

BNP-B2194\* (ENG)

# **MITSUBISHI CNC**

# **MELDASMAGIC 64**

**MELDASMAGIC MMI**  
**OPERATION MANUAL (FOR L/G)**

ADVANCED AND EVER ADVANCING  
**MITSUBISHI ELECTRIC**

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## Introduction


This instruction manual is the guideline for using the MELDASMAGIC 64L/G for lathes and grinding machines.

The display details and operation methods of the MELDASMAGIC 64L/G MELDASMAGIC Man-Machine Interface (MMI) Software are described in this manual. The NC function is described in the MELDAS64 Operation Manual. Thoroughly read this before starting use. Learn the "Precautions for safety" given on the next page to ensure safe use of the MELDASMAGIC Series.


The MELDASMAGIC Monitor is available besides the MMI software for the display and operation related software, but these cannot be used simultaneously. Quit the MELDASMAGIC Monitor before using the MMI Software.


### Details described in this manual

#### CAUTION

 For the items described in the "Restrictions" and "Usable State", the instruction manual issued by the machine maker takes a precedence over this instruction manual.

Items not described in this manual must be interpreted as "not possible".

 This instruction manual has been written on the assumption that all options are provided. Check the specifications issued by the machine maker before starting use.

 Some screens and functions may differ or may not be usable depending on the NC system version.

### General precautions

#### (1) Refer to the following documents concerning handling.

MELDAS 64 Operation Manual .....	BNP-B2180
MELDASMAGIC Monitor Operation Manual .....	BNP-B2192

## Precautions for Safety

Always read the specifications issued by the machine maker, this manual, related manuals and enclosed documents before starting installation, operation, programming, maintenance or inspections to ensure correct use. Thoroughly understand the basics, safety information and precautions of this numerical controller before using the unit.

The safety precautions are ranked as "DANGER", "WARNING" and "CAUTION" in this manual.



**DANGER**

When there is a great risk that the user could be subject to fatalities or serious injuries if handling is mistaken.




**WARNING**

When the user could be subject to fatalities or serious injuries if handling is mistaken.



**CAUTION**

When the user could be subject to injuries or when physical damage could occur if handling is mistaken.

Note that even if the item is ranked as "  **CAUTION**", incorrect handling could lead to serious results. Important information is described in all cases, so please observe the items.



**DANGER**

Not applicable in this manual.








**WARNING**

Not applicable in this manual.



**CAUTION**

Items related to product and manual

-  For items described as "Restrictions" or "Usable State" in this manual, the instruction manual issued by the machine maker takes precedence over this manual.
-  Items not described in this manual must be interpreted as "not possible".
-  This manual is written on the assumption that all option functions are added.
-  Refer to the specifications issued by the machine maker before starting use.
-  Some screens and functions may differ or may not be usable depending on the NC version.

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## Outline

The MMI Software provides the man-machine interface for the MELDASMAGIC Series.  
This manual describes the functions and operations of the MMI Software.  
This software has been created using the Custom Application Interface (Custom API) Library.

## Installing the MMI Software

Install the MMI Software following the procedure below.

### CAUTION

 Because changes are made to the AUTOEXEC.BAT file during installation, make a backup of the AUTOEXEC.BAT file beforehand.

- **Copy the files in the "melpcnc" folder on the "MELDASMAGIC MMI Software Disk 1" and "MELDASMAGIC MMI Software Disk 2" to the (C: \) drive of the installation destination.**

#### [Procedure]

- (1) Insert the floppy disk titled "MELDASMAGIC MMI Software Disk 1" into drive A: .
- (2) Click on [Program]-[Windows Explorer] of the taskbar [Start] menu.  
Operation : [Windows Explorer] starts.
- (3) Click on [Tools]-[Go to...] menu of Explorer.  
Operation : The "Go To Folder" dialog box appears.
- (4) Input as shown below in [Type the name and path of the folder you want to open.], and then click on [OK].  
A:\  
Operation : The A:\ folder opens, and the Contents of '3 1/2 Floppy (A:)' appear.
- (5) Click on the following folder from the file list.  
melpcnc
- (6) Click on [Edit]-[Copy].
- (7) Go to the folder below using steps (3) ~ (4).  
C:\
- (8) Click on [Edit]-[Paste].  
Operation : All files in the melpcnc folder on the "MELDASMAGIC MMI Software Disk 1" floppy disk are copied to the C: \melpcnc\ folder.
- (9) Insert the floppy disk titled "MELDASMAGIC MMI Software Disk 2" into drive A: .
- (10) Repeat steps (3)~(8).

- **Copy the MMI Software Initialization File to the Windows 95 folder.**

#### [Procedure]

- (1) Click on the [Tools]-[Go to...] menu of Explorer.  
Operation : The "Go To Folder" dialog box appears.
- (2) Input as shown below in [Type the name and path of the folder you want to open.], and then click on [OK].  
C:\melpcnc\ini  
Operation : The C:\melpcnc\ini folder opens, and the Contents of 'Ini' appear.
- (3) Click on the following file from the file list.  
magicm01.ini (or magicd01.ini) (Note 1)
- (4) Click on [Edit]-[Copy].
- (5) Go to the folder below using steps (1) ~ (2).  
C:\windows
- (6) Click on [Edit]-[Paste].  
Operation : magicm01.ini (or magicd01.ini) is copied to the C:\windows\ folder.

**(Note 1)** The name of the initialized file is magic+NC Card type+NC Card No.+ ".ini".  
Select the file that matches the NC Card type (M or D) purchased.



- **Change the name of the MMI Software Initialization file copied to the Windows 95 folder to a name corresponding to the NC Card No.**


**[Procedure]**

- (1) Click on [Settings]-[Control Panel] of the taskbar [Start] menu.  
Operation : The "Control Panel" opens.
- (2) Double-click on the "System" icon, and then click on the [Device Manager] tab.  
Operation : The list of devices appears.
- (3) Double-click on [Other Devices], and then double-click on [Mitsubishi PC-Based NC MELDASMAGIC64 (HR621B)].  
Operation : [Mitsubishi PC-Based NC MELDASMAGIC64 (HR621B) PROPERTY] opens.
- (4) Click on the [Settings] tab, and then display "Configuration".
- (5) If the NC Card No. of the MMI Software Initialization file (copied to the Windows 95 folder) differs from the NC Card No. that appears in [NC Card Number (01-FF) :&h] of "Configuration", change the file name using steps (6) onward.
- (6) Return to Explorer, and then open the Windows 95 folder.
- (7) Click on the MMI Software Initialization file copied to the Windows 95 folder.
- (8) Click on [File]-[Rename].
- (9) Change the file name.

**(Example)** When the NC Card No. that appears in [NC Card Number (01-FF) : &h] is '02':  
For NC Card type M: magicm01.ini → magicm02.ini  
For NC Card type D: magicd01.ini → magicd02.ini

- **Add the MMI Software PATH setting to the AUTOEXEC.BAT file.**

 **CAUTION**

 Because changes are made to the AUTOEXEC.BAT file, make a backup of the AUTOEXEC.BAT file beforehand.

**[Procedure]**

- (1) Start Notepad, etc., and then open the AUTOEXEC.BAT file.
- (2) Add the MMI Software PATH setting as shown below.

*PATH=%PATH% ; C:\MELPCNC\BIN32 ; C:\MELPCNC\BIN*



*PATH=%PATH% ; C:\MELPCNC\BIN32 ; C:\MELPCNC\BIN ; C:\MELPCNC\MMI*

- **Register the shortcut in the [Start] menu.**

**[Procedure]**

- (1) Click on [Settings]-[Taskbar...] of the taskbar [Start] menu.  
Operation : The "Taskbar Properties" window appears.
- (2) Click on the "[Start] Menu Settings" tab, and then click on the [Add...] button.  
Operation : The "Create Shortcut" window appears.
- (3) Input as shown below in the [Command line:], and then click on the [Next>] button.  
C:\melpcnc\mmi\magic.exe  
Operation : The "Select Program Folder" window appears.

- (4) If [MELDASMAGIC] is in the [Select folder to place shortcut in:] list, click on [MELDASMAGIC], and then click on the [Next>] button.  
If there is no [MELDASMAGIC] folder, click on the [New Folder. . .] button, and then input as shown below before clicking on the [Next>] button.  
MELDASMAGIC  
Operation : The "Select a Title for the Program" window appears.
- (5) Input as shown below in [Select a name for the shortcut:], and then click on the [Finish] button.  
MELDASMAGIC MMI
- (6) Click on the [Tools]-[Go to...] menu of Explorer.  
Operation : The "Go To Folder" dialog box appears.
- (7) Input as shown below in [Type the name and path of the folder you want to open.], and then click on the [OK] button.  
C:\windows\Start Menu\Programs\meldasmagic  
Operation : The C:\windows\Start Menu\Programs\meldasmagic folder opens, and the Contents of 'MELDASMAGIC' appear.
- (8) Click on the "MELDASMAGIC MMI" icon with the right mouse key, and then click [Properties].  
Operation : The "MELDASMAGIC MMI Properties" window appears.
- (9) Click on the "Shortcut" tab, input as shown below in [Target:], and click on the [OK] button.  
C:\melpnc\mmi\magic.exe/M= NC Card No. **(Note 1)**

■ **When starting MMI Software simultaneously with Windows, register the shortcut in [Startup].**

**[Procedure]**

- (1) Execute steps (1)~(3) in "Register the shortcut in the [Start] menu".
- (2) Click on [Start Up] in the [Select folder to place shortcut in:] list, and then click on the [Next>] button.  
Operation : The "Select a Title for the Program" window appears.
- (3) Input as shown below in [Select a name for the shortcut:], and then click on the [Finish] button.  
MELDASMAGIC MMI
- (4) Click on the [Tools]-[Go to...] menu of Explorer.  
Operation : The "Go To Folder" dialog box appears.
- (5) Input as shown below in [Type the name and path of the folder you want to open.], and then click on the [OK] button.  
C:\windows\Start Menu\Programs\startup  
Operation : The C:\windows\Start Menu\Programs\startup folder opens, and [Open Folder:] becomes 'Start Up'.
- (6) Execute steps (8)~(9) in "Register the Shortcut in the [Start] Menu".

■ **Close Windows, and then restart the personal computer.**

**[Procedure]**

- (1) Click on the [Shut Down ...] menu of the taskbar [Start] menu, and then restart the computer.

**(Note 1)** As the NC Card No., designate the NC Card No. displayed in [NC Card Number (01-FF):&h] of "Mitsubishi PC-Based NC MELDASMAGIC64 (HR621B) Properties".

## How to Read This Manual

### Basic configuration of this manual

This manual is configured of the "1. Screen configuration", "2. Menu window", "3. NC operation windows", "4. MMI Software operation procedure" and "5. Appendix" sections. The contents of each section are as follow.

1. Screen configuration  
..... Explanation of screens that configure the MMI Software.
2. Menu window  
..... Details of the display and explanation of the operation for the menu window.
3. NC operation windows  
..... Details of the displays and explanations of the operation for each NC operation window.
4. MMI Software operation procedure  
..... Explanation of basic operation from starting the MMI Software → window operation → ending operation.
5. Appendix  
..... List of commands, list of buttons, initialization file for MMI Software, list of error messages, list of alarms.

The basic operation method of the MMI Software is described in section "4. MMI Software operation procedure". Refer to this section when actually operating the menu window and NC operation windows.

## 1. Screen Configuration

The MMI Software is configured of the menu window and various NC operation windows. The NC operation windows are selected from the menu window and opened. (Fig. 1.1)

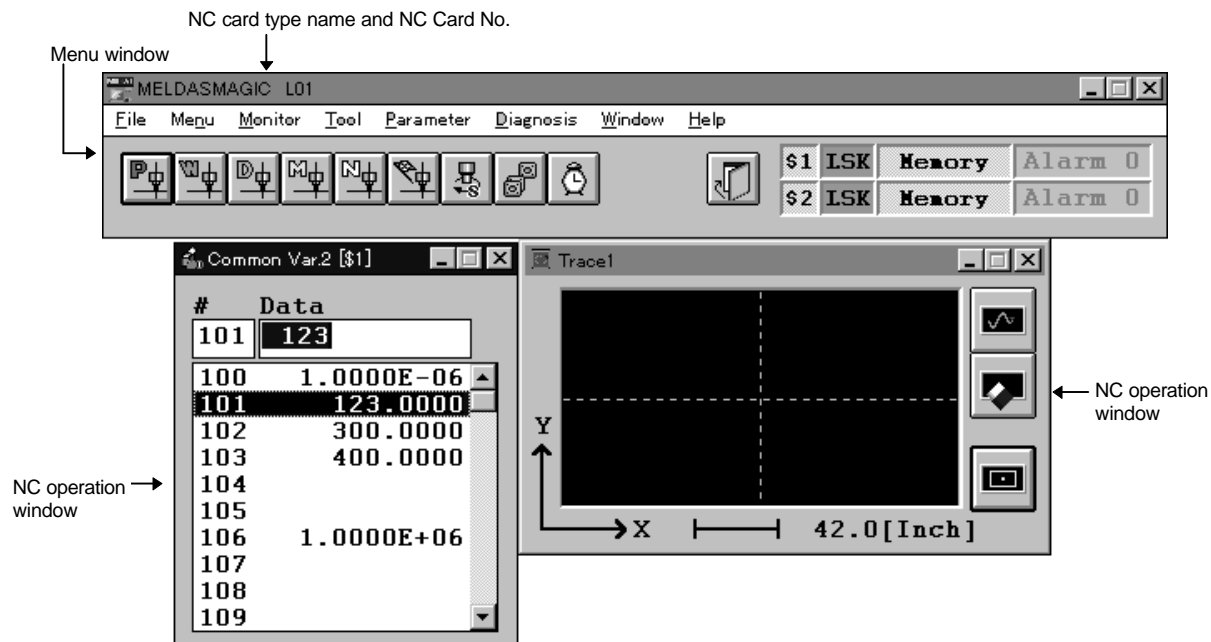


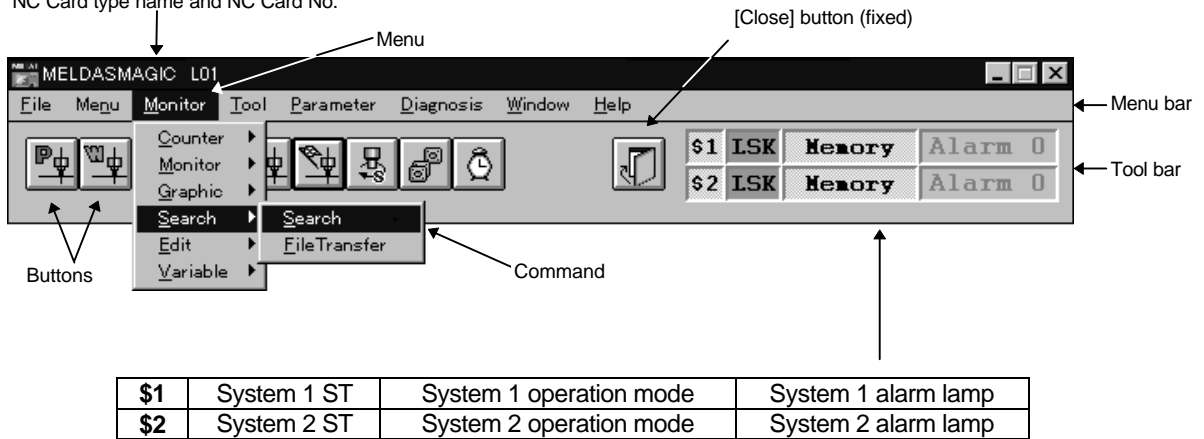
Fig. 1.1 MMI Software

## 2. Menu Window

### 2. Menu Window

The menu window realizes various functions with the menu commands found on the menu bar.

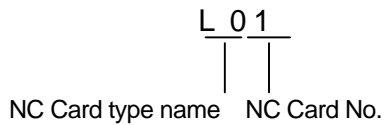
NC Card type name and NC Card No.



**Fig. 2.1 Menu window**

#### 2.1 NC Card type name and NC Card No.

The type name and NC Card No. that the MMI Software presently corresponds to are displayed.



#### 2.2 Menu bar

The functions of the menu are as described below.

Menu	Details
<u>F</u> ile	Ending of MMI Software
<u>M</u> enu	Changeover of button group on tool bar (Refer to 2.3.1 Buttons)
<u>M</u> onitor	Changeover of NC operation window open or active state
<u>T</u> ool <u>P</u> arameter <u>D</u> iagnosis <u>W</u> indow	(Refer to 3. NC operation windows)  Close all NC operation windows on screen
<u>H</u> elp	Display of MMI Software version information

## 2.3 Tool bar

The tool bar displays several buttons and the operation status, mode and alarm lamps.

### 2.3.1 Buttons

When a button is clicked, the NC operation window can be opened or activated. **(Note 1)**

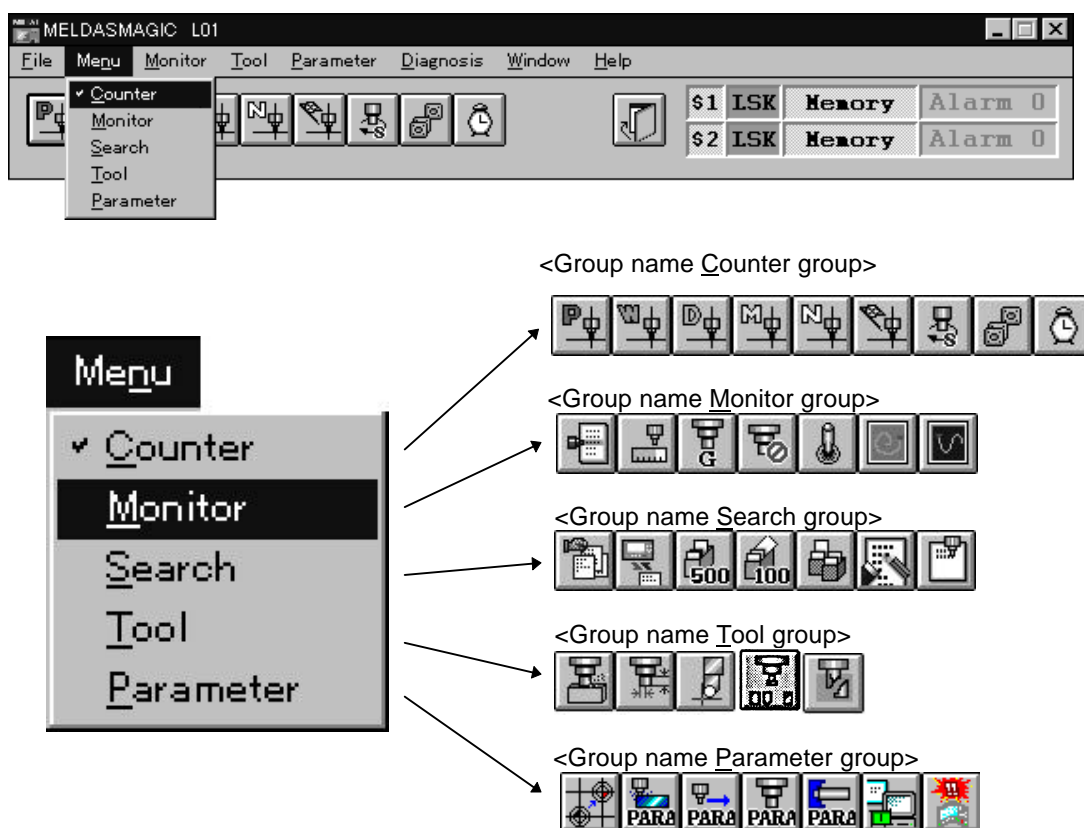


Fig. 2.2 Button group selection and display

The buttons are handled as a group of buttons arranged in a horizontal row. These buttons can be displayed on the tool bar in group units. To changeover the group display, click [Menu] — [(each group name)].

The groups are registered in the initialization file (refer to section 5. Appendix). A maximum of five groups (maximum 10 buttons per group). **(Note 2)**

**(Note 1)** The NC operation window can also be opened or activated by clicking the menu command on the menu bar instead of clicking a button.

**(Note 2)** The [Close] button is a fixed display. The fixed display buttons are excluded.

## 2. Menu Window

---

### 2.3.2 Operation status, mode, alarm lamps

The operation status, mode and alarm lamps are displayed on the tool bar. These displays can be constantly confirmed by placing the menu window screen as the front screen.

The operation status, mode and alarm lamps are displayed per system. When only system 1 is valid, the system No. will not display.

#### (1) Operation status

The display and details of the operation status are as described below.

Display	Background color	Details
EMG	Red	In emergency stop
RST	Orange	In reset
LSK	Green	When paper tape reader is in label skip state
HLD	Yellow	In feed hold stop
STP	Yellow	In single block stop
Blank	Green	Normal operation state other than the above

#### (2) Operation mode

The display and details of the operation mode are as described below.

Display	Details
Memory	Memory mode
Tape	Tape mode
MDI	MDI mode
Jog	Jog mode
Rapid	Rapid traverse mode
Handle	Handle mode
Zero-Rtn	Zero point return mode
Step	Step mode
Manual	Manual random mode
Init-Set	Initial setting mode
Jog + HND	Jog + handle mode
RAP + HND	Rapid traverse + handle mode
No mode	No mode

## 2. Menu Window

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### (3) Alarm lamps

The alarm lamps change to red when an alarm occurs, and a No. to indicate the alarm type is displayed. The order of alarm priority is 1>2>3>4. The No. of the alarm with the highest priority is displayed.

The types and details of the alarms are as described below.

Degree of priority	Display	NC alarm	Details
High	Alarm 1	<ul style="list-style-type: none"> <li>• S01 Servo alarm: PR</li> <li>• S04 Servo alarm: AR</li> <li>• Y** MCP alarm</li> <li>• Z71 alarm that causes detector error (This is a warning and does not turn ON)</li> </ul>	Notifies that the NC Card's MA (NC READY) has turned OFF.
	Alarm 2	<ul style="list-style-type: none"> <li>• S01 to S04 Servo alarm</li> <li>• Y** MCP alarm</li> <li>• Z71 alarm that causes detector error</li> </ul>	Notifies that the NC Card's SA (Servo READY) has turned OFF.
	Alarm 3	<ul style="list-style-type: none"> <li>• P** Program error</li> </ul>	Notifies that an NC Card program alarm has occurred. (This alarm occurs during automatic operation with memory or MDI mode, and generally occurs when there is a creation mistake in the machining program or when a program that does not match the NC Card specifications is run.)
Low	Alarm 4	<ul style="list-style-type: none"> <li>• M*** Operation error</li> <li>• Z70 to Z73 Absolute position related alarm or warning</li> </ul>	Notifies that an NC Card operation alarm or absolute position related error (alarm and warning) has occurred.

An alarm has not occurred if the alarm lamp is gray. The last alarm status is displayed.




### 3. NC Operation Windows

The NC operation windows can be opened or activated by clicking a command on the menu bar or a button on the tool bar.

Each NC operation window will be explained in this chapter.

#### 3.1 Windows that can be opened from [Monitor] menu

##### Relative position counter window (Position)

The Relative Position window will display when the  button or the [Monitor] — [Counter] — [Position] commands are clicked.

The counter setting and origin setting are executed on this window.

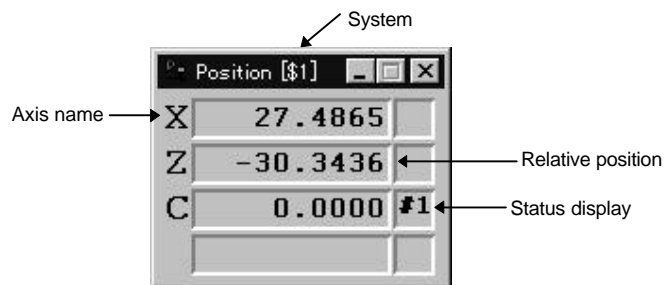


Fig. 3.1 Position window

#### Display

The current position and status of each axis are displayed.

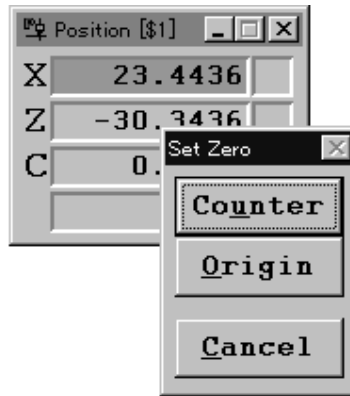
Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Axis name	The name of the currently selected axis is displayed.
Relative position	The position currently being executed is displayed for each axis.
Status display	If each axis is at a specific position or state, the axis abbreviation symbol will display. #1 ~ #4 : 1st - 4th reference point return ][ : Servo OFF mode >< : Axis removed mode MR : Mirror image

#### Counter setting

When counter set is executed, only the display will be cleared to zero. The coordinate position in the current coordinate system will be held.

#### ■ How to execute counter setting

- (1) Double click the counter area of the axis of which the counter is to be set.  
→ The color of the counter area clicked will change, and the Set Zero window will open.



**Fig. 3.2 Position window and Set Zero window**

- (2) Click the [Counter] button.  
→ The relative position for the axis will change to 0. The color of the counter area will return and the Set Zero window will close.  
The color of the counter area for the next axis will change, and the Set Zero window will open again. If the counter is to be set, click the [Counter] button again.

#### ■ How to quit counter setting

The counter setting will quit in the following cases.

- After all axes have been executed:  
When the final axis has been set to zero, the color of the counter area will return, and the Set Zero window will close.
- To cancel midway:  
If [Cancel] in the Set Zero window is clicked, the color of the counter area will return, and the Set Zero window will close. The relative positions will not be changed.

### 3. NC Operation Windows

---

#### Origin setting

When origin set is executed, the relative position display and coordinate system position will be set to zero.

##### ■ How to execute origin setting

- (1) Double click the counter area of the axis of which the origin is to be set.  
→ The color of the counter area clicked will change, and the Set Zero window will open. (Refer to Fig. 3.2.)
- (2) Click the [Origin] button. **(Note 1)**  
→ The relative position for the axis will change to 0. The color of the counter area will return and the Set Zero window will close.  
The color of the counter area for the next axis will change, and the Set Zero window will open again. If the origin is to be set, click the [Origin] button again.

##### ■ How to quit origin setting

The origin setting will quit in the following cases.

- After all axes have been executed:  
When the final axis has been set to zero, the color of the counter area will return, and the Set Zero window will close.
- To cancel midway:  
If [Cancel] in the Set Zero window is clicked, the color of the counter area will return, and the Set Zero window will close. The relative position displays and the positions in the coordinates will not be changed.


#### Enlargement/ reduction of window

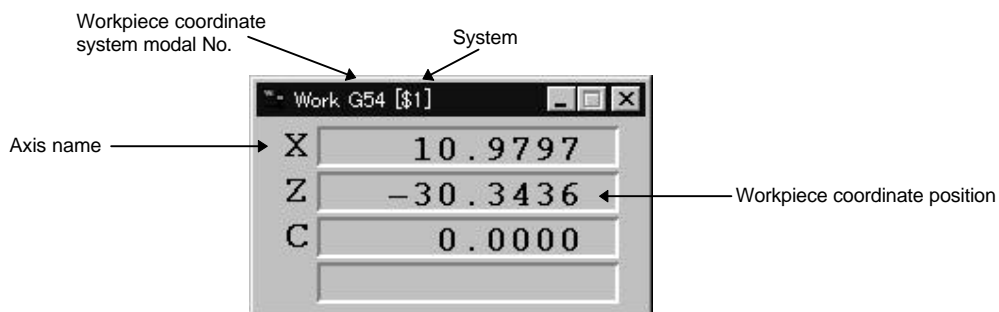
The window can be enlarged or reduced in five steps. **(Note 2)**

**(Note 1)** When origin setting cannot be executed, the color of the [Origin] button will lighten, and the click will not be accepted.

**(Note 2)** Depending on the window size, all of the window may not be displayed when the window is enlarged.

#### Work position counter window (Work)

The Work window will display when the  button or the [Monitor] — [Counter] — [Work] commands are clicked.



**Fig. 3.3 Work window**

#### Display

The current workpiece coordinate system modal No. and workpiece coordinate positions are displayed.


Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Axis name	The name of the currently selected axis is displayed.
Workpiece coordinate system modal No.	The currently selected workpiece coordinate system modal No. is displayed. (G54 to G59)
Workpiece coordinate position	The coordinate position in the currently selected workpiece coordinate system is displayed.

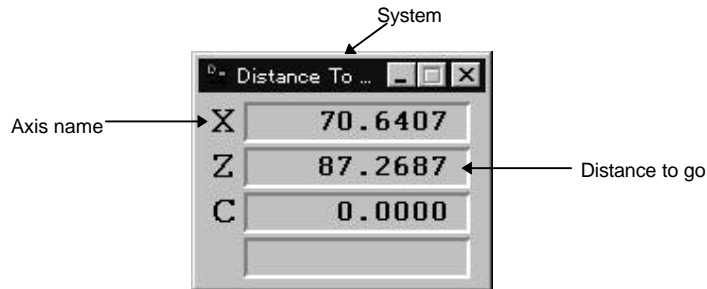
#### Enlargement/ reduction of window

The window can be enlarged or reduced in five steps. **(Note 1)**

**(Note 1)** Depending on the window size, all of the window may not be displayed when the window is enlarged.

**Distance to go counter window (Distance To ... )**

The Distance To ... window will display when the  button or the [Monitor] — [Counter] — [DistanceTo ...] commands are clicked.



**Fig. 3.4 Distance To ... window**

**Display**

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Axis name	The name of the currently selected axis is displayed.
Distance to go	The distance to go (incremental distance from current position to end point of that block) of the movement command being executed will display during automatic starting or automatic offtime.

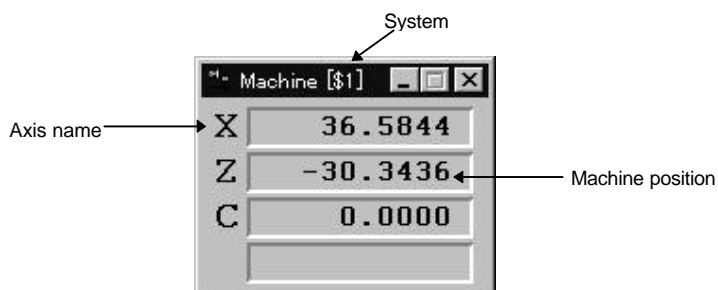
**Enlargement/  
reduction  
of window**

The window can be enlarged or reduced in five steps. **(Note 1)**

**(Note 1)** Depending on the window size, all of the window may not be displayed when the window is enlarged.

#### Machine position counter window (Machine)

The Machine window will display when the  button or the [Monitor] — [Counter] — [Machine] commands are clicked.



**Fig. 3.5 Machine window**

#### Display


Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Axis name	The name of the currently selected axis is displayed.
Machine position	The coordinate position of each axis in the basic machine coordinate system that uses a characteristic position determined according to the machine as the zero point is displayed.

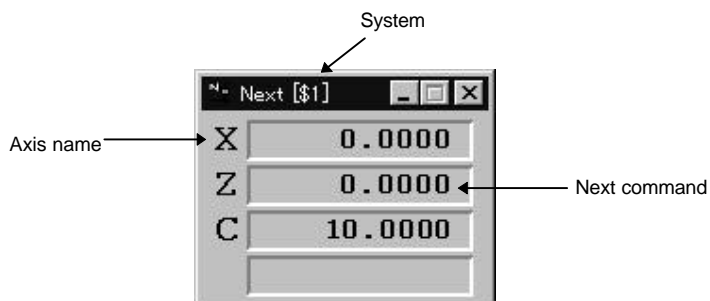
#### Enlargement/ reduction of window

The window can be enlarged or reduced in five steps. **(Note 1)**

**(Note 1)** Depending on the window size, all of the window may not be displayed when the window is enlarged.

#### Next command counter window (Next)

The Next window will appear when the  button or the [Monitor] — [Counter] — [Next] commands are clicked.



**Fig. 3.6 Next window**

#### Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not be displayed.
Axis name	The currently set axis name is displayed.
Next command	The movement amount of the next block in automatic operation execution is displayed.

#### Enlargement/ reduction of window

The window can be enlarged or reduced in five steps. **(Note 1)**

**(Note 1)** Depending on the window size, all of the window may not be displayed when the window is enlarged.

### 3. NC Operation Windows

#### F speed window (F Speed)

The F Speed window will display when the  button or the [Monitor] — [Counter] — [E-Speed] commands are clicked.

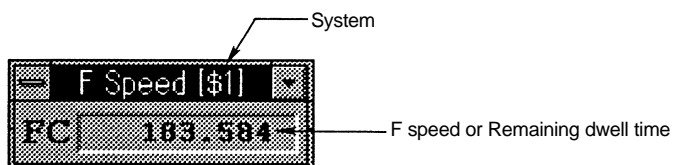


Fig. 3.7 F Speed window

#### Display


Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
F speed or Remaining dwell time	<p>During interpolation feed: The speed in the vector direction currently being moved in will display.</p> <p>During each axis independent feed: The speed of the axis having the highest speed will display.</p> <p>During execution of G04 command: The remaining dwell time is displayed. The unit is [sec].</p>

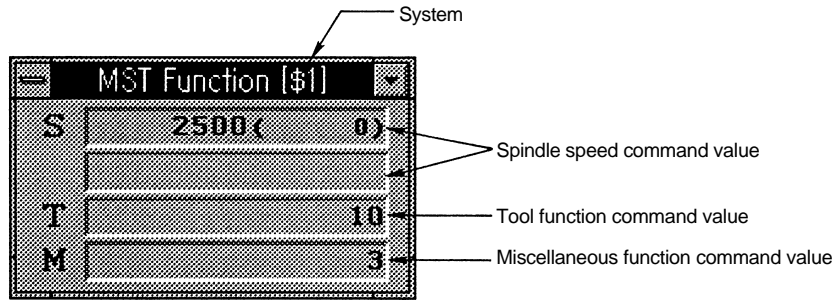
#### Enlargement/ reduction of window

The window can be enlarged or reduced in five steps.



**Miscellaneous command window (MST Function)**

The MST Function window will display when the  button or the [Monitor] — [Counter] — [MST-Function] commands are clicked.



**Fig. 3.8 MST Function window**

**Display**

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Spindle speed command value	The spindle function (S) command value (value given to spindle actually) is displayed. The spindle speed during actual rotation is displayed in the parentheses. (Note 1) If there are two spindles, [S1] and [S2] will display on the screen, indicating spindle 1 and 2 respectively.
Tool function command value	The tool function (T) command value is displayed.
Miscellaneous function command value	The last four digits of the miscellaneous function (M) command value are displayed.

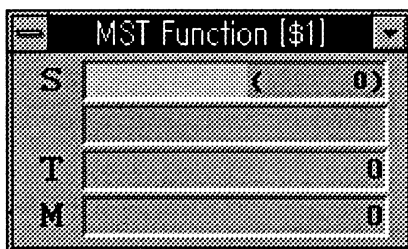
**(Note 1)** The actual spindle speed will not be displayed if the window size is the smallest available size.

### 3. NC Operation Windows

**Manual numerical command value** Manual numerical value commands can be issued in this window. In other command words, the spindle speed command S, tool function T and miscellaneous function M commands can be set on the screen. When these commands are executed, the same operation will occur as if each S, T or M command is executed in the program. Note that the manual numerical value commands can be executed when each command sequence for S, T and M has been completed.

■ How to execute manual numerical value command

- (1) Click the command value display area for the function to be commanded.
  - The color of the command value area clicked will change and a cursor will appear.



**Fig. 3.9 MST function window during setting of manual numerical value command**

- (2) Input the numerical value to be commanded.  
The setting ranges are as shown below.

Function	Setting range
S	-99999 ~ 99999
T	0 ~ 9999
M	0 ~ 9999

- (3) Press the [Enter] key.
  - The command for the designated function will be executed.

■ How to cancel manual numerical value command

The manual numerical value command will be canceled in the following cases.

- When a key other than a numerical value such as +, - or [Delete] is input continuously.
- When the same display area is clicked again after clicking the command value display area. **(Note 1)**

**Enlargement/  
reduction  
of window**

The window can be enlarged or reduced in five steps. **(Note 2)**

**(Note 1)** If another command value display area is clicked, the target for the manual numerical value command will move, and the manual numerical value command can be executed for that function.

**(Note 2)** The actual spindle speed will not be displayed if the window size is the smallest available size.

### 3. NC Operation Windows

#### No. of workpiece machining times window (Work Count)

The Work Count window will display when the  button or the [Monitor] — [Counter] — [WorkCount] commands are clicked.

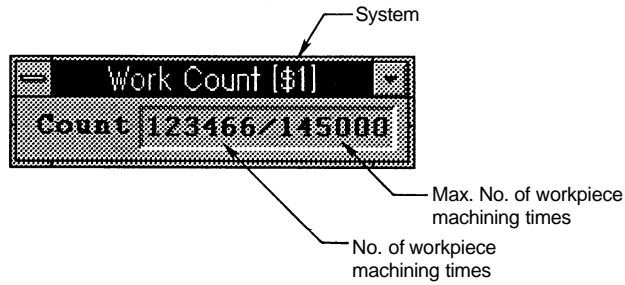


Fig. 3.10 Work Count window

#### Display


Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
No. of workpiece machining times	The No. of workpieces for which machining has been completed will be counted and displayed.
Max. No. of workpiece machining times	The value set in the machining parameters "#8003 WRK Limit" will display.

#### Enlargement/ reduction of window

The window can be enlarged or reduced in four steps.

### 3. NC Operation Windows

#### Cumulative time window (Time)

The Time window will display when the  button or the [Monitor] — [Counter] — [Time] commands are clicked.

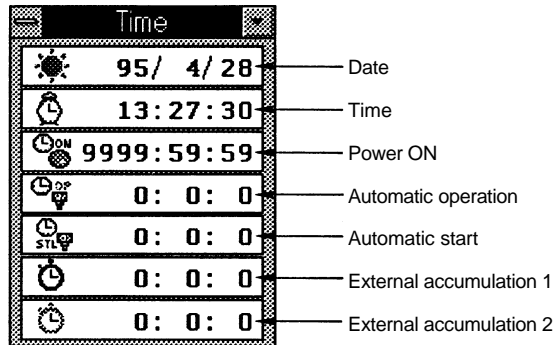


Fig. 3.11 Time window

#### Display

The date, time and total cumulative time for the operation states are displayed.

Display item	Details
Date, Time	The current date and time are displayed.
Power ON	The total time cumulated per each NC Card power ON to OFF is displayed.
Automatic operation	The total cumulative time per machining from when the automatic start button is pressed to M02/M03 or when the reset button is pressed in the memory mode is displayed.
Automatic start	The total cumulative time during automatic operation from when the automatic start button is pressed to feed hold stop, block stop or when the reset button is pressed in the memory mode or MDI is displayed.
External accumulation 1 External accumulation 2	This depends on the PLC sequence. Refer to the manual issued by the machine maker.

#### Setting of cumulative time

■ How to set cumulative time (Power ON, Automatic operation, Automatic start, External accumulation 1 or 2)

- (1) Click the cumulative time display area to be set.
  - A cursor will appear in the clicked area.
- (2) Input the value (hour : minute : second) to be set, and press the [Enter] key.
  - The set value will be validated and the accumulation will start.

**(Note 1)** When the cumulative time value reaches the maximum value (9999:59:59) for the Power ON, Automatic operation, Automatic start or External accumulation 1 or 2 areas, the accumulation will stop. After that, the maximum value will display.

### 3. NC Operation Windows

#### Program window (Program)

The Program window will display when the  button or the [Monitor] — [Monitor] — [Program] commands are clicked.

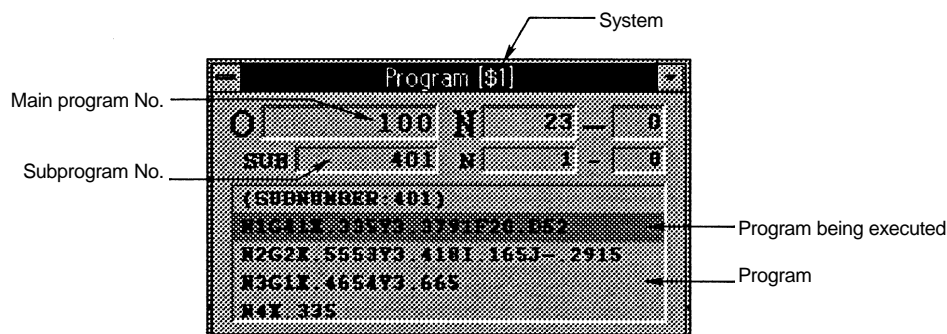


Fig. 3.12 Program window

#### Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Main program No.	The program No., sequence No. and block No. of the main program currently being executed are displayed.
Subprogram No.	The program No., sequence No. and block No. of the subprogram are displayed while a subprogram is being executed.
Program	The program currently being executed is displayed.
Program being executed	The program block currently being executed is highlighted.

#### Enlargement/ reduction of window

The window can be enlarged or reduced in two steps.  
(Display size for five blocks/display size for ten blocks)  
Note that the size of the characters cannot be changed.

### 3. NC Operation Windows

#### Load meter window (Load Meter)

The Load Meter window will display when the  button or the [Monitor] — [Monitor] — [LoadMeter] commands are clicked.

The load meter bar graph display turns red when there is an overload.

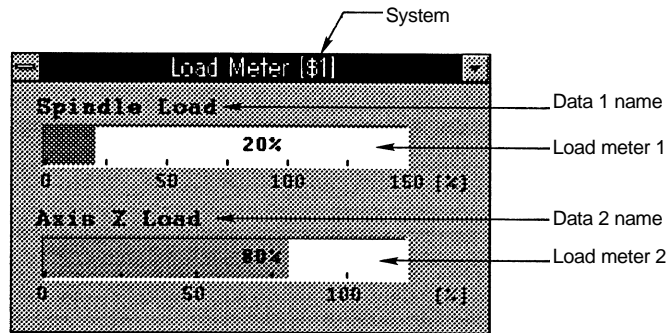


Fig. 3.13 Load Meter window


#### Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Data 1 name Data 2 name	The name of the displayed load meter data is displayed. <b>(Note 1)</b>
Load meter 1 Load meter 2	The designated data is displayed with a bar graph. <b>(Note 1)</b>

**(Note 1)** The details described in the initialization file are set for the data, data names and maximum values.

### 3. NC Operation Windows

#### Modal information window (Modal)

The Modal window will display when the  button or the [Monitor] — [Monitor] — [Modal] commands are clicked.

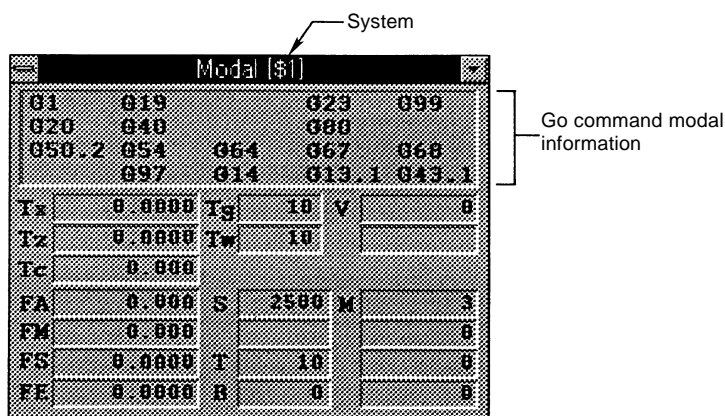


Fig. 3.14 Modal window

#### Display

The execution modal value of the program being executed is displayed.


Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
G command modal information	The G command modal state currently being executed is displayed.
Tx, Tz, Tc	The No.1 axis, No.2 axis and No.3 axis wear compensation amounts of the tool being used are displayed.
FA	The non-synchronous feed rate command value for the program currently being executed is displayed.
FM	The manual feed rate for the program currently being executed is displayed.
FS	The synchronous feed rate command value for the program currently being executed is displayed.
FE	The thread lead command value for the program currently being executed is displayed.
Tg	The tool length offset No. command value for the program currently being executed is displayed.
Tw	The tool nose wear compensation No. command value for the program currently being executed is displayed.
V (Note 1)	The surface speed command value for the program currently being executed is displayed.
S (Note 2)	The spindle function (S) command value for the program currently being executed is displayed.
T	The tool function (T) command value for the program currently being executed is displayed.
B	The 2nd miscellaneous function (B) command value for the program currently being executed is displayed.
M	The miscellaneous function (M) command value (max. 4 sets) for the program currently being executed is displayed.

**(Note 1)** If two spindles are being used, [V1] and [V2] will display on the screen and each data will display for spindle 1 and 2.

**(Note 2)** If two spindles are being used, [S1] and [S2] will display on the screen and each data will display for spindle 1 and 2.

### 3. NC Operation Windows

#### Invalid status display window (Invalid)

The Invalid window will display when the  button or the [Monitor] — [Monitor] — [Invalid] commands are clicked.

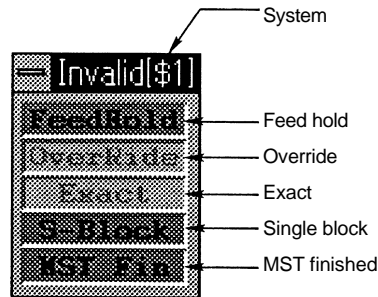


Fig. 3.15 Invalid window

#### Display

The modal information for the operation control status according to the #3003 and #3004 commands is displayed.


Invalid item : Displayed in light color

Valid item : Background is displayed in green.

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Feed hold	Feed hold is invalid. (When variable #3004/bit0 is commanded as 1.)
Override	Cutting override is invalid (When variable #3004/bit1 is commanded as 1.)
Exact	The G09 (block deceleration check) command is invalid. (When variable #3004/bit2 is commanded as 1.)
Single block	Single block stop is invalid. (When variable #3003/bit0 is commanded as 1.)
MST finished	The next block is proceeded to without waiting for the MST command finished signal. (When variable #3003/bit1 is commanded as 1.)



**PLC switch window (PLC Switches)**

The PLC Switches window will appear when the  button or the [Monitor]-[Monitor]-[PLC Switches] commands are clicked. **(Note 1)**

Various control signals can be turned ON/OFF in this window.

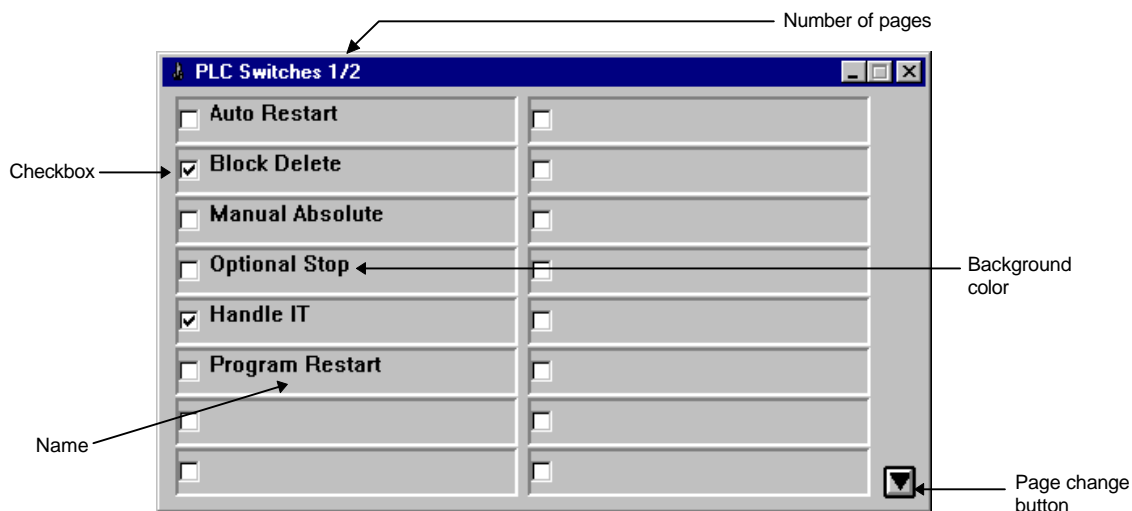




Fig. 3.16 PLC Switches window

**Display**

Display item	Details
Number of pages	The number of pages is displayed. The PLC Switch window is configured of two pages. 16 PLC switches appear on one page.
Page change button	Use this button to change the PLC Switch window page.
Checkbox	The ON/OFF status of the control signal is displayed. A check appears in the box when ON.
Name	The name of the PLC switch is displayed (Note 1)
Background color	The background color of the selected name is displayed in green. (Note 1)

**Changing the page** ■ How to change the page

- (1) Click on the page change button.
  - The next page is displayed when the  button is pressed. The previous page is displayed when the  button is pressed.

**(Note 1)** The PLC switch name and background color will differ depending on the maker.

### 3. NC Operation Windows

#### Changing the control signal

Change the control signal ON/OFF.

■ How to change the control signal from OFF to ON.

- (1) Click on name or the checkbox.  
→ A check appears in the checkbox.

■ How to change the control signal from ON to OFF.

- (1) Click on name or the checkbox.  
→ The check disappears from the checkbox.

#### Enlargement/ reduction of window

The window size can be enlarged or reduced in four steps vertically, five steps horizontally.

Note that the character size and number of items per page cannot be changed. The display area of each item is enlarged/reduced, and the name is wrap displayed.

#### Supplementary explanations for the machine maker

- (1) Define the name of the switch displayed in the PLC switch window as "PLC Switch Name File". Designate the file name in the "PLCSW??.TXT" format. (?: NC Card No.) (**Note 1**)
- (2) Each PLC switch corresponds to the control signals Y160 to Y17F as shown in the figure below.

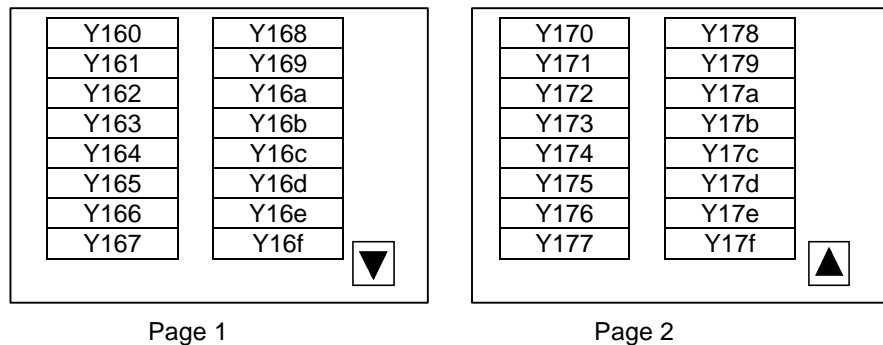




Fig. 3.17 Control signals corresponding to PLC switches

(Note 1) Refer to the Utility Instruction Manual (BNP-B2196) for details on the PLC switch name file format.

### 3. NC Operation Windows

#### Trace window (Trace)

The Trace window will display when the  button or the  button or the [Monitor] — [Graphic] — [Trace1] or [Trace2] commands are clicked.

In the Trace window, the path that the machine position has actually moved during automatic or manual operation can be displayed.

The Trace1 window or Trace2 window can be opened respectively with the [Trace1] or [Trace2] commands. These windows each display the respective screen that has been set in the initialization file.

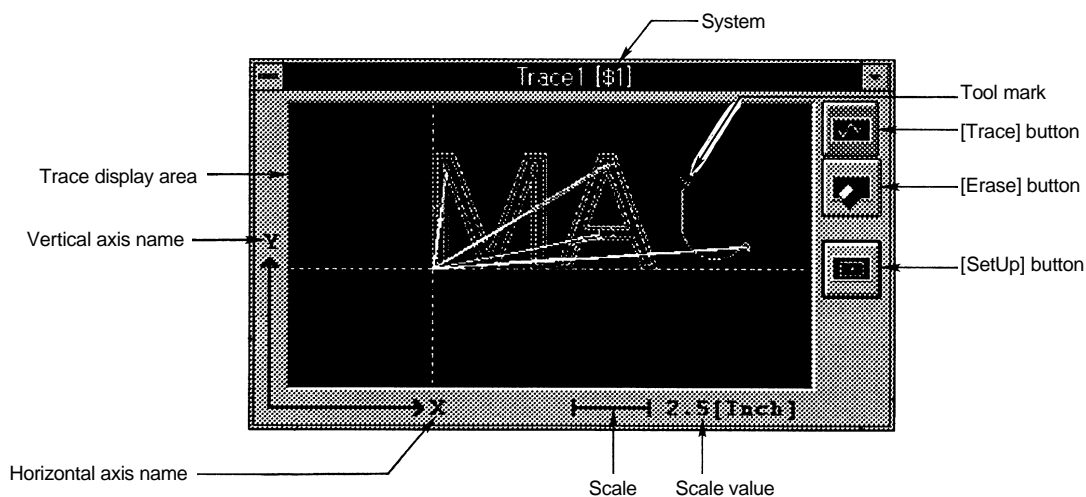


Fig. 3.18 Trace window

#### Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Trace display area	The tracing is displayed.
Vertical axis name	The name of the axis targeted for trace display is displayed.
Horizontal axis name	The details described in the initialization file are set for the axis.
Scale	The scale and current scale value are displayed.
Scale value	
[Trace] button	The trace is started or stopped.
[Erase] button	The tracing drawing on the trace display area is erased.
[SetUp] button	The SetUp window is opened. The scale value and trace display position can be changed in this window.
Tool mark	The current machining position during tracing is indicated. This will not display if the machine position is not in the trace display range.

### 3. NC Operation Windows

**Trace display** During tracing, the path that the machine moved with automatic or manual operation is drawn in the trace display area.

■ How to execute trace display

(1) Click the [Trace] button.

→ The color of the [Trace] button will change, and the trace mode will be entered. During tracing, the machine position will always be displayed with the tool mark (▽). **(Note 1)**

The tracking is displayed with white or green solid lines.

Lines drawn during tracing	State during machine movement
White solid line	Rapid traverse or manual feed
Green solid line	Cutting feed

■ How to cancel the trace display

(1) Click the [Trace] button during tracing.

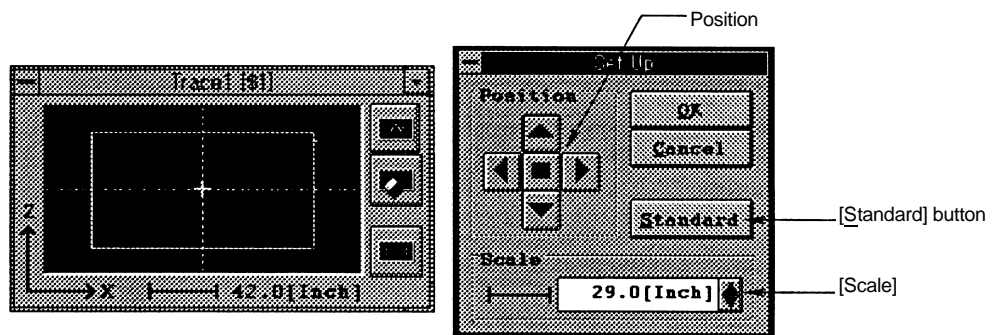
→ The trace display will be canceled, and the [Trace] button color will return.

■ How to erase displayed tracing

(1) Click the [Erase] button.

→ All tracings that are displayed will be erased.

**Display area** To change the trace display position or scale value, click the [SetUp] button, and open the SetUp window.



**Fig. 3.19 Trace window (left) and SetUp window (right)**

The details displayed in the SetUp window are as follow.

Display item	Details
[Position]	The display position in the trace display area is changed. When the <input type="checkbox"/> button is clicked, the current machine position can be set to the center of the display area.
[Standard]	The machine's movable area determined with the Setup parameters [OT+] and [OT-] is used as the display range.
[Scale]	The value of the scale used during trace display can be changed.

A [Display center point] (+) is displayed at the center of the display area in the Trace window.

**(Note 1)** If the machine position is at a coordinate other than the trace display area, the tool mark will not display.

### 3. NC Operation Windows

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#### ■ How to change the trace display position

- (1) Click each direction button of [Position], and move the [Display center point] to the position that is to be the center of the display.
- (2) Click the [OK] button.
  - The position moved to in step (1) will become the center of the display area.

#### ■ How to change the scale value for the trace display

- (1) Click the [SetUp] button.
  - The SetUp window will display.
- (2) Set the scale value with the [Scale] spin button.
  - The display unit ([mm] or [inch]) will display according to the NC system parameters.
- (3) Click the [OK] button.
  - The SetUp window will close. All currently displayed tracings will be erased, and the set display area will be validated.

#### ■ How to set trace display area to standard area

- (1) Click the  button of [Position].
  - The [Display center point] will move to the machine position (the tool mark display during tracing).
- (2) Click the [Standard] button.
  - The scale value will be set so that the machine movable display determined with the Setup parameters [OT+] and [OT-] fits in the display area.

#### Trace backup

This opens the Trace window in the status (trace, trace mode, display position, scale value) in which it was closed the previous time.

#### Enlargement/ reduction of window

The window can be enlarged or reduced in four steps.  
The size of the trace display area will change according to this. **(Note 1)**.  
Note that the size other than the trace display area (the buttons and axis names, etc.) will not change.

**(Note 1)** The machine position on the screen will not change. To change the position to be displayed, use each button in [Position], and change the [Display center point]. The scale value will also not change at this time.

### 3. NC Operation Windows

#### Operation search window (Search)

The Search window will display when the  button or the [Monitor] — [Search] — [Search] commands are clicked.

In this window, the program No., sequence No. and block No. of the program automatically operated can be searched by designating the drive, directory and file.

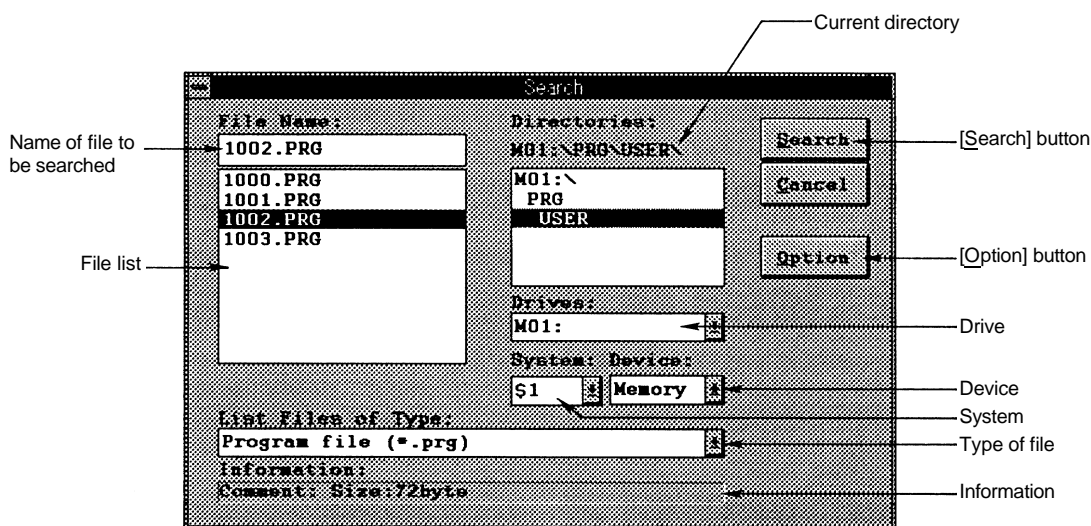


Fig. 3.20 Search window

#### Display

Display item	Details
Current directory	The currently selected drive name and directory name are displayed with an absolute path.
Drive	The drive where operation search is to be executed can be selected.
System	The system where operation search is to be executed can be selected.
Name of file to be searched	The file name selected with the current file list is displayed.
File list	The files that correspond to the type selected in [List Files of Type:] that are in the current directory are displayed.
Type of file	The type of file for which operation search is to be executed can be selected.
Information	The comments and size of the file displayed in [File Name:] are displayed.
[Search] button	Operation search is executed.
[Option] button	The Search Option window is opened. The sequence No. and block No. for which operation search is to be executed can be selected in this window.

### 3. NC Operation Windows

#### Memory search

Steps (5) and (6) are not required when the sequence No. and block No. are not designated.

■ How to search file to be operated from memory

- (1) Select the drive where operation search is to be executed in [Drives:].  
→ The selected drive name and current directory will be displayed in [Directories:].  
When the PC Direct Operation option is added, the personal computer side drive can also be designated.
- (2) Set [System:] as required.
- (3) Select the directory where the file to be searched exists.  
→ The currently selected directory will display in [Directories:].  
The names of files located in the current directory that correspond to the type selected in [List Files of Type:] will display in the file list.
- (4) Select the file for which operation search is to be executed from the file list.  
→ The currently selected file name will display in [File Name:].
- (5) Click the [Option] button.  
→ The Search Option window will open.  
The sequence No. and block No. will be cleared to zero each time operation search is executed.

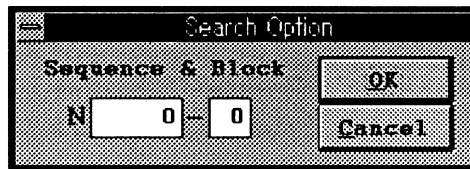


Fig. 3.21 Search Option window

- (6) Set the sequence No. and block No., and then click the [OK] button.  
→ The Search Option window will close.  
If the [Cancel] button is clicked, the settings will be invalidated, and the window will close.
- (7) Click the [Search] button.  
→ The operation search will start. When the search is completed, a dialog box will display. If the [OK] button is clicked at this time, the dialog box and Search window will close.

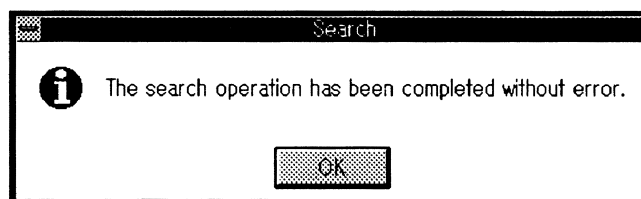


Fig. 3.22 Dialog box when search is completed.

### 3. NC Operation Windows

#### File transfer window (File Transfer)

The File Transfer window will display when the  button or the [Monitor] – [Search] – [File Transfer] commands are clicked.

The following operations can be executed in this window.

- 1) Copying of files between the personal computer (PC) and NC. (Multiple files possible.)
- 2) Display of NC or PC file information.
- 3) Deletion of NC or PC files. (Multiple files possible.)
- 4) Renaming of NC or PC files names.

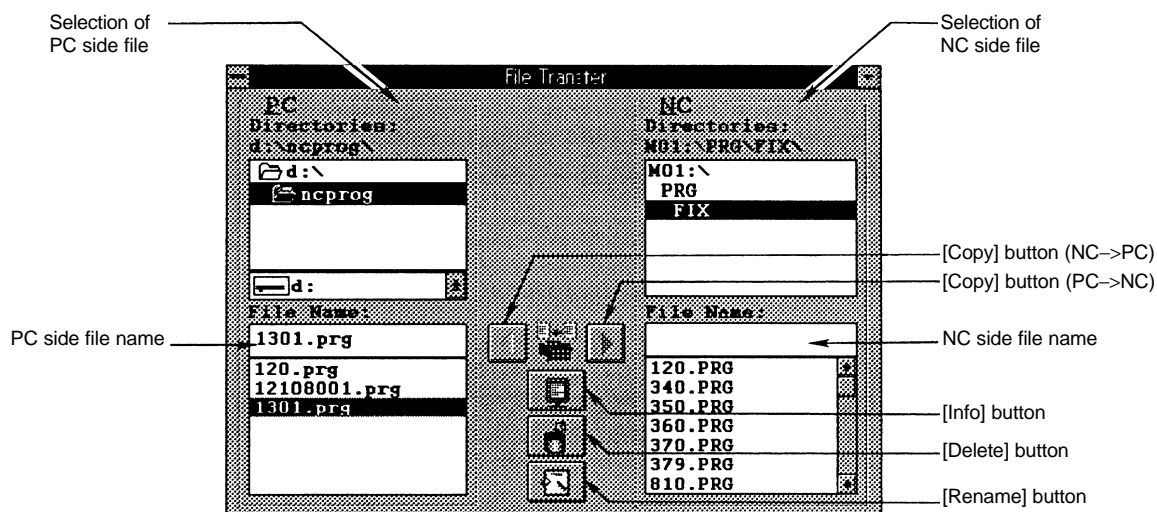


Fig. 3.23 File Transfer window

#### Display

Display item	Details
Selection of NC side file	The directory of the NC side file and the file can be selected.
NC side file name	The name of the file currently selected on the NC side is displayed.
Selection of PC side file	The directory of the PC side file and the file can be selected.
PC side file name	The name of the file currently selected on the PC side is displayed.
[Copy] button (PC->NC)	The file selected on the PC side is copied to the directory designated on the NC side.
[Copy] button (NC->PC)	The file selected on the NC side is copied to the directory designated on the PC side.
[Info] button	Information of the selected file is displayed.
[Delete] button	The selected file is deleted.
[Rename] button	The selected file is renamed.



### 3. NC Operation Windows

#### Menu bar

Menu	Command	Details
File	Copy	Copies the selected file
	Info	Displays information on the selected file
	Delete	Deletes the selected file
	Rename	Renames the selected file
	Exit	Closes the File Transfer window
Help	Version ...	Version information display of the File Transfer window

#### File copy

##### ■ To copy NC file to PC

- (1) Select the directory where the copy source file exists in the NC side.  
→ The selected directory will display in the NC side [Directories:].
- (2) Select the drive and copy destination directory on the PC side.  
→ The selected directory will display in the PC side [Directories:].
- (3) Select the copy source file from the file list in the NC side. **(Note 1)**  
→ The selected file name will display in the NC side [File Name:].
- (4) Click the [Copy] button (NC→PC).  
→ The File Transfer (Copy) window 1 (NC→PC) will open.  
To change the file name, set the new file name.

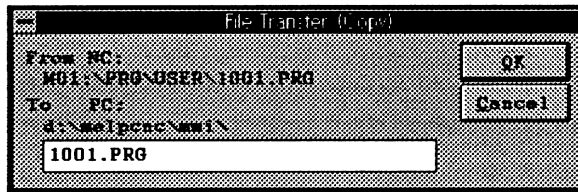


Fig. 3.24 File Transfer (Copy) window 1 (NC→PC)

- (5) Click the [OK] button.  
→ The NC file will be copied to the PC. The name of the copied file will display in the PC side file list.  
The File Transfer (Copy) window 1 (NC → PC) will close.

**(Note 1)** Multiple files can be selected within the same directory. When multiple files are selected, the name of the file selected last will display in [From NC:].

### 3. NC Operation Windows

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■ To copy PC file to NC

- (1) Select the directory where the copy source file exists in the PC side.  
→ The selected directory will display in the PC side [Directories:].
- (2) Select the copy destination directory on the NC side.  
→ The selected directory will display in the NC side [Directories:].
- (3) Select the copy source file from the file list in the PC side. **(Note 1)**  
→ The selected file name will display in the PC side [File Name:].
- (4) Click the [Copy] button (PC→NC).  
→ The File Transfer (Copy) window 2 (PC→NC) will open.  
To change the file name, set the new file name. **(Note 2) (Note 3)**



Fig. 3.25 File Transfer (Copy) window 2 (PC→NC)

- (5) Click the [OK] button.  
→ The PC file will be copied to the NC. The name of the copied file will display in the NC side file list.  
The File Transfer (Copy) window 2 (PC→NC) will close.

**(Note 1)** Multiple files can be selected within the same directory. When multiple files are selected, the name of the file selected last will display in [From PC:].

**(Note 2)** When copying to the NC side, there may be limits to the file name depending on the directory. Change the file name as required.

**(Note 3)** It is possible to use long file names in the file name on the PC side. Set the 8.3 format file name in the file on the NC side.

### 3. NC Operation Windows

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**File information** The file information is displayed.

■ How to read PC or NC file information

- (1) Select a file from the PC or NC side file list.  
→ The file name will display in the PC or NC side [File Name:].
- (2) Click the [Info] button.  
→ The File Transfer (Information) window will open, and the information can be read. The following details will display as the file information.  
PC file information : Size, date ..... (Refer to Fig. 3.26.)  
NC file information : Size, comment ..... (Refer to Fig. 3.27.)

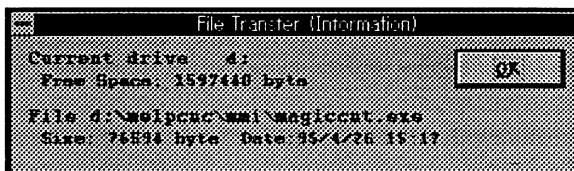


Fig. 3.26 File Transfer (Information) window 1 (PC)

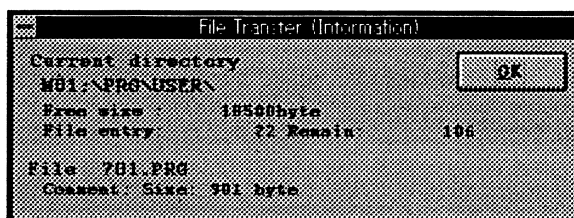


Fig. 3.27 File Transfer (Information) window 2 (NC)

- (3) Click the [OK] button.  
→ The File Transfer (Information) window will close.

### 3. NC Operation Windows

#### File deletion

The file is deleted

##### ■ How to delete a PC or NC file

- (1) Select the file to be deleted from the PC or NC side file list. **(Note 1)**  
→ The name of the selected file will display in the PC or NC side [File Name:].
- (2) Click the [Delete] button.  
→ The File Transfer (Delete) window will open.

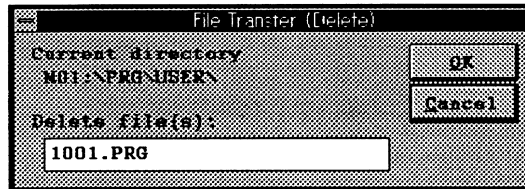


Fig. 3.28 File Transfer (Delete) window

- (3) Click the [OK] button.  
→ The file will be deleted. The File Transfer (Delete) window will close.

#### File rename

The file name is changed.

##### ■ How to rename a PC or NC file

- (1) Select the file to be renamed from the PC or NC side file list.  
→ The selected file name will display in the PC or NC side [File Name:].
- (2) Click the [Rename] button.  
→ The File Transfer (Rename) window will open.

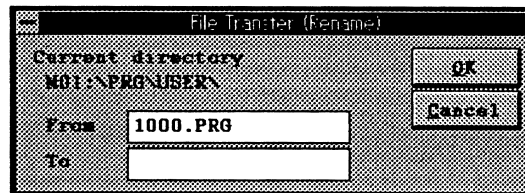


Fig. 3.29 File Transfer (Rename) window

- (3) Set the new file name, and then click the [OK] button. **(Note 2)**  
→ The file will be renamed and the new file name will display in the file list. The File Transfer (Rename) window will close.

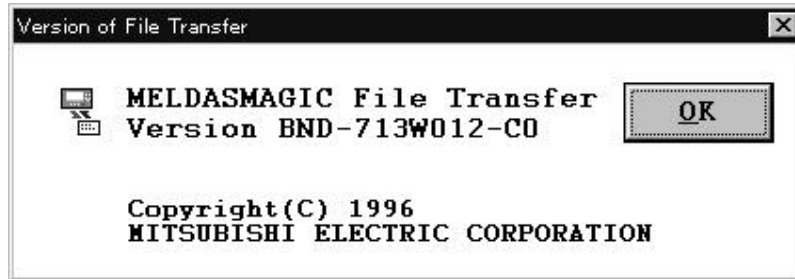
**(Note 1)** Multiple files can be selected within the same directory. When multiple files are selected, the name of the file selected last will display.

**(Note 2)** It is possible to use long file names in the file name on the PC side.  
Set the 8.3 format file name in the file on the NC side.

### 3. NC Operation Windows

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**Version window** The Version window will appear when the File Transfer window [Help]-[Version ... ] commands are clicked.  
The File Transfer Tool version can be seen in this window. **(Note 1)**




**Fig 3.30 File Transfer Tool Version window**

**Changing the card** Change the card displayed using the NC side drive selection in the File Transfer window. The card displayed will not change by using the Card change button on the Menu window.

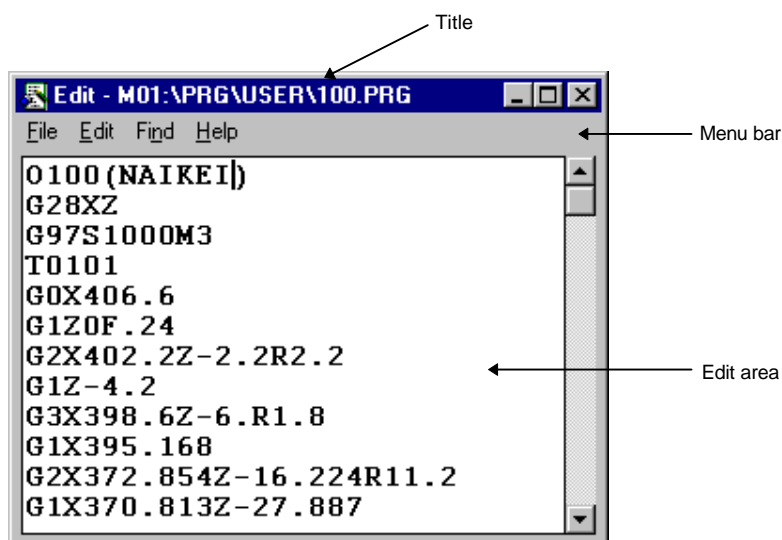
**(Note 1)** The File Transfer Window can be used separately as a File Transfer Tool.

#### Edit window (Edit)

The Edit window will display when the  button or [Monitor]-[Edit]-[Edit] commands are clicked.

**(Note 1)**

The file details in the PC or NC can be displayed or edited using this window. **(Note 2)**



**Fig. 3.31 Edit window**

#### Display

Display item	Details
Title	Displays the absolute path name of the file whose details are being displayed in the edit area.
Edit area	The PC or NC file details can be displayed or edited.

#### MDI Setting

##### ■ How to set and edit the MDI program

- (1) Click on the [File]-[Open] commands.  
→ The "Open File" window opens.
- (2) Select file "M01:\PRG\MDI\MDI.PRG".  
→ The MDI program (MDI.PRG) appears in the edit area.
- (3) After editing, click on the [File]-[Save] commands.  
→ The MDI is set.

**(Note 1)** When starting, the details in the edit area are completely erased in the same manner as when the Edit window is newly created, and the title file name is not displayed. (Fig. 3. 32)

**(Note 2)**

- A maximum of 30000 bytes of character string can be edited in the Edit window.
- Create the program using all capital letters.
- If a character string enclosed by () is written in the head line of the edit area it will be saved as a comment to the NC.

### 3. NC Operation Windows

#### Menu bar

Menu	Command	Details
File	New	Clears the edit area
	Open	Displays the details of the selected file in the edit area
	Save	Saves the details in the edit area in a file
	Save As ...	Designates a file name for the details in the edit area and saves
	Exit	Closes the Edit window
Edit	Undo	Returns the edit details to the origin
	Cut	Moves the selected character string to the clipboard
	Copy	Copies the selected character string to the clipboard
	Paste	Inserts the clipboard contents into the cursor position
	Delete	Deletes the selected character string
	Select All	Selects all the character strings
	Start Playback	Connects with the Playback window
	Playback release	Releases the connection with the Playback window
Find	Find	Selects the character string to be searched
	Next	Searches the designated character string
Help	Version ...	Displays information on the Edit window version

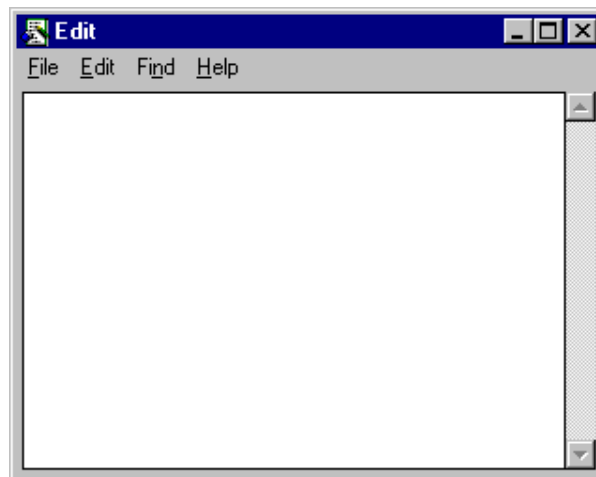
#### New creation

##### ■ How to create a new file

(1) Click on the [File]-[New] commands.

→ All of the edit area details are erased, and the title file name is erased.

**(Note 1)**



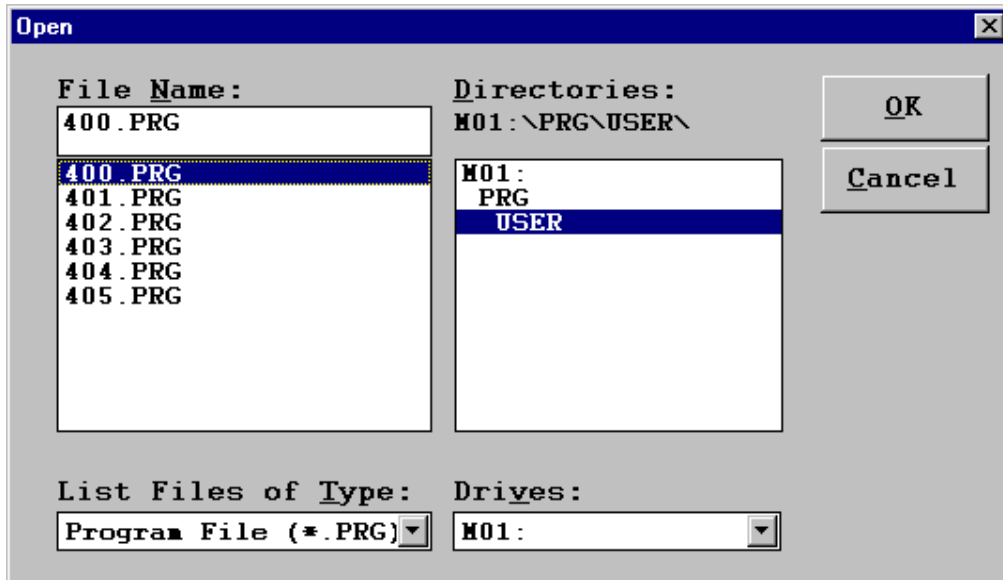
**Fig. 3.32 Edit window (Newly create)**

**(Note 1)** If the edit area details have been changed, the window for confirming whether to save the changes will open.

### 3. NC Operation Windows

**Opening a file** ■ How to display the PC or NC file details in the edit area

- (1) Click on the [File]-[Open] commands.  
→ The Open window opens.



**Fig. 3.33 Open File window**

- (2) Click on the file name whose details will be displayed in the edit area.  
→ The file name clicked on appears in [File Name:].
- (3) Click on the [OK] button.  
→ The file details appear in the edit area. The file name of the selected file appears in the title of the Edit window. The Open File window closes. **(Note 1)**

**(Note 1)** If the edit area details have been changed, the window will open for confirming whether to save the changes.



### 3. NC Operation Windows

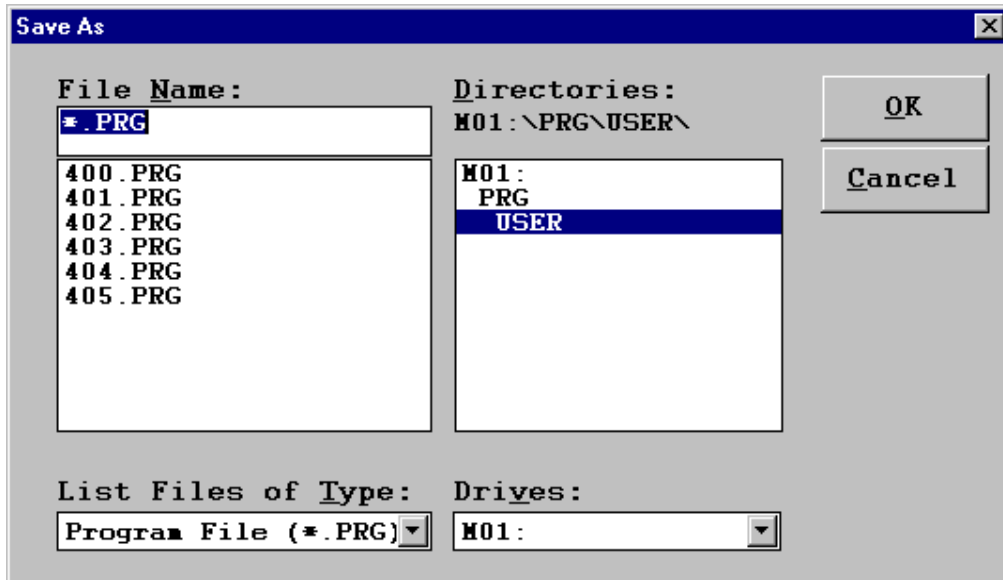
---

**Overwrite saving** ■ How to change and overwrite save a file

- (1) Click on the [File]-[Save] commands.  
→ The edit area details are saved in the file displayed in the title. **(Note 1)**

**Naming and saving a file** ■ How to save the edit area details with a file name assigned

- (1) Click on the [File]-[Save As ...] commands.  
→ The Save As window opens.



**Fig. 3.34 Save As window**

- (2) Designate the name of the file where the edit area details will be saved in [File Name:], and then click on the [OK] button.  
→ The edit area details are saved in the designated file. The designated file name appears in the title of the Edit window. The Save As window closes.

**(Note 1)** The Save As window will open when a file is newly created.

### 3. NC Operation Windows

#### Starting the playback

- How to connect to the Playback window
- (1) Open the Playback window to be connected. **(Note 1)**
- (2) Click on the [Edit]-[Playback] commands.  
→ The Link to Playback window opens.

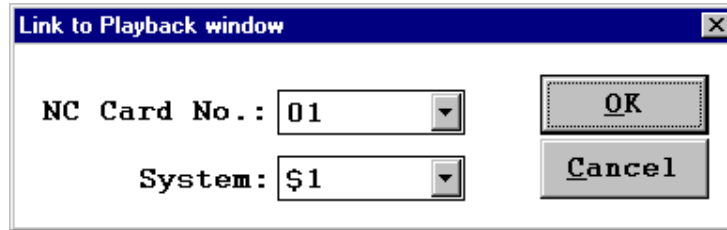


Fig. 3.35 Link to Playback window

- (3) Select the NC Card No. and system of the Playback window to be connected, and then click on the [OK] button.  
→ The Edit window and the Playback window are connected. The NC Card No. and system of the connected Playback window appear in the Edit window.

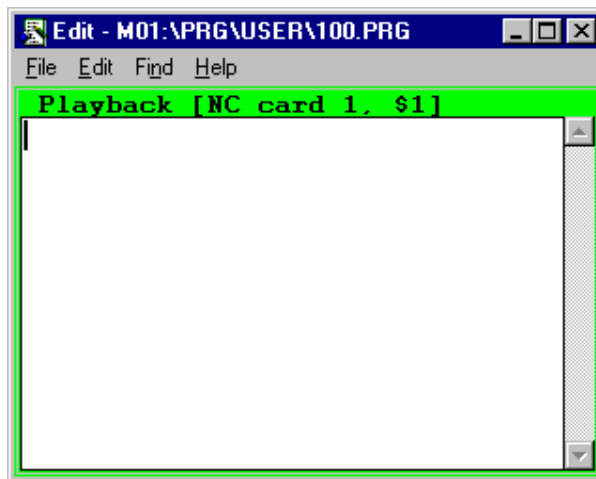


Fig. 3.36 Edit window (during connection to the Playback window)

- (4) Edit the program in the Playback window.  
→ The character string edited in the Playback window is inserted into the Edit window. **(Note 2)**

**(Note 1)** Before connecting, always open the Playback window corresponding to the selected NC Card No. and system. If the Playback window is not opened, an error will occur and the window cannot be connected.

**(Note 2)** The editing method in the Playback window is explained in detail in the next section.

#### Character string Search

Search the edit area character string.

■ How to search the edit area character string

- (1) Click on the [Find]-[Find] commands.  
→ The Find window opens.

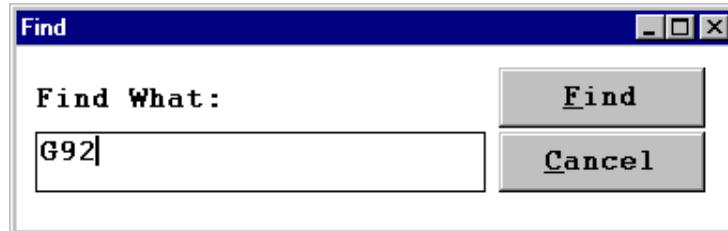


Fig. 3.37 Find window

- (2) Designate the character string to be searched, and then click on the [Find] button.  
→ The designated character strings are searched downward from the cursor position in the edit area.
- (3) Click on the [Find]-[Next] commands.  
→ The designated character strings continue to be searched downward from the cursor position in the edit area.

#### Version window

The Version window will appear when the Edit window [Help]-[Version ...] commands are clicked.

The Edit Tool versions can be seen in this window. **(Note 1)**

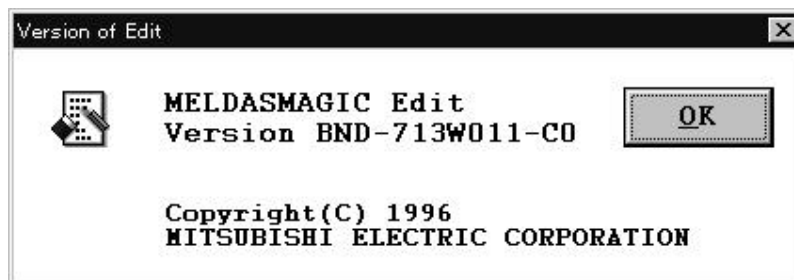


Fig. 3.38 Edit Tool Version window


#### Changing the Card

The NC Card displayed in the Edit window changes depending on drive selection of the File Open window or Save As window. The displayed NC Card is not changed with the Menu window Card Change button.

**(Note 1)** The Edit window can be used independently as an Edit Tool.

### 3. NC Operation Windows

#### Playback window (Playback)

The Playback window appears when the  button or the [Monitor]-[Edit]-[Playback] commands are clicked.

In this window, programs can be created while simultaneously carrying out sample machining by manual feed, handle feed, or mechanical handle feed. **(Note 1)**

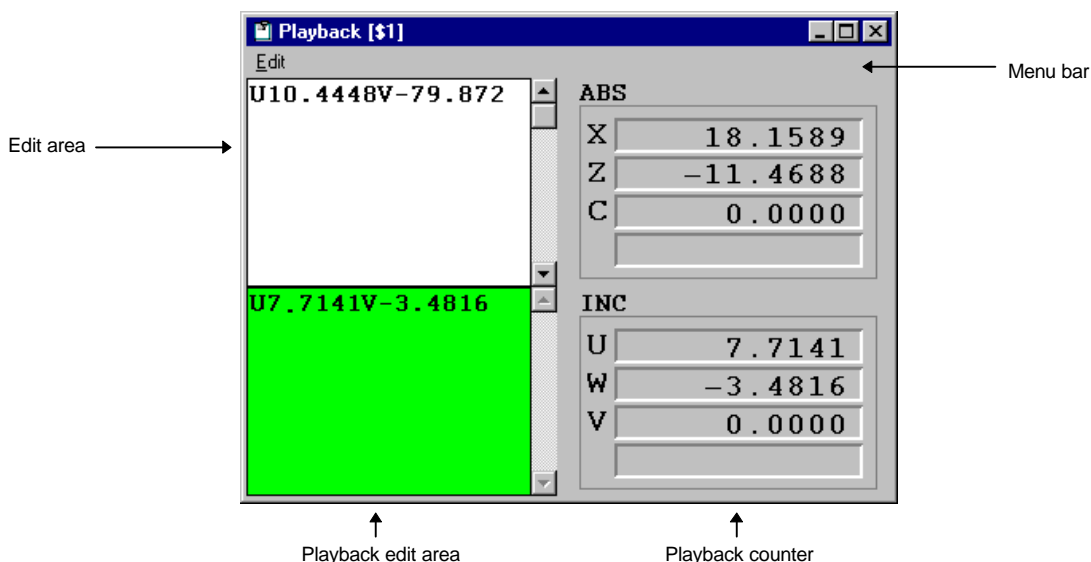


Fig. 3.39 Playback window

#### Display

Display item	Details
Edit area	In order adds the data confirmed in the Playback edit area.
Playback edit area	Reads the Playback counter value as a program command value. Editing is possible.
Playback counter	Displays ABS value and INC value of the movement value by manual feed, handle feed, or mechanical handle feed.

#### Menu bar

Menu	Command	Details
Edit	Cu <u>t</u>	Moves the selected character string to the clipboard
	<u>C</u> opy	Copies the selected character string to the clipboard
	<u>P</u> aste	Inserts the clipboard contents into the cursor position
	<u>D</u> elete	Deletes the selected character string
	<u>S</u> elect All	Selects all the character strings

**(Note 1)** Use the Playback window connected to the Edit window. Note that during editing, the data is erased in the edit area of the Playback window connected to the Edit window.

### 3. NC Operation Windows

#### Playback edit

Creates a program with the movement amount obtained by manual operation as the program command value.

##### ■ How to read the playback counter value

- (1) Move the axis with the manual mode.  
→ The playback counter display changes.
- (2) Input the axis name of the axis to be read in the playback edit area.  
→ The playback counter value appears in the playback edit area.

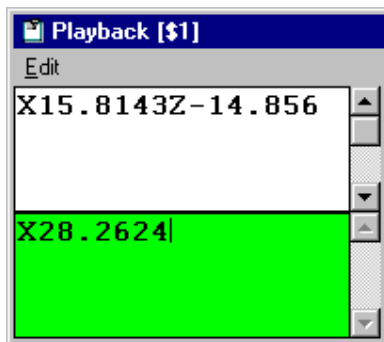


Fig. 3.40 Playback window (during input)

- (3) Press the [Enter] key.  
→ The playback edit area program is established, and the program moves to the edit area. **(Note 1)**

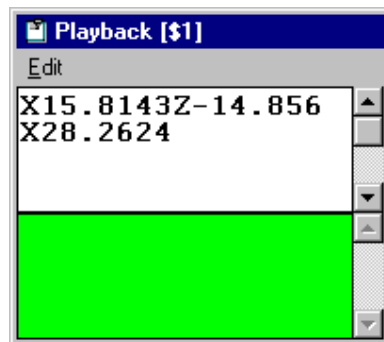


Fig. 3.41 Playback window (established)

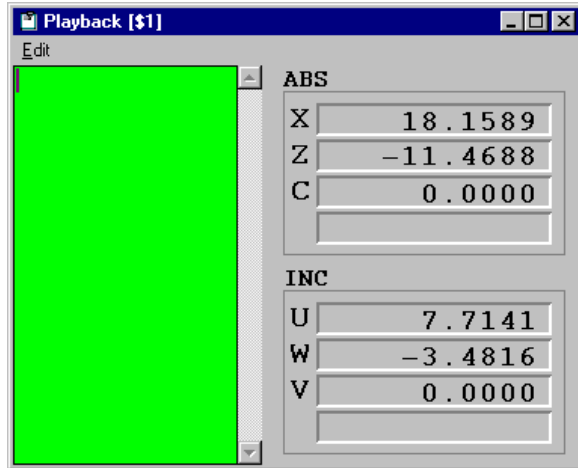
- (Note 1)**
- When the Playback window is connected to the Edit window, the playback edit area program moves to the Edit window.
  - The file is not saved because the edit area is in operation. Move the edited data using the Copy & Paste operations.

### 3. NC Operation Windows

**Inserting into a file** Add the program created in the playback edit area to a file.

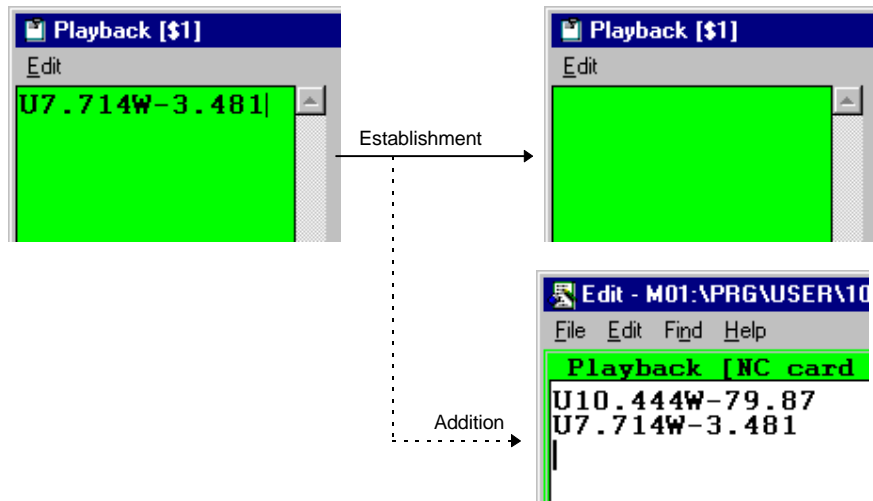
■ How to add a program to the Edit window.

- (1) Open the Edit window and Playback window, and then connect them. **(Note 1)**  
→ The Playback window edit area and data are erased.



**Fig. 3.42 Playback window (while connected to the Edit window)**

- (2) Select and display the file in the Edit window. Move the cursor to the position where the program will be added.
- (3) Create the program in the playback edit area of the Playback window, and then press the [Enter] key.  
→ The program is established, and the playback edit area program moves to the Edit window cursor position.



**Fig. 3.43 Program movement from the Playback window to the Edit window**

- (4) Save the details in the edit area in a file in the Edit window.

**(Note 1)** Refer to the Edit window section for details on the connection method for the Edit window and Playback window.

### 3. NC Operation Windows

**Enlargement/reduction of window**      The window size can be enlarged/reduced freely. The edit area and playback edit area size also changes accordingly.  
Note that the character size does not change.


**Playback counter display**      The counter value in the playback counter changes after the establishment of a program in the playback edit area.

	Data before establishment	Playback counter after establishment	
		For an ABS counter	For an INC counter
Setting of position data with ABS axis name	Counter X 10.002 Playback edit area X10.	Counter X 10.002 Playback counter does not change.	Counter U 0.002 The difference between the axis command value and the ABS axis playback counter remains.
Setting of position data with INC axis name	Counter U 10.002 Playback edit area U10.	Counter X 10.002 Playback counter does not change.	Counter U 0.002 The difference between the axis command value and the INC axis playback counter remains.
G92 with ABS axis name (counter preset) setting	Counter X 20.000 Playback edit area G92X10.	Counter X 10.000 The axis command value following G92 is set in the playback counter.	Counter U 20.000 The playback counter does not change if unrelated to the axis command value following G92.
G92 with INC axis name (counter preset) setting	Counter U 20.000 Playback edit area G92U10.	Counter X 30.000 The axis command value following G92 is set in the playback counter.	Counter U 20.000 The playback counter does not change if unrelated to the axis command value following G92.

- Restricted items**
- (1) A maximum of 30000 bytes of program can be handled by the edit area and playback edit area.
  - (2) Do not edit macro text in the playback edit area. For example, if XOR input is attempted, the X command value is played back by the X input.
  - (3) Do not use the paste function for the axis address code in the playback edit area. For example, the X command value cannot be played back even if input by the X paste function.
  - (4) In the playback edit area a program will not be established even if the paste function is used and line feed characters are input. Always press the [Enter] key.

### 3. NC Operation Windows

#### Common variable 1 window (Common Var. 1)

The Common Var. 1 window will display when the  button or the [Monitor] — [Variable] — [CommonVar. 1] commands are clicked.

The details of the #500 and following common variables can be displayed and set in this window.

**(Note 1)**

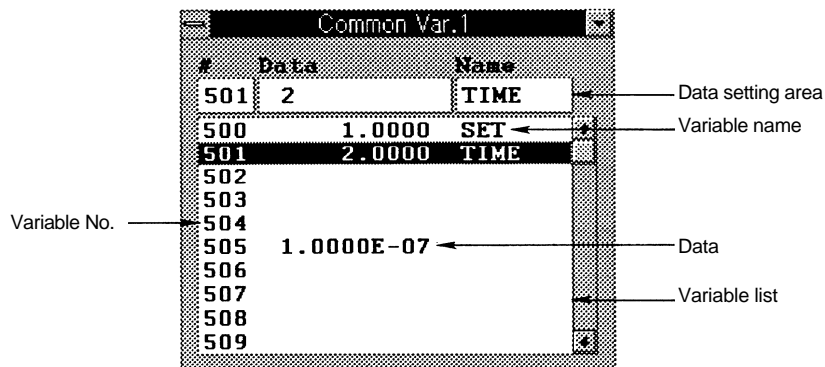


Fig. 3.44 Common Var. 1 window

#### Display

Display item	Details
Variable list	The variable Nos. and data for the #500 and following common variables are displayed. <b>(Note 1)</b> The variable name will also display for the 20 variables #500 to #519. If the variable data is "blank", that data will not display on the screen. The 6 digits above the decimal point and 4 digits after the decimal point can be displayed. In the following cases, an exponential will display. <b>(Note 2)</b> <input type="radio"/> When the No. of data digits above the decimal point exceeds 6 digits. <input type="radio"/> When the data value is less than 0.0001. When setting or deleting a common variable, it is selected from this list.
Data setting area	The data and variable name of the common variable selected from the variable list are displayed. The common variable data and variable name can be set here. <b>(Note 3)</b>
Variable No.	The common variable Nos. (#500~) are displayed.
Data	Each common variable data is displayed.
Variable name	The variable names of common variables #500 to #519 are displayed.

**(Note 1)** The No. of common variable sets that can be used will differ according to the specifications.

**(Note 2)** If the data is 0.0001 or more and the No. of digits exceeds four after the decimal point, only four digits of the value after the decimal point will display.

**(Note 3)** The variable name is set with seven or less alphanumeric characters starting with an alphabetic character. All alphabetic characters are input as uppercase characters.



### 3. NC Operation Windows

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- Common variable setting/deletion**
- How to set the common variable data
    - (1) Select the variable to be set from the variable list and double click it. **(Note 1)**
      - The data of the selected variable will display in the data setting area.
    - (2) Set the data and variable name in [Data] and [Name], and then press the [Enter] key.
      - The details of the variable list will change. **(Note 2)**  
The data of the next variable No. will display in the data setting area. That variable can be set next.
  - How to delete common variable data
    - (1) Select the variable to be deleted from the variable list, and click it. **(Note 3)**
      - The data of the selected variable will be highlighted.
    - (2) Press the [Delete] key.
      - The data and variable name of the selected common variable will all be deleted and "blank".

**(Note 1)** Instead of double clicking the variable in the variable list, the variable No. can be set in [#] of the data setting area, and then the [Tab] key pressed.


**(Note 2)** If the data or variable name in the data setting area is blank, the data or variable name for that No. will be deleted.

The variables for which the variable name can be set are #500 to #519.

**(Note 3)** If multiple common variables are selected, they can be deleted in a batch.

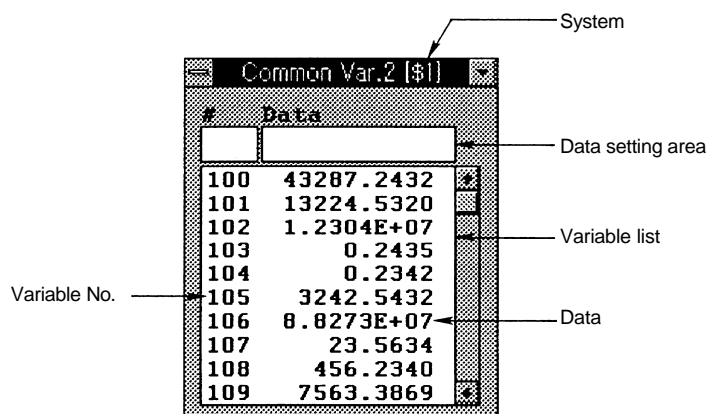
### 3. NC Operation Windows

#### Common variable 2 window (Common Var. 2)

The Common Var. 2 window will display when the  button or the [Monitor] — [Variable] — [CommonVar. 2] commands are clicked.

The details of the #100 and following common variables can be displayed and set in this window.

**(Note 1)**



**Fig. 3.45 Common Var. 2 window**

#### Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Variable list	The variable Nos. and data for the #100 and following common variables are displayed. <b>(Note 1)</b> If the variable data is "blank", that data will not display on the screen. The 6 digits above the decimal point and 4 digits after the decimal point can be displayed. In the following cases, an exponential will display. <b>(Note 2)</b> <ul style="list-style-type: none"> <li>○ When the No. of data digits above the decimal point exceeds 6 digits.</li> <li>○ When the data value is less than 0.0001.</li> </ul> When setting or deleting a common variable, it is selected from this list.
Data setting area	The data of the common variable selected from the variable list are displayed. The common variable data can be set here.
Variable No.	The common variable Nos. (#100_) are displayed.
Data	Each common variable data is displayed.

**(Note 1)** The No. of common variable sets that can be used will differ according to the specifications.

**(Note 2)** If the data is 0.0001 or more and the No. of digits exceeds four after the decimal point, only four digits of the value after the decimal point will display.

#### Common variable setting/deletion

##### ■ How to set the common variable data

- (1) Select the variable to be set from the variable list and double click it. **(Note 1)**
  - The data of the selected variable will display in the data setting area.
- (2) Set the data in [Data], and then press the [Enter] key.
  - The details of the variable list will change. **(Note 2)**  
The data of the next variable No. will display in the data setting area. That variable can be set in succession.

##### ■ How to delete common variable data

- (1) Select the variable to be deleted from the variable list, and click it. **(Note 3)**
  - The data of the selected variable will be highlighted.
- (2) Press the [Delete] key.
  - The data of the selected common variable will all be deleted and "blank".

**(Note 1)** Instead of double clicking the variable in the variable list, the variable No. can be set in [#] of the data setting area, and then the [Tab] key pressed.

**(Note 2)** If the data in the data setting area is blank, the data for that No. will be deleted.

**(Note 3)** If multiple common variables are selected, they can be deleted in a batch.

### 3. NC Operation Windows

#### Local variable window (Local Var.)

The Local Var. window will display when the  button or the [Monitor] — [Variable] — [LocalVar.] commands are clicked.

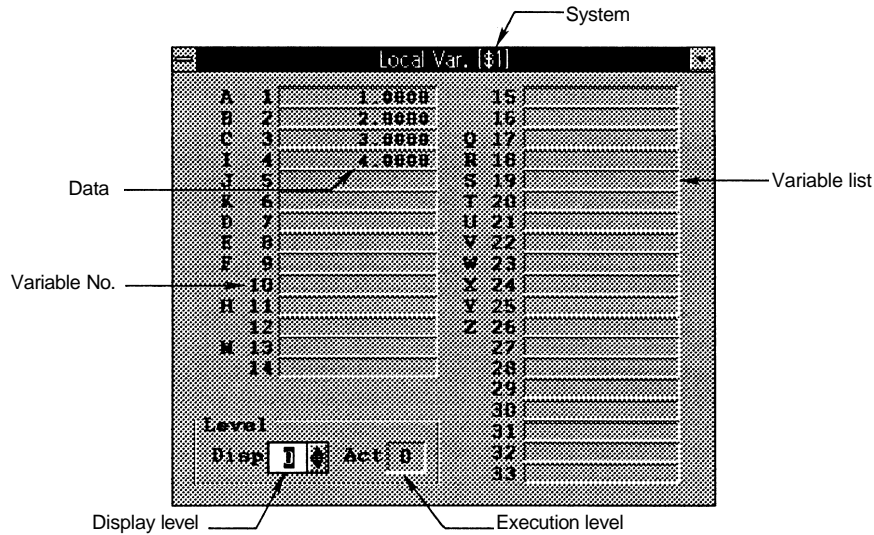


Fig. 3.46 Local Var. window

#### Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Variable list	The local variable Nos. and details are displayed. The alphabet before the variable No. is the argument code. If the variable data is "blank", that data will not display on the screen. The 6 digits above the decimal point and 4 digits after the decimal point can be displayed. In the following cases, an exponential will display. <b>(Note 1)</b> ○ When the No. of data digits above the decimal point exceeds 6 digits. ○ When the data value is less than 0.0001.
Variable No.	The local variable Nos. (#1 to #33) are displayed.
Data	Each local variable data is displayed.
Display level	The display level (0 to 4) of the local variables displayed in the window is displayed.
Execution level	The level of the subprogram control being executed by the user macro is displayed. 0 : Not in user macro call state 1 to 4 : User macro call level

#### Changeover of display level

##### ■ How to change display level

- Using the [Level] spin button, set the display level (0 to 4).  
→ The local variables in the designated display level will display in the variable list.

**(Note 1)** If the data is 0.0001 or more and the No. of digits exceeds four after the decimal point, only four digits of the value after the decimal point will display.

3.2 Windows that can be opened from the [Tool] menu

**Tool wear window (TipOffset)**

The TipOffset window will display when the  button or the [Tool] — [TipOffset] commands are clicked.

The nose wear compensation amount is set for each tool being used in this window.

When the tool offset No. is designated with the tool command (T command), the offset operation will be executed together with the tool length offset amount set in the Length window ([Tool] — [Length]).

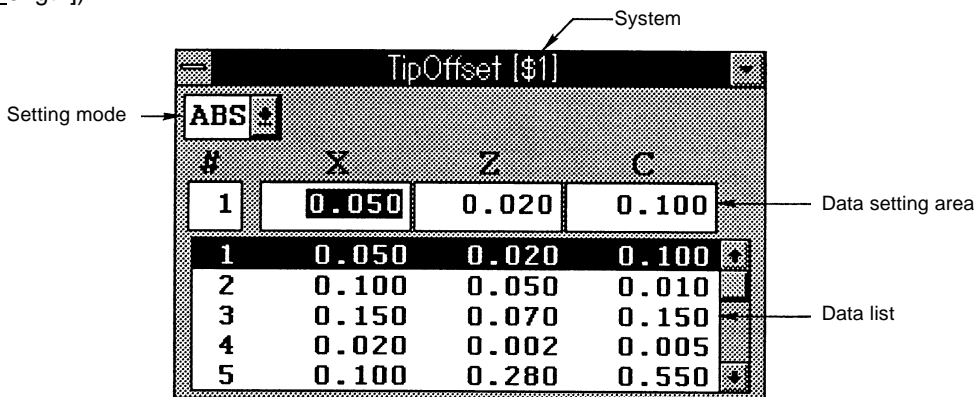


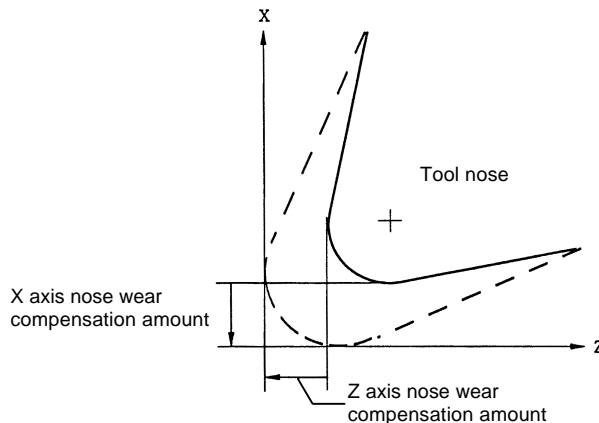
Fig. 3.47 TipOffset window

**Display**

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Setting mode	The current absolute value setting/incremental value setting mode state is displayed.
Data setting area	The offset memory No. and tool wear amount are set.
Data list	All currently set data is displayed.

**Wear compensation amount**

The wear compensation amount is shown in the following drawing.



### 3. NC Operation Windows

#### Tool length window (Length)

The Length window will display when the  button or the [Tool] — [Length] commands are clicked.

The length of the tool to the reference position of the program is set for each tool being used in this window.

When the tool offset No. is designated with the tool command (T command), the offset operation will be executed together with the tool wear compensation amount set in the TipOffset window ([Tool] — [TipOffset]).

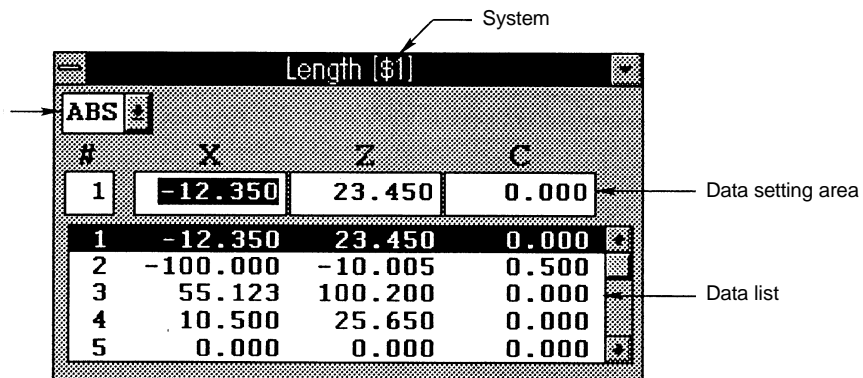


Fig. 3.48 Length window

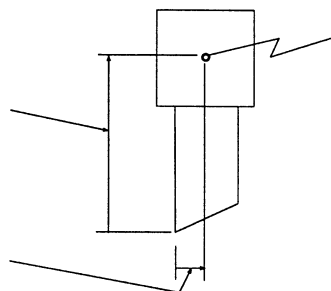
#### Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Setting mode	The current absolute value setting/incremental value setting mode state is displayed.
Data setting area	The offset memory No. and tool length offset amount are set.
Data list	All currently set data is displayed.

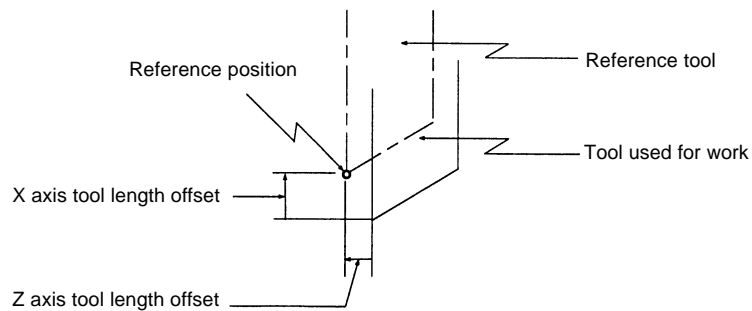
#### Tool length offset amount

The reference position of the program when the tool length offset is set is generally as shown in the following cases.

- 1) When reference position is to be set at center of tool post.



#### 2) When reference position is to be set as nose position of reference tool



**Tool offset amount** When the tool offset No. is set with the tool command (T command), the offset operation will be executed with the tool wear compensation amount set in the TipOffset window ([Tool] — [TipOffset]) and the tool length offset amount set in the Length window ([Tool] — [Length]).

X axis offset

X axis tool length offset + X axis wear offset

Z axis offset

Z axis tool length offset + Z axis wear offset

C axis offset (additional axis)

C axis tool length offset + C axis wear offset

#### Changeover of setting mode

■ How to change the tool wear/tool length window setting mode.

(1) Click the downward arrow at the right of the setting mode display area, and designate the setting mode.

→ The mode designated will display in the setting mode display area.

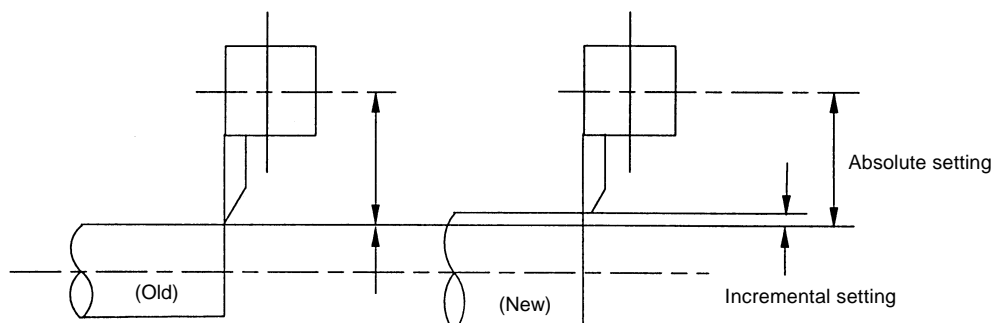
The mode that has been set once will be held even when the power is turned OFF.

#### Tool offset data setting/deletion

The tool wear/tool length offset data can be set with an absolute value or incremental value.

Before setting the data confirm whether the mode is the absolute value setting or incremental value setting mode.

Setting examples of tool offset data in the absolute value setting and incremental value setting modes are shown below.



### 3. NC Operation Windows

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#### ■ How to set tool wear/tool length offset data

- (1) Double click the data in the data list that is to be set. **(Note 1)**  
→ The selected data will display in the data setting area.
- (2) Input the numerical value to be input.  
The setting ranges are as shown below.

Display item	Setting range (unit)
Offset memory No.	1 ~ 99
Tool wear amount	±99.999 (mm)
Tool length offset amount	±999.999 (mm)

- (3) Press the [Enter] key.  
→ The details of the data list will change.  
The next offset memory No. data will display in the data setting area, and can be set in succession.

#### ■ How to delete tool wear/tool length offset data

- (1) Click the data in the data list that is to be deleted. **(Note 2)**  
→ The selected data will be highlighted.
- (2) Press the [Delete] key.  
→ All selected offset data will be set to 0.

**(Note 1)** Instead of double clicking the data in the data list, the offset memory No. can be set in [#] of the data setting area, and then the [Tab] key pressed.

**(Note 2)** Multiple offset data can be selected.



**Nose P/R window (Tip)**

The Tip window will display when the  button or the [Tool] — [Tip] commands are clicked.

The radius "R" (nose R) of the tool nose, wear "r" and nose point "P" is set for each tool being used in this window.

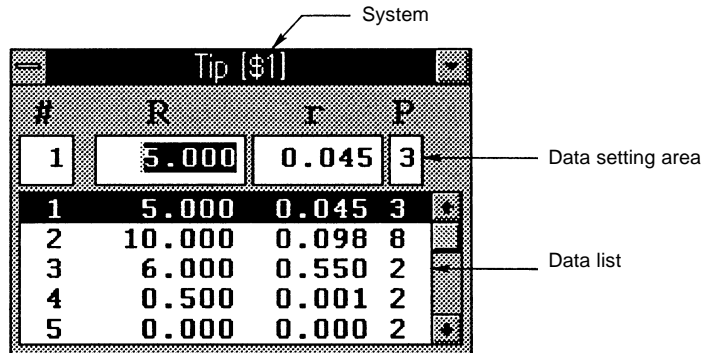


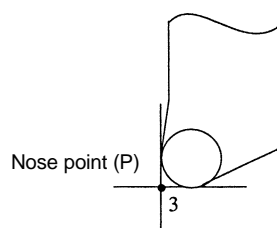
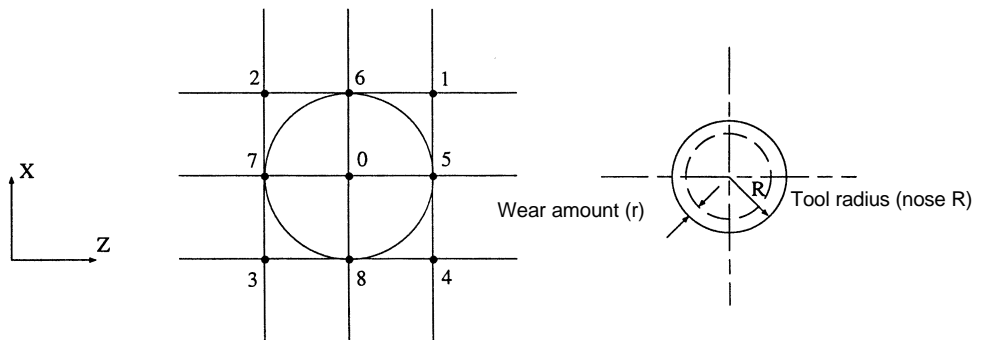
Fig. 3.49 Tip window

**Display**

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Data setting area	The offset memory No. and tool nose data are set.
Data list	All currently set data is displayed.

**Tool nose data**

With the nose R offset (G41, G42, G46) commands, the tool nose is interpreted as a radius R ( $R + r$ ) semicircle according to the tool No. The semicircle is compensated so that it contacts the designated part program path.



#### Tool nose data setting

##### ■ How to set tool nose data

- (1) Double click the data in the data list that is to be set. **(Note 1)**  
→ The selected data will display in the data setting area.
- (2) Input the numerical value to be input.  
The setting ranges are as shown below. **(Note 2, Note 3)**

Display item	Setting range (unit)
Offset memory No.	1 ~ 99
Tool radius (nose R)	0 ~ 99.999 (mm)
Tool radius (nose R) wear amount	0 ~ 99.999 (mm)
Tool nose point	0 ~ 8

- (3) Press the [Enter] key.  
→ The details of the data list will change.  
The next offset memory No. data will display in the data setting area, and can be set in succession.

##### ■ How to delete tool nose data

- (1) Click the data in the data list that is to be deleted. **(Note 4)**  
→ The selected data will be highlighted.
- (2) Press the [Delete] key.  
→ All selected offset data will be set to 0.

**(Note 1)** Instead of double clicking the data in the data list, the offset memory No. can be set in [#] of the data setting area, and then the [Tab] key pressed.

**(Note 2)** If the Setup parameter #1019dia is set to "0", set a radius value. If set to "1", set a diameter value. Refer to the MELDAS 64 Operation Manual (BNP-B2180) for the Setup parameters.

**(Note 3)** Changeover between an incremental value setting and absolute value setting is done according to the Length window setting mode for R. For r, the mode set in the TipOffset window will be followed.

**(Note 4)** Multiple offset data can be selected.

### 3. NC Operation Windows

#### Tool registration window (Registration)

The Registration window will display when the  button or the [Tool] — [Registration] commands are clicked.

In this window, the tool to be used can be registered in the magazine pot, and the tool can be registered in the spindle, standby 1 to 3 and indexing display areas.

The method for using this window will differ according to the user PLC, so refer to the manual issued by the machine maker for details.

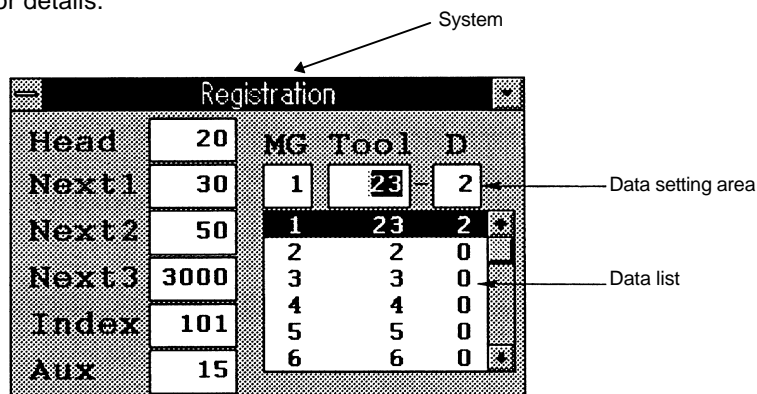


Fig. 3.50 Registration window

#### Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Head Next 1 ~ 3 Index	Head : The No. of tool registered for the spindle. Next 1~3 : The Nos. of tool registered for standby 1~3. Index : The No. of tool registered for index. If the magazine pot and tool No. change due to the tool selection command or tool change command, the new tool No. will display.
AUX	Any data can be set and sequence processing executed with the user PLC.
Data setting area	The tool can be registered to the magazine pot.
Data list	All data in the current set magazine pot is displayed.

### 3. NC Operation Windows

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#### Tool registration/ deletion to magazine pot

##### ■ How to register tool to magazine pot

- (1) Double click the data in the data list that is to be set. **(Note 1)**  
→ The selected data will display in the data setting area.
- (2) Input the numerical value to be set.  
The setting ranges are as follow.

Display item	Setting area
Magazine No.	1 ~ 80
Tool No.	0 ~ 9999
D data <b>(Note 2)</b>	1 ~ 80

- (3) Press the [Enter] key.  
→ The details of the data list will change.  
The data for the next magazine No. will display in the data setting area, and can be sequentially set.

##### ■ How to delete tool registered to magazine pot

- (1) Click the data in the data list that is to be deleted. **(Note 3)**  
→ The clicked data will be highlighted.
- (2) Press the [Delete] key.  
→ All selected data will be set to 0.

#### Tool registration/ deletion to Head, Next and Index

This is used to change the display data when the No. of the tool set in the magazine pot and the displayed tool No. differ.

##### ■ How to register tool to Head (spindle), Next and Index.

- (1) Click the data for which the tool is to be registered.  
→ The clicked data display area will be highlighted, and a cursor will appear.
- (2) Input the numerical value to be input, and then press the [Enter] key.  
→ The details of the data display area will change.

##### ■ How to delete tool registered to Head, Next and Index

- (1) Click the tool No. to be deleted, and press the [Delete] key.  
→ Selected tool No. will be set to 0.


**(Note 1)** Instead of double clicking the data in the data list, the magazine No. can be set in [MG] of the data setting area, and then the [Tab] key pressed.

**(Note 2)** Refer to the manual issued by the machine maker for details on the D data function and purpose.

**(Note 3)** Multiple tool Nos. can be selected.

### 3. NC Operation Windows

#### Tool life window (ToolLife Display)

The Tool Life window will display when the  button or the [Tool] — [Life] commands are clicked. The window displayed for the ToolLife Display window differs according to the Setup parameter #1096T\_Ltype, and the specifications will change according to #1103T\_Life \_ #1106Tcount.

**(Note 1, Note 2)**

- 1) Tool life monitoring I (When parameter #1096T\_Ltype is set to 1)  
The life is managed by the tool usage time or No. of used times.
- 2) Tool life monitoring II (When parameter #1096T\_Ltype is set to 2)  
With this tool life monitoring with spare tool, the tools used are divided into several groups, and the tool life (usage time, No. of used times) is managed per group. When the life is reached, the same type of spare tool is selected from the group that the life reached group belongs to.

#### Tool life monitoring I

The tool life management data can be displayed and set on this window.

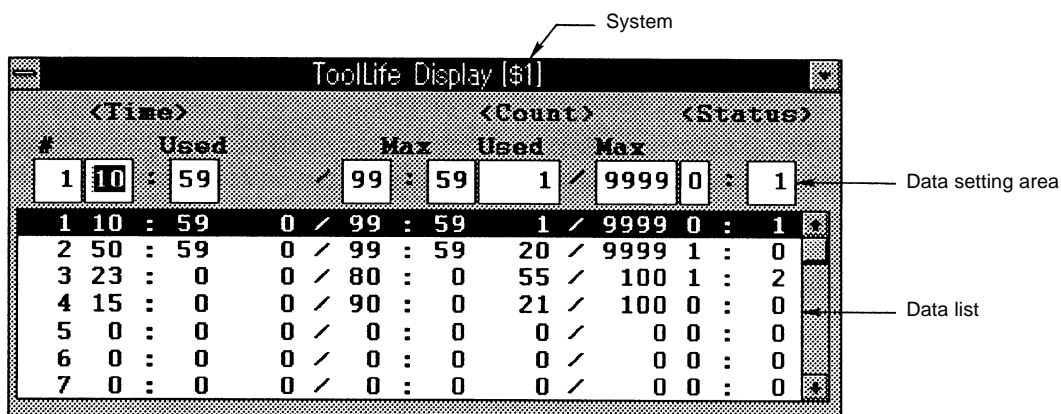


Fig. 3.51 ToolLife Display window (Tool life monitoring I)

#### Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Data setting area	The life monitoring information according to the tool usage time and No. of used times is set.
Data list	All currently set tool life management data is displayed. When the usage time reaches the life time or when the No. of used times exceeds the No. of life times, the tool life over signal (X20E) is output to the user PLC, and a [*] is displayed in front of the [#] No. in the ToolLife Display window.

**(Note 1)** Refer to the MELDAS 64 Operation Manual (BNP-B2180) for the Setup parameters.

**(Note 2)** The ToolLife Display window will not display in systems that do not have the tool life monitoring function.

### 3. NC Operation Windows

**Tool life monitoring data setting/deletion** The details and setting ranges of the tool life monitoring data are as shown below.

Display item		Details	Setting range (unit)
#		Tool No.	1 ~ 80 <b>(Note 1)</b>
Time monitoring	Usage	Tool usage cumulative time This is counted during cutting.	0:0 ~ 99:59 (Hour:min.)
	Life	Tool life setting time The maximum usable time is set. The sec. unit value is "0".	0:0 ~ 99:59 (Hour:min.) (0:0 No warning)
No. of times monitoring	Usage	Tool No. of cumulative used times This is counted during tool selection.	0 ~ 9999 (No. of times)
	Life	No. of set tool life usages The maximum No. of usages is set.	0 ~ 9999 (No. of times) (0:0 No warning)
Status	Left side	The tool life monitoring status is displayed. 0: Not used state 1: In use 2: Life time (No. of times) over	0 ~ 2
	Right side	(Machine maker release area)	0 ~ 99

#### ■ How to set tool life monitoring data

- (1) Click the data in the data list that is to be set. **(Note 2)**  
→ The selected data will display in the data setting area.
- (2) Input the numerical value to be input, and then press the [Enter] key.  
→ The details of the data list will change.  
The next tool No. will display in the data setting area, and can be set in succession.

#### ■ How to delete tool life monitoring data

- (1) Click the data in the data list that is to be deleted. **(Note 3)**  
→ The selected data will be highlighted.
- (2) Press the [Delete] key.  
→ All selected tool life monitoring data will be set to 0.

**(Note 1)** If there are 20 offset sets, the No. of tools for which the life can be managed will be 20.

**(Note 2)** Instead of double clicking the data in the data list, the tool No. can be set in [#] of the data setting area, and then the [Tab] key pressed.

**(Note 3)** Multiple tool life monitoring data can be selected.

### 3. NC Operation Windows

#### Life monitoring method

The following methods can be selected by setting the life time (No. of used times) to "0" for each tool. **(Note 1)**

Life monitoring method	Setting of life time	Setting of No. of life times
1) Monitoring of only time		Set "0"
2) Monitoring of only No. of times	Set "0"	
3) Monitoring of time and No. of times		
4) No monitoring	Set "0"	Set "0"

#### 1) Monitoring of only time

The cutting time after the tool selection command is issued is added to the usage time for each tool.

When the usage time reaches the life time during the tool selection command, a warning will be output to the user PLC. **(Note 2)**

When the usage time reaches the life time, a [\*] will display in front of the [#] No. on the ToolLife Display window.

#### 2) Monitoring of only No. of times

The No. of used times for the commanded tool is counted when the first cutting feed starts after the tool selection (T) command is issued. Thus, if cutting feed is not executed after the tool is selected, the No. of used times will not be counted.

If the No. of used times and the No. of life times is the same when the tool selection command is executed, a warning will be output to the user PLC.

A [\*] will display in front of the [#] No. on the ToolLife Display window when the No. of used times exceeds the No. of life times. In other words, this is displayed when cutting feed starts after the tool selection command.

#### 3) Monitoring of time and No. of times

Life monitoring with time and with No. of used times is carried out simultaneously.

If the usage time has reached the life time or if the No. of used times and No. of life times are the same when the tool selection command is issued, a warning will be output to the user PLC.

When the usage time reaches the life time or when the No. of used times exceeds the No. of life times, a [\*] will display in front of the [#] No. on the ToolLife Display window.

#### 4) No monitoring

The usage time is cumulated and the No. of used times will be counted, but a warning will not be output to the user PLC, and a [\*] will not display in front of the [#] No. on the ToolLife Display window.

**(Note 1)** The usage time cumulative time (No. of times) will be counted even when the life time (No. of times) setting is "0". However, the warning (tool life over: X20E) will not be output.

**(Note 2)** Even if the usage time reaches the life time during cutting, the warning will not be output to the user PLC at that time. The warning will be output at the next tool selection command. During that time, the counting of the usage time will continue.

### 3. NC Operation Windows

- Count conditions** The usage time (No. of times) will be counted during cutting feed (G1, G2, G3, G33). However, these will not be counted under the following conditions.
- When Setup parameter "#1103 T\_Life" is zero (**Note 1**)
  - During machine lock
  - During miscellaneous function lock (Input signal from PLC)
  - During dry run
  - During single block operation
  - When usage data count valid signal is OFF (Input signal from PLC)

**Tool life monitoring II** This window is for only a display. The data setting is described on the next page.

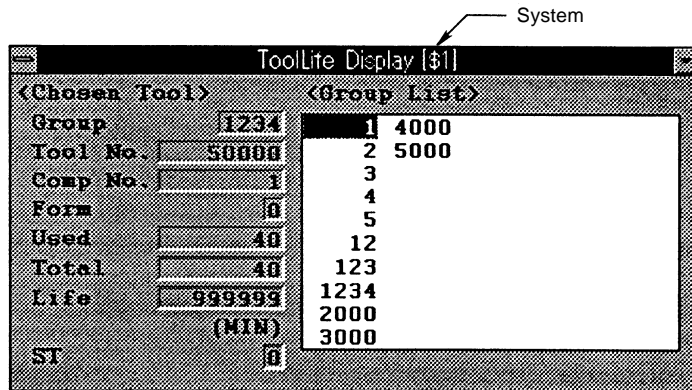


Fig. 3.52 ToolLife Display (Tool life monitoring II)

**Display**

Display item	Details
Chosen tool	The tool No. of the tool being used and the tool life monitoring data is displayed. Refer to the next page for details on the tool life monitoring data.
Group list	The group No. registered as the tool life monitoring data is displayed. When the life is reached, the tool life over signal (X20E) is output to the user PLC, and a [*] is displayed in front of the [#] No. in the ToolLife Display window.

**Tool life monitoring data setting/ Deletion** The ToolLife Setup window will display when the group list group No. is double clicked.

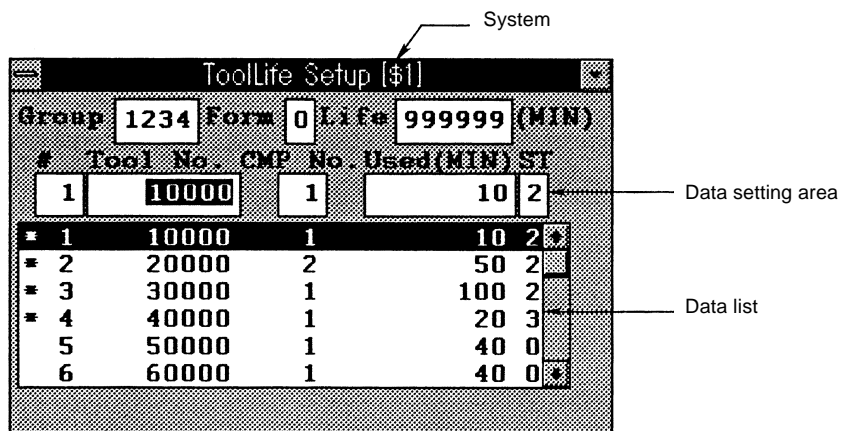


Fig. 3.53 ToolLife Setup window

(Note 1) Refer to the MELDAS 64 Operation Manual (BNP-B2180) for Setup parameters.



### 3. NC Operation Windows

The display details and setting ranges for the ToolLife Setup window are as follow.

Display item	Details	Setting range
Group	This is the group No. of the tool for which life monitoring is to be executed.	1 ~ 9999
Form	The tool life monitoring method and life data count unit is indicated. <b>(Note 1)</b> 0: Time (minutes) 1: No. of times (No. of times) If the setting is omitted, it will be interpreted as "0".	
Life	The life value of the tool in that group is indicated. <b>(Note 1, Note 2)</b> The life value unit will change according to the method setting. Method 0: The setting is in minute units 1: The setting is in No. of time units If the setting is omitted, it will be interpreted as "0".	0 ~ 999999
#	This is the data setting No.	1 ~ 16
Tool No.	The tool No. is set. <b>(Note 3)</b> Set in order from the tool used first. If multiple offset Nos. are to be used for one tool, set the tool No. and each offset No. per offset tool.	1 ~ 999999
CMP No.	The offset No. is set. <b>Example)</b> When multiple offset Nos. are to be used for one tool # Tool No. CMP No. 1 520000 11 : Same as T52000011 command 2 520000 12 : Same as T52000012 command 3 520000 13 : Same as T52000013 command	1 ~ 80 0 ~ 999999
Used (MIN)	If the designated tool is not an unused tool, the initial value for the counting can be adjusted by setting the usage data. The usage value unit will change according to the method setting. Method 0: The setting is in minute units 1: The setting is in No. of time units If the setting is omitted, it will be interpreted as "0".	
ST	The tool status is indicated. 0: Unused tool 1: Tool in use 2: Normal life tool 3: Tool skip tool If the data is not set or if 0 to 2 is set, the data will automatically be set according to the relation of the usage data and life data. If 2 to 3 is set, a [*] will display in front of the [#] No.	

- (Note 1)** The method and life data is common data for the group. If the life value of a specific tool is to be suppressed, set the offset value for the usage data. In this case, ST will be set to "1" (tool in use).
- (Note 2)** If the life data is "0", the usage data will be counted, but a judgment will not be made on the life reaching.
- (Note 3)** This function executes tool life monitoring in group units. Thus, if a tool is set in a differing group, the life monitoring will be executed for each group, and correct life monitoring will not be executed for that tool.

### 3. NC Operation Windows

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#### ■ How to set tool life monitoring data

- (1) Double click the data in the data list that is to be set. **(Note 1)**
  - The selected data will display in the data setting area.
- (2) Input the numerical value to be input, and then press the [Enter] key.
  - The details of the data list will change.
  - The next tool No. will display in the data setting area, and can be set in succession.

#### ■ How to delete tool life monitoring data

- (1) Click the data in the data list that is to be deleted. **(Note 2)**
  - The selected data will be highlighted.
- (2) Press the [Delete] key.
  - All selected tool life monitoring data will be cleared.

**(Note 1)** Instead of double clicking the data in the data list, the tool No. can be set in [#] of the data setting area, and then the [Tab] key pressed.

**(Note 2)** Multiple tool life monitoring data can be selected.

### 3. NC Operation Windows

#### Count method

The tool life can be counted with the time method or No. of times method. If the usage data is the same as or higher than the life data as a result of the counting, the spare tool in the group will be selected with the next corresponding group selection command (T\*\*\*99), and the count will start for the newly selected tool.

If all tools in the group have reached their lives and a spare tool cannot be selected, the count will continue for the tool selected last.

#### 1) Count of time for time method

The time that the tool is used in the cutting mode (G01, G02, G03, G31, G33, etc.) is counted in 100msec units.

The time will not be counted during dwell, machine lock, miscellaneous function lock, dry run or single block.

#### 2) Count of No. of times for No. of times method

The No. of times is counted when the No. of the tool used changes with execution of the tool selection command (T\*\*\*99) and when in the cutting mode (excluding the machine lock, miscellaneous function lock, dry run and single block states).

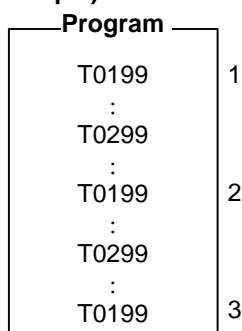
(The No. of times will not be counted if the cutting mode is not entered after the No. changes. The count will also not take place if only the offset No. of the tool being used changes.)

#### When T code of tool being used is T12345678

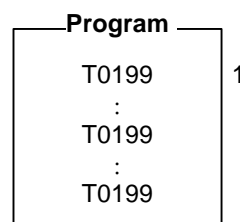
T12345678

Offset No. (CMP No.): Does not count even when changed.  
Tool No.: Counts when changed.

#### (Operation example)



The No. of times group G01 is used is three time.



The No. of times group G01 is used is one time.

The No. of used times is once per program execution.

If the program is re-executed after resetting, the No. of times will be counted.

#### 3) Counting when using multiple offset Nos. for one tool


With this function, each registered T No. (tool No. + offset No.) has independent usage data. Thus, for tools having multiple offset Nos., the usage data is counted per offset No.

This tool usage data is life managed after the usage data for each offset is totaled. Thus, in the window, even if the tool usage data has not reached the life when one [#] No. is looked at, the tool status may be [2] (life tool).

The total of the currently selected tool usage data is displayed in the [Total] section of the <Chosen Tool> column on the ToolLife Display window.

3.3 Windows that can be opened from [Parameter] menu

**Workpiece coordinate window (Work Offset)**

The Work Offset window will display when the  button or the [Parameter] — [WorkOffset] commands are clicked.

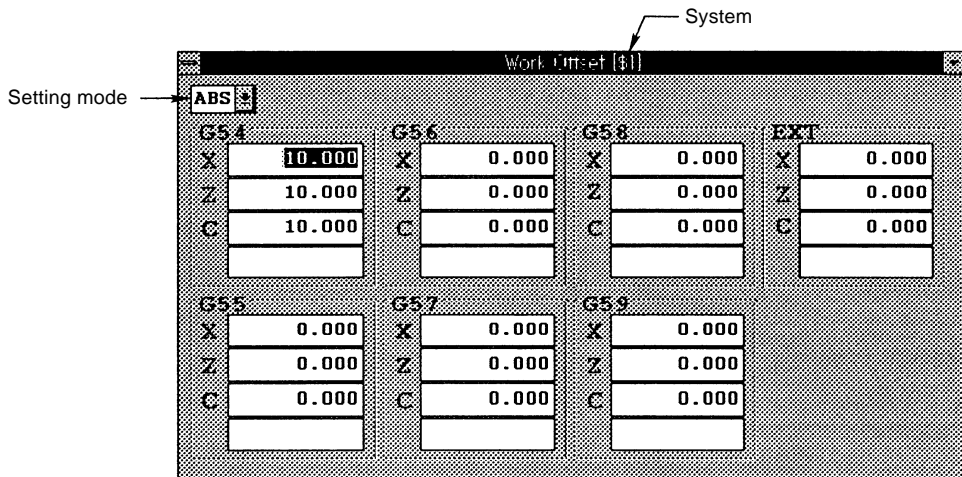


Fig. 3.54 Work Offset window

Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Setting mode	The state of the current absolute value setting or incremental value setting mode is displayed.
G54 offset G55 offset G56 offset G57 offset G58 offset G59 offset EXT offset	<p>The G54 to G59 workpiece coordinate system and external workpiece coordinate system offset values are set.</p>

### 3. NC Operation Windows

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#### How to change the setting mode

##### ■ How to change the setting mode

- (1) Click the downward arrow at the right of the setting mode display area, and designate the setting mode.
  - The mode designated in the setting mode display area will display.
  - The mode that has been set once will be held even when the power is turned OFF.

#### Workpiece coordinate system offset data setting

The workpiece coordinate system offset data can be set with an absolute value or incremental value. Before setting the data confirm whether the mode is the absolute value setting or incremental value setting mode.

##### ■ How to set the workpiece coordinate system offset data

- (1) Click the data display area where the data is to be set.
  - The clicked data setting area will be highlighted, and a cursor will appear.
- (2) Input the value to be set.

The setting ranges are as follow.

Display item	Setting range (unit)
G54 offset	±99999.999 (mm)
G55 offset	
G56 offset	
G57 offset	
G58 offset	
G59 offset	

- (3) Press the [Enter] key.
  - The set value will be validated.

#### External workpiece coordinate system offset data setting

The coordinate system deviation can be measured with an external touch sensor, etc., and the entire workpiece coordinate system from G54 to G59 can be offset.


The data can be directly written into the external offset (EXT) with external data input, or can be set in the setting area in the window.

The setting method is the same as for the workpiece coordinate system offset data.

The setting range is as follows.

Display item	Setting range (unit)
EXT offset	±99999.999 (mm)

**Machining parameter window (Process Parameter)**

The Process Parameter window will display when the  button or the [Parameter] — [Process] commands are clicked.

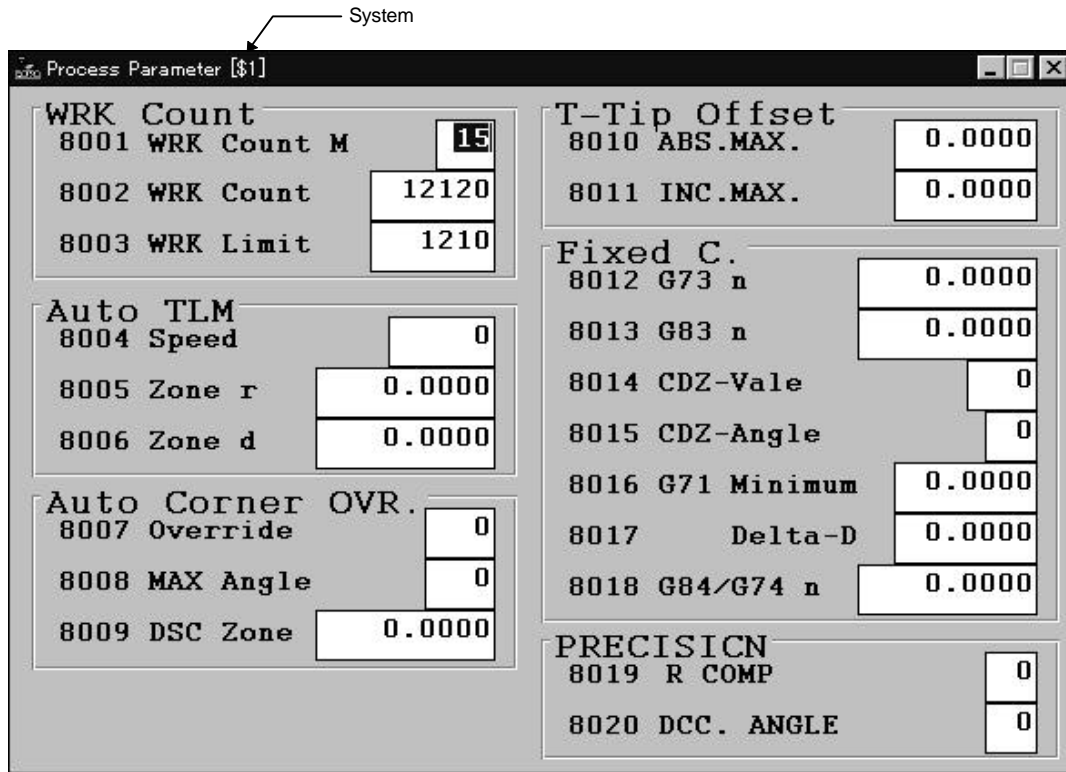
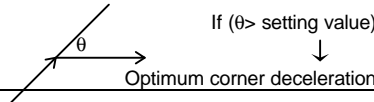


Fig. 3.55 Process Parameter window

### 3. NC Operation Windows

#### Display

Display item	Details	Setting range (unit)
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.	
8001 WRK Count M	The M code that counts the No. of workpiece repeated machining times is set. When set to 0, the No. of times will not be counted.	0 ~ 99 (times)
8002 WRK Count	The current No. of machining times is displayed. The initial value is set.	0 ~ 999999 (times)
8003 WRK Limit	The maximum value for the No. of workpiece machining times is set. When the No. of machining times counts to this value, a signal will be output to the PLC.	0 ~ 999999 (times)
8004 Speed	The feedrate for automatic tool length measurement is set.	1 ~ 60000 (mm/min.)
8005 Zone r	The distance between the measurement point and the deceleration start point is set.	0 ~ 99999.999 (mm)
8006 Zone d	The tolerable range of the measurement point is set. If the sensor signal turns ON at d or more before the measurement point, or if the sensor signal does not turn ON when d or more has been passed, an alarm will occur.	0 ~ 99999.999 (mm)
8007 Override	The override value for automatic corner override is set.	0 ~ 100 (%)
8008 MAX Angle	The maximum opening angle of a corner that is to be automatically decelerated is set. The axis will not decelerate at an angle larger than this.	0 ~ 180 (degree)
8009 DSC. Zone	The position to start deceleration at the corner is set. Designate at which length point before the corner to start deceleration.	0 ~ 99999.999 (mm)
8010 ABS.MAX.	The maximum value is set for when the tool wear compensation is input.	0 ~ 99.999 (mm)
8011 INC.MAX.	The maximum value is set when inputting the tool wear compensation amount in the incremental mode.	0 ~ 99.999 (mm)
8012 G73 n	Not used	
8013 G83 n	The return amount for G83 (deep hole drilling cycle) is set.	0 ~ 99999.999 (mm)
8014 CDZ-Vale	The thread cutting amount for G76, G78 (thread cutting cycle) is set.	0 ~ 127 (0.1 lead)
8015 CDZ-Angle	The thread cutting angle for G76, G78 (thread cutting cycle) is set.	0 ~ 89 (deg.)
8016 G71Minimum	The minimum value of the final cut amount for G71, G72 (rough cutting cycle) is set. If the final cutting amount is smaller than this value, the final cutting will not be executed.	0 ~ 99.999 (mm)
8017 Delta-D	The change amount to the commanded cut amount D for G71, G72 (rough cutting cycle) is set. Each cutting amount adds this value to command D creating in a subtracted value allowing per-time change.	0 ~ 99.999 (mm)
8018 G84/G74 Return	Not used	
8019 Precision coefficients	Set the compensation coefficients when further reduction is required of the control error of the corner radius or arc radius reduction, etc. Theoretically, the precision error becomes smaller as the setting value becomes larger, but the cycle time becomes longer because of the low speed at corners.	0 ~ 99 (%)
8020 Corner deceleration angle	The minimum angle (external angle) to be regarded as a corner is set. When the angle (external angle) between blocks in the High Precision mode is larger than the setting value, it is determined to be a corner, and deceleration to create an edge occurs.  	0 ~ 10 (degrees) 0: Automatic determination

### 3. NC Operation Windows

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#### **How to set machining parameters** ■ How to set machining parameters

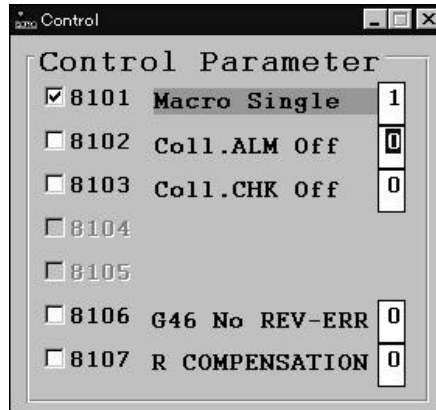
#### **ing parameters**

- (1) Click the parameter display area where the parameter is to be set.  
→ The clicked parameter setting area will be highlighted, and a cursor will appear.
- (2) Input the value to be set, and then press the [Enter] key.  
→ The set value will be validated.



#### Control parameter window (Control)

The Control window will display when the  button or the [Parameter] — [Control] commands are clicked.



**Fig. 3.56 Control window**

#### Display

Display item	Details
8101 Macro Single	The control of the blocks where the user macro commands continue is selected. 0 : Do not stop while macro blocks continue. 1 : Stop every block during single block.
8102 Coll. ALM Off	Collision (biting) control to the workpiece due to the tool radius during tool radius compensation or nose R offset is selected. 0 : Stop with an alarm at the point a collision is judged. 1 : Change the path so that the collision is avoided.
8103 Coll. CHK Off	Collision (biting) control to the workpiece due to the tool radius during tool radius compensation is set. 0 : Execute collision check. 1 : Do not execute collision check.
8106 G46 No REV-ERR	Control in respect to the compensation direction reversal during G46 (nose R compensation) is selected 0 : Stop with an alarm when the compensation direction reverses. (G41 → G42, G42 → G41) 1 : Do not generate an alarm when the compensation direction reverses, and instead maintain the compensation direction.
8107 Radius error compensation	0: During arc cutting, moves inward due to servo lag, etc., in regards to the command, resulting in a smaller arc than the command value. 1: During arc cutting, compensates movement to the inside caused by servo lag, etc., in regards to the command.


#### Control parameter setting ■ How to set the control parameters

- (1) Click the button at the left of the parameter No. **(Note 1)**  
→ The clicked item parameter will be validated or invalidated. When valid, the parameter will be displayed in green. **(Note 2)**

**(Note 1)** The data setting area can be clicked, the value (1 or 0) to be set input, and the [Enter] key pressed as with the other parameters.

**(Note 2)** The valid state is when the setting value is 1.

**Axis parameter window (Axis)**

The Axis window will display when the  button or the [Parameter] — [Axis] commands are clicked.

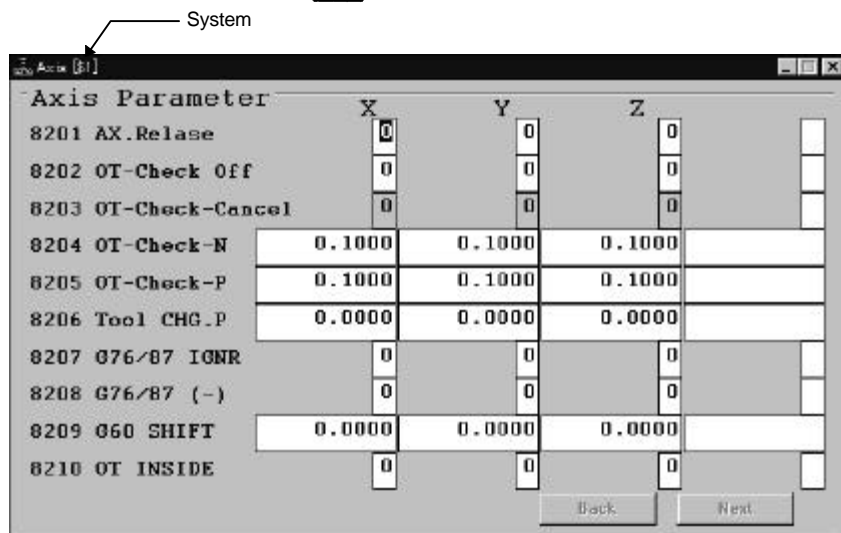


Fig. 3.57 Axis window

### 3. NC Operation Windows

#### Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
8201 Ax.Release	The function to release the control axis from the control target is selected. 0 :Normal 1 :Release from control target.
8202 OT-Check Off	The soft limit function set in 8204 and 8205 is selected. 0 :Soft limit valid 1 :Soft limit invalid
8203 OT-Check-Cancel	When the simple absolute position method is selected (when Setup parameter #2049 type is set to 9), the soft limit can be invalidated from when the power is turned ON to when the first zero point return is executed. <b>(Note 1)</b> 0 :Soft limit valid (follow 8202) 1 :Soft limit temporary cancel
8204 OT-Check-N	The soft limit (-) direction coordinates are set. When the sign and numerical value are both the same as 8205, the soft limit will be invalidated. Setting range: -99999.999 ~ +99999.999 mm
8205 OT-Check-P	The soft limit (+) direction coordinates are set. When the sign and numerical value are both the same as 8204, the soft limit will be invalidated. Setting range: -99999.999 ~ +99999.999 mm
8206 Tool CHG.P	The tool change position coordinates for G30.n (tool change position return) are set. Set with a basic machine coordinate system coordinate. Setting range: -99999.999 ~ +99999.999 mm
8207 G76/87 IGNR	Not used
8208 G76/87 (-)	Not used
8209 G60 Shift amount	Not used
8210 Soft limit inner side	Select whether to prohibit invasion outside the setting range by the stored stroke limit function set in 8204, 8205, or whether to prohibit invasion inside the range. 0: Prohibited range is outer side. (Select stored stroke limit II) 1: Prohibited range is inner side. (Select stored stroke limit II B)

#### How to set axis parameters

##### ■ How to set axis parameters

- (1) Click the parameter display area where the parameter is to be set.  
→ The clicked parameter setting area will be highlighted, and a cursor will appear.
- (2) Input the value to be set, and then press the [Enter] key.  
→ The set value will be validated.

**(Note 1)** Refer to the MELDAS 64 Operation Manual (BNP-B2180) for the Setup parameters.

**Barrier window (Barrier)**

The Barrier window will display when the  button or the [Parameter] – [Barrier] commands are clicked.

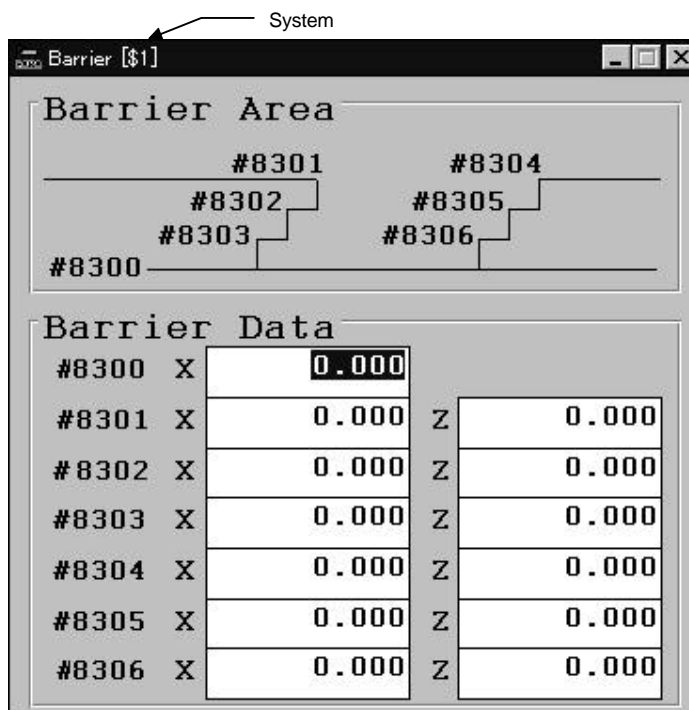


Fig. 3.58 Barrier window

**Display**

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
#8300	The reference X coordinates for the chuck and tailstock barrier are set. (Radius value) Set the center coordinates in the basic machine coordinate system. Setting range : -99999.999 ~ +99999.999 mm
#8301 #8302 #8303 #8304 #8305 #8306	The chuck and tailstock barrier ranges are set. (Radius value) Set a coordinate value from the workpiece center for the X axis. Set the coordinates in the basic machine coordinate system for the Z axis. Setting range : -99999.999 ~ +99999.999


**Barrier data setting** ■ How to set barrier data

- (1) Click the data display area where data is to be set.
  - The clicked data display area will be highlighted, and a cursor will appear.
- (2) Input the value to be input, and then press the [Enter] key.
  - The set value will be validated.

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#### PC direct operation environment setting window (PC-direct Environment)

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The PC Direct Operation Environment Setting window appears when the  button or the [Parameter]-[PC-direct Env.] commands are clicked (**Note 1**). The environment parameters for the PC direct operation can be set in this window.

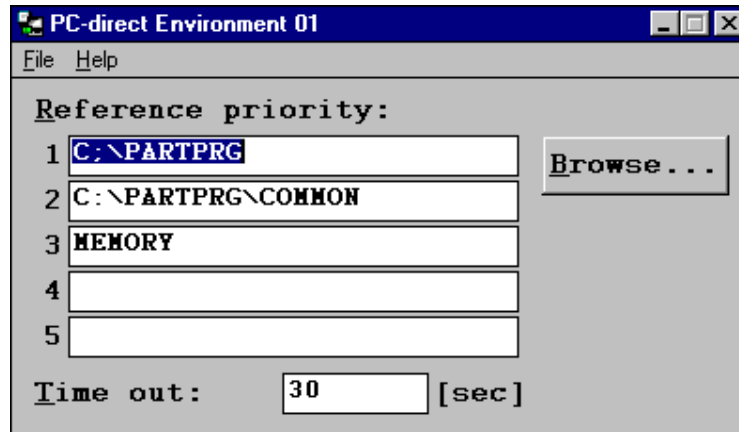



Fig. 3.59 PC Direct Operation Environment Setting window

**(Note 1)** Refer to the Personal Computer Direct Operation Instruction Manual (BND-B2195) for information on PC direct operation.

### 3.4 Window that can be opened from [Diagnosis] menu

#### Alarm message window (Alarm Message)

The Alarm Message window will display when the  button or the [Diagnosis] — [Message] commands are clicked.

Refer to the MELDAS 64 Operation Manual (BNP-B2180) for details on the alarms.

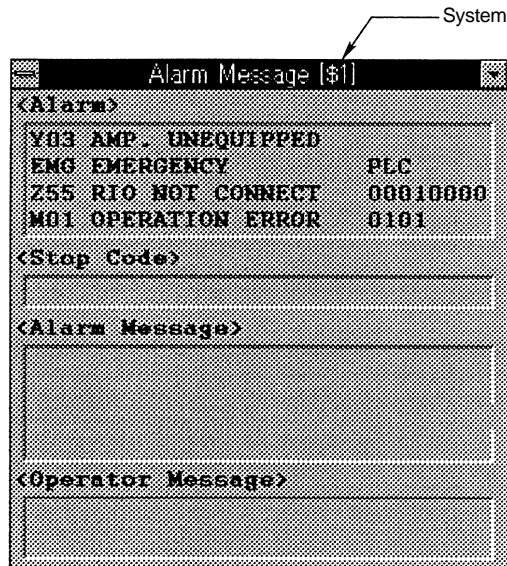


Fig. 3.60 Alarm Message window

#### Display

Display item	Details
System	The currently selected system is displayed. When only system 1 (\$1) is valid, this item will not display.
Alarm	The code and No. or message related to the operation alarm, program error, MCP alarm, servo alarm or system error will display. Up to four alarms can be displayed. The new alarm will display sequentially from the bottom of the display area.
Stop Code	The automatic operation not possible state or the stop during automatic operation state is displayed with a code and error No. Only one code will display.
Alarm Message	The alarm messages designated by the user PLC will display. Up to four messages can be displayed.
Operator Message	The operator messages designated by the user PLC will display. Up to two messages can be displayed.

#### 3.5 Window that can be opened from [Help] menu

##### Version window (Version of MELDASMAGIC)

The Version of MELDASMAGIC window will display when the [Help] — [Version ...] commands are clicked.

The version of the MMI Software currently being used can be seen on this window.

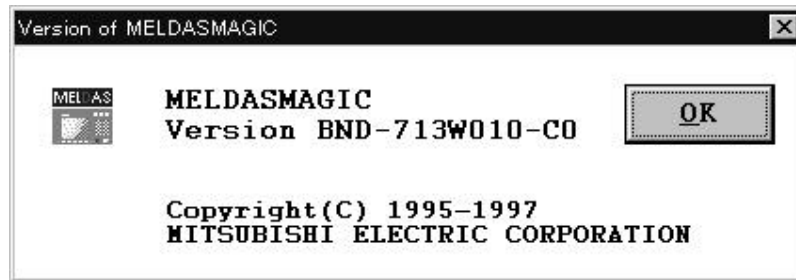


Fig. 3.61 Version of MELDASMAGIC window

## 4. MMI Software Operation Procedure

The basic operation procedure of the MMI Software will be described in this section.

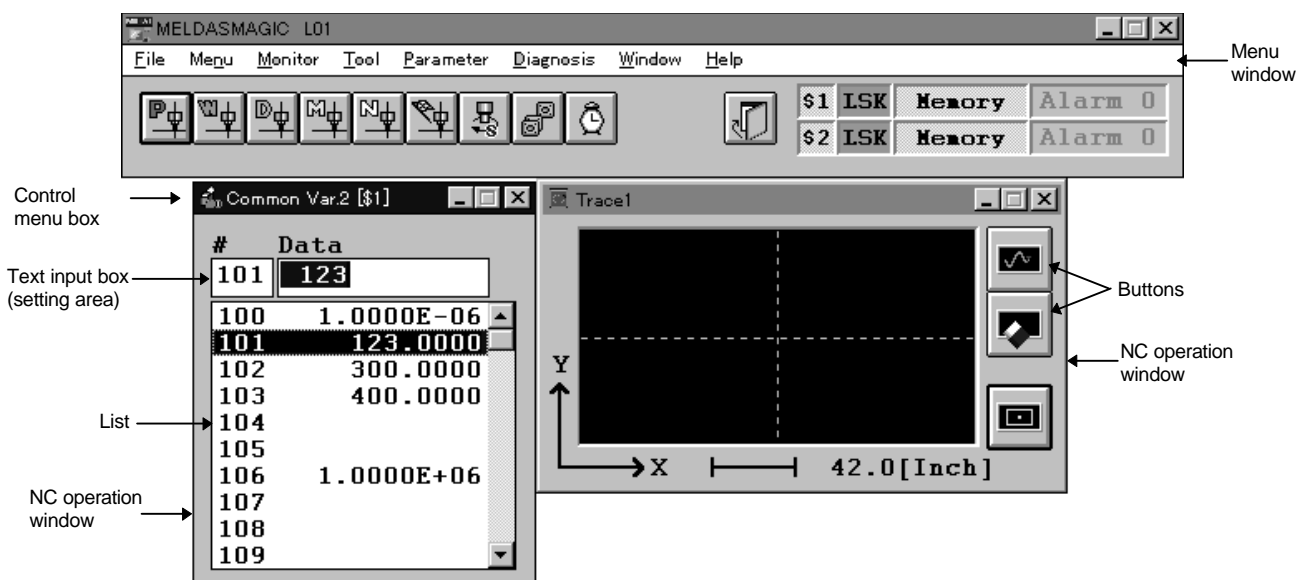


Fig. 4.1 MMI Software

Starting MMI Software .....	Refer to 4.1
Opening the NC operation window .....	Refer to 4.2
Activating the window .....	Refer to 4.3
Operating the window .....	Refer to 4.4
Closing the NC operation window .....	Refer to 4.5
Exiting MMI Software .....	Refer to 4.6



## 4.1 Starting MMI Software

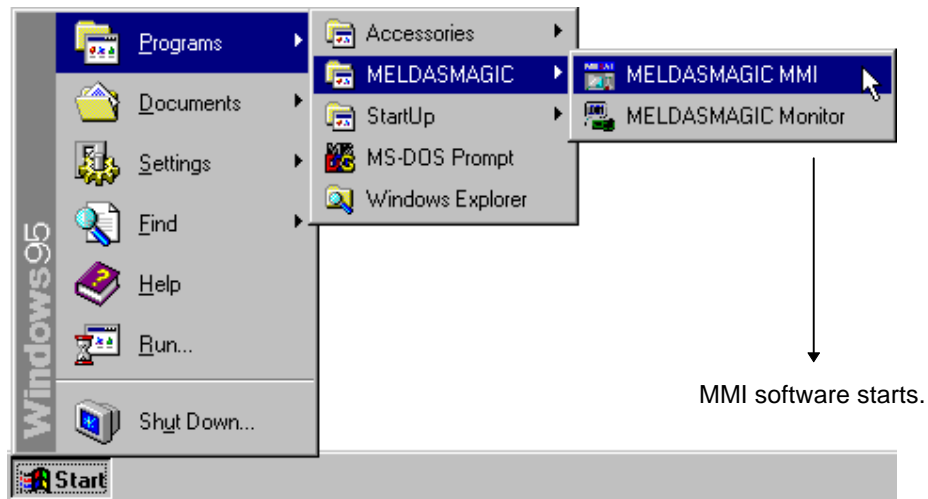
Three main methods of starting will be described in this section.

### Method 1: Start from the taskbar

- (1) Click on the [Start] button of the taskbar, and then display the [Start] menu.



- (2)



Click on the [P]rograms-[M]ELDASMAGIC-[M]ELDASMAGIC MMI] icons.

### Method 2: Starting simultaneously with starting of Windows

By adding the MMI software shortcut to the [Start Up] of the [Start] menu, the MMI software will start simultaneously with Windows.

### Method 3: Starting with the keyboard

- (1) The [Start] menu will appear when the [Esc] key is pressed while holding down the [Ctrl] key.
- (2) Select [P]rograms-[M]ELDASMAGIC-[M]ELDASMAGIC MMI using the direction keys, and then press the [Enter] key.

The title window will display for approximately 30 seconds when the program is started.

**(Note 1)**

When the title window disappears, the menu window and NC operation window will display in the state (window type, position, size, etc.) that the MMI Software was exited last.



Fig. 4.2 Title window

**(Note 1)** To make the title window disappear faster, either press the [Enter] key or click the title window with the mouse.

### 4.2 Opening the NC operation window

The NC operation window is opened by clicking a menu command on the menu bar or by clicking a button on the tool bar. The window will be opened in the state (position and size) used when the window was closed last. For windows that have displays per system, the windows for each system will open at once.

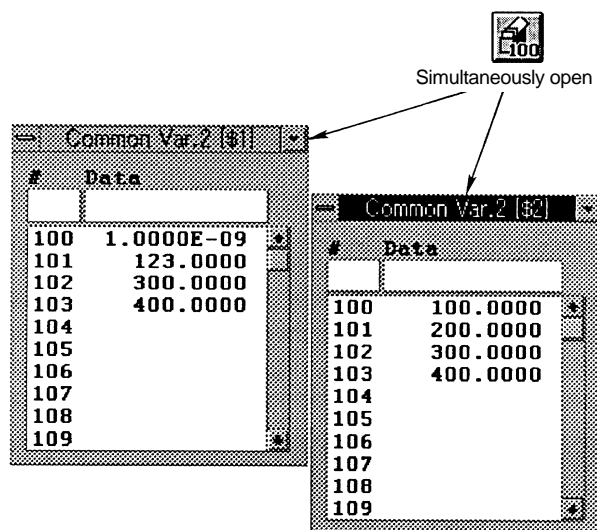


Fig. 4.3 Windows for two systems

If the designated NC operation window is already opened, the window will be activated and will display at the very front of the screen.

### 4.3 Activating the window

The window is activated by clicking it with the mouse. If a menu command on the menu bar or a button on the tool bar is clicked, the NC operation window that is already open will be activated.

If the NC operation window is active, the menu window will be activated when the [Alt] key is held down and the [Esc] key pressed.

### 4.4 Operating the window

#### (1) Movement of focus in the window

Method 1 : Click the control of which the focus is to be moved.

Method 2 : When the [Tab] key is pressed in an active window, the focus will sequentially move the control in the window.

#### (2) Button operation

Method 1 : Click the button with the mouse.

Method 2 : Move the focus to the button, and press the [Enter] key.

Method 3 : Press the access key ([Alt] key + key of underlined character) displayed on the button.

#### (3) Text input

Method 1 : Move the focus to the box where the text is to be input (text input box).

Input the text from the keyboard, and then press the [Enter] key.

#### (4) Multiple selection in list

Method 1 : Drag the multiple data in the list with the mouse.

Method 2 : Move the focus to the list, and designate the multiple data in the list with the [Shift] key + [↑] key ([↓] key).

Method 3 : Hold down the [Ctrl] key and click multiple data in the list.

#### (5) Command selection

Method 1 : Click the menu name in the menu bar, and then click the command name with the mouse.

Method 2 : Activate the menu window.

Press the [Alt] key or [F10] key, and activate the menu bar.

Press the menu access key, and then press the command access key.

#### (6) Enlargement/reduction of window

Method 1 : Designate the lower right corner of the window with the mouse, and drag in the direction to enlarge or reduce the size.

Method 2 : Activate the window to be enlarged or reduced.

Press the [Alt] key + [Space] key, and display the control menu.

Move the focus to the [Size] command, and then press the [Enter] key.

Press two direction keys simultaneously and select the window corner. (For example, if [↓] + [→] are pressed, the lower right corner of the window will be selected.)

Press the direction key, and enlarge or reduce the size of the window frame. Then press the [Enter] key. **(Note 1)**

**(Note 1)** To cancel the enlargement or reduction, press [Esc] instead of [Enter].

### 4.5 Closing the NC operation window

#### (1) To close one window

Method 1 : Double click the control menu box.

Method 2 : Activate the window to be closed.

Press the [Alt] key + [Space] key, and display the control menu.

Move the focus to the [Close] command, and press the [Enter] key.

#### (2) To close all windows (Note 1)

Method 1 : Click the [Close] button  on the menu window's tool bar.

Method 2 : Click the [Window] — [Close] commands on the menu window.

### 4.6 Exiting MMI Software

(1) Click the [File] — [Exit] commands on the menu window.

(2) A window confirming that the MMI Software is to be exited will display.

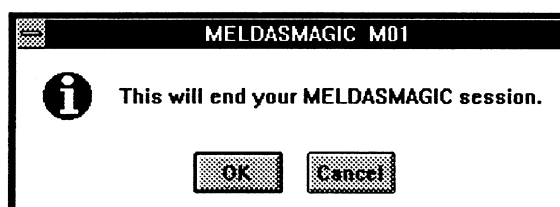


Fig. 4.4 Window for confirming exit

(3) Click the [OK] button.

**(Note 1)** If a dialog box window such as the search window or error message window is displayed, the window will not close properly. Close the dialog box windows one by one, and then click the [Close] button or the [Window] - [Close] commands.

## 5. Appendix

### 5.1 List of commands

The commands and details of the commands for the MMI Software are shown in Table 5.1.

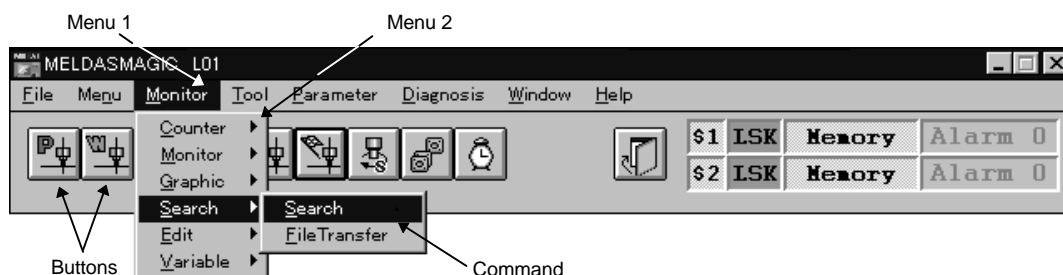


Fig. 5.1 Menu window

Table 5.1 List of commands

\$: Commands for which windows per system are opened ↓

Menu 1	Menu 2	Command	Details	
File		Exit	Exiting of MMI Software	
Menu		(Button group name)	Changeover of button group on tool bar	
Monitor	Counter	Position	Opening of Position window	\$
		Work	Opening of Work window	\$
		DistanceTo ...	Opening of Distance To ... window	\$
		Machine	Opening of Machine window	\$
		Next	Opening of Next Command Counter window	\$
		F-Speed	Opening of F Speed window	\$
		MST-Function	Opening of MST Function window	\$
		WorkCount	Opening of Work Count window	\$
		Time	Opening of Time window	
	Monitor	Program	Opening of Program window	\$
		LoadMeter	Opening of Load Meter window	\$
		Modal	Opening of Modal window	\$
		Invalid	Opening of Invalid window	\$
		PLC Switches	Opening of PLC Switches window	
	Graphic	Trace1	Opening of Trace1 window	\$
		Trace2	Opening of Trace2 window	\$
	Search	Search	Opening of Search window	
		FileTransfer	Opening of File Transfer window	
	Edit	Edit	Opening of Edit window	
		Playback	Opening of Playback window	\$
	Variable	CommonVar.1	Opening of Common Var.1 window	
		CommonVar.2	Opening of Common Var.2 window	\$
		LocalVar.	Opening of Local Var. window	\$
Tool		TipOffset	Opening of TipOffset window	\$
		Length	Opening of Length window	\$
		Tip	Opening of Tip window	\$
		Registration	Opening of Registration window	
		Life	Opening of ToolLife Display window	\$

## 5. Appendix

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\$: Commands for which windows per system are opened ↓

Menu 1	Menu 2	Command	Details	
<u>P</u> arameter		<u>W</u> orkOffset	Opening of Work Offset window	\$
		<u>P</u> rocess	Opening of Process Parameter window	\$
		<u>C</u> ontrol	Opening of Control window	
		<u>A</u> xis	Opening of Axis window	\$
		<u>B</u> arrier	Opening of Barrier window	\$
		<u>P</u> C- <u>d</u> irect Env.	Opening of PC-direct Environment window	
<u>D</u> iagnosis		<u>M</u> essage	Opening of Alarm Message window	\$
<u>W</u> indow		<u>C</u> lose	Closing of all NC operation windows on screen	
<u>H</u> elp		<u>V</u> ersion	Display of MMI Software version information	

## 5.2 List of buttons
















The list of buttons for the MMI Software is shown in Table 5.2.

**Table 5.2 List of buttons**

Button	Window name	Method using menu commands		
		Menu 1	Menu 2	Command
	Position window	<u>M</u> onitor	<u>C</u> ounter	<u>P</u> osition
	Work window			<u>W</u> ork
	Distance To ... window			<u>D</u> istanceToGo
	Machine window			<u>M</u> achine
	Next window			<u>N</u> ext
	F Speed window			<u>F</u> -Speed
	MST Function window			<u>M</u> ST-Function
	Work Count window			Work <u>C</u> ount
	Time window			<u>T</u> ime
	Program window		<u>M</u> onitor	<u>P</u> rogram
	Load Meter window			<u>L</u> oadMeter
	Modal window			<u>M</u> odal
	Invalid window			<u>I</u> nvalid
	PLC Switches window			PLC <u>S</u> witches
	Trace1 window		<u>G</u> raphic	Trace <u>1</u>
	Trace2 window			Trace <u>2</u>
	Search window		<u>S</u> earch	<u>S</u> earch
	File Transfer window			<u>F</u> ileTransfer
	Edit window		<u>E</u> dit	<u>E</u> dit
	Playback window			<u>P</u> layback
	Common Var.1 window		<u>V</u> ariable	CommonVar. <u>1</u>



## 5. Appendix

	Window name	Method using menu commands		
		Menu 1		Command
	Common Var.2 window	<u>M</u> onitor	<u>V</u> ariable	CommonVar. <u>2</u>
	Local Var. window			<u>L</u> ocalVar.
	TipOffset window	<u>T</u> ool		Tip <u>O</u> ffset
	Length window			<u>L</u> ength
	Tip window	<u>T</u> ool		Tip
	Registration window			<u>R</u> egistration
	ToolLife Display window			<u>L</u> ife
	Work Offset window			<u>W</u> orkOffset
	Process Parameter window	<u>P</u> arameter		<u>P</u> rocess
	Control window			<u>C</u> ontrol
	Axis window			<u>A</u> xis
	Barrier window			<u>B</u> arrier
	PC-direct Environment window			PC- <u>d</u> irect Env.
	Alarm Message window	<u>D</u> iagnosis		<u>M</u> essage
	Closing of all NC operation windows on screen	<u>W</u> indow		<u>C</u> lose

### 5.3 MMI Software initialization file

#### 5.3.1 Name of initialization file

The name of the initialization file is MAGIC + NC Card type + NC Card No. + ".ini".

(Example) MAGICL01.ini, MAGICL02.ini

#### 5.3.2 Details of initialization file

##### (1) Setting of menu button group

The type and group of the buttons displayed on the menu window's tool bar can be set. A maximum of five groups and ten buttons (button/group) can be set.

##### <Setting in initialization file>

[MenuButtonGroup]	Button setting common section name
DispGroup=1	Group No. displayed on tool bar when MMI Software is started
[MenuButtonGroup1]	Section name of group 1
GroupName=&Counter	Name of group 1 added to menu window [Menu]
Button1.exe=MAGICCNT.EXE	Name of execution file started when group 1 button 1 is pressed <b>(Note 1)</b>
Button1.key=P	Access key transferred to above execution file
Button2.exe=MAGICCNT.EXE	(Up to 10 buttons can be set in the same manner.)
Button2.key=W	
:	
[MenuButtonGroup2]	Up to five groups can be set in the same manner as group 1.
GroupName=&Monitor	
Button1.exe=MAGICMNT.EXE	
Button1.key=P	
Button2.exe=MAGICMNT.EXE	
:	

##### (2) Backup data for NC operation window

The size and position, etc., of the NC operation window displayed when the MMI Software is exited are automatically backed up.

The backed up data is validated the next time the MMI Software is started.

##### [Data format]

Name of key identifying each window = Name of backup data key for each NC operation window = "\$" + system No. + "\_" + name assigned to each NC operation window

Backup data =

- Display state at exit (0: No display 1: Display)
- Size of window (horizontal width, vertical width. Unit: pixel)
- Position of window (left end position, upper end position. Unit: pixel)

**(Note 1)** When assigning an NC operation window to the execution file name, refer to the sub-application names listed in Table 5.3.

<Setting in initialization file>

[NC-Window]	NC operation window backup data section name
ActiveAppName=MAGICCNT,MAGICPRM,	Sub-application started when MMI Software was exited
\$1_Position=1 214 130 0 100	Position window (System 1)
\$2_Position=0 160 130 100 320	Position window (System 2)
\$1_Work=1 634 347 8 119	Work window (System 1)
\$2_Work=0 160 130 100 480	Work window (System 2)
\$1_Distance=0 320 190 0 480	Distance To Go window (System 1)
\$2_Distance=0 160 130 230 320	Distance To Go window (System 2)

(3) Trace window axis No.

Axis Nos. are assigned to the horizontal axis and vertical axis to execute tracing on the trace window.

[Data format]

Name of key for identifying each axis = Assigned axis No.

<Setting in initialization file>

[Trace]	Trace window data section name
\$1_Trace1HorizontalAxis=1	Trace 1 window horizontal axis (System 1)
\$1_Trace1VerticalAxis=2	Trace 1 window vertical axis (System 1)
\$1_Trace2HorizontalAxis=1	Trace 2 window horizontal axis (System 1)
\$1_Trace2VerticalAxis=2	Trace 2 window vertical axis (System 1)
\$2_Trace1HorizontalAxis=1	Trace 1 window horizontal axis (System 2)
\$2_Trace1VerticalAxis=2	Trace 1 window vertical axis (System 2)
\$2_Trace2HorizontalAxis=1	Trace 2 window horizontal axis (System 2)
\$2_Trace2VerticalAxis=2	Trace 2 window vertical axis (System 2)
\$1_Trace1Trace=0	Backup data of the Trace window status
\$1_Trace2Trace=0	:
\$1_Trace1ScaleLeft=34.5	:
\$1_Trace1ScaleTop=19.2	
\$1_Trace1ScaleWidth=69	
\$1_Trace1ScaleHeight=38.4	
\$1_Trace1Scale=10	
\$1_Trace2ScaleLeft=100	
\$1_Trace2ScaleTop=54.20168	
\$1_Trace2ScaleWidth=200	
\$1_Trace2ScaleHeight=108.4034	
\$1_Trace2Scale=42.01681	
\$2_Trace1Trace=0	
\$2_Trace2Trace=0	
\$2_Trace1ScaleLeft=34.5	
\$2_Trace1ScaleTop=19.2	
\$2_Trace1ScaleWidth=69	
\$2_Trace1ScaleHeight=38.4	
\$2_Trace1Scale=10	
\$2_Trace2ScaleLeft=100	
\$2_Trace2ScaleTop=54.20168	
\$2_Trace2ScaleWidth=200	
\$2_Trace2ScaleHeight=108.4034	
\$2_Trace2Scale=42.01681	

**(4) Load meter window axis No.**

The name of the data, axis No., maximum value and load meter size displayed on the Load Meter window are assigned.

The Load Meter will turn red when data exceeding the maximum value is input.

**<Setting in initialization file>**

[LoadMeter]	Load meter data section name
\$1_LoadMeter1Name=Spindle Load	Load meter 1 (System 1) name
\$1_LoadMeter1Axis=S1	Load meter 1 (System 1) axis No. (S indicates the spindle)
\$1_LoadMeter1Max=100	Load meter 1 (System 1) maximum value
\$1_LoadMeter1Size=150	Load meter 1 (System 1) load meter size
\$1_LoadMeter2Name=Axis Z Load	Load meter 2 (System 1) name
\$1_LoadMeter2Axis=2	:
\$1_LoadMeter2Max=100	
\$1_LoadMeter2Size=120	
\$2_LoadMeter1Name=Spindle Load	
\$2_LoadMeter1Axis=S1	
\$2_LoadMeter1Max=100	
\$2_LoadMeter1Size=120	
\$2_LoadMeter21Name=Axis Z Load	
\$2_LoadMeter2Axis=2	
\$2_LoadMeter2Max=100	
\$2_LoadMeter2Size=120	

**(5) Setting the color for each NC Card**

A color can be set corresponding to each NC Card. The color set here is used in the Card Change button in the Menu window and the frame in the NC Operation window.

[DATA FORMAT] Setting data and corresponding colors

0: Black, 1: Blue, 2: Green, 3: Cyan, 4: Red, 5: Magenta, 6: Yellow, 7: White, 8: Gray,  
9: Bright blue, 10: Bright green, 11: Bright cyan, 12: Bright red, 13: Bright magenta,  
14: Bright yellow, 15: Bright white

**<Setting in initialization file>**

[CardColor]  
Color=7

 **CAUTION**

 Always make a backup before changing the initialization file.

## 5. Appendix

**Table 5.3 List of sub-applications**

\$: Commands for which windows per system are opened ↓

Sub-application name	Command	Details	
MAGICCNT.EXE	<u>P</u> osition	Position window	\$
	<u>W</u> ork	Work window	\$
	<u>D</u> istanceTo...	Distance To ... window	\$
	<u>M</u> achine	Machine window	\$
	<u>N</u> ext	Next window	\$
	<u>F</u> -Speed	F Speed window	\$
	<u>M</u> ST-Function	MST Function window	\$
	Work <u>C</u> ount	Work Count window	\$
	<u>T</u> ime	Time window	
MAGICMNT.EXE	<u>P</u> rogram	Program window	\$
	<u>L</u> oadMeter	Load Meter window	\$
	<u>M</u> odal	Modal window	\$
	<u>I</u> nvalid	Invalid window	\$
	PLC <u>S</u> witches	PLC Switches window	
	<u>T</u> race <sub>1</sub>	Trace1 window	\$
	<u>T</u> race <sub>2</sub>	Trace2 window	\$
	MAGICSRC.EXE	<u>S</u> earch	Search window
<u>P</u> layback		Playback window	\$
<u>C</u> ommonVar. <sub>1</sub>		Common Var.1 window	
<u>C</u> ommonVar. <sub>2</sub>		Common Var.2 window	\$
<u>L</u> ocalVar.		Local Var. window	\$
MAGICTOL.EXE	<u>T</u> ipOffset	TipOffset window	\$
	<u>L</u> ength	Length window	\$
	<u>T</u> ip	Tip window	\$
	<u>R</u> egistration	Registration window	
	<u>L</u> ife	ToolLife Display window	\$
	MAGICPRM.EXE	<u>W</u> orkOffset	Work Offset window
<u>P</u> rocess		Process Parameter window	\$
<u>C</u> ontrol		Control window	
<u>A</u> xis		Axis window	\$
<u>B</u> arrier		Barrier window	\$
<u>M</u> essage		Alarm Message window	\$
MAGICEDT.EXE		None	Edit window
MAGICTRS.EXE	None	File Transfer window	
MAGICPCD.EXE	PC- <u>d</u> irect Env.	PC-direct Environment window	

### 5.4 List of error messages

The error messages output on the MMI Software screen are listed in Table 5.4.

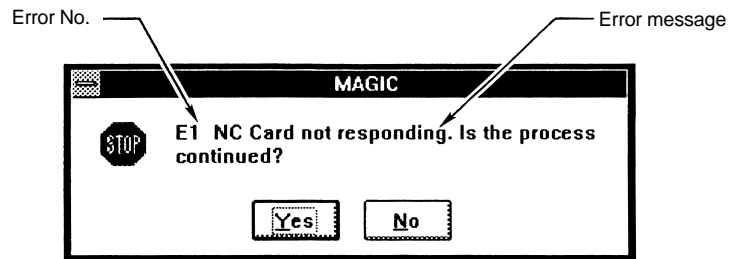


Fig. 5.2 Error message dialog box

Table 5.4 List of error messages

Error No.	Error message	Button
E1	NC Card not responding. Is the process continued?	<u>Y</u> es • <u>N</u> o
E2	There is an error in the setting data. Set the correct data.	<u>O</u> K
E3	The setting data is out of the setting range. Set the correct data.	<u>O</u> K
E4	Operation search cannot be executed while a program running.	<u>O</u> K
E5	The designated program No. or the sequence No. or the block designated with the block No. does not exist in the designated program.	<u>O</u> K
E6	The designated file does not exist.	<u>O</u> K
E7	The designated directory does not exist.	<u>O</u> K
E8	It failed in copying file.	<u>O</u> K
E9	It failed in deleting file.	<u>O</u> K
E10	It failed in renaming file.	<u>O</u> K
E11	It almost exceeds the storage capacity of the memory. Delete the unnecessary files.	<u>O</u> K
E12	Designated file name already exists. Designate the other file name.	<u>O</u> K
E13	File cannot be registered because the number of files exceeds the max number allowed by specifications. Delete the unnecessary files.	<u>O</u> K
E14	Data format of the input file is illegal. Correct the format.	<u>O</u> K
E15	The designated drive does not exist.	<u>O</u> K
E16	Data cannot be set while a program running.	<u>O</u> K
E17	Window cannot be opened any more because of shortage of system resources. Close unnecessary windows.	<u>O</u> K

## 5. Appendix

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Error No.	Error message	Button
E18	There is something wrong in file system of NC Card.	<u>O</u> K
E19	Copying, deleting or renaming of files cannot be executed while a program running.	<u>O</u> K
E20	There is an error in the set file name. Set the correct file name.	<u>O</u> K
E21	Files cannot be copied while PLC operation.	<u>O</u> K
E22	It failed in opening the designated file.	<u>O</u> K
E23	It failed in reading from the designated file.	<u>O</u> K
E24	It failed in writing into the designated file.	<u>O</u> K
E25	It failed in operation search because system is now resetting.	<u>O</u> K
E26	NC Card got system down. Is the process continued?	<u>Y</u> es <u>N</u> o
E27	Not enough memory available to complete this operation.	<u>O</u> K
E28	The designated "Playback window" does not exist.	<u>O</u> K
E29	Mode error. An attempt cannot be made to set G90 when PB_G90 is OFF or an attempt cannot be made to set G91 when PB_G90 is ON.	<u>O</u> K
E30	The path length is too long.	<u>O</u> K
E31	No specifications.	<u>O</u> K
E32	Searching time was already over. It failed in operation search.	<u>O</u> K
E33	Tool cannot be registered because the number of tools exceeds the max number allowed by specifications. Delete the unnecessary tools.	<u>O</u> K

## Revision History

Sub-No.	Date of revision	Revision details
*	July, 1997	First edition created.



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