CNC SYSTEM FOR MACHINING CENTERS

YASNAC J300M/J100M

OPERATING MANUAL

Upon receipt of the product and prior to initial operation, read these instructions thoroughly, and retain for future reference.

REFERENCE

YASNAC J300M/J100M PROGRAMMING MANUAL	TOE-C844-2.2
YASNAC J300M LARGE-SIZE PROGRAM OPERATING MANUAL	TOE-C844-2.1-1

YASKAWA

MANUAL NO. TOE-C844-2.1

Safety Information

The following conventions are used to indicate precautions in this manual. Failure to heed the precautions provided in this manual can result in serious or possibly even fatal injury or damage to the products or related equipment and systems.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to personnel.

Symbol is used in labels attached to the product.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury to personnel and damage to equipment.

Even items described in ⚠ CAUTION may result in a vital accident in some situations. In either case, follow these important items.

Please note that symbol markused to indicate caution differs between ISO and JIS.

ISO	JIS

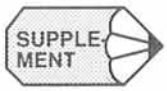
In this manual, symbol mark stipulated by ISO is used.

On products, caution symbol marks of ISO and JIS are used in labels. Please follow the same safety instructions concerning caution.

Visual Aids

The following aids are used to indicate certain types of information for easier reference.

Indicates important information that should be memorized, including precautions such as alarm displays to avoid damaging the devices.



Indicates supplemental information.

Indicates definitions of difficult terms or terms that have not been previously explained in this manual.

Indicates operations and specifications specific to J300.

Indicates operations and specifications specific to J100.

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CONTENTS

Safety Information iii
Visual Aids iv
About this Manual xi
Related Manuals xi
CAUTIONS xii
NOTES FOR SAFE OPERATION xiii

1 OUTLINE OF THE PRODUCT

1.1 OUTLINE OF YASNAC SYSTEM ..... 1 - 2
1.1.1 System Configuration ..... 1 - 2
1.1.2 Environmental Requirements ..... 1 - 5
1.1.3 Machine Operation Panel ..... 1 - 7
1.1.4 General Specifications ..... 1 - 8

1.2 PROTECTIVE FUNCTIONS ..... 1 - 12
1.2.1 Emergency Stop ..... 1 - 12
1.2.2 Overtravel ..... 1 - 13
1.2.3 Stored Stroke Limit ..... 1 - 14
1.2.4 Interlock Inputs ..... 1 - 16

2 BASIC OPERATION OF YASNAC

2.1 GENERAL FLOW OF OPERATION ..... 2 - 4

2.2 INSPECTION BEFORE TURNING THE POWER ON ..... 2 - 5
2.2.1 Inspection of the NC Unit ..... 2 - 7
2.2.2 Inspection of the Tape Reader ..... 2 - 8
2.2.3 Preparation before Turning the Power ON ..... 2 - 9

2.3 TURNING THE POWER ON AND INSPECTION AFTER POWER ON ..... 2 - 10
2.3.1 Procedure for Turning the Power ON ..... 2 - 10
2.3.2 Checking the Motors for Abnormalities ..... 2 - 11
2.3.3 Procedure for Turning the Power OFF ..... 2 - 12
2.3.4 Inspection of the Battery ..... 2 - 13

2.4 MANUAL OPERATION (1) ..... 2 - 17
2.4.1 Manual Rapid Traverse (RAPID) ..... 2 - 17
2.4.2 Jog Feed (JOG) ..... 2 - 18
2.4.3 Step Feed (STEP) ..... 2 - 18
2.4.4 Handle Feed (HANDLE)* ..... 2 - 19

2.5 MANUAL OPERATION (2) ..... 2 - 20
2.5.1 Simultaneous 2- or 3-axis Handle Feed * ..... 2 - 20
2.5.2 Manual Reference Point Return ..... 2 - 21
2.5.3 Manual Reference Point Return to the Second Reference Point * ..... 2 - 24
2.5.4 1-line MDI ..... 2 - 25

2.6 AUTOMATIC OPERATION (1) ..... 2 - 26
2.6.1 Preparation of Automatic Operation ..... 2 - 26
2.6.2 Memory Operation ..... 2 - 28
2.6.3 MDI Operation ..... 2 - 29
2.6.4 Feed Hold ..... 2 - 30
2.6.5 Override ..... 2 - 31

2.7 AUTOMATIC OPERATION (2) ..... 2 - 33
2.7.1 Optional Stop ..... 2 - 33
2.7.2 Optional Block Skip ..... 2 - 33
2.7.3 Dry Run ..... 2 - 34
2.7.4 Display Lock and Machine Lock ..... 2 - 35
2.7.5 Auxiliary Function Lock ..... 2 - 36
2.7.6 Z-axis Command Neglect ..... 2 - 36
2.7.7 4th-axis Command Neglect ..... 2 - 36
2.7.8 5th-axis Command Neglect ..... 2 - 37

2.8 OPERATION INTERVENTION DURING AUTOMATIC OPERATION ..... 2 - 38
2.8.1 Manual Operation Intervention during Automatic Operation ..... 2 - 38
2.8.2 MDI Operation Intervention during Automatic Operation ..... 2 - 39
2.8.3 Automatic Handle Mode Offset * ..... 2 - 40
2.8.4 Manual Absolute ..... 2 - 42

2.9 AUTOMATIC OPERATIONS AT ENHANCED LEVEL ..... 2 - 44
2.9.1 Tool Length Measurement * ..... 2 - 44
2.9.2 Return to the Operation Interrupted Point * ..... 2 - 48
2.9.3 Manual Centering Operation * ..... 2 - 50
2.9.4 Program Restart * ..... 2 - 51
2.9.5 Playback Function * ..... 2 - 57

3 BASICS OF DISPLAY AND WRITING OPERATION

3.1 BASICS OF TERMS RELATED TO OPERATION ..... 3 - 2
3.1.1 Process Screens ..... 3 - 3
3.1.2 Jobs and Functions ..... 3 - 3
3.1.3 YASNAC Function Structure ..... 3 - 4

3.2 NC OPERATION PANEL ..... 3 - 9
3.2.1 Keys and Display Screen on NC Operation Panel ..... 3 - 9
3.2.2 Normal Display on CRT Screen ..... 3 - 16
3.2.3 Pop-up Menu ..... 3 - 21
3.2.4 Key Buffer Edit Function ..... 3 - 22
3.2.5 Buzzer Function ..... 3 - 23

4 EDIT PROCESS OPERATION

4.1 PART PROGRAM EDIT JOB ..... 4 - 3
4.1.1 Calling a Part Program ..... 4 - 4
4.1.2 Editing a Part Program ..... 4 - 7
4.1.3 Saving a Part Program after Editing ..... 4 - 23
4.1.4 Deleting a Part Program ..... 4 - 25

4.2 PART PROGRAM DIRECTORY JOB ..... 4 - 28
4.2.1 Display of the Directory of Part Programs ..... 4 - 28
4.2.2 Calling a Part Program ..... 4 - 35
4.2.3 Deleting a Part Program ..... 4 - 37
4.2.4 Renaming a Part Program ..... 4 - 39
4.2.5 Copying a Part Program ..... 4 - 41

4.3 PART PROGRAM INPUT/OUTPUT AND VERIFY JOB ..... 4 - 42
4.3.1 Inputting a Part Program ..... 4 - 42
4.3.2 Outputting a Part Program ..... 4 - 46
4.3.3 Verifying the Part Programs ..... 4 - 53
4.3.4 Setting the Communication Conditions ..... 4 - 57
4.3.5 Other Function ..... 4 - 62

4.4 PROGRAM PATH DRAWING JOB ..... 4 - 63
4.4.1 Features of the Program Path Drawing Screen ..... 4 - 63
4.4.2 Description of the Program Path Drawing Screens ..... 4 - 64
4.4.3 Basic Program Path Drawing Operation ..... 4 - 87
4.4.4 Switching the Program Path Drawing Screen ..... 4 - 89
4.4.5 Differences between the Program Path Drawing Job and the NC Path Drawing Job ..... 4 - 90

5 SETUP PROCESS OPERATION

5.1 WORKPIECE COORDINATE SYSTEM JOB ..... 5 - 3
5.1.1 Writing the Workpiece Shift Amount ..... 5 - 4
5.1.2 Writing the Workpiece Coordinate System Shift Correction Amount ..... 5 - 5
5.1.3 Writing the Workpiece Shift POS Value ..... 5 - 6
5.1.4 Selecting the Absolute/Incremental Mode ..... 5 - 8

5.2 TOOL DATA CONTROL JOB ..... 5 - 9
5.2.1 Writing the Offset Data ..... 5 - 9
5.2.2 Displaying and Writing the Tool Pot Number ..... 5 - 15
5.2.3 Displaying the ATC Tool Status ..... 5 - 17
5.2.4 Writing the Measured Tool Length Offset Amount ..... 5 - 18

5.3 TOOL LIFE CONTROL JOB ..... 5 - 23
5.3.1 Writing the Tool Life Control Data ..... 5 - 23
5.3.2 Displaying the Tool Life Control Data ..... 5 - 23
5.3.3 Setting the Tool Life Control Data ..... 5 - 24
5.3.4 Erasing the Tool Life Control Data ..... 5 - 27

6 RUN PROCESS

6.1 PROGRAM JOB ..... 6 - 3
6.1.1 Program Information Displayed on Screen ..... 6 - 3
6.1.2 Program Number Search ..... 6 - 5
6.1.3 Address Search ..... 6 - 7
6.1.4 Editing the Part Program Stored in Memory ..... 6 - 9
6.1.5 Execution of a Part Program ..... 6 - 10
6.1.6 Display of Subprogram Nesting Information ..... 6 - 11

6.2 MDI OPERATION JOB ..... 6 - 12
6.2.1 Entry of an MDI Program ..... 6 - 12
6.2.2 Editing an MDI Program ..... 6 - 12
6.2.3 Execution of an MDI Program ..... 6 - 13
6.2.4 Deleting an MDI Program ..... 6 - 14
6.2.5 Storing an MDI Program ..... 6 - 14

6.3 COMMAND VALUE DISPLAY JOB ..... 6 - 15
6.3.1 Collective Display of Command Values ..... 6 - 15

6.4 SETTING JOB ..... 6 - 16
6.4.1 Internal Switch Function * ..... 6 - 16
6.4.2 Software Switch Function * ..... 6 - 17
6.4.3 Macro Variable Function ..... 6 - 17
6.4.4 F1-digit Function ..... 6 - 19
6.4.5 Setting Function ..... 6 - 20
6.4.6 Stored Stroke Limit Function * ..... 6 - 21

6.5 OTHER JOB ..... 6 - 22
6.5.1 NC Path Drawing Job * ..... 6 - 22

7 COMMON PROCESS OPERATION

7.1 PRESENT POSITION DATA CONTROL JOB ..... 7 - 2
7.1.1 Collective Display of Present Position Data ..... 7 - 2
7.1.2 Display of Present Position Data in the Workpiece Coordinate System ..... 7 - 4
7.1.3 Display of Present Position Data in the External Coordinate Values ..... 7 - 5
7.1.4 Display of Remaining Distance ..... 7 - 6
7.1.5 Setting the Coordinate Systems ..... 7 - 7
7.1.6 Error Pulse Display Function ..... 7 - 9

7.2 ALARM DISPLAY JOB ..... 7 - 10
7.2.1 Alarm Function ..... 7 - 10
7.2.2 Servo Alarm Function ..... 7 - 11
7.2.3 User's Message Function ..... 7 - 12

7.3 TIME CONTROL JOB ..... 7 - 13
7.3.1 Calendar Function ..... 7 - 14
7.3.2 Operating Time Function ..... 7 - 15

8 MAINTENANCE PROCESS

8.1 PARAMETER JOB ..... 8 - 3
8.1.1 Parameter Function ..... 8 - 3
8.1.2 Setting Function ..... 8 - 6
8.1.3 Sequence Parameter Function ..... 8 - 7
8.1.4 Pitch Error Function * ..... 8 - 7

8.2 I/O MONITORING JOB ..... 8 - 8
8.2.1 Displaying the ON/OFF Status of the I/O Signals ..... 8 - 8
8.2.2 Displaying the ON/OFF Status of the Selected I/O Signals ..... 8 - 9
8.2.3 Turning ON/OFF I/O Signals Forcibly ..... 8 - 11

8.3 INPUT/OUTPUT AND VERIFY JOB ..... 8 - 12
8.3.1 Input/output and Verify Function ..... 8 - 12
8.3.2 Background Reset Function ..... 8 - 14
8.3.3 I/O Device Setting Function ..... 8 - 14

8.4 INTERNAL INFORMATION JOB ..... 8 - 15
8.4.1 Version Number Function ..... 8 - 15
8.4.2 Memory Dump Function ..... 8 - 16
8.4.3 Key Memory Function ..... 8 - 16
8.4.4 Servo Configuration Function ..... 8 - 17

9 MAINTENANCE

9.1 MAINTENANCE DATA ..... 9 - 2
9.1.1 Checking the Status of Troubles ..... 9 - 2
9.1.2 Checking the NC Information ..... 9 - 3
9.1.3 Display of Alarm Information ..... 9 - 5
9.1.4 Cause of Alarm and Corrective Action ..... 9 - 6
9.1.5 Troubleshooting (1) ..... 9 - 7
9.1.6 Troubleshooting (2) ..... 9 - 21
9.1.7 Alarms Not Indicated by Alarm Numbers ..... 9 - 27

Appendix 1 LIST OF NC INPUT/OUTPUT SIGNALS

APPENDIX 1.1 INPUT SIGNALS (PLC → NC) ..... A1 - 2

1.1.1 Operation Mode Control Signals ..... A1 - 2
1.1.2 Servo Axis Control Signals (X-axis to 5th-axis) ..... A1 - 5
1.1.3 Spindle Control ..... A1 - 7

APPENDIX 1.2 OUTPUT SIGNALS (NC → PLC) ..... A1 - 9

1.2.1 Operation Mode Control Signals ..... A1 - 9
1.2.2 Servo Axis Control (X-axis to 5th-axis) ..... A1 - 13
1.2.3 Spindle Control ..... A1 - 15
1.2.4 Constants ..... A1 - 17

Appendix 2 PARAMETER TABLE

APPENDIX 2.1 CLASSIFICATION OF THE PARAMETERS ..... A2 - 2

APPENDIX 2.2 PARAMETER TABLE (J300M) ..... A2 - 3

APPENDIX 2.3 PARAMETER TABLE (YENET1200 COMPATIBLE DRIVER FOR J300M/J100M) ..... A2 - 47

Appendix 3 ALARM TABLE

APPENDIX 3.1 CLASSIFICATION OF ALARMS ..... A3 - 2

APPENDIX 3.2 ALARM TABLE (J300M) ..... A3 - 3

APPENDIX 3.3 ALARM TABLE (YENET1200 COMPATIBLE DRIVER FOR J300M/J100M) ..... A3 - 20

Appendix 4 INDEX

About this Manual

This manual describes cautionary items that must be taken into consideration when operating the YASNAC J300M/J100M (with basic NC operation panel, 9-inch CRT) as well as the basic configuration and operation procedure of it.

Some information is presented in tables in the Appendix so that readers can easily find the necessary information. In the specification table, section numbers are given for each specification to allow quick access to a detailed explanation if necessary.

The YASNAC J300M/J100M comes with a programming manual in addition to this operating manual. Use these manuals in conjunction with each other to ensure productive operation.

Related Manuals

Refer to the following manuals as required.

Read this manual carefully to ensure the proper use of J300M/J100M. Also, keep this manual in a safe place so that it can be refereed to whenever necessary.

Manual Name	Manual Number	Contents
YASNAC J300M/J100M Programming Manual	TOE-C844-2.2	Describes the information necessary for creating a program using the YASNAC J300M/J100M.
YASNAC J300/J100 PLC Programming Manual	SIE-C844-0.1	Describes the PLC instructions and the operation for developing the PLC programs.
YASNAC J300 Connecting Manual (Type A)	SIE-C843-13.2	Describes the specifications for connecting YASNAC J300 with machines, machine interface and external equipment.
YASNAC J300 Connecting Manual (Type B)	SIE-C843-13.5	
YASNAC J100 Connecting Manual	SIE-C844-0.2	Describes the specifications for connecting YASNAC J100 with machines, machine interface and external equipment.
YASNAC J300M/J100M I/O Signal Function Manual	SIE-C844-2.3	Describes the functions of I/O signals between YASNAC J300M and PLC.

CAUTIONS

This manual describes all the option functions (identified by the "*" symbol) but some of these may not be available with your YASNAC J300M/J100M. To determine the option functions installed in your NC, refer to the specification document or manuals published by the machine tool builder.

Unless otherwise specified, the following conditions apply in programming explanations and programming examples.

- Metric system for input and metric system for output/movement
- : Zero point in the base coordinate system
- : Reference point

Yaskawa has made every effort to describe individual functions and their relationships to other functions as accurately as possible. However, there are many things that cannot or must not be performed and it is not possible to describe all of these. Accordingly, readers are requested to understand that unless it is specifically stated that something can be performed, it should be assumed that it cannot be performed.

Also bear in mind that the performance and functions of an NC machine tool are not determined solely by the NC unit. The entire control system consists of the mechanical system, the machine operation panel and other machine related equipment in addition to the NC. Therefore, read the manuals published by the machine tool builder for detailed information relating to the machine.

NOTES FOR SAFE OPERATION

Read this programming manual thoroughly before installation, operation , maintenance or inspection of the YASNAC J300M/J100M.

The functions and performance as an NC machine tool are not determined only by an NC unit itself. Before the operation, read thoroughly the machine tool builder's documents relating to the machine tool concerned.

In this manual, the NOTES FOR SAFE OPERATION are classified as "WARNING" or "CAUTION".

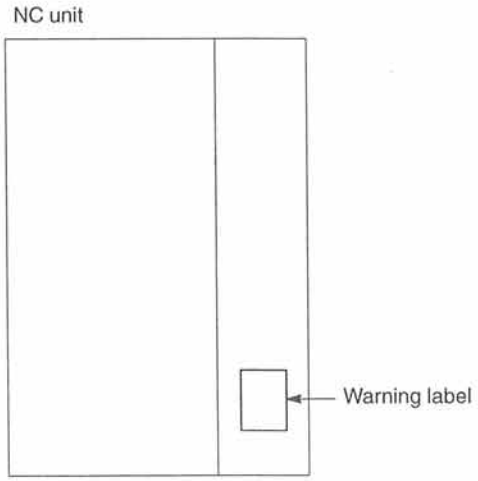
■ KEY TO WARNING LABELS

The following warning labels are used with the YASNAC J300M/J100M.

:

Electric shock hazard
Do not touch the terminals while the power is on, and for 5 minutes after switching off the power supply!

Location of label

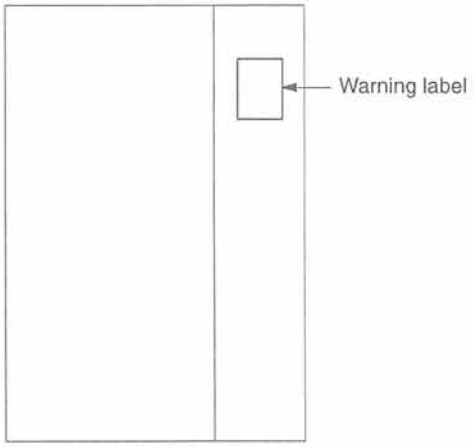


⚠ CAUTION :

Grounding wires must be connected to the unit's grounding terminals.

Location of label

NC unit

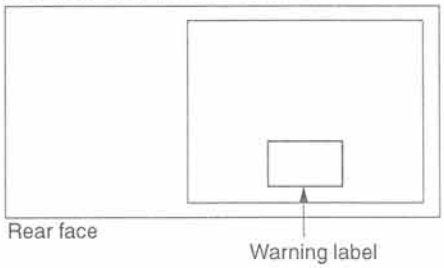


⚠ WARNING :

Electric shock hazard
Do not touch inside.

Location of label

NC operation panel with 9 inch CRT



■ STORAGE PRECAUTIONS

⚠ CAUTION

(ref page)

- Do not store the product in locations subject to rain, water droplets, or harmful gases or liquids. 1 - 5

  Failure to observe this caution may result in product failure.

- Select a storage area indoors that is clean and meets the following temperature and humidity requirements. 1 - 5

  Failure to observe this caution may result in product failure.

  Ambient temperature : –20° C to 60° C
  Relative humidity : 10% to 90%

■ CAUTIONS ON USE AND OPERATION

⚠ WARNING

(ref page)

- Do not touch any unit, terminals, etc., while the power is ON. 2 - 5

  Failure to observe this warning may lead to electric shock or device malfunction.

- Immediately after switching the power OFF, the product retains some electric charge. Do not touch any parts which are live when the power is ON for 5 minutes after switching the power OFF. 2 - 5

  Failure to observe this warning may lead to electric shock or device malfunction.

- Do not damage cables, subject them to excessive stress, or pinch them. 2 - 5

  Excessive load on cables may cause electric shock.

- When the unit is turned ON, never touch its rotating parts. 2 - 5

  Failure to observe this warning may result in personal injury.

- Never modify the product. 2 - 5

  Failure to observe this warning may result in electric shock, fire, or product failure.

⚠ CAUTION

(ref page)

- Use the product in an environment with the following characteristics. 1 - 5

  Using it in an environment in which it is subject to high temperatures, high humidity, dust, corrosive gases, vibration or impacts may cause fire, electric shock or malfunction.

  - Free from gases or vapors that create a potentially explosive atmosphere.
  - Free from oil, organic solvents, etc.
  - Relative humidity in the range 10 to 90% RH, with no condensation.
  - Ambient temperature in the 0° C to 45° C with no freezing.
    (Installation site must not be exposed to direct sunlight, must be distanced from heat generating devices, and must be indoors.)
  - Vibration not exceeding 4.9 m/s^2 (0.5 G).

- Do not let foreign matter such as electric wire scrap enter the unit. 2 - 6

  Failure to observe this caution may result in fire, product failure or malfunction.

- Do not restart automatic operation after stopping automatic operation and then performing "tool selection" in manual operation or "1 line MDI" operation. 2 - 38

  The reason for this is that the "tool selection" operation may cause the coordinate system to be changed, leading to unexpected operation if automatic operation were restarted. This could cause tool damage due to interference, and resulting accidents involving injuries to personnel.

  Reset the NC after any manual intervention.

- After stopping automatic operation and performing a manual intervention, do not restart automatic operation without resetting first. 2 - 38

  If automatic operation is started with the "mirror image" or "manual absolute" function in effect, unexpected operation may be performed. This could cause tool damage due to interference, and resulting accidents involving injuries to personnel.

  Reset the NC after any manual intervention.

- Before carrying out cutting operation with a new program, confirm safety by performing single block operation and dry run operation. 2 - 26

  If this check operation is not performed, unexpected operation may be performed due to missetting of the amount of offset, leading to tool damage due to interference, and resulting accidents involving injuries to personnel.

- The end user must not change parameters relating to machine accuracy, travel axis control and spindle axis control. 8 - 3

  The NC parameters are set to the optimum values for each machine, and changing them could therefore result in unexpected operation. This could cause tool damage due to interference, and resulting accidents involving injuries to personnel.

  Reset the NC after any manual intervention.

⚠ CAUTION

(ref page)

- Strictly observe the cautions in the user's manual when using programming functions. 2 - 26
  Ignoring these cautions could lead to accidents involving injuries to personnel and malfunctions.
- Use the product with the "System Number Switch" of the CPU set to "0". 2 - 10
  Use while set to another number may lead to malfunction.
- Wait at least 2 seconds after turning the power OFF before turning it ON again. 2 - 10
  Failure to observe this caution may lead to malfunction.

■ PRECAUTIONS RELATING TO MAINTENANCE AND INSPECTION

⚠ WARNING

(ref page)

- Always turn the power OFF (including the primary power supply) before carrying out daily inspection. 2 - 5
  Carrying out the inspection with the power ON may lead to electric shock.
- Wait 5 minutes after turning the power (including the primary power supply) OFF before removing or replacing any unit or part. 2 - 5
  Failure to observe this warning may lead to electric shock and product failure.
- Be sure to turn the power OFF before replacing the battery. 2 - 10
  Failure to observe this warning may lead to electric shock and product failure.

⚠ CAUTION

(ref page)

- To prevent personnel other than those involved in maintenance and inspection work from turning ON the power while maintenance and inspection is in progress, place signs stating "Do not turn the power on" or words to that effect at the primary power supplies of related control panels and other relevant locations. 2 - 6
  Failure to observe this caution may lead to electric shock.
- Replace fuses and batteries with the designated products. 2 - 10
  Failure to observe this caution may result in fire or product failure.

⚠ CAUTION

(ref page)

- Electronic devices such as CMOS ICs are used on the control boards. If you touch them with your bare fingers the static electrical charge in your body could destroy them; care must be taken when handling these devices. Before handling these devices for maintenance purposes, first discharge the static electricity in your body by touching a grounded metal device. 2 - 6

  Failure to observe this caution could lead to injuries and product failure.

- Do not install or remove boards, wiring, connectors, etc., while the power is ON. 2 - 6

  Failure to observe this caution could lead to electric shock, product failure, and malfunction.

- When an alarm occurs, eliminate its cause and confirm safety before resetting it. 9 - 2

  Failure to observe this caution could result in malfunction.

- Be sure to check the following points on completing maintenance and inspection work. 2 - 6
  - Check that all fastening bolts are tightened.
  - Check that no tools or other objects have been left inside the control panel.
  - Check that the control panel door is closed properly.

  Failure to carry out these checks may lead to electric shock, injuries, fire, and malfunction.

- For details on trouble relating to the machine-related sequence, refer to the manual issued by the machine tool builder. 9 - 2

- Never attempt to disassemble or modify units or devices inside the NC unit. 2 - 6

  Failure to observe this caution may lead to fire, product failure, or malfunction.

- Do not change the set values of the devices, variable resistors, etc., in the control panel. 2 - 6

  Failure to observe this caution may lead to fire, product failure, and malfunction.

General Precautions

- Some drawings in this manual are shown with the protective cover or shields removed, in order to describe the detail with more clarity. Make sure all covers and shields are replaced before operating this product, and operate it in accordance with the directions in the manual.
- The figures and photographs in this manual show a representative product for reference purposes and may differ from the product actually delivered to you.
- This manual may be modified when necessary because of improvement of the product, modification, or changes in specifications.
  Such modification is made as a revision by renewing the manual No.
- To order a copy of this manual, if your copy has been damaged or lost, contact your Yaskawa representative listed on the last page stating the manual No. on the front page.
- If any of the nameplates affixed to the product become damaged or illegible, please send these nameplates to your Yaskawa representative.
- Yaskawa is not responsible for any modification of the product made by the user since that will void our guarantee.

1

OUTLINE OF THE PRODUCT

Chapter 1 describes the outline of the product and the protective functions that should be thoroughly understood for safe and efficient operation of the YASNAC.

1.1 OUTLINE OF YASNAC SYSTEM ..... 1 - 2

1.1.1 System Configuration ..... 1 - 2

1.1.2 Environmental Requirements ..... 1 - 5

1.1.3 Machine Operation Panel ..... 1 - 7

1.1.4 General Specifications ..... 1 - 8

1.2 PROTECTIVE FUNCTIONS ..... 1 - 12

1.2.1 Emergency Stop ..... 1 - 12

1.2.2 Overtravel ..... 1 - 13

1.2.3 Stored Stroke Limit ..... 1 - 14

1.2.4 Interlock Inputs ..... 1 - 16

1.1 OUTLINE OF YASNAC SYSTEM

1.1.1 System Configuration

The configuration of the YASNAC J300M system and the list of components are described below.

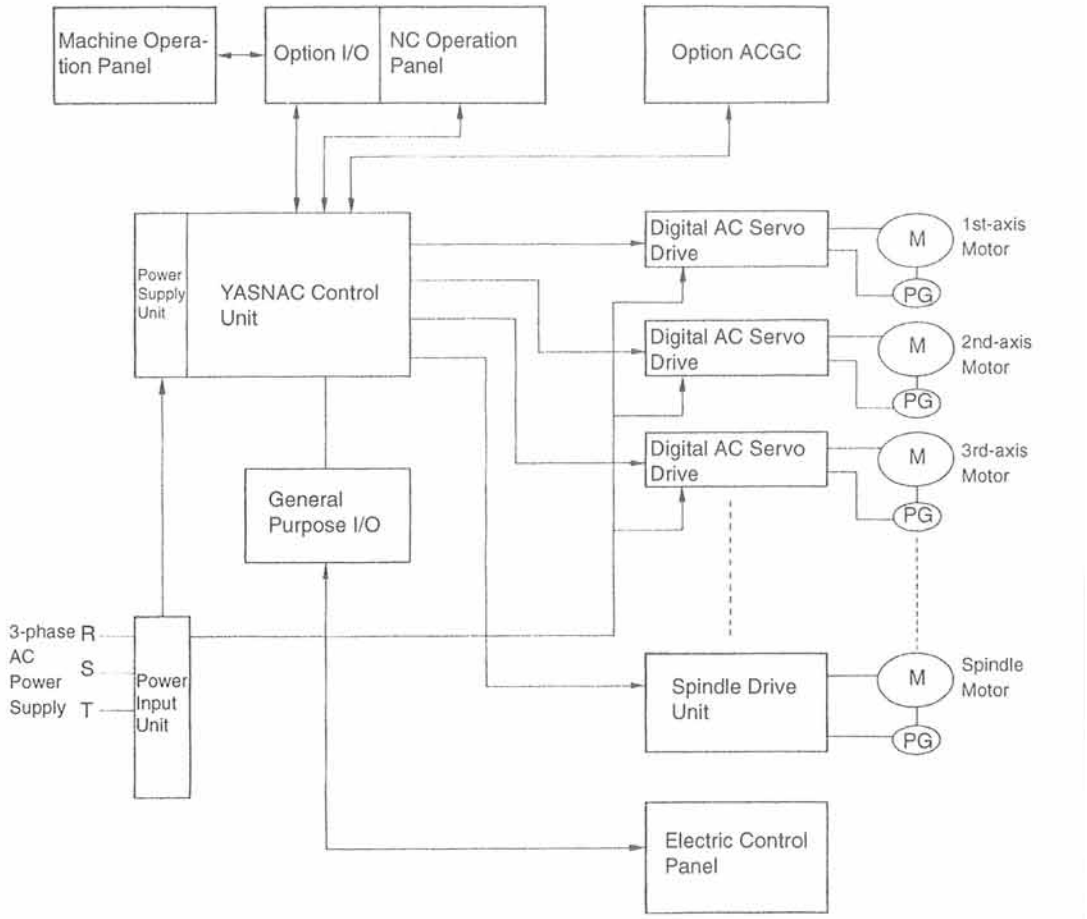


Fig. 1.1 Standard Configuration of YASNAC J300M System

Table 1.1 List of YASNAC J300M System Components

Component Name	Model Name
CPU rack	JZNC-JRK□□
NC operation panel	JZNC-JOP□□
ACGC	JZNC-JOP□□
SERVOPACK	CACR-IR□□/SGDC-□□
Spindle drive	CIMR-M5
Servomotor	SGMG-□□
Spindle motor	UAASKA-□□
Tape reader	MODEL 2801E
Manual pulse generator	PREH-2E5T/100-M

J100

The configuration of the YASNAC J100M system and the list of components are described below.

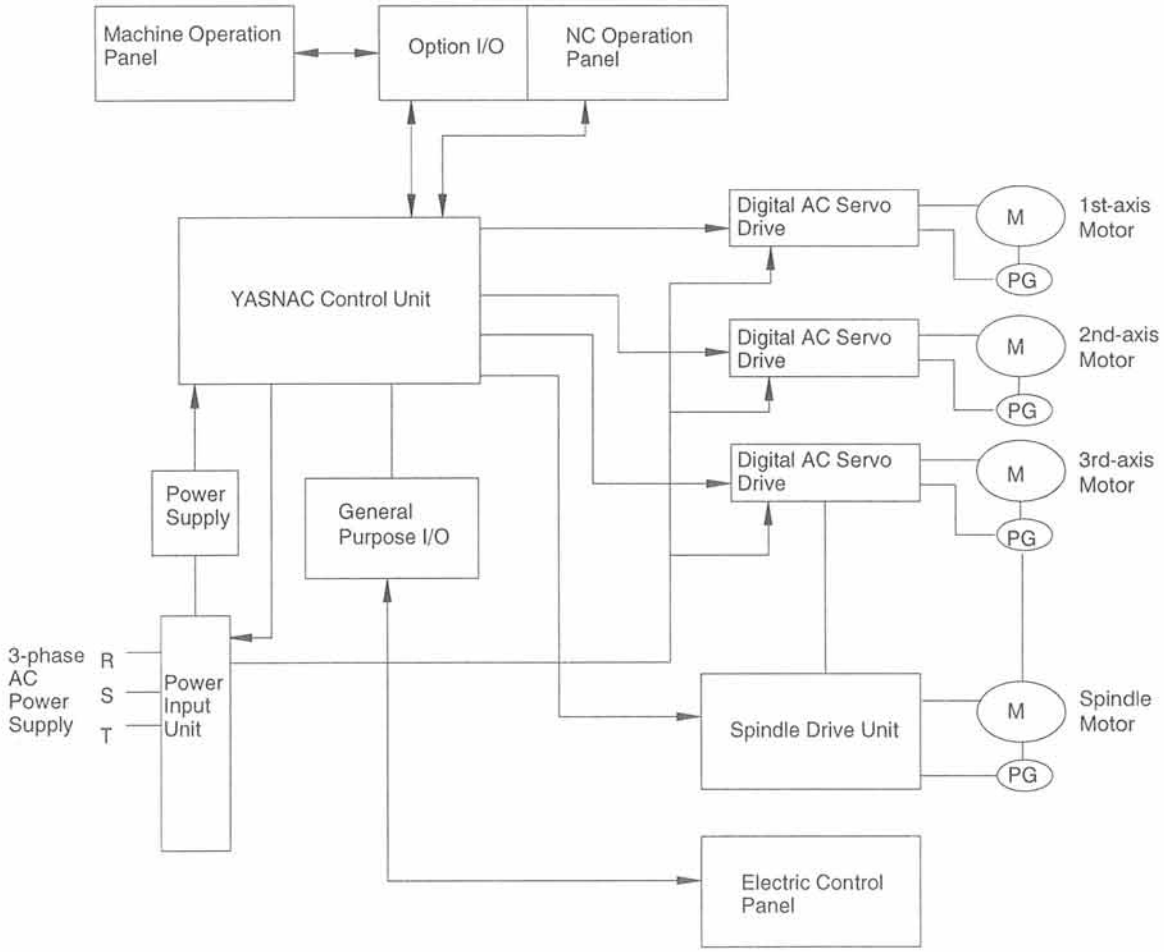


Fig. 1.2 Standard Configuration of YASNAC J100M System

Table 1.2 List of YASNAC J100M System Components

Component Name	Model Name
CPU rack	JZNC-JRKS□□
NC operation panel	JZNC-JOP□□
SERVOPACK	SGDC-□□
Spindle drive	CIMR-M5□□
Servomotor	SGM□-□□
Spindle motor	UAASKA-□□

1.1.2 Environmental Requirements

Requirements for the installation of an NC unit are indicated below. Install the NC unit only in a location where these requirements are satisfied to avoid malfunctioning.

⚠ CAUTION

- Use the product in an environment with the following characteristics.

  Using it in an environment in which it is subject to high temperatures, high humidity, dust, corrosive gases, vibration or impacts may cause fire, electric shock or malfunction.

  - Free from gases or vapors that create a potentially explosive atmosphere.
  - Free from oil, organic solvents, etc.
  - Relative humidity in the range 10 to 90% RH, with no condensation.
  - Ambient temperature in the 0° C to 45° C with no freezing.
    (Installation site must not be exposed to direct sunlight, must be distanced from heat generating devices, and must be indoors.)
  - Vibration not exceeding 4.9 m/s^2.

- Do not store the product in locations subject to rain, water droplets, or harmful gases or liquids.

  Failure to observe this caution may result in product failure.

- Select a storage area indoors that is clean and meets the following temperature and humidity requirements.

  Failure to observe this caution may result in product failure.

  Ambient temperature : –20° C to 60° C
  Relative humidity : 10% to 90%

(1) Ambient Temperature

For operation	0°C to 45°C
For storage and transportation	–20°C to +60°C

Install the NC unit in locations not subject to direct sunlight, distant from heat sources, and indoors.

(2) Humidity

Relative humidity must be in the range of 10 to 90%RH (non-condensing).

(3) Vibration

During operation: Max. 4.9 m/s^2

(4) Atmosphere

Avoid the following locations:

- Dusty places
- Places where concentration of coolant and/or organic solvent mist is extremely high.

(5) Power Source

Input voltage: AC (single-phase) 200/220/230 V −15 to +10%

Frequency: 50/60 Hz −2 to +2 Hz

1.1.3 Machine Operation Panel

An example of machine operation panel is indicated below. Arrangement and names of switches and indicator lamps vary according to the machine model. For details, refer to the manuals published by the machine tool builder.

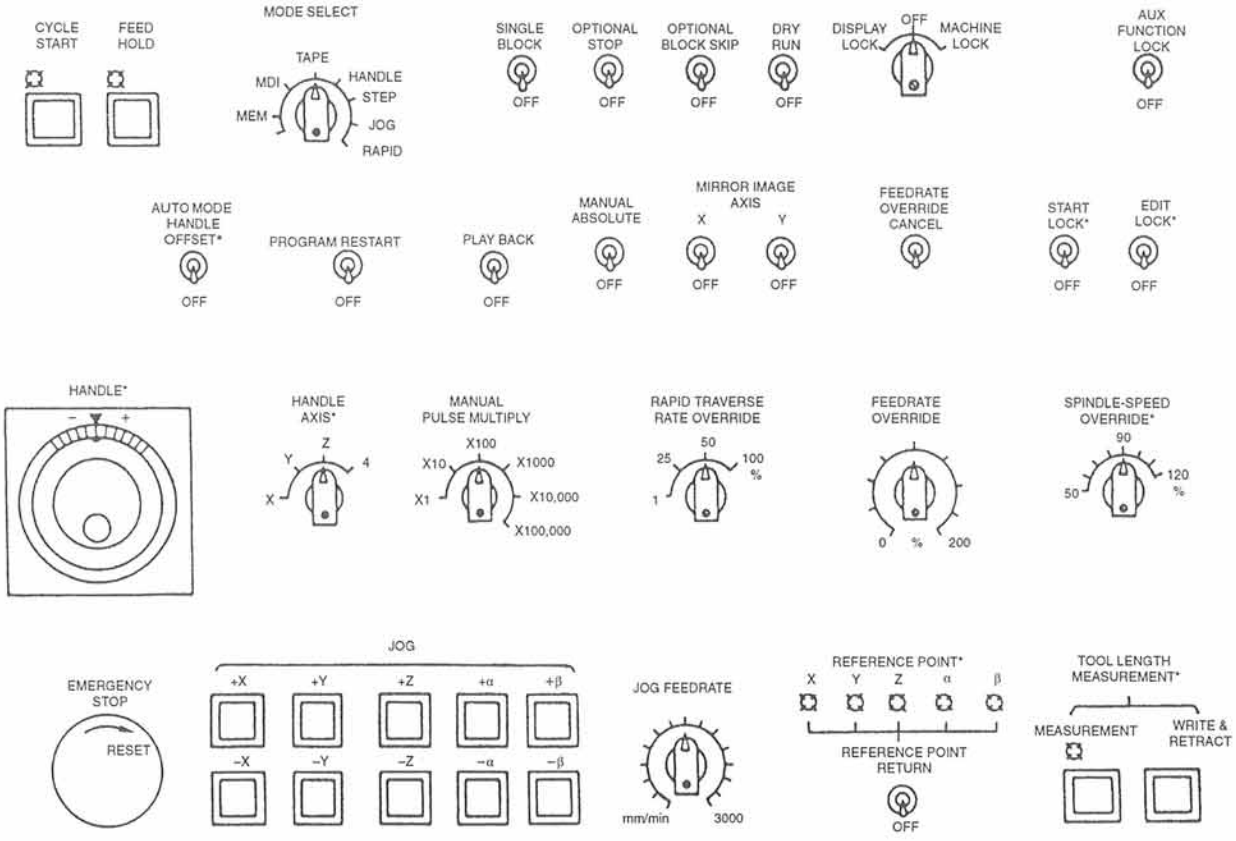


Fig. 1.3 Example of Machine Operation Panel

1.1.4 General Specifications

1

(1) Standard Specifications

Category	Item and Function	Operation Manual	Programming Manual	Section No.
Controlled axes	Controlled axes		✓	1.1.1
	Number of simultaneously controlled axes		✓	1.1.1
Input command	Least input increment		✓	1.1.2
	Least output increment		✓	1.1.2
	Maximum programmable value		✓	1.1.3
	Absolute/incremental programming		✓	3.2.1
	Decimal point input		✓	1.1.5
	Input unit 10 times		✓	1.1.5
	Tape code		✓	1.1.4
	NC tape		✓	1.1.4
	Input format		✓	1.1.5
	Buffer register		✓	1.1.7
Interpolation	Positioning		✓	2.1.1
	Linear interpolation		✓	2.1.2
	Circular interpolation		✓	2.1.3
Feed	Rapid traverse		✓	1.2.1
	Cutting feed		✓	1.2.2
	Dwell		✓	3.3.1
	Incremental feed	✓		2.3.3
	Automatic acceleration and deceleration		✓	1.2.6
Storage and editing of program	Program storage capacity	✓		4.1
	Number of programs		✓	1.1.5
	Program editing	✓		4.1.2
	Program number search	✓		6.1.2
	Sequence number search	✓		6.1.2
	Address search	✓		6.1.3
	MDI editing	✓		6.2
Operation and display	Operation panel	✓		3.2.1
	MDI function	✓		6.2
	1-line MDI	✓		2.4.4
	Operation time display	✓		7.3.2
	Calendar display	✓		7.3.1
	Pop-up menu	✓		3.1.2
	Buzzer function	✓		3.2.3

Category	Item and Function	Operation Manual	Programming Manual	Section No.
Input/output function	Input/output interface	✓		8.3.3
Spindle, tool and miscel-laneous functions	Spindle function		✓	3.5.1
	Tool function		✓	3.5.2
	Miscellaneous function		✓	3.5.3
Tool offset	Tool length offset		✓	3.4.2
	Tool position offset		✓	3.4.3
	Number of tool offset data sets		✓	3.4.1
Coordinate system	Manual return to reference point	✓		2.4.2
	Automatic return to reference point		✓	2.2.1
	Automatic return to second reference point		✓	2.2.4
	Reference point return check		✓	2.2.2
	Return from reference point		✓	2.2.3
	Base coordinate system setting		✓	3.1.1
Operation support function	Label skip		✓	1.1.4
	Single block	✓		2.5.2
	Optional stop	✓		2.6.1
	Optional block skip	✓		2.5.2
	Dry run	✓		2.6.3
	Machine lock	✓		2.6.4
	Miscellaneous function lock	✓		2.6.5
	Display lock	✓		2.6.4
	Manual absolute	✓		2.7.4
	Numerical value set-up	✓		7.1.5
	Break-point function		✓	4.2.5
	Operation mode	✓		2.3, 2.5
	Feed hold	✓		2.5.4
Program-ming support function	Circular interpolation by R command		✓	2.1.3
	Repetitive circle interpolation		✓	2.1.3
	Subprogram		✓	4.1.7
	Exact stop check		✓	3.3.2
	Exact stop check mode		✓	3.3.3
Safety and maintenance	Emergency stop input	✓		1.2.1
	Overtravel	✓		1.2.2
	Axis interlock	✓		1.2.4
	Stored stroke limit	✓		1.2.3
	Self-diagnostics (always displayed)	✓		3.2.2
Environment requirements	Power supply	✓		1.1.2
	Ambient temperature	✓		1.1.2
	Humidity	✓		1.1.2

(2) Option Specifications

Category	Item and Function	Operation Manual	Programming Manual	Section No.
Controlled axes	Number of controlled axes		✓	1.1.1
	Rotary axis control		✓	1.1.1
Input command	Least input/output increment of rotary axis		✓	1.1.2
	Inch/metric switching		✓	3.2.2
	Multi-active registers		✓	1.1.7
Interpolation	Helical interpolation		✓	2.1.4
Feed	Synchronized feed (solid tap)		✓	1.2.5
	High-speed mode operation		✓	4.2.6
	F1-digit		✓	1.2.3
	Simultaneous 1-axis handle feed	✓		2.3.4
	Simultaneous 2-axis handle feed	✓		2.4.1
	Simultaneous 3-axis handle feed	✓		2.4.1
Storage and editing of program	Addition of program storage capacity	✓		4.1
	Addition of number of programs		✓	1.1.5
	Playback	✓		2.8.5
Operation and display	Internal toggle switch	✓		6.4.1
	NC program drawing	✓		6.5.1
	Comment display function		✓	4.2.4
Input/output function and device	Tape reader without take-up reels	✓		1.2.2
	Tape reader with take-up reels	✓		1.2.2
	RS-232C interface	✓		8.3.3
Spindle, tool, and miscella-neous function	T4-digit command		✓	3
	Second miscellaneous function		✓	3
Tool offset	Tool radius offset		✓	3.4.4
	Addition of tool offset data sets		✓	3.4.1

Category	Item and Function	Operation Manual	Programming Manual	Section No.
Coordinate system	Manual second reference point return	✓		2.4.3
	Automatic third/fourth reference point return		✓	2.2.4
	Workpiece coordinate system setting		✓	3.1.2
	Expanded number of workpiece coordinate systems		✓	3.1.2
	Local coordinate system		✓	3.1.3
	Rotation of workpiece coordinate system		✓	3.1.5
Operation support function	Optional block skip B	✓		2.6.2
	Automatic mode handle offset	✓		2.7.3
	Program restart	✓		2.8.4
	Automatic tool length measurement (TLM)	✓		2.8.1
	Manual interruption point return	✓		2.8.2
Programming support function	Canned cycle		✓	4.1.1
	Canned cycle B		✓	4.1.1
	Circle cutting		✓	4.1.4
	Macroprogram		✓	4.4.1
	Programmable mirror image		✓	4.1.5
	Scaling		✓	3.2.3
	Coordinate system rotation		✓	3.1.5
	Automatic corner override		✓	4.2.2
	Programmable data input		✓	4.1.6
	Hole machining pattern cycle		✓	4.1.2
	Program copy		✓	4.2.1
Accuracy correction for mechanical system	Stored pitch error compensation	✓		8.1.4
	Unidirectional approach		✓	2.1.1
Automation support function	Skip function		✓	4.3.1
	Tool life control function		✓	4.3.3
	Program interruption		✓	4.3.2
Safety and maintenance	Stored stroke limit B		✓	4.2.3
	Stored stroke limit C		✓	4.2.3

1.2 PROTECTIVE FUNCTIONS

1.2.1 Emergency Stop

Press the emergency stop button immediately if a problem occurs with the system or line. The execution of all commands stops instantaneously when the emergency stop button is pressed. Servo power supply of the NC is shut OFF and dynamic brake is applied to stop all mechanical movement. In the emergency stop state, the NC is in the alarm state "3002". In the state the emergency stop signal input signal is "opened", the NC stops the entire operation, and the SVMX and BKX signals are "opened".

This operation is executed by setting the pins on the board. The pins used differs between J300M and J100M.

Signal Name	Pin Setting
Emergency Stop Input	CN02-19 pin on JANCD-JCP03/JCP04/JCP05 boards
SVMX	CN02-17 pin on JANCD-JCP03/JCP04/JCP05 boards
BKX	CN02-16 pin on JANCD-JCP03/JCP04/JCP05 boards

Signal Name	Pin Setting
Emergency Stop Input	CN12-19 pin on JZNC-JRKS10 board
SVMX	CN12-17 pin on JZNC-JRKS10 board
BKX	CN12-16 pin on JZNC-JRKS10 board

1.2.2 Overtravel

The overtravel function stops axis feed operation when an axis reaches the travel limit; for the detection of travel limit, a limit switch and a dog are used and if an axis reaches the travel limit, the limit switch outputs a signal and the function stops axis feed operation in response to this input. The axis reached and stopped at the travel limit can be moved manually into the axis movable range.

When the overtravel input is "opened", axis move is stopped in the manner as indicated in Table 1.3. In response to this input, the alarm output (ALM) is "closed" and the corresponding alarm message is displayed on the screen.

Table 1.3 Axis Stop Direction with Overtravel Input "Opened"

	Manual Operation Mode	Automatic Operation Mode
*+X to *+5 input is "opened"	Movement in the *+X to *+5 direction is stopped.	Movement of all axes is stopped in all directions.
*–X to *–5 input is "opened"	Movement in the *–X to *–5 direction is stopped.	

* Normally closed contact

If the overtravel input is "opened", select the manual mode (jog, pulse handle) and move the axis in the direction opposite to the direction for which the overtravel input is "opened" to "close" the input. After that press the [RESET] key on the NC operation panel, and the alarm output and display are canceled.

SUPPLEMENT

1. After the occurrence of an alarm due to the "open" of the overtravel input, the M, S, and T code read output signals (MF, SF, and TF) are not turned OFF.
2. If it is necessary to interrupt the operation called by M, S, and/or T code, set the interlock by an external sequence.
3. The alarm numbers at the occurrence of overtravel are 2001 to 2005. If the overtravel alarm occurs, axis move is stopped. Note that the servo is not turned OFF.

1.2.3 Stored Stroke Limit

To ensure improved safety in operation, the function prevents axes from entering the preset entry prohibited areas both in manual and automatic operation.

(1) Stored Stroke Limit

To use the stored stroke limit function, the axis movable area is set by parameters with the coordinate values in the machine coordinate system. The area outside the set boundary is established as the entry prohibited area. If an axis enters the entry prohibited area, the function stops axis movement and displays an alarm message. The function is made valid upon completion of the manual reference point return after the power is turned ON. In automatic operation, if even one axis causes the alarm, all axes are stopped. In manual operation, only the axis that caused an alarm is stopped.

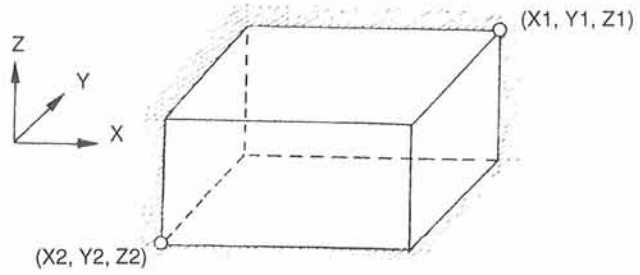


Fig. 1.4 Stored Stroke Limit

(2) Stored Stroke Limit B, C (G22, G23) *

The area either outside or inside the boundary set by parameters or by the commands in a program is established as the entry prohibited area. The boundary is set with the coordinate values in the machine coordinate system. Whether the entry prohibited area is established outside or inside the boundary can be determined by the setting for a parameter. The function is made valid upon completion of the reference point return after turning ON the power.

Table 1.4 G Code Used to Turn ON/OFF the Stored Stroke Limit B Function

G code	Function	Group
G22	Turning ON the stored stroke limit B	04
G23	Turning OFF the stored stroke limit B	04

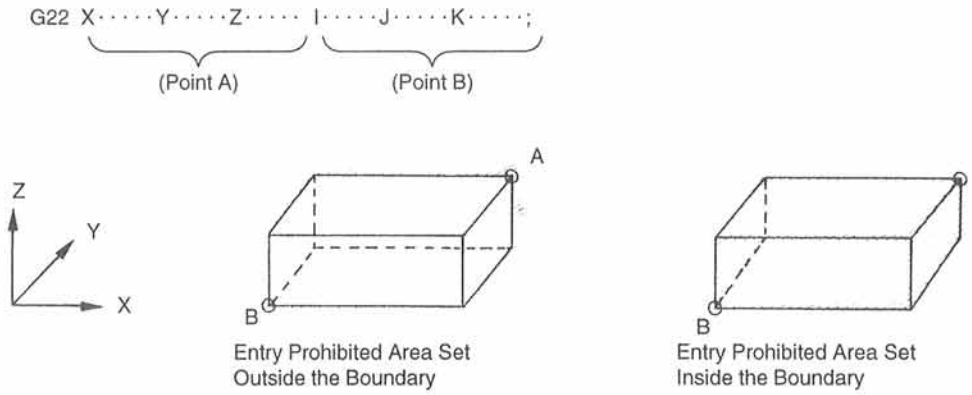


Fig. 1.5 Stored Stroke Limit B Function

- In addition to the stored stroke limits A and B, stored stroke limit C can be added.
- With the stored stroke limit C, set the boundary of the area and inside or outside the boundary by parameters.
- According to the setting for the parameter or the input signal, one of the stored stroke limit C (third to fifth prohibited area) can be made valid.
- For details of the stored stroke limit B, C, refer to 4.2.3 "Stored Stroke Limit B and C (G22, G23)" in the PROGRAMMING MANUAL.

1.2.4 Interlock Inputs

The interlock input is the signal used to disable axis movement, and is provided for each axis.

- When an axis is interlocked during movement, it is stopped after deceleration.
- When the interlock is released, the axis continues moving to complete the remaining commands. Upon completion of the commands, the program advances to the next block.
- For simultaneous two or three axis interpolation commands, interpolation operation is disabled if one of these two or three axes is interlocked.

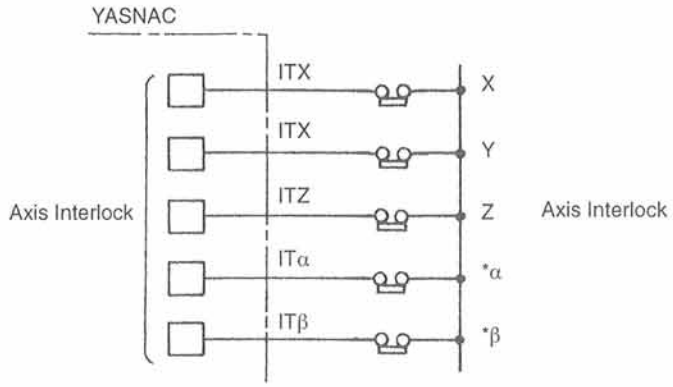


Fig. 1.6 Interlock Inputs

2

BASIC OPERATION OF YASNAC

Chapter 2 describes various kinds of operations including power ON procedure, manual operation, and automatic operation.

2.1 GENERAL FLOW OF OPERATION .... 2 - 4

2.2 INSPECTION BEFORE TURNING THE POWER ON ..... 2 - 5

2.2.1 Inspection of the NC Unit ..... 2 - 7

2.2.2 Inspection of the Tape Reader ..... 2 - 8

2.2.3 Preparation before Turning the Power ON ... 2 - 9

2.3 TURNING THE POWER ON AND INSPECTION AFTER POWER ON ... 2 - 10

2.3.1 Procedure for Turning the Power ON ..... 2 - 10

2.3.2 Checking the Motors for Abnormalities ..... 2 - 11

2.3.3 Procedure for Turning the Power OFF ..... 2 - 12

2.3.4 Inspection of the Battery ..... 2 - 13

2.4 MANUAL OPERATION (1) ..... 2 - 17

2.4.1 Manual Rapid Traverse (RAPID) ..... 2 - 17

2.4.2 Jog Feed (JOG) ..... 2 - 18

2.4.3 Step Feed (STEP) ..... 2 - 18

2.4.4 Handle Feed (HANDLE)* ..... 2 - 19

2.5 MANUAL OPERATION (2) ..... 2 - 20
2.5.1 Simultaneous 2- or 3-axis Handle Feed * ... 2 - 20
2.5.2 Manual Reference Point Return ..... 2 - 21
2.5.3 Manual Reference Point Return to the Second Reference Point * ..... 2 - 24
2.5.4 1-line MDI ..... 2 - 25
2.6 AUTOMATIC OPERATION (1) ..... 2 - 26
2.6.1 Preparation of Automatic Operation ..... 2 - 26
2.6.2 Memory Operation ..... 2 - 28
2.6.3 MDI Operation ..... 2 - 29
2.6.4 Feed Hold ..... 2 - 30
2.6.5 Override ..... 2 - 31
2.7 AUTOMATIC OPERATION (2) ..... 2 - 33
2.7.1 Optional Stop ..... 2 - 33
2.7.2 Optional Block Skip ..... 2 - 33
2.7.3 Dry Run ..... 2 - 34
2.7.4 Display Lock and Machine Lock ..... 2 - 35
2.7.5 Auxiliary Function Lock ..... 2 - 36
2.7.6 Z-axis Command Neglect ..... 2 - 36
2.7.7 4th-axis Command Neglect ..... 2 - 36
2.7.8 5th-axis Command Neglect ..... 2 - 37
2.8 OPERATION INTERVENTION DURING AUTOMATIC OPERATION .. 2 - 38
2.8.1 Manual Operation Intervention during Automatic Operation ..... 2 - 38
2.8.2 MDI Operation Intervention during Automatic Operation ..... 2 - 39
2.8.3 Automatic Handle Mode Offset * ..... 2 - 40
2.8.4 Manual Absolute ..... 2 - 42

2.9 AUTOMATIC OPERATIONS AT ENHANCED LEVEL ..... 2 - 44
2.9.1 Tool Length Measurement * ..... 2 - 44
2.9.2 Return to the Operation Interrupted Point * . 2 - 48
2.9.3 Manual Centering Operation * ..... 2 - 50
2.9.4 Program Restart * ..... 2 - 51
2.9.5 Playback Function * ..... 2 - 57

2.1 GENERAL FLOW OF OPERATION

The operation procedure usually followed for daily operation is indicated in Fig. 2.1. This Chapter gives explanation on these operation items.

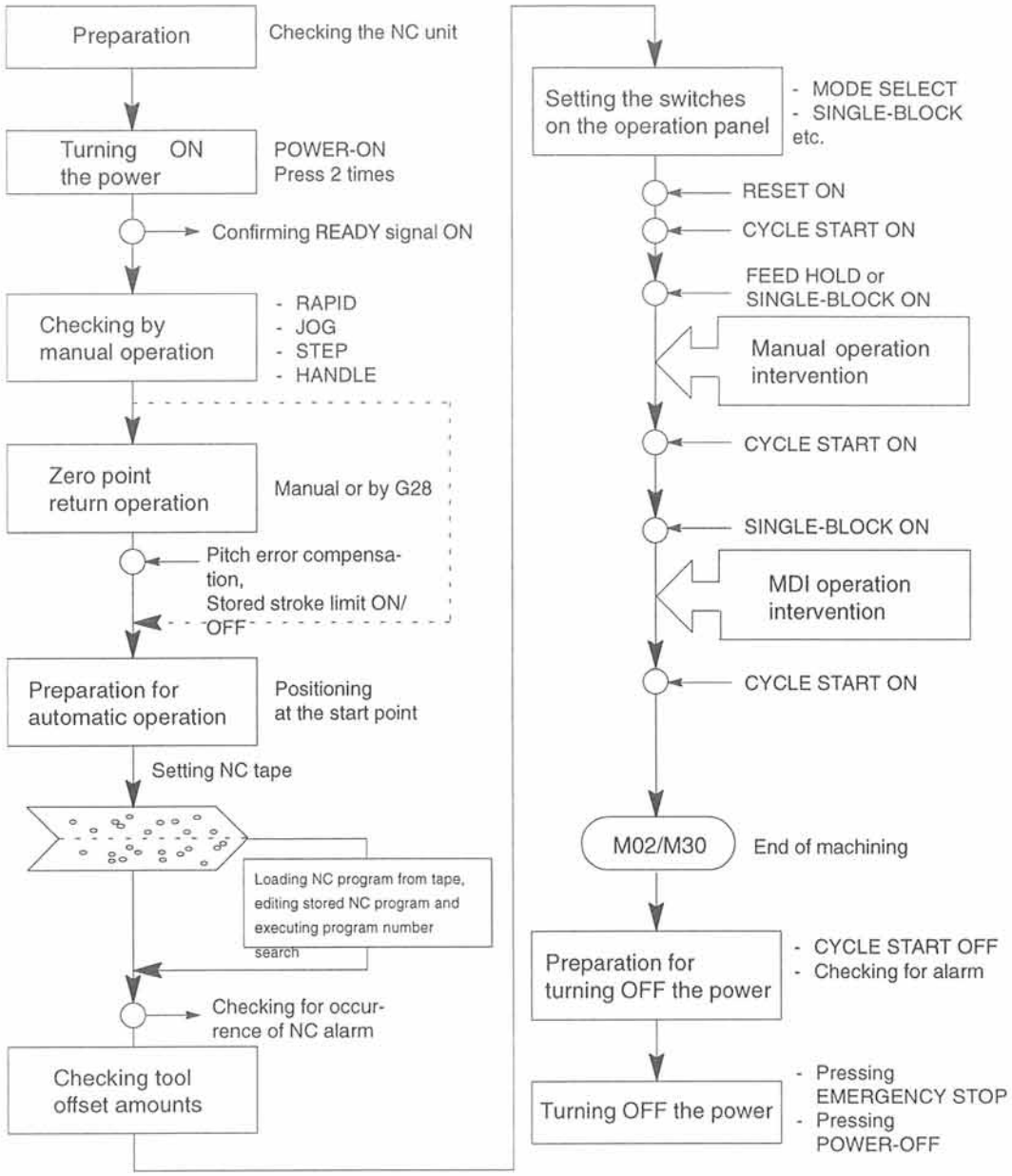


Fig. 2.1 Operation Procedure

2.2 INSPECTION BEFORE TURNING THE POWER ON

Before turning the power ON for YASNAC J300, it is necessary to carry out inspection to ensure safety. If the power is turned ON while the system has troubles, it could cause malfunctioning of the system itself as well as hazards to the operators. Make sure to carry out daily inspection before turning the power ON.

⚠ WARNING

- Always turn the power OFF (including the primary power supply) before carrying out daily inspection.

  Carrying out the inspection with the power ON may lead to electric shock.

- Wait 5 minutes after turning the power (including the primary power supply) OFF before removing or replacing any unit or part.

  Failure to observe this warning may lead to electric shock and product failure.

- Do not touch any unit, terminals, etc., while the power is ON.

  Failure to observe this warning may lead to electric shock or device malfunction.

- Immediately after switching the power OFF, the product retains some electric charge. Do not touch any parts which are live when the power is ON for 5 minutes after switching the power OFF.

  Failure to observe this warning may lead to electric shock or device malfunction.

- Do not damage cables, subject them to excessive stress, or pinch them.

  Excessive load on cables may cause electric shock.

- When the unit is turned ON, never touch its rotating parts.

  Failure to observe this warning may result in personal injury.

- Never modify the product.

  Failure to observe this warning may result in electric shock, fire, or product failure.

⚠ CAUTION

- To prevent personnel other than those involved in maintenance and inspection work from turning ON the power while maintenance and inspection is in progress, place signs stating "Do not turn the power on" or words to that effect at the primary power supplies of related control panels and other relevant locations.

  Failure to observe this caution may lead to electric shock.

- Electronic devices such as CMOS ICs are used on the control boards. If you touch them with your bare fingers the static electrical charge in your body could destroy them; care must be taken when handling these devices. Before handling these devices for maintenance purposes, first discharge the static electricity in your body by touching a grounded metal device.

  Failure to observe this caution could lead to injuries and product failure.

- Do not install or remove boards, wiring, connectors, etc., while the power is ON.

  Failure to observe this caution could lead to electric shock, product failure, and malfunction.

- Do not let foreign matter such as electric wire scrap enter the unit.

  Failure to observe this caution may result in fire, product failure or malfunction.

- Be sure to check the following points on completing maintenance and inspection work.
  - Check that all fastening bolts are tightened.
  - Check that no tools or other objects have been left inside the control panel.
  - Check that the control panel door is closed properly.

  Failure to carry out these checks may lead to electric shock, injuries, fire, and malfunction.

- Never attempt to disassemble or modify units or devices inside the NC unit.

  Failure to observe this caution may lead to fire, product failure, or malfunction.

- Do not change the set values of the devices, variable resistors, etc., in the control panel.

  Failure to observe this caution may lead to fire, product failure, and malfunction.

2.2.1 Inspection of the NC Unit

In this subsection, the items to be inspected before turning ON the power are indicated for the standard NC box supplied by Yaskawa. For the control box specific to the machine tool, refer to the manuals published by the machine tool builder.

(1) Inspecting the Doors

Make sure that the doors are securely closed before turning the power ON.

The NC box is completely shielded to keep outside air out to protect the precision devices in the NC box from oil mist or other airborne foreign matter. The doors of the NC box must always be kept closed.

(2) Inspecting the Shielding Parts

Inspect the shielding parts in the NC box every month for gaps and/or damages.

① Open the doors and check the packings which are installed around the door for damage.

② Inspect the inside of the NC box for abnormal contamination. If the inside is abnormally dirty, clean it immediately after locating the cause of contamination.

③ Lock the doors securely and inspect the doors to make sure that there are no gaps.

By carrying out the inspection indicated above at regular intervals, performance of YASNAC can be maintained for a long period.

2.2.2 Inspection of the Tape Reader

If the tape reader is dirty or does not operate smoothly, it could cause malfunctioning of the NC. Inspect and clean the tape reader from time to time.

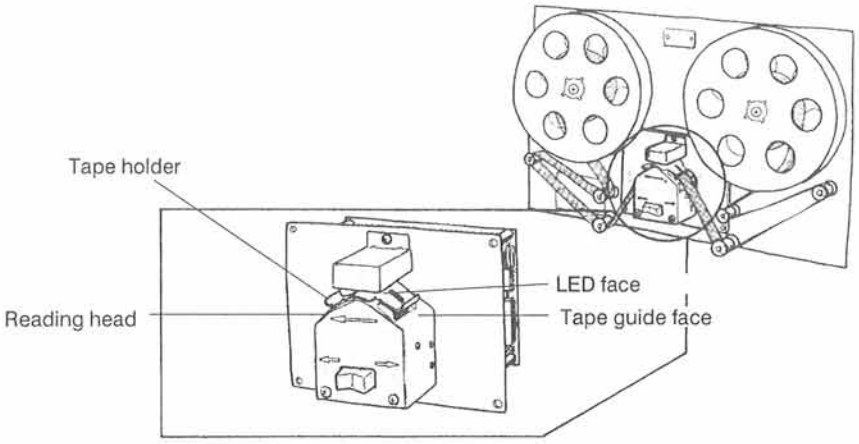


Fig. 2.2 Tape Reader

① Clean the glass in the reading head by removing tape chips and dust with a soft brush. If oily stain is found, wipe it off with clean gauze or soft cloth soaked with absolute alcohol. Clean both the tape guide face and tape holder at the same time.

② If dust is found on the LED face in the upper light source, clean it with soft brush.

③ For the tape reader equipped with 6-inch or 8-inch tape take-up reels, if tension arm movement seems to be heavy, apply a small amount of machine oil to the shaft base portion.

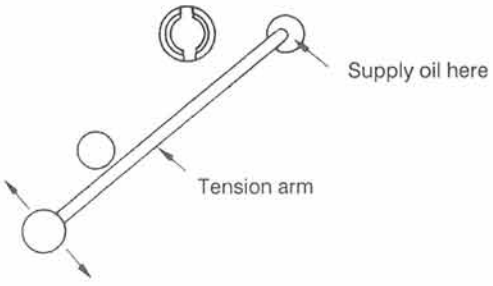


Fig. 2.3 8-inch Take-up Reel

SUPPLEMENT

If a problem occurs with tape winding or tape feed operation with the tape reader equipped with 8-inch tape reels, open the front door, and clean the area around the photocoupler located near the reel drive motor.

2.2.3 Preparation before Turning the Power ON

Before turning the power ON, confirm the following items.

- Make sure that both the front and rear sides of the NC unit are closed. If the door is open or if there is a gap between the door and the box panels, securely close the door using the door lock.
- Carry out the inspection for the machine and machine related controllers according to the instructions given in the manuals published by the machine tool builder.

2.3 TURNING THE POWER ON AND INSPECTION AFTER POWER ON

In this section, the procedure to be used for turning the power ON is explained. Inspection that must be conducted after turning the power ON is also described.

⚠ WARNING

- Be sure to turn the power OFF before replacing the battery.
  Failure to observe this warning may lead to electric shock and product failure.

⚠ CAUTION

- Replace fuses and batteries with the designated products.
  Failure to observe this caution may result in fire or product failure.
- Use the product with the "System Number Switch" of the CPU set to "0".
  Use while set to another number may lead to malfunction.
- Wait at least 2 seconds after turning the power OFF before turning it ON again.
  Failure to observe this caution may lead to malfunction.

2.3.1 Procedure for Turning the Power ON

Turn the power ON in the following procedure.

① Make sure that the power is supplied to the NC unit from an external power source.

② Press the POWER ON button on the NC operation panel. Control power is turned ON and the cooling fan starts rotating.

③ Make sure that air is flowing out at the upper part on the side of the NC unit.

- In approximately 20 seconds, the control is ready for turning ON the servo power (alarm code 3000).

④ Press the POWER ON button once again.

- The servo power is turned ON. When the machine is ready for operation, the NC enters the ready state.
- When the power is correctly turned ON to the NC unit, the NRD (NC ready) signal is output.

- When the power is turned ON at the machine side in response to the NRD signal, the MRD (machine ready) signal will be returned to the NC. The READY lamp goes on when the MRD signal is returned. Note that the READY lamp is not used with some types of machines.
- When the NC unit enters the ready state, the alarm message displayed on the screen will go off.

⑤ If the NC unit fails to enter the ready state, locate the cause by referring to Section 7.2, "ALARM DISPLAY JOB", and take appropriate measures. For turning the power ON, there are items that must be inspected at the machine side in addition to the NC unit related items. For such items, refer to the manuals published by the machine tool builder.

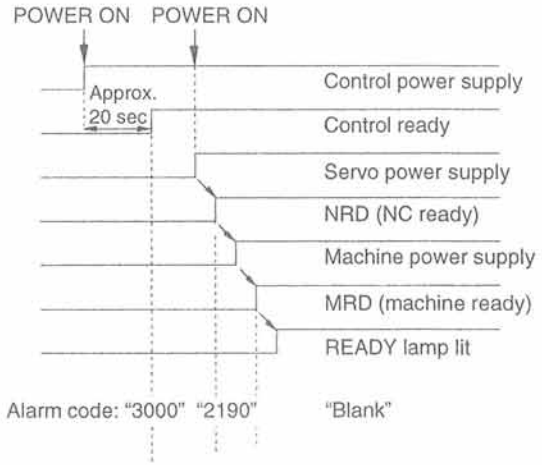


Fig. 2.4 Power ON Sequence

2.3.2 Checking the Motors for Abnormalities

Check the motors for their operation. If abnormal vibration or noise is found, turn OFF the power and contact the maintenance personnel.

2.3.3 Procedure for Turning the Power OFF

Turn the power OFF in the following procedure.

① Make sure that the CYCLE START lamp on the machine operation panel is OFF with the machine stopped.

② Make sure that there is no alarm message displayed on the CRT screen. If an alarm message is displayed, locate the cause by referring to Section 7.2, "ALARM DISPLAY JOB" and take appropriate measures to clear it.

③ Carry out inspection necessary for turning the power OFF at the machine side. For details, refer to the manuals published by the machine tool builder.

④ Press the EMERGENCY STOP button on the machine operation panel to turn OFF the servo power.

⑤ Press the POWER OFF button on the NC operation panel to shut off the power to the control panel.

⑥ Turn the power supply to the NC OFF by turning OFF such as a circuit breaker.

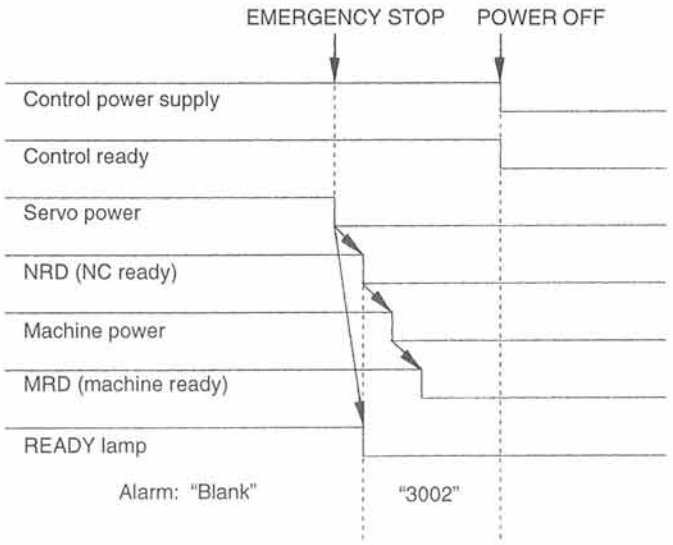
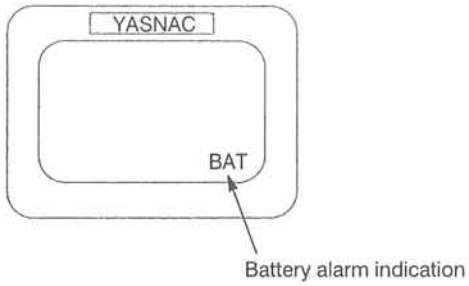


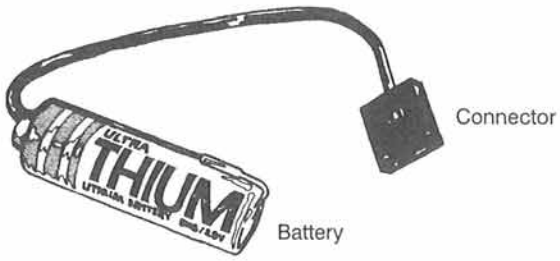
Fig. 2.5 Power OFF Sequence

2.3.4 Inspection of the Battery

After turning the power ON, check the CRT screen if "BAT" message is blinking at the lower right area. If it is displayed, it indicates that the battery is weakening. The battery must be replaced within one month. If the display of "BAT" message is given, make sure to leave the NC unit power ON at least one hour every three days.



Standard batteries cannot be used. For a spare battery, contact your Yaskawa representative.
Battery type: ER6VC3N, Parts code: BA510



The location of battery and related indicator (LED) differs between J300M and J100M. Refer to Fig. 2.6 for J300M, and Fig. 2.7 for J100M.

(1) Checking the Battery Which Needs Replacing

Follow the procedure indicated below to check whether or not battery must be replaced.

① Press the POWER OFF button.

② If a door interlock switch is installed, place the door interlock key in the OFF position. This makes power ON possible with the door opened.

③ Open the door so that the front part of the NC unit is visible.

④ Press the POWER ON button once again.

⑤ Check the red LED on the front panel of CPU rack. If it is lit, the battery must be replaced.

J300

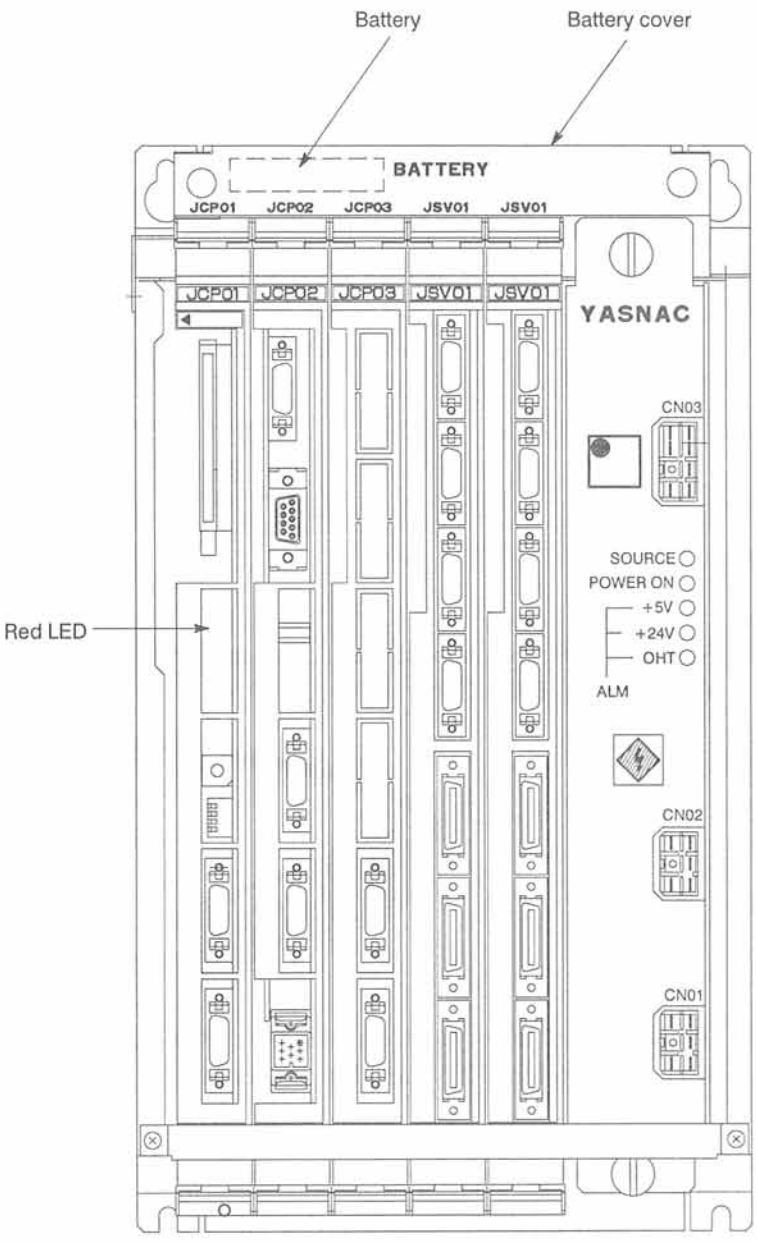


Fig. 2.6 J300M Arrangement of Battery and Indicator Lamp (LED)

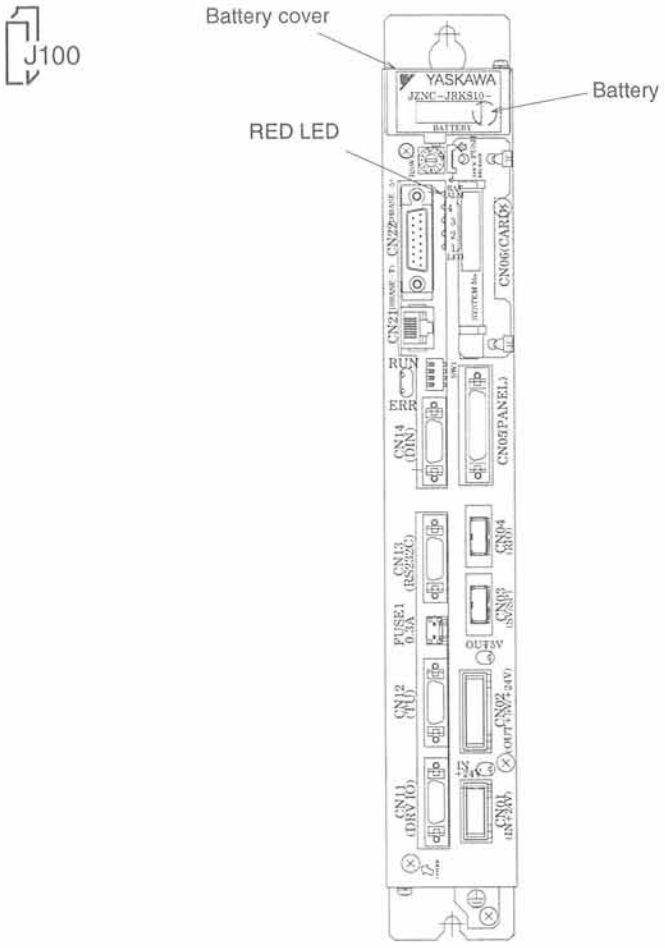


Fig. 2.7 J100M Arrangement of Battery and Indicator Lamp (LED)

(2) Replacing the Battery

Replace the battery quickly in the following procedure.

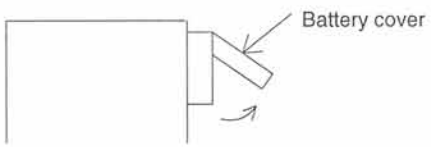
① Turn the power OFF.

② Open the battery cover. Then, remove the battery from the holder.

The method for removing the battery cover differs between J300M and J100M.

Draw the black clasps on the ends of the battery cover, and remove the cover.

Draw the battery cover upward.



③ Fit the new battery in the holder and insert the connector. Although the connector may be inserted in either direction, it must be securely inserted. Otherwise, the power will not be supplied by the battery. (See Fig. 2.8.)

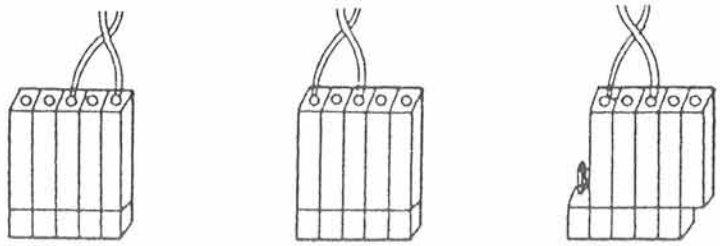


Fig. 2.8 Connecting the Battery Connector

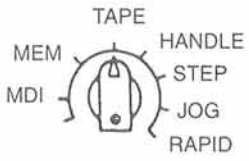
④ Turn the power ON.

⑤ Make sure that "BAT" is not blinking on the CRT screen and that the red LED in the board is OFF.

1. If the red LED remains lit after replacing the battery, the connector might be inserted incorrectly or the battery might be faulty.
2. Power OFF operation is allowed a few seconds after turning the power ON.
3. After turning the power OFF, replace the battery quickly. If the NC unit is left with the battery removed, the data stored in the memory could be lost.

2.4 MANUAL OPERATION (1)

This section describes general explanation on manual operation. To move an axis manually, select the operation mode of RAPID, JOG, STEP or HANDLE with the MODE SELECT switch on the machine operation panel.



2.4.1 Manual Rapid Traverse (RAPID)

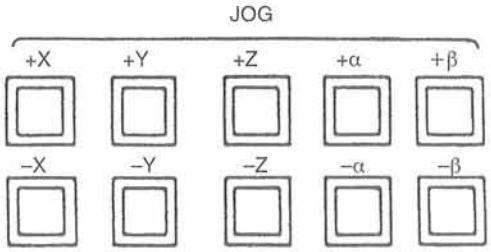
An axis can be moved at a rapid traverse rate. Follow the procedure indicated below.

① Select the rapid mode by placing the MODE SELECT switch on the machine operation panel in the RAPID position.

② Select the feedrate to be used for axis feed operation by the RAPID TRAVERSE RATE OVERRIDE switch on the machine operation panel.

- Override setting is possible in four steps of 100%, 50%, 25%, and F_0. The feedrate corresponding to the setting at 100%, 50%, and 25% is set for parameters pm2801 to pm2805. For the setting at F_0, feedrate set for parameter pm2447 is used.
- Optionally, F_1 and F_2 positions are selectable. Feedrate to be selected according to the switch setting at F_1 and F_2 is set for parameters pm2448 and pm2449.

③ On the machine operation panel, press the JOG button that corresponds to the axis and the direction in which the axis should move. The axis moves at a rapid traverse rate while the button is held pressed.



2.4.2 Jog Feed (JOG)

It is possible to move an axis in the jog feed mode. Follow the procedure indicated below.

① Select the jog mode by placing the MODE SELECT switch on the machine operation panel in the JOG position.

② Select the feedrate with the JOG FEEDRATE switch on the machine operation panel.

- Feedrate can be selected from 32 steps, with actual feedrates of individual setting positions set for parameters pm2400 to pm2431. The actual number of steps and feedrates selectable by the JOG FEEDRATE switch vary depending on the machine model. For details, refer to the manuals published by the machine tool builder.

③ Press the JOG switch corresponding to the axis to be moved and the required axis move direction.

④ The axis moves at the selected feedrate while the JOG switch is held pressed.

2.4.3 Step Feed (STEP)

Manual step feed operation is possible. Follow the procedure indicated below.

① Select the step mode by placing the MODE SELECT switch on the machine operation panel in the STEP position.

② Select the feed distance per step with the MANUAL PULSE MULTIPLY switch on the machine operation panel.

Metric system : 0.001, 0.01, 0.1, 1.0, 10.0, 100.0 mm (per step)
Inch system : 0.0001, 0.001, 0.01, 0.1, 1.0, 10.0 inch (per step)

③ Press the JOG switch corresponding to the axis to be moved and the required axis move direction.

④ Each time the JOG switch is pressed, the selected axis moves in the selected direction by the set feed distance per step.

2.4.4 Handle Feed (HANDLE)*

When the NC is equipped with a manual pulse generator, pulse handle feed operation is possible. Follow the procedure indicated below.

① Select the handle mode by placing the MODE SELECT switch on the machine operation panel in the HANDLE position.

② Select the axis to be moved by the HANDLE AXIS selection switch on the machine operation panel.

③ With the MANUAL PULSE MULTIPLY switch on the machine operation panel, select the axis feed distance per pulse (one division of the pulse handle).

Clockwise rotation: In the positive direction
Counterclockwise direction: In the negative direction

Metric system : 0.001, 0.01, 0.1 mm (per division)
Inch system : 0.0001, 0.001, 0.01 inch (per division)

④ Turn the pulse handle. The axis moves in the positive or negative direction according to the direction in which the pulse handle is turned.

2.5 MANUAL OPERATION (2)

This section describes manual operations carried out in daily production using the manual operation functions explained in 2.4 "MANUAL OPERATION (1)".

2.5.1 Simultaneous 2- or 3-axis Handle Feed *

By installing the pulse handle for the individual axes, it is possible to move up to three axes among the X-, Y-, Z-, α-, and β-axis simultaneously. Follow the procedure indicated below.

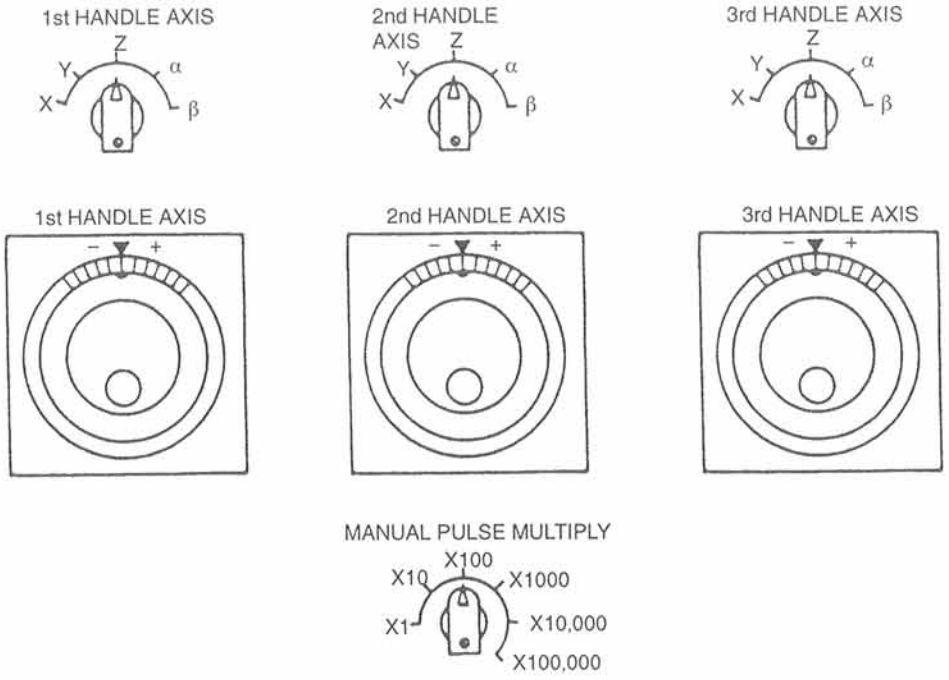


Fig. 2.9 Simultaneous 2- or 3-axis Pulse Handle Feed

① Select the handle mode by placing the MODE SELECT switch on the machine operation panel in the HANDLE position.

② Select the axis feed distance per graduation of the pulse handle with the MANUAL PULSE MULTIPLY switch on the machine operation panel. This switch is used in common for the three pulse handles.

③ Turn the pulse handle. The selected axis is moved in the positive or negative direction according to the handle turning direction.

2.5.2 Manual Reference Point Return

Axes can be returned to the reference point in manual operation. Follow the procedure indicated below.

① Select the rapid or jog mode by placing the MODE SELECT switch on the machine operation panel in the RAPID or JOG position.

② Move an axis manually (manual rapid traverse or jog feed) to a position away from the reference point (within the reference point return enabled area). When an axis is located in range A in Fig. 2.9, reference point return ca be executed correctly.

③ Turn ON the REFERENCE POINT RETURN switch.

④ Keep the JOG switch pressed corresponding to the axis to be returned to the reference point and in the return direction. When the JOG switch is held pressed, the corresponding axis starts moving in the same manner as ordinary manual axis feed operation. When the axis reaches the deceleration point, feedrate is decelerated to a low feedrate and the axis stops automatically at the reference point.

⑤ Upon completion of the reference point return, the REFERENCE POINT lamp of that axis lights.

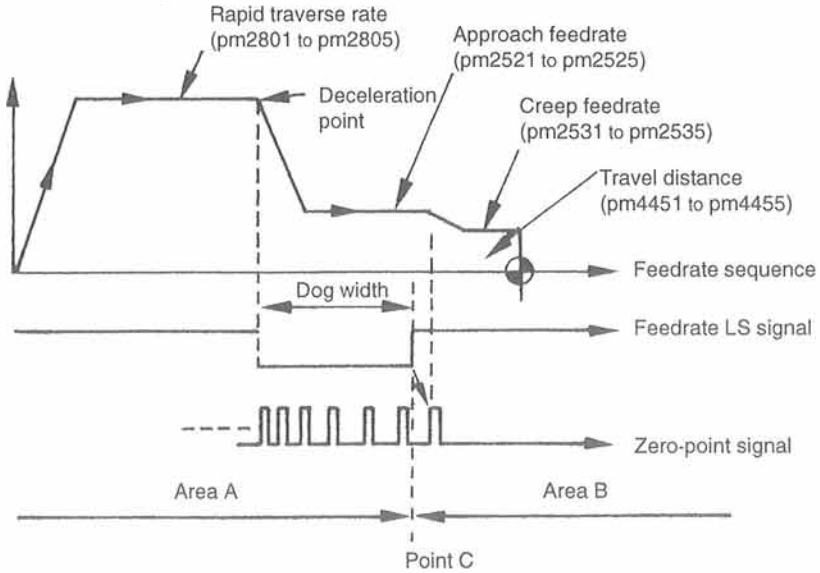


Fig. 2.10 Manual Reference Point Return

TERM?

◆ Reference Point

A specific position in the machine coordinate system. It is also called the machine zero point or the machine reference point.

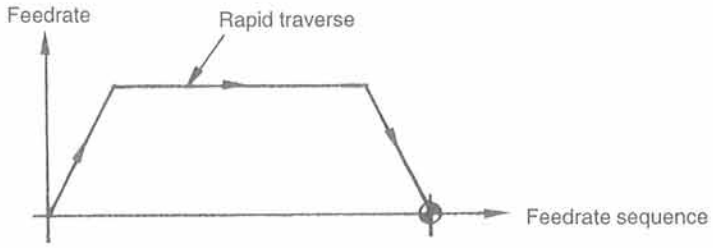
1. Once the reference point return is completed, point C indicated in Fig. 2.9 is stored to the NC. Therefore, if reference point return is attempted while an axis is in area B, an error occurs. In this case, the axis should first be returned to area A and then the reference point return should be executed.
2. The axis for which reference point return has been completed can be moved in the reference point return direction manually only if the reference point return switch is turned OFF.
3. If commands have been read to the buffer area during automatic operation, manual reference point return must not be executed. If manual return operation is executed, the data in the buffer area is cleared.

SUPPLEMENT

1. Immediately after the power is turned ON, the axes start manual or automatic reference point return operation independent of the present axis position. However, reference point return cannot be executed correctly if the axis is located in area B. In this case, the axis must be returned to area A before executing reference point return.
2. If the MODE SELECT switch setting is changed while an axis is moving automatically to the reference point, an alarm (alarm 2141 to 2145 reference point return interruption error) occurs.
3. Reference point return cannot be executed when the MACHINE LOCK switch is ON.
4. With a rotary axis, it is possible to execute automatic reference point return as with a linear axis. With a rotary axis, if it has been moved by more than ±360.000° from the reference point established first, reference point return is executed to the closest reference point in the preset direction of reference point return.

   The illustration below shows how the reference point return is executed from points A and B. (The reference point return direction is determined by the setting for pm4002 D3 and D4.)

5. Once the reference point return is completed, second and later reference point return is executed at a high-speed mode. This is called "high-speed reference point return". However, if the setting is so made to execute the reference point return at a low speed (pm4003 D6 = 1), second and later reference point return is executed at a low speed.



2.5.3 Manual Reference Point Return to the Second Reference Point *

The axes are automatically positioned at the second reference point. This operation allows positioning at the second reference point independent of the present axis position, whether it is in the negative side or positive side from the second reference position. Follow the procedure indicated below.

① Select the jog or rapid mode by placing the MODE SELECT switch in the JOG or RAPID position.

② Turn ON the ZRN2 (second zero point return request) switch on the machine operation panel.

③ Keep the JOG switch corresponding to the axis and direction of reference point return. The corresponding axis is positioned at the second zero point at the jog feedrate or rapid traverse rate according to the selected mode.

- If the ZRN2 switch is turned OFF while an axis is moving to the second reference point, the axis stops moving. To restart the second reference point return operation, turn ON the ZRN2 switch and turn OFF the JOG switch having been pressed once, then press it once again.
- If the JOG switch is pressed again to be turned OFF while the X-axis is moving to the second zero point, the axis stops moving. In this case, press the JOG switch again to turn it ON, and the X-axis restarts moving to the second zero point. With the Y- and Z-axis, this is also applied.

1. If the JOG switches of [+] and [–] are pressed at the same time, the corresponding axis stops moving since this operation is assumed to have turned OFF the JOG switch.
2. It is not allowed to use the first zero point return mode and the second reference point return mode at the same time. If both input signals are ON at the same time, both of the modes are invalid and neither jog nor rapid feed is executed. This feature is provided to ensure safety.
3. If the NC is in either the machine lock state (including the machine lock for individual axes) or the Z-axis command disregard state, the second zero point return operation cannot be executed. When a JOG switch is pressed under such state, normal jog operation is performed.
4. With the axis for which second zero point return has been completed, manual axis move operation is allowed only after the ZRN2 (second reference point return) switch is turned OFF.

SUPPLEMENT

1. If the second zero point return input signal is turned ON in the state that the first zero point return has not been completed, the input is invalid and the second reference point return mode cannot be set.
2. In the second reference point return mode, input from the JOG switch [–X] ([–Y], [–Z]) is valid. If the mode is changed, the ZRN2 switch is assumed to have been turned OFF.

2.5.4 1-line MDI

During the execution of manual operation, it is possible to execute one block of a part program by directly entering it to the CRT screen. For this type of operation, a maximum of 40 characters can be written and the function codes that are allowed are M, S, T, F, and E codes. However, M00, M01, M02, M30, M90 to M99, and M190 to M199 cannot be specified. An offset command with a T command is also disregarded. With the system that carries out setup by using a T command, a T command must not be specified for this 1-line MDI operation. Follow the procedure indicated below.

① Select the manual mode with the MODE SELECT switch on the machine operation panel. 1-line MDI operation is not possible in the automatic or edit mode.

② Enter the program from the operation panel and press the [EOB] (carrier return) key.

③ Press the CYCLE START switch on the machine operation panel, and the entered program is executed. When the execution of the program is completed, the program displayed in the key entry display area is cleared.

- If the mode is changed while the program is executed (waiting for FIN), the FIN is not returned forcibly and the NC remains in the state waiting for the input of FIN.

2.6 AUTOMATIC OPERATION (1)

This section describes basic information necessary for performing automatic operation.

⚠ CAUTION
• Before carrying out cutting operation with a new program, confirm safety by performing single block operation and dry run operation. If this check operation is not performed, unexpected operation may be performed due to mis-setting of the amount of offset, leading to tool damage due to interference, and resulting accidents involving injuries to personnel. • Strictly observe the cautions in the user's manual when using programming functions. Ignoring these cautions could lead to accidents involving injuries to personnel and malfunctions.

2.6.1 Preparation of Automatic Operation

After turning ON the power, the axes must be positioned at the start point defined in a program before starting automatic operation. Set the coordinate system to be used for machining either manually or by specifying appropriate commands in a program. Several examples are given below to explain how the the coordinate system should be set. For details, refer to the manuals published by the machine tool builder.

(1) Setting the Coordinate System

The origin of the coordinate system to be used for executing the commands should be set.

(a) When G92 is not specified in the program

The coordinate system for which the origin is set at other than the reference point for the program not containing the coordinate system setting command (G92) is called a coordinate system for machining. The procedure for setting a coordinate system for machining is indicated below.

① Return the axes to the reference point by following the manual reference point return procedure (see 2.4.2).

② Select the MDI mode by placing the MODE SELECT switch on the machine operation panel in the MDI position.

③ Write the program for setting the coordinate system.

For example,
G 92 X · · · Y · · · Z · · · ;

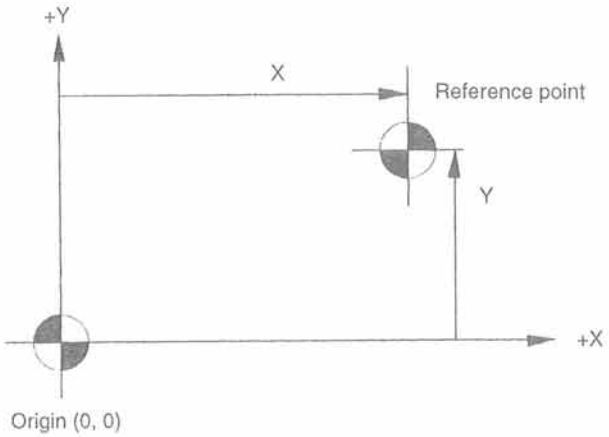


Fig. 2.11 Coordinate System for Machining

④ Execute the program by pressing the CYCLE START switch on the machine operation panel.

(b) When G92 is specified in the program

Return the axes to the reference point by manual reference point return operation.

Example of Programming

EOR;
N1 G92X · · · Y · · · Z · · · ;

(c) When G28 (automatic reference point return) and G92 are specified in the program

Move the axes manually to a position (in the area where reference point return operation is allowed) away from the reference point.

Example of Programming

EOR;
N1 G28 · · · · · Y · · · Z · · · ;
N2 G92X · · · Y · · · Z · · · ;

(2) Start Lock

Keep the machine in the start lock state until it is confirmed that machine operation is permitted. Follow the procedure indicated below.

① Before starting machine operation, turn the START LOCK switch on the machine operation panel ON.

② After safety is confirmed, turn the START LOCK switch OFF.

2.6.2 Memory Operation

Memory mode operation is used to carry out automatic operation by using programs stored in the NC memory. Follow the procedure indicated below.

① Make sure that the alarm indicating lamp on the machine operation panel is not lit. Note that with some types of machines, the alarm indicating lamp is not provided on the machine operation panel. If the alarm indication is given, locate the cause by referring to 9.1.4, "Cause of Alarm and Corrective Action" and take appropriate measures to clear it.

② Check the tool offset amounts and correct them if necessary, then position the axes at the start point. For details of tool offset, refer to 5.3, "TOOL DATA CONTROL JOB".

③ Carry out necessary settings with the switches on the machine operation panel.

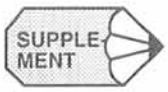
- Select the memory mode by placing the MODE SELECT switch in the MEM position.
- Set the SINGLE-BLOCK switch ON or OFF. To execute the program block-by-block, set it ON.
- Set the rapid traverse rate with the RAPID TRAVERSE RATE OVERRIDE switch.
- Set the MANUAL ABSOLUTE switch ON or OFF. Set the switch ON to return the tool by manual operation intervention to the previously located position.
- Set the OPTIONAL BLOCK SKIP switch ON or OFF. Set the switch ON to disregard the blocks that include the "/" (slash) code.
- Set the OPTIONAL STOP switch ON or OFF. To execute the optional stop function (M01), set the switch ON.
- Set the DRY RUN switch ON or OFF. Set the switch ON when checking the program.

- With the FEEDRATE OVERRIDE and JOG FEEDRATE switches, set the feed-rate.

④ Press the [RESET] key on the NC operation panel. The program is rewound to the beginning and "LSK" (label skip) message is displayed on the CRT screen.

⑤ Press the CYCLE START switch on the machine operation panel to start automatic operation.

⑥ To suspend operation temporarily, press the FEED HOLD switch on the machine operation panel.



1. In case of emergency, press the EMERGENCY STOP button on the machine operation panel to stop the machine immediately.
2. It is possible to start a program half way in the memory mode operation. Locate the cursor at the required start block by using the address search operation, and press the CYCLE START switch. For this operation, however, the modal G codes must be set before starting the program.
3. In the memory mode, address search must always be executed by specifying "address + numeral".

2.6.3 MDI Operation

Automatic operation is possible by inputting a program in the MDI mode. Follow the procedure indicated below.

① Select the MDI mode with the MODE SELECT switch on the machine operation panel.

② Enter the block of commands from the keyboard. For details of program entry operation in the MDI mode, refer to 6.2, "MDI OPERATION JOB".

③ Press the CYCLE START switch on the machine operation panel and the execution of the entered program is started.

2.6.4 Feed Hold

The feed hold function suspends automatic operation temporarily. Follow the procedure indicated below.

① When the FEED HOLD switch on the machine operation panel is pressed while an axis is moving, it stops after deceleration. The CYCLE START lamp on the machine operation panel goes OFF and the FEED HOLD lamp lights.

② After the completion of axis movement, the indicating lamp goes OFF.

1. If the execution of a drilling canned cycle is stopped halfway due to the single-block function, the FEED HOLD lamp automatically goes ON to indicate that the operation is suspended during the execution of a drilling canned cycle.
2. The setting of the FEED HOLD switch is disregarded while a tapping cycle is executed in the G84 mode.
3. If the FEEL HOLD switch is turned ON while M, S, T, or B* function not associated with axis movements is executed, the function is continuously executed to be completed although the FEED HOLD lamp lights immediately. After the completion of the function, the FEED HOLD lamp goes OFF and operation stops.

2.6.5 Override

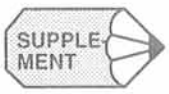
The following gives a general description of the override function. For details of override, refer to the manuals published by the machine tool builder.

(1) Feedrate Override

In the automatic mode (TAPE, MEM, MDI), feedrate specified by an F code can be overridden in 21 steps in the range from 0 to 200% in increments of 10%, using the FEEDRATE OVERRIDE switch on the machine operation panel. During the execution of a tapping cycle (G74, G84), the setting is disregarded and the tapping cycle is executed in the feedrate specified by the program. If the OVERRIDE CANCEL switch is ON, the setting of the FEEDRATE OVERRIDE switch is disregarded and the axes are moved at the feedrate specified by the F codes in a program.

Table 2.1 Feedrate Override Steps

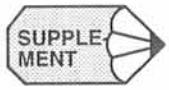
STEP	%	STEP	%
0	0	11	110
1	10	12	120
2	20	13	130
3	30	14	140
4	40	15	150
5	50	16	160
6	60	17	170
7	70	18	180
8	80	19	190
9	90	20	200
10	100	–	–



Optionally, feedrate override range can be expanded to 0 to 540% (32 steps). In this case, override increments are 10% in the range from 0 to 200%, 20% in the range from 220 to 300%, and 40% in the range from 340 to 540%.

(2) Rapid Traverse Override

For the G00 mode operation in automatic mode and for the rapid mode operation in manual mode, the switch can be installed to adjust rapid traverse rate in 4 steps (100%, 50%, 25%, F_0) in the range from 0 to 100%, using the RAPID TRAVERSE OVERRIDE switch on the machine operation panel. For F_0, actual override value is set for parameter (pm2447).



Optionally, override setting is possible in 6 steps as 100%, 50%, 25%, F_0, F_1, and F_2. The feedrates called by the selection of F_1 and F_2 are set for parameters (pm2448 and pm2449). For details, refer to the manuals published by the machine tool builder.

2.7 AUTOMATIC OPERATION (2)

This section describes the switches used for automatic operation.

2.7.1 Optional Stop

The OPTIONAL STOP switch is used to select whether or not the M01 (optional stop) command should be executed in the automatic mode (TAPE, MEM, MDI).

(1) OPTIONAL STOP Switch ON

When the OPTIONAL STOP switch is ON, the machine stops operating with the CYCLE START lamp on the machine operation panel lit after the execution of the block that includes M01. The CYCLE START lamp goes OFF if the FIN signal is returned. The operation restarts when the CYCLE START switch is pressed.

(2) OPTIONAL STOP Switch OFF

The M01 command is disregarded. If the OPTIONAL STOP switch setting is changed during the execution of an automatic operation, it is disregarded for the block presently executed. The new setting becomes valid from the block which is read after the switch setting has been changed.

2.7.2 Optional Block Skip

The OPTIONAL BLOCK SKIP switch is used to set whether or not the data in the block which includes the "/" (slash) code should be disregarded in automatic operation. Note that if the switch setting is changed during operation, the new setting is not valid for the blocks having been read to buffer area.

(1) OPTIONAL BLOCK SKIP Switch ON

When the OPTIONAL BLOCK SKIP switch is ON, the commands specified after the "/" (slash) code are disregarded (up to the end of the block). For the blocks in which the "/" code is specified, the commands specified preceding the "/" code are executed.

(2) OPTIONAL BLOCK SKIP Switch OFF

The blocks which include the "/" (slash) code are executed. If the OPTIONAL BLOCK SKIP switch setting is changed during the execution of an automatic operation, it is disregarded for the block presently executed and also for the blocks having been read to the buffer area. The new setting becomes valid from the block which is read after the switch setting has been changed.

SUPPLEMENT

1. Specification of "/" is equivalent to "/1".
2. When the optional block skip B function is selected, the switches are provided corresponding to "/2" to "/9" individually and by using these switches, it is possible to turn ON and OFF the block skip function for the individual designation of "/2" to "/9".

2.7.3 Dry Run

When automatic mode operation (TAPE, MEM, MDI) is executed with the DRY RUN switch set ON, feedrates specified in a program are disregarded and axis move commands are executed at the feedrate set with the JOG FEEDRATE switch. Since the F code specified in a program is displayed during the execution of a program, the program can be checked efficiently by using this function.

Feedrate to be used in positioning (G00) can be selected from the rapid traverse rate or jog feedrate according to the setting for parameter pm2000 D0 as indicated in Table 2.2.

Table 2.2 Rapid Traverse in Dry Run

Parameter pm2000 D0	G00 in Dry Run
"0"	Rapid traverse rate
"1"	Jog feedrate set with JOG FEEDRATE switch

SUPPLEMENT

1. When the setting of the DRY RUN switch is changed during automatic operation, the new setting becomes valid immediately. However, if it is changed while axis movement is controlled in the "mm/rev" mode* or during the execution of a tapping cycle, the new setting becomes valid after the completion of the presently executed block.
2. In the dry run mode, the setting of the RAPID TRAVERSE RATE OVERRIDE switch is valid for rapid traverse operation.

2.7.4 Display Lock and Machine Lock

The DISPLAY LOCK/MACHINE LOCK switch allows the program to be executed in the following manner – to operate the machine with the present position data fixed, or to execute the program to update the present position data without actually operating the machine. The switch can be operated only while the operation is stopped in the block stop or feed hold state.

(1) DISPLAY LOCK/MACHINE LOCK Switch OFF

Select this position for normal manual or automatic operation. Both the machine and the position data are operated and updated according to the execution of the commands in the program.

(2) In the DISPLAY LOCK Position

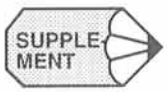
The displayed position data are not updated even when the axes are moved. This position should be selected when the display data should not include the distance of shift.

(3) In the MACHINE LOCK Position

As the program commands are executed manually or automatically, the position data are updated according to the execution of the commands while the machine is not actually operated. With this setting, the M, S, T, and B* functions are executed normally. This are used for manually presetting the display or for checking the tape. Note that the reference point return operation is not executed if the switch is placed in the MACHINE LOCK position.

2.7.5 Auxiliary Function Lock

The AUX FUNCTION LOCK switch on the machine operation panel is used to check the NC tape in combination with the MACHINE LOCK function. When the switch is ON, the M, S, T, and B* function commands are disregarded. When the switch is turned ON during automatic operation, the function becomes valid from the block next to the presently executed block.



1. The M00, M01, M02, and M03 codes are processed normally.
2. Both the decode signal and BCD code are output. However, BCD code is not output with M90 to M99 (internally processed M codes); BCD code is not output inherently with these M codes.
3. The AUX FUNCTION LOCK switch setting is invalid for the S5-digit commands.

2.7.6 Z-axis Command Neglect

The Z-AXIS COMMAND NEGLECT switch is used to execute a program only in the XY plane.

When the switch is ON, the program is executed with the machine lock function applied only to the Z-axis. Although the Z-axis does not move, position data of the Z-axis is updated as the program is executed.

The switch can be operated only while the operation is stopped in the block stop or feed hold state.

2.7.7 4th-axis Command Neglect

When the 4TH-AXIS COMMAND NEGLECT switch is ON, the program is executed with the machine lock function applied only to the 4th-axis. Although the 4th-axis does not move, position data of the 4th-axis are updated as the program is executed.

The switch can be operated only while the operation is stopped in the block stop or feed hold state.

2.7.8 5th-axis Command Neglect

When the 5TH-AXIS COMMAND NEGLECT switch is ON, the program is executed with the machine lock function applied only to the 5th-axis. Although the 5th-axis does not move, position data of the 5th-axis are updated as the program is executed.

The switch can be operated only while the operation is stopped in the block stop or feed hold state.

2.8 OPERATION INTERVENTION DURING AUTOMATIC OPERATION

This section describes the procedure used for manual and MDI operation intervention during automatic operation.

⚠ CAUTION

- Do not restart automatic operation after stopping automatic operation and then performing "tool selection" in manual operation or "1 line MDI" operation.

  The reason for this is that the "tool selection" operation may cause the coordinate system to be changed, leading to unexpected operation if automatic operation were restarted. This could cause tool damage due to interference, and resulting accidents involving injuries to personnel.

  Reset the NC after any manual intervention.

- After stopping automatic operation and performing a manual intervention, do not restart automatic operation without resetting first.

  If automatic operation is started with the "mirror image" or "manual absolute" function in effect, unexpected operation may be performed. This could cause tool damage due to interference, and resulting accidents involving injuries to personnel.

  Reset the NC after any manual intervention.

2.8.1 Manual Operation Intervention during Automatic Operation

To carry out a manual operation during automatic operation, follow the steps indicated below.

① Interrupt the operation by using the FEED HOLD or SINGLE-BLOCK switch on the machine operation panel.

② Record the position where the operation has been interrupted after displaying the present position data by pressing the [EXTERN] (f3) key of the POS. job at the COMN screen.

③ Select the manual mode (RAPID, JOG, STEP or HANDLE) with the MODE SELECT switch on the machine operation panel.

④ Return the axes to the position where manual operation (see 2.3 "MANUAL OPERATION (1)".) has been started (the position recorded in step ②).

⑤ Return the MODE SELECT switch to the operation mode (MEM or MDI) position selected before manual operation intervention.

⑥ Press the CYCLE START switch on the machine operation panel to restart the interrupted automatic operation.

SUPPLEMENT

1. If the operation mode is changed from automatic to manual without stopping the operation, the axes are decelerated and stopped immediately. When the operation mode is changed from one automatic mode to another automatic mode, operation stops at the block end.
2. If automatic operation is restarted without returning the axes to the previously located position after manual operation intervention, how the tool paths to be generated after the restart of automatic operation differs depending on the setting of the MANUAL ABSOLUTE switch on the machine operation panel. For details of the switch, refer to 2.8.4, "Manual Absolute".
3. In the manual mode, 1-line MDI operation is possible. For details of the operation, refer to 2.5.4, "1-line MDI".

2.8.2 MDI Operation Intervention during Automatic Operation

To carry out an MDI operation during automatic operation, follow the steps indicated below.

① Interrupt the automatic operation by turning the SINGLE-BLOCK switch on the machine operation panel ON. The machine stops after the completion of the block being executed when the switch is turned ON. In this case, several blocks of commands might have been read into the buffer area.

② Place the MODE SELECT switch on the machine operation panel in the MDI position.

③ Enter the necessary commands.

④ Press the CYCLE START switch to execute the entered commands.

⑤ Return the MODE SELECT switch to the mode previously selected (TAPE or MEM).

⑥ Turn OFF the SINGLE-BLOCK switch.

⑦ Press the CYCLE START switch to restart the interrupted automatic operation.

SUPPLEMENT

Do not attempt MDI operation intervention in a canned cycle mode (G73, G74, G76, G77, G81 to G89) or during reference point return. Interrupted canned cycle or reference point return could not be completed correctly.

2.8.3 Automatic Handle Mode Offset *

During automatic operation (TAPE, MDI, MEM), distance of axis shift carried out by using the pulse handle can be added by this function. This function allows compensation for errors in mounting workpieces, etc. Follow the procedure indicated below.

① Turn ON the AUTO MODE HANDLE OFFSET switch on the machine operation panel.

② Select the axis to be moved with the HANDLE AXIS switch on the machine operation panel. If the simultaneous 3-axis control by using the pulse handles is selected optionally, simultaneous 3-axis operation is allowed.

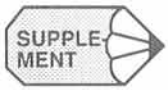
③ Select the axis feed distance per graduation of the pulse handle by placing the MANUAL PULSE MULTIPLY switch on the machine operation panel at an appropriate position. By this switch, it is possible to select 1, 10, or 100 pulses per graduation of the manual pulse generator.

④ When the pulse handle is turned during the execution of automatic operation, movement of the axis which is selected in step ② above is added to the axis move distance specified in the program. When the pulse handle is turned in the clockwise direction, the selected axis moves in the positive direction and when it is turned in the counterclockwise direction, the axis moves in the negative direction.

⑤ Restart the automatic operation after turning the AUTO MODE HANDLE OFFSET switch OFF. Succeeding operation is executed with the axis shifted by the pulse handle operation. When the coordinate system set-up command (G92, etc.) is executed after that, the shift amount is not included but the coordinate system is set according to the specified values.

Table 2.3 Setting Valid/Invalid for AUTO MODE HANDLE OFFSET

Axis	Parameter		Valid/Invalid
	No.	Setting	
X-axis	pm2002 D0 (HOFSX)	1 0	Valid Invalid
Y-axis	pm2002 D1 (HOFSY)	1 0	Valid Invalid
Z-axis	pm2002 D2 (HOFSZ)	1 0	Valid Invalid
4th-axis	pm2002 D3 (HOFS4)	1 0	Valid Invalid
5th-axis	pm2002 D4 (HOFS5)	1 0	Valid Invalid



1. If the NC is in an alarm state or the interlock input (see 1.2.4.) is ON, it is not possible to move an axis by using the automatic mode handle offset function.
2. With parameter pm2003 D1, the condition necessary for moving an axis by using the automatic mode handle offset function can be set.

   pm2003 D1 = 0: Enabled during both rapid traverse and interpolation operation
   D1 = 1: Enabled only during interpolation operation
3. The manual absolute function cannot be used in this function.

2.8.4 Manual Absolute

If a cutting tool is moved manually by interrupting automatic operation, how the manually moved distance should be treated when restarting automatic operation can be determined by the setting of the MANUAL ABSOLUTE switch on the machine operation panel.

2

(1) MANUAL ABSOLUTE Switch ON

After the intervention of manual operation, the program coordinate system is not changed. Subsequently, the remaining commands in the interrupted block are executed by shifting from the programmed path when automatic operation is restarted. When the block appearing next to the operation restarted block is the circular interpolation block (G02, G03), circular interpolation is executed with the paths shifted from the programmed paths. When the G00 or G01 mode commands are given, the shift distance is canceled, and the paths return to the programmed paths.

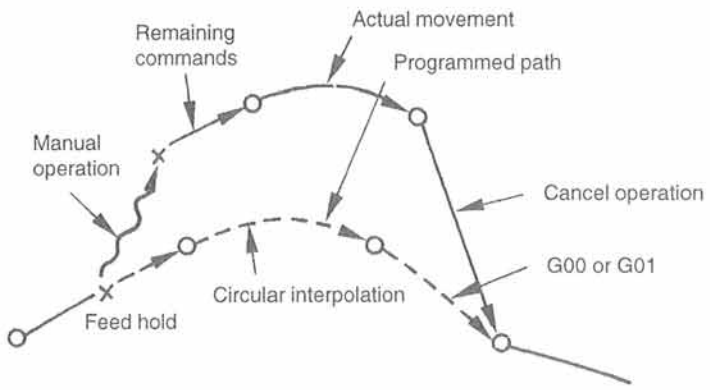


Fig. 2.12 Operation with MANUAL ABSOLUTE Switch ON

SUPPLEMENT

By setting pm4011 D7, it is possible to make the manual absolute function valid when a program is executed in the G91 (incremental command) mode. In this case, the manual absolute function is called when the G90 (absolute command) is executed.

(2) MANUAL ABSOLUTE Switch OFF

If manual operation is executed by interrupting automatic operation, the program coordinate system is shifted by the manually shifted distance. Accordingly, when automatic operation is restarted, the program is executed in the shifted coordinate system.

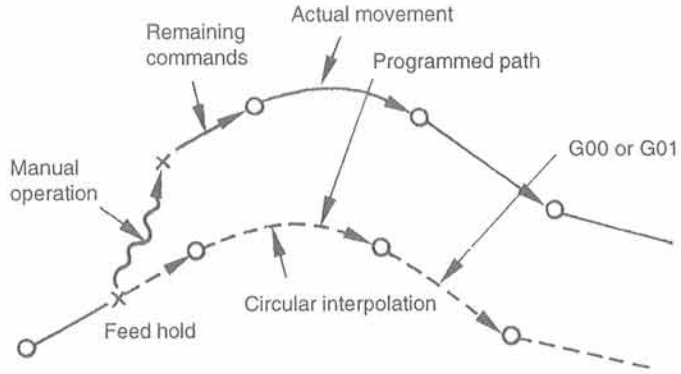


Fig. 2.13 Operation with MANUAL ABSOLUTE Switch OFF

The manually shifted amount is canceled by the following commands or operation in which the commands in the program are changed so that they agree with the present values.

- Manual or automatic reference point return
- Setting the base coordinate system
- Execution of skip (G31)
- Reset operation

2.9 AUTOMATIC OPERATIONS AT ENHANCED LEVEL

In this section, enhanced level functions of YASNAC are described.

2.9.1 Tool Length Measurement *

The tool length measurement function measures the tool length offset amount which is used for the tool length offset (G43, G44, G49) function.

(1) Operation (Parameter pm6008 D0 = 0)

Follow the procedure indicated below to measure the travel distance.

① Mount a tool in the spindle and position the Z-axis at the position that should be taken as the home position. Although the home position may be set at any position, setting it at the tool change position will simplify the tool change procedure.

② Select a manual mode by placing the MODE SELECT switch on the machine operation panel at the RAPID, JOG, HANDLE, or STEP position.

③ Press the [SET] process key on the NC operation panel to select the set-up process.

④ Press the [TOOL] (f1) job soft-key to select the tool job. The tool offset amount display mode is selected and the tool offset amount of the offset number already specified and those near this number are displayed.

⑤ In the state that axes are all stopped, press the MEASUREMENT switch on the machine operation panel. Note that this switch is valid only in a manual mode. The MEASUREMENT lamp lights and the preset Z-axis position is set as the home position. If the selected process is not the set-up process, the set-up process is automatically selected and the corresponding screen is displayed.

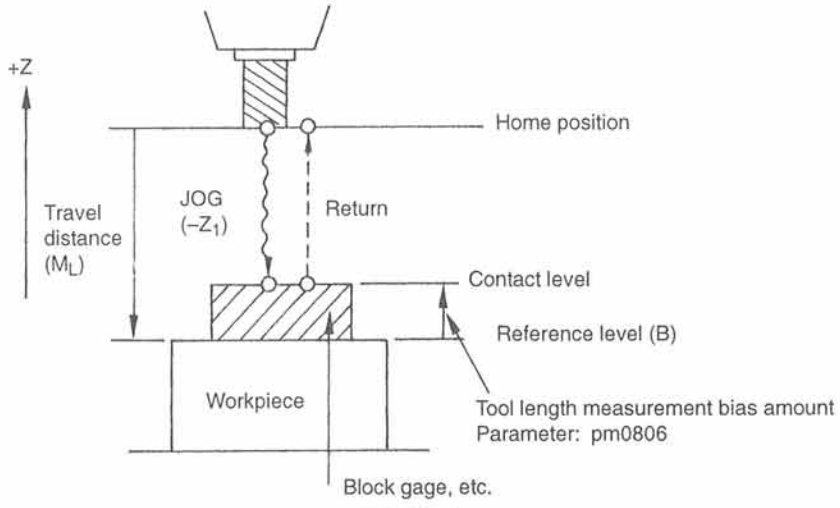


Fig. 2.14 Measuring the Tool Length Offset Amount

⑥ Measurement starts from the home position; this position is taken as "0".

SUPPLEMENT

1. To start measurement from "0" in the workpiece coordinate system, execute zero set operation of the workpiece coordinate system at this position. Note that measurement can be executed correctly even if zero set operation is not executed.
2. For details of the screen used for tool length measurement, refer to 5.2.4, "Writing the Measured Tool Length Offset Amount".

⑦ Move the tool offset number where the offset amount should be written by using the page keys or cursor up/down keys. Or press the cursor down key after entering the tool offset number. The page including the specified offset number is displayed and the cursor is located at the specified tool offset number.

⑧ Manually move the Z-axis to bring the nose of the tool into contact with the contact level. The contact level is set in reference to the reference level (top face of the workpiece to be machined) and the difference between these two levels is set for parameter pm0806 as the "tool length measurement bias amount" (1 = input unit). This bias amount can be considered as the thickness of the block gage, etc, and should be written in a positive value. This bias amount can be set by carrying out the following operation on the tool length measurement screen.

- Press the [BIAS] (f1) soft-key, and "BIAS (B)" is highlighted.
- After keying in the bias amount, press the [WR] key. The keyed in bias amount is entered.

⑨ Press the WRITE & RETRACT switch on the machine operation panel, and the following operation is executed.

- The Z-axis automatically returns to the home position at a rapid traverse rate. The distance from the home position to the reference level, which is equivalent to the travel distance (M_L) is stored to at the specified offset number. Note that "(M_L) = Z - B".
- After the completion of the above, the offset number one larger than the specified offset number is newly specified. The tool length offset amount can now be entered for this new offset number. After the completion of offset amount storing for H99, the H code number returns to H01.

⑩ Change the tool either manually or in MDI mode operation to set the next tool in the spindle. The MEASUREMENT lamp remains lit even when the mode is changed to MDI. After setting the tool length offset amount for all tools, return the mode to a manual mode.

⑪ Repeat steps ⑧ to ⑩ to set the tool offset amount for all tools to be used.

⑫ Press the [RETURN] (f5) function soft-key. The screen is changed to the offset screen. Note that this operation can be omitted.

⑬ Press the MEASUREMENT switch. The MEASUREMENT lamp goes OFF and the automatic offset data writing function is canceled. If the tool length measurement screen has been displayed, the screen is changed to the offset screen.

2

(2) Measuring the Remaining Distance (Parameter: pm 6008 D0 = 1)

If "parameter pm6008 D0 = 1", the remaining distance (R_L) is stored to the tool offset data memory instead of the travel distance (M_L).

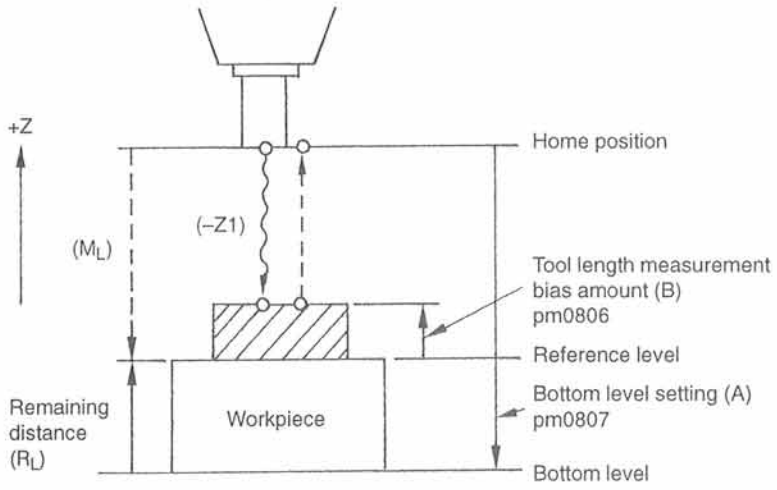


Fig. 2.15 Measuring the Remaining Distance

The bottom level which is taken as the reference for measuring the remaining distance is set for parameter pm0807 (1 = input unit) with the signed value reference from the home position. The bottom level can also be set in the following operation at the tool length measurement screen.

① Press the [BOTTOM LEVEL] (f2) soft-key. The "BOTTOM LEVEL (A)" is highlighted.

② After inputting the bottom level setting value, press the [WR] key. The bottom level is written. For other operations, follow the same steps as in (1). $R_L = -(A - M_L)$

(3) Measuring the Tool Length Using the NC Operation Panel

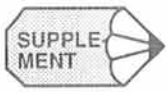
Without using the special switches on the machine operation panel provided for measurement, it is possible to measure tool length by using the switches and keys on the NC operation panel. Follow the procedure indicated below instead of pressing the WRITE & RETRACT switch.

① Display the common process screen by pressing the [COMN] process key. After that press the [POS] (f1) job soft-key and then the [UNIV] (f2) function soft-key.

② Press the [SET] (f5) function soft-key to clear the coordinate system set value to "0". This means that the home position is set to "0".

③ Press the [SET] process key to display the set-up process screen. After pressing the [TOOL] (f1) job soft-key, press the [OFFSET] (f1) function soft-key, then press the function selection key to change the menu. Select the [TLM] (f1) function soft-key to display the tool length measurement screen.

④ Press the [WRITE] (f4) function soft-key. The measured tool length is written in the same manner as in normal tool length measurement operation. In this case, however, the Z-axis does not return to the home position. The setting for parameter pm6008 D0 (travel distance measurement/remaining distance measurement) is valid for this operation, and which of the values written is determined by the setting for this parameter.



1. In this automatic writing operation, the measured value is stored to the memory in an absolute value.
2. When the home position is not the tool change position, the tool can be brought into contact with the contact level directly after changing the tool to the next one. Once the home position is set with the MEASUREMENT switch, positioning at the home position is not necessary for the succeeding operation.
3. If "H00" is specified, the offset amount is not updated even when the WRITE & RETRACT switch is pressed. Therefore, the tool length measurement operation should be executed after moving the cursor to a position of "H01" or below.
4. On the tool length measurement screen, it is possible to update the offset amount where the cursor is positioned by pressing the [WR] key after entering the data by the keys.

2.9.2 Return to the Operation Interrupted Point *

The "return to operation interrupted point" function is provided to return the axes to the previously located position where automatic operation has been interrupted to carry out manual operation for measuring the machined dimensions or removing chips.

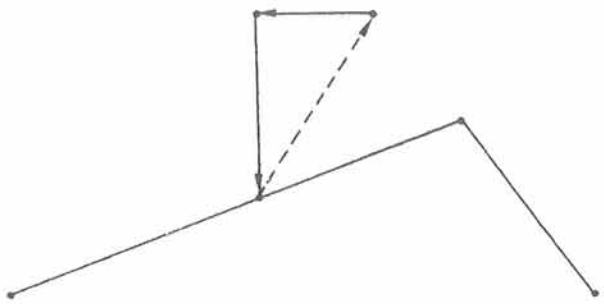


Fig. 2.16 Return to Operation Interrupted Point

The operation procedure is explained below.

① Interrupt the automatic operation by pressing the SINGLE-BLOCK or FEED HOLD switch on the machine operation panel.

② Select a manual mode by placing the MODE SELECT switch on the machine operation panel in the JOG, RAPID, HANDLE, or STEP position.

③ Move an axis in the manual mode to retract the cutting tool appropriately.

④ Carry out required operation such as measuring the workpiece, removal of chips, etc.

⑤ Turn ON the INTERRUPTION POINT RETURN switch on the machine operation panel.

⑥ Press the MANUAL PULSE MULTIPLY switch on the machine operation panel corresponding to the direction to the machining interrupted point (the point where the operation mode has been changed from automatic to manual). The axis moves to the machining interrupted point at the selected feedate and it stops moving when it reaches the machining interrupted point.

⑦ Turn OFF the INTERRUPTION POINT RETURN switch on the machine operation panel.

⑧ Return the operation mode to an automatic mode and press the CYCLE START switch on the machine operation panel. The automatic operation restarts.

SUPPLEMENT

1. If the axes are positioned on the machining interrupted point, turn OFF the INTERRUPTION POINT RETURN switch. Otherwise, jog feed of such axes is not possible.
2. If the NC is reset after changing the operation mode from automatic to manual, the present position is taken as the machining interrupted point. This means that the axes are positioned on the machining interrupted point and, subsequently, jog feed operation is not allowed unless the INTERRUPTION POINT RETURN switch is turned OFF.
3. If automatic operation is interrupted by manual operation for a second time after the automatic operation was once interrupted by manual operation and then the automatic operation was recovered, the point where the operation mode was last changed from automatic to manual is taken as the machining interrupted point.
4. If the REFERENCE POINT RETURN switch or the second reference point return switch is ON, the machining interrupted point return operation is not executed but the reference point return or the second reference point return operation is executed.

2.9.3 Manual Centering Operation *

The manual centering function can determine the coordinate values of the center between the two points or the center of a circle by manual operation. Follow the procedure indicated below.

2

① Place the MODE SELECT switch on the machine operation panel in the HANDLE, STEP, JOG, or RAPID position.

② Press the COMN process key to display the common screen. Then press the [POS.] and [UNIV] soft-keys.

③ Turn ON the MANUAL CENTERING MODE switch. At the same time, turn ON the MANUAL SKIP MODE switch.

④ Specify the axis for centering operation. If the [WR] key is pressed after entering "X0" or "X123.000", the entered value is saved temporarily and displayed on the screen.

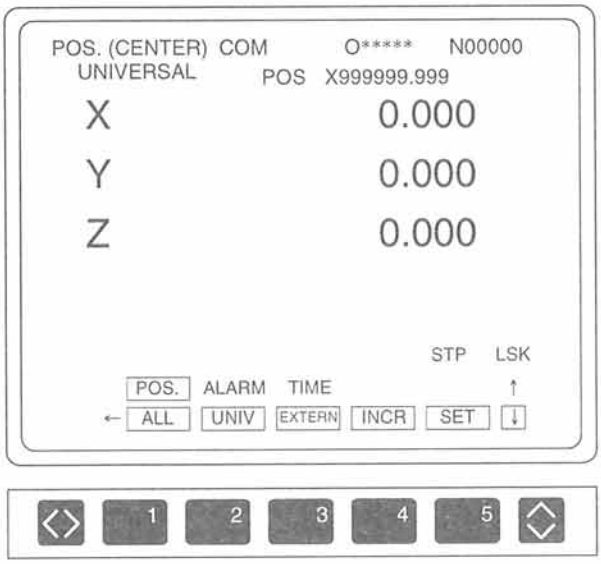


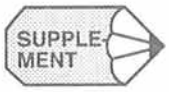
Fig. 2.17 Centering Axis Designation Screen

⑤ Operate the X-axis to bring the sensor into contact with the circumference. When the sensor outputs a signal, the axis stops moving and the value saved in step ④ is set for position data. This is the same processing as the setting for coordinate system. The axis does not move in the contact detected direction until it is retracted by more than the preset return amount.

⑥ Move the axis in the opposite direction and bring the sensor into contact with the circumference in the opposite side. When the sensor outputs a signal, the axis stops moving and the center of two contact detected points is set as the present position.

⑦ Carry out the same steps ④ to ⑥ for the Y-axis.

⑧ Turn OFF the MANUAL CENTERING MODE switch. At the same time, turn OFF the MANUAL SKIP MODE switch.



This function is valid only when the manual skip is valid.

2.9.4 Program Restart *

By using the program restart function, it is possible to restart an interrupted operation in such cases where execution is interrupted due to breakage of a cutting tool or to restart the program continuously from the block where the operation was stopped the previous day. By designating a sequence number of the block, the function allows the program to be restated from the specified block.

(1) Operation

① Turn ON the PROGRAM RETURN (program restart) switch on the machine operation panel.

② After placing the MODE SELECT switch on the machine operation panel in the MEM position.

③ Rewind the program to the beginning. For details of this operation, refer to the explanation given in 6.1, "PROGRAM JOB".

④ Press the [RESTART] (f3) function soft-key on the PROGRAM JOB screen of the RUN process. The message requesting the input of the program restart position information is displayed.

⑤ The message "ENTER SEQUENCE NUMBER" is displayed. Enter the sequence number and press the [WR] key.

⑥ The message "ENTER THE OCCURRENCE NUMBER" is displayed. If the same sequence number appears more than one time, enter the position of the objective sequence number and press the [WR] key. If designation of the position of the objective sequence number is not necessary, press the [WR] key only.

⑦ Press the [WR] key again. Sequence number search starts from the present cursor position.

- During the execution of the search, the message "PREPARING TO RE-START" is displayed on the screen, and, at the same time, the program restart message "PRS" blinks on and off on the screen. The "PRS" is cleared when the positioning of the axes at the restart position is completed.
- Upon completion of the search, the program restart information is displayed on the screen.

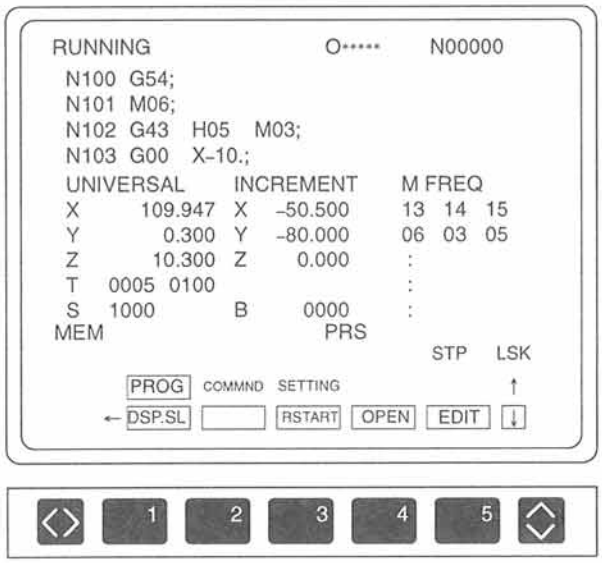


Fig. 2.18 Program Restart Information Display Screen

UNIVERSAL	:	Indicates the coordinate values of program restart position.
INCREMENT	:	Indicates the distance from the present tool position to the program restart position.
M	:	Displays all M codes having been read from the sequence number search start block to the restart block. If there are more than 24 M codes, the latest 24 M codes are displayed.
MFREQ	:	Indicates the number of specified M codes.
T	:	Displays up to two latest T codes specified before the restart block.
S	:	Displays the last S code specified before the restart block.
B	:	Displays the last B code specified before the restart block. (only when the second auxiliary function option is valid.)

SUPPLEMENT

M and T codes are displayed in the order of their appearance.

⑧ If the searched sequence number is the objective block, turn OFF the PROGRAM RETURN switch. If it is not the objective block, execute the program restart request again.

⑨ If there are M, S, T, and/or B codes that are necessary for restarting the program, specify one on the program restart information screen. Select the manual mode for this operation.

⑩ Enter the necessary M, S, T, and/or B code and execute it by pressing the CYCLE START switch on the machine operation panel (execution of M, S, T, and/or B code using the 1-line MDI function).

⑪ Return the mode to the memory mode.

⑫ Restart the program by pressing the CYCLE START button. When the CYCLE START switch is pressed, the axes move to the operation restart point one by one in the order of 5th-axis, 4th-axis, X-axis, Y-axis, and Z-axis. After that the automatic operation restarts from the block next to the specified sequence number.

(2) Precautions on Operation

- While the "PREPARING TO RESTART" message is displayed, no key operation is accepted except the RESET key on the NC operation panel. The G and M code display in the program job of the operation process is not changed.
- After the "PREPARING TO RESTART" message is cleared, it is possible to change the display in the lower half area of the screen to "G/M code information", "Subprogram nesting information", or "Program restart information" by pressing the page keys.
- While "PRS" is displayed, it is not allowed to call and edit the program stored in memory.
- The [RESTART] (f3) function soft-key is displayed only when the PROGRAM RETURN switch on the machine operation panel is ON and the NC is in the label skip status.
- The program restart request can be executed without using the PROGRAM RETURN switch.

pm4015 D0 = 0	PROGRAM RETURN switch necessary
pm4015 D0 = 1	PROGRAM RETURN switch not necessary

- When the parameter setting is made so that the PROGRAM RETURN switch is not necessary for the program restart request, the program restart mode ON/OFF is changed by the [RESTART] (f3) soft-key. In this case, operation step ⑧ explained in item (1) above is not necessary.

(3) Remarks on Program Restart and Related Functions

The program restart function establishes various conditions during the execution of sequence number search so that the conditions at the restart will be the same as those when the program was interrupted. However, some program commands require extra care. These are indicated below.

(a) Program restart position

The position for the restart of program is generated in the NC. Therefore, the axes are regarded to move as programmed during the search for the program restart position. If the function is executed in the mode called by the following G codes, the point specified in a program and actual positioning point differ from each other and in such modes, the point specified in the program is regarded as the end point: automatic reference point return (G28), reference point return check (G27), return from reference point (G29), second - fourth reference point return (G30), and machine coordinate system (G53).

(b) Input signal

There are commands that perform different operations depending on the input signals. With one type of signal, the status at the start of search for the program restart is retained, and with another type of signal, they are completely disregarded.

- The signals that retain the status at the start of search:

  Mirror image (M95, M94), block delete, machine lock, and F1-digit selection

- The signals that are disregarded:

  Feed hold, single-block, auxiliary function lock, skip, program interrupt (M91, M90), and optional stop

- The distance which the axes were moved before cycle start is cancelled disregarding of the ON/OFF status of the manual absolute signal and the commands are executed in the workpiece coordinate system called at the completion of search.

(c) Program restart in a special mode

When program restart is attempted in a special mode, there are cases where the commands in the program cannot be executed as specified since the operation mode cannot be established.

- If the program is restarted in the solid tap mode (M93), G74/G84 mode is executed in normal mode tapping.
- If the program is restarted in the high-speed cutting command (HON, HOF) mode, normal operation is executed.
- Restart is possible according to the feedrate selected by the F1-digit command. However, for acceleration/deceleration using the pulse handle, it is necessary to specify the F1-digit command again.
- To restart the program in the tool life control mode, it is necessary to specify the life control groups before restarting the operation.
- The tool group is displayed in a T code in the program restart information.

(d) Using a macroprogram

When a macroprogram is used, care must be paid on system variables.

- All interface input/output signals (#1000 - #1031, #1032, #1100 - #1131, and #1132) are processed as "0". Therefore, correct results cannot be expected.
- Although the clock (#3001, #3002) is read and written normally, the time count at the restart of the program is not guaranteed.
- The control of single-block stop and wait for the completion of auxiliary function (#3003) is disregarded and the specification of control is made invalid.
- The control for feed hold, feedrate override, and exact stop (#3004) is disregarded and the specification of control is made invalid.
- Although the position data (#5000 -) is read normally, the data generated in the NC is used for the operation. For the servo error data (#5101 - #5105), "0" is read.
- Concerning the RS-232C data output 2 (BPRNT, DPRNT), if the program is restarted at the RS-232C open command, an alarm occurs at the execution of the RS-232C output command.

SUPPLEMENT

1. When moving the axes to the program restart position by pressing the CYCLE START switch, if interference occurs between the axes and the workpiece or fixture, move the axes to the same position manually.
2. If the CYCLE START switch is pressed while the PROGRAM RETURN switch is ON, the warning message "RESTARTING PROG!" is displayed.
3. After the completion of search for program restart, operation intervention is not allowed in other than manual mode until program restart is executed. If the CYCLE START switch is pressed in the MDI, TAPE or MEM mode, alarm "0292" occurs and the message "IMPOSSIBLE TO START THE COMMAND WHEN RESTARTING PROGRAM" is displayed.
4. If the PROGRAM RETURN switch is ON, it is not possible to move an axis manually. Operation of jog switches and manual pulse generator is disregarded.
5. When requesting the program restart, conditions such as the input signals and tool offset must be the same as those at the interruption of the program. Otherwise, correct restart position and conditions cannot be established. Manual operation that is carried out in the program restart operation is allowed only with the MANUAL ABSOLUTE switch set ON.
6. During the search for program restart, the FEED HOLD switch and the SINGLE-BLOCK switch are disregarded. If the NC is reset during the search, the search is interrupted immediately. If this occurs, it is necessary to request the program to restart once again.
7. This function executes processing on the assumption that the coordinate system has been established correctly before the restart of operation. Therefore, if the restart request is given without executing the reference point return after turning the power ON, alarm "0411" to "0415" occurs and the message "REFERENCE POINT RETURN NOT COMPLETED" is displayed. With the incremental command program, if the coordinate system setting command is not given at the beginning of the program, the restart position cannot be generated correctly.
8. If the sequence number given with the restart request is not found, alarm "0290" occurs and the message "PROGRAM RESTART SEQUENCE NUMBER NOT FOUND" is displayed.
9. Upon completion of the search, if reference point return is executed by changing the mode to manual, or if manual coordinate system setting is executed, alarm "0291" occurs and the alarm message "COORDINATE SYSTEM SHIFTED AFTER PROGRAM RESTART" is displayed.
10. Program restart is impossible for DNC operation, tape operation, and high-speed cutting mode operation.

2.9.5 Playback Function *

When editing a part program, it is possible to set the present value of axes, and F, S, and T codes for the command values. In other words, for axis command, after moving the axis to the required position, that position data can be set as the command value. With F, S, and T codes, the present valid values can be written as the command values.

(1) Operation

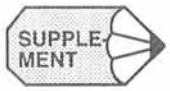
To enter the playback mode, select the RUN process and press the [PROG] and [EDIT] soft-keys to select the edit mode. After that turn the PLAY BACK switch ON.

For writing the data, either key input or external signals can be used.

(a) Writing the data by key operation

① Move the axes to the position whose position data should be written as the command value. For this movement, select an appropriate method for the individual axes.

② Press the address key corresponding to the axis name for which the data should be written and press the [WR] key. The present position data (workpiece coordinate system) displayed on the screen is taken as the command value for that axis. If a value is entered from the keyboard before pressing the [WR] key, the entered value is added to the present position data and the total of these values is used as the command value.



If the [WR] key is pressed repeatedly, the value of the present position is added each time the [WR] key is pressed.

Examples:

- When the present position value (workpiece coordinate system) is "1.000", if the [WR] key is pressed after entering "X", the value is set for X as "X1.".
- When the [WR] key is pressed after entering "2.000", the present position value of "1.000" is added to the entered value and the value is set for X as "X3.".
- When the [WR] key is pressed two times after entering "2.000", the present position of "1.000" is added two times to the entered value and the value is set for X as "X4.".

---

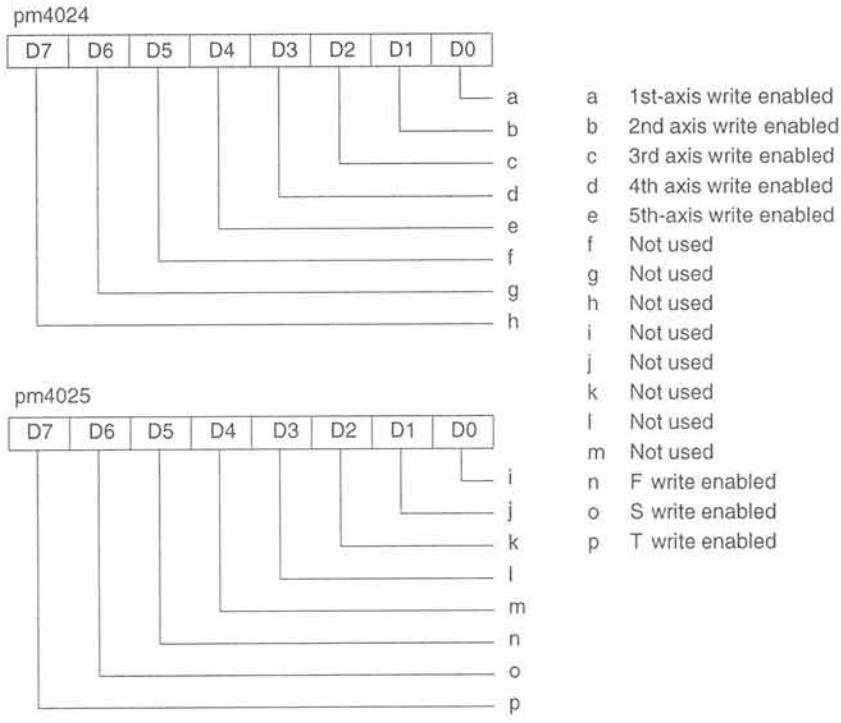
③ Write the data for F, S, and T. The data can be written in the same manner as writing the axis data. Differences from the procedure for writing the axis data are indicated below.

- If a value is entered before pressing the [WR] key, the entered value is taken as the command value. The entered value is not added to the present value as with the axis data.
- When writing the F or S data, the presently specified F or S command value is written.

(b) Writing the data by using the external write signal

The external signal used for writing is #30086.

① When the external write signal is turned ON, writing is enabled for the axes and cutting feed set for parameters pm4024 and pm4025.



② When writing the data, the new data are compared to the existing data and only the changed data are written.

(c) Storing the edited program to memory

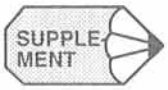
After the completion of editing, press the [EDIT] (f5) soft-key to store the edited part program.

(d) Supplements to the playback function

- Concerning the data other than the axis data, and F, S, and T data, edit the part program in the same manner as normal editing operation.
- The present value written by pressing the [WR] key is the position data in the workpiece coordinate system. Therefore, the playback operation can be started only after setting the zero point for machining by using such as G92.
- Editing is possible only when the [EDIT] soft-key is highlighted.

(2) Input/output Signal

The playback function can be turned ON and OFF by the value set for #30087. Instead of this, the playback function can be turned ON and OFF by changing the setting for parameter pm0005 D5.



1. If the [EDIT] soft-key is not highlighted, it indicates that the playback mode is OFF.
2. When writing the data by key entry operation, if the [WR] key is pressed without entering the address of the data to be written (axis address, F, S, T), the warning message "NO ADDRESS SPECIFIED" is displayed. Press the [WR] key only after specifying the address.
3. If an attempt is made to write the data before axis movement is completed, the warning message "AXIS MOVING" is displayed and writing operation is not accepted until the completion of axis movement.
4. For F, S, and T, the preset F, S, and T command value are written.

3

BASICS OF DISPLAY AND WRITING OPERATION

Chapter 3 describes the basic terms related to operation and the NC operation panel.

3.1 BASICS OF TERMS RELATED TO OPERATION ..... 3 - 2

3.1.1 Process Screens ..... 3 - 3

3.1.2 Jobs and Functions ..... 3 - 3

3.1.3 YASNAC J300M Function Structure ..... 3 - 4

3.2 NC OPERATION PANEL ..... 3 - 9

3.2.1 Keys and Display Screen on NC Operation Panel ..... 3 - 9

3.2.2 Normal Display on CRT Screen ..... 3 - 16

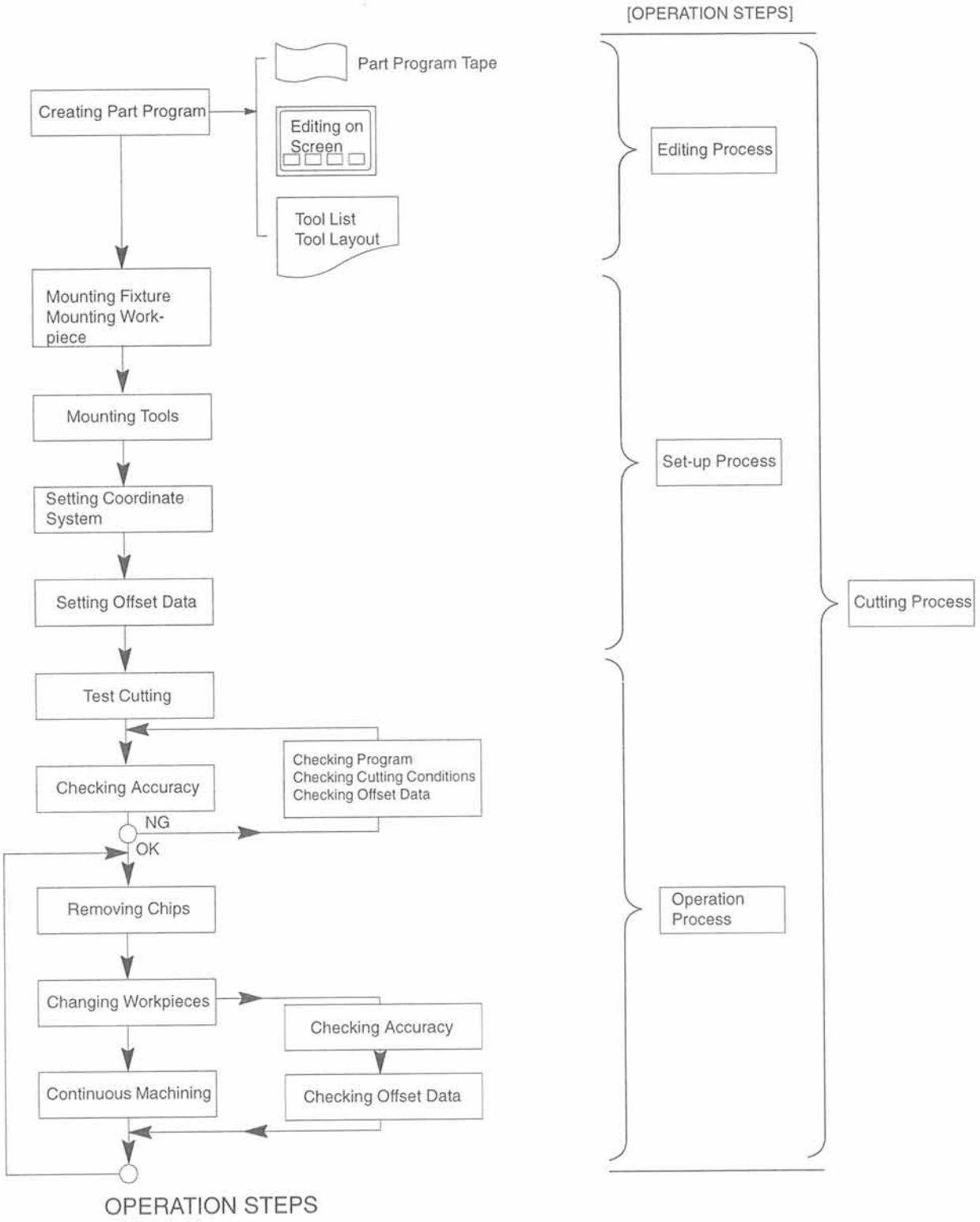
3.2.3 Pop-up Menu ..... 3 - 21

3.2.4 Key Buffer Edit Function ..... 3 - 22

3.2.5 Buzzer Function ..... 3 - 23

3.1 BASICS OF TERMS RELATED TO OPERATION

This section describes the functions of the keys on the operation panel and guide messages displayed on the screen for each of the operation steps according to the actual operation flow.



OPERATION STEPS

3.1.1 Process Screens

YASNAC J300 provides a variety of display screens and these display screens are largely classified into six blocks according to the processes: edit, set-up, operation (run), maintenance, common, and AUX1.

Process screens directly related to cutting	Edit process screen, set-up process screen, run process screen, AUX1 screen
Process screen related to NC maintenance	Maintenance process screen
Process screen used in common for four cutting related processes	Common process screen

At each screen, keys used to control the display are arranged on the NC operation panel (four cutting process keys, maintenance process key, and common process key). By using these keys, the required process screen can be quickly displayed for each machining process.

3.1.2 Jobs and Functions

Each process consists of jobs and each job has functions. One process has a maximum of five jobs, and for each of the jobs there are no restrictions in the number of functions. After selecting a process, the jobs and functions are selected by using soft-keys. Tree structure of the process, jobs, and functions is indicated in Fig. 3.1.

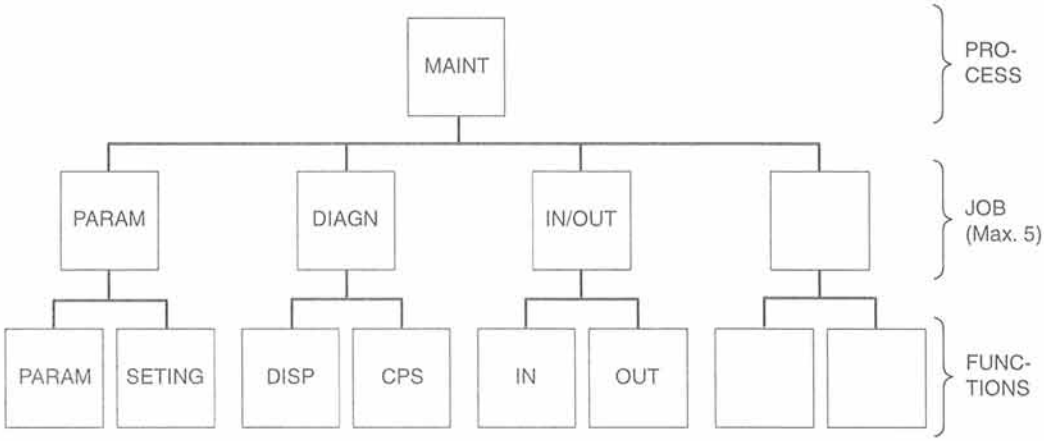
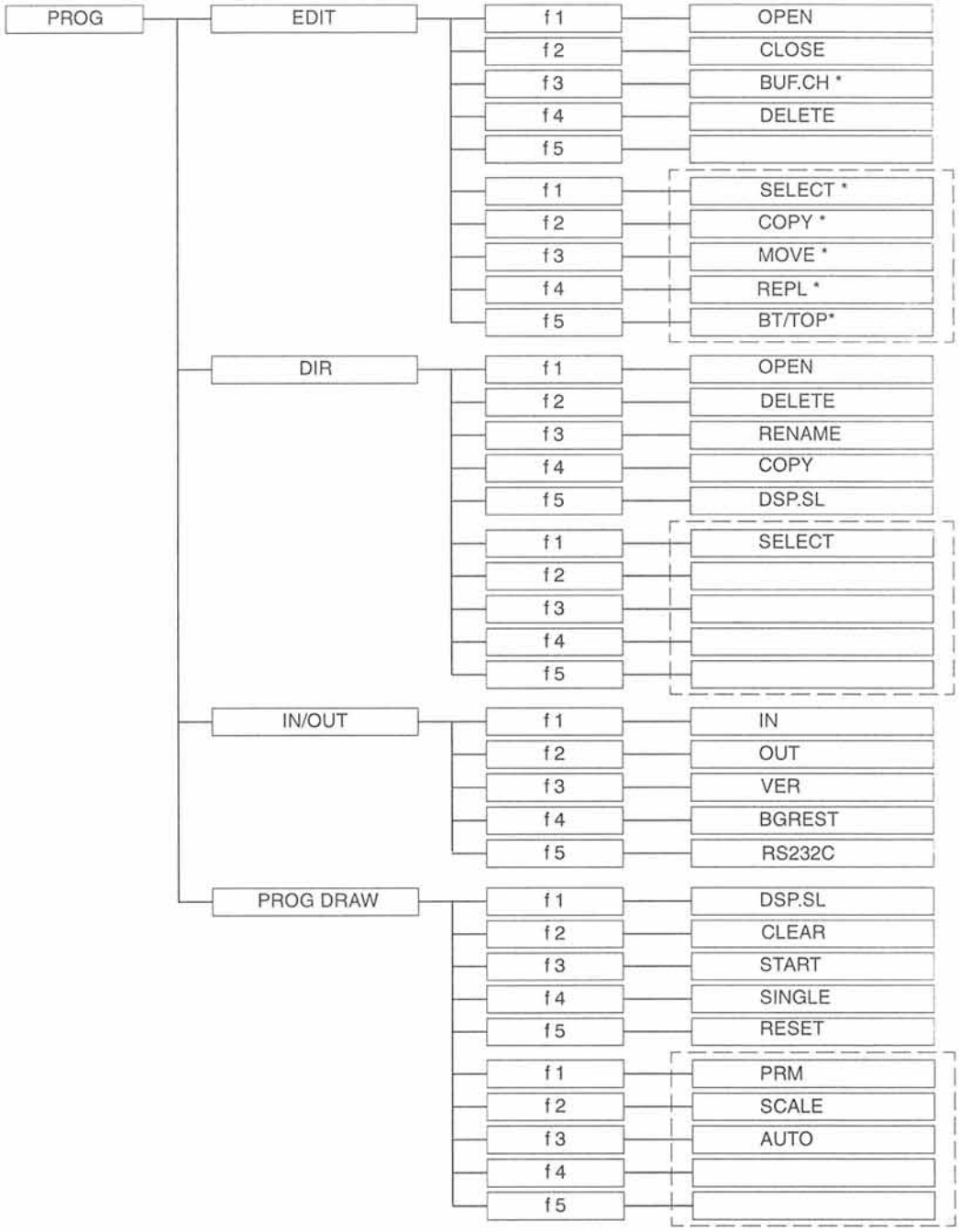
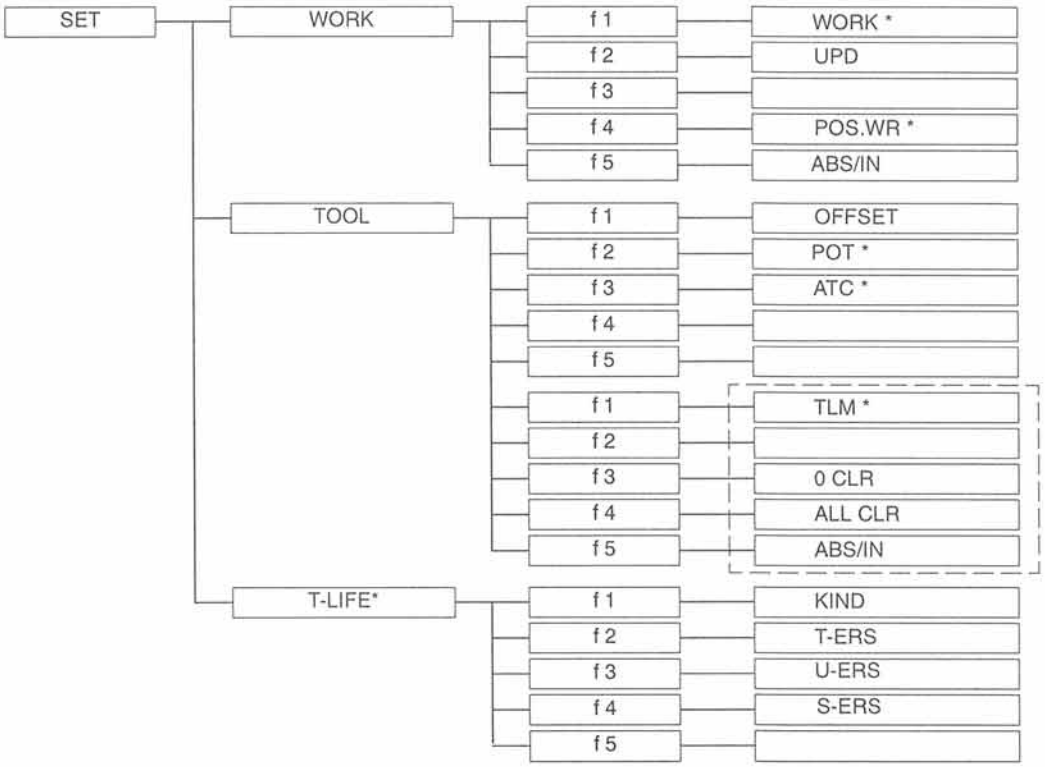


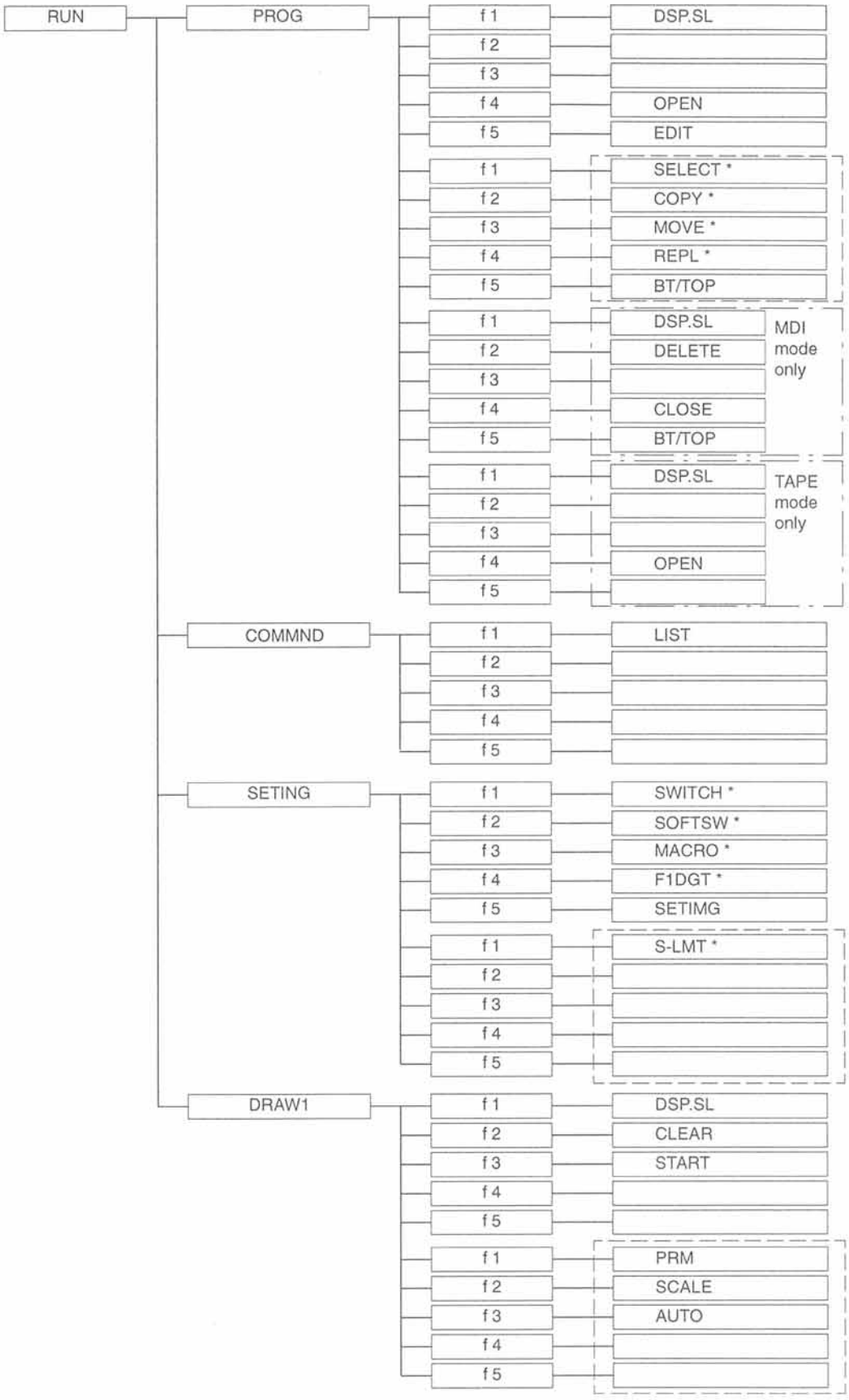
Fig. 3.1 Example of Structure

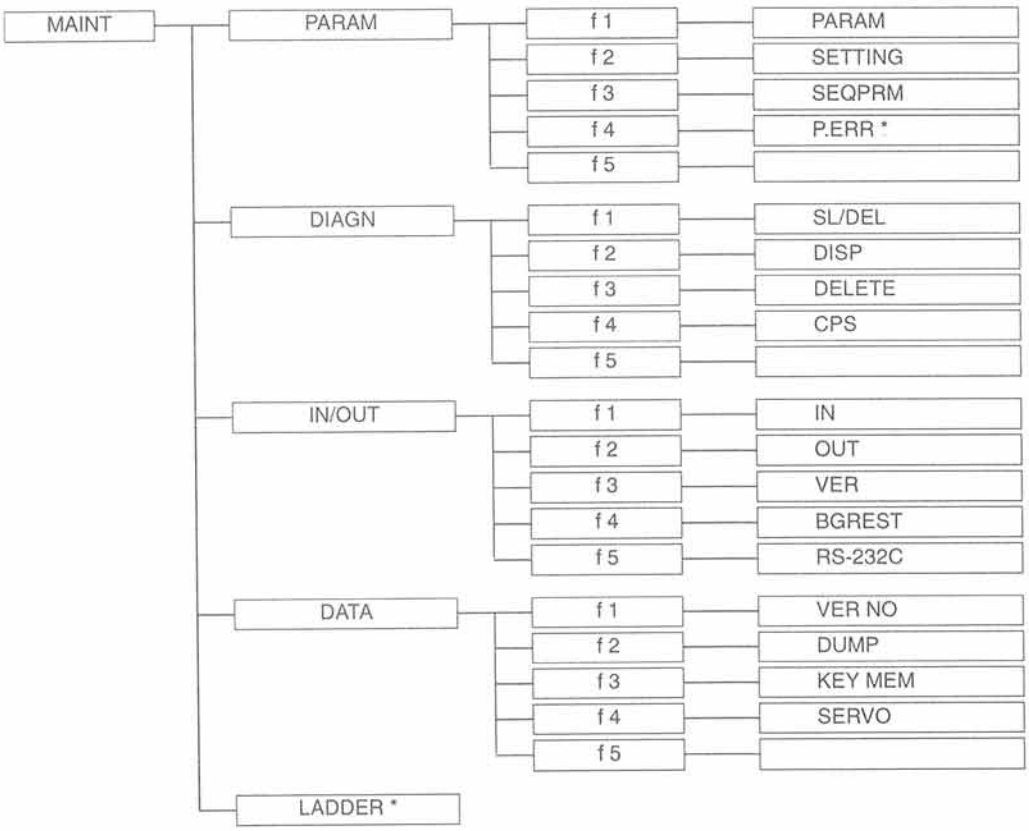
3.1.3 YASNAC Function Structure

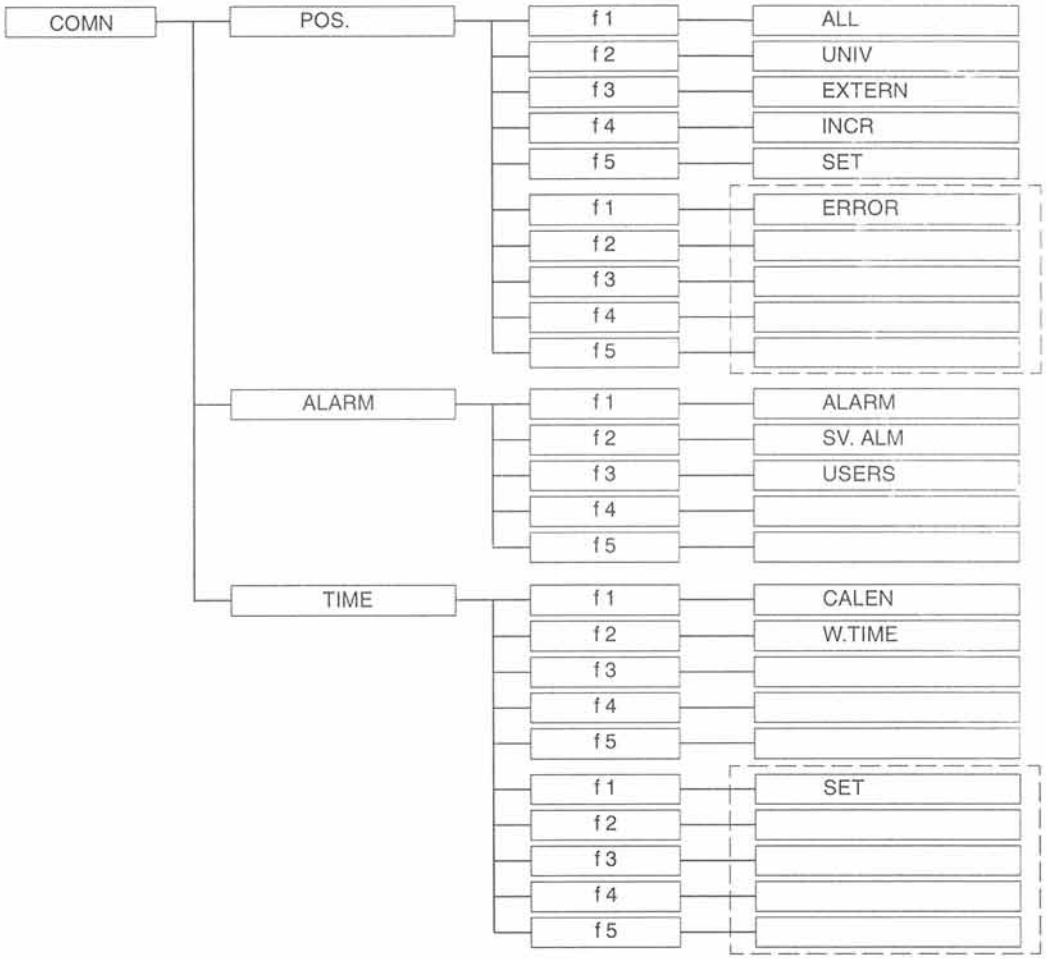
The structure of processes, jobs, and functions is indicated below.




SET
WORK
f 1
WORK *
f 2
UPD
f 3
f 4
POS.WR *
f 5
ABS/IN
TOOL
f 1
OFFSET
f 2
POT *
f 3
ATC *
f 4
f 5
f 1
TLM *
f 2
f 3
0 CLR
f 4
ALL CLR
f 5
ABS/IN
T-LIFE*
f 1
KIND
f 2
T-ERS
f 3
U-ERS
f 4
S-ERS
f 5


RUN
PROG
f1
DSP.SL
f2
f3
f4
OPEN
f5
EDIT
f1
SELECT *
f2
COPY *
f3
MOVE *
f4
REPL *
f5
BT/TOP
f1
DSP.SL
f2
DELETE
f3
f4
CLOSE
f5
BT/TOP
MDI mode only
f1
DSP.SL
f2
f3
f4
OPEN
f5
TAPE mode only
COMMND
f1
LIST
f2
f3
f4
f5
SETING
f1
SWITCH *
f2
SOFTSW *
f3
MACRO *
f4
F1DGT *
f5
SETIMG
f1
S-LMT *
f2
f3
f4
f5
DRAW1
f1
DSP.SL
f2
CLEAR
f3
START
f4
f5
f1
PRM
f2
SCALE
f3
AUTO
f4
f5


MAINT
PARAM
f 1
PARAM
f 2
SETTING
f 3
SEQPRM
f 4
P.ERR *
f 5
DIAGN
f 1
SL/DEL
f 2
DISP
f 3
DELETE
f 4
CPS
f 5
IN/OUT
f 1
IN
f 2
OUT
f 3
VER
f 4
BGREST
f 5
RS-232C
DATA
f 1
VER NO
f 2
DUMP
f 3
KEY MEM
f 4
SERVO
f 5
LADDER *



: Functions displayed by pressing the FUNCTION SELECTION key

* : Option

: Mode dependent functions

3.2 NC OPERATION PANEL

This section describes the configuration of the NC operation panel and the editing function.

3.2.1 Keys and Display Screen on NC Operation Panel

NC operation panel of YASNAC series is shown in Fig. 3.2.

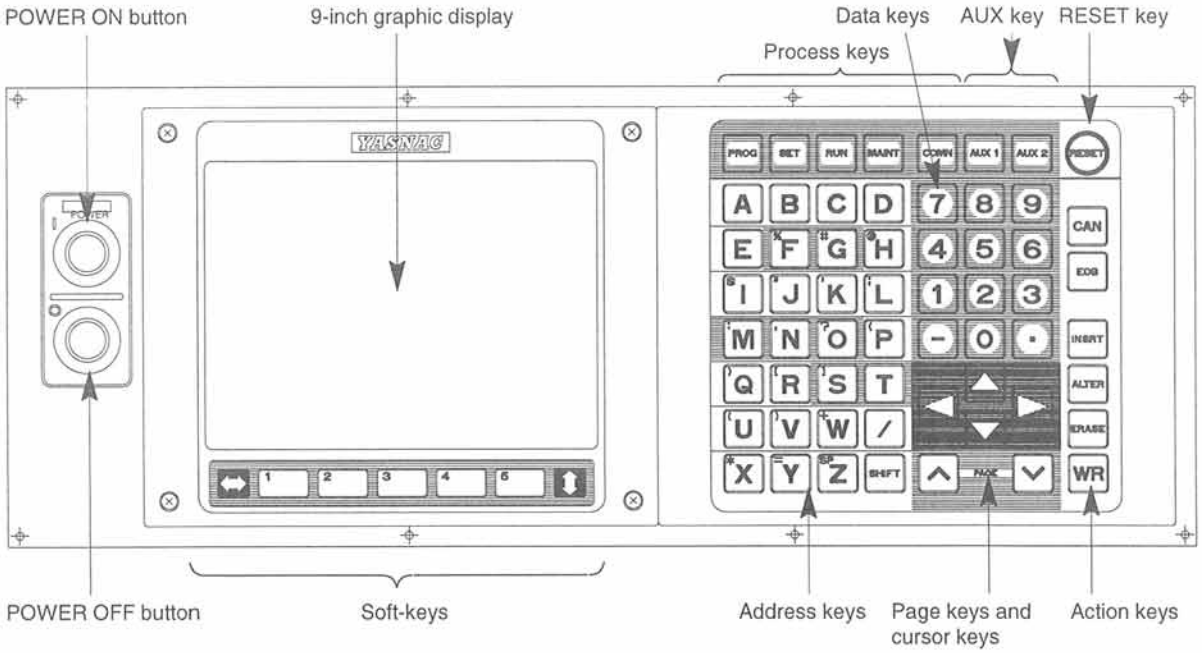


Fig. 3.2 Operation Panel

(1) POWER ON/OFF Buttons

(a) POWER ON button (Turning ON the power to the NC unit)

Power is supplied in two steps of operation. In the first, pressing of the POWER ON button, power is supplied to the control unit, and power is supplied to the servo the second time the POWER ON button is pressed. With some models of machines, power will be supplied to the servo in the first pressing of the POWER ON button. For details, refer to the manuals published by the machine tool builder. To turn ON the servo power after emergency stop or other similar operation, this button is also used.

(b) POWER OFF button (Shutting OFF the power to the NC unit)

The power is supplied to the control unit and servo is shut OFF by pressing the POWER OFF button.

(2) 9-inch Graphic Display (CRT)

Data are displayed in different sizes of characters in the range from 1 × 1 to 3 × 3 magnification.

Maximum number of characters	40 characters × 20 lines (25 lines) = 800 characters (or 1000 characters) [in 1 × 1 scale]
Displayed characters	Numerals (0 to 9, –, .) Alphabets (A to Z) Special codes [/ (slash), EOB, +, #, SP, =, etc.]
Graphic display	640 × 400 dots (high resolution type)

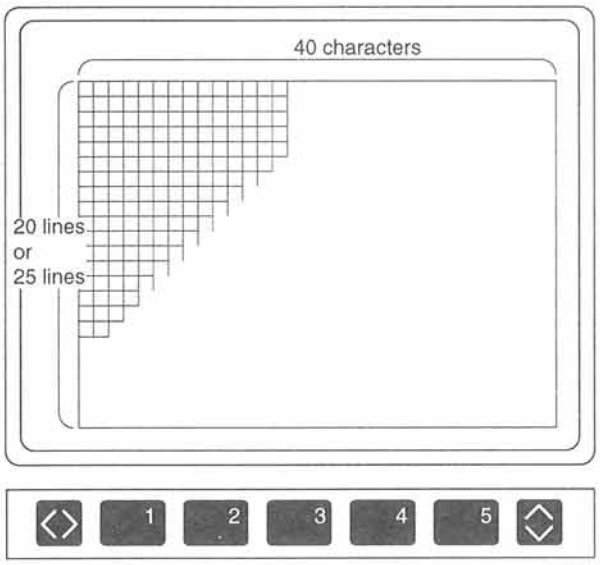


Fig. 3.3 9-inch Graphic Display

(3) Process Keys

The process keys are used to select the process. The following five process keys are provided and by pressing one of these keys, the corresponding process is selected.

[PROG]	Edit key	: Selects the editing process.
[SET]	Set-up key	: Selects the set-up process.
[RUN]	Operation key	: Selects the operating process.
[MAINT]	Maintenance key	: Selects the maintenance process.
[COMN]	Common key	: Selects the common display or returns to each process.

(4) Soft-keys

The soft-keys are selection keys related to display and writing. The soft-keys are displayed in two rows (upper and lower) as shown in Fig. 3.4. The upper soft-keys are used to select jobs and the lower ones to select functions. By pressing the UP/DOWN SELECT key, the selection mode can be changed between the job selection mode and the function selection mode. The presently selected mode can be found from the UP/DOWN SELECT indicator on the CRT and also from the soft-keys.

In the job selection mode, selection of job soft-keys is possible and in the function selection mode, selection of function soft-keys is possible. If more than five functions are provided in the selected job, the next set of functions are displayed by pressing the FUNCTION SELECT key. The selected job or function is highlighted.

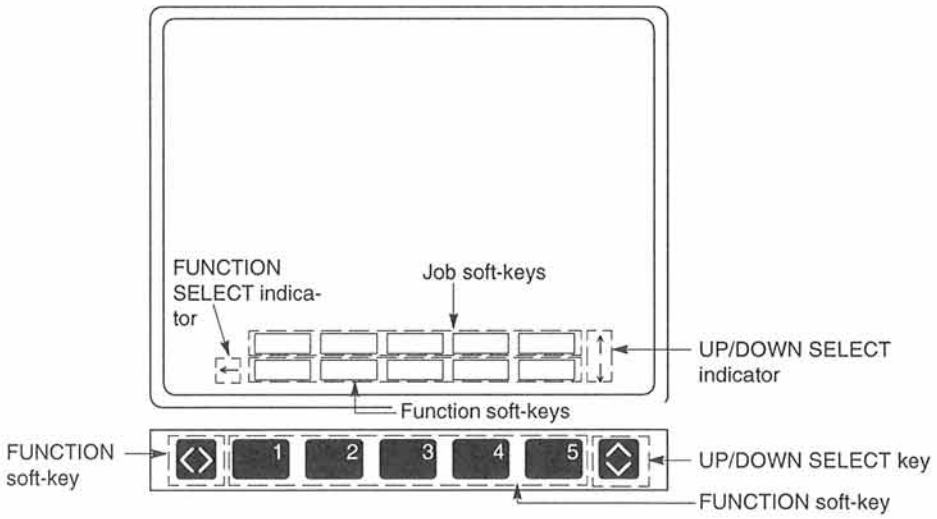


Fig. 3.4 Soft-keys

SUPPLEMENT

When there are more than five function soft-keys, the FUNCTION SELECT indicator is displayed as shown in Fig. 3.4.

When the UP/DOWN SELECT indicator is moved, the box moves up or down.

When the box is in the upper position, it indicates the job selection mode and if it is in the lower position, it indicates the function selection mode.

(5) Address Keys

The address keys are used to specify the addresses when writing data.

[/]	Slash key	: The slash key is used to indicate the optional skip command.
[SHIFT]	Shift key	: To display special characters such as "%" and "#", press the address keys of F to Z on which the corresponding special character is indicated while pressing the [SHIFT] key.

(6) Data Keys

The data keys are used to write numerical values such as command values, tool offset amounts, and settings for parameters.

[0] - [9]	Numeric keys	: Used to enter numerals.
[–]	Minus key	: Used enter a minus sign.
[.]	Decimal point key	: Used to enter a decimal point.

(7) Page Keys

Display given on the screen is assumed as "page", and these keys are used to change the display page to the previous or next page.

[∧] page up key : Used to display the previous page.

[∨] page down key : Used to display the next page.

When a page key is held pressed, the display page changes continuously.

(8) Cursor Keys

The cursor keys are used to move the cursor on the screen up/down and right/left. When the cursor is positioned at a certain position on the screen, that position is highlighted. In this manual, the position displayed in highlighted block is called the cursor.

(a) Moving the cursor up/down

When a set of parameter data is displayed with parameters selected, the up/down cursor keys are used to move the cursor to the required parameter position.

[▲] cursor up key : Used to move the cursor up.

[▼] cursor down key : Used to move the cursor down.

When the cursor up or down key is held pressed, the cursor moves continuously.

It is also possible to move the cursor to the required position by specifying the required number; enter the required number and press the cursor up or down key, and the cursor moves to the specified position.

(b) Moving the cursor right/left

[◀] cursor left key : Used to move the cursor left.

[▶] cursor right key : Used to move the cursor right.

(9) Action Keys

The action keys are used for various applications. When an action key is pressed, display on the screen will be changed by such as entered data.

[CAN]	Cancel key	: Used to cancel typing error of numerals or address data.
[EOB]	End of block key	: Used to indicate the end of a block. ";"(semicolon)is displayed on the screen instead of EOB.
[INSRT]	Insert key	: Used to insert data to the memory.
[ALTER]	Alter key	: Used to correct data in the memory
[ERASE]	Erase key	: Used to erase data in the memory
[WR]	Write key	: Used to store address data (=word) keyed in by using the address keys and data keys

(10)RESET Key

The RESET key is used to reset the internal state of the NC unit. When the RESET key is pressed, the following items are executed.

- Cancels the move commands.
- Clears the buffer area.
- Resets the alarm (after removing the cause).
- Cancels the tool offset.
- Cancels the miscellaneous function.
- Turns ON the label skip function.
- Rewinds the memory. (Returns the program execution pointer to the beginning of the program.)

  Whether or not the memory rewind is executed is determined by the setting for the parameter.

pm4008 D0 = 0	Memory rewind is executed.
pm4008 D0 = 1	Memory rewind is not executed.

  If "pm4008 D0 = 0", memory rewind is executed by pressing the [SRCH] softkey.

- Sends the reset signal.
- Resets the G code.
- Clears the key buffer area.

Note that the following items are not influenced by the reset operation.

- Present position data of the axes
- F command
- S and T commands
- Tool offset amounts, setting data, and parameter data

(11)AUX Key

The AUX key is used for the future expansion of the functions.

[AUX1], [AUX2] keys: Used for optional functions.

3.2.2 Normal Display on CRT Screen

Independent of the selected process, job, and function, the following information is always displayed at the top line and the lower five lines as shown in Fig. 3.5.

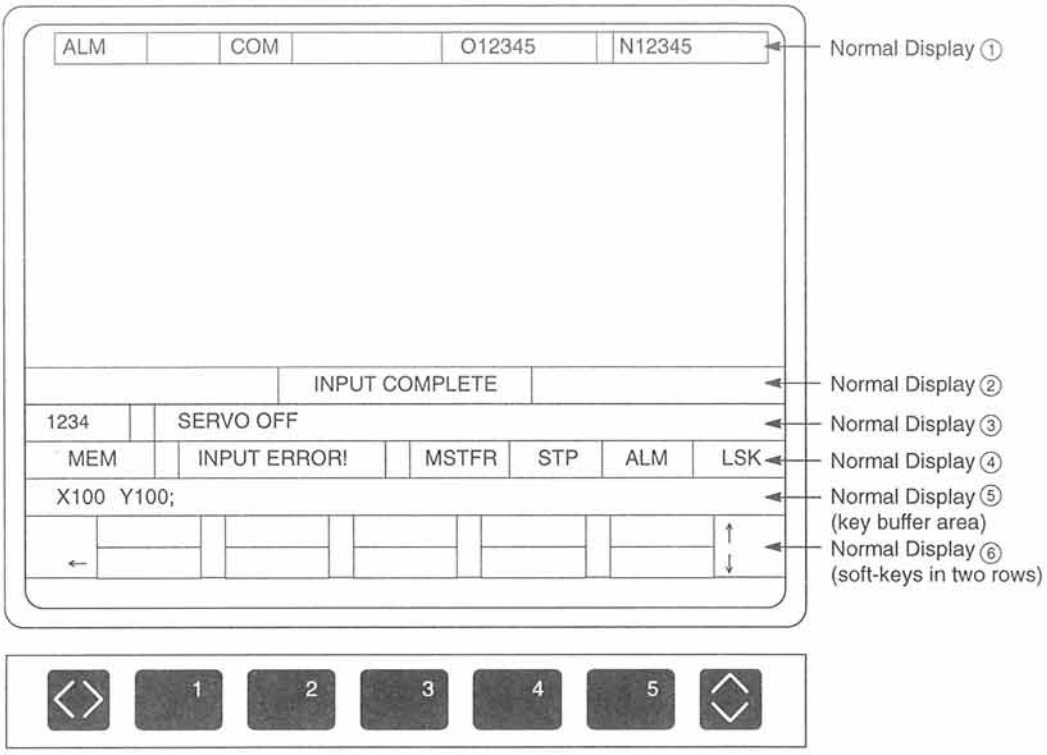


Fig. 3.5 Normal Display on the Screen

Contents of normal display are indicated in Table 3.1.

Table 3.1 Contents of Normal Display

Normal Display	Item	Message	Meaning
①	Screen title display	ALM OFFSET · · · etc.	Job name of the selected screen is displayed as the title.
	Process display	EDT AUX1 SET AUX2 MNT COM	The selected process name is displayed.
	Program number display	O***** O00001 - O99999	The number of the program operating in the selected series is displayed. O***** indicates that program number is not selected.
	Sequence number display	N00000 - N99999	The present sequence number of the selected series is displayed.
②	Display of operation results and guide messages	INPUT? (Y/N) INPUTTING INPUT STOPPED INPUT COMPLETE OUTPUT? (Y/N) OUTPUTTING OUTPUT STOPPED OUTPUT COMPLETE VERIFY? (Y/N) VERIFYING VERIFICATION STOPPED VERIFICATION COMPLETE CREATE ? (Y/N) CREATION COMPLETE COPY? (Y/N) COPY COMPLETE RENAME ? (Y/N) RENAMING COMPLETE DELETE ? (Y/N) DELETION COMPLETE SELECT OTHER JOB PUSH EXEC TO CONTINUE EXECUTING STOP?(Y/N) SEARCH COMPLETE INPUT O NO. INPUT COMMENT SAVING COMPLETE TRANSFER PARM ? TRANSFERRING PARM TRANSFER COMPLT	Result of key operation and the NC execution state are displayed.

Table 3.1 Contents of Normal Display (cont'd)

Normal Display	Item	Message	Meaning
②	Display of operation results and guide messages	INPUT O NO. SAVING SEARCHING INPUT? (PUSH Y) OUTPUT? (PUSH Y) VERIFY? (PUSH Y) OK? (Y/N) SET POINT 1 SET POINT 2 SET POINT 3 MODE IS UNSUITABLE SEARCH STOPPED INPUT O NO. (DELETE) DELETE ALL? (Y/N) INPUT OLD O NO. INPUT ORIGINAL O NO. INPUT NEW O NO. INPUT O NO. (COPY) RANGE IS UNSUITABLE DRAWING COMPLETE CLEAR ALL OFFSETS? (Y/N) SEARCH COMPLETE INPUT OLD STRING INPUT NEW STRING (Yes/No/All) ?	Result of key operation and the NC execution state are displayed.
③	Alarm number display	0001 - 9999	The top priority alarm occurring in the selected series is displayed. If there is no alarm in the selected series, the top priority alarm of the other series is displayed.
	Alarm message display	TH error Character cannot be used External data input error · · · · · · etc.	The message of the top priority alarm occurring in the selected series. If there is no alarm in the selected series, the alarm message of the top priority of the other series is displayed.
④	Operation mode	Edit Memory MDI Tape Step Handle Jog Rapid feed	The operation mode of the selected series is displayed.

Table 3.1 Contents of Normal Display (cont'd)

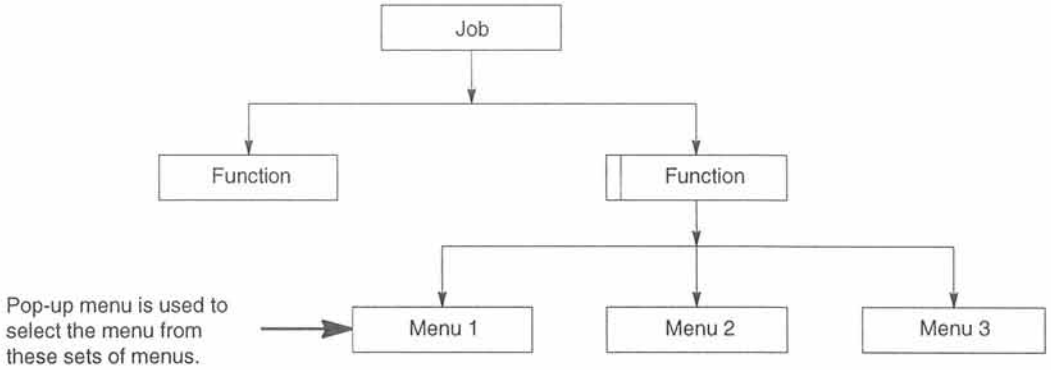
Normal Display	Item	Message	Meaning
④	Warning display	INPUT ERROR ! O NO. NOT FOUND ! NOT FOUND ! ALREADY IN ! OVER MEM CAP ! TOO MANY PROGS ! VERIFY ERROR ! MACRO LOCK ! LINE LOCK ! RUNNING PROGRAM ! NC RUNNING ! FORMAT ERROR ! EDIT LOCK ! NOT FOUND ! ALREADY EDIT ! SELECT MODE ERR ! COPY MODE ERROR ! MOVE MODE ERROR ! PRM SETTING ERROR ! CAN'T SET COORD ! OVER MDI BUFFER ! PRM SETTING ERR ! READING PROGRAM ! EDITING PROGRAM ! IMPOSS COLLECT ! EDIT LOCK ! BIAS ERROR ! BOTTOM ERROR ! OFFSET ERROR ! OVER MEM CAP ! RUNNING PROGRAM ! MEASUREMENT ERR ! TOO LARGE AREA ! ALREADY IN ! NC RUNNING ! BREAK POINT ! PLAYBACK LOCK ! SYSTEM NO.1 ! CAN'T WRITE! ADDRESSING ER! AXIS MOVING! RESTARTING PROG! CAN'T SET COORD!	Warning indicates lower priority error, which does not cause operation stop. Reset the error by key input, mode change, screen switching.

Table 3.1 Contents of Normal Display (cont'd)

Normal Display	Item	Message	Meaning
④	Operation status	M/S/T/F/R/B DWELL	Indicates the status of the selected series. M, S, T: Waiting for the completion of the specified code. F: During cutting, R: During rapid traverse, P: During communication, and D: During dwell.
			Indicates the status of the selected series.
		HSC	Indicates high-speed cutting mode.
		STP	Indicates that the NC stopped.
		RST	Indicates that the NC is in reset status.
		BUFn	Indicates that the NC is in the n-block buffering status.
	Alarm status		Indicates the status of the selected series.
		ALM	Indicates that an alarm has occurred.
		BAT	Indicates that the battery alarm has occurred.
		A/B	Indicates that both an alarm and a battery alarm have occurred.
		BGA	Indicates that a background alarm has occurred.
		B/B	Indicates that both a background alarm and a battery alarm have occurred.
	Label skip	LSK	Displayed when label skip is ON.
⑤	Key buffer		Key input echo back display (up to 40 characters can be input.)
⑥	Soft-key		Selection key for display and writing (in two rows - up and down)

3.2.3 Pop-up Menu

The pop-up menu is used to select a menu item in the selected function. Usually, there is only a single menu item in a function. The pop-up menu is used to select the menu if there is more than one menu item in the selected function. The soft-keys that support the pop-up menu are distinguished by the soft-key frame with a double-line at the left side.



If the [DELETE] soft-key is pressed, the pop-up menu is displayed. Selection by the pop-up menu is made by using the UP/DOWN SELECT key and the [WR] key. The pop-up menu is cleared when the selection is finished.

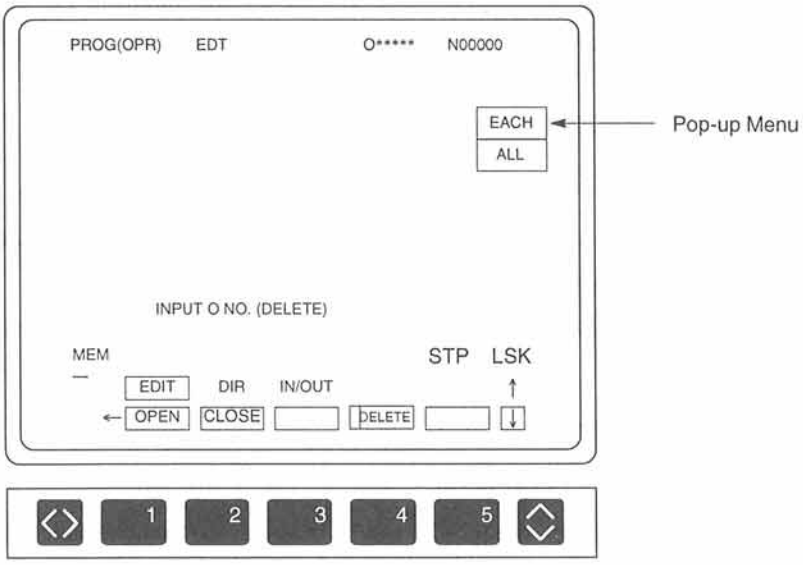


Fig. 3.6 Pop-up Menu for DELETE Function

3.2.4 Key Buffer Edit Function

For the data keyed in by key operation and displayed at the key buffer area on the CRT screen, insertion and deletion of characters are allowed. This key buffer area edit function is helpful to correct the entered data in the following cases.

- The user finds an error immediately after keying in the data.
- The keyed in data could not be entered with the "INPUT ERROR!" warning message displayed even when the [WR] key was pressed.

(1) Key Buffer Cursor

The underline cursor "_" blinks at the beginning of the key buffer area. This underlined cursor is the key buffer cursor. It moves to the right as characters are keyed in and is displayed after the last character.

(2) Moving the Key Buffer Cursor

With characters keyed in to the key buffer area, the underlined cursor moves in response to the operation with the cursor right/left keys. The underlined cursor is valid in the key buffer area but not for the contents displayed on the screen. However, if there are no characters keyed in to the key buffer, the underline cursor is valid for the contents displayed on the screen. Examples of the key buffer edit operation are explained below.

(a) Deletion

G00 X100.Z100.; _

To delete "X100." while the data indicated above are keyed in to the key buffer area.

① Move the key buffer cursor back to "Z" by pressing the cursor left key.

G00 X100. Z100.;

② Press the [CAN] key five times to delete "X100.".

G00 Z100.;

When the [CAN] key is pressed, the last character before the key buffer cursor is deleted. If the key buffer cursor is at the beginning of the key buffer area, pressing the [CAN] key has no effect and no characters are deleted.

(b) Insertion

X100.Z100.; __

To insert "G00" before "X100." while the data indicated above are keyed in to the key buffer area.

① Move the key buffer cursor back to "X" by pressing the cursor left key.

X100. Z100.;

② Key in "G00". The keyed in characters are inserted before the key buffer cursor.

G00 X100. Z100.;

3.2.5 Buzzer Function

It is possible to sound the buzzer for each key operation at the NC operation panel. Whether the buzzer should be sounded or not can be selected by the setting for the parameter.

pm0007 D7 = 0	No buzzer sound
pm0007 D7 = 1	With buzzer sound

4

EDIT PROCESS OPERATION

Chapter 4 describes the operation carried out by using the edit process keys. In the edit process a part program is created using the edit job, part program directory job, part program input/output and verify job, and program path drawing job.

Job selection is possible by using either the [EDIT] job soft-key or the [PROG] process selection key.

The operation indicated above can be executed any time independent of the NC operation mode even while automatic operation is being executed.

4.1 PART PROGRAM EDIT JOB ..... 4 - 3
- 4.1.1 Calling a Part Program ..... 4 - 4
- 4.1.2 Editing a Part Program ..... 4 - 7
- 4.1.3 Saving a Part Program after Editing ..... 4 - 23
- 4.1.4 Deleting a Part Program ..... 4 - 25

4.2 PART PROGRAM DIRECTORY JOB . 4 - 28
- 4.2.1 Display of the Directory of Part Programs .. 4 - 28
- 4.2.2 Calling a Part Program ..... 4 - 35
- 4.2.3 Deleting a Part Program ..... 4 - 37
- 4.2.4 Renaming a Part Program ..... 4 - 39
- 4.2.5 Copying a Part Program ..... 4 - 41

4.3 PART PROGRAM INPUT/OUTPUT AND VERIFY JOB ..... 4 - 42
4.3.1 Inputting a Part Program ..... 4 - 42
4.3.2 Outputting a Part Program ..... 4 - 46
4.3.3 Verifying the Part Programs ..... 4 - 53
4.3.4 Setting the Communication Conditions ..... 4 - 57
4.3.5 Other Function ..... 4 - 62
4.4 PROGRAM PATH DRAWING JOB .... 4 - 63
4.4.1 Features of the Program Path Drawing Screen ..... 4 - 63
4.4.2 Description of the Program Path Drawing Screens ..... 4 - 64
4.4.3 Basic Program Path Drawing Operation .... 4 - 87
4.4.4 Switching the Program Path Drawing Screen ..... 4 - 89
4.4.5 Differences between the Program Path Drawing Job and the NC Path Drawing Job ..... 4 - 90

4.1 PART PROGRAM EDIT JOB

To select the part program edit job, press the [EDIT] (f1) job soft-key. In the part program edit job, the following functions are provided.

- Calling a part program
- Editing a part program
- Saving a part program
- Deleting a part program

Optionally, editing up to three part programs is simultaneously possible. The standard program storage capacity is 16 KB (40 m in tape length) and this capacity can be optionally expanded to 32 KB, 64 KB, 128 KB, 256 KB, 512 KB, 1024 KB, or 2048 KB.

SUPPLEMENT

1. If a process key other than [PROG] is pressed while editing a part program, the part program is temporarily saved. The interrupted editing can be continued after pressing the [PROG] key.
2. Do not turn OFF the power during editing. Before turning OFF the power, the part program(s) must be saved.

4.1.1 Calling a Part Program

Call the program to be edited. To call a program not existing in the memory, create it before calling.

(1) Using the [EDIT] (f1) Job Soft-key

Basic and optional operation is possible by using the [EDIT] (f1) job soft-key.

(a) Basic operation

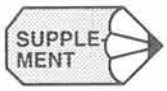
Carry out the basic operation in the following procedure.

① Press the [EDIT] (f1) job soft-key.

② Press the [OPEN] (f1) function soft-key. (This step can be skipped.)

③ Key in the program number of the program to be called by using the address and data keys (O111, for example). If a new program number is keyed in and the [WR] key is pressed in this step, it is registered as a program and can be called in later operation.

④ Key in a comment with the address keys and press the [WR] key. (This operation is necessary even when a comment is not entered.)



1. In the edit lock state, it is not allowed to create a new program number. Reset the edit lock state before creating a new program number.
2. The program presently executed can also be called. However, it is not allowed to edit such a program after calling it to the screen.
3. While the EDIT LOCK switch is ON, the edit function keys ([INSRT], [ALTER], and [ERASE]) and NC tape loading operation are invalid.
4. If program editing is attempted with the EDIT LOCK switch ON, the warning message "EDIT LOCK !" is displayed.

The contents of the called part program are displayed as indicated below.

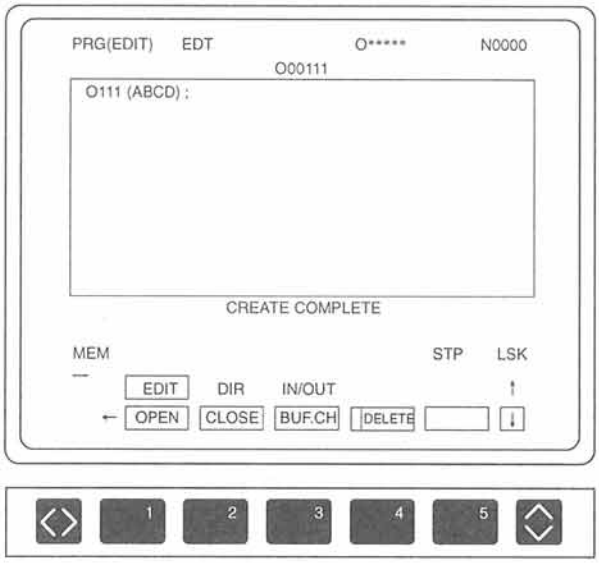


Fig. 4.1 Contents of the Called Part Program

Optionally, other part programs can be called at the same time.

The number of programs that can be called differs between J300M and J100M.

J300

Up to three part programs can be called at the same time. To call another program, press the [OPEN] (f1) function soft-key. The message "INPUT O NO." is displayed. Execute steps ③ and ④.

J100

Up to two part programs can be called at the same time. To call another program, press the [OEN](f1) function soft-key. The message "INPUT O NO." is displayed. Execute steps ③ and ④.

Examples of screens where two or three part programs are called are shown in Figs. 4.2 and 4.3.

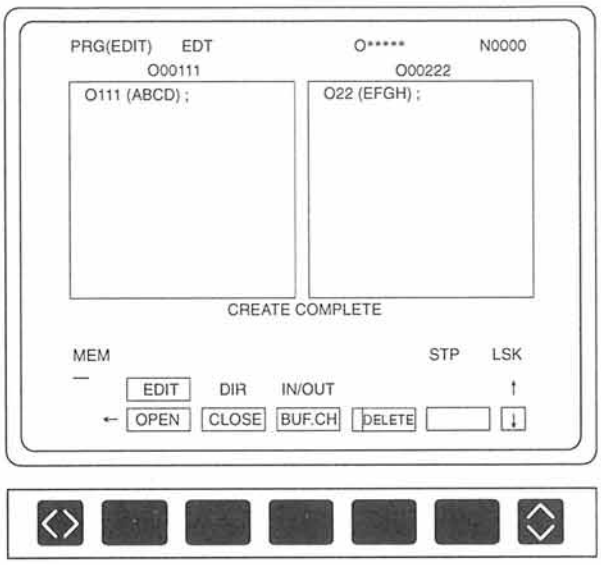


Fig. 4.2 Display Screen with Two Part Programs

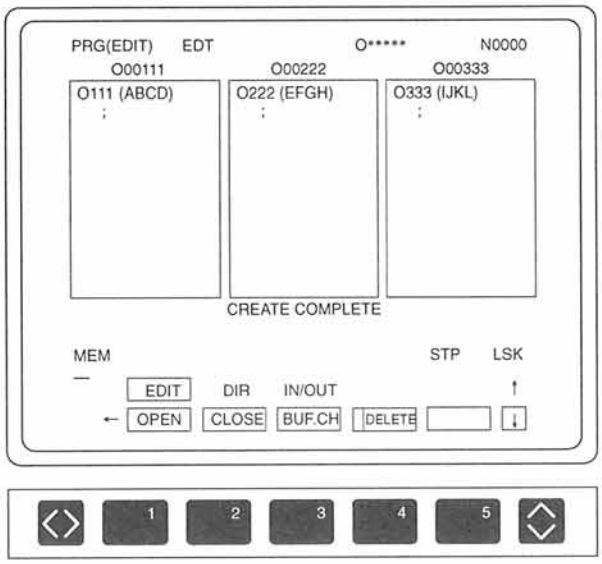


Fig. 4.3 Display Screen with Three Part Programs

(2) Using the [BUF. CH] (f3) Soft-key

If the part program to be called is within the allowable range of program call, the specified program can be called. However, if calling a new part program causes the allowable range of program call to be exceeded, the program selected by the [BUF. CH] (f3) function soft-key is saved automatically before calling the specified program.

A part program can be called without using the [OPEN] (f1) function soft-key. Follow the procedure indicated below.

① After keying in the program number of the program to be called, press the [WR] key. When the existing program number is entered, the specified program is called. If a program number not existing in the memory is entered, the message "INPUT COMMENT" is displayed indicating that the specified program number is a new program number.

② Key in a comment and press the [WR] key.

4.1.2 Editing a Part Program

The procedure for editing the part program called to the screen is explained below. Optionally, the expansion editing functions (copy, move, and alter and erase with range specification) can be used. Select the part program to be edited in the following procedure.

① If more than one program has been called, press the [BUF. CH] (f3) soft-key several times until the cursor moves to the program number of the program to be edited.

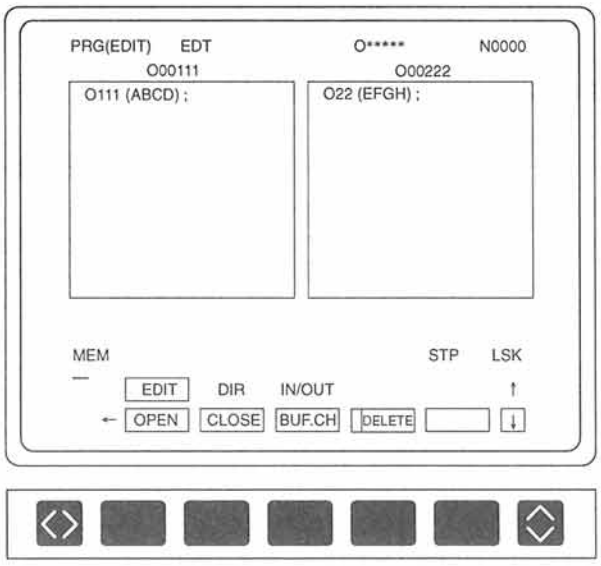


Fig. 4.4 Part Program Editing Screen

② For editing a part program, the following keys are used: function soft-keys ([SELECT] (f1), [COPY] (f2), [MOVE] (f3), [REPL] (f4), and [BT/TOP] (f5)), function keys ([INSRT], [ALTER], and [ERASE]), cursor keys (up/down, right/left), page keys, etc.

(1) Inserting a Word

By pressing the [INSRT] key, new data can be inserted immediately after the word specified by the cursor. Follow the procedure indicated below.

① Move the cursor to the word immediately before the position where a new word should be inserted (for example, ";").

Fig. 4.5 Screen before Word Insertion

② Key in the word to be inserted ("F1.2", for example) by using the address and data keys and press the [INSRT] key.

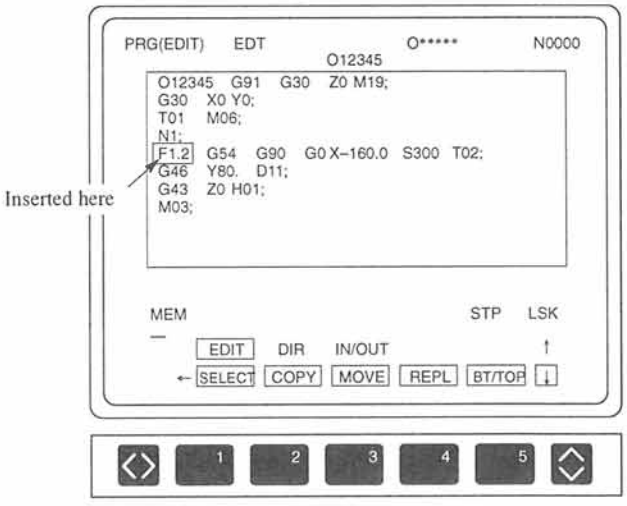


Fig. 4.6 Screen after Word Insertion

SUPPLEMENT

After inserting a word, the cursor indicates the word entered last. The insertion operation allows more than one word (within 40 characters) to be inserted at a time.

(2) Altering a Word

By pressing the [ALTER] key, the word specified by the cursor is erased and replaced with a new word. Follow the procedure indicated below.

① Move the cursor to the word to be altered (for example, "F1.2").

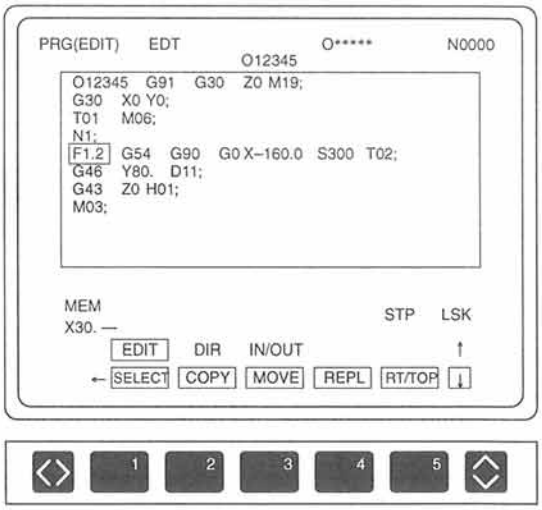


Fig. 4.7 Screen before Alter

② Key in the word ("X30.", for example) that replaces the cursor specified word by using the address and data keys and press the [ALTER] key. The word specified by the cursor is erased and replaced with the keyed in new word.

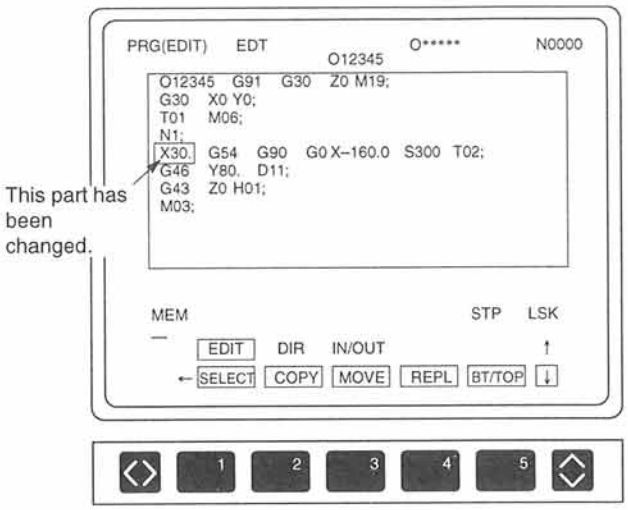


Fig. 4.8 Screen after Alter

SUPPLEMENT

In this operation, if more than one word (within 40 characters) is keyed in, the specified word/words are replaced with keyed in words.

(3) Erasing a Word

By pressing the [ERASE] key, the word specified by the cursor is erased. Follow the procedure indicated below.

① Move the cursor to the word to be erased (for example, "X30.").

Fig. 4.9 Screen before Erasing

② Press the [ERASE] key. Only the specified word is erased.

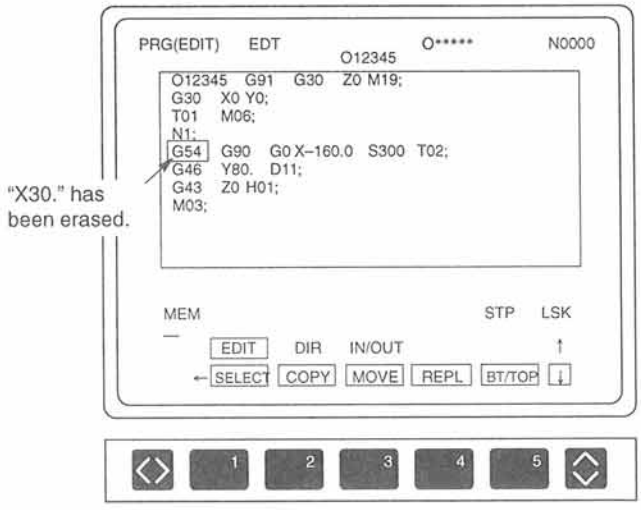


Fig. 4.10 Screen after Erasing

(4) Search and Erase Function

The search and erase function erases the characters in the specified range, from the present cursor position to the specified character-string. Follow the procedure indicated below.

① Move the cursor to the first character of the character-string to be erased (for example, "T01").

Fig. 4.11 Specifying the First Character in the Character-string to be Erased

② Key in the last word of the range to be erased (for example, "Y0" if the part program should be erased up to "Y0" in the "G54 X0 Y0;" block) and press the [ERASE] key. The specified range is highlighted. At the same time, the message "DELETE OK ? (Y/N) ?" is also highlighted.

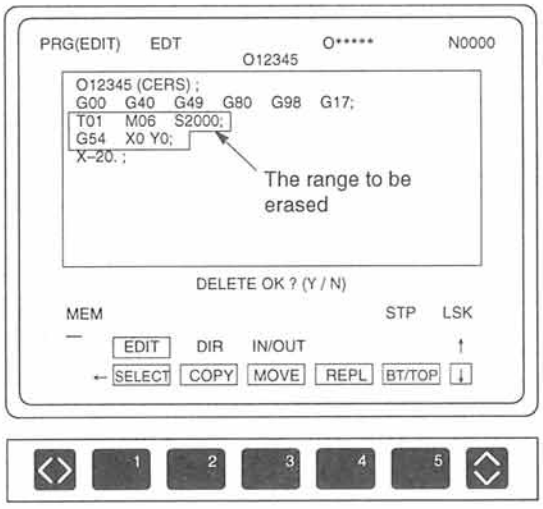


Fig. 4.12 Screen for Specifying the Range to be Erased

- If the specified word is not found in the part program, the warning message "NOT FOUND !" is displayed.
- While the message "DELETE OK? (Y / N)" is displayed on the screen, word insertion, alter, and erase operation are not allowed. If any of the soft-keys calling such functions is pressed, the search and erase function is canceled.
- To cancel the search and erase function, press the [RESET] key, [CAN] key, or address key [N]. After the pressing of the [RESET] or [CAN] key, the cursor moves to the position where it was located before the specification of the range. In the case of the address key [N], the cursor is located at the position where it was located after the specification of the range.

③ After confirming the range to be erased, press the [Y] key and the character-string in the highlighted range is erased.

Fig. 4.13 Screen after Erasing the Range to be Erased

SUPPLEMENT

If the first character of the character-string specified for erasing, an O number is erased. This is not the search and erase function. For the search of character-string, binary search is used (leading zeros can be omitted).

(5) Moving the Cursor

- When the cursor up/down keys are pressed, the cursor moves up or down in units of the part program blocks. The cursor always moves to the beginning of the next or previous block.
- When the cursor right/left keys are pressed, the cursor moves right or left in units of words.
- When page keys are pressed, the part program display screen is scrolled up or down in units of pages.

(6) Address Search Function

Follow the procedure indicated below to execute the address search function.

① Key in the character-string to be searched for.

② When the cursor down key is pressed, the search is made from the present cursor position to the end of the program. When the cursor up key is pressed, the search is made from the present cursor position to the beginning of the program. During search operation, the "SEARCHING" message is displayed on the screen.

③ Upon completion of the search, the message is cleared and the cursor is positioned at the found word.

④ If the specified word is not found, the warning message "NOT FOUND!" is displayed.

⑤ To search the same character-string continuously, press the cursor up or down key while holding down the [SHIFT] key. This executes the search operation again. Once the character-string to be searched is keyed in, the same character-string can be searched as many times as required unless another character-string is specified

(7) Copy Function

By pressing the [COPY] key, the registered character-string can be copied to the specified area.

Limit of character-string length: 1024 characters

Follow the procedure indicated below to executed the copy function.

① Move the cursor to the first character of the character-string to be copied (for example, "G91").

② Press the [SELECT] (f1) function soft-key.

The function name "SELECT" is highlighted indicating that the selection mode is selected. If the [SELECT] (f1) function soft-key is pressed while it is highlighted, the selection mode is canceled.

③ Move the cursor to the last character of the character-string to be copied. The specified character-string are displayed highlighted.

④ When the [COPY] (f2) function soft-key is pressed, the selected character-string is saved and, at the same time, "*" symbol appears at the start of the [COPY] (f2) function soft-key. Display of the character-string returns to the normal mode.

Fig. 4.14 Screen for Specifying the Character-string to be Copied

⑤ Move the cursor to the position where the specified character-string should be copied (";" that follows "M03", for example).

⑥ Press the [*COPY] (f2) function soft-key, and the specified character-string is copied to the position indicated by the cursor.

⑦ While "*COPY" is displayed, the same character-string can be copied as many times as required by simply pressing the [*COPY] (f2) function soft-key.

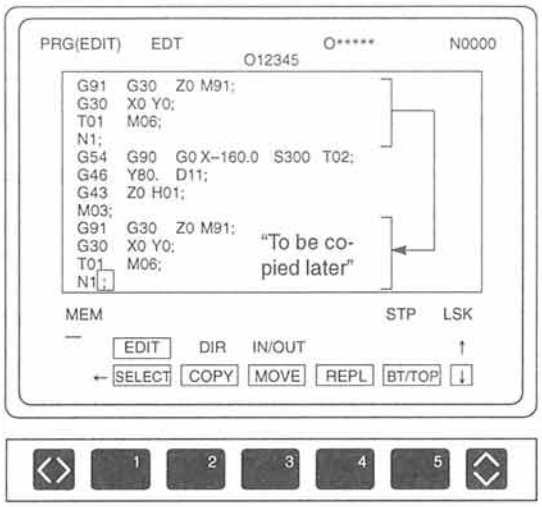


Fig. 4.15 Copy Screen

SUPPLEMENT

1. When the power is turned OFF, selection of the character-sting is cancelled and the "*" symbol is cleared.
2. When executing program edit by displaying more than one program, it is possible to copy the same character-string if the edit objective program is changed.
3. If the move function is used after using the copy function, selection of the character-string for the copy function is cancelled.
4. If the number of characters in the selected character-string exceeds 1024 characters, the warning message "MEM AREA OVER !" is displayed.

(8) Move Function

By pressing the [MOVE] key, the registered character-string is moved to the specified position.

Limit of character-string length: 1024 characters

Follow the procedure indicated below to execute the move function.

① Specify the character-string to be moved in the same manner as with the copy function after pressing the [SELECT] (f1) function soft-key. The selected character-string is displayed in white characters.

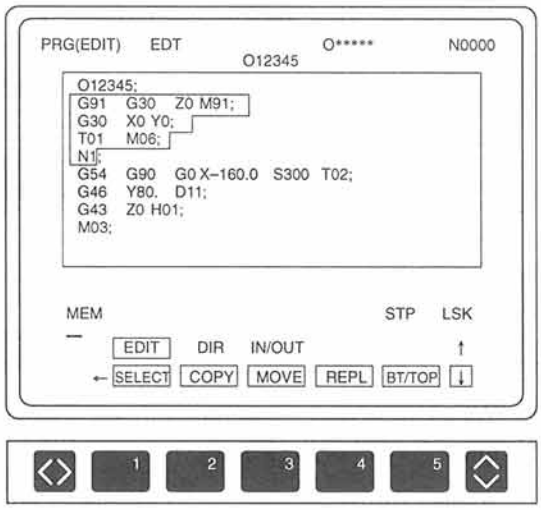


Fig. 4.16 Specifying the Character-string to be Moved

② When the selected character-string is saved by pressing the [MOVE] (f3) function soft-key, the "*" symbol appears at the beginning of the soft-key function name. The character-string, displayed in white characters, is deleted from the screen.

③ Move the cursor to the position where the selected character-string should be moved.

④ When the [MOVE] (f3) function soft-key is pressed, the specified character-string is moved to the position indicated by the cursor.

⑤ While "*MOVE" is displayed, the same character-string can be moved as many times as required by simply pressing the [*MOVE] (f2) function soft-key.

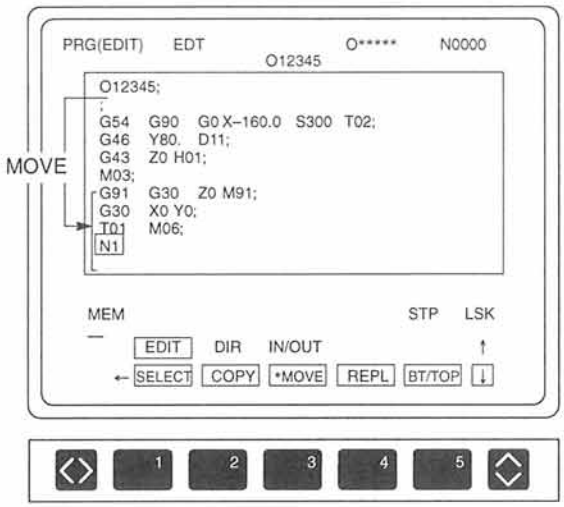


Fig. 4.17 Screen after Move

SUPPLEMENT

1. When the power is turned OFF, selection of the character-sting is cancelled and the "*" symbol is cleared.
2. When executing program edit by displaying more than one program, it is possible to move the same character-string if the edit objective program is changed.
3. If the copy function is used after using the move function, selection of the character-string for the move function is cancelled.
4. If the number of characters in the selected character-string exceeds 1024 characters, the warning message "MEM AREA OVER !" is displayed.
5. It is not allowed to move the range including an O number given at the beginning of a program. If move operation is attempted after specifying the range which includes an O number, the warning message "MOVE MODE ERROR !" is displayed.

(9) Replace Function

By pressing the [REPL] key, this function searches the specified character-string and replaces it with the new character-string. Follow the procedure indicated below to execute the replace function.

① When the [REPL] (f4) function soft-key is pressed, the message "INPUT OLD STRING" is displayed.

② Key in the character-string to be replaced and press the [WR] key. The message "INPUT NEW STRING" is displayed. See the examples below.

- To change "G00", key in "G00" and press the [WR] key.
- To change only address Y, key in "Y [SHIFT] [X]" and press the [WR] key.
- To change only the data of "–160.0", key in "[SHIFT] [X] –160.0" and press the [WR] key.

Note 1: The [SHIFT] and [X] keys can be pressed at the same time.

2: For the old character-string, only one word is allowed. If two or more words are specified, the warning message "INPUT ERROR !" is displayed.

3: It is allowed to use a wild card "*" when specifying an old character-string.
Use a wild card as a substitute for an unknown character in the address part or a numeral in the data part.

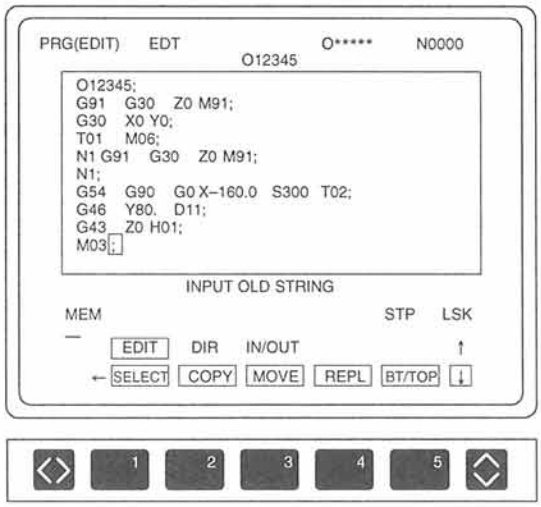


Fig. 4.18 Replace Screen

SUPPLEMENT

1. Only one wild card can be used. If two ore more wild cards are used, the "INPUT ERROR !" warning message is displayed.
2. If a wild card is used, it is disregarded and search is executed with the rest of the character-string.
3. The replace function is valid for the character-string appearing after the cursor. If an attempt is made to replace the character-string before the cursor, the replace processing completes at the time the [WR] key is pressed.
4. If the character-string specified is not found, the "NOT FOUND !" warning message is displayed.

- For a new character-string, more than two words can be specified.
- The new character-string must begin with an address. Otherwise the "INPUT ERROR !" warning message is displayed.
- A wild card can be used in the new character-string only when a wild card is used in the old character-string.
- The wild card must be used in the same part (address or numeral) as it is used in the old character-string.

Example

Old Character-string	New Character-string	Remark
*10.0	*–10.0	
Y*	Z*	
*10.0	Z*	"INPUT ERROR !" occurs.

③ Key in the new character-string (for example, "G01") and press the [WR] key.

- To change the all of address of "Y*" to "Z", key in "Z [SHIFT] X".
- To change the data part to "10.5", key in "[SHIFT] X 10.5".

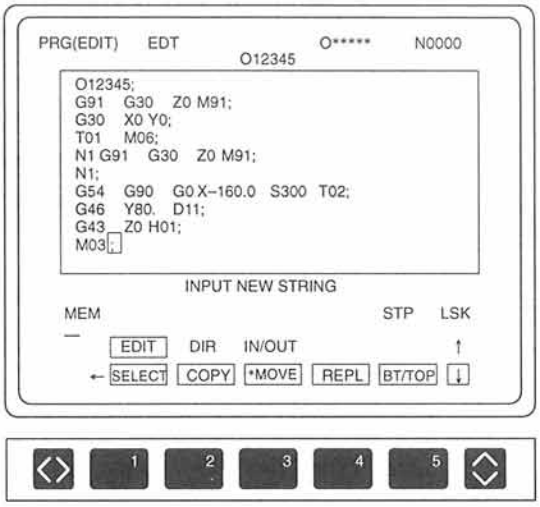


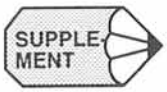
Fig. 4.19 Keying in New Character-string

SUPPLEMENT

If a wild card is used in the old character-string, only one word can be specified for the new character-string. If more than one word is specified in the new character-string, the warning message "INPUT ERROR !" is displayed.

④ The cursor moves to the character-string specified in step ②, and "(Yes/No/All)?" is displayed.

- If "Y" is input, the character-string specified in step ② is replaced with the character-string specified in step ③. If there is another character-string that is the same as the one specified in step ②, the cursor moves to it. If the character-string specified in step ② is not found, the replace processing is completed.
- If "N" is input, replace processing is not executed. If there is another character-string that is the same as the one specified in step ②, the cursor moves to it. If the character-string specified in step ② is not found, the replace processing is completed.
- If "A" is input, all character-string specified in step ② are replaced with the character-string specified in step ③. During replace processing, "EXECUTING" message is displayed.
- The replace function is cancelled by pressing the [RESET] key or [REPL] (f4) function soft-key once again.



While "(Yes/No/All)" is displayed on the screen, [SELECT], [COPY], [MOVE], and [BT/TOP], and other edit operations are not possible.

(10)Moving the Cursor to the Top or Bottom Line of the Program

When the [BT/TOP] function soft-key is pressed, the cursor moves to first address in the program displayed on the screen. Pressing the soft-key once again moves the cursor to the last address of the program displayed on the screen. Bottom line and top line are alternately selected each time the [BT/TOP] function soft-key is pressed.

4.1.3 Saving a Part Program after Editing

The called program must be saved after editing. The part program in the part program memory is updated only after the edited program is saved. After a part program is saved, another part program can be called.

Assume that the program numbers of the programs that have been called are displayed on the screen in the state as shown in Fig. 4.20. The following describes the procedure for saving the part programs under this state.

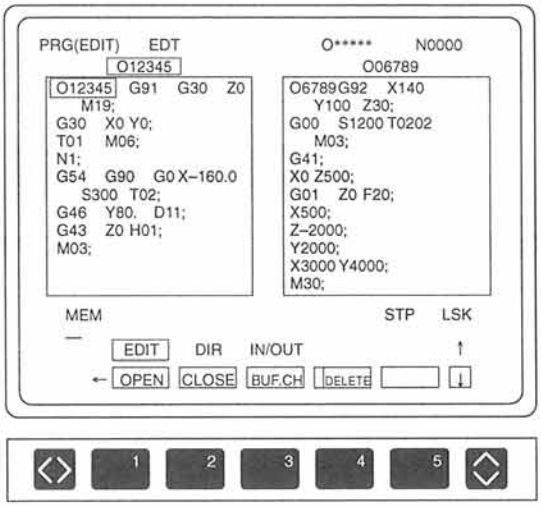


Fig. 4.20 Screen before Saving Part Program

① When the [BUF.CH] (f3) function soft-key is pressed, the cursor moves to the other program number. Select the program to be saved by using this function soft-key.

② Press the [CLOSE] (f2) function soft-key. The screen displays the contents of the program that has been selected to be saved.

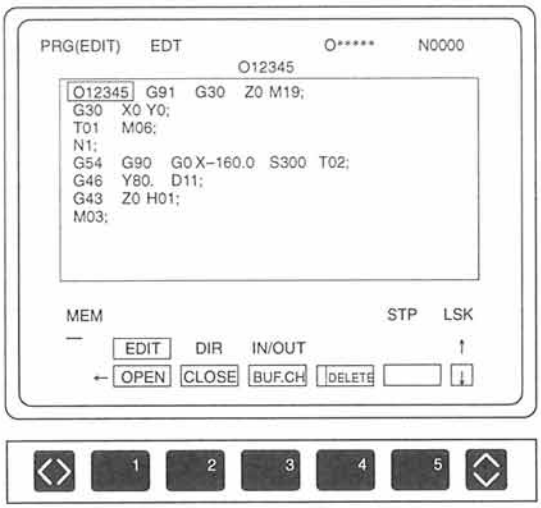


Fig. 4.21 Screen after Saving Part Program

4.1.4 Deleting a Part Program

For the deletion of a part program, the following two types of operation are provided.

[EACH] : Part programs are deleted one by one.
[ALL] : All part programs are deleted simultaneously.

In the edit lock status, part program deletion is not allowed. To delete a part program, cancel the edit lock status. During operation, the part program presently executed cannot be deleted. To delete the program being executed, delete it only after completing operation.

(1) Deleting a Part Program One by One

To delete a part program one by one, there are two methods: To use the [DELETE] (f4) function soft-key and to enter the program number.

(a) To use the [DELETE] (f4) function soft-key

Follow the procedure indicated below.

① When the [DELETE] (f4) function soft-key is pressed, the message "INPUT DEL O NO." is displayed.

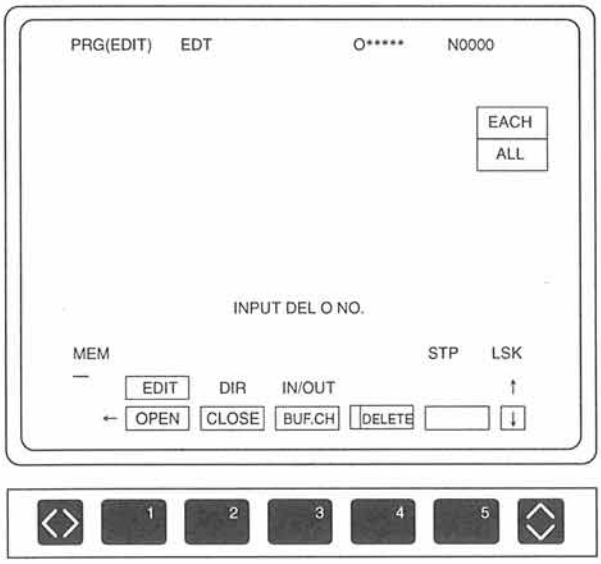


Fig. 4.22 Delete Menu Screen

② Key in the program number to be deleted (for example, "O123") and press the [WR] key. The message "DELETE OK ? (Y/N)" is displayed.

- Key in "Y" to delete the program. The designated program is deleted and the message "DELETE COMPLETE". is displayed upon completion of program deletion.
- Key in "N" when the program should not be deleted.

(b) To start with the entry of program number

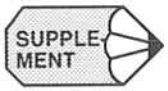
Follow the procedure indicated below.

① Enter the program number of the program to be deleted.

② Press the [ERASE] key.

③ The message "DELETE OK? (Y/N)" is displayed.

- Key in "Y" to delete the program. The "DELETE COMPLETE" message is displayed when the designated program is deleted.
- Key in "N" when the program should not be deleted.



If the specified program number is not found, the "NOT FOUND O NO. !" message is displayed.

(2) Deleting All Part Programs

Follow the procedure indicated below.

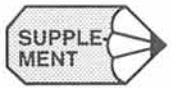
① Press the [DELETE] (f4) function soft-key.

② Press the [DELETE] (f4) function soft-key once again. The pop-up menu is displayed.

③ Press the cursor down key to select "ALL".

④ Press the [WR] key. The pop-up menu for the delete menu selection is cleared. The message "DELETE ALL? (Y/N)" is displayed.

- Key in "Y" to delete all part programs. The "DELETE COMPLETE" message is displayed when all programs are deleted.
- Key in "N" if the part programs should not be deleted.



1. If the program specified to be deleted is called for editing, that program is automatically saved and deleted.
2. If the program specified to be deleted has been called for operation, the program number for operation changes to "O*****" and the status before the selection of a program is recovered.

4.2 PART PROGRAM DIRECTORY JOB

Press the [DIR] (f2) job soft-key. In the directory job, the following functions are provided.

- Displaying the directory of part programs
- Calling part programs
- Deleting part programs
- Renaming part program
- Copying part programs

4.2.1 Display of the Directory of Part Programs

This function displays the directory of program numbers of the part programs stored in the NC memory. The display mode can be selected from the following three modes by pressing the [DSP.SL] (f3) function soft-key: with comment and date, with comment and the actually used number of characters, or program number only.

Display capacity of program numbers on one page is,
With comment : 10 program numbers
Without comment: 50 program numbers

① Press the [DIR] (f2) job soft-key. The directory of part program numbers is displayed.

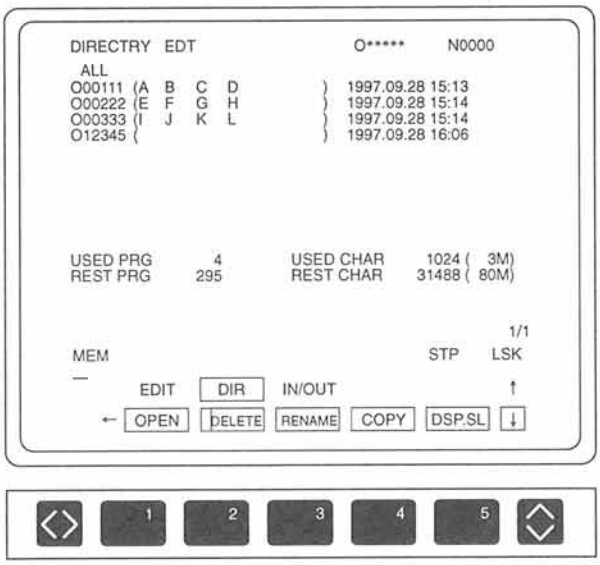


Fig. 4.23 Display of Part Program Directory with Comment and Date

② Press the [DSP.SL] (f5) function soft-key.

The display mode is changed cyclically in the order from "with comment and date" to "with comment and number of actually used characters", then to "O-number only" as the [DSP.SL] function soft-key is pressed. From the "O-number only", the display mode is changed back to "with comment and date".

- An example of the display in "with comment and a number of actually used characters" mode is shown below.

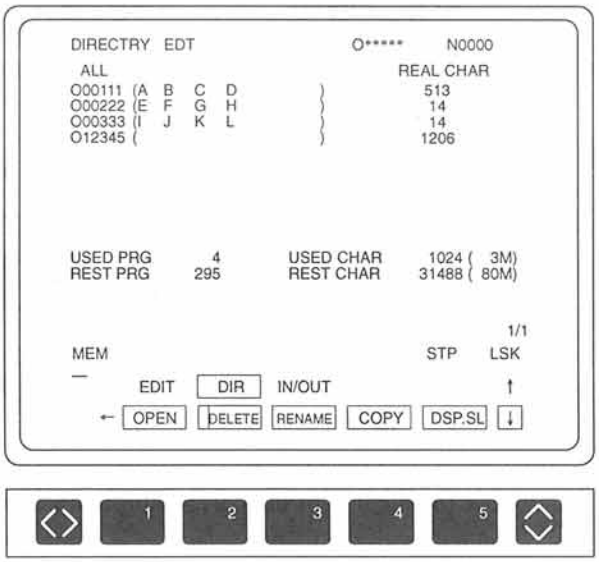


Fig. 4.24 Part Program Directory Display with Comment and Number of Actually Used Characters

SUPPLEMENT

The number of actually used characters indicates the number of characters actually used in the individual programs. It is different from the number of used characters and the number of remaining characters. The number of used characters and the number of remaining characters indicate the number of characters occupying the memory area and they change in units of 256 or 1024, depending on the hardware specifications.

- An example of the display in "only O numbers" mode is shown below.

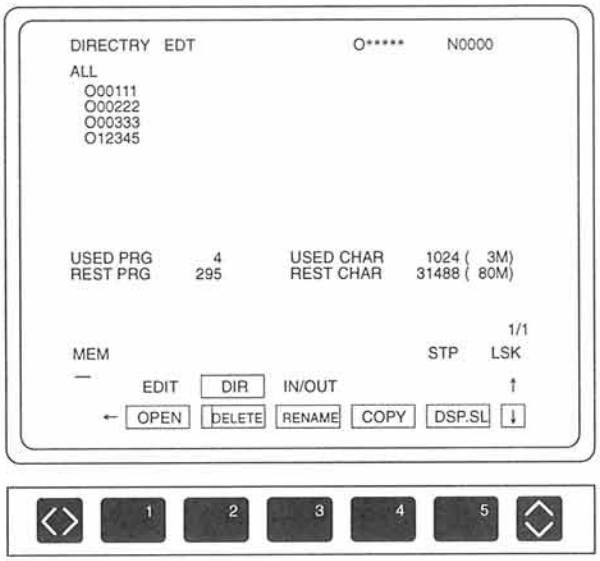


Fig. 4.25 Part Program Directory Display Screen without Comment and Date

For the display of the part program directory, the following four items can be selected from the menu; selection is made by pressing the [SELECT] (f1) function soft-key.

- ALL
- O NO. RANGE
- DATE RANGE
- COLLECT

For the display of related part programs (COLLECT), the [DSP.SL] function soft-key is invalid.

(1) Selection of All Programs

The directory of part program numbers of all stored part programs are displayed.

① Move the selection symbol to "ALL" by pressing the cursor up/down keys after pressing the [SELECT] (f1) function soft-key. In the initial state, "ALL" is selected.

② Press the [RETURN] (f5) function soft-key. The screen returns to the directory display screen and displays the directory of all program numbers.

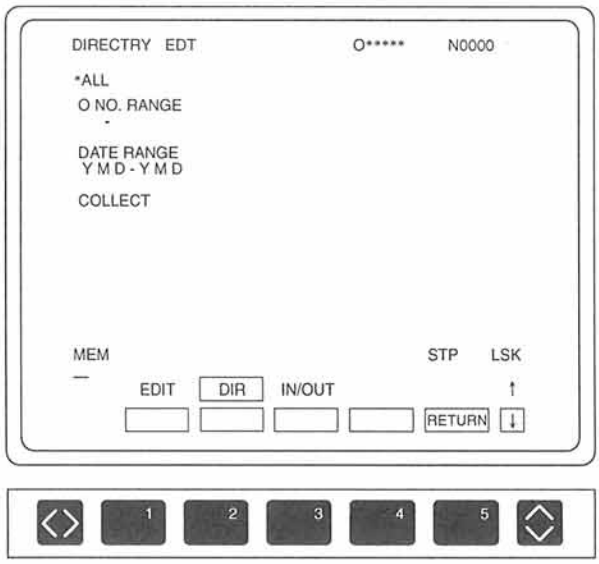


Fig. 4.26 Selection of "ALL"

(2) Selection of Program Number Range

The directory of program numbers of part programs in the specified range is displayed.

① Move the selection symbol to "O NO. RANGE" by pressing the cursor up/down keys after pressing the [SELECT] (f1) function soft-key. In the initial state, "ALL" is selected.

② Enter the first program number (for example, "O1000") and press the [WR] key.

③ Enter the last program number (for example, "O2000") and press the [WR] key.

④ Press the [RETURN] (f5) function soft-key. The screen returns to the directory screen and displays the directory of program numbers in the range from the first program number to the last program number.

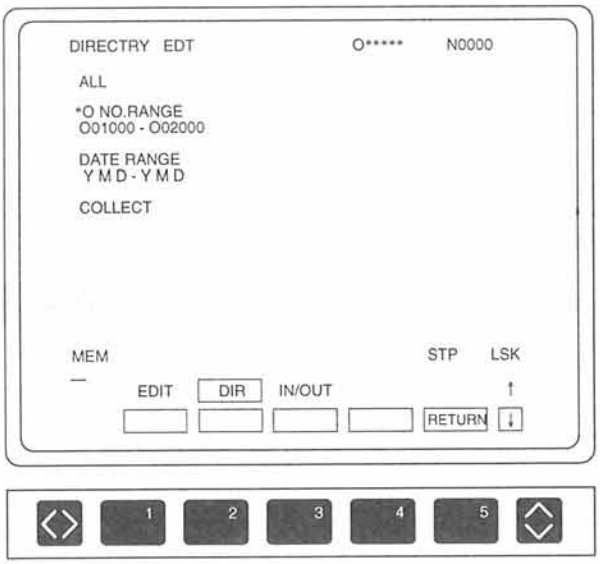


Fig. 4.27 Selection of "O NO. RANGE"

SUPPLEMENT

If there is an error in the input program numbers, the warning message "TOO LARGE AREA!" is displayed.

(3) Selection of Program Creation Date Range

The directory of program numbers in the specified range of program creation date is displayed.

① Move the selection symbol to "DATE RANGE" by pressing the cursor up/down keys after pressing the [SELECT] (f1) function soft-key. In the initial state, "ALL" is selected.

② Enter the first date of program creation (for example, "1997. 1. 1") and press the [WR] key. If only the year is entered, the first day of the year is set. And if only the year and month are entered, the first day of that month of the year is set.

③ Enter the last date of program creation (for example, "1997.5.20") and press the [WR] key. If only the year is entered, the last day of the year is set. And if only the year and month are entered, the last day of that month of the year is set.

④ Press the [RETURN] (f5) function soft-key. The screen returns to the directory display screen and displays the directory of program numbers in the range from the first program creation date to the last program creation date.

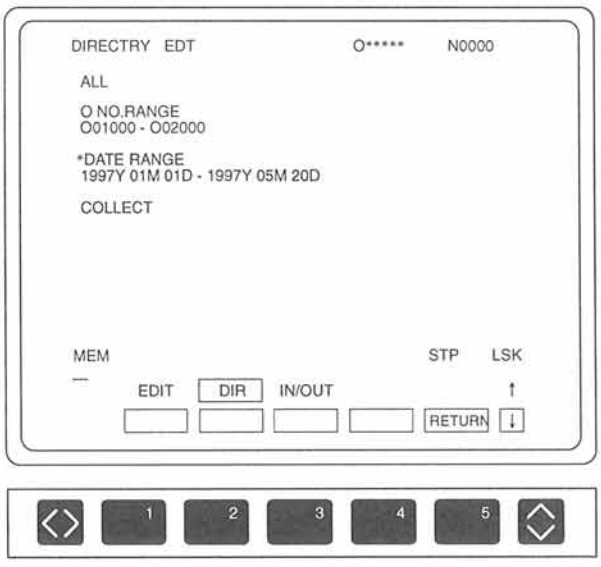


Fig. 4.28 Selection of "DATE RANGE"

SUPPLEMENT

If there is an error in the input program creation dates, the warning message "TOO LARGE AREA!" is displayed.

(4) Selection of Related Programs

By specifying the main program numbers, the directory of part programs that are called from the specified main program is displayed.

① Move the selection symbol to "COLLECT" by pressing the cursor up/down keys after pressing the [SELECT] (f1) function soft-key. In the initial state, "ALL" is selected.

② Enter the main program number (for example, "O12345") and press the [WR] key.

③ Press the [RETURN] (f5) function soft-key. The screen returns to the directory display screen and displays the directory of program numbers of the programs called from the specified main program.

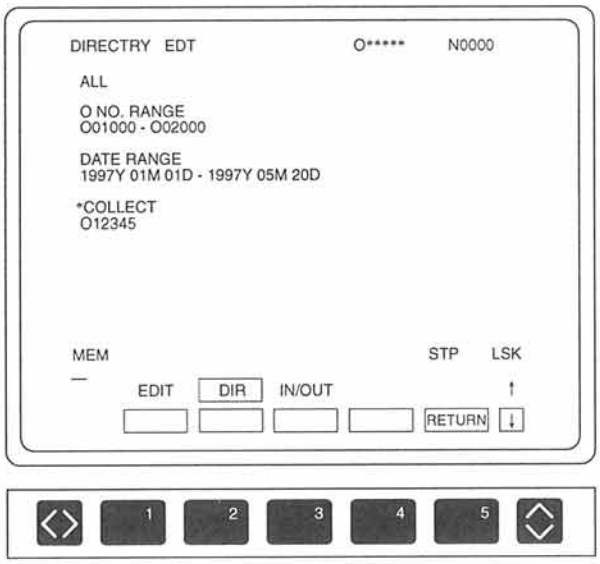


Fig. 4.29 Selection of "COLLECT"

SUPPLEMENT

1. For the display of the directory of related programs, only the display mode of "without comment and date" is selectable. The [DSP.SL] (f5) function soft-key is valid.
2. The programs which are called from the specified main program, but not stored in the part program memory, are displayed in blinking characters.

4.2.2 Calling a Part Program

In the directory of program numbers, part programs can be called to the program edit screen by a simple operation. When the program number of a stored program is entered, the screen changes to the program edit screen and the called program can be edited immediately. If a new program number is entered, comment must be entered to create a new part program and the screen changes to the program edit screen where the newly created program can be edited.

A part program can be called in the same manner as calling a part program in the edit job. On the program directory screen, a part program can be called by pressing function soft-keys or by entering a program and pressing the [WR] key. Follow the procedure indicated below.

① Press the [EDIT] (f1) job soft-key.

② Press the [OPEN] (f1) function soft-key. Note that this operation can be omitted.

③ Key in the program number of the program to be called and press the [WR] key.

④ Key in a comment and press the [WR] key.

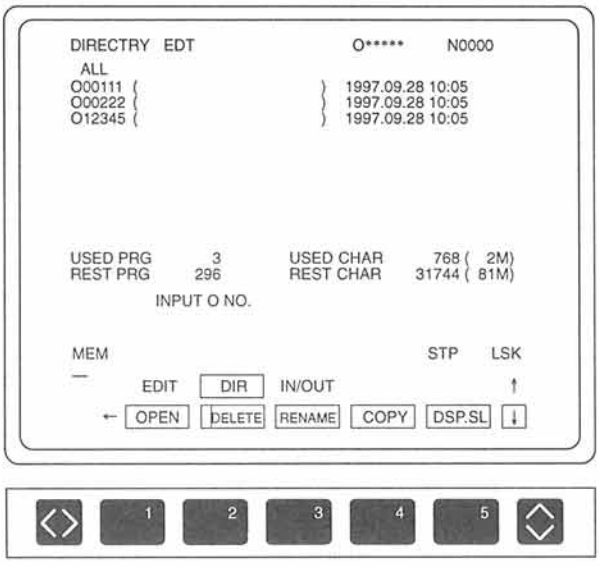


Fig. 4.30 Calling a Part Program

SUPPLEMENT

1. Optionally, it is possible to call other programs at the same time by repeating steps ② to ④.

   The number of programs that can be called differs between J300M and J100M.
   J300M : Up to three part programs can be called at the same time.
   J100M : Up to two part programs can be called at the same time.

2. In the edit lock state, it is not allowed to create a new program number. Reset the edit lock state before creating a new program number.

3. The program presently executed can also be called. However, it is not allowed to edit such a program after calling it to the screen.

4.2.3 Deleting a Part Program

A part program can be deleted in a simple operation on the screen displaying the directory of part programs. The same operation as used for deleting a part program in the edit job can be used.

(1) Deleting a Part Program One by One

To delete a part program one by one, there are two methods: To use the [DELETE] (f4) function soft-key and to enter the program number.

(a) To press the [DELETE] key

① Press the [DELETE] (f2) function soft-key. The message "INPUT DEL O NO." is displayed.

② Enter the program number of the program to be deleted. The message "DELETE OK? (Y/N)" is displayed.

- Enter "Y" to delete the specified program. After the completion of deletion, "DELETE COMPLETE" message is displayed.
- Enter "N" when the program should not be deleted.

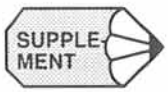
(b) To input a program number

① Enter the program number of the program to be deleted.

② Press the [ERASE] key.

③ The message "DELETE OK? (Y/N)" is displayed.

- Enter "Y" to delete the specified program. After the completion of deletion, "DELETE COMPLETE" message is displayed.
- Enter "N" when the program should not be deleted.



If the specified program number is not found, the "NOT FOUND O NO.!" message is displayed.

(2) Deleting All Part Programs

① Press the [DELETE] (f4) function soft-key.

② Press the [DELETE] (f4) function soft-key once again.

The pop-up menu is displayed.

③ Press the cursor down key to select "ALL".

④ Press the [WR] key. The pop-up menu for the delete menu selection is cleared. The message "DELETE ALL? (Y/N)" is displayed.

- Enter "Y" to delete all part programs. The "DELETE COMPLETE" message is displayed when all programs are deleted.
- Enter "N" when the part programs should not be deleted.

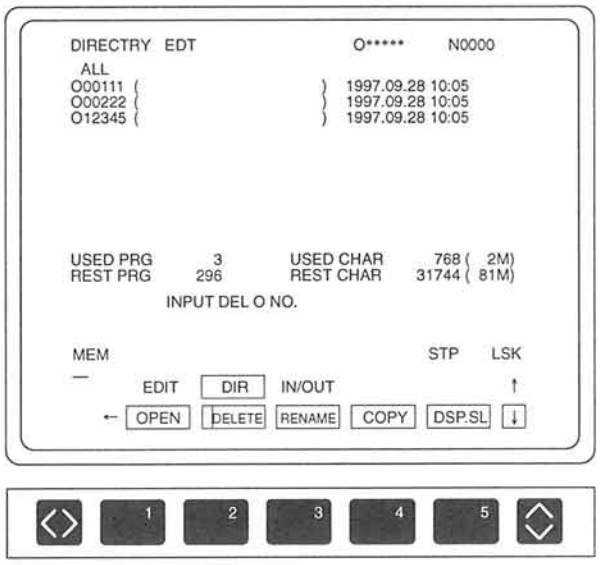


Fig. 4.31 Deleting Part Programs

SUPPLEMENT

1. In the edit lock status, part program deletion is not allowed. To delete a part program, cancel the edit lock status.
2. During operation, the part program presently executed cannot be deleted. To delete the program being executed, delete it only after completing operation.

4.2.4 Renaming a Part Program

The rename function changes the program number. Follow the procedure indicated below.

① Press the [RENAME] (f3) function soft-key. The message "INPUT OLD O NO." is displayed.

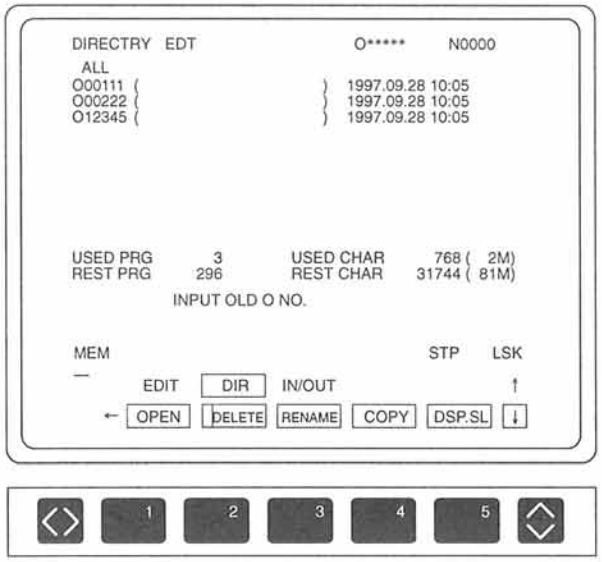


Fig. 4.32 Renaming a Part Program

② Enter the old program number (for example, "O100") and press the [WR] key. The message "INPUT NEW O NO." is displayed.

③ Enter a new program number (for example, "O200") and press the [WR] key. The message "RENAME OK? (Y/N)" is displayed.

- Enter "Y" to rename the program.
- Enter "N" when the program should not be renamed.

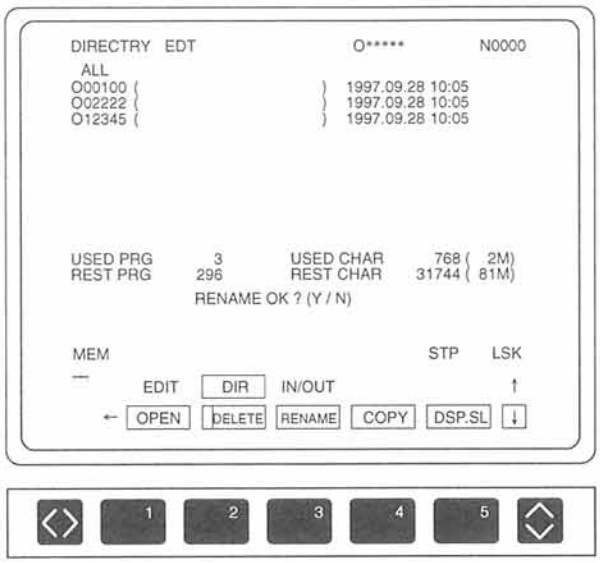


Fig. 4.33 Part Program Rename Screen

If a program number is entered at the beginning of the part program after renaming or copying (refer to 4.2.5.) a part program, whether or not this program number should also be changed automatically can be selected by the setting for the parameter.

Parameter	Selection of Processing	Remark
pm3005 D4 = 0	Do not edit the program number automatically in renaming, copying or storing.	The program creation date is not updated by program renaming operation.
pm3005 D4 = 1	Edit the program number automatically in renaming, copying or storing.	

4.2.5 Copying a Part Program

A part program is copied. The new program created by copying is assigned a new program creation date.

① Press the [COPY] (f4) function soft-key. The message "INPUT ORIGINAL O NO." is displayed.

② Enter the original program number (for example, "O100") and press the [WR] key. The message "INPUT O NO. (COPY)" is displayed.

③ Enter a new program number of the program to be created (for example, "O200") and press the [WR] key. The message "COPY OK? (Y/N)" is displayed.

- Enter "Y" to copy the part program.
- Enter "N" when the part program should not be copied.

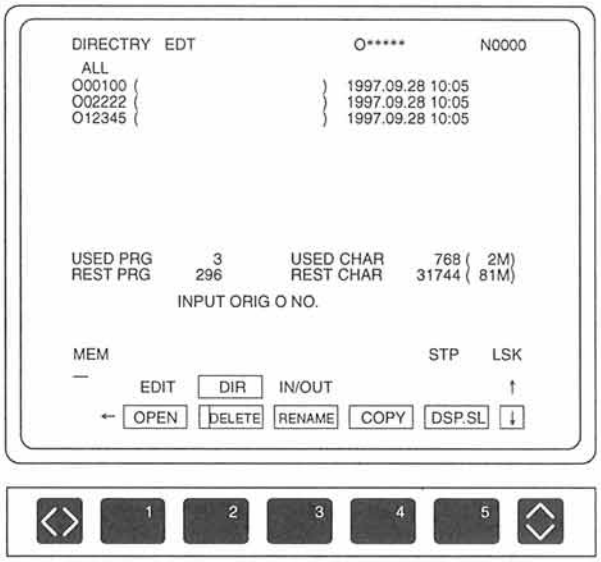


Fig. 4.34 Copying a Part Program

4.3 PART PROGRAM INPUT/OUTPUT AND VERIFY JOB

Press the [IN/OUT] (f3) job soft-key. This job provides the following functions.

- Inputting part programs
- Outputting part programs
- Verifying part programs
- Setting communication conditions
- Others

In the edit lock state, part program input, output, and verify functions cannot be executed. To execute these functions, cancel the edit lock.

4.3.1 Inputting a Part Program

Inputs a part program from an external device to the NC memory. For the input function, two menu items (EACH, ALL) are displayed in the pop-up menu. Check the communication parameters by pressing the [RS232C] (f3) function soft-key.

(1) Selection of EACH

Select "EACH" in the input pop-up menu and input part programs one by one. Follow the procedure indicated below.

① Enter the program number of the part program to be input (for example, "O111") and press the [WR] key. Program input is started and the program input screen is displayed.

- To stop the input of a program, press the [BGREST] (f4) function soft-key or the [RESET] key.
- If a program number is punched on the tape, it is not necessary to input a program number on the screen. In this case, simply press the [WR] key.
- Even if a program number is punched on the tape, the program can be input with a new program number by entering a new program number. When a program is input to the NC memory with a new program number, whether the program number should also be changed or not can be selected by the setting for the parameter.

Parameter	Selection of Processing	Remark
pm3005 D4 = 0	Do not edit the program number automatically in renaming, copying or storing.	The program creation date is not updated by program renaming operation.
pm3005 D4 = 1	Edit the program number automatically in renaming, copying or storing.	

- If the input program number already exists, the processing to be executed can be determined by the setting for the parameter. Selection is possible from the generation of warning or the deletion of the existing program.

pm3005 D0 = 0	Warning message is displayed.
pm3005 D0 = 1	Program number is deleted.

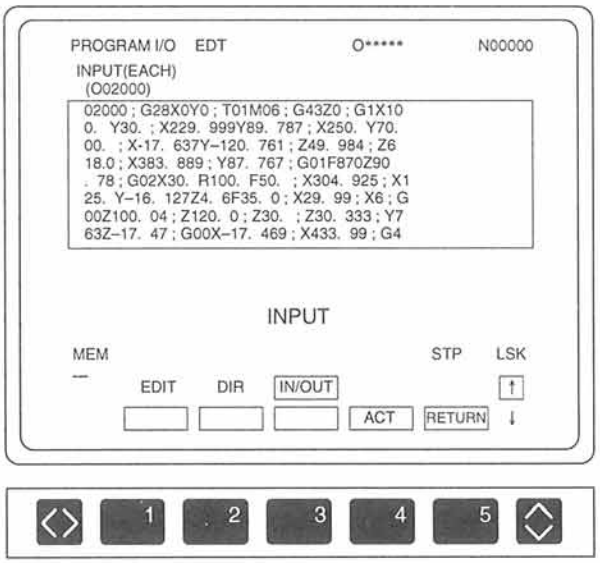


Fig. 4.35 Part Program Input Screen

- Whether or not the list of part programs being input is displayed on the screen can be selected by the setting for the parameter setting.

Parameter	Selection of Processing
pm0007 D5 = 0	List of programs is not displayed.
pm0007 D5 = 1	List of programs is displayed.

Table 4.1 Difference between the [BGREST] (f4) Function Soft-key and the [RESET] Key

[BGREST] (f4) key	Stops only tape input/output and verifies. Operation is not influenced.
[RESET] key	Resets all NC operations.

② When an end M code (M02, M30, M99) or the "%" code is read, program input is completed. Upon completion of program input, the message "INPUT COMPLETE" is displayed.

- The [RETURN] (f5) function soft-key is invalid until the program input is completed. However, the process keys are valid.
- Whether or not the end M code is regarded as the end of a program can be selected by the parameter setting.

pm3005 D3 = 0	The end M code (M02, M30, M99) is not regarded as the end of a program.
pm3005 D3 = 1	The end M code (M02, M30, M99) is regarded as the end of a program.

- Whether or not spaces are deleted during program input and verified can be selected by the setting for the parameter.

pm0020 D0 = 0	Spaces are deleted.
pm0020 D0 = 1	Spaces are not deleted.

(2) Selection of "All"

Select "ALL" in the input pop-up menu and input all part programs punched on tape at a time. Follow the procedure indicated below.

① When "ALL" is selected, the message "ALL PROG. INPUT" is displayed and the message "INPUT OK ? (Y/N)" is displayed.

- To input all programs, enter "Y". Program input starts and the screen changes. As shown in Fig. 4.35, the list of programs being input is displayed.
- Enter "N" when part programs should not be input.
- To stop the input of a program, press the [BGREST] (f4) function soft-key or the [RESET] key.

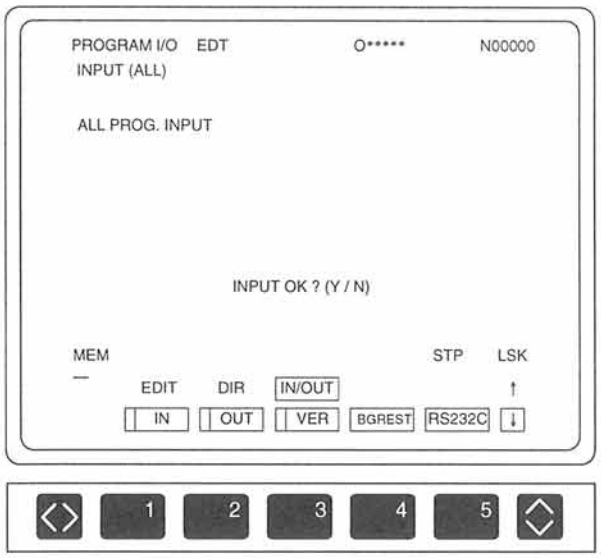


Fig. 4.36 All Program Input Screen

② The ALL input operation is completed when the % code is input. Upon completion of the input of the part programs, the message "INPUT COMPLETE" is displayed.

4.3.2 Outputting a Part Program

Outputs a part program from the NC memory to an external device.

The output function provides the following six menu items (EACH, PLR, RANG, ALL, COL, and DATE) by the pop-up menu. Check the communication parameters by pressing the [RS232C] (f3) function soft-key.

(1) Selection of EACH

Select "EACH" in the output pop-up menu and output part programs one by one. Follow the procedure indicated below.

4

ⓘ Enter the program number of the program to be output (for example, "O2000") and press the [WR] key. Output of the specified program starts and the list of the program being output is displayed on the screen.

- To stop program output, press the [BGREST] (f4) function soft-key or the [RESET] key.

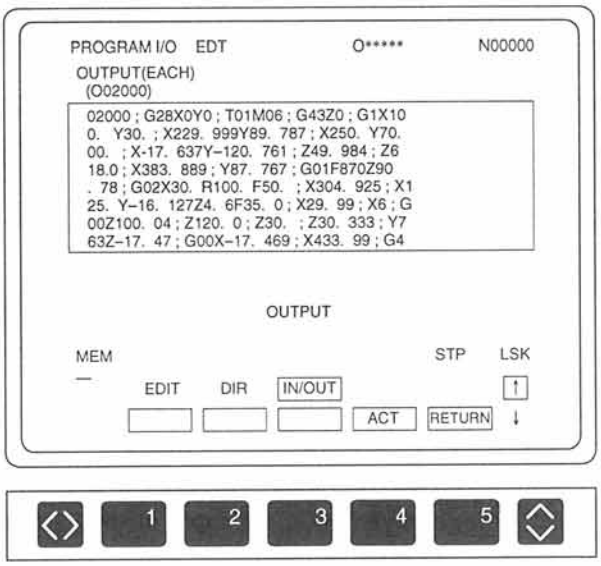


Fig. 4.37 Program Output Screen (EACH)

- Whether or not the list of part programs being output is displayed can be selected by the parameter setting.

pm0007 D5 = 0	Program list is not displayed.
pm0007 D5 = 1	Program list is displayed.

- To cancel the feed portion at the leader and trailer part, press the [CAN] key while feed holes are being output.

② Upon completion of the program output, the message "OUTPUT COMPLETE" is displayed. The [RETURN] (f5) function soft-key is not valid until output of a program is completed. Note that process keys are valid.

(2) Selection of PLR., RANG, ALL, COL and DATE

Select the required output function from the output pop-up menu. Follow the procedure indicated below.

① Press the [OUT] (f2) function soft-key. The "OUTPUT (EACH)" screen is displayed.

② Press the [OUT] (f2) function soft-key once again. The pop-up menu appears, displaying the selection items of EACH, PLR., RANG, ALL, COL, and DATE.

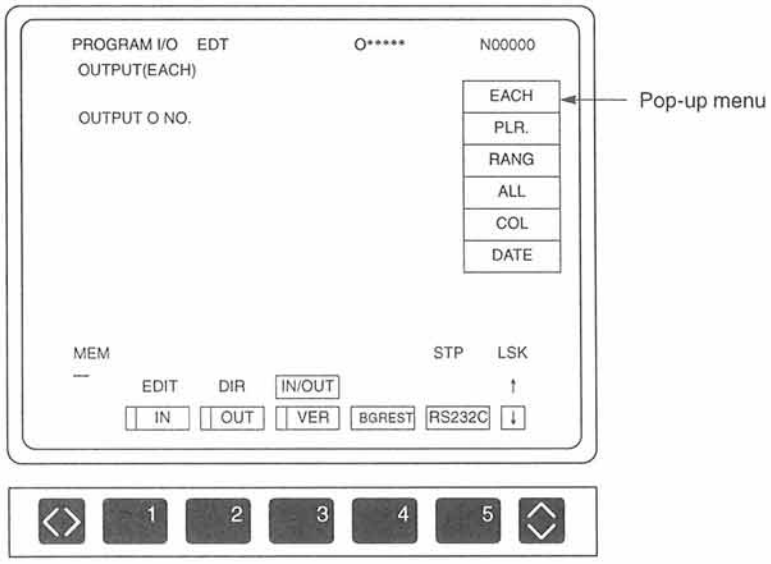


Fig. 4.38 Output Menu Selection Screen

③ Select the menu item by moving the cursor with the cursor up/down keys and press the [WR] key. The output pop-up menu is cleared and the specified screen is displayed.

(a) Selection of PLR.

Outputs the specified multiple part programs. Follow the procedure indicated below.

① Enter the program number of the part program to be output (for example, "O111") and press the [WR] key.

② Move the cursor to the next line and press the [WR] key. Up to 20 program numbers can be entered consecutively.

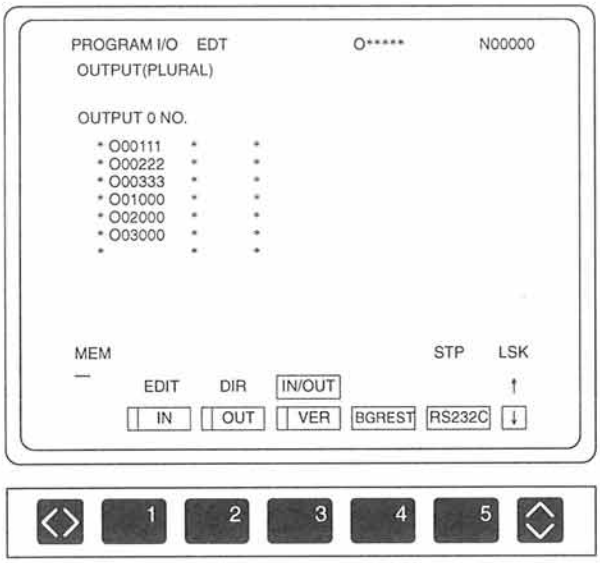


Fig. 4.39 Program Number Input Screen

③ Output of the specified program starts and the list of the program being output is displayed on the screen. The specified programs are output on a single NC tape.

(b) Selection of RANG

Outputs the part programs in the range specified by the program numbers. Follow the procedure indicated below.

① The message is displayed requesting the input of the start program number of the range. Key in the first program of the program output range (for example, "O111") and press the [WR] key.

② For the next message, input the end program number of the range (for example, "O222") and press the [WR] key.

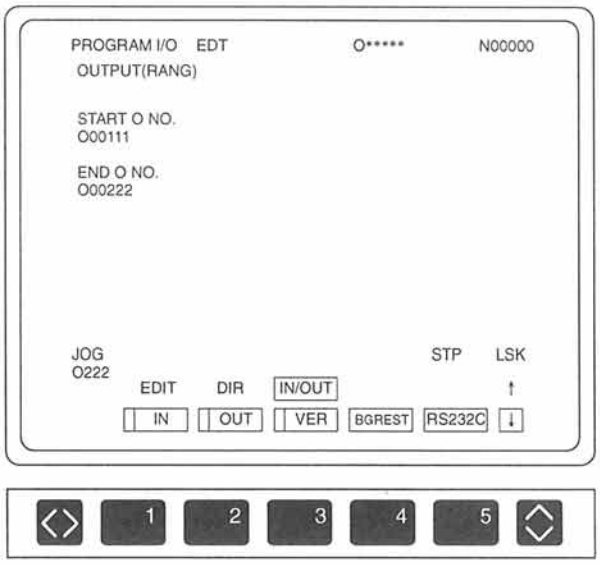


Fig. 4.40 Start and End Program Number Input Screen

③ Output of the specified program start and the list of the programs being output is displayed on the screen. The part programs in the specified range are output on a single NC tape. If no program number is found in the specified range, the warning message "O NO NOT FOUND!" is displayed.

(c) Selection of ALL

Outputs all part programs stored in the NC memory. Follow the procedure indicated below.

① The message "ALL PROG. OUTPUT" is displayed on the screen and the message "OUTPUT OK? (Y/N)" is displayed.

- Enter "Y" to output all part programs.
- Enter "N" when the part programs should not be output.

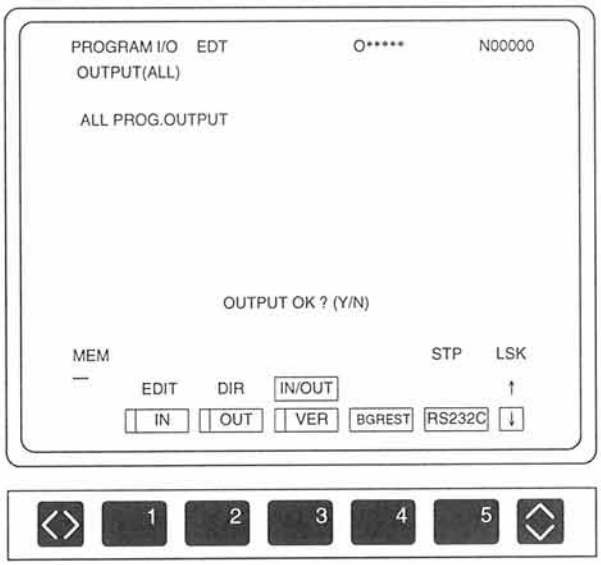


Fig. 4.41 All Part Program Output Screen

② Output of the part programs starts and the list of the program being output is displayed on the screen. All part programs are output on a single NC tape.

(d) Selection of COL.

By specifying the main program, the subprograms, program copies, and macroprograms called from the specified main program can be output up to 500 programs. Follow the procedure indicated below.

① When the "COL." item is selected, the "COLLECT O NO." message is displayed; enter the main program number (for example, "O12345") and press the [WR] key.

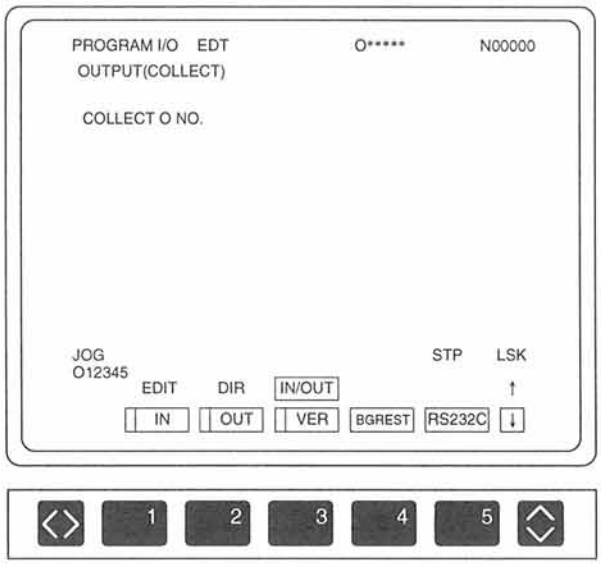


Fig. 4.42 Program Number Input Screen

② Output of the programs starts and the list of the programs being output is displayed on the screen. The main program and the programs that are called from the specified main program are output on a single NC tape.

(e) Selection of DATE

The date of part program creation and registration is stored in the NC memory. It is possible to output part programs by specifying the date. Follow the procedure indicated below.

① The message requesting the input of the date is displayed. Enter the date of program creation of the programs to be output (for example, "1997. 05. 20") and press the [WR] key. If only the year is entered, all programs created in the specified year are output, and if only the year and the month are entered, all programs created in the specified month of the specified year are output.

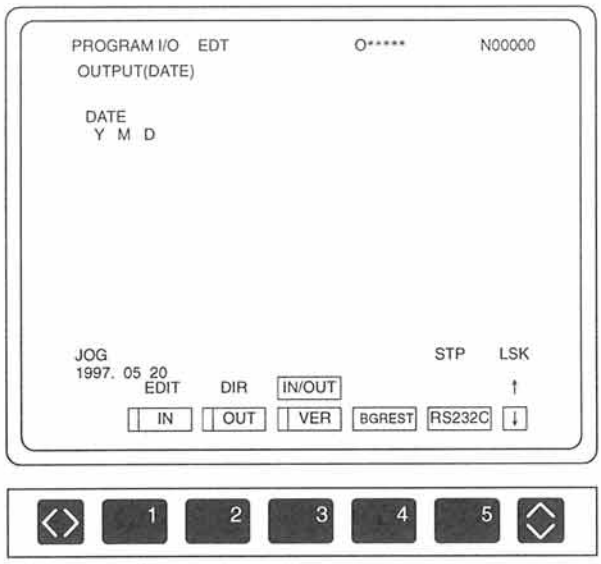


Fig. 4.43 Date Input Screen

② Output of the specified programs starts and the list of the programs being output is displayed on the screen. The part programs created in the specified date are output on a single NC tape.

4.3.3 Verifying the Part Programs

Compares the part program in an external device with the part program stored in the NC memory. For the execution of the verify function, selection is possible from each and all using the pop-up menu.

Check the setting for communication parameters by pressing the [RS232C] (f5) function soft-key.

(1) Selection of EACH

Verifies part programs one by one. Follow the procedure indicated below.

① Press the [VER] (f3) function soft-key.

② Press the [VER] (f3) function soft-key once again. The pop-up menu is displayed to allow the selection between "EACH" and "ALL".

③ Select "EACH" by moving the cursor with the cursor up/down keys.

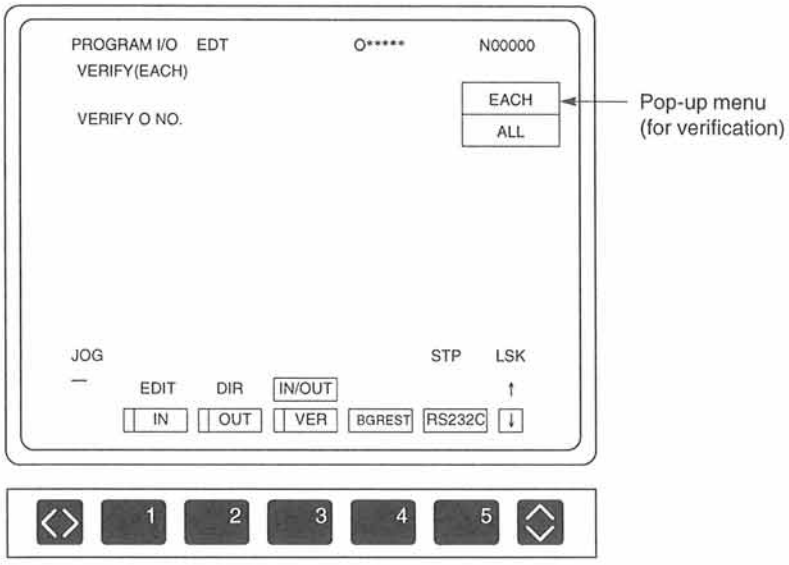


Fig. 4.44 Verification Menu Selection Screen

④ Enter the program number of the program to be verified (for example, "O2000") and press the [WR] key.

⑤ Verification is started and the list of the part programs (tape input side) to be compared with the part programs stored in the NC memory is displayed on the screen.

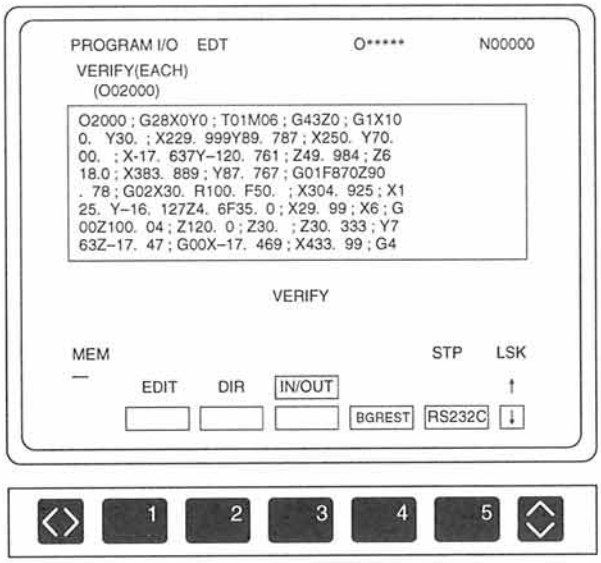


Fig. 4.45 Program Verify Screen

- It is possible to select whether or not the list of part programs should be displayed on the screen for execution part program verification.

pm0007 D5 = 0	List of part programs is not displayed.
pm0007 D5 = 1	List of part programs is displayed.

- If inconsistency between the contents of the part programs stored in the NC memory and the contents of the one input from an external device is found, the display area in the screen is divided into two parts. The upper half area displays the list of the part programs in the NC memory and the lower half area displays the list of the part programs input from the external device. Inconsistent parts are highlighted.

Fig. 4.46 Screen after Occurrence of Inconsistency

(2) Selection of ALL

Verifies all programs punched on tape. Follow the procedure indicated below.

① Press the [VER] (f3) function soft-key.

② Press the [VER] (f3) function soft-key once again. The pop-up menu is displayed to allow the selection between "EACH" and "ALL" (Fig. 4.46).

③ Select "ALL" by moving the cursor with the cursor up/down keys and press the [WR] key.

④ The pop-up menu is cleared and the VERIFY (ALL) screen is displayed.

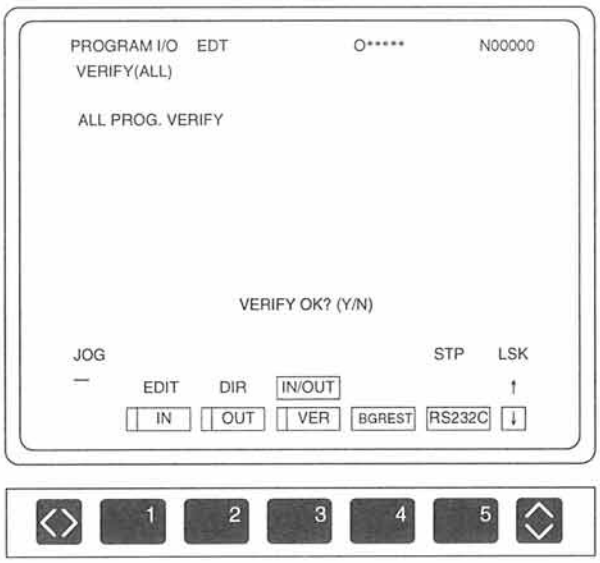


Fig. 4.47 All Program Verify Screen

⑤ The "ALL PROG. VERIFY" message is displayed, and the message "VERIFY OK? (Y/N)" is displayed.

- Enter "Y" to execute all program verify operation.
- Enter "N" when program verification should not be executed.

⑥ Verification is started and the list of the part programs (input from the tape) to be compared with the part programs stored in the NC memory is displayed on the screen.

- If inconsistency is found between the contents of the part programs stored in the NC memory and the contents of the one input from an external device, the screen changes as shown in Fig. 4.46 and inconsistent parts are highlighted.

4.3.4 Setting the Communication Conditions

Sets the baud rate of the data I/O interface, stop bit length, the use of control codes, etc.

(1) Setting the RS-232C Communications Parameters

This screen is used to display and set the communication parameters used when an external device is connected by the RS-232C interface. For the connection of an external device, two ports are provided; one is used for input and the other for output. Follow the procedure indicated below.

① Press the [RS232C] (f5) function soft-key, and the screen as shown below is displayed.

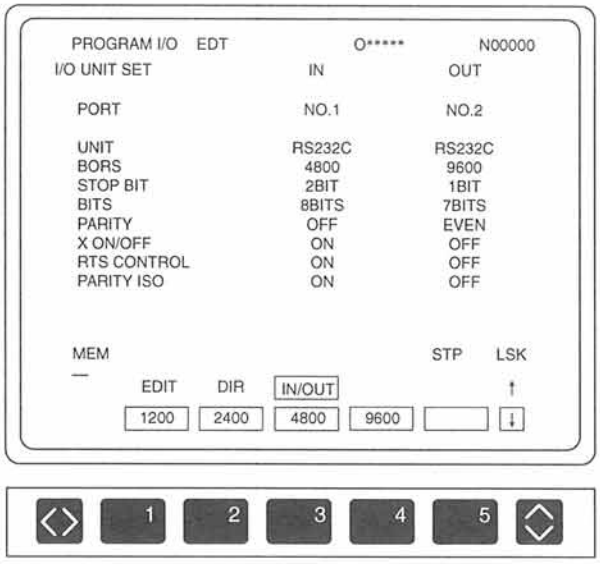


Fig. 4.48 RS-232C Communication Parameters Setting

② Move the cursor to the parameter for which the data should be set by using the cursor up/down keys. When the cursor is moved to a certain parameter, the contents of the function soft-keys change meeting the selected parameter.

③ Press the soft-key corresponding to the required setting. The selected value is set for the cursor located parameter. For example, in the setting of BORS, if [9600] (f4) soft-key is pressed, "9600" is written.

SUPPLEMENT

For the parameters for which "*****" is displayed, setting is not permitted.

For the serial interface, setting is possible as indicated in Table 4.2.

Table 4.2 Serial Interface Setting

Menu Item	Input	Output
UNIT (device)	YE tape reader	
	General-purpose RS-232C	General-purpose RS-232C
PORT	NO. 1	NO. 1
	NO. 2	NO. 2
BORS (baud rate)	100 or 75	100 or 75
	110 or 150	110 or 150
	300	300
	600	600
	1200	1200
	2400	2400
	4800	4800
	9600	9600
STOP BIT	1 bit	1 bit
	2 bits	2 bits
BITS (bit length)	7 bits	7 bits
	8 bits	8 bits
PARITY (parity scheme)	Even parity	Even parity
	Odd parity	Odd parity
	None	None
X ON/OFF (control code)	Supported	Supported
	None	None
RTS CONTROL	Supported	Supported
	None	None
PARITY ISO	Supported	Supported
	None	None

Note 1: Although two RS-232C ports are provided, these two ports cannot be used at the same time. For these two ports, setting can be made independently from each other.

2: Recommended setting for the communication at 9600 bps is indicated below.

BORS	9600 bps	PARITY	EVEN/ODD/OFF
STOP BIT	2 BITS	NC DATA SPECIAL CONTROL	OFF
BIT LENGTH	8 BITS		

The menu items are explained below.

(a) UNIT (external device)

Select "YE tape reader" when the tape reader special for YASNAC is used. If "YE tape reader" is set, parameters are automatically set and "****" is displayed for other parameters.

BORS	4800 bps
STOP BIT	2 BITS
BIT LENGTH	8 BITS
PARITY	OFF
X ON/OFF	ON

By selecting "RS232C" (general-purpose RS-232C), connection is possible with a variety of RS-232C devices by setting appropriate communication parameters.

(b) PORT

Selection is possible between No. 1 port and No. 2 port.

(c) BORS

Communication speed can be set by this parameter. Whether 100 and 110 bps or 75 and 150 bps are selected for low speed is determined by the setting for the following parameters.

No. 1 port	Input	pm0011 D7 = 0	100 and 110 bps
		pm0011 D7 = 1	75 and 150 bps
	Output	pm0013 D7 = 0	100 and 110 bps
		pm0013 D7 = 1	75 and 150 bps
No. 2 port	Input	pm0016 D7 = 0	100 and 110 bps
		pm0016 D7 = 1	75 and 150 bps
	Output	pm0018 D7 = 0	100 and 110 bps
		pm0018 D7 = 1	75 and 150 bps

(d) STOP BIT

It is possible to set the bit length of the stop bit.

(e) BITS

It is possible to set the bit length of the data.

(f) PARITY

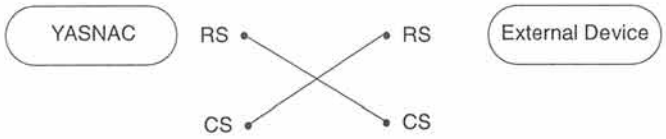
It is possible to specify the hardware dependent parity check status.

(g) X ON/OFF

It is possible to specify whether or not the control codes are used.

(h) RTS CONTROL

When the setting for this parameter is "ON", communication between the YASNAC and the connected device is controlled using the RS and CS signals. To use the RTS control, the cross-cable as shown below must be used.



(i) PARITY ISO

When ISO code data is used, this parameter is used to set whether parity check is made with the higher data bits. For this parameter, setting is possible if "YE tape reader" is selected for UNIT.

(2) Other Communication Control Parameters

Set the communication parameters used for data communications with an external device.

(a) DR LINE CHECK

The DR line check executes the test at the NC side whether the DR line of the connected external device is ON (that is, whether the connected device is ready for communications). For this function, the following parameters are provided. To perform this test, use the cable that connects the DR line of the NC to the DR line of the connected device. The connected device must have the DR line control function.

No. 1 port	Input	pm0012 D2 = 1
	Output	pm0014 D2 = 1
No. 2 port	Input	pm0017 D2 = 1
	Output	pm0019 D2 = 1

(b) NC DATA SPECIAL CONTROL

This parameter is used to set whether or not the check specific to the NC is executed and also whether or not special character codes are used. How this control is used is indicated below.

Control ON for input	The following are as set with parameters: • pm0004: D1, D2, D3 • pm3005: D0, D2, D3, D4, and D5 The following parameters are made valid: • pm4100 - pm4109 and pm4144 - pm4146 EIA/ISO automatic recognition is provided.
Control OFF for input	Several bits of the following parameters are fixed: • pm0004: ××××100× • pm3005: ××0000×0 The following parameters are made invalid: • pm4100 - pm4109 and pm4144 - pm4l46 Fixed to ISO code
Control ON for output	The following are as set with parameters: • pm0004: Other than D3 • pm3005: D5 The following parameters are made valid: • pm4100 - pm4109 and pm4144 - pm4146
Control OFF for output	Several bits of the following parameters are fixed: • pm0004: 0110×××0 • pm3005: ××0××××××

4.3.5 Other Function

With the [BGREST] (f4) function soft-key, resetting operation is possible.

(1) BG Reset

The [BGREST] function soft-key provides the background reset function which is different from the function provided by the [RESET] key on the operation panel. The BG reset function executes the following processing.

- Interruption of input/output/verify operation
- Turning on the label skip function
- Resetting the background alarm (ALM 9000's)

The [BGREST] (f4) function soft-key does not have any influence on the operation even if it is pressed during the execution of a program. Even if the [BGREST] (f4) function soft-key is pressed, the "RST" status indicating message is not displayed.

4.4 PROGRAM PATH DRAWING JOB

The tool paths defined by a machining program are analyzed and drawn on the program path drawing screen. The range of drawing, view angle, and other conditions are set on the program drawing screen.

4.4.1 Features of the Program Path Drawing Screen

The program path drawing job has the following features.

Table 4.3 Features of the Program Path Drawing Screen

Function	Feature
Line drawing	Tool paths are drawn by lines.
Drawing plane selection	The plane on which the tool paths should be drawn can be selected. (XY, YZ, ZX, XYZ, XY/YZ, XY, XZ)
View angle selection	On the XYZ plane, view angle can be selected in units of 5 degrees.
Drawing range (scale) selection	Tool path drawing range can be selected as required from all the tool paths.
Automatic scaling	The scale for drawing the tool paths is automatically determined so that all the tool paths can be drawn on the screen.
Process drawing	Cutting operations carried out by a single tool are assumed as one process, and drawing of the tool paths is possible only for the selected processes.
Auxiliary function indicator	While an auxiliary function is executed, the status of the functions being executed are displayed by the corresponding symbol.
Continuous/single selection	Continuous drawing and single-block drawing can be selected.

4.4.2 Description of the Program Path Drawing Screens

When the program path draw job ([PROG DRAW]) is selected at the edit process screen, the tool path drawing screen is displayed.

(1) Drawing Screen

The tool path drawing screen is the main screen to draw the specified program and the screen used for setting the drawing parameters, the one used for setting the drawing scale can be called. The setting screens for program path drawing provide the following functions.

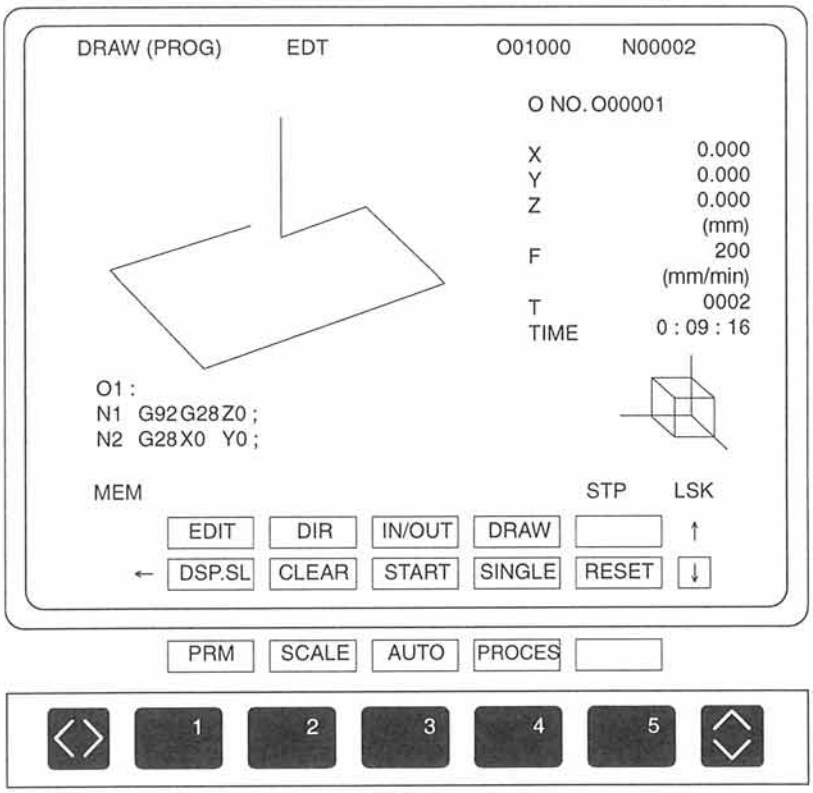


Fig. 4.49 Program Path Drawing Screen

(a) Setting the program number for program path drawing

When drawing program paths, it is necessary to specify the program number first. Follow the procedure indicated below.

① Press the [DRAW] (f4) function soft-key to display the DRAW (PROG) screen.

② To set the program number, key in "O" and "program-number" and press the [WR] key.

- Once set, the program number is retained until the power is turned OFF. Therefore, if a program drawn previously should be drawn again, it is not necessary to enter the program number again.
- When the power is turned ON, "O0" is set.
- If tool paths of a subprogram are drawn or when automatic scaling is executed for a subprogram, the program number is automatically changed to the subprogram number.

(b) Executing the program path drawing

The program paths are drawn according to the setting for drawing parameters. Whether the paths are drawn continuously or block by block is determined according to the setting made by the [CONT/SINGLE] soft-key. Follow the procedure indicated below.

① On the program path drawing screen, press the [START] (f3) soft-key and the program path drawing starts. In the state that the [START] (f3) soft-key is highlighted, it indicates that the program paths are being drawn.

② To suspend program path drawing temporarily, press the [START] (f3) soft-key while the program paths are being drawn. Note that drawing of the program paths is suspended at the single-block stop point. When the [START] (f3) soft-key is pressed, while the program path drawing is suspended, program path drawing is restarted.

③ Upon completion of the program path drawing, the "DRAW COMPLETE" message is displayed. To end the program path drawing forcibly, press the [RESET] soft-key. If the [START] (f3) soft-key is pressed the next time, the program paths are drawn from the beginning of the program.

④ To clear the drawn paths from the screen, press the [CLEAR] (f2) soft-key. If the [CLEAR] soft-key is pressed while the program paths are being drawn, the paths having already been drawn are cleared and the remaining paths are drawn continuously.

- If there are errors in the program, the alarm number and the corresponding alarm message are displayed on the screen. Note that if there is more than one alarm in the program, only the largest alarm number is displayed.
- The modes of axis feed (rapid traverse, cutting feed) are identified by the line types as indicated below.

Rapid traverse	Dotted line	Tool center path
	Dot chain line	Offset path
Cutting feed	Solid line	Tool center path
	Dot chain line	Offset path

SUPPLEMENT

1. Program paths are drawn at a fixed speed independent of the feedrates specified in a program or the setting of the override switches.
2. Usually, the size of drawing is determined by the maximum and minimum values of the program that are set for GRAPH RANGE on the drawing parameter setting screen. However, if the scale is changed on the scale setting screen, program paths are drawn according to the setting made on this screen.

(c) Contents of display

The program paths of the specified program are drawn in line.

- When two-dimensional drawing mode is selected (XY, YZ, ZX, XY/YZ, XY/X planes), the coordinate axes are displayed on the screen.

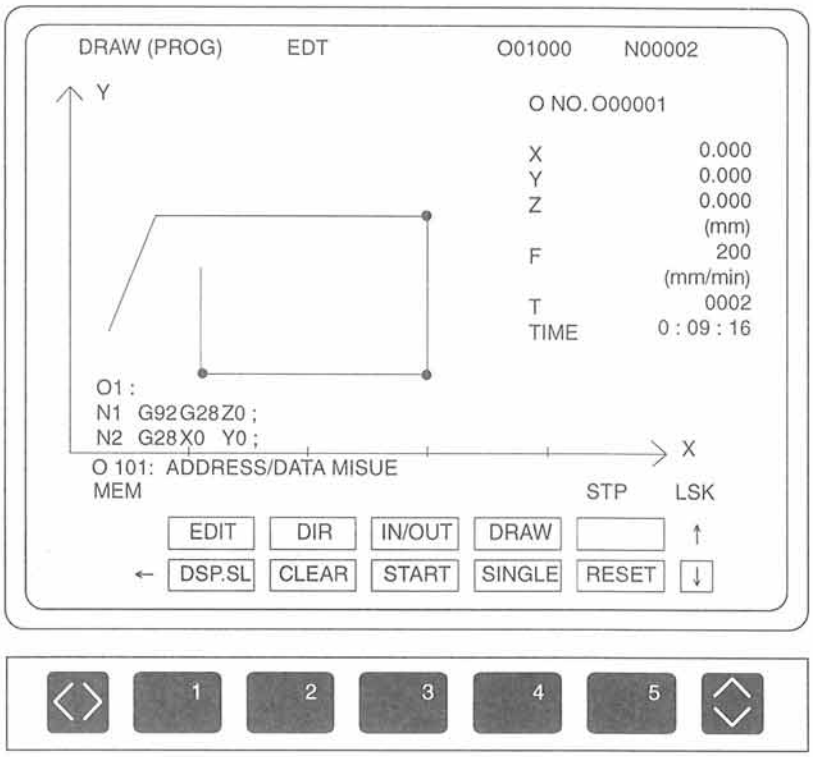


Fig. 4.50 Program Path Drawing Screen (Two-dimensional Drawing)

- When three-dimensional drawing mode is selected (XYZ plane), the coordinate axes are not displayed.

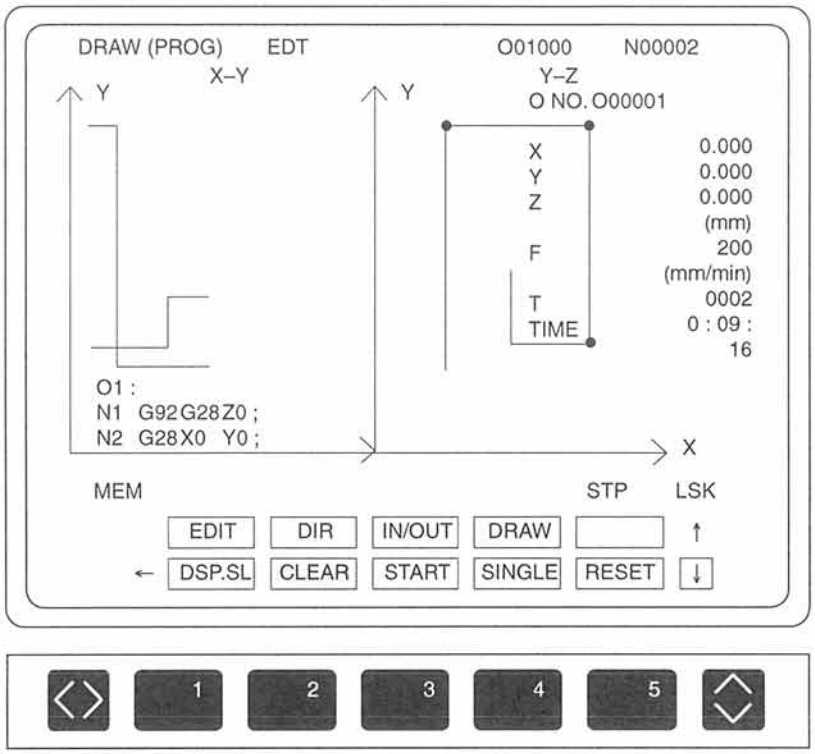


Fig. 4.51 Program Path Drawing Screen (Three-dimensional Drawing)

- The area where program paths are drawn is the "304 × 544" dot area at the upper left part of the screen. When the XY/YZ or XY/XZ planes are selected, the size of the single plane is determined so that the drawn program path size will be the maximum size.

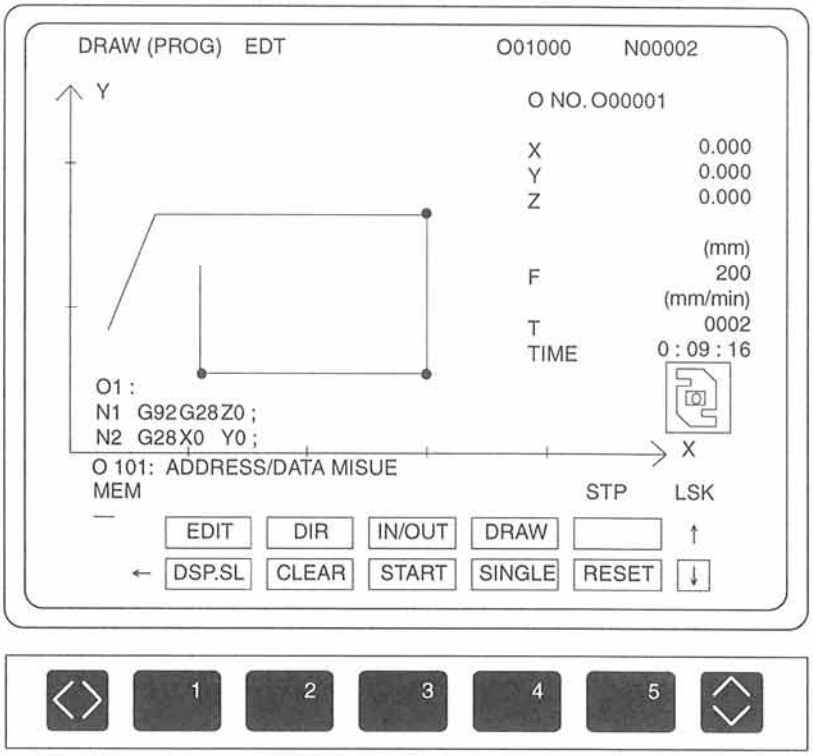


Fig. 4.52 Program Path Drawing Screen (Three-dimensional Drawing)

- O NO. (drawing program number)

  Displays the program number of the program for which program paths are drawn. While program paths of the subprogram called from the main program are being drawn or when automatic scale calculation is being made for that subprogram, the program number of the subprogram is displayed.

- Coordinate symbol

  When the three-dimensional mode is selected, the coordinate symbol is displayed at the lower right part of the screen. Note that the symbol is not displayed when the two-dimensional mode is selected.

  The symbol is displayed in the "80 × 80" dot area.

- Program list

  Three blocks of the program that are being drawn are displayed.

- Position data

  The Present Position of the X-, Y-, and Z-axis is displayed. The position data do not include the tool radius offset amounts.

- Command values

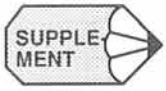
  For F and T codes, the values specified in the program are displayed.

- M code function indicator

  The valid M code functions are indicated by the symbols.

  Depending on the M code type to be indicated, three display positions are used.

Left position	M code symbol to indicate the spindle status Spindle forward rotation, spindle reverse rotation, spindle stop, and spindle orientation stop
Center	M code symbol to indicate the coolant ON/OFF status
Right	Non-modal M code symbol Program stop, optional stop, end of program, and tool change



The correspondence between the miscellaneous functions (M code functions) and the M code numbers is determined by the machine tool builder. This correspondence is set for the NC function parameters (pm3442 to pm3448).

pm3442	Spindle forward rotation M code number	pm3446	Tool change M code number
pm3443	Spindle reverse rotation M code number	pm3447	Coolant ON M code number
pm3444	Spindle stop M code number	pm3448	Coolant OFF M code number
pm3445	Spindle orientation M code number		

- TIME (machining time)

  Actual machining time up to the block for which program paths are presently drawn is calculated and displayed.

(d) Description of the soft-keys

- [CLEAR] (f2) soft-key

  When this soft-key is pressed, the program paths having been drawn are cleared. Note that the information displayed by characters is not cleared.

- [CONT/SINGLE] (f4) soft-key

  The drawing mode (continuous drawing, single-block drawing) is switched over by pressing this soft-key.

- [START] (f3) soft-key

  Program path drawing starts when this soft-key is pressed. While the program paths are drawn, the soft-key is highlighted. If the [START] soft-key is pressed while the program paths are drawn, drawing is suspended. Pressing the [START] soft-key while the program path drawing is suspended restarts drawing from the block where drawing has been suspended.

- [DSP.SL] (f1) soft-key

  This soft-key is used to select whether or not the operation information (position data, command values, program blocks, etc.) should be displayed on the screen. Each time the [DSP.SL] soft-key is pressed, the status alternates between "display" and "not display".

- [RESET] (f5) soft-key

  When this soft-key is pressed, the key buffer area and the drawn paths are cleared and the drawing execution pointer is returned to the beginning of the programs. Both drawing and the automatic calculation of scale are stopped.

- [PRM] (f1) soft-key

  When this soft-key is pressed, the screen changes to the drawing parameter setting screen (PRM (PROG)).

- [SCALE] (f2) soft-key

  When this soft-key is pressed, the screen changes to the scale setting screen (SCALE (PROG)). Note that this soft-key is invalid when the program paths are drawn by selecting the XY/YZ plane or XY/XZ plane.

- [AUTO] (f3) soft-key

  When this soft-key is pressed, the scale is calculated automatically. While the scale is calculated, the "AUTO SCALING" message is displayed. At the same time the [AUTO] soft-key is highlighted. Upon completion of the calculation, the [AUTO] display returns to the normal display and the lower row of the soft-keys returns to the display of the foreground functions. If the [SCALE] soft-key is pressed during automatic scale calculation, the calculation is stopped and the value obtained at that point becomes valid. When the [DPS.SL] soft-key is pressed, the program for which the scale is calculated, position data, command values, etc. are displayed.

- [PROCESS] (f4) soft-key

  This soft-key is used to select whether the program paths should be drawn for all processes (normal state) or only for the selected processes (highlighted state). The selection alternates each time the [PROCESS] soft-key is pressed. In the state where the automatic scale calculation has not been made, this soft-key is not displayed.

(e) Soft-keys valid in the individual functions

- Soft-keys valid for automatic scale calculation

  [DSP.SL], [CONT/SINGLE], [AUTO], [START], [RESET], and [CLEAR]

- Soft-keys valid during program path drawing

  [CLEAR], [CONT/SINGLE], [START], [RESET], and [PROCESS]

  Note that the [PROCESS] soft-key is displayed only after the completion of automatic scale calculation.

(f) Messages

On the program path drawing screen, the following messages are displayed.

Table 4.4 Messages

Message	Desctiption
"AUTO SCALING"	Indicates that automatic scaling is executed. (highlighted, blinking)
"SCALING COMPLETE"	Indicates that automatic scaling is completed. (highlighted)
"DRAWING COMPLETE"	Indicates that program path drawing has been completed. (highlighted)

(g) Others

- Even if the [RESET] (f5) soft-key is pressed during program path drawing or automatic scaling, the processing is not influenced.
- If an additional axis is selected, although the position data of the additional axis is displayed, program path drawing is executed with the additional axis disregarded.
- For the calculation of cycle time (machining time), the time used for the execution of M, S, and T commands is taken into account. The values set for parameters pm3449 to pm3451 are used for this calculation (average time of the execution of the M, S, and T commands).

pm3449	The average time necessary for the execution of an M code (msec)
pm3450	The average time necessary for the execution of an S code (msec)
pm3451	The average time necessary for the execution of a T code (msec)

(2) Drawing Parameter Setting Screen

When the [PRM] function soft-key is pressed on the program path drawing screen, the drawing parameter setting screen as shown below is displayed. On this screen, the parameters necessary for drawing the program paths are displayed. It is also possible to set the required values or change the displayed setting.

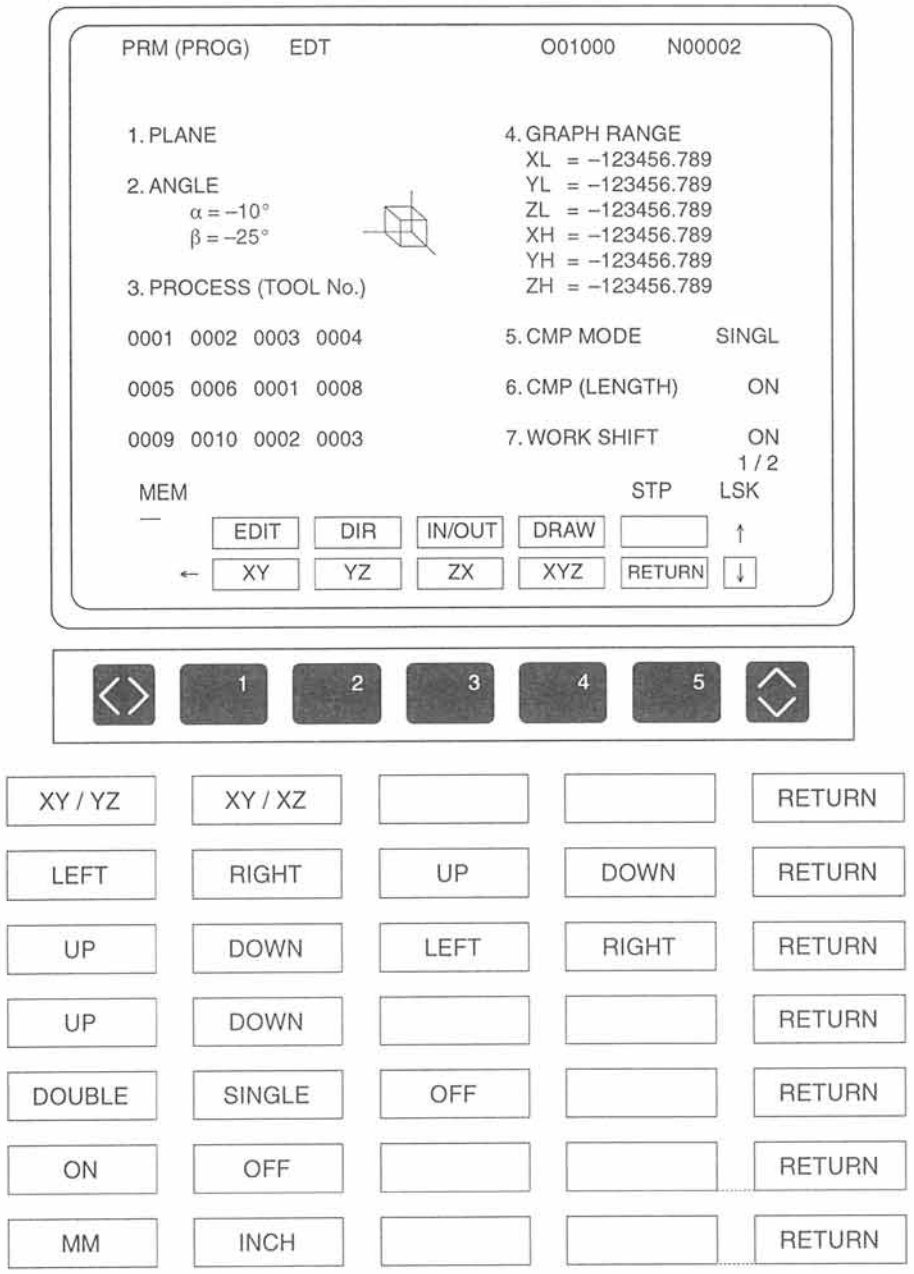


Fig. 4.53 Program Path Drawing Parameter Setting Screen

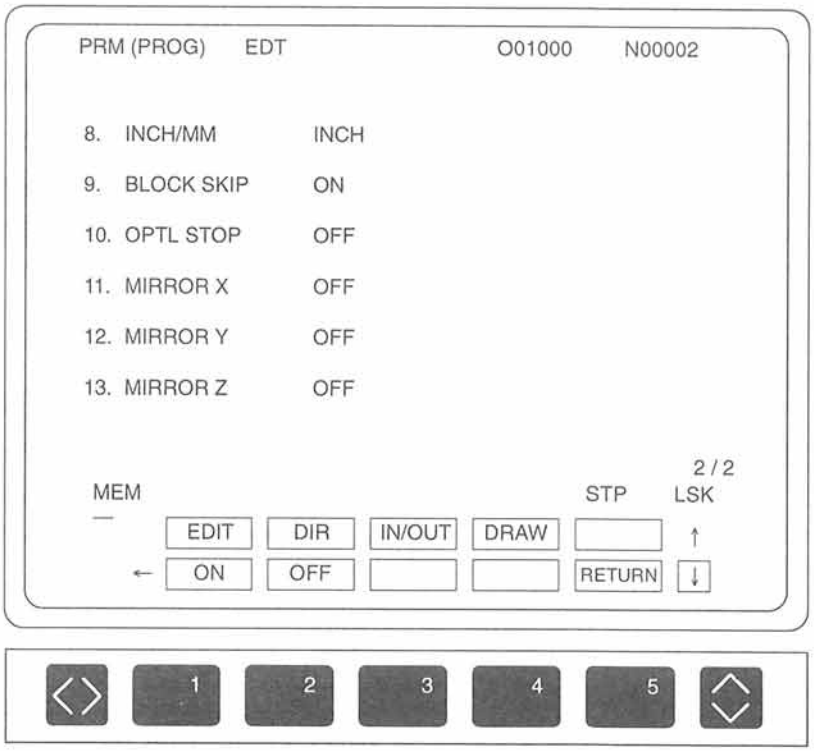


Fig. 4.54 Program Path Drawing Parameter Setting Screen

The following parameters are provided to set the conditions for drawing the program paths.

- PLANE (Program path drawing plane)
- ANGLE (View angle for three-dimensional drawings)
- PROCESS (Processes for drawing program paths)
- GRAPH RANGE [Range (scale) of drawing]
- CMP MODE and CMP (LENGTH) (Offset data handling for drawings)
- WORK SHIFT (Workpiece coordinate system shift amount handling for drawings)
- INCH/MM (Selection of "mm" or "inch" system)
- BLOCK SKIP (Handling of block skip for drawings)
- OPTL STOP (Handling of optional stop for drawings)
- MIRROR X/Y/Z (Handling of mirror image for drawings)

Follow the procedure indicated below to set the program path drawing parameters.

① After moving the cursor to the program path drawing parameter item.

② Set the contents by using the soft-keys, cursor keys, [WR] key, and data keys.

③ The parameter setting screen consists of two pages and the page keys are used to change the display pages. The page is also changed by the movement of the cursor.

(a) PLANE

The parameter is used to select the plane (two-dimensional – XY, YZ, ZX, XY/YZ, XY/XZ, three-dimensional – XYZ) where the program paths should be drawn.

① When the cursor is moved to this parameter, the soft-key names are changed as indicated below to permit the selection of the required program path drawing plane.

XY	YZ	ZX	XYZ	RETURN
XY/YZ	XY/XZ			RETURN

② It is also possible to select the plane by entering the addresses of the plane to be selected and pressing the [WR] key ([X], [Y], [WR] for the selection of the XY plane, for example).

(b) ANGLE

This parameter is used to select the view angle for program path drawing.

- "α" indicates an angle around the Z-axis; the angle measured from the X-axis to the Y-axis has a positive value.
- "β" indicates an angle between the XY plane and the view point; the angle measured from the plane to the Z-axis has a positive value.

① When the cursor is moved to this parameter, the soft-key names are changed as indicated below.

LEFT	RIGHT	UP	DOWN	RETURN

② Setting by using the soft-keys

Value of "α" changes in increments of –5° and +5° each time the [LEFT] and [RIGHT] soft-keys are pressed respectively. Value of "β" changes in increments of –5° and +5° each time the [UP] and [DOWN] soft-keys are pressed respectively.

③ Direct setting by inputting a numerical value

While the cursor is located on this parameter, the second cursor is displayed at the position of "α" or "β". When the [WR] key is pressed after keying in a numerical value, the view angle is updated according to the input value. The second cursor is moved by the cursor right/left keys or the [WR] key.

(c) PROCESS

The tool numbers of the tools to be selected for the selection of the processes are displayed. The highlighted numbers indicate the tool numbers selected for drawing the program paths.

- The tool numbers of the tools used in the program for which automatic scaling calculation has been made are displayed. These numbers are stored during automatic calculation.

① When the cursor is moved to this parameter, the second cursor (blinking) is displayed in the tool number list and the soft-keys are changed as shown below.

UP	DOWN	LEFT	RIGHT	RETURN

② The second cursor moves right or left as the cursor right/left key or the [RIGHT] and [LEFT] soft-keys are pressed. When the [UP] or [DOWN] soft-keys are pressed, the second cursor moves up or down.

③ The [WR] key changes the "selected" and "not selected" status of the tool where the second cursor is positioned each time the key is pressed. The selected tool number is displayed in highlighted characters. The tool number display status and meaning are as follows.

Normal characters	Not selected and not at the second cursor position
Highlighted characters	Selected and not at the second cursor position
Blinking characters	Not selected and at the second cursor position
Blinking highlighted characters	Selected and at the second cursor position

- Up to 12 tools are displayed on one page and if more than 12 tools are used in the program, they are displayed by scrolling the screen by the second cursor.

- The cursor is not moved in the following cases.
  The cursor left key is pressed when the cursor is on the first tool.
  The cursor right key is pressed when the cursor is on the last tool.
- When the cursor left or right key is pressed when the cursor is on the right end or the left end tool, respectively, the cursor moves to the next or previous tool.

(d) GRAPH RANGE (base coordinate system)

The parameters indicate the range of program path drawing. The range is specified by the coordinate values in the base coordinate system.

① When the cursor is moved to this parameter, the soft-keys are changed as indicated below and the second cursor (highlighted cursor) is displayed.

UP	DOWN			RETURN

② When the [UP] soft-key or the cursor left key is pressed, the second cursor is moved up, and when the [DOWN] soft-key, cursor right key, or the [WR] key is pressed, the cursor is moved down.

③ When the [WR] key is pressed after keying in a numerical value, the coordinate value where the second cursor is positioned is updated and the cursor moves down.

- When automatic scaling is not executed, the required range for program path drawing can be defined by setting appropriate coordinate values in the base coordinate system for these parameters.
- When automatic scaling is executed, the maximum and minimum values in the program are automatically set.

(e) CMP MODE

This parameter indicates whether or not the tool radius offset is included when program paths are drawn. Selection is possible from "OFF", "SINGLE", and "DOUBLE".

- If the setting for CMP MODE is "OFF", program paths are drawn without including the tool radius offset amount.
- If the setting for CMP MODE is "SINGLE", program paths are drawn including the tool radius offset amount.
- If the setting for CMP MODE is "DOUBLE", both program paths are drawn (OFF mode paths and SINGLE mode paths).

① When the cursor is located on this parameter, the soft-keys are changed as indicated below.

DOUBLE	SINGLE	OFF		RETURN

② Program paths drawing status is selected by using the soft-keys ([DOUBLE], [SINGLE], [OFF]) or the [WR] key.

(f) CMP (LENGTH)

This parameter indicates whether or not the tool length offset is included when program paths are drawn. Program path drawing status depends on the setting for parameter CMP MODE.

- If the setting for CMP MODE is "OFF", the setting made for this parameter is disregarded.
- If the setting is "ON", tool paths are drawn with both the tool radius and tool length offset included.

① When the cursor is located on this parameter, the soft-keys are changed as indicated below.

ON	OFF			RETURN

② The [ON] and [OFF] soft-keys or the [WR] key are used to select whether or not the workpiece coordinate system shift distance is valid for drawing the program paths.

(g) WORK SHIFT

This parameter is used to select whether or not the workpiece coordinate shift distance is included for the program paths to be drawn.

① When the cursor is located on this parameter, the soft-keys are changed as indicated below.

ON	OFF			RETURN

② The [ON] and [OFF] soft-keys or the [WR] key are used to select whether or not the workpiece coordinate system shift distance is valid for drawing the program paths.

(h) INCH/MM

This parameter is used to select whether program paths are drawn in the units of inches or mm. When G20 (inch input) or G21 (mm input) is specified in the program, the setting for this parameter is changed accordingly.

① When the cursor is located on this item, the soft-keys are changed as indicated below.

MM	INCH			RETURN

② The input unit is selected by pressing the soft-keys ([MM], [INCH]) or the [WR] key.

4

(i) BLOCK SKIP

This parameter is used to select whether the blocks preceded by the slash code (/) at the beginning of a block are valid or invalid for program path drawing.

① When the cursor is located on this parameter, the soft-keys are changed as indicated below.

ON	OFF			RETURN

② The [ON] and [OFF] soft-keys or the [WR] key are used to select whether or not the block skip is valid for drawing the program paths.

(j) OPTIONAL STOP

This parameter is used to select whether the program path drawing is suspended at the M01 block.

① When the cursor is located on this parameter, the soft-keys are changed as indicated below.

ON	OFF			RETURN

② The [ON] and [OFF] soft-keys or the [WR] key are used to select whether or not the optional stop is valid for drawing the program paths.

③ After the suspension of program path drawing, drawing restarts when the [START] soft-key is pressed.

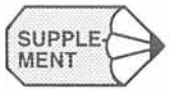
(k) MIRROR

These parameters are used to specify the axes for which the mirror image is made valid. The following three parameters are provided: MIRROR X, MIRROR Y, and MIRROR Z. Mirror image is valid only for the X-, Y-, and Z-axis.

① When the cursor is located on this parameter, the soft-keys are changed as indicated below.

ON	OFF			RETURN

② The [ON] and [OFF] soft-keys or the [WR] key are used to select whether or not the mirror image is valid for drawing the program paths.



The setting for the program path drawing parameters is not cleared when the power is turned OFF. Note that the tool information for the drawing processes is cleared.

(3) Drawing Scale Change Screen

When the [SCALE] soft-key is pressed on the program path drawing screen, the drawing scale change screen is displayed. On this screen, the program paths drawn once can be redrawn by enlarging a part of the drawn paths.

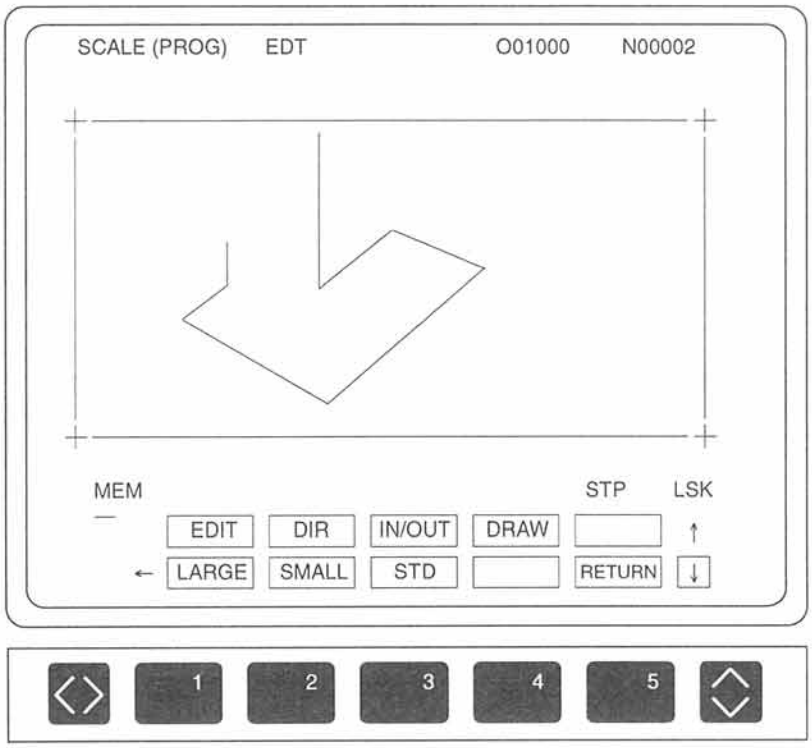


Fig. 4.55 Drawing Scale Change Screen

Scale of program path drawing can be determined by specifying the range to be enlarged by a frame on the drawn paths. When the range to be drawn is defined by using the frame, the enclosed part is drawn in the maximum size when the program paths are drawn next.

(a) Display contents

- The same program paths drawn on the main drawing screen are drawn on the screen.
- The drawing frame indicates the range of program path drawing; when the position and the size of the frame is changed, the drawing window to be used next is changed.

(b) Operation

Set the position and the size of the drawing frame.

① As the cursor up/down or right/left keys are pressed, the drawing frame moves up/down or right/left by one character.

② When the [LARGE] or [SMALL] soft-key is pressed, the drawing frame is enlarged or reduced in units of characters.

③ When the [STD] soft-key is pressed, the drawing frame is returned to the same size as the standard drawing scale (the maximum scale for displaying the drawn paths), and the screen is switched to the main drawing screen. However, if the drawing frame is at the end of the display range in the screen, the frame cannot be moved or enlarged any more.

④ The screen returns to the program path drawing screen when the [RETURN] soft-key is pressed.

(c) Others

- When the XY/YZ or XY/XZ plane is selected for drawing the program paths, it is not possible to change the screen to this drawing scale change screen.
- Even if the drawing frame is changed, the setting for the parameter GRAPH RANGE on the drawing screen is not influenced.

(4) Scaling

Before starting the drawing of program paths, it is necessary to set the size of program paths to be drawn on the screen. To determine this size, either the automatic scaling function is used or the coordinate values are used to define the scale that should be entered.

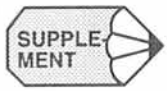
(a) Automatic scaling

The automatic scaling determines the display scale so that all the program paths are drawn in the maximum size. At the same time, the function checks the syntax error in the program and calculates cycle time. If an error is found in the program, automatic scaling is terminated before completion and an alarm is given. As with an error found during the program path drawing, both the alarm number and the alarm message are displayed at the lower section in the screen.

- To start the automatic scaling, press the [AUTO] soft-key. The automatic scaling ends when any of M30, M99, or M02 specified in the program is executed. Note that M99 specified in a subprogram does not cause the automatic scaling to end.
- To stop automatic scaling forcibly, press either the [START] soft-key (highlighted) or the [AUTO] soft-key (highlighted). In this case, the scale is calculated based on the program paths before the automatic scaling is stopped.
- After the execution of the automatic scaling, the following data are automatically set.

GRAPH RANGE (drawing parameter)	The maximum and minimum coordinate values of X, Y, and Z in the program (in the base coordinate system).
PROCESS (drawing parameter)	The tool numbers of the tools used in the program.

- It is possible to execute automatic scaling block by block by selecting "SINGLE" by pressing the [CONT/SINGLE] soft-key.
- It is possible to select the display status (with or without the position and program list display) during the automatic scaling processing by using the [DSP.SL] soft-key.



For automatic scaling, the setting for the drawing parameters (workpiece coordinate system shift distance included/not included, tool offset included/not included) are referenced.

(b) Entering the drawing scale values

When determining the scale for drawing the program paths, it is possible to directly set it by entering the coordinate values. On the drawing parameter setting screen, enter the range for drawing the program paths with the coordinate values in the base coordinate system for the parameter "4. GRAPH RANGE".

Once the scale is determined by the automatic scaling function, the obtained scale remains valid until a new scale is calculated for another program or the coordinate values are entered to determine the scale. Therefore, to draw the program paths of the same program repeatedly, execution of the automatic scaling function is not necessary for the second and later operations.

(5) Program Path Drawing for the Selected Processes

By assuming that an operation executed by one tool constitutes a process, it is possible to draw the program paths only for the selected processes.

① When the [PRM] soft-key is pressed on the program path drawing screen, the drawing parameter setting screen is displayed.

② Move the cursor to "3. PROCESS" by using the cursor up/down keys.

③ Move the second cursor (blinking) to the tool number which corresponds to the process for which the program paths should be drawn by using the cursor right/left keys and select "to draw" by pressing the [WR] key. Selection returns to the "not to draw" if the [WR] key is pressed again. The program paths are drawn for the process of the tool which is highlighted.

④ Press the [RETURN] soft-key on the drawing parameter setting screen to return the screen to the path drawing screen.

⑤ Press the [PROCESS] soft-key to select the process drawing mode. The [PROCESS] soft-key is highlighted.

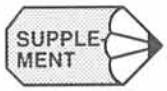
Program path drawing starts; program paths are drawn only for the selected processes.

In the process drawing mode, a process refers to a unit of machining operation which begins with the mounting of a new tool in the spindle and ends when the tool is changed to the next tool. For the automatic scaling, the tool numbers that are set for PROCESS on the tool path drawing parameter setting screen are only the tools which are changed by the M06 command. If tool change is not executed even if a T command is specified, such T command is disregarded.

Example)

```
    :
    :
T01 ;
T02 ;
G28   Z0 ;
G28   X0   Y0 ;
M06 ; . . . . . (i)
    :
    :
T01 ;
T02 ;
G28   Z0 ;
G28   X0   Y0 ;
M06 ; . . . . . (ii)
    :
```

· Since T01 tool is not changed, it is disregarded.
· T02 tool is used from block (i) to block (ii).



1. Process drawing is not executed even if the drawing parameters are changed unless the process drawing mode is set.
2. Process drawing is valid up to the 45th process from the first process in a program.
3. If the same tool number is specified two times, it is assumed to be the same process.
4. If M06 is specified without a T command at the beginning of a program, the tool number of the first process is T0000. In this case, this process is always drawn.

4.4.3 Basic Program Path Drawing Operation

The program path drawing operation allows the paths to be drawn in enlarged mode or only for the specified processes in addition to the basic drawing operation.

(1) Basic Operation for the Program Path Drawing Function

Follow the procedure indicated below to draw the program paths.

① Enter the edit process by pressing the [PROG] process key.

② Press the [PROG DRAW] job soft-key to select the program path draw job.

③ On the program path drawing screen, key in "O" and "program-number", and press the [WR] key to specify the program for which the tool paths should be drawn.D

- If no program number is entered, the program selected for previous tool path drawing operations is selected.

④ Press the [PRM] (f1) soft-key on the program path drawing screen, and the screen changes to the drawing parameter setting screen where the drawing plane, view angle and other items (block, skip, offset drawing mode, drawing scale, etc.) should beset. Drawing process selection is invalid at this step (before automatic scaling).

⑤ Press the [AUTO] (f3) soft-key on the program path drawing screen, and the scaling value is automatically calculated and the message "AUTO SCALING" is displayed. Scaling can be manually set without using the automatic scaling function. Enter values for GRAPH RANGE to determine the drawing range. Note that the values should be those on a workpiece coordinate system.

⑥ Press the [START] (f3) soft-key, and tool path drawing starts.

- To stop drawing, press the [START] (f3) soft-key once again.
- To clear the drawn paths, press the [CLEAR] (f2) soft-key.

(2) Enlarged Path Drawing

To draw the enlarged program paths, follow the procedure indicated below.

① Press the [SCALE] (f2) soft-key on the program path drawing screen to display the drawing scale change screen.

② Change the position and size of the frame for drawing using the cursor keys and soft-keys to set the program path drawing range.

③ Return the screen to the program path drawing screen by pressing the [SCALE] (f2) soft-key and press the [START] (f3) soft-key.

(3) Drawing the Paths for the Specified Process

To draw the program path of the required process, follow the procedure indicated below.

① To draw the program paths of the required processes, first change the screen to the drawing parameter setting screen by pressing the [PRM] (f1) soft-key.

② Move the cursor to "PROCESS" and select the tool numbers of the tools used in the processes to be drawn by using the soft-keys.

③ Return to the drawing screen and press the [DSP.SL] (f1) and [START] (f3) soft-keys.

4.4.4 Switching the Program Path Drawing Screen

The program path drawing screen, drawing parameter setting screen, and drawing scale change screen have the following features. After switching the screen to the one in another process or job, the same screen is recovered when the selection of the display screen is returned. The display status is also recovered.

(1) Switching to Other Processes

(a) Program path drawing screen

Switching to another process is permitted during automatic scaling or program path drawing. While the screen of another process is displayed during automatic scaling or program path drawing, execution of automatic scaling or program path drawing is suspended.

(b) Drawing parameter setting screen and drawing scale change screen

Switching the screen from both of the screens to another process screen is permitted and the display screen status is retained even when the screen is switched.

(2) Switching in the same job

(a) Switching from the program path drawing screen to the drawing parameter setting screen or drawing scale change screen

Switching is permitted during program path drawing and automatic scaling.

(b) Switching between the drawing parameter setting screen and the program path drawing screen

The previous status is recovered including the cursor position.

(c) Switching between the drawing scale change screen and the program path drawing screen

The previous status is recovered including the frame.

(3) Switching between the Program Path Drawing Screen and NC Path Drawing Screen

(a) Program path drawing screen

If the path drawing mode is switched between the program path and NC path on the drawing screen, the previously drawn path is recovered. If the path drawing mode is switched while paths are being drawn, the paths are drawn in the selected mode.

(b) Drawing parameter setting screen

The setting on the drawing parameter setting screen does not influence the other path display mode.

(c) Drawing scale change screen

While paths are being drawn in one drawing mode, if the drawing scale change screen of the other mode is displayed, the paths drawn in the previous mode are displayed as with the path drawing screen.

4.4.5 Differences between the Program Path Drawing Job and the NC Path Drawing Job

The program path drawing job and the NC path drawing job differ in the following points from each other.

(1) Program Path Drawing Job

The tool paths are drawn independent of the NC mode or program execution status.

By using this job, the tool paths are drawn in the background mode during automatic operation.

(2) NC Path Drawing Job

The job monitors the NC tool paths and draws them on the screen.

For the NC path drawing job, refer to 6.5.1, "NC Path Drawing Job".

5

SETUP PROCESS OPERATION

Chapter 5 describes the operation carried out by using the set process key. In the set process, setting up before starting machining is carried out by using the workpiece coordinate system job, tool data job, and tool life control job.

Job selection is possible by using either the job soft-keys or the [SET] process selection key.

The operation indicated above can be executed any time independent of the NC operation mode even while automatic operation is being executed.

5.1 WORKPIECE COORDINATE SYSTEM JOB ..... 5 - 3

5.1.1 Writing the Workpiece Shift Amount ..... 5 - 4

5.1.2 Writing the Workpiece Coordinate System Shift Correction Amount ..... 5 - 5

5.1.3 Writing the Workpiece Shift POS Value ..... 5 - 6

5.1.4 Selecting the Absolute/Incremental Mode ... 5 - 8

5.2 TOOL DATA CONTROL JOB ..... 5 - 9

5.2.1 Writing the Offset Data ..... 5 - 9

5.2.2 Displaying and Writing the Tool Pot Number ..... 5 - 15

5.2.3 Displaying the ATC Tool Status ..... 5 - 17

5.2.4 Writing the Measured Tool Length Offset Amount ..... 5 - 18

5.3 TOOL LIFE CONTROL JOB ..... 5 - 23
5.3.1 Writing the Tool Life Control Data ..... 5 - 23
5.3.2 Displaying the Tool Life Control Data ..... 5 - 23
5.3.3 Setting the Tool Life Control Data ..... 5 - 24
5.3.4 Erasing the Tool Life Control Data ..... 5 - 27

5.1 WORKPIECE COORDINATE SYSTEM JOB

When the [WORK] (f1) job soft-key is pressed, the following function menu is displayed: [WORK] (f1), [UPD] (f2), [POS.WR] (f4), and [ABS/IN] (f5).

1. The job to be selected when the power is turned ON can be selected by the setting for the parameter.

pm3003 D2 = 0	Workpiece coordinate system job is selected.
pm3003 D2 = 1	Tool job is selected.

2. Position data can be displayed in the machine coordinate system or the workpiece coordinate system according to the setting for the parameter.

pm3000 D3 = 0	Machine coordinate system
pm3000 D3 = 1	Workpiece coordinate system

3. Either "P" or "J" can be seleted as an expansion address of workpiece coordinate system.

pm4012 D7 = 0	"J" is specified as an expansion address.
pm4012 D7 = 1	"P" is specified as an expansion address.

5.1.1 Writing the Workpiece Shift Amount

It is possible to display and set the work shift amount.

① Press the [WORK] (f1) function soft-key.

② Press either the page keys or enter a P number. After entering a numerical value, press the cursor up/down keys to display the workpiece coordinate system shift data.

- In the standard specification, 6 sets of workpiece coordinate systems are provided. Optionally, the number of workpiece coordinate system sets can be expanded to 54 or 162. The P number and the number of sets have the relationship as P1 = 6 sets, P2 = 12 sets, ... up to P27 = 162 sets.

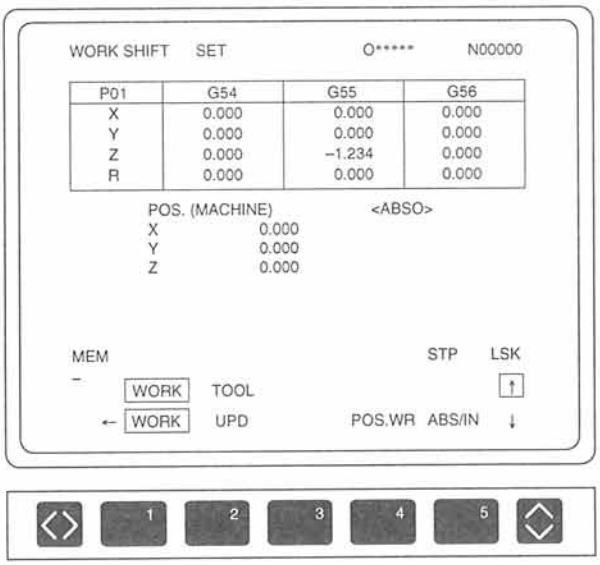


Fig. 5.1 P Number Entry Screen

③ Move the cursor to the axis and the workpiece coordinate system for which the offset amount should be written. For the axis selection, use the cursor up/down keys and for the selection of G codes, use the cursor right/left keys.

- G codes are classified into the two groups: G54 to G56 and G57 to G59.

④ Enter a numerical value (for example, "–1.234") and press the [WR] key. The screen as shown in Fig. 5.1 is displayed.

5.1.2 Writing the Workpiece Coordinate System Shift Correction Amount

It is possible to shift all workpiece coordinate systems by setting the shift correction amount. Follow the procedure indicated below.

① Press the [UPD] (f2) function soft-key.

② Move the cursor to the UPD (correction amount) column of the axis for which the workpiece coordinate system shift data should be changed.

③ Enter a numerical value (for example, "–1.234") and press the [WR] key. The screen as shown in Fig. 5.2 is displayed.

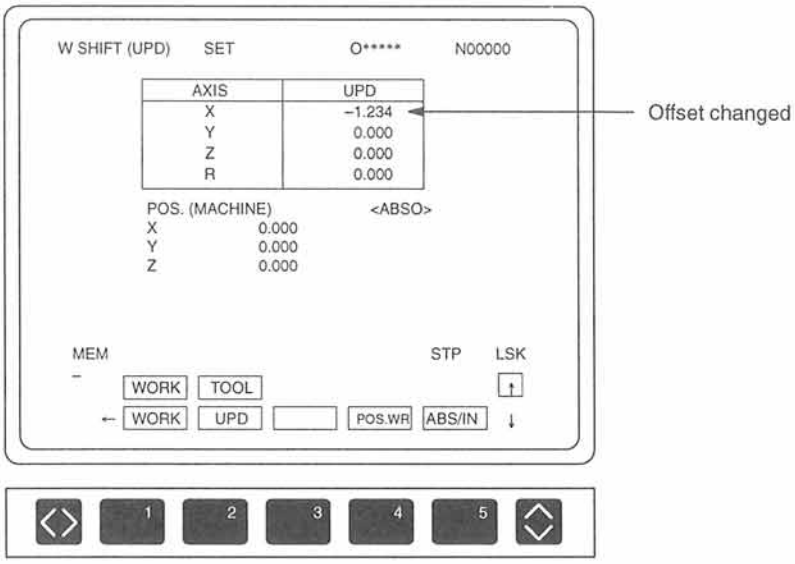


Fig. 5.2 Correction Data Entry Screen

- It is possible to select whether the workpiece shift correction amount should be added or not by the setting for the parameter.

pm0007 D3 = 0	Correction amount is added.
pm0007 D3 = 1	Correction amount is not added.

- If workpiece shift correction amount is written with the setting of "pm0007 D3 = 0", the warning message "CAN'T WRITE !" is displayed.

5.1.3 Writing the Workpiece Shift POS Value

By using the workpiece shift write function, it is possible to write the position data displayed on the workpiece shift screen as the workpiece shift amount.

① When the [POS.WR] (f4) function soft-key is pressed, the soft-key is highlighted and the message "ALL SET? (Y/N)" is displayed in highlighted characters.

- Press "Y" to set the position data for the workpiece shift amount.
- If "N" is pressed, the "INPUT AXIS NAME" message is displayed.

② Key in the axis name for which the position data should be set for the workpiece shift amount and press the [WR] key. The workpiece shift amount is set for the specified axis.

③ The position data input mode is canceled by pressing the [CAN] key, [RESET] key, or [POS.WR] (f4) function soft-key, or by changing the screen from the workpiece shift screen to another screen.

5

(1) Writing the POS Data Collectively

If POS. (MACHINE) is "X: 123.456 Y: 654.321 Z: –1.234":

① The "ALL SET? (Y/N)" message is displayed.

P01	G54	
X	0.000	
Y	0.000	
Z	0.000	
R	0.000	

② The POS data is written when "Y" is pressed.

P01	G54	
X	123.456	
Y	654.321	
Z	–1.234	
R	0.000	

(2) Writing the POS Data for the Specified Axes (Y- and Z-axis)

If POS. (MACHINE) is "X: 123.456 Y: 654.321 Z: –1.234":

① The "ALL SET? (Y/N)" message is displayed.

② Press "N".

③ Enter the name of axis for which the position data should be set.

01	G54	
X	0.000	
Y	0.000	
Z	0.000	
R	0.000	

④ After pressing "Y", press the [SHIFT] key. Then press "N" and "Z", and press the [WR] key. The POS data are written.

01	G54	
X	0.000	
Y	654.321	
Z	–1.234	
R	0.000	

SUPPLEMENT

1. The position data are written to the workpiece coordinate system indicated by the cursor.
2. The position data displayed on the screen is written.
3. When writing the position data by specifying an axis name, if an invalid axis name is specified, the warning message "INPUT ERROR !" is displayed.
4. When writing the position data by specifying multiple axis names, if any one of the specified axis names is incorrect, position data are not written to any of the specified axes.
5. The position data are always written in absolute values independent of the selected dimensioning mode.

5.1.4 Selecting the Absolute/Incremental Mode

It is possible to select the input mode between the incremental mode and the absolute mode.

(1) Selection by [ABS/INC] Soft-key

- When the [ABS/IN] (f5) function soft-key is pressed while in the incremental input mode, the mode is changed to the absolute input mode.
- When the [ABS/IN] (f5) function soft-key is pressed while in the absolute input mode, the mode is changed to the incremental input mode.

(2) Selection by Parameter Setting

The dimensioning mode to be set when the power is turned ON can be selected by the setting for the parameter.

pm3003 D3 = 0	Sets the absolute input mode.
pm3003 D3 = 1	Sets the incremental mode.

5.2 TOOL DATA CONTROL JOB

When the [TOOL] (f1) job soft-key is pressed, the following function menus are displayed: [OFFSET] (f1), [POT] (f2), [ATC] (f3), and [TLM] (f1).

1. The [ABS/IN] function soft-key is a toggle key and the selection is changed alternately each time it is pressed. When the incremental input mode is selected, "<INCR>" is displayed at the upper right corner in the screen. In the absolute input mode, "<ABSO>" is displayed.
2. The dimensioning mode to be set when the power is turned ON can be selected by the setting for the parameter.

pm3003 D3 = 0	Sets the absolute input mode.
pm3003 D3 = 1	Sets the incremental input mode.

3. Position data can be displayed in the machine coordinate system or the workpiece coordinate system according to the setting for the parameter.

pm3000 D4 = 0	Machine coordinate system
pm3000 D4 = 1	Workpiece coordinate system

5

5.2.1 Writing the Offset Data

For the offset data, either of the following types is selected according to the setting for the parameter.

H and D common use type	The offset numbers are used in common for the tool length offset number and the tool radius offset number.
H and D individual use type	The offset numbers are used for the tool length offset numbers and the tool radius offset numbers independently.

(1) H and D Common Use Type

① Select the input mode (absolute or incremental) by pressing the [ABS/IN] (f5) function soft-key.

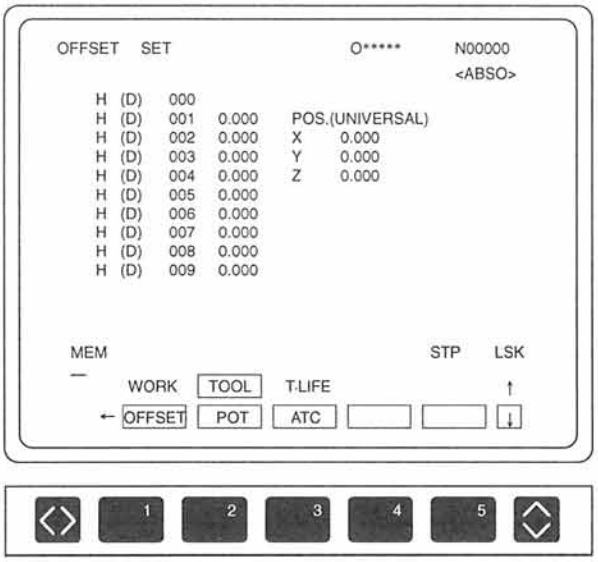


Fig. 5.3 Offset Screen (H and D Common Type)

② Move the cursor to the offset number for which the offset data should be changed, key in the required offset data (for example, "54.321"), and press the [WR] key. The offset data are updated.

- To clear the offset data to "0" in the incremental input mode, move the cursor to the value which should be cleared to "0" by using the cursor up/down keys and press the [ATC] (f3) function soft-key.

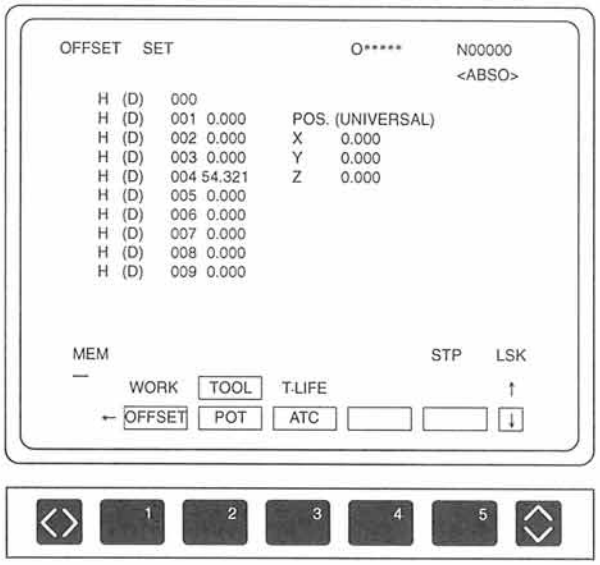


Fig. 5.4 Screen after Changing the Offset Data

(2) H and D Individual Use Type

① Select the input mode (absolute or incremental) by pressing the [ABS/IN] (f5) function soft-key.

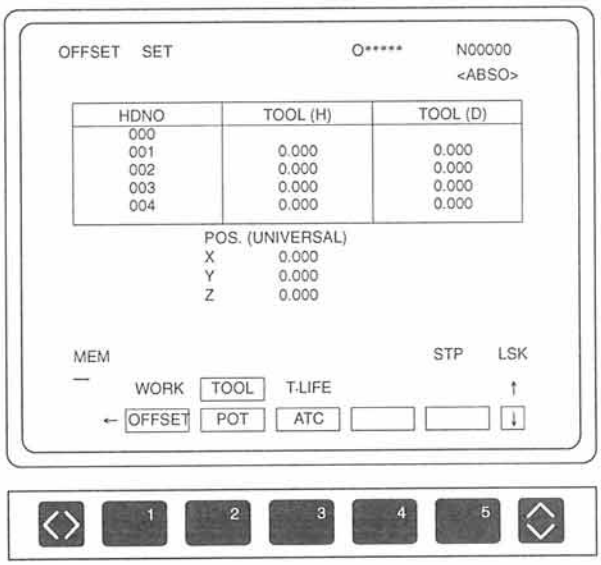


Fig. 5.5 Offset Screen (H and D Individual Use Type)

② Move the cursor to the column of the offset data which should be written by using the cursor keys, key in the offset data, and press the [WR] key.

③ The offset data are changed and the screen as shown in Fig. 5.6 is displayed.

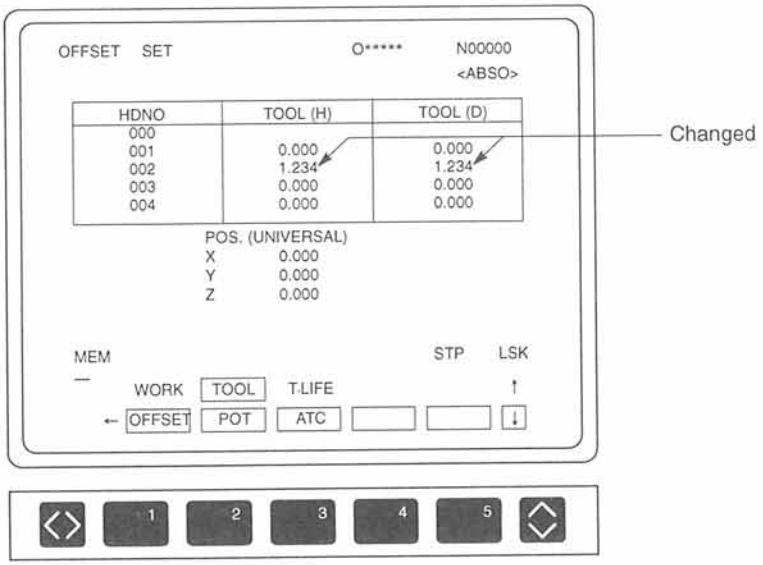


Fig. 5.6 Offset Data Change Screen

(3) H and D Common Use Type with Tool Wear Offset (Tool Wear Offset Option Selected)

The data can be set manually by displaying the offset screen.

① Move the cursor to the offset memory data to be changed by using the cursor keys, key in the offset data and press the [WR] key.

② To clear all offset data, press the [ALLCLR] function soft-key. In this case, if the setting for the parameter is "pm3000 D6 = 1", only the wear offset data are cleared.

③ To clear the cursor located data, press the [0 CLR] (f3) function soft-key.

SUPPLEMENT

1. Geometry offset data can be changed only when the parameter setting is "pm3000 D6 = 0". If the geometry offset data are changed with the parameter setting of "pm3000 D2 = 0", the corresponding wear offset data are cleared to "0". The wear offset data can be changed independent of the setting for the parameter pm3000 D6.
2. For the input value of the wear offset data, the input value is checked against the preset maximum value. If the input value of the wear offset data exceeds the value 999.999 set for the parameter pm3800, the "INPUT ERROR !" warning message is displayed. The check against the value set for the parameter pm3800 is made in the absolute value.

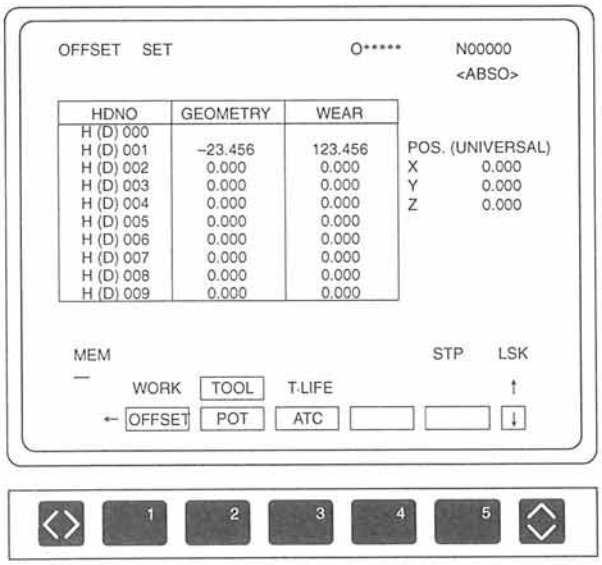


Fig. 5.7 Offset Data Screen (H and D Individual Use Type)

(4) H and D Individual Use Type with Tool Wear Offset (Tool Wear Offset Option Selected)

The offset data can be written in the same manner as writing the offset data for the H and D common use type.

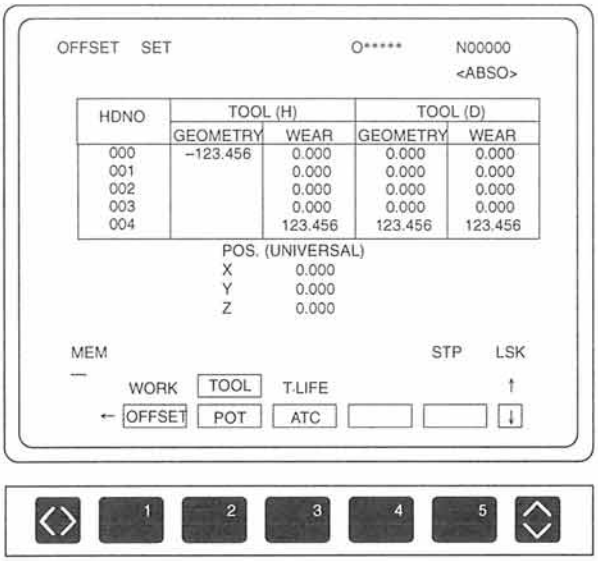


Fig. 5.8 Offset Screen (H and D Individual Use Type)

5.2.2 Displaying and Writing the Tool Pot Number

When the [POT] (f2) function soft-key is pressed, the TOOL POT screen is displayed.

Either of the following types is selected according to the setting for the parameter.

pm3001 D6 = 0	Byte display type
pm3001 D6 = 1	Word display type

(1) Byte Display Type

① Select the tool pot number for which the corresponding tool number should be changed. The tool pot number can be specified by moving the cursor with the cursor up/down keys or by pressing the cursor up/down key after keying in the tool pot number.

② Key in the tool number (for example, "12") and press the [WR] key.

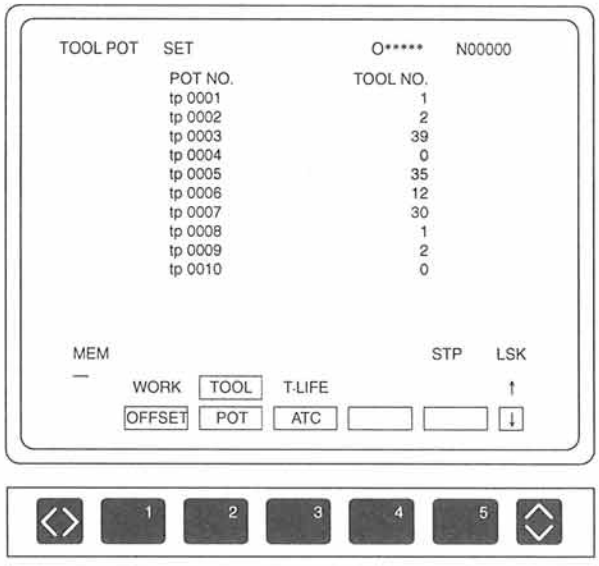


Fig. 5.9 Byte Display Screen

(2) Word Display Type

① Select the tool pot number for which the corresponding tool number should be changed. The tool pot number can be specified by moving the cursor with the cursor up/down keys or by pressing the cursor up/down keys after keying in the tool pot number.

② Key in the tool number (for example, "1234") and press the [WR] key.

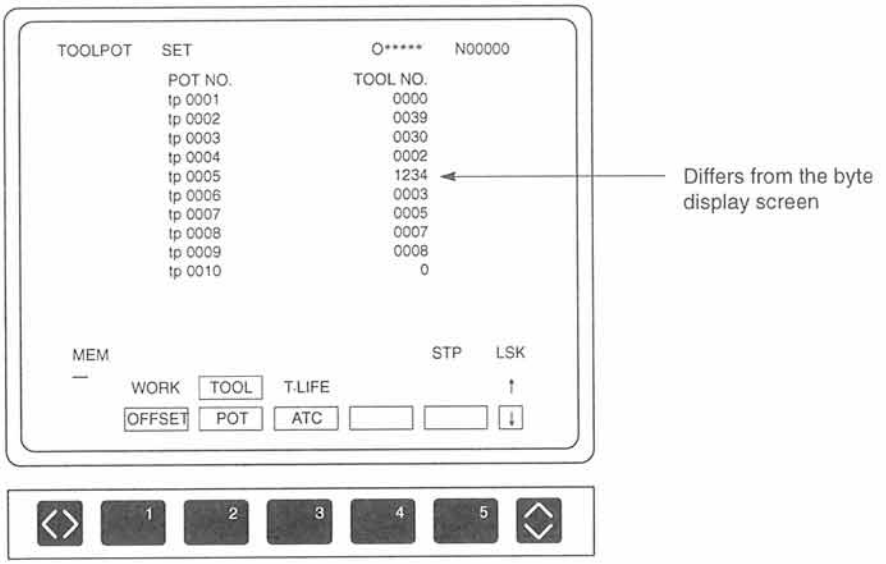


Fig. 5.10 Word Display Screen

5.2.3 Displaying the ATC Tool Status

When the [ATC] (f3) function soft-key is pressed, the ATC tool status is displayed.

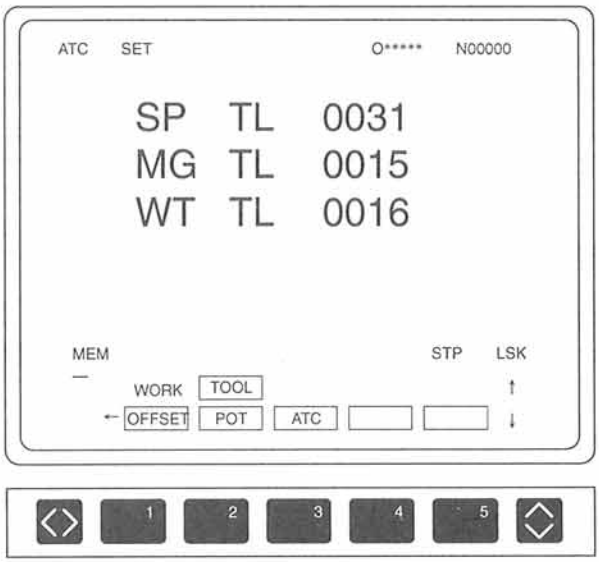


Fig. 5.11 ATC Tool Status Display Screen

SP	Tool number of the tool mounted in the spindle
MG	Tool number of the tool at the tool change position in the tool magazine
WT	Tool number of the tool in the waiting pot

- Whether or not the waiting pot number is displayed depends on the machine specifications.

5.2.4 Writing the Measured Tool Length Offset Amount

The tool length offset amount to be used for the tool length offset function (G43, G44, G49) is measured by using the tool length measurement function. Either of the following types is selected according to the setting for the parameter.

pm6008 D0 = 0	Measurement of travel distance
pm6008 D0 = 1	Measurement of remaining distance

(1) Measuring the Travel Distance

When the [TLM] (f1) function soft-key is pressed, the following soft-keys are displayed: [BIAS] (f1), [WRITE] (f4), and [RETURN] (f5).

(a) Bias function

The bias function sets the bias amount for measuring the tool length.

① Press the [BIAS] (f1) function soft-key. The "BIAS(B)" is highlighted.

② After keying in a numerical value (for example, "10.000"), press the [WR] key. Bias amount is written and the "BIAS(B)" returns to the normal display.

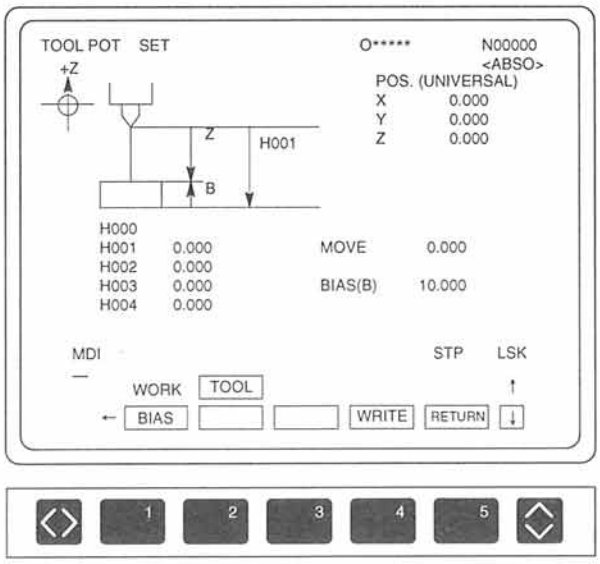


Fig. 5.12 Bias Amount Setting Screen (Travel Distance Measurement)

SUPPLEMENT

Bring the tool nose into contact with the contact level face by manually moving the Z-axis. The contact level is set arbitrarily in reference to the reference level (top face of the workpiece), and the difference between the contact level and the reference level should be set for parameter pm0806 ("1" = input unit) as the "tool length measurement bias amount" beforehand. This can be considered as the thickness of the block gage and should be set in a positive value.

(b) [WRITE] function soft-key

The distance from the home position to the reference level is stored as the contents for the specified offset number.

① Display the page in which the required tool offset number is included by pressing the page keys and specify the tool offset number by moving the cursor to it. It is also possible to specify the tool offset number by pressing the cursor up/down keys after keying in the tool offset number (for example, "12").

The display page that includes the entered offset number is displayed and the cursor is positioned on the entered offset number.

② Press the [WRITE] (f4) function soft-key.

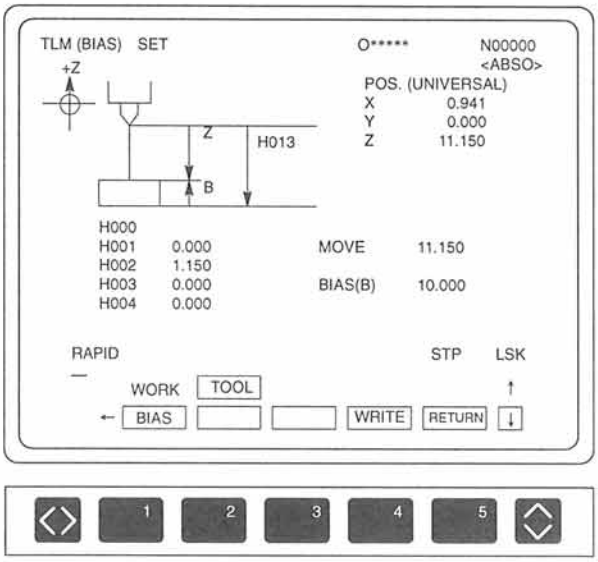


Fig. 5.13 Tool Offset Number Contents (Travel Distance Measurement) Screen

SUPPLEMENT

After the completion of the operation indicated above, an offset number one greater than the presently specified number is newly specified for the next tool offset data writing operation. (Upon completion of the data setting for H99, H number is returned to H01.)

(c) [RETURN] function soft-key

Press the [RETURN] (f5) function soft-key. The screen changes to the offset screen.

(2) Measuring the Remaining Distance

When the [TLM] (f1) function soft-key is pressed, the following soft-keys are displayed: [BIAS] (f1), [BTLEVL] (f2), [WRITE] (f4), and [RETURN] (f5).

5

(a) Bias function

The bias function sets the bias amount for measuring the tool length.

① Press the [BIAS] (f1) function soft-key. The "BIAS(B)" is highlighted.

② After keying in a numerical value (for example, "10.000"), press the [WR] key.

Bias amount is written and the "BIAS(B)" returns to the normal display.

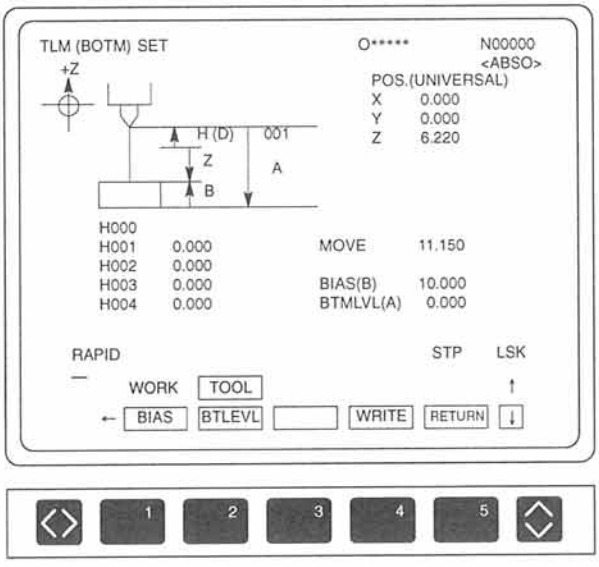


Fig. 5.14 Bias Setting Screen (Remaining Distance)

SUPPLEMENT

Bring the tool nose into contact with the contact level face by manually moving the Z-axis. The contact level is set arbitrarily in reference to the reference level (top face of the workpiece), and the difference between the contact level and the reference level should be set for parameter pm0806 ("1" = input unit) as the "tool length measurement bias amount" beforehand. This can be considered as the thickness of the block gage and should be set in a positive value.

(b) [BTLEVL] function soft-key

① Press the [BTLEVL] (f2) function soft-key. The "BTMLVL (A)" is highlighted.

② Key in the required bottom level value (for example, "30.000") and press the [WR] key. The data are written for the bottom level and the "BTMLVL (A)" returns to normal display.

③ Use steps (b) and (c) explained in item (1) above.

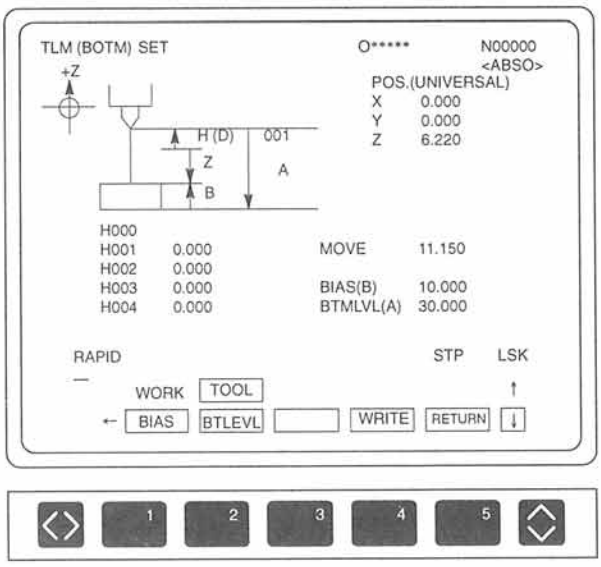


Fig. 5.15 Bottom Level Setting Screen

SUPPLEMENT

The bottom level, which is used as the reference for measuring the remaining distance, can be set for the parameter pm0807 ("1" = input unit) as the signed distance from the home position.

(c) Memory clear

Press the [0 CLR] (f1) function soft-key. The offset memory which is indicated by the highlighted cursor is cleared to "0".

(d) Memory all clear

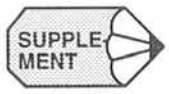
Press the [ALLCLR] (f2) function soft-key. "CLEAR ALL OFFSET? (Y/N)" is displayed.

- Press "Y" and all offset memory is cleared.
- Press "N" and the memory all clear function is cancelled.

(e) Selecting the input mode (absolute, incremental)

Press the [ABS/IN] (f5) function soft-key. The input mode is changed between absolute and incremental each time it is pressed.

5



The offset data on which the cursor is positioned can be changed by pressing the [WR] key after keying in a numerical value on the tool length measurement screen.

5.3 TOOL LIFE CONTROL JOB

When the tool life control function is used, tools are controlled in the following manner.

In a program, the tools are specified by the tool group; when tool life has expired, the next tool in the same group is selected.

5.3.1 Writing the Tool Life Control Data

Classify tools into groups according to the type of tools and set the tool life for the individual groups.

5.3.2 Displaying the Tool Life Control Data

When the [T-LIFE] soft-key is pressed in the [SET] process, the screen as shown in Fig. 5.16 is displayed.

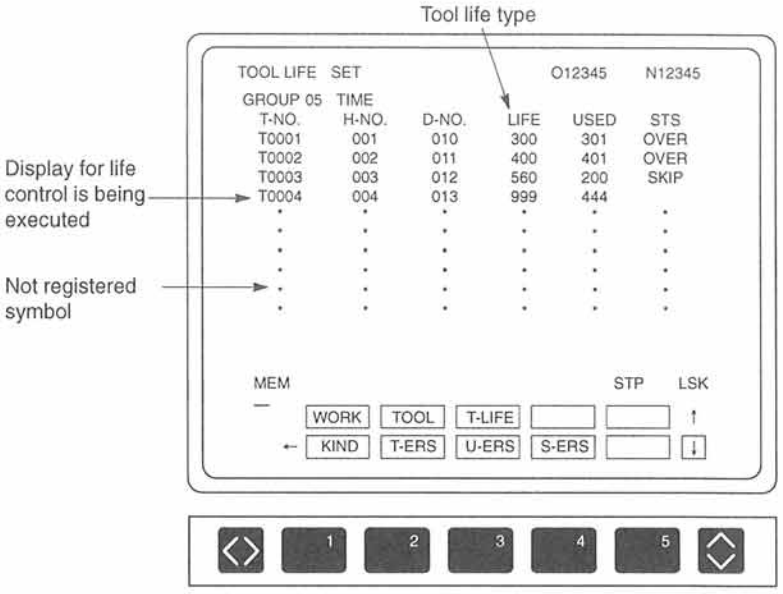


Fig. 5.16 Tool Life Control Data Display Screen

(1) Display

On one page of the display screen, tool data of up to ten tools (per group) are displayed. The tool life control data display screen is provided for the individual tool groups and the selection of the display screen is possible by using the page keys. It is also possible to select the display screen by pressing the cursor up/down keys after keying in the group number.

- When 16 tools are set for a single group, two display pages are provided for the tool group. In this case, the page keys can be used to change the display screen in units of tool groups. To display the second page in the same tool group, it is necessary to press the cursor key.

(2) Searching a Tool Number

① Display the TOOL LIFE screen.

② Press the cursor up/down keys after keying in a tool number following address T, and the specified tool is searched and the tool group of that tool is displayed.

5

5.3.3 Setting the Tool Life Control Data

The tool life control data can be set in the following two methods: to set the data by directly keying them in using the NC operation panel keys and to set them by inputting them from tape. Setting of the tool life control data using tape is possible at the input screen of the IN/OUT job in the [MAINT] process.

This sub section describes the procedure used for writing and correcting the tool life control data by using the keys on the NC operation panel. (Refer to 8.3 "INPUT/OUTPUT AND VERIFY JOB".)

(1) Writing a Tool Number

Set the tool number for which the tool life control is executed.

Move the cursor to the T-NO. column and press the [WR] key after keying in a tool number (1 to 9998).

When a tool number is written to T-NO., the corresponding data are initialized: 9999 for LIFE, 0 for H-NO., D-NO., and USE, and blank for STS.

SUPPLEMENT

While the tool life control is executed, the tools are used in the order from the top. If an attempt is made to enter the tool number which is already entered, the warning message "REPETITION ERROR!" is displayed.

(2) Writing the Data for H-NO. and D-NO.

Set the tool length offset number or tool radius offset number corresponding to the set tool number. The offset number written here is used when H999 or D999 command specified in a part program is executed.

Move the cursor to H-NO, or D-NO., key in an offset number, and press the [WR] key.

Setting range varies according to the selected options. The initial data for H-NO. and D-NO. is "0" (offset cancel).

(3) Writing the Tool Life

Set the tool life.

Move the cursor to the LIFE column, key in the tool life (1 to 9999), and press the [WR] key.

(4) Writing the Tool-use Data

Set the tool-use count data.

Move the cursor to the USED column, key in the use-count data (0 to 9999), and press the [WR] key.

- Enter "0" when a new tool is used. If the value in the USED column is greater than the LIFE value, the STS automatically changes to "OVER".

(5) Writing the Tool Life Control Type

① When the [KIND] (f1) function soft-key is pressed, the pop-up menu as indicated below is displayed and, at the same time, the message "SELECT BY CURSOR & WR" is displayed.

② To change the life control type, move the cursor to the required life control type by using the cursor up/down keys and press the [WR] key. When it is not necessary to change the presently selected life control type, press the [KIND] (f1) function soft-key again and the pop-up menu is cleared.

Table 5.1 Tool Life Control Type Menu

Menu	Contents
TIME	Tool life is controlled by the length of time the tool has been used.
COUNT	Tool life is controlled by the number of times the tool has been used.
DIST	Tool life is controlled by the distance in which the tool has been used.
DRILL	Tool life is controlled by the number of holes machined by the tool.

- The selected tool life control type is valid only for the tool group for which it is written.

5.3.4 Erasing the Tool Life Control Data

(1) Erasing the Tool Number

① When the [T-ERS] (f2) function soft-key is pressed, the pop-up menu is displayed and, at the same time, the message "SELECT BY CURSOR & WR" is displayed.

② Select the required erase mode by moving the cursor to the required erase mode with the cursor up/down keys and press the [WR] key. When it is not necessary to change the presently selected erase mode, press the [T-ERS] (f2) function soft-key again and the pop-up menu is cleared.

Table 5.2 Tool Life Control Data Erase Menu

Menu	Contents
EACH	The data of the tool number indicated by the cursor are erased.
GROUP	The data of the tools in the displayed group are erased.
ALL	The data of all groups are erased.

- When tool data are erased for all groups or the selected group, the tool life control type of such groups is automatically set at "TIME".

(2) Erasing the Tool Use Count Data

① When the [U-ERS] (f3) function soft-key is pressed, the pop-up menu as indicated below is displayed and, at the same time, the message "SELECT BY CURSOR & WR" is displayed.

② Select the required erase mode by moving the cursor to the required erase mode with the cursor up/down keys and press the [WR] key. When it is not necessary to change the presently selected erase mode, press the [U-ERS] (f3) function soft-key again and the pop-up menu is cleared.

Table 5.3 Tool Use Count Data Erase Menu

Menu	Contents
GROUP	The data of the tools in the displayed group are erased.
ALL	The data of all groups are erased.

(3) Erasing the Status Data

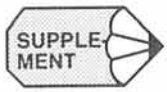
① When the [S-ERS] (f4) function soft-key is pressed, the pop-up menu as indicated below is displayed and, at the same time, the message "SELECT BY CURSOR & WR" is displayed.

② Select the required erase mode by moving the cursor to the required erase mode with the cursor up/down keys and press the [WR] key. When it is not necessary to change the presently selected erase mode, press the [R-ERS] (f4) function soft-key again and the pop-up menu is cleared.

Table 5.4 Status Data Erase Menu

Menu	Contents
EACH	The data of the tool number indicated by the cursor are erased.
GROUP	The data of the tools in the displayed group are erased.
ALL	The data of all groups are erased (blank).

5



1. The LIFE, USE, and STS are closely related to each other.
2. Generally, "OVER" is displayed if "LIFE < USE".
   - The data can be corrected when the edit lock is OFF and the NC is in the automatic operation suspended state (reset state). This also applies to the erase operation.
   - For the change and erase of the LIFE, USE, and STS data, data change and erase operation are possible in the single-block stop state, with an exception of the tool data of the tool in the tool life control mode.
   - When the setting of the number of groups and the number of tools (set for parameters pm0009 D6, D7) is changed, the display changes at the time the parameter is set valid (at the time the reset key is pressed.).

6

RUN PROCESS

Chapter 6 describes the operation carried out by using the run process key.

In the run process, the part program is actual executed by the program job (program run, MDI run), command value display job, setting job, and NC path drawing job.

During the execution of the part program it is possible to display the list of the program, command values of the program presently executed, and the necessary settings having been made to execute the program.

Job selection is possible by using either the job soft-keys or the [RUN] process selection key.

6.1 PROGRAM JOB ..... 6 - 3

6.1.1 Program Information Displayed on Screen .. 6 - 3

6.1.2 Program Number Search ..... 6 - 5

6.1.3 Address Search ..... 6 - 7

6.1.4 Editing the Part Program Stored in Memory ..... 6 - 9

6.1.5 Execution of a Part Program ..... 6 - 10

6.1.6 Display of Subprogram Nesting Information ..... 6 - 11

6.2 MDI OPERATION JOB ..... 6 - 12
6.2.1 Entry of an MDI Program ..... 6 - 12
6.2.2 Editing an MDI Program ..... 6 - 12
6.2.3 Execution of an MDI Program ..... 6 - 13
6.2.4 Deleting an MDI Program ..... 6 - 14
6.2.5 Storing an MDI Program ..... 6 - 14
6.3 COMMAND VALUE DISPLAY JOB ... 6 - 15
6.3.1 Collective Display of Command Values .... 6 - 15
6.4 SETTING JOB ..... 6 - 16
6.4.1 Internal Switch Function * ..... 6 - 16
6.4.2 Software Switch Function * ..... 6 - 17
6.4.3 Macro Variable Function ..... 6 - 17
6.4.4 F1-digit Function ..... 6 - 19
6.4.5 Setting Function ..... 6 - 20
6.4.6 Stored Stroke Limit Function * ..... 6 - 21
6.5 OTHER JOB ..... 6 - 22
6.5.1 NC Path Drawing Job * ..... 6 - 22

6.1 PROGRAM JOB

The program job means the job in which the operation is executed using the created part program. This section describes how to execute the part program.

6.1.1 Program Information Displayed on Screen

To execute the part program, first call the RUNNING screen.

When the [PROG] (f1) job soft-key is pressed, the list of the programs presently executed and the execution information are displayed. The display screen is generally classified into four display blocks.

(1) Displaying and Editing the Execution Program

For the display of the program to be executed, the contents of the display differ depending on the selected automatic NC operation mode (memory, MDI, tape). In the manual mode, the contents of the searched part program are displayed.

In the memory mode, it is possible to edit the program displayed on the screen by pressing the [EDIT] (f5) function soft-key. When the NC is in the edit enabled state, the list of programs is displayed with a frame.

Fig. 6.1 Program Execution Display Screen

SUPPLEMENT

1. The position data display on the workpiece coordinate system can be changed to the display of the coordinate values in the machine coordinate system by the setting for the parameter.

pm3000 D5 = 0	Workpiece coordinate system
pm3000 D5 = 1	Machine coordinate system

2. If "pm3005 D5 = 0":
   It is possible to display the Z-axis position data without including the offset data (G43 H**).

pm3000 D2 = 0	Z-axis offset data are included.
pm3000 D2 = 1	Z-axis offset data are not included.

(2) Display of G Codes and M Codes

Modal G codes, non-modal G codes, and M codes that are being executed or those immediately before the execution in automatic mode operation (TAPE, MEM, or MDI) are displayed. Concerning the modal G codes, those in the most important 14 groups of 23 G code groups supported by the NC are displayed. With the non-modal G codes, if no non-modal G codes are specified, only character G is displayed. Concerning the M codes, the specified M code numbers are displayed as a 3-digit number.

(3) Display of Workpiece Coordinate System and Remaining Distance

The values displayed in the UNIVERSAL (workpiece coordinate system) and INCREMENT (remaining distance) columns are conveniently used for checking a program.

(4) Display of Tool Number, Feedrate, Actual Spindle Speed, and Specified Spindle Speed

For T-NO., FEED, ACT, and ORDER, the values immediately before the execution or those being executed are displayed. The items to be displayed can be changed as indicated below by changing the setting for the parameter.

pm3003	D5 = 0	Tool number, feedrate, actual speed, and specified speed
	D5 = 1	Actual speed, feedrate, spindle tool, and next tool
pm1000	D4 = 0	ACT S = Specified spindle speed x override
	D4 = 1	ACT S = The spindle speed of feedback value

SUPPLEMENT

Note that the display of "ACT S" is optional.

6.1.2 Program Number Search

It is possible to call the program by specifying its program number. The program can be called by the following two methods.

(1) Using the [OPEN] (f4) Function Soft-key

① Select the memory or tape mode with the MODE SELECT switch on the machine operation panel.

② Press the [OPEN] (f4) function soft-key. The message "SPECIFY PROGRAM NUMBER TO CALL" is displayed.

③ Key in the program number beginning with address "O".

④ Press the [WR] key.

(2) Entering the Program Number

① Select the memory or tape mode with the MODE SELECT switch on the machine operation panel.

② Key in the program number.

③ Press the cursor up or down key.

(a) In the memory mode

Program number search is executed for the stored programs and the specified program is called. When the specified program is called, the execution program number displayed at the upper right area of the screen is changed to the called program number. If the specified program is not found, the warning message "O NO. NOT FOUND !" is displayed.

Whether the program previously called should be called or not when the power is turned ON can be selected by the setting for the parameter.

pm3005 D1 = 0	Program number is cleared when the power is turned ON.
pm3005 D1 = 1	Program number is not cleared when the power is turned ON.

6

(b) In the tape mode

Program number search is executed after reading the program data (tape) from the selected RS-232C input port (No. 1 port, No. 2 port). During program search, the "SEARCHING" message is displayed on the screen. Tape reading stops after the programs have been read. If the specified program number is not found in the program data having been read, the warning message "O NO. NOT FOUND !" is displayed.

After the completion of program number search, press the CYCLE START switch on the machine operation panel, and the reading of program data (tape) restarts and the program is executed. The list of the programs being executed is displayed on the screen.

SUPPLEMENT

1. If an attempt is made to execute program number search in the manual mode, the message "MODE IS UNSUITABLE" is displayed.
2. When entering a program number, leading zeros can be omitted.

6.1.3 Address Search

The data (character-string) entered from the NC operation panel is compared to the data (tape) input from the RS-232C port or the data (character-string) in the memory, and the display stops when the data match. The object of search is the data (tape) input from the RS-232C port in the tape mode, part program in the memory mode, and the MDI program in the MDI mode.

(1) In the Memory Mode

Key in the word to be searched and press the cursor up or down key.

- When the cursor up key is pressed, search is executed from the present cursor position to the beginning of the data.
- When the cursor down key is pressed, search is executed from the present cursor position to the end of the data.

During address search, the "SEARCHING" message is displayed.

(2) In the Tape Mode

The program data (tape) is read from the RS-232C port and the specified character-string is searched for. During address search, the "SEARCHING" message is displayed, but data having been read are not displayed. Reading of the data stops when the specified character-string is read.

If the specified character-string is not found in the read data (tape), the warning message "NOT FOUND !" is displayed.

After the completion of address search, press the CYCLE START switch on the operation panel, and the reading of program data (tape) restarts and the program is executed. The list of the programs being executed is displayed on the screen.

(3) Status after the Completion of Search

Upon completion of the search, the message is cleared and the cursor is positioned on the searched word. If the word to be searched is not found, the corresponding warning message "NOT FOUND !" is displayed.

Using the cycle start operation after the completion of address search, the program is executed from the block where the cursor is positioned.

SUPPLEMENT

1. For the address search operation, leading zeros may be omitted in the data to be specified. Decimal point processing is also executed during search according to the input unit (mm or inches). Therefore, it is possible to execute search for the command having the same meaning (e.g. X1. = X1000). (Binary search function)
2. Address search is not possible in the alarm state.
3. The operation to search a sequence number which is specified by address N is called sequence number search.

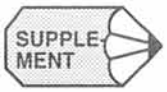
6.1.4 Editing the Part Program Stored in Memory

Follow the procedure indicated below to edit a part program.

① Press the [EDIT] (f5) function soft-key while a part program is selected in the memory mode. The part program presently selected can be edited. When the edit function is called, a frame is displayed on the program display screen. In the edit function called in this job, expanded edit function can be used the same as with editing by the edit function called in the edit process. Four lines of a part program are displayed.

② If the [DSP.SL] (f1) function soft-key is pressed in this state, 13 lines of a part program are displayed.

③ After completing the editing, press the [EDIT] (f5) function soft-key once again. The part program is stored and the edit mode ends. While the part program is being stored, the message of "SAVING" is displayed.



1. If the [EDIT] (f5) function soft-key is pressed while a program is being executed, it is not possible to edit the program. However, program editing is possible if the NC is in the single-block stop state.
2. Cycle start is not possible while a program is being edited. To execute cycle start, complete program editing first. In this case, the program is restarted from the block on which the cursor is positioned after the editing. Therefore, pay attention to the cursor position when completing the editing.
3. The [EDIT] (f5) function soft-key is not displayed in the MDI and tape mode.
4. If the [RESET] key is pressed, the cursor moves to the beginning of the program even during editing.
5. Even in the edit status, it is possible to call another program by following the operation explained in 6.1.2, "Program Number Search". However if the cursor up/down key is pressed after inputting address "O", character "O" is searched in the program being edited.

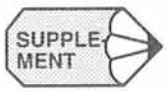
6.1.5 Execution of a Part Program

Follow the procedure indicated below to execute a part program.

① Select the memory mode by placing the MODE SELECT switch on the machine operation panel in the MEM position.

② Enter the program number from the NC operation panel and execute program search. The list of the part program is displayed on the screen and the cursor is displayed in a highlighted block.

③ Press the CYCLE START switch on the machine operation panel. Execution of the part program starts and the cursor is positioned at the beginning of the block presently executed.



If the CYCLE START switch is pressed while the cursor is positioned in the middle of a block, how that block is executed is determined according to the setting for the parameter.

pm4008 D3 = 0	The block is executed from the word on which the cursor is positioned.
pm4008 D3 = 1	The block is executed from the beginning.

6.1.6 Display of Subprogram Nesting Information

When the page key is pressed, the subprogram nesting information is displayed.

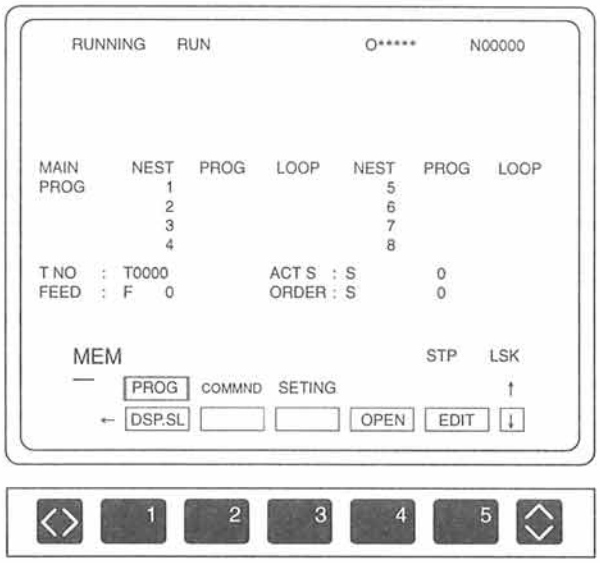


Fig. 6.2 Nesting Information Display Screen

On the subprogram nesting information display screen, the main program number and the subprogram numbers are displayed. For the subprograms, the number of loops is displayed for up to a nesting level of eight. The program presently executed is indicated by the symbol of "→". Subprogram call is executed by M98.

Macroprogram call is also displayed on this screen. While a program is being executed in the memory mode, the subprogram nesting information is not displayed even if a page key is pressed. In this case, the display page of the program being edited is changed.

6.2 MDI OPERATION JOB

The job to execute an automatic operation by manually inputting a program is called the MDI operation job. This section describes the MDI operation procedure.

6.2.1 Entry of an MDI Program

An MDI program of a maximum of 1024 characters can be entered by the following operation. If a program exceeding 1024 characters is entered, the warning message "OVER MDI BUFFER !" is displayed.

① Select the MDI mode by placing the MODE SELECT switch on the machine operation panel in the MDI position. On the screen, "EOB" is displayed in the execution program display area. In this status, MDI program can be entered by using the address and data keys.

② Key in the required address and data, and press the [WR] key.

③ The entered data are stored to the MDI buffer.

6.2.2 Editing an MDI Program

The MDI program entered to the MDI buffer can be edited in the same manner as with the part program stored in the memory.

- When the cursor up/down key is pressed, the cursor moves forward or backward in units of blocks of MDI program.
- When the cursor right/left key is pressed, the cursor moves forward or backward in units of words.
- When the page key is pressed, the MDI program is moved forward or backward in units of pages.
- When the [INSRT] key is pressed, the entered data are inserted following the present cursor position.
- When the [ALTER] key is pressed, the word on which the cursor is positioned is replaced with the entered word.
- When the [ERASE] key is pressed, the word on which the cursor is positioned is erased.
- When [WR] key is pressed, the entered word is appended to the existing MDI program.
- Whether or not the MDI buffer should be cleared by pressing the [RESET] key can be selected by the setting for the parameter.

pm3002 D1 = 0	MDI buffer is cleared by the reset signal.
pm3002 D1 = 1	MDI buffer is not cleared by the reset signal.

SUPPLEMENT

1. The MDI program cannot be edited while it is executed. However, editing is possible in the single-block stop state.
2. After completing the MDI program editing, cycle start the edited program. In this case, pay attention to the cursor position since the program is restarted from the cursor position.
3. When the [BT/TOP] (f5) function soft-key is pressed, the cursor moves to the bottom line of the MDI program. When the [BT/TOP] (f5) function soft-key is pressed once again, the cursor moves to the top line of the MDI program.
4. When the setting is made so that the MDI buffer is not cleared by the reset signal, the cursor position is determined by the setting for the parameter.

pm4002 D1 = 0	The cursor is returned to the beginning of the program.
pm4002 D1 = 1	The cursor stays at the same position.

6.2.3 Execution of an MDI Program

With the MODE SELECT switch on the machine operation panel placed in the MDI position, press the CYCLE START switch, and the entered MDI program is executed. Execution starts from the block where the cursor is positioned.

- As the MDI program is executed, the cursor moves at the beginning of the block which is presently executed.
- For the execution of the MDI program, the [RUN] process is not necessarily selected. It is possible to execute the MDI program from any display screen as long as the MDI program has been entered.
- Whether or not the MDI program should be cleared upon completion of the execution of the MDI program can be selected by the setting for the parameter.

pm3002 D1 = 0	MDI buffer is cleared upon completion of MDI program execution.
pm3002 D1 = 1	Single-block mode and MDI buffer are not cleared upon completion of MDI program execution if an end M code (M02, M30) exists.

SUPPLEMENT

In the single-block stop state, editing an MDI program and the cursor movement by the cursor keys and the [BT/TOP] (f5) function soft-key are permitted.

6.2.4 Deleting an MDI Program

When the MODE SELECT switch on the machine operation panel is placed in the MDI position, delete function is displayed ([DELETE] (f2) function soft-key). When the [DELETE] (f2) function soft-key is pressed, the MDI program is deleted.

This key is conveniently used when parameter setting is made so that the MDI buffer is not cleared by the reset operation or when the [RESET] key cannot be pressed during MDI operation intervention.

6.2.5 Storing an MDI Program

To store the MDI program in the memory, follow the procedure indicated below.

① In the MDI mode, press the [CLOSE] (f4) function soft-key. Note that the [CLOSE] function menu item is displayed only in the MDI mode. The message "INPUT O NO." is displayed.

② Enter the program number for storing the MDI program. For example, key in "O20" and press the [WR] key. The message of "INPUT COMMENT" is displayed.

③ Enter the comment. For example, key in "DRILL" and press the [WR] key.

6.3 COMMAND VALUE DISPLAY JOB

The job to display the command values in the program presently executed is called the command value display job. This section describes the procedure used for displaying the command values.

6.3.1 Collective Display of Command Values

It is possible to display all command values of the program presently executed. When the [COMMND] (f2) job soft-key is pressed, the command value display screen is displayed as shown in Fig. 6.3. On this screen, the data of the block being executed in the automatic mode are displayed.

SUPPLEMENT

1. During automatic operation or in the feed hold state, the contents of the execution register are displayed.
2. In the block stop state, the contents in the buffer area are displayed. If the buffer area is <empty>, the contents of the block executed previously are displayed.

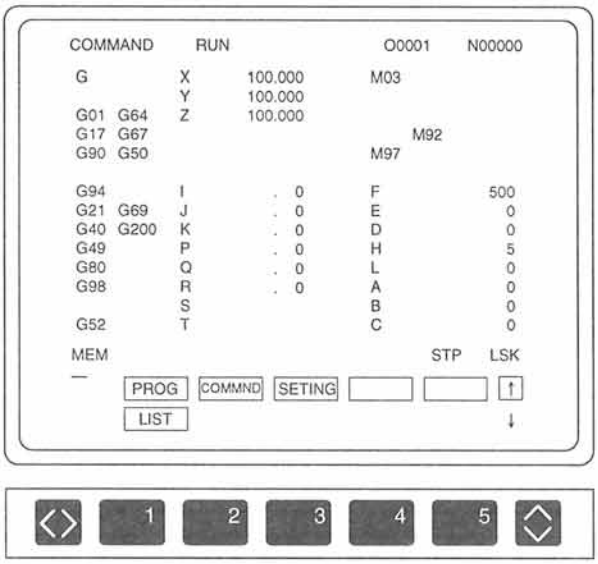


Fig. 6.3 Command Value Display Screen

6.4 SETTING JOB

Various data necessary for operating the NC can be set by the setting job. When the [SETING] (f3) job soft-key is pressed, any of the following functions may be displayed.

- SWITCH (internal switch) function
- SOFTSW (software switch) function
- MACRO (macroprogram variable) function
- F1 DGT (F1-digit) function
- SETING (setting) function
- S-LMT (stored stroke-limit) function

6.4.1 Internal Switch Function *

By using the switches displayed on this screen, they can be turned ON or OFF without using the switches on the machine operation panel. Up to 15 switches are displayed on two pages. The number of switches displayed by this function varies depending on the selected options.

① When the [SWITCH] (f1) function soft-key is pressed, the internal switch screen (Fig. 6.4) is displayed.

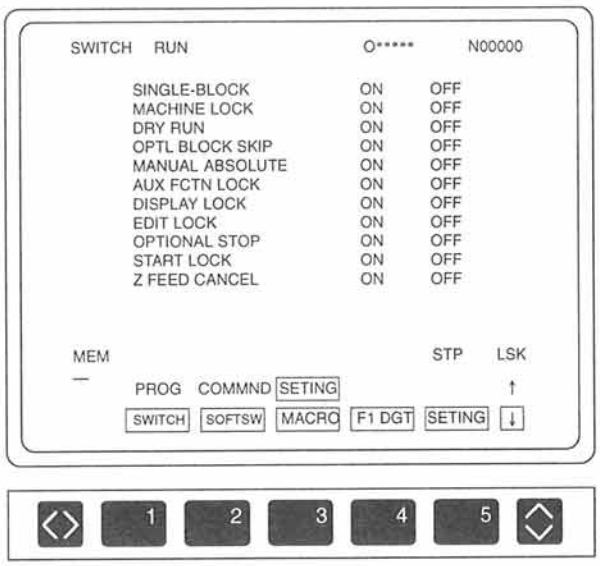


Fig. 6.4 Internal Switch Screen

② Move the cursor to the switch to be turned ON or OFF, then press the [WR] key. Each time the [WR] key is pressed, the switch status toggles between ON and OFF. The new setting of the switch becomes valid immediately.

6.4.2 Software Switch Function *

By selecting the optional software switch function, it is possible to substitute the switches on the operation panel with the switches provided on this screen. When the [SOFT SW] (f2) function soft-key is pressed, the software switch selection screen is displayed. A maximum of 64 points of software switches can be used; this uses a maximum of eight pages for display.

For details, refer to the manuals published by the machine tool builder.

6.4.3 Macro Variable Function

When the optional macroprogram function is used, it is possible to display and write the local variables (#1 to #33) and common variables (#100 to #299, #500 to #999).

① When the [MACRO] (f3) function soft-key is pressed, the local variables and the nesting level are displayed.

- Nesting level is indicated by the symbol in the range of LVL0 to LVL4. The nesting level of the macroprogram which is presently executed is indicated by the symbol and a numerical value.
- The values of the local variables in the present level are displayed by a signed data string (integer: 8 digits, decimal fraction: 7 digits).
- The values of the local variables used in a different level cannot be viewed on this screen.
- If the data area is blank, it indicates the local variable is <empty>. After the execution of a macroprogram, local variable data are displayed in blank.

- For common variables, nesting level is not displayed.

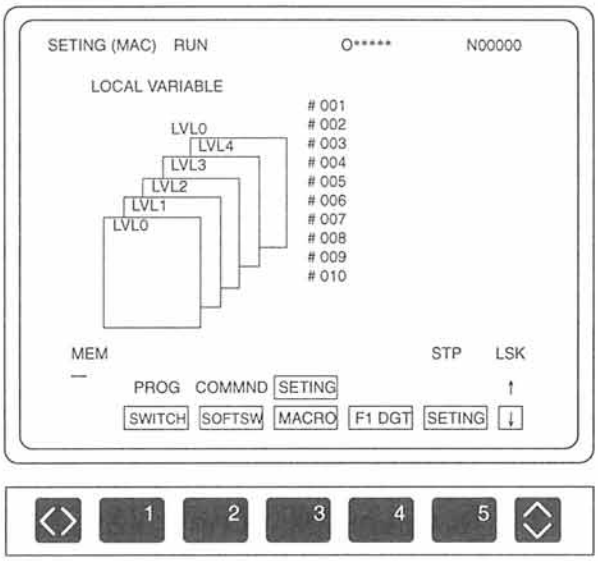


Fig. 6.5 Local Variable and Nesting Level Display Screen

6

② It is possible to search the variable by directly specifying the variable number. After entering the variable number, press the cursor up/down key, and the specified variable is displayed on the screen. The other method to search the variable uses the page keys and the cursor up/down keys. Display the screen that includes the required variable by pressing the page keys and move the cursor to the required variable by pressing the cursor up/down keys.

③ After keying in the numerical value, press the [WR] key. The entered value is stored to the variable that is specified by the cursor.

SUPPLEMENT

1. Common variables can be written any time.
2. Local variables can be written only while a macroprogram is executed. If an attempt is made to write, it wil be invalid. However, since it is very risky to change the contents of local variables while a macroprogram is being executed, suspend the execution of the macroprogram once by single-block stop to change the contents. When changing the contents, make sure that changing the contents does not cause problems.

6.4.4 F1-digit Function

① Press the [F1 DGT] (f4) function soft-key. The F1-digit data setting screen is displayed.

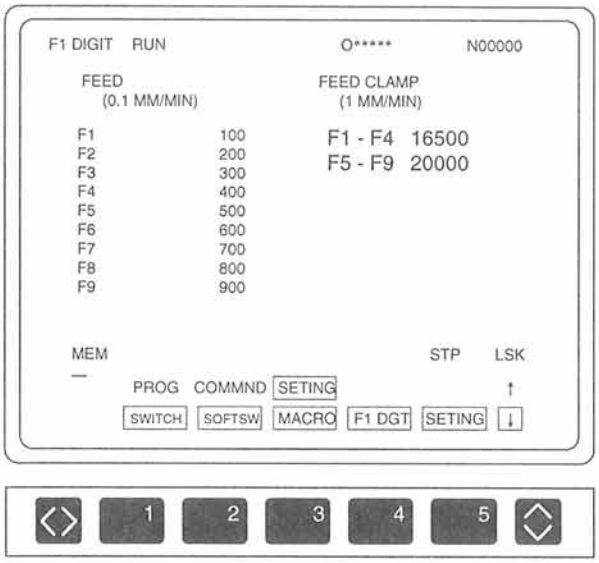


Fig. 6.6 F1-digit Data Setting Screen

② Move the cursor to the F1-digit number for which the present setting should be changed. After keying in a required feedrate (for example, "5000") press the [WR] key. The present data are replaced with the newly entered value.

TERM?

◆ F1-digit

When an F1-digit feed command is specified, the feedrate set on this screen is called corresponding to the specified F1-digit value (F1 to F9).

6.4.5 Setting Function

① When the [SETING] (f5) function soft-key is pressed, the setting screen as shown in Fig. 6.7 is displayed.

② Either press the page keys or key in the page number. Display the page which includes the objective setting item by pressing the cursor up/down keys.

③ Move the cursor to the required setting item by using the cursor up/down key.

④ For the items for which setting should be made in other than numerical values, the contents of the setting changes each time the [WR] key is pressed. Selection is made from "ON and OFF", "ISO and EIA", "MM and INCH", etc. For the items for which setting should be made in numerical values, press the [WR] key after keying in the required value.

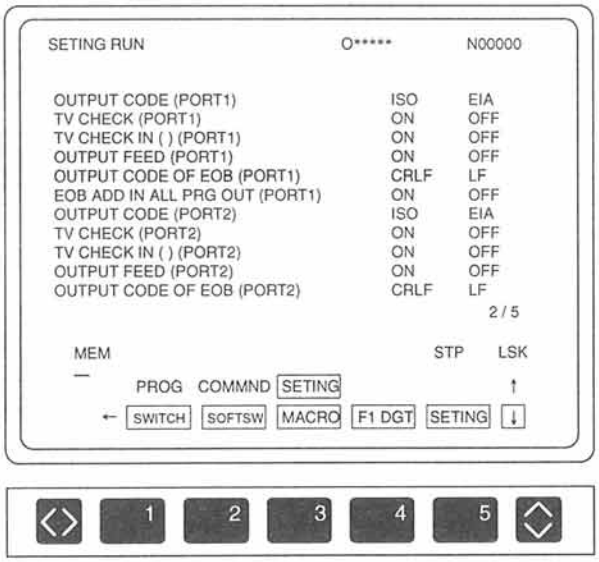


Fig. 6.7 Setting Screen

SUPPLEMENT

The items to be set on this screen correspond to the setting parameters that are displayed by the setting function in the parameter job of the maintenance process.

6.4.6 Stored Stroke Limit Function *

① When the [S-LMT] (f1) function soft-key is pressed, the stored stroke limit screen is displayed.

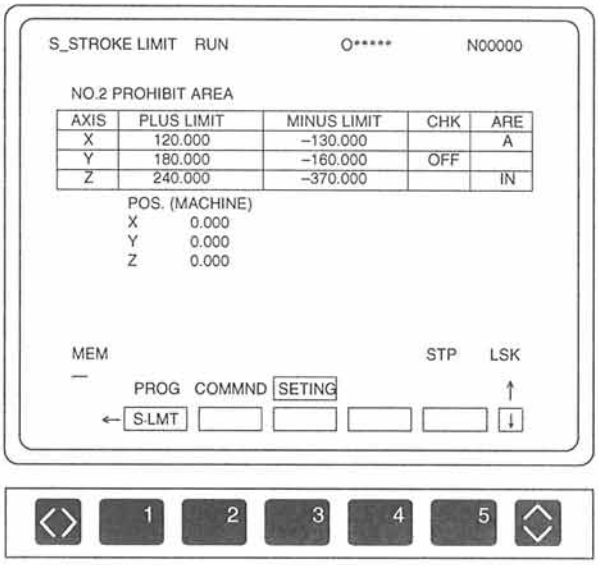


Fig. 6.8 Stored Stroke Limit Screen

② Press the page keys to display the page that shows the required entry prohibited area (No. 2 to No. 5 entry prohibited areas). Note that the number of entry prohibited areas varies depending on the selected option.

③ Move the cursor to the item for which the data should be set by using the cursor keys.

④ Press the [WR] key to set the data.

- To set the PLUS LIMIT or MINUS LIMIT data, press the [WR] key after keying the required data.
- For the CHK item, ON/OFF of the stored stroke limit function is changed as the [WR] key is pressed.
- For the AREA item, inside/outside of the entry prohibited area is changed as the [WR] key is pressed.

TERM?

◆ Stored Stroke Limit Check Function

The stored stroke limit check function checks if the present position value of an axis enters the entry prohibited area which is set by the parameters or the G22 command. This function is valid in both automatic and manual operation.

6.5 OTHER JOB

6.5.1 NC Path Drawing Job *

On the NC path drawing screen, the NC tool paths are monitored and drawn. The scale, view angle and other drawing conditions are set for the drawing parameters.

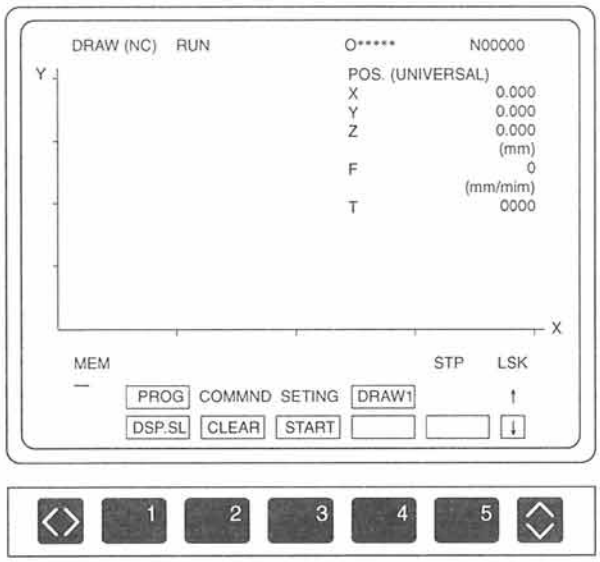


Fig. 6.9 NC Path Drawing Screen

6

(1) Setting the Program Number

It is necessary to call the part program for which the NC paths should be drawn. After keying the program number following address "O", press the [WR] key.

(2) Setting the NC Path Drawing Parameters

Set the parameters for drawing the NC paths – plane, view angle, scale, coordinate system, etc. For details, refer to item (9). When the scale is set, NC paths are drawn only in the specified range and no tool paths are drawn while the cutting tool is moving outside the specified range.

(3) Executing the NC Path Drawing Job

(a) In the automatic operation mode (MEM, MDI, or TAPE)

When the CYCLE START switch is pressed, the [START] (f3) function soft-key is highlighted and the execution of the selected program starts. The tool paths are then drawn on the screen.

Axis feed mode is identified by the type of lines:
Cutting feed . . . . . Solid line
Rapid traverse . . . . . Dotted line

(b) In the manual operation mode (HANDLE, STEP, JOG or RAPID)

Press the [START] (f3) function soft-key. The paths of tool moved manually are drawn on the screen.

(4) Suspending the NC Path Drawing Job

If the [START] (f3) function soft-key is pressed while the NC paths are being drawn ([START] function soft-key is highlighted), monitoring is suspended although the NC continues operating. In this state, NC paths are not drawn on the screen. Pressing the [START] (f3) function soft-key while the NC path drawing is suspended restarts drawing from the time the soft-key is pressed.

(5) Ending the NC Path Drawing Job

When the program operation ends by the execution of M02 or M30, or by pressing the [RESET] key, NC path drawing stops with the message "DRAWING COMPLETED" displayed on the screen.

(6) Display Selection Function

When the [DSP.SL] (f1) function soft-key is pressed, the operation information is displayed including the position data and the list of programs. The operation information is cleared when the [DSP.SL] (f1) function soft-key is pressed again.

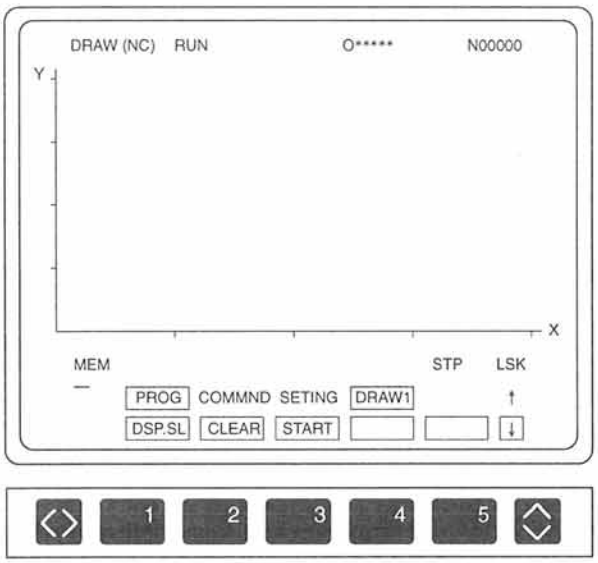


Fig. 6.10 NC Path Drawing Screen

(7) Clear Function

The paths having been drawn are cleared when the [CLEAR] (f2) function soft-key is pressed.

(8) Start Function

The start function is called by pressing the [START] (f3) function soft-key. When the [START] (f3) function soft-key is pressed, it is highlighted and NC path drawing starts. When the [START] (f3) function soft-key is given in ordinary display mode, it indicates that the NC path drawing is not executed.

(9) NC Path Drawing Parameters

① When the [PRM] (f4) function soft-key is pressed, the NC path drawing parameter setting screen is displayed.

Note that this function is accessible by pressing the FUNCTION SELECT key.

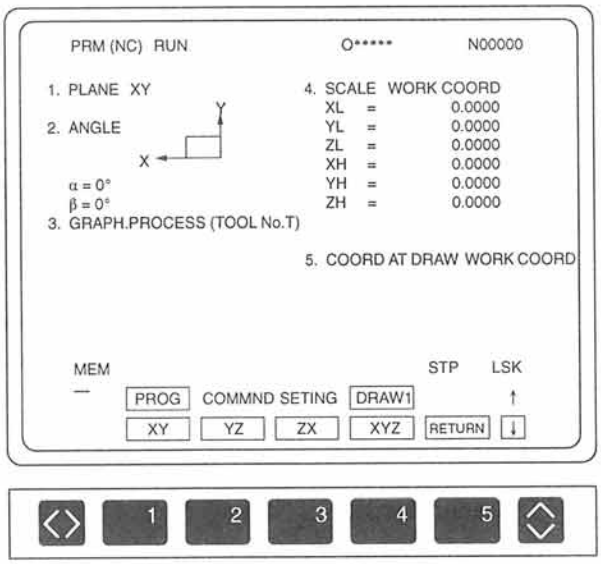


Fig. 6.11 NC Path Drawing Parameter Setting Screen

② Move the cursor to "1. PLANE" by using the cursor up/down keys. Select the NC path drawing plane by pressing the appropriate function soft-keys ([XY] (f1), [YZ] (f2), [ZX] (f3), [XYZ] (f4)).

③ Move the cursor to "2. ANGLE" by using the cursor up/down keys. Set the view angle by pressing the appropriate function soft-keys ([LEFT] (f1), [RIGHT] (f2), [UP] (f3), [DOWN] (f4)).

- α represents an angle of rotation around the Z-axis. The positive direction is the rotation in the direction from X-axis to Y-axis.
- β represents an angle made between the XY plane and the view point.
- The ANGLE item is valid only when the XYZ plane is selected.

④ Move the cursor to "3. GRAPH.PROCESS (TOOL No.T)" by using the cursor up/down keys.

Move the cursor to the tool number (process) for which the selected status should be changed and press the [WR] key. To move the cursor in this area, use the appropriate function soft-keys ([UP] (f1), [DOWN] (f2), [LEFT] (f3), [RIGHT] (f4)). The tool numbers of the selected processes are given in highlighted display.

⑤ Move the cursor to "4. SCALE WORK COORD" by using the cursor up/down keys.

- The set values must satisfy the following conditions:

  XL < XH, YL < YH, ZL < ZH

  If the setting does not satisfy this condition, it is not possible to return to the NC path drawing screen.

- The coordinate values to be set must be the values in the coordinate system selected by "5. COORD AT DRAW".

⑥ Move the cursor to "5. COORD AT DRAW WORK COORD" by using the cursor up/down keys. Select the coordinate system to be used for drawing the NC paths from the workpiece coordinate system and the machine coordinate system by pressing the appropriate function soft-keys ([UNIV], [ABS]).

⑦ After setting the NC path drawing parameters, press the [RETURN] (f5) function soft-key and the screen returns to the NC path drawing screen.

(10) Scale Function

The required range of NC path drawing can be set on the scale setting screen by directly setting the frame. Once the drawing scale is changed, NC paths are drawn using the set scale. Note that the frame set on this screen does not influence the setting made for SCALE on the NC path drawing parameter setting screen.

① Press the [SCALE] (f5) function soft-key.

Note that this function is accessible by pressing the FUNCTION SELECT key. The screen changes to the scale setting screen.

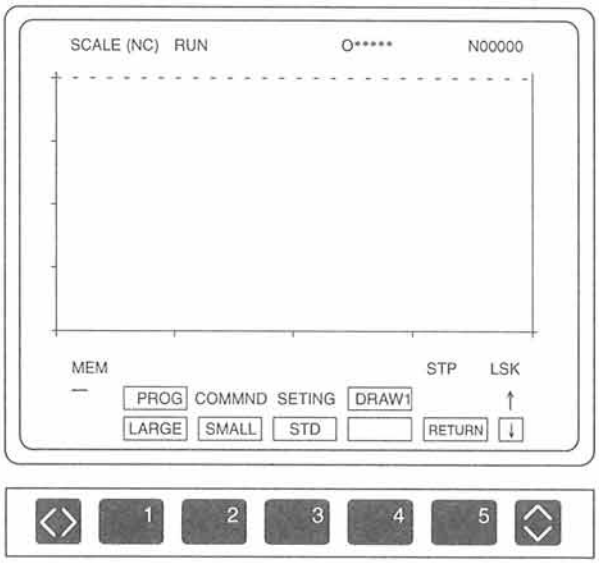


Fig. 6.12 NC Path Drawing Range Setting Screen

② Change the NC path drawing frame size by using the function soft-keys ([LARGE] (f1), [SMALL] (f2)). The set frame is applied for the next drawing operation.

③ Change the position of the frame by pressing the cursor keys to set the center of drawing.

④ Press the [RETURN] (f5) function soft-key. The screen returns to the NC path drawing screen. The NC paths are drawn so that the frame set above will occupy the largest area in the screen.

⑤ To return the drawing scale to the previous scale, press the [STD] (f3) function soft-key. The screen returns to the NC path drawing screen and the NC paths are drawn in the standard scale.

(11) Automatic Scaling Function

When the [AUTO] (f5) function soft-key is pressed, the scale for drawing the NC paths is automatically calculated so that the entire paths of the presently selected program can be drawn. While the scaling calculation is executed, the message "AUTO SCALING" is displayed. Upon completion of the calculation, the message "SCALING COMPLETE" is displayed.

7

COMMON PROCESS OPERATION

Chapter 7 describes the operation carried out by using the common process key.

In the common process, screens used in all machining processes in addition to the edit, setup, run, and maintenance processes are provided by the present position data control, alarm display, and time control jobs.

Job selection is possible by using either the job soft-keys or the [COMN] process selection key.

7.1 PRESENT POSITION DATA CONTROL JOB ..... 7 - 2

7.1.1 Collective Display of Present Position Data .. 7 - 2

7.1.2 Display of Present Position Data in the Workpiece Coordinate System ..... 7 - 4

7.1.3 Display of Present Position Data in the External Coordinate Values ..... 7 - 5

7.1.4 Display of Remaining Distance ..... 7 - 6

7.1.5 Setting the Coordinate Systems ..... 7 - 7

7.1.6 Error Pulse Display Function ..... 7 - 9

7.2 ALARM DISPLAY JOB ..... 7 - 10

7.2.1 Alarm Function ..... 7 - 10

7.2.2 Servo Alarm Function ..... 7 - 11

7.2.3 User's Message Function ..... 7 - 12

7.3 TIME CONTROL JOB ..... 7 - 13

7.3.1 Calendar Function ..... 7 - 14

7.3.2 Operating Time Function ..... 7 - 15

7.1 PRESENT POSITION DATA CONTROL JOB

The present position job displays the position data and also permits the setting of the position data.

When the [POS.] (f1) job soft-key is pressed, any of the following functions may be displayed.

- ALL (collective display) function
- UNIV (workpiece coordinate system) function
- EXTERN (external coordinate value) function
- INCR (remaining distance) function
- ERROR (error pulse) function

7.1.1 Collective Display of Present Position Data

When the [ALL] (f1) function soft-key is pressed, the present position data collective display screen is displayed.

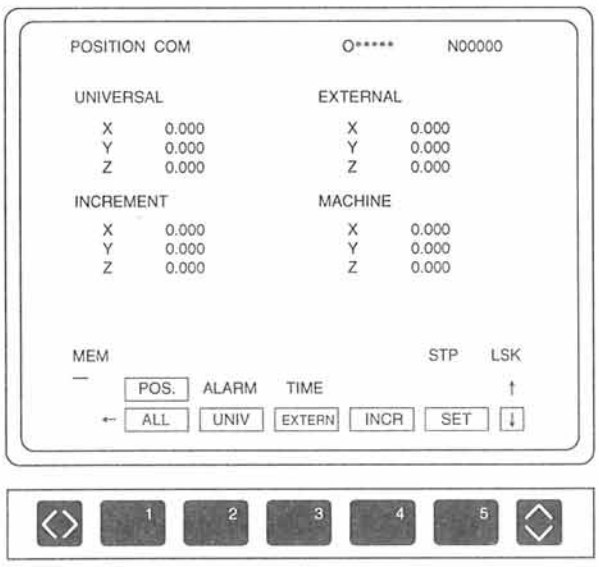


Fig. 7.1 Present Position Data Collective Display Screen

The following describes the individual functions.

(1) UNIVERSAL (Workpiece Coordinate System)

The coordinate values of a cutting tool in the set workpiece coordinate system are displayed. Whether or not the tool offset data are included in the coordinate values to be displayed here can be selected by the setting for the parameter.

pm3000 D2 = 0	Tool offset data are included.
pm3000 D2 = 1	Tool offset data are not included.

The workpiece coordinate system can be preset by using [SET] of the [UNIV] function (see 7.1.5, "Setting the Coordinate Systems".)

(2) EXTERNAL (External Coordinate Values)

Accumulated travel distance of a cutting tool is displayed in reference to the position preset by using the preset operation.

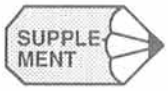
(3) INCREMENT (Remaining Distance)

The following values are displayed.

- In the automatic operation mode, the distance from the present position of the cutting tool to the end point of the block being executed is displayed.
- In the manual operation mode, the distance is measured from the present position of the cutting tool to the manual operation start point. This display is reset to "0" when the operation mode is returned to manual.

(4) MACHINE (Machine Coordinate System)

The present position of the cutting tool is displayed in the coordinate system that has its origin at the position where the axes are positioned by the reference point return operation.



The axis names displayed on the screen are those set for parameter pm1100. If no axis name is set for this parameter, the default axis names are displayed.

7.1.2 Display of Present Position Data in the Workpiece Coordinate System

When the [UNIV] (f2) function soft-key is pressed, the present position data in the workpiece coordinate system are displayed.

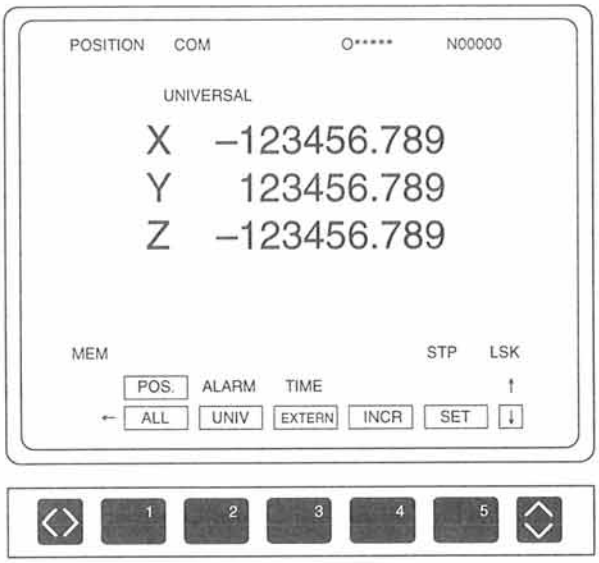


Fig. 7.2 Workpiece Coordinate System Display Screen

7.1.3 Display of Present Position Data in the External Coordinate Values

When the [EXTERN] (f3) function soft-key is pressed, the external coordinate values are displayed.

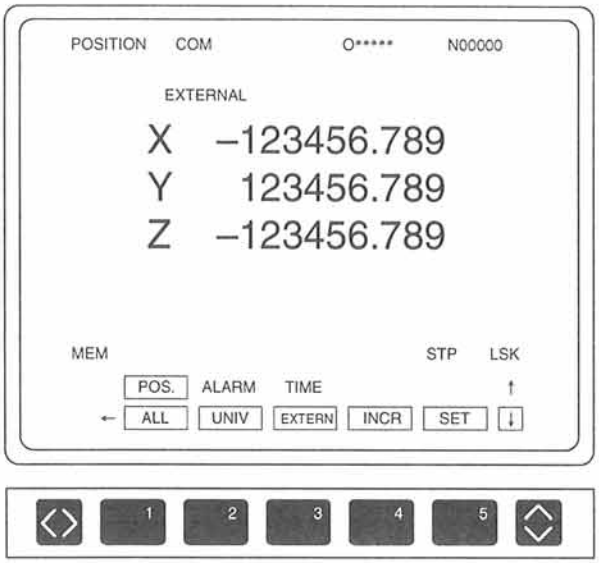


Fig. 7.3 External Coordinate System Display Screen

7.1.4 Display of Remaining Distance

When the [INCR] (f4) function soft-key is pressed, the remaining distance is displayed.

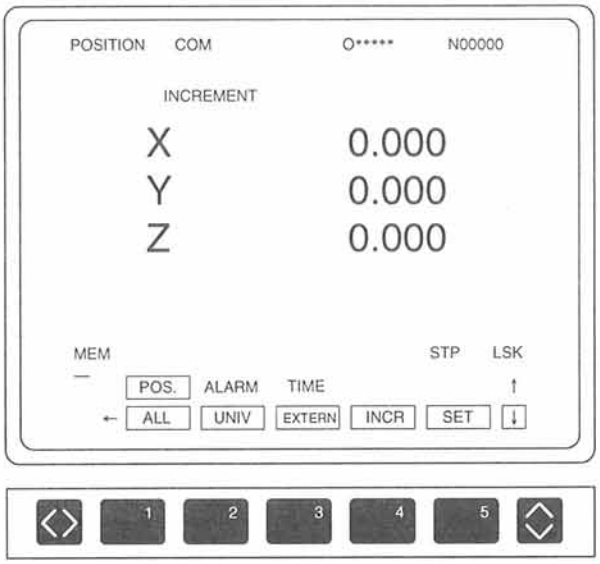


Fig. 7.4 Remaining Distance Display Screen

7.1.5 Setting the Coordinate Systems

By pressing the [ALL] (f1), [UNIV] (f2), or [EXTERN] (f3) function soft-keys, the coordinate systems can be set.

(1) Outline of the Setting in Each Function

(a) All function

When the [ALL] (f1) function soft-key is pressed, the external coordinate system can be set. The external coordinate system can always be set, even while an axis is moving in automatic operation of a part program.

(b) Workpiece coordinate system function

When the [UNIV] (f2) function soft-key is pressed, the workpiece coordinate system can be set. This function is valid in manual operation mode (rapid traverse, jog feed, step feed, handle feed). If an attempt is made to set a workpiece coordinate system in a mode other than manual mode, the warning message "CAN'T SET COORD!" is displayed.

(c) External coordinate system function

When the [EXTERN] (f3) function soft-key is pressed, the external coordinate system can be set. The external coordinate system can always be set, even while an axis is moving in automatic operation of a part program.

(2) Setting the Coordinate Systems

Follow the procedure indicated below to set a coordinate system.

① When the [SET] (f5) function soft-key is pressed, the key is highlighted and, at the same time, the name of the axis for which a coordinate value can be set is highlighted.

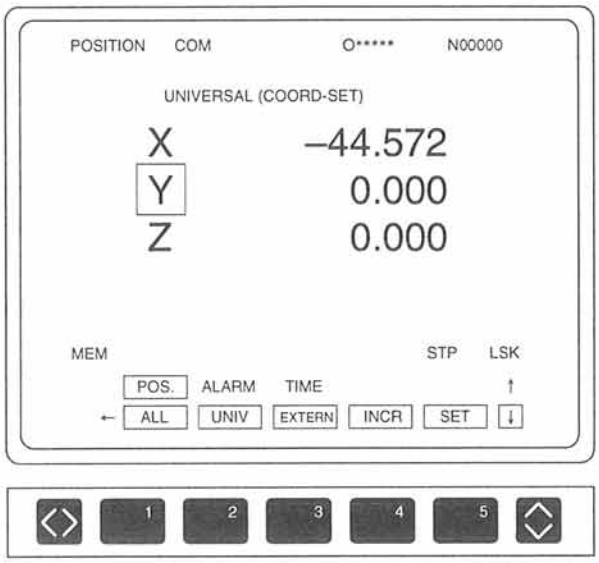


Fig. 7.5 Workpiece Coordinate System Setting Screen

② Move the cursor to the axis for which the coordinate value should be set by using the cursor up/down keys.

③ The coordinate system is set when a coordinate value is entered and the cursor moves to the next axis name. For example, key in "210.5" and press the [WR] key. The coordinate system is set based on the entered value.

- If the [WR] key is pressed without keying in a coordinate value, the coordinate system is set assuming "0".
- If the [WR] key is pressed after keying in the "/" code, one-half of the position data value is entered and the coordinate system is set accordingly.

④ When the [SET] (f5) function soft-key is pressed, the cursor on the axis name disappears.

SUPPLEMENT

1. If an attempt is made to set a coordinate system in the mode in which a coordinate system cannot be set, the warning message "CAN'T SET COORD!" is displayed.
2. The operation to set the coordinate system in the present position data control job is called the numerical setting up.

7.1.6 Error Pulse Display Function

The error pulse screen is displayed when the [ERROR] (f1) function soft-key is pressed.

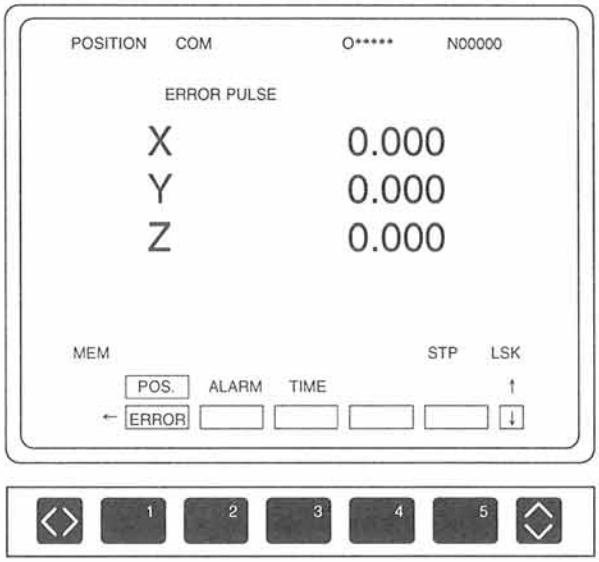


Fig. 7.6 Error Pulse Display Screen

On the error pulse display screen, the contents of the command pulse accumulation registers in the NC are displayed. The command pulse accumulation registers are reset to "0" when the power is turned ON, and command pulses are all accumulated in these registers after that.

7.2 ALARM DISPLAY JOB

The alarm display job displays the contents of the alarm if an alarm occurs with the NC unit.

When the [ALARM] (f2) job soft-key is pressed, any of the following functions may be displayed: alarm function, servo alarm function, and user's message function.

7.2.1 Alarm Function

If an alarm occurs with the NC unit, "ALM" or "BGA" (background alarm) message is displayed in the alarm status display area in the screen regardless of the mode or process. If battery alarm occurs at the same time, either "A/B" or "B/B" is displayed in blinking characters. At the same time, the alarm number of the alarm having the highest priority is displayed with the corresponding alarm message and alarm occurring program line in the alarm message display area.

When the [ALARM] (f1) function soft-key is pressed, the screen changes to the alarm display screen where alarm information of all alarms that have occurred is displayed. The alarm numbers and the alarm messages are displayed in the order of priority.

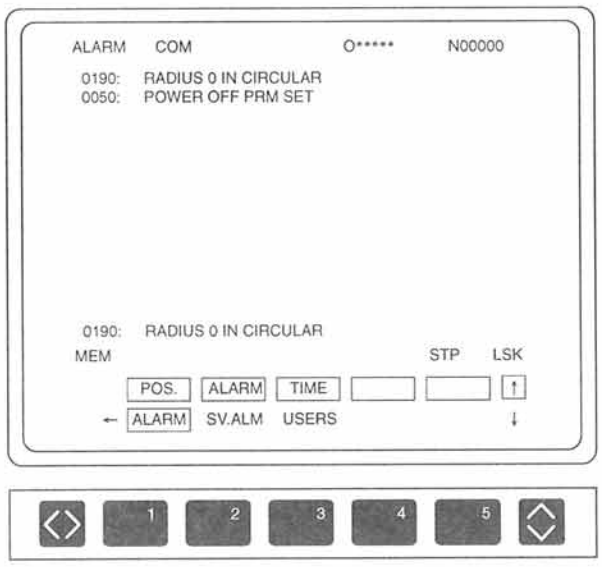


Fig. 7.7 Alarm Message Display Screen

7.2.2 Servo Alarm Function

When an alarm occurs with the servo controller (SERVOPACK), the alarm information is displayed on the screen. Follow the procedure indicated below.

① When the [SV.ALM] (f2) function soft-key is pressed, the servo alarm display screen is displayed as shown in Fig. 7.8. If an alarm related with the SERVOPACK is displayed on the alarm message display screen (Fig. 7.7), details of the SERVOPACK related alarm can be checked on this screen.

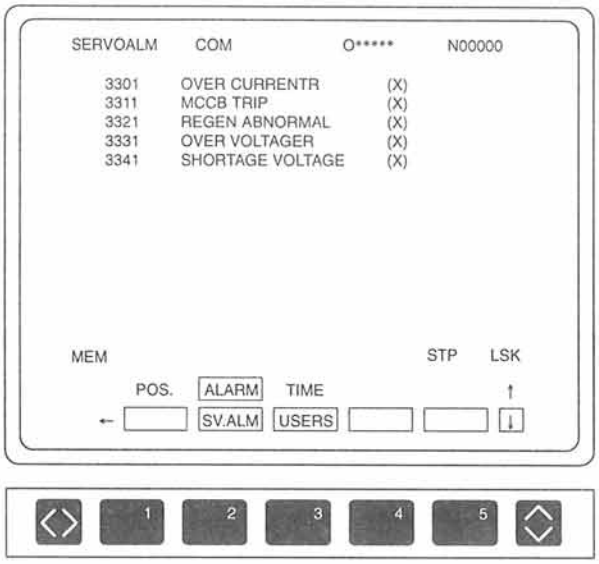


Fig. 7.8 Servo Alarm Display Screen

② If alarms cannot be displayed on one page of the display screen, they are displayed on more than one page. To change the display page, use the page keys. If alarm display is given on one page, the page keys are invalid.

7.2.3 User's Message Function

The function displays user's message on the screen by the PLC system (machine sequence controller) in the NC unit. Usually, this function is used to display the outline of the alarm detected by the PLC. However, this function is also used to simply display the message.

When the message display instruction (macro instruction) is executed in the PLC, either "ALM" or "A/B" blinks at the alarm status display area.

(1) When the [ALARM] (f1) Function Soft-key is Pressed

The following display is given.

- ALM 1080 SEQUENCE ERROR 0
- ALM 2180 SEQUENCE ERROR 1
- ALM 3240 SEQUENCE ERROR 2

(2) When the [USERS] (f3) Function Soft-key is Pressed

The user's message screen is displayed where detailed error codes output from the PLC are displayed. For details, refer to the manuals published by the machine tool builder.

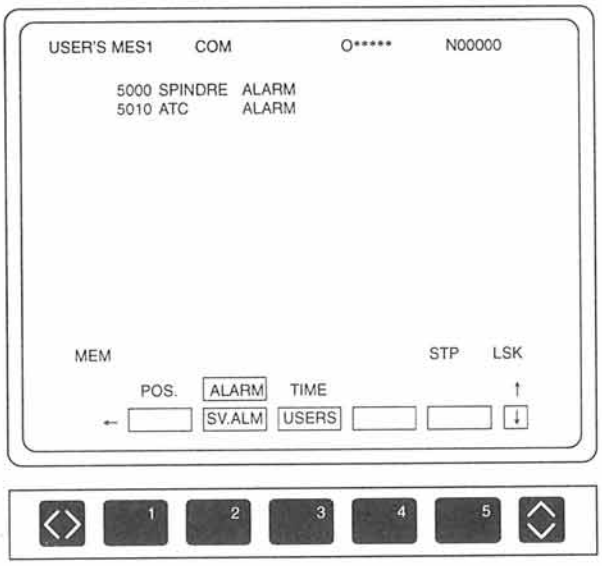


Fig. 7.9 User's Message Screen

7.3 TIME CONTROL JOB

The time control job allows the display and setting of the date and time using the calendar function. When the operating time data are selected, operating time data can be displayed and set.

When the [TIME] (f3) job soft-key is pressed, either the calendar screen or the operating time screen is displayed. The [CALEN] (f1) and [W.TIME] (f2) function soft-keys are used to change the display screen.

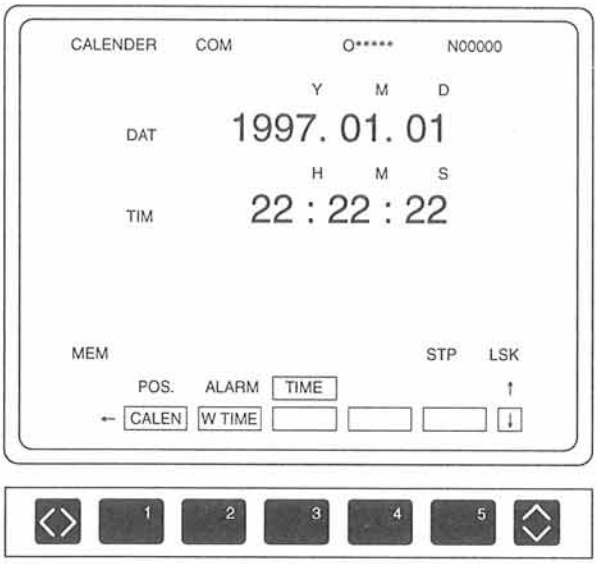


Fig. 7.10 Calendar Display Screen

7.3.1 Calendar Function

(1) Calendar Display

When the [CALEN] (f1) function soft-key is pressed, the calendar screen is displayed where the NC's calendar data (date and time) are displayed.

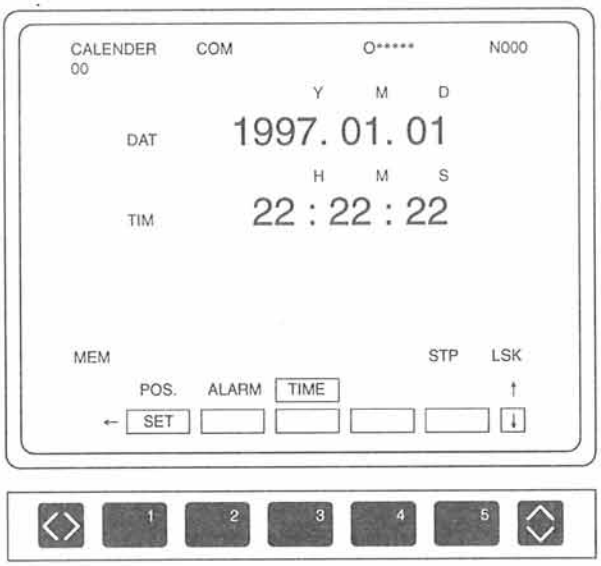


Fig. 7.11 Calendar Setting Screen

(2) Calendar Setting

① Press the FUNCTION SELECT key to display the [SET] (f1) function soft-key.

② When the [SET] (f1) function soft-key is pressed, the calendar setting mode is called and the [SET] (f1) function soft-key is highlighted. At the same time, the cursor is displayed on "DAT".

③ Selection of date and time is possible by moving the cursor. The cursor up/down keys are used to move the cursor.

④ Set the date. For example, key in "1997.01.01" and press the [WR] key.

⑤ Set the time. For example, key in "22.22.22" and press the [WR] key.

⑥ When the [SET] (f5) function soft-key is pressed, the cursor disappears and the newly entered date and time are displayed.

7.3.2 Operating Time Function

The NC accumulates operating time in the individual operation modes and the contents of the accumulated time data can be displayed on the screen. This function allows the analysis of cycle time used to finish one workpiece and also the checking of total NC unit running time. The operating time is displayed on the following four modes and time data are displayed in units of hours, minutes, and seconds.

POWER ON	Displays the total accumulated time after turning the power ON.
CYCLE ST	Displays the total accumulated time in which the NC has operated in the automatic mode.
CUTTING	Displays the total accumulated time in which the NC has operated in the cutting mode.
TIMER*	Displays the total accumulated time in which external input signals have been ON. (option)

① Press the [W.TIME] (f2) function soft-key.

② To reset the displayed time data, display the [0 CLR] (f1) function soft-key first by pressing the FUNCTION SELECT key.

③ When the [0 CLR] (f1) function soft-key is pressed, the key is highlighted and, at the same time, the cursor is displayed on the POWER ON item, indicating that the zero clear mode has been set.

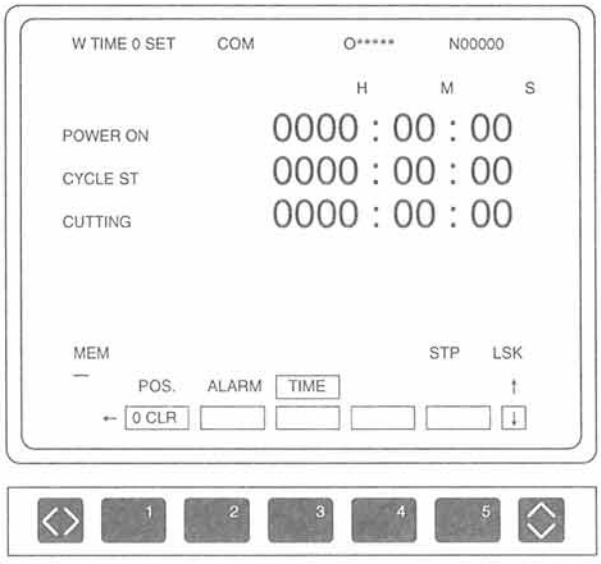


Fig. 7.12 Zero Clear Mode Screen

④ To clear the time data to "0", move the cursor to the item to be cleared and press the [WR] key. The time data of the item on which the cursor is positioned are cleared to "0" and the cursor moves to the next item.

⑤ When the [0 CLR] (f1) function soft-key is pressed, the cursor disappears and the zero clear mode is canceled.

8

MAINTENANCE PROCESS

Chapter 8 describes the operation carried out by using the maintenance process key.

In the maintenance process, display and setting of the data necessary to maintain the NC unit and input/output of the data using an external device are executed by the parameter job, I/O monitoring job, input/output and verify job, and internal information job.

Job selection is possible by using either the job soft-keys or the [MAINT] process selection key.

8.1 PARAMETER JOB ..... 8 - 3

8.1.1 Parameter Function ..... 8 - 3

8.1.2 Setting Function ..... 8 - 6

8.1.3 Sequence Parameter Function ..... 8 - 7

8.1.4 Pitch Error Function * ..... 8 - 7

8.2 I/O MONITORING JOB ..... 8 - 8

8.2.1 Displaying the ON/OFF Status of the I/O Signals ..... 8 - 8

8.2.2 Displaying the ON/OFF Status of the Selected I/O Signals ..... 8 - 9

8.2.3 Turning ON/OFF I/O Signals Forcibly ..... 8 - 11

8.3 INPUT/OUTPUT AND VERIFY JOB .. 8 - 12
8.3.1 Input/output and Verify Function ..... 8 - 12
8.3.2 Background Reset Function ..... 8 - 14
8.3.3 I/O Device Setting Function ..... 8 - 14
8.4 INTERNAL INFORMATION JOB ..... 8 - 15
8.4.1 Version Number Function ..... 8 - 15
8.4.2 Memory Dump Function ..... 8 - 16
8.4.3 Key Memory Function ..... 8 - 16
8.4.4 Servo Configuration Function ..... 8 - 17

8.1 PARAMETER JOB

With the parameter job, the data stored in the internal memory (parameter data, setting data, battery back-up memory data, pitch error compensation data) can be displayed and set. According to the contents, specific functions are turned ON and OFF or the operation conditions of the functions are determined.

When the [PARAM] (f1) job soft-key is pressed, the following function soft-keys are displayed: [PARAM] (f1), [SETING] (f2), [SEQPRM] (f3), and [P.ERR] (f4).

Before setting the parameters, set "ON" for "PARAMETER CHANG" parameter by using the [SETING] job in the [RUN] process. With this setting, the data set for parameters, battery back-up memory, and pitch error can be changed. After the completion of changing, make sure to return the setting for "PARAMETER CHANG" to "OFF".

⚠ CAUTION

- The end user must not change parameters relating to machine accuracy, travel axis control and spindle axis control.

  The NC parameters are set to the optimum values for each machine, and changing them could therefore result in unexpected operation. This could cause tool damage due to interference, and resulting accidents involving injuries to personnel.

  Reset the NC after any manual intervention.

8.1.1 Parameter Function

With the parameter function, display and setting of parameter data stored in the NC are possible. Usually, the parameter data are set by the machine tool builder and to change the setting for the parameters, make sure to consult the machine tool builder.

① Press the [PARAM] (f1) function soft-key.

② The parameters are largely classified into two types – bit type and byte/word/double-word type.

(1) Bit Type Parameters

Follow the procedure indicated below to write the bit type parameters.

① Move the cursor to the parameter for which the present setting should be changed. For this operation, use the page keys and the cursor up/down keys, or use the cursor up/down keys after keying in the parameter number.

② Press either the [INSRT] key or the cursor right key. In the case of [INSRT] key, the cursor moves to the decimal number display area and in the case of the cursor right key, the cursor moves to the bit data position.

③ Move the cursor to the bit position where the data should be changed and press the [WR] key. Each time the [WR] key is pressed, the bit status (ON/OFF) is changed alternately. Writing a numerical value is allowed only when the cursor is moved to the decimal number position at the right end column.

Table 8.1 Example) Writing a decimal number for bit data

Key Operation	Bit 76543210	Decimal Number
[0] [WR]	00000000	0
[8] [WR]	00001000	8
[2][5][5][WR]	11111111	255

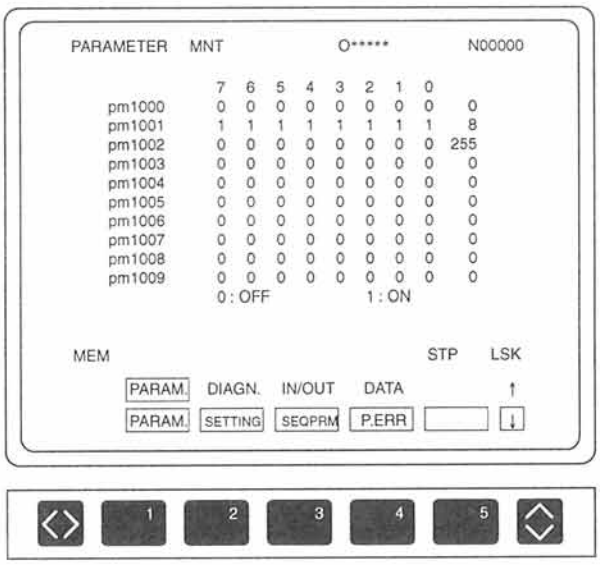


Fig. 8.1 Parameter Input Screen (Bit Type Parameters)

8

(2) Byte/Word/Double-word Type Parameters

Follow the procedure indicated below to write the byte/word/double-word type parameters.

① Move the cursor to the parameter for which the present setting should be changed. For this operation, use the page keys and the cursor up/down keys, or use the cursor up/down keys after keying in the parameter number. When parameter number search is executed, it is not necessary to enter "pm".

② Key in a required parameter value and press the [WR] key. The keyed in value is entered to the specified parameter.

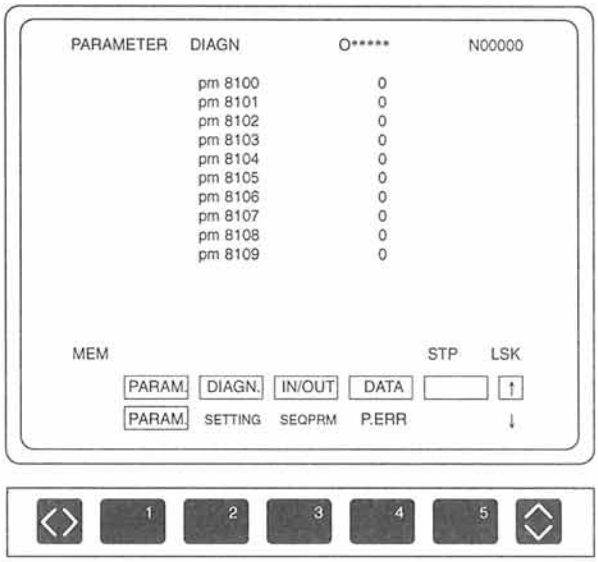


Fig. 8.2 Parameter Input Screen (Byte/Word/Double-word Type Parameters)

③ After changing the setting for the parameters, press the [RESET] key. The new settings become valid when the NC is reset.

- When the setting is made for the parameters that become valid after the power is turned OFF, the alarm "ALM 0050: POWER OFF PRM SET" occurs. If this alarm message is displayed, turn OFF the power once and then turn it back ON.
- When the setting is made for the parameters that become valid when the part program is initialized, the alarm "ALM 0051: PROGRAM GENERATION PRM SET" occurs. If this alarm message is displayed, program clear is necessary.

  Contact your Yaskawa representative. Even after the occurrence of this alarm, it is possible to run the NC without problems by turning OFF the power once and then turning it back ON again. In this case, the new setting is invalid.

8.1.2 Setting Function

It is possible to display the setting data stored in the NC and also to set the data. Follow the procedure indicated below.

① Press the [SETING] (f2) function soft-key.

② Move the cursor to the setting number for which the present setting should be changed.

③ Enter the required value.

8

SUPPLEMENT

1. Operation is basically the same as with the parameter function. When changing the setting data, it is not necessary to set "ON" for the "PARAMETER CHANG" parameter.
2. When the setting is changed for the setting data, the new data become valid immediately.
3. A part of the setting data can be set on the setting function screen in the RUN process.

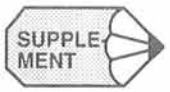
8.1.3 Sequence Parameter Function

With the sequence parameter function, display and setting are possible for the sequence parameters. Here, the sequence parameter refers to the data used by the PLC. Follow the procedure indicated below.

① Press the [SEQPRM] (f3) function soft-key.

② Move the cursor to the sequence parameter number for which the present setting should be changed.

③ Enter the required parameter data. For the procedure for entering the parameter data, refer to 8.1.1, "Parameter Function".



On the bit type data display screen, the numerical values given at the right end of the column are hexadecimal numbers.

8.1.4 Pitch Error Function *

The pitch error function allows the display and setting of the pitch error compensation data stored in the NC.

① Press the [P.ERR] (f4) function soft-key.

② Move the cursor to the pitch error number for which the present setting should be changed.

③ Enter the required pitch error compensation data. For the procedure for entering the data, refer to 8.1.1, "Parameter Function".

8.2 I/O MONITORING JOB

With the I/O monitor job, ON/OFF status of the I/O signals of the NC, PLC, and the machine can be monitored.

8.2.1 Displaying the ON/OFF Status of the I/O Signals

When the [DIAGN.] (f2) soft-key is pressed, the ON/OFF status of the I/O signals of the NC, PLC, and machine are displayed. This display can be displayed at any time.

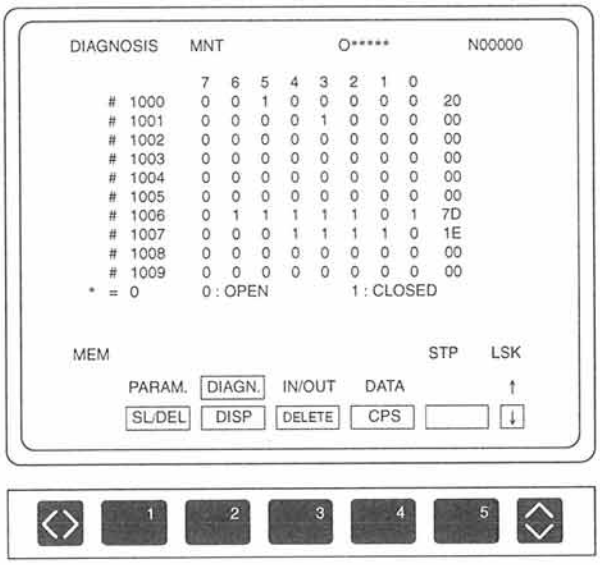


Fig. 8.3 I/O Signal Display Screen

SUPPLEMENT

On the I/O signal display screen, the numerical values given at the right end of the column are hexadecimal numbers.

8

8.2.2 Displaying the ON/OFF Status of the Selected I/O Signals

It is possible to display the ON/OFF status of the I/O signals by selecting the required ones.

① Move the cursor to the I/O signal number that should be selected.

For this operation, use the page keys and the cursor up/down keys, or use the cursor up/down keys after keying in the parameter number.

② Press the [SL/DEL] (f1) function soft-key and the selected I/O signal number is stored; the "*" symbol is displayed to the left of it. The entire number of the selected I/O signal number is displayed at the lower area of the screen (* = xx).

③ Repeat steps ① and ② above to select the I/O signal numbers. Selection is possible for up to ten signal numbers.

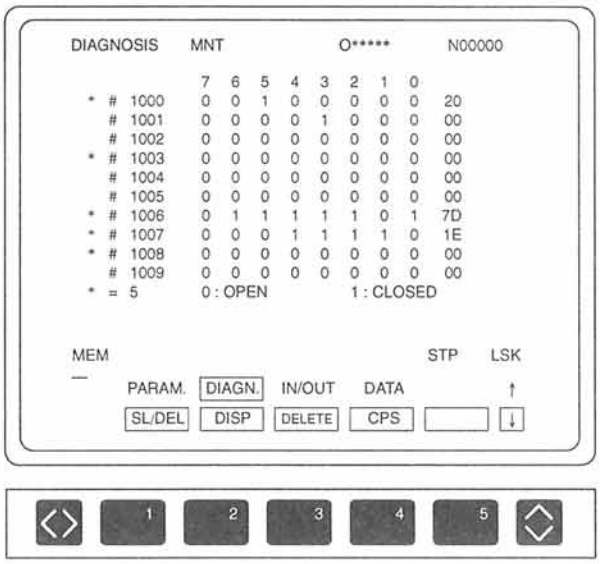


Fig. 8.4 Selected I/O Signal Screen

④ Press the [DISP] (f2) function soft-key. The selected I/O signal numbers are displayed.

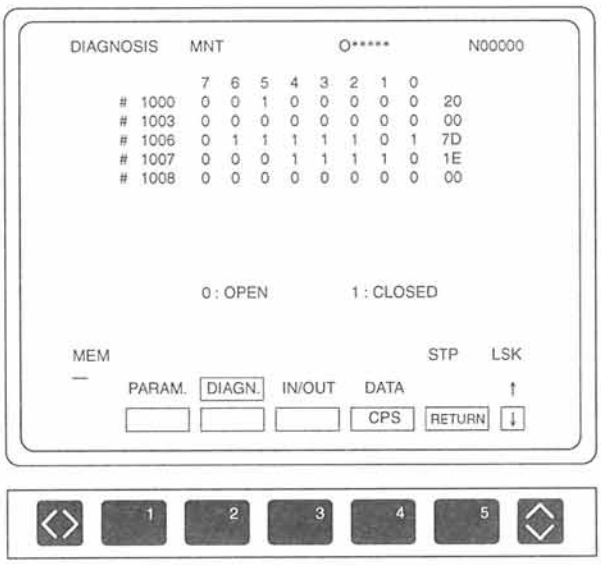


Fig. 8.5 Selected I/O Signal Display Screen

⑤ When the [RETURN] (f5) function soft-key is pressed, the screen returns to the I/O signal display screen which is displayed when the [DIAGN] (f2) job soft-key is pressed.

⑥ When the [DELETE] (f3) function soft-key is pressed, the selection of the I/O signal numbers is canceled.

⑦ When the [SL/DEL] (f2) function soft-key is pressed after moving the cursor to the I/O signal number that has been selected, the selection of that I/O signal number is canceled.

8.2.3 Turning ON/OFF I/O Signals Forcibly

The forced contact ON/OFF selection function is provided to check the machine sequence. This function allows the contact status to be changed forcibly without changing the machine sequence. To make this function valid, set "1" for parameter pm0109 in the [SETING] function of [PRM] job in the [MAINT] process.

① Move the cursor to the I/O signal number that should be selected. For this operation, use the page keys and the cursor up/down keys, or use the cursor up/down keys after keying in the parameter number.

② Press the [INSRT] key. The cursor moves to the bit data area.

③ Move the cursor to the bit that should be selected for forced contact ON/OFF operation and press the [CPS] (f4) function soft-key. A box (□) appears at the selected bit. The box disappears when the [CPS] (f4) function soft-key is pressed again.

④ Press the [WR] key. Each time the [WR] key is pressed, the ON/OFF status of the selected bit is changed alternately.

⑤ After moving the cursor to the I/O signal number for which the "*" symbol is displayed to the left, press the [SL/DEL] (f1) function soft-key and the selection of forced contact ON/OFF operation is canceled.

⑥ When the [DELETE] (f3) function soft-key is pressed, selection of forced contact ON/OFF operation is canceled for all contacts.

8.3 INPUT/OUTPUT AND VERIFY JOB

The input/output and verify job allows the input and output of the NC data with an external device. It is possible to display the input/output data while the data are input from a tape reader or output to a tape punch by setting the appropriate value for the parameter.

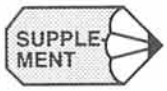
pm0007 D5 = 0	Data are displayed on the screen during data input/output using tape.
pm0007 D5 = 1	Data are not displayed on the screen during data input/output using tape.

If data are displayed for input/output and verify operation, processing time will be extended.

8.3.1 Input/output and Verify Function

The input/output and verify function provides the following menu items.

- Input/output and verify of all parameters (setting, parameters, sequence parameters and battery back-up memory, pitch error, offset)
- Input/output and verify of setting data
- Input/output and verify of parameters (not possible for sequence parameters pm7000 to pm7099)
- Input/output and verify of sequence parameters and battery back-up memory



Although data are displayed in hexadecimal number for battery back-up memory, output is decimal value.

- Input/output and verify of pitch error compensation parameters (option)
- Input/output and verify of all offset data (tool offset and work coordinate system shift data)
- Input/output and verify of tool life control data (option)
- Input/output and verify of macro and common variables (option)

The input/output and verify of the data is possible disregarding of the NC operation mode. However, automatic operation is not possible during input/output and verify.

(1) Selection and Operation of the Function

① Press the appropriate function soft-key corresponding to the required operation. The screen is displayed corresponding to the pressed function soft-key. Fig. 8.6 shows the parameter input screen.

- For input, press the [IN] (f1) function soft-key.
- For output, press the [OUT] (f2) function soft-key.
- For verify, press the [VER] (f3) function soft-key.

② Move the cursor to the parameter which should be input, output, or verified and press the [WR] key. The message "INPUT (OUTPUT/VERIFY) OK?" is displayed.

When the [Y] key is pressed, the selected function starts and the screen changes to the input/output/verify data display screen.

Whether or not the zero suppress function is used for these functions can be selected by the setting for the parameter.

pm0007 D6 = 0	"0" data are not output (zero suppress function)
pm0007 D6 = 1	"0" data are output.

SUPPLEMENT

1. For the input, since only the data (other than "0") that have been output are written, "0" is not written,
2. For the verify, since only the data (other than "0") that have been output are verified, verify is not executed for the part which was "0" in output.

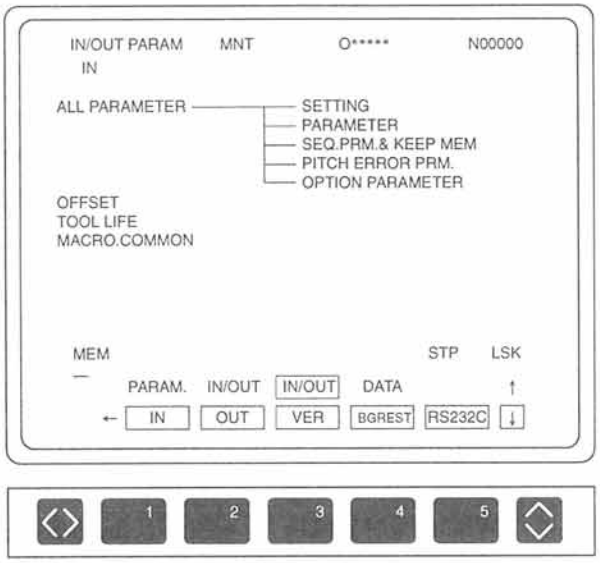


Fig. 8.6 Parameter Input Screen

8.3.2 Background Reset Function

The switch for background reset which provides the function different from the reset switch arranged on the NC operation panel is available. The background reset function provides the following functions.

- Interruption of input/output/verify function
- Turning ON the label skip function
- Canceling the background alarm (ALM 9000)

The [BGREST] (f4) function soft-key has no influence on the operation even if it is pressed during operation. If the [BGREST] (f4) function soft-key is pressed, the "RST" status message is not displayed on the screen.

8.3.3 I/O Device Setting Function

It is possible to set the I/O device by pressing the [RS232C] (f5) function soft-key. For the operation procedure, refer to the [RS232C] function of the [IN/OUT] job in the [PROG] process.

8.4 INTERNAL INFORMATION JOB

Selection of each job is possible by pressing the corresponding job soft-keys ([PARAM] (f1), [DIAGN] (f2), [IN/OUT] (f3), and [DATA] (f4)), or by pressing the [MAINT] process key.

For control of the internal information, the following function soft-keys which are accessible by pressing the [DATA] job soft-key are provided: [VER NO] (f1), [DUMP] (f2), [KEY-MEM] (f3), and [SERVO] (f4).

8.4.1 Version Number Function

The version number function is provided for the purpose of maintenance and it is not used for daily operation. When the [VER NO] (f1) function soft-key is pressed, the version number list screen is displayed. On this screen, the following information is displayed.

(1) SYSTEM NO

Two system numbers (NC and PC ladder) are displayed.

(2) OPTION VERSION NO

When the option boards are installed, the software version of these option boards is displayed.

(3) BASIC VERSION NO

The software version of the basic boards is displayed.

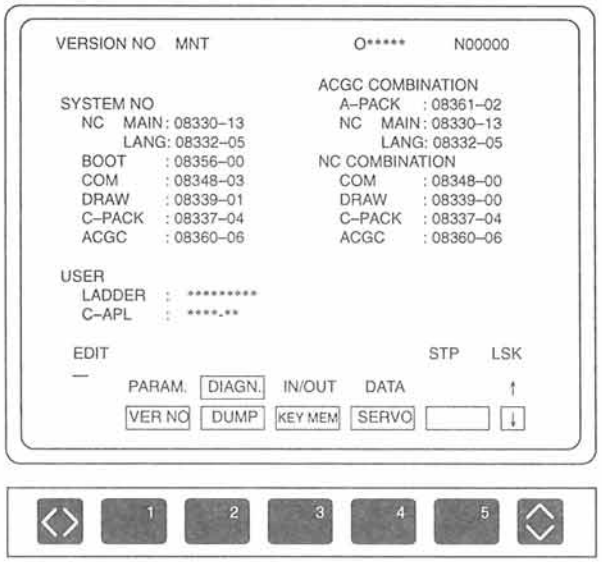


Fig. 8.7 Version Number Display Screen

8.4.2 Memory Dump Function

The memory dump function is provided for the purpose of maintenance and it is not used for daily operation. When the [DUMP] (f2) function soft-key is depressed, the memory dump screen is displayed. This screen is provided for the service technician of YASNAC NC.

8.4.3 Key Memory Function

When the [KEYMEM] (f3) function soft-key is pressed, the key memory screen is displayed. On the key memory screen, the history of key entry from the NC operation panel is displayed. The correspondence between the keys used and the key codes is indicated below.

List of key codes:
Alphabet, numerals, [SHIFT] + A – Z

The characters of the pressed keys are displayed. [SP] is displayed only for space bar.

Special keys:

Soft-keys			Process keys and other keys		
〈 〉 key	.....	MN-L	PROG key	.....	PRG
∧ key ∨	.....	MN-R	SET key	.....	SET
1 key	.....	F_1	RUN key	.....	RUN
2 key	.....	F_2	MAINT key	.....	MNT
3 key	.....	F_3	COMN key	.....	CMN
4 key	.....	F_4	AUX1 key	.....	AUX1
5 key	.....	F_5	AUX2 key	.....	AUX2
Cursor keys			[RESET] key	.....	RES
▶ key	.....	CU-R	CAN key	.....	CAN
▲ key	.....	CU-U	EOB key	.....	EOB
◀ key	.....	CU-L	INSRT key	.....	INS
▼ key	.....	CU-D	ALTER key	.....	ALT
Page keys			ERASE key	.....	ERS
△ key	.....	PG-U	WR key	.....	WR
▽ key	.....	PG-D			

8.4.4 Servo Configuration Function

When the [SERVO] (f4) function soft-key is pressed, the servo configuration screen is displayed. The screen displays the types of SERVOPACKs and servomotors installed to the NC.

Note: The servo configuration function is valid to the NC which uses the IR servo.

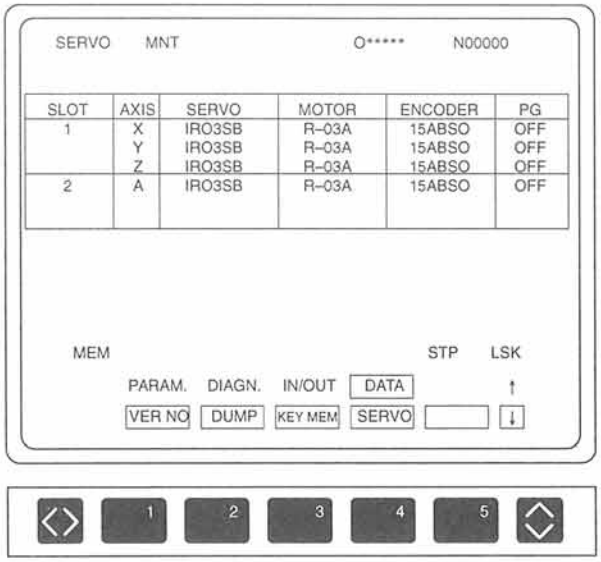


Fig. 8.8 Servo Configuration Screen

9

MAINTENANCE

Chapter 9 describes the maintenance data that can be accessed by the users.

9.1 MAINTENANCE DATA ..... 9 - 2

9.1.1 Checking the Status of Troubles ..... 9 - 2

9.1.2 Checking the NC Information ..... 9 - 3

9.1.3 Display of Alarm Information ..... 9 - 5

9.1.4 Cause of Alarm and Corrective Action ..... 9 - 6

9.1.5 Troubleshooting (1) ..... 9 - 7

9.1.6 Troubleshooting (2) ..... 9 - 21

9.1.7 Alarms Not Indicated by Alarm Numbers ... 9 - 27

9.1 MAINTENANCE DATA

To locate the cause of problems or when contacting your Yaskawa representative for advice, it is very important that users precisely understand the actual situation. To minimize the downtime, check the following points precisely.

⚠ CAUTION
• When an alarm occurs, eliminate its cause and confirm safety before resetting it. Failure to observe this caution could result in malfunction. • For details on trouble relating to the machine-related sequence, refer to the manual issued by the machine tool builder.

9.1.1 Checking the Status of Troubles

(1) Understanding the Situation

To make clear the status of troubles, check the following items first.

- Type of operation that causes a trouble.

  Do other types of operation not cause troubles?
- Details of troubles.

  How, frequency (always or sometimes), and when.
- Unusual situation when the trouble occurred.

  Was there an unusual external occurrence such as power failure or lightning when the trouble occurred?
- Timing of trouble occurrence.

  Had the trouble occurred during or after the operation of the keys or in a specific operation mode?

(2) Check Items

(a) Troubles related with axis feed and spindle drive

Check the following items.

- Indication of the LEDs on the drive unit
- Fuses and breakers
- Timing of trouble occurrence – when the power is turned ON, during acceleration, during deceleration, or during fixed speed spindle rotation, etc.?

(b) Troubles related with part program

Record the program block data, offset data, workpiece coordinate system offset data, coordinate system setting data, etc.

9.1.2 Checking the NC Information

Independent of the contents of the troubles, the following information must be checked.

(1) Hardware Environment

- Machine tool builder's name
- Delivery date of machine tool
- Type and model name of the machine tool
- Type and model name of the NC and units

(Example)

NC unit	YASNAC J300M
Servo drive	CACR–IR05SE
Servo motor	USAGED–05A
Spindle drive	VS–626 M5
Spindle motor	UAASKA–08CA3

(2) NC System Software

YASNAC J300s software is managed by the system numbers.

(a) System number (NC: □□□□□-□□)

The system number refers to the system software number which consists of five integer digits and a two-digit revision number. The system number of the basic software of the NC is displayed at the start-up screen which is displayed when the power is turned ON.

The following screen is the J300 start-up screen.

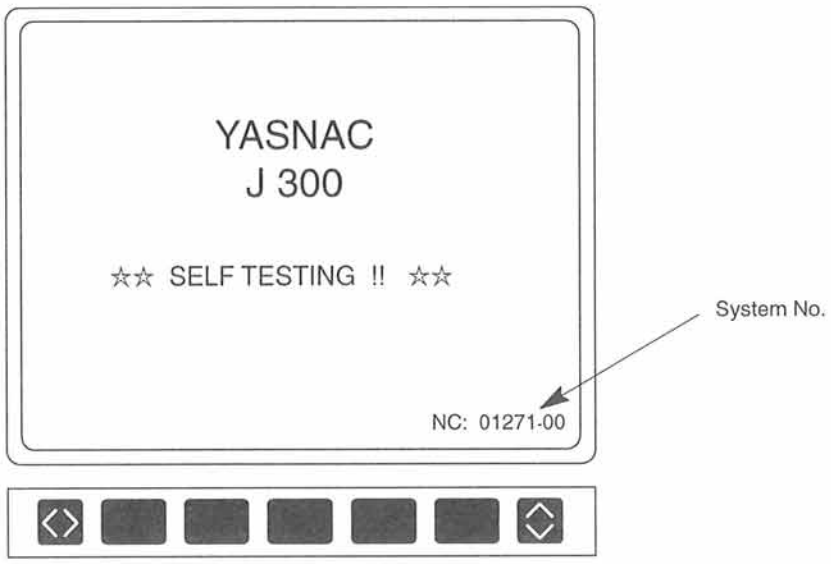


Fig. 9.1 Start-up Screen (J300)

Note that optional software also has individual system numbers - communication module, PLC ladder, ACGC applications, etc.

(b) Calling the system number display screen

Follow the procedure indicated below to call the system number display screen.

① Press the [MAINT] process key on the NC operation panel.

② Press the FUNCTION SELECT key in the function selection mode, and the function soft-key as shown in Fig. 9.2 is displayed.

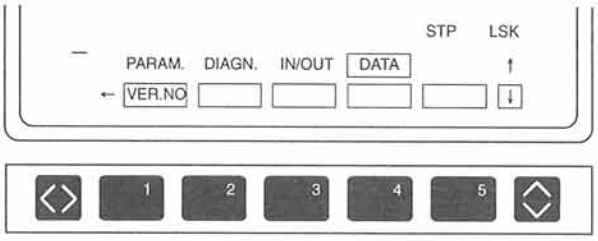


Fig. 9.2

③ Press the [VER.NO] (f1) function soft-key and the system number display screen is displayed.

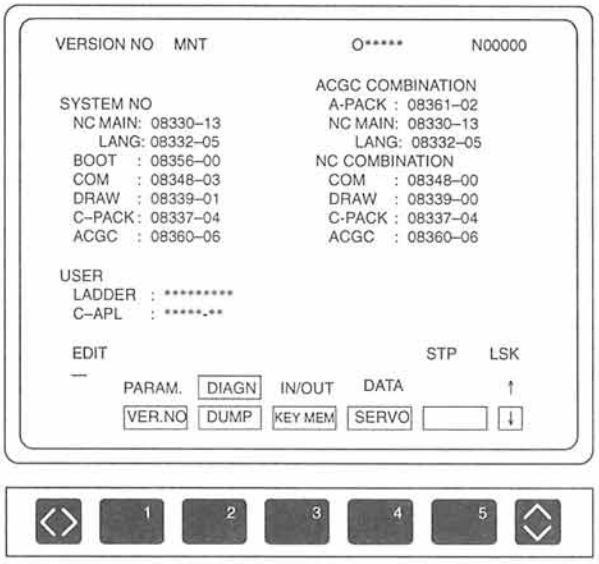


Fig. 9.3 System Number Display Screen

9.1.3 Display of Alarm Information

If an alarm occurs, the alarm number and comment of the alarm of the top priority is displayed in the normal display area disregarding the selected mode and the screen. For the procedure to follow to display the alarm information, refer to 7.2, "ALARM DISPLAY JOB".

9.1.4 Cause of Alarm and Corrective Action

The following shows the classification of YASNAC alarms.

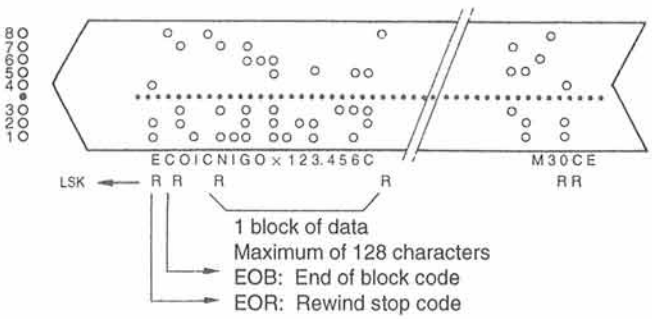
Table 9.1 Alarm Numbers and Classification

No.	Contents	Stop Mode	Output	How to Reset
0000 to 0049	Errors related to edit and operation Occurring in the background mode also.	Block stop	Input error alarm	Reset
0050 to 0099	Errors related to edit and operation Not occurring in the background mode.	Block stop	Input error alarm	Reset Power OFF for #0050 and #0051
0100 to 0499	Program error	Block stop	Input error alarm	Reset
1000 to 1099	Program error DNC, COMS total, etc.	Block stop	Input error alarm	Reset
2000 to 2199	Machine related error OT, reference point return, machine ready, in-position, etc.	Stop after deceleration, or immediate stop	Alarm	Reset operation after removing the cause. With the alarm caused by the machine ready signal, if it occurs in the first power ON operation, it is automatically reset.
3000 to 3299	Servo and spindle related alarm ESP, CPU mutual monitoring	Immediate stop, or servo OFF	Alarm	Reset after removing the cause. With the SVOFF alarm, it is automatically reset by the SVON.
8000 to 8049	Memory check error Watchdog timer error Offline error	Immediate stop, or servo OFF	Alarm	For maintenance CPU halt Switching to the special maintenance screen
9000 to 9049	Error occurring in background editing (basically the same as with 0000 to 0049)	Not stopped	Background error output	Reset or with reset soft-key
No number indication BAT indication BAT. AXIS	Battery error Encoder alarm	Not stopped	No output	Changing the battery
No number indication Warning message	Key operation error, edit operation error (not serious operation error)	Not stopped	Warning	Next key operation

9.1.5 Troubleshooting (1)

(1) Alarm Nos.: 0010 and 0011 (Parity Error)

Table 9.2 Troubleshooting – Alarm Nos.: 0010 and 0011 (Parity Error)

Alarm No.	Cause	Check Item	Countermeasures
0010	TH error	• In the tape mode operation. Check the number of punched holes for each character. An alarm occurs in the following cases: EIA code: An even number of holes ISO code: An odd number of holes <The following explanation is given assuming the EIA code.> 	• Clean the tape reader. • Check the tape for problems. • If the punched hole is faulty or fluffy, change the tape. • If the tape reader is faulty, change the tape reader.
		• In the memory or edit mode operation Check the machining program storage area.	If the JANCD-JP01 board or an expansion board (JANCD-JMM01) is faulty, change the faulty board.
0011	TV error	• In the tape mode operation Check the tape if TV check is allowed. (The number of characters in a block must be even, including the EOB code.)	If the tape for which TV check is not allowed is used, change the setting for the parameters to turn OFF the TV check function. pm0004 D1 = 0 pm0006 D1 = 0 Or correct the tape so that the TV check is allowed.

(2) Alarm Nos.: 0016, 0017, 0018, 9016, 9017, 9018 (RS-232C Error)

Table 9.3 Countermeasures – Alarm Nos.: 0016, 0017, 0018, 9016, 9017, 9018 (RS-232C Error)

Alarm No.	Cause	Check Item	Countermeasures
0016 9016	Transmission error	Check if the RS-232C transmission error (high noise level) occurs.	Check the grounding of cables.
0017 9017	Overrun	Check if more than 10 characters have been read after the output of the RS-232C interface stop code.	
0018 9018	Line selection	Check the RS-232C interface line selection for error.	• Check the RS-232C device specifications. • Check the setting for parameters.

Note: Nos. 0016, 0017, and 0018 are for online and Nos. 9016, 9017, and 9018 are for offline.

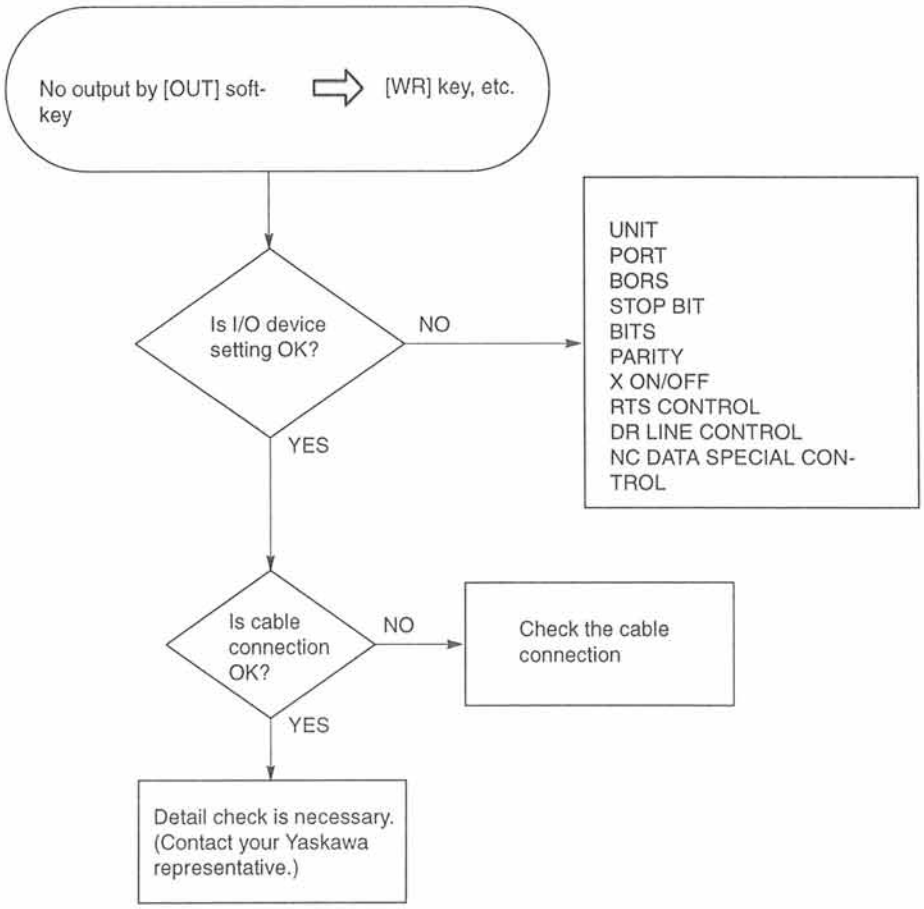


Fig. 9.4 RS-232C Interface Troubleshooting Flowchart

(a) Setting the interface

When the RS-232C interface is used, baud rate, stop bit length, and use of control code must be set in the folloowing procedure.

① Press the [MAINT] process key on the NC operation panel.

② Press the [IN/OUT] (f3) job soft-key.

③ Press the [RS232C] (f5) function soft-key to select the I/O device setting function.

④ Set the necessary RS-232C communication parameters.

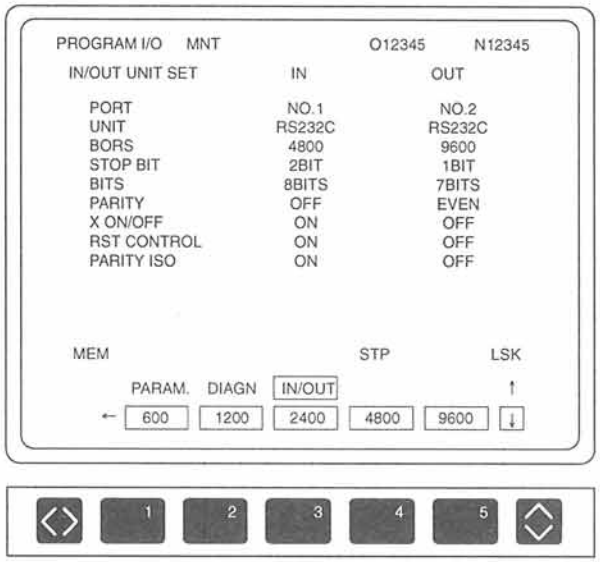


Fig. 9.5 Setting for the Serial Interface

(b) Setting for the serial interface

For the serial interface, setting is possible for the following parameters.

Table 9.4 Serial Interface Setting

Menu Item	Input	Output
UNIT (device)	YE tape reader	YE tape puncher
	General-purpose RS-232C	General-purpose RS-232C
PORT	NO. 1	NO. 2
	NO. 1	NO. 2
BORS (baud rate)	75	75
	150	150
	300	300
	600	600
	1200	1200
	2400	2400
	4800	4800
	9600	9600
STOP BIT	1 bit	1 bit
	2 bits	2 bits
BITS (bit length)	7 bits	7 bits
	8 bits	8 bits
PARITY (parity scheme)	Even parity	Even parity
	Odd parity	Odd parity
	None	None
X ON/OFF (control code)	Supported	Supported
	None	None
RTS CONTROL	Supported	Supported
	None	None
PARITY ISO	Supported	Supported
	None	None

Note: Although two RS-232C ports are provided, these two ports cannot be used at the same time. For these two ports, setting can be made independently from each other.

(c) Selecting the input/output port

When changing the port to be used, follow the procedure indicated below.

① Move the cursor to the required port number.

② Press the FUNCTION SELECT key.

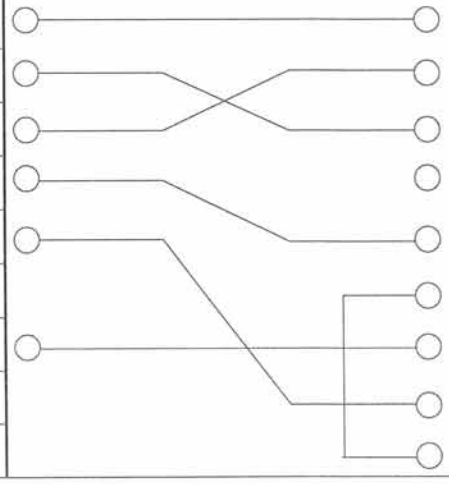
③ Press the soft-key corresponding to the item to be set, and the data are written to the cursor position.

Tables 9.5 and 9.6 show the RS-232C voltage level and the interface connection cable, respectively.

Table 9.5 RS-232C Voltage Level

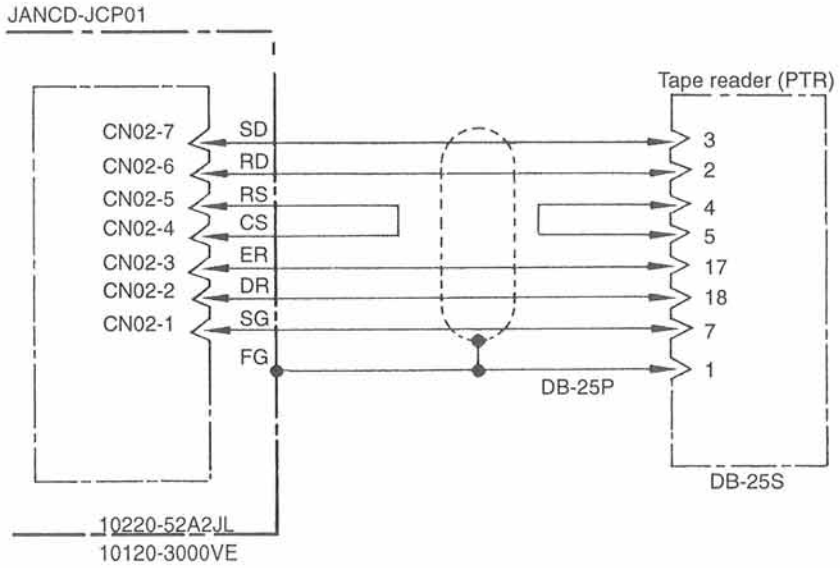
	V0 < –3V	V0 < +3V
Function	OFF	ON
Signal Status	Mark	Space
Logic	1	0

Table 9.6 RS-232C Interface Connection Cable (A)

NC Side (DB-9P)			Connection	Device Side
Symbol	Signal Name	Pin No.		Symbol
FG	Frame grounding	1		FG
SD	Send data	2		SD
RD	Receive data	3		RD
RS	Request to send	4		RS
CS	Clear to send	5		CS
DR	Data set ready	6		DR
SG	Signal grounding	7		SG
ER	Data terminal ready	9		$\overline{\text{IO BUSY}}$
				ER

(d) Example of port connection

An example of connection at RS-232C port is indicated below. Fig. 9.6 shows the connection of standard RS-232C tape reader.



Note: Cable length between the tape reader and the main board (JANCD-JCP01) must be within 3 m. If a cable longer than 3 m must be used, contact your Yaskawa representative.

Fig. 9.6 Connection of No. 1 RS-232C Port

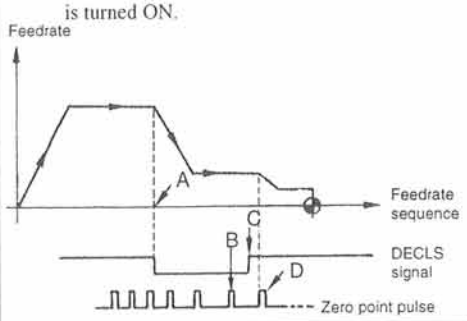
(3) Alarm No.: 1099 (High Temperature)

Table 9.7 Countermeasures – Alarm No.: 1099 (High Temperature)

Cause	Check Item	Countermeasures
Ambient temperature of the NC rack exceeded the specified value* due to the failure of cooling fan. *: 70°C ± 3°C when measured above CPS-18.	• Open the NC unit door to check if the cooling fan is operating correctly. • Make sure that air is blowing out through the ventilation port of the cooling duct. • Make sure that the ventilation port of the cooling duct is not blocked.	• If the fan is faulty, it is necessary to change it. Contact your Yaskawa representative. • If the cooling duct is blocked, remove interfering object and start the cooling fan.
Internal temperature of the power supply unit is high.	Allow the power supply unit to cool by turning OFF the power with the NC unit door opened. If the alarm occurs even after the power supply unit has been cooled for 30 minutes, the power supply unit will be faulty.	It is necessary to change the power supply unit. Contact your Yaskawa representative.
Ambient temperature of the NC unit is high*. *: Allowable temperature range for operation is 0 to 40°C.	• Measure ambient temperature. • If the NC unit is subject to direct sunlight, the NC unit temperature will exceed the allowable limit.	This is not the failure of the NC unit. Remove the cause.

(4) Alarm Nos.: 2061 to 2068 (Reference Point Return Area Error)

Table 9.8 Troubleshooting – Alarm Nos.: 2061 to 2068 (Reference Point Return Area Error)

Cause	Check Item	Countermeasures
The reference point return start point is at the zero point side of the deceleration limit switch.	Deceleration limit switch (DECLS) #3073 D0 (1st axis) #3073 D1 (2nd axis) #3073 D2 (3rd axis) #3073 D3 (4th axis) #3073 D4 (5th axis) Execute reference point return again while observing the I/O signal monitor screen. If reference point return is started from a point located at the reference point side of DECLS (point C) as shown below, an alarm occurs. Note: This error check is not made before the execution of manual reference point return after the power is turned ON. 	Return the axis to a position on the deceleration LS or away from it and, then, execute reference point return once again.
Approach feedrate is too fast.	Compare the setting for the approach feedrate parameter with the parameter list.	Change the setting for parameters pm2521 to pm2525 to an appropriate value.

(5) Alarm Nos.: 2071 to 2078, 2081 to 2088 (Reference Point Return Position Error)

Table 9.9 Troubleshooting – Alarm Nos.: 2071 to 2078, 2081 to 2088 (Reference Point Return Position Error)

Cause	Check Item	Countermeasures
Alarm in manual reference point return operation	Check if the error occurs every time.	Contact machine tool builder or your Yaskawa representative.
Alarm in automatic referemce point return operation	G28: Check if the alarm occurs every time.	Contact machine tool builder or your Yaskawa representative.
	G27: Check the point specified in the program if it agrees with the zero point.	Review the program.

(6) Alarm Nos.: 2101 to 2108 (P-SET Error)

The P-SET alarm occurs if the error between the position specified in the program and the actual machine position is larger than the value set for parameters pm1321 (1st axis) to pm1325 (5th axis) in the following modes of operation.

At the completion of positioning in G00, G27, G28, G29, G30, etc., error detect ON (I/O monitor parameter #3004 D4 = 1), and G04 (dwell).

If error pulses have been accumulated, check the number of accumulated pulses on the error pulse display screen before contacting your Yaskawa representative.

(7) Alarm No.: 3000 (Servo Power Not Ready)

Table 9.10 Troubleshooting – Alarm No.: 3000 (Servo Power Not Ready)

Cause	Check Item	Countermeasures
Secondary power supply is not applied.	If the NC RESET switch, etc. is depressed after depressing the POWER ON button once, or after clearing the emergency stop or alarm state, the alarm message is displayed. This does not indicate the occurrence of alarm.	Press the POWER ON button again.
With the secondary power ON I/O input specification, the input is not turned ON. (For the automatic servo power ON)	Check the following on the I/O monitor screen: #3005 D0 = 1 (SVON) #3503 D0 = 1 (SVONS)	Contact your Yaskawa representative.
Emergency stop signal stays ON.	Check if alarm No. 3002 is displayed (#3503 D4 = 1) on the screen.	Reset the emergency stop input signal.
The secondary power ON signal is turned OFF due to some other alarm.	Check the alarm indication for other alarms.	Take appropriate measures by referring to the alarm code.

(8) Alarm No.: 3001 (Control Not Ready)

The NC executes self-diagnose after power ON. If positioning error checked during this self-diagnosis exceeds the values set for parameters pm1321 (1st axis) to pm1325 (5th axis), this alarm occurs.

Table 9.11 Troubleshooting – Alarm No.: 3001 (Control Not Ready)

Cause	Check Item	Countermeasures
Machine (axes) have moved.	Select the error pulse display screen from the present position display screen in the common process and check the error pulse value.	The machine tool has a problem. Contact the machine tool builder.
PG signal remains output.		PG or AC servo must be changed. Contact your Yaskawa representative.

(9) Alarm Nos.: 3041 to 3048 (Excessive Follow-up Error)

If the follow-up error between the command values and the actual position values exceeds 120% of the error in rapid traverse (100%) operation, this alarm occurs. Check the values set for parameters pm1671 to pm1675 and pm1681 to pm1685 and contact the machine tool builder or your Yaskawa representative.

(10) Alarm No.: 3051 (Excessive Follow-up Error: Spindle)

If the follow-up error between the command value and the actual position value exceeds the value set for parameter pm1351, this alarm occurs. Check the value set for parameter pm1351 and contact the machine tool builder or your Yaskawa representative.

(11) Alarm Nos.: 3061 to 3068 (Overload)

Table 9.12 Troubleshooting – Alarm Nos.: 3061 to 3068 (Overload)

Cause	Check Item	Countermeasures
Cutting conditions	Check if the alarm has occurred during machining.	Turn OFF the power and allow the servomotors to cool. After that change the machining conditions to lighter conditions and restart the operation.
Guideways are not lubricated properly causing heavy axis movements.	Check the guideways if they are lubricated properly.	Contact the machine tool builder.

Note: In other cases, contact your Yaskawa representative.

(12)Alarm Nos.: 3081 to 3088 (Broken PG Cable)

The A and B phase signal cables are checked for breakage.

Table 9.13 Troubleshooting – Alarm Nos.: 3081 to 3088 (Broken PG Cable)

Cause	Check Item	Countermeasures
Signal cables between the NC and the AC servo drive unit are broken or loose.	Make sure that the cable connectors are plugged into the connectors securely.	If they are loose or disconnected, connect them correctly.
Faulty PG cable breakage detection circuit	Check if the alarm occurs in the first depressing of POWER ON button even if the cables are connected correctly.	Contact your Yaskawa representative.
Error in motor type parameter setting	Check the motor type setting parameters (pm1061 to pm1065) if "0" has been set.	Correct the setting for the motor type setting parameters (pm1061 to pm1065).

(13)Alarm No. 3091 (Broken Spindle PG Cable)

The A, B, and C phase signal cables are checked for breakage.

Table 9.14 Troubleshooting – Alarm No.: 3091 (Broken Spindle PG Cable)

Cause	Check Item	Countermeasures
Signal cables between the NC and the AC servo drive unit are broken or loose.	Make sure that the cable connectors are plugged into the connectors securely.	If they are loose or disconnected, connect them correctly.
Faulty PG cable breakage detection circuit	Check if the alarm occurs in the first pressing of POWER ON button even if the cables are connected correctly.	Contact your Yaskawa representative.
Faulty PG	If an alarm occurs during low speed operation, the PG could be faulty.	Contact your Yaskawa representative.

(14)Alarm Nos.: 3121 to 3125 (Excessive Speed)

This alarm is detected if the motor speed exceeds 1.2 times the maximum motor speed. Contact your Yaskawa representative.

(15)Alarm Nos.: 3161 to 3165 (Absolute Error)

Malfunction of the absolute encoder is detected. Contact your Yaskawa representative after checking the following:

- Whether the alarm occurs immediately after the control power is turned ON.
- Whether the alarm is cleared when the power is turned OFF and then turned ON again.
- Whether the battery alarm occurs at the same time.

(16)Alarm Nos.: 3181 to 3185 (Position Error)

Malfunction of the PG pulse counter in the absolute encoder is detected. Contact your Yaskawa representative after checking the following:

- Whether the alarm occurs immediately after the control power is turned ON.
- Whether the alarm occurs frequently during operation.

(17)Alarm Nos.: 3201 to 3205 (Servo Drive Unit Communication Error)

Communication error between the NC and the AC servo drive unit is detected. Contact your Yaskawa representative.

(18)Alarm Nos.: 3301 to 3305 (Over current)

Contact your Yaskawa representative after checking the following:

- Whether the alarm occurs immediately after the control power is turned ON.
- Whether the alarm occurs after turning ON the main power.

(19)Alarm No.: 3311 to 3315 (MCCB Trip)

Contact your Yaskawa representative after checking the following:

- Whether the alarm occurs immediately after the control power is turned ON.
- Whether the alarm occurs after turning ON the main power.

(20)Alarm No.: 3321 to 3325 (Regeneration Error)

Contact your Yaskawa representative after checking the following:

- Whether the alarm occurs immediately after the control power is turned ON.
- Whether the alarm occurs after turning ON the main power.

(21)Alarm No.: 3331 to 3335 (Over Voltage)

Contact your Yaskawa representative after checking the following:

- Whether the alarm occurs at the start of motor rotation.
- Whether the alarm occurs during deceleration.

(22)Alarm No.: 3341 to 3345 (Under Voltage)

Contact your Yaskawa representative after checking the following:

- Whether the alarm occurs after turning ON the main power.

(23)Alarm No.: 3351 to 3355 (Heat Sink Overheat)

Table 9.15 Troubleshooting – Alarm No.: 3351 to 3355 (Heat Sink Overheat)

Cause	Check Item	Countermeasures
Faulty control board	Check whether the alarm occurs immediately after the control power is turned ON.	Contact your Yaskawa representative.
Fan stop	• Check whether the alarm occurs during operation (alarm reoccurs if the control power is turned ON after turning it OFF once, or the operation restarts when the NC is reset after several minutes.) • Check whether the fan is rotating.	Contact your Yaskawa representative.

(24)Alarm No.: 3361 to 3365 (Wire Break in Current Instruction Cable)

Contact your Yaskawa representative after checking the following:

- Whether the alarm occurs immediately after the control power is turned ON.
- Whether an alarm other than current instruction cable breakage occurs.

(25) Alarm No.: 3371 to 3375 (Open Phase Detection)

Contact your Yaskawa representative after checking the following:

- Whether the alarm occurs immediately after the control power is turned ON.
- Whether the alarm occurs after turning ON the main power.

9.1.6 Troubleshooting (2)

For the system equipped with the drive unit compatible with YENET1200, check is made by both the drive unit itself and the NC unit. If a fault is detected, the drive unit notifies the NC unit the alarm information in two systems.

The drive unit first gives the NC unit the information on the occurrence of an alarm (alarm No. 3101 to No. 3105 and No. 3201) and then the content of the alarm. The NC unit displays alarm No. 3100 when it receives the alarm information from drive units.

Therefore, three alarms usually occur if an error is detected with the drive unit. If fuse blown occurs with the X-axis servo unit, alarm No. 3100, No. 3101, and No. 3021 occur.

(1) Alarm Nos.: 3021 to 3025 (Fuse Blown)

The main circuit of the servo unit will be faulty.

The servo unit detects the error.

Contact your Yaskawa representative.

(2) Alarm Nos.: 3041 to 3045, and 3051 (Excessive Follow-up Error)

This alarm occurs if the follow-up error exceeds 120% of the error in rapid traverse (100%) operation.

The servo unit detects the alarm.

Improper gain adjustment is one of the reasons.

Contact your Yaskawa representative.

(3) Alarm Nos.: 3061 to 3065 (Overload)

This alarm occurs if the load exceeds the rated torque considerably.

The servo unit detects the error.

Review the cutting conditions. Contact your Yaskawa representative after checking whether the alarm occurs simply after turning the control power ON.

(4) Alarm Nos.: 3081 to 3085 and 3091 (Broken PG Cable)

The encoder signal cable or the encoder itself will be faulty.

The servo unit or the inverter detects the error.

Contact your Yaskawa representative.

(5) Alarm Nos.: 3101 to 3105 (Servo Alarm)

This alarm occurs when the NC unit detects the alarm signal output from the servo unit.

Check the contents of the alarm by displaying the servo alarm display screen (press [F2] of the alarm job in the common process.).

(6) Alarm Nos.: 3111 to 3115 (Servo Communication Alarm)

Probable causes of this alarm are broken YENET1200 communication cable, loose cable connection, and communication processing error.

The servo unit detects the alarm.

Contact your Yaskawa representative after making sure that the cable is securely connected.

(7) Alarm Nos.: 3121 to 3125 (Excessive Speed)

This alarm occurs if the motor speed exceeds 4950 r/min or the value set for the parameter.

The servo unit detects the alarm.

It is necessary to check whether the connection to the encoder is correct.

Contact your Yaskawa representative.

(8) Alarm Nos.: 3141 to 3145 (Overrun Prevention)

The encoder will be faulty.

The servo unit detects the alarm.

Contact your Yaskawa representative.

(9) Alarm Nos.: 3151 to 3155 (Phase Detection Error)

The encoder signal cable or the encoder itself will be faulty.

The servo unit detects the error.

Contact your Yaskawa representative.

(10) Alarm Nos.: 3161 to 3165 (Absolute Error)

This alarm occurs if the absolute value data cannot be received correctly in one to two seconds after turning ON the power to the encoder.

The servo unit detects the error.

The encoder or the servo unit will be faulty.

Contact your Yaskawa representative.

(11) Alarm Nos.: 3181 to 3185 (Absolute Position Error)

The number of feedback pulses is checked every turn of the encoder and this alarm occurs if there is an error in the counted number of pulses.

The servo unit detects the alarm.

The encoder or the servo unit will be faulty, or malfunction could have occurred due to noises.

Contact your Yaskawa representative.

(12) Alarm No.: 3201 (Inverter Alarm)

This alarm occurs when the NC unit detects the alarm signal output from the inverter.

Check the contents of the alarm by displaying the servo alarm display screen (press [F2] of the alarm job in the common process.).

(13) Alarm Nos.: 3281 to 3285, 3291 (YENET1200 command time-out)

This alarm occurs when the YENET1200 communication lines fail to get ready.

The NC units detects the alarm.

The servo unit or the inverter unit will be faulty.

Contact your Yaskawa representative.

(14)Alarm Nos.: 3301 to 3305 (Over Current)

The servo unit detects the alarm.

The servo unit will be faulty if the alarm occurs before the operation is started after turning the power ON.

If the alarm occurs during operation, ground fault of the motor will be the cause.

Contact your Yaskawa representative.

(15)Alarm Nos.: 3331 to 3335 (Over Voltage)

The servo unit detects the alarm.

If the alarm occurs when the power is turned ON to the spindle, the input voltage will be too high.

If the alarm occurs during motor operation, it is necessary to review the operation conditions; lower motor speed, for example.

If the alarm occurs when the servo control power is turned ON, the servo unit will be faulty.

Contact your Yaskawa representative.

(16)Alarm Nos.: 3351 to 3355 (Heat Sink Overheat)

This alarm occurs when the heat sink temperature is abnormally high.

The servo unit detects the alarm.

If this alarm occurs, turn OFF the power and allow the heat sink to cool. After that turn the power ON again.

If the alarm occurs immediately after turning the power ON, the servo unit will be faulty.

Contact your Yaskawa representative.

(17)Alarm Nos.: 3381 to 3385, 3391 (YENET1200 Communication Error)

This is an communication error between the NC unit and the servo unit or between the NC unit and the inverter unit; the NC unit detects the alarm when no answer is returned for the command output by the NC unit.

The servo unit or the inverter unit will be faulty, or the cable will not be connected securely.

Contact your Yaskawa representative.

(18)Alarm Nos.: 3401 to 3405 (Converter Alarm)

This alarm occurs due to the following reasons: blown fuse, regeneration alarm, open phase, or faulty board.

The servo unit detects the alarm.

Contact your Yaskawa representative.

(19)Alarm Nos.: 3411 to 3415 (Servo Unit Alarm)

This alarm occurs due to the following reasons: destroyed parameter setting, faulty current detector, encoder's battery alarm, memory error, or sensor error.

The servo unit detects the alarm.

The servo unit or the motor will be faulty.

Contact your Yaskawa representative.

(20)Alarm No.: 3421 (Inverter Unit Alarm)

This alarm occurs when the inverter detects an alarm other than converter alarm, broken PG cable, excessive follow-up error, and communication error.

Contact your Yaskawa representative.

(21)Alarm Nos.: 3425, 3431 to 3435 (YENET1200 Watchdog Error)

This alarm occurs when the NC unit detects the watchdog error with the inverter unit or the servo unit.

The inverter unit or the servo unit will be faulty.

Contact your Yaskawa representative.

(22)Alarm Nos.: 3441 to 3445 (Ground Fault)

This alarm occurs when the servo unit detects the alarm when the power is turned ON.

Motor insulation is faulty.

Contact your Yaskawa representative.

(23)Alarm No.: 3451 and 3452 (Follow-up Error)

This alarm occurs when the follow-up error exceeds the value set for the servo unit parameter.

The servo unit detects the alarm.

If this alarm occurs during axis feed over a long distance, it is necessary to either lower the command speed or increase the gain.

If the motor does not rotate, the servo unit will be faulty.

Contact your Yaskawa representative.

9.1.7 Alarms Not Indicated by Alarm Numbers

Troubles caused by abnormal functioning of the NC, but not indicated by an alarm number, and required countermeasures are indicated below. If the troubles cannot be cleared by following the procedure indicated below, contact the machine tool builder or your Yaskawa representative.

(1) Power Cannot be Turned ON

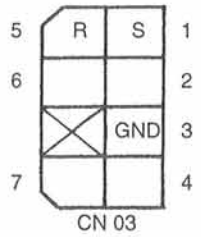
The checking method differs between J300M and J100M.

(a) Power is not supplied to the NC

J300

- Check the SOURCE LED (green) of the DC power supply (CPS-18FB) in the CPU module if it is lit.
- Check the input AC power across CN03-1 and CN03-5 terminals of the DC power supply (CPS-18FB).

  Specification: 200/220/230 VAC –15 to +10%, 50/60 Hz ±2 Hz



J100

- Check the LED(green) of the IN +24V on the front panel of the CPU rack if it is lit.

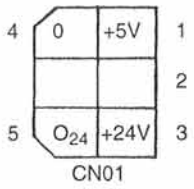
J300

(b) Alarm LED on the DC power supply (CPS-18FB) is lit

Table 9.16 Alarm LEDs on DC power supply (CPS-18FB)

	Signal Name	Display	LED Color	Function and Cause
Normal	Power supply conditions	SOURCE	Green	Lit: Power is input. Not lit: Power is not input.
	Power ON status	POWER ON	Green	Lit: DC power is output.
Error indication	±5 V error	±5 V	Red	Lit: +5 V overvoltage or overcurrent
	+24 V error	+24 V	Red	Lit: +24 V overvoltage or overcurrent
	Overheat	OHT	Red	Lit: Overheat of components in the NC unit

Check the DC output voltage at CN01 terminals of the DC power supply (CPS-18FB).



+5 V: Across CN01-1 and CN01-4
+24 V: Across CN01-3 and CN01-5

(2) No Display is Given on the CRT

If nothing is displayed on the CRT, the CRT itself might be faulty, or the display circuit or connection cables might be faulty. When nothing is displayed even if the power can be turned ON to the NC, check the cable connection to the operation panel and also the connectors.

(3) Handle Mode Operation is Impossible

(a) Handle mode signal is not input

- Check the bit status of I/O monitor #3000.

  D2 = 1
  Other bits (D0, D1, D3 to D7) = 0

- Check the mode display given in the normal display area on the screen.

(b) Axis selection signal is not input

- I/O monitor
  Check whether one of the following bits is ON.

#3070	
$D_0 = 1$	1st axis
$D_1 = 1$	2nd axis
$D_2 = 1$	3rd axis
$D_3 = 1$	4th axis
$D_4 = 1$	5th axis

- No. 2 handle
  Check whether one of the following bits is ON.

#3080	
$D_0 = 1$	1st axis
$D_1 = 1$	2nd axis
$D_2 = 1$	3rd axis
$D_3 = 1$	4th axis
$D_4 = 1$	5th axis

- No. 3 handle
  Check whether one of the following bits is ON.

#3081	
$D_0 = 1$	1st axis
$D_1 = 1$	2nd axis
$D_2 = 1$	3rd axis
$D_3 = 1$	4th axis
$D_4 = 1$	5th axis

(c) There is no input to handle PG

- Check the input voltage (5 V) at the handle PG terminal.
- Check the handle PG signal cable connector if it is securely plugged in.

(d) Handle PG is faulty

Check the following (counter monitor) on the I/O screen if the values change according to the operation of the pulse handle.

#3037 (No. 1 handle)
#3038 (No. 2 handle)
#3039 (No. 3 handle)

(e) Other related parameters

Check the setting for the following parameters.

Maximum feedrate for handle operation	Parameter pm2860 (linear axis) Parameter pm2861 (rotary axis)
Acceleration/deceleration time constant for handle operation	Parameters pm2561 to pm2565
Pulse multiplication ratio of "× 100" is set (pm2003 D7 = 1)	Parameter pm2549

(4) Jog Operation is Impossible

(a) Jog mode signal is not input

Check the bit status of I/O monitor #3000.

D1 = 1

Other bits (D0, D2 to D7) = 0

(b) Axis move direction signal is not input.

Check the bit status of I/O monitor #3071 and #3072.

#3071		#3072	
D0	+1st axis	D0	–1st axis
D1	+2nd axis	D1	–2nd axis
D2	+3rd axis	D2	–3rd axis
D3	+4th axis	D3	–4th axis
D4	+5th axis	D4	–5th axis

(c) Jog feedrate signal is not input, or job feedrate setting parameter is incorrect

Check the bit status on the I/O monitor screen whether it changes according to the operation of the JOG FEEDRATE switch, and also check if the setting for the parameters is correct.

Table 9.17 Jog Feedrate

Step	I/O Monitor #3002					Jog Feedrate
	D4	D3	D2	D1	D0	
	JV16	JV8	JV4	JV2	JV1	
1	0	0	0	0	0	Set for parameter pm2400
2	0	0	0	0	1	Set for parameter pm2401
3	0	0	0	1	0	Set for parameter pm2402
4	0	0	0	1	1	Set for parameter pm2403
5	0	0	1	0	0	Set for parameter pm2404
6	0	0	1	0	1	Set for parameter pm2405
7	0	0	1	1	0	Set for parameter pm2406
8	0	0	1	1	1	Set for parameter pm2407
9	0	1	0	0	0	Set for parameter pm2408
10	0	1	0	0	1	Set for parameter pm2409
11	0	1	0	1	0	Set for parameter pm2410
12	0	1	0	1	1	Set for parameter pm2411
13	0	1	1	0	0	Set for parameter pm2412
14	0	1	1	0	1	Set for parameter pm2413
15	0	1	1	1	0	Set for parameter pm2414
16	0	1	1	1	1	Set for parameter pm2415
17	1	0	0	0	0	Set for parameter pm2416
18	1	0	0	0	1	Set for parameter pm2417
19	1	0	0	1	0	Set for parameter pm2418
20	1	0	0	1	1	Set for parameter pm2419
21	1	0	1	0	0	Set for parameter pm2420
22	1	0	1	0	1	Set for parameter pm2421
23	1	0	1	1	0	Set for parameter pm2422
24	1	0	1	1	1	Set for parameter pm2423
25	1	1	0	0	0	Set for parameter pm2424
26	1	1	0	0	1	Set for parameter pm2425
27	1	1	0	1	0	Set for parameter pm2426
28	1	1	0	1	1	Set for parameter pm2427
29	1	1	1	0	0	Set for parameter pm2428
30	1	1	1	0	1	Set for parameter pm2429
31	1	1	1	1	0	Set for parameter pm2430
32	1	1	1	1	1	Set for parameter pm2431

(d) Axis interlock is input

Check the bit status on the I/O monitor screen. If "0", the corresponding axis cannot move.

#3078	
$D_0 = 1$	1st axis
$D_1 = 1$	2nd axis
$D_2 = 1$	3rd axis
$D_3 = 1$	4th axis
$D_4 = 1$	5th axis

(e) Machine lock is ON

- Even when the machine lock function is ON, position display changes. Check the input of the machine lock switch (I/O monitor, #3006 D5 = 0). If "1", the axes do not move.
- Check the internal toggle switch (parameter pm0000 D1 = 0). If "1", the axes do not move.

(5) Manual Rapid Traverse is Impossible

(a) The rapid mode is not selected

Check the bit status of I/O monitor #3000.

D0 = 1
Other bits (D1 to D7) = 0

(b) Axis move direction signal is not input.

Check the bit status of I/O monitor #3071 and #3072.

#3071		#3072	
D0	+1st axis	D0	–1st axis
D1	+2nd axis	D1	–2nd axis
D2	+3rd axis	D2	–3rd axis
D3	+4th axis	D3	–4th axis
D4	+5th axis	D4	–5th axis

(c) Rapid traverse override is not input

- Check the bit status on the I/O monitor screen whether it changes according to the operation of the RAPID TRAVERSE RATE OVERRIDE switch, and also check if the setting for the parameters is correct.

Table 9.18 Input Status and Rapid Traverse Rate

Input Status of #3003		Rapid Traverse Rate				
ROV2	ROV1	1st Axis	2nd Axis	3rd axis	4th axis	5th axis
1	1	Set for pm2801	Set for pm2802	Set for pm2803	Set for pm2804	Set for pm2805
1	0	[Setting for pm2801] × 1/2	[Setting for pm2802] × 1/2	[Setting for pm2803] × 1/2	[Setting for pm2804] × 1/2	[Setting for pm2805] × 1/2
0	1	[Setting for pm2801] × 1/4	[Setting for pm2802] × 1/4	[Setting for pm2803] × 1/4	[Setting for pm2804] × 1/4	[Setting for pm2805] × 1/4
0	0	F_0 (set for pm2447)				

- For the 6-step specification (pm2000 D3 = 1), refer to Table 9.19.

Table 9.19

Input Status			Rapid Traverse Rate
ROV4	ROV2	ROV1	1st to 5th Axis
1	0	1	F_2 (set for pm2449)
1	0	0	F_1 (set for pm2448)
0	1	1	100%
0	1	0	50%
0	0	1	25%
0	0	0	F_0 (set for pm2447)

(d) Parameter setting is incorrect

Refer to Tables 9.18 and 9.19.

(e) Axis interlock is input

Check the bit status on the I/O monitor screen. If "0", the corresponding axis cannot move.

#3078	
$D_0 = 1$	1st axis
$D_1 = 1$	2nd axis
$D_2 = 1$	3rd axis
$D_3 = 1$	4th axis
$D_4 = 1$	5th axis

(f) Machine lock is ON

- Even when the machine lock function is ON, position display changes. Check the input of the machine lock switch (I/O monitor, 3006 D5 = 0). If "1", the axes do not move.
- Check the internal toggle switch (parameter pm0000 D1 = 0). If "1", the axes do not move.

(6) Manual Reference Point Return is Incorrect

The following explanation is given assuming that jog and rapid traverse are executed correctly.

(a) Manual reference point return signal is not input

Check the I/O monitor #3007 D0. The status must be "1".

Otherwise, the axis continues moving to OT at the same feedrate even if it reaches point A. See Fig. 9.7.

(b) Jog or rapid traverse mode is not selected

I/O monitor #3000 D0 or D1 must be "1".

(c) Deceleration limit switch signal is not input.

Check I/O monitor #3073 D0 to D4 while moving an axis at a slow feedrate such as in jog operation. Make sure feedrate changes as shown in Fig. 9.7.

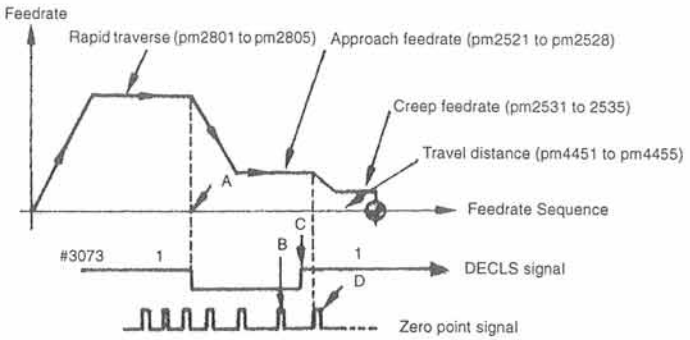


Fig. 9.7 Reference Point Return Control I/O Signals

(d) Parameter setting is incorrect.

Check the setting for the related parameters against the parameter sheet by referring to Fig. 9.7.

(e) Position of the dog for the deceleration limit switch is incorrect.

If the dog position is incorrect, the zero point could be shifted by one turn of the motor.

(f) Others (loose coupling or dog)

If another adjustment is incorrect, zero point could be shifted at random.

(7) Cycle Start is Impossible

(a) Cycle start signal is not input, or feed hold signal is open.

Check the I/O monitor #3003 D0 whether it goes "1" when the cycle start switch is pressed. In this case, the feed hold signal must be open; this can be confirmed by I/O monitor #3003 D1 = 1.

(b) Start interlock signal is input.

If I/O monitor #3004 D2 = 1, cycle start is impossible.

(c) The NC is in the reset status.

Normal status: I/O monitor #3500 D1 = 0
Also check the external reset signal status.
Normal status: I/O monitor #3004 D1 = 0

(8) G01, G02, or G03 Mode Operation is Impossible

(a) The spindle is in the speed agreed status.

Check whether parameter pm1000 D7 = 1.

If it is "1", check whether the spindle is in the speed agreed status by I/O monitor #3111.

(b) FEEDRATE OVERRIDE switch setting is 0%.

Check the setting for I/O monitor #3111 D0 to D4 whether the setting is correct.

(c) In the dry run mode, setting for jog feedrate is incorrect.

Table 9.20

I/O Monitor #3040					Feedrate Override (Automatic Operation)
D4	D3	D2	D1	D0	
OV16	OV8	OV4	OV2	OV1	
0	0	0	0	0	0%
0	0	0	0	1	10%
0	0	0	1	0	20%
0	0	0	1	1	30%
0	0	1	0	0	40%
0	0	1	0	1	50%
0	0	1	1	0	60%
0	0	1	1	1	70%
0	1	0	0	0	80%
0	1	0	0	1	90%
0	1	0	1	0	100%
0	1	0	1	1	110%
0	1	1	0	0	120%
0	1	1	0	1	130%
0	1	1	1	0	140%
0	1	1	1	1	150%
1	0	0	0	0	160%
1	0	0	0	1	170%
1	0	0	1	0	180%
1	0	0	1	1	190%
1	0	1	0	0	200%
1	0	1	0	1	220%
1	0	1	1	0	240%
1	0	1	1	1	260%
1	1	0	0	0	280%
1	1	0	0	1	300%
1	1	0	1	0	340%
1	1	0	1	1	380%
1	1	1	0	0	420%
1	1	1	0	1	460%
1	1	1	1	0	500%
1	1	1	1	1	540%

(d) Start interlock signal is input.

If I/O monitor #3004 D2 = 1, start interlock is ON.
Normal: #3004 D2 = 0

(e) Axis interlock is input.

Check I/O monitor #3087 D0 to D4.
Normal: #3078 D0 to D4 = 1

(f) Setting of the servo system is incorrect.

Check whether the axes can be moved manually.

(9) Spindle Rotation is Impossible

(a) Error in a program (no S command, or no spindle start M code)

Check the contents of the program on the [RUN] screen.

(b) Start signal has not been input.

Check the output signals (#1100s) on the I/O monitor screen.

(c) Spindle rotation command has not been output.

Check #3654 to #3656 on the I/O monitor screen.

(d) The spindle drive is in the alarm status.

Check the alarm indication of the spindle drive.

(e) Combination of GRO and SOR is incorrect, or "0" is input for parameter pm1412 or pm1413.

Check I/O monitor #3110 by referring to Table 9.21.

Table 9.21 Input of GRO and SOR and S4-digit Command Analog Voltage

I/O Monitor #3110		S4-digit Command Analog Voltage
D7	D6	
GRO Input	SOR Input	
0	0	Voltage corresponding to the spindle speed specified in the NC program.
0	1	Voltage corresponding to parameter pm1412
1	0	Voltage corresponding to parameter pm1413
1	1	0 V

Note: If "1" is set for parameter pm1000 D5, SSTP input is reversed.

(f) Setting for the parameters related to spindle operation is incorrect.

Check the setting for the related parameters.

#3110 D0	GR1
#3110 D1	GR2
#3110 D2	GR3
#3110 D3	GR4

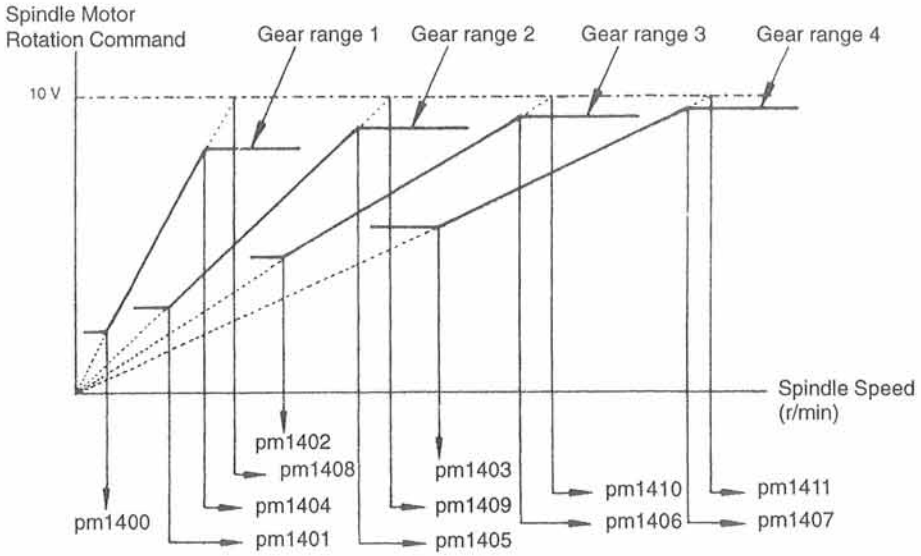


Fig. 9.8

(10) FIN Wait Status after Execution of Spindle Related Commands

If sequence processing is interrupted waiting for a signal, the NC enters the FIN wait status.

(a) Spindle speed agree signal is not input.

If the NC enters this status after the execution of such as "M03 S100" commands, check whether #3111 D6 = 1 (waiting for FIN).

Check the I/O signals of #1000s at the I/O section by referring to the ladder chart supplied by the machine tool builder.

(b) Spindle zero speed signal is not input.

If the NC enters this status after the execution of "M05" command, check the I/O signals of #1000s at the I/O section by referring to the ladder chart supplied by the machine tool builder.

(c) Others

If the NC enters this status after the execution of "M19" or "M20" (spindle orientation command), check the I/O signals related with spindle orientation by referring to the ladder chart supplied by the machine tool builder.

(11) Edit Operation is Impossible

(a) The edit lock signal is input.

Check I/O monitor #3007 D2.
Normal: #3007 D2 = 0
If "#3007 D2 = 1", program edit is impossible.

(b) Edit lock is set by the parameter (pm0000 D7).

Set "pm0000 D7 = 0" to cancel the edit lock setting.

(c) Others

The corresponding alarm message is displayed.

OVER MEM CAP !
TOO MANY PROGS !
ALREADY IN !

Delete unnecessary programs and edit the program again.

9

(12) Skip Function (G31) Failure

(a) The skip signal has not been input.

- Check ON/OFF status of the skip signals by checking the I/O monitor #3514 D0 to D2.
- Check the operation of proximity switches, etc.

(b) Parameter setting is incorrect.

- Check the setting for parameter pm2001 D0. If the setting for pm2440 is "0" while "pm2001 D0 = 1", an axis does not move.

pm2001 D0 = 1	Feedrate in the skip feed mode (G31) is the feedrate set for parameter pm2440.
pm2001 D0 = 0	Feedrate in the skip feed mode (G31) is the feedrate specified with an F code.

- Check the setting for parameters pm5011 D0 to D2.

  Set the signal status at the start of the processing when the SKIP signal is input.

Fig. 9.9

  · If "0", processing starts at the point where 24 V falls to 0 V.

  · After changing the setting, be sure to turn OFF the power once and turn it ON again.

- Check the setting for parameters pm5010 D0.

  The setting for this parameter determines ENABLE/DISABLE of the control circuit for the "SKIP" input.

  · Set "1" to use the skip function.

  · After changing the setting for this parameter always turn OFF the power once and then turn it ON again.

(13) Tape Mode Operation is Impossible

(a) Mode selection signal is incorrect.

Check the bit status of I/O monitor #3000.
D4 = 1
Other bits (D0 to D3, D5 to D7) = 0

(b) Setting at the tape reader is incorrect.

Check the setting made at taper reader model 2801 B-2. Refer to the table indicated below.

DIP Switch (DS)						Read-ing Speed	Trans-mis-sion Speed (bps)	Auto/ Self-check	Input Control
PTR Reading Speed		Transmission Speed		Input Control Selec-tion	Self-check				
S1	S2	B1	B2	C/L	STS	char/s			
ON*	OFF	OFF	ON	ON	OFF	270	4800	AUTO	
ON	ON				OFF	300		AUTO	
OFF	OFF				OFF	200		AUTO	
		ON	ON		OFF		9600	AUTO	
		ON	OFF		OFF		2400	AUTO	
		OFF	OFF		OFF		1200	AUTO	
					ON			Self-check	
				ON					Code control
				OFF					Line control

Note: * Standard setting

Arrangement of DIP switches (standard setting)

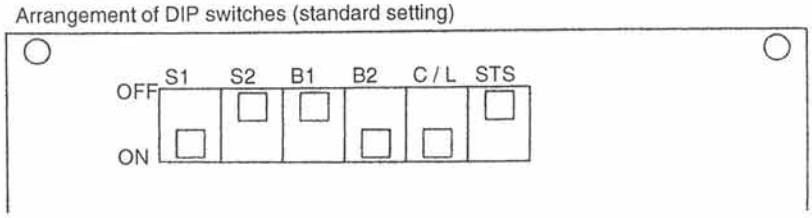


Fig. 9.10 Setting for Tape Reader

(c) Loose contact

Make sure that the cable connectors are securely connected.

(d) Faulty tape reader

- If the tape does not move even when the FEED switch is pressed, change the tape reader.
- If the red LED in the tape reader is not lit (power is not supplied to the taper reader, or tape reader is faulty.), change the tape reader.
- Check the tape holder.

(e) Power supply (EYG30/55GTL) for tape reader is faulty.

- Check if 200 V is input to the power supply.
- Check if 5 V and 24 V are correctly output.

APPENDIX 1

A

LIST OF NC INPUT/OUTPUT SIGNALS

Appendix 1 describes the diagnosis numbers of the input/output signals between the NC and the PLC.

1.1 INPUT SIGNALS (PLC → NC) ..... A1 - 2

1.1.1 Operation Mode Control Signals ..... A1 - 2

1.1.2 Servo Axis Control Signals (X-axis to 5th-axis) ..... A1 - 5

1.1.3 Spindle Control ..... A1 - 7

1.2 OUTPUT SIGNALS (NC → PLC) ..... A1 - 9

1.2.1 Operation Mode Control Signals ..... A1 - 9

1.2.2 Servo Axis Control (X-axis to 5th-axis) .... A1 - 13

1.2.3 Spindle Control ..... A1 - 15

1.2.4 Constants ..... A1 - 17

APPENDIX 1.1 INPUT SIGNALS (PLC → NC)

1.1.1 Operation Mode Control Signals

Appendix Table 1.1 Operation Mode Control Signals

	7	6	5	4	3	2	1	0
#3000	EDT	MEM	MDI	TP	STP	H	JOG	RT
				Operation Mode				
#3002	MP4	MP2	MP1	JV16	JV8	JV4	JV2	JV1
			Manual Pulse Multiply			Jog Feedrate		
#3003		ROV4	ROV2	ROV1			* SP	ST
			Rapid Traverse Override				Stop	Cycle Start
#3004						STLK	ERS	MRD
						Start Interlock	External Reset	Machine Ready
#3005	ERR2	ERR1	ERR0				EXTC	SVON
	Servo OFF	Decel. and Stop	Block Stop				Time Count	External Servo ON
			External Error Detection					
#3006	AFL	MLK		DRN	PRST	DLK	ABS	SBK
	MST Function Lock	Machine Lock		Dry Run	Program Restart	Display Lock	Manual Absolute	Sinble-Block
#3007		F1	RET	TLMI		EDT LK	ZRN2	ZRN
		F1-Digit Select	Tool Length Measurement			Edit Lock	Second Reference Point Return	Reference Point Return
#3008	PLYBAK	EWS				CPRN	HOFS	
	Playback	Ext. Write Signal				Interruption Point Return	Auto Mode Handle Offset	
	Playback							
#3009	SPST	MSKP	MSI					
	Touch Sensor Signal	Manual Skip Mode	Manual Centering Mode					
	Measurment Function							
#3011	FSED CLR	FSED CH	FSED MEM	FSED M	ECLM	EOUT	EVER	EIN
	FS Automatic Edit				External I/O Verify			

Appendix Table 1.1 Operation Mode Control Signals (cont'd)

	7	6	5	4	3	2	1	0
#3012	TLCTN	TLSKP		TLCH			STSEL1	STSEL0
	Tool Life Control			Life Finish Check Request			Ext. Stroke Check	
#3016		GOS2						
		Second S-curve form Decel/Accel						
#3017	DSPP3	DSPP2	DSPP1	DSPP0	DSPJ3	DSPJ2	DSPJ1	DSPJ0
	Ext. Screen Change (Process Designation)				Ext. Screen Change (Job Designation)			
#3018				DSPCHG	DSPF3	DSPF2	DSPF1	DSPF0
				Ext. Screen Change Strobe Signal	Ext. Screen Change (Function Designation)			
#3023	TLTGN7	TLTGN6	TLTGN5	TLTGN4	TLTGN3	TLTGN2	TLTGN1	TLTGN0
	Tool Life Management (Life Expired Check Group No. Designation)							
#3025	TGN7	TGN6	TGN5	TGN4	TGN3	TGN2	TGN1	TGN0
	Tool Life Control Management (Tool Skip Group No.)							
#3030	ED7	ED6	ED5	ED4	ED3	ED2	ED1	ED0
	Ext. Data Input							
#3031	ED15	ED14	ED13	ED12	ED11	ED10	ED9	ED8
	Ext. Data Input							
#3032	ED23	ED22	ED21	ED20	ED19	ED18	ED17	ED16
	Ext. Data Input							
#3033	ED31	ED30	ED29	ED28	ED27	ED26	ED25	ED24
	Ext. Data Input							
#3034	EDCL	EDAS2	EDAS1	EDAS0	EDSD	EDSC	EDSB	EDSA
	Ext. Data Input							
#3036					PINT			
					Program Interruption			

Appendix Table 1.1 Operation Mode Control Signals (cont'd)

	7	6	5	4	3	2	1	0
#3037	1HP7	1HP6	1HP5	1HP4	1HP3	1HP2	1HP1	1HP0
	PG Pulse Input Monitor							
#3038	2HP7	2HP6	2HP5	2HP4	2HP3	2HP2	2HP1	2HP0
	PG Pulse Input Monitor							
#3039	3HP7	3HP6	3HP5	3HP4	3HP3	3HP2	3HP1	3HP0
	PG Pulse Input Monitor							
#3040	OVC	OPT	BDT	OV16	OV8	OV4	OV2	OV1
	Override Cancel	Optional Stop	Block Delete	Feedrate Override				
#3041					FIN	RWDH	RWD	EOP
					MT Function Fin.	High-speed Rewind	Rewind	End of Program
#3042	BDT9	BDT8	BDT7	BDT6	BDT5	BDT4	BDT3	BDT2
	Block Delete							
#3046	UI7	UI6	UI5	UI4	UI3	UI2	UI1	UI0
	Macroprogram Input							
#3047	UI15	UI14	UI13	UI12	UI11	UI10	UI9	UI8
	Macroprogram Input							
#3048	UI23	UI22	UI21	UI20	UI19	UI18	UI17	UI16
	Macroprogram Input							
#3049	UI31	UI30	UI29	UI28	UI27	UI26	UI25	UI24
	Macroprogram Input							

1.1.2 Servo Axis Control Signals (X-axis to 5th-axis)

Appendix Table 1.2 Servo Axis Control Signals (X-axis to 5th-axis)

	7	6	5	4	3	2	1	0
#3070				H5	H4	HZ	HY	HX
				Pulse Handle Axis Selection				
#3071				+5	+4	+Z	+Y	+X
				Manual Feed Axis/Direction Selection				
#3072				–5	–4	–Z	–Y	–X
				Manual Feed Axis/Direction Selection				
#3073				* DC5	* DC4	* DCZ	* DCY	* DCX
				Reference Point Return Decel. LS				
#3074				* +5	* +4	* +Z	* +Y	* +X
				Overtravel LS				
#3075				* –5	* –4	* –Z	* –Y	* –X
				Overtravel LS				
#3078				* IT5	* IT4	* ITZ	* ITY	* ITX
				Axis Interlock				
#3079				* SVOF5	* SVOF4	* SVOFZ	* SVOFY	* SVOFX
				Axis Servo OFF				
#3080				2H5	2H4	2HZ	2HY	2HX
				No. 2 Pulse Handle Axis Selection				
#3081				3H5	3H4	3HZ	3HY	3HX
				No. 3 Pulse Handle Axis Selection				
#3082				MI5	MI4	MIZ	MIY	MIX
				Mirror Image Axis Selection				

Appendix Table 1.2 Servo Axis Control Signals (X-axis to 5th-axis) (cont'd)

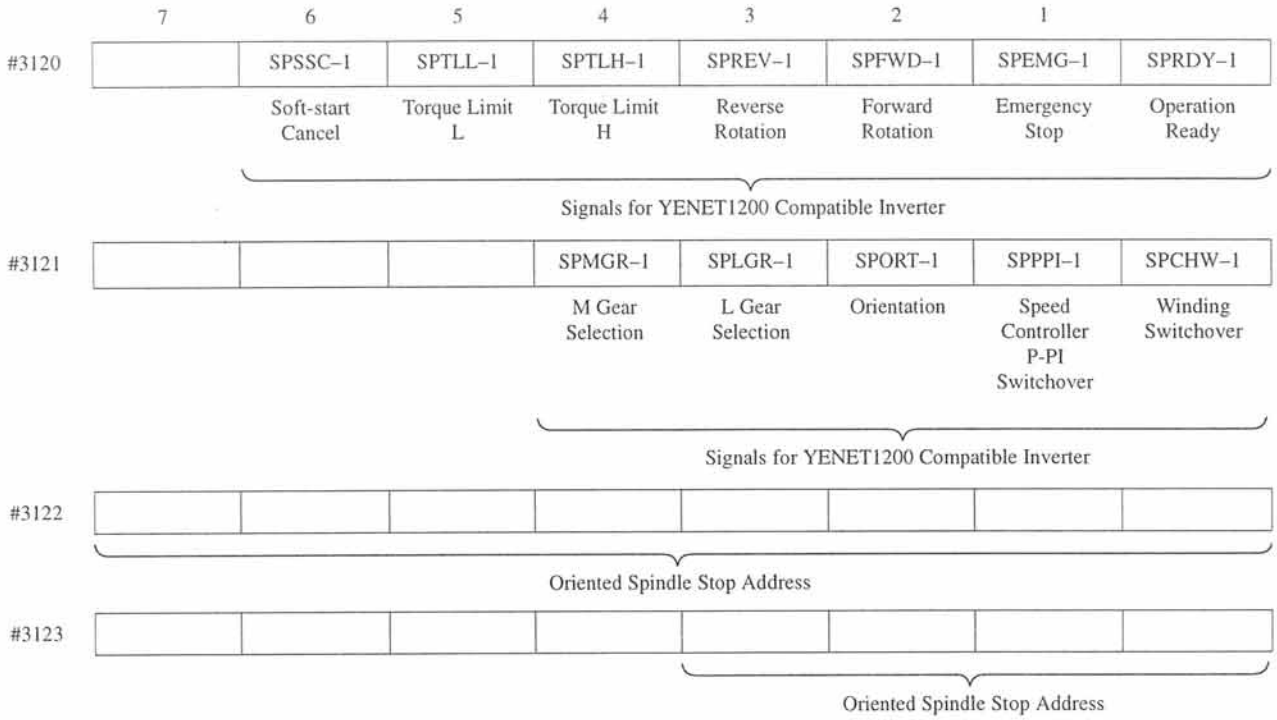
	7	6	5	4	3	2	1	0
#3083				DTCH5	DTCH4			
				Axis Disconnection Designation				
#3084				AMLK5	AMLK4	AMLKZ	AMLKY	AMLKX
				Axis Dependent Machine Lock				
#3101				G0025	G0024	G002Z	G002Y	G002X
				No. 2 G00 Mode				

1.1.3 Spindle Control

Appendix Table 1.3 Spindle Control

	7	6	5	4	3	2	1	
#3110	GR0	SOR		SINV	GR4	GR3	GR2	GR1
	Gear Shift	Fixed Speed		S Analog Output Reverse	Spindle Gear Range			
#3111	SFIN	SAGR		SPE	SPD	SPC	SPB	SPA
	S Function Fin.	Spindle Speed Agreed		Spindle Speed Override				
#3112	SDI7	SDI6	SDI5	SDI4	SDI3	SDI2	SDI1	SDI0
	S Command Binary							
#3113	SDI15	SDI14	SDI13	SDI12	SDI11	SDI10	SDI9	SDI8
	S Command Binary							
#3114	SDI23	SDI22	SDI21	SDI20	SDI19	SDI18	SDI17	SDI16
	S Command Binary							
#3115			STPGR					
			Solid Tap Gear Selection					
#3116						CSVONS	SPMODES	CAXREQ
						Spindle Servo ON	Spindle Control Mode	C-axis Switching Request
#3117				SLPC	SIDX CUT	SIDXI	SIDX INC	SIDX
				Spindle Position Loop Mode	Spindle Index			
#3118	SID7	SID6	SID5	SID4	SID3	SID2	SID1	SID0
	Spindle Index							
#3119					SID11	SID10	SID9	SID8
					Spindle Index			

Appendix Table 1.3 Spindle Control (cont'd)



APPENDIX 1.2 OUTPUT SIGNALS (NC → PLC)

1.2.1 Operation Mode Control Signals

Appendix Table 1.4 Operation Mode Control Signals

	7	6	5	4	3	2	1	0
#3500			BGEDES	WARN S		* ESP S	RSTS	ALMS
			Output – BG Edit Error State	Output – Warning State		Output – EMG. Stop State	Output – Reset State	Output – Alarm/Error State
#3501				G002S	LSK	EDTS	AUTO	MAN
				Output – No. 2 G00 Mode State	Output – Label Skip State	Output – Editing	Output – Auto Mode Selected	Output – Manual Mode Selected
#3502	ONPB	OHT	TO	* BALM	SSW3	SSW2	SSW1	SSW0
	Output – NC Control Monitor				Output – System No. Switch Monitor			
#3503			PWLOST	ESP	SVALM		* BK	SVON S
			Power Lost	Emergency Stop	Servo Alarm		Output – Brake ON Monitor	Output – Servo ON Monitor
#3504		ES END	ER END			FSED MC	FSED CE	FSED S
		External Data Input Function Fin. Output				Output – FS Auto Edit Monitor		
#3505								TLMO
								Output – Tool Length Measurement Mode
#3506	CALEN4	CALEN3	CALEN2	CALEN1	SSWS3	SSWS2	SSWS1	SSWS0
	Calendar Output				Output – System No. Setting Monitor			
#3507	MSKPO							
	In Manual Skip Mode							
#3508	TLCHA	TLCHB	TLCEND	TLANS				
	Tool Change Signal	New Tool Selection Signal	Life-Expired Check Fin. Output	Life Expired/Not-Expired Output				
	Tool Life Control							
#3514								HIN1
								Output – Direct Processing Signal Monitor

Appendix Table 1.4 Operation Mode Control Signals (cont'd)

	7	6	5	4	3	2	1	0
#3515	SETS AFL	SETS MLK		SETS DRN	SETS PRST	SETS DLK	SETS ABS	SETS SBK
	Output – Internal Toggle Switch Monitor							
#3516	SETS SRN	SETS F1				SETS EDLK	SETS ZRN2	SETS ZRN
	Output – Internal Toggle Switch Monitor							
#3517	SETS PLBK	SETS STLK	SETS ZNG			SETS CPRN	SETS HOFS	
	Output – Internal Toggle Switch Monitor							
#3518				SETS MI5	SETS MI4	SETS MIZ	SETS MIY	SETS MIX
				Output – Internal Toggle Switch Monitor				
#3519	TLGS7	TLGS6	TLGS5	TLGS4	TLGS3	TLGS2	TLGS1	TLGS0
	Output – Tool Life Control Execution Group							
#3520	MA7	MA6	MA5	MA4	MA3	MA2	MA1	MA0
	M Code Output							
#3521	M30 R	M02 R	M01 R	M00 R			MA9	MA8
	M Decode Output						M Code Output	
#3530	T7	T6	T5	T4	T3	T2	T1	T0
	T Code Output							
#3531	T15	T14	T13	T12	T11	T10	T9	T8
	T Code Output							
#3532					T19	T18	T17	T16
					T Code Output			
#3533	B7	B6	B5	B4	B3	B2	B1	B0
	B Code Output							
#3534	B15	B14	B13	B12	B11	B10	B9	B8
	B Code Output							

Appendix Table 1.4 Operation Mode Control Signals (cont'd)

	7	6	5	4	3	2	1	0
#3535	TF		BF					MF
				Output – Read M, B, T Code				
#3537		RWDS	OP	DEN	RPD S	FEED S	SPL	STL
		During Rewinding	During Operation	Feed Completed	R State	F State	Stopped	During Operation
				Output – Series Operation Status Monitor				
#3538					SETS OPT	SETS BDT	G93M	M04S
					Output – Internal Toggle Switch Monitor		G93M	M04 Status
#3539						TAP	G84S	G80S
						Output – Canned Cycle Operation Status Monitor		
#3540	UO7	UO6	UO5	UO4	UO3	UO2	UO1	UO0
				Macro Program Output Signal				
#3541	UO15	UO14	UO13	UO12	UO11	UO10	UO9	UO8
				Macro Program Output Signal				
#3542	UO23	UO22	UO21	UO20	UO19	UO18	UO17	UO16
				Macro Program Output Signal				
#3543	UO31	UO30	UO29	UO28	UO27	UO26	UO25	UO24
				Macro Program Output Signal				
#3544		POSX	UVX	OVX	RGX	MCBX	OCX	ABSX
				X-axis IAMP Alarm				
#3545	O-PHX	OIREFX	OFX			OHX		
				X-axis IAMP Alarm				
#3546		POSY	UVY	OVY	RGY	MCBY	OCY	ABSY
				Y-axis IAMP Alarm				

Appendix Table 1.4 Operation Mode Control Signals (cont'd)

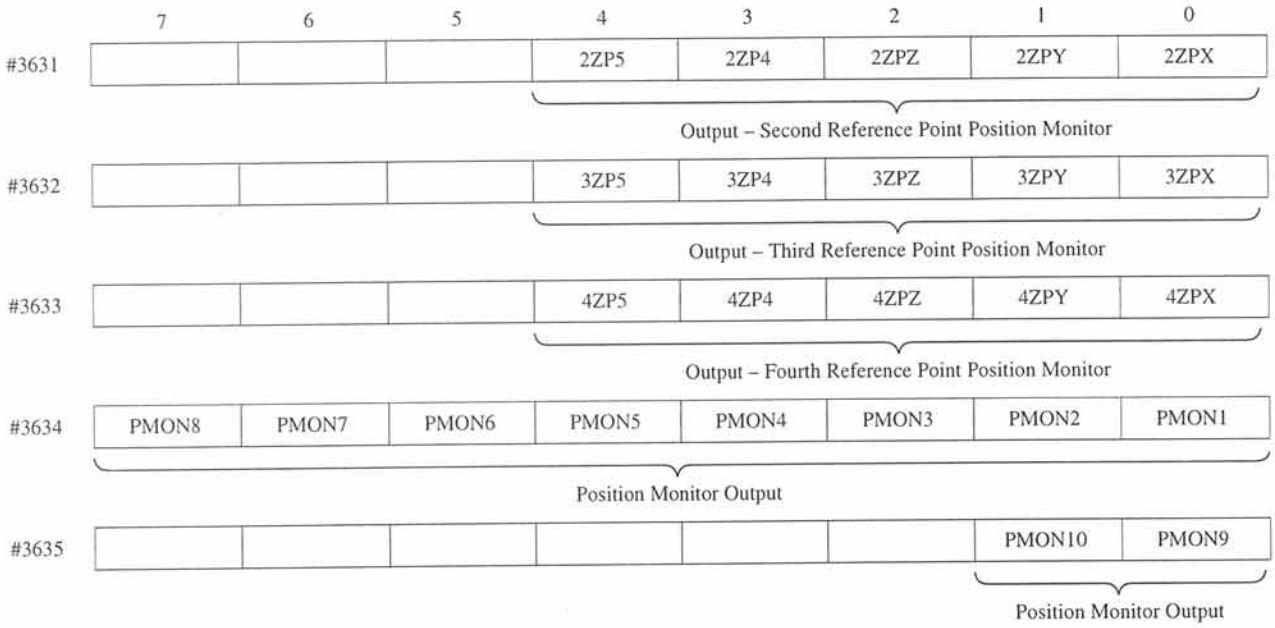
	7	6	5	4	3	2	1	0
#3547	O-PHY	OIREFY	OFY			OHY		
	Y-axis IAMP Alarm							
#3548		POSZ	UVZ	OVZ	RGZ	MCBZ	OCZ	ABSZ
	Z-axis IAMP Alarm							
#3549	O-PHZ	OIREFZ	OFZ			OHZ		
	Z-axis IAMP Alarm							

1.2.2 Servo Axis Control (X-axis to 5th-axis)

Appendix Table 1.5 Servo Axis Control (X-axis to 5th-axis)

	7	6	5	4	3	2	1	0
#3610	TGONX	PCX	PBX	PAX	* ALX	* OLX	FUX	SRDX
	Output – Servo Unit Monitor							
#3611	TGONY	PCY	PBY	PAY	* ALY	* OLY	FUY	SRDY
	Output – Servo Unit Monitor							
#3612	TGONZ	PCZ	PBZ	PAZ	* ALZ	* OLZ	FUZ	SRDZ
	Output – Servo Unit Monitor							
#3613	TGON4	PC4	PB4	PA4	* AL4	* OL4	FU4	SRD4
	Output – Servo Unit Monitor							
#3614	TGON5	PC5	PB5	PA5	* AL5	* OL5	FU5	SRD5
	Output – Servo Unit Monitor							
#3615				FUP5	FUP4	FUPZ	FUPY	FUPX
	Output – Follow-up Monitor							
#3616				PSET5	PSET4	PSETZ	PSETY	PSETX
	Output – PSET Status Monitor							
#3617				DTCH 5S	DTCH 4S			
	Output – Axis Disconnected Status							
#3618				AMLK 5S	AMLK 4S	AMLK ZS	AMLK YS	AMLK XS
	Output – Axis Machine Lock Status							
#3628				G0025S	G0024S	G002ZS	G002YS	G002XS
	Output – No. 2 G00 Mode							
#3630				ZP5	ZP4	ZPZ	ZPY	ZPX
	Output - First Reference Point Position Monitor							

Appendix Table 1.5 Servo Axis Control (X-axis to 5th-axis) (cont'd)



1.2.3 Spindle Control

Appendix Table 1.6 Spindle Control

	7	6	5	4	3	2	1	0
#3650	GR 4S	GR 3S	GR 2S	GR 1S	GRS S	GSC S	G96 S	SINV A
	Output – Gear Range Status				Output – GRS Control Status	Output – GSC Control Status	Output – G96 Control Satus	Output – S Binary Reversed Status
#3651	SF				OS	SLPS	SIDXO	SIDXA
	Output – S Command Sampling				Spindle Orientation	Output – Spindle Position Loop Monitor	Output – Spindle Index Monitor	
#3652							AXMODES	CAXS
							Axis Control Mode	Mode Switching
#3653						PCS	PBS	PAS
						Output – Monitor of PG Signal, etc.		
#3654	SDO7	SDO6	SDO5	SDO4	SDO3	SDO2	SDO1	SDO0
	Output – S Command Binary							
#3655	SDO15	SDO14	SDO13	SDO12	SDO11	SDO10	SDO9	SDO8
	Output – S Command Binary							
#3656	SDO23	SDO22	SDO21	SDO20	SDO19	SDO18	SDO17	SDO16
	Output – S Command Binary							
#3657	SARM7	SARM6	SARM5	SARM4	SARM3	SARM2	SARM1	SARM0
	Output – Actual Spindle Speed Monitor							
#3658	SARM15	SARM14	SARM13	SARM12	SARM11	SARM10	SARM9	SARM8
	Output – Actual Spindle Speed Monitor							
#3659	SARM23	SARM22	SARM21	SARM20	SARM19	SARM18	SARM17	SARM16
	Output – Actual Spindle Speed Monitor							

Appendix Table 1.6 Spindle Control (cont'd)

	7	6	5	4	3	2	1	0
#3660	SPCHWE–1	SPORE–1	SPORG–1	SPTLE–1	SPTDET–1	SPSDET–1	SPAGR–1	SPZSPD–1
	Winding Switchover Complete	Orientation Complete	Load Axis Zero Point	Torque Limit	Torque Detection	Speed Detection	Speed Agreed	Zero Speed
	Signals for YENET1200 Compatible Inverter							
#3661							SPTALM–1	SPFLT–1
							Error Warning	Fault
							Signals for YENET1200 Compatible Inverter	
#3740	LDX-7	LDX-6	LDX-5	LDX-4	LDX-3	LDX-2	LDX-1	LDX-0
	X-axis Load Data (L)							
#3741	LDX-15	LDX-14	LDX-13	LDX-12	LDX-11	LDX-10	LDX-9	LDX-8
	X-axis Load Data (H)							
#3742	LDY-7	LDY-6	LDY-5	LDY-4	LDY-3	LDY-2	LDY-1	LDY-0
	Y-axis Load Data (L)							
#3743	LDY-15	LDY-14	LDY-13	LDY-12	LDY-11	LDY-10	LDY-9	LDY-8
	Y-axis Load Data (H)							
#3744	LDZ-7	LDZ-6	LDZ–5	LDZ–4	LDZ-3	LDZ-2	LDZ-1	LDZ-0
	Z-axis Load Data (L)							
#3745	LDZ-15	LDZ-14	LDZ-13	LDZ-12	LDZ-11	LDZ-10	LDZ-9	LDZ-8
	Z-axis Load Data (H)							
#3746	LD4-7	LD4-6	LD4-5	LD4-4	LD4-3	LD4-3	LD4-1	LD4-0
	4th-axis Load Data (L)							
#3747	LD4-15	LD4-14	LD4-13	LD4-12	LD4-11	LD4-10	LD4-9	LD4-8
	4th-axis Load Data (H)							
#3748	LD5-7	LD5-6	LD5-5	LD5-4	LD5-3	LD5-2	LD5-1	LD5-0
	5th-axis Load Data (L)							

Appendix Table 1.6 Spindle Control (cont'd)

	7	6	5	4	3	2	1	0
#3749	LD5-15	LD5-14	LD5-13	LD5-12	LD5-11	LD5-10	LD5-9	LD5-8

5th-axis Load Data (H)

1.2.4 Constants

Appendix Table 1.7 Constants

	7	6	5	4	3	2	1	0
#3996	0	0	0	0	0	0	0	0

Constants

#3997	0	0	0	0	0	0	0	0

Constants

#3998	0	0	0	0	0	0	0	0

Constants

#3999	0	0	0	0	0	0	0	1

Constants

APPENDIX 2

PARAMETER TABLE

Appendix 2 describes the classification and function of the parameters used for YASNAC.
If you use J300M, refer to 2.2 or 2.3, and use J100M, refer to 2.3.

2.1 CLASSIFICATION OF THE PARAMETERS ..... A2 - 2

2.2 PARAMETER TABLE (J300M) ..... A2 - 3

2.3 PARAMETER TABLE (YENET1200 COMPATIBLE DRIVER FOR J300M/J100M) ..... A2 - 47

APPENDIX 2.1 CLASSIFICATION OF THE PARAMETERS

Appendix Table 2.1 Classifications of the Parameters

Classification	Data Type	Parameter No.	Sign	Power OFF/ON*	Remarks
Related to setting	Bit	pm0000 - pm0099			
	Byte	pm0100 - pm0109			
	Word	pm0400 - pm0429	Used		
	D-word	pm0800 - pm0939	Used		
Related to axis and spindle control Axis control Servo Spindle	Bit	pm1000 - pm1099		pm1020 - pm1099	
	Byte	pm1100 - pm1393		pm1300 - pm1399	
	Word	pm1400 - pm1799	Used	pm1600 - pm1799	
	D-word	pm1800 - pm1859	Used	pm1820 - pm1859	
Related to feed Feedrate and acceleration Thread/tap Pulse handle	Bit	pm2000 - pm2019			
	Byte	pm2100 - pm2139			
	Word	pm2400 - pm2649	Used	pm2600 - pm2649	
	D-word	pm2800 - pm2899	Used	pm2870 - pm2899	
Related to interface and communications Edit, tape input,display, communications, DNC	Bit	pm3000 - pm3009			
	Byte	pm3100 - pm3109			
	Word	pm3400 - pm3459	Used		
	D-word	pm3800 - pm3859	Used		
Related to program and automatic operation Program/automatic operation,canned cycle, offset,coordinate system, zero return, macro	Bit	pm4000 - pm4039			
	Byte	pm4100 - pm4199			
	Word	pm4400 - pm4599	Used		
	D-word	pm4800 - pm4899	Used		
Related to I/O and automation assisting I/O, PLC, skip, TLM	Bit	pm5000 - pm5019		pm5010 - pm5019	
	Byte	pm5100 - pm5109			
	Word	pm5400 - pm5449	Used		
	D-word	pm5800 - pm5809	Used		
Related to safety and maintenance (machine) Stroke check, pitch error	Bit	pm6000 - pm6009			
	Byte	pm6100 - pm6149			
	Word	pm6400 - pm6479	Used	pm6450 - pm6479	
	D-word	pm6800 - pm6949	Used		
PLC ladder Related to battery back-up memory	Bit	pm7000 - pm7099			Byte and word
	Byte	pm7100 - pm7999			
Others	Bit	pm8000 - pm8099			
	Byte	pm8100 - pm8119			
	Word	pm8400 - pm8429	Used		
	D-word	pm8800 - pm8829	Used		
	Word	pm9000 - pm9551			

APPENDIX 2.2 PARAMETER TABLE (J300M)

Appendix Table 2.2 J300M Parameter Table

Parameter No.	Bit	Description
pm0000	0	Single-block switch 0: OFF 1: ON
	1	Machine lock switch 0: OFF 1: ON
	2	Dry run switch 0: OFF 1: ON
	3	Block delete switch 0: OFF 1: ON
	4	Manual absolute switch 0: OFF 1: ON
	5	Auxiliary function lock switch 0: OFF 1: ON
	6	Display lock switch 0: OFF 1: ON
	7	Edit lock switch 0: OFF 1: ON
pm0001	0	Optional stop switch 0: OFF 1: ON
	1	Start lock switch 0: OFF 1: ON
	2	Z-axis neglect switch 0: OFF 1: ON
pm0002	0	Mirror image 1 0: OFF 1: ON
	1	Mirror image 2 0: OFF 1: ON
	2	Mirror image 3 0: OFF 1: ON
	3	Mirror image 4 0: OFF 1: ON
	4	Mirror image 5 0: OFF 1: ON
pm0003	1	Axis disconnection designation (4th-axis) 0: OFF 1: ON
	2	Axis disconnection designation (5th-axis) 0: OFF 1: ON
pm0004 Data setting for No. 1 port	0	ISO/EIA code selection for output tape code 0: ISO code 1: EIA code
	1	Execution of TV check 0: Not executed 1: Executed
	2	Counting the number of characters in ( ) for TV check 0: Not counted 1: Counted
	3	TH check for ISO code input 0: Executed 1: Not executed
	4	Feed holes in output to tape 0: Not punched 1: Punched
	5	TH check for ISO code output 0: Executed 1: Not executed
	6	EOB codes in ISO code output 0: CR and LF 1: LF

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0005	0	Manual zero return switch 0: OFF 1: ON
	1	No. 2 manual zero return switch 0: OFF 1: ON
	2	Interruption point return switch 0: OFF 1: ON
	3	Automatic mode handle offset switch 0: OFF 1: ON
	4	Setup point return switch 0: OFF 1: ON
	5	Playback switch 0: OFF 1: ON
	6	F1-digit switch 0: OFF 1: ON
	7	Program restart switch 0: OFF 1: ON
pm0006	0	ISO/EIA code selection for output tape code 0: ISO code 1: EIA code
	1	Execution of TV check 0: Not executed 1: Executed
	2	Counting the number of characters in ( ) for TV check 0: Not counted 1: Counted
	3	TH check for ISO code input 0: Executed 1: Not executed
	4	Feed holes in output to tape 0: Not punched 1: Punched
	5	TH check for ISO code output 0: Executed 1: Not executed
	6	EOB codes in ISO code output 0: CR and LF 1: LF

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0007	0	Selection of input unit 0: mm 1: inches
	1	Operation instructions and control instructions in user macro 0: Not interrupted by single-block stop. 1: Interrupted by single-block stop.
	2	Occurrence of an alarm if skip signal is not turned ON until the completion of axis move specified in the skip function block 0: An alarm occurs. 1: An alarm does not occur.
	3	Addition of work shift correction amount 0: Not added 1: Added
	4	Tool life control by T command 0: Executed 1: Not executed (valid only when the optional tool life control function is selected.)
	5	Display of program list during input/output/verify of a program 0: Program list is displayed. 1: Program list not displayed.
	6	"0" data in parameter output 0: "0" data are output. 1: "0" data are not output.
	7	Buzzer sound for the operation of keys in the keyboard 0: No buzzer sound 1: Buzzer sound

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0008	0	No. 2 stored stroke limit 0: Invalid 1: Valid
	1	No. 3 stored stroke limit 0: Invalid 1: Valid
	2	No. 4 stored stroke limit 0: Invalid 1: Valid
	3	No. 5 stored stroke limit 0: Invalid 1: Valid
	4	No. 2 entry prohibited area 0: Inside the boundary 1: Outside the boundary
	5	No. 3 entry prohibited area 0: Inside the boundary 1: Outside the boundary
	6	No. 4 entry prohibited area 0: Inside the boundary 1: Outside the boundary
	7	No. 5 entry prohibited area 0: Inside the boundary 1: Outside the boundary
pm0009	0	Selection of input port 0: No. 1 port 1: No. 2 port
	4	Selection of output port 0: No. 1 port 1: No. 2 port
	6.7	Number of tool life control groups and tools Groups / Tools / D6 / D7 ① 128 / 2 / 0 / 0 ② 64 / 4 / 1 / 0 ③ 32 / 8 / 0 / 1 ④ 16 / 16 / 1 / 1

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0010 No. 1 port device setting	0 - 3	Input device setting D3 D2 D1 D0 0 0 0 0 Reserved 0 0 0 1 YE tape reader 0 0 1 0 General-purpose RS-232C device 0 0 1 1 Not used – 1 1 1 1
	4 - 6	Output device setting D7 D6 D5 D4 0 0 0 0 Reserved 1 0 0 0 1 Reserved 2 0 0 1 0 General-purpose RS-232C device 0 0 1 1 Not used – 1 1 1 1
pm0011 Communication parameter setting No. 1 port (input) for general-purpose RS-232C device (format)	0 - 2	BPS setting D2 D1 D0 0 0 0 100 or 75 0 0 1 110 or 150 0 1 0 300 0 1 1 600 1 0 0 1200 1 0 1 2400 1 1 0 4800 1 1 1 9600
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity
	7	Setting of low baud rate selection 0: 100 and 110 bps 1: 75 and 150 bps

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0012 Communication parameter setting No. 1 port (input) for general-purpose RS-232C device (control)	0	Control by control code 0: Not executed 1: Executed
	1	RTS control 0: Not executed 1: Executed
	2	DR line check 0: Not executed 1: Executed
	7	NC data special control 0: Not executed 1: Executed
pm0013 Communication parameter setting No. 1 port (output) for general-purpose RS-232C device (format)	0 - 2	BPS setting D2 D1 D0 0 0 0 100 or 75 0 0 1 110 or 150 0 1 0 300 0 1 1 600 1 0 0 1200 1 0 1 2400 1 1 0 4800 1 1 1 9600
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity
	7	Setting of low baud rate selection 0: 100 and 110 bps 1: 75 and 150 bps

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0014 Communication parameter setting No. 1 port (output) for general-purpose RS-232C device (control)	0	Control by control code 0: Not executed 1: Executed
	1	RTS control 0: Not executed 1: Executed
	2	DR line check 0: Not executed 1: Executed
	7	NC data special control 0: Not executed 1: Executed
pm0015 No. 2 port device setting	0 - 3	Input device setting D3 D2 D1 D0 0 0 0 0 Reserved 0 0 0 1 YE tape reader 0 0 1 0 General-purpose RS-232C device 0 0 1 1 Not used – 1 1 1 1
	4 - 7	Output device setting D7 D6 D5 D4 0 0 0 0 Reserved 1 0 0 0 1 Reserved 2 0 0 1 0 General-purpose RS-232C device 0 0 1 1 Not used – 1 1 1 1

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0016 Communication parameter setting No. 2 port (output) for general-purpose RS-232C device (format)	0 - 2	BPS setting D2 D1 D0 0 0 0 100 or 75 0 0 1 110 or 150 0 1 0 300 0 1 1 600 1 0 0 1200 1 0 1 2400 1 1 0 4800 1 1 1 9600
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity
	7	Setting of low baud rate selection 0: 100 and 110 bps 1: 75 and 150 bps
pm0017 Communication parameter setting No. 2 port (output) for general-purpose RS-232C device (control)	0	Control by control code 0: Not executed 1: Executed
	1	RTS control 0: Not executed 1: Executed
	2	DR line check 0: Not executed 1: Executed
	7	NC data special control 0: Not executed 1: Executed

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0018 Communication parameter setting No. 2 port (output) for general-purpose RS-232C device (format)	0 - 2	BPS setting D2 D1 D0 0 0 0 100 or 75 0 0 1 110 or 150 0 1 0 300 0 1 1 600 1 0 0 1200 1 0 1 2400 1 1 0 4800 1 1 1 9600
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity
	7	Setting of low baud rate selection 0: 100 and 110 bps 1: 75 and 150 bps
pm0019 Communication parameter setting No. 2 port (output) for general-purpose RS-232C device (control)	0	Control by control code 0: Not executed 1: Executed
	1	RTS control 0: Not executed 1: Executed
	2	DR line check 0: Not executed 1: Executed
	7	NC data special control 0: Not executed 1: Executed
pm0020	0	Edit, display, and input/output operation of part programs O8000 to O8999 0: Permitted 1: Prohibited
	7	Spaces in program input 0: Spaces are deleted when a program is input. (Spaces in comments are not deleted.) 1: Spaces are not deleted when a program is input.

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0021	0	0: Edit, display, and input/output operation of part programs O8000 to O8999 conforms to the setting for pm0020 1: Display of part programs O8000 to O8999 is permitted.
pm0022	0	0: Edit, display, and input/output operation of part programs O8000 to O8999 conforms to the setting for pm3004. 1: Display of part programs O8000 to O8999 is permitted.
pm0030	4	DC3 control code designation 0: 13H 1: 93H
	5	DR signal check by communication module 0: Not checked 1: Checked
	6	Communication module device designation 0: RS-232C 1: RS-422
	7	Tape operation designation for NC 0: PTR 1: Communication module
pm0031 Communication parameter setting RS-232C	0 - 2	BPS setting D2 D1 D0 0 0 0 1200 0 0 1 2400 0 1 0 4800 0 1 1 9600 1 0 0 19200
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0032 Communication parameter setting RS-422	0 - 2	BPS setting D2 D1 D0 0 0 0 1200 0 0 1 2400 0 1 0 4800 0 1 1 9600 1 0 0 19200
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity
pm1000	0	Designation of inputs 0: Least input unit 1: 10 times the least input unit
	2	Application of override setting on spindle speed output 0: Not applied 1: Applied
	4	Display of actual spindle speed 0: Calculated value based on S command 1: Feedback from the spindle motor
	5	SSTP setting for "0" output in response to "0" S command 0: SSTP "0" 1: SSTP "1"
	7	Checking of SAGR when feedrate is changed from rapid traverse to cutting feedrate. 0: Not checked 1: Checked
pm1001	0.1	Output sign of S in S5-digit command D1 D0 M03 M04 0 0 + + 0 1 − − 1 0 + − 1 1 − +
pm1002	0	Magnification ratio of spindle speed parameter 0: ×1 1: ×10
	4	Display of spindle load meter 0: Displayed 1: Not displayed

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm1003	2	D/A output status is input to the PLC. 0: Yes 1: No
pm1020 - pm1024	0.1	1st - 5th physical servo axis slot number D1 D0 0 0 No. 1 slot axis 0 1 No. 1 slot axis 1 0 No. 2 slot axis 1 1 No. 1 slot axis
	3.4	1st - 5th physical servo axis slot inside axis number D4 D3 0 0 1st-axis 0 1 1st-axis 1 0 2nd-axis 1 1 3rd-axis
	7	1st - 5th physical servo axis 0: Invalid 1: Valid
pm1026 - pm1027	0.1	No. 1, No. 2 physical spindle slot number D1 D0 0 0 No. 1 slot axis 0 1 No. 1 slot axis 1 0 No. 2 slot axis 1 1 No. 1 slot axis
	3.4	No. 1, No. 2 physical spindle slot inside axis number D4 D3 0 0 1st-axis 0 1 1st-axis 1 0 2nd-axis 1 1 1st-axis
	7	No. 1, No. 2 physical spindle 0: Invalid 1: Valid

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm1030 - pm1034 1st - 5th axis servo control type	0	Velocity loop control method 0: PI 1: IP
	1	Velocity loop control automatic setting 0: Invalid 1: Valid
	2	Separately installed PG 0: Invalid 1: Valid
	4	Reverse connection of separately installed PG 0: Invalid 1: Valid
	5	0: Servo axis 1: C-axis integral with spindle
	6	Axis type 0: Linear axis 1: Rotary axis
	7	Motor rotation direction 0: Forward rotation 1: Reverse rotation
pm1039 Spindle servo control type	1.2	D2 D1 Use of PG 0 0 No PG for spindle 0 1 PG used at the spindle 1 0 PG used at the motor
	5	Spindle servo control 0: Executed 1: Not executed
	7	Spindle configuration 0: Normal spindle 1: C-axis integrated

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm1044 - pm1048 1st-axis - 5th-axis	0	Servo feed amount change 0: Not executed 1: Executed
	1	Absolute encoder 0: Motor PG 1: Separately installed PG
	2	Disregarding error pulses at the input of emergency stop 0: Not disregarded 1: Disregarded
	3	Execution of follow-up processing for the input of servo OFF 0: Not executed 1: Executed
	4	Use of absolute encoder 0: Not used 1: Used
	6	Infinite length for rotary axis control 0: Not possible 1: Possible
	7	Use of 17-bit encoder 0: Not used 1: Used
pm1053	0.1	No. 1 spindle feedback pulse magnification ratio setting D1 D0 0 0 ×1 0 1 ×2 1 0 ×4 1 1 ×8
	2	Execution of spindle indexing in loop control 0: Not executed 1: Executed
	3	Execution of C-axis indexing when switching to C-axis 0: Not executed 1: Executed
pm1060	0 - 4	Amplifier type for 1st - 5th axis 0: Analog amplifier 1: Digital amplifier

Appendix Table 2.2 J300M Parameter Table (cont'd)

<table>
<tr><th>Parameter No.</th><th>Bit</th><th>Description</th></tr>
<tr><td>pm1061 - pm1065</td><td>0 - 7</td><td>
Setting of motor selection code for "n"th-axis
<table>
<tr><th colspan="2">F series</th><th colspan="2">M series</th><th colspan="2">S series</th><th colspan="2">R series</th></tr>
<tr><th>Type</th><th>MTYPEN</th><th>Type</th><th>MTYPEN</th><th>Type</th><th>MTYPEN</th><th>Type</th><th>MTYPEN</th></tr>
<tr><td>Short</td><td>0</td><td>M-03B</td><td>10</td><td>S-02A</td><td>20</td><td></td><td>30</td></tr>
<tr><td>F-02C</td><td>1</td><td>M-06B</td><td>11</td><td>S-03A</td><td>21</td><td></td><td>31</td></tr>
<tr><td>F-03C</td><td>2</td><td>M-09B</td><td>12</td><td>S-05A</td><td>22</td><td></td><td>32</td></tr>
<tr><td>F-05C</td><td>3</td><td>M-12B</td><td>13</td><td>S-08A</td><td>23</td><td>R-03A</td><td>33</td></tr>
<tr><td>F-09C</td><td>4</td><td>M-20B</td><td>14</td><td>S-15A</td><td>24</td><td>R-05A</td><td>34</td></tr>
<tr><td>F-13C</td><td>5</td><td>M-30B</td><td>15</td><td>S-30A</td><td>25</td><td>R-07A</td><td>35</td></tr>
<tr><td>F-20C</td><td>6</td><td>M-44B</td><td>16</td><td></td><td>26</td><td></td><td>36</td></tr>
<tr><td>F-30C</td><td>7</td><td></td><td>17</td><td></td><td>27</td><td></td><td>37</td></tr>
<tr><td>F-44C</td><td>8</td><td></td><td>18</td><td></td><td>28</td><td></td><td>38</td></tr>
<tr><td></td><td>9</td><td></td><td>19</td><td></td><td>29</td><td></td><td>39</td></tr>
</table>
<table>
<tr><th colspan="2">G series</th><th colspan="2">D series</th><th colspan="2">Special</th></tr>
<tr><th>Type</th><th>MTYPEN</th><th>Type</th><th>MTYPEN</th><th>Type</th><th>MTYPEN</th></tr>
<tr><td>Short</td><td>40</td><td>D-05E</td><td>50</td><td></td><td>246</td></tr>
<tr><td>G-02A</td><td>41</td><td>D-10E</td><td>51</td><td></td><td>247</td></tr>
<tr><td>G-03A</td><td>42</td><td>D-15E</td><td>52</td><td></td><td>248</td></tr>
<tr><td>G-05A</td><td>43</td><td>D-22E</td><td>53</td><td></td><td>249</td></tr>
<tr><td>G-09A</td><td>44</td><td>D-37E</td><td>54</td><td></td><td>250</td></tr>
<tr><td>G-13A</td><td>45</td><td></td><td>55</td><td>S-07HS</td><td>251</td></tr>
<tr><td>G-20A</td><td>46</td><td></td><td>56</td><td>D-09HS11</td><td>252</td></tr>
<tr><td>G-30A</td><td>47</td><td></td><td>57</td><td>S-10HS</td><td>253</td></tr>
<tr><td>G-44A</td><td>48</td><td></td><td>58</td><td>F-20HS11</td><td>254</td></tr>
<tr><td></td><td>49</td><td></td><td>59</td><td>F-09FX</td><td>255</td></tr>
</table>
</td></tr>
<tr><td>pm1070</td><td>0 - 4</td><td>Availability of digital amplifier offset automatic adjustment
0: Not available
1: Available</td></tr>
<tr><td>pm1071-pm1075</td><td>0 - 4</td><td>Encoder type(1st -5th axis)
<table>
<tr><th>Type</th><th>Setting</th></tr>
<tr><td>Linear scale</td><td>0</td></tr>
<tr><td>15-bit ABS</td><td>1</td></tr>
<tr><td>15-bit ABS (rotary axis)</td><td>2</td></tr>
<tr><td>17-bit ABS</td><td>3</td></tr>
<tr><td>8192-pulse new INC</td><td>11</td></tr>
<tr><td>25000 - pulse new INC</td><td>18</td></tr>
<tr><td>30000 - pulse new INC</td><td>19</td></tr>
<tr><td>360000 - pulse type for C-axis</td><td>23</td></tr>
</table>
</td></tr>
<tr><td>pm1080</td><td>0 - 4</td><td>Availability of projection compensation function in circle cut (1st - 5th axis)
0: Not available
1: Available</td></tr>
</table>

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm1081 - pm1085		Externally installed encoder type (1st - 5th axis) Type — Setting Linear scale — 0 15-bit ABS — 1 15-bit ABS (rotary axis) — 2 17-bit ABS — 3 8192-pulse new INC — 11 25000 - pulse new INC — 18 30000 - pulse new INC — 19 360000 - pulse type for C-axis — 23
pm1091		Spindle encoder type: 1024INC Setting:21
pm1099	0 - 4	Resonance filter type (1st - 5th axis) 0: Secondary axis resonance filter 1: Cubic root axis resonance filter
pm2000	0	Dry run during rapid traverse 0: Invalid 1: Valid
	1	Dry run during thread cutting 0: Valid 1: Invalid
	2	Spindle override during tapping 0: Not clamped at 100% 1: Clamped at 100% (only for lathe)
	3	Setting of input unit for pm2447 (F_0 feedrate) 0: mm/min 1: %
	4	Validity of feedrate override signal 0: Valid when "1" (NO contact) 1: Valid when "0" (NC contact)
	6	Replacing rapid traverse with jog until the completion of reference point return after turning ON the power 0: Rapid traverse is not replaced with jog. 1: Rapid traverse is replaced with jog.
	7	Setting jog feedrate of rotary axis at 1/10 of that of linear axis 0: Not set at 1/10 1: Set at 1/10
pm2001	0	Feedrate for skip function 0: As specified by F code 1: As set by parameter
pm2002	0 - 4	Validity of automatic mode handle offset (1st - 5th axis) 0: Invalid 1: Valid

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm2003	1	Valid operation of automatic mode handle offset 0: Other than rapid traverse 1: Only in the interpolation mode
	7	Setting of ×100 for manual pulse multiply 0: ×100 1: Value set for parameter (pm2459)
pm2004	0	Feedrate at the detection of 0.001 mm or 0.0001 inch 0: F6.0 mm/min or F4.1 inch/min 1: F6.1 mm/min or F4.2 inch/min
pm3000	2	Addition of tool position offset amount in Z-axis position data for display 0: Added 1: Not added
	3	Position data display change (work shift coordinate system screen, correction amount screen) 0: Machine coordinate system 1: Workpiece coordinate system
	4	Position data display change (offset screen) 0: Machine coordinate system 1: Workpiece coordinate system
	5	Position data display change (program screen) 0: Machine coordinate system 1: Workpiece coordinate system
pm3001	0	External timer display 0: Invalid 1: Valid
	1	Setup menu screen 0: Valid 1: Invalid
	3	Simplified TLM 0: Valid 1: Invalid
	4	Priority of validity between T and M96 if specified in the same block 0: T command becomes valid first. 1: M06 command becomes valid first.
	5	Waiting pot display 0: Invalid 1: Valid
	6	Tool pot word display 0: Invalid 1: Valid
	7	Sub tool pot word display 0: Invalid 1: Valid

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm3002	0	Clear of MDI buffer by program reset if M02 or M30 is specified at the completion of MDI program 0: Cleared 1: Not cleared
	1	Clear of MDI buffer by panel reset or external reset 0: Cleared 1: Not cleared
	2	Start position of MDI program 0: Present cursor position 1: Beginning of the MDI program
	3	Input switching on work shift and offset screens 0: By soft-keys 1: According to the setting for pm3002 (D4, D5)
	4	Input on work shift screen (correction screen) 0: Absolute 1: Incremental
	5	Input on offset screen 0: Absolute 1: Incremental
	6	EDIT process address search 0: Character search 1: Binary search
	7	RUN process address search 0: Binary search 1: Character search

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm3003	0.1	Initial screen at power ON D1 D0 0 0 4POS 0 1 Program check screen 1 0 Edit screen 1 1 4POS
	2	Job screen of the setup process at power ON 0: Workpiece coordinate system job screen 1: Tool job screen
	3	Input mode setting at power ON 0: Absolute 1: Incremental
	4	Clearing of the program that requires the check for alarm 0: Cleared by reset operation 1: Cleared by reset operation after the check for the alarm
	5	Display of the spindle and the next tool on the RUN screen 0: Not displayed 1: Displayed
	6	ATC display 0: Byte + byte 1: Word
pm3004	0	Edit/display/output of part programs of O9000 to O9999 0: Permitted 1: Prohibited

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm3005	0	Processing if the same O number already exists in loading a program from tape 0: Warning 1: Existing program is overwritten by new program
	1	Clearing of the program numbers at power ON 0: Cleared 1: Not cleared
	2	Definition of program number 0: Numerical value specified following O 1: Numerical value specified following O or N
	3	Interpretation of M code (M02, M30, M*99 [*: 0 - 3]) read at the end of program loading from tape 0: Regarded as program end 1: Not regarded as program end
	4	Automatic editing of a program number in program rename/copy/storing operation 0: Edited automatically 1: Not edited
	5	Conversion of ":" code (ISO) at input and output 0: Not converted 1: Converted
	6	Conversion of ":" code (ISO) at input and output (valid if pm3005 D5 = 1) 0: Not converted 1: Converted

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm3006	0	Identification of tape operation device 0: I/O input specification 1: Setting specification
	1	Designation of processing at the occurrence of communication module error 0: NC placed in the alarm state 1: NC not placed in the alarm state
	2.3	Buffer area data storing amount at the start of DNC operation D3 D2 Bytes 0 0 2048 0 1 128 1 0 256 1 1 512
	4	Designation of the transmission of the control character 0: Not transmitted 1: Transmitted
	5 - 7	Communication module protocol D7 D6 D5 0 0 0 Protocol 1 0 0 1 Protocol 2 0 1 0 Protocol 3 0 1 1 Protocol 4
pm3007	1	Function key of [SRCH] key 0: Background function key 1: Foreground function key
	6	0: Setting of pm3006 D0, D1 is valid. 1: If pm3006 D1 = 1, only time-out error is not output.
	7	Buffering of 150-byte DAT binary data after the reception of the WAT command by the communication module. 0: Buffered 1: Not buffered

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4000	0	Selection of G code in 01-group when the power is turned ON or the NC is reset 0: G00 1: G01
	1	Selection of G code in 03-group when the power is turned ON 0: G90 1: G91
	2	Selection of G code in 04-group when the power is turned ON 0: G98 1: G99
	3.4	Selection of G code in 08-group when the power is turned ON D4 D3 0 0 G49 0 1 G43 1 0 G44
	5	Selection of G code in 02-group when the NC is reset 0: G17 1: G code specified immediately before the reset
	6	Selection of G code in 03-group when the NC is reset 0: G code set for pm4000 D1 1: G code specified immediately before the reset

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4001	0	Mirror image mode when the power is turned ON or the NC is reset 0: M94 (mirror image OFF) 1: M95 (mirror image ON)
	1	Initial M code mode when the power is turned ON or the NC is reset 0: M96 (arc) 1: M97 (linear)
	2	Application of mirror image ON the intermediate positioning point for G28 if M95 is set when the power is turned ON or the NC is reset 0: Mirror image is applied 1: Mirror image is not applied.
	3	Presetting of workpiece coordinate system shift distance when the power is turned ON (G54 - G59: #4143) 0: Not preset 1: Preset
	4	Presetting of workpiece coordinate system shift distance at the completion of zero return (G54 - G59: #4143) 0: Not preset 1: Preset
	6	Occurrence of alarm if an attempt is made to execute cycle start without carrying out reference point return after turning the power ON 0: Alarm occurs (0411 - 0415) (conforms to pm4018 D0 - D4). 1: Alarm does not occur (setting is possible for pm4018 D0 - D4).
	7	Cycle start interlock when system number switch is set at "1" or pm0109 D0 = 1 0: Cycle start interlock is not provided. 1: Cycle start interlock is provided.
pm4002	0 - 4	Reference point return direction (1st - 5th axis) 0: Positive direction 1: Negative direction
pm4003	6	Manual reference point return type in the second and later operation after power ON 0: High-speed type 1: Low-speed type
	7	Automatic reference point return type in the second and later operation after power ON 0: High-speed type 1: Low-speed type
pm4004	0 - 4	Occurrence of alarm if movement command other than G28 is executed without carrying out manual or automatic reference point return after power ON (1st - 5th axis) 0: Alarm does not occur. 1: Alarm occurs.
pm4006	0 - 4	Automatic coordinate system setting (1st - 5th axis) 0: Invalid 1: Valid

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4008	0	Returning of the execution pointer to the start of the program when the NC is reset by the external key operation 0: Returned 1: Not returned
	1	Rewinding of tape by M30 when YASNAC standard tape reader is connected to the No. 1 RS-232C port 0: Not rewound 1: Rewound
	2	Rewinding of tape by M30 when YASNAC standard tape reader is connected to the No. 2 RS-232C port 0: Not rewound 1: Rewound
	3	Possibility of starting of memory operation from a mid point of a block 0: Possible 1: Not possible; always started from the beginning of a block
	7	High-speed automatic start for high-speed rewind operation 0: Does not start at high-speed 1: Start at high-speed
pm4009	0	Present value is input to system variables #5001 and on at the execution of G31 skip. 0: Present value 1: Command value
	1	Macroprogram common variables #100 - #299 become <empty> by the reset operation. 0: Emptied 1: Not emptied
	2	Output of leading zeros if the upper digit value of a variable is "0" at the execution of DPRINT function 0: Spaces are output. 1: Nothing is output.
	7	MST status when operation mode is changed from automatic to manual 0: M, S, and T are forcibly finished without SPL indicating lamp lit. 1: M, S, and T are saved with SPL indicating lamp lit.

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4010	0	Processing after the change of offset amount 0: New offset amount becomes valid from the block to be buffered next. 1: New offset amount becomes valid from the H (D) code to be buffered next.
	1	D code in the G12/G13 mode 0: Modal 1: One shot
	2	Operation expression for the direct input of measured workpiece value 0: Present value saved temporarily – Keyed-in value 1: Keyed-in value – Present value saved temporarily
	6	Processing of D code after reset (valid when pm4011 D1 = 0) 0: 00 1: Saved
	7	Processing of H code after reset or reference point return (valid when pm4011 D1 = 1) 0: 00 1: Saved
pm4011	1	Designation of offset number for G45 - G48 0: Only D code 1: Only H code
	2	Validity of manual absolute function if there is no axis move command in the block where incremental amount is generated 0: Manual absolute function is valid. 1: Manual absolute function is not valid.
	3	Validity of manual absolute function if there is no axis move command in the block where incremental amount is not generated 0: Manual absolute function is valid. 1: Manual absolute function is not valid.
	7	Ignoring of the manual absolute function for the incremental commands. 0: Manual absolute function is not ignored. 1: Manual absolute function is ignored.
pm4012	0	Processing when the workpiece coordinate system shift distance is changed 0: New value becomes valid from the next command. 1: New value becomes valid from the next block.
	1	Reversing of the input incremental value of the workpiece coordinate system shift distance 0: Not reversed 1: Reversed
	7	Workpiece coordinate system setting expansion address 0: "J" 1: "P"

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4013 Tool radius offset C	0	Start-up and cancel motion 0: Type B compensation method 1: Type A compensation method
	1	Switching point of offset direction (G41/G42) 0: Point of intersection 1: At the start and end points
	2	Processing after the offset amount is changed 0: New offset amount becomes valid from the end point. 1: New offset amount becomes valid from the start point.
	3	Availability of interference check function 0: Not provided 1: Provided
	4	Processing after the detection of interference 0: Automatic correction 1: Alarm
pm4014	0 - 4	Direction of G60 unidirectional positioning operation (1st - 5th axis) 0: + 1: –

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4015	0	Entry of program restart mode 0: By I/O 1: By soft-key
	1	Allowable error range check for circular arc command 0: Not executed 1: Executed
	2	Waiting of PSET when exiting the geometry offset mode 0: PSET is not waited. 1: PSET is waited.
	3	Error detection at the completion dwell 0: Error detection is OFF. 1: Error detection is ON.
	4	In-position check when the G code mode is changed to G00 (G00, G01 → G00) 0: In-position check is not executed. 1: In-position check is executed.
	5	G00 error detection during solid tap 0: G00 error detection is ON. 1: G00 error detection is OFF.
	6	Display of the peak value of synchronization error between the spindle and the hole machining axis during solid tap. 0: Not displayed 1: Displayed
	7	Approach speed for program restart 0: Jog feedrate 1: Rapid traverse
pm4016	1	Positioning mode in a canned cycle 0: G00 1: G00 or G01, either of which presently selected
	2	M code to be output in the G74/G84 canned cycle 0: M code reversing the one specified before the start of the canned cycle 1: M03 for G74 and M04 for G84
	3	Output of M05 for changing the spindle rotation direction (forward/reverse) at the hole bottom in the G74, G84 canned cycle 0: M05 is not output. 1: M05 is output.
	4	Execution type of G184/G174 0: Return to R-point level in each feed (type A) 1: Pecking cycle (type B)

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4017	1	Output of M05 before the output of M19 in the G76/G77 cycle 0: M05 is not output. 1: M05 is output.
	2	Spindle override during the execution of G84/G74 tapping cycle 0: Fixed at 100% 1: Fixed at the value read at the start of cycle
	3	Validity of pm0400 dwell time in the G76/G77 cycle 0: Invalid 1: Valid
	4	Validity of pm0401 pitch dwell time 0: Invalid 1: Valid
pm4018	0 - 4	Occurrence of alarm (0411 - 0419) in response to the cycle start executed without carrying out manual reference point return after power ON (1st - 5th axis) 0: Alarm does not occur. 1: Alarm occurs.
pm4020	2	Backing up of the macro variable data during normal operation 0: Macro variable data is backed up. 1: Macro variable data is not backed up.
	4	Validity of B code macro execution on single block switch 0: Valid 1: Invalid
	5	Designation of argument in M code macro 0: Not designated 1: Designated
	6	Designation of multiple M codes in one block in M code macro 0: Second and later codes are regarded as normal M codes. 1: Second and later codes are regarded as argument.
	7	Designation of multiple S codes in one block in S code macro 0: Second and later codes are regarded as normal S codes. 1: Second and later codes are regarded as argument.
pm4021	6	Objective for argument in M (G) code macro call 0: The words given after the macro call code are regarded as the objective for argument. 1: The words given in the same block are all regarded as the objective for argument.

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4022	0 - 4	Validity of reference point return (1st - 5th axis) 0: Invalid 1: Valid
pm4024	0 - 4	Validity of playback write (1st - 5th axis) 0: Invalid 1: Valid
pm4029	0	Use of H and D codes 0: Used in common 1: Used individually
	1	Setting of the tool group in the skip status 0: Presently selected tool group 1: Tools in the specified tool group
pm4030	0	Binary data for direct operation 0: Invalid 1: Valid
	1	Buffering of T code command 0: Not buffered 1: Buffered
pm5000	0	Valid timing of cycle start signal 0: Valid at "0" → "1" 1: Valid at "1" → "0"
	1	Output of rewind signal when rewinding NC program by the reset and rewind signal 0: Output 1: Not output
	2	Turning ON of RST output signal when ESP input signal is ON 0: Not turned ON 1: Turned ON
pm5001	0	Selection of external data input data type 0: Binary 1: BCD
pm5010	0	First skip signal 0: Disable 1: Enable
	5	Sensor ON timing 0: Input of direct in signal "0" → "1" 1: Input of direct in signal "1" → "0"
	7	Manual skip function 0: Manual skip function is valid. 1: Manual skip B function is valid.
pm5011	0	Valid timing of first skip signal 0: "24 V" → "0 V" 1: "0 V" → "24 V"

Appendix Table 2.2 J300M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm5012	0	Servo power ON method 0: By power on button 1: By external input signal
	1	Measuring by work/offset presetter 0: By touch sensor 1: By soft-key
	2	Mode of measuring by work/offset presetter 0: I/O type 1: Soft-key type
pm5013	0	Tool measuring direction by offset presetter 0: X-axis direction 1: Y-axis direction
	2	Validity of TLM and offset presetter when both offset presetter and TLM options are set valid. 0: TLM is valid. 1: Offset presetter is valid.
	3	Execution of TLM measurement in manual skip B 0: Not executed 1: Executed
pm6000	0 - 4	Pitch error compensation (1st - 5th axis) 0: Invalid 1: Valid
pm6001	0	Setting of compensation data for the pitch error compensation function 0: Incremental 1: Absolute
pm6002	0 - 4	Execution of stored stroke limit check for entry prohibited area (1st - 5th axis) 0: Executed 1: Not executed
pm6004	0 - 4	Execution of stored stroke limit check for rotary axis (1st - 5th axis) 0: Not executed 1: Executed
pm6006	0 - 4	Axis disconnection (1st - 5th axis) 0: Invalid 1: Valid
pm6008	0	Measuring objective in tool length measurement 0: Travel distance 1: Remaining distance

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm0103	Time-out time of protocol 2 in DNC operation	1 - 15	1 = 1 s
pm0104	Time until the occurrence of ALM9023 (APL4 error) 0 : 489 ms 1 - 254 : 1 - 254 ms 255 : Waiting infinitely	0 - 255	
pm0107	Manual skip measuring point monitor	0 - 6	
pm0109	Internal system number switch setting "0", "1"	0 - 255	
pm0400	Dwell period for G76, G77	0 - 32767	1 = 1 ms
pm0401	Pitch dwell period for G73, G83	0 - 32767	1 = 1 ms
pm0420 - pm0425	Manual skip contact direction (No. 1 - No. 6 point)	Bit information D1: X– D8: X– D2: Y+ D9: Y– D3: Z+ D10:Z–	
pm0801	Break point sequence number setting (1)	1 - 99999	
pm0802	Break point sequence number setting (2)	1 - 99999	
pm0803	Scaling ratio setting (1) Ratio = pm0803/pm0804	1 - 999999	1 = 0.001
pm0804	Scaling ratio setting (2)	1 - 1000000	1 = 0.001
pm0805	Angle for G76, G77	1 - 360000	1 = 0.001 deg
pm0806	Tool length measurement bias amount	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0807	Tool length measurement bottom level	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0811 - pm0815	Coordinate values at skip signal input (1st - 5th axis)	0 - ±999999999	1 = Minimum input unit
pm0820 - pm0828	F1-digit feedrate (F1 - F9)	0 - 2400000	In "mm" mode 1 = 0.1 mm/min In "inch" mode 1 = 0.01 inch/min
pm0831 - pm0833	No. 2 stored stroke limit, 1st - 3rd axis (+)	0 - ±999999999	1 = Minimum detection unit
pm0834 - pm0836	No. 2 stored stroke limit, 1st - 3rd axis (–)	0 - ±999999999	1 = Minimum detection unit
pm0837 - pm0839	No. 3 stored stroke limit, 1st - 3rd axis (+)	0 - ±999999999	1 = Minimum detection unit
pm0840 - pm0842	No. 3 stored stroke limit, 1st - 3rd axis (–)	0 - ±999999999	1 = Minimum detection unit
pm0843 - pm0845	No. 4 stored stroke limit, 1st - 3rd axis (+)	0 - ±999999999	1 = Minimum detection unit
pm0846 - pm0848	No. 4 stored stroke limit, 1st - 3rd axis (–)	0 - ±999999999	1 = Minimum detection unit

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm0849 - pm0851	No. 5 stored stroke limit, 1st - 3rd axis (+)	0 - ±999999999	1 = Minimum detection unit
pm0852 - pm0854	No. 5 stored stroke limit, 1st - 3rd axis (–)	0 - ±999999999	1 = Minimum detection unit
pm0860	Deceleration feedrate by corner feedrate designation function, "mm" mode (P)	0 - 240000	1 = 1 mm/min
pm0861	Deceleration distance by corner feedrate designation function, "mm" mode (L)	0 - 999999999	1 = 0.001 mm
pm0862	Deceleration feedrate by corner feedrate designation function, "inch" mode (P)		1 = 0.1 inch/min
pm0863	Deceleration distance by corner feedrate designation function, "inch" mode (L)		1 = 0.0001 inch
pm0870	Return stroke in G73 cycle (rapid traverse)	0 - 999999999	1 = 0.001 mm, 0.0001 inch
pm0871	Return stroke in G83 cycle (rapid traverse)	0 - 999999999	1 = 0.001 mm, 0.0001 inch
pm0873	Returns stroke in G184/G174 cycle (rapid traverse)	0 - 999999999	1 = 0.001 mm, 0.0001 inch
pm0905 - pm0908	Calendar output function, date setting, No. 1 - No. 4 parameters		
pm0920 - pm0922	Manual skip position information, No. 1 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0923 - pm0925	Manual skip position information, No. 2 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0926 - pm0928	Manual skip position information, No. 3 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0929 - pm0931	Manual skip position information, No. 4 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0932 - pm0934	Manual skip position information, No. 5 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0935 - pm0937	Manual skip position information, No. 6 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm1100 - pm1102	Servo axis display name (X-axis)	X: 88 00 00	
pm1103 - pm1105	Servo axis display name (Y-axis)	Y: 89 00 00	
pm1106 - pm1108	Servo axis display name (Z-axis)	Z: 90 00 00	
pm1109 - pm1111	Servo axis display name (4th-axis)	U: 85 00 00 V: 86 00 00 W: 87 00 00 A: 65 00 00 B: 66 00 00 C: 67 00 00 Set any of the above values	
pm1112 - pm1114	Servo axis display name (5th-axis)		
pm1127 - pm1129	Spindle display name	S: 83 00 00	Set by converting ASCII code into decimal

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm1142 - pm1144	Servo axis automatic system axis display name (X-axis)	X: 88 00 00	Set by converting ASCII code into decimal
pm1145 - pm1147	Servo axis automatic system axis display name (Y-axis)	Y: 89 00 00	Set by converting ASCII code into decimal
pm1148 - pm1150	Servo axis automatic system axis display name (Z-axis)	Z: 90 00 00	Set by converting ASCII code into decimal
pm1151 - pm1153	Servo axis automatic system axis display name (4th-axis)	U: 85 00 00 V: 86 00 00 W: 87 00 00 A: 65 00 00 B: 66 00 00 C: 67 00 00 Set any of the above values	Set by converting ASCII code into decimal
pm1154 - pm1156	Servo axis automatic system axis display name (5th-axis)		Set by converting ASCII code into decimal
pm1169 - pm1171	Spindle automatic system axis display name	S: 83 00 00	Set by converting ASCII code into decimal
pm1200	High-speed mode operation, number of controlled axes	3 - 5	3: 3 axes, 4: 4 axes, 5: 5 axes
pm1201	High-speed mode operation, address name of additional 4th axis (input in the ASCII code)	U: 85 00 00 V: 86 00 00 W: 87 00 00 A: 65 00 00 B: 66 00 00 C: 67 00 00 Set any of the above values	
pm1202	High-speed mode operation, address name of additional 5th axis (input in the ASCII code)		
pm1220	Spindle index confirmation timer	1 - 255	1 = 4 ms
pm1225	Spindle index stopped confirmation speed	1 - 255	1 = 1 r/min
pm1226	Spindle index stopped confirmation speed, gear B selected	1 - 255	1 = 1 r/min
pm1240	Axis number to execute solid tap (1)	1	
pm1241	Servo axis number to execute solid tap (1)	1 - 5	
pm1252	Solid tap (1) return feedrate multiplication ratio	1 - 255	1 = 0.1 times
pm1253	Solid tap (2) return feedrate multiplication ratio		
pm1260	Spindle, loop control gear number (A)	0 - 4	
pm1261	Spindle, loop control gear number (B)	0 - 4	
pm1321 - pm1325	1st - 5th axis, error detect on area	0 - 255	1 = Minimum input unit
pm1331	Spindle, error detection on area in loop control	0 - 255	1 = Minimum input unit
pm1332	Spindle, error detection on area in loop control, gear B selected	0 - 255	1 = Minimum input unit

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm1351	Spindle, magnification ratio for axis feed in servo error area in reference to rapid traverse rate	0 - 200	1 = 1 %
pm1400 - pm1403	Spindle, spindle speed clamp (minimum) for gear 1 - gear 4	0 - 30000	1 = 1 r/min, 10 r/min Note: According to the setting for pm1002 D0
pm1404 - pm1407	Spindle, spindle speed clamp (maximum) for gear 1 - gear 4	0 - 30000	1 = 1 r/min, 10 r/min
pm1408 - pm1411	Spindle, max. motor speed for gear 1 - gear 4	0 - 30000	1 = 1 r/min, 10 r/min
pm1412	Spindle speed in response to the input of spindle orientation (SOR) signal	0 - 32767	1 = 1 r/min
pm1413	Motor speed in response to the input of spindle gear shift (SRO)	0 - 32767	1 = 1 r/min
pm1414	Spindle, zero point for indexing	0 - 4095	1 = 360/4096 deg
pm1415	Spindle, maximum speed corresponding to 10 V of command	0 - 32767	1 = 1 r/min, 10 r/min
pm1416	Maximum spindle speed during solid tap	0 - 32767	1 = 1 r/min, 10 r/min
pm1417	Spindle, position loop gain	0 - 32767	1 = 0.01 [S^{-1}]
pm1418	Maximum spindle speed corresponding to 10 V of command (C-axis is used)	0 - 666	1 = 1 r/min
pm1419	Spindle, specified speed for gear A	0 - 32767	1 = 1 r/min
pm1435	Spindle, maximum spindle speed corresponding to 10 V command (gear B selected)	0 - 32767	1 = 1 r/min, 10 r/min
pm1436	Spindle, maximum spindle speed during solid tap (gear B selected)	0 - 32767	1 = 1 r/min, 10 r/min
pm1437	Spindle, position loop gain (gear B selected)	0 - 32767	1 = 0.01 [S^{-1}]
pm1500	Solid tap (1), servo axis drawing-in in-position width	0 - 32767	1 = Minimum input unit
pm1501	Solid tap (2), servo axis drawing-in in-position width	0 - 32767	1 = Minimum input unit
pm1502	Solid tap (1), synchronization offset parameter K1	–32767 - 32767	
pm1503	Solid tap (1), synchronization offset parameter K2	–32767 - 32767	
pm1504	Solid tap (2), synchronization offset parameter K1	–32767 - 32767	
pm1505	Solid tap (2), synchronization offset parameter K2	–32767 - 32767	
pm1506	Rotary tool spindle (1), synchronization offset parameter K1'	–32767 - 32767	
pm1507	Rotary tool spindle (1), synchronization offset parameter K2'	–32767 - 32767	

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm1510	Spindle, the number of teeth of gear A at the spindle side used in loop control	0 - 32767	1 = 1 tooth Note: "9" if intermediate gear is not used.
pm1511	Spindle, the number of teeth of gear A of spindle intermediate gear in loop control	0 - 32767	1 = 1 tooth
pm1512	Spindle, the number of teeth of gear A of intermediate gear in loop control	0 - 32767	1 = 1 tooth
pm1513	Spindle, the number of teeth of gear A at the motor side used in loop control	0 - 32767	1 = 1 tooth
pm1514	Spindle, the number of teeth of gear B at the spindle side used in loop control	0 - 32767	1 = 1 tooth
pm1515	Spindle, the number of teeth of gear B of spindle intermediate gear in loop control	0 - 32767	1 = 1 tooth
pm1516	Spindle, the number of teeth of gear B of intermediate gear in loop control	0 - 32767	1 = 1 tooth
pm1517	Spindle, the number of teeth of gear B at the motor side used in loop control	0 - 32767	1 = 1 tooth
pm1540	Delay time to check the spindle speed arrived signal (SAGR)	0 - 32767	1 = 1 ms
pm1551 - pm1555	1st - 5th axis, backlash compensation amount	0 - 32767	1 = 1 μM
pm1561 - pm1565	Number of teeth of motor when changing the servo feed amount (1st - 5th axis)	1 - 255	1 = 1 tooth
pm1571 - pm1575	Number of teeth of screw when changing the servo feed amount (1st - 5th axis)	1 - 255	1 = 1 tooth
pm1580	1st axis, position loop gain Kp	500 - 20000	1 = 0.01 [1/s]
pm1581	1st axis, velocity loop gain Kv	350 - 32767	1 = 0.1 [1/s]
pm1582	1st axis, velocity loop integration time constant Ti	26 - 32767	1 = 0.01 [ms]
pm1584	1st axis, velocity feed forward gain Kvfff	0 - 100	1 = 0.01 [%] 1 = 1%
pm1586	1st axis, axis torsion filter time constant Tn	1 - 32767	1 = 0.01 [ms]
pm1589	1st axis, monitor board signal selection, multiplication ratio	1 - 32767	
pm1590	2nd axis, position loop gain Kp	500 - 20000	1 = 0.01 [1/s]
pm1591	2nd axis, velocity loop gain Kv	350 - 32767	1 = 0.1 [1/s]
pm1592	2nd axis, velocity loop integration time constant Ti	26 - 32767	1 = 0.01 [ms]
pm1594	2nd axis, velocity feed forward gain Kvfff	0 - 100	1 = 0.01 [%] 1 = 1%
pm1596	2nd axis, axis torsion filter time constant Tn	1 - 32767	1 = 0.01 [ms]
pm1599	2nd axis, monitor board signal selection, multiplication ratio	1 - 32767	
pm1600	3rd axis, position loop gain Kp	500 - 20000	1 = 0.01 [1/s]

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm1601	3rd axis, velocity loop gain Kv	350 - 32767	1 = 0.1 [1/s]
pm1602	3rd axis, velocity loop integration time constant Ti	26 - 32767	1 = 0.01 [ms]
pm1604	3rd axis, velocity feed forward gain Kvfff	0 - 100	1 = 0.01 [%] 1 = 1%
pm1606	3rd axis, axis torsion filter time constant Tn	1 - 32767	1 = 0.01 [ms]
pm1609	3rd axis, monitor board signal selection, multiplication ratio	1 - 32767	
pm1610	4th axis, position loop gain Kp	500 - 20000	1 = 0.01 [1/s]
pm1611	4th axis, velocity loop gain Kv	350 - 32767	1 = 0.1 [1/s]
pm1612	4th axis, velocity loop integration time constant Ti	26 - 32767	1 = 0.01 [ms]
pm1614	4th axis, velocity feed forward gain Kvfff	0 - 100	1 = 0.01 [%] 1 = 1%
pm1616	4th axis, axis torsion filter time constant Tn	1 - 32767	1 = 0.01 [ms]
pm1619	4th axis, monitor board signal selection, multiplication ratio	1 - 32767	
pm1620	5th axis, position loop gain Kp	500 - 20000	1 = 0.01 [1/s]
pm1621	5th axis, velocity loop gain Kv	350 - 32767	1 = 0.1 [1/s]
pm1622	5th axis, velocity loop integration time constant Ti	26 - 32767	1 = 0.01 [ms]
pm1624	5th axis, velocity feed forward gain Kvfff	0 - 100	1 = 0.01 [%] 1 = 1%
pm1626	5th axis, axis torsion filter time constant Tn	1 - 32767	1 = 0.01 [ms]
pm1629	5th axis, monitor board signal selection, multiplication ratio	1 - 32767	
pm1671 - pm1675	1st - 5th axis, torque limit (+)	1 - 32767	1 = 1 [%]
pm1681 - pm1685	1st - 5th axis, torque limit (–)	–32767 - –1	1 = 1 [%]
pm1701 - pm1705	1st - 5th axis, backlash sub-compensation amount	1 - 32767	1 = 1 pulse Minimum detection unit = L (pm1821)/ PG (pm1071)
pm1711 - pm1715	1st - 5th axis, backlash time constant	1 - 32767	1 = 0.01 [ms]
pm1791 - pm1795	1st - 5th axis, multi-segment geometry offset coefficient	0 - 32767	1 = ×0.001
pm1801 - pm1805	1st - 5th axis, geometry offset coefficient	0 - 32767	1 = ×0.001
pm1821 - pm1825	1st - 5th axis, axis move distance or table rotation angle per 1 turn of motor	0 - 999999999	1 = Minimum detection unit or 0.001 deg
pm1831 - pm1835	1st - 5th axis, inertia of load	0 - 32767	1 = 0.01 [kg-cm^2]
pm1841 - pm1845	1st - 5th axis, minimum detection unit of separately installed PG or number of pulses per 1 turn of motor	0 - 999999999	1 = 1/1000 μm (0.000001 deg) or 1 = 1 pulse
pm2111 - pm2119	In F1-digit designation, variation in feedrate per division of pulse handle	0 - 255	1 = 0.1 mm/min/pulse

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm2400 - pm2431	Feedrate corresponding to the JOG FEEDRATE setting position, 0 - 31	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2432	Multiplication of jog feedrate parameter value by 10 or 100	1, 10, 100	1 = ×1
pm2433	Designation of the addition start switch position if pm2432 ≠ 0	0 - 31	
pm2434	Designation of position where the jog feedrate parameter value is multiplied by 1/10 (if both pm2433 and pm2434 are specified, pm2433 is given priority.)	0 - 31	
pm2440	Feedrate for the execution of skip	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2444	Feedrate of rapid traverse by external deceleration	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2445	Feedrate of cutting feed by external deceleration	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2447	Feedrate for rapid traverse override F_0	0 - 100, 0 - 32767	1 = 1 mm/min (pm2000 D3 = 0) 1 = 1% (pm2000 D3 = 1)
pm2448	Feedrate for rapid traverse override F_1	0 - 100	1 = 1 %
pm2449	Feedrate for rapid traverse override F_2	0 - 100	1 = 1 %
pm2459	Multiplication value for ×100 position of manual pulse multiply switch	0 - 32767	1 = ×1
pm2461 - pm2465	1st - 5th axis, rapid traverse acceleration/deceleration time constant	4 - 32767	1 = 1 ms (multiple of 4)
pm2471	Spindle, rapid traverse acceleration/deceleration time constant	4 - 32767	1 = 1 ms (multiple of 4)
pm2472	Spindle, rapid traverse acceleration/deceleration time constant (gear B selected)	4 - 32767	1 = 1 ms (multiple of 4)
pm2501 - pm2505	1st - 5th axis, acceleration/deceleration time constant in normal cutting	0 - 32767	1 = 1 ms
pm2511 - pm2515	1st - 5th axis, acceleration/deceleration time constant in thread cutting/tapping	0 - 32767	1 = 1 ms
pm2521 - pm2525	1st - 5th axis, reference point return approach speed	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm2531 - pm2535	1st - 5th axis, reference point return creep speed	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2541	No. 1 spindle, index start speed	1 - 32767	1 = 1 r/min
pm2542	No. 1 spindle, index start speed (gear B selected)	1 - 32767	1 = 1 r/min
pm2546	No. 1 spindle, index creep speed	1 - 32767	1 = 1 r/min
pm2547	No. 1 spindle, index creep speed (gear B selected)	1 - 32767	1 = 1 r/min
pm2561 - pm2565	1st - 5th axis, acceleration/deceleration time constant in handle feed	4 - 32767	1 = 1 ms (multiple of 4)
pm2571 - pm2575	1st - 5th axis, acceleration/deceleration time constant in No. 2 G00 mode operation	4 - 32767	1 = 1 ms (multiple of 4)
pm2580	Cutting feedrate acceleration	125 - 32767	1 = 0.001 m/s (multiple of 4)
pm2581	S-curve factor in cutting feed	0 - 6	
pm2591 - pm2595	1st - 5th axis, S-curve factor in rapid traverse acceleration/deceleration	0 - 20	
pm2601 - pm2605	1st - 5th axis, S-curve factor in rapid traverse acceleration/deceleration in second S-curve acceleration/deceleration	0 - 15	
pm2800	Maximum cutting feedrate (linear axis)	0 - 240000	1 = 1 mm/min, 0.1 inch/min
pm2801 - pm2805	1st - 5th axis, rapid traverse rate	0 - 240000	1 = 1 mm/min, 0.1 inch/min
pm2809	Maximum high–speed cutting feedrate	0 - 240000	1 = 1 mm/min, 0.1 inch/min
pm2810	Maximum cutting feedrate (rotary axis)	0 - 240000	1 = 1 deg/min
pm2811 - pm2815	1st - 5th axis, rapid traverse rate in second S-curve acceleration/deceleration	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2821 - pm2825	1st - 5th axis, bias in normal acceleration/deceleration	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2831 - pm2835	1st - 5th axis, bias in thread cutting acceleration/deceleration	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2851 - pm2855	1st - 5th axis, second G00 feedrate	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2860	Maximum feedrate in handle feed (linear axis)	0 - 240000	1 = 1mm/min, 0.1 inch/min
pm2861	Maximum feedrate in handle feed (rotary axis)	0 - 240000	1 = 1deg/min

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm2862	Feedrate in high-speed feedrate section during circle cut	0 - 240000	1 = 1mm/min, 0.1 inch/min
pm2863	Number of servo lag pulses for feed clamp in handle feed operation("0": Not clamped)	0 - 240000	1 = 1 pulse
pm2864	Shift feedrate in G76/G77 canned cycle	0 - 240000	1 = 1 mm/min, 0.1 inch/min
pm2865	Maximum feedrate in F1-digit feed (F1 - F4)	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2866	Maximum feedrate in F1-digit feed (F5 - F9)	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm3400 - pm3409	Title display at power on, 1st line, 1 - 10 columns		Set by converting ASCII code into decimal
pm3410 - pm3419	Title display at power on, 2nd line, 1 - 10 columns		Set by converting ASCII code into decimal
pm3420	Title display, magnification ratio 1st line : 2 times 2nd line : 1 time Set 12h = 18 (decimal)	1st digit: Magnification for the 1st line (1 - 3) 2nd digit: Magnification for the 2nd line (1 - 3)	2-digit value is assumed to be a hexadecimal number; convert it into decimal for setting.
pm3421	Title display, display start position 1st line : 10th digit 2nd line : 12th digit Set 0C0Ah = 3082 (decimal)	1st and 2nd digits: 1st line start position (1 - 39) 3rd and 4th digits: 2nd line start position (1 - 39)	2-digit value is assumed to be a hexadecimal number; convert it into decimal for setting.
pm3422	Tool pot, display start number	7000 - 7999	Battery backed-up memory number
pm3423	Tool pot, display end number	7000 - 7999	Battery backed-up memory number
pm3424	ATC display, MG number	7000 - 7999	Battery backed-up memory number
pm3425	ATC display, SP number	7000 - 7999	Battery backed-up memory number
pm3426	ATC display, WT number	7000 - 7999	Battery backed-up memory number
pm3427	Sub-tool pot number, display start number	7000 - 7999	Battery backed-up memory number

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm3428	Sub-tool pot number, display end number	7000 - 7999	Battery backed-up memory number
pm3440	"RDI" command PLC battery backed-up memory number designation	7000 - 7999	
pm3441	"SOD" command PLC battery backed-up memory number designation	7000 - 7999	
pm3442	Spindle forward rotation M code number (for drawing)	0 - 999	
pm3443	Spindle reverse rotation M code number (for drawing)	0 - 999	
pm3444	Spindle stop M code number (for drawing)	0 - 999	
pm3445	Spindle orientation M code number (for drawing)	0 - 999	
pm3446	Tool change M code number (for drawing)	0 - 999	
pm3447	Coolant ON M code number (for drawing)	0 - 999	
pm3448	Coolant OFF M code number (for drawing)	0 - 999	
pm3449	Average time necessary for the execution of an M code (for drawing)	0 - 65535	1 = 1 ms
pm3450	Average time necessary for the execution of an S code (for drawing)	0 - 65535	1 = 1 ms
pm3451	Average time necessary for the execution of a T code (for drawing)	0 - 65535	1 = 1 ms
pm3830 - pm3853	"0" must be set; the system uses these parameters.		
pm4100	Punched hole pattern, in EIA code, of special characters used in user macro, #	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4101	Punched hole pattern, in EIA code, of special characters used in user macro, [	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4102	Punched hole pattern, in EIA code, of special characters used in user macro,]	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4103	Punched hole pattern, in EIA code, of special characters used in user macro, *	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4104	Punched hole pattern, in EIA code, of special characters used in user macro, =	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4105	Punched hole pattern, in EIA code, of special characters used in user macro, (	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm4106	Punched hole pattern, in EIA code, of special characters used in user macro,)	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4107	Punched hole pattern, in EIA code, of special characters used in user macro, .	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4108	Punched hole pattern, in EIA code, of special characters used in user macro, ,	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4109	Punched hole pattern, in EIA code, of special characters used in user macro, " "	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4110	Tool life control group command T code offset	Tool life control group (0 - 9) =T command − pm4110 × 1000	
pm4143	Designation of coordinate system if work coordinate system shift is executed at power on or reference point return	54 - 59	
pm4144	Punched hole pattern, in EIA code, of special characters used in user macro, <	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4145	Punched hole pattern, in EIA code, of special characters used in user macro, >	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4146	Punched hole pattern, in EIA code, of special characters used in user macro, ;	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4160	Designation of operation mode in high-speed mode operation		0: Not converted 1: Converted in the specified sections
pm4161 - pm4163	High-speed mode operation conversion start designation code (in ASCII) if pm4160 = 1 (Example) HON pm4161 48H pm4162 4FH pm4163 4EH		
pm4164 - pm4166	High-speed mode operation conversion end designation code (in ASCII) if pm4160 = 1 (Example) HOF pm4164 48H pm4165 4FH pm4166 46H		
pm4167	Segment type in high-speed mode operation	1 - 4	1 = 1 ms, 2 = 2 ms, 4 = 4 ms
pm4400 - pm4409	Buffering stop M code (1) - (10)	0 - 999	

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm4450	Small arc skip value in nose R and tool radius offset mode	0 - 32767	1 = Minimum input unit
pm4451 - pm4455	1st - 5th axis, reference point return distance	0 - 32767	1 = 0.001 mm, 0.001 deg
pm4461 - pm4465	1st - 5th axis, overtravel distance in G60	0 - 32767	1 = 0.001 mm, 0.0001 inch, 0.001 deg
pm4480 - pm4503	G code macro (1 - 24) call G code	1 - 999	
pm4504 - pm4527	M code macro (1 - 24) call M code	1 - 9999	
pm4551 - pm4555	Virtual C-phase shift distance, 1st - 5th axis	–32767 - 32767	1 = 0.001 mm, 0.001 deg
pm4800	High-speed mode operation, acceleration/deceleration at corners		1 = 1 mm/sec^2
pm4801 - pm4805	1st - 5th axis, automatic coordinate system in "mm" input	0 - ±999999999	1 = Minimum input unit in "mm" system
pm4810	High-speed mode operation, acceleration/deceleration		1 = 1 mm/sec^2
pm4811 - pm4815	1st - 5th axis, automatic coordinate system in "inch" input	0 - ±999999999	1 = Minimum input unit in "inch" system
pm4820	Allowable error range in circular arc interpolation by R command	0 - 999999999	1 = 0.001 mm, 0.0001 inch
pm4823	High-speed mode operation, allowable acceleration in circular arc interpolation block		1 = 1 mm/sec^2
pm4840 - pm4863	G code macro (1 - 24) call program number	0 - 99999	
pm4864 - pm4887	M code macro (1 - 24) call program number	0 - 99999	
pm4888	S code macro call designation	"0" or call program number	
pm4889	T code macro call designation	"0" or call program number	
pm4890	B code macro call designation	"0" or call program number	
pm5400	Duration of time from resetting of signal for turning servo power off to brake release at servo power ON	0 - 32767	1 = 1 ms
pm5401 - pm5405	1st - 5th axis, duration of time from ESP signal (normally closed) rising edge to base block ON	0 - 32767	1 = 1 ms
pm5410	Duration of time from sending M, S, T code to sending of MF, SF, TF	0 - 32767	1 = 1 ms
pm5420	Software switch, input battery backed-up memory start number	7000 - 7999	

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm5421	Software switch, output battery backed-up memory start number	7000 - 7999	
pm5427	Program restart switch, battery backed-up memory number	7000 - 7999	
pm5428	Manual skip signal, battery backed-up memory number (workpiece presetter)	7000 - 7999	
pm6101 - pm6105	1st - 5th axis, pitch error compensation magnification ratio	0 - 3	
pm6111 - pm6113	No. 2 stored stroke limit check axis designation, 1 - 3	0 - 3	1 = X-axis, 2 = Y-axis, 3 = Z-axis
pm6114 - pm6116	No. 3 stored stroke limit check axis designation, 1 - 3	0 - 3	
pm6117 - pm6119	No. 4 stored stroke limit check axis designation, 1 - 3	0 - 3	
pm6120 - pm6122	No. 5 stored stroke limit check axis designation, 1 - 3	0 - 3	
pm6130 - pm6139	No. 1 - No. 10 position monitor, check axis	0 - 5	
pm6401 - pm6405	1st - 5th axis, pitch error compensation data storing memory start number		
pm6411 - pm6415	1st - 5th axis, pitch error compensation data storing memory end number		
pm6421 - pm6425	1st - 5th axis, memory number storing the reference point for pitch error compensation		
pm6801 - pm6805	1st - 5th axis, pitch error compensation intervals	0 - 999999999	1 = 0.001 mm, 0.0001 inch, 0.001 deg
pm6811 - pm6815	1st - 5th axis, second reference point position	0 - ±999999999	1 = 0.001 mm, 0.0001 inch, 0.001 deg
pm6821 - pm6825	1st - 5th axis, third reference point position	0 - ±999999999	1 = 0.001 mm, 0.0001 inch, 0.001 deg
pm6831 - pm6835	1st - 5th axis, fourth reference point position	0 - ±999999999	1 = 0.001 mm, 0.0001 inch, 0.001 deg
pm6840	Offset presetter measuring direction reference value, X0	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6841	Offset presetter measuring direction reference value, Z0	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6842	Work presetter measuring probe radius, (DX+)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6843	Work presetter measuring probe radius, (DX–)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6844	Work presetter measuring probe radius, (DX+)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6845	Work presetter measuring probe radius, (DY–)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6846	Work presetter measuring probe radius, (HZ–)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch

Appendix Table 2.2 J300M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm6847	Work presetter measuring enabled retraction stroke	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6848	Work presetter measuring point feed-away stroke	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6861 - pm6865	1st - 5th axis, pitch error compensation stroke (maximum)	0 - ±999999999	1 = 0.001 mm, 0.001 deg
pm6871 - pm6875	1st - 5th axis, pitch error compensation stroke (minimum)	0 - ±999999999	1 = 0.001 mm, 0.001 deg
pm6881 - pm6885	1st - 5th axis, pitch error compensation reference point position	0 - ±999999999	1 = 0.001 mm, 0.001 deg
pm6901 - pm6905	1st - 5th axis, stored stroke limit (+)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch, 0.001 deg
pm6911 - pm6915	1st - 5th axis, stored stroke limit (–)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch, 0.001 deg
pm6920 - pm6929	No. 1 - No. 10 position monitor positive direction area boundary value	0 - ±999999999	1 = 0.001 mm
pm6930 - pm6939	No. 1 - No. 10 position monitor negative direction area boundary value	0 - ±999999999	1 = 0.001 mm
pm8811 - pm8815	1st - 5th axis, offset amount in zero point setting	0 - ±999999999	1 = 1 pulse

APPENDIX 2.3 PARAMETER TABLE (YENET1200 COMPATIBLE DRIVER FOR J300M/J100M)

When the driver compatible with the YENET1200 is used, the contents of the parameters are partly changed. In this case, please refer to Table 2.3.

Appendix Table 2.3 J300M/J100M Parameter Table

Parameter No.	Bit	Description		
pm0000	0	Single-block switch	0: OFF	1: ON
	1	Machine lock switch	0: OFF	1: ON
	2	Dry run switch	0: OFF	1: ON
	3	Block delete switch	0: OFF	1: ON
	4	Manual absolute switch	0: OFF	1: ON
	5	Auxiliary function lock switch	0: OFF	1: ON
	6	Display lock switch	0: OFF	1: ON
	7	Edit lock switch	0: OFF	1: ON
pm0001	0	Optional stop switch	0: OFF	1: ON
	1	Start lock switch	0: OFF	1: ON
	2	Z-axis neglect switch	0: OFF	1: ON
pm0002	0	Mirror image 1	0: OFF	1: ON
	1	Mirror image 2	0: OFF	1: ON
	2	Mirror image 3	0: OFF	1: ON
	3	Mirror image 4	0: OFF	1: ON
	4	Mirror image 5	0: OFF	1: ON
pm0003	1	Axis disconnection designation (4th-axis)	0: OFF	1: ON
	2	Axis disconnection designation (5th-axis)	0: OFF	1: ON

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0004 Data setting for No. 1 port	0	ISO/EIA code selection for output tape code 0: ISO code 1: EIA code
	1	Execution of TV check 0: Not executed 1: Executed
	2	Counting the number of characters in ( ) for TV check 0: Not counted 1: Counted
	3	TH check for ISO code input 0: Executed 1: Not executed
	4	Feed holes in output to tape 0: Not punched 1: Punched
	5	TH check for ISO code output 0: Executed 1: Not executed
	6	EOB codes in ISO code output 0: CR and LF 1: LF
pm0005	0	Manual zero return switch 0: OFF 1: ON
	1	No. 2 manual zero return switch 0: OFF 1: ON
	2	Interruption point return switch 0: OFF 1: ON
	3	Automatic mode handle offset switch 0: OFF 1: ON
	4	Setup point return switch 0: OFF 1: ON
	5	Playback switch 0: OFF 1: ON
	6	F1-digit switch 0: OFF 1: ON
	7	Program restart switch 0: OFF 1: ON

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0006	0	ISO/EIA code selection for output tape code 0: ISO code 1: EIA code
	1	Execution of TV check 0: Not executed 1: Executed
	2	Counting the number of characters in ( ) for TV check 0: Not counted 1: Counted
	3	TH check for ISO code input 0: Executed 1: Not executed
	4	Feed holes in output to tape 0: Not punched 1: Punched
	5	TH check for ISO code output 0: Executed 1: Not executed
	6	EOB codes in ISO code output 0: CR and LF 1: LF

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0007	0	Selection of input unit 0: mm 1: inches
	1	Operation instructions and control instructions in user macro 0: Not interrupted by single-block stop. 1: Interrupted by single-block stop.
	2	Occurrence of an alarm if skip signal is not turned ON until the completion of axis move specified in the skip function block 0: An alarm occurs. 1: An alarm does not occur.
	3	Addition of work shift correction amount 0: Not added 1: Added
	4	Tool life control by T command 0: Executed 1: Not executed (valid only when the optional tool life control function is selected.)
	5	Display of program list during input/output/verify of a program 0: Program list is displayed. 1: Program list not displayed.
	6	"0" data in parameter output 0: "0" data are output. 1: "0" data are not output.
	7	Buzzer sound for the operation of keys in the keyboard 0: No buzzer sound 1: Buzzer sound

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0008	0	No. 2 stored stroke limit 0: Invalid 1: Valid
	1	No. 3 stored stroke limit 0: Invalid 1: Valid
	2	No. 4 stored stroke limit 0: Invalid 1: Valid
	3	No. 5 stored stroke limit 0: Invalid 1: Valid
	4	No. 2 entry prohibited area 0: Inside the boundary 1: Outside the boundary
	5	No. 3 entry prohibited area 0: Inside the boundary 1: Outside the boundary
	6	No. 4 entry prohibited area 0: Inside the boundary 1: Outside the boundary
	7	No. 5 entry prohibited area 0: Inside the boundary 1: Outside the boundary
pm0009	0	Selection of input port 0: No. 1 port 1: No. 2 port
	1	The code used for counting 0: An M code 1: T9999 command
	6.7	Number of tool life control groups and tools (pm0009) Groups Tools D6 D7 ①128 2 0 0 ② 64 4 1 0 ③ 32 8 0 1 ④ 16 16 1 1

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0010 No. 1 port device setting	0 - 3	Input device setting D3 D2 D1 D0 0 0 0 0 Reserved 0 0 0 1 YE tape reader 0 0 1 0 General-purpose RS-232C device 0 0 1 1 Not used – 1 1 1 1
	4 - 6	Output device setting D7 D6 D5 D4 0 0 0 0 Reserved 1 0 0 0 1 Reserved 2 0 0 1 0 General-purpose RS-232C device 0 0 1 1 Not used – 1 1 1 1
pm0011 Communication parameter setting No. 1 port (input) for general-purpose RS-232C device (format)	0 - 2	BPS setting D2 D1 D0 0 0 0 100 or 75 0 0 1 110 or 150 0 1 0 300 0 1 1 600 1 0 0 1200 1 0 1 2400 1 1 0 4800 1 1 1 9600
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity
	7	Setting of low baud rate selection 0: 100 and 110 bps 1: 75 and 150 bps

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0012 Communication parameter setting No. 1 port (input) for general-purpose RS-232C device (control)	0	Control by control code 0: Not executed 1: Executed
	1	RTS control 0: Not executed 1: Executed
	2	DR line check 0: Not executed 1: Executed
	7	NC data special control 0: Not executed 1: Executed
pm0013 Communication parameter setting No. 1 port (output) for general-purpose RS-232C device (format)	0 - 2	BPS setting D2 D1 D0 0 0 0 100 or 75 0 0 1 110 or 150 0 1 0 300 0 1 1 600 1 0 0 1200 1 0 1 2400 1 1 0 4800 1 1 1 9600
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity
	7	Setting of low baud rate selection 0: 100 and 110 bps 1: 75 and 150 bps

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0014 Communication parameter setting No. 1 port (output) for general-purpose RS-232C device (control)	0	Control by control code 0: Not executed 1: Executed
	1	RTS control 0: Not executed 1: Executed
	2	DR line check 0: Not executed 1: Executed
	7	NC data special control 0: Not executed 1: Executed
pm0015 No. 2 port device setting	0 - 3	Input device setting D3 D2 D1 D0 0 0 0 0 Reserved 0 0 0 1 YE tape reader 0 0 1 0 General-purpose RS-232C device 0 0 1 1 Not used – 1 1 1 1
	4 - 7	Output device setting D7 D6 D5 D4 0 0 0 0 Reserved 1 0 0 0 1 Reserved 2 0 0 1 0 General-purpose RS-232C device 0 0 1 1 Not used – 1 1 1 1

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0016 Communication parameter setting No. 2 port (output) for general-purpose RS-232C device (format)	0 - 2	BPS setting D2 D1 D0 0 0 0 100 or 75 0 0 1 110 or 150 0 1 0 300 0 1 1 600 1 0 0 1200 1 0 1 2400 1 1 0 4800 1 1 1 9600
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity
	7	Setting of low baud rate selection 0: 100 and 110 bps 1: 75 and 150 bps
pm0017 Communication parameter setting No. 2 port (output) for general-purpose RS-232C device (control)	0	Control by control code 0: Not executed 1: Executed
	1	RTS control 0: Not executed 1: Executed
	2	DR line check 0: Not executed 1: Executed
	7	NC data special control 0: Not executed 1: Executed

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0018 Communication parameter setting No. 2 port (output) for general-purpose RS-232C device (format)	0 - 2	BPS setting D2 D1 D0 0 0 0 100 or 75 0 0 1 110 or 150 0 1 0 300 0 1 1 600 1 0 0 1200 1 0 1 2400 1 1 0 4800 1 1 1 9600
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity
	7	Setting of low baud rate selection 0: 100 and 110 bps 1: 75 and 150 bps
pm0019 Communication parameter setting No. 2 port (output) for general-purpose RS-232C device (control)	0	Control by control code 0: Not executed 1: Executed
	1	RTS control 0: Not executed 1: Executed
	2	DR line check 0: Not executed 1: Executed
	7	NC data special control 0: Not executed 1: Executed
pm0020	0	Edit, display, and input/output operation of part programs O8000 to O8999 0: Permitted 1: Prohibited
	7	Spaces in program input 0: Spaces are deleted when a program is input. (Spaces in comments are not deleted.) 1: Spaces are not deleted when a program is input.

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0021	0	0: Edit, display, and input/output operation of part programs O8000 to O8999 conforms to the setting for pm0020 1: Display of part programs O8000 to O8999 is permitted.
pm0022	0	0: Edit, display, and input/output operation of part programs O8000 to O8999 conforms to the setting for pm3004. 1: Display of part programs O8000 to O8999 is permitted.
pm0030	4	DC3 control code designation 0: 13H 1: 93H
	5	DR signal check by communication module 0: Not checked 1: Checked
	6	Communication module device designation 0: RS-232C 1: RS-422
	7	Tape operation designation for NC 0: PTR 1: Communication module
pm0031 Communication parameter setting RS-232C	0 - 2	BPS setting D2 D1 D0 0 0 0 1200 0 0 1 2400 0 1 0 4800 0 1 1 9600 1 0 0 19200
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm0032 Communication parameter setting RS-422	0 - 2	BPS setting D2 D1 D0 0 0 0 1200 0 0 1 2400 0 1 0 4800 0 1 1 9600 1 0 0 19200
	3	Stop bit length 0: 1 bit 1: 2 bits
	4	Data length 0: 7 bits 1: 8 bits
	5.6	Parity bit D6 D5 0 0 No parity 0 1 Even parity 1 0 Odd parity
pm1000	0	Designation of inputs 0: Least input unit 1: 10 times the least input unit
	2	Application of override setting on spindle speed output 0: Not applied 1: Applied
	4	Display of actual spindle speed 0: Calculated value based on S command 1: Feedback from the spindle motor
	5	SSTP setting for "0" output in response to "0" S command 0: SSTP "0" 1: SSTP "1"
	7	Checking of SAGR when feedrate is changed from rapid traverse to cutting feedrate. 0: Not checked 1: Checked
pm1001	0.1	Output sign of S in S5-digit command D1 D0 M03 M04 0 0 + + 0 1 − − 1 0 + − 1 1 − +
pm1002	0	Magnification ratio of spindle speed parameter 0: ×1 1: ×10
	4	Display of spindle load meter 0:Displayed 1:Not displayed

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

<table>
<tr><th>Parameter No.</th><th>Bit</th><th>Description</th></tr>
<tr><td>pm1003</td><td>2</td><td>D/A output status is input to the PLC.
0: Yes
1: No</td></tr>
<tr><td rowspan="3">pm1020 - pm1024</td><td>0 - 3</td><td>1st - 5th physical servo axis
YENET1200 station number setting (No. 2 to No. 15 station)
<table>
<tr><th>D3</th><th>D2</th><th>D1</th><th>D0</th><th></th><th>D3</th><th>D2</th><th>D1</th><th>D0</th><th></th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>0</td><td>Alarm</td><td>1</td><td>0</td><td>0</td><td>0</td><td>No. 8 station</td></tr>
<tr><td>0</td><td>0</td><td>0</td><td>1</td><td>Alarm</td><td>1</td><td>0</td><td>0</td><td>1</td><td>No. 9 station</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>0</td><td>No. 2 station</td><td>1</td><td>0</td><td>1</td><td>0</td><td>No. 10 station</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>1</td><td>No. 3 station</td><td>1</td><td>0</td><td>1</td><td>1</td><td>No. 11 station</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>0</td><td>No. 4 station</td><td>1</td><td>1</td><td>0</td><td>0</td><td>No. 12 station</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>1</td><td>No. 5 station</td><td>1</td><td>1</td><td>0</td><td>1</td><td>No. 13 station</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>0</td><td>No. 6 station</td><td>1</td><td>1</td><td>1</td><td>0</td><td>No. 14 station</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>1</td><td>No. 7 station</td><td>1</td><td>1</td><td>1</td><td>1</td><td>No. 15 station</td></tr>
</table></td></tr>
<tr><td>6</td><td>1st - 5th physical servo axis specifications
0: Servo axis
1: C-axis integral with spindle</td></tr>
<tr><td>7</td><td>1st - 5th physical servo axis
0: Invalid
1: Valid</td></tr>
<tr><td rowspan="3">pm1026</td><td>0 - 3</td><td>No. 1 physical spindle
YENET1200 station number setting (see pm1020 - pm1024)</td></tr>
<tr><td>6</td><td>No. 1 physical spindle specifications
0: Spindle
1: C-axis integral with spindle</td></tr>
<tr><td>7</td><td>No. 1 physical spindle
0: Invalid
1: Valid</td></tr>
</table>

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm1030 - pm1034 1st - 5th axis servo control type	0	Velocity loop control method 0: PI 1: IP
	1	Velocity loop control automatic setting 0: Invalid 1: Valid
	2	Separately installed PG 0: Invalid 1: Valid
	4	Reverse connection of separately installed PG 0: Invalid 1: Valid
	5	0: Servo axis 1: C-axis integral with spindle
	6	Axis type 0: Linear axis 1: Rotary axis
	7	Motor rotation direction 0: Forward rotation 1: Reverse rotation
pm1039 Spindle servo control type	1.2	D2 D1 Use of PG 0 0 No PG for spindle 0 1 PG used at the spindle 1 0 PG used at the motor
	5	Spindle servo control 0: Executed 1: Not executed
	7	Spindle configuration 0: Normal spindle 1: C-axis integrated

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm1044 - pm1048 1st-axis - 5th-axis	0	Servo feed amount change 0: Not executed 1: Executed
	1	Absolute encoder 0: Motor PG 1: Separately installed PG
	2	Disregarding error pulses at the input of emergency stop 0: Not disregarded 1: Disregarded
	3	Execution of follow-up processing for the input of servo OFF 0: Not executed 1: Executed
	4	Use of absolute encoder 0: Not used 1: Used
	6	Infinite length for rotary axis control 0: Not possible 1: Possible
	7	Use of 17-bit encoder 0: Not used 1: Used
pm1053	0.1	No. 1 spindle feedback pulse magnification ratio setting D1 D0 0 0 ×1 0 1 ×2 1 0 ×4 1 1 ×8
	2	Execution of spindle indexing in loop control 0: Not executed 1: Executed
	3	Execution of C-axis indexing when switching to C-axis 0: Not executed 1: Executed
pm1060	0 - 4	Amplifier type for 1st - 5th axis 0: Analog amplifier 1: Digital amplifier

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm1061 - pm1065	0 - 7	Setting of motor selection code for "n"th-axis

Type	Setting	Type	Setting
SGMG-03A□B	171	USAFED-44*	17
SGMG-05A□A	142	USAGED-02A/C	50
SGMG-06A□B	172	USAGED-02B/D	90
SGMG-09A□A	143	USAGED-03A/C	51
SGMG-09A□B	173	USAGED-03B/D	91
SGMG-12A□B	174	USAGED-05A/C	52
SGMG-13A□A	144	USAGED-05B/D	92
SGMG-20A□A	145	USAGED-09A/C	53
SGMG-20A□B	175	USAGED-09B/D	93
SGMG-20A*V-HS21	254	USAGED-13A/C	54
SGMG-30A□A	146	USAGED-13B/D	94
SGMG-30A□B	176	USAGED-20A/C	55
SGMG-44A□A	147	USAGED-20B/D	95
SGMG-44A□B	177	USAGED-30A/C	56
SGM-04A	106	USAGED-30B/D	96
SGM-08A	107	USAGED-44A/C	57
SGMP-04A	126	USAGED-44B/D	97
SGMP-08A	127	USADED-05*	42
SGMP-15A	128	USADED-10*	43
SGMS-10A	163	USADED-15*	44
SGMS-15A	164	USADED-22*	45
SGMS-20A	165	USADED-37*	46
SGMS-30A	166	USASEM-02*	20
SGMS-40A	167	USASEM-03*	21
SGMS-50A	168	USASEM-05*	22
SGMD-22A	155	USASEM-08*	23
SGMD-32A	156	USASEM-15*	24
SGMD-40A	157	USASEM-30*	26
USAFED-02*	10	USAMED-03*	1
USAFED-03*	11	USAMED-06*	2
USAFED-05*	12	USAMED-09*	3
USAFED-09*	13	USAMED-12*	4
USAFED-13*	14	USAMED-20*	5
USAFED-20*	15	USAMED-30*	6
USAFED-30*	16	USAMED-44*	7

Note: 1. Alphabets(A, B, C, D) at the end of motor type mean the revision order of the motor.

2. "B/D" means the peak value specifications in G-series.

3. "*" is determined by the encoder specifications.

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm1070	0 - 4	Availability of digital amplifier offset automatic adjustment 0: Not available 1: Available
pm1071 - pm1075		Encoder type(1st -5th axis) Type — Setting Linear scale — 0 15-bit ABS — 1 15-bit ABS(rotary axis) — 2 17-bit ABS — 3 8192-pulse new INC — 11 25000-pulse new INC — 18 30000-pulese new INC — 19 36000-pulse type for C-axis — 23 17-bit serial ABS — 32 20-bit serial ABS — 33
pm1080	0 - 4	Availability of projection compensation function in circle cut (1st - 5th axis) 0: Not available 1: Available
pm1081 - pm1085		Externally installed encoder type (1st - 5th axis) Type — Setting Linear scale — 0 15-bit ABS — 1 15-bit ABS (rotary axis) — 2 8192-pulse new INC — 11 360000 - pulse type for C-axis — 23
pm1091		Spindle encoder type: 1024INC Setting:21
pm1099	0 - 4	Resonance filter type (1st - 5th axis) 0: Secondary axis resonance filter 1: Cubic root axis resonance filter

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm2000	0	Dry run during rapid traverse 0: Invalid 1: Valid
	1	Dry run during thread cutting 0: Valid 1: Invalid
	2	Spindle override during tapping 0: Not clamped at 100% 1: Clamped at 100% (only for lathe)
	3	Setting of input unit for pm2447 (F_0 feedrate) 0: mm/min 1: %
	4	Validity of feedrate override signal 0: Valid when "1" (NO contact) 1: Valid when "0" (NC contact)
	6	Replacing rapid traverse with jog until the completion of reference point return after turning ON the power 0: Rapid traverse is not replaced with jog. 1: Rapid traverse is replaced with jog.
	7	Setting jog feedrate of rotary axis at 1/10 of that of linear axis 0: Not set at 1/10 1: Set at 1/10
pm2001	0	Feedrate for skip function 0: As specified by F code 1: As set by parameter
pm2002	0 - 4	Validity of automatic mode handle offset (1st - 5th axis) 0: Invalid 1: Valid
pm2003	1	Valid operation of automatic mode handle offset 0: Other than rapid traverse 1: Only in the interpolation mode
	7	Setting of ×100 for manual pulse multiply 0: ×100 1: Value set for parameter (pm2459)
pm2004	0	Feedrate at the detection of 0.001 mm or 0.0001 inch 0: F6.0 mm/min or F4.1 inch/min 1: F6.1 mm/min or F4.2 inch/min

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm3000	2	Addition of tool position offset amount in Z-axis position data for display 0: Added 1: Not added
	3	Position data display change (work shift coordinate system screen, correction amount screen) 0: Machine coordinate system 1: Workpiece coordinate system
	4	Position data display change (offset screen) 0: Machine coordinate system 1: Workpiece coordinate system
	5	Position data display change (program screen) 0: Machine coordinate system 1: Workpiece coordinate system
pm3001	0	External timer display 0: Invalid 1: Valid
	1	Setup menu screen 0: Valid 1: Invalid
	3	Simplified TLM 0: Valid 1: Invalid
	4	Priority of validity between T and M96 if specified in the same block 0: T command becomes valid first. 1: M06 command becomes valid first.
	5	Waiting pot display 0: Invalid 1: Valid
	6	Tool pot word display 0: Invalid 1: Valid
	7	Sub tool pot word display 0: Invalid 1: Valid

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm3002	0	Clear of MDI buffer by program reset if M02 or M30 is specified at the completion of MDI program 0: Cleared 1: Not cleared
	1	Clear of MDI buffer by panel reset or external reset 0: Cleared 1: Not cleared
	2	Start position of MDI program 0: Present cursor position 1: Beginning of the MDI program
	3	Input switching on work shift and offset screens 0: By soft-keys 1: According to the setting for pm3002 (D4, D5)
	4	Input on work shift screen (correction screen) 0: Absolute 1: Incremental
	5	Input on offset screen 0: Absolute 1: Incremental
	6	EDIT process address search 0: Character search 1: Binary search
	7	RUN process address search 0: Binary search 1: Character search

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm3003	0.1	Initial screen at power ON D1 D0 0 0 4POS 0 1 Program check screen 1 0 Edit screen 1 1 4POS
	2	Job screen of the setup process at power ON 0: Workpiece coordinate system job screen 1: Tool job screen
	3	Input mode setting at power ON 0: Absolute 1: Incremental
	4	Clearing of the program that requires the check for alarm 0: Cleared by reset operation 1: Cleared by reset operation after the check for the alarm
	5	Display of the spindle and the next tool on the RUN screen 0: Not displayed 1: Displayed
	6	ATC display 0: Byte + byte 1: Word
pm3004	0	Edit/display/output of part programs of O9000 to O9999 0: Permitted 1: Prohibited

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm3005	0	Processing if the same O number already exists in loading a program from tape 0: Warning 1: Existing program is overwritten by new program
	1	Clearing of the program numbers at power ON 0: Cleared 1: Not cleared
	2	Definition of program number 0: Numerical value specified following O 1: Numerical value specified following O or N
	3	Interpretation of M code (M02, M30, M*99 [*: 0 - 3]) read at the end of program loading from tape 0: Regarded as program end 1: Not regarded as program end
	4	Automatic editing of a program number in program rename/copy/storing operation 0: Edited automatically 1: Not edited
	5	Conversion of ":" code (ISO) at input and output 0: Not converted 1: Converted
	6	Conversion of ":" code (ISO) at input and output (valid if pm3005 D5 = 1) 0: Not converted 1: Converted

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm3006	0	Identification of tape operation device 0: I/O input specification 1: Setting specification
	1	Designation of processing at the occurrence of communication module error 0: NC placed in the alarm state 1: NC not placed in the alarm state
	2.3	Buffer area data storing amount at the start of DNC operation D3 D2 Bytes 0 0 2048 0 1 2128 1 0 2256 1 1 2512
	4	Designation of the transmission of the control character 0: Not transmitted 1: Transmitted
	5 - 7	Communication module protocol D7 D6 D5 0 0 0 Protocol 1 0 0 1 Protocol 2 0 1 0 Protocol 3 0 1 1 Protocol 4
pm3007	1	Function key of [SRCH] key 0: Background function key 1: Foreground function key
	6	0: Setting of pm3006 D0, D1 is valid. 1: If pm3006 D1 = 1, only time-out error is not output.
	7	Buffering of 150-byte DAT binary data after the reception of the WAT command by the communication module. 0: Buffered 1: Not buffered

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4000	0	Selection of G code in 01-group when the power is turned ON or the NC is reset 0: G00 1: G01
	1	Selection of G code in 03-group when the power is turned ON 0: G90 1: G91
	2	Selection of G code in 04-group when the power is turned ON 0: G98 1: G99
	3.4	Selection of G code in 08-group when the power is turned ON D4 D3 0 0 G49 0 1 G43 1 0 G44
	5	Selection of G code in 02-group when the NC is reset 0: G17 1: G code specified immediately before the reset
	6	Selection of G code in 03-group when the NC is reset 0: G code set for pm4000 D1 1: G code specified immediately before the reset

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4001	0	Mirror image mode when the power is turned ON or the NC is reset 0: M94 (mirror image OFF) 1: M95 (mirror image ON)
	1	Initial M code mode when the power is turned ON or the NC is reset 0: M96 (arc) 1: M97 (linear)
	2	Application of mirror image ON the intermediate positioning point for G28 if M95 is set when the power is turned ON or the NC is reset 0: Mirror image is applied 1: Mirror image is not applied.
	3	Presetting of workpiece coordinate system shift distance when the power is turned ON (G54 - G59: #4143) 0: Not preset 1: Preset
	4	Presetting of workpiece coordinate system shift distance at the completion of zero return (G54 - G59: #4143) 0: Not preset 1: Preset
	6	Occurrence of alarm if an attempt is made to execute cycle start without carrying out reference point return after turning the power ON 0: Alarm occurs (0411 - 0415) (conforms to pm4018 D0 - D4). 1: Alarm does not occur (setting is possible for pm4018 D0 - D4).
	7	Cycle start interlock when system number switch is set at "1" or pm0109 D0 = 1 0: Cycle start interlock is not provided. 1: Cycle start interlock is provided.
pm4002	0 - 4	Reference point return direction (1st - 5th axis) 0: Positive direction 1: Negative direction
pm4003	6	Manual reference point return type in the second and later operation after power ON 0: High-speed type 1: Low-speed type
	7	Automatic reference point return type in the second and later operation after power ON 0: High-speed type 1: Low-speed type
pm4004	0 - 4	Occurrence of alarm if movement command other than G28 is executed without carrying out manual or automatic reference point return after power ON (1st - 5th axis) 0: Alarm does not occur. 1: Alarm occurs.
pm4006	0 - 4	Automatic coordinate system setting (1st - 5th axis) 0: Invalid 1: Valid

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4008	0	Returning of the execution pointer to the start of the program when the NC is reset by the external key operation 0: Returned 1: Not returned
	1	Rewinding of tape by M30 when YASNAC standard tape reader is connected to the No. 1 RS-232C port 0: Not rewound 1: Rewound
	2	Rewinding of tape by M30 when YASNAC standard tape reader is connected to the No. 2 RS-232C port 0: Not rewound 1: Rewound
	3	Possibility of starting of memory operation from a mid point of a block 0: Possible 1: Not possible; always started from the beginning of a block
	7	High-speed automatic start for high-speed rewind operation 0: Does not start at high-speed 1: Start at high-speed
pm4009	0	Present value is input to system variables #5001 and on at the execution of G31 skip. 0: Present value 1: Command value
	1	Macroprogram common variables #100 - #299 become <empty> by the reset operation. 0: Emptied 1: Not emptied
	2	Output of leading zeros if the upper digit value of a variable is "0" at the execution of DPRINT function 0: Spaces are output. 1: Nothing is output.
	7	MST status when operation mode is changed from automatic to manual 0: M, S, and T are forcibly finished without SPL indicating lamp lit. 1: M, S, and T are saved with SPL indicating lamp lit.

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4010	0	Processing after the change of offset amount 0: New offset amount becomes valid from the block to be buffered next. 1: New offset amount becomes valid from the H (D) code to be buffered next.
	1	D code in the G12/G13 mode 0: Modal 1: One shot
	2	Operation expression for the direct input of measured workpiece value 0: Present value saved temporarily – Keyed-in value 1: Keyed-in value – Present value saved temporarily
	6	Processing of D code after reset (valid when pm4011 D1 = 0) 0: 00 1: Saved
	7	Processing of H code after reset or reference point return (valid when pm4011 D1 = 1) 0: 00 1: Saved
pm4011	1	Designation of offset number for G45 - G48 0: Only D code 1: Only H code
	2	Validity of manual absolute function if there is no axis move command in the block where incremental amount is generated 0: Manual absolute function is valid. 1: Manual absolute function is not valid.
	3	Validity of manual absolute function if there is no axis move command in the block where incremental amount is not generated 0: Manual absolute function is valid. 1: Manual absolute function is not valid.
	7	Ignoring of the manual absolute function for the incremental commands. 0: Manual absolute function is not ignored. 1: Manual absolute function is ignored.
pm4012	0	Processing when the workpiece coordinate system shift distance is changed 0: New value becomes valid from the next command. 1: New value becomes valid from the next block.
	1	Reversing of the input incremental value of the workpiece coordinate system shift distance 0: Not reversed 1: Reversed
	7	Workpiece coordinate system setting expansion address 0: "J" 1: "P"

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4013 Tool radius offset C	0	Start-up and cancel motion 0: Type B compensation method 1: Type A compensation method
	1	Switching point of offset direction (G41/G42) 0: Point of intersection 1: At the start and end points
	2	Processing after the offset amount is changed 0: New offset amount becomes valid from the end point. 1: New offset amount becomes valid from the start point.
	3	Availability of interference check function 0: Not provided 1: Provided
	4	Processing after the detection of interference 0: Automatic correction 1: Alarm
pm4014	0 - 4	Direction of G60 unidirectional positioning operation (1st - 5th axis) 0: + 1: –

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4015	0	Entry of program restart mode 0: By I/O 1: By soft-key
	1	Allowable error range check for circular arc command 0: Not executed 1: Executed
	2	Waiting of PSET when exiting the geometry offset mode 0: PSET is not waited. 1: PSET is waited.
	3	Error detection at the completion dwell 0: Error detection is OFF. 1: Error detection is ON.
	4	In-position check when the G code mode is changed to G00 (G00, G01 → G00) 0: In-position check is not executed. 1: In-position check is executed.
	5	G00 error detection during solid tap 0: G00 error detection is ON. 1: G00 error detection is OFF.
	6	Display of the peak value of synchronization error between the spindle and the hole machining axis during solid tap. 0: Not displayed 1: Displayed
	7	Approach speed for program restart 0: Jog feedrate 1: Rapid traverse
pm4016	1	Positioning mode in a canned cycle 0: G00 1: G00 or G01, either of which presently selected
	2	M code to be output in the G74/G84 canned cycle 0: M code reversing the one specified before the start of the canned cycle 1: M03 for G74 and M04 for G84
	3	Output of M05 for changing the spindle rotation direction (forward/reverse) at the hole bottom in the G74, G84 canned cycle 0: M05 is not output. 1: M05 is output.
	4	Execution type of G184/G174 0: Return to R-point level in each feed (type A) 1: Pecking cycle (type B)

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4017	1	Output of M05 before the output of M19 in the G76/G77 cycle 0: M05 is not output. 1: M05 is output.
	2	Spindle override during the execution of G84/G74 tapping cycle 0: Fixed at 100% 1: Fixed at the value read at the start of cycle
	3	Validity of pm0400 dwell time in the G76/G77 cycle 0: Invalid 1: Valid
	4	Validity of pm0401 pitch dwell time 0: Invalid 1: Valid
pm4018	0 - 4	Occurrence of alarm (0411 - 0419) in response to the cycle start executed without carrying out manual reference point return after power ON (1st - 5th axis) 0: Alarm does not occur. 1: Alarm occurs.
pm4020	2	Backing up of the macro variable data during normal operation 0: Macro variable data is backed up. 1: Macro variable data is not backed up.
	4	Validity of B code macro execution on single block switch 0: Valid 1: Invalid
	5	Designation of argument in M code macro 0: Not designated 1: Designated
	6	Designation of multiple M codes in one block in M code macro 0: Second and later codes are regarded as normal M codes. 1: Second and later codes are regarded as argument.
	7	Designation of multiple S codes in one block in S code macro 0: Second and later codes are regarded as normal S codes. 1: Second and later codes are regarded as argument.
pm4021	6	Objective for argument in M (G) code macro call 0: The words given after the macro call code are regarded as the objective for argument. 1: The words given in the same block are all regarded as the objective for argument.
pm4022	0 - 4	Validity of reference point return (1st - 5th axis) 0: Invalid 1: Valid
pm4024	0 - 4	Validity of playback write (1st - 5th axis) 0: Invalid 1: Valid

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm4029	0	Use of H and D codes 0: Used in common 1: Used individually
	1	Setting of the tool group in the skip status 0: Presently selected tool group 1: Tools in the specified tool group
pm4030	0	Binary data for direct operation 0: Invalid 1: Valid
	1	Buffering of T code command 0: Not buffered 1: Buffered
pm5000	0	Valid timing of cycle start signal 0: Valid at "0" → "1" 1: Valid at "1" → "0"
	1	Output of rewind signal when rewinding NC program by the reset and rewind signal 0: Output 1: Not output
	2	Turning ON of RST output signal when ESP input signal is ON 0: Not turned ON 1: Turned ON
pm5001	0	Selection of external data input data type 0: Binary 1: BCD
pm5010	0	First skip signal 0: Disable 1: Enable
	5	Sensor ON timing 0: Input of direct in signal "0" → "1" 1: Input of direct in signal "1" → "0"
	7	Manual skip function 0: Manual skip function is valid. 1: Manual skip B function is valid.
pm5011	0	Valid timing of first skip signal 0: "24 V" → "0 V" 1: "0 V" → "24 V"

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm5012	0	Servo power ON method 0: By power on button 1: By external input signal
	1	Measuring by work/offset presetter 0: By touch sensor 1: By soft-key
	2	Mode of measuring by work/offset presetter 0: I/O type 1: Soft-key type
pm5013	0	Tool measuring direction by offset presetter 0: X-axis direction 1: Y-axis direction
	2	Validity of TLM and offset presetter when both offset presetter and TLM options are set valid. 0: TLM is valid. 1: Offset presetter is valid.
	3	Execution of TLM measurement in manual skip B 0: Not executed 1: Executed
pm5018	0.1	Gear selection of H gear D1 D0 0 0 Gear A 0 1 Gear A 1 0 Gear B
	2.3	Gear selection of M gear D3 D2 0 0 Gear A 0 1 Gear A 1 0 Gear B
	4.5	Gear selection of L gear D5 D4 0 0 Gear A 0 1 Gear A 1 0 Gear B
pm6000	0 - 4	Pitch error compensation (1st - 5th axis) 0: Invalid 1: Valid
pm6001	0	Setting of compensation data for the pitch error compensation function 0: Incremental 1: Absolute
pm6002	0 - 4	Execution of stored stroke limit check for entry prohibited area (1st - 5th axis) 0: Executed 1: Not executed

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

Parameter No.	Bit	Description
pm6004	0 - 4	Execution of stored stroke limit check for rotary axis (1st - 5th axis) 0: Not executed 1: Executed
pm6006	0 - 4	Axis disconnection (1st - 5th axis) 0: Invalid 1: Valid
pm6008	0	Measuring objective in tool length measurement 0: Travel distance 1: Remaining distance

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm0103	Time-out time of protocol 2 in DNC operation	1 - 15	1 = 1 s
pm0104	Time until the occurrence of ALM9023 (APL4 error) 0 : 489 ms 1 - 254 : 1 - 254 ms 255 : Waiting infinitely	0 - 255	
pm0107	Manual skip measuring point monitor	0 - 6	
pm0109	Internal system number switch setting "0", "1"	0 - 255	
pm0400	Dwell period for G76, G77	0 - 32767	1 = 1 ms
pm0401	Pitch dwell period for G73, G83	0 - 32767	1 = 1 ms
pm0420 - pm0425	Manual skip contact direction (No. 1 - No. 6 point)	Bit information D1: X– D8: X– D2: Y+ D9: Y– D3: Z+ D10:Z–	
pm0801	Break point sequence number setting (1)	1 - 99999	
pm0802	Break point sequence number setting (2)	1 - 99999	
pm0803	Scaling ratio setting (1) Ratio = pm0803/pm0804	1 - 999999	1 = 0.001
pm0804	Scaling ratio setting (2)	1 - 1000000	1 = 0.001
pm0805	Angle for G76, G77	1 - 360000	1 = 0.001 deg
pm0806	Tool length measurement bias amount	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0807	Tool length measurement bottom level	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0811 - pm0815	Coordinate values at skip signal input (1st - 5th axis)	0 - ±999999999	1 = Minimum input unit
pm0820 - pm0828	F1-digit feedrate (F1 - F9)	0 - 2400000	In "mm" mode 1 = 0.1 mm/min In "inch" mode 1 = 0.01 inch/min
pm0831 - pm0833	No. 2 stored stroke limit, 1st - 3rd axis (+)	0 - ±999999999	1 = Minimum detection unit
pm0834 - pm0836	No. 2 stored stroke limit, 1st - 3rd axis (–)	0 - ±999999999	1 = Minimum detection unit
pm0837 - pm0839	No. 3 stored stroke limit, 1st - 3rd axis (+)	0 - ±999999999	1 = Minimum detection unit
pm0840 - pm0842	No. 3 stored stroke limit, 1st - 3rd axis (–)	0 - ±999999999	1 = Minimum detection unit
pm0843 - pm0845	No. 4 stored stroke limit, 1st - 3rd axis (+)	0 - ±999999999	1 = Minimum detection unit
pm0846 - pm0848	No. 4 stored stroke limit, 1st - 3rd axis (–)	0 - ±999999999	1 = Minimum detection unit

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm0849 - pm0851	No. 5 stored stroke limit, 1st - 3rd axis (+)	0 - ±999999999	1 = Minimum detection unit
pm0852 - pm0854	No. 5 stored stroke limit, 1st - 3rd axis (–)	0 - ±999999999	1 = Minimum detection unit
pm0860	Deceleration feedrate by corner feedrate designation function, "mm" mode (P)	0 - 240000	1 = 1 mm/min
pm0861	Deceleration distance by corner feedrate designation function, "mm" mode (L)	0 - 999999999	1 = 0.001 mm
pm0862	Deceleration feedrate by corner feedrate designation function, "inch" mode (P)		1 = 0.1 inch/min
pm0863	Deceleration distance by corner feedrate designation function, "inch" mode (L)		1 = 0.0001 inch
pm0870	Return stroke in G73 cycle (rapid traverse)	0 - 999999999	1 = 0.001 mm, 0.0001 inch
pm0871	Return stroke in G83 cycle (rapid traverse)	0 - 999999999	1 = 0.001 mm, 0.0001 inch
pm0873	Returns stroke in G184/G174 cycle (rapid traverse)	0 - 999999999	1 = 0.001 mm, 0.0001 inch
pm0905 - pm0908	Calendar output function, date setting, No. 1 - No. 4 parameters		
pm0920 - pm0922	Manual skip position information, No. 1 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0923 - pm0925	Manual skip position information, No. 2 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0926 - pm0928	Manual skip position information, No. 3 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0929 - pm0931	Manual skip position information, No. 4 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0932 - pm0934	Manual skip position information, No. 5 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm0935 - pm0937	Manual skip position information, No. 6 point (X - Z)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm1100 - pm1102	Servo axis display name (X-axis)	X: 88 00 00	
pm1103 - pm1105	Servo axis display name (Y-axis)	Y: 89 00 00	
pm1106 - pm1108	Servo axis display name (Z-axis)	Z: 90 00 00	
pm1109 - pm1111	Servo axis display name (4th-axis)	U: 85 00 00 V: 86 00 00 W: 87 00 00 A: 65 00 00 B: 66 00 00 C: 67 00 00 Set any of the above values	
pm1112 - pm1114	Servo axis display name (5th-axis)		
pm1127 - pm1129	Spindle display name	S: 83 00 00	Set by converting ASCII code into decimal

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm1142 - pm1144	Servo axis automatic system axis display name (X-axis)	X: 88 00 00	Set by converting ASCII code into decimal
pm1145 - pm1147	Servo axis automatic system axis display name (Y-axis)	Y: 89 00 00	Set by converting ASCII code into decimal
pm1148 - pm1150	Servo axis automatic system axis display name (Z-axis)	Z: 90 00 00	Set by converting ASCII code into decimal
pm1151 - pm1153	Servo axis automatic system axis display name (4th-axis)	U: 85 00 00 V: 86 00 00 W: 87 00 00 A: 65 00 00 B: 66 00 00 C: 67 00 00 Set any of the above values	Set by converting ASCII code into decimal
pm1154 - pm1156	Servo axis automatic system axis display name (5th-axis)		Set by converting ASCII code into decimal
pm1169 - pm1171	Spindle automatic system axis display name	S: 83 00 00	Set by converting ASCII code into decimal
pm1200	High-speed mode operation, number of controlled axes	3 - 5	3: 3 axes, 4: 4 axes, 5: 5 axes
pm1201	High-speed mode operation, address name of additional 4th axis (input in the ASCII code)	U: 85 00 00 V: 86 00 00 W: 87 00 00 A: 65 00 00 B: 66 00 00 C: 67 00 00 Set any of the above values	
pm1202	High-speed mode operation, address name of additional 5th axis (input in the ASCII code)		
pm1220	Spindle index confirmation timer	1 - 255	1 = 4 ms
pm1225	Spindle index stopped confirmation speed	1 - 255	1 = 1 r/min
pm1226	Spindle index stopped confirmation speed, gear B selected	1 - 255	1 = 1 r/min
pm1240	Axis number to execute solid tap (1)	1	
pm1241	Servo axis number to execute solid tap (1)	1 - 5	
pm1252	Solid tap (1) return feedrate multiplication ratio	1 - 255	1 = 0.1 times
pm1253	Solid tap (2) return feedrate multiplication ratio		
pm1260	Spindle, loop control gear number (A)	0 - 4	
pm1261	Spindle, loop control gear number (B)	0 - 4	
pm1321 - pm1325	1st - 5th axis, error detect on area	0 - 255	1 = Minimum input unit
pm1331	Spindle, error detection on area in loop control	0 - 255	1 = Minimum input unit
pm1332	Spindle, error detection on area in loop control, gear B selected	0 - 255	1 = Minimum input unit

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm1351	Spindle, magnification ratio for axis feed in servo error area in reference to rapid traverse rate	0 - 200	1 = 1 %
pm1400 - pm1403	Spindle, spindle speed clamp (minimum) for gear 1 - gear 4	0 - 30000	1 = 1 r/min, 10 r/min Note: According to the setting for pm1002 D0
pm1404 - pm1407	Spindle, spindle speed clamp (maximum) for gear 1 - gear 4	0 - 30000	1 = 1 r/min, 10 r/min
pm1408 - pm1411	Spindle, max. motor speed for gear 1 - gear 4	0 - 30000	1 = 1 r/min, 10 r/min
pm1412	Spindle speed in response to the input of spindle orientation (SOR) signal	0 - 32767	1 = 1 r/min
pm1413	Motor speed in response to the input of spindle gear shift (SRO)	0 - 32767	1 = 1 r/min
pm1414	Spindle, zero point for indexing	0 - 4095	1 = 360/4096 deg
pm1415	Spindle, maximum speed corresponding to 10 V of command	0 - 32767	1 = 1 r/min, 10 r/min
pm1416	Maximum spindle speed during solid tap	0 - 32767	1 = 1 r/min, 10 r/min
pm1417	Spindle, position loop gain	0 - 32767	1 = 0.01 [S^{-1}]
pm1418	Maximum spindle speed corresponding to 10 V of command (C-axis is used)	0 - 666	1 = 1 r/min
pm1419	Spindle, specified speed for gear A	0 - 32767	1 = 1 r/min
pm1435	Spindle, maximum spindle speed corresponding to 10 V command (gear B selected)	0 - 32767	1 = 1 r/min, 10 r/min
pm1436	Spindle, maximum spindle speed during solid tap (gear B selected)	0 - 32767	1 = 1 r/min, 10 r/min
pm1437	Spindle, position loop gain (gear B selected)	0 - 32767	1 = 0.01 [S^{-1}]
pm1500	Solid tap (1), servo axis drawing-in in-position width	0 - 32767	1 = Minimum input unit
pm1501	Solid tap (2), servo axis drawing-in in-position width	0 - 32767	1 = Minimum input unit
pm1502	Solid tap (1), synchronization offset parameter K1	–32767 - 32767	
pm1503	Solid tap (1), synchronization offset parameter K2	–32767 - 32767	
pm1504	Solid tap (2), synchronization offset parameter K1	–32767 - 32767	
pm1505	Solid tap (2), synchronization offset parameter K2	–32767 - 32767	
pm1506	Rotary tool spindle (1), synchronization offset parameter K1'	–32767 - 32767	
pm1507	Rotary tool spindle (1), synchronization offset parameter K2'	–32767 - 32767	

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm1510	Spindle, the number of teeth of gear A at the spindle side used in loop control	0 - 32767	1 = 1 tooth Note: "9" if intermediate gear is not used.
pm1511	Spindle, the number of teeth of gear A of spindle intermediate gear in loop control	0 - 32767	1 = 1 tooth
pm1512	Spindle, the number of teeth of gear A of intermediate gear in loop control	0 - 32767	1 = 1 tooth
pm1513	Spindle, the number of teeth of gear A at the motor side used in loop control	0 - 32767	1 = 1 tooth
pm1514	Spindle, the number of teeth of gear B at the spindle side used in loop control	0 - 32767	1 = 1 tooth
pm1515	Spindle, the number of teeth of gear B of spindle intermediate gear in loop control	0 - 32767	1 = 1 tooth
pm1516	Spindle, the number of teeth of gear B of intermediate gear in loop control	0 - 32767	1 = 1 tooth
pm1517	Spindle, the number of teeth of gear B at the motor side used in loop control	0 - 32767	1 = 1 tooth
pm1540	Delay time to check the spindle speed arrived signal (SAGR)	0 - 32767	1 = 1 ms
pm1551 - pm1555	1st - 5th axis, backlash compensation amount	0 - 32767	1 = 1 μM
pm1561 - pm1565	Number of teeth of motor when changing the servo feed amount (1st - 5th axis)	1 - 255	1 = 1 tooth
pm1571 - pm1575	Number of teeth of screw when changing the servo feed amount (1st - 5th axis)	1 - 255	1 = 1 tooth
pm1580	1st axis, position loop gain Kp	500 - 20000	1 = 0.01 [1/s]
pm1581	1st axis, velocity loop gain Kv	350 - 32767	1 = 0.1 [1/s]
pm1582	1st axis, velocity loop integration time constant Ti	26 - 32767	1 = 0.01 [ms]
pm1584	1st axis, velocity feed forward gain Kvfff	0 - 100	1 = 0.01 [%] 1 = 1%
pm1586	1st axis, first step axis torsion filter time constant Tn	1 - 32767	1 = 0.01 [ms]
pm1587	1st axis, second step axis torsion filter time constant	1 - 32767	1 = 0.01 [ms]
pm1588	1st axis, third step axis torsion filter time constant	1 - 32767	1 = 0.01 [ms]
pm1589	1st axis, monitor board signal selection, multiplication ratio	1 - 32767	
pm1590	2nd axis, position loop gain Kp	500 - 20000	1 = 0.01 [1/s]
pm1591	2nd axis, velocity loop gain Kv	350 - 32767	1 = 0.1 [1/s]
pm1592	2nd axis, velocity loop integration time constant Ti	26 - 32767	1 = 0.01 [ms]
pm1594	2nd axis, velocity feed forward gain Kvfff	0 - 100	1 = 0.01 [%] 1 = 1%
pm1596	2nd axis, first step axis torsion filter time constant Tn	1 - 32767	1 = 0.01 [ms]

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm1597	2nd axis, second step axis torsion filter time constant	1 - 32767	1 = 0.01 [ms]
pm1598	2nd axis, third step axis torsion filter time constant	1 - 32767	1 = 0.01 [ms]
pm1599	2nd axis, monitor board signal selection, multiplication ratio	1 - 32767	
pm1600	3rd axis, position loop gain Kp	500 - 20000	1 = 0.01 [1/s]
pm1601	3rd axis, velocity loop gain Kv	350 - 32767	1 = 0.1 [1/s]
pm1602	3rd axis, velocity loop integration time constant Ti	26 - 32767	1 = 0.01 [ms]
pm1604	3rd axis, velocity feed forward gain Kvfff	0 - 100	1 = 0.01 [%] 1 = 1%
pm1606	3rd axis, first step axis torsion filter time constant Tn	1 - 32767	1 = 0.01 [ms]
pm1607	3rd axis, second step axis torsion filter time constant	1 - 32767	1 = 0.01 [ms]
pm1608	3rd axis, third step axis torsion filter time constant	1 - 32767	1 = 0.01 [ms]
pm1609	3rd axis, monitor board signal selection, multiplication ratio	1 - 32767	
pm1610	4th axis, position loop gain Kp	500 - 20000	1 = 0.01 [1/s]
pm1611	4th axis, velocity loop gain Kv	350 - 32767	1 = 0.1 [1/s]
pm1612	4th axis, velocity loop integration time constant Ti	26 - 32767	1 = 0.01 [ms]
pm1614	4th axis, velocity feed forward gain Kvfff	0 - 100	1 = 0.01 [%] 1 = 1%
pm1616	4th axis, first step axis torsion filter time constant Tn	1 - 32767	1 = 0.01 [ms]
pm1617	4th axis, second step axis torsion filter time constant	1 - 32767	1 = 0.01 [ms]
pm1618	4th axis, third step axis torsion filter time constant	1 - 32767	1 = 0.01 [ms]
pm1619	4th axis, monitor board signal selection, multiplication ratio	1 - 32767	
pm1620	5th axis, position loop gain Kp	500 - 20000	1 = 0.01 [1/s]
pm1621	5th axis, velocity loop gain Kv	350 - 32767	1 = 0.1 [1/s]
pm1622	5th axis, velocity loop integration time constant Ti	26 - 32767	1 = 0.01 [ms]
pm1624	5th axis, velocity feed forward gain Kvfff	0 - 100	1 = 0.01 [%] 1 = 1%
pm1626	5th axis, first step axis torsion filter time constant Tn	1 - 32767	1 = 0.01 [ms]
pm1627	5th axis, second step axis torsion filter time constant	1 - 32767	1 = 0.01 [ms]
pm1628	5th axis, third step axis torsion filter time constant	1 - 32767	1 = 0.01 [ms]
pm1629	5th axis, monitor board signal selection, multiplication ratio	1 - 32767	
pm1671 - pm1675	1st - 5th axis, torque limit (+)	1 - 32767	1 = 1 [%]
pm1681 - pm1685	1st - 5th axis, torque limit (–)	–32767 - –1	1 = 1 [%]
pm1711 - pm1715	1st - 5th axis, backlash time constant	1 - 32767	1 = 0.01 [ms]
pm1791 - pm1795	1st - 5th axis, multi-segment geometry offset coefficient	0 - 32767	1 = ×0.001

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm1801 - pm1805	1st - 5th axis, geometry offset coefficient	0 - 32767	1 = ×0.001
pm1821 - pm1825	1st - 5th axis, axis move distance or table rotation angle per 1 turn of motor	0 - 999999999	1 = Minimum detection unit or 0.001 deg
pm1831 - pm1835	1st - 5th axis, ratio of load inertia to motor inertia	0 - 32767	1 = 0.01 [kg-cm^2]
pm1841 - pm1845	1st - 5th axis, number of pulses per 1 turn of motor	0 - 999999999	1 = 1/1000 μm (0.000001 deg) or 1 = 1 pulse
pm2111 - pm2119	In F1-digit designation, variation in feedrate per division of pulse handle	0 - 255	1 = 0.1 mm/min/pulse
pm2400 - pm2431	Feedrate corresponding to the JOG FEEDRATE setting position, 0 - 31	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2432	Multiplication of jog feedrate parameter value by 10 or 100	1, 10, 100	1 = ×1
pm2433	Designation of the addition start switch position if pm2432 ≠ 0	0 - 31	
pm2434	Designation of position where the jog feedrate parameter value is multiplied by 1/10 (if both pm2433 and pm2434 are specified, pm2433 is given priority.)	0 - 31	
pm2440	Feedrate for the execution of skip	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2444	Feedrate of rapid traverse by external deceleration	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2445	Feedrate of cutting feed by external deceleration	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2447	Feedrate for rapid traverse override F_0	0 - 100, 0 - 32767	1 = 1 mm/min (pm2000 D3 = 0) 1 = 1% (pm2000 D3 = 1)
pm2448	Feedrate for rapid traverse override F_1	0 - 100	1 = 1 %
pm2449	Feedrate for rapid traverse override F_2	0 - 100	1 = 1 %
pm2459	Multiplication value for ×100 position of manual pulse multiply switch	0 - 32767	1 = ×1
pm2461 - pm2465	1st - 5th axis, rapid traverse acceleration/deceleration time constant	4 - 32767	1 = 1 ms (multiple of 4)
pm2471	Spindle, rapid traverse acceleration/deceleration time constant	4 - 32767	1 = 1 ms (multiple of 4)

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm2472	Spindle, rapid traverse acceleration/deceleration time constant (gear B selected)	4 - 32767	1 = 1 ms (multiple of 4)
pm2481 - pm2485	1st - 5th axis, backlash compensation amount in G01 mode	0 - 32767	1 = 0.1 μm
pm2491 - pm2495	1st - 5th axis, backlash compensation amount in pulse handle mode	0 - 32767	1 = 0.1 μm
pm2501 - pm2505	1st - 5th axis, acceleration/deceleration time constant in normal cutting	0 - 32767	1 = 1 ms
pm2511 - pm2515	1st - 5th axis, acceleration/deceleration time constant in thread cutting/tapping	0 - 32767	1 = 1 ms
pm2521 - pm2525	1st - 5th axis, reference point return approach speed	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2531 - pm2535	1st - 5th axis, reference point return creep speed	0 - 32767	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2541	No. 1 spindle, index start speed	1 - 32767	1 = 1 r/min
pm2542	No. 1 spindle, index start speed (gear B selected)	1 - 32767	1 = 1 r/min
pm2546	No. 1 spindle, index creep speed	1 - 32767	1 = 1 r/min
pm2547	No. 1 spindle, index creep speed (gear B selected)	1 - 32767	1 = 1 r/min
pm2551	Max. speed of spindle drive motor	0 - 32767	1 = 1 r/min or 10 r/min
pm2561 - pm2565	1st - 5th axis, acceleration/deceleration time constant in handle feed	4 - 32767	1 = 1 ms (multiple of 4)
pm2571 - pm2575	1st - 5th axis, acceleration/deceleration time constant in No. 2 G00 mode operation	4 - 32767	1 = 1 ms (multiple of 4)
pm2580	Cutting feedrate acceleration	125 - 32767	1 = 0.001 m/s (multiple of 4)
pm2581	S-curve factor in cutting feed	0 - 6	
pm2591 - pm2595	1st - 5th axis, S-curve factor in rapid traverse acceleration/deceleration	0 - 20	
pm2601 - pm2605	1st - 5th axis, S-curve factor in rapid traverse acceleration/deceleration in second S-curve acceleration/deceleration	0 - 15	
pm2800	Maximum cutting feedrate (linear axis)	0 - 240000	1 = 1 mm/min, 0.1 inch/min
pm2801 - pm2805	1st - 5th axis, rapid traverse rate	0 - 240000	1 = 1 mm/min, 0.1 inch/min,
pm2810	Maximum cutting feedrate (rotary axis)	0 - 240000	1 = 1 deg/min

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm2811 - pm2815	1st - 5th axis, rapid traverse rate in second S-curve acceleration/deceleration	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2821 - pm2825	1st - 5th axis, bias in normal acceleration/deceleration	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2831 - pm2835	1st - 5th axis, bias in thread cutting acceleration/deceleration	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2851 - pm2855	1st - 5th axis, second G00 feedrate	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2860	Maximum feedrate in handle feed (linear axis)	0 - 240000	1 = 1mm/min, 0.1 inch/min
pm2861	Maximum feedrate in handle feed (rotary axis)	0 - 240000	1 = 1deg/min
pm2862	Feedrate in high-speed feedrate section during circle cut	0 - 240000	1 = 1mm/min, 0.1 inch/min
pm2863	Number of servo lag pulses for feed clamp in handle feed operation("0": Not clamped)	0 - 240000	1 = 1 pulse
pm2864	Shift feedrate in G76/G77 canned cycle	0 - 240000	1 = 1 mm/min, 0.1 inch/min
pm2865	Maximum feedrate in F1-digit feed (F1 - F4)	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm2866	Maximum feedrate in F1-digit feed (F5 - F9)	0 - 240000	1 = 1 mm/min, 0.1 inch/min, 1 deg/min
pm3400 - pm3409	Title display at power on, 1st line, 1 - 10 columns		Set by converting ASCII code into decimal
pm3410 - pm3419	Title display at power on, 2nd line, 1 - 10 columns		Set by converting ASCII code into decimal
pm3420	Title display, magnification ratio 1st line : 2 times 2nd line : 1 time Set 12h = 18 (decimal)	1st digit: Magnification for the 1st line (1 - 3) 2nd digit: Magnification for the 2nd line (1 - 3)	2-digit value is assumed to be a hexadecimal number; convert it into decimal for setting.

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm3421	Title display, display start position 1st line : 10th digit 2nd line : 12th digit Set 0C0Ah = 3082 (decimal)	1st and 2nd digits: 1st line start position (1 - 39) 3rd and 4th digits: 2nd line start position (1 - 39)	2-digit value is assumed to be a hexadecimal number; convert it into decimal for setting.
pm3422	Tool pot, display start number	7000 - 7999	Battery backed-up memory number
pm3423	Tool pot, display end number	7000 - 7999	Battery backed-up memory number
pm3424	ATC display, MG number	7000 - 7999	Battery backed-up memory number
pm3425	ATC display, SP number	7000 - 7999	Battery backed-up memory number
pm3426	ATC display, WT number	7000 - 7999	Battery backed-up memory number
pm3427	Sub-tool pot number, display start number	7000 - 7999	Battery backed-up memory number
pm3428	Sub-tool pot number, display end number	7000 - 7999	Battery backed-up memory number
pm3440	"RDI" command PLC battery backed-up memory number designation	7000 - 7999	
pm3441	"SOD" command PLC battery backed-up memory number designation	7000 - 7999	
pm3442	Spindle forward rotation M code number (for drawing)	0 - 999	
pm3443	Spindle reverse rotation M code number (for drawing)	0 - 999	
pm3444	Spindle stop M code number (for drawing)	0 - 999	
pm3445	Spindle orientation M code number (for drawing)	0 - 999	
pm3446	Tool change M code number (for drawing)	0 - 999	
pm3447	Coolant ON M code number (for drawing)	0 - 999	
pm3448	Coolant OFF M code number (for drawing)	0 - 999	
pm3449	Average time necessary for the execution of an M code (for drawing)	0 - 65535	1 = 1 ms
pm3450	Average time necessary for the execution of an S code (for drawing)	0 - 65535	1 = 1 ms
pm3451	Average time necessary for the execution of a T code (for drawing)	0 - 65535	1 = 1 ms
pm3830 - pm3853	"0" must be set; the system uses these parameters.		

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm4100	Punched hole pattern, in EIA code, of special characters used in user macro, #	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4101	Punched hole pattern, in EIA code, of special characters used in user macro, [	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4102	Punched hole pattern, in EIA code, of special characters used in user macro,]	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4103	Punched hole pattern, in EIA code, of special characters used in user macro, *	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4104	Punched hole pattern, in EIA code, of special characters used in user macro, =	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4105	Punched hole pattern, in EIA code, of special characters used in user macro, (	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4106	Punched hole pattern, in EIA code, of special characters used in user macro,)	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4107	Punched hole pattern, in EIA code, of special characters used in user macro, .	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4108	Punched hole pattern, in EIA code, of special characters used in user macro, ,	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4109	Punched hole pattern, in EIA code, of special characters used in user macro, " "	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4110	Tool life control group command T code offset	Tool life control group (0 - 9) =T command − pm4110 × 1000	
pm4143	Designation of coordinate system if work coordinate system shift is executed at power on or reference point return	54 - 59	
pm4144	Punched hole pattern, in EIA code, of special characters used in user macro, <	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.
pm4145	Punched hole pattern, in EIA code, of special characters used in user macro, >	0 - 255	Hole pattern is regarded as a binary number; convert it into decimal for setting.

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm4160	Designation of operation mode in high-speed mode operation		0: Not converted 1: Converted in the specified sections
pm4161 - pm4163	High-speed mode operation conversion start designation code (in ASCII) if pm4160 = 1 (Example) HON pm4161 48H pm4162 4FH pm4163 4EH		
pm4164 - pm4166	High-speed mode operation conversion end designation code (in ASCII) if pm4160 = 1 (Example) HOF pm4164 48H pm4165 4FH pm4166 46H		
pm4167	Segment type in high-speed mode operation	1 - 4	1 = 1 ms, 2 = 2 ms, 4 = 4 ms
pm4400 - pm4409	Buffering stop M code (1) - (10)	0 - 999	
pm4450	Small arc skip value in nose R and tool radius offset mode	0 - 32767	1 = Minimum input unit
pm4451 - pm4455	1st - 5th axis, reference point return distance	0 - 32767	1 = 0.001 mm, 0.001 deg
pm4461 - pm4465	1st - 5th axis, overtravel distance in G60	0 - 32767	1 = 0.001 mm, 0.001 deg
pm4480 - pm4503	G code macro (1 - 24) call G code	1 - 999	
pm4504 - pm4527	M code macro (1 - 24) call M code	1 - 9999	
pm4551 - pm4555	Virtual C-phase shift distance, 1st - 5th axis	–32767 - 32767	1 = 0.001 mm, 0.001 deg
pm4800	High-speed mode operation, acceleration/deceleration at corners		1 = 1 mm/sec^2
pm4801 - pm4805	1st - 5th axis, automatic coordinate system in "mm" input	0 - ±999999999	1 = Minimum input unit in "mm" system
pm4810	High-speed mode operation, acceleration/deceleration		1 = 1 mm/sec^2
pm4811 - pm4815	1st - 5th axis, automatic coordinate system in "inch" input	0 - ±999999999	1 = Minimum input unit in "inch" system
pm4820	Allowable error range in circular arc interpolation by R command	0 - 999999999	1 = 0.001 mm, 0.0001 inch
pm4823	High-speed mode operation, allowable acceleration in circular arc interpolation block		1 = 1 mm/sec^2
pm4840 - pm4863	G code macro (1 - 24) call program number	0 - 99999	
pm4864 - pm4887	M code macro (1 - 24) call program number	0 - 99999	

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm4888	S code macro call designation	"0" or call program number	
pm4889	T code macro call designation	"0" or call program number	
pm4890	B code macro call designation	"0" or call program number	
pm5400	Duration of time from resetting of signal for turning servo power off to brake release at servo power ON	0 - 32767	1 = 1 ms
pm5401 - pm5405	1st - 5th axis, duration of time from ESP signal (normally closed) rising edge to base block ON	0 - 32767	1 = 1 ms
pm5410	Duration of time from sending M, S, T code to sending of MF, SF, TF	0 - 32767	1 = 1 ms
pm5420	Software switch, input battery backed-up memory start number	7000 - 7999	
pm5421	Software switch, output battery backed-up memory start number	7000 - 7999	
pm5427	Program restart switch, battery backed-up memory number	7000 - 7999	
pm5428	Manual skip signal, battery backed-up memory number (workpiece presetter)	7000 - 7999	
pm6101 - pm6105	1st - 5th axis, pitch error compensation magnification ratio	0 - 3	
pm6111 - pm6113	No. 2 stored stroke limit check axis designation, 1 - 3	0 - 3	1 = X-axis, 2 = Y-axis, 3 = Z-axis
pm6114 - pm6116	No. 3 stored stroke limit check axis designation, 1 - 3	0 - 3	
pm6117 - pm6119	No. 4 stored stroke limit check axis designation, 1 - 3	0 - 3	
pm6120 - pm6122	No. 5 stored stroke limit check axis designation, 1 - 3	0 - 3	
pm6130 - pm6139	No. 1 - No. 10 position monitor, check axis	0 - 5	
pm6401 - pm6405	1st - 5th axis, pitch error compensation data storing memory start number		
pm6411 - pm6415	1st - 5th axis, pitch error compensation data storing memory end number		
pm6421 - pm6425	1st - 5th axis, memory number storing the reference point for pitch error compensation		
pm6801 - pm6805	1st - 5th axis, pitch error compensation intervals	0 - 999999999	1 = 0.001 mm, 0.001 deg
pm6811 - pm6815	1st - 5th axis, second reference point position	0 - ±999999999	1 = 0.001 mm, 0.001 deg

Appendix Table 2.3 J300M/J100M Parameter Table (cont'd)

No.	Description	Setting Range	Unit
pm6821 - pm6825	1st - 5th axis, third reference point position	0 - ±999999999	1 = 0.001 mm, 0.001 deg
pm6831 - pm6835	1st - 5th axis, fourth reference point position	0 - ±999999999	1 = 0.001 mm, 0.001 deg
pm6840	Offset presetter measuring direction reference value, X0	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6841	Offset presetter measuring direction reference value, Z0	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6842	Work presetter measuring probe radius, (DX+)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6843	Work presetter measuring probe radius, (DX–)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6844	Work presetter measuring probe radius, (DX+)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6845	Work presetter measuring probe radius, (DY–)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6846	Work presetter measuring probe radius, (HZ–)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6847	Work presetter measuring enabled retraction stroke	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6848	Work presetter measuring point feed-away stroke	0 - ±999999999	1 = 0.001 mm, 0.0001 inch
pm6861 - pm6865	1st - 5th axis, pitch error compensation stroke (maximum)	0 - ±999999999	1 = 0.001 mm, 0.001 deg
pm6871 - pm6875	1st - 5th axis, pitch error compensation stroke (minimum)	0 - ±999999999	1 = 0.001 mm, 0.001 deg
pm6881 - pm6885	1st - 5th axis, pitch error compensation reference point position	0 - ±999999999	1 = 0.001 mm, 0.001 deg
pm6901 - pm6905	1st - 5th axis, stored stroke limit (+)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch, 0.001 deg
pm6911 - pm6915	1st - 5th axis, stored stroke limit (–)	0 - ±999999999	1 = 0.001 mm, 0.0001 inch, 0.001 deg
pm6920 - pm6929	No. 1 - No. 10 position monitor positive direction area boundary value	0 - ±999999999	1 = 0.001 mm
pm6930 - pm6939	No. 1 - No. 10 position monitor negative direction area boundary value	0 - ±999999999	1 = 0.001 mm
pm8811 - pm8815	1st - 5th axis, offset amount in zero point setting	0 - ±999999999	1 = 1 pulse

APPENDIX 3

ALARM TABLE

Appendix 3 describes the classification and contents of alarms.
If you use J300M, refer to 3.2 and 3.3, and use J100M, refer to 3.3.

3.1 CLASSIFICATION OF ALARMS ..... A3 - 2

3.2 ALARM TABLE (J300M) ..... A3 - 3

3.3 ALARM TABLE
(YENET1200 COMPATIBLE DRIVER
FOR J300M/J100M) ..... A3 - 20

APPENDIX 3.1 CLASSIFICATION OF ALARMS

Appendix Table 3.1 Classification of Alarms

No.	Contents	Stop Mode	Output	How to Reset
0000 - 0049	Errors related with edit and operation Occurring in the background mode also.	Block stop	Input error alarm	Reset
0050 - 0099	Errors related with edit and operation Not occurring in the background mode.	Block stop	Input error alarm	Reset Power OFF for #0050 and #0051
0100 - 0499	Program error (occurring in a series)	Block stop	Input error alarm	Reset
1000 - 1099	Program error (occurring over multiple series) DNC, COMS total, etc.	Block stop	Input error alarm	Reset
2000 - 2199	Machine related error OT, reference point return, machine ready, in-position, etc.	Stop after deceleration, or immediate stop	Alarm	Reset operation after removing the cause. With the alarm caused by the machine ready signal, if it occurs in the first power ON operation, it is automatically reset.
3000 - 3299	Servo and spindle related alarm ESP, CPU mutual monitoring in NC	Immediate stop, or servo off	Alarm	Reset after removing the cause. With the SVOFF alarm, it is automatically reset by the SVON.
8000 - 8049	Memory check error (ROM, RAM) Watchdog timer error Offline error	Immediate stop, or servo off	Alarm	For maintenance CPU halt Switching to the special maintenance screen
9000 - 9049	Error occurring in background editing (basically the same as with 0000 - 0049)	Not stopped	Background error output	Reset or with reset soft-key
BAT indication BAT. AXIS	Battery error Encoder alarm	Not stopped	No output	Changing the battery
Warning message	Key operation error, edit operation error (not serious operation error)	Not stopped	Warning	Next key operation

APPENDIX 3.2 ALARM TABLE (J300M)

Appendix Table 3.2 J300M Alarm Table

Alarm No.	Description
0010	In tape mode operation, TH parity error has occurred.
0011	In tape mode operation, TV parity error has occurred.
0012	In tape mode operation, an illegal character (not conforming to EIA or ISO) is detected.
0013	In tape mode operation, one block capacity (128 characters) has been exceeded.
0014	In tape mode operation, there is no response of data set ready signal.
0015	In tape mode operation, overflow has occurred with the input numerical value (more than 9 characters).
0016	RS-232C interface transfer error has occurred.
0017	After the reading of RS-232C interface stop code, more than 10 characters of data has been read.
0018	There is an error in the RS-232C interface line.
0020	The designated line has already been opened.
0021	The designated line has not been opened.
0022	Double-call or combination is incorrect.
0023	Data has not been sent within the specified length of time.
0024	Send or receive start processing has not been executed.
0025	There is an error in the setting of parameters.
0050	The parameter which is made valid after power off/on operation has been set.
0051	The parameter which is made valid only when the program area is cleared has been set.
0061	There is an error in the designation of data in external data input.
0062	The program designated by the external data number search is not found.
0100	Overflow has occurred with one-block buffer (128 characters).
0101	There is no data specified following an address, or the data is specified without address.
0102	"–" or "." is not used correctly.
0103	Illegal character is specified in the significant information area.
0104	Overflow has occurred with the input numerical value (more than 9 characters).
0105	An axis not defined as an axis is designated.
0106	The same address is designated more than one time in one block.
0107	Nesting of "("; ")" is used without "("; "(" and ")" are not used in pairs.
0110	More than one M code is designated in one block although multiple M code option is not selected.
0111	The number of digits in the specified M code is larger than the allowable limit.

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
0112	M90 and M91 are not designated in a block without other commands. There is no P command in the M91 block.
0113	There is an error in the designation of an internal M code.
0114	M90/M91 is designated although designation is not allowed.
0115	There is an error in the M191 command.
0116	M93 is designated although designation is not allowed.
0125	M, S, or T is designated although designation of M, S, or T is not allowed.
0126	There is no M02/M30 command in memory mode or tape mode operation.
0127	• In the mirror image mode, an illegal G is designated. • Mirror image is turned ON in the mirror image prohibited mode.
0130	More than one S code is designated in one block although multiple S control option is not selected.
0131	The number of digits in the specified S code is larger than the allowable limit.
0140	The number of digits in the specified T code is larger than the allowable limit.
0144	The number of digits in the specified B code is larger than the allowable limit.
0150	Offset number is too large.
0151	Offset number specified in H/D switching is too large.
0152	Offset number H is not designated.
0160	An illegal G code is designated. Or a G code for which the corresponding option is not selected is designated.
0161	G codes which cannot be used in combination in one block are designated.
0162	An address which is mandatory is not specified.
0163	An illegal G is designated in the high-speed mode operation section.
0170	An illegal G code is designated in a canned cycle.
0171	G70 - G72 is designated in other than a canned cycle.
0172	R-point level return is designated in G77 (back boring) canned cycle.
0174	In G73/G83, Q and I are not designated. G73/G83 is designated with Q = I = 0.
0175	In G70 - G72, designation of address is incorrect.
0180	At the start-up of tool radius offset or nose R offset mode, • There are no axis move commands within 3 blocks. • M00, M01, M02, or M30 is designated. • Circular interpolation mode is designated.
0181	The tool radius offset or nose R offset mode ends in the circular interpolation mode.
0182	An illegal G code is designated in the tool radius offset or nose R offset mode.

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
0183	In the tool radius offset or nose R offset mode, offset plane has been changed. Circular arc is designated outside the offset plane.
0184	In the tool radius offset or nose R offset mode, point of intersection cannot be obtained.
0185	In the tool radius offset or nose R offset mode, the shape causing reversed tool movement is designated.
0186	In the tool radius offset or nose R offset mode, a system variable for which buffering is not allowed is designated.
0187	In the tool radius offset or nose R offset mode, interference is detected.
0188	In the tool radius offset or nose R offset mode, automatic interference correction is not possible.
0189	Offset mode error (work area has been destroyed, or no output data in data output operation)
0190	In circular interpolation commands, a circle of "0" radius has been specified.
0191	In circular interpolation, commands including three axes are designated. In helical interpolation, axes exceeding the number of controllable axes are designated.
0192	The plane cannot be defined from the given circular interpolation commands. In circular interpolation, commands of four or more axes are designated.
0193	The center cannot be obtained from the designated R.
0194	Tool length offset or tool position offset is designated in the circular interpolation mode.
0196	Chamfering or corner rounding cannot be designated.
0197	Chamfering or corner rounding designation plane error has occurred.
0198	Chamfering or corner rounding block creation impossible error has occurred.
0200	In inputting an offset amount by using a program, a number designated with P is larger than the allowable limit.
0201	In inputting an offset amount by using a program, offset amount is too large. There is an error in the format.
0202	In "G10 Q2" (inputting work coordinate system shift amount by program), a number designated with P is larger than the allowable limit.
0210	In user macro, the value of constant is~ outside the allowable range.
0211	The number of cancel codes for G67 is too many.
0212	There is an error in the format.
0213	A value not defined as a variable number is used.
0214	A variable used in replace statement is the variable which cannot be used for this operation.
0215	The nesting level of "[ ]" exceeds the allowable limit.
0216	The nesting level of macroprogram call exceeds the allowable limit.
0217	DO - END is not used in pairs.
0218	The numbers of brackets "[" and "]" do not agree with each other.

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
0219	In "DO M", 1 ≦ m ≦ 3 is not satisfied.
0220	In "GOTO n", "n" is outside the allowable range or "n" is not found.
0221	In a macroprogram, division by "0" is executed.
0222	Square root of a negative value
0223	Floating point data exceeds the allowable range.
0224	In modal call (G66), axis command is specified with M99 return designation.
0225	Overflow has occurred with operation stack.
0226	Execution of the following functions was impossible: ASIN, ACOS, LN, SQRT
0227	Overflow has occurred during conversion into integer.
0228	Overflow has occurred with the input data for the BCD function.
0229	There is an error in the format of the BIN function.
0230	Overflow has occurred as the result of execution of the EXP function.
0240	Reference point return has not been completed with the axis for which G29, G30 is designated.
0241	Reference point return is invalid for the axis for which G28 is designated.
0250	An illegal code has been designated in a solid tap program.
0255	A C command is designated for the spindle in the spindle control mode.
0256	An S command is designated for the spindle in the C-axis control mode.
0260	• There is no P or Q command in the M98 block. • There is no P command in the G65/G66, G25 block. • Both G25 and M98/M99 are designated in the same block.
0261	Nesting level of M98 subprogram call or G25 exceeds the allowable limit.
0262	In a program that calls a microprogram by G, M, or T code (M98, M99, G65, G66, G25), the designated program number or sequence number is not found.
0263	An attempt was made to start a program by executing address search after buffering subprogram or macro call.
0264	M99 is used in copy program when an attempt was made to execute the program copy function.
0270	• I or J command is not designated in the G106 block. • Neither I nor I command is designated in the G106 block. • An axis other than X and Y is designated in the G106 block.
0275	During program interruption, an illegal command is designated.
0280	In the scaling mode, an illegal command is designated.
0281	There is an error in the format of G50/G51 block. Scaling value is "0".
0285	The order of designation/cancellation of the following functions is incorrect: mirror image, scaling, rotation.

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
0290	A sequence number is not found at the restart of the program.
0291	The operation that changes the coordinate system is executed at the restart of the program.
0292	At the restart of the program, an axis was moved by MDI intervention.
0301	There are no tools registered in the designated tool group.
0302	All tools in the designated tool group are in the skipped status.
0310	In the coordinate rotation mode, an illegal G code is designated. Or G68 is designated in the tool radius offset mode.
0311	There is an error in the format of the G68, G69 command block.
0312	In the coordinate rotation mode, an axis that cannot be designated is designated.
0320	A work coordinate system that cannot be designated for the G54 - G59 J* work coordinate system shift program is selected. Or G54 - G59 is designated in the circular interpolation mode.
0321	A local coordinate system is set although a work coordinate system is not set.
0322	G53 is designated in incorrect conditions.
0360	In circle cut commands, radius R < offset amount D.
0361	In circle cutting, a plane other than the G17 plane is selected.
0362	There is an error in the format of circle cut program.
0365	An illegal G code is designated in G45 - G48 mode.
0370	There is no F command in a cutting program.
0380	An axis command is designated in the G04, G40, G21 block.
0381	An axis command is designated in the G10, G22, G23 block.
0382	More than one area has been selected from No. 3 - No. 5 prohibited areas.
0390	An execution program does not exist.
0391	An execution program is being input.
0392	An execution program is being edited.
0393	A sequence number that does no exist is designated in M98 Q G25 commands.
0395	Cycle start is executed after changing the mode from tape to memory, or from memory to tape.
0396	During tape/direct operation, an attempt was made to return to the main program by interrupting program execution.
0397	During tape/direct operation, operation interruption that does not allow the re-execution has been carried out.
0400	An O number of five or more digits is designated.
0401	An N number of five or more digits is designated.

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
0402	A P number of five or more digits is designated.
0406	Before the axis move, the axis is in the stored stroke limit No. 2 area.
0407	Before the axis move, the axis is in the stored stroke limit No. 3 area.
0408	Before the axis move, the axis is in the stored stroke limit No. 4 area.
0409	Before the axis move, the axis is in the stored stroke limit No. 5 area.
0411	Reference point return has not been completed (X-axis).
0412	Reference point return has not been completed (Y-axis).
0413	Reference point return has not been completed (Z-axis).
0414	Reference point return has not been completed (4th-axis).
0415	Reference point return has not been completed (5th-axis).
0421	After the execution of G27, the axis has not returned to the reference point (X-axis).
0422	After the execution of G27, the axis has not returned to the reference point (Y-axis).
0423	After the execution of G27, the axis has not returned to the reference point (Z-axis).
0424	After the execution of G27, the axis has not returned to the reference point (4th-axis).
0425	After the execution of G27, the axis has not returned to the reference point (5th-axis).
0431	Before the axis move, the axis has reached the entry prohibited area (outside) of stored stroke limit (X-axis)
0432	Before the axis move, the axis has reached the entry prohibited area (outside) of stored stroke limit (Y-axis)
0433	Before the axis move, the axis has reached the entry prohibited area (outside) of stored stroke limit (Z-axis)
0434	Before the axis move, the axis has reached the entry prohibited area (outside) of stored stroke limit (4th-axis)
0435	Before the axis move, the axis has reached the entry prohibited area (outside) of stored stroke limit (5th-axis)
0491	In the G31 block, skip signal (1) has not been input.
0492	In the G31 block, skip signal (2) has not been input.
0494	When G31 is executed, the skip signal (1) is not ready.
0495	When G31 is executed, the skip signal (2) is not ready.
1000	DNC time-out error has occurred.
1001	DNC DR line error has occurred.
1002	DNC packet length error has occurred.
1003	DNC 8251 error has occurred.
1004	DNC check sum error has occurred.

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
1005	DNC command error has occurred.
1006	DNC high-speed cutting mode error has occurred.
1007	DNC communication module diagnosis error has occurred.
1008	DNC CPU error has occurred.
1009	DNC 51 error has occurred.
1020	Start number of the battery backed-up memory storing the cell controller I/O link information is outside the allowable range.
1021	An interface error between the cell controller and COM in the cell controller system.
1041	Incorrect command has been made for the PLC control axis (X-axis).
1042	Incorrect command has been made for the PLC control axis (Y-axis).
1043	Incorrect command has been made for the PLC control axis (Z-axis).
1044	Incorrect command has been made for the PLC control axis (4th-axis).
1045	Incorrect command has been made for the PLC control axis (5th-axis).
1051	Axis has been changed while the control axis selected status signal is ON (X-axis).
1052	Axis has been changed while the control axis selected status signal is ON (Y-axis).
1053	Axis has been changed while the control axis selected status signal is ON (Z-axis).
1054	Axis has been changed while the control axis selected status signal is ON (4th-axis).
1055	Axis has been changed while the control axis selected status signal is ON (5th-axis).
1080	Execution of a program block has been stopped with the ERR 0 signal ON.
1090	Setting area total check error has occurred.
1091	Parameter area total check error has occurred.
1092	Battery backed-up memory area total check error has occurred.
1093	Offset and work coordinate system shift amount area total check error has occurred.
1094	Macro variable area total check error has occurred.
1095	Machining program area total check error has occurred.
1096	Tool life control data area total check error has occurred.
1098	The fan is faulty.
1099	High temperature in the NC unit.
2001	Overtravel has occurred (X-axis).
2002	Overtravel has occurred (Y-axis).

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
2003	Overtravel has occurred (Z-axis).
2004	Overtravel has occurred (4th-axis).
2005	Overtravel has occurred (5th-axis).
2011	Axis has reached the stored stroke limit No. 1 area (X-axis).
2012	Axis has reached the stored stroke limit No. 1 area (Y-axis).
2013	Axis has reached the stored stroke limit No. 1 area (Z-axis).
2014	Axis has reached the stored stroke limit No. 1 area (4th-axis).
2015	Axis has reached the stored stroke limit No. 1 area (5th-axis).
2020	More than two areas are made valid at the same time among No. 2 - No. 5 areas.
2021	Axis has reached the outside of the stored stroke limit No. 2 area (X-axis).
2022	Axis has reached the outside of the stored stroke limit No. 2 area (Y-axis).
2023	Axis has reached the outside of the stored stroke limit No. 2 area (Z-axis).
2024	Axis has reached the outside of the stored stroke limit No. 3 area (X-axis).
2025	Axis has reached the outside of the stored stroke limit No. 3 area (Y-axis).
2026	Axis has reached the outside of the stored stroke limit No. 3 area (Z-axis).
2027	Axis has reached the outside of the stored stroke limit No. 4 area (X-axis).
2028	Axis has reached the outside of the stored stroke limit No. 4 area (Y-axis).
2029	Axis has reached the outside of the stored stroke limit No. 4 area (Z-axis).
2031	Axis has reached the outside of the stored stroke limit No. 5 area (X-axis).
2032	Axis has reached the outside of the stored stroke limit No. 5 area (Y-axis).
2033	Axis has reached the outside of the stored stroke limit No. 5 area (Z-axis).
2040	Axis has reached the inside of the stored stroke limit No. 2 area.
2041	Axis has reached the inside of the stored stroke limit No. 3 area.
2042	Axis has reached the inside of the stored stroke limit No. 4 area.
2043	Axis has reached the inside of the stored stroke limit No. 5 area.
2044	The end point does not lie on the circle in manual circular interpolation type 2.
2045	The start point does not exist on the circle in manual circular interpolation type 1.
2046	In manual circular interpolation, depth of cut is too large.
2051	When the separately installed PG is used for reference point return, the deceleration LS is turned from OFF to ON before the C-phase is latched (X-axis).

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
2052	When the separately installed PG is used for reference point return, the deceleration LS is turned from OFF to ON before the C-phase is latched (Y-axis).
2053	When the separately installed PG is used for reference point return, the deceleration LS is turned from OFF to ON before the C-phase is latched (Z-axis).
2054	When the separately installed PG is used for reference point return, the deceleration LS is turned from OFF to ON before the C-phase is latched (4th-axis).
2055	When the separately installed PG is used for reference point return, the deceleration LS is turned from OFF to ON before the C-phase is latched (5th-axis).
2060	The reference point return (low-speed type) is executed in the manual skip B (measuring) mode.
2061	Reference point return area error has occurred (X-axis).
2062	Reference point return area error has occurred (Y-axis).
2063	Reference point return area error has occurred (Z-axis).
2064	Reference point return area error has occurred (4th-axis).
2065	Reference point return area error has occurred (5th-axis).
2070	After the completion of measurement in the manual skip (A/B) mode, measuring cycle is executed again without returning the contact detection axis.
2071	Reference point return position error has occurred (X-axis).
2072	Reference point return position error has occurred (Y-axis).
2073	Reference point return position error has occurred (Z-axis).
2074	Reference point return position error has occurred (4th-axis).
2075	Reference point return position error has occurred (5th-axis).
2081	In reference point return, the deceleration LS is turned OFF after it has been turned ON once and then turned ON again (X-axis).
2082	In reference point return, the deceleration LS is turned OFF after it has been turned ON once and then turned ON again (Y-axis).
2083	In reference point return, the deceleration LS is turned OFF after it has been turned ON once and then turned ON again (Z-axis).
2084	In reference point return, the deceleration LS is turned OFF after it has been turned ON once and then turned ON again (4th-axis).
2085	In reference point return, the deceleration LS is turned OFF after it has been turned ON once and then turned ON again (5th-axis).
2091	According to the parameter setting, retraction operation must be made in reference point return operation (X-axis).
2092	According to the parameter setting, retraction operation must be made in reference point return operation (Y-axis).

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
2093	According to the parameter setting, retraction operation must be made in reference point return operation (Z-axis).
2094	According to the parameter setting, retraction operation must be made in reference point return operation (4th-axis).
2095	According to the parameter setting, retraction operation must be made in reference point return operation (5th-axis).
2101	P-SET error has occurred (X-axis).
2102	P-SET error has occurred (Y-axis).
2103	P-SET error has occurred (Z-axis).
2104	P-SET error has occurred (4th-axis).
2105	P-SET error has occurred (5th-axis).
2111	Absolute position overflow has occurred with the absolute position detection function (X-axis).
2112	Absolute position overflow has occurred with the absolute position detection function (Y-axis).
2113	Absolute position overflow has occurred with the absolute position detection function (Z-axis).
2114	Absolute position overflow has occurred with the absolute position detection function (4th-axis).
2115	Absolute position overflow has occurred with the absolute position detection function (5th-axis).
2121	There is no battery mounted on the AXIS board (X-axis).
2122	There is no battery mounted on the AXIS board (Z-axis).
2123	There is no battery mounted on the AXIS board (Y-axis).
2124	There is no battery mounted on the AXIS board (4th-axis).
2125	There is no battery mounted on the AXIS board (5th-axis).
2131	Difference in axis positions between the position at the previous power off and the position at the start-up of the absolute position detection function is excessively large (X-axis).
2132	Difference in axis positions between the position at the previous power off and the position at the start-up of the absolute position detection function is excessively large (Y-axis).
2133	Difference in axis positions between the position at the previous power off and the position at the start-up of the absolute position detection function is excessively large (Z-axis).
2134	Difference in axis positions between the position at the previous power off and the position at the start-up of the absolute position detection function is excessively large (4th-axis).

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
2135	Difference in axis positions between the position at the previous power off and the position at the start-up of the absolute position detection function is excessively large (5th-axis).
2141	Reference point return movement has been interrupted due to mode change (X-axis).
2142	Reference point return movement has been interrupted due to mode change (Y-axis).
2143	Reference point return movement has been interrupted due to mode change (Z-axis).
2144	Reference point return movement has been interrupted due to mode change (4th-axis).
2145	Reference point return movement has been interrupted due to mode change (5th-axis).
2151	During the execution of reference point return, the deceleration LS is turned from OFF to ON before C-phase latch is completed (X-axis).
2152	During the execution of reference point return, the deceleration LS is turned from OFF to ON before C-phase latch is completed (Y-axis).
2153	During the execution of reference point return, the deceleration LS is turned from OFF to ON before C-phase latch is completed (Z-axis).
2154	During the execution of reference point return, the deceleration LS is turned from OFF to ON before C-phase latch is completed (4th-axis).
2155	During the execution of reference point return, the deceleration LS is turned from OFF to ON before C-phase latch is completed (5th-axis).
2161	While an axis is disconnected, the disconnection input has been turned OFF (X-axis).
2162	While an axis is disconnected, the disconnection input has been turned OFF (Y-axis).
2163	While an axis is disconnected, the disconnection input has been turned OFF (Z-axis).
2164	While an axis is disconnected, the disconnection input has been turned OFF (4th-axis).
2165	While an axis is disconnected, the disconnection input has been turned OFF (5th-axis).
2171	Unmatch in axis disconnection status (X-axis).
2172	Unmatch in axis disconnection status (Y-axis).
2173	Unmatch in axis disconnection status (Z-axis).
2174	Unmatch in axis disconnection status (4th-axis).
2175	Unmatch in axis disconnection status (5th-axis).
2180	An axis has been decelerated and stopped due to turning ON of the ERR 1 signal.
2190	The machine is not ready.
2191	The SLPC input signal has been turned off in the spindle command loop sequence by G93.
3000	Servo power is not turned on.
3001	The control is not ready.

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
3002	NC has entered the emergency stop state.
3010	The memory used to store machining programs has not been initialized.
3011	In initialization processing, expansion memory for storing machining programs and the memory after power on do not match.
3012	Axis configuration setting parameters do not agree with the physical axis configuration.
3014	The number of valid axes is greater than the allowable number.
3021	Fuse is blown (X-axis).
3022	Fuse is blown (Y-axis).
3023	Fuse is blown (Z-axis).
3024	Fuse is blown (4th-axis).
3025	Fuse is blown (5th-axis).
3037	Serial communication error has occurred in the communication with the inverter (C1).
3038	Serial communication error has occurred in the communication with the inverter (C2).
3041	Excessively large servo error (X-axis)
3042	Excessively large servo error (Y-axis)
3043	Excessively large servo error (Z-axis)
3044	Excessively large servo error (4th-axis)
3045	Excessively large servo error (5th-axis)
3051	Excessively large servo error (No. 1 spindle)
3060	Overload (other than servo axis)
3061	Overload (X-axis)
3062	Overload (Y-axis)
3063	Overload (Z-axis)
3064	Overload (4th-axis)
3065	Overload (5th-axis)
3081	Disconnection in PG wiring (X-axis)
3082	Disconnection in PG wiring (Y-axis)
3083	Disconnection in PG wiring (Z-axis)
3084	Disconnection in PG wiring (4th-axis)
3085	Disconnection in PG wiring (5th-axis)

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
3100	Hardware error has been detected with the Servopack or AXIS board.
3101	Servopack error has occurred (X-axis).
3102	Servopack error has occurred (Y-axis).
3103	Servopack error has occurred (Z-axis).
3104	Servopack error has occurred (4th-axis).
3105	Servopack error has occurred (5th-axis).
3111	Servopack communication error has occurred (X-axis).
3112	Servopack communication error has occurred (Y-axis).
3113	Servopack communication error has occurred (Z-axis).
3114	Servopack communication error has occurred (4th-axis).
3115	Servopack communication error has occurred (5th-axis).
3121	Over-speed has been detected (X-axis).
3122	Over-speed has been detected (Y-axis).
3123	Over-speed has been detected (Z-axis).
3124	Over-speed has been detected (4th-axis).
3125	Over-speed has been detected (5th-axis).
3131	Serial communication error has occurred in the communication with the inverter (No. 1 spindle).
3141	Overrun is detected with the servo controlled axis (X-axis).
3142	Overrun is detected with the servo controlled axis (Y-axis).
3143	Overrun is detected with the servo controlled axis (Z-axis).
3144	Overrun is detected with the servo controlled axis (4th-axis).
3145	Overrun is detected with the servo controlled axis (5th-axis).
3161	Malfunctioning is detected with the absolute position encoder (X-axis).
3162	Malfunctioning is detected with the absolute position encoder (Y-axis).
3163	Malfunctioning is detected with the absolute position encoder (Z-axis).
3164	Malfunctioning is detected with the absolute position encoder (4th-axis).
3165	Malfunctioning is detected with the absolute position encoder (5th-axis).
3171	Encoder type parameter has been set incorrectly (X-axis).
3172	Encoder type parameter has been set incorrectly (Y-axis).

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
3173	Encoder type parameter has been set incorrectly (Z-axis).
3174	Encoder type parameter has been set incorrectly (4th-axis).
3175	Encoder type parameter has been set incorrectly (5th-axis).
3181	Malfunctioning is detected with the PG counter of the absolute position encoder (X-axis).
3182	Malfunctioning is detected with the PG counter of the absolute position encoder (Y-axis).
3183	Malfunctioning is detected with the PG counter of the absolute position encoder (z-axis).
3184	Malfunctioning is detected with the PG counter of the absolute position encoder (4th-axis).
3185	Malfunctioning is detected with the PG counter of the absolute position encoder (5th-axis).
3211	Separately installed PG is set valid although the hardware is not installed (X-axis).
3212	Separately installed PG is set valid although the hardware is not installed (Y-axis).
3213	Separately installed PG is set valid although the hardware is not installed (Z-axis).
3214	Separately installed PG is set valid although the hardware is not installed (4th-axis).
3215	Separately installed PG is set valid although the hardware is not installed (5th-axis).
3221	Disconnection in wiring to the separately installed PG (X-axis)
3222	Disconnection in wiring to the separately installed PG (Y-axis)
3223	Disconnection in wiring to the separately installed PG (Z-axis)
3224	Disconnection in wiring to the separately installed PG (4th-axis)
3225	Disconnection in wiring to the separately installed PG (5th-axis)
3240	Servo has been turned off due to turning ON of the ERR 2 signal.
3241	Absolute error (separately installed PG) has occurred (X-axis).
3242	Absolute error (separately installed PG) has occurred (Y-axis).
3243	Absolute error (separately installed PG) has occurred (Z-axis).
3244	Absolute error (separately installed PG) has occurred (4th-axis).
3245	Absolute error (separately installed PG) has occurred (5th-axis).
3252	NMI interruption has occurred due to the occurrence of bus gate error.
3253	NMI interruption has occurred due to the occurrence of watchdog time-out.
3260	SH-INTEX synchronization error has occurred.
3261	SH-MOTION synchronization error has occurred.
3262	INTEX-MOTION synchronization error has occurred.

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
3263	MOTION-PLC synchronization error has occurred.
3264	MOTION-AXIS synchronization error has occurred.
3265	ACGC synchronization error has occurred.
3266	DNC synchronization error has occurred.
3270	Data error has occurred when turning the power OFF (battery backed-up memory).
3271	Data error has occurred when turning the power OFF (tool life control).
3272	Data error has occurred when turning the power OFF (macro).
3273	Data error has occurred when turning the power OFF (internal memory).
3274	Program has been destroyed due to turning the power off during editing (program).
3275	Data error has occurred when turning the power OFF during editing (custom variables).
3276	The power has been turned OFF during editing. This requires the program to be checked after turning the power ON.
3281	AXIS error 1 has occurred.
3282	AXIS error 2 has occurred.
3283	AXIS error 3 has occurred.
3284	AXIS error 4 has occurred.
3285	AXIS error 5 has occurred.
3296	During sequence editing, the power is turned ON for the NC with the system number switch set in "0".
3297	Sequence data has been destroyed.
3299	Communication error has occurred in YENET.
3301	Excessively large current is supplied to the Servopack main circuit (X-axis).
3302	Excessively large current is supplied to the Servopack main circuit (Y-axis).
3303	Excessively large current is supplied to the Servopack main circuit (Z-axis).
3304	Excessively large current is supplied to the Servopack main circuit (4th-axis).
3305	Excessively large current is supplied to the Servopack main circuit (5th-axis).
3311	Servopack MCCB has been tripped (X-axis).
3312	Servopack MCCB has been tripped (Y-axis).
3313	Servopack MCCB has been tripped (Z-axis).
3314	Servopack MCCB has been tripped (4th-axis).
3315	Servopack MCCB has been tripped (5th-axis).

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
3321	An error has occurred with the Servopack regeneration resistor (X-axis).
3322	An error has occurred with the Servopack regeneration resistor (Y-axis).
3323	An error has occurred with the Servopack regeneration resistor (Z-axis).
3324	An error has occurred with the Servopack regeneration resistor (4th-axis).
3325	An error has occurred with the Servopack regeneration resistor (5th-axis).
3331	DC voltage in the Servopack main circuit is abnormally high (X-axis).
3332	DC voltage in the Servopack main circuit is abnormally high (Y-axis).
3333	DC voltage in the Servopack main circuit is abnormally high (Z-axis).
3334	DC voltage in the Servopack main circuit is abnormally high (4th-axis).
3335	DC voltage in the Servopack main circuit is abnormally high (5th-axis).
3341	DC voltage in the Servopack main circuit is abnormally low (X-axis).
3342	DC voltage in the Servopack main circuit is abnormally low (Y-axis).
3343	DC voltage in the Servopack main circuit is abnormally low (Z-axis).
3344	DC voltage in the Servopack main circuit is abnormally low (4th-axis).
3345	DC voltage in the Servopack main circuit is abnormally low (5th-axis).
3351	Heat sink in the Servopack has been overheated (X-axis).
3352	Heat sink in the Servopack has been overheated (Y-axis).
3353	Heat sink in the Servopack has been overheated (Z-axis).
3354	Heat sink in the Servopack has been overheated (4th-axis).
3355	Heat sink in the Servopack has been overheated (5th-axis).
3361	Disconnection of the current command cable between the NC and the Servopack (X-axis).
3362	Disconnection of the current command cable between the NC and the Servopack (Y-axis).
3363	Disconnection of the current command cable between the NC and the Servopack (Z-axis).
3364	Disconnection of the current command cable between the NC and the Servopack (4th-axis).
3365	Disconnection of the current command cable between the NC and the Servopack (5th-axis).
3371	Open phase in the three-phase power supply for the Servopack (X-axis).
3372	Open phase in the three-phase power supply for the Servopack (Y-axis).
3373	Open phase in the three-phase power supply for the Servopack (z-axis).
3374	Open phase in the three-phase power supply for the Servopack (4th-axis).

Appendix Table 3.2 J300M Alarm Table (cont'd)

Alarm No.	Description
3375	Open phase in the three-phase power supply for the Servopack (5th-axis).
9010	TH parity has occurred.
9011	TV parity has occurred.
9012	In RS-232C communications, an illegal character (not conforming to EIA or ISO) is detected.
9013	In RS-232C communications, one block capacity (128 characters) has been exceeded.
9014	In RS-232C communications, there is no response of data set ready signal.
9015	Overflow has occurred with the input numerical value (more than 9 characters).
9016	In RS-232C communications, interface parity error has occurred.
9017	In RS-232C communications, interface overrun has occurred.(protocol setting error or transmission error)
9018	There is an error in RS-232C interface line selection.
9019	Framing error has occurred (stop bit setting error or transmission error).
9020	The designated line has already been opened.
9021	The designated line has not been opened.
9022	Double-call or combination is incorrect.
9023	Data has not been sent within the specified length of time.
9024	Send or receive processing is not executed.
9025	There is an error in the designated parameter.

APPENDIX 3.3 ALARM TABLE (YENET1200 COMPATIBLE DRIVER FOR J300M/J100M)

When the driver compatible with the YENET1200 is used, the contents of the alarm numbers are partly changed. In this case, please refer to Table 3.3.

Appendix Table 3.3 J300M/J100M Alarm Table

Alarm No.	Description
0010	In tape mode operation, TH parity error has occurred.
0011	In tape mode operation, TV parity error has occurred.
0012	In tape mode operation, an illegal character (not conforming to EIA or ISO) is detected.
0013	In tape mode operation, one block capacity (128 characters) has been exceeded.
0014	In tape mode operation, there is no response of data set ready signal.
0015	In tape mode operation, overflow has occurred with the input numerical value (more than 9 characters).
0016	RS-232C interface transfer error has occurred.
0017	After the reading of RS-232C interface stop code, more than 10 characters of data has been read.
0018	There is an error in the RS-232C interface line.
0020	The designated line has already been opened.
0021	The designated line has not been opened.
0022	Double-call or combination is incorrect.
0023	Data has not been sent within the specified length of time.
0024	Send or receive start processing has not been executed.
0025	There is an error in the setting of parameters.
0050	The parameter which is made valid after power off/on operation has been set.
0051	The parameter which is made valid only when the program area is cleared has been set.
0061	There is an error in the designation of data in external data input.
0062	The program designated by the external data number search is not found.
0100	Overflow has occurred with one-block buffer (128 characters).
0101	There is no data specified following an address, or the data is specified without address.
0102	"–" or "." is not used correctly.
0103	Illegal character is specified in the significant information area.
0104	Overflow has occurred with the input numerical value (more than 9 characters).
0105	An axis not defined as an axis is designated.
0106	The same address is designated more than one time in one block.
0107	Nesting of "("; ")" is used without "("; "(" and ")" are not used in pairs.

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
0110	More than one M code is designated in one block although multiple M code option is not selected.
0111	The number of digits in the specified M code is larger than the allowable limit.
0112	M90 and M91 are not designated in a block without other commands. There is no P command in the M91 block.
0113	There is an error in the designation of an internal M code.
0114	M90/M91 is designated although designation is not allowed.
0115	There is an error in the M191 command.
0116	M93 is designated although designation is not allowed.
0125	M, S, or T is designated although designation of M, S, or T is not allowed.
0126	There is no M02/M30 command in memory mode or tape mode operation.
0127	• In the mirror image mode, an illegal G is designated. • Mirror image is turned ON in the mirror image prohibited mode.
0130	More than one S code is designated in one block although multiple S control option is not selected.
0131	The number of digits in the specified S code is larger than the allowable limit.
0140	The number of digits in the specified T code is larger than the allowable limit.
0144	The number of digits in the specified B code is larger than the allowable limit.
0150	Offset number is too large.
0151	Offset number specified in H/D switching is too large.
0152	Offset number H is not designated.
0160	An illegal G code is designated. Or a G code for which the corresponding option is not selected is designated.
0161	G codes which cannot be used in combination in one block are designated.
0162	An address which is mandatory is not specified.
0163	An illegal G is designated in the high-speed mode operation section.
0170	An illegal G code is designated in a canned cycle.
0171	G70 - G72 is designated in other than a canned cycle.
0172	R-point level return is designated in G77 (back boring) canned cycle.
0174	In G73/G83, Q and I are not designated. G73/G83 is designated with Q = I = 0.
0175	In G70 - G72, designation of address is incorrect.
0180	At the start-up of tool radius offset or nose R offset mode, • There are no axis move commands within 3 blocks. • M00, M01, M02, or M30 is designated. • Circular interpolation mode is designated.

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
0181	The tool radius offset or nose R offset mode ends in the circular interpolation mode.
0182	An illegal G code is designated in the tool radius offset or nose R offset mode.
0183	In the tool radius offset or nose R offset mode, offset plane has been changed. Circular arc is designated outside the offset plane.
0184	In the tool radius offset or nose R offset mode, point of intersection cannot be obtained.
0185	In the tool radius offset or nose R offset mode, the shape causing reversed tool movement is designated.
0186	In the tool radius offset or nose R offset mode, a system variable for which buffering is not allowed is designated.
0187	In the tool radius offset or nose R offset mode, interference is detected.
0188	In the tool radius offset or nose R offset mode, automatic interference correction is not possible.
0189	Offset mode error (work area has been destroyed, or no output data in data output operation)
0190	In circular interpolation commands, a circle of "0" radius has been specified.
0191	In circular interpolation, commands including three axes are designated. In helical interpolation, axes exceeding the number of controllable axes are designated.
0192	The plane cannot be defined from the given circular interpolation commands. In circular interpolation, commands of four or more axes are designated.
0193	The center cannot be obtained from the designated R.
0194	Tool length offset or tool position offset is designated in the circular interpolation mode.
0196	Chamfering or corner rounding cannot be designated.
0197	Chamfering or corner rounding designation plane error has occurred.
0198	Chamfering or corner rounding block creation impossible error has occurred.
0200	In inputting an offset amount by using a program, a number designated with P is larger than the allowable limit.
0201	In inputting an offset amount by using a program, offset amount is too large. There is an error in the format.
0202	In "G10 Q2" (inputting work coordinate system shift amount by program), a number designated with P is larger than the allowable limit.
0210	In user macro, the value of constant is~ outside the allowable range.
0211	The number of cancel codes for G67 is too many.
0212	There is an error in the format.
0213	A value not defined as a variable number is used.
0214	A variable used in replace statement is the variable which cannot be used for this operation.
0215	The nesting level of "[ ]" exceeds the allowable limit.
0216	The nesting level of macroprogram call exceeds the allowable limit.

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
0217	DO - END is not used in pairs.
0218	The numbers of brackets "[" and "]" do not agree with each other.
0219	In "DO M", 1 ≦ m ≦ 3 is not satisfied.
0220	In "GOTO n", "n" is outside the allowable range or "n" is not found.
0221	In a macroprogram, division by "0" is executed.
0222	Square root of a negative value
0223	Floating point data exceeds the allowable range.
0224	In modal call (G66), axis command is specified with M99 return designation.
0225	Overflow has occurred with operation stack.
0226	Execution of the following functions was impossible: ASIN, ACOS, LN, SQRT
0227	Overflow has occurred during conversion into integer.
0228	Overflow has occurred with the input data for the BCD function.
0229	There is an error in the format of the BIN function.
0230	Overflow has occurred as the result of execution of the EXP function.
0240	Reference point return has not been completed with the axis for which G29, G30 is designated.
0241	Reference point return is invalid for the axis for which G28 is designated.
0250	A~n illegal code has been designated in a solid tap program.
0255	A C command is designated for the spindle in the spindle control mode.
0256	An S command is designated for the spindle in the C-axis control mode.
0260	• There is no P or Q command in the M98 block. • There is no P command in the G65/G66, G25 block. • Both G25 and M98/M99 are designated in the same block.
0261	Nesting level of M98 subprogram call or G25 exceeds the allowable limit.
0262	In a program that calls a microprogram by G, M, or T code (M98, M99, G65, G66, G25), the designated program number or sequence number is not found.
0263	An attempt was made to start a program by executing address search after buffering subprogram or macro call.
0264	M99 is used in copy program when an attempt was made to execute the program copy function.
0270	• I or J command is not designated in the G106 block. • Neither I nor I command is designated in the G106 block. • An axis other than X and Y is designated in the G106 block.
0275	During program interruption, an illegal command is designated.

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
0280	In the scaling mode, an illegal command is designated.
0281	There is an error in the format of G50/G51 block. Scaling value is "0".
0285	The order of designation/cancellation of the following functions is incorrect: mirror image, scaling, rotation.
0290	A sequence number is not found at the restart of the program.
0291	The operation that changes the coordinate system is executed at the restart of the program.
0292	At the restart of the program, an axis was moved by MDI intervention.
0301	There are no tools registered in the designated tool group.
0302	All tools in the designated tool group are in the skipped status.
0310	In the coordinate rotation mode, an illegal G code is designated. Or G68 is designated in the tool radius offset mode.
0311	There is an error in the format of the G68, G69 command block.
0312	In the coordinate rotation mode, an axis that cannot be designated is designated.
0320	A work coordinate system that cannot be designated for the G54 - G59 J* work coordinate system shift program is selected. Or G54 - G59 is designated in the circular interpolation mode.
0321	A local coordinate system is set although a work coordinate system is not set.
0322	G53 is designated in incorrect conditions.
0360	In circle cut commands, radius R < offset amount D.
0361	In circle cutting, a plane other than the G17 plane is selected.
0362	There is an error in the format of circle cut program.
0365	An illegal G code is designated in G45 - G48 mode.
0370	There is no F command in a cutting program.
0380	An axis command is designated in the G04, G40, G21 block.
0381	An axis command is designated in the G10, G22, G23 block.
0382	More than one area has been selected from No. 3 - No. 5 prohibited areas.
0390	An execution program does not exist.
0391	An execution program is being input.
0392	An execution program is being edited.
0393	A sequence number that does no exist is designated in M98 Q G25 commands.
0395	Cycle start is executed after changing the mode from tape to memory, or from memory to tape.
0396	During tape/direct operation, an attempt was made to return to the main program by interrupting program execution.

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
0397	During tape/direct operation, operation interruption that does not allow the re-execution has been carried out.
0400	An O number of five or more digits is designated.
0401	An N number of five or more digits is designated.
0402	A P number of five or more digits is designated.
0406	Before the axis move, the axis is in the stored stroke limit No. 2 area.
0407	Before the axis move, the axis is in the stored stroke limit No. 3 area.
0408	Before the axis move, the axis is in the stored stroke limit No. 4 area.
0409	Before the axis move, the axis is in the stored stroke limit No. 5 area.
0411	Reference point return has not been completed (X-axis).
0412	Reference point return has not been completed (Y-axis).
0413	Reference point return has not been completed (Z-axis).
0414	Reference point return has not been completed (4th-axis).
0415	Reference point return has not been completed (5th-axis).
0421	After the execution of G27, the axis has not returned to the reference point (X-axis).
0422	After the execution of G27, the axis has not returned to the reference point (Y-axis).
0423	After the execution of G27, the axis has not returned to the reference point (Z-axis).
0424	After the execution of G27, the axis has not returned to the reference point (4th-axis).
0425	After the execution of G27, the axis has not returned to the reference point (5th-axis).
0431	Before the axis move, the axis has reached the entry prohibited area (outside) of stored stroke limit (X-axis)
0432	Before the axis move, the axis has reached the entry prohibited area (outside) of stored stroke limit (Y-axis)
0433	Before the axis move, the axis has reached the entry prohibited area (outside) of stored stroke limit (Z-axis)
0434	Before the axis move, the axis has reached the entry prohibited area (outside) of stored stroke limit (4th-axis)
0435	Before the axis move, the axis has reached the entry prohibited area (outside) of stored stroke limit (5th-axis)
0480	The cylindrical interpolation command error has occurred.
0481	A command error has occurred in the cylindrical interpolation mode.
0482	The polar coordinate interpolation command error has occurred.
0483	A command error has occurred in the polar coordinate interpolation mode.
0484	Program interrupt has occurred in the cylindrical or polar coordinate interpolation mode.
0491	In the G31 block, skip signal (1) has not been input.

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
0492	In the G31 block, skip signal (2) has not been input.
0494	When G31 is executed, the skip signal (1) is not ready.
0495	When G31 is executed, the skip signal (2) is not ready.
1000	DNC time-out error has occurred.
1001	DNC DR line error has occurred.
1002	DNC packet length error has occurred.
1003	DNC 8251 error has occurred.
1004	DNC check sum error has occurred.
1005	DNC command error has occurred.
1006	DNC high-speed cutting mode error has occurred.
1007	DNC communication module diagnosis error has occurred.
1008	DNC CPU error has occurred.
1009	DNC 51 error has occurred.
1020	Start number of the battery backed-up memory storing the cell controller I/O link information is outside the allowable range.
1021	An interface error between the cell controller and COM in the cell controller system.
1041	Incorrect command has been made for the PLC control axis (X-axis).
1042	Incorrect command has been made for the PLC control axis (Y-axis).
1043	Incorrect command has been made for the PLC control axis (Z-axis).
1044	Incorrect command has been made for the PLC control axis (4th-axis).
1045	Incorrect command has been made for the PLC control axis (5th-axis).
1051	Axis has been changed while the control axis selected status signal is ON (X-axis).
1052	Axis has been changed while the control axis selected status signal is ON (Y-axis).
1053	Axis has been changed while the control axis selected status signal is ON (Z-axis).
1054	Axis has been changed while the control axis selected status signal is ON (4th-axis).
1055	Axis has been changed while the control axis selected status signal is ON (5th-axis).
1080	Execution of a program block has been stopped with the ERR 0 signal ON.
1090	Setting area total check error has occurred.
1091	Parameter area total check error has occurred.
1092	Battery backed-up memory area total check error has occurred.

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
1093	Offset and work coordinate system shift amount area total check error has occurred.
1094	Macro variable area total check error has occurred.
1095	Machining program area total check error has occurred.
1096	Tool life control data area total check error has occurred.
1098	The fan is faulty.
1099	High temperature in the NC unit.
2001	Overtravel has occurred (X-axis).
2002	Overtravel has occurred (Y-axis).
2003	Overtravel has occurred (Z-axis).
2004	Overtravel has occurred (4th-axis).
2005	Overtravel has occurred (5th-axis).
2011	Axis has reached the stored stroke limit No. 1 area (X-axis).
2012	Axis has reached the stored stroke limit No. 1 area (Y-axis).
2013	Axis has reached the stored stroke limit No. 1 area (Z-axis).
2014	Axis has reached the stored stroke limit No. 1 area (4th-axis).
2015	Axis has reached the stored stroke limit No. 1 area (5th-axis).
2020	More than two areas are made valid at the same time among No. 2 - No. 5 areas.
2021	Axis has reached the outside of the stored stroke limit No. 2 area (X-axis).
2022	Axis has reached the outside of the stored stroke limit No. 2 area (Y-axis).
2023	Axis has reached the outside of the stored stroke limit No. 2 area (Z-axis).
2024	Axis has reached the outside of the stored stroke limit No. 3 area (X-axis).
2025	Axis has reached the outside of the stored stroke limit No. 3 area (Y-axis).
2026	Axis has reached the outside of the stored stroke limit No. 3 area (Z-axis).
2027	Axis has reached the outside of the stored stroke limit No. 4 area (X-axis).
2028	Axis has reached the outside of the stored stroke limit No. 4 area (Y-axis).
2029	Axis has reached the outside of the stored stroke limit No. 4 area (Z-axis).
2031	Axis has reached the outside of the stored stroke limit No. 5 area (X-axis).
2032	Axis has reached the outside of the stored stroke limit No. 5 area (Y-axis).
2033	Axis has reached the outside of the stored stroke limit No. 5 area (Z-axis).

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
2040	Axis has reached the inside of the stored stroke limit No. 2 area.
2041	Axis has reached the inside of the stored stroke limit No. 3 area.
2042	Axis has reached the inside of the stored stroke limit No. 4 area.
2043	Axis has reached the inside of the stored stroke limit No. 5 area.
2044	The end point does not lie on the circle in manual circular interpolation type 2.
2045	The start point does not exist on the circle in manual circular interpolation type 1.
2046	In manual circular interpolation, depth of cut is too large.
2051	When the separately installed PG is used for reference point return, the deceleration LS is turned from OFF to ON before the C-phase is latched (X-axis).
2052	When the separately installed PG is used for reference point return, the deceleration LS is turned from OFF to ON before the C-phase is latched (Y-axis).
2053	When the separately installed PG is used for reference point return, the deceleration LS is turned from OFF to ON before the C-phase is latched (Z-axis).
2054	When the separately installed PG is used for reference point return, the deceleration LS is turned from OFF to ON before the C-phase is latched (4th-axis).
2055	When the separately installed PG is used for reference point return, the deceleration LS is turned from OFF to ON before the C-phase is latched (5th-axis).
2060	The reference point return (low-speed type) is executed in the manual skip B (measuring) mode.
2061	Reference point return area error has occurred (X-axis).
2062	Reference point return area error has occurred (Y-axis).
2063	Reference point return area error has occurred (Z-axis).
2064	Reference point return area error has occurred (4th-axis).
2065	Reference point return area error has occurred (5th-axis).
2070	After the completion of measurement in the manual skip (A/B) mode, measuring cycle is executed again without returning the contact detection axis.
2071	Reference point return position error has occurred (X-axis).
2072	Reference point return position error has occurred (Y-axis).
2073	Reference point return position error has occurred (Z-axis).
2074	Reference point return position error has occurred (4th-axis).
2075	Reference point return position error has occurred (5th-axis).

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
2081	In reference point return, the deceleration LS is turned OFF after it has been turned ON once and then turned ON again (X-axis).
2082	In reference point return, the deceleration LS is turned OFF after it has been turned ON once and then turned ON again (Y-axis).
2083	In reference point return, the deceleration LS is turned OFF after it has been turned ON once and then turned ON again (Z-axis).
2084	In reference point return, the deceleration LS is turned OFF after it has been turned ON once and then turned ON again (4th-axis).
2085	In reference point return, the deceleration LS is turned OFF after it has been turned ON once and then turned ON again (5th-axis).
2091	According to the parameter setting, retraction operation must be made in reference point return operation (X-axis).
2092	According to the parameter setting, retraction operation must be made in reference point return operation (Y-axis).
2093	According to the parameter setting, retraction operation must be made in reference point return operation (Z-axis).
2094	According to the parameter setting, retraction operation must be made in reference point return operation (4th-axis).
2095	According to the parameter setting, retraction operation must be made in reference point return operation (5th-axis).
2101	P-SET error has occurred (X-axis).
2102	P-SET error has occurred (Y-axis).
2103	P-SET error has occurred (Z-axis).
2104	P-SET error has occurred (4th-axis).
2105	P-SET error has occurred (5th-axis).
2111	Absolute position overflow has occurred with the absolute position detection function (X-axis).
2112	Absolute position overflow has occurred with the absolute position detection function (Y-axis).
2113	Absolute position overflow has occurred with the absolute position detection function (Z-axis).
2114	Absolute position overflow has occurred with the absolute position detection function (4th-axis).
2115	Absolute position overflow has occurred with the absolute position detection function (5th-axis).

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
2131	Difference in axis positions between the position at the previous power off and the position at the start-up of the absolute position detection function is excessively large (X-axis).
2132	Difference in axis positions between the position at the previous power off and the position at the start-up of the absolute position detection function is excessively large (Y-axis).
2133	Difference in axis positions between the position at the previous power off and the position at the start-up of the absolute position detection function is excessively large (Z-axis).
2134	Difference in axis positions between the position at the previous power off and the position at the start-up of the absolute position detection function is excessively large (4th-axis).
2135	Difference in axis positions between the position at the previous power off and the position at the start-up of the absolute position detection function is excessively large (5th-axis).
2141	Reference point return movement has been interrupted due to mode change (X-axis).
2142	Reference point return movement has been interrupted due to mode change (Y-axis).
2143	Reference point return movement has been interrupted due to mode change (Z-axis).
2144	Reference point return movement has been interrupted due to mode change (4th-axis).
2145	Reference point return movement has been interrupted due to mode change (5th-axis).
2151	During the execution of reference point return, the deceleration LS is turned from OFF to ON before C-phase latch is completed (X-axis).
2152	During the execution of reference point return, the deceleration LS is turned from OFF to ON before C-phase latch is completed (Y-axis).
2153	During the execution of reference point return, the deceleration LS is turned from OFF to ON before C-phase latch is completed (Z-axis).
2154	During the execution of reference point return, the deceleration LS is turned from OFF to ON before C-phase latch is completed (4th-axis).
2155	During the execution of reference point return, the deceleration LS is turned from OFF to ON before C-phase latch is completed (5th-axis).
2161	While an axis is disconnected, the disconnection input has been turned OFF (X-axis).
2162	While an axis is disconnected, the disconnection input has been turned OFF (Y-axis).
2163	While an axis is disconnected, the disconnection input has been turned OFF (Z-axis).
2164	While an axis is disconnected, the disconnection input has been turned OFF (4th-axis).
2165	While an axis is disconnected, the disconnection input has been turned OFF (5th-axis).
2171	Unmatch in axis disconnection status (X-axis).
2172	Unmatch in axis disconnection status (Y-axis).
2173	Unmatch in axis disconnection status (Z-axis).
2174	Unmatch in axis disconnection status (4th-axis).

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
2175	Unmatch in axis disconnection status (5th-axis).
2180	An axis has been decelerated and stopped due to turning ON of the ERR 1 signal.
2190	The machine is not ready.
2191	The SLPC input signal has been turned off in the spindle command loop sequence by G93.
3000	Servo power is not turned on.
3001	The control is not ready.
3002	NC has entered the emergency stop state.
3010	The memory used to store machining programs has not been initialized.
3011	In initialization processing, expansion memory for storing machining programs and the memory after power on do not match.
3012	Axis configuration setting parameters do not agree with the physical axis configuration, or the option is not selected.
3013	YENET station number parameter setting error
3014	The number of valid axes is greater than the allowable number.
3021	Fuse is blown (1st-axis).
3022	Fuse is blown (2nd-axis).
3023	Fuse is blown (3rd-axis).
3024	Fuse is blown (4th-axis).
3025	Fuse is blown (5th-axis).
3041	Excessively large servo error (1st-axis)
3042	Excessively large servo error (2nd-axis)
3043	Excessively large servo error (3rd-axis)
3044	Excessively large servo error (4th-axis)
3045	Excessively large servo error (5th-axis)
3051	Excessively large servo error (No. 1 spindle)
3061	Overload (1st-axis)
3062	Overload (2nd-axis)
3063	Overload (3rd-axis)
3064	Overload (4th-axis)
3065	Overload (5th-axis)

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
3081	Disconnection in PG wiring (1st-axis)
3082	Disconnection in PG wiring (2nd-axis)
3083	Disconnection in PG wiring (3rd-axis)
3084	Disconnection in PG wiring (4th-axis)
3085	Disconnection in PG wiring (5th-axis)
3091	Disconnection in PG wiring (spindle)
3100	Station No. for YENET1200 has not been set.
3101	Servopack error has occurred (1st-axis).
3102	Servopack error has occurred (2nd-axis).
3103	Servopack error has occurred (3rd-axis).
3104	Servopack error has occurred (4th-axis).
3105	Servopack error has occurred (5th-axis).
3111	Servopack communication error has occurred (1st-axis).
3112	Servopack communication error has occurred (2nd-axis).
3113	Servopack communication error has occurred (3rd-axis).
3114	Servopack communication error has occurred (4th-axis).
3115	Servopack communication error has occurred (5th-axis).
3121	Over-speed has been detected (1st-axis).
3122	Over-speed has been detected (2nd-axis).
3123	Over-speed has been detected (3rd-axis).
3124	Over-speed has been detected (4th-axis).
3125	Over-speed has been detected (5th-axis).
3131	Serial communication error has occurred in the communication with the inverter (spindle).
3141	Overrun is detected with the servo controlled axis (1st-axis).
3142	Overrun is detected with the servo controlled axis (2nd-axis).
3143	Overrun is detected with the servo controlled axis (3rd-axis).
3144	Overrun is detected with the servo controlled axis (4th-axis).
3145	Overrun is detected with the servo controlled axis (5th-axis).
3151	Phase detection error has occurred (1st-axis).

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
3152	Phase detection error has occurred (2nd-axis).
3153	Phase detection error has occurred (3rd-axis).
3154	Phase detection error has occurred (4th-axis).
3155	Phase detection error has occurred (5th-axis).
3161	Malfunctioning is detected with the absolute position encoder (1st-axis).
3162	Malfunctioning is detected with the absolute position encoder (2nd-axis).
3163	Malfunctioning is detected with the absolute position encoder (3rd-axis).
3164	Malfunctioning is detected with the absolute position encoder (4th-axis).
3165	Malfunctioning is detected with the absolute position encoder (5th-axis).
3181	Malfunctioning is detected with the PG counter of the absolute position encoder (1st-axis).
3182	Malfunctioning is detected with the PG counter of the absolute position encoder (2nd-axis).
3183	Malfunctioning is detected with the PG counter of the absolute position encoder (3rd-axis).
3184	Malfunctioning is detected with the PG counter of the absolute position encoder (4th-axis).
3185	Malfunctioning is detected with the PG counter of the absolute position encoder (5th-axis).
3191	Error has occurred in the reduction of fraction of the gear ratio (1st-axis).
3192	Error has occurred in the reduction of fraction of the gear ratio (2nd-axis).
3193	Error has occurred in the reduction of fraction of the gear ratio (3rd-axis).
3194	Error has occurred in the reduction of fraction of the gear ratio (4th-axis).
3195	Error has occurred in the reduction of fraction of the gear ratio (5th-axis).
3221	Disconnection in wiring to the separately installed PG (1st-axis)
3222	Disconnection in wiring to the separately installed PG (2nd-axis)
3223	Disconnection in wiring to the separately installed PG (3rd-axis)
3224	Disconnection in wiring to the separately installed PG (4th-axis)
3225	Disconnection in wiring to the separately installed PG (5th-axis)
3240	Servo has been turned off due to turning ON of the ERR 2 signal.
3241	Absolute error (separately installed PG) has occurred (1st-axis).
3242	Absolute error (separately installed PG) has occurred (2nd-axis).
3243	Absolute error (separately installed PG) has occurred (3rd-axis).
3244	Absolute error (separately installed PG) has occurred (4th-axis).

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
3245	Absolute error (separately installed PG) has occurred (5th-axis).
3252	NMI interruption has occurred due to the occurrence of bus gate error.
3253	NMI interruption has occurred due to the occurrence of watchdog time-out.
3260	SH-INTEX synchronization error has occurred.
3261	SH-MOTION synchronization error has occurred.
3262	INTEX-MOTION synchronization error has occurred.
3263	MOTION-PLC synchronization error has occurred.
3264	MOTION-AXIS synchronization error has occurred.
3265	ACGC synchronization error has occurred.
3266	DNC synchronization error has occurred.
3270	Data error has occurred when turning the power OFF (battery backed-up memory).
3271	Data error has occurred when turning the power OFF (tool life control).
3272	Data error has occurred when turning the power OFF (macro).
3273	Data error has occurred when turning the power OFF (internal memory).
3274	Program has been destroyed due to turning the power off during editing (program).
3275	Data error has occurred when turning the power OFF during editing (custom variables).
3276	The power has been turned OFF during editing. This requires the program to be checked after turning the power ON.
3281	YENET1200 command time-out error has occurred (1st-axis).
3282	YENET1200 command time-out error has occurred (2nd-axis).
3283	YENET1200 command time-out error has occurred (3rd-axis).
3284	YENET1200 command time-out error has occurred (4th-axis).
3285	YENET1200 command time-out error has occurred (5th-axis).
3291	YENET1200 command time-out error has occurred (spindle).
3296	During sequence editing, the power is turned ON for the NC with the system number switch set in "0".
3297	Sequence data has been destroyed.
3299	Communication error has occurred in the YENET1200 (I/O).
3301	Excessively large current is supplied to the Servopack main circuit (1st-axis).
3302	Excessively large current is supplied to the Servopack main circuit (2nd-axis).
3303	Excessively large current is supplied to the Servopack main circuit (3rd-axis).

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
3304	Excessively large current is supplied to the Servopack main circuit (4th-axis).
3305	Excessively large current is supplied to the Servopack main circuit (5th-axis).
3311	Servopack MCCB has been tripped (X-axis).
3312	Servopack MCCB has been tripped (Y-axis).
3313	Servopack MCCB has been tripped (Z-axis).
3314	Servopack MCCB has been tripped (4th-axis).
3315	Servopack MCCB has been tripped (5th-axis).
3321	An error has occurred with the Servopack regeneration resistor (X-axis).
3322	An error has occurred with the Servopack regeneration resistor (Y-axis).
3323	An error has occurred with the Servopack regeneration resistor (Z-axis).
3324	An error has occurred with the Servopack regeneration resistor (4th-axis).
3325	An error has occurred with the Servopack regeneration resistor (5th-axis).
3331	DC voltage in the Servopack main circuit is abnormally high (1st-axis).
3332	DC voltage in the Servopack main circuit is abnormally high (2nd-axis).
3333	DC voltage in the Servopack main circuit is abnormally high (3rd-axis).
3334	DC voltage in the Servopack main circuit is abnormally high (4th-axis).
3335	DC voltage in the Servopack main circuit is abnormally high (5th-axis).
3381	Communication error has occurred in the YENET1200 (1st-axis).
3382	Communication error has occurred in the YENET1200 (2nd-axis).
3383	Communication error has occurred in the YENET1200 (3rd-axis).
3384	Communication error has occurred in the YENET1200 (4th-axis).
3385	Communication error has occurred in the YENET1200 (5th-axis).
3391	Communication error has occurred in the YENET1200 (spindle).
3395	Converter error has occurred (spindle).
3401	Converter error has occurred (1st-axis).
3402	Converter error has occurred (2nd-axis).
3403	Converter error has occurred (3rd-axis).
3404	Converter error has occurred (4th-axis).
3405	Converter error has occurred (5th-axis).

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
3411	Servo unit error has occurred (1st-axis).
3412	Servo unit error has occurred (2nd-axis).
3413	Servo unit error has occurred (3rd-axis).
3414	Servo unit error has occurred (4th-axis).
3415	Servo unit error has occurred (5th-axis).
3421	Inverter unit error has occurred.
3425	Watchdog error has occurred in the YENET1200 (spindle).
3431	Watchdog error has occurred in the YENET1200 (1st-axis).
3432	Watchdog error has occurred in the YENET1200 (2nd-axis).
3433	Watchdog error has occurred in the YENET1200 (3rd-axis).
3434	Watchdog error has occurred in the YENET1200 (4th-axis).
3435	Watchdog error has occurred in the YENET1200 (5th-axis).
3441	Ground fault (1st-axis)
3442	Ground fault (2nd-axis)
3443	Ground fault (3rd-axis)
3444	Ground fault (4th-axis)
3445	Ground fault (5th-axis)
3451	Follow-up error has occurred (1st-axis).
3452	Follow-up error has occurred (2nd-axis).
3453	Follow-up error has occurred (3rd-axis).
3454	Follow-up error has occurred (4th-axis).
3455	Follow-up error has occurred (5th-axis).
3461	Erroneous setting of the motor code (1st–axis)
3462	Erroneous setting of the motor code (2nd–axis)
3463	Erroneous setting of the motor code (3rd–axis)
3464	Erroneous setting of the motor code (4th–axis)
3465	Erroneous setting of the motor code (5th–axis)
9010	TH parity has occurred.
9011	TV parity has occurred.

Appendix Table 3.3 J300M/J100M Alarm Table (cont'd)

Alarm No.	Description
9012	In RS-232C communications, an illegal character (not conforming to EIA or ISO) is detected.
9013	In RS-232C communications, one block capacity (128 characters) has been exceeded.
9014	In RS-232C communications, there is no response of data set ready signal.
9015	Overflow has occurred with the input numerical value (more than 9 characters).
9016	In RS-232C communications, interface parity error has occurred.
9017	In RS-232C communications, interface overrun has occurred.(protocol setting error or transmission error)
9018	There is an error in RS-232C interface line selection.
9019	Framing error has occurred (stop bit setting error or transmission error).
9020	The designated line has already been opened.
9021	The designated line has not been opened.
9022	Double-call or combination is incorrect.
9023	Data has not been sent within the specified length of time.
9024	Send or receive processing is not executed.
9025	There is an error in the designated parameter.

APPENDIX 4

INDEX

In Appendix 4, technical terms specific to NC and J300M/J100M are arranged in alphabetical order.

Please use this index when looking for descriptions using the technical term as the key code.

Numbers

1-line MDI ..... 2 - 25
8-inch Take-up Reel ..... 2 - 8
9-inch Graphic Display ..... 3 - 10

A

About this Manual vi
Absolute Error ..... 9 - 18, 9 - 23
Absolute Position Error ..... 9 - 23
Action Keys ..... 3 - 14
Address Keys ..... 3 - 13
Address Search ..... 6 - 7
ALARM DISPLAY JOB ..... 7 - 10
Alarm Function ..... 7 - 10
ALARM TABLE (J300M) ..... A3 - 3
ALARM TABLE
(YENET1200 COMPATIBLE DRIVER FOR J300M/J100M) ..... A3 - 20
Alarms Not Indicated by Alarm Numbers ..... 9 - 27
Arrangement of Battery and Indicator Lamp (LED) ..... 2 - 14
Automatic Handle Mode Offset ..... 2 - 40
AUTOMATIC OPERATION ..... 2 - 26, 2 - 33
AUTOMATIC OPERATIONS ..... 2 - 44
Automatic scaling ..... 4 - 84
Automatic Scaling Function ..... 6 - 27
AUX Key ..... 3 - 15
Auxiliary Function Lock ..... 2 - 36

B

Background Reset Function ..... 8 - 14
BG Reset ..... 4 - 62
Broken PG Cable ..... 9 - 17, 9 - 22
Broken Spindle PG Cable ..... 9 - 17
Buzzer Function ..... 3 - 23

C

Calendar Function ..... 7 - 14
Calling a Part Program ..... 4 - 4, 4 - 35
Cause of Alarm and Corrective Action ..... 9 - 6
Checking the Motors for Abnormalities ..... 2 - 11
Checking the NC Information ..... 9 - 3
Checking the Status of Troubles ..... 9 - 2
CLASSIFICATION OF ALARMS ..... A3 - 2
CLASSIFICATION OF THE PARAMETERS ..... A2 - 2
Collective Display of Command Values ..... 6 - 15
Collective Display of Present Position Data ..... 7 - 2
COMMAND VALUE DISPLAY JOB ..... 6 - 15
Communication Conditions ..... 4 - 57
Constants ..... A1 - 17
Control Not Ready ..... 9 - 16
Converter Alarm ..... 9 - 25
coordinate system for machining ..... 2 - 26
Copying a Part Program ..... 4 - 41
CRT ..... 3 - 10
Cursor Keys ..... 3 - 14

D

Data Keys ..... 3 - 13
Deleting a Part Program ..... 4 - 25, - 37
Deleting an MDI Program ..... 6 - 14
Display Lock ..... 2 - 35
Display of Alarm Information ..... 9 - 5
Display of Present Position Data in the External Coordinate Values ... 7 - 5
Display of Present Position Data in the Workpiece Coordinate System . 7 - 4
Display of Remaining Distance ..... 7 - 6
Display of Subprogram Nesting Information ..... 6 - 11
Display of the Directory of Part Programs ..... 4 - 28
Displaying and Writing the Tool Pot Number ..... 5 - 15
Displaying the ATC Tool Status ..... 5 - 17
Displaying the ON/OFF Status of the I/O Signals ..... 8 - 8
Displaying the ON/OFF Status of the Selected I/O Signals ..... 8 - 9
Displaying the Tool Life Control Data ..... 5 - 23
Dry Run ..... 2 - 34

E

Editing a Part Program ..... 4 - 7
Editing an MDI Program ..... 6 - 12
Editing the Part Program Stored in Memory ..... 6 - 9
Emergency Stop ..... 1 - 12
Entry of an MDI Program ..... 6 - 12
Erasing the Tool Life Control Data ..... 5 - 27
Error Pulse Display Function ..... 7 - 9
Excessive Follow-up Error ..... 9 - 16, 9 - 21
Excessive Follow-up Error: Spindle ..... 9 - 16
Excessive Speed ..... 9 - 17, 9 - 22
Execution of a Part Program ..... 6 - 10
Execution of an MDI Program ..... 6 - 13

F

F1-digit Function ..... 6 - 19
Feed Hold ..... 2 - 30
Feedrate Override ..... 2 - 31
Follow-up Error ..... 9 - 26
Function Structure ..... 3 - 4
Functions ..... 3 - 3
Fuse Blown ..... 9 - 21

G

GENERAL FLOW OF OPERATION ..... 2 - 4
Ground Fault ..... 9 - 25

H

Handle Feed ..... 2 - 19
Heat Sink Overheat ..... 9 - 19, 9 - 24
High Temperature ..... 9 - 13

I

I/O Device Setting Function ..... 8 - 14
I/O MONITORING JOB ..... 8 - 8
INPUT SIGNALS (PLC → NC) ..... A1 - 2
Input/output and Verify Function ..... 8 - 12
INPUT/OUTPUT AND VERIFY JOB ..... 8 - 12
Inputting a Part Program ..... 4 - 42
Inspection ..... 2 - 7
  NC Unit ..... 2 - 7
  Tape Reader ..... 2 - 8
Inspection of the Battery ..... 2 - 13
Interlock Inputs ..... 1 - 16
INTERNAL INFORMATION JOB ..... 8 - 15
Internal Switch Function ..... 6 - 16
Inverter Alarm ..... 9 - 23
Inverter Unit Alarm ..... 9 - 25

J

J300M Alarm Table ..... A3 - 3
J300M Parameter Table ..... A2 - 3
J300M/J100M Alarm Table ..... A3 - 20
J300M/J100M Parameter Table ..... A2 - 47
Jobs ..... 3 - 3
Jog Feed ..... 2 - 18
Jog Feedrate ..... 9 - 31

K

Key Buffer Edit Function ..... 3 - 22
Key Memory Function ..... 8 - 16

M

Machine Lock ..... 2 - 35
Machine Operation Panel ..... 1 - 7
Macro Variable Function ..... 6 - 17
MAINTENANCE DATA ..... 9 - 2
Manual Absolute ..... 2 - 42
Manual Centering Operation ..... 2 - 50
MANUAL OPERATION ..... 2 - 17, 2 - 20
Manual Operation Intervention during Automatic Operation ..... 2 - 38
Manual Rapid Traverse ..... 2 - 17
Manual Reference Point Return ..... 2 - 21
Manual Reference Point Return to the Second Reference Point ..... 2 - 24
MCCB Trip ..... 9 - 18
MDI Operation ..... 2 - 29
MDI Operation Intervention during Automatic Operation ..... 2 - 39
MDI OPERATION JOB ..... 6 - 12
Memory Dump Function ..... 8 - 16
Memory Operation ..... 2 - 28

N

NC OPERATION PANEL ..... 3 - 9
NC Path Drawing Job ..... 4 - 90, 6 - 22
NC System Software ..... 9 - 4
Normal Display on CRT Screen ..... 3 - 16
number of actually used characters ..... 4 - 29
numerical setting up ..... 7 - 9

O

Open Phase Detection ..... 9 - 20
Operating Time Function ..... 7 - 15
OPERATION INTERVENTION DURING AUTOMATIC OPERATION 2 - 38
Operation Mode Control Signals ..... A1 - 2, A1 - 9
OPERATION STEPS ..... 3 - 2
Option Specifications ..... 1 - 10
Optional Block Skip ..... 2 - 33
optional block skip B function ..... 2 - 34
Optional Stop ..... 2 - 33
OUTPUT SIGNALS (NC → PLC) ..... A1 - 9
Outputting a Part Program ..... 4 - 46
Over Current ..... 9 - 24
Over current ..... 9 - 18
Over Voltage ..... 9 - 19, 9 - 24
Overload ..... 9 - 16, 9 - 21
Override ..... 2 - 31

P

P-SET Error ..... 9 - 15
Page Keys ..... 3 - 13
Parameter Function ..... 8 - 3
PARAMETER JOB ..... 8 - 3
PARAMETER TABLE (J300M) ..... A2 - 3
PARAMETER TABLE
(YENET1200 COMPATIBLE DRIVER FOR J300M/J100M) ..... A2 - 47
Parity Error ..... 9 - 7
PART PROGRAM DIRECTORY JOB ..... 4 - 28
PART PROGRAM EDIT JOB ..... 4 - 3
PART PROGRAM INPUT/OUTPUT AND VERIFY JOB ..... 4 - 42
Phase Detection Error ..... 9 - 23
Pitch Error Function ..... 8 - 7
Playback Function ..... 2 - 57
Pop-up Menu ..... 3 - 21
Position Error ..... 9 - 18
POWER ON/OFF Buttons ..... 3 - 9
Preparation before Turning the Power ON ..... 2 - 9
Preparation of Automatic Operation ..... 2 - 26
PRESENT POSITION DATA CONTROL JOB ..... 7 - 2
Procedure for Turning the Power OFF ..... 2 - 12

Procedure for Turning the Power ON ..... 2 - 10
Process Keys ..... 3 - 11
Process Screens ..... 3 - 3
Program Information Displayed on Screen ..... 6 - 3
PROGRAM JOB ..... 6 - 3
Program Number Search ..... 6 - 5
PROGRAM PATH DRAWING JOB ..... 4 - 63
Program Restart ..... 2 - 51
PROTECTIVE FUNCTIONS ..... 1 - 12

R

RAPID ..... 2 - 17
Rapid Traverse Override ..... 2 - 32
Reference Point ..... 2 - 21
Reference Point Return Area Error ..... 9 - 14
Reference Point Return Position Error ..... 9 - 14
Regeneration Error ..... 9 - 19
Related Manuals vi
Renaming a Part Program ..... 4 - 39
RESET Key ..... 3 - 15
Return to the Operation Interrupted Point ..... 2 - 48
RS-232C Communications Parameters ..... 4 - 57
RS-232C Error ..... 9 - 8
RS-232C Interface Troubleshooting Flowchart ..... 9 - 8
Run-away Prevention ..... 9 - 22

S

Safety Information iii
Saving a Part Program after Editing ..... 4 - 23
Selecting the Absolute/Incremental Mode ..... 5 - 8
sequence number search ..... 6 - 8
Sequence Parameter Function ..... 8 - 7
Serial Interface Setting ..... 4 - 58, 9 - 10
Servo Alarm ..... 9 - 22
Servo Alarm Function ..... 7 - 11
Servo Axis Control ..... A1 - 13
Servo Axis Control Signals ..... A1 - 5
Servo Communication Alarm ..... 9 - 22
Servo Configuration Function ..... 8 - 17
Servo Drive Unit Communication Error ..... 9 - 18
Servo Power Not Ready ..... 9 - 15
Servo Unit Alarm ..... 9 - 25
Setting Function ..... 6 - 20, 8 - 6
SETTING JOB ..... 6 - 16
Setting the Coordinate Systems ..... 7 - 7
Setting the Tool Life Control Data ..... 5 - 24
Simultaneous 2- or 3-axis Handle Feed ..... 2 - 20
Soft-keys ..... 3 - 12
Software Switch Function ..... 6 - 17
Spindle Control ..... A1 - 7, A1 - 15
Standard Configuration of YASNAC System ..... 1 - 2
Standard Specifications ..... 1 - 8
Step Feed ..... 2 - 18
Stored Stroke Limit ..... 1 - 14
Stored Stroke Limit B, C ..... 1 - 15
Stored Stroke Limit Function ..... 6 - 21
Storing an MDI Program ..... 6 - 14
Switching the Program Path Drawing Screen ..... 4 - 89

T

Tape Reader ..... 9 - 42
TIME CONTROL JOB ..... 7 - 13
TOOL DATA CONTROL JOB ..... 5 - 9
Tool Length Measurement ..... 2 - 44
TOOL LIFE CONTROL JOB ..... 5 - 23
Troubleshooting ..... 9 - 7, 9 - 21
Turning ON/OFF I/O Signals Forcibly ..... 8 - 11

U

Under Voltage ..... 9 - 19
User's Message Function ..... 7 - 12

V

Verifying the Part Programs ..... 4 - 53
Version Number Function ..... 8 - 15
Visual Aids iv

W

Wire Break in Current Instruction Cable ..... 9 - 19
WORKPIECE COORDINATE SYSTEM JOB ..... 5 - 3
Writing the Measured Tool Length Offset Amount ..... 5 - 18
Writing the Offset Data ..... 5 - 9
Writing the Tool Life Control Data ..... 5 - 23
Writing the Workpiece Coordinate System Shift Correction Amount .. 5 - 5
Writing the Workpiece Shift Amount ..... 5 - 4

Y

YASNAC System Components ..... 1 - 3
YENET1200 ..... 9 - 21
YENET1200 command time-out ..... 9 - 23
YENET1200 Communication Error ..... 9 - 24
YENET1200 Watchdog Error ..... 9 - 25

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