VP-3170 3-WAY PNEUMATIC MIXING CONTROL VALVES

DESCRIPTION

The VP-3170 series pneumatic mixing valves have been designed for the control of hot water, chilled water, and glycol. They are normally closed on their side ports 'A', opening on rise in control air pressure, and normally open on their bottom ports 'B', closing rise in control air pressure. The third port 'AB' on the side of the body opposite port 'A' is the common outlet.
Three spring ranges are standard:

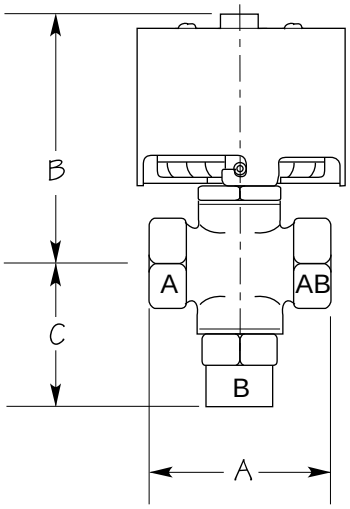
VP-3171 has a nominal spring range of 3 - 6 psi.
VP-3173 has a nominal spring range of 9 - 12 psi.
VP-3174 has a nominal spring range of 3 - 12 psi.

An adjustable spring follower allows for increasing or decreasing the spring ranges by 2 to 6 psi to assure accurate positioning.

Multiple spring loaded EPM V-ring packing with brass followers and the use of heavy bronze yoke casting (no white metal) assures years of trouble free service.

APPLICATIONS

The VP-3170 series of valves is suitable for use in heating and cooling systems to control heating coils, cooling coils, heat reclaim coils, converters, and other heat transfer systems.



HOW TO SPECIFY

Provide Spartan type VP-3170 pneumatic, three-way mixing control valves with heavy duty 250 psig bronze globe valve bodies, parabolic equal percentage plugs, replaceable EPM discs and with compact 12 sq in actuators, bronze non-corroding valve yokes (no white metal), spring ranges to suit and (optional) pilot positioners.

DIMENSIONS AND PERFORMANCE

			VP-3171-F Spring Range 3 - 6 psi				VP-3173-F Spring Range 9 - 12 psi				VP-3174-F Spring Range 3 - 12 psi				Dimensions						Weight	
			@ 15psi		@ 20psi		@ 15psi		@ 20psi		@ 15psi		@ 20psi		A		B		C			
Cv	Size	KVs	B-AB	A-AB	B-AB	A-AB	B-AB	A-AB	B-AB	A-AB	B-AB	A-AB	B-AB	A-AB	"	mm	"	mm	"	mm	lbs.	Kg.
4.6	1/2	3.9	100	78	100	78	78	100	100	100	78	78	100	78	3.3	85	5.9	149	2.7	69	5.8	2.6
6.9	3/4	5.8	100	78	100	78	78	100	100	100	78	78	100	78	3.3	85	5.9	149	2.7	69	5.7	2.6
11.7	1	9.8	100	44	100	44	44	100	100	100	44	44	100	44	4.1	105	6.1	155	2.8	71	7.0	3.2
18.7	1 1/4	15.6	84	28	100	28	28	84	75	84	28	28	75	28	4.7	120	6.2	157	3.0	75	8.0	3.6
29.5	1 1/2	14.6	59	20	91	20	20	59	52	59	20	20	52	20	5.7	145	6.5	164	3.1	80	10.0	4.5
46.7	2	38.9	33	11	51	11	11	33	29	33	11	11	29	11	6.5	165	6.8	173	3.5	90	13.0	5.9
			MAX Δpsi				MAX Δpsi				MAX Δpsi											

NOTE: Maximum recommended Δpsi = 100 psi although static rating = 250 psig. In locations where water noise is critical, limit Δpsi to 35 psi.

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VP-3170 3-WAY PNEUMATIC MIXING CONTROL VALVES

SPECIFICATIONS

BODY:	bronze, three-way mixing
Nominal Pressure:	250 psig
Style:	globe with top and bottom seats
Parabolic Plugs:	equal percentage
Discs:	replaceable EMPT
Seats:	integral bronze
Stem:	stainless steel
Packing:	multiple EMPT V-ring
Sizes:	1/2 inch through 2 inch
Ports:	female NPT
Cv's:	4.6 to 46.7
Kvs's:	3.9 to 38.9
Max. temperature:	120°C, 250°F

ACTUATOR:	pneumatic 12 sq. in.
Action:	direct; air drives stem down
Diaphragm:	neoprene reverse roll
Spring Ranges:	3-6; 9-12; 3-12 psi
Spring Follower:	bronze +-2 psi, (±6 psi on VP-2274)
Housing:	epoxy coated steel
Yoke:	bronze
Position Indicator:	integral 0 - 1
Pilot Positioner	optional
Air Line Connection:	1/8" NPT

Maximum Air Pressure:	30 psig
Maximum Ambient Pressure:	175°F, 80°C
Mounting Position (to 200°F fluids):	any
Mounting Position (over 200°F): (see installation instructions)	on side

INSTALLATION INSTRUCTIONS

Install VP-3170 control valves with the fluid passing in the direction shown on the valve body, (as mixing valves, never as diverting valves,) and with suitable strainers to prevent pipe shavings and debris from entering the valve body.

Preferred installation is upright, however in high temperature installations (and where space restrictions dictate) the valve assembly should be mounted on its side, slightly above horizontal, so the at high temperatures rising from the pipe do not overheat the actuator diaphragm. This will ensure maximum life expectancy while any leaking from the valve packing will run off the valve body rather than the operator.

The actuator requires space for its disassembly and repair. Leave at least 4 inches for ease of maintenance.

The nominal spring ranges are affected by the fluid pressure and differential pressure and this can be compensated for by the adjustable spring follower.

Tightening the spring will raise the effective control range and raise the differential pressure that the valve can oppose against port 'A' while lowering the differential pressure that the valve can oppose against port 'B'.

Loosening the spring will lower the effective control range, and lower the potential differential pressure at port 'A' while lowering the potential differential pressure available at port 'B'.

MAINTENANCE INSTRUCTIONS

Normally, the valve will provide decades of service without maintenance, however, over years, the valve may leak, either across the seat, or out of the packing gland.

To replace disc and packing, proceed as follows:

Make sure no pressure is in the hydronic system.

Make sure no air pressure is applied to the actuator.

Remove air line connection. Apply downward force to the top while rotating it to the left, then lift top and diaphragm off.

Hold or clamp actuator piston down firmly while removing 'C' clips, and remove spring assembly carefully. (Use care not to allow spring to get away, and if necessary, release spring adjuster to reduce spring force.)

Disassemble actuator housing to remove and replace diaphragm. Loosen and remove the bottom coupling on the valve, slide the stem plug and disc assembly out the bottom of the valve, remove the packing gland nut and packing rings. (It is best when repairing valve to replace all wearing components at the same time.)

Check the state of the stainless steel valve stem. If it appears scratched or worn, it is wise to replace it as well.

Reassemble valve with small amount of pipe seal and readjust reassembled control valve spring range to required setting. (Note that when two valves operate in sequence, accurate adjustment of the spring is particularly critical to prevent the two valves from being opened simultaneously with resultant decreased energy efficiency.)