SGARIA.

Trustable for life

Aw-series 90°
Rotary Pneumatic Valve Actuator

COMPANY PROFILE

The Sgaria

In addition to the best products, we work objectively and efficiently, with integrity and a sense of urgency to generate the best services.

Check out some of the pillars of our company:

Customer Focus: Our customers are the reason for our existence. We are committed to meeting your demands on site and time required;

Safety: We are strict in meeting our standards, valuing the safety of our customers and contributors;

Quality Results: We seek to maximize results by valuing quality in every detail of our operation;

Teamwork: Together we achieve our goals, acting in a shared way will more easily achieve achievements and good results, sharing achievements and results.

Certificates

By bringing together technical force with design and experience, Sgaria has all the documentation necessary to deliver a certified quality product.

ABS

PETROBRAS

BUREAU VERITAS 1828 BUREAU VERITAS

TÜV AUSTRIA

Sgaria Hong Kong

Address:
10 / F, Pilkem Commercial Center, 8
Pilkem Street, Jordan, Kowloon, Hong Kong
VAT CODE: 2288999

Sgaria EUA

Address:
175 SW 7th Street – Unit#1515
Miami – FL 33130
Phone: +1 786 773 4767
VAT CODE: 83-1661307

Sgaria China

Address:
Business Center in Mirae Asset Tower, 166
LujiAzui Ring Road 20Floor
Phone: +852 (3) 6789958
VAT CODE: 91310115MA1K4CN75C

Sgaria Brasil

Address:
VITÓRIA- ES
e-mail: comercial.ind@sgaria.com
Telefone: +55 27 2142-5884
CNPJ: 28.446.398/0001-03

I. Profile & features

AW pneumatic actuator consists of two types, namely the double-acting and single-acting (spring reset). It is composed of two separated cylinders, double pistons, and fork-type driving mechanism, facilitating manufacture of large-size cylinder body. The product features high output torque and flexible and steady actions. The inner wall of the cylinder body and piston axles has been plated with hard chrome, ideal in resisting abrasion. All the sliding parts have been equipped with oil-less bearing and pilot ring to minimize coefficient of friction and prolong the service life. The output torque characteristic of U-curve for the AW pneumatic actuator is more suitable to large-diameter ball valve and butterfly valve in terms of switch on/off and regulating; meanwhile, it is also fit for other occasions of 90° rotation.

Double-acting

Single-acting

II. Standard parameters

Basic design:
Pneumatic double-cylinder double-piston fork-type driving mechanism;
Model Awxx = double-acting;
Model AwxxS = single-acting (spring reset).
Angle of rotation:
Double-acting =0° ~ 90° ;
Single-acting = 0° ~90° ;
Adjustable angles from the two ends: -5° ~+5° .
Ambient temperature:-20° ~90° .
Air supply pressure:0.2~0.8 MPa(max. 1.0 Mpa).

III. Codification

AW 28 S

1. Pneumatic actuator
2. Cylinder inner diameter specifications: 13/17/20/25/28/35/40/50/60 (cm)
3. Single-acting (spring reset)

IV. Selection & installation of actuator

In choosing an AW pneumatic actuator, please firstly determine the torque of valve and take into consideration of conduit medium. The safety value shall be added by 25% for steam or non-lubricating medium; the safety value shall be added by 60% for non-lubricating dry gas medium; the safety value shall be added by 100% for non-lubricating granular or powder medium conveyed by gas; the safety value shall be added by 20% for clean, abrasion-free lubricating medium. Then, according to the working pressure of the air supply, the user will resort to the torque meter of the double-acting or single-acting type, acquiring accurate model of the actuator.

The correct installation accuracy of pneumatic actuator and valve has immediate influence upon the safety operation and service life of actuator. The correct installation means the absolute alignment of the actuator central axle and the valve rod, or accurate connection. Before assembly of the actuator and the valve, the valve torque has to be measured up within prescribed value. When the device is assembled, test the pneumatic actuator and valve simultaneously and pressurize the valve to sealing pressure rating. The actuator shall apply the air supply pressure of 0.4~0.7MPa or the pressure required by user. The two air inlets will be switched over for air intake of the pneumatic actuator. Observe the opening and closing of the pneumatic valve, which shall feature no halting or creeping. The switch shall operate flexibly. Repeated tests are necessary.

V. Functions and purposes of the actuator/the accessories

Double-acting pneumatic actuator: Two-position control over the switch on/off of valve.

Model of spring reset: The valve switches on/off automatically in case of cut-off or fault of the electric/air circuit.

Single electrical control solenoid valve: The valve switches on/off in case of power supply, or switches off/on in case of power failure (explosion-proof model is optional).

Double electrical control solenoid valve: The valve switches on when a coil is electrified, or the valve switches off when the other coil is electrified; memory function is available (explosion-proof model is optional).

Limiter switch feedback device: Transmitting the signal of switch position from the valve by long distance (explosion-proof model is optional).

Electrical positioner: Regulating the medium flow of the valve according to current signal (standard 4~20mA) (explosion-proof model is optional).

Pneumatic positioner: Regulating the medium flow of the valve according to air pressure signal (standard 0.02~0.1MPa).

Electrical converter: Converting current signal into air pressure signal; used in line with pneumatic positioner (explosion-proof model is optional).

Air supply treating trilink device: Including air pressure reducer, filter and oil atomizer for the pressurization of air supply, clean, and lubrication of moving parts.

Manual operating mechanism: Allowing manual operation in case of malfunction of the automatic control.

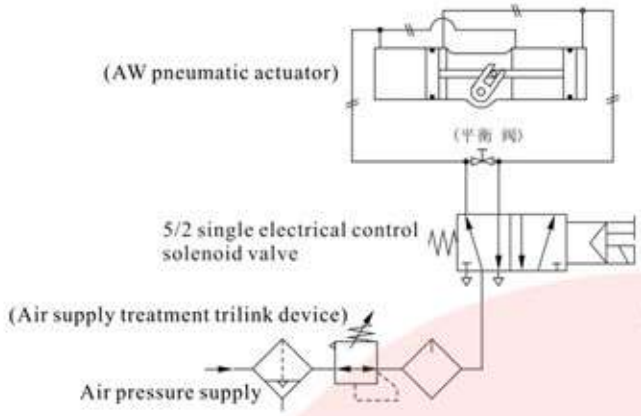
VI. Ordering information

The pneumatic valve is a complicated automatic control instrument consisting of various pneumatic elements. The user may specify the following accessories according to the requirements on control and detail the accessories in the technical agreement.

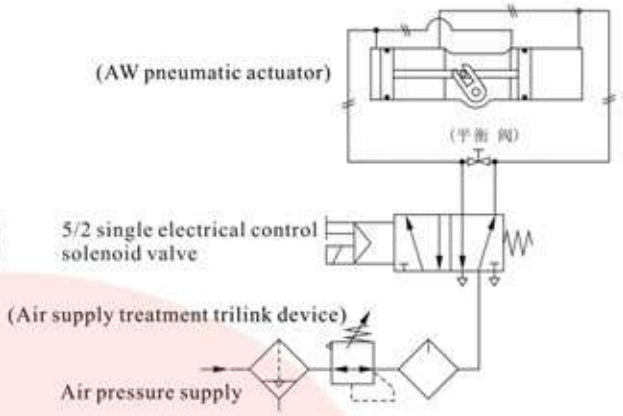
1. Pneumatic actuator: 1) Double-acting; 2) Single-acting; 3) Model and specification; 4) Actuating duration.
2. Solenoid valve: 1) Single-control solenoid valve; 2) Double-control solenoid valve; 3) Service voltage; 4) Explosion-proof model.
3. Signal feedback: 1) Mechanical switch; 2) Proximity switch; 3) Output current signal; 4) Service voltage; 5) Explosion-proof model.
4. Positioner: 1) Electrical positioner; 2) Pneumatic positioner; 3) Current signal; 4) Air pressure signal; 5) Electrical converter; 6) Explosion-proof model.
5. Air supply treatment trilink device: 1) Filtering reducing valve; 2) Oil atomizer.
6. Manual operating mechanism.
7. Special interface size.
8. Customer-made.

VII. Double-acting piping principle

■ Normal close (open upon electrification)

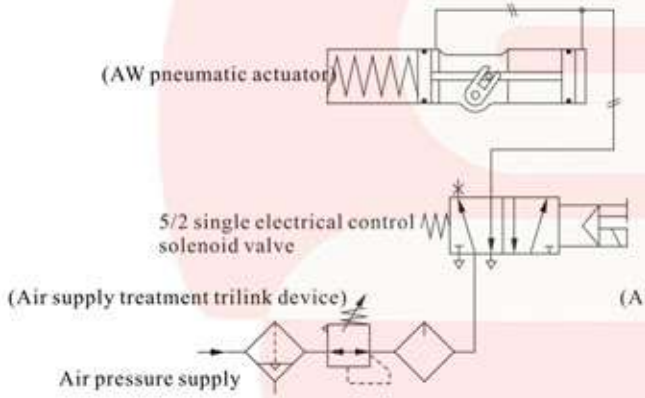


■ Normal open (closed upon power down)

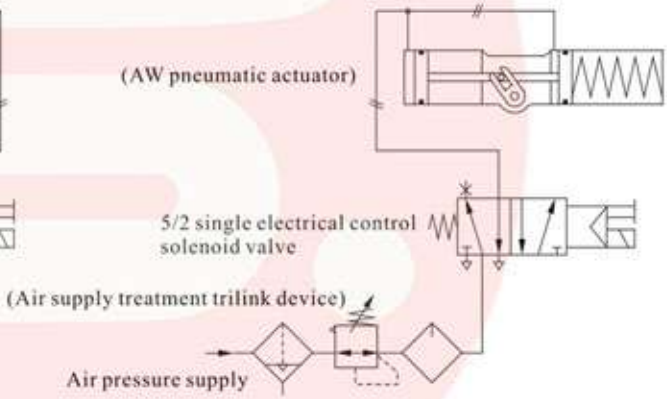


VIII. Single-acting piping principle

■ Normal close (open upon electrification)

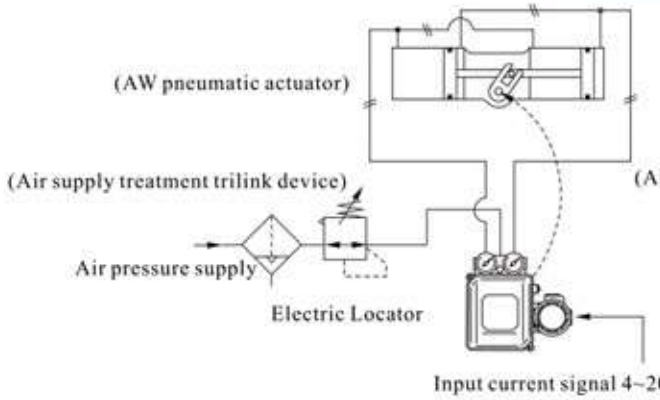


■ Normal open (closed upon power down)

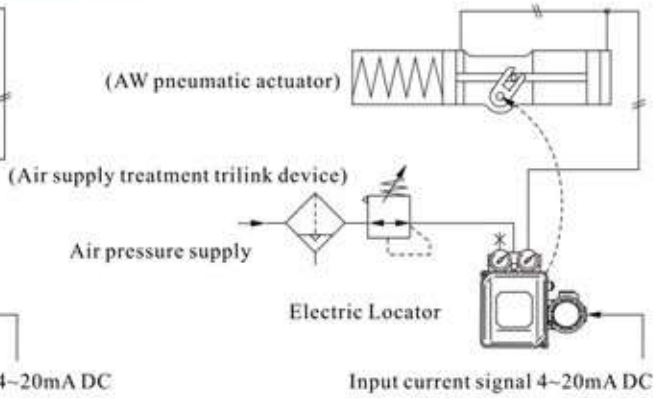


IX. Regulating piping principle (with electrical positioner)

■ Double-acting



■ Single-acting



X. Double-acting output torque

Unit: N.m

Model and specification	Air supply pressure (Mpa)				
	0.3	0.4	0.5	0.6	0.7
AW13	515	620	770	930	1080
AW17	950	1270	1590	1910	2230
AW20	2150	2870	3580	4300	5020
AW25	3360	4480	5600	6720	7850
AW28	5150	6860	8580	10300	12020
AW35	10120	13500	16870	20250	23620
AW40	13220	17630	22040	26450	30860
AW50	22460	29950	37440	44930	52420
AW60	47300	63070	78840	94610	110380

XI. Single-acting output torque

Unit: N.m

Model and specification	Spring torque		Air supply pressure (Mpa)					
			0.4		0.5		0.6	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
AW13S	230	430	185	340	340	545	490	700
AW17S	330	670	600	930	920	1290	1230	1573
AW20S	1190	1980	880	1670	1600	2390	2320	3110
AW25S	1600	2510	1970	2880	3090	4000	4210	5120
AW28S	2900	5610	1250	3960	2970	5685	4680	7400
AW35S	5520	10740	2760	7970	6130	11340	9510	14720
AW40S	8770	16140	1480	8860	5900	13260	10300	17670
AW50S	13110	27490	6370	20750	14840	29220	23310	37700

XII. Cylinder capacity, air consumption calculation and weight

Unit: N.m

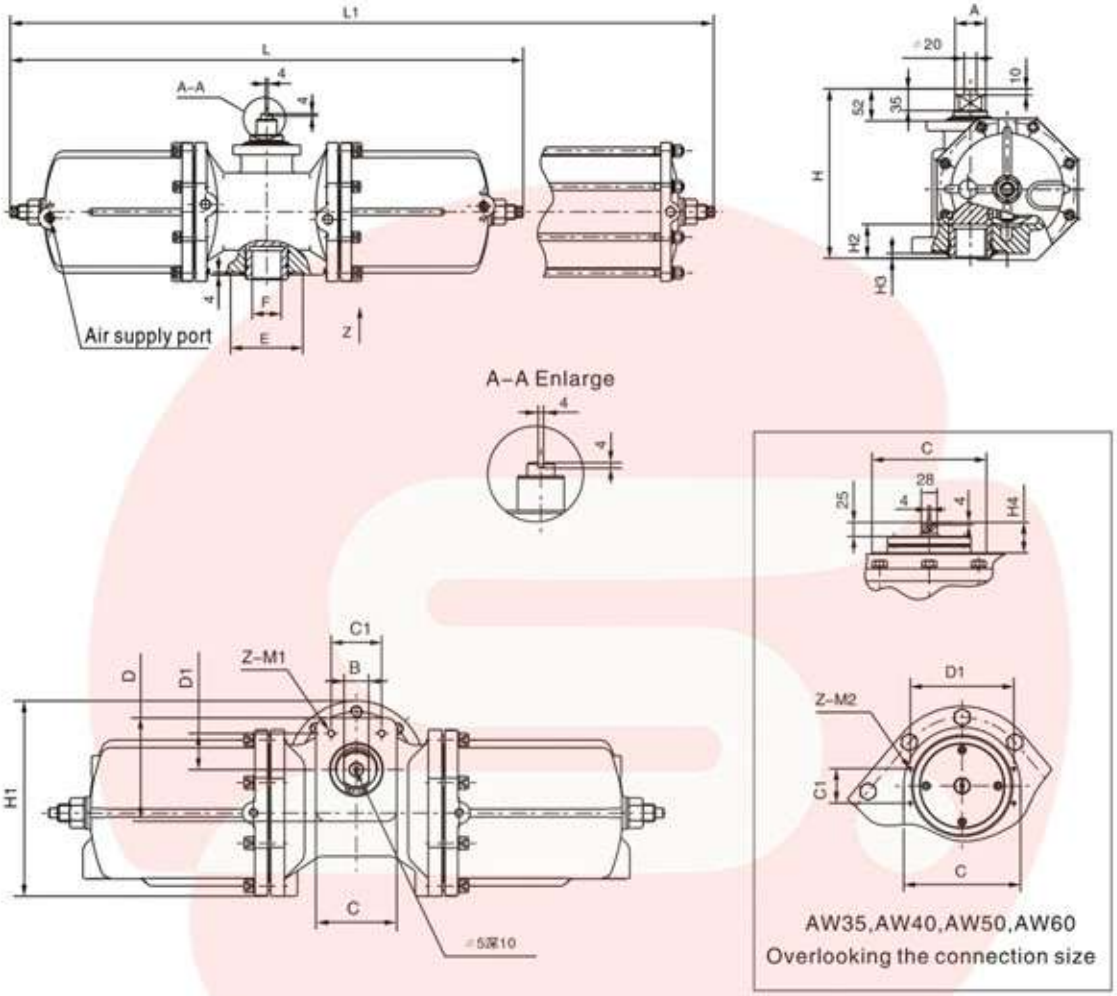
Model and specification		AW13	AW17	AW20	AW25	AW28	AW35	AW40	AW50	AW60
Cylinder capacity L	Double-acting A+B	6.5	14.3	30.8	48.5	73.0	148.2	193.2	350	630
	Single-acting B	3.25	7.15	15.4	24.2	36.5	74.1	96.1	175	315
Weight kg	Double-acting	48	82	170	195	325	600	800	1070	1580
	Single-acting	65	116	223	280	450	845	1070	1400	

Formula for the double-acting V=(A+B){(P+101.2)/98}M
Formula for the single-acting V=A{(P+101.2)/98}M

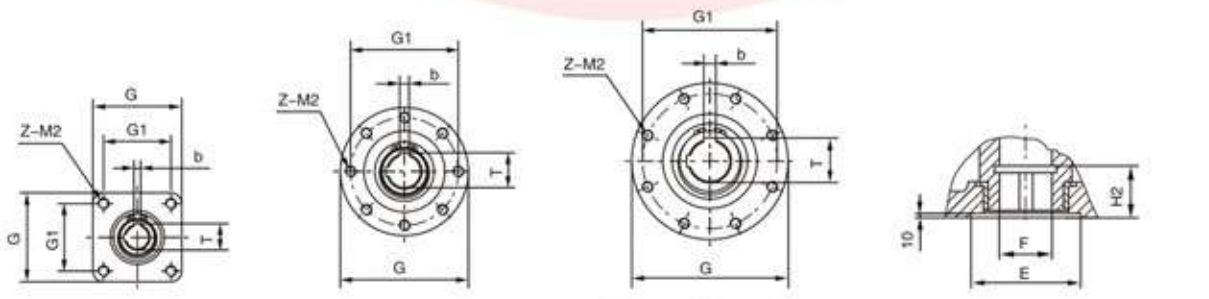
Note: Multiply MPa with 1000 to convert into Kpa.

V: Air consumption NL/min
P: Air supply pressure Kpa G (gauge pressure)
M: Number of repetitions per minute for the piston
A/B: Cylinder capacity (see the table)

XIII. External dimensions



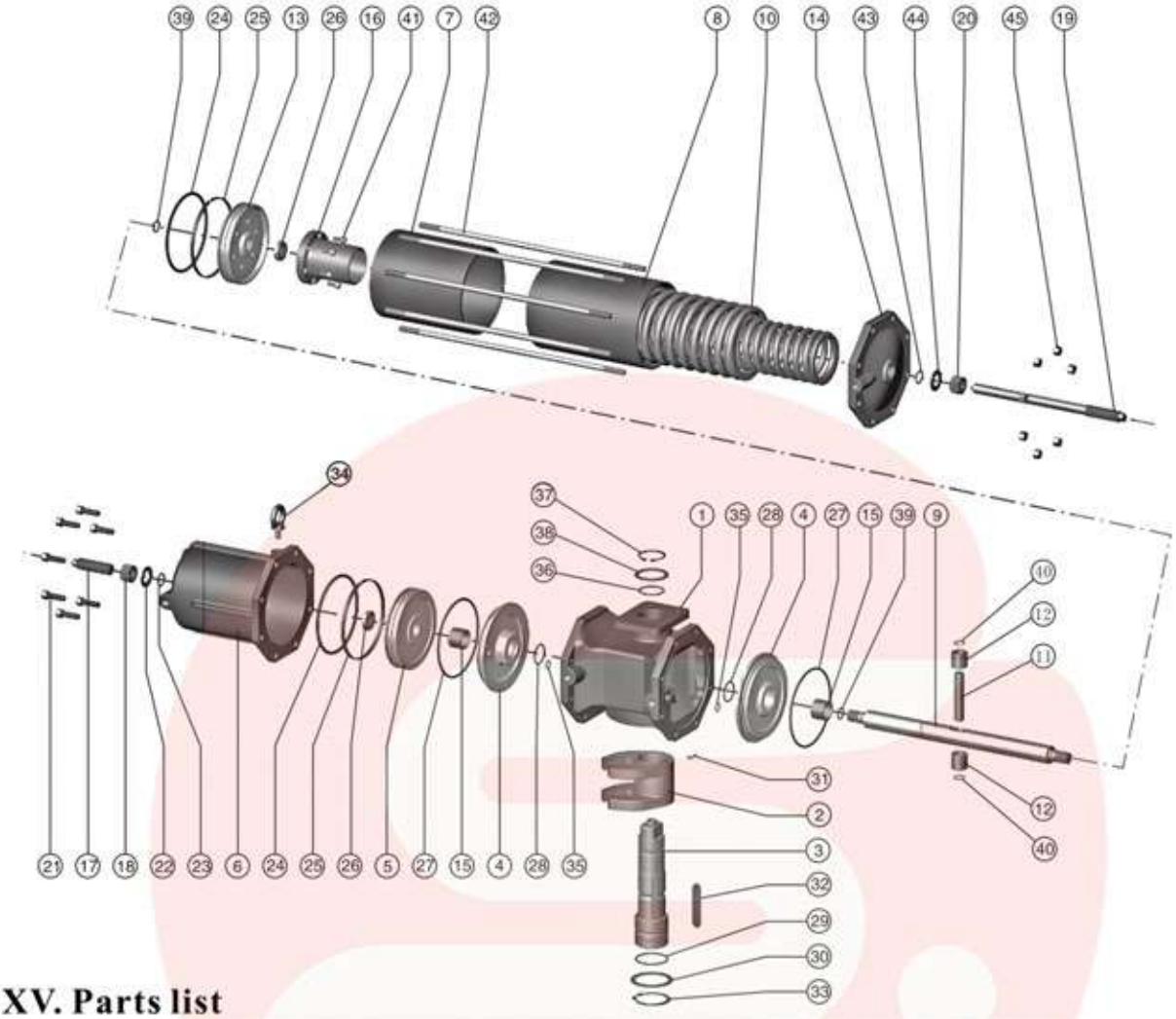
Direction Z



Shape and connection dimensions

Model	AW13/ AW13S	AW17/ AW17S	AW20/ AW20S	AW25/ AW25S	AW28/ AW28S	AW35/ AW35S	AW40/ AW40S	AW50/ AW50S	AW60
L	627	850	1158	1158	1448	1880	1880	2350	2800
L1	850	1120	1495	1630	1955	2520	2520	3280	/
H	228	275	326	326	396	440	490	600	700
H1	200	270	350	375	460	545	570	680	820
H2	46	55	67	67	80	116	116	144	172
H3	7	8	12	12	11	/	/	/	/
H4	/	/	/	/	/	/	54	54	54
A	⌀42	⌀50	⌀64	⌀64	⌀85	/	/	/	/
B	28	34	44	44	55	/	/	/	/
C	85	112	137	137	160	203	203	230	256
D	95	143	157	157	170	/	/	/	/
C1	70	70	100	100	100	180	180	195	234
D1	35	50	60	60	60	60	60	80	60
Z-M1	2-M8	2-M10	2-M10	2-M10	2-M10	4-M6	4-M6	4-M6	4-M6
E	⌀80	⌀120	⌀140	⌀140	⌀220	⌀220	⌀220	⌀280	⌀360
F	⌀34	⌀48	⌀60	⌀60	⌀70	⌀105	⌀105	⌀120	⌀140
G	132	⌀190	⌀232	⌀232	⌀318	⌀350	⌀350	⌀400	⌀500
G1	100	⌀160	⌀200	⌀200	⌀280	⌀300	⌀300	⌀350	⌀450
Z-M2	4-M16	8-M16	8-M16	8-M16	8-M20	8-M24	8-M24	12-M24	12-M27
b	10	14	18	18	20	28	28	32	36
T	37.3	51.8	64.4	64.4	74.9	117.8	117.8	127.4	148.5
Air supply port	4-G1/4	4-G3/8	4-G1/2	4-G1/2	4-G1/2	4-G1/2	4-G1/2	4-G1/2	4-G1/2
Remarks									

XIV. Exploded view



XV. Parts list

S/N	Name	Amount	S/N	Name	Amount	S/N	Name	Amount	S/N	Name	Amount
1	Casing	1	13	Piston	1	25	Piston Bearing	2	37	Elastic collar	1
2	Fork	1	14	Cylinder cove	1	26	Round nut	2	38	Shaft washer	1
3	Axle	1	15	Oil-less bearing	2	27	O-ring	2	39	O-ring	2
4	Clapboard	2	16	Positioning plate	1	28	O-ring	2	40	Elastic collar	2
5	Piston	1	17	Adjusting screw	1	29	O-ring	1	41	Internal hexagon screw	4-8
6	Cylinder body	1	18	Nut	1	30	Shaft washer	1	42	Stud bolt	4-12
7	Cylinder body	1	19	Adjusting screw	1	31	Set screws	1	43	O-ring	1
8	Spring cylinder	1	20	Nut	1	32	Flat key	1	44	Washers	1
9	Piston rod	1	21	Internal hexagon screw	4-12	33	Elastic collar	1	45	Nut	4-12
10	Spring mix	1	22	Washers	1	34	Ring screwr	1-2	46		
11	Pin shaft	1	23	O-ring	1	35	O-ring	2	47		
12	Rolling sleeve	2	24	O-ring	2	36	O-ring	1	48		

Maintenance and upkeep

Pneumatic Whole-set Valve, as the local instrumentation, shall be kept in regular maintenance in order to guarantee the machine work normally under the clean and well lubricating conditions.

The ordinary maintenance for the pneumatic actuator shall involve both keeping the air supply dry and clean and regularly discharging water or pollutions from the air filter that works together with the actuator to prevent them entering into the solenoid valve and actuator. The surface of actuator shall keep clean. The actuator shall keep clear of vapor, water, or oily soy, and retain a satisfactory sealeach sealing surface or point shall be unbroken and airproofed. No damage is permitted in the joint of air intake and outlet of cylinder: carefully check every part of the cylinder and air pipes, make sure the air supply pressure is normal. No defects are allowed in the pipe, which shall be unblocked and leakless. The coupling of pipes, no matter of solenoid valve, tri-link device for air source treatment, or of the localizer, shall be well jointed without leakage. The power source signal or regulating current signal shall be of no phase-out, short-circuit, or circuit break problems. The protection joint of the shell shall be tight enough to avoid the erosion of water, moisture and dust which may influence the or dinary operation of solenoid valve or localizer. The signal feedback device shall be of good condition so as to ensure the proper signal transmission from open and close position. Make sure the manual operating device is lubricated and agile for close and open.

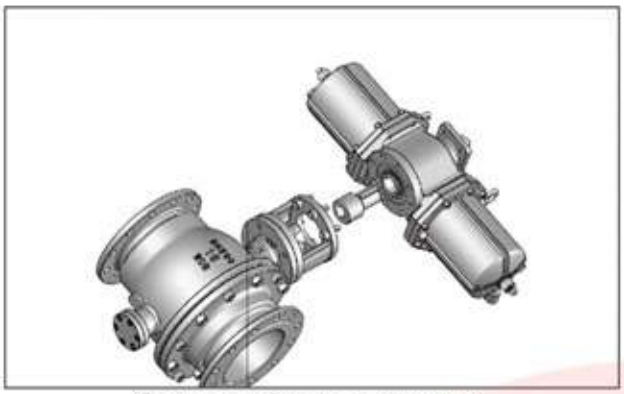
Valve surface shall keep clean, removing dust, oily soy, and media residues at every turn. Special attention should be given to the moving parts of valve so as to avoid the erosion and abrasion. During operation, the valve shall be of good condition; no leakage, and no trouble for open and close. Make sure all valves are perfect and complete. Bolts in flange and support shall be well equipped with the screw thread inviolated and tight. If it happens looseness, tighten it at once, which may cause the wrong 拗pen?and 挿lose?position and thus result in the leakage. The packing gland shall not be deflected, otherwise it will rub the valve rod and be stopped, and makes the actuator run ineffectively or abnormally.

Obviously it is very important to carry out the maintenance work, only by which the whole pneumatic system can work in gear. Normally it is recommended to check the system at least once a month, and maintain it at least once a year.

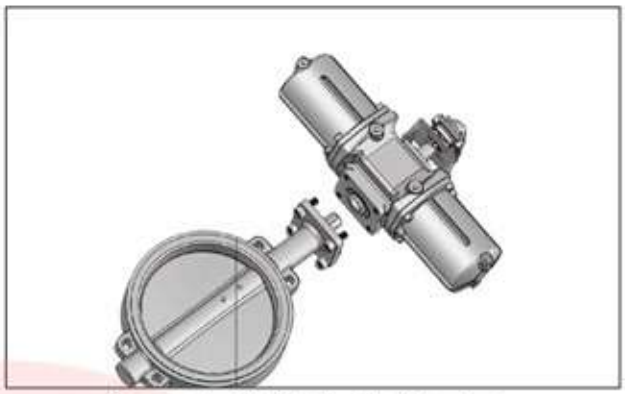
Troubles & Troubleshooting

Troubles	Causes	Troubleshooting
The pneumatic valve does not work	(1) check the solenoid valve, see if it is normal, if the coil burned out, or if the valve core blocked by dirties.	(1) change the solenoid valve, coil, or clean out dirties.
	(2) check the air supply of the actuator, see if it works well. If not, undo it and see if there is damage on seals, or on the surface of the inner bore of cylinder.	(2) change seal ring, or cylinder.
	(3) impurities in valve that block the valve core.	(3) remove impurities and change valve pieces.
	(4) the lever stays in the manual position.	(4) pull the lever onto the pneumatic position.
The pneumatic valve works slow	(1) short of air supply pressure	(1) increase air supply pressure (<0.4Mpa for unclassified test, while 0.4~0.7Mpa for operation.)
	(2) too small torque of the pneumatic actuator	(2) use a large-sized acutuator.
	(3) the valve core or other valve pieces is mounted too tight and unreasonable .	(3) remount the valve pieces, and adjust the valve torque.
	(4) the air supply pipe is blocked and causes a poor flow.	(4) dredge it.
The message replyer has no message	(1) the circuit is short, or broken.	(1) maintain the circuit.
	(2) wrong cam position	(2) rearrange the cam's position.
	(3) damage of microswitch	(3) change the micro switch.

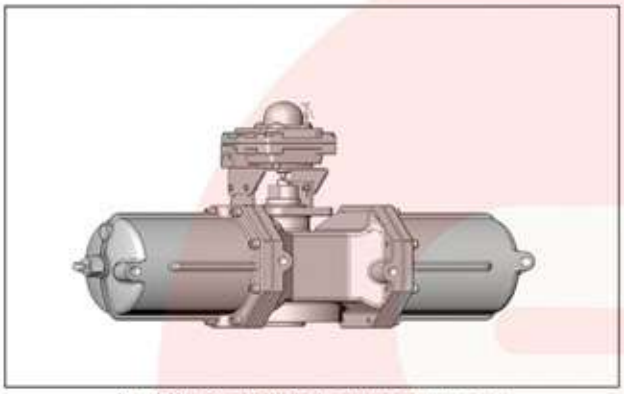
Valves and accessories to connect



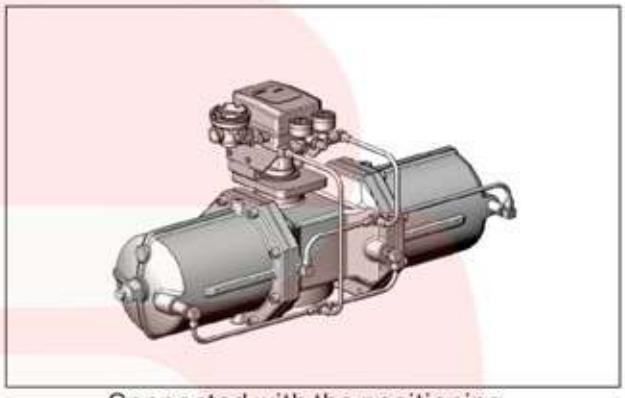
Connect with the ball valve



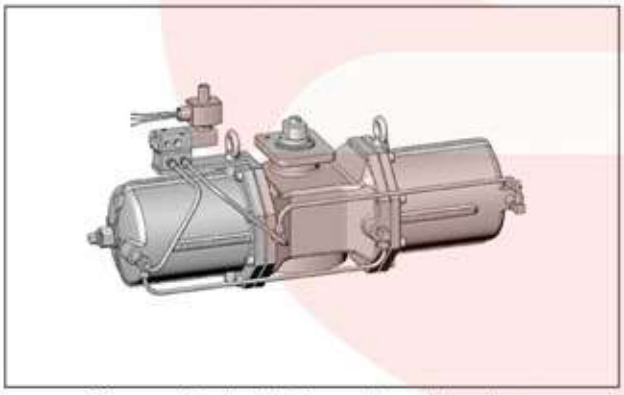
Connect with the butterfly valve



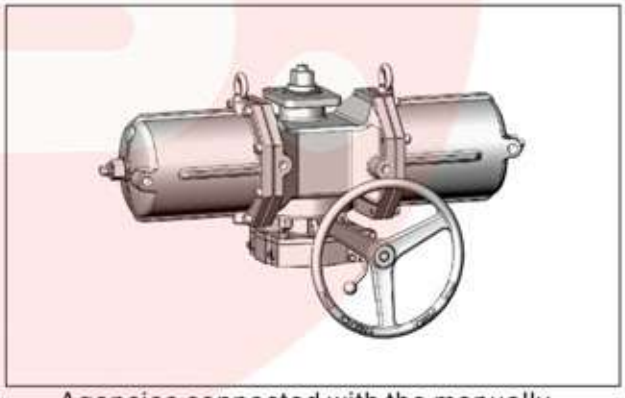
And limit switch box to connect



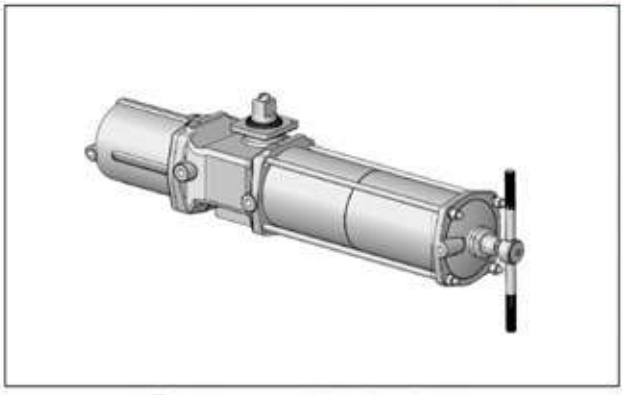
Connected with the positioning



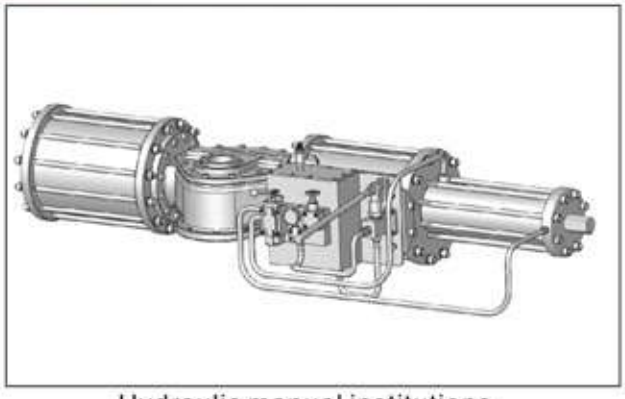
Connected with the solenoid valve



Agencies connected with the manually



Easy manual institutions



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