Motoman NX100 Controller

Job Editor NX
User’s Manual

Part Number: 150033-1CD
Revision: 0
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Chapter 1
Introduction

Job Editor NX is a PC-based job editing program for the NX100 robot controller. Job Editor allows you to edit robot jobs from a personal computer the same way you would from the programming pendant.

1.1 Features and Benefits

This software has two features: displays and handling. The displays where editing can be done, such as the job contents, the line editing, and the detailed editing displays, are the same as those for the programming pendant. The programming pendant keys correspond to the keyboard keys as follows.

<table>
<thead>
<tr>
<th>NX100 Programming Pendant</th>
<th>Personal Computer Keyboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cursor key</td>
<td>Cursor key</td>
</tr>
<tr>
<td>Select key</td>
<td>Space key</td>
</tr>
<tr>
<td>Enter key</td>
<td>Enter key</td>
</tr>
</tbody>
</table>

Files required by this software are the NX100 parameter file (ALL.PRM) and the job files.

<table>
<thead>
<tr>
<th>Required File</th>
<th>Job Editor NX</th>
<th>MRC World</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ALL.PRM</td>
<td>CMOS.HEX</td>
</tr>
<tr>
<td></td>
<td>*JBI</td>
<td></td>
</tr>
</tbody>
</table>
# 1.1.1 Function List

<table>
<thead>
<tr>
<th>File Functions</th>
<th>Create new job</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Open job</td>
</tr>
<tr>
<td></td>
<td>Change job name</td>
</tr>
<tr>
<td></td>
<td>Copy job</td>
</tr>
<tr>
<td></td>
<td>Delete job</td>
</tr>
<tr>
<td></td>
<td>Save file</td>
</tr>
<tr>
<td></td>
<td>Save as</td>
</tr>
<tr>
<td></td>
<td>Print</td>
</tr>
<tr>
<td></td>
<td>Print preview</td>
</tr>
<tr>
<td>Editing Functions</td>
<td>Add instruction</td>
</tr>
<tr>
<td></td>
<td>Change instruction</td>
</tr>
<tr>
<td></td>
<td>Cut instruction</td>
</tr>
<tr>
<td></td>
<td>Copy instruction</td>
</tr>
<tr>
<td></td>
<td>Paste instruction</td>
</tr>
<tr>
<td></td>
<td>Highlight and paste instruction</td>
</tr>
<tr>
<td></td>
<td>Edit multiple jobs</td>
</tr>
<tr>
<td></td>
<td>Edit line</td>
</tr>
<tr>
<td></td>
<td>Edit details</td>
</tr>
<tr>
<td></td>
<td>Search</td>
</tr>
<tr>
<td></td>
<td>Change interpolation type</td>
</tr>
<tr>
<td></td>
<td>Change speed</td>
</tr>
<tr>
<td></td>
<td>Register group combination</td>
</tr>
<tr>
<td></td>
<td>Change language level</td>
</tr>
<tr>
<td></td>
<td>Edit condition file (I/O name, variable name)</td>
</tr>
<tr>
<td>Display Functions</td>
<td>Display header</td>
</tr>
<tr>
<td></td>
<td>Display auxiliary header</td>
</tr>
<tr>
<td></td>
<td>Display position variables</td>
</tr>
<tr>
<td></td>
<td>Change background color</td>
</tr>
<tr>
<td></td>
<td>Change font</td>
</tr>
<tr>
<td></td>
<td>Change comment color</td>
</tr>
<tr>
<td></td>
<td>Change language</td>
</tr>
<tr>
<td></td>
<td>Open call job</td>
</tr>
<tr>
<td></td>
<td>Display step no., I/O name, or variable name</td>
</tr>
</tbody>
</table>
1.2 System Requirements

To run Job Editor NX, the following hardware and software are required:

Computer .................................................. IBM compatible personal computer (PC)
Processor .................................................. Pentium, 400 Mhz (700 Mhz recommended)
Memory ..................................................... 16 MB minimum (128 MB recommended)
Hard Disk .................................................. 10 MB for complete installation to hard disk
CD-ROM Drive .......................................... 4x speed or faster
Monitor ..................................................... SVGA, 800x600 resolution, 16 million colors, small fonts selected
Input Device .............................................. Mouse
Operating System ...................................... Microsoft® Windows® 95, 98, NT4.0, 2000, XP
Web Browser ............................................ Internet Explorer 5.5 or greater

Note: When transferring data between the NX100 and the personal computer, one of the following is required:

- A floppy disk drive “YASNAC FC2” for robot controller
- PC communications software “FC1 Emulator32”
- PC communications software “MOTOCOM32” and the data transmission function of robot controller
- Compact flash

Before you start the Job Editor NX installation, make sure your package includes all of the items listed below:

- CD-ROM
- Hardware key (Motoman Part Number 141722-15)
- Job Editor NX User's Manual

1.3 Care of Job Editor NX Components

Take precautions to avoid scratching the CD. Always store the CD in its case and avoid placing the CD on any surface when not in its protective case.

Keep this user's manual in a safe place and refer to it whenever necessary. Additional copies of this manual are available from Motoman.

CAUTION!

Keep the hardware key in a safe place. If you lose the hardware key, Job Editor NX will not work and you will need to purchase a new copy of the software. If the key is accidentally damaged, return it to Motoman for a replacement.

Observe the following guidelines to protect your hardware key:

- Remove hardware key from computer if parallel port is used for any other operation.
- Key may not operate properly when stacked with any additional keys or if attached to anything other than a parallel port (e.g. SCSI adapter).
It is highly recommended that the key(s) be insured for the full value of the software package. **Lost or stolen keys cannot be replaced.** If the key is lost, users will have no alternative but to purchase a new copy of the software.

If the key is accidentally damaged, return it to Motoman for replacement. **There is a charge for key replacement.**

### 1.4 Customer Service Information

If you are in need of technical assistance, contact the Motoman service staff at (937) 847-3200. Please have the following information ready before you call:

- Job Editor NX version
- Software configuration (hard disk capacity, memory, operating system, software, etc.)
- Description of difficulty (make note of any error messages)
Chapter 2

Safety

2.1 Introduction

It is the purchaser’s responsibility to ensure that all local, county, state, and national codes, regulations, rules, or laws relating to safety and safe operating conditions for each installation are met and followed.

We suggest that you obtain and review a copy of the ANSI/RIA National Safety Standard for Industrial Robots and Robot Systems. This information can be obtained from the Robotic Industries Association by requesting ANSI/RIA R15.06. The address is as follows:

Robotic Industries Association
900 Victors Way
P.O. Box 3724
Ann Arbor, Michigan 48106
TEL: (734) 994-6088
FAX: (734) 994-3338

Ultimately, the best safeguard is trained personnel. The user is responsible for providing personnel who are adequately trained to operate, program, and maintain the robot cell. The robot must not be operated by personnel who have not been trained!

We recommend that all personnel who intend to operate, program, repair, or use the robot system be trained in an approved Motoman training course and become familiar with the proper operation of the system.
This safety section addresses the following:

- Standard Conventions (Section 2.2)
- General Safeguarding Tips (Section 2.3)
- Mechanical Safety Devices (Section 2.4)
- Installation Safety (Section 2.5)
- Programming Safety (Section 2.6)
- Operation Safety (Section 2.7)
- Maintenance Safety (Section 2.8)

### 2.2 Standard Conventions

This manual includes information essential to the safety of personnel and equipment. As you read through this manual, be alert to the four signal words:

**DANGER!**

**WARNING!**

**CAUTION!**

**NOTE:**

Pay particular attention to the information provided under these headings which are defined below (in descending order of severity).

![DANGER!]

Information appearing under the **DANGER** caption concerns the protection of personnel from the immediate and imminent hazards that, if not avoided, will result in immediate, serious personal injury or loss of life in addition to equipment damage.

![WARNING!]

Information appearing under the **WARNING** caption concerns the protection of personnel and equipment from potential hazards that can result in personal injury or loss of life in addition to equipment damage.

![CAUTION!]

Information appearing under the **CAUTION** caption concerns the protection of personnel and equipment, software, and data from hazards that can result in minor personal injury or equipment damage.

Note: Information appearing in a **Note** caption provides additional information which is helpful in understanding the item being explained.
2.3 General Safeguarding Tips

All operators, programmers, plant and tooling engineers, maintenance personnel, supervisors, and anyone working near the robot must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. General safeguarding tips are as follows:

- Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation of this robot, the operator’s manuals, the system equipment, and options and accessories should be permitted to operate this robot system.
- Do not enter the robot cell while it is in automatic operation. Programmers must have the teach pendant when they enter the robot cell.
- Improper connections can damage the robot. All connections must be made within the standard voltage and current ratings of the robot I/O (Inputs and Outputs).
- The robot must be placed in Emergency Stop (E-STOP) mode whenever it is not in use.
- In accordance with ANSI/RIA R15.06, section 6.13.4 and 6.13.5, use lockout/tagout procedures during equipment maintenance. Refer also to Section 1910.147 (29CFR, Part 1910), Occupational Safety and Health Standards for General Industry (OSHA).

2.4 Mechanical Safety Devices

The safe operation of the robot, positioner, auxiliary equipment, and system is ultimately the user’s responsibility. The conditions under which the equipment will be operated safely should be reviewed by the user. The user must be aware of the various national codes, ANSI/RIA R15.06 safety standards, and other local codes that may pertain to the installation and use of industrial equipment. Additional safety measures for personnel and equipment may be required depending on system installation, operation, and/or location.

The following safety measures are available:

- Safety fences and barriers
- Light curtains
- Door interlocks
- Safety mats
- Floor markings
- Warning lights

Check all safety equipment frequently for proper operation. Repair or replace any non-functioning safety equipment immediately.
2.5 Installation Safety

Safe installation is essential for protection of people and equipment. The following suggestions are intended to supplement, but not replace, existing federal, local, and state laws and regulations. Additional safety measures for personnel and equipment may be required depending on system installation, operation, and/or location. Installation tips are as follows:

- Be sure that only qualified personnel familiar with national codes, local codes, and ANSI/RIA R15.06 safety standards are permitted to install the equipment.
- Identify the work envelope of each robot with floor markings, signs, and barriers.
- Position all controllers outside the robot work envelope.
- Whenever possible, install safety fences to protect against unauthorized entry into the work envelope.
- Eliminate areas where personnel might get trapped between a moving robot and other equipment (pinch points).
- Provide sufficient room inside the workcell to permit safe teaching and maintenance procedures.

2.6 Programming Safety

All operators, programmers, plant and tooling engineers, maintenance personnel, supervisors, and anyone working near the robot must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. Programming tips are as follows:

Any modifications to PART 1 of the XRC controller PLC can cause severe personal injury or death, as well as damage to the robot! Do not make any modifications to PART 1. Making any changes without the written permission of Motoman will VOID YOUR WARRANTY!

Some operations require standard passwords and some require special passwords. Special passwords are for Motoman use only. YOUR WARRANTY WILL BE VOID if you use these special passwords.

Back up all programs and jobs onto a floppy disk whenever program changes are made. To avoid loss of information, programs, or jobs, a backup must always be made before any service procedures are done and before any changes are made to options, accessories, or equipment.

The concurrent I/O (Input and Output) function allows the customer to modify the internal ladder inputs and outputs for maximum robot performance. Great care must be taken when making these modifications. Double-check all modifications under every mode of robot operation to ensure that you have not created hazards or dangerous situations that may damage the robot or other parts of the system.

- Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation, manuals, electrical design, and equipment interconnections of this robot should be permitted to operate the system.
- Inspect the robot and work envelope to be sure no potentially hazardous conditions exist. Be sure the area is clean and free of water, oil, debris, etc.
• Be sure that all safeguards are in place.
• Check the E-STOP button on the teach pendant for proper operation before programming.
• Carry the teach pendant with you when you enter the workcell.
• Be sure that only the person holding the teach pendant enters the workcell.
• Test any new or modified program at low speed for at least one full cycle.

2.7 Operation Safety

All operators, programmers, plant and tooling engineers, maintenance personnel, supervisors, and anyone working near the robot must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. Operation tips are as follows:

• Be sure that only trained personnel familiar with the operation of this robot, the operator’s manuals, the system equipment, and options and accessories are permitted to operate this robot system.
• Check all safety equipment for proper operation. Repair or replace any non-functioning safety equipment immediately.
• Inspect the robot and work envelope to ensure no potentially hazardous conditions exist. Be sure the area is clean and free of water, oil, debris, etc.
• Ensure that all safeguards are in place.
• Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation, manuals, electrical design, and equipment interconnections of this robot should be permitted to operate the system.
• Do not enter the robot cell while it is in automatic operation. Programmers must have the teach pendant when they enter the cell.
• The robot must be placed in Emergency Stop (E-STOP) mode whenever it is not in use.
• This equipment has multiple sources of electrical supply. Electrical interconnections are made between the controller, external servo box, and other equipment. Disconnect and lockout/tagout all electrical circuits before making any modifications or connections.
• All modifications made to the controller will change the way the robot operates and can cause severe personal injury or death, as well as damage the robot. This includes controller parameters, ladder parts 1 and 2, and I/O (Input and Output) modifications. Check and test all changes at slow speed.
2.8 **Maintenance Safety**

All operators, programmers, plant and tooling engineers, maintenance personnel, supervisors, and anyone working near the robot must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. Maintenance tips are as follows:

- Do not perform any maintenance procedures before reading and understanding the proper procedures in the appropriate manual.
- Check all safety equipment for proper operation. Repair or replace any non-functioning safety equipment immediately.
- Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation, manuals, electrical design, and equipment interconnections of this robot should be permitted to operate the system.
- Back up all your programs and jobs onto a floppy disk whenever program changes are made. A backup must always be made before any servicing or changes are made to options, accessories, or equipment to avoid loss of information, programs, or jobs.
- Do not enter the robot cell while it is in automatic operation. Programmers must have the teach pendant when they enter the cell.
- The robot must be placed in Emergency Stop (E-STOP) mode whenever it is not in use.
- Be sure all safeguards are in place.
- Use proper replacement parts.
- This equipment has multiple sources of electrical supply. Electrical interconnections are made between the controller, external servo box, and other equipment. Disconnect and lockout/tagout all electrical circuits before making any modifications or connections.
- All modifications made to the controller will change the way the robot operates and can cause severe personal injury or death, as well as damage the robot. This includes controller parameters, ladder parts 1 and 2, and I/O (Input and Output) modifications. Check and test all changes at slow speed.
- Improper connections can damage the robot. All connections must be made within the standard voltage and current ratings of the robot I/O (Inputs and Outputs).
Chapter 3

Installation

3.1 Installing Job Editor NX

Job Editor NX is part of the MotoSoft family of software solutions. Job Editor NX is installed by default under the Motoman program manager group (C:\Program Files\Motoman\Job Editor NX). To install Job Editor NX, proceed as follows:

1. Insert CD-ROM installer into CD-ROM drive.
2. The setup program executes automatically.

Note: Setup executes automatically when the CD is inserted into the CD-ROM drive unless autoexecute has been disabled on your computer. If the setup program fails to autoexecute, refer to the directions on the CD label for more information.

3. Follow the Job Editor NX install wizard instructions as it guides you through the installation process.

3.2 Installing the Hardware Key

The hardware key supplied with Job Editor NX must be installed on your computer or Job Editor NX will not function properly. The hardware key attaches to the computer’s parallel port. This port is commonly used to connect printers and other peripheral devices to your computer. To attach the hardware key, proceed as follows:

1. Disconnect any device currently connected to your computer’s parallel port.
2. Carefully insert the hardware key into the parallel port. If the key does not fit, do not force it. The key should fit snugly but does not require significant force to insert.
3. Connect your peripheral cable to the free end of the hardware key. The key will not interfere with the operation of your printer or other peripheral devices.

If you are using two or more MotoSoft products that require the use of different hardware keys, you can stack the keys (connect in series).
CAUTION!
Keep the hardware key in a safe place. If you lose the hardware key, Job Editor NX will not work and you will need to purchase a new copy of the software. If the key is accidentally damaged, return it to Motoman for a replacement.

Observe the following guidelines to protect your hardware key:

- Remove hardware key from computer if parallel port is used for any other operation.
- Key may not operate properly when stacked with any additional keys or if attached to anything other than a parallel port (e.g. SCSI adapter).

It is highly recommended that the key(s) be insured for the full value of the software package. **Lost or stolen keys cannot be replaced.** If the key is lost, users will have no alternative but to purchase a new copy of the software.

If the key is accidentally damaged, return it to Motoman for replacement. **There is a charge for key replacement.**
Chapter 4
Basic Operation

4.1 Basic Concept and Operation Flow

4.1.1 Differences between MRC-World and Job Editor NX

MRC-World was the previous software version of Job EditorNX.

For basic operations, MRC-World used CMOS.HEX as a file unit. Job EditorNX uses *.JBI file units and therefore, cannot read in CMOS.HEX files directly.

To manage each robot, MRC-World required registration of the robots at the beginning. Robot registration is no longer required using Job EditorNX. To manage each robot with the Job EditorNX, simply create a folder and input the parameter and job files to be edited into the folder.

4.1.2 Operation Flow

Job Editor NX requires only parameter files. To edit the same instructions as the programming pendant, save the parameter file from the programming pendant in advance.

4.1.2.1 Saving a Parameter File (ALL.PRM)

Use the Motoman FC2 or FC1-Emulator to save ALL.PRM and the job file to be edited from the programming pendant.

4.1.2.2 Creating a Folder

Create a folder anywhere on the personal computer, and copy the parameter and job files that have been saved from the programming pendant to the folder.

4.1.2.3 Editing

Use Job EditorNX to open the job file and save it after editing.

4.1.2.4 Loading to the Programming Pendant

Load the edited file to the programming pendant using the Motoman FC2 or FC1-Emulator.
4.2 Starting Job Editor NX

To start Job EditorNX, from the Windows® START menu, select PROGRAMS > MOTOMAN > JOB EDITOR NX, and then select JOB EDITOR NX. The JEDITNX window appears.
4.3 Basic Windows

The basic windows include the "Main Window," "Line-edit Box," and the "Detail Edit Window."
4.4 Selecting a Job

Sample parameter and job files are provided in the Sample folder located in the installation folder. Refer to these samples before proceeding.

4.4.1 Opening a Job

1. From the FILE dropdown menu, click SELECT JOB.

2. The Open dialog box appears.

3. Select the file to be opened.

4. Click OPEN.

Note: An NX parameter file (ALL.PRM) must be in the directory having the job. If there is no parameter file, the following warning appears.
4.4.2 Opening Multiple Jobs

1. From the FILE dropdown menu, click SELECT JOB.

![Select Job Menu]

2. The Open dialog box appears.

![Open Dialog Box]

3. Select the file to be opened.
4. Hold down the Ctrl key and select additional files.
5. Click OPEN.
4.5 Creating a Job

1. From the FILE dropdown menu, click CREATE JOB.

2. The Create Job dialog box appears.

3. Enter a job name using lower-case letters, maximum 8 characters.
4. Click OK. The new job appears.

Note: A file is created in the folder. If an existing job has the same name, the following message appears. Select YES only when the existing job is to be overwritten.
4.5.1  **Job Options**

4.5.1.1  **Job Type**

Select whether a job including position data is to be created. A robot job contains position data, and the concurrent job does not.

4.5.1.2  **Control Group**

Select the job control group. If the control group is not found in this list, register the control group in the "Group Combination Registry," and re-open this window.

4.6  **Copying a Job**

1. From the FILE dropdown menu, click COPY JOB.

2. The Copied Job Name Input dialog box appears.

3. Enter a job name using lower-case letters, up to 8 characters.

4. Click OK. The newly copied job appears.

   **Note:** An existing job cannot be selected for the Copied Job Name Input. If selected, the following message appears to prompt user to enter a different name. To select the name of an existing job for the Copied Job Name Input, delete the existing job first.
4.7 Deleting a Job

Use the Explorer to delete a file.

1. From the FILE dropdown menu, click DELETE JOB.

2. The Delete Job dialog box appears.

3. Select the file to be deleted.

4. Hold down the Ctrl key and select additional files.

5. Click OPEN.
4.8 When No Job is Provided

When no job is provided, open a parameter file to create an environment for making a new job.

4.8.1 Opening a Parameter File

1. From the FILE dropdown menu, click SELECT JOB.

2. The Open dialog box appears.

3. From the Files of Type dropdown menu, select PRM FILES. The .prm files appear.

4. Select ALL.PRM.

5. Click OPEN.
4.9 Changing a Job Name

1. From the FILE dropdown menu, click MODIFY NAME.

2. The Modified Job Name Input dialog box appears.

3. Enter a job name using upper-case letters, up to 8 characters.

Note: An existing job cannot be specified for the Modified Job Name Input. If selected, the following message appears to prompt user to enter a different name. To select the name of an existing job for the Modified Job Name Input, delete the existing job first.
4.10 Closing a File

1. From the FILE dropdown menu, click CLOSE.

2. If the file to be closed has been modified, the following message appears.

3. Select the appropriate response.
   - Yes  - Saves modified content, and closes the file.
   - No   - Closes the file without saving the modified content.
   - Cancel - Cancels closing the file.

4.11 Saving a File

1. From the FILE dropdown menu, click SAVE.

Note: The following error message may appear when saving a file. This message appears when the position variable is not defined, although there is an instruction using a position variable in the job which was going to be saved. Select VIEW and then POSITION VARIABLE to define the position variable.
4.12 Printing

1. From the FILE dropdown menu, click PRINT.

2. The Print dialog box appears.

3. Click OK.
4.13 Exit

1. From the FILE dropdown menu, click EXIT.

Note: If there is any job that has not been saved when attempting to close the Job Editor NX, the dialog will appear to ask if the edited job is to be saved.
Notes
Chapter 5

Editing

5.1 Adding an Instruction

Use the arrow keys to highlight the line address where an instruction is to be added. This can also be done using the mouse.

1. Select the line address where an instruction is to be inserted.

2. Press the SPACE bar, or from the EDIT dropdown menu, click INSERT INSTRUCTION. (menu: EDIT > INSERT INSTRUCTION). The Select Inst dialog box appears.

3. Select an instruction group using the arrow keys or mouse.
4. Press ENTER or double-click the mouse (press ESC to exit Add mode). The Select Inst dialog box appears.

![Select Inst dialog box](image)

Press the ESC key to return to the SELECT INST dialog box containing the separate instruction groups.

5. Select an instruction using the arrow keys or mouse.

6. Press ENTER or double-click the mouse. The line-edit box appears in the lower-left of the window.

![Line-edit box](image)

7. Press ENTER or click OK. The instruction is inserted.
5.2 Deleting an Instruction

1. Select the line address or instruction to be deleted.

   Note: Multiple instructions can be deleted by selecting multiple lines or instructions as described in Section 5.3.

2. From the EDIT dropdown menu, click CUT.

3. A dialog box appears confirming you want to delete the line. Click YES.

   Note: Cut contents are copied to the buffer, and can be pasted to another place or job.
5.3 Selecting Multiple Lines

5.3.1 Using the Keyboard

1. Move to the first line to be selected.

![Example screen showing line selection](image1)

2. Press and hold the SHIFT key.

![Example screen showing line selection](image2)

3. While holding the SHIFT key, move the cursor to select additional lines.

![Example screen showing line selection](image3)
5.3.2 Using the Mouse

1. Click the first line to be selected.

2. Drag the cursor over adjacent lines to select multiple lines.
5.4 Copying an Instruction

1. Select the line to be copied.

Note: Multiple instructions can be copied by selecting multiple lines or instructions as described in Section 5.3.

2. From the EDIT dropdown menu, click COPY.

3. Perform the same operation as described in 4.5 "Pasting an Instruction."

Note: There is no limitation to the number of instructions that can be copied. Move instructions can also be copied, however, pay attention when operating those copied instructions.
5.5  Pasting an Instruction

5.5.1  Paste

1. Move to the line where data is to be pasted.

![Image of Yaskawa Editor window with code]

2. From the EDIT dropdown menu, click PASTE.

![Image of EDIT dropdown menu with Paste option highlighted]

3. A dialog box appears confirming you want to paste the data.

![Image of JEDITNX - YASKAWA JBI with Paste is OK dialog box]

4. Click YES.
5.5.2 **Reverse**

The Reverse command pastes several copied lines in the opposite order of how they were copied. A group of move instructions for returning can be created simply by copying the group of move instructions for going, and reverse-pasting them.

1. Select multiple lines and copy them.

2. Move to the position where the data is to be inserted. The data is inserted on the next line.

3. From the **EDIT** dropdown menu, click **REVERSE**.

4. A dialog box appears confirming you want to reverse-paste the data.

5. Click **YES**. The data is reverse-pasted.
5.6 Modifying an Instruction

5.6.1 Changing Numeric Values (1)

1. Move to the instruction line to be edited.

2. Press the SPACE bar, or from the EDIT dropdown menu, click MODIFY INSTRUCTION. The line-edit box appears in the lower-left of the window.

3. Press the [>] key to highlight the output number.

4. Press the [up] or [down] arrow keys to obtain the desired value.
5. Press ENTER or click OK (to cancel the changes, press the ESC key or click CANCEL). The new data appears in the main window.

5.6.2 Changing Numeric Values (2)

Select the numeric value for line editing with the same procedures as described in 4.6.1 "Changing Numeral Values (1)."

1. Move to the instruction line to be edited.

2. Press the SPACE key. The Value Input dialog box appears.
3. Change the value by one of the following three methods.
   • Enter the value directly.
   • Press the [up] or [down] arrow keys.
   • Click on [up] or [down] arrow buttons using the mouse.

4. Click OK. The new value appears in the line edit box.

5. Press ENTER or click OK (to cancel the changes, press the ESC key or click CANCEL). The new data appears in the main window.

Note: Lines cannot be moved in the main window during line editing.
5.6.3 Changing Characters

1. Move to the instruction line to be edited.

2. Press the SPACE bar, or from the EDIT dropdown menu, select MODIFY INSTRUCTION.

3. Press the [>] key.

4. Press the SPACE bar. The Character Input dialog box appears.

5. Enter the character string.
6. Click OK.

![Image of a screen showing a program editor with code]

7. Press ENTER or click OK. To cancel the changes, press the ESC key or click CANCEL.

8. The new data appears in the main window.

![Image of a screen showing a modified program]

### 5.7 Changing the Motion Type

1. Move to the instruction line to be edited.

![Image of a screen showing an instruction line]

2. Press the SPACE bar, or from the EDIT dropdown menu, click MODIFY INSTRUCTION. The line-edit box appears in the lower-left of the window.
3. Press the [up] or [down] key to select the desired motion type.

Motion types can be changed in this order. Speed is relative speed and converted automatically.

4. Press ENTER or click OK (to cancel the changes, press the ESC key or click CANCEL). The instruction line with the new motion type appears in the main window.
5.8 Editing in the Detail Edit Window

5.8.1 Changing an Item

1. Move to the instruction line to be edited.

2. Press the SPACE bar, or from the EDIT dropdown menu, click MODIFY INSTRUCTION. The line-edit box appears in the lower-left of the window.

3. Press the SPACE bar. The Detail Edit window appears.

4. Use the arrow keys to move the cursor to the item to be changed.

5. Press the SPACE bar. A selection list appears.
6. Use the [up] or [down] key to select an item.

7. Press ENTER (to cancel, press the ESC key). The new item appears in the Detail Edit window.

8. Click OK. The line-edit box appears in the lower-left of the window.

5.8.2 Adding an Item

1. Move to the instruction line to be edited.

2. Press the SPACE bar, or from the EDIT dropdown menu, click MODIFY INSTRUCTION. The line-edit box appears in the lower-left of the window.

3. Press the SPACE bar. The Detail Edit window appears.

4. Use the arrow keys to move the cursor to the item to be changed.
5. Press the [Space] key. A selection list appears.

6. Use the [up] or [down] keys to make a selection.

7. Press the [Enter] key. The added item appears in the Detail Edit window.

8. Move the cursor to the numeric data if the numeric value of the item is to be changed.

9. Press the [Space] key. The Value Input dialog box appears.
10. Change the value by one of the following three methods:
   - Enter the value directly.
   - Press the [up] or [down] arrow keys.
   - Click on [up] or [down] arrow buttons using the mouse.

11. Click OK. The Detail Edit window appears with the new value.

12. Click OK. The line-edit box appears in the lower-left of the window.

13. Press ENTER. The new instruction appears in the main window.
5.8.3 Deleting an Item

1. Move to the instruction line to be edited.

2. Press the `SPACE` bar, or from the `EDIT` dropdown menu, click `MODIFY INSTRUCTION`. The line-edit box appears in the lower-left of the window.

3. Press the `SPACE` bar. The Detail Edit window appears.
1. Use the arrow keys to move the cursor to the item to be deleted.

![](image1)

2. Press the **SPACE** key. A selection list appears.

![](image2)

3. Use the [up] or [down] key to make a selection.

4. Press **ENTER**. The Detail Edit window appears with the item deleted.

![](image3)

5. Click **OK**. The line-edit box appears in the lower-left of the window.

6. Press **ENTER**. The edited instruction appears in the main window.
5.9 Searching

5.9.1 Searching for Character Strings

1. From the EDIT dropdown menu, click FIND.

2. The Find and Jump dialog box appears.

3. Enter the character string to be found (disregarding upper-case or lower-case characters).

4. Click NEXT. The search for the character string starts.

   Note: The search starts from the cursor's position and goes down the list.

5.9.2 Moving the Line Number or Step Number

1. From the EDIT dropdown menu, click FIND.

2. The Find and Jump dialog box appears.

3. Click on the Jump tab.

4. Select Line No. or Step No. from the Type of Jump window.
5. Use the [up] or [down] arrow buttons to select Line No.

6. Click JUMP. The search for line No. or Step No. starts.

Note: The search starts from the cursor's position and goes down the list.
Notes
Chapter 6
Editing Other Items

6.1 Changing the Speed

6.1.1 Changing according to Speed Type

1. Select the range to be changed.

2. From the EDIT dropdown menu, click MODIFY SPEED.

3. The Modify Speed dialog box appears.
4. Click >> for Target Type.

5. Select VJ and click OK.

6. Click >> for Speed.

7. Enter 100.00 for the speed and click OK.

8. Click OK in the Modify Speed dialog box. The main window appears with only VJ changed to 100.00.
6.1.2 Changing Speed Relatively (Changing Speed in Ratio for Current Speed)

To call up the "Modify speed" dialog box, perform the same procedure as described in 5.1.1 "Changing according to Speed Type."

1. Select the range to be changed.
2. From the EDIT dropdown menu, click MODIFY SPEED. The Modify Speed dialog box appears.

3. Click >> for Target Type.

4. Select RELATIVE. The Value Input dialog box appears.

5. Enter 50 and click OK.
6. Click OK in the Modify Speed dialog box. The main window appears with all the speeds changed to 50%.
6.2 Defining Control Groups

When there is more than one control group, the combination can be defined. The control group to be selected for new job creation, etc. does not appear on the window when creating a job unless it is defined here.

6.2.1 Adding a Combination

1. From the MODE dropdown menu, click MATCH CONTROL GROUP.

2. The Regist Match of Group dialog box appears.

3. Click ADD. The [Select Group] dialog box appears.

4. Click >> for 1st Control Group.

5. Select R1:ROBOT1 and click OK.

6. Click >> for 2nd Control Group.
7. Select S1:STATION1 and click OK. "R1 + S1" has been added to the Regist Match of Group list.

6.2.2 Changing a Combination

1. From the MODE dropdown menu, click MATCH CONTROL GROUP.

2. The Regist Match of Group dialog box appears.

1. Select the combination to be changed.

2. Click MODIFY. The Select Group dialog box appears.

3. Click >> for 1st Control Group.
4. Select R1:ROBOT1 and click OK.
5. Click >> for 2nd Control Group.

6. Select S1:STATION1 and click OK. "S1" in the [Regist Match of Group] dialog box has been changed to "R1 + S1".
6.2.3 Deleting a Combination

1. From the MODE dropdown menu, click MATCH CONTROL GROUP.

2. The Regist Match of Group dialog box appears.

3. Select the combination to be deleted.

4. Click Del. "S1" is deleted from the Regist Match of Group dialog box.
6.3 Defining Position Variables

1. From the VIEW dropdown menu, click POSITION VARIABLE.

2. Click ROBOT…. The Position Variable dialog box appears.

3. Use the [up] and [down] buttons to select the variable number.

4. Select the frame from the dropdown menu.

5. Click OK.

Note: To create a job using position variables, the position variables must be defined in this window before saving the data.
6.4 Adding Comments

1. From the VIEW dropdown menu, click HEADER....

![Header dialog box]

2. The Header of Job dialog box appears.

![Header of Job dialog box]

3. Enter comment character string and click OK.

Note: Enter maximum of 32 characters for the comment character string.
6.5 Entering the Number of Local Variables Used

1. From the VIEW dropdown menu, click HEADER....

![Header of Job dialog box](image)

2. The Header of Job dialog box appears.

![Header of Job dialog box](image)

3. Click MORE. The Local variable Num text boxes appear.

4. Enter the local variable number and click OK.

Note: The MORE button may occasionally be invalid and become unable to select.
6.6 Increasing the Instruction Types to be Used

6.6.1 Changing the Language Level

Since the "language level" is set to "Reduction" by default, the instruction types displayed are less than the total number available. Setting the language level to "Extension" increases the number of instruction types displayed.

1. From the MODE dropdown menu, click LEVEL OF INFORM and select EXTENSION.

The number of instructions increases.

6.6.2 Parameter Option

For example, the SRCH tag is one of several instructions that can be added to MOV1. Because the instruction is a parameter option, it requires the parameter file, where the flag permitting the use of the SRCH tag is valid, from the programming pendant.
6.7 Displaying Step Nos., I/O Names, or Variable Names

1. From the MODE dropdown menu, click OPTION.

2. The Option dialog box appears.

3. Click the desired items to be displayed.
4. Set the Disp Position to display the I/O name or the variable name.
5. Click OK. Names and numbers are displayed.
6.8 Opening a Call Job

This function can be used only with a CALL instruction or a JUMP instruction.

1. Move the cursor to a CALL or JUMP instruction.

2. From the VIEW dropdown menu, click OPEN CALL JOB.

3. The job that is designated in the CALL or JUMP instruction appears.
6.9 Changing a Condition File

6.9.1 Changing an I/O Name File (IONAME.DAT)

1. From the MODE dropdown menu, click CONDITION FILE EDIT and select I/O NAME.

2. The Condition File Edit screen appears.

3. Select I/O from the dropdown menu and click EDIT. The Character Edit dialog box appears.

4. Enter an I/O name up to 16 characters and click OK.

Note: If there is no I/O name file, a file is automatically created after entering the I/O name in step 5. This I/O name file can also be used with the programming pendant in the same way as a file edited by the Job EditorNX can be used with the programming pendant.
6.9.2 Changing a Variable Name File (VARNAME.DAT)

1. From the MODE dropdown menu, click CONDITION FILE EDIT and select VARIABLE NAME.

2. The Condition File Edit screen appears.

3. Select variable and click EDIT. The Character edit dialog box appears.

4. Enter an I/O name up to 16 characters.

Note: If there is no variable name file, a file is automatically created after entering the variable name in step 3. This variable name file can also be used with the programming pendant in the same way as a job edited by the Job Editor NX can be used with the programming pendant.
6.10 Editing an Expression

To edit an expression, use a "SET" instruction.

Note: To edit an expression, set the language level to "Standard" or "Extension."

1. Move to the address area of the line to be inserted.

   ![Image of Yaskawa Di interface]

   2. Press the SPACE bar, or from the EDIT dropdown menu, click INSERT INSTRUCTION. The Select Inst dialog box for each group of instructions appears.

   ![Image of Select Inst dialog box]

   3. Select a line using the cursor keys or clicking the mouse.

   4. Press ENTER or double-click the mouse (press ESC key to exit the Add mode). The Select Inst dialog box appears.

   ![Image of Select Inst dialog box]

   5. Select a line by pressing the cursor keys or clicking the mouse.
6. Press ENTER or double-click the mouse. Click ... or press ESC to return to the Select Inst dialog box for each group of instructions. The line-edit box appears in the lower-left of the window.

7. Press the space bar. The Detail Edit dialog box for the SET instruction appears.

8. Press the space key. A selection list appears.

9. Press enter (ESC to cancel). The Detail Edit dialog box for EXPRESS appears.

10. To set an expression, proceed as follows. The set expression is displayed at the bottom of the window.

11. Click INS LINE to add data.

12. Click DEL LINE to delete data.

13. Click OK.
14. Double-click the position or click EDIT to select the following items.

a.) Left parenthesis
   By double-clicking or clicking EDIT, the display changes in the following order.
   
   \[ > (( > ((( > - ( > - ((( > - (((

b.) Data
   The [Value Input] box appears.

   ![Value Input Window]

   a. Enter the value and click OK.

c.) Changing the Data Type
   A selection list appears.

   ![Constant Selection]

   a. Use the [up] or [down] keys to select the data.
   b. Press ENTER.

c. Enter the value and click OK.

d.) Right Parenthesis
   By double-clicking or clicking EDIT, the display changes in the following order.
   
   \[ > )) > )))

e.) Operator
   A selection list appears.

   ![Operator Selection]

   Click one of the items in the selection list and press OK.
a. Use the [up] or [down] keys to select the operator.

b. Press ENTER.

The [Detail Edit] dialog box for the SET instruction appears again.

15. Click OK. The line-edit box appears in the lower-left of the window.

16. Press the ENTER key. The changed main window appears.
6.11 Using a Macro Command

By storing the macro definition file (MACRO.DAT) in the same folder as the parameter file (All.prm), the defined macro command can be used.

1. Move the cursor to the address area of the line to be added.

2. Press the space bar, or from the EDIT dropdown menu click INSERT INSTRUCTION. The Select Inst dialog box for each group of instructions appears.

3. Move the cursor to "MACRO" and select it by clicking it. The Select Inst dialog box appears.

Instructions that have been defined in the macro definition file appear. These instructions are used to add or edit the macro command.

Note: Job Editor NX can use macro commands but cannot create them. To use this function, use the parameter file that has the "INFORM creation function" option available.
6.12 Changing the Font

The font can be changed in the "Main Window," "Line-edit Box," or "Detail Edit Window."

1. From the VIEW dropdown menu, click FONT.

2. Select the window to be changed. The Font dialog box appears.

3. Click OK.
6.13 Changing the Background Color

The background color can be changed in the "Main Window," "Line-edit Box," or "Detail Edit Window."

1. From the **VIEW** dropdown menu, click **BACKCOLOR**.

2. Select the window to be changed. The Color dialog box appears.

3. Select the color and click **OK**.
6.14 Changing the Comment Color

1. From the VIEW dropdown menu, click COMMENT COLOR.

2. The Color dialog box appears.

3. Select the color and click OK.
6.15 Changing the Language

1. From the VIEW dropdown menu, click CHANGE LANGUAGE.

2. The Select Language dialog box appears.

3. Select the language and click OK.
Appendix A

FAQ (Frequently Asked Questions)

When the driver has been installed with USB type key connected to a personal computer?

1. Under the state that the USB type key is attached to the personal computer, delete the item registered as "USB Token" in Device Manager.

2. Uninstall the driver (Sentinel System Driver 5.41.1(32-bit)) with [Add/Remove Programs].

3. Install the driver with key detached from personal computer. With the procedure above, the driver can be performed normally.

When the previous version driver (Ver.PD-5.39.2) has been installed after installing the driver Ver.PD-5.41.1

In this case, problems may occur infrequently. To avoid problems, uninstall the driver Ver.PD-5.39.2(Sentinel System Driver)by [Add / Remove Programs].

When the software program does not start properly with D-SUB type

There is a possibility that the driver of the hardware lock key is old type or does not exist.

Execute "\SentinelDriver\SSD5411-32bit.EXE" of installation CD-ROM. Refer to "\SentinelDriver\Manual\us\Readme.pdf" for the installation procedure.

Note: Be sure to install the driver under WindowsNT/2000/XP environment. When installing the driver under WindowsNT/2000/XP environment, be sure to login on administrator mode in order to add files to system folder and input information in registry.
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