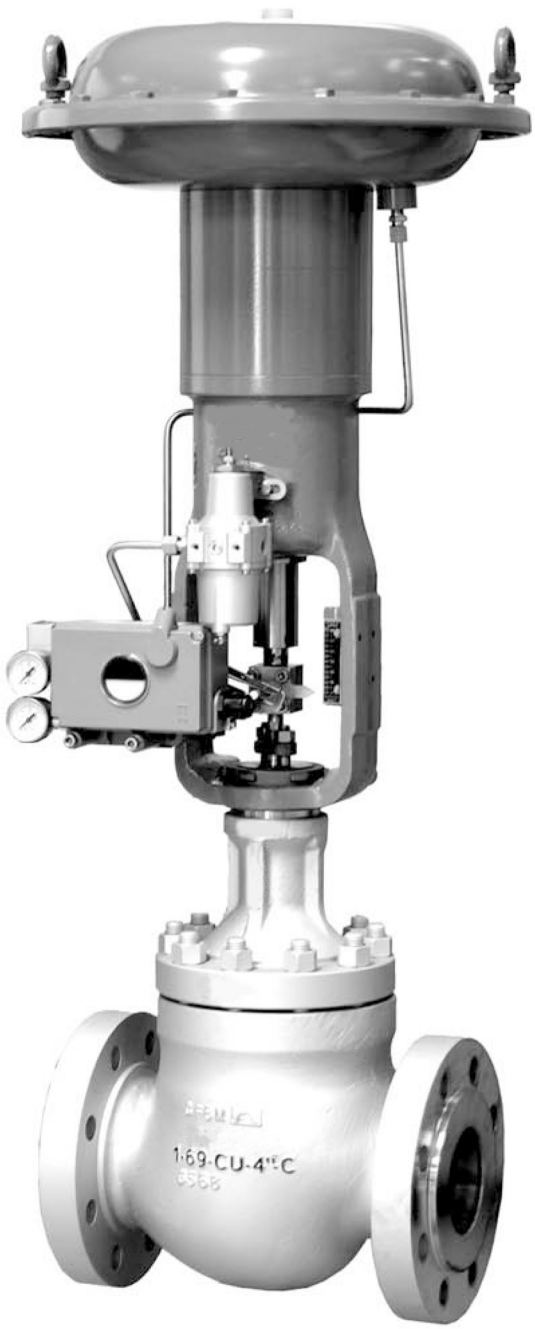

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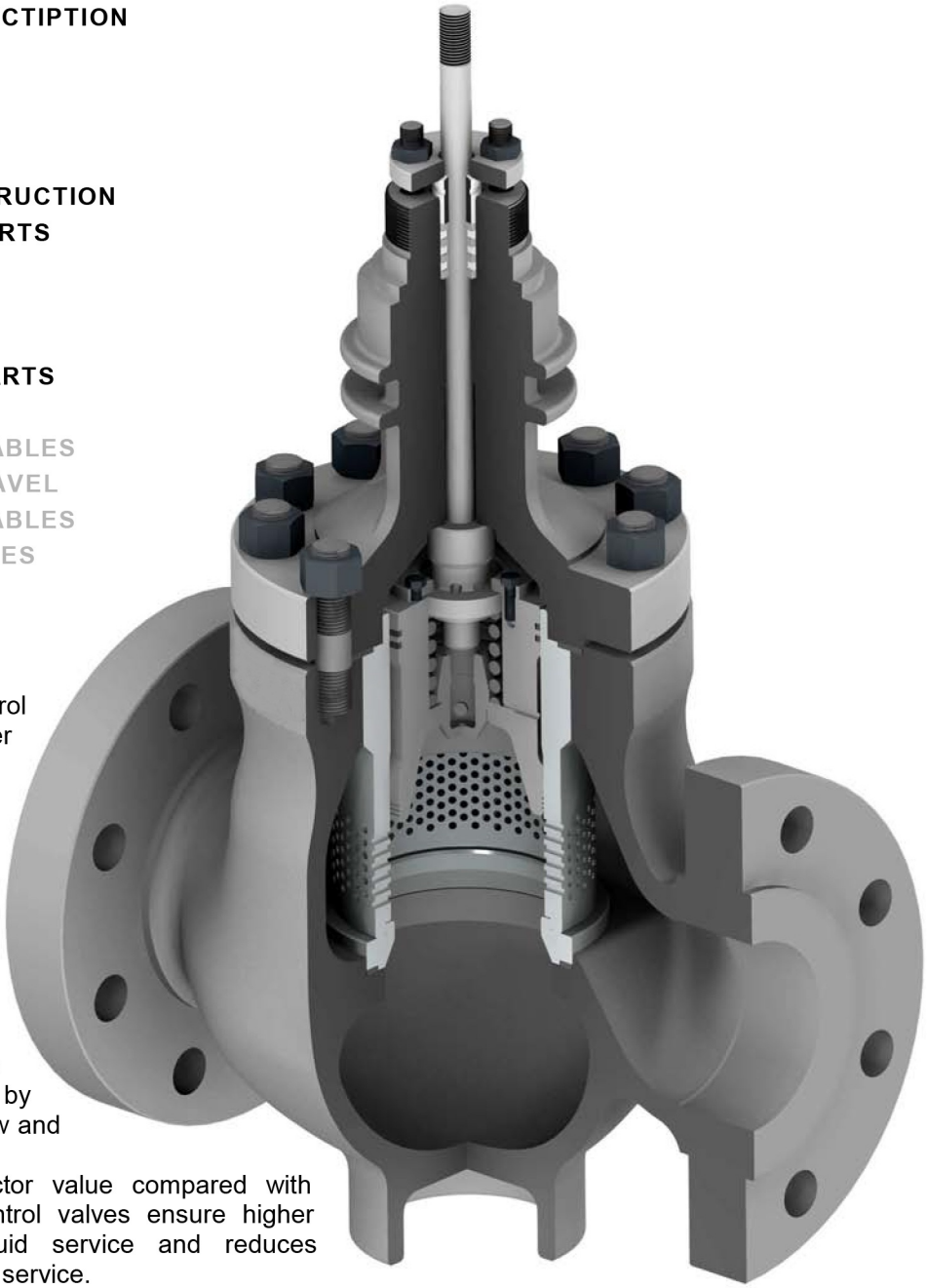


VeGA is the most **Ve**rsatile control valve for **G**eneral **A**pplications ever designed by EBSON.
VeGA is a straight body single seat control valve with cage guided balanced plug designed to withstand the most severe process conditions; the flow is mainly controlled by the special drilled cage, which acts as a continuous and full plug guide along the whole valve travel.
The special plug design allows improving valve rangeability by reducing minimum controllable flow and plug erosion.
The high pressure recovery factor value compared with conventional Contoured plug control valves ensure higher flow rates on compressible fluid service and reduces cavitation risk and effects on liquid service.

All versions have quick change trim with internal spring to extend the quick change design up to maximum working temperature.
Together with the standard high capacity trim, low noise trims and double cage trims are available respectively for critical service on compressible fluids (gas and vapor) and for high differential pressures or for cavitating service where higher pressure recovery factor values are required.
Balanced Plug with Pilot execution allows to comply with IEC sealing class V up to 566°C for compressi ble fluids service. “Flow to close” configuration improves seat ring protection and increases seating force making this solution particularly reliable.
For uncompressible fluids service, a special C-ring metallic seal is available to comply with IEC sealing class V without practical temperature limitations.
Contoured unbalanced plugs are available on request up to DN 4” for dirty fluids service.
Bonnet style, finned and partially extended is specially designed to comply with all working conditions.
A special material configuration is available to comply with NACE MR0175 and MR0103 standards.
VeGA control valves are usually equipped with EBSON diaphragm spring return pneumatic actuators 1-X-210 and 1-X-250 series (pneumatic cylinders 1-X-400 series for DN 16” and over).
Electrical or hydraulic actuators are available on request.

MAIN FEATURES

- Wide range of sizes: from DN 3/4" to DN 24" ;
- Ratings from ANSI 150 up to ANSI 2500 (B10 to B100 for EN ratings);
- Wide operating temperature range (-75 °C to 566 °C, -196°C with optional extended bonnet);
- Quick change design up to maximum allowed working temperature;
- High flow capacity thanks to optimized body shape design;
- High rangeability thanks to CCF plug design;
- Sealing class V IEC 60534-4 extended up to 566 °C for balanced plug with pilot ("flow to close" for compressible fluid applications) or metal C-ring seal for all applications;
- Unbalanced Contoured plug version available up to DN 4" for dirty fluids service;
- Soft seat ring insert, to comply with IEC 60534-4 leakage class VI;
- Finned-partially extended bonnet shape, to comply with all working temperatures.

GENERAL DATA

BODY

- Type: globe, straight way single port. Angle body version 1-4640 series is available on request
- Construction: cast
- Materials: wide material selection (from ASME and EN standards) is available, according to material tables. Other materials are available on request
- Sizes: 3/4" through 24"
- Connections:
  - ANSI, EN flanged
  - BW ANSI B16.25
  - UNI EN 12627 butt welding ends
  - Socket welding up to NPS 2"
- Ratings: according to EN 12516-1 and ASME B16.34 materials
  - PN 10/16/25/40/63/100
  - ANSI 150/300/600 up to DN 24", ANSI 900/1500 (up to DN 12"), ANSI 2500 (up to DN 4")

FLOW DIRECTION

Flow over the plug on 1-6948 (balanced with pilot). Flow under the plug on 1-6941, 1-6942 and 1-6943.

BONNET

- Type: partially extended, finned. With bellows seal or extension bonnet for low temperature service (< -75 °C) on request
- Constructions: flanged type, cast or forged
- Materials: same as body
- Low Emission certified packings are available on request

PLUG

- Sizes: full or reduced ports as per Cv table
- Type:
  - Balanced and unbalanced, cage guided: port 1/2" to 24", for 1-6943 and 1-6948 series
  - Contoured unbalanced: up to DN 4" , for 1-6941 and 1-6942 series
- Materials: see table of materials

FLOW CHARACTERISTIC

- Linear (also suitable for on-off service)
- Equal percentage

SEAT

- Mounting: free fitted in the body without screwing or forcing. Centered in the cage granting alignment with the plug, body and seat. Coupling sealed by means of a flat gasket
- Materials: see table of materials

CAGE

- Constructions: rolled or forged cylinder, drilled or V-ported, tightened between body and bonnet
- Materials: see table of materials

STEM PACKINGS

- TFK: PTFE aramid fibers reinforced packing up to 250°C – 150 bar
- GRF: Pure flexible graphite packing without practical temperature limitation (max 450 °C in presence of oxidizing fluids)
- TFP: Pure PTFE packing (suitable for oxygen service) up to 200°C – 150 bar

SPECIAL EXECUTIONS SUPPLIED AS OPTION

- Double packing with leak off lateral connection Live Loading System with Belleville Springs
- Low Emission Certified Packings
- Sand protection

For further details see Parcol technical Bulletin 1-VII.

LEAKAGE CLASSES

In accordance with IEC 60534-4 leakage classes, up to class VI for both balanced and unbalanced construction up to maximum admissible working temperatures.
Special sealing class (HS) for erosive/corrosive fluids applications with higher seating forces is available.

BASIC RATINGS

	Availability												
	RATING												
ANSI	150	300	600	900	1500	2500	ANSI	150	300	600	900	1500	2500
PN	10/16	15/40	63/100				PN	10/16	15/40	63/100			
DN							DN						
3/4 "	■	■	■	■	■	■	8"	■	■	■	■	■	
1"	■	■	■	■	■	■	10"	■	■	■	■	■	
1.1/2"	■	■	■	■	■	■	12"	■	■	■	■		
2"	■	■	■	■	■	■	14"	■	■	■			
3"	■	■	■	■	■	■	16"	■	■	■		(1)	
4"	■	■	■	■	■	■	20"	■	■	■			
6"	■	■	■	■	■	(1)	24"	■	■	■			

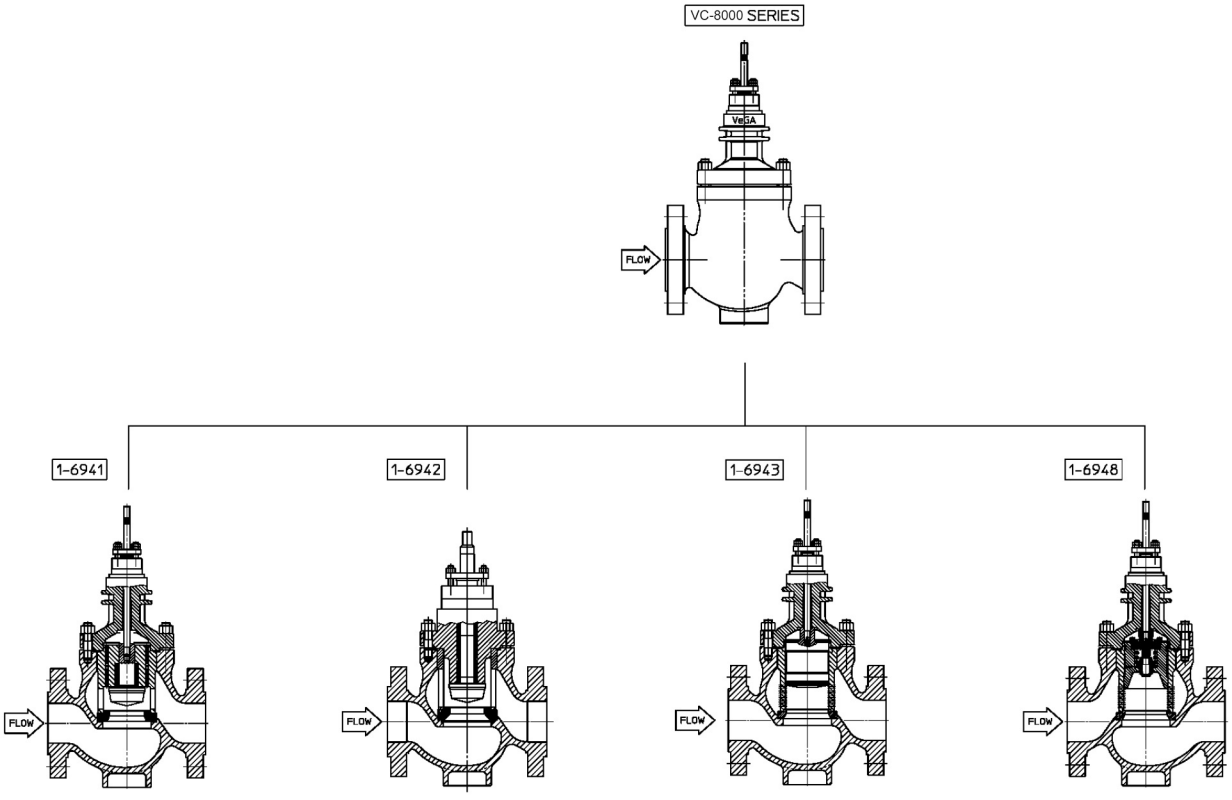
(1) ON REQUEST

NUMBERING SYSTEM

1 - ### #

	Trim Type
1	contoured plug
2	contoured integral plug, stem guided
3	cage guided plug
8	cage balanced with pilot plug

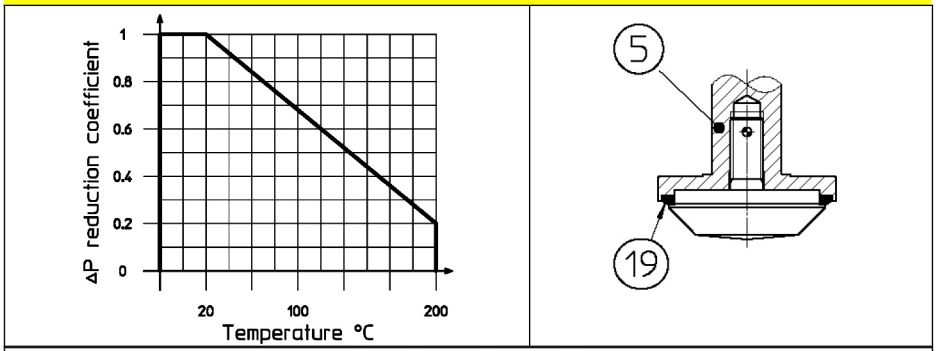
	Body Shape
1 - 6 9 4	straight body
1 - 4 6 4	angle body



MATERIALS OF CONSTRUCTION

		Carbon and CrMo Steels			Stainless Steels		NACE	
Temp. Range		-29 ÷ +427°C	-29 ÷ +566°C	-29 ÷ +566°C	-196 ÷ +343° C	-196 ÷ +343°C	-29 ÷ +427°C	-196 ÷ +343°C
Item	*Description*							
1	BODY	SA 216 WCC *EN GP240GH*	SA 217 WC9 *EN G17CrMo9-10*	SA 217 C12A	SA 351 CF8M *EN GX5CrNiMo19-11-2*	SA 351 CF3M *EN GX2CrNiMo19-11-2*	SA 216 WCC HRC22 max	SA 351 CF8M HRC22 max
2	BONNET	SA 216 WCC	SA 217 WC9	SA 217	SA 351 CF8M	SA 351 CF3M	SA 216 WCC HRC22 max	SA 351 CF8M HRC22 max
		SA 105	SA 182 F22 cl.3	SA 182 F91	SA 479 316	SA 479 316L	SA 105 HRC22 max	SA 479 316 HRC22 max
3	BODY STUD	SA 193 B7	SA 193 B16 / SA 479 XM-19	SA 479 XM-19	SA 479 XM-19 / SA193 B7		SA 193 B7	SA 479 XM-19
4	NUT	SA 194 gr.4	SA 194 gr.8		SA 194 gr.8 / SA 194 gr.4		SA 194 gr.4	SA 194 gr.8
5[1]	PLUG	A479 316		-	A 479 316	A 479 316L	A 479 316 22HRC	
		A 182 F6NM Nitrided			A 479 316+ Stellite gr.6	A 479 316L+ HVD1	A 182 F6NM HRC 22max nitrided	-
		A479 316 +Stellite gr.6	-	-			A 479 316 22HRC +Stellite	
6	SEAT	A479 316		-	A 479 316	A 479 316L	A 479 316 22HRC	
		AISI 400 series hardened					A 182 F6NM HRC 22max nitrided	-
		A479 316+Stellite	-		A 479 316 + Stellite gr.6	A 479 316L + HVD1		
		A182 F6NM+Stellite					A 479 316 22HRC +Stellite	
7	STEM••	A 479 316	A 479 XM-19		A 479 316	A 479 316L	A 479 316 HRC22 max	
8 - 14	GASKET•	AISI 321 + GRAPHITE						
9	GUIDE	A 182 F6NM Nitrided			A 479 316L Cr plated		A 182 F6NM HRC22 max Nitrided	A 479 316 HRC22 max Cr plated
19	INSERT	PTFE						
12	PIN	A 479 304				A 479 316L	A 479 304 HRC 22 max	
27	PACKING•	TFK - aramid fibres reinforced PTFE rings						
		GRF - Pure flexible graphite rings						
		TFP - Pure PTFE rings						
36	BELLOW	AISI 316L						
37	EXTENSION	A 479 316	A 479 XM-19		A 479 316	A 479 316L	A 479 316 HRC22 max	
44	BELLOW CHAMBER	SA 105	SA 182 F22	SA 182 F91	SA 479 316	SA 479 316L	SA 105 HRC 22Max	SA 479 316 HRC 22Max
45	ANTIROT.SCR.	AISI 316L						
46	GASKET	AISI 321 + GRAPHITE						
251	PLUG	AISI 316L						

1-6941 Seal Insert for Leackage Class VI



Port size : ø12mm ÷ 4”

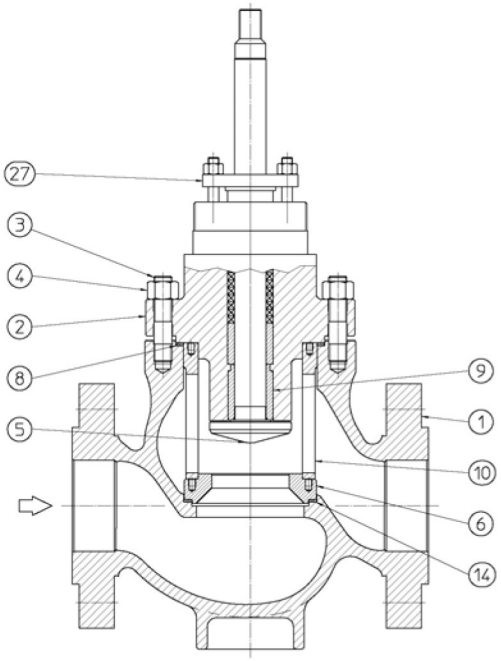
[1] Available also soft seat version for sealing class VI

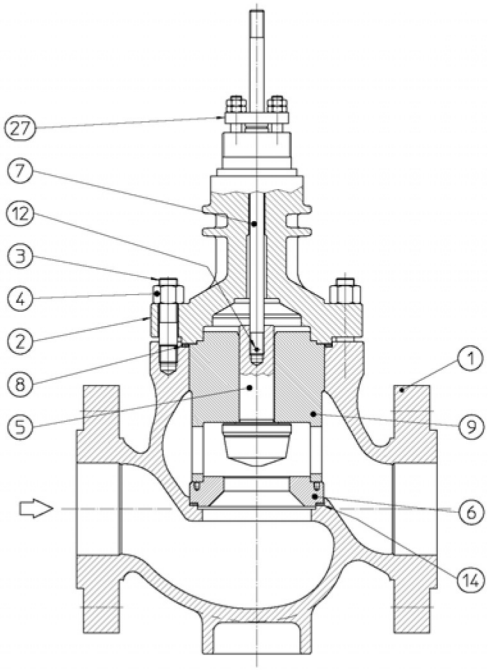
• Suggested as spare part for commissioning and start-up

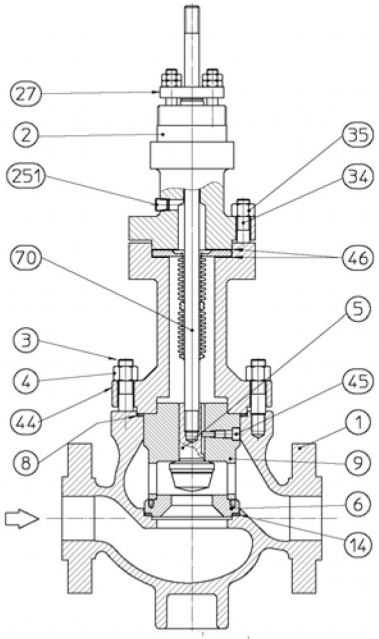
•• Suggested as spare part for for the first two years

		Carbon Steels	Stainless Steels		NACE	
Temperature Range		-29 ÷ +427℃	-196 ÷ +343℃	-196 ÷ +343℃	-29 ÷ +427 ℃	-29 ÷ +343℃
Item	***Description***					
1	BODY	SA 216 WCC *EN GP240GH*	SA 351 CF8M *EN GX2CrNiMo19-11-2*	SA 351 CF3M *EN GX2CrNiMo19-11-2*	SA 216 WCC HRC22 max	SA 351 CF8M HRC22 max
2	BONNET	SA 105	SA 479 316	SA 479 316L	SA 105 22HRC max	SA 479 316 22HRC max
3	BODY STUD	SA 193 B7	-196<T<-29: SA 479 XM19 -29<T<343: SA 193 B7		SA 193 B7	SA 479 XM19
4	NUT	SA 194 gr.4	-196<T<-29: SA 194 gr.8 -29<T<343: SA 194 gr.4		SA 194 gr.4	SA 194 gr.8
5	PLUG and STEM ••	A 479 316	SA 479 316	A479 316L	A 479 316 22HRC max	
		A 479 316 + Stellite gr.6	A 479 316 + Stellite gr.6	A479 316L+HVD1 HVD1	A 479 316 22HRC max + Stellite gr.6	
6	SEAT••	A 479 316	A 479 316	A 479 316L	A 479 316 22HRC max	
		A 479 316 + Stellite gr.6	A 479 316 + Stellite gr.6	A479 316L+HVD1 HVD1	A 479 316 22HRC max + Stellite gr.6	
8 - 14	GASKET•	AISI 321 + GRAPHITE				
9	GUIDE BUSHING	S21800	S21800	HASTELLOY C276 HVD1 annealed	S 21800	
10	CAGE	A 105	A 479 316L		A105 HRC22 max	A479 316L HRC22 max
27	PACKING•	TFK - aramid fibres reinforced PTFE GRF - Pure flexible graphite TFP – Pure PTFE				

1-6942





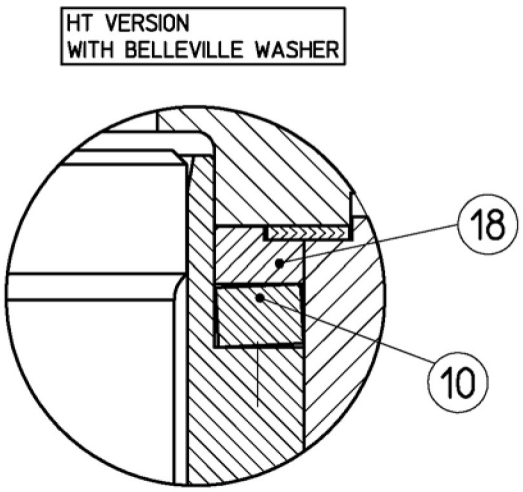


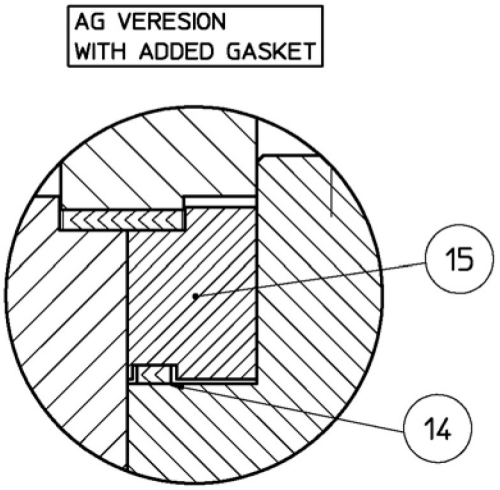
1-6941

• Suggested as spare part for commissioning and start-up

•• Suggested as spare part for for the first two years

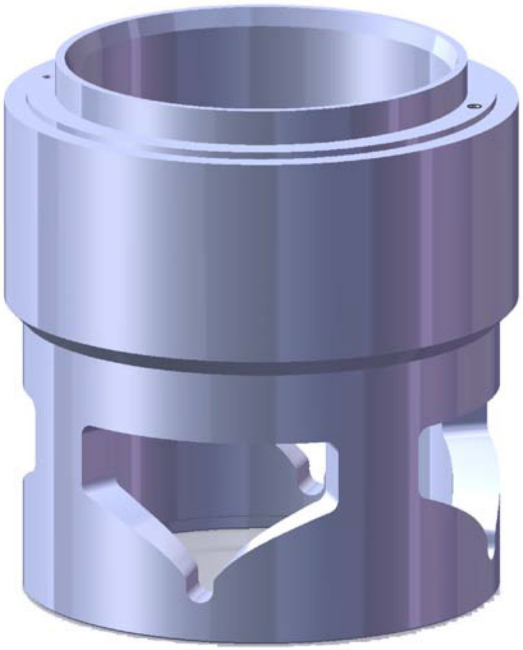
		Carbon and CrMo Steels			Stainless Steels		NACE	
Temperature Range		-29 ÷ +427℃	-29 ÷ +566℃	-29 ÷ +566℃	-196 ÷ +343℃	-196 ÷ +343℃	-29 ÷ +427℃	-196 ÷ +34 3℃
Item	***Description***							
1	BODY	SA 216 WCC *EN GP240GH*	SA 217 WC9 *EN G17CrMo9-10*	SA 217 C12A	SA 351 CF8M *EN GX5CrNiMo19-11-2*	SA 351 CF3M *EN GX2CrNiMo19-11-2*	SA 216 WCC HRC22 max	SA 351 CF8M HRC22 max
2	BONNET	SA 216 WCC	SA 217 WC9	SA 217 C12A	SA 351 CF8M	SA 351 CF3M	SA 216 WCC HRC22 max	SA 351 CF8M HRC22 max
		SA 105	SA 182 F22 cl.3	SA 182 F91	SA 479 316	SA 479 316L	SA 105 HRC22 max	SA 479 316 HRC22 max
3	BODY STUD	SA 193 B7	SA 193 B16 SA 479 XM-19	SA 479 XM-19	SA 479 XM-19 SA 193 B7		SA 193 B7	SA 479 XM-19
4	NUT	SA 194 gr.4	SA 194 gr.8	SA 194 gr.8	SA 194 gr.8 SA 194 gr.4		SA 194 gr.4	SA 194 gr.8
5	PLUG••	A 182 F6NM Nitrided			A 479 316 A 479 316L	A 479 316L	A 182 F6NM HRC22 max Nitrided	A 479 316 HRC22 max
					A 479 316 + Stellite gr.6	A 479 316L + HVD1		A 479 316 HRC22 max + Stellite gr.6
6	SEAT••	AISI 400 series hardened		-	A 479 316	A 479 316L	DN ≤ 3": A 479 316 HRC22 max + Stellite gr.6	A 479 316 HRC22 max
		For DN ≤ 3": A 479 316+Stellite gr.6			A 479 316L			
		For DN> 3": A 182 F6NM + Stellite gr.6			A 479 316+ Stellite gr.6	A 479 316L+HVD1	DN > 3": A 182 F6NM HRC22 max +Stellite gr.6	A 479 316 HRC22 max + Stellite gr.6
7	STEM••	A 479 316	A 479 XM-19		A 479 316	A 479 316L	A 479 316 HRC22 max	
8 -14-16	GASKET♦	AISI 321 + GRAFITE						
9	CAGE	A 351 CA6NM Nitrided			A 479 316 Cr plated	A 479 316L Cr plated	A 182 CA6NM HRC22 max Nitrided	A 479 316 HRC22 max Cr plated
10	DISC SPRING	INCONEL 718 Hardened						
11	ADAPTER	A 105	A 182 F22		A 479 316L		A 105 HRC22 max	A 479 316L HRC22 max
12	PIN	A 479 304					A 479 304 HRC 22Max	
13	SPACER RING	A 479 316L					A 479 316L HRC22 max	
15-18	SPACER	A 105	A 182 F22		A 182 F316L		A 105 HRC22 max	A 479 316L HRC22 max
27	PACKING♦	TFK - aramid fibres reinforced PTFE						
		GRF - Pure flexible graphite						
		TFP – Pure PTFE						

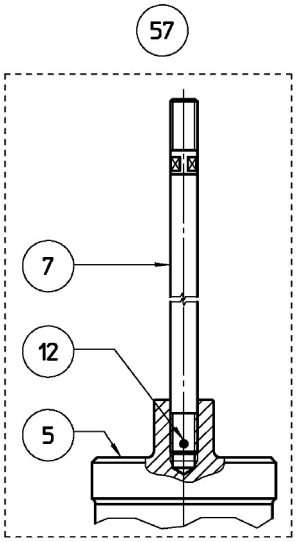




♦ Suggested as spare part for commissioning and start-up

•• Suggested as spare part for for the first two years

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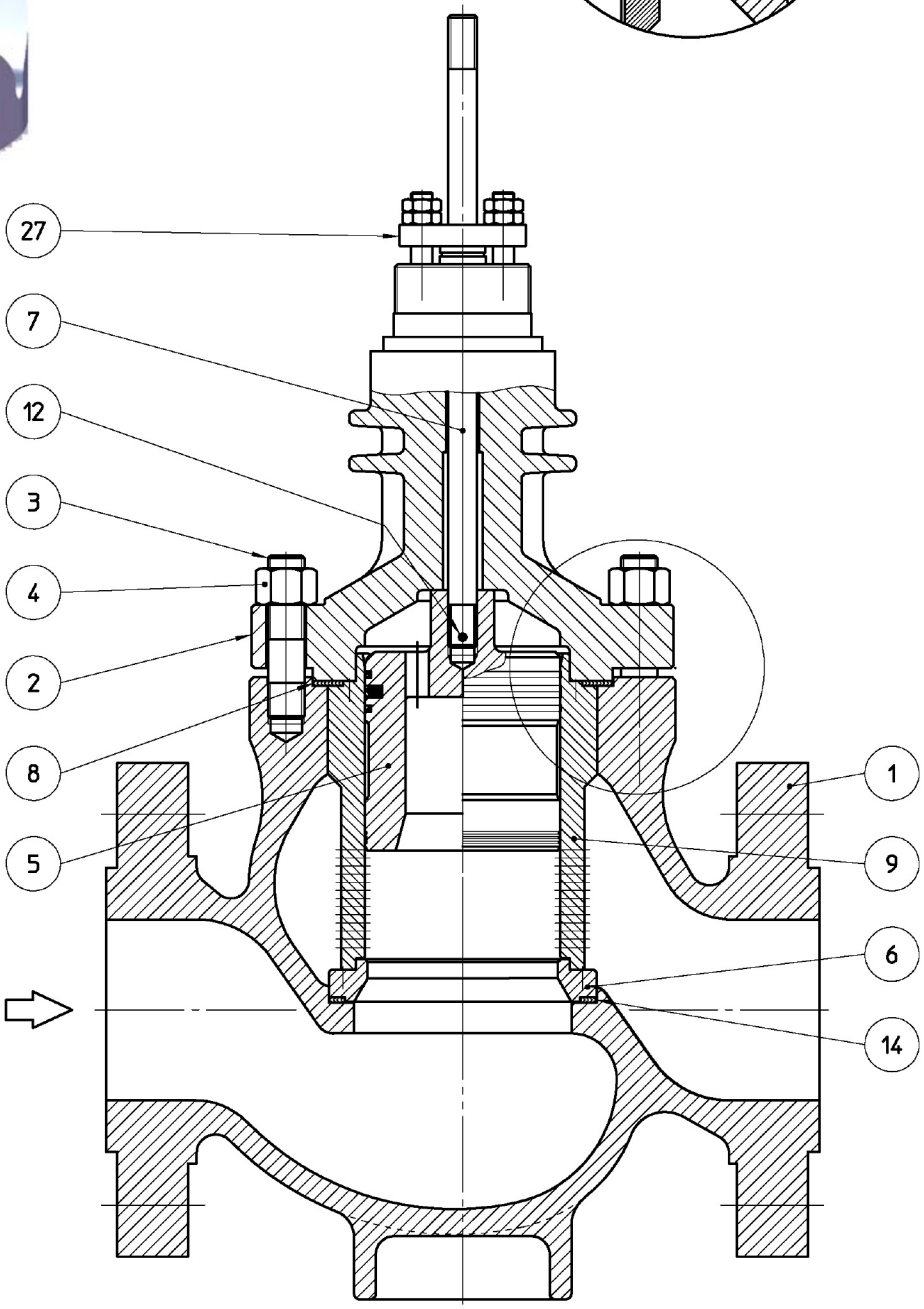
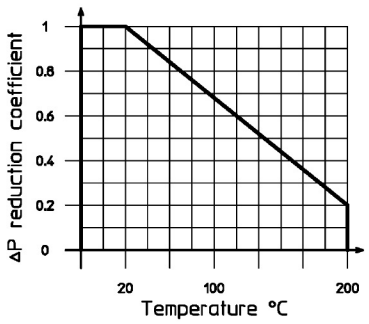
7
12
5

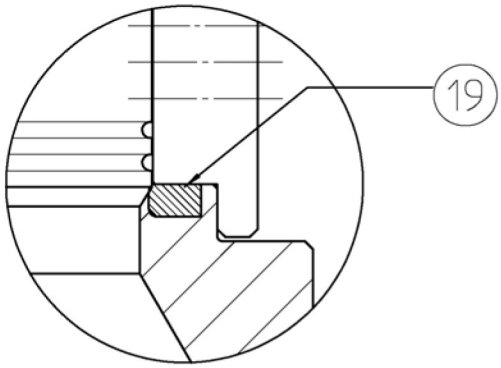

REDUCED PORT VALVE
WITH ADAPTOR DETAIL
11
16
27
7
12
3
4
2
8
5
1
9
6
14

	Sealing config. code	Description	Temp. range	Port size	Max leakage class
metallic seat	**N**	Non balanced	as for mat. class	1/2"÷6"	V
	D	Energized carbon graphite rings	-29 ÷ +566°C	1 1/2"÷24"	IV
	E	Bronze loaded PTFE ring energized with O-ring	-29 ÷ +180°C	1 1/2"÷24"	IV S1
	C	Carbon graphite rings energ. wt flexible graphit + back seal	-29 ÷ +566°C	2"÷24"	IV S1
	R	Metallic C-ring balanced plug	-29 ÷ +566°C	1/2"÷24"	V
	S	Graphite loaded pressure energized PTFE ring	-29 ÷ +200°C	1 1/2"÷24"	V
soft seat	**P**	Soft Seat, non balanced plug	-20 ÷ +200°C	1/2"÷6"	VI
	U	Soft Seat, balanced plug (Graph. loaded pressure energ. PTFE ring)	-20 ÷ +200°C	1 1/2"÷24"	VI

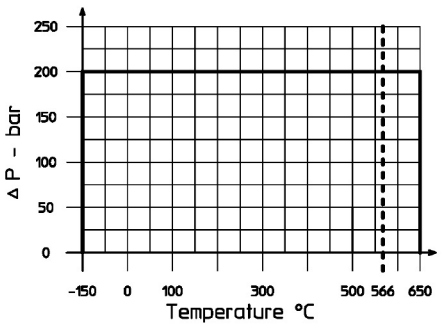
Insert code		D	E	C	R	S	P
Item	***Description***						
19	INSERT	-	-	-	-	-	PTFE
32	SEAL RING	-	-	-	-	Graph. loaded PTFE	-
46	ENERGIZER	A 182 F6NM Hard.	-	-	-	-	-
47	SEAL RING	Carbon graphite	-	Carbon graphite	-	-	-
48	BACK SEAL	-	-	Flexible graphite	-	-	-
49	ROD SEAL	A 182 F6NM Hard.	-	A 182 F6NM Hard.	A 182 F6NM Hard.	-	-
51	O-ring	-	Fluoroelastomer	-	-	-	-
52	SEAL RING	-	Bronze loaded PTFE	-	-	-	-
110	SEAL RING	-	-	-	INCONEL X 750 silver plated	-	-
112	SCREW	-	-	-	A 479 316	-	-
114	WASHER	-	-	-	A 479 304	-	-

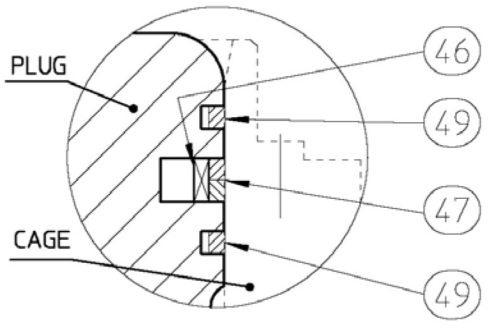
Soft Seat Insert	
Used for code	**P and U**
Sealing Class	**VI**



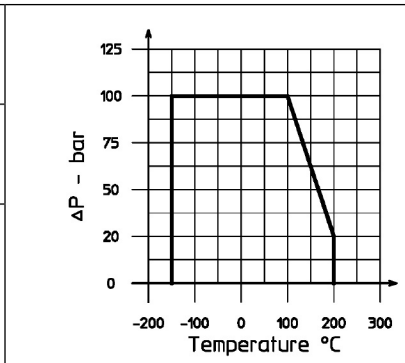


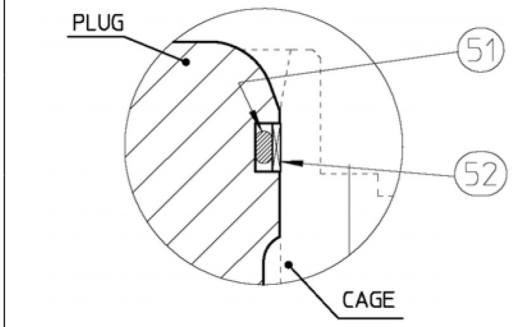
Energized Carbon Graphite Rings	
Used for code	**D**
Max sealing class:	**IV**



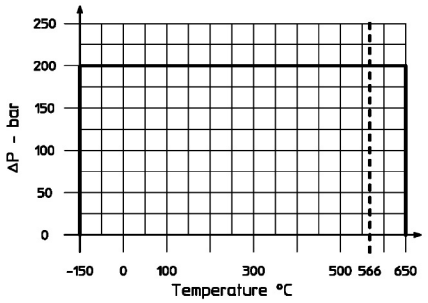


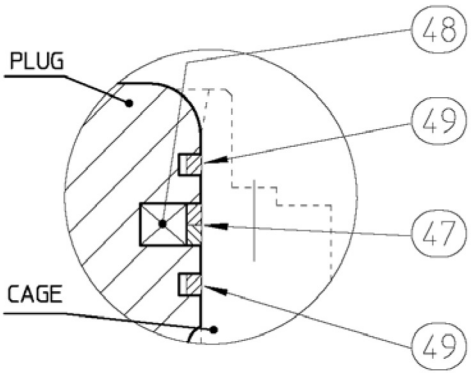
Bronzed PTFE Ring	
Used for code	**E**
Max sealing class:	**IV s1**



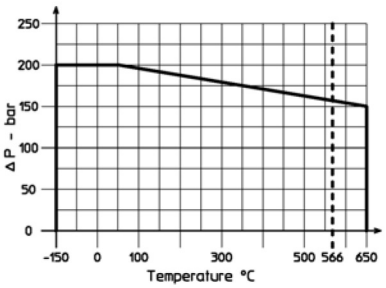


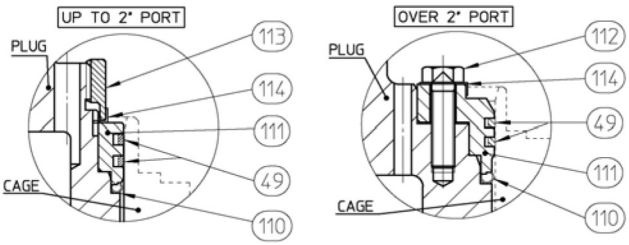
Carbon Graphite Rings and Back Seal	
Used for code	**C**
Max sealing class:	**IV s1**



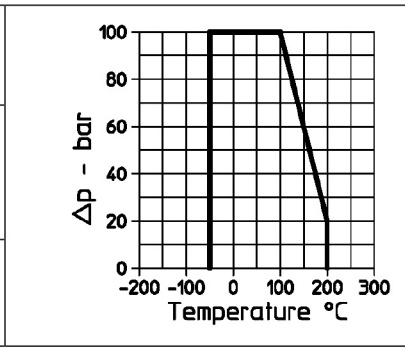


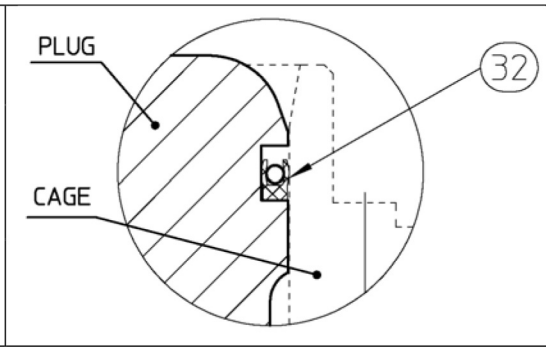
Metallic C-ring	
Used for code	**R**
Max sealing class:	**V**



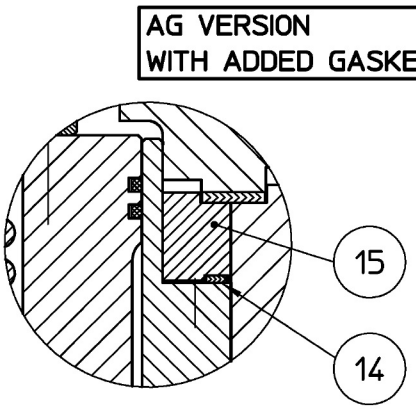


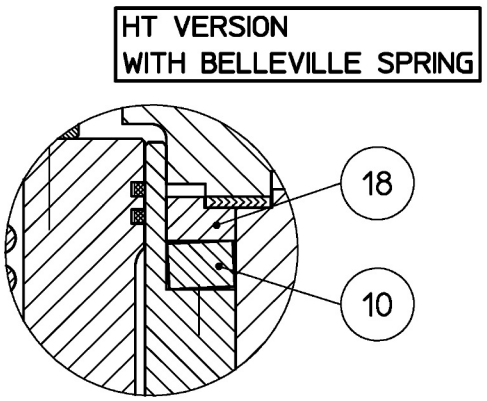
Pressure Energized PTFE Ring	
Used for code	**S and U**
Max sealing class:	**VI**





		Carbon and CrMo Steels			Stainless Steels	
Temperature Range		-29 ÷ +427℃	-29 ÷ +566℃	-29 ÷ +566℃	-196 ÷ +343℃	-196 ÷ +343℃
Item	***Description***					
1	BODY	SA 216 WCC *GP240GH*	SA 217 WC9 *G17CrMo9-10*	SA 217 C12A	SA 351 CF8M *EN GX5 CrNiMo19-11-2*	SA 351 CF3M *EN GX2 CrNiMo19-11-2*
2	BONNET	SA 216 WCC	SA 217 WC9	SA 217 C12A	SA 351 CF8M	SA 351 CF3M
		SA 105	SA 182 F22	SA182 F91	SA 479 316	SA 479 316L
3	BODY STUD	SA 193 B7	SA 193 B16	SA 479 XM-19	SA 479 XM-19	
			SA 479 XM-19		SA 193 B7	
4	NUT	SA 194 gr.4	SA 194 gr.8		SA 194 gr.8	
					SA 194 gr.4	
5	PLUG••	A 182 F6NM Nitrided			A 479 316 + Stellite gr.6	A 479 316L + HVD1
6	SEAT••	AISI 400 series hardened		-	A 479 316 + Stellite gr.6	A 479 316L + HVD1
		-	DN ≤4" : A 479 316 + Stellite gr.6			
		-	DN >4": A 182 F6NM + Stellite gr.6			
7	STEM••	A 479 316	A 479 316	A 479 XM-19	A 479 316	A 479 316L
			A 479 XM-19			
8 - 14	GASKET♦	AISI 321 + GRAFITE				
9	CAGE	A 351 CA6NM Nitrided			A 479 316L Cr plated	
10	DISC SPRING	INCONEL 718 Hardened				
12	PIN	A 479 304				
18	SPACER	A 105	A 182 F22	A 192 F91	A 479 316L	
27	PACKING♦	TFK - aramid fibres reinforced PTFE				
		GRF - Pure flexible graphite				
		TFP - Pure PTFE				
28	SCREW	A 479 304				
29	WASHER	SA 479 304 Annealed				
30	FLANGE	A 182 F6NM Hardened			A 479 316	A 479 316L
31	PILOT	A 182 F6NM + Nitrided			A 479 316L + Stellite gr.6	
32	SPRIG	INCONEL X750 TTT				
49	SEAL RING♦	A 182 F6NM Hardened			A 479 316L	

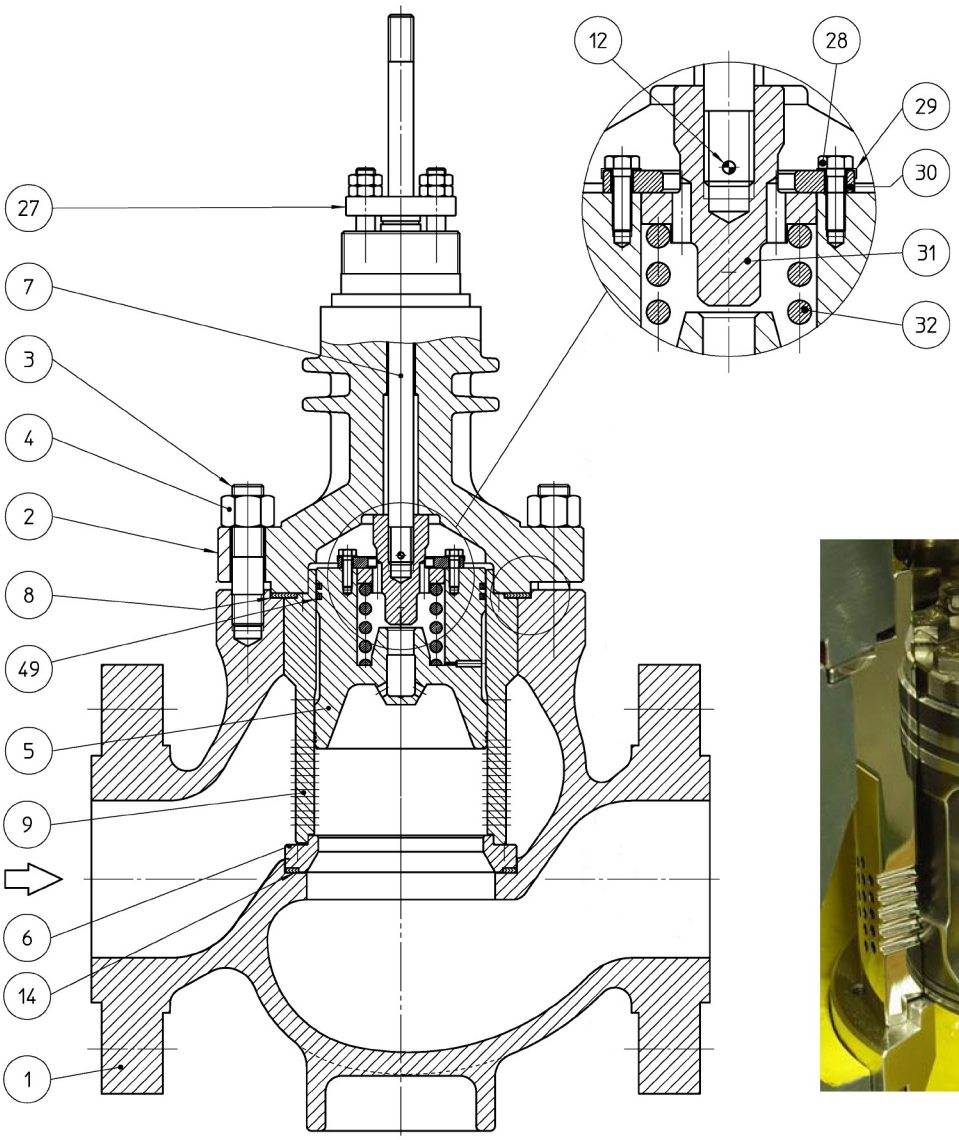




♦ Suggested as spare part for commissioning and start-up

•• Suggested as spare part for for the first two years

(1) Balanced plug with pilot 1-6948 series control valves are specifically designed for service on compressible fluids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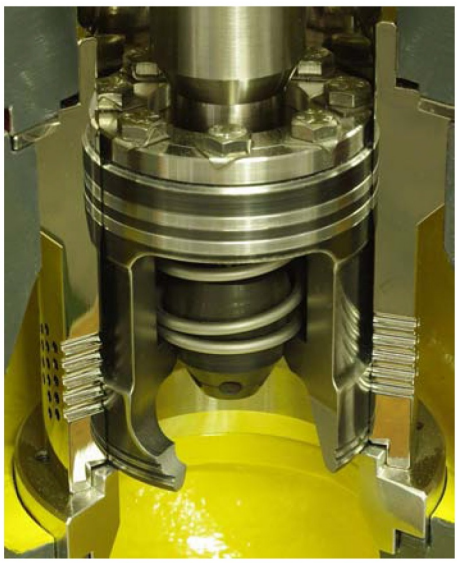


VALVES DIMENSIONS[2]

Dimension A

DN	FLANGED & BW																		SW & SCREWED	
	ANSI 150 PN16			ANSI 300 PN40			ANSI 600 PN100			ANSI 900 PN150			ANSI 1500 PN250			ANSI 2500 PN420			ANSI	
	RF	RJ	BW	RF	RJ	BW	RF	RJ	BW	RF	RJ	BW	RF	RJ	BW	RF	RJ	BW	300	600
3/4"	184	-	206	194	207	206	206	206	206	273	273	279	273	273	279	318	318	318	-	-
1"	184	197	210	197	210	210	210	210	210	273	273	279	273	273	279	318	318	318	-	-
1.1/2"	222	235	251	235	248	251	251	251	251	333	333	330	333	333	330	381	384	359	251	251
2"	254	267	286	267	283	286	286	289	286	375	378	375	375	378	375	413	416	400	286	286
3"	298	311	337	317	333	337	337	340	337	441	444	460	460	463	460	660	666	498		
4"	352	365	394	368	384	394	394	397	394	511	514	530	530	533	530	737	747	575		
6"	451	464	508	473	489	508	508	511	508	714	717	768	768	774	768					
8"	543	556	610	568	584	610	610	613	610	781	784	832	838	848	832					
10"	673	686	752	708	724	752	752	755	752	864	867	991	991	1001	991					
12"	737	750	819	775	791	819	819	822	819	1016	1019	1130	1130	1146	1130					
14"	889	902	1029	927	943	1029	972	975	1029											
16"	1016	1029	1108	1057	1073	1108	1108	1111	1108					on request						
20"	1278	1291	1420	1320	1333	1420	1400	1413	1460											
24"	1680	1693	1680	1724	1746	1724	1800	1809	1800											

Dimension B

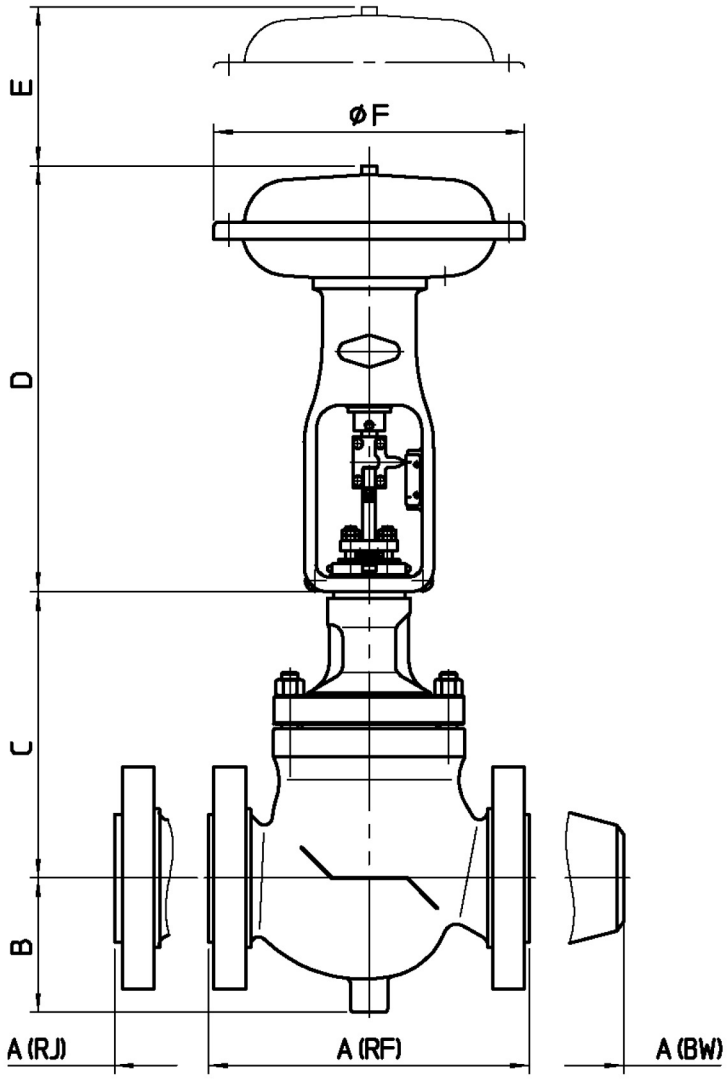
DN	ANSI					
	150	300	600	900	1500	2500
3/4"	70	70	70	85	85	90
1"	70	70	70	85	85	90
1.1/2"	100	100	100	110	110	120
2"	122	122	122	135	135	150
3"	150	150	150	170	170	180
4"	160	160	160	200	200	220
6"	290	200	205	210	222	
8"	200	200	220	220	230	
10"	258	258	265	310	335	
12"	290	290	300	330	370	
14"	350	360	380			
16"	370	380	410		on request	
20"	490	500	520			
24"	550	560	570			

Dimension C[3]

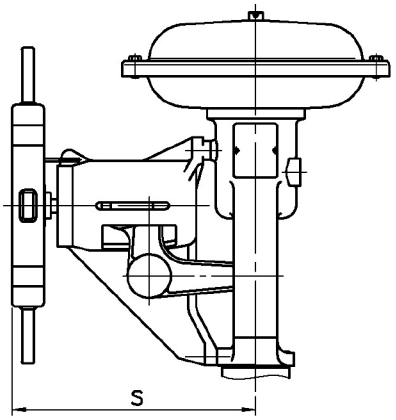
ANSI					
150	300	600	900	1500	2500
188	188	188	218	218	238
188	188	188	218	218	238
250	250	250	280	280	320
290	290	290	310	310	340
330	330	330	340	340	370
380	380	380	400	400	430
430	430	430	460	460	
480	480	480	520	520	
620	620	620	670	670	
710	710	710	760	760	
780	780	780			
910	910	910		on request	
1060	1060	1060			
1330	1330	1330			

[2] Dimensions in mm. See following page drawings for dimensions positioning.

[3] Approximate value, for more accurate value contact Ebson



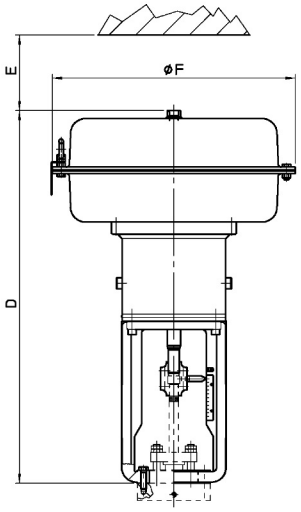
1-6940 VeGA valve with diafragm actuator



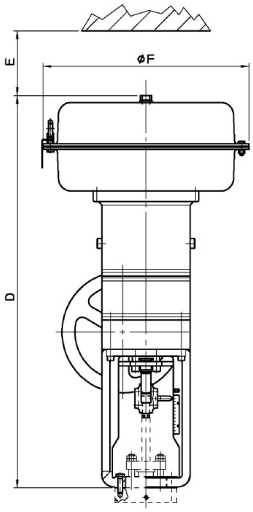
Diaphragm Actuator with side hand-wheel

	1-X-210 Diaphragm Series[4]				
TYPE	**D**		**E**	**ΦF**	**S**
	Direct	**Reverse**			
D250	400	460	130	265	300
D310	412	494	150	325	300
D390	511	662	200	400	360
D450	584	750	250	482	365
D600	754	954	300	631	455

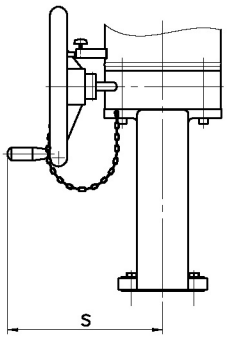
[4] See Ebson Actuators bulletins 1-X210, 1-X250 and 1-X400 for further information



D63 Series Diaphragm Actuator



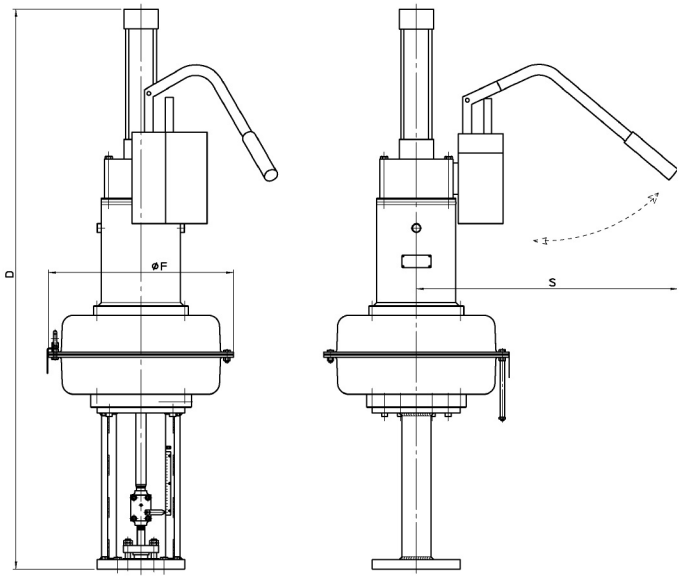
D63 Hand-wheel front view



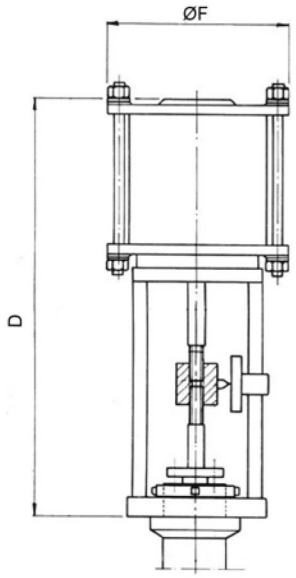
D63 Hand-wheel side view

D63 TYPE		1-X-250 Diaphragm Series D Direct	D Reverse	E	ϕF	S
stroke ≤120mm	Standard	985	1022	350	640	-
	With side handwheel	1211	1248	350	640	365
	With H.M.O.	1385	1422	350	640	905
stroke >120mm	Standard	1370	1407	450	640	-
	With side handwheel	1686	1723	450	640	365
	With H.M.O.	1870	1907	450	640	905

	1-X-400 Cylinder Series				
C450	1767	2107	450	565	-
With side hand-wheel	2245	2585	450	565	350
C600	1841	2130	450	730	-
With side hand-wheel	2319	2670	450	730	350



D63 actuator with Hydraulic Manual Operator (H.M.O.)
with damping functions



1-X-400 series
Pneumatic Cylinder Actuators

MASSES[5]

SERIES	TYPE		Direct	Reverse	Handwheel (to be added)	
					Side	Top
1-X-210	D250		15	16	+10	+6
1-X-210	D310		16	19	+10	+6
1-X-210	D390		29	39	+19	+15
1-X-210	D450		48	63	+19	+15
1-X-210	D600		98	130	+13	-
1-X-250	D63	stroke≤120mm	185	215	+40 both fo hadwheel and HMO	
		stroke>120mm	220	250	+60 both fo hadwheel and HMO	
1-X-400	C450		540		650	
1-X-400	C600		1016		1156	

DN	Flanged						BW				
	ANSI 150	ANSI 300	ANSI 600	ANSI 900	ANSI 1500	ANSI 2500	ANSI 300	ANSI 600	ANSI 900	ANSI 1500	ANSI 2500
3/4"	16	22	22	30	30	38	21	15	28	28	31
1"	16	22	22	30	30	38	21	15	28	28	31
1.1/2"	41	43	46	60	60	54	41	43	55	55	44
2"	49	60	63	102	102	143	57	60	93	93	129
3"	74	94	100	180	180	340	88	94	170	164	311
4"	119	120	135	260	260	500	111	121	243	236	457
6"	198	250	300	420	560		256	273	384	507	
8"	310	345	432	680	980		322	392	620	897	
10"	470	576	789	1200	1700		543	726	1120	1562	
12"	677	805	789	1580	2250		760	719	1468	2021	
14"	960	1240	1650	on request			1182	1572	on request		
16"	1416	1700	2100				1628	1987			
20"	2256	3300	3900				3265	3728			
24"	2916	4100	5000				4056	4780			

[5] Masses in kg

[6] See Ebson Actuators bulletins 1-X-210, 1-X-250 and 1-X-400 for further information

OPTIONS

- Cleaning for Oxygen Service
- Reducers
- Electric or hydraulic actuators
- Special materials
- Body drain connections
- Special tools

SUGGESTED SPARE PARTS

Components suggested as spare parts for commissioning and start-up[7]:

- body gaskets
- packing
- soft balancing inserts (PTFE / Graphite)

Two years suggested spare parts[8]:

- plug
- seat
- stem
- metallic balancing inserts
- electrical accessories (2% per type)

SPECIAL TOOLS

(provided as options)

- blow out
- blow through/flushing
- pressure testing kit
- acid washing kit
- special trim for blowing

[7] See also part list where •

[8] See also part list where ••