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Spraytech Systems have gone ahead with its endeavor of optimizing in process control instruments, in adding control elements in its range of manufacture. We at Spraytech Systems have globe control valves till 16" and upto 2500#RF for applications from minus 196 deg cent till 550 deg cent .

Applications in flow element control lead to control of flow through a globe control valve affecting control of flow, pressure and temperature thus a playing a vide role in the control element of the plant, used in either

- Isolation of plants
- In field of linear level and temperature control
- In field of fasting acting parameter of pressure and differential pressure and flow control through PID controllers



Spraytech Systems Globe Control Valve

Spraytech System's Globe valve provides a flow rangeability of 50:1 and carries the effect in controlling cavitation, flashing and the choking concept of the media. With its level of control the affect of start up conditions of the plant where shearing off the internal closing member in form of plug and seat of the trim section take place, Spraytech Systems own high density flow control plug which carries the special design to take care of all such critical start up and cavitation effect of the media help you solve a major cost effectiveness and reduce your major man hour usage and maintenance cost of the plan.

Following are the main features of Spraytech Systems Globe control valve

- The energy conservation of the plant
- High flow control rangeability
- High flow recovery and controllability factor
- Low maintenance driven design
- Usage from minus 196 deg cent till plus 550 deg cent application
- High density valve sealing gasket design for high and low temperature
- Used for special chemical sealing design concept in plant for all critical applications
- Modular concept thus introducing major plant design concept feasibility with reduce cost of manpower, maintenance
- Highly efficient build up design

Spraytech Systems Flow control effectively uses the closing member of plug falling or closing in on seat of the trim section of the valve and thus with its contour of

- Modified equal percentage
- Equal percentage
- · Quick opening

Enables a perfect control of the media effectively to the tune of desired level as per your requirements. Spraytech Systems Manufactures pneumatic actuator with multiple springs and a rolling diaphragm which helps in

- Linear hysteresis of control
- High life cycle of the diaphragm
- Less tension on spring and diaphragm
- Most linear travel record of plug movement

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Specifications of Spraytech Systems globe control valve

Table 15.1

Table 13.1	
Material of construction for body	Carbon steel, stainless steel, SS316, SS304, SS304L, SS316L, PTFE lined valves, PP
Size	½", 1", 1 1/2", 2", 2 1/2", 3", 4" and 6"
Rating of valve	150#,300#, 600# and as per DIN std PN10, PN16, PN25, PN40
Pressure rating	From full vaccum till plus 52 bar g till 300#
Temperature rating	Minus 196 till plus 550 deg cent
Material of construction for trim	SS316, SS410, SS316L, PP, PTFE, Monel, Hastealloy
Design	Globe
Plug	V skirted anti cavitation trim, parabolic plug, balanced plug
Seat	Screwed in seat, welded seat
Bonnet	Square bonnet, yoke bonnet design, extended bonnet design
Extension bonnet	Forged construction bonnet design depending on small and large extension bonnet depending on temperature and pressure rating
Bellows sealing bonnet	With multifunction bellows sealing for critical application applicable from minus 196 till plus 550 deg cent
Sealing gland packing	PTFE sealing V ring packing versions and Graphite sealing version available, 3ring, 5 ring, 7 ring sealing rings for maximum sealing versions available for rating till 10 ⁽⁶⁾ mbarltr / sec
Body bonnet sealing ring	SS316 impregnated graphite and PTFE sealing available, depending on applications
Plug and seat leakage class sealing	Class III, class IV, class V, class VI sealing tightness is available
Leakage class for trim	Is achieved by metal / metal version with special design plug, with special design PTFE soft seal for low temp and upto 120 deg cent and for temperature above Titanium sealing for class VI is achieved, also available is leakage class V with high performance sealing with special hand grinding, lapping method, desired for high temperature application
Guide bushing MOC	SS410, SS316L, SS316 stellited
Actuator	Multispring actuator, with rolling diaphragm concept, with MS actuator cover with anticorossion powder coated
Actuator diaphragm	Nitrile Butyl Rubber, Ethylene Propylene Dimonomer
Valve end connection	Screwed, NPT or BSP connections, but welded, socket welded, flanged end connections both ANSI and DIN std
Heating jacket and cooling jacket	Available for all sizes as applicable till 300#X 600#, jacketing for valve body and bonnet design
Base construction design	Forgings and castings
Special test versions	NACE, Radiography level -1, 2, 3 std available, helium leak tested version till 10 ⁽⁶⁾ mbarltr/sec
Trim hardening versions	All hardening versions with stelliting version available



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The process medium flows through the valve in the direction indicated by the arrow. The position of the valve plug determines the cross-sectional area of flow between the seat and plug.

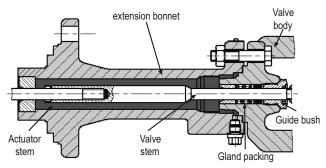
Depending on how the compression springs are arranged in the actuator the control valve has two different fail-safe positions that become effective

when the supply air fails:

Actuator stem extends (FA): The actuator springs close the valve when the supply air fails.

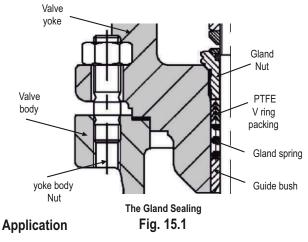
Actuator stem retracts (FE): The actuator springs open the valve when the supply air fails.

Spraytech Systems in process automation in the chemical, petrochemical, power and refinery industry have developed designs to suit the most such critical applications. The resulting products define the industry standard in many applications.



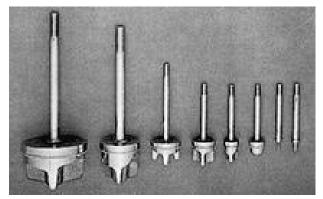
Extension Bonnet For Cryogenic Application And High Temperature Application

Fig. 15.2



As a main manufacturer of process Instruments, we provide a comprehensive product range for all chemical processes from light and heavy-duty valves in modular design made of all common materials and exotic alloys according to DIN, ANSI to high-pressure valves complying with important company standards. Forged bodies, live-loaded packings, metal bellows, pressure-balanced plugs, heating jackets as well as corrosion-resistant, low-noise and low-wear valve trims are included in our product portfolio for this field.

We also provide solutions for highly specialized tasks, such as cryogenic applications, aseptic processes and tank blanketing.



High profile plugs with v skirt for low noise control and high controllability

Spraytech Systems high definition actuator selection criteria: Table 15.2

Actuator model	SCT1				
	SCT11	SCT12	SCT13		
Actuator, actuation torque kN	0.48	0.96	1.44		
Travel in mm	17	17	17		
Air supply in kg/cm²g	1.4	2.4	3.2		
Shut off pr in kg/cm²g	15	24	33		
Actuator model	SCT2				
	SCT21	SCT22	SCT23	SCT24	SCT25
Actuator actuation torque kN	0.7	1.4	2.1	4.9	7.35

Travel	17	17	17	17	17
Air supply in kg/cm²g	1.4	2.4	3.2	2.5	3.5
Shut off pr in kg/cm²g	20	31	42	48	55
Actuator model	SCT3				
	SCT31	SCT32	SCT33	SCT34	SCT35
Actuator actuation torque kN	1.4	2.8	4.2	9.8	14.7
Travel	17	17	17	34	34
Air supply in kg/cm²g	1.4	2.4	3.2	2.5	3.5
Shutoff pr in kg/cm²g	26	39	50	60	70



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Spraytech Systems Globe control valves and its complete engineering application available design Table 15.3

Sizes	1/2"	3/4"	1"	11½"	2"	21/2"	3"	4"	6"
Available kv value in m3/hr (flow coefficient value)	0.1, 0.16, 0.25, 0.4, 0.63, 1, 1.6,2.5, 4	0.1, 0.16, 0.25, 0.4, 0.63, 1, 1.6, 2.5, 4, 6.3	0.4, 0.63, 1, .6, 2.5, 4, 6.3 0.4, 0.63, 1, 1.6, 0.4, 0.63, 1, 1.6, 0.4, 0.63, 1, 1. 2.5, 4, 6.3, 10, 2.5, 4, 6.3, 10		0.1, 0.16, 0.25, 0.4, 0.63, 1, 1.6,0. 2.5, 4, 6.3, 10, 16, 25, 35, 40	0.1, 0.16, 0.25, 4, 0.63, 1, 1.6, 2.5, 4, 6.3, 10, 16, 25, 35, 40	0.1, 0.16, 0.25, 0.4, 0.63, 1, 1.6, 2.5, 4, 6.3,10,16, 25, 35, 40, 63, 80	63, 80,100, 160	63,80,100, 160, 260, 360
Pressure rating available Temperature rating available	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent
Valve stem travel in mm	17	17	17	17	17	17	17,34	34	34
Flow range ability	50:1	50:1	50:1	50:1	50:1	50:1	50:1	50:1	50:1
Extension bonnet design available version	Both short and long extension version	Both short and long extension version	Both short and long extension version	Both short and long extension version	Both short and long extension version	Both short and long extension version	Both short and long extension version	Both short and long extension version	Both short and long extension
Max pr shut off for actuator available based on 150# rating	22 bar	22 bar	22 bar	22 bar	22 bar	22 bar	22 bar	22 bar	22 bar
Max pressure shut off for actuator available based on 300# rating	ure 50 bar 50 bar or lable		50 bar	50 bar	50 bar	50 bar	50 bar till lower kv value and 30 bar from kv value from kv 63	30 bar	30 bar
Face to face as per 150#	184mm	188mm	193mm	225mm	260mm	280mm	312mm	360mm	465mm
Face to face as per 300#	190mm	194mm	197mm	240mm	272mm	295mm	330mm	385mm	485mm
Actuator phase with available air supply controlling the max shut off pressure, depending on design of Kv	SCT-1, SCT-2, SCT3 with air supply of 1.2 till 4 bar and pressure shut off till 52 bar	SCT-1, SCT-2, SCT3 with air supply of 1.2 till 4 bar and pressure shut off till 52 bar	SCT-1, SCT-2, SCT3 with air supply of 1.2 till 4 bar and pressure shut off till 52 bar	SCT-1, SCT-2, SCT3 with air supply of 1.2 till 4 bar and pressure shut off till 52 bar	SCT-1, SCT-2, SCT3 with air supply of 1.2 till 4 bar and pressure shut off till 52 bar	SCT-1, SCT-2, SCT3, SCT 4 with air supply of 1.2 till 4 bar and pressure shut off till	SCT-1, SCT-2, SCT3, SCT-4 with air supply of 1.2 till 4 bar and pressure shut off till 40 bar 52 bar	SCT3, SCT4 with air supply of 1.2 till 4 bar and pressure shut off till 40 bar	SCT3, SCT4 with air supply of 1.2 till 4 bar and pressure shut off till 40 bar

Spraytech Systems actuator model versus Kv value and the shut off pressure, applicable for seat leakage class IV and class VI

Table 15.4

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Kv value in m3/hr	0.1	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6.3	10	16	25	35	40	63	80	160	260	360
Actuator model applicable	SCT2, SCT3, SCT1	SCT3,	SCT3,	SCT4, SCT3,																
Seat bore in mm	2	3	3	5	5	8	8	8	10	12	24	26	38	46	50	65	80	100	125	150
Valve stem dia in mm	3	3	3	3	3	6	6	6	6	10	10	10	10	10	10	12	12	16	25	25
Max shutoff pr in bar g available w r t to kv value	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	30	30	30	30	30
Max available air supply in bar g for actuator	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Valve travel in mm	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	34	34	34	34	34
Actuator spring travel in mm	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	34	34	34	34	34
Actuator stem dia in mm	3	3	3	3	3	6	6	6	6	10	10	10	10	10	10	12	12	16	25	25



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Valve size :- ANSI. 1/2" to 16"
Pressure rating :- Class 150 to 2500
Temperatures :- 196 °C to 550 °C ·

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- Used for special chemical sealing design concept in plant for all critical applications
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Fig. 1: Angle Control Valve with Pneumatic Actuator, Positioner and solenoid valve

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- Linear
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- Equal percentage
- Quick opening

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- High life cycle of the diaphragm
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Specifications of Spraytech Systems globe control valve

Table 1.1

Material of construction for body	Carbon steel, stainless steel, SS316, SS304, SS304L, SS316L, PTFE lined valves, PP
Size	½", 1", 1 1/2", 2", 2 1/2", 3", 4" and 6"
Rating of valve	150#,300#, 600# and as per DIN std PN10, PN16, PN25, PN40
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Material of construction for trim	SS316, SS410, SS316L, PP, PTFE, Monel, Hastealloy
Design	Globe
Plug	V skirted anti cavitation trim, parabolic plug, balanced plug
Seat	Screwed in seat, welded seat
Bonnet	Square bonnet, yoke bonnet design, extended bonnet design
Extension bonnet	Forged construction bonnet design depending on small and large extension bonnet depending on temperature and pressure rating
Bellows sealing bonnet	With multifunction bellows sealing for critical application applicable from minus 196 till plus 550 deg cent
Sealing gland packing	PTFE sealing V ring packing versions and Graphite sealing version available, 3ring, 5 ring, 7 ring sealing rings for maximum sealing versions available for rating till 10 ⁽⁴⁾ mbarltr / sec
Body bonnet sealing ring	SS316 impregnated graphite and PTFE sealing available, depending on applications
Plug and seat leakage class sealing	Class III, class IV, class V, class VI sealing tightness is available
Leakage class for trim	Is achieved by metal / metal version with special design plug, with special design PTFE soft seal for low temp and upto 120 deg cent and for temperature above Titanium sealing for class VI is achieved, also available is leakage class V with high performance sealing with special hand grinding, lapping method, desired for high temperature application
Guide bushing MOC	SS410, SS316L, SS316 stellited
Actuator	Multispring actuator, with rolling diaphragm concept, with MS actuator cover with anticorossion powder coated
Actuator diaphragm	Nitrile Butyl Rubber, Ethylene Propylene Dimonomer
Valve end connection	Screwed, NPT or BSP connections, but welded, socket welded, flanged end connections both ANSI and DIN std
Heating jacket and cooling jacket	Available for all sizes as applicable till 300#X 600#, jacketing for valve body and bonnet design
Base construction design	Forgings and castings
Special test versions	NACE, Radiography level -1, 2, 3 std available, helium leak tested version till 10 ^(a) mbarltr/sec
Trim hardening versions	All hardening versions with stelliting version available

Principle of operation

The medium flows through the valve in the direction indicated by the arrow. The valve plug determines the cross-sectional area of flow. The version with bellows seal (Fig. 3) is fitted with a test connection to monitor the stainless steel bellows. Pressure balancing must be used when high pressures or differential pressures act on the plug (Fig. 4).

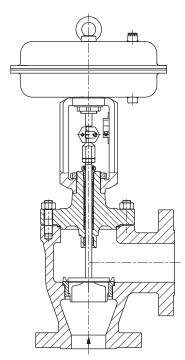


Fig. 2: Angle Control Valve with Pneumatic Actuator

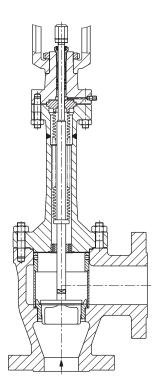


Fig. 3: Angle Valve with bellows seal

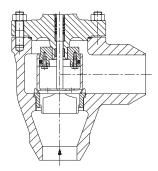


Fig. 4: Angle Valve with balanced plug



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The process medium flows through the valve in the direction indicated by the arrow. The position of the valve plug determines the cross-sectional area of flow between the seat and plug.

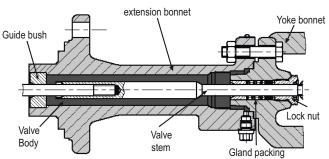
Depending on how the compression springs are arranged in the actuator the control valve has two different fail-safe positions that become effective

when the supply air fails:

Actuator stem extends (FA): The actuator springs close the valve when the supply air fails.

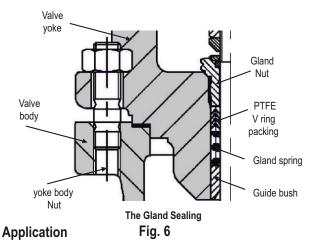
Actuator stem retracts (FE): The actuator springs open the valve when the supply air fails.

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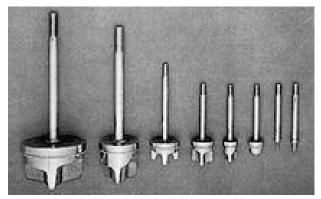
Extension Bonnet For Cryogenic Application And High Temperature Application

Fig. 5



As a main manufacturer of process Instruments, we provide a comprehensive product range for all chemical processes from light and heavy-duty valves in modular design made of all common materials and exotic alloys according to DIN, ANSI to high-pressure valves complying with important company standards. Forged bodies, live-loaded packings, metal bellows, pressure-balanced plugs, heating jackets as well as corrosion-resistant, low-noise and low-wear valve trims are included in our product portfolio for this field.

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Actuator model	SCT1				
	SCT11	SCT12	SCT13		
Actuator, actuation torque kN	0.48	0.96	1.44		
Travel in mm	17	17	17		
Air supply in kg/cm²g	1.4	2.4	3.2		
Shut off pr in kg/cm²g	15	24	33		
Actuator model	SCT2				
	SCT21	SCT22	SCT23	SCT24	SCT25
Actuator actuation torque kN	0.7	1.4	2.1	4.9	7.35

Travel	17	17	17	17	17
Air supply in kg/cm²g	1.4	2.4	3.2	2.5	3.5
Shut off pr in kg/cm²g	20	31	42	48	55
Actuator model	SCT3				
	SCT31	SCT32	SCT33	SCT34	SCT35
Actuator actuation torque kN	1.4	2.8	4.2	9.8	14.7
Travel	17	17	17	34	34
Air supply in kg/cm²g	1.4	2.4	3.2	2.5	3.5
Shutoff pr in kg/cm²g	26	39	50	60	70



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Spraytech Systems Globe control valves and its complete engineering application available design

Table 1.3

Sizes	1/2"	3/4"	1"	1½"	2"	2½"	3"	4"	6"
Available kv value in m3/hr (flow coefficient value)	0.1, 0.16, 0.25, 0.4, 0.63, 1, 1.6,2.5, 4	0.1, 0.16, 0.25, 0.4, 0.63, 1, 1.6, 2.5, 4, 6.3	0.1, 0.16, 0.25, 0.4, 0.63, 1, 1.6, 2.5, 4, 6.3, 10	0.1, 0.16, 0.25, 0.4, 0.63, 1, 1.6, 2.5, 4, 6.3, 10, 16, 25	0.1, 0.16, 0.25, 0.4, 0.63, 1, 1.6, 2.5, 4, 6.3, 10, 16, 25, 35, 40	0.1, 0.16, 0.25, 0.4, 0.63, 1, 1.6, 2.5, 4, 6.3, 10, 16, 25, 35, 40	0.1, 0.16, 0.25, 0.4, 0.63, 1, 1.6, 2.5, 4, 6.3,10,16, 25, 35, 40, 63, 80	63, 80,100, 160	63,80,100, 160, 260, 360
Pressure rating available Temperature rating available	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g plus 52 bar g minus 196 till 550 deg cent 550 deg cent		Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent	Full vaccum till plus 52 bar g minus 196 till 550 deg cent
Valve stem travel in mm	17	17	17	17	17	17	17 17,34		34
Flow range ability	50:1	50:1	50:1	50:1	50:1	50:1	50:1	50:1	50:1
Extension bonnet design available version	available long extension long extension long extension long extension		Both short and long extension version	Both short and long extension version	Both short and long extension version	Both short and long extension version	Both short and long extension		
Max pr shut off for actuator available based on 150# rating	22 bar	22 bar	22 bar	22 bar	22 bar 22 bar		22 bar	22 bar	22 bar
Max pressure shut off for actuator available based on 300# rating	sure 50 bar 50 bar 50 bar 50 bar 60 ailable 800#		50 bar	50 bar	50 bar	50 bar till lower kv value and 30 bar from kv value from kv 63	30 bar	30 bar	
Face to face as per 150#	184mm	188mm	193mm	225mm	260mm	280mm	312mm	360mm	465mm
Face to face as per 300#	190mm	194mm	197mm	240mm	272mm	295mm	330mm	385mm	485mm
Actuator phase with available air supply controlling the max shut off pressure, depending on design of Kv	tor phase valiable air SCT-1, SCT-2, SCT3 with air supply of 1.2 scT3 with air supply of 1.2 till ax shut off till 4 bar and pressure, anding on off till 52 bar off till 52 bar sct SCT-1, SCT-2, SCT3 with air supply of 1.2 till 4 bar and pressure shut off till 52 bar of the sct of the sc		SCT-1, SCT-2, SCT3 with air supply of 1.2 till 4 bar and pressure shut off till 52 bar	SCT-1, SCT-2, SCT3, SCT 4 with air supply of 1.2 till 4 bar and pressure shut off till	SCT-1, SCT-2, SCT3, SCT-4 with air supply of 1.2 till 4 bar and pressure shut off till 40 bar 52 bar	SCT3, SCT4 with air supply of 1.2 till 4 bar and pressure shut off till 40 bar	SCT3, SCT4 with air supply of 1.2 till 4 bar and pressure shut off till 40 bar		

Spraytech Systems actuator model versus Kv value and the shut off pressure, applicable for seat leakage class IV and class VI

Table 1.4

Kv value in m3/hr	0.1	0.16	0.25	0.4	0.63	1	1.6	2.5	4	6.3	10	16	25	35	40	63	80	160	260	360
Actuator model applicable	SCT2, SCT3, SCT1	SCT3,	SCT3,	SCT4, SCT3,																
Seat bore in mm	2	3	3	5	5	8	8	8	10	12	24	26	38	46	50	65	80	100	125	150
Valve stem dia in mm	3	3	3	3	3	6	6	6	6	10	10	10	10	10	10	12	12	16	25	25
Max shutoff pr in bar g available w r t to kv value	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	30	30	30	30	30
Max available air supply in bar g for actuator	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Valve travel in mm	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	34	34	34	34	34
Actuator spring travel in mm	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	34	34	34	34	34
Actuator stem dia in mm	3	3	3	3	3	6	6	6	6	10	10	10	10	10	10	12	12	16	25	25