

## **Precision – Made in Germany**

As a part of the Schubert & Salzer Control Systems GmbH, Schubert & Salzer Inc. has developed a strong network of aligned technical sales representatives and regional offices across the Americas. We are defined by highly technical products, astute customer service, exceptional deliveries and commercially attractive costing. We offer a multitude of control and actuated valves for a wide variety of process industries. These valves serve a variety of disciplines where durability, precision and value are important. Our support and service staff in Concord, North Carolina, USA and within a number of direct regional sites as well as our distribution partners are accustomed to fulfilling all of your application needs and requirements.

## Tradition since 1883

We are a part of everyday life; whether it be production of chemical or pharmaceutical products, food & beverage processing, production of plastics, rubber, steel, paper, textiles or simply heating & cooling campus's or buildings Schubert & Salzer products play a vital role.

The global market expects highly developed and engineered products that encompass the "Made in Germany" label. Schubert & Salzer delivers on this theme and exemplifies excellent response and delivery, highly functional products that are competitively priced, completing a full circle of value.



# Technology for tomorrow

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## The sliding gate valve principle by Schubert & Salzer

This is how easy control can be. In the field of control valves, Schubert & Salzer has been breaking new ground for many years. We developed the sliding gate control valve: a practical, light and highly accurate valve. It operates based on a principle that had already excited Leonardo Da Vinci. Even today, it satisfies the most challenging requirements that are placed on a control valve.

### The alternative when the demands are high

The sliding gate valve series controls liquid, vapor and gaseous media precisely, quickly and economically. A sealing disc (2) fixed in the body (1) at right angles to the flow direction has a certain number of horizontal slots (3). A moving disc (4) with the same arrangement of slots moves parallel to the fixed disc, thereby changing the flow cross section. The prevailing differential pressure presses the moving disc (4) against the fixed disc (2) and seals it.

### Sliding gate valves are used to control gases, steam and liquids:

- Chemical and pharmaceutical industry
- Steel and aluminum plants
- Food and beverage industry
- Breweries
- Textile manufacturing
- Tire production
- Plastics and rubber
- Research and development
- Gas and compressed air production and utilization
- & many more.

fast

innovative

accurate



# Details

Positioner

Pilot line

Diaphragm shell

Diaphragm disc

Coupling

Adjusting nut

Packing tube

Chevron packing, spring loaded

Bellows (where needed)

Column

Valve stem

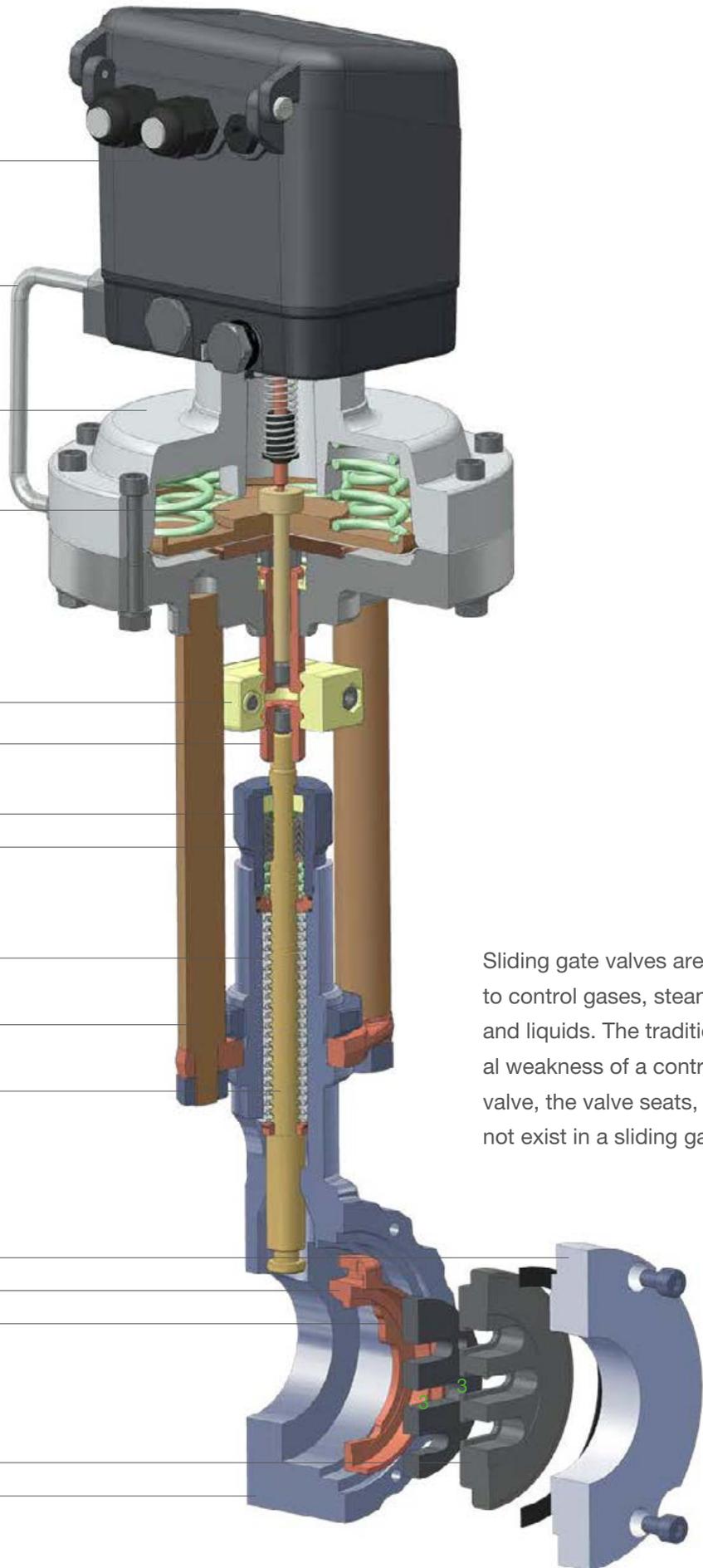
Body cover (1)

Coupling ring

Moving disc (4)

Fixed disc (2)

Body (1)



Sliding gate valves are used to control gases, steam and liquids. The traditional weakness of a control valve, the valve seats, does not exist in a sliding gate.

# The advantages of sliding gate valves

## Fits into tight spaces

Compact construction for minimum use of space and ease of installation.

## Easy to install and maintain

Thanks to the compact construction, the low weight and the innovative seal disc design makes easy work of installation and maintenance.

## Extremely low leakage rate

< 0.0001% of the  $C_{V_{max}}$  value due to the self-lapping action of the moving disc and the pressure of the medium against the moving disc, using a surface seal instead of an annular seal.

## Outstanding rangeability

From 30 : 1 up to 160 : 1

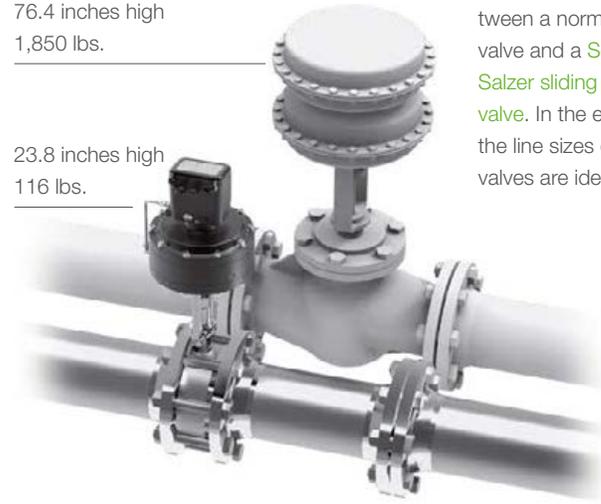
## Variable $C_{V_{max}}$ values and characteristic curves

A simple exchange of the fixed disc (plate) is all that's needed to change the  $C_{V_{max}}$  value and characteristic curve at any time - possible range of  $C_{V_{max}} = 0.02$  to 1056.

## Size comparison 10 inch GS vs globe

76.4 inches high  
1,850 lbs.

23.8 inches high  
116 lbs.



Size comparison between a normal globe valve and a Schubert & Salzer sliding gate valve. In the example, the line sizes of both valves are identical.

## Minimal wear

Low turbulence means less erosion. The short stroke (1/4" to 1/2") insures greater packing life and also requires reduced actuation energy.

## High differential pressures

Using its unique compact design and low energy consumption, the GS valve gives accurate control of high differential pressures up to 1450 psi.

Variable  $C_{V_{max}}$  values and characteristic curves – By simply replacing the fixed sealing disc:



100% linear



16% reduced



0,4% reduced



100% equal percentage



SV100

### **Optimal flow control**

Avoids cavitation problems in the valve and operates quietly by reducing turbulence.

### **Saves resources and climate-friendly**

Sliding gate valves are more compact and weigh much less than standard flanged valves. When in use, the GS valves benefit from a driving force that is reduced 10-fold. This reduces the energy consumption and is good for the climate and the environment.



# Variable C<sub>v</sub> values

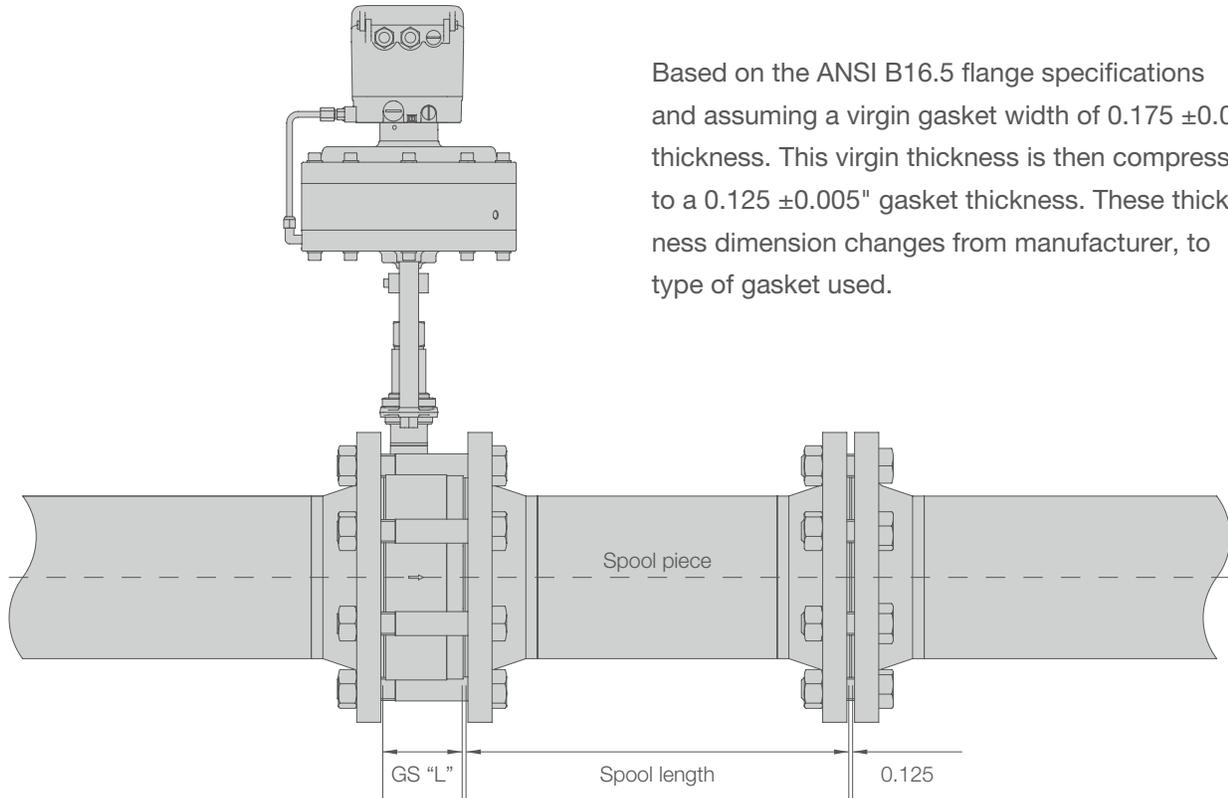
Ordering code		-	A	1	B	6	2	7	C	3	4	8	5	9
Size	Charact.	100 %	63 %	40 %	25 %	20 %	16 %	12 %	10 %	6.3 %	2.5 %	2 %	1 %	0.4 %
1/2"	(mod.) linear eq. perc	4.6 2	3 -	2 1.3	1.6 -	- 0.4	0.82 -	0.57 -	0.51 -	0.3 0.12	0.16 -	0.09 -	0.05 -	0.021 -
3/4"	(mod.) linear eq. perc	7.4 3.5	- -	- 1.7	- -	- -	1.16 -	- -	- -	- -	- -	0.15 -	- -	- -
1"	(mod.) linear eq. perc	13 5.8	7.4 -	4.6 2.8	- -	- 1.3	1.9 -	- -	1.08 -	0.72 -	0.3 -	- -	0.16 -	0.05 -
1 1/4"	(mod.) linear eq. perc	19 9.3	12 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
1 1/2"	(mod.) linear eq. perc	30 13	19 9.9	13 -	8.1 3.2	- -	- -	- -	- -	- -	- -	- -	- -	- -
2"	(mod.) linear eq. perc	52 22	32 14	23 -	14 -	12 -	- -	- -	- -	- -	- -	- -	- -	- -
2 1/2"	(mod.) linear eq. perc	60 35	41 -	- -	17 9.3	- -	- -	- -	- -	- -	- -	- -	- -	- -
3"	(mod.) linear eq. perc	107 56	67 41	46 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
4"	(mod.) linear eq. perc	179 89	110 56	72 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
5"	(mod.) linear eq. perc	275 135	- -	110 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
6"	(mod.) linear eq. perc	392 171	246 104	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
8"	(mod.) linear eq. perc	650 296	408 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
10"	(mod.) linear eq. perc	1056 -	667 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

## Seating elements

		Function unit			
		Carbon – SST	SFC	STN2	STN3
Characteristics	Friction coefficient	⊕ ⊕	⊕ ⊕	⊖	⊖
	Actuator force	⊕ ⊕	⊕ ⊕	⊖	⊖
	Leakage rate	⊕ ⊕	⊕	⊖	⊖
	Chemical resistance	⊕ ⊕	⊖	⊕	⊕
	Ability for high differential pressure	⊖	⊖	⊕	⊕ ⊕
	Edge stability	⊖ ⊖	⊖	⊕	⊕ ⊕
	Application during cavitation	⊖ ⊖	⊖	⊕	⊕ ⊕
	Application at low valve opening (liquids and steam)	⊖ ⊖	⊖	⊕	⊕ ⊕
Applications	Range of use	Gases, fluids, steam without possibility for condensate hammer (continuous applications)	Reinforced alternative to carbon tribological pairing without influence to actuating forces, stability and rigidity of the STN2 pairing	Loaded fluids, like steam even at the danger of water hammer	Applications with very high differential pressures
	Fluid temperature	-328 °F to 842 °F	-76 °F to 572 °F	-148 °F to 986 °F	
Setup	Fixed disc	Stainless steel, coated with Stellite			Stellite
	Moving disc	Carbon	Stainless steel combined coating technique – SFC	Stainless steel coated with Tribaloy	Tribaloy
Availability		1/2" - 10"		1/2" - 6"	1/2" - 2"



# Simple installation to replace existing flanged valves



Based on the ANSI B16.5 flange specifications and assuming a virgin gasket width of  $0.175 \pm 0.01$ " thickness. This virgin thickness is then compressed to a  $0.125 \pm 0.005$ " gasket thickness. These thickness dimension changes from manufacturer, to type of gasket used.

## Spool piece adapters for retrofitting Schubert & Salzer GS wafer style

Nominal size	150 #	300 #	600 #	150 #	300 #	600 #	S&S GS valve "L" dimension (in.)
	ANSI B16.5 standard face to face dimension (in.)			Spool piece length (in.)			
1/2"	7.25	7.50	8.00	4.93	5.18	5.68	2.20
3/4"	7.25	7.63	8.13	4.93	5.30	5.80	2.20
1"	7.25	7.75	8.25	4.93	5.43	5.93	2.20
1 1/4"	NA	8.38	NA	NA	6.06	NA	2.20
1 1/2"	8.75	9.25	9.88	6.43	6.93	7.55	2.20
2"	10.00	10.50	11.25	7.36	7.86	8.61	2.52
2 1/2"	10.88	11.50	12.25	8.07	8.70	9.45	2.68
3"	11.75	12.50	13.25	8.88	9.63	10.38	2.75
4"	13.88	14.50	15.50	10.80	11.43	12.43	2.95
5"	Consult factory						3.15
6"	17.75	18.63	Consult factory	14.48	15.35	Consult factory	3.15
8"	21.38	Consult factory		17.60	Consult factory		3.65
10"	26.50	factory		22.59	factory		3.78

Virgin gasket width (in.) 0.175 may vary

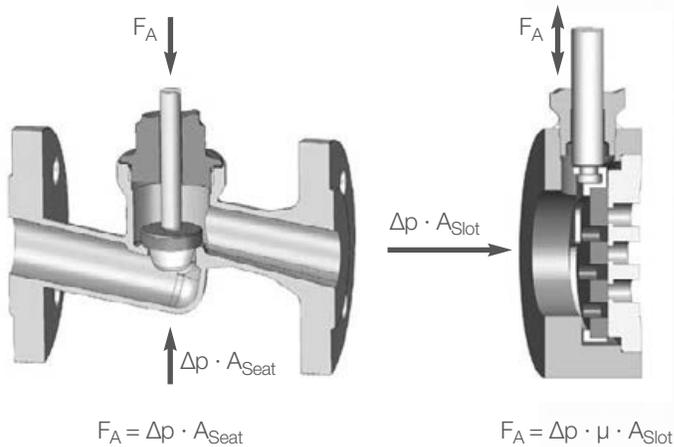
Nominal gasket compression width (in.) 0.125 may vary

# Efficiency

The outstanding feature of the sliding gate valve is the actuating force which is approximately 10% of that needed to actuate a globe valve of the same size and differential pressure. This permits the use of much smaller actuators even though both designs of the same size have similar flow rates!

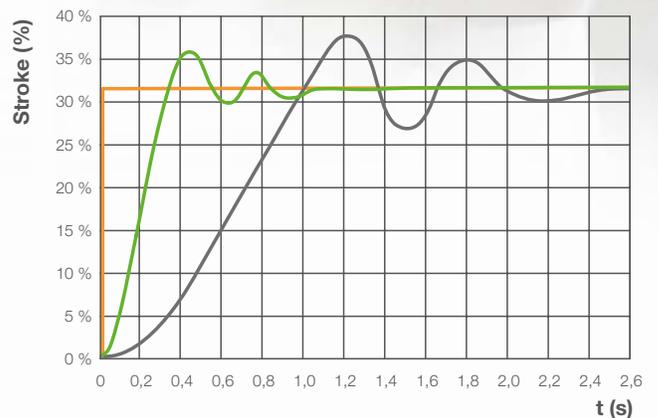
The decisive factor in this respect is the low actuation force required that results from the static or sliding friction of the disc pairing. Globe valves on the other hand have to overcome the force of the flowing medium.

$$\frac{F_{a, \text{ Sliding gate valve}}}{F_{a, \text{ Seat valve}}} = \frac{\Delta p \cdot \mu \cdot A_{\text{Slot}}}{\Delta p \cdot A_{\text{Seat}}} \approx 10\%$$



# Vitality

Sliding gate control valves are considerably faster than conventional control valves. If you compare the stroke of two valves after a control signal step, it can be seen that the short stroke, the low actuating forces and the small actuator volume of the sliding gate control valves result in lower actuating times and a significantly smaller stroke amplitude in the transient condition. This high dynamism has a positive influence on the control quality of the entire control circuit.

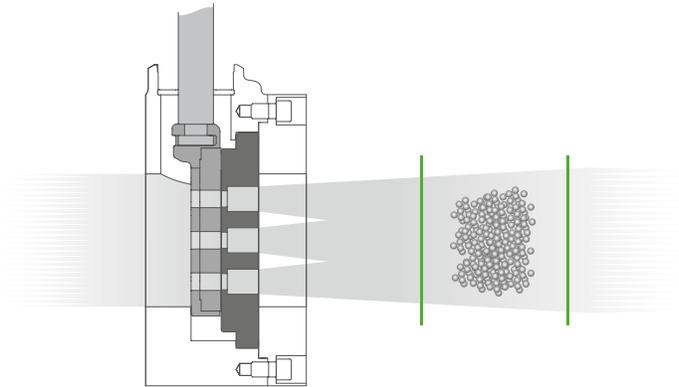


■ Control signal   
 ■ Sliding gate valve   
 ■ Globe valve



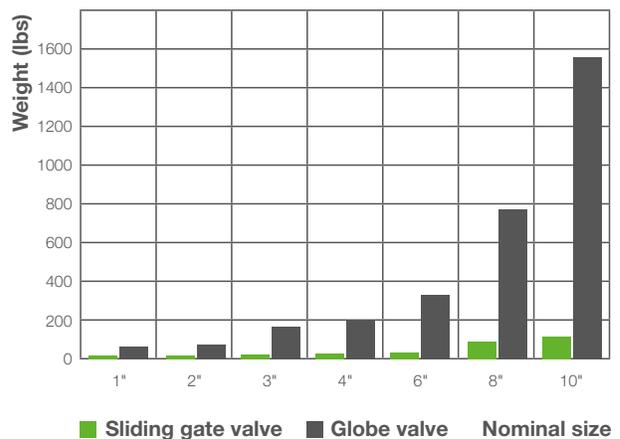
## Cavitation

A high rate of flow through the narrowest cross section of a valve will lower the local pressure below the vapor pressure of the liquid. Vapor bubbles form which then collapse in the regions of higher pressure. When they come into contact with solid boundaries (valve body), the imploding bubbles can cause damage. In the case of a sliding gate valve, these dangerous cavitation zones are external, or more accurately, they are located about **3 - 6 ft** beyond the valve. The cavitation bubbles then collapse around the center of the pipe-line without consequence.



## Weight

The low actuating force and short stroke allow the use of smaller actuator. Coupled with the space-saving wafer construction, weight and installation dimensions are minimized, particularly in the mid to large nominal sizes. This translates into about 330 lbs for a flanged globe valve in 6", whereas a sliding gate valve of the same nominal size weighs a mere 33 lbs!



# Have it your way – from the USA

Now, the Schubert & Salzer sliding gate valve is available in a new flanged body design. This product is designed to replace existing flanged control valves where a need is required to meet ANSI B16.5, ANSI/ISA-75.08.01 as well as API standards. This new model is excellent for new installations concerning field retrofit and replacement of existing control valves. The 8621 is manufactured in the Concord, North Carolina, USA facility and proudly carries the label “Made in the USA”. It fully implements all of the technical and maintenance advantages of the wafer body style GS3 series. This latest development has the advantages of less weight and a smaller footprint than other traditional and globe style control valves.

## GS Advantages

- Compact construction
- Ease of installation & maintenance
- Extremely low leakage rates
- Variable  $C_{V\max}$  values and flow characteristics
- Outstanding rangeability
- Minimal wear
- High differential pressures

## ANSI

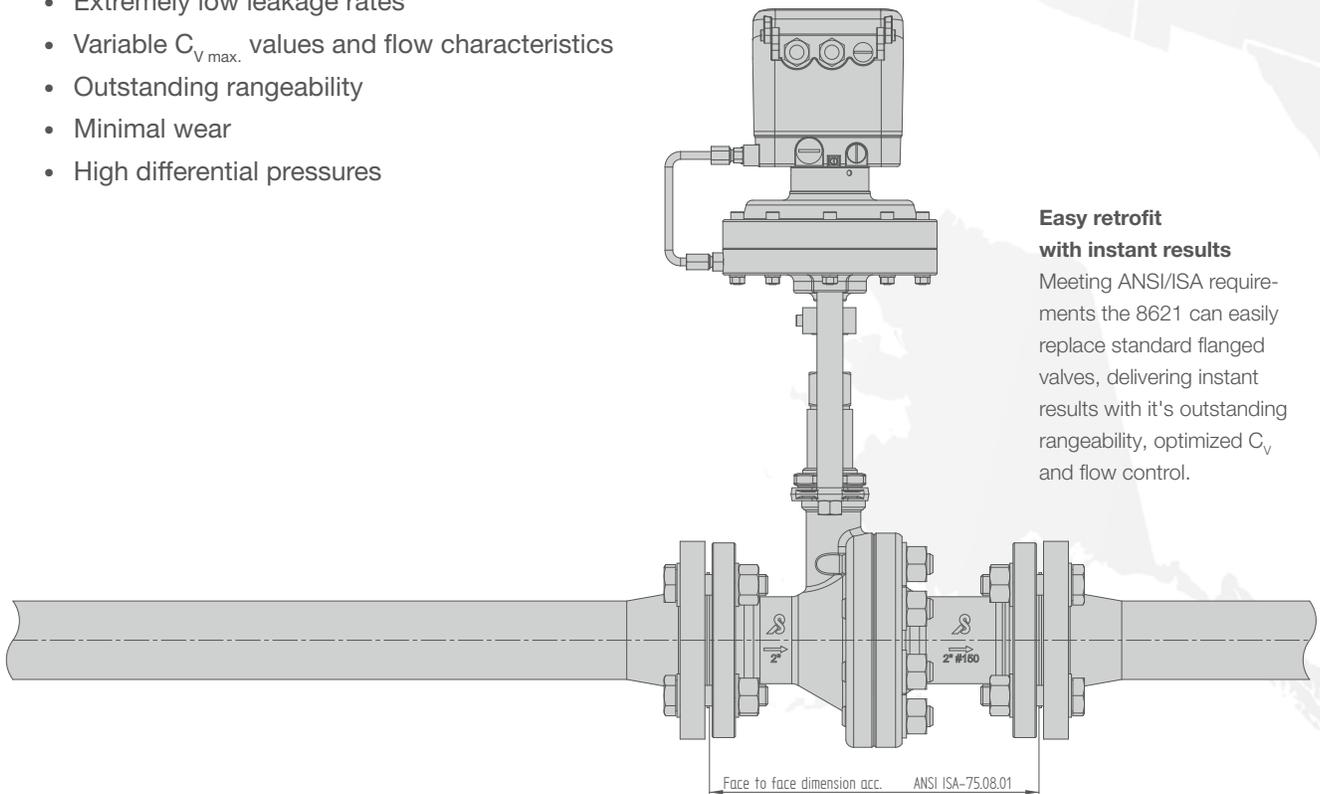
The 8621 control valve meets ANSI/ISA requirements in carbon steel and stainless steel flanged bodies in Class 150/300 designs from 1/2 inch through 6 inch.

## Various sizes and actuation principles

The flanged sliding gate valve is shipped in every size and actuation principle that is required. Have it your way... has never been so fast & easy.

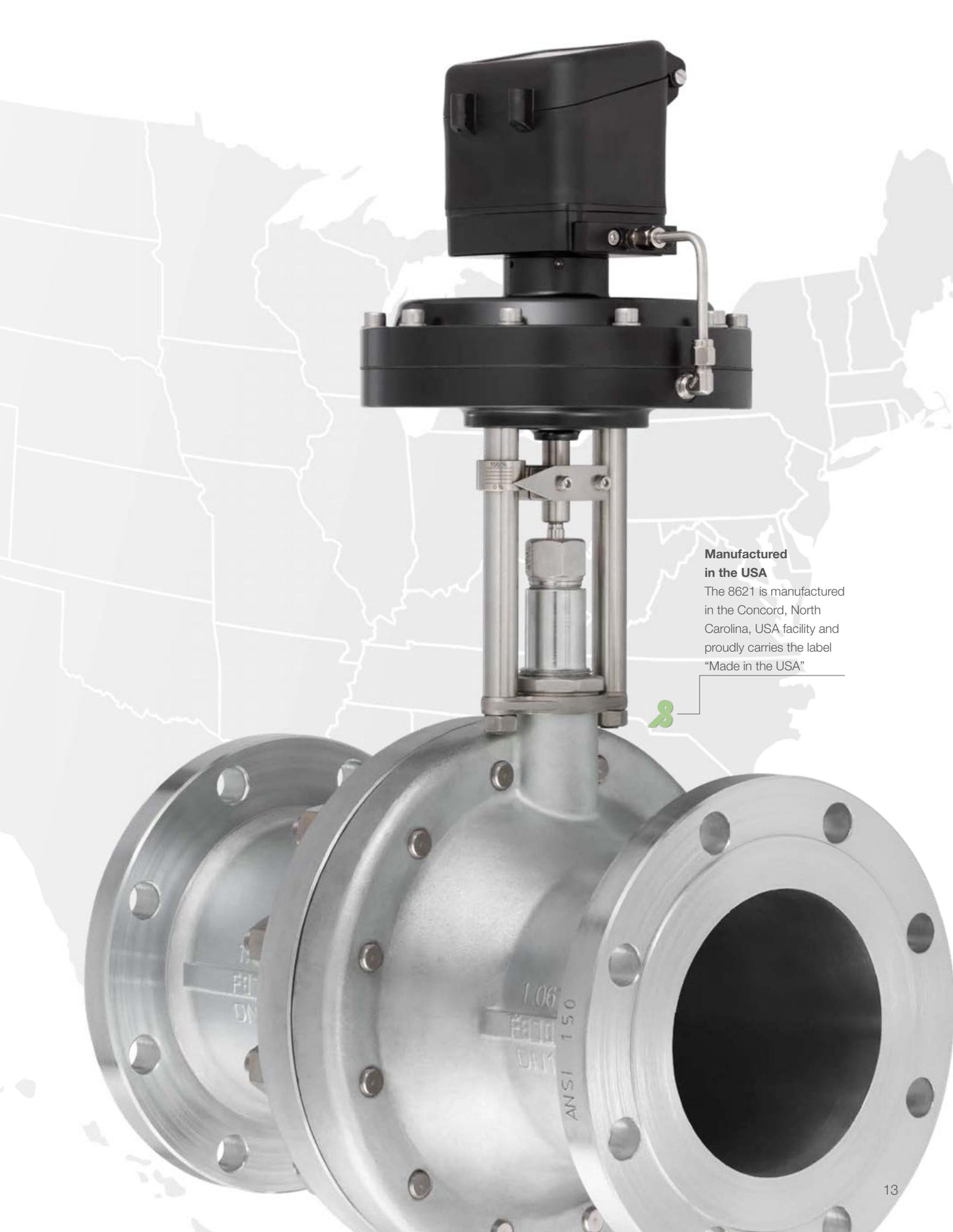
## Made in the USA

A dream and a plan to one day manufacture control valve products in the Americas has now become a reality. The 8621, now available for shipment from the Concord, North Carolina facility near Charlotte. Customized product can now be shipped quickly and efficiently.



## Easy retrofit with instant results

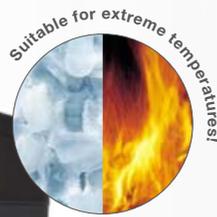
Meeting ANSI/ISA requirements the 8621 can easily replace standard flanged valves, delivering instant results with its outstanding rangeability, optimized  $C_v$  and flow control.



**Manufactured  
in the USA**

The 8621 is manufactured in the Concord, North Carolina, USA facility and proudly carries the label "Made in the USA"





**Sliding gate control valve 8021**

Nominal size: 1/2" - 10"  
 Nominal pressure: ANSI Class 150 - 900  
 Media temperature: -76°F to +662°F,  
 optional -328°F to +986°F  
 Material: carbon steel, stainless steel,  
 Alloy C276  
 Positioner: pneumatic, analog  
 electropneumatic, digital electro-  
 pneumatic, Ex-i version



**Sliding gate control valve 8020**

Nominal size: 1/2" - 10"  
 Nominal pressure: ANSI Class 150 - 600  
 Media temperature: -76°F to +662°F,  
 optional to +986°F  
 Material: carbon steel, stainless steel,  
 Side mount positioner: pneumatic,  
 analog electro-pneumatic,  
 digital electro-pneumatic,  
 Ex-Version, Various communication  
 protocols available, ex. Hart, Fieldbus  
 Foundation, Profibus, etc.



**Sliding gate control valve 8028**

Nominal size: 1/2" - 6"  
 Nominal pressure: ANSI Class 150 - 300  
 Media temperature: -76°F to +662°F  
 Material: carbon steel, stainless steel  
 Positioner: pneumatic, analogue  
 electropneumatic, digital electro-  
 pneumatic, Ex-i version  
 Series GS1 also available as a short  
 version.



**Flanged sliding gate control valve 8621**

Nominal size: 1/2" - 8"  
 Nominal pressure: ANSI Class 150 - 300  
 Media temperature: -76°F to +662°F  
 Material: carbon steel, stainless steel  
 Positioner: pneumatic, analogue  
 electropneumatic, digital electro-  
 pneumatic, Ex-i version



**Sliding gate control valve 8043**

Nominal size: 1/2" - 10"  
 Nominal pressure: ANSI Class 150 - 300  
 Media temperature: -76°F to +662°F  
 Material: carbon steel, stainless steel  
 Positioner: pneumatic,  
 analog electro-pneumatic,  
 digital electro-pneumatic, Ex-i version



**Sliding gate stop valve 8040**

Nominal size: 1/2" - 8"  
 Nominal pressure: ANSI Class 150 - 300  
 Media temperature: -76°F to +662°F  
 Material: carbon steel, stainless steel  
 Accessories: metal bellows, pilot valve,  
 limit switches, stroke limiter



**Sliding gate motor valve 8230**

Nominal size: 1/2"-10"  
 Nominal pressure: ANSI class 150 - 300  
 Media temperature: -76°F to +662°F,  
 Material: carbon steel, stainless steel  
 Actuation: On/off and control actuation,  
 optional positioning control and  
 position feedback plus limit switches



**Sliding gate motor valve 8038**

Nominal size: 1/2" - 10"  
 Nominal pressure: ANSI Class 150 - 600  
 Media temperature: -76°F to +662°F  
 optional -328°F to +986°F  
 Material: carbon steel, stainless steel,  
 Alloy C276  
 Dead band: ± 0.2%  
 Repeatability: ± 0.1%  
 Stroking speed: adjustable between  
 4.7 and 35 seconds  
 Actuator: high resolution motor actuator  
 for control and switching with stroke  
 monitoring, limit switches and optional  
 fail safe unit



**Sliding gate motor valve 8037**

Nominal size: 1/2" - 10"  
 Nominal pressure: ANSI Class 150 - 600  
 Media temperature: -76°F to +662°F  
 optional -328°F to 986°F  
 Material: carbon steel, stainless steel  
 Power supply: 24 ... 230 V AC/DC  
 (Multi-zone power pack)  
 Explosion-proof (gas version):  
 II 2G Ex de [ia] IIC T6/T5  
 Protection class: IP 66  
 Optional actuation with 3-point  
 control + position electronics obtainable



**Sliding gate pressure regulator 8011**

Nominal size: 1/2" - 6"  
 Nominal pressure: ANSI Class 150 - 300  
 Media temperature: -76°F to +446°F  
 optional up to 572°F  
 Pressure ranges: 4.4 psi to 145 psi  
 Material: Stainless steel  
 Self-operated pressure controller  
 Enclosed spring housing



**Manual sliding gate valve 8050**

Nominal size: 1/2" - 10"  
 Nominal pressure: ANSI Class 150 - 600  
 Media temperature: -76°F to +662°F,  
 optional -328°F to +986°F.  
 Gear operator available  
 Material: carbon steel, stainless steel,  
 Alloy C276



**Adjustable sliding gate orifice 8090**

Nominal size: 1/2" - 10"  
 Nominal pressure: ANSI Class 150 - 600  
 Media temperature: -76°F to +662°F,  
 Material: carbon steel, stainless steel



reliable

## Seat valves by Schubert & Salzer

Seat valves are the extremely reliable all-rounders in the valve world. In a wide range of applications, they provide a number of benefits:

- Robust and compact
- High switching performance and wear resistance
- No water hammers when closing against the media flow
- High degree of tightness, low leakage
- Wide operating temperature range
- Simple insulation, low heat losses
- High  $C_v$  value
- Easy to install and maintain

Our range includes stop valves and control valves in stainless steel or bronze, with actuators either made of stainless steel, non-ferrous metal or light-weight polymer. They are available in a variety of end connections, including threaded, weld ends, flanged versions and tri-clamps. Actuation is either pneumatic or electric motor-driven.

consistent

high quality

# Angle seat valve 7010

## 7010 technical data

	Body material		
	Brass	Bronze	SST 316
Nominal size	2 1/2" and 3"	1/2" - 2"	1/4" - 3"
Connections: NPT thread, Tri clamp Welding ends (ISO/SAE), Tube ends ANSI 150, ANSI 300	2 1/2" - 3"	1/2" - 2"	1/4" - 3"
Nominal pressure	235 psi	235 psi	580 psi
Max. fluid temperature * Optional type 220 HT-version	-22 °F up to +140 °F	-22 °F up to +338 °F up to +392 °F (opt.)	-22 °F up to +338 °F up to +428 °F*
Ambient temperature	-5 °F up to +140 °F		
Viscosity of the fluid	maximum 600 mm <sup>2</sup> /s (600 cSt, 80 °E)		
Vacuum	maximum 0.075 mm mercury (Hg)		
Working pressure for inverted packing	maximum 175 psi		
Seating seal	PTFE, glass reinforced PTFE, PEEK, EPDM, Viton, Buna N, Vulkollan		

## 7010 key features

Rotating actuator

Chrome plated brass and stainless housing for high heat dissipation and corrosion resistance. Actuator not susceptible to UV degradation, and is suitable for washdown.

Dual stem bearings for "true" guidance and superior life

Precision roller-burnished and polished 316 SS stem for long life

NPT standard connection and optional end connections

### Chevron packing

O-ring

Packing PTFE filled with carbon

Spring loading on packing rings for tight sealing

Guide rings

Fully repairable for optimum serviceability without removal from system

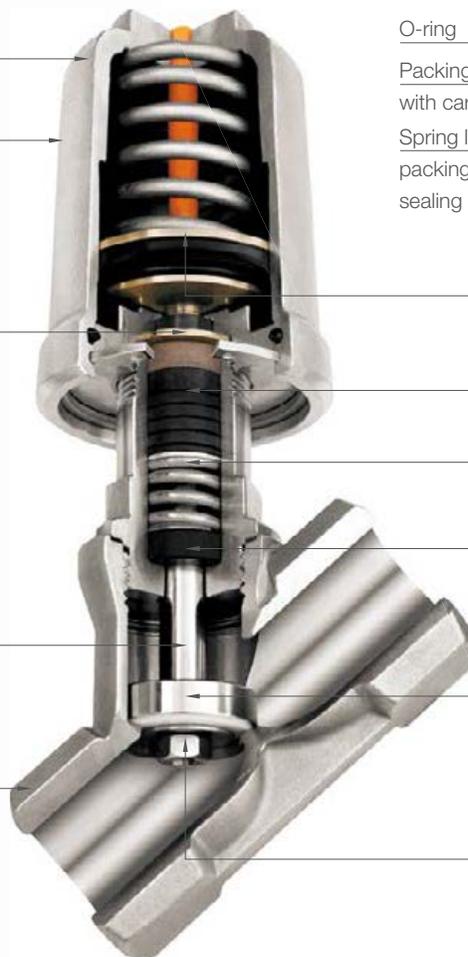
4-PTFE chevron packing rings

Spring loading on packing rings for tight sealing

Wiping ring prior to packing gland to protect against contamination

PTFE seal provides resistance to aggressive fluids, high temperatures and tight sealing. Other seat materials available.

Water-hammer free flow under seat



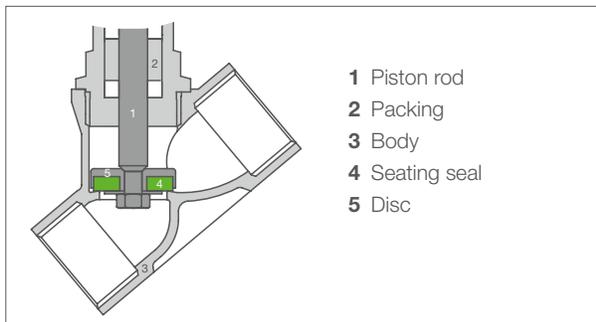
**Normally closed version shown**

### Angle seat valves

The angle-seat valves from Schubert & Salzer offer a long service life, reliable on-off and precise control performance. Due to the angled arrangement of the valve actuators in relation to the pipeline, the compact angle seat on-off and control valves can be installed and operated even in very confined spaces.

The Schubert & Salzer angle seat valves with optimized flow direction are characterized by particularly high flow coefficient ( $C_v$ ) values. The body provides various combination with different actuator types for a wide range of applications in industrial piping systems.

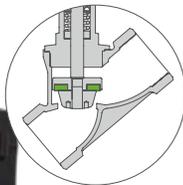
### Angle seat valves





**Angle seat stop valve 7010**

Nominal size: 1/4" - 3"  
 Working pressure up to 580 psi  
 Media temperature: -22°F up to +392°F,  
 optional -148°F to 428°F  
 Material: Bronze and 316 stainless steel  
 Also available as sanitary version.



**Angle seat control valve 7020**

Nominal size: 1/4" - 3"  
 Working pressure up to 580 psi  
 Media temperature: -22°F to +392°F,  
 optional -148°F to +428°F  
 Material: Stainless steel  
 Positioner: pneumatic, analog elec-  
 tro-pneumatic, digital electro-pneumatic,  
 Ex-i version  
 Direct acting 3-15 psi, 6-30 psi



**Angle seat manual valve 7011**

Nominal size: 1/2" - 2"  
 Working pressure up to 580 psi  
 Media temperature: -22°F to +392°F  
 Material: Stainless steel



**Strainer 4005**

Nominal size: 3/8" - 3"  
 Working pressure up to 580 psi  
 Media temperature: -40°F to +428°F  
 Material: Stainless steel



**Angle seat motor valve 7210**

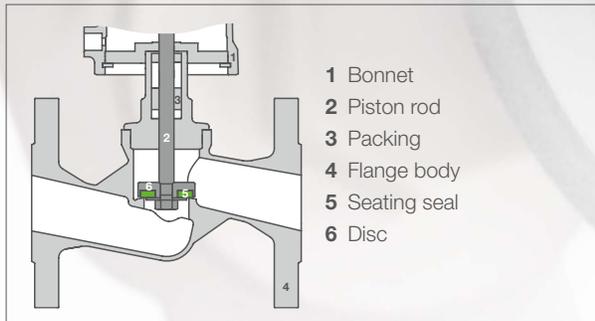
Nominal size: 1/4" - 3"  
 Working pressure up to 580 psi  
 Media temperature: -22°F to +392°F  
 optional -148°F to +428°F  
 Material: Bronze and stainless steel  
 Actuation: stop and control actuation,  
 optional position control and  
 position feedback plus limit switches



**Check valve 4000**

Nominal size: 3/8" - 3"  
 Working pressure up to 580 psi  
 ANSI # 150, DIN flanged versions  
 Media temperature: -40°F to +392°F  
 optional up to +428°F  
 Material: Stainless steel

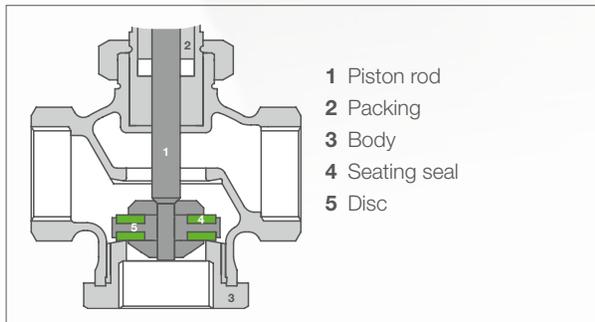
## Seat valves (1)



### Seat valves

For globe valves, the actuator orientation is at 90° to the flow direction. The rugged design with welding ends or flanged connections is in no way less competitive than the angle seat valves in terms of performance. The traditional flange design allows the simple disassembly and reassembly of the valves.

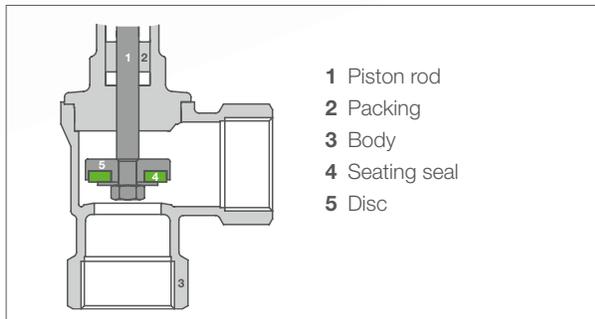
## Three-way valves (2)



### Three-way valves

Depending on its design, the three-way valve can perform a variety of functions: it can mix and distribute media flows or charge and discharge an operating component (e.g. a pressure cylinder). It is installed in a pipeline by threaded connections.

## Right-angle valves (3)



### Right-angle valves

Due to their extremely compact design, right angle valves with threaded connections are ideally suitable for space-saving installations.



**(1) Seat valve 7017**

Nominal size: 1/2" - 2"  
 Working pressure: Up to 580 psi  
 Media temperature: -22°F up to +392°F,  
 optional -148°F to +428°F  
 Material: Stainless steel



**(3) Right angle valve 7050**

Nominal size: 1/2" - 2"  
 Working pressure: Up to 580 psi  
 Media temperature: -22°F to +428°F  
 Material: Stainless steel  
 Actuation: stop and control actuation



**(1) Seat control valve 7027**

Nominal size: 1/2" - 2"  
 Working pressure: Up to 580 psi  
 Media temperature: -22°F up to +392°F,  
 optional -148°F to +428°F  
 Material: Stainless steel  
 Positioner: pneumatic,  
 analog electro-pneumatic,  
 digital electro-pneumatic, Ex-i version



**(3) Right angle motor valve 7250**

Nominal size: 1/2" - 2"  
 Working pressure: Up to 580 psi  
 Media temperature: -22°F up to +392°F  
 Material: Stainless steel  
 Actuation: on/off and control actuation,  
 optional position control and  
 position feedback plus limit switch  
 Available with pneumatic actuator as on/  
 off valve 7050 and optionally  
 with positioner as right angle control valve  
 7051



**(2) Three-way control valve 7082**

Nominal size: 1/2" - 2"  
 Working pressure: Up to 580 psi  
 Media temperature: -22°F up to 392°F  
 optional -148°F to +428°F  
 Material: Stainless steel  
 Positioner: digital electro-pneumatic,  
 Ex-i version  
 Available with pneumatic actuator as  
 3/2-way stop valve 7080 in corrosion-re-  
 sistant bronze, Motor actuators  
 available as well



**(1) Flanged control valve 7032/7037**

Nominal size: 1/2" - 2"  
 On/Off or Modulating  
 Nominal pressure: ANSI # 150, DIN  
 Media temperature: -22°F up to 392°F  
 optional -148°F to +428°F  
 Material: Stainless steel  
 Positioner: pneumatic,  
 analog electro-pneumatic,  
 digital electro-pneumatic, Ex-i version  
 Direct acting 3-15 psi, 6-30 psi



robust

## Ball sector valves by Schubert & Salzer

The ball sector valve is designed to succeed in harsh applications; slurries, dry media and fluids with suspended solids or fibers. It is suitable for control and isolation.

With pneumatic and electrical actuators, it is the best choice for very precise control within a broad range of industries and a variety of process applications.

Pulp fiber & digestive liquors, mining slurries, dry powders, oils, coal & carbon, molasses, sugar slurries, limestone & fly ash suspensions, miscellaneous fluids, combustion gases, coke gases, steam and more.

precise

- Minimal wear even with contaminated, abrasive and glutinous media
- Precise control over a large control range
- Very high rangeability 300:1
- Extremely high  $C_v$ -values
- Robust and compact design
- Long service life, low operating costs
- No flow deflection
- No draining of paper stock due to elliptical flow geometry

efficient

# Details

Positioner

Actuator

Pilot line

Drive adapter

Bracket

Plain bearing sleeve

Plain bearing

Packing

Plain bearing

Bearing pin

Ball sector

Seat support ring

O-ring

Seat ring

Seat retaining ring

Bearing pin

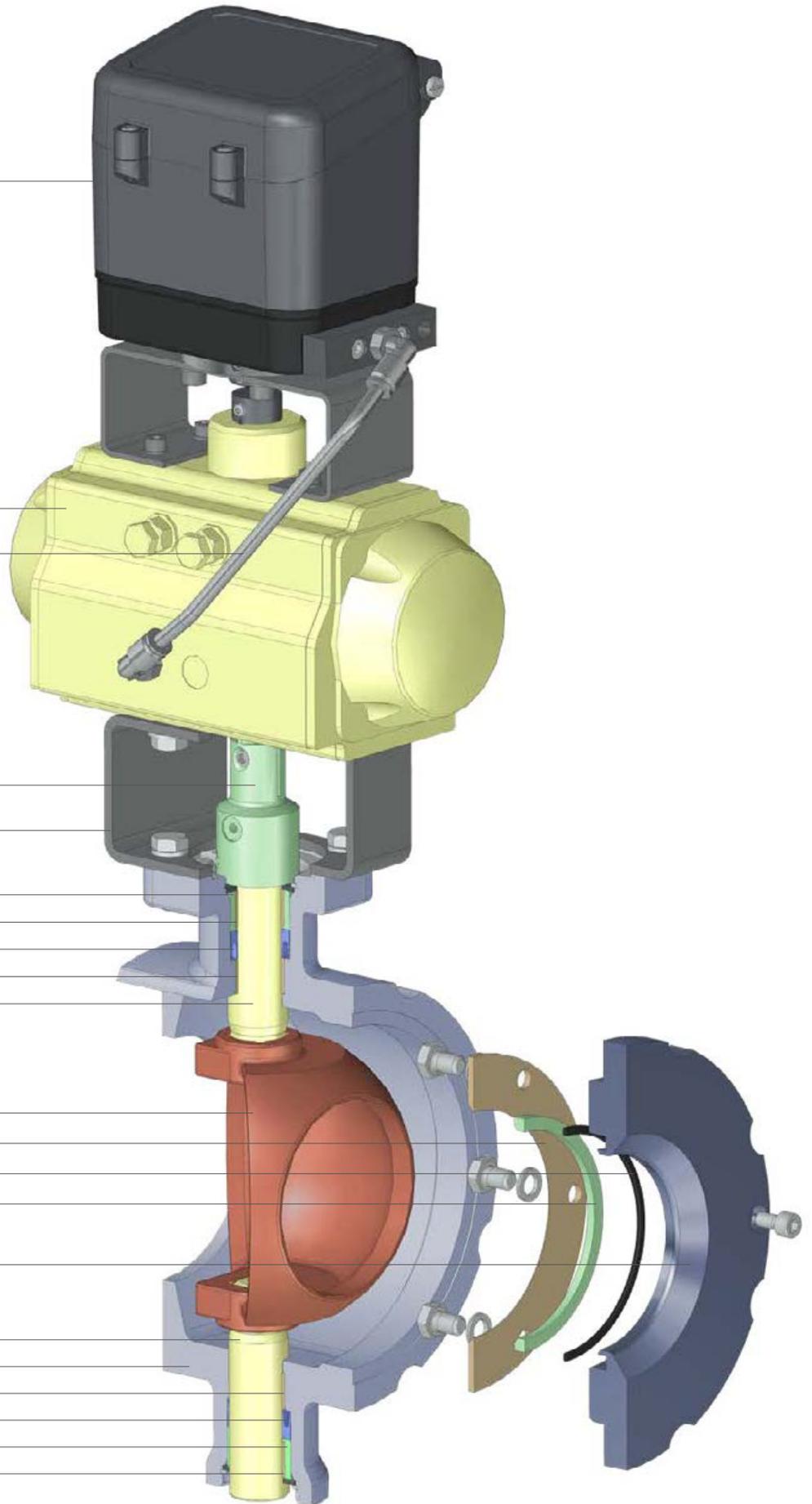
Body

Plain bearing

Packing

Plain bearing

Plain bearing sleeve



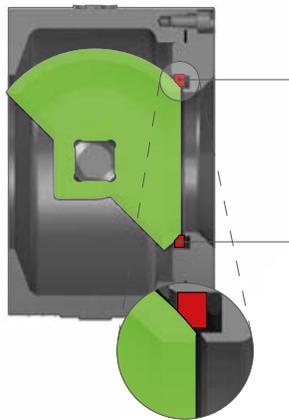
# The advantages of ball sector valves

## Wear resistance

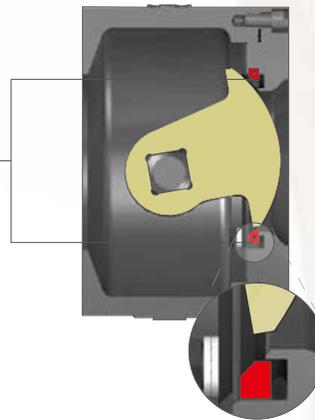
Generally segmented ball or rotary globe valves use eccentric shafts, which cause the ball or plug to lift up from the valve seat when starting to open. Thus, sealing areas are instantly exposed to permanent wear. More-over, particulate can migrate between the seal ring and ball/plug, causing damage leading to leakage.

The ball sector valve has centric and robust trunnions which allows the ball sector to maintain constant contact with the valve seat, eliminating contamination by the media. The permanent actuation torque is not affected by changes in the differential pressure.

**Schubert & Salzer ball sector**



**Standard rotary globe / or butterfly valve**



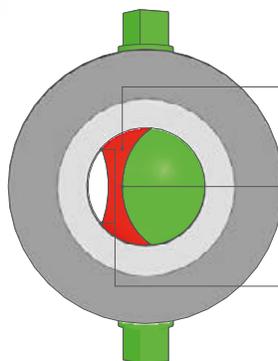
Seating seal

## Life span

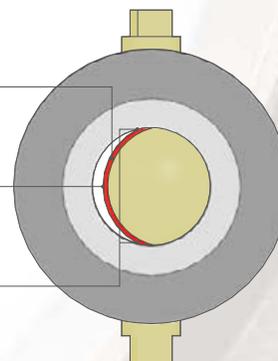
This smart seal design, combined with a variety of materials, precision radius ball sector and valve seat increases the life span of the valve substan-

tially over butterfly valves or alike. It is therefore particularly suitable for abrasive, high viscosity or fiber containing media.

**Schubert & Salzer ball sector**



**Standard rotary globe / or butterfly valve**



Available surface to wear

Position of seat seal

Origin of wear

# The details that matter

Compact top mount  
Schubert & Salzer  
digital positioner

Wide range of accessories available,  
mounting to  
NAMUR standard

Pneumatic actuator  
(double or single  
acting) or motor  
actuator mounting  
to DIN/ISO 5211

Mounting kit according  
to DIN/ISO 5211

Wafer body designed  
to suit ANSI or DIN standards  
up to 12"  
(12" flanged only)

Centric and maintenance-free,  
high temperature bearings

Visual position indication

Tubing

Adjustable  
travel stops

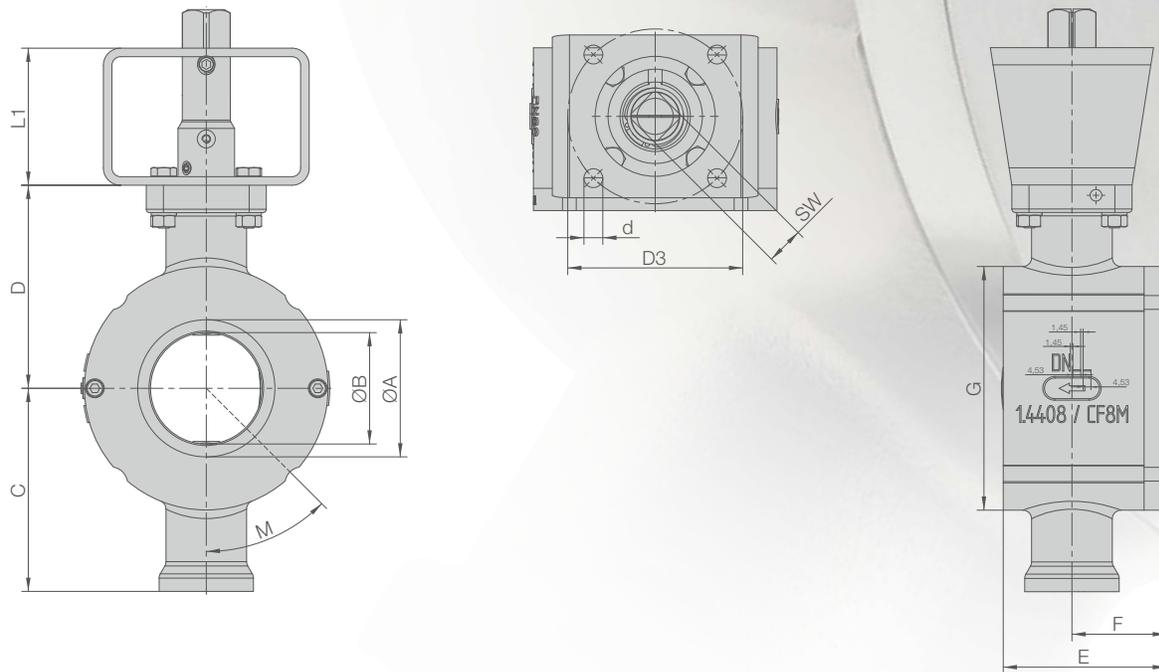
Close toleranced  
coupling to ensure  
precise positioning  
and repeatability

Ball sector optional  
with hardened  
surface treatments  
for demanding  
media and modified  
equal percentage  
flow characteristic  
with rangeability of  
300:1

Seat retaining ring  
and valve seat  
available in various  
material combinations;  
easy to install and maintain



# Standard dimensions without actuator (with mounting kit ISO 5211)



Size	A	B	C	D	E	F	G	L1	d	D3	SW	DIN/ISO 5211
1"	0.98	0.79	3.35	3.35	1.97	1.02	2.95	2.36	0.26	1.97	0.55	F 05
1 1/2"	1.61	1.26	3.62	3.62	2.28	1.22	3.78	2.36	0.35	2.76	0.67	F 07
2"	2.09	1.57	3.74	3.74	2.8	1.5	4.41	2.36	0.35	2.76	0.67	F 07
2 1/2"	2.56	1.97	4.55	4.55	3.35	1.93	5.08	3.15	0.43	4.02	0.87	F 10
3"	3.15	2.56	4.67	4.67	3.74	2.17	5.59	3.15	0.43	4.02	0.87	F 10
4"	3.94	3.15	5.1	5.1	4.41	2.44	6.85	3.15	0.43	4.02	0.87	F 10
5"	4.92	3.94	6.99	6.99	5.83	3.35	7.87	3.15	0.53	4.92	1.06	F 12
6"	5.91	4.72	7.36	7.36	6.69	3.74	8.66	3.15	0.53	4.92	1.06	F 12
8"	7.87	6.1	8.5	8.5	8.27	4.72	10.85	3.15	0.67	5.51	1.42	F 14
10"	9.84	7.68	9.53	9.53	10.63	5.71	13.31	3.15	0.67	5.51	1.42	F 14

Dimensions for 12" on request

Dimensions in inch

**4040 valve body, acc. to ANSI ISA-75.08.02\***



\* Consult factory for dimensions

# Technical information

Design	Flangeless, wafertype (size 12" flanged)	
Nominal sizes	1" up to 12"	
Body material	Cast parts Turned parts	CF8M (1.4408) 316 L (1.4404)
Bearing material	High temperature plain bearing	
Actuator mount	Mounting kit DIN/ISO 5211	
Nominal pressure	1" - 2" 3" - 4" 6" - 12"	ANSI150, ANSI300, 580 psi (for flanges 145 psi - 580 psi) ANSI150, ANSI300, 365 psi ANSI150, 235 psi Other pressure ranges on request
Fluid temperature	-76 °F up to +446 °F	
Ambient temperature	-40 °F up to +176 °F (special version on request)	
Characteristic	Almost equal percentage	
Rangeability	300:1	

## C<sub>v</sub>-values

Size	100%	63%	40%	25%	6.3%
1"	24.6	14.9	9.83	6.14	1.7
1 1/2"	80	47.2	29.3		
2"	126	70.6			
2 1/2"	179.2				
3"	348				
4"	456				
5"	874				
6"	948				
8"	1597				
10"	2597				
12"	4493				



100%



reduced to  
63%



reduced to  
6,3%

## Maximum working pressure

Nominal size	Maximum differential pressure ( $\Delta p$ )							
	Seat ring PTFE			Seat ring PEEK			Seat ring Stellite	
	up to 176 °F psi	248 °F psi	338 °F psi	up to 248 °F psi	338 °F psi	428 °F psi	up to 338 °F psi	428 °F psi
1" - 2"	365	230	85	580	365	230	580	365
3" - 4"	230	175	75	365	230	145	365	230
6" - 12"	230	175	60	230	175	115	230	175

## Design

### General design

Ball sector valves provide outstanding performance in challenging applications.

In a closed position conventional butterfly and segmented valves expose their critical sealing components to the highest wear in the valve (see pictures on page 24). Due to the special design of the ball sector, the seat seals through a surface part of the sector less exposed to wear. In order to avoid abrasion caused leakage, the ball sector valve facilitates sealing through less exposed areas of the ball sector. The fact that the sealing surface is not exposed to high flow velocities increases the service life of the ball sector valves significantly.



## Valve seat combinations

Seat ring	Ball sector	Leakage	Temp. range (°F)*
PTFE	Stainless steel polished	$5 \times 10^{-7}$ from max. $C_v$	-40 up to +338 °F
PEEK	Stainless steel polished	$5 \times 10^{-7}$ from max. $C_v$	-40 up to +428 °F
PTFE	Stainless steel, hard chrome plated	$5 \times 10^{-7}$ from max. $C_v$	-40 up to +338 °F
PEEK	Stainless steel, hard chrome plated	$5 \times 10^{-7}$ from max. $C_v$	-40 up to +428 °F
Stellite	Stainless steel, hard chrome plated and lapped	Class IV-S1 acc. EN 1349 (IEC 534-4) $5 \times 10^{-6}$ from max. $C_v$	-40 up to +446 °F
PTFE	Stainless steel, hard chrome plated and lapped	Class VI acc. EN 1349 (IEC 534-4)	-40 up to +338 °F

\* Please note the restrictions of the o-ring material!



**Ball sector valve 4040**

Nominal size: 1" - 12"  
 Nominal pressure: PN 10 - 40,  
 ANSI # 150 - 300  
 Material: stainless steel 1.4408 (CF8M)  
 and 1.4404 (316L)  
 Various seat material combinations  
 Single or double acting on/off actuators  
 Positioner: pneumatic, analogue electro-  
 pneumatic, digital electro-pneumatic,  
 Ex-i version  
 As an open/close valve, it is also available  
 with an optional limit switch box and a  
 manual actuator.



**Motorized ball sector valve 4030**

Nominal size: 1" - 12"  
 Nominal pressure: PN 10 - 40,  
 ANSI # 150 - 300  
 Material: stainless steel 1.4408 (CF8M)  
 and 1.4404 (316L)  
 Various seat material combinations  
 With an electric actuator for controlling  
 and for the open/close function incl. a  
 position feedback.  
 With an optional limit switch.  
 Other electrical actuators available.



**Highly precise  
 ball sector valve 4032**

Nominal size: 3" - 10"  
 Nominal pressure: PN 10 - 40,  
 ANSI # 150 - 300  
 Material: stainless steel 1.4408 (CF8M)  
 and 1.4404 (316L)  
 Various seat material combinations  
 Actuator: electric actuator, highly precise  
 (1500/8000 steps)



**Ex-motorized  
 ball sector valve 4037**

Nominal size: 1" - 4" (others on  
 request), 1" - 3" also available  
 with spring return  
 Nominal pressure: PN 10 - 40,  
 ANSI # 150 - 300  
 Material: stainless steel 1.4408 (CF8M)  
 and 1.4404 (316L)  
 Various seat material combinations  
 Actuator: Ex-certified motor actuator  
 II2G/D EEx ia IIC T6/T5 and IEC Ex

sterile

## Sanitary valves by Schubert & Salzer

The cleanability of valves is becoming more and more important in many segments. The Schubert & Salzer Sanitary valves comply with the highest cleanability requirements while also maintaining maximum efficiency. The valves are CIP and SIP-capable in order to avoid accumulation of bacteria and residue from the production process. A particular focus has been placed eliminating dead spaces across the entire stroke area.

reliable

efficient

# Details

Positioner

Sensing pin

Bolt

Piston spring

Pilot line

Piston

Flange

Bonnet

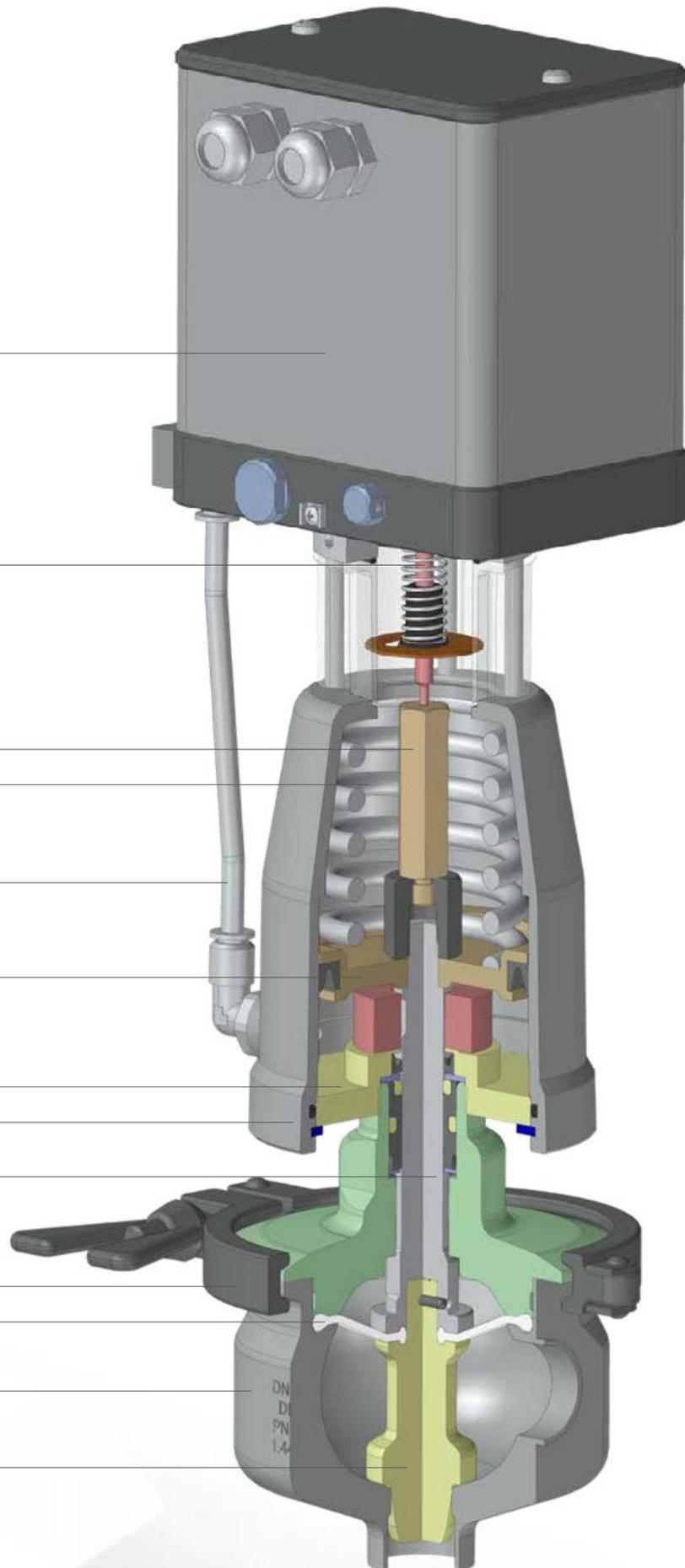
Valve stem

Tri-clamp

Diaphragm

Body

Control cone



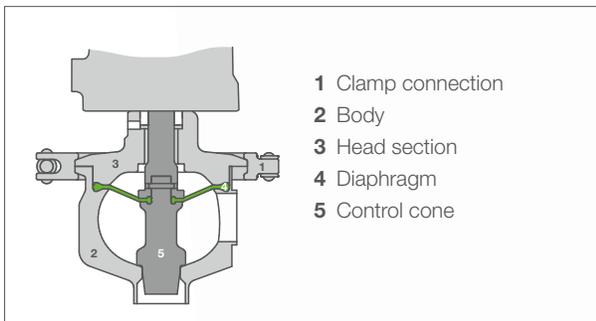
## Aseptic Right Angle Valves

The aseptic right angle valves from Schubert & Salzer with integrated positioner combine high control quality with the highest aseptic requirements. They guarantee ultimate rangeability, tremendous chemical resistance and can be used over a wide temperature range. Flow analyses have been used to optimize all wetted areas with regard to maximum wall shear stresses.

The EHEDG-certified type 6051 aseptic right angle valves meet almost every requirement in the pharmaceutical and cosmetics industry, but also in the biotechnology sector as well as the food and beverage technology sector. The components used are FDA-compliant, meet USP class VI and the directives (EC) 1935/2004 and (EU) 10/2011.

The 3A-compliant type 6052 right angle valve provides high safety in production processes for food and dairy products.

## Aseptic right angle valves



precise

# ultra-clean

# aseptic



#### **Aseptic angle control valve 6051**

Nominal size: 1/2" - 2"  
Nominal pressure: 235 psi  
Media temperature: -4°F to +284°F  
Material: Stainless steel 1.4435  
wetted surface < 9.8µin (0.25µm)  
Diaphragm material:  
EPDM with PTFE-foil  
Positioner: pneumatic,  
analogue electro-pneumatic,  
digital electro-pneumatic, Ex-i version  
Available with pneumatic on/off actuator



#### **Hygiene right angle valve 6052**

Nominal size: 1/2" - 2"  
Nominal pressure: 235 psi  
Media temperature: -4°F to +284°F  
Material: Stainless steel 1.4435  
Diaphragm material:  
EPDM with PTFE-foil  
Positioner: pneumatic,  
analogue electro-pneumatic,  
digital electro-pneumatic, Ex-i version  
Available with pneumatic on/off actuator

versatile

## Pinch valves by Schubert & Salzer

On Schubert & Salzer pinch valves, only the tube itself, or a few components, come into contact with the operating medium. They are suitable for safely shutting off and controlling in a wide variety of processes and applications.

Endless pinch valves have absolutely no dead spaces and therefore provide a modern solution for applications with the highest hygienic requirements e.g. in the pharmaceutical industry, cosmetics and biotechnology.

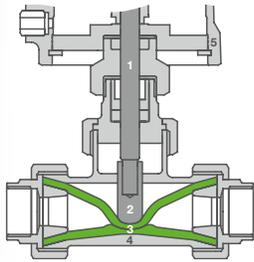
Pinch valves with an enclosed metal housing are used for lower hygienic requirements such as in food and beverage applications, environmental technology and water treatment, as well as in electroplating. Their straight valve passage is particularly advantageous for contaminated, abrasive and viscous media.

resilient

straight

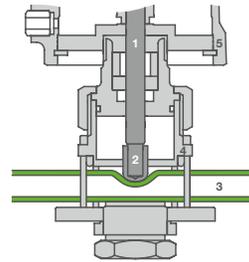


## Pinch valves



- 1 Piston rod
- 2 Actuating pin
- 3 Tube
- 4 Body
- 5 Bonnet

## Endless tube pinch valves



- 1 Body
- 2 Actuating pin
- 3 Tube
- 4 Body
- 5 Bonnet



### Pinch shut off valve 7078

Nominal size: 1/2" - 2"  
 Operating pressure: to 87 psi  
 Media temperature: -40°F to +266°F  
 Tube material: NBR and EPDM (conforming to FDA), FKM, and more



### Pinch control valve 7079

Nominal size: 1/2" - 2"  
 Operating pressure: to 87 psi  
 Media temperature: -40°F to +266°F  
 Tube material: NBR and EPDM (conforming to FDA), FKM, and more  
 Positioner: pneumatic, analogue electro-pneumatic, digital electro-pneumatic, Ex-i version



### Endless tube shut off valve 7072

Tube external diameter: 10 - 18 mm  
 Operating pressure: to 58 psi (depending on tube)  
 Media temperature: -22°F to +338°F (depending on tube)  
 Material: Stainless steel



### Endless tube control valve 7077

Tube external diameter: 10 - 18 mm  
 Operating pressure: to 58 psi (depending on tube)  
 Media temperature: -22°F to +338°F (depending on tube)  
 Material: Stainless steel  
 Positioner: pneumatic, analogue electro-pneumatic, digital electro-pneumatic, Ex-i version

## Segmented disc valves by Schubert & Salzer

Perfect and variable control with high precision over a wide flow range, this is made possible up to DN 800 by the segmented disc valves by Schubert & Salzer.

Due to the robust design and the reciprocal flow direction, segmented disc valves are suitable for fluids, gases and steam, even those carrying a high degree of particulate. The wide range of applications includes areas such as building materials, chemical and power plants, pipelines, water and waste water treatment, and shipbuilding. A simple yet effective valve design!

### Functional principle

The central throttling element - the segmented discs that rotate and seal against each other - are positioned in the valve body perpendicular to the flow direction. The fixed disc is a non-rotating element whose geometry determines the  $C_v$  and flow characteristic. The moving disc having the same number of segments is driven by a linear stem which opens and closes the segments in precise segments to regulate superior control.

The movable segmented disc is constantly pressed onto the fixed disc by a spring assembly regardless of the prevailing differential pressure. As a result, the flow can be bi-directional and the valve can be installed in any position.

durable

back sealing



This special design makes segmented disc valves one of the few valves that combine control precision even in extreme operating conditions with a high seal tightness and very low exposure to wear.

robust

# Details

Positioner

Pilot tube

Diaphragm shell

Diaphragm plate

Coupling

Adjusting nut

Column

End positions

Protection tube

Toothed rack

Packing

Fixed segmented disc

Moving segmented disc

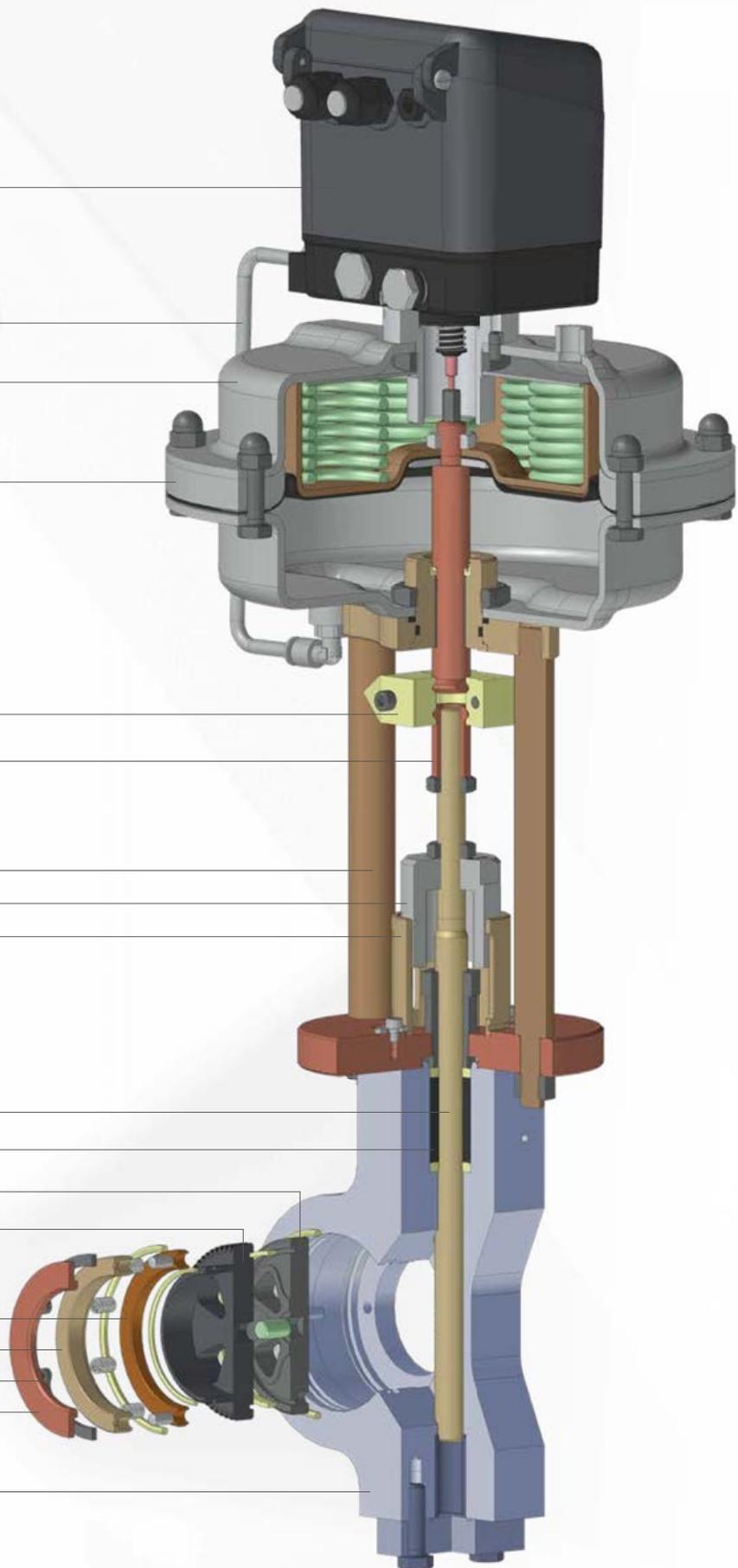
Sliding ring

Spring retainer

Circlip

Retaining ring

Body





**Segmented disc valve  
with pneumatic actuator 5020**

Nominal size: 1" to 32"  
 Nominal pressure: PN 25 (PN 16 for  
 DN 250 and larger)  
 Material: Stainless steel (also available  
 in carbon steel for 6 inch and larger)  
 Available with and without positioner  
 Positioner: pneumatic, analog electro-  
 pneumatic, digital electro-pneumatic,  
 Ex-i version



**Segmented disc valve  
with motor actuator 5030**

Nominal size: 1" to 32"  
 Nominal pressure: PN 25 (PN 16 for  
 DN 250 and larger)  
 Material: Stainless steel (also available  
 in carbon steel for 6 inches and larger)  
 Actuator: Various electrical actuators  
 available, stop and control actuators,  
 optional position control and position  
 feedback plus limit switch



**Segmented disc valve  
with manual actuator 5050**

Nominal size: 1" to 32"  
 Nominal pressure: PN 25  
 Material: Stainless steel (also available  
 in carbon steel for 6 inch and larger)  
 Actuator: Smooth-running ball-bearing  
 manual actuation



**Desuperheater 5090**

Nominal size: 2", ANSI connection available  
 Nominal pressure: 580psi - Wide control  
 range due to 4 nozzle system  
 Material: Stainless steel  
 Media temperature: -76 °F up to 428 °F  
 Positioner: pneumatic, analog electro-  
 pneumatic, digital electro-pneumatic,  
 Ex-i version

## Technical information

Design	Wafer design for flanges according to DIN EN 1092-1 type B
Nominal sizes	DN 25 to DN 800 / 1"-32", ANSI unavailable
Nominal pressure	1" - 6" PN 25 according to DIN 2401 (also suitable for flanges PN 10 - PN 25)
Consult factory	8" PN 25 according to DIN 2401
for ANSI ratings	10" - 12" PN 16 according to DIN 2401
Media temperature	-60°C to +220°C, -76°F to 428°F (higher temperatures on request)
Ambient temperature*	-30°C to +100°C, -22°F to 212°F
Characteristic	Modified linear
Rangeability	60 : 1
Leakage rate % of $C_{Vmax}$	< 0.001 (0.01 = ANSI Class IV)

\* Note limits of the positioner!

# Details

Electric actuator with 3-point step control or analogue control signal.

Optical position indication

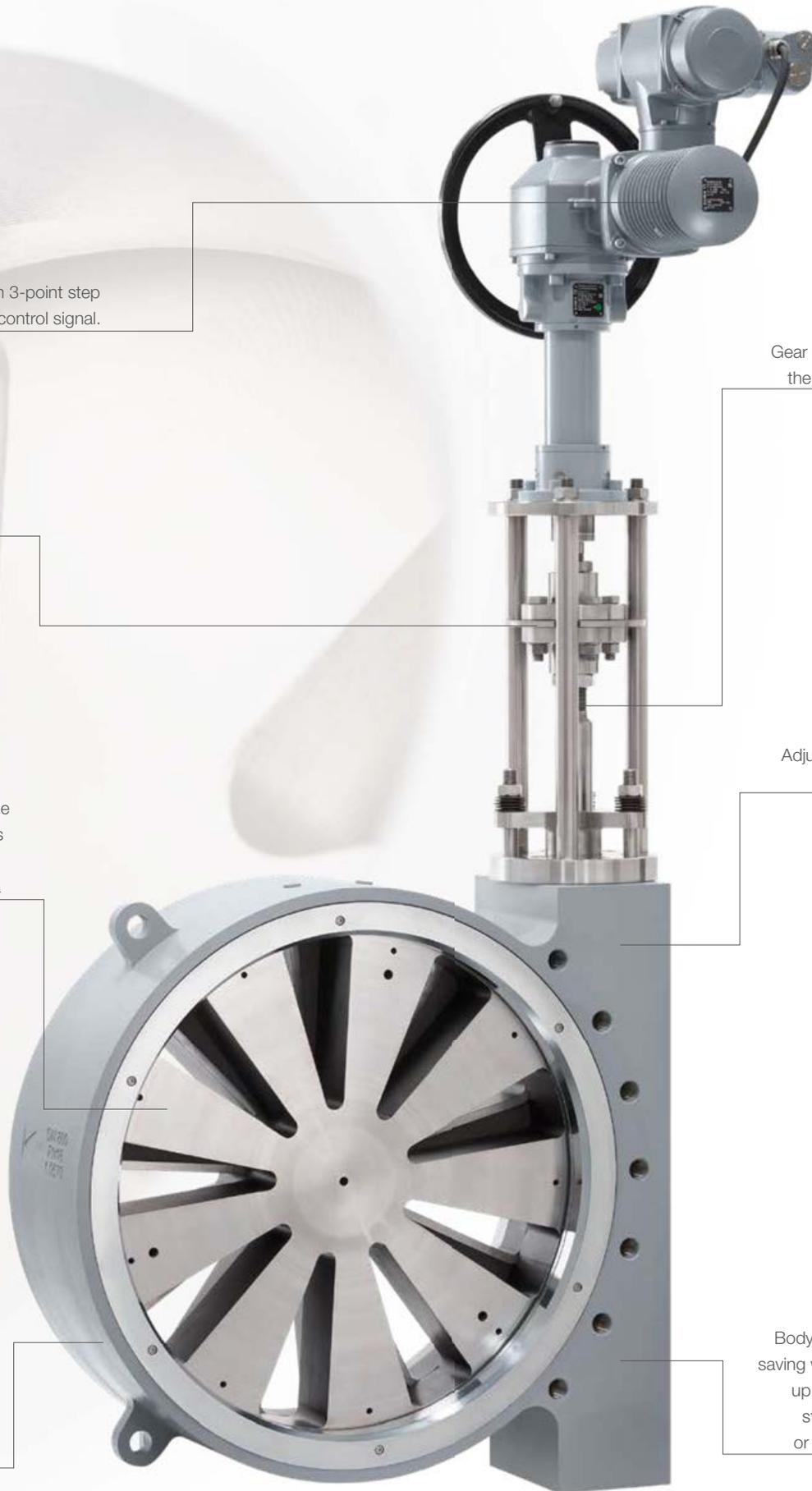
Hardened discs, the special contour of the sealing disc provides durability in case of contaminated media

Spring pre-tensioning of the sealing disc, this means bi-directional flow is possible as well

Gear rack rotating the moving disc

Adjustable gland nut packing

Body with space-saving wafer design up to DN800 in stainless steel or carbon steel



## Positioners by Schubert & Salzer

Compact positioners in analog and digital versions for adaption to pneumatic control valves.

- High precision and minimum hysteresis**  
 Because the positioner is integrated in the valve actuator, no moving parts (return stroke) are accessible from the outside. The operational safety and particularly the control accuracy are thus significantly increased.
- Low compressed air consumption**  
 Through the use of piezo and solenoid valves, the consumption of compressed air is minimized significantly compared to standard positioners.
- Self-adaptation and diagnostics**  
 Configuration and diagnostics function by means of "DeviceConfig" software.



## DeviceConfig by Schubert & Salzer

Maximum efficiency and performance – with the configuration and diagnosis software, "DeviceConfig", you have control over all of the digital positioners and motor actuators from Schubert & Salzer.



precise

- Calibration and optimization of the positioners and motors to the used valve with just a few clicks.
- Numerous diagnosis functions provide for a fast and simple fault analysis.
- Configuration of individual maintenance settings.
- Connection is possible via Bluetooth or USB using a connector
- Compatible with the following types: 8049, 2040, 2030, 2032.

# digital



  IO-Link

## Digital positioner 8049

Connections: G 1/8", NPT 1/8"

Input signal: 0/4 - 20 mA,  
optional 0/2 - 10 V

Adaptation to actuator: self-learning  
Adaptability: 3 - 28 mm (sliding stem),  
optional up to 50mm (sliding stem),  
max. 270° (rotary stem)

Versions: 2 and 4-wire

Ambient temperature:

-20°C to +75°C / -4°F to +167°F

Also in ATEX version

Optional feedback module available



 IO-Link

## Digital positioner 8049 (stainless steel)

Entirely in stainless steel

Connections: G 1/8", NPT 1/8"

Input signal: 0/4 - 20 mA, optional  
0/2 - 10 V

Adaptation to actuator: self-learning

Stroke range: 3 - 28 mm

Versions: 2 and 4-wire

Ambient temperature:

-20°C to +75°C / -4°F to +167°F

Also in ATEX version



## Digital positioner 8049 IPC

Positioner with integrated process  
controller

Input signal: 0/4 - 20 mA, PT-100

Sampling rate: ca. 50 ms

Set point setting: external/internal

Ambient temperature:

-20°C to +75°C / -4°F to +167°F



## Positioner 8047 i/p + p/p

Input signal range:

electro-pneumatic 0/4 - 20 mA

pneumatic 3 - 15 psi

Stroke range: 5 - 22 mm / 0.2" - .87"  
(depending on stroke return spring)

Pilot energy: 43 - 87 psi

Hysteresis: < ± 1%

Air consumption: 400 - 600 NI/h

(depending on air supply)

Also in ATEX version

M12 connection

# innovative

# Electric actuators by Schubert & Salzer

Besides a precise throttling element, a precise actuator is also required for solving complex control applications.

This requirement is achieved by electrical Schubert & Salzer actuators, model 2030 and 2032. These actuators are focused on control accuracy, high positioning speed and reliability. These actuators are field configurable through Schubert & Salzer's device config communications software, complete with diagnostics capability. All motors are interchangeable with existing actuators.



## Actuator 2030

Fast and high-resolution actuator  
Regulating speed up to 0.75 mm/s (.03 "/s)  
Dead band:  $\pm 0.2\%$  of the valve stroke  
Repeatability: approx.  $\pm 0.1\%$   
Actuating force: 450 lbf and 1,100 lbf  
Protection class: IP67  
Ambient temperature:  
-10 °C to +60 °C / 14°F to 140°F  
Low temperature version to -40° C / F  
Automatic valve adaption  
Diagnostics functions  
Also available with safety position in case of power failure



## Actuator 2032

Compact and precise actuator  
Regulating speed up to 1.5 mm/s (.06 "/s)  
Dead band:  $\pm 0.6\%$  of the valve stroke  
Repeatability: approx.  $\pm 0.3\%$   
Actuating force: 180 lbf  
Protection class: IP65  
Ambient temperature:  
-10 °C to +60 °C / 14°F to 140°F  
Automatic valve adaption  
Diagnostics functions  
Also available with safety position in case of power failure



# Customized valve manifolds

Compact valve manifolds by Schubert & Salzer reduce piping, maintenance time and ultimately minimize investment costs.

In many systems, processes require connecting multiple valves for different media so that they can together carry out a special process function. A connection system well-known from the field of hydraulics and adapted to the respective application, allows for the intelligent combination of several valves in a customer-specific manifold. All necessary connections between the individual process valves are integrated in the manifold. On the customer side, connections for process media input and output in the desired number are available depending on the requirement.

Manifolds can be manufactured either completely from stainless steel or solid carbon steel with threaded valve seats. Additional pressure and temperature sensors can be integrated at any time. The manifolds are developed and manufactured individually according to your P&I diagrams.

Applications include:

Tire presses

Food & beverage

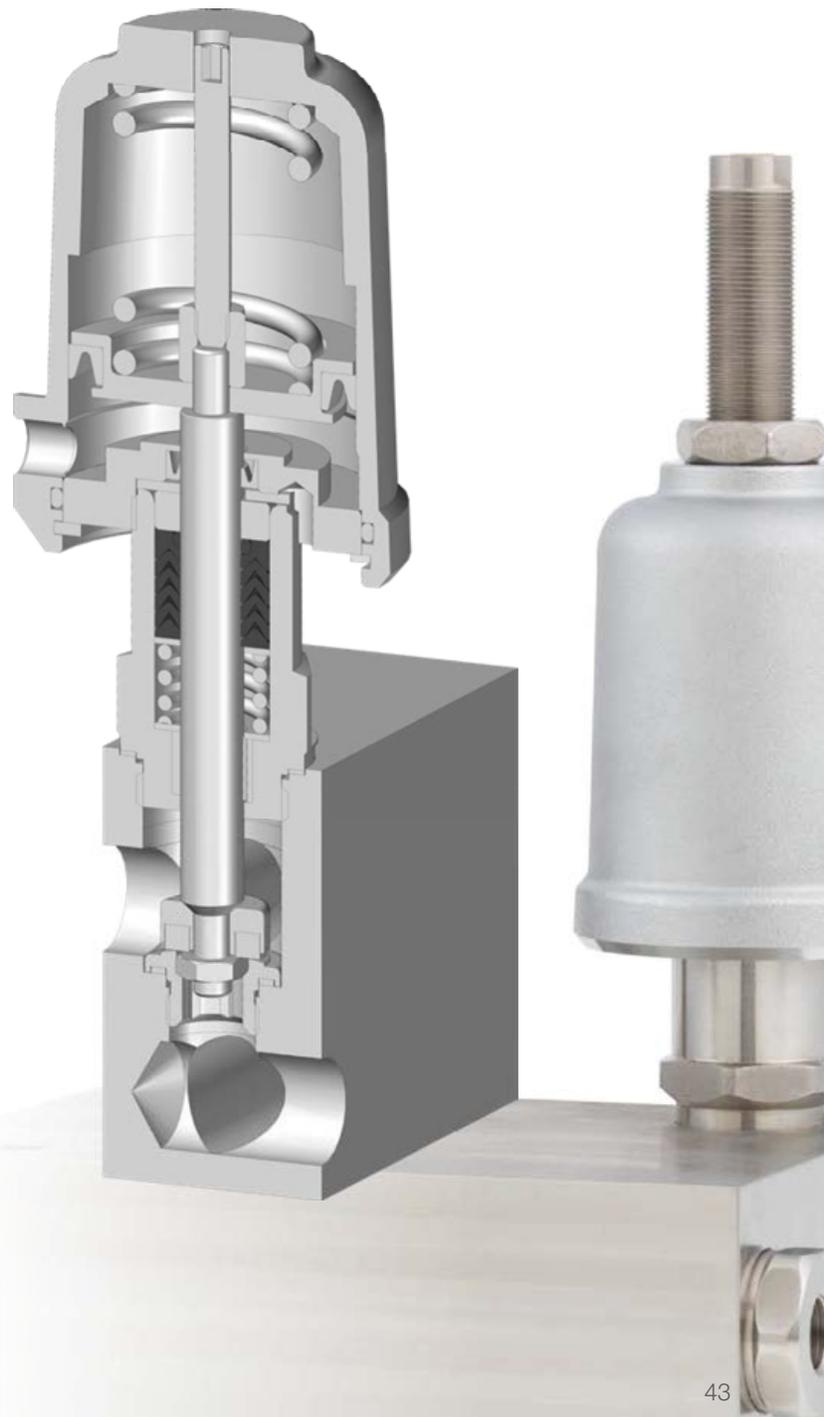
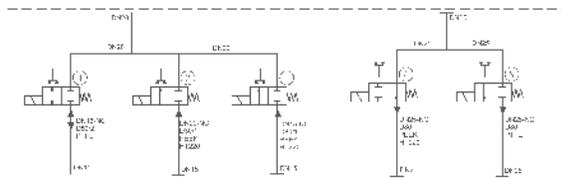
Multiple pipe racks

Specialty chemicals

bioPharm

Electronics

more...



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