

MOTOMAN-MPK2F-5 SUPPLEMENT INSTRUCTIONS

**TYPE:YR-MPK002F-A10(PUT IT ON FLOOR 5kg PAYLOAD SPECIFICATION FS100)
YR-MPK002F-A20(HANG IT ON CEILING 5kg PAYLOAD SPECIFICATION FS100)**

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

Part Number: 162687-1CD
Revision: 0

Introduction

This supplementary instruction manual describes how the YR-MPK002F-A10/YR-MPK002F-A20 (hereinafter referred to as MPK2F-A10/MPK2F-A20) is different from the YR-MPK002F-A00/YR-MPK002F-A20 (hereinafter referred to as MPK2F-A00/MPK2F-A01).

Read this supplementary instruction manual thoroughly together with the following instruction manual:

“MOTOMAN-MPK2/MPK2F INSTRUCTIONS”

(Type: YR-MPK002F-A00/YR-MPK002F-A01) for standard specification, Part Number 159409-1CD)

The sections in this supplementary is the same as the numbered sections of the manual.

Points of Differences

The MPK2F-A10/ MPK2F-A20 differs from the MPK2F-A00/MPK2F-A01 in the following points:

- 5kg payload

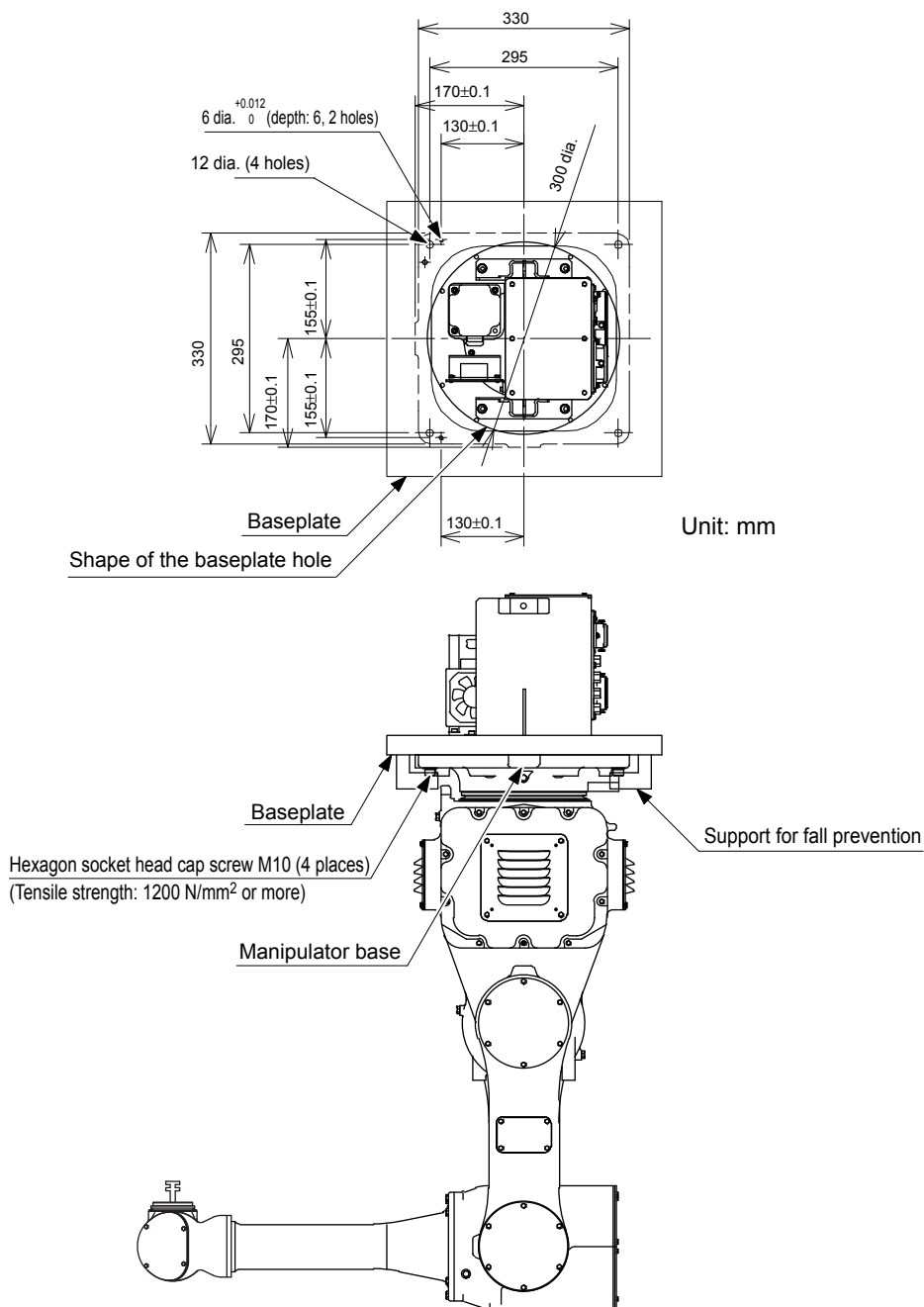
The differences are described based on "MOTOMAN-MPK2/MPK2F INSTRUCTIONS" (Part Number 159409-1CD). Read this manual thoroughly replacing the subject matters for changes with this supplementary instruction manual.

MPK2F-5

3.3.3 Precautions to Prevent the Manipulator from Falling

For the ceiling-mounted types, take appropriate measures to avoid the falling of the manipulator in case of emergency. Refer to *fig. 3-2 "Precaution Against Falling"* for details.

Fig. 3-2: Precaution Against Falling



In case of using the ceiling-mounted type, inform Yaskawa of the matter when placing an order. Be sure to contact your Yaskawa representative (listed on the back cover of this instruction manual) to perform a ceiling installation on site.

3.3.4 It is changed the B-Axis position by vertical posture

In the case of ceiling mounted specifications(YR-MPK002F-A20) the B-axis faces upward and locates outside the movement range. When shipment After turning the power supply ON, move the B-axis downward (180 ° reverse from shipment position).



That "Special Soft Limit" message is displayed when the B-axis moves away from the movement range.

3.4 When Mounting on the Ceiling

3.4.1 Change of the part

When the manipulator is shipped in the floor mounting way yet it is used in the ceiling mounted way in the field, each parts mentioned in the following figure should be replaced after installed on the ceiling. Otherwise, grease may leak from the inner pressure adjusting case.

- Replace the opening of the the Cover 1 to 4 from the upward direction to the downward direction.
- Remove the Cover 5 and 6, then untie the cable ties in the Case S and L.
- Pull out the Hose S1 from the Union S2, then connect it to the Union S1. Also, pull out the Hose 2 from the Union S3, then it to the Union S2.
- Fix the Case S with the cable tie.
- Pull out the Hose L1 from the Case L1, then connect it to the Union L1. Pull out the Hose L2 from the Union L3, then connect it to the Case L.
- Fix the Case L with the cable tie after changing the direction.
- Reinstall the Cover 5 and 6.
- When reinstalling the Cover 1 to 6, tighten them with the bolt M4 and the bolt M3 with the tightening torque of 1.2 N•m (0.12kg•m) and 1.4 N•m (0.14kg•m)

3.4.2 Change of the parameter



A change of the model setting is necessary for MPK2F-5 to switch from floor setting to ceiling setting. Be sure to contact your Yaskawa representative (listed on the back cover of this instruction manual) to perform a ceiling installation on site.

5 Basic Specifications

5.1 Basic Specifications

Table 5-1: Basic Specifications¹⁾

Item	Model	MOTOMAN-MPK2F-5	
		YR-MPK002F-A10	YR-MPK002F-A20
Model		YR-MPK002F-A10	YR-MPK002F-A20
Structure		Vertically Articulated	
Degree of Freedom		5	
Payload		5 kg	
Repeatability ²⁾		±0.5 mm	
Range of Motion	S-Axis (turning)	-170° – +170°	
	L-Axis (lower arm)	-120° – +120°	
	U-Axis (upper arm)	-102° – +60°	-60° – +240°
	B-Axis (wrist pitch/yaw)	-15° – +15°	
	T-Axis (wrist twist)	-270° – +270°	
Maximum Speed	S-Axis	5.59 rad/s, 320° /s	
	L-Axis	5.76 rad/s, 330° /s	
	U-Axis	5.76 rad/s, 330° /s	
	B-Axis	6.63 rad/s, 380° /s	
	T-Axis	34.9 rad/s, 2000° /s	
Allowable Moment ³⁾	B-Axis	2.26 N•m (0.23 kgf•m)	
	T-Axis	0 N•m (0 kgf•m)	
Allowable Inertia (GD ² /4)	B-Axis	0.065 kg•m ²	
	T-Axis	0.012 kg•m ²	
Approx. Mass		72 kg	
Ambient Conditions	Temperature	0 to 40°C	
	Humidity	20 to 80% RH (non-condensing)	
	Vibration	4.9 m/s ² (0.5G) or less	
	Others	Free from corrosive gas, or explosive gas Free from exposure to dust, soot, or oil Free from excessive electrical noise (plasma)	
Power Requirements		2.0 kVA	

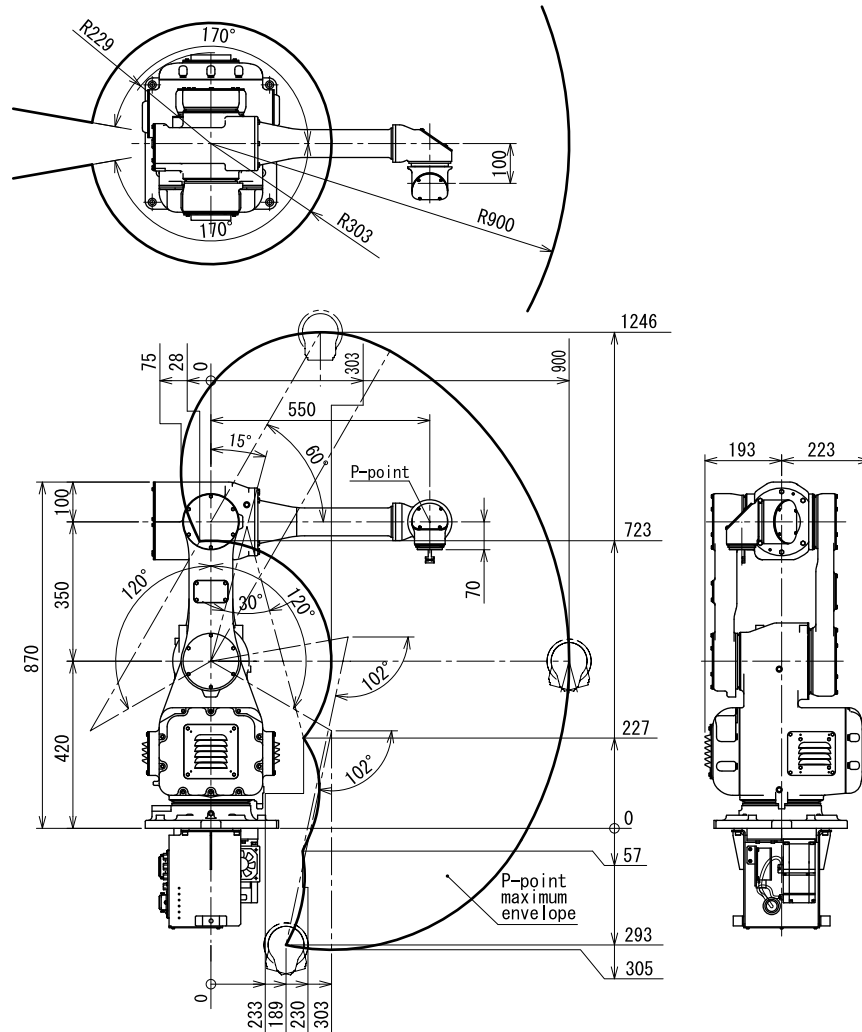
1 SI units are used in this table. However, gravitational unit is used in ().

2 Conformed to ISO9283

3 Refer to *chapter 6.1 "Allowable Wrist Load"* at page 6-10 for details on the permissible moment of inertia.

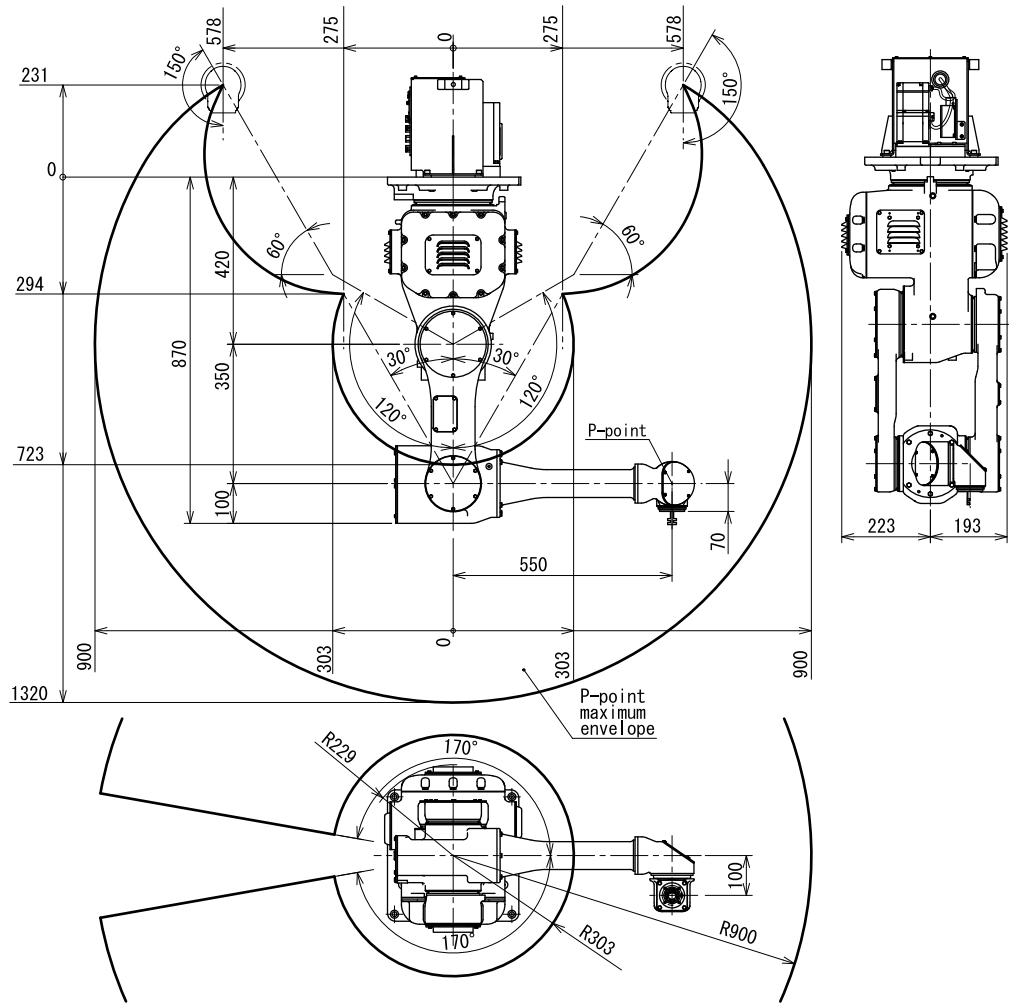
5.4 Dimensions and P-Point Maximum Envelope

Fig. 5-3: MPK2F-A10 Dimensions and P-Point Maximum Envelope



5 Basic Specifications
5.4 Dimensions and P-Point Maximum Envelope

Fig. 5-4: MPK2F-A20 Dimensions and P-Point Maximum Envelope



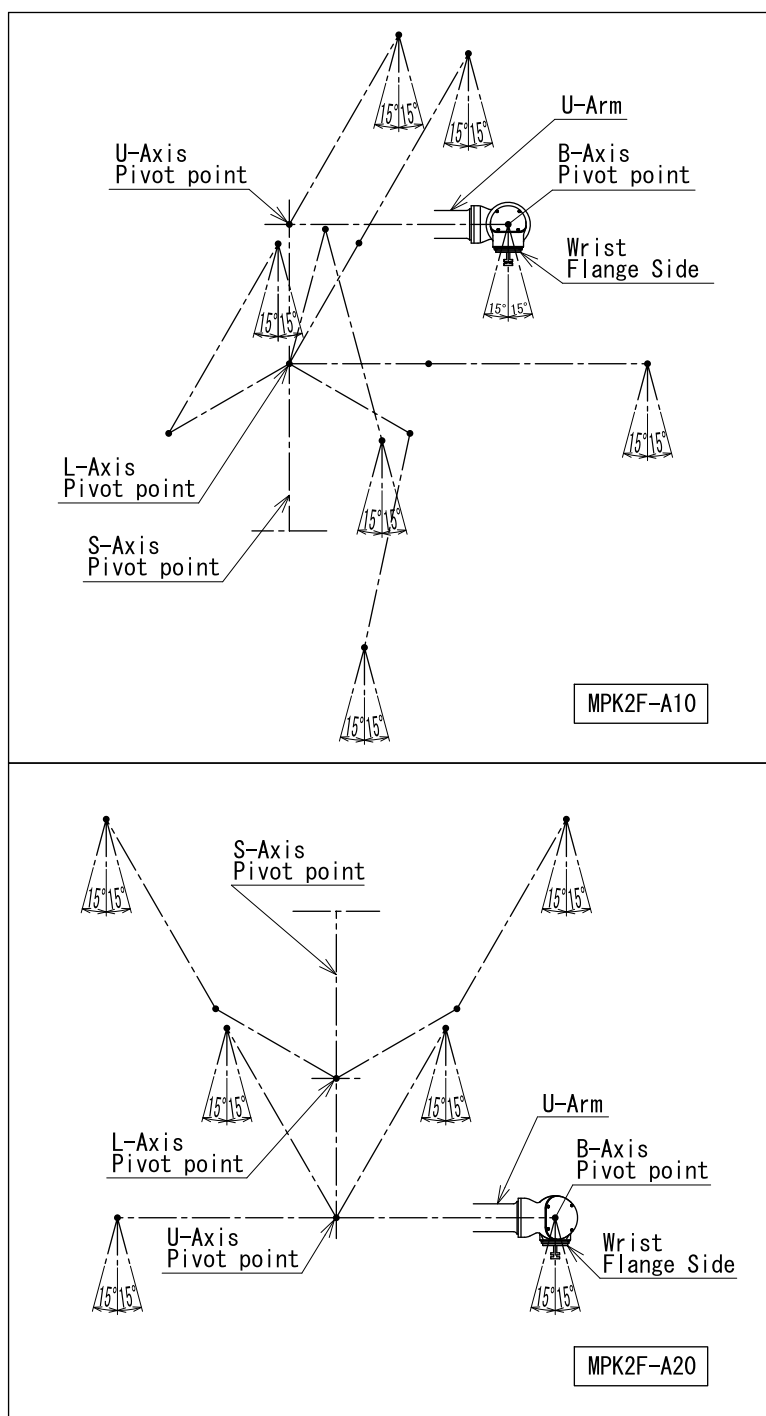
5.6 B-Axis Operating Range

The Operating range of the B-axis maintaining a constant angle to the center of U-axis is shown in Fig. : "5-4: B-Axis Operating Range".

By "B-axis adjustable motion function", the B-axis maintains the same posture to the ground regardless of the L-or U-axis angle.

The operating range is $\pm 15^\circ$ (0 degree is defined as the angle when the wrist flange is horizontal and facing to the ground.) When the B-axis position exceeds this limit, "Special Soft Limit" occurs.

Fig. : 5-4: B-Axis Operating Range



6 Allowable Load for Wrist Axis and Wrist Flange

6.1 Allowable Wrist Load

The allowable wrist load is 5 kg maximum. If force is applied to the wrist instead of the load, force on B- and T-axes should be within the value shown in *table 6-1 "Allowable Wrist Load"*. Contact your Yaskawa representative for further information or assistance.

Table 6-1: Allowable Wrist Load

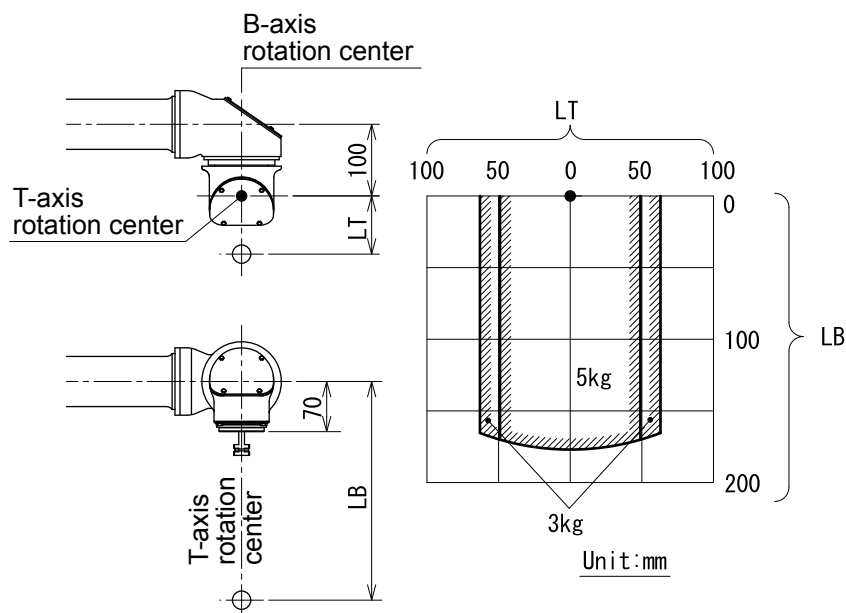
Axis	Moment N·m (kgf·m) ¹⁾	GD ² /4 Total Moment of Inertia kg·m ²
B-Axis	2.26 (0.23)	0.065
T-Axis	0 (0)	0.012

1 (): Gravitational unit

When the volume load is small, refer to the moment arm rating shown in *fig. 6-1 "Moment Arm Rating"*.

The allowable total moment of inertia is calculated when the moment is at the maximum. Contact your Yaskawa representative beforehand when only moment of inertia, or load moment is small and moment of inertia is large. Also, when the load mass is combined with an outside force, contact your Yaskawa representative beforehand.

Fig. 6-1: Moment Arm Rating



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