Schubert & Salzer VALVES

SCHUBERT & SALZAR
Core Valve Offering

VANZANDT CONTROLS, LLC
Eagle AUTOMATION

Other Offerings

Sliding Gate Wafer

Seat Valves

Ball Sector Valves

Sanitary Valves

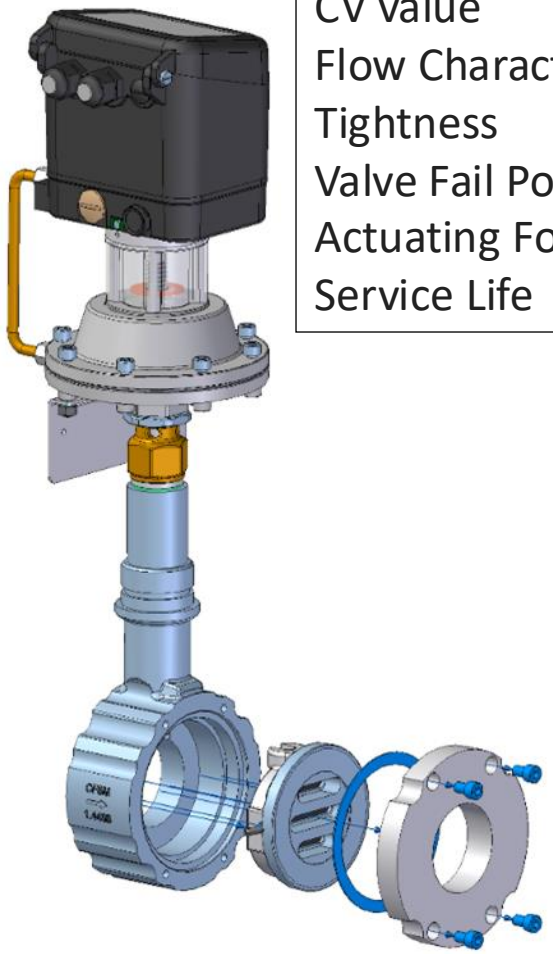
VANZANDT CONTROLS, LLC

Eagle AUTOMATION

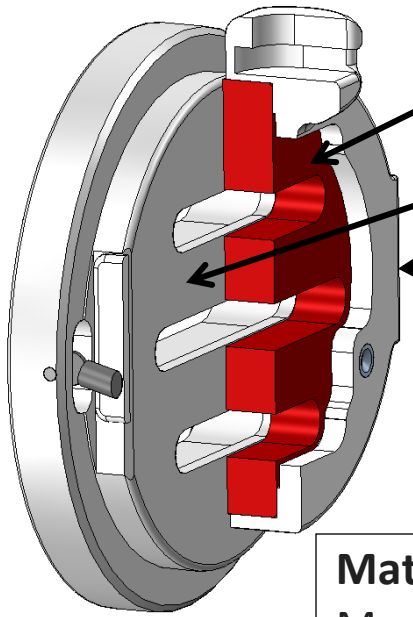
Schubert & Salzer
Sliding Gate Valves

SCHUBERT & SALZAR SLIDING GATE VALVE

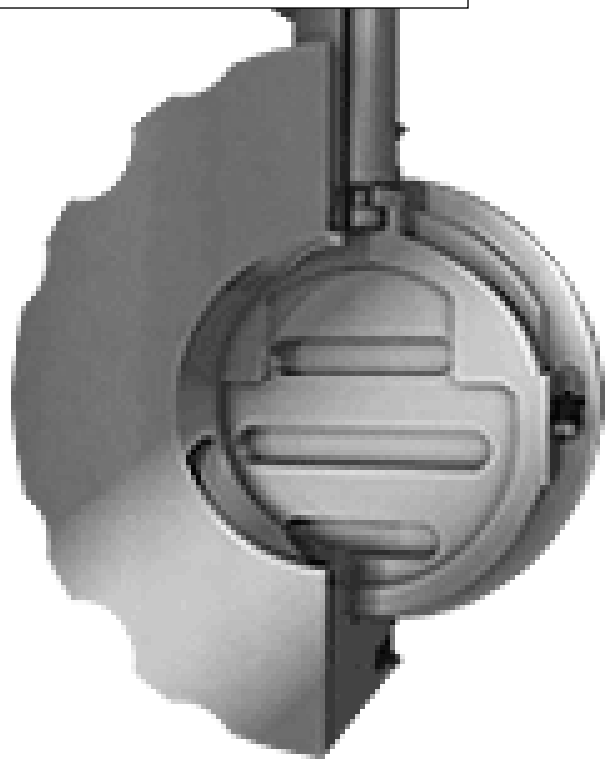
Operating Principle



Orifice Designed & Sized for
CV value
Flow Characteristics
Tightness
Valve Fail Position, Open/Close
Actuating Force
Service Life



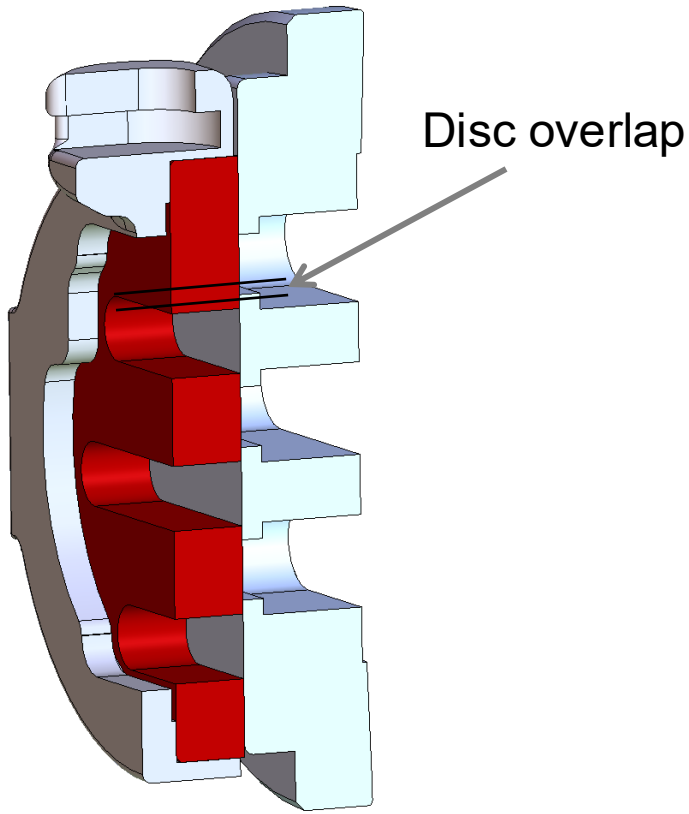
Valve has No Seat
Upstream Pressure creates the Shutoff



Matched Pair of Discs
Machined & Lapped together for hours
“Matched Pair” of Discs

SCHUBERT & SALZAR SLIDING GATE VALVE

Disc Overlap



Disc Overlap is Key

Class IV to Class V Shutoff

1 to 2 mm Disc Overlap for tight sealing

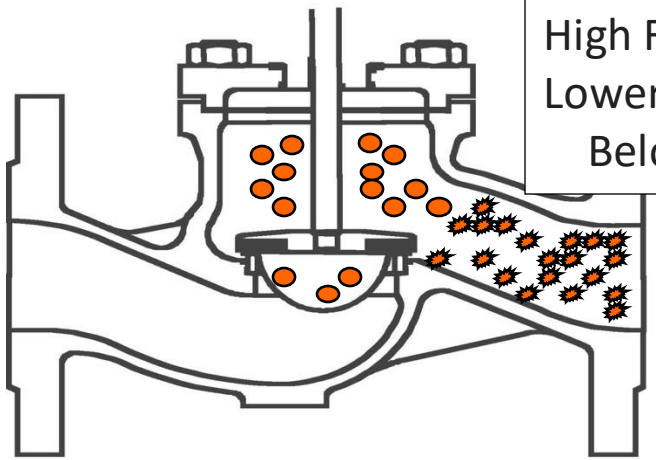
Improved shutoff thru life of the valve

Due to constant lapping as valve modulates

DN (In)	Overlap (mm)	Valve stroke mm (in)	Overlap %
15 (1/2)	1.0	6.25 (.246)	24.0%
20 (3/4)	1.5	6.25 (.246)	24.0%
25 (1)	1.5	6.25 (.246)	24.0%
32 (1-1/4)	1.5	6.25 (.246)	24.0%
40 (1-1/2)	1.5	6.25 (.246)	24.0%
50 (2)	1.5	8.25 (.325)	18.2%
65	1.5	8.25 (.325)	18.2%
80 (3)	1.5	8.25 (.325)	17.1%
100 (4)	1.5	8.25 (.325)	17.1%
125	1.5	8.25 (.325)	17.1%
150 (6)	2.0	8.25 (.325)	22.9%
200 (8)	2.0	8.25 (.325)	22.9%
250 (10)	2.0	8.25 (.325)	22.9%

SCHUBERT & SALZAR SLIDING GATE VALVE

Centralized Flow Results In More Durable Valve

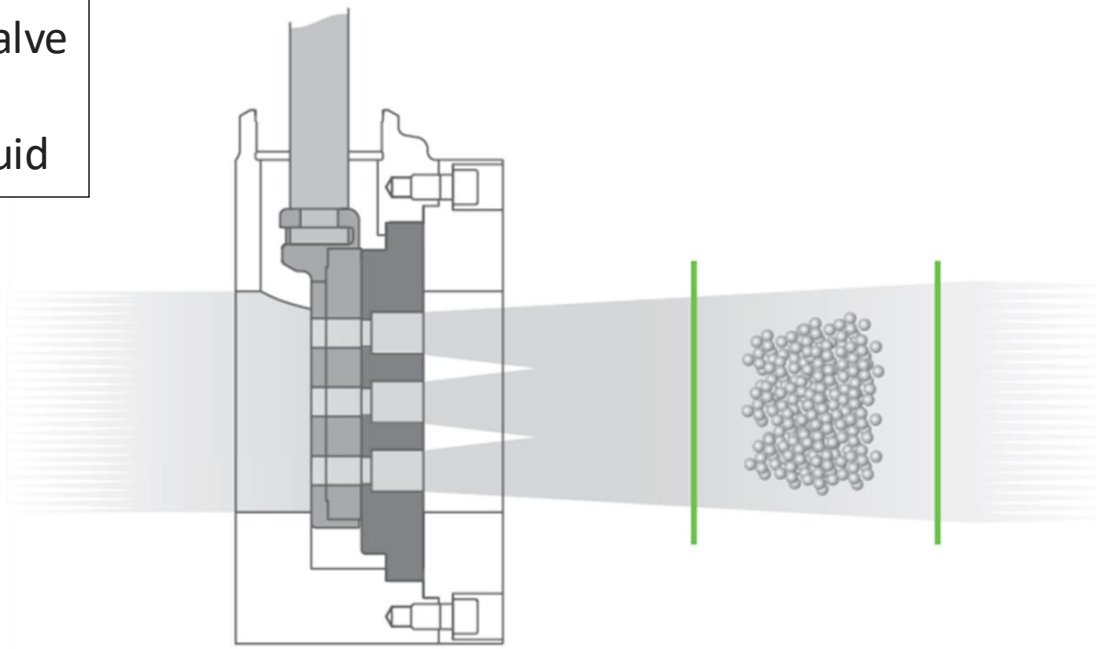


Globe Valve Cavitation

High Flow Velocity in Narrowest Section of Valve

Lowers Local Pressure

Below Local Saturation Pressure of the Liquid



Cavitation

Vapor Bubbles Occur

Collapse in Areas of High Pressure

Damages Valve

Improved Cavitation Behavior

Straight Through Flow

Eliminates Additional Turbulence

Multiple Orifice Patterns Break Up the Flow

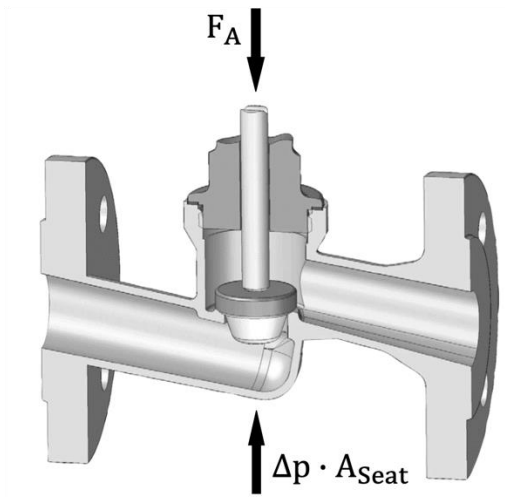
Reduce the Flow Energy

Resulting in Quieter & More Durable Valve

SCHUBERT & SALZAR SLIDING GATE VALVE
Lower Torque With Faster Response

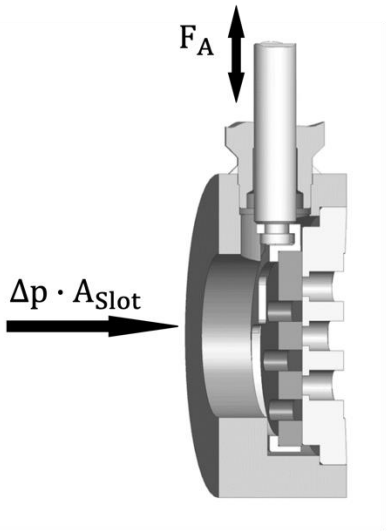
Lower Torque with Faster Response
Perpendicular Forces w SG Valve
Versus Opposing Forces w Globes
Typically SG's are **10% of Globe Valves**

Globe Valve



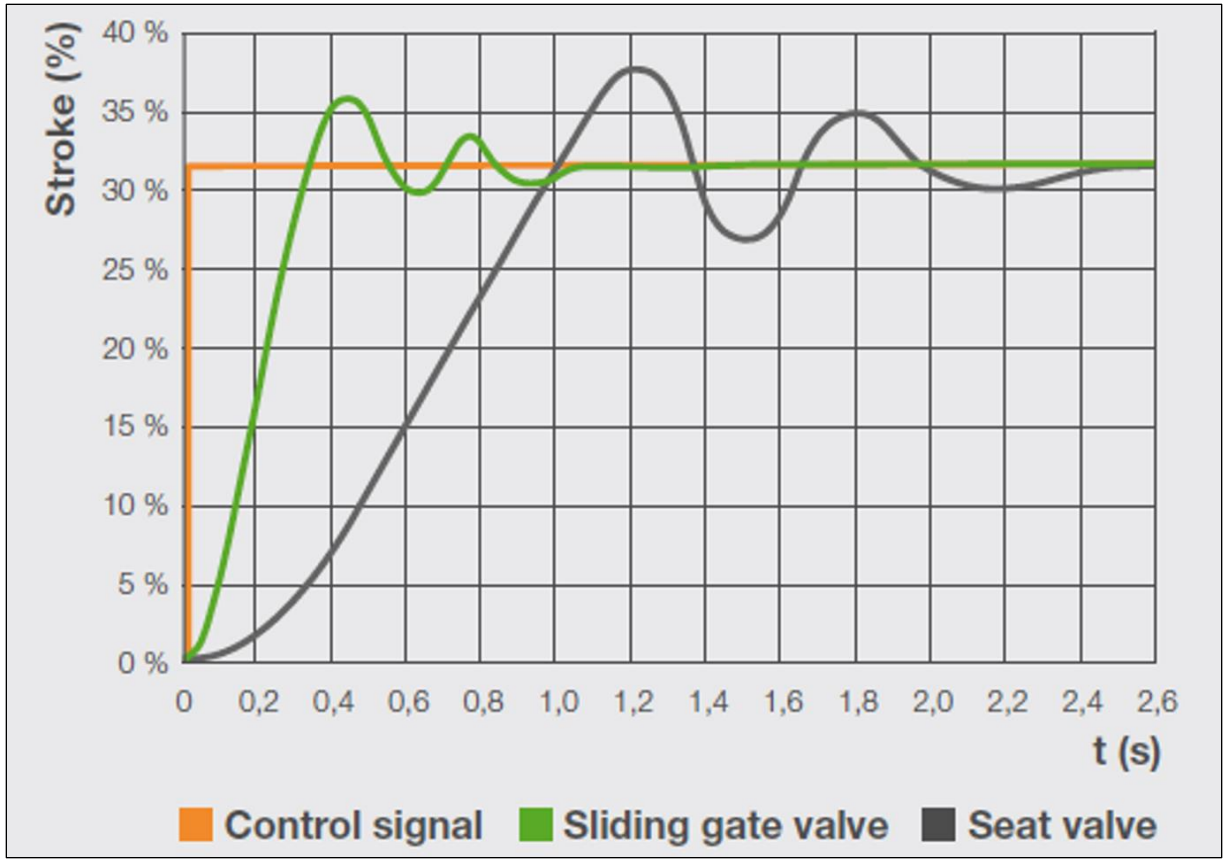
$$F_A = \Delta p \cdot A_{Seat}$$

Sliding Gate Valve



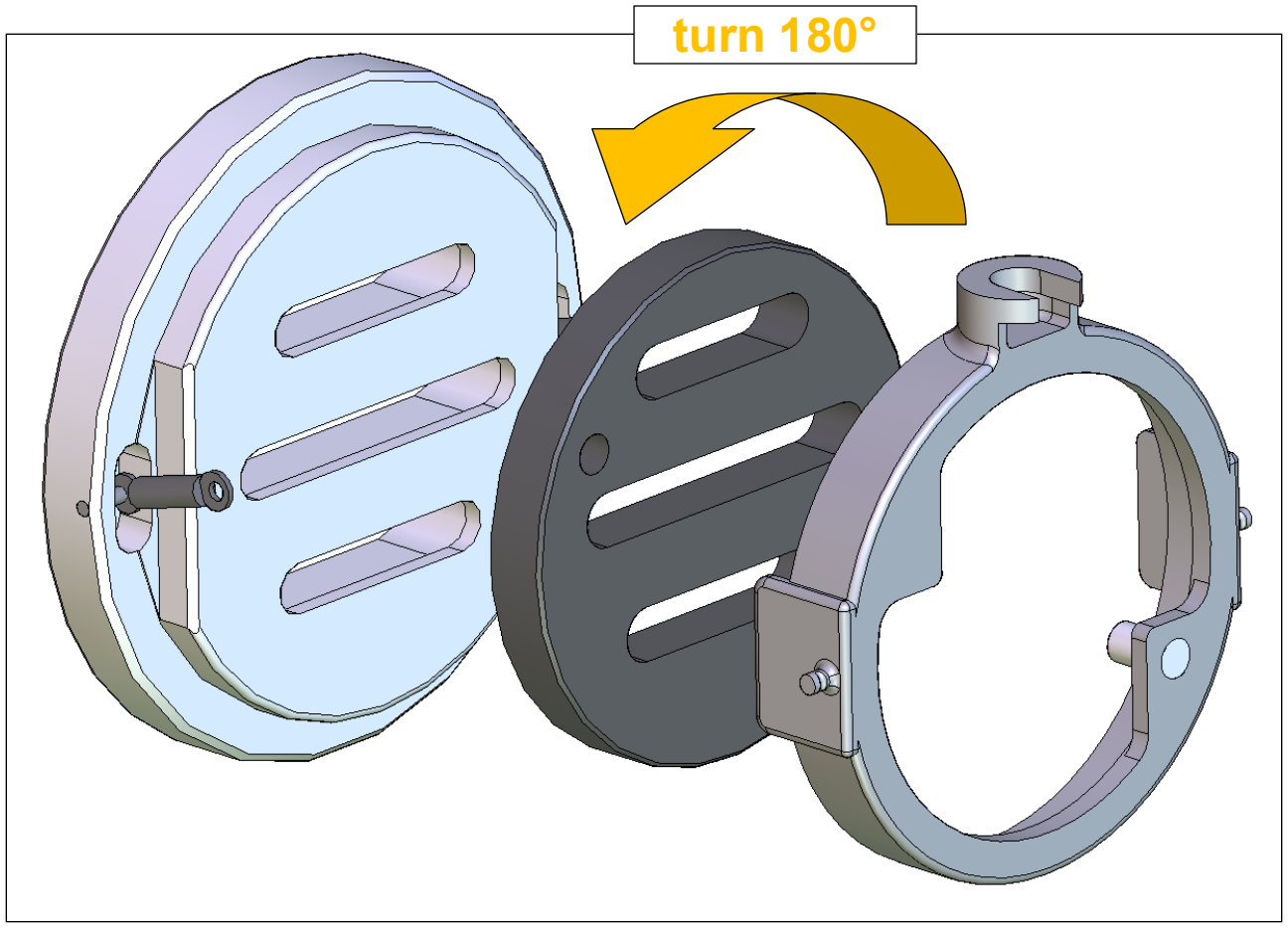
$$F_A = \Delta p \cdot \mu \cdot A_{Slot}$$

Faster Response
Due to Lower Actuating Torque & Smaller Actuator Volume
Results in Better Control Quality



SCHUBERT & SALZAR SLIDING GATE VALVE

Changing Valve Action is Easy



Changing the Valve Function
FROM Spring closes NC
TO Spring Opens NO
Rotating Moving Disc changes the Valve Action

Equal Percentage Function
Turn Both Moving Disc and Fixed Disc

SCHUBERT & SALZAR SLIDING GATE VALVE

Sliding Gate Valve Silver Bullets

Fits into Tight Spaces
Compact Construction
Much Lower Weight than Globes

No Valve Seat
Eliminates Globe's Biggest Weakness

Excellent Rangeability
From 30:1 to 160:1

Flexible Max CV Values
Simple Exchange of Fixed Disc Plate
CV Max Ranges from 0.02 to 1056!!

High Differential Pressures
Up to 1450 PSI
While Maintaining Precise Control

Flexible End Connections
Wafer, Flanged, Threaded

Minimal Wear
Due to Centralized Flow
Cavitation is pushed downstream
Lower Turbulence = Lower Erosion
Short Stroke Length [1/4" to 3/8"]
Greater Packing Life

Lower Torque Required
Perpendicular Forces w SG Valve
Versus Opposing Forces w Globes
Typically SG's are **10% of Globe Valves**

Extremely Low Leakage Rate
Less than 0.0001% of Max CV
Due to Self-lapping Disc + Medium Pressure against the Disc
Using Surface Seal NOT Annular Seal

Faster Response
Due to Lower Actuating Torque & Smaller Actuator Volume
Results in Better Control Quality

SCHUBERT & SALZAR SLIDING GATE VALVE

CV's & Seating Details

Variable C_v 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 -											

Variable CV Values & Characteristic Curves
By simply replacing the Fixed Sealing Disc

Variable C_v values and characteristic curves – By simply replacing the fixed sealing disc:

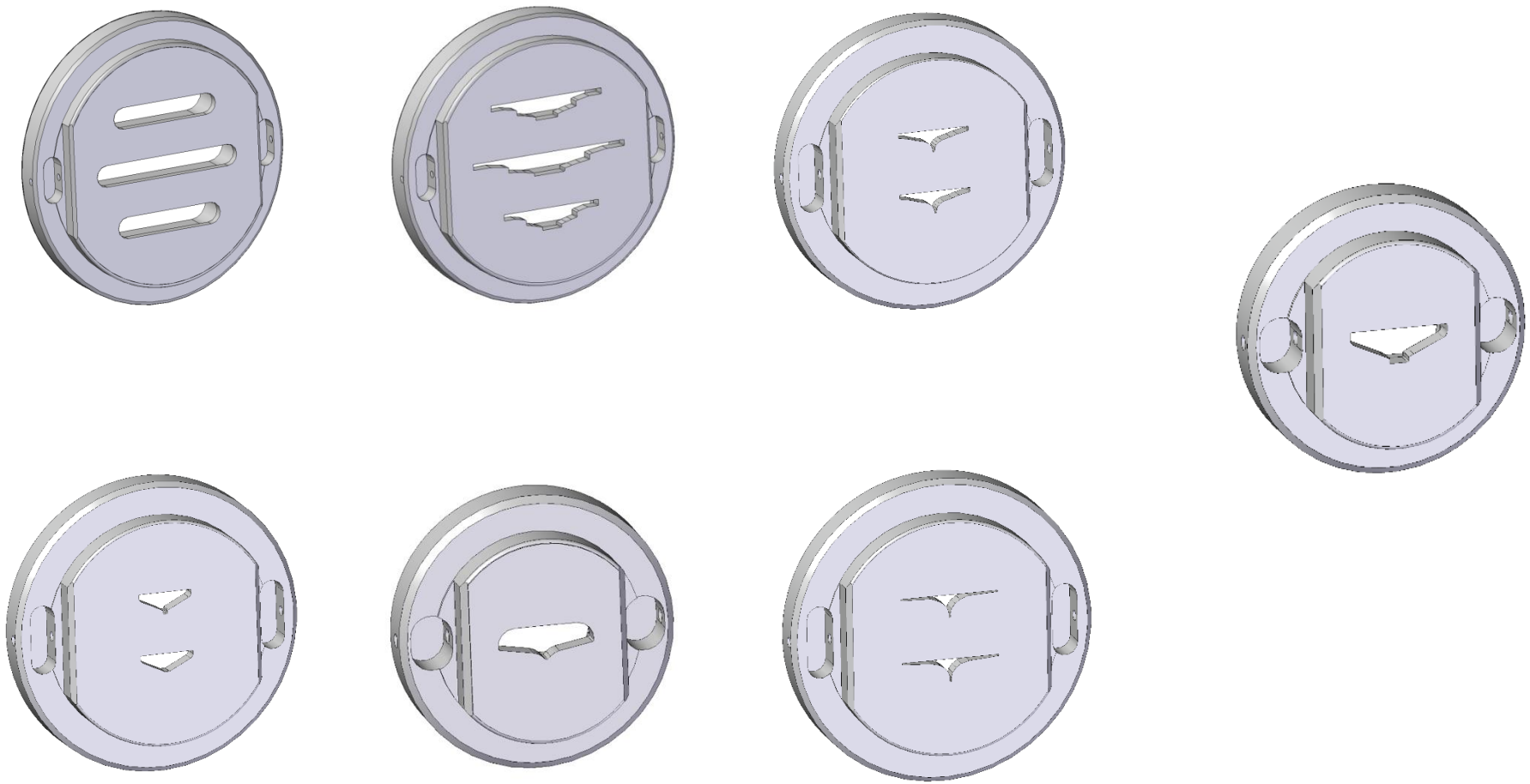
100% linear | 16% reduced | 0,4% reduced | 100% equal percentage | SV100

Seating Details

	Function unit			
	Carbon – SST	SFC	STN2	STN3
Friction coefficient	⊕⊕	⊕⊕	⊖	⊖
Actuator force	⊕⊕	⊕⊕	⊖	⊖
Leakage rate	⊕⊕	⊕	⊖	⊖
Chemical resistance	⊕⊕	⊖	⊕	⊕
Ability for high differential pressure	⊖	⊖	⊕	⊕⊕

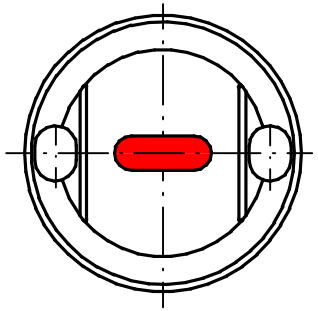
SCHUBERT & SALZAR SLIDING GATE VALVE

Different Discs, Different Flow Characteristics

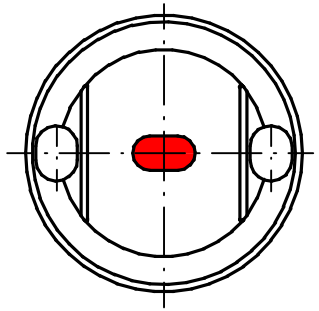


SCHUBERT & SALZAR SLIDING GATE VALVE

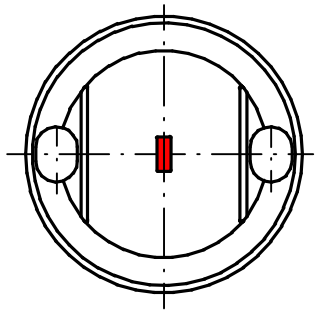
Reduced CV Options



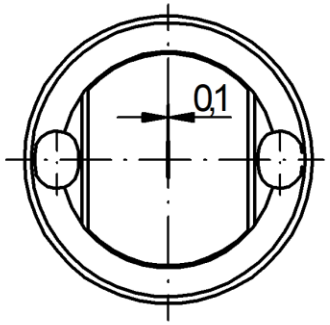
Valve disc ½”
linear 100% , Cv = 4.6



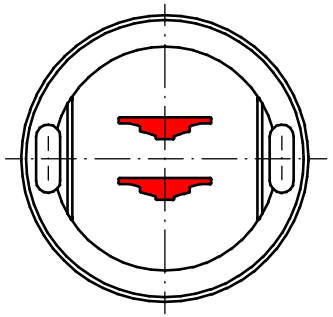
Valve disc ½”
linear 40%, Cv = 2.0



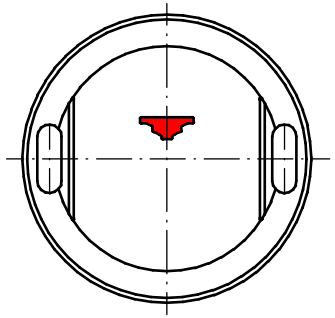
Valve disc ½”
linear 10%, Cv = 0.51



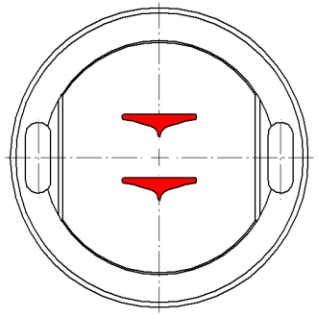
Valve disc ½”
linear 0.4%, Cv = 0.021



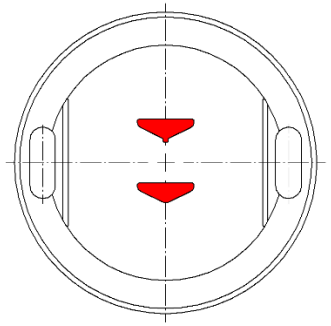
Valve disc 1”
equal percentage 100%,
Cv = 5.8



Valve disc 1”
equal percentage 20%,
Cv = 1.3



Valve disc 1”
equal percentage 40% - SV100,
Cv = 5.8



Valve disc 1”
parabola 63%,
Cv = 2.8

SCHUBERT & SALZAR SLIDING GATE VALVE

Much Lower in Weight

8021

8621

Size	8021 Wafer	8621 Flanged	Fisher Globe
1”	18	29	30
2”	23	39	85
3”	34	77	125
4”	42	110	170
6”	68	188	350
8”	105	118	900
10”	116	N/A	1800
	Weight in lbs		

Fisher

SCHUBERT & SALZAR SLIDING GATE VALVE

Key Applications

Typical Applications

Cooling water & Steam systems
Thermal Fluids/Fuel Oils
RO systems
High-point vents and low-point drains
Feedwater
Chemical feed
Condenser air extraction
Extraction drain systems
Boiler vents and drains
Main steam vents and drains, and heater drains
Turbine oils, seals and drains
Any Gas Service

SCHUBERT & SALZAR SLIDING GATE VALVE

More Compact, Lighter Weight

Public Service Co of NM
Afton Power Plant
Condensate Recirculation Valve

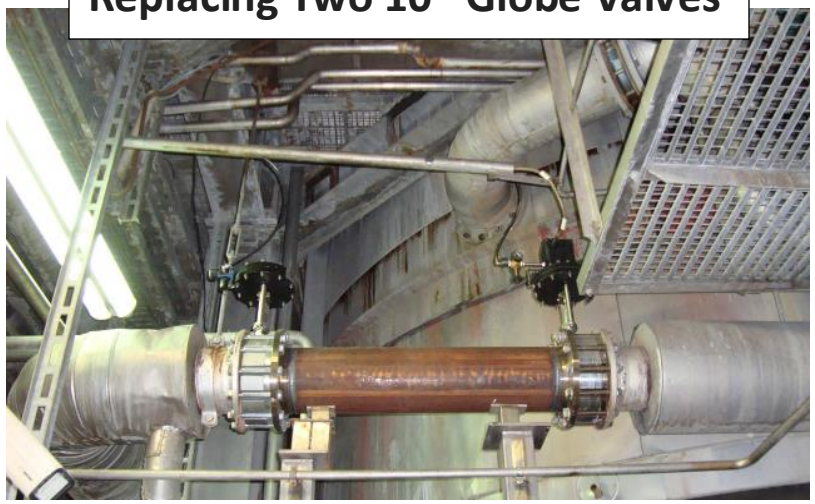
6” Fisher Globe Valve
Repaired each year due to Cavitation
P1=168PSI, P2=5PSI
200F
960to 1920 GPM
498 lbs

6” Schubert & Salzer w Spool
Solved Cavitation Issue
68 lbs

SCHUBERT & SALZAR SLIDING GATE VALVE

More Compact, Lighter Weight

Replacing Two 10” Globe Valves



SCHUBERT & SALZAR SLIDING GATE VALVE
Special Design for Hydrogen Service

Hydrogen Green Energy Service
Tighter Shutoff
Bellows Seal on Packing
Very Compact for Skid Applications

Recommend for Hydrogen Applications
Tongue-and-groove flange sealing
Stem sealing with bellows for Hydrogen

Code Y
Version for Gaseous Hydrogen
Based on the limit values of TA-Luft (ISO 15848)
Body sealing PTFE
Sealing at the Packing Tube FKM O-rings
Max Fluid Temperature +200°C [392°F]

Code Z
Version for Gaseous Hydrogen
With increased tightness requirement
Special sealing of the body and packing tube with FKM O-rings
Max fluid temperature +200°C [392°F]
Max leakage rate of housing and stem sealing
5E-6 mbar x liters/s [5 ppmv] at helium sniff test with 6 bar