MOTOMAN-MS80W II OPTIONS
INSTRUCTIONS
FOR ZEROING FUNCTION

**TYPE:**
YR-MS0080W-J** (ZEROING (OPTION))

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

MOTOMAN INSTRUCTIONS

MOTOMAN-MS80WII INSTRUCTIONS
DX200 INSTRUCTIONS
DX200 OPERATOR’S MANUAL (for each purpose)
DX200 MAINTENANCE MANUAL

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

Part Number: 180253-1CD
Revision: 0
Copyright © 2017 YASKAWA America, Inc.

Terms of Use and Copyright Notice

All rights reserved. This manual is freely available as a service to YASKAWA customers to assist in the operation of Motoman robots, related equipment and software. This manual is copyrighted property of YASKAWA and may not be sold or redistributed in any way. You are welcome to copy this document to your computer or mobile device for easy access but you may not copy the PDF files to another website, blog, cloud storage site or any other means of storing or distributing online content.

Printed in the United States of America

First Printing, 2017

YASKAWA America, Inc.
Motoman Robotics Division
100 Automation Way
Miamisburg, OH 45342
Phone: 937-847-6200

www.motoman.com
MANDATORY

- This instruction manual is intended to explain mainly on the mechanical part of the MOTOMAN-MS80W II for the application to the actual operation and for proper maintenance and inspection. It describes on safety and handling, details on specifications, necessary items on maintenance and inspection, to explain operating instructions and maintenance procedures. Be sure to read and understand this instruction manual thoroughly before installing and operating the manipulator.

- General items related to safety are listed in 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”.

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

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

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

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

PROHIBITED
Must never be performed.

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

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

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

DANGER

- Maintenance and inspection must be performed by specified personnel.

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

- For disassembly or repair, contact your YASKAWA representative.

- Do not remove the motor, and do not release the brake.

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

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

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

Fig. : 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

• 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.

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 the manipulator cables.

In this manual, the equipment is designated as follows.

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

Description of the Operation Procedure

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

Registered Trademark

In this manual, names of companies, corporations, or products are trademarks, registered trademarks, or bland names for each company or corporation. The indications of (R) and TM are omitted.
Explanation of Warning Labels

The following warning labels are attached to the manipulator. Always follow the warnings on the labels.

Also, an identification label with important information is placed on the body of the manipulator. Prior to operating the manipulator, confirm the contents.

Fig.: Warning Label Locations
Safeguarding Tips

All operators, programmers, maintenance personnel, supervisors, and anyone working near the system must become familiar with the operation of this equipment. All personnel involved with the operation of the equipment must understand potential dangers of operation. General safeguarding tips are as follows:

- Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation of this equipment, the operator's manuals, the system equipment, and options and accessories should be permitted to operate this equipment.

- Improper connections can damage the equipment. All connections must be made within the standard voltage and current ratings of the equipment.

- The system must be placed in Emergency Stop (E-Stop) mode whenever it is not in use.

- In accordance with ANSI/RIA R15.06-2012, section 4.2.5, Sources of Energy, use lockout/tagout procedures during equipment maintenance. Refer also to Section 1910.147 (29CFR, Part 1910), Occupational Safety and Health Standards for General Industry (OSHA).

Mechanical Safety Devices

The safe operation of this equipment is ultimately the users responsibility. The conditions under which the equipment will be operated safely should be reviewed by the user. The user must be aware of the various national codes, ANSI/RIA R15.06-2012 safety standards, and other local codes that may pertain to the installation and use of this equipment.

Additional safety measures for personnel and equipment may be required depending on system installation, operation, and/or location. The following safety equipment is provided as standard:

- Safety barriers
- Door interlocks
- Emergency stop palm buttons located on operator station

Check all safety equipment frequently for proper operation. Repair or replace any non-functioning safety equipment immediately.
Programming, Operation, and Maintenance Safety

All operators, programmers, maintenance personnel, supervisors, and anyone working near the system must become familiar with the operation of this equipment. Improper operation can result in personal injury and/or damage to the equipment. Only trained personnel familiar with the operation, manuals, electrical design, and equipment interconnections of this equipment should be permitted to program, or maintain the system. All personnel involved with the operation of the equipment must understand potential dangers of operation.

- Inspect the equipment to be sure no potentially hazardous conditions exist. Be sure the area is clean and free of water, oil, debris, etc.
- Be sure that all safeguards are in place. Check all safety equipment for proper operation. Repair or replace any non-functioning safety equipment immediately.
- Check the E-Stop button on the operator station for proper operation before programming. The equipment must be placed in Emergency Stop (E-Stop) mode whenever it is not in use.
- Back up all programs and jobs onto suitable media before program changes are made. To avoid loss of information, programs, or jobs, a backup must always be made before any service procedures are done and before any changes are made to options, accessories, or equipment.
- Any modifications to the controller unit can cause severe personal injury or death, as well as damage to the robot! Do not make any modifications to the controller unit. Making any changes without the written permission from YASKAWA will void the warranty.
- Some operations require a standard passwords and some require special passwords.
- The equipment allows modifications of the software for maximum performance. Care must be taken when making these modifications. All modifications made to the software will change the way the equipment operates and can cause severe personal injury or death, as well as damage parts of the system. Double check all modifications under every mode of operation to ensure that the changes have not created hazards or dangerous situations.
- This equipment has multiple sources of electrical supply. Electrical interconnections are made between the controller and other equipment. Disconnect and lockout/tagout all electrical circuits before making any modifications or connections.
- Do not perform any maintenance procedures before reading and understanding the proper procedures in the appropriate manual.
- Use proper replacement parts.
- Improper connections can damage the equipment. All connections must be made within the standard voltage and current ratings of the equipment.
**Maintenance Safety**

Turn the power OFF and disconnect and lockout/tagout all electrical circuits before making any modifications or connections.

Perform only the maintenance described in this manual. Maintenance other than specified in this manual should be performed only by YASKAWA-trained, qualified personnel.

**Summary of Warning Information**

This manual is provided to help users establish safe conditions for operating the equipment. Specific considerations and precautions are also described in the manual, but appear in the form of Dangers, Warnings, Cautions, and Notes.

It is important that users operate the equipment in accordance with this instruction manual and any additional information which may be provided by YASKAWA. Address any questions regarding the safe and proper operation of the equipment to YASKAWA Customer Support.
Customer Support Information

If you need assistance with any aspect of your MS80WII Zeroing Function system, please contact YASKAWA Customer Support at the following 24-hour telephone number:

(937) 847-3200

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

techsupport@motoman.com

When using e-mail to contact YASKAWA 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 YASKAWA Customer Support at the telephone number shown above.

Please have the following information ready before you call Customer Support:

• System MS80WII Zeroing Function
• 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
# Table of Contents

1  Zeroing Function .......................................................................................................................... 1-1

  1.1  Outline ................................................................................................................................. 1-1

  1.2  Details on Zeroing Function ............................................................................................... 1-2

    1.2.1  System Configuration .......................................................................................... 1-2

    1.2.1.1  System Configuration of the Zeroing Device Using the CF Card .............. 1-2

    1.2.1.2  System Configuration of the Zeroing Device Using the USB Connector. 1-3

    1.2.2  Operational Procedure and Cautions ..................................................................... 1-4

    1.2.2.1  Before the Zeroing Operation .................................................................. 1-4

    1.2.2.2  Connection of the Zeroing Devices ......................................................... 1-4

    1.2.2.3  Zeroing Procedure for S-Axis .................................................................. 1-7

    1.2.2.4  Zeroing Procedure for L-Axis .................................................................. 1-11

    1.2.2.5  Zeroing Procedure for U-Axis .................................................................. 1-16

    1.2.2.6  Zeroing Procedure for R-Axis .................................................................. 1-20

    1.2.2.7  Zeroing Procedure for B-Axis .................................................................. 1-24

    1.2.2.8  Zeroing Procedure for T-Axis .................................................................. 1-28

  1.3  Errors in the Zeroing Operation and Solutions ................................................................ 1-33
1 Zeroing Function

Zeroing function automatically allows for the restoration of the home position data when the manipulator’s home position data disappear. (Optional function)

This function only applies to the manipulator which was ordered to be equipped with the zeroing function and shipped.

1.1 Outline

The DX200 stores the manipulator home position based on the pulse value of each axis encoder. Since the home position is already set and registered before shipment, zeroing operation does not need to be performed at the normal operation. However, zeroing operation needs to be performed to restore the home position since the home position data disappear when you perform the following operations, or the followings occur.

- Replacement of Motors
- Replacement of Encoders
- Backup Battery Exhaustion in the Manipulator

---

**NOTE**

The home position data is stored by the backup battery. If the battery is exhausted, the home position data disappear again when you turn OFF the DX200 power even if the zeroing operation is performed.

Be sure to replace the battery periodically. For the battery replacement, refer to the “Maintenance and Inspection” of the “MOTOMAN-MS80WII INSTRUCTIONS”.

**NOTE**

The home positioning cannot be performed accurately by the zeroing operation if you change the combination of the manipulator and the DX200.
1.2 Details on Zeroing Function

1.2.1 System Configuration

The system configuration of the zeroing function is described in the following.

1.2.1.1 System Configuration of the Zeroing Device Using the CF Card

Fig. 1-1: Zeroing System Configuration Using CF Card Slot

![Diagram of zeroing system configuration using CF card slot]

Table 1-1: Components for Zeroing Device Using CF Card Slot

<table>
<thead>
<tr>
<th>Component</th>
<th>Type</th>
<th>Qty</th>
<th>Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>① Sensor</td>
<td>HW0381863-A</td>
<td>1</td>
<td>YASKAWA Electric Corporation</td>
</tr>
<tr>
<td>② Amplifier</td>
<td>HW0381864-A</td>
<td>1</td>
<td>YASKAWA Electric Corporation</td>
</tr>
<tr>
<td>③ Lead wire</td>
<td>HW0470652-A</td>
<td>1</td>
<td>YASKAWA Electric Corporation</td>
</tr>
<tr>
<td>④ Communication cable</td>
<td>C232N-915</td>
<td>1</td>
<td>YASKAWA Electric Corporation</td>
</tr>
<tr>
<td>⑤ Communication interface</td>
<td>REX-CF60 *</td>
<td>1</td>
<td>YASKAWA Electric Corporation</td>
</tr>
</tbody>
</table>

* The communication interface REX-CF60 has been discontinued.

The sensor, amplifier, and communication interface are precision instruments.
Handle and store them with due care.
1.2.1.2 System Configuration of the Zeroing Device Using the USB Connector

*Fig. 1-2: Zeroing System Configuration Using USB Slot*

*Table 1-2: Components for Zeroing Device Using USB Slot*

<table>
<thead>
<tr>
<th>Component</th>
<th>Type</th>
<th>Qty.</th>
<th>Manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>① Sensor</td>
<td>HW0381863-A</td>
<td>1</td>
<td>YASKAWA Electric Corporation</td>
</tr>
<tr>
<td>② Amplifier</td>
<td>HW0381864-A</td>
<td>1</td>
<td>YASKAWA Electric Corporation</td>
</tr>
<tr>
<td>③ Lead wire</td>
<td>HW0470652-A</td>
<td>1</td>
<td>YASKAWA Electric Corporation</td>
</tr>
<tr>
<td>④ Communication cable</td>
<td>C232N-915</td>
<td>1</td>
<td>YASKAWA Electric Corporation</td>
</tr>
<tr>
<td>⑤ Communication interface</td>
<td>REX-USB60F</td>
<td>1</td>
<td>YASKAWA Electric Corporation</td>
</tr>
</tbody>
</table>

**NOTE**

The sensor, amplifier, and communication interface are precision instruments.
Handle and store them with due care.
1.2.2 Operational Procedure and Cautions

### WARNING

- False zeroing operation may lead to the manipulator's operation error.
  Be sure to follow the set procedures and perform the zeroing operation upon ensuring the safety.

Injury may result from unintentional or unexpected manipulator motion, or operation error.

---

**NOTE**

The zeroing function is only valid when the security mode is set to the management mode.

For the security mode, refer to chapter 7 “Security System” of the “DX200 INSTRUCTIONS”.

---

1.2.2.1 Before the Zeroing Operation

1. Remove the tool attached to the manipulator and perform the zeroing operation for accurate home positioning by the zeroing function. If the zeroing operation is performed with the tool attached to the manipulator, the tool’s weight may affect positioning accuracy.

2. When the zeroing sensor cannot be mounted since the external equipment is mounted on the manipulator, remove the external equipment from the manipulator first. For disassembly and reassembly procedures, contact your YASKAWA representative.

1.2.2.2 Connection of the Zeroing Devices

1. When using the CF card slot: Insert the communication interface (REX-CF60) into the CF card slot of the programming pendant. When using the USB slot: Insert the communication interface (REX-USB60F) into the USB slot of the programming pendant.
1 Zeroing Function

1.2 Details on Zeroing Function

**Fig. 1-3: Insertion of the Communication Interface**

Using the CF card slot

2. When using the CF card slot: Connect the communication interface (REX-CF60) with the amplifier by using the communication cable (C232N-915).

Using the USB slot

2. When using the USB slot: Connect the communication interface (REX-USB60F) with the amplifier by using the communication cable (C232N-915).

3. Connect the lead wire to the amplifier.
   (Do not connect the sensor yet.)
The installation locations of the zeroing sensors for each axis are shown in Fig. 1-4 “Installation Locations of the Zeroing Sensors”. Perform the zeroing operation for every axis by referring to the procedures described in the following pages.
1.2.2.3 Zeroing Procedure for S-Axis

Perform the zeroing operation for S-axis with the following procedure.

1. Remove the plug and cover from the attaching portion for the sensor.

   **NOTE** Be sure to remove the cover. If the zeroing operation is performed with the cover on, the sensor may be damaged.

   **NOTE** The plug, cover, and cover mounting screws are small parts. Be sure not to lose them during the operation.

   **NOTE** Be sure that the servo power is OFF and no safety hazard is around the manipulator when you approach the manipulator. Injury may result from unintentional or unexpected manipulator motion, or operation error.

2. Perform the home position alignment by adjusting the alignment marks on the S-axis of the manipulator in the TEACH mode.

   **NOTE** Be sure to adjust the home position alignment marks and perform the zeroing operation.

   **NOTE** Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place. Injury may result from unintentional or unexpected manipulator motion, or operation error.
3. Check that no spatter, fume or rust is attached in/on the sensor mounting hole, or sensor detecting element after removing the plug and cover.
   – Remove the spatter, fume, and rust if they are found.
4. Install the sensor onto the mounting holes.

5. Connect the lead wire to the sensor.
6. Turn ON the amplifier power.
   – If the amplifier power has been turned ON for prolonged periods of time, turn OFF the power once and turn ON the power again.
7. Set the mode selector switch on the programming pendant to TEACH.
8. From the main menu, select {Robot}, and then select {Zeroing}. Then, select “S: S-axis” on the touch panel.

NOTE
Never use tools, or avoid excessive force on the sensor.
Failure to observe this instruction may result in damage to the sensor.
Zeroing Function

1.2 Details on Zeroing Function

9. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant.

**NOTE**

Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.

Injury may result from unintentional or unexpected manipulator motion, or operation error.

10. Press (Zeroing) on the touch panel, and pop-up window appears displaying the CAUTION message.

11. Press (OK) by following the message in the pop-up window, and the manipulator starts automatically.

**NOTE**

Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.

Injury may result from unintentional or unexpected manipulator motion, or operation error.

**NOTE**

The manipulator motion is hard to be detected due to its slight motion.

Confirm that no persons approach the manipulator.
12. The programming pendant screen shows the message to confirm the completion of the zeroing operation, then indicates the calculated absolute data.

13. Turn OFF the servo power.

**NOTE**
Be sure to turn OFF the servo power to approach the manipulator.
Injury may result from unintentional or unexpected manipulator motion.

14. Turn OFF the amplifier power.

15. Disconnect the lead wire from the sensor.

16. Remove the sensor from the manipulator.

**NOTE**
After the zeroing operation, be sure to remove the sensor from the manipulator before starting the manipulator.
If the manipulator is operated with the sensor attached to the manipulator, the sensor may be damaged.

17. Reinstall the plug and cover onto the manipulator.

**NOTE**
Be sure to install the plug and cover to prevent any dirt on the sensor mounting holes or sensor detecting element.
The zeroing operation cannot be performed if any dirt is attached on them.

18. Remove dirt on the sensor if you found any.

19. Confirm the manipulator position as follows:
   From the main menu, select {Robot}, and then select {Second Home Position}.
   - The Second Home Position window appears.
   - For safety reasons, automatic operations by playback cannot be performed unless the position is confirmed.
20. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant. Then, press [FWD] to move TCP to the second home position.
   – Check for any position deviation of the manipulator’s second home position.

21. From the main menu, select {Data}, and then select {Confirm Position}.
   – The message “Home position checked” appears.

22. Confirm the operation in the TEACH mode before restarting automatic operation by playback.
   – Check the followings to confirm the operation.
     • Any deviation at each taught point by FWD operation in the TEACH mode
     • Test runs

NOTE
Be sure to confirm the home position before starting automatic operation.
If false home position is input by the zeroing function, it may lead to errors in the manipulator performance.

1.2.2.4 Zeroing Procedure for L-Axis
Perform the zeroing operation for L-axis with the following procedure.
1. Remove the plug and cover from the attaching portion for the sensor.

L-axis

NOTE
Be sure to remove the cover. If the zeroing operation is performed with the cover on, the sensor may be damaged.

NOTE
The plug, cover, and cover mounting screws are small parts.
Be sure not to lose them during the operation.
1. Zeroing Function

1.2 Details on Zeroing Function

Be sure that the servo power is OFF and no safety hazard is around the manipulator when you approach the manipulator.

Injury may result from unintentional or unexpected manipulator motion, or operation error.

2. Perform the home position alignment by adjusting the alignment marks on the L-axis of the manipulator in the TEACH mode.

- Be sure to adjust the home position alignment marks and perform the zeroing operation.

3. Check that no spatter, fume or rust is attached in/on the sensor mounting hole, or sensor detecting element after removing the plug and cover.

- Remove the spatter, fume, and rust if they are found.

4. Install the sensor onto the mounting holes.

- Never use tools, or avoid excessive force on the sensor. Failure to observe this instruction may result in damage to the sensor.

5. Connect the lead wire to the sensor.

6. Turn ON the amplifier power.

- If the amplifier power has been turned ON for prolonged periods of time, turn OFF the power once and turn ON the power again.

7. Set the mode selector switch on the programming pendant to TEACH.
8. From the main menu, select {Robot}, and then select {Zeroing}. Then, select "L: L-axis" on the touch panel.

9. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant.

   **NOTE**
   Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.
   Injury may result from unintentional or unexpected manipulator motion, or operation error.

10. Press {Zeroing} on the touch panel, and pop-up window appears displaying the CAUTION message.
1. Zeroing Function

1.2 Details on Zeroing Function

11. Press {OK} by following the message in the pop-up window, and the manipulator starts automatically.

**NOTE**

- Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.
- Injury may result from unintentional or unexpected manipulator motion, or operation error.

12. The programming pendant screen shows the message to confirm the completion of the zeroing operation, then indicates the calculated absolute data.

![Programming Pendant Screen](image)

13. Turn OFF the servo power.

**NOTE**

- Be sure to turn OFF the servo power to approach the manipulator.
- Injury may result from unintentional or unexpected manipulator motion.

14. Turn OFF the amplifier power.

15. Disconnect the lead wire from the sensor.

16. Remove the sensor from the manipulator.

**NOTE**

- After the zeroing operation, be sure to remove the sensor from the manipulator before starting the manipulator.
- If the manipulator is operated with the sensor attached to the manipulator, the sensor may be damaged.
17. Reinstall the plug and cover onto the manipulator.

**NOTE**
Be sure to install the plug and cover to prevent any dirt on the sensor mounting holes or sensor detecting element. The zeroing operation cannot be performed if any dirt is attached on them.

18. Remove dirt on the sensor if you found any.

19. Confirm the manipulator position as follows:
   From the main menu, select {Robot}, and then select {Second Home Position}.
   - The Second Home Position window appears.
   - For safety reasons, automatic operations by playback cannot be performed unless the position is confirmed.

20. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant.
    Then, press [FWD] to move TCP to the second home position.
    - Check for any position deviation of the manipulator’s second home position.

21. From the main menu, select {Data}, and then select {Confirm Position}.
    - The message “Home position checked” appears.

22. Confirm the operation in the TEACH mode before restarting automatic operation by playback.
    - Check the followings to confirm the operation.
    - Any deviation at each taught point by FWD operation in the TEACH mode
    - Test runs

**NOTE**
Be sure to confirm the home position before starting automatic operation.
If false home position is input by the zeroing function, it may lead to errors in the manipulator performance.
1.2.2.5 Zeroing Procedure for U-Axis

Perform the zeroing operation for U-axis with the following procedure.

1. Remove the plug and cover from the attaching portion for the sensor.

2. Perform the home position alignment by adjusting the alignment marks on the U-axis of the manipulator in the TEACH mode.

3. Check that no spatter, fume or rust is attached in/on the sensor mounting hole, or indentation after removing the plug and cover.
   - Remove the spatter, fume, and rust if they are found.
**MS80WII Zeroing Function**

1. **Zeroing Function**

1.2 **Details on Zeroing Function**

4. Install the sensor onto the mounting holes.

![Image](image-url)

**NOTE**

Never use tools, or avoid excessive force on the sensor. Failure to observe this instruction may result in damage to the sensor.

5. Connect the lead wire to the sensor.

6. Turn ON the amplifier power.
   - If the amplifier power has been turned ON for prolonged periods of time, turn OFF the power once and turn ON the power again.

7. Set the mode selector switch on the programming pendant to TEACH.

8. From the main menu, select {Robot}, and then select {Zeroing}. Then, select “U: U-axis” on the touch panel.

![Image](image-url)

9. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant.

   **NOTE**

   Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.

   Injury may result from unintentional or unexpected manipulator motion, or operation error.
1. Zeroing Function

1.2 Details on Zeroing Function

10. Press {Zeroing} on the touch panel, and pop-up window appears displaying the CAUTION message.

11. Press {OK} by following the message in the pop-up window, and the manipulator starts automatically.

**NOTE**
Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.
Injury may result from unintentional or unexpected manipulator motion, or operation error.

**NOTE**
The manipulator motion is hard to be detected due to its slight motion.
Confirm that no persons approach the manipulator.

12. The programming pendant screen shows the message to confirm the completion of the zeroing operation, then indicates the calculated absolute data.
Zeroing Function

1.2 Details on Zeroing Function

13. Turn OFF the servo power.

Be sure to turn OFF the servo power to approach the manipulator.

Injury may result from unintentional or unexpected manipulator motion.

14. Turn OFF the amplifier power.

15. Disconnect the lead wire from the sensor.

16. Remove the sensor from the manipulator.

After the zeroing operation, be sure to remove the sensor from the manipulator before starting the manipulator.

If the manipulator is operated with the sensor attached to the manipulator, the sensor may be damaged.

17. Reinstall the plug and cover onto the manipulator.

Be sure to install the plug and cover to prevent any dirt on the sensor mounting holes or sensor detecting element.

The zeroing operation cannot be performed if any dirt is attached on them.

18. Remove dirt on the sensor if you found any.

19. Confirm the manipulator position as follows:

   From the main menu, select {Robot}, and then select {Second Home Position}.

   – The Second Home Position window appears.
   – For safety reasons, automatic operations by playback cannot be performed unless the position is confirmed.

20. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant.

Then, press [FWD] to move TCP to the second home position.

– Check for any position deviation of the manipulator’s second home position.

21. From the main menu, select {Data}, and then select {Confirm Position}.

– The message “Home position checked” appears.

22. Confirm the operation in the TEACH mode before restarting automatic operation by playback.

– Check the followings to confirm the operation.

   • Any deviation at each taught point by FWD operation in the TEACH mode
   • Test runs

Be sure to confirm the home position before starting automatic operation.

If false home position is input by the zeroing function, it may lead to errors in the manipulator performance.
### 1.2.2.6 Zeroing Procedure for R-Axis

Perform the zeroing operation for R-axis with the following procedure.

1. Remove the plug and cover from the attaching portion for the sensor.

   ![R-axis](image)

   **NOTE**
   Be sure to remove the cover. If the zeroing operation is performed with the cover on, the sensor may be damaged.

2. Perform the home position alignment by adjusting the alignment marks on the R-axis of the manipulator in the TEACH mode.

   **NOTE**
   The plug, cover, and cover mounting screws are small parts.
   Be sure not to lose them during the operation.

   **NOTE**
   Be sure that the servo power is OFF and no safety hazard is around the manipulator when you approach the manipulator.
   Injury may result from unintentional or unexpected manipulator motion, or operation error.

3. Check that no spatter, fume or rust is attached in/on the sensor mounting hole, or sensor detecting element after removing the plug and cover.
   - Remove the spatter, fume, and rust if they are found.

   **NOTE**
   Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.
   Injury may result from unintentional or unexpected manipulator motion, or operation error.
1. Zeroing Function

1.2 Details on Zeroing Function

4. Install the sensor onto the mounting holes.

5. Connect the lead wire to the sensor.

6. Turn ON the amplifier power.
   - If the amplifier power has been turned ON for prolonged periods of time, turn OFF the power once and turn ON the power again.

7. Set the mode selector switch on the programming pendant to TEACH.

8. From the main menu, select {Robot}, and then select {Zeroing}. Then, select “R: R-axis” on the touch panel.

9. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant.

   Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.

   Injury may result from unintentional or unexpected manipulator motion, or operation error.

   **Note**
   Never use tools, or avoid excessive force on the sensor.
   Failure to observe this instruction may result in damage to the sensor.
10. Press {Zeroing} on the touch panel, and pop-up window appears displaying the CAUTION message.

11. Press {OK} by following the message in the pop-up window, and the manipulator starts automatically.

**NOTE**
Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.
Injury may result from unintentional or unexpected manipulator motion, or operation error.

**NOTE**
The manipulator motion is hard to be detected due to its slight motion.
Confirm that no persons approach the manipulator.

12. The programming pendant screen shows the message to confirm the completion of the zeroing operation, then indicates the calculated absolute data.
13. Turn OFF the servo power.

**NOTE**
Be sure to turn OFF the servo power to approach the manipulator.
Injury may result from unintentional or unexpected manipulator motion.

14. Turn OFF the amplifier power.

15. Disconnect the lead wire from the sensor.

16. Remove the sensor from the manipulator.

**NOTE**
After the zeroing operation, be sure to remove the sensor from the manipulator before starting the manipulator.
If the manipulator is operated with the sensor attached to the manipulator, the sensor may be damaged.

17. Reinstall the plug and cover onto the manipulator.

**NOTE**
Be sure to install the plug and cover to prevent any dirt on the sensor mounting holes or sensor detecting element.
The zeroing operation cannot be performed if any dirt is attached on them.

18. Remove dirt on the sensor if you found any.

19. Confirm the manipulator position as follows:
   - From the main menu, select {Robot}, and then select {Second Home Position}.
     - The Second Home Position window appears.
     - For safety reasons, automatic operations by playback cannot be performed unless the position is confirmed.

20. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant.
   Then, press [FWD] to move TCP to the second home position.
   - Check for any position deviation of the manipulator’s second home position.

21. From the main menu, select {Data}, and then select {Confirm Position}.
   - The message “Home position checked” appears.

22. Confirm the operation in the TEACH mode before restarting automatic operation by playback.
   - Check the followings to confirm the operation.
     - Any deviation at each taught point by FWD operation in the TEACH mode
     - Test runs

**NOTE**
Be sure to confirm the home position before starting automatic operation.
If false home position is input by the zeroing function, it may lead to errors in the manipulator performance.
1.2.2.7 Zeroing Procedure for B-Axis

Perform the zeroing operation for B-axis with the following procedure.

1. Remove the plug and cover from the attaching portion for the sensor.

   - **NOTE:** Be sure to remove the cover. If the zeroing operation is performed with the cover on, the sensor may be damaged.

   - **NOTE:** The plug, cover, and cover mounting screws are small parts. Be sure not to lose them during the operation.

   - **NOTE:** Be sure that the servo power is OFF and no safety hazard is around the manipulator when you approach the manipulator. Injury may result from unintentional or unexpected manipulator motion, or operation error.

2. Perform the home position alignment by adjusting the alignment marks on the B-axis of the manipulator in the TEACH mode. Set the R-axis to the home position (0 pulse position).

   - **NOTE:** Be sure to adjust the home position alignment marks and perform the zeroing operation.

   - **NOTE:** When zeroing operation for the R-axis needs to be performed, perform it before zeroing operation for the B-axis.

   - **NOTE:** Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place. Injury may result from unintentional or unexpected manipulator motion, or operation error.
MS80WII Zeroing Function
1 Zeroing Function
1.2 Details on Zeroing Function

3. Check that no spatter, fume or rust is attached in/on the sensor mounting hole, or sensor detecting element after removing the plug and cover.
   – Remove the spatter, fume, and rust if they are found.

4. Install the sensor onto the mounting holes.

![Zeroing Function Image]

**NOTE**

Never use tools, or avoid excessive force on the sensor. Failure to observe this instruction may result in damage to the sensor.

5. Connect the lead wire to the sensor.

6. Turn ON the amplifier power.
   – If the amplifier power has been turned ON for prolonged periods of time, turn OFF the power once and turn ON the power again.

7. Set the mode selector switch on the programming pendant to TEACH.

8. From the main menu, select {Robot}, and then select {Zeroing}. Then, select “B: B-axis” on the touch panel.

![Programming Pendant Image]
9. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant.

**NOTE**

Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.

Injury may result from unintentional or unexpected manipulator motion, or operation error.

10. Press {Zeroing} on the touch panel, and pop-up window appears displaying the CAUTION message.

11. Press {OK} by following the message in the pop-up window, and the manipulator starts automatically.

**NOTE**

Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.

Injury may result from unintentional or unexpected manipulator motion, or operation error.

**NOTE**

The manipulator motion is hard to be detected due to its slight motion.

Confirm that no persons approach the manipulator.
12. The programming pendant screen shows the message to confirm the completion of the zeroing operation, then indicates the calculated absolute data.

13. Turn OFF the servo power.

**NOTE**
Be sure to turn OFF the servo power to approach the manipulator.
Injury may result from unintentional or unexpected manipulator motion.

14. Turn OFF the amplifier power.

15. Disconnect the lead wire from the sensor.

16. Remove the sensor from the manipulator.

**NOTE**
After the zeroing operation, be sure to remove the sensor from the manipulator before starting the manipulator.
If the manipulator is operated with the sensor attached to the manipulator, the sensor may be damaged.

17. Reinstall the plug and cover onto the manipulator.

**NOTE**
Be sure to install the plug and cover to prevent any dirt on the sensor mounting holes or sensor detecting element.
The zeroing operation cannot be performed if any dirt is attached on them.

18. Remove dirt on the sensor if you found any.

19. Confirm the manipulator position as follows:
   - From the main menu, select (Robot), and then select (Second Home Position).
     - The Second Home Position window appears.
     - For safety reasons, automatic operations by playback cannot be performed unless the position is confirmed.
1 Zeroing Function

1.2 Details on Zeroing Function

20. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant. Then, press [FWD] to move TCP to the second home position.
   – Check for any position deviation of the manipulator’s second home position.

21. From the main menu, select {Data}, and then select {Confirm Position}.
   – The message “Home position checked” appears.

22. Confirm the operation in the TEACH mode before restarting automatic operation by playback.
   – Check the followings to confirm the operation.
     • Any deviation at each taught point by FWD operation in the TEACH mode
     • Test runs

**Be sure to confirm the home position before starting automatic operation.**

If false home position is input by the zeroing function, it may lead to errors in the manipulator performance.

1.2.2.8 Zeroing Procedure for T-Axis

Perform the zeroing operation for T-axis with the following procedure.

1. Remove the plug and cover from the attaching portion for the sensor.

**Be sure to remove the cover. If the zeroing operation is performed with the cover on, the sensor may be damaged.**

**The plug, cover, and cover mounting screws are small parts.**

Be sure not to lose them during the operation.

**Be sure that the servo power is OFF and no safety hazard is around the manipulator when you approach the manipulator.**

Injury may result from unintentional or unexpected manipulator motion, or operation error.
1. Zeroing Function

1.2 Details on Zeroing Function

2. Perform the home position alignment by adjusting the alignment marks on the T-axis of the manipulator in the TEACH mode. Set the R- and B-axis to each home position (0 pulse position).

   **NOTE**
   Be sure to adjust the home position alignment marks and perform the zeroing operation.

   **NOTE**
   When zeroing operations for the R- and B-axis need to be performed, perform them before zeroing operation for the T-axis.

   **NOTE**
   Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.
   Injury may result from unintentional or unexpected manipulator motion, or operation error.

3. Check that no spatter, fume or rust is attached in/on the sensor mounting hole, or sensor detecting element after removing the plug and cover.
   – Remove the spatter, fume, and rust if they are found.

4. Install the sensor onto the mounting holes.

   **NOTE**
   Never use tools, or avoid excessive force on the sensor. Failure to observe this instruction may result in damage to the sensor.

5. Connect the lead wire to the sensor.

6. Turn ON the amplifier power.
   – If the amplifier power has been turned ON for prolonged periods of time, turn OFF the power once and turn ON the power again.

7. Set the mode selector switch on the programming pendant to TEACH.
8. From the main menu, select (Robot), and then select (Zeroing). Then, select “T: T-axis” on the touch panel.

9. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant.

   **NOTE**
   Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.
   Injury may result from unintentional or unexpected manipulator motion, or operation error.

10. Press (Zeroing) on the touch panel, and pop-up window appears displaying the CAUTION message.
11. Press {OK} by following the message in the pop-up window, and the manipulator starts automatically.

   Confirm that no persons are present in the P-point maximum envelope of the manipulator and that you are in a safe place.
   Injury may result from unintentional or unexpected manipulator motion, or operation error.

   The manipulator motion is hard to be detected due to its slight motion.
   Confirm that no persons approach the manipulator.

12. The programming pendant screen shows the message to confirm the completion of the zeroing operation, then indicates the calculated absolute data.

13. Turn OFF the servo power.

   Be sure to turn OFF the servo power to approach the manipulator.
   Injury may result from unintentional or unexpected manipulator motion.

14. Turn OFF the amplifier power.
15. Disconnect the lead wire from the sensor.
16. Remove the sensor from the manipulator.

   After the zeroing operation, be sure to remove the sensor from the manipulator before starting the manipulator.
   If the manipulator is operated with the sensor attached to the manipulator, the sensor may be damaged.
17. Reinstall the plug and cover onto the manipulator.

**NOTE**
Be sure to install the plug and cover to prevent any dirt on the sensor mounting hoes or sensor detecting element. The zeroing operation cannot be performed if any dirt is attached on them.

18. Remove dirt on the sensor if you found any.

19. Confirm the manipulator position as follows:
From the main menu, select {Robot}, and then select {Second Home Position}.

– The Second Home Position window appears.
– For safety reasons, automatic operations by playback cannot be performed unless the position is confirmed.

20. Turn ON the servo power by the [SERVO ON READY] button and Enable switch on the programming pendant. Then, press [FWD] to move TCP to the second home position.

– Check for any position deviation of the manipulator's second home position.

21. From the main menu, select {Data}, and then select {Confirm Position}.

– The message “Home position checked” appears.

22. Confirm the operation in the TEACH mode before restarting automatic operation by playback.

– Check the followings to confirm the operation.
  • Any deviation at each taught point by FWD operation in the TEACH mode
  • Test runs

**NOTE**
Be sure to confirm the home position before starting automatic operation.
If false home position is input by the zeroing function, it may lead to errors in the manipulator performance.
### 1.3 Errors in the Zeroing Operation and Solutions

If errors occur during the zeroing operation, confirm the error contents and perform the following operations.

<table>
<thead>
<tr>
<th>Message</th>
<th>Contents</th>
<th>Operation</th>
</tr>
</thead>
</table>
| There is little depth of the hole or it is large.                      | Error in the data on the hole depth caught by the sensor                 | 1. Check if dust or spatter is present on the hole.  
2. Check for damage or cracks on the sensor exterior, or deformation of the sensor end.  
3. Perform the zeroing operation again upon confirming the procedures. |
| Investigate the hole.                                                  |                                                                         |                                                                                                |
| Error Code: 55550004                                                   |                                                                         |                                                                                                |
| Switch mode to teach. Again, Execute zeroing.                          | The mode selector switch on the programming pendant is set to PLAY mode at the start of the zeroing operation. | Set the mode selector switch to TEACH to perform the zeroing operation.                       |
| Keep servo on state in teach mode between under zeroing execution.    | The servo power is not turned ON at the start of the zeroing operation. | Turn ON the servo power by the operations as gripping the Enable switch of the programming pendant, etc. |
| Again, Execute zeroing                                                 |                                                                         |                                                                                                |
| Loop Error [The maximum measurement point were exceeded.]             | Error in the zeroing processing                                          | Possible causes: False parameter settings for zeroing speed, distance, radius, and etc., false starting point of the zeroing operation and etc.  
Contact the nearest YASKAWA representative.                           |
| Error Code: 55550005                                                   |                                                                         |                                                                                                |
| Loop Error [Acquiring a pulse went wrong.]                            | Error in communication                                                   | Possible causes: Inconsistency in software version.  
Contact your nearest YASKAWA representative.                           |
| Error Code: 55550006                                                   |                                                                         |                                                                                                |
| Loop Error [The processing which starts robot operation went wrong.]  |                                                                         |                                                                                                |
| Error Code: 55550008                                                   |                                                                         |                                                                                                |
| Loop Error [The processing which stops robot operation went wrong.]   |                                                                         |                                                                                                |
| Error Code: 55550009                                                   |                                                                         |                                                                                                |
| Loop Error [Acquiring the value of the sensor went wrong.]            |                                                                         |                                                                                                |
| Error Code: 55550010                                                   |                                                                         |                                                                                                |
| Error [Sensor Amp (Read():D1)]                                        |                                                                         |                                                                                                |
| Error Code: 55550044                                                   |                                                                         |                                                                                                |
| Information                                                            |                                                                         |                                                                                                |
| * Check the amp power supply of the sensor.                           | Error in communication                                                   | 1. Check if the alarm lamp is lit, or cables and etc. are connected properly.  
2. Turn OFF the power to the amplifier, and turn ON again. Then perform the zeroing operation. |
| * Check connection of the RS-232C cable.                              |                                                                         |                                                                                                |
| * Check Battery.                                                      |                                                                         |                                                                                                |
| Alarm: Sensor Amp (Battery)                                           | Amplifier battery exhaustion                                            | Replace the battery with the new battery.                                                      |
| Alarm: Sensor Amp (Write Error EEPROM)                                | Amplifier EEPROM writing error                                           | Contact your nearest YASKAWA representative.                                                  |
## 1.3 Errors in the Zeroing Operation and Solutions

<table>
<thead>
<tr>
<th>Message</th>
<th>Contents</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm: Sensor Amp (AD Over)</td>
<td>AD Over Alarm of the amplifier</td>
<td>Contact your nearest YASKAWA representative.</td>
</tr>
<tr>
<td>Error [Sensor Amp (Auto Zero: OK)]</td>
<td>Error in zeroing of the amplifier</td>
<td>Contact your nearest YASKAWA representative.</td>
</tr>
<tr>
<td>Error Code: 55550046</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error [No CtrlGroup]</td>
<td>Zeroing was performed with the DX200 which has no manipulator control group.</td>
<td>Perform the zeroing operation by the DX200 with the manipulator control group.</td>
</tr>
<tr>
<td>Error Code: 55550052</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error [No Axis]</td>
<td>Zeroing was performed with the manipulator control group which has no operable axes.</td>
<td>Specify the manipulator control group with operable axes.</td>
</tr>
<tr>
<td>Error Code: 55550056</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Found: RS-232C CF-Card</td>
<td>CF-Card for the RS-232C is not inserted into the slot of the programming pendant.</td>
<td>Insert the CF-Card for the RS-232C into the slot.</td>
</tr>
<tr>
<td>Error Code: 55550001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error [RS-232C Communication]</td>
<td>Errors occur during the amplifier communication</td>
<td>Contact your nearest YASKAWA representative.</td>
</tr>
<tr>
<td>Error Code: 55550017</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error Code: 55550018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error Code: 55550019</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error Code: 55550020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error Occur</td>
<td>The zeroing operation is terminated due to error occurrence.</td>
<td>Confirm the error content and remove the error cause. Then, perform the zeroing operation again from the start.</td>
</tr>
<tr>
<td>Finish! (Error Occur)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operator Stop</td>
<td>The zeroing operation is terminated with the stop button.</td>
<td>Perform the zeroing operation again from the start.</td>
</tr>
<tr>
<td>Finish! (Operator Stop)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The operator pushed the stop.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error [Any axis don't set ABSO.]</td>
<td>Error in the zeroing processing</td>
<td>Contact your nearest YASKAWA representative.</td>
</tr>
<tr>
<td>Error Code: 55550088</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loop Error [The maximum moving pulse over.]</td>
<td>Error in the zeroing processing</td>
<td>Contact your nearest YASKAWA representative.</td>
</tr>
<tr>
<td>Error Code: 55550097</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
MOTOMAN-MS80W II OPTIONS INSTRUCTIONS

FOR ZEROING FUNCTION

HEAD OFFICE
2-1 Kurosakishiroishi, Yahatanishi-ku, Kitakyushu 806-0004, Japan
Phone  +81-93-645-7703   Fax  +81-93-645-7802

YASKAWA America Inc. (Motoman Robotics Division)
100 Automation Way, Miamisburg, OH 45342, U.S.A.
Phone  +1-937-847-6200   Fax  +1-937-847-6277

YASKAWA Europe GmbH (Robotics Division)
Yaskawasstrasse 1, 85391 Allershausen, Germany
Phone  +49-8166-90-100   Fax  +49-8166-90-103

YASKAWA Nordic AB
Verkstadsgatan 2, Box 504, SE-385 25 Torsas, Sweden
Phone  +46-480-417-800   Fax  +46-486-414-10

YASKAWA Electric (China) Co., Ltd.
22F, One Corporate Avenue, No.222, Hubin Road, Huangpu District, Shanghai 200021, China
Phone  +86-21-5385-2200   Fax  +86-21-5385-3299

YASKAWA SHOUGANG ROBOT Co. Ltd.
No7 Yongchang North Road, Beijing E&T Development Area, China 100176
Phone  +86-10-6788-2858   Fax  +86-10-6788-2878

YASKAWA India Private Ltd. (Robotics Division)
#426, Udyog Vihar, Phase- IV, Gurgaon, Haryana, India
Phone  +91-124-475-8500   Fax  +91-124-475-8542

YASKAWA Electric Korea Corporation
35F, Three IFC, 10 Gukjegeumyung-ro, Yeongdeungpo-gu, Seoul, Korea 07326
Phone  +82-2-784-7844   Fax  +82-2-784-8495

YASKAWA Electric Taiwan Corporation
12F, No.207, Sec. 3, Beishin Rd., Shindian District, New Taipei City 23143, Taiwan
Phone  +886-2-8913-1333   Fax  +886-2-8913-1513

YASKAWA Electric (Singapore) PTE Ltd.
151 Lorong Chuan, #04-02A, New Tech Park, Singapore 556741
Phone  +65-6282-3003   Fax  +65-6289-3003

YASKAWA Electric (Thailand) Co., Ltd.
59,1st-5th Floor, Flourish Building, Soi Ratchadapisek 18,Ratchadapisek Road, Huaykwang, Bangkok 10310, THAILAND
Phone  +66-2-017-0099   Fax  +66-2-017-0199

PT. YASKAWA Electric Indonesia
Secure Building-Gedung B Lantai Dasar & Lantai 1 Jl. Raya Protokol Halim Perdanakusuma, Jakarta 13610, Indonesia
Phone  +62-21-2982-6470   Fax  +62-21-2982-6741

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