LAVLACC Linear Actuator Assembly Repair Kit Instructions
For SureMotion™ LAVL Series Value-Slide Linear Actuator Assemblies

Repair Kits Covered by These Instructions

Repair Kit Product Compatibility	
Repair Kit #	***Linear Actuator Assembly #***
LAVLACC-002	LAVL-60TxxLP2 (0.2-in lead screw pitch)
LAVLACC-003	LAVL-60TxxLP5 (0.5-in lead screw pitch)

Component Parts Included in the Repair Kit

- *1 ea Lead Screw Nut*
- *4 ea Slide Liner*
- *1 ea Ball Bearing*
- *2 ea Flanged Ball Bearing*
- *1 ea Lubrication Pen*

Tools

Required Tools

- *Metric hex key set*
- *Imperial hex key set*

Optional Tools

- *Open ended 12mm wrench, pliers, or equivalent tool for lock nut removal*

Warning: Before repair is performed, all electrical power to the system components should be removed, and the payload must be removed from the carriage. For ease of repair, the system should ideally be detached from its mounting substrate.

Torque Specifications

Standard Steel Bolt/Screw Torque Specifications				
Bolt/Screw			***Torque****	
Size	***Pitch***	***Type***	***lb·in***	***lb·ft***
6	32	Low Carbon Steel	8.7	–
8	32		17.8	
10	24		20.8	
1/4	20	SAE Grade 5 Med. Carbon Steel	–	10
5/16	18			19
3/8	16			33
7/16	14			54
1/2	13			78

** It is recommended to use 50% of listed torque when using steel threads into aluminum material.*

Metric Steel Bolt/Screw Torque Specifications			
Bolt/Screw			***Torque****
Size	***Pitch***	***Type***	***N·m***
M3	0.5	Standard 5D Med. Carbon Steel	0.6
M4	0.7		1.5
M5	0.8		3.0
M6	1.0		5.2
M8	1.0		12.5

** It is recommended to use 50% of listed torque when using steel threads into aluminum material.*

Actuator Disassembly

Disassembly assumes that a motor is attached to the motor mount and coupler.

1) *Loosen the clamping screw on the lead screw side of the shaft coupler. If the shaft coupler is the standard beam coupler, use a 2.5mm hex key on the clamping screws.*

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2) *Remove the motor mounting screws, then remove the motor, motor mounting plate, and shaft coupler.*

3) *Use a 1.5mm hex key to loosen the set screw on the lead screw shaft's lock nut, but keep the set screw threaded in the nut.*

4) *Hold the carriage steady with one hand and use your other hand to loosen and remove the lock nut from the lead screw shaft.*
Tips:

a) *If lock nut cannot be removed by finger, use a 12mm wrench or pliers to loosen the lock nut. If there is inadequate clearance for the wrench to reach the nut, remove one of the motor mount legs by loosening its mounting screws from the interior side of the motor end plate. Use a 7/64-in hex key on the motor mount leg screws.*

b) If the carriage keeps moving, move it to the simple end - the carriage will be pressed against the simple end plate by the counterclockwise torque required to loosen the lock nut.

5) *Use a 5/64-in hex key to remove the screws attaching the lead screw nut to the carriage.*

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6) *Use a 3/32-in hex key to remove the screws on the motor end plate and pull the plate out axially, along with the lead screw nut. The simple end of the drive shaft will pull out of the simple end plate bearing.*

7) *Pull the drive shaft out of the bearings in the motor end plate.*

8) *Use a 3/32-in hex key to remove the screws on the simple end plate and then remove the plate from the base.*

9) *Use a 3/32-in hex key to loosen the pre-load screws slightly on the carriage, but make sure the top and bottom halves of the carriage remain assembled.*

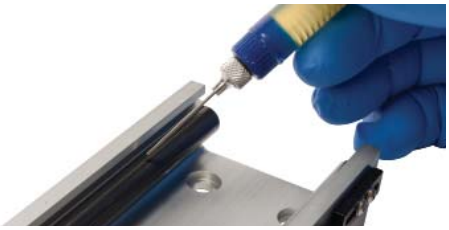
10) *Slide the carriage out of the base. Keep track of which side of the carriage originally faced the motor.*

Component Replacement / Actuator Assembly

11) *Replace all four slide liners.*

Make sure the raised ring on the OD of each liner is constrained in its groove on the carriage. Also make sure the raised cylindrical nub at the middle of each liner is seated in its circular pocket located at the seam between the top and bottom carriage sections.

12) *Apply a small amount of lubricant to the base rails.*



13) *Slide the carriage back onto the base rails. Make sure the original motor side of the carriage faces the motor side of the base. If the carriage doesn't initially fit back onto the rails, try further loosening the pre-load screws slightly.*

14) *Tighten the pre-load screws until slight resistance is detected, then tighten about a quarter turn further. The carriage should be able to be pushed with light effort, so loosen the screws slightly if the carriage requires noticeable effort to move.*

15) *Slide the carriage back and forth several times. Periodically stop and rotate the carriage in all directions. This will help seat the new liners in the carriage, and may cause slight play to develop between the liners and rails. If slight play is detected, tighten the pre-load screws a bit more to eliminate the play without significantly increasing friction.*

16) *Repeat step 15 until no further play develops. The carriage should not have any looseness, but should still be able to be pushed with light effort.*

17) *Apply lubricant to the rail and slide the carriage back and forth a few times to distribute it on the rail surface. There should be a thin, even layer.*

18) *Replace the flanged bearings on both sides of the motor end plate.*

19) *Replace the nut on the lead screw. Make sure that the lead screw nut's flange faces the motor end of the lead screw. Thread the nut onto the screw starting from the nut's flanged end.*

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20) *Insert the motor end of the lead screw through the two flanged bearings on the motor end plate.*

21) *Reassemble the lock nut on the lead screw shaft. Hold the threaded portion of the drive screw with one hand and moderately finger-tighten the nut with the other hand. Then re-tighten the set screw on the lock nut.*

22) *Replace the bearing in the simple end plate.*

23) *Reattach the simple end plate to the base with the original screws. Keep the screws loose enough that the plate can be easily shifted perpendicular to the drive screw axis.*

24) *Pass the simple end of the lead screw through the bore of the carriage, and into the bearing on the simple end plate.*

25) *Reattach the motor end plate to the base with the original screws. Keep the screws loose enough that the plate can be easily shifted perpendicular to the drive screw axis.*

26) *Move the carriage to the center of the system and fasten the new lead screw nut to the carriage with the original lead screw nut mounting screws.*

27) *Move the carriage to motor end by rotating the drive screw with your fingers, then tighten the motor end plate mounting screws enough to keep the plate in position.*

28) *Move the carriage to the simple end by rotating the drive screw with your fingers, then tighten the simple end plate mounting screws enough to keep the plate in position.*

29) *Move the carriage back and forth along the full length of the base at least once to check for consistent movement characteristics. Apply some of the lubricant to the drive screw and slide the carriage to distribute it along the entire travel length.*

30) *If carriage movement feels tighter towards one end of the system, the end plate there may not be adequately aligned with the nut. Loosen the end plate mounting screws on that end and repeat the appropriate procedures outlined in steps 27 through 29 as needed.*

31) *Once satisfactory carriage sliding characteristics are achieved, fully tighten the end plate mounting screws.*

32) *Reassemble the motor mount leg on the motor end plate, if it was removed earlier. Then reattach the motor, motor mount plate, and coupler onto the motor side of the system.*

33) *Re-tighten the shaft coupler clamping screws.*