

- 24-hour Telephone Number: (937) 847-3200
Use for urgent or emergency needs for technical support, service and/or replacement parts
- Routine Technical Inquiries: techsupport@motoman.com
Allow up to 36 hours for response

YRC1000micro OPTIONS INSTRUCTIONS

FOR MANUAL BRAKE RELEASE FUNCTION

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

MOTOMAN INSTRUCTIONS

MOTOMAN-□□□ INSTRUCTIONS
YRC1000micro INSTRUCTIONS
YRC1000micro OPERATOR'S MANUAL
YRC1000micro MAINTENANCE MANUAL
YRC1000micro ALARM CODES (MAJOR ALARMS) (MINOR ALARMS)

The YRC1000micro alarm codes above consists of "MAJOR ALARMS" and "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: 181301-1CD
Revision: 0

MANUAL NO.
HW1484588



DANGER

- This manual explains the manual brake release function of the YRC1000micro system. Read this manual carefully and be sure to understand its contents before handling the YRC1000micro. 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 YRC1000micro INSTRUCTIONS. To ensure correct and safe operation, carefully read “Chapter 1. Safety” of the YRC1000micro 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.
- 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.

Notes for Safe Operation

Read this manual carefully before installation, operation, maintenance, or inspection of the YRC1000micro.

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.



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



DANGER

- 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 button on the programming pendant or on the external control device, etc.
 - Disconnect the safety plug of the safety fence. (when in the 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 YRC1000micro 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 button is located on the right of the programming pendant.

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

**DANGER**

- In the case of not using the programming pendant, be sure to supply the emergency stop button on the equipment. Then before operating the manipulator, check to be sure that the servo power is turned OFF by pressing the emergency stop button. Connect the external emergency stop button to the 4-14 pin and 5-15 pin of the Safety connector (Safety).
- Upon shipment of the YRC1000micro, this signal is connected by a jumper cable in the dummy connector. To use the signal, make sure to supply a new connector, and then input it.

If the signal is input with the jumper cable connected, it does not function, which may result in personal injury or equipment damage.

**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.
- Return the programming pendant to a safe place 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.

Definition of Terms Used Often in This Manual

The MOTOMAN is the YASKAWA industrial robot product.

The MOTOMAN usually consists of the manipulator, the YRC1000micro controller, manipulator cables, the YRC1000micro programming pendant (optional), and the YRC1000micro programming pendant dummy connector (optional).

In this manual, the equipment is designated as follows:

Equipment	Manual Designation
YRC1000micro controller	YRC1000micro
YRC1000micro programming pendant	Programming pendant (optional)
Cable between the manipulator and the controller	Manipulator cable
YRC1000micro programming pendant dummy connector	Programming pendant dummy connector (optional)

Descriptions of the programming pendant keys, buttons, and displays are shown as follows:

Equipment	Manual Designation
Programming Pendant	Character Keys /Symbol Keys
	The keys which have characters or symbols printed on them are denoted with []. ex. [ENTER]
	Axis Keys /Number 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, ex. [SHIFT]+[COORD]
PC Keyboard	Mode Key
	Three kinds of modes that can be selected by the mode key are denoted as follows: REMOTE, PLAY, or TEACH
	Button
	Three buttons on the upper side of the programming pendant are denoted as follows: HOLD button START button EMERGENCY STOP button
	Displays
	The menu displayed in the programming pendant is denoted with { }. e.g. {JOB}
The name of the key is denoted. e.g. Ctrl key on the keyboard	

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 [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 TM are omitted.

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1	Manual Brake Release Function
1.1	Operating Conditions of Manual Brake Release

1 Manual Brake Release Function

The manual brake release function allows forcible release of each motor brakes of the manipulator and external axes by programming pendant operation.

The following operating conditions have to be met before performing the manual brake release function since this function releases brakes by software, which is different from the conventional brake release by hardware.

The manual brake release is an optional function set by parameter.

1.1 Operating Conditions of Manual Brake Release

1. YRC1000micro Status
The YRC1000micro has to be launched correctly¹⁾.
2. Mode: Mode switch on the programming pendant
The function can be used in all modes: Remote / Play / Teach.
3. Security Mode
The function can be used in all modes: Operation / Editing / Management / Safety.
4. Others
 - Servo power is OFF
 - Emergency stop is OFF
(programming pendant, YRC1000micro, external signals)

Fig. 1-1: Alarm Window



- 1 Basically, the manual brake release function is available even at alarm occurrence.
However, the manual brake release function cannot be used if the communication failure between each board occurs due to a board failure, etc.

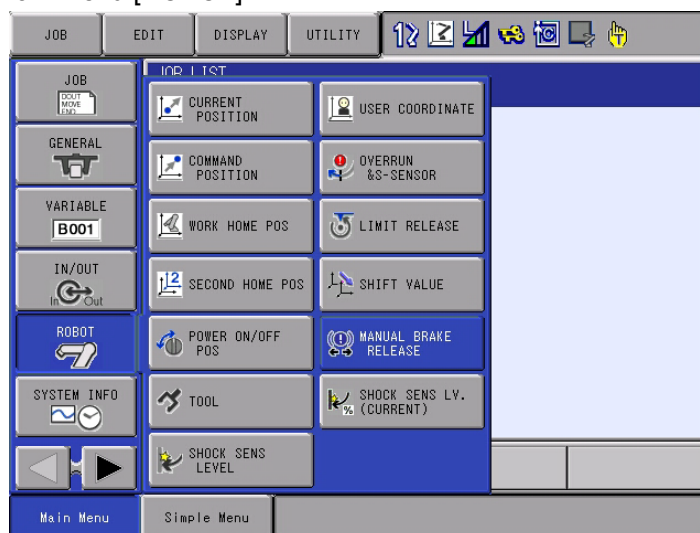
<Example>

The manual brake release cannot be performed at occurrence of the alarm 0010 as shown in fig. 1-1, since the communication with the servo board becomes unavailable.

2 Manual Brake Release Operation

1. Select [ROBOT] under the main menu, then select [MANUAL BRAKE RELEASE] under the submenu.

– [MANUAL BRAKE RELEASE] is shown under the submenu of the main menu [ROBOT].

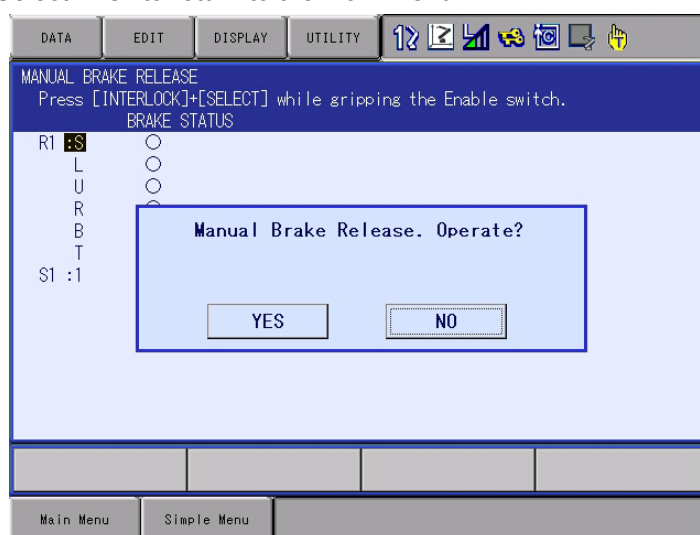


2. Select "YES".

– To avoid careless operation mistake, a warning message appears when [MANUAL BRAKE RELEASE] menu is selected.

– Select "YES" to display [MANUAL BRAKE RELEASE] window.

– Select "NO" to return to the main menu.




2 Manual Brake Release Operation

3. Move a cursor to the axis of which the brake is to be released.

- The brake is released by following the operation: Move a cursor to the axis of which the brake is to be released and press [INTERLOCK] + [SELECT] while gripping Enable switch. Then the brake status is shown.

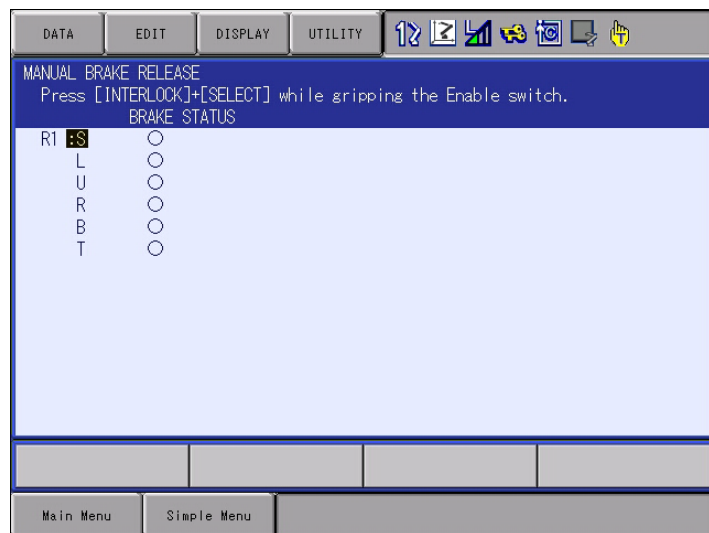
- The brake is locked under one of the following conditions:

- When [SELECT] is released.

Also, see the following  CAUTION

- When the emergency stop button on the programming pendant, YRC1000micro or external device is pressed.
- When Enable switch is released or gripped further.
- When the window is switched from the Manual Brake Release window to another window.

Fig. 2-1: Manual Brake Release Window



Brake Status: ○: Brake locked ●: Brake released

4. Press [INTERLOCK] + [SELECT] while gripping Enable switch.



CAUTION

- Brake can be released by pressing [INTERLOCK] + [SELECT] while gripping Enable switch.
Note that the brake remains released even though [INTERLOCK] is released at this time.

3 Warning Message Display

If the manual brake release is performed under the following conditions, the warning message appears in the message area bottom right of the window.

In this case, the brake release cannot be performed.

- Servo power is turned ON.
- Emergency stop button on the programming pendant is pressed.
- Emergency stop button on YRC1000micro is pressed.
- External emergency stop signal is input.

YRC1000micro OPTIONS INSTRUCTIONS

FOR MANUAL BRAKE RELEASE FUNCTION

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

YASKAWA

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© Printed in Japan July 2017 17-07

MANUAL NO.

HW1484588