



810 Series Electric Actuators

► For Part-turn Application



Summary

- ▶ **Applicability** They provide a reliable position control of butterfly, ball valves, as well as similar ones.
- ▶ **Torque** 25 ~ 600 Nm
- ▶ **Power** 220VAC /1 phase / 50Hz; 380VAC /3 phase / 50Hz

Features

- 1 Delicacy**
Thanks to computer 3D CAD tools, 810 series are designed with an outstanding structure and concise, meticulous appearance.
- 2 Legerity**
810 series are more lightweight for the die-casting aluminum case.
- 3 Waterproof**
The protection grade reaches IP68 by using the rubber sealing ring in all jointing surface.
- 4 Quiet**
The two-stage worm gear and worm driving ensures 810 series operating smoothly and quietly, so 810 series are especially suitable for environment of 1 phase power supply.
- 5 Usability**
Some unique designs such as the tridimensional valve position indicator and the spring-return and concealed hand/auto switch make 810 series easier to be operated.



About us

Tianjin Beifang ValveActuator Co., Ltd. (BF for short) always focus on the design and manufacture of excellent valve actuator and control equipment.

BF attaches great importance to product design, and the design team has strong product design and innovation ability. BF has complete intellectual property rights and a number of technical patents. Over the years, our products have been annual exported in batches and were widely and successfully used in water treatment, oil, electricity, chemical and other industries.

BF acquired the authentication of quality management system standards ISO9000 of DNV in 1998. Strict quality control in all stages and constantly improving the product quality control standards is the consensus of the staff.

BF believes that only solid the software and hardware foundation to achieve long-term stable development. We have set up some advanced computer-aided system, such as product design, resource management, production management, and soon. And we have set up the platform of precision machining mainly based on CNC machining center. We also continue to establish and improve a documented management system.

BF will design and manufacture products solidly and continue our efforts to create more value for customers.

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Structure

The tridimensional position indicator is easier to view from the side. And the valve position can be seen at a distance for the dial surface is coated with red and yellow. In addition, the viewing window can be adjusted to the appropriate position.

Limit switch: Once the valve run to the right place, the cam set on the limit shaft which remains in step with the drive sleeve will drive the microswitch to interrupt the power or transmit signals.

Torque switch: The axial move of the worm shaft which mounted with the disk spring is proportional to the torque generated by the actuator. The torque switches can sense the movement and interrupt the power or transmit the over-torque signals.

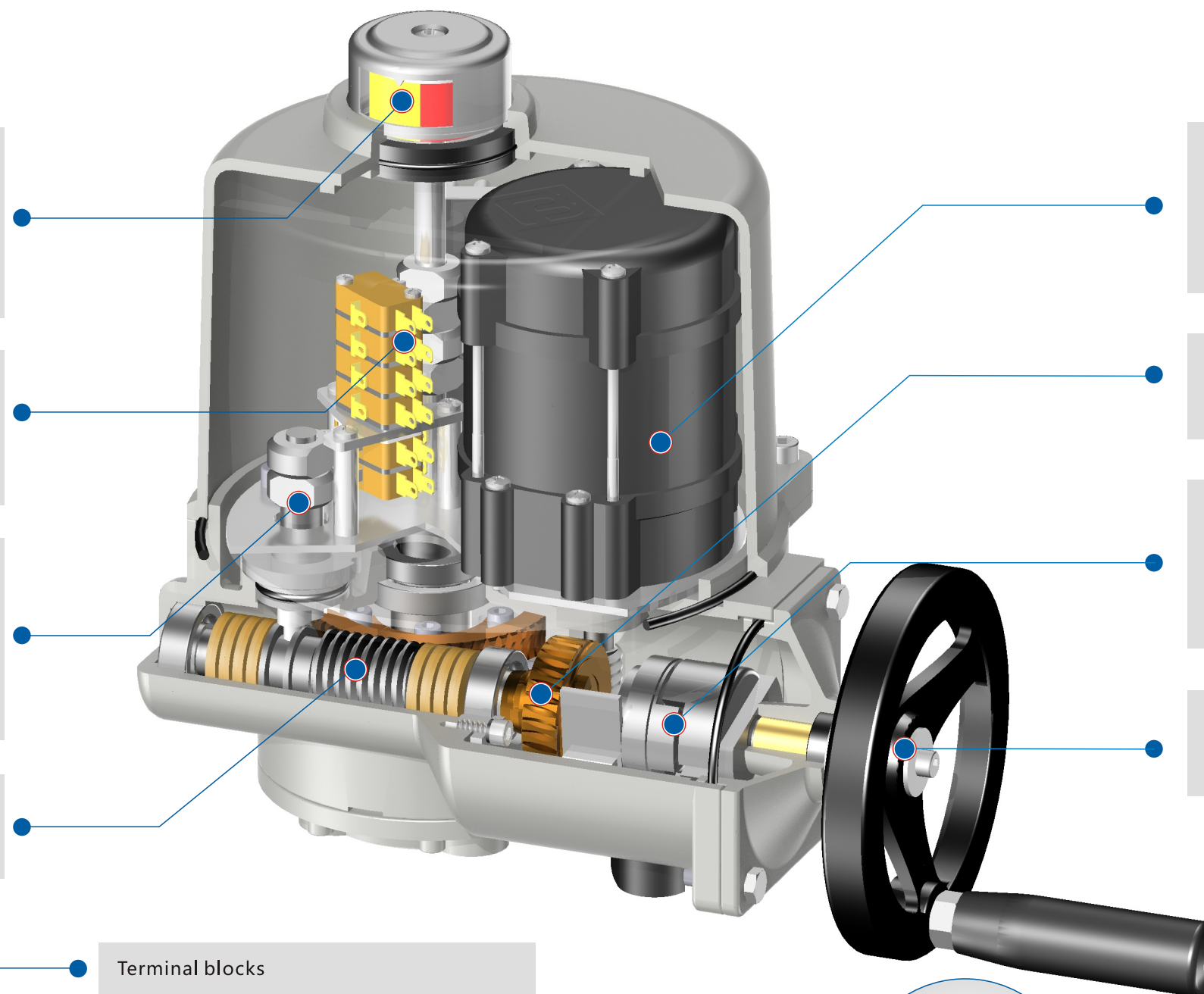
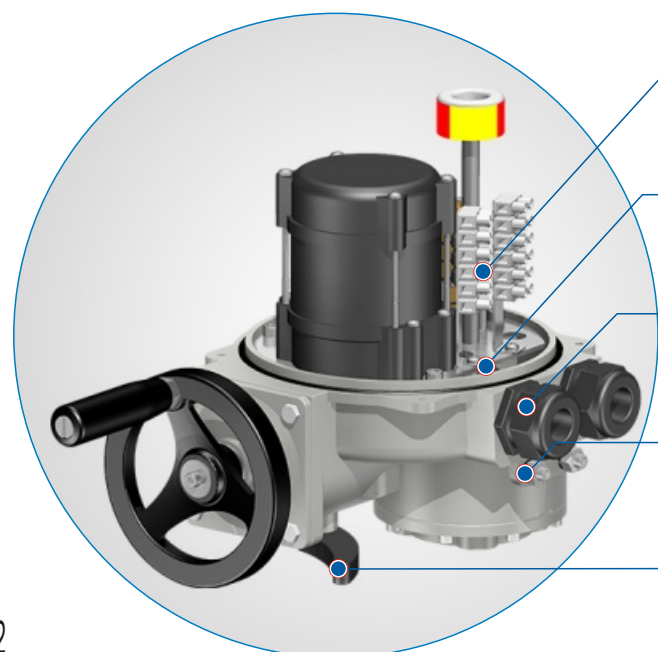
For the worm and worm gear is self-locking, the valve can be maintained in place when the operation stops.

The excellent heat-sinking motor can be dismantled. If the motor windings overheat, a temperature protection switch embedded in the windings will cut off the power.

The worm and worm gear are directly driven by motor, so the product runs noiselessly.

Automatic reset hand/auto switch: By operating the switch lever, manual drive is engaged. Energization of the motor automatically re-engages power operation.

A handwheel is provided for setting or manual operation when power failure.



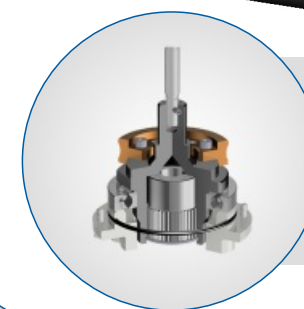
Terminal blocks

The motor and all control elements are arranged above the steel plate, so it is convenient for debugging and maintaining.

Cable gland

Two adjustable mechanical stop bolts in open and close direction are provided for limiting the travel of the drive sleeve.

The switch lever is located at the bottom of the unit to avoid being knocked against.



The removable drive sleeve which splined with the output shaft is convenient to install. The drive sleeve can be flexibly machined to match the valve stem.



As the smallest unit of 810 series, the 8100 product with a compact shape can match the small diameter valve. In addition, the 8100 unit without torque switch is designed with a spacesaving hand/auto switching mechanism.

Configuration and function

Standard

Ordinary products comply with GB/T24923 《Technical specifications of basic version electric valve actuators》 .
Explosion-proof products comply with GB/T24922 《Technical specifications of explosion-proof version electric valve actuators》 .

Ambient temperature

	Basic and integrated type	Explosion-proof type
Standard	-20~+70 °C	-20~+40 °C
Low temperature	-40~+60 °C	-40~+40 °C

Degree of protection

Standard IP65 (GB4208) : Protection from dust and sprinkling.
Options IP67 (GB4208) : Protection from dust and submersion in water to a depth of 1m for 30 minutes.
IP68 (GB4208) : Protection from dust and submersion in water to a depth of 3m for 48 hrs.

Ex degree

The Ex degree of explosion-proof products is Ex d IIB T4 Gb (GB3836.1, GB3836.2)

Lubrication

Molybdenum disulphide lithium grease is used in the products. And it is not need to refresh the lubricating grease periodically.

Coating

The epoxy powder electrostatic spraying surface has excellent corrosion resistance.

Power supply

Standard 220VAC/50Hz/1ph power supply. The product can work normally in the condition of ±10% voltage vibration or ±5% frequency vibration.
Options Three phase four wire system 380V/50Hz AC power supply. 24VDC power supply.

Cable gland

	8100	8101,8102,8103	8100B,8101B,8102B,8103B	8100CP,8101CP,8102CP,8103CP
Standard	2x M16x1.5	2x G 3/4"	2x M25x1.5	2x G 3/4"
Options	2x 3/8" NPT	2x 3/4" NPT	2x 3/4" NPT	2x 3/4" NPT

Motor

810 series adopt special motor for valve with high torque low inertia. For the stator is exposed, the motor has good heat dissipation. Duty of motor as follows:

- S2-10 : The continuous running time of the motor is less than 10 minutes , and it will not start again until the motor surface cooled to ambient temperature. This kind of motor is used for operating the valve full open or full close.
- S4-25 % : The proportion of each working time and working cycle (the interval between two starts) is not more than 25%. This kind of motor is the standard configuration for the modulating type.

Travel range

Standard	90°± 5°
Options	180°± 5°; 270°± 5°

Limit switch

The mechanical limit switch ensures the cam and the drive sleeve coaxially and synchronously. 810 series supplied two switches of 250VAC 16A in open/close direction respectively.

Torque switch

810 series adopted mechanical torque switch and supplied two switches of 250VAC 16A in open/close direction respectively. It has not torque switch in 8100 product.

Manual operation

Equipped with automatic reset hand/auto switch and some manual operation parts, ensure safe operation. Among them:

8100 product is designed with a hidden hole to be used for manual operation with a spanner supplied with the product. Insert the spanner into the hole to manual operation and drawing out the spanner will automatic reset the power operation.
8101~8103 series are equipped with a handwheel and an auto/hand switch lever, turn the lever will drive the clutch out of the electric position and the manual operation can be carried. Energization of the motor will automatically re-engage power operation.

Position indication

The tridimensional mechanical position indicator keeps in step with the drive sleeve.

Mechanical stops

One adjustable mechanical stop bolt in open/close direction respectively is supplied.



Main parameters

Performance parameters

Base No.	Output torque	Maximum torque ¹	Running time ²	Max-dia. Of stem	Motor power (W)		Rated current of motor (A)		Handwheel turns
	Nm	Nm	S/90°		1 Phase220V	3 phase380V	1 Phase220V	3 phase380V	
8100	25	30	5.5	Φ22	25	20	0.5	0.2	14
	45	50	11						
	80	90	21						
8101	70	75	5.5	Φ22	60	30	0.7	0.3	15
	110	130	11						
	150	200	22						
8102	120	150	7	Φ35	90	60	1.0	0.4	16
	200	250	14						
	300	400	28						
8103	200	250	7.5	Φ42	150	90	1.8	0.8	14
	400	450	15						
	600	800	28						

Note:
1.For modulating type, the maximum output torque is 80% of the value in the table.
2.Output speed is the running speed of the drive sleeve when the supply frequency is 50Hz. Please contact us for special speed.

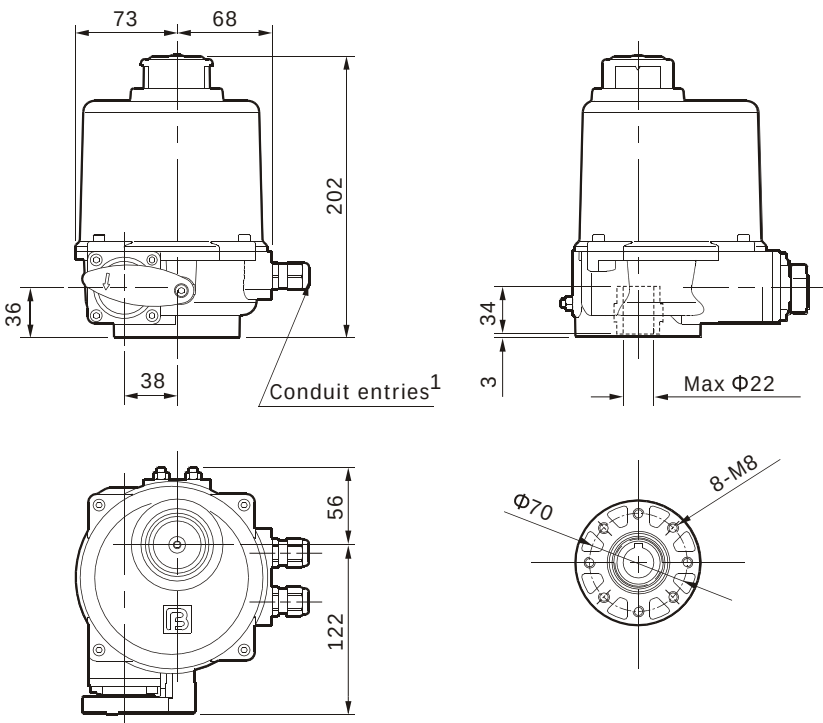
Reference weight

Model	Weight (kg)	Model	Weight (kg)	Model	Weight (kg)	Model	Weight (kg)
8100	5	8101	10	8102	13	8103	19
8100B	6	8101B	12	8102B	15	8103B	22
8100CP	7	8101CP	12	8102CP	15	8103CP	21



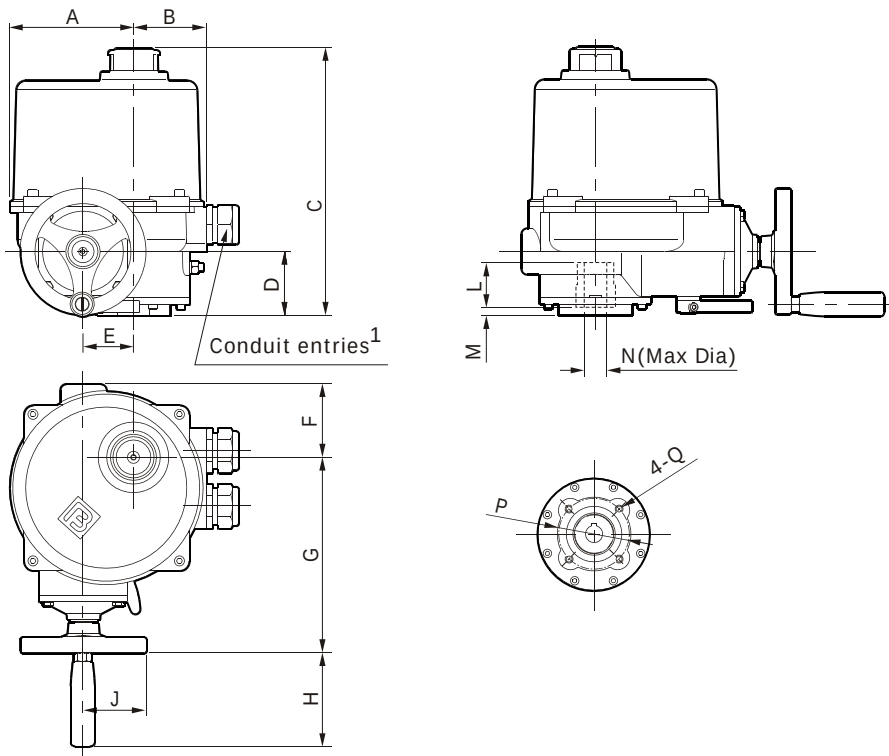
Overall dimension

8100



Note 1: See page 04 “Cable gland”

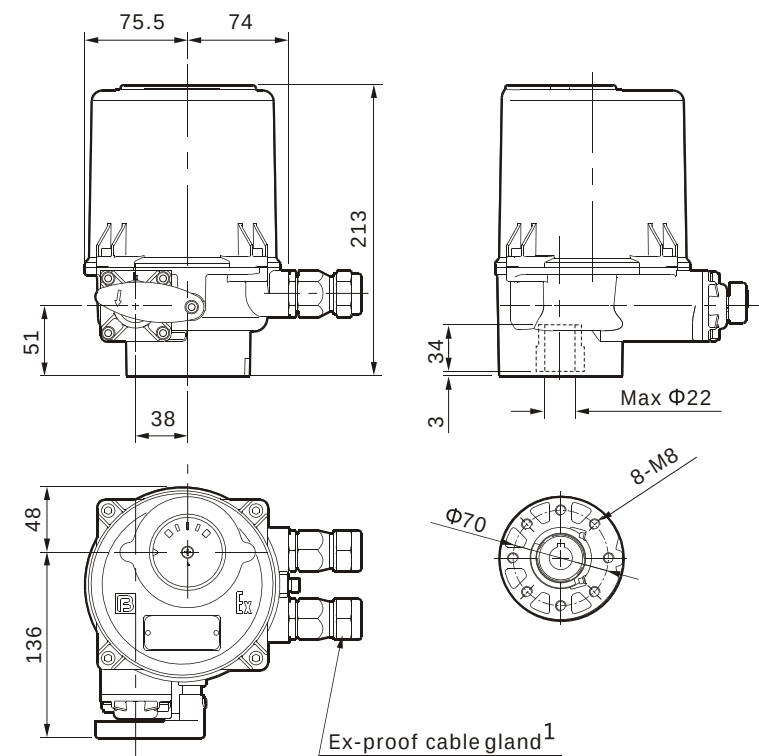
8101,8102,8103



	8101		8102		8103	
A	123		127		146	
B	72		85		92	
C	265		281		328	
D	63		74		83	
E	50		62		76	
F	73		85		88	
G	194		205		244	
H	92		92		92	
J	62.5		62.5		110	
L	44		45		55	
M	8		3		3	
N	22		35		42	
	F07d	F10g	F07d	F10b	F10g	F12a
P	Φ70	Φ102	Φ70	Φ102	Φ102	Φ125
Q	M8	M10	M8	M10	M10	M12

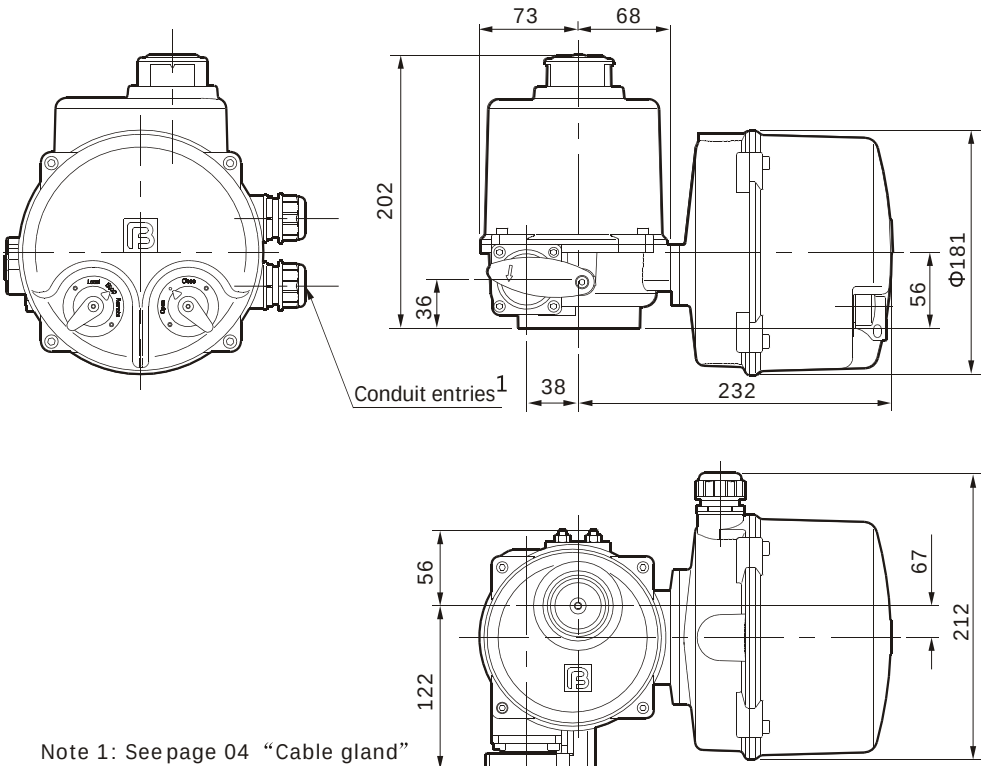
Note 1: See page 04 “Cable gland”

8100B



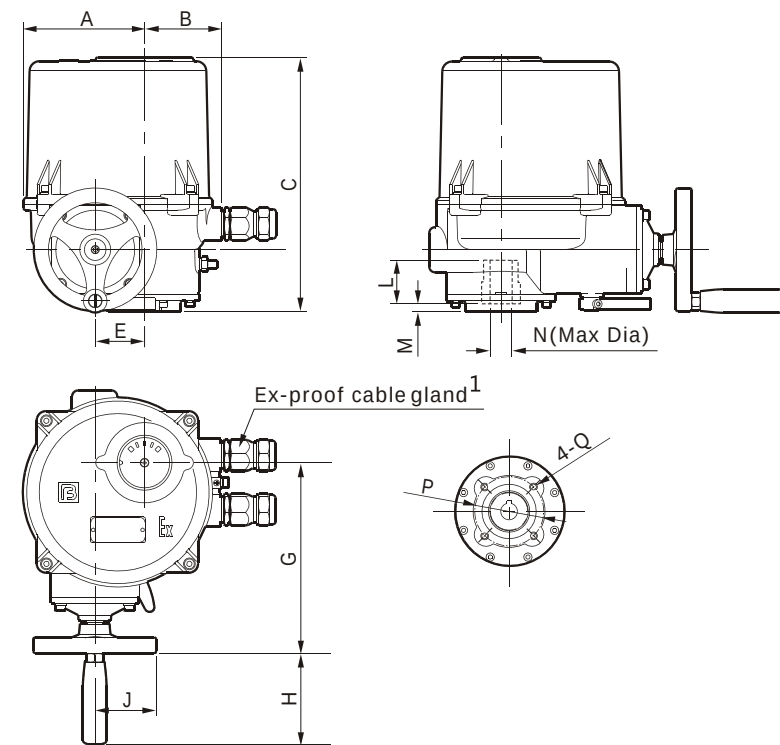
Note 1: See page 04 “Cable gland”

8100CP



Note 1: See page 04 “Cable gland”

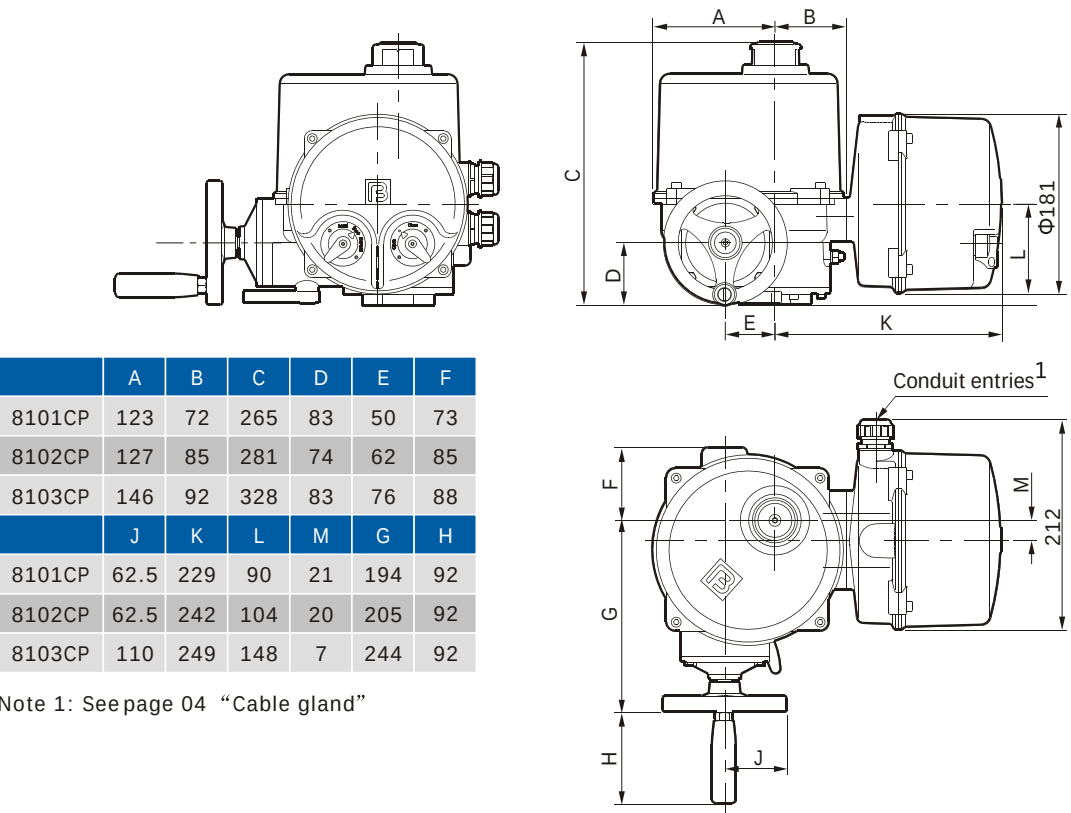
8101B,8102B,8103B



	8101B	8102B	8103B
A	123	127	146
B	78	94	94
C	259	274	319
D	63	74	83
E	50	62	76
F	73	92	102
G	194	205	244
H	92	92	92
J	62.5	62.5	110
L	44	45	55
M	8	3	3
N	Φ22	Φ35	Φ42
	F07d F10g	F07d F10b	F10g F12a
P	Φ70	Φ102	Φ70 Φ102 Φ102 Φ125
Q	M8	M10	M8 M10 M10 M12

Note 1: See page 04 “Cable gland”

8101CP,8102CP,8103CP



	A	B	C	D	E	F
8101CP	123	72	265	83	50	73
8102CP	127	85	281	74	62	85
8103CP	146	92	328	83	76	88
	J	K	L	M	G	H
8101CP	62.5	229	90	21	194	92
8102CP	62.5	242	104	20	205	92
8103CP	110	249	148	7	244	92

Note 1: See page 04 “Cable gland”

Wiring diagram

Electrical wiring is closely related to the function of products.
810 series are designed with rich wiring diagram. You can visit our website or contact us for them.
This book describes some typical wiring principle (The actual wiring is subject to the wiring diagrams provided with the products).

Introduction

- 1. The internal wiring is showed on the right side of the dashedline or inside the dashed line.
- 2. Limit switches in the diagram show that the valve is in the intermediate position. Torque switches show that the valve is not over torque.

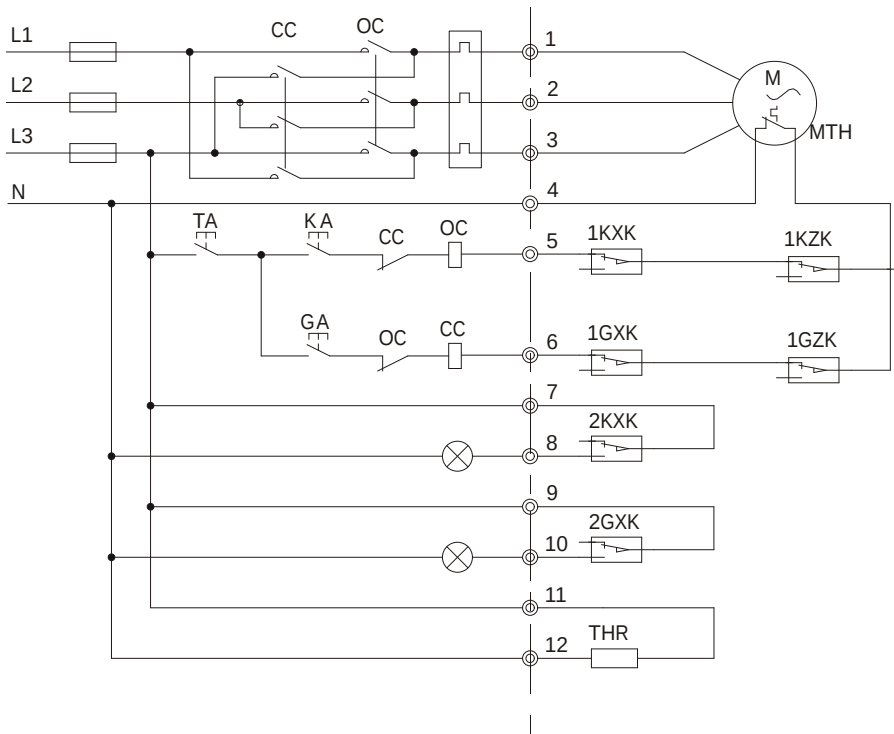
Symbol description

KXK	Open limit switch
GXK	Close limit switch
KZK	Open torque switch
GZK	Close torque switch
M	Motor
MTH	Temperature protection switch in motor winding
THR	Space heater
U	Potentiometer

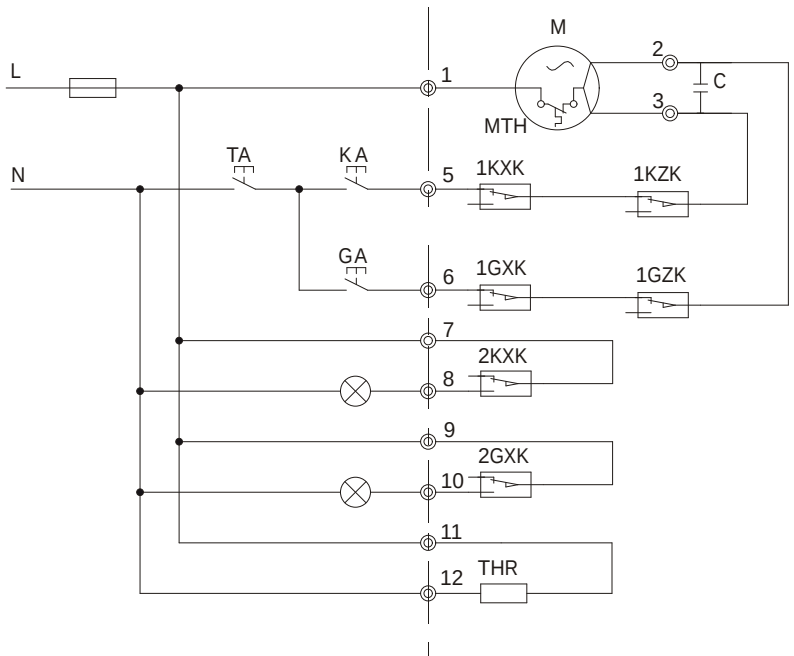
Limit switch contact development

Limit switch	Valve position	
	Full close	Full open
1KXK	ON	OFF
2KXK	OFF	ON
1GXK	OFF	ON
2GXK	ON	OFF
— ON - - - OFF		

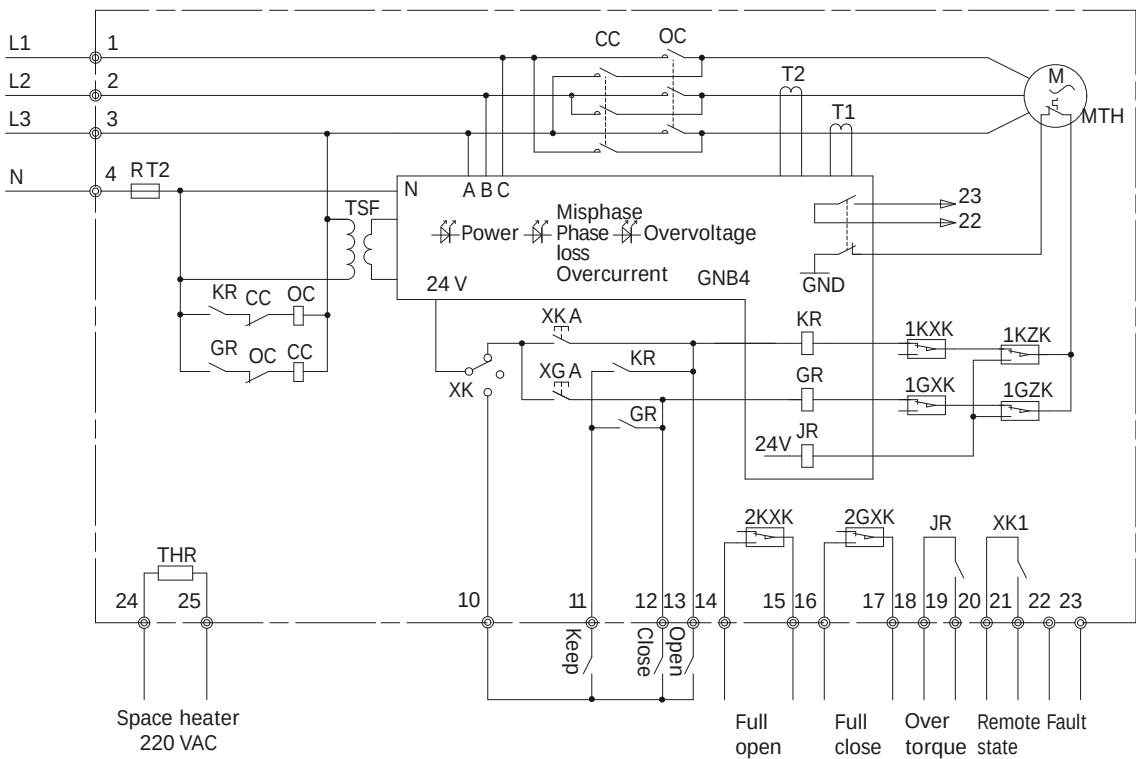
Basic type (Three-phase AC power supply)



Basic type (Single-phase AC power supply)



Integrated (open-close) type



Integrated (modulating) type

