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- Routine Technical Inquiries: techsupport@motoman.com
Allow up to 36 hours for response

MOTOMAN-GP400,GP600 SUPPLEMENTAL INSTRUCTIONS

TYPE:**YR-1-06VX400-C00 (Drip-proof Specification)****YR-1-06VX600-C00 (Drip-proof Specification)**

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

MOTOMAN INSTRUCTIONS

MOTOMAN-GP400,GP600 INSTRUCTIONS
MOTOMAN-GP400,GP600 SUPPLEMENTAL INSTRUCTIONS
YRC1000 INSTRUCTIONS
YRC1000 OPERATOR'S MANUAL (GENERAL) (SUBJECT SPECIFIC)
YRC1000 MAINTENANCE MANUAL
YRC1000 ALARM CODES (MAJOR ALARMS) (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: 186435-1CD
Revision: 0

MANUAL NO.
HW1485777

Introduction

This supplemental instruction manual describes MOTOMAN-GP400 for drip proof specifications (YR-1-06VX400-C00) and MOTOMAN-GP600 for drip proof specifications (YR-1-06VX600-C00).

Point of Difference

The YR-1-06VX400-C00 and YR-1-06VX600-C00 differ from the YR-1-06VX400-A00 and YR-1-06VX600-A00 in the following points:

- Grease for gear and each axis speed reducer
- IP54 for the IEC protection class of the manipulator

This manual differs from “MOTOMAN-GP400,GP600 INSTRUCTIONS” (Manual No. HW1484394) in the following points.

- 3.4 Location
- 3.5 Notes on Dust-Poof/Water-Proof Specifications
- 5.1 Basic Specifications
- 7.2 Internal User I/O Wiring Harness and Air Line
- 9.1 Inspection Schedule
- 9.4 Notes on Grease Replenishment/Exchange Procedures
- 10 Recommended Spare Parts

3.4 Location

3.4 Location

When installing a manipulator, it is necessary to satisfy the following environmental conditions:

- Ambient temperature: 0 to + 45°C
- Humidity: 20 to 80%RH
- Free from dust, soot, or oil
- Free from corrosive gas or liquid, or explosive gas or liquid
- Free from excessive vibration (Vibration acceleration: 4.9 m/s² [0.5 G] or less)
- Free from large electrical noise (plasma)
- Free from the strong magnetic field
- Altitude: 1000 m or less
- Flatness for installation: 0.5 mm or less



When the operation is started after the manipulator has been out of operation and left in the low temperature (almost 0°C) for a long period, the alarm may occur since the friction torque of the drive unit is large. If the alarm occurs, perform the break-in for few minutes.

3.5 Notes on Dust-Poof/Water-Proof Specifications

3.5 Notes on Dust-Poof/Water-Proof Specifications

The YR-1-06VX400-C00 and YR-1-06VX600-C00 conform to:

- IP67 for the wrist part
- IP54 for the main part of the manipulator



< Definition of IP (protection class) >

- Definition of IP67

IP6□: Protection from the entry of dust

IP□7: Protection from immersion in water with being submerged for a specified duration and pressure

- Definition of IP54

IP5□: Protection from entering the amount of dust which leads to the abnormal motion of the device or deteriorates safety

IP□4: Protection from water drip in any direction

However, the following precautions must be observed:

- Do not use the following liquids, because the rubber parts of the manipulator (gasket, oil seal, O-ring, etc.) may be deteriorated or corroded:
 - Organic solvent
 - Chlorine-based cutting fluid
 - Amine-based cleaning fluid
 - Corrosive substances such as acids, alkalis, or liquids/solutions causing rust
 - Other liquids/solutions to which nitrile-butadiene rubber (NBR) is not resistant
- After removing a gasket for parts replacement or maintenance/inspection, make sure to replace the gasket with a new one.
- Do not use cutting fluid or cleaning fluid which contains unknown chemical substances.

5.1 Basic Specifications

5.1 Basic Specifications

Table 5-1: Basic Specifications (YR-1-06VX400-C00)¹⁾

Item		Type	YR-1-06VX400-C00
Structure			Vertically articulated
Degree of freedom			6
Payload	Wrist part		400 kg
	U-arm		50 kg
Repeatability ²⁾			±0.3 mm
Range of Motion	S-Axis (turning)		-180° - +180°
	L-Axis (lower arm)		-55° - +61°
	U-Axis (upper arm)		-113° - +18°
	R-Axis (wrist roll)		-360° - +360°
	B-Axis (wrist pitch/yaw)		-115° - +115°
	T-Axis (wrist twist)		-360° - +360°
Maximum Speed	S-Axis		1.78 rad/s, 102°/s
	L-Axis		1.69 rad/s, 97°/s
	U-Axis		1.69 rad/s, 97°/s
	R-Axis		1.40 rad/s, 80°/s
	B-Axis		1.40 rad/s, 80°/s
	T-Axis		3.00 rad/s, 172°/s
Allowable Moment ³⁾	R-Axis		2989 N•m (305 kgf•m)
	B-Axis		2989 N•m (305 kgf•m)
	T-Axis		1343 N•m (137 kgf•m)
Allowable Inertia (GD ² /4) ³⁾	R-Axis		500 kg•m ²
	B-Axis		500 kg•m ²
	T-Axis		315 kg•m ²
Approx. Mass			2840 kg
Protective enclosure			Body: IP54 Wrist part: IP67
Mounting method			Floor-mounted
Ambient Conditions	Temperature		0°C - 45°C
	Humidity		20% - 80%RH
	Vibration		4.9 m/s ² (0.5 G) or less
	Altitude		1000 m or less
	Others		Free from corrosive gas or liquid, or explosive gas Free from excessive electrical noise (plasma) Free from strong magnetic field
Power Capacity			7.0 kVA
Applicable controller			YRC1000
Equivalent continuous sound pressure level ⁴⁾			71 dB or less

1 SI units are used in this table. However, gravitational unit is used in ().

2 Conformed to ISO9283

3 Refer to *chapter 6.1 "Allowable Wrist Load"* for details on the allowable moment and the allowable inertia.

4 Conformed to equivalent continuous A-weighted sound pressure level measured in accordance with ISO11201 (EN31201).

1, Measurement is carried out when the maximum load is mounted to the manipulator and operated in the maximum speed.

2, Measurement is carried out:

-between 1.2 m and 1.5 m above the ground.

-400 mm away from the P-point maximum envelope.

5.1 Basic Specifications

Table 5-2: Basic Specifications (YR-1-06VX600-C00)¹⁾

Item		Type	YR-1-06VX600-C00
Structure			Vertically articulated
Degree of freedom			6
Payload	Wrist part		600 kg
	U-arm		50 kg
Repeatability ²⁾			±0.3 mm
Range of Motion	S-Axis (turning)		-180° - +180°
	L-Axis (lower arm)		-55° - +61°
	U-Axis (upper arm)		-113° - +18°
	R-Axis (wrist roll)		-360° - +360°
	B-Axis (wrist pitch/yaw)		-115° - +115°
	T-Axis (wrist twist)		-360° - +360°
Maximum Speed	S-Axis		1.43 rad/s, 82°/s
	L-Axis		1.43 rad/s, 82°/s
	U-Axis		1.43 rad/s, 82°/s
	R-Axis		1.40 rad/s, 80°/s
	B-Axis		1.40 rad/s, 80°/s
	T-Axis		2.83 rad/s, 162°/s
Allowable Moment ³⁾	R-Axis		3430 N•m (350 kgf•m)
	B-Axis		3430 N•m (350 kgf•m)
	T-Axis		1764 N•m (180 kgf•m)
Allowable Inertia (GD ² /4) ³⁾	R-Axis		520 kg•m ²
	B-Axis		520 kg•m ²
	T-Axis		350 kg•m ²
Approx. Mass			3035 kg
Protective enclosure			Body: IP54 Wrist part: IP67
Mounting method			Floor-mounted
Ambient Conditions	Temperature		0°C - 45°C
	Humidity		20% - 80%RH
	Vibration		4.9 m/s ² (0.5 G) or less
	Altitude		1000 m or less
	Others		Free from corrosive gas or liquid, or explosive gas Free from excessive electrical noise (plasma) Free from strong magnetic field
Power Capacity			7.0 kVA
Applicable controller			YRC1000
Equivalent continuous sound pressure level ⁴⁾			71 dB or less

1 SI units are used in this table. However, gravitational unit is used in ().

2 Conformed to ISO9283

3 Refer to chapter 6.1 "Allowable Wrist Load" for details on the allowable moment and the allowable inertia.

4 Conformed to equivalent continuous A-weighted sound pressure level measured in accordance with ISO11201 (EN31201).

1, Measurement is carried out when the maximum load is mounted to the manipulator and operated in the maximum speed.

2, Measurement is carried out:

-between 1.2 m and 1.5 m above the ground.

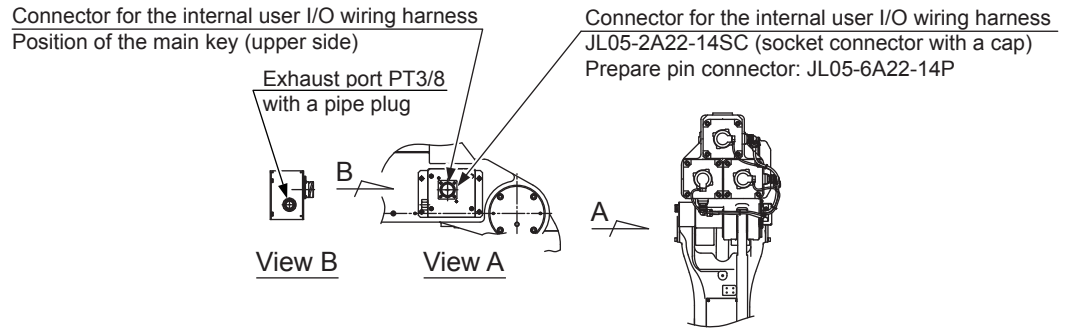
-400 mm away from the P-point maximum envelope.

7.2 Internal User I/O Wiring Harness and Air Line

7.2 Internal User I/O Wiring Harness and Air Line

As shown in the following figure, the location of the view A that shows the connector for the internal user I/O wiring harness and the view B that shows the air exhaust port are changed.

Fig. 7-1: Connectors for Internal User I/O Wiring Harness and Air Line



9.1 Inspection Schedule

9.1 Inspection Schedule

Replace the following table with table 9-2 "Inspection Parts and Grease Used".

Table 9-2: Inspection Parts and Grease Used

Inspection number	Grease used	Items
10, 11	RV grease LB00	Speed reducers for each axis R-, B-, and T-axis gear
12	Alvania EP Grease 2	L- and U-arm links, joint of the spring balancer, other links

9.4 Notes on Grease Replenishment/Exchange Procedures

Where the following types of grease appear in the manual, they should be replaced as follows:

Gear and each axis speed reducer
 Molywhite RE No.00 to RV grease LB00

10 Recommended Spare Parts

It is recommended to keep the parts and components in the following table in stock as spare parts for the YR-1-06VX400-C00, YR-1-06VX600-C00.

To purchase lead wires of the wire harness or etc., check the order/ manufacture no. and contact YASKAWA representative.

Product performance cannot be guaranteed when using spare parts from any company other than YASKAWA. The spare parts are ranked as follows:

- Rank A: Expendable and frequently replaced parts.
- Rank B: Parts for which replacement may be necessary as a result of frequent operation.
- Rank C: Drive unit.



For replacing parts in Rank B or Rank C, contact your YASKAWA representative.

Table 10-1: Recommend Spare Parts for the YR-1-06VX400-C00 (Sheet 1 of 2)

Rank	Parts No.	Name	Type	Manufacturer	Qty	Qty per Unit	Remarks
A	1	Grease	RV grease LB00	YASKAWA Electric Corporation	16 kg	-	
A	2	Grease	Alvania EP Grease 2	Showa Oil Co., Ltd.	16 kg	-	
A	3	Liquid Gasket	TB1206C	ThreeBond Co., Ltd.	-	-	
A	4	Adhesive	LOCTITE 243	Henkel Japan Ltd	-	-	
A	5	Seal Tape	TB4501	ThreeBond Co., Ltd.	-	-	
A	6	Battery Pack	HW1483880-A	YASKAWA Electric Corporation	1	3	
A	7	Lead Wire for Battery Replacement	HW1471281-A	YASKAWA Electric Corporation	1	-	
B	8	Replacement Kit for S-Axis Speed Reducer	Y005C-06VX400A00S	YASKAWA Electric Corporation	1	1	
B	9	Replacement Kit for L-Axis Speed Reducer	Y005C-06VX400A00L	YASKAWA Electric Corporation	1	1	
B	10	Replacement Kit for U-Axis Speed Reducer	Y005C-06VX400A00U	YASKAWA Electric Corporation	1	1	
B	11	Replacement Kit for R-Axis Speed Reducer	Y005C-06VX400A00R	YASKAWA Electric Corporation	1	1	

10 Recommended Spare Parts

Table 10-1: Recommend Spare Parts for the YR-1-06VX400-C00 (Sheet 2 of 2)

Rank	Parts No.	Name	Type	Manufacturer	Qty	Qty per Unit	Remarks
B	12	Replacement Kit for B-Axis Speed Reducer	Y005C-06VX400A00B	YASKAWA Electric Corporation	1	1	
B	13	Replacement Kit for T-Axis Speed Reducer	Y005C-06VX400A00T	YASKAWA Electric Corporation	1	1	
B	14	Wrist Unit	HW1173000-C	YASKAWA Electric Corporation	1	1	
B	15	Internal Wiring Harness	HW1173622-A	YASKAWA Electric Corporation	1	1	
B	16	Lead Wire for S-Axis Signal	HW1372910-G	YASKAWA Electric Corporation	1	1	Lead wire between the S-axis motor and the multi-port connector
B	17	Lead Wire for L-Axis Signal	HW1372910-H	YASKAWA Electric Corporation	1	1	Lead wire between the L-axis motor and the multi-port connector
B	18	Lead Wire for U-Axis Signal	HW1372910-I	YASKAWA Electric Corporation	1	1	Lead wire between the U-axis motor and the multi-port connector
B	19	Lead Wire for R-Axis Signal	HW1372597-O	YASKAWA Electric Corporation	1	1	Lead wire between the R-axis motor and the multi-port connector
B	20	Lead Wire for B-Axis Signal	HW1372597-P	YASKAWA Electric Corporation	1	1	Lead wire between the B-axis motor and the multi-port connector
B	21	Lead Wire for T-Axis Signal	HW1372597-Q	YASKAWA Electric Corporation	1	1	Lead wire between the T-axis motor and the multi-port connector
B	22	Lead Wire	HW1471359-B	YASKAWA Electric Corporation	1	1	Lead wire between the multiport in the S-head and the multiport
C	23	Bypass Cable	HW1471212-C	YASKAWA Electric Corporation	1	-	Signal lead wires for tentative recovery from failure
C	24	S-Axis AC Servomotor	SGM7G-44APK-YR1* HW1385398-A	YASKAWA Electric Corporation	1	1	
C	25	L- and U-Axes AC Servomotor	SGM7G-37APK-YR1* HW1385397-A	YASKAWA Electric Corporation	1	2	
C	26	R-, B-, and T-Axes AC Servomotor	SGM7G-30APK-YR1* HW1385396-A	YASKAWA Electric Corporation	1	3	
C	27	Multiport Connector	HW1384619-A	YASKAWA Electric Corporation	1	3	
C	28	Power Supply Board Box	HW1372944-A	YASKAWA Electric Corporation	1	1	
C	29	Dummy Connector	HW1471285-A	YASKAWA Electric Corporation	1	-	For dismounting function of the axis

Table 10-2: Recommend Spare Parts for the YR-1-06VX600-C00 (Sheet 1 of 2)

Rank	Parts No.	Name	Type	Manufacturer	Qty	Qty per Unit	Remarks
A	1	Grease	RV grease LB00	YASKAWA Electric Corporation	16 kg	-	
A	2	Grease	Alvania EP Grease 2	Showa Oil Co., Ltd.	16 kg	-	
A	3	Liquid Gasket	TB1206C	ThreeBond Co., Ltd.	-	-	
A	4	Adhesive	LOCTITE 243	Henkel Japan Ltd	-	-	
A	5	Seal Tape	TB4501	ThreeBond Co., Ltd.	-	-	
A	6	Battery Pack	HW1483880-A	YASKAWA Electric Corporation	1	3	
A	7	Lead Wire for Battery Replacement	HW1471281-A	YASKAWA Electric Corporation	1	-	
B	8	Replacement Kit for S-Axis Speed Reducer	Y005C-06VX600A00S	YASKAWA Electric Corporation	1	1	
B	9	Replacement Kit for L-Axis Speed Reducer	Y005C-06VX600A00L	YASKAWA Electric Corporation	1	1	
B	10	Replacement Kit for U-Axis Speed Reducer	Y005C-06VX600A00U	YASKAWA Electric Corporation	1	1	
B	11	Replacement Kit for R-Axis Speed Reducer	Y005C-06VX600A00R	YASKAWA Electric Corporation	1	1	
B	12	Replacement Kit for B-Axis Speed Reducer	Y005C-06VX600A00B	YASKAWA Electric Corporation	1	1	
B	13	Replacement Kit for T-Axis Speed Reducer	Y005C-06VX600A00T	YASKAWA Electric Corporation	1	1	
B	14	Wrist Unit	HW1173000-D	YASKAWA Electric Corporation	1	1	
B	15	Internal Wiring Harness	HW1173622-A	YASKAWA Electric Corporation	1	1	
B	16	Lead Wire for S-Axis Signal	HW1372910-M	YASKAWA Electric Corporation	1	1	Lead wire between the S-axis motor and the multi-port connector
B	17	Lead Wire for L-Axis Signal	HW1372910-N	YASKAWA Electric Corporation	1	1	Lead wire between the L-axis motor and the multi-port connector
B	18	Lead Wire for U-Axis Signal	HW1372910-O	YASKAWA Electric Corporation	1	1	Lead wire between the U-axis motor and the multi-port connector

10 Recommended Spare Parts

Table 10-2: Recommend Spare Parts for the YR-1-06VX600-C00 (Sheet 2 of 2)

Rank	Parts No.	Name	Type	Manufacturer	Qty	Qty per Unit	Remarks
B	19	Lead Wire for R-Axis Signal	HW1372597-O	YASKAWA Electric Corporation	1	1	Lead wire between the R-axis motor and the multi-port connector
B	20	Lead Wire for B-Axis Signal	HW1372597-P	YASKAWA Electric Corporation	1	1	Lead wire between the B-axis motor and the multi-port connector
B	21	Lead Wire for T-Axis Signal	HW1372597-Q	YASKAWA Electric Corporation	1	1	Lead wire between the T-axis motor and the multi-port connector
B	22	Lead Wire	HW1471359-B	YASKAWA Electric Corporation	1	1	Lead wire between the multiport in the S-head and the multiport
C	23	Bypass Cable	HW1471212-C	YASKAWA Electric Corporation	1	-	Signal lead wires for tentative recovery from failure
C	24	S-Axis AC Servomotor	SGM7G-44APK-YR1* HW1385398-A	YASKAWA Electric Corporation	1	1	
C	25	L- and U-Axes AC Servomotor	SGM7G-55APK-YR1* HW1385400-A	YASKAWA Electric Corporation	1	2	
C	26	R-, B-, and T-Axes AC Servomotor	SGM7G-30APK-YR1* HW1385396-A	YASKAWA Electric Corporation	1	3	
C	27	Multiport Connector	HW1384619-A	YASKAWA Electric Corporation	1	3	
C	28	Power Supply Board Box	HW1372944-A	YASKAWA Electric Corporation	1	1	
C	29	Dummy Connector	HW1471285-A	YASKAWA Electric Corporation	1	-	For dismounting function of the axis

MOTOMAN-GP400,GP600 SUPPLEMENTAL INSTRUCTIONS

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