MAINTENANCE MANUAL
for
Machine Relocation Detector
Battery Replacement Procedure Manual

MANUAL No. : HGENMA0016E
NC Equipment: MAZATROL MATRIX,
MAZATROL MATRIX NEXUS,
MAZATROL SMART,
MAZATROL FUSION 640TX

Serial No. :

Before using this machine and equipment, fully understand the contents of this manual to ensure proper operation. Should any questions arise, please ask the nearest Technical Center or Technology Center.

--- IMPORTANT NOTICE ---

1. Be sure to observe the safety precautions described in this manual and the contents of the safety plates on the machine and equipment. Failure may cause serious personal injury or material damage. Please replace any missing safety plates as soon as possible.

2. No modifications are to be performed that will affect operation safety. If such modifications are required, please contact the nearest Technical Center or Technology Center.

3. For the purpose of explaining the operation of the machine and equipment, some illustrations may not include safety features such as covers, doors, etc. Before operation, make sure all such items are in place.

4. This manual was considered complete and accurate at the time of publication, however, due to our desire to constantly improve the quality and specification of all our products, it is subject to change or modification. If you have any questions, please contact the nearest Technical Center or Technology Center.

5. Always keep this manual near the machinery for immediate use.

6. If a new manual is required, please order from the nearest Technical Center or Technology Center with the manual No. or the machine name, serial No. and manual name.

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12. 2010
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1 INTRODUCTION

This manual explains what to do if the machine relocation detector raises an alarm, and also important things you should keep in mind when replacing the batteries of the machine relocation detector. If the alarm indicating drop in voltage of the battery is displayed, follow the instructions given in this manual and replace the battery with new one specified by Mazak as soon as possible. Otherwise, the automatic operation of the machine becomes impossible.

Do not start replacing the batteries until you fully understand the contents of this manual.

1-1 Background of the Installation of Machine Relocation Detectors

The machine relocation detector installed in the machine is designed to detect the replacement of the machine and to restrict its operation if it is replaced.

The background of the installation of machine relocation detectors is that certain machines were illegally exported by some Japanese manufacturers to third country as the proliferation of nuclear weapons, weapons of mass destruction, and so on has been a global issue recently. In view of this, the Japanese government requested each Japanese machine tool manufacturer to study the feasibility of installing machine relocation detectors in order to prevent the illegal relocation and export of machines.

In response to this request, we, Yamazaki Mazak, have decided to install machine relocation detectors in our machines to prevent the machine from being illegally relocated to third country.

The current law enacted by the Japanese government in this control specifies that the reexport, reselling and relocation of specified machines are subject to prior approval of the Japanese government. If this is the case, please consult the Mazak Technical Center or Technology Center.

1-2 Procedure to Follow when Relocating the Machine

If you are planning to relocate your machine, contact the Mazak Technical Center or Technology Center without delay and let them know the scheduled date of relocation.

Note that relocating the machine without prior notice will make it incapable of operating automatically. Also, it might make it impossible to reuse the machine, because particular examinations are required to enable automatic operation.

Caution plate that indicates precautions to take when relocating the machine is attached in the vicinity of the main power breaker for the machine.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>This machine will not be operated automatically when relocated. When this machine is transferred, please contact Yamazaki Mazak Corp. beforehand.</td>
</tr>
</tbody>
</table>

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### 2 ALARM LIST

The machine relocation detector issues a total of 5 alarms, as listed below.

<table>
<thead>
<tr>
<th>No.</th>
<th>Alarm message</th>
<th>Causes</th>
<th>Operation condition</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1393</td>
<td>R.D. Relocation Detected</td>
<td>Issued if the machine is replaced.</td>
<td></td>
<td>Contact Mazak Technical Center or Technology Center.</td>
</tr>
<tr>
<td>1394</td>
<td>R.D. Communication Error</td>
<td>Issued if the machine relocation detector is out of order or its wiring is faulty.</td>
<td></td>
<td>At that time, you may be asked whether and how the machine was relocated.</td>
</tr>
<tr>
<td>1395</td>
<td>RD Battery Change Time Exceeded</td>
<td>Issued if power supply to the NC unit is cut off for 30 minutes or more during replacement of the batteries.</td>
<td>The machine cannot be operated automatically.</td>
<td>Purchase replacement batteries from Mazak Technical Center or Technology Center and replace the batteries with new ones.</td>
</tr>
<tr>
<td>1397</td>
<td>R.D. Battery Not Mounted</td>
<td>Issued if the batteries are exhausted or the batteries are removed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1396</td>
<td>R.D. Low battery</td>
<td>Issued if the batteries are low.</td>
<td>The machine can be operated normally.</td>
<td></td>
</tr>
</tbody>
</table>

**Note 1:** One month after the alarm 1396 R.D. Low battery is displayed on the NC unit, it becomes impossible for the machine to be automatically operated. This period is given as a guide, but not to guarantee a grace period of one month. So, if the alarm 1396 R.D. Low battery is displayed, immediately replace the batteries with new ones.

**Note 2:** To prevent the battery from running out, leave the main power breaker ON as far as possible during the period between when the alarm 1396 R.D. Low battery is displayed on the NC unit and when the batteries are replaced with new ones, even when the machine is not used.

**Note 3:** To change the batteries, follow the procedure in “3 HOW TO REPLACE THE BATTERIES.” Before replacing the batteries, be sure to turn on the NC unit temporarily.
3  HOW TO REPLACE THE BATTERIES

- Handling the batteries with wet hands may result in an electric shock.

WARNING

Note 1:  Never remove the machine relocation detector when replacing the batteries.

Note 2:  If replacement steps (1) through (13) cannot be completed within 30 minutes, alarm 1395 RD Battery Change Time Exceeded will be given when the NC unit is turned on in step (13) and it will become impossible to operate the machine automatically.

Note 3:  Complete replacement of the batteries before the date measured by the clock in the NC unit changes. If the date changes before the completion of replacement, alarm 1395 RD Battery Change Time Exceeded will also be issued, even if replacement of the batteries is completed within 30 minutes.

3-1  Arrangement

The relocation detector is installed in the control panel of the machine. There are two types of relocation detectors that differ in the method of connecting battery connectors, as shown below.

1. Relocation detector with covered battery connectors
2. Relocation detector with exposed battery connectors

Note that the procedures to follow when replacing the batteries differ depending on the detector type, although there is no difference in functionality between the types.

![Fig. 3-1  Contour of the machine relocation detector](DHGENM0027)
You will see two batteries installed side by side.

Fig. 3-4  Opening of the battery compartment cover

(6)  Remove the batteries from their compartment.

Fig. 3-5  Removal of the batteries (1/2)
**Note:** Since the batteries are connected to a connector, do not pull them strongly to avoid damage to the detector.

![Image](DHGENM0019)

(7) Pull out the connector that connects the batteries to the detector.

![Image](DHGENM0020)

- Remove the batteries, holding the connector with hand. Detach the connector by pulling it in the direction of the arrow indicated in Fig. 3-7. If your fingers cannot be put in the battery compartment, hold the battery cable on the side closer to the connector and pull the connector in the direction of the arrow.

**Note 1:** Do not pull the connector toward you, or the detector may be damaged. Some force is required to detach the connector. [Pull-out force: Approx. 20 N (4.5 lbf)]

**Note 2:** When detaching the connector, be careful not to hit your finger against the battery compartment to avoid injury.
(8) Have a new set of batteries handy and attach the connector first.
   - Insert the connector with the guide at an end facing downward.

Fig. 3-8 Shape of the battery connector (on the battery side)

Fig. 3-9 Shape of the battery connector (on the battery compartment side)

Fig. 3-10 Insertion of the connector
(9) Install the batteries in the detector.

*Fig. 3-11 Installation of the batteries*

**Note:** When you put the battery cables in the battery compartment and close the battery cover, be careful not to allow the cables to get caught between the battery compartment and its cover.

*Fig. 3-12 Putting in the battery cables*
(10) Attach the battery compartment cover. To do so, slide the battery cover diagonally upward from this side.

- Slide the battery compartment cover upward until the white line on the detector case is hidden behind it, push in the battery compartment cover with your fingers, and lastly check to make sure the cover is securely attached.

**Note:** Failure to securely attach the battery cover could cause it to come off, thus causing the batteries to fall down and their cables to break.

(11) Close the control panel door.

(12) Turn the main power breaker to the ON position.

(13) Turn on the NC unit.

- Make sure alarm 1397 R.D. Battery Not Mounted or 1396 R.D. Low battery has gone out.
3-3-2  For relocation detector with exposed battery connectors

Note:  When changing the batteries, always start out with turning on the NC unit, that is, with the operation in step (1) below. If the operation is started in step (4), and steps (1) to (3) are skipped, no matter whether the operation is completed within 30 minutes, an alarm is raised and the machine is put in a state where it cannot be automatically operated.

(1) Turn on the main power breaker and the NC unit. (Turn on them without fail.)
(2) Turn off the NC unit.
(3) Turn the main power breaker to the OFF position.
(4) Open the control panel door.
   - If the control panel door is opened before the main power breaker is turned to the OFF position, the breaker will trip.

Fig. 3-15  Machine relocation detector
(5) Put your fingers on the projecting part of the battery cover and slide the cover downward to remove it.

![Diagram of battery cover removal process]

**Note:** Be careful not to drop the battery compartment cover at that time.
You will see two batteries installed side by side.

(6) Remove the batteries from their compartment.
**Note:** Since the batteries are connected to a connector, do not pull them strongly to avoid damage to the detector.

(7) Pull out the connector that connects the batteries to the detector.

- Remove the batteries, holding the connector with hand. Detach the connector by pulling it in the direction of the arrow indicated in Fig. 3-20. If the connector cannot be removed easily, hold the battery cable on the side closer to the connector and pull the connector in the direction of the arrow.

**Note:** Do not pull the connector in other direction than that indicated by the arrow, or the detector may be damaged. Some force is required to detach the connector. [Pull-out force: Approx. 20 N (4.5 lbf)]
(8) Have a new set of batteries handy and attach the connector first.
- Insert the connector with the guide at an end facing upward.

Fig. 3-21 Shape of the battery connector (on the battery side)

Fig. 3-22 Shape of the battery connector (on the battery compartment side)

Fig. 3-23 Insertion of the connector
(9) Install the batteries in the detector.

- Install the battery so that the battery cable comes on the right side as viewed toward the detector.

**Note:** If the battery is installed so that the battery cable comes on the left side as viewed toward the detector, the cable may get caught in the battery compartment cover when the cover is closed.
(10) Attach the battery compartment cover. To do so, slide the battery cover diagonally upward from this side.

- Slide the battery compartment cover upward until the white line on the detector case is hidden behind it, push in the battery compartment cover with your fingers, and lastly check to make sure the cover is securely attached.

**Note:** Failure to securely attach the battery cover could cause it to come off, thus causing the batteries to fall down and their cables to break.
(11) Close the control panel door.
(12) Turn the main power breaker to the ON position.
(13) Turn on the NC unit.

- Make sure alarm **1397 R.D. Battery Not Mounted** or **1396 R.D. Low battery** has gone out.