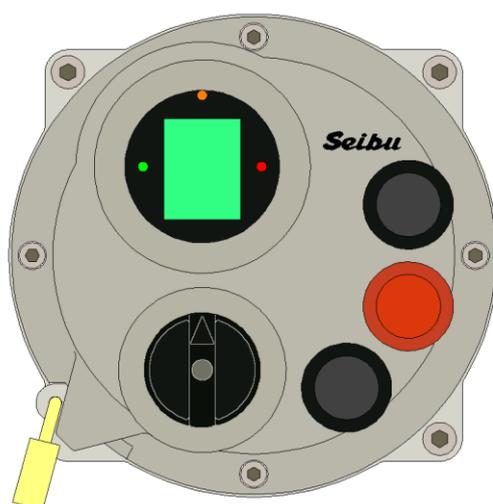


# *VM-Series / VP-Series Operation Manual*



3	Add caution about Limit position slip away	22-10-05	Hamada	-	Sekimura
2	Add setting items and handling precautions. Modify wiring diagram (p8,9)	22-06-01	Kawamoto	-	Mori
1	Modify wiring diagram (P6,7,8,9)	19-04-10	Kawamoto	-	Mori
Original	VM-Series/VP-Series Operation Manual	10-03-03	Kitajima	-	Iwai
Rev. No.	Description	Date (yy-mm-dd)	Prepared	Checked	Approved
SEIBU ELECTRIC & MACHINERY CO., LTD.		ISSUED BY DESIGN SEC.			

Safety precautions below describes particularly important instructions to handle valve actuator.  
Read these precautions carefully before using and handling valve actuator properly.  
Installation of valve actuator should be performed only by trained and qualified professionals.

[Receiving, Transportation and Storage]

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

- (1) Check the weight of valve actuator before suspending and slinging work. Stay out of suspended actuator and ensure utmost safety before and during the work.
- (2) Should be handling and storing actuator with care since the strengthen of packing would be weakened by getting wet or exposed to moisture.

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

[Installation and Test Operation]

 **Caution --- Prevent accidents due to dropping or falling.**

- (1) Check the weight of valve actuator before suspending and slinging work. Stay out of suspended actuator and ensure utmost safety before and during the work.
- (2) Make sure to secure foothold for work, and never attempt to work on a pipe or anything unstable.

**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 high moisture or wetting.
- (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.**

 **Caution --- Prevent slipping away of Limit position (Electrically-operated type)**

- (1) When use handwheel to operate manually, please check and confirm LCD panel is ON. When blackout happened, built-in battery supply power to LCD panel and encoder to adjust position.
- (2) Do NOT us manual operation (handwheel) when LCD panel is OFF.
- (3) When LCD panel is OFF, please turn on the power or change the battery to charged one.

**Limit position need to be set again since the position will slip away if manually operated when LCD panel is OFF.**

[Maintenance and Inspection]

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

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

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

 **Caution --- Prevent slipping away of Limit position (Electrically-operated type)**

- (1) When use handwheel to operate manually, please check and confirm LCD panel is ON. When blackout happened, built-in battery supply power to LCD panel and encoder to adjust position.
- (2) Do NOT us manual operation (handwheel) when LCD panel is OFF.
- (3) When LCD panel is OFF, please turn on the power or change the battery to charged one.

**Limit position need to be set again since the position will slip away if manually operated when LCD panel is OFF.**

- Valve actuator handling precautions

( 1 ) Semflex-VM/VP has IP 68 protective structure. Underwater condition is as below.

“It is possible to drive within 8m depth in water and for 72 hours or less. And possibly operate for one year after water has drained.”

( 2 ) Check if O-ring does not have any damage, and set mating surface after cleaning. And then close switch cover by surely tightening bolts.

( 3 ) Avoid any water intrusion into cable entries of actuator while installation or repairing at site.

( 4 ) Do not leave actuator switch cover and terminal cover open.

( 5 ) Do not leave actuator in earth and sand or in a puddle.

( 6 ) After flooding and water is drained, measure insulation resistance of electrical parts such as motors and switches, and confirm that it is 1 MΩ or more with a 500 V megger.

( 7 ) After flooding and water has drained, check if water has entered in switch box. If water has infiltrated, remove it and eliminate the cause of infiltration.

( 8 ) After flooding and water has drained, check grease condition of valve stem and stem bush. If the amount of grease is insufficient, apply grease, and make sure that no foreign matter is caught in it.

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## ● Overview of VM type

Semflex-VM type is an intelligent type, electric actuator equipped with a controller device. VM type with the data processing feature allows user to set and adjust fully closed and fully open positions and torque setting with operation panel without opening the switch cover.

## ● Wiring Procedures

### (1) Open Terminal cover.

Terminal cover is fixed on terminal case with hexagon socket head cap screw (M6).

Remove the cap screw and open the cover.

### (2) Connect power supply.

#### \*Precautions

- Make sure that power supply is OFF before connecting the cables.
- Check terminal number and the number on wiring diagram to connect wiring correctly.
- Please use highly waterproof cable glands such as those for marine use or waterproof gasket-type unions.
- Close terminal cover to prevent electric shock.

Provide an external power supply (3φ 200 VAC / 3φ 400 VAC ±10%, 50/60 Hz).

Connect R, S, T phase wires of the power supply to R, S, T terminals respectively.

\* For wiring, refer to wiring diagrams on the following pages.

### External Connection Wiring Diagram Reference for VM Series

Model type	Specifications	Drawing No.	Page No.
VM	Standard	3M01016	6
VM	With relay options	3M01096	7
VM	With PROFIBUS interface	3M01119	8
VM	With MODBUS interface	3M01286	9









● Initial Operation

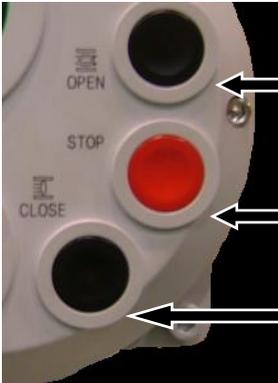
\* Precautions

Make sure that selector switch is OFF, push button is not pressed, and remote control is not operated, and then turn the power on.

Operation mode OFF selected



Selector Switch



OPEN button

STOP button

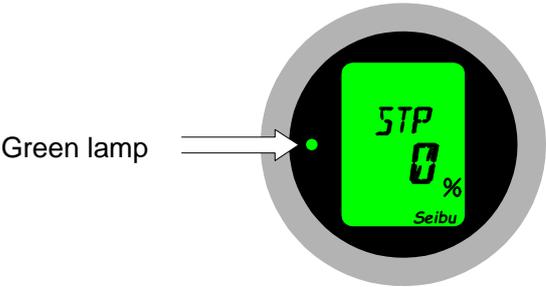
CLOSE button

Push buttons

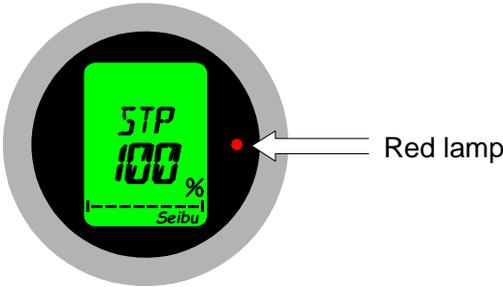
(Check after power supply is turned on.)

Confirm display lit in bright Green when power is turned on, and check that "STP □□%" is displayed. When power is on, "Green lamp" lights up when fully closed, and "Red lamp" lights up when fully open. If an error status, "Orange lamp" lights up.

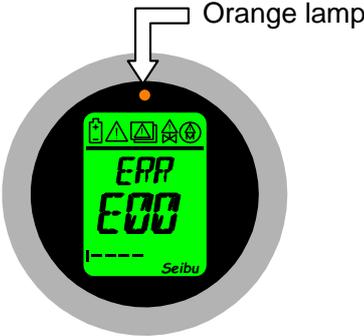
**\* Refer to "Error Indications (from page 54)" for the error descriptions and troubleshooting.**



Fully Closed (Green lamp)



Fully Open (Red lamp)



Error indication (Orange lamp)

●Check Operation of Actuator only

※\* Precautions

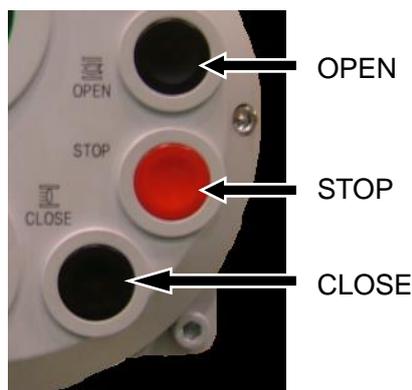
- CLOSE cannot be done while OPEN movement is in progress. Push STOP before performing CLOSE.
- OPEN cannot be done while CLOSE movement is in progress. Push STOP before performing OPEN.
- Operation stops when mode is changed by selector switch during Opening or Closing action.
- Do not touch output shaft while activating valve. It causes machine trouble or any accident.
- Holding circuits are used for Local and Remote operation modes to activate the actuator.

(1) Drive valve in LOCAL Operation Mode [With OPEN/CLOSE self-holding function (standard setting)]

Turn selector switch to LOCAL operation mode.



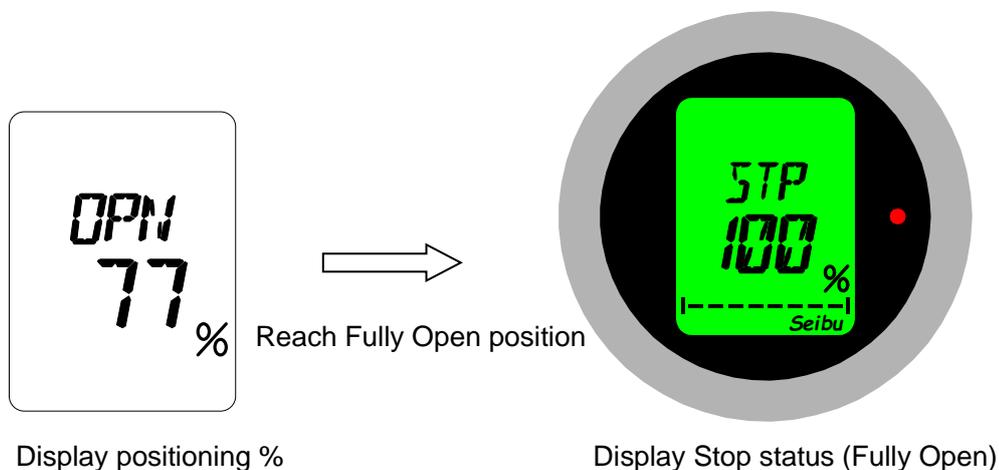
Selector switch



Push button

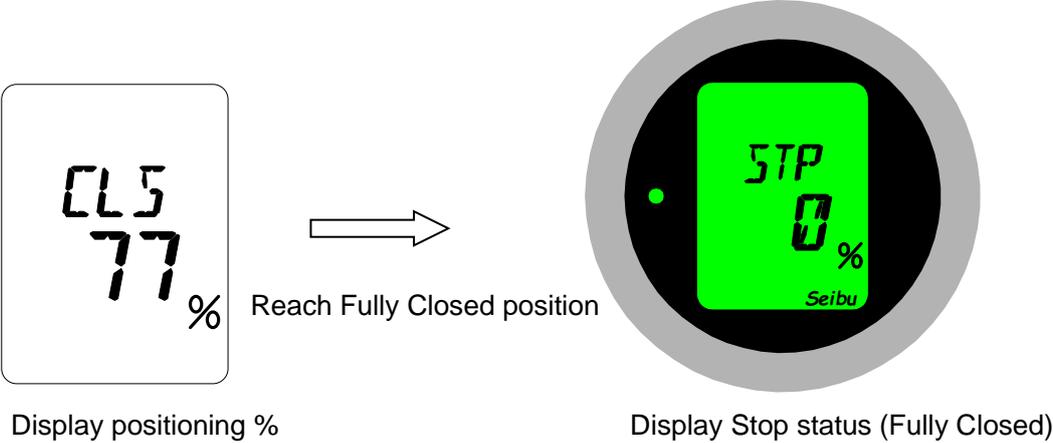
[OPEN]

When OPEN button is pressed, the actuator drives valve to Open. "OPN ##%" is shown on display during opening and position percent (%) is counted. It stops when reach to fully open position, and the display shows "STP 100%." Confirm that Red lamp, which indicates fully open position, lights on the right side of display.



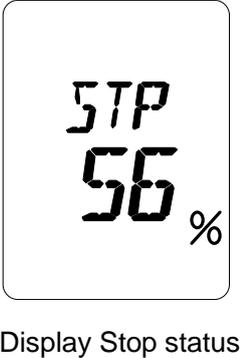
[CLOSE]

When CLOSE button is pressed, actuator drives valve to close. "CLS ##%" is shown on display during closing and position percent (%) is counted. It stops when reach to fully closed position and the display shows "STP 0%." Confirm that Green lamp, which indicates fully closed position, lights on the left side of display.



[STOP]

When STOP button is pressed during opening or closing, it stops and position (%) at the time of stop is shown on display.

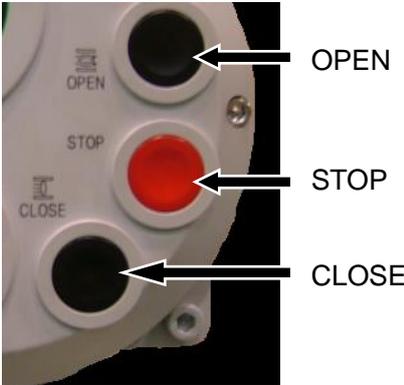


(2) Driving valve in LOCAL Operation Mode [Without OPEN/CLOSE self-holding function (Inching)]

Turn selector switch to local operation mode.



Selector switch

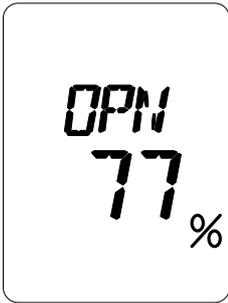


Push buttons

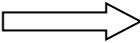
[OPEN]

With Inching operation, actuator drives valve to open while OPEN button is hold. Opening operation stops when OPEN button is released or when STOP button is pressed.

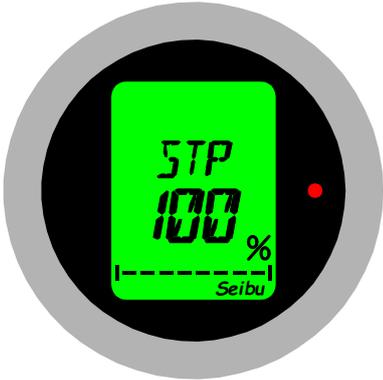
“OPN xx%” is shown on display during opening and position percent (%) is counted. It stops when reach to fully open position, and display shows “STP 100%.” Confirm that Red lamp, which indicates fully open position, is lit on the right side of display.



Display positioning %



Reach Fully Open position

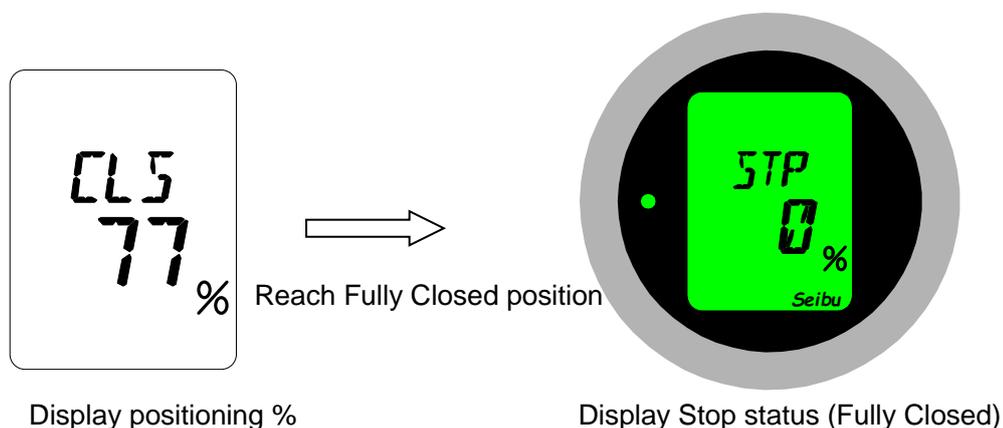


Display Stop status (Fully Open)

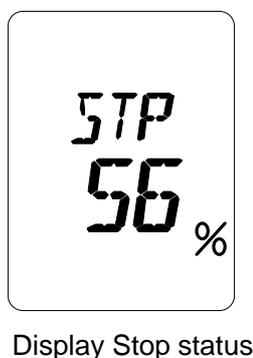
**[CLOSE]**

With Inching operation, actuator drives valve to close while CLOSE button is hold down. Closing operation stops when CLOSE button is released or when STOP button is pressed.

“CLS xx%” is shown on display during closing and position percent (%) is counted. It stops when reach to fully closed position, and display shows “STP 0%.” Confirm that Green lamp, which indicates the fully closed position, is lit on the left side of display.

**[STOP]**

When STOP button is pressed during opening or closing, it stops and position (%) at the time of stop is shown on display.

**\*Without OPEN/CLOSE self-holding function (Inching)**

With inching operation, OPEN or CLOSE continues only while operation is being performed in LOCAL or REMOTE mode. It stops when releasing OPEN or CLOSE button or when STOP button is pressed.

In addition, please do note operate as below to operate safely .

- 1) Operate CLOSE during OPEN operation is active, or
- 2) Operate Open during CLOSE operation is active,

### (3) Operation OFF

When actuator is not to be operated or when maintenance is to be carried out, turn LOCAL/REMOTE selector switch to OFF for safety reason.

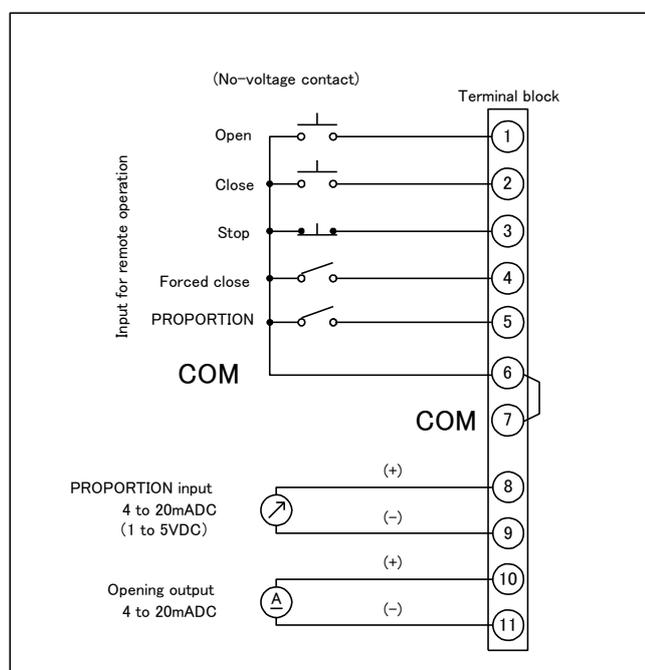


Selector switch

## ● Function of Input Contacts for Remote Operation

To perform remote operation, set the (LOCAL/REMOTE) selecting switch of the actuator to REMOTE.

### (1) How to Use the Contacts in Input for REMOTE Operation



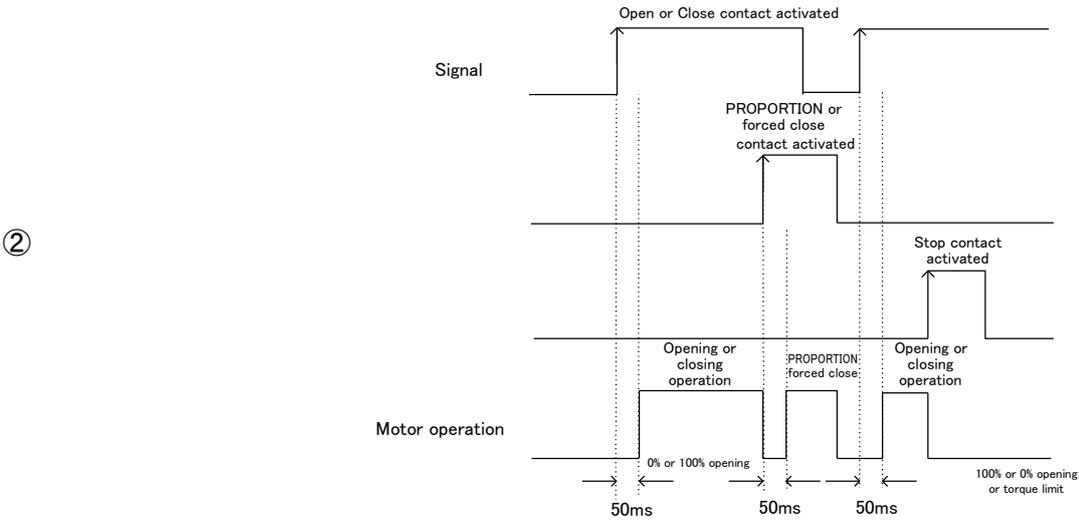
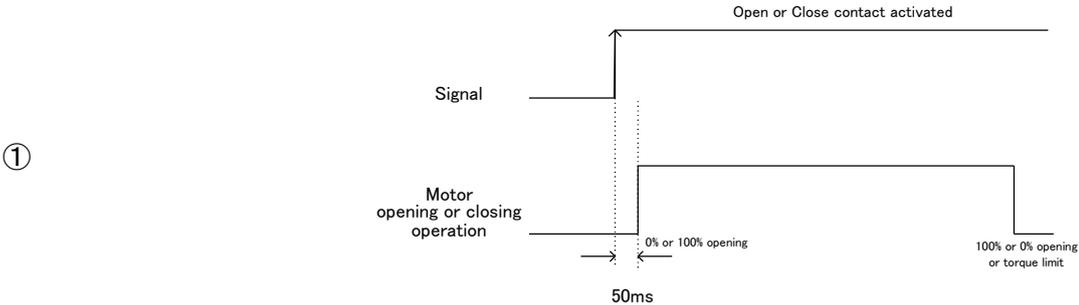
Selector Switch

Fig.: External Connection Wiring Diagram Reference for Semflex-VM

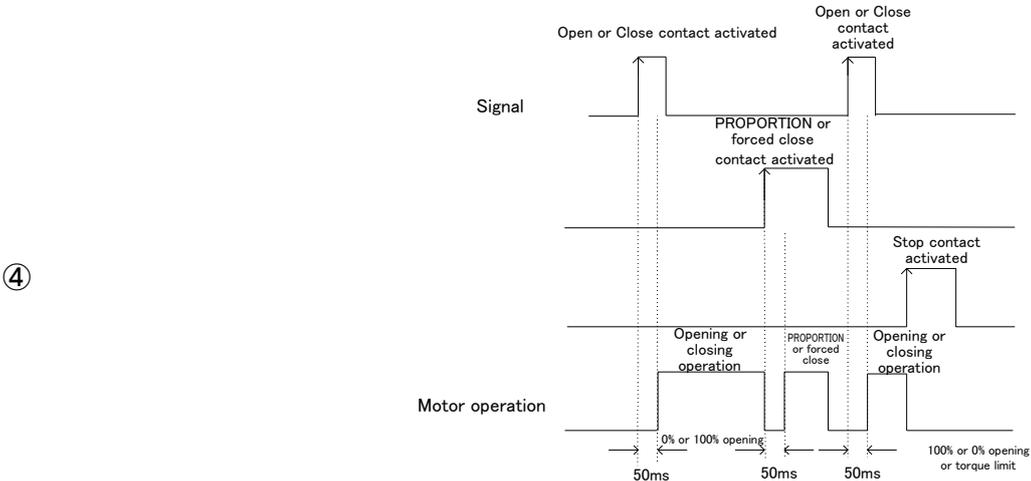
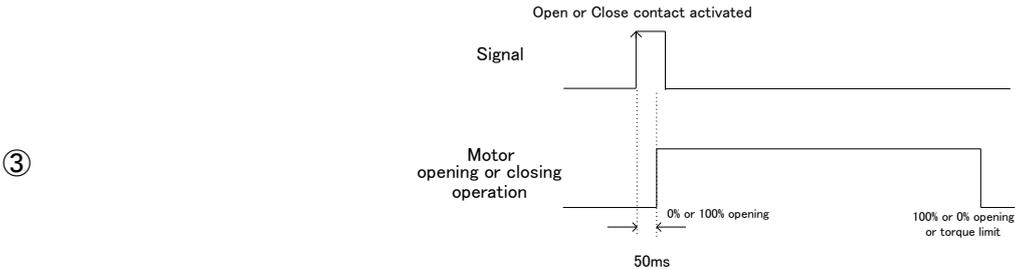
#### (a) OPEN, CLOSE, STOP Contacts:

- When OPEN contact is short-circuited (terminal No. ①-③-⑥), actuator works to open the valve.
- Movement stops at the position exceeding OPEN POSITION LIMIT or OPEN TORQUE LIMIT which has been set.
- When CLOSE contact is short-circuited (terminal No. ②-③-⑥), actuator works to close the valve.
- Movement stops at the position exceeding CLOSE POSITION LIMIT or CLOSE TORQUE LIMIT which has been set.
- Movement stops when Stop contact is opened (terminal No.③-⑥).

### Timing Chart (for inverter type only)

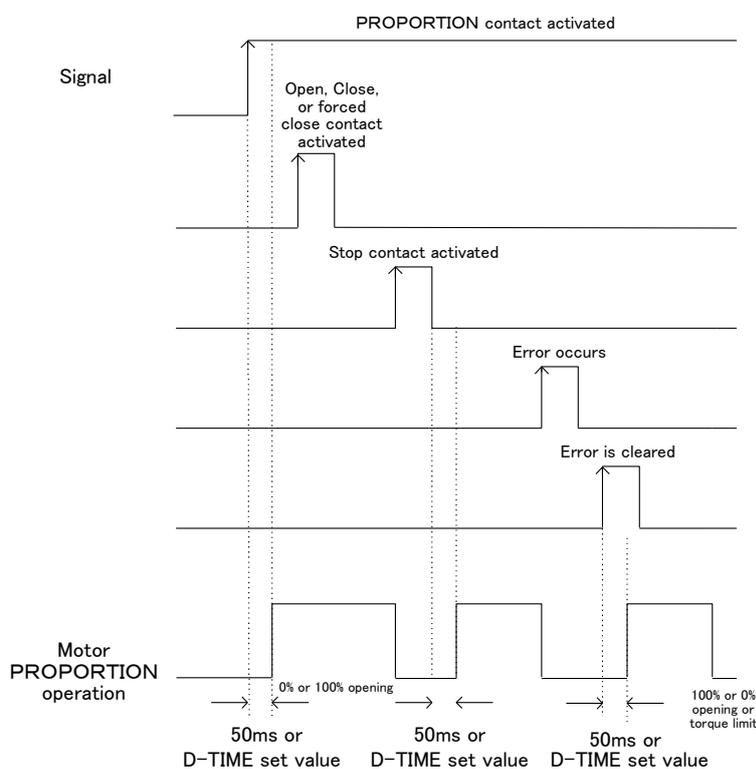


### OPEN and CLOSE contacts with self-holding



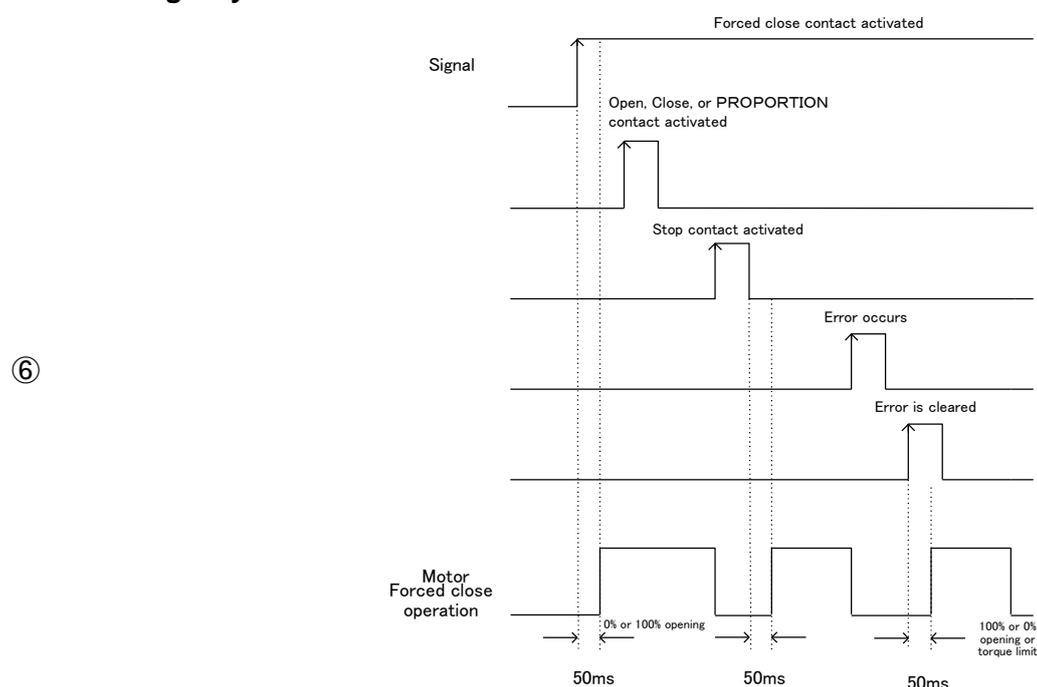
**(b) Proportional Control Contact:**

- When Proportional control contact is short-circuited (terminal No. ③—⑤—⑥), 4 to 20mA proportional control becomes possible.
- During Proportional control (while signal is being transmitted), only Stop contact is valid.
- Proportional control is stopped only while Stop contact is open. When STOP contact is short-circuited again, it is reactivated and move toward targeted value.
- During Proportional control, intermediate stop positions are skipped, and actuator moves the valve up to set position.  
\*When set speed changes at intermediate positions, speed changes at these positions.
- During Proportional control, actuator stops in case of any error. Actuator reactivates automatically after the error has been cleared.
- Proportional contact is invalid while Emergency Close is active.
- When actuator stops once during Proportional control, it is reactivated after set D-TIME (minimum 0.5 sec.) has passed. (Prevention of command chattering and valve hunting)

**When Proportional control contact is activated**

**(c) Emergency CLOSE Contact:**

- When Emergency close contact is short-circuited (terminal No. ③—④—⑥), the movement continues to close end limit.
- During emergency closing, only Stop contact is valid.
- Emergency closing movement is stopped only while Stop contact is open. When Stop contact is short-circuited again, it is reactivated and move toward target position.
- During Emergency closing action, intermediate stop positions are skipped, and actuator moves the valve up to set position.  
\*When set speed change at intermediate positions, speed changes at these positions.
- During emergency closing movement, actuator stops in case of any error. Actuator reactivates automatically after the error has been cleared.
- Emergency close contact is invalid while Proportional control is active.

**When Emergency CLOSE contact is activated****(2) Options for Other Contacts**

- \* It is possible to select with or without self-holding function for OPEN/CLOSE contacts,.  
With self-holding, movement continues even if contact is released.  
Without self-holding, movement stops when contact is released.
- \* Self-holding function is not available for Proportional control and Emergency close. Possible to use self-holding when contact is short-circuited.
- \* 50 ms dead time is set for contact signals. Contacts can be used if input command signal is more than 50ms.
- \* No matter with or without self-holding, if Proportional control or Emergency close contact is short-circuited during opening or closing movement, priority is given to Proportional control or Emergency close, and opening/closing action stops. Even if Proportional control or Emergency close contact is opened after it was once short-circuited, actuator does not automatically restart opening or closing.  
To restart OPEN/CLOSE, Open or Close contact must be short-circuited again.
- \* **When operation mode is switched from manual to electric, there may be some delay in actuator activation against motor drive depending on the drive section conditions.**

●User-specific Settings

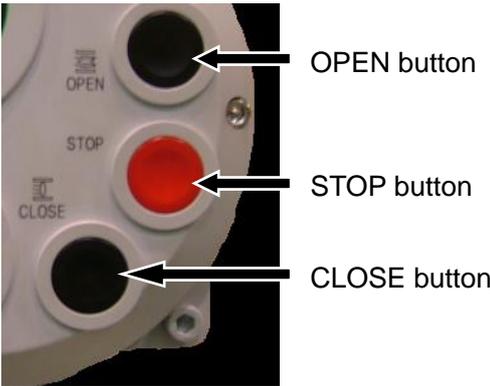
(1) How to Start User-specific Setting Mode

1) Turn Selector switch to OFF.

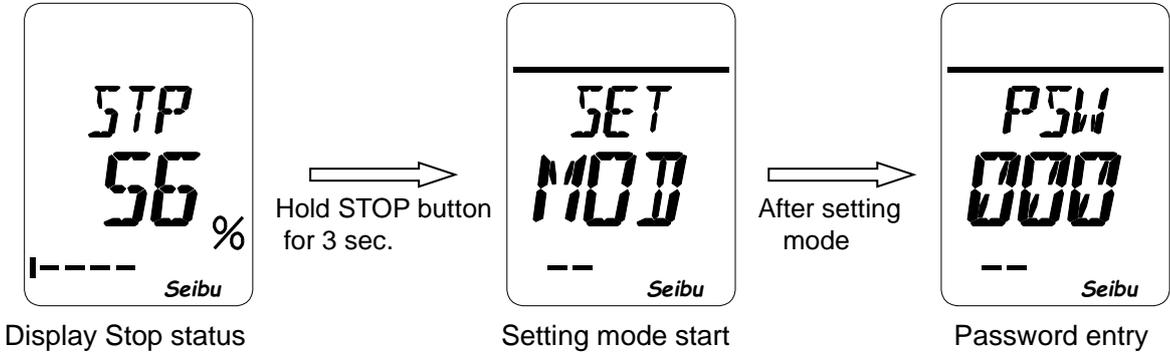


Selector switch

2) Hold STOP button for 3 seconds. Setting Mode Start screen is shown on the display and then changed to Password Entry screen.



Push buttons



## (2) Password Entry Operation \*Initially password is set to 000 (three zeros).

[1] Input 1<sup>st</sup> (left) digit.

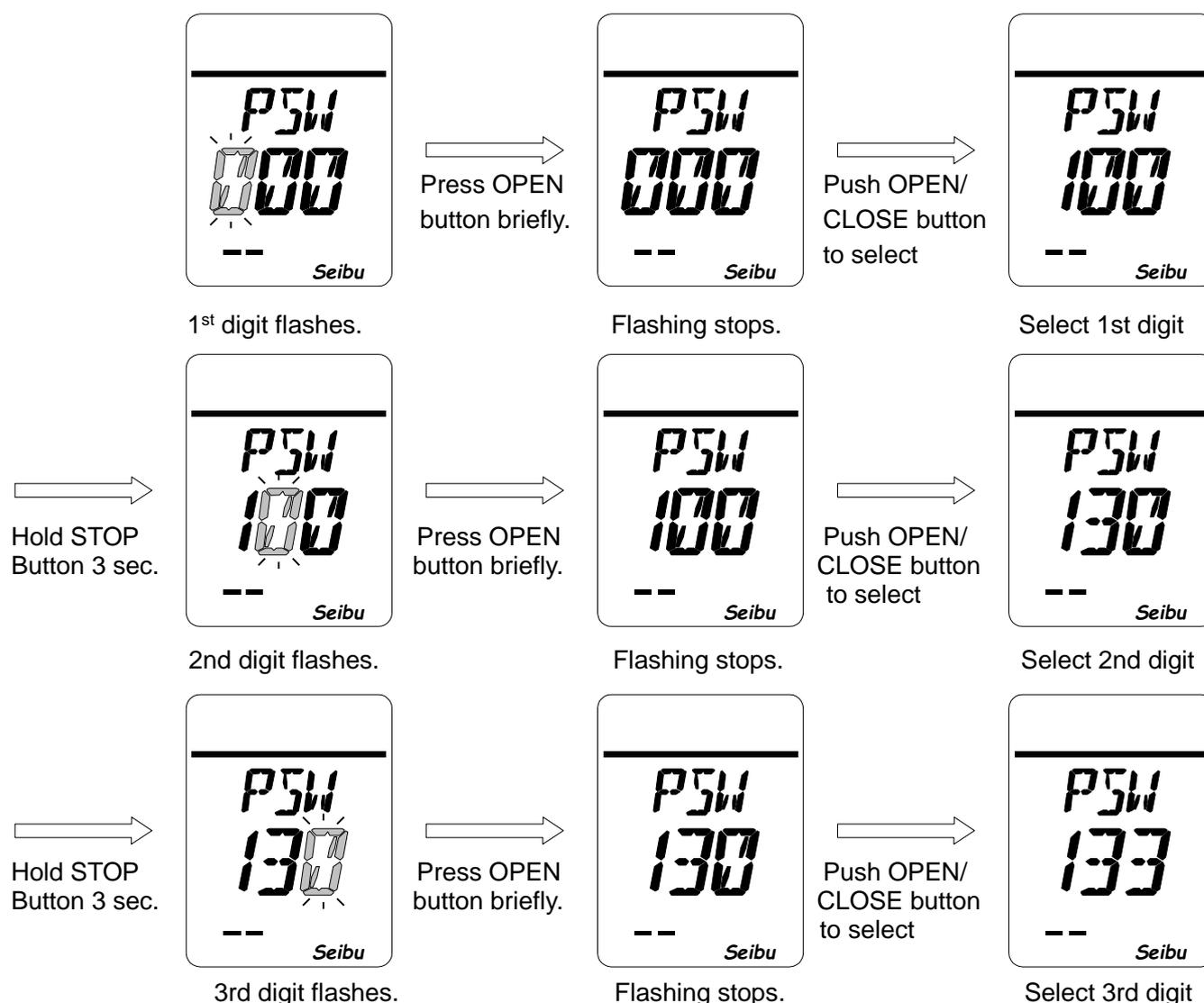
- 1) While left digit is flashing, press OPEN button briefly.
- 2) When flashing has stopped, choose a number by using OPEN and CLOSE buttons. Then hold STOP button for 3 seconds.
- 3) When 1st digit input is completed, 2nd digit start flashing to proceed to second digit input.

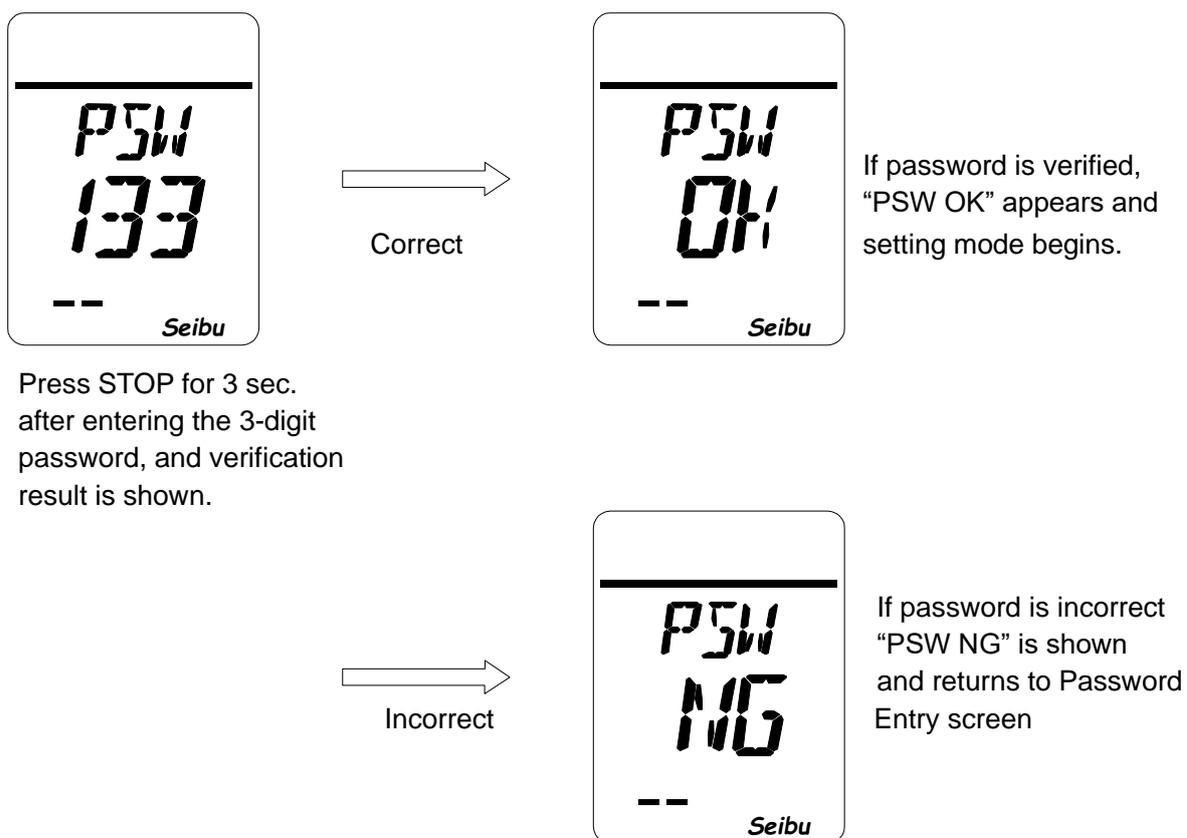
[2] Input 2<sup>nd</sup> (center) digit.

- 1) While center digit is flashing, press OPEN button briefly.
- 2) When flashing has stopped, choose a number by using OPEN and CLOSE buttons. Then hold STOP button for 3 seconds.
- 3) When 2nd digit input is completed, 3rd digit start flashing to proceed to third digit input.

[3] Input 3<sup>rd</sup> (right) digit.

- 1) While right digit is flashing, press OPEN button briefly.
- 2) When flashing has stopped, choose a number by using OPEN and CLOSE buttons. Then hold STOP button for 3 seconds.
- 3) When 3rd digit input is completed and entered password is verified, Setting Mode begins.





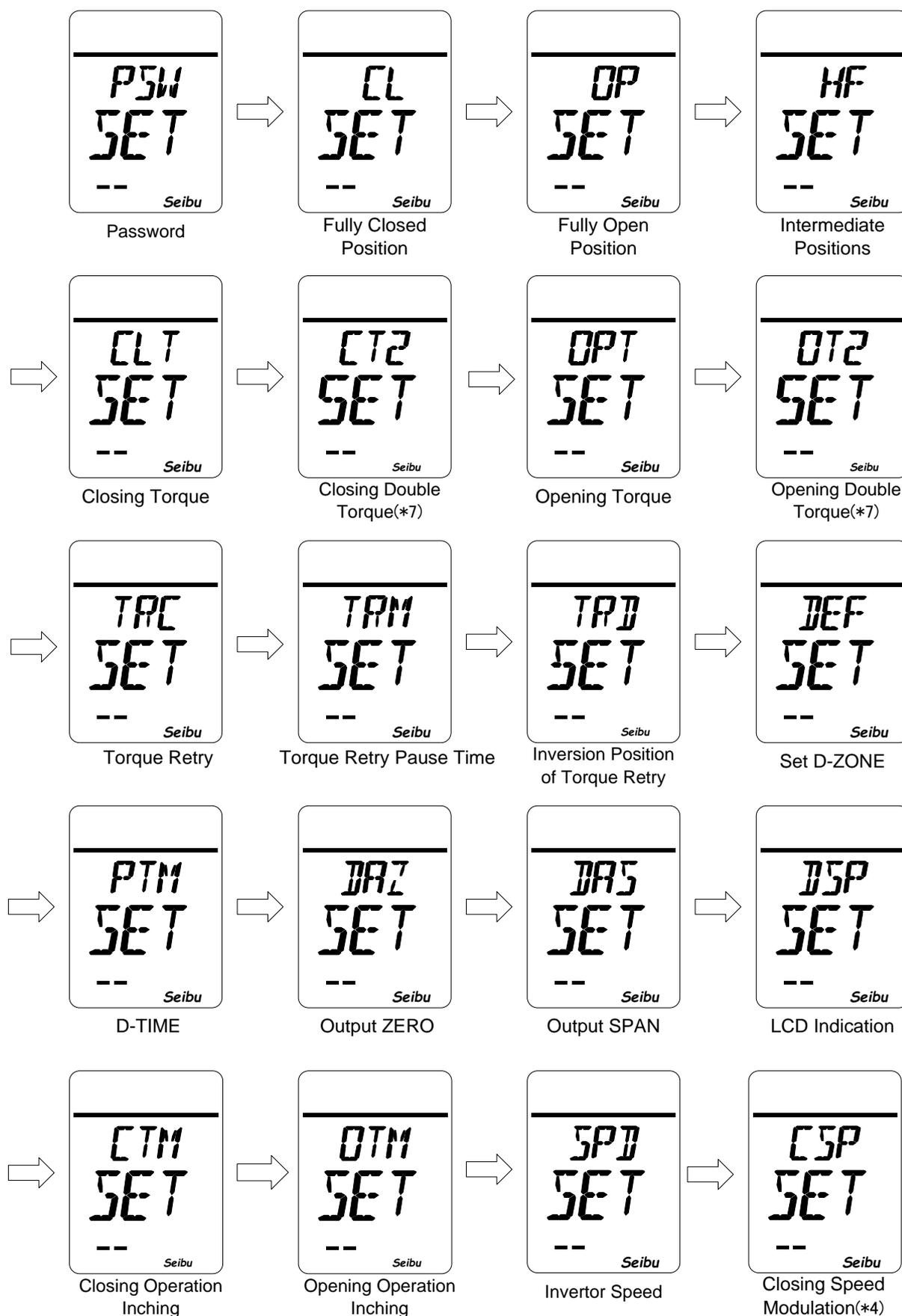
(Password entry operation)

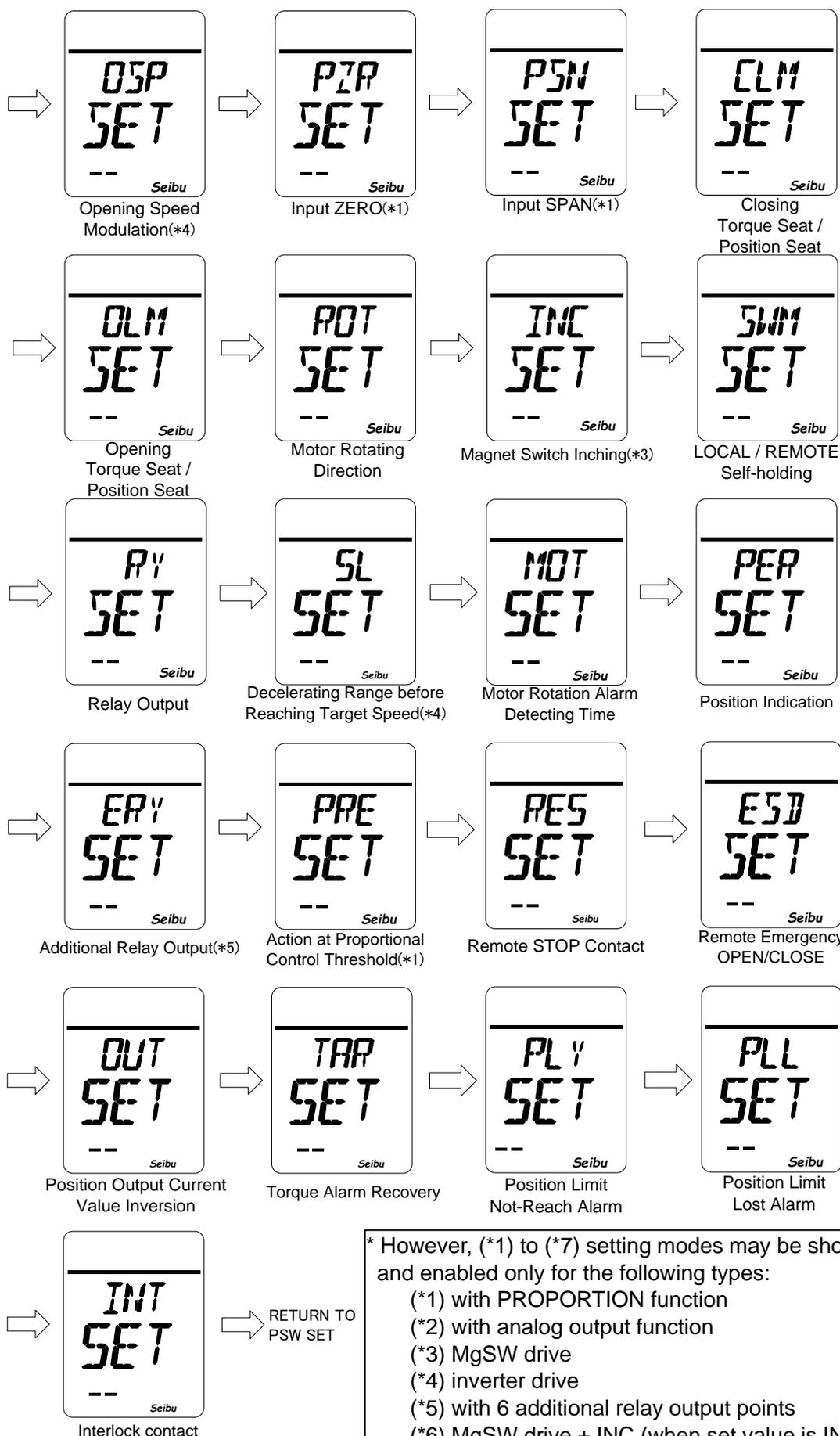
- i) Characters for input can be chosen from 36 alphanumeric characters (0 to 9 and A to Z).
- ii) Input password of flashing digit.
- iii) When OPEN or CLOSE buttons are pressed while digit is flashing, the flashing stops.
- iv) Inputting character can be changed by pressing OPEN button (value changes in ascending order from 0 to 9 and from A to Z) and CLOSE button (value changes in descending order from 9 to 0 and from Z to A).
- v) Setting of that digit completes when STOP button is held for 3 seconds, and shifting to next digit.  
\*While character is flashing, inputting is NOT completed.
- vi) When 3-digit password is entered and verified, "PSW OK" is shown, and screen changes to Setting Mode screen (refer to page 22). If entered password is incorrect, "PSW NG" appears, and screen returns to Password Entry screen.
- vii) To change password later on, refer to "How to Set Password" on page 25.

## (3) User-specific Setting Mode Item List

Item	Setting contents	Page
PSW	Password	P29
CL	Fully Closed Position	P30
OP	Fully Open Position	P30
HF	Intermediate Positions	P31
CLT	Closing Torque	P32
CT2	Closing Double Torque (Torque sheeting)	P33
OPT	Opening Torque	P34
OT2	Opening Double Torque (Torque sheeting)	P35
TRC	Torque Retry	P36
TRM	Torque Retry Pause Time	P36
TRD	Inversion Position of Torque Retry	P37
DEF	Set D-ZONE	P38
PTM	D-TIME (Reverse holding time)	P38
DAZ	Output ZERO (*With analog output function)	P39
DAS	Output SPAN (*With analog output function)	P39
DSP	LCD Indication	P40
CTM	Closing Operation Inching (MgSW drive type)	P41
OTM	Opening Operation Inching (MgSW drive type)	P42
SPD	Invertor Speed (with Invertor)	P43
CSP	Closing Speed Modulation (with Invertor)	P44
OSP	Opening Speed Modulation (with Invertor)	P45
PZR	Input ZERO (*With Proportional control function)	P46
PSN	Input SPAN (*With Proportional control function)	P46
CLM	Closing Torque Seat / Position Seat	P47
OLM	Opening Torque Seat / Position Seat	P47
ROT	Motor Rotating Direction	P49
INC	Magnet Switch Inching (MgSW drive type)	P50
SWM	LOCAL / REMOTE Self-holding	P51
RY	Relay Output	P52
SL	Decelerating Range before Reaching Target Speed (with Invertor)	P54
MOT	Motor Rotation Alarm Detecting Time	P55
PER	Position Indication (% , distance , angle)	P56
ERY	Additional Relay Output (with Additional relay option)	P58
PRE	Action at Proportional Control Threshold (*with Proportional control)	P60
RES	Remote STOP Contact	P61
ESD	Remote Emergency OPEN/CLOSE	P62
OUT	Position Output Current Value Inversion (4-20mA Output)	P64
TAR	Torque Alarm Recovery	P65
PLY	Position Limit Not-Reach Alarm	P66
PLL	Position Limit Lost Alarm	P67
INT	Interlock contact	P68

- Every time the OPEN button is pressed, the setting screen changes in the order shown below. Every time the CLOSE button is pressed, the screen changes in the reverse order.





\* However, (\*1) to (\*7) setting modes may be shown and enabled only for the following types:

- (\*1) with PROPORTION function
- (\*2) with analog output function
- (\*3) MgSW drive
- (\*4) inverter drive
- (\*5) with 6 additional relay output points
- (\*6) MgSW drive + INC (when set value is INC)
- (\*7) when set Torque Seat

#### (4) User-specific Setting Mode

- User-specific setting mode is provided to allow setting or adjusting functions, not related to basic performance of the actuator.
- During setting mode, a bar line “ ————— ” is shown on the upper part of display.
- If selector switch (knob) is turned to LOCAL or REMOTE during setting mode, setting mode ends.
- If no operation is performed for 5 min. or more during setting mode, setting mode automatically ends.
- Data is not saved if setting is not completed before setting mode ends.

## (5) How to set for User-specific Setting

**How to Set Password**

-Hold STOP button for 3 seconds on Password Setting screen (LCD shows "PSW SET") to start.

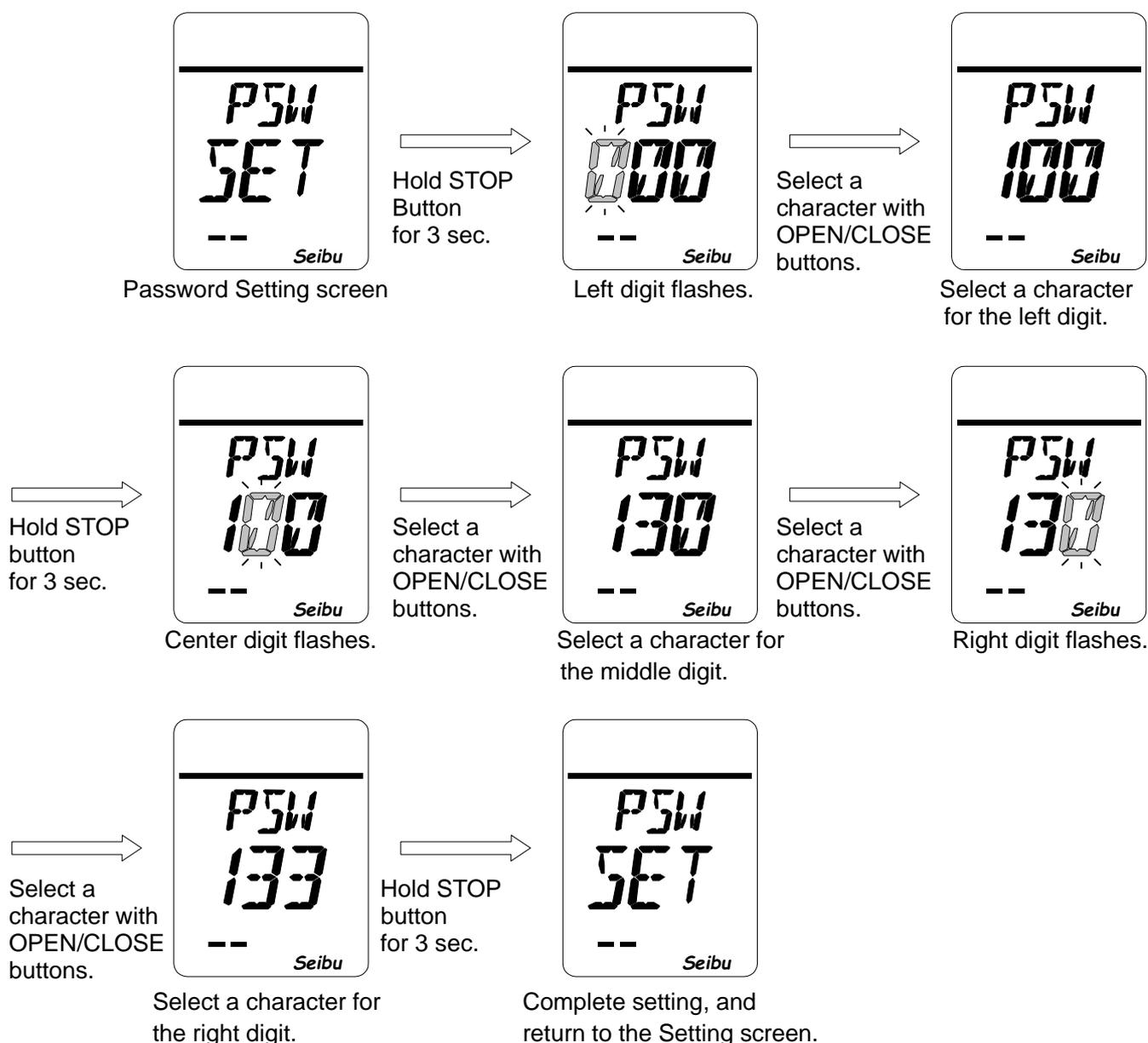
**[Setting operation]**

Input a three-digit code of alphanumeric characters (0 to 9, A to Z) in the digit that is flashing. Hold STOP button for 3 seconds after the last third character is selected, and password setting completes.

Press OPEN button : Select alphanumeric character, from 0 to 9 and from A to Z.

Press CLOSE button : Select alphanumeric character, from 9 to 0 and from Z to A.

Hold STOP button for 3 seconds: Confirm the input digit.



\* When password is changed, be sure not to forget the new password.

## How to Set Fully Closed Position

-Hold STOP button for 3 sec. on Fully Closed Position Setting screen (Display shows “CL SET” ) to start.

[Setting operation]

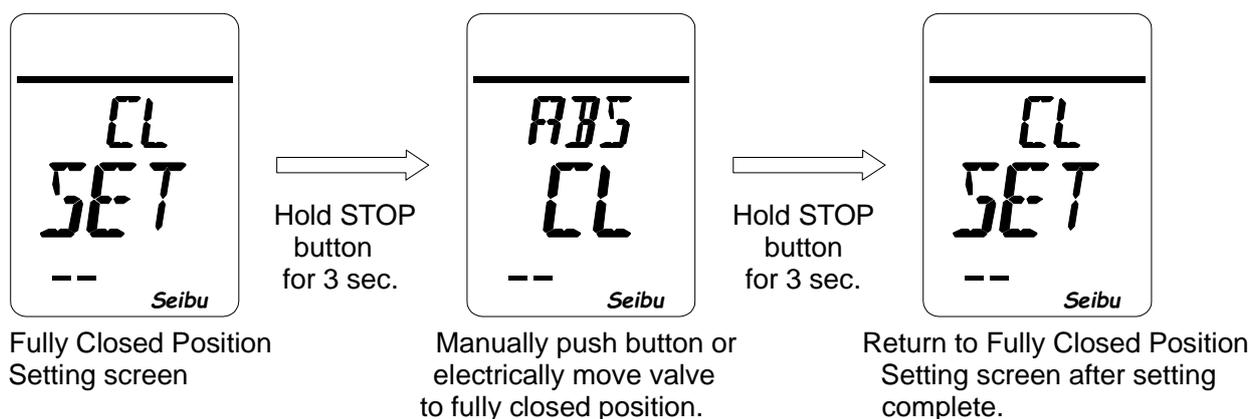
Move valve to fully closed position by motor drive or manual operation on Fully Closed Position Setting Mode screen (Display shows “ABS CL”). Then, hold STOP button for 3 sec. to complete setting.

Press OPEN button : Motor rotates to forward direction (When select “REV”, rotates to reverse direction.)

Press CLOSE button : Motor rotates to reverse direction (When select “REV”, rotates to forward direction.)

Press STOP button briefly : Motor stops.

Hold STOP button for 3 seconds : Fully closed position is saved.



## How to Set Fully Open Position

-Hold STOP button for 3 sec. on Fully Open Position Setting screen (Display shows “OP SET”) to start.

[Setting operation]

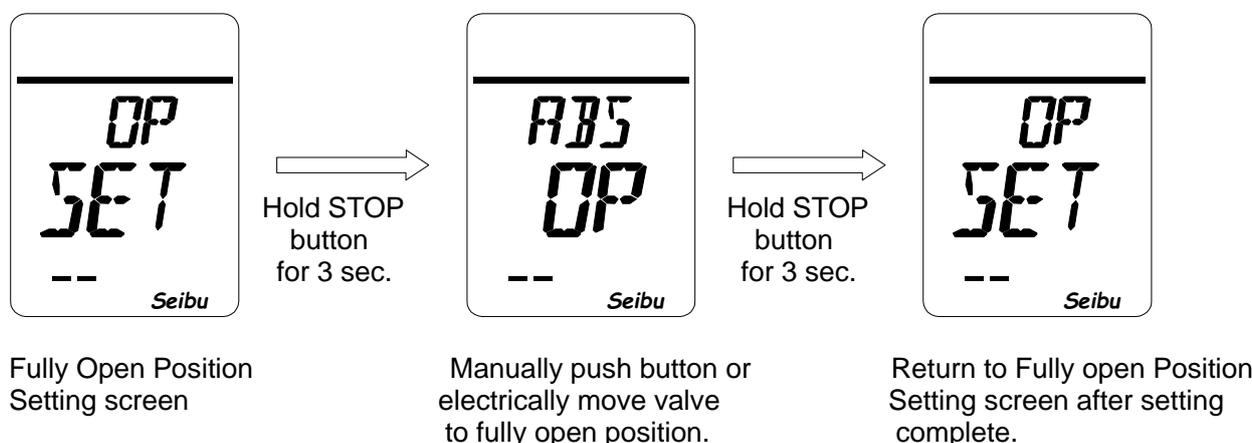
Move valve to fully open position by motor drive or manual operation on Fully Open Position Setting Mode screen (Display shows “ABS OP”). Then, hold STOP button for 3 sec. to complete setting.

Press OPEN button : Motor rotates to forward direction (When select “REV”, rotates to reverse direction.)

Press CLOSE button : Motor rotates to reverse direction (When select “REV”, rotates to forward direction.)

Press STOP button briefly : Motor stops.

Hold STOP button for 3 seconds : Fully open position is saved.



## How to Set Intermediate Positions

-Hold STOP button for 3 sec. on Intermediate Position Setting screen (Display shows “HF SET” ) to start.

### [About Pause time set]

- i) Set value = 0 : Only speed changes without pausing at the set intermediate position
- ii) Set value = 1~20 : Pauses for set time (1 to 20 sec.) at set intermediate position.  
Thereafter automatically restarts to same direction before pausing.
- iii) Set value = 21 : Stop at set intermediate position. Does not restart until inputing next signal.

### [Setting procedure]

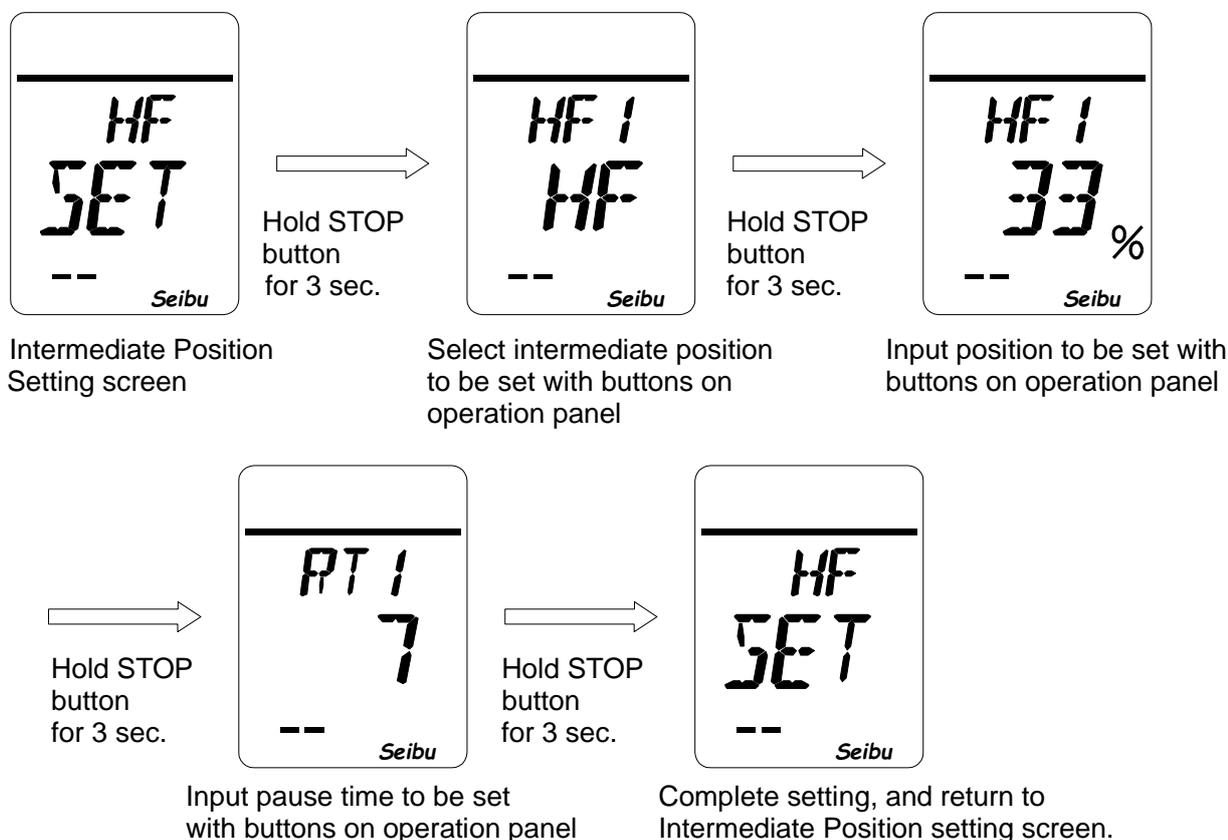
- 1) Select setting intermediate position from 1 to 4 (HF 1 to 4) on Intermediate Position Setting Mode screen (LCD shows: “HF# HF”) and hold STOP button for 3 seconds.
- 2) The intermediate Position Opening Setting screen (LCD shows: “HF# xx%”) is displayed.
- 3) Select intermediate opening position (0 to 100%) on Opening Setting screen and hold STOP button for 3 seconds.
- 4) Intermediate Position Pause Time Setting screen (LCD shows: “RT# xx”) is displayed.
- 5) Set pause time (0 to 21 sec.) on Pause Time Setting screen, and hold STOP button for 3 seconds to complete the setting procedure.

### [Setting operation]

Press OPEN button : Select numerical value in ascending order from 0 to 9.  
(Value increases in high speed by holding the button.)

Press CLOSE button : Select numerical value in descending order from 9 to 0.  
(Value decreases in high speed by holding the button.)

Hold STOP button for 3 seconds : Saves the set value.



## How to Set Closing Torque

-Hold STOP button for 3 seconds on Closing Torque Setting screen (LCD shows "CLT SET") to start.

[Closing torque set value] \*If Max. torque value exceeds 3 digits, the first three numbers are shown.

Setting range = Any value within the range of Min. torque value [Nm] to Max. torque value [Nm] can be set.

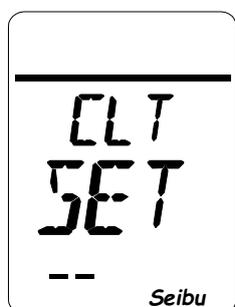
[Setting operation]

Input set value of closing torque by using OPEN / CLOSE buttons of operation panel on Closing Torque Setting Mode screen (LCD shows: "CLT xx"). Then, hold STOP button for 3 seconds to complete the setting.

Press OPEN button : Select numerical value in ascending order from 0 to 9.  
(Value increases in high speed while the button is hold.)

Press CLOSE button : Select numerical value in descending order from 9 to 0.  
(Value decreases in high speed while the button is hold.)

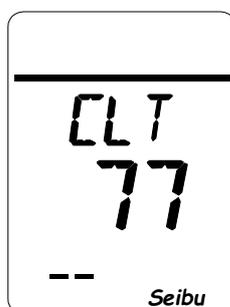
Hold STOP button for 3 seconds : Saves the set value.



Closing Torque Setting screen



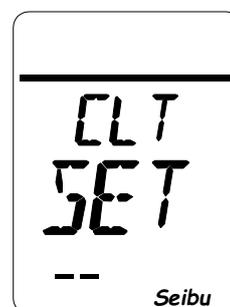
Hold STOP  
button  
for 3 sec.



Input set value of closing  
torque with the buttons  
on operation panel



Hold STOP  
button  
for 3 sec.



Complete setting, and  
returns to Setting screen

## How to Set Closing Double Torque

-Hold STOP button for 3 seconds on Closing Double Torque Setting screen (LCD shows "CT2 SET") to start

[Closing torque set value]

- 1.OFF : Off the Double torque function
- 2.ON : Set Torque value for Torque Sheeting

\*Setting range = Any value within the range of Min. torque value [Nm] to Max. torque value [Nm] can be set.

[Setting operation]

\*Select Closing Double torque setting (ON/OFF) by OPEN / CLOSE buttons of operation panel on Closing Double Torque Setting Mode screen (LCD shows: "CT2 xxx"), and hold STOP button for 3 seconds to complete the setting.

\*When select OFF, return to the Closing Double Torque Setting screen (LCD shows "CT2 SET")

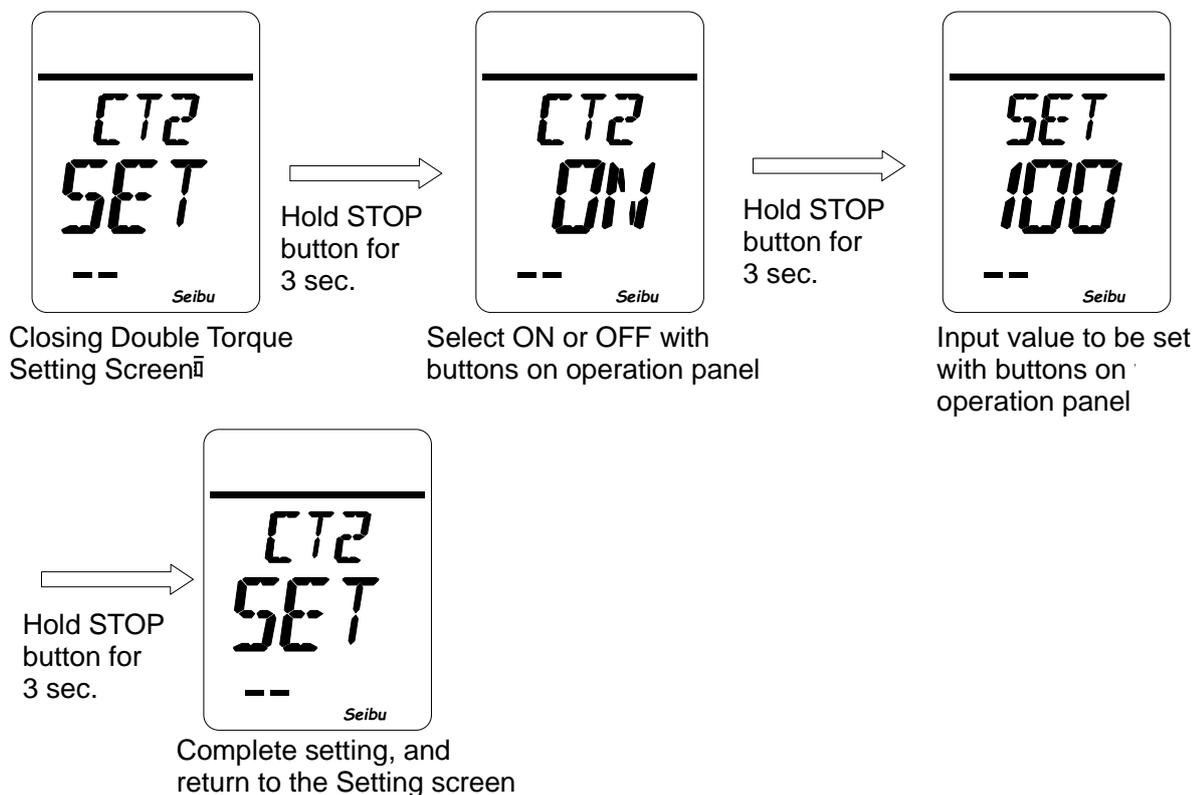
\*When select ON, input set value of closing double torque by OPEN / CLOSE buttons of operation panel on Closing Torque Setting Mode screen (LCD shows "SET xxx"), and hold STOP button for 3 seconds to complete the setting.

Press OPEN button : Select numerical value in ascending order from 0 to 9.  
(Value increases in high speed while the button is hold.)

Press CLOSE button : Select numerical value in descending order from 9 to 0.  
(Value decreases in high speed while the button is hold.)

Hold STOP button for 3 seconds : Saves the set value.

-When select ON



## How to Set Opening Torque

-Hold STOP button for 3 seconds on Opening Torque Setting screen (LCD shows "OPT SET") to start.

[Opening torque set value] \* If Max. torque value exceeds 3 digits, the first three numbers are shown.

Setting range = Any value within the range of Min. torque value [Nm] to Max. torque value [Nm] can be set.

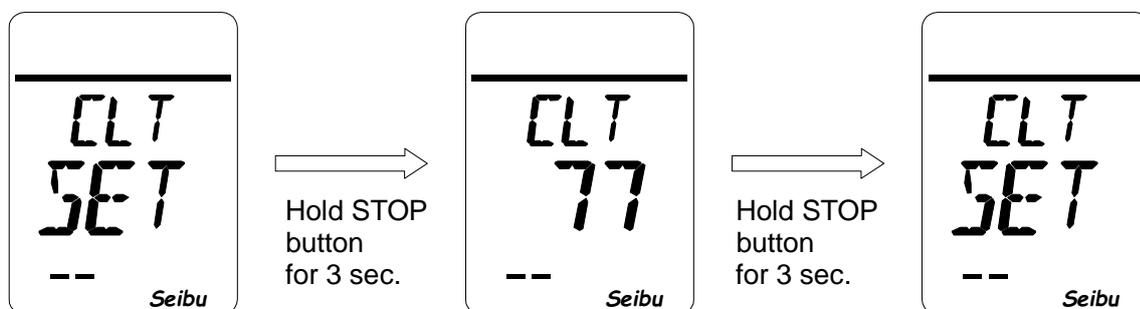
[Setting operation]

Input set value of closing torque by using OPEN / CLOSE buttons of operation panel on Closing Torque Setting Mode screen (LCD shows: "OPT xx"), and hold STOP button for 3 seconds to complete the setting.

Press OPEN button : Changes numerical value in ascending order from 0 to 9.  
(Value increases in high speed while the button is hold.)

Press CLOSE button : Changes numerical value in descending order from 9 to 0.  
(Value decreases in high speed while the button is hold.)

Hold STOP button for 3 seconds: Saves the set value.



Opening Torque Setting screen

Input set value of opening torque with the buttons on operation panel

Complete setting, and returns to Setting screen.

## How to Set Opening Double Torque

-Hold STOP button for 3 seconds on Opening Double Torque Setting screen (LCD shows "OT2 SET") to start

[Closing torque set value]

- 1.OFF : Off the Double torque function
- 2.ON : Set Torque value for Torque Sheeting

\*Setting range = Any value within the range of Min. torque value [Nm] to Max. torque value [Nm] can be set.

[Setting operation]

\*Select Opening Double torque setting (ON/OFF) by OPEN / CLOSE buttons of operation panel on Opening Double Torque Setting Mode screen (LCD shows: "OT2 xxx"), and hold STOP button for 3 seconds to complete the setting.

\*When select OFF, return to the Opening Double Torque Setting screen (LCD shows "OT2 SET")

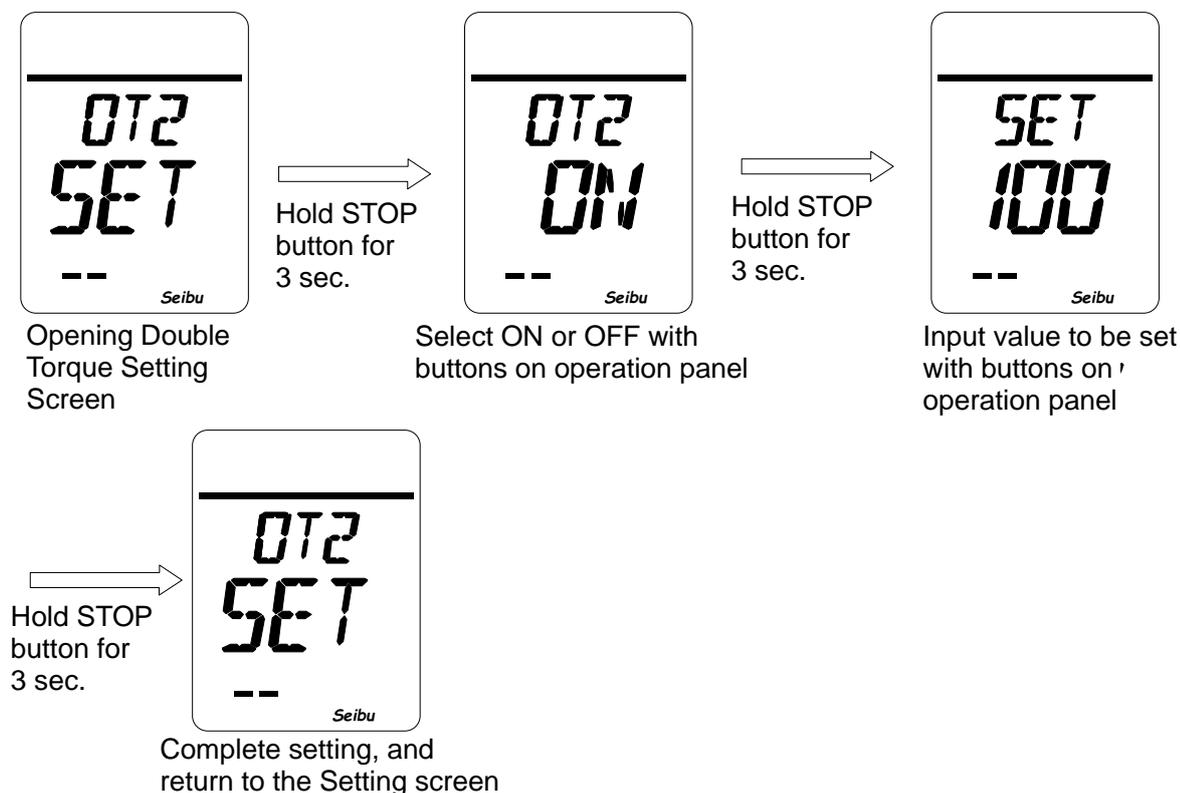
\*When select ON, input set value of opening double torque by OPEN / CLOSE buttons of operation panel on Opening Torque Setting Mode screen (LCD shows "SET xxx"), and hold STOP button for 3 seconds to complete the setting.

Press OPEN button : Select numerical value in ascending order from 0 to 9.  
(Value increases in high speed while the button is hold.)

Press CLOSE button : Select numerical value in descending order from 9 to 0.  
(Value decreases in high speed while the button is hold.)

Hold STOP button for 3 seconds : Saves the set value.

-When select ON



## How to Set Number of Torque Retries

-Hold STOP button for 3 seconds on Number of Torque Retries Setting screen (LCD shows "TRC SET") to start.

[Number of torque retries set value]

- i) Set value = 0 to 5: Set number of times to do retry to make the actuator automatically move back and force when loading torque is more than set value.

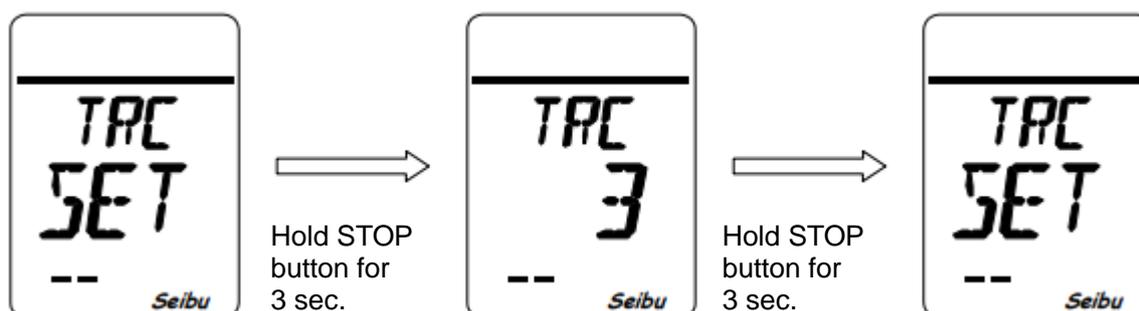
[Setting operation]

Input number of times for torque retries by using OPEN / CLOSE buttons on operation panel on Number of Torque Retries Setting Mode screen (LCD shows: "TRC xx"), and hold STOP button for 3 seconds to complete the setting operation.

Press OPEN button : Select numerical value in ascending order from 0 to 9.  
(Value increases in high speed while the button is hold)

Press CLOSE button : Select numerical value in descending order from 9 to 0.  
(Value decreases in high speed while the button is hold)

Hold STOP button for 3 seconds: Saves the set value.



Number of Torque Retries Setting screen

Set value of the number of torque retries with button on operation panel

Complete setting, and returns to the Setting screen

## How to Set Torque Retry Pause Time

-Hold STOP button for 3 seconds on Torque Retry Pause Setting screen (LCD shows "TRM SET") to start.

[Torque retry pause time set value]

Set value=0 to 5: Sets time (1 to 5 [sec]) to pause when in no torque state during torque retries.

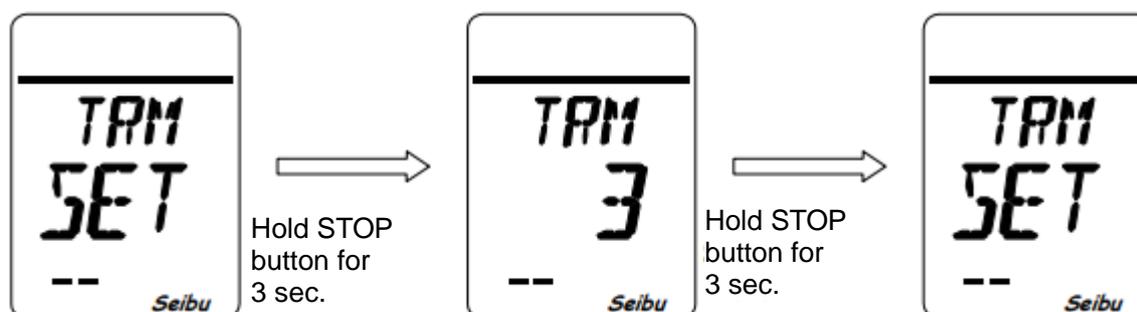
[Setting operation]

Input time (sec) for torque retry pause using OPEN / CLOSE buttons on operation panel on Torque Retry Pause Time Setting Mode screen (LCD shows: "TRM xx"), and hold STOP button for 3 seconds to complete the setting operation.

Press OPEN button : Select numerical value in ascending order from 0 to 9.  
(Value increases in high speed while the button is hold)

Press CLOSE button : Select numerical value in descending order from 9 to 0.  
(Value decreases in high speed while the button is hold)

Hold STOP button for 3 seconds: Saves the set value.



Torque Retry Pause Time Setting screen

Set Pausing time for torque retry with button on operation panel

Complete setting, and returns to the Setting screen

## How to Set Inversion Position of Torque Retry

-Hold STOP button for 3 seconds on Inversion Position for Torque Retry Setting screen (LCD shows "TRD SET") to start.

[Inversion Position Torque retry set value]

Set value = 0 to 50 : Set position (0 to 50%) to invert for torque retry

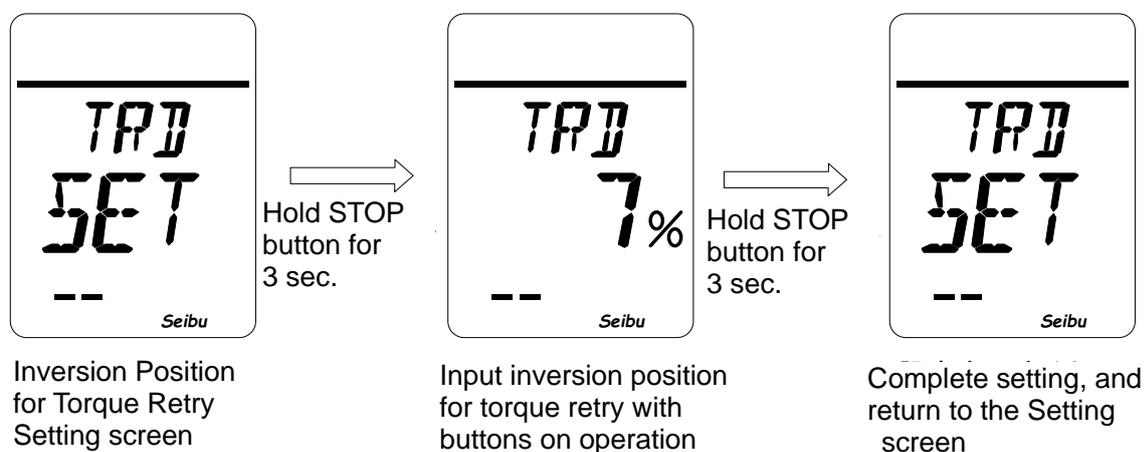
[Setting operation]

Input inversion position for torque retry by OPEN / CLOSE buttons on operation panel on Inversion Position for Torque Retry Setting Mode screen (LCD shows: "TRD xx%"), and hold STOP button for 3 seconds to complete the setting operation.

Press OPEN button : Select numerical value in ascending order from 0 to 9.  
(Value increases in high speed while the button is hold)

Press CLOSE button : Select numerical value in descending order from 9 to 0.  
(Value decreases in high speed while the button is hold)

Hold STOP button for 3 seconds: Saves the set value.



## How to Set D-ZONE

-Hold STOP button for 3 seconds on D-ZONE Setting screen (LCD shows “DEF SET”) to start.

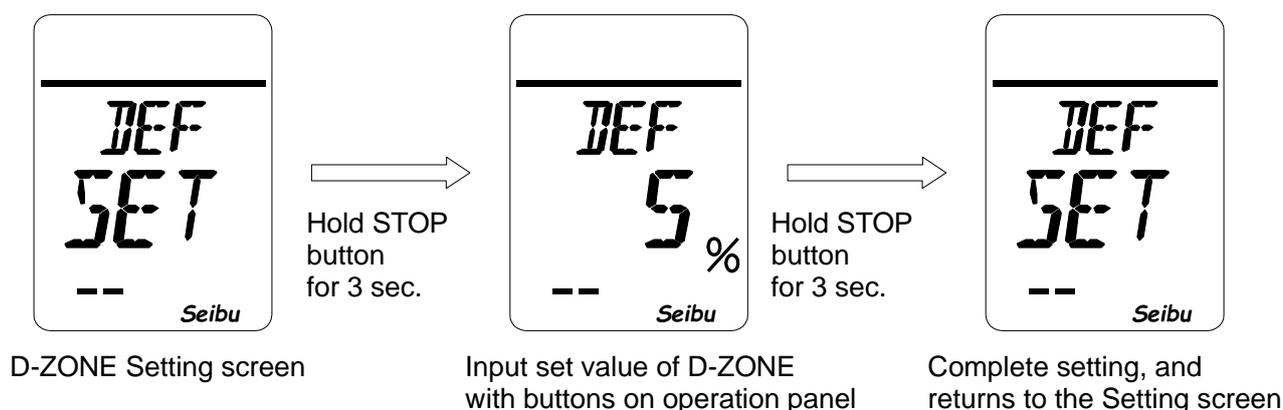
[D-ZONE set value]

Set value = 1 to 999: Actuator stops within the range of difference (0.01 to 9.99%) from target position when using Proportional control or PROFIBUS.

[Setting operation]

Input set value of D-ZONE by OPEN / CLOSE buttons on operation panel on D-ZONE Setting Mode screen (LCD shows “DEF xx%”), and hold STOP button for 3 seconds to complete the setting operation.

- Press OPEN button : Select numerical value in ascending order from 0 to 9.  
(Value increases in high speed while the button is hold)
- Press CLOSE button : Select numerical value in descending order from 9 to 0.  
(Value decreases in high speed while the button is hold)
- Hold STOP button for 3 seconds: Saves the set value.



## How to Set D-TIME (\*with Proportional Control)

-Hold STOP button for 3 seconds on D-TIME Setting screen (LCD shows “PTM SET”) to start.

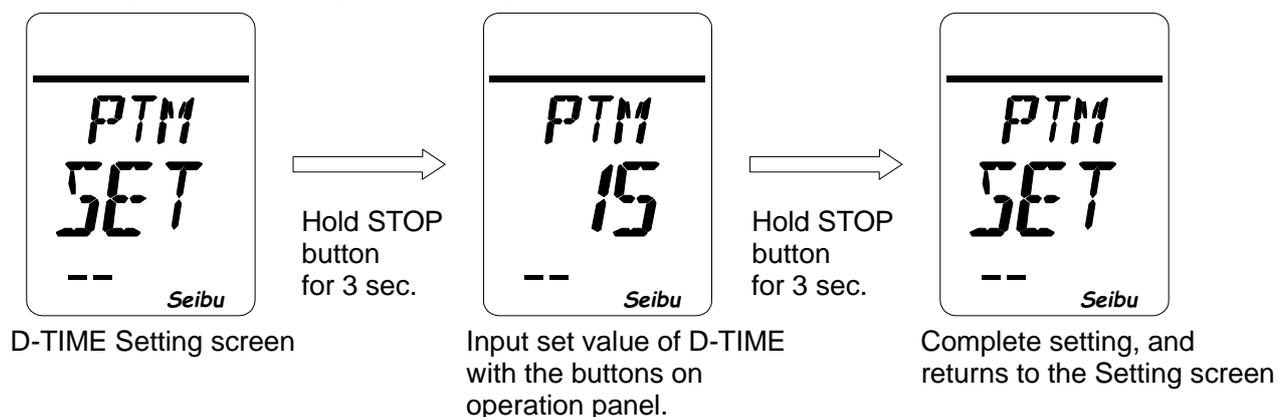
[D-TIME set value]

Set value = 5 to 20: Set time to receive Proportional control signal within the range of 0.5 to 2.0 [sec].

[Setting operation]

Input set value of D-TIME by using OPEN / CLOSE buttons on operation panel on D-TIME Setting Mode screen (LCD shows: “PTM xxx”). Then, hold STOP button for 3 seconds to complete the setting operation.

- Press OPEN button : Select numerical value in ascending order from 0 to 9.  
(Value increases in high speed while the button is hold.)
- Press CLOSE button : Select numerical value in descending order from 9 to 0.  
(Value decreases in high speed while the button is hold.)
- Hold STOP button for 3 seconds: Saves set value.



## How to Set Output ZERO (\*with 4-20mA output)

-Hold STOP button for 3 seconds on Output ZERO Setting screen (LCD shows “DAZ SET”) to start.

### [Output ZERO set value]

Set value = -10 to 10: Analog output position of 0% can be adjusted within the range of -0.8 to 0.8 [mA].

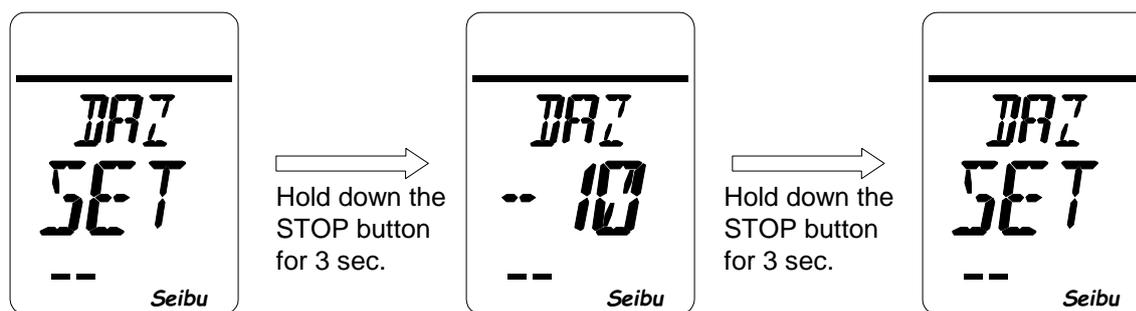
### [Setting operation]

Input set value of Output ZERO by OPEN / CLOSE buttons on operation panel on Output ZERO Setting Mode screen (LCD shows “DAZ xx”), and hold STOP button for 3 seconds to complete the setting operation.

Press OPEN button : Select numerical value in ascending order from 0 to 9.

Press CLOSE button : Select numerical value in descending order from 9 to 0.

Press STOP button for 3 seconds : Saves the set value.



Output ZERO Setting screen

Set value of Output ZERO with buttons on operation panel

Complete setting, and return to the Setting screen

## How to Set Output SPAN (\*with 4-20mA output)

-Hold STOP button for 3 seconds on Output SPAN Setting screen (LCD shows “DAS SET”) to start.

### [Output SPAN set value]

Set value = -10 to 10: Analog output position of 100% can be adjusted within the range of -0.8 to 0.8 [mA].

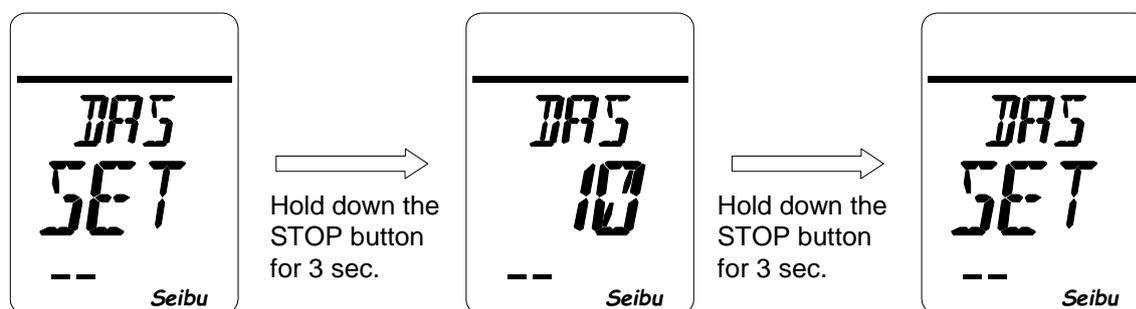
### [Setting operation]

Input set value of Output SPAN by OPEN / CLOSE buttons on operation panel on Output SPAN Setting Mode screen (LCD shows “DAS xx”), and hold STOP button for 3 seconds to complete the setting operation.

Press OPEN button : Select numerical value in ascending order from 0 to 9.

Press CLOSE button : Select numerical value in descending order from 9 to 0.

Press STOP button for 3 seconds : Saves the set value.



Output SPAN Setting screen

Set value of Output SPAN with buttons on operation panel

Complete setting, and return to the Setting screen

## How to Set LCD Indication

-Hold STOP button for 3 seconds on LCD Indication Setting screen (LCD shows "DSP SET") to start.

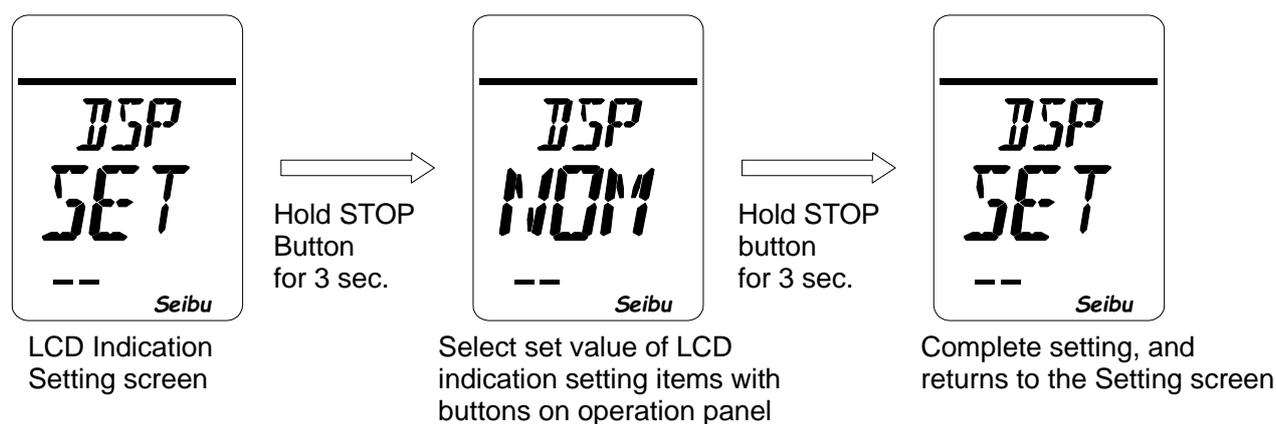
### [Setting operation]

Select setting item on the LCD by using OPEN / CLOSE buttons on operation panel on LCD Indication Setting Mode screen (LCD shows "DSP xxx"). Then, hold STOP button for 3 seconds to complete the setting operation.

Press OPEN button : Select items in order from NOM to MNT as shown in setting items below.

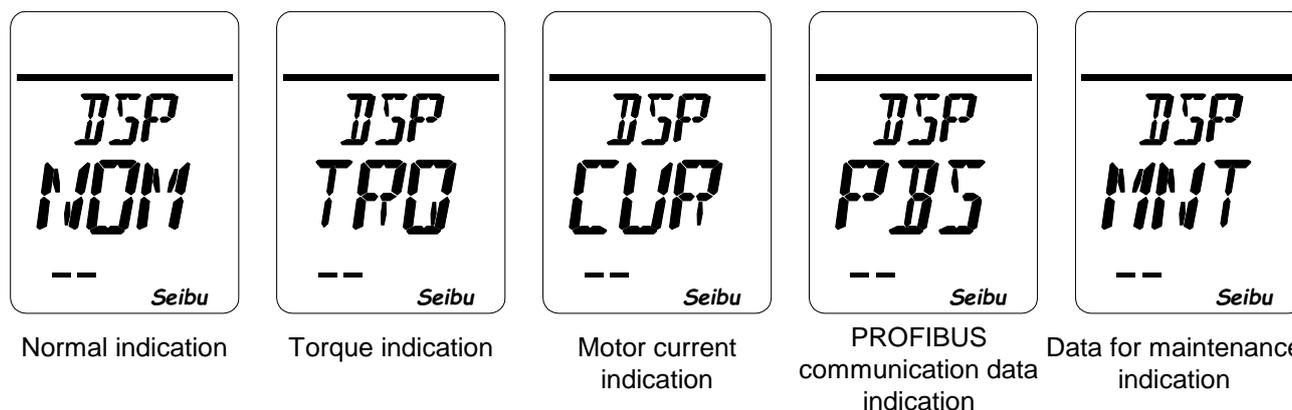
Press CLOSE button : Select items in order from MNT to NOM as shown in setting items below.

Hold STOP button for 3 seconds: Saves the set value.



### [LCD indication setting items]

- 1) NOM: Display action status on the upper part of LCD.
- 2) TRQ: Display torque value on the upper part of LCD (Value is shown when the torque is more than Min. torque and shown "LOW" when it is less than Min. torque.).
- 3) CUR: Display electric current of motor on the upper part of LCD (in the range of 0 to 30.0 A).
- 4) PBS: Display data of communication with PROFI-CARD (when use Profibus.)
- 5) MNT: Display data for maintenance.



## How to Set Closing Operation Inching (\*for MgSW drive type + when set INC)

-Hold STOP button for 3 seconds on Closing Operation Inching Setting screen (LCD shows "CTM SET") to start.

[Closing operation inching setting]

- i) ON time set value = 10 to 600: Closing operation inching time (1.0 to 60.0 sec)
- ii) OFF time set value = 0 to 600: Closing operation inching-pause time (0.0 to 60.0 sec)

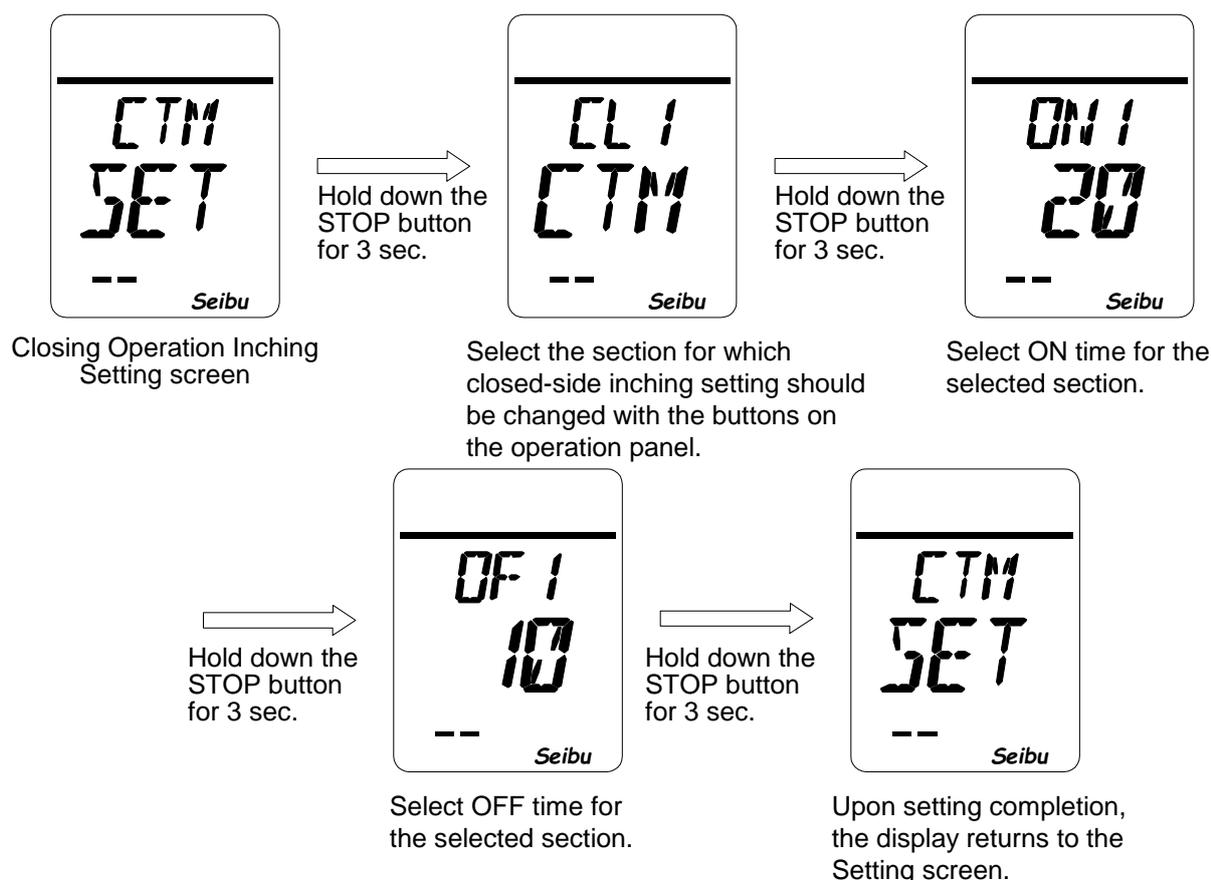
[Setting procedure]

- 1) Select a section from CL1 to CL5, numbered in order from full-close side, on Closing Operation Section Selecting screen (LCD shows "CL# CTM"), and hold STOP button for 3 seconds to go next.
- 2) Input inching ON time for the selected section by OPEN / CLOSE buttons on operation panel on Inching ON Time Setting screen (LCD shows "ON# xxx"), and hold STOP button for 3 seconds to go next.
- 3) Input inching OFF time for the selected section by OPEN / CLOSE buttons on operation panel on Inching OFF Time Setting screen (LCD shows "OF# xxx"), and hold STOP button for 3 seconds to complete the setting procedure.

Press OPEN button : Select numerical value in ascending order from 0 to 9.

Press CLOSE button : Select numerical value in descending order from 9 to 0.

Hold STOP button for 3 seconds: Saves the set value.



## How to Set Opening Operation Inching (\*for MgSW drive type + when set INC)

-Hold STOP button for 3 seconds on Opening Operation Inching Setting screen (LCD shows "OTM SET") to start.

[Opening operation inching setting]

- i) ON time set value = 10 to 600: Opening operation inching time (1.0 to 60.0 sec)
- ii) OFF time set value = 0 to 600: Opening operation inching-pause time (0.0 to 60.0 sec)

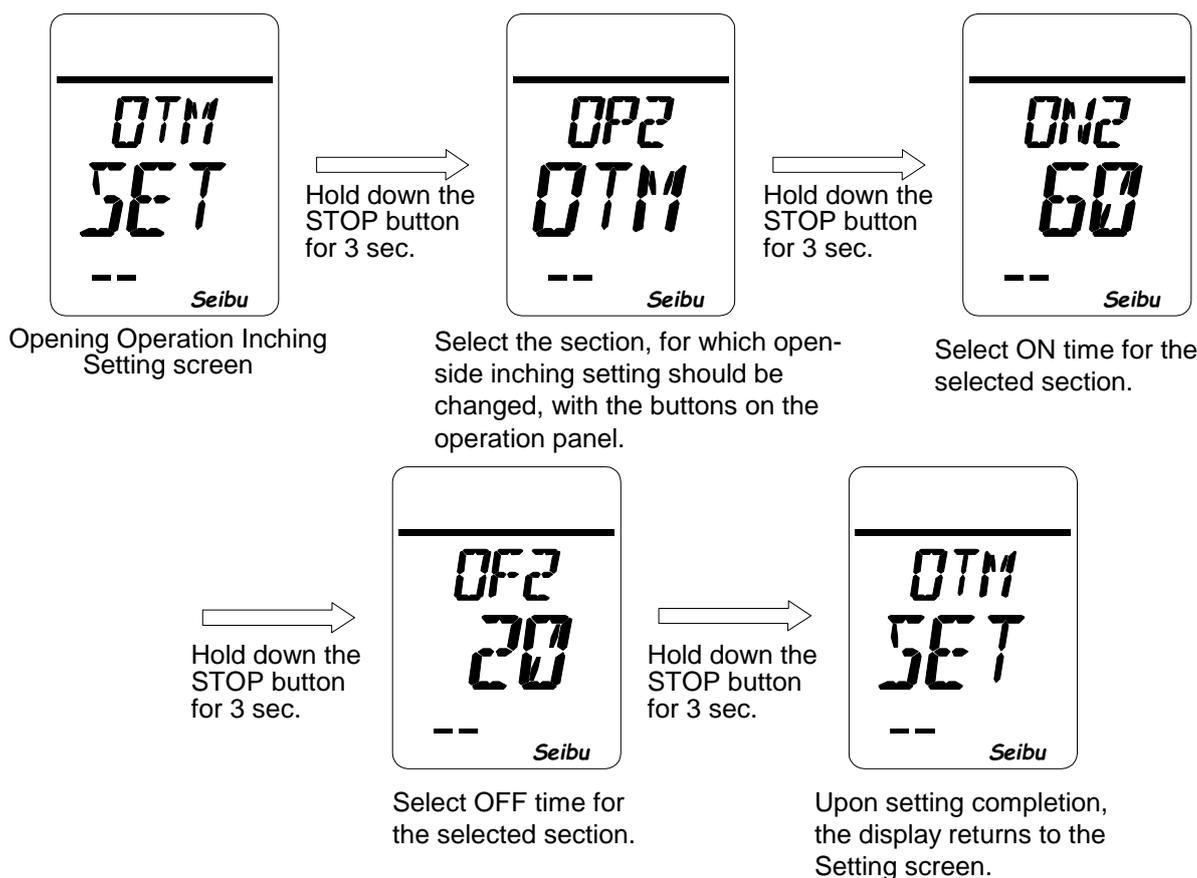
[Setting procedure]

- 1) Select a section from OP1 to OP5, numbered in order from full-close side, on Opening Operation Section Selecting screen (LCD shows "OP# CTM"), and hold STOP button for 3 seconds to go next.
- 2) Input inching ON time for the selected section by OPEN / CLOSE buttons on operation panel on Inching ON Time Setting screen (LCD shows "ON# xxx"), and hold STOP button for 3 seconds to go next.
- 3) Input inching OFF time for the selected section by OPEN / CLOSE buttons on operation panel on Inching OFF Time Setting screen (LCD shows "OF# xxx"), and hold STOP button for 3 seconds to complete the setting procedure.

Press OPEN button : Select numerical value in ascending order from 0 to 9.

Press CLOSE button : Select numerical value in descending order from 9 to 0.

Hold STOP button for 3 seconds: Saves the set value.



## How to Set Invertor Speed (\*with Invertor)

- Hold STOP button for 3 seconds on INV Speed Setting screen (LCD shows “SPD SET”) to start.

### [Speed set value]

i) SP1:	Speed 1 (speed at POSITION LIMIT)	(Initial value = 10 [Hz])
ii) SP2:	Speed 2 (speed during setting mode)	(Initial value = 60 [Hz])
iii) SP3:	Speed 3	(Initial value = 60 [Hz])
iv) SP4:	Speed 4	(Initial value = 60 [Hz])
v) SP5:	Speed 5	(Initial value = 60 [Hz])
vi) SP6:	Speed 6	(Initial value = 60 [Hz])
vii) SP7:	Speed 7	(Initial value = 60 [Hz])

### [Setting procedure]

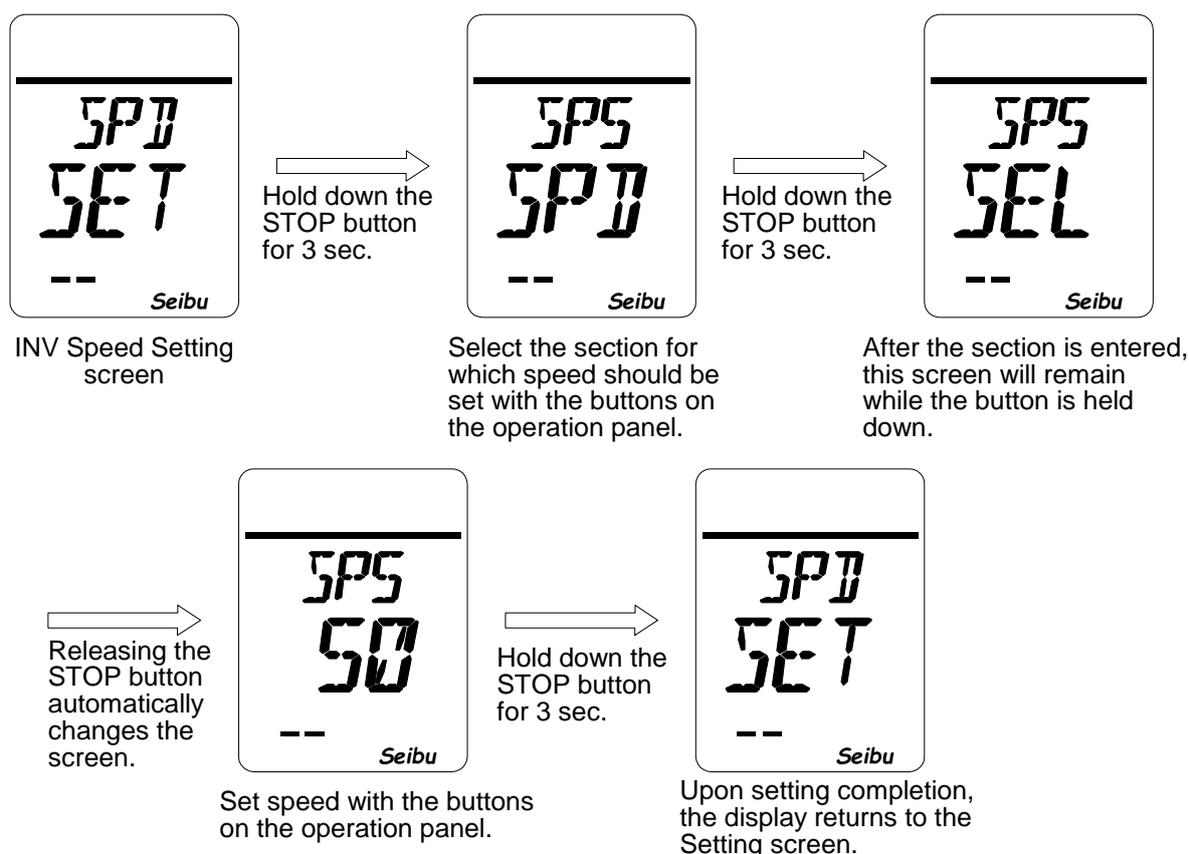
- 1) Select speed to be set from 1 to 7 (SP1 to 7) on INV Speed Setting Mode screen (LCD shows “SP# SPD”). Then, hold STOP button for 3 seconds.
- 2) Release STOP button after “SP# SEL” is displayed on LCD, and Speed Setting screen (LCD shows “SP# xx”) will be shown automatically.
- 3) Select speed (10 to 100 [Hz]) on Speed Setting screen. Then, hold STOP button for 3 seconds to complete the setting procedure.

### [Setting operation]

Press OPEN button : Select by ascending order from 0 to 9 and from SP1 to SP7.

Press CLOSE button : Select by descending order from 9 to 0 and from SP7 to SP1.

Hold STOP button for 3 seconds: Saves the set value.



## How to Set Closing Speed Modulation (\*with Invertor)

-Hold STOP button for 3 seconds on Closing Speed Modulation Setting screen (LCD shows "CSP SET") to start.

[Closing speed modulation set value]

- |           |                    |                     |
|-----------|--------------------|---------------------|
| i) CL1:   | Speed in section 1 | (Initial value=SP3) |
| ii) CL2:  | Speed in section 2 | (Initial value=SP4) |
| iii) CL3: | Speed in section 3 | (Initial value=SP5) |
| iv) CL4:  | Speed in section 4 | (Initial value=SP6) |
| v) CL5:   | Speed in section 5 | (Initial value=SP7) |

\* Setting of Sections 1 to 5 vary in accordance with intermediate position settings.

If intermediate position setting is not used, Section 1 is set from full-close to full-open position.

When intermediate positions are used, Section 1 is set from full-close position to the nearest intermediate position, followed by Section 2 which to be till next intermediate position, and following sections to be set subsequently.

[Setting procedure]

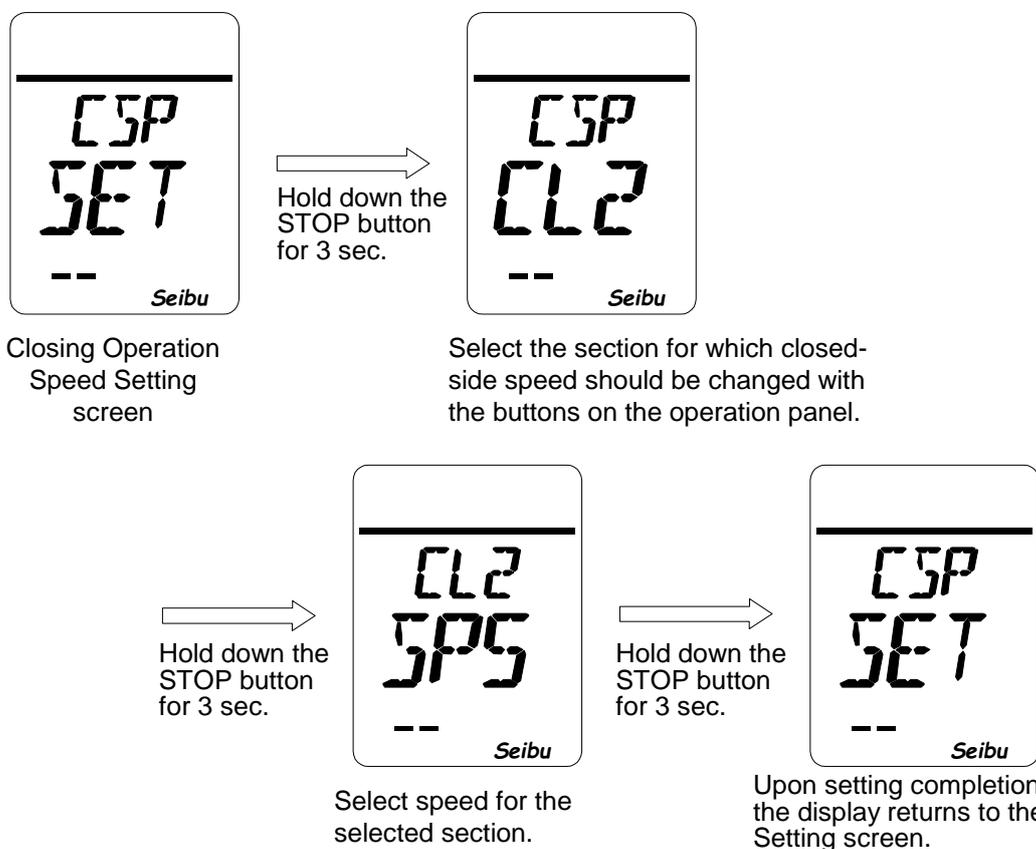
- 1) Select section 1 to 5 (CL 1 to 5 from full-close side) on the Closing Speed Modulation mode screen (LCD shows "CSP CL#"), and hold STOP button for 3 seconds. The Speed Selection screen (LCD shows "CL# SP#") is shown.
- 2) Select closing speed for the selected section by OPEN / CLOSE buttons on operation panel on Speed Selection screen (LCD shows: "CL# SP#"), and hold STOP button for 3 seconds to complete the setting procedure.

[Setting operation]

Press OPEN button : Select in ascending order from CL1 to CL5 and from SP3 to SP7.

Press CLOSE button : Select in descending order from CL5 to CL1 and from SP7 to SP3.

Hold STOP button for 3 seconds: Saves the set value.



## How to Set Opening Speed Modulation (\*with Invertor)

-Hold STOP button for 3 seconds on Closing Speed Modulation Setting screen (LCD shows "OSP SET") to start.

[Closing speed modulation set value]

- i) OP1: Speed in section 1 (Initial value=SP3)
- ii) OP2: Speed in section 2 (Initial value=SP4)
- iii) OP3: Speed in section 3 (Initial value=SP5)
- iv) OP4: Speed in section 4 (Initial value=SP6)
- v) OP5: Speed in section 5 (Initial value=SP7)

\* Setting of Sections 1 to 5 vary in accordance with intermediate position settings.

If intermediate position setting is not used, Section 1 is set from full-close to full-open position.

When intermediate positions are used, Section 1 is set from full-close position to the nearest intermediate position, followed by Section 2 which to be till next intermediate position, and following sections to be set subsequently.

[Setting procedure]

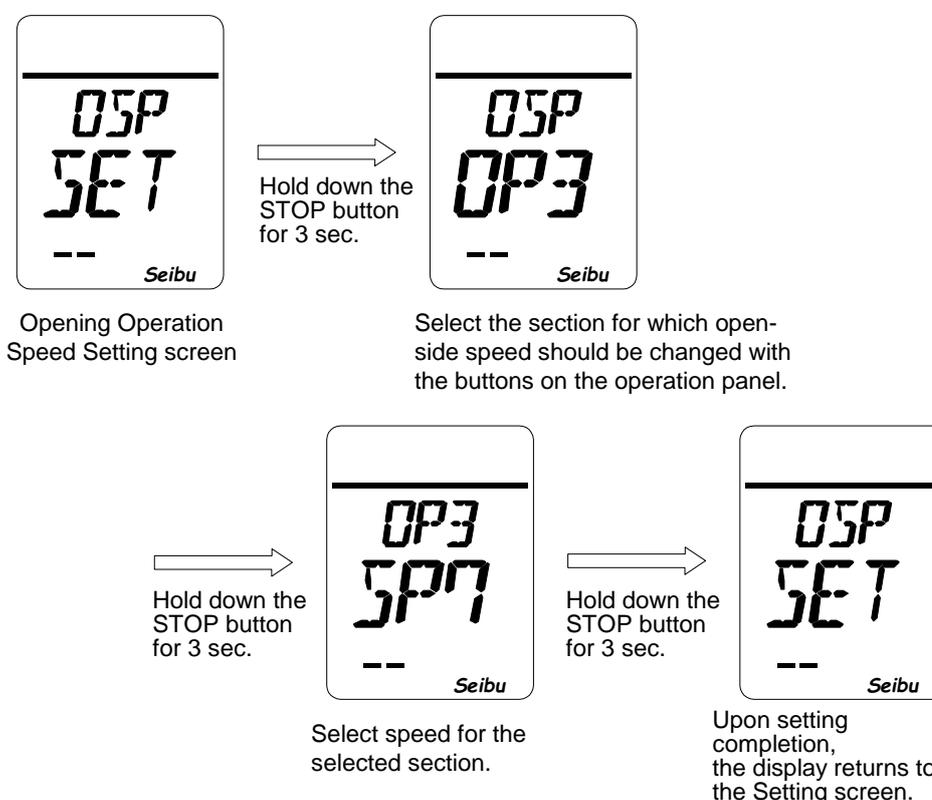
- 1) Select section 1 to 5 (OP1 to 5 from full-close side) on the Closing Speed Modulation mode screen (LCD shows "OSP CL#"), and hold STOP button for 3 seconds. The Speed Selection screen (LCD shows "OP# SP#") is shown.
- 2) Select closing speed for the selected section by OPEN / CLOSE buttons on operation panel on Speed Selection screen (LCD shows: "OP SP#"), and hold STOP button for 3 seconds to complete the setting procedure.

[Setting operation]

Press OPEN button : Select in ascending order from OP1 to OP5 and from SP3 to SP7.

Press CLOSE button : Select in descending order from OP5 to OP1 and from SP7 to SP3.

Hold STOP button for 3 seconds: Saves the set value.



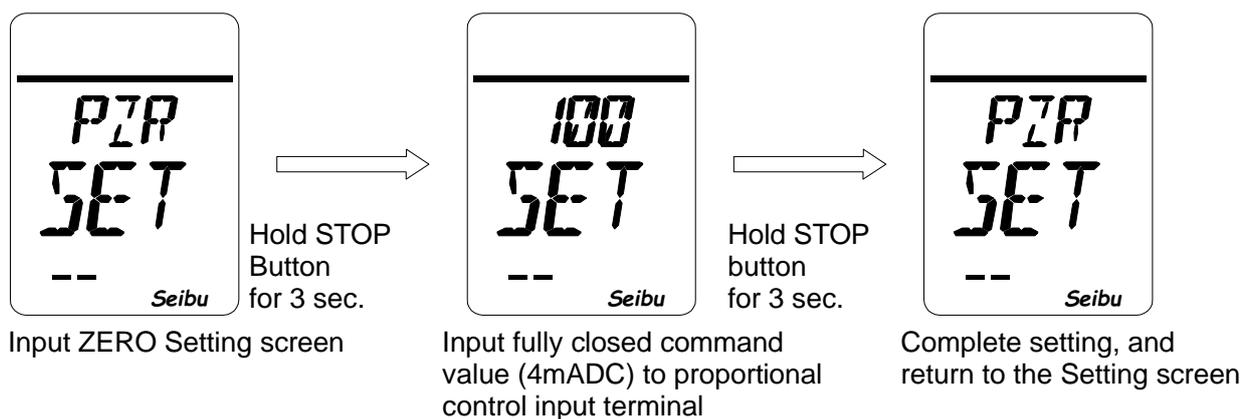
## How to Set Input ZERO (\*with Proportional Control)

-Hold STOP button for 3 seconds on Input ZERO Setting screen (LCD shows “PZR SET”) to start.

### [Setting operation]

Input fully closed command current (4mADC) to Proportional control input terminal on Input ZERO Setting Mode screen (LCD shows “xxx SET”), and hold STOP button on operation panel for 3 seconds to complete the setting operation.

Hold STOP button for 3 seconds: Save the input ZERO.



\* Value that appears on screen during setting operation is not related to setting, as it is a data value of voltage internally converted from input current.

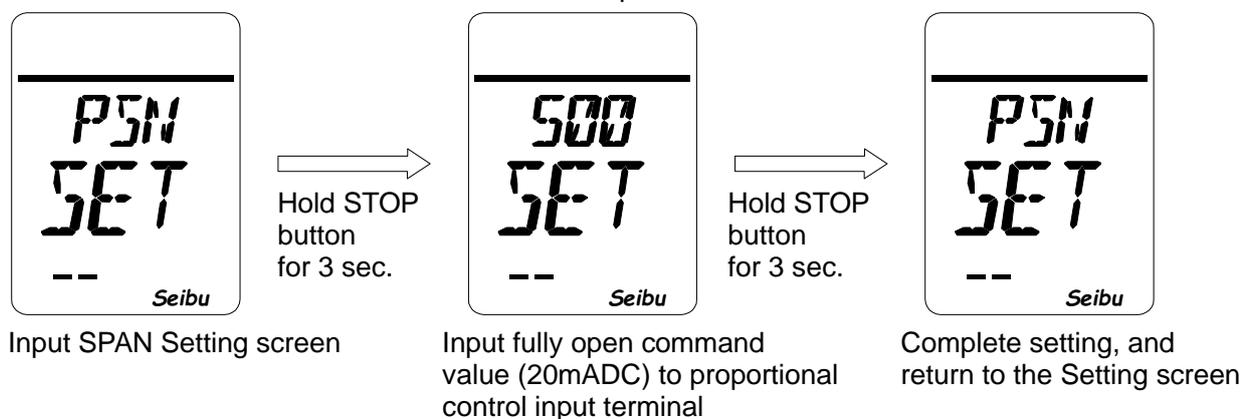
## How to Set Input SPAN (\*with Proportional Control)

-Hold STOP button for 3 seconds on Input SPAN Setting screen (LCD shows “PSN SET”) to start.

### [Setting operation]

Input fully open command current (20mADC) to Proportional control input terminal on Input SPAN Setting Mode screen (LCD shows “xxx SET”), and hold STOP button on operation panel for 3 seconds to complete the setting operation.

Hold STOP button for 3 seconds: Saves the input SPAN.



\* Value that appears on screen during setting operation is not related to setting, as it is a data value of voltage internally converted from input current.

## How to Set Closing Torque Seat / Position Seat

-Hold STOP button for 3 seconds on Fully Closed Condition Setting screen (LCD shows "CLM SET") to start.

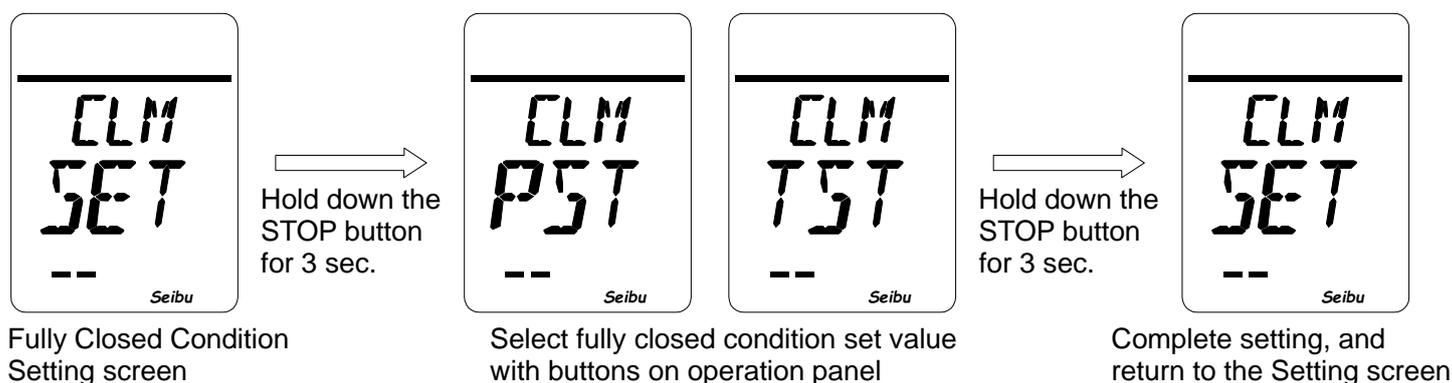
[Closing torque seat and position seat set values]

- i) Set value = PST : Position seat. Stop at 0% position
- ii) Set value = TST : Torque seat. Stop actuator when loading torque exceeds set value at less than 0%.

[Setting operation]

Input fully closed condition set value by using OPEN / CLOSE buttons on operation panel on Fully Closed Condition Setting Mode screen (LCD shows "CLM xxx"), and hold STOP button on operation panel for 3 seconds to complete the setting operation.

Press OPEN / CLOSE button : Select PST or TST.  
Hold STOP button for 3 seconds: Saves the set value.



## How to Set Opening Torque Seat / Position Seat

-Hold STOP button for 3 seconds on Fully Open Condition Setting screen (LCD shows "OLM SET") to start.

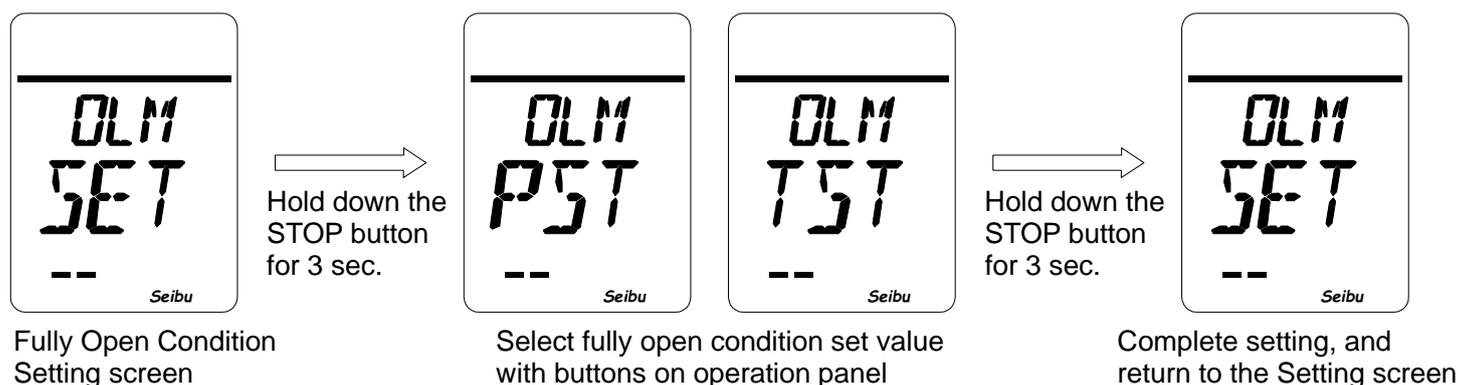
[Closing torque seat and position seat set values]

- iii) Set value = PST : Position seat. Stop at 100% position
- iv) Set value = TST : Torque seat. Stop actuator when loading torque exceeds set value at more than 100%.

[Setting operation]

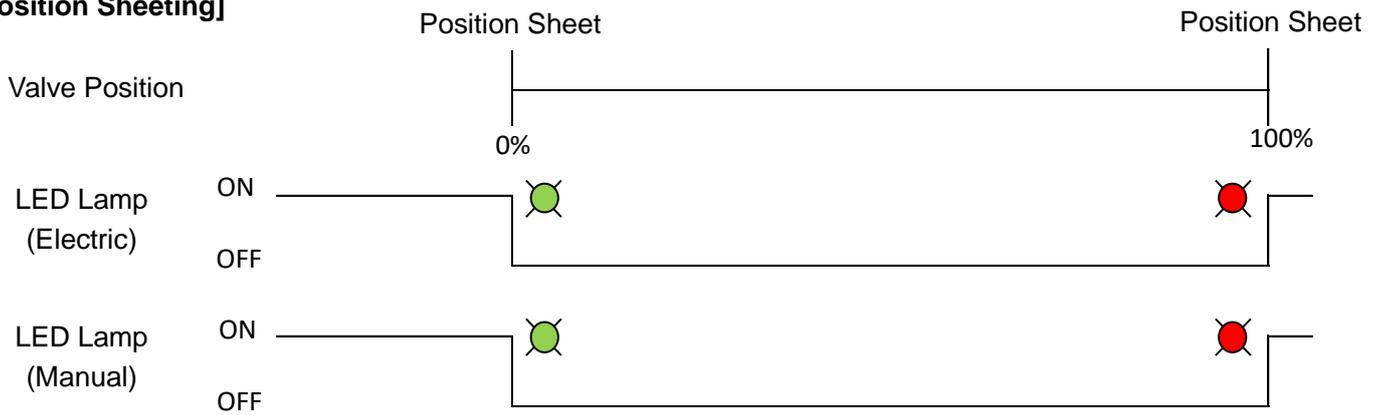
Input fully open condition set value by using OPEN / CLOSE buttons on operation panel on Fully Open Condition Setting Mode screen (LCD shows "OLM xxx"), and hold STOP button on operation panel for 3 seconds to complete the setting operation.

Press OPEN / CLOSE button : Select PST or TST.  
Hold STOP button for 3 seconds: Saves the set value.



■ Sheeting method wise LED Lighting Timing Chart

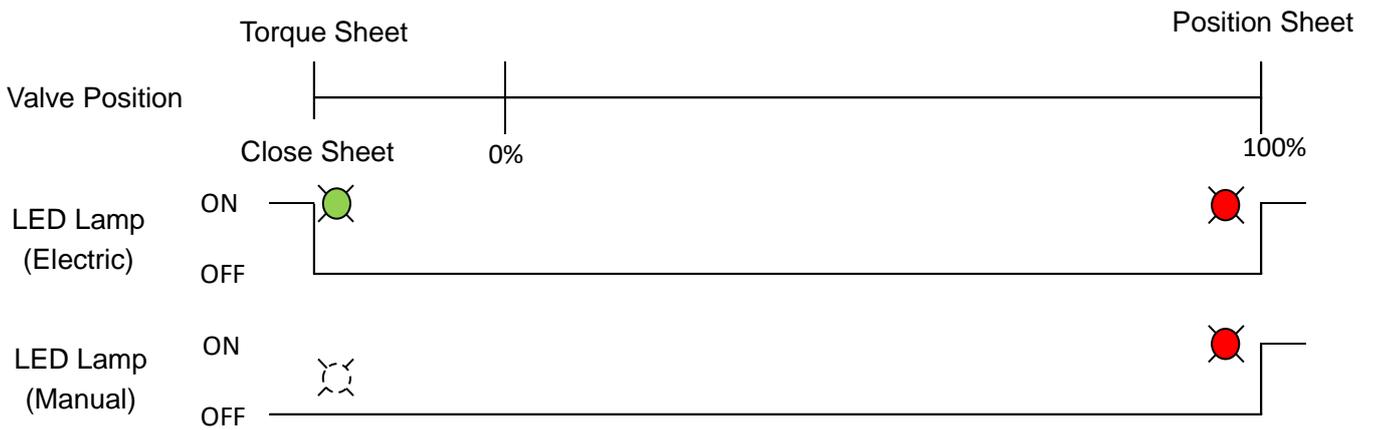
**[Position Sheeting]**



**[Torque Sheeting]**

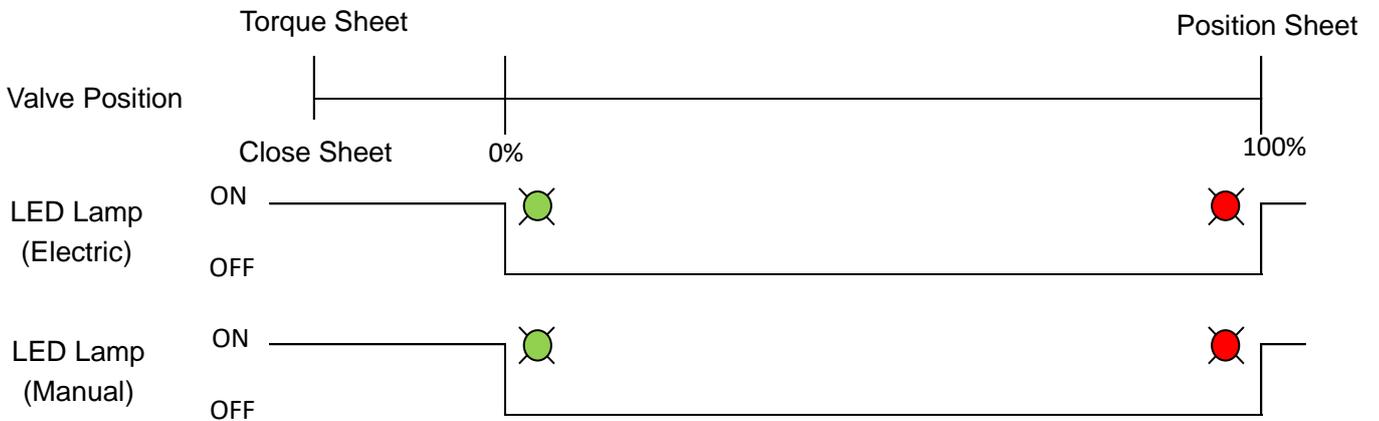
\*Select LED lighting method for torque sheeting from the following No.1 or 2.

<LED lighting method 1 (Standard)>



\*LED lamp does not light when manual operation since torque cannot be detected.

<LED lighting method 2>



## How to Set Motor Rotating Direction

-Hold STOP button for 3 seconds on Motor Rotating Direction Setting screen (LCD shows "ROT SET") to start.

[Motor rotating direction settings]

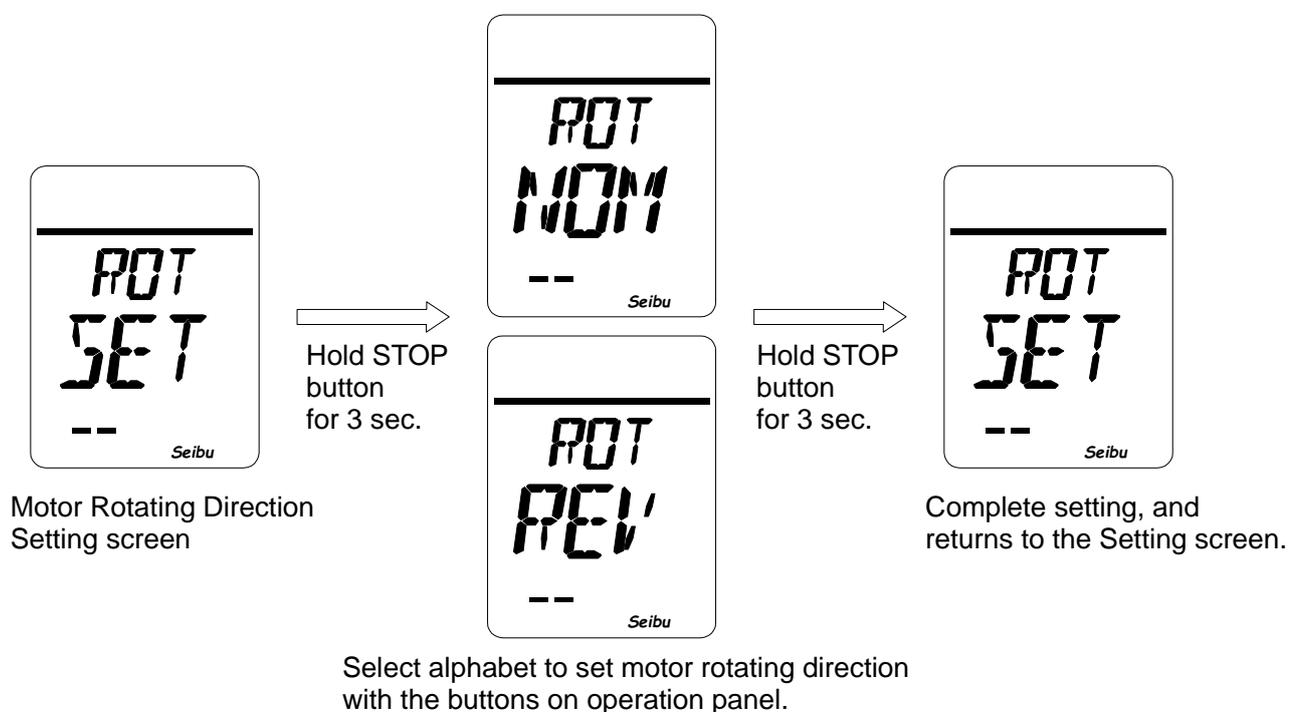
- i) NOM : Rotates output shaft clockwise close
- ii) REV : Rotates output shaft clockwise open (counter clockwise)

\*Above settings may not apply if any optional specification like using gear box.

[Setting operation]

Select motor rotating directions by pressing OPEN / CLOSE buttons on operation panel on Motor Rotating Direction Setting Mode screen (LCD shows: "ROT xxx"). Then, hold STOP button on operation panel for 3 seconds to complete the setting operation.

Press OPEN button : Select alphabet A to Z  
 Press CLOSE button : Select alphabet Z to A  
 Hold STOP button for 3 seconds: Saves set direction



## How to Set Magnet Switch Inching (\*with MgSW drive type)

-Hold STOP button for 3 seconds on Magnet Switch (MgSW) Inching Setting screen (LCD shows "INC SET") to start.

[MgSW inching settings]

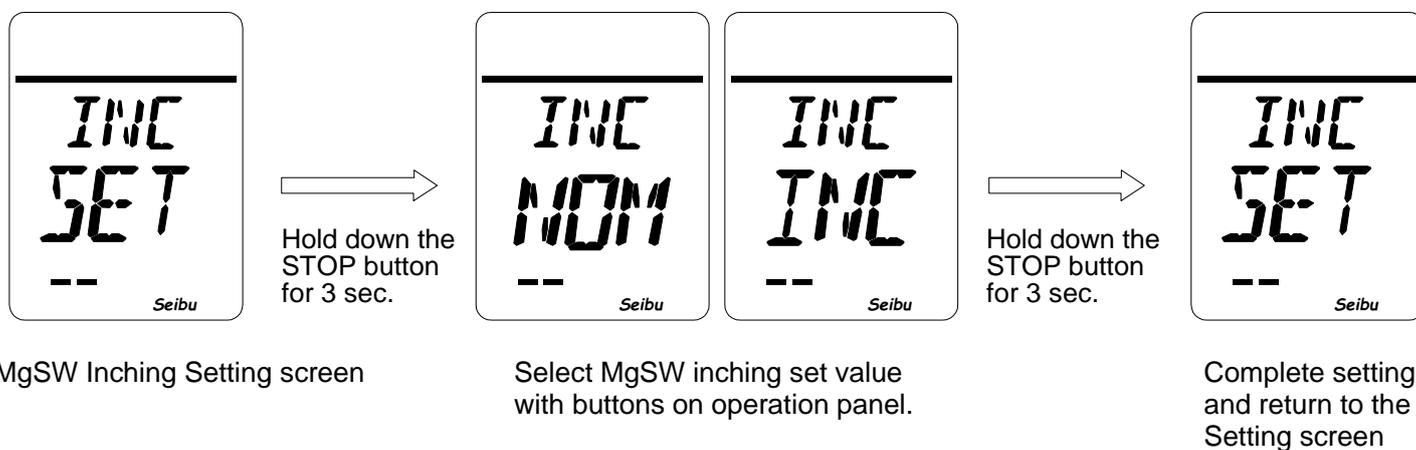
- i) NOM: Normal mode
- ii) INC: Inching mode

[Setting operation]

Select NOM or INC of MgSW inching by OPEN / CLOSE buttons on operation panel on MgSW Inching Setting Direction Setting Mode screen (LCD shows "INC xxx"), and hold STOP button on the operation panel for 3 seconds to complete the setting operation.

Press OPEN/CLOSE button : Select NOM or INC.

Hold STOP button for 3 seconds: Save the set value.



MgSW Inching Setting screen

Select MgSW inching set value with buttons on operation panel.

Complete setting, and return to the Setting screen

## How to Set OPEN/CLOSE Operation Self-holding

-Hold STOP button for 3 seconds on OPEN/CLOSE Self-holding Setting screen (LCD shows "SWM SET") to start.

[OPEN/CLOSE self-holding settings]

- i) HLD : With self-holding for OPEN/CLOSE
- ii) NOM : Without self-holding for OPEN/CLOSE

[Setting operation]

\*Select alphabet to set OPEN/CLOSE self-holding for LOCAL operation by using OPEN / CLOSE buttons on operation panel on OPEN/CLOSE Self-holding Setting Mode screen (LCD shows: "LOC xxx").

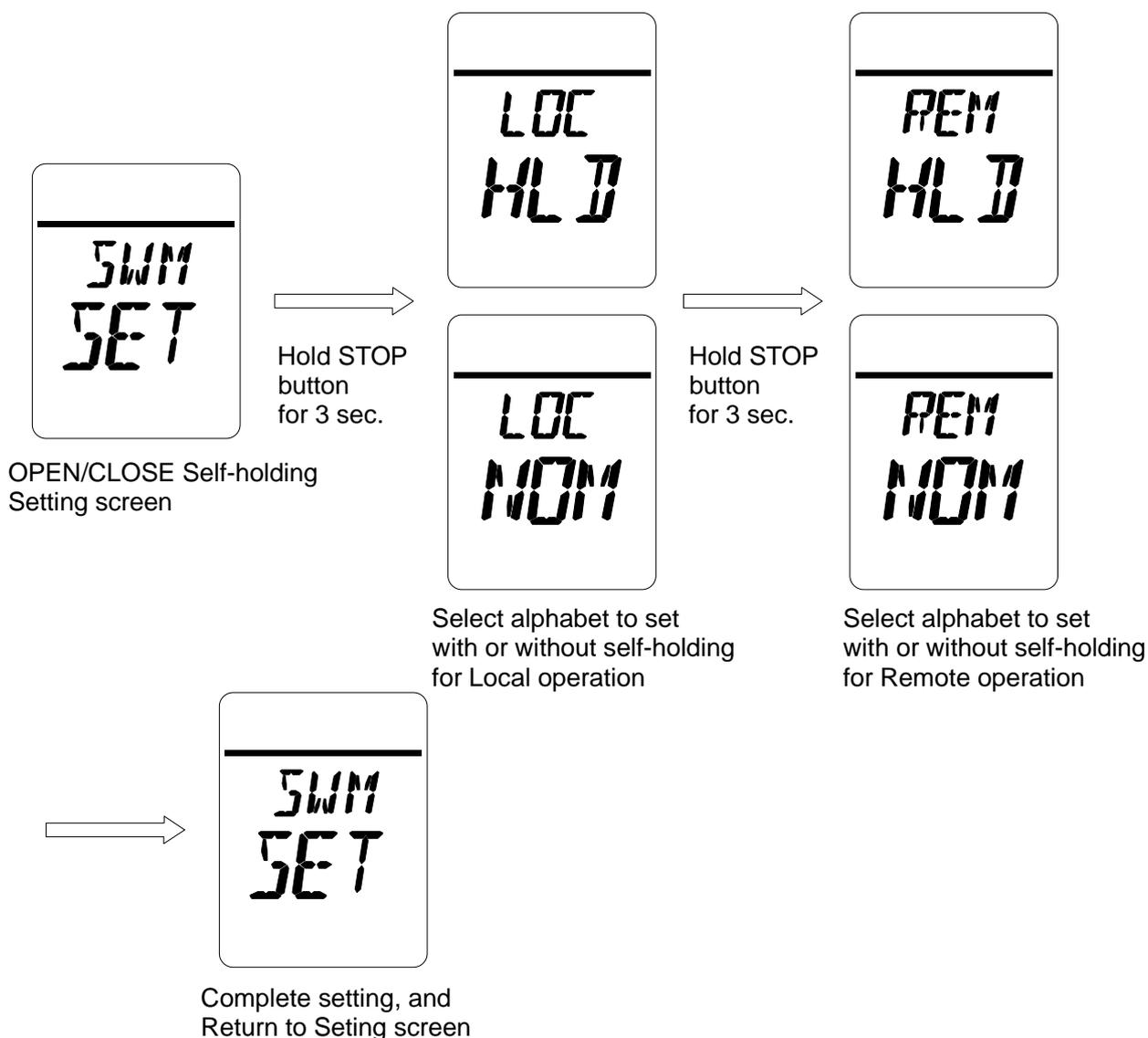
\*Select alphabet to set OPEN/CLOSE self-holding for REMOTE operation by using OPEN / CLOSE buttons on operation panel on OPEN/CLOSE Self-holding Setting Mode screen (LCD shows: "REM xxx").

\*Then, hold STOP button on operation panel for 3 seconds to complete the setting operation.

Press OPEN button : Select alphabet A to Z.

Press CLOSE button : Select alphabet Z to A.

Hold STOP button for 3 seconds : Save the set value.



## How to Set Relay Output

-Hold STOP button for 3 seconds on Relay Output Setting screen (LCD shows "RY SET") to start.

[Relays to be set]

- i) RY1: Change setting of relay 1. (Initial value = ERR)
- ii) RY2: Change setting of relay 2. (Initial value = OP)
- iii) RY3: Change setting of relay 3. (Initial value = CL)
- iv) RY4: Change setting of relay 4. (Initial value = CPT)
- v) RY5: Change setting of relay 5. (Initial value = CLT)

[Setting procedure]

- 1) Select a relay number from RY1 to RY5 to be set on Relay Output Setting Mode screen (LCD shows "xxx RY"). Then, hold STOP button for 3 seconds.
- 2) Currently set value (LCD shows "RY# xxx") of selected relay is shown.
- 3) Select function to be set on screen, and hold STOP button for 3 seconds to complete the setting procedure.

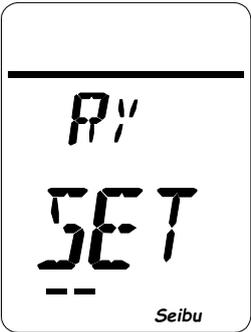
[Setting operation]

Press OPEN button : Select relay from RY1 to RY5, and function from ERR to ER3 as in below table.  
 Press CLOSE button : Select relay from RY5 to RY1, and function from ER3 to ERR as in below table.  
 Hold STOP button for 3 seconds: Saves the set value.

[Relay Output Setting Items]

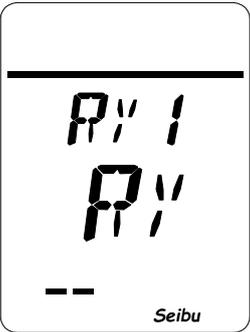
- |          |                               |          |   |
|----------|-------------------------------|----------|---|
| 1) ERR:  | Error occurred                | 13) LOC: | LOCAL selected  |
| 2) OP:   | Fully Open Position Limit     | 14) THM: | Motor overheating   |
| 3) CL:   | Fully Closed Position Limit   | 15) INT: | Interlocked   |
| 4) HF1   | Intermediate Position Limit 1 | 16) PRP: | Under PROPORTION  |
| 5) HF2:  | Intermediate Position Limit 2 | 17) CPU: | CPU RUN   |
| 6) HF3:  | Intermediate Position Limit 3 | 18) MV:  | In Action   |
| 7) HF4:  | Intermediate Position Limit 4 | 19) ER1: | Torque limit batch output   |
| 8) OPT:  | Open direction Torque Limit   | 20) ER2: | Missing phase, Motor overheating<br>CPU error batch output  |
| 9) CLT:  | Closed direction Torque Limit | 21) ER3: | Missing phase, Motor overheating,<br>Rotation abnormality, Inverter abnormality,<br>Relay board error |
| 10) MVO: | Under opening operation       | 22) ER4: | Power loss, Control power off, Motor<br>overheating.  |
| 11) MVC: | Under closing operation       |          |   |
| 12) REM: | REMOTE selected               |          |   |

Note) When using ER4, the relay contact has negative logic. Please refer to wiring diagram for details.



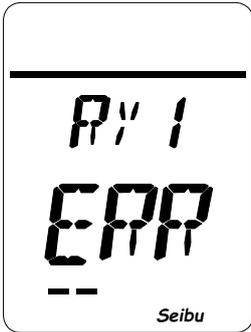
Relay Output Setting screen

Hold down the STOP button for 3 sec.



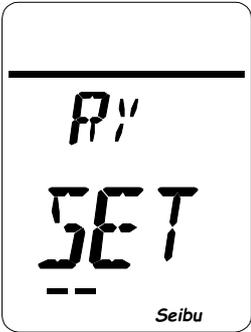
Select relay number (RY1 to RY5) with buttons on operation panel.

Hold down the STOP button for 3 sec.



Select setting items with buttons on operation panel

Hold down the STOP button for 3 sec.



Complete setting, and, return to the Setting screen.

## How to Set Decelerating Range Before Reaching Target (\*with Invertor)

-Hold STOP button for 3 seconds on Decelerating Range Before Reaching Target Setting screen (LCD shows "SL SET") to start.

[Decelerating range before reaching target value settings]

Set value =1 to 10: Set (1 to 10%) range to decelerate before reaching target value.

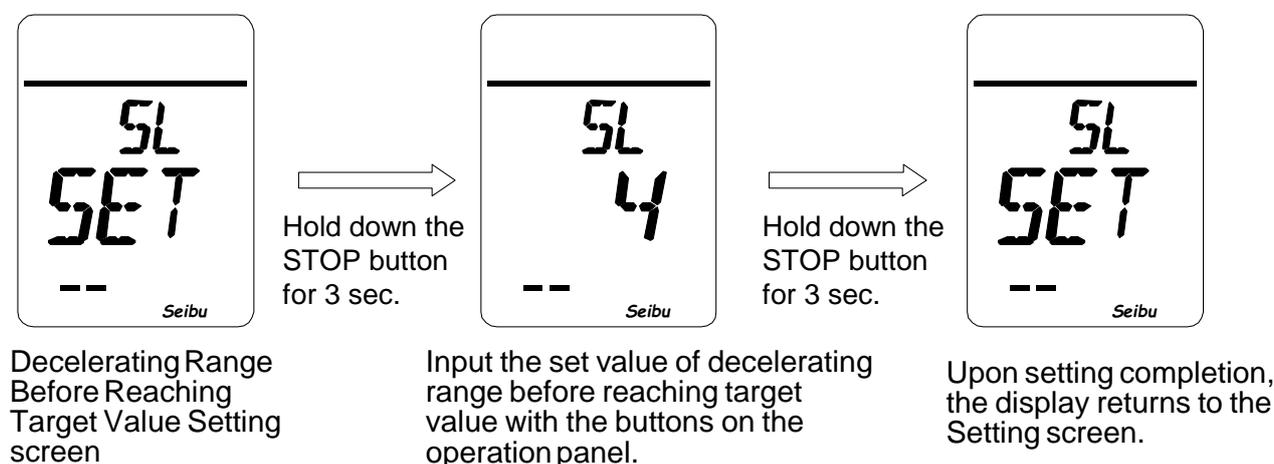
[Setting operation]

Input value of decelerating range target to be set by using OPEN / CLOSE buttons on operation panel with Decelerating Range Before Reaching Target Value Setting Mode screen (LCD shows: "SL xxx"), and hold STOP button on operation panel for 3 seconds to complete the setting operation.

Press OPEN button : Changes numerical value in ascending order from 0 to 9.

Press CLOSE button : Changes numerical value in descending order from 9 to 0.

Hold STOP button for 3 seconds: Saves the set value.



## How to Set Motor Rotation Alarm Detecting Time

-Hold STOP button for 3 seconds on Motor Rotation Alarm Detecting Time Setting screen (LCD shows "MOT SET") to start.

[Motor Rotation Alarm detecting time settings]

- i) Set value = 0: Disable Motor Rotation Alarm detection output.
- ii) Set value = 1 to 60: Set timing till output Motor Rotation Alarm if position does not change when motor is driving within the range of 1 to 60 sec.

**\* Motor Rotation Alarm detecting time is adjusted according to actuator specification at Seibu plant before delivery. The actuator may not operate with the time setting not fit with specifications.**

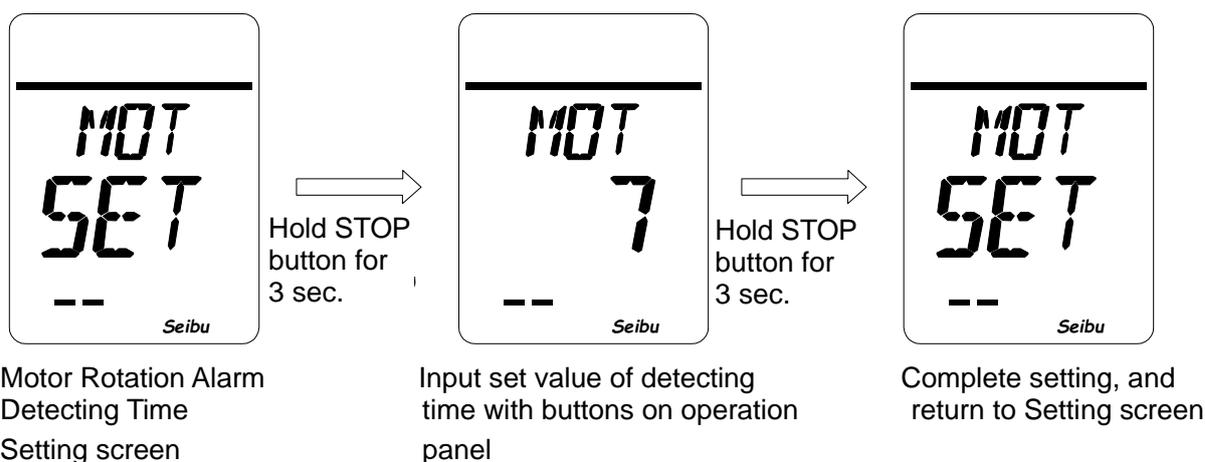
[Setting operation]

Input set value of Motor Rotation Alarm detecting time by OPEN / CLOSE buttons on operation panel on Motor Rotation Alarm Detecting Time Setting Mode screen (LCD shows "MOT xxx"), and hold STOP button on operation panel for 3 seconds to complete the setting operation.

Press OPEN button: Select numerical value in ascending order from 0 to 9.

Press CLOSE button: Select numerical value in descending order from 9 to 0.

Hold STOP button for 3 seconds: Saves the entered set value.



## How to Set Position Indication

-Hold STOP button for 3 seconds on Position Indication Setting screen (LCD shows "PER SET") to start.

### [Opening indication settings]

- 1) ON: Indicate position by percentage in the range of 0 to 100%.
- 2) OFF: Indicate position by any set value

Example: 1) 0 to 400 mm → Input value: 400

2) 0 to 90 degrees → Input value: 90

\*Select unit (No unit, degree, m, mm, %)

### [Setting procedure]

- 1) Select Position indication setting (either ON or OFF) on Position Indication Setting Mode screen (LCD shows: "PER xxx"), and hold STOP button for 3 seconds.
- 2) When OFF is selected on Position Indication Setting Mode screen, current set value of position indication (LCD shows "SET xxx") is shown.
- 3) Select set value of Position indication on Setting screen. Then, hold STOP button for 3 seconds to complete the setting procedure.

### [Setting operation]

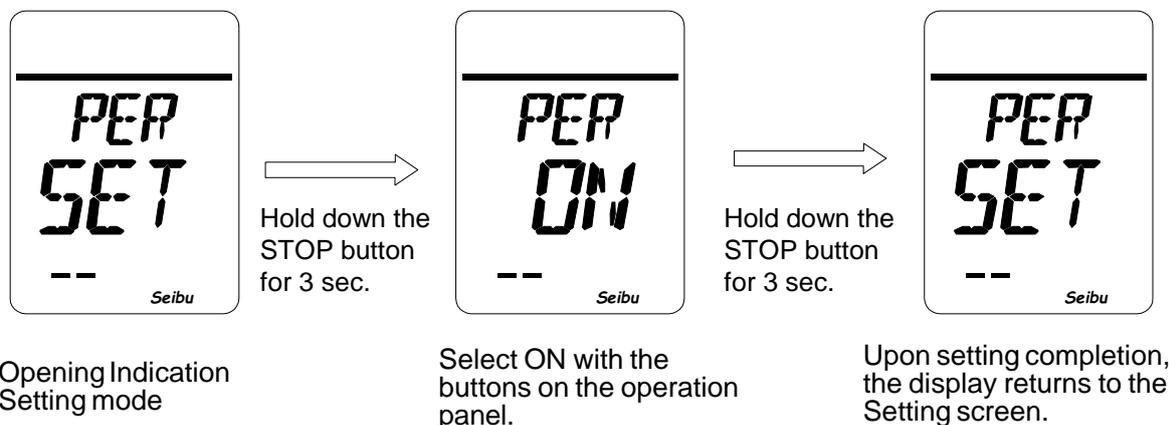
Input value of position indication by using OPEN / CLOSE buttons on operation panel on Position Indication Setting Mode screen (LCD shows "PER xxx"). Then, hold STOP button on operation panel for 3 seconds to complete the setting operation.

Press OPEN button: Select numerical value in ascending order from 0 to 9.

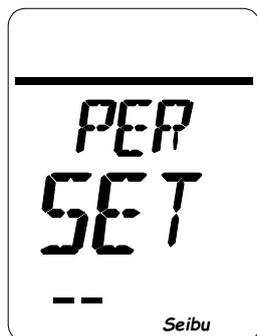
Press CLOSE button: Select numerical value in descending order from 9 to 0.

Hold STOP button for 3 seconds: Saves the set value.

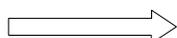
- When ON is selected for Position Indication setting.



- When OFF is selected for Position Indication setting.



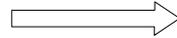
Opening Indication  
Setting mode



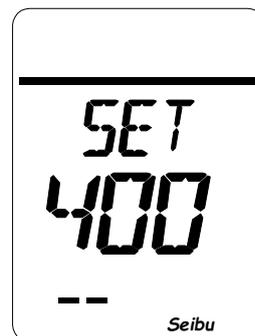
Hold down the  
STOP button  
for 3 sec.



Select OFF with button  
buttons on operation panel



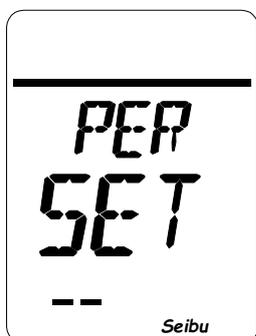
Hold down the  
STOP button  
for 3 sec.



Input set value of position  
indication with button



Hold down the  
STOP button  
for 3 sec.



Complete setting, and  
return to the Setting screen.

## How to Set Additional Relay Output (\*with 6 additional relay output)

-Hold STOP button for 3 seconds on 6 Additional Relay Output Setting screen (LCD shows "ERY SET") to start.

[Items for which setting operation is performed]

- i) EY1: Change setting of relay 4 (Initial value: OPT)
- ii) EY2: Change setting of relay 5 (Initial value: CLT)
- iii) EY3: Change setting of relay 6 (Initial value: HF1)
- iv) EY4: Change setting of relay 7 (Initial value: HF2)
- v) EY5: Change setting of relay 8 (Initial value: REM)
- vi) EY6: Change setting of relay 9 (Initial value: INT)

[Setting procedure]

- 1) Select a relay number from EY1 to RY6 to set functions on 6 Additional Relay Output Setting Mode screen (LCD shows "xxx ERY"). Then, hold down the STOP button for 3 seconds.
- 2) The current function set value (LCD indication: "EY# xxx") for the selected relay will be shown.
- 3) Select a function set value on the Function Setting screen, and hold down the STOP button for 3 seconds to complete the setting procedure.

[Setting operation]

Press OPEN button: Select in ascending order from EY1 to EY6 and from ERR to CPU.  
 Press CLOSE button: Select in descending order from EY6 to EY1 and from CPU to ERR.  
 Hold STOP button for 3 seconds: Saves the set value.

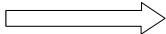
[Relay Output Setting Items]

- |          |                               |          |   |
|----------|-------------------------------|----------|---|
| 1) ERR:  | Error occurred                | 13) LOC: | LOCAL selected  |
| 2) OP:   | Fully Open Position Limit     | 14) THM: | Motor overheating   |
| 3) CL:   | Fully Closed Position Limit   | 15) INT: | Interlocked   |
| 4) HF1   | Intermediate Position Limit 1 | 16) PRP: | Under PROPORTION  |
| 5) HF2:  | Intermediate Position Limit 2 | 17) CPU: | CPU RUN   |
| 6) HF3:  | Intermediate Position Limit 3 | 18) MV:  | In Action   |
| 7) HF4:  | Intermediate Position Limit 4 | 19) ER1: | Torque limit batch output   |
| 8) OPT:  | Open direction Torque Limit   | 20) ER2: | Missing phase, Motor overheating<br>CPU error batch output  |
| 9) CLT:  | Closed direction Torque Limit | 21) ER3: | Missing phase, Motor overheating,<br>Rotation abnormality, Inverter abnormality,<br>Relay board error |
| 10) MVO: | Under opening operation       | 22) ER4: | Power loss, Control power off, Motor<br>overheating.  |
| 11) MVC: | Under closing operation       |          |   |
| 12) REM: | REMOTE selected               |          |   |

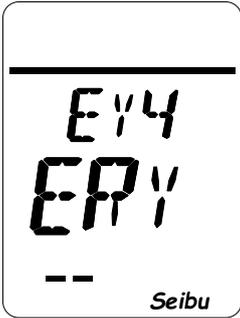
Note) When using ER4, the relay contact has negative logic. Please refer to wiring diagram for details.



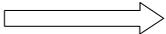
6 Additional Relay Output Setting screen



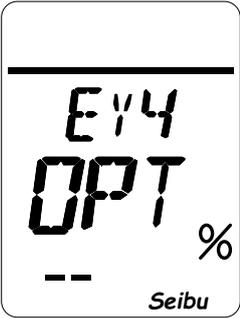
Hold STOP button for 3 sec.



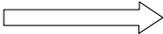
Select a relay number (EY1 to EY6) with buttons On operation panel.



Hold STOP button for 3 sec.



Select item to set function with buttons on operation panel.



Complete setting, and return to the Setting screen.

## How to Set Action at Proportional Control Threshold (\*with Proportional Control)

-Hold STOP button for 3 seconds on Action at Proportional Control Threshold Setting screen (LCD shows "PRE SET") to start.

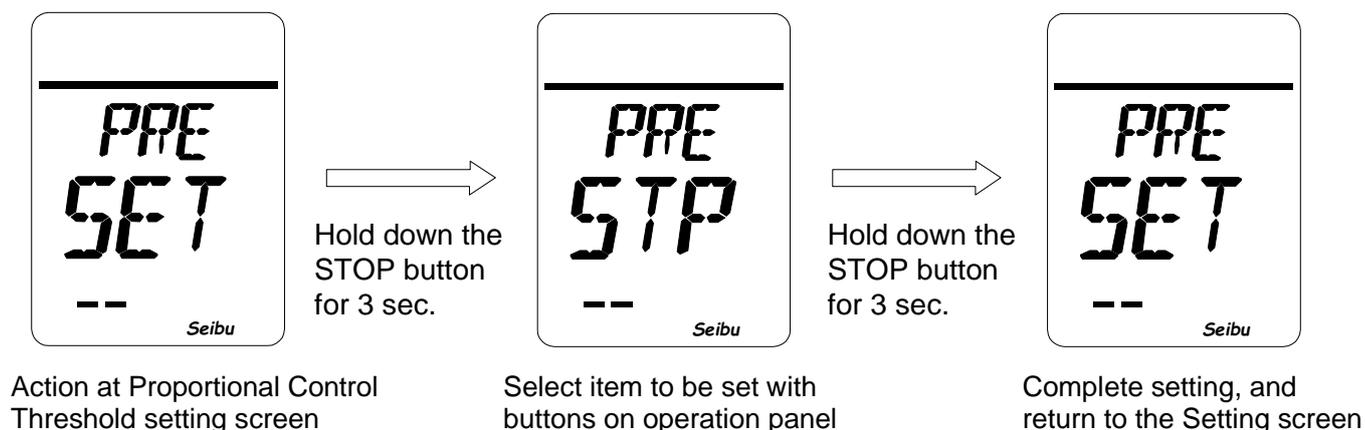
### [Setting operation]

Select the item to be set on LCD by OPEN / CLOSE buttons on operation panel on Action at Proportional control Threshold Setting Mode screen (LCD shows "PRE xxx"), and hold STOP button for 3 seconds to complete the setting operation.

Press OPEN button : Select form STP to CLS as items listed below.

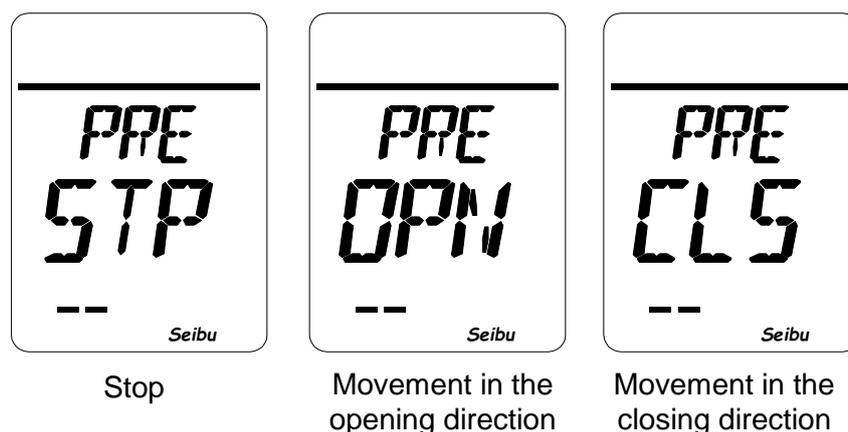
Press CLOSE button : Select from CLS to STP as items listed below.

Hold STOP button for 3 seconds: Saves the set value.



### [Items to be set for Action at Proportional Control Threshold]

- 1) STP: Stop at the point when Proportional control input value is in the range of 0 to 1mA.
- 2) OPN: Move to fully open limit position when Proportional control value is in the range of 0 to 1mA.
- 3) CLS: Move to fully closed limit position when Proportional input value is in the range of 0 to 1mA.



## How to Set Remote STOP Contact

-Hold STOP button for 3 seconds on Remote STOP Contact Switching screen (LCD shows “RES SET”) to start.

[Remote STOP contact switching settings]

- i) A: Stop contact N/O contact
- ii) B: Stop contact N/C contact (standard)

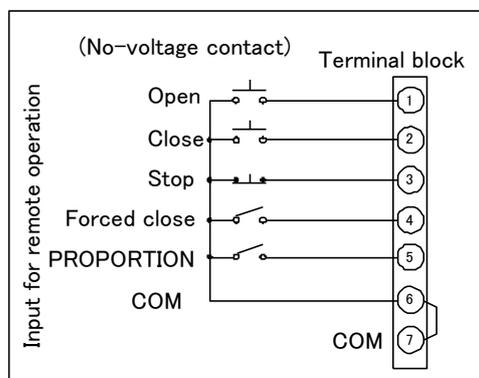
[Setting operation]

Input set value of remote STOP contact by OPEN / CLOSE buttons on operation panel on Remote STOP Contact Mode screen (LCD shows “RES x”), and hold STOP button on operation panel for 3 seconds to complete the setting operation.

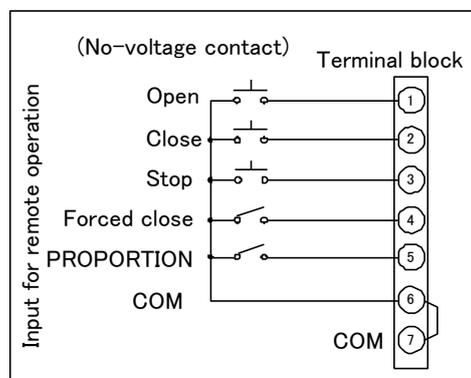
Press OPEN/CLOSE button : Select set value to A or B.

Hold STOP button for 3 seconds: Saves the set value.

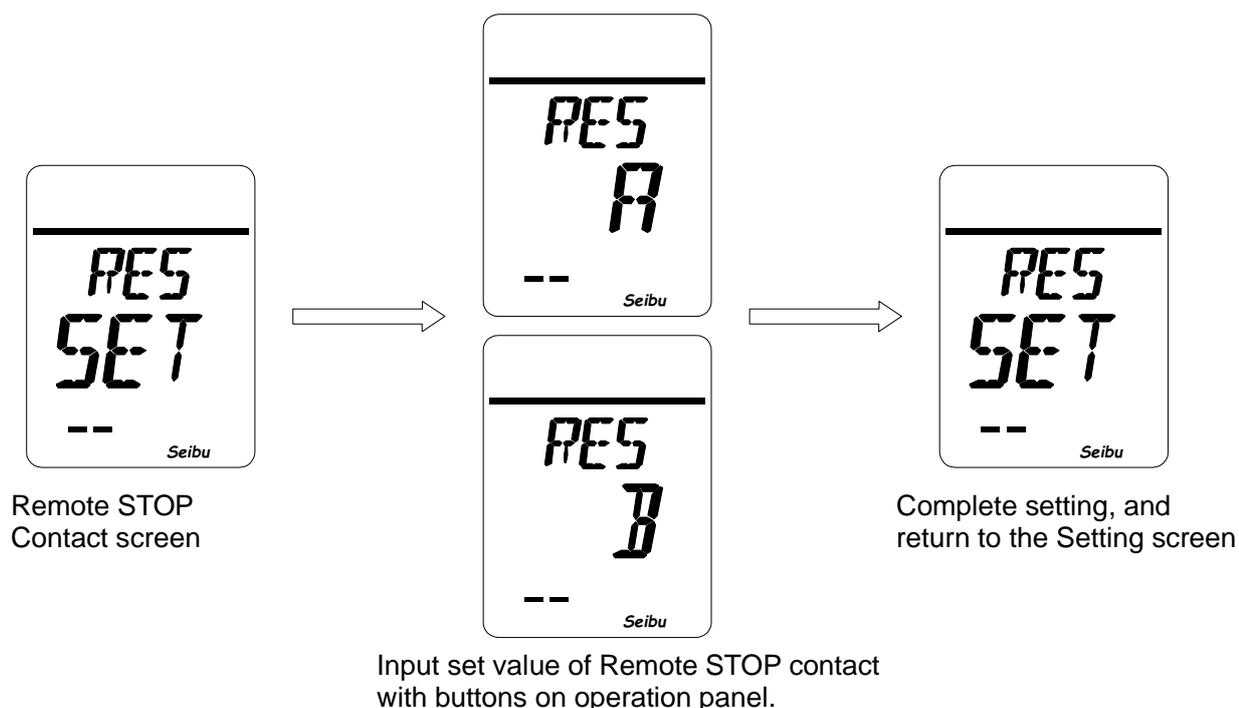
[Wiring method for each set value]



Wiring when B is selected



Wiring when A is selected



## How to Set Remote Emergency OPEN/CLOSE

-Hold STOP button for 3 seconds on Remote Emergency OPEN/CLOSE screen (LCD shows "ESD SET") to start.

[Remote Emergency OPEN/CLOSE settings]

1. Remote Emergency direction select

- i) CL: Emergency Close (De fault setting)
- ii) OP: Emergency Open

\*When Emergency control is ON, Alarm and over torque signal is ignored.

2. Remote Emergency contact select

- i) A: Emergency Contact A (De fault setting)
- ii) B: Emergency Contact B

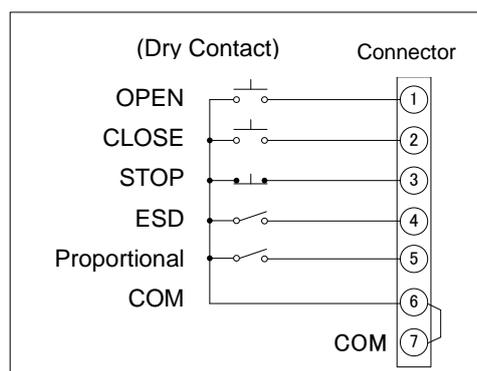
[Setting operation]

Select set value of remote emergency control by OPEN / CLOSE buttons on operation panel on Remote Emergency OPEN/CLOSE Mode screen (LCD shows "ESD xx"), and hold STOP button on operation panel for 3 seconds to complete the setting operation.

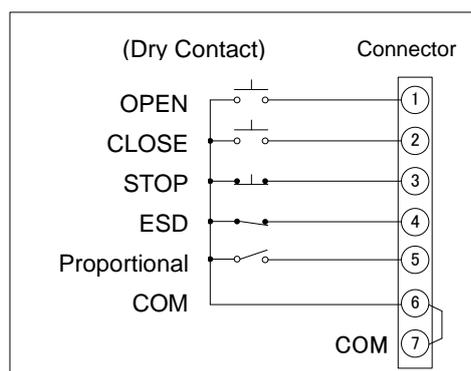
Press OPEN/CLOSE button : Select CL or OP, and A or B.

Hold STOP button for 3 seconds: Save the set value.

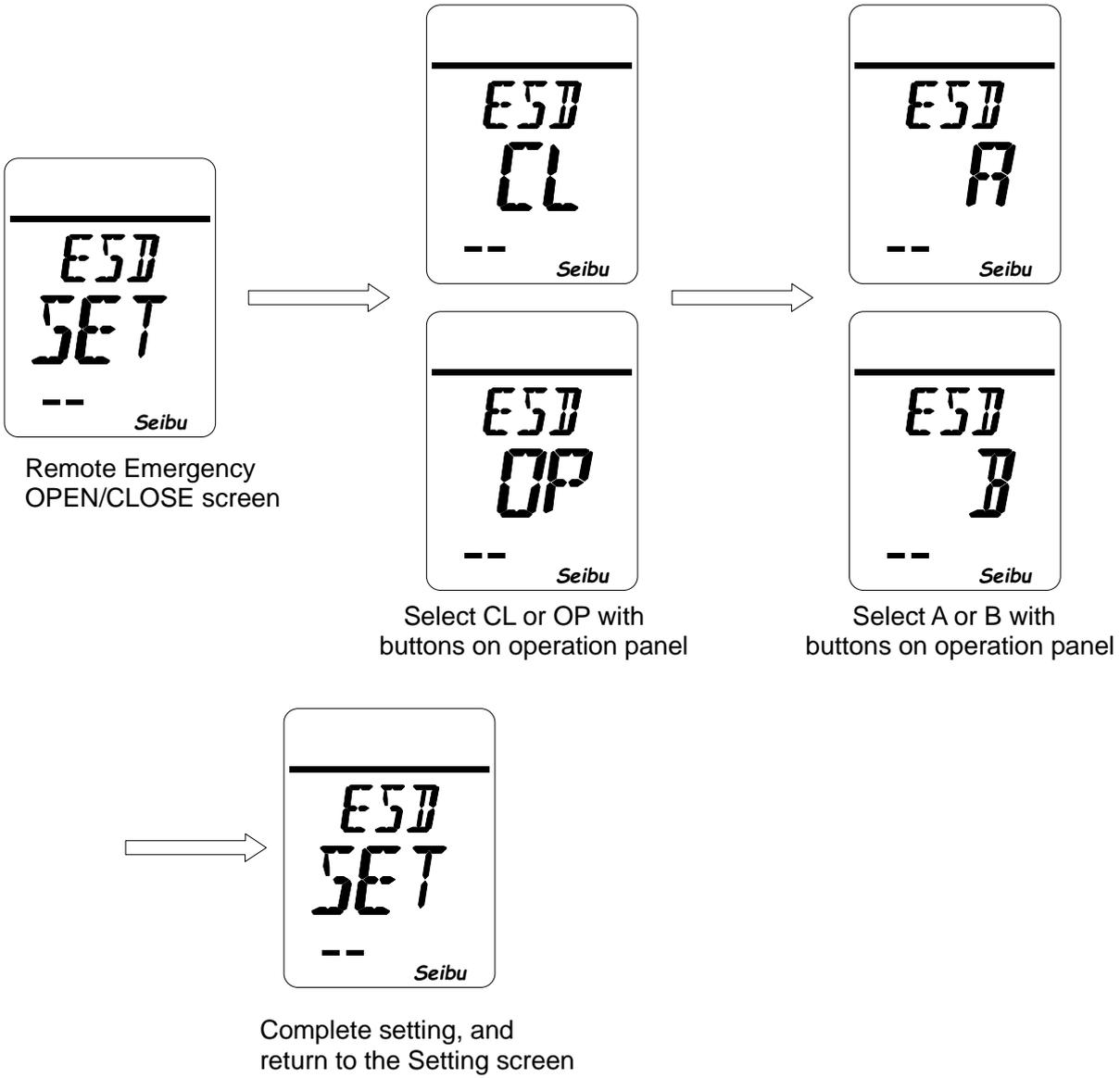
[Wiring method for each set value]



Wiring when B is selected



Wiring when A is selected



## How to Set Position Output Current Value Inversion (\*with 4-20mA Output)

-Hold STOP button for 3 seconds on Position Output Current Value Inversion Setting screen (LCD shows "OUT SET") to start.

[Opening output current value inversion settings]

i) NOM: Fully Closed 4 mA Fully Open 20 mA

ii) REV: Fully Closed 20 mA Fully Open 4 mA

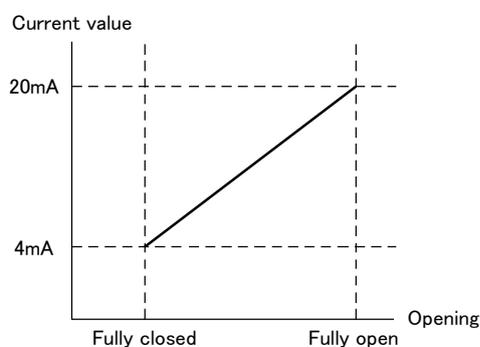
[Setting operation ]

Select set value of opening output current value inversion by OPEN / CLOSE button on control panel on Position Output Current Value Inversion Setting Mode screen (LCD shows: "RES xxx"), and hold STOP button for 3 seconds to complete the setting operation.

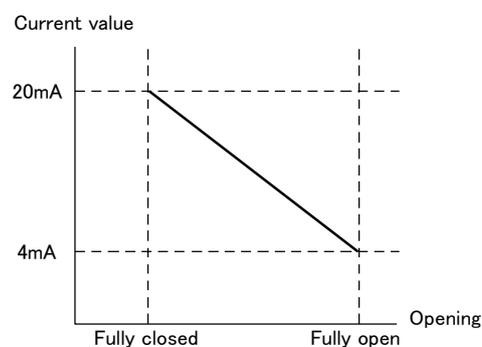
Press OPEN / CLOSE button : Select NOM or REV.

Hold STOP button for 3 seconds: Saves the set value.

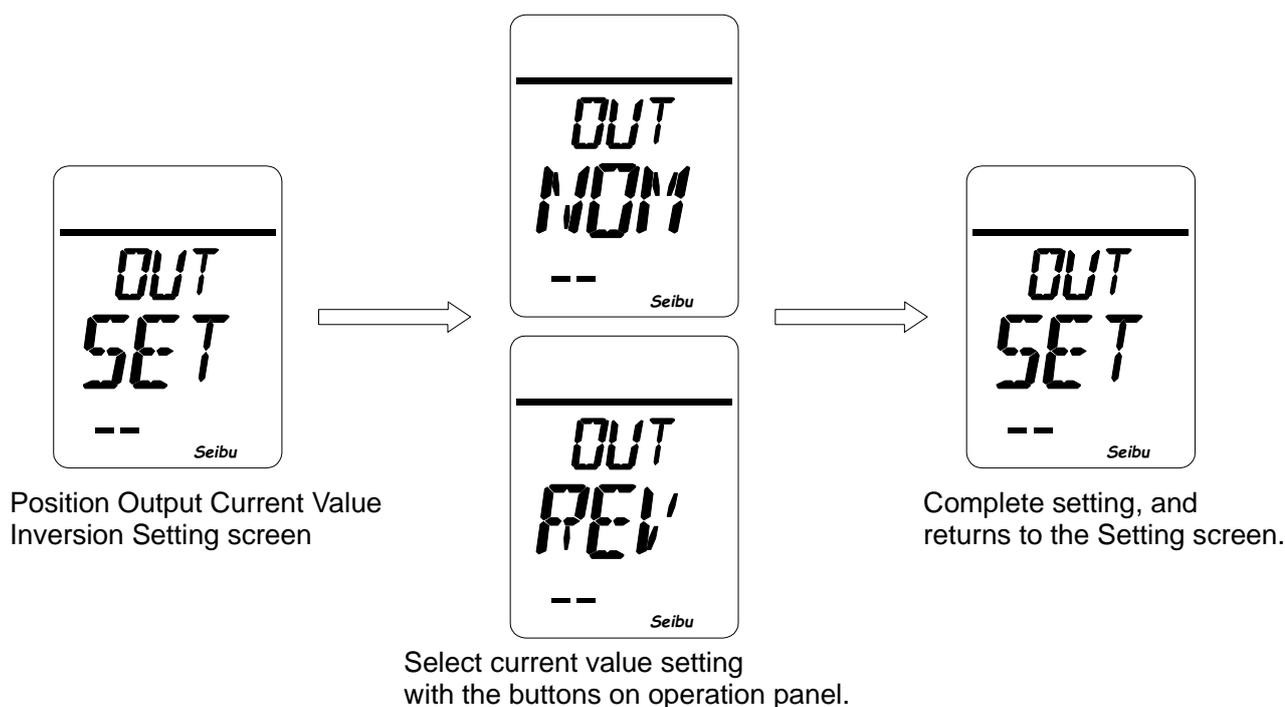
[Position output current value for each set value]



Current value when NOM is selected



Current value when REV is selected



## How to Set Torque Alarm Recovery

-Hold STOP button for 3 seconds on Torque Alarm Recovery Setting screen (LCD shows "TAR SET") to start.

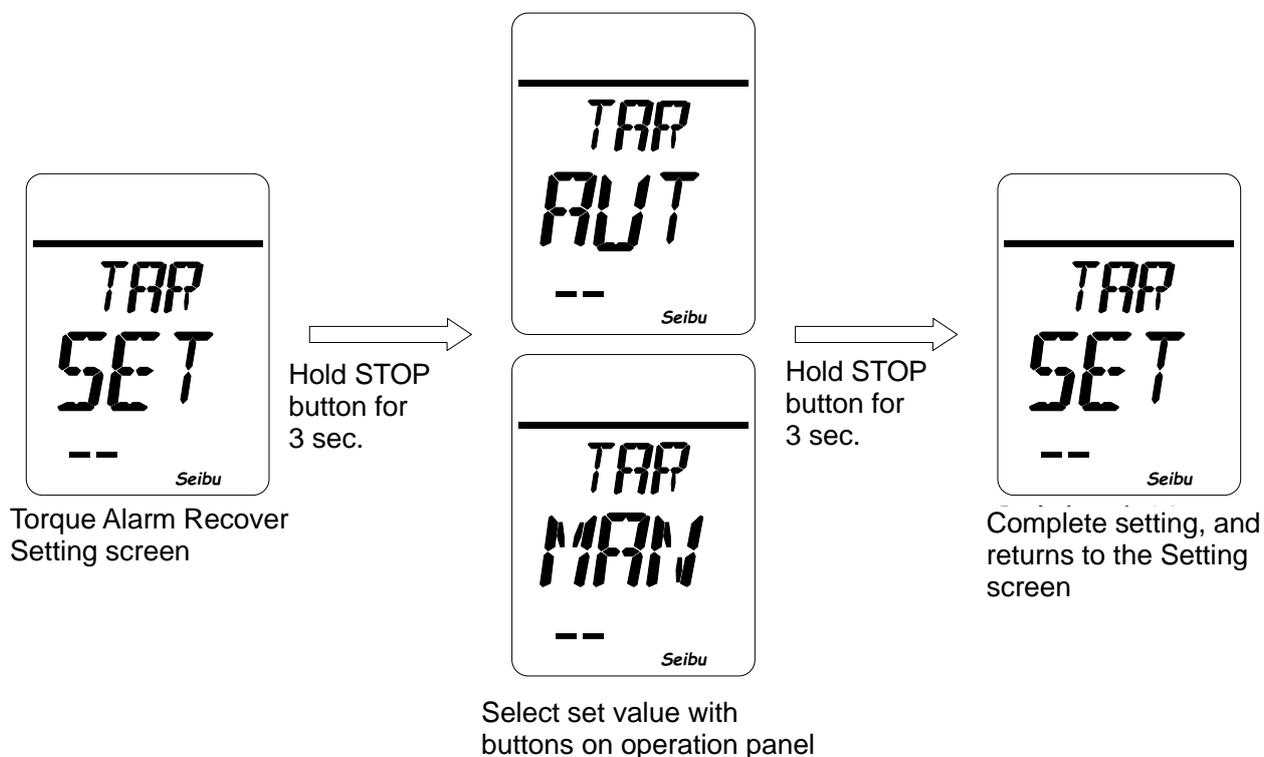
[Torque Alarm Recovery settings]

- i) AUT: Automatically recover after loading torque released
- ii) MAN: Manually input command to forwarding or reversing direction of torque alarm

[Setting operation]

Select set value of torque alarm recovery by OPEN / CLOSE button on control panel on Torque Alarm Recovery Setting Mode screen (LCD shows: "TAR xxx"), and hold STOP button for 3 seconds to complete the setting operation.

Press OPEN / CLOSE button : Select AUT or MAN.  
Hold STOP button for 3 seconds: Saves the set value.



## How to Set Position Limit Not-Reach Alarm

-Hold STOP button for 3 seconds on Position Limit Alarm Setting screen (LCD shows "PLY SET") to start.

[Position Limit Not-Reach Alarm settings]

- 1) OFF: Off the function
- 2) ON: Set alarm in case not to reach open/close position limit within set time, when use Remote control  
 \*\*Set value = 1 to 540 : Set time 10 to 5400 sec. till output position limit not-reach alarm

[Setting procedure]

- 1) Select Position Limit alarm (either ON or OFF) on Position Limit Not-Reach Alarm Setting Mode screen (LCD shows: "PLY xxx"), and hold STOP button for 3 seconds.
- 2) When OFF is selected on the Setting Mode screen, return to Position Limit Not-Reach Alarm setting screen (LCD shows "PLY SET.")
- 3) Input set value of Position Limit Not-Reach Alarm setting screen, and hold STOP button for 3 seconds to complete the setting procedure.

[Setting operation]

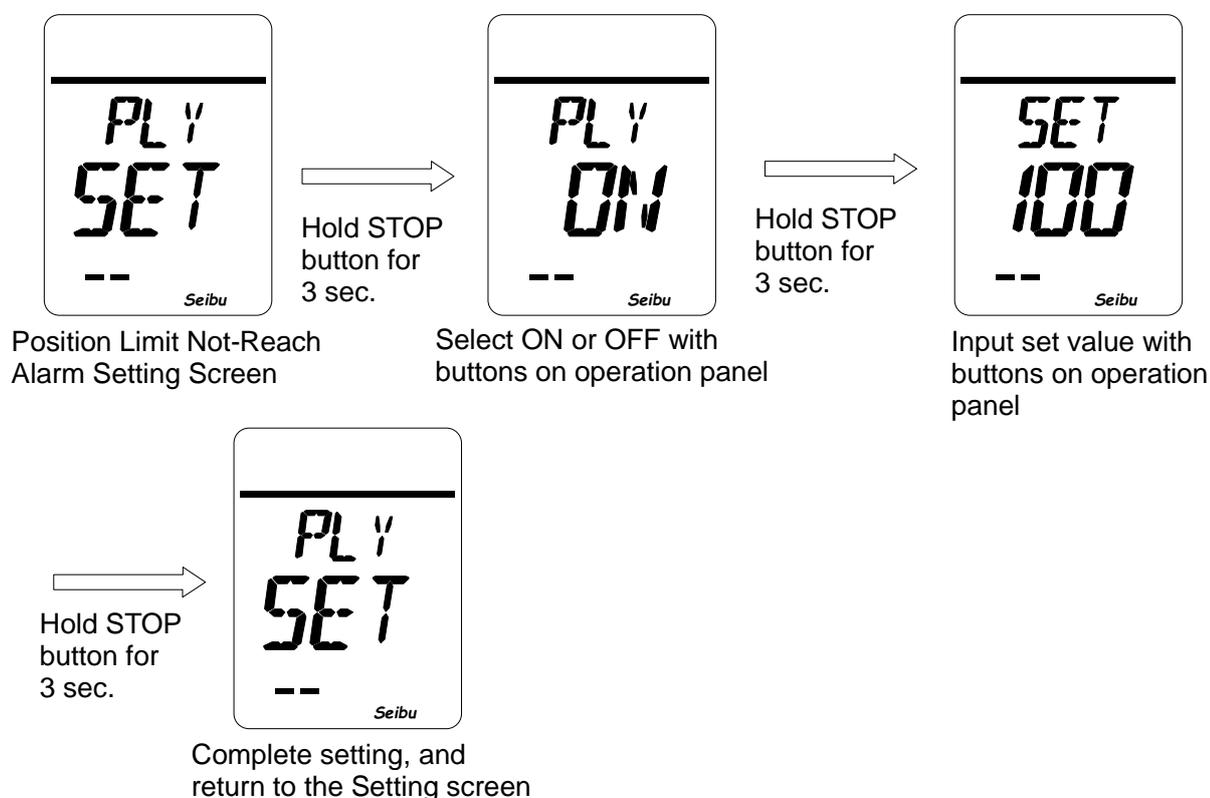
Input value of position limit alarm timing by OPEN / CLOSE buttons on operation panel on Position Limit Not-Reach Alarm Setting Mode screen (LCD shows "PLY xxx"), and hold STOP button on operation panel for 3 seconds to complete the setting operation.

Press OPEN button: Select ON or OFF and numerical value in ascending order from 0 to 9.

Press CLOSE button: Select ON or OFF and numerical value in descending order from 9 to 0.

Hold STOP button for 3 seconds: Saves the set value.

- When select ON



## How to Set Position Limit Lost Alarm

-Hold STOP button for 3 seconds on Position Limit Lost Alarm Setting screen (LCD shows "PLL SET") to start.

[Position Limit Lost Alarm settings]

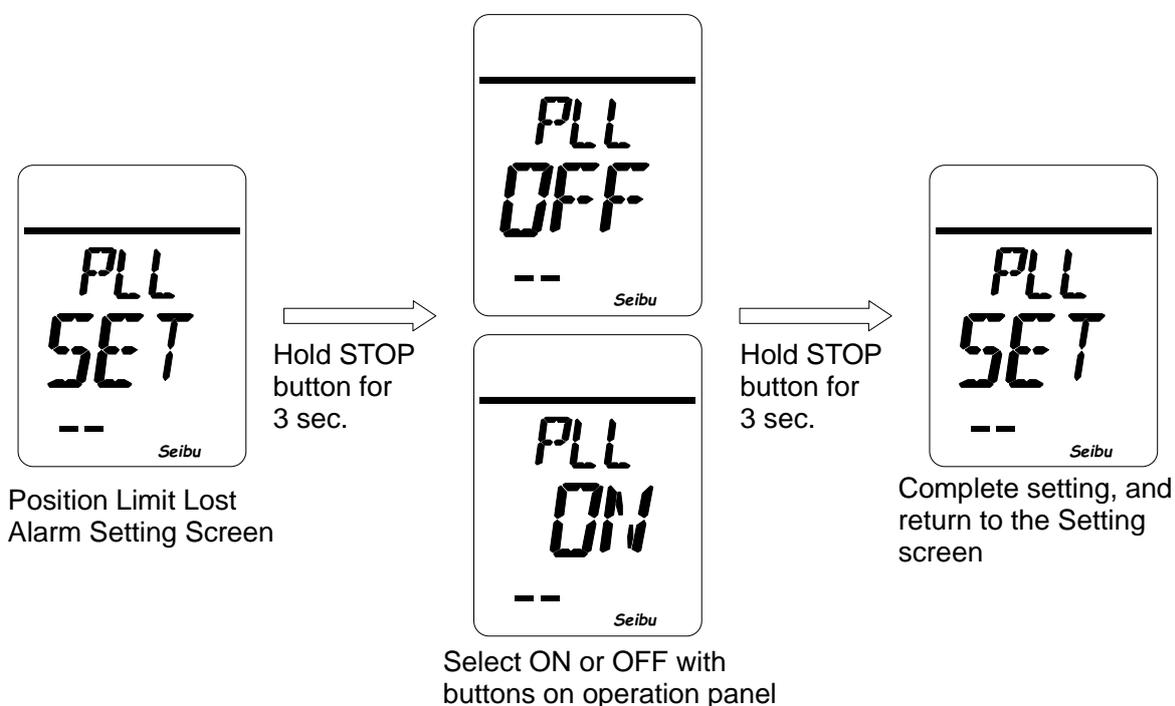
- 1) OFF: Off the function
- 2) ON: Set alarm in case to deviate from position limit when no Remote open/close operation

\*\*Activate alarm only when selector switch set to REMOTE

[Setting operation]

Select ON or OFF of Position Limit Lost Alarm by OPEN / CLOSE buttons on operation panel on Position Limit Lost Alarm Setting Mode screen (LCD shows "PLL xxx"), and hold STOP button on operation panel for 3 seconds to complete the setting operation.

Press OPEN/CLOSE button : Select ON or OFF.  
Hold STOP button for 3 seconds: Saves the set value.



## How to Set Interlock Contact

-Hold STOP button for 3 seconds on Interlock Contact Setting screen (LCD shows "INT SET") to start.

[Interlock Contact settings]

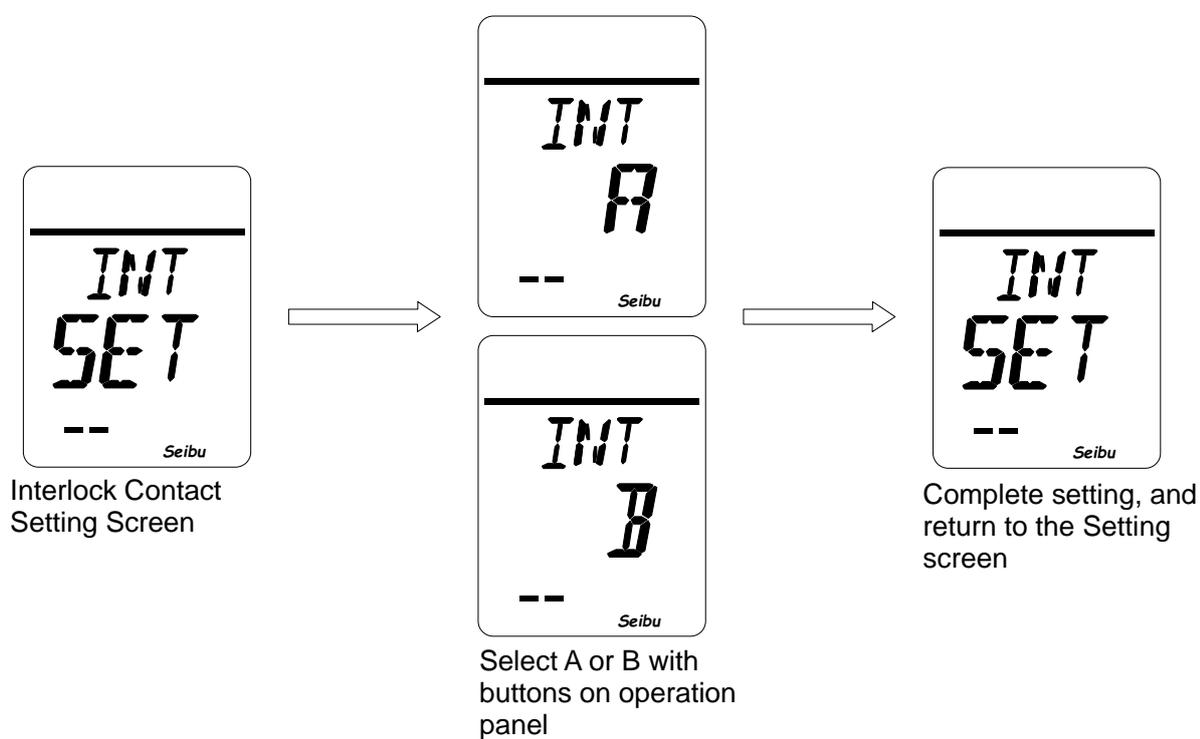
- 1) A: Interlock contact A
- 2) B: Interlock contact B (Standard)

[Setting operation]

Select A or B of Interlock contact by OPEN / CLOSE buttons on operation panel on Interlock Contact Setting Mode screen (LCD shows "INT x"), and hold STOP button on operation panel for 3 seconds to complete the setting operation.

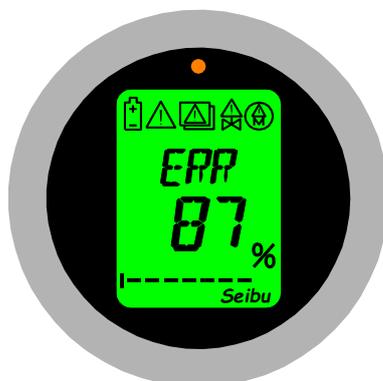
Press OPEN/CLOSE button : Select A or B.

Hold STOP button for 3 seconds: Saves the set value.



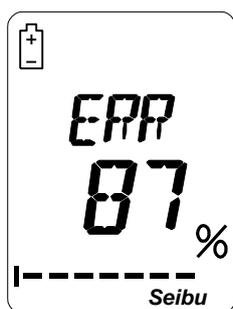
● Error Indications

\*When any error is detected, the orange lamp is lit and ERR icon or an error code appears on upper part of LCD, and the actuator stops.

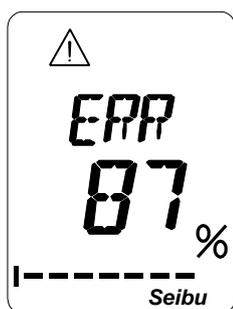


Error indication

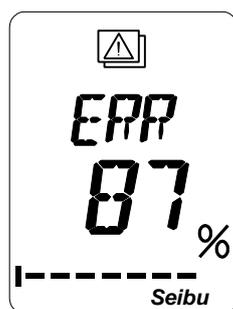
(1) Error Icons



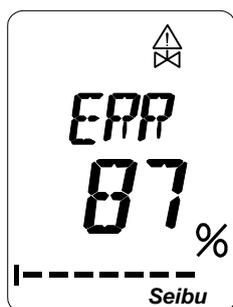
Battery alarm



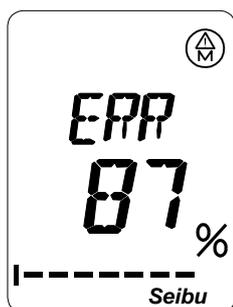
Torque error  
(over-torque)



INVERTER ALARM



MOTOR ROTATION  
ALARM or power supply  
alarm



Thermal alarm

## (2) Error Icon Descriptions and recovery

## 1) Motor Thermal alarm

Actuator stops when built-in thermal protector of motor detects abnormal temperature rise, icon "  " and error code E09 appears on the display.

## [To Reset error]

After temperature becomes less than spec value, error indication turns off and possible to operate.

## 2) Torque error (Over-torque)

Actuator stops when over torque is detected by built in torque-detecting potentiometer against Open/Close torque setting. Icon "  " is shown on the display.

## [To Reset error]

Check valve condition and operate in reverse direction against applied torque to release. Perform Closing operation with Opening over torque, and Opening torque with closing over torque.

\* If torque error repeatedly occurs, stop the operation and investigate valve and actuator.

## 3) Motor Rotation Alarm

Actuator stops when actuator output shaft does not rotate or when the number of revolutions in a given period of time falls short. Rotation error is detected and showing icon "  " and error code E03 on the display.

## [To Reset error]

Investigate the cause of actuator output shaft stop or insufficient revolutions within a given time, and take appropriate countermeasures. Then, restart operation.

\* If a Motor Rotation Alarm repeatedly occurs, stop operation and investigate valve and actuator.

## 4) Power Supply Alarm

Actuator stops when detect open-phase in AC input (S phase) by signal from built-in power supply board. Icon "  " and error code E02 is shown on the display.

## [To Reset error]

Check the power supply (S phase).

## 5) Battery alarm

LCD shows icon "  " when battery level for display is low or some error is detected while main power supply is OFF.

## [To Reset error]

Turn on power supply immediately to charge, or replace the battery with a charged one.

\* Limit position need to be set again since the position will slip away if manually operated when LCD panel is OFF.

## (3) Error code / How to reset error indication

Error code	Error	Description	To Reset error indication
E09	Thermal Alarm	Motor thermal activates	When motor temperature goes down to the set value, and motor recovers automatically.
E03	Motor Rotation Alarm	Emergency stop, as the number of revolutions of actuator output shaft per unit time fell below the specified value.	Investigate the cause. (Operate STOP to reset error indication.)
E02	Power Supply Alarm	AC input (S phase) is open.	Check the power supply. (Automatically recover.)
E01	Power Failure Alarm	Power failure was detected while the actuator was on.	Check the power supply. (Error indication resets by operating OPEN, CLOSE, STOP.)
E13	Proportional Control Command Value Error	Current of Proportional Control is 1mA or less.	Check input current value, and input cable. (Automatically recover)
E17	Position Limit Not-Reach Alarm	Not to reach open/close position limit within set time.	Need to check the status of gears inside (Error indication resets by operating OPEN, CLOSE, STOP.)
E18	Position Limit Lost Alarm	Deviation from position limit when no Remote open/close operation	Need to check the status of gears inside (Error indication resets by operating OPEN, CLOSE, STOP.)
E04	DC Power Alarm	Error of DC power supply for potentiometer.	___(Note)
E05	Inverter Error Signal Being Output	A signal informing an error from inverter multifunction output signals.	
E06	Inverter Memobus Error Code Output	Data informing an error from the inverter via memobus.	
E07	Inverter ZERO Speed Unachieved	Inverter did not stop within the specified period of time, although a stop command was sent to inverter.	
E08	Memobus Error	Memobus communication is consecutively down for the set period of time or longer.	
E10	PROFIBUS Communication Error	Communication with Profi-Card was consecutively down for the set period of time or longer.	
E11	PROFIBUS Communication Error Output	Error of data from Profi-Card (sum mismatch, etc.)	
E12	Relay Board Communication Error	Communication with relay board is consecutively down for the set period of time or longer.	
E14	Control Board Setting Error	Set value error of control board	
F01	OTHER ERRORS	Other errors were detected.	
A01			
A02			
A03			
A04			
A06			
A07			
A08			
A09			
A10			
A11			
A12			
A13			
A14			
A15			
A16			
A17			

Note: Contact us for further information on these errors.

## (4) When Error happened

\*When any error occurs, take appropriate action and be sure to understand the details of error.