate the screen according to the same procedure as the inputting PMC sequence program.
2. Select “MEMORY CARD” for DEVICE (select “USB MEMORY” for DEVICE when USB memory is used), select “READ” for FUNCTION, input “SIMI**.MEM” for FILE NAME.

```

PMC = PMC1
DEVICE = MEMORY CARD / USB MEMORY / FLASH ROM / FLOPPY / OTHERS
FUNCTION = WRITE / READ / COMPARE / DELETE / FORMAT
KIND OF DATA = SEQUENCE PROGRAM / PARAMETER / MESSAGE / TRACE SETTING / I/O CONFIGURATION
FILE NO. = 
FILE NAME = SIMI01.MEM
  
```

Fig.2.2.2.2 (a) PMC DATA I/O screen

3. Press the soft key [EXEC], the soft key [EXEC] appears again for confirmation. Press the soft key [EXEC], this starts reading a PMC sequence program “SIMI**.MEM”.

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4. After reading, PMC alarm “WN68 I/O CONFIGURATION DATA IS NOT WRITTEN TO FLASH ROM” occurs. Continue the subsequent operations.
5. Select “FLASH ROM” for DEVICE, select “WRITE” for FUNCTION, and select “I/O CONFIGURATION” for KIND OF DATA.

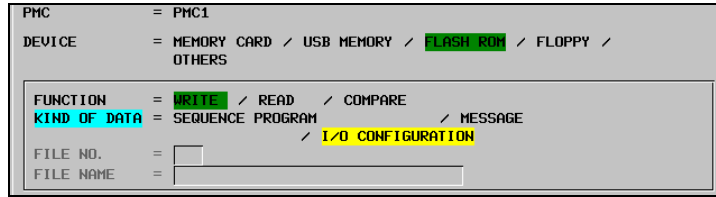


Fig.2.2.2.2 (b) PMC DATA I/O screen

6. Press the soft key [EXEC], this completes writing the I/O configuration in flash ROM.

2.2.2.3 Sample for Lathe

If CNC Simulator is used as lathe system and the sample programs for lathe will be executed, copy T_PROG.TXT, T_TLDB.TXT, and T_TLOF.TXT stored on the T_sample folder to a memory card and copy them to CNC from the memory card.


The sample programs have been stored in advance at FANUC, but the all sample data are erased if switching the system mode is operated. After the operation of switching the system mode, re-enter the sample data in the following procedure before the sample programs are executed.

In addition, the sample program of "CNC_Simulator-Text_e.ppt" is O1001 among the sample programs.

NOTE

When enter the sample data on the MANUAL GUIDE *i* screen, use a memory card always. USB memories cannot be used even if the I/O channel is set to use USB memories (=17) on the setting screen.

(1) The procedure of entering the program file (T_PROG.TXT)

1. Change the mode to EDIT.
2. Press the function key , then the soft key [O LIST] is displayed.
3. Press the soft key [O LIST], then press the soft key [IN/OUT], the following screen is displayed.

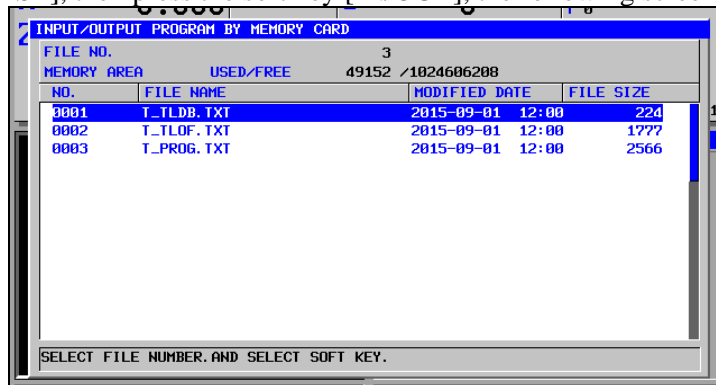




Fig.2.2.2.3 (a) Input/output program screen

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4. Press the cursor keys   to move the cursor to "T_PROG.TXT".

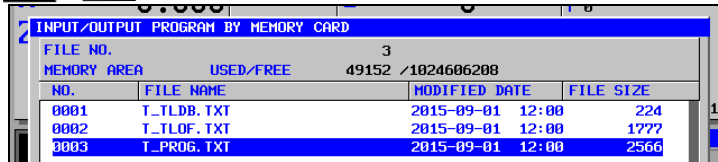


Fig.2.2.2.3 (b) Input/output program screen

5. Press the soft key [INPUT]. Then, the program file "T_PROG.TXT" is input.

6. After the finish of input, press the soft key [RETURN], then the following screen is displayed.

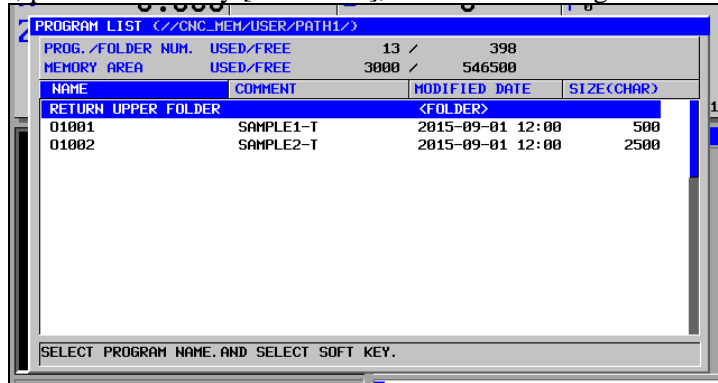


Fig.2.2.2.3 (c) Program list screen

7. Press the cursor keys   to move the cursor to O1001.

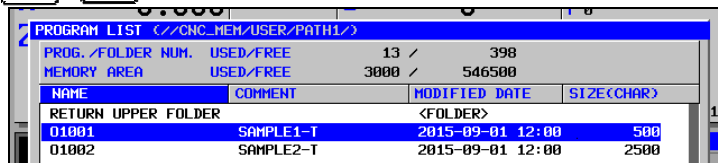


Fig.2.2.2.3 (d) Program list screen

8. Press the soft key [OPEN], the following screen is displayed and the program O1001 is selected.

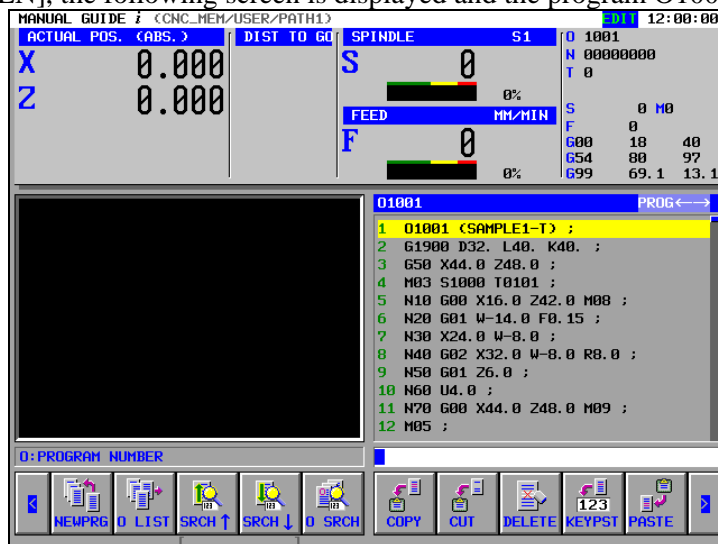





Fig.2.2.2.3 (e) Manual Guide *i* screen

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(2) The procedure of entering the tool information file (T_TLDB.TXT)

1. Change the mode to EDIT.
2. Press the function key , and press the continuous menu key  at 3 times, and then the soft key [T-OFS] is displayed.
3. Press the soft key [T-OFS], and press the cursor key  twice, and then the following screen is displayed.

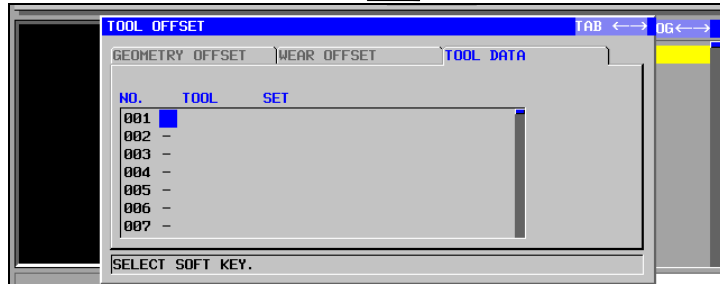



Fig.2.2.2.3 (f) Tool information screen

4. Press the continuous menu key  twice, the soft key [INPUT] is displayed.
5. Press the soft key [INPUT], the following screen is displayed.

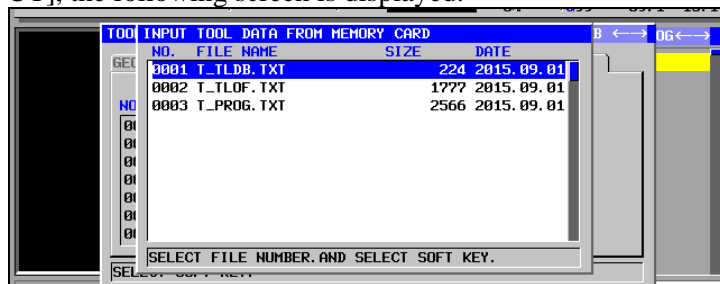




Fig.2.2.2.3 (g) Tool information input screen

6. Press the cursor keys   to move the cursor to "T_TLDB.TXT".

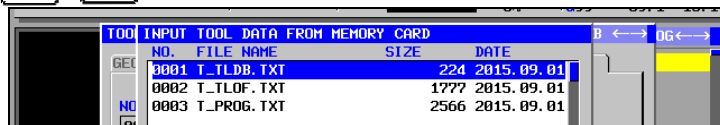




Fig.2.2.2.3 (h) Tool information input screen

7. Press the soft key [INPUT]. By this, the tool information file "T_TLDB.TXT" is input.
8. After the finish of input, press the soft key [CLOSE].
9. Press the soft key [CLOSE] to continue further. This completes the input of the tool information.

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(3) The procedure of entering the tool offset file (T_TLOF.TXT)

1. Change the mode to EDIT.
2. Press the function key , and press the continuous menu key  at 3 times, and then the soft key [T-OFS] is displayed.
3. When pressing the soft key [T-OFS], the screen like the following is displayed.

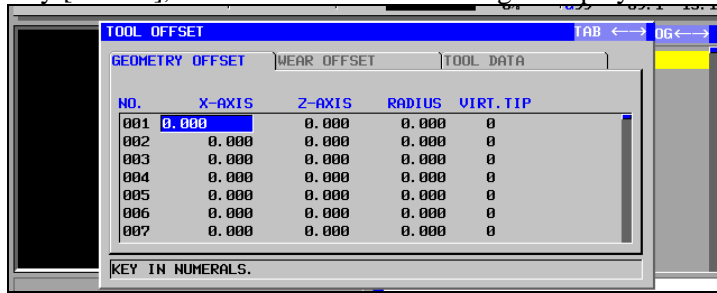



Fig.2.2.2.3 (i) Tool geometry offset screen

4. When pressing the continuous key  once, the soft key [INPUT] is displayed.
5. When pressing the soft key [INPUT], the screen like the following is displayed.

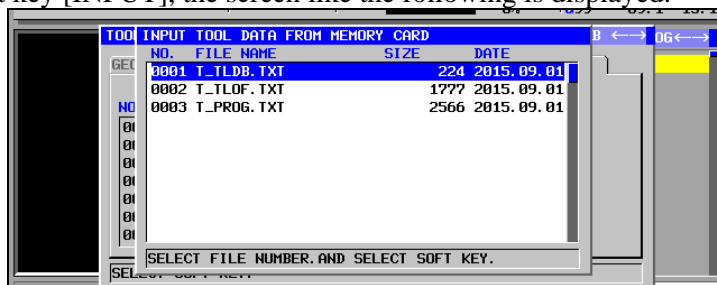


Fig.2.2.2.3 (j) Tool offset data input screen



6. Press the cursor keys   to move the cursor to "T_TLOF.TXT".





Fig.2.2.2.3 (k) Tool offset data input screen

7. Press the soft key [INPUT]. By this, the tool offset data file "T_TLOF.TXT" is input.
8. After the completion of input, press the soft key [CLOSE].
9. Press the soft key [CLOSE] to continue further. This completes the input of the tool offset data.

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Simulation procedure of sample programs

Procedure

1. Change the mode to EDIT.
2. When pressing the function key , and pressing the continuous menu key  twice, the soft key [SIMLAT] is displayed.
3. When pressing the soft key [SIMLAT], the screen like the following is displayed.

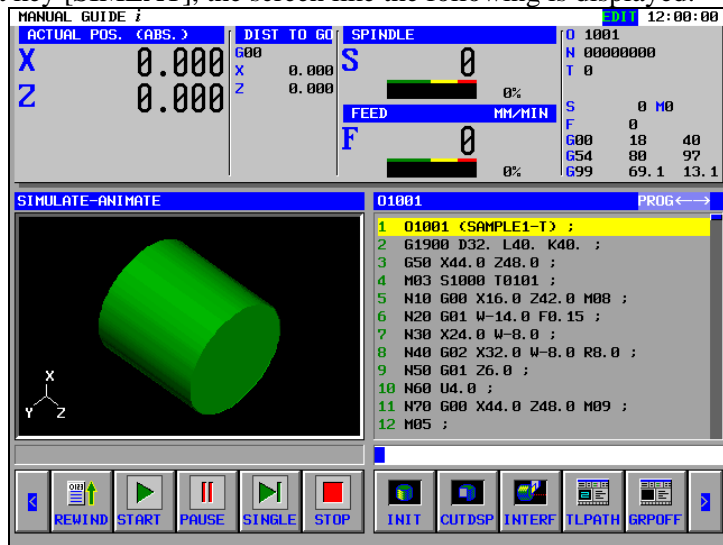




Fig.2.2.2.3 (I) Simulation screen

4. Press the soft key [START]. By this, the simulation starts.

If the sample program O1002 will be simulated, press the continuous key  at three times, and press the soft key [O LIST]. Then, move the cursor to O1002, press the soft key [OPEN]. In addition, press the continuous key  once, and press the soft key [START].

2.2.2.4 Sample for Machining Center

If CNC Simulator is used as machining center system and the sample programs for machining center will be executed, copy M_PROG.TXT, M_TLDB.TXT, and M_TLOF.TXT stored in the M_sample folder to a memory card and copy them to CNC from the memory card. The simulation can be executed by the same operation as lathe.

2.2.2.5 CNC_Simulator-Text_e.ppt

CNC_Simulator-Text_e.ppt stored in the manual folder is a text that the basic operation for CNC simulator is written. The sample program O1001 is also written.

2.2.2.6 CNC_Simulator-Operator's Manual_e.pdf

CNC_Simulator-Operator's Manual_e.ppt stored in the manual folder is this manual.

2.2.2.7 readme_e.txt

"readme_e.txt" is the file that a brief description of the various files stored on the backup CD is written.

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2.3 EDIT OF PMC SEQUENCE PROGRAM AND I/O CONFIGURATION DATA





PMC sequence program and I/O configuration data for CNC simulator are protected by the password. When editing them, enter the following password to enable edit.





PMC sequence program : CNCSIMULAD
I/O configuration data : CNCSIMUIO

2.4 TROUBLESHOOTING

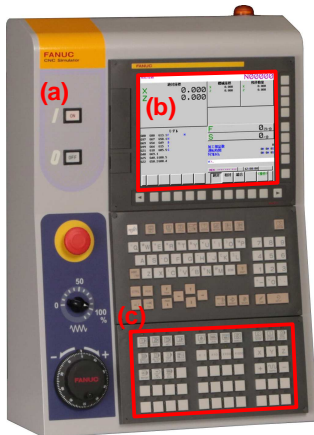
If you experience trouble with CNC Simulator, try to check following items before contacting FANUC customer service.

1. CNC Simulator does not start when you press the power-on button.
→ Please check the power cable and power supply.
2. If CNC simulator can not be executed also manual operation or automatic operation (Position display (relative, absolute, machine coordinate) does not change).
→ Please make sure the position of the override switch is not 0%. If it is 0%, the program does not start.
→ Please check Emergency stop button.

3. When you turn on the power while holding down  +  or  +  of MDI key, it does not start up normally.

→ Please try turn the power while holding down  +  or  +  of key again.

If it still do not work properly, please contact our service along with following information. If it still do not work properly, please contact FANUC customer service along with following information



- 1) Does the lamp(a) on the power-on switch turn on?
- 2) Is there anything displayed on the LCD after the power is turned on?
- 3) Does the lamp(c) on the Machine Operator's Panel?
- 4) Details of trouble
- 5) Please make a note of it if there is some messages on the alarm display screen.

In addition, please visit our website (<http://www.fanuc.co.jp/>) for each FANUC customer service base.

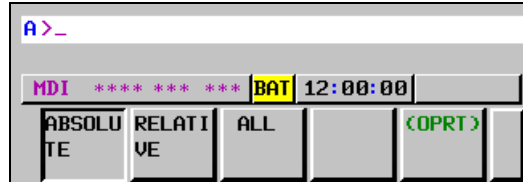
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2.5 REPLACING A MEMORY BACKUP BATTERY AND FAN MOTORS

2.5.1 For Replacing a Lithium Battery

CNC unit has a lithium battery to back up data, such as programs, offset data and system parameters, without the power.

When the battery voltage falls, alarm message the BAT alarm message blinks on the position of status indication.



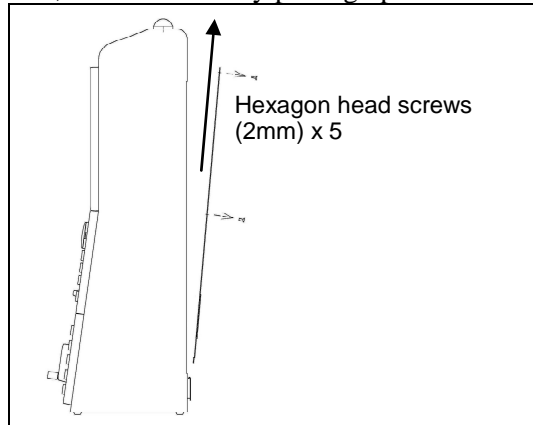
Once the alarm message starts blinking or the alarm signal is output, replace the battery as soon as possible. In general, the battery can be replaced within one week of the alarm first being issued. If the battery voltage subsequently drops further, backup of memory can no longer be provided. Turning on the power to CNC Simulator in this state causes system alarm to be issued because the contents of memory are lost. Replace the battery, clear the entire memory, then reenter the data.

2.5.2 Lithium Battery replacement procedure

Prepare a new lithium battery (ordering code: A02B-0323-K102).

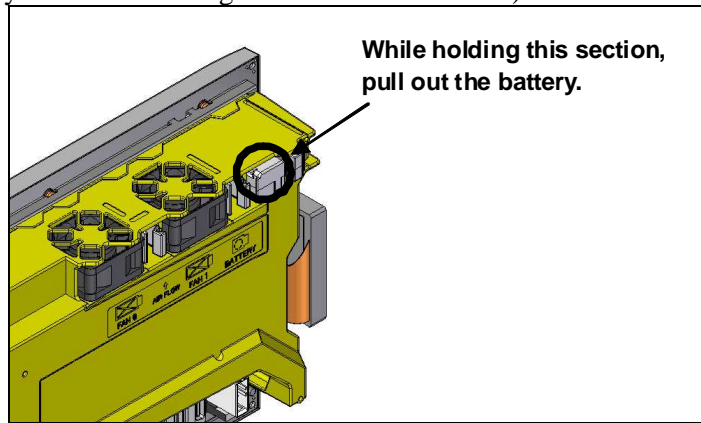
Also, please read the “SAFETY PRECAUTIONS FOR REPLACING THE MEMORY BACKUP BATTERY AND FAN MOTORS” before replacement.

1. Turn the power to CNC Simulator on. After about 30 seconds, turn the power off.
2. When replacing the battery, please be sure to disconnect the power cable from CNC Simulator.
3. Remove the back board of CNC Simulator. Back board is fixed by five Hexagon heads screws(2mm).
Remove the Hexagon head screws, and remove it by pulling up on the back board obliquely upward.

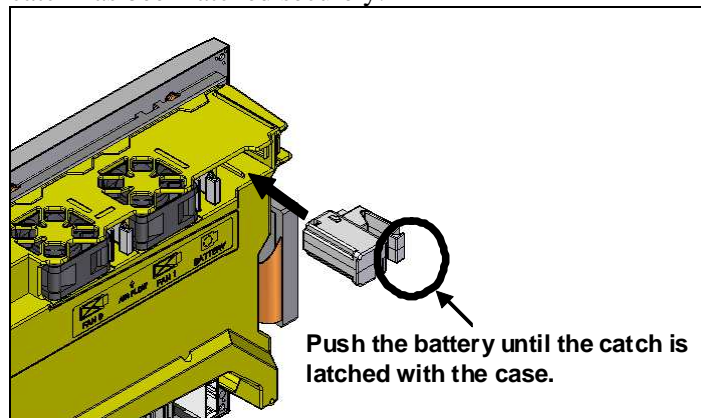


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4. Pull out the lithium battery on the back of the control unit. (Hold the latch of the lithium battery, and pull the lithium battery toward you while releasing the claw from the case.)



5. Mount a new lithium battery you get ready beforehand. (Push the battery until the catch is latched with the case.) Confirm that the catch has been latched securely.



⚠ WARNING

Using other than the recommended lithium battery may result in the battery exploding. Replace the battery only with the specified lithium battery (A02B-0323-K102).
Replacing of the battery must be undertaken only by a qualified technician.

⚠ CAUTION

Steps 2. to 5. should be completed within 30 minutes.
Do not leave the control unit without a battery for any longer than the specified period. Otherwise, the contents of the backup memory may be lost.
Before starting replacement work, save the contents of the backup memory. Even if they are lost, they can be restored easily.
For the methods of saving all contents and restoring them, refer to “Backing up and restoring CNC data”.

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NOTE

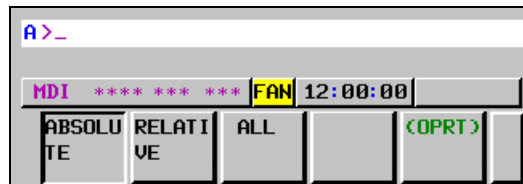
After replacement, dispose the used battery as “industrial waste” correctly according to the laws of the country where the machine is installed and the ordinances of the local government having jurisdiction over the site of the machine. When disposing the battery, insulate it, for example, by taping its electrodes in order to prevent a short circuit.

2.5.3 For Replacing Fan motors

When a reduction in the speed of the fan motor is detected, the FAN warning message blinks on the position of status indication.

When a failure such as stop of the fan motor is detected, an overheat alarm or system alarm is issued and the system stops operating. Therefore, as soon as the FAN warning appears, replace the fan motor.

The CNC body on the back of the display unit has two fan motors. Please replace all fan motors at the time of replacement.

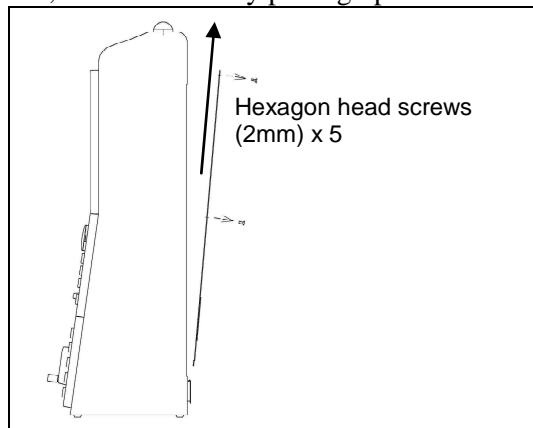


2.5.4 Fan motors replacement procedure

Prepare new fan motors (ordering code: A02B-0323-K120). It includes two pieces.

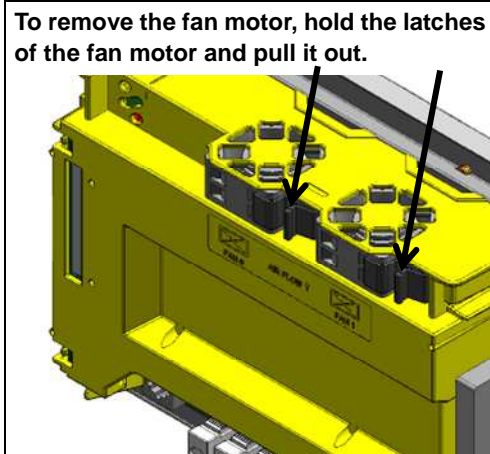
Also, please read the “SAFETY PRECAUTIONS FOR REPLACING THE MEMORY BACKUP BATTERY AND FAN MOTORS” before replacement.

1. When replacing the fan motors, please be sure to disconnect the power cable from CNC Simulator.
2. Remove the back board of CNC Simulator. Back board is fixed by five by five hexagon head screws (2mm). Remove the hexagon head screws, and remove it by pulling up on the back board obliquely upward.

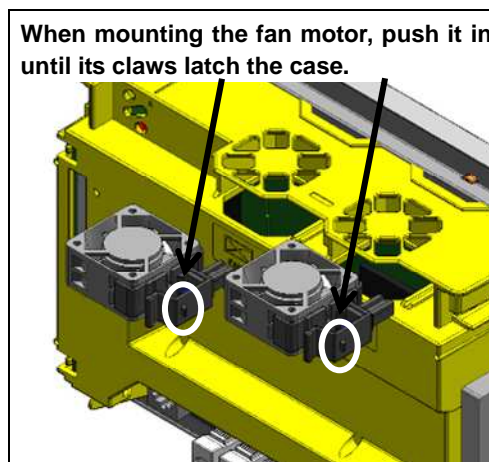


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3. Remove the fan motors from the case by holding its latch and pulling it out while releasing the claws from the case.



4. Mount the fan motor to the case. After that, make sure that the fan motor claws have latched the case securely.



⚠ WARNING

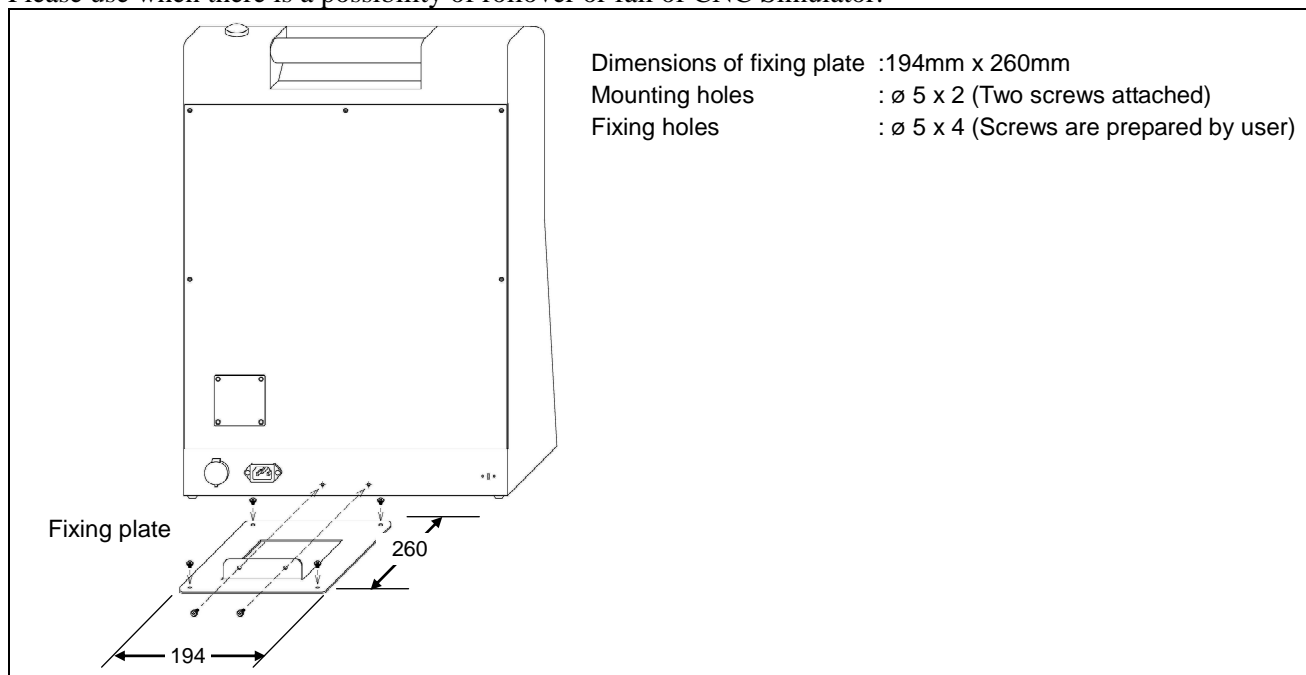
Replacing of fan motors must be undertaken only by a qualified technician.

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2.6 FIXING PALTE

CNC Simulator includes a plate for fixing it on a desk.

Please use when there is a possibility of rollover or fall of CNC Simulator.



2.7 CONTACT INFORMATION

Your local contacts, please visit our website.

FANUC CORPORATION

Headquarters Oshino-mura, Yamanashi 401-0597, Japan <http://www.fanuc.co.jp>

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