GRAT®
Simple & Reliable

V-Port Control Valve

Product Introduction:

V-type ball valve is a high-precision control valve with cut-off and regulation functions, featuring V-shaped opening core and metal seat hard seal. Its V-opening provides strong shearing force to cut impurities and prevent clogging. With high regulation accuracy and equal percentage flow curve, it controls flow precisely. Made of stainless steel, carbon steel, etc., it resists high pressure, high temperature and corrosion, suitable for water, oil, gas and impurity-containing media, widely used in harsh conditions of petroleum, chemical and other industries.

Product Features:

- **Lightweight & Easy Installation:** Integrated valve body with ultra-short flange distance, weight only 50% of similar ball valves, reducing installation and transportation costs;
- **Strong Anti-clogging & Shearing Force:** Precise scissor mouth between seat and core cuts pipeline impurities, ensuring unobstructed flow;
- **Precise & Stable Regulation:** V-type core solves traditional control problems; equal percentage flow ensures linear correspondence, with different opening shapes for various CV values and flow needs;
- **Excellent Sealing:** Double-sided spherical seal ensures zero leakage (Class IV), guaranteeing tight system operation;

Ultra-short Flange Electric V-Port Control Valve

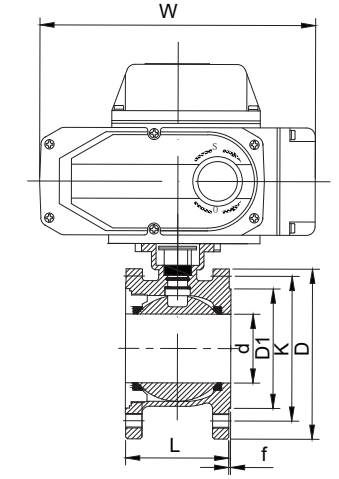
Product Description

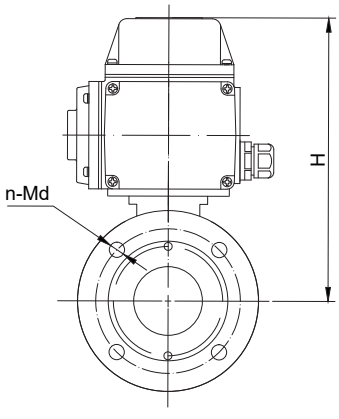
The ultra-short flanged electric V-type regulating valve adopts electric actuator to drive V-shaped plug for accurate flow control. It features compact structure and high regulation precision, ideal for space-limited working conditions requiring precise flow and pressure control in petrochemical, water treatment, metallurgy, power, food and pharmaceutical industries.

Main Performance Specifications

Nominal Diameter: DN15~DN200
Nominal Pressure: 1.6MPa~6.4MPa
Medium Temperature: ≤220°C
Protection Grade: Ip67
Applicable Media: Food, grease, fibrous fluid
Manufacturing Standard: GB12237-2021, API 6D
Face-to-Face Standard: GB/T 12221-2005
Inspection Standard: API 598
Flange Standard: JB/T 79-2015, GB/T 9124.1-2019, GB/T 9124.2-2019, ANSI B16.5, JIS B2239

Installation Dimension Drawing





Size		d	D1	K	D	n-Md	f	L	H	W
mm	in									
15	1/2〃	15	45	65	95	4-M12	2	35	210	196
20	3/4〃	19	55	75	105	4-M12	2	38	216	196
25	1〃	25	65	85	115	4-M12	2	50	223	196
32	1-1/4〃	28	76	100	140	4-M12	2	50	230	196
40	1-1/2〃	38	83	110	148	4-M16	3	67	240	196
50	2〃	49	102	125	156	4-M16	3	72	250	196
65	2-1/2〃	64	120	145	185	4-M16	3	94	298	255
80	3〃	73	143	160	200	8-M16	3	120	312	255
100	4〃	90	168	180	220	8-M16	3	141	322	255
125	5〃	110	185	210	245	8-M16	3	165	397	255
150	6〃	145	208	240	277	8-M20	3	225	422	255
200	8〃	195	265	395	335	12-M20	3	275	512	255

Wafer Type
Electric V-Port Control Valve

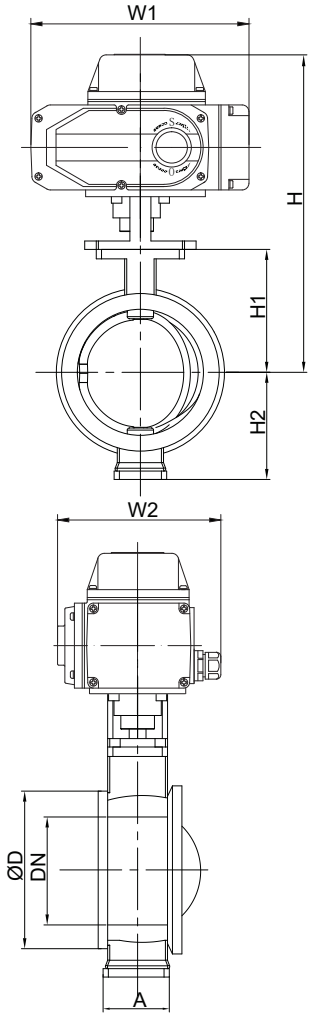
Product Description

Wafer-type electric V-ball valve saves space with wafer mounting and delivers precise electric regulation. Its V-shaped plug features strong shearing force to prevent blockage, suitable for slurry, granular and other complex media with wide flow control range, ideal for chemical, papermaking, metallurgy and other industries.

Main Performance Specifications

Nominal Diameter: DN15~DN250
Nominal Pressure: 1.6MPa~6.4MPa
Medium Temperature: ≤220°C
Protection Grade: Ip67
Applicable Media: Food, grease, fibrous fluid
Manufacturing Standard: GB12237-2021, API 6D
Face-to-Face Standard: GB/T 12221-2005
Inspection Standard: API 598

Installation Dimension Drawing



Size		A	ϕD	H1	H2	H	W1	**W2**
mm	in							
15	1/2"	62	54	74	75	390	196	145
20	3/4"	62	54	74	75	390	196	145
25	1"	62	54	74	75	390	196	145
32	1-1/4"	62	78	80	75	400	196	145
40	1-1/2"	62	82	85	75	405	196	145
50	2"	75	100	87	95	430	196	145
65	2-1/2"	80	120	105	115	498	255	182
80	3"	100	131	115	125	520	255	182
100	4"	115	158	125	125	530	255	182
125	5"	130	180	140	155	570	255	182
150	6"	160	216	153	165	600	255	182
200	8"	200	260	200	195	680	255	182
250	10"	240	325	225	225	730	255	182

Flanged
Electric V-Port Control Valve

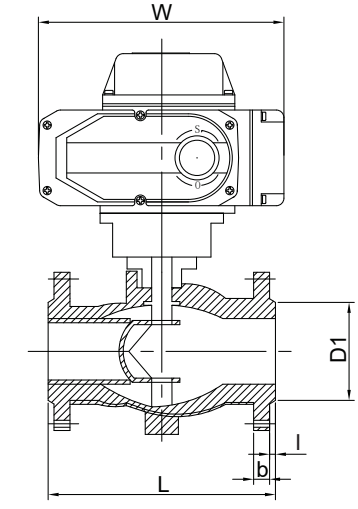
Product Description

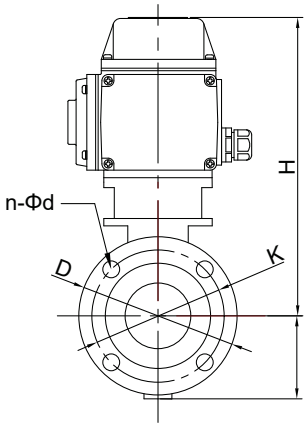
Flanged electric V-type control valve features firm flanged connection with good sealing and precise efficient electric regulation. The V-shaped plug has strong shearing force, anti-clogging and wear-resistant, suitable for slurry, granular and other complex media, a reliable choice for flow control in chemical, metallurgical and papermaking industries.

Main Performance Specifications

Nominal Diameter: DN15~DN250
Nominal Pressure: 1.6MPa~6.4MPa
Medium Temperature: ≤220°C
Protection Grade: Ip67
Applicable Media: food, grease, fibrous fluid
Manufacturing Standard: GB12237-2021, API 6D
Face-to-Face Standard: GB/T 12221-2005
Inspection Standard: API 598
Flange Standard: JB/T 79-2015, GB/T 9124.1-2019, GB/T 9124.2-2019, ANSI B16.5, JIS B2239

Installation Dimension Drawing





Size		L	D	K	D1	n-Φd	b	i	H	W
mm	in									
15	1/2″	130	95	65	45	4-Φ14	14	2	209	196
20	3/4″	130	105	75	55	4-Φ14	16	2	211	196
25	1″	142	113	85	65	4-Φ14	18	2	218.5	196
32	1-1/4″	165	140	100	78	4-Φ18	18	2	233	196
40	1-1/2″	165	150	110	85	4-Φ18	18	2	234	196
50	2″	203	165	125	100	4-Φ18	20	2	248	196
65	2-1/2″	222	185	145	120	8-Φ18	20	2	294	255
80	3″	241	200	160	135	8-Φ18	21	2	320	255
100	4″	305	220	180	155	8-Φ18	22	2	339	255
125	5″	356	250	210	184	8-Φ18	22	3	392	255
150	6″	394	285	240	210	8-Φ23	24	3	402	255
200	8″	457	340	295	265	12-Φ23	26	3	467	255

Wafer Type
Pneumatic V-Port Hard - Seated Control Valve

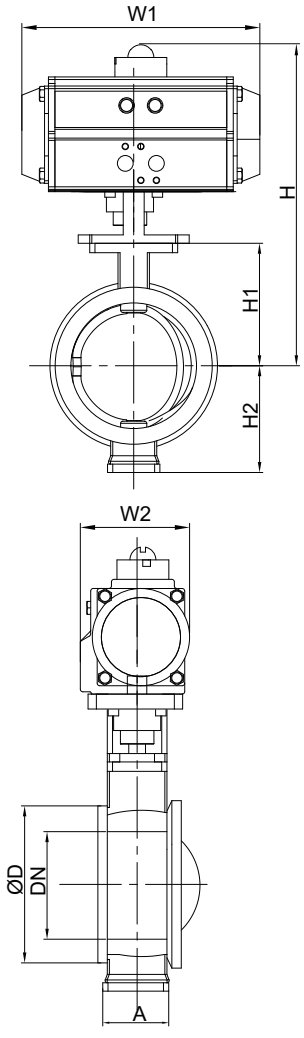
Product Description

Space-saving wafer mounting for easy assembly, fast pneumatic operation. Hard-sealed V-core offers strong shearing force, wear and blockage resistance for particle and slurry media, ideal for precise flow control in chemical and mining industries.

Main Performance Specifications

Nominal Diameter: DN15~DN250
Nominal Pressure: 1.6MPa~6.4MPa
Medium Temperature: ≤220°C
Protection Grade: Ip66
Applicable Media: food, grease, fibrous fluid
Manufacturing Standard: GB12237-2021, API 6D
Face-to-Face Standard: GB/T 12221-2005
Inspection Standard: API 598

Installation Dimension Drawing



Size		A	ϕD	H1	H2	Double-acting			Single-acting		
mm	in					H1	W1	W2	H1	W1	W2
15	1/2"	62	54	74	75	186	147	72	186	147	72
20	3/4"	62	54	74	75	186	147	72	202	168	83
25	1"	62	54	74	75	202	168	83	214	184	95
32	1-1/4"	62	78	80	75	208	168	83	229	204	103
40	1-1/2"	62	82	85	75	225	184	95	242	262	109
50	2"	75	100	87	95	236	204	103	260	268	122
65	2-1/2"	80	120	105	115	262	262	109	320	301	142
80	3"	100	131	115	125	288	268	122	347	390	152
100	4"	115	158	125	125	340	301	142	382	458	174
125	5"	130	180	140	155	355	301	142	397	458	174
150	6"	160	216	153	165	385	390	152	443	525	206
200	8"	200	260	200	195	457	458	174	515	532	226
250	10"	240	325	225	225	515	525	206	575	602	260

Note: For pneumatic valves, the matching actuator model and relevant dimensions may vary depending on service medium, valve torque and control method.

Flanged
Pneumatic V-Port Hard-Seated Control Valve

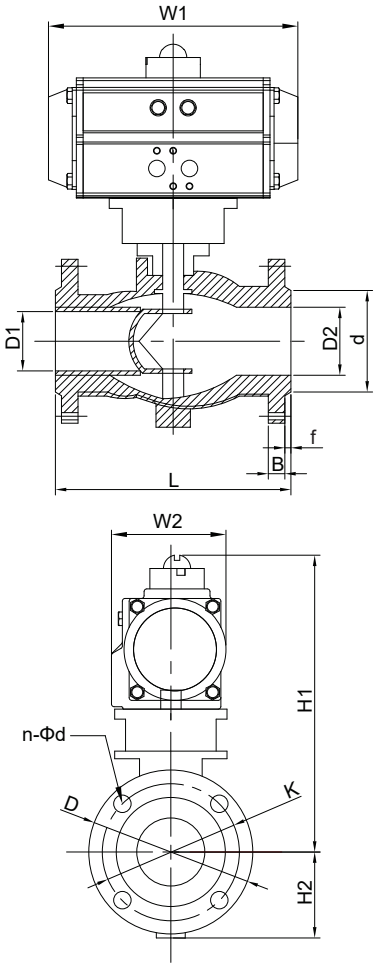
Product Description

Flanged pneumatic V-type hard-seal control valve: firm leakproof flange connection, fast pneumatic opening/closing. Hard-seal structure resists high pressure and wear; V-core with strong shearing force handles slurry and particles easily, an excellent tool for flow control in harsh chemical, mining, metallurgical conditions.

Main Performance Specifications

Nominal Diameter: DN15~DN250
Nominal Pressure: 1.6MPa~6.4MPa
Medium Temperature: ≤220°C
Protection Grade: Ip66
Applicable Media: Food, grease, fibrous fluid
Manufacturing Standard: GB12237-2021, API 6D
Face-to-Face Standard: GB/T 12221-2005
Inspection Standard: API 598
Flange Standard: JB/T 79-2015, GB/T 9124.1-2019, GB/T 9124.2-2019, ANSI B16.5, JIS B2239

Installation Dimension Drawing



Size		D1	D2	d	K	D	n-ϕd	B	F	L	H2	Double-acting			Single-acting		
mm	in											H1	W1	W2	H1	W1	W2
15	1/2"	15	28	45	65	95	4-Φ14	14	2	102	55	276	147	72	276	147	72
20	3/4"	15	28	55	75	105	4-Φ14	14	2	102	60	286	147	72	302	168	83
25	1"	20	40	66	85	115	4-Φ14	14	2	102	65	312	168	83	324	184	95
32	1-1/4"	25	46	78	100	135	4-Φ18	16	2	114	75	322	168	83	343	204	103
40	1-1/2"	32	54	85	110	145	4-Φ18	16	2	114	80	344	184	95	361	262	109
50	2"	40	65	100	125	160	4-Φ18	16	2	124	85	363	204	103	387	268	122
65	2-1/2"	50	80	120	145	180	4-Φ18	18	2	145	100	381	262	109	439	301	142
80	3"	65	100	135	160	195	8-Φ18	20	2	165	105	391	268	122	450	390	152
100	4"	80	110	155	180	215	8-Φ18	20	2	194	115	493	301	142	535	458	174
125	5"	100	135	185	210	245	8-Φ18	22	3	210	130	497	301	142	539	458	174
150	6"	125	165	210	240	280	8-Φ23	24	3	229	150	534	390	152	592	525	206
200	8"	160	205	265	295	335	12-Φ23	26	3	243	175	589	458	174	647	532	226
250	10"	210	260	320	355	405	12-Φ26	30	3	297	220	662	525	206	722	602	260

Note: For pneumatic valves, the matching actuator model and relevant dimensions may vary depending on service medium, valve torque and control method.

Wafer Type
Explosion - Proof Electric V - Port Hard - Seated Control Valve

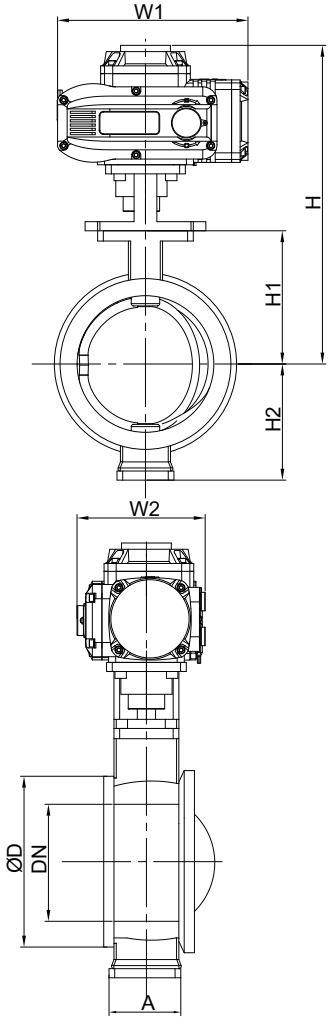
Product Description

Space-saving wafer design for easy installation. Explosion-proof motor suits hazardous areas. High-pressure wear-resistant hard seal, shear-proof V-core for smooth flow, ideal for oil, gas and chemical industries.

Main Performance Specifications

Nominal Diameter: DN15~DN250
Nominal Pressure: 1.6MPa~6.4MPa
Medium Temperature: ≤220°C
Protection Grade: Ip67
Applicable Media: Food, grease, fibrous fluid
Manufacturing Standard: GB12237-2021, API 6D
Face-to-Face Standard: GB/T 12221-2005
Inspection Standard: API 598

Installation Dimension Drawing



Size		A	ϕd	H1	H2	H	W1	W2
mm	in							
15	1/2"	62	54	74	75	420	217	150
20	3/4"	62	54	74	75	420	217	150
25	1"	62	54	74	75	420	217	150
32	1 1/4"	62	78	80	75	430	217	150
40	1 1/2"	62	82	85	75	435	217	150
50	2"	75	100	87	95	459	217	150
65	2 1/2"	80	120	105	115	522	268	180
80	3"	100	131	115	125	544	268	180
100	4"	115	158	125	125	554	268	180
125	5"	130	180	140	155	594	268	180
150	6"	160	216	153	165	624	268	180
200	8"	200	260	200	195	704	268	180
250	10"	240	325	225	225	754	268	180

Flanged
Explosion-Proof Electric V-Port Hard-Seated Control Valve

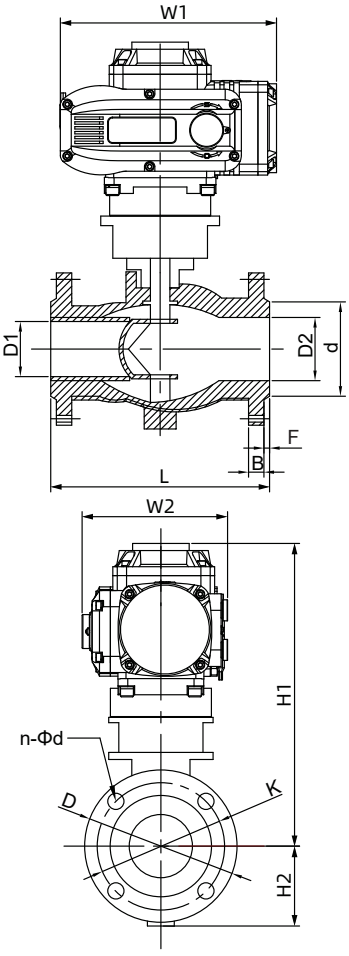
Product Description

Flanged explosion-proof electric V-type hard-seal valve features tight sealing for large pipes. Explosion-proof design fits hazardous areas. Erosion-resistant hard seal and high-shear V-core precisely regulate particle and fibrous media, perfect for petrochemical and coal chemical industries.

Main Performance Specifications

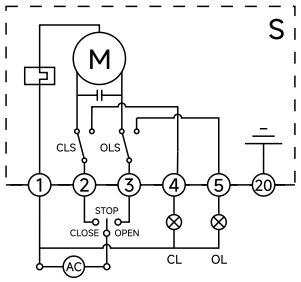
Nominal Size: DN15~DN250
Nominal Pressure: 1.6MPa~6.4MPa
Medium Temperature: ≤220°C
Protection Class: Ip67
Applicable Media: Food, grease, fibrous fluid
Manufacturing Standard: GB12237-2021, API 6D
Face-to-Face Standard: GB/T 12221-2005
Inspection Standard: API 598
Flange Standard: JB/T 79-2015, GB/T 9124.1-2019, GB/T 9124.2-2019, ANSI B16.5, JIS B2239

Installation Dimension Drawing



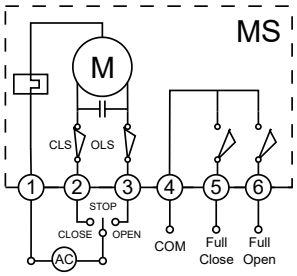
Size		D1	D2	d	K	D	n-ϕd	B	F	L	H1	H2	W1	W2
mm	in													
15	1/2"	15	28	45	65	95	4-Φ14	14	2	102	320	55	217	150
20	3/4"	15	28	55	75	105	4-Φ14	14	2	102	330	60	217	150
25	1"	20	40	66	85	115	4-Φ14	14	2	102	340	65	217	150
32	1-1/4"	25	46	78	100	135	4-Φ18	16	2	114	350	75	217	150
40	1-1/2"	32	54	85	110	145	4-Φ18	16	2	114	360	80	217	150
50	2"	40	65	100	125	160	4-Φ18	16	2	124	369	85	217	150
65	2-1/2"	50	80	120	145	180	4-Φ18	18	2	145	412	100	268	180
80	3"	65	100	135	160	195	8-Φ18	20	2	165	423	105	268	180
100	4"	80	110	155	180	215	8-Φ18	20	2	194	450	115	268	180
125	5"	100	135	185	210	245	8-Φ18	22	3	210	454	130	268	180
150	6"	125	165	210	240	280	8-Φ23	24	3	229	474	150	268	180
200	8"	160	205	265	295	335	12-Φ23	26	3	243	504	175	268	180
250	10"	210	260	320	355	405	12-Φ26	30	3	297	544	220	268	180
300	12"	250	322	375	410	460	12-Φ26	30	3	340	624	250	268	180
350	14"	300	365	435	470	520	16-Φ26	34	3	422	654	280	268	180

Circuit Diagram



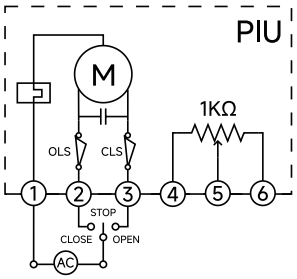
S

Switching Action Mode：
Switching operations (open/close) are achieved via AC switching signals, and a set of active position signals indicating fully open/fully closed status are output.



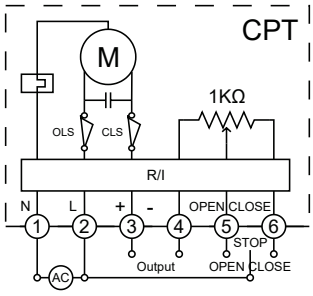
MS

Switching Action Mode: Outputs passive contact signals.
Structure：Equipped with two intermediate position switches.



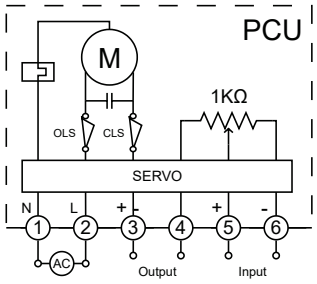
PIU

Switching Action Mode: Outputs 0~1000Ω feedback signal.
Structure: Equipped with 500Ω or 1kΩ potentiometer.



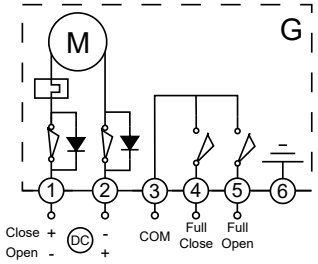
PCU

Regulating Action Mode:Accepts 4~20mA control signal input and outputs 4~20mA valve position feedback signal.
Structure: Integrated with 1kΩ potentiometer and control module (servo amplifier).



CPT

Switching Action Mode:Outputs 4~20mA valve position feedback signal.
Structure: Equipped with 1kΩ potentiometer and R/I converter.

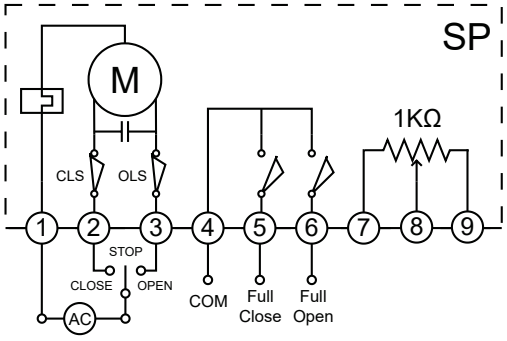


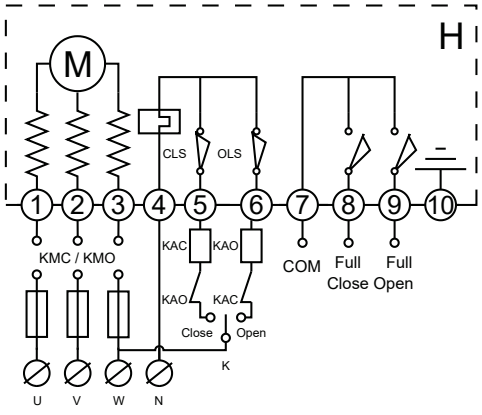
G

DC switching signals are output from the circuit via an external DC power supply to control the opening/closing program, and a set of passive contact signals corresponding to fully open/fully closed positions are provided.

SP

Switching Action Mode: Controls valve opening angle via switching circuit, corresponding to potentiometer resistance value, while enabling intermediate position control function.
Structure: Integrated with potentiometer and intermediate position switch.



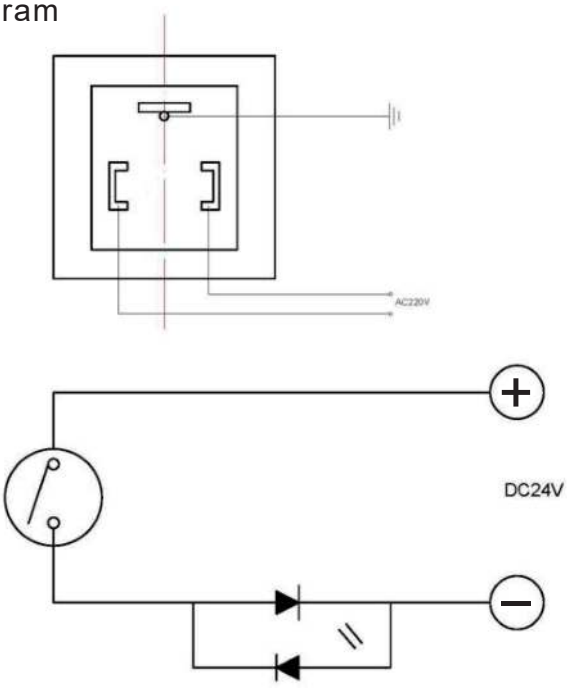


H

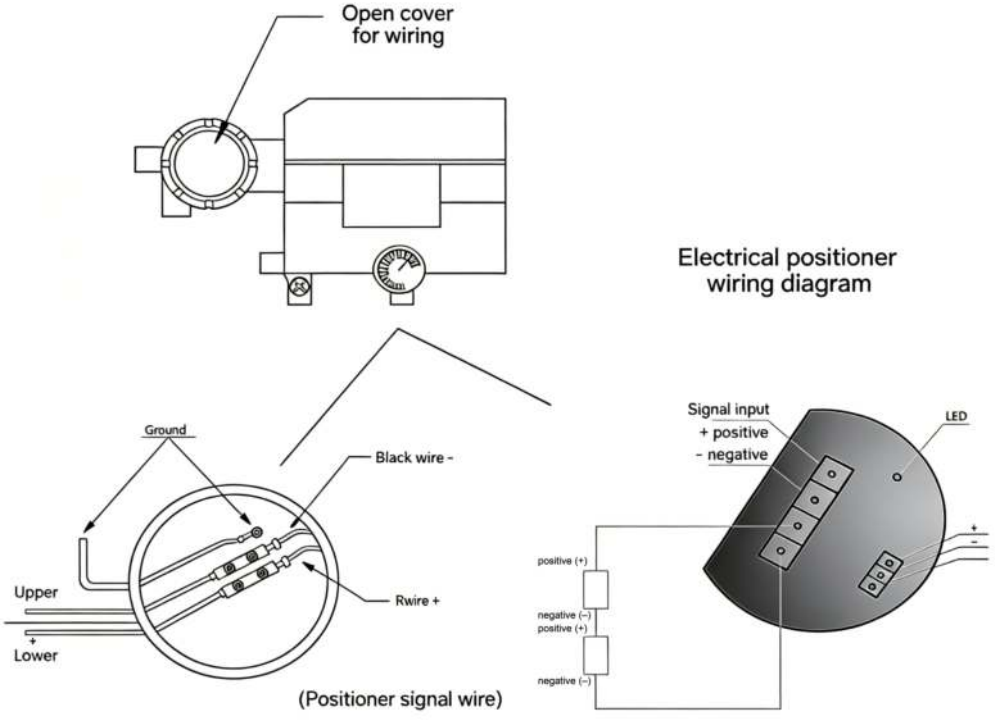
Three-phase AC switching signals are output through an external three-phase power phase-reversing circuit to control opening/closing operations, accompanied by a set of passive contact signals for fully open/fully closed position indication.

Pneumatic Valve Circuit Diagram

On-off Type Wiring Diagram



Regulating Type Wiring Diagram



Vision: Build more robust industrial automatic control systems
Mission: Make industrial automation technologies simpler and more reliable
Core Values: Simplify complexity, Continuous Innovation, Win-Win Collaboration

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official website