



CAUTION !

- Please ensure that the O-ring seal is in good condition prior to cover installation.
- Installation, maintenance and repair works must be performed by trained personnel.
- Do not use any tools to increase force on handwheel for operating as this can damage the actuator or valve.

Installation Notices

- Please read operation manual and wiring diagram carefully before installation.
- Verify that supply voltage is in accordance with the data on nameplate to prevent short circuit or electrical / electronic parts damage caused by incorrect power input.
- Turn power off before wiring or maintenance.
- Connect the ground wire to PE point inside the electric actuator.
- To avoid functional failure caused by static, do not touch any components on the PCBA with metal tools or bare hands.
- Do not parallel wire multiple actuators together without using an extra relay or or equipping with Isolation Relay Module.
- Use suitable water-proof cable gland to ensure it fits the conduit entry size, diameter of the cable and the enclosure protection of the actuator when wiring. The water-proof cable gland must be tightened and flattened to the cable after wiring procedure and use original black water-proof plug to seal unused conduit entry and fasten the top cover of the actuator to prevent dust or water from entering the actuator. The red plastic dust-proof plug is not meant for long-term use. Replace it with suitable water-proof connector to ensure the enclosure protection rating.
- Actuator should be installed in an upright or horizontal position. Do not mount upside down or below a horizontal position.
- These units are not designed to operate in vacuum spaces or where an explosive atmosphere exists.
- Periodically inspect actuator enclosure to prevent dust from accumulating.
- Please obey the local environment regulation for equipment scrapping.
- If the actuator is installed in a low-temperature environment and not operated according to the rated duty cycle, the initial startup time may be delayed.

Sizing

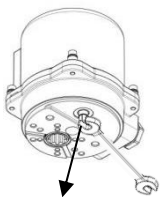
- The actuator shall be sized to ensure that its torque output meets the load requirements of valve and its ability to overcome the required duty cycle of application. (As a MINIMUM, a 30% safety factor when calculating the torque requirement. Refer to the example below.)

- If the maximum torque of 5" valve is 80 Nm
 $\rightarrow 80 \times 1.3$ (safety factor) = 104 Nm
 $104 \text{ Nm} < 150 \text{ Nm (OM-3)} \rightarrow \text{OK!}$
 $104 \text{ Nm} > 90 \text{ Nm (OM-2)} \rightarrow \text{Not OK!}$

- In cases where the actuator does not directly fit onto the valve, a mounting kit is required. Please ensure the bracket and coupling are properly designed and manufactured to withstand the torque output of the actuator.

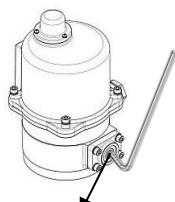
Manual Device Installation

- OM-1, OM-AM



Manual Position

- Use a 8 mm wrench to rotate the shaft.
- Max. torque: 5 Nm

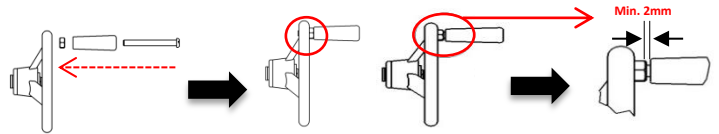


Manual Position

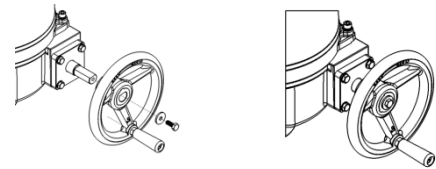
- Use a 5 mm wrench to rotate the shaft.
- Max. torque: 5 Nm

- OM-2 to OM-13, OM-F, OM-G and OM-H

- Pass the screw through the handle and tighten the nut onto handwheel.
 - ⚠ Do not overtighten.
- Secure the handle to the wheel with the slotted screw and tighten the locknut all the way down to the wheel. Ensure that the locknut is locked between the wheel and the handle.
 - ⚠ Leave a 2 mm gap between the locknut and the handle as the figure below to allow the handle free to rotate and then to have a smooth manual operation.



- Slide fixing screw through washers and handwheel and secure them to override shaft as shown in the figure below.
 - ⚠ Turn off power when installing handwheel.
- Assembly completed as shown in the figure below.



Valve Mounting Instructions

- Make sure both the valve and actuator are in the same position before mounting, either fully-open or fully-closed. If not, use the manual override to correct this.
- Once mounted together, either directly or with a mounting kit, ensure that they are properly secured together and all fasteners are tightened.
 - ⚠ Remove all of valve handle parts, for example, the handle or open/close mechanical stops so as to not interfere with the actuator.
- Check again that the valve and actuator are in the same position.
- Remove the conduit entry plug to relieve the pressure inside the actuator for the ease of the top cover removal and gently remove the cover.
 - ⚠ The power must be off before removing the cover.
- Refer to operation manual section 4.3 (P.9) for wiring notices and connect the wires according to the wiring diagram labeled inside the cover of actuator.
 - ⚠ Before operating a three-phase voltage actuator, please manually operate it to mid-travel position by the handwheel and power up to check if it rotates properly in order to verify the phase sequence is correct. If it is incorrect, please correct the phase errors by changing the connection of any two of power supply wires U, V, W to prevent the actuator from mechanical damages.
- Supply power to actuator.
 - ⚠ Care must be taken at all times as there are live circuits present that may cause electrical shock.
- Re-calibration may be require for the end positions, refer to Actuator Set-up section for further instructions.
- Refer to Modulating Control Board Adjustment.
 - ⚠ Use insulated wires and length should be less than 30m.
 - ⚠ A minimum of 18 AWG wiring is recommended for all field wiring.
 - ⚠ Turn power off before changing any setting.
- Assemble the cover and secure cover screws firmly after setting.
 - ⚠ Please ensure that the O-ring is in good condition prior to cover installation.

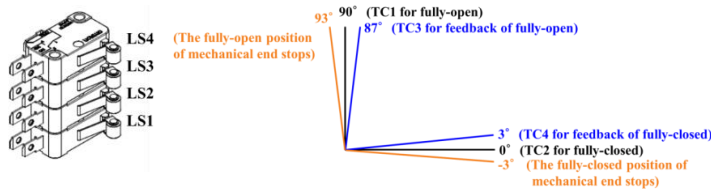
Actuator Set-up

CAUTION:

- The power must be off during this procedure so as to avoid damage to the actuator.
- Do not make adjustments to the mechanical end stops when actuator is in motion.
- All steps below must be completed before normal operation.

Instructions - Fully-open and fully-closed position limit switches

- Actuators come standard with two limit switches, LS1 for fully-open and LS2 for fully-closed positioning. Two auxiliary limit switches (LS3 & LS4) are optional for fully-open and fully-closed position feedback. LS1 & LS2: LS1 is for fully-open and LS2 is for fully-closed. They limit the fully-open and fully-closed travel range by disabling the electric motor. LS3 & LS4 are optional. They allow external equipment to confirm that the valve has reached the fully-open and fully-closed positions.



Instructions – Dry contact sequence diagram:

- The state of dry contact feedback signal :
 - Solid line (—) : Dry contact in conductive state.
 - Dotted line (---) : Dry contact in non-conductive state.

【OM-1, OM-A and OM-AM】

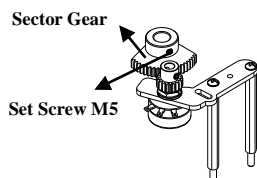
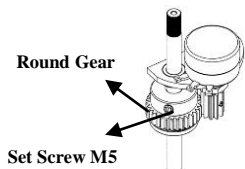
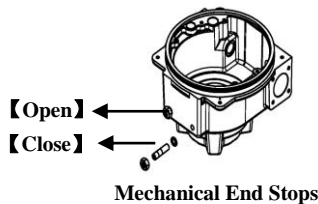
Symbol	Contact	Position	
		100%	0%
LS4 (Dry Contact)	A - F	—	---
	A - E	---	—
LS3 (Dry Contact)	A - C	---	—
	A - B	—	---

【OM-2 to OM-13, OM-F, OM-G and OM-H】

Symbol	Contact	Position	
		100%	0%
LS4 (Dry Contact)	D - F	---	—
	D - E	—	---
LS3 (Dry Contact)	A - C	---	—
	A - B	—	---

Adjustment Steps

- Turn power off.
- Loosen the locknut and unwind both Open and Close Mechanical end stop screws for 7 turns.
- Loosen the M5 set screw on the sector gear or round gear.



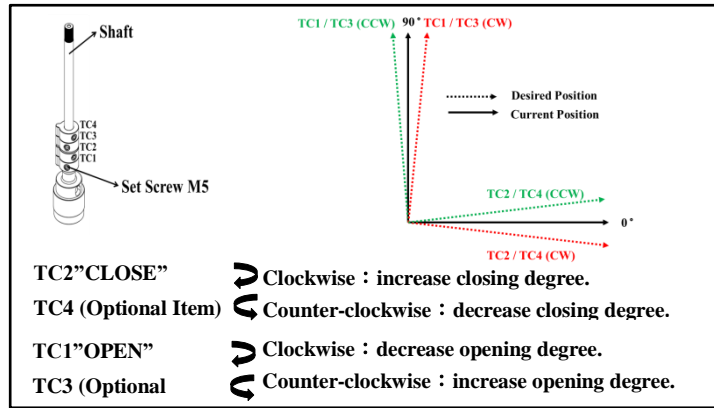
【OM-1, OM-A and OM-AM】

【OM-2 to OM-13, OM-F, OM-G and OM-H】

- Refer to below illustrations to adjust the TC1 - TC4 to set the fully-open and fully-closed position.

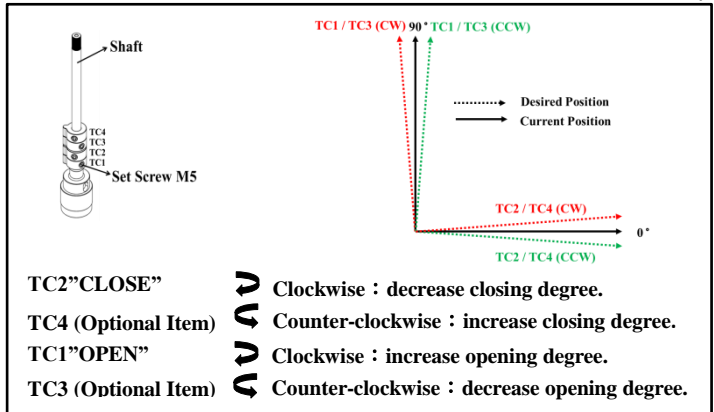
【OM-A and OM-AM】

Tool : 2.5 mm Allen Key



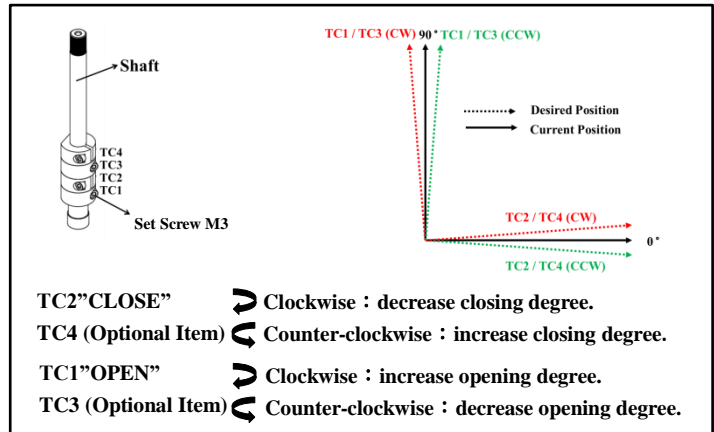
【OM-1】

Tool : 2.5 mm Allen Key



【OM-2 to OM-13, OM-F, OM-G and OM-H】

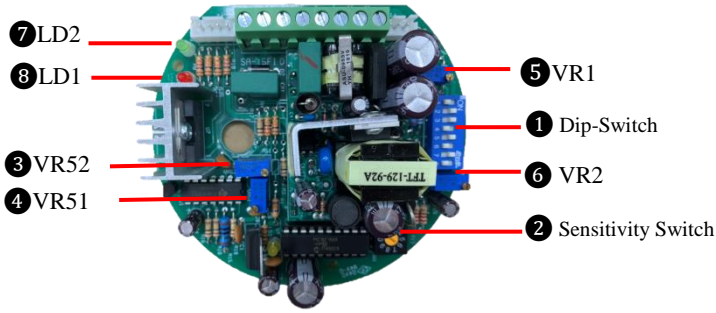
Tool : 2.5 mm Allen Key



- Supply power to the fully-open position. Screw in the Open (left) Mechanical end stop screw until it bottoms out, and then turn back for 1/2, 3/4 or 1 turn based on the actuator model listed below.
 - OM-2 to OM-6, OM-F, OM-G and OM-H : 1 turn.
 - OM-7 to OM-8 : 3/4 turn.
 - OM-9 to OM-13 : 1/2 turn.
- Tighten the locknut of mechanical end stops. (Max. Torque : 5.88 Nm)
- Supply power to the fully-closed position. Screw in the Close (right) Mechanical end stop screw until it bottoms out, and then turn back for 1/2, 3/4 or 1 turn based on the actuator model listed below.
 - OM-2 to OM-6, OM-F, OM-G and OM-H : 1 turn.
 - OM-7 to OM-8 : 3/4 turn.
 - OM-9 to OM-13 : 1/2 turn.
- Tighten the locknut of mechanical end stops. (Max. Torque : 5.88 Nm)
- Supply the power to confirm that the limit switches achieve the fully open-close stroke.
- Supply power to run the actuator to the fully-closed position. Adjust the gear and the set screws based on the actuator model listed below.
 - OM-A and OM-AM : Rotate the round gear counter-clockwise to the end and tighten the M5 set screw.
 - OM-1 : Rotate the round gear clockwise to the end and tighten the M5 set screw.
 - OM-2 to OM-13, OM-F, OM-G and OM-H : Rotate the sector gear clockwise to the end and tighten the M5 set screw.
- The setting procedure is now completed.

Modulating Control Board Adjustment (OM-A, OM-AM and OM-1)

▲ Turn power off before adjusting below settings.



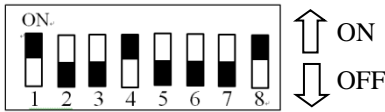
3、4、5、6 Signal Setting for Open and Close Position

- ⚠ These settings are set and calibrated at the factory. Be sure to reset the Signal Setting for Open and Close Position when recalibrating TC1 and TC2 for fully-open and fully-closed position or other signal types are required.
- ⚠ Use a multimeter to measure the output signal in accordance with the selected signal type.

Variable Resistor	Signal type to be adjusted	Position to be adjusted
VR1	To adjust 5 V、10 V, 20 mA input signal	Fully-Open
VR51	To adjust 10 V, 20 mA output signal	Fully-Open
VR2	To adjust 1 V、2 V, 4 mA input signal	Fully-Closed
VR52	To adjust 2 V, 4 mA output signal	Fully-Closed

- ⚠ If VR51 and VR52 are adjusted, VR1 and VR2 must be adjusted accordingly.

1 Dip Switch Setting (Original Factory Setting : 1, 4, 8 ON)



Analog Signal Setting

* S1, S2 : Input Signal Setting

Input Signal	S1	S2
4 - 20 mA	ON	OFF
1 - 5 V	OFF	OFF
2 - 10 V	OFF	ON

* S3, S4 & S5 : Output Signal Setting

Output Signal	S3	S4	S5
4 - 20 mA	OFF	ON	OFF
2 - 10 V	ON	OFF	ON

* S6, S7 & S8 : Setting of fail position when input signal fails.

- ⚠ The input signal type is set by switches 1 and 2. And switch 6 is used to set the corresponding relationship between the input signal value and the angle of the actuator.
- ⚠ If you require S6 to be set at ON and Clockwise to open, please specify in purchase order to modify the internal wiring during production; otherwise, the output signal will be opposite to the input signal.

Symbol	S6	S7	S8	Signal Failed Position
	ON	OFF	ON	Fully-Open (90°)
		ON	OFF	Fully-Closed (0°)
		ON	ON	The Last Position
	OFF	ON	OFF	Fully- Open (90°)
		OFF	ON	Fully- Closed (0°)
		ON	ON	The Last Position

Signal setting for Fully-OPEN position

Rotate VR1 counter-clockwise until a light click is heard, then apply 5 V、10 V or 20 mA to the modulating board. After that, slightly rotate VR1 clockwise until the LD2 goes on and then adjust VR51 to complete the setting. When adjusting VR51, if the LD2 is off, keep rotating VR1 clockwise until the LD2 goes on.

VR51 : Clockwise : decreasing signal value.
 Counter-clockwise : increasing signal value.

Signal setting for Fully-CLOSED position

Rotate VR2 clockwise until a light click is heard, then apply 1 V、2 V or 4 mA to the modulating board. After that, slightly rotate VR2 counter-clockwise until the LD1 goes on and then adjust VR52 to complete the setting. When adjusting VR52, if the LD1 is off, keep rotating VR2 counter-clockwise until the LD1 goes on.

VR52 : Clockwise : decreasing signal value.
 Counter-clockwise : increasing signal value.

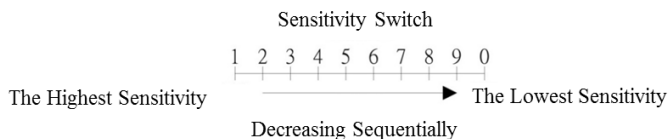
After completing the above settings, press “SET” button to quit local setting.

7、8 Indicator Lamp (LD1 ~ LD2)

Lamp	Status
LD1	Fully-closed
LD2	Fully-open

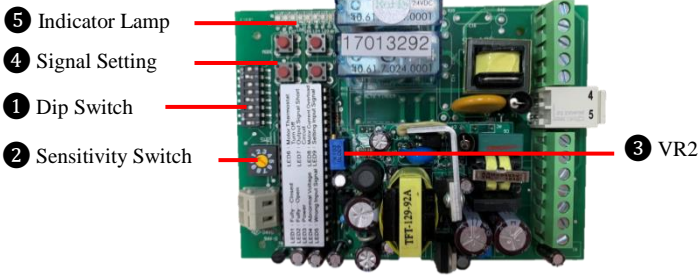
2 Sensitivity Switch Setting (SW2)

- a. When switched to “1”: The Highest Sensitivity.
When switched to “0”: The Lowest Sensitivity.
- b. Original factory setting
 - OM-1, OM-A and OM-AM: 3.



Modulating Control Board Adjustment (OM-2 to OM-13, OM-F, OM-G & OM-H)

▲ Turn power off before adjusting below settings.



1 Dip Switch Setting (Original Factory Setting : 1, 4, 8 ON)



Analog Signal Setting

* S1, S2 : Input Signal Setting

Input Signal	S1	S2
4 - 20 mA	ON	OFF
1 - 5 V	OFF	OFF
2 - 10 V	OFF	ON

* S3, S4 & S5 : Output Signal Setting

Output Signal	S3	S4	S5
4 - 20 mA	OFF	ON	OFF
2 - 10 V	ON	OFF	ON

* S6 : Close direction setting

- When S6 is set to OFF, the close direction is CW (clockwise).
- When S6 is set to ON, the close direction is CCW (counter-clockwise).

⚠ The input signal type is set by switches 1 and 2. And switch 6 is used to set the corresponding relationship between value of input signal and operation direction of actuator as shown in the figure below, e.g., 4 - 20 mA input signal.

⚠ The operating direction of the actuator has been set and calibrated at the factory. Be sure to change the direction of the position indicator if different operating direction is required.



S6	Position Indicator (Fully-Open → Fully-Closed)	Operating Position	Input Signal	LED	Output Signal
OFF	CW	Fully-Closed	1 V, 2 V, 4 mA	LD1 ON	2 V, 4 mA
		Fully-Open	5 V, 10 V, 20 mA	LD2 ON	10 V, 20 mA



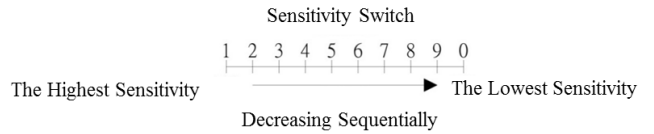
S6	Position Indicator (Fully-Open → Fully-Closed)	Operating Position	Input Signal	LED	Output Signal
ON	CCW	Fully-Closed	1 V, 2 V, 4 mA	LD1 ON	2 V, 4 mA
		Fully-Open	5 V, 10 V, 20 mA	LD2 ON	10 V, 20 mA

* S7 & S8 : Setting of fail position when input signal failed.

Signal Failed Position	S7	S8
Fully-Open	ON	OFF
Fully-Closed	OFF	ON
The Last Position	ON	ON
	OFF	OFF

2 Sensitivity Switch Setting (SW2)

- When switched to "1": The Highest Sensitivity.
When switched to "0": The Lowest Sensitivity.
- Original factory setting
 - OM-2 ~ OM-13、OM-H : 3
 - OM-F、OM-G : 0



4 Signal Setting for Open and Close Position

⚠ These settings are set and calibrated at the factory. Be sure to reset the Signal Setting for Open and Close Position when recalibrating TC1 and TC2 for fully-open and fully-closed position or other signal types are required.

⚠ Use a multimeter to measure the output signal in accordance with the selected signal type.

Press and hold "SET" button for 2 seconds until LD9 lights to enter local setting mode.

Signal setting for Fully-OPEN position

- Press and hold "UP" button to operate the actuator to open until it has reached fully-open position and LD2 lights and then input a signal 5 V or 10 V or 20 mA.
- Press "MODE" button for 2 seconds until LD2 flashes to complete the setting of fully-open position.

Signal setting for Fully-CLOSED position

- Press and hold "DN" button to operate the actuator to close until it has reached fully-closed position and LD1 lights and then input a signal 1 V or 2 V or 4 mA.
- Press "MODE" button for 2 seconds until LD1 flashes to complete the setting of fully-closed position.

① See below description for VR2 adjustment :

- VR2 : Clockwise: decreasing signal value.
 Counter-clockwise: increasing signal value.

After completing the above settings, press "SET" button to quit local setting.

5 Indicator Lamp (LD1 - LD9)



Lamp	Status	Lamp	Status
LD1	Fully-closed	LD6	Motor thermal protector activated
LD2	Fully-open	LD7	Output signal short circuit
LD3	Power	LD8	Overcurrent in motor
LD4	Abnormal input voltage	LD9	Local setting mode
LD5	Wrong input signal		