

**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 3 way globe control valves till 20" and up to 250#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 wide 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 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

- Linear
- 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

## 3 Way Diverting & Mixing Valve



Fig. 1: Spraytech Systems Pneumatic Control Valve with SCT Actuator

3 way Valve with Pneumatic Actuator (Fig. 1)

Valve body made of

- Cast iron
- Cast steel
- Cast stainless steel

Undivided valve bonnet

The control valves, designed according to the modular assembly principle, can be equipped with various accessories: Positioners, limit switches, solenoid valves and other accessories according to IEC 60534-6 and NAMUR recommendation

### Versions

Standard version designed for temperatures from -10 to +220 °C (15 to 430 °F) with pneumatic actuator

### Further versions

- Insulating section or bellows seal
- Adjustable packing
- Heating jacket
- Additional handwheel
- 3 Way Electric Control Valve
- 3 Way Manually Operated Valve
- Hand-operated Actuator

## Specifications of Spraytech Systems globe control valve

**Table 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 vacuum 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, Hastelloy
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 <sup>(6)</sup> 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 anticorrosion 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 <sup>(6)</sup> mbarltr/sec
Trim hardening versions	All hardening versions with stelliting version available

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.

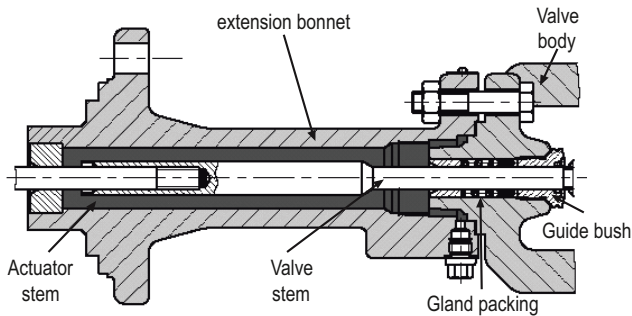
Depending on how the compression springs are arranged in the actuator the control valve has two different fail-safe positions that become effective

when the supply air fails:

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

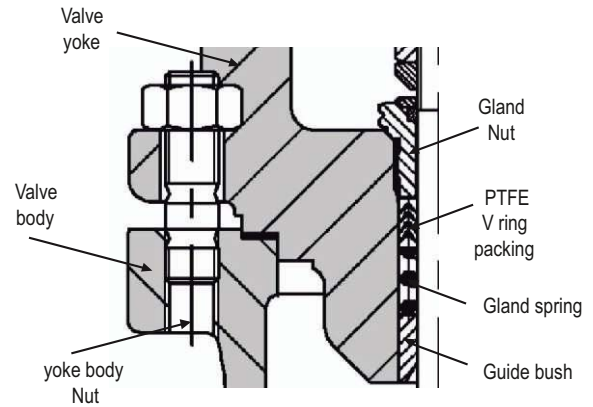
**Actuator stem retracts (FE):** The actuator springs open the valve when the supply air fails.

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. 3**



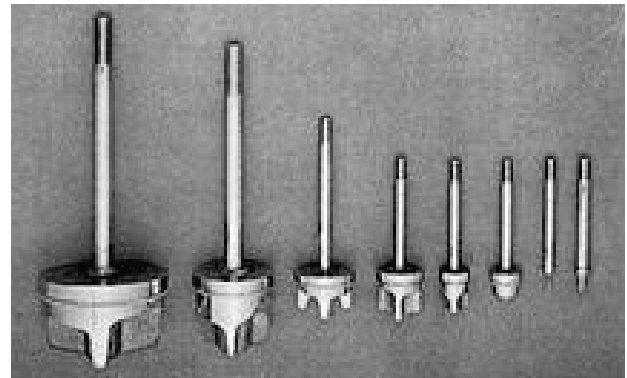
The Gland Sealing

**Fig. 2**

## Application

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 2

Actuator model	SCT1				
	SCT11	SCT12	SCT13		
Actuator, actuation torque kN	0.48	0.96	1.44		
Travel in mm	15	15	15		
Air supply in kg/cm <sup>2</sup> g	1.4	2.4	3.2		
Shut off pr in kg/cm <sup>2</sup> g	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	15	15	15	15	15
Air supply in kg/cm <sup>2</sup> g	1.4	2.4	3.2	2.5	3.5
Shut off pr in kg/cm <sup>2</sup> g	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	15	15	15	30	30
Air supply in kg/cm <sup>2</sup> g	1.4	2.4	3.2	2.5	3.5
Shutoff pr in kg/cm <sup>2</sup> g	26	39	50	60	70

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

Table 3

Sizes	½"	¾"	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 vacuum till plus 52 bar g minus 196 till 550 deg cent	Full vacuum till plus 52 bar g minus 196 till 550 deg cent	Full vacuum till plus 52 bar g minus 196 till 550 deg cent	Full vacuum till plus 52 bar g minus 196 till 550 deg cent	Full vacuum till plus 52 bar g minus 196 till 550 deg cent	Full vacuum till plus 52 bar g minus 196 till 550 deg cent	Full vacuum till plus 52 bar g minus 196 till 550 deg cent	Full vacuum till plus 52 bar g minus 196 till 550 deg cent	Full vacuum till plus 52 bar g minus 196 till 550 deg cent
Valve stem travel in mm	15	15	15	15	15	15	15, 30	30	30
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 version
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	50 bar	50 bar	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 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 40 bar	SCT-1, SCT-2, SCT3, SCT-4 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 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	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT2, SCT3, SCT1	SCT3, SCT1	SCT3, SCT1	SCT4, SCT3, SCT1
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	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	30	30	30	30	30
Actuator spring travel in mm	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	30	30	30	30	30
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

				Actuator area	Bench range	Required supply pressure	Bench range	Required supply pressure	Bench range	Required supply pressure
				350 cm <sup>2</sup>	0.4 to 2.0	2.4	1.4 to 2.3	3.7	2.1 to 3.3	5.4
				700 cm <sup>2</sup>	0.4 to 2.0 (1.2 to 2.0)	2.4 (3.2)	1.4 to 2.3 (1.85 to 2.3)	3.7 (4.15)	2.1 to 3.3 (2.7 to 3.3)	5.4 (6)
DN	K <sub>VS</sub> for mixing valve	Seat Ø	Rated travel	Actuator area	Δp when p <sub>2</sub> = 0 bar					
100	100	80	30	700 cm <sup>2</sup>	3.9	16.5	25			
	160	100			2.3	10	16			
125	140	90			3	13	20			
	200	110			–	8.5	13			
150	200	110			–	8.5	13			
	300	130			–	6	9			
100	100	80		750 cm <sup>2</sup>	4.3	17.5	24.5			
	160	100			2.6	11	15.5			
125	140	90			3.3	14	19			
	200	110			2.1	9	12.5			
150	200	110	2.1		9	12.5				
	300	130	–		6.5	9				

				Actuator area	Bench range	Required supply pressure	Bench range	Required supply pressure	Bench range	Required supply pressure
				350 cm <sup>2</sup>	0.4 to 2.0	2.4	1.4 to 2.3	3.7	2.1 to 3.3	5.4
				700 cm <sup>2</sup>	0.4 to 2.0 (1.2 to 2.0)	2.4 (3.2)	1.4 to 2.3 (1.85 to 2.3)	3.7 (4.15)	2.1 to 3.3 (2.7 to 3.3)	5.4 (6)
DN	K <sub>VS</sub> for diverting valve	Seat Ø	Rated travel	Actuator area	Δp when p <sub>2</sub> = 0 bar					
100	100	80	30	700	3.9	16.5	25			
	160/100	100/80			2.3	10	16			
125	140	90			3	13	20			
	200/140	110/90			–	8.5	13			
150	200	110			–	8.5	13			
	300/200	130/110			–	6	9			
100	100	80		750	4.3	17.5	24.5			
	160/100	100/80			2.6	11	15.5			
125	140	90			3.3	14	19			
	200/140	110/90			2.1	9	12.5			
150	200	110	2.1		9	12.5				
	300/200	130/110	–		6.5	9				

**Table 5 Weights**

Valve	DN	15	20	25	32	40	50	65	80	100	125	150	
	ANSI	½	¾	1	–	1½	2	2½	3	4	–	6	
Valve without actuator	kg	6	7	8	13	15	17	31	37	49	95	135	
	lbs	13	15.5	17.5	28.7	33	37.5	68	82	108	210	298	
Weight with insulating section or bellows seal	Short	kg	9	10	11	19	21	23	40	45	68	120	165
		lbs	20	22	24	42	46.3	50.7	88	99	150	265	364
	Long	kg	13	14	15	23	25	27	44	49	76	128	173
		lbs	28.7	30.9	33	50.7	55	59.5	97	108	168	282	382

Actuator		cm <sup>2</sup>	350	700
		in <sup>2</sup>	54.2	108.5
SCT Actuator without/with handwheel	Without	kg	8	22
		lbs	18	48.5
	With	kg	13	27
		lbs	29	59.5