

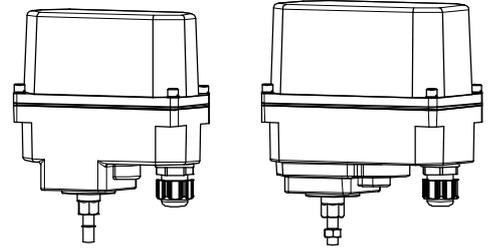


Please read this document before using these valves.

GENERAL

Long service life electric actuator built in high reliability and proportional motor. (linear motion)

LAX : For AC power.



PRODUCT CODE

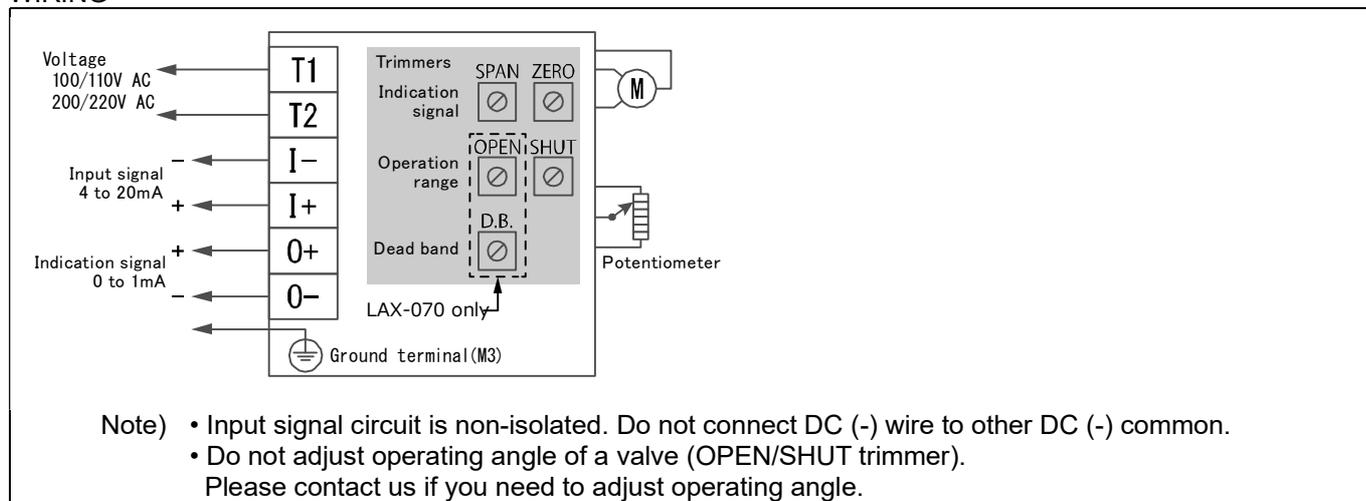
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(1) (2) (3) (4) (5)

(1) Actuator LAX	(2) Torque 030 070	(3) Voltage 1 : 100 / 110 V 2 : 200 / 220 V	(4) Option	(5) Operation mode Nil : Mode A J : Mode B
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ELECTRIC ACTUATOR SPECIFICATIONS

Actuator type (□:Voltage code)	LAX-030-□	LAX-070-□
Voltage	100 / 110 V AC ±10 % 50/60 Hz (Code: 1) 200 / 220 V AC ±10 % 50/60 Hz (Code: 2)	
Thrust [N]	300	700
Operation time [mm/s]	0.39 / 0.47 (50/60 Hz)	0.46 / 0.55 (50/60 Hz)
Stroke [mm]	7.5	7 to 11.5
Adjustment range	Fixed	Adjust by OPEN / SHUT trimmers
Power consumption [VA]	4.5	11
Motor	Synchronous motor (Triac control)	
Overload protection	Timer	
Method of operation	Proportional control (linear motion)	
Input signal	4 to 20 mA (Input resistance: 220 Ω)	4 to 20 mA (Input resistance: 250 Ω)
Operation	[Mode A] SHUT by decreased signal ↔ OPEN by increased signal (Standard) [Mode B] SHUT by increased signal ↔ OPEN by decreased signal (Option: J) Impossible to change the mode. Please appoint it at the time of the order.	
Indication signal	0 mA : SHUT ↔ 1 mA : OPEN (External load resistance: less than 3 kΩ) Common in mode A / B	
Resolution	Less than 0.2 %	
Duty cycle	100 / 200 V AC : 100 % 110 / 220 V AC : 50 % 30 min.	
Ambient temperature	-10 to 50 °C	
Space heater	Built in to the control board	
Manual operation	Manual shaft	
Enclosure	Equivalent to IP65 (IEC 60529)	
Housing material	Aluminum alloy diecast (acrylic resin baking finish)	
Terminal block	For bare wire 0.2 to 1.5 mm ² (AWG 26 to 16) Ground terminal: M3	
Conduct port	G3/8 Cable gland (for Φ5 to 10.5 mm cable)	

WIRING



ELECTRIC ACTUATOR SPECIFICATIONS

DIMENSION

LAX-030

LAX-070

Parts name

1	Body	4	Control board	7	Drive shaft
2	Motor cover	5	Terminal block	8	Manual shaft
3	Motor	6	Potentiometer	9	Rubber packing

ADJUSTMENT

LAX-030

- ① Adjust ZERO / SPAN trimmer
The trimmer is already setting when the shipped.
- ② Adjust SHUT trimmer
Please contact us if you need to adjust trimmer.

Terminal board : Mode A

LAX-070

- ① Adjustment of dead band
Adjustment of dead band is useful to prevent hunting of the actuator. Turning D.B. trimmer clockwise increases the dead band range.
- ② Adjust ZERO / SPAN trimmer
The trimmer is already setting when the shipped.
- ③ Adjust OPEN / SHUT trimmer
The trimmer is already setting when the shipped.

Terminal board : Mode A

INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

HANDLING & STORAGE

①HANDLING

Proper care in handling the actuator should be taken to prevent damage. Do not drop or throw it.

②STORAGE

Store the actuator in the protected area from dust, moisture, and direct sunlight. If possible, actuator should be kept in the original packaging.

③CHECKING

Check the product code, power supply, and voltage before installation.

INSTALLATION

①ENVIRONMENT

- Do not install in place where corrosive gas is present or where vibration is heavy (0.5 G or more).
- When radiant heat causes the surface temperature of the control unit to exceed 50 °C, provide an appropriate shielding plate.
- If there is a possibility that the fluid and drive part freeze, please take measures to prevent freezing.

②POSITIONING

Should be positioned through 90° upward from horizontal. Provide space around the product to allow manual operation, inspection and replacement work.

Maintenance space for upper part of actuator	
LAX	More than 90 mm

③OTHER NOTES

Until the wiring is completed there must be no condensation or flooding in the interior of the actuator, after piping. Protective caps on the cable gland are not waterproof.

WIRING

- Do not wiring outdoors on a rainy day.
- Check the power supply and voltage. Connect the signal as shown in the wiring diagram. Do not connect unnecessarily terminal.
- Use suitable flexible cable (Φ5 to 10.5 mm). Lock and seal the cable completely to prevent condensation inside the actuator.
- Built-in terminal block can clamp up to 1.5 mm in diameter without using solderless terminal.
- Allow proper cable slack for maintenance.
- Actuator should be electrically grounded. Use the terminal marked (≡) inside the actuator.

PREVENT DEW CONDENSATION

- When installing the cover after wiring, perform the bolt by the temporary tightening procedure and the permanent tightening procedure to tightly and securely tighten the rubber packing so that water does not enter from the outside.
- Tighten the cable gland nut so that there is no leakage from the wire entrance.

CONTROL

- Use shielded wire for signal wiring where high level noise is generated or when the wiring distance is long.
- When wiring, if wiring of a signal is mistaken, it will not operate correctly. Contact us when you use two valve or more by one controller or indicator.
- Input signal circuit is non-isolated. Do not connect DC (-) wire to other DC (-) common.
- Set to stabilize the MV value the PID constant of the adjustment meter. The life of the actuator and the valve becomes short if the movement of MV value is used on unstable condition.
- The input signal and operation mode are set as follows. (Factory shipped)

Input signal	4 to 20 mA
Operation mode	Mode A
Operation	SHUT by decreased signal OPEN by increased signal

OPERATION

①TESTING

- Make sure that power supply voltage is correct. Also check operating position, wiring, speed and signals.
- During trial operation, check that valve movement and output signal are correct.

②ATTENTION

- Keep power supplied for built-in space heater to prevent condensation inside actuator.
- Do not touch the moving parts of actuator in operation.
- Never put anything on the actuator or make it into a foothold.

ADJUSTABLE RANGE OF STROKE

LAX-030

- SHUT by an input signal 4 mA and shipped.
- It is not necessary to adjust the stroke.

LAX-070

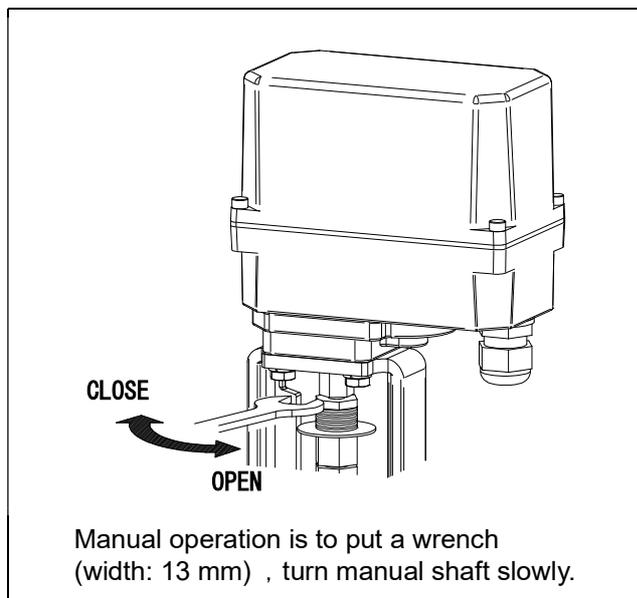
- SHUT by an input signal 4 mA and shipped.
- Can be adjusted in the range of 7 to 11.5 mm. (default stroke: 11.5 mm)

INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS**MANUAL OPERATION****① PRECAUTIONS**

- Manual operation should be a temporary operation.
- Be sure to turn off the power before manual operation.

② NOTE

- See indicator during operation and check OPEN / CLOSE position to prevent overturn.
- For manual operation, do not give more than the rated torque and make at a slow rate. Actuator might be damaged if excessive force is added.

**MAINTENANCE**

- To prevent electric shock, be sure to turn off the power when removing the actuator cover.
- Perform the first time in the state of the first stage included in real operation.
- Do the routine maintenance at least once in half a year.

Inspection items

- Confirm operation of opening and closing.
- Confirm that an actuator is not hot excessively.
- Confirm existence of abnormal noise and vibration during operation.
- Confirm whether screws are loose or not.
- Confirm that water or condensation no remains in the actuator.
- Confirm that operate the hunting or move continuously at high frequency.

TROUBLE SHOOTING

Problem	Cause	Solution
Actuator does not move.	Faulty wiring.	Correct the wiring.
	Voltage and input signal are not coming.	Check the voltage and input signal.
	Incorrect voltage.	When it's burned out by excess voltage, replace the actuator.
	Connection or wiring is not correct.	Correct the miswiring and misconnection. Be careful not to mistake the plus and minus of wiring.
	Short the circuit, contact failure.	Review wires and connection.
	Motor is too old.	Replace the actuator.
Operation is unstable.	Excess surge or voltage was applied.	Replace the actuator.
	Rainwater entered the actuator.	
	Added high harmonics noise from an inverter.	Attachment a filter for each inverter maker option.
	Effect of high level noise.	Use the shielded wire and ground the wiring. Separate signal wire from power line.
Stop in the mid position.	Overload protector runs because of over-torque.	Motor protection circuit returns by the signal of operation of an opposite direction. Turn on the power again.

For assistance in trouble shooting, contact us with specific service conditions, full details of valve and fluid.
NIPPON VALVE CONTROLS, INC. for consultation.