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

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

Part Number: 174115-1CD
Revision: 0
MANDATORY

• This manual explains the controller of the DX200. 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.
We suggest that you obtain and review a copy of the ANSI/RIA National Safety Standard for Industrial Robots and Robot Systems (ANSI/RIA R15.06-2012). You can obtain this document from the Robotic Industries Association (RIA) at the following address:

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

Ultimately, well-trained personnel are the best safeguard against accidents and damage that can result from improper operation of the equipment. The customer is responsible for providing adequately trained personnel to operate, program, and maintain the equipment. NEVER ALLOW UNTRAINED PERSONNEL TO OPERATE, PROGRAM, OR REPAIR THE EQUIPMENT!

We recommend approved Yaskawa training courses for all personnel involved with the operation, programming, or repair of the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Notes 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>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="DANGER" /></td>
<td>Indicates a imminent hazardous situation which, if not avoided, could result in death or serious injury to personnel.</td>
</tr>
<tr>
<td><img src="image" alt="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><img src="image" alt="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><img src="image" alt="MANDATORY" /></td>
<td>Always be sure to follow explicitly the items listed under this heading.</td>
</tr>
<tr>
<td><img src="image" alt="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

- 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.: 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.: Release of Emergency Stop Button**

- 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.
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 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:

Definitions 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>

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 ™ are omitted.
Customer Support Information

If you need assistance with any aspect of your system, please contact Motoman Customer Support at the following 24-hour telephone number:

(937)847-3200

For routine technical inquiries, you can also contact Motoman Customer Support at the following e-mail address:

techsupport@motoman.com

When using e-mail to contact Motoman Customer Support, please provide a detailed description of your issue, along with complete contact information. Please allow approximately 24 to 36 hours for a response to your inquiry.

Please use e-mail for routine inquiries only. If you have an urgent or emergency need for service, replacement parts, or information, you must contact Motoman Customer Support at the telephone number shown above.

Please have the following information ready before you call:

- System
- Primary Application
- Controller DX200
- Software Version Access this information on the Programming Pendant’s LCD display screen by selecting {MAIN MENU} - {SYSTEM INFO} - {VERSION}
- Robot Serial Number Located on the robot data plate
- Robot Sales Order Number Located on the DX200 controller data plate
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1 Introduction

Before using this product, read this manual and all other documents carefully to ensure knowledge about the product and safety, including all the cautions.

As seen in the figure below, the DX200 consists of the painting unit part and the standard unit part.

Hereinafter, the DX200 which consists of the painting unit part and the standard unit part is referred to as “the DX200”.

“Manipulator” described in this manual contains the external axis motor unit.
2 Indications on Explosion-Proof Devices

2.1 Label

Following warning labels are attached to the DX200.
Always follow the warnings on the labels.
Also, an identification label with important information is placed on the body of the DX200. Prior to operating the DX200, confirm the contents.

Note 1:
Specifications of the standard unit vary depending on its function or the manipulator to be connected.
2 Indications on Explosion-Proof Devices

Fig: Explosion-Proof Indication
Name plate indications on explosion-proof specifications

1. Controller: Painting Unit

(Note 3)

(Note 2)

Quality Number
Certificate Number

(Note 4)

Note 2:
The place of production may be replaced with the following address in case it is the ATEX-approved one.

YASKAWA ELECTRIC CORPORATION
2-1 Kurosaki shiroishi, Yahatanishi-ku
Kitakyushu 806-0004 Japan

Note 3:
This part may be replaced with the following one.

YASKAWA

Note 4: List of the Painting Unit Types

<table>
<thead>
<tr>
<th>Type</th>
<th>Rated</th>
<th>Remarks</th>
<th>Door opening and closing direction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Painting unit size</td>
<td>Programing pendant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Painting unit size</td>
<td>Programing pendant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Painting unit size</td>
<td>Programing pendant</td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-P000</td>
<td>Single phase AC200V 50/60Hz</td>
<td>Non explosion-proof</td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-P001</td>
<td>Single phase AC200V 50/60Hz</td>
<td>Non explosion-proof</td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-P010</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-P011</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-P020</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-P021</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-PZ00</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-PZ01</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-PZ10</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-PZ11</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-PZ20</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-PZ21</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-PX20</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JZRCR-YCS21-PX21</td>
<td>Non explosion-proof</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Indications on Explosion-Proof Devices

Fig: Label 3 (Indications on Rating)

![Type and Power Supply Information]

Fig: Label A: Caution Label

![Caution Label]

Fig: Label B: Type of Painting Unit

![Type of Painting Unit]

Fig: Label C: Order Number Label

![Order Number Label]
2.2 Standards

The DX200 meets the following requirements:

- Directive 94/9/EC for equipment and protective systems for proper use in hazardous areas
- IEC 60079-0:2011 for electrical apparatus for explosive gas atmospheres Part 0: General requirements
- Machinery Directive 2006/42/EC
- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC
- EN 1127-1 and EN 13463-1 for hazardous areas

When classifying a manipulator environment as a hazardous area (zone), observe the “Guidelines for the Avoidance of Dangers due to Explosive Atmospheres with Collection of Examples - Explosion Protection Guidelines - (EX-Directives)”. In special cases, or if you are not sure about the specification of areas with the risk of explosion, contact the competent authorities or Yaskawa and have them decide.

2.3 Use in Hazardous Areas

Following explosion-proof markings are attached on the painting unit.

Painting Unit  [Exib]  IIB Gb

<table>
<thead>
<tr>
<th>Marking</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EX</td>
<td>Symbol for explosion-proof devices</td>
</tr>
<tr>
<td>ib</td>
<td>Intrinsic safety type of explosion-proof</td>
</tr>
<tr>
<td>[ ]</td>
<td>A marking when the unit is used with approved devices such as barrier, and has conditional parts for explosion-proof.</td>
</tr>
<tr>
<td>IIB</td>
<td>Gas group</td>
</tr>
</tbody>
</table>

3 System configuration

*Fig 3-1: System Configuration (PMU37-***)*

(*) When using Explosion-proof programming pendant.

Note: 1) The programming pendant is equipped with either non-explosion-proof type or explosion-proof type.
4 Basic Specifications

### DX200

<table>
<thead>
<tr>
<th>Standard Unit</th>
<th>Painting Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Explosion-proof marking</strong></td>
<td>[Exib] II B Gb</td>
</tr>
<tr>
<td>Pressure detector/flow switch circuit</td>
<td>Maximum voltage 13.2V</td>
</tr>
<tr>
<td><strong>Intrinsic safe circuit</strong></td>
<td>Maximum current 14.2mA</td>
</tr>
<tr>
<td>Solenoid valve circuit</td>
<td>Maximum voltage 17.22V</td>
</tr>
<tr>
<td><strong>Battery circuit</strong></td>
<td>Maximum current 220mA</td>
</tr>
<tr>
<td>Power Supply</td>
<td>Maximum voltage DC3.6V</td>
</tr>
<tr>
<td><strong>Dimensions (Note 1)</strong></td>
<td>Maximum current 81mA</td>
</tr>
<tr>
<td>600(W) × 739(H) × 520(D)</td>
<td>(lithium thionyl chloride battery (ER17500VLY)) (Note)</td>
</tr>
<tr>
<td><strong>Mass (Note 2)</strong></td>
<td>Note: mounted in the pressurized enclosure which is in the manipulator.</td>
</tr>
<tr>
<td>150kg (total of Standard unit + paint unit)</td>
<td></td>
</tr>
<tr>
<td><strong>Grounding</strong></td>
<td>Supplied from the standard unit</td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td>Three-phase 200VAC 50/60Hz</td>
</tr>
<tr>
<td>62db or less</td>
<td>220VAC 60Hz</td>
</tr>
<tr>
<td><strong>Installation</strong></td>
<td>Single-phase 200VAC 50/60Hz</td>
</tr>
<tr>
<td>Non-hazardous area</td>
<td></td>
</tr>
<tr>
<td><strong>Ambient Temperature</strong></td>
<td>During operation: 0 to +45℃</td>
</tr>
<tr>
<td>During transportation or when stored: -10 to +60℃</td>
<td></td>
</tr>
<tr>
<td><strong>Relative Humidity</strong></td>
<td>10%~90% (Non-condensing)</td>
</tr>
<tr>
<td><strong>Vibration</strong></td>
<td>0.5G or less</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>Free from corrosive gas or liquid, or explosive gas</td>
</tr>
<tr>
<td>Free from exposure to water, oil, or dust</td>
<td></td>
</tr>
<tr>
<td>Free from large electrical noise (plasma)</td>
<td></td>
</tr>
</tbody>
</table>

### Non explosion-proof programming pendant

**Protective structure** | IP65
---|---
**Dimensions** | 169(W) × 314.5(H) × 50(D)
**Ambient Temperature** | During operation: 0 to +45℃
During transportation or when stored: -10 to +60℃
**Ambient Temperature** | 10%~90% (Non-condensing)
**Installation** | Non-hazardous area

### Explosion-proof programming pendant

**Protective structure** | IP54
---|---
**Dimensions** | 235(W) × 203(H) × 78(D)
**Ambient Temperature** | During operation: 0 to +40℃ (Hazardous area)
During operation: 0 to +45℃ (Non-hazardous area)
During transportation or when stored: -10 to +60℃
**Ambient Temperature** | 10%~90% (Non-condensing)
**Installation** | Hazardous area or non-hazardous area
**Grounding** | A-class grounding with ground resistance of 10 or less (Connected to the back side of the painting unit)

Note 1: Dimensions are subject to change depending on the type of the DX200.
Note 2: Mass is subject to change depending on the specifications of the DX200
5 Installation

5.1 Place of Installation

The conditions listed below must be met before installing the DX200:

- Non-Hazardous area
- Ambient temperature must be 0 to 45°C (32 to 113°F) during operation and -10 to 60°C (14 to 140°F) during transportation and maintenance.
- Humidity must be low with no condensation (10~90%RH).
- It must be a place with little dirt, dust, or water.
- No flammable or corrosive liquids or gases, etc. in the area.
- Little jarring or potential for striking of the DX200 (under 0.5G oscillation).
- No large electric noise source nearby.
- No potential for collision with moving equipment such as forklifts.

If the external electric noise applies, the alarm occurs and the manipulator may stop. When the alarm occurs and the manipulator stops, refer to DX200 maintenance manual and reset the alarm.

**WARNING**

Devices that are not explosion proof must not be installed in hazardous area. Failure to observe this warning may result in a fire.
5.2 Location

- Install the DX200 outside of the P-point maximum envelope of the manipulator and outside of the safeguarding.
- Install the DX200 in a location where the manipulator can be clearly seen during operation and can be operated safely.
- Install the DX200 in a location where it can be easily inspected with its door open. (Make sure to keep the maintenance area.)
- Install the DX200 at least 500 mm away from the nearest wall for maintenance access.
5.3 Installation Method

**CAUTION**

- Do not climb on top of the DX200.
  Failure to observe this caution may result in injury or damage.

Fix the DX200 to the floor or baseplate by using four user-supplied brackets made according to the specifications shown below.
If casters are attached, fix the DX200 in the same way.

---

<table>
<thead>
<tr>
<th>Specification</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard, with transformer</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>with caster</td>
<td>145</td>
<td>165</td>
</tr>
</tbody>
</table>

(蝗it:mm)

Recommended Controller fixing screw: M12 (length: 20 mm) Tightening torque (45N・m (4.6kgf・m²))
Recommended plate thickness :6mm
Note.: Choose screw length in considering effective screw 14mm in depth of the fixed screw in the side panel.
Anchor bolt :M12

※1 :Fixing JIG is different with specification.
For detail ,see the following.

![Diagram of DX200 installation](image)

- Tapped holes for M12 screws on the DX200 side

- φ 14 (2 holes)
  40
  30
  50
  (unit:mm)
6 Connection

6.1 Connection Methods

A connection diagram for the manipulator, manipulator cable, primary power cable, programming pendant, pressure switch unit, and Intrinsically safe cable is shown below.

Fig. 6-1: Cable connection
(Non-explosion-proof programming pendant)

Fig. 6-2: Cable connection (Explosion-proof programming pendant)
6.1.1 Connecting the primary power supply

If the transformer unit is not attached to the DX200, refer to the “DX200 INSTRUCTIONS” to connect the primary power supply cable and ground wire.

Table 6-1: Power supply

<table>
<thead>
<tr>
<th>DX200 power supply specifications</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-phase</td>
<td>200V/220V AC (-15%,+10%) 60Hz</td>
</tr>
<tr>
<td></td>
<td>200V AC (-15%,+10%) 50Hz</td>
</tr>
</tbody>
</table>

Table 6-2: DX200 Power Capacity, Cable Sizes, and Breaker Capacities

<table>
<thead>
<tr>
<th>Manipulator</th>
<th>Power capacity (kVA)</th>
<th>Cable size (size of terminal) (mm²)</th>
<th>Capacity of breaker in DX200 (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.7kW</td>
<td>1.5</td>
<td>5.5 (M5) (*)</td>
<td>20 (*)</td>
</tr>
</tbody>
</table>

( ): Content in the above mentioned table is only an example. When an external axis is added, contact your Yaskawa representative

Grounding cable terminal (M6 screw)
The power capacity is subject to change depending on the work condition. However, the maximum load value such as payload, operation speed, and frequency etc. are taken into account to the value.

- When an external axis is added, the power capacity will also increase. In that case, contact your Yaskawa representative, or check the rated value shown on the label on the DX200 for the power capacity.

- When selecting a transformer, contact your Yaskawa representative.

The power capacity shown above is the continuous rating value. When the robot is rapidly accelerated, the power capacity of several times the continuous rating value may be needed instantly.
### 6.1.2 Connecting the Manipulator Cable

Confirm the apparatus sign of the connector of the manipulator cable, connect the manipulator cable to the connectors on the back side of the DX200.

(*) The following connector layout and name depend on specification.
6.1.3 Connecting the Programming Pendant

(1) Non-explosion proof programming pendant

Connect the programming pendant cable to the connector on the door lower right side of the DX200.
(2) Explosion proof programming pendant

1. Connect a ground wire to the ground terminal (for the power supply barrier for explosion proof programming pendant) on the back side of the DX200 painting unit.

MANDATORY

- Ground resistance to be connected to the backside of the painting unit must be 10 ohms or less with independent ground connection.

The performance of explosion proof programming pendant cannot be maintained.

The customer must prepare the ground wire.

2. Connect the explosion proof programming pendant cable to the connector on the door of the DX200 painting unit. Intrinsically safe cable

Intrinsically safe cable is connected to the DX200 painting unit from pressure switch unit.
6.1.4 Connecting the Programming Pendant

1. Draw the intrinsically safe cable into the painting unit through the cable inlets for intrinsically safe cable on the back side of the painting unit.

---

**CAUTION**

- Connect the intrinsically safe cable through the cable inlets for intrinsically safe cable so that the intrinsically safe cable is separated from other cables. The performance of explosion proof cannot be maintained.
- The intrinsically safe cable must be fixed on the support, which is already mounted, after tied with the cable tie.

---

Fix the Intrinsically safe safety cable

Fix the Intrinsically safe safety cable

Cable support

Isolated Barrier (7BAR)
(For external axis)

Relay Barrier (6BAR)
(For external axis)

Painting Unit Inside
2. As illustrated in the figure below, Connect the intrinsically safe cable to the terminal of the relay barrier (6BAR) and the terminal of the isolated barrier (7BAR) in the painting unit.

3. For grounding the intrinsically safe cables, that are to be connected to (6BAR) and (7BAR), open the back panel of the painting unit, and then connect the grounding cables to the terminals.

4. **External Motor Unit**

<table>
<thead>
<tr>
<th>Pressure Switch Unit</th>
<th>DX200 Painting Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsically safety terminal block</td>
<td>Relay barrier (6BAR)</td>
</tr>
<tr>
<td>P1</td>
<td>P1</td>
</tr>
<tr>
<td>N1</td>
<td>N1</td>
</tr>
<tr>
<td>P3</td>
<td>P3</td>
</tr>
<tr>
<td>N3</td>
<td>N3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Isolated Barrier (7BAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
</tbody>
</table>

   (*1) The content described in this diagram is a representative example, and it is subject to change depending on the specifications.

   (*2) Crimped terminal shown below is recommended for connecting the relay barrier (6BAR) inside the DX200

   ![Crimped terminal](image)

   1.25-MS3(J.S.T. CONNECTORS)

   (*3) Crimped terminal shown below is recommended for connecting the Isolated barrier (7BAR) inside the DX200

   ![Crimped terminal](image)

   1.25-AF2.3B(J.S.T. CONNECTORS)
6.2 Equipment Connection Diagram

Note: Above mentioned diagrams are examples among many
Note: Above mentioned diagrams are examples among many
7 Turning ON the Power Supply

7.1 Turning ON the Main Power Supply

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Confirm that nobody is present in the P-point maximum envelope of the manipulator when turning ON the DX200 power supply. Failure to observe this caution could result in injury caused by accidental contact with the manipulator. Press the emergency stop button immediately if any problems occur. The emergency stop buttons are located on the right side of the front door of the DX200 and on the right side of the programming pendant. (When the programming pendant is explosion-proof specification, the Emergency stop button is located on the upper side of the operating window.)</td>
</tr>
</tbody>
</table>

The main power supply is turned ON when the main power supply switch on the front of the DX200 is turned to the "ON" position, and the initial diagnosis and the current position setting begin.

7.2 Air purge

The air purge of the manipulator is started when turning ON the main power supply, and a message "Purging" is displayed on the programming pendant. The servo power cannot be turned ON during the purge. After the air pressure becomes to normal state, and the purge time count of the timer is completed, the message "purge completed" is displayed on the programming pendant. When purge is completed, it becomes possible to turn ON the servo power.
## 8 Inspections

### 8.1 Regular Inspection Item

<table>
<thead>
<tr>
<th>NO.</th>
<th>Item</th>
<th>Operation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DX200 front door</td>
<td>Check whether it is completely</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>closed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check whether the gasket is not</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>damaged.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Fan</td>
<td>Check whether it is functioning</td>
<td>When the power is turned ON</td>
</tr>
<tr>
<td></td>
<td>-Inside the DX200</td>
<td>normal.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Duct fan at the backside</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Heat exchanger</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Emergency stop button</td>
<td>Check whether it is functioning</td>
<td>When the servo power is turned ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>normal.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Enable switch</td>
<td>Check whether it is functioning</td>
<td>When Teach mode is enabled</td>
</tr>
<tr>
<td></td>
<td></td>
<td>normal.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Battery</td>
<td>Check the message indication</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Power supply</td>
<td>Check the power supplying voltage</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(by tester)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Lead wires for the breaker</td>
<td>Check disconnection or missing of</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>lead wires, and the screw loose.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Intrinsically safe cable</td>
<td>Check disconnection or missing of</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>lead wires, and the screw loose.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Power supply cable</td>
<td>Check disconnection or missing of</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>lead wires, and the screw loose.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Relay barrier</td>
<td>Check whether it is functioning</td>
<td>Placed Inside the painting unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>normal.</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Isolated barrier</td>
<td>Check whether it is functioning</td>
<td>Placed Inside the painting unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>normal.</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Purge control board JARCR-YIS21</td>
<td>Check whether it is functioning</td>
<td>Placed Inside the painting unit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>normal.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Encoder separating board JARCR-YIS22</td>
<td>Check whether it is functioning</td>
<td>Placed Inside the painting unit(back side).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>normal.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Encoder separating board JARCR-YIS23</td>
<td>Check whether it is functioning</td>
<td>Placed Inside the painting unit(back side).</td>
</tr>
<tr>
<td></td>
<td>(Note1)</td>
<td>normal.</td>
<td></td>
</tr>
</tbody>
</table>

Note1: This board may be mounted by specification.
9 Maintenance

9.1 Maintenance for DX200

**WARNING**

- Turn OFF the power supply before opening the DX200 doors. Failure to observe this warning may result in electric shock.

- To prevent anyone inadvertently turning ON the power supply during maintenance, put up a warning sign such as “DO NOT TURN ON THE POWER” at the primary power supply (knife switch, wiring circuit breaker, etc.) and at the DX200 and related controllers and use accepted lockout/tag out Procedures. Failure to observe this caution may result in electric shock or injury.

- After maintenance is completed, carefully check that no tools are left inside the DX200 and that the doors are securely closed. Failure to observe this caution may result in electric shock or injury.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Equipment</th>
<th>Schedule</th>
<th>Method</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DX200 Front door</td>
<td>□</td>
<td>Visually</td>
<td>Refer to the DX200 MAINTENANCE MANUAL and service notes.</td>
</tr>
<tr>
<td>2</td>
<td>DX200 Front door Gasket</td>
<td>□</td>
<td>Visually</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Fan inside the DX200</td>
<td>□</td>
<td>Visually</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Duct fan back side of the DX200</td>
<td>□</td>
<td>Visually</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Heat exchanger fan</td>
<td>□</td>
<td>Visually</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Emergency stop button Programming Pendant</td>
<td>□</td>
<td>Press the button after servo power is turned on</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Enable switch</td>
<td>□</td>
<td>check that the enable switch functions securely (programming pendant)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Battery</td>
<td>□</td>
<td>Visually/programming pendant</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Power supply</td>
<td>□</td>
<td>check for the power supplying voltage (use a tester)</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Intrinsically safety cable</td>
<td>□</td>
<td>Visually, manually check for exterior damages and proper connection</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Power supply cable</td>
<td>□</td>
<td>Visually, manually check for exterior damages and proper connection</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Relay Barrier (inside the painting unit)</td>
<td>□</td>
<td>Visually</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Isolated Barrier</td>
<td>□</td>
<td>Visually</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Surge control board (inside the painting unit)</td>
<td>□</td>
<td>Visually</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Encoder separation board note.1) (back side inner painting unit)</td>
<td>□</td>
<td>Visually</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Encoder separation board note.1) (back side inner painting unit)</td>
<td>□</td>
<td>Visually</td>
<td></td>
</tr>
</tbody>
</table>

Note.1: Even if the encoder separating board is functioning normally, it is recommended to replace it in 36000H cycle.
MANUAL No. HW1483333

YASKAWA

DX200

INSTRUCTIONS

SUPPLEMENT FOR PAINTING APPLICATION

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