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

MOTOMAN INSTRUCTIONS

MOTOMAN-□□□ INSTRUCTIONS
YRC1000 INSTRUCTIONS
YRC1000 OPERATOR’S MANUAL (GENERAL) (SUBJECT SPECIFIC)
YRC1000 MAINTENANCE MANUAL
YRC1000 ALARM CODES (MAJOR ALARMS) (MINOR ALARMS)

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: 187804-1CD
Revision: 1
DANGER

- This manual explains the YRC1000 system for the press applications PH200R/PH200RF. Read this manual carefully and be sure to understand its contents before handling the YRC1000. Any matter not described in this manual must be regarded as "prohibited" or "improper".
- General information related to safety are described in “Chapter 1. Safety” of the “YRC1000 INSTRUCTIONS”. To ensure correct and safe operation, carefully read “Chapter 1. Safety” of the YRC1000 INSTRUCTIONS.

CAUTION

- In some drawings in this manual, protective covers or shields are removed to show details. Make sure that all the covers or shields are installed in place 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 is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification voids the product warranty.

NOTICE

- 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.
Read this manual carefully before installation, operation, maintenance, or inspection of the YRC1000

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

**DANGER**
Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Safety Signs identified by the signal word DANGER should be used sparingly and only for those situations presenting the most serious hazards.

**WARNING**
Indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury. Hazards identified by the signal word WARNING present a lesser degree of risk of injury or death than those identified by the signal word DANGER.

**CAUTION**
Indicates a hazardous situation, which if not avoided, could result in minor or moderate injury. It may also be used without the safety alert symbol as an alternative to “NOTICE”.

**NOTICE**
NOTICE is the preferred signal word to address practices not related to personal injury. The safety alert symbol should not be used with this signal word. As an alternative to “NOTICE”, the word “CAUTION” without the safety alert symbol may be used to indicate a message not related to personal injury.

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”.
• Before operating the manipulator, make sure the servo power is turned OFF by performing the following operations. When the servo power is turned OFF, the SERVO ON LED on the programming pendant is turned OFF.
  – Press the emergency stop buttons on the front door of the YRC1000, on the programming pendant, on the external control device, etc.
  – Disconnect the safety plug of the safety fence. (when in the automatic (play) mode or in the remote mode)
If operation of the manipulator cannot be stopped in an emergency, personal injury and/or equipment damage may result.

Fig. : Emergency Stop Button

• Before releasing the emergency stop, make sure to remove the obstacle or error caused the emergency stop, if any, and then turn the servo power ON.
Failure to observe this instruction may cause unintended movement of the manipulator, which may result in personal injury.

Fig. : Release of Emergency Stop

• Observe the following precautions when performing a teaching operation within the manipulator's operating range:
  – Be sure to perform lockout by putting a lockout device on the safety fence when going into the area enclosed by the safety fence. In addition, the operator of the teaching operation must display the sign that the operation is being performed so that no other person closes the safety fence.
  – View the manipulator from the front whenever possible.
  – Always follow the predetermined operating procedure.
  – Always keep in mind emergency response measures against the manipulator's unexpected movement toward a person.
  – Ensure a safe place to retreat in case of emergency.
Failure to observe this instruction may cause improper or unintended movement of the manipulator, which may result in personal injury.

• Confirm that no person is present in the manipulator's operating range and that the operator is in a safe location before:
  – Turning ON the YRC1000 power
  – Moving the manipulator by using the programming pendant
  – Running the system in the check mode
  – Performing automatic operations
Personal injury may result if a person enters the manipulator's operating range during operation. Immediately press an emergency stop button whenever there is a problem. The emergency stop buttons are located on the front panel of the YRC1000 and on the right of the programming pendant.

• Read and understand the Explanation of the Warning Labels before operating the manipulator.
WARNING

- Perform the following inspection procedures prior to conducting manipulator teaching. If there is any problem, immediately take necessary steps to solve it, such as maintenance and repair.
  - Check for a problem in manipulator movement.
  - Check for damage to insulation and sheathing of external wires.
- Always return the programming pendant to the hook on the YRC1000 cabinet after use.

If the programming pendant is left unattended on the manipulator, on a fixture, or on the floor, etc., the Enable Switch may be activated due to surface irregularities of where it is left, and the servo power may be turned ON. In addition, in case the operation of the manipulator starts, the manipulator or the tool may hit the programming pendant left unattended, which may result in personal injury and/or equipment damage.
CAUTION

- If a main circuit power supply breaker in the YRC1000 has tripped, use the procedure on the next page to troubleshoot the problem before turning the power supply ON again.

<Main Circuit Breakers>

- FS53: Converter main circuit
- FS54: JZRCR-ASV02 (-TA2) Main circuit
- FS55: JZRCR-ASV01 (-TA3) Main circuit
- FS56: JZRCR-ASV01 (-TA4) Main circuit
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>YRC1000 controller</td>
<td>YRC1000</td>
</tr>
<tr>
<td>YRC1000 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</td>
<td></td>
</tr>
</tbody>
</table>
| Character Keys /Symbol Keys| The keys which have characters or symbols printed on them are denoted with [ ].  
|                            | e.g. [ENTER]                                                                        |
| Axis Keys /Numeric Keys    | [Axis Key] and [Numeric Key] are generic names for the keys for axis operation and  
|                            | number input.                                                                       |
| Keys pressed simultaneously| When two keys are to be pressed simultaneously, the keys are shown with a “+”  
|                            | sign between them, e.g. [SHIFT]+[COORD].                                            |
| Mode Switch                | Mode Switch can select three kinds of modes that are denoted as follows: REMOTE,  
|                            | PLAY or TEACH.                                                                     |
|                            | (The switch names are denoted as symbols)                                           |
| Button                     | The three buttons on the upper side of the programming pendant are denoted as follows:  
|                            | START, HOLD, or EMERGENCY STOP.                                                   |
|                            | (The button names are denoted as symbols)                                           |
| Displays                   | The menu displayed in the programming pendant is denoted with {}.  
|                            | e.g. {JOB}                                                                         |

*The button/switch names are denoted as symbols.*
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] 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 brand names for each company or corporation. The indications of (R) and ™ are omitted.

Explanation of Warning Labels

The following warning labels are attached to the YRC1000 system for the press applications PH200R/PH200RF.

Fully comply with the precautions on the warning labels.

DANGER

- The label described below is attached to the YRC1000 for the PH200R/PH200RF.

Observe the precautions on the warning labels.

Failure to observe this caution may result in injury or damage to equipment.

Refer to the manipulator manual for the warning label location.

Front Panel of the Door
DANGER

Internal Breaker

View A: Ground terminal

WARNING

High voltage
Do not open the cover

WARNING

High voltage
Ground the earth terminal based on local code.
CAUTION

- The label described below is attached to the YRC1000 for the PH200R/PH200RF.

Observe the precautions on the caution label. Failure to observe this caution may result in burn.

Right side cover of the regenerative resistor box
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1 Introduction

1.1 About this instruction

This manual is YRC1000 supplementary instructions for the press applications PH200R/PH200RF. Differences from YRC1000 INSTRUCTIONS (RE-CTO-A221) and YRC1000 MAINTENANCE MANUAL (RE-CHO-A114) are described in this manual.

Refer to the following manuals as required.

- YRC1000 INSTRUCTIONS (RE-CTO-A221)
- YRC1000 MAINTENANCE MANUAL (RE-CHO-A114)
- YRC1000 OPERATOR’S MANUAL (RE-CSO-A051)
- YRC1000 ALARM CODES (MAJOR ALARMS) (MINOR ALARMS) (RE-CER-A600)

For information on the operation and maintenance of the standard YRC1000, refer to other manuals, as well as this supplementary instruction manual.
2 Controller Specification

2.1 Controller Type

This manual describes information on the following controller. The controller type depends on the specifications of robot models, applications, etc.

<table>
<thead>
<tr>
<th>Type</th>
<th>(For Japan) ERAR-1000-06VRF200-A00</th>
<th>(For Asia) ERAR-1000-06VRF200-A00</th>
<th>(For North America) ERAR-1000-06VRF200-B00</th>
<th>(For Europe) ERAR-1000-06VRF200-E00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manipulator configuration</td>
<td>PH200R/PH200RF</td>
<td>Grounding</td>
<td>Exclusive grounding to a ground resistance of 100 Ω or less1)</td>
<td></td>
</tr>
<tr>
<td>Dimensions (excluding protrusions)</td>
<td>W1190 × H1400 × D650 (including the width of regenerative resistor box)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approx. mass</td>
<td>350 kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling system</td>
<td>Indirect cooling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply2)</td>
<td>• Three-phase 200 VAC (+10% to -15%) 50/60Hz (±2%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Three-phase 220 VAC (+10% to -15%) 60Hz (±2%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise level</td>
<td>Less than 80 dB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>0°C to + 45°C (during operation) -10°C to + 60°C (during transit and storage)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative humidity</td>
<td>10% to 90%RH (non-condensing)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration acceleration</td>
<td>0.5G or less</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power capacity</td>
<td>22 kVA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breaker capacity</td>
<td>100 A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary power cable size (size of terminal)</td>
<td>AWG2 (33 mm²) (M8)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Make sure to perform D class grounding (with the ground resistance of 100 Ω or less) in accordance with local codes of indoor wiring and electric installation rules.

Install a ground fault circuit interrupter against overloads and short-circuiting, or install a ground fault protection device combined with a molded case circuit breaker.

2 If the voltage specification is different, such as at international factories, etc., prepare a step-down transformer at the factory or use the standalone transformer box available as an option.
2.2 Dimension Diagram

- Power supply cable opening: 31 dia. to 41 dia.
- Caution label
- Air inlet
- Air outlet
- (-X3)
- (-X2)
- (-X1)
- Eyebolt M16 (4 places)
- Main power supply switch
- Warning label
- Tapped hole M12 Depth: 14 mm
- Tapped hole M12 Depth: 25 mm
- Door lock
- Programming pendant
- (-X81) Connector for the programming pendant
- Emergency stop button (Not installed for North American spec. nor for European spec.)
- Rating NP
- Tapped hole M12 Depth: 14 mm
- Caution label
- Covering plate
- Air outlet
- Air outlet
- Air outlet
- Air outlet
- Cable opening
- (-X11)
2.3 Arrangement of Units and Circuit Boards

Back view

Front view

Section A

Right side view

From left (-G15, -G14)
Interior circulation fan
5915PC-22T-B30-B00 or 15038PB-B2L-EP-03

(-L1) AC reactor UZBC-B 40A
(-K1) Fan control relay LY2N-D2 DC24V
(-K2) Power supply relay of the SERVOPACK LY2N-D2 DC24V
(-AE2) Power supply contactor unit JZRCR-APU04-1

From left (-G16, -G17, -G18)
Duct fan of the backside 5915PC-22T-B30-B00 or 15038PB-B2L-EP-03

(-Q1M) Circuit breaker (-TA4)
SERVOPACK JZRCR-ASV01

From top (-R4-1 to 3) Regenerative resistor (U-axis) SMVK500W1R0J A5998 (3 pieces) (1500W 3Ω)

From left (-G15, -G17) Interior circulation fan 5915PC-22T-B30-B00 or 15038PB-B2L-EP-03

From left (-G16, -G15) Interior circulation fan
5915PC-22T-B30-B00 or 15038PB-B2L-EP-03

(-AE1) CPU unit JZNC-ARK5

From top (-R2-1 to 6) Regenerative resistor (S-axis) SMVK500W2R0J A5978 (6 pieces) (3000W 3Ω)

From top (-R3-1 to 8) Regenerative resistor (L-axis) RDC50N6R0J IXX800ZZ (8 pieces) (4000W 3Ω)

(-AE3) Control power supply unit CSRA-CPS01K

Detailed view of B

(-X18) Safety signal terminal block
(-R1) AC reactor UZBC-B 40A
(-L1) AC reactor UZBC-B 40A

Back view

From left (G19, G20, G21, G22) Regenerative resistor fan 5915PC-22T-B30-B00 or 15038PB-B2L-EP-03

(-S1) Emergency stop button (Not installed for North American spec.)

Front view

(-J1) Power supply relay of the SERVOPACK LI1-D2 DC24V
(-K1) Power supply relay of the SERVOPACK LI1-D2 DC24V

From left (G10) Ceiling mounted relay UZBCB 8A

Back view

(-TP1) CPU reset timer H3Y-2 DC24V 0.3 to 5.0 S

Front view

(-R4-1 to 3) Regenerative resistor (U-axis) SMVK500W1R0J A5998 (3 pieces) (1500W 3Ω)

From left (G19, G20) Inter connected fan 5915PC-22T-B30-B00 or 15038PB-B2L-EP-03

(-AE1) CPU unit JZNC-ARK5

From top (R2-1 to 6) Regenerative resistor (S-axis) SMVK500W2R0J A5978 (6 pieces) (3000W 3Ω)

From top (R3-1 to 8) Regenerative resistor (L-axis) RDC50N6R0J IXX800ZZ (8 pieces) (4000W 3Ω)

(-AE2) Power supply relay of the SERVOPACK LI1-D2 DC24V

Back view

(-AE3) Control power supply unit CSRA-CPS01K

From top (R4-1 to 3) Regenerative resistor (U-axis) SMVK500W1R0J A5998 (3 pieces) (1500W 3Ω)

From left (G19, G20) Inter connected fan 5915PC-22T-B30-B00 or 15038PB-B2L-EP-03

(-AE1) CPU unit JZNC-ARK5

Detailed view of B

(-X18) Safety signal terminal block
(-R1) AC reactor UZBC-B 40A
(-L1) AC reactor UZBC-B 40A

Back view

From left (G19, G20, G21, G22) Regenerative resistor fan 5915PC-22T-B30-B00 or 15038PB-B2L-EP-03

(-S1) Emergency stop button (Not installed for North American spec.)
### 2.6 Equipment Configuration

This section explains the configuration of the controller.

**Table 2-2: Configuration of the Controller**

<table>
<thead>
<tr>
<th>Component Description</th>
<th>For Japan</th>
<th>For Asia</th>
<th>For North America</th>
<th>For Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>YRC1000 type (last part) (ERAR-1000-06VRF200□□□□)</td>
<td>A00</td>
<td>B00</td>
<td>E00</td>
<td></td>
</tr>
<tr>
<td>Input voltage</td>
<td>200 VAC 50/60Hz, 220 VAC 60Hz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimension (W) x (H) x (D)</td>
<td>W1190mm×H1400mm×D650mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breaker</td>
<td>NF125-SVU 3P 100A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control power supply unit</td>
<td>CSRA-CPS01K□</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU unit</td>
<td>JZNC-ARK01-E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU board</td>
<td>JANCD-ACP01-E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back board</td>
<td>JANCD-ABB01-E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riser board (PCIe/PCIe)</td>
<td>JANCD-ABB02-E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robot I/F board</td>
<td>JANCD-AIF01-1E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety terminal block board</td>
<td>IM-YE250/5-80P</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General-purpose I/O board</td>
<td>JANCD-AIO01-E</td>
<td></td>
<td>JANCD-AIO02-E</td>
<td></td>
</tr>
<tr>
<td>Power supply contactor unit</td>
<td>JZCR-CPU04-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SERVOPACK</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-axis</td>
<td>JZRCR-ASV02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L-axis</td>
<td>JZRCR-ASV01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U-axis</td>
<td>JZRCR-ASV01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inverter unit (R-, B-, and T-axis)</td>
<td>CSRA-SDA11H01A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Servo control board</td>
<td>CSRA-SDC01AA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differential converter circuit board</td>
<td>JARCR-AIF11-E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety circuit board</td>
<td>JANCD-ASF01-E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Converter</td>
<td>CSRA-CV10A02A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC reactor</td>
<td>UZBC-B 40A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fan control relay</td>
<td>LY2N-D2 DC24V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Servo power supply relay</td>
<td>LY2N-D2 DC24V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timer</td>
<td>H3Y DC24V 0.3 - 5.0S</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interior cooling fan</td>
<td>4715MS-22T-B50-B00 or 11938MB-B2N-EA-01×2</td>
<td>4715MS-22T-B5A-B00 or 11938MB-B2N-EP-01×2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regenerative resistor cooling fan</td>
<td>5915PC-22T-B30-B00 or 15038PB-B2L-EP-03 ×4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regenerative resistor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-axis</td>
<td>SMVK500W2ROJ A5978 (6 pieces) (3000W, 3Ω)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L-axis</td>
<td>RDC50N6ROJX800ZZ (8 pieces) (4000W, 3Ω)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U-axis</td>
<td>SMVK500W1ROJ A5998 (3 pieces) (1500W, 3Ω)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling fan for the backside of the door</td>
<td>5915PC-22T-B30-B00 or 15038PB-B2L-EP-03 ×2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2-2: Configuration of the Controller

<table>
<thead>
<tr>
<th></th>
<th>For Japan</th>
<th>For Asia</th>
<th>For North America</th>
<th>For Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling fan for the back</td>
<td>5915PC-22T-B30-B00 or 15038PB-B2L-EP-03 ( \times 3 )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise filter</td>
<td>-</td>
<td></td>
<td></td>
<td>FN3258-100-35</td>
</tr>
<tr>
<td>Expansion safety terminal block board</td>
<td>IM-YE250/5-80P</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3 Product Confirmation

3.1 Order Number Confirmation

Confirm that the order numbers attached on the manipulator and the YRC1000 are the same.

The order number labels are attached to the position shown in the figure below.
4 Installation

4.1 Handling Procedure

**WARNING**

- Operation of the crane, sling, or forklift must be performed only by authorized personnel.

Failure to observe this instruction may result in personal injury and/or equipment damage.

**NOTICE**

- Avoid excessive vibration or shock while transporting or moving the YRC1000.

Failure to observe this instruction may adversely affect the performance of the YRC1000 because it consists of precision components.

4.2 Using a Crane to Move the Controller

Use a crane, in principle, to transport the YRC1000.

Check the followings before transporting:

- Confirm the weight of the controller before transporting, and use a wire rope with a rating that is greater than the weight of the controller.
- Use eyebolts for transporting and confirm they are securely fastened before lifting.

After checking above, lift the YRC1000 with a crane.

**Approx. Mass of YRC1000**

<table>
<thead>
<tr>
<th>Model Available for YRC1000</th>
<th>Specifications</th>
<th>Approx. mass [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra Large Capacity Model</td>
<td>For Japan</td>
<td>350</td>
</tr>
<tr>
<td>(PH200R/PH200RF)</td>
<td>For Asia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For North America</td>
<td></td>
</tr>
<tr>
<td></td>
<td>For Europe</td>
<td></td>
</tr>
</tbody>
</table>
4.3 Place of Installation

Install the YRC1000 in accordance with chapter 3.2 “Place of Installation” in “YRC1000 INSTRUCTIONS”. 
4.4 Location

Install the YRC1000 for the PH200R/PH200RF at least 300mm from the nearest wall to allow maintenance access.
4.5 Mounting the Controller

Fix the YRC1000 controller in accordance with chapter 3.4 “Mounting the Controller” in “YRC1000 INSTRUCTIONS”.
5 Connection

5.1 Connection

WARNING

• The system must be grounded.
Failure to observe this instruction may result in fire and/or electric shock. Especially in the case where the YRC1000 for European standards is used in Japan, difference in conditions related to electricity such as grounding methods may cause increase in leakage current, which may result in electric shock.

• Before wiring, make sure to turn OFF the primary power supply and use tagout (e.g., “DO NOT TURN THE POWER ON”).
Failure to observe this instruction may result in electric shock and/or personal injury.

• Do not touch any part inside the YRC1000 for at least six minutes after turning OFF the power supply. In addition, confirm that the charge lamps (orange LED) on the converter, the inverter unit, and the SERVOPACK are turned OFF.
Failure to observe this instruction may result in electric shock and/or personal injury due to residual voltage in the capacitor.

• While the power is ON, make sure that the protective cover of the breaker is mounted and the front door of the YRC1000 is closed.
Failure to observe this instruction may result in fire and/or electric shock.

• Wiring of the emergency stop circuit must be performed under the responsibility of the user. Make sure to perform operation check after wiring.
Failure to observe this instruction may result in personal injury and/or mechanical failure.

• Wiring must be performed only by authorized personnel.
Failure to observe this instruction may result in fire and/or electric shock.

• Perform wiring in accordance with the rated capacity as specified in this INSTRUCTIONS.
Failure to observe this instruction may result in fire and/or electric shock.

• Make sure to securely tighten the terminal screws on the main circuit and the control circuit.
Failure to observe this instruction may result in fire and/or electric shock.
5 Connection
5.1 Connection

NOTICE

• Engine generators cannot be used to supply power because the YRC1000 regenerates power. Use commercial power supply for operations, including test operations.

If an engine generator is used to supply power, the converter cannot sufficiently discharge regenerated power and an alarm may occur. The alarm is more likely to occur in high-speed regeneration due to an instantaneous, large regenerative current.

NOTICE

• Do not touch the circuit board directly by hand.
Failure to observe this instruction may result in malfunction of the IC due to static electricity.
5.2 Notes on Cable Junctions

Perform the work in accordance with chapter 4.1 “Notes on Cable Junctions” in “YRC1000 INSTRUCTIONS”.

5.3 Power Supply

Perform the work in accordance with chapter 4.2 “Power Supply” in “YRC1000 INSTRUCTIONS”.

Table 5-1: YRC1000 Input Power Supply Specification

<table>
<thead>
<tr>
<th>Destination</th>
<th>Type (ERAR-1000-)</th>
<th>Input power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan/Asia</td>
<td>06VRF200-A00</td>
<td>Three-phase 200VAC (+10% to -15%), 50/60Hz (±2%)</td>
</tr>
<tr>
<td>North America</td>
<td>06VRF200-B00</td>
<td>Three-phase 220VAC (+10% to -15%), 60Hz (±2%)</td>
</tr>
<tr>
<td>Europe</td>
<td>06VRF200-E00</td>
<td></td>
</tr>
</tbody>
</table>

Table 5-2: YRC1000 Power Capacity, Cable Sizes, and Breaker Capacities

<table>
<thead>
<tr>
<th>Manipulator</th>
<th>Power capacity (kVA)</th>
<th>Cable size and size of terminal (in case of Cabtyre cable (three cores)) (mm²)</th>
<th>Capacity of breaker in YRC1000 (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH200R/ PH200RF</td>
<td>22.0</td>
<td>AWG2 (33 mm²), M8</td>
<td>100 A</td>
</tr>
</tbody>
</table>

The maximum load value (payload, operation speed, and frequency, etc.) is displayed. However, the power capacity is different depending on work conditions. Inquire at the nearest branch office listed on the back cover for information when selecting the transformer.

The power capacity shown above is the continuous rating value. When the manipulator is rapidly accelerated, the power capacity of several times the continuous rating value may be needed instantly.
5.4 User I/O Cable Connection

The user I/O cable connection opening of the YRC1000 for the press applications PH200R/PH200RF is located in a different position than the standard YRC1000. Refer to the following figure to locate the position.

Refer to chapter 4.3.4 "User I/O Cable Connection" in "YRC1000 INSTRUCTIONS" for detailed procedures on running cables through the opening.
5.5 Signal Cable Connection to the User I/O Board

Run the general-purpose I/O signal cables through the general-purpose I/O board (JANCD-AIO0□-E) as shown by the red line in the figure below.

For the details of the connection, refer to “Wiring Procedure of the Terminal Block” in chapter 14.8 “General-Purpose I/O Board (JANCD-AIO0□-E)” in “YRC1000 INSTRUCTIONS (RE-CTO-A221)".
5.6 Safety I/O Signal Cable Connection

Run the system external signal cables such as the safety I/O signals through the safety terminal block board (IM-YE250/5-80P) as shown by the red line in the figure below.

For the details of the connection, refer to “Wiring Procedure of the Terminal Block” in chapter 14.7 “Safety Terminal Block Board (IM-YE250/5-80P)” in “YRC1000 INSTRUCTIONS (RE-CTO-A221)”. 

Pass the cables to the back of the controller through the wiring duct.
5.7 Signal Cable Connection to the User I/O Terminal Block (When adding the optional terminal block)

Run the general-purpose I/O signal cable through the I/O terminal block as shown by the red line in the figure below.

For the details of the connection, refer to “Connection Wire with Robot General-Purpose I/O Connector (CN306, 307, 308, 309)” in chapter 14.8 “General-Purpose I/O Board (JANCD-AIO0□-E)” in “YRC1000 INSTRUCTIONS (RE-CTO-A221)”.

Pass the cables to the back of the controller through the wiring duct.

Fix the cables on the tie mount and the cable clamp by using the cable ties.
6 Inspections

6.1 Regular Inspections

**CAUTION**

- Do not touch the cooling fan or any other part while the power is ON.
  Failure to observe this instruction may result in electric shock and/or personal injury.

Carry out the following inspections.
Failure to perform the following inspections may adversely affect the performance of YRC1000, shorten the life of YRC1000, or cause the unexpected accidents.

<table>
<thead>
<tr>
<th>Inspection Equipment</th>
<th>Inspection Item</th>
<th>Inspection Frequency</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>YRC1000 controller</td>
<td>Confirm that the door is completely closed.</td>
<td>Daily</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Confirm that no gap or damage to the sealed part.</td>
<td>Monthly</td>
<td></td>
</tr>
<tr>
<td>Backside duct fan</td>
<td>Check operation</td>
<td>Daily</td>
<td>While power ON</td>
</tr>
<tr>
<td>Regenerative resistor cooling fan</td>
<td>Check operation</td>
<td>Daily</td>
<td>While power ON</td>
</tr>
<tr>
<td>Emergency stop button</td>
<td>Check operation</td>
<td>Daily</td>
<td>While servo ON</td>
</tr>
<tr>
<td>Enable switch</td>
<td>Check operation</td>
<td>When using</td>
<td>In teach mode</td>
</tr>
<tr>
<td>Battery</td>
<td>Check the message for replacement, etc. is displayed or not.</td>
<td>When an alarm occurs</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>Confirm that power supply voltage is normal.</td>
<td>Before using</td>
<td></td>
</tr>
<tr>
<td>Circuit breaker lead cables</td>
<td>Confirm that the lead cables are not falling out, loosing or breaking. Check the line voltage.</td>
<td>Before using</td>
<td></td>
</tr>
<tr>
<td>YRC1000 cables</td>
<td>Confirm that the cables are not twisted or falling out.</td>
<td>Daily</td>
<td></td>
</tr>
</tbody>
</table>
6.2 Outline

• The YRC1000 inspections must be performed in accordance with chapter 3.2 “YRC1000 Inspections” in “YRC1000 MAINTENANCE MANUAL”.

### WARNING

• Before releasing the door lock, be sure to turn “OFF” the main power supply switch.

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

6.3 Cooling Fan Inspections

• Regarding the inspection of cooling fans, be sure to check the following fans as daily inspection.
  – Cooling fans in the controller: -G11, -G12, -G14, -G15
  – Backside cooling fans: -G16 to -G18
  – Regenerative resistor cooling fans: -G19 to -G22

※After Servo OFF, the backside cooling fans and the regenerative resistor cooling fans operate for 10 minutes and then automatically stop.

• If Alarm 4324: Converter overload appears on the programming pendant, the built-in fan of the SERVOPACK may have stopped. Check the panel display of the SERVOPACK and replace the SERVOPACK if ”.7Ab: SERVOPACK Built-in Fan Stopped” appears on the screen.

### CAUTION

• Do not turn “OFF” the main power supply switch or the control power supply until 10 minutes elapses after the robot is stopped.

• When turning “OFF” the main power supply switch or control power supply immediately after the robot is stopped, do not touch the regenerative resistor box for 30 minutes.

If the main power supply switch or control power supply is turned “OFF” immediately after the robot is stopped, the regenerative resistor cooling fans stop and the regenerative resistor box heats up, which may cause burn injury.
6 inspections
6.3 Cooling Fan Inspections

Fig. 6-1: Cooling Fan Construction

- Interior circulation fan
- Duct fan of the backside
- Regenerative resistor cooling fan

Left side in the controller view
Right side of the board view
6.4 Open Phase Check

The circuit of the YRC1000 for the press applications PH200R/PH200RF is different from that of the standard YRC1000. Perform the open phase check by referring to the following diagram.
7 Description of Units and Circuit Boards

7.1 SERVOPACK (JZRCR-ASV01, JZRCR-ASV02)

The SERVOPACK converts the Three-phase AC power supply supplied by the power supply contactor unit into a Three-phase motor current and outputs to a servo motor. The SERVOPACK JZRCR-ASV02 outputs to the S-axis motor, and the SERVOPACK JZRCR-ASV01 outputs to the L- and U-axis motor.

Configuration of SERVOPACK (JZRCR-ASV01)

Configuration of SERVOPACK (JZRCR-ASV02)
The differential converter circuit board is the circuit board for converting the PWM signal from the servo control board to a differential signal and then transmitting that signal to the SERVOPACK.
8 Replacing Parts

This Supplemental Instructions describes replacing of parts that are not described in the “YRC1000 MAINTENANCE MANUAL.” For replacing other parts, refer to the “YRC1000 MAINTENANCE MANUAL.”

8.1 Replacing the Power Supply Contactor Unit (JZRCR-APU04-□)

Use the following procedure to replace the unit.

![WARNING]

- Turn OFF the power before replacing the power supply contactor unit.
- Do not touch any part inside the YRC1000 for at least six minutes after turning OFF the power supply. In addition, confirm that the charge lamps (orange LED) on the converter, the inverter unit, and the SERVOPACK are turned OFF.

Failure to observe this instruction may result in electric shock and/or personal injury due to residual voltage in the capacitor.

**Replacement procedure**

1. Disconnect the cables connected to the power supply contactor unit.
   ▶ It is not necessary to disconnect the following connectors because they are connected inside the power supply contactor unit.
   (CN610, CN611, CN612)
   ▶ When removing the wiring of 1KM-1, 3, 5, of the main power supply input terminal in the power supply contactor unit and the wiring of \(-X600-2,4,6\) of the converter output terminal, remove the transparent cover.
   ▶ Disconnect the ground wirings screwed to the front side of the unit.

2. Loosen the upper and lower screws (4 places) fixing the power supply contactor unit to the controller.

3. Remove the power supply contactor unit from the controller by holding up.
   ▶ Do not hold the board only, but hold it together with the unit since it may cause damages to the board or injury.

4. Hook the new power supply contactor unit to the screws in the controller (4 places).
   ▶ Do not hold the board only, but hold it together with the unit since it may cause damages to the board or injury.

5. Tighten upper and lower side screws (4 places) firmly to fix the power supply controller unit.
8. Connect all the disconnected cables.

※When installing the main circuit input power supply 1KM-1, 3, 5 in the power supply contactor unit, tighten it together with the wiring (AWG16 black wire) in the unit that was connected to 1KM-1, 5.

※Install the main circuit input power supply 1KM-1, 3, 5, and the converter output terminal -X600-2, 4, 6 in the power supply contactor unit, and then attach the transparent cover.

※Firmly connect the disconnected ground wire for the front of the unit.

Configuration of Power Supply Contactor Unit (JZRCR-APU04-□)
8.2 Replacing the SERVOPACK (JZRCR-ASV01, JZRCR-ASV02)

Use the following procedure to replace the SERVOPACK.

**WARNING**

- Turn OFF the power before replacing the SERVOPACK.
- Do not touch any part inside the YRC1000 for at least six minutes after turning OFF the power supply. In addition, confirm that the charge lamps (orange LED) on the converter, the inverter unit, and the SERVOPACK are turned OFF.
- The SERVOPACK must be replaced by two workers, a worker and an assistant worker, because it is a heavy load.
- When confirming the parameter and changing the settings after replacing the SERVOPACK, the door of the controller must be open while the power is ON.
- Since a voltage (200 VAC) is applied inside the controller, do not touch any unit except for the panel operator key of the SERVOPACK.

Failure to observe this instruction may result in electric shock and/or personal injury due to residual voltage in the capacitor.

- Close the door of the controller immediately after changing the parameter.

<Information from the supplier>

- **Door Lock Mechanism**
  The reset-open mechanism is provided for the standard specification.
  The door of the YRC1000 can be opened only when the OPEN (RESET) operation is performed. Note that even at the ON or OFF position, the door of the YRC1000 can also be opened by turning the release by using a tool.

  - **Size of the screwdriver to turn the release**
    - Tip width: 4 mm, Max. width: 5 mm or less

- **Safety Device**
  The interlock lever is provided to prevent the breaker from turning ON while the door of the YRC1000 is open.
  When the breaker must be turned ON while the door is open for maintenance, etc., press and hold the interlock lever in the direction of the arrow, and turn the setting knob to ON.
8 Replacing Parts
8.2 Replacing the SERVOPACK (JZRCR-ASV01, JZRCR-ASV02)

- **Replacement procedure**

1. Disconnect all the following connectors connected externally to the SERVOPACK. (CNP1, CNP2, CNP3, CNP6, CN1)

2. Remove the SERVOPACK ground terminal.

3. Loosen the upper and lower screws (4 places).
   - Remove the screws on the upper side (2 places).
   - ※※ Since the screws on the lower side (2 places) will be used to support the SERVOPACK, loosen the screws. Do not remove them.
   - ※When removing the screws, the assistant worker must help the work such as supporting the unit.

4. Remove the SERVOPACK.
   - ※Sufficient care must be exercised when removing the SERVOPACK because it is a heavy load.

5. Install the new SERVOPACK.
   - ※Sufficient care must be exercised when installing the SERVOPACK because it is a heavy load.

6. Install the upper and lower screws (4 places).
   - ※When installing the screws, the assistant worker must help the work such as supporting the unit.

7. Connect the ground wire of the SERVOPACK.

8. Connect all the disconnected cables.
8.2 Replacing the SERVOPACK (JZRCR-ASV01, JZRCR-ASV02)

9. After replacing the SERVOPACK, the parameters of the SERVOPACK must be confirmed. The list of parameters has been attached to the back of the left door on the YRC1000. Check the parameters using this list. Next, turn ON the main power supply after replacing the SERVOPACK, and then make sure to confirm the parameters according to the SERVOPACK parameter changing procedure. If a different parameter setting is found after the parameters are checked, make sure to change the parameter.

※ The parameter list may not be attached to certain YRC1000s. In this case, check the YRC1000 type, and then perform the procedures to check the parameter settings and change the parameters described in this manual.

10. After changing the settings, turn ON the power supply for the controller again.
8 Replacing Parts
8.2 Replacing the SERVOPACK (JZRCR-ASV01, JZRCR-ASV02)

Changing procedure of the SERVOPACK parameter

1. Turn ON the main power supply switch.
2. Press the MODE/SET Key twice from the Panel Operator Key to switch the panel display from “bb” to “Pn000”.

<table>
<thead>
<tr>
<th>Key No.</th>
<th>Key Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>MODE/SET Key</td>
<td>• Changes the display.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Confirms settings.</td>
</tr>
<tr>
<td>②</td>
<td>UP Key</td>
<td>Increases the setting.</td>
</tr>
<tr>
<td>③</td>
<td>DOWN Key</td>
<td>Decreases the setting.</td>
</tr>
<tr>
<td>④</td>
<td>DATA/SHIFT Key</td>
<td>• Displays the setting. To display the setting, press the DATA/SHIFT Key for approximately one second.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Moves to the next digit on the left when a digit is flashing.</td>
</tr>
</tbody>
</table>

Power ON

Press the MODE/SET Key.

Press the MODE/SET Key.

Press the MODE/SET Key.

Change the panel display to Pn000.

Press the MODE/SET Key.

Press the MODE/SET Key.
3. Switch the panel display to “Pn600” or “Pn603” according to the following procedure.

<table>
<thead>
<tr>
<th>Step</th>
<th>Panel Display after Operation</th>
<th>Keys</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><img src="image" alt="Pn600" /></td>
<td></td>
<td>Press the MODE/SET Key to enter Parameter Setting Mode. Press the UP Key or DOWN Key to display Pn600 (or Pn603). (Press the DATA/SHIFT Key to move the digit.)</td>
</tr>
<tr>
<td>2</td>
<td><img src="image" alt="000120" /></td>
<td></td>
<td>Press the DATA/SHIFT Key for approximately one second. The current setting of Pn600 (or Pn603) will be displayed.</td>
</tr>
<tr>
<td>3</td>
<td><img src="image" alt="Pn600" /></td>
<td></td>
<td>Press the DATA/SHIFT Key for approximately one second again to return to the original display.</td>
</tr>
</tbody>
</table>

If the setting value is different from the listed value, change the setting value according to the following procedure. Turn the power supply ON again after changing the setting, and confirm again that the setting value is set as the listed value on the table next page.

※ The following procedure illustrates the steps to set parameters. Be careful as the actual setting values may differ from these setting values.

<table>
<thead>
<tr>
<th>Step</th>
<th>Panel Display after Operation</th>
<th>Keys</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><img src="image" alt="Pn600" /></td>
<td></td>
<td>Press the MODE/SET Key to enter Parameter Setting Mode. Press the UP Key or DOWN Key to display Pn600. (Press the DATA/SHIFT Key to move the digit.)</td>
</tr>
<tr>
<td>2</td>
<td><img src="image" alt="00120" /></td>
<td></td>
<td>Press the DATA/SHIFT Key for approximately one second. The current setting of Pn600 will be displayed.</td>
</tr>
<tr>
<td>3</td>
<td><img src="image" alt="00120" /></td>
<td></td>
<td>Press the DATA/SHIFT Key to move the digit that is flashing. (You can change the value of the digit that is flashing.)</td>
</tr>
<tr>
<td>4</td>
<td><img src="image" alt="00150" /></td>
<td></td>
<td>Press UP (or DOWN) Key to change the setting value to 00150.</td>
</tr>
<tr>
<td>5</td>
<td><img src="image" alt="00150" /></td>
<td></td>
<td>Press the MODE/SET Key. The display will flash. The setting has now been changed to 00150.</td>
</tr>
<tr>
<td>6</td>
<td><img src="image" alt="Pn600" /></td>
<td></td>
<td>Press the DATA/SHIFT Key for approximately one second to return the display to Pn600. The parameter will be enabled after changing.</td>
</tr>
</tbody>
</table>
When the JZRCR-ASV02(-TA2) has been replaced.
After replacing the SERVOPACK JZRCR-ASV02(-TA2), confirm that each parameter is the same as the parameter setting table on the back of the left door on the controller.
If a different parameter setting is found, make sure to change the parameter as shown in the parameter setting table on the back of the left door on the controller.
When there is no parameter setting table attached, set the following values.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>JZRCR-ASV02 (-TA2) Setting value</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pn600</td>
<td>00120</td>
<td>Regenerative resistor capacity</td>
</tr>
<tr>
<td>Pn603</td>
<td>00300</td>
<td>Regenerative resistor value</td>
</tr>
</tbody>
</table>

When the JZRCR-ASV01(-TA3) has been replaced.
After replacing the SERVOPACK JZRCR-ASV01(-TA3), confirm that each parameter is the same as the parameter setting table on the back of the left door on the controller.
If a different parameter setting is found, make sure to change the parameter as shown in the parameter setting table on the back of the left door on the controller.
When there is no parameter setting table attached, set the following values.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>JZRCR-ASV01 (-TA3) Setting value</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pn600</td>
<td>00160</td>
<td>Regenerative resistor capacity</td>
</tr>
<tr>
<td>Pn603</td>
<td>00300</td>
<td>Regenerative resistor value</td>
</tr>
</tbody>
</table>

When the JZRCR-ASV01(-TA4) has been replaced.
After replacing the SERVOPACK JZRCR-ASV01(-TA4), confirm that each parameter is the same as the parameter setting table on the back of the left door on the controller.
If a different parameter setting is found, make sure to change the parameter as shown in the parameter setting table on the back of the left door on the controller.
When there is no parameter setting table attached, set the following values.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>JZRCR-ASV01 (-TA4) Setting value</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pn600</td>
<td>00060</td>
<td>Regenerative resistor capacity</td>
</tr>
<tr>
<td>Pn603</td>
<td>00300</td>
<td>Regenerative resistor value</td>
</tr>
</tbody>
</table>
8.3 Replacing Cooling Fans in the Controller (-G11, -G12)

Use the following procedure to replace the cooling fans in the controller (-G11, -G12).

**NOTE** Turn OFF the power before replacing the fans.

- **Replacing procedure**
  1. Open the F door.
  2. Disconnect the cable from the wiring duct on the base which is attached to the fan.
  3. Loosen screws of the base on which the fan is mounted, and then take out the fan together with the base.
  4. Disconnect the fan cable.
8 Replacing Parts
8.3 Replacing Cooling Fans in the Controller (-G11, -G12)

5. Remove two screws fixing the fan, and then remove the fan from the base.

6. Remove the ground wire connected to the fan.

7. Connect the ground wire to the new fan.

8. Tighten two screws of the fan, and then mount the fan to the base.
   ※Match the wind direction of the fan with the original. For the wind direction of the fan, refer to fig. 6-1 “Cooling Fan Construction” in chapter 6.3 “Cooling Fan Inspections”.

9. Mount the fan cable which are removed at step 4.

10. Tighten the screws of the base (2 places) to mount the base on the controller.

11. Enclose the cable which are removed at step 2 in the wiring duct.
8.4 Replacing the Rear Fans (-G16, -G17, -G18)

Use the following procedure to replace the rear fans in the controller (-G16, -G17, -G18).

**NOTE**

Turn OFF the power before replacing the fans.

- **Replacing procedure**
  1. Remove the rear plate fixing screws (9 places) at the top of the back of the YRC1000, loosen the fixing screws (3 places) at the bottom, and then remove the rear plate.
  2. Remove the screws (2 places each) that fix the fan, and then remove the fan from the base.
  3. Disconnect the fan cable and ground wire connected to the fan.
8.5 Replacing Cooling Fans in the Regenerative Resistor Box (-G19, -G20, -G21, -G22)

Use the following procedure to replace the cooling fans in the regenerative resistor box (-G19, -G20, -G21, -G22).

- **Replacing procedure**

1. Remove two screws and loosen other one screw on the front of the regenerative resistor box.

   - **NOTE**
   - Turn OFF the power before replacing the fans.
   - If the regenerative resistor heats up, it may result in burn injury.

4. Connect the fan cable and ground wire to the new fan. For the fan cable connection, refer to chapter 8.6 “Connecting the Fan Cable of the Cooling Fan (-G14 to -G22)”.

   ※Ensure that the airflow direction of the new fan is the same as the old fan.
   - For the airflow direction of the fans, refer to fig. 6-1 “Cooling Fan Construction” in chapter 6.3 “Cooling Fan Inspections”.

5. Fix the fan by tightening the fan screws (2 places each).

6. Attach the rear plate that was removed in step 1 to the YRC1000 and tighten the mounting screws (12 places).
8 Replacing Parts
8.5 Replacing Cooling Fans in the Regenerative Resistor Box (-G19, -G20, -G21, -G22)

2. Remove two screws and loosen other one screw on the back of the regenerative resistor box.

3. Slide the regenerative resistor box cover to the right to remove the cover.
4. Remove the screw (2 places each) fixing the fan.
5. Remove the fan from the base in the regenerative resistor box.
6. Remove the fan cables and ground wire connected to the fan.
7. Mount the new fan cable and the ground wire. For connecting the fan cable, refer to chapter 8.6 “Connecting the Fan Cable of the Cooling Fan (-G14 to -G22)”.
8. Mount the new fan to the base in the regenerative resistor box.
   ※Match the wind direction of the fan with the original. For the wind direction of the fan, refer to fig. 6-1 “Cooling Fan Construction” in chapter 6.3 “Cooling Fan Inspections”.
9. Tighten and fix the screw (2 places each) of the fan.
10. Mount the cover to the regenerative resistor box.
11. Tighten and fix the screw (6 places) on the cover of the regenerative resistor box.
8.6 Connecting the Fan Cable of the Cooling Fan (-G14 to -G22)

For connecting the fan cable of the cooling fan (-G14 to -G22), connect the fan cable according to the following procedures.

1. Connect the fan cable to the fan with the “MNB mark” which is on the fan cable connecting port faced to this side.

2. Fix the fan fixing screw and the fan cable by using the cable ties. (Refer to the photo shown below.) Also, pass the cable ties through the bottom of the fan cable connecting port.

**NOTE**
- Confirm that the fan cable is not slipped off the fan by pulling the fan cable to the removing direction.
- Confirm that the cable ties are not moved at pulling the fan cable.
- After that, push the fan cable to the fan side.

1. Connect the cable in the direction of that the "MNB mark" can be seen.

2. Pass the cable ties through the bottom of the fan cable connecting port.

Cut off the excess length of the cable ties.
8.7 Replacing CPU Reset Timer (-KT1) (Setting Timer)

After replacing CPU Reset Timer (-KT1), set the timer to "2 sec".

**NOTE**

Turn OFF the power before replacing the timer.
9 Alarm Message List

9.1 Alarm Message List (-TA2, -TA3, -TA4)

For the PH200R/PH200RF, the alarm of the SERVOPACK may appear on the SERVOPACK (-TA2) (-TA3) (-TA4) panel display. If the alarm listed on the following page appears on the programming pendant, also confirm the SERVOPACK panel display.

WARNING

- To confirm the panel display part of the SERVOPACK, the door of the controller must be open while the power is ON.
- Since a voltage (200 VAC) is applied inside the controller, do not touch any unit in the controller.

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

- Close the door of the controller immediately after confirming the panel display part of the SERVOPACK.

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

- Make sure to turn OFF the power supply before touching the inside unit or wirings.
  After turning OFF the power supply, wait at least six minutes before the replacement operation. In addition, confirm that the charge lamps (orange LED) on the converter, the inverter unit, and the SERVOPACK are turned OFF.

Failure to observe this instruction may result in electric shock and/or personal injury due to residual voltage in the capacitor.

<Information from the supplier>

Purchase of the product implies acceptance of the product specification and manual. Any changes to the product or service with the purpose of altering the specifications or manual are prohibited.

- Door Lock Mechanism
  The reset-open mechanism is provided for the standard specification.
  The door of the YRC1000 can be opened only when the OPEN (RESET) operation is performed. Note that even at the ON or OFF position, the door of the YRC1000 can also be opened by turning the release by using a tool.
  Size of the screwdriver to turn the release
  Tip width: 4 mm, Max. width: 5 mm or less

- Safety Device
  The interlock lever is provided to prevent the breaker from turning ON while the door of the YRC1000 is open.
  When the breaker must be turned ON while the door is open for maintenance, etc., press and hold the interlock lever in the direction of the arrow, and turn the setting knob to ON.
<table>
<thead>
<tr>
<th>Alarm Number of the programming pendant</th>
<th>Alarm Name of the programming pendant</th>
<th>Alarm number of the SERVOPACK panel display</th>
<th>Alarm Meaning</th>
<th>Cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1309 HARDWARE ERROR(CONVERTER)</td>
<td>.020 Parameter Checksum Error</td>
<td>There is an error in the parameter data in the SERVOPACK.</td>
<td>A malfunction was caused by noise from the AC power supply, ground, static electricity, or other source.</td>
<td>The power supply voltage suddenly dropped.</td>
<td>(1) Turn the power OFF then back ON. (2) Confirm that the parameter of the SERVOPACK is appropriate. (3) If the alarm occurs again, replace the SERVOPACK. If the alarm occurs again, save the CMOS.BIN, and then contact your YASKAWA representative about occurrence status (operating procedure).</td>
</tr>
<tr>
<td>.021 Parameter Format Error</td>
<td></td>
<td>There is an error in the parameter data format in the SERVOPACK.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.022 System Checksum Error</td>
<td></td>
<td>There is an error in the parameter data in the SERVOPACK.</td>
<td>The power supply voltage suddenly dropped.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
</tr>
<tr>
<td>.024 System Alarm</td>
<td></td>
<td>An internal program error occurred in the SERVOPACK.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.025 System Alarm</td>
<td></td>
<td>An internal program error occurred in the SERVOPACK.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.030 Main Circuit Detector Error</td>
<td></td>
<td>An error occurred in the main circuit detector.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.040 Parameter Setting Error</td>
<td></td>
<td>A parameter setting is outside of the setting range.</td>
<td>A parameter setting is outside of the setting range.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
</tr>
</tbody>
</table>
9 Alarm Message List

9.1 Alarm Message List (-TA2, -TA3, -TA4)

<table>
<thead>
<tr>
<th>Alarm Number of the programming pendant</th>
<th>Alarm Name of the programming pendant</th>
<th>Alarm number of the SERVOPACK panel display</th>
<th>Alarm Meaning</th>
<th>Cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1309 HARDWARE ERROR(CONVERTER)</td>
<td>.S10 Overspeed</td>
<td>The motor exceeded the maximum speed.</td>
<td>The order of phases U, V, and W in the motor wiring is not correct.</td>
<td>(1) Turn the power OFF then back ON. (2) If the alarm occurs again, replace the SERVOPACK. If the alarm occurs again, save the CMOS.BIN, and then contact your YASKAWA representative about occurrence status (operating procedure).</td>
<td></td>
</tr>
<tr>
<td>.S11 Encoder Output Pulse Overspeed</td>
<td></td>
<td>The encoder output pulse (Pn212) exceeded the upper limit of the setting speed.</td>
<td>The encoder output pulse frequency exceeded the limit.</td>
<td>(1) Turn the power OFF then back ON. (2) If the alarm occurs again, replace the SERVOPACK. If the alarm occurs again, save the CMOS.BIN, and then contact your YASKAWA representative about occurrence status (operating procedure).</td>
<td></td>
</tr>
<tr>
<td>.bF0 System Alarm 0</td>
<td>Internal program error 0 occurred in the SERVOPACK.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.bF1 System Alarm 1</td>
<td>Interior program error 1 occurred in the SERVOPACK.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.bF2 System Alarm 2</td>
<td>Interior program error 2 occurred in the SERVOPACK.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.bF3 System Alarm 3</td>
<td>Interior program error 3 occurred in the SERVOPACK.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.bF4 System Alarm 4</td>
<td>Interior program error 4 occurred in the SERVOPACK.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.Eb1 Safety Function Signal Input Timing Error</td>
<td>An error occurred in the input timing of the safety function signal.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Alarm Message List

#### 9.1 Alarm Message List (-TA2, -TA3, -TA4)

<table>
<thead>
<tr>
<th>Alarm Number of the programming pendant</th>
<th>Alarm Name of the programming pendant</th>
<th>Alarm number of the SERVOPACK panel display</th>
<th>Alarm Meaning</th>
<th>Cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1367</td>
<td>OVERVOLTAGE (CONVERTER)</td>
<td>.400 Overvoltage</td>
<td>Detected in the main circuit power supply section of the SERVOPACK.</td>
<td>The power supply voltage exceeded the specified range. The power supply is not stable or was influenced by a lightning surge. The voltage for AC power supply was too high during acceleration or deceleration. The moment of inertia ratio or mass ratio exceeded the allowable value. A failure occurred in the SERVOPACK.</td>
<td>(1) Turn the power OFF then back ON. (2) Review the primary power supply. (3) Confirm the mass setting of the tool and the workpiece. (4) If the alarm occurs again, replace the SERVOPACK. If the alarm occurs again, save the CMOS.BIN, and then contact your YASKAWA representative about occurrence status (operating procedure).</td>
</tr>
<tr>
<td>.410</td>
<td>Undervoltage</td>
<td>Detected in the main circuit power supply section of the SERVOPACK.</td>
<td>The power supply voltage went below the specified range. The power supply voltage dropped during operation. A momentary power interruption occurred. The SERVOPACK fuse is blown out. A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm Number of the programming pendant</td>
<td>Alarm Name of the programming pendant</td>
<td>Alarm number of the SERVOPACK panel display</td>
<td>Alarm Meaning</td>
<td>Cause</td>
<td>Correction</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------------------------------------</td>
<td>---------------------------------------------</td>
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<td>------------</td>
</tr>
<tr>
<td>1368</td>
<td>REGENERATIVE TROUBLE (CONVERTER)</td>
<td>300 Regeneration Error</td>
<td>Regeneration error</td>
<td>A parameter relating to the regenerative resistor is not set correctly. The regenerative resistor is not wired correctly, slipped off, or disconnected. A failure occurred in the SERVOPACK.</td>
<td>(1) Turn the power OFF then back ON. (2) Confirm the mass setting of the tool and the workpiece. (3) Review the primary power supply. (4) Confirm that the parameter of the SERVOPACK is appropriate. (5) Confirm that the regenerative resistor value connected with the CNP3 of the SERVOPACK is not disconnected. (6) Confirm that the CNP3 of the SERVOPACK is connected. (7) If the alarm occurs again, replace the SERVOPACK. If the alarm occurs again, save the CMOS.BIN, and then contact your YASKAWA representative about occurrence status (operating procedure).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>320 Regenerative Overload</td>
<td>Regenerative overload</td>
<td>The power supply voltage exceeded the specified range. The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state. There was a continuous regeneration state because a negative load was continuously applied. The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor. The setting of Pn603 (Regenerative Resistance) is smaller than the capacity of the External Regenerative Resistor. The external regenerative resistance is too high. A failure occurred in the SERVOPACK.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>330 Main Circuit Power Supply Wiring Error</td>
<td>Detected when the main circuit power supply is turned ON.</td>
<td>The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high. A failure occurred in the SERVOPACK.</td>
<td></td>
</tr>
<tr>
<td>Alarm Number of the programming pendant)</td>
<td>Alarm Name of the programming pendant</td>
<td>Alarm number of the SERVOPACK panel display</td>
<td>Alarm Meaning</td>
<td>Cause</td>
<td>Correction</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------------------------------------</td>
<td>---------------------------------</td>
<td>---------------</td>
<td>-------</td>
<td>------------</td>
</tr>
</tbody>
</table>
| 1373                                   | OVERCURRENT (CONVERTER)               | 100                             | An overcurrent flowed through the power transistor or the heat sink overheated. | The Main Circuit Cable is not wired correctly or there is faulty contact. | (1) Turn the power OFF then back ON.  
(2) Confirm that the parameter of the SERVOPACK is appropriate.  
(3) If an alarm occurs again, replace the following cable.  
• Internal wiring harness  
• Manipulator cable  
(4) Confirm that the regenerative resistor value connected with the CNP3 of the SERVOPACK is not disconnected.  
(5) Confirm that the CNP3 of the SERVOPACK is connected.  
(6) If the alarm occurs again, replace the SERVOPACK.  
If the alarm occurs again, save the CMOS.BIN, and then contact your YASKAWA representative about occurrence status (operating procedure). |
|                                        | Overcurrent Detected                  |                                 |               | There is a short-circuit or ground fault in a Main Circuit Cable. | |
|                                        |                                      |                                 |               | There is a short-circuit or ground fault inside the Servomotor. | |
|                                        |                                      |                                 |               | The regenerative resistor is not wired correctly or there is faulty contact. | |
|                                        |                                      |                                 |               | The regenerative processing capacity was exceeded. | |
|                                        |                                      |                                 |               | The SERVOPACK regenerative resistance is too small. | |
|                                        |                                      |                                 |               | A heavy load was applied while the Servomotor was stopped or running at a low speed. | |
|                                        |                                      |                                 |               | A malfunction was caused by noise. | |
|                                        |                                      |                                 |               | A failure occurred in the SERVOPACK. | |
## 9 Alarm Message List

### 9.1 Alarm Message List (-TA2, -TA3, -TA4)

<table>
<thead>
<tr>
<th>Alarm Number of the programming pendant</th>
<th>Alarm Name of the programming pendant</th>
<th>Alarm number of the SERVOPACK panel display</th>
<th>Alarm Meaning</th>
<th>Cause</th>
<th>Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>4324 COMCONVERTER OVERLOAD .710 Instantaneous Overload</td>
<td>Instantaneous Overload</td>
<td>The wiring is not correct or there is a faulty connection in the motor wiring.</td>
<td>(1) Confirm the mass setting of the tool and the workpiece.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation was performed that exceeded the overload protection characteristics.</td>
<td>(2) Check if the manipulator interferes with any objects such as workpieces or peripheral devices. If interferes, remove the object.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.</td>
<td>(3) Review the job so that the overload ratio is not exceeded 100%.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A failure occurred in the SERVOPACK.</td>
<td>(4) Confirm that the fan in the controller is not stopped.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(5) Confirm that the following terminal brake voltage generates 24V.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• SDCA01 board - CN540</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Motor brake terminal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If any error is found, replace the SDCA01 board.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Operation was performed that exceeded the overload protection characteristics.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.</td>
<td>(6) Confirm that there is no brake lock due to the malfunction of the contactor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A failure occurred in the SERVOPACK.</td>
<td>If any error is found, replace the APU04 unit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(7) Reset the alarm. If an alarm occurs again, replace the motor of the axis in which the alarm occurs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(8) Reset the alarm. If an alarm occurs again, replace the internal wiring harness.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(9) Reset the alarm. If an alarm occurs again, replace the SERVOPACK.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If the alarm occurs again, save the CMOS.BIN, and then contact your YASKAWA representative about occurrence status (operating procedure).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>.720 Continuous Overload</td>
<td>Overload (Continuous Overload)</td>
<td>The wiring is not correct or there is a faulty connection in the motor wiring.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operation was performed that exceeded the overload protection characteristics.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.730 Dynamic Brake Overload</td>
<td>The rotational or linear kinetic energy exceeded the capacity of the DB (dynamic brake) resistor in the DB motion.</td>
<td>The Servomotor was rotated by an external force.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>When the Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.740 Inrush Current Limiting Resistor Overload</td>
<td>The main circuit power supply was frequently turned ON and OFF.</td>
<td>The allowable frequency of the inrush current limiting resistor was exceeded when the main circuit power supply was turned ON and OFF.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A failure occurred in the SERVOPACK.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alarm Number of the programming pendant</td>
<td>Alarm Name of the programming pendant</td>
<td>Alarm number of the SERVOPACK panel display</td>
<td>Alarm Meaning</td>
<td>Cause</td>
<td>Correction</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>---------------------------------------</td>
<td>---------------------------------------------</td>
<td>---------------</td>
<td>-------</td>
<td>-----------</td>
</tr>
<tr>
<td>4324</td>
<td>CONVERTER OVERLOAD</td>
<td>.7A1 Internal Temperature Error 1</td>
<td>An error occurred in the surrounding air temperature of the controller board.</td>
<td>The surrounding air temperature is too high.</td>
<td>An overload alarm was reset by turning OFF the power supply too many times.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.7A2 Internal Temperature Error 2</td>
<td>An error occurred in the surrounding air temperature of the power board.</td>
<td>The surrounding air temperature is too high.</td>
<td>An overload alarm was reset by turning OFF the power supply too many times.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.7A3 Internal Temperature Sensor Error</td>
<td>An error occurred in the temperature sensor circuit.</td>
<td>A failure occurred in the SERVOPACK.</td>
<td>A failure occurred in the SERVOPACK.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.7Ab SERVOPACK Built-In Fan Stopped</td>
<td>The fan inside the SERVOPACK is stopped.</td>
<td>The fan inside the SERVOPACK is stopped.</td>
<td></td>
</tr>
</tbody>
</table>
## 9 Alarm Message List
### 9.1 Alarm Message List (-TA2, -TA3, -TA4)

<table>
<thead>
<tr>
<th>Alarm Number of the programming pendant</th>
<th>Alarm Name of the programming pendant</th>
<th>Alarm number of the SERVOPACK panel display</th>
<th>Alarm Meaning</th>
<th>Cause</th>
<th>Correction</th>
</tr>
</thead>
</table>
| 4336                                    | OPEN PHASE (CONVERTER)                 | .F10                                          | The voltage was low for more than one second for phase R, S, or T when the main power supply was ON. | The three-phase power supply wiring is not correct. The three-phase power supply is unbalanced. A failure occurred in the SERVOPACK. | (1) Reset the alarm. 
(2) If an alarm occurs again, confirm the state of the following cable, the connector, and the circuit protector. 
• APU04 unit -CN607 
• SERVOPACK - CNP1 
• Circuit protector -FS54, -FS56, -FS57 
(3) Set the primary breaker voltage to the specified voltage. 
(4) Reset the alarm. If an alarm occurs again, replace the APU04 unit. 
(5) Reset the alarm. If the alarm occurs again, replace the SERVOPACK. 
If the alarm occurs again, save the CMOS.BIN, and then contact your YASKAWA representative about occurrence status (operating procedure). |
10 Recommended Spare Parts

10.1 Recommended Spare Parts

It is recommended that the following parts and components be kept in stock as spare parts for the YRC1000. The spare parts list for the YRC1000 is shown below.

To buy the spare parts which are ranked B or C, inform the manufacturing number (or order number) of YRC1000 to YASKAWA representative.

Please make sure to use our recommended spare parts. In case use spare parts from any other than YASKAWA, it may cause that product performance can not be guaranteed, damage to equipment or fire.

The spare parts are ranked as follows:

- Rank A: Expendable and frequently replaced parts
- Rank B: Parts for which replacement may be necessary as a result of frequent operation
- Rank C: Drive unit

**NOTE** For replacing parts in Rank B or Rank C, contact your YASKAWA representative.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Parts No.</th>
<th>Name</th>
<th>Type</th>
<th>Manufacturer</th>
<th>Qty.</th>
<th>Qty. per Unit</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 1</td>
<td>Battery</td>
<td>ER6BD_WK77P 3.6V</td>
<td>Hitachi Maxell, Ltd.</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 2</td>
<td>Interior circulation fan</td>
<td>4715MS-22T-B50-B00 or 11938MB-B2N-EA-01</td>
<td>Minebea Co., Ltd.</td>
<td>2</td>
<td>2</td>
<td>For Japan, For Asia, For North America</td>
<td></td>
</tr>
<tr>
<td>A 3</td>
<td>Interior circulation fan</td>
<td>4715MS-22T-B5A-B00 or 11938MB-B2N-EP-01</td>
<td>Minebea Co., Ltd.</td>
<td>2</td>
<td>2</td>
<td>For Europe</td>
<td></td>
</tr>
<tr>
<td>A 4</td>
<td>Interior circulation fan</td>
<td>5915PC-22T-B30-B00 or 15038PB-B2L-EP-03</td>
<td>Minebea Co., Ltd.</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 5</td>
<td>Backside duct fan</td>
<td>5915PC-22T-B30-B00 or 15038PB-B2L-EP-03</td>
<td>Minebea Co., Ltd.</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 6</td>
<td>Regenerative resistor box cooling fan</td>
<td>5915PC-22T-B30-B00 or 15038PB-B2L-EP-03</td>
<td>Minebea Co., Ltd.</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 7</td>
<td>Control power supply unit fan</td>
<td>CSRA-CPS01KA-FN</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 8</td>
<td>DC24V fuse for I/O</td>
<td>02173.15P 3.15A 250V</td>
<td>LITTEL</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 9</td>
<td>AC control power supply fuse</td>
<td>ATDR10 10A 600V</td>
<td>FERRAZ-SHAWMUT</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 10</td>
<td>Encoder power supply fuse</td>
<td>HM10 1A 250V</td>
<td>Daito Communication Apparatus Co., Ltd.</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 11</td>
<td>Relay</td>
<td>LY2N-D2 DC24V</td>
<td>OMRON Corporation</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 12</td>
<td>Timer</td>
<td>H3Y-2 DC24V 0.3 - 5.0S</td>
<td>OMRON Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 13</td>
<td>CPU board</td>
<td>JANCD-ACP01-E</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 14</td>
<td>Robot I/F board</td>
<td>JANCD-AIF01-□</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 15</td>
<td>Safety circuit board</td>
<td>JANCD-ASF01-E</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 16</td>
<td>General-purpose I/O board</td>
<td>JANCD-AI00-□</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 17</td>
<td>Differential converter circuit board</td>
<td>JANCD-AIF11-E</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 18</td>
<td>Converter</td>
<td>CSRA-CV10:□:□A</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 19</td>
<td>Inverter unit</td>
<td>CSRA-SDA11H01A</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td>With the servo control board (CSRA-SDCA01AA)</td>
<td></td>
</tr>
<tr>
<td>C 20</td>
<td>SERVOPACK (S-axis)</td>
<td>JZRCR-ASV02</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 21</td>
<td>SERVOPACK (L-, and U-axis)</td>
<td>JZRCR-ASV01</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 22</td>
<td>CPU unit</td>
<td>JZNC-ARK01-E</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 10-1: Recommended Spare Parts for PH200R/PH200RF (Sheet 2 of 2)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Parts No.</th>
<th>Name</th>
<th>Type</th>
<th>Manufacturer</th>
<th>Qty.</th>
<th>Qty. per Unit</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>23</td>
<td>Power supply contactor unit</td>
<td>JZRCR-APU04-□</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>24</td>
<td>Control power supply unit</td>
<td>CSRA-CPS01K-□</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>25</td>
<td>Programming pendant</td>
<td>JZRCR-APP01-1</td>
<td>YASKAWA Electric Corporation</td>
<td>1</td>
<td>1</td>
<td>With cable (8 m)</td>
</tr>
</tbody>
</table>
YRC1000
SUPPLEMENTARY INSTRUCTIONS
PRESS APPLICATIONS : PH200R/PH200RF

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