



## ELECTRIC VALVE ACTUATOR

Semflex<sup>®</sup> VMM-Z Series

## OPERATION MANUAL



西部電機株式会社

SEIBU ELECTRIC & MACHINERY CO., LTD.

## History of Revisions

| History of Revisions |                                                 |          |          |          |          |
|----------------------|-------------------------------------------------|----------|----------|----------|----------|
| Rev.                 | History (Revised Contents)                      | Date     | Approved | Checked  | Write    |
| Original             | First publication                               | 23.09.25 | Kitajima | Nakahama | Maruyama |
| Rev.1                | Addition of explosion-proof specification items | 24.01.09 | Kitajima | Nakahama | Maruyama |
|                      |                                                 |          |          |          |          |

**Safety precautions**

The safety precautions below describe particularly important instructions in handling the valve actuator. Read the precautions carefully prior to use for handling the valve actuator properly. The installation should be performed only by trained and qualified professionals.

**【Receiving, Transportation and Storage】****Caution**

--- Prevent accidents due to dropping of the product or other such causes.

- (1) Check the mass (weight) of the valve actuator before starting suspending and slinging work.

Stay clear of the suspended load and ensure utmost safety before and during the work.

- (2) Particular care should be used when handling and storing products packed in cardboard boxes, because the boxes may have lowered strength after getting wet or exposed to moisture.
- (3) Store the valve actuator in a dry place until it is installed on-site, and do not remove the plug or cover from the wire entry port.

**Failure to observe these cautions may result in injury.**

**【Installation and Test Operation】****Caution**

--- Prevent accidents due to dropping or falling.

- (1) Check the mass (weight) of the valve actuator before starting suspending and slinging work.

Stay clear of the suspended load and ensure utmost safety before and during the work.

- (2) Make sure to secure a safe foothold for work, and never attempt to use a pipe or anything similarly unstable for footing.

**Failure to observe these cautions may result in injury.**

**Caution**

--- Prevent electric shock. (Electrically-operated type)

- (1) When connecting, make sure that there is no insulation failure due to dampness or moisture.
- (2) Securely connect ground wires.

**Failure to observe these cautions may result in electric shock.**

**Caution**

--- Prevent injuries and/or accidents. (Electrically-operated type)

- (1) Make sure to notify and maintain communications with the power supply operator.

**Failure to observe this caution may result in injury.**

**【Maintenance and Inspection】****Caution**

--- Prevent electric shock. (Electrically-operated type)

- (1) When changing wires, make sure that there is no insulation failure due to dampness or moisture.
- (2) Make sure that ground wires have been securely connected.

**Failure to observe these cautions may result in electric shock.**

### Valve actuator handling precautions

- (1) When closing the switch cover, check that the O-ring is installed correctly and clean the mounting surface. Tighten the mounting bolts securely.
- (2) Construct the external lead wire inlet to prevent rainwater from entering.
- (3) Do not leave the switch cover or terminal cover open.
- (4) Do not leave the valve actuator in dirt or puddles.
- (5) The protection structure of this device is IP68.  

The underwater operating conditions are as follows. "You can operate underwater 15 times while temporarily submerged within 8 meters (within 72 hours).

After flooding, it can be operated for one year after the water subsides. "
- (6) After flooding and after the water subsides, measure the insulation resistance of electrical parts such as motors and switches, and use a 500V megger to confirm that the resistance is  $1\text{M}\Omega$  or more.
- (7) After flooding and after the water subsides, check to see if water has entered the switch box. If water has entered, remove it and eliminate the cause of water entry.
- (8) After flooding and after the water subsides, check the grease condition on the valve stem and stem bush, and reapply grease if it seems insufficient. Also, make sure that no foreign objects are caught in it.

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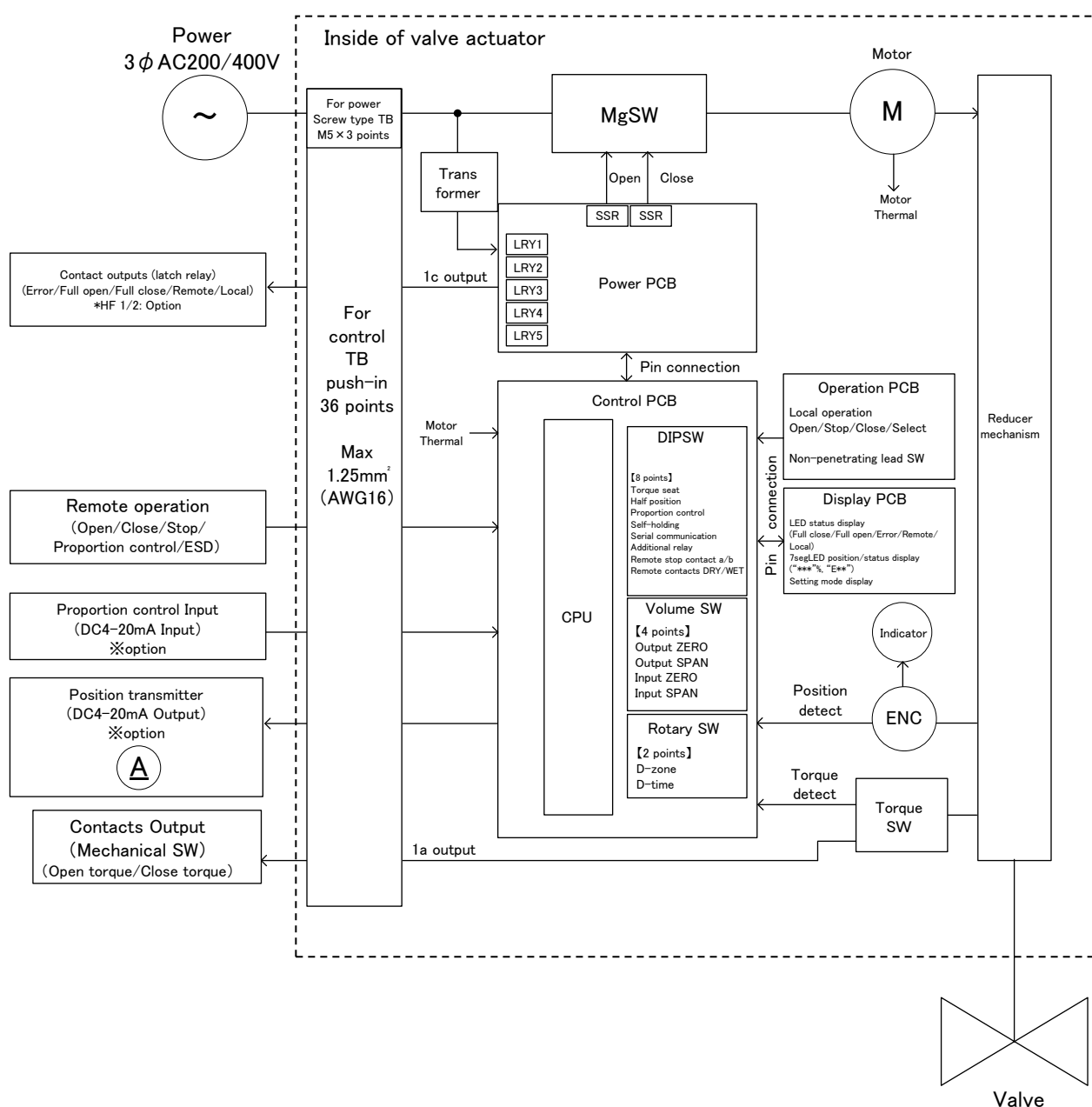
9-2. Precautions of explosion-proof

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1. Over view

The electric valve actuator Semflex VMM-Z is an integral type of Semflex VMM (mechanical). Transformer, MgSW, board, mechanical absolute encoder, mechanical torque SW, mechanical indicator, 7s eg LED opening display It is built-in. Depending on the required specifications, you can select a Position transmitter, Proportion control specification, or Half position limit (HF 1 and 2).

Electric operation is possible just by supplying the main power supply (3ΦAC200V/400V class). Please refer to the diagram below for the internal equipment configuration.

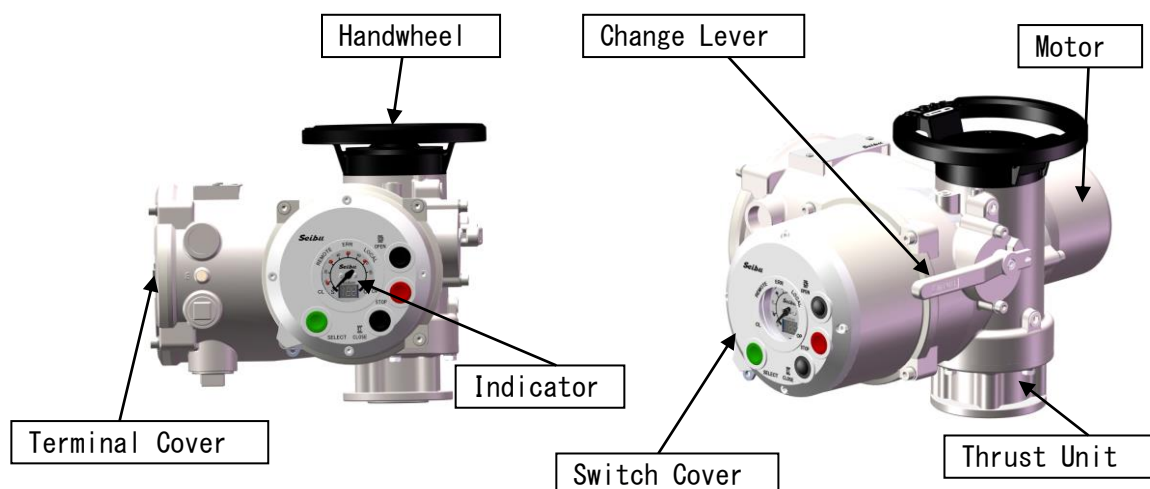


**2. Specification**

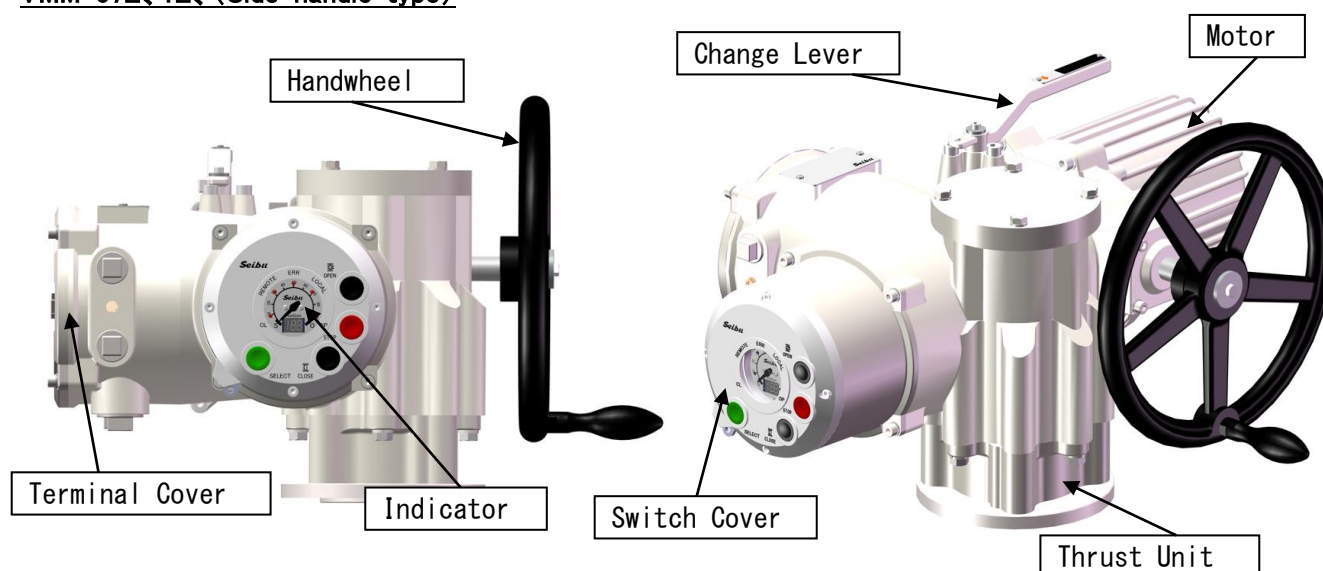
| Contents                                       |                        | Semflex VMM-Z                                                                                                                                                                                                                                               |
|------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Items                                          |                        |                                                                                                                                                                                                                                                             |
| Actuator models                                |                        | Semflex VMM-007/01/04/07/1Z                                                                                                                                                                                                                                 |
| Motor outputs                                  |                        | 0.1/0.2/0.4/0.75/1.5/2.2/3.7kW                                                                                                                                                                                                                              |
| Local operation                                | Select SW              | Remote/OFF/Local                                                                                                                                                                                                                                            |
|                                                | Local Input            | Open/Close/Stop                                                                                                                                                                                                                                             |
|                                                | Local LED              | Full open (Red) • Full close (Green) • Error (Orange) • Local (White) • Remote (White)                                                                                                                                                                      |
|                                                | Local SW               | Non-penetrating push button SW                                                                                                                                                                                                                              |
| Remote operation                               |                        | Open/Close/Stop/Proportion control/ESD<br>(Dry/Wet contact (DC24V) can be selected)                                                                                                                                                                         |
| Analog signal                                  | Position signal input  | DC4-20mA                                                                                                                                                                                                                                                    |
|                                                | Position signal output | DC4-20mA (Load resistance $\leq 600\Omega$ )                                                                                                                                                                                                                |
|                                                | Resolution             | Approximately 1/100                                                                                                                                                                                                                                         |
| Contacts output                                |                        | Latching relay contact output (5 points)<br>AC250V/3A, DC125V/0.4A<br>Error, Full open, Full close, Remote, Local (HF 1, HF 2)<br>1c contact x 5<br><br>Mechanical contacts (2 points)<br>AC250V/3A, DC125V/0.4A<br>Open torque/Close torque 1a contact x 2 |
| Position display                               |                        | Mechanical + 7segLED                                                                                                                                                                                                                                        |
| Position detect                                |                        | Mechanical absolute encoder                                                                                                                                                                                                                                 |
| Position limit setting range<br>(design value) |                        | VMM-007Z 3rev(MIN) ~ VMM-1Z 821rev(MAX)                                                                                                                                                                                                                     |
| Torque detect                                  |                        | Mechanical torque SW                                                                                                                                                                                                                                        |
| Alarm function                                 |                        | Over torque, Position limit data error, Rotation detection error<br>• Motor heating error • Proportion control command value error •<br>Control PCB setting error                                                                                           |
| Settings<br>Adjustments                        | Settings               | Full close seating (position seat / torque seat)                                                                                                                                                                                                            |
|                                                |                        | Half position limit 1•2(with / without) ※option                                                                                                                                                                                                             |
|                                                |                        | Proportion control(with / without) ※option                                                                                                                                                                                                                  |
|                                                |                        | Self-holding (with / without)                                                                                                                                                                                                                               |
|                                                |                        | Remote stop contact (b/a contact)                                                                                                                                                                                                                           |
|                                                |                        | Remote contacts (Dry contacts / Wet contacts)                                                                                                                                                                                                               |
|                                                | Volume SW              | 4-20mA input / output zero•span adjustments                                                                                                                                                                                                                 |
|                                                | Rotary SW              | D-ZONE / D-TIME adjustments                                                                                                                                                                                                                                 |

### 3. Name of each parts

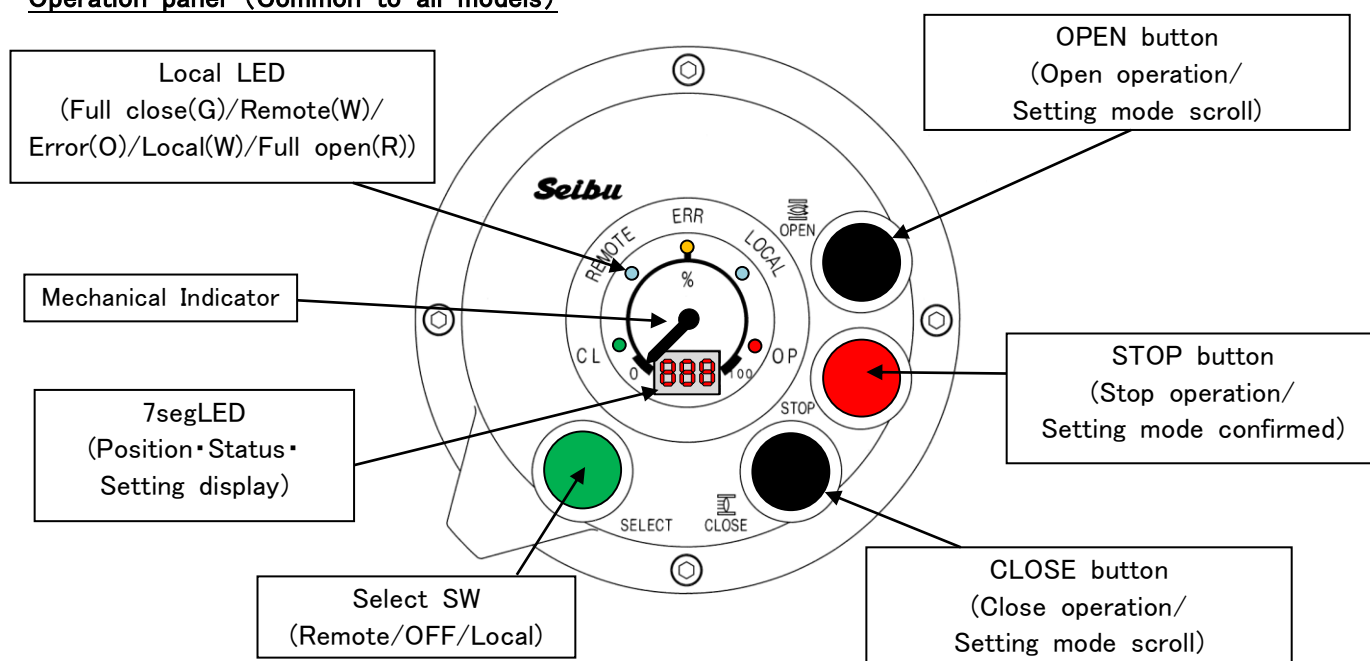
#### VMM-007Z, 01Z, 04Z (Top handle type)



#### VMM-07Z, 1Z, (Side handle type)



#### Operation panel (Common to all models)





## 4. Installation

### 4—1. Inspection Prior to Installation

- ① Check the nameplate on the main body to make sure that the actuator meets the specifications.
- ② Check the connection wiring diagram attached on the back face of the terminal cover to make sure that it meets with the specifications.
- ③ Make sure that the dimensions of the stem bushing are the same as those of the stem, and that the dimensions for the actuator flange are the same as those for the valve flange.

### 4—2. Mounting on Valve

#### 1) Insertion of stem bushing

Refer to the construction diagram for the thrust unit construction.

For the inside screw type, the stem bushing is machined in advance in our factory if its internal diameter is standard.

However, if non-standard internal diameter is required for the stem bushing or the valve is of an outside screw type, the stem bushing must be machined to fit the valve stem diameter.

In case machining is required, follow the steps given below to disassemble and reassemble the stem bushing.

- ① Remove the thrust cover by removing the two bolts with a hexagonal wrench key.
- ② Remove the stem bushing.
- ③ Remove the retaining ring, and loosen and remove the nut.  
Then, remove the thrust ball bearing (balls and bearing ring).
- ④ Care should be taken so that no dust or other foreign matter adheres to the bearing.
- ⑤ When machining the internal diameter of the stem bushing, be careful not to scratch any parts that will contact the bearing and O-ring.
- ⑥ After completion of machining, clean the stem bushing thoroughly. Apply an adequate amount of grease to the bearing, and reassemble the stem bushing with the bearing, nut and retaining ring.
- ⑦ Attach the thrust cover and tighten the bolts.



## 2) Mounting on Valve

- ① Before mounting on the valve, operate the switching lever so that the actuator can be manually operated.
- ② Suspend the actuator with belts or other such means.
- ③ For the outside screw type, screw the valve stem into the stem bushing while turning the actuator. After the actuator flange has come in contact with the valve flange, tighten the flanges with bolts. At this time turn the hand wheel slightly toward the opening direction to prevent excessive tightening on the valve body.
- ④ For the inside screw type, there are two options; to be subjected to the thrust power of the valve stem either on the valve side or on the actuator side. In the case of the latter, remove the thrust unit and attach a locknut on the stem bushing.



When suspending the actuator, use the belts to hold the main body of the actuator as shown in the picture below. If it is suspended by the manual hand wheel section, it may result in equipment damage.



Suspending the actuator, and slinging work, should be conducted only after the weight of the actuator and load capacity of the belts to be used have been checked. Stay clear of the suspended load.



When suspending work is to be performed after the valve and actuator are connected, never suspend by the actuator only. It may result in damaging the actuator due to the valve weight.



VMM-007Z, 01Z, 04Z



VMM-07Z, 1Z

## 4-3. Wiring

### 1) Wiring instructions

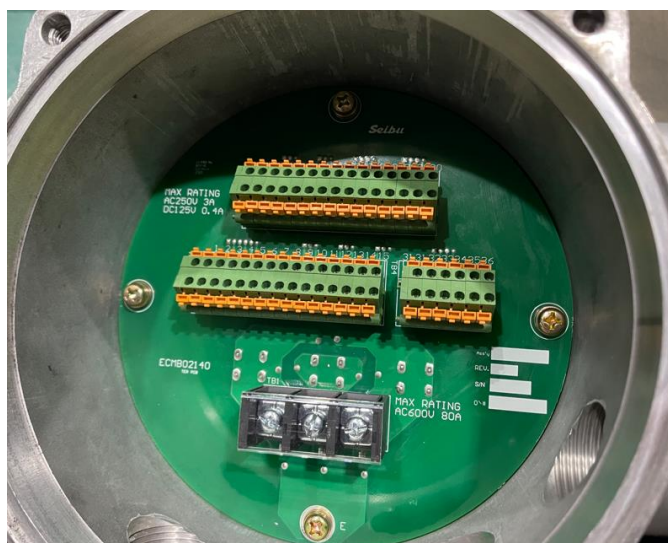
- ① Loosen the bolts and remove the terminal cover. Remove wiring entrance plugs only where necessary.
- ② Connect the ground wire to the ground terminal. (Screw size : M6)
- ③ If the actuator is installed outdoors, use waterproof cable glands to prevent rainwater from entering the terminal box.
- ④ Connect the main power supply wires to the terminals in the following way: R-U, S-V, and T-W. (Screw size : M5)
- ⑤ Connect the control cables appropriately according to the specifications.  
(Applicable wire diameter: 0.3 to 1.25sq, bare twisted wire or bar terminal)  
The control terminal block uses a 1-pole, 2-point type.  
Vertical columns are terminals with the same number. Please insert a crossover wire as necessary, such as COM, etc.
- ⑥ After completing the wiring, organize the internal wires and be careful not to get them caught in the cover. Remove any dirt from the mounting surface and install the terminal cover securely.



Before connecting wires, make sure that there is no insulation failure due to dampness or moisture. The ground wires must be securely connected.



This machine does not support external inverter drive. It will be the cause of the failure. Please supply 3-phase AC power according to the specifications.



Standard (36 points · push-in type)

### 2) Wiring diagram

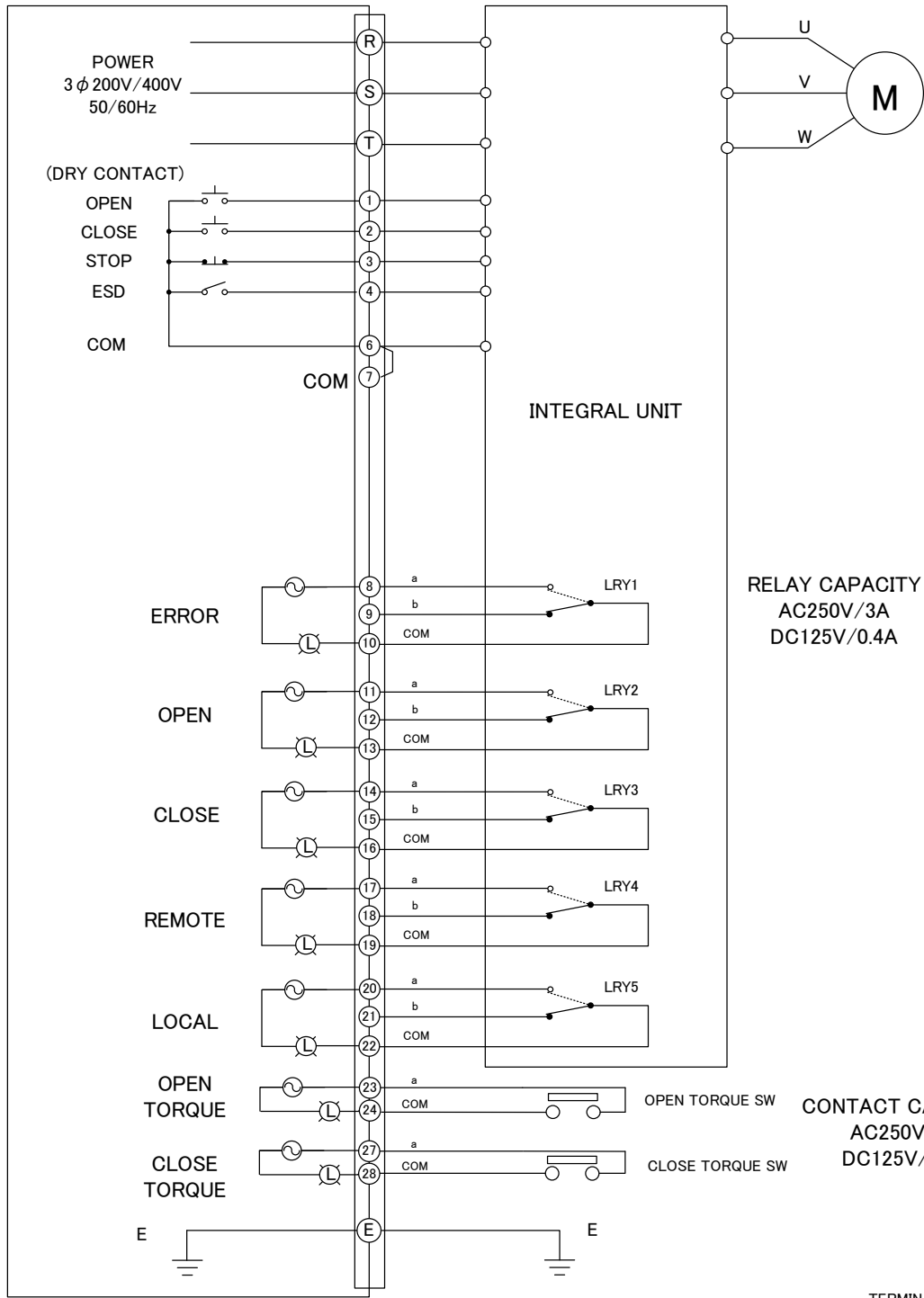
When making wiring connections, please use the reference wiring diagram submitted in the delivery specifications or the reference wiring diagram enclosed with the product terminal block. Excerpts of external reference wiring diagrams are shown on the following pages.



This product's contacts (LRY1 to 5) use latching relays. In the event of main power loss, error, full open, full close it is designed to remain the status before main power loss.

If the handle is operated on the machine side when the main power is lost, the state before main power loss will be maintained.

The current state will be restored by turning the power back on. When performing manual handle operation in the event of main power loss, mutual confirmation with the host (distant panel) is performed to ensure safety. Please work after doing so.



RELAY CAPACITY  
AC250V/3A  
DC125V/0.4A

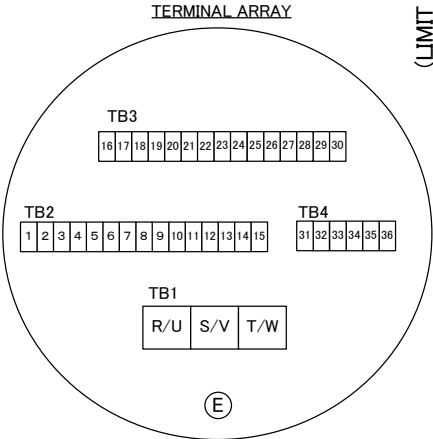
CONTACT CAPACITY  
AC250V/3A  
DC125V/0.4A

(Reference connection diagram)  
※For the power supply specifications,  
please check the product nameplate and specification sheet.

| SIGNAL  | TM NO. | POSITION |     |     |      |
|---------|--------|----------|-----|-----|------|
|         |        | CLOSE    | HF1 | HF2 | OPEN |
| OPEN:a  | 11-13  | ---      | --- | --- | ---  |
| OPEN:b  | 12-13  | ---      | --- | --- | ---  |
| CLOSE:a | 14-16  | ---      | --- | --- | ---  |
| CLOSE:b | 15-16  | ---      | --- | --- | ---  |

— : CONTACT ON    - - - - : CONTACT OFF

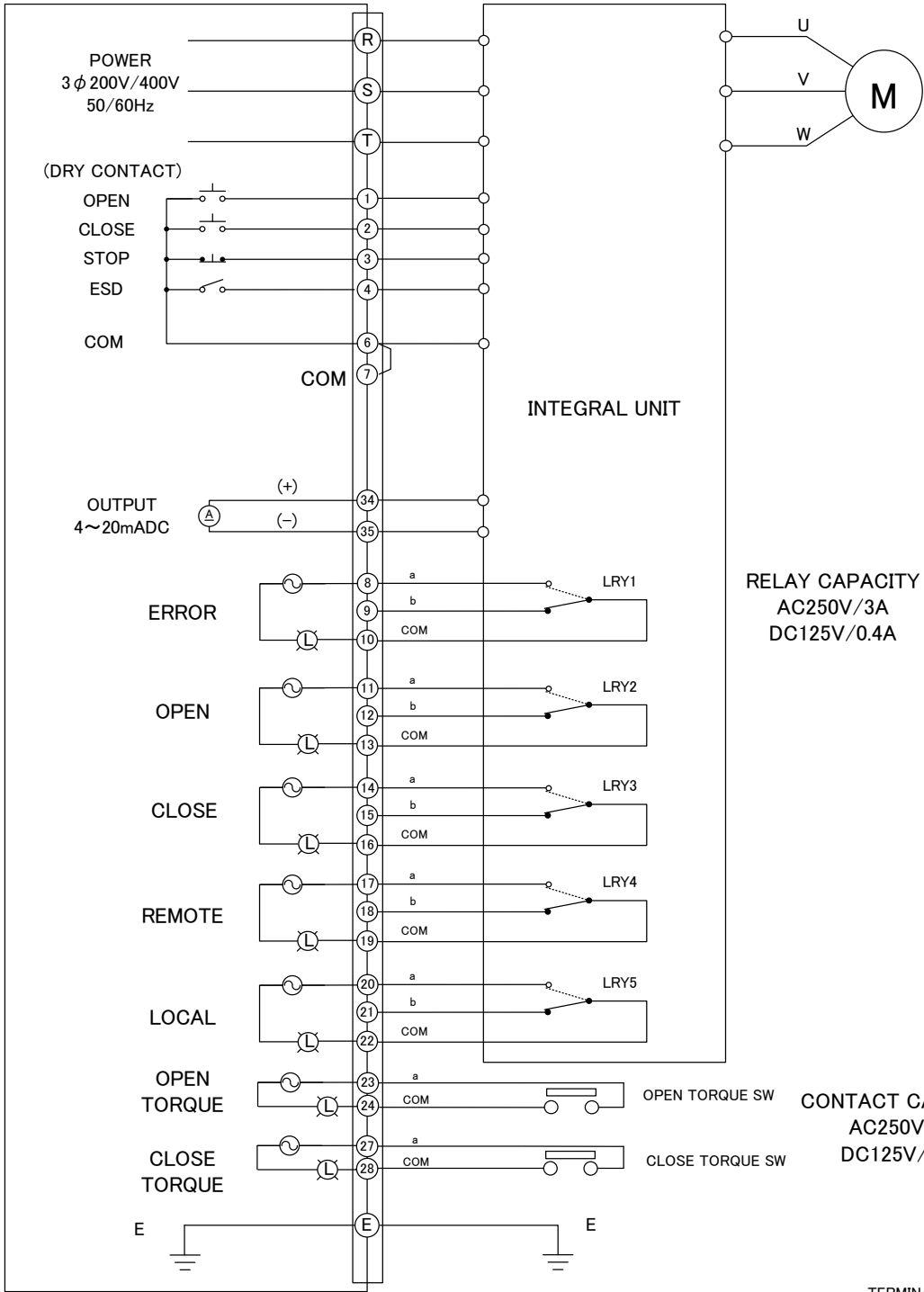
| SIGNAL                | TM NO. | 動作                                                                      |
|-----------------------|--------|-------------------------------------------------------------------------|
| ERROR:a               | 8-10   | When abnormality occurs, the point of contact is turned on.             |
| ERROR:b               | 9-10   | When abnormality occurs, the point of contact is turned off.            |
| OPEN TORQUE:a         | 23-24  | When open direction is over torque, the point of contact is turned on.  |
| CLOSE TORQUE:a        | 27-28  | When close direction is over torque, the point of contact is turned on. |
| SELECT SW<br>REMOTE:a | 17-19  | When select SW is REMOTE, the point of contact is turned on.            |
| SELECT SW<br>REMOTE:b | 18-19  | When select SW is REMOTE, the point of contact is turned off.           |
| SELECT SW<br>LOCAL:a  | 20-22  | When select SW is LOCAL, the point of contact is turned on.             |
| SELECT SW<br>LOCAL:b  | 21-22  | When select SW is LOCAL, the point of contact is turned off.            |



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| REV.           |  | REV.           |  |
|----------------|--|----------------|--|
| 3MO1833        |  | 3MO1833        |  |
| DWG. NO.       |  | DWG. NO.       |  |
| Semiflex VMM-Z |  | Semiflex VMM-Z |  |
| TYPE           |  | TYPE           |  |
| Maruyama       |  | Maruyama       |  |
| DWN            |  | DWN            |  |
| Kitajima       |  | Kitajima       |  |
| APP            |  | APP            |  |
| 3RD.ANG.PROJ.  |  | 3RD.ANG.PROJ.  |  |
| DATE           |  | DATE           |  |
| 24.03.04       |  | 24.03.04       |  |
| SCALE          |  | SCALE          |  |
| 1/1            |  | 1/1            |  |
| UNIT           |  | UNIT           |  |
| mm             |  | mm             |  |
| TITLE          |  | TITLE          |  |
| Wiring Diagram |  | Wiring Diagram |  |

(LIMIT SW 1c x 2, REMOTE OPERATION : DRY CONTACT)



RELAY CAPACITY  
AC250V/3A  
DC125V/0.4A

CONTACT CAPACITY  
AC250V/3A  
DC125V/0.4A

|       |  |                                     |  |                |  |
|-------|--|-------------------------------------|--|----------------|--|
| 圖名    |  | TITLE                               |  | Wiring Diagram |  |
| 圖號    |  | SCALE                               |  | DATE           |  |
| 單位    |  | mm                                  |  | 24.03.04       |  |
| 三     |  | 角                                   |  | DATE           |  |
| 3RD   |  | ANG                                 |  | 24.03.04       |  |
| PROJ. |  | 照                                   |  | DWN            |  |
| APP.  |  | Ktjima                              |  | Maruyama       |  |
| 承認    |  | Ktjima                              |  | Maruyama       |  |
| 形式    |  | TYPE                                |  | Semflex VMM-Z  |  |
| 圖番    |  | DWG. NO.                            |  | 3M01834        |  |
| REV.  |  | SEBU Electric & Machinery CO., LTD. |  | 3M01834        |  |

(LIMIT SW 1c x 2, 4-20mADC OUT,  
REMOTE OPERATION : DRY CONTACT)

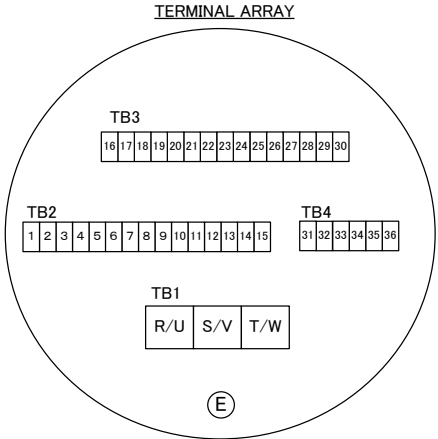
(Reference connection diagram)

※For the power supply specifications,  
please check the product nameplate and specification sheet.

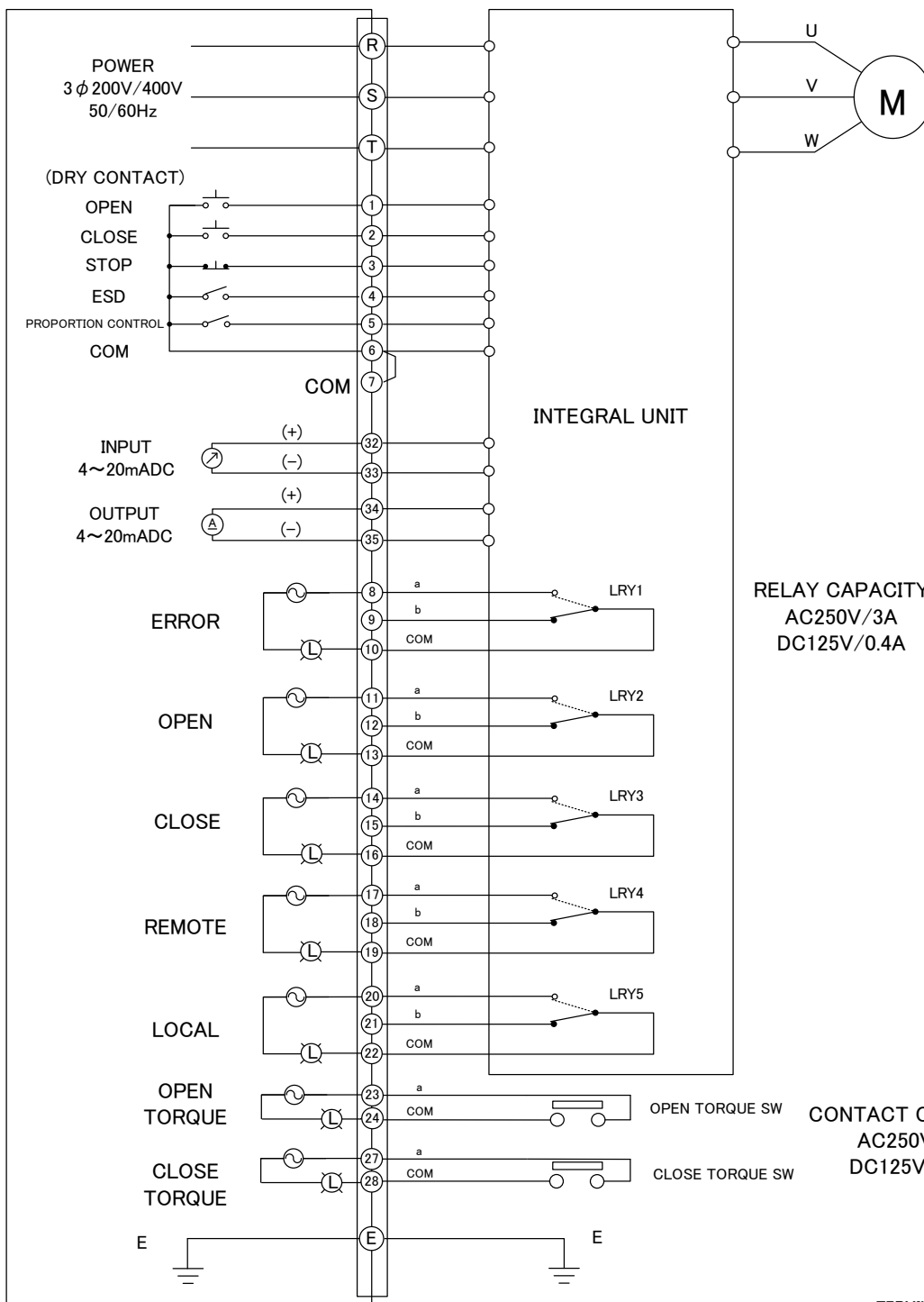
| SIGNAL    | TM NO. | POSITION |     |     |      |
|-----------|--------|----------|-----|-----|------|
|           |        | CLOSE    | HF1 | HF2 | OPEN |
| OPEN : a  | 11-13  | —        | —   | —   | —    |
| OPEN : b  | 12-13  | —        | —   | —   | —    |
| CLOSE : a | 14-16  | —        | —   | —   | —    |
| CLOSE : b | 15-16  | —        | —   | —   | —    |

— : CONTACT ON    - - - - : CONTACT OFF

| SIGNAL               | TM NO. | 動作                                                                      |
|----------------------|--------|-------------------------------------------------------------------------|
| ERROR : a            | 8-10   | When abnormality occurs, the point of contact is turned on.             |
| ERROR : b            | 9-10   | When abnormality occurs, the point of contact is turned off.            |
| OPEN TORQUE : a      | 23-24  | When open direction is over torque, the point of contact is turned on.  |
| CLOSE TORQUE : a     | 27-28  | When close direction is over torque, the point of contact is turned on. |
| SELECT SW REMOTE : a | 17-19  | When select SW is REMOTE, the point of contact is turned on.            |
| SELECT SW REMOTE : b | 18-19  | When select SW is REMOTE, the point of contact is turned off.           |
| SELECT SW LOCAL : a  | 20-22  | When select SW is LOCAL, the point of contact is turned on.             |
| SELECT SW LOCAL : b  | 21-22  | When select SW is LOCAL, the point of contact is turned off.            |



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[illegible]

(LIMIT SW 1c x2, PROPORTION CONTROL,  
REMOTE OPERATION : DRY CONTACT)

 (Reference connection diagram)

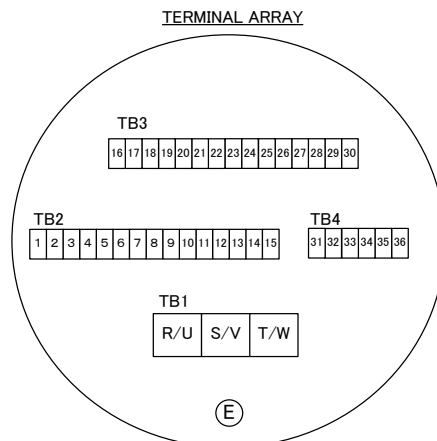
✖For the power supply specifications,

please check the product nameplate and specification sheet.

| SIGNAL   | TM NO. | POSITION |     |     |      |
|----------|--------|----------|-----|-----|------|
|          |        | CLOSE    | HF1 | HF2 | OPEN |
| OPEN :a  | 11-13  |          |     |     |      |
| OPEN :b  | 12-13  |          |     |     |      |
| CLOSE :a | 14-16  |          |     |     |      |
| CLOSE :b | 15-16  |          |     |     |      |

———— : CONTACT ON      - - - - : CONTACT OFF

| SIGNAL                | TM NO. | 動作                                                                      |
|-----------------------|--------|-------------------------------------------------------------------------|
| ERROR:a               | 8—10   | When abnormality occurs, the point of contact is turned on.             |
| ERROR:b               | 9—10   | When abnormality occurs, the point of contact is turned off.            |
| OPEN TORQUE:a         | 23—24  | When open direction is over torque, the point of contact is turned on.  |
| CLOSE TORQUE:a        | 27—28  | When close direction is over torque, the point of contact is turned on. |
| SELECT SW<br>REMOTE:a | 17—19  | When select SW is REMOTE, the point of contact is turned on.            |
| SELECT SW<br>REMOTE:b | 18—19  | When select SW is REMOTE, the point of contact is turned off.           |
| SELECT SW<br>LOCAL:a  | 20—22  | When select SW is LOCAL, the point of contact is turned on.             |
| SELECT SW<br>LOCAL:b  | 21—22  | When select SW is LOCAL, the point of contact is turned off.            |



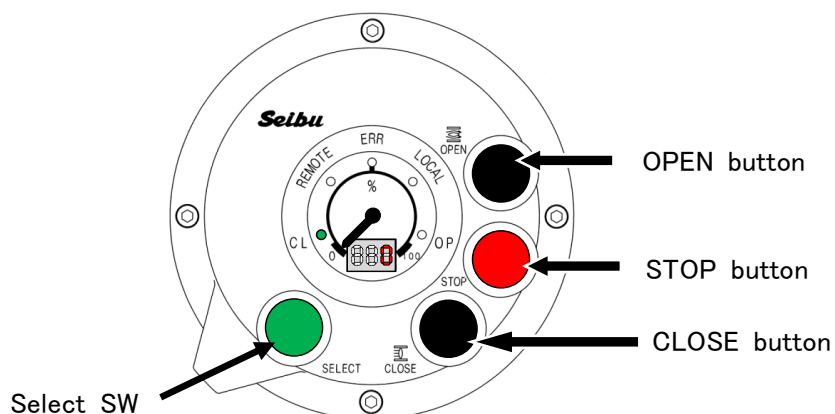
※PLEASE DON'T TOUCH EMPTY TERMINAL

## 5. Trial operation(Basical operation)

### 5—1. Initial operation



After confirming that each push button switch is not pressed and that the external operation part is not operated , Please turn on the power.

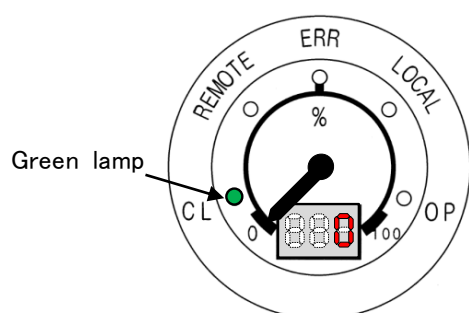


(Check after power on)

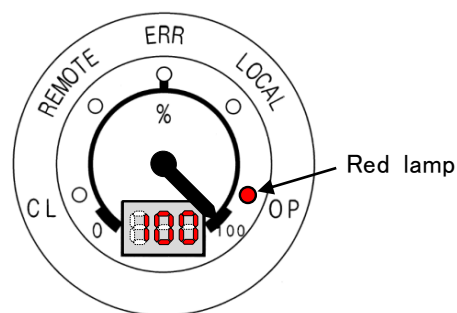
When the power is turned on, the 7seg LED section at the bottom of the Indicator lights up in red, and the software version "v□□" → Please confirm that the current position is displayed as "□□□%".

Furthermore, when the power is turned on, the "green lamp" is in the Full close position, and the "red lamp" is in the Full open position. Lights up. In case of an Error condition, the "orange lamp" lights up.

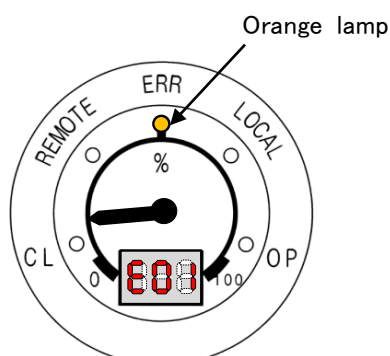
**\*Please refer to "Error Code List (P.37)" for error details and troubleshooting.**



Full close display(Green lamp turns on)



Full open display(Red lamp turns on)



Error display(Orange lamp turns on)



## 5-2. Manual operation

- ① For the Change lever operation, set the actuator to the manual mode. (The lever can be locked in the manual mode position.)

Turn the lever while turning the hand wheel to make sure that the clutch is engaged.

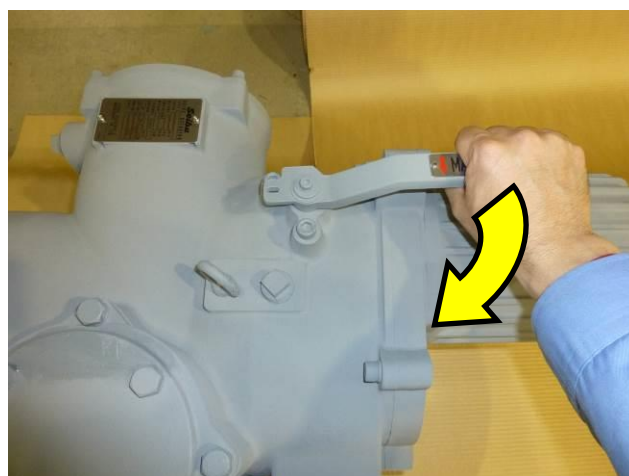
 If the Change lever cannot be pushed all the way in, it is possible that the claws of the clutch mechanism are in the same phase. If you force the switch in this state, the lever may be damaged. Turn the handle slightly in the open or close direction, then push in the Change lever to set it to manual mode.

- ② If you let go of the lever after switching to the manual position, the switching lever will automatically return to its original position. The internal clutch remains in manual mode.

\*This machine is an automatic return type, so if you perform electric operation again after manual operation, it will automatically return to the electric state.



VMM-007Z, 01Z, 04Z



VMM-07Z, 1Z



## 5-3. Electric operation(Operation confirmation of actuator alone)



CLOSE is not accepted during OPEN. Please stop it once and then close it.

OPEN is not accepted during CLOSE. Please stop it once and then open it.

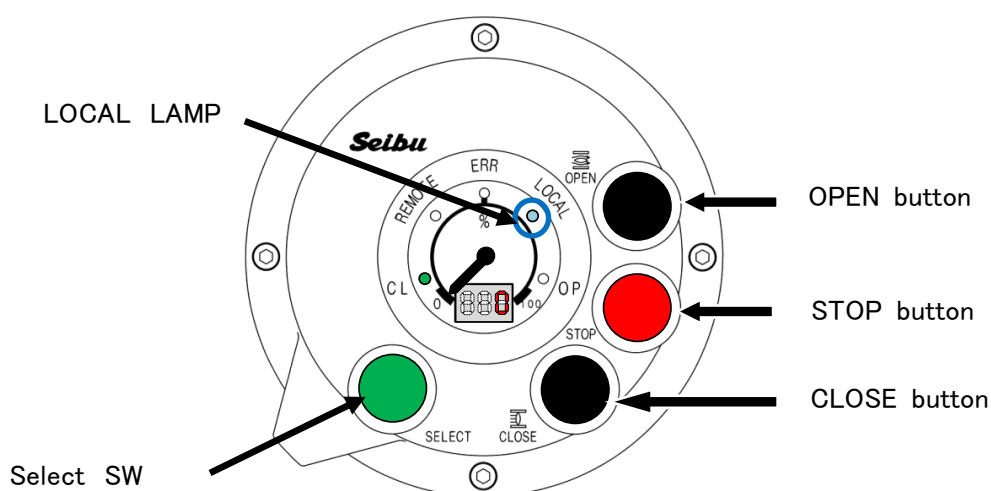
If you change the select switch during OPEN/CLOSE operation, the operation will stop.

Do not touch the output shaft during OPEN/CLOSE operation. Doing so may cause an accident.

The actuator OPEN/CLOSE operation can be performed in both local operation mode and remote operation mode, and it uses a holding circuit.

## (1) Local operation【Open/close operation self-holding (standard) specifications】

Press the select switch to switch to "local operation mode selection".



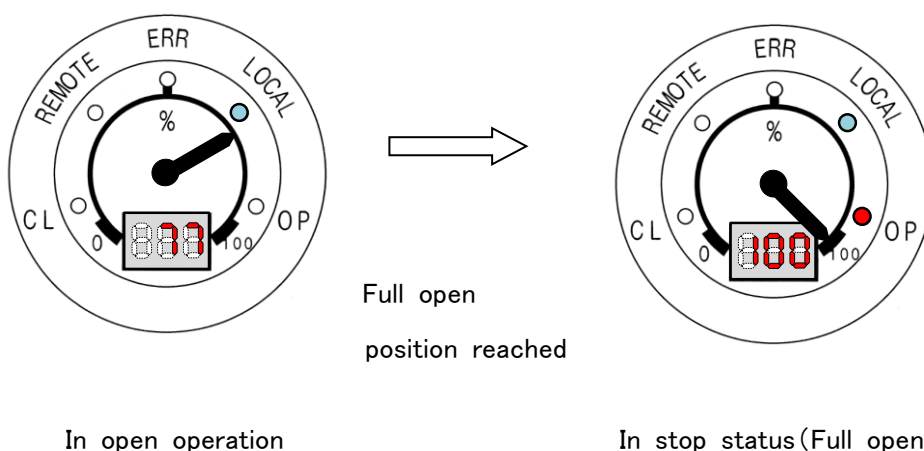
## [OPEN Operation]

Press the OPEN button to move the valve in the opening direction.

During the opening operation, the mechanical opening gauge moves in the opening direction.

It rotates, "□□□%" is displayed on the 7segLED, and the "position" % is counted up.

The operation will stop at the fully open position and "100%" will be displayed. At this time, the red lamp (OP) indicates the full open position. Please make sure that it is lit.

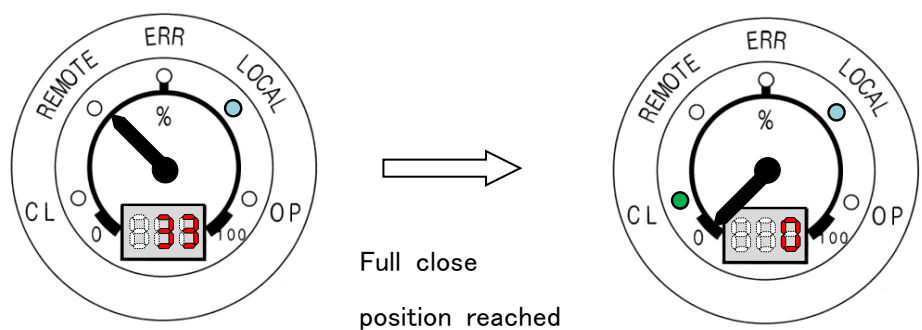


## [CLOSE Operation]

Press the CLOSE button to move the valve in the closing direction. During the closing operation, the mechanical opening gauge rotates in the closing direction.

It rotates, “□□□”% will be displayed on the 7segLED and the “Position”% will count down.

The operation will stop at the fully closed position and “0”% will be displayed. At this time, the green lamp (CL) indicates the fully closed position. Please make sure that it is lit.



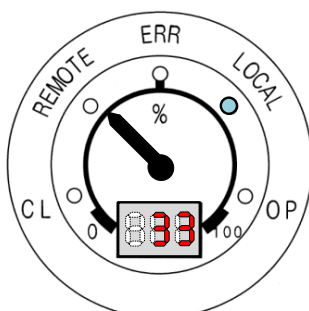
In close operation

In stop status (Full close)

## [STOP Operation]

If you press the STOP button during open/close operation, the open/close operation will stop.

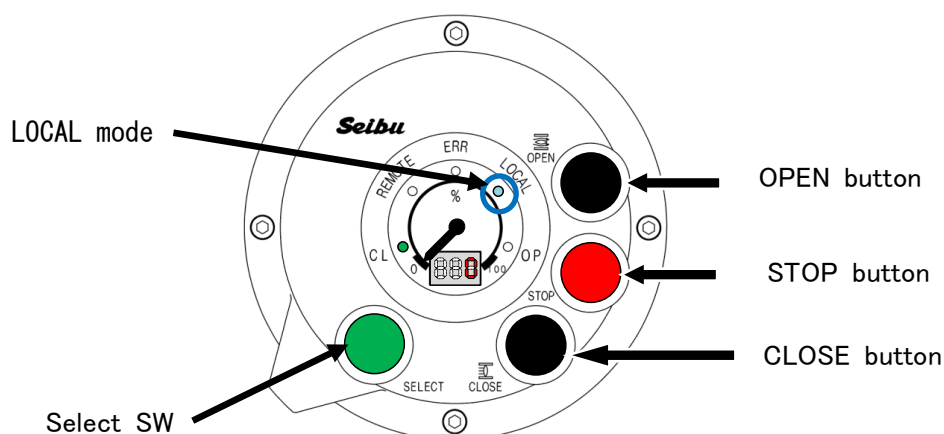
The position at the time of stop is displayed on the 7seg LED.



In stop status

## (2) Local operation【Open/close operation inching specifications】

Press the select switch to switch to "Local operation mode selection".



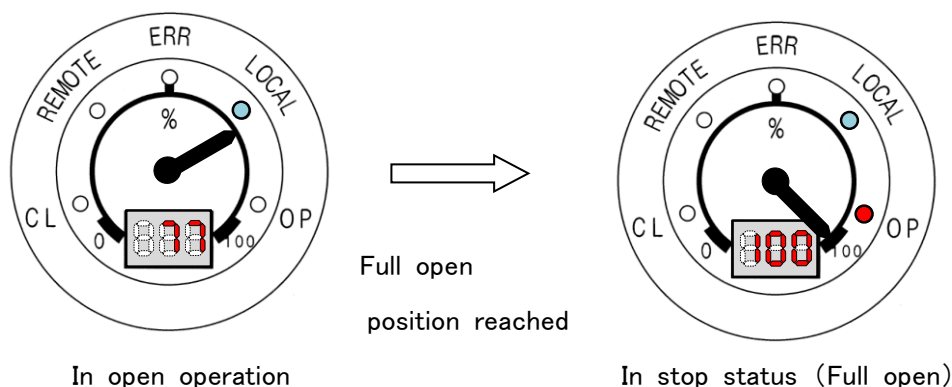
## [OPEN Operation]

In the inching operation specification, the valve moves in the opening direction by holding down the OPEN button.

OPEN operation will be stopped by releasing the OPEN button or pressing the STOP button.

During the OPEN operation, the mechanical indicator rotates in the opening direction and the position [%] on the 7seg LED indicator counts up.

The operation will stop at the Full open position and "100" will be displayed. At this time, the red lamp (OP) indicates the Full open position. Please make sure that it is lit.



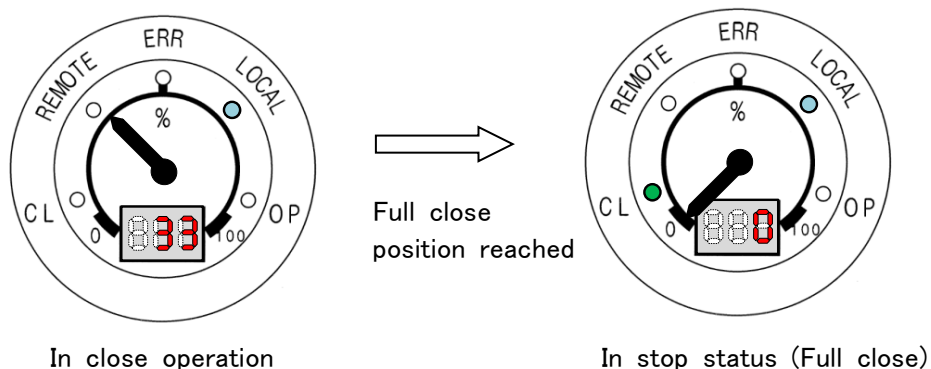
## [CLOSE Operation]

In the inching operation specification, the valve moves in the closing direction by holding down the CLOSE button.

CLOSE operation will be stopped by releasing the CLOSE button or pressing the STOP button.

During the CLOSE operation, the mechanical indicator rotates in the closing direction and the position [%] on the 7seg LED indicator counts down.

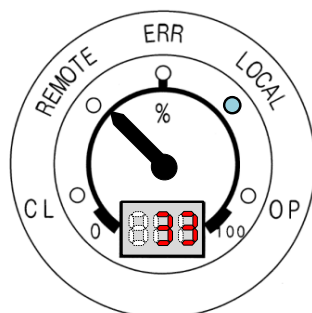
The operation will stop at the Full close position and "0" will be displayed. At this time, the green lamp (CL) indicates the Full close position. Please make sure that it is lit.



**[STOP Operation]**

If you stop the OPEN/CLOSE operation or press the STOP button during the OPEN/CLOSE operation, the OPEN/CLOSE operation will stop.

The position at the time of stop is displayed on the 7seg LED.



In stop status

**※About OPEN/CLOSE operation without self-holding (inching operation) specifications**

Actuators with inching operation specifications perform OPEN and CLOSE operations only when OPEN and CLOSE operations are performed local or remote.

The OPEN/CLOSE operation will be stopped by stopping the OPEN/CLOSE operation or by performing the STOP operation.

①CLOSE operation during OPEN operation

②OPEN operation during CLOSE operation

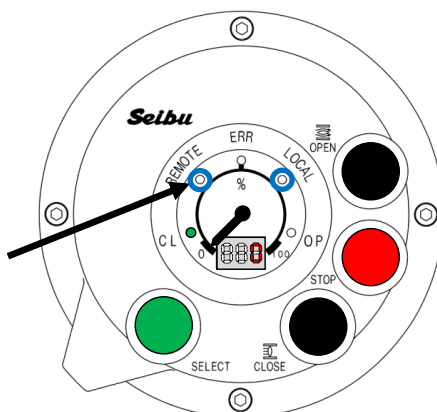
Even if you perform this operation, the interlock will continue, so the previous operation will continue and there will be no reverse operation.

For safety reasons, please do not perform reverse operations (operations ①②) during OPEN/CLOSE operation.

**(3)When operation is OFF**

For safety reasons, when operating the actuator, changing or adjusting settings, or performing maintenance, please turn off the LOCAL/REMOTE select switch.

Select SW = OFF  
(Both REMOTE and LOCAL  
Led are off.)

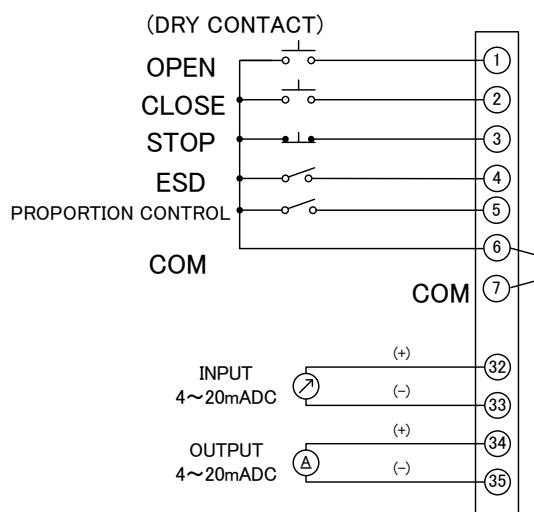


#### 5—4. Electric Operation (Operation confirmation of Remote operation)

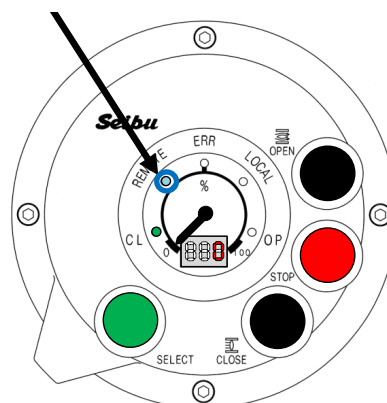
When performing remote operation,

Press the select switch on the actuator to switch to "remote operation mode".

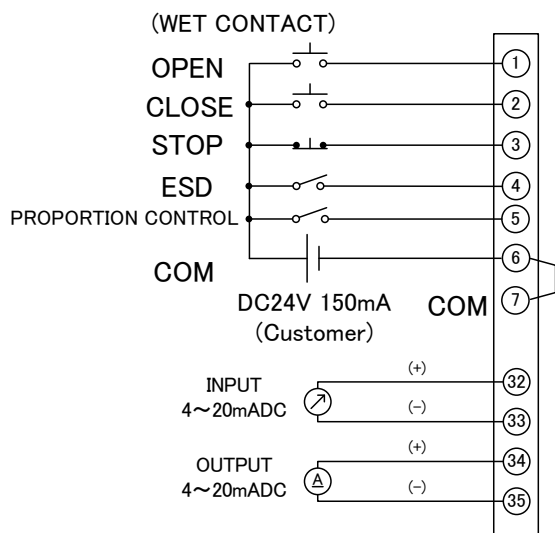
##### (1) How to use contacts for remote operation input



REMOTE operation mode



Semflex VMM-Z Wiring diagram (Dry contacts)



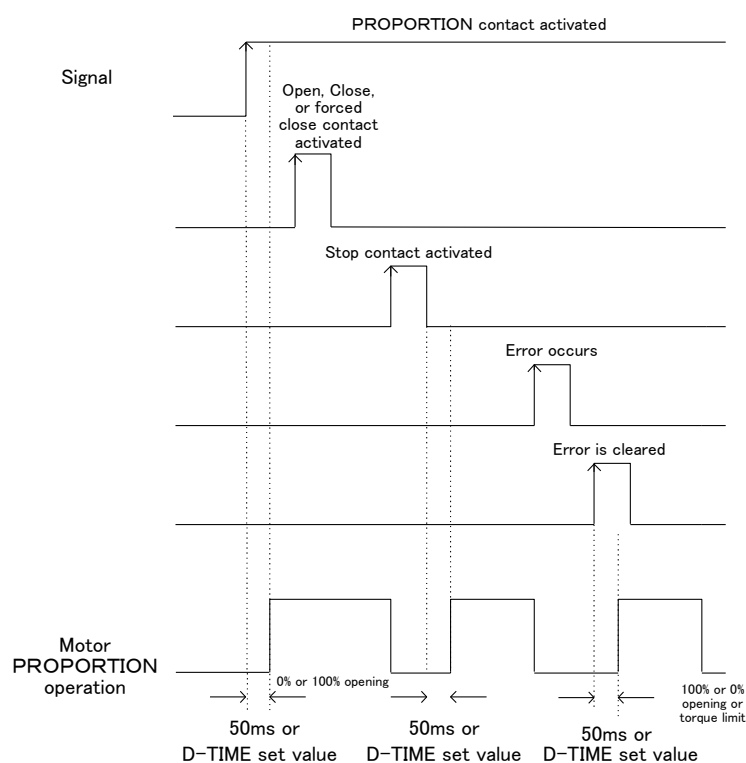
Semflex VMM-Z Wiring diagram (Wet contacts)

##### (a) Open•Close•Stop contacts:

- It operates in the open direction by shorting the OPEN contacts (terminal numbers ①-③-⑥).
- It will stop at the position exceeding the set Full open or Open torque limit value.
- It operates in the close direction by shorting the CLOSE contacts (terminal numbers ②-③-⑥).
- It will stop at the position exceeding the set Full close or Close torque limit value.
- Operation is stopped by release the stop contacts (terminal numbers ③-⑥).

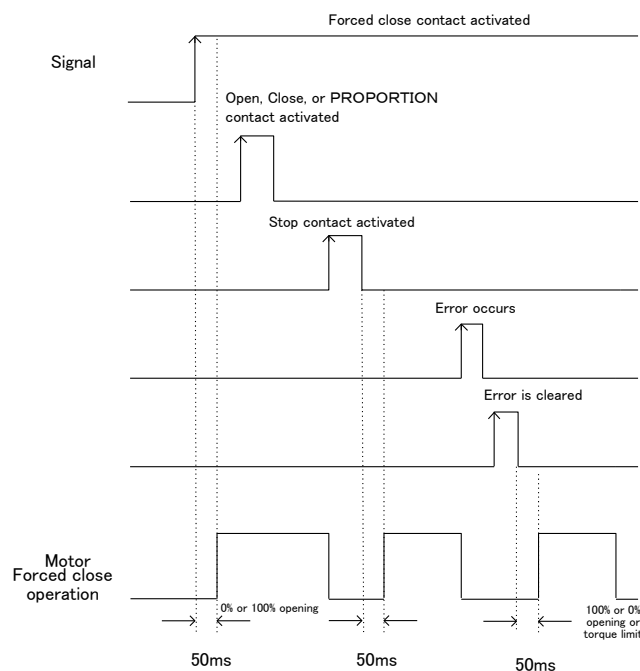
**(b) Proportion control contact:**

- By shorting the proportional control contacts (terminal numbers ③-⑤-⑥), proportion control of 4-20mA is possible.
- Only the stop contact is valid during proportion control operation (while sending a signal).
- Proportion control operation can only be stopped while the stop contact is released. if it is short-circuited, it will move toward the target value again.
- During proportion control operation, intermediate stop positions are ignored and the valve is moved to the commanded position.
- If an abnormality occurs during proportion control operation, it will stop. After the error is cleared, operation will automatically resume.
- Proportion control contacts are disabled during ESD(Forced close).
- If the proportion control stops once during operation, the set D-TIME (minimum 0.5 seconds) non-operation time will be used. It does not move to the next operation until it is counted up. (Prevents command value fluctuation and valve hunting)

**When Proportion control contact is activated**

**(c) ESD (Forced close) operation contact:**

- If the forced close contacts are shorted (terminal numbers ③-④-⑥), remote forced close operation will be performed.
- During forced closing, only the stop contact and error are valid.
- Forced closing can be stopped only while the stop contact is released, and if you short-circuit it, it will move toward Full close again.
- During forced close operation, any intermediate stop positions will be ignored and the valve will operate Full close.

**ESD (When Forced close contact is activated)**Regarding other contact specifications

※For OPEN/CLOSE contacts, it is possible to select whether or not the contacts are self-holding.  
 If it has self-holding, it will continue to operate even if the contact is released.  
 If it has no self-holding, the operation will stop when the contact is released.

※Proportion control contacts and ESD(forced close) contacts do not have self-holding.  
 It can only operate while short-circuited.

※The contact signal has a dead time of 50ms. By inputting a command signal of 50ms or more, Contact commands can be used.

※Regardless of whether self-holding is present or not, if the proportion control or forced close (ESD) contact is short-circuited during open/close operation.  
 Prioritizes proportion control/forced close (ESD) and stops opening/closing operations.  
 In addition, proportion control/forced close (ESD) contacts  
 Even if it is opened after a short circuit, it will not automatically return to open/close operation.  
 For open/close operations, it is necessary to short-circuit the open/close contacts again.

※When switching from manual to electric, etc., the actuator operation may lag behind the motor operation depending on the condition of the drive unit. (This machine is designed to automatically return from manual to electric)

## 6. Trial Operation(Settings & Adjustments)

### 6-1. List of settings / adjustments items

#### Setting mode

| Items | Contents                                          | Related pages |
|-------|---------------------------------------------------|---------------|
| CL    | Set the full close position. (Encoder origin set) | P26           |
| OP    | Set the full open position.                       | P27           |
| HF1   | Set the Half position1                            | P32           |
| HF2   | Set the Half position2                            | P33           |
| ROT   | Set the motor rotation direction.                 | P34           |

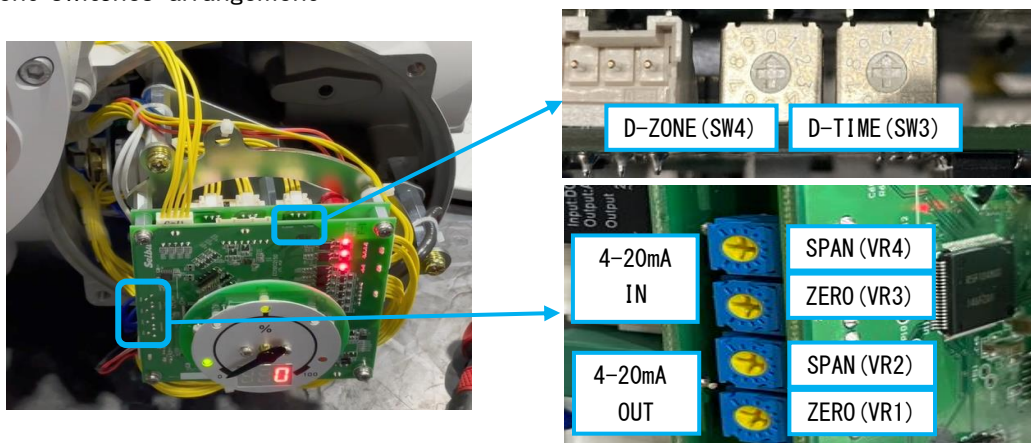
#### Adjustments items

| Items                  | Contents                                                                                                                                                          | Related pages |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Torque SW              | Adjust the torque detection position within the red range of the scale.                                                                                           | P28           |
| Output ZERO adjustment | Adjust the zero position of the Position output signal (4-20mA output) using the volume switch "4-20mA OUT ZERO" (VR1). (Setting range: $4 \pm 2\text{mA}$ )      | P29           |
| Output SPAN adjustment | Adjust the slope of the Position output signal (4-20mA output) using the volume switch "4-20mA OUT SPAN" (VR2). (Setting range: $20 \pm 2\text{mA}$ )             | P29           |
| Input ZERO adjustment  | Adjust the zero position of the Position input command signal (4-20mA input) using the volume switch "4-20mA IN ZERO" (VR3). (Setting range: $4 \pm 2\text{mA}$ ) | P30           |
| Input SPAN adjustment  | Adjust the slope of the Position input command signal (4-20mA input) using the volume switch "4-20mA IN SPAN" (VR4). (Setting range: $20 \pm 2\text{mA}$ )        | P30           |
| D-Zone adjustment      | Adjust the dead zone using the rotary switch "D-ZONE" (SW4). (10 steps :0.5、1.0、1.5、2.0、2.5、3.0、3.5、4.0、5.0、6.0%)                                                 | P31           |
| D-Time adjustment      | Adjust the reversal pause time with the rotary switch "D-TIME" (SW3). (10 steps :0.5、0.6、0.7、0.8、1.0、1.2、1.4、1.6、1.8、2.0sec)                                      | P31           |

#### Other settings

| Items   | Contents                                                                 | Related pages |
|---------|--------------------------------------------------------------------------|---------------|
| DIPSW-1 | Select the seating type of Full close limit (position seat/torque seat). | P35           |
| DIPSW-4 | Select open/close self-holding (with/without).                           | P35           |
| DIPSW-7 | Select the remote stop contact (B contact/A contact).                    | P35           |
| DIPSW-8 | Select the remote contact (Dry /Wet contact).                            | P35           |

#### Adjustment switches arrangement





## 6-2. How to start / exit Setting mode

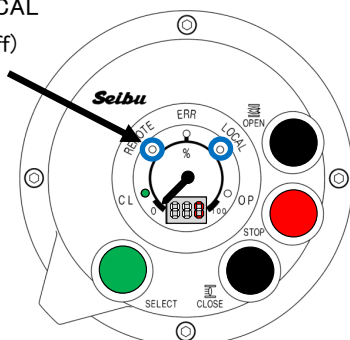
### How to start Setting mode

#### ① Turn the select switch to "OFF"

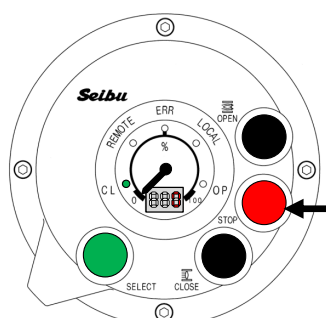
Operation mode OFF selection

(REMOTE•LOCAL

(both lights off)



#### ② Press STOP button for 2 seconds

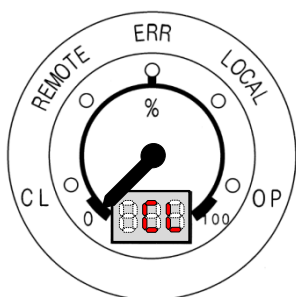


Press STOP  
for 2 seconds

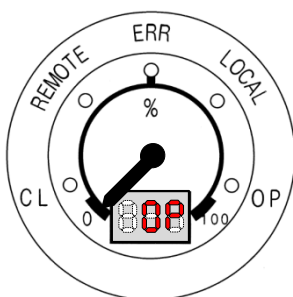
#### ③ Setting mode starts

After starting the setting mode, press the OPEN/CLOSE button to scroll to each setting item.

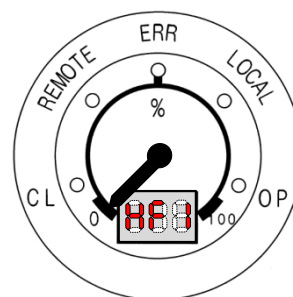
Press and hold the STOP button for the item you want to set to enter the setting mode for each item.



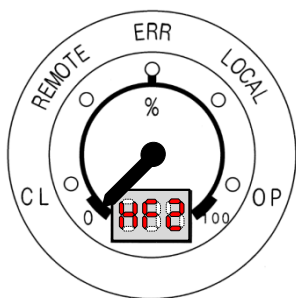
Full close setting



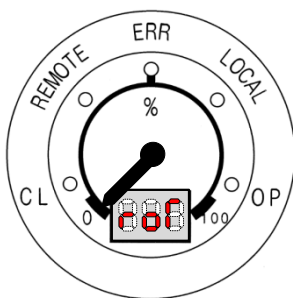
Full open setting



Half position1 setting (\*)



Half position2 setting (\*)



Motor rotation setting

Return to CL

(\*): option

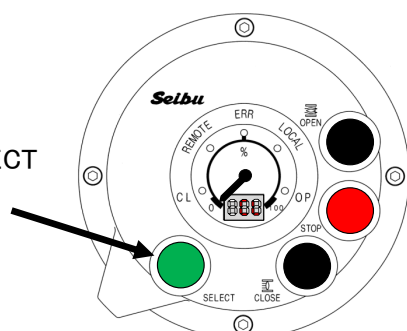
### How to exit Setting mode



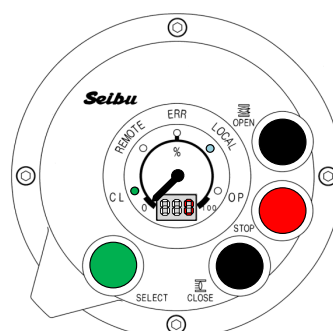
After completing the settings or if you accidentally start the setting mode, press the select switch once to exit the setting mode. (Return in local mode)

Please note that if you leave before confirming the settings for each item, the previous settings will be retained.

Press SELECT  
SW once



Still in setting mode



Exit the setting mode (Return in Local mode)

### 6—3. Position Limit settings

After installing it on the valve, it is necessary to set the limit switch's Full close and Full open positions. This machine sets limits in the setting mode, so adjustments can basically be made without the need to release the switch cover.

(If you need to fine-tune the Indicator when Full close or Full open, release the switch cover and adjust.)

#### (1)How to set Full close

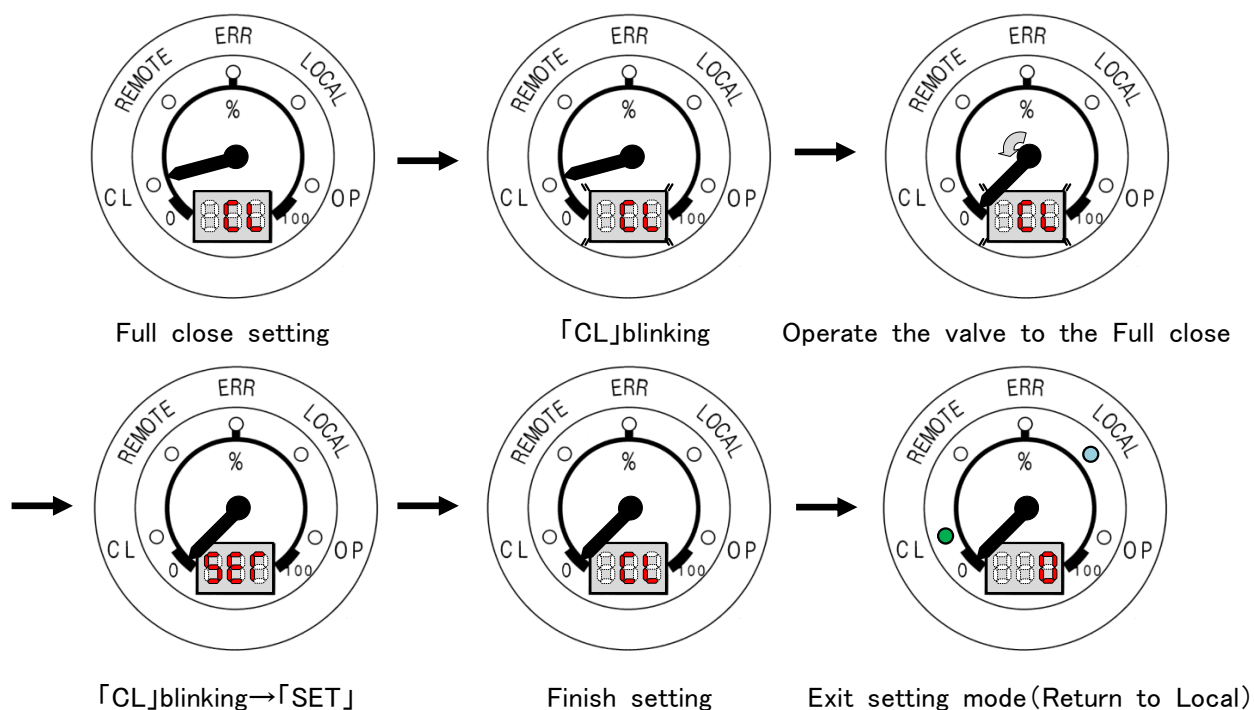
##### 【Operating procedure】

- ①In the Full close position setting mode (7seg LED : "CL"), press the STOP button for 2 seconds to enter the Full close position setting mode starts up.
- ②Electric/Manual opening/closing is possible when the "CL" display is blinking.
- ③Full close the valve manually. (When using electric power, stop before fully closing, and then manually close fully.)
- ④Press the STOP button for 2 seconds to complete the setting.  
(7segLED : "CL" blinking → "SET" → "CL")
- ⑤Press the select switch to exit setting mode.

##### 【Method of operation】

- Press OPEN button : Motor forward rotation operation (reverse operation when ROT="L" is selected)
- Press CLOSE button : Motor reverse rotation operation (forward rotation operation when ROT="L" is selected)
- Press STOP button briefly : Motor operation stopped
- Press STOP button for 2 seconds : Finish setting of Full close position

##### 【Indicator and display】



## (2) How to set Full open

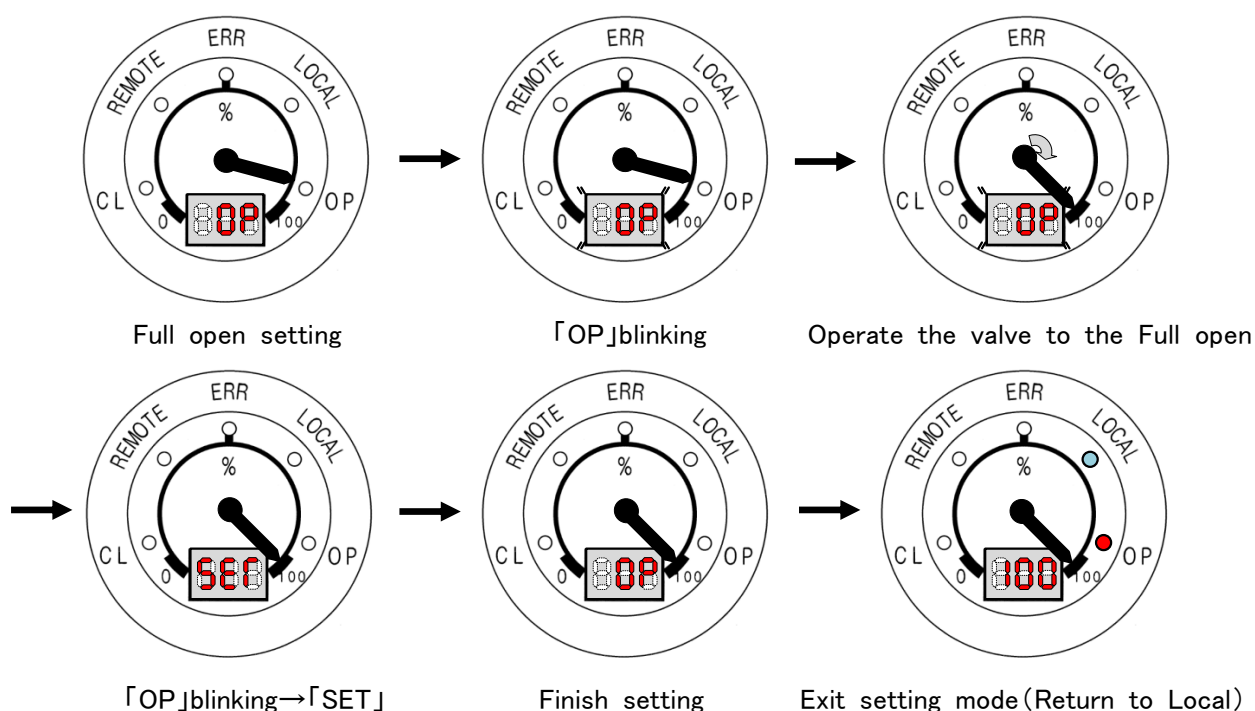
## 【Operating procedure】

- ① In the Full open position setting mode (7seg LED : "OP"), press the STOP button for 2 seconds to enter the Full open position setting mode starts up.
- ② Electric/Manual opening/closing is possible when the "OP" display is blinking
- ③ Full open the valve manually. (When using electric power, stop before fully opening, and then manually open fully.)
- ④ Press the STOP button for 2 seconds to complete the setting.  
(7segLED : "OP" blinking → "SET" → "OP")
- ⑤ Press the select switch to exit setting mode.

## 【Method of operation】

- Press OPEN button : Motor forward rotation operation (reverse operation when ROT="L" is selected)
- Press CLOSE button : Motor reverse rotation operation (forward rotation operation when ROT="L" is selected)
- Press STOP button briefly : Motor operation stopped
- Press STOP button for 2 seconds : Finish setting of Full close position

## 【Indicator and display】



## 6-4. Torque settings

This machine is set so that the torque switch operates at the appropriate torque, so there is no need for adjustment unless there is a particular abnormality. If readjustment is necessary, please follow the steps below.

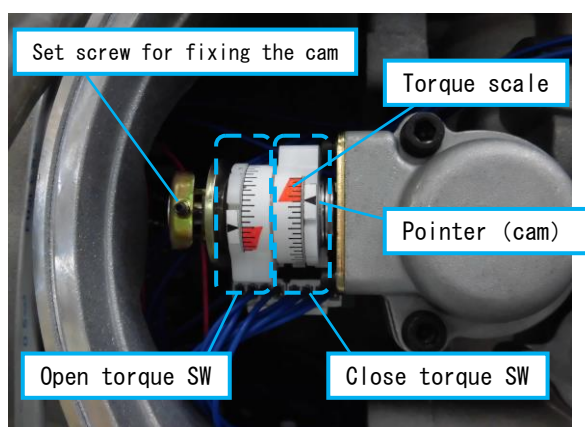
### 【Operating procedure】

- ① Loosen the cam fixing set screw with a hex wrench (#1.5) to move the pointer (cam) freely.  
(Loosen the hex wrench while pressing it.)
- ② Look at the inspection report and align the pointer (cam) with the scale of the torque you want to set.
  - ※1) The Open torque SW is on the cam fixing set screw side, and the Close torque SW is on the opposite side. (See Pic.1)
  - ※2) Torque settings can be adjusted within the red range on the scale. (See Pic. 2)
  - ※3) The operating torque is "1" at the lowest scale in the red range of the scale. (See Pic. 2)
  - ※4) The cam is tightened by a disc spring and held in place by friction.  
A non-turn washer is inserted between the two cams, so even if one cam is turned, the other cam will not turn.
- ③ After aligning the pointer (cam), securely tighten the set screw for fixing the cam.

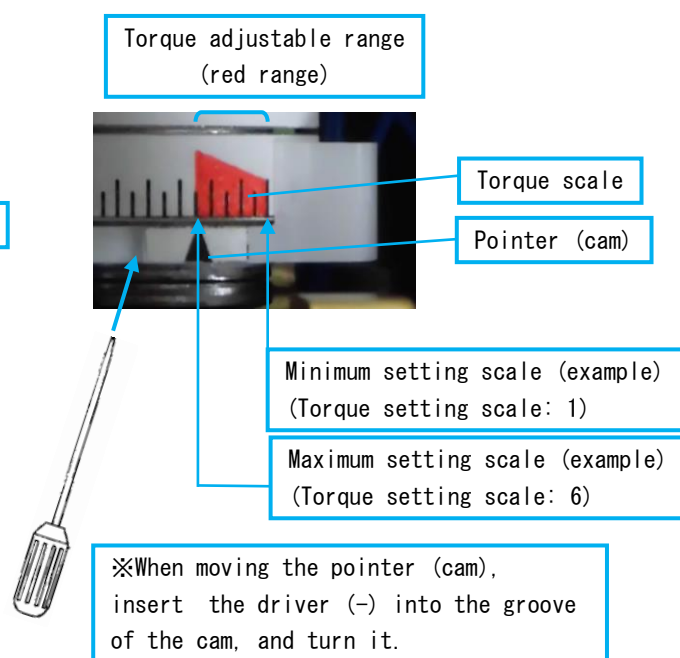


If opening/closing operation is performed without tightening the set screw, the standard will shift and the set torque cannot be guaranteed.

(Pic. 1)



(Pic. 2)



## 6-5. Position transmitter (DC4-20mA Output)adjustment(option)



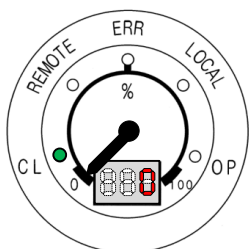
For safety, please turn off the power of this machine when releasing or installing the switch cover.

When turning on the power of this machine with the switch cover open, do not touch anything other than the adjustment switches to prevent electric shock.

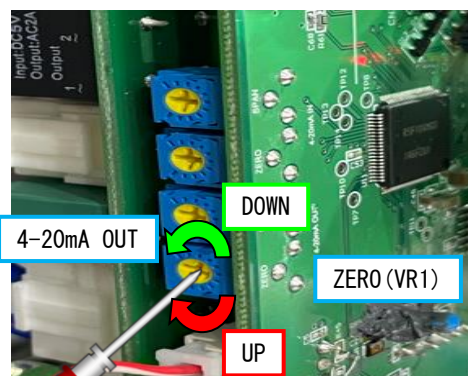
## (1)Output ZERO adjustment

Adjust the zero position of the Position output signal (4-20mA output) using the volume switch "4-20mA OUT ZERO" (VR1). (Setting range:  $4 \pm 2\text{mA}$ )

- ① Fully close the valve using the electric or manual.
- ② Check the opening output signals from the terminals "No. 34: +" and "No. 35: -" on the Center control room panel or tester. Turn the adjustment volume switch "4-20mA OUT ZERO" (VR1) with a precision Phillips screwdriver. Adjust so that 0% (4mA) is displayed at the full close position. (Clockwise: Output UP, Counterclockwise: Output DOWN)



Fully close the valve

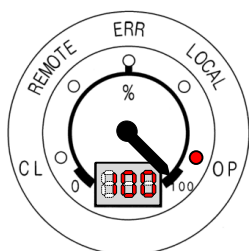


Adjust by turning 4-20mA OUT ZERO (VR1)

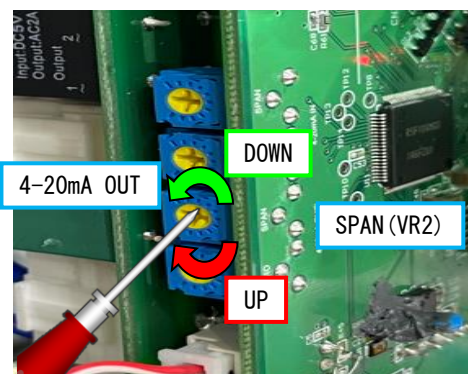
## (2)Output SPAN adjustment

Adjust the slope of the Position output signal (4-20mA output) using the volume switch "4-20mA OUT SPAN" (VR2). (Setting range:  $20 \pm 2\text{mA}$ )

- ① Fully open the valve using the electric or manual.
- ② Check the opening output signals from the terminals "No. 34: +" and "No. 35: -" on the Center control room panel or tester. Turn the adjustment volume switch "4-20mA OUT SPAN" (VR2) with a precision Phillips screwdriver. Adjust so that 100% (20mA) is displayed at the full open position. (Clockwise: Output UP, Counterclockwise: Output DOWN)



Fully open the valve



Adjust by turning 4-20mA OUT SPAN (VR2)

## 6-6. Proportion control (DC4-20mA Input / Output) Adjustment(option)



For safety, please turn off the power of this machine when releasing or installing the switch cover.

When turning on the power of this machine with the switch cover open, do not touch anything other than the adjustment switches to prevent electric shock.

### (1)Input ZERO adjustment

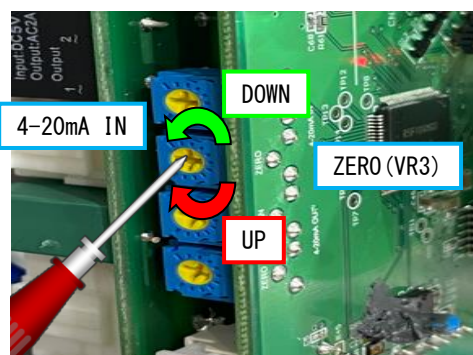
Adjust the zero position of the Position input command signal (4-20mA input) using the volume switch "4-20mA IN ZERO" (VR3). (Setting range:  $4 \pm 2\text{mA}$ )

①Switch the select switch "Remote" and prepare for proportional control operation.  
(Terminals 3-5-6: short circuit)

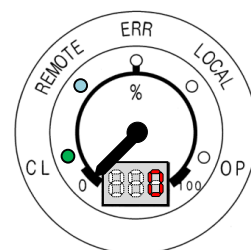
②Input 0% Position input command from the Center control room panel (signal generator).  
Adjust the adjustment volume switch "4-20mA IN ZERO" (VR3) using a precision Phillips screwdriver to make the actuator operates until full close (0%).  
(Clockwise: Input correction UP, counterclockwise: Input correction DOWN)

※When shipped from the factory: It is adjusted to operate fully closed at 4mA input before shipping by the signal generator.

0% Position  
input command



Adjust by turning 4-20mA IN ZERO (VR3)



Check the valve fully closed

### (2)Input SPAN adjustment

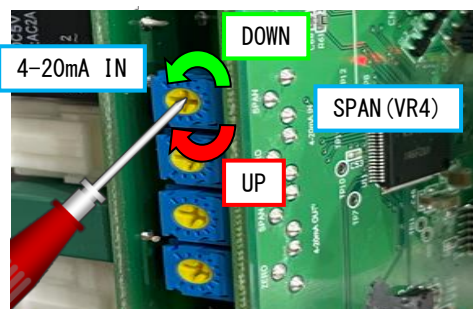
Adjust the slope of the Position input command signal (4-20mA input) using the volume switch "4-20mA IN SPAN" (VR4). (Setting range:  $20 \pm 2\text{mA}$ )

①Switch the select switch "Remote" and prepare for proportional control operation.  
(Terminals 3-5-6: short circuit)

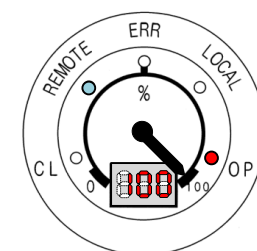
②Input 100% Position input command from the Center control room panel (signal generator).  
Adjust the adjustment volume switch "4-20mA IN SPAN" (VR4) using a precision Phillips screwdriver to make the actuator operates until full open (100%).  
(Clockwise: Input correction UP, counterclockwise: Input correction DOWN)

※When shipped from the factory: It is adjusted to operate fully opened at 20mA input before shipping by the signal generator.

100% Position  
input command



Adjust by turning 4-20mA IN SPAN (VR4)



Check the valve fully opened

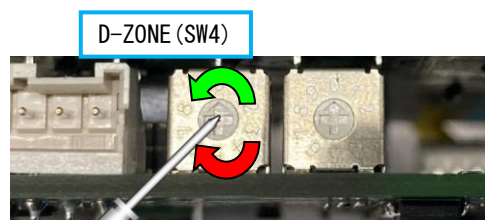


## (3)D-ZONE adjustment

Adjust the dead zone using the rotary switch "D-ZONE" (SW4).

- ① Make adjustments after all input/output ZERO/SPAN adjustments are completed.
  - ② Set the rotary switch "D-ZONE" to about number 5. After that, set No. 4 → No. 3 → No. 2, and hunting set to a number that does not.
- ※ When shipped from the factory = No. 5 to 9 (adjusted by gear ratio and stroke)

| SW4-No | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    |
|--------|------|------|------|------|------|------|------|------|------|------|
| D-ZONE | 0.5% | 1.0% | 1.5% | 2.0% | 2.5% | 3.0% | 3.5% | 4.0% | 5.0% | 6.0% |



## (4)D-TIME adjustment

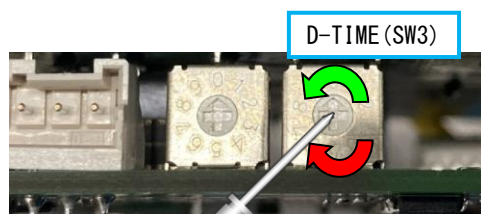
Adjust the reversal pause time with the rotary switch "D-TIME" (SW3)

- ① Make adjustments after all input/output ZERO/SPAN adjustments are completed.
  - ② Basically, no adjustment is required (set to 0), but please set it as desired to prevent hunting that occurs when the opening input signal fluctuates periodically.
- ※ When shipped from the factory = No. 0 to 4 (adjusted by gear ratio and stroke)
- ※ The motor (valve) will remain stopped unless the pause time is increased and the amount of change in the opening input signal (forward/reverse repeat signal) does not exceed the pause time.
- ※ There is no pause time when operating in the same direction (open → open, close → close).

| SW3-No | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| D-zone | 0.5sec | 0.6sec | 0.7sec | 0.8sec | 1.0sec | 1.2sec | 1.4sec | 1.6sec | 1.8sec | 2.0sec |



For models with fast opening/closing speeds or large models, the amount of motor coasting will be relatively large, so we recommend setting the dead band setting to be large and the reversal pause time to be long. Operating with constant hunting may lead to abnormal motor heating or damage to built-in electrical components.



## 6—7. Half position limit (HF1, HF2) settings (option)

## (1) How to set Half position limit1 (HF1)

## 【Operating procedure】

- ① In the HF1 setting mode (7seg LED : "HF1"), press the STOP button for 2 seconds to enter the HF1 setting mode starts up.
- ② The set value "□□□" % display will blink and change the value with OPEN/CLOSE button.  
(Default value: "0"% , if specified, the specified position will be set and shipped)  
※Setting range: "0" to "100"%
- ③ Press the STOP button for 2 seconds to complete the setting.  
(7segLED display: "□□□" % blinking → "SET" → "HF1")
- ④ Press the select switch to exit setting mode.

## 【Method of operation】

Press OPEN button

:Setting value counts up

(While entering numbers, press and hold to speed UP)

Press CLOSE button

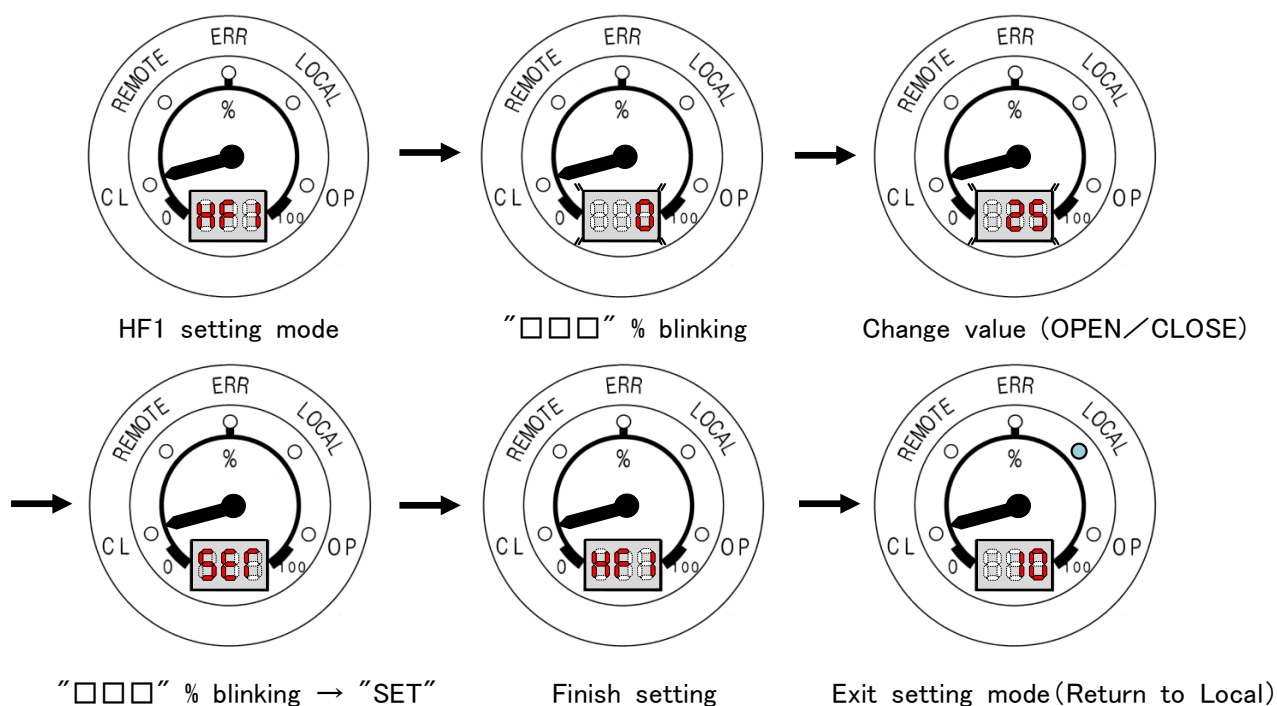
:Setting value counts down

(While entering numbers, press and hold to speed DOWN)

Press STOP button for 2 seconds

:Finish setting of HF1

## 【Indicator and display】





(2) How to set Half position limit2 (HF2)

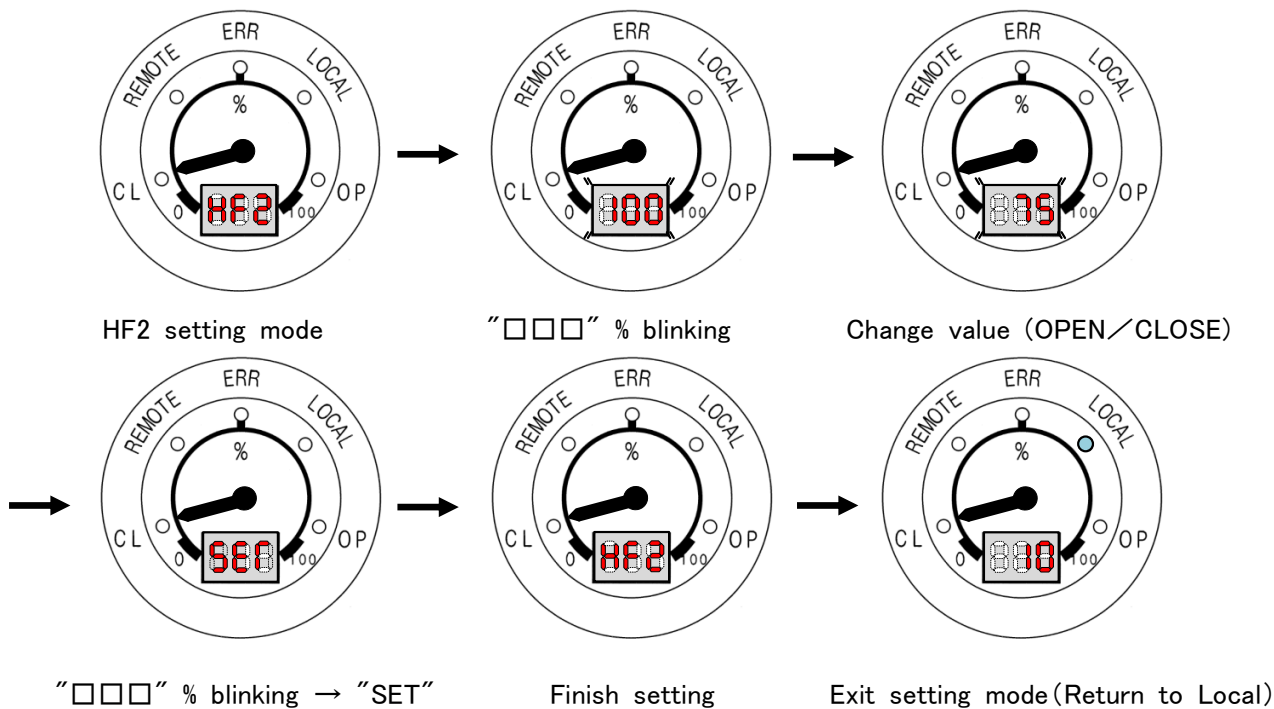
【Operating procedure】

- ①In the HF2 setting mode (7seg LED : "HF2"), press the STOP button for 2 seconds to enter the HF2 setting mode starts up.
- ②The set value "□□□" % display will blink and change the value with OPEN/CLOSE button.  
(Default value: "100"% , if specified, the specified position will be set and shipped)  
※Setting range: "0" to "100" %
- ③Press the STOP button for 2 seconds to complete the setting.  
(7segLED display: "□□□" % blinking → "SET" → "HF2")
- ④Press the select switch to exit setting mode.

【Method of operation】

- |                                 |                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------|
| Press OPEN button               | :Setting value counts up<br>(While entering numbers, press and hold to speed UP)     |
| Press CLOSE button              | :Setting value counts down<br>(While entering numbers, press and hold to speed DOWN) |
| Press STOP button for 2 seconds | :Finish setting of HF2                                                               |

【Indicator and display】



Set the motor rotation direction. When shipped from the factory, the rotation direction specified by the customer (output shaft clockwise open/close) is set.



After changing the motor rotation direction, limit settings (full close (origin set)/full open) are required again.

Additionally, this machine has a built-in mechanical indicator, so the AB gear of the indicator needs to be replaced.

When replacing the indicator AB gear, it is necessary to disassemble the laminated PCB board unit, so we recommend that you contact us for this setting change.

#### 【Operating procedure】

- ① In the Motor rotation direction setting mode (7seg LED : "ROT"), press the STOP button for 2 seconds to enter the Motor rotation direction setting mode starts up.
- ② The current setting will be displayed as "R" or "L" and can be changed using the OPEN/CLOSE button. (R = Output shaft clockwise closed, L = Output shaft clockwise open)
- ③ Press the STOP button for 2 seconds to complete the setting.  
(7segLED: "R or L" → "SET" → "ROT")
- ④ Press the select switch to exit setting mode.
- ⑤ Turn off the power of this machine, disassemble the laminated PCB board unit, and replace the indicator AB gear.
- ⑥ Please turn on the power of this machine.
- ⑦ Perform the full close limit setting (origin setting) using the same procedure as in Section 6-3.
- ⑧ Set the full open limit using the same procedure as in section 6-3.
- ⑨ Press the select switch to exit setting mode.

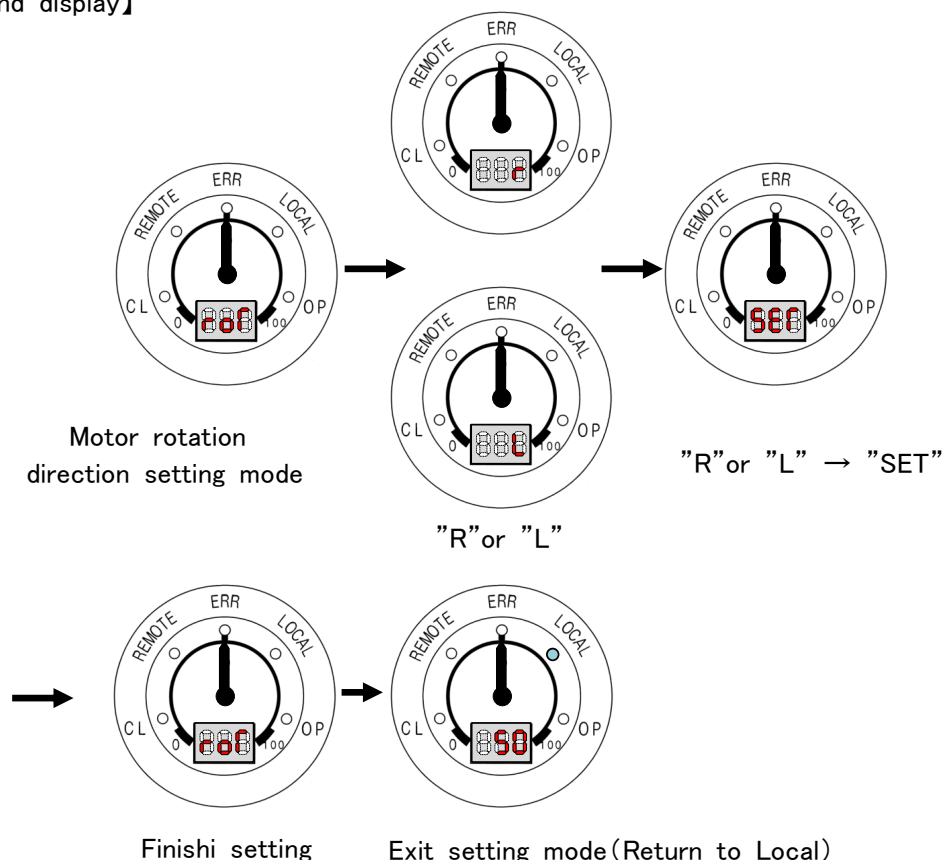
#### 【Method of operation】

Press OPEN button : Settings scroll (R→L→R...)

Press CLOSE button : Settings scroll (R→L→R...)

Press STOP button for 2 seconds : Finish setting of ROT

#### 【Indicator and display】



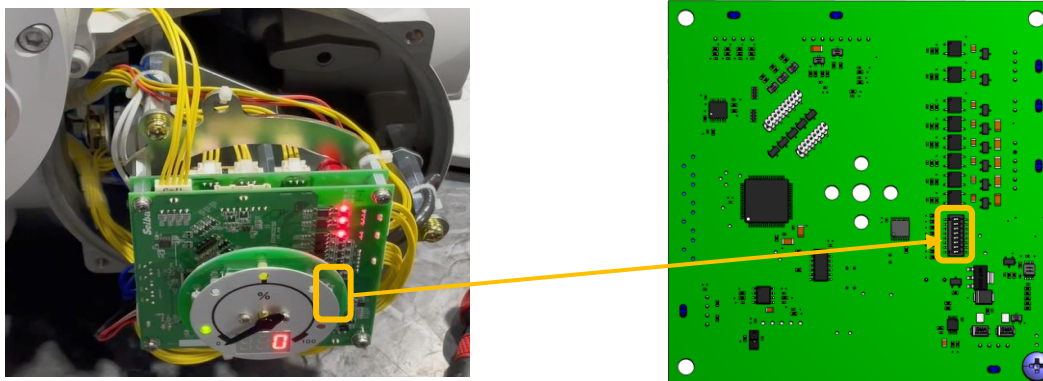
## 6—9. Others settings



For safety, please turn off the power of this machine before opening or installing the switch cover.

The operating specifications of this machine can be changed using the DIPSW on the control board.

## DIPSW layout



| Items   | Contents                                                                 | ON<br>(When specified)       | OFF<br>(Standard) |
|---------|--------------------------------------------------------------------------|------------------------------|-------------------|
| DIPSW-1 | Select the seating type of Full close limit (position seat/torque seat). | Torque seat                  | Position seat     |
| DIPSW-2 | Set by our company                                                       | Change prohibited            | Change prohibited |
| DIPSW-3 | Set by our company                                                       | Change prohibited            | Change prohibited |
| DIPSW-4 | Select open/close self-holding (with/without).                           | No self-holding              | Self-holding      |
| DIPSW-5 | Set by our company                                                       | Change prohibited            | Change prohibited |
| DIPSW-6 | Set by our company                                                       | Change prohibited            | Change prohibited |
| DIPSW-7 | Select the remote stop contact (B contact/A contact).                    | a contact                    | b contact         |
| DIPSW-8 | Select the remote contact (Dry /Wet contact).                            | Wet contact<br>(DC24V 150mA) | Dry contact       |

## 【Operating procedure】

- ① Turn the select switch to "OFF".
- ② Turn off the power of this machine.
- ③ Release the switch cover and change the DIPSW settings using a precision flathead screwdriver.
- ④ Attach the switch cover and turn on the power of this machine.



The setting changes will be reflected when the power is restarted.

## 7. Maintenance

### 7-1. Storage

If the actuator is temporarily stored alone before being installed on the valve, please store it according to the following.

- ① Please store in a dry place indoors.
- ② If you have no choice but to store it outdoors, place it at a location higher than the floor and cover it securely to prevent it from getting wet with rainwater.
- ③ Apply grease to the stem bushing.
- ④ Apply rust preventive to the mounting flange surface.
- ⑤ After long-term storage, check for rust or peeling of the paint.

### 7-2. Maintenance

#### 1) Lubrication

This machine is filled with long-life lithium grease, so there is no need to replace the grease for several years during normal operation.

When disassembling the product for periodic inspection or repair, replace the grease with new grease according to the table below.

You can mix different brands of lithium grease, but please avoid mixing greases with different soap bases as this may cause deterioration.

| Model    | Grease quantity (kg) | Recommended grease brand         | Manufacturer or distributor                                                                       |
|----------|----------------------|----------------------------------|---------------------------------------------------------------------------------------------------|
| VMM-007Z | 1.0                  | NIGHTIGHT LYW No.0-N             | NIPPON GREASE CO., LTD.<br>KYODO YUSHI CO., LTD.<br>COSMO OIL LUBRICANTS CO., LTD                 |
| VMM-01Z  | 1.0                  | Multi-purpose grease No.0-S      |                                                                                                   |
| VMM-04Z  | 1.5                  | COSMO GREASE DYNAMAX EP No.0     |                                                                                                   |
| VMM-07Z  | 4.2                  | Daphne grease MP No.0            | Idemitsu Kosan Co., Ltd.<br>EMG Lubricants G.K<br>Shell Lubricants Japan K.K<br>ENEOS Corporation |
| VMM-1Z   | 7.7                  | Mobilux EP0                      |                                                                                                   |
|          |                      | Alvania EP rease R0<br>EPNOC AP0 |                                                                                                   |

#### 2) Valve stem lubrication

Externally threaded valves require lubrication to prevent thread wear on the stem bushing. Depending on the frequency of use and environment, apply the following recommended grease periodically (for example, every six months).

| Recommended grease brand | Manufacturer or distributor |
|--------------------------|-----------------------------|
| OG Grease                | K.K DAIZO                   |
| Alumix EP No. 1 Grease   | Alumix EP No. 1 Grease      |

Notice) 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.

## 8. Troubleshooting

### 8-1. List of Error codes

| Code | Contents                                                | Explanation                                                                                                                                                                                     | How to reset                                                                                                                                                                                                        |
|------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OP-  | Open over torque                                        | Detects opening side overtorque                                                                                                                                                                 | Perform the closing action (reverse action) to remove the abnormal condition.If it occurs repeatedly, stop the operation.<br>Please inspect the valve and actuator.                                                 |
| CL   | Close over torque                                       | Detects closing side overtorque                                                                                                                                                                 | Perform opening action (reverse action) to remove the abnormal condition.If it occurs repeatedly, stop the operation.<br>Please inspect the valve and actuator.                                                     |
| E01  | Error of Position limit data                            | The position limit is not set or the position limit is set to the same position.                                                                                                                | Please reset the position limit in the order of full close → full open.<br>If the encoder is replaced during maintenance, it is necessary to reset the limit.                                                       |
| E03  | Rotation detection error                                | Abnormal stop because the rotation speed of the actuator output shaft (position detection mechanism) per unit time is below the specified value (abnormality detected in about 7 to 10 seconds) | Please check the cause.<br>(The error can be canceled by press stop button with the select switch in the LOCAL state.)<br>If you cannot identify the cause, please contact us.<br>Please. (Recovery by our workers) |
| E04  | Motor overheating error                                 | Motor thermal SW operated                                                                                                                                                                       | It will automatically recover when the motor temperature falls below the specified value.                                                                                                                           |
| E05  | Proportional control command value (4-20mA input) error | Position input command signal is 1mA or less                                                                                                                                                    | Check the Position input command signal value and input line wiring.<br>(Automatic return after recovery)                                                                                                           |
| E06  | Error of control PCB settings                           | The control PCB settings are abnormal.                                                                                                                                                          | Please contact us.<br>(Recovery by our workers)                                                                                                                                                                     |

### 8-2. Others error

| Items | Contents                                                                                                      | Explanation                                                                                                                                                                                  | Recovery method                                                                                                                                                                                                                                                                                     |
|-------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1     | You cannot open/close electrically in local mode                                                              | Power is off<br>The select switch is OFF or in remote mode.                                                                                                                                  | Please turn on the power.<br>Set the select switch to local mode.                                                                                                                                                                                                                                   |
| 2     | You cannot open/close electrically in remote mode                                                             | Power is off<br>The select switch is OFF or in local mode.<br>The remote stop contact (b contact) is in the open state.                                                                      | Please turn on the power.<br>Set the select switch to remote mode.<br>Short-circuit the remote stop contact (b contact) and COM.                                                                                                                                                                    |
| 3     | Position input command signal (4-20mA) It doesn't work even if I type it (Proportional control specification) | The remote stop contact (b contact) is in the open state.<br>The proportional control contact is in the open state.<br>The position limit was changed during proportional control operation. | Short-circuit the remote stop contact (b contact) and COM.<br>Short-circuit the proportional control contact and COM.<br>If the position limit is changed during proportional control operation, it may not operate properly.<br>For safety, turn off the power to this machine.<br>Please restart. |
| 4     | During opening/closing operation Openness meter or 7segLED Position display don't change                      | Abnormality of internal gear mechanism<br>Abnormality in the in-machine wiring (mechanical absolute encoder)                                                                                 | Reset full close and full open.<br>If the problem does not recover even after resetting the limit, please contact us.<br>(Recovery by our workers)                                                                                                                                                  |
| 5     | You cannot switch Manual-Electric                                                                             | Abnormality of internal gear mechanism                                                                                                                                                       | Please contact us.<br>(Recovery by our workers)                                                                                                                                                                                                                                                     |
| 6     | Even when the power is turned on, the 7segLED and status display does not light up                            | Voltage specification mismatch (200V/400V class)<br>Malfunction of internal electrical components                                                                                            | Make sure that the supply voltage and actuator voltage specifications match.<br>Please contact us. (Recovery by our workers)                                                                                                                                                                        |

## 9. Explosion-proof specification (option)

### 9-1. Information on explosion-proof device

Information regarding the device in explosion-proof specifications is shown below.

|                           |                                                                                         |
|---------------------------|-----------------------------------------------------------------------------------------|
| Manufacturer's name       | Seibu Electric & Machinery Co.,Ltd.                                                     |
| Model                     | VMM-007ZT/VMM-01ZT                                                                      |
| Explosion-proof structure | Exdb II BT4                                                                             |
| Applicable standards      | (General provisions) JNIO SH-TR-46-1:2020<br>(Pressure resistance) JNIO SH-TR-46-2:2018 |
| Cable gland               | SFLU-30-M(NCS004)                                                                       |
| Ambient temperature       | -10°C~50°C                                                                              |

### 9-2. Precautions of explosion-proof

Be sure to observe the following items to prevent ignition and explosion accidents.

- (1) Do not open the cover in areas where explosive gas is present.
- (2) To prevent electric shock, be sure to connect the ground wire.
- (3) To maintain explosion-proof performance, do not apply shock to the case or cover.
- (4) Users should not attempt to repair or modify the flame path inside the explosion-proof device.
- (5) If the flameproof explosion-proof joint (mating surface) requires repair, please contact us.
- (6) There is a risk of electrostatic charge on the operation panel.  
When operating this machine using the operation panel, be sure to take measures against static electricity.

#### <Examples of static electricity countermeasures>

- Wear anti-static gloves.
- Touch the static electricity removal sheet.
- Apply antistatic agent to the operation panel. etc.



**Failure to follow these precautions may result in an explosion.**



ISO 9001

# 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

Head office/factory 〒811-3193 3-3-1, Ekihigashi, Koga, Fukuoka, Japan  
☎+81-92-941-1500 FAX+81-92-941-1511

Overseas sales 〒811-3193 3-3-1, Ekihigashi, Koga, Fukuoka, Japan  
☎+81-92-941-1530 FAX+81-092-941-1522

URL <http://www.seibudenki.co.jp>

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