

## Compact Motorized Actuator

# New ELMY®

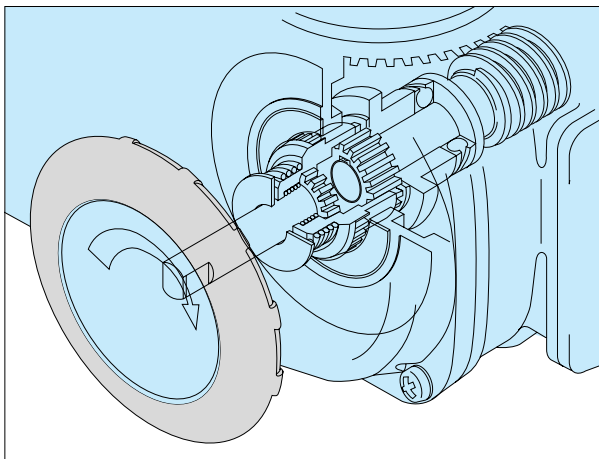
Using the superior characteristics of the best selling ELMY butterfly valve actuator, we developed an improved successor, the **New ELMY®**. With a replaceable control circuit board, tough metal gears, new limit cam mechanism, a new clutch mechanism, and an improved watertight design, the **New ELMY®**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

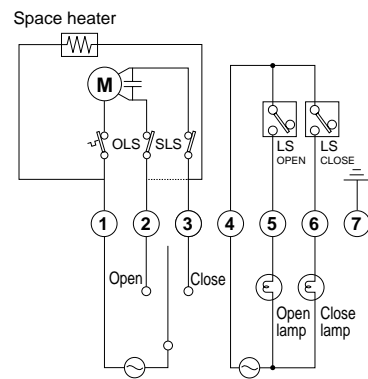
New ELMY Structure figure



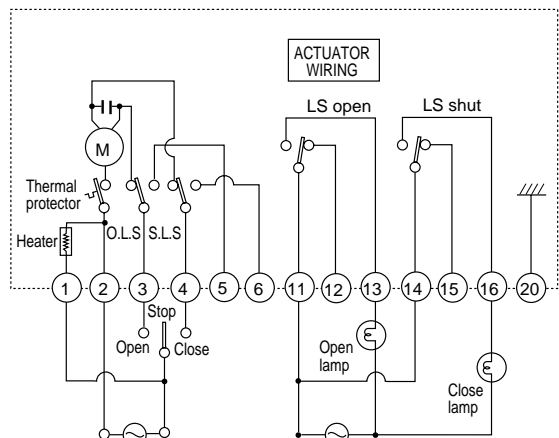
Types 1 to 4

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

Type 00



Type 0 to 4



Actuator
New ELMY
New MICOM ELMY II
PMK-SRM
SRJ
LTKD
T-DYNAMO
TGA
TG-S
3C
Diaphragm
Hydraulic type
Manual type

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 N	2000
Power source (V)	AC 100V, 200V, 220V		AC 100V, 120V, 200V, 220V, 240V, 50/60Hz <sup>1</sup>				
Motor capacity (W)	8		20	30		90	
Travel time (50/60Hz) (sec)	10/8	25/20 (180/150) <sup>2</sup>			37/30 (260/210) <sup>2</sup>	55/50 (500/440) <sup>2</sup>	125/105 (1100/900) <sup>2</sup>
Rating (min)	30						
Insulation	Class E						
Type of motor and its protective device	Reversible motor with built-in thermal protector						
Space heater	Option	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 50 degreesC						
Storage temperature range	- 30 to 80 degreesC						
Paint finish	Epoxy-melanin baked with Munsell 2.5 BG 6/12						
Options	1) Space heater	1) Potentiometer: 135 and 500 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 <sup>1</sup> (AC 4 - 20mA, DC1 - 5V, 0 - 10V) 5) Speed controller unit					

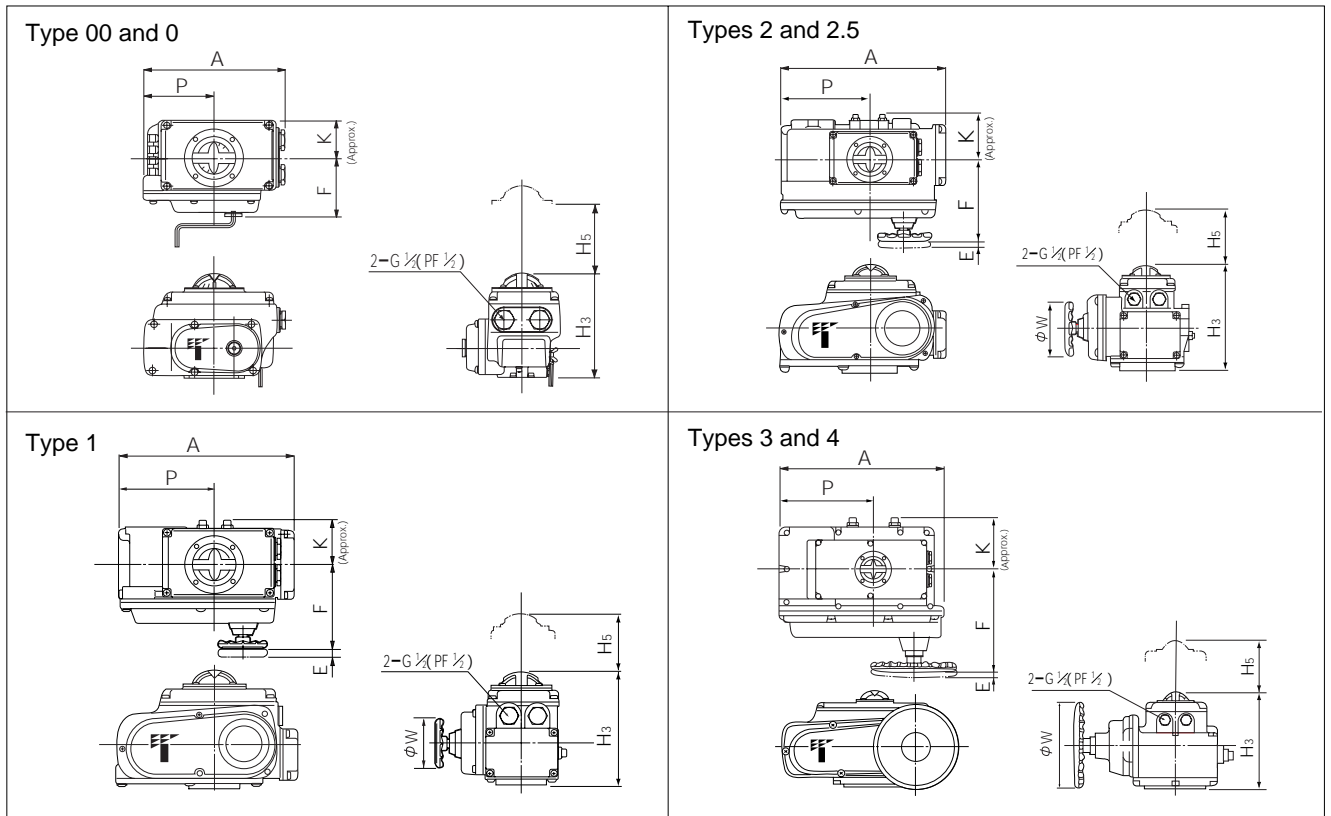
1. No space heater with servounit.
2. With speed controller unit

### New ELMY Tabel actuator selection

Nominal size (mm)	773Z	700G 705G 704G	700S 720F	731P	732P	732X	847T 846T	508V
40	Type 00	Type 00	—	—	—	—	—	—
50			Type 0	Type 00	Type 00	Type 1	Type 0	Type 0
65		Type 0		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	Type 1	
125	Type 1	Type 2	Type 2	Type 2	Type 2	Type 2	—	
150	Type 2	Type 2.5	Type 2.5	Type 2.5	Type 2.5	Type 2.5	Type 2.5	Type 2.5
200								
250	Type 2.5	Type 3	Type 3	Type 3	Type 3	Type 3	Type 3	Type 3
300								
350	Type 3	Type 3	Type 3	Type 3	Type 3	Type 3	Type 3	Type 3
400								
450								
500	Type 4	Type 4	Type 4	Type 4	Type 4	Type 4	Type 4	Type 4

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Hydraulic type
Manual type

**New ELMY Dimensions**



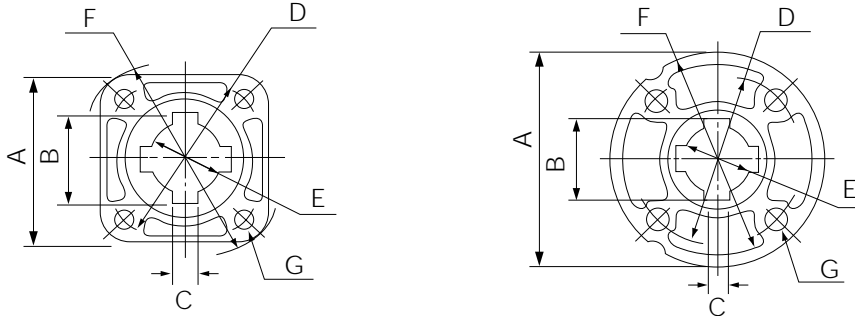
**New ELMY Dimensions / Weight**

Motor type	Dimension( mm )								Approx. weight ( kg )
	H3	H5	P	A	E	F	K	W	
Type 00	121	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

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### New ELMY Mounting details



### New ELMY Mounting flange details

Actuator type		A	B	C	D ( )	E ( )	F ( )	G			
								Qty	M	P	Dep.
Type 00	ISO F05/F07	70	-	-	50/70	12	90	4	8/6	1.25/1.0	13/10
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	100	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	125	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	125	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	200	43.1	10	125	35.5	200	4	12	1.75	24
200		47.6	10	170	40	200	4	16	2.0	30	
Type 4	ISO F12	140	57.6	14	125	50.0	175	4	12	1.75	18
	ISO F14	140	46.6	12	140	40.0	175	4	16	2.0	24
		140	53.6	14	140	46.0	175	4	16	2.0	24
		140	57.6	14	140	50.0	175	4	16	2.0	24
	Tomoe Original	200	47.6	10	170	40.0	200	4	16	2.0	30
		200	54.6	12	170	47.0	200	4	16	2.0	30

#### Actuator

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New MICOM ELMY II

PMK-SRM

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Hydraulic type

Manual type

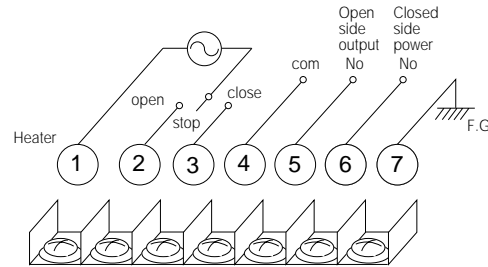
**New ELMY Terminal board connection diagram( Type 00 )**

**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, 2, and 3.
3. The power sources for the control units are the same for both 100V and 200V series, however the actuator motors differ depending on the power source.

Terminal block screw size: M3 (with angular washer)

**Wiring diagram**

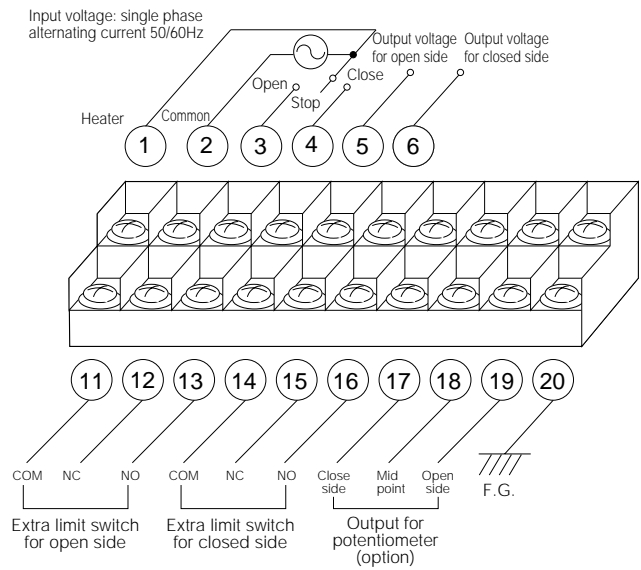


**New ELMY Terminal board connection diagram( Type 0 to 4 )**

- (1) FG contact should be grounded.
- (2) If space heater (option) is used, round contact should be connected to contacts 1 and 2.
- (3) Power source for control unit of 100V series and 200V series is same, but power source for actuator motor is not.

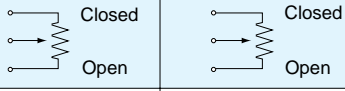
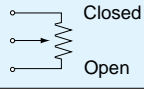
Terminal block screw size: M3 (with washer)

**Wirng diagram**



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## 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				
5	Open lamp				
6	Close lamp				
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	-	-		
18	Potentiometer	-	-		
19	Potentiometer	-	-		
20	Earth (F.G.)				

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

## New ELMY Contacts

	Terminal No.	Connection	Capacity
Contact output	⑦ ( COM )	Common with No. 8 and 9	AC250V-10A
	⑧ ( OPEN )	Connect with No. 7 at open position	
	⑨ ( CLOSE )	Connect with No. 7 at close position	

## New ELMY Recommended fuse and non-fuse breaker

### 1. On-off use

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
0, 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. Modulating use

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	2.5A
	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

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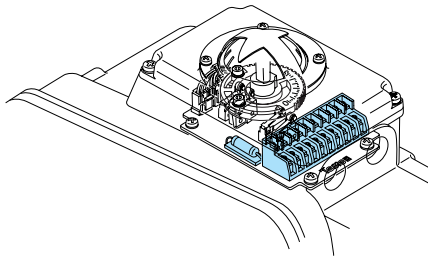
New ELMY Wiring diagrams (Control options) (Type 0 to 4)

**Standard**

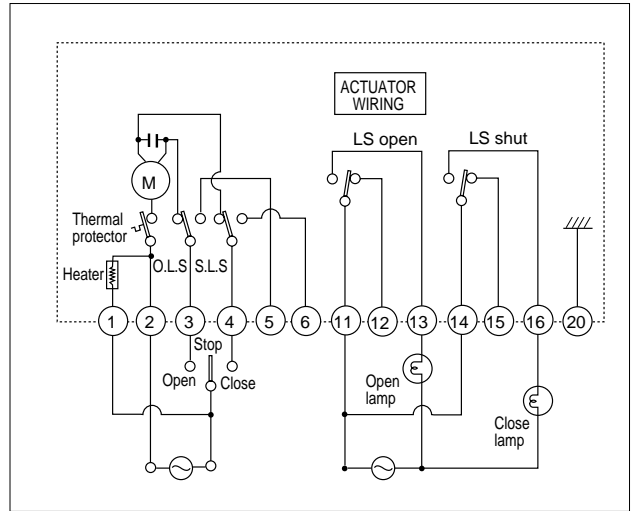
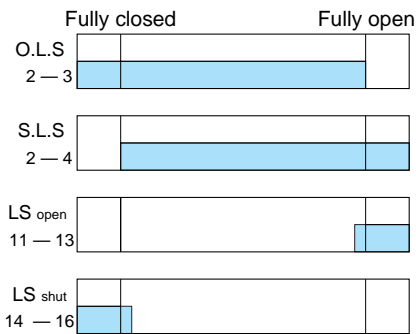
**With extra position limit switch (non-voltage)**

**Purpose**

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



**Limit switch contact development**



**Notes**

- 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.
- Extra limit switches work 2 to 3% 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.
- 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.

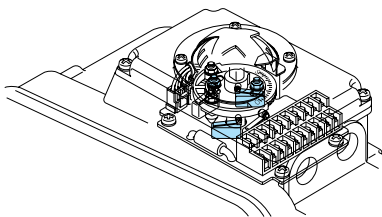
**With intermediate limit switch**

**Purpose**

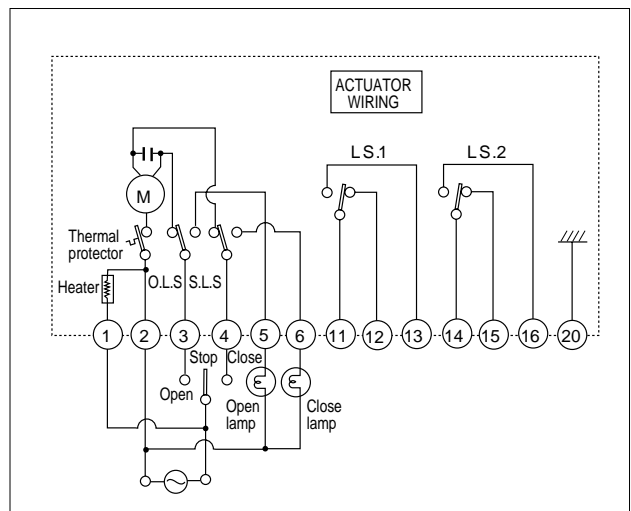
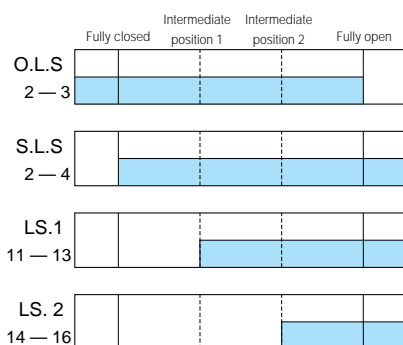
To send intermediate open and close signals by switching on and off, and to stop the valve at intermediate positions.

**Options**

Intermediate limit switches (two, non-voltage)



**Limit switch contact development**



**Notes**

- 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.
- 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.

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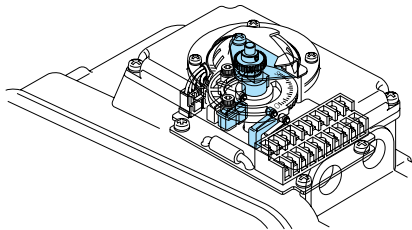
### With potentiometer and extra position limit switch (non-voltage)

**Purpose**

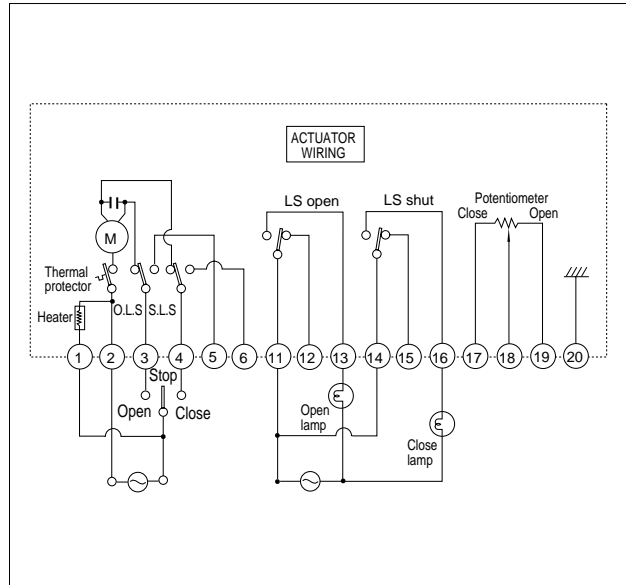
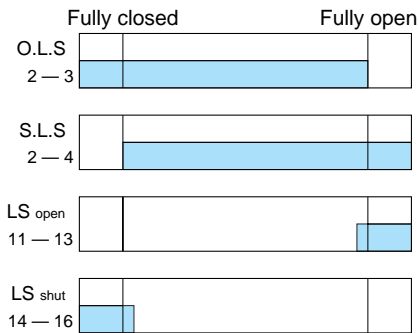
To control valve opening by resistance variations and send non-voltage full-open and full-closed signals by switching on and off.

**Options**

135 or 500 potentiometer



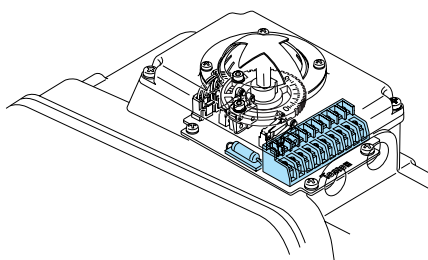
**Limit switch contact development**



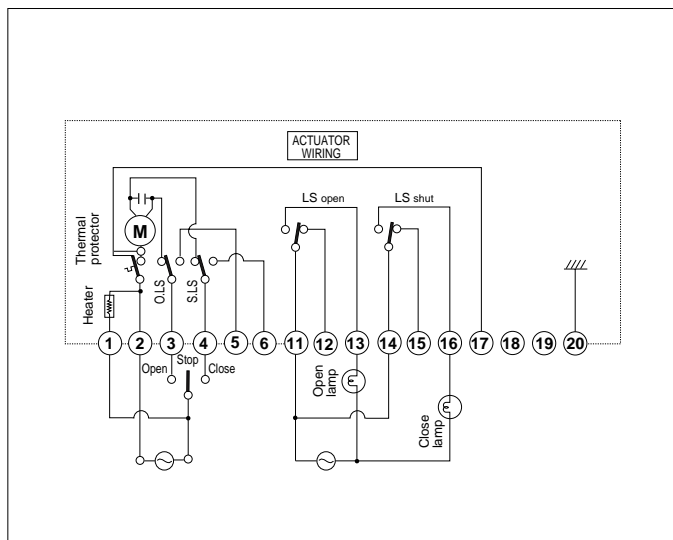
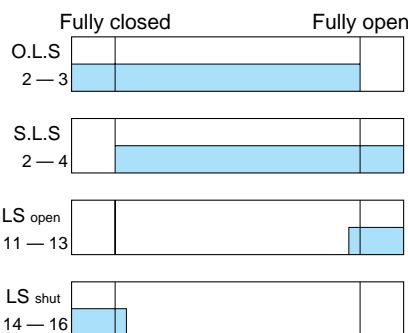
**Notes**

- Do not use a switch for two or more of motor actuators, as the voltage will be transmitted to the other motor through the capacitor and cause malfunction.
- Extra limit switches work 2 to 3% 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.
- 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.

### With thermal output



**Limit switch contact development**



**Notes**

- Outputs when thermal operation shall be "b" contacts.
- 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.
- Extra limit switches work 2 to 3% 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.
- 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.

**Actuator**

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- T-DYNAMO
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- TG-S
- 3C
- Diaphragm
- Hydraulic type
- Manual type

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

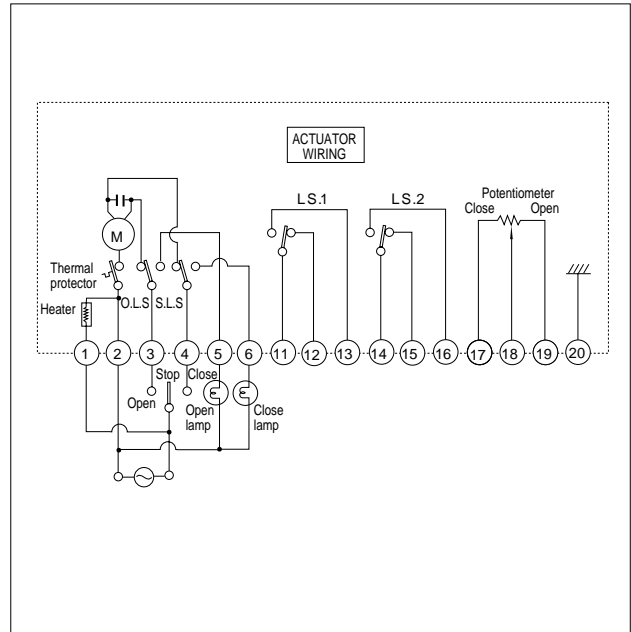
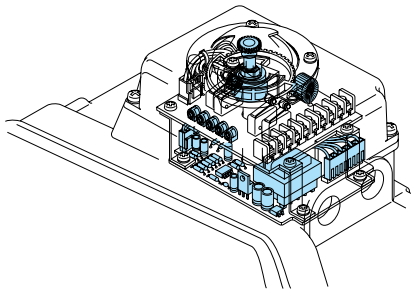
**With servo unit, potentiometer and extra position limit switch (non-voltage)**

**Purpose**

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

**Options**

- 135 or 500 potentiometer
- Intermediate limit switches (two, non-voltage)



**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.

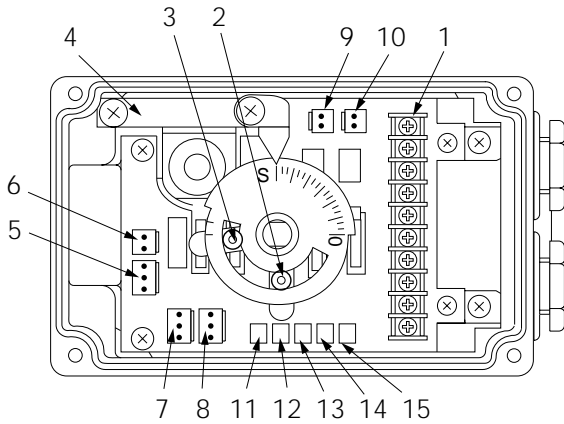
**New ELMY Specifications with servo unit (Type 0 to 4)**

Controller	Input signal	DC. 4 to 20 mA (Option 1 to 5 V, 0 to 10 V)
	Output signal	DC. 4 to 20 mA
	Contact output	Fully open, Fully closed (non voltage) (capacity: AC 250 V-10 A (over 0.1 A))
	Dead band	2% to 5% variable
	Operation frequency rate	ED 50% or less
	Zero span adjustment range	-15 to 15% FS
	Span adjustment	-40 to 20% FS
	Switching of RA and DA	By changing connector
Operation temperature	-10 to 50 degrees C	

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- Hydraulic type
- Manual type

Parts list for New ELMY (Type 0 to 4)

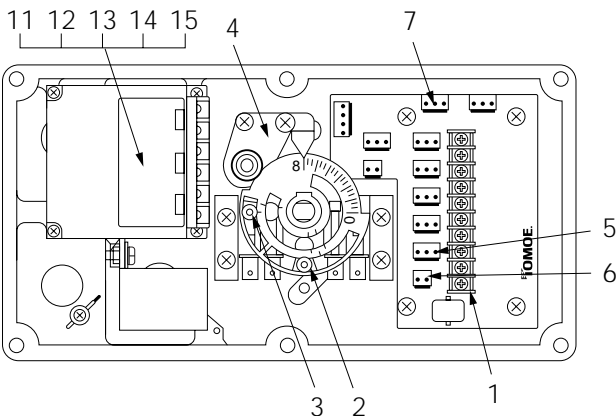
With servo unit  
inside of types 0, 1, 2 and 2.5



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

With servo unit  
inside of types 3 and 4



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

Actuator

New ELMY

New MICOM ELMY II

PMK-SRM

SRJ

LTKD

T-DYNAMO

TGA

TG-S

3C

Diaphragm

Hydraulic type

Manual type

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

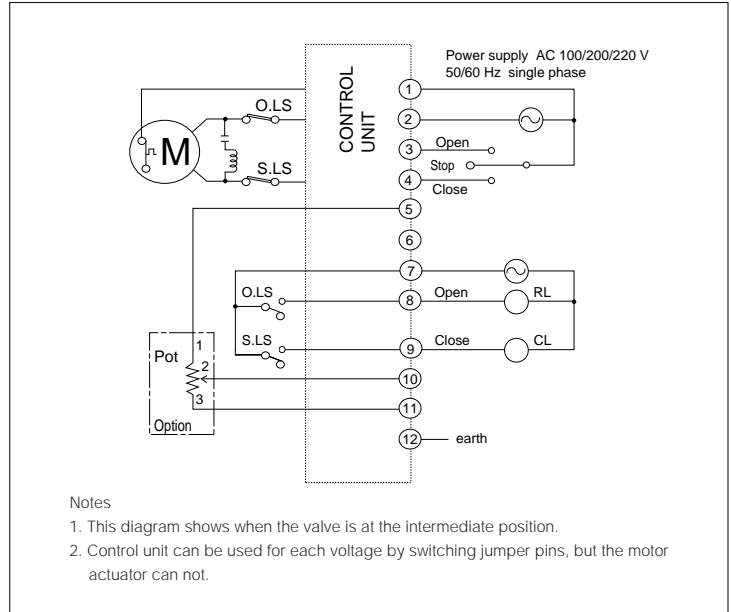
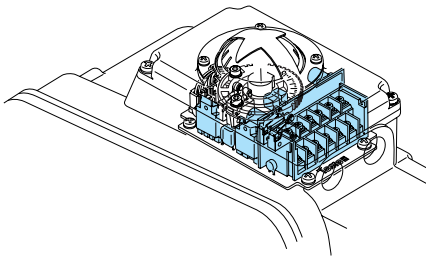
**With speed controller unit**

**Purpose**

Set the valve open and close time.

**Options**

135 or 500 potentiometer, heater



**Notes**

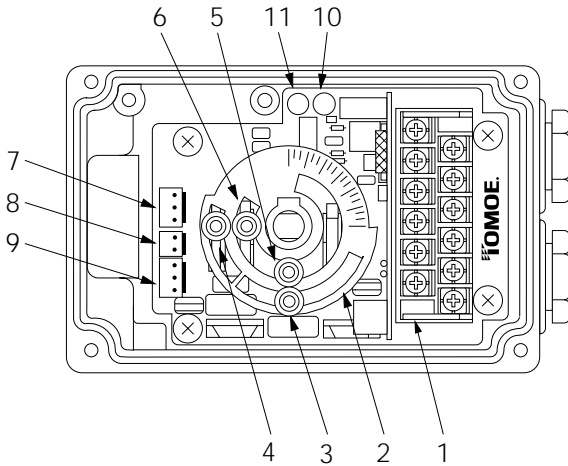
1. Do not use a switch for two or more motor actuators, as the voltage will be transmitted to the other motor through the capacitor and cause malfunction.
2. Extra limit switches work 2 to 3% ahead of each opening and closing position of the valve. Therefore, if you stop the valve using signals from 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				

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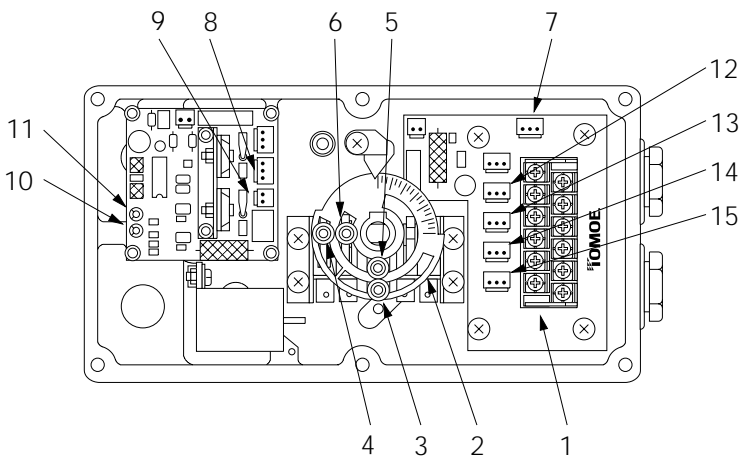
Parts list for New ELMY with speed controller unit (Type 0 to 4)

Inside of types 0, 1, 2 and 2.5



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

Inside of types 3 and 4



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

Actuator

New ELMY

New MICOM ELMY II

PMK-SRM

SRJ

LTKD

T-DYNAMO

TGA

TG-S

3C

Diaphragm

Hydraulic type

Manual type

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

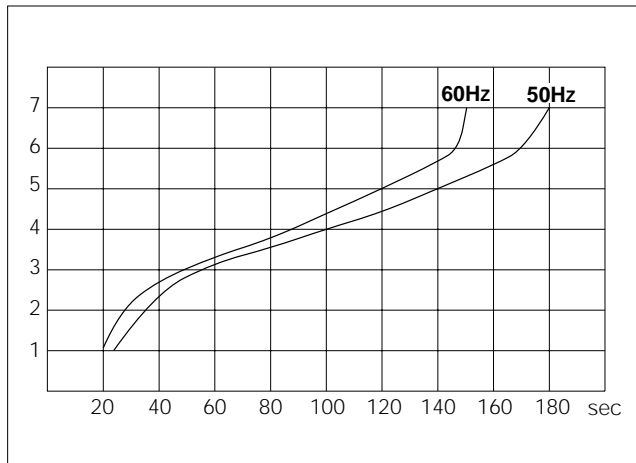
Stroke time for open to close and close to open can be set independently.  
See the trimmer position for operating speed adjustment.

**Trimmer position and stroke time**

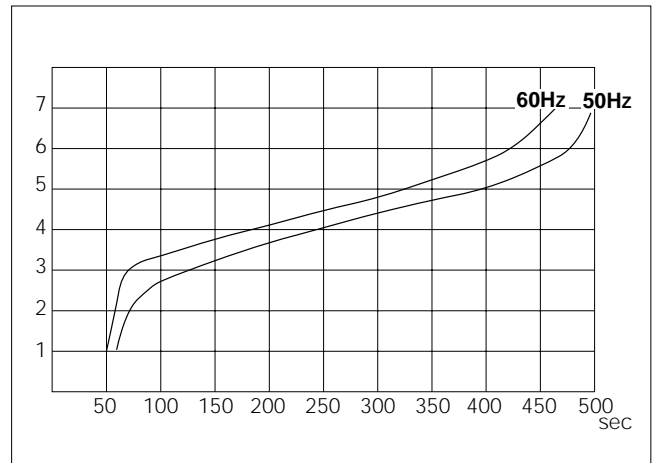
Position	Diagram	Type 0, 1 and 2		Type 2.5		Type 3		Type 4	
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
1		25 sec	20 sec	37 sec	30 sec	55 sec	50 sec	120 sec	105 sec
		Tolerance ± 5 sec				Tolerance ± 5 sec			
2		90 sec	70 sec	130 sec	110 sec	250 sec	220 sec	500 sec	450 sec
		Tolerance ± 20 sec				Tolerance ± 40 sec			
3		180 sec	150 sec	260 sec	220 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.

**Type 1 and 2:**  
The graph below shows stroke time and trimmer position



**Type 3:**  
The graph below shows stroke time and trimmer position



<b>Actuator</b>
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Manual type

### 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	
	200	200	50	0.5	0.25	
			60	0.5	0.25	
			50	0.7	0.30	
			60	0.7	0.30	
0	100	100	50	1.2	0.50	
			60	1.2	0.50	
	200	200	50	0.5	0.25	
			60	0.5	0.25	
			50	0.7	0.30	
			60	0.7	0.30	
	240	240	50	0.5	0.25	
			60	0.5	0.25	
1	100	100	50	1.6	0.70	
			60	1.4	0.60	
			50	1.7	0.90	
			60	1.7	0.70	
	200	200	50	0.7	0.40	
			60	0.7	0.30	
			50	0.8	0.50	
			60	0.9	0.40	
	220	220	50	0.7	0.40	
			60	0.7	0.30	
	240	240	50	0.6	0.30	
			60	0.6	0.30	
2 2.5	100	100	50	2.4	0.90	
			60	2.4	1.20	
			50	2.5	1.00	
			60	2.5	1.20	
	200	200	50	1.1	0.50	
			60	1.1	0.80	
	220	200	50	1.2	0.60	
			60	1.2	0.80	
	220	220	50	1.1	0.50	
			60	1.0	0.50	
240	240	50	0.9	0.50		
		60	0.9	0.60		
3 4	100	100	50	5.1	1.60	
			60	4.8	1.70	
			50	6.1	1.70	
			60	6.6	1.80	
	200	200	50	2.6	0.80	
			60	2.4	1.00	
			50	3.1	0.90	
			60	3.0	1.00	
	220	220	50	2.3	0.70	
			60	2.3	0.80	
	240	240	50	2.1	0.60	
			60	2.2	0.60	

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

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