Bellino

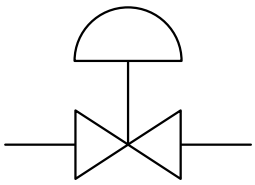
Control it better

Index

The **Company**

Introduction

Bellino S.r.l. is based in the South of Italy, located in Modugno, surroundings the capital of the province Bari, 15 minutes from the Bari airport and 5 minutes from the national motorway A14.
Originally formed in 1978 as workshop of fine mechanical accuracy, nowadays its business is focused on the supply of Standard Service Control Valves and Severe Service Control Valves, manufactured and supplied for the main national and international companies.
In this way **Bellino S.r.l.** gained a reputation for supplying specially designed high quality valves for the most severe service conditions, based on proper engineering and manufacturing capabilities to meet the changing demands of the market in the "Control" service.



Bellino S.r.l. has blend of proven expertise, innovative design technology and skilled engineering. This is the motivating force behind the development of its range of high quality Severe Service *Control Valves*.
Whether it is for problematic applications relating to High Pressure, High Temperature, Cryogenic, Cavitation, Flashing, Corrosion, High Velocity, Vibration, Noise or Energy Dissipation, **Bellino S.r.l.** has proved it has the solutions.
The key products and services that **Bellino S.r.l.** provides are Control Valves for Chemical and Power plants; it have also a trustworthy after service customer assistance and it have gained special End Users Qualification from *eni* (National Hydrocarbon Company), *snam rete gas, Bonatti, saipem* and others.

Resources

Human resources have been growth during the recent past, increasing their professional skills, now are more then 45. At the technical department engineers are responsible in the interpretation of technical specifications, calculation

according to Standards & Codes, CAE as Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD); other resources are devoted to the constructional and customer drawings development.

Equipments

The manufacturing layout is 3500 square meters, provided with tools to machining many different type of material, such as carbon steel, stainless steel, special alloy as Monel, Hastelloy, Inconel, duplex and super-duplex stainless steel. The company has a capacity of 80000 hour per year. **Bellino S.r.l.** is also provided with pressure test benches up to 1000 tons.

Certifications

Bellino S.r.l. started in 1999 with ISO 9002 certification, and now is certified ISO 9001:2000 for the quality assurance. It is authorized by the Notified Body to mark its valves where applicable according to 97/23/CE – PED, category III, module H, and also according to 94/9/CE – ATEX. Bellino S.r.l can assist the customer in case special product specifications are required, based on own resources and on third party certified bodies.

Product Service

Gas, Steam
Water, Oil, Liquids in general
Valves are designed and produced according to the most relevant International Codes such as:

- ASME B16.34
- API 6A, API 600
- ASME BPVC, Div. 1&2

Product **tree**

Bellino

- **CONTROL VALVES**
  - GVPC (Globe Valve Contoured Trim)
  - GVCH (Globe Valve Cage Trim)
  - GVLN (Globe Valve Low Noise)
  - GVVP (Globe Valve V-Port)
  - Microflow
  - Angle
  - 3-WAY
  - SRVI (Self Regulating Internal Tapping)
  - SRVE (Self Regulating External Tapping)
- **DESUPERHEATER**
- **ON/OFF VALVES**
  - Globe Valve
  - Gate Valve
  - Check Valve
  - Molten Salt Valve
- **ACTUATORS**

Control **Valves**

Control Valves

The control valve plays a very important role in the automatic control of modern plants, which depend on the correct distribution and control of flowing liquids or gases. Such control consist in the exchange of energy, reduction of pressure, or simply to fill a tank and depends on some form of final control element to do the job: they furnish the necessary power amplification between the low energy levels in controllers and the higher energy levels needed to perform their function in controlling flowing fluids.

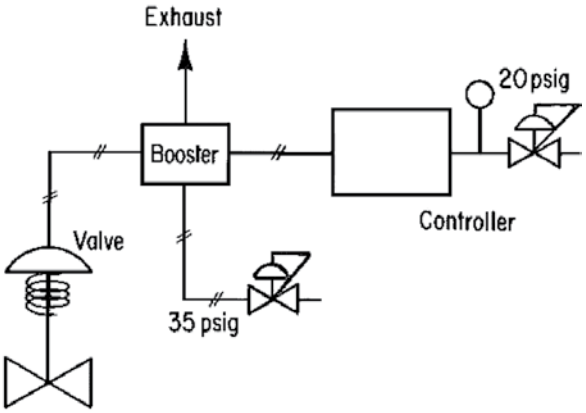
The control valve is the most widely used type of final control element.

A control valve functions as a variable resistance in a pipeline. It provides a pressure drop by changing the turbulence in the process fluid or, in the case of laminar flow, the pressure drop is caused by the changed valve resistance or "drag". This pressure-drop process is often called throttling. For gases it approaches adiabatic, isothermal conditions. Deviations depend upon the degree of non-ideality of the gas (Joule-Thompson effect). In the case of liquids the pressure is dissipated by either turbulence or viscous drag. In either case, it converts the pressure energy to heat, resulting in a very small rise in temperature.

The usual control loop consists of three major parts. The first part is a sensing element, which usually is a transmitter. This is a device which is able to measure the process variable which is to be controlled, such as pressure, level, or temperature. The transmitter output is sent to a controlling instrument -the controller-, which defines and measures the error between the set point or desired value, and the actual value of the process variable, and in turn sends a corrective signal to a final control element -the control valve-. The valve varies the fluid flow to change the process variable to the desired value.

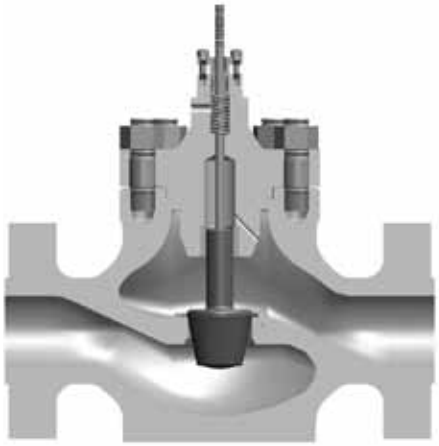
In pneumatic control systems, the pneumatic output signal from the controller may directly actuate the valve by either a spring-and-diaphragm actuator or a piston actuator. The positioning energy in this case is provided by compressed air which should be dry in outdoor installations to prevent freeze-up, and should be clean and filtered.

When a pneumatic valve is used with an electronic controller, either an electronic-to-pneumatic valve positioner or an electronic-to-pneumatic transducer is used. The same considerations for compressed air apply as in all-pneumatic control systems.



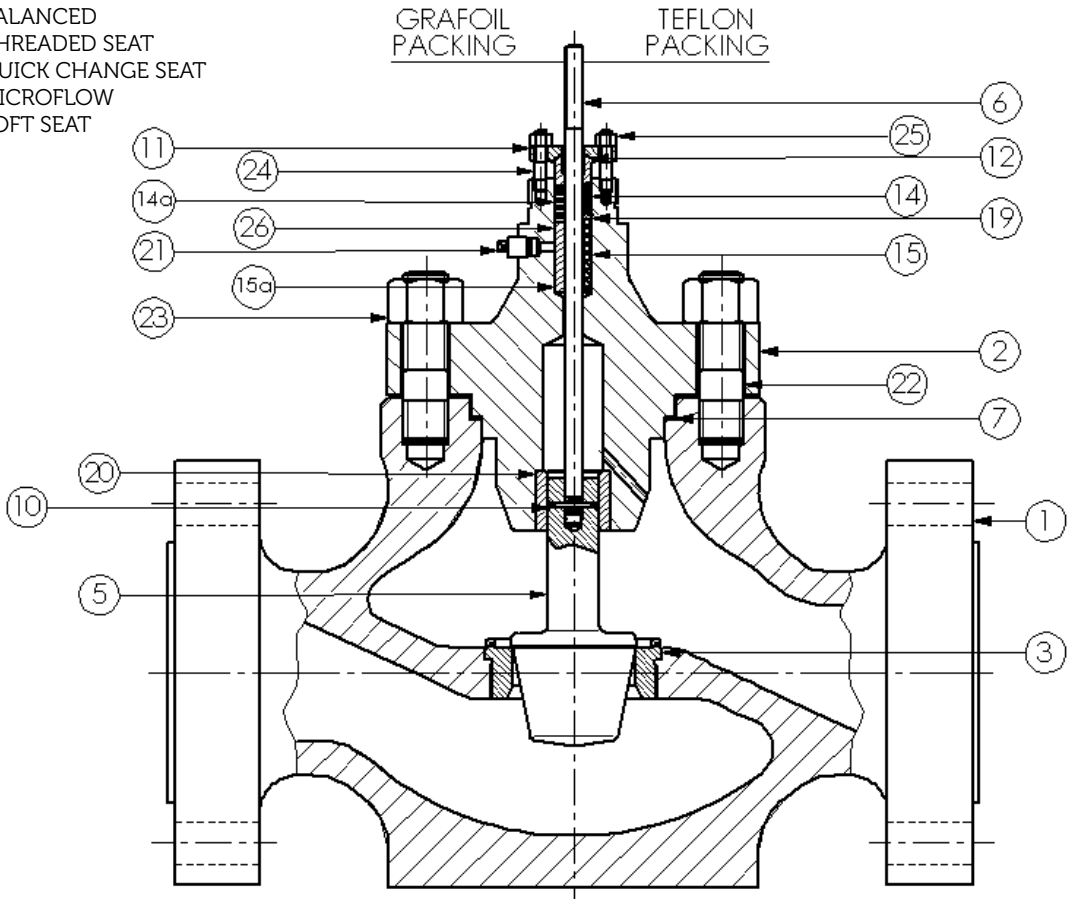
GVPC **Model**

GVPC **Model**

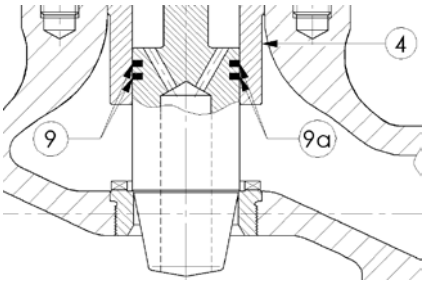


GVPC
GLOBE VALVE CONTOURED TRIM

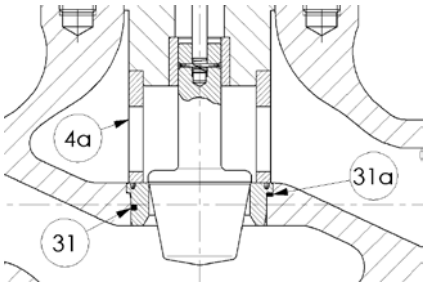
S – STANDARD
B – BALANCED
T – THREADED SEAT
Q – QUICK CHANGE SEAT
M – MICROFLOW
I – SOFT SEAT



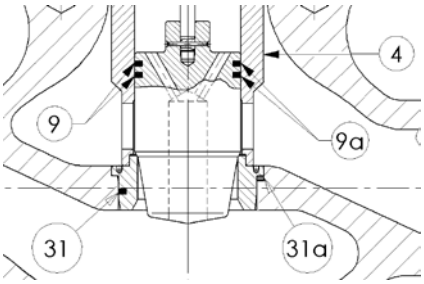
GVPC/B/T



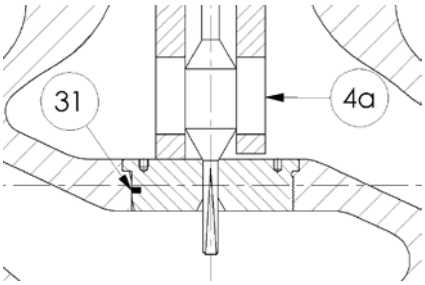
GVPC/S/Q



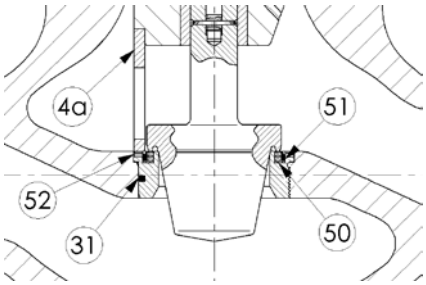
GVPC/B/Q



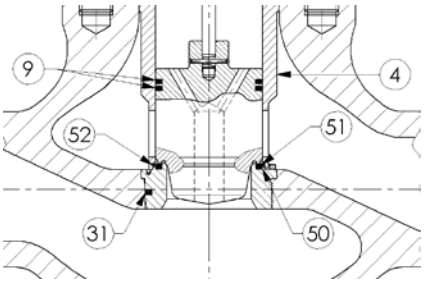
GVPC/M/Q GVPC/M/T



GVPC/I/S/Q GVPC/I/S/T



GVPC/I/B/Q GVPC/I/B/T



STANDARD MATERIALS		CONFIGURATIONS					
POS.	ITEM	1	2	3	4	5	6
1	BODY	A216WCB	A352LCB	A217WC6	A217WC9	A351CF8	A351CF8M
2	BONNET	A105	A350LF2	A182F11	A182F22	A182F304	A182F316
3	SEAT	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE, CONFIGURATIONS FROM "A" TO "F"					
4	BALANCING CYLINDER						
4a	SPACER						
5	PLUG						
6	STEM						
7	BODY-BONNET GASKET	ANSI 150-600 : S.S. 304/316 + GRAPHITE ; ANSI 900-2500 : S.S. 304/316					
9	BALANCING RING	LOADED TEFLON + OR VITON (T ≤ 210 °C)					
9a		FULL GRAPHITE / CA6NM NITR.					
10	PIN	S.S. 304/316					
11	GLAND FLANGE	A105				S.S. 304	
12	GLAND	S.S.304/316					
14	PACKING *	TEFLON (T ≤ 210 °C)					
14a		GRAFOIL (T ≤ 560 °C)					
15	SPRING	S.S. 316					
15a	PACKING SPACER	S.S. 304					
19	LOWER ADAPTER RING	S.S. 304					
20	BUSHING	S.S. 440C H.T.				S.S. 17-4 PH	
21	BONNET PLUG	A105				S.S. 304	
22	BODY-BONNET STUDS	A193 Gr. B7	A193 Gr.B8 Cl.1	A193 Gr. B16		A193 Gr.B8 Cl.1	
23	BODY-BONNET NUTS	A194 Gr. 2H	A194 Gr. 8	A194 Gr. 2H		A194 Gr. 8	
24	GLAND FLANGE STUDS	A193 Gr. B7				A193 Gr.B8 Cl.1	
25	GLAND FLANGE NUTS	A194 Gr. 2H				A194 Gr. 8	
26	ANTIEXTRUSION RING	GRAPHITE (T ≤ 560 °C)					
31	SEAT GASKET	LOADED TEFLON + OR VITON (T ≤ 210 °C)					
31a		GRAPHITE (T ≤ 560 °C)					
50	SOFT INSERT	TEFLON DuPONT ®					
51	RING	S.S. 304/316					
52	SCREWS	S.S. 304/316					

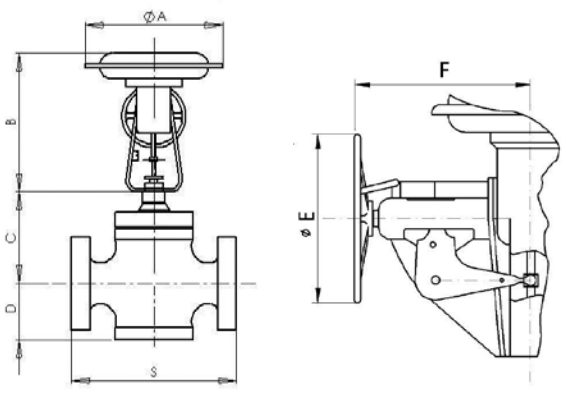
TRIM MATERIALS		CONFIGURATIONS					
		A	B	C	D	E	F
3	SEAT	S.S. 316	S.S. 316+STELL. **	S.S. 316 + SHEET STELL. **	S.S. 316+STELL. **	S.S. 17-4 PH H900	S.S. 17-4 PH H900
4	BALANCING CYLINDER	-	-	-	S.S. 316	-	S.S. 17-4 PH H1150
4a	SPACER	-	-	-	S.S. 316	-	S.S. 17-4 PH H1150
5	PLUG	S.S. 316	S.S. 316+STELL. **	S.S. 316 + SHEET STELL. **	S.S. 316 + SHEET STELL. **	S.S. 17-4 PH H900	S.S. 17-4 PH H900
6	STEM	S.S. 316	S.S. 316	S.S. 316	S.S. 316	S.S. 17-4 PH H900	S.S. 17-4 PH H900

NOTES : * DOUBLE PACKING (TEFLON AND GRAFOIL) AND FOR UNDERVACUUM SERVICE ALSO AVAILABLE
** : STELLITE HAYNES Gr. 6

Materials according to NACE, UOP, EXXON and other applications are also available on request.

OVERALL DIMENSIONS																	
VALVE NPS [in]	ACTUATOR	STROKE [mm]	ϕA [mm]	B [mm]		C [mm]		D [mm]	ϕE [mm]	F [mm]	S [mm] (ACC. TO ANSI-ISA 75.08.01)					
											ANSI 150		ANSI 300		ANSI 600	
				DIRECT	REVERSE	STD	EXTEND.				RF	RJ	RF	RJ	RF	RJ
3/4	11 (N)	25	330	420	500	180	260	67	255	270	184	197	194	206	206	206
	13 (N+1)		382	560	670				400	380						
1	11 (N)	25	330	420	500	180	260	67	255	270	184	197	197	210	210	210
	13 (N+1)		382	560	670				400	380						
1 1/2	11 (N)	25	330	420	500	180	260	83	255	270	223	235	235	248	251	251
	13 (N+1)		382	560	670				400	380						
2	11 (N)	25	330	420	500	180	260	86	255	270	254	267	267	282	286	289
	13 (N+1)		382	560	670				400	380						
3	13 (N)	40	382	560	670	230	310	111	400	380	299	311	318	333	337	340
	18 (N+1)		532	740	890				570	420						
4	13 (N)	40	382	560	670	230	310	146	400	380	352	365	368	384	394	397
	18 (N+1)		532	740	890				570	420						
6	18 (N)	60	532	740	890	280	360	171	570	420	451	464	473	489	508	511
	24 (N+1)		640	1050	1270				910	740						
8	18 (N)	60	532	740	890	315	415	203	570	420	543	556	568	584	610	613
	24 (N+1)		640	1050	1270				910	740						
10	18L (N)	80	532	990	1175	390	490	238	910	740	673	686	708	724	752	755
	24 (N+1)		640	1050	1270				910	740						
12	18L (N)	80	532	990	1175	390	490	251	910	740	737	749	775	790	819	822
	24 (N+1)		640	1050	1270				910	740						
14	24 (N)	100	640	1050	1270	550	650	292	910	740	890	902	927	943	972	975
16	24 (N)	100	640	1050	1270	680	780	352	910	740	1016	1029	1057	1073	1108	1111

Electrical and electro-pneumatic actuators also available on request.

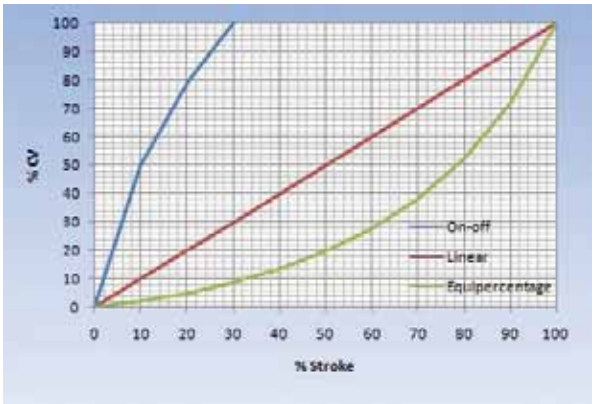


FLOW RATE COEFFICIENTS - CV - GVPC									
VALVE NPS	STROKE	TRIM DIMENSIONS	ANSI 150-300-600				ANSI 900-1500-2500		
			SEAT DIAMETER	CV			SEAT DIAMETER	CV	
[in]	[mm]	[in]	[mm]	Quick opening	Equip./Linear		[mm]	Quick opening	Equip./Linear
1	25	1	24	16	13		19	10 *	8 *
		3/4	19	10	8		15	8	6,5
		1/2	15	8	6,5		11	5	4,2
		3/8	11	5	4,2		9	3,5	2,9
		1/4	9	3,5	2,9		6	2	1,5
1- 1/2	25	1- 1/2	38	36	30		32	30	25
		1-1/4	32	30	25		24	16	13
		1	24	16	13		19	10	8
		3/4	19	10	8		15	8	6,5
		1/2	15	8	6,5		11	5	4,2
2	25	2	47	59	49		38	36	30
		1- 1/2	38	36	30		32	30	25
		1- 1/4	32	30	25		24	16	13
		1	24	16	13		19	10	8
		3/4	19	10	8		15	8	6,5
3	40	3	72	138	115		57	102	85
		2-1/2	57	102	85		47	59	49
		2	47	59	49		38	36	30
		1- 1/2	38	36	30		32	30	25
		1-1/4	32	30	25		24	16	13
4	40	4	97	246	205		72	138	115
		3	72	138	115		57	102	85
		2- 1/2	57	102	85		47	59	49
		2	47	59	49		38	36	30
		1-1/2	38	36	30		32	30	25
6	60	6	147	528	440		122	390	325
		5	122	390	325		97	246	205
		4	97	246	205		72	138	115
		3	72	138	115		57	102	85
		2-1/2	57	102	85		47	59	49
8	60	8	187	780	650		147	528	440
		6	147	528	440		122	390	325
		5	122	390	325		97	246	205
		4	97	246	205		72	138	115
		3	72	138	115		57	102	85
10	80	10	236	1152	960		187	780 *	650 *
		8	187	780	650		147	528 *	440 *
		6	147	528	440		122	390 *	325 *
		5	122	390	325		97	246 *	205 *
		4	97	246	205		72	138 *	115 *
12	80	12	277	1656	1380		236	1152 *	960 *
		10	236	1152	960		187	780 *	650 *
		8	187	780	650		147	528 *	440 *
		6	147	528	440		122	390 *	325 *
		5	122	390	325		97	246 *	205 *
14	100	14	316	2220	1850		-	-	-
		12	277	1656	1380		-	-	-
		10	236	1152	960		-	-	-
		8	187	780	650		-	-	-
16	100	16	356	2940	2450		-	-	-
		14	316	2220	1850		-	-	-
		12	277	1656	1380		-	-	-
		10	236	1152	960		-	-	-

NOTES * : - CV marked with * refer only to ANSI 900-1500; ANSI 2500 not available.
- Values above refer to trim with metal-to-metal sealing. For soft seat trim, reduce the corrisponding Cv value by 15%.

FLOW RATE COEFFICIENTS-CV-MICROFLOW ANSI 150÷2500					
VALVE NPS	STROKE	TRIM	SEAT DIAMETER	REGULATION CHARACTERISTIC	
[in]	[mm]	No.	[mm]	Linear	Equipercentage
3/4 ÷ 1	25	1	6	1,5	1,5
		2		0,8	0,8
		3		0,5	0,5
		4		0,42	0,42
		5		0,25	0,25
		6		0,15	0,15
		7	4	0,08	-
		8		0,05	-
		9		0,042	-
		10		0,025	-
		11		0,015	-
		12		0,008	-
		13		0,005	-
		14		0,0042	-
		15		0,0025	-
		16		0,0015	-

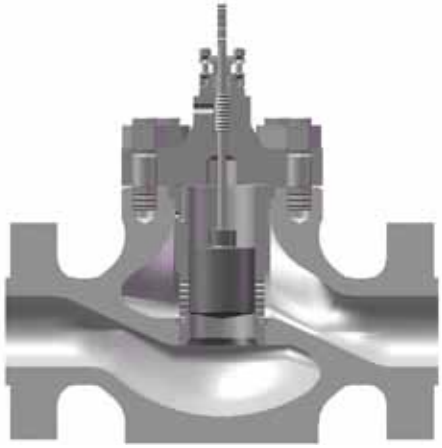
REGULATION CHARACTERISTIC



AVAILABLE ACCESSORIES: PNEUMATIC OR I/P (STD OR SMART) POSITIONER, REDUCTION FILTER, SOLENOID VALVE, LOCK-UP, LIMIT OR PROXIMITY SWITCHES, BOOSTER, ETC. OTHER SIZES ALSO AVAILABLE ON REQUEST

GVCH **Model**

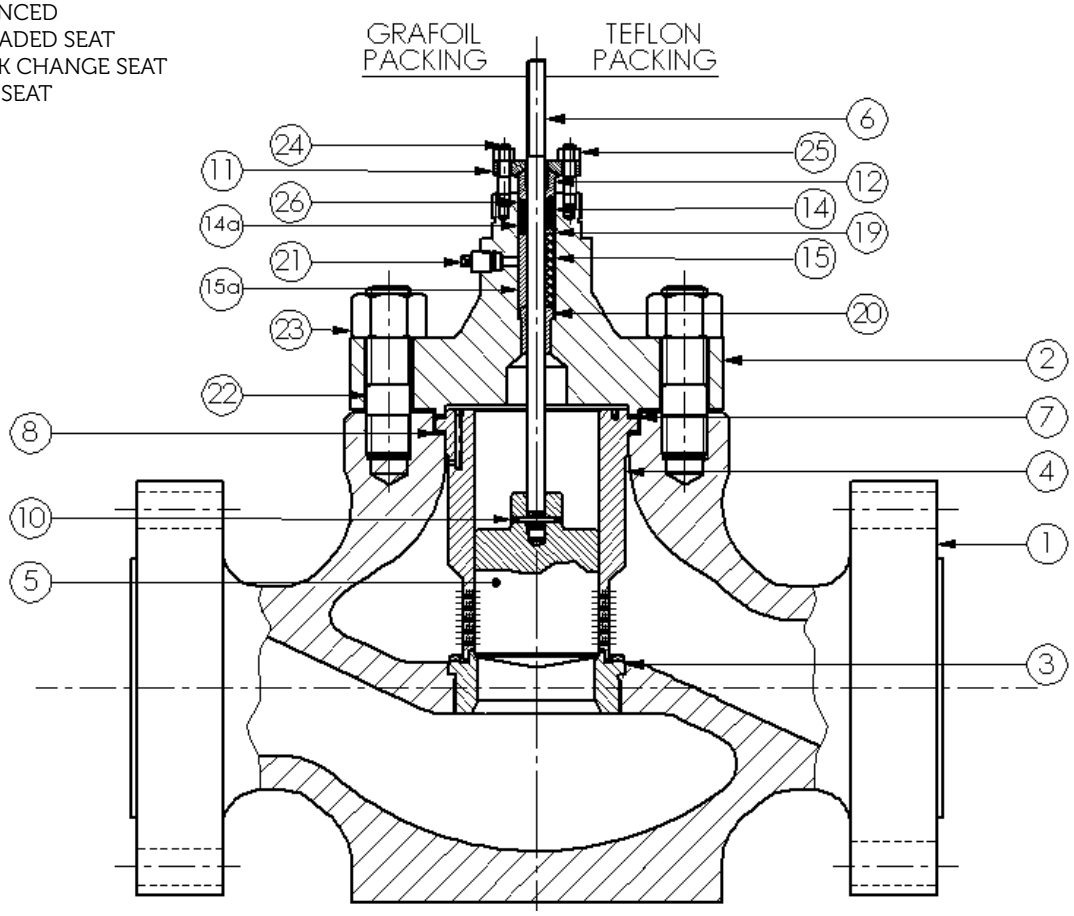
GVCH **Model**



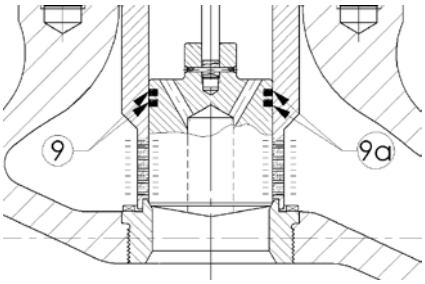
GVCH/S/T

GVCH
GLOBE VALVE CAGE TRIM

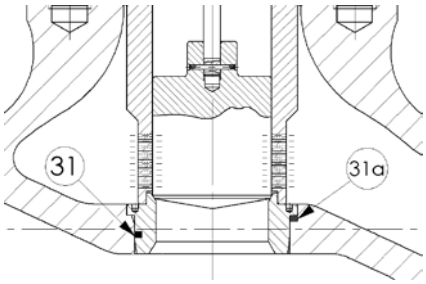
S – STANDARD
B – BALANCED
T – THREADED SEAT
Q – QUICK CHANGE SEAT
I – SOFT SEAT



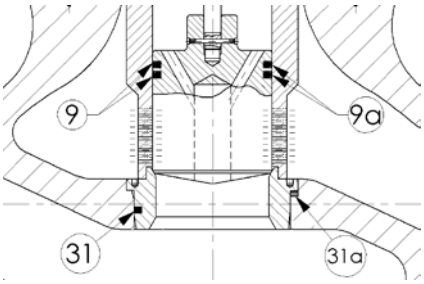
GVCH/B/T



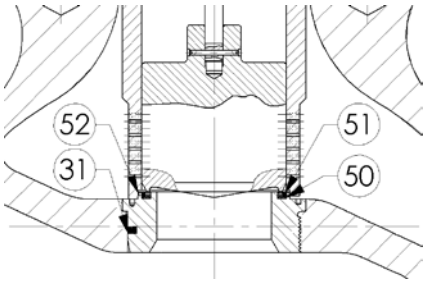
GVCH/S/Q



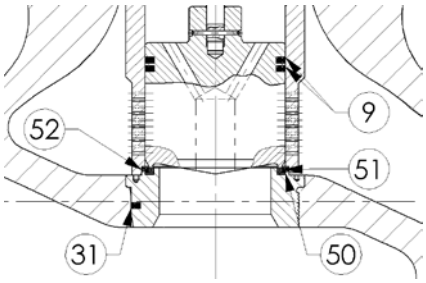
GVCH/B/Q



GVCH/I /S/Q GVCH/I /S/T



GVCH/I/B/Q GVCH/I/B/T



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2	BONNET	A105	A350LF2	A182F11	A182F22	A182F304	A182F316
3	SEAT	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE, CONFIGURATIONS FROM "A" TO "C"					
4	CAGE						
5	PLUG						
6	STEM						
7	BONNET-CAGE GASKET	ANSI 150-600 : S.S. 304/316 + GRAPHITE ; ANSI 900-2500 : S.S. 304/316					
8	BODY-CAGE GASKET	ANSI 150-600 : S.S. 304/316 + GRAPHITE ; ANSI 900-2500 : S.S. 304/316					
9	BALANCING RING	LOADED TEFLON + OR VITON (T ≤ 210 °C)					
9a		FULL GRAPHITE / CA6NM NITR.					
10	PIN	S.S. 304/316					
11	GLAND FLANGE	A105				S.S. 304	
12	GLAND	S.S.304/316					
14	PACKING *	TEFLON (T ≤ 210 °C)					
14a		GRAFOIL (T ≤ 560 °C)					
15	SPRING	S.S. 316					
15a	PACKING SPACER	S.S. 304					
19	LOWER ADAPTER RING	S.S. 304					
20	BUSHING	S.S. 440C H.T.				S.S. 17-4 PH	
21	BONNET PLUG	A105				S.S. 304	
22	BODY-BONNET STUDS	A193 Gr. B7	A193 Gr.B8 Cl.1	A193 Gr. B16		A193 Gr.B8 Cl.1	
23	BODY-BONNET NUTS	A194 Gr. 2H	A194 Gr. 8	A194 Gr. 2H		A194 Gr. 8	
24	GLAND FLANGE STUDS	A193 Gr. B7				A193 Gr.B8 Cl.1	
25	GLAND FLANGE NUTS	A194 Gr. 2H				A194 Gr. 8	
26	ANTIEXTRUSION RING	GRAPHITE (T ≤ 560 °C)					
31	SEAT GASKET	LOADED TEFLON + OR VITON (T ≤ 210 °C)					
31a		GRAPHITE (T ≤ 560 °C)					
50	SOFT INSERT	TEFLON DuPONT ®					
51	RING	S.S. 304/316					
52	SCREWS	S.S. 304/316					

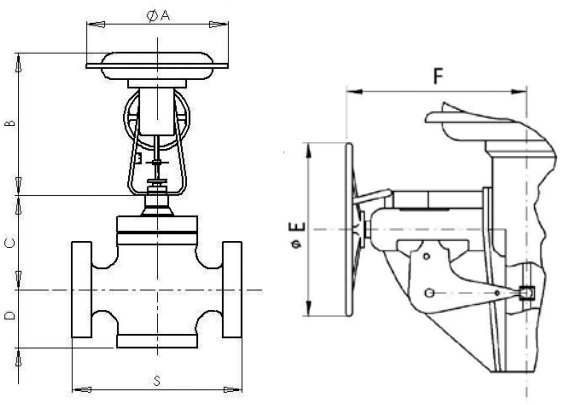
TRIM MATERIALS		CONFIGURATIONS		
		A	B	C
3	SEAT	S.S. 316 + STELLITE **	S.S. 17-4 PH H900	A182 F6NM H.T.
4	CAGE	S.S. 316	S.S. 17-4 PH H1150	A182 F6NM H.T.
5	PLUG	S.S. 316 + SHEET STELLITE **	S.S. 17-4 PH H900	A182 F6NM H.T.
6	STEM	S.S. 316	S.S. 17-4 PH H900	S.S. 17-4 PH H900

NOTES : * DOUBLE PACKING (TEFLON AND GRAFOIL) AND FOR UNDERVACUUM SERVICE ALSO AVAILABLE
** : STELLITE HAYNES Gr. 6

Materials according to NACE, UOP, EXXON and other applications are also available on request.

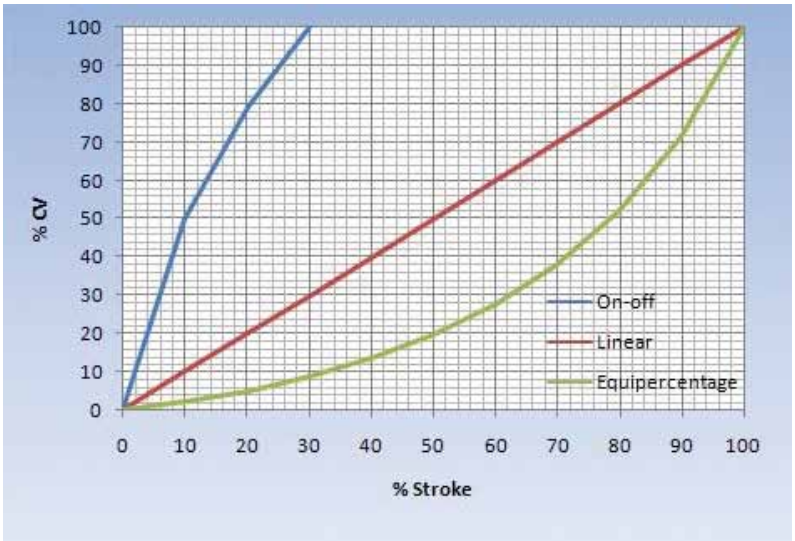
OVERALL DIMENSIONS																	
VALVE NPS [in]	ACTUATOR	STROKE [mm]	ϕA [mm]	B [mm]		C [mm]		D [mm]	ϕE [mm]	F [mm]	S [mm] (ACC. TO ANSI-ISA 75.08.01)					
											ANSI 150		ANSI 300		ANSI 600	
				DIRECT	REVERSE	STD	EXTEND.				RF	RJ	RF	RJ	RF	RJ
1	11 (N)	25	330	420	500	180	260	67	255	270	184	197	197	210	210	210
	13 (N+1)		382	560	670				400	380						
1 1/2	11 (N)	25	330	420	500	180	260	83	255	270	223	235	235	248	251	251
	13 (N+1)		382	560	670				400	380						
2	11 (N)	25	330	420	500	180	260	86	255	270	254	267	267	282	286	289
	13 (N+1)		382	560	670				400	380						
3	13 (N)	40	382	560	670	230	310	111	400	380	299	311	318	333	337	340
	18 (N+1)		532	740	890				570	420						
4	13 (N)	40	382	560	670	230	310	146	400	380	352	365	368	384	394	397
	18 (N+1)		532	740	890				570	420						
6	18 (N)	60	532	740	890	280	360	171	570	420	451	464	473	489	508	511
	24 (N+1)		640	1050	1270				910	740						
8	18 (N)	60	532	740	890	315	415	203	570	420	543	556	568	584	610	613
	24 (N+1)		640	1050	1270				910	740						
10	24 (N)	100	640	1050	1270	390	490	238	910	740	673	686	708	724	752	755
12	24 (N)	100	640	1050	1270	390	490	251	910	740	737	749	775	790	819	822
14	24 (N)	100	640	1050	1270	550	650	292	910	740	890	902	927	943	972	975
16	24 (N)	100	640	1050	1270	680	780	352	910	740	1016	1029	1057	1073	1108	1111

Electrical and electro-pneumatic actuators also available on request.



FLOW RATE COEFFICIENTS - CV - GVCH								
VALVE DN	STROKE	TRIM DIMENSIONS	ANSI 150-300-600			ANSI 900-1500-2500		
			SEAT DIAMETER	CV		SEAT DIAMETER	CV	
[in]	[mm]	[in]	[mm]	Equipercentage	Linear	[mm]	Equipercentage	Linear
1	25	1	24	12	12	19	8 *	8 *
		3/4	19	8	8	15	6	6
		1/2	15	6	6	11	3,8	3,8
		3/8	11	3,8	3,8	9	2,4	2,4
		1/4	9	2,4	2,4	6	2	2
1- 1/2	25	1- 1/2	38	28	28	32	23 *	23 *
		1-1/4	32	23	23	24	12	12
		1	24	12	12	19	8	8
		3/4	19	8	8	15	6	6
		1/2	15	6	6	11	3,8	3,8
2	25	2	47	45	45	38	28	28
		1- 1/2	38	28	28	32	23	23
		1- 1/4	32	23	23	24	12	12
		1	24	12	12	19	8	8
		3/4	19	8	8	15	6	6
3	40	3	72	110	110	57	80	80
		2-1/2	57	80	80	47	45	45
		2	47	45	45	38	28	28
		1- 1/2	38	28	28	32	23	23
		1-1/4	32	23	23	24	12	12
4	40	4	97	170	170	72	110	110
		3	72	110	110	57	80	80
		2- 1/2	57	80	80	47	45	45
		2	47	45	45	38	28	28
		1-1/2	38	28	28	32	23	23
6	60	6	147	360	360	122	240	240
		5	122	240	240	97	170	170
		4	97	170	170	72	110	110
		3	72	110	110	57	80	80
		2-1/2	57	80	80	47	45	45
8	60	8	187	550	590	147	360	360
		6	147	360	360	122	240	240
		5	122	240	240	97	170	170
		4	97	170	170	72	110	110
		3	72	110	110	57	80	80
10	100	10	236	780	880	187	550 *	590 *
		8	187	550	590	147	360 *	360 *
		6	147	360	360	122	240 *	240 *
		5	122	240	240	97	170 *	170 *
		4	97	170	170	72	110 *	110 *
12	100	12	277	1080	1200	236	780 *	880 *
		10	236	780	880	187	550 *	590 *
		8	187	550	590	147	360 *	360 *
		6	147	360	360	122	240 *	240 *
		5	122	240	240	97	170 *	170 *
14	100	14	316	1550	1650	-	-	-
		12	277	1080	1200	-	-	-
		10	236	780	880	-	-	-
		8	187	550	590	-	-	-

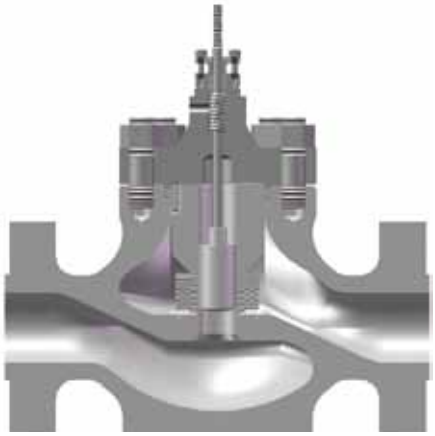
REGULATION CHARACTERISTIC



AVAILABLE ACCESSORIES: PNEUMATIC OR I/P (STD OR SMART) POSITIONER, REDUCTION FILTER, SOLENOID VALVE, LOCK-UP, LIMIT OR PROXIMITY SWITCHES, BOOSTER, ETC. OTHER SIZES ALSO AVAILABLE ON REQUEST

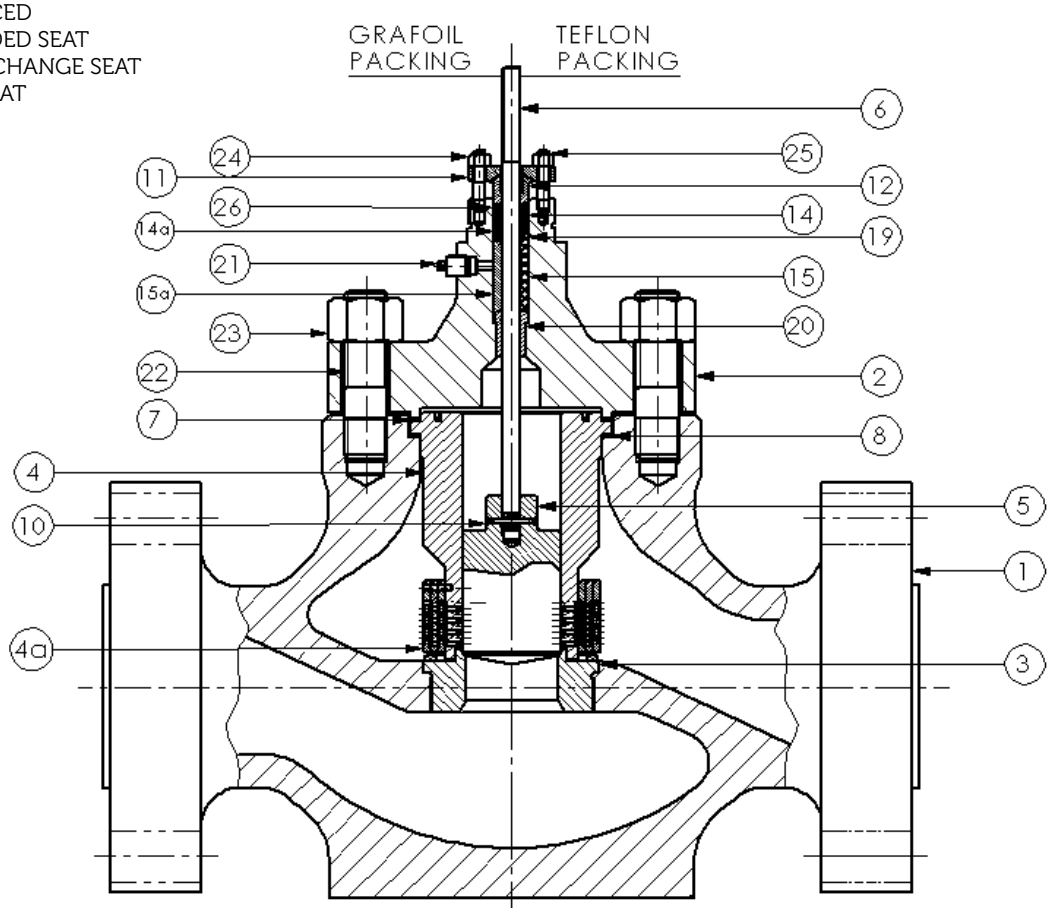
GVLN **Model**

GVLN **Model**

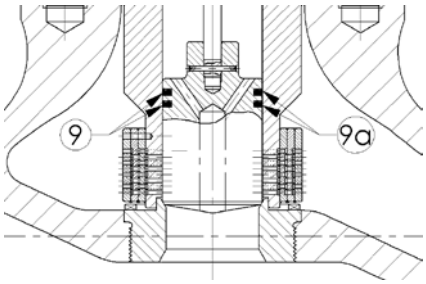


GVLN
GLOBE VALVE LOW NOISE

S – STANDARD
B – BALANCED
T – THREADED SEAT
Q – QUICK CHANGE SEAT
I – SOFT SEAT



GVLN/B/T



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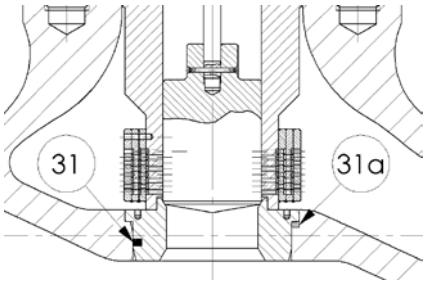
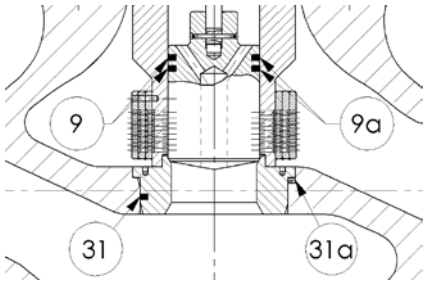
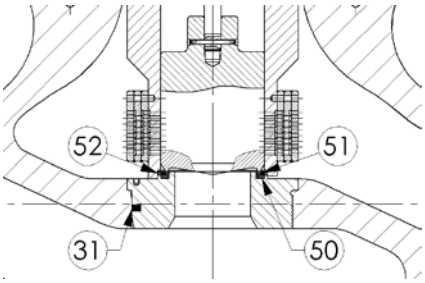


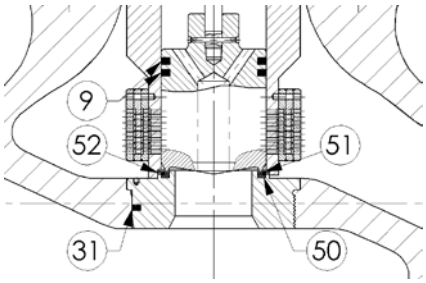
GVLN/B/Q



GVLN/I /S/Q GVLN/I /S/T



GVLN/I/B/Q GVLN/I/B/T



STANDARD MATERIALS		CONFIGURATIONS					
POS.	ITEM	1	2	3	4	5	6
1	BODY	A216WCB	A352LCB	A217WC6	A217WC9	A351CF8	A351CF8M
2	BONNET	A105	A350LF2	A182F11	A182F22	A182F304	A182F316
3	SEAT	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE, CONFIGURATIONS FROM "A" TO "C"					
4	CAGE						
4a	CYLINDERS						
5	PLUG						
6	STEM						
7	BONNET-CAGE GASKET	ANSI 150-600 : S.S. 304/316 + GRAPHITE ; ANSI 900-2500 : S.S. 304/316					
8	BODY-CAGE GASKET	ANSI 150-600 : S.S. 304/316 + GRAPHITE ; ANSI 900-2500 : S.S. 304/316					
9	BALANCING RING	LOADED TEFLON + OR VITON (T ≤ 210 °C)					
9a		FULL GRAPHITE / CA6NM NITR.					
10	PIN	S.S. 304/316					
11	GLAND FLANGE	A105				S.S. 304	
12	GLAND	S.S.304/316					
14	PACKING *	TEFLON (T ≤ 210 °C)					
14a		GRAFOIL (T ≤ 560 °C)					
15	SPRING	S.S. 316					
15a	PACKING SPACER	S.S. 304					
19	LOWER ADAPTER RING	S.S. 304					
20	BUSHING	S.S. 440C H.T.				S.S. 17-4 PH	
21	BONNET PLUG	A105				S.S. 304	
22	BODY-BONNET STUDS	A193 Gr. B7	A193 Gr.B8 Cl.1	A193 Gr. B16		A193 Gr.B8 Cl.1	
23	BODY-BONNET NUTS	A194 Gr. 2H	A194 Gr. 8	A194 Gr. 2H		A194 Gr. 8	
24	GLAND FLANGE STUDS	A193 Gr. B7				A193 Gr.B8 Cl.1	
25	GLAND FLANGE NUTS	A194 Gr. 2H				A194 Gr. 8	
26	ANTIEXTRUSION RING	GRAPHITE (T ≤ 560 °C)					
31	SEAT GASKET	LOADED TEFLON + OR VITON (T ≤ 210 °C)					
31a		GRAPHITE (T ≤ 560 °C)					
50	SOFT INSERT	TEFLON DuPONT ®					
51	RING	S.S. 304/316					
52	SCREWS	S.S. 304/316					

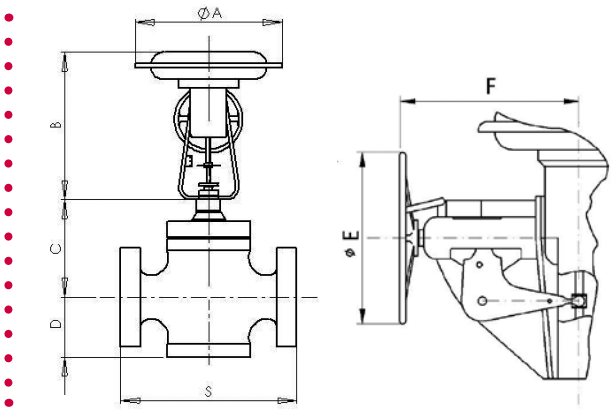
TRIM MATERIALS		CONFIGURATIONS		
		A	B	C
3	SEAT	S.S. 316 + STELLITE **	S.S. 17-4 PH H900	A182 F6NM H.T.
4	CAGE	S.S. 316	S.S. 17-4 PH H1150	A182 F6NM H.T.
4a	CYLINDERS	S.S. 316	S.S. 17-4 PH H1150	A182 F6NM H.T.
5	PLUG	S.S. 316 + SHEET STELLITE **	S.S. 17-4 PH H900	A182 F6NM H.T.
6	STEM	S.S. 316	S.S. 17-4 PH H900	S.S. 17-4 PH H900

NOTES : * DOUBLE PACKING (TEFLON AND GRAFOIL) AND FOR UNDERVACUUM SERVICE ALSO AVAILABLE
** : STELLITE HAYNES Gr. 6

Materials according to NACE, UOP, EXXON and other applications are also available on request.

OVERALL DIMENSIONS																	
VALVE NPS [in]	ACTUATOR	STROKE [mm]	ϕA [mm]	B [mm]		C [mm]		D [mm]	ϕE [mm]	F [mm]	S [mm] (ACC. TO ANSI-ISA 75.08.01)					
											ANSI 150		ANSI 300		ANSI 600	
				DIRECT	REVERSE	STD	EXTEND.				RF	RJ	RF	RJ	RF	RJ
1	11 (N)	25	330	420	500	180	260	67	255	270	184	197	197	210	210	210
	13 (N+1)		382	560	670				400	380						
1 1/2	11 (N)	25	330	420	500	180	260	83	255	270	223	235	235	248	251	251
	13 (N+1)		382	560	670				400	380						
2	11 (N)	25	330	420	500	180	260	86	255	270	254	267	267	282	286	289
	13 (N+1)		382	560	670				400	380						
3	13 (N)	40	382	560	670	230	310	111	400	380	299	311	318	333	337	340
	18 (N+1)		532	740	890				570	420						
4	13 (N)	60	382	560	670	230	310	146	400	380	352	365	368	384	394	397
	18 (N+1)		532	740	890				570	420						
6	18 (N)	80	532	740	890	280	360	171	570	420	451	464	473	489	508	511
	18L (N+1)		532	990	1175				910	740						
8	24 (N)	100	640	1050	1270	315	415	203	910	740	543	556	568	584	610	613
10	24 (N)	100	640	1050	1270	390	490	238	910	740	673	686	708	724	752	755
12	24 (N)	100	640	1050	1270	390	490	251	910	740	737	749	775	790	819	822
14	24 (N)	100	640	1050	1270	550	650	292	910	740	890	902	927	943	972	975
16	24 (N)	100	640	1050	1270	680	780	352	910	740	1016	1029	1057	1073	1108	1111

Electrical and electro-pneumatic actuators also available on request.



FLOW RATE COEFFICIENTS - CV - GVLN

VALVE NPS	STROKE	TRIM DIMENSIONS	ANSI 150-300-600											ANSI 900-1500-2500										
			SEAT DIAM.	CV										SEAT DIAM.	CV									
				G+1		G+2		G+3		G+4		G+5			G+1		G+2		G+3		G+4		G+5	
[in]	[mm]	[in]	[mm]	E	L	E	L	E	L	E	L	E	L	[mm]	E	L	E	L	E	L	E	L	E	L
1	25	1	24	9,5	10,5	-	-	-	-	-	-	-	-	19	6,5*	7,2*	6*	7*	-	-	-	-	-	-
		3/4	19	6,5	7,2	6	7	-	-	-	-	-	-	15	3,2	3,6	2,5	2,7	-	-	-	-	-	-
		1/2	15	3,2	3,6	2,5	2,7	-	-	-	-	-	-	11	2,5	2,7	2	2	-	-	-	-	-	-
1- 1/2	25	1-1/2	38	20	23	-	-	-	-	-	-	-	-	32	16*	17*	14*	15*	-	-	-	-	-	-
		1-1/4	32	16	17	14	15	-	-	-	-	-	-	24	9,5	9,5	9,5	10,5	9,5	10,5	-	-	-	-
		1	24	9,5	9,5	9,5	9,5	9,5	10,5	-	-	-	-	19	6	6	6	6	6	6	-	-	-	-
		3/4	19	6	6	6	6	6	6	-	-	-	-	15	3,2	3,6	2,5	2,7	1,9	1,9	-	-	-	-
		1/2	15	3,2	3,6	2,5	2,7	1,9	1,9	-	-	-	-	11	2,5	2,7	2	2	1,5	1,5	-	-	-	-
2	25	2	47	28	32	-	-	-	-	-	-	-	-	38	20	20	20	23	-	-	-	-	-	-
		1-1/2	38	20	20	20	23	-	-	-	-	-	-	32	14	14	14	14	14	15	-	-	-	-
		1-1/4	32	14	14	14	14	14	15	-	-	-	-	24	9,5	9,5	9,5	9,5	9,5	9,5	-	-	-	-
		1	24	9,5	9,5	9,5	9,5	9,5	9,5	-	-	-	-	19	6	6	6	6	6	6	-	-	-	-
		3/4	19	6	6	6	6	6	6	-	-	-	-	15	3,2	3,6	2,5	2,7	1,9	1,9	-	-	-	-
3	40	3	72	60	69	-	-	-	-	-	-	-	-	57	44	44	44	50	-	-	-	-	-	-
		2-1/2	57	44	44	44	50	-	-	-	-	-	-	47	28	28	28	28	28	32	-	-	-	-
		2	47	28	28	28	28	28	32	-	-	-	-	38	20	20	20	20	20	20	20	23	-	-
		1-1/2	38	20	20	20	20	20	20	20	23	-	-	32	14	14	14	14	14	14	14	14	-	-
		1-1/4	32	14	14	14	14	14	14	14	14	-	-	24	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	-	-
4	60	4	97	105	120	-	-	-	-	-	-	-	-	72	60	60	60	69	-	-	-	-	-	-
		3	72	60	60	60	69	-	-	-	-	-	-	57	44	44	44	44	44	50	-	-	-	-
		2-1/2	57	44	44	44	44	44	50	-	-	-	-	47	28	28	28	28	28	28	28	32	-	-
		2	47	28	28	28	28	28	28	28	32	-	-	38	20	20	20	20	20	20	20	20	20	23
		1-1/2	38	20	20	20	20	20	20	20	20	20	23	32	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5	9,5
6	80	6	147	200	230	-	-	-	-	-	-	-	-	122	145	145	145	160	-	-	-	-	-	-
		5	122	145	145	145	160	-	-	-	-	-	-	97	105	105	105	105	105	120	-	-	-	-
		4	97	105	105	105	105	105	120	-	-	-	-	72	60	60	60	60	60	60	60	69	-	-
		3	72	60	60	60	60	60	60	60	69	-	-	57	44	44	44	44	44	44	44	44	44	50
		2-1/2	57	44	44	44	44	44	44	44	44	44	50	47	28	28	28	28	28	28	28	28	28	28
8	100	8	187	280	320	-	-	-	-	-	-	-	-	147	200	200	200	230	-	-	-	-	-	-
		6	147	200	200	200	230	-	-	-	-	-	-	122	145	145	145	145	145	160	-	-	-	-
		5	122	145	145	145	145	145	160	-	-	-	-	97	105	105	105	105	105	105	105	120	-	-
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		8	187	280	280	280	320	-	-	-	-	-	-	147	200*	200*	200*	200*	200*	230*	-	-	-	-
		6	147	200	200	200	200	200	230	-	-	-	-	122	145*	145*	145*	145*	145*	145*	145*	160*	-	-
		5	122	145	145	145	145	145	145	145	160	-	-	97	105*	105*	105*	105*	105*	105*	105*	105*	105*	120*
		4	97	105	105	105	105	105	105	105	105	105	120	72	60*	60*	60*	60*	60*	60*	60*	60*	60*	60*
12	100	12	277	540	620	-	-	-	-	-	-	-	-	236	390*	390*	390*	440*	-	-	-	-	-	-
		10	236	390	390	390	440	-	-	-	-	-	-	187	280*	280*	280*	280*	280*	320*	-	-	-	-
		8	187	280	280	280	280	280	320	-	-	-	-	147	200*	200*	200*	200*	200*	200*	200*	230*	-	-
		6	147	200	200	200	200	200	200	200	230	-	-	122	145*	145*	145*	145*	145*	145*	145*	145*	145*	160*
		5	122	145	145	145	145	145	145	145	145	145	160	97	105*	105*	105*	105*	105*	105*	105*	105*	105*	105*
14	100	14	316	745	820	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		12	277	540	540	540	620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10	236	390	390	390	390	390	440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		8	187	280	280	280	280	280	280	280	320	-	-	-	-	-	-	-	-	-	-	-	-	-
		6	147	200	200	200	200	200	200	200	200	200	230	-	-	-	-	-	-	-	-	-	-	-
16	100	16	356	980	1100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		14	316	745	745	745	820	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		12	277	540	540	540	540	540	620	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		10	236	390	390	390	390	390	390	390	440	-	-	-	-	-	-	-	-	-	-	-	-	-
		8	187	280	280	280	280	280	280	280	280	280	320	-	-	-	-	-	-	-	-	-	-	-

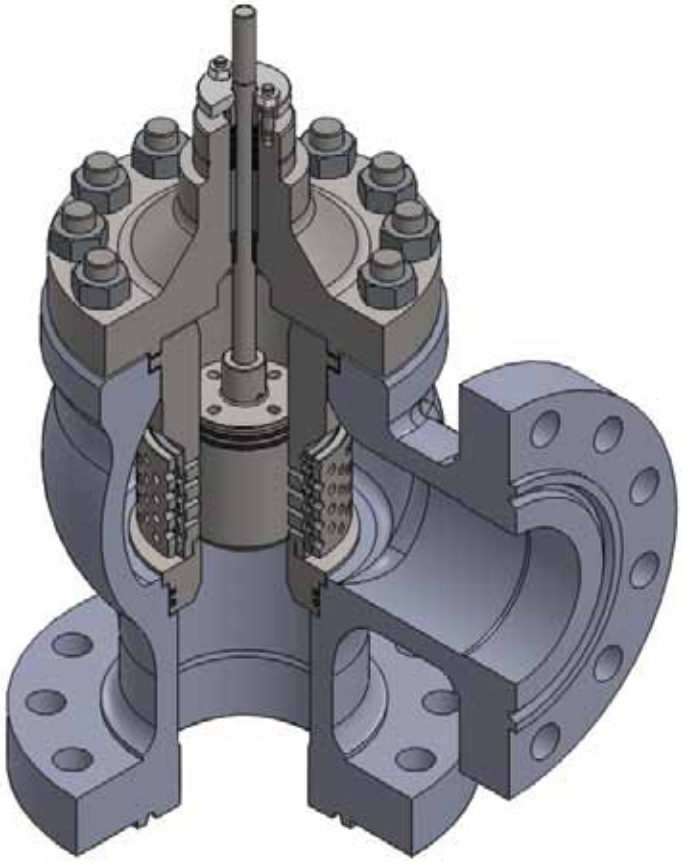
NOTES : - CV marked with * refer only to ANSI 900-1500; ANSI 2500 not available.
- E = Equipercentage; L = Linear
- Values above refer to trim with metal-to-metal sealing. For soft seat trim, reduce the corrisponding CV value by 15%.

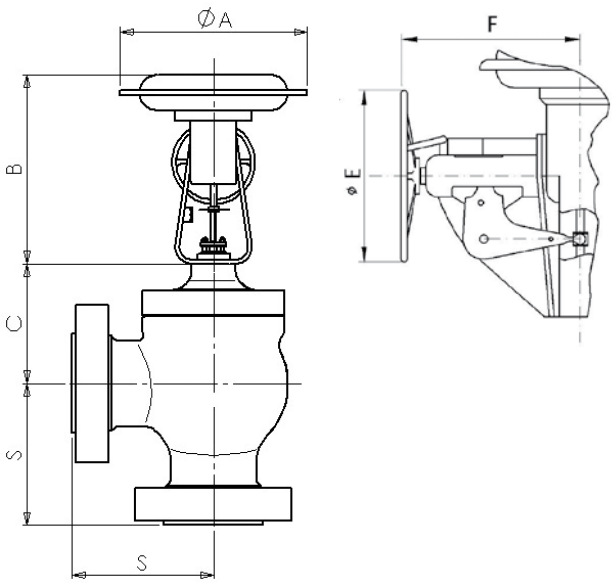
REGULATION CHARACTERISTIC

AVAILABLE ACCESSORIES: PNEUMATIC OR I/P (STD OR SMART) POSITIONER, REDUCTION FILTER, SOLENOID VALVE, LOCK-UP, LIMIT OR PROXIMITY SWITCHES, BOOSTER, ETC. OTHER SIZES ALSO AVAILABLE ON REQUEST

Angle **Valves**

Angle **Valves**





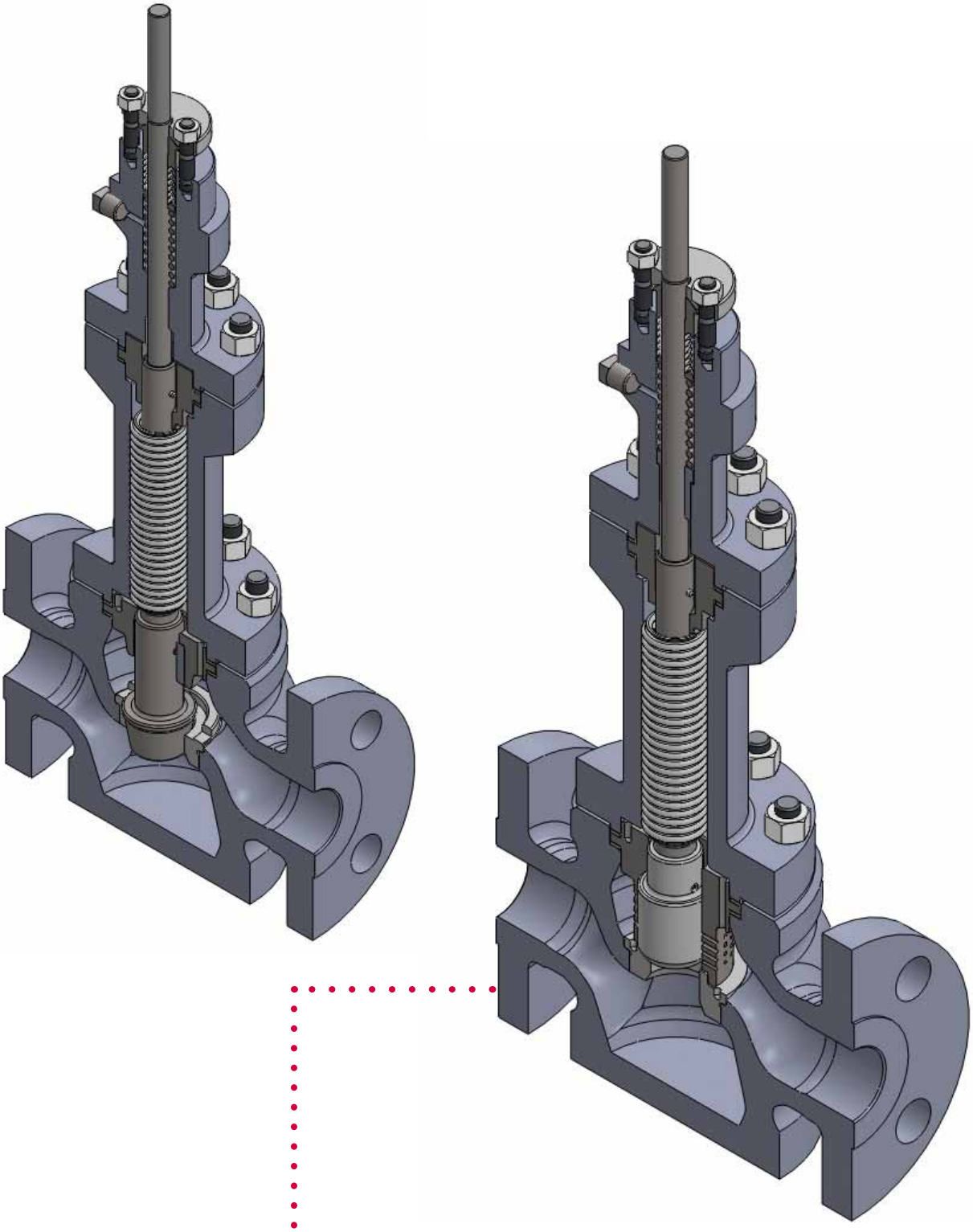
Angle valves are available in the same materials and with the same trim (GVPC, GVCH, GVLN...) of straight valves.

OVERALL DIMENSIONS

NOMINAL VALVE SIZE		ACTUATOR	STROKE [mm]	ϕA [mm]	B [mm]		C [mm]		ϕE [mm]	F [mm]	S [mm] (FROM 1" TO 8": ACC. TO ANSI-ISA 75.08.08 FROM 10" TO 16": ACC. TO ASME B 16.10)					
											ANSI 150		ANSI 300		ANSI 600	
NPS	DN				DIRECT	REVERSE	STD	EXTEND.			RF	RJ	RF	RJ	RF	RJ
1	25	11 (N) 13 (N+1)	25	330 382	420 560	500 670	180	260	255 400	270 380	92	99	99	106	105	105
1 ½	40	11 (N) 13 (N+1)	25	330 382	420 560	500 670	180	260	255 400	270 380	111	118	117	124	125	125
2	50	11 (N) 13 (N+1)	25	330 382	420 560	500 670	180	260	255 400	270 380	127	134	133	141	143	145
3	80	13 (N) 18 (N+1)	40	382 532	560 740	670 890	230	310	400 570	380 420	149	156	159	167	168	170
4	100	18 (N) 24 (N+1)	60	532 640	740 1050	890 1270	230	310	570 910	420 740	176	183	184	192	197	199
6	150	18L (N) 24 (N+1)	80	532 640	990 1050	1175 1270	280	360	910 910	740 740	226	233	236	244	254	256
8	200	24 (N)	100	640	1050	1270	315	415	910	740	272	279	284	292	305	307
10	250	24 (N)	100	640	1050	1270	390	490	910	740	311	318	311	319	394	396
12	300	24 (N)	100	640	1050	1270	390	490	910	740	349	356	356	364	419	421
14	350	24 (N)	100	640	1050	1270	550	650	910	740	394	401	TBA		TBA	
16	400	24 (N)	100	640	1050	1270	680	780	910	740	457	464	TBA		TBA	

Bellows-seal **Valves**

Bellows-seal **Valves**



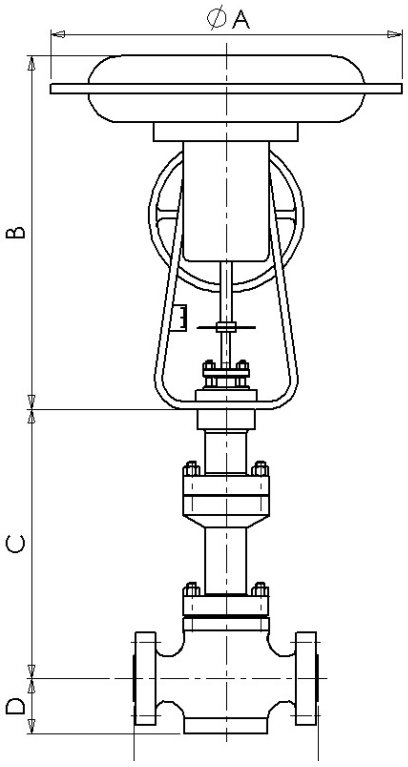
Bellows-seal valves are available in the same materials and with the same trim (GVPC, GVCH, GVLN...) of standard valves. Sealing bellows standard materials are:

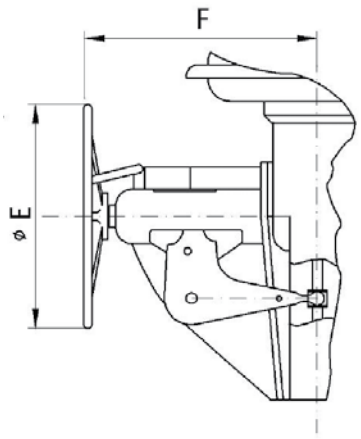
- SS316 / SS316L
- INCONEL 625
- MONEL 400
- HASTELLOY C-276

OVERALL DIMENSIONS WITH PNEUMATIC ACTUATOR*

NOMINAL VALVE SIZE		ACTUATOR	STROKE [mm]	ϕA [mm]	B [mm]		C [mm]	D [mm]	ϕE [mm]	F [mm]	S [mm] (ACC. TO ANSI-ISA 75.08.01)					
					DIRECT	REVERSE					ANSI 150		ANSI 300		ANSI 600	
NPS	DN										RF	RJ	RF	RJ	RF	RJ
3/4	20	11 (N)	25	330	420	500	Depending on process data	67	255	270	184	197	194	206	206	206
		13 (N+1)		382	560	670			400	380						
1	25	11 (N)	25	330	420	500		67	255	270	184	197	197	210	210	210
		13 (N+1)		382	560	670			400	380						
1 1/2	40	11 (N)	25	330	420	500		83	255	270	223	235	235	248	251	251
		13 (N+1)		382	560	670			400	380						
2	50	11 (N)	25	330	420	500		86	255	270	254	267	267	282	286	289
		13 (N+1)		382	560	670			400	380						
3	80	13 (N)	40	382	560	670		111	400	380	299	311	318	333	337	340
		18 (N+1)		532	740	890			570	420						
4	100	13 (N)	40	382	560	670		146	400	380	352	365	368	384	394	397
		18 (N+1)		532	740	890			570	420						
6	150	18 (N)	60	532	740	890		171	570	420	451	464	473	489	508	511
		24 (N+1)		640	1050	1270			910	740						
8	200	18 (N)	60	532	740	890		203	570	420	543	556	568	584	610	613
		24 (N+1)		640	1050	1270			910	740						

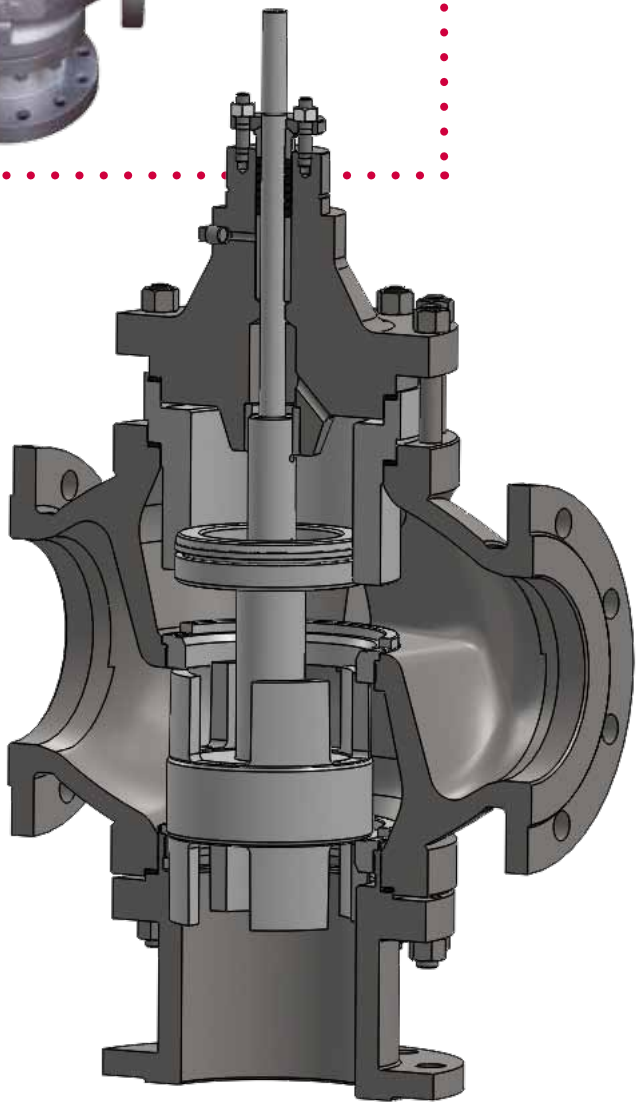
OTHER SIZES ALSO AVAILABLE ON REQUEST





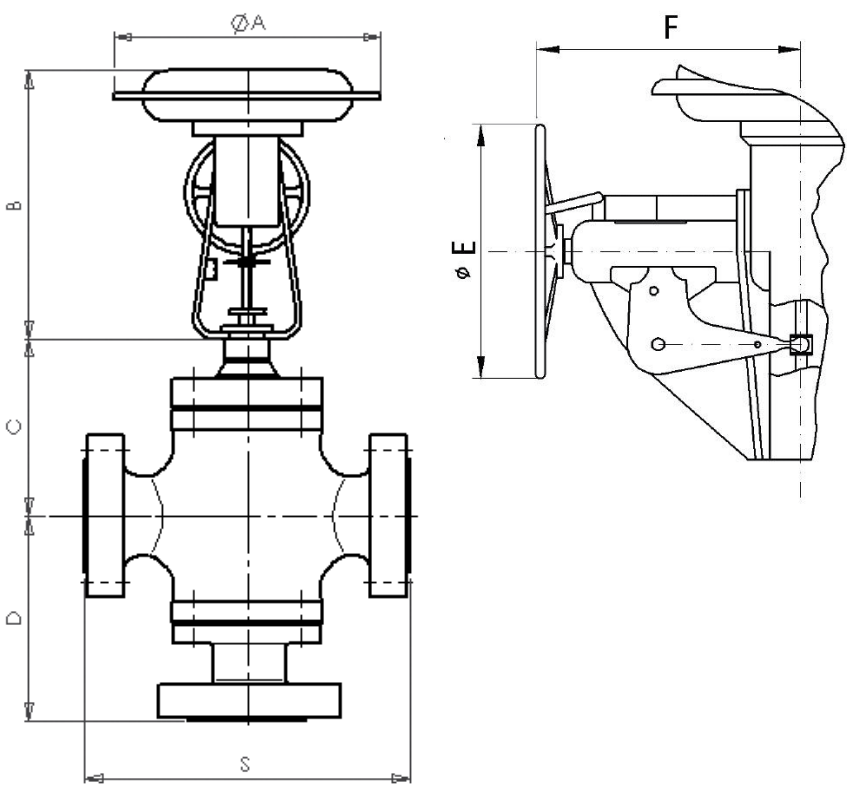
3-Way **Valves**

3-Way **Valves**



It is possible to employ 3-Way valves in two different services:
• CONVERGING (MIXER): 2 input and 1 output
• DIVERTING: 1 input and 2 output
3-WAY valves are available in the same materials of straight valves.

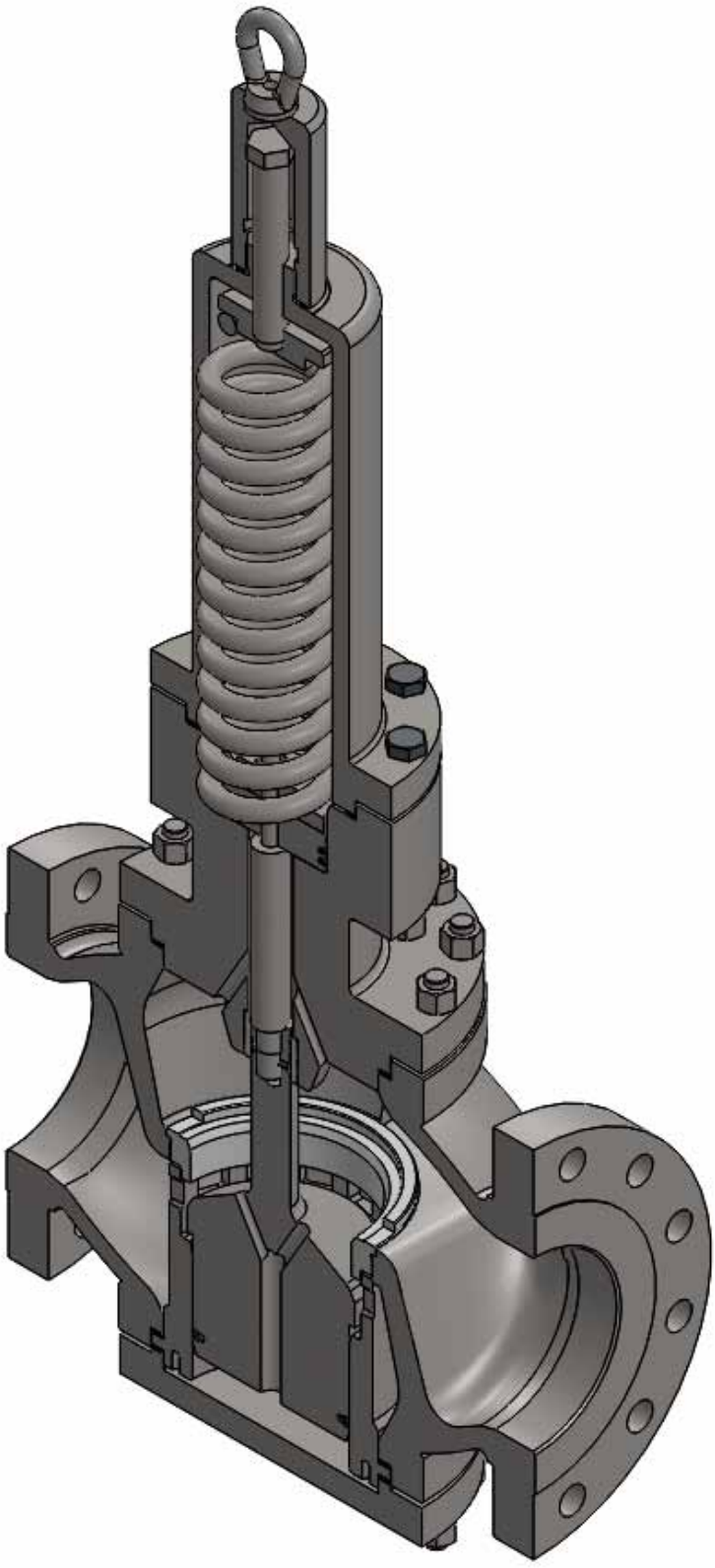
OVERALL DIMENSIONS																	
NOMINAL VALVE SIZE		ACTUATOR	STROKE [mm]	ϕA [mm]	B [mm]		C [mm]		D [mm]	ϕE [mm]	F [mm]	S [mm] (ACC. TO ANSI-ISA 75.08.01)					
												ANSI 150		ANSI 300		ANSI 600	
NPS	DN				DIRECT	REVERSE	STD	EXTEND.				RF	RJ	RF	RJ	RF	RJ
1	25	11 (N)	25	330	420	500	180	260	155	255	270	184	197	197	210	210	210
		13 (N+1)		382	560	670				400	380						
1 ½	40	11 (N)	25	330	420	500	200	280	170	255	270	223	235	235	248	251	251
		13 (N+1)		382	560	670				400	380						
2	50	11 (N)	25	330	420	500	200	280	190	255	270	254	267	267	282	286	289
		13 (N+1)		382	560	670				400	380						
3	80	13 (N)	40	382	560	670	260	340	230	400	380	299	311	318	333	337	340
		18 (N+1)		532	740	890				570	420						
4	100	13 (N)	40	532	560	670	260	340	290	570	420	352	365	368	384	394	397
		18 (N+1)		640	740	890				910	740						
6	150	18 (N)	60	532	740	890	330	410	315	910	740	451	464	473	489	508	511
		24 (N+1)		640	1050	1270				910	740						
8	200	18 (N)	60	640	740	890	340	440	360	910	740	543	556	568	584	610	613
		24 (N+1)			1050	1270											
10	250	18L (N)	80	640	990	1175	410	510	410	910	740	673	686	708	724	752	755
		24 (N+1)			1050	1270											
12	300	18L (N)	80	640	990	1175	430	530	460	910	740	737	749	775	790	819	822
		24 (N+1)			1050	1270											
14	350	24 (N)	100	640	1050	1270	600	700	510	910	740	890	902	927	943	972	975
16	400	24 (N)	100	640	1050	1270	710	810	590	910	740	1016	1029	1057	1073	1108	1111



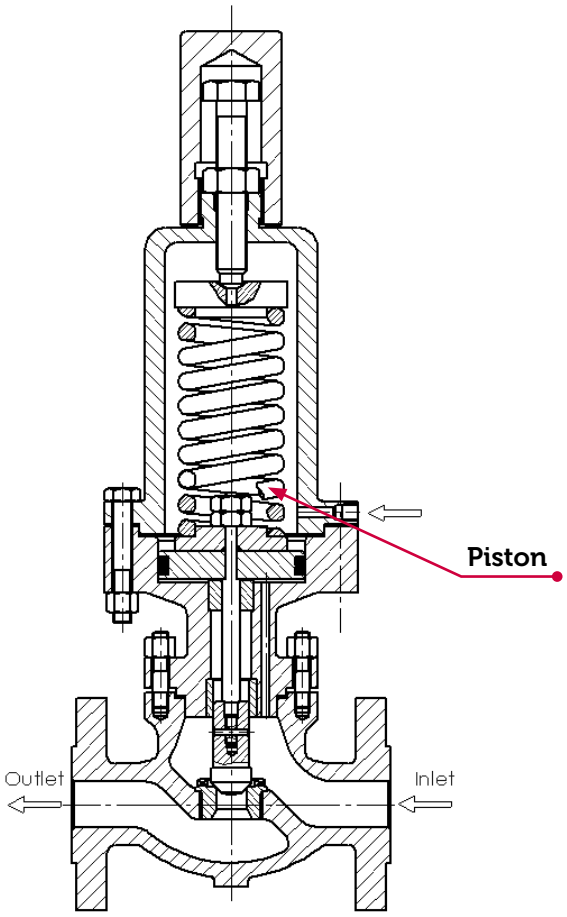
SRVI **Model**

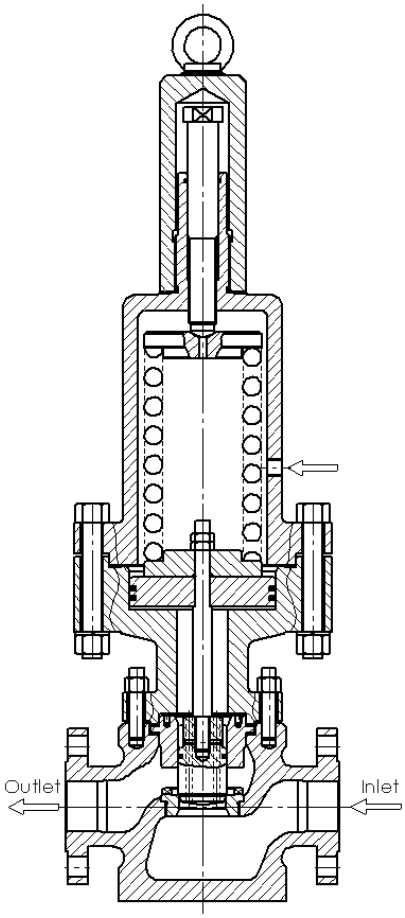
SRVI **Model**

SELF-REGULATING VALVES
–
INTERNAL TAPPING

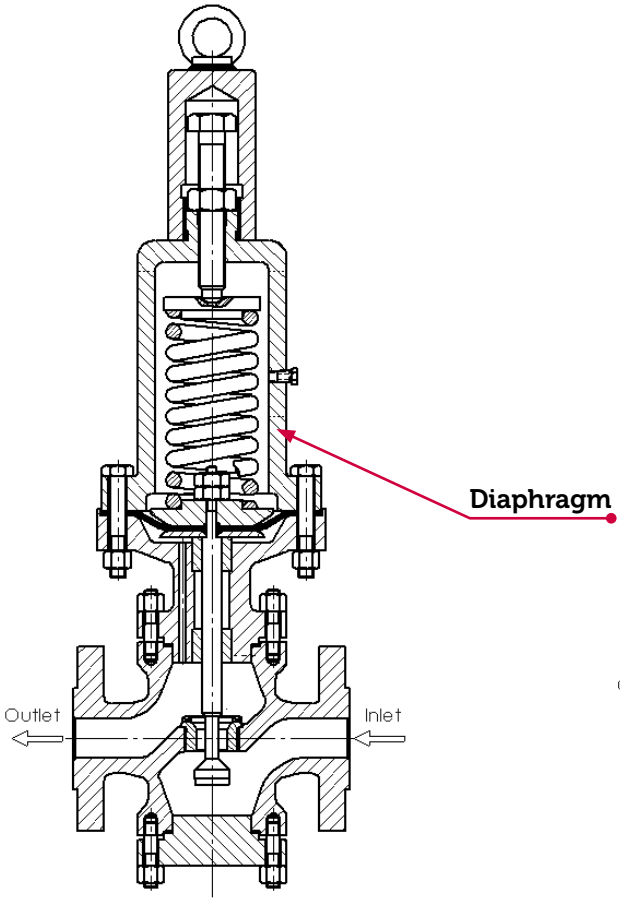


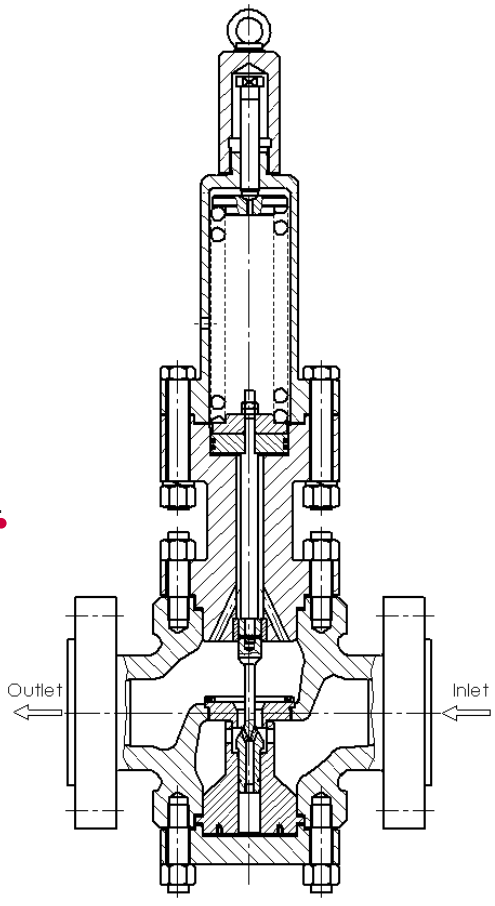
UPSTREAM SELF-REGULATING VALVE (RELIEF)

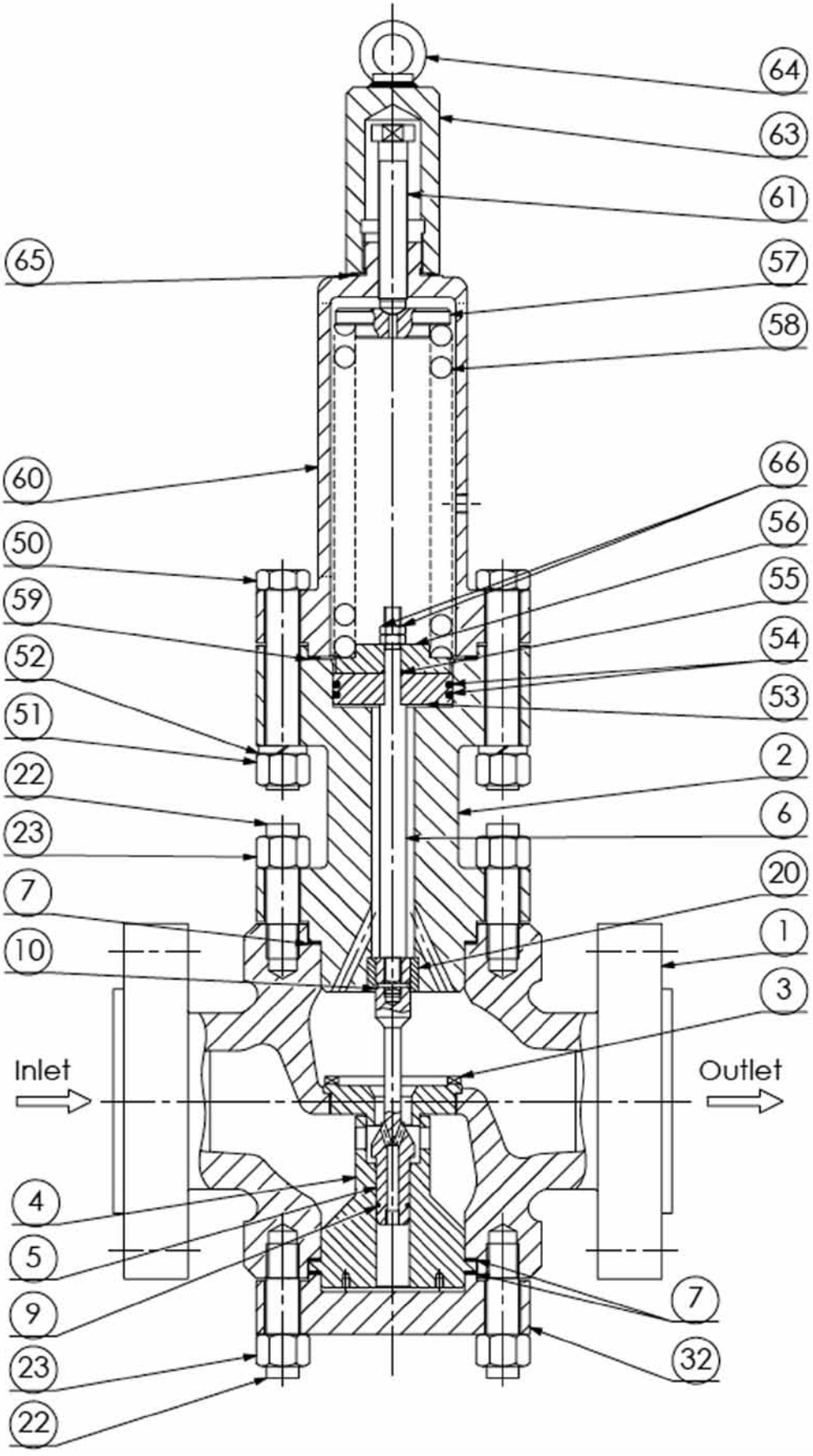




DOWNSTREAM SELF-REGULATING VALVE (REDUCER)



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Inlet
Outlet
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32
22

STANDARD MATERIALS		CONFIGURATIONS						
POS.	ITEM	1	2	3	4	5	6	7
1	BODY	A216 WCB	A351CF8	A351CF8M	A351CF3M	A494 CW6MC	ASTM A494 M35-1	ASTM A494 CW-12M-1
2	BONNET	A105	A182F304	A182 F316	A182 F316L	INCONEL 625	MONEL 400	HASTELLOY C-276
3	SEAT	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE BELOW, CONFIGURATIONS FROM "A" TO "E"						
4	BALANC. CYLIND./CAGE							
5	PLUG							
6	STEM							
7-8	BODY GASKET	ANSI 150-600: SS316+GRAPHITE/PTFE; ANSI 900-2500: SS316				ANSI 150-600: INC. 625+GRAPH./PTFE; ANSI 900-2500: INC. 625	ANSI 150-600: MON. 400+GRAPH./PTFE; ANSI 900-2500: MON. 400	
9	BALANCING RING	LOADED PTFE + VITON						
10	PIN	SS304/SS316				INCONEL 625	MONEL 400	HASTELLOY C-276
20	BUSHING	SS440C	SS17-4 PH			STELLITE HAYNES Gr. 6	MONEL K500	STELLITE HAYNES Gr. 6
22	BODY-BONNET STUD	A193 Gr. B7	ASTM A193 Gr.B8M Cl.2					
23	BODY-BONNET NUT	A194 Gr. 2H	ASTM A194 Gr. 8M					
32	BOTTOM CAP	A105	A182F304	A182 F316	A182 F316L	INCONEL 625	MONEL 400	HASTELLOY C-276
50	BOLT	A193 Gr. B7	ASTM A193 Gr.B8M Cl.2					
51	NUT	A194 Gr. 2H	ASTM A194 Gr. 8M					
52	WASHER	SS316						
53	PISTON	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE BELOW, CONFIGURATIONS FROM "A" TO "E"						
54	PISTON SEAL RING	LOADED PTFE + VITON						
55	STEM SEAL RING	VITON						
56	LOWER SPRING PLATE	CS	SS			INCONEL 625	MONEL 400	HASTELLOY C-276
57	UPPER SPRING PLATE	CS	SS			INCONEL 625	MONEL 400	HASTELLOY C-276
58	SPRING	52SiCrNi5	SS316			INCONEL 625	MONEL	
59	SPRING CASE GASKET	ANSI 150-600: SS316+GRAPHITE/PTFE; ANSI 900-2500: SS316				ANSI 150-600: INC. 625+GRAPH./PTFE; ANSI 900-2500: INC. 625	ANSI 150-600: MON. 400+GRAPH./PTFE; ANSI 900-2500: MON. 400	
60	SPRING CASE	A105	A182F304	A182 F316	A182 F316L	INCONEL 625	MONEL 400	HASTELLOY C-276
61	ADJUSTING SCREW	SS				INCONEL 625	MONEL 400	HASTELLOY C-276
63	CAP	CS	SS					
64	LIFTING EYE BOLT	CS	SS					
65	GASKET	ANSI 150-600: SS316+GRAPHITE/PTFE; ANSI 900-2500: SS316				ANSI 150-600: INC. 625+GRAPH./PTFE; ANSI 900-2500: INC. 625	ANSI 150-600: MON. 400+GRAPH./PTFE; ANSI 900-2500: MON. 400	
66	STEM NUT	SS				INCONEL 625	MONEL	

NOTES:
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST
- MATERIALS ACCORDING TO NACE AND OTHER STANDARDS ALSO AVAILABLE ON REQUEST

TRIM MATERIALS		CONFIGURATIONS				
POS.	ITEM	A	B	C	D	E
3	SEAT	SS316+STELL.**	SS17-4 PH H900	INCONEL 625+STELL.**	MONEL 400	HASTELLOY C-276
4	BALANC. CYLIND./CAGE	(SS17-4 PH)	(SS17-4 PH H1150)	(INCONEL 625)	(MONEL K500)	(STELL. HAYNES Gr. 6)
5	PLUG	SS316+STELL.**	SS17-4 PH H900	INCONEL 625+STELL.**	MONEL 400	HASTELLOY C-276
6	STEM	SS316	SS17-4 PH H900	INCONEL 625	MONEL 400	HASTELLOY C-276
53	PISTON	SS316	SS17-4 PH H900	INCONEL 625	MONEL 400	HASTELLOY C-276

NOTES:
- ** STELLITE HAYNES GR. 6 ON REQUEST
- MATERIALS IN BRACKETS REFER TO BALANCED VERSION

NOTES:
- Self-regulating valves - Internal tapping are available: “Piston Actuated” or “Diaphragm Actuated”
- Fluid temperature up to 210°C
- Standard valve size up to 4”
- Standard valve rating up to ANSI 600
- Other sizes and ratings available on request

SRVE **Model**

SRVE Model

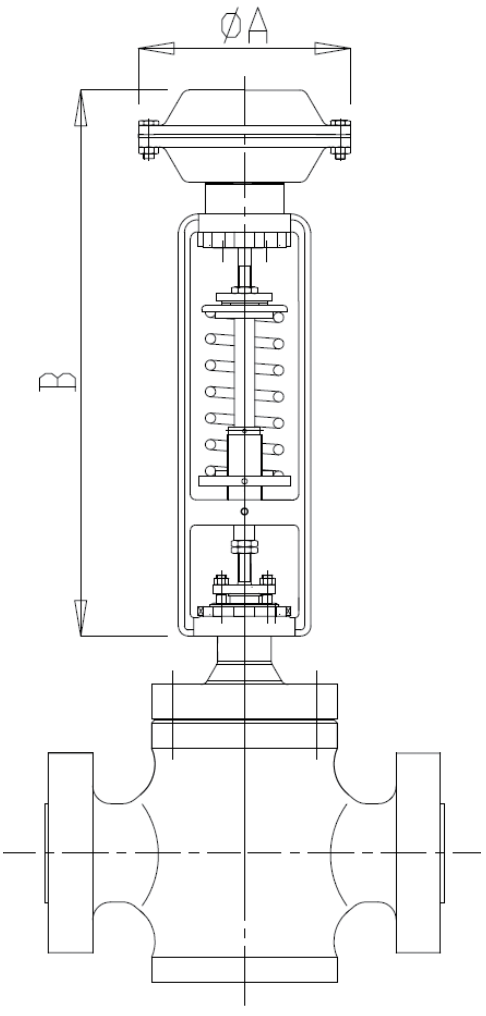
SRVE **Model**

SELF-REGULATING VALVES
–
EXTERNAL TAPPING

Self-regulating valves – external tapping are similar to standard valves (with same materials and type of trim) except for:
• plug profile and, consequently, valve rangeability;
• stroke;
• actuators.
In these actuators the control action is exerted by the same fluid whose pressure is to be controlled and which acts directly on one side of the actuator diaphragm while the reference pressure acts on the other.

ACTUATOR	ϕA [mm]	B [mm]
470	330	545
135	224	555
60	168	550
45	130	550

NOTES:
- Fluid temperature up to 210°C
- Control range: 0,8 to 500 psi
- Standard valve size up to 4"
- Standard valve rating up to ANSI 600
- Other sizes and ratings available on request



SEAT **Leakage**

Seat Leakage

SEAT **Leakage**

To provide control valves is necessary that the purchaser specifies the allowable seat leakage.
Seat Leakage is defined as "the quantity of test fluid passing through an assembled valve in the closed position under the test conditions".
The ANSI / FCI 70-2 standard establishes six leakage classes gradually more restrictive. Bellino S.r.l. provides valves in Class IV, V and VI.
The above-mentioned legislation provides a metal-to-metal sealing for Class IV and Class V, and a resilient seating for valves in Class VI.
Test medium defined by ANSI /FCI 70-2 is:

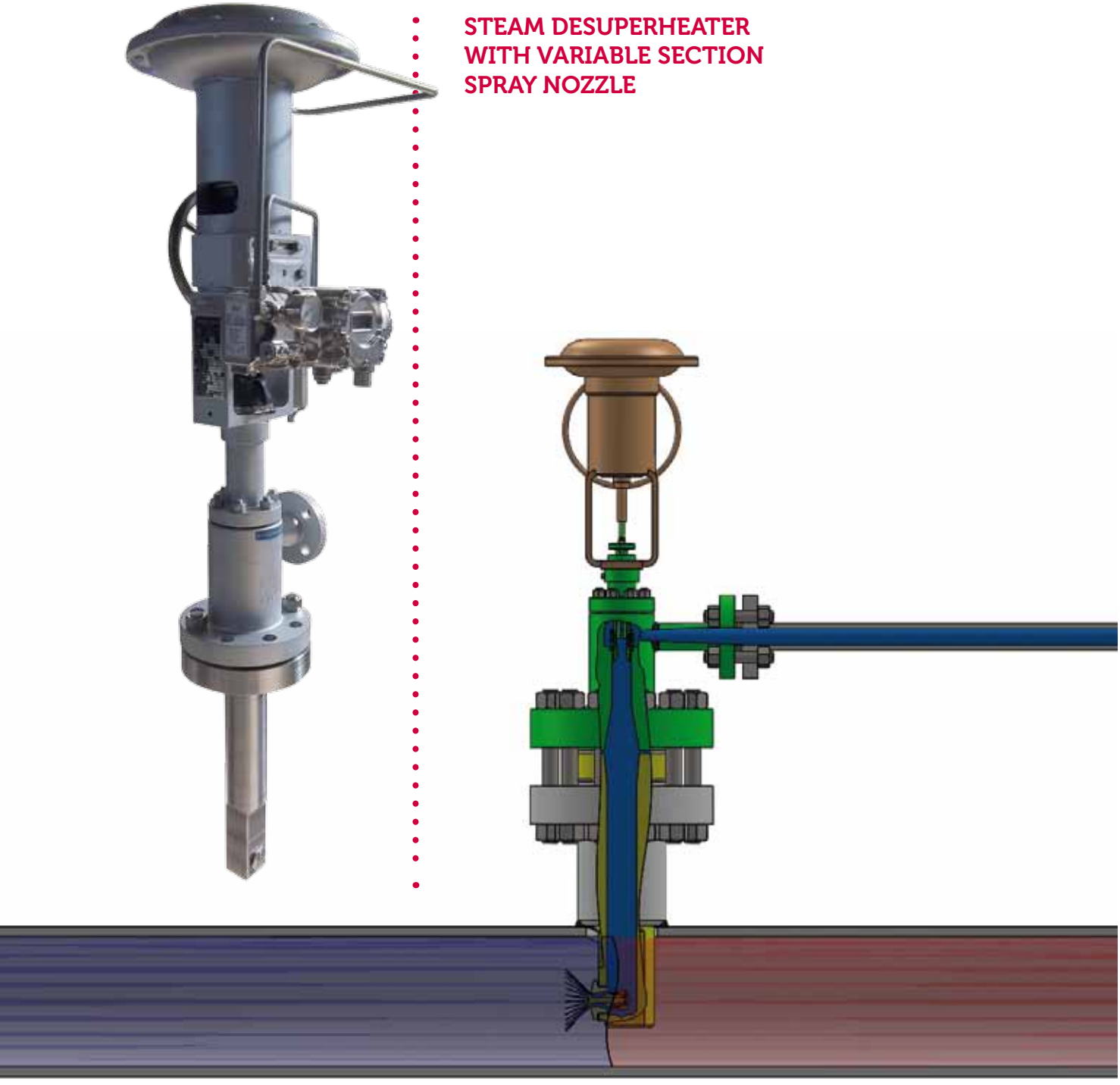
CLASS	TEST MEDIUM	PRESSURE
IV	clean air or water at 10-52°C	3 - 4 bar or the maximum operating differential pressure, wichever is less
V	clean water at 10-52°C	the maximum service pressure drop across the valve plug
	clean air or nitrogen at 10-52°C	3,5 bar
VI	clean air or nitrogen at 10-52°C	3,5 bar or the maximum rated differential pressure across the valve plug, wichever is less

Bellino

Desuperheater

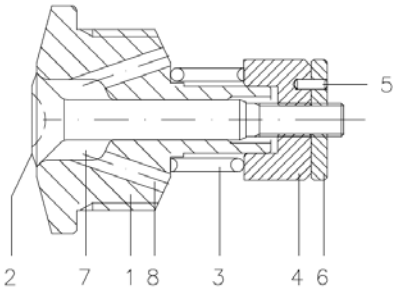
Desuperheater

STEAM DESUPERHEATER WITH VARIABLE SECTION SPRAY NOZZLE



General

The Bellino S.r.l. steam BPD probe desuperheater is used in desuperheater applications where small or medium spray water flows are required for cooling the steam.
The BPD is mounted into the steam line (see fig. above) with one or two water atomizing SP-nozzles. The nozzles are connected to a common spray water pipe. A liner can be installed in the BPD desuperheater to improve the system turndown or to protect the steam pipe.
The spray water flow is controlled by a separate water control valve.



Crass-section of SP nozzle

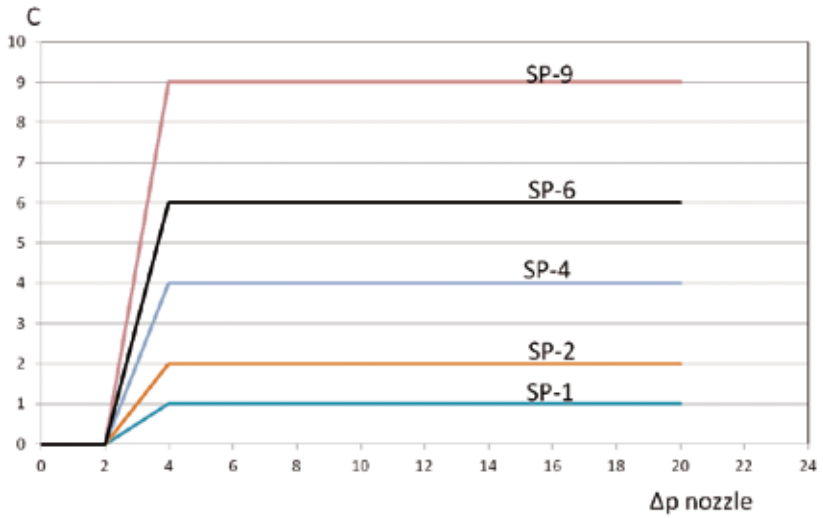
1	Body	**5**	Pin
2	Nozzle Plug	**6**	Lock nut
3	Spring	**7**	Ineer nozzle chamber
4	Adjistment Nut	**8**	Water channels

Operating principle of SP-nozzle

The SP-nozzle is a variable orifice mechanically atomizing device. The Sp-nozzle body (1) is screwed into the probe which houses the nozzle and distributes the water. The cooling water enters the inner nozzle chamber (7) of the SP-nozzle through the admission holes (8). In this chamber the water assumes a rotation around the control plug (2) thanks to the special design of the admission holes. The design of plug and seat is made to create maximum velocity of the water at nozzle edge point. The high velocity of the water at the moment that it leaves the nozzle guarantees a fine atomization which provides fast evaporation of the cooling water. In order to maintain specific pressure inside the inner nozzle chamber the plug is preloaded by a spring (3).

SP-NOZZLE - Technical data

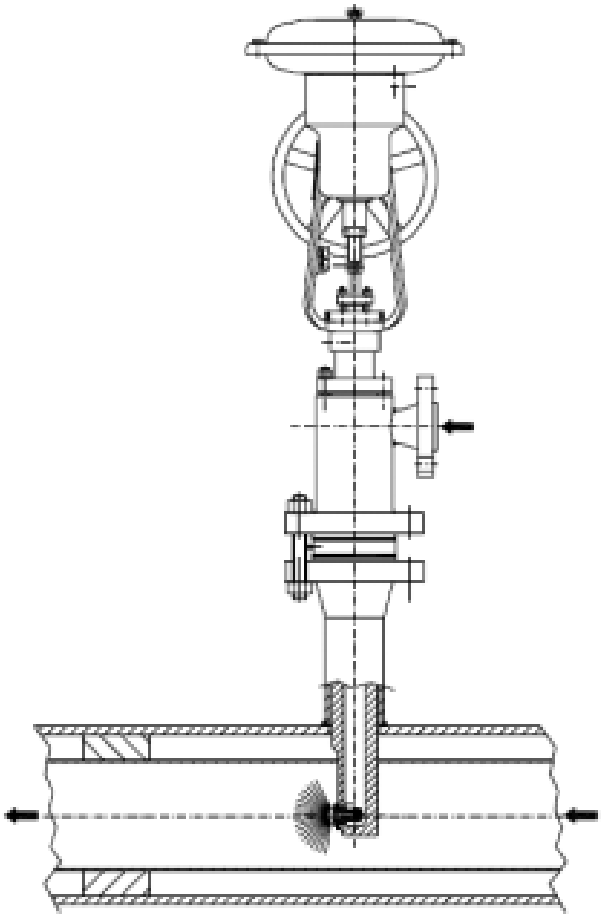
Model	SP				
Manufacturer	Bellino S.r.l., Italy				
Size of Nozzles (Max cv)	SP-1 -1	SP-2 -2	SP-4 -4	SP-6 -6	SP-9 -9
Differential press. water/steam	2 ÷ 20 bar				
Rangeability	Nozzle turndown	Limited only by turndown of selected water control valve			
	System turndown	Min steam velocity for temperature control: 10 m/sec			
Pressure Class	ANSI 150 ÷ 2500 DIN 16 ÷ 320				
Materials	Nozzle body	ASTM A182 F91 X19CrMoVNb11.1			
	Nozzle plug	ASTM A182 F91 X19CrMoVNb11.1 X20Cr13; SS420			
	Spring	Inconel 718 Inconel X750			
	Adjusting nut	X20Cr13; SS420			
Cooling water filter	It is recommended to use a filter Mesh 100 (100 holes/sq. inch) with maximum diameter				

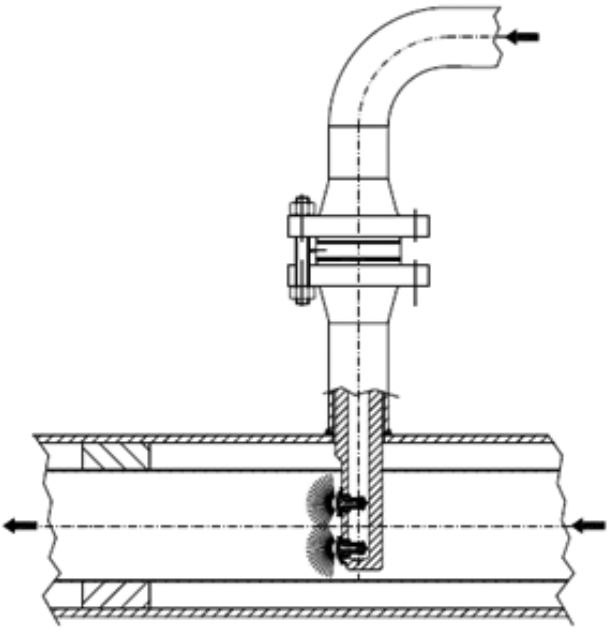


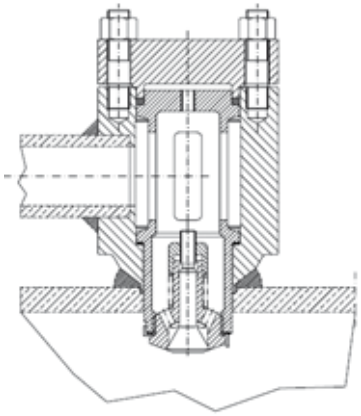
BPD PROBE DESUPERHEATER - Technical data

It consists of a tubular element on which one o two SP-nozzle are mounted. The desuperheater is fastened on a pipe nosepiece. The length is chosed in accordance to the steam pipe diameter, in order to place the center of the spraying area close to the pipe axis. The nozzle orientation, with regard to steam flow direction, is guaranteed by a pin.

Size	Water side: from 1-$^{1}/_{2}$" to 3" Steam side: from 3" to 6"
Connections	ANSI, UNI, DIN flanges and BW connection according to pipe size and schedule
Ratings	ANSI 150 ÷ 2500 DIN 16 ÷ 320
Steam Pipe	EN and ASTM material according to design pressure e temperature. 10CrMo910, A335 P22 or 13CrMo-44, A335 P12 or A335 P91, A182 F91
Water Pipe	EN and ASTM material according to design pressure e temperature. 13CrMo-44, A335 P12 or St35.8, A105.
Overall dimension	According to steam pipe, water pipe and customer design





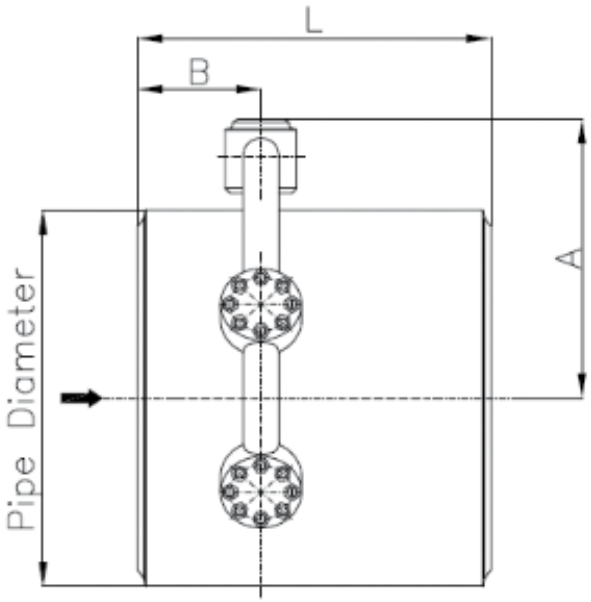


BRD RING TYPE DESUPERHEATER

The Bellino S.r.l. steam BRD ring desuperheater is used in desuperheater applications where large spray water flows are required for cooling the steam.
The BRD is part of the steam line with a number of water atomizing SP-nozzles mounted in a body and finally welded to the steam pipe. The nozzles are connected to a common spray water pipe.
The spray water flow is controlled by a separate water control valve. A liner can be installed in the BRD desuperheater to improve the system turn down or to protect the steam pipe.

Size	From 8” to 60”	
Connections	BW connection according to pipe size and schedule	
Ratings	ANSI 150 ÷ 2500 DIN 16 ÷ 320	
Materials	Steam Pipe	EN and ASTM material according to design pressure e temperature. 10CrMo910, A335 P22 or 13CrMo-44, A335 P12 or A335 P91, A182 F91
	Water Pipe	EN and ASTM material according to design pressure e temperature. 13CrMo-44, A335 P12 or St35.8, A105.

Typical dimensions:



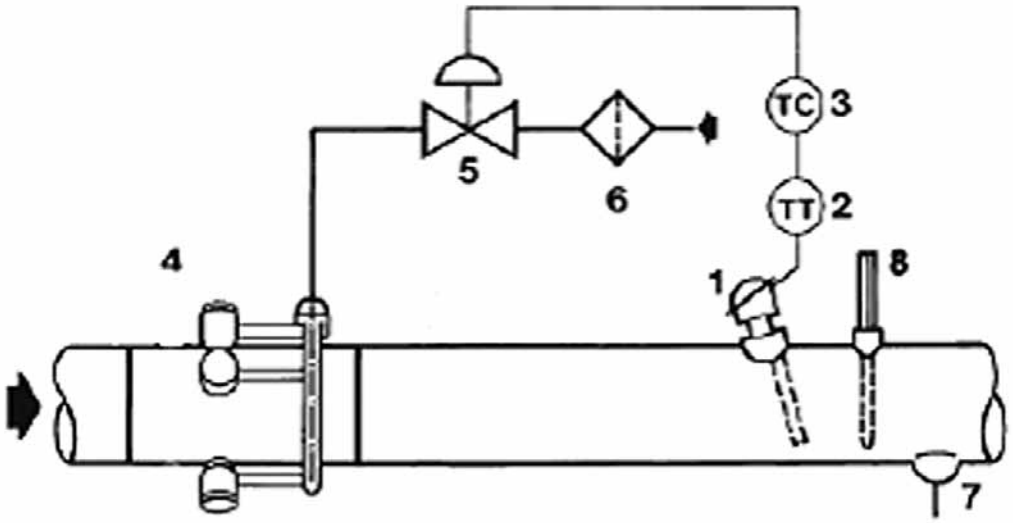
The dimensions are typical. The length and the water connections are dependent on the number of nozzles required.

Nominal Pipe Diameter inch	L mm	A mm	B mm
8	600	300	180
10	650	320	180
12	700	350	180
14	750	375	180
16	800	400	200
18	850	425	200
20	900	450	200
22	1000	475	200
24	1000	500	250
26	1000	525	250
28	1000	550	250
32	1100	600	350
36	1100	650	300
40	1100	720	300
44	1200	770	300
48	1200	830	300
52	1200	880	350
56	1300	930	350
60	1300	980	350

Installation of probe and ring type desuperheater

Select the location of the installation carefully. This is especially important when the steam velocity is low and the steam temperature is close to saturation. Straight pipe portions in upstream and downstream side are very important as well as the distance between the temperature sensor and the desuperheater.
Use the following rules:

1. Minimum straight pipe portion in upstream side of the desuperheater shall be 6 x pipe diameter and however not less than 4 m for pipe diameters equal - or small than - 28 inches.
2. Minimum straight pipe portion in downstream side: 6 m.
3. Minimum distance -if no protective sleeve for the thermowell is used-: 12 m.
4. Minimum distance -if a protective sleeve for the thermowell is used-: 8 m.
5. For final temperature of steam ≥ 15 °C above saturation is possible to use the thermowell or the temperature sensor. Saturated steam conditions cannot be controlled with downstream temperature measurement. Feed forward enthalpy control is recommended.



Typical installation

1 Temperature sensor
2 Temperature transmitter
3 Temperature controller
4 Desuperheater
5 Valve for water strainer
6 Cooling water strainer
7 Drain
8 Control thermometer

ON/OFF **Valves**

ON/OFF Valves

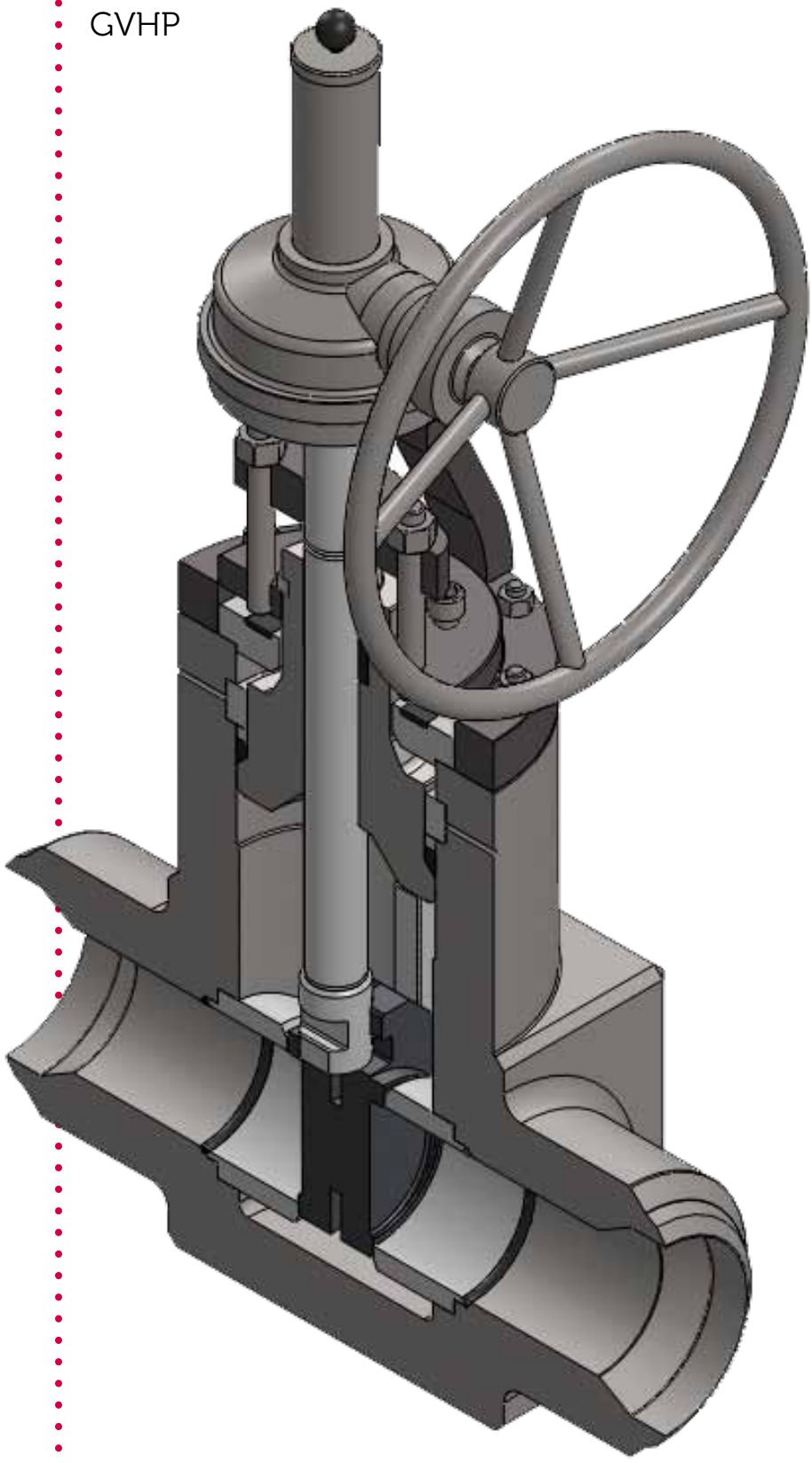
If there is no need of a fine regulation, is possible to use on/off valves. These valves are designed to work mainly in two operating conditions: fully opened position and fully closed position.
In this family is possible to find several kind of valves. Bellino S.r.l. mainly produces:

- Gate valves
- Globe valves
- Check valves

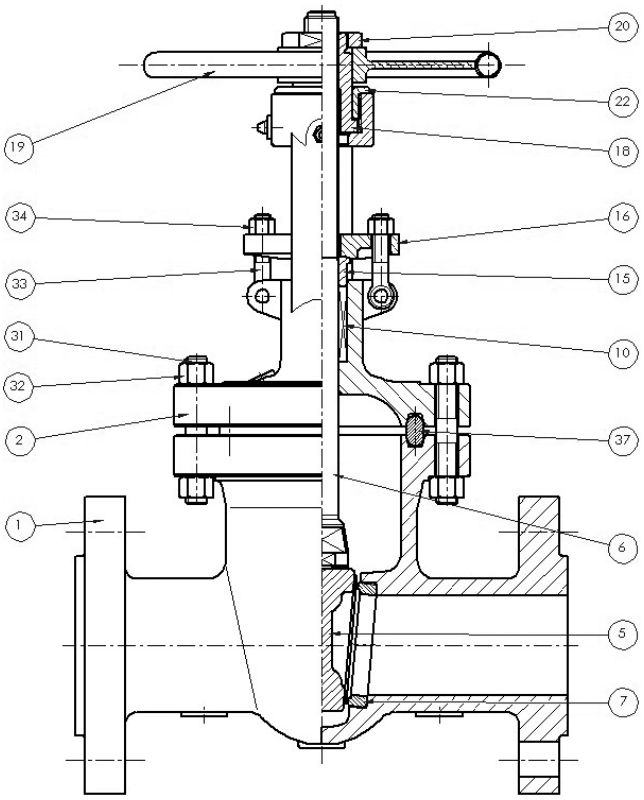
Gate **Valves**

Gate **Valves**

GVLP
&
GVHP



LOW PRESSURE GATE VALVE (ANSI 150-600)



GVLP

OS&Y, Rising Stem, Flexible or Solid Wedge,
Bolted Bonnet, Welded-in
or Threaded Seat Ring

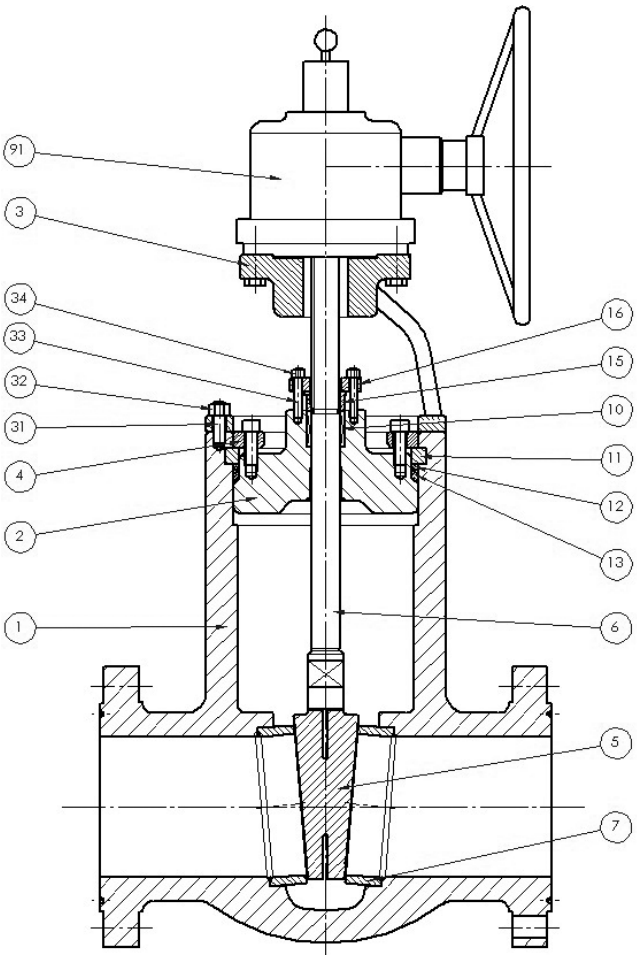
Basic Design	API 600
Face to Face / End to End Dimension	ANSI B 16.10
Flanged Ends	ANSI B 16.5 for NPS ≤ 24" ANSI B 16.47 for NPS > 24"
BW Ends	ANSI B 16.25
Tested to	API 598

HIGH PRESSURE GATE VALVE (ANSI 900-2500)

GVHP

OS&Y, Rising Stem, Flexible or Solid Wedge,
Pressure Seal Bonnet, Welded-in
or Threaded Seat Ring

Basic Design	API 600
Face to Face / End to End Dimension	ANSI B 16.10
Flanged Ends	ANSI B 16.5 for NPS ≤ 24" ANSI B 16.47 for NPS > 24"
BW Ends	ANSI B 16.25
Tested to	API 598



STANDARD MATERIALS FOR LP GATE VALVE		CONFIGURATIONS									
		CARBON STEEL		ALLOY STEEL				STAINLESS STEEL			
POS.	ITEM	1	2	3	4	5	6	7	8	9	10
1	BODY	A216 WCB	A352 LCB	A217 WC1	A217 WC6	A217 WC9	A217 WC5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
2	BONNET	A216 WCB	A352 LCB	A217 WC1	A217 WC6	A217 WC9	A217 WC5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
5	WEDGE	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE BELOW, CONFIGURATIONS FROM "A" TO "E"									
6	STEM										
7	SEAT										
10	PACKING	BRAIDED GRAPHITE+DIEFORMED GRAPHITE OR PTFE									
15	GLAND	SS410						SS304	SS316	SS304L	SS316L
16	GLAND FLANGE	A105						SS304	SS316	SS304L	SS316L
18	STEM NUT	SS410									
19	HANDWHEEL	CS						SS			
20	HANDWHEEL NUT	CS						SS			
22	YOKE NUT	CS						SS			
31	BODY-BONNET STUD	A193 B7	A320 L7	A193 B7	A193 B16	A193 B16	A193 B16	A193 B8	A193 B8	A193 B8	A193 B8
32	BODY-BONNET NUT	A194 2H	A194 4	A194 2H	A194 4	A194 4	A194 4	A194 8	A194 8	A194 8	A194 8
33	GLAND FLANGE STUD	A193 B7	A320 L7	A193 B7	A193 B7	A193 B7	A193 B7	A193 B8	A193 B8	A193 B8	A193 B8
34	GLAND FLANGE NUT	A194 2H	A194 4	A194 2H	A194 2H	A194 2H	A194 2H	A194 8	A194 8	A194 8	A194 8
37	GASKET	SS+GRAPHITE OR SS+PTFE									
91	GEAR	COMMERCIAL									

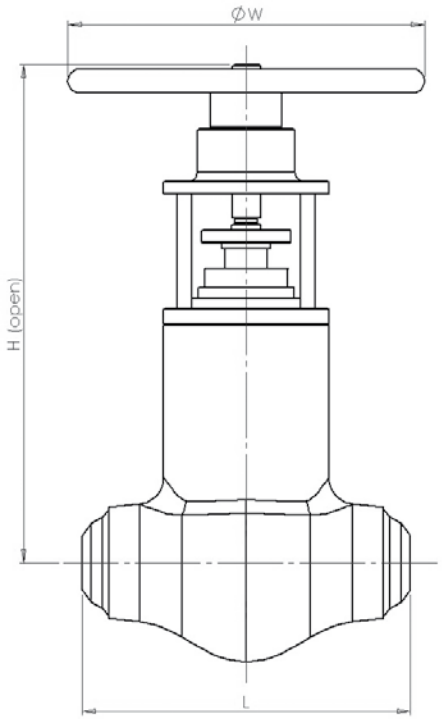
NOTES:
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST
- MATERIALS ACCORDING TO NACE AND OTHER STANDARDS ALSO AVAILABLE ON REQUEST
- MATERIALS CAN VARY DEPENDING ON THE PROJECT

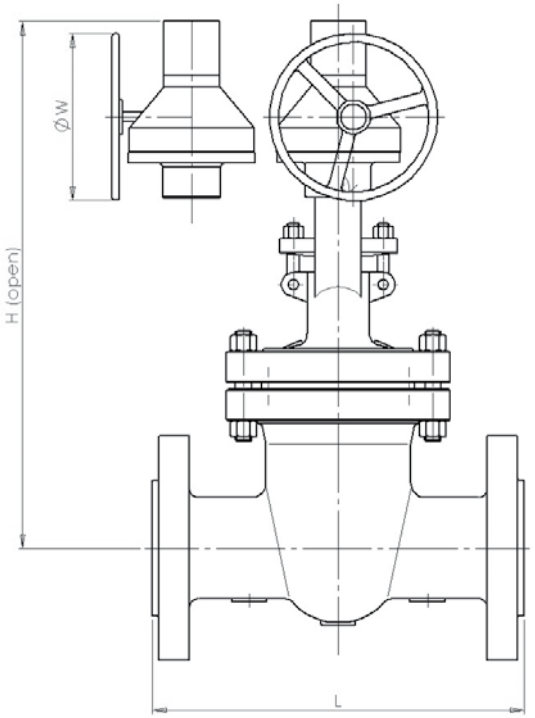
STANDARD MATERIALS FOR HP GATE VALVE		CONFIGURATIONS				
		CARBON STEEL	ALLOY STEEL		STAINLESS STEEL	
POS.	ITEM	1	2	3	4	5
1	BODY	A216 WCB	A217 WC6	A217 WC9	A351 CF8	A351 CF8M
2	BONNET	A216 WCB	A217 WC6	A217 WC9	A351 CF8	A351 CF8M
3	YOKE	A216 WCB	A217 WC6	A217 WC9	A351 CF8	A351 CF8M
4	FLANGE	A105			SS304	SS316
5	WEDGE	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE BELOW, CONFIGURATIONS FROM "A" TO "E"				
6	STEM					
7	SEAT					
8	RETAINER FLANGE	A105			SS304	SS316
10	PACKING	BRAIDED GRAPHITE+DIEFORMED GRAPHITE OR PTFE				
11	SPLIT RING	CS			SS	
12	SPACER RING	CS			SS	
13	SEAL RING	SS+GRAPHITE OR SS316L				
14	HALF RING	CS			SS	
15	GLAND	SS410			SS304	SS316
16	GLAND FLANGE	A105			SS304	SS316
18	STEM NUT	SS410				
19	HANDWHEEL	CS			SS	
20	HANDWHEEL NUT	CS			SS	
22	YOKE NUT	CS			SS	
31	BODY-BONNET STUD	A193 B7	A193 B7	A193 B7	A193 B8	A193 B8
32	BODY-BONNET NUT	A194 2H	A194 2H	A194 2H	A194 8	A194 8
33	GLAND FLANGE STUD	A193 B7	A193 B7	A193 B7	A193 B8	A193 B8
34	GLAND FLANGE NUT	A194 2H	A194 2H	A194 2H	A194 8	A194 8
37	GASKET	SS+GRAPHITE OR SS+PTFE				
91	GEAR	COMMERCIAL				

NOTES:
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST
- FORGED MATERIALS ALSO AVAILABLE ON REQUEST
- MATERIALS ACCORDING TO NACE AND OTHER STANDARDS ALSO AVAILABLE ON REQUEST
- MATERIALS CAN VARY DEPENDING ON THE PROJECT

TRIM MATERIALS		CONFIGURATIONS				
POS.	ITEM	A	B	C	D	E
5	WEDGE	SS410	SS304	SS316	MONEL	HASTELLOY B
6	STEM	SS410	SS304	SS316	MONEL	HASTELLOY B
7	SEAT	SS410	SS304	SS316	MONEL	HASTELLOY B

NOTES:
- STELLITE HAYNES GR. 6 CLADDING ON REQUEST
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST





OVERALL DIMENSIONS FOR MANUAL OPERATED VALVES

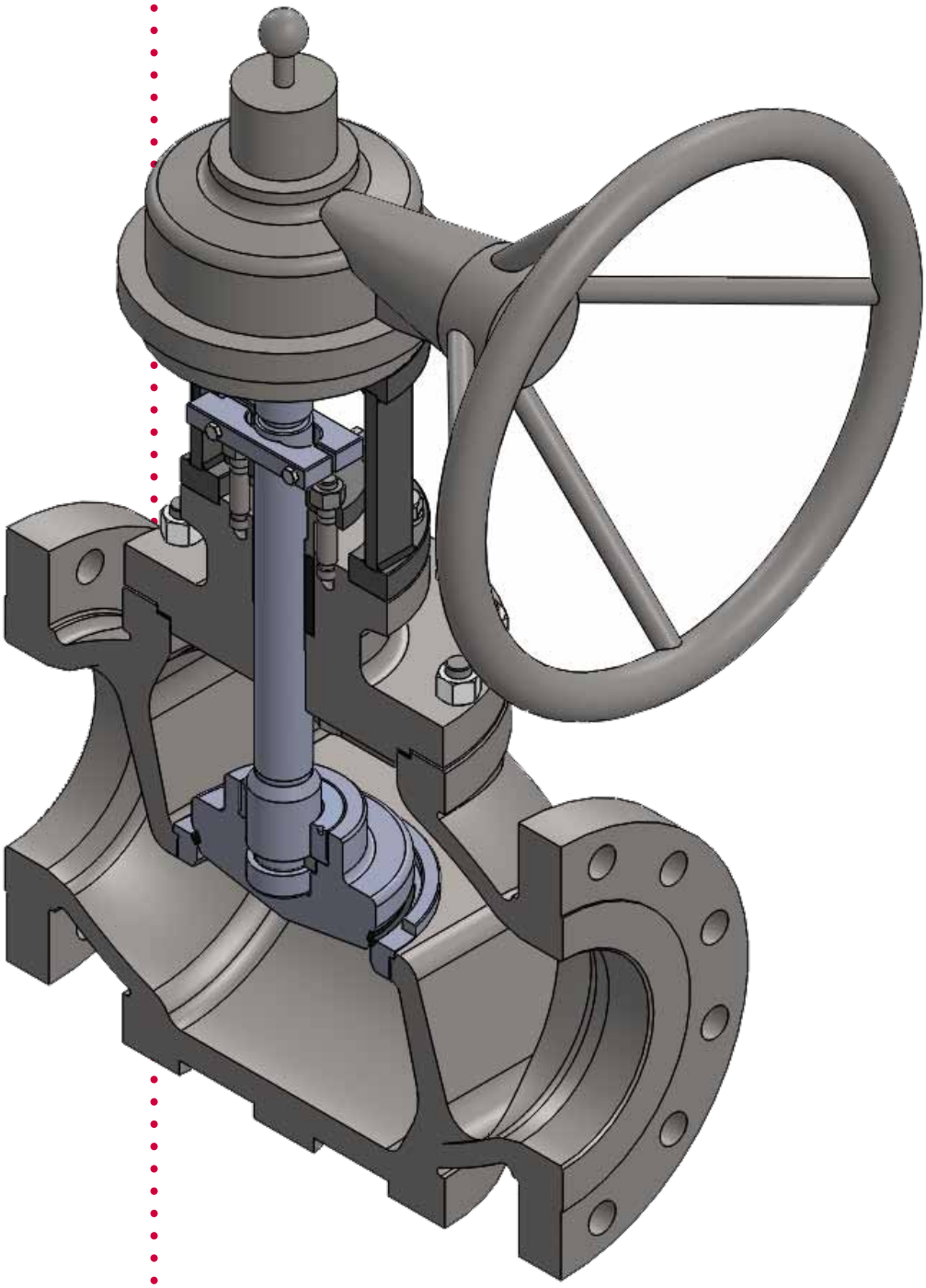
NPS / DN		Class	2" 50	2-1/2" 65	3" 80	4" 100	6" 150	8" 200	10" 250	12" 300	14" 350	16" 400
L	RF	150	178	190	203	229	267	292	330	356	381	406
		300	216	241	283	305	403	419	457	502	762	838
		600	292	330	356	432	559	660	787	838	889	991
		900	368	419	381	457	610	737	838	965	1029	1130
		1500	368	419	470	546	705	832	991	1130	1257	1384
		2500	451	508	578	673	917	1022	1270	1422	-	-
	BW	150	216	241	283	305	403	419	457	502	572	610
		300	216	241	283	305	403	419	457	502	762	838
		600	292	330	356	432	559	660	787	838	889	991
		900	216	254	305	355	508	660	787	914	991	1092
		1500	216	254	305	406	559	711	864	991	1067	1194
		2500	279	330	368	457	610	762	914	1041	1118	1245
	RTJ	150	191	203	216	241	279	305	343	368	394	419
		300	232	257	298	321	419	435	473	518	778	854
		600	295	333	359	435	562	664	791	841	892	994
		900	371	422	384	460	613	740	841	968	1038	1140
		1500	371	422	473	549	711	841	1000	1146	1276	1407
		2500	454	514	584	683	927	1038	1292	1444	-	-
H (Open)		150	410	475	535	615	810	990	1190	1405	1615	1815
		300	400	477	545	650	880	1040	1275	1440	1650	1840
		600	475	553	595	715	970	1125	1330	1520	1730	1835
		900	555	640	680	800	1085	1375	1495	1550	1960	2210
		1500	555	640	770	875	1095	1375	1655	1835	2150	2260
		2500	610	655	755	850	1255	1375	1685	1875	-	-
W		150	200	200	250	250	300	350	450	500	450	450
		300	200	250	250	300	350	450	500	550	450	450
		600	250	250	300	350	500	550	700	600	600	600
		900	300	350	350	400	550	450	600	600	600	750
		1500	300	450	450	550	300	450	600	600	750	750
		2500	500	500	600	600	450	450	600	750	-	-
Weight	RF	150	20	30	35	55	85	140	220	325	390	555
		300	30	40	55	85	140	240	335	540	700	1010
		600	41	60	90	130	255	415	625	785	1290	1820
		900	50	85	95	155	345	625	950	1295	1720	2380
		1500	60	95	130	185	395	795	1370	2120	2800	3870
		2500	125	175	195	230	720	1295	2250	3090	-	-
	BW	150	17	26	30	50	80	120	205	295	350	510
		300	25	35	50	70	120	195	270	435	595	850
		600	35	50	70	105	210	330	500	640	1120	1450
		900	40	65	85	120	270	525	760	1090	1450	2020
		1500	50	75	85	130	295	590	675	1615	2010	2815
		2500	90	135	145	160	500	895	1550	2330	-	-

NOTES:
- OTHER SIZES ALSO AVAILABLE ON REQUEST
- ELECTRICAL ACTUATOR ALSO AVAILABLE ON REQUEST

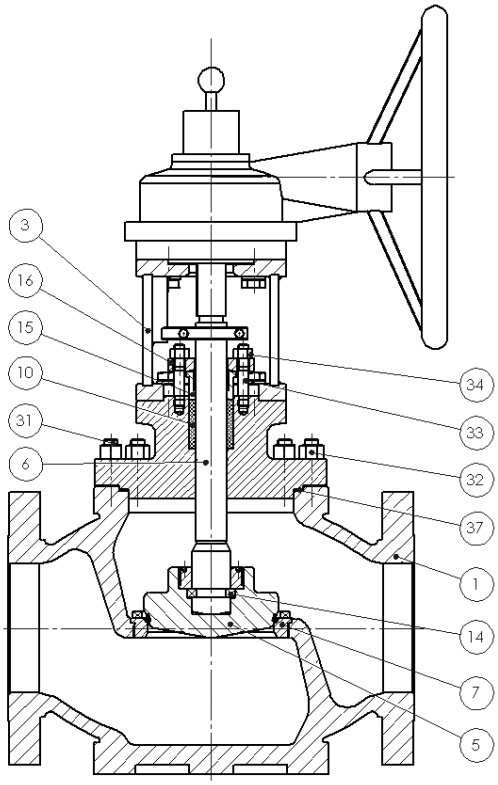
Globe **Valves**

Globe **Valves**

GLLP
&
GLHP



LOW PRESSURE GLOBE VALVE (ANSI 150-600)



GLLP

OS&Y, Rising Stem,
Bolted Bonnet, Threaded Seat Ring

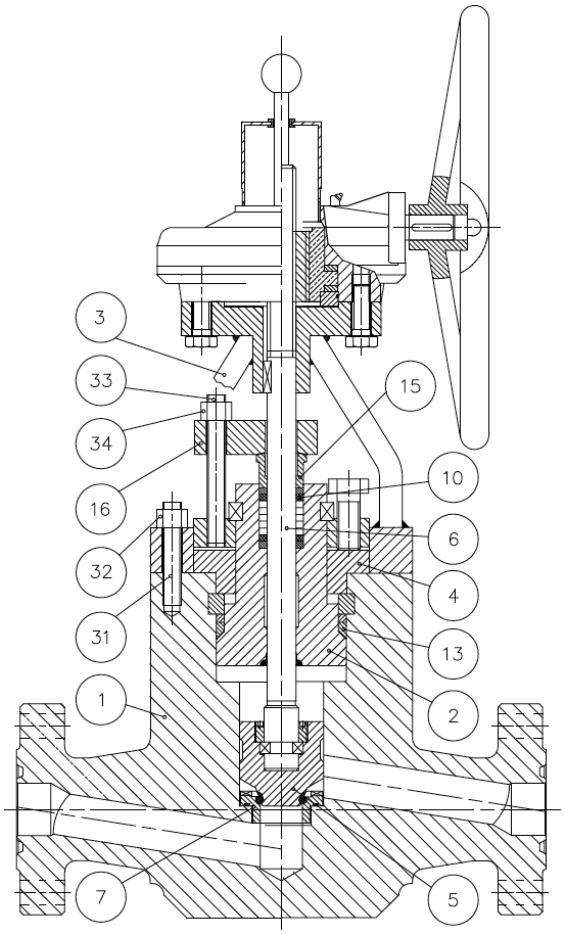
Basic Design	BS 1873
Face to Face / End to End Dimension	ANSI B 16.10
Flanged Ends	ANSI B 16.5 for NPS ≤ 24" ANSI B 16.47 for NPS > 24"
BW Ends	ANSI B 16.25
Tested to	API 598

HIGH PRESSURE GLOBE VALVE (ANSI 900-2500)

GLHP

OS&Y, Rising Stem,
Pressure Seal Bonnet, Threaded Seat Ring

Basic Design	BS 1873
Face to Face / End to End Dimension	ANSI B 16.10
Flanged Ends	ANSI B 16.5 for NPS ≤ 24" ANSI B 16.47 for NPS > 24"
BW Ends	ANSI B 16.25
Tested to	API 598



STANDARD MATERIALS FOR LP GLOBE VALVE		CONFIGURATIONS									
		CARBON STEEL		ALLOY STEEL				STAINLESS STEEL			
POS.	ITEM	1	2	3	4	5	6	7	8	9	10
1	BODY	A216 WCB	A352 LCB	A217 WC1	A217 WC6	A217 WC9	A217 WC5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
2	BONNET	A216 WCB	A352 LCB	A217 WC1	A217 WC6	A217 WC9	A217 WC5	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
5	PLUG	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE BELOW, CONFIGURATIONS FROM "A" TO "E"									
6	STEM										
7	SEAT										
10	PACKING	BRAIDED GRAPHITE+DIEFORMED GRAPHITE OR PTFE									
15	GLAND	SS410						SS304	SS316	SS304L	SS316L
16	GLAND FLANGE	A105						SS304	SS316	SS304L	SS316L
18	STEM NUT	SS410									
19	HANDWHEEL	CS						SS			
20	HANDWHEEL NUT	CS						SS			
22	YOKE NUT	CS						SS			
31	BODY-BONNET STUD	A193 B7	A320 L7	A193 B7	A193 B16	A193 B16	A193 B16	A193 B8	A193 B8	A193 B8	A193 B8
32	BODY-BONNET NUT	A194 2H	A194 4	A194 2H	A194 4	A194 4	A194 4	A194 8	A194 8	A194 8	A194 8
33	GLAND FLANGE STUD	A193 B7	A320 L7	A193 B7	A193 B7	A193 B7	A193 B7	A193 B8	A193 B8	A193 B8	A193 B8
34	GLAND FLANGE NUT	A194 2H	A194 4	A194 2H	A194 2H	A194 2H	A194 2H	A194 8	A194 8	A194 8	A194 8
37	GASKET	SS+GRAPHITE OR SS+PTFE									
91	GEAR	COMMERCIAL									

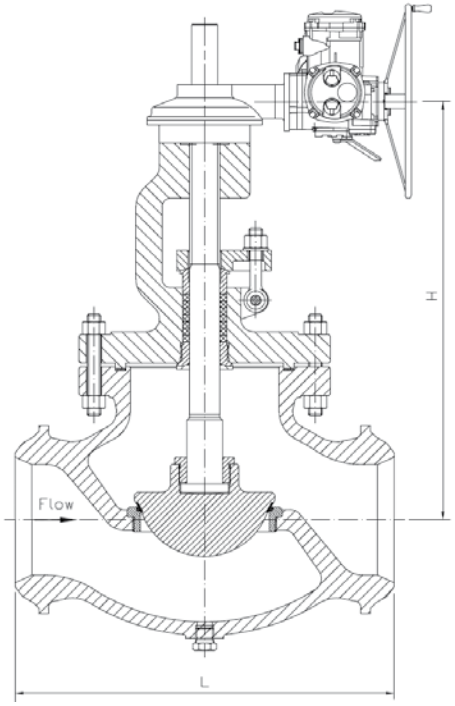
NOTES:
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST
- MATERIALS ACCORDING TO NACE AND OTHER STANDARDS ALSO AVAILABLE ON REQUEST
- MATERIALS CAN VARY DEPENDING ON THE PROJECT

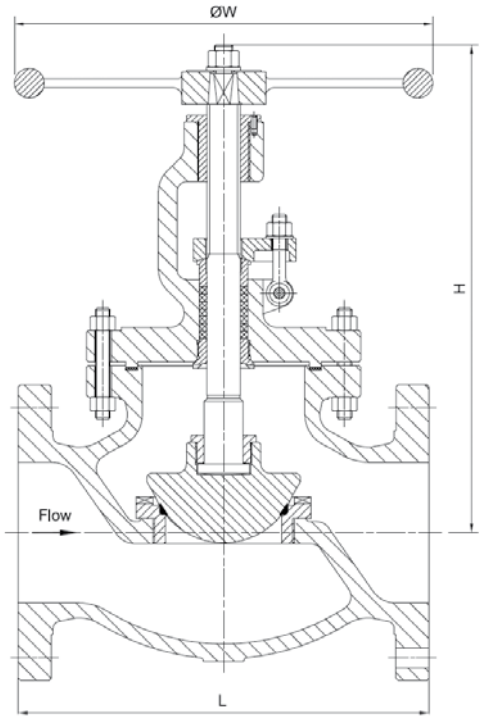
STANDARD MATERIALS FOR HP GLOBE VALVE		CONFIGURATIONS				
		CARBON STEEL	ALLOY STEEL		STAINLESS STEEL	
POS.	ITEM	1	2	3	4	5
1	BODY	A216 WCB	A217 WC6	A217 WC9	A351 CF8	A351 CF8M
2	BONNET	A216 WCB	A217 WC6	A217 WC9	A351 CF8	A351 CF8M
3	YOKE	A216 WCB	A217 WC6	A217 WC9	A351 CF8	A351 CF8M
4	FLANGE	A105			SS304	SS316
5	PLUG	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE BELOW, CONFIGURATIONS FROM "A" TO "E"				
6	STEM					
7	SEAT					
8	RETAINER FLANGE	A105			SS304	SS316
10	PACKING	BRAIDED GRAPHITE+DIEFORMED GRAPHITE OR PTFE				
11	SPLIT RING	CS			SS	
12	SPACER RING	CS			SS	
13	SEAL RING	SS+GRAPHITE OR SS				
14	HALF RING	CS			SS	
15	GLAND	SS410			SS304	SS316
16	GLAND FLANGE	A105			SS304	SS316
18	STEM NUT	SS410				
19	HANDWHEEL	CS			SS	
20	HANDWHEEL NUT	CS			SS	
22	YOKE NUT	CS			SS	
31	BODY-BONNET STUD	A193 B7	A193 B7	A193 B7	A193 B8	A193 B8
32	BODY-BONNET NUT	A194 2H	A194 2H	A194 2H	A194 8	A194 8
33	GLAND FLANGE STUD	A193 B7	A193 B7	A193 B7	A193 B8	A193 B8
34	GLAND FLANGE NUT	A194 2H	A194 2H	A194 2H	A194 8	A194 8
37	GASKET	SS+GRAPHITE OR SS+PTFE				
91	GEAR	COMMERCIAL				

NOTES:
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST
- FORGED MATERIALS ALSO AVAILABLE ON REQUEST
- MATERIALS ACCORDING TO NACE AND OTHER STANDARDS ALSO AVAILABLE ON REQUEST
- MATERIALS CAN VARY DEPENDING ON THE PROJECT

TRIM MATERIALS		CONFIGURATIONS				
POS.	ITEM	A	B	C	D	E
5	PLUG	SS410	SS304	SS316	MONEL	HASTELLOY B
6	STEM	SS410	SS304	SS316	MONEL	HASTELLOY B
7	SEAT	SS410	SS304	SS316	MONEL	HASTELLOY B

NOTES:
- STELLITE HAYNES GR. 6 CLADDING ON REQUEST
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST





OVERALL DIMENSIONS FOR MANUAL OPERATED VALVES

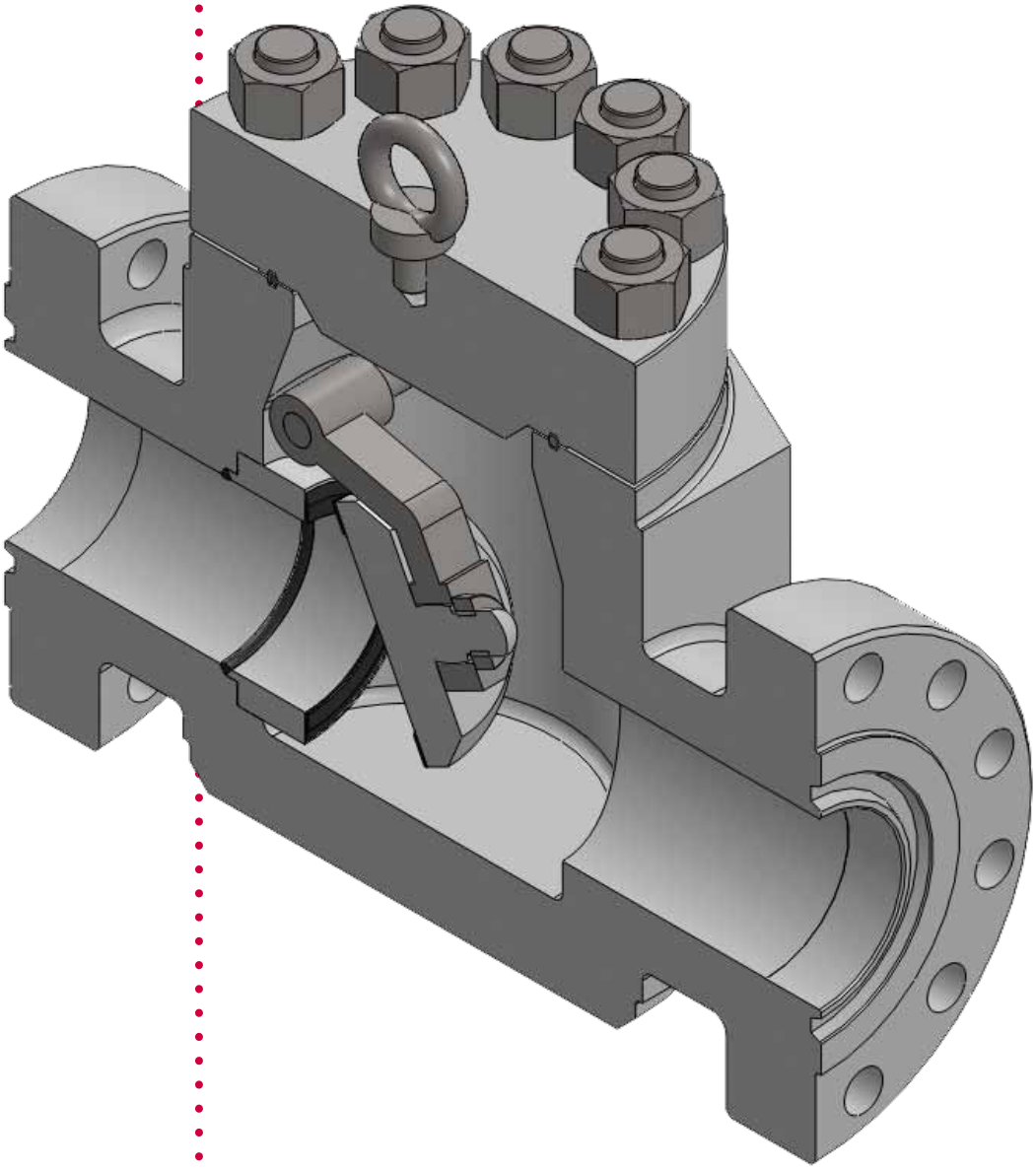
NPS / DN		Class	2" / 50	2-1/2" / 65	3" / 80	4" / 100	6" / 150	8" / 200	10" / 250	12" / 300	14" / 350	16" / 400
L	RF/BW	150	203	216	241	292	406	495	622	698	787	914
		300	267	292	318	356	444	559	622	711	838	864
		600	292	330	356	432	559	660	787	838	-	-
		900	368	419	381	457	610	737	-	-	-	-
		1500	368	419	470	546	705	832	-	-	-	-
		2500	451	508	578	673	914	1022	-	-	-	-
	RTJ	150	216	229	254	305	419	508	635	711	800	927
		300	283	308	334	372	460	575	638	727	854	880
		600	295	333	359	435	562	663	790	841	-	-
		900	371	422	384	460	613	740	-	-	-	-
		1500	371	422	473	549	711	841	-	-	-	-
		2500	454	514	584	683	927	1038	-	-	-	-
H (Open)		150	340	375	420	480	525	590	740	865	950	995
		300	355	390	425	500	675	915	950	1035	1130	1310
		600	400	450	500	600	795	1015	1180	1400	-	-
		900	620	645	725	850	1225	1350	-	-	-	-
		1500	620	645	835	860	1230	1800	-	-	-	-
		2500	616	785	800	1300	1370	2160	-	-	-	-
W		150	200	250	300	300	350	400	600	650	600	600
		300	200	300	300	350	400	600	700	600	600	600
		600	250	300	350	400	600	600	700	600	-	-
		900	350	350	450	500	600	600	-	-	-	-
		1500	350	350	500	550	600	600	-	-	-	-
		2500	400	500	550	600	600	600	-	-	-	-
Weight	RF	150	20	30	35	60	100	160	255	500	550	725
		300	25	40	50	75	170	285	485	725	1125	1650
		600	40	50	80	120	290	545	1000	1350	-	-
		900	85	100	110	180	445	1050	-	-	-	-
		1500	85	120	145	240	920	1770	-	-	-	-
		2500	110	165	225	525	1315	2520	-	-	-	-
	BW	150	17	20	30	50	90	140	220	360	490	650
		300	20	30	40	60	140	240	420	635	975	1450
		600	30	40	65	90	230	460	760	1050	-	-
		900	60	75	85	140	380	945	-	-	-	-
		1500	60	85	100	170	780	1500	-	-	-	-
		2500	75	120	150	370	975	2100	-	-	-	-

NOTES:
- OTHER SIZES ALSO AVAILABLE ON REQUEST
- ELECTRIC, ELECTROHYDRAULIC ACTUATOR ALSO AVAILABLE ON REQUEST

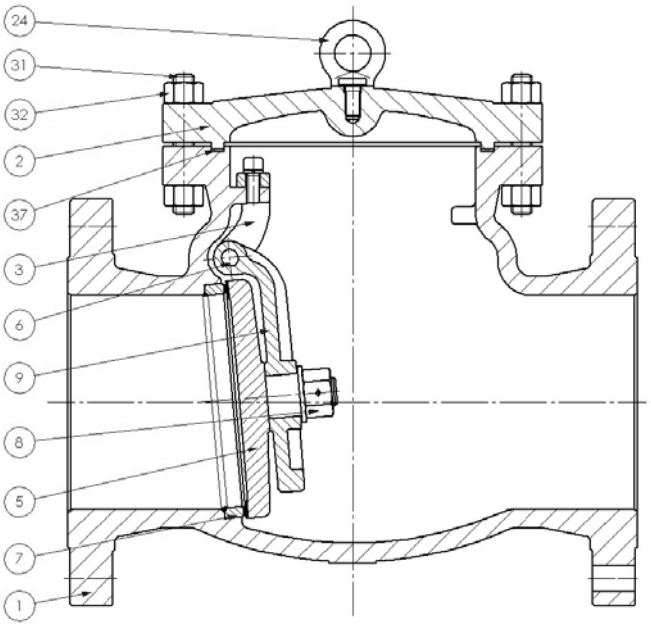
Check **Valves**

Check **Valves**

SCLP
&
SCHP



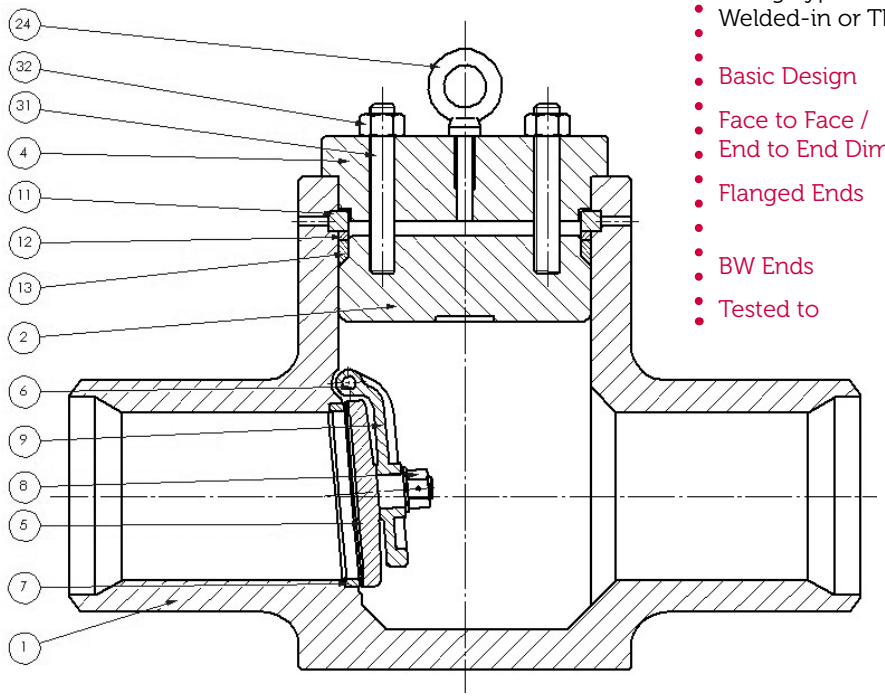
LOW PRESSURE SWING CHECK VALVE (ANSI 150-600)



SCLP

Swing Type Disc, Bolted Cover,
Welded-in or Threaded Seat Ring

Basic Design	BS 1868
Face to Face / End to End Dimension	ANSI B 16.10
Flanged Ends	ANSI B 16.5 for NPS ≤ 24" ANSI B 16.47 for NPS > 24"
BW Ends	ANSI B 16.25
Tested to	API 598



SCHP

Swing Type Disc, Pressure Seal Cover,
Welded-in or Threaded Seat Ring

Basic Design	ANSI B 16.34
Face to Face / End to End Dimension	ANSI B 16.10
Flanged Ends	ANSI B 16.5 for NPS ≤ 24" ANSI B 16.47 for NPS > 24"
BW Ends	ANSI B 16.25
Tested to	API 598

STANDARD MATERIALS FOR LP SWING CHECK VALVE		CONFIGURATIONS								
		CARBON STEEL		ALLOY STEEL			STAINLESS STEEL			
POS.	ITEM	1	2	3	4	5	6	7	8	9
1	BODY	A216 WCB	A352 LCB	A217 WC1	A217 WC6	A217 WC9	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
2	BONNET	A216 WCB	A352 LCB	A217 WC1	A217 WC6	A217 WC9	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
3	YOKE	A216 WCB	A352 LCB	A217 WC1	A217 WC6	A217 WC9	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
5	DISC	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE BELOW, CONFIGURATIONS FROM "A" TO "E"								
6	STEM									
7	SEAT									
8	DISC NUT	SS410					SS316			
9	HINGE	A216 WCB	A352 LCB	A217 WC1	A217 WC6	A217 WC9	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
24	EYEBOLT	CS								
31	BODY-BONNET STUD	A193 B7	A320 L7	A193 B7	A193 B16		A193 B8			
32	BODY-BONNET NUT	A194 2H	A194 4	A194 2H	A194 4		A194 8			
37	GASKET	SS+GRAPHITE OR SS+PTFE								

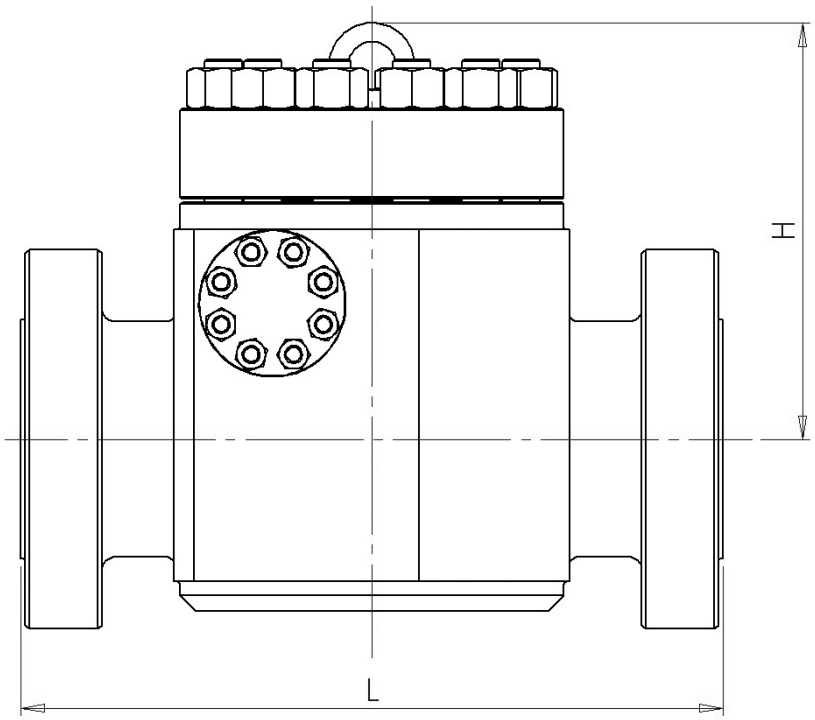
NOTES:
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST
- MATERIALS ACCORDING TO NACE AND OTHER STANDARDS ALSO AVAILABLE ON REQUEST
- MATERIALS CAN VARY DEPENDING ON THE PROJECT

STANDARD MATERIALS FOR HP SWING CHECK VALVE		CONFIGURATIONS				
		CARBON STEEL	ALLOY STEEL		STAINLESS STEEL	
POS.	ITEM	1	2	3	4	5
1	BODY	A216 WCB	A217 WC6	A217 WC9	A351 CF8	A351 CF8M
2	BONNET	A216 WCB	A217 WC6	A217 WC9	A351 CF8	A351 CF8M
3	YOKE	A216 WCB	A217 WC6	A217 WC9	A351 CF8	A351 CF8M
4	FLANGE	CS			SS	
5	DISC	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE BELOW, CONFIGURATIONS FROM "A" TO "E"				
6	HINGE PIN					
7	SEAT					
8	DISC NUT	SS410			SS304	SS316
9	HINGE	A216 WCB	A217 WC6	A217 WC9	A351 CF8	A351 CF8M
11	SPLIT RING	CS			SS	
12	SPACER RING	CS			SS	
13	SEAL RING	SS+GRAPHITE OR SS316L				
24	EYEBOLT	CS				
31	BODY-BONNET STUD	A193 B7			A193 B8	
32	BODY-BONNET NUT	A194 2H			A194 8	

NOTES:
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST
- FORGED MATERIALS ALSO AVAILABLE ON REQUEST
- MATERIALS ACCORDING TO NACE AND OTHER STANDARDS ALSO AVAILABLE ON REQUEST
- MATERIALS CAN VARY DEPENDING ON THE PROJECT

TRIM MATERIALS		CONFIGURATIONS				
POS.	ITEM	A	B	C	D	E
5	WEDGE	SS410	SS304	SS316	MONEL	HASTELLOY B
6	HINGE PIN	SS410	SS304	SS316	MONEL	HASTELLOY B
7	SEAT	SS410	SS304	SS316	MONEL	HASTELLOY B

NOTES:
- STELLITE HAYNES GR. 6 CLADDING ON REQUEST
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST



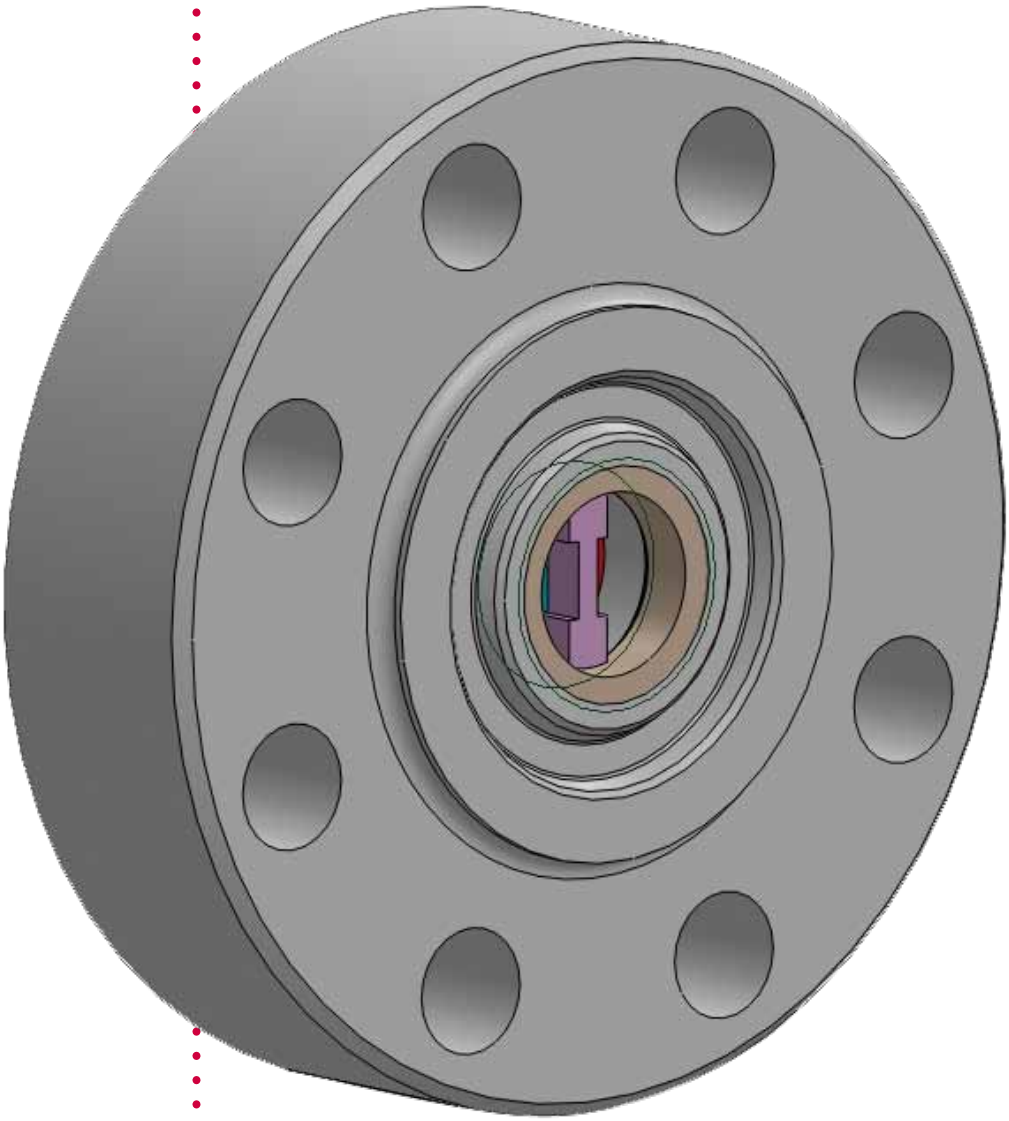
OVERALL DIMENSIONS

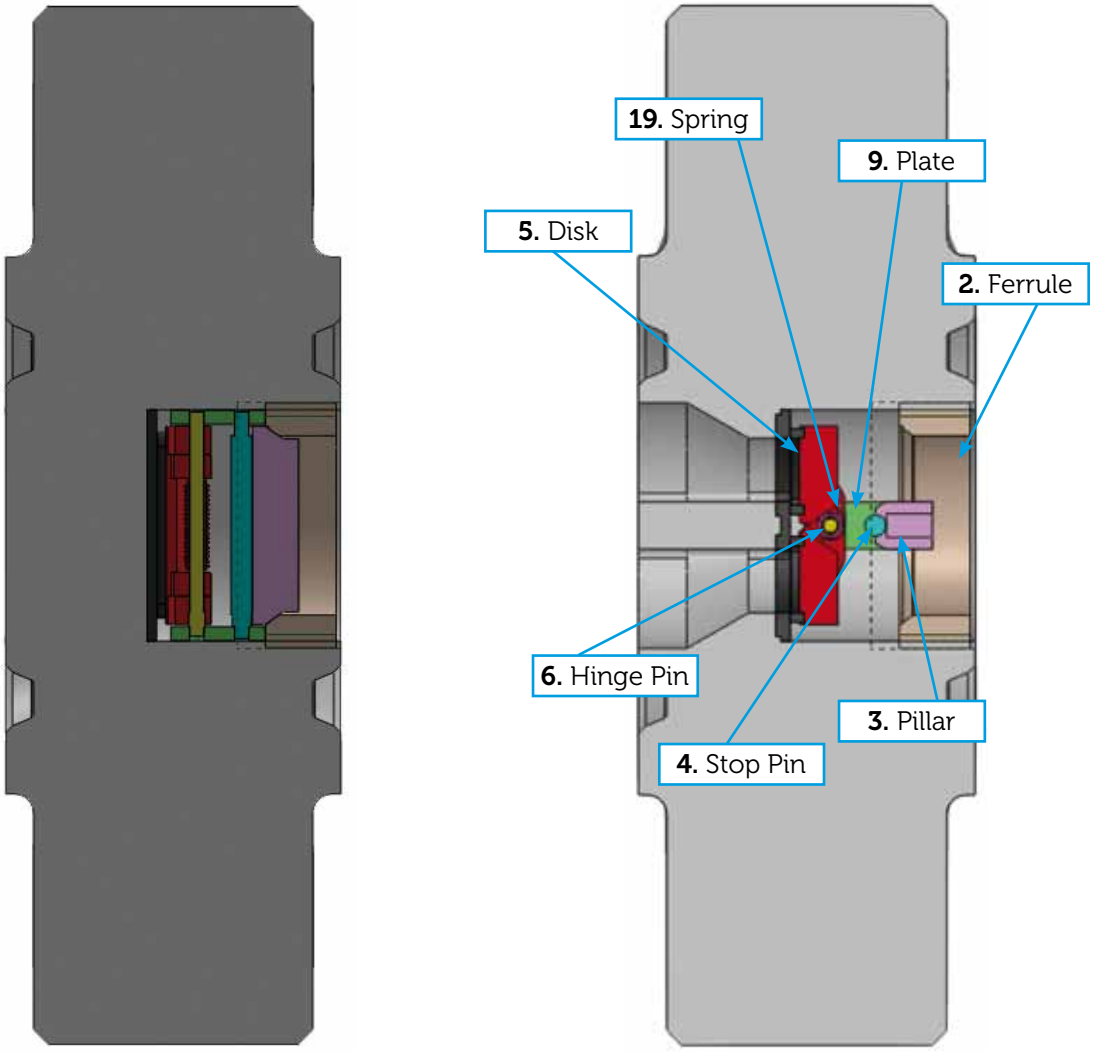
NPS / DN		Class	2" / 50	2-1/2" / 65	3" / 80	4" / 100	6" / 150	8" / 200	10" / 250	12" / 300	14" / 350	16" / 400
L	RF	150	203	216	241	292	356	495	622	698	787	864
		300	267	292	318	356	400	533	622	711	838	864
		600	292	330	356	432	559	660	787	838	889	991
		900	368	419	381	457	610	737	838	965	1029	1130
		1500	368	419	470	546	705	832	991	1130	1257	1384
		2500	451	508	578	673	914	1022	1270	1422	-	-
	BW	150	203	216	241	292	356	495	622	698	787	864
		300	267	292	318	356	400	533	622	711	838	864
		600	292	330	356	432	559	660	787	838	889	991
		900	216	254	305	355	508	660	787	914	991	1092
		1500	216	254	305	406	559	711	864	991	1067	1194
		2500	279	330	368	457	610	762	914	1041	-	-
	RTJ	150	216	229	254	305	368	508	635	711	800	876
		300	283	308	333	371	416	549	638	727	854	879
		600	295	333	359	435	562	664	791	841	892	994
		900	371	422	384	460	613	740	841	968	1038	1140
		1500	371	422	473	549	711	841	1000	1146	1276	1407
		2500	454	514	584	683	927	1038	1292	1445	-	-
H		150	150	170	180	210	275	340	355	410	475	555
		300	180	185	210	270	345	370	385	440	520	555
		600	200	210	235	285	365	440	490	530	575	660
		900	190	210	210	220	370	515	615	705	740	760
		1500	265	265	270	370	475	570	630	770	795	825
		2500	280	305	310	370	485	545	710	800	-	-
Weight	RF	150	17	21	30	45	75	110	180	285	375	570
		300	22	35	45	65	85	215	385	450	680	840
		600	37	50	70	115	230	420	675	875	945	1220
		900	50	65	65	125	260	515	940	1450	1725	1835
		1500	60	75	75	130	335	590	1025	1530	1855	2060
		2500	90	115	135	215	550	900	1600	2300	-	-
	BW	150	13	17	25	37	62	98	160	240	325	485
		300	17	25	35	45	65	170	275	375	560	710
		600	30	40	60	85	195	365	545	770	775	1015
		900	35	48	45	80	180	385	705	1130	1355	1465
		1500	45	55	52	90	230	460	715	1150	1390	1545
		2500	70	90	95	160	385	640	1200	1725	-	-

NOTES:
- OTHER SIZES ALSO AVAILABLE ON REQUEST

Check **Valves**

DPSA





DPSA

Spring Actuated Discs, Integral Seat Ring

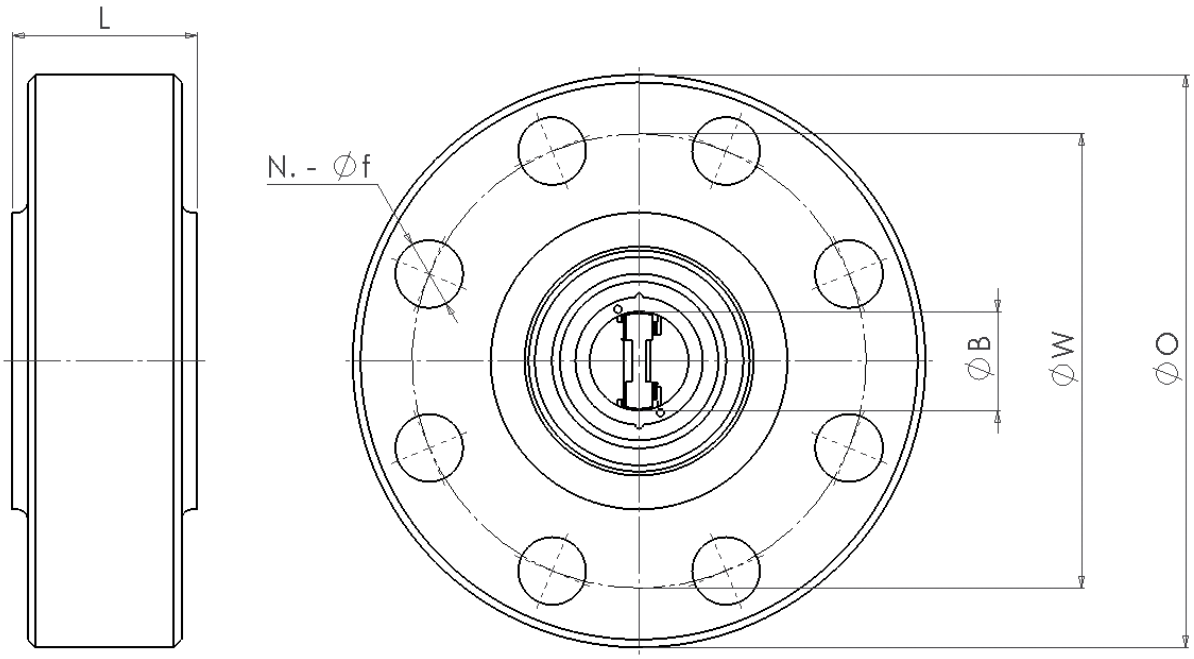
Basic Design	API 594
Face to Face / End to End Dimension	API 594
Flanged Ends	ANSI B 16.5 for NPS ≤ 24" ANSI B 16.47 for NPS > 24"
BW Ends	ANSI B 16.25
Tested to	API 598

STANDARD MATERIALS FOR SA DUAL PLATE VALVE		CONFIGURATIONS								
		CARBON STEEL		ALLOY STEEL			STAINLESS STEEL			
POS.	ITEM	1	2	3	4	5	6	7	8	9
1	BODY	A216 WCB	A352 LCB	A217 WC1	A217 WC6	A217 WC9	A351 CF8	A351 CF8M	A351 CF3	A351 CF3M
2	FERRULE	TO CHOOSE ACCORDING TO DATA PROCESS AND TRIM MATERIALS TABLE BELOW, CONFIGURATIONS FROM "A" TO "E"								
3	PILLAR									
4	STOP PIN									
5	DISC									
6	HINGE PIN									
9	PLATE									
19	SPRING									

NOTES:
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST
- MATERIALS ACCORDING TO NACE AND OTHER STANDARDS ALSO AVAILABLE ON REQUEST
- MATERIALS CAN VARY DEPENDING ON THE PROJECT

TRIM MATERIALS		CONFIGURATIONS				
POS.	ITEM	A	B	C	D	E
2	FERRULE	SS410	SS304	SS316	MONEL	INCONEL625
3	PILLAR	SS410	SS304	SS316	MONEL	INCONEL625
4	STOP PIN	SS410	SS304	SS316	MONEL	INCONEL625
5	DISC	SS410	SS304	SS316	MONEL	INCONEL625
6	HINGE PIN	SS410	SS304	SS316	MONEL	INCONEL625
9	PLATE	SS410	SS304	SS316	MONEL	INCONEL625
19	SPRING	SS316			INCONEL X-750	

NOTES:
- STELLITE CLADDING ON REQUEST
- OTHER MATERIALS ALSO AVAILABLE ON REQUEST



OVERALL DIMENSIONS

NPS DN	Class	2" 50	2-1/2" 65	3" 80	4" 100	6" 150	8" 200	10" 250	12" 300	14" 350	16" 400
B	150	50,8	63,5	76,2	101,6	152,4	203,2	254,0	304,8	336,6	387,4
	300	50,8	63,5	76,2	101,6	152,4	203,2	254,0	304,8	336,6	387,4
	600	50,8	63,5	76,2	101,6	152,4	199,9	247,7	298,5	326,9	374,7
	900	47,5	57,2	72,9	98,3	146,1	190,5	238,0	282,4	311,2	355,6
	1500	47,5	57,2	69,9	91,9	136,4	177,8	222,3	263,4	288,8	330,2
	2500	38,1	47,5	57,2	72,9	111,0	146,1	184,2	218,9	-	-
W	150	120,7	139,7	152,4	190,5	241,3	298,5	362,0	431,8	476,3	539,8
	300	127,0	149,2	168,3	200,0	269,9	330,2	387,4	450,8	514,4	571,5
	600	127,0	149,2	168,3	215,9	292,1	249,2	431,8	489,0	527,0	603,2
	900	165,1	190,5	190,5	235,0	317,5	393,7	469,9	533,4	558,8	616,0
	1500	165,1	190,5	203,2	241,3	317,5	393,7	482,6	571,5	635,0	704,8
	2500	171,4	196,8	228,6	273,0	368,3	438,2	539,8	619,1	-	-
O	150	150	180	190	230	280	345	405	485	535	595
	300	165	190	210	255	320	380	445	520	585	650
	600	165	190	210	275	355	420	510	560	605	685
	900	215	245	240	290	380	470	545	610	640	705
	1500	215	245	265	310	395	485	585	675	750	825
	2500	235	265	305	355	485	550	675	760	-	-
N / f	150	4 x 3/4"	4 x 3/4"	4 x 3/4"	8 x 3/4"	8 x 7/8"	8 x 7/8"	12 x 1"	12 x 1"	12 x 1-1/8"	16 x 1-1/8"
	300	8 x 3/4"	8 x 7/8"	8 x 7/8"	8 x 7/8"	12 x 7/8"	12 x 1"	16 x 1-1/8"	16 x 1-1/4"	20 x 1-1/4"	20 x 1-3/8"
	600	8 x 3/4"	8 x 7/8"	8 x 7/8"	8 x 1"	12 x 1-1/8"	12 x 1-1/4"	16 x 1-3/8"	20 x 1-3/8"	20 x 1-1/2"	20 x 1-5/8"
	900	8 x 1"	8 x 1-1/8"	8 x 1"	8 x 1-1/4"	12 x 1-1/4"	12 x 1-1/2"	16 x 1-1/2"	20 x 1-1/2"	20 x 1-5/8"	20 x 1-3/4"
	1500	8 x 1"	8 x 1-1/8"	8 x 1-1/4"	8 x 1-3/8"	12 x 1-1/2"	12 x 1-3/4"	12 x 2"	16 x 2-1/8"	16 x 2-3/8"	16 x 2-5/8"
	2500	8 x 1-1/8"	8 x 1-1/4"	8 x 1-3/8"	8 x 1-5/8"	8 x 2-1/8"	12 x 2-1/8"	12 x 2-5/8"	12 x 2-7/8"	-	-
L	150	60	67	73	73	98	127	146	181	184	191
	300	60	67	73	73	98	127	146	181	222	232
	600	60	67	73	79	136	165	213	229	273	305
	900	70	83	83	102	159	206	241	292	356	384
	1500	70	83	83	102	159	206	248	305	356	384
	2500	70	83	86	105	159	206	254	305	-	-
Weight	150	7	10	13	20	34	66	98	179	209	258
	300	8	12	15	24	47	82	121	254	329	513
	600	8	12	15	32	85	141	246	319	462	693
	900	17	22	26	47	121	228	347	534	814	893
	1500	17	24	30	54	125	242	397	683	950	1176
	2500	20	30	40	72	193	315	513	784	-	-

NOTES:
- OTHER SIZES ALSO AVAILABLE ON REQUEST
- OTHER ENDS AND TYPES (RF, RJ, BW, HUB, DOUBLE FLANGED, WAFER, SOLID LUG) AVAILABLE ON REQUEST

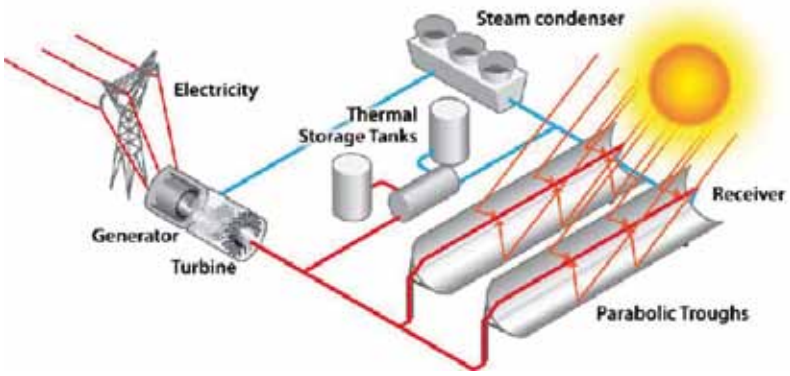
Molten Salt **Valves**

Molten Salt **Valves**

Bellino S.r.l., as valves manufacturer, in close collaboration with its customers (ENEL), has recently developed the valves to be installed on pipes for transportation of Molten Salts.

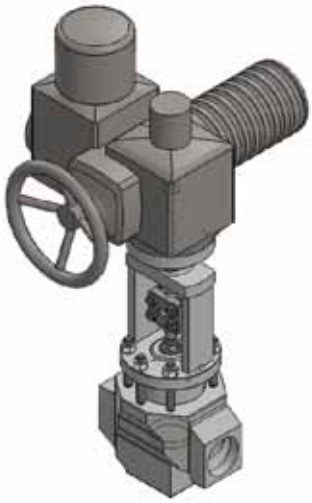
Plant's characteristics

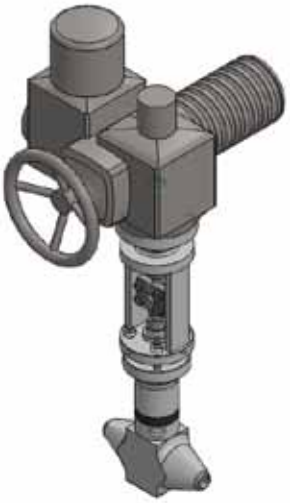
This kind of system uses a series of parabolic mirrors to concentrate the solar radiation on special pipes within which circulates a mixture of salts constantly in the molten state. This mixture, collects the thermal flux of the solar radiation, and is piped to a storage tank. From here, it's piped to a steam generator where, through some Molten Salts-water heat exchangers, transfers its heat to the water that feeds the combined thermal cycle. Is thus produced superheated steam, sent to the steam turbines of the plant.

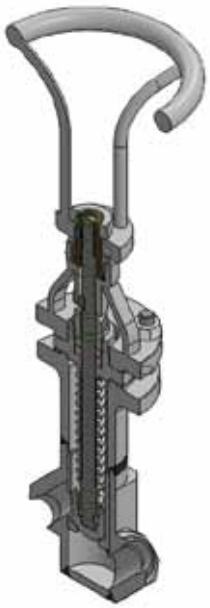


Valves characteristic

Bellino S.r.l. produces Molten Salts valves up to 2" class 600, which can be manually operated or motorized.
The body is of the "Globe type" or "Y type", but, in any case, when valve is closed, salt drains by gravity.
The trim is constituted by a disc with ON/OFF characteristic and by a seat, accurately machined to meet the sealing requirements stated in ANSI B16.104 Class V. To ensure the seal outwards, the disc is equipped with a metal bellows, which, however, is not interested during the "closed valve" conditions. In addition, between the body and the bellows-flange, there is a sealing metal O-Ring.







Terms of use

- temperature	290 ÷ 550°C
- pressure	1 ÷ 15 bar
- fluid	Molten Salts (a mixture of sodium nitrate and potassium nitrate)

The chosen materials are appropriate to meet the operating conditions:

- body	SS 321 H
- trim	SS 422
- bellows	SS 321
- O-Ring	INCONEL X-750
- packing	ceramic fiber

Valves are easily maintainable without the need for complete removal of the insulation and of the tracing from the valves' body and yoke.

Accessories

Accessories

Is possible to equip a valve with some accessories:

ELECTRIC / ELECTROHYDRAULIC ACTUATOR

COOLING FINS

SAND-PROTECTION BELLOWS

BOOSTER

SOLENOID VALVE

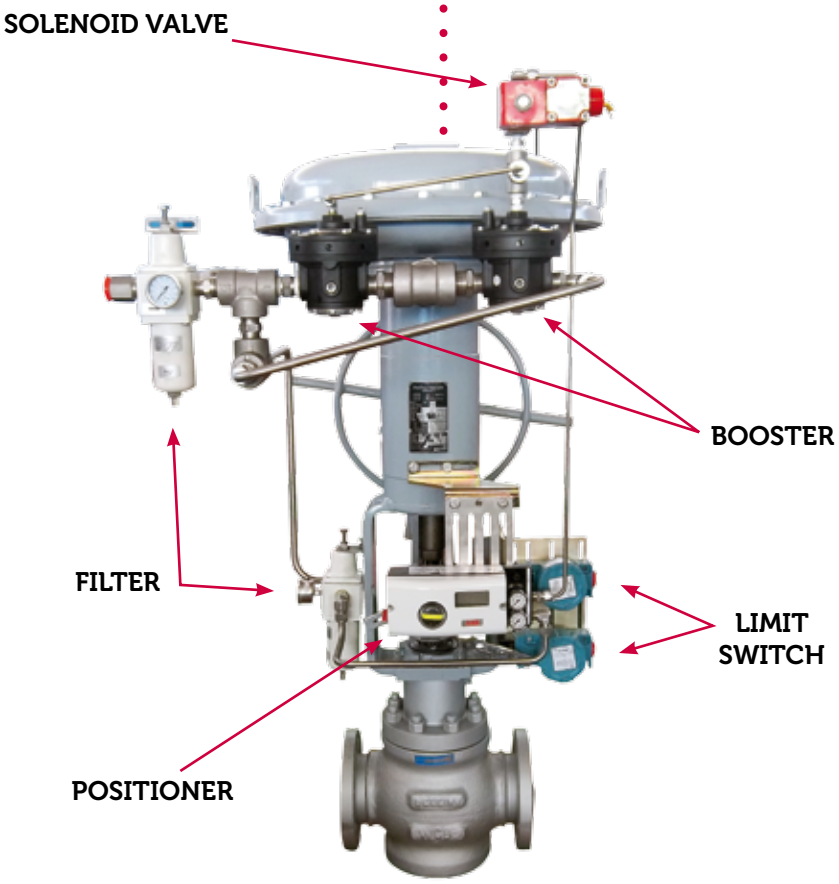
JUNCTION BOX

MECHANICAL LIMIT SWITCH

MAGNETIC LIMIT SWITCH

POSITIONER

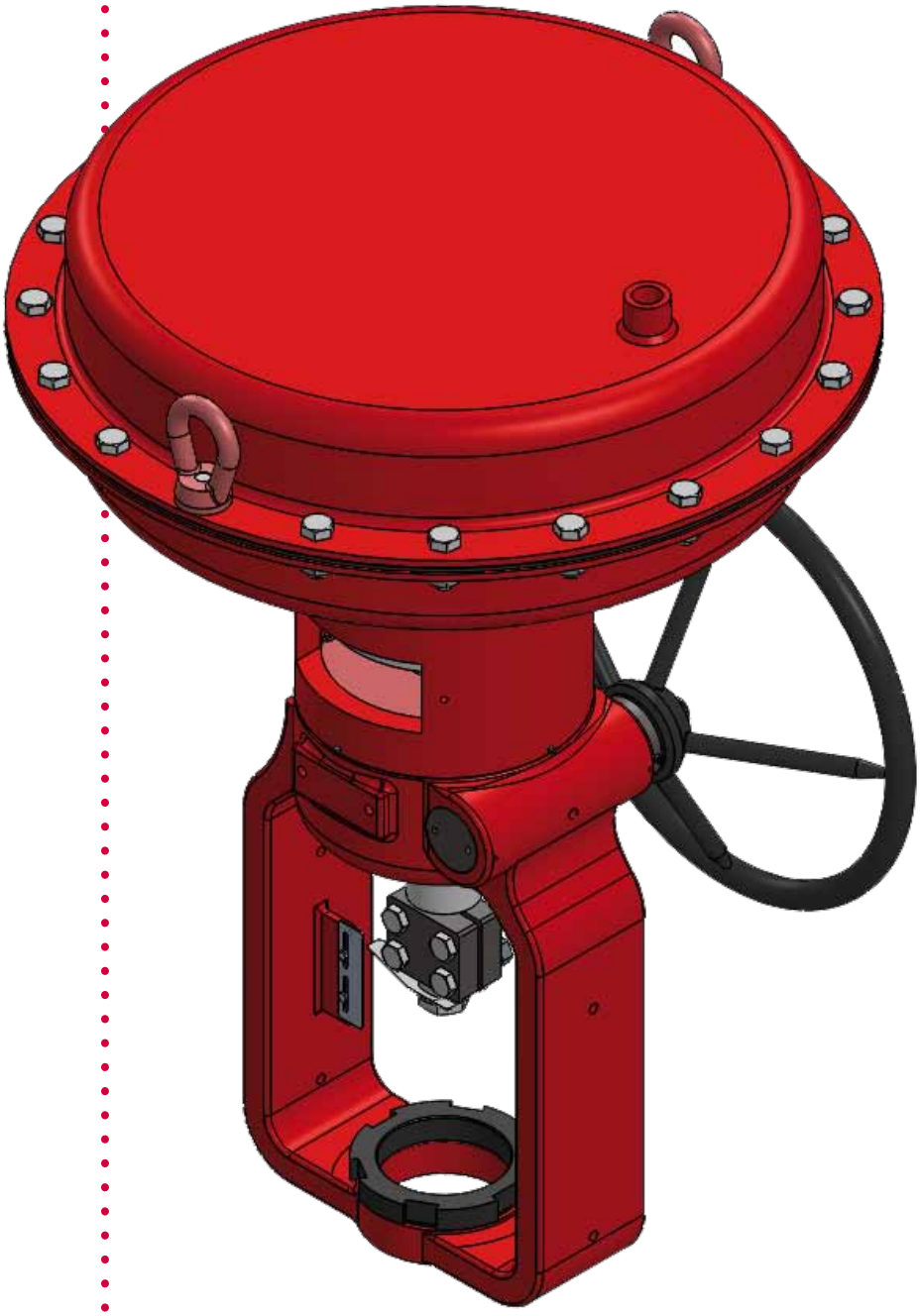
FILTER



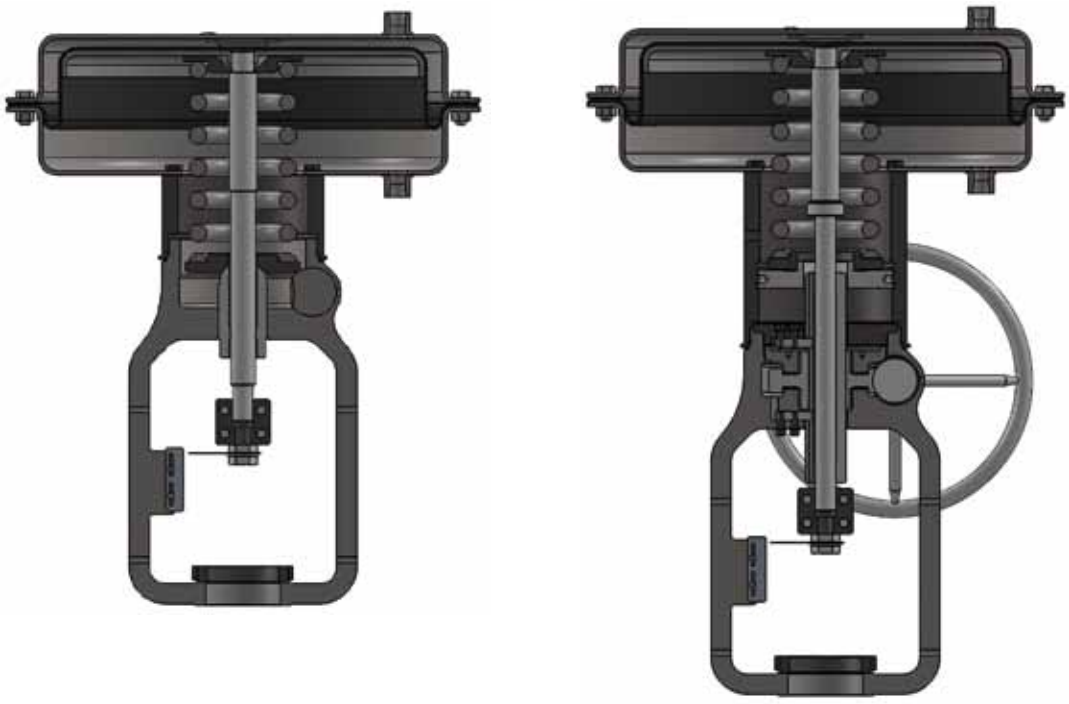
Bellino's **actuators**

‘M’ series

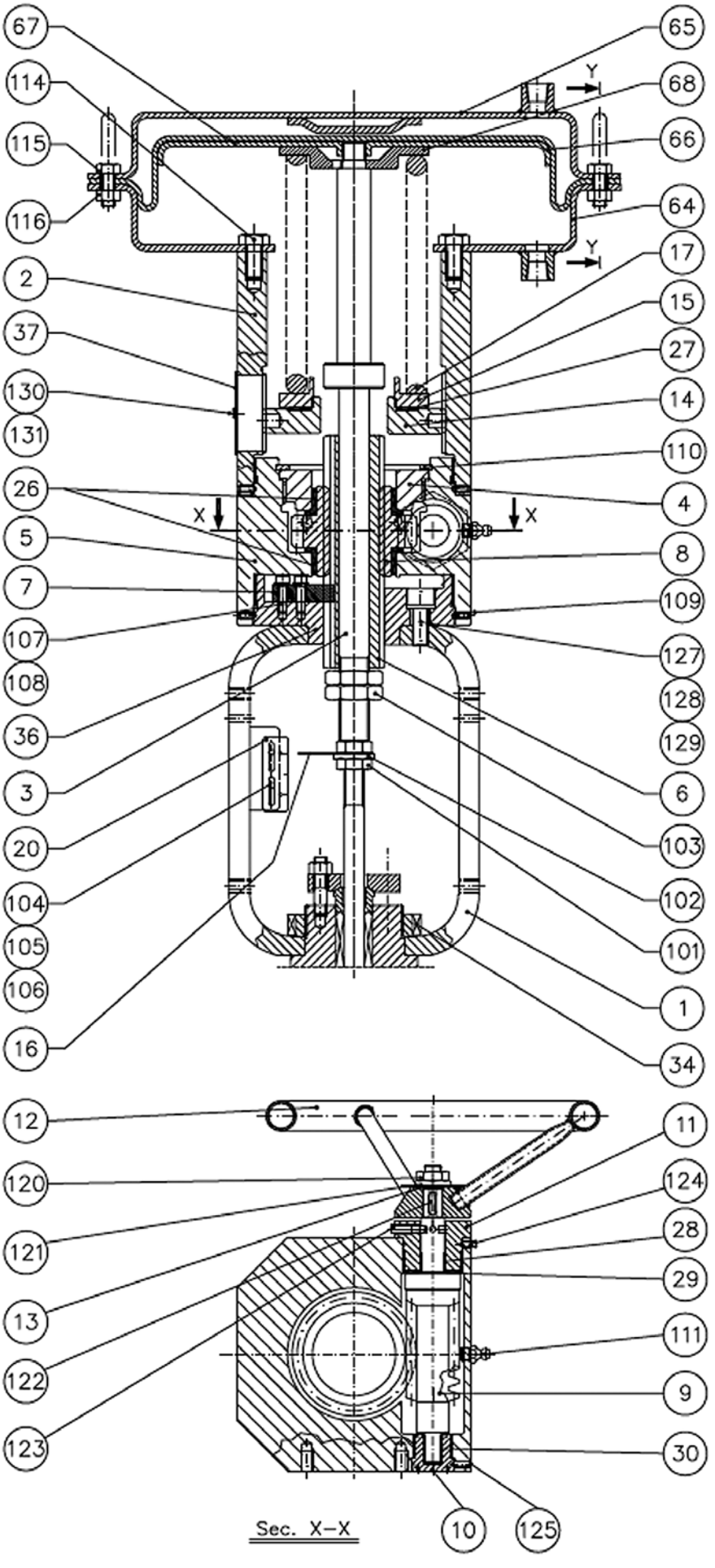
PNEUMATIC OPERATED SPRING
DIAPHRAGM ACTUATOR

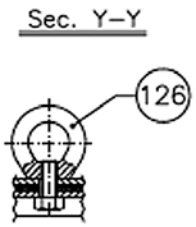


DIRECT ACTING

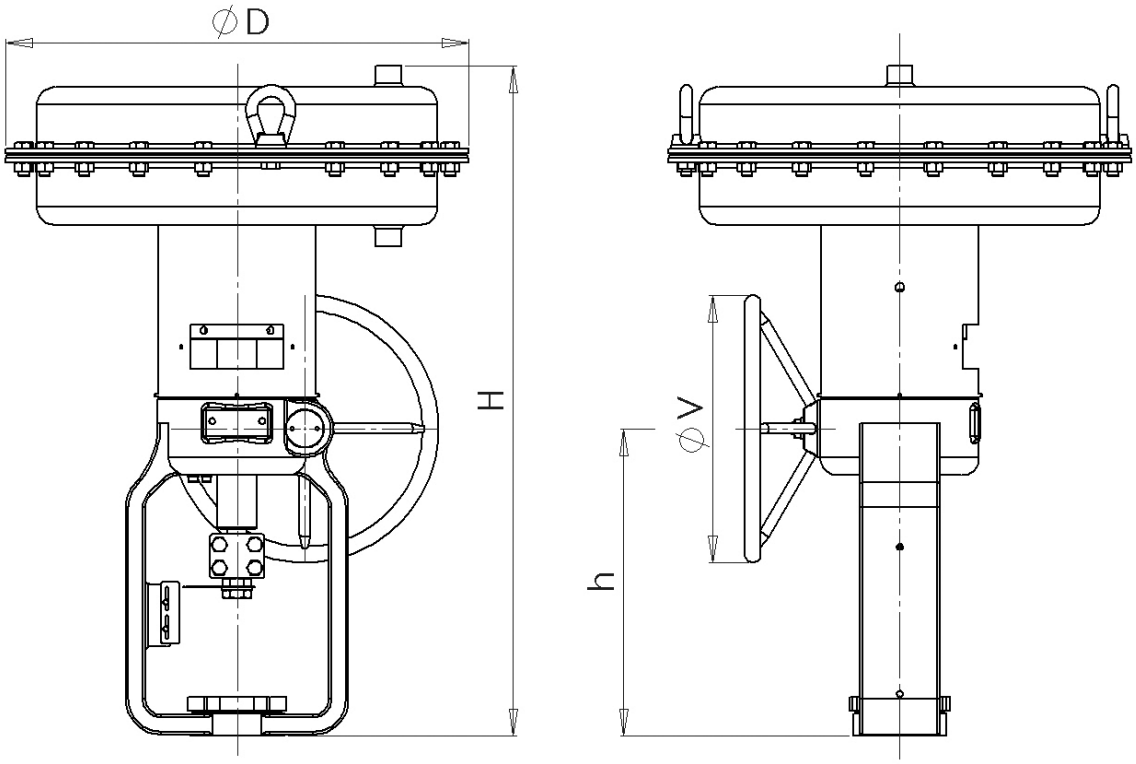


REVERSE ACTING





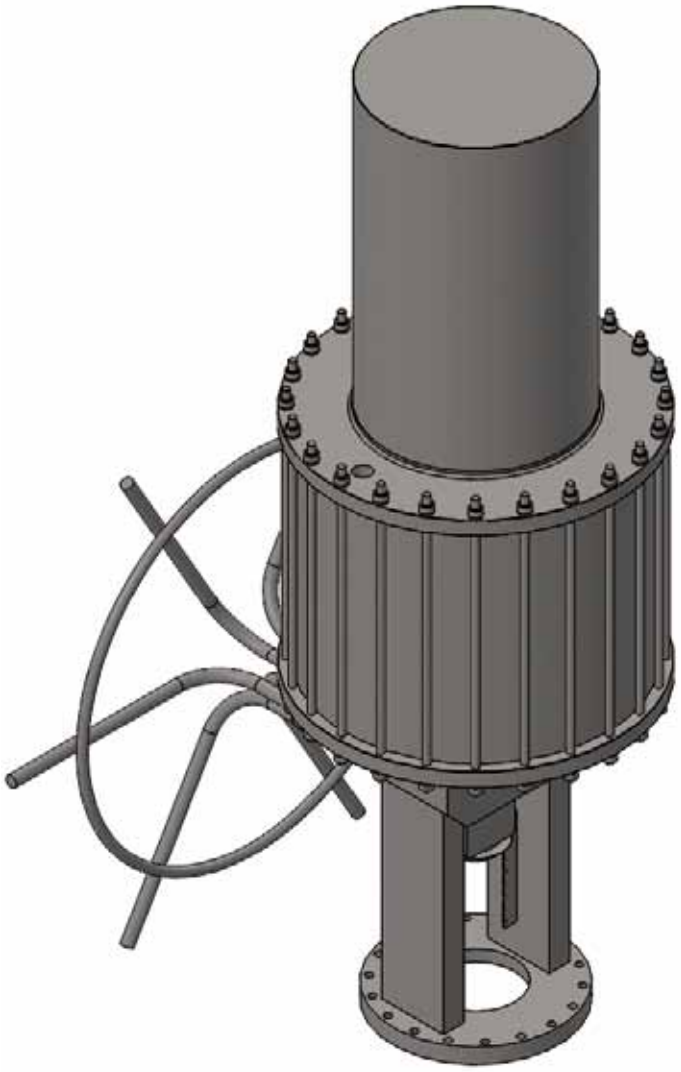
POS.	PART
1	YOKE
2	SPRING CONTAINER
3	CML STEM
4	CML NUT
5	CML BODY
6	COUPLING BOW
7	ANTIROTATION DEVICE
8	WORM-WHEEL
9	ENDLESS SCREW
10	PLUG
11	NUT
12	HANDWHEEL
13	HANDWHEEL PLATE
14	REGULATING SCREW
15	SPRING PLATE
16	PLATE
17	SPRING
20	STROKE PLATE
26	DU FLANGED BUSHING
27	DU WASHER
28	DU BUSHING
29	DU WASHER
30	DU BUSHING
34	NUT
36	FLANGE
37	SPRING CONTAINER PLATE
64	LOWER CASE
65	UPPER CASE
66	DIAPHRAGM
67	DIAPHRAGM DISC
68	CASE DISC
101	NUT
102	WASHER
103	NUT
104	SCREW
105	NUT
106	WASHER
107	SCREW
108	WASHER
109	GRUB SCREW
110	SEEGER RING
111	GREASER
114	SCREW
115	SCREW
116	NUT
120	NUT
121	WASHER
122	FEATHER KEY
123	GRUB SCREW
124	GRUB SCREW
125	GRUB SCREW
126	EYE BOLT
127	SCREW
128	WASHER
129	PIN
130	SCREW
131	WASHER



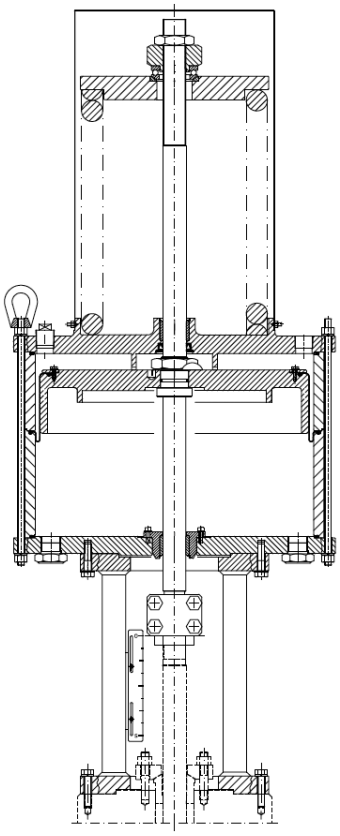
OVERALL DIMENSIONS									
MODEL	SPRING RANGE [psi]	STROKE [mm]	AREA [cm²]	ØD [mm]	h [mm]	ØV [mm]	H [mm] with CML	H [mm] without CML	H [mm] tolerance
M250D	3 - 15	25	460	320	255	200	525	435	± 5
	6 - 30								
	15 - 30								
M250R	3 - 15						580	490	
	6 - 30								
	15 - 30								
M300D	3 - 15	40	680	370	255	200	630	540	± 5
	6 - 30								
	15 - 30								
M300R	3 - 15						720	615	
	6 - 30								
	15 - 30								
M400D	3 - 15	60	1290	520	345	300	750	650	± 5
	6 - 30						795	695	
	15 - 30						865	770	
M400R	3 - 15						875	780	
	6 - 30						910	815	
	15 - 30						965	880	

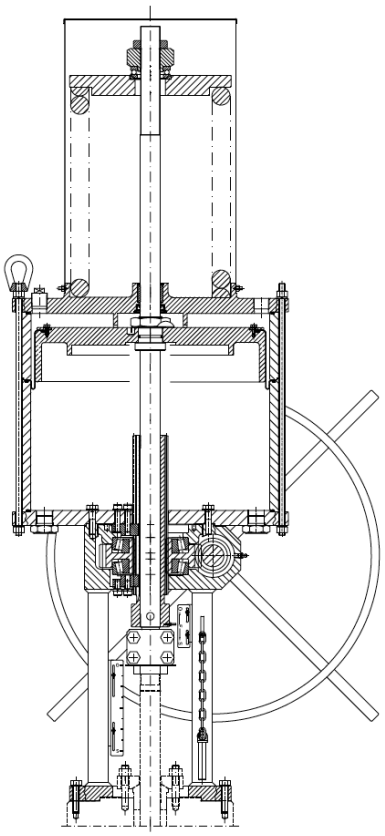
'P' series

PNEUMATIC OPERATED SPRING
PISTON ACTUATOR

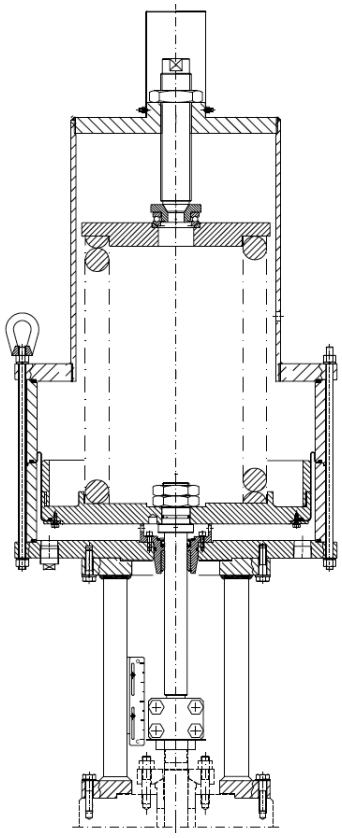


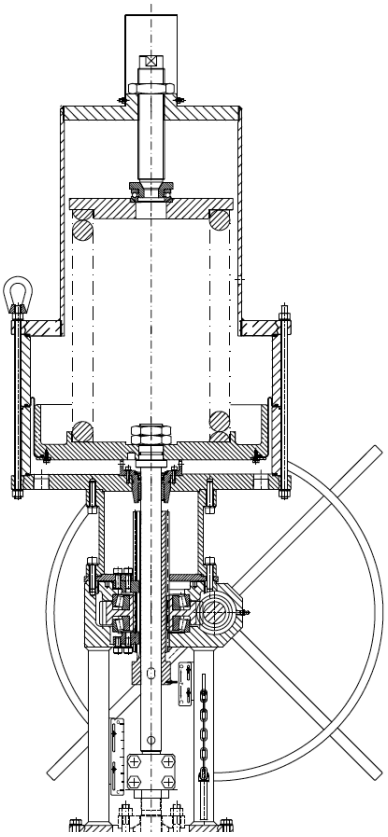
DIRECT ACTING

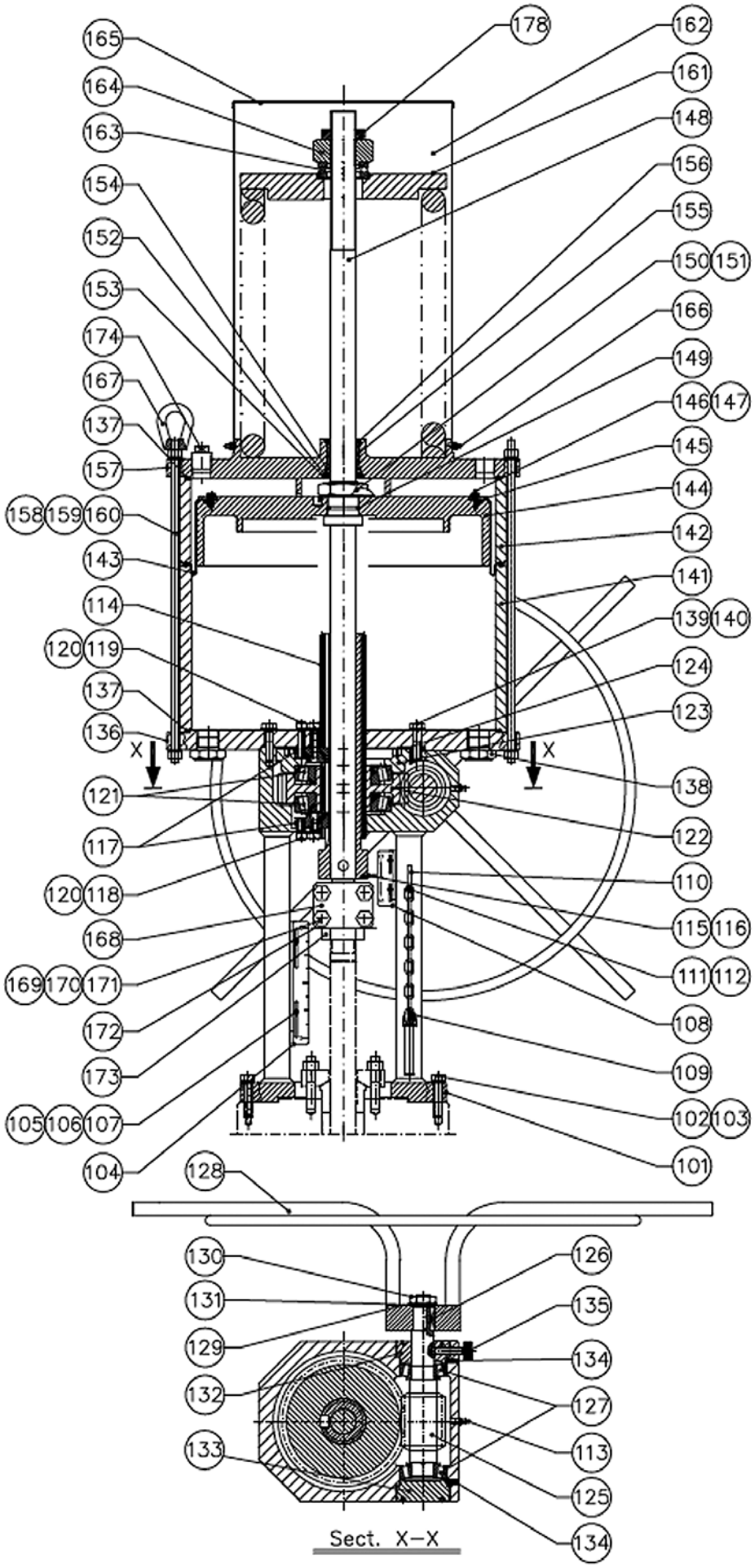




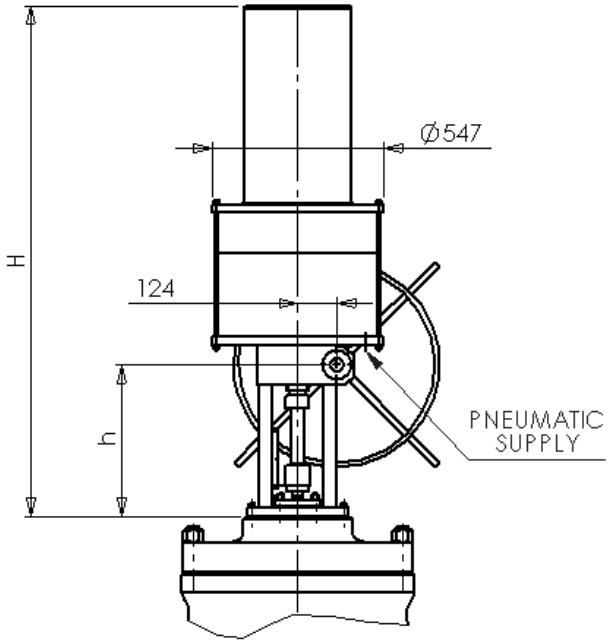
REVERSE ACTING

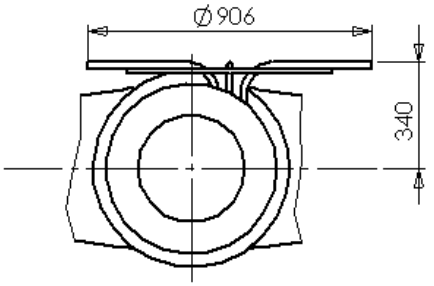






PART LIST	
ITEM	DESCRIPTION
101	YOKE
102	SCREW
103	WASHER
104	STROKE PLATE
105	SCREW
106	NUT
107	WASHER
108	HANDWHEEL PLATE
109	PIN
110	HOOK
111	NUT
112	WASHER
113	GREASER
114	COUPLING BOW
115	SCREW
116	NUT
117	FEATHER KEY
118	SCREW
119	SCREW
120	WASHER
121	BEARING
122	WORM–WHEEL
123	SETTING FERRULE
124	GASKET
125	ENDLESS SCREW
126	FEATHER KEY
127	BEARING
128	HANDWHEEL
129	HANDWHEEL DISC
130	NUT
131	WASHER
132	DRILLED CASE
133	BLIND CASE
134	SCREW
135	HANDWHEEL SCREW
136	LOWER PLATE
137	O–RING
138	FILTER
139	SCREW
140	WASHER
141	LOWER CYLINDER
142	UPPER CYLINDER
143	DIAPHRAGM
144	PISTON
145	DIAPHRAGM RING
146	SCREW
147	WASHER
148	STEM
149	O–RING
150	WASHER
151	NUT
152	WASHER
153	ESASTIC RING
154	SEALING RING
155	BUSHING
156	ESASTIC RING
157	UPPER PLATE
158	STUD BOLT
159	NUT
160	WASHER
161	SPRING
162	SPRING PLATE
163	BEARING
164	PRE–LOAD NUT
165	SPRING COVER
166	SCREW
167	EYE BOLT
168	STEM COUPLING BOW
169	SCREW
170	NUT
171	WASHER
172	STROKE DISC
173	NUT
174	PLUG
178	NUT





OVERALL DIMENSIONS					
MODEL	AREA [cm2]	STROKE [mm]	without CML	with CML	
			H [mm]	H [mm]	h [mm]
P470D (direct acting)	1654	130	1178	1313	447
		150	1256	1433	467
		170	1335	1553	487
		200	1453	1728	517
P470R (reverse acting)	1654	130	1340	1620	447
		150	1419	1740	467
		170	1497	1860	487
		200	1615	2035	517

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