GRAT®
Simple & Reliable

Hard-Seated Butterfly Valve

Product Introduction:

Hard-seal Butterfly Valve is a key type for severe working conditions. Matched metal sealing surfaces of seat and disc deliver high temperature & pressure resistance, as well as wear and corrosion resistance. With compact structure, low operating torque, flexible operation, low flow resistance and high flow efficiency, it is applicable for conveying harsh media such as steam, high-temperature oil and corrosive gas. It enables accurate flow and pressure control, widely used in chemical, power, metallurgy and other industrial fields.

Product Features:

• **Reliable sealing performance:** The valve stem adopts graphite molded sealing rings to achieve zero leakage. It maintains tight sealing before, during and after fire, featuring inherent fire safety performance.

• **Smooth opening/closing with wear resistance:** The convex conical sealing surface of the disc fully separates from the sealing ring when opening, avoiding solid accumulation. It closes relying on the elasticity of the sealing ring with almost no friction between seat and disc, achieving tighter sealing as it closes.

Wafer Type
Electric Hard-Seated Butterfly Valve

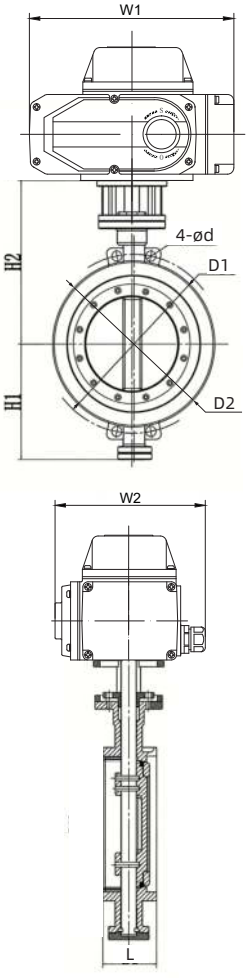
Product Description

Wafer-type electric hard-seal Butterfly Valve: compact, Hard-Seated, high-temp resistant, with electric control. Suitable for industrial pipelines with impurities.

Main Performance Specifications

Nominal Diameter: DN50~DN1200
Nominal Pressure: 0.6MPa~4.0MPa
Medium Temperature: ≤540°C
Protection Grade: Ip67
Applicable Media: Water, oil, gas and various high-temperature or impurity-containing media
Manufacturing Standard: GB/T 12238-2008, API 609
Structural Length Standard: GB/T 12221-2005
Inspection Standard: GB/T 13927-2022, API 598

Installation Dimension Drawing



Size (mm)	L	D1	D2	4-Φd	H1	H2	W1	W2
50	43	125	105	18	238	112	196	145
65	46	145	125	18	255	115	196	145
80	56	160	140	18	260	120	196	145
100	64	180	160	18	285	138	196	145
125	70	210	190	18	300	164	196	145
150	71	240	215	22	320	175	255	182
200	76	295	270	22	370	208	255	182
250	83	355	325	26	420	243	255	182
300	92	410	375	26	500	283	255	182
350	102	470	435	26	530	310	255	182
400	114	525	545	30	570	340	354	273
450	127	585	565	30	600	380	354	273
500	154	650	590	33	680	410	354	273
600	165	770	690	36	750	470	354	273
700	190	840	805	36	810	550	354	273
800	203	950	915	39	905	640	354	273
900	216	1050	1015	39	960	710	354	273
1000	254	1170	1120	42	1010	770	354	273
1200	265	1390	1335	48	1175	890	354	273

Flanged
Electric Hard-Seated Butterfly Valve

Product Description

Flanged electric hard-seal Butterfly Valve features sturdy flange connection, high pressure and temperature resistance with reliable metal hard sealing. Electric drive provides precise regulation, low flow resistance and fast actuation for harsh industrial pipeline cut-off and control.

Main Performance Specifications

Nominal Diameter: DN50~DN1200

Nominal Pressure: 0.6MPa~4.0MPa

Medium Temperature: ≤540°C

Protection Grade: Ip67

Applicable Media: Water, oil, gas, and various high-temperature or impurity-containing media

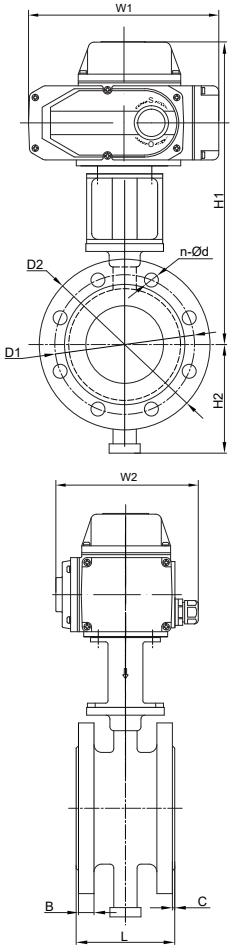
Manufacturing Standard: GB/T 12238-2008, API 609

Structural Length Standard: GB/T 12221-2005

Inspection Standard: GB/T 13927-2022, API 598

Flange Standard: GB/T 9124.1-2019, GB/T 9124.2-2019, ASME B16.50, ASME B16.47

Installation Dimension Drawing



Size (mm)	L	D1	D2	N-Φd	B	C	H1	H2	W1	W2
50	108	125	165	4-Φ18	16	2	238	112	196	145
65	112	145	185	4-Φ18	16	2	255	115	196	145
80	114	160	200	8-Φ18	18	2	260	120	196	145
100	127	180	220	8-Φ18	20	3	285	138	196	145
125	140	210	250	8-Φ18	22	3	300	164	196	145
150	140	240	285	8-Φ22	24	3	320	175	255	182
200	152	295	340	12-Φ22	24	3	370	208	255	182
250	165	355	405	12-Φ26	26	3	420	243	255	182
300	178	410	460	16-Φ26	28	3.5	500	283	255	182
350	190	470	520	16-Φ30	30	3.5	530	310	255	182
400	216	525	580	20-Φ30	32	3.5	570	340	354	273
450	222	585	640	20-Φ33	40	3.5	600	380	354	273
500	229	650	715	20-Φ36	44	4	680	410	354	273
600	267	770	840	24-Φ36	54	4	750	470	354	273
700	292	840	910	24-Φ39	40	4	810	550	354	273
800	318	950	1025	28-Φ39	42	4	905	640	354	273
900	330	1050	1125	28-Φ42	44	5	960	710	354	273
1000	410	1170	1255	32-Φ48	46	5	1010	770	354	273
1200	470	1390	1485	32-Φ48	52	5	1175	890	354	273

Wafer Type
Pneumatic Hard-Seated Butterfly Valve

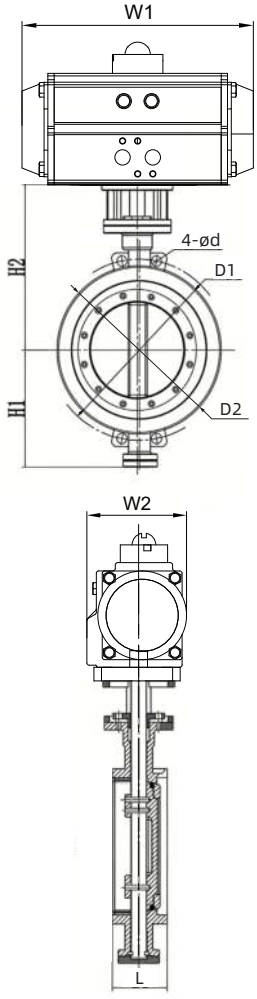
Product Description

Compact wafer design with high-temperature wear-resistant metal hard seal and excellent tightness. Pneumatic drive offers fast response, precise control, low flow resistance and flexible operation, suitable for medium control in industrial pipelines under harsh conditions.

Main Performance Specifications

Nominal Diameter: DN50~DN400
Nominal Pressure: 0.6MPa~4.0MPa
Medium Temperature: ≤540°C
Protection Grade: Ip66
Applicable Media: Water, oil, gas and other high-temperature or impurity-containing media
Manufacturing Standards: GB/T 12238-2008, API 609
Structural Length Standard: GB/T 12221-2005
Inspection Standards: GB/T 13927-2022, API 598

Installation Dimension Drawing



Size (mm)	L	D	N-ϕD	H2	Double-acting			Single action		
					H1	W1	W2	H1	W1	W2
50	43	125	4-Φ18	112	240	168	83	252	184	95
65	46	145	4-Φ18	115	269	184	95	286	262	109
80	56	160	4-Φ18	120	283	204	103	307	268	122
100	64	180	4-Φ18	138	326	262	109	384	301	142
125	70	210	4-Φ18	164	341	262	109	399	301	142
150	71	240	4-Φ22	175	376	268	122	435	390	152
200	76	295	4-Φ22	208	442	301	142	484	458	174
250	83	355	4-Φ26	243	509	390	152	567	525	206
300	92	410	4-Φ26	283	614	458	174	672	532	226
350	102	470	4-Φ26	310	677	525	206	737	602	260
400	114	525	4-Φ30	340	652	525	206	712	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 Hard-Seated Butterfly Valve

Product Description

Flanged pneumatic hard-seal Butterfly Valve features fast pneumatic actuation, high pressure & temperature resistant hard seal, and leak-tight flange connection. It delivers precise flow control and long service life for harsh chemical and metallurgical conditions.

Main Performance Specifications

Nominal Diameter: DN50~DN400

Nominal Pressure: 0.6MPa~4.0MPa

Medium Temperature: ≤540°C

Protection Grade: Ip66

Applicable Media: Water, oil, gas and various high-temperature or impurity-containing media

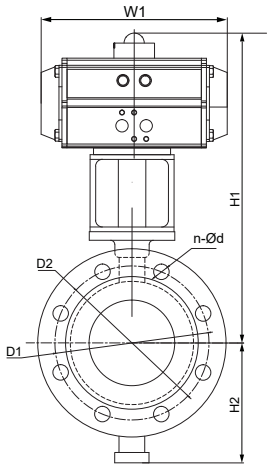
Manufacturing Standards: GB/T 12238-2008, API 609

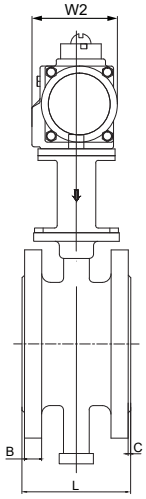
Structural Length Standard: GB/T 12221-2005

Inspection Standards: GB/T 13927-2022, API 598

Flange Standards: GB/T 9124.1-2019, GB/T 9124.2-2019, ASME B16.50, ASME B16.47

Installation Dimension Drawing





Size (mm)	L	D1	D2	n-Φd	B	C	H2	Double-acting			Single-acting		
								H1	W1	W2	H1	W1	W2
50	108	125	165	4-Φ18	16	2	112	240	168	83	252	184	95
65	112	145	185	4-Φ18	16	2	115	269	184	95	286	262	109
80	114	160	200	8-Φ18	18	2	120	283	204	103	307	268	122
100	127	180	220	8-Φ18	20	3	138	326	262	109	384	301	142
125	140	210	250	8-Φ18	22	3	164	341	262	109	399	301	142
150	140	240	285	8-Φ22	24	3	175	376	268	122	435	390	152
200	152	295	340	12-Φ22	24	3	208	442	301	142	484	458	174
250	165	355	405	12-Φ26	26	3	243	509	390	152	567	525	206
300	178	410	460	16-Φ26	28	3.5	283	614	458	174	672	532	226
350	190	470	520	16-Φ30	30	3.5	310	677	525	206	737	602	260
400	216	525	580	20-Φ30	32	3.5	340	675	525	206	735	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 Hard-Seated Butterfly Valve

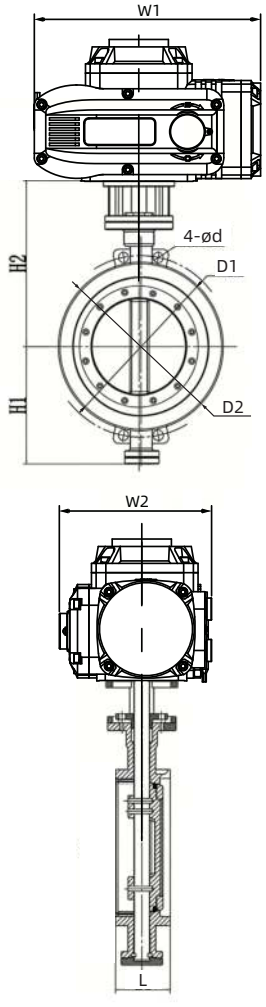
Product Description

Wafer-type explosion-proof electric hard-sealed Butterfly Valve saves installation space, applies to flammable and explosive environments. Its hard seal ensures wear resistance and tight sealing, and electric drive enables accurate flow regulation, ideal for high-risk sites like chemical and oil-gas industries.

Main Performance Specifications

Nominal Diameter: DN50~DN1200
Nominal Pressure: 0.6MPa~4.0MPa
Medium Temperature: ≤540°C
Protection Class: Ip67
Applicable Media: water, oil, gas and various high-temperature or impurity-containing media
Manufacturing Standards: GB/T 12238-2008, API 609
Face-to-Face Dimension Standard: GB/T 12221-2005
Inspection Standards: GB/T 13927-2022, API 598

Installation Dimension Drawing



Size (mm)	L	D1	D2	4-Φd	H1	H2	W1	W2
50	43	125	105	18	267	112	217	150
65	46	145	125	18	284	115	217	150
80	56	160	140	18	289	120	217	150
100	64	180	160	18	347	138	268	180
125	70	210	190	18	352	164	268	180
150	71	240	215	22	381	175	268	180
200	76	295	270	22	399	208	268	180
250	83	355	325	26	449	243	268	180
300	92	410	375	26	529	283	268	180
350	102	470	435	26	559	310	268	180
400	114	525	545	30	570	340	354	273
450	127	585	565	30	600	380	354	273
500	154	650	590	33	680	410	354	273
600	165	770	690	36	750	470	354	273
700	190	840	805	36	810	550	354	273
800	203	950	915	39	905	640	354	273
900	216	1050	1015	39	960	710	354	273
1000	254	1170	1120	42	1010	770	354	273
1200	265	1390	1335	48	1175	890	354	273

Flanged
Explosion-Proof Electric Hard-Seated Butterfly Valve

Product Description

Flanged explosion-proof electric hard-sealed Butterfly Valve: firm leak-proof flange connection, explosion-proof motor for flammable & explosive environments, hard seal with high pressure/high temperature/wear resistance, precise efficient electric control, reliable for chemical, oil & gas and other high-risk applications.

Main Performance Specifications

Nominal Diameter: DN50~DN1200

Nominal Pressure: 0.6MPa~4.0MPa

Medium Temperature: ≤540°C

Protection Grade: Ip67

Applicable Media: Water, oil, gas and various high-temperature or impurity-laden media

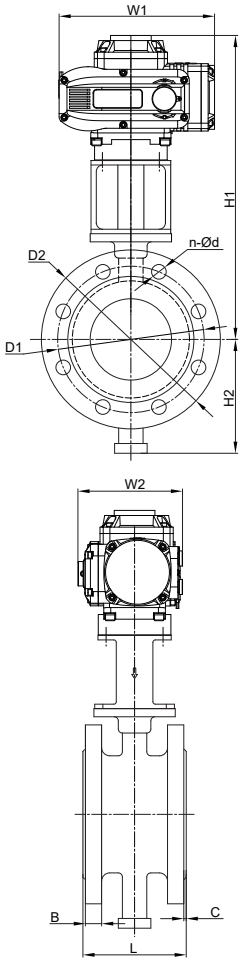
Manufacturing Standards: GB/T 12238-2008, API 609

Face-to-Face Standard: GB/T 12221-2005

Inspection Standards: GB/T 13927-2022, API 598

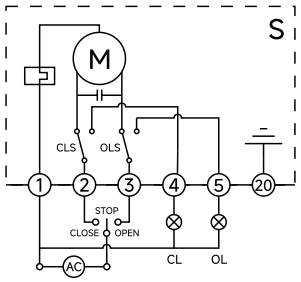
Flange Standards: GB/T 9124.1-2019, GB/T 9124.2-2019, ASME B16.50, ASME B16.47

Installation Dimension Drawing



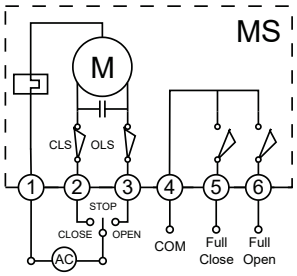
Size (mm)	L	D1	D2	N-Φd	B	C	H1	H2	W1	W2
50	108	125	165	4-Φ18	16	2	267	112	217	150
65	112	145	185	4-Φ18	16	2	284	115	217	150
80	114	160	200	8-Φ18	18	2	289	120	217	150
100	127	180	220	8-Φ18	20	3	347	138	252	163
125	140	210	250	8-Φ18	22	3	362	164	252	163
150	140	240	285	8-Φ22	24	3	381	175	252	163
200	152	295	340	12-Φ22	24	3	399	208	293	184
250	165	355	405	12-Φ26	26	3	449	243	293	184
300	178	410	460	16-Φ26	28	3.5	529	283	293	184
350	190	470	520	16-Φ30	30	3.5	559	310	293	184
400	216	525	580	20-Φ30	32	3.5	570	340	354	273
450	222	585	640	20-Φ33	40	3.5	600	380	354	273
500	229	650	715	20-Φ36	44	4	680	410	354	273
600	267	770	840	24-Φ36	54	4	750	470	354	273
700	292	840	910	24-Φ39	40	4	810	550	354	273
800	318	950	1025	28-Φ39	42	4	905	640	354	273
900	330	1050	1125	28-Φ42	44	5	960	710	354	273
1000	410	1170	1255	32-Φ48	46	5	1010	770	354	273
1200	470	1390	1485	32-Φ48	52	5	1175	890	354	273

Circuit Diagram



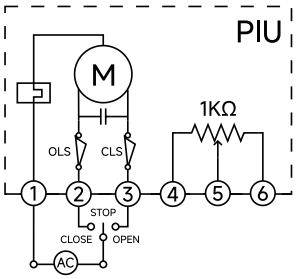
S

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.



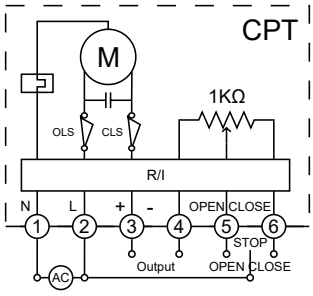
MS

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



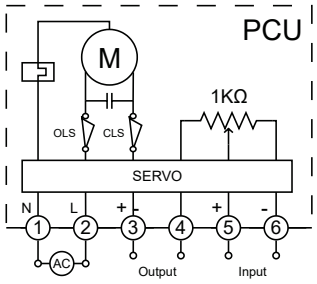
PIU

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



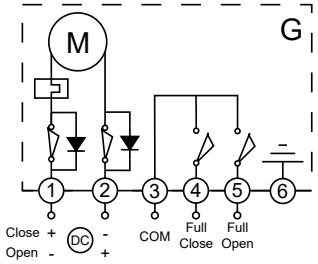
PCU

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.

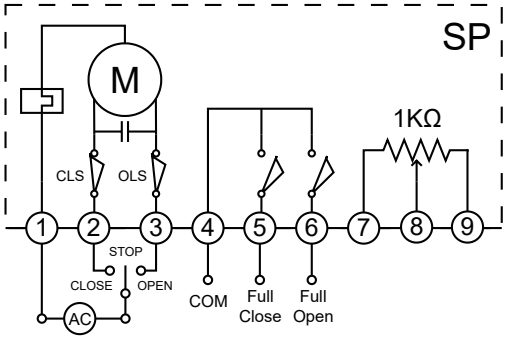


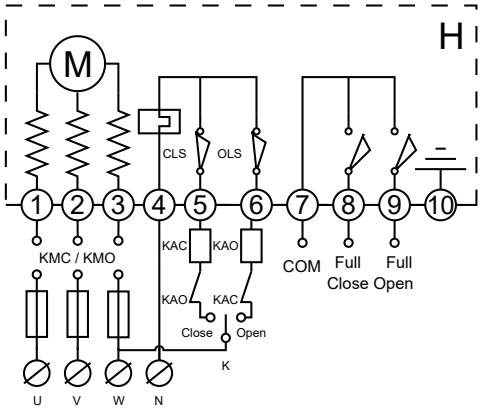
G

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.



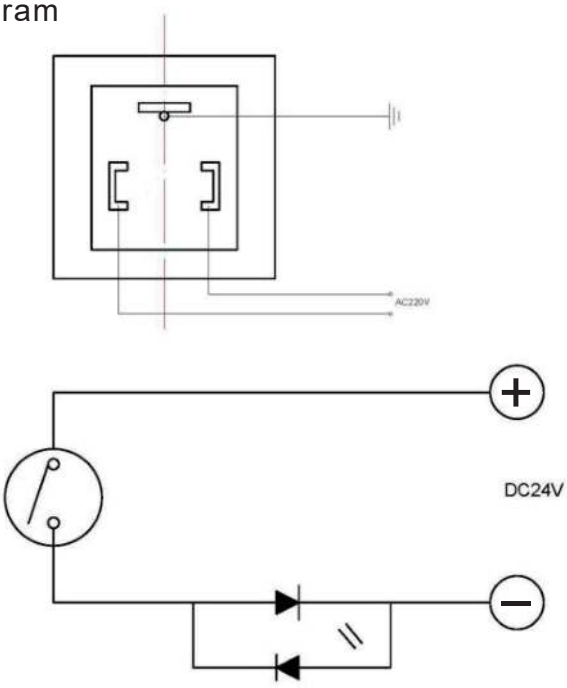


H

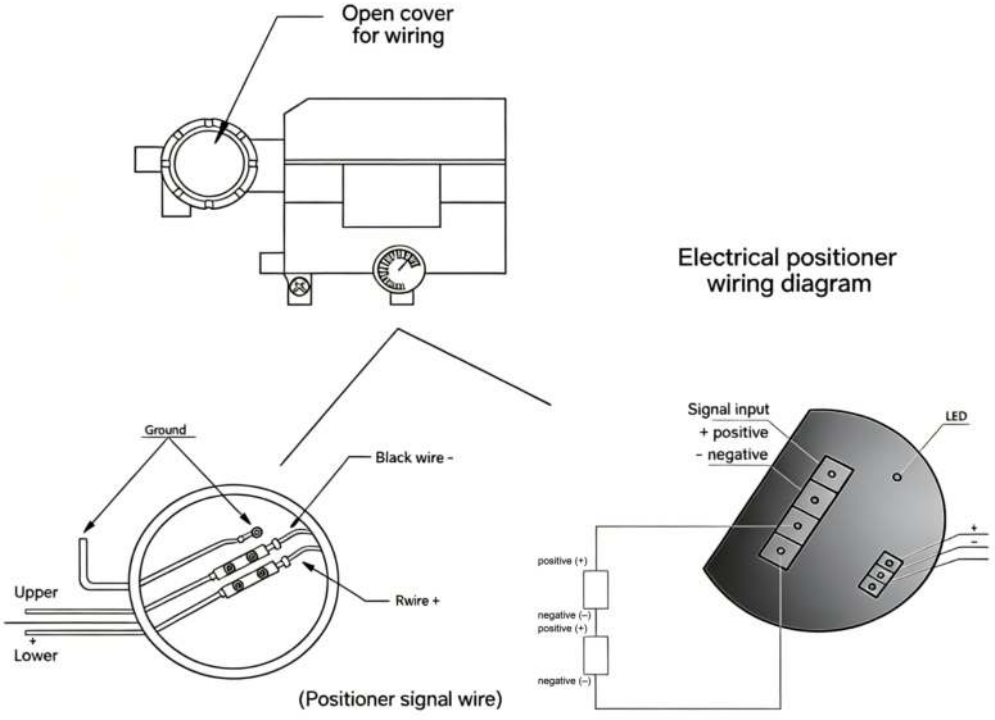
Three-phase AC switching signals are output through an external three-phase power phase-reversing circuit to control opening/closing operations, accompanied by a set of passive contact signals for fully open/fully closed position indication.

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

Wuhan Grat Control Valve Co., Ltd
TEL: +86-027-60706976
+86-027-60706977
Email: info@gratcv.com
Web: https://www.gratcv.com
Co.Addr: No. 62, Guanggu Avenue, Wuhan, Hubei, China.
Fty.Addr:B8-3-2, OVU, Wuhan, Hubei, China.

official website