◆ LUBRICATION

The gearbox of the Sharpe actuator is enclosed, and it has already been lubricated sufficiently with high temperature lubricant at the factory sufficient for use for up to two years.

◆ IMPORTANT NOTICES & MAINTENANCE

∗**Notices**:

1. Make sure the voltage is correct before wiring.
2. Turn off before power for maintenance purposes.
3. Seal the casing and conduit entrance after wiring to prevent dusting or water contamination.
4. The angle of electric actuator installation must between 0~180 degree. Do not install upside down or below the horizontal.
5. Do not install when hazardous or explosive gases may be present.
6. The frequency of open and close is restricted to every 5 minutes. Avoid too high frequency.
7. When more than one electric actuator needs to operate simultaneously, please connect with the individual cables.
8. Please connect the ground wire to PE inside the electric actuator.
9. The warranty period of our product is for one year.

∗**Storage**:

1. The actuator should be placed in a clean and dry place, and protected from the weather and extreme vibration.
2. If actuator needs be stored outside, it must be protected from excess moisture, dust, and weather.

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◆ SPECIFICATIONS

【12V / 24V】

Model No.	Max Torque (Nm)	Speed (90^0)	Motor Power	Motor Speed		12V DC/ AC			24V DC/ AC		
				12 V	24 V	Run	Start	Lock	Run	Start	Lock
SEA-3	35	15 s	10 W	3600/min	3600/min	1.9A	2.0A	2.8A	1.1A	1.1A	1.6A
SEA-4	50	20 s	10 W	3600/min	3600/min	1.3A	1.5A	2.8A	0.8A	0.9A	1.6A
SEA-8	90	15 s	40 W	1800/min	1800/min	3.4A	5.2A	16.5A	2.2A	4.5A	14.5A
SEA-13	150	22 s	40 W	1800/min	1800/min	4.4A	4.9A	16.5A	2.4A	5.0A	14.5A
SEA-35	400	16 s	80W	1800/min	1800/min	16.1A	16.1A	33.0A	8.5A	9.2A	30.0A
SEA-44	500	22 s	80W	1800/min	1800/min	14.1A	13.5A	33.0A	7.5A	9.0A	30.0A
SEA-57	650	28 s	80W	1800/min	1800/min	12.3A	12.5A	33.0A	7.0A	8.5A	30.0A
SEA-88	1000	46 s	80W		1800/min				6.8A	7.8A	30.0A
SEA-132	1500	46 s	80W		1800/min				8.1A	8.0A	30.0A
SEA-177	2000	58 s	80W		1800/min				8.8A	11.0A	26.0A
SEA-221	2500	58 s	80W		1800/min				11.8A	11.0A	26.0A
SEA-265	3000	58 s	220W		1800/min				15.1A	11.0A	33.0A
SEA-310	3500	58 s	220W		1800/min				17.8A	12.0A	33.0A

【Single-Phase】

Model No.	Max Torque (Nm)	Speed (90^0)		Motor Power	Motor Speed		110V Current			220V-240V Current		
		60 Hz	50 Hz		60 Hz	50 Hz	Run	Start	Lock	Run	Start	Lock
SEA-3	35	12s	13s	10W	3600/min	3000/min	0.6A	0.6A	0.7A	0.3A	0.4A	0.4A
SEA-4	50	20s	24s	10W	3600/min	3000/min	0.6A	0.6A	0.7A	0.3A	0.4A	0.5A
SEA-8	90	15s	17s	40W	1720/min	1450/min	1.0A	1.8A	1.6A	0.5A	0.8A	0.9A
SEA-13	150	22s	26s	40W	1720/min	1450/min	1.2A	1.8A	1.6A	1.0A	1.2A	0.9A
SEA-35	400	16s	18s	80W	1720/min	1420/min	1.9A	3.8A	3.6A	1.1A	2.0A	2.2A
SEA-44	500	22s	25s	80W	1720/min	1450/min	2.0A	3.8A	3.6A	1.1A	2.0A	2.2A
SEA-57	650	28s	31s	80W	1720/min	1450/min	2.1A	3.8A	3.6A	1.1A	2.0A	2.2A
SEA-88	1000	46s	55s	120W	1720/min	1450/min	3.1A	8.5A	9.0A	1.4A	4.1A	5.0A
SEA-132	1500	46s	55s	120W	1720/min	1450/min	3.3A	9.0A	9.0A	1.6A	4.4A	5.0A
SEA-177	2000	58s	70s	180W	1720/min	1450/min	3.3A	5.8A	5.9A	2.1A	3.8A	3.6A
SEA-221	2500	58s	70s	180W	1720/min	1450/min	4.0A	6.5A	5.9A	2.3A	4.0A	3.6A
SEA-265	3000	58s	70s	180W	1720/min	1450/min	4.5A	3.5A	5.9A	2.5A	4.2A	3.6A
SEA-310	3500	58s	70s	220W	1720/min	1420/min	4.0A	8.0A	7.5A	2.4A	4.4A	4.8A
SEA-398	4500	80s	95s	220W	1720/min	1420/min	4.2A	8.0A	7.5A	2.4A	4.8A	4.8A

RUN-operating; START-start; LOCK- Input the power supply, the actuator can't rotate.

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SPECIFICATIONS (continued)

【Three-Phase】

Model No.	Max Torque (Nm)	Speed (90°)		Motor Power	Motor Speed		220V Current			380V Current			440V Current		
		60Hz	50Hz		60Hz	50Hz	Run	Start	Lock	Run	Start	Lock	Run	Start	Lock
SEA-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEA-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEA-8	90	15 s	17 s	40W	1720/min	1450/min	0.8A	1.4A	1.5A	0.4A	0.7A	0.7A	0.4A	0.9A	0.6A
SEA-13	150	22 s	26 s	40W	1720/min	1450/min	0.8A	1.4A	1.5A	0.4A	0.7A	0.7A	0.4A	0.9A	0.6A
SEA-35	400	16 s	18 s	80W	1720/min	1450/min	1.0A	1.8A	2.3A	0.7A	1.3A	1.5A	0.6A	1.4A	1.4A
SEA-44	500	22 s	25 s	80W	1720/min	1450/min	1.0A	1.8A	2.3A	0.7A	1.3A	1.5A	0.6A	1.4A	1.4A
SEA-57	650	28 s	31 s	80W	1720/min	1450/min	1.0A	1.8A	2.3A	0.7A	1.3A	1.5A	0.6A	1.4A	1.3A
SEA-88	1000	46 s	55 s	120W	1720/min	1450/min	0.9A	2.0A	2.2A	0.7A	1.2A	1.4A	0.5A	1.3A	1.2A
SEA-132	1500	46 s	55 s	120W	1720/min	1450/min	1.0A	2.4A	2.6A	0.7A	1.5A	1.5A	0.6A	1.2A	2.2A
SEA-177	2000	58 s	70 s	180W	1720/min	1450/min	1.3A	3.7A	3.9A	0.7A	2.0A	2.3A	0.7A	2.0A	2.2A
SEA-221	2500	58 s	70 s	180W	1720/min	1450/min	1.3A	3.4A	3.9A	0.7A	2.0A	2.4A	0.7A	2.0A	2.2A
SEA-265	3000	58 s	70 s	180W	1720/min	1450/min	1.3A	3.5A	3.9A	0.7A	2.0A	2.4A	0.7A	2.0A	2.2A
SEA-310	3500	58 s	70 s	220W	1720/min	1450/min	1.5A	4.8A	5.4A	0.9A	2.5A	2.5A	0.8A	2.6A	2.4A
SEA-398	4500	80 s	95 s	220W	1720/min	1450/min	1.5A	4.9A	5.4A	1.0A	2.5A	2.5A	0.8A	2.6A	2.4A

Note: RUN-operating；START-start to operate；LOCK-When you input the power supply to the actuator, the actuator can't operate.

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◆ TRAVEL CAM & LIMIT SWITCHES ADJUSTMENT

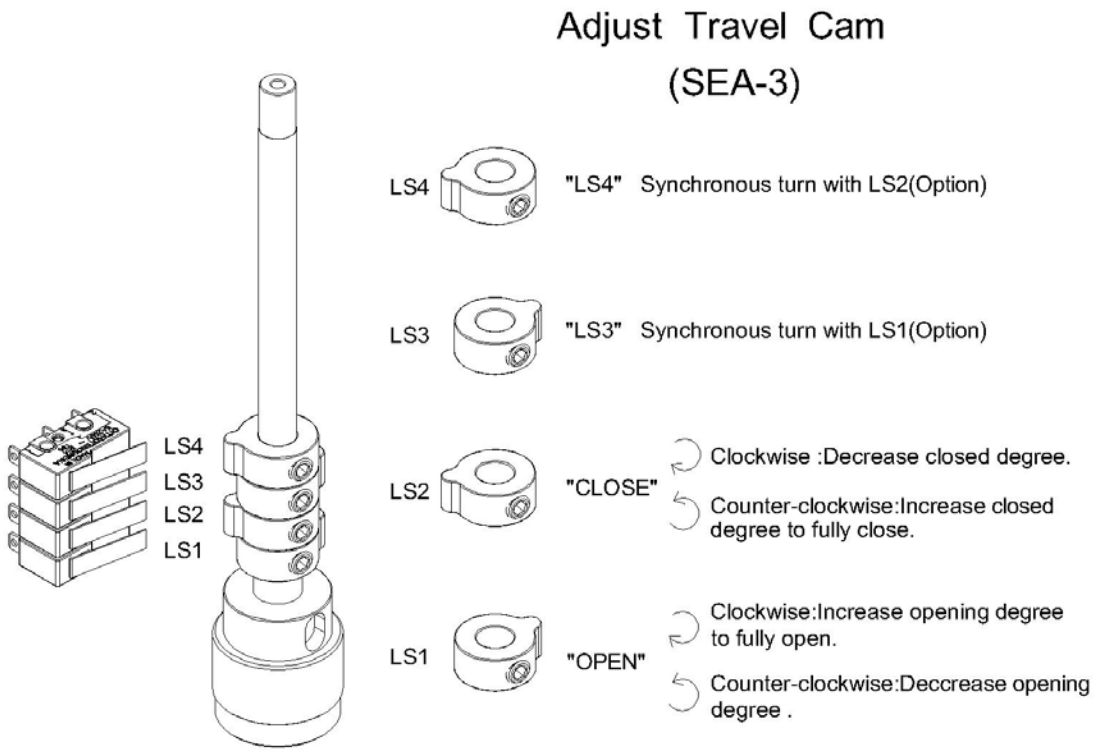
The travel cams are set to control the open and closed position of the valve.

LS1 & LS2 limit the maximum 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.

IMPORTANT: If LS3 & LS4 are fitted, they should be set to operate before LS1 & LS2 prevent further travel.

A 2.5mm Hex Spanner will be required to adjust cam settings.



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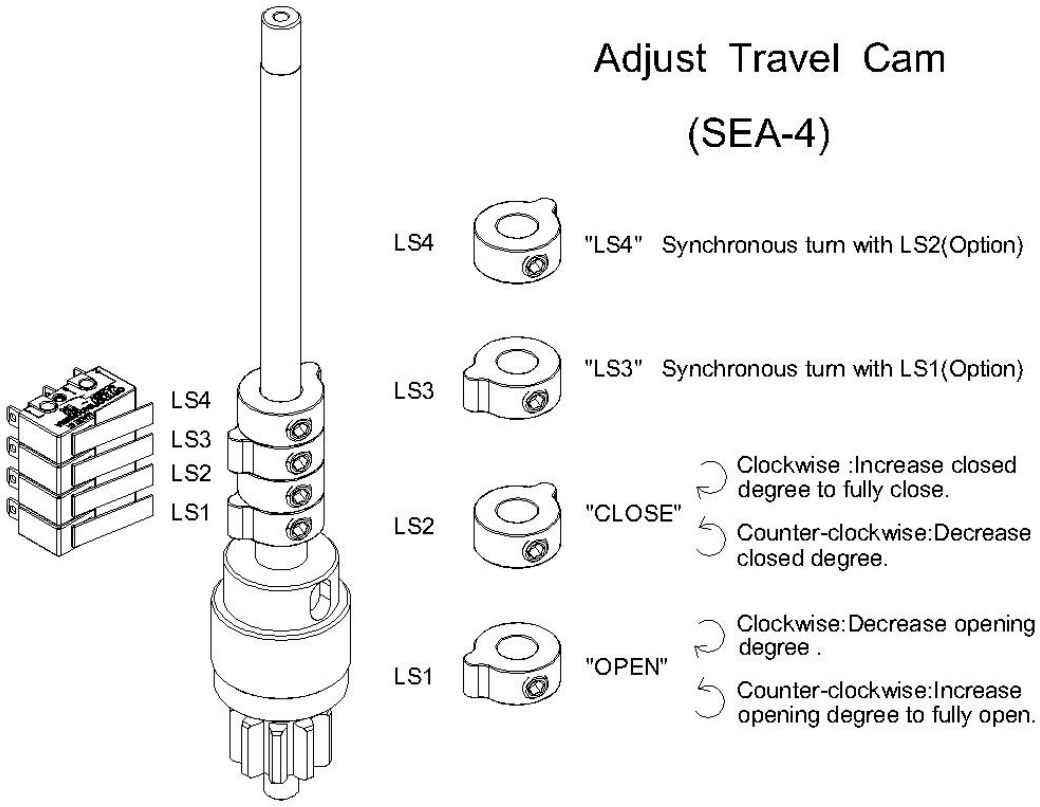
◆ TRAVEL CAM & LIMIT SWITCHES ADJUSTMENT



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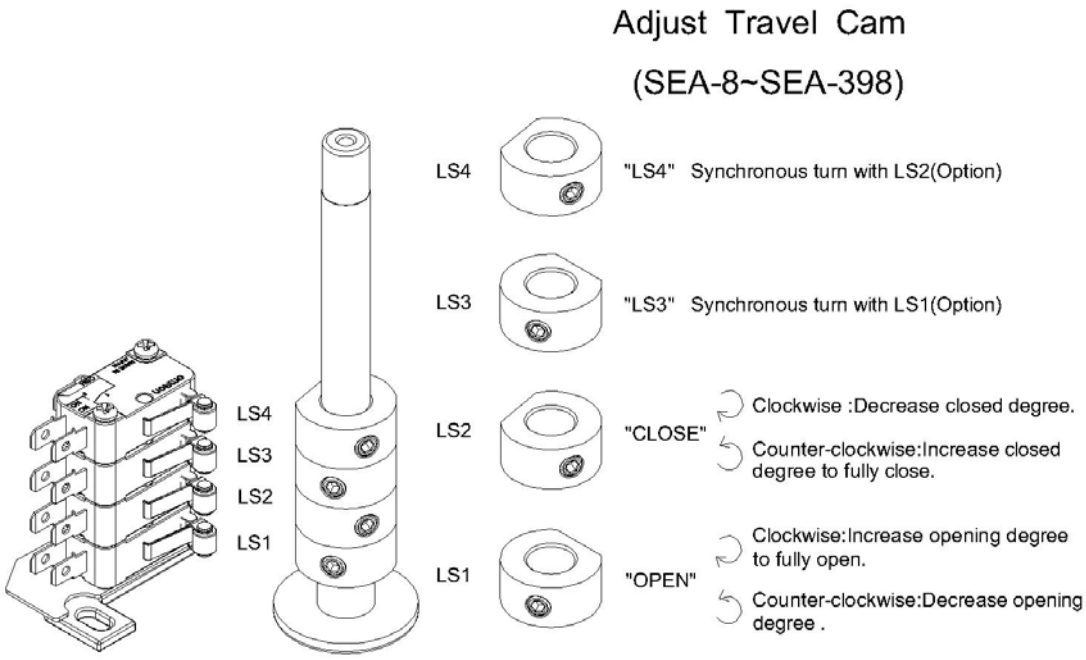
◆ TRAVEL CAM & LIMIT SWITCHES ADJUSTMENT



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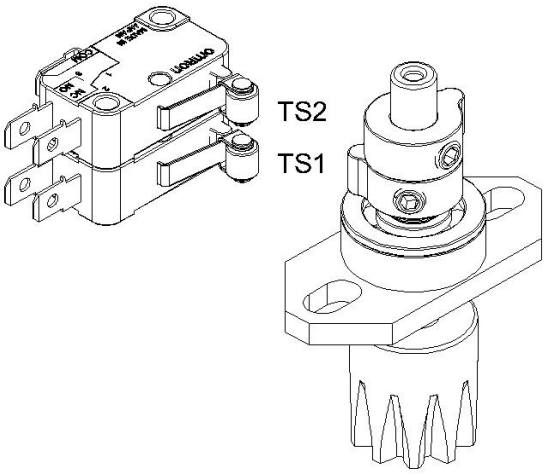
TRAVEL CAM & TORQUE SWITCHES ADJUSTMENT

Adjust Travel Cam
(SEA-8~SEA-132)



TS2
"CLOSE"

Counter-clockwise:Decrease the degree of torque setting.

Clockwise :Increase the degree of torque setting.

TS1
"OPEN"

Counter-clockwise:Decrease the degree of torque setting.

Clockwise :Increase the degree of torque setting.

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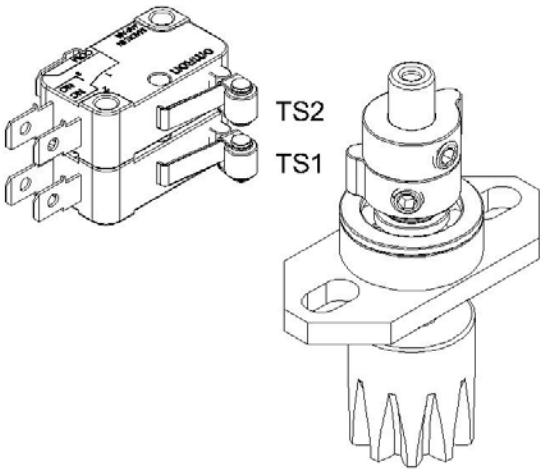
Adjust Travel Cam
(SEA-177~SEA-398)



TS2 "CLOSE"

- Counter-clockwise:Increase the degree of torque setting.
- Clockwise :Decrease the degree of torque setting.

TS1 "OPEN"

- Clockwise :Increase the degree of torque setting.
- Counter-clockwise:Decrease the degree of torque setting.

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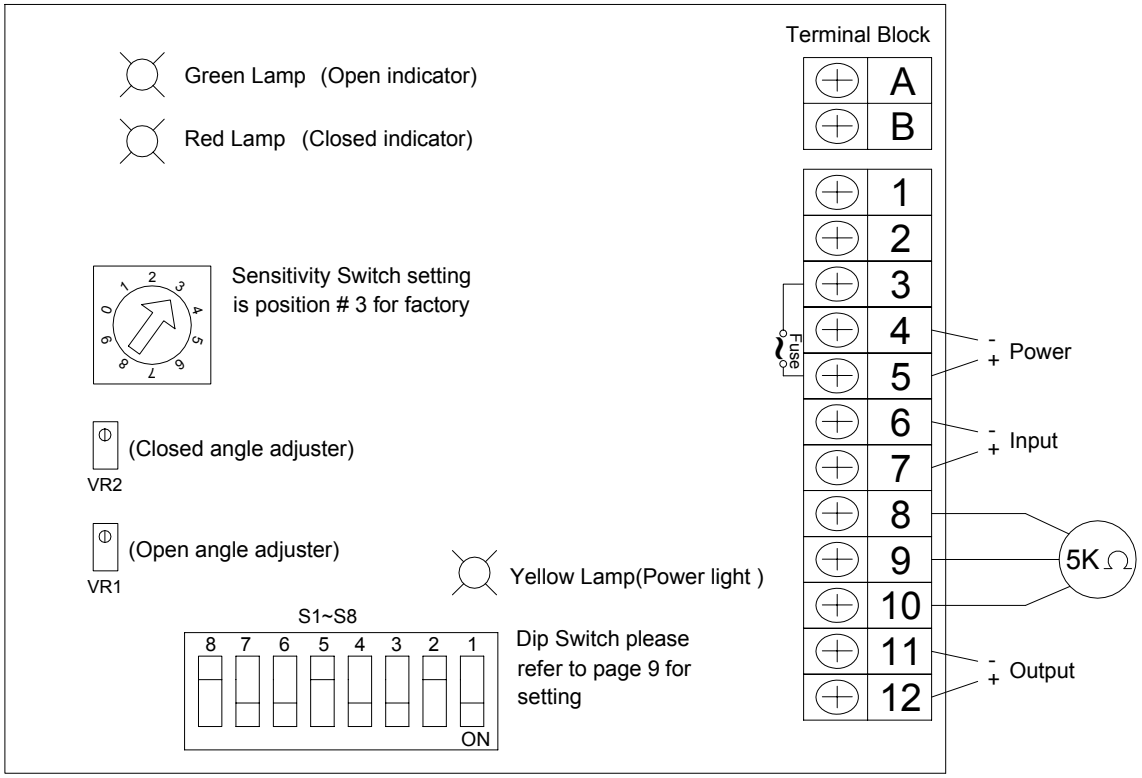
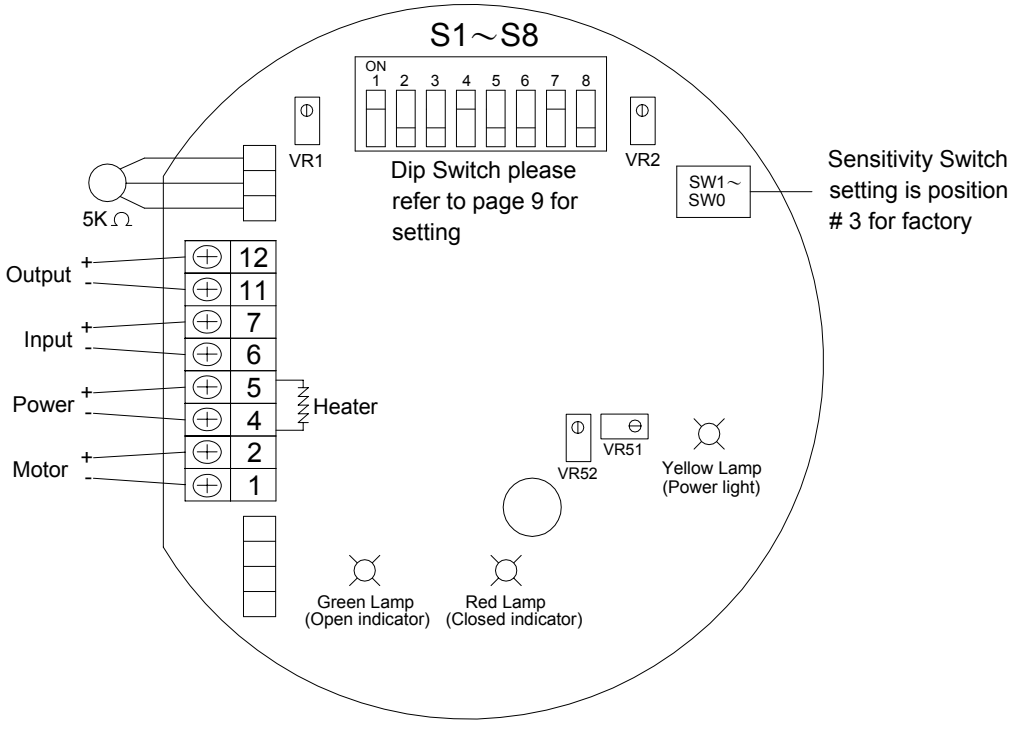
◆ Modulating Control Board: Interface

Modulating Control Board for SEA 8 - SEA 398



Modulating Control Board for SEA 3 - SEA 4



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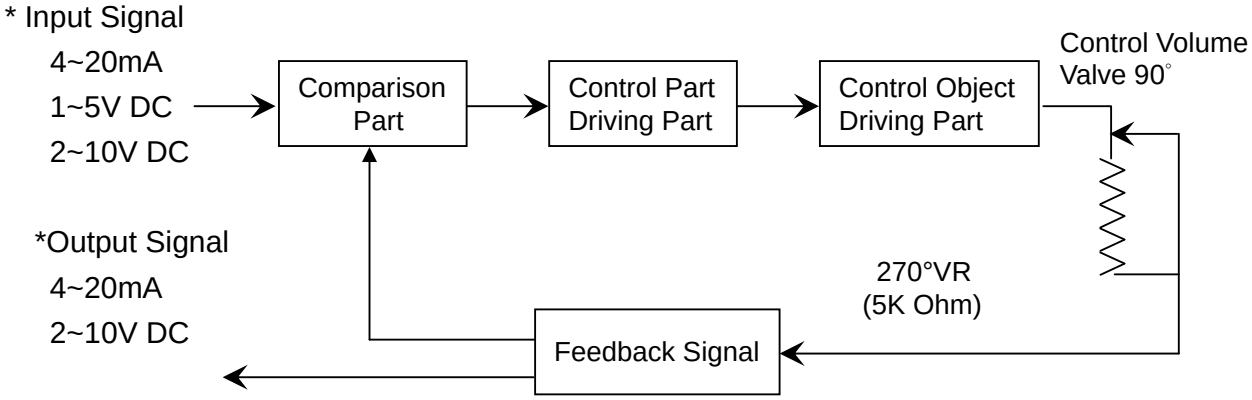
◆ MODULATING CONTROL BOARD



★Attention: TURN POWER OFF BEFORE CHANGING THE FOLLOWING SETTINGS:

DIP-SWITCH SETTING

IMPORTANT: Do not alter switch positions while actuator is turned on.

8	7	6	5	4	3	2	1	
ON	OFF	OFF	OFF	ON	OFF	OFF	ON	Factory setting
						OFF	ON	4-20mA input
						OFF	OFF	1-5V input
						ON	OFF	2-10V input
			OFF	ON	OFF	4-20mA output		
			ON	OFF	ON	2-10V output		
		OFF	20mA / 5V / 10V means valve fully-open					
		ON	20mA / 5V / 10V means valve fully-closed					
ON	OFF	Close valve if input signal disconnected						
OFF	ON	Open valve if input signal disconnected						

S1, 2: INPUT SIGNAL SELECT
- 4~20m/A set 1-ON / 2-OFF.
- 1~5V set 1-OFF / 2-OFF.
- 2~10V set 1-OFF / 2-ON.

S3, 4, 5: OUTPUT SIGNAL SELECT
- 2-10V set 3-ON / 4-OFF / 5-ON.
- 4-20m/A set 3-OFF / 4-ON / 5-OFF.

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S6: Valve is fully-open when the input signal is 4mA, 2V or 1V and valve is fully-closed when the input signal is 20mA, 10V or 5V, set 6-ON.

S7, 8: POSITION SELECT (When the feedback signal fails) “valve fully-closed” set 7-ON / 8-OFF；“valve fully-open” set 7-OFF / 8-ON；“valve stops” set 7-ON / 8-ON.

S6: Valve is fully-closed when the input signal is 4mA, 2V or 1V and valve is fully-open when the input signal is 20mA, 10V or 5V, set 6-OFF.

S7, 8: POSITION SELECT (When the feedback signal fails) “valve fully-closed” set 7-OFF 8-ON；“valve fully-open” set 7-ON / 8-OFF；“valve stops” set 7-ON / 8-ON.

SW1~0: Sensitivity switch:-

When switch to “1”: Highest Sensitive and the 0~90 degree can be divided up to around 80 times movement.

When switch to “0”: Lowest Sensitive and the 0~90 degree can be divided up to around 17 times movement.

The sensitivity decreases 7 times movement by sectors from SW1 to SW2, SW2 to SW3, SW3 to SW4 and so on.

※ **Note:** The standard factory presetting is 1, 4, 8 for ON and 2, 3, 5, 6, 7 for OFF.

Even if S6 is adjusted, the feedback signal will not change.

★ **SUPPLIED VOLTAGE:** 24V DC/AC, 110V/220V AC 1-PH.

★ **WORKING TEMPERATURE:** -30^{o}C ~ +65^{o}C.

★ **THE PROCEDURE FOR ADJUSTING VR1 & VR2.**

Calibration of actuator to input control signals:

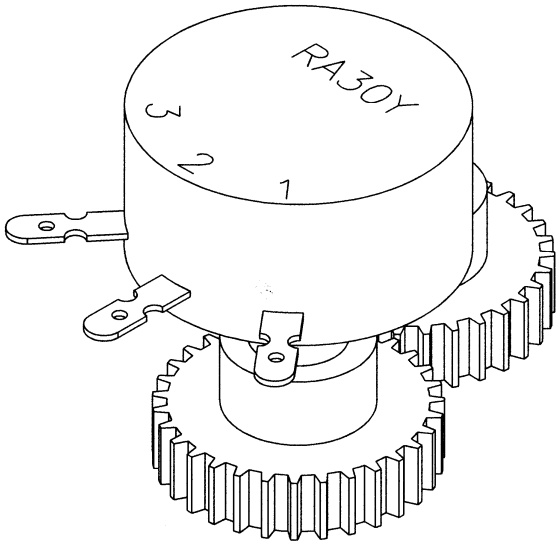
⇨ VR2 adjusts 4mA, 2V, 1V (Fully-closed).
VR1 adjusts 20mA, 10V, 5V (Fully-open).

1. Turn VR2 fully clockwise.
2. Set the device that supplies the input signal (4mA) to “fully-closed”.
3. Turn VR2 anticlockwise until the red LED comes on.
4. Turn VR1 fully anticlockwise.
5. Set the device that supplies the input signal (20mA) to “fully-open”.
6. Turn VR1 clockwise until the green LED comes on.

◆ POTENTIOMETER

Potentiometers turn with the output shaft to provide feedback for position indication. Potentiometers that are intended to work with a modulating card have different resistance values, and are connected to different terminals.

Potentiometer points 1, 2, 3 are wired to terminal blocks 5, 6, 7.
When a valve is closed:
5, 6 ⟶ 1K Ohm.
6, 7 ⟶ 0K Ohm.
When a valve is opened:
5, 6 ⟶ 0K Ohm
6, 7 ⟶ 1K Ohm.
For modulating controllers, potentiometer points 1, 2, 3 are wired to terminal blocks 8, 9, 10.
When a valve is closed:
8, 9 ⟶ 5K Ohm.
9, 10 ⟶ 0K Ohm.
When a valve is opened:
8, 9 ⟶ 0K Ohm
9, 10 ⟶ 5K Ohm.
＊Remark: SEA-4 is opposite (1, 2, 3 wired to 7, 6, 5; 1, 2, 3 wired to 10, 9,8)



◆ MECHANICAL STOPS

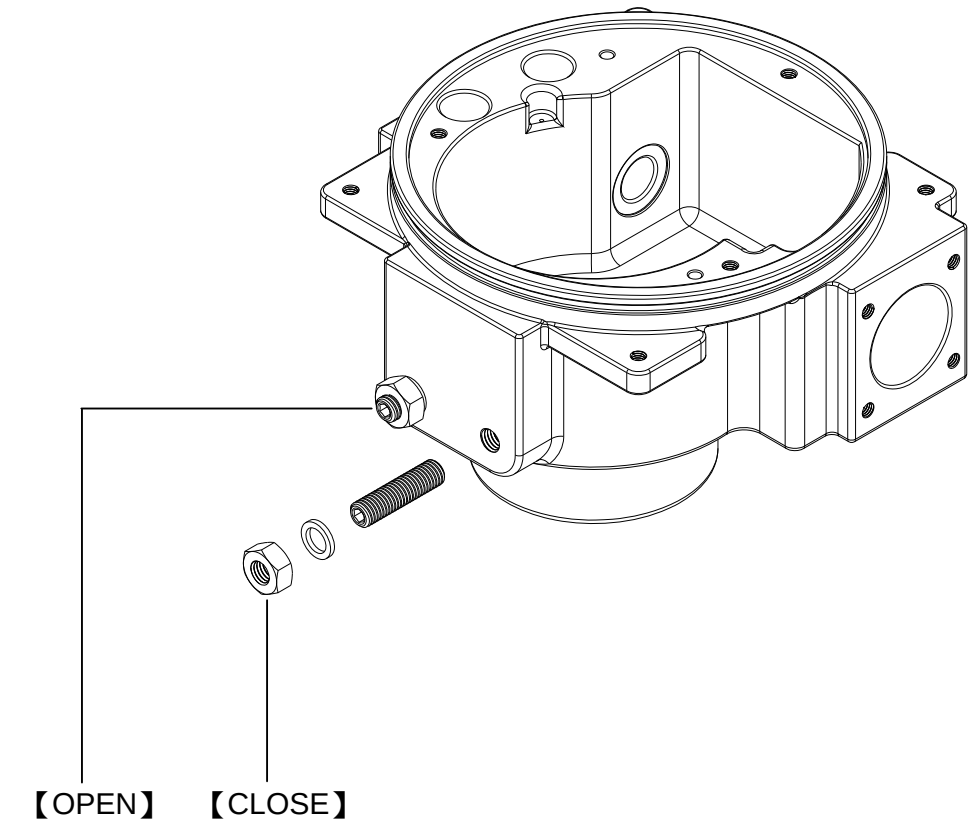
Mechanical stops should only be reached during manual operation. They are factory set, though in some cases adjustment may be required once a valve is fitted.

(1) For Electric Operation

Please refer to “Travel Cam & Limit Switches Adjustment “.

(2) For Manual Operation

1. Remove power from actuator.
2. Loosen locknut and unwind it a few turns.
3. Unwind grub-screw.
4. Manually turn the actuator to desire limit position.
5. Screw in the grub-screw until it reached the internal cam, then reverse one cycle.
6. Tighten locknut.
7. Check that the electrical limit switches can still be reached.



◆ TROUBLE SHOOTING

Conditions	Possibilities	Solutions
Motor does not operate	1. Is the supplied power and voltage correct? 2. Any blisters on the capacitor? 3. Is the gear train free?	1. Checking by meter. 2. If so replace. 3. Remove motor to check.
Motor stops running	1. Is power supply short circuited? 2. Any foreign objects in flow stream?	1. Check wiring. 2. Check for obstructions.
Unable to fully open/close	1. Loose/Misaligned cam? 2. Bent valve stem? 3. Mechanical stop adjustment incorrect?	1. Adjust/Tighten using spanner. 2. Replace valve stem. 3. Check position of stops.
Valve stops operating when motor is running.	1. Gear worn out? 2. Sleeve adapter worn out or broken? 3. Broken valve stem or actuator transmission shaft?	1. Replace gear. 2. Replace sleeve adapter. 3. Replace valve stem or actuator transmission shaft.
Abnormal control for operating two or more actuators simultaneously.	1. Controlling circuit connects in tandem or parallel?	1. Please refer to the wiring diagram.
Motor overheats.	1. Is the voltage correct? 2. Is valve / actuator torque too close - no safety? 3. High working frequency? 4. Is motor stem or bearing binding?	1. Checking by meter. 2. Replace valve. 3. Check duty cycle. 4. Replace the binding parts.
Abnormal on/off angle on 3-phase voltage.	1. Wrong phase wiring?	1. Change phase wiring.
Occasional on/off actuator failure.	1. Simultaneous input power on/off.	1. Check if the selection switch is normal.
Vibration when valve is closed.	1. Motor brake spring fatigued or Teflon worn?	1. Replace spring or Teflon.