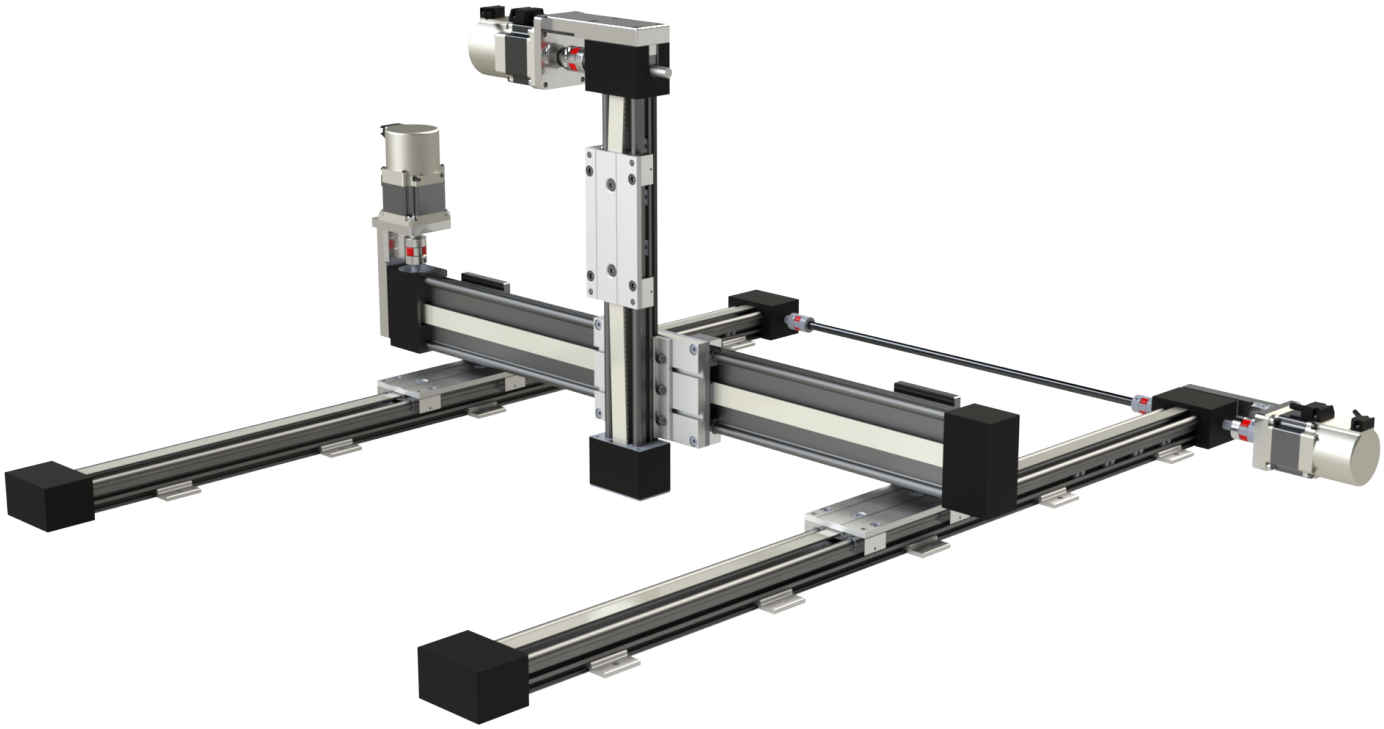
IGUS XYZ GANTRY USER MANUAL

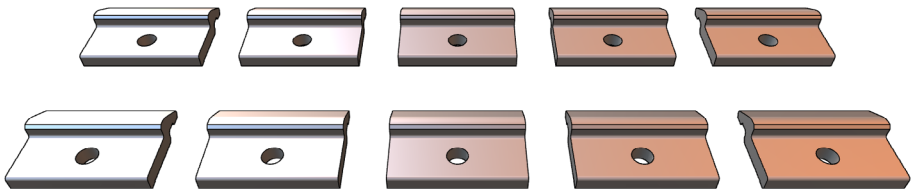


CONTENTS

Getting Started

Unpacking

All linear actuators have mounting clamps included in the box. These can be used to secure the linear actuator to a frame. Ensure the clamps are found and removed from the packaging before disposal of the box and packing materials. There are 10 clamps included with each actuator (shown below).



Remove the orange quality inspection tag before using. Handle the linear actuator on the ends to avoid damage to the bearing rails and carriage drive components.

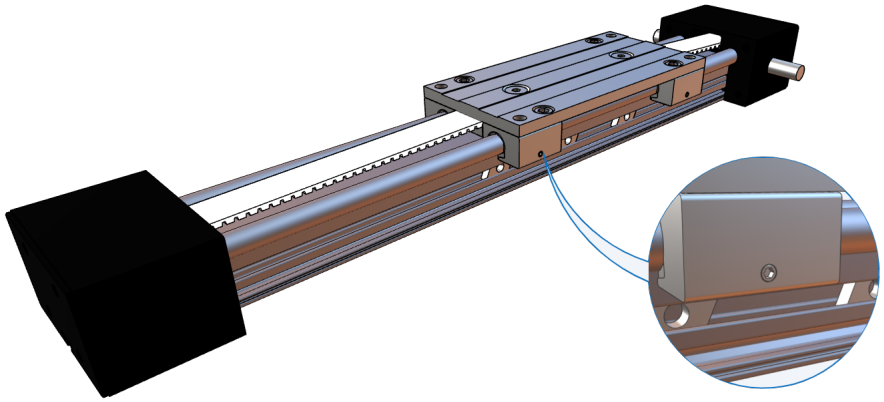
The carriage of the ZLW series will have a slight stiffness to movement due to the storage of the belt in a fixed position. This is normal and will diminish as the carriage is stroked back and forth exercising the belt.

Adjusting Carriage Block Clearance

All igus linear actuators are assembled with Adjustable Carriage Blocks to optimize side-to-side movement of the Carriage. As the 4 adjustment screws are tightened the clearance between the bearing material and the guide rails is reduced. The amount of adjustment depends on the application needs. Lower clearances give better holding position when external loads are applied. But as the clearance decreases so does the resistance to linear travel, therefore requiring more applied torque from the drive system. Typical clearance adjustment is a balance between the two affects and becomes more of a judgement call rather than a calculated/measured value.

The adjustment is made by turning the brass set screw on each of the 4 bearing blocks.

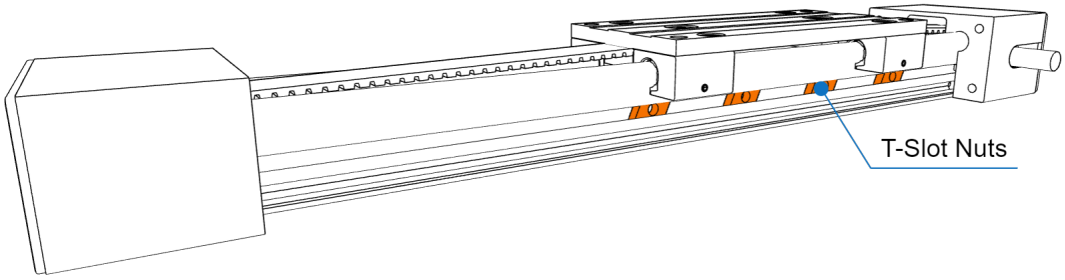
- Use 1.5mm Allen wrench
- Clockwise = LESS Clearance
- Counter-Clockwise = MORE Clearance
- Turn 1 'click' at a time, on each of the 4 bearing blocks, for best results
- Stroke the carriage assembly after each 'click' of adjustment and note the carriage travel resistance as well as side-to-side movement.



NOTE: The adjustment set screw is brass. Do apply excessive torque or damage may occur to its threads or hex socket.

T-Slot Nuts

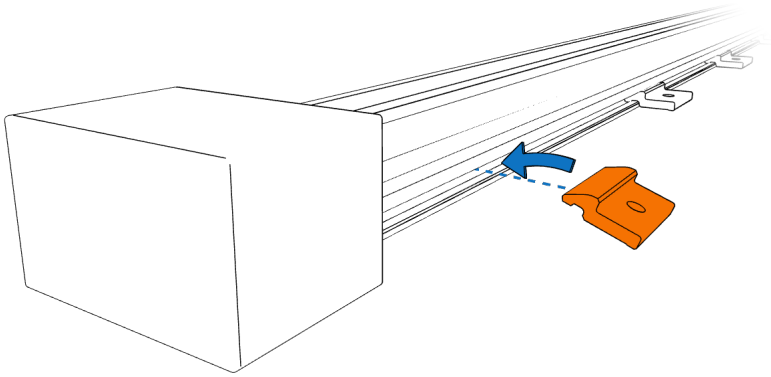
All igus linear actuators have 8 pre-installed t-slot nuts, M5-0.8, 4 each side. Remove the shipping set screws for freedom of movement along the T-slot.

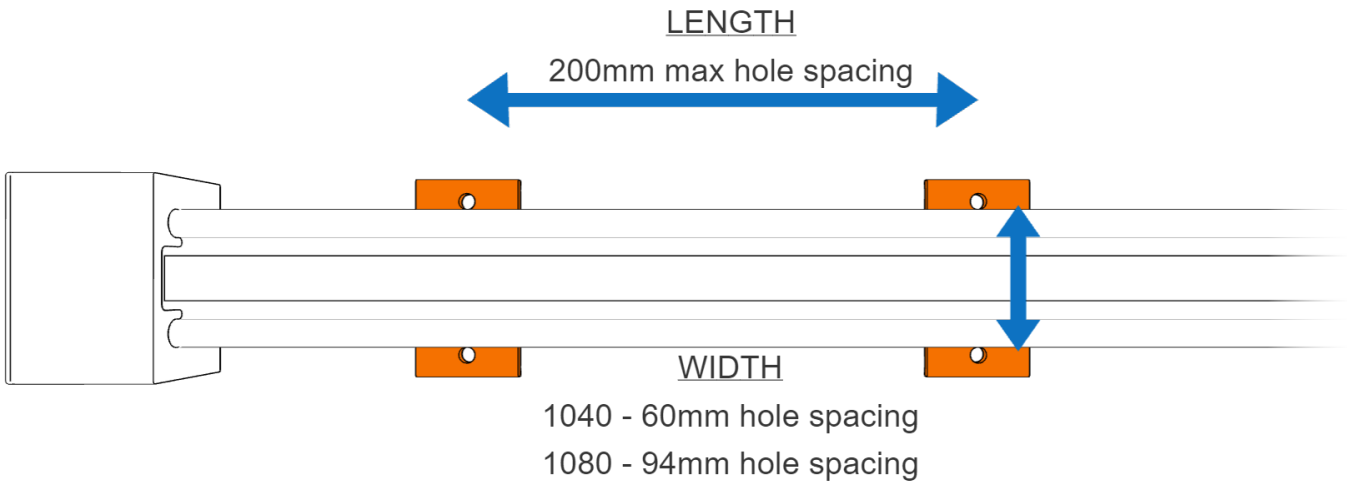


Linear Actuator Mounting

Actuator Clamps

The included mounting clamps fit into the bottom side cavity of the extrusion and can be positioned anywhere along the length of the linear actuator.





NOTE: Not all included mounting clamps may be needed.

Gantry Accessories

Mounting Clamps

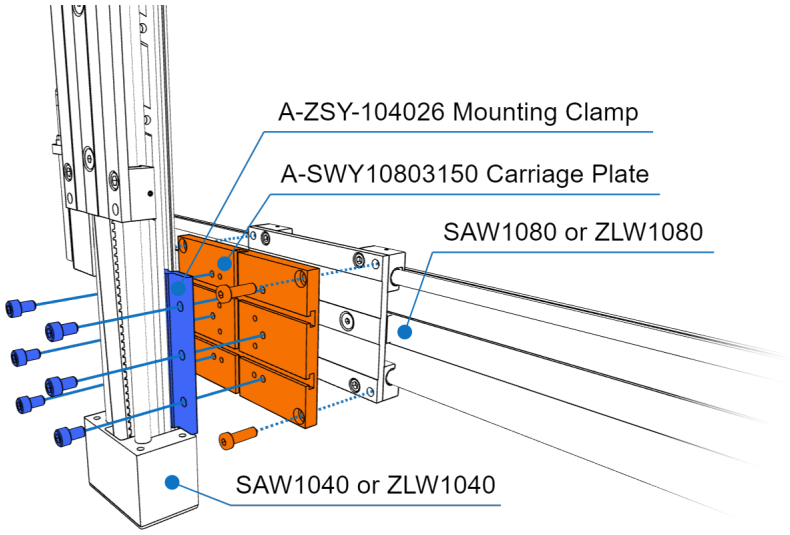
A-ZSY-104026 kit includes:

- 2 Mounting Clamps
- 6 SHCS M6-1.0 x 12mm

Carriage Plate Adapter

A-SWY108003150 kit includes:

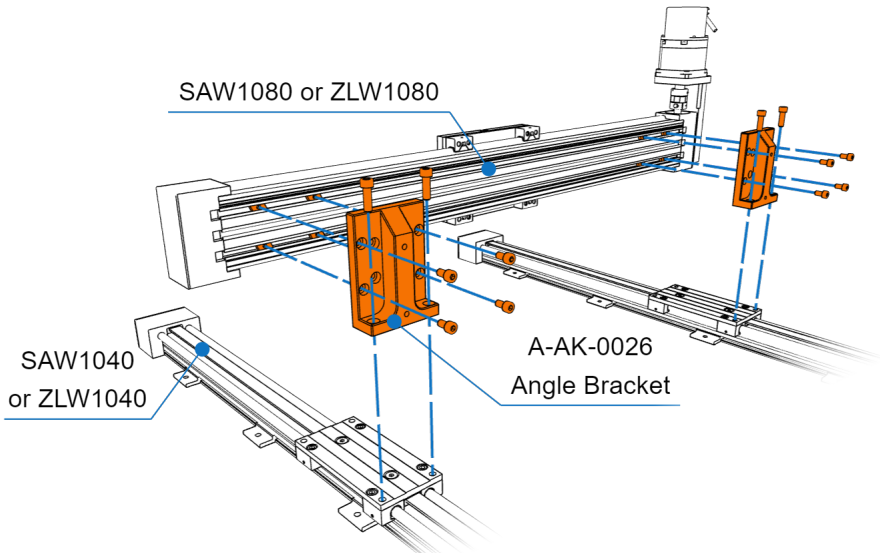
- 2 Plate Adapters
- 8 Low Profile SHCS M6-1.0 x 20mm



Angle Brackets

A-AK-0026 kit includes:

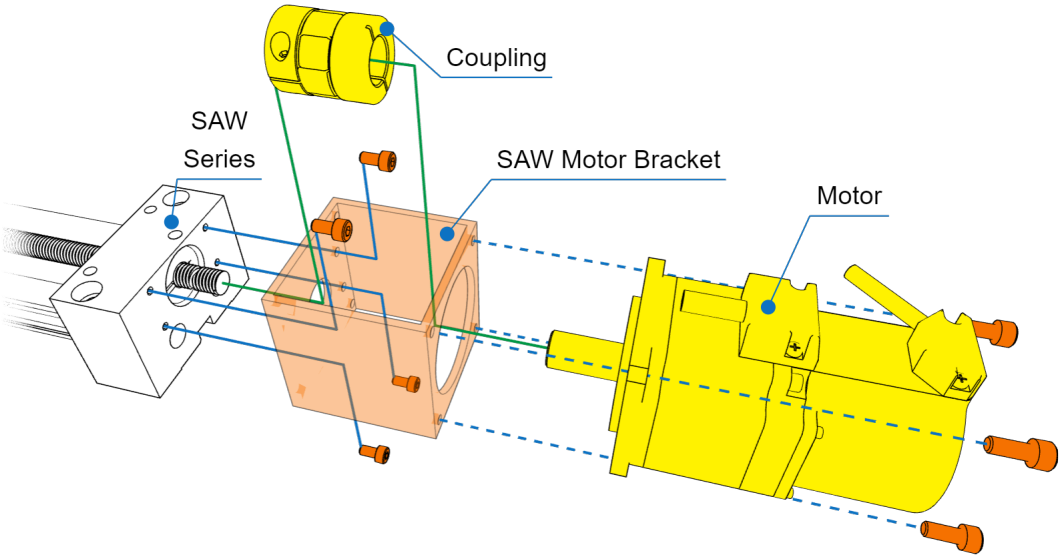
- 2 Angle Brackets
- 4 SHCS M6-1.0 x 20mm
- 8 SHCS M5-0.8 x 10mm
- 8 T-slot nuts M5-0.8



Motor Bracket Assembly

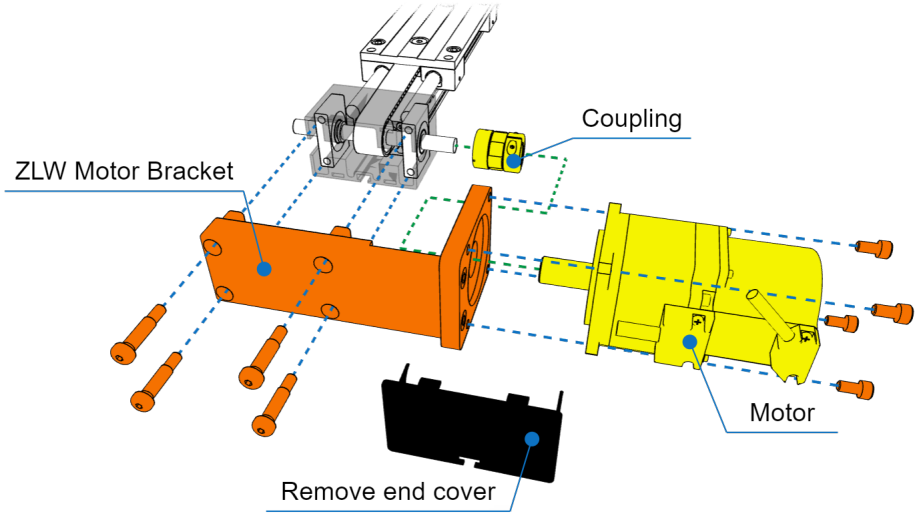
The motor brackets are designed to mount specific motor sizes. They include all of the necessary mounting hardware for the particular motor. The drive coupling is not part of the motor bracket kit and must be purchased separately. It is best practice to assemble the motor to the linear actuator with it in the vertical orientation.

SAW Series (Lead Screw Driven)



Motor Bracket PN	Bracket to Actuator Fastener	Motor to Bracket Fastener	Recommended ADC Drive Couplings			
			Coupling Jaw for Actuator		Coupling Jaw for Motor	Coupling Spider
			1040	1080		
STP17-SAW	SHCS M4-0.7 x 8mm (x4)	SHCS M3-0.5 x 6mm (x4)	SJCA-30C-10	SJCA-30C-8	SJCA-30C-5	SJC-30-RD-SLEEVE
STP23-SAW		SHCS M5-0.8 x 10mm (x4)			SJCA-30C-6.35	
SVL201-SAW		SHCS M4-0.7 x 8mm (x2)			SJCA-30C-8	
SVL202-SAW		SHCS M5-0.8 x 12mm (x4)			SJCA-30C-14	

ZLW Series (Belt Driven)

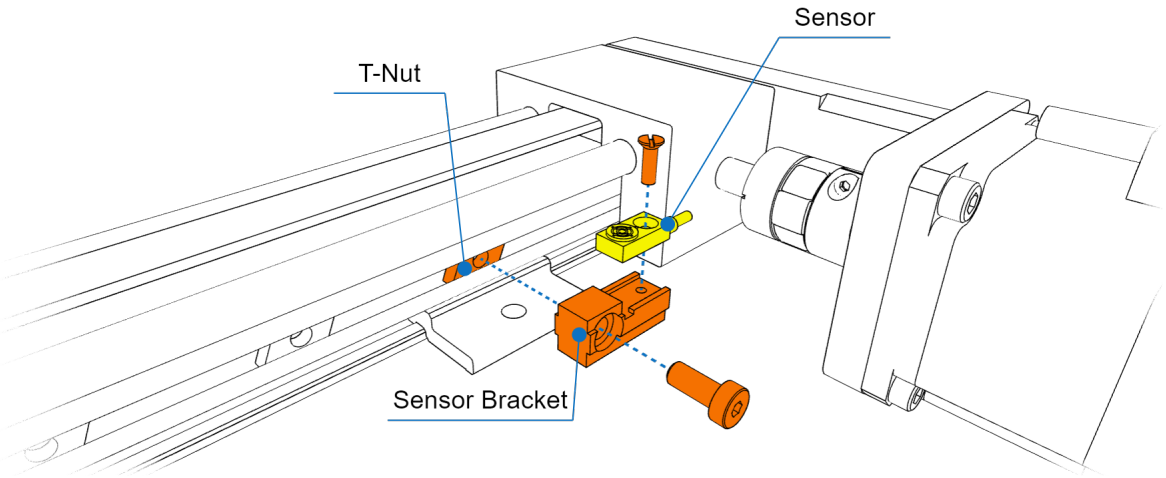


Motor Bracket PN	Bracket to Actuator Fastener	Motor to Bracket Fastener	Recommended ADC Drive Couplings		
			Coupling Jaw for Actuator	Coupling Jaw for Motor	Coupling Spider
STP17-ZLW	Shoulder Screw Ø6 x M5-0.8 x 20mm (x4)	SHCS M3-0.5 x 14mm (x4)	SJCA-30C-10	SJCA-30C-5	SJC-30-RD-SLEEVE
STP23-ZLW		SHCS M5-0.8 x 10mm (x4)		SJCA-30C-6.35	
SVL201-ZLW		SHCS M4-0.7 x 8mm (x2)		SJCA-30C-8	
SVL202-ZLW		SHCS M5-0.8 x 10mm (x4)		SJCA-30C-14	

Sensor Attachment

Sensors can be attached to the side T-slots of the linear actuator using the pre-installed T-slot nuts. The carriage block will act as the flag when an ADC proximity sensor is mounted on the sensor bracket. Mounting hardware is included with the sensor bracket kit (IGUS-SENSBKT).

NOTE: The linear actuator end blocks should not be used as hard stops. Sensors should be mounted at both ends of stroke for a controlled stop. Best control practice is to use Normally Closed (NC) for this purpose.



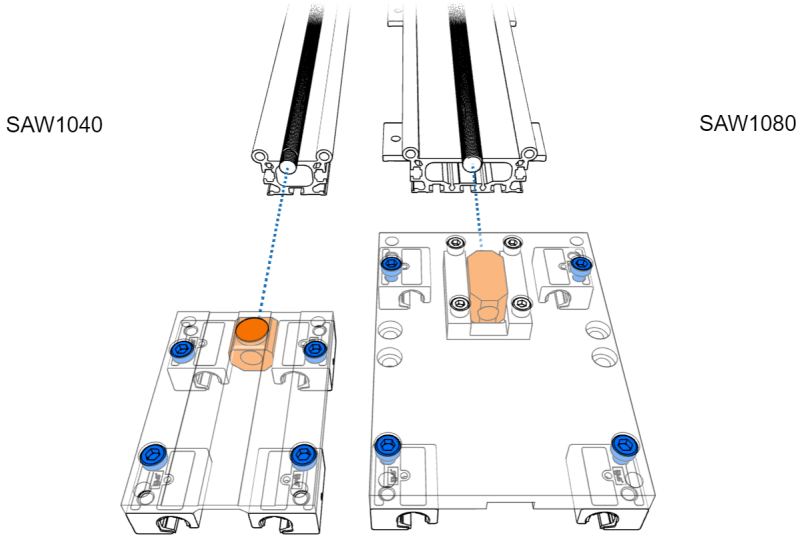
RECOMMENDED ADC INDUCTIVE PROX SENSORS		
Sensor PN	**Switch**	**Normal State**
P8-AN-2A	NPN	N.O.
P8-AP-2F	PNP	N.O.
P8-CP-2F	PNP	N.C.

SAW Series Assembly/Disassembly

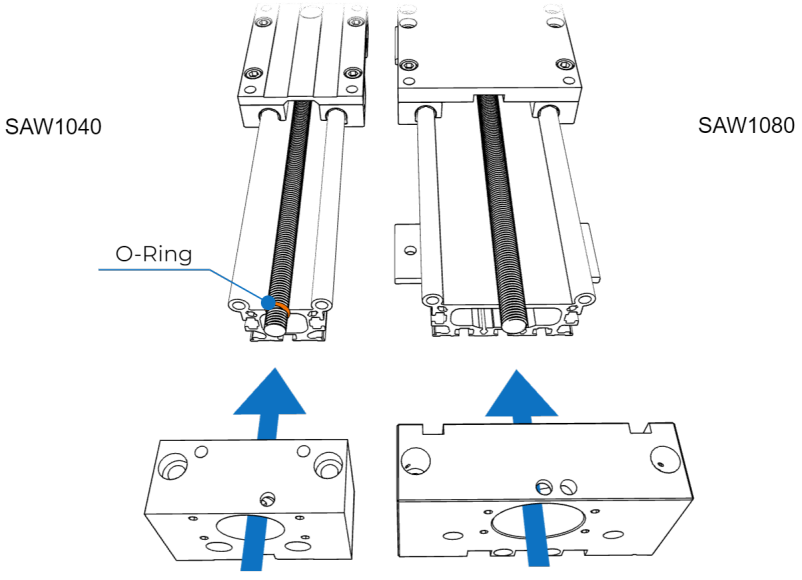
The following assembly steps can be followed in the reverse order for disassembly.

NOTE: Steps shown below are the same for both ends of the Actuator.

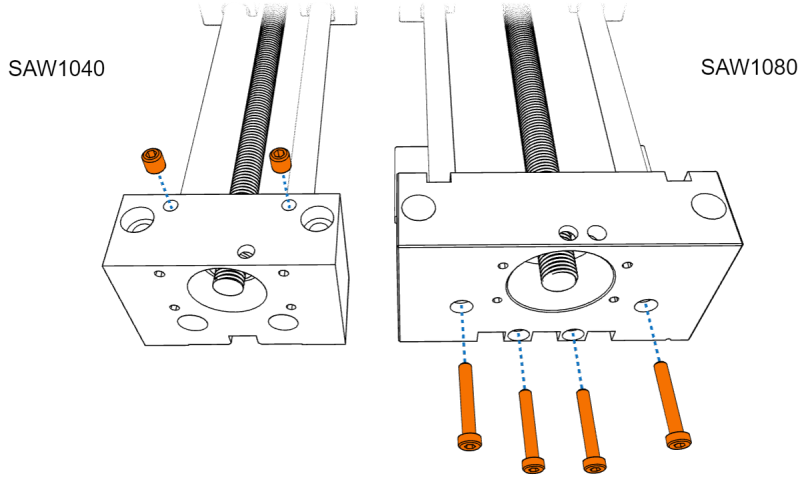
1. Loosen 4 screws on Carriage Plate.
2. Install Carriage Plate subassembly by aligning the Bearing Liners with the top rails and Lead Nut with the Lead Screw. Lead Nut should be opposite side from the input shaft. Turn Lead Screw to engage with Lead Nut. This will pull the Carriage Plate fully onto rails.



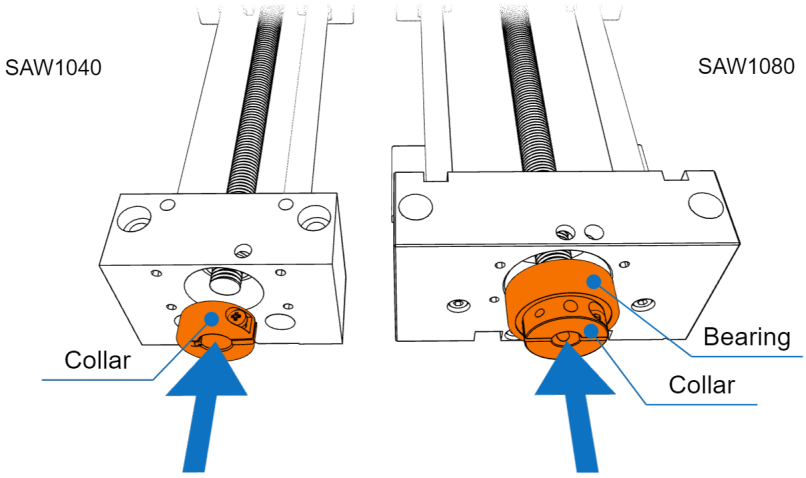
3. Gently install O-ring onto Lead Screw until seated into notch (SAW1040 only).
4. Install end block.

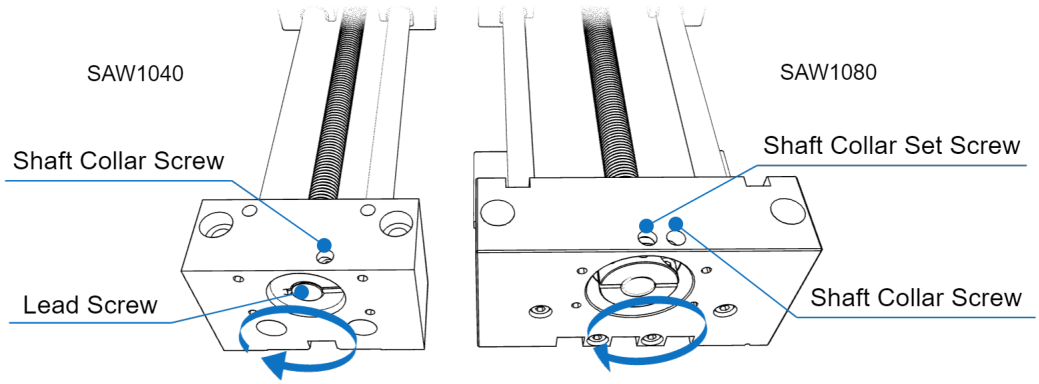


5. Apply blue thread locking compound to the screws (x2 set screws for SAW1040 / x4 SHCS for SAW1080) and install to secure end block.



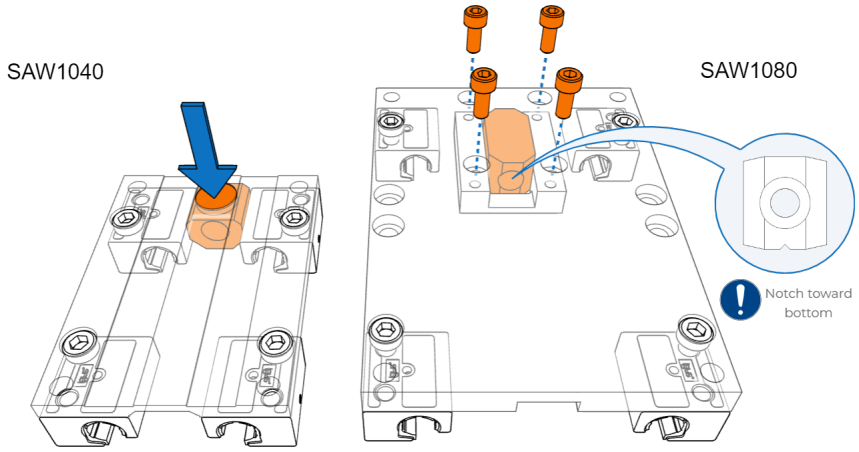
6. Install shaft collar onto Lead Screw...
   i. SAW1040–...turning clockwise with a flat blade screwdriver. Install the shaft collar such that the Lead Screw turns freely with no lengthwise movement of the Lead screw drive subassembly. Turn Lead Screw to access shaft collar screw and tighten.
   ii. SAW1080–... until bearing is fully seated. Turn Lead Screw to access 1 shaft collar screw (socket head) and slightly tighten. Rotate the Lead Screw 180° to access the 2nd shaft collar screw and slightly tighten. Check to ensure Lead Screw turns freely with no lengthwise movement of the Lead screw drive subassembly. Alternate tightening of the shaft collar screws until fully tightened. Finally, rotate lead screw to access shaft collar set screw and tighten.





SAW Lead Nut Replacement

1. SAW1040
   i. Press down to remove old Lead Nut.
   ii. Press new Lead Nut into hole in the Carriage Plate until fully seated.
2. SAW1080
   i. Remove 4 M5-0.8 x 12mm SHCS to release Lead Nut and Retainer.
   ii. Remove old Lead Nut and press in new Lead Nut with groove facing down.
   iii. Replace Retainer and re-install screws.

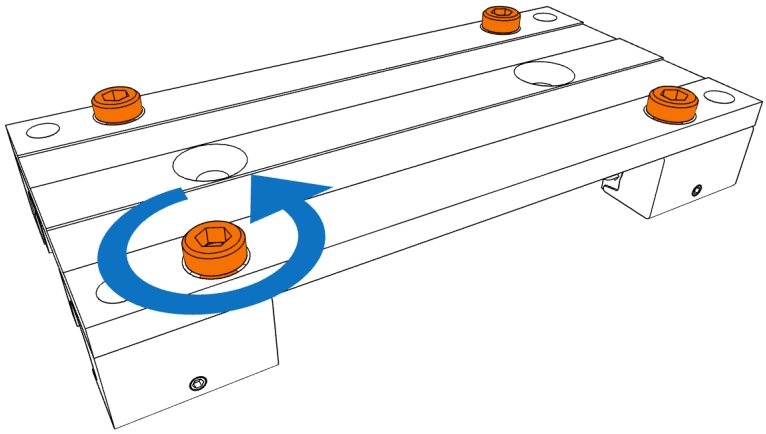


ZLW Series Assembly/Disassembly

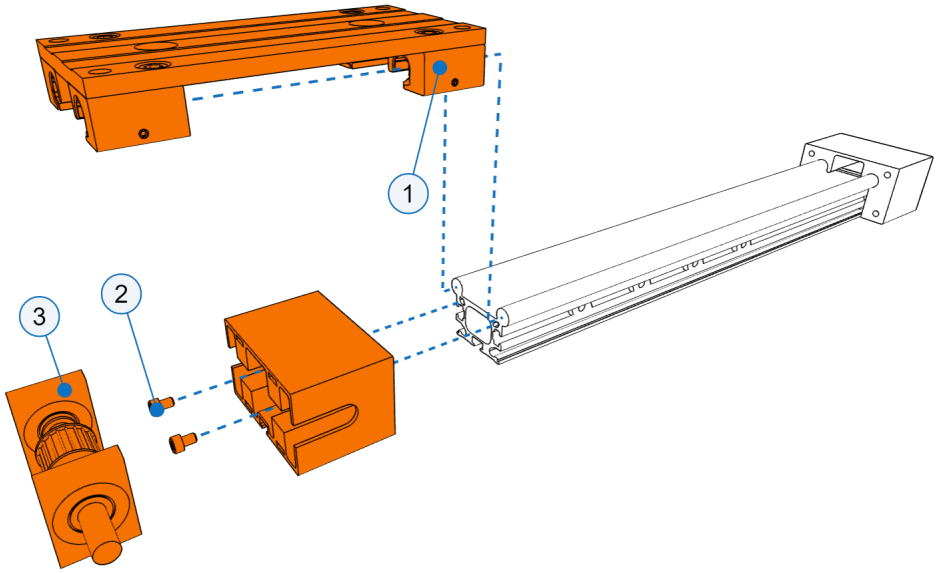
The following assembly steps can be followed in the reverse order for disassembly.

NOTE: Steps shown below are the same for both ends of the Actuator.

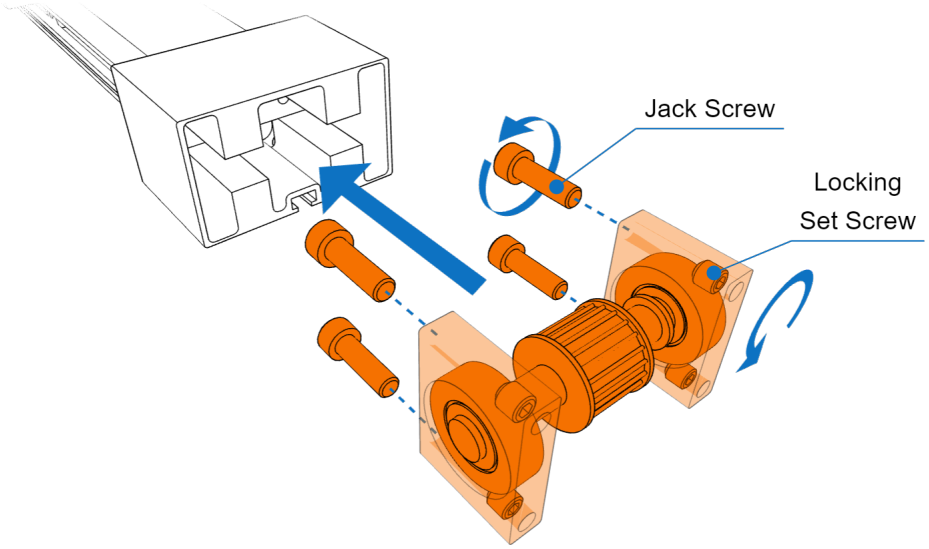
1. Loosen 4 screws on the Carriage Plate.



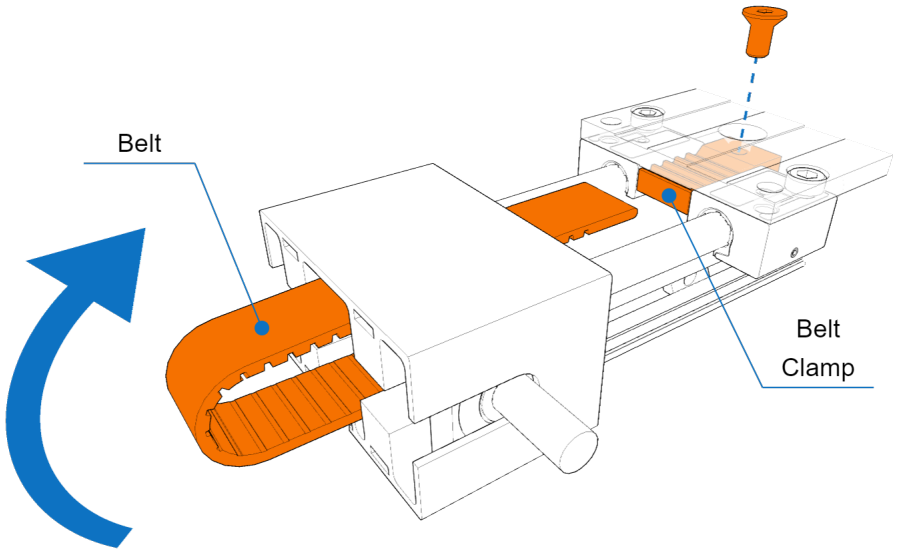
2. Slide the Carriage Plate onto the Rails.
3. Install the End Stop onto the rails using 2 screws (Low Profile SHCS M4-0.7 x 10mm).
4. Insert Drive Pulley subassembly into the End Stop.



5. Prepare the Idler Pulley by loosening the 4 Locking Set Screws by a few turns and tightening the Jack Screws all the way in. If the Jack Screws don't go all the way in, loosen the Locking Set screws further.
6. Insert the Idler Pulley subassembly into the End Stop with the Jack Screw going in first.

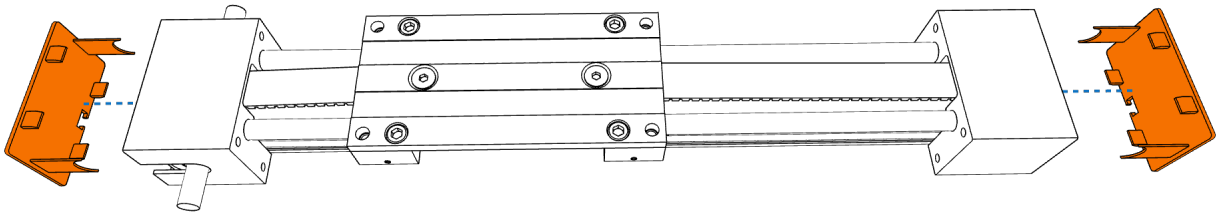


7. Insert the timing belt through the lower channel of both End Stops and wrap it around both pulleys.
8. Attach the timing belt to both ends of the Carriage Plate using the belt clamps and screws.



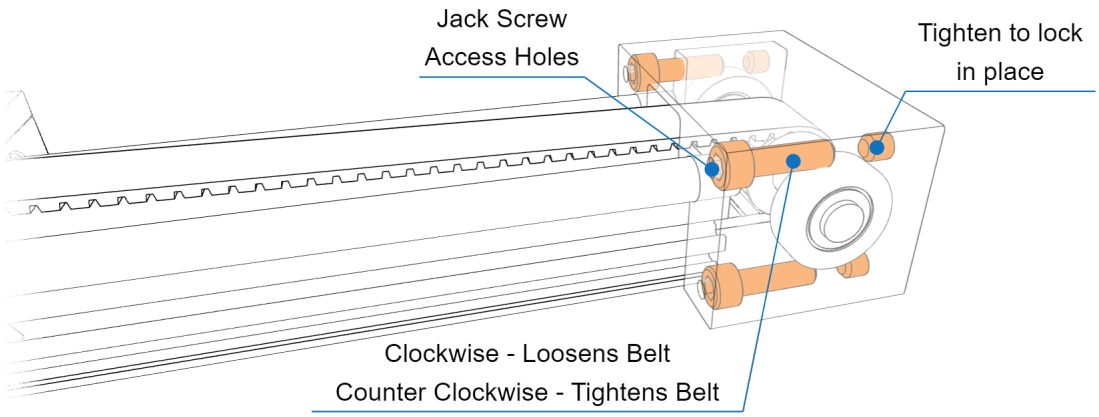
Actuator Part Number	Replacement Belt Length (mm)
ZLW1040S-2 / ZLW1080S-2	775
ZLW1040S-3 / ZLW1080S-3	975
ZLW1040S-4 / ZLW1080S-4	1175
ZLW1040S-5 / ZLW1080S-5	1375
ZLW1040S-6 / ZLW1080S-6	1575
ZLW1040S-8 / ZLW1080S-8	1975
ZLW1040S-10 / ZLW1080S-10	2375
Timing Belt Information *Material: Polyurethane with Steel Cords* *Tooth Profile: AT5* *Belt Width: 16mm* *Belt Mass: 0.059 kg/m* *Color: White*	

9. Install the End Stop covers



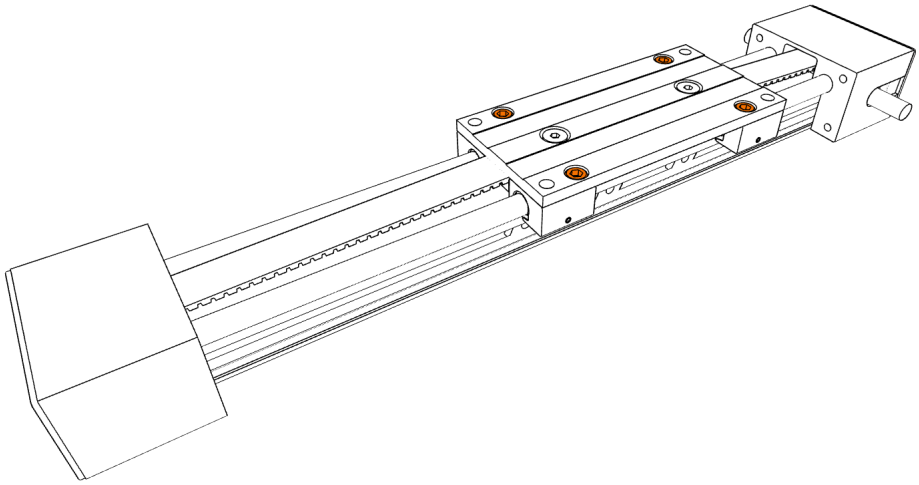
ZLW Series Belt Tensioning

1. Using a 'Belt Tensioning Meter' to measure belt tension, turn the 4 Jack Screws counter-clockwise to increase belt tension. Turn the Jack Screws evenly in a crisscross pattern. To reduce belt tension turn the Jack Screws clockwise.
   i. Belt mass property = 0.059 kg/m
   ii. Proper Belt Tension should be 200N
2. Once the proper belt tension is achieved, install 4 Locking Set Screws
3. Verify Belt Tension. If adjustment is needed, loosen the Locking Set Screws and repeat the above steps.
4. Install plastic End Caps

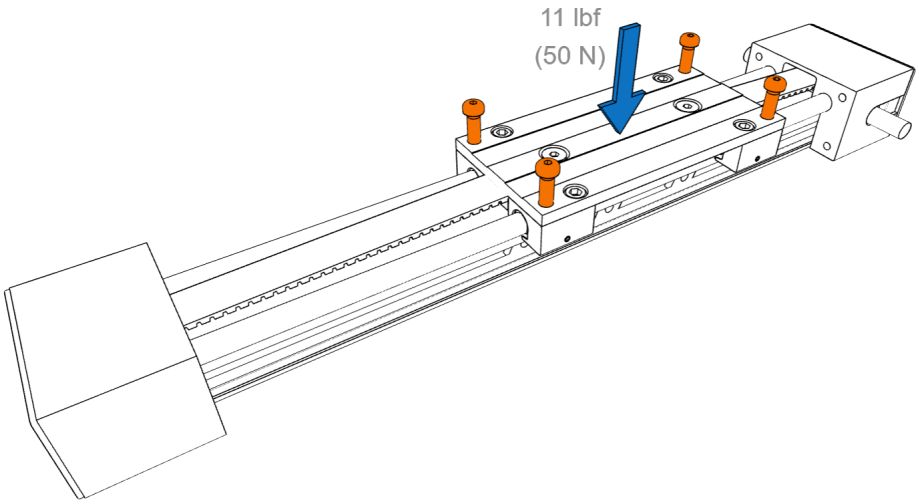


Bearing Block Alignment Procedure (All Models)

1. Loosen 4 Screws on the Carriage Plate



2. Loosely install 4 M6-1.0 screws in open holes of Carriage Plate. These are temporary to ensure thread access for attaching future parts to the Carriage Plate.
3. While applying a downward force on the center of the Carriage Plate, slightly tighten the 4 Carriage Plate screws in a crisscross pattern.



4. Move and stroke the Carriage checking for smooth movement.
5. Repeat steps 3 and 4 until movement is as desired.
6. Remove the 4 M6-1.0 temporary screws.
7. With a rubber hammer, sharply hit the center of the Carriage Plate. This fully seats the Bearing Liner. This step can be done any time, after installation or use, when the carriage seems to have resistance to motion.

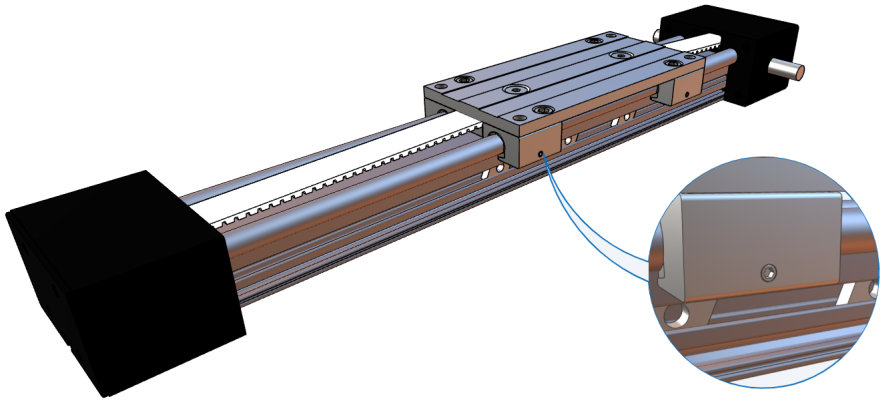
Bearing Block Liner Replacement (All Models)

The following assembly steps are performed after the Carriage Plate is removed from the Linear Actuator. For reinstalling the Carriage Plate, please refer to the SAW or ZLW Assembly Steps.

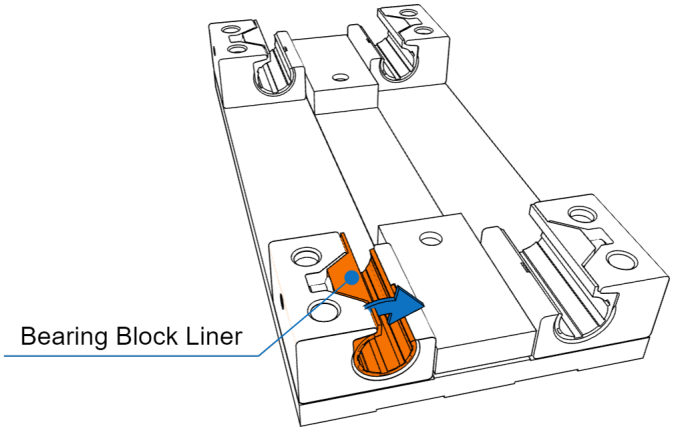
NOTE: Follow the "Bearing Block Alignment Procedure (All Models)" on page 17 after the Linear Actuator is fully assembled to ensure the new Bearing Block Liners are fully seated.

Important:

1. Gently turn each of the 4 Clearance adjustment set screws fully counter-clockwise

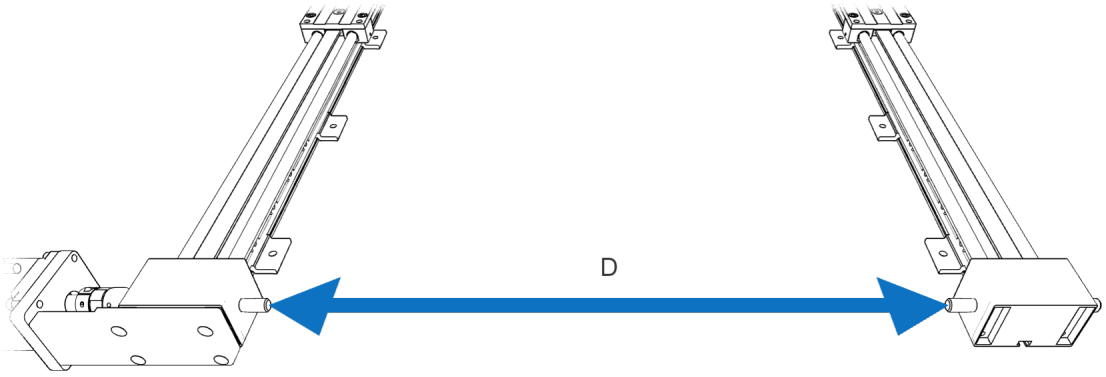


2. To remove Bearing Liner, push down on the tab and roll.
3. To install new Bearing Liner, drop in and roll until seated



ZLW Dual X Connecting Shaft

1. When the 2 linear actuators are mounted, measure the distance between shaft ends (D)
2. The length of the connecting shaft (L) may need to be cut to accommodate the proper spacing for the Drive Couplings. Use the following formula to calculate L.
   i. (metric) L = D – 38 mm
   ii. (imperial) L = D- 1.5”



NOTE: This formula is for AutomationDirect Drive Coupling SRBA-39C-10-10 only.

3. Cut Connecting Shaft, A-AWM-10-xxx to the proper length (L). If the Connecting Shaft is greater than 500mm, use Pillow Block Support A-KSTM-10 midway along Connecting Shaft to minimize shaft whipping during high speeds.
4. Slide 2 Drive couplings, and optional Pillow Block Supprt, onto the Connecting Shaft. Align this subassembly with linear actuator drive shafts.
5. Slide the couplings onto the 2 drive shafts and tighten coupling clamp screws.
6. If the Connecting Shaft is out of alignment, adjust the mounting of the Linear Actuators to correct.
7. Slide the Connecting Shaft into position of 1 Drive Coupling and tighten clamp screw onto the drive shafts.
8. Move Carriages of both actuators to same end of stroke and tighten 2nd Drive Coupling clamp screw to Connecting Shaft.