JANOME DESKTOP ROBOT

JR3000 Series

Operation Manual

Maintenance

(For Maintenance Operators Only)

Maintenance operators are individuals who have received maintenance training from Janome or from a Janome dealer. People responsible for maintenance should receive this training.

Thank you for purchasing this Janome Robot.

- **Before using your robot, read this manual thoroughly and always make sure you use the robot correctly. In particular, be sure to thoroughly read "For Your Safety" as it contains important safety information.**

- **After reading this manual, store in a safe place that can be easily accessed at any time by the operator.**

Original Instructions

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PREFACE

This manual covers the JR3200, JR3300, JR3400, JR3500 and the JR3600 Series.

There are several manuals pertaining to these robots.

Manual	Details	JR3000	JC-3	JS3
Read This First	• For Your Safety Be sure to thoroughly read "For Your Safety" as it contains important safety information. • Package Contents (JS3 Series only) Check the items included with your robot. • CD-ROM Contents Explains the CD-ROM contents.	✓	✓	✓
Setup (JR3000 / JC-3) Installation (JS3)	Explains how to set up the robot. ■ Make sure you read this manual when installing the robot ■ NOTE: This manual is designed for people who have received safety and installation training regarding the robot.	✓	✓	✓
Maintenance	Explains maintenance procedures for the robot. ■ Make sure you read this manual when performing maintenance ■ NOTE: This manual is designed for people who have received safety and maintenance training regarding the robot.	✓	✓	✓
Basic Instructions	Provides part names, data configurations, and the basic knowledge necessary to operate the robot.	✓ (Common)		✓
Quick Start	Explains the actual operation of the robot by creating and running simple programs.	✓ (Common)		✓
Teaching Pendant Operation	Explains how to operate the robot via the teaching pendant.	✓ (Common)		✓
Functions I	Explains point teaching.	✓ (Common)		
Functions II	Explains commands, variables, and functions.	✓ (Common)		
Functions III	Explains functions such as All Program Common Settings and PLC programs.	✓ (Common)		
Functions IV	Explains Customizing Functions.	✓ (Common)		
External Control	Explains I/O and Fieldbus. Refer to this manual if you are using Fieldbus.	✓	✓	✓
Communication Control	Explains COM 1 – 3 and LAN communication control.	✓ (Common)		
Camera & Sensor Functions	Explains the functions of the attachable camera and Z position sensor.	✓ (Common)		

Manual	Details	JR3000	JC-3	JS3
Specifications	Outlines general specifications such as the robot's operating range, mass, etc.	✓	✓	—
Auxiliary Axis Functions	Explains the auxiliary axis functions.	✓ (Common)		
Application Specifications	Explains the specialized functions of the various application specifications.	Standard model: - Application model: ✓		

⚠ Warning

🚫 Do not handle or operate the robot in ways not covered in the manuals listed here. Contact Janome (information provided on the back of this manual) for repairs. Failure to do so can cause electric shock or injury.

⚠ Caution

❗ To make full use of the machine's functions and capabilities, make sure that you use the robot according to the correct handling/operation procedures that are written in the manuals pertaining to this robot.

❗ If you turn OFF the power after making changes to robot's settings or data without saving, these changes are lost and the robot will revert to its original settings. Make sure that you save any changes to data and/or settings.

❗ Before using this robot for the first time, make sure you back up robot data and save the individual configuration information. Individual configuration information is needed when replacing internal circuit boards. For details on how to back up robot data, refer to "3. BACKING UP AND RESTORING ROBOT DATA" in the operation manual *Setup*.

- The descriptions within this manual are based on standard specifications. The menu item names etc. may vary depending on the model type.
- For information regarding optional additions for this robot, refer to "24. SPECIFICATIONS" in the operation manual *Specifications*. The notation "optional" is not used in the main text of this manual except for diagrams.
- Machine specifications may be modified without prior notice to improve quality.

Remarks:
- The operation methods described in this manual are indicated as follows:

  TP ▶ Operation via the teaching pendant
  PC ▶ Operation via PC (JR C-Points II)

- Click text that appears blue and is underlined to jump to that section.
  Example: Refer to "1. BACKING UP DATA AND UPGRADING SYSTEM SOFTWARE VIA USB MEMORY".

CONTENTS

FOR YOUR SAFETY

The safety notes outlined below are provided in order to ensure safe and correct usage of the product in addition to preventing injury to the operator, other people and damage to property as well.

・・・・・Be sure to follow the safety guidelines detailed here・・・・・

Symbols are also listed alongside the safety note explanations. Refer to the list below for an explanation of these symbols.

■ Symbols that indicate the level of danger and/or damage.
The level of danger or damage that could occur as a result of ignoring these safety guidelines and misusing the robot are classified by the following symbols.

⚠ **Danger**	This symbol indicates an imminent risk of serious injury or death.
⚠ **Warning**	This symbol indicates a risk of serious injury or death.
⚠ **Caution**	This symbol indicates the possibility of serious injury or damage to property.

■ The following symbols list the nature of the danger and any necessary safety methods to be taken.

	Indicates caution must be taken
⚠	Take Caution (General Precaution)
	Indicates a forbidden action
🚫	Never do this (General Prohibition)
	Do not disassemble, modify or repair.
	Do not touch (Contact Prohibition)
●	Indicates a required action
❗	Be sure to follow instructions (General Requirement)
	Be sure to unplug the power cord
	Make sure the machine is grounded

FOR YOUR SAFETY

If using auxiliary axis functions to operate a motor, such as a servo motor, that produces feedback and/or a motor with high output etc., or when using auxiliary axes in the robot setup etc., we ask that you perform a risk assessment on your side and take any necessary safety measures.

If Using Auxiliary Axis Functions in a Way that Require Safety Measures

⚠ Danger

Always set up safety guards around the robot or the auxiliary axes so the moveable parts cannot be touched.

Anyone within the maximum reach of the robot and the auxiliary axes being controlled by the robot may be injured. Set up an **emergency stop interlock device that cuts OFF the motor power to the auxiliary axes when the entrance to the safety guard is opened** and make sure this entrance is the only way to access the machine.

NOTE: **A stop made via a device connected to the I/O-S connector is a category 2 stop. Make sure to perform a separate risk assessment of the interlock device**.

Furthermore, put up a **"Keep Out"** or **"Do Not Operate"** warning sign in a clearly visible place.

Example:
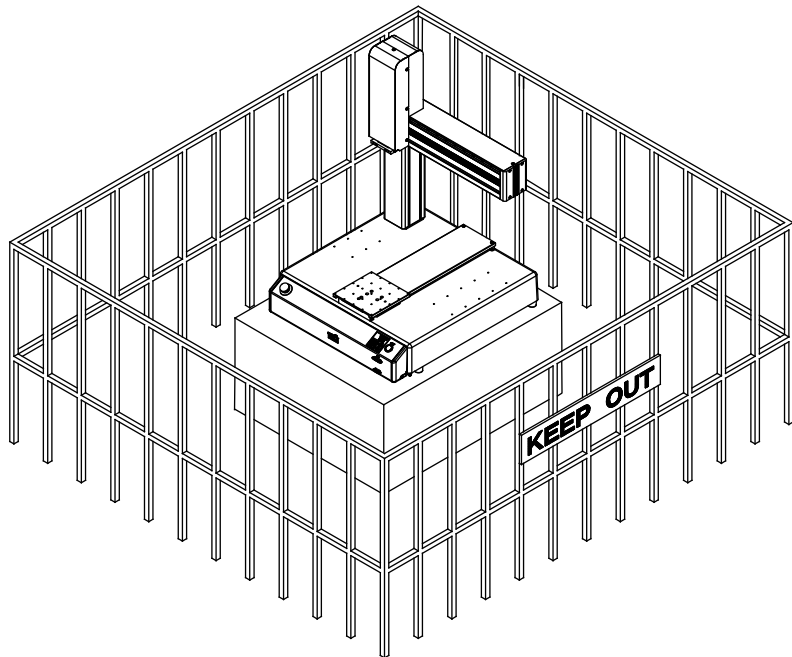
FOR YOUR SAFETY

If Using Auxiliary Axis Functions in a Way that Require Safety Measures

	⚠ **Danger**
🚫	**When power to the robot is ON, never enter the safety guard or put your head, hands, or any part of your body inside.** Entering the safety guard could result in injury.
❗	**When entering the safety guard** due to something wrong with the robot or a peripheral device, or to inspect or lubricate the machine etc., **with both the power supply breaker and the robot switched OFF, make sure to lockout and tagout and confirm there is no electricity flowing to the robot.** Failure to do so can cause electric shock or injury.

	⚠ **Warning**
❗	When creating a robot system using auxiliary axis functions, if the system can be categorized as an industrial robot, make sure to use the robot in accordance with the laws and guidelines of the country where it is used.
❗	**Before performing a run or operation, always check the following:** • **Obstacles** : Make sure there are no obstacles or people within the safety guard. • **Installation** : Make sure the robot is installed properly, that there are no abnormalities with the robot and the surrounding devices, and that the teaching pendant and tools are in the appropriate places. • **Emergency Stop Switch** : Make sure the I/O-S circuit (interlock) and emergency stop switch (es) are functioning properly. It is potentially dangerous to operate the robot without making these checks first.

FOR YOUR SAFETY

If Using Auxiliary Axis Functions in a Way that Require Safety Measures

	⚠ **Warning**
⬤!	**Construct safety guards that are strong enough to protect the operator against such dangers as the tool or workpiece splintering, etc.** When working within the safety guard, use protective gear such as a helmet, protective gloves, protective goggles, and safety shoes. Failure to follow these safety measures can result in injury.
⬤!	If objects that the robot grasps have a risk of falling or being projected, **take into account the size, mass, and chemical composition of the objects for the required safety precautions.** Failure to do so can result in injury or unit breakdown.
⬤!	**When working within the safety guard, make sure not to come within the maximum range of the robot.** Failure to do so can cause injury.
⬤!	When starting a run, first confirm there are **no people inside of the safety guard and there are no obstacles that could interfere with the run.** Failure to do so can cause injury or unit breakdown.

FOR YOUR SAFETY

⚠ Danger

🚫	**Do not use where flammable or corrosive gas is present.** Leaked gas accumulating around the unit causes explosions or fire.

⚠ Warning

❗	**Use protective gear such as a helmet, protective gloves, protective goggles, and safety shoes when installing the robot and performing maintenance.** Failure to do so can cause injury.
❗	**Make sure that you securely install the unit in a place that can fully withstand both the unit's weight and its usage.** Install the robot on a workbench 600 mm or higher above floor level, in the center of the workbench. In addition, **for units with a cooling fan on the back, allow for 300 mm or more clearance between the back of the unit and the wall.** Install the switchbox 600 mm or more above floor level in an easily accessible place. If installation is inadequate, the unit can drop or fall over causing injury and unit breakdown. Also, inadequate installation causes overheating or fire.
❗	**Make sure to power the unit within its rated current range.** Failure to do so causes electric shock, fire, or unit breakdown.
❗	**Plug the power cord into the power outlet firmly.** Failure to do so causes the plug to heat up resulting in fire.
❗	**Be sure to use the unit within its indicated voltage range.** Failure to do so causes unit breakdown, fire, or electric shock.
	When replacing fuses, or inspecting or lubricating the unit, unplug the power cord from the power outlet, then remove the cord from the main unit and make sure there is no electrical current. Also, **do not touch any of the power inlet pins within 5 seconds of removing the power cords.** Failure to follow these steps causes electric shock or injury.

FOR YOUR SAFETY

⚠ Warning

	Always **make sure the machine is grounded through the power cord.** **Do not use the machine when it is not grounded.** Improper grounding causes electric shock, fire, malfunction, or unit breakdown.
	Wipe the power plug with a clean, dry cloth periodically to eliminate dust. Dust accumulation deteriorates the electrical insulation or causes fire.
	Be sure to unplug the power cord from the power outlet when the unit is not in use for long periods of time. Dust accumulation causes fire.
	Be sure to turn OFF the unit before inserting or removing cords and cables such as the teaching pendant cable or LAN cable. Failure to do so causes electric shock, data loss, unit breakdown, or malfunction.
	If disassembling this machine, follow the instructions in this manual, and do not disassemble in any other way other than those specified. Do not modify the machine in any way. Inappropriate disassembly or modification causes electric shock or unit breakdown.
	Do not allow water or oil to come in contact with the unit, control box or the power cord. Contact with water or oil causes electric shock, fire, or unit breakdown. IP Protection Rating: IP20.
	If anything unusual occurs, such as a burning smell or unusual sound, stop operation and unplug the power cord immediately. Contact Janome (details on the back of this manual) or a Janome dealer. Continuing to use the robot without addressing the problem causes electric shock, fire, or unit breakdown.

FOR YOUR SAFETY

⚠ Caution

🚫	**Do not drop or jar the unit during transport and/or installation.** This can cause injury or damage the unit.
❗	**Before performing any operation, ensure there is no imminent danger to any of the operators.** Failure to do so causes injury.
❗	**Use the unit in an environment between 0 and 40 °C, with a humidity level of 20 to 90 %, and without condensation.** Use outside of these conditions can cause unit breakdown or malfunction.
❗	**Use the unit in an environment where no electrical noise is present.** Failure to do so causes unit malfunction or breakdown.
❗	**For models with I/O-S circuits*, when installing the unit, take safety measures such as setting up area sensors and safety guards.** If there are no safety measures in place and someone enters the area of operation when the robot is running, they may be injured.
❗	**Keep the emergency stop switch within reach of the operator when running or operating the robot.** If the robot is operated when the emergency switch is not within reach, it may not be possible to stop the robot immediately and safely. This is potentially dangerous.
❗	**Make sure that you regularly perform a function check of the emergency stop switch(es). Also, for models with I/O-S circuits*, regularly perform an I/O-S circuit function check.** If the robot is operated without making these checks, it may not be possible to stop the robot immediately and safely in an emergency. This is potentially dangerous.

* A stop made via a device connected to the I/O-S connector is a category 2 stop. Make sure to perform a separate risk assessment of the interlock device.

FOR YOUR SAFETY

⚠ **Caution**	
🛈	**When attaching tools, a USB camera, or any other device, make sure they are securely fitted before running the robot.** Failure to do so causes injury or breakdown.
🛈	**When using the machine for extended periods of time, check and make sure none of the main unit's mounting screws are loose, and perform a routine inspection every 3 months or after every 750 hours of operation.** Failure to do so causes injury or breakdown.
🛈	**Be sure to check the connections of the cords and cables to the main unit.** Improper connection causes unit malfunction or breakdown.
🛈	**When lifting or transporting the robot, do so in accordance with the following:** • **Secure the movable parts of the unit (the Z/ZR mechanism) before transportation.** • **Lift and transport the JR3200 Series with 2 or more people.** • **Lift and transport the JR3300 – JR3600 Series with 2 or more people or use a lifter.** • **Hold the bottom of the base and keep the robot horizontal.** • **Do not hold the robot by the column or Y body.** Failure to adhere to this can cause injury or damage the robot.
🛈	**Use the unit in an environment that is not exposed to direct sunlight.** Direct sunlight causes unit malfunction or breakdown.
🚫	Individual Configuration Information varies for each individual unit even if they are the same model. **Do not use backup data with a different robot. The robot cannot function normally with backup data from a different robot.**

1. BACKING UP DATA AND UPGRADING SYSTEM SOFTWARE VIA USB MEMORY

Insert a commercially sold USB memory (Ver. 2.0) into the Memory Port to record robot data or upgrade the system software.
For details regarding precautions when using the memory port, refer to "14.1 USB Memory Usage Precautions" in the operation manual *Specifications*.

Mount the USB memory device into the locations indicated below.

JR3200 Series
Example: JR3203N-AC

Robot Front
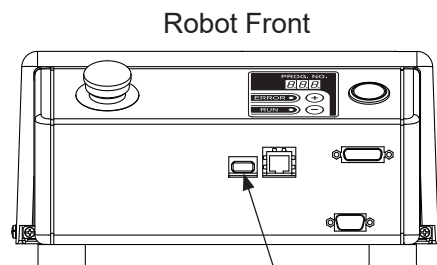
USB Memory Port

JR3300 – JR3600 Series
Example: JR3303N-AJ
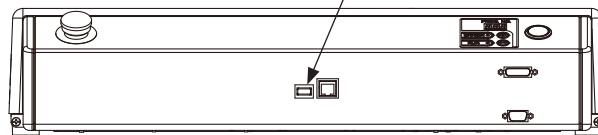
The USB memory device needs to be in FAT format.
The robot may not recognize some USB memory devices depending on the manufacturer.
However, the robot may recognize the USB memory device if you format it.

1.1 Backing Up Teaching Data (C&T Data)

This section explains how to record C&T (customizing data and teaching data) to USB memory and how to copy C&T data backups from a USB memory to the robot.
The PC software JR C-Points II can read/write to and from C&T data saved on a USB memory device.

TP ▶ [UTILITY] [MEMORY Port]
[Write USB Memory]
[Read USB Memory]

NOTE: Always make sure to insert/remove the USB memory using the MEMORY Port screen.
Do not insert/remove the USB memory while the message is displayed and the robot is reading/writing.

1.1.1 Write Teaching Data to USB Memory

When you execute this function, a screen for entering the save file name is displayed. On this screen, the save file is given a default save file name. You can also change this save file name to a name of your choice. The default name is set with the date and time settings set in Administration Settings Mode. The default save file name status is as follows:
"JR3_CandT_YYYYMMDD_hhmm"   (Y: year, M: month, D: day, h: hour, m: minute)

With robots running system software version 6 or higher, you can use the [F2] (T.STAMP) key and the [F3] (PRESET) key to switch between given save file name formats on the save file name entry screen.

Press the [F2] (T.STAMP) key to display a time stamped save file name such as: JR3_CandT_20170323_0930
The numerical digits in the last half of the file name represent a fixed format for the year, month, day, and time. The fixed format for the date and time is acquired according to the robot's internal clock.
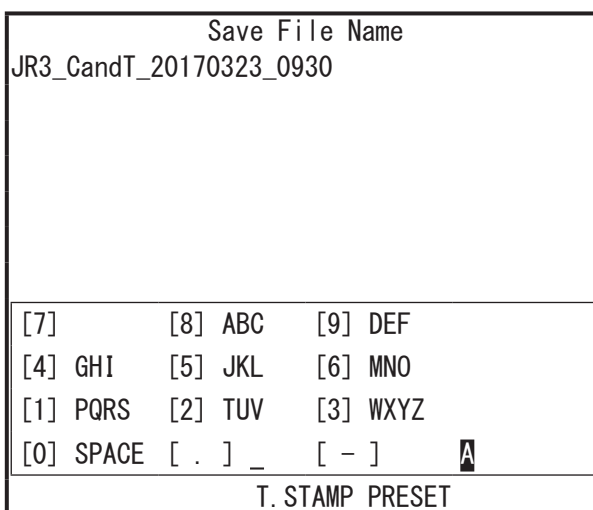
```
           Save File Name
JR3_CandT_20170323_0930




[7]          [8] ABC    [9] DEF
[4] GHI      [5] JKL    [6] MNO
[1] PQRS     [2] TUV    [3] WXYZ
[0] SPACE  [ . ] _    [ - ]    A
          T. STAMP  PRESET
```
Save File Name Screen

Press the [F3] (PRESET) key to display the following file name: JR3_CandT_data
If you save C&T data using this file name, you can read this file using the receive C&T data function on the startup menu. For further details regarding the startup menu, refer to "15. SETUP MENU" in the operation manual *Basic Instructions*.

NOTE: If you want to use the startup menu, use a dedicated memory device. You cannot use a USB memory device with multiple files on it. Format the USB memory before use.

The following folder configuration is created, in which the teaching data is recorded:

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DATA — Teaching data is saved in this folder (extension CTD)

XXX.CTD
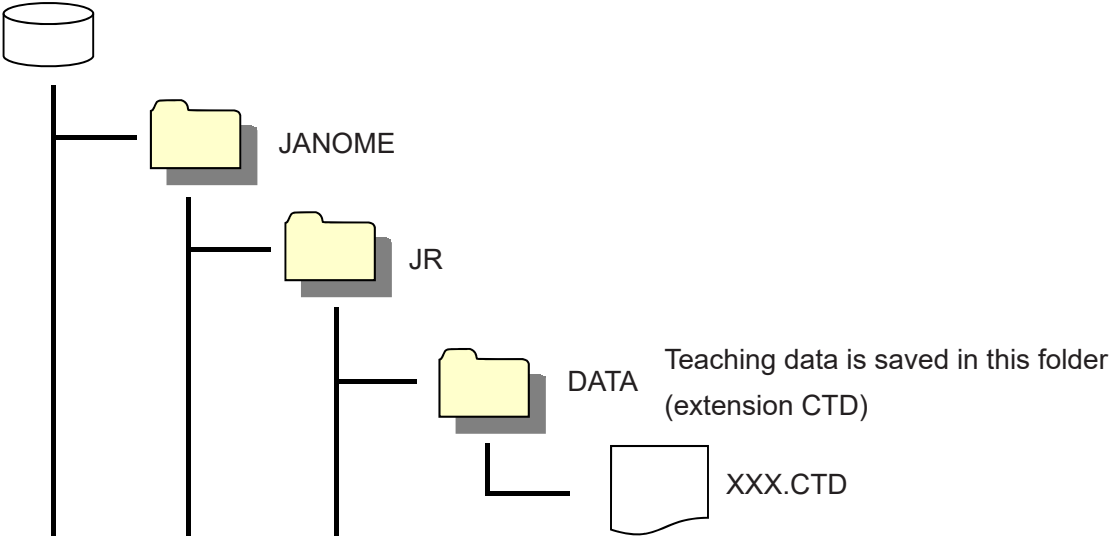
NOTE: The PC software JR C-Points II can read teaching data saved from the robot to a USB memory device. For further details regarding operation using JR C-Points II, refer to the operation manual *PC Operation*.

1.1.2 Read Teaching Data from USB Memory

With this you can read teaching data from the USB memory.

The teaching data backup file is read from the DATA folder in the following folder configuration:
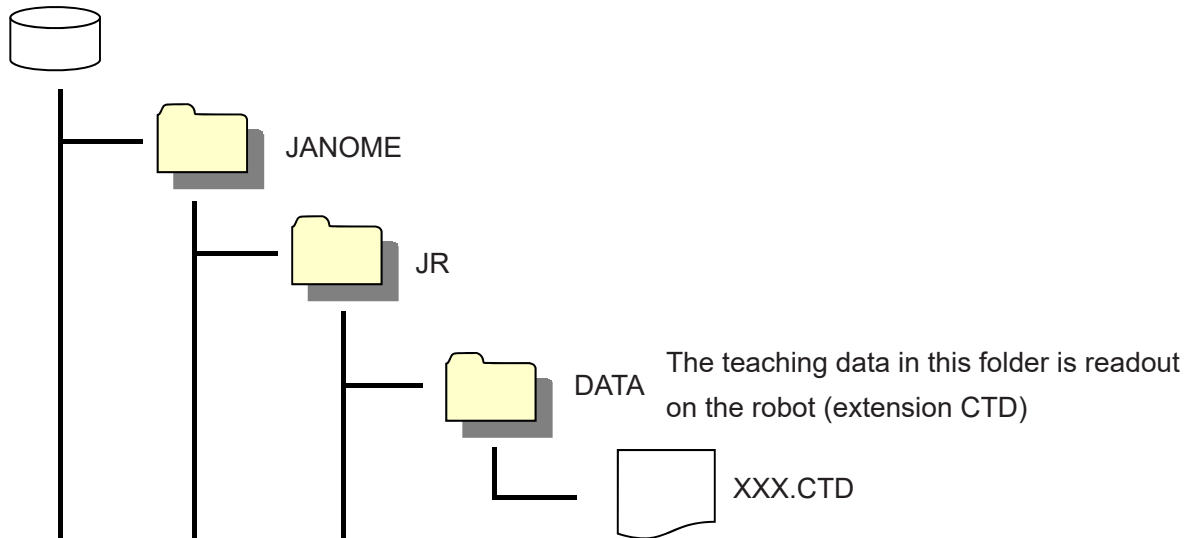
Teaching data can be read from the DATA folder if there are 1 or more files contained within the folder. You can select the file you want from among multiple files.

NOTE:
- If you change the folder name, the data cannot be read.
- The robot can also read teaching data written from the PC software JR C-Points II to USB memory. For further details regarding the PC software, refer to the operation manual *PC Operation.*

1.2 Backing Up and Restoring Robot Data

The robot data storage area is partitioned as shown by the diagram below. All of the storage area partitions including the robot system software storage partition are subject to backup and data restoration operations.

```
                    ┌─────────────────┐
                    │   Robot System  │
                    │    Software     │
                    │                 │
                    ├──┬──────────────┤
   Model       ────→│  │  Individual  │
   Setting Files    │  │ Config. Info.│
                    ├──┴──────────────┤
                    │                 │
                    │    C&T Data     │
                    │                 │
                    └─────────────────┘
                      Storage Area
```
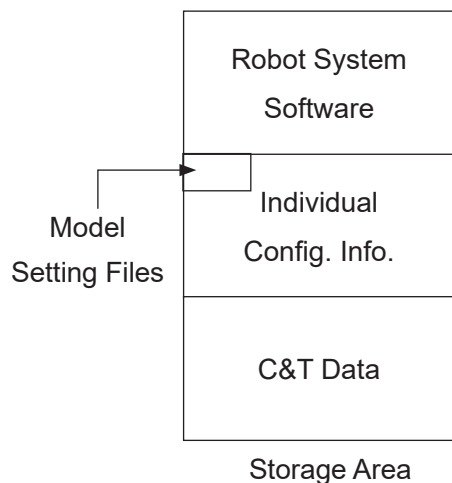
▶ T P ▶ MODE [Administration]

[Administration Settings Mode]

[Backup/Restore]

⚠ Caution

Individual configuration information varies for each individual unit even if they are the same model. **Do not use backup data with a different robot. The robot cannot function normally with backup data from a different robot.**

1.2.1 Backup Data

The robot system software, C&T data, individual configuration information and model setting files are read and saved as a file. If you do not specify an extension name, the file is saved with the extension "JRB".

Select [Backup] with a USB memory device connected. A screen for entering the backup file name is displayed. The default file name contains the date and time of the backup. You can change the file name should you wish to do so. You can enter up to 40 characters for the file name. Enter the file name and press the ENTR key.

The backup may take several minutes to process. Follow the instructions of the teaching pendant LCD and do not turn OFF the power to the robot.

The BACKUP folder is automatically created and the backup file is saved within this folder.

1.2.2 Restore Data

This restores the data saved in [Robot Data Backup] to the robot.

Executing robot data restoration deletes all of the data in the robot (robot system software, C&T data, individual configuration information and model setting files) and overwrites it with the backup file.

Select [Restore] with a USB memory device connected. A screen for selecting the file is displayed. Select the file name and press the ENTR key.

Restoration may take several minutes to process. Follow the instructions of the teaching pendant LCD and do not turn OFF the power to the robot.

1.3 Upgrading System Software

Before upgrading the system software, make sure to create a backup using the PC software JR C-Points II so that the data is useable with the new system software. A USB backup of C&T data from system software version 3 is not compatible with version 5 or higher system software.

You can use a USB memory device to upgrade the system software and PS data (model setting file). There are the following two methods of upgrading the system software with a USB memory device: Auto Update or Manual Update using a teaching pendant.

⚠ Caution

ⓘ	• Never cut the power to the unit while the system software is being updated. • If the power to the unit is cut while the system software is being updated, the robot's internal software can be damaged and you may not be able to update the system software from the MEMORY Port. If the system software cannot be updated from the MEMORY Port, you may be able to restore the system software using JR C-Points II.
ⓘ	• Use JR-C Points II to upgrade if you are updating from version 2 or lower to version 3 or higher. This cannot be done with the MEMORY Port. • Updating from versions 3 or higher can be done with the MEMORY Port.

Create the following folder configuration in the USB memory beforehand. Save the system software into the UPDATE folder.

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UPDATE — The system software is saved into this folder (extension: JSY)

XXX.JSY
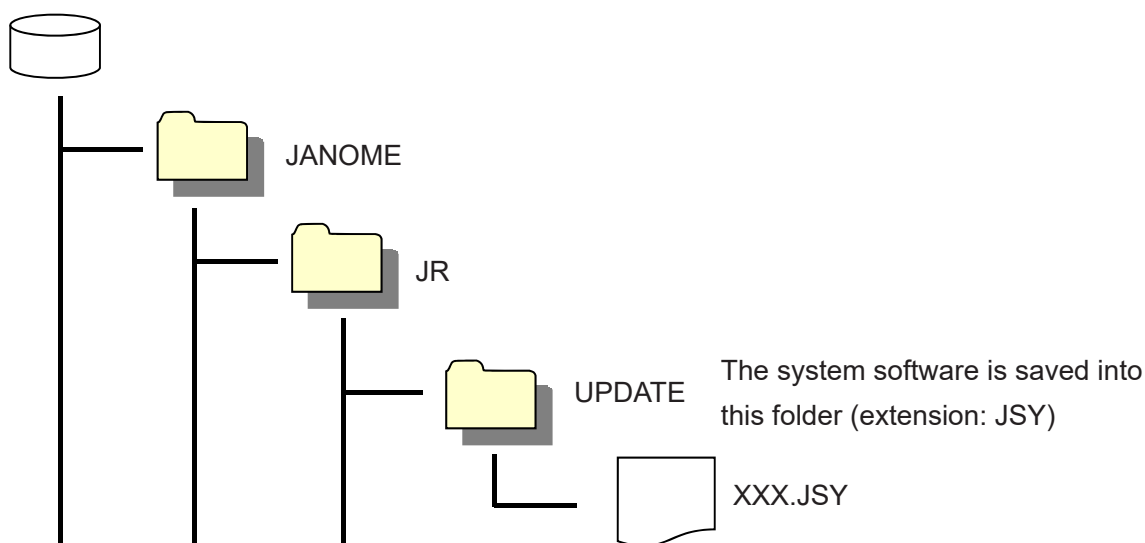
1.3.1 Auto Update

Make sure that [MEMORY Port] and [Auto Update] are set to [Valid] in [MEMORY Port Settings] (Administration Settings Mode). If these are disabled, the robot does not automatically update when power to the robot is turned ON. Disabling these is convenient if you want to prevent malfunctions when powering up the robot.

Mount the USB memory device with the system software saved on it into the memory port on the robot. Turn the power to the robot ON. The robot automatically upgrades the system software.

You cannot update both the system software and PS data (model setting files) at the same time. For PS data, you can update the data for all the settings as a group.

NOTE:
   • Updates happen directly after turning the power ON and with no user confirmation.
   • You can disable this function in Administration Settings Mode.

1.3.2 Manual Update

Use this to upgrade the system software while the robot is ON. Mount the USB memory device with the system software saved on it into the memory port on the robot and then follow the procedure below.

T P ▶ MODE [Administration]
                          [Administration Settings Mode]
                      [MEMORY Port Settings]
                    [Manual Update]

```
          MEMORY Port Settings
MEMORY Port                      Valid
Auto Update                    Invalid
Manual Update




```

Select [Manual Update] to display the screen to the right. Select [YES] to perform the update. After the update is complete, a completion screen is displayed and the robot restarts.

```



            Manual Update
            Update OK?



           YES        NO


```

2. BACKING UP DATA AND UPGRADING SYSTEM SOFTWARE VIA PC

Before upgrading the software version of your robot, make sure to create a data backup.

Create a data backup using the PC software (JR C-Points II or JR C-Points II Limited Edition).

You can use the following functions with the PC software:

1. Backing up C&T data.
2. Reading/writing C&T data to and from USB memory.
3. Updating system software.
4. Restoring all data when replacing printed circuit boards.

For further information, refer to the operation manual *PC Operation*.

To connect the robot and a PC, refer to the following sections.

2.1 PC Software JR C-Points II Limited Edition

2.1.1 Operating Environment

To operate JR C-Points II Limited Edition (included in the Operation Manual CD-ROM), the following system requirements are needed:

Computer	A PC capable of running Windows® 7/8.1/10
Memory capacity	512 MB or more
OS	Microsoft Windows® 7/8.1/10 NOTE: Compatible with both 32 bit and 64 bit systems.
Hard disk capacity	2 GB or more free disk space after installing Windows® 7/8.1/10
Video Card	Capable of displaying 32 bit color with a resolution of 1280×800 or 1366×768. However, we recommend a video card with a resolution of 1920×1080 if displaying images using a robot with the USB camera (optional).
LAN (Ethernet)	To connect to the robot, a LAN cable with the following specifications are required: • Straight cable (CAT5) The connectable Ethernet specifications (on the PC side) are as follows: • 10BASE-T/100BASE-TX • LAN Port: RJ-45

The required memory capacity and hard disk capacity can vary depending on the PC's system requirements.

Also be careful when using a PC because if there is not enough free hard disk space, it can result in insufficient memory during operation or other such problems.

■ If screen resolution exceeds 1920×1080, or if the monitor is small

On a monitor with resolution exceeding 1920×1080, or on a Laptop PC with a small screen, the layout of text and icons in "Limited Edition" may be disrupted. In such cases, adjust and set the following two points in the Windows screen settings.

• Lower to resolution setting to "1920×1080" or lower
• Set text size to "100 %"

Use the following values as guidelines for the appropriate resolution for each monitor size.

Monitor size	Resolution
Desktop monitor of 20 inches or more	1920×1080 - 1600×900
Laptop PC monitor of around 12 inches	1600×900 - 1280×720

2.1.2 Installation

1. Boot up Windows® and confirm it is operating properly. Also, close down any other open applications.
2. Insert the Operation Manual CD-ROM into the CD drive. In the "JCP*E***L" folder (* = specifications, *** = version number) double click ¥SETUP.EXE. The installer starts up.
3. Follow the instructions on the screen and proceed with the installation.

NOTE: If the installer is started up when this software is already installed, the uninstallation process will begin. To uninstall JR C-Points II Limited Edition, follow the same procedure as above to start up the installer.

NOTE: The installation may not complete if the following error occurred during installation.
• "Error applying transforms. Verify that the specified transform paths are valid".
• "Error2254 : Database : Transform : Cannot update row that doesn't exist.Table"

These errors appear when the installer starts up in the environment JR C-Points II already installed and tries to uninstall, but could not uninstall the JR C-Points II.
Uninstall the JR C-Points II already installed. After the uninstallation, reinstall the JR C-Points II by the following procedure:

1) From the [Start] menu in Windows®, select [Control Panel].
2) When "View by" is "Category", select [Uninstall a program].
   When "View by" is "Large icons" or "Small icons", select [Programs and Features].
3) When the programs are appeared, select the program you want to uninstall.
4) Right-click on the mouse to display the menu and select "Uninstall".
5) The selected program is uninstalled.

2.1.3 Version Up From Ver.3 or Lower to Ver.5 or Higher

When upgrading from an older version, the older version is automatically uninstalled. Teaching data is compatible to and from different versions of robot system software.

However, teaching data from a robot (or JR C-Points II) running version 3 or older is not compatible with JR C-Points II (or robot system software) version 5 or newer. To maintain compatibility between the robot and PC software, JR C-Points II version 3 or older is not automatically uninstalled when you install version 5 or newer. Make sure to use the applicable version when transferring data to and from the robot.

NOTE: After the uninstallation is complete, the shortcut may remain on the desktop and/or start menu. If this happens, please delete the shortcut yourself.

Upgrading the Ver.4 - Ver.7 software to Ver.8
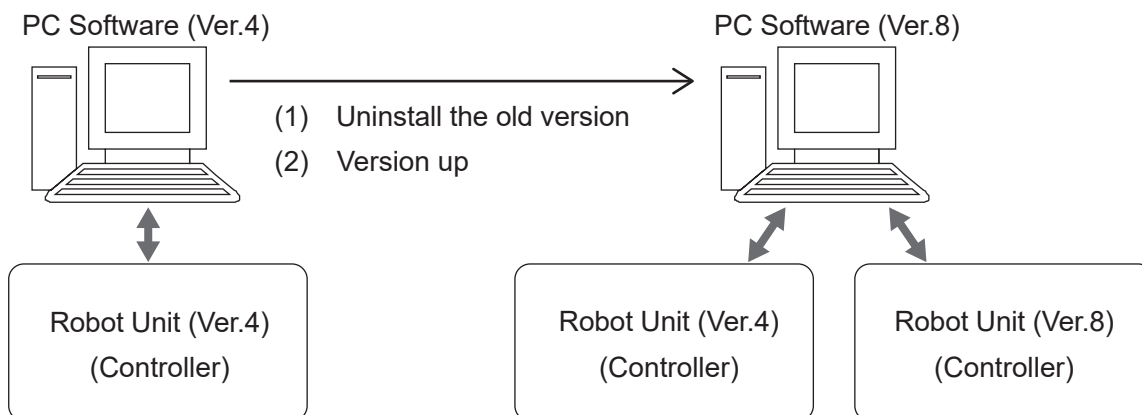
Upgrading the Ver.3 software or lower to Ver.8
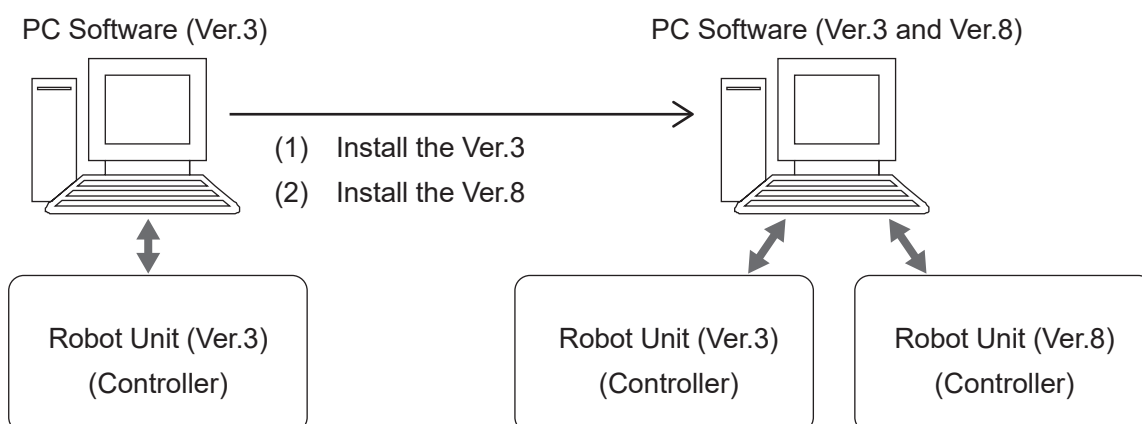
2.2 Connecting to a PC (LAN Connection)

To back up the robot's C&T data and to upgrade the robot's system software, connect the robot and a PC via Ethernet and make sure the PC and robot are able to interface.

■   Ethernet Overview

The robot is fitted with an Ethernet connector (10BASE-T/100BASE-TX) by standard. The LAN port is on the front of the robot. By using Ethernet to transmit commands and data from a PC, you can use functions such as the following:

1.   Send and receive C&T data
2.   Overwrite the system program
3.   Online teaching such as JOG and GO movements etc.
4.   Monitor functions such as external I/O and Fieldbus I/O display etc.
5.   Set online settings such as administration settings and teaching environment settings etc.
6.   Display robot information such as system information and error history etc.

If using Ethernet, you can connect to and use multiple robots with one PC via a hub.

⚠ Caution

	If you instruct an urgent stop from a network other than I/O-SYS, it takes a few moments for the robot to actually stop after the command is sent.

2.2.1 LAN Cable

Use a straight LAN cable (category 5) compatible with the 10BASE-T/100BASE-TX standard to connect the Robot and PC. Insert one end of the LAN cable into the LAN port on the robot and the other into the LAN port on the PC.

Robot Front (Example: JR3203N-AC)

LAN Port
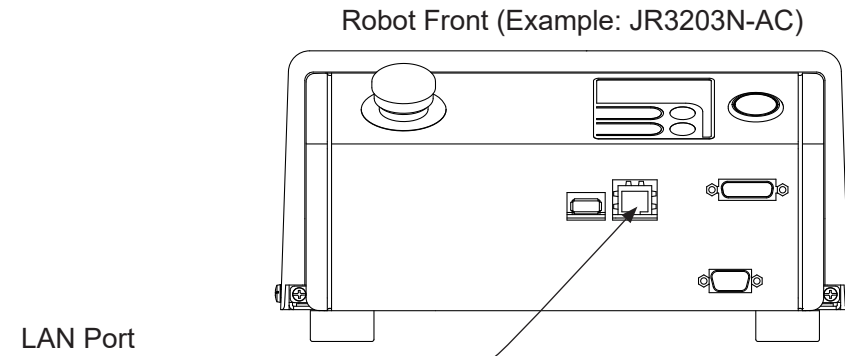
If you are using JR C-Points II to operate the robot from a PC, remove the teaching pendant, as you cannot operate the robot with the teaching pendant connected.
After removing the teaching pendant, connect a short connector to the teaching pendant connector if the teaching pendant has an emergency stop switch. Otherwise, you cannot use JR C-Points II to operate the robot.

■   LAN Settings
    To get the robot and PC to interface, you need to setup an IP address on both the robot side and PC side. For further details refer to "2.2.4 Robot IP Address Settings" and "2.2.5 PC IP Address Settings".

2.2.2 LAN Port

Diagram: RJ-45
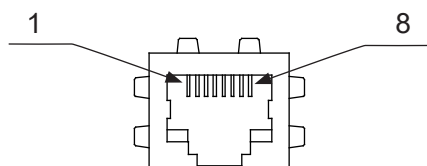
LAN Port Pin Assignment

Pin No.	Name	Function
1	TD +	Transmit signal+
2	TD -	Transmit signal-
3	RD +	Receive signal+
4	NC	Not connected
5	NC	Not connected
6	RD -	Receive signal-
7	NC	Not connected
8	NC	Not connected

2.2.3 Communication Settings (IP Address Settings)

Ethernet communication uses "TCP/IP protocol". For this reason, you need to set the IP address, subnet mask, and default gateway as preparations for Ethernet connection.
These settings are done using the PC software, JR C-Points II Limited Edition. JR C-Points II Limited Edition is included on the Operation Manual CD-ROM. You can set the IP address from the PC using the Ethernet.

To set the IP address via Ethernet, you need to establish communication settings (TCP/IP settings) on the PC side. Take note of the following points for PC communication settings (TCP/IP).

- To use Ethernet functions, you need a TCP/IP network environment.
- If you are using the default network settings, you do not need to set a new IP address on the PC.
- Do not use a DHCP server as the robot uses a static IP address.
- If you are setting a new IP address on the PC, consult your network administrator.

2.2.4 Robot IP Address Settings

You can set the robot's IP address from the PC software JR C-Points II. (This is also possible with Limited Edition)
Open the JR C-Points II robot IP address settings dialog by clicking [Robot] → [IP-Address Settings].

- IP Address (initial settings: 192.168.200.180)
- Subnet Mask (initial settings: 255.255.255. 0)

Enter these values and click the [Setting] button to send the settings to the robot.
Turn the power to the robot OFF and then ON again to apply the new settings.

You can also set the robot IP address settings from the teaching pendant.
Connect the teaching pendant and turn the power to the robot ON. Display the screen;
[Administration Mode] → [Administration Settings Mode] → [Ethernet Settings] and make the following settings:

- IP Address (initial settings: 192.168.200.180)
- Subnet Mask (initial settings: 255.255.255. 0)

Turn the power to robot OFF and then ON again to apply the new settings.

NOTE: After modifying the settings and exiting [Administration Settings Mode], the system is reset and the settings are enabled.

2.2.5 PC IP Address Settings

Set an IP address to the PC if the one is not already set.
Set the IP address with IPv4 as the robot is not compatible with IPv6.
If the IP address is already set, you do not need to set the IP address again.

- The IP address setting method varies depending on the Windows® version you are using. Set the IP address by referring to the manual supplied with your PC.

- We recommend using a class C private IP address (192.168.0.0 – 192.168.255.255). However, you cannot set 0 and 255 to the right end of the IP address (4th octet).

- If you want to set a new IP address to the PC, contact your network administrator.

2.3 Sending and Receiving C&T Data

We recommend creating backup data in case of contingencies.

To create a data backup, startup JR C-Points II Limited Edition on the PC, receive the data from the robot, and then save the received data as a file.

Additionally, you can use a USB memory device to make a backup. Refer to "1.1 Backing Up Teaching Data (C&T Data)" for information regarding a backup using USB memory.

The data sent and received between the robot and the PC is teaching data and customizing data collectively sent as one unit (C&T data).

NOTE: If the robot is not connected to the network or it cannot communicate with the PC, you can save the C&T data backup to a USB memory device and then access it using JR C-Points II. For further information regarding the PC software JR C-Points II, refer to the operation manual *PC Operation*.

Example: JR3203N-AC

Send/ Receive Data

PC

Storage Area

Work Area

Backup Data
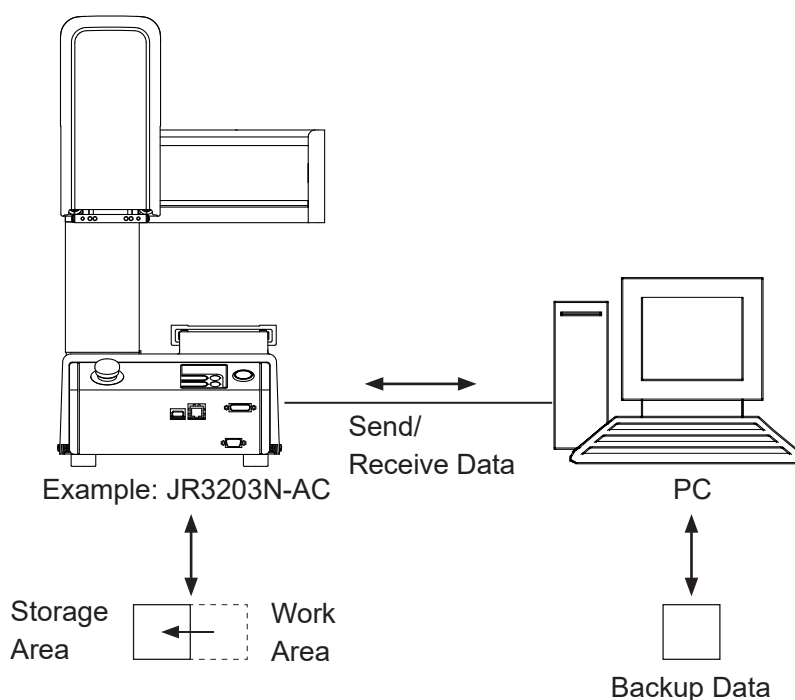
The robot has a data storage area and a work area. When you start the robot, the C&T data in the storage area is copied to the work area. Data in the work area is used for teaching and running programs. The data in the work area is deleted when the power to the robot is turned OFF.

When receiving data from the robot, the PC receives work area data. If sending data from a PC to the robot, the sent data is automatically written to the storage area via the work area.

NOTE: If you are using JR C-Points II software, you can also perform the same operation by selecting [Receive C&T Data] from the [Robot] pull-down menu.

Have the robot doing one of the following:

Switch Run Mode: Run standby (waiting to start)

External Run Mode: Run standby (waiting to start)

Teaching Mode: Point value setting screen

Startup JR C-Points II Limited Edition, and from the [Robot] pull down menu select [Receive C&T Data].
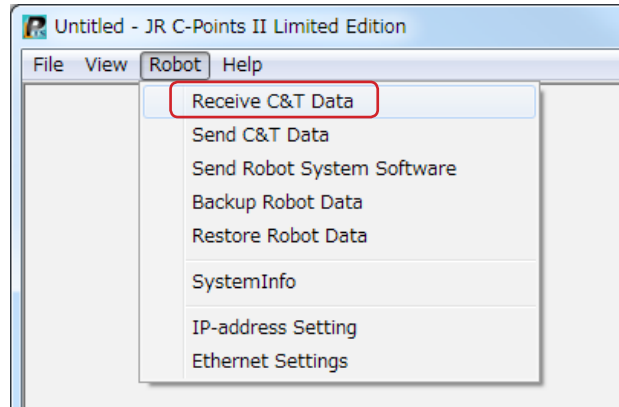
To create a backup file, click the [Receive] button. The C&T data transfer starts.

Once the transfer of C&T data is complete, "The C&T Data was Received Successfully" message appears on the screen.
Note that the C&T data is not displayed on the screen.

Save the file by selecting [Save as] from the [File] pull down menu.
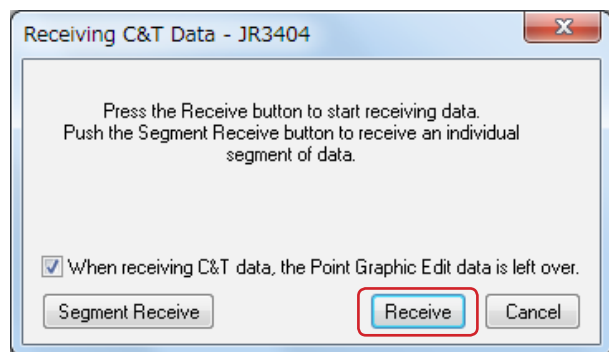
If you send this backup file to the robot using Send C&T Data, the robot reverts to the above received data.

Click [Segment Receive] to select and receive a specific program or customizing datum, etc. For example, when the backup file is open, select just one program with Segment Receive and only that received program is updated.

With Segment Send, you can update the robot's C&T data for only a specific program, etc.

2.4 Upgrading Robot System Software

Before upgrading the system software, make sure to create a backup using the PC software JR C-Points II so that the data is usable with the new system software. A USB backup of C&T data from system software version 3 is not compatible with system software version 5 or higher.

This robot is controlled by built-in robot system software. Use the Send Robot System Software function to upgrade the robot system software.
You may also be able to use the recovery function to restore the robot system software if you mistakenly turn OFF the robot during an update or the update failed causing the robot to malfunction.

The robot system software is included on the operation manual CD-ROM under the following file name:

■ JR3000_SysProgram_Ver.+++_***(JSY Ver3).jsy

> "+++" indicates the version number.
> "***" varies according to robot specifications.

2.4.1 Version Upgrade

Perform the following when you want to upgrade the robot system software.

1. Turn ON the robot and place the Operation Manual CD-ROM into the CD drive of the PC.
2. Start JR C-Points II and select [Send Robot System Software] from the [Robot] pull-down menu on the menu bar. The dialog box shown below is displayed.
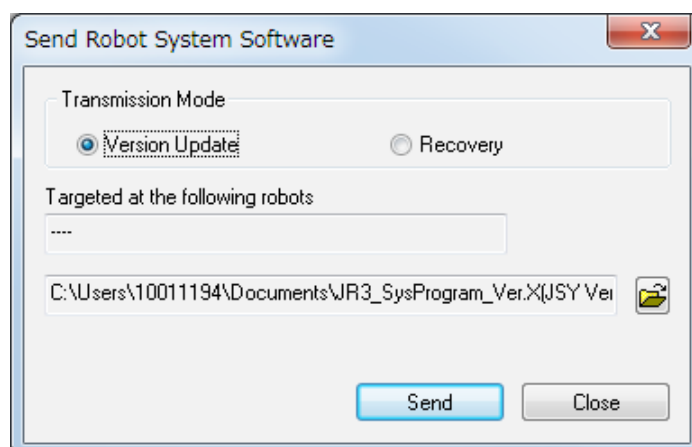
3. Select [Version Update] as the Transmission Mode.
4. Click the 📂 icon, specify the drive where the Operation Manual CD-ROM is placed, then select the robot system software file and click [Open]. The selected file name is displayed.

5.   Click [Send] and the robot system software starts sending.

⚠ **Caution**

🚫 | **When transferring the robot system software, never turn OFF the power to the robot or the PC.** If the power to robot is cut OFF during the transfer, there is a risk the robot will not be able to start up again.

6.   After the transmission, power cycle the robot.

2.4.2 Recovery

Use the robot system software recovery function in the following situations:

*   The power was switched OFF during a version upgrade
*   The version upgrade was not successful and the robot is not starting up properly

Follow the steps below to recover the system software:

1.   Turn ON the robot and place the Operation Manual CD-ROM into the CD drive of the PC.
2.   Start JR C-Points II and select [Send Robot System Software] from the [Robot] pull-down menu on the menu bar. The dialog box shown below is displayed.
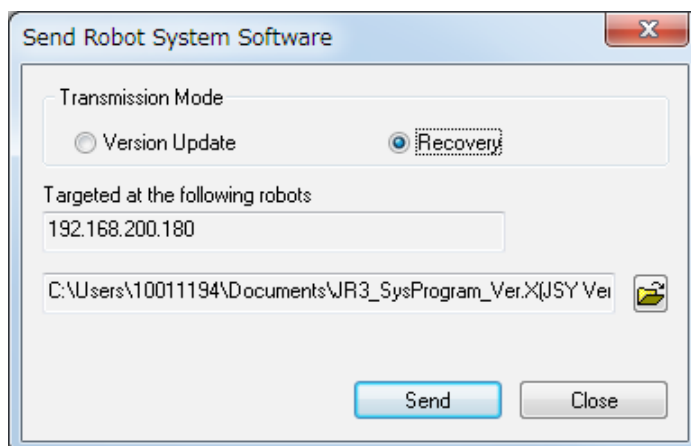
3.   Select [Recovery] as the Transmission Mode. (The robot IP address used for recovery is 192.168.200.180.)

4. Click the ⊟ icon, specify the drive where the Operation Manual CD-ROM is placed, then select the robot system software file and click [Open]. The selected file name is displayed. Click [Send] and the robot system software starts sending.

⚠ Caution

🚫 **When transferring the robot system software, never turn OFF the power to the robot or the PC.** If power to the robot is cut OFF during the transfer, there is a risk the robot will not be able to start up again.

NOTE: If you make a recovery using application specification robot system software such as for screw tightening specifications or dispensing specifications, etc., the robot reverts to standard specification system software (the robot has no movement modes for the application specification) after recovery is made. Upgrade the robot system software using the application specification software once again to resolve this.

Confirmation

❓ Recovery in Transfer Mode is a mode used to restore robot system software when a version update fails and corrupts the system software.
Take note that the robot system software will revert to standard
specifications when transfering sytem software in this mode.
Do you want to make the transfer?

[はい(Y)] [いいえ(N)]
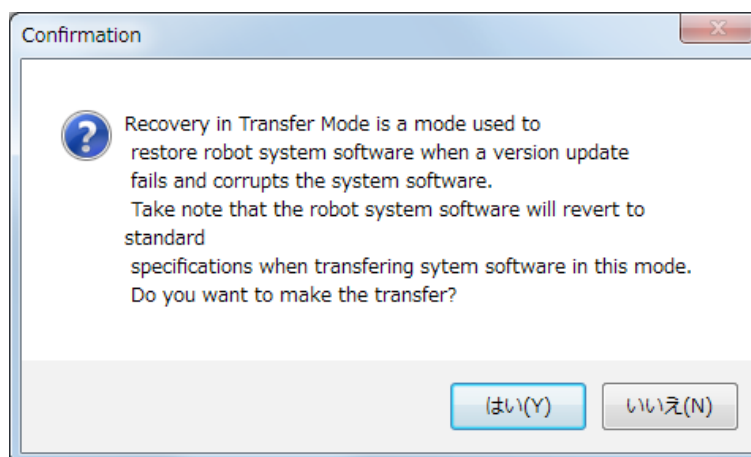
5. After the transmission, power cycle the robot.
6. If you are using an application specification robot such as screw tightening specifications or dispensing specifications, upgrade the robot version software with the application specification.
NOTE: Refer to "2.4.1 Version Upgrade" for details on how to upgrade the robot system software.

2.5 Backing Up and Restoring Robot Data

The robot data storage area is partitioned as shown by the
diagram on the right. "Robot data" mentioned in this section
refers to all data displayed in the diagram to the right (robot
system software included).
This allows you to transfer all data for printed circuit board
replacement etc.

NOTE: System software is also subject to backups and
       restoration operations.

Robot System Software
Individual Configuration Info.
C&T Data

Model Setting Files

Storage Area
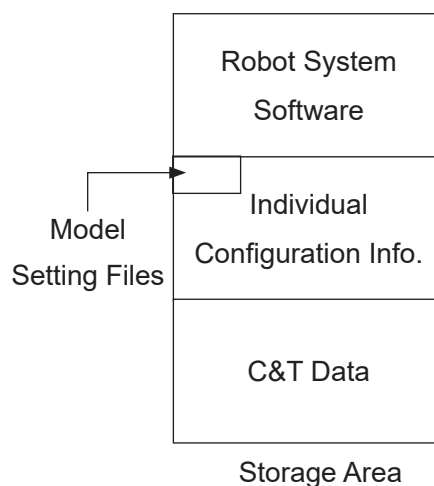
2.5.1 Backup Data

The robot system software, C&T data, individual configuration information and model setting files
held by the robot are read and saved as a file. If you do not specify an extension, the file is saved
as a "JRB" extension file.
Select [Backup Robot Data] from the [Robot] pull-down menu to display the dialog to the right.

Click the [icon] icon and specify the name of the
backup file and the location where you want to
save it. An existing file can also be specified.
Click [Backup] to start the backup operation.

After the backup is complete, restart the robot.
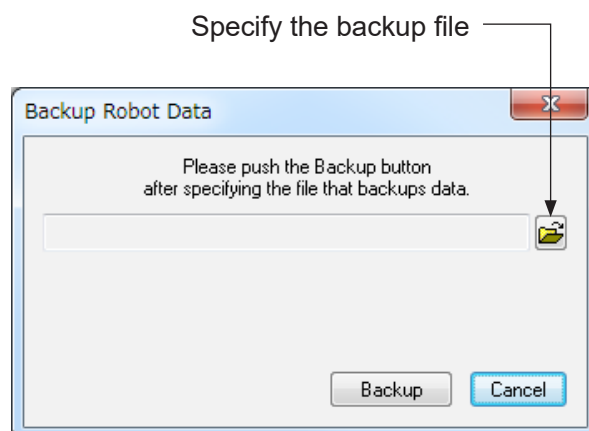
Specify the backup file

Backup Robot Data

Please push the Backup button
after specifying the file that backups data.

[Backup] [Cancel]

⚠ Caution

Individual configuration information varies for each individual unit even if they are
the same model. **Do not use backup data with a different robot. The robot
cannot function normally with backup data from a different robot.**

2.5.2 Restore Data

This restores robot data using the data saved in [Robot Data Backup].
Restoring robot data deletes all of the data in the robot (robot system software, C&T data, individual configuration information and model setting files) and overwrites it with the data in the backup file.

Click [Robot] on the menu bar and select [Restore Robot Data] from the pull-down menu. The dialog to the right is displayed.

Click the 📂 icon, specify the backup file and click [Restore].

After the restoration is complete, restart the robot.
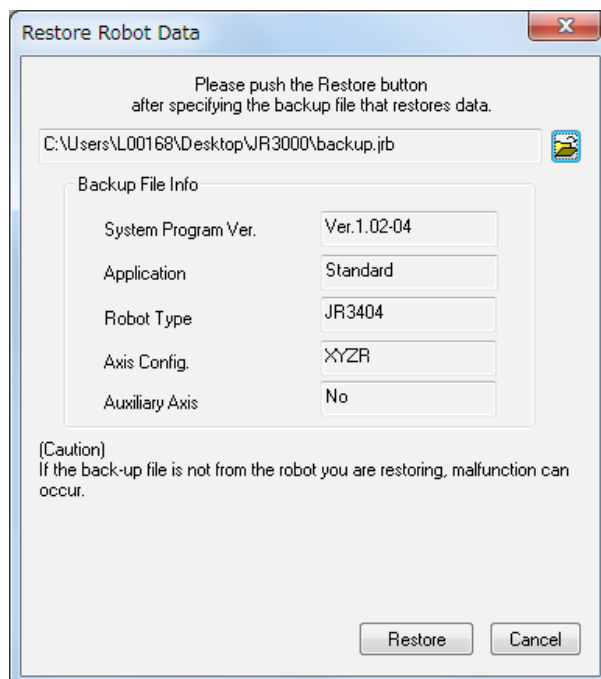
Restore Robot Data

Please push the Restore button after specifying the backup file that restores data.

C:\Users\L00168\Desktop\JR3000\backup.jrb

Backup File Info

System Program Ver.	Ver.1.02-04
Application	Standard
Robot Type	JR3404
Axis Config.	XYZR
Auxiliary Axis	No

(Caution)
If the back-up file is not from the robot you are restoring, malfunction can occur.

Restore   Cancel

⚠ Caution

Individual configuration information varies for each individual unit even if they are the same model. **Do not use backup data with a different robot. The robot cannot function normally with backup data from a different robot.**

3. PERIODIC INSPECTION

Below is a table of inspections for the robot. Add any inspection items for surrounding devices, fixtures, etc., based on your own judgment.

NOTE: Periodical inspections should be performed within the allocated elapsed number of months or hours of use, whichever comes first.

Inspection Item	Method	Power Status During Inspection	Daily (Before Operation/Run)	Every 3 Months / Every 750 Hours	Every 6 Months / Every 1500 Hours
External cables connected to the robot and peripheral devices	Visually check none of the cables are loose, damaged or disconnected.	OFF	✓		
Teaching pendant display and robot and PC communication	Check the TP screen is displayed properly. Make sure communication between the PC and robot is established.	ON	✓		
Emergency stop switch function	Push and test the emergency stop switch.	ON	✓		
I/O-S circuit function	Test the safety device connected to I/O-S. (If using a light curtain, test by obstructing the light etc.)	ON	✓		
Cooling fan	Visually check that the fan is rotating.	ON	✓		
Abnormal vibrations, sounds, and odors	Visual, auditory and olfactory check.	ON	✓		
Fixture mounting screw tightness	Check the tightening torque using a torque wrench.	OFF		✓	
Lubrication	Make sure the lubrication is dust-free and sufficient.	OFF			✓
Timing belt	Visually check for any damage and touch the timing belt to test the tightness.	OFF			✓

⚠ Caution

Perform daily and periodic inspections and check to make sure there are no abnormalities with the unit or the peripheral devices. Additionally, keep records of the inspections and store them for 3 years or more so that the details can be referred to during the next inspection.

4. PERIODIC INSPECTION SHEET

Copy this page and use it to write in the dates when inspections were performed. Store these records for at least three years.

NOTE: Routine inspections should be performed within the allocated months or hours of use, whichever comes first.

Inspection Item	Method	Power Status During Inspection	Daily (Before Operation/Run)	Every 3 Months / Every 750 Hours	Every 6 Months / Every 1500 Hours
External cables connected to the robot and peripheral devices	Visually check none of the cables are loose, damaged or disconnected.	OFF			
Teaching pendant display Robot and PC communication	Check the TP screen is displayed properly. Make sure communication between the PC and robot is established.	ON			
Emergency stop switch function	Push and check the emergency switch.	ON			
I/O-S circuit function	Test the safety device connected to I/O-S. (If using a light curtain, test by obstructing the light etc.)	ON			
Cooling fan	Visually check that the fan is rotating.	ON			
Abnormal vibrations, sounds, and odors	Visual, auditory and olfactory check.	ON			
Fixture mounting screw tightness	Check the tightening torque using a torque wrench.	OFF	/		
Lubrication	Make sure the lubrication is dust-free and sufficient.	OFF	/	/	
Timing belt	Visually check for any damage and touch the timing belt to test the tightness.	OFF	/	/	

5. REPLACING FUSES

⚠ Warning

! When replacing a fuse, turn the power switch OFF, **unplug the power cord from power outlet and the main unit, and make sure there is no electricity flowing to the robot.** Also, avoid contact with all of the power inlet pins within 5 seconds of removing the power cords. Failure to do so may cause electric shock or injury.

■ I/O Internal Power Source Fuse

As a protection when an abnormal current is output due to the wrong External I/O connection etc., the internal power supply fuse (capacity: 2.5 A) is attached.

Additionally, if you use and exceed 1.6 A, it can cause the I/O to not function due to an output capacity insufficiency of the internal power source.

If this happens, replace the fuse and make sure the total electric current of the devices connected to the internal power source are within 1.6 A.

When replacing fuses, use fuses with the part number below:

Part number: 000530509 (SOC®, ST6 N1 Series 2.5 A equivalent)

Contact the Janome (information provided on the back of this manual) or a Janome dealer for replacement fuses.

ø6.35

31.8

AC 125 V
ST6 2.5AN1   (Unit: mm)
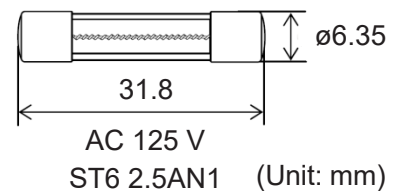
■ Outlet Fuse

There is an outlet (service power) with a connectivity of up to 3 A on the back of the main units of the JR3300 – JR3600 models. If a current higher than 3 A is connected, a fuse will blow and power can no longer be supplied from the outlets (there are no outlets on the JR3200).

If this happens, replace the fuse and make sure the device connected to the outlet is using a current within 3 A.

When replacing fuses, use fuses with the part number below:

Part number: 000143992 (SOC®, ET Series T3.15A equivalent)

Contact the Janome (information provided on the back of this manual) or a Janome dealer for replacement fuses.

20

ø5.2

AC 250 V
T3.15A   (Unit: mm)
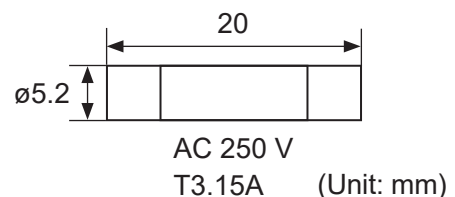
■   Replacement Procedure

1.   Turn OFF the robot's main switch, unplug the cord from the power outlet and remove it from the main unit.

2.   Replacing I/O Internal Power Source Fuses:
     Turn the fuse cover counterclockwise and remove the fuse holder from the robot.

     Replacing Outlet Fuses:
     Use a flathead screwdriver to turn the fuse cover counterclockwise and remove the fuse holder from the robot.

3.   Take out the fuse from the fuse holder and replace it with a new fuse.

4.   After replacing the fuse, return the fuse holder to its original position.

JR3200 Series (Example: JR3203N-AC/BC)

Fuse
(for I/O internal power sources)
(Optional)

JR3300 Series (Example: JR3303N-AC/BC)

Remove   Secure

Fuse (for outlet)

Outlet 200 V

Fuse
(for I/O internal power sources)
(Optional)

JR3300 Series (Example: JR3303N-AC/BC)

Outlet 200 V

Fuse
(for I/O internal power sources)
(Optional)

Remove   Secure

Fuse (for outlet)
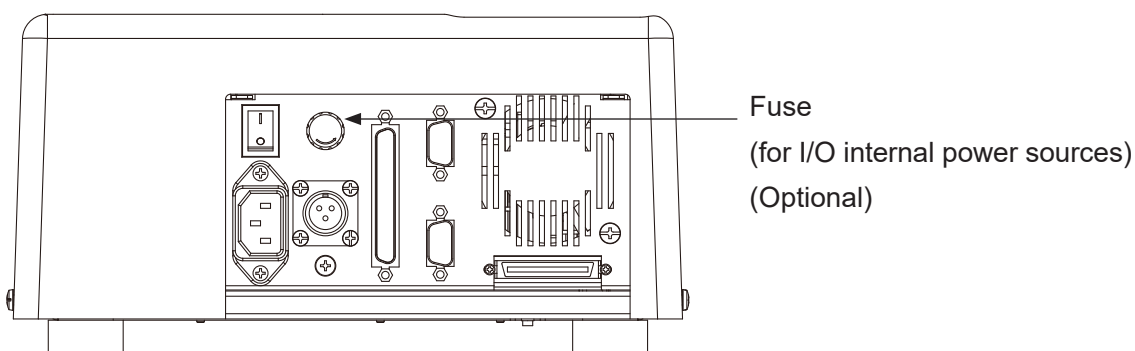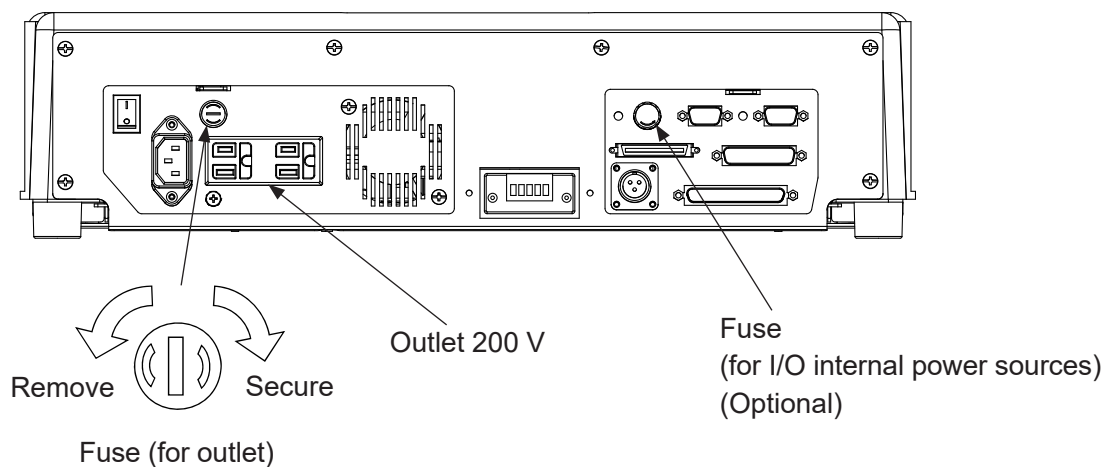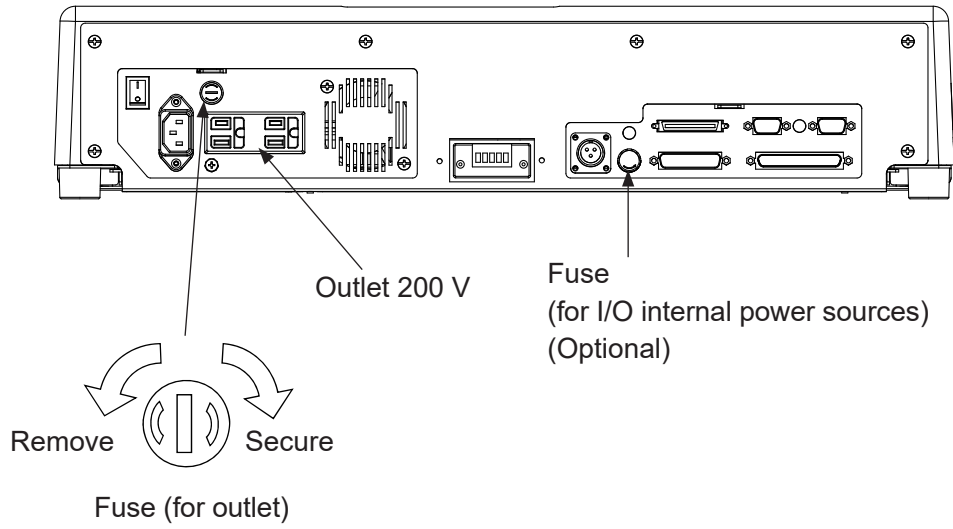
6. LUBRICATION

⚠ Caution

ⓘ	When removing covers and screws, turn the power switch OFF, **unplug the power cord from the power outlet and the main unit, and make sure there is no electricity flowing to the robot.** Also, avoid contact with the power inlet pins within 5 seconds of removing the power cord. Failure to do so may cause electric shock or injury.
ⓘ	For smooth operation and long-term use of the robot, **replace the grease and lubricate the robot once every six months or so**. If the robot is run for 24 hour periods, lubricate the machine more frequently because the running time between lubrication periods is longer.
ⓘ	If the Z-axis is continuously moved in a short pitch, only a certain part of the ball screw may wear out. To ensure grease is spread over the whole ball screw, **move the Z-axis in a full stroke motion (From Z = 0 to the maximum stroke) about once a week.**
ⓘ	Use grease recommended by Janome. Using any other grease may cause unit breakdown. Make sure to wipe off old grease before applying new grease.

LM Guide	Shell Alvania Grease S2 equivalent (Royal Dutch Shell)
	EPNOC Grease AP(N)-1 equivalent (ENEOS)
Guide Roller	Ivy Oil MOS-5J (Product: 963418100)
Ball Screw	Shell Alvania Grease S2 equivalent (Royal Dutch Shell)
	EPNOC Grease AP(N)-1 equivalent (ENEOS)
R Spline	Shell Alvania Grease S2 equivalent (Royal Dutch Shell)
	EPNOC Grease AP(N)-1 equivalent (ENEOS)
Angle Bearing	Shell Alvania Grease S2 equivalent (Royal Dutch Shell)
	EPNOC Grease AP(N)-1 equivalent (ENEOS)
Robot Cable	Nigstar SF No.2 (Nippon Grease)

NOTE: When removing the Y top cover, if an external device is secured with a cable clamp etc., make sure to remove this as well.

6.1 How to Remove the Covers

6.1.1 JR3200 Series

Remove the covers from the 6 areas (screws you need to remove for lubrication (indicated by the arrows)).

NOTE: These diagrams are of the JR3203N-AC (3 axis specifications). For the 4 axis specification cover, refer to "6.2.4 ZR Axis (4 Axis Specifications)".

Z Front Cover
Remove 6 screws in total from the left and right sides.

Y Front Cover
Remove 4 screws in total from the left and right sides.

Y Side Cover L
Remove 5 screws in total

NOTE: The side cover is omitted in the above diagram.

Y Side Cover R
Remove 5 screws in total

X Cover
Remove 4 screws in total

Y Top Cover
Remove 4 screws in total
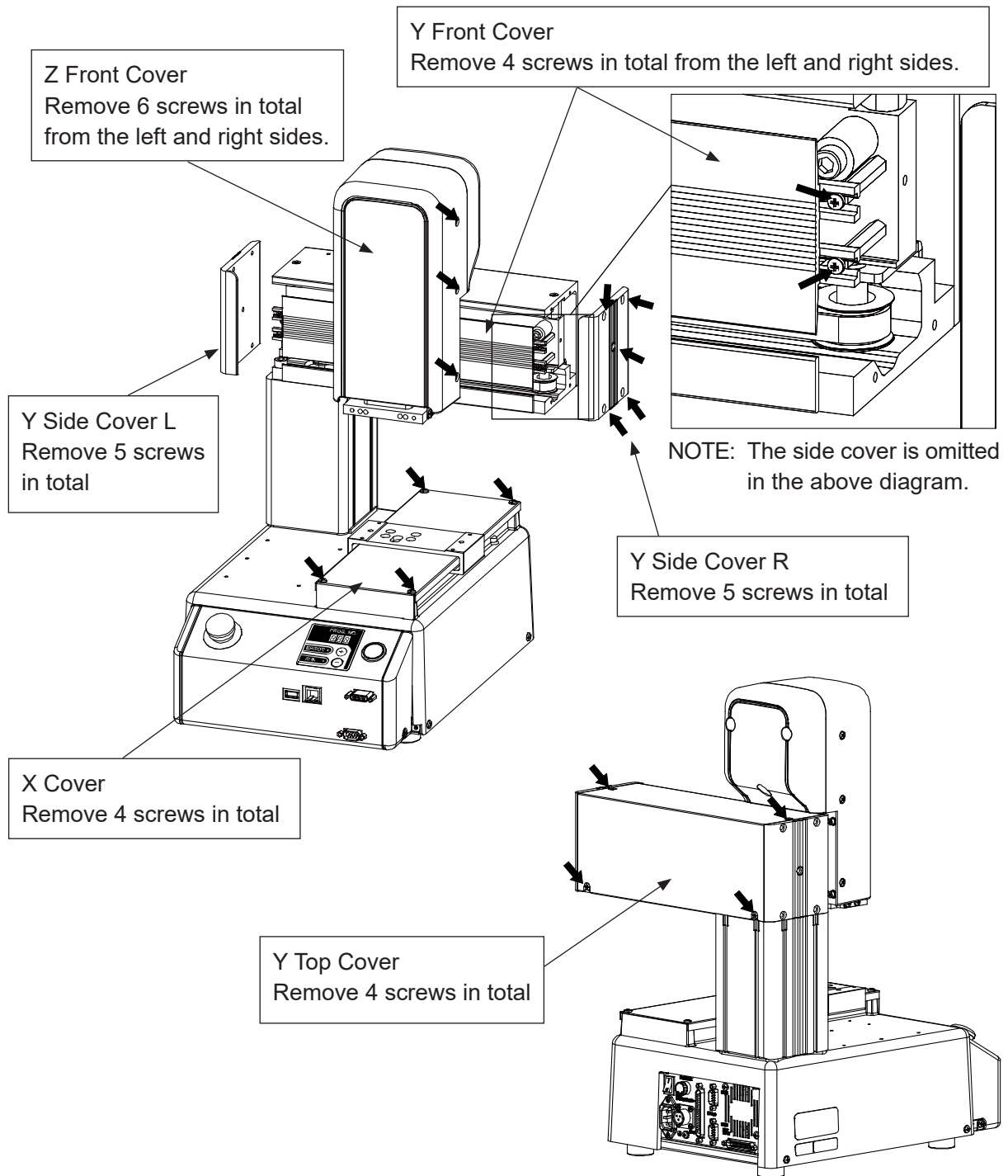
6.1.2 JR3300 Series

NOTE: These diagrams are of the JR3303N-AC (3 axis specifications). For the 4 axis specification cover, refer to "6.2.4 ZR Axis (4 Axis Specifications)". For the JR3000F cover, refer to "6.2.5 Z Axis (JR3000F)".

Z Front Cover
Remove 6 screws in total from the left and right sides

Y Front Cover
Remove 4 screws in total from the left and right sides.
NOTE: Refer to "6.1.1 JR3200 Series" for screw location.

Y Side Cover L
Remove 4 screws in total

Y Side Cover R
Remove 5 screws in total

X Cover
Remove 4 screws in total

Y Top Cover
Remove 5 screws in total.
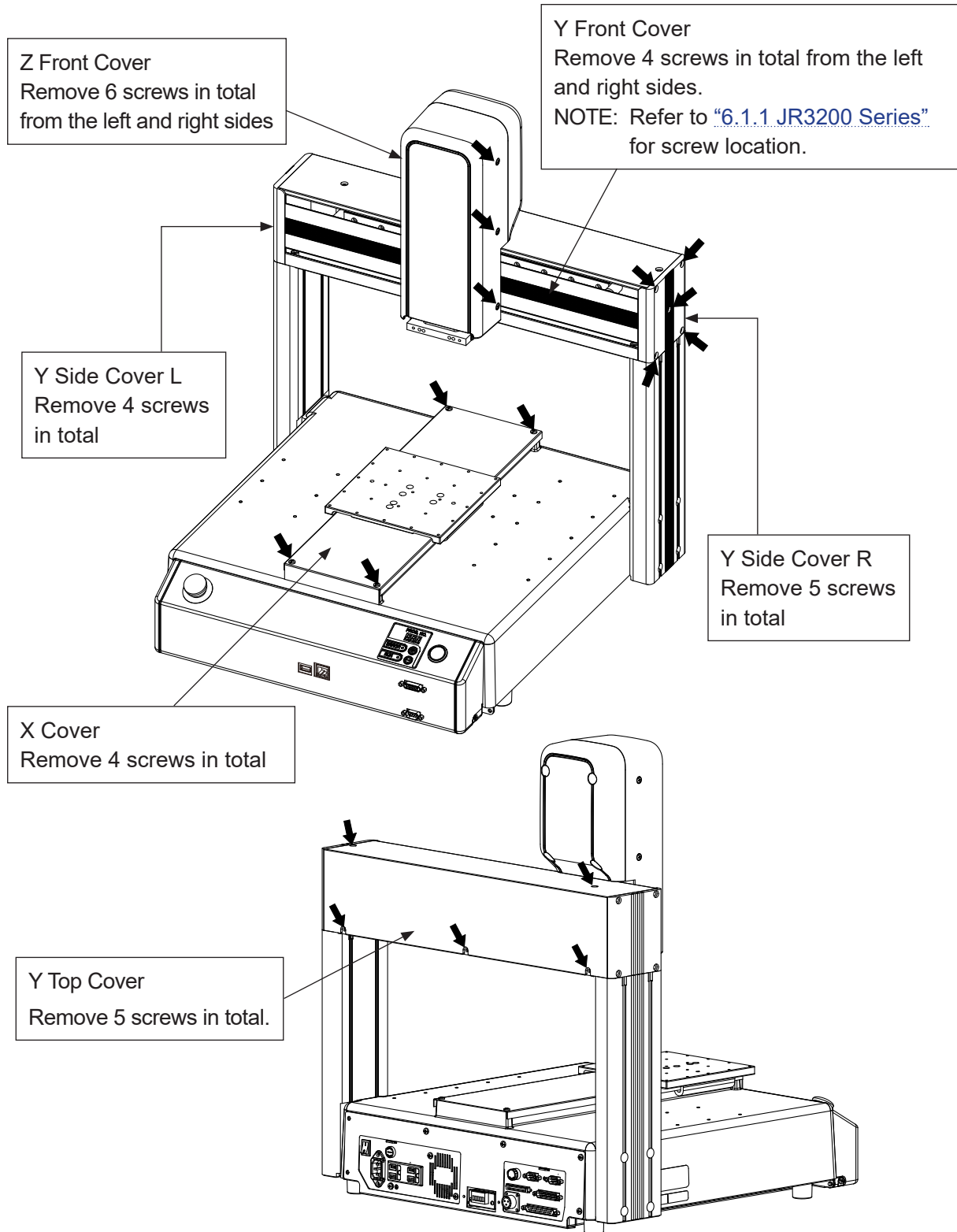
6.1.3 JR3400 – JR3600 Series

NOTE: These diagrams are of the JR3403N-AC (3 axis specifications). For the 4 axis specification cover, refer to "6.2.4 ZR Axis (4 Axis Specifications)".

Y Front Cover
Remove 4 screws in total from the left and right sides.
NOTE: Refer to "6.1.1 JR3200 Series" for screw placement.

Z Front Cover
Loosen the 6 screws in total from the left and right and 1 screw from the top

Y Side Cover L
Remove 5 screws in total

Y Side Cover R
Remove 5 screws in total

X Cover
Remove 4 screws in total

Y Top Cover
Remove 5 screws in total.
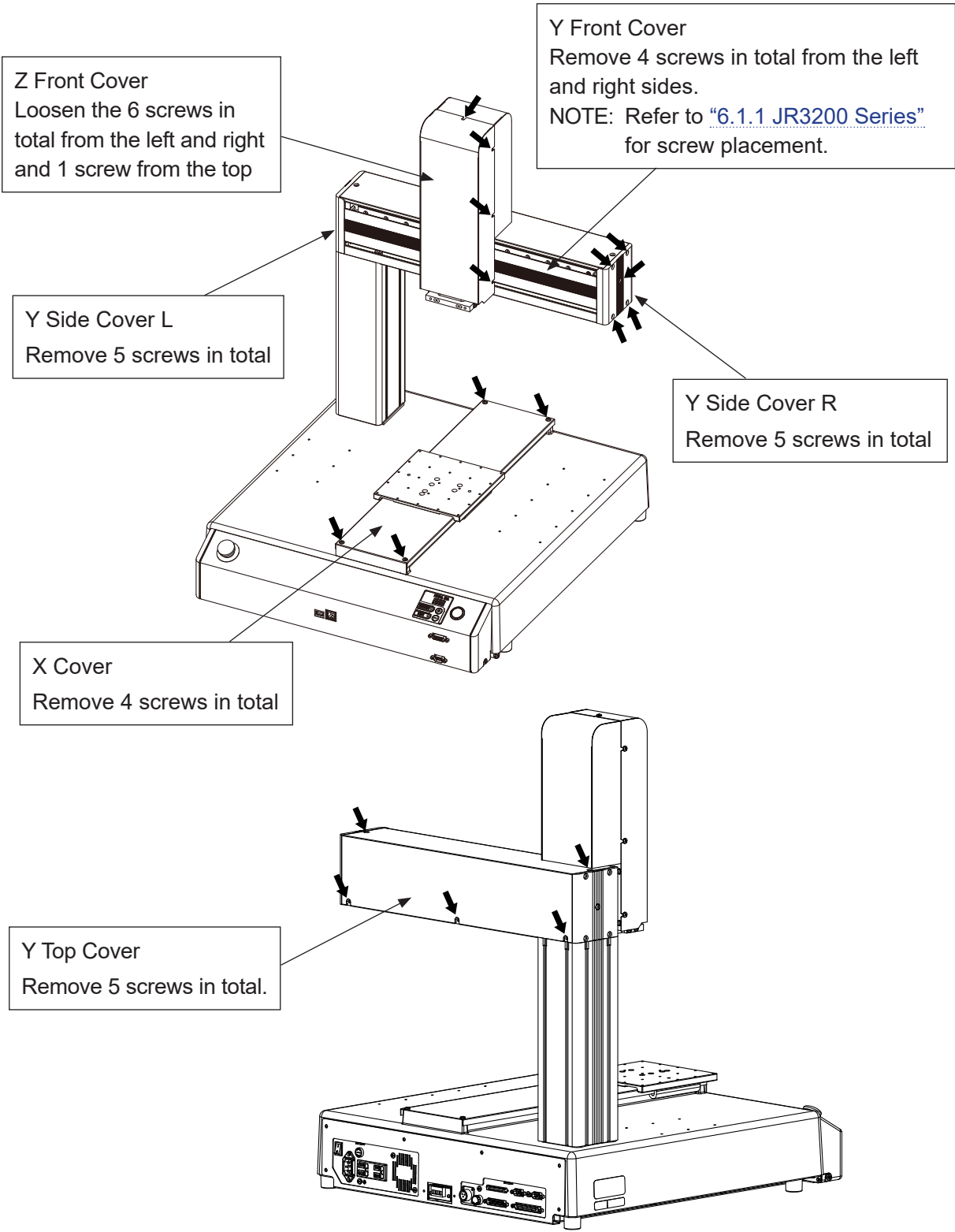
6.2 Applying Grease

For the X axis/Y axis LM guide, wipe away the old grease from the groove indicated by the arrows, and apply new grease. Apply grease to the outside*1 of the robot cable (refer to "6.2.2 Robot Cable").

6.2.1 X Axis, Y Axis

NOTE: These diagrams are of the JR3203N-AC. (The stroke varies depending on the model)

Y Axis LM Guide
Shell Alvania Grease S2 (Royal Dutch Shell) or EPNOC Grease AP(N)-1 equivalent (ENEOS) or their equivalent.

X Axis LM Guide
Shell Alvania Grease S2 equivalent (Royal Dutch Shell) or EPNOC Grease AP(N)-1 equivalent (ENEOS) or their equivalent.

6.2.2 Robot Cable

*1: Area of grease application

Robot Cable
Nigstar SF No.2 (Nippon Grease)
(Product no.: 170662006 grease (unit))

Example: JR3203N-AC
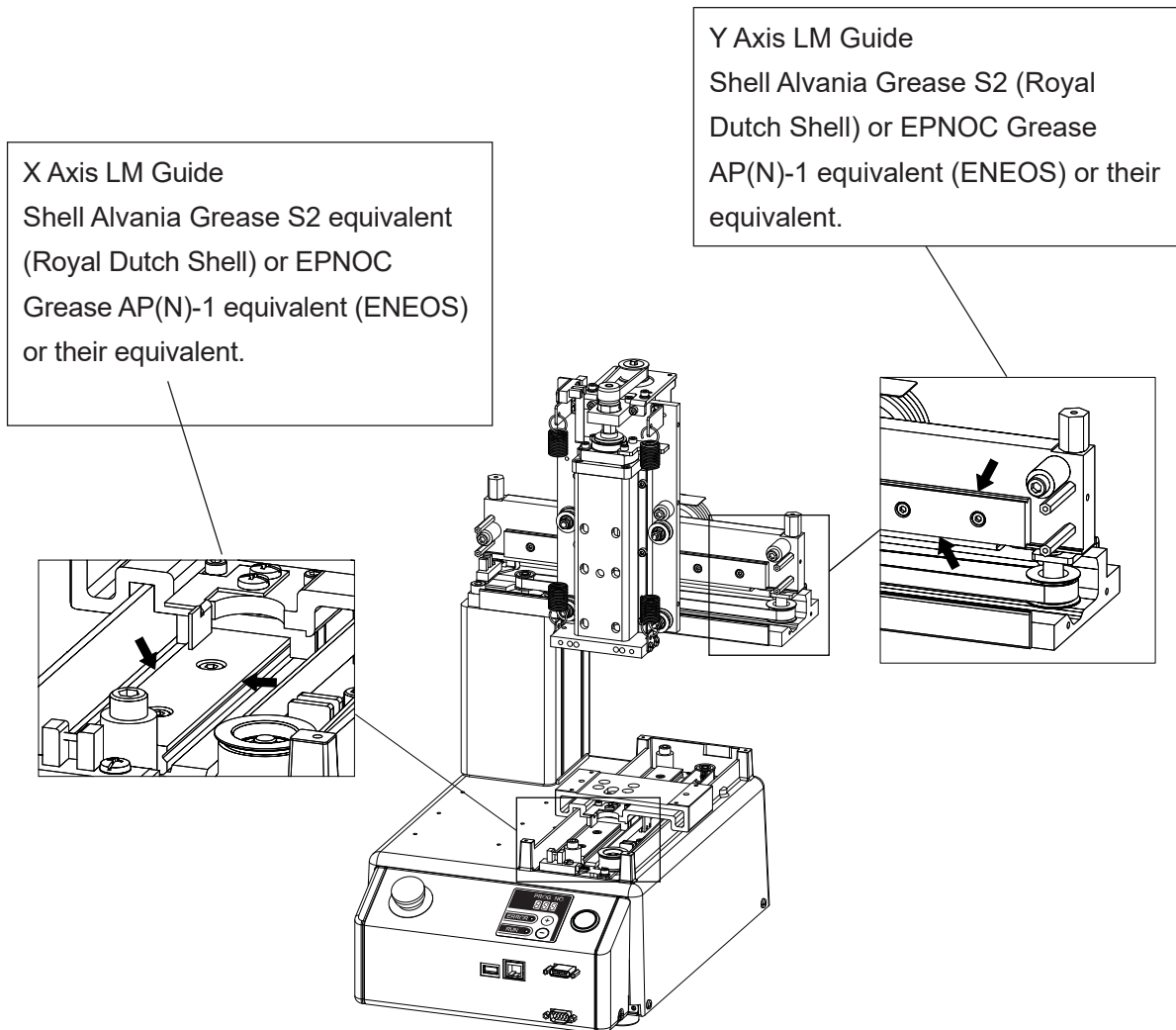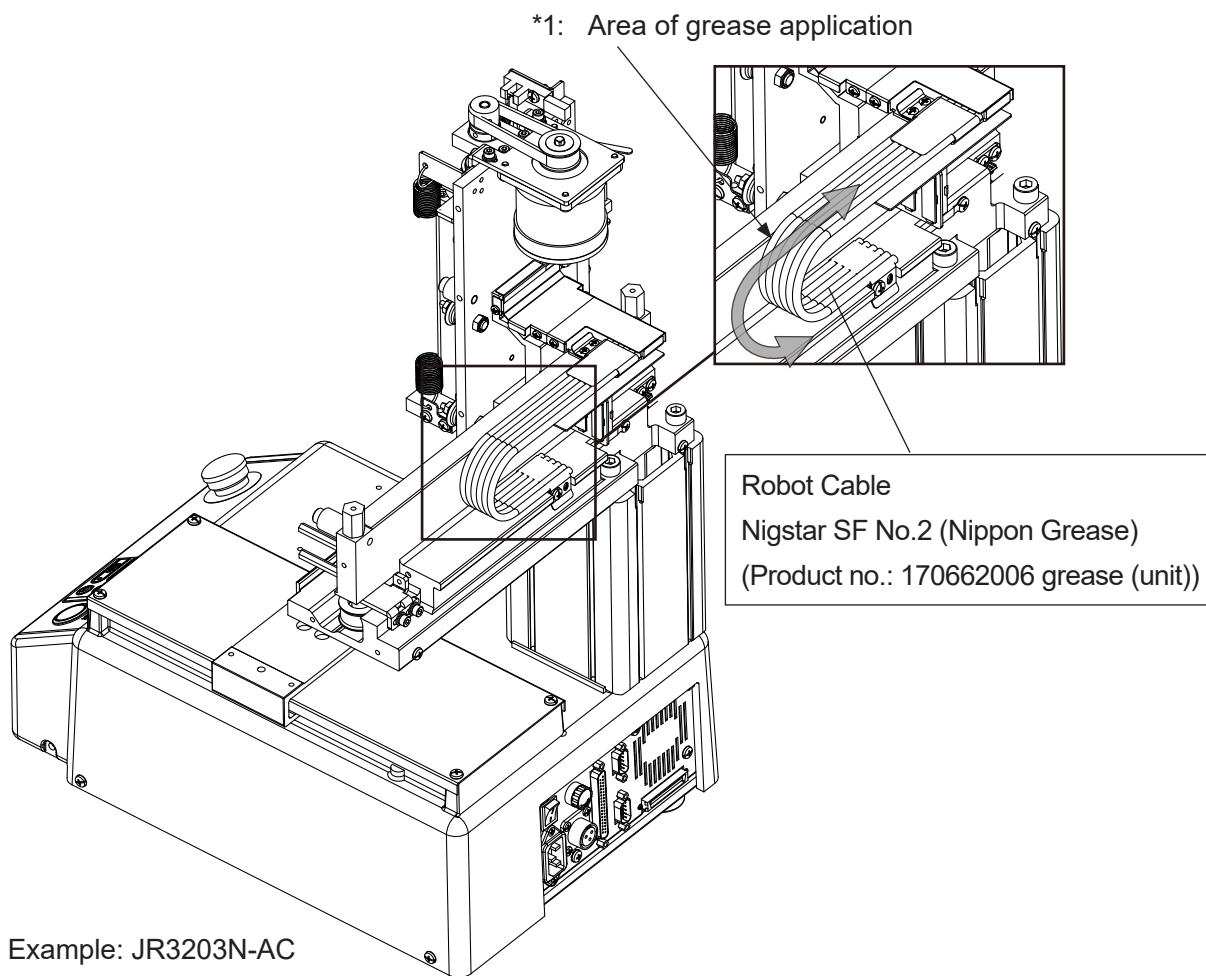
⚠ Caution

Apply grease to the robot cable every 6 months. If grease is not applied, the Y axis may not move smoothly, and the motor may step-out.

- Grease included: Product no. 170662006 grease (unit)
- Grease type: Nigstar SF No.2 (Nippon Grease)

6.2.3 Z Axis (3 Axis Specifications)

⚠ Caution

🛇 Make sure to use the recommended grease. Using any other grease may cause unit breakdown. Additionally, do not mix different types of grease. Also note that the grease may drip if too much is applied.

1. Remove the front of the Z cover.
2. Remove the Z spring and lower the Z movement plate.
3. Wipe off the old lubricant and apply new lubricant to the Z guide roller and Z guide axis.
4. Wipe off the old grease on the screw area of the ball screw shaft and then apply new grease.

■ Cover Removal
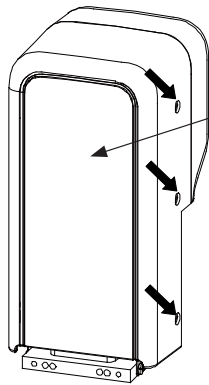
Z Front Cover
Remove 6 screws in total from the left and right sides

■ Grease and Lubrication

Z springs
2 places
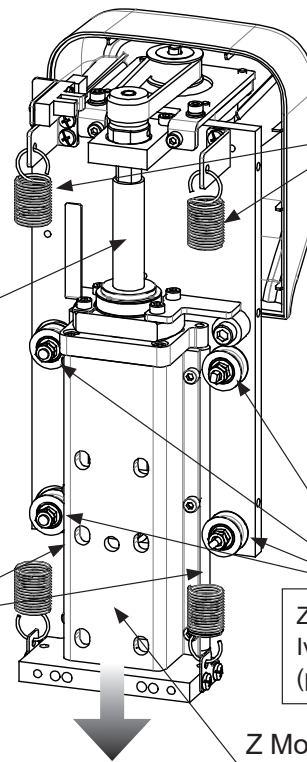
Ball Screw – screw area
Shell Alvania Grease S2 (Royal Dutch Shell) or EPNOC Grease AP(N)-1(ENEOS) or their equivalent.

Z Guide Axis – Left and Right Side – 2 places. Ivy Oil MOS-5J
(Product: 963418100)

Z Guide Roller – 4 places.
Ivy Oil MOS-5J
(product: 963418100)

Z Movement Plate

⚠ Caution

🖐 When removing the Z springs, do not touch the ends of the springs.
Coming in contact with the ends of the springs can cause injury.

6.2.4 ZR Axis (4 Axis Specifications)

⚠ Caution

> ❗ Make sure to use the recommended grease. Using any other grease may cause unit breakdown. Additionally, do not mix different types of grease. Also note that the grease may drip if too much is applied.

1. Remove the ZR front cover.
2. Wipe off the old grease on the R-spline and apply new grease to it.
3. Wipe off the old grease on the screw area of the ball screw and apply new grease to it.
4. Apply new grease to the angular bearing.

■ Cover Removal
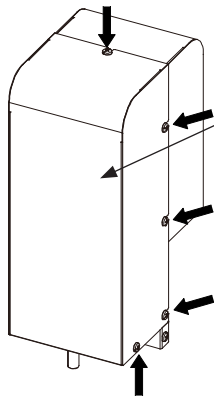
ZR Front Cover
Loosen a total of 6 screws (JR3200 Series)* from the left and right sides, and remove 1 on top, and 2 screws on the left and right of the cover bottom.
* JR3300 – JR3600 Series have 8 screws

■ Grease and Lubrication

R Spline
Shell Alvania Grease S2 (Royal Dutch Shell) or EPNOC Grease AP(N)-1 equivalent (ENEOS) or their equivalent.

Angular Bearing – 2 places
Shell Alvania Grease S2 (Royal Dutch Shell) or EPNOC Grease AP(N)-1 equivalent (ENEOS) or their equivalent.
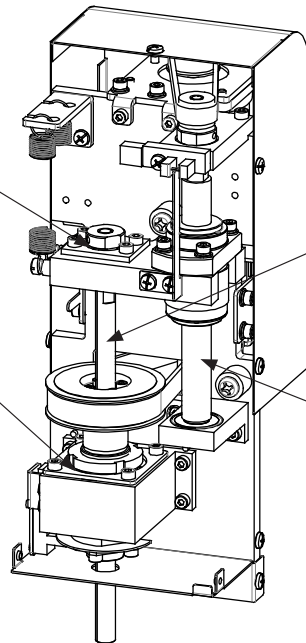
Ball Screw
Shell Alvania Grease S2 or (Royal Dutch Shell) or EPNOC Grease AP(N)-1 (ENEOS) or their equivalent.

⚠ Caution

> ❗ The ZR front cover is made of metal. For this reason, be careful to not cut your hands or fingers on the corners and edges when removing it.

6.2.5 Z Axis (JR3000F)

⚠ Caution

> ❗ Make sure to use the recommended grease. Using any other grease may cause unit breakdown. Additionally, do not mix different types of grease. Also note that the grease may drip if too much is applied.

1. From Teaching Mode, use JOG movements to lower the Z axis.
2. Switch the robot OFF.
3. Remove the front Z cover.

■ How to Remove the Cover

Front Z Cover
Remove 3 screw from the left and right sides and 1 from the top (7 total)
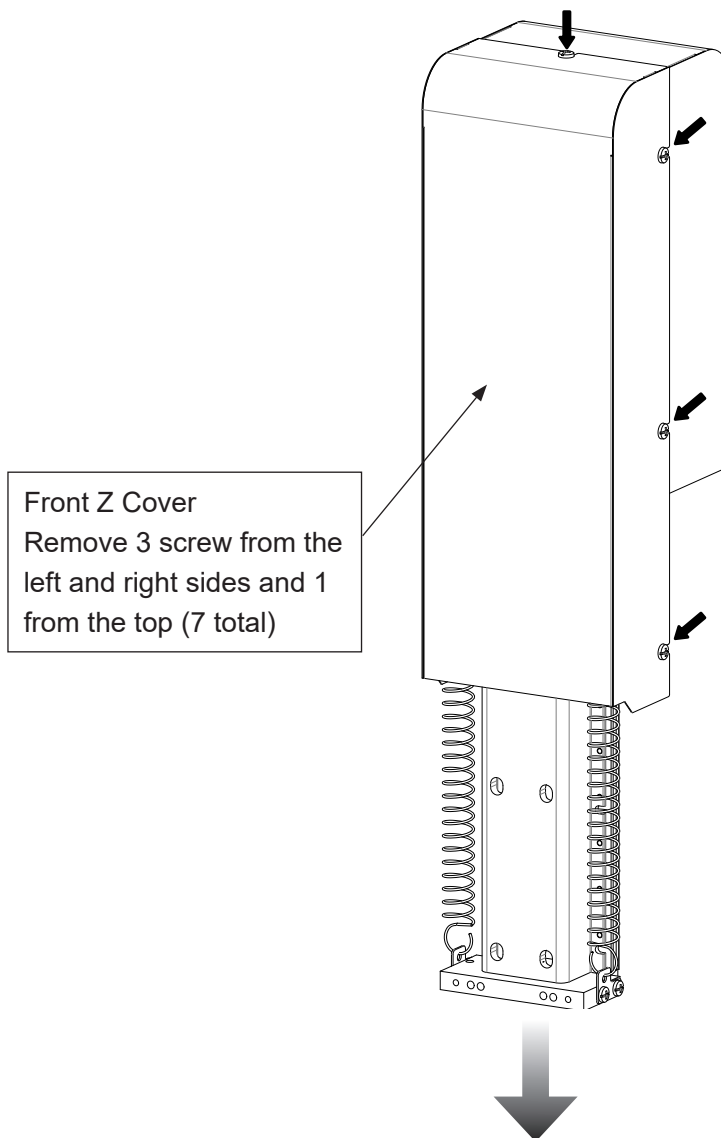
4. Wipe off the old grease from the ball screw. Apply new grease.

Screw area of the Ball Screw
Shell Alvania Grease S2 equivalent (Royal Dutch
Shell)
EPNOC Grease AP(N)-1 equivalent
(ENEOS)
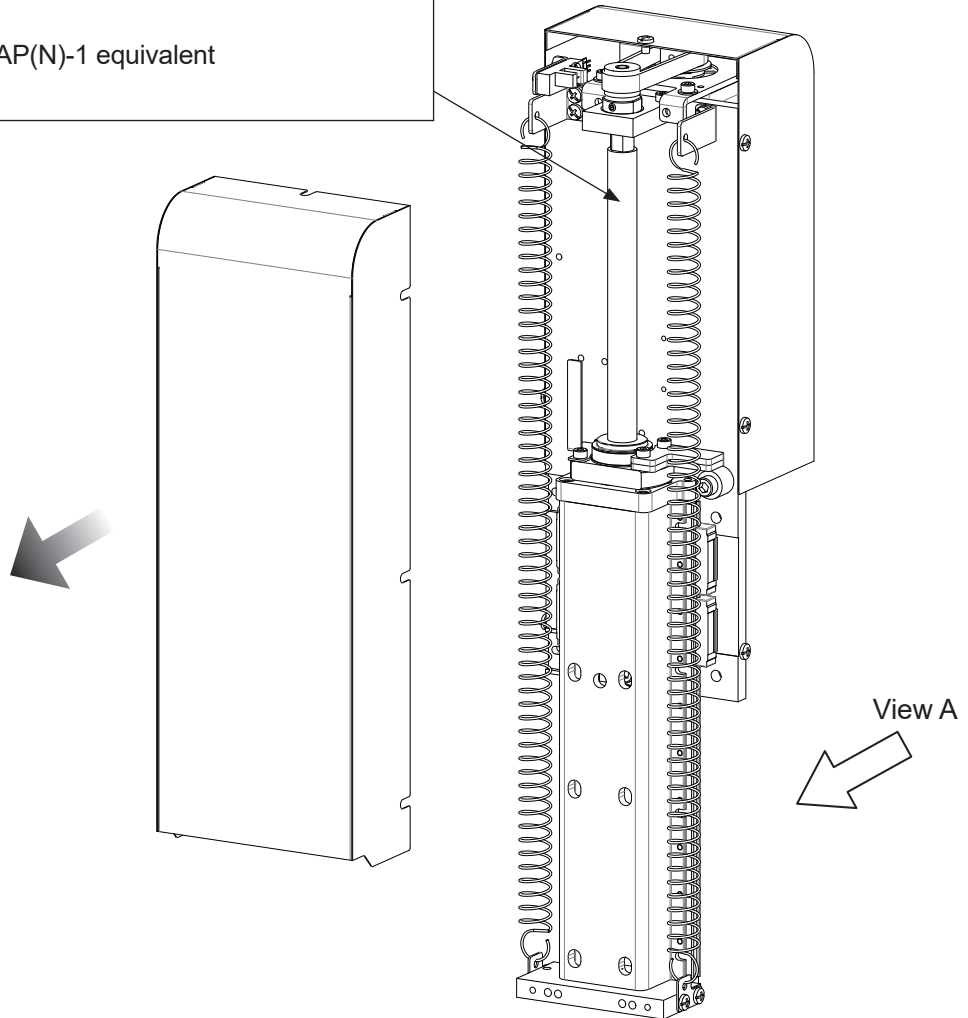
View A

⚠ Caution

The front Z cover has sharp metal edges.
Take care not to cut yourself on the edges when removing the cover.

Apply grease as described below to the back of the Z axis (view A).

Wipe off the old grease from the grooves on both sides of the LM guide rails (as indicated by the white arrows). Apply new grease to the grooves.

Z Axis LM Guide
Shell Alvania Grease S2 equivalent (Royal Dutch Shell)
EPNOC Grease AP(N)-1 equivalent
(ENEOS)
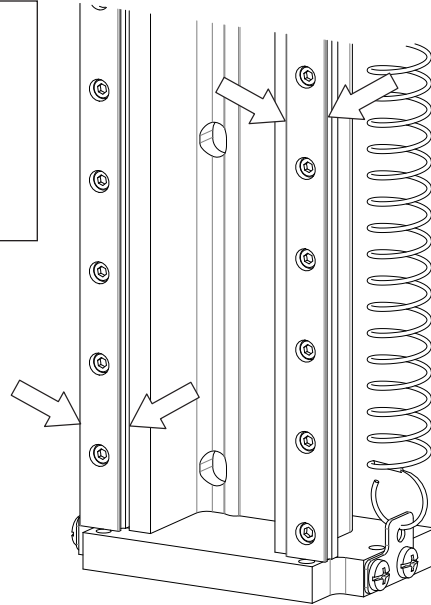
View A

7. TROUBLESHOOTING

7.1 Teaching Pendant Message at Power ON

⚠ Caution

🚫 Do not plug or remove the teaching pendant while the power is ON. Doing so can damage the device and/or cause a malfunction. Additionally, only connect teaching pendants with/without an emergency switch and/or enable switch to the compatible robot. Connecting an incompatible teaching pendant can cause robot breakdown.

■ If the Teaching Pendant is Stuck on the Welcome Screen
If the teaching pendant is stuck on the "Welcome" message, or does not respond to the operator, etc., power cycle the robot. If this continues, turn the power OFF and confirm whether or not the main unit and teaching pendant are connected correctly. If all connections are normal and this problem persists, contact the office listed on the back of this manual or a Janome dealer.

■ If the Teaching Pendant displayed the "Wrong Teaching Pendant Type" Message
If the screen to the right is displayed when the power is turned ON, make sure the connected teaching pendant and its specifications (whether or not it has an emergency switch and/ or enable switch) are compatible with your robot. If you are using the appropriate teaching pendant and this screen is still displayed, the teaching pendant is likely to be faulty. Contact the office listed on the back of this manual or a Janome dealer.

```
        Wrong Teaching Pendant Type
      Turn off and Connect the Right
             Pendant as follows

           Emergency Switch  N
            Enable Switch  N




```
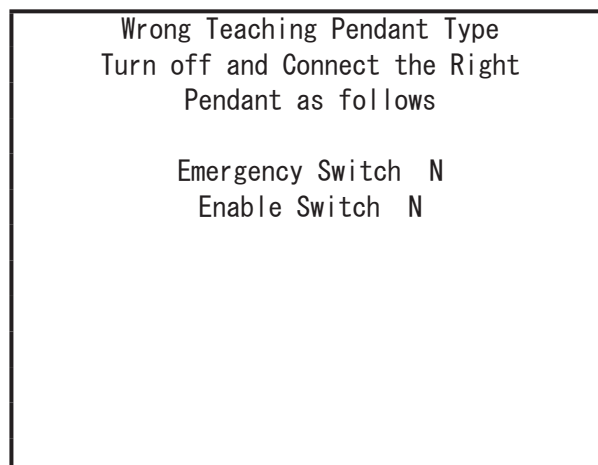
These are example teaching pendant
specifications

7.2 Error Display (Self-Diagnostic)

If an error occurs during a run or during teaching, the robot performs a self-diagnostic and alternately displays "Er" and the error number in the program number display on the front of the robot. If the error occurs during a run, the run is stopped.

For further details regarding error content and how to handle them, refer to "10. ERROR MESSAGE LIST."

If a teaching pendant is connected, the error number and error content is displayed on the teaching pendant as well. If the teaching pendant is not connected, turn the robot OFF and attach the teaching pendant. When you turn the power back ON, the error number and error message is displayed on the teaching pendant LCD.

```
        Error has occurred
          Error No.092
        X Sensor/Motor Error


Turn off the power switch
if error occurs repeatedly contact your
dealer with error number.
```

```
        Error has occurred
          Error No.096
       Y Driver 0-Phase Error


Turn off the power switch
if error occurs repeatedly contact your
dealer with error number.
```

7.2.1 View Error History

The error history can retain up to the most recent 1000 errors. After reaching 1000 errors, older errors are deleted to make room for newer errors.

Timestamps are recorded to each of the errors. The time for the timestamps is based on the clock function of the robot.

TP   Teaching Mode → ⎢ UTILITY ⎢ → [Error History]

        Run Mode → ⎢ MENU ⎢ → [Error History]

        Administration Mode → [Error History].

With error history, you can check the error date and time, and the error details.

```
         Error History                        Error Description
2015 1/15 12:20 45      Error No.001  2015 1/15 12:20 45         Error No.001
2015 1/15 15:20 32      Error No.082
2015 1/16 09:20 20      Error No.082
                                                  Error No.001
                                      Enter the number of a registered program
```

Error history can be deleted from Administration Mode → [Administration Settings Mode] → [Clear Error History].

PC   [Robot] → [Error Log]

        If the PC is not connected, turn OFF the robot's power (if the PC is running, also turn OFF the PC's power) and after connecting the PC, startup both the robot and the PC and load the error information.

7.2.2 Save Error History to USB Memory

You can use this to save error history to USB memory.

When you execute this function, a screen for entering the save file name is displayed. On this screen, the save file is given a default save file name. You can also change this save file name to a name of your choice. The default name is set with the date and time settings set in Administration Settings Mode. The default save file name status is as follows:
"ErrorLog_YYYYMMDD"   (Y: year, M: month, D: day, h: hour, m: minute)
The following folder configuration is created, in which the error log is recorded:

JANOME

JR

ERRLOG   Error log is saved in this folder
                (extension CSV)

XXX.CSV
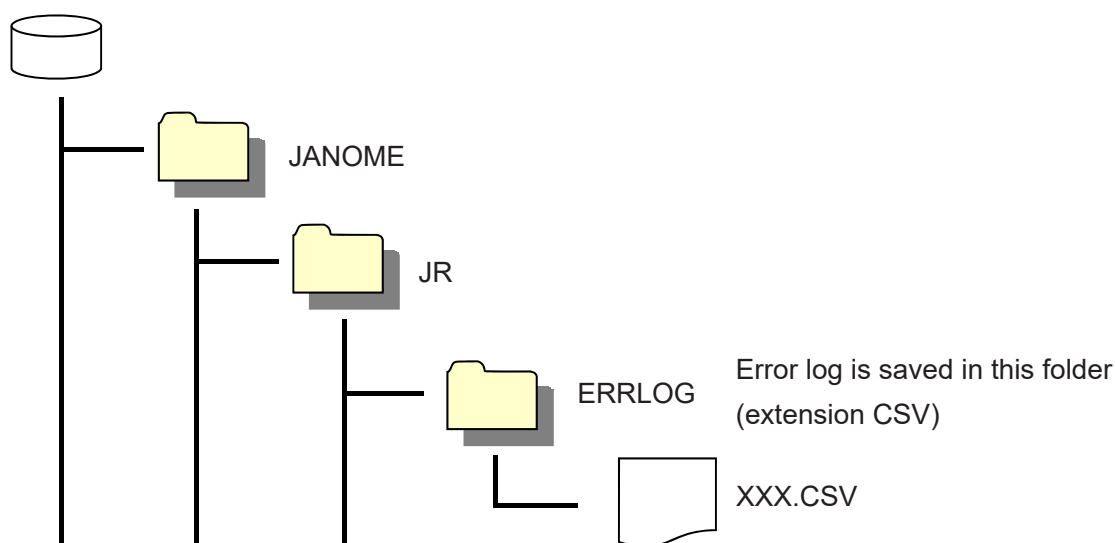
The saved file can be opened in Microsoft Excel® or a text editor, etc.

TP ▶ | UTILITY | [MEMORY Port]
                    [Save Error Log to USB Memory]

7.2.3 Clear Error History

This deletes only the error history, and does so by setting the history error nodes to zero.

Administration Mode

TP ▶ | MODE | [Administration]
                    [Administration Settings Mode] (In Administration Mode)
                        [Clear Error History]

PC ▶ [Robot] → [Administration] → [Administration Settings] → [General Setting]

7.3 Fault Diagnostic

With this robot, when you are in Administration Mode, the Administration Mode menu is equipped with a Diagnostic Mode. By selecting Diagnostic Mode, the robot performs hardware fault diagnostics including those for the keys, LCD, Switches, external I/O, motor, and printed circuit boards.
In the following instances, first of all check the items in the table below and then execute Diagnostic Mode:

- The robot is not moving
- The robot is not operating even when the sysIn1 signal (I/O-SYS) is ON

	Cause	Treatment
1	The unit's power cord is not firmly connected.	Firmly connect the power cord.
2	The unit's power switch is OFF.	Turn the power switch ON.
3	The robot's mode is not appropriate for the intended purpose of use.	• You want to execute a run by turning the sysIn1 signal ON → External Run Mode • You want to execute a run by pressing the start/stop switch → Switch Run Mode • You want to move the robot with a JOG operation → Teaching Mode
4	Tried to do a run, but there was nothing connected to the teaching pendant connector.	If not using the teaching pendant, connect the included short connector. NOTE: Applicable when using a teaching pendant equipped with an emergency stop button.
5	The emergency stop switch is pressed in.	Turn the emergency stop switch clockwise to release.
6	Teaching has not been performed correctly.	Follow the procedures and redo the teaching.
7	The program number is not set correctly.	Set a program number of a registered program.
8	The self-diagnostic message displays an error	Fix by following the message instructions.

If the robot still does not move after confirming the above items and executing the Diagnostic Mode, contact Janome (details on the back of this manual) or a Janome dealer.

If you think something is faulty with the unit, perform a diagnostic for every section.

⚠ Caution

Do not perform these checks unless you are a maintenance operator*. Performing these checks can cause injury or unit breakdown.

* Maintenance operators are individuals who have received maintenance training from Janome or from a Janome dealer.

[Diagnostic] contains the following items:

Menu Name	Details
Teaching Pendant Keys	Checks the operation for the each of the teaching pendant keys.
Teaching Pendant	Checks the switches, buzzer, LEDs, and LCD on the teaching pendant.
Switches	Checks the switches on the main unit.
Buzzer and LEDs	Checks the operation panel (SB board) LED, the 7 seg LEDs and the line
State of Sensor	Checks the initialization sensors for the XYZR axes.
X Axis Motor	Confirms:
Y Axis Motor	• Motor drive I/O status
Z Axis Motor	• Pulse number and pulse rate specification for motor movement
R Axis Motor	• Encoder pulse count
Position of Sensor	Returns to home and outputs the phase contrast of the initialization sensor and Z phase.
External I/O	Monitors the input and output of the I/O-SYS and I/O-1.
Emergency Stop Related	Checks the emergency stop button, I/O-S and the motor power status.
COM1 Communication	
COM2 Communication	Checks the communication status with the host via given baud rates
COM3 Communication	
MEMORY Port	Conducts a test of USB add-remove memory status and memory access.
Ethernet	Generates PING for a given IP address.
Fieldbus	Monitors the Anybus situation awareness display of the lead input/output 1 word bit set according to the connected module display.

Press the ⎢ MODE ⎥ key and select [Administration] from the Mode selection menu to start up Administration Mode. Select [Diagnostic Mode] from the Administration Mode menu to enter the Diagnostic Mode. Select the item that you wish to check and make sure that it is functioning properly.

For functions regarding I/O-MT, refer to the operation manual *Auxiliary Axis Functions*.

⚠ Caution

In Diagnostic Mode, the move area limit is disabled. Therefore, if you are running diagnostics on something related to movement, such as "Motors", etc., first remove the tools, etc. Failure to do so may damage the tools. Also, make sure not to move the robot axis beyond its maximum operating range.

⚠ **Caution**

After performing diagnostics, make sure to turn the power OFF once. The robot may not be able to perform a run or job accurately if you run the robot as is after diagnostics.

7.3.1 Teaching Pendant Keys

You can enter and check all the teaching pendant keys on this screen.

Press a certain key. The name of that key is displayed on the screen.

The screen is not renewed until the next key is pressed.

You can check the double functions of the SHIFT , CTRL keys by pressing these in conjunction with another key.

However, a combination of SHIFT and CTRL is not recognized.

These keys are not recognized even if pressed individually.

```
        Teaching Pendant Keys

            Hit any key.
        Exit with [CTRL]+[ESC]
```

Pressing CTRL and ESC finishes the teaching pendant key diagnostic.
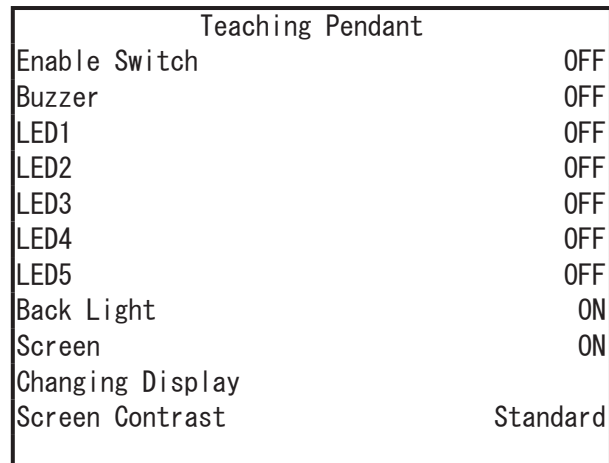
Press a key to display the pressed key on the teaching pendant LCD.

NOTE: Press the CTRL and ESC keys to return to the diagnostics menu.
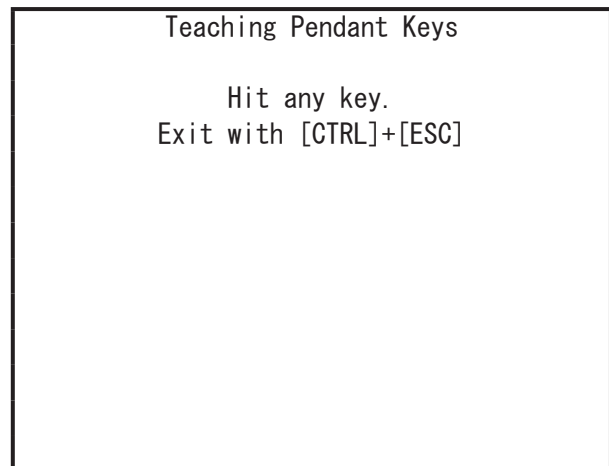
7.3.2 Teaching Pendant

Check the enable switch, buzzer, the 5 LEDs, and LCD functions. Select an item that you wish to check. Press the ESC key to return to the Diagnostic Mode menu.

```
             Teaching Pendant
Enable Switch                       OFF
Buzzer                              OFF
LED1                                OFF
LED2                                OFF
LED3                                OFF
LED4                                OFF
LED5                                OFF
Back Light                           ON
Screen                               ON
Changing Display
Screen Contrast                Standard
```

Menu Name	Details
Buzzer	• Switch this ON to sound the buzzer built into the teaching pendant. • This is OFF by default.
LED1 – 5	• Switch this ON to light the LEDs below the function keys on the teaching pendant. • The LEDs are arranged 1 – 5 from the left of the teaching pendant. • These are OFF by default
Back Light	• This diagnoses the backlight of the LCD • This is ON by default. • Switch this to OFF to turn the backlight OFF.
Screen	• The screen does not display on the teaching pendant II. • This changes the LCD display (there is a front screen and back screen for teaching pendants, this displays the back screen). • This is ON by default • Switch this to OFF to change to the back screen. The LCD goes blank. • When the screen is blank, press any key other than SHIFT or CTRL to return to the front screen and return to the diagnostic screen. • Use the ESC key to return to the diagnostic mode menu.
Changing Display	• Move the cursor to this item and push the ENTR key to change the screen in the following order: 1. Checkered pattern 2. Inverted checkered pattern 3. Clear 4. Grid pattern Press the ENTR key to change to the next screen. Press any key other than ENTR to finish this diagnostic.
Screen Contrast	• Move the cursor to this item and press the ENTR key to change the screen in the following order: 1. Standard 2. High 3. Low Press the ENTR key at low contrast to return to standard contrast.

The emergency stop switch diagnostic can be done in the "Emergency Stop Related" diagnostic.

7.3.3 Switches

This checks the switches on the robot and the switchbox. Press the ESC key to return to the Diagnostic Mode menu.

```
                    Switches
Select Switch                      MODE_2
Initialize Switch                     OFF
Start/Stop Switch                     OFF
Emergency Stop Switch                 OFF
Increment Number                      OFF
Decrement Number                      OFF
Option Switch 1                       OFF
Option Switch 2                       OFF
Option Switch 3                       OFF
Motor Power Switch ON                 OFF


```

Menu Name	Details
Select Switch	If the robot is not equipped with a select switch, MODE_2 is displayed. If the robot is equipped with a select switch, turn it to the left to display MODE_1, to the middle for MODE_2, and to the right for MODE_3.
Initialize Switch	Press this switch to display ON, release to display OFF
Start/Stop Switch	Press this switch to display ON, release to display OFF
Emergency Stop Switch	Press this switch to display ON, release to display OFF
Increment Number	Press this switch to display ON, release to display OFF
Decrement Number	Press this switch to display ON, release to display OFF
Option Switch 1	Press this switch* to display ON, release to display OFF
Option Switch 2	Press this switch to display ON, release to display OFF
Option Switch 3	Press this switch to display ON, release to display OFF
Motor Power Switch ON	Press this switch to display ON, release to display OFF

* Option Switch 1 performs a diagnostic on the purge switch for dispensing robots and the replace bit switch for dispensing robots.

7.3.4 Buzzer and LEDs

This checks the LEDs and buzzer on the main unit.

```
                Buzzer and LEDs
Number Display                          OFF
Green LED                               OFF
Red LED                                 OFF
Option 1 LED                            OFF
Option 2 LED                            OFF
Option 3 LED                            OFF
Power ON LED                            OFF
Buzzer (Control Box)                    OFF
```

Menu Name	Details
Number Display	**Increment Key** OFF (the LED on the main unit is OFF) → 000 → 111 → 222 → 333 → 444 → 555 → 666 → 777 → 888 → 999 → OFF (the LED on the main unit is OFF) **Decrement Key** OFF (the LED on the main unit is OFF) → 999 → 888 → 777 → 666 → 555 → 444 → 333 → 222 → 111 → 000
Green LED	• Move the cursor to this item and press ENTR to turn this ON. Press ENTR again to turn it OFF. • The operation panel's green LED goes ON/OFF in synchronization with the ON/OFF display. • This is OFF by default.
Red LED	• Move the cursor to this item and press ENTR to turn this ON. Press ENTR again to turn it OFF. • When this is displayed as ON, the operation panel's red LED is lit. • This is OFF by default.
Option 1 LED	• Move the cursor to this item and press ENTR to turn this ON. Press ENTR again to turn it OFF. • When this is displayed as ON, the operation panel's red LED is lit. • This is OFF by default.
Option 2 LED	• Move the cursor to this item and press ENTR to turn this ON. Press ENTR again to turn it OFF. • When this is displayed as ON, the operation panel's red LED is lit. • This is OFF by default.

Menu Name	Details
Option 3 LED	• Move the cursor to this item and press ENTR to turn this ON. Press ENTR again to turn it OFF. • When this is displayed as ON, the operation panel's red LED is lit. • This is OFF by default.
Power ON LED	• Move the cursor to this item and press ENTR to turn this ON. Press ENTR again to turn it OFF. • When this is displayed as ON, the operation panel's red LED is lit. • This is OFF by default.
Buzzer	• Move the cursor to this item and press ENTR to turn this ON. Press ENTR again to turn it OFF. • The buzzer sounds when this is displayed as ON. • This is OFF by default.

7.3.5 State of Sensor (Initialization Sensors)

This checks the initialization sensor for each of the XYZR axes.

```
              State of Sensor
X Axis Sensor                        OFF
Y Axis Sensor                         ON
Z Axis Sensor                        OFF
R Axis Sensor                        OFF
```

Menu Name	Details
X Axis Sensor	Manually move each axis; when the sensor cover blocks the initialization sensor (photomicro sensor) this is displayed as ON. When it is not blocked, this is displayed as OFF.
Y Axis Sensor	
Z Axis Sensor	
R Axis Sensor	

■ JR3000F Series

After selecting the Start of Sensor diagnostic menu, a screen appears warning you that the tool may drop down when you release the brake. Press any key to release the Z axis brake. The State of Sensor diagnostic screen appears.

If the driver has failed or the connecting cord is damaged, the brake is not released and "Unlocked" continues to display at the bottom of the screen for 5 seconds, after which an error appears.
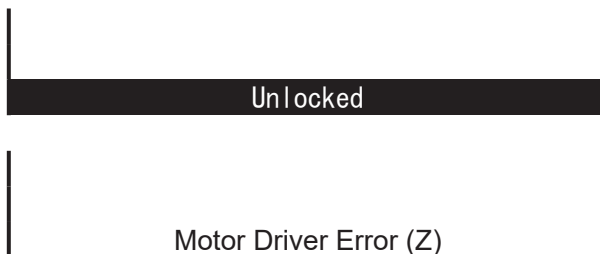
```
                                    
          Unlocked
```

```

          Motor Driver Error (Z)
```

Valid Key	Details
BRAKE (F3)	This activates/deactivates the brake. When the brake is activated, this is highlighted and displayed as BRAKE .

⚠ Caution

If the tool mass is large, make sure to take safety precautions, such as installing a safety stopper, etc., to prevent the tool from falling.
Failure to do so can damage the tool or robot, etc.

7.3.6 X Axis Motor

This checks the motor movement and I/O related to motor movement for the X-axis.

```
          X Axis Motor
State of Sensor                ON
Z-phase of Motor Driver       OFF
Alarm                         OFF


Excite Motor                  OFF
Current Down                  OFF
Clear Servo Alarm             OFF
Settings of Output Pulse    10000
Number of Output Pulse        100
Encoder Value                  20
  POS                        INIT
```

Settings of output pulse

```
       Settings of output pulse
Number of Output Pulse      10000
Rate of Output Pulse         1000
```

NOTE: Do not press the SHIFT + GO keys at the initialization position. The motor may step-out.

The items displayed for this diagnostic vary depending on the model.

Menu Name	Details	Valid Models
State of Sensor	This displays the status of the initialization sensor. This action is the same as the sensor diagnostic. You cannot move the cursor to this item.	JR3000 Series
Z-phase of Motor Driver	This displays the status of the Z-phase motor driver. When mechanical initialization is complete, the Z-phase is ON. Z-phase comes ON every 200 pulse outputs. You cannot move the cursor to this item.	JR3000 Series
Alarm	This displays the status of the motor driver alarm. This is displayed as ON when an alarm is activated, and OFF when the alarm is deactivated. You cannot move the cursor to this item.	*1
Excite Motor	Move the cursor to this item and press the ENTR key to hold (excite) the axis motor. Press the ENTR key again to release the axis motor from the hold.	JR3000 Series
Current Down	To confirm this item you need to excite the motor axis. Move the cursor to this item and press the ENTR key to turn this ON and halve the electrical current flowing to the motor; reducing the torque. Press the ENTR key again to turn this OFF and fully excite the motor.	JR3000 Series
Clear Servo Alarm	Move the cursor to this item and press the ENTR key to display this as ON, and turn the motor driver's clear servo alarm signal ON. Press the ENTR key again to turn this OFF. When the alarm is activated, if you turn the clear servo alarm signal OFF after it is turned ON, the alarm is deactivated. Press CTRL + GO to execute the following all at once: (1) Turn the clear servo alarm signal OFF after it has been turned ON. (2) Wait for the alarm to deactivate. If the alarm is not deactivated, the error content is displayed at the bottom line.	*1

Menu Name	Details	Valid Models
Settings of Output Pulse	Move the cursor to this item and press the ⎡ENTR⎤ key to switch the display to the Settings of Output Pulse screen. On this screen you can specify the number and rate of pulse output for when the ⎡GO⎤ key (or ⎡SHIFT⎤ + ⎡GO⎤) is pressed.	JR3000 Series
Number of Output Pulse	This displays the completed number of output pulses. This displays the number of output pulses when the axes were moved by the ⎡JOG⎤ key or ⎡GO⎤ key. You cannot move the cursor to this item.	JR3000 Series
Encoder Value	If your robot is a model equipped with an encoder, this displays the encoder count value. 20 pulses are added per 1 encoder pulse.	*2

*1: Displayed for JR3300 – JR3600 series. Not displayed for JR3200 series.

*2: Displayed for JR3200E – JR3600E series. Not displayed for JR3200N – JR3600N series.

Keys valid with axis movements

Valid Keys	Details
GO	Outputs a pulse in the +direction according to the settings specified in Settings of Output Pulse.
SHIFT + GO	Outputs a pulse in the –direction according to the settings specified in Settings of Output Pulse.
JOG+	Outputs 20 pulse
JOG-	Outputs -20 pulse
CTRL + JOG+	Outputs 1 pulse
CTRL + JOG-	Outputs -1 pulse
SHIFT + JOG+	Outputs 100 pulse
SHIFT + JOG-	Outputs -100 pulse
POS/CNT (F0 key)	This switches the encoder value display to units of length or pulse.
INIT (F4 key)	This initializes only the axis being checked (1 axis).

⚠ Caution

🛈　Always pay attention to the robot's movements in Diagnostic Mode.

7.3.7 Y Axis Motor

This checks the motor movements and I/O related motor movements for the Y-axis.

Refer to "7.3.6 X Axis Motor" for information regarding the diagnostics.

```
            Y Axis Motor
State of Sensor                   ON
Z-phase of Motor Driver          OFF
Alam                             OFF


Excite Motor                     OFF
Current Down                     OFF
Clear Servo Alarm                OFF
Settings of Output Pulse       10000
Number of Output Pulse             0
Encoder Value                     20
   POS                          INIT
```

7.3.8 Z Axis Motor

This checks the motor movements and I/O related motor movements for the Z-axis.

Refer to "7.3.6 X Axis Motor" for information regarding the diagnostics.

```
            Y Axis Motor
State of Sensor                   ON
Z-phase of Motor Driver          OFF
Alam                             OFF


Excite Motor                     OFF
Current Down                     OFF
Clear Servo Alarm                OFF
Settings of Output Pulse       10000
Number of Output Pulse             0
Encoder Value                     20
   POS                          INIT
```

■ JR3000F Series

```
            Z Axis Motor
State of Sensor                  OFF
Z-phase of Motor Driver          OFF
Alam                             OFF

Servo Ready                    Ready
Excite Motor                     OFF
Current Down                     OFF
Clear Servo Alarm                OFF
Release Brake                    OFF
Settings of Output Pulse       10000
Number of Output Pulse             0
                      BRAKE     INIT
```

Menu Name	Details
Servo Ready	This indicates the motor driver warning status. When the motor driver is in a warning status, this is displayed as "Warning", and when the motor driver is in the ready status (no warning), this is displayed as "Ready". You cannot move the cursor to this item.
Release Brake	Move the cursor to this item and press the ENTR key to switch this ON and release the brake. When this is displayed as ON, the brake is released. However, this item does not function when the alarm is ON.

Valid Key	Details
BRAKE (F3)	This activates/deactivates the brake. When the brake is activated, this is highlighted and displayed as BRAKE . When the alarm is ON, this clears the alarm status and releases the brake.

If [Excite Motor] is OFF when the brake is released, the Z axis may go down/up depending on the tool mass.

⚠ Caution

If the tool mass is large, make sure to take safety precautions, such as installing a safety stopper, etc., to prevent the tool from falling.
Failure to do so can damage the tool or robot, etc.

For information regarding all other Z axis motor diagnostic items, refer to

7.3.9 R Axis Motor

This checks the motor movements and I/O related motor movements for the R-axis.

Refer to for information regarding the diagnostics.

```
            R Axis Motor
State of Sensor                   ON
Z-phase of Motor Driver          OFF
Alarm                            OFF


Excite Motor                     OFF
Current Down                     OFF
Clear Servo Alarm                OFF
Settings of Output Pulse       10000
Number of Output Pulse             0
Encoder Value                     20
  POS                           INIT
```

7.3.10 Position of Sensor

This checks the position of the initialization sensors.

This diagnostic for checking the initialization sensors is used when returning home and checking the position related aspects of the motor driver Z-phase.

```
        Sensor Adjustment                          Sensor Adjustment
                                          X Axis Sensor               -35 %
                                          Y Axis Sensor                 0 %
                                          Z Axis Sensor                14 %
            Press F4 Key                  R Axis Sensor                -5 %
      For Mechanical Initialization



                                          CHANGE    SENSOR                INIT
```

You cannot use the cursor for this item. Mechanically initialize the robot and check the relationship between the sensors and the motor driver Z-phases.

Valid Keys	Details
CHANGE(F0 key)	This changes the display from percentages to OK/Fault. Fault if there is more than a ± 26 % discrepancy. OK if there is a ± 25 % discrepancy or less.
SENSOR(F1 key)	This changes the display from percentages to the current status of the sensor. ON if the photomicro sensor is blocked OFF if the photomicro sensor is free.
INIT(F4 key)	This mechanically initializes all of the axes.

⚠ Caution

Always pay attention to the robot's movement in Diagnostic Mode.

If you want to recheck the positions, press the F4 key to mechanically initialize.
Press the ESC key to return to the Diagnostic Mode menu.

⚠ Caution

After making a mechanical initialization with this diagnostic; INIT (F4 key), always also perform a mechanical initialization in Teaching Mode.
With diagnostic mechanical initializations, the axis positions differ from mechanical initializations made after a run or when in Teaching Mode.

7.3.11 External I/O

This checks the I/O-SYS port and the I/O-1 port.
This can monitor the input signals of the device connected to the I/O port.
Select each output bit with the cursor and press the ENTR key to switch them ON/OFF.
When ON the corresponding bit is displayed as 1. When OFF the corresponding bit is displayed as _ (an underbar).

```
            External I/O
                      6543210987654321
I/O-SYS IN            _____
I/O-1 IN                      _____

                      6543210987654321
I/O-SYS OUT           _____
I/O-1 OUT                     _____



        Push [ENTR] Key to Change Output
```

7.3.12 Emergency Stop Related

This checks the motor power supply and other such emergency stop related motor power cut-offs etc.

```
        Emergency Stop Related
Motor Power Output                    ON
Emergency Stop Output                OFF
Motor Power OFF                  Invalid
I/O-S                              CLOSE
Emergency Stop Switch                OFF
Motor Power Detection                 ON
```

Menu Name	Details
Motor Power Output	Power is supplied to the motor driver when this is ON. The motor power relay and the power supply to the motor driver is cut-off when this is OFF.
Emergency Stop Output	ON: the motor power detection goes OFF. OFF: the motor power detection comes ON.
Motor Power OFF	This is linked to the I/O-S Valid: The motor power is cut-off when the I/O-S is open. Invalid: The motor power is not cut-off when the I/O-S is open.
I/O-S	CLOSE: The I/O-S is shorted. OPEN: The I/O-S is open.
Emergency Stop Switch	ON: The emergency stop switch is pressed. OFF: The emergency stop switch is released.
Motor Power Detection	ON: Power is supplied to the motor. OFF: Power is not supplied to the motor.

1. Motor Power ON Command

    (A): Motor Power Output ON

2. Motor Power OFF Command

    (B): Emergency Stop Switch

    (C): Emergency Stop Output

    (D): I/O-S (OPEN/CLOSE)

    (E): Motor Power OFF (Valid/Invalid)

3. Motor Power Feedback Signal

    (F): Motor Power Detection

The following diagram shows the logical relationship between each signal:

Logical Relationship between Each Signal
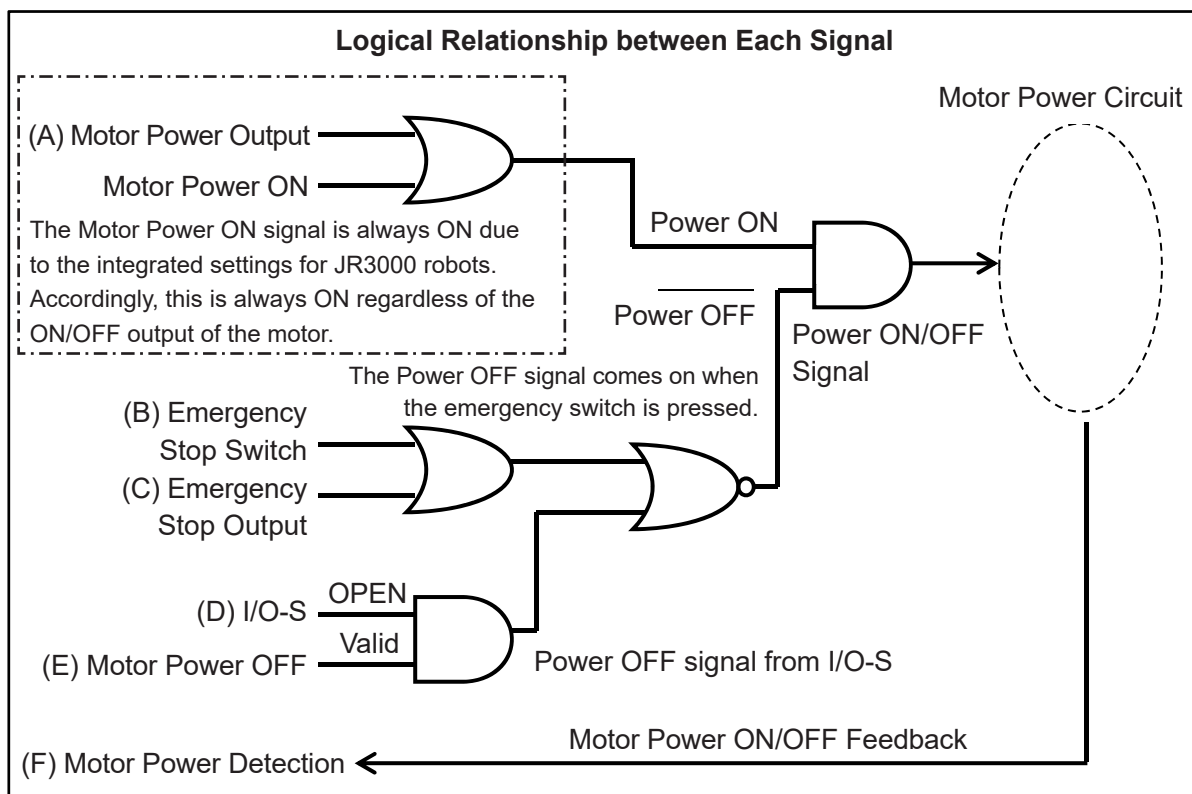
After diagnosis, you need to determine and split the results into two types: "Input Signal" and "Emergency Stop Sequencer".

1. Input Signal

Check that (B) [Emergency Stop Switch] and (D) [I/O-S] signals are input normally.

Emergency Stop Switch		I/O-S	
Status	Display	Status	Display
When the switch is pressed	ON	When the connector is short-circuited	CLOSE
When the switch is not pressed	OFF	When the connector is not short-circuited	OPEN

2. Emergency Stop Sequence

To confirm if the emergency stop sequence is operating normally, check whether the (F) motor power indicator is ON or OFF for the (A) – (E) input signals. The chart (on the previous page) indicates the logical relationship between the (A) – (E) input signals and the (F) motor power indicator.

[Motor Power Output], [Emergency Stop Output], [Motor Power OFF] are switched ON/OFF (or Valid/Invalid) by pressing the ENTR key.

As shown in the logical relationship chart on the previous page, regardless of whether (A) motor power output is ON/OFF, the signal is always ON if the motor power is ON. Accordingly, if it is functioning normally, the (F) motor power ON/OFF indicator does not change even if the (A) motor power output ON/OFF changes.

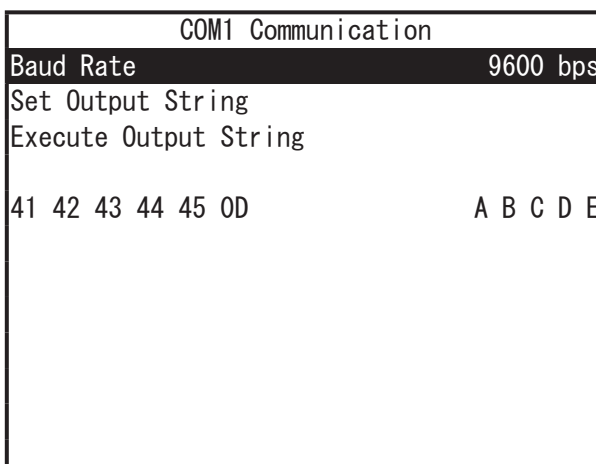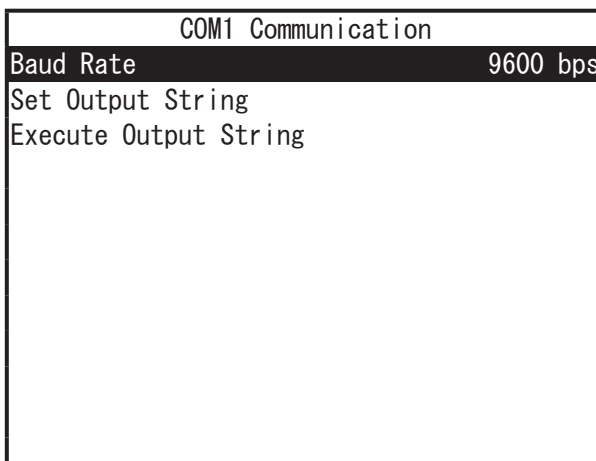|						
Input	A: Motor Power Output	OFF	OFF	OFF	OFF	OFF
	B: Emergency Stop Output	OFF	ON	OFF	OFF	OFF
	C: Motor Power OFF	Valid	Valid	Valid	Valid	Invalid
	D: I/O-S	CLOSE	CLOSE	CLOSE	OPEN	OPEN
	E: Emergency Stop Switch	OFF	OFF	ON	OFF	OFF
Output	F: Motor Power Detection	**ON**	**OFF**	**OFF**	**OFF**	**ON**

7.3.13 COM 1 – 3 Communication

This carries out COM port diagnostics. This can be used as a communication connection check with an external device (host PC or PLC etc.). Select [Set Output String] to display a screen for character string input. Set the output character string here, and select [Execute Output String]. The registered character string is output from the COM port.

Characters not displayed (00H – 1FH and 7FH – FFH) are HEX format only. ASCII sections appear as blank spaces.

Status of a character string received from an external device.
(Character string example: ABCDE[CR])

```
┌─────────────────────────────────┐
│       COM1 Communication        │
│ Baud Rate              9600 bps │
│ Set Output String               │
│ Execute Output String           │
│                                 │
│                                 │
│                                 │
│                                 │
│                                 │
└─────────────────────────────────┘
```

```
┌─────────────────────────────────┐
│       COM1 Communication        │
│ Baud Rate              9600 bps │
│ Set Output String               │
│ Execute Output String           │
│                                 │
│ 41 42 43 44 45 0D      A B C D E│
│                                 │
│                                 │
│                                 │
└─────────────────────────────────┘
```

Menu Name	Details
Baud Rate	You can select from the following values • 2400 bps • 4800 bps • 9600 bps • 19200 bps • 38400 bps • 57600 bps • 76800 bps • 115200 bps Communication is carried out at the selected communication speed.
Set Output String	You can set a given output string here. The default is "JR3000".
Execute Output String	The character string set in Set Output String is output from the COM port during the diagnostic. Confirm the output status of the character string from the external device (host PC etc.).

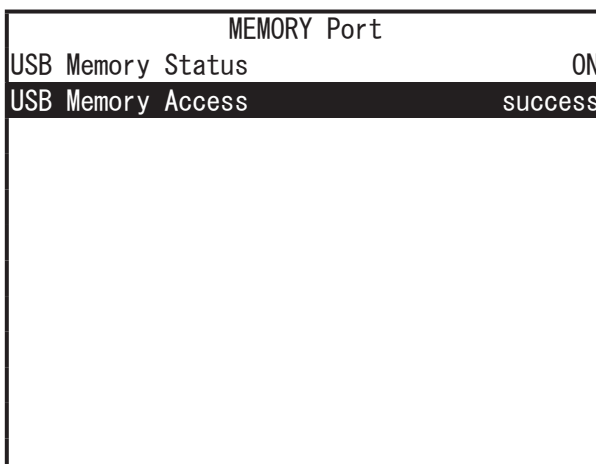| Menu Name	Details
From the 6th line and downwards (on the teaching pendant)	The character string from the external device is displayed on the LCD. Binary code and ASCII code is displayed.

NOTE: The baud rate exchanges here are a test. These revert to their original values after the diagnostic.

7.3.14 MEMORY Port

Connect USB memory to the MEMORY port and check the USB connectivity.

```
                 MEMORY Port
USB Memory Status                        OFF
USB Memory Access                        -----



```
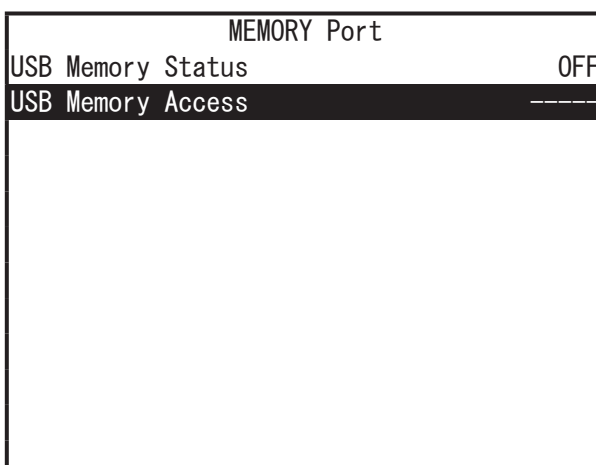
This is an example of accessing the USB memory of a connected USB.

```
                 MEMORY Port
USB Memory Status                         ON
USB Memory Access                    success



```

Menu Names	Details
USB Memory Status	This shows whether the USB memory is inserted/removed. This item cannot be selected.
USB Memory Access	This item is enabled when USB memory is inserted and the USB Memory Status is ON. Access the USB memory when the USB memory is inserted to create a text file for checking the USB memory connection. The robot itself reads the file from the USB memory and displays the result on the LCD.

7.3.15 Ethernet

With this you can do a LAN port communication test.
Set the IP address and the destination IP address. Execute the ping test against the destination IP address to display the results on the LCD.

```
                Ethernet
IP Address            192.168.200.180
Dest. IP Address       192.168.200.46
Ping Execute
```

A successful communication example

```
                Ethernet
IP Address            192.168.200.180
Dest. IP Address       192.168.200.46
Ping Execute


1: from 192.168.200.46:  32 bytes  1 ms
2: from 192.168.200.46:  32 bytes  0 ms
3: from 192.168.200.46:  32 bytes  0 ms
4: from 192.168.200.46:  32 bytes  0 ms
```

A failed communication example (offline or no destination)

```
                Ethernet
IP Address            192.168.200.180
Dest. IP Address       192.168.200.46
Ping Execute


Error: No answer
```

Menu Name	Details
IP Address	Sets the IP address. This is a setting only used for diagnostics. The Administration Settings Mode values are used as the system IP address.
Dest. IP Address	Set the destination IP address. This is the destination of the ping test
Ping Execute	This executes the ping test and waits for the response. Success if there is a response Timeout if failed
From the 6th line and downwards (on the teaching pendant)	The communication results are displayed here

7.3.16 Fieldbus

You can check the Fieldbus module with this. If the Fieldbus module is recognized by the main unit, and the module status is valid, the connected module's name is displayed.

```
                  Fieldbus
Module Status                      Valid
Connect Module                  Profibus


                        FEDCBA9876543210
Field-Bus IN        _____
Field-Bus OUT       _____




     Push [ENTR] Key to Change Output
```

If the Fieldbus module is not connected or is malfunctioning, the following screen is displayed.

```
                  Fieldbus
Module Status                    Invalid
Connect Module                    ------


                        FEDCBA9876543210
Field-Bus IN        _____
Field-Bus OUT       _____




     Push [ENTR] Key to Change Output
```

Menu Name	Details
Module Status	This displays the connection status of the module. Valid if there is a module Invalid if there is no module This item cannot be selected
Connect Module	This displays the module name when the module status is valid. If the module status is invalid, this shows there is no module by displaying "----"
Field-Bus IN	1 word input channel lead
Field-Bus OUT	1 word output channel lead

7.4 Mechanical Adjustment Mode

Mechanical Adjustment Mode functions the same as "Position of Sensor" in Diagnostic Mode.

For further details, refer to "7.3.10 Position of Sensor."

8. THINGS TO TRY BEFORE MAKING A REPAIR CALL

If the robot does not function correctly even after turning it OFF and then ON again, there may be a hardware problem and a circuit board, etc., may need replacing. However, before making a repair call, try restoring the robot data, as this can sometimes solve the issue.

If the robot functions correctly after performing step 1 below, the procedure is complete. If the robot is still not functioning correctly, continue onto step 2.

The figure on the right shows how the memory domain of the robot is divided up.

Robot System Software
Individual Configuration Information
C&T Data
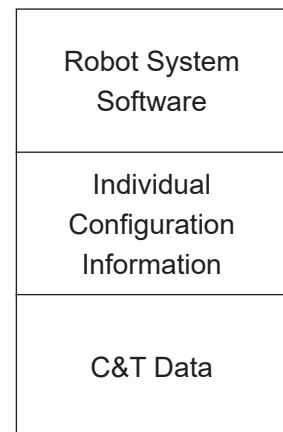
Storage Area
(All Data)

1. Clear all C&T data.
    MENU → [Teaching Data Copy, Delete, Conversion] → [Delete All Teaching Data]
    Administration Mode → [Administration Setting Mode] → [Clear All C&T Data]

2. Download the robot system software.
    This can be done by USB memory or using the PC software (JR C-Points II Limited Edition or JR C-Points II). With the PC software, click [Robot] on the menu bar and select [Send Robot System Software] from the pull down menu. Specify the file you want to download with [Open File]. The factory system software is included on the Operation Manual CD-ROM.
    JR3000_SysProgram_Ver.+++_***(JSY Ver3).jsy
    ("+++" indicates the version number. "***" varies according to robot specifications.)
    For further details, refer to "2. BACKING UP DATA AND UPGRADING SYSTEM SOFTWARE VIA PC."

3. Restore all data.
    Restore all of the robot's data if you have previously made a backup.
    For further details, refer to "2.5 Backing Up and Restoring Robot Data."

NOTE:
*   Only perform the above when there is a malfunction.
*   Do not turn OFF the power to the PC or robot while downloading data.
*   If the issue persists after restoring the data, contact Janome (details on the back of this manual) or a Janome dealer.

9. CHECKING VERSION INFORMATION

Use this when you want to confirm version information. Checking this information can be helpful when there is trouble with the robot.

```
          Control Information
System Program        Ver STD 9.76 ◄──────── 1.   System Program
Application               Standard ◄──────── 2.   Application Specifications
Base Type                  JR3204 ◄──────── 3.   Base Type
Axis Configuration           XYZR ◄──────── 4.   Axis Configuration
          X+200, Y+200, Z+50, R+360, R-360
Auxiliary Axis                 No ◄──────── 5.   Auxiliary Axis
Fieldbus                  Profibus ◄──────── 6.   Fieldbus
MAC Address      00:00:12:34:56:78 ◄──────── 7.   MAC Address
ON Time              48 h 00 m ◄──────── 8.   ON Time
Play Back Time        5 h 00 m ◄──────── 9.   Play Back Time
Teaching Data              20 % ◄──────── 10.  Teaching Data
```

Control Information Screen Example: Page 1

	Item	Content
1.	System Program	This displays the robot's system program version number.
2.	Application	This displays the name of the application.
3.	Base Type	This displays the robot's model name. The model name shows the model, size, and number of axes.
4.	Axis Configuration	This displays the configuration of the 1st – 4th axes of the robot. This also displays a coordinate indicating the maximum movement range for each of the axes.
5.	Auxiliary Axis	This displays the method of control for the auxiliary axis. For models with no auxiliary axis, [No] is displayed.
6.	Fieldbus	This displays the Fieldbus module attached to the robot. If there is no Fieldbus module attached, [Invalid] is displayed.
7.	MAC Address	This displays the MAC address.
8.	ON Time	This displays the total ON time of the robot.
9.	Play Back Time	This displays the total run time of programs.
10.	Teaching Data	This displays the entered ratio of teaching data. The smaller the number, the more memory available.

TP ▶ MODE [Administration]

[Version Information]

PC ▶ [Robot] → [Administration Settings] → [Control Information]

The version information screen on the teaching pendant has multiple pages.

CURSOR ▽ / CURSOR ▷ / ENTR key to display the next page.

CURSOR △ / CURSOR ◁ key to display the previous page.

1. Version information

2. System program*: Information regarding the system program

3. Boot program*:   Information regarding the boot program

4. Teaching data*:   Information regarding teaching data.

* 2 – 4 are normally unused as they are internal administration information.

10. ERROR MESSAGE LIST

When an error occurs, the program number display on the front of the main unit alternately displays "Er" and the error number.
Also, you can confirm the time and date the error occurred and the error number from [Error History].

TP The error number and the error content also appear on the teaching pendant LCD.
If the teaching pendant is not connected, turn OFF the power once and connect the teaching pendant. When you turn ON the power again, the error and error number appear on the teaching pendant LCD.
Run Mode → MENU → [Error History]
Teaching Mode → UTILITY → [Error History]
Administration Mode → [Error History]
In addition, error history can be deleted from Administration Mode → [Administration Settings Mode] → [Clear Error History].

PC When connected to a PC, select [Error History] from the [Robot] pull-down menu in JR C-Points II. Every error of the connected robot is loaded and displayed.
If the PC is not connected, turn OFF the robot's power (if the PC is running, also turn OFF the PC's power) and after connecting the PC, startup both the robot and the PC and load the error information.

There are 2 types of errors.
• Run Errors: a situational error which can be restored or an error during Run Mode.
• System Errors: a robot system error or an error caused by something faulty.
However, error number82 (Emergency Stop) is an independent error; not classified as either of the above.

In addition to the errors shown in the table below, there are errors specific to the application specifications. For errors specific to the application specifications, refer to the respective application specifications.

Error No.	Teaching Pendant Message	Countermeasure	Error Category
001	Program is Empty	Enter the number of a registered program.	Run error
006	Point Type Error	A Point type error in which a PTP point is succeeded by a CP passing point. Check and reenter the point type.	Run error
007	Position is out of range	The point position itself is out of range or the axes have gone out of range at a CP arc point, etc. Out of range means that the tool tip is unable to move in the range designated by the robot's move area limit. Check and reenter teaching positions. Also, check and reenter the move area limit and TCP (tool center point) in the tool data.	Run error
008	Error on Point Job	Any point job errors that are not as defined as errors 009 to 013, 016, and 042 to 053 are all 008 errors. • There is no *Id* and *Idi* for *anb* and *orb* in the condition operation command. • When *then/else/timeUp* nest reaches 30 or more. • *Then/else/endIf* appear even though *if* doesn't exist • *timeUp/endWait* appears even though *waitCondTime* and *waitCond* do not exist. Check and reenter the point job contents.	Run error
009	then/else for if doesn't exist	If in the point job command: • There is no t*hen/else* for *if* • If there is something other than a condition operation command mistakenly written before *then/else* and after *if* etc. Check and reenter the point job command.	Run error
010	endIf for if doesn't exist	Check and reenter the point job command.	Run error
011	endWait for waitCond doesn't exist	Check and reenter the point job command.	Run error
012	Label for jump doesn't exist	Check and reenter the point job command.	Run error

Error No.	Teaching Pendant Message	Countermeasure	Error Category
013	Point for goPoint doesn't exist	If the pallet loop jump point number of the point job command *goPoint*, *goRPoint* is larger than the program's biggest point number, or it is a negative number, this error occurs. Check and reenter the point job command.	Run error
016	Error on pallet Routine data	If the pallet number designated by a point job command doesn't exist, this error occurs. Check and reenter the pallet for the point job command and/or additional function.	Run error
022	CP Speed Over	Reduce the CP line speed.	Run error
029	Saving Data Error	The C&T data is no longer compatible due to a system software downgrade. You need to either revert the system software to the version prior to the downgrade or format the C&T data. • If the teaching pendant is not connected, clear all C&T data using JR C-Points II. • [Robot] → [Administration Settings] → [General] → [Clear All Data in Robot] • Wait for all of the C&T data to clear. Power cycle the robot after the operation is complete. • If the teaching is connected, a message should display on the teaching pendant. Press the ENTR key to clear all C&T data. Wait for all of the C&T data to clear. Power cycle the robot after the operation is complete.	System error
030	Flash ROM Erase Error	When saving C&T data, all data is first deleted and then saved anew. If the data cannot be deleted, this error occurs. Printed circuit board A is most likely damaged and needs replacing. Contact Janome or a Janome dealer.	System error
031	Flash ROM Write Error	This is a writing error which occurs when saving C&T data. Printed circuit board A needs replacing. Contact Janome or a Janome dealer.	System error

Error No.	Teaching Pendant Message	Countermeasure	Error Category
034	System Model Incompatibility Error	This error occurs when the model settings and robot system software are not compatible with each other. This is likely caused by transferring the incorrect model settings data and/or system software, etc., to the robot after replacing printed circuit board A. Check the error message on the teaching pendant and transfer the appropriate system program and/ or model settings file to the robot.	System error
035	Teaching data SUM error	When the robot's power is turned ON, stored C&T data is loaded. If the data sum doesn't match, this error occurs. Delete the C&T data. If the power is turned OFF in the middle of saving C&T data, this error occurs.	System error
037	Motor Power Supply Error	This error occurs when there is no power supplied to the motor. Check the motor power. • Damage to the power supply connector → Check the connection etc. • Damage to the power supply itself → Replace the power supply unit.	System error
042	Job for callJob doesn't exist	Check and reenter the point job commands.	Run error
043	callJob Nesting Error	This error occurs when the number of *callJob*, *callBase* nest reaches 30 or more in a point command sequence call up. Check and reenter the point job commands.	Run error
044	Program for callProg doesn't exist	Check and reenter the point job commands.	Run error
045	callProg Nesting Error	This error occurs when the number of *callProg*, *callPoints* commands in a nest reaches 30 or more. Check and reenter the point job commands.	Run error
046	for, do Nesting Error	This error occurs when the number of *for*, *do* reaches 30 or more. Check and reenter the point job commands.	Run error
047	Points for callPoints doesn't exist	Check and reenter the point job commands.	Run error

Error No.	Teaching Pendant Message	Countermeasure	Error Category
048	for-next, do-loop Error	This error occurs when *next* for *for*, and *loop* for *do*, do not exist; or when *for* and *next* do not exist but *next* or *loop* appear. Check and reenter the point job commands.	Run error
049	Creating Local Variable Error	This error occurs when the identifier is doubled up or the variable domain cannot be acquired when you try to generate a local variable with the *declare* command. Check and reenter the point job commands.	Run error
050	Expression Evaluation Error	This error occurs if the evaluation of the formula fails. • There are no variables or functions in the expression; the identifier of the variable or function is wrong, or the definition for the variable or function is missing. • The use of parentheses is incorrect • Use of operators is incorrect (+-*/etc.) • In the calling up of functions, the form or number of arguments (including sequence elements) is incorrect. Check and reenter the point job commands.	Run error
051	I/O Alias Error	This error occurs if there is no I/O alias specified. It is likely that the identifier is wrong or there is no definition. Check and reenter the point job commands.	Run error
052	COM Alias Error	This error occurs if there is no COM alias specified. It is likely that the identifier is wrong or the definition is missing. Check and reenter the point job commands.	Run error
053	Parameter value is out of range	This error occurs when the expression judgment value exceeds the range. Check and reenter the point job commands.	Run error
056	Measurement of Needle Error	This error occurs when the measurement of Needle Adjuster 2 could not be taken correctly at the measuring point.	Run error

Error No.	Teaching Pendant Message	Countermeasure	Error Category
071	Motor Driver Error (JR3300 – JR3600)	This error occurs when a motor driver error is detected at the start or during a movement, or when there is a Z axis brake failure or cable breakage. Power cycle the robot. If this does not resolve the error, check the following: • The tool mass and workpiece mass settings. If the setting value is smaller than the actual mass, this error may occur. Refer to the operation manual *Functions I* for details regarding the tool mass and workpiece mass settings. • The error occurs during the mechanical initialization. Check and modify the mechanical initialization speed settings as needed. Refer to the operation manual *Functions III* for details regarding mechanical initialization speed settings. • The error occurs during a movement or when the robot is stopped. Make sure there is no excessive load or external force applied to the axes. If this error occurs even after checking the above, the motor driver, the motor, or a related component has likely failed. Contact Janome (details on the back of this manual) or a Janome dealer.	System Error
074	Motor Driver Not Ready (Z) (JR3000F Series Only)	This error occurs when a motor driver error is detected at the start of a movement or when there is a Z axis brake failure or cable breakage. Power cycle the robot. If this error continues to occur, the motor driver, the motor, or a related component has likely failed. Contact Janome (details on the back of this manual) or a Janome dealer.	System Error
082	Emergency Stop	This error occurs when the emergency stop switch is pressed or the I/O-S emergency stop function is activated. Release the emergency stop switch then send a start instruction to perform mechanical initialization.	–

Error No.	Teaching Pendant Message	Countermeasure	Error Category

083	Stop with Over Load (JR3000E Series Only)	• This error occurs if a position error is detected.
		  • Teaching Mode
		    The robot returns to normal two seconds after the error message is displayed. However, if this error occurs during a test run, press the start switch or a teaching pendant key.
		
		  • Switch Run Mode
		    Press the start switch or a teaching pendant key to put the robot into standby for run.
		
		  • Ext. Run Mode
		    I/O-A: The robot stands by for run when the sysIn11 (Error Reset) signal is turned ON. Note that the default assignment for sysIn11 is [Last Work]. If you wish to use the signal as an error reset signal, change the sysIn11 function to Error Reset in [I/O-SYS Function Assignment].
		
		• This is likely a component malfunction.
		  Search for the malfunction area with the motor diagnostics, and encoder diagnostics. (Refer to "7.3 Fault Diagnostic.")
		  If the motor does not operate correctly, this may be a malfunction with the driver (unit), motor, or cables*. The malfunctioning component needs to be replaced.
		  If the motor is operating correctly but the encoder is not, there may be malfunction with printed circuit board B (unit), the motor, or cables*. The malfunctioning component needs to be replaced.
		* For replacement of cables, contact Janome (details on the back of this manual) or a Janome dealer.
			Run error

Error No.	Teaching Pendant Message	Countermeasure	Error Category
085	Incorrect Use	This error occurs if the system program application and the C&T data application are different. For example, if you load a "Standard" system program onto a robot that has "Dispensing" programs registered, this error occurs when the power is turned ON. Either delete the C&T data or make a system program that is appropriate for your robot's application. If the teaching pendant is connected, "OK to delete all teaching pendant data?" appears. Select [YES] to delete the C&T data.	System error
086	Incorrect Data Version	This error occurs when the data version number of the system program is smaller than the data version number of the teaching data. This means that the system program cannot run the new version of teaching data registered onto the robot. Either delete all the teaching data or upgrade the system program. If the teaching pendant is connected, a message stating "OK to Delete All Teaching Data?" appears. Select [YES] to delete the C&T data.	System error
087	Incorrect Data Sub Version	This error occurs when the system program data subversion number is different from the teaching data subversion number. This means that there is new teaching data registered in the main unit that the system program cannot run. Delete all teaching data or update the system program to a newer version. If the teaching pendant is connected, "OK to Delete All Teaching Data?" appears. Select [YES] to delete the C&T data.	System error
088	Z Motor or Encoder Error	If the Z motor is running, this is an encoder error (JR3000E models). If the Z motor is not running, this is a motor error. Confirm operation in Diagnostic Mode. (Mechanical initialization error)	System error

Error No.	Teaching Pendant Message	Countermeasure	Error Category
089	Z Sensor/Motor Error	This error occurs if the sensor does not go ON (blocked)/OFF after running the motor according to the preset pulse output during mechanical initialization. If the Z motor is running, this is a sensor error. If the Z motor is not running, this is a motor error. (Mechanical initialization error)	System error
090	Z Driver 0-Phase Error	This error occurs when the driver Z-Phase signal is not output or is constantly output after running the motor according to the preset pulse output during mechanical initialization. (Mechanical initialization error)	System error
091	X Motor or Encoder Error	If the X motor is running, this is an encoder error (JR3000E models). If the X motor is not running, this is a motor error. Confirm operation in Diagnostic Mode. (Mechanical initialization error)	System error
092	X Sensor/Motor Error	This error occurs if the X sensor does not go ON (blocked)/OFF after rotating the X motor according to the preset pulse output during mechanical initialization. If the X motor is rotating, the error has been caused by a sensor malfunction. If the X motor is not rotating, it has been caused by a motor malfunction. (Mechanical initialization error)	System error
093	X Driver 0-Phase Error	This error occurs when the driver Z-phase signal is not output or if it is constantly output after running the motor according to the preset pulse output during mechanical initialization. (Mechanical initialization error)	System error
094	Y Motor or Encoder Error	If the Y motor is running, this is an encoder error (JR3000E models). If the Y motor is not running, this is a motor error. Confirm operation in Diagnostic Mode. (Mechanical initialization error)	System error

Error No.	Teaching Pendant Message	Countermeasure	Error Category
095	Y Sensor/Motor Error	This error occurs if the sensor does not go ON (blocked)/OFF after running the motor according to the preset pulse output during mechanical initialization. If the Y motor is running, this is a sensor error. If the Y motor is not running, this is a motor error. (Mechanical initialization error)	System error
096	Y Driver 0-Phase Error	This error occurs when the driver Z-phase signal is not output or if it is constantly output after running the Y motor according to the preset pulse output during mechanical initialization. (Mechanical initialization error)	System error
097	R Motor or Encoder Error	If the R motor is running, this is an encoder error (JR3000E models). If the R motor is not running, this is a motor error. Confirm operation in Diagnostic Mode. (Mechanical initialization error)	System error
098	R Sensor/Motor Error	This error occurs if the sensor does not go ON (blocked)/OFF after running the R motor according to the preset pulse output during mechanical initialization. If the R motor is running, this is a sensor error. If the R motor is not running, this is a motor error. (Mechanical initialization error)	System error
099	R Driver 0-Phase Error	This error occurs when the driver Z-phase signal is not output or if it constantly output after running the R motor according to the preset pulse output during mechanical initialization. (Mechanical initialization error)	System error
100	Logical Error XXXXXX	This error number is not displayed in the program number display. Turn the power OFF and ON again. If the error persists, contact Janome or a Janome dealer and inform them about the "XXXXXX" display information.	System error

Error No.	Teaching Pendant Message	Countermeasure	Error Category
101	Trap Error	When a trap error occurs, it is not shown on the display. A short buzzer sounds twice. Turn the power OFF and then ON again and the error and error number are displayed on the teaching pendant LCD. This is likely a printed circuit board A malfunction. Printed circuit board A needs replacing. Contact Janome or a Janome dealer for assistance.	System error

If an error occurs with the data held by the robot, "CA" and the error number appear alternately on the 7 seg LED program number display after the power is turned back ON.

Do not turn the power OFF while the CA number is displayed as the robot is processing the restoration data etc. Once the robot has finished processing the data, the CA number disappears and the robot starts up normally.

CA No.	Details
CA28	C&T data is being automatically restored due to an error with one of the copies of the recorded C&T data. Do not turn the power OFF while CA28 is displayed as the robot is automatically processing the restoration data.
CA50	Battery backup data has been erased due to low battery voltage or the removal of the battery. All of the battery backup data is cleared and replaced with the default values.

11. DISPOSAL

JR3000 Series desktop robots contain a lithium battery. Before disposing of the robot, remove the lithium battery. Do not remove the lithium battery for any other purpose other than disposing the robot. If you remove the lithium battery, the robot's coordinate information is lost.

When disposing of the robot, contact a waste collector and dispose of the lithium battery in accordance with national and local regulations.

11.1 Disassembly Precautions

Take note of the following when disassembling the robot.

⚠ Warning

ⓘ	When dissembling the robot, always make sure to wait **30 minutes or more** after removing the power cord from the robot and confirm there is no residual current before performing the operation. Also, **do not touch any of the power inlet pins within 5 seconds of removing the power cords.** Failure to follow these steps causes injury from electric shocks and unit malfunction from shorted circuitry.
ⓘ	Perform disassembly operations only after moving the robot to a safe place. When lifting or transporting the robot, do so in accordance with the following: • Secure the movable parts of the unit (the Z/ZR mechanism) before transportation. • Lift and transport with 2 or more people. • Hold the bottom of the base and keep the robot horizontal. • Do not hold the robot by the column or Y body. Failure to adhere to this can cause injury or damage the robot.

⚠ Caution

ⓘ	When removing the robot covers, take care with the sharp edges. Failure to do so can cause injury.
ⓘ	When disposing of the lithium battery, do not cut the lead wires or remove the insulation tubing, as this can cause the battery to short-circuit. A short-circuited battery can burst or cause fire.

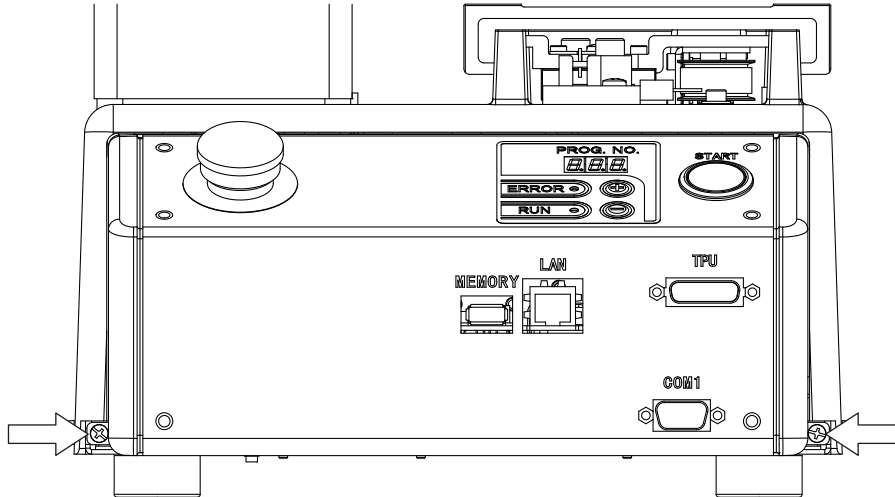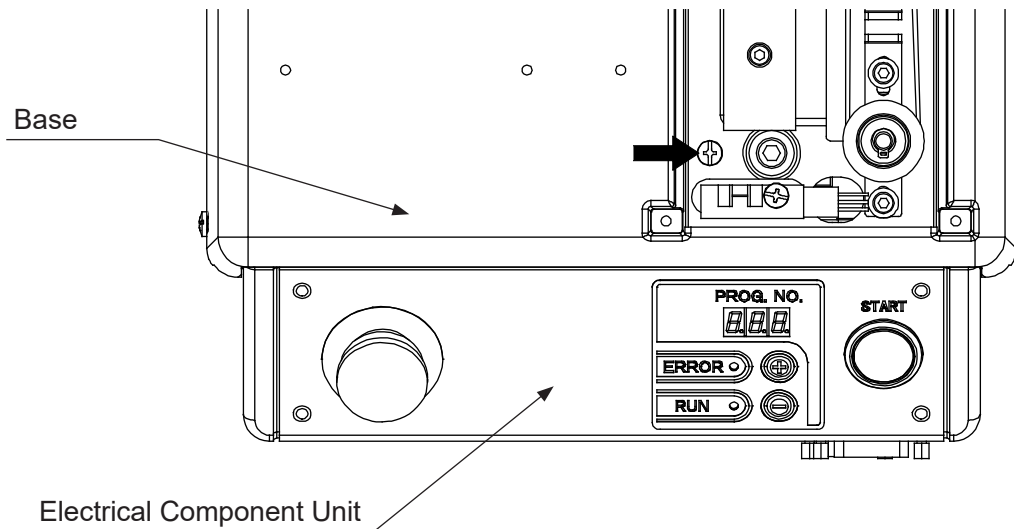## 11.2 How to Remove the Battery

11.2.1 JR3200 Series

1. Remove the X cover.

    Remove the 4 screws indicated by the black arrows (± binding screws M4x6), and remove the X cover by pulling it forward.

X Cover

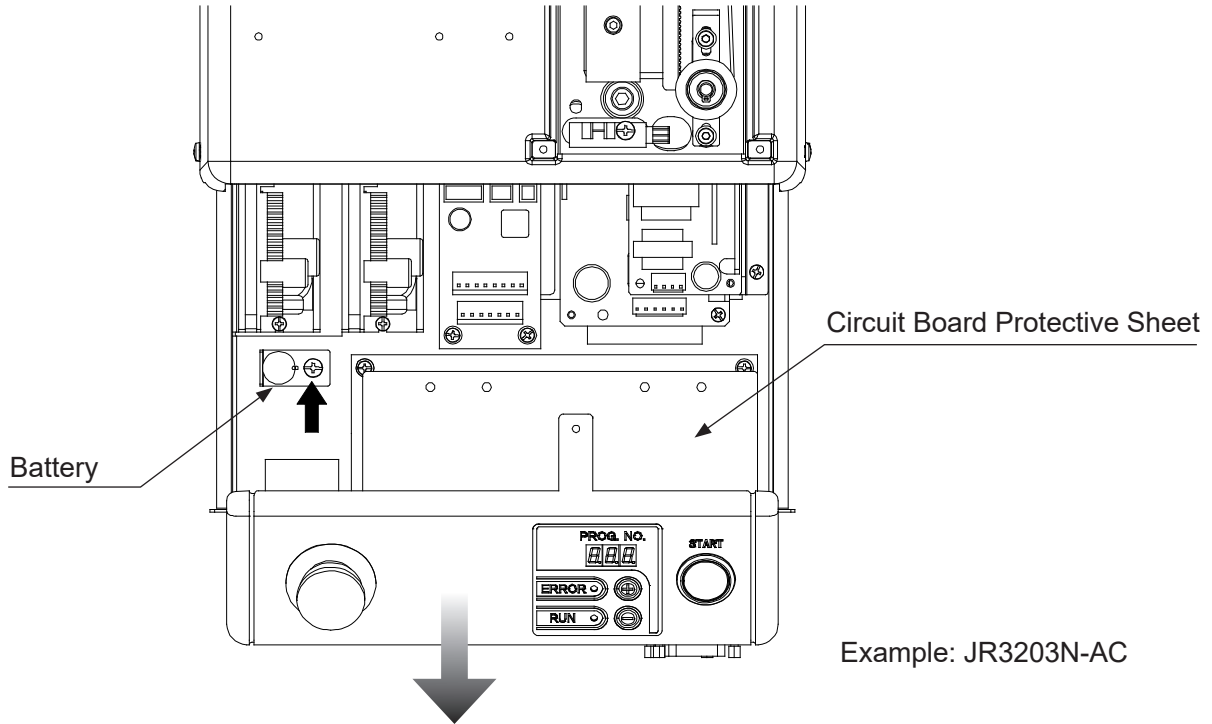Example: JR3203N-AC
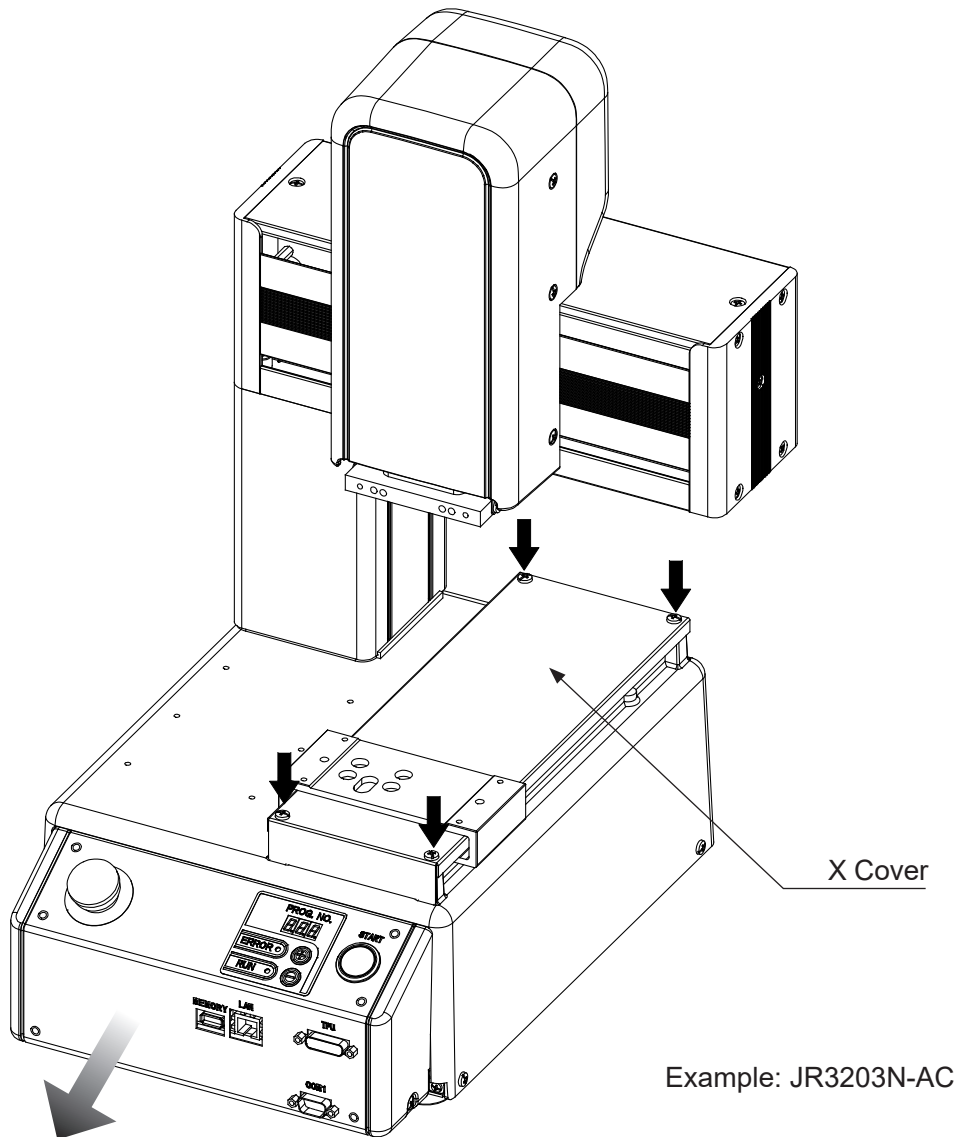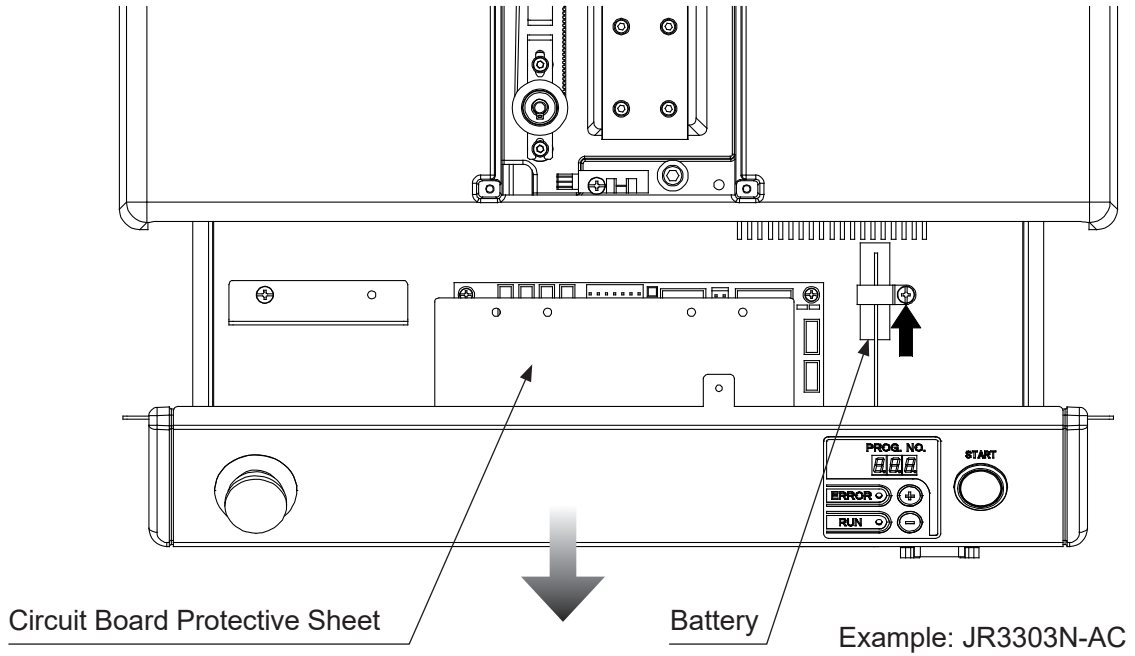
2. Remove the electrical component unit.

   Remove the 1 screw on top of the base indicated by the black arrow (± binding screw M4x16).

   Remove the 2 screws on the front of the robot indicated by the white arrows below (± binding screw M3x6) and slide the electrical components forward far enough until you can identify the battery.

Base

Electrical Component Unit

Example: JR3203N-AC

3. Remove the cable ties.

Remove the 2 cable ties securing the circuit board protective sheet and cords and fold over the circuit board protective sheet so that you can see the battery connector connected to the circuit board.

Circuit Board Protective Sheet

Battery

Example: JR3203N-AC

4. Remove the battery.

Unscrew the 1 screw indicated by the black arrow above (± binding screw M4x6), disconnect the battery connector and remove the battery.

Battery Connector
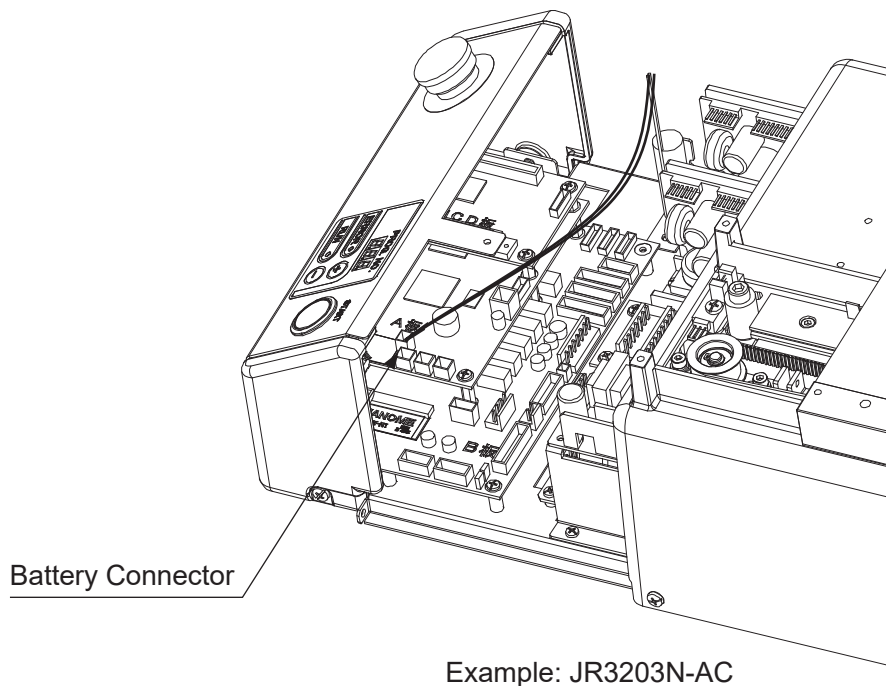
Example: JR3203N-AC

11.2.2 JR3300 – JR3600 Series

1. Remove the X cover.

   Remove the 4 screws indicated by the black arrows (± binding screws M4x6), and remove the X cover after checking you can pull it off.

X Cover
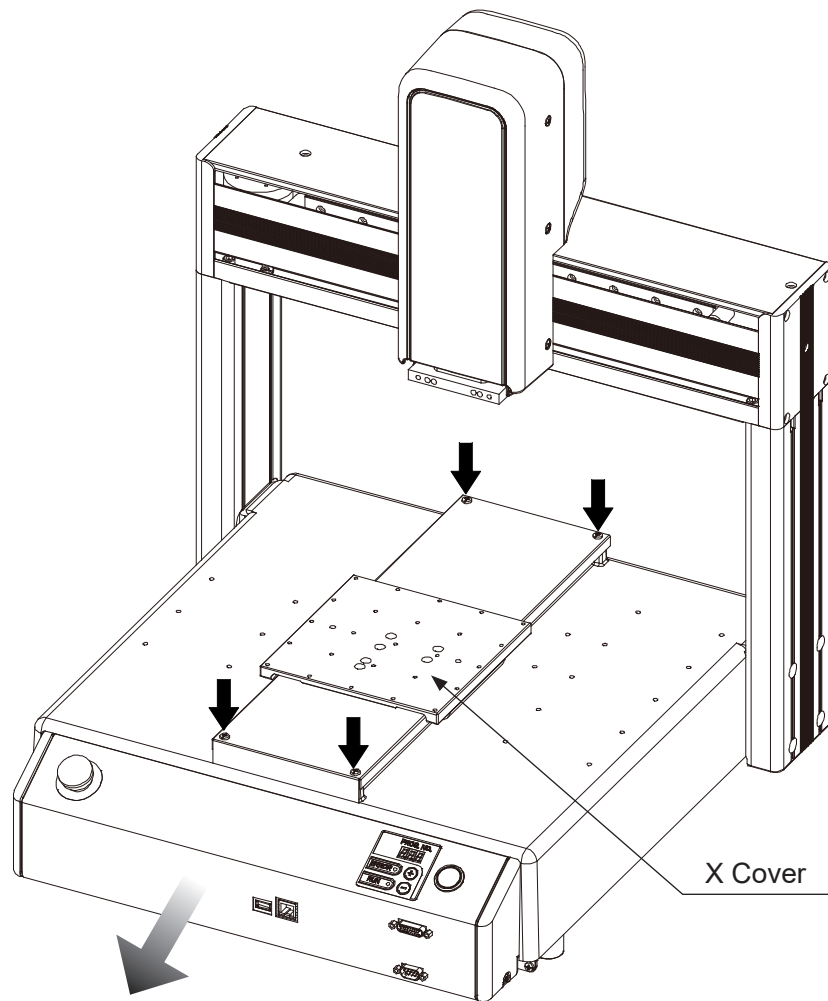
Example: JR3303N-AC

2. Remove the electrical components.

    Remove the 1 screw on top of the base indicated by the black arrow (± binding screw M4x16). Remove the 2 screws on the front of the robot indicated by the white arrows below (± binding screw M4x6) and slide the electrical components forward far enough until you can identify the battery.
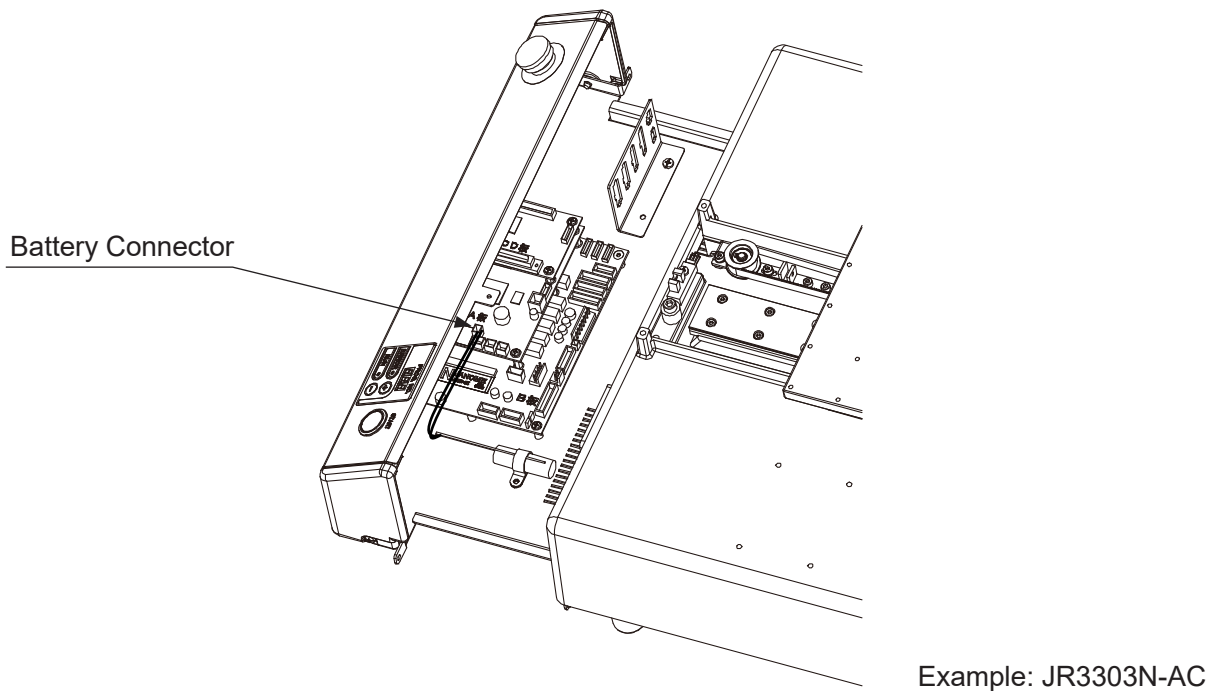
Base

Electrical Component Unit
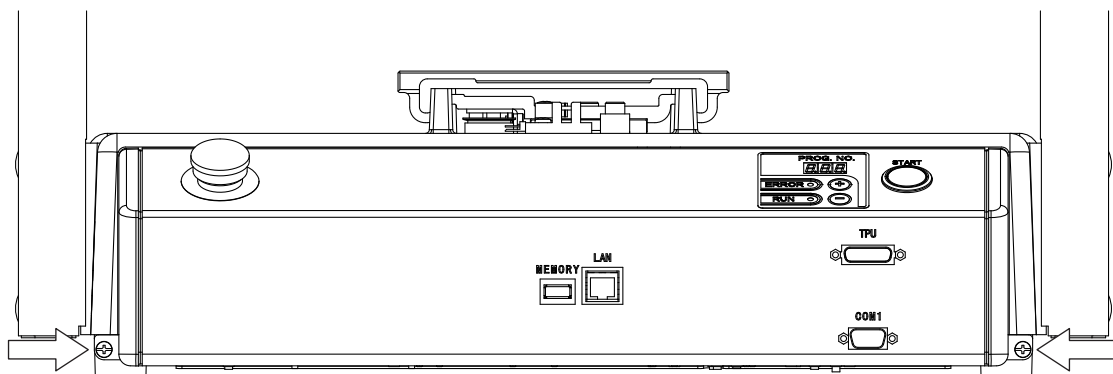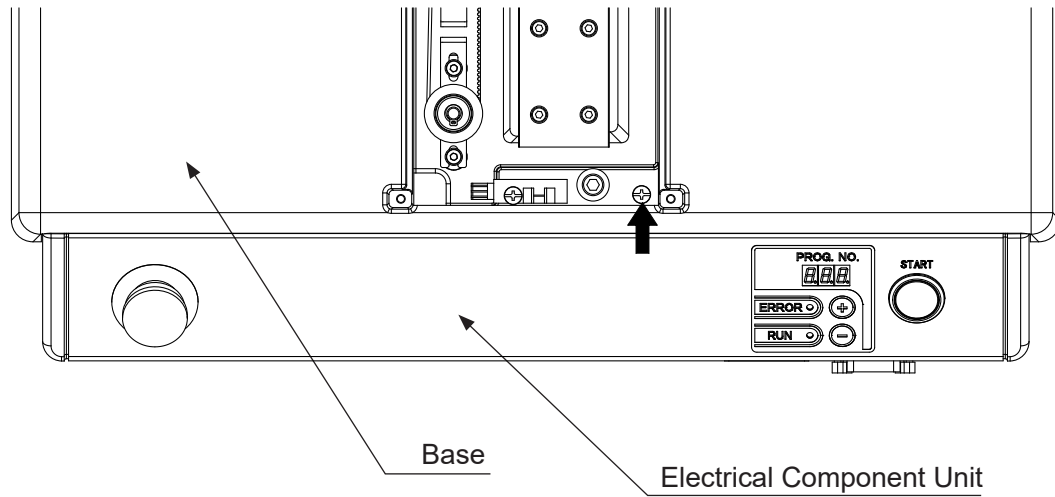
Example: JR3303N-AC

3. Remove the cable ties.

Remove the 2 cable ties securing the circuit board protective sheet and cords and fold over the circuit board protective sheet so that you can see the connectors connected to the circuit board.

Circuit Board Protective Sheet   Battery   Example: JR3303N-AC

4. Remove the battery.

Unscrew the 1 screw indicated by the black arrow above (± binding screw M4x8), disconnect the battery connector and remove the battery.

Battery Connector

Example: JR3303N-AC