Manufacturer focused on
Integrated Solution Engineered Valve for Over 40 Years.

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INTELLIGENT ELECTRIC ACTUATOR

Manufacturer focused on Integrated Solution Engineered Valve for Over 40 Years.

SUNGO from design to production stages and unwavering emphasis on all aspects of quality.

From the site survey, design specifications tailored to the selection, installation and commissioning is detected from the manufacturing, from sales to after–sales service, our reputation first First, the quality first.

SUNGO products for including pneumatic, hydraulic actuators and plating and a variety of gear boxes and valve accessories.

SUNGO the There actuator products with market–leading performance, all digital control systems with other combination. This manual provides SUNGO actuators and related products, applications Features include SP series actuators perform multi–turn Device and the SQ part–turn actuators.

SP Series Multi–turn actuator is an intelligent non–invasive products. The introduction of a new range of product features. Peripheral red Set replaces the traditional mechanical set up, advanced control and monitoring functions, torque measurement technology, and product user interface Hand, the ergonomic and anti–corrosion performance of the world's leading technology.

SUNGO VALVES GROUP CO. LTD

SP Series Actuator

The SP series includes a variety of actuator products for all multi–turn valves where control and indicating flexibility are required.

▲ Easy Debugging

Simple,safe and fast non–invasive regulation of the SP can be performed by using an infrared remote controller.
The remote controller XBURS provided can be set non–intrusively for actuators
in any environment.

▲ Fault Diagnosis

The LCD displays text of valve position and actuator status etc. in real time. Using the SP remote controller, the torque of the relevant position and the status of the actuator can be accessed during commissioning and monitoring.

▲ SP Actuator Performance

Three–phase and single–phase power supply
Simple,easy to control and indication function
Status display
Torque and position control

▲ SP

The SP Actuator is a multi–turn electric actuator that allows 600 times of regulation per hour controlling the valve. SP is available in waterproof and explosion–proof specification for optional.
If directly connect to valve, the torque output range is 42 NM (25 IBF FT) to 3,000 NM (2,200 IBF FT).

▲ SPM

Solid–state relays are used instead of alternating current contactors.
SPM startup times up to 1200 times per hour, with motor added "brakes" Function, improved accuracy of positioning control .

▲ SPML

Combining the advantages of SP and SPM actuators, SPML has a linear output unit with an output modulating thrust up to 71.64 kN.

SQ Series Actuator

The SQ Part-turn actuator maintains an easy design for SP debugging and troubleshooting. At the same time, the function of drive quarter-turn valve directly has been added, also with access to real-time diagnostic information.

▲SQ Feature

Direct drive quarter-turn valve and other partial rotary equipment.
Three-phase and single-phase power supply
Multi-text display screen
Simple,easy to control and indication function
Simple torque and position control

▲SQ

The SQ Actuator is a part-turn electric actuator. It can achieve 600 times per hour regulations when controlling the valve. SQ is available in waterproof and explosion-proof specification for optional. Torque output range from 60Nm (44 lbf ft) to 1500Nm (1100 lbf ft)

▲SQM

SQM is a modulating version of the SQ and uses solid state relays. The SQM series electric actuators are suitable for applications with 1200 times startups per hour.

Setting Tool and Control System

▲Control System

The SP control system has unique control and indication functions. The user's interface is simple and easy to understand, providing full support for reliable and accurate control of the valve.
This product is equipped with a new non-invasive infrared remote controller, which is convenient for the installation and commissioning of the actuator and the modification of settings.

▲System Control Feature

Large clear display screen.
Valve torque signal records
Display the Status and monitoring diagnosis

▲Remote Controller Feature

Non-invasive infrared communication
Multiple configuration functions

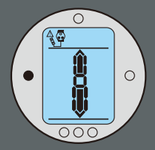
▲Display Function

The display screen adopt LED as the lighting power which enable the customer to read the valve position (the status of valves and actuators,operation torque and alarm)information in different lights under the normal working temperature. Resetting the actuator can be achieved by controller in the setting model. Green and red light indicate the position of valve through the light-emitting diode on the screen. 180 degree rotary assembled screen for different direction of valve assembling.

▲Display

SP display the valve position normally even when the actuator power is turned off. The power supply also supports data recording and debugging when power off.

valve alarm



control alarm

▲Setting

By using the attached SP remote controller for setting, regulating and checking, users can easily enter the configuration mode of the actuator through the LCD screen.

▲Control System

For applications required high completeness, standard SP control systems can be configured to achieve conditional control. For ESD applications, dedicated ESD input can be adopted. It takes precedence over local or remote control signals. Thus, any current or applied control signals will be ignored when applying this signal.

Advanced Engineering Design

1 SP Motor and Transmission System

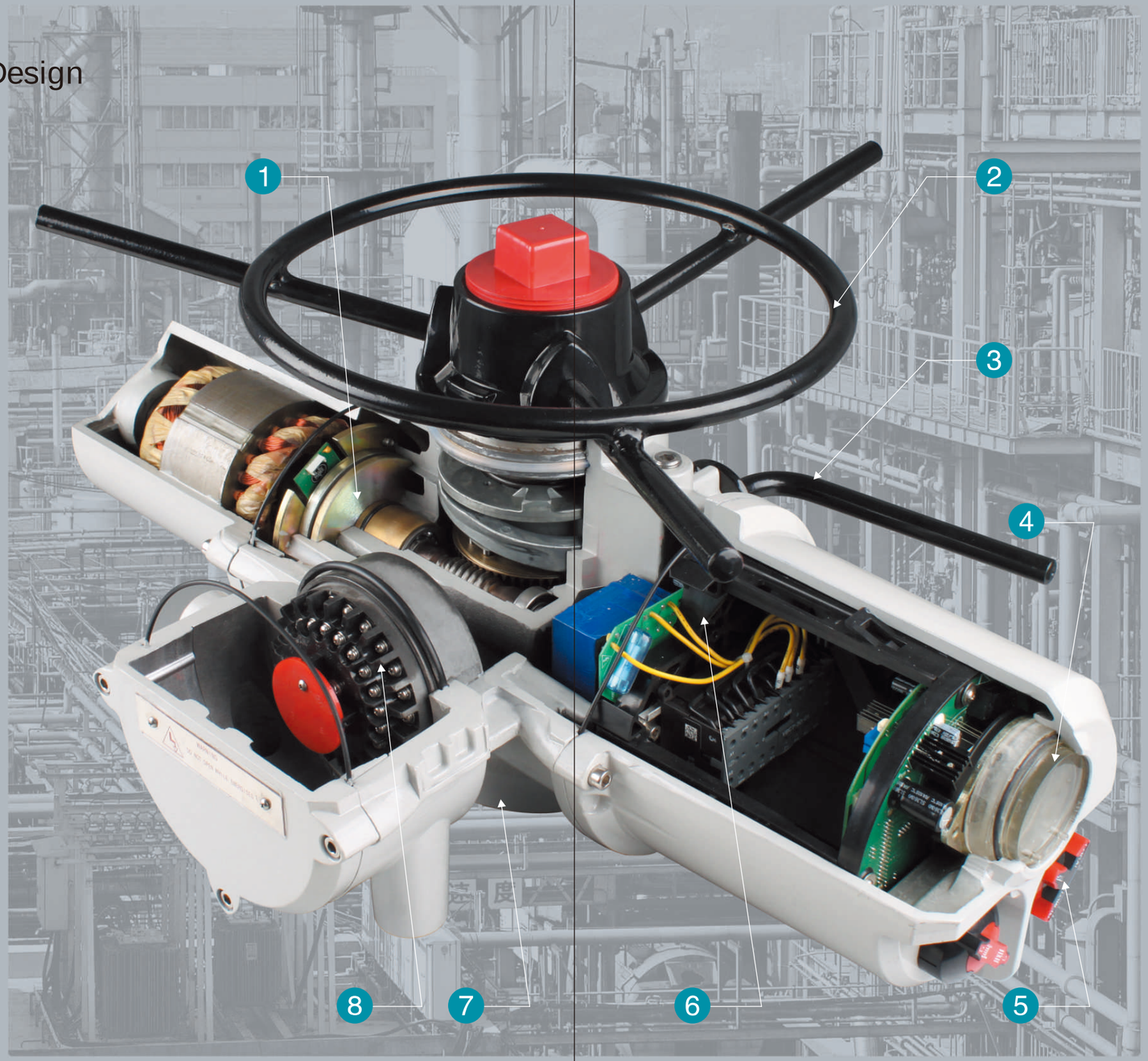
The motor shaft and worm are independent of each other to facilitate quick motor replacement. The low inertia, high torque motor allows the motor to quickly reach the peak torque after starting, and there is almost no exceeding inertia motion after power outage. A precise temperature sensor is installed in the stator coil to protect the motor from burnout.
A "hammering" device is designed in the transmission system to help drive the valves which are closed too tight or have not been used for a long time. SP worm drives the worm wheel in the pressure resistant worm wheel lubricant, which ensures the high efficiency, stability and reliability of transmission.

2 Manual Operation

Switch the "MANUAL/ELECTRIC SWITCH HANDLE" to "MANUAL" to drive the handwheel directly. This operation can provide reliable emergency manual operation in case of power failure. In order to operate the valves that have not been used for a long time, the "hammering" effect has been designed for the empty stroke for the handwheel .

3 Manual/Electric Switch Handle

Safe and simple operation can be ensured even when the motor is running (unless padlock is used in the "manual" or "electric" position). Normally in the free state, electric operation is always in priority.



4 Non-invasive Setting

All actuator settings and diagnostics are performed by remote controllers, by using infrared light through a sealed display window, without having to open the cover and expose internal control components.

5 Local control

Mode selection knob and local operation knob are designed to avoid the connection between the actuator and the external environment by using magnetic control of the internal Hall device.

6 Position Control

The 18-bit magnetism absolute encoder can accurately measure and control the stroke of the actuator.

7 Output Flange

SP series output flanges comply with ISO 5210 and JB 2920 standards. The drive sleeve can be removed for supporting processing to connect with the valve.

8 Double Sealing Structure of Connecting Cavity

Even in case that the wiring cavity is opened for a long time for field wiring, the secondary sealing between the terminal disc and the shell prevents the invasion of dust and humid gas to the actuator.

Advanced Engineering Design

1 Position Indicator

Real-time indication of valve opening.

2 Manual Operation

Press the ""Manual/Electric Switch Handle" "Manual" to drive the handwheel directly. This operation can provide reliable emergency manual operation in case of power failure. In order to operate the valves that have not been used for a long time, the handwheel has been designed the "hammering" effect for the empty stroke.

3 Manual/Electric Switch Handle

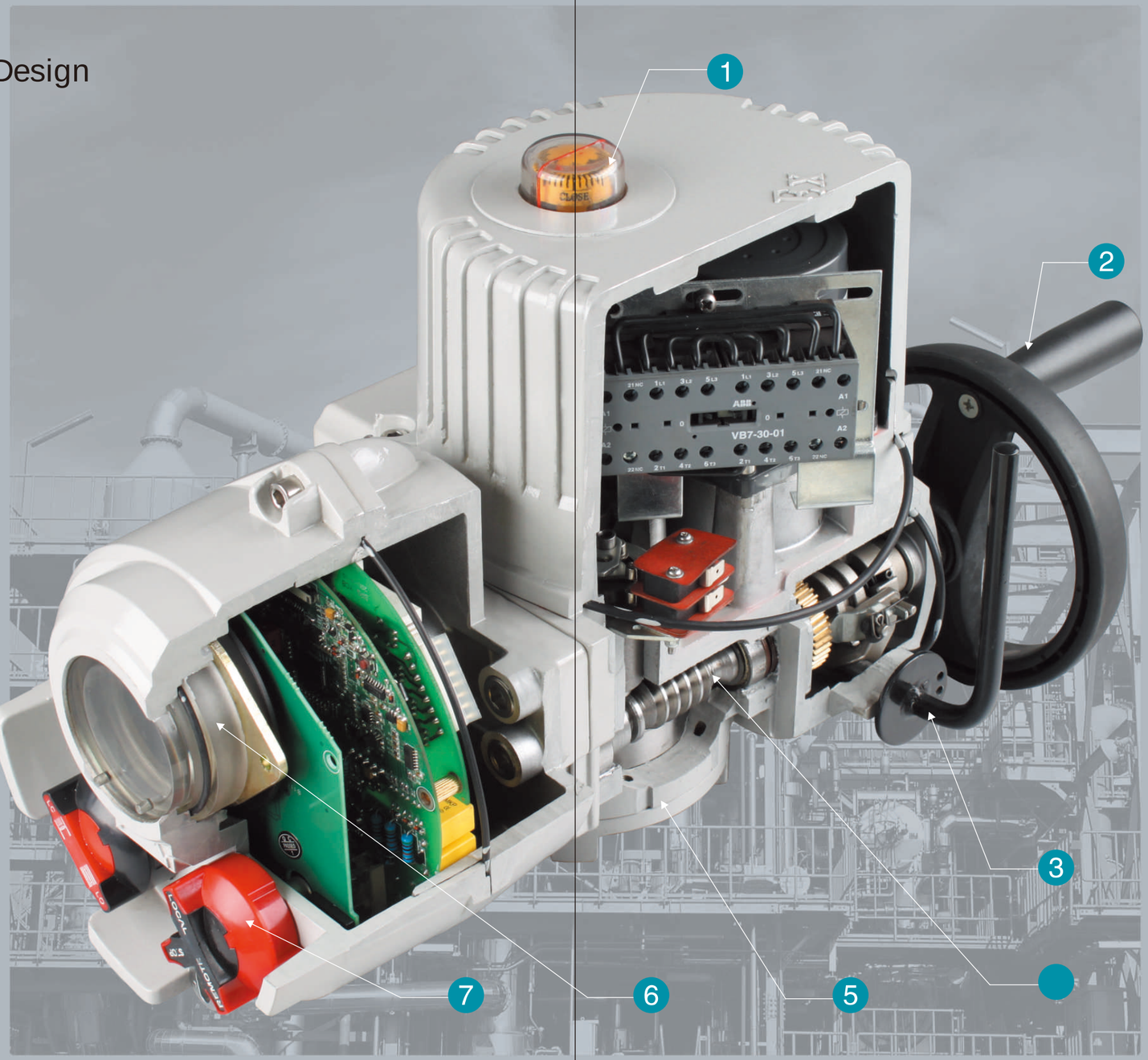
Safe and simple operation can be ensured even when the motor is running (unless padlock is used in the "manual" or "electric" position). Normally "electric" mode is always in priority.

4 SQ Transmission System

The motor shaft and worm are independent of each other to facilitate quick motor replacement. The low inertia, high torque motor enables the motor to quickly reach the peak torque after starting, and there is almost no exceeding inertia motion after power outage. A precise temperature sensor is installed in the stator coil to protect the motor from burnout.

A "hammering" device is designed in the transmission system to help to drive the valves which are closed too tight or have not been used for a long time.

The SQ worm drives the gears in extremely pressured lithium-based grease to ensure efficient, stable and reliable transmission.



5 Output Flange

SQ series output flanges are ISO 5211 standard. The drive sleeve can be removed for processing to connect with the valve.

6 Non-Invasive Setting

All actuator settings and diagnostics are performed by using remote controllerJ using infrared light through a sealed display window, without having to open the cover and expose internal control components.

7 Local Control

Mode selection knob and local operation knob are designed to avoid the connection between the actuator and the external environment by using magnetic control of the internal Hall device.

Features

▲ Automatic Phase Sequence Adjustment

The actuator can automatically detect the access phase sequence of the three–phase power supply, and through logical calculation, determine which AC contactor is excited during the operation of the actuator to ensure that the correct phase sequence is connected to the motor. It can prevents valve damage due to incorrect power wiring.

▲ Phase Loss Protection

The actuator has a perfect power supply phase loss protection function. Always detect the phase loss of the power supply when the motor is stationary or running, to avoid the motor working in phase loss or even overheating and burning. And show the power phase drop information on the display.

▲ Motor Protection When Valve Stuck

The torque protection function would be temporarily disabled within 5~10 seconds of the excitation motor signal. The actuator will provide a 1.2 times torque of the rated value to the "stuck" valve, achieving release of the valve. If there is no action of the actuator within 5~10 seconds in above mentioned situation, the control circuit will cut off the power supply of the motor, to avoid valve damage or motor burnout.

▲ Overheating Protection

A thermal relay installed inside the stator winding of the motor detects motor overheating. If the motor overheats, the control circuit will disconnect the motor power.

▲ Double Seal & Double Protection

SP, SQ series explosion–proof actuator has a protection rating of IP68, which is completely waterproof and dustproof. Even if the wiring cavity is opened for a long time for field wiring, the device inside can still be sealed and protected due to the secondary seal.

▲ Non–Invasive Setting & Absolute Sealing

The setting and commissioning of the actuator is done by infrared remote control setter and magnetic knob. There is no need to disassemble the actuator, which is completely sealed from the external environment.

▲ Torque Measurement

Actuators reliably and precisely determine the torque of operating a valve. By setting the protective torque, valves and actuators can be safely protected. Accurate and repeatable torque measurements are obtained regardless of frequency, voltage and temperature variations.

▲ Valve Position Measurement

The actuator refines and encodes the full stroke of the valve through the encoder. Each position of the actuator output drive sleeve corresponds to a code point of the valve, which can accurately display the current valve position on the display screen in real time.

Features

▲ Customized Design

SQ series actuators provide the torque required for direct operation of small and medium–sized quarter–turn valves, and the torque size is 60NM~1500NM.
SP actuators can be connected to a quarter–turn worm gear box to operate a quarter–turn valve, which can achieve different torque and time requirements.

▲ High And Extreme Cold Temperatures

It can be operated normally in environments up to 70℃. Standard SP actuators can work in water for up to 30 minutes by using an additional chamber covered with an expansion coating, according to customer-specified requirements. It can also be improved to work properly at temperatures as low as -60 ℃.

▲ Install Away From Valves

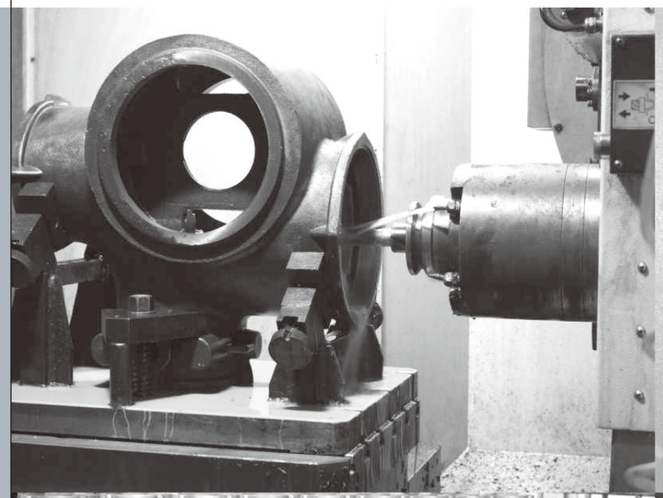
Floor brackets with upward or downward stub shafts are connected to distant valves via user–supplied connecting rods and universal joints. The SPML actuator is fitted with a linear drive assembly that outputs branch stroke motion.

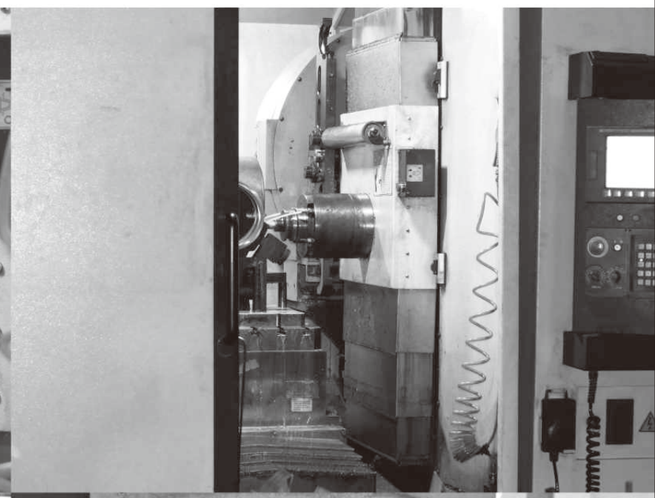
▲ Drive of Air Damper

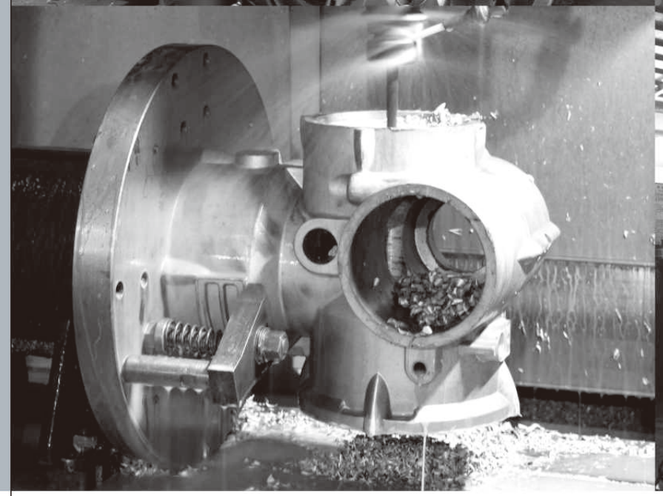
The SQ actuator is connected directly to the damper shaft or via rocker arm to drive single–vane or multi–vane dampers.
The combination of SP and quarter–turn worm gearbox can also realize above functions.

▲ Extension Stem

The stem must be extended for rising stem valves which used in high temperature media.





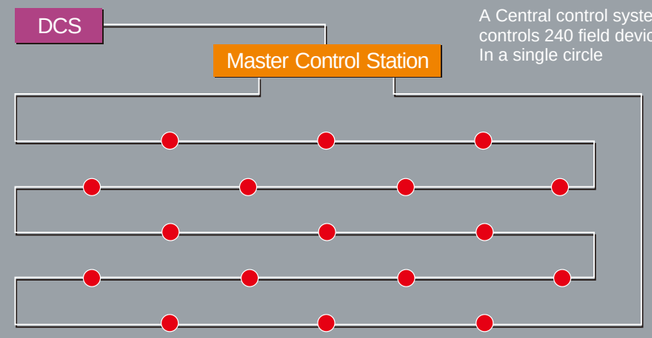


FieldBus Control System

Fieldbus technology is a new technology based on instrumentation, metering,computer technology and network technology in the field of control system and automation. The fieldbus archives the network interconnection system among the field instruments, interconnection between the field instrument and the controller, and realizes the digital, bi-direction and multi-point digital communication. All Sungo actuators are available with appropriate optional cards. Therefore, it can be compatible with various communication and process control bus systems. Through the bus actuator report the status to the whole plant control system, feedback information, and issue valve control command. Our actuators are compatible with Modbus,Profibus,Hart.

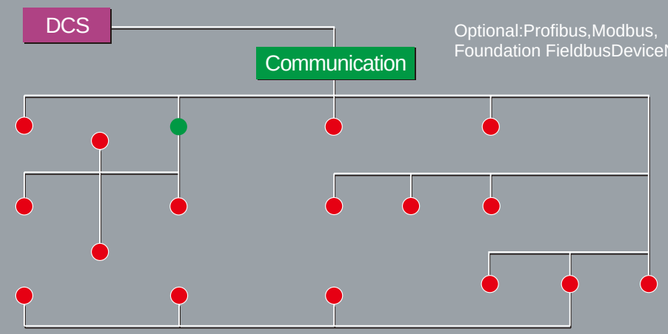
PROFIBUS Modbus®

PAKSCAN



Dual - line (single - pair) null - error redundancy system

FIELDBUS



Dual (single pair) high-speed links require repeaters after 32 devices.

SP Technical Parameters

Performance data

▲ Output speed

Model	Voltage/ Frequency	Output speed rpm	18	24	36	48	72	96
SP10	380V/50HZ	Rated torque N.m		100	81	75	51	42
		Motor power KW		0.35	0.35	0.35	0.35	0.35
		Locked-rotor current A		2.1	2.1	2.1	2.1	2.1
		Rated current A		1.2	1.2	1.2	1.2	1.2
	220V/50HZ	Rated torque N.m	90	90	90	70	70	
		Motor power KW	0.23	0.23	0.28	0.28	0.32	
		Locked-rotor current A	11.6	13	14.1	14.1	16.5	
		Rated current A	2.8	3.2	3.4	3.4	3.6	
SP20	380V/50HZ	Rated torque N.m	200	200	180	160	135	124
		Motor power KW	0.6	0.6	0.6	0.6	0.6	0.6
		Locked-rotor current A	12	12	12	12	12	12
		Rated current A	1.8	1.8	1.8	1.8	1.8	1.8
SP25	380V/50HZ	Rated torque N.m	400	400	360	298	244	230
		Motor power KW	0.81	0.81	0.81	0.81	0.81	0.81
		Locked-rotor current A	15	15	15	15	15	15
		Rated current A	2.5	2.5	2.5	2.5	2.5	2.5
	220V/50HZ	Rated torque N.m	150	142	125	100	60	
		Motor power KW	0.35	0.37	0.37	0.37	0.37	
		Locked-rotor current A	17.2	18.1	18.1	18.1	18.1	
		Rated current A	3.75	3.9	3.9	3.9	3.9	
SP35	380V/50HZ	Rated torque N.m	600	600	542	474	474	366
		Motor power KW	2	2	2	2	2	2
		Locked-rotor current A	31	31	31	31	31	31
		Rated current A	5	5	5	5	5	5
	220V/50HZ	Rated torque N.m	350	300	230	200	147	
		Motor power KW	0.9	0.8	0.75	0.75	0.8	
		Locked-rotor current A	36	36	32	36	36	
		Rated current A	7.8	7.8	7	7.8	7.8	
SP40	380V/50HZ	Rated torque N.m	1020	1020	845	680	680	542
		Motor power KW	3	3	3	3	3	3
		Locked-rotor current A	41	41	41	41	41	41
		Rated current A	7	7	7	7	7	7
SP70	380V/50HZ	Rated torque N.m	1500	1500	1290	1020	1020	745
		Motor power KW	6	6	6	6	6	6
		Locked-rotor current A	83	83	83	83	83	83
		Rated current A	14	14	14	14	14	14
SP90	380V/50HZ	Rated torque N.m	2000	2000	1700	1355	1355	1020
		Motor power KW	6	6	6	6	6	6
		Locked-rotor current A	83	83	83	83	83	83
		Rated current A	14	14	14	14	14	14
SP95	380V/50HZ	Rated torque N.m		3000				
		Motor power KW		6				
		Locked-rotor current A		83				
		Rated current A		14				

*Due to the inertia effect and the abrasion of the drive sleeve, it is recommended that the operating speed should not be too fast when directly installed on the gate valve.

**Rated torque sets in both directions. The maximum torque is 1.2 to 1.8 times which depends on valve speed and voltage.

SPM/SPML Technical Parameters

Performance data

▲ Output speed

Model	Voltage Frequency	Output speed rpm	18	24	36	48	72	96
SPM10 SPML10	380V/50HZ	Rated torque N.m		100	81	75	51	42
		Continuous Modulating torque N.m		60	49	45	31	25
		Motor power KW		0.35	0.35	0.35	0.35	0.35
		Locked-rotor current A		2.1	2.1	2.1	2.1	2.1
		Rated current A		1.2	1.2	1.2	1.2	1.2
	220V/50HZ	Rated torque N.m	90	90	90	70	70	
		Continuous Modulating torque N.m	54	54	54	42	42	
		Motor power KW	0.23	0.23	0.28	0.28	0.32	
		Locked-rotor current A	11.6	13	14.1	14.1	16.5	
		Rated current A	2.8	3.2	3.4	3.4	3.6	
SPM20 SPML20	380V/50HZ	Rated torque N.m	200	200	180	160	135	124
		Continuous Modulating torque N.m	120	120	108	96	81	74
		Motor power KW	0.6	0.6	0.6	0.6	0.6	0.6
		Locked-rotor current A	12	12	12	12	12	12
		Rated current A	1.8	1.8	1.8	1.8	1.8	1.8
SPM25 SPML25	380V/50HZ	Rated torque N.m	400	400	360	298	244	230
		Continuous Modulating torque N.m	240	240	216	179	146	138
		Motor power KW	0.81	0.81	0.81	0.81	0.81	0.81
		Locked-rotor current A	15	15	15	15	15	15
		Rated current A	2.5	2.5	2.5	2.5	2.5	2.5
	220V/50HZ	Rated torque N.m	150	142	125	100	60	
		Continuous Modulating torque N.m	90	85	75	60	36	
		Motor power KW	0.35	0.37	0.37	0.37	0.37	
		Locked-rotor current A	17.2	18.1	18.1	18.1	18.1	
		Rated current A	3.75	3.9	3.9	3.9	3.9	
SPM35	380V/50HZ	Rated torque N.m	600	600	542	474	474	366
		Continuous Modulating torque N.m	360	360	325	284	284	220
		Motor power KW	2	2	2	2	2	2
		Locked-rotor current A	31	31	31	31	31	31
		Rated current A	5	5	5	5	5	5
	220V/50HZ	Rated torque N.m	350	300	230	200	147	
		Continuous Modulating torque N.m	210	180	138	120	88	
		Motor power KW	0.9	0.8	0.75	0.75	0.8	
		Locked-rotor current A	36	36	32	36	36	
		Rated current A	7.8	7.8	7	7.8	7.8	
SPM40	380V/50HZ	Rated torque N.m	1020	1020	845	680	680	542
		Motor power KW	3	3	3	3	3	3
		Locked-rotor current A	41	41	41	41	41	41
		Rated current A	7	7	7	7	7	7
SPM70	380V/50HZ	Rated torque N.m	1500	1500	1290	1020	1020	745
		Motor power KW	6	6	6	6	6	6
		Locked-rotor current A	83	83	83	83	83	83
		Rated current A	14	14	14	14	14	14
SPM90	380V/50HZ	Rated torque N.m	2000	2000	1700	1355	1355	1020
		Motor power KW	6	6	6	6	6	6
		Locked-rotor current A	83	83	83	83	83	83
		Rated current A	14	14	14	14	14	14
SPM95	380V/50HZ	Rated torque N.m		3000				
		Motor power KW		6				
		Locked-rotor current A		83				
		Rated current A		14				

SP SPM Technical Parameters

Mechanical data

Model SP/SPM		10	20 25	35	40	70	90	95

▲ Type A drive sleeve(Thrust type)

Flange	ISO 5210	F10	F14	F16	F25	F25/F30	F25/F30	F25/F30
	MSS SP-102	FA10	FA14	FA16	FA25	FA25/FA30	FA25/FA30	FA25/FA30
Rated thrust	KN	44	100	150	220	220	334	445
	lbf	10,000	22,480	33,750	50,000	50,000	75,000	100,000
Acceptable stem diameter	mm	32	38	54	64	70	70	70
	ins	1¼	2½	2⅛	2½	2¾	2¾	2¾

▲ Type Z drive sleeve

Seat NO.	JB2920	2	3	4	4/5	7	7	7

▲ Type B drive sleeve

Flange	ISO 5210	F10	F14	F16	F25	F25/F30	F25/F30	F25/F30
	MSS SP-102	FA10	FA14	FA16	FA25	FA25/FA30	FA25/FA30	FA25/FA30
Type B1(Fixed Bore)	mm	42	60	80	100	100/120	100/120	100/120
Type B3(Fixed Bore)	mm	20	30	40	50	50/60	50/60	50/60
Type B4(Maximum)	mm	20	30	40	50	60	60	60
	ins	¾	1¼	1¾	2	2¼	2¼	2¼
Handwheel Ratio		1:1	1:1	1:1	1:1	30:1	30:1	30:1

* When B3 and B4 sleeve is used, flange model of SP90 is F25.
** The weight depends on the additional equipment installed.
+ For SP10 to SP35 actuators, when the driven valve shaft or stem is required to move in the axial direction, the type A drive sleeve must be used. (unless the valve has thrust bearing)
++Use Z3 drive sleeve

SPML Technical Parameters

Mechanical data

Model	Connecting Flange ISO 5210	Thread Dia mm	Voltage Frequency	Output speed rpm	18	24	36	48	72	96
SPML10	F10	25x3-LH	380V/50HZ	Linear speed mm/s		1.2	1.8	2.4	3.6	4.8
				Rated thrust KN		46.73	37.85	35.05	23.83	19.63
				Modulating thrust KN		28.04	22.90	21.03	14.49	11.68
			220V/50HZ	Linear speed mm/s	0.90	1.20	1.80	2.40	3.60	
				Rated thrust KN	42.06	42.06	42.06	32.71	32.71	
				Modulating thrust KN	25.23	25.23	25.23	19.63	19.63	
SPML20	F14	32x7-LH	380V/50HZ	Linear speed mm/s	2.10	2.80	4.20	5.60	8.40	11.20
				Rated thrust KN	59.70	59.70	53.73	47.76	40.30	37.01
				Modulating thrust KN	35.82	35.82	32.24	28.66	24.18	22.09
SPML25	F14	32x7-LH	380V/50HZ	Linear speed mm/s	2.10	2.80	4.20	5.60	8.40	11.20
				Rated thrust KN	119.40	119.40	107.46	88.96	72.84	68.66
				Modulating thrust KN	71.64	71.64	64.48	53.43	43.58	41.19
			220V/50HZ	Linear speed mm/s	2.10	2.80	4.20	5.60	8.40	
				Rated thrust KN	44.78	42.39	37.31	29.85	17.91	
				Modulating thrust KN	26.87	25.37	22.39	17.91	10.75	

* Optional flange, flange size must be specified when ordering.
** The connecting hole of the attached drive sleeve shall be finally processed by the valve manufacturer.

SQ Technical Parameters

Performance data

Data / Model	Rated torque Nm	Output speed rpm	Motor (Grade F) W	Rated current 380V	Rated current 220V	90 ° Stroke time S	90 ° Handwheel rotation	Flange ISO 5210	Max stem Dia.(mm)	Weight Kg
SQ06	60	1	15	0.1	0.53	18	10	F07	22	13
SQ10	100	1	25	0.15	0.6	18	10	F07	22	13
SQ20	200	1	40	0.25	1.1	18	10	F07	28	13
	100	2	40	0.25	1.1	9	10	F07	28	13
SQ30	300	0.5	60	0.4	1.2	24	12.5	F10	38	17
	230	1	60	0.4	1.2	12	12.5	F10	38	17
	200	2	60	0.4	1.2	8	12.5	F10	38	17
SQ40	400	0.5	60	0.4	1.4	24	12.5	F10	38	17
	310	1	60	0.4	1.4	12	12.5	F10	38	17
	300	2	90	0.64	1.7	8	12.5	F10	38	17
SQ50	500	0.5	90	0.64	1.7	24	12.5	F10	38	17
	330	1	90	0.64	1.7	12	12.5	F10	38	17
	300	2	90	0.64	1.7	8	12.5	F10	38	17
SQ60	600	0.5	140	0.78	2	28	14.5	F12 F14*	50	25
	430	1	140	0.78	2	14	14.5	F12 F14*	50	25
	400	2	140	0.78	2	9	14.5	F12 F14*	50	25
SQ80	800	0.5	200	1.35	2.4	28	14.5	F12 F14*	50	25
	530	1	200	1.35	2.4	14	14.5	F12 F14*	50	25
	500	2	200	1.35	2.4	9	14.5	F12 F14*	50	25
SQ90	900	0.2	60	0.4	1.2	72	38.8	F12	60	35
SQ100	1000	0.5	200	1.35	2.4	28	14.5	F12 F14*	50	25
	650	1	200	1.35	2.4	14	14.5	F12 F14*	50	25
SQ120	1200	0.2	60	0.4	1.4	72	38.8	F14	60	35
SQ150	1500	0.2	90	0.64	1.7	72	38.8	F14	60	35

SQM Technical Parameters

Performance data

Data / Model	Rated torque Nm	Modulating torque Nm	Output speed rpm	Motor (grade F) W	Rated current 380V	Rated current 220V	90 ° Stroke time S	90 ° Handwheel rotation	Flange ISO 5210	Max stem Dia.(mm)	Weight Kg
SQM06	60	40	1	15	0.1	0.53	18	10	F07	22	13
SQM10	100	65	1	25	0.15	0.6	18	10	F07	22	13
SQM20	200	130	1	40	0.25	1.1	18	10	F07	28	13
	100	65	2	40	0.25	1.1	9	10	F07	28	13
SQM30	300	195	0.5	60	0.4	1.2	24	12.5	F10	38	17
	230	145	1	60	0.4	1.2	12	12.5	F10	38	17
	200	130	2	60	0.4	1.2	8	12.5	F10	38	17
SQM40	400	260	0.5	60	0.4	1.4	24	12.5	F10	38	17
	310	200	1	60	0.4	1.4	12	12.5	F10	38	17
	300	195	2	90	0.64	1.7	8	12.5	F10	38	17
SQM50	500	320	0.5	90	0.64	1.7	24	12.5	F10	38	17
	330	210	1	90	0.64	1.7	12	12.5	F10	38	17
	300	195	2	90	0.64	1.7	8	12.5	F10	38	17
SQM60	600	390	0.5	140	0.78	2	28	14.5	F12 F14*	50	25
	430	275	1	140	0.78	2	14	14.5	F12 F14*	50	25
	400	260	2	140	0.78	2	9	14.5	F12 F14*	50	25
SQM80	800	520	0.5	200	1.35	2.4	28	14.5	F12 F14*	50	25
	530	340	1	200	1.35	2.4	14	14.5	F12 F14*	50	25
	500	325	2	200	1.35	2.4	9	14.5	F12 F14*	50	25
SQM90	900	580	0.2	60	0.4	1.2	72	38.8	F12	60	35
SQM100	1000	650	0.5	200	1.35	2.4	28	14.5	F12 F14*	50	25
	650	420	1	200	1.35	2.4	14	14.5	F12 F14*	50	25
SQM120	1200	780	0.2	60	0.4	1.4	72	38.8	F14	60	35
SQM150	1500	970	0.2	90	0.64	1.7	72	38.8	F14	60	35

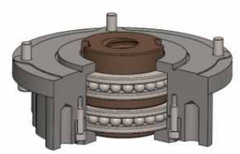
* Optional flange, flange size must be specified when ordering.
** The connecting hole of the attached drive sleeve shall be finally processed by the valve manufacturer.

Drive Connection

Connection of SP/SPM series actuator

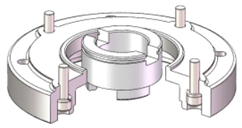
▲ Type A connection

Type A connecting actuator mounting base contains a thrust bearing and a detachable drive sleeve. The thrust bearing is used to withstand the reaction axial thrust generated during valve operation. The drive sleeve is detachable and be able to assembled by the user to match the stem.



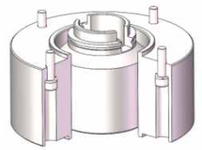
▲ Type Z connection

Type Z connecting drive sleeve adopts JB2920 standard design. There is no thrust–type bearing in seat. Therefore, the actuator is suitable for applications that only torque is needed but without thrust needs.



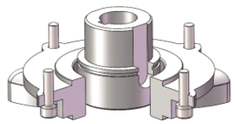
▲ Type B1 connection

Type B1 connecting drive sleeve adopts ISO5210 standard Type B1 inner hole design, and the corresponding axle hole keyway size adopts GB/T 1095, which is used for the applications that only torque is needed but without thrust needs.



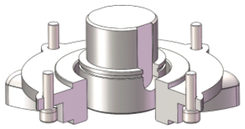
▲ Type B3 connection

Type B3 connecting drive sleeve adopts ISO5210 standard Type B3 inner hole design, and the corresponding axle hole keyway size adopts GB/T 1095. which is used for the applications that only torque is needed but without thrust needs.



▲ Type B4 connection

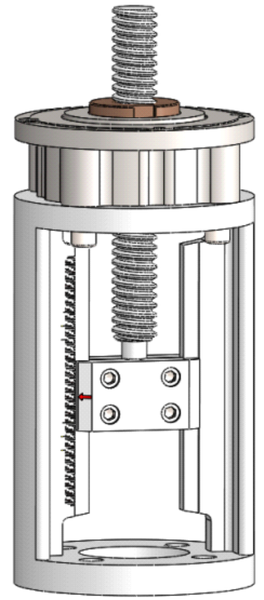
Type B4 connecting drive sleeve is the solid structure of type B3 driving sleeve. Users can process rectangular square key, diagonal square key, flat key, standard axle hole and keyway according to their needs.



Drive Connection

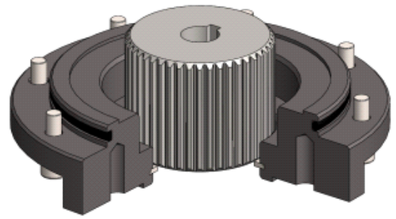
▲ Drive connection of SPML actuator

SPML actuator is a linear output unit added on the basis of type A connection of SPM actuator, which converts rotational motion into linear motion and then realizes linear output.



▲ Connection of SQ/SQM actuator

The connection size of the SQ/SQM actuator is designed according to ISO 5211. The output drive sleeve adopts the detachable spline structure, which is convenient for processing and stock, and the angle can be fine–tuned. The driving form can be standard axis key, rectangular square key, diagonal square key, flat key, etc. Users can flexibly process according to their needs.



Manufacturer focused on
Integrated Solution Engineered Valve for Over 40 Years.

Actuator Introduction

SP and SQ actuators can perform local and remote electrical operation of valves. Their power source is a motor which transmits power through a reduction gear,reversing starter with local control and indication. The electronic control and monitor can intelligently control the output motion. For example, set the rotation turns, rotation angle, output protection torque and thrust etc.. All these devices are installed in a double sealed enclosure with protection of IP68. SUNGO provides hazardous area certified enclosures that meet international and national requirements for users to choose.

The configuration of all torque, thrust and rotation turns, rotation angle and indicating contact can be realized by non–invasive infrared remote controller.

Selection Guide

The Housing enclosure and options should be detailed by customer.
If customer can provide the operating specification information of the project when inquiring, SUNGO can analyze in detail and provide professional selection services for customers' reference. SUNGO will customize the most economical and efficient solution for you according to the information you provide.

Page	Selection	Parameter	Details
28	Circulating Load	On/Off	Startup times/hour
		Modulating	Startup times/hour
17,18 20,21,22	Speed stroke time	rpm	Output cycles per minute
		S	Time required of one stroke
17,18 21,22	On/off torque	N.m	
18,22	Modulating Torque	N.m	
19,20	Thrust	KN	
	Power Supply	Single Phase	
		Three Phase	
11,30	Fault Protection	Intelligent	
		UPS or Battery	
29	Enclosure	Non-hazardous area	Protection Level
		Hazardous area	Protection and explosion-proof grade
29	Local Indication	Position Display	Language(Chinese,English)
		Text Display	
15,16	Remote control	On/Off	Actuator Motor/Control Motor
		Analog	4~20mA or others(specified)
		Fieldbus	Type
15,16	Remote Indication	Status Output	
		Valve Position Output	
		Digital bus network	

Design Parameter

Rated load, Design life,Vibration, Impact and Noise

▲Rated Load

Type of load	Type of actuator	Rated load	Note
On/off	SP	The torque during operation is 33% of the rated torque	60 times/hour ≤ startup times ≤200 times/hour, working time ≤ 15 minutes, when longer stroke time, the motor type is S2-33%
	SQ	The torque during operation is 75% of the rated torque	60 times/hour ≤ startup times ≤200 times/hour, working time ≤ 15 minutes, when longer stroke time, the motor type is S2-75%
Modulating	SPM	The torque during operation is 50% of the rated torque	Under rated torque, startup times 600 times/hour: The motor type is S2-50%, Under Modulating torque; startup 1200 times per hour: the motor type is S2-50%
	SQM	The torque during operation is 50% of the rated torque	Startup 1200 times per hour: the motor type is S2-50%

▲Life-time Design

Type of Load	Type of actuator	Type	Minimum rated designed life
On/off	SP	10~35	When the rated torque is enabled , the average torque in the middle of the stroke is 33% of the rated torque, the minimum maintenance-free life of the actuator is 10,000 cycles
		40-95	When the rated torque is enabled and the average torque in the middle of the stroke is 33% of the rated torque, the minimum maintenance-free life of the actuator is 5000 cycles
	SQ	All types	When the rated torque is enabled and the average torque in the middle of the stroke is 33% of the rated torque, the minimum maintenance-free life of the actuator is 25,000 cycles
Modulating	SPM	10~35	1.8 million startups under 50% rated load
	SQM	All types	1.8 million startups under 70% rated load

▲Vibration, impact and noise

The SP and SQ series are suitable for vibration and impact strength that not exceeding the following standards

Impact	The maximum acceleration is 5g
Earthquake	If the equipment is working during or after the earthquake, the acceleration is 2g within 1 ~ 50Hz
Vibration	Within 10 ~ 100Hz, the total vibration is 1g
Noise	Independent test result shows, no more than 70db(A) within 1 meter of the actuator.

Remark: The cumulative vibration will shorten the life time of actuator, especially on the high level of vibration for long time.If the vibration level of the actuator operating environment is too high, then isolation control should be applied or the actuator should be mounted away from the valve and driven by an extension stem(with shock-absorbing device).

Non Hazardous & Hazardous Enclosures

All SP SQ series actuators for hazardous and non-hazardous area enclosures are waterproof to IP68/IEC60529,and the infrared remote control attached is safety certified for safe use even in hazardous areas.

▲ Non hazardous area enclosure

Standard waterproof type

SP/SPM/SPML
Protection grade: IP68, ambient temperature: - 30 - + 70 . Optional:- 60 ~ + 60

SQ/SQM
Protection grade: IP68, ambient temperature: - 20 - + 60 . Optional:- 60 ~ + 60

▲ Hazardous area enclosure

Standard explosion-proof type

SP/SPM/SPML
Explosion proof grade: Ex db llC T4 Gb, standard ambient temperature: - 30 ~ + 70 , optional: - 60 ~ + 60 .
Ex db llC T4 Gb meets the requirements of environments contains IIA, IIB ,IIC ,
T1~T4 grade and explosive environment zone 1 and zone 2.

SQ/SQM
Explosion proof grade:Ex db llC T4 Gb, standard ambient temperature: - 20 ~ + 60 , optional: - 60 ~ + 60 .
Ex db llC T4 Gb meets the requirements of environments contains IIA, IIB ,IIC ,
T1~T4 grade and explosive environment zone 1 and zone 2.

Control and Indication

▲ Local control, indication and setting

Actuator is equipped with a non-invasive operation knob and LCD(display position, status and alarm). It is applicable for different direction installation of the actuator. Use the infrared remote controller within 1 meter to modify the setting. The non-invasive knob can be used to "open" and "close" the actuator, and select the operation mode for "local", "stop" or "remote control".

▲ Remote control and indication

SP and SQ series actuators can remotely control and indicate the valves to realize central control. There are a variety of actuator control and indication forms to choose. Relay output or digital "bus" network system is used to meet the requirements from simple manual button control to complex distributed system control.

Protection and Operation

▲ SP and SQ series actuators have the following safety characteristics to ensure reliable operation of valves and actuators.

Fault	Reason	Protection
Valve blocked	Obstacle in valve	Torque protection: set the on/off torque to 40% ~ 100% of the rated torque. When the preset output torque is reached, the on/off torque will cut off the motor power. The actuator display will display the torque protection. It can also send a cut-off signal remotely.
Valve stuck	The valve disc stuck in the seat because of long time no use	Valve stuck protection: if the actuator does not detect the valve movement information after receiving the on/off signal for 3 ~7 seconds, the motor power will be cut off to avoid the motor stall and burnt. The actuator displays the torque trip, and can also send a cut-off signal remotely.
Torque switch bypass	Excess torque for stuck valve	Torque switch bypass protection: within 3 ~ 7 seconds of electric operation, the bypass will be automatically set for the torque switch to allow over torque operation to start the stuck valve.
Automatic phase sequence Adjustment	When the actuator is connected to a three-phase power supply, the phase sequence is easily connected incorrectly, resulting in confusion in the direction of the actuator operation and damage to the motor and valve.	Automatically detects the phase sequence of the connected three-phase power, and ensures the correct operation direction of the actuator through proper logic operation.
Power phase failure protection	Phase failure during motor stop or phase loss during motor operation	Automatically detect the phase loss of the power supply, prohibit the motor from running, and prevent the motor from overheating. The display shows the phase loss information and can also send a remote signal.
Motor overheating	Overloaded operating cause the motor overheating	Motor overheating protection: a temperature switch is set in the motor winding to cut off the motor power when the temperature is too high.After the motor is fully cooled, the temperature switch automatically resets, then operation can continue.In the meantime, the display screen shows the motor overheating protection information, and can also send signals remotely.
Instant reversal	Instantly loading of inversion control signals	Instant reversal protection: a time delay is automatically added during reverse operation. Prevent impact damage to valve shaft and actuator parts caused by sharp directional control movement.
Emergency stop ESD	When the valve needs to be held in position or moved to the safety end of the stroke, the operation takes precedence	ESD operation has priority over any existing or applied local or remote control signals.

Accessory

▲ Handwheel

Actuator handwheel can manually operate the valve in case of power interruption.When operate hand wheel, pull down manual/electric switch handle for operation. During electric operation, the actuator will automatically return to the electric mode without moving the handle. The manual / electric switch handle can be padlocked at the manual or electric position to prevent motor driving (locked at manual gear) or manual operation (locked at electric gear). During the electric operation, pull down and hold the manual / electric switch handle to make the motor drive disengage in an emergency.

Model	Manual Ratio/Circle	Option 1	Option 2
SP10	1：1(Direct)	X	X
SP20、SP25	1：1(Direct)	X	X
SP35	1：1(Direct)	X	X
SP40	1：1(Direct)	X	X
SP70,SP95	30：1	15：1	60：1
SQ06、SQ10、SQ20	10 Circles/90Ў	X	X
SQ30、SQ40、SQ50	12.5 Circles/90Ў	X	X
SQ60、SQ80、SQ100	14.5 Circles/90Ў	X	X
SQ90、SQ120、SQ150	72 Circles/90Ў	X	X

▲ Lubrication

SP is filled with heavy duty vehicle gear lubricant GL–5 75W/90 for standard.
SQ is filled with high quality lithium base pressure grease 7023B for standard.

▲ Coating

Model	Standard	Offshore Platform
SP	Spray painting(9006) sliver gray	Two coats of epoxy coating
SQ	Spray painting(9006) sliver gray	Two coats of epoxy coating

▲ Motor

Actuator	Load	Remark
SP	On/Off	Insulation grade F, low inertia and high torque, three–phase squirrel–cage– motor with temperature protection. Continuous working time 15 minutes, motor type S2, 60 times/hour ▮ startup times ▮ 600 times / hour under condition of 33% rated torque.
SPM	Modulating	Insulation grade F, low inertia high torqueJsquirrel-cage- motor with temperature protection. Continuous working time 15 minutes, motor type S2, and the starting times are 1200 times / hour under the condition of 50% rated torque.
SQ	On/Off	Low inertia and high torque design,continuous working time 15 minutes, 60 times / hour ▮ startup times ▮ 600 times / hour under the nominal torque of 75% of rated torque.
SQM	Modulating	Low inertia and high torque design, motor type S2, and the starting times are 1200 times/hour under the condition of 50% rated torque.

Cable Entries

▲ Cable Entries

Actuator		Entry diameter	Adapter
SP	Non explosion-proof	1 * 1 1/2" NPT	
		2 * 1" NPT	
	Explosion-proof	1 * 1 1/2" NPT	1* 3/4" NPT
		2 * 1" NPT	1* 1/2" NPT
SQ	Non explosion-proof	2 *3/4" NPT	
	Explosion-proof	2 * 1"NPT	1* 1/2" NPT

Remark:

1.SP,SQ actuators are delivered with plastic plugs. For wiring holes which won't be used in a long period, users have the responsibility to choose steel or copper thread sealing.

2. When explosion-proof actuator is selected, the installer has the responsibility to ensure that the cable conductor joint, cable sleeve/solid plug are matched, to maintain the hazardous area certification in accordance with the protection level.