SCARA Robots
XS Series

R6Y - XS series

USER´S MANUAL
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Introduction

This user’s manual was prepared for XS series ceiling-hanging/inverse type models (R6YXSH300 to R6YXS1000) of the OMRON industrial robots.

This user’s manual describes the safety measures, handling, adjustment and maintenance of XS series robots for correct, safe and effective use. Be sure to read this manual carefully before installing the robot. Even after you have read this manual, keep it in a safe and convenient place for future reference.

This user’s manual should be used with the robot and considered an integral part of it. When the robot is moved, transferred or sold, send this manual to the new user along with the robot. Be sure to explain to the new user the need to read through this manual.

For the operating or maintenance procedures not described in this manual, please refer to the separate “X Series User’s Manual”. Also refer to the “X Series User’s Manual” for precautions and warranty. If there are any obscure points in handling the robot, be sure to contact OMRON sales office or dealer.

For details on specific operation and programming of the robot, refer to the separate “OMRON Robot Controller User’s Manual”.

Disclaimers

**CHANGE IN SPECIFICATIONS**
Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

**DIMENSIONS AND WEIGHTS**
Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

**PERFORMANCE DATA**
Performance data given in this manual is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON’s test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

**ERRORS AND OMISSIONS**
The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.
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CHAPTER 1

Functions

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1 Robot Manipulator

XS series robots are grouped into the ceiling-hanging models of Fig. 1-1 and the inverse type models of Fig. 1-2. Jog key movement is in the directions shown in Figs. 1-1 and 1-2.

Robot part names and functions are shown in Fig. 1-3 and Fig. 1-4.
In the case of the ceiling-hanging/inverse type models, the robot base up/down installation directions in the figure are reversed.
Fig. 1-4 R6YXS500 to R6YXS1000 ceiling-hanging/reverse type robots
In the case of the ceiling-hanging/reverse type models, the robot base up/down installation directions in the figure are reversed.
2 Robot Parameters

A portion of the robot parameters for ceiling-hanging/inverse type models are changed from the standard specifications when shipped. The following is a description of these changed parameters and precautions you should take when using these robots.

To purchasers of this robot
At this time our sincere thanks for your purchase of this robot. This robot is made to custom specifications so some parameters are different from standard robots. Please be aware of the following points before attempting to use the robot.

Cautions regarding use
Always make a backup of parameters. Initializing the parameters voids all parameters that were entered. When initialized, load the backup parameters.

Parameter changes
A description of parameter changes is given below. Boxes left blank indicate standard specifications.

(1) Ceiling-hanging model
Axis settings

<table>
<thead>
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(2) Inverse type models
Axis settings

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Axis settings (R6YXSH300, R6YXSH400)

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Axis settings (R6YXS500, R6YXS600, R6YXS700, R6YXS800, R6YXS1000)

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(3) R6YXSH300

Axis settings

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Robot numbers used to initialize the parameters are as follows

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<td>R6YXS1000 Z400</td>
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Manufacturer serial No. 
Controller serial No.
CHAPTER 2

Installation

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2 Installation ............................................................................................................ 2-2
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1) Please read the description of standard robot models for the installation base and comply with the caution items provided.

**WARNING**

THE CEILING-HANGING/INVERSE TYPE ROBOT MODELS ARE HUNG FROM THE CEILING SO A DANGEROUS SITUATION CAN OCCUR IF THE ROBOT SUPPORT SECTION BREAKS AND THE ROBOT FALLS. MAKE SURE THE ROBOT SUPPORT SECTION HAS SUFFICIENT STRENGTH, RIGIDITY AND SAFETY.

**CAUTION**

- WHEN USING THE R6YXSH300 AND R6YXSH400, MAKE SURE THAT THE ARM DOES NOT INTERFERE WITH THE BASE INSTALLATION SECTION.
- WHEN USING THE R6YXS500 TO R6YXS1000, MAKE SURE THAT THE MACHINE HARNESS AND Y-AXIS ARM UPPER COVER DO NOT INTERFERE WITH THE BASE INSTALLATION SECTION.

SEE “1-2 EXTERNAL VIEW AND DIMENSIONS” IN CHAPTER 4.

2) Tap the required holes into the surface of the installation base. See “1-2 External view and dimensions” in Chapter 4 for how to tap the holes.
2 Installation

2-1 Unpacking

**WARNING**
THE ROBOT AND CONTROLLER ARE HEAVY. TAKE SUFFICIENT CARE NOT TO DROP THEM DURING MOVING OR UNPACKING AS THIS MAY DAMAGE THE EQUIPMENT OR CAUSE BODILY INJURY.

**CAUTION**
WHEN MOVING THE ROBOT OR CONTROLLER BY EQUIPMENT SUCH AS A FOLK-LIFT THAT REQUIRES A LICENSE, ONLY PROPERLY QUALIFIED PERSONNEL MAY OPERATE IT. THE EQUIPMENT AND TOOLS USED FOR MOVING THE ROBOT SHOULD BE SERVICED DAILY.

The XS series robot comes packed with a robot controller and accessories, according to the order specifications. Using a carrying cart (dolly) or forklift, move the package to near the installation base. Take sufficient care not to apply shocks to the equipment when unpacking it.

![Diagram of unpacked robot](image)

**Fig. 2-1 Packed state**
2-2 Checking the product

After unpacking, check the product configuration and conditions. The illustration below shows typical configurations for R6YXS500 to R6YXS1000 ceiling-hanging/inverse type models, which are different from standard models.

⚠️ CAUTION

IF THERE IS ANY DAMAGE DUE TO TRANSPORTATION OR INSUFFICIENT PARTS, PLEASE NOTIFY YOUR OMRON SALES OFFICE OR DEALER IMMEDIATELY.

Controller : YRC v.1
Robot : R6YXS500, R6YXS600, R6YXS700, R6YXS800, R6YXS1000

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Fig. 2-2 Product configurations
2-3 Moving the robot

**WARNING**

SERIOUS INJURY MAY OCCUR IF THE ROBOT FALLS AND PINS SOMEONE UNDER IT.

• DO NOT ALLOW ANY PART OF YOUR BODY TO ENTER THE AREA BENEATH THE ROBOT DURING WORK.

• ALWAYS WEAR A HELMET, SAFETY SHOES AND GLOVES DURING WORK.

To check the mass of each robot, refer to “1-1 Basic specifications” in Chapter 4.

2-3-1 Moving the R6YXSH300, R6YXSH400

1) Fold the X and Y axis arms as shown in Fig. 2-3, and wind the robot cable around the machine harness, then fasten the robot cable with adhesive tape so as not to cover the bolt installation holes.

When moving an inverted ceiling-hanging robot, wind the robot cable around the spline shaft as shown and fasten the cable with adhesive tape.

2) Holding the support parts as shown in the figure with both hands, place the robot on the installation base and secure it temporarily by tightening the bolts.

(For tightening torque to secure the robot firmly, see “2-4 Installing the robot” in the X standard model user’s manual.)

![Fig. 2-3](image-url)
2-3-2 Moving the R6YXS500, R6YXS600, R6YXS700, R6YXS800, R6YXS1000

**WARNING**

SERIOUS INJURY MAY OCCUR IF THE ROBOT FALLS AND PINS SOMEONE UNDER IT.

- CHECK THAT THERE ARE NO CRACKS AND CORROSION ON THE EYEBOLT INSTALLATION. IF FOUND, DO NOT USE EYEBOLTS TO MOVE THE ROBOT.
- INSERT THE EYEBOLTS INTO THE HOLES OF THE CARRYING JIG SO THAT THEIR BEARING SURFACES MAKE TIGHT CONTACT WITH EACH OTHER, AND SECURELY FASTEN THE EYEBOLTS WITH THE NUTS.
- USE A HOIST AND ROPE WITH CARRYING CAPACITY STRONG ENOUGH TO SUPPORT THE ROBOT WEIGHT.
- MAKE SURE THE ROPE STAYS SECURELY ON THE HOIST HOOK.
- REMOVE ALL LOADS ATTACHED TO THE ROBOT MANIPULATOR END. IF ANY LOAD IS STILL ATTACHED, THE ROBOT MAY LOSE BALANCE WHILE BEING CARRIED, AND TOPPLE OVER CAUSING ACCIDENTS.

**CAUTION**

- WHEN MOVING THE ROBOT BY EQUIPMENT SUCH AS CRANES THAT REQUIRE A LICENSE, ONLY PROPERLY QUALIFIED PERSONNEL MAY OPERATE IT.
- THE EQUIPMENT AND TOOLS USED FOR MOVING THE ROBOT SHOULD BE SERVICED DAILY.

To move a robot (for example, the R6YXS500) correctly and safely, follow the procedure below. Use the same procedure to move other robots.

2-3-2-1 Moving the ceiling-hanging robot

1) When using eyebolts (See Fig. 2-4.)

   1) Remove the X-axis and Y-axis under covers and attach the carrying jigs as shown in Fig. 2-4. Remove all loads if attached to the Z-axis to set the servo free and release the brake. Then fold the Z-axis to a position where it can be fastened to the arm clamping stay.

   2) Insert the eyebolts into the holes on the carrying jig and securely fasten the eyebolts with the nuts. Then attach the arm clamping stay to the carrying jig.
3) Clamp the Y-axis arm by using the stay and bolts that come with the robot. If the arms cannot be folded in the carrying position (see Fig. 2-4) due to the X-axis mechanical stoppers, then remove them. (When the robot is shipped, the mechanical stoppers are installed to provide the maximum movement range.)

4) Wind the robot cable around the robot base while keeping the cable from hanging up on the base mount, then fasten the cable end with adhesive tape.

5) Prepare 4 looped ropes with the same length to allow a good lifting balance, then pass each rope through each eyebolt and catch it on the hoist hook.

6) Slightly lift the hoist so that each rope has light tension to hold the robot. In this state, remove the bolts securing the robot base to the pallet supplied or installation base (if robot is to be moved to another installation base).

7) Using caution to keep the balance of the robot and avoid subjecting it to any strong vibrations and shocks, operate the hoist carefully to move to the installation base. The angle between each rope and the arm surface should be kept at 45 degrees or more.

8) Temporarily secure the robot to the installation base by tightening the bolts. (Use the same tightening torque as specified to secure the standard model robots.)

9) Remove the ropes and carrying jigs, then reattach the X-axis and Y-axis under covers. Be sure to keep the carrying jigs, eyebolts, arm clamping stay, bolts and pallet for future use in case the robot needs to be moved or transported.
CHAPTER 2 Installation

Fig. 2-4

Arm clamping stay (supplied with robot)

Bolts (M12x20) supplied with robot
Tightening torque 71N\(\cdot\)m (720kgf\(\cdot\)cm)

Arm clamped position

Eyebolts (4 pieces supplied with the robot)

Pallet (supplied with the robot)

Use bolts and nuts or screws (4 pcs) supplied with robot

4 bolts (supplied with robot)
Tightening torque 71N\(\cdot\)m (720kgf\(\cdot\)cm)

Robot carrying jig

4 bolts (supplied with robot)
Tightening torque 71N\(\cdot\)m (720kgf\(\cdot\)cm)

Robot cable

Use bolts and nuts or screws (4 pcs) supplied with robot

Y-axis under cover

Screw

X-axis under cover

Bolts (2 pcs) supplied with robot
Tightening torque 4.5N\(\cdot\)m (46kgf\(\cdot\)cm)

Rope

Hoist hook

Bolts (M12x20) supplied with robot
Tightening torque 71N\(\cdot\)m (720kgf\(\cdot\)cm)

Robot carrying jig

Bolts (2 pcs) supplied with robot
Tightening torque 4.5N\(\cdot\)m (46kgf\(\cdot\)cm)
(2) When using the hand forklift (See Fig. 2-5)

1) Remove the X- and Y-axis under covers and install the robot carrying jigs.

2) Set the X- and Y-axis arms straight (See Fig. 2-5). If the robot is in the shipped state, remove the spline from the arm clamping stay, and set the X- and Y-axis arms straight. If the arms cannot be folded in the carrying position (see Fig. 2-5) due to the X-axis mechanical stoppers, then remove them.

3) Wind the robot cable around the robot base while keeping the cable from hanging up on the base mount, then fasten the cable end with adhesive tape.

4) Insert the prongs of the hand forklift into the robot carrying jigs and raise the hand forklift supporting the robot. Remove the bolts securing the pallet supplied or installation base (if moving the robot to another installation base).

5) Using caution to keep the balance of the robot and avoid subjecting it to vibrations and shocks, slowly move to the installation base.

6) Temporarily secure the robot to the installation base by tightening the bolts. (Bolt tightening torque is the same as the standard model robots.)

7) Remove the carrying jigs, and reattach the X- and Y-axis under covers. Be sure to keep the carrying jigs, bolts, arm clamping stay and pallet for future use in case the robot needs to be moved or transported.
Set the arms out straight.

Fig. 2-5

Arm clamped position

Bolts (M12 x 20) supplied with robot

Arm clamping stay (supplied with robot)

Robot cable

Use bolts and nuts or screws (4 pcs) supplied with robot

Robot carrying jig

Insert the prongs of the hand forklift there.

Pallet (supplied with the robot)

Bolts (2 pcs) supplied with robot

Y-axis under cover

Screw

X-axis under cover

4 bolts (supplied with robot)

Tightening torque 71N•m (720Kgf•cm)

Set the arms out straight.

CHAPTER 2 Installation
2-3-2-2 Moving the inverse type robot

(1) When using eyebolts (See Fig. 2-6.)

1) Remove the X-axis and Y-axis upper covers and attach the robot carrying jigs. Remove all loads if attached to the Z-axis to set the servo free and release the brake. Then fold the Z-axis to a position where it can be fastened to the arm clamping stay.

2) Insert the eyebolts into the holes on the carrying jigs and securely fasten the eyebolts with the nuts. Then attach the arm clamping stay to the carrying jigs.

3) Clamp the Y-axis arm by using the stay and bolts that come with the robot. If the arms cannot be folded in the carrying position (see Fig. 2-4) due to the X-axis mechanical stoppers, then remove them. (When the robot is shipped, the mechanical stoppers are installed to provide the maximum movement range.)

4) Wind the robot cable around the robot base while keeping the cable from hanging up on the base mount, then fasten the cable end with adhesive tape.

5) Prepare 4 looped ropes with the same length to allow a good lifting balance, then pass each rope through each eyebolt and catch it on the hoist hook.

6) Slightly lift the hoist so that each rope has light tension to hold the robot. In this state, remove the bolts securing the robot base to the pallet supplied or installation base (if moving the robot to another installation base).

7) Using caution to keep the balance of the robot and avoid subjecting it to any strong vibrations and shocks, operate the hoist carefully to move to the installation base. The angle between each rope and the arm surface should be kept at 45 degrees or more.

8) Temporarily secure the robot to the installation base by tightening the bolts. (Bolt tightening torque is the same as the standard model robots.)

9) Remove the ropes and carrying jigs, then reattach the X-axis and Y-axis upper covers. Be sure to keep the carrying jigs, eyebolts, arm clamping stay, bolts and pallet for future use in case the robot needs to be moved or transported.
CHAPTER 2 Installation

Fig. 2-6

Arm clamped position

X-axis upper cover
Y-axis upper cover
Screw

Hoist hook
Rope

Eyebolts (4 pieces supplied with the robot)

2 bolts (supplied with robot)
Tightening torque 4.5N•m (46kgf•cm)

4 bolts (supplied with robot)
Tightening torque 71N•m (720kgf•cm)

Robot carrying jig

Pallet (supplied with the robot)

Use bolts and nuts or screws supplied with robot

Robot cable

Bolts (M12×20) supplied with robot
Tightening torque 71N•m (720kgf•cm)

Arm clamping stay (supplied with robot)
(2) When using the hand forklift (See Fig. 2-7)

1) Remove the X- and Y-axis upper covers and install the robot carrying jigs.

2) Set the X- and Y-axis arms straight (See Fig. 2-5). If the robot is in the shipped state, remove the spline from the arm clamping stay, and set the X- and Y-axis arms straight. If the arms cannot be folded in the carrying position (see Fig. 2-5) due to the X-axis mechanical stoppers, then remove them. (When the robot is shipped, the mechanical stoppers are installed to provide the maximum movement range.)

3) Wind the robot cable around the robot base while keeping the cable from hanging up on the base mount, then fasten the cable end with adhesive tape.

4) Insert the prongs of the hand forklift into the robot carrying jigs and raise the hand forklift supporting the robot. Remove the bolts securing the pallet supplied or installation base (if moving the robot to another installation base).

5) Using caution to keep the balance of the robot and avoid subjecting it to vibrations and shocks, slowly move to the installation base.

6) Temporarily secure the robot to the installation base by tightening the bolts. (Bolt tightening torque is the same as the standard model robots.)

7) Remove the carrying jigs, and reattach the X- and Y-axis upper covers. Be sure to keep the carrying jigs, bolts, arm clamping stay and pallet for future use in case the robot needs to be moved or transported.
Set the arms out straight.

Insert the prongs of the hand forklift there.

Robot carrying jig

4 bolts (supplied with robot)

Use bolts and nuts or screws supplied with robot

Pallet (supplied with the robot)

Bolts (M12×20) supplied with robot

Arm clamping stay (supplied with robot)

Set the arms out straight.

Fig. 2-7
CHAPTER 3

Periodic Inspection

1  Replacing the Harmonic Grease (Inverse type model R-axis)........ 3-1
   1-1  Replacement period........................................................................................................3-1
**1 Replacing the Harmonic Grease (Inverse type model R-axis)**

Only the R-axis harmonic drive of the inverse type model uses harmonic grease HC-1A. This grease must be replaced periodically. Use the guideline explained below to determine the appropriate replacement period and replace the grease.

### 1-1 Replacement period

The harmonic drive grease replacement period is determined by the total number of turns of the wave generator used in the harmonic drive. It is recommended to replace the harmonic drive grease when the total number of turns has reached $1.5 \times 10^8$ (at ambient operating temperatures of 0°C to +40°C). This means that the replacement period will differ depending on the following operating conditions. If the robot operation duty ratio is high or the robot is operated in environments at higher temperatures, the harmonic drive should be replaced earlier.

Replacement period = $1.5 \times 10^8 / (n \times 60 \times h \times D \times N \times \theta)$ years

where

- $n$ : Number of axis movements per minute
- $\theta$ : Average turn per axis movement
- $N$ : Speed reduction ratio
- $h$ : Operation time per day
- $D$ : Operation days per year

For example, when the robot is used under the following conditions, the replacement period for the R-axis harmonic drive grease of the R6YXS500 can be calculated as follows.

- $n$ : 10
- $\theta$ : 0.25
- $N$ : 80
- $h$ : 24 hours per day
- $D$ : 240 days per year

Replacement period = $1.5 \times 10^8 / (10 \times 60 \times 24 \times 240 \times 80 \times 0.25) = 2.17$ years

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CHAPTER 4

Specifications

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CHAPTER 4 Specifications

1  Robot Manipulator

1-1  Basic specifications

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<td>4x3</td>
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<td>1. Soft limit</td>
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</tr>
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<td></td>
<td>2. Mechanical limit</td>
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*1 At constant ambient temperature (XY)
*2 There are limits to acceleration coefficient settings.
### Chapter 4 Specifications

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<th>Parameter</th>
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<th>R6YS600</th>
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<td><strong>Robot model</strong></td>
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<td><strong>Axis specifications</strong></td>
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<td>20 cables</td>
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<td><strong>User tubing (Outer diameter)</strong></td>
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<td>1. Soft limit 2. Mechanical limit (XYZ-axes)</td>
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<td><strong>Robot cable</strong></td>
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*1 At constant ambient temperature (XY)

*2 There are limits to acceleration coefficient settings.
## CHAPTER 4 Specifications

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<th>R6YS700</th>
<th>R6YS800</th>
<th>R6YS1000</th>
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<td>200,400mm</td>
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<td>R-axis</td>
<td>Rotation angle</td>
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<td>±180°</td>
</tr>
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<td>Motor</td>
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<td>Y-axis</td>
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<td>Z-axis</td>
<td>400W</td>
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<tr>
<td>R-axis</td>
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<td>200W</td>
<td>200W</td>
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<td>Maximum speed</td>
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<td>±0.005°</td>
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<td>20kg</td>
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<tr>
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<td>20 cables</td>
<td>20 cables</td>
<td>20 cables</td>
</tr>
<tr>
<td>User tubing (Outer diameter)</td>
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<td>6x3</td>
<td>6x3</td>
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</table>

*1 At constant ambient temperature (XY)

*2 There are limits to acceleration coefficient settings.
1-2 External view and dimensions

The drawing below is for the ceiling-hanging robots. The inverse type robots also have the same dimensions.

Fig. 4-1 R6YXSH300
Inverse type is installed upside down.

Working envelope
Use caution to prevent interference with installation wall

*Inverse type is installed upside down.*
CHAPTER 4 Specifications

Z-axis mechanical stopper
Circlet for user tool positioning
Spline shaft (hollow) Hollow diameter φ7

M8×1.25 Depth15

Z-axis tip shape

Base interference range
Working envelope

Use caution to prevent interference with installation wall

※Inverse type is installed upside down.

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CHAPTER 4 Specifications

Fig. 4-3 R6YXS500
Interference position
(a) Base flange
(b) Base rear side
(c) Base

X and Y-axis mechanical stopper positions (maximum working envelope)

D-sub connector for user wiring
[No. 1 to 20]

User tubing 3(Ø6 blue)
User tubing 2(Ø6 red)
User tubing 1(Ø6 black)

M4 ground terminal
CHAPTER 4 Specifications

Fig. 4-4 R6YXS600

Z-axis 300mm stroke

Z-axis 200mm stroke

(Z-axis lower end mechanical stopper position)

(Z-axis upper end mechanical stopper position)

Recommended user installation base

User tubing 1 (ø6 black)

User tubing 2 (ø6 red)

User tubing 3 (ø6 blue)

D-sub connector for user wiring
(No. 1 to 20 usable)

User tubing 2 (ø6 red)

User tubing 3 (ø6 blue)

Z-axis stroke 300mm
Working envelope

Z-axis stroke 200mm
Working envelope

Use M10 bolt for installation

Center of recommended user installation base

View from direction A

¢205

(Installation base of larger than ø205mm may interfere with harness.)

Z-axis lower end mechanical stopper position

Z-axis upper end mechanical stopper position

M12X1.75 Depth20

2X2-M4X0.7 Depth10
(Same on opposite side)

228 Z-axis 300mm stroke

93 Z-axis 200mm stroke

ø18 ø18

20

ø7

ø7

94

99

86

ø11 ø11

ø11 ±2

8

120

364

411±2

120

160

47

250

350

120

350

120

ø205

(Installation base of larger than ø205mm may interfere with harness.)

ø11 ø11

ø11 ±2

8

Center of recommended user installation base

View from direction A

Fig. 4-4 R6YXS600

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CHAPTER 4 Specifications

Interference position
(a) Base flange
(b) Base rear side
(c) Base

Working envelope

X and Y-axis mechanical stopper positions (maximum working envelope)

D-sub connector for user wiring
(No. 1 to 20 usable, pin contact)

User tubing 3 (ø6 blue)
User tubing 2 (ø6 red)
User tubing 1 (ø6 black)
M4 ground terminal
CHAPTER 4 Specifications

Fig. 4-5 R6YXS700
Interference position
(a) Base flange
(b) Base rear side
(c) Base

Working envelope

X and Y-axis mechanical stopper positions (maximum working envelope)

D-sub connector for user wiring
(No. 1 to 20 usable, pin contact)
CHAPTER 4 Specifications

Fig. 4-6 R6YXS800
Interference position
(a) Base flange
(b) Base rear side
(c) Base

X and Y-axis mechanical stopper positions (maximum working envelope)

D-sub connector for user wiring
(No. 1 to 20 usable, pin contact)
CHAPTER 4 Specifications

Fig. 4-7 R6YXS1000
CHAPTER 4 Specifications

Interference position
(a) Base flange
(b) Base rear side
(c) Base

Working envelope

X and Y-axis mechanical stopper positions (maximum working envelope)

D-sub connector for user wiring
(No. 1 to 20 usable, pin contact)

User tubing 1 (ø6 black)
User tubing 2 (ø6 red)
User tubing 3 (ø6 blue)
Revision History

A manual revision code appears as a suffix to the catalog number on the front cover of the manual.

Cat. No. I142E-EN-01

The following table outlines the changes made to the manual during each revision. Page numbers refer to the previous revision.

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<th>Revised content</th>
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<td>Original production</td>
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