

NX100 OPTIONS INSTRUCTIONS

FOR BRAKE RELEASE UNIT

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

MOTOMAN INSTRUCTIONS

MOTOMAN-□□□ INSTRUCTIONS
NX100 INSTRUCTIONS
NX100 OPERATOR'S MANUAL
NX100 MAINTENANCE MANUAL

The NX100 operator's manuals above correspond to specific usage.
Be sure to use the appropriate manual.

Part Number: 158216-1CD
Revision: 0

 **MANDATORY**

- **This manual explains the brake release unit in NX100. Read this manual carefully and be sure to understand its contents before handling the NX100.**
- **General items related to safety are listed in the Section 1: Safety of the NX100 Instructions. To ensure correct and safe operation, carefully read the NX100 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.**

Notes for Safe Operation

Read this manual carefully before installation, operation, maintenance, or inspection of the NX100.

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



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 “CAUTION” and “WARNING”.



WARNING

- **Before operating the manipulator, check that servo power is turned off when the emergency stop buttons on the front door of the NX100 and programming pendant are pressed. When the servo power is turned off, the SERVO ON lamp on the playback panel and the SERVO ON icon on the programming pendant are 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.



- **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.



- **Observe the following precautions when performing teaching operations within the working envelope of the manipulator:**
 - **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 persons are present in the P-point maximum envelope of the manipulator and that you are in a safe location before:**
 - **Turning on the NX100 power**
 - **Moving the manipulator with the programming pendant**
 - **Running check operations**
 - **Performing automatic operations**

Injury may result if anyone enters the working envelope of the manipulator during operation. Always press an emergency stop button immediately if there are problems. The emergency stop button is located on the right of the front door of the NX100 and on the upper center of 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 NX100 cabinet 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 the Warning Labels in the NX100 Instructions before operating the manipulator.**

Definition of Terms Used Often in This Manual


The MOTOMAN manipulator is the YASKAWA industrial robot product.

The manipulator usually consists of the controller, the programming pendant, and supply cables.

In this manual, the equipment is designated as follows.

Equipment	Manual Designation
NX100 Controller	NX100
NX100 Programming Pendant	Programming Pendant
Cable between the manipulator and NX100	Manipulator Cable

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

Equipment		Manual Designation
Programming Pendant	Character Keys	The keys which have characters printed on them are denoted with []. ex. [ENTER]
	Symbol Keys	The keys which have a symbol printed on them are not denoted with [] but depicted with a small picture. ex. page key  The cursor key is an exception, and a picture is not shown.
	Axis Keys Numeric Keys	“Axis Keys” and “Numeric Keys” 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]
	Displays	The menu displayed in the programming pendant is denoted with { }. ex. {JOB}

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 brand names for each company or corporation. The indications of (R) and TM are omitted.

1 Product Confirmation

2 Installation and Wiring

- NX100 Off-Panel Mounting Type2-1

3 Operation Procedure

- NX100 Off-Panel Mounting Type3-1

1 Product Confirmation

Confirm the contents of the delivery when the product arrives.

- NX100 (Off-Panel Mounting Type)

The following item is included by each other than standard delivery, respectively.

NX100 Off-Panel Mounting type	<ul style="list-style-type: none"> • Brake release unit (Refer to " Fig. 1 Brake release unit (Off-Panel Mounting Type) ") x 1 • Dedicated Cable (Refer to " Fig. 1 Brake release unit (Off-Panel Mounting Type) ") x For each 1
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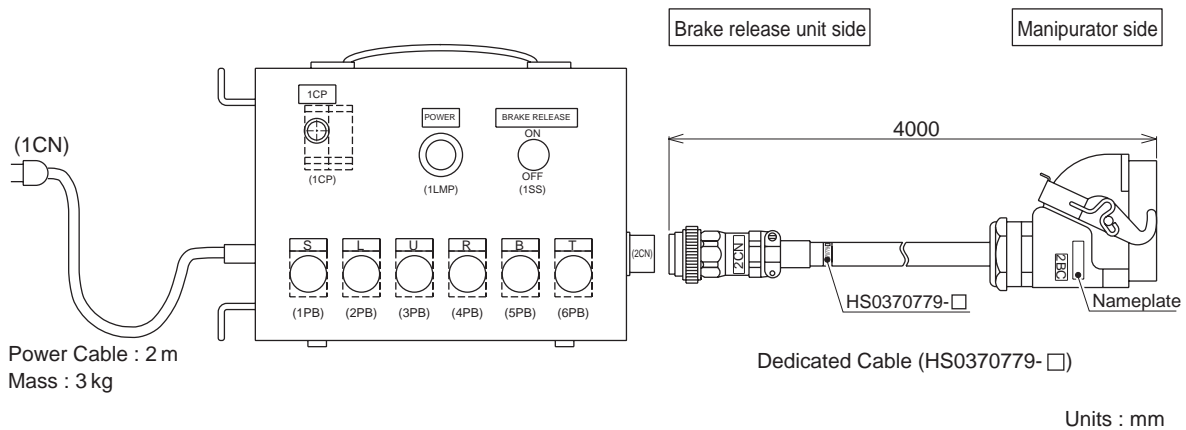


Fig. 1 Brake release unit (Off-Panel Mounting Type)

2 Installation and Wiring

■ NX100 Off-Panel Mounting Type

Connect the brake release unit cable provided, only when using the brake release unit.



CAUTION

- **For details of the Axis which releases the brake and the points to which the cables are to be connected, refer to " Table. 1 Comparison table ".**

- **Before starting connection work, confirm that the main breaker of the NX100 is turned OFF.**

Failure to observe this warning may result in electric shock or damage.

- **Connect each connector securely.**

Failure to observe this warning may result in electric shock or malfunction.

Connection method

1. Check if the NX100 main breaker is turned OFF.
2. Disconnect the power feed connector (power line) on the manipulator side.
3. Connect the brake release unit cable (HS0370779-□) to 2BC on the manipulator main unit, and connect 2CN to 2CN on the brake release unit.
(For the various combinations of robot types and cables used, refer to the comparison table.)
4. Connect the power outlet plug 1CN on the brake release unit to a 100 VAC power outlet (with ground terminal).

Table. 1 Comparison table

robot type	cable type
HP20	HS0370779-A
EA1900	HS0370779-B
HP6	HS0370779-C
EA1400	HS0370779-D

3 Operation Procedure

■ NX100 Off-Panel Mounting Type



CAUTION

- **Before changing the connections of the brake release unit cable, set the circuit protector 1CP to OFF.**

If the numbers do not match, manipulators may not perform as expected and cause injury or damage.

- **Make sure to exercise caution in the manipulator motion when the brake is released.**

The manipulator may move under its own weight when the brake is released, resulting in injury or damage.

- **Make sure to release only one axis brake at a time.**

Releasing more than one axis brake may cause an unexpected manipulator movement. Make sure to exercise caution in the manipulator motion when unavoidably releasing more than one axis brake.

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

- **After the end of the above work, be sure to set the "BRAKE RELEASE" switch and the circuit protector 1CP to OFF.**

If the numbers do not match, manipulators may not perform as expected and cause injury or damage.

The brake release unit is to be operated in the following procedure.

1. Check if the NX100 main breaker is turned OFF.
2. Set the Circuit protector 1CP of brake release unit to ON.
(The "Power" lamp will light up.)
3. The state which turned ON the "BRAKE RELEASE" switch (1SS), and the brake of the relevant axis is released while the button is being pressed.
4. To end brake releasing work, set the button for the shaft which releases the brake, and also the "BRAKE RELEASE" switch (1SS) to OFF.
5. After the end of the above work, set the circuit protector 1CP to OFF.
(The "Power" lamp will go out.)

NX100 OPTIONS INSTRUCTIONS

FOR BRAKE RELEASE UNIT

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