Keyto 星拓

1013 rocker arm structure solenoid valve

Solenoid valve series | specification

Shenzhen Keyto Fluid Technology Co., Ltd.

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Threaded Valve
(Square Base)

Threaded Valve
(Fan-shaped base)

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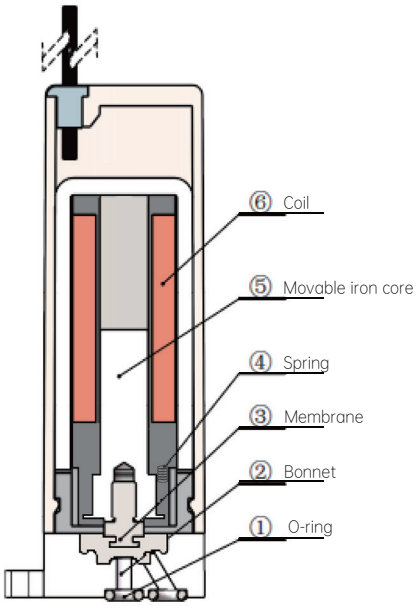
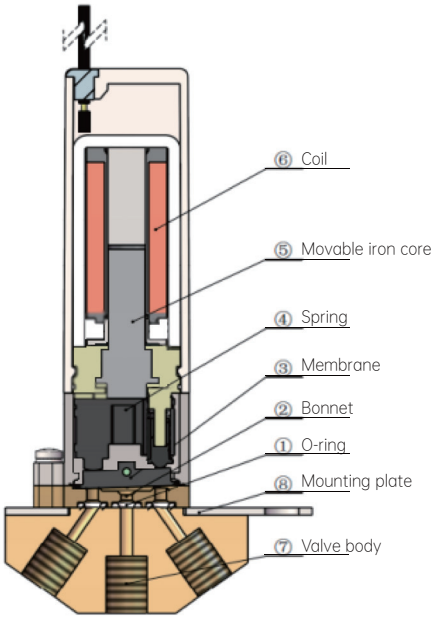


Direct-operated type



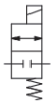
Rocker type

	①	②	③	④	⑤	⑥	⑦	⑧
Name	O-ring	Bonnet	Membrane	Spring	Movable iron core	Coil	Valve body	Mounting plate

3. Specification

3.1 How To Order

1013 - ① ② - ③ ④ / ⑤ ⑥ ⑦

Code	Item		Description	
①	Valve Type	2	Rocker type 2-way N.C.	
		3	Rocker type 3-way	
		4	Rocker type 2-way N.O.	
②	Rated Voltage	1	12V	
		2	24V	

③ Mterial & Port Connection	④ Membrane+Valve seat/Body/Bonnet+Port connection	
E: EPDM	L: PEEK Bonnet H: PVDF Bonnet	Base-mounted 
T: ETP	P: PEEK Bonnet	Tubing 
F: FFKM	MU: PEEK Bonnet+POM Body HU: PEEK Bonnet+PVDF Body FU: PEEK Bonnet+PVDF Body DU: PVDF Bonnet+PVDF Body KU: PEEK Bonnet+PEEK Body NU: PVDF Bonnet+PTFE Body	U : 1/4-28UNFThreaded M: M6Threaded G: G1/8Threaded  Threaded Note: Threaded type U/M/G optional

⑤	Lead wire length	5	500mm
⑥	Terminal by default	N	N/A
⑦	Customerization	N/A	——
		Cx	x shall be number, which repreasents customer's demand

3.2 Selection Suggestion

Item	Suggestion		
Membrane	EPDM	Suitableforweak acids andbases, clear water, air andothermedia; notsuitablefor oil, strong acids andbases andothermedia	Be sure to verify the compatibility of the reagent beforefixingtheproduct model number. Forexample, a cleaningsolution containing sodiumhypochlorite
	ETP	Suitableformediumsthat are notstrongly acidicor alkaline;oils	Be sure to verify the compatibility of the reagent before fixing the product model number. For example, special medical reagents
	FFKM	Resistanttohighlycorrosivereagents andorganicsolvents	

4. Main Features

① **Membrane Isolated Structure:** Use membrane to isolate the fluid area from the coil, which ensures that the fluid will not contact with other parts outside the flow path

② **Less Flow Fluctuation:** Direct operated structure——because valve chamber volumes are different in the OFF and ON states, the volume change when switching the valve from the ON to the OFF state tends to cause fluid to be output from the 2 sides of the valve
Rocker type construction—— 1013 rocker type solenoid valve due to the special internal construction, the variation of action volume is basically 0

③ **StrongCorrosion Resistance:** Thesolenoidvalveismadeofhighperformanceplastic andrubber, whichcan ensurethe mostreliablesealduringtheworkingprocessofthesolenoidvalve at alltimes, and a varietyofmaterials are availablefor

④ **Fast Response:** Theport-to-portswitchingtimeofthesolenoidvalvein operation istypicallylessthan 20ms

⑤ **CompactSize:** The overall dimension of the 1013 series solenoid valve is small, whichcan meetthemounting needsof various instruments

⑥ **Long Lifetime:** Up to 5 million times under normal working conditions

⑦ **Low Powe Consumption:** 1013rocker type solenoid valve power is aslow as 1.8W, 1013 direct operated solenoid valve poweris aslow as 2.8W, whichcan effectivelyreducetheheatin thelong-hoursworking

⑧ **Independent Intellectual Property Rights:** PatentNumber:CN114060565A

5. Main Specifications

Stucture	Rocker type			Direct-operted type
Ways Number	2-WAY N.C.	2-WAY N.O.	3-WAY	2-WAY N.C.
Orifice	1.5mm			
Flow Rate CV (Note1)	0.03			0.017
Suitable Medium	Water, air, weak acid, weakbase(The applicablemediumisrelatedtothewettedpartmaterialtolerance)			
Environmental Conditions	RefertoAttached Table			
Applicable Pressure Range	-75kpa~250kpa			
Pressure Resistance (Note2)	0.38Mpa			
Leakage	0 (hydraulicpressure)			
Response Time (Note3)	< 20ms			30ms
Internal Volume	20μL			40μL
Rated Voltage (Note4)	DC: 24V/12V			
Fluctuation of Voltage	-10%~+10%			
Power	24V:2.8W; 12V:3W;			24V/12V:2.8W
Low Power	24V:1.5W; 12V:1.8W;			/
Energy Saving Circuit (Note5)	12V/24V: 0.8W			/
Insulation grade	F			
Insulation rade	IP40			

Note(1) Flow rate CV, also known as the flow rate coefficient, is a dimensionless parameter, representing the liquid flow capacity of the component, the actual design and use, according to the application conditions to be converted into a flow reference with a scale.

$$C_v = q_v\sqrt{\frac{\rho \times \Delta P}{\rho_0 \times \Delta P_0}}$$

q_v ——flow rate of the medium when measured, in gal/min.

ρ_0 ——specifies the density of the aqueous medium at $60^\circ F$, $\rho_0 = 1g/cm^3$

ΔP_0 ——differential pressure before and after the measured element, $\Delta P_0 = 1lbf/in^2(psi)$

ρ , ΔP ——the density of the medium and the pressure difference before and after the measured element.

Note (2) Indicates the leakage test at for 1-minute, under the pressure without breakage or cracking.

Note (3) Response time: The medium at 0.25MPa or maximum operating differential pressure of air or water from the inlet, input rated on-off signal to the tested solenoid valve to open and close the solenoid valve, the pressure sensor measures the pressure change on the outlet of the solenoid valve, and at the same time, the test instrument with fast response time starts to increase the pressure to 90% of the maximum value (normally closed solenoid valve) or decrease the pressure to 10% of the maximum value (normally open solenoid valve) from the moment of voltage on-off.According to engineering experience, the response time T exceeds 50ms, the air gap of the valve is close to the design threshold, there will be suction instability, so the response time is generally within the declared life, are not more than 50ms.

In addition, the industry has the use of the current method response time, which is based on the change in current caused by the change in the coil magnetic field when the solenoid valve is switched in action, to measure the action response time T1, T1 is generally less than the response time T of the airflow method.

When the sealing material is ETP or FFKM, the response time will be longer if the ambient temperature and the fluid temperature are below 10°C. The response time is the action time of the solenoid valve, which will also be affected by pressure, medium and temperature.

Note (4) Rated voltage: When the solenoid valve connected to the power supply, since the coils are electromagnetic element electromagnetic components, the Back-EMF will be generated when the solenoid valve motions, it is recommended that the use of parallel diode can be eliminated, please contact our technicians if there is anything you don't understand.

Note (5) The energy-saving circuit is recommended for use under conditions of prolonged power-on and high duty-cycle conditions

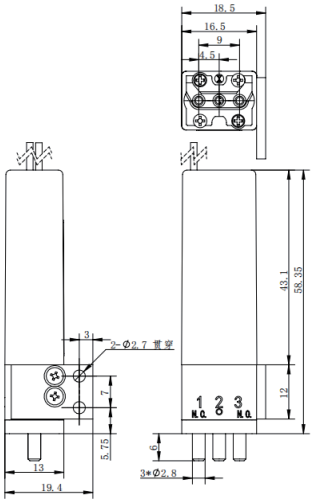
Please see below table 1.

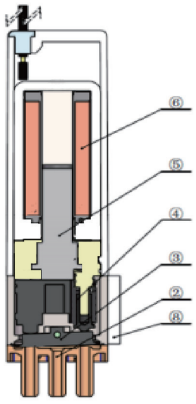
Items	Unit	Value
Operating ambient temperature	Degrees Celsius	5℃~40℃
Operating medium temperature	Degrees Celsius	5℃~40℃
Humidity of the operating environment	RH%	30%~80%
Storage temperature	Degrees Celsius	-20℃~+60℃
Storage humidity	RH%	10%~85%

Note: Please contact our technicians for further information and special applications.

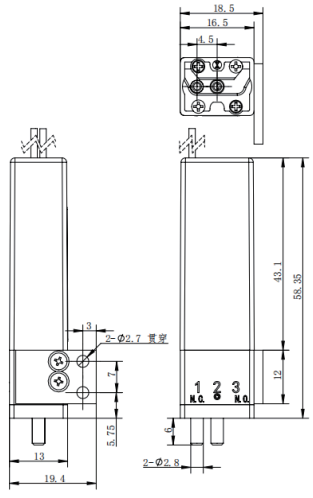
6. Dimensions

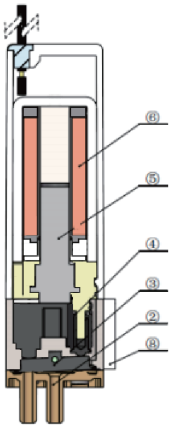
A Tubing Type





3-WAY





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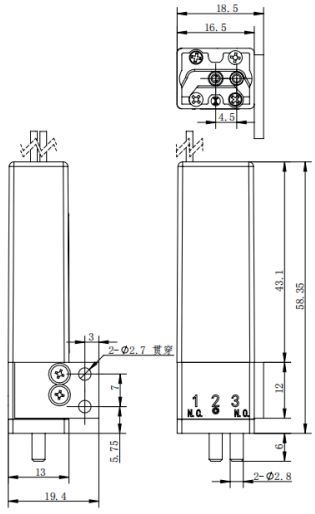
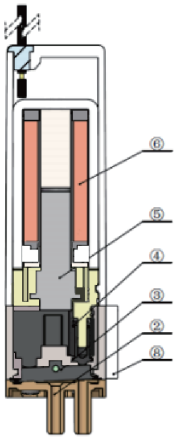
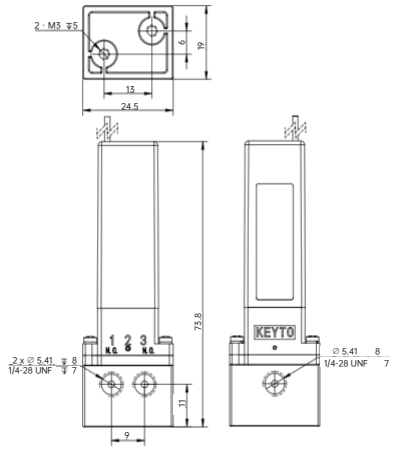
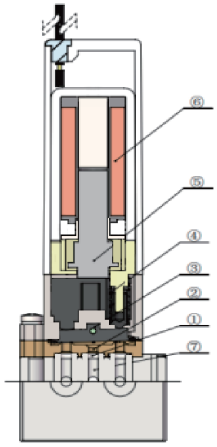




2-WAY N.O.

B Threaded Type (Rocker)





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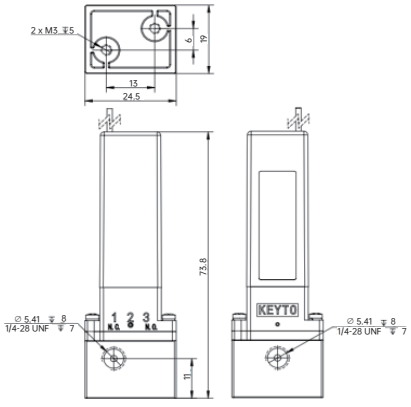

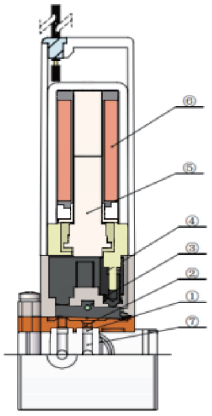

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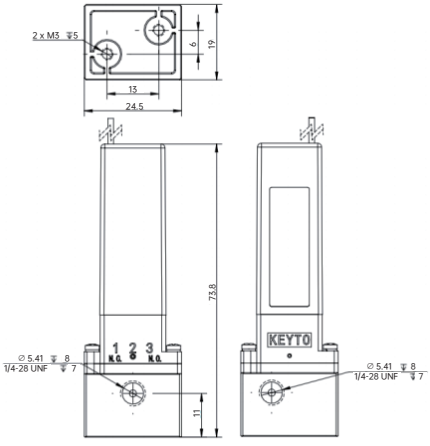
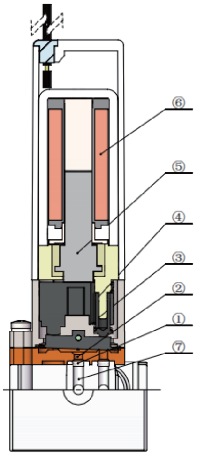
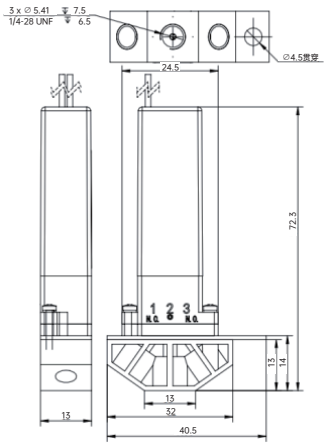
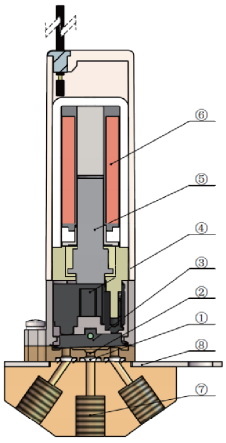




2-WAY N.O.

C Threaded Typed(Fan-Shaped Base)





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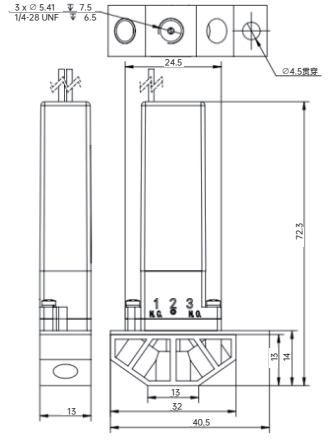

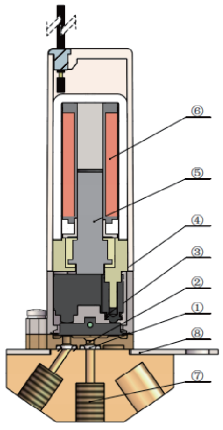

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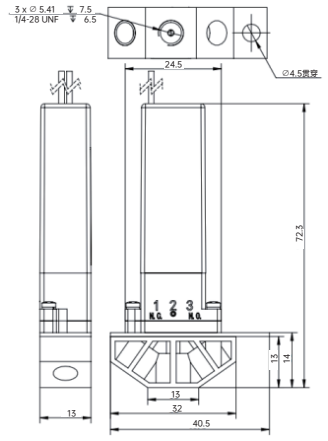
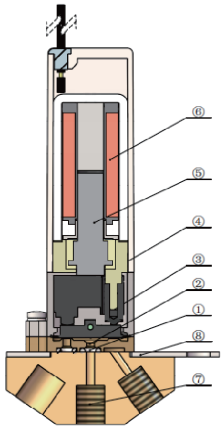
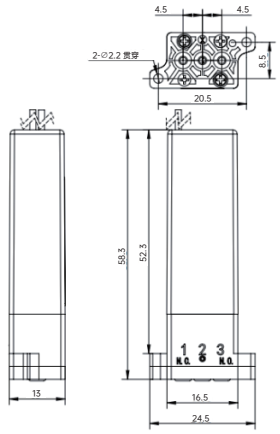
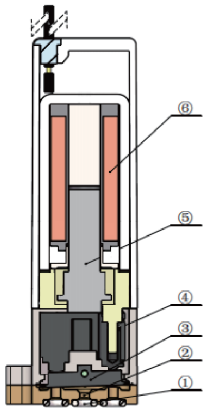




2-WAY N.O.

D Base-Mounted Type(Rocker)





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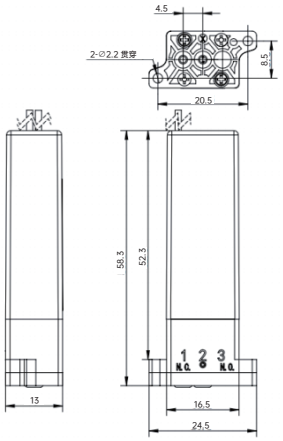

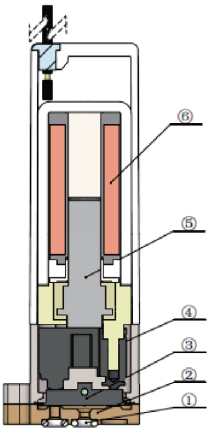

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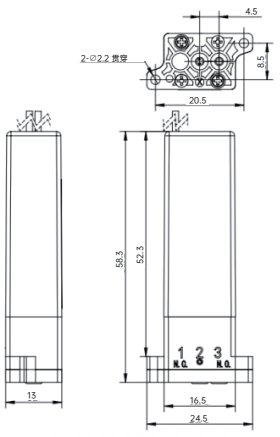
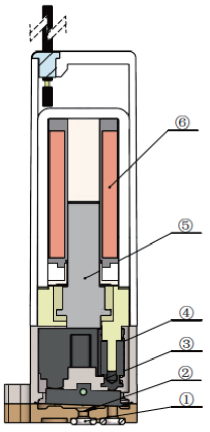
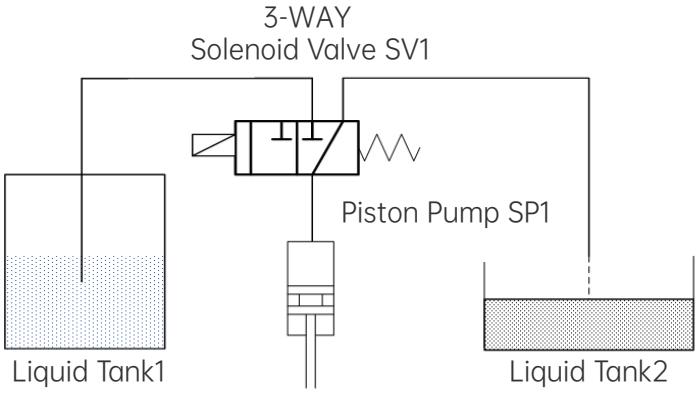




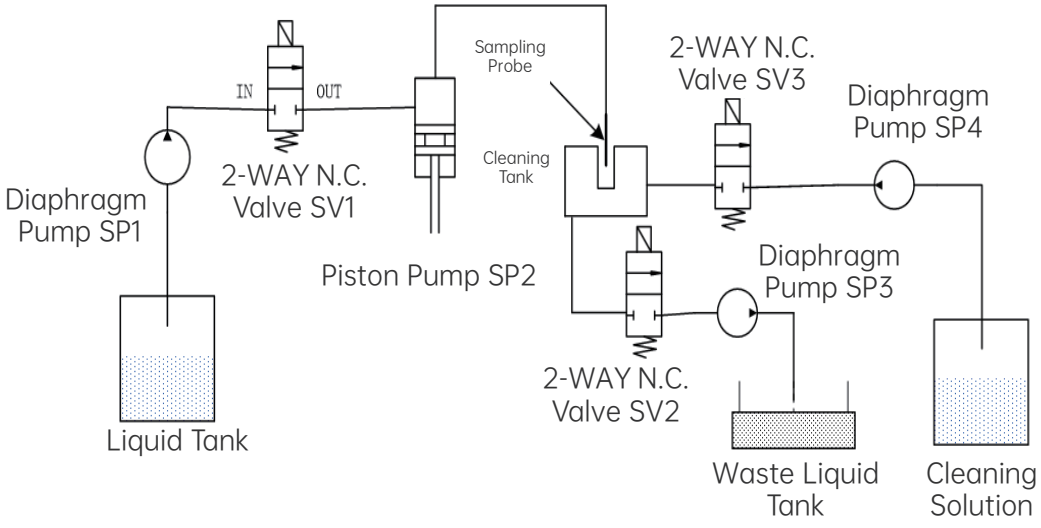
2-WAY N.O.

7. TypicalApplications

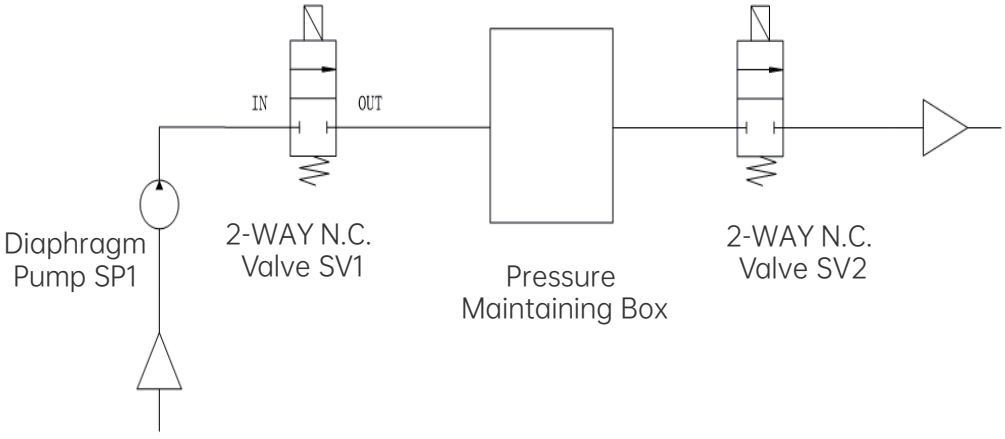
7.1 Sampling



7.2 Cleaning



7.3 Pressure Maintaining



8. Using Instructions

8.1 Poweron for a LongTime:

Standard model solenoid valve shall avoid the use of wet conditions, otherwise it is easy to cause the solenoid valveru st, short circuit and other undesir able phenomena occur.If the wet conditions can not be avoided, please contact us to recommend better solution

8.2 Applicable Medium:

As the 1013 series solenoid valves are miniature valves with a compact internal structure, the applicable medium is as high purity as possible without suspended particles of impurities or low concentration of crystalline reagents, which can effectively avoid seal failure and diaphragm adhesion of the solenoid valve and improve the service life of the solenoid valve. If the above situation cannot be avoided, a filter can be installed in front of the solenoid valve to avoid the solenoid valve being blocked

8.3 Normal Maintenance:

If the reagents used are salt reagents that crystallise easily or mixtures that deteriorate easily, it is recommended that the fluid circuit of the solenoid valve be set up with a cleaning and emptying sequence before the equipment is switched off, and that the solenoid valve be filled and self-tested with a sequence to avoid dysfunction of the fluid circuit, which may affect the use of the equipment and the test results

8.4 Operating Environment:

Standard model solenoid valve shall avoid the use of wet conditions, otherwise it is easy to cause the solenoid valve rust, short circuit and other undesirable phenomena occur. If the wet conditions can not be avoided, please contact us to recommend better solution

8.5 Wetted Part Material Selection:

You can select the corresponding material for wettd parts by referring to the material resistance listed in the table below

Valve body material	Resistant reagents	Sealing plastic materials	Resistant reagents
PEEK	Resistance: most acid and alkali organic solvents. No resistance: concentrated sulfuric acid and concentrated nitric acid.	EPDM	Resistance: oxidation, ozone, certain acid and alkali at 130°C. No resistance: aliphatic and aromatic solvents (benzene, gasoline).
PVDF	Good resistance: halogens, halogenated hydrocarbons, strong oxidants, boiling acids, alkali, and various organic solvents. No resistance: oleum, concentrated hot sulfuric acid and nitric acid, and ketones, esters, amine reagents above 90°C, and high temperature sulfur sulphonating agent.	Fluorine rubber FKM: low fluorinated ETP: highly fluorinated FFKM: perfluorinated	Reagent resistance is directly proportional to fluorine content. Mechanical property is inversely proportional to fluorine content. Poor low temperature resistance.
POM	Resistance: organic solvents, weak acids and alkali, strong acids. Decomposes thermally at high temperatures.	/	/
PTFE	Resistant to all chemicals except molten alkali metals, chlorine trifluoride, chlorine pentafluoride and liquid fluorine.	/	/

9. Safety Precautions

For you and other users' safety, please read the safety precautions carefully.
This manual uses the following signs. Please fully understand what they mean before reading on.

 WARNING	Any content with this sign, related to the safe use of the product and the user's personal safety, must be strictly in accordance with the requirements of the operation, otherwise it may cause damage to the product or endanger the user's personal safety.
 CAUTION	Any content with this sign is a part of the user must pay attention to, otherwise it will cause damage to the product or other losses due to improper operation.
 ATTENTION	Leakage voltage: Keep the leakage voltage within 2% of the rated voltage. If this value isexceeded, the solenoid valve may not close.
	Special fluoroelastomers and perfluoroelastomers are affected by temperature, so please avoid high frequency use at low temperatures and allow for more response time.
	If inadvertently when using water or media drops splashed on the solenoid valve, please wipe as soon as possible to avoid water penetration into the coil resulting in a short circuit, solenoid valve if frequent contact with water, please contact our technical staff to select the waterproof coating solution.
 WARNING	1. Do not use in applications where the body is directly connected or where there is an adverse effect on life (e.g. medical equipment used for infusion)
	2. Confirmation of specifications: Please take full account of the application, fluid, environment and other conditions of use, and use within the scope of the specification claims.
	3. Material selection: In the case of unclear media resistance, it is recommended to do the corresponding experimental confirmation of the material before confirming the model.
	4. Maintenance and repair: For abnormalities, please contact the manufacturer first, do not disassemble and assemble directly; avoid being unable to confirm the cause of the abnormality.
	5. Application conditions: Try to avoid using the solenoid valve under dynamic pressure to close the solenoid valve, otherwise it will have a certain impact on the life and performance of the solenoid valve. Please contact our technical staff for specific system solutions
	6. Continuous use: Try to avoid continuous power supply, otherwise it will cause the solenoid valve to heat up, as well as avoid using the solenoid valve near a heat source with excessively high temperature.

Keyto® 垦拓

Contact Us At

Tel:: 0755-29516669

E-mail: info@keyto.com

Web: www.keyto.com

Add: No.2 Far East Road, Xinhe Community, Fuhai Street, Baoan District, Shenzhen

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