ILEA_IOM

Installation Instructions for ILEA electric actuators

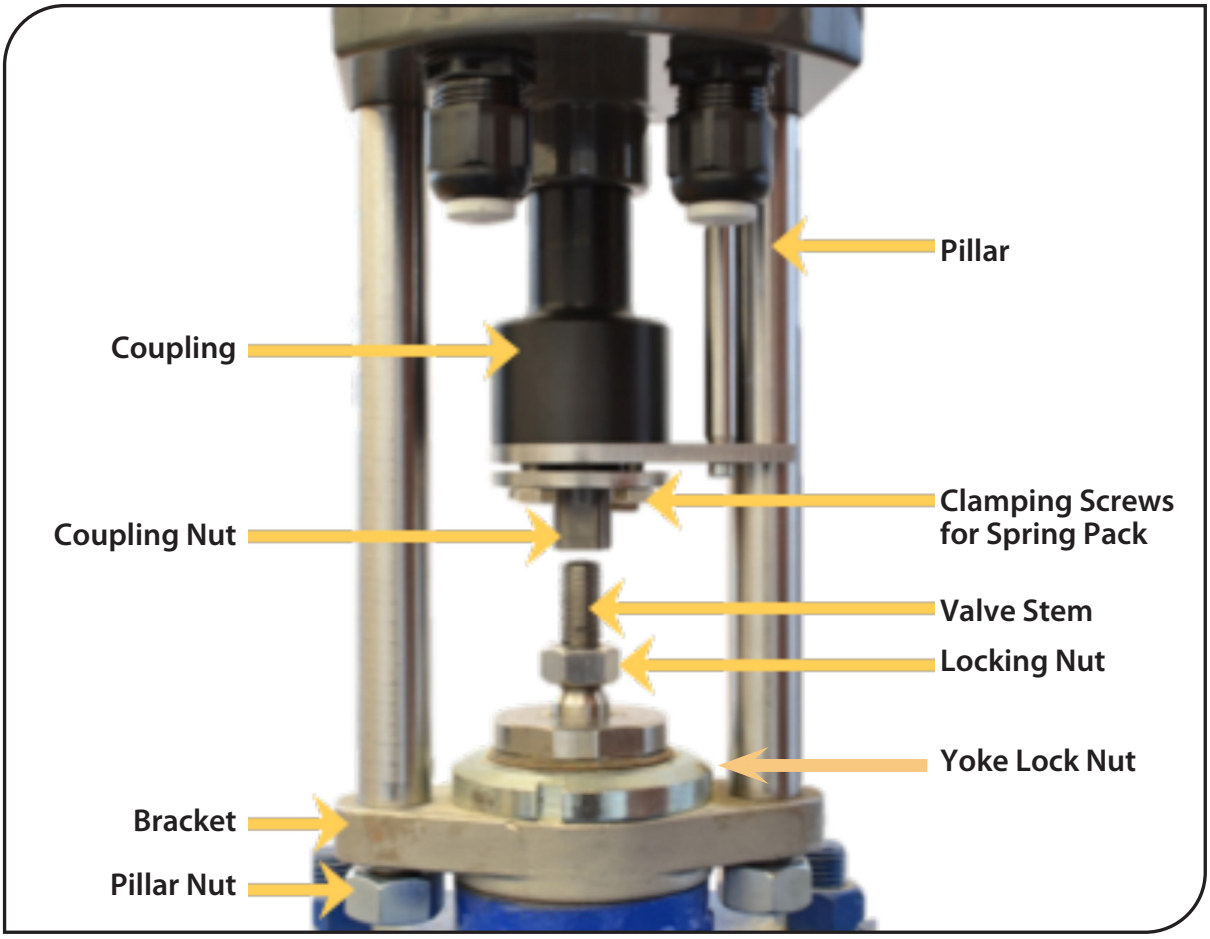
ILEA-Ax
ILEA-Bx
ILEA-Px
ILEA-Qx

TABLE OF CONTENTS

WARREN CONTROLS

ILEA_IOM_RevDc_0721
92500136 RevC

ACTUATOR PART DESIGNATIONS



SYMBOLS AND SAFETY

Please ensure that the detailed operating instructions and the chapter on "Safety" in particular have been read and understood by all personnel involved in the installation, start-up, operation, maintenance and repair of the actuators.

Beware of mechanical hazards due to electrically powered actuator components! With the actuator powered electrically, operating the unit holds the danger of crushing your finger!

Caution! During the installation of the actuator on the valve, the unit must not be powered electrically. Disconnect voltage from the actuator before maintenance and adjustment work.

During adjustment work, the actuator must be operated by means of the handwheel only. Do not operate electrically!
DO NOT FULLY EXTEND.

ACTUATOR MOUNTING

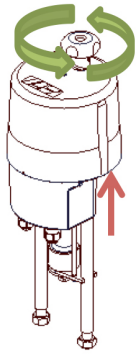
BEFORE START WORKING:
SAFETY REGULATIONS:

- Disconnect mains!
- Prevent reconnection!
- Test for absence of harmful voltages!
- Cover or close nearby live parts!

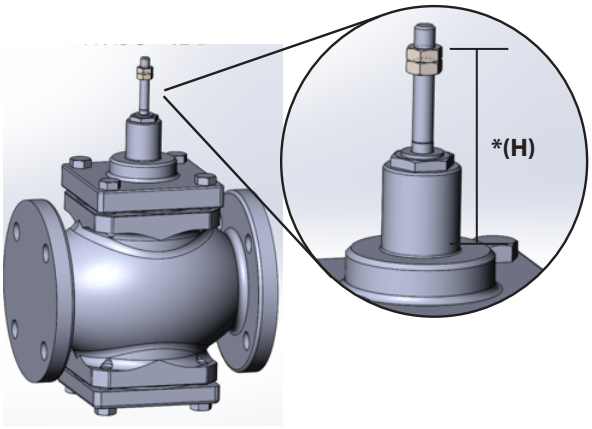
When mounting an actuator on a valve, always use the hand wheel! Motor operation during mounting may cause injuries and damage to actuator and valve!

FOR MOUNTING THE ACTUATOR, THE VALVE MUST BE IN FULLY CLOSED POSITION!

Mounting

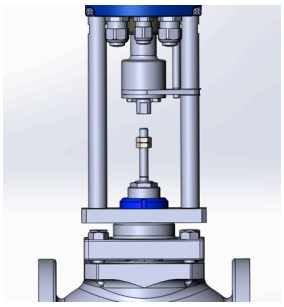


1: Drive coupling upwards by hand

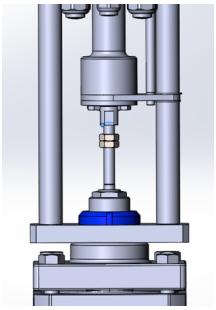


2: Position Jam nuts as per reference drawing and lock nuts together.

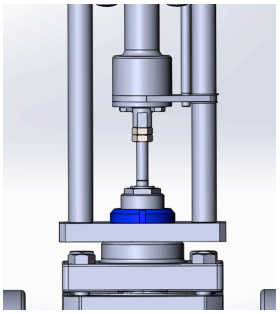
Valve	Height *(H)	Number of Jam Nuts
18L	3.55	2
18M	3.35	1
18N	3.91	1
28E, 28M	3.46	2
29E	3.46	2
29S	3.03	1
58E	3.46	2
58T	3.35	1
NS, PICV (Pxx)	2.67	2



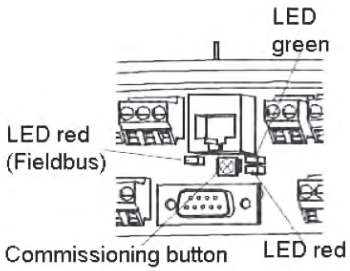
3: Drop Actuator onto Valve assembly and tighten lock nut.



4: Extend Actuator by hand and lift valve stem to meet Actuator coupling.



5: Thread the valve stem into the coupling until the jam nuts meet the coupling. Lock the upper jam nut against the coupling. Lock the second jam nut against the upper nut.



6: Proceed **ONLY AFTER** following set-up and wiring on Pages 4 & 5.

Use the commission function to complete the actuator mounting, ***detailed on the bottom of Page 5***.

GENERAL SAFETY

ILEA actuators are built with state of the art technology and are safe to operate with commonly accepted electrical safety precautions. ILEA Actuators can also produce significant linear forces and should only be operated when connected to a control valve unless otherwise instructed. Fingers should not be anywhere near the moving parts of the valve and actuator assembly while power is connected.

Operators should be trained, read the user manual and have a good understand of the actuator's function and operating capabilities.

The wiring termination should be verified before commissioning commences.

If the actuator was purchased together with a control valve the actuator will be precalibrated to the valve's stroke and there will be no other requirement than applying the correct power supply and control signal.

The standard control signal is 4 – 20 mA where a 2-way valve is closed at 4mA and fully open at 20 mA. This standard configuration would be depicted on the product label for

SET UP & GENERAL SAFETY

'Signal' as 20-4 CL, to indicate it is a 4 – 20 mA signal and CLOSED at 4 ma. The actuator should be preprogrammed for control action and which signal is designated. Switching from a milliamp signal to a voltage signal is simply a matter of wiring termination. Switching whether the control signal is ZERO based or not, or the control action must be done in the software set up. This can be done on the job site as necessary with the programming umbilical cord option along with a laptop computer that has a USB connection. If this is required, contact the Warren Controls factory.

CONTROL SIGNAL AND POSITION FEEDBACK CHOICES AND LABEL DESIGNATIONS.

SIGNAL	2-WAY VALVE CLOSED	LABEL DESIGNATION	3-WAY VALVE LOWER PORT CLOSED	LABEL DESIGNATION
4 – 20 mA	@ 4 mA	20 – 4 mA CL	@ 4 mA	20 – 4 mA DN
4 – 20 mA	@ 20 mA	4 – 20 mA CL	@ 20 mA	4 – 20 mA DN
0 – 20 mA	@ 0 mA	20 – 0 mA CL	@ 0 mA	20 – 0 mA DN
0 – 20 mA	@ 20 mA	0 – 20 mA CL	@ 20 mA	0 – 20 mA DN
2 – 10 Vdc	@ 2 Vdc	10 – 2 Vdc CL	@ 2 Vdc	10 – 2 Vdc DN
2 – 10 Vdc	@ 10 Vdc	2 – 10 Vdc CL	@ 10 Vdc	2 – 10 Vdc DN
0 – 10 Vdc	@ 0 Vdc	10 – 0 Vdc CL	@ 0 Vdc	10 – 0 Vdc DN
0 – 10 Vdc	@ 10 Vdc	0 – 10 Vdc CL	@ 10 Vdc	0 – 10 Vdc DN

With power applied, preferably, use a signal calibrator to verify that the valve is fully stroking from one end to the other as depicted by the travel indicator on the side of the actuator mounting Pillar and with the proper control action. Alternately the process controller could be directly connected to test if it has a 'Manual-Mode' of operation where the controllers output can be manually adjusted from 0% - 100%.

IF THE ACTUATOR IS ONE WITH A DEFINED 'FAIL-SAFE' DIRECTION ,THAT CAN BE VERIFIED BY:

1. Using the signal calibrator to move the actuator position to mid-stroke.
2. Safely disconnecting power at the power breaker switch and observing the actuator going to its fail-safe position.

Once these steps are verified you may proceed to commissioning the control valve. If either of these tests did not perform as expected, then contact the Warren Controls factory for further troubleshooting steps.

BASIC SAFETY NOTES:

• Before opening the actuator cover, ensure that the electrical mains supply voltage is disconnected.

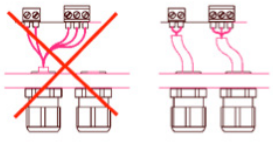
• If operating the actuator with the cover removed for troubleshooting reasons make sure the wiring terminations are clearly understood. Contract the Warren Controls factory for further troubleshooting steps as may be necessary.

• Do NOT attempt to auto-stroke the actuator when the actuator is not connected to a control valve as it will not function.

• Do NOT adjust the Manual Override completely downward when the actuator is not connected to a control valve as this could permanently damage the actuator.

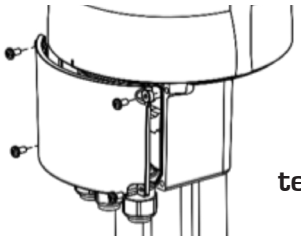
•If the actuator is removed from the control valve, upon reinstallation the auto-calibration procedure must be performed.

Electric installation as well as over-current and over-voltage protection devices must be conform to the standard DIN IEC 60364-4-41, protection class I resp. protection class III (24VAC/24VDC) and also to the standard DIN IEC 60364-4-44 according to the applied over-voltage category of the actuator.

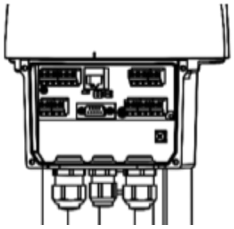


Please protect all of the power supply and control cables in front of the terminals mechanically by using suitable measures against unintentional loosening.

Never install the power supply and the control cables together in one conduit but instead please always use two different conduit.



Remove connection terminal cover



WIRING TERMINATION (A/B ONLY)

Electric supply for 1-phase AC/DC

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	⏚		TTL	Button
↑	↑	↑	↓	↓	↓	↕	↕	↑	↑	↑	↑	↑	↓	↑	↑	↑	↕	↕	↕	↕	↑	↑				
+0(2) - 10 V	+ 0(4) - 20 mA	GND	+ 0(2) - 10 V	+ 0(4) - 20 mA	GND	max. Last/max. Load 100 mA/at 24 VD (Option)		L/ + Open	N/-	L/ + Close	L/+ (24V AC/DC)	N/- (24V AC/DC) (Option)	21-40 VDC/ 100 mA	+ 0(2) - 10 V	+ 0(4) - 20 mA	GND	(Option)	(Option)	(Option)	(Option)	L/+(see tag plate)	N/-(see tag plate)	PE	(Option)		
								24 V AC/DC					(OPTION)													
								115V- 230V AC																		
Control Signal Input			Position Feedback Output			Monitor relay potential-free		Binary Input signals			Fail safe signal		Supply	Actual value			Closed		Open		Supply Voltage			Fieldbus Interface	PC Communication	Commissioning
Galvanically isolated 1 kV													Process-Sensor (Option)				Position switch potential-free contact									

COMMISSIONING

ILEA actuators are commissioned at the factory when mounted to a control Valve.

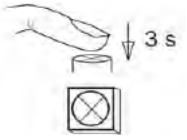
It must be commissioned if provided separately from a valve or has been dismounted.

The actuator can only be commissioned when correctly mounted to a valve and with at least one cut off set to "force/torque.

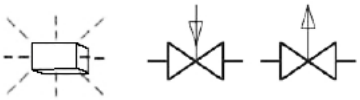
CAUTION! ELECTRICAL OPERATION OF THE ACTUATOR IS ALLOWED ONLY AFTER MOUNTING TO A VALVE!

AUTOMATIC COMMISSIONING

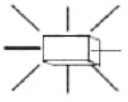
(Only available if at least one of the cut-offs is set to be "by force/torque" or "by position automatically".)



1 ***Press the commissioning button for 3 sec***

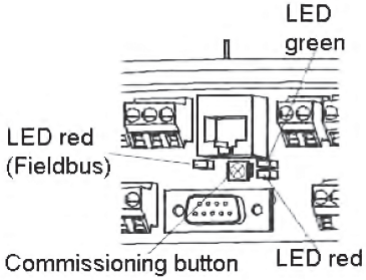


2 ***Commissioning in progress (Green LED is flashing, actuator drives in both positions).***



3 ***Green LED lights – Actuator successfully commissioned and ready to be used.***

OPERATING DISPLAY – CONTROLS



TRACING FAULTS CHARTS (A/B ONLY)

Red LED				Green LED						
Glowing permanently	Flashing quickly	Flashing slowly	Off	Glowing permanently	Flashing quickly	Flashing slowly	Off			
								Status	**Probable reasons**	**Possible remedy**
			x				x	Actuator does not respond, both LEDs are off	1) No supply voltage applied 2) The applied voltage does not match the actuator voltage on the tag plate	1) Check mains supply 2) Apply correct supply voltage
			x	x				Actuator does not drive the full stroke	1) Actuator not correctly commissioned 2) Too small stroke programmed (in mode “one position-dependent cut-off”)	1) Repeat commissioning 2) Check valve stroke parameters -> see instructions AMS-PSCS
			x	x				Actuator does not close the valve properly	1) Actuator not correctly commissioned 2) Actuator closing force/ torque too low	1) Repeat commissioning 2) Check actuator selection
			x	x				Actuator is in normal operating condition, but does not respond to set-value changes	1) Fixed digital set-value is activated 2) Actuator is configured to work with process controller	1) Check set-value parameters -> see instrucions AMS-PSCS 2) Connect process sensor
			x	x				Actuator position does not correspond to set-value input	A non-linear valve curve has been parameterised	Verify parameterised characteristic -> see instructions AMS-PSCS
								Operating conditions	**Probable reasons**	**Possible remedy**
			x	x				Normal operating condition		
			x		x			Actuator in commissioning mode		Commissioning mode will be left automatically after completion
			x			x		Actuator not commissioned		Depending on the type of cut-offs, the actuator has to be commissioned either automatically or manually
								Faults within the actuator’s environment	**Probable reasons**	**Possible remedy**
		x		x				Too high torque has been encountered within the valve stroke	1) Actuator not correctly commissioned to the valve 2) Mechanical block within the stroke path 3) Improper selection of the actuator	1) Repeat commissioning 2) Check valve and actuator for unobstructed running 3) Check actuator selection
		x			x			1) No proper process feedback (only in combination with PSIC) 2+3) Maximum control range exceeds (only in combination with PSIC)	1) Process feedback wrongly or not at all connected 2) Process feedback outside od adjusted range 3) No process sensor signal available	1) Apply the correct process feedback signal and check polarity 2) Ensure the correct process feedback range 3) Check the process sensor and its supply voltage

Red LED				Green LED						
Glowing permanently	Flashing quickly	Flashing slowly	Off	Glowing permanently	Flashing quickly	Flashing slowly	Off			
								Faults within the actuator's environment	**Probable reasons**	**Possible remedy**
		x				x		Actuator drives into a preset position	1) Signal is applied to the binary fail-safe input 2) Supply voltage failure on actuators with optional PSCP	1) Disconnect the signal 2) Check supply voltage
		x					x	Set-value disconnected or outside the parameterized range	1) Set-value not connected 2) Wrong polarity of set-value 3) set-value signal outside parameter range, please check	1) Apply set-value 2) Check the set-value polarity 3) Check the set-value range
	x			x				Stored end position could not be reached	Loose or dirty valve seat	Check the valve seat
	x				x			Stored end position has been passed over	Valve seat worn or defective	Check the valve seat
	x					x		Actuator supply voltage too low	1) Improper wiring of the mains supply 2) Jitter in supply voltage 3) Too low supply voltage from PSEP (with optional PSEP)	1) Check mains wiring 2) Check supply voltage -> see datasheet 3) Contact PS service team
								Faults within the actuator	**Probable reasons**	**Possible remedy**
x				x				Actuator has reached lifetime limit	Wear and/ or running time	Contact PS service team
x					x			Faulty electronics or invalid parameters	1) Supply voltage interrupted during commissioning 2) Defective electronic component	1) Reload parameters (-> see manual AMS-PSCS), then repeat commissioning 2) Contact PS service team
x						x		Critical or maximum temperature reached	1) Too high numbers of starts 2) Ambient temperature too high	1) Check application and its adjustment 2) Check ambient temperature and try to reduce it -> see relevant data sheet
x							x	Mechanical fault in the actuator	Defective mechanical part	Contact PS service team

ILEA_IOM_RevDc_0721

92500136 RevC

WARREN CONTROLS

2600 EMRICK BLVD • BETHLEHEM, PA 18020 • USA •800-922-0085 • WWW.WARRENCONTROLS.COM

DEPENDABLE, RUGGED, PRECISION CONTROL VALVES AND ACCESSORIES