TREVISO

Pressure reducing valve product selection manual

TREVISO TRANSMISSION MACHINERY S.R.L.

CONTENT

TREVISO

OPERATING INSTRUCTIONS FOR
PRESSURE REDUCING VALVE

01

Operation of pressure regulating valve

The pressure regulator can reduce the pressure of gases and liquids discharged from sources such as gas cylinders and compressors to the lower values required by analytical instruments and other equipment. When the inlet pressure and the control range pressure are very close to the pressure requirements of the liquid handling system, the regulator exhibits higher resolution and control capability. Resolution refers to the number of handle rotations required to adjust the regulator from the lowest outlet pressure setting to the highest outlet pressure setting. Control capability refers to the regulator's ability to maintain a given outlet pressure setpoint.

Pressure reducing regulator

The pressure reducing regulator controls the outlet pressure by balancing the inlet pressure and outlet pressure forces through an adjustable spring force.By rotating the valve stem/handle, the spring force can be adjusted to set the desired outlet pressure.

Supply pressure effect

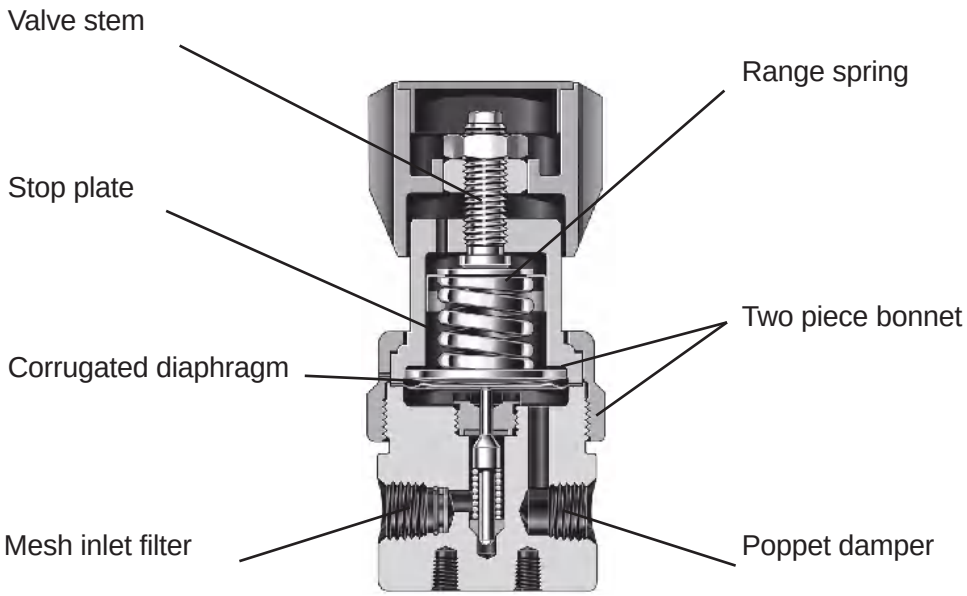
The supply pressure effect (SPE) or dependency is a ratio that describes the change in outlet pressure for every 100 psi (i.e.,6.8bar) variation in inlet pressure. In other words, when the inlet pressure decreases by 100 psi (i.e.,6.8bar), the outlet pressure increases by X psi. X represents the supply pressure effect (SPE). For standard pressure-reducing valves, the opposite occurs when the supply pressure increases. This pressure variation effect can also be achieved during system startup or shutdown. Before opening or closing the supply pressure, the pressure regulator should be set to the "closed" position to prevent diaphragm damage. When selecting the outlet pressure mode with anti-interference options, it is crucial to ensure that SPE does not cause overpressure during supply pressure activation or deactivation.

02 Characteristics of pressure reducing valve T series

Valve stem	Fine threads allow for precise adjustment of springs with low torque.
stop plate	This disc provides reliable support for the diaphragm during diaphragm overpressure.
Bottleneck	This all-metal diaphragm serves as the sensing mechanism between the inlet pressure and the range spring, broussonetia papyrifera. The corrugated non-perforated design ensures higher sensitivity and longer service life. The piston sensing mechanism broussonetia papyrifera (as shown below) can withstand higher pressure.
Range spring	Rotating the handle compresses the spring, pushing the poppet away from the seat and increasing the outlet pressure.
Two-piece valve cover Lift valve core damper	The two-piece design enables the diaphragm seal to bear linear load when compressing the valve cover ring, thereby eliminating torque damage to the diaphragm during the assembly process.
Mesh inlet filter	The pressure regulator is prone to damage from particulate matter within the system. The pressure reducing regulator includes a 25μm snap-in mounted filter that can be removed to adapt the regulator for liquid environments.
Piston sensing mechanism	The piston sensing mechanism is generally used for regulation above the pressure that the diaphragm can withstand. This machine Broussonetia papyrifera also has a strong ability to resist peak pressure damage, and its stroke is short, thus maximizing the service life.

The piston is sealed inside the valve cover through a shoulder joint broussonetia papyrifera to prevent the piston from being ejected when the outlet pressure of the pressure regulating valve is too high.

Piston sensing mechanism



03 Model and structural material of pressure reducing valve

Pressure reducing and regulating valve (AT5001P Series)

AT5001P series is a compact pressure regulating valve with excellent accuracy, sensitivity and set point pressure stability.

Characteristic

1. Ripple non perforated diaphragm
2. Metal to metal diaphragm seal
3. Small internal volume
4. The two-piece valve cover design enables the diaphragm seal to withstand linear loads
5. There is a high flow, dual filter type filter inside the inlet

Technical data

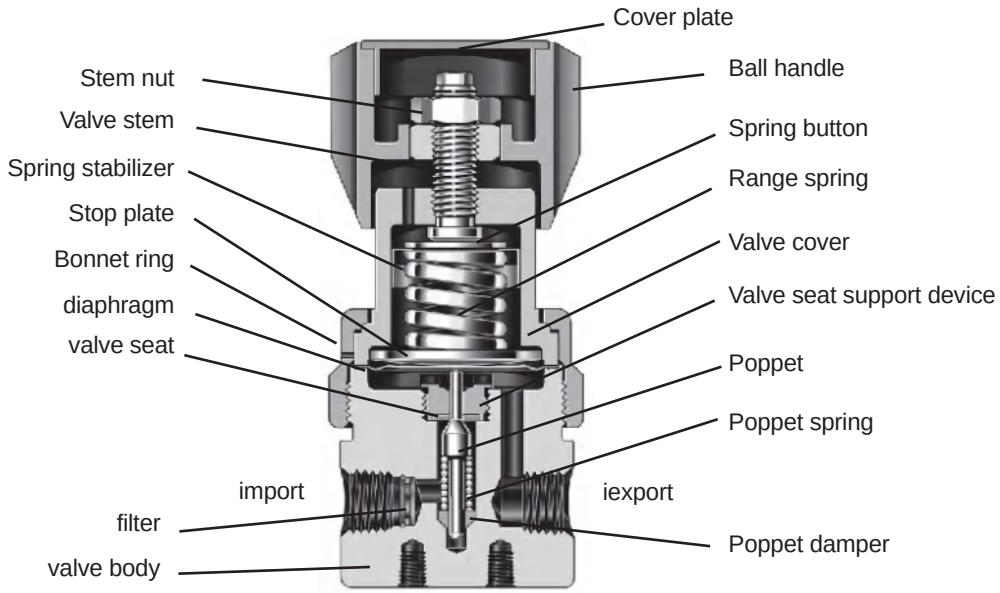
Maximum inlet pressure	3600 psig (248 bar)
	6000 psig (413 bar), PEEK valve seat
Pressure control range	0～10 psig (0.68 bar) - 0～500 psig (34.4 bar)
Discharge coefficient	0.06、0.20
Maximum operating temperature	80°C (176°F) with PCTFE seat 100°C (212°F), PEEK seat, maximum inlet pressure greater than 3600 psig (248 bar)
Orifice	1/4 in. internal thread NPT inlet, outlet and pressure gauge port (all valve body materials available); 1/4 in. tube fitting welded inlet, outlet and pressure gauge connection (316 SS valve body material only); 1/4 in. VCR inlet, outlet and pressure gauge connection (316 SS valve body material only)

Pressure supply effect

discharge coefficient （Cv）	Pressure control range	
	to 100psig (6.8bar)	250psig(17.2bar) Higher pressure
0.02	0.3	0.5
0.06	1	1.5
0.5	2.3	3.3

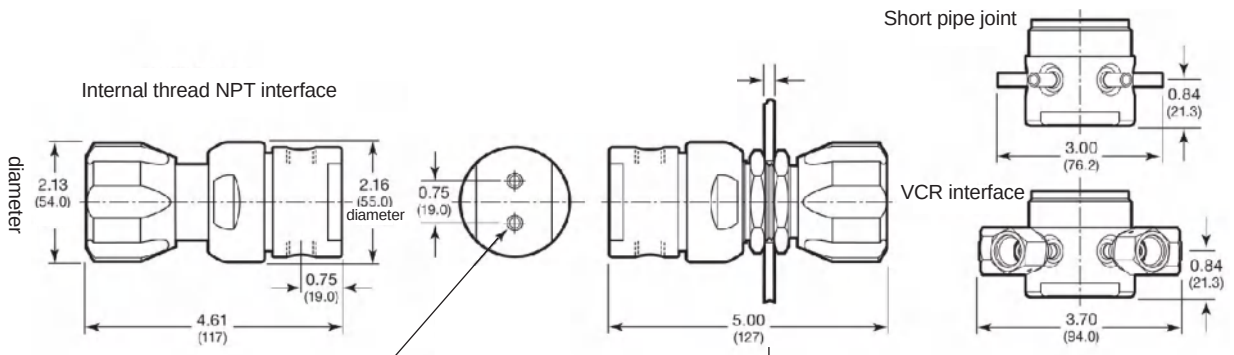
Pressure reducing and regulating valve (AT5001P Series)

Structural materials



Components	316 SS	Brass CW721R	Alloy 400	Alloy C-276
	Materials			
Ball handle, cover plate	Nylon with 316 SS insert			
Spring button	Galvanized steel			
Spring stabilizer	301SS			
Range spring	316 SS or galvanized/galvanized steel, depending on configuration			
Stem, stem nut, bonnet ring, retaining plate, bonnet, faceplate nut	/			
VCR nut	316 SS			
Lubricant not in contact with the medium	316 SS	/		
Seat retainer	Hydrocarbyl			
Seat	316 SS		Alloy 400	Alloy C-276
Filter	PCTFE/PEEK			
Diaphragm	316 SS		22 alloy	
Poppet	Alloy X-750 or Alloy C-27			
Poppet spring	S17400 SS		Alloy 400	Alloy C-276
Poppet dampener, filter carrier	Alloy X-750			Alloy C-276
Self-draining seal	PTFE			
Valve body	Fluorocarbon FKM			
Tube butt weld port,	316SS	BrassCW721R	Alloy 400	Alloy C-276
VCR gland port	316LSS	/		
Lubricant in contact with media	PTFE			

Dimensions are indicated in in. (mm), for reference only and subject to change.



Mounting hole
10-32, depth 0.33
(M5 × 0.8, depth 8.5)

Maximum panel thickness 0.39 (10.0) with 2 lock nuts
Maximum panel thickness 0.63 (16.0) with 1 lock nut
Panel opening, diameter 1.38 (35.0)

Medium and high pressure piston sensing pressure reducing and regulating valve (AT5002P Series)

AT5002P series pressure regulating valve has light weight and small installation area, which can meet the needs of a variety of gas or liquid applications.

Characteristic

1. Light weight and compact design
2. Live load body seal
3. Small internal volume
4. There is a high flow, double screen type filter in the inlet

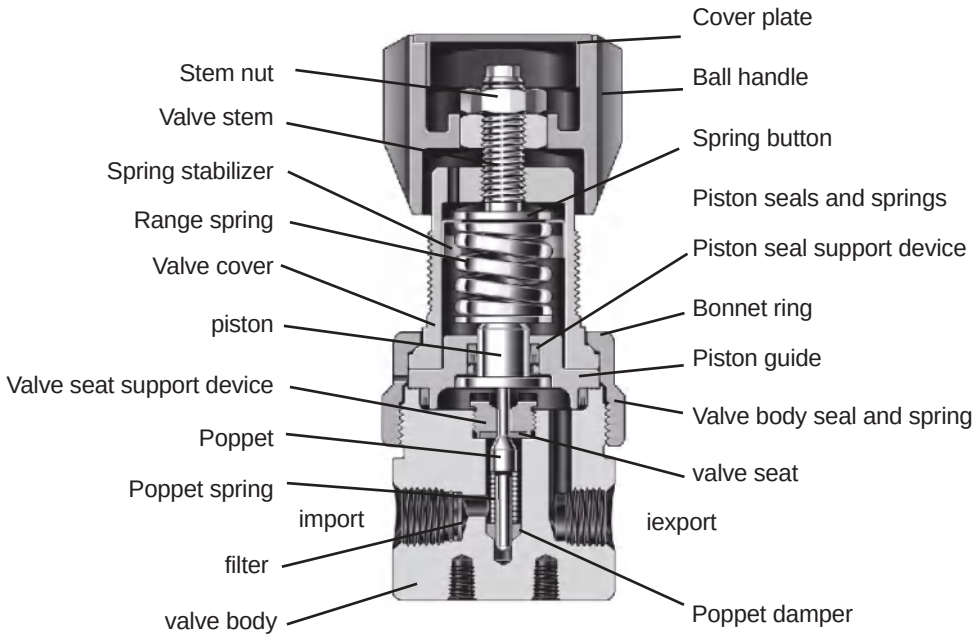
Technical data

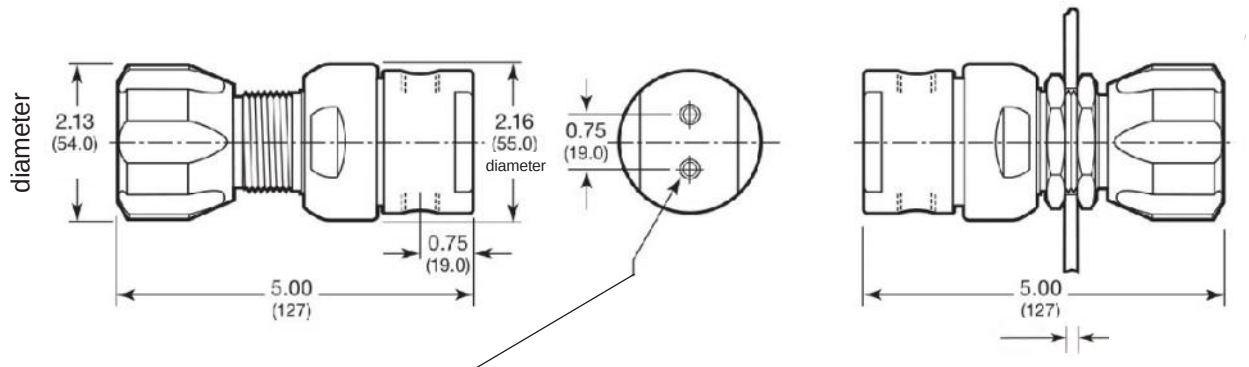
Maximum inlet pressure	6000 psig(413bar)
Pressure control range	0～1000 psig(68.9bar)-0～3600 psig(248bar)
Discharge coefficient	0.06、0.20
Maximum operating temperature	200 ℃ (392 ° f), maximum inlet pressure 2000 psig (137bar) 100 ℃ (212 ° f), peek valve seat, maximum inlet pressure greater than 2000 psig (137bar)
Orifice	1/4in. female NPT inlet, outlet and pressure gauge interface

Pressure supply effect

Discharge coefficient	Pressure supply effect
0.02	2.2
0.06	7.2

Structural materials





Mounting hole
10-32, depth 0.33
(M5 × 0.8, depth 8.5)

Maximum panel thickness 0.39 (10.0) with 2 lock nuts
Maximum panel thickness 0.63 (16.0) with 1 lock nut
Panel opening, diameter 1.38 (35.0)

Components	316 SS Brass CW721R Material
Ball handle, cover plate	Nylon with 316SS insert
Spring button	316 SS (0 to 3000 and 0 to 3600 psig ranges)
Spring stabilizer	301SS
Range spring	316 stainless steel or galvanized/galvanized steel, depending on configuration
Valve stem, stem nut, bonnet ring, bonnet, panel nut	depending on configuration
Lubricant for non-wetted parts	316SS
Valve body, seat retainer, filter, piston, piston guide	Hydrocarbon-based
Valve seat, piston seal retainer	316SS
Poppet	PEEK
Poppet spring	S17400 SS
Piston seal spring	Alloy X-750
Valve body seal spring	Elgiloy
Poppet damper, filter carrier, piston seal, body seal	PTFE
Lubricant for wetted parts	PTFE-based

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