DX200 OPTIONS

INSTRUCTIONS

FOR INDEPENDENT TYPE BREKE RELEASE UNIT (HANDY TYPE)

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

MOTOMAN 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.

Please have the following information available when contacting Yaskawa Customer Support:

- System
- Primary Application
- Software Version (Located on Programming Pendant by selecting: {Main Menu} - {System Info} - {Version})
- Robot Serial Number (Located on robot data plate)
- Robot Sales Order Number (Located on controller data plate)

Part Number: 165296-1CD
Revision: 2
MONDATORY

- This manual explains the brake release unit of the DX200 system. Read this manual carefully and be sure to understand its contents before handling the DX200.

- 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.
FOR SAFE OPERATION

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

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

<table>
<thead>
<tr>
<th>DANGER</th>
<th>Indicates an imminent hazardous situation which, if not avoided, could result in death or serious injury to personnel.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WARNING</td>
<td>Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to personnel.</td>
</tr>
<tr>
<td>CAUTION</td>
<td>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.</td>
</tr>
<tr>
<td>MANDATORY</td>
<td>Always be sure to follow explicitly the items listed under this heading.</td>
</tr>
<tr>
<td>PROHIBITED</td>
<td>Must never be performed.</td>
</tr>
</tbody>
</table>

Even items described as “CAUTION” may result in a serious accident in some situations. At any rate, be sure to follow these important items.

**NOTE**

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

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

- 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.
  - Ensure that you have a safe place to retreat in case of emergency.

Improper or unintended manipulator operation may result in injury.

- Before operating the manipulator, check that servo power is turned OFF when the emergency stop buttons on the front door of the DX200 and programming pendant are pressed. 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.

- 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.
CAUTION

- Perform the following inspection procedures prior to conducting manipulator teaching. If problems are found, repair them immediately, and be sure that all other necessary processing has been 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 DX200 cabinet 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 the Warning Labels in the DX200 Instructions before operating the manipulator.

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 manipulator 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, and displays are shown as follows:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Manual Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming Pendant Keys</td>
<td>The keys which have characters printed on them are denoted with []. ex. [ENTER]</td>
</tr>
<tr>
<td>Symbol Keys</td>
<td>“Axis Keys” and “Number Keys” are generic names for the keys for axis operation and number input.</td>
</tr>
<tr>
<td>Number Keys</td>
<td>When two keys are to be pressed simultaneously, the keys are shown with a “+” sign between them, ex. [SHIFT]+[COORD]</td>
</tr>
<tr>
<td>Keys pressed simultaneously</td>
<td></td>
</tr>
<tr>
<td>Displays</td>
<td>The menu displayed in the programming pendant is denoted with {}. ex. {JOB}</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.

**Registered Trademark**

In this manual, names of companies, corporations, or products are trademarks, registered trademarks, or brand names for each company or corporation. The indications of (R) and TM are omitted.
1 Product Confirmation

Confirm the contents of the delivery when the product arrives.

- Brake Release Unit x 1  
  (refer to fig. 1-1 “Brake Release Unit (handy type)”)

- Brake Release Unit Cable x 1  
  (refer to fig. 1-1 “Brake Release Unit (handy type)”)

* The above figure is an example.

Fig. 1-1: Brake Release Unit (handy type)
2  Installation and Wiring

**MONDATORY**

When you use DX200 brake release unit (Non-explosion-proof unit) with the painting manipulator in the hazardous area may cause a fire.
Be sure to use them in Non-hazardous area.
(Use them in Safe area where explosive gases etc. do Not exist.)

Only when using the brake release unit, connect it with the attachment cable for brake release unit.

**CAUTION**

- Check to be sure that the main breaker of the DX200 is turned OFF before connecting the cable. Electric shock or equipment damage may result.
- Connect each connector firmly. Electric shock or wrong operation may result.

■ Connection procedure

Connection procedure varies depending on the purpose.
For purpose, refer to table 2-1 “The table for common application”, table 2-2 “The table for painting application”

**For common application type**

1. Prepare the brake release unit and the brake release unit cable corresponding to the manipulator (or external axis) whose brake is to be released.
   Refer to Table 2-1 “The table for common application”.

2. Confirm that the main breaker of the DX200 is turned OFF.

3. Remove the power supply connector (power line) on the manipulator side (or external axis) side.
4. Connect the connector (2CN) of the brake release unit cable to the brake release unit connector (2CN).
   Before connecting the cable connector of the manipulator side (or external axis) side to the manipulator power supply connector, check each notation on the connector and the manipulator (or external axis) is the same.

5. Insert the plug 1CN of the brake release unit to the outlet for AC100V (with ground terminal).

**For painting application type**

1. Prepare the brake release unit and the brake release unit cable corresponding to the manipulator or the external axis whose brake is to be released.
   Refer to Table 2-2 “The table for painting application”.

2. Confirm that the main breaker of the DX200 is turned OFF.

3. Remove the power supply connector (power line) on the DX200.

4. Connect the connector (2CN) of the brake release unit cable to the brake release unit connector (2CN).
   Before connecting the cable connector of the manipulator side to the power supply cable connector which disconnected in the step 3, check each notation on the connector and the power supply cable is the same.

5. Insert the plug 1CN of the brake release unit to the outlet for AC100V (with ground terminal).
Table 2-1: The table for common application

<table>
<thead>
<tr>
<th>Manipulator Type / External Axis Motor Type</th>
<th>Brake release unit cable</th>
<th>Brake release unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MH280 II</td>
<td>HS1370337-□</td>
<td>HE0301921-□</td>
</tr>
<tr>
<td>MH250 II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPL160 II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPL300 II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ES165RD II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ES200RD II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS165/MH180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH180-120</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS210/MH225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MC2000 II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS100/MH110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPL100 II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH400 II</td>
<td>HS0371058-□</td>
<td></td>
</tr>
<tr>
<td>MH600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UP400RD II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA1440/MH12</td>
<td>HS0371438-□</td>
<td></td>
</tr>
<tr>
<td>MA2010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH5LS II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH50 II</td>
<td>HS1370251-□</td>
<td></td>
</tr>
<tr>
<td>MH50 II -20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH50 II -35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH80 II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS808 II</td>
<td>HS1370055-□</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HS1370058-□</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HS1370059-□</td>
<td></td>
</tr>
<tr>
<td>MPL800 II</td>
<td>HS1370644-□</td>
<td></td>
</tr>
<tr>
<td>MPL80 II</td>
<td>HS1370647-□</td>
<td></td>
</tr>
<tr>
<td>VA1400 II</td>
<td>HS1370646-□</td>
<td>HE1300914-A</td>
</tr>
<tr>
<td>VS100</td>
<td>HS1370645-□</td>
<td></td>
</tr>
<tr>
<td>SIA20D II</td>
<td>HS1370175-□</td>
<td></td>
</tr>
<tr>
<td>MLT1700</td>
<td>HS1370672-□</td>
<td>HB1371413-A</td>
</tr>
<tr>
<td>SGMRV-13ANA-YR1□</td>
<td>HS1370176-A</td>
<td>HE0301921-□</td>
</tr>
<tr>
<td>SGMRV-20ANA-YR1□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGMRV-30ANA-YR1□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGMRV-37ANA-YR1□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGMRV-44ANA-YR1□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SGMRV-55ANA-YR1□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Built-in power supply GUN axis</td>
<td>HS1370503-A</td>
<td></td>
</tr>
</tbody>
</table>
### Table 2-2: The table for painting application

<table>
<thead>
<tr>
<th>Manipulator Type / External Axis Motor Type (Note.1)</th>
<th>Brake release unit cable</th>
<th>Brake release unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPX3500</td>
<td>HB1371322-A</td>
<td>HE0301921-□</td>
</tr>
<tr>
<td>MPX2600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPO10</td>
<td>HS1370677-A</td>
<td></td>
</tr>
<tr>
<td>PMU0037</td>
<td>HS1370678-A</td>
<td></td>
</tr>
</tbody>
</table>

Note.1 Must Not use the brake release unit in hazardous area.
3 Operating Method

**MONDATORY**

When you use DX200 brake release unit (Non-explosion-proof unit) with the painting manipulator in the hazardous area may cause a fire. Be sure to use them in Non-hazardous area. (Use them in Safe area where explosive gases etc. do Not exist.)

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**WARNING**

- Before rewiring the brake release unit cable, turn OFF the circuit protector 1CP. Personal injury or equipment damage may result due to the wrong operation.
- When releasing the brake, pay attention to surroundings. The robot arm may move under its own weight, and personal injury or equipment damage may result.
- Release the brake for one axis at a time.
- If the brakes of multiple axes are released, the robot arm may move in an unexpected way. Pay attention to surroundings. Personal injury or equipment damage may result.
- After the operation, be sure to turn OFF the “BRAKE RELEASE” switch and the circuit protector 1CP. Personal injury or equipment damage may result due to the wrong operation.

1. Confirm that the main breaker of the DX200 is turned OFF.
2. Turn ON the circuit protector 1CP on the brake release unit. (The "POWER" light turns ON.)
3. In the state that the “BRAKE RELEASE” switch is ON, press the button for the axis whose brake is to be released to release the corresponding axis brake. The axis brake is released while pressing the button.

* When using the cable for external axis:
The brake of the external axis will be released when the "S"-axis switch is pressed.

4. To finish the brake release operation, turn OFF the button for the axis whose brake is released and the “BRAKE RELEASE” switch.

5. After the operation, turn OFF the circuit protector 1CP. (The “POWER” light turns OFF.)
DX200 OPTIONS
INSTRUCTIONS
FOR INDEPENDENT TYPE BREKE RELEASE UNIT (HANDY TYPE)

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

YASKAWA