ACTUATOR

MSV Series (Electrical Multi-Turn Actuator)

Model Number: MSV Series

DESCRIPTION

The MSV intelligent electric actuator represents a new generation of non-invasive actuators, independently developed from conventional designs. It boasts numerous advantages such as high precision, a compact structure, enhanced protection levels, an appealing appearance, reliable performance, customizable functions, and a modular design.

By integrating and optimizing the most advanced technologies from similar products worldwide, our company has created a high-performance intelligent actuator.

TECHNICAL FEATURES

1. High-Quality Housing: High-quality aluminum alloy shell, compact and lightweight, with protective material suitable for extremely harsh environments; other types of coatings are available upon request.

2. Advanced Motor Design: The low-inertia, high-torque motor enables it to reach peak torque quickly after startup, with almost no overrun when de-energized. A precise temperature switch is embedded in the motor coil and is unaffected by ambient temperature, ensuring optimal thermal performance. Additionally, the motor shaft and worm gear are independent, allowing for quick and easy replacement.

3. User-Friendly Control Panel: The control panel LCD provides instantaneous, up-to-date status and valve position, is available in English, and uses a straight menu structure to provide calibration and diagnostic information. It includes torque lines, operation and fault records, motor status, machine information, and hardware data.

4. Double-Sealed Terminal Box: The double seal design provides a sunflower terminal box that is separated from the control room and sealed. Even if the terminal box cover is opened in the field, it ensures isolation between the inside of the actuator and the outside world, so that moisture, dust, harmful gases, etc., will not enter the inside of the execution structure, and the internal components are fully protected.

5. Accurate Torque Measurement: The output torque measurement system uses a professionally designed useful work measurement system developed from familiar electrical energy measurement techniques to obtain accurate and repeatable torque measurements, independent of changes in frequency, voltage, and temperature.

6. Modular Control Unit: The control unit consists of control, monitoring, and protection modules; adopts a clasp-cage type installation structure with shock absorption and buffering; and uses plug-in connections to ensure quick and error-free module removal and replacement.

7. Efficient Worm Gear Transmission: The worm gear transmission chain has a simple, compact structure and constant transmission efficiency, with a mechanical self-locking function, requiring no brake. The transmission part is filled with long-lasting lubricating oil, allowing for long-term operation without maintenance.

8. Robust Position Sensor: The position sensor of the MSV series electric actuator adopts self-developed multicircle magnetic absolute encoder technology, which features wear resistance, shock resistance, long service life, high resolution, and resistance to low and high temperatures (from -50°C to 120°C).

MSV Series Product Communication Technology

Fieldbus is a development trend in industrial control technology, significantly reducing the cost of communication systems. Among these, serial communication is considered one of the most innovative methods. Various fieldbus systems have been developed to control field equipment and actuators. Improvements in plant efficiency, remote parameter setting, and factory asset management would not be possible without fieldbus technology.

The MSV electric actuator, equipped with a fieldbus interface, represents the world's most advanced technical level. Many different fieldbus systems are widely used in actuators, including:

- Modbus RTU
- HART Modbus
- Profibus DP

With fieldbus technology, actuators transition from centralized control to decentralized control. This simplifies system design, improves operational reliability, and saves users significant installation and maintenance costs.

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STANDARD CONFIGURATION

1	Protection Degree	IP67
2	Structural performance:	Basic Type
3	Power Supply	Single phase: 220VAC 50/60Hz, Three phase: 380VAC 50/60Hz
4	Motor	Rated operation 10 minutes, F grade insulation(special time to be customized)
5	Output Speed	18RM, 24RM, 36RM, 48RM, 72RM
6	Stroke Control	The use of an absolute encoder ensures that the valve position is never lost, providing high precision (accuracy up to 0.5%), zero wear, long service life, strong resistance to interference, and no need for battery support.
7	Position Indication	LCD display
8	Manual operation	Declutchable manual override
9	Flange Connection	ISO5210
10	Ambient Temperature*	-20° C~+70° C
11	Ambient Humidity	Minimum relative humidity 10%, Maximum relative humidity 95%, No condensation
12	Housing	High-pressure aluminum alloy housing with hard anodizing and powder coating

*Note: A canopy/sunshade provides essential protection for actuator controls against harsh environmental conditions such as direct sunlight, rain, and dust.

OPTIONAL CONFIGURATION

1	Explosive-proof Type	Explosion-proof options: Ex d IIB T4/T6, Ex d IIC T4/T6
2	Advanced protection type	IP68
3	Bus control	Hart, Modbus, Profibus FF
4	Space heater	Automatic temperature adjustment (for use in low temperature environments)
5	Power supply:	Single phase: 110VAC 230VAC 50/60HZ Three-phase: 220VAC 400VAC 415VAC 440VAC 50/60HZ and other special voltages
6	Split type	The actuator is divided into the execution part and the control part, which are installed on site and in the safety area respectively and connected by cables
7	Torque	Torque range 3000~20000 (with reduction gearbox)
8	Ambient temperature	-40° C~+70° C(low temperature type) -20° C~+80° C (high temperature type)

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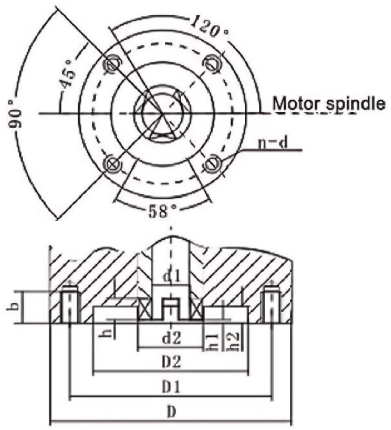
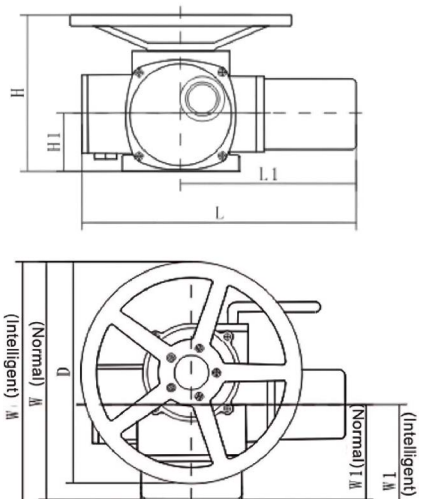
PRODUCT DIMENSIONS FOR MSV10/15/20/30



MSV Series Actuator Interface Dimensions

Actuator Model	D	D1	D2	d1	d2	n-d	b	h	h1	h2
MSV10/MSV15	145	120	90	30	45	4-M10	20	8	2	5
MSV20/MSV30	185	160	125	42	58	4-M12	20	10	2	5



MSV Series Actuator External Dimensions

Actuator Model	H	H1	W		W1		D	L	L1
			Normal	Inteligent	Normal	Inteligent			
MSV10/MSV15	235	87	330	375	155	200	Ø280	410	225
MSV20/MSV30	255	105	382	427	165	210	Ø350	510	320

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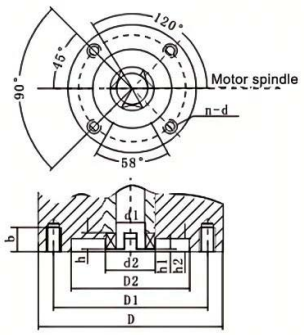
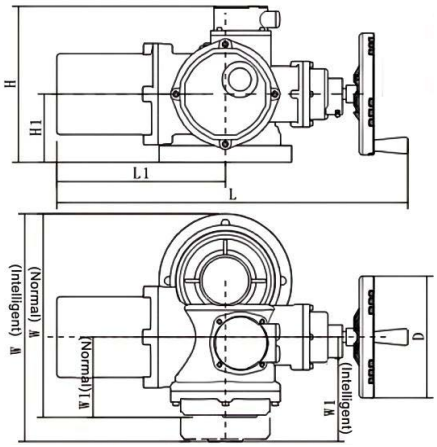
PRODUCT DIMENSIONS FOR MSV45/60/90/120



MSV Series Actuator Interface Dimensions

Actuator Model	D	D1	D2	d1	d2	n-d	b	h	h1	h2
MSV45/MSV60	225	195	150	50	73	4-M16	30	13	2	5
MSV90/MSV120	275	235	180	63	83	4-M18	34	13	2	5



MSV Series Actuator External Dimensions

Actuator Model	H	H1	W		W1		D	L	L1
			Normal	Inteligent	Normal	Inteligent			
MSV45/MSV60	310	130	371	487	169	279	Ø250	725	357
MSV90/MSV120	320	140	424	534	172	282	Ø250	740	362

ACTUATOR PERFORMANCE PARAMETER

Output speed rpm	MSV10	MSV15	MSV20	MSV30	MSV45	MSV60	MSV90	MSV120
Motor Power	0.25Kw	0.37Kw	0.55Kw	0.75Kw	1.1Kw	1.5Kw	2.2Kw	3Kw
Rated Current	1.6A	1.8A	2.2A	2.4A	3.7A	5.2A	6.8A	11A
Output Torque	100N.m	150N.m	200N.m	300N.m	450N.m	600N.m	900N.m	1200N.m
Output (r/min) Speed	18/24/36	18/24/36	18/24/36	18/24/36	24/48	24/48	24/48	24/48
Weight	16Kg	18Kg	24Kg	28Kg	50Kg	53Kg	68Kg	70Kg

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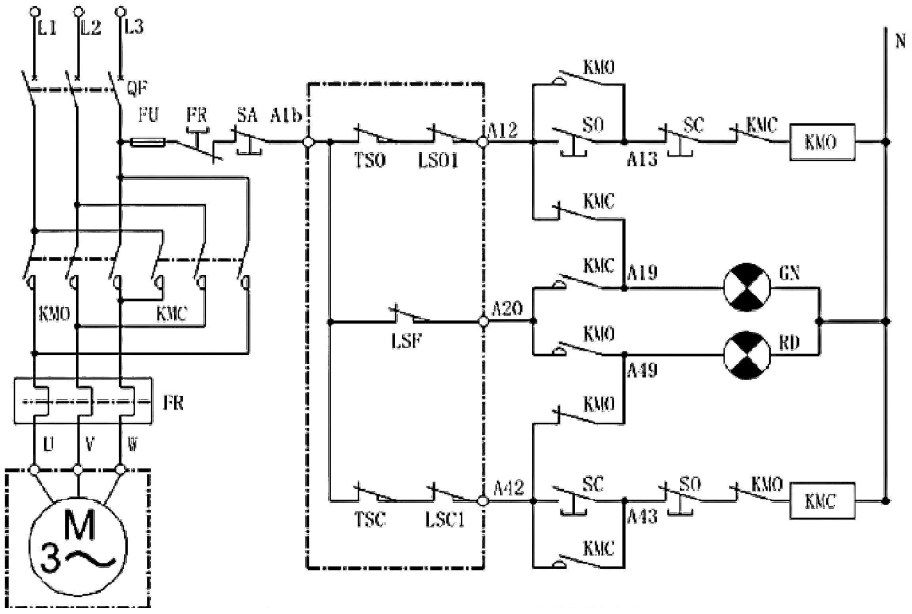
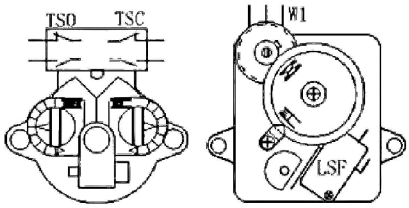
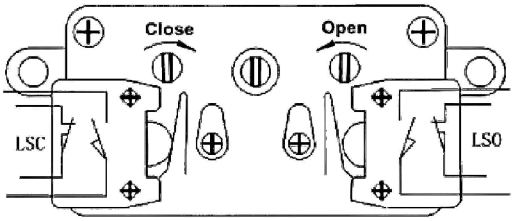
CONTROL CIRCUIT

Normal Electric Control Part
(For intelligent electric control part,see Debugging instructions for Intelligent electric actuators)







LIST OF MAIN COMPONENT

Code	Name	Quantity	Remarks
FR	Thermal relay	1	User-supplied
KMO KMC	Ac contactor	1	User-supplied
SA SC SO	Button	3	User-supplied
TSO TSC	Torque switch	1	
LSO LSC	Limit switch	2	
LSF	Flash switch	1	
W1	Potentiometer	1	
M	Motor	1	
TH	Thermal switch	1	Special order
RT	Space heater	1	Special order

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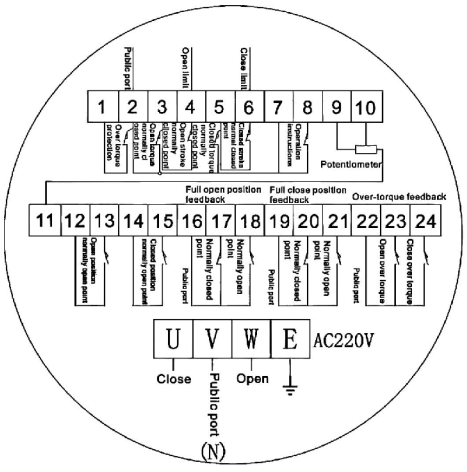
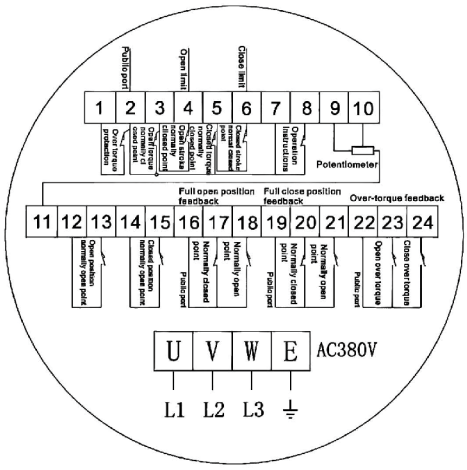
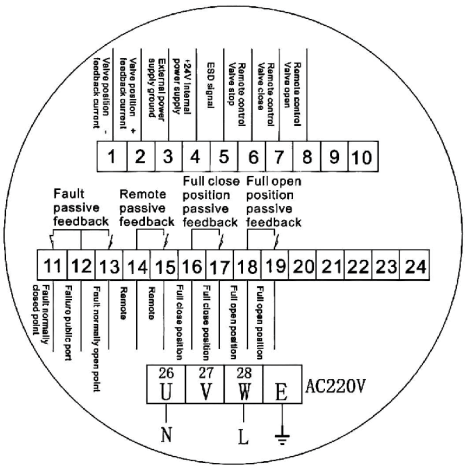
WIRING DIAGRAM



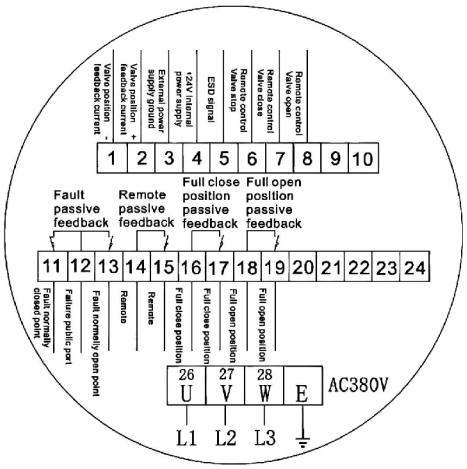
220V Normal Terminal Wiring Diagram



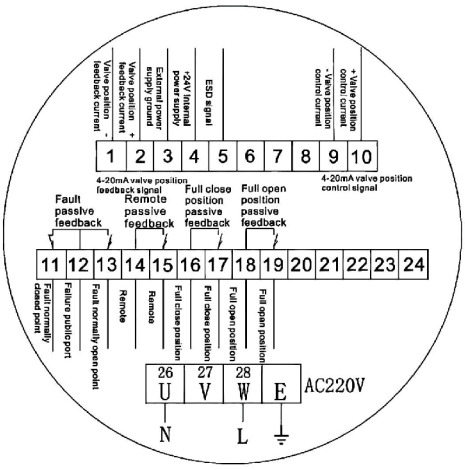
380V Normal Terminal Wiring Diagram



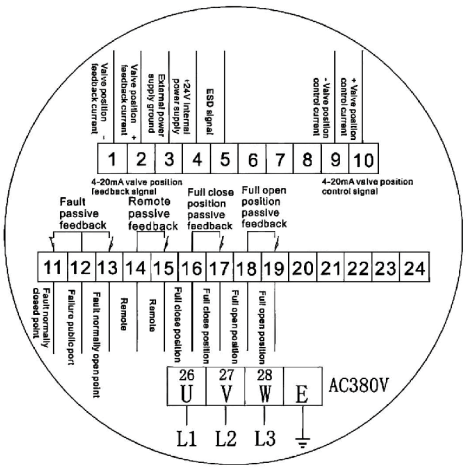
220V Intelligent On Off Type Terminal Wiring Diagram



380V Intelligent On Off Type Terminal Wiring Diagram



220V Intelligent Regulating Terminal Wiring Diagram



380V Intelligent Regulating Terminal Wiring Diagram