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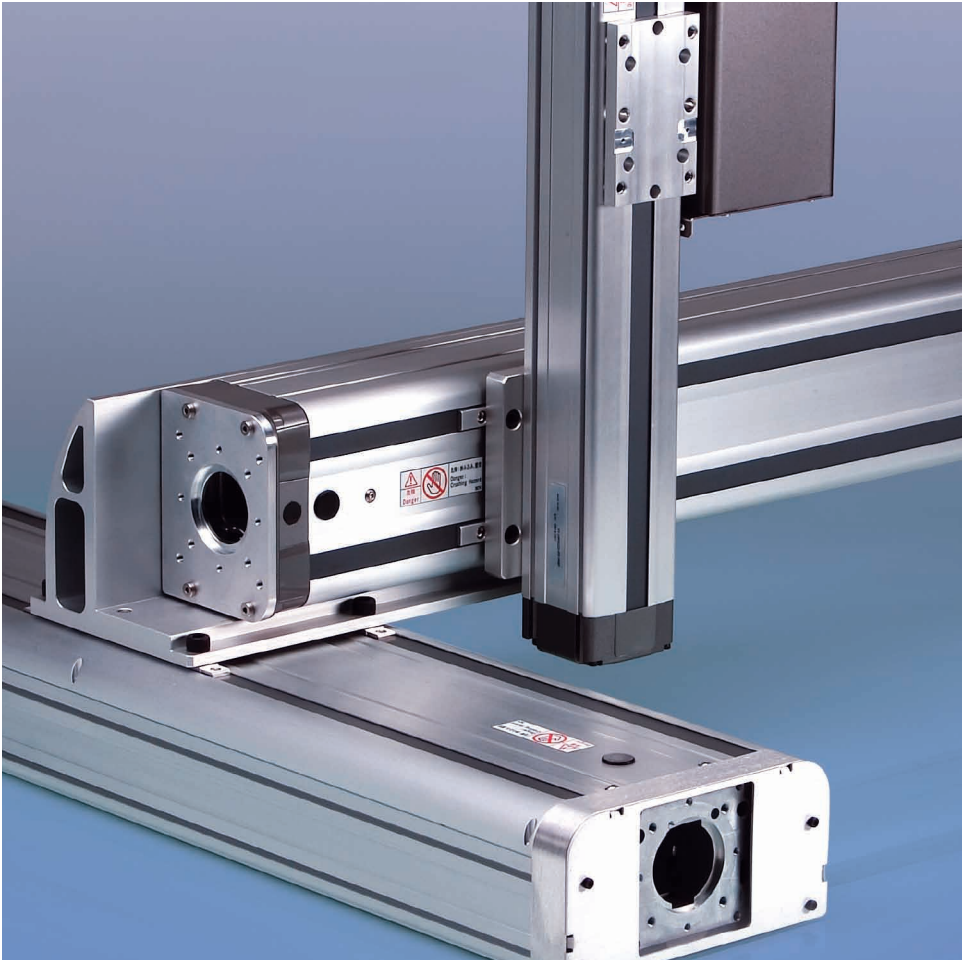
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Assembly and Installation of NSK Robot Module™ MR Series



1.0 Introduction

Congratulation on purchasing your NSK Robot Module. Your NSK Robot module is made from our high quality linear guides and ballscrews for maximum performance and reliability.

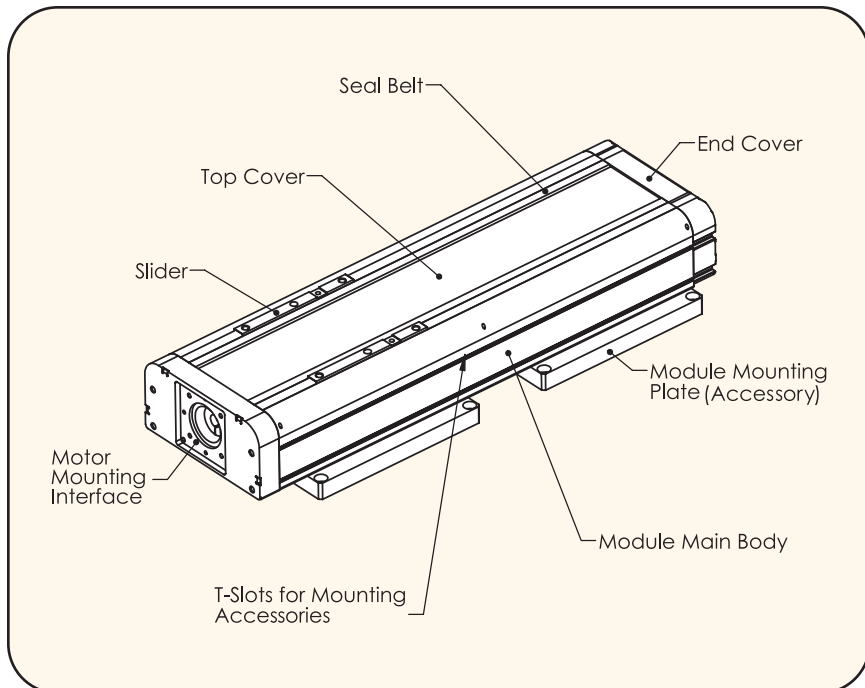
2.0 Purpose

This installation guide is intended to provide you with detailed instructions on how to mount and assemble your Robot Module Hardware.

The guide is split up into several sections:

- 1) Module construction
- 2) Installation precautions
- 3) Lifting and transporting requirements
- 4) Robot module mounting
- 5) Maintenance
- 6) Assembling 2 axis systems
- 7) Assembling 3 axis systems

3.0 Module Construction



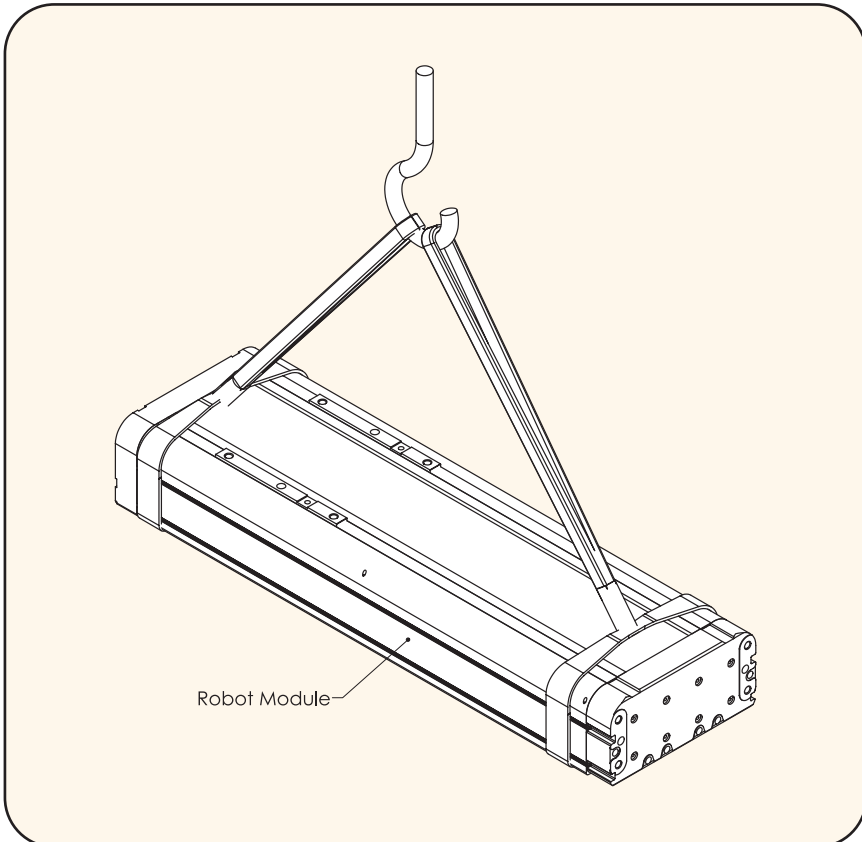
3.1 Installation

3.2 Installation Precautions

- 1) Follow all rules and recommendation defined herein.
- 2) The Robot Module is a precision device and requires careful handling.
- 3) Install Robot Module on a smooth, finished surface. Flatness < 0.1mm
- 4) Use mounting screw engagement lengths defined herein.
- 5) Do not disassemble the robot module.
- 6) Keep Robot Module away from water and oil splash.

3.3 Lifting and Transporting

- 1) Use sling or other appropriate lifting equipment to move individual modules or multi-axis systems.



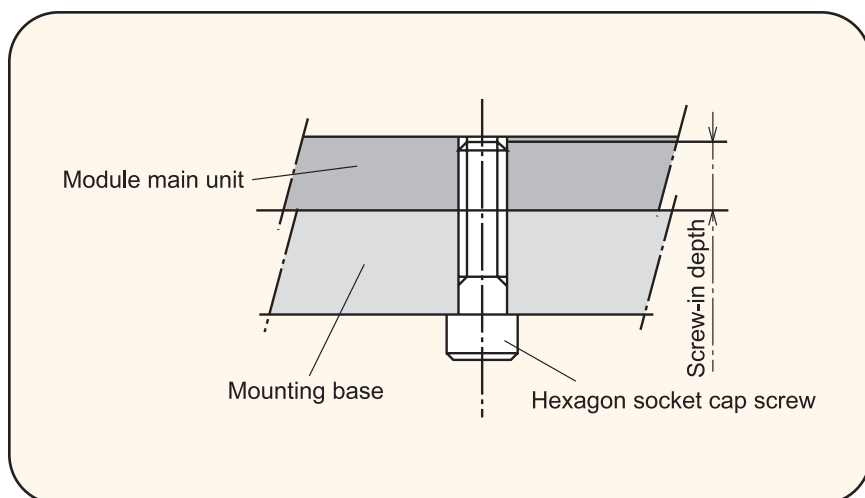
3.4 Mounting the Robot Module

There are two methods for mounting the robot module to the work surface:

- 1) Direct mounting using tapped holes on underside of Module.
- 2) Mounting with Module Mounting Plates.

3.4.1 Direct mounting using tapped holes on underside of Module

- 1) Drill through holes in mounting base.
- 2) Fix module to base using underside holes in Robot Module.
- 3) Use bolt engagement depths per table below.



	RH Module	RM Module	RS Module
Bolt Size	M8	M6	M5
Thread Engagement	12-16mm	9-12mm	7-9mm
Tightening Torque	33.3N-m	14.7N-m	5.9N-m

3.4.2 Mounting with Module Mounting Plates

- 1) Attach mounting plates to underside of Robot Module using supplied fasteners.
- 2) Transfer mounting hole pattern from mounting plates to base.
- 3) Drill and tap mounting holes into mounting base.
- 4) Fix module to mounting base.

3.4.3 Mounting tooling to Robot Module Slider

- 1) Mount tooling to slider using bolts per table.

	RH Module	RM Module	RS Module
Bolt Size	M8	M6	M5
Thread Engagement	12-16mm	9-12mm	6-8mm
Tightening Torque	33.3N-m	14.7N-m	5.9N-m

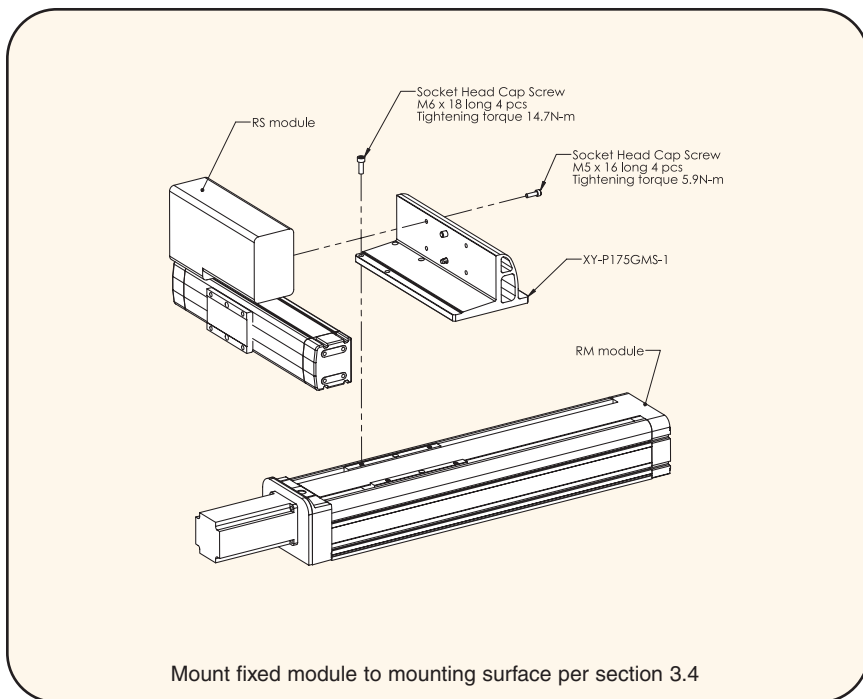
3.5 Maintenance

Perform these daily maintenance checks.

- 1) Check for looseness of mounting bolts. Re-tighten as necessary.
- 2) Check for looseness of tooling mounting bolts. Re-tighten as necessary.

4.0 Installation of 2 Axis Combination

4.1 – RG-MS Combination



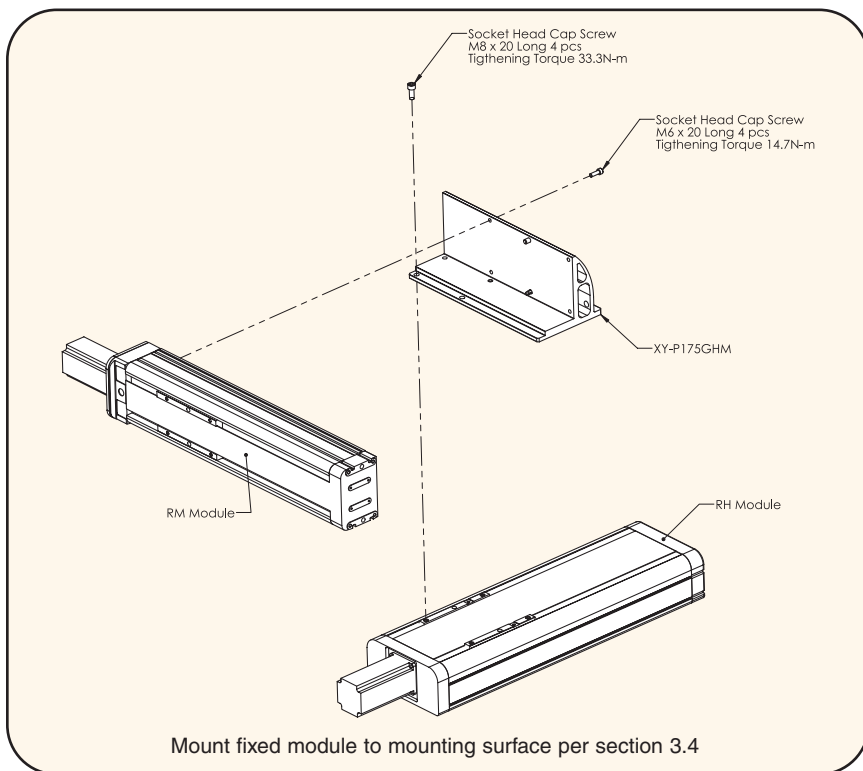
Material List for RG-MS Combination

	Part Number	Qty
X Axis Module	XY-HRS0*5-RM*SNF	1
X Axis Motor Mounting Kit	XY-P****RM	1
Y Axis Module	XY-HRS0*0-RS1R*F	1
XY Combining Bracket	XY-P175GMS-1	1
	RGMS-1 Bracket, Qty 1	
	M6 x 18 Lg Socket Head Cap Screw, Qty 4	
	M5 x 16 Lg Socket Head Cap Screw, Qty 4	

Options

	Part Number	Qty
Limit Sensor Kit, X Axis	XY-L3543RM	1
Limit Sensor Kit, Y Axis	XY-L3544RM	1
X Axis Module Mounting Plate	XY-P170M-1	2
	RM Module Mounting Plate, Qty 1	
	M6 x 20 Lg Socket Head Cap Screw, Qty 4	
Square Nut Kit	XY-P170M3-1 (4 nuts per kit)	1

4.2 – RG-HM Combination



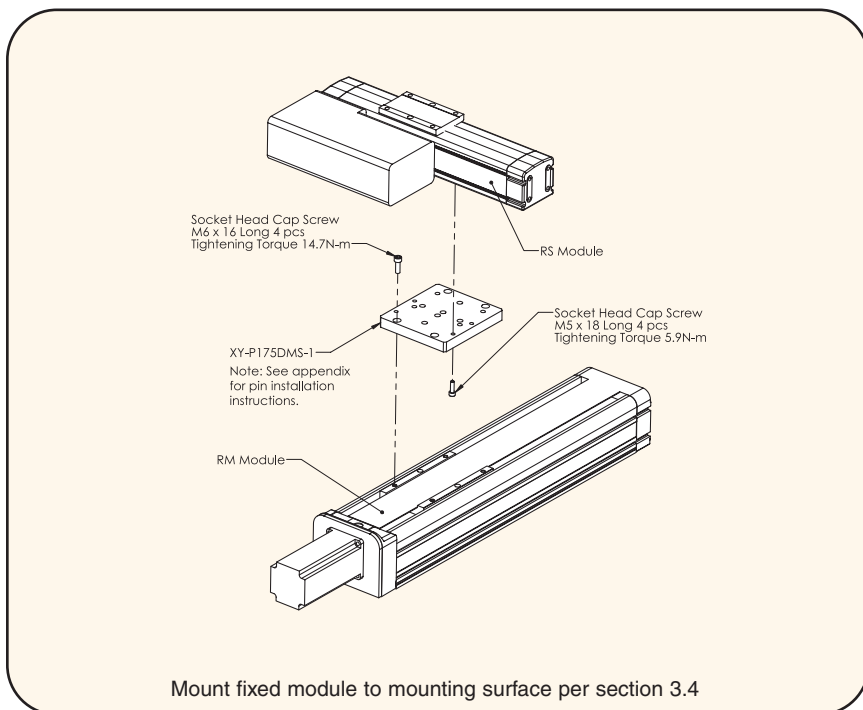
Material List for RG-HM Combination

	Part Number	Qty
X Axis Module	XY-HRS0*0-RH*SNF	1
X Axis Motor Mounting Kit	XY-P****RM	1
Y Axis Module	XY-HRS0*5-RM*SNF	1
Y Axis Motor Mounting Kit	XY-P****RM	1
XY Combining Bracket	XY-P175GHM-1 or XY-P175GHM-2	1
	RGHM-1 or RGHM-2 Bracket, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 4	
	M6 x 20 Lg Socket Head Cap Screw, Qty 4	

Options

	Part Number	Qty
Limit Sensor Kit, X Axis	XY-L3542RM	1
Limit Sensor Kit, Y Axis	XY-L3543RM	1
X Axis Module Mounting Plate	XY-P170H-1	2
	RH Module Mounting Plate, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 4	
Square Nut Kit	XY-P170M3-1 (4 nuts per kit)	1

4.3 – RD-MS Combination



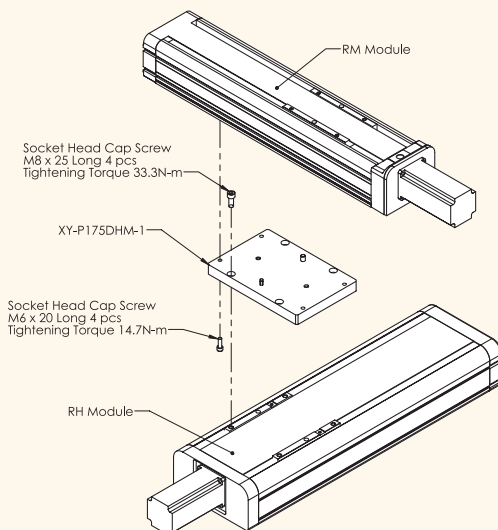
Material List for RD-MS Combination

	Part Number	Qty
X Axis Module	XY-HRS0*5-RM*SNF	1
X Axis Motor Mounting Kit	XY-P***RM	1
Y Axis Module	XY-HRS0*0-RS1**F	1
XY Combining Bracket	XY-P175DMS-1	1
	RDMS-1 Bracket, Qty 1	
	M6 x 16 Lg Socket Head Cap Screw, Qty 8	
	M5 x 18 Lg Socket Head Cap Screw, Qty 4	
	8mm diameter x 18Lg Pin, Qty 1	
	8mm diameter x 20Lg Diamond Pin, Qty 1	

Options

	Part Number	Qty
Limit Sensor Kit, X Axis	XY-L3543RM	1
Limit Sensor Kit, Y Axis	XY-L3544RM	1
X Axis Module Mounting Plate	XY-P170M-1	2
	RM Module Mounting Plate, Qty 1	
	M6 x 20 Lg Socket Head Cap Screw, Qty 4	
Square Nut Kit	XY-P170M3-1 (4 nuts per kit)	1

4.4 – RD-HM Combination



Mount fixed module to mounting surface per section 3.4

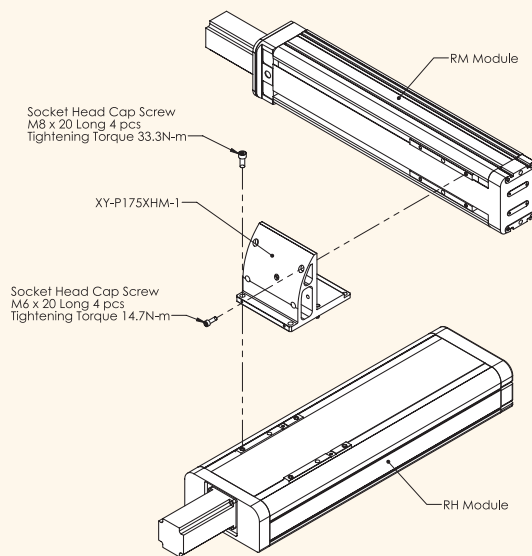
Material List for RD-HM Combination

	Part Number	Qty
X Axis Module	XY-HRS0*0-RH*SNF	1
X Axis Motor Mounting Kit	XY-P****RM	1
Y Axis Module	XY-HRS0*5-RM*SNF	1
Y Axis Motor Mounting Kit	XY-P****RM	1
XY Combining Bracket	XY-P175DHM-1	1
	RDHM-1 Bracket, Qty 1	
	M8 x 25 Lg Socket Head Cap Screw, Qty 4	
	M6 x 20 Lg Socket Head Cap Screw, Qty 4	

Options

	Part Number	Qty
Limit Sensor Kit, X Axis	XY-L3542RM	1
Limit Sensor Kit, Y Axis	XY-L3543RM	1
X Axis Module Mounting Plate	XY-P170H-1	2
	RH Module Mounting Plate, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 4	
Square Nut Kit	XY-P170M3-1 (4 nuts per kit)	1

4.5 – RX-HM Combination



Mount fixed module to mounting surface per section 3.4

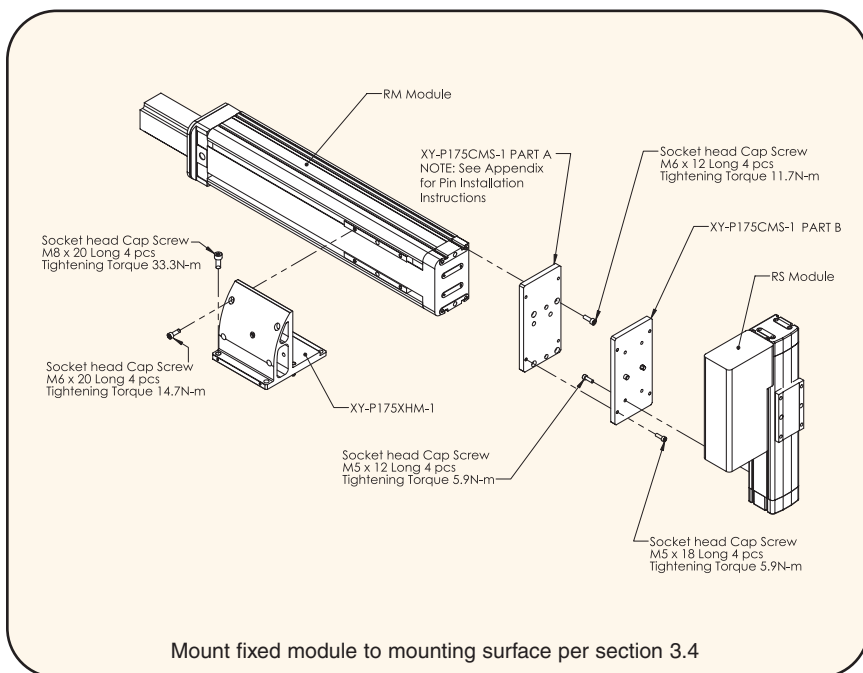
Material List for RX-HM Combination

	Part Number	Qty
X Axis Module	XY-HRS0*0-RH*SNF	1
X Axis Motor Mounting Kit	XY-P****RM	1
Y Axis Module	XY-HRS0*5-RM*SNF	1
Y Axis Motor Mounting Kit	XY-P****RM	1
XY Combining Bracket	XY-P175XHM-1	1
	RXHM-1 Bracket, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 4	
	M6 x 20 Lg Socket Head Cap Screw, Qty 4	

Options

	Part Number	Qty
Limit Sensor Kit, X Axis	XY-L3542RM	1
Limit Sensor Kit, Y Axis	XY-L3543RM	1
X Axis Module Mounting Plate	XY-P170H-1	2
	RH Module Mounting Plate, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 4	
Square Nut Kit	XY-P170M3-1 (4 nuts per kit)	1

4.6 – RC-MS Combination



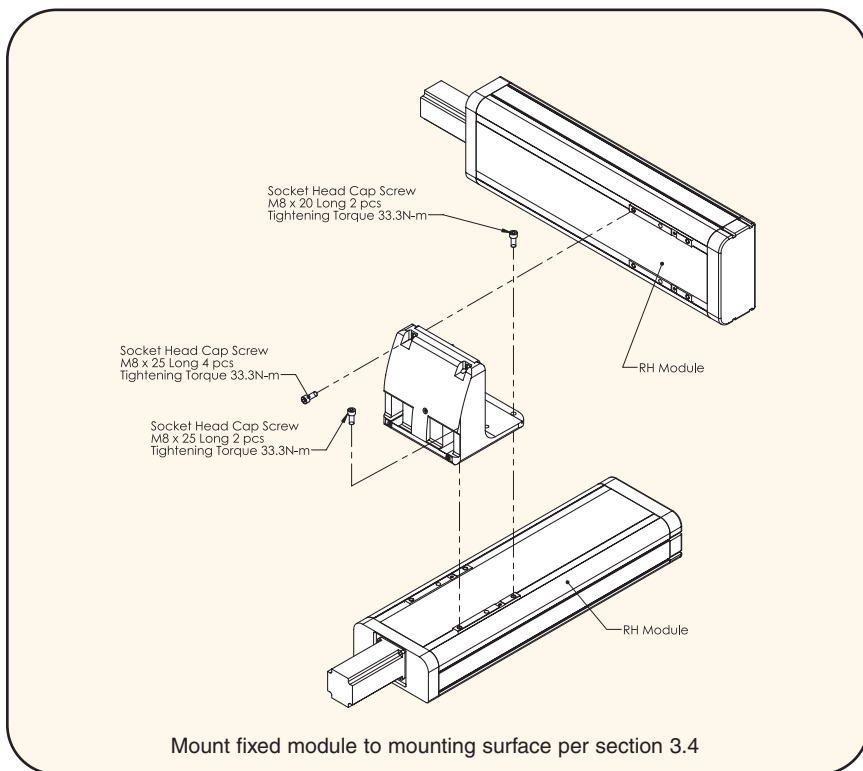
Material List for RC-MS Combination

	Part Number	Qty
X Axis Module	XY-HRS0*5-RM*SNF	1
X Axis Motor Mounting Kit	XY-P****RM	1
Y Axis Module	XY-HRS0*0-RS1**F	1
XY Combining Bracket	XY-P175CMS-1	1
	RCMS-1 Bracket, Qty 1	
	M5 x 12 Lg Socket Head Cap Screw, Qty 4	
	M5 x 18 Lg Socket Head Cap Screw, Qty 4	
	M6 x 10 Lg Socket Head Cap Screw, Qty 4	
	M6 x 12 Lg Socket Head Cap Screw, Qty 4	
	8mm diameter x 22Lg Pin, Qty 1	
	8mm diameter x 25Lg Diamond Pin, Qty 1	

Options

	Part Number	Qty
Limit Sensor Kit, X Axis	XY-L3543RM	1
Limit Sensor Kit, Y Axis	XY-L3544RM	1
X Axis Module Mounting Plate	XY-P175XHM-1	1
	RXHM-1 Bracket, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 4	
	M6 x 20 Lg Socket Head Cap Screw, Qty 4	
Square Nut Kit	XY-P170M3-1 (4 nuts per kit)	1

4.7 – RX-HH Combination



Material List for RX-HH Combination

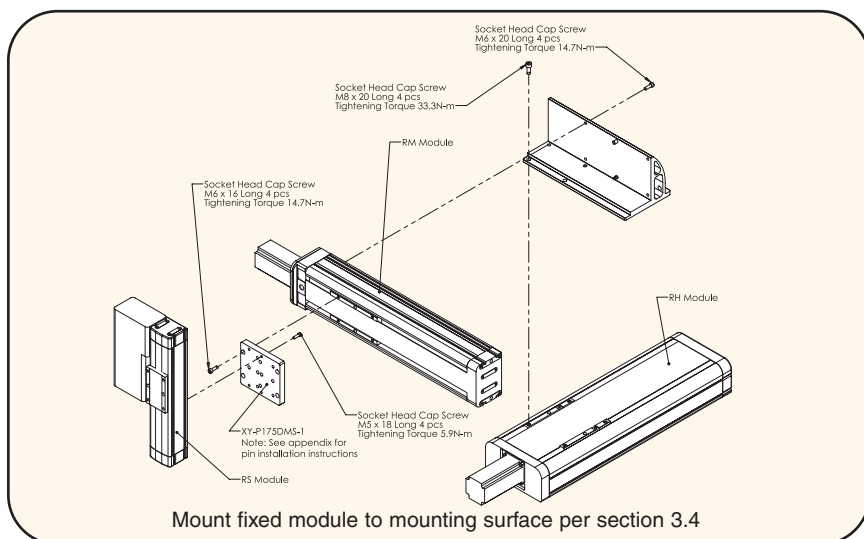
	Part Number	Qty
X Axis Module	XY-HRS0*0-RH*SNF	1
X Axis Motor Mounting Kit	XY-P****RM	1
Y Axis Module	XY-HRS0*0-RH*SNF	1
Y Axis Motor Mounting Kit	XY-P****RM	1
XY Combining Bracket	XY-P175XHH-1	1
	RXHH-1 Bracket, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 2	
	M8 x 25 Lg Socket Head Cap Screw, Qty 6	

Options

	Part Number	Qty
Limit Sensor Kit, X Axis	XY-L3542RM	1
Limit Sensor Kit, Y Axis	XY-L3542RM	1
X Axis Module Mounting Plate	XY-P170H-1	2
	RH Module Mounting Plate, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 4	
Square Nut Kit	XY-P170M3-1 (4 nuts per kit)	1

5.0 Installation of 3 Axis Combinations

5.1 – RP-HMS Combination



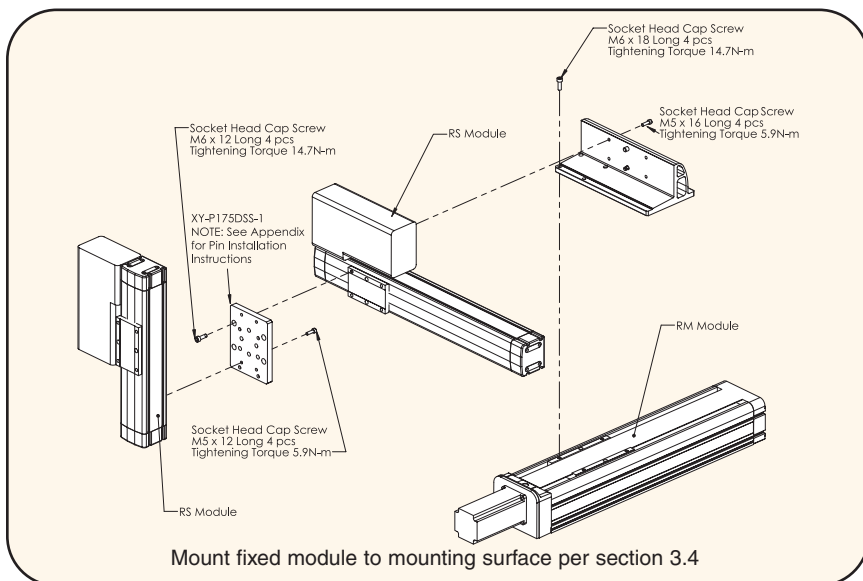
Material List for RP-HMS Combination

	Part Number	Qty
X Axis Module	XY-HRS0*0-RH*SNF	1
X Axis Motor Mounting Kit	XY-P****RM	1
Y Axis Module	XY-HRS0*5-RM*SNF	1
Y Axis Motor Mounting Kit	XY-P****RM	1
Z Axis Module	XY-HRS0*0-RS1**F	1
XY Combining Bracket	XY-P175GHM-1 or XY-P175GHM-2	1
	RGHM-1 or RGHM-2 Bracket, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 4	
	M6 x 20 Lg Socket Head Cap Screw, Qty 4	
YZ Combining Bracket	XY-P175DMS-1	1
	RDMS-1 Bracket, Qty 1	
	M5 x 18 Lg Socket Head Cap Screw, Qty 4	
	M6 x 16Lg Socket Head Cap Screw, Qty 8	
	8mm diameter x 18Lg Pin, Qty 1	
	8mm diameter x 20Lg Diamond Pin, Qty 1	

Options

	Part Number	Qty
Limit Sensor Kit, X Axis	XY-L3542RM	1
Limit Sensor Kit, Y Axis	XY-L3543RM	1
Limit Sensor Kit, Z Axis	XY-L3544RM	1
X Axis Module Mounting Plate	XY-P170H-1	2
	RH Module Mounting Plate, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 4	
Square Nut Kit	XY-P170M3-1 (4 nuts per kit)	1

5.2 – RP-MSS Combination



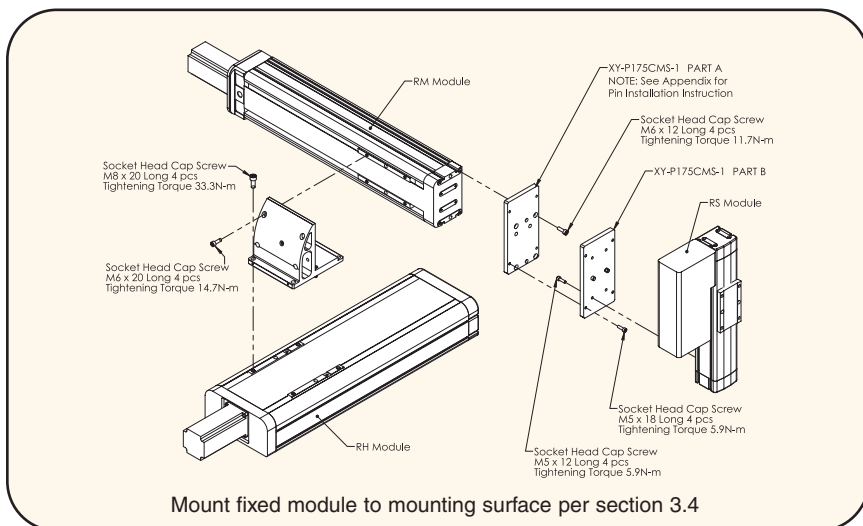
Material List for RP-MSS Combination

	Part Number	Qty
X Axis Module	XY-HRS0*5-RM*SNF	1
X Axis Motor Mounting Kit	XY-P****RM	1
Y Axis Module	XY-HRS0*0-RS1R*F	1
Z Axis Module	XY-HRS0*0-RS1L*F	1
XY Combining Bracket	XY-P175GMS-1	1
	RGMS-1 Bracket, Qty 1	
	M5 x 16 Lg Socket Head Cap Screw, Qty 4	
	M6 x 18 Lg Socket Head Cap Screw, Qty 4	
YZ Combining Bracket	XY-P175DSS-1	1
	RDSS-1 Bracket, Qty 1	
	M5 x 18 Lg Socket Head Cap Screw, Qty 8	
	M6 x 10Lg Socket Head Cap Screw, Qty 8	
	8mm diameter x 18Lg Pin, Qty 1	
	8mm diameter x 20Lg Diamond Pin, Qty 1	

Options

	Part Number	Qty
Limit Sensor Kit, X Axis	XY-L3543RM	1
Limit Sensor Kit, Y Axis	XY-L3544RM	1
Limit Sensor Kit, Z Axis	XY-L3544RM	1
X Axis Module Mounting Plate	XY-P170M-1	2
	RM Module Mounting Plate, Qty 1	
	M6 x 20 Lg Socket Head Cap Screw, Qty 4	
Square Nut Kit	XY-P170M3-1 (4 nuts per kit)	1

5.3 – RJ-HMS Combination



Material List for RJ-HMS Combination

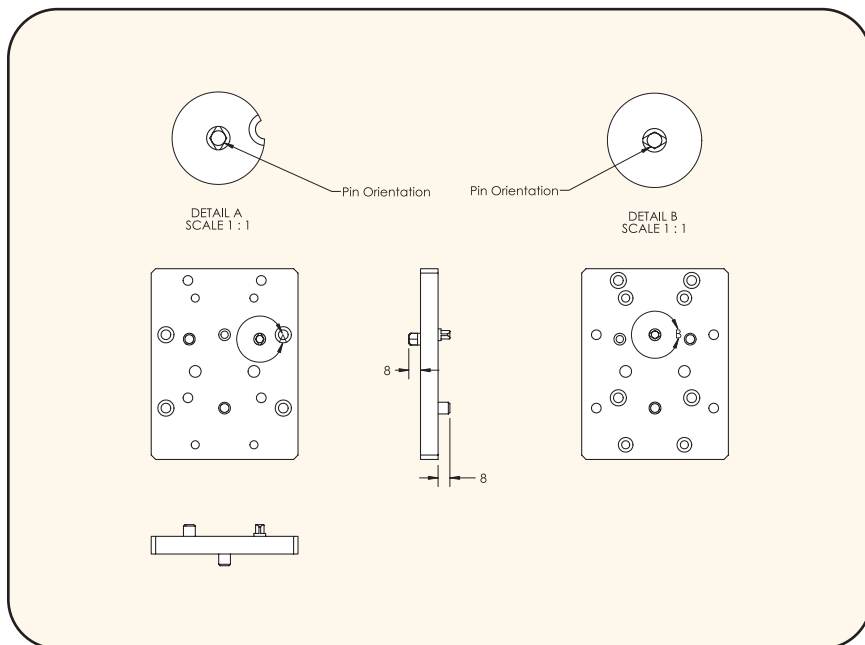
	Part Number	Qty
X Axis Module	XY-HRS0*0-RH*SNF	1
X Axis Motor Mounting Kit	XY-P****RM	1
Y Axis Module	XY-HRS0*5-RM*SNF	1
Y Axis Motor Mounting Kit	XY-P****RM	1
Z Axis Module	XY-HRS0*0-RS1**F	1
XY Combining Bracket	XY-P175XHM-1	1
	RXHM-1 Bracket, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 4	
	M6 x 20 Lg Socket Head Cap Screw, Qty 4	
YZ Combining Bracket	XY-P175CMS-1	1
	RCMS-1 Bracket, Qty 1	
	M5 x 12 Lg Socket Head Cap Screw, Qty 4	
	M5 x 18 Lg Socket Head Cap Screw, Qty 4	
	M6 x 10Lg Socket Head Cap Screw, Qty 4	
	M6 x 12Lg Socket Head Cap Screw, Qty 4	
	8mm diameter x 22Lg Pin, Qty 1	
	8mm diameter x 25Lg Diamond Pin, Qty 1	

Options

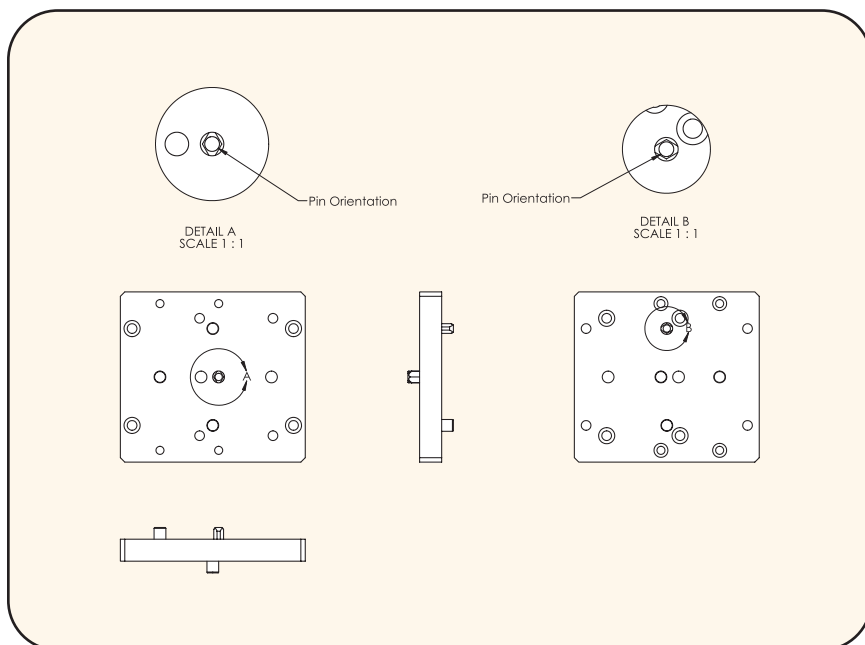
	Part Number	Qty
Limit Sensor Kit, X Axis	XY-L3542RM	1
Limit Sensor Kit, Y Axis	XY-L3543RM	1
Limit Sensor Kit, Z Axis	XY-L3544RM	1
X Axis Module Mounting Plate	XY-P170H-1	2
	RH Module Mounting Plate, Qty 1	
	M8 x 20 Lg Socket Head Cap Screw, Qty 4	
Square Nut Kit	XY-P170M3-1 (4 nuts per kit)	1

Appendix – Pin Installation Instructions

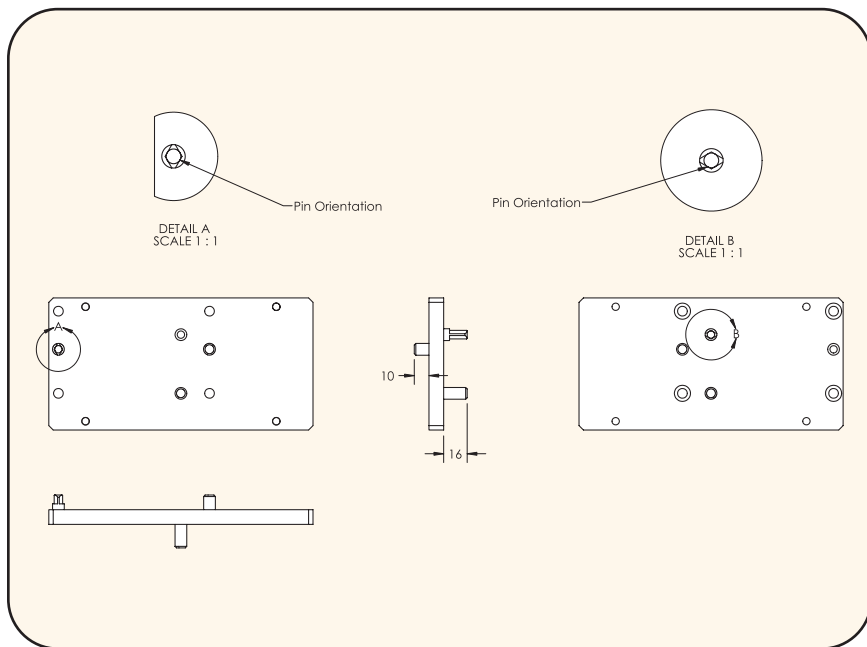
XY-P175DSS-1



XY-P175DMS-1



XY-P175CMS-1 PART A



Assembly and Installation Notes

