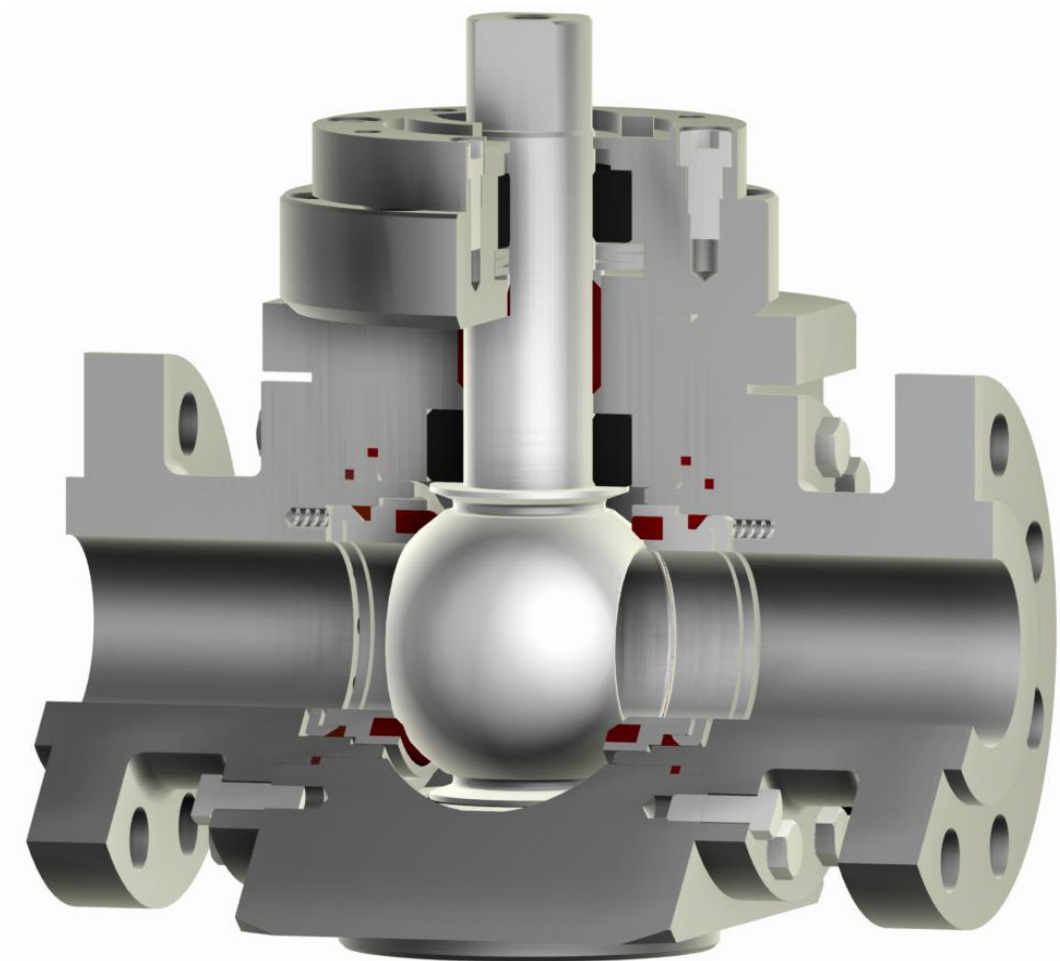




Two-Way Soft Seated Ball Valve Type 16-S



Design Characteristics

- ✓ Split body
- ✓ Trunnion mounted ball with integral stem
- ✓ Live loaded stem packing
- ✓ Spring loaded seat system
- ✓ Fire Safe design optional

Design Standards

- ✓ EN 12516, EN 1983, ISO 5211, AD-2000
- ✓ ASME B 16.34, API 608

Range of Application

- ✓ Diameter ½" to 12" / DN 15 to 300
- ✓ Class 150 to 1500 / PN 10 to 250
- ✓ -20°F to +450°F / -60°C to +250°C

Approvals

- ✓ "TA-Luft" certified for low fugitive emissions

Testing Standards

- ✓ EN 12266-1/2
- ✓ API 598



Main Parts

- 1 Body
- 2 Body End Connection
- 3 Retainer Ring
- 4 Retainer Ring
- 5 Ball with Stem
- 8 Gland Washer
- 10 Bearing Cover
- 12 Cover
- 13 Bearing Ring
- 16 Plate Spring
- 17 Coil Spring
- 20 Sealing Ring
- 21 Seat Ring
- 23 Body Gasket
- 24 Stem Packing
- 25 Bearing Ring
- 26 Bearing Ring
- 27 Body Gasket
- 28 Hexagonal Screw
- 29 Socket Screw
- 30 Socket Screw

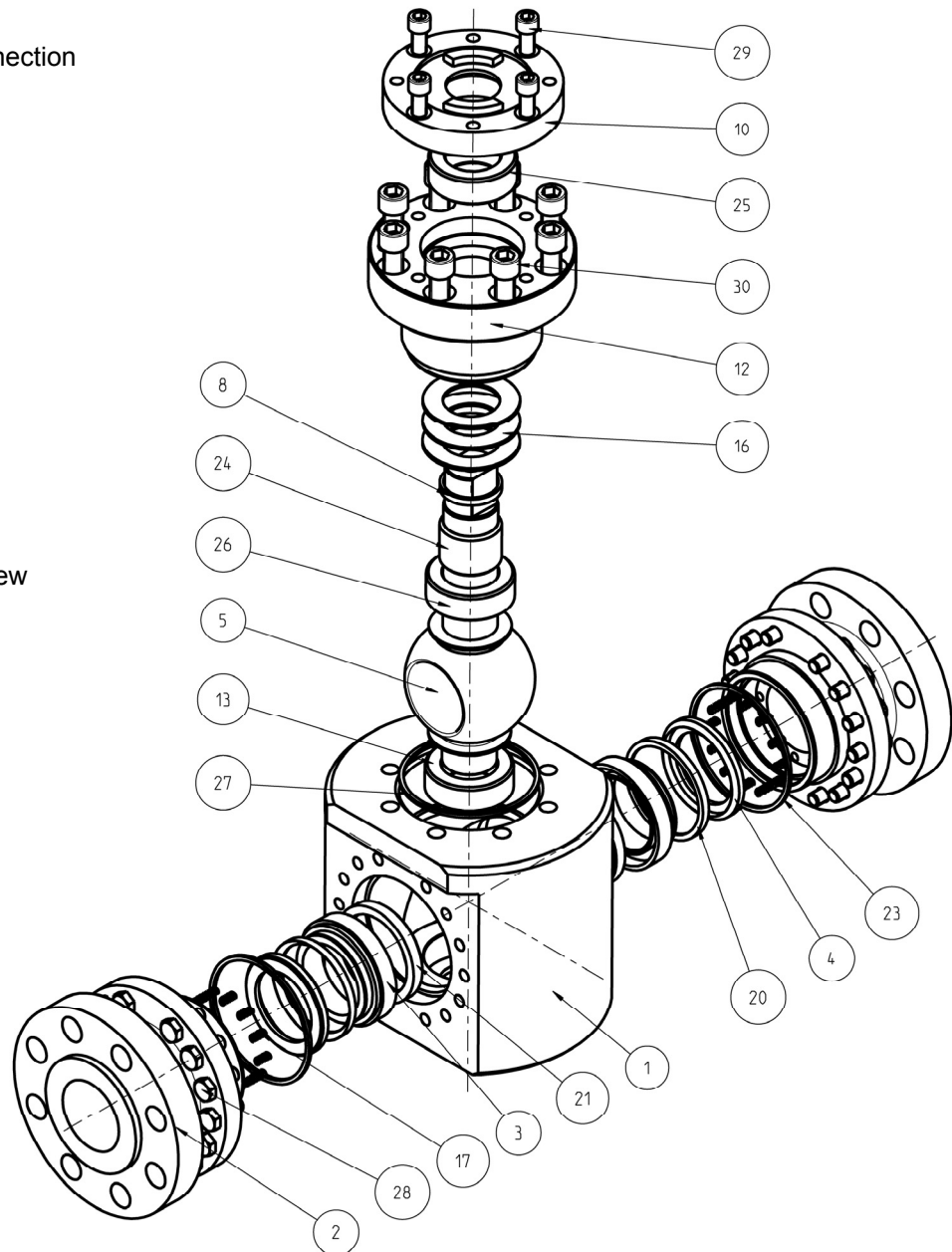


Fig. 1

Description

This PERRIN ball valve is a trunnion mounted ball design with split body housing and integral stem. The spring loaded seat system and live loaded stem packing also provide continuous tightness during rapid temperature changes.

The valve is equipped with an integral actuator mounting flange for actuator connection acc. to ISO 5211 standard. Stem extensions, locking devices and actuators with accessories, can be attached without operating interruptions.

The ball valve has an antistatic design. The stem packing and sealings are "TA-Luft" certified for low fugitive emissions.

Parts List / Materials

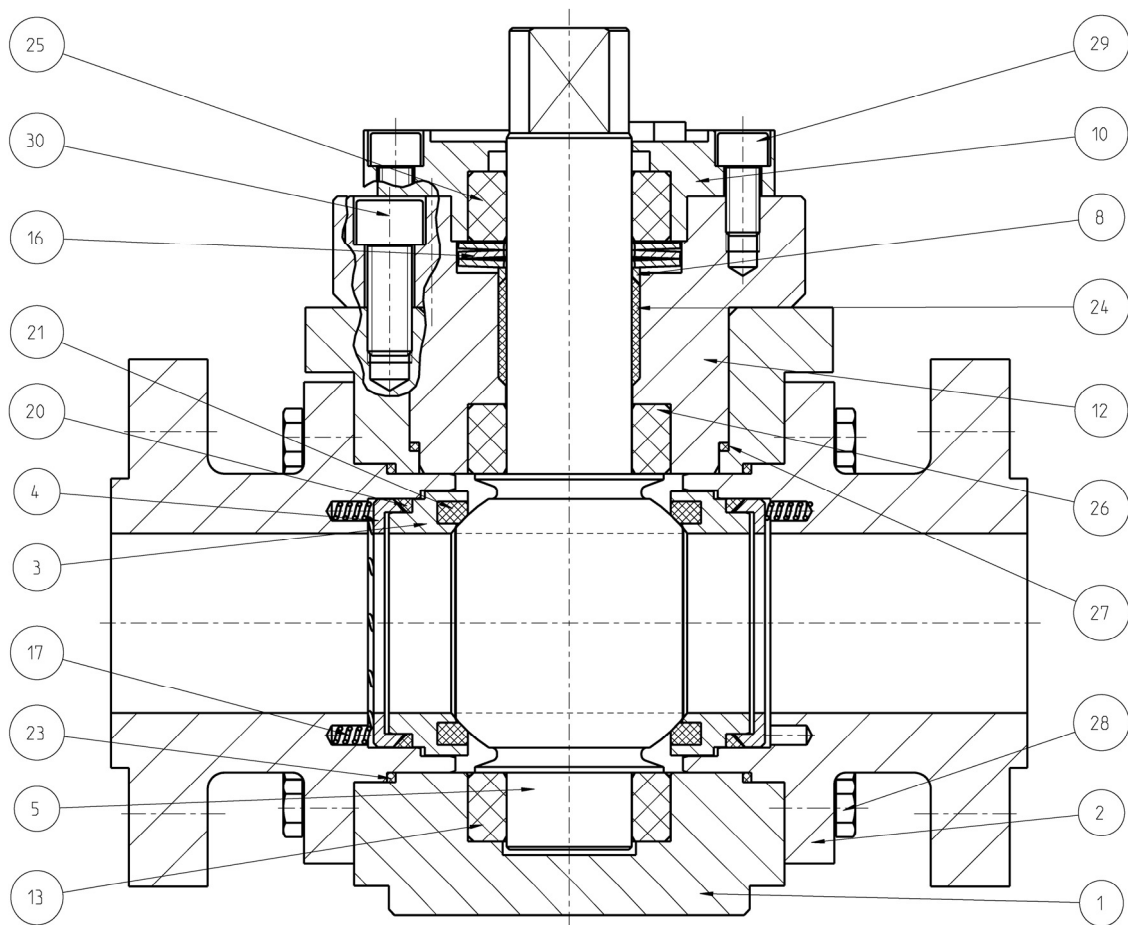


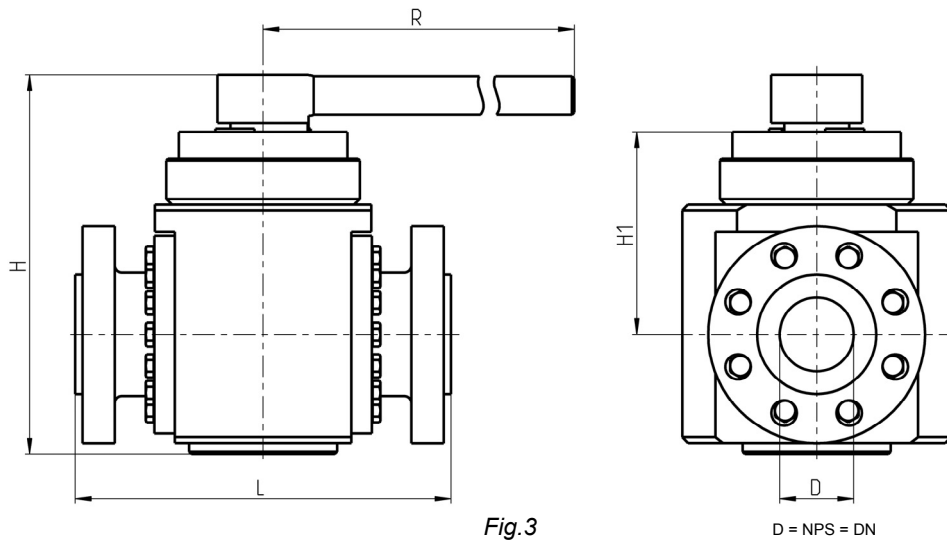
Fig.2

Item	Designation	ASME		DIN EN	
		-20°F up to +450°F	-20°F up to +450°F	-60°C up to +250°C	-10°C up to +250°C
1	Body	A351 CF8M ¹⁾	A216 WCB	1.4408 ¹⁾	1.0619
2	Body End Connection	Type 316 (up to 2")	A105 (up to 2")	1.4571 (up to 2")	1.0460 (up to 2")
3	Retainer Ring	Type 316	Type 316	1.4571	1.4571
4	Retainer Ring	Type 316	Type 316	1.4571	1.4571
5	Ball with Stem	Type 316 A351 CF8M	Type 316 A351 CF8M	1.4571 1.4408	1.4571 1.4408
8	Gland Washer	Type 316	Type 316	1.4571	1.4571
10	Bearing Cover	Type 316	A216 WCB	1.4571	1.0619
12	Cover	Type 316 / A351 CF8M ¹⁾	A105 / A216 WCB	1.4571 / 1.4408 ¹⁾	1.0460 / 1.0619
13	Bearing Ring	Carbon-Antimony	Carbon-Antimony	Carbon-Antimony	Carbon-Antimony
16	Plate Spring ¹⁾	Type 301	AISI 6150	1.4310	1.8159
17	Coil Spring	Type 316	Type 316	1.4571	1.4571
20	Sealing Ring	Graphite	Graphite	Graphite	Graphite
21	Seat Ring	Mod. PTFE TFM 1600	Mod. PTFE TFM 1600	Mod. PTFE TFM 1600	Mod. PTFE TFM 1600
23	Body Gasket	Mod. PTFE TFM 1600	Mod. PTFE TFM 1600	Mod. PTFE TFM 1600	Mod. PTFE TFM 1600
24	Stem Packing	PTFE-Con. Pigment	PTFE-Con. Pigment	PTFE-Con. Pigment	PTFE-Con. Pigment
25	Bearing Ring	Graphite	Graphite	Graphite	Graphite
26	Sealing Ring	PTFE-Glass	PTFE-Glass	PTFE-Glass	PTFE-Glass
27	Body Gasket	Mod. PTFE TFM 1600	Mod. PTFE TFM 1600	Mod. PTFE TFM 1600	Mod. PTFE TFM 1600
28	Hexagonal Screw	SS	SS	SS	SS
29	Socket Screw	SS	SS	SS	SS
30	Socket Screw	SS	SS	SS	SS

Tab.1

1) Material 2.4668 (Inconel 718) is generally required for operating temperature over 200°C [392°F]
2) Materials for lower / higher temperature on request

Technical Data



Nominal Size		Class 150 - Full Bore Dimensions acc. to ASME Standards						Face to Face ASME B16.10		Cv [gal/min]	Weights	
NPS [inch]	DN [mm]	H [inch]	H [mm]	H1 [inch]	H1 [mm]	R [inch]	R [mm]	L [inch]	L [mm]		kg	lbs
½	15	6.2	158	3.5	89	12	300	4	108	27	15	33
¾	20	6.8	173	3.7	95	12	300	5	117	48	17	37
1	25	7	188	4.1	105	12	300	5	127	75	18	40
1¼	32	8.3	210	4.7	120	12	300	6	140	124	23	51
1½	40	9.4	238	5.3	135	12	300	6	165	193	38	84
2	50	10.0	255	5.8	147	18	450	7	178	302	52	114
2½	65	12.6	320	7.0	178	18	450	7	190	510	71	156
3	80	13.5	343	8	191	28	700	8	203	772	102	224
4	100	14	363	7.9	201	28	700	9	229	1206	154	339

Tab.2

Nominal Size		Class 150 - *Single Reduced Bore Dimensions acc. to ASME Standards						Face to Face ASME B16.10		Cv [gal/min]	Weights	
NPS [inch]	*SRB [inch]	H [inch]	H [mm]	H1 [inch]	H1 [mm]	R [inch]	R [mm]	L [inch]	L [mm]		kg	lbs
½	-	-	-	-	-	-	-	-	-	-	-	-
¾	½	6.2	158	3.5	89	12	300	5	117	27	16	35
1	¾	6.8	173	3.7	95	12	300	5	127	48	18	40
1¼	1	7	188	4.1	105	12	300	6	140	75	20	44
1½	1¼	8.3	210	4.7	120	12	300	6	165	124	27	59
2	1½	9.4	238	5.3	135	12	300	7	178	193	44	97
2½	2	10.0	255	5.8	147	18	450	7	190	302	65	143
3	2½	12.6	320	7.0	178	18	450	8	203	510	82	180
4	3	13.5	343	8	191	28	700	9	229	772	117	257

Tab.3



Nominal Size		Class 300 - Full Bore Dimensions acc. to ASME Standards						Face to Face ASME B16.10		Cv [gal/min]	Weights	
NPS [inch]	DN [mm]	H [inch]	H [mm]	H1 [inch]	H1 [mm]	R [inch]	R [mm]	L [inch]	L [mm]		kg	lbs
½	15	6.2	158	3.5	89	12	300	6	140	27	16	35
¾	20	6.8	173	3.7	95	12	300	6	152	48	18	40
1	25	7	188	4.1	105	12	300	6	165	75	19	42
1¼	32	8.3	210	4.7	120	18	450	7	178	124	25	55
1½	40	9.4	238	5.3	135	18	450	7	190	193	41	90
2	50	10.0	255	5.8	147	18	450	9	216	302	54	119
2½	65	12.6	320	7.0	178	18	450	9	241	510	73	161
3	80	13.5	343	8	191	28	700	11	282	772	106	233
4	100	14	363	7.9	201	28	700	12	305	1206	163	359

Tab.4

Nominal Size		Class 300 - *Single Reduced Bore Dimensions acc. to ASME Standards						Face to Face ASME B16.10		Cv [gal/min]	Weights	
NPS [inch]	*SRB [inch]	H [inch]	H [mm]	H1 [inch]	H1 [mm]	R [inch]	R [mm]	L [inch]	L [mm]		kg	lbs
½	-	-	-	-	-	-	-	-	-	-	-	-
¾	½	6.2	158	3.5	89	12	300	6	152	27	18	39
1	¾	6.8	173	3.7	95	12	300	6	165	48	20	44
1¼	1	7	188	4.1	105	12	300	7	178	75	21	47
1½	1¼	8.3	210	4.7	120	18	450	7	190	124	28	62
2	1½	9.4	238	5.3	135	18	450	9	216	193	46	102
2½	2	10.0	255	5.8	147	18	450	9	241	302	62	136
3	2½	12.6	320	7.0	178	18	450	11	282	510	84	185
4	3	13.5	343	8	191	28	700	12	305	772	122	268

Tab.5

Nominal Size		PN 16 - PN 40 Dimensions [mm] acc. to DIN EN Standards			Face to Face DIN EN 558		Kv [m³/h]	Weights [kg]	
DN		H	H1	R	GR1 L	GR27 L		GR1	GR27
15		158	89	300	130	115	23	16	14
20		173	95	300	150	120	41	17	15
25		188	105	300	160	125	64	18	16
32		210	120	300	180	130	106	25	23
40		238	135	450	200	140	165	41	37
50		255	147	450	230	150	258	59	54
65		320	178	450	290	170	436	76	66
80		343	191	700	310	180	660	107	93
100		363	201	700	350	190	1031	161	140

Tab.6

Other dimensions and pressure classes on request.

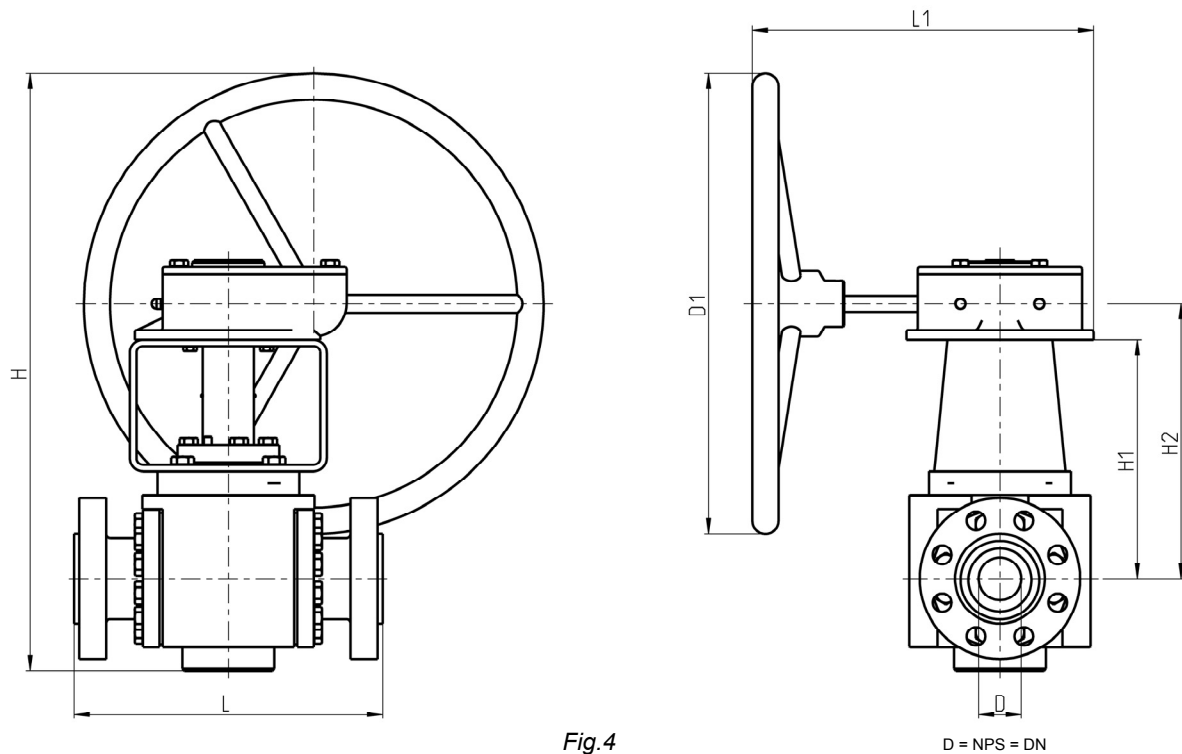


Fig.4

Nominal Size		Class 150 - Full Bore Dimensions acc. to ASME Standards										Face to Face ASME B16.10		Cv [gal/min]	Weights	
NPS [inch]	DN [mm]	H [inch]	H [mm]	H1 [inch]	H1 [mm]	H2 [inch]	H2 [mm]	L1 [inch]	L1 [mm]	D1 [inch]	D1 [mm]	L [inch]	L [mm]		kg	lbs
6	150	32.3	821	7.9	201	13	331	20.3	515	28	700	22	550	2448	160	352
8	200	34.5	877	10.5	266	18	456	23	588	20	500	26	650	4351	382	840
10	250	42	1057	11.2	284	19.8	504	29	725	28	700	31	775	7070	516	1135
12	300	41	1053	12	312	20.2	512	30	770	24	600	35	900	9789	941	2070

Tab.7

Nominal Size		Class 150 - *Single Reduced Bore Dimensions acc. to ASME Standards										Face to Face ASME B16.10		Cv [gal/min]	Weights	
NPS [inch]	*SRB [inch]	H [inch]	H [mm]	H1 [inch]	H1 [mm]	H2 [inch]	H2 [mm]	L1 [inch]	L1 [mm]	D1 [inch]	D1 [mm]	L [inch]	L [mm]		kg	lbs
6	4	27	687	6.6	167	12	297	19.4	492	20	500	22	550	1699	150	329
8	6	33.6	852	7.9	201	13	331	20.3	515	28	700	26	650	2448	184	405
10	8	35.8	909	10.5	266	18	456	23	588	20	500	31	775	4351	439	966
12	10	43	1095	11.2	284	19.8	504	29	725	28	700	35	900	7070	593	1305

Tab.8



Nominal Size		Class 300 - Full Bore Dimensions acc. to ASME Standards										Face to Face ASME 16.10		Cv [gal/min]	Weights	
NPS [inch]	DN [mm]	H [inch]	H [mm]	H1 [inch]	H1 [mm]	H2 [inch]	H2 [mm]	L1 [inch]	L1 [mm]	D1 [inch]	D1 [mm]	L [inch]	L [mm]		kg	lbs
6	150	37	940	12.1	307	17	431	24	610	28	700	22	550	2448	330	726
8	200	43.2	1098	14.4	366	20	507	31	790	31	800	31	800	4351	635	1397
10	250	45	1155	17.8	452	24.9	633	28	718	24	600	37	940	7070	898	1976
12	300	53	1338	24	610	32.6	828	31	792	20	500	41	1050	9789	1174	2583

Tab.9

Nominal Size		Class 300 - *Single Reduced Bore Dimensions acc. to ASME Standards										Face to Face ASME B16.10		Cv [gal/min]	Weights	
NPS [inch]	*SRB [inch]	H [inch]	H [mm]	H1 [inch]	H1 [mm]	H2 [inch]	H2 [mm]	L1 [inch]	L1 [mm]	D1 [inch]	D1 [mm]	L [inch]	L [mm]		kg	lbs
6	4	31	796	6.6	167	13	337	22	560	24	600	22	550	1699	308	678
8	6	34	872	12.1	307	17	431	24	610	20	500	31	800	2448	421	926
10	8	40.5	1029	14.4	366	20	507	31	790	24	600	37	940	4351	730	1607
12	10	51	1293	17.8	452	24.9	633	28	718	31	800	41	1050	7070	1033	2272

Tab.10

Nominal Size	PN 16 Dimensions [mm] acc. to DIN EN Standards					Face to Face DIN EN 558		Kv [m³/h]	Weights [kg]		
	DN	H	H1	H2	L1	D1	GR1		GR27	GR1	GR27
							L		L		
150	703	265	389	435	450	480	350	2320	204	177	
200	940	303	444	526	700	600	400	4124	336	292	
250	1125	360	541	600	700	730	450	6701	538	468	
300	1200	421	639	687	450	850	500	9279	772	671	

Tab.11

Nominal Size	PN 40 Dimensions [mm] acc. to DIN EN Standards					Face to Face DIN EN 558		Kv [m³/h]	Weights [kg]		
	DN	H	H1	H2	L1	D1	GR1		GR27	GR1	GR27
							L		L		
150	889	265	389	506	700	480	350	2320	271	236	
200	1032	303	444	585	800	600	400	4124	430	374	
250	1066	360	541	682	600	730	450	6701	684	595	
300	1147	421	639	768	500	850	500	9279	1039	903	

Tab.12

Other dimensions and pressure classes on request.

Top Works

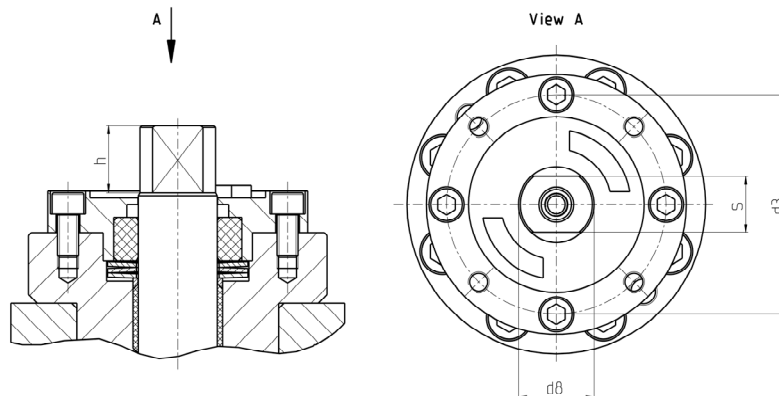


Fig.5

Dimensions								
F	h		s		d3		d8	
	mm	inch	mm	inch	mm	inch	mm	inch
F07	22	0.9	12	0.5	70	2.8	17	0.7
F10	27	1.1	18	0.7	102	4	27	1.1
F12	38	1.5	32	1.3	125	4.9	40	1.6
F14	38	1.5	38	1.5	140	5.5	57	2
F16	48	1.9	44	1.7	165	6.5	68	2.7
F25	48	1.9	55	2.2	254	10	82	3.2

Tab.13

Nominal Size		Actuator-Connection ISO 5211 Full Bore		Nominal Size		Actuator-Connection ISO 5211 *Single Reduced Bore	
NPS [inch]	DN [mm]	Class 150	Class 300	NPS [inch]	*SRB [inch]	Class 150	Class 300
½	15	F07	F07	½	-	-	-
¾	20	F07	F07	¾	½	F07	F07
1	25	F07	F07	1	¾	F07	F07
1¼	32	F07	F10	1¼	1	F07	F07
1½	40	F07	F10	1½	1¼	F07	F10
2	50	F10	F10	2	1½	F07	F10
2½	65	F10	F10	2½	2	F10	F10
3	80	F12	F12	3	2½	F10	F12
4	100	F12	F12	4	3	F12	F12
6	150	F12	F14	6	4	F12	F14
8	200	F14	F16	8	6	F12	F14
10	250	F16	F25	10	8	F14	F16
12	300	F16	F25	12	10	F16	F25

Tab.14



Pressure / Temperature Diagrams

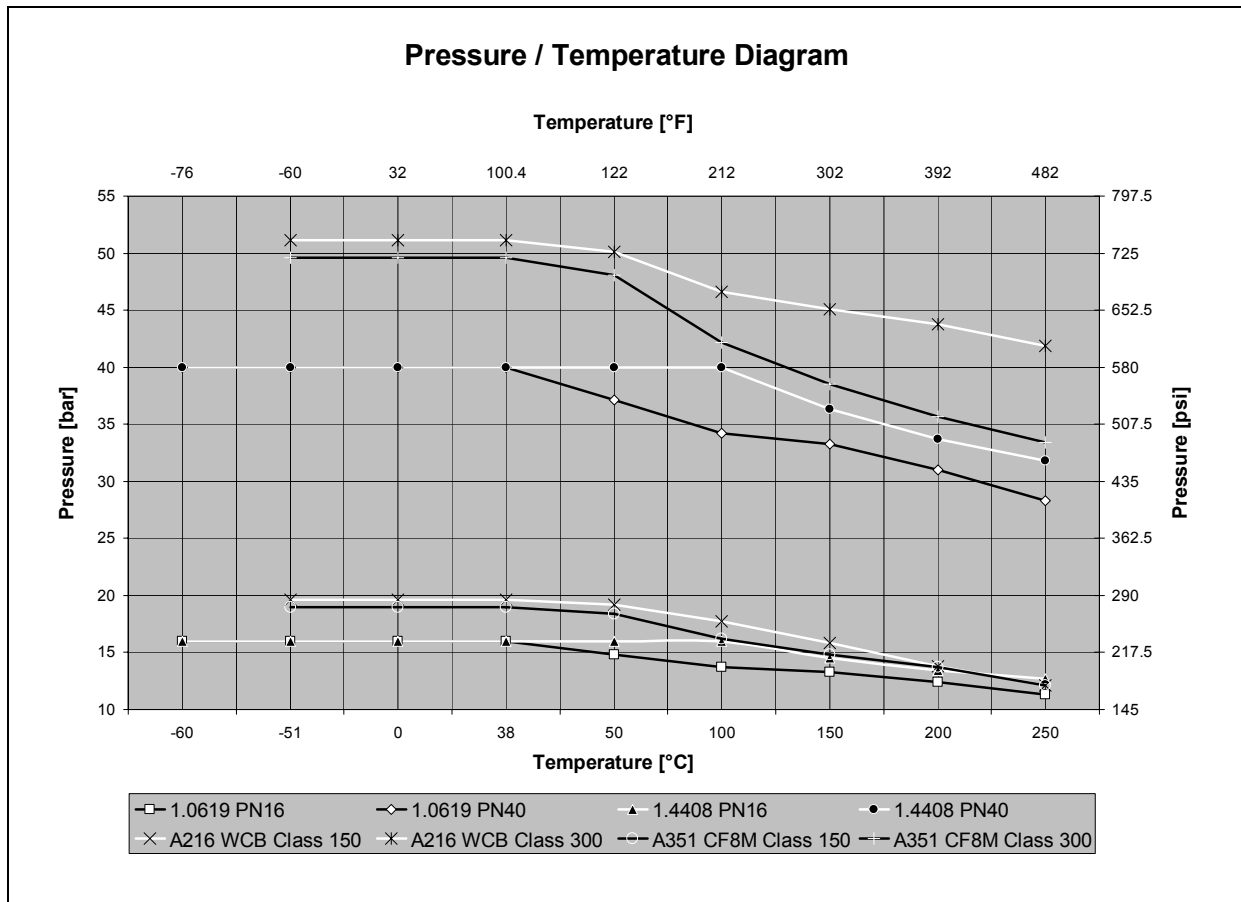


Fig. 6

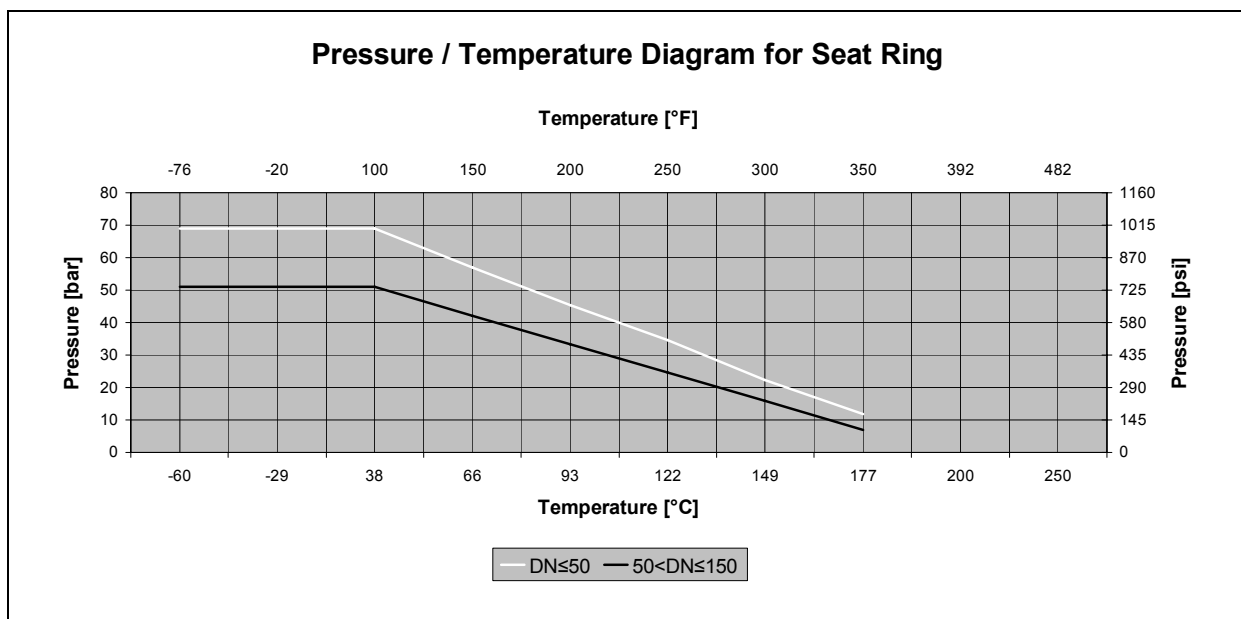


Fig. 7

Options

1) Seat system with protected spring area

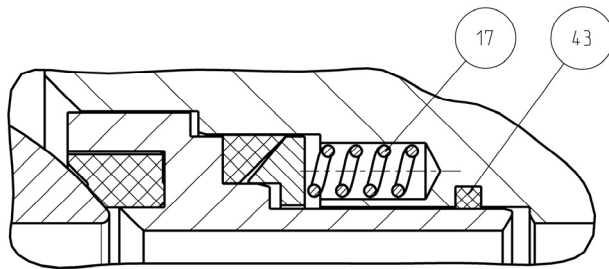


Fig.8

The area where the springs (17) are located is protected by graphite-based seal (43). This seal prevents material from entering the spring area or recess but allow the spring chamber to be energized by line pressure.

2) Adjustable stem packing

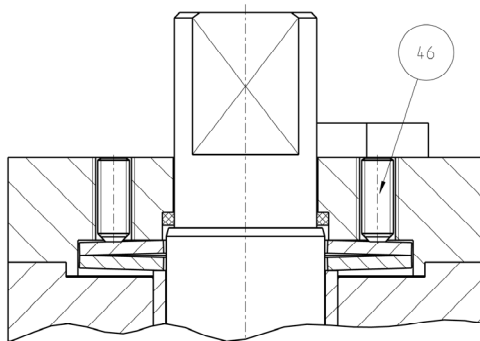


Fig.9

Additionally the live loaded stem packing may be equipped with hexagon socket screws (46). To fasten these screws it is possible to increase the spring force on the packing in the event of leakage.

3) With high pressure seat system

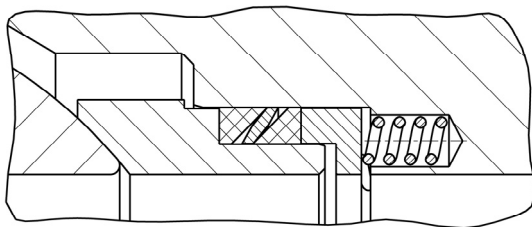


Fig.10

4) Double-stage gland packing with purge connection

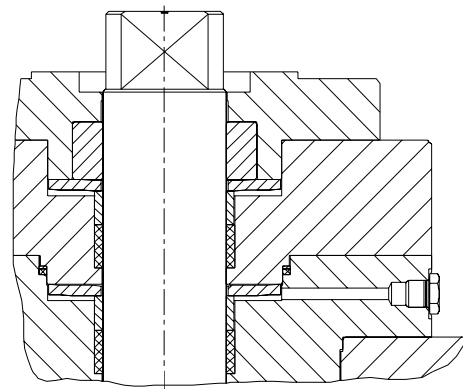


Fig.11

5) Valve with heating jacket

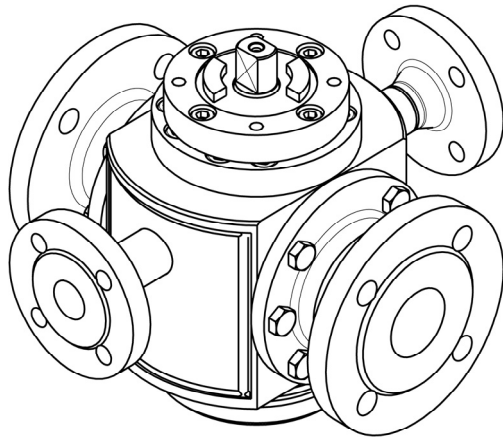


Fig.12

6) Valve with dosing ball

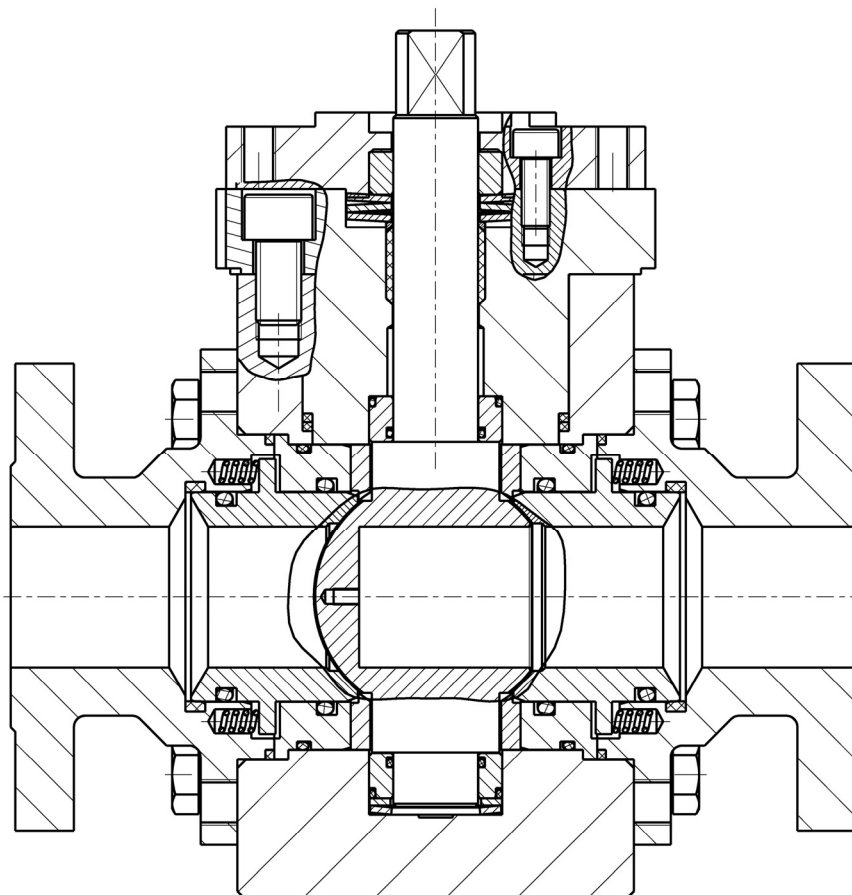


Fig.13

Technical modifications are reserved.

