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

MOTOMAN INSTRUCTIONS
- MOTOMAN-MH50 II INSTRUCTIONS
- DX200 INSTRUCTIONS
- DX200 OPERATOR'S MANUAL (for each purpose)
- DX200 MAINTENANCE MANUAL

The DX200 operator’s manual above corresponds to specific usage. Be sure to use the appropriate manual.

Part Number: 169857-1CD
Revision: 0
MANDATORY

• This instruction manual is intended to explain mainly the DX200 Capacitor Unit for the application to the actual operation and for proper maintenance and inspection. It describes on safety and handling, details on specifications, necessary items on maintenance and inspection, to explain operating instructions and maintenance procedures. Be sure to read and understand this instruction manual thoroughly before installing and operating the manipulator.

• General items related to safety are listed in the Chapter 1: Safety of the DX200 instructions. To ensure correct and safe operation, carefully read the DX200 instructions before reading this manual.

CAUTION

• Some drawings in this manual are shown with the protective covers or shields removed for clarity. Be sure all covers and shields are replaced before operating this product.

• The drawings and photos in this manual are representative examples and differences may exist between them and the delivered product.

• YASKAWA may modify this model without notice when necessary due to product improvements, modifications, or changes in specifications. If such modification is made, the manual number will also be revised.

• If your copy of the manual is damaged or lost, contact a YASKAWA representative to order a new copy. The representatives are listed on the back cover. Be sure to tell the representative the manual number listed on the front cover.

• YASKAWA is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification voids your product’s warranty.
Notes for Safe Operation

Read this manual carefully before installation, operation, maintenance, or inspection of the DX200 Capacitor Unit.

In this manual, the Notes for Safe Operation are classified as "WARNING", "CAUTION", "MANDATORY", or "PROHIBITED".

- **DANGER**: Indicates an imminent hazardous situation which, if not avoided, could result in death or serious injury to personnel.

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

- **CAUTION**: Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury to personnel and damage to equipment. It may also be used to alert against unsafe practices.

- **MANDATORY**: Always be sure to follow explicitly the items listed under this heading.

- **PROHIBITED**: Must never be performed.

Even items described as “CAUTION” may result in a serious accident in some situations.

At any rate, be sure to follow these important items.

To ensure safe and efficient operation at all times, be sure to follow all instructions, even if not designated as “DANGER”, “WARNING” and “CAUTION”.

**NOTE**
### PROHIBITED

- Do not use or keep the unit in the following environmental conditions:
  - Where exposed to direct sunlight
  - Where vibration or impact occurs
  - Where high humidity exists
  - Where a strong magnetic field exists
  - Where much dust exits
  - Where a sudden change in the temperature occurs
  - Where corrosive gases occur
  - Where condensation occurs

Improper usage of the unit may damage the unit.

### DANGER

- Maintenance and inspection must be performed by specified personnel.

Failure to observe this DANGER may result in electric shock or injury.
- For disassembly or repair, contact your Yaskawa representative.
- Do not remove the motor, and do not release the brake.

Failure to observe these safety precautions may result in death or serious injury from unexpected turning of the manipulator's arm.
WARNING

• Before operating the manipulator, check that servo power is turned OFF pressing the emergency stop buttons on the front door of the DX200 and the programming pendant. When the servo power is turned OFF, the SERVO ON LED on the programming pendant is turned OFF.

Injury or damage to machinery may result if the emergency stop circuit cannot stop the manipulator during an emergency. The manipulator should not be used if the emergency stop buttons do not function.

Fig. 1: Emergency Stop Button

• Once the emergency stop button is released, clear the cell of all items which could interfere with the operation of the manipulator. Then turn the servo power ON.

Injury may result from unintentional or unexpected manipulator motion.

Fig. 2: Release of Emergency Stop

• Observe the following precautions when performing teaching operations within the P-point maximum envelope of the manipulator:
  – Be sure to use a lockout device to the safeguarding when going inside. Also, display the sign that the operation is being performed inside the safeguarding and make sure no one closes the safeguarding.
  – View the manipulator from the front whenever possible.
  – Always follow the predetermined operating procedure.
  – Keep in mind the emergency response measures against the manipulator’s unexpected motion toward you.
  – Ensure that you have a safe place to retreat in case of emergency.

Improper or unintended manipulator operation may result in injury.

• Confirm that no person is present in the P-point maximum envelope of the manipulator and that you are in a safe location before:
  – Turning ON the power for the DX200.
  – Moving the manipulator with the programming pendant.
  – Running the system in the check mode.
  – Performing automatic operations.

Injury may result if anyone enters the P-point maximum envelope of the manipulator during operation. Always press an emergency stop button immediately if there is a problem.

The emergency stop buttons are located on the right of front door of the DX200 and the programming pendant.
WARNING

- Do not touch the inside of the DX200 at least 5 minutes after turning power OFF.

The remaining charged voltage in the capacitor can cause electrical shock and injury.
- Make sure to close door while power is ON.

Failure to observe this warning may result in electrical shock or fire.

CAUTION

- Perform the following inspection procedures prior to conducting manipulator teaching. If problems are found, repair them immediately, and make sure that all other necessary processes have performed.
  - Check for problems in manipulator movement.
  - Check for damage to insulation and sheathing of external wires.
- Always return the programming pendant to the hook on the cabinet of the DX200 after use.

The programming pendant can be damaged if it is left in the manipulator's work area, on the floor, or near fixtures.
- Read and understand the Explanation of Warning Labels in the DX200 Instructions before operating the manipulator.
- The wiring and mounting must be performed by authorized and qualified personnel.

Failure to observe these cautions may result in a fire or damage to the equipment.
- Never give any shock to the DX200

The shock may damage the unit.
**Definition of Terms Used Often in This Manual**

The MOTOMAN is the YASKAWA industrial robot product.

The MOTOMAN usually consists of the manipulator, the controller, the programming pendant, and supply cables.

In this manual, the equipment is designated as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DX200 controller</td>
<td>DX200</td>
</tr>
<tr>
<td>DX200 programming pendant</td>
<td>Programming pendant</td>
</tr>
<tr>
<td>Cable between the manipulator and the controller</td>
<td>Manipulator cable</td>
</tr>
</tbody>
</table>

Descriptions of the programming pendant keys, buttons, displays and keyboard of the PC are shown as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming Pendant</td>
<td></td>
</tr>
<tr>
<td>Character Keys</td>
<td>The keys which have characters printed on them are denoted with [], e.g. [ENTER]</td>
</tr>
<tr>
<td>Symbol Keys</td>
<td>The keys which have a symbol printed on them are not denoted with [ ] but depicted with a small picture. e.g. PAGE key. The cursor key is an exception, and a picture is not shown.</td>
</tr>
<tr>
<td>Axis Keys Numeric Keys</td>
<td>“Axis keys” and “Numeric keys” are generic names for the keys for axis operation and number input.</td>
</tr>
<tr>
<td>Keys Pressed Simultaneously</td>
<td>When two keys are to be pressed simultaneously, the keys are shown with a “+” sign between them. e.g. SHIFT key + COORD key</td>
</tr>
<tr>
<td>Mode Key</td>
<td>Three kinds of modes that can be selected by the mode key are denoted as follows: REMOTE, PLAY, or TEACH</td>
</tr>
<tr>
<td>Button</td>
<td>Three buttons on the upper side of the programming pendant are denoted as follows: HOLD button START button EMERGENCY STOP button</td>
</tr>
<tr>
<td>Displays</td>
<td>The menu displayed in the programming pendant is denoted with {}, e.g. {JOB}</td>
</tr>
<tr>
<td>PC Keyboard</td>
<td>The name of the key is denoted. e.g. Ctrl key on the keyboard</td>
</tr>
</tbody>
</table>
Description of the Operation Procedure

In the explanation of the operation procedure, the expression “Select • • • ” means that the cursor is moved to the object item and the SELECT key is pressed, or that the item is directly selected by touching the screen.

Registered Trademark

In this manual, names of companies, corporations, or products are trademarks, registered trademarks, or bland names for each company or corporation. The indications of (R) and TM are omitted.
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3 Setting the Functions.......................................................................................... 3-1
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  4.2 Replacing Procedure for JZRCR-YAU21 ................................................... 4-4
    4.2.1 Opening the Front Door of the DX200 ........................................... 4-4
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Revision History .....................................................................................................A-1
This instruction manual describes the capacitor unit JZRCR-YAU21. The capacitor unit JZRCR-YAU21 enables collection of part of the regeneration power using the DX200 to save energy.

1.1 System Configuration
This instruction manual describes the capacitor unit JZRCR-YAU21. The capacitor unit JZRCR-YAU21 enables collection of part of the regeneration power using the DX200 to save energy.

### 2.1 Unit External View

*To assure insulation distance, confirm that the distance from the capacitor edge to the capacitor mounting band is 25 mm or more at the installation or inspection.

### 2.2 Unit Specifications

<table>
<thead>
<tr>
<th>Items</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Type</td>
<td>JZRCR-YAU21-1</td>
</tr>
<tr>
<td>Approx. Mass</td>
<td>3.2 kg</td>
</tr>
</tbody>
</table>
3 Setting the Functions

3.1 Setting the Functions

JZRCR-YAU21 requires no function setting. In mounting or removal, setting change is not necessary for the DX200 or the JZRCR-YAU21.
4 Replacing the Unit

WARNING

• Before wiring, mounting and removing the unit, make sure to turn OFF the power and put up a warning sign, such as "DO NOT TURN ON THE POWER". Failure to observe this warning can result in an electric shock or an injury.

• Do not touch the inside of the DX200 for five minutes after the power is turned OFF. Ensure that the charge lamp (red LED) of the converter is completely OFF. The remaining charged voltage in the capacitor may cause an electric shock or an injury.

• Be sure to close the door while the power is turned ON. Failure to observe this warning may result in a fire or an electric shock.

1 If the charge lamp does not go out for a long time, there is a possibility that abnormal power shutdown (such as breaker off or power outage during servo on) occurs. In that case, discharge is possible by turning on the breaker. Ensure that the charge lamp is turned off.
This instruction manual describes the capacitor unit JZRCR-YAU21. The capacitor unit JZRCR-YAU21 enables collection of part of the regeneration power using the DX200 to save energy.
4.1 Mounting Position of JZRCR-YAU21

The JZRCR-YAU21 unit is mounted on the following position.

Refer to the following section for replacing.
4.2 Replacing Procedure for JZRCR-YAU21

Replace the JZRCR-YAU21 in the following procedures.

4.2.1 Opening the Front Door of the DX200

1. Turn the two door locks on the front face of the DX200 clockwise 90° with a flat tip screwdriver.

2. With the door locks turned clockwise 90°, turn the main power supply switch handle to the "OFF" position, and slowly open the door.
### 4.2.2 Replacing the JZCR-R-YAU21

#### WARNING

- Ensure that the primary power to the DX200 is turned OFF on the power distribution board. For confirmation, check the breaker and other devices of the power distribution board are turned OFF as well as power is not supplied to the DX200 by checking the interphase voltage or using a voltage detector.

Failure to observe this warning may result in an electric shock or an injury.

- Put up a warning sign, such as "DO NOT TURN ON THE POWER" on the breaker and other devices of the power distribution board.

Failure to observe this warning may result in an electric shock or an injury.

1. Pull out the covers that is on both sides of the primary and secondary power wires, of the breaker located in the upper left of the DX200.
2. Remove the primary, secondary power wires, and the grounding wire.

3. Remove the fixing screws of the breaker base (upper 2 places, lower 2 places) to remove the breaker together with the base.
4. Disconnect the cable of connector CN900 and grounding wire of the JZRCR-YAU21.

5. Remove the upper and lower fixing screws (4 places), and remove the JZRCR-YAU21.

6. Mount the new JZRCR-YAU21 to the DX200 by firmly tightening the upper and lower fixing screws (4 places).

**CAUTION**

- In mounting, follow the figure for the vertical orientation of JZRCR-YAU21.

Failure to observe this caution may result in a fire or damage the unit.

7. Connect the grounding wire and the cable of connector CN900 of JZRCR-YAU21.

8. Attach the breaker base to the DX200 using four screws.
4.2 Replacing Procedure for JZRCR-YAU21

After attaching the breaker, close the door and check that the door can be opened/closed smoothly and the breaker can be turned ON/OFF using the handle.

If the door cannot be opened/closed smoothly, loosen the screw fixing the handle of the back side of the door, fine-tune the position of the handle to open/close the door smoothly, and then tighten the screw of the handle.

**NOTE**

If the handle spins around and the breaker cannot be switched between ON/OFF, loosen the screw of the breaker base, move the breaker base to the front, adjust the handle not to spin around, and then screw the breaker base.

9. Connect the primary power wires, the secondary power wires, and the grounding wire.

![Diagram showing primary power wires, breaker base, breaker, grounding wire, and secondary power wires.](image-url)
10. Attach the two covers on the primary and secondary power wires of the breaker.

4.2.3 Closing the Front Door of the DX200

1. Close the door slowly.

2. Turn the two door locks counterclockwise 90° using a flat tip screwdriver.
### Revision History

<table>
<thead>
<tr>
<th>Date</th>
<th>CEN / ECN</th>
<th>Revision No.</th>
<th>Reason For Revision</th>
<th>Initials</th>
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<tr>
<td>7/17/2014</td>
<td>M2094/49516</td>
<td>0</td>
<td>Original Release</td>
<td>JFC</td>
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</table>
DX200 OPTIONS
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FOR CAPACITOR UNIT

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Specifications are subject to change without notice for ongoing product modifications and improvements.