



ELECTRIC VALVE ACTUATOR

Semflex VMM Series

HANDLING INSTRUCTION



SEIBU ELECTRIC & MACHINERY CO., LTD.

History

Rev	(Contents and Reason)	Date	Approve	Check	Write
First Edition	Create New	19.04.03	C.K	—	Oka
Rev.1	Add option parts	20.04.28	Mori	Kawamoto	Oka
Rev.2	Add -007 and Explosionproof	24.01.23	Kitajima	Kusano	Oka

The matters concerning safety for using valve actuator is written in these notes.
Please read these notes before using and please use it correctly.
And when you install the actuator, please follow the instructions of trained professional workers.

【 When receiving, transporting and storing】



Cautions . . . Prevent accidents caused by falling

- (1) Check the mass (weight) when suspending / hanging the valve actuator, and do not enter under the suspended load.
- (2) Corrugated cardboard packaging may lose its packaging strength when it gets wet, so be careful when storing and handling.
- (3) Store the valve actuator in a dry place until installation on the site, and do not remove the plug or cover of the wire inlet.

Neglecting these precautions can cause injury.

【 During installation / trial operation】



Cautions . . . Prevent accidents caused by falling

- (1) Check the mass (weight) when suspending / hanging the valve actuator, and do not enter under the suspended load.
- (2) When performing work, ensure the safety of the scaffold and avoid acts on unstable pipes.

Neglecting these precautions can cause injury.



Cautions . . . Prevention of electric shock accidents (electric type)

- (1) When performing the wiring work, make sure that there is no insulation failure due to moisture or moisture.
- (2) Connect the ground wire securely.

Neglecting these precautions can cause injury.



Cautions . . . Prevention of electric shock accidents (electric type)

- (1) When working, be sure to contact the power operator.

Neglecting these precautions can cause injury.

【 During maintenance and inspection】



Cautions . . . Prevention of electric shock accidents (electric type)

- (1) When changing the connection, make sure that there is no insulation failure due to moisture or moisture.
- (2) Make sure that the ground connection is secure.

Neglecting these precautions can cause injury.

— Table of contents —

Name of each part

1. Mounting

1 – 1. Advance inspection

1 – 2. Mounting to the valve

1) Built-in stem bush

2) Mounting to the valve

1 – 3. Connection

1 – 4. Heater

2. Commissioning

2 – 1. Manual driving

2 – 2. Setting

1) Limit setting

2) Torque setting

2 – 3. Electric driving

3. Maintenance

3 – 1. Storage

3 – 2. Maintenance

1) Refueling

2) Refueling valve stem

4. Option parts

4 – 1. Potentiometer

1) Adjustment method

4 – 2. Transmitter

1) Transmitter(Sei-mitter)

2) Adjustment method

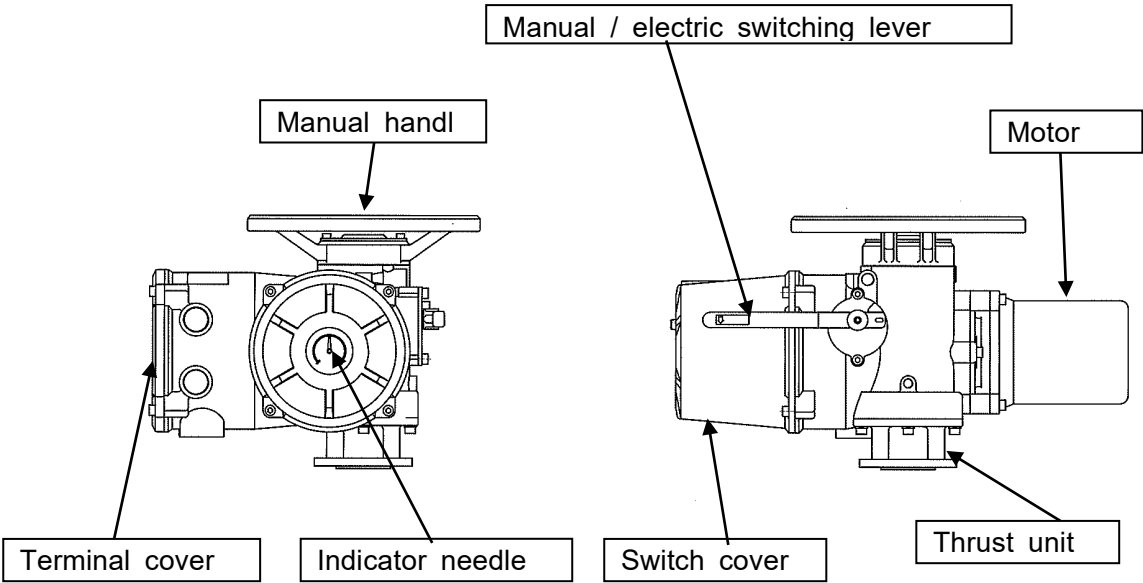
3) Notes

5. Explosionproof

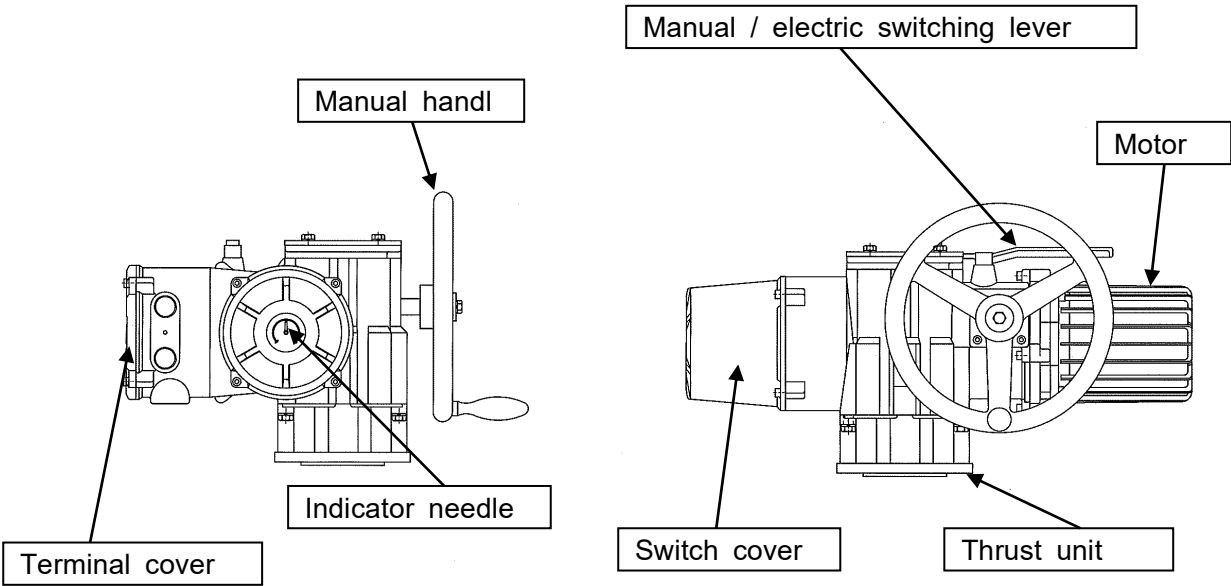
5 – 1. Equipment Specification

5 – 2. Precautions

Name of each part



VMM007、01, 04



VMM-07, 1

1. Mounting

1 – 1. Advance inspection

- ①Refer to the nameplate on the main unit and check if it matches the specifications.
- ②Refer to the wiring diagram pasted on the back of the terminal cover and check whether it matches the specifications.
- ③Check that the dimensions of the stem bush and stem, actuator and valve flange match each other.

1 – 2. Mounting to the valve

1) Built-in stem bush

Refer to the construction diagram for the structure of the thrust unit.

For the internal thread type, if the stem bushing has a standard inner diameter, no processing is required. However, in the case of non-standard inner diameter and external thread type, it is necessary to process according to the valve stem diameter. In that case, follow the procedure below to disassemble and assemble the stem bush.

- ①Use a hexagon wrench key to remove the two bolts and remove the thrust cover.
- ②Remove the stem bush.
- ③Remove the retaining ring and loosen the nut. Remove the thrust ball bearing (ball and race).
- ④Be careful not to get dust on the bearings.
- ⑤When machining the inner diameter of the stem bush, be careful not to damage the part that contacts the bearing or O-ring.
- ⑥After processing, clean the stem bush cleanly. Apply sufficient grease to the bearing and install the bearing, nut and retaining ring.
- ⑦Install the thrust cover and tighten the bolts.



2) Mounting to the valve

- ① Operate the switching lever before installing it on the valve so that manual operation is possible.
- ② Use a belt to lift the actuator.
- ③ In the case of the external thread type, the valve stem is screwed into the stem bush while turning the actuator, and after the actuator flange and valve flange contact, the flange is tightened with a bolt. At this time, turn the handle a little in the opening direction, and do not overtighten the disc.
- ④ For the internal thread type, the thrust force of the valve stem may be received on the valve side or on the actuator side. In the latter case, remove the thrust unit and install a lock nut on the stem bush.



When lifting the actuator, use a belt to lift the actuator body as shown below. Lifting the manual handle may cause damage.



Check the weight of the actuator and the allowable load of the belt to be used before lifting or slinging the actuator. Do not enter under suspended loads.



When lifting the valve and actuator after joining them, do not lift only the actuator. The actuator may be damaged by the weight of the valve.



VMM-007、01、04



VMM-07, 1

1 – 3. Connection

- ① Loosen the bolts and remove the terminal cover. Also, remove the plug of the wire inlet only where necessary.
- ② Connect the ground wire to the ground terminal.
- ③ For outdoor installation, use a waterproof wire penetration fitting to prevent rain water from entering the terminal box.
- ④ Connect the power supply to RU, SV, TW.
- ⑤ Connect the control line to a location that meets the specifications.
- ⑥ After completing the connection, keep the internal wires in order and be careful not to pinch them in the cover.



When making connections, make sure that there is no insulation failure due to moisture, moisture, etc., and securely connect the ground.



Standard (32 points, Push-in type)



Option (42 points, screw type)

1 – 4. Heater

Heater is installed inside switch cover to prevent moisture.
Be sure to turn on the heater.

<Specification>

Voltage	Model	Resistance	Power consumption
100V class	TRH10G1.5kΩJ	1500Ω	6.7~10.4W
200V class	TRH10G6.2kΩJ	6200Ω	5.8~10.1W

2. Commissioning

2 – 1. Manual driving

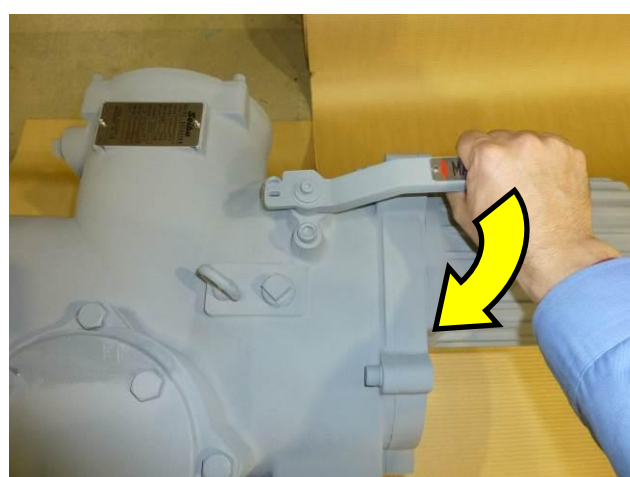
① Operate the switching lever to set it to manual mode. (You can lock the key in the manual position.) Turn the lever fully while checking that the clutch is engaged by turning the handle.

* If the lever is switched forcibly with the clutch not engaged, the lever may be damaged.

② If you release the lever after switching to the manual position, the switch lever automatically returns to its original position, but the internal clutch remains in the manual state.



VMM-007、01、04



VMM-07、1

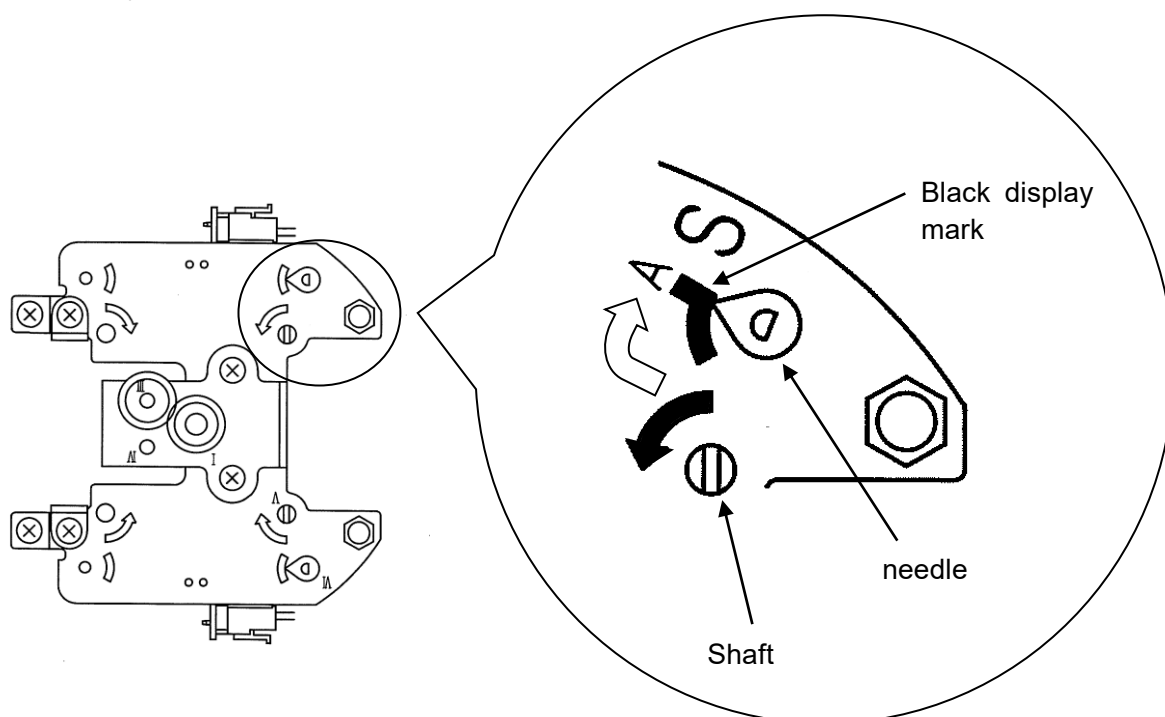
2 – 2. Setting

1) Limit setting

After mounting on the valve, it is necessary to remove the switch cover and set the limit switch fully closed and fully open.

Fully closed setting

- ① Fully close the valve manually. (When using the motor, stop before the fully closed, and then manually close it fully.)
- ② Turn the shaft marked "S" with the (-) screwdriver in the direction of the arrow. Then, the pointer will rotate every 90 ° in the opposite direction of the shaft. When the pointer approaches the position shown in the figure, carefully turn the shaft little by little, turn the black display mark, and when you hear a click at A (action), stop rotating and remove the driver from the shaft. At this point, the setting is complete. If the shaft overruns, repeat this section.
- ③ Set the switch lever to manual operation to check the limit switch setting. Turn the manual handle 3-5 times in the opening direction. At this time, check that the pointer rotates in the direction opposite to the arrow. After that, rotate the manual handle 3-5 times in the closing direction and check that the pointer turns around the black display mark and stops at "A".



Fully open setting

- ① Open the handle fully using the same procedure as the closing side.
- ② Set the shaft on the "O" display side in the same way as on the closed side.

《Setting the opening indicator》

The gear ratio of the switch unit and indicator is set according to the number of revolutions from fully closed to fully open. Follow the procedure below to set the opening indicator.

- ① Fully close the valve.
- ② Set the indicator needle of the position indicator to the fully closed position of the memory meter.
- ③ Fully open the valve and check that the indicator needle shows full open.

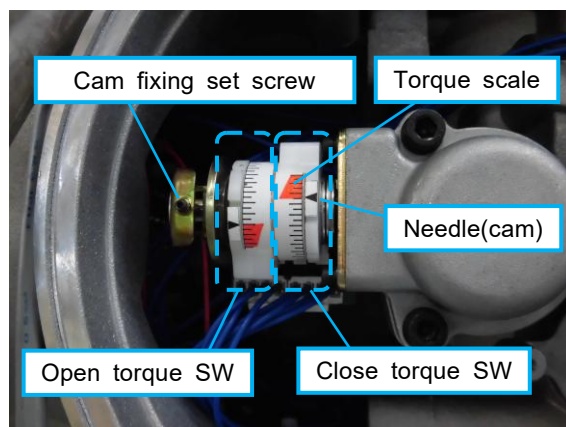
2) Torque setting

The delivered product is set so that the torque switch operates with the proper torque, so there is no need for adjustment unless there is an abnormality. If readjustment is necessary, follow the procedure below.

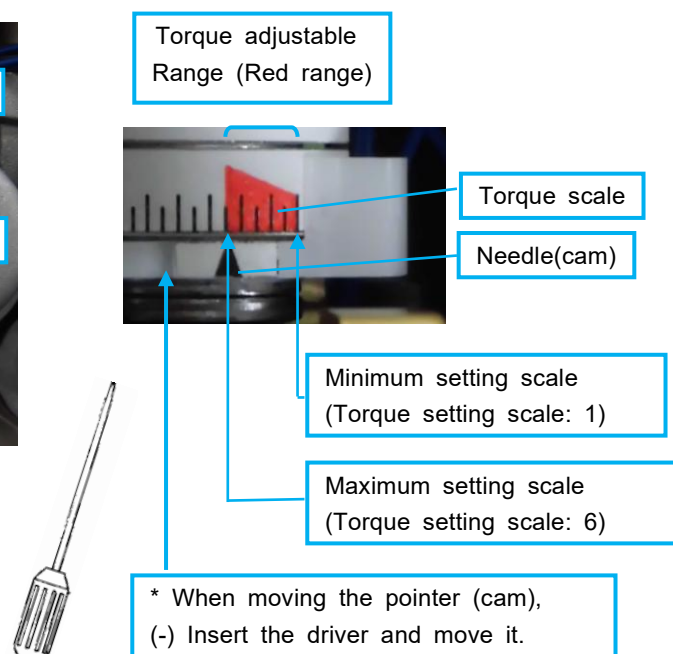
- ① The pointer (cam) can be moved freely by loosening the set screw for fixing the cam with a hexagon wrench key (# 1.5). (Loosen the hexagon stick spanner while pressing it.)
Look at the inspection report and align the pointer (cam) with the torque scale you want to set.
- ② ※1 For the torque switch, the cam fixing screw side is the open side torque switch, and the opposite side is the closed side torque switch.
(See Photo 1)
※2 The torque setting can be adjusted within the red range of the scale.
(See Photo 2)
※3 The operating torque is “1” at the lowest scale in the red range.
(See Photo 2)
※4 The cam is fastened by a disc spring and fixed by frictional force.
Since a non-rotating washer is inserted between the two cams, even if one cam is rotated, the other cam will not rotate.

- ④ After aligning the pointer (cam), securely tighten the cam fixing set screw.
 [Caution] If the drive is performed without tightening the set screw, the reference will deviate and the set torque cannot be guaranteed.

(Photo 1)



(Photo 2)



* When moving the pointer (cam),
 (-) Insert the driver and move it.

2 – 3 . Electric driving

Normally, it is operated by pressing the (Open) (Closed) and (Stop) pushbuttons. Pressing the (open) or (close) pushbutton will start the motor and the valve will move in that direction, and pressing (stop) will stop the valve in that position.

In the fully open or fully closed position, the limit switch automatically stops.
 In the case of automatic control and interlocking operation, it is automatically operated by an electrical command from another.

3. Maintenance

3-1. Storage

Follow the instructions below if the actuator is to be stored temporarily before it is mounted on the valve.

- 1) Store in dry place indoors.
- 2) If storing outdoors is necessary, place the actuator on an elevated position higher than the floor and attach a cover securely to prevent rainwater.
- 3) Apply grease to the stem bushing.
- 4) Apply rust inhibitor on the mounting flange face.
- 5) After storage for a long period of time, check for rust or paint film peeling.

3-2. Maintenance

(1) Lubrication

This actuator is filled with lithium-based grease that is characterized by long service life. Replacing lubricant grease is not required for several normal operation years from the initial operation. If the actuator is disassembled for a periodic inspection or for repair, replace the grease with new one in accordance with the table below. Different brands of lithium-based grease may be used in combination. However, avoid mixing greases that use different soap bases, as mixed use may alter their properties.

Model	Grease (kg)	Recommended brand of grease	Manufacturer or distributor
VMM-007 /-01	1.0	NIGHTIGHT LYW No. 0-N Multi-purpose grease No. 0-S	NIPPON GREASE CO., LTD. KYODO YUSHI CO., LTD.
VMM-04	1.5	COSMO GREASE DYNAMAX EP No.0 Daphne Eponex EP 0 Mobilux EP 0	COSMO OIL Co., Ltd. Idemitsu Kosan Co., Ltd. Exxon Mobil Corporation
VMM-07	3.5	Shell Alvania EP Grease R 0 EPNOC Grease AP 0	Showa Shell Sekiyu K.K. NIPPON OIL CORPORATION
VMM-1	4.5	JOMO LISONIX GREASE EP 0	JAPAN ENERGY CORPORATION

(2) Valve Stem Lubrication

Outside screw type valves need lubrication to prevent wear of the stem bushing screws. According to the frequency of use and the environment, apply the following recommended grease regularly (for instance, semi-annually).

Recommended brand of grease	Manufacturer or distributor
Molub-Alloy 882 EP-H Open Gear Grease	SERIO
Alumix EP No. 1 Grease	KYODO YUSHI CO., LTD.

Note) Choose grease specifically designed for low temperature application when the valve is used in a cold environment, minus 10 degrees Celsius or lower.

Lubricating Method

Remove the spindle cover and apply lubricating grease to the valve stem screws with a brush or bamboo spatula.

If the spindle cover is long shaped and removal is difficult, remove the oil filler plug and apply lubricating grease with a grease gun.

While making sure not to allow dust or other foreign matter to contact or adhere to the screws, apply the grease adequately so that the entire circumference of the screwed part is lubricated with grease or fill the grease pockets with an adequate amount of grease.

If the actuator is operated only infrequently, set a schedule to operate it periodically (for instance, once a week) to ensure that it operates normally with no sign of anomaly.

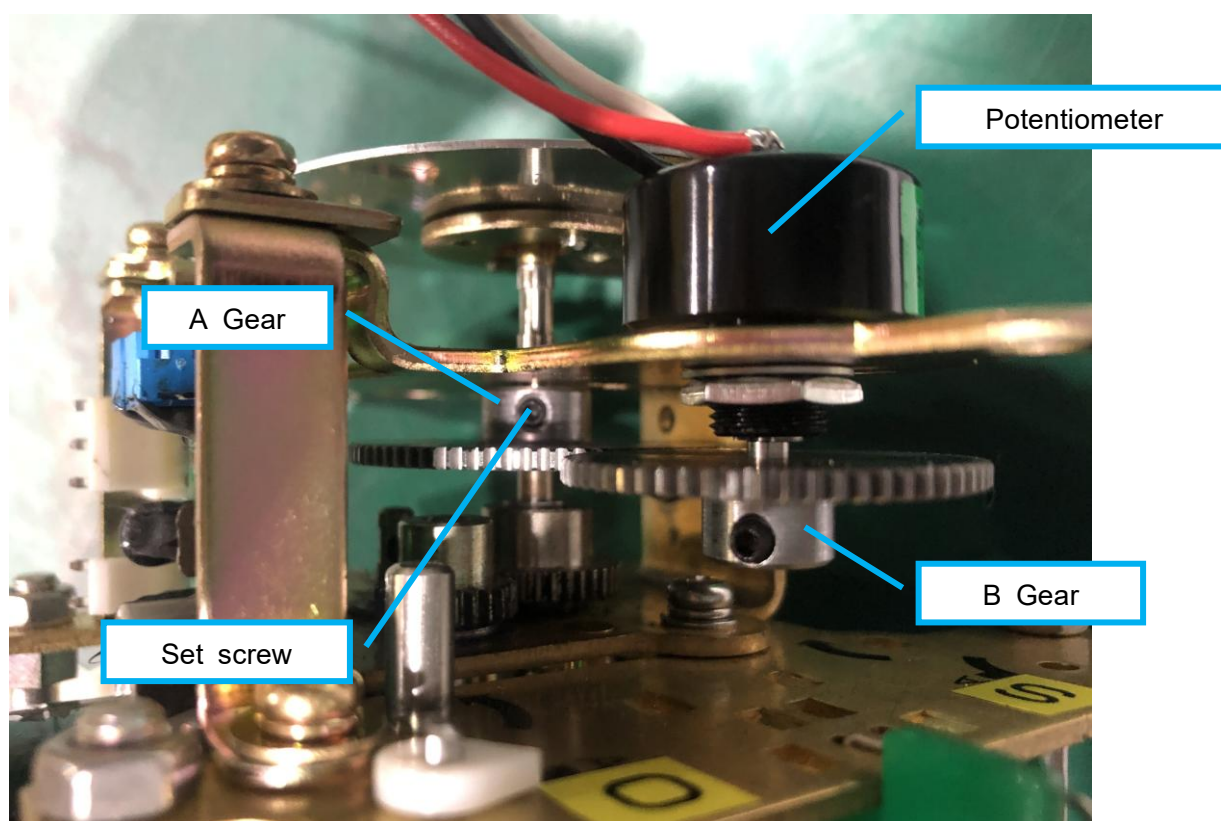
4. Option parts

4-1. Potentiometer

1) Adjustment method

The potentiometer is adjusted in combination with the VMM series electric actuator and shipped from the factory. Normally, it is not necessary to readjust, but if adjustment is necessary for some reason, Please make the following adjustments.

- ① Set the valve position to 50%.
- ② Loosen the set screw of A gear with a hexagon wrench (# 1.5).
- ③ Turn the A gear or B gear while reading the resistance of the potentiometer with the tester.
- ④ Tighten the set screw when the resistance is just 250 ohms.



4-2. Transmitter

1) Transmitter (Sei-mitter)

Transmitter (Sei-mitter: PA-420AC) is an electronic R / I converter manufactured by Seibu. The valve position (potentiometer resistance change) is converted into a DC signal of 4 to 20 mA and output.

2) Adjustment method

The seimitter is adjusted in combination with the VMM series electric actuator and shipped from the factory. Normally, it is not necessary to readjust, but if the adjustment is necessary for any reason, adjust it as follows.

Potentiometer adjustment

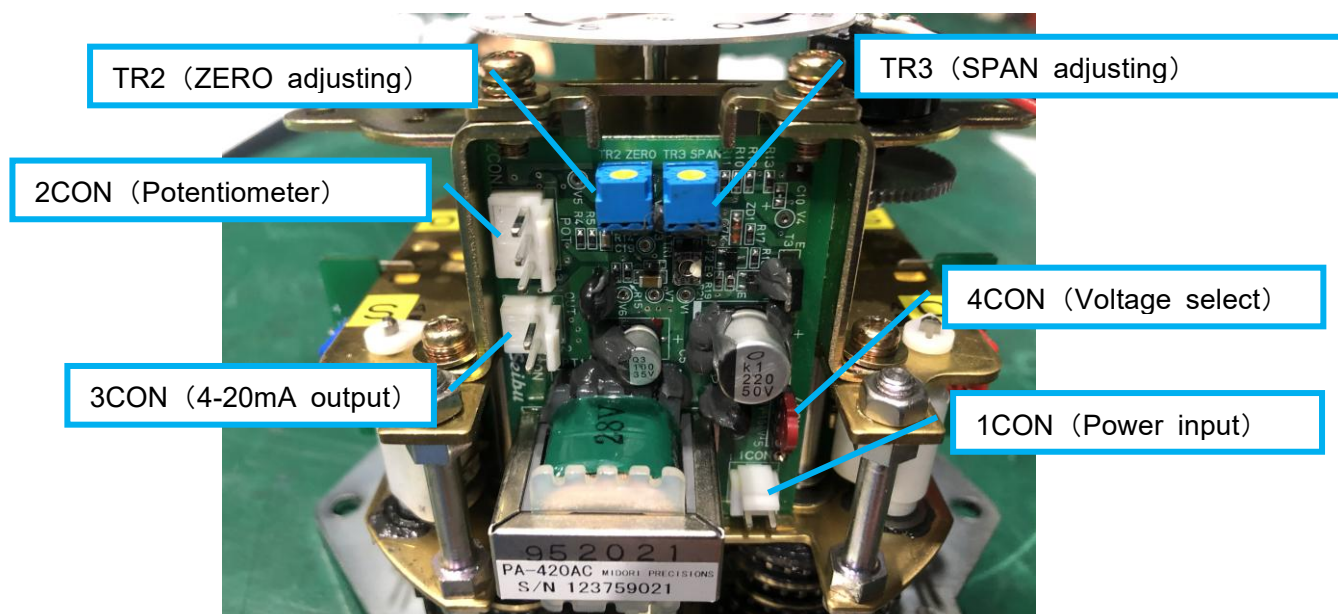
Adjust according to "4-1. Potentiometer 1) Adjustment method".

Transmitter adjustment

- ① Connect an ammeter to terminals 10 and 11 (+,-).
 - ② Fully close the valve and adjust the zero adjustment volume (TR2) so that the current value becomes 4mA
 - ③ Fully open the valve and adjust the span adjustment volume (TR3) so that the current value becomes 20mA.
 - ④ Fully close the valve again and check that the output signal is 4mA.
- ※Repeat steps 2 and 3 above to check for mutual interference.

3) Notes

- ① Turn the zero (TR2) and span (TR3) adjustment volumes clockwise to increase the opening signal current, and counterclockwise to decrease it.
- ② Make sure that the total resistance of the wires connected between (3CON) 1-2 and the internal resistance of the device is 750Ω.
- ③ Regarding the power supply to the sei-mitter, change between 100V and 200V by replacing the voltage selection connector (4CON).



5. Explosionproof

5-1. Equipment specification

Information regarding explosion-proof equipment is given below.

Manufacturer	Seibu Electric & Machinery Co., Ltd.
Model	VMM-007T/VMM-01T
Explosionproof structure	Ex db IIB T4 Gb
Applicable standards	(General)JNIOSH-TR-46-1:2020 (Pressure resistance) JNIOSH-TR-46-2:2018
Cable ground	SFLU-30-M(NCS004)
Temperature	-10°C~50°C

5-2. Precautions

To prevent fire and explosion accidents, be sure to observe the following items.

- (1) Do not open the cover in areas where explosive gases are present.
- (2) To prevent electric shock, be sure to connect the earth wire.
- (3) To maintain explosionproof performance, do not subject the case or cover to impacts.
- (4) Users should not attempt to repair the flame path.
- (5) If repairing a pressure-resistant explosion-proof joint is necessary, please contact us.
- (6) The dimensions of pressure-resistant joints of this product are greater than the minimum and less than the maximum values specified in JNIOSH-TR-46-2:2018.
Contact us for information about pressure-resistant explosion-proof joints.

Failure to observe these precautions may result in an explosion.



西部電機株式会社

産業機械事業部 〒811-3193 福岡県古賀市駅東三丁目3番1号 ☎ (092)941-1507
FAX (092)941-1517