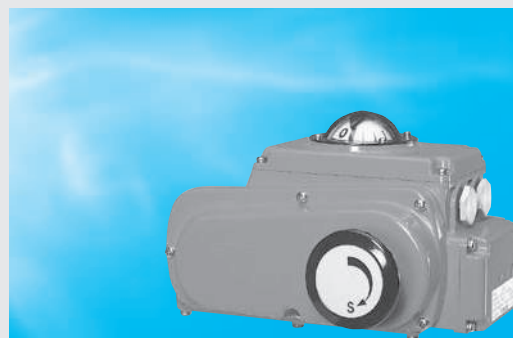


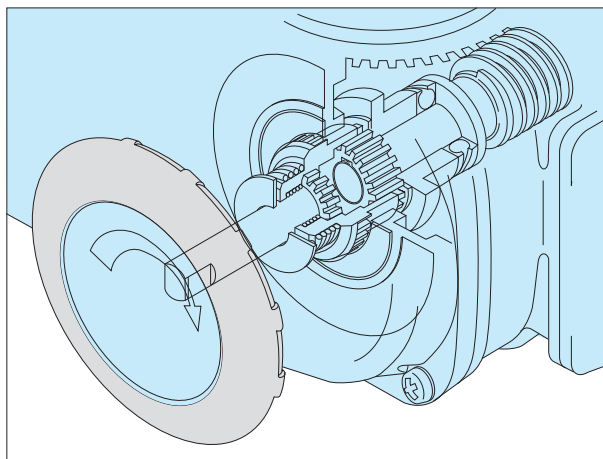
Using the superior characteristics of the best selling ELMY butterfly valve actuator, we developed an improved successor, the **New ELMY**. With a replaceable control circuit board, tough metal gears, new limit cam mechanism, a new clutch mechanism, and an improved watertight design, the **New ELMY** actuator is even better than before.



### ■ Features

- Circuit board is easily replaceable to meet different requirements.
- New adjustable limit switch cam plate.
- Waterproof design protects against rain water or condensation
- Declutchable handwheel for ease of operation and maximum safety.
- High output torque and compact in size.

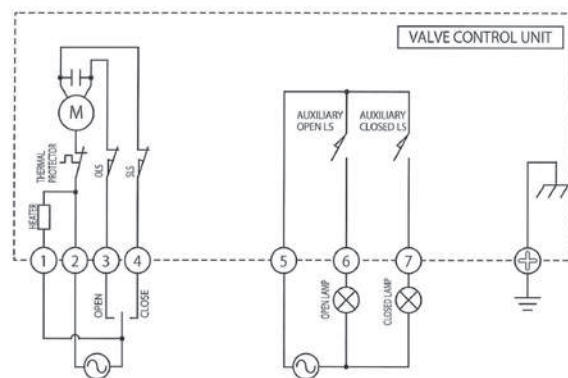
New ELMY Structure figure



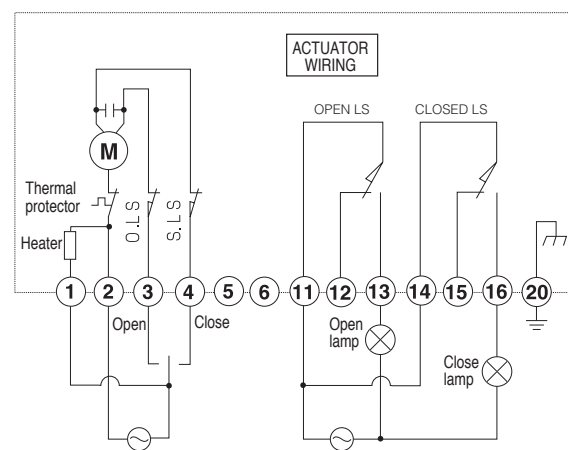
Types 1 to 4

New ELMY Wiring diagrams Standard (With extra position limit switch non-voltage)

Type 00






Type 0 to 4



New ELMY Specifications							
Type	Type 00	Type 0	Type 1	Type 2	Type 2.5	Type 3	Type 4
Output torque (N · m)	25	70	98	196	333	981	2000
Power source (V)	AC 100V, 200V, 220V		AC 100V, 200V, 220V, 50/60Hz				
Motor capacity (W)	8		20	30		90	
Travel time (50/60Hz) (sec)	10/8	25/20 (180/150)* <sup>1</sup>			37/30 (260/210)* <sup>1</sup>	55/50 (500/440)* <sup>1</sup>	125/105 (1100/900)* <sup>1</sup>
Electric power consumption (only as a rough standard)	60W		100W	160W		200W	
Rating (min)	30						
Insulation	Class E						
Type of motor and its protective device	Reversible motor with built-in thermal protector						
Space heater	Supplied under the standard specifications						
Position limit switch	One each at fully opened and closed positions, contact capacity: AC250V-5A (Can be used with minimum load down to 100mA.)	One each at fully opened and closed positions, contact capacity: AC250V-10A (Can be used with minimum load down to 100mA.)					
Torque limit switch	None						
Mechanical limit stop	End of travel positioning bolt built-in						
Conduit connections	G 1/2 (PF 1/2) 1 ports	G 1/2 (PF 1/2) 2 ports					
Enclosure	JIS C 0920 (IP 65), Class 5, dust and water-jet proof type						
Manual operation	Detachable handle		Declutchable handwheel				
Number of turns for handle/handwheel	7.5 turns	6.7 turns	16.5 turns				
Working temperature range	-10 to 60 degreesC						
Storage temperature range	-20 to 80 degreesC						
Paint finish	Epoxy-melanin baked (Tomoe green)						
Options	1) Space heater	1) Potentiometer: 135Ω and 500Ω 2) Intermediate limit switch (no voltage) 3) Extra position limit switch contact capacity for minute-load: 30V-100mA (Can be used with minimum load down to 1mA.) 4) Servounit (DC 4-20mA, DC1-5V, 0-10V)* <sup>2</sup> 5) Speed controller unit* <sup>2</sup>					

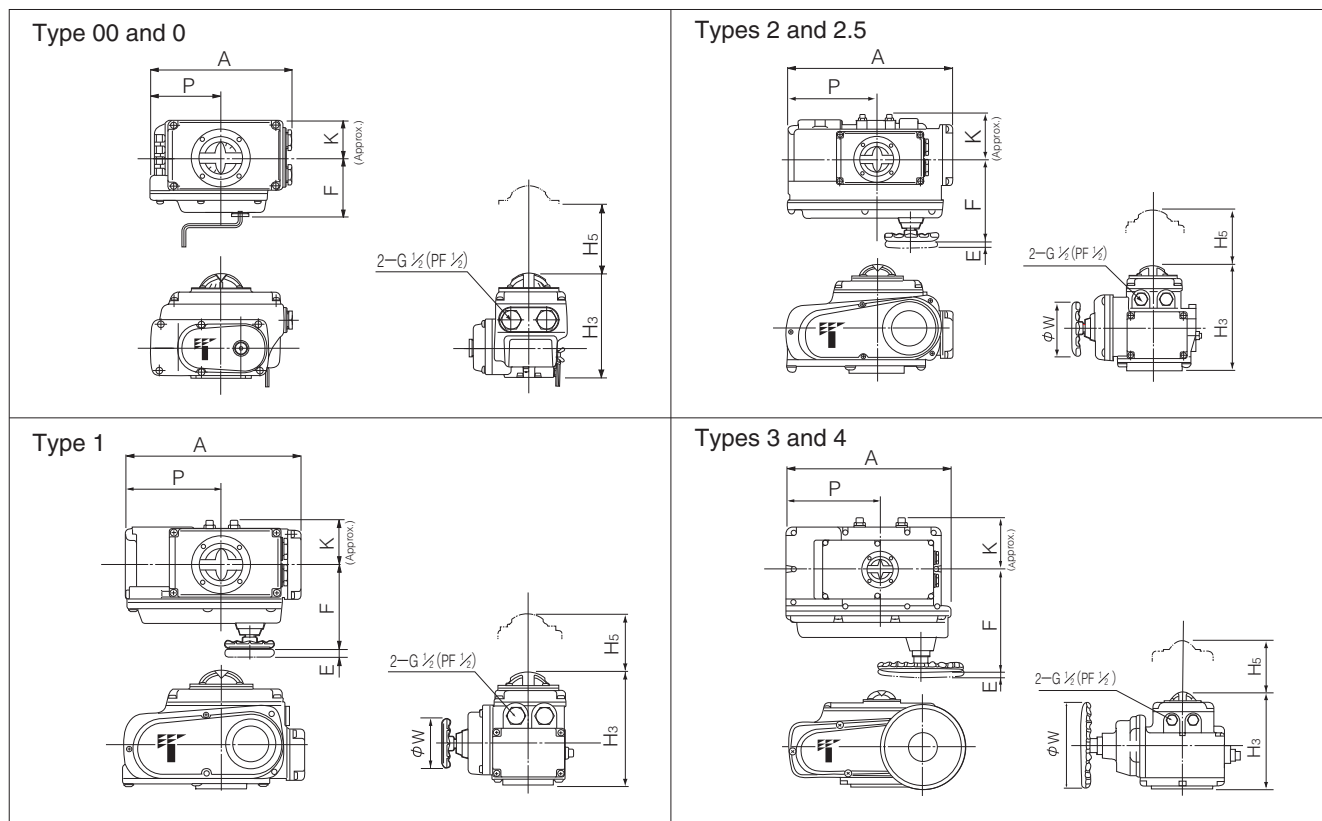
\*1 With speed controller unit

\*2 If equipped with a servo unit or speed control unit, a space heater is available as an option.  
Ambient temperature shall be up to 50 degrees C.

New ELMY Tabel Actuator Selection								
Nominal size (mm)	700Z	700G 705G 704G	700S 720F	731P	732P	847T 846T	508V	
40	Type 00	Type 00	——	——	——	——	——	
50		Type 0	Type 0	Type 00	Type 00	Type 0	Type 0	
65				Type 0	Type 0		——	
80	Type 0	Type 1	Type 1	Type 1	Type 1	Type 1	Type 0	
100		Type 1	Type 1	Type 1	Type 1		Type 1	
125	Type 1	Type 2	Type 2	Type 2	Type 2	Type 2	——	
150	Type 2		Type 2	Type 2	Type 2	Type 2	Type 2.5	
200		Type 2.5	Type 2.5	Type 2.5	Type 3	Type 2.5		
250	Type 2.5	Type 3	Type 3	Type 3		Type 3	Type 3	Type 3
300	Type 3			Type 3	Type 3			
350		Type 3	Type 3	Type 4			Type 4	
400				Type 4				Type 4
450								
500								

\* For on-off Selection

### New ELMY Dimensions

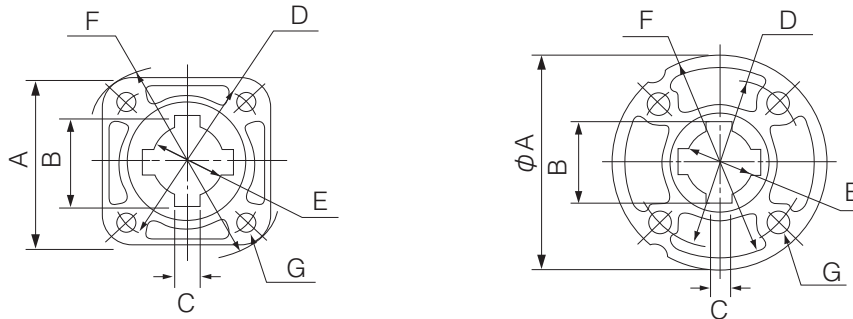


### New ELMY Dimensions / Weight

Motor type	Dimension (mm)								Approx. Weight (kg)
	H <sub>3</sub>	H <sub>5</sub>	P	A	E	F	K	φW	
Type 00	100	100	84	161	—	58	43	—	2.1
Type 0	150(185)	100	100	202	—	85	54	—	4.2
Type 1	165(191)	100	138	252	12	126	65	70	6.4
Type 2	198(224)	100	167	310	14	154	85	100	11.2
Type 2.5	198(224)	100	167	310	14	154	85	100	12.8
Type 3	230(255)	100	223	388	23	243	136	200	23.2
Type 4	230(255)	100	223	388	23	246	136	280	28.3

( ): Dimension with servounit

### New ELMY Mounting details



### New ELMY Mounting flange details

Actuator type		A	B	C	D ( $\phi$ )	E ( $\phi$ )	F ( $\phi$ )	G			
								Qty	M	P	Dep.
Type 00	ISO F05/F07	□70	—	—	50/70	12	90	4	6/8	1.0/1.25	10/13
Type 0	ISO F07	□70	—	—	70	12	90	4	8	1.25	13
Type 1	ISO F07	□70	34.6	8	70	28	90	4	8	1.25	13
	Tomoe Original	φ100	34.6	8	80	28	100	4	10	1.5	12
Type 2	ISO F10	□102	52.6	14	102	45	125	4	10	1.5	15
	Tomoe Original	φ125	52.6	14	95	45	125	4	12	1.75	15
Type 2.5	ISO F10	□102	52.6	14	102	45	125	4	10	1.5	15
	ISO F12	□125	52.6	14	125	45	155	4	12	1.75	20
	Tomoe Original	φ125	52.6	14	95	45	125	4	12	1.75	15
Type 3	ISO F10	□140	57.6	14	102	50	175	4	10	1.5	15
	ISO F12	□140	57.6	14	125	50	175	4	12	1.75	18
		□140	38.6	10	140	32	175	4	12	1.75	18
	ISO F14	□140	46.6	12	140	40	175	4	16	2.0	24
	Tomoe Original	φ200	43.1	10	125	35.5	200	4	12	1.75	24
		φ200	47.6	10	170	40	200	4	16	2.0	30
Type 4	ISO F12	□140	57.6	14	125	50	175	4	12	1.75	18
	ISO F14	□140	46.6	12	140	40	175	4	16	2.0	24
		□140	53.6	14	140	46	175	4	16	2.0	24
		□140	57.6	14	140	50	175	4	16	2.0	24
	Tomoe Original	φ200	47.6	10	170	40	200	4	16	2.0	30
		φ200	54.6	12	170	47	200	4	16	2.0	30

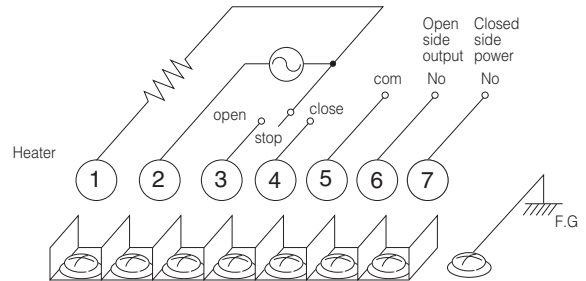
**New ELMY Terminal board connection diagram (Type 00)**

**Notes:**

1. The FG terminal should be grounded.
2. If a space heater is used, the round terminal should be connected to terminals 1, and 2.

Terminal block screw size: M3 (with angular washer)

**Wiring diagram**



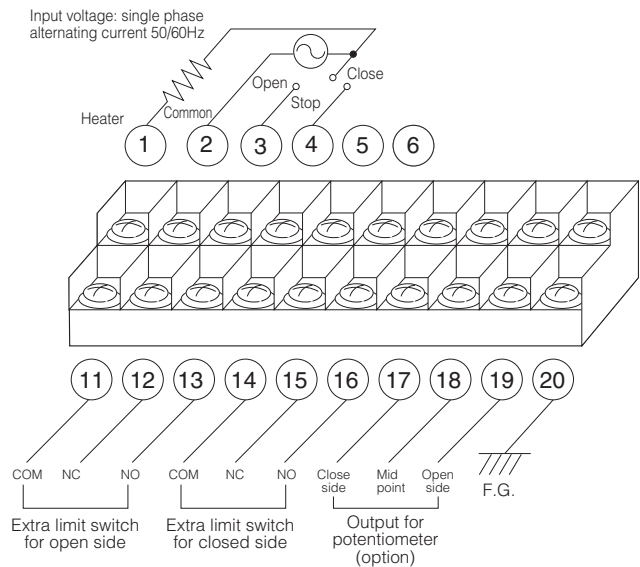
**New ELMY Terminal board connection diagram (Type 0 to 4) with potentiometer and extra limit switch**

**Notes:**



1. The FG terminal should be grounded.
2. If a space heater(option) is used, the round terminal should be connected to terminals 1 and 2.

Terminal block screw size: M3 (with angular washer)

**Wiring diagram**



### New ELMY Terminal board (Type 0 to 4)

Terminal No.	Specification	Standard with extra position limit switches	With intermediate limit switches	With a potentiometer and extra position limit switches	With a potentiometer and intermediate limit switches
①	Heater	○	○	○	○
②	COMMON	○	○	○	○
③	Open switch	○	○	○	○
④	Close switch	○	○	○	○
⑪	Extra position limit switch, open end (intermediate limit switch 1) COMMON	○	○	○	○
⑫	(intermediate limit switch 1) NC	○	○	○	○
⑬	(intermediate limit switch 1) NO	○	○	○	○
⑭	Extra position limit switch, close end (intermediate limit switch 2) COMMON	○	○	○	○
⑮	(intermediate limit switch 2) NC	○	○	○	○
⑯	(intermediate limit switch 2) NO	○	○	○	○
⑰	Potentiometer	—	—	 Closed Open	 Closed Open
⑱	Potentiometer	—	—		
⑲	Potentiometer	—	—		
⑳	Earth (F.G.)	○	○	○	○

7, 8 and 9 are out of use.  
○: wired  
— : not wired

### New ELMY Recommended fuse and non-fuse breaker

#### 1. On-off type

with extra limit switch (as standard)  
with intermediate limit switch (as option)

Type	Power source and frequency	Recommended capacity for fuse	Recommended capacity for non-fuse breaker
00, 1	100V/110V (50Hz/60Hz)	2A	2A
	200V/220V (50Hz/60Hz)	1A	1A
2, 2.5	100V/110V (50Hz/60Hz)	3A	3A
	200V/220V (50Hz/60Hz)	2A	2A
3, 4	100V/110V (50Hz/60Hz)	7A	7A
	200V/220V (50Hz/60Hz)	5A	5A

#### 2. Control type

with speed control unit (as option)  
with servo unit (as option)

Type	Power source and frequency	Recommended capacity for fuse	Recommended capacity for non-fuse breaker
0, 1	100V/110V (50Hz/60Hz)	3A	3A
	200V/220V (50Hz/60Hz)	2A	2A
2, 2.5	100V/110V (50Hz/60Hz)	5A	5A
	200V/220V (50Hz/60Hz)	3A	3A
3, 4	100V/110V (50Hz/60Hz)	10A	10A
	200V/220V (50Hz/60Hz)	7A	7A

## New ELMY Wiring diagrams (Control options) (Type 00)

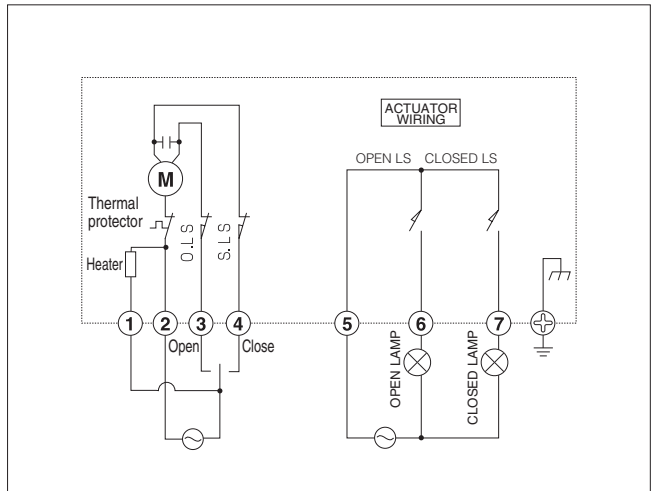
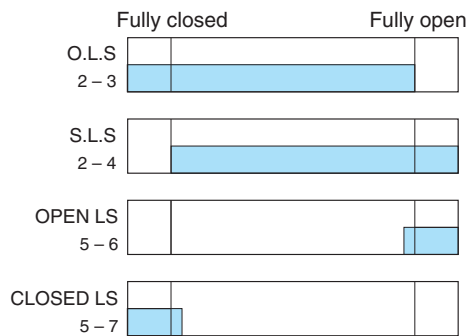
### Standard

#### With extra position limit switch (non-voltage)

##### • Purpose

To send non-voltage full-open and full-closed signals by switching on and off.

#### Limit switch contact development



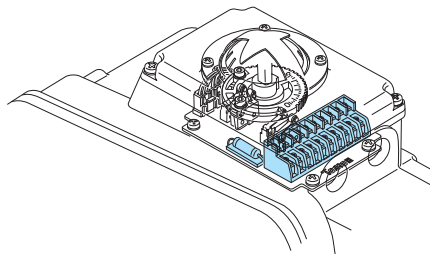
## New ELMY Wiring diagrams (Control options) (Type 0 to 4)

### Standard

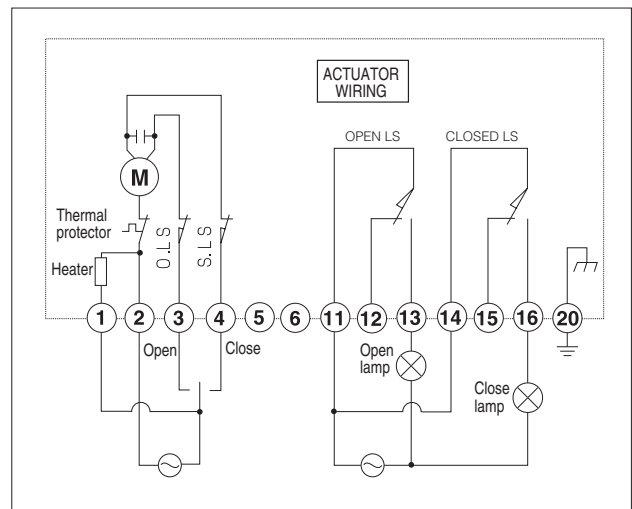
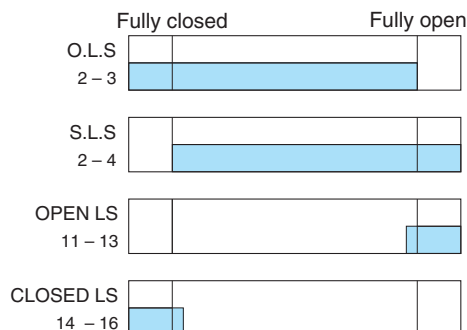
#### With extra position limit switch (non-voltage)

##### • Purpose

To send non-voltage full-open and full-closed signals by switching on and off.



#### Limit switch contact development



##### Notes

1. Each actuators should be controlled by one operation switch. If two or more actuators are controlled by one operation switch, there is a risk of causing a erroneous actuate by due to a loop circuit.
2. OLS/SLS break contact at fully open/closed position. Auxiliary limit switch is output in front of the position of fully open/closed. Should not stop the valve operation by auxiliary limit switch output until it reaches fully open/closed position.
3. Capacity of standard auxiliary limit switch is AC250V-10A (minimum voltage: 30V- minimum current 0.1A). In the case of this less than the minimum voltage or current, we will provide the lower current specification auxiliary limit switch upon request.

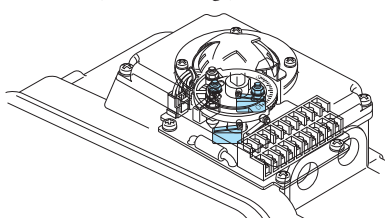
## With intermediate limit switch

### • Purpose

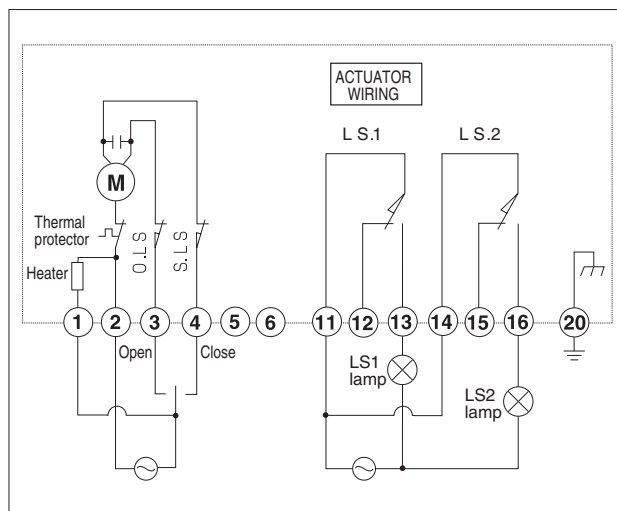
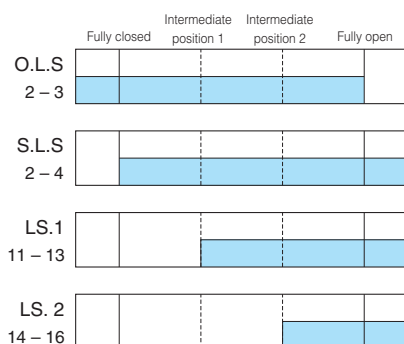
To send intermediate open and close signals by switching on and off, and to stop the valve at intermediate positions.

### • Options

Intermediate limit switches (two, non-voltage)



### Limit switch contact development



### Notes

1. Do not use a switch for two or more motor actuators, as the voltage will be transmitted to the other motor through the capacitor and cause malfunction.
2. The contact capacity of the extra limit switch is 250 VAC-10 A (min. 0.1 A). For anything below this contact capacity (1 mA to 100 mA, 5 to 30 V), please use specifications for minute loads.

## New ELMY Wiring diagrams (Control options) (Type 0 to 4)

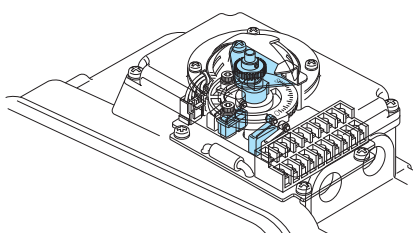
## With potentiometer and extra position limit switch (non-voltage)

### • Purpose

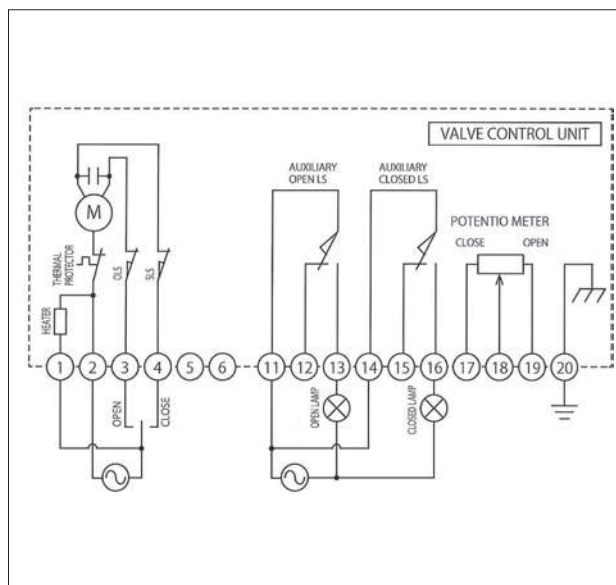
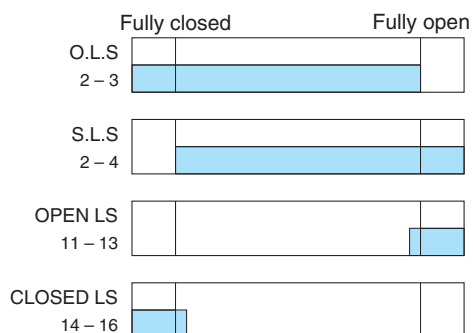
To control valve opening by resistance variations and send non-voltage full-open and full-closed signals by switching on and off.

### • Options

135Ω or 500Ω potentiometer



### Limit switch contact development



### Notes

1. Each actuators should be controlled by one operation switch. If two or more actuators are controlled by one operation switch, there is a risk of causing a erroneous actuate by due to a loop circuit.
2. OLS/SLS break contact at fully open/closed position. Auxialiry limit switch is output in front of the position of fully open/closed. Should not stop the valve operation by auxiliary limit switch output until it reaches fully open/closed position.
3. Capacity of standard auxiliary limit switch is AC250V-10A (minimum voltage: 30V- minimum current 0.1A). In the case of this less than the minimum voltage or current, we will provide the lower current specification auxiliary limit switch upon request.



## New ELMY Wiring diagrams (Control options) (Type 0 to 4)

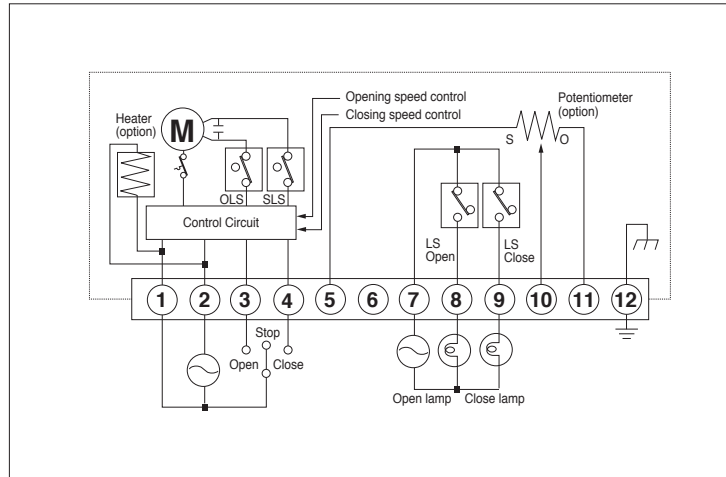
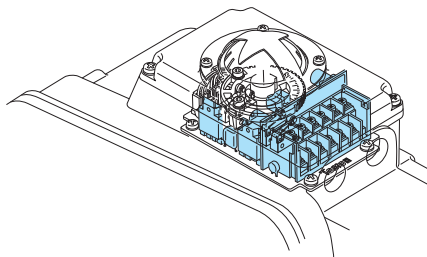
### With speed controller unit

● Purpose

Set the valve open and close time.

● Options

135  $\Omega$  or 500  $\Omega$  potentiometer, heater



Notes

1. Do not use a switch for two or more motor actuators, as the voltage will be transmitted to the other motor through the capacitor and cause malfunction.
2. Extra limit switches work ahead of each opening and closing position of the valve. Therefore, if you stop the valve using signals from an extra limit switch, leakage may occur.

Type		0, 1, 2	2.5	3	4
Opening degree		0 to 90 degrees C			
Open and close time	50Hz	25／180sec	37／260sec	55／500sec	125／1100sec
	60Hz	20／150sec	30／210sec	50／440sec	105／900sec
Adjustment method		Adjustment trimmer			

### With servo unit

#### Potentiometer and extra position limit switch (non-voltage)

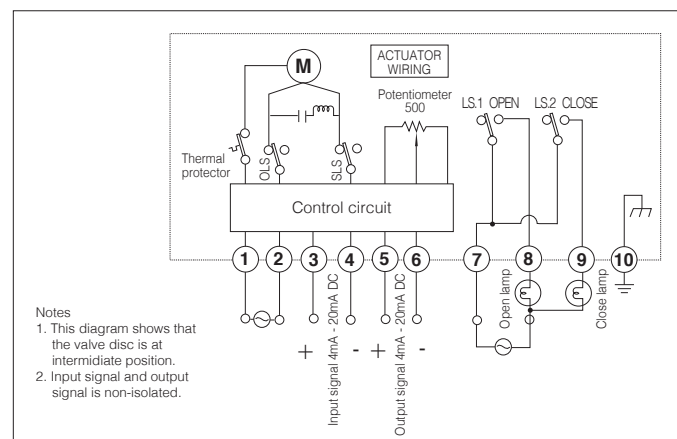
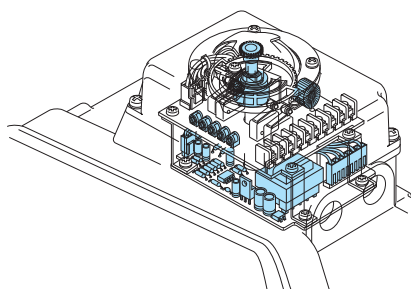
● Purpose

Control the valve opening degree proportionally  
 Input signal : 4 to 20mA DC (1 to 5V DC, 0 to 10V DC as option)  
 Output signal : 4 to 20mA DC

For full-open / full-close : contact output

● Option

Servo unit 500  $\Omega$  potentiometer



Notes

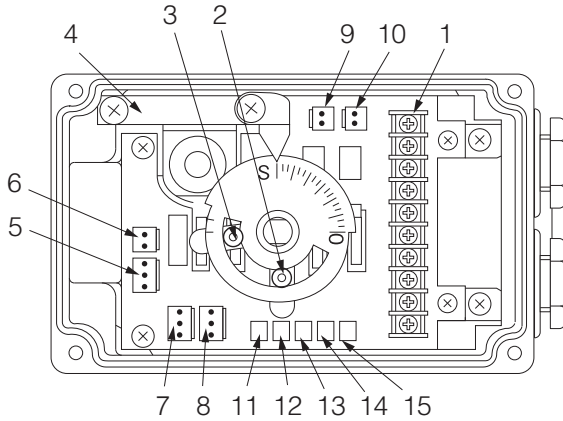
1. This diagram shows that the valve disc is at intermediate position.
2. Input signal and output signal is non-isolated.

Notes

1. The contact capacity of the extra limit switch is 250 VAC-10 A (min. 0.1 A).  
 For anything below this contact capacity (1 mA to 100 mA, 5 to 30 V), please use specifications for minute loads.

## Parts list for New ELMY (Type 0 to 4)

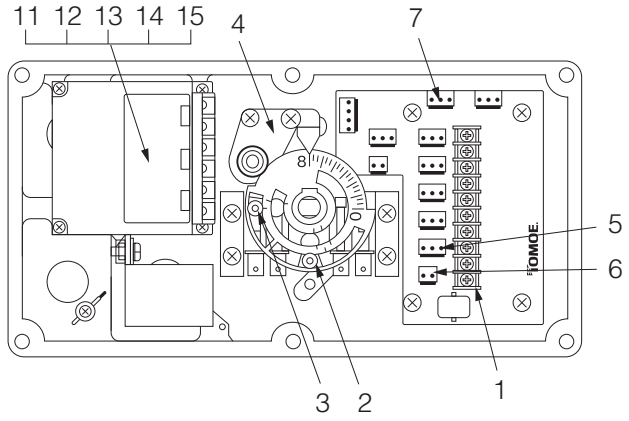
### With servo unit inside of types 0, 1, 2 and 2.5



1 Terminal	9 RA: wiring connector
2 Dog for open position	10 DA: wiring connector
3 Dog for closed position	11 Trimmer for hysteresis adjustment
4 Potentiometer	12 Trimmer for zero adjustment
5 Connector for motor	13 Trimmer for span adjustment
6 Connector for motor capacitor	14 Trimmer for output zero adjustment
7 RA: connector for potentiometer	15 Trimmer for output span adjustment
8 DA: connector for potentiometer	

Remarks: When Z1 is adjusted, then please adjust S1 too.  
When Z2 is adjusted, then please adjust S2 too.

### With servo unit inside of types 3 and 4

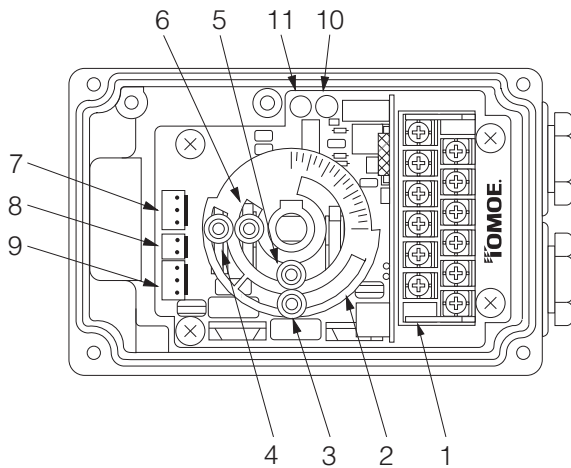


1 Terminal	7 RA: connector for potentiometer
2 Dog for open position	11 Trimmer for hysteresis adjustment
3 Dog for closed position	12 Trimmer for zero adjustment
4 Potentiometer	13 Trimmer for span adjustment
5 Connector for motor	14 Trimmer for output zero adjustment
6 Connector for motor capacitor	15 Trimmer for output span adjustment

Remarks: When Z1 is adjusted, then please adjust S1 too.  
When Z2 is adjusted, then please adjust S2 too.

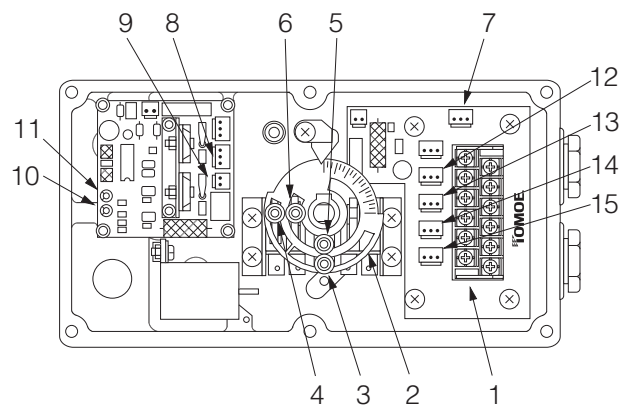
## Parts list for New ELMY with speed controller unit (Type 0 to 4)

### Inside of types 0, 1, 2 and 2.5



1 Terminal	7 Connector for potentiometer
2 Limit switch cam	8 Connector for motor capacitor
3 Dog for open position	9 Connector for motor
4 Dog for closed position	10 Trimmer for closed position
5 Dog for open signal	11 Trimmer for open position
6 Dog for closed signal	

### Inside of types 3 and 4






1 Terminal	9 Connector for motor
2 Limit switch cam	10 Trimmer for closed position
3 Dog for open position	11 Trimmer for open position
4 Dog for closed position	12 Connector for open signal
5 Dog for open signal	13 Connector for closed signal
6 Dog for closed signal	14 Connector for open limit switch
7 Connector for potentiometer	15 Connector for closed limit switch
8 Connector for motor capacitor	

## New ELMY Adjustable operating speed (Type 0 to 4)

Stroke time for open to close and close to open can be set independently.  
See the trimmer position for operating speed adjustment.

### Trimmer position and stroke time

Position		Type 0, 1 and 2		Type 2.5		Type 3		Type 4	
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
1		25 sec	20 sec	37 sec	30 sec	55 sec	50 sec	120 sec	105 sec
		Tolerance 5 sec				Tolerance 5 sec			
2		90 sec	70 sec	130 sec	110 sec	250 sec	220 sec	500 sec	450 sec
		Tolerance 20 sec				Tolerance 40 sec			
3		180 sec	150 sec	260 sec	210 sec	500 sec	440 sec	1100 sec	900 sec
		Tolerance 40 sec				Tolerance 80 sec			
4		360 sec	300 sec	520 sec	440 sec	1000 sec	880 sec	2000 sec	1800 sec
		Tolerance 100 sec				Tolerance 200 sec			

- (1) Carry out the procedure after the limit switch and stopper bolt are set.
- (2) Adjust the trimmer with a screwdriver following the table above.
- (3) Standard stroke time can be set by turning the trimmer fully in the clockwise direction.
- (4) Stroke time can be adjusted by turning the trimmer counterclockwise.
- (5) The above stroke time is just criteria. Please confirm actual operation time.

# New ELMY Rated current

Type	Motor voltage (V)	Impressed voltage (V)	Frequency (Hz)	Starting current (A)	Rated current (A)	Note
00	100	100	50	0.8	0.40	
			60	0.8	0.40	
	110		50	1.0	0.50	
			60	1.0	0.50	
	200	200	50	0.5	0.25	
			60	0.5	0.25	
	220		50	0.7	0.30	
			60	0.7	0.30	
0	100	100	50	1.2	0.50	
			60	1.2	0.50	
	110		50	1.4	0.60	
			60	1.4	0.60	
	200	200	50	0.5	0.25	
			60	0.5	0.25	
	220		50	0.7	0.30	
			60	0.7	0.30	
1	100	100	50	1.6	0.70	
			60	1.4	0.60	
	110		50	1.7	0.90	
			60	1.7	0.70	
	200	200	50	0.7	0.40	
			60	0.7	0.30	
	220		50	0.8	0.50	※
			60	0.9	0.40	※
	220	220	50	0.7	0.40	
			60	0.7	0.30	
2 2.5	100	100	50	2.4	0.90	
			60	2.4	1.20	
	110		50	2.5	1.00	
			60	2.5	1.20	
	200	200	50	1.1	0.50	
			60	1.1	0.80	
	220		50	1.2	0.60	※
			60	1.2	0.80	※
	220	220	50	1.1	0.50	
			60	1.0	0.50	
3 4	100	100	50	5.1	1.60	
			60	4.8	1.70	
	110		50	6.1	1.70	
			60	6.6	1.80	
	200	200	50	2.6	0.80	
			60	2.4	1.00	
	220		50	3.1	0.90	※
			60	3.0	1.00	※
	220	220	50	2.3	0.70	
			60	2.3	0.80	

\*※\* means not available as standard specification. Values are provided as reference.