

MOTOMAN-MPL80 II SUPPLEMENTAL INSTRUCTIONS

TYPE**YR-MPL0080-JF0 (FOR FOOD GRADE GREASE (DX200))**

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

MOTOMAN INSTRUCTIONS

MOTOMAN-MPL80 II INSTRUCTIONS
MOTOMAN-MPL80 II SUPPLEMENTAL INSTRUCTIONS
DX200 INSTRUCTIONS
DX200 OPERATOR'S MANUAL (for each purpose)
DX200 MAINTENANCE MANUAL

The DX200 operator's manual above corresponds to specific usage. Be sure to use the appropriate manual.

Part Number: 175875-1CD
Revision: 0

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Printed in the United States of America

First Printing, 2016

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Introduction

This supplementary instruction manual describes how YR-MPL0080-JF0 (Food grade grease specification) is different from the YR-MPL0080-J00 (Standard).

In case of using YR-MPL0080-JF0, read this supplementary instruction manual thoroughly with: "MOTOMAN-MPL80 II INSTRUCTIONS" (170904-1CD).

Point of Difference

YR-MPL0080-JF0 differ from the YR-MPL0080-J00 in the following point:

(1)Food grade grease specification

- 3.4 Location (Page 3-5)
- 5.1 Basic Specifications (Page 5-1)
- 9.1 Inspection Schedule (Page 9-2 to 9-3)
- 9.3 Grease Replenishment/Exchange (Page 9-8 to 9-17)
- 10 Recommended Spare Parts (Page 10-1)

The differences are described based on "MOTOMAN-MPL80 II INSTRUCTIONS" (170904-1CD). Read this manual thoroughly replacing the subject matters for changes with this supplementary instruction manual.

3.4 Location (Page 3-5)

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

- Ambient Temperature: +15°C to +45°C
- Humidity: 20 to 80%RH (non-condensing)
- Free from dust, soot, oil, or water
- Free from corrosive gas or liquid, or explosive gas or liquid.
- Free from excessive vibration (4.9 m/s^2 [0.5G] or less)
- Free from large electrical noise (plasma)
- The flatness for installation is 0.5 mm or less

5 Basic Specifications

5.1 Basic Specifications (Page 5-1)

Table 5-1: Basic Specifications¹⁾

Item	Model	MOTOMAN-MPL80 II
Structure		Vertically Articulated
Degree of Freedom		5
Payload		80 kg
Repeatability ²⁾		±0.07 mm
Range of Motion	S-Axis (turning)	-180° – +180°
	L-Axis (lower arm)	-90° – +135°
	U-Axis (upper arm)	-160° – +35°
	B-Axis (wrist pitch/yaw)	-15° – +15° ³⁾
	T-Axis (wrist twist)	-360° – +360°
Maximum Speed	S-Axis	2.97 rad/s, 170°/s
	L-Axis	2.97 rad/s, 170°/s
	U-Axis	2.97 rad/s, 170°/s
	B-Axis	2.97 rad/s, 170°/s
	T-Axis	6.11 rad/s, 350°/s
Allowable Moment ⁴⁾	B-Axis	78.4 N•m (8 kgf•m)
	T-Axis	20.5 N•m (2.1 kgf•m)
Allowable Inertia (GD ² /4)	B-Axis	16 kg•m ²
	T-Axis	6.1 kg•m ²
Approx. Mass		550 kg
Protective Structure		Basic axis: IP54 or equivalent Wrist axis only: IP67 or equivalent
Ambient Conditions	Temperature	+15°C to 45°C
	Humidity	20 to 80% RH at constant temperature
	Vibration Acceleration	Less than 4.9 m/s ² (0.5 G)
	Others	Free from corrosive gas or liquid, or explosive gas. Free from water, oil, or dust. Free from excessive electrical noise (plasma).
Power Capacity		4.0 kVA
Noise ⁵⁾		70 dB

- 1 SI units are used in this table. However, gravitational unit is used in ().
- 2 Conformed to ISO9283
- 3 The range of motion of the B-axis indicates the angle to the ground. With certain postures, however, motion may be limited by the relative angle between the B-axis and the upper arm.
Refer to *section 5.5 "B-Axis Operating Range"*.
- 4 Refer to *section 6.1 "Allowable Wrist Load"* for details on the permissible moment of inertia.
- 5 Conformed to ISO6926
 - 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.

9.1 Inspection Schedule (Page 9-2 to 9-3)

Table 9-1: Inspection Items (Sheet 1 of 2)

Items ¹⁾		Schedule					Method	Operation	Inspection Charge		
		Daily	1000HCycle	3000HCycle	9000HCycle	18000HCycle			Specified Personnel	Licensee	Service Company
1	Alignment mark	●					Visual	Check alignment mark accordance at the home position. Check for damage.	●	●	●
2	External lead	●					Visual	Check for damage and deterioration of leads.	●	●	●
3	Working area and manipulator	●					Visual	Clean the work area if dust or spatter is present. Check for damage and outside cracks.	●	●	●
4	S, L, U, B, T-axes motor	●					Visual	Check for grease leakage. ²⁾	●	●	●
5	Baseplate mounting bolts		●				Spanner Wrench	Tighten loose bolts. Replace if necessary.	●	●	●
6	Cover mounting screws		●				Screwdriver, Wrench	Tighten loose bolts. Replace if necessary.	●	●	●
7	S, L, U, B, T-axes motor connector		●				Manual	Tighten loose bolts.	●	●	●
8	Connector base		●				Manual	Check for loose connectors.	●	●	●
9	Wire harness in manipulator				●		Visual Multimeter	Check for conduction between the main connector of base and intermediate connector with manually shaking the wire. Check for wear of protective spring ³⁾		●	●
						●		Replace it 18000H intervals.			●
10	Battery pack in manipulator					●		Replace the battery pack when the battery alarm occurs or the manipulator drove for 18000H.		●	●
11	S-axis speed reducer			●	●		Grease Gun	Check for malfunction. (Replace if necessary.) ⁴⁾ Replace grease. (3000H cycle) ⁵⁾ . See section 9.3.2.		●	●

Table 9-1: Inspection Items (Sheet 2 of 2)

Items ¹⁾	Schedule	Method	Operation	Inspection Charge												
				Specified Personnel	Licensee	Service Company										
	<table border="1"> <tr> <th>Daily</th> <th>1000HCycle</th> <th>3000HCycle</th> <th>9000HCycle</th> <th>18000HCycle</th> </tr> <tr> <td></td> <td></td> <td>●</td> <td>●</td> <td></td> </tr> </table>	Daily	1000HCycle	3000HCycle	9000HCycle	18000HCycle			●	●						
Daily	1000HCycle	3000HCycle	9000HCycle	18000HCycle												
		●	●													
12	LU-axes speed reducers	Grease Gun	Check for malfunction. (Replace if necessary.) ⁴⁾ Replace grease (3000H cycle) ⁵⁾ . See <i>section 9.3.3, section 9.3.4.</i>		●	●										
13	B,T-axes speed reducers B,T-axes gears	Grease Gun	Check for malfunction. (Replace if necessary.) ⁴⁾ Replace grease (3000H cycle) ⁵⁾ . See <i>section 9.3.5, section 9.3.6.</i>		●	●										
14	Overhaul					●										

1 Inspection No. correspond to the numbers in *Fig. 9-1 "Inspection Items"*.

2 The occurrence of a grease leakage indicates the possibility that grease has seeped into the motor. This can cause a motor breakdown. Contact your Yaskawa representative.

3 When checking for conduction with multimeter, connect the battery to "BAT" and "OBT" of connectors on the motor side for each axis, and then remove connectors on detector side for each axis from the motor. Otherwise, the home position may be lost. (Refer to *section 9.4 "Notes for Maintenance"*.)

4 The grease might leak out from the air breather or the internal pressure might rise in case the manipulator is used very frequently for the application such as handling.

5 For the grease, refer to *Table 9-2 "Inspection Parts and Grease Used"*.

Table 9-2: Inspection Parts and Grease Used

No.	Grease Used	Inspected Parts
13,14,15,16	Cassida Grease EPS 00	Speed reducers for all axes B,T-axes gears

The numbers in the above table correspond to the numbers in *Table 9-1 "Inspection Items"*

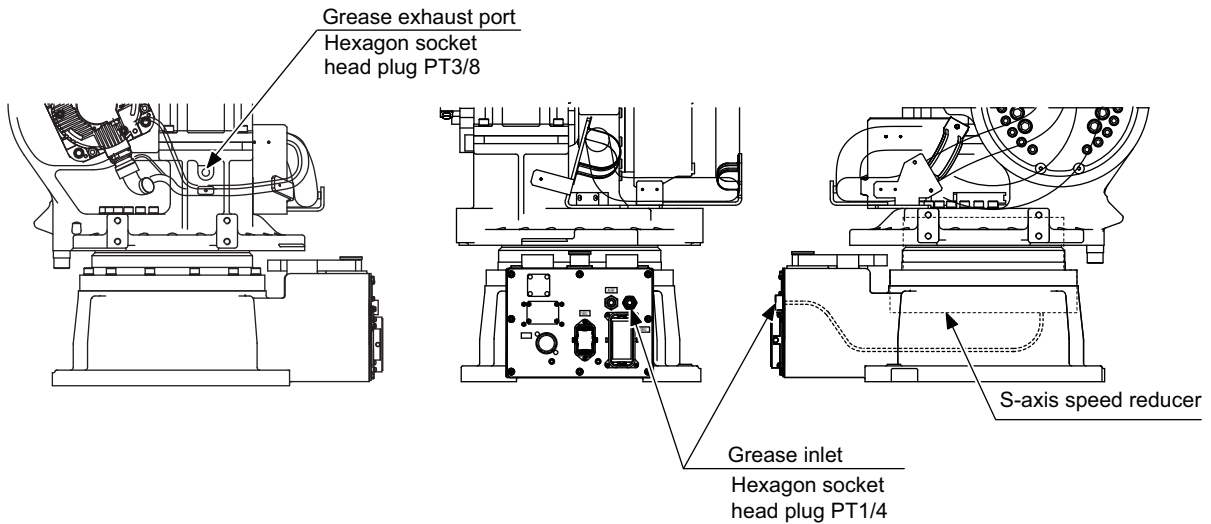
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9.3 Grease Replenishment/Exchange (Page 9-8 to 9-17)

9.3.2 Grease Replenishment/Exchange for S-axis Speed Reducer

Fig. 9-4: S-axis Speed Reducer Diagram



9.3.2.2 Grease Exchange

(Refer to Fig. 9-4 "S-axis Speed Reducer Diagram".)

1. Remove the hexagon socket head plug PT1/4 from the grease inlet and the hexagon socket head plug PT3/8 from the grease exhaust port.

NOTE

- If grease is injected with the plugs on, the grease will leak inside the motor and may cause a damage. Make sure to remove the plug before the grease injection.
- Do not install a joint, a hose, etc. to a grease exhaust port. Failure to observe this instruction may result in damage to the motor due to coming off of an oil seal.

2. Install the grease zerk PT1/4 to the grease inlet.
(The grease zerk is delivered with the manipulator.)
3. Inject the grease through the grease inlet using a grease gun.
 - Grease type: Cassida Grease EPS 00
 - Amount of grease: approx. 2600 cc
 - Air supply pressure of grease pump: 0.3 MPa or less
 - Grease injection rate: 8 g/s or less
4. The grease exchange is complete when new grease appears from the exhaust port. (The new grease can be distinguished from the old grease by color.)
5. Move the S-axis for a few minutes to discharge the excess grease.
6. Remove the grease zerk from the grease inlet and reinstall the hexagon socket head plug PT 1/4.
Before installing the plug, apply Three Bond 1206C on the thread part of each plug, then tighten the plug with a tightening torque of 12 N•m (1.2 kgf•m).

9.3 Grease Replenishment/Exchange (Page 9-8 to 9-17)

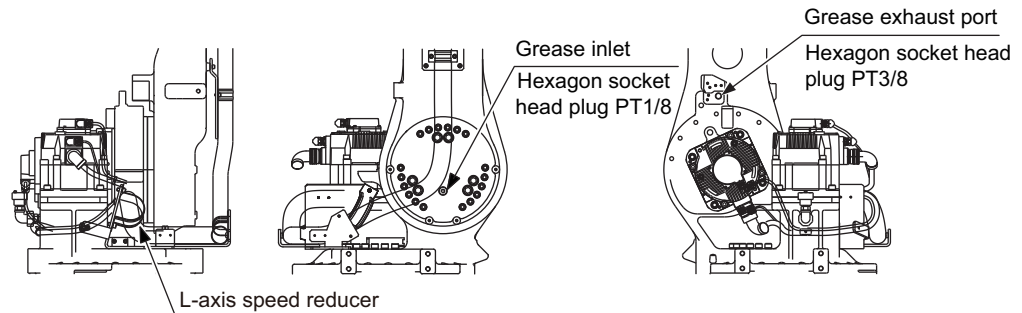
7. Wipe the discharged grease with a cloth and reinstall the hexagon socket head plug PT 3/8 to the exhaust port.
Before installing the plug, apply Three Bond 1206C on the thread part of each plug, then tighten the plug with a tightening torque of 23 N•m (2.3 kgf•m).



If grease is injected with the plug on, the grease will leak inside the motor and may cause a damage. Make sure to remove the plug before the grease injection

9.3.3 Grease Replenishment/Exchange for L-Axis Speed Reducer

Fig. 9-5: L-Axis Speed Reducer Diagram



9.3.3.2 Grease Exchange

(Refer to Fig. 9-5 "L-Axis Speed Reducer Diagram".)

1. Make the L-arm vertical to the ground.
2. Remove the hexagon socket head plug PT3/8 from the grease exhaust port.
3. Remove the hexagon socket head plug PT1/8 from the grease inlet.

NOTE

- If grease is injected with the exhaust plug on, grease will leak inside the motor and may cause a damage. Make sure to remove the plug before the grease injection.
- Do not install a joint, a hose, etc. to the grease exhaust port. Failure to observe this instruction may result in damage to the motor due to coming off of an oil seal.

4. Install the grease zerk PT1/8 to the grease inlet.
(The grease zerk is delivered with the manipulator.)
5. Inject grease through the grease inlet using a grease gun.
 - Grease type: Cassida Grease EPS 00
 - Amount of grease: approx. 1650 cc
 - Air supply pressure of grease pump: 0.3 MPa or less
 - Grease injection rate: 8 g/s or less
6. The grease discharge is complete when new grease appears from the exhaust port. The new grease can be distinguished from the old grease by color.
7. Move the L-axis for a few minutes to discharge the excess grease.
8. Wipe the discharged grease with a cloth and reinstall the hexagon socket head plug PT3/8 to the exhaust port.
Before installing the plugs, apply Three Bond 1206C on the thread part of each plug, then tighten the plug with a tightening torque of 23 N•m (2.3 kgf•m).

NOTE

- If grease is injected with the plug on, grease will leak inside the motor and may cause a damage. Make sure to remove the plug before the grease injection.

9.3 Grease Replenishment/Exchange (Page 9-8 to 9-17)

9. Remove the grease zerk from the grease inlet and reinstall the hexagon socket head plug PT1/8 to the grease inlet. Before installing the plug, apply Three Bond 1206C on the thread part of each plug, then tighten the plug with a tightening torque of 4.9 N•m (0.5 kgf•m).

9.3.4 Grease Replenishment/Exchange for U-Axis Speed Reducer

Fig. 9-6: U-Arm Posture

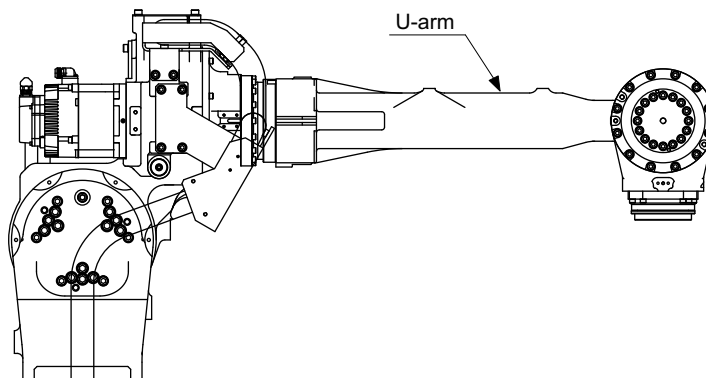
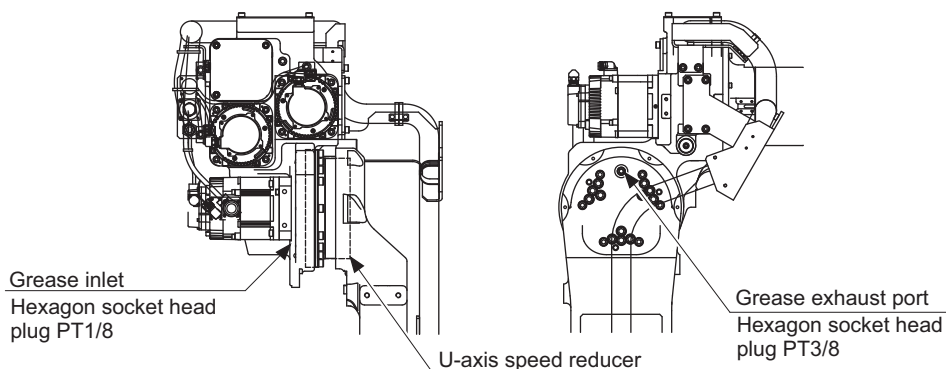


Fig. 9-7: U-Axis Speed Reducer Diagram



9.3.4.2 Grease Exchange

(Refer to Fig. 9-7 "U-Axis Speed Reducer Diagram".)

1. Make the U-arm horizontal to the ground.
2. Remove the hexagon socket head plug PT3/8 from the grease exhaust port.
3. Remove the hexagon socket head plug PT1/8 from the grease inlet.



- If grease is injected with the bolt on, grease will leak inside the motor and may cause a damage. Make sure to remove the bolt before the grease injection.
- Do not install a joint, a hose, etc. to the grease exhaust port. Failure to observe this instruction may result in damage to the motor due to coming off of an oil seal.

4. Install the grease zerk PT1/8 to the grease inlet. (The grease zerk is delivered with the manipulator.)
5. Inject grease through the grease inlet using a grease gun.
 - Grease type: Cassida Grease EPS 00
 - Amount of grease: approx.700 cc
 - Air supply pressure of grease pump: 0.3 MPa or less
 - Grease injection rate: 8 g/s or less

9.3 Grease Replenishment/Exchange (Page 9-8 to 9-17)

6. The grease discharge is complete when new grease appears from the exhaust port. The new grease can be distinguished from the old grease by color.
7. Move the U-axis for a few minutes to discharge the excess grease.
8. Wipe the discharged grease with a cloth and reinstall the hexagon socket head plug PT3/8 to the exhaust port.
Before installing the plug, apply Three Bond 1206C on the thread part of each plug, then tighten the plug with a tightening torque of 23 N•m (2.3 kgf•m).

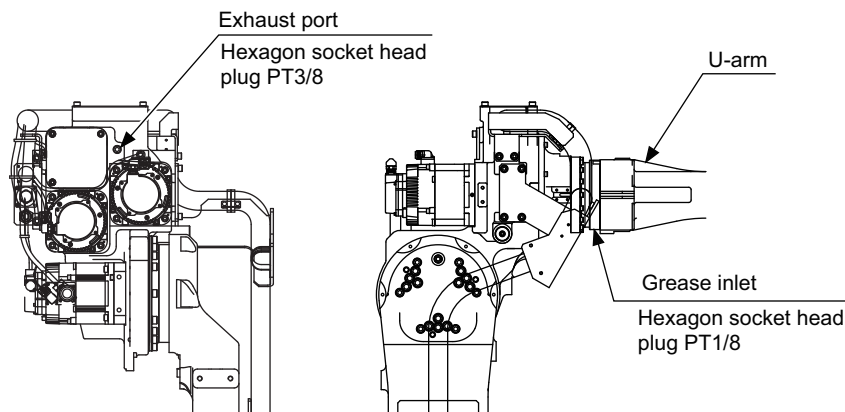


If grease is injected with the plug on, grease will leak inside the motor and may cause a damage. Make sure to remove the plug before the grease injection.

9. Remove the grease zerk from the grease inlet and reinstall the hexagon socket head plug PT1/8.
Before installing the plug, apply Three Bond 1206C on the thread part of each plug, then tighten the plug with a tightening torque of 4.9 N•m (0.5 kgf•m).

9.3.5 Grease Replenishment for B- and T-Axis Gears

Fig. 9-8: B- and T-Axis Gears Diagram



9.3.5.2 Grease Exchange

(Refer to Fig. 9-8 “B- and T-Axis Gears Diagram”.)

1. Remove the hexagon socket head plug PT3/8 from the grease exhaust port.
2. Remove the hexagon socket head plug PT1/8 from the grease inlet.



- If grease is injected with the bolt on, grease will leak inside the motor and may cause a damage. Make sure to remove the bolt before the grease injection.
- Do not install a joint, a hose, etc. to the grease exhaust port. Failure to observe this instruction may result in damage to the motor due to coming off of an oil seal.

3. Install the grease zerk PT1/8 to the grease inlet. (The grease zerk is delivered with the manipulator.)
4. Inject grease through the grease inlet using a grease gun.
 - Grease type: Cassida Grease EPS 00
 - Amount of grease: approx.3500 cc
 - Air supply pressure of grease pump: 0.3 MPa or less
 - Grease injection rate: 8 g/s or less
5. The grease discharge is complete when new grease appears from the exhaust port. The new grease can be distinguished from the old grease by color.
6. Move the B-axis for a few minutes to discharge the excess grease.
7. Wipe the discharged grease with a cloth and reinstall the hexagon socket head plug PT3/8 to the exhaust port.
Before installing the plug, apply Three Bond 1206C on the thread part of each plug, then tighten the plug with a tightening torque of 23 N•m (2.3 kgf•m).



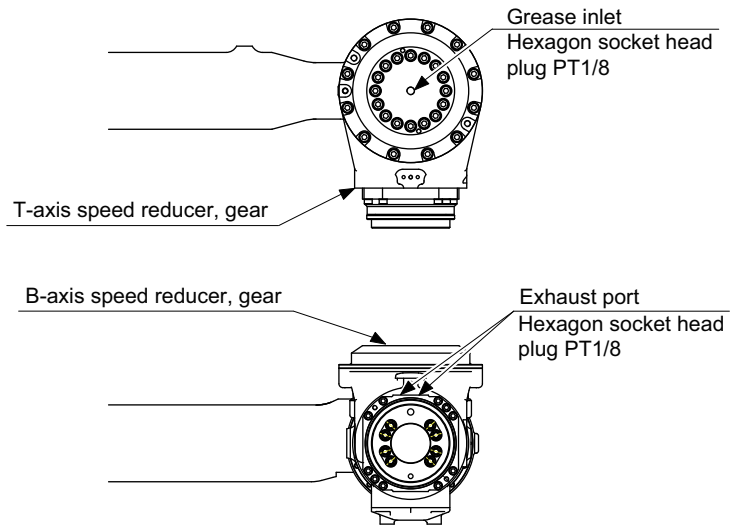
- If grease is injected with the plug on, grease will leak inside the motor and may cause a damage. Make sure to remove the plug before the grease injection.

9.3 Grease Replenishment/Exchange (Page 9-8 to 9-17)

8. Remove the grease zerk from the grease inlet and reinstall the hexagon socket head plug PT1/8.
Before installing the plug, apply Three Bond 1206C on the thread part of each plug, then tighten the plug with a tightening torque of 4.9 N•m (0.5 kgf•m).

9.3.6 Grease Replenishment for B- and T-Axis Speed Reducers and Gears

Fig. 9-9: B- and T-Axis Speed Reducers and Gears Diagram



9.3.6.2 Grease Exchange

(Refer to Fig. 9-9 “B- and T-Axis Speed Reducers and Gears Diagram”.)

1. Remove the hexagon socket head plug PT1/8 from the grease exhaust port.
2. Remove the hexagon socket head plug PT1/8 from the grease inlet.



- If grease is injected with the bolt on, grease will leak inside the motor and may cause a damage. Make sure to remove the bolt before the grease injection.
- Do not install a joint, a hose, etc. to the grease exhaust port. Failure to observe this instruction may result in damage to the motor due to coming off of an oil seal.

3. Install the grease zerk PT1/8 to the grease inlet. (The grease zerk is delivered with the manipulator.)
4. Inject grease through the grease inlet using a grease gun.
 - Grease type: Cassida Grease EPS 00
 - Amount of grease: approx. 1500 cc
 - Air supply pressure of grease pump: 0.3 MPa or less
 - Grease injection rate: 8 g/s or less
5. The grease discharge is complete when new grease appears from the exhaust port. The new grease can be distinguished from the old grease by color.
6. Move the B-axes for a few minutes to discharge the excess grease.
7. Wipe the discharged grease with a cloth and reinstall the hexagon socket head plug PT1/8 to the exhaust port. Before installing the plug, apply Three Bond 1206C on the thread part of each plug, then tighten the plug with a tightening torque of 4.9 N•m (0.5 kgf•m).



If grease is injected with the plug on, grease will leak inside the motor and may cause a damage. Make sure to remove the plug before the grease injection.

8. Remove the grease zerk from the grease inlet and reinstall the hexagon socket head plug PT1/8.
Before installing the plug, apply Three Bond 1206C on the thread part of each plug, then tighten the plug with a tightening torque of 4.9 N•m (0.5 kgf•m).

10 Recommended Spare Parts (Page 10-1)

It is recommended to keep the parts and components in the following table in stock as spare parts for the MOTOMAN-MPL80 II . 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: Spare Parts for YR-MPL0080-J00

Rank	Parts No.	Name	Type	Manufacturer	Qty	Qty per Unit	Remarks
A	1	Grease	Cassida Grease EPS 00	Yaskawa	16 kg	-	For speed reducers in each axis
A	2	Liquid Gasket	Three Bond 1206C	Three Bond Co., Ltd.	-	-	
A	3	Battery Pack	HW9470932-A	Yaskawa	1	1	For internal wire harness replacement
A	4	Battery Pack	HW0470360-A	Yaskawa	1	1	
B	5	S-axis Speed Reducers Kit	Y005C-MPL0080JF0S	Yaskawa	1	1	
B	6	L-axis Speed Reducers Kit	Y005C-MPL0080JF0L	Yaskawa	1	1	
B	7	U-axis Speed Reducers Kit	Y005C-MPL0080JF0U	Yaskawa	1	1	
B	8	B-axis Speed Reducers Kit	Y005C-MPL0080JF0B	Yaskawa	1	1	
B	9	T-axis Speed Reducers Kit	Y005C-MPL0080JF0T	Yaskawa	1	1	
C	10	S-Axis AC Servomotor	SGMRV-30ANA-YR11 HW0388669-A	Yaskawa	1	1	
C	11	L-Axis AC Servomotor	SGMRV-37ANA-YR11 HW0388670-A	Yaskawa	1	1	
C	12	U-Axis AC Servomotor	SGMRV-13ANA-YR11 HW0388666-A	Yaskawa	1	1	
C	13	B-, T-Axes AC Servomotor	SGMRV-09ANA-YR11 HW0388665-A	Yaskawa	1	2	
C	14	Internal Wire Harness	HW1171901-A	Yaskawa	1	1	
C	15	Connector Base	HW0374528-C	Yaskawa	1	1	
C	16	Board	SGDR-EFBA02A	Yaskawa	1	1	

MOTOMAN-MPL80 II

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