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mks

LTA Series

Precision Long-Travel & High-Speed Motorized Actuators



Newport®

USER'S MANUAL

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Warranty

Newport Corporation warrants this product to be free from defects in material and workmanship for a period of 1 year from the date of shipment. If found to be defective during the warranty period, the product will either be repaired or replaced at Newport's discretion.

To exercise this warranty, write or call your local Newport representative, or contact Newport headquarters in Irvine, California. You will be given prompt assistance and return instructions. Send the instrument, transportation prepaid, to the indicated service facility. Repairs will be made and the instrument returned, transportation prepaid. Repaired products are warranted for the balance of the original warranty period, or at least 90 days.

Limitation of Warranty

This warranty does not apply to defects resulting from modification or misuse of any product or part.

CAUTION

Warranty does not apply to damages resulting from:

- **Incorrect usage:**
  - **Driven load greater than maximum specified load.**
  - **Actuator speed higher than specified speed.**
  - **Improper grounding.**
    - ¬ **Connectors must be properly secured.**
    - ¬ **When the load on the stage represents an electrical risk, it must be connected to ground.**
  - **Excessive or improper cantilever loads.**
- **Modification of the actuator or any part thereof.**

CAUTION

Please return equipment in the original (or equivalent) packing.

You will be responsible for damage incurred from inadequate packaging if the original packaging is not used.

This warranty is in lieu of all other warranties, expressed or implied, including any implied warranty of merchantability or fitness for a particular use. Newport Corporation shall not be liable for any indirect, special, or consequential damages.

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Original instructions.

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EC Declaration of Conformity

LTA Series

Newport®

EU Declaration of Conformity

following Annex II-1A
of Directive 2006/42/EC on machinery

The manufacturer:

MICRO-CONTROLE Spectra-Physics,
9, rue du bois sauvage
F-91055 Evry FRANCE

Hereby declares that the machinery:

- Description: " LTA "
- Function: Precision long-Travel & High Speed Motorized Actuators
- Models: LTA-HS, LTA-HL, LTAHSPPV6,LTAHLPPV6

– the technical file of which was compiled by:

Mr Hervé LE COINTE , Quality Director,
MICRO-CONTROLE Spectra-Physics, Zone Industrielle - B.P.29
F-45340 Beaune La Rolande France

– complies with all the relevant provisions of the Directive 2006/42/EC on machinery.
– complies with all the relevant provisions of the Directive 2014/30/EU relating to electro-magnetic compatibility.
– complies with all the relevant provisions of the Directive 2011/65/EU relating to RoHS2.

– was designed and built in accordance with the following harmonised standards:

- NF EN 61326-1:2013 « Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements »
- NF EN 55011:2010/A1:2011 Class A

– was designed and built in accordance with the following other standards:

- NF EN 61000-4-2
- NF EN 61000-4-3
- NF EN 61000-4-4
- NF EN 61000-4-6

ORIGINAL DECLARATION

Done in Beaune La Rolande on 16 May 2017
Hervé LE COINTE
Quality Director



DC1-EN rev:A

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Definitions and Symbols

The following terms and symbols are used in this documentation and also appear on the product where safety-related issues occur.

General Warning or Caution



The exclamation symbol may appear in warning and caution tables in this document. This symbol designates an area where personal injury or damage to the equipment is possible.

The following are definitions of the Warnings, Cautions and Notes that may be used in this manual to call attention to important information regarding personal safety, safety and preservation of the equipment, or important tips.



WARNING

Warning indicates a potentially dangerous situation which can result in bodily harm or death.



CAUTION

Caution indicates a potentially hazardous situation which can result in damage to product or equipment.

NOTE

Note indicates additional information that must be considered by the user or operator.

European Union CE Mark

The presence of the CE Mark on Newport Corporation equipment means that it has been designed, tested and certified as complying with all applicable European Union (CE) regulations and recommendations.

Warnings and Cautions



ATTENTION

This stage is a Class A device. In a residential environment, this device can cause electromagnetic interference. In this case, suitable measures must be taken by the user.

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Warnings



WARNING

The motion of objects of all types carries potential risks for operators. Ensure the protection of operators by prohibiting access to the dangerous area and by informing the personnel of the potential risks involved.

WARNING

Do not use this actuator when its motor is emitting smoke or is unusually hot to the touch or is emitting any unusual odor or noise or is in any other abnormal state.

Stop using the actuator immediately, switch off the motor power and then disconnect the electronics power supply.

After checking that smoke is no longer being emitted contact your Newport service facility and request repairs. Never attempt to repair the actuator yourself as this can be dangerous.

WARNING

Make sure that this actuator is not exposed to moisture and that liquid does not get into the actuator.

Nevertheless, if any liquid has entered the actuator, switch off the motor power and then disconnect the electronics from power supply.

Contact your Newport service facility and request repairs.



WARNING

Do not insert or drop objects into this actuator, this may cause an electric shock, or lock the drive.

Do not use this actuator if any foreign objects have entered the actuator. Switch off the motor power and then disconnect the electronics power supply.

Contact your Newport service facility for repairs.

WARNING

Do not place this actuator in unstable locations such as on a wobbly table or sloping surface, where it may fall or tip over and cause injury.

If this actuator has been dropped or the case has been damaged, switch off the motor power and then disconnect the electronics power supply.

Contact your Newport service facility and request repairs.

WARNING

Do not attempt to modify this actuator; this may cause an electric shock or downgrade its performance.

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Caution

CAUTION

Do not place this actuator in a hostile environment such as X-Rays, hard UV,… or in any vacuum environment.
Only LTAHxPPV6 actuators are compatible and can be used in a vacuum environment up to 10^{-6} hPa.

CAUTION

Do not place this actuator in a location affected by dust, oil fumes, steam or high humidity. This may cause an electric shock.

CAUTION

Do not leave this actuator in places subject to extremely high temperatures or low temperatures. This may cause an electric shock.

- **Operating temperature: +10 to +35 °C**
- **Storage temperature: -10 to +40 °C (in its original packaging)**



CAUTION

Do not move this actuator if its motor power is on.

Make sure that the cable to the electronics is disconnected before moving the actuator. Failure to do so may damage the cable and cause an electrical shock.

CAUTION

Be careful that the actuator is not bumped when it is being carried. This may cause it to malfunction.

CAUTION

When handling this actuator, always unplug the equipment from the power source for safety.

CAUTION

Contact your Newport service facility to request cleaning and specification control every year.

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Precision Long-Travel & High-Speed Motorized Actuators
LTA Series

1.0 Introduction

This manual provides operating instructions for the actuator that you have purchased in the LTA Series:

- LTA-HL
- LTA-HS
- LTAHLPPV6
- LTAHSPPV6



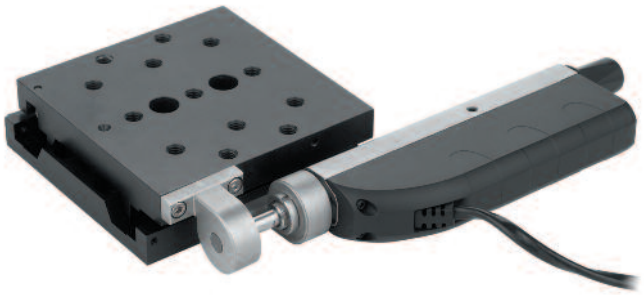
LTA-HL (down) and LTA-HS (up) motorized actuators.



LTAHxPPV6 vacuum compatible actuators.

RECOMMENDATION

We recommend you read carefully the chapter "Connection to electronics" before using the LTA actuator.



The LTA Series actuator is compatible with most standard Newport manual stages and opto-mechanical components like the (M-)426 Series translation stage.

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2.0 Description

The LTA actuators provide up to 50 mm motorized travel in a compact package. They are designed to fit into your existing manual stages and other opto-mechanical components as a direct replacement for manual micrometers.

The LTA series features a space-saving design with the motor and lead screw side-by-side. This cuts the actuator length in half and minimizes the negative effects of long cantilever loads on micro-positioning equipment. The non-rotating tip furthermore prevents wear and avoids periodic motion variations which can be caused by variable contacts made between a rotating tip and the mating surface.

Precision motion is accomplished by a miniature motor with an optimized output torque:

- DC servo motor for LTA-HL and LTA-HS
- Stepper motor for LTAHLPPV6 and LTAHSPPV6

This allows for faster motion with higher load capacity.

“HL” versions are especially recommended for heavy load applications. They feature a stronger 8 mm diameter rod and a M12 x 0.5 thd mounting bezel that is compatible with our UMR8 and MVN80 linear stages and SK and SL series optical mounts.

“HS” versions are optimized for high-speed applications and provide the longer travel range. The mounting interface of these versions is compatible with a large number of Newport and others manual components.

A movable limit switch prevents equipment from over-travel. Its position can be changed in minutes to adjust the max. travel position. A manual adjustment knob permits quick and intuitive positioning of the actuator while the motor is off. On LTA-HL and LTA-HS actuators, convenient marked scales indicate coarse actuator position in both millimeters and inches.

For optimal performance, we recommend the use of our motion controllers.

LTA actuators are equipped with a cable with a SUB-D25 connector for connection to our motion controllers.

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2.1 Design Details

	LTA-HL & LTA-HS	LTAHLPPV6 & LTAHSPPV6
Base Material	Stainless steel body with polycarbonate cover	Stainless steel body
Drive Mechanism	Non-rotating lead screw (rotating nut)	
Drive Screw Pitch (mm)	1.0	
Reduction Gear	HL Version 1:66 HS Version 1:14	– –
Feedback	Motor mounted rotary encoder, 2048 cts/rev.	
Limit Switches	Optical switches, both ends, max. travel limit is adjustable [1]	
Origin	Uses minimum travel limit for homing typically <4 µm repeatability	
Motor	DC-servo	Stepper
Cable Length	3 m	1.5 m (SUB-D25 connector not vacuum compatible)
Vacuum Compatibility	10^{-6} hPa ($0{,}7 \times 10^{-7}$ Torr)	
MTBF	10,000 h at 25 N load and a 10% duty cycle	10,000 h at half load and with a 10% duty cycle

[1] *See section: "Setting of the + Limit Switch".*



LTAHxPPV6 into its sachet packaging.

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3.0 Characteristics

3.1 Definitions

Specifications of our products are established in reference to ISO 230 standard part II “Determination of accuracy and repeatability of positioning numerically controlled axes”.

This standard gives the definition of position uncertainty which depends on the 3 following parameters:

Absolute Accuracy

Difference between ideal position and real position.

Accuracy

Difference between ideal position and real position after the compensation of linear errors.

Linear errors include: cosine errors, inaccuracy of screw or linear scale pitch, angular deviation at the measuring point (Abbe error) and thermal expansion effects. All Newport motion electronics can compensate for linear errors.

The relation between absolute accuracy and on-axis accuracy is as follows:

$$Absolute\ Accuracy = Accuracy + Correction\ Factor \times Travel$$

Repeatability

Ability of a system to achieve a commanded position over many attempts.

Reversal Value (Hysteresis)

Difference between actual position values obtained for a given target position when approached from opposite directions.

Minimum Incremental Motion (MIM or Sensitivity)

The smallest increment of motion a device is capable of delivering consistently and reliably.

Resolution

The smallest increment that a motion device can theoretically move and/or detect. Resolution is not achievable, whereas MIM, is the real output of a motion system.

The testing of accuracy, repeatability, and reversal error are made systematically with test equipment in controlled environment ($20^{\pm 1}$ °C).

A linear cycle with 21 data points on the travel and 4 cycles in each direction gives a total of 168 points.

Guaranteed and Typical Specifications

Guaranteed maximum performance values are verified per Newport's A167 metrology test procedure. For more information, please consult the metrology tutorial section in the Newport catalog or at **www.newport.com**

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3.2 Mechanical Specifications

	LTA-HS	LTA-HL	LTAHSPPV6	LTAHLPPV6
Travel (mm)	50	25	50	25
Minimum Incremental Motion [5] (µm)	0.1	0.05	0.08	0.08
Uni-directional Repeatability, Typical (Guaranteed) (µm)	±0.10 (±0.25)	±0.10 (±0.25)	±0.10 (±0.25)	±0.10 (±0.30)
Bi-directional Repeatability, Typical (Guaranteed) [1] [2] (µm)	±0.30 (± 1.0)	±0.30 (± 1.0)	±0.30 (± 1.0)	±0.30 (± 1.0)
Accuracy [1] (µm)	±2.2 (±5.0)	±1.2 (±3.0)	±2.2 (±5.0)	±1.2 (±3.0)
Maximum Speed (mm/s)	5	1	0.5 [4]	0.25 [4]
Axial Load Capacity [-Cx, +Cx] (N)	-50, +40	-120, +100	40	-100, +100
Side Load Capacity [3] (N)	5	20	5	-40, +40

1) *For the definition of Typical and Guaranteed specifications see "Motion Basics Terminology & Standards" Tutorial at www.newport.com*
2) *After backlash compensation.*
3) *Avoid side loads during motion.*
4) *With SMC100PP: 0.1 mm/s for LTAHLPPV6, 0.2 mm/s for LTAHSPPV6.*
5) *MIM in closed loop: 0.15 mm for LTAHLPPV6, 0.3 mm for LTAHSPPV6.*

CAUTION

Values in the table above are indicated for actuators operating with the rod in –Cx direction.

3.3 Axial Load Capacity

Maximum load an actuator can move while maintaining specifications. This value is given with speed and acceleration specified for the actuator.

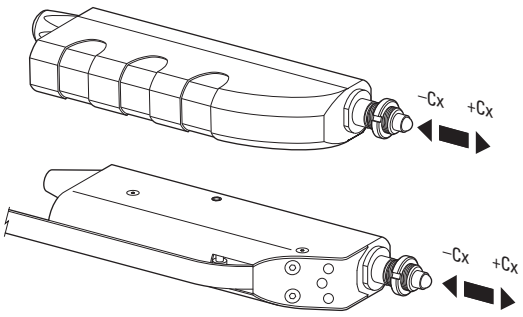
	LTA-HS	LTA-HL	LTAHSPPV6	LTAHLPPV6
Specified Speed (mm/s)	5	1	0.5	0.25
Specified Acceleration (mm/s²)	20	4	2	1

This value is given for load along the direction of the motion.

	LTA-HS	LTA-HL	LTAHSPPV6	LTAHLPPV6
–Cx, Inverse axial load capacity (N)	50	120	40	100
+Cx Direct axial load capacity (N)	40	100	40	100

CAUTION

Do not apply alternatively +Cx and –Cx loads during an operating cycle.



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3.4 Minimal Axial Load



CAUTION

To reach the specifications stated for LTA actuators, a minimum axial load must be applied at the end of the rod.

	LTA-HS	LTA-HL	LTAHSPPV6	LTAHSPPV6
Min. ±Cx (N)	2.5	5	2.5	2.5

3.5 Actuator Weights

Weights indicated are values for actuators with their cable.

	Weight [lb (kg)]
LTA-HS	0.99 (0.45)
LTA-HL	1.14 (0.52)
LTAHxPPV6	0.77 (0.35)

4.0 Drives and Motors

4.1 Stepper Drive Version

LTAHxPPV6 actuators are driven by a stepper motor.

Stepper Motor Performance Specifications and Characteristics

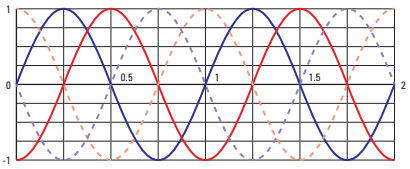
	Resolution (µm)	Speed (mm/s)	Angle by Step (°)	RMS Current per Phase (A)	Resistance (Ω)	Inductance (mH)
LTAHSPPV6	0.08 [2]	0.5 [1]	15	0.18	12.5	5.5
LTAHLPPV6	0.08 [2]	0.25 [1]	15	0.18	12.5	5.5

1) With SMC100PP: 0.1 mm/s for LTAHLPPV6 and 0.2 mm/s for LTAHSPPV6.

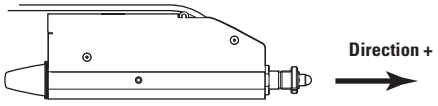
2) MIM in closed loop: 0.15 µm for LTAHLPPV6 and 0.3 µm for LTAHSPPV6.

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Command Signals for the Stepper Motor



Step	1	2	3	4	5	8	7	8
+ Phase 1	+	+	–	–	+	+	–	–
– Phase 1	–	–	+	+	–	–	+	+
+ Phase 2	–	+	+	–	–	+	+	–
– Phase 2	+	–	–	+	+	–	–	+
Direction	– ←			MOTION			→	+



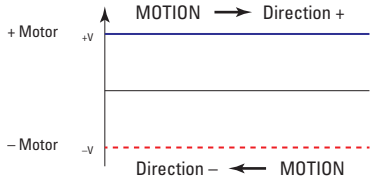
4.2 DC-Motor Drive Version

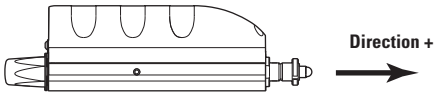
LTA-HS and LTA-HL actuators are driven by a DC servo motor.

DC-Motor Performance Specifications and Characteristics

	Resolution (µm)	Speed (mm/s)	Nominal Voltage (V)	Max RMS Current (A)	Max. Peak Current (A)	Resistance (Ω)	Inductance (mH)	Tachometer Const. (V/krpm)
LTA-HS	0.035	5	24	0.15	0.21	54.6	1.19	–
LTA-HL	0.0074	1	24	0.15	0.21	54.6	1.19	–

Command Signals for the DC-Motor



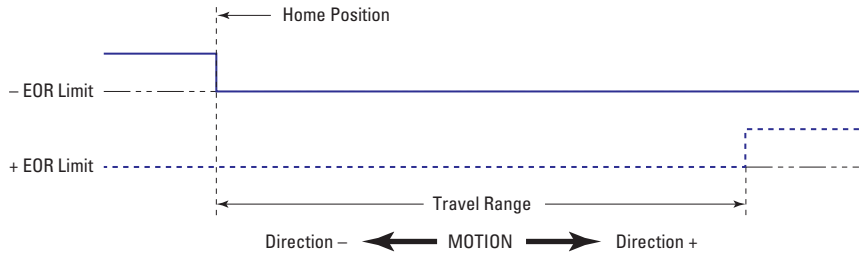


In the above drawings, + Motor signal is referred to – Motor signal.

① When the actuator moves in + Direction, the + Motor voltage is higher than – Motor voltage.

② When the actuator moves in – Direction, the + Motor voltage is lower than – Motor voltage.

4.3 Sensor Position



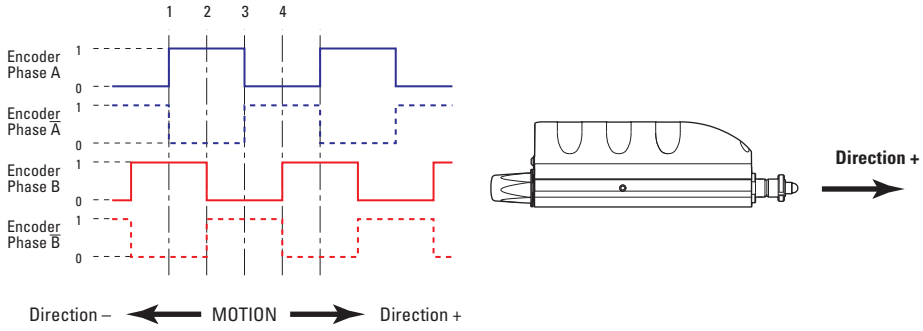
End-of-Run are 5 V open collector type.

CAUTION

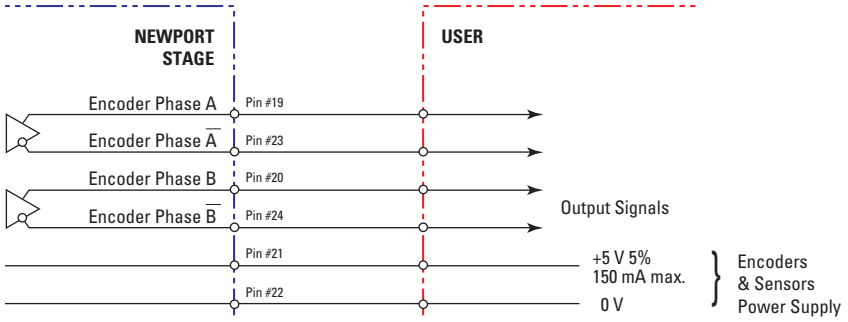
"End-of-Run" are active signals and should not be connected to any other source.

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4.4 Feedback Signal Position



The incremental sensor consists of an optical scale and an encoder head. When the carriage moves, the encoder head generates square signals in quadrature and sends to pins #19, #20, #23 and #24 of the SUB-D25 connector.

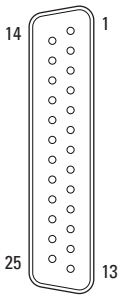


"Encoder" are "differential pair" (type RS-422) type output signals. Using these signals permits a high immunity to noise. Emission circuits generally used by Newport are 26LS31 or MC3487. Reception circuits to use are 26LS32 or MC3486.

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4.5 Pinouts

The pinout diagrams for the LTA actuators SUB-D25M connectors are shown below.



	LTAHSPPV6 & LTAHLPPV6		LTA-HS & LTAHL
1	+ Phase 1	**1**	N.C.
2	+ Phase 1	**2**	N.C.
3	– Phase 1	**3**	N.C.
4	– Phase 1	**4**	N.C.
5	+ Phase 2	**5**	+ Motor
6	+ Phase 2	**6**	+ Motor
7	– Phase 2	**7**	– Motor
8	– Phase 2	**8**	– Motor
9	N.C.	**9**	N.C.
10	N.C.	**10**	N.C.
11	N.C.	**11**	N.C.
12	N.C.	**12**	N.C.
13	Reserved [1]	**13**	Reserved [1]
14	Ground	**14**	Ground
15	N.C.	**15**	N.C.
16	0 V	**16**	0 V
17	+ End-of-Run	**17**	+ End-of-Run
18	– End-of-Run	**18**	– End-of-Run
19	Encoder Phase A	**19**	Encoder Phase A
20	Encoder Phase B	**20**	Encoder Phase B
21	+5 V	**21**	+5 V
22	0 V	**22**	0 V
23	Encoder Phase /A	**23**	Encoder Phase /A
24	Encoder Phase /B	**24**	Encoder Phase /B
25	N.C.	**25**	N.C.

1) Pin #13 of SUB-D25M is reserved for internal logic for Newport controller.

WARNING



The SUB-D25 connector supplied with LTAHxPPV6 actuators is not designed for using in a vacuum environment. The customer has the responsibility to link the actuator to the bulkhead coupling with its cable removing the supplied connector, then to connect the bulkhead coupling and the controller with a cable equipped with the removed SUB-D25 connector.

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5.0 Connection to Newport Controllers

5.1 Warnings on Controllers

Controllers are intended for use by qualified personnel who recognize shock hazards and are familiar with safety precautions required to avoid possible injury. Read the controller user's manual carefully before operating the instrument and pay attention to all written warnings and cautions.

WARNING

Disconnect the power plug under the following circumstances:

- **If the power cord or any attached cables are frayed or damaged in any way.**
- **If the power plug is damaged in any way.**
- **If the unit is exposed to rain, excessive moisture, or liquids are spilled on the unit.**
- **If the unit has been dropped or the case is damaged.**
- **If you suspect service or repair is required.**
- **Whenever you clean the electronics unit.**

CAUTION

To protect the unit from damage, be sure to:

- **Keep all air vents free of dirt and dust.**
- **Keep all liquids away from the unit.**
- **Do not expose the unit to excessive moisture (85% humidity).**
- **Read this manual before using the unit for the first time.**



WARNING

All attachment plug receptacles in the vicinity of this unit are to be of the grounding type and properly polarized.

Contact your electrician to check your receptacles.

WARNING

This product is equipped with a 3-wire grounding type plug.

Any interruption of the grounding connection can create an electric shock hazard.

If you are unable to insert the plug into your wall plug receptacle, contact your electrician to perform the necessary alterations to ensure that the green (green-yellow) wire is attached to earth ground.

WARNING

This product operates with voltages that can be lethal.

Pushing objects of any kind into cabinet slots or holes, or spilling any liquid on the product, may touch hazardous voltage points or short out parts.

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5.2 Connection

There is a label on every stage indicating its part and serial numbers. This label is located on the sachet of the LTAHxPPV6 actuators.

WARNING

Always turn the controller's power OFF before connecting to a stage.

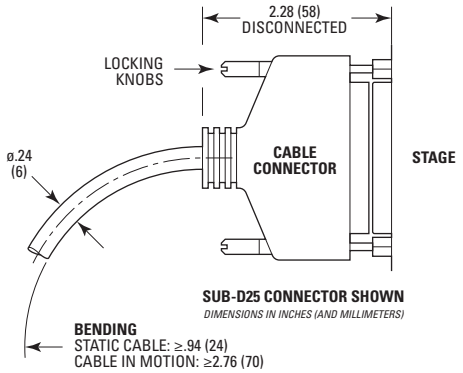
NOTE

These stages are ESP compatible. Enhanced System Performance is Newport's exclusive technology that enables Newport ESP motion controllers to recognize the connected Newport ESP stage and upload the stage parameters. This ensures that the user can operate the motion system quickly and safely.

5.3 Cables

LTA-HS and LTA-HL are delivered equipped with a 3-meter cable, LTAHSPPV6 and LTAHLPPV6 actuators are delivered with a 1.5-meter cable.

These cables are equipped with a SUB-D25M connector so they can be directly connected to our controllers/drivers.



WARNING

This cable is shielded correctly. For a correct operation, make sure to lock connectors (ground continuity provided by the cable).

WARNING

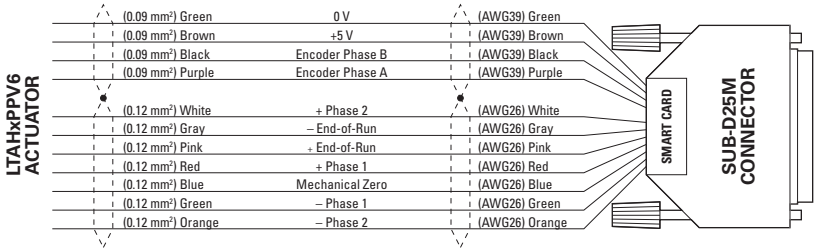
Keep the motor cables at a safe distance from other electrical cables in your environment to avoid potential cross talk.

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WARNING

The SUB-D25M connector supplied with the LTAHxPPV6 actuators is not designed for using in a vacuum environment.

The customer has the responsibility to link the actuator to a bulkhead coupling with the supplied cable cut in half then to connect this bulkhead coupling to the appropriate connector of the controller with the other part of this cable.



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6.0 Connection to Non-Newport Electronics

6.1 Connections

WARNING

Newport is not responsible for malfunction or damage of LTA actuators when used with non-Newport controllers.

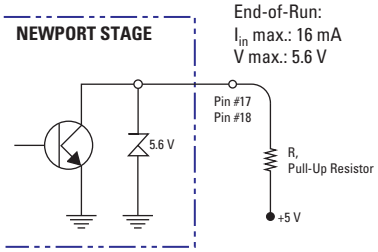
WARNING

Newport guarantees "CE" compliance of LTA actuators only if used with Newport cables and controllers.

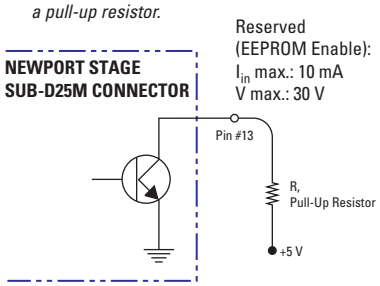
It is the customer's responsibility to modify the cable and take care of sensor signal connections, when using the stage with non-Newport controllers.

End-of-Runs and Mechanical Zero are open collector type with a 5.6 V protective Zener diode.

For connection to non-Newport electronics, pin #17 and #18 End-of-Runs must be connected to +5 V with a pull-up resistor. For some non-Newport controllers, the +5 V output signal may be pulled up internally.



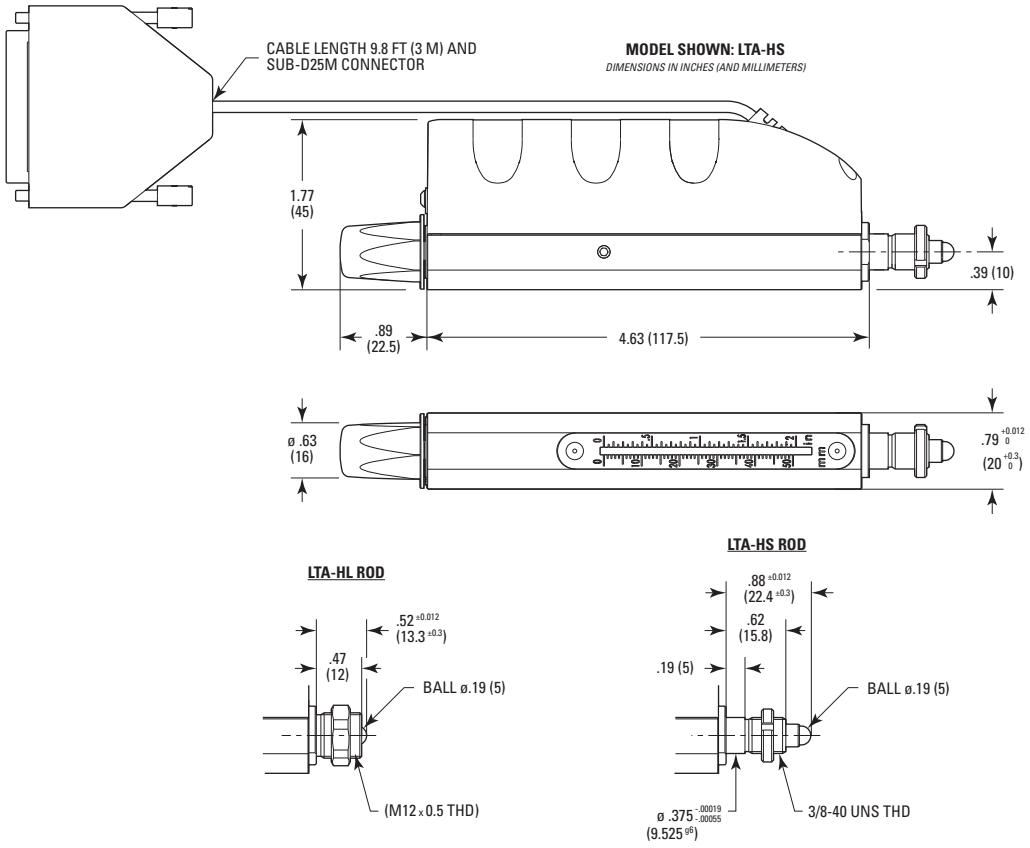
When a LTA actuator is used with non-Newport controllers using the SUD-D25M connector provided, pin #13 must be connected to +5 V with a pull-up resistor.



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7.0 Dimensions

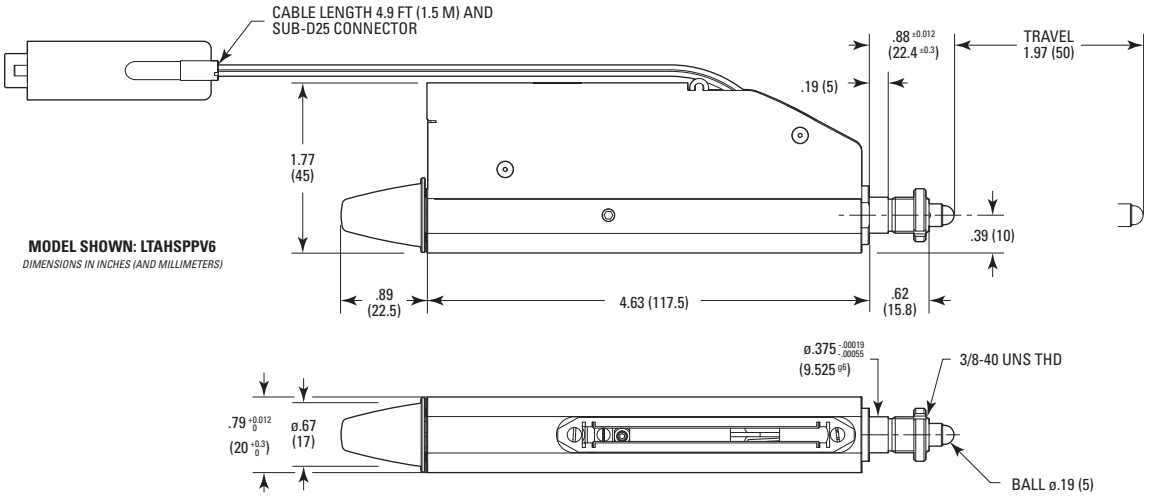
7.1 LTA-HL & LTA-HS Actuators



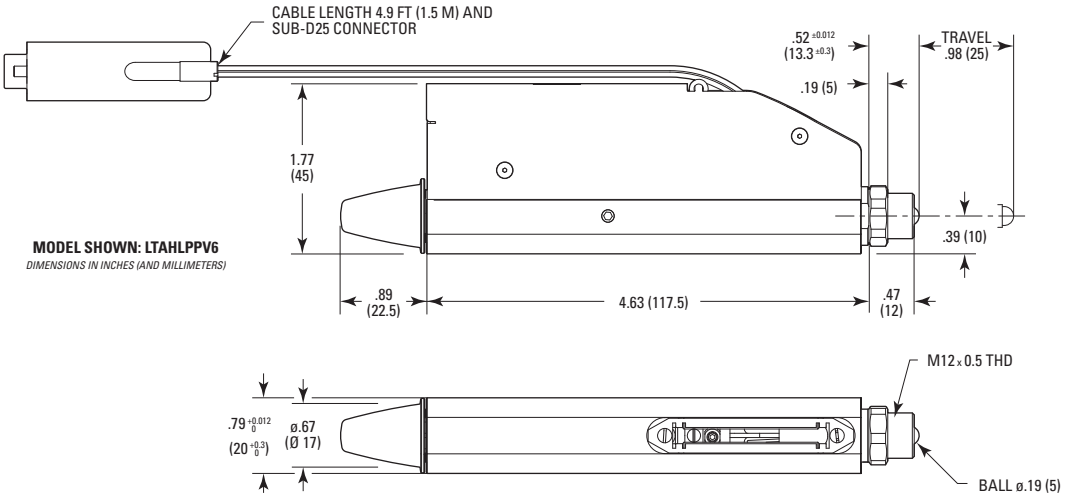


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7.2 LTAHSPPV6 Actuator



8.3 LTAHLPPV6 Actuator





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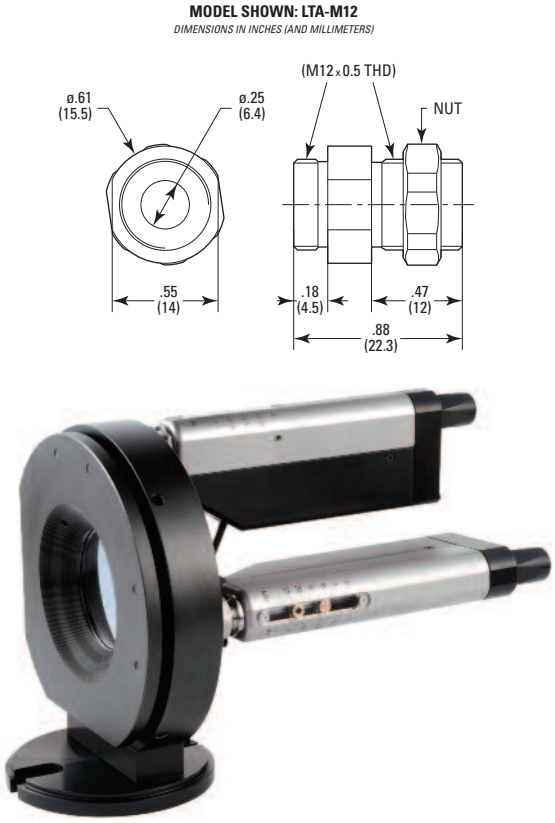
8.0 Accessories

NOTE

These adapters are not included with LTA actuators and must be ordered separately.

8.1 LTA-M12 Adapter for LTA-HS Actuator

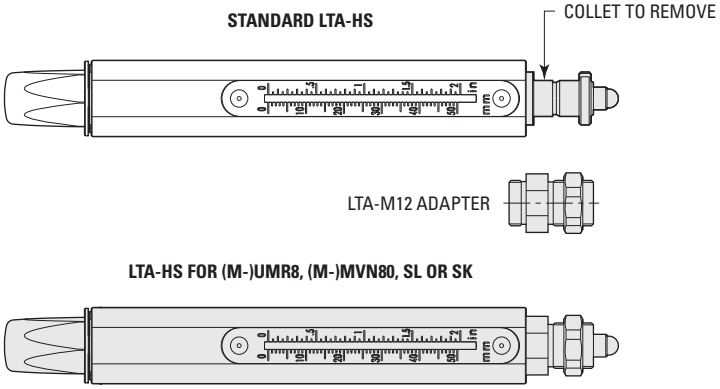
This adapter is designed for the LTA-HS actuator. It allows for mounting to a UMR8 or MVN80 stage and a SL series optical mount.



Adapter Mounting for LTA-HS

When you have to fix a LTA-HS actuator on a (M-)UMR-8 or (M-)MVN80 stage or on a SK or SL optical mount, you must use the LTA-M12 adapter.

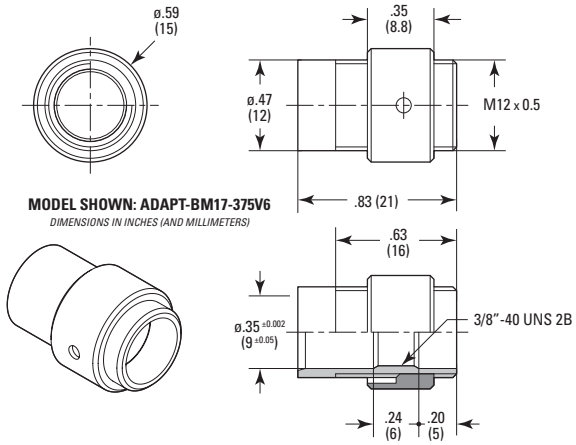
To do that, you have to remove the collet delivered with the LTA-HS and put the adapter instead.



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8.2 ADAPT-BM17-375V6 Adapter for LTAHSPPV6

This adapter is designed for the LTAHSPPV6 actuator. It allows for mounting to a UMR8V6, MVN80V6 stage and a SLV6 or SKV6 optical mount.



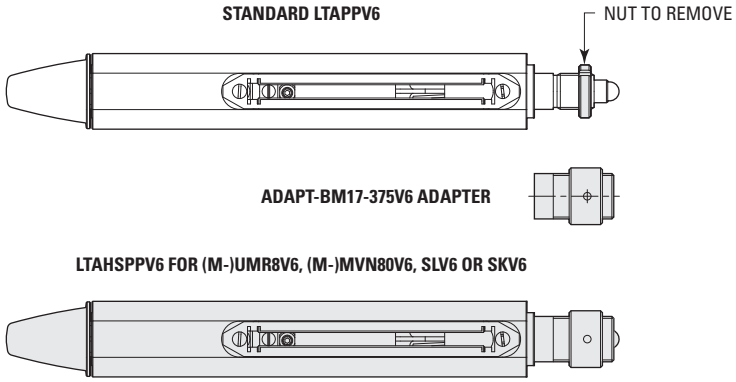
Adapter Mounting for LTAHSPPV6

NOTE

The ADAPT-BM17-375V6 adapter can only be used with the LTAHSPPV6 actuator.

When you have to fix a LTAHSPPV6 actuator on a (M-)UMR8V6 or (M-)MVN80V6 stage or on a SKV6 or SLV6 optical mount, you must use the ADAPT-BM17-375V6 adapter.

To do that, you have to remove the nut delivered with the LTAHSPPV6 and place the adapter instead.



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9.0 Setting of the Travel Range

WARNING

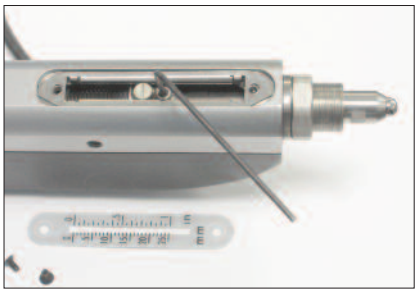
The actuator must be disconnected from any controller before setting the + limit switch.

9.1 LTA-HL & LTA-HS Actuators

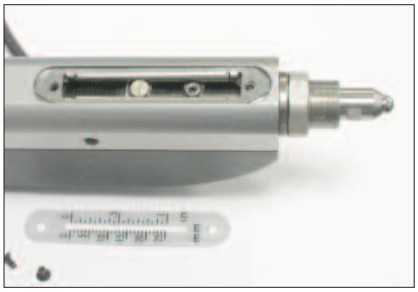


① Position the actuator rod at the travel range required (read on the translucent window) then move forward the rod of 2 mm.

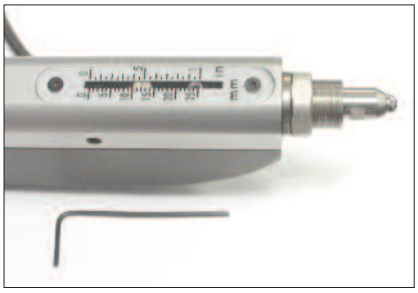
Example: For a 10 mm travel range, place the cursor at the position 12 mm.



② Remove the translucent window unscrewing with an Allen key, both M2 screws located on each side (don't remove the metallic plate located under this window).



③ With the Allen key, unscrew the lock screw and move it on the rod until the mechanical end-of-run position. Lock it without operating any lateral stress.



④ Put back the translucent window and fix it with both screws.

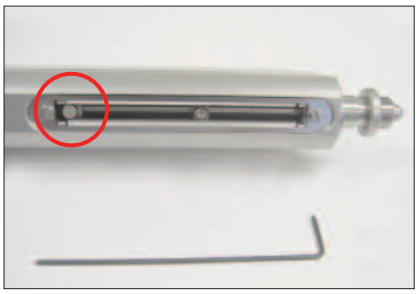


⑤ Move back the rod with the manual knob.

⑥ Now, you can connect your LTA actuator to the controller and use it with the new travel range.

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9.2 LTAHLPPV6 & LTAHSPPV6 Actuators

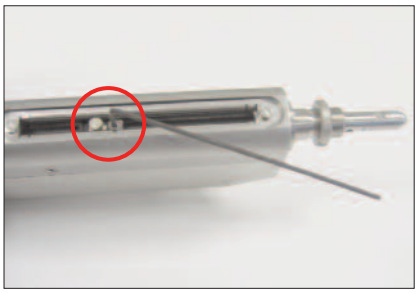


① Position the actuator at the mechanical zero position.



② Operate a displacement at the needed travel, then move of +2 mm.

③ Disconnect the actuator from the controller.



④ With the Allen key, unscrew the lock screw and move it on the rod until the mechanical end-of-run position. Lock it without operating any lateral stress.

⑤ Move back the rod with the manual knob.

⑥ Now, you can connect your LTAHxPPV6 actuator to the controller and use it with the new travel range.

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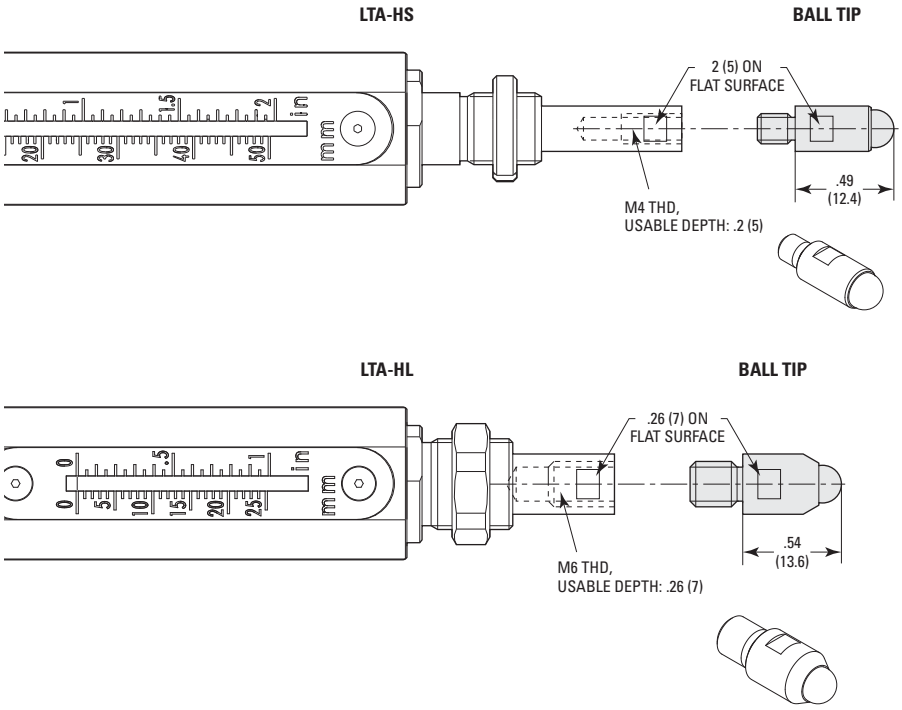
10.0 Dismantling of the Ball Tip

WARNING

The actuator must be disconnected from any controller before dismantling of the ball tip.

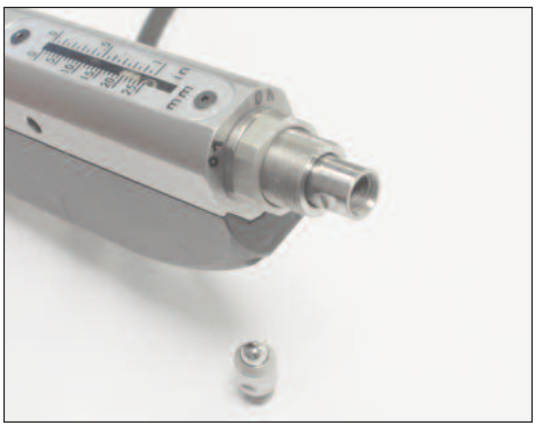
10.1 LTA-HL & LTA-HS Actuators

If you dismantle the ball tip at the end of the actuator rod, you will get a M4 (LTA-HS) or M6 (LTA-HL) threaded interface instead.



To do that, two flat surfaces are available on both actuator rod and ball tip to remove.

Lock the rod actuator with a wrench and unscrew the ball tip with an other one.



Ball tip of the LTA-HL actuator.

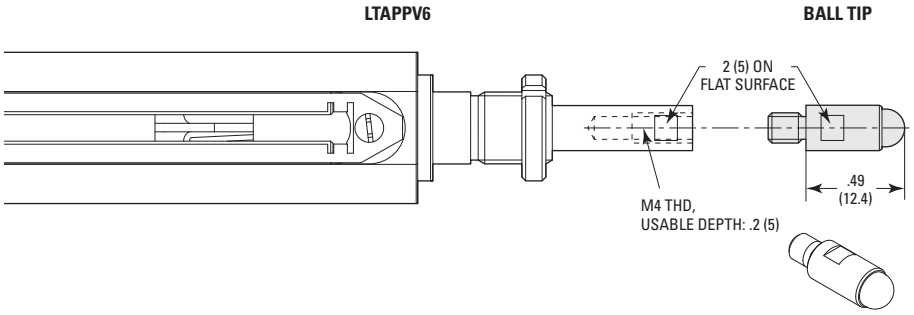
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10.2 LTAHSPPV6 Actuator

NOTE

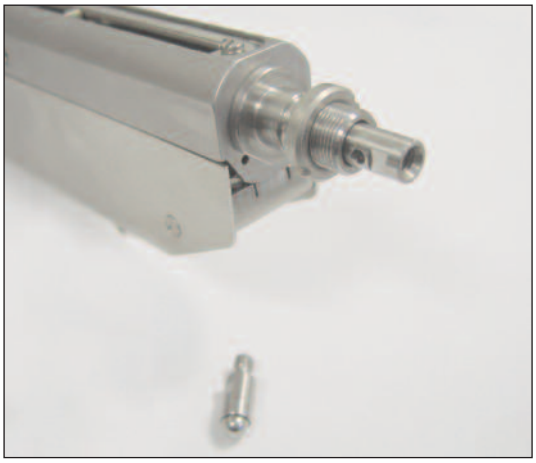
The dismantling of the ball tip can only be operated on the LTAHSPPV6 actuator.

If you dismantle the ball tip at the end of the actuator rod, you will get a M4 threaded interface instead.



To do that, two flat surfaces are available on both actuator rod and ball tip to remove.

Lock the rod actuator with a wrench and unscrew the ball tip with an other one.



Ball tip of the LTAHSPPV6 actuator.

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11.0 Maintenance

RECOMMENDATION

Please contact Technical Sales Support team for recommendations on application specific maintenance.

11.1 Maintenance

The LTA actuator requires no particular maintenance. Nevertheless, this is a precision mechanical device that must be kept and operated with caution.

PRECAUTIONS

The LTA actuator must be used or stocked in a clean environment, without dust, humidity, solvents or other substances.

RECOMMENDATION

It is recommended to return the actuator to Newport for re-lubrication after 2000 hours of use.

If the LTA actuator is mounted on a workstation and cannot be easily removed, please contact Newport's After Sales Service for further instructions.

11.2 Repair



CAUTION

Never attempt to disassemble a component of the actuator that has not been covered in this manual.

To disassemble a non specified component can cause a malfunction of the stage.

If you observe a malfunction in your actuator, please contact us immediately to arrange for a repair.



CAUTION

Any attempt to disassemble or repair a actuator without prior authorization will void your warranty.

11.3 Calibration



CAUTION

It is recommended to return your LTA actuator to Newport once a year for recalibration to its original specifications.

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Service Form

Your Local Representative
Tel.: _____
Fax: _____

Name: _____
Company: _____
Address: _____
Country: _____
P.O. Number: _____

Return authorization #: _____
(Please obtain prior to return of item)
Date: _____
Phone Number: _____
Fax Number: _____

Item(s) Being Returned:

Model #: _____
Serial #: _____

Description: _____

Reasons of return of goods (please list any specific problems): _____

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