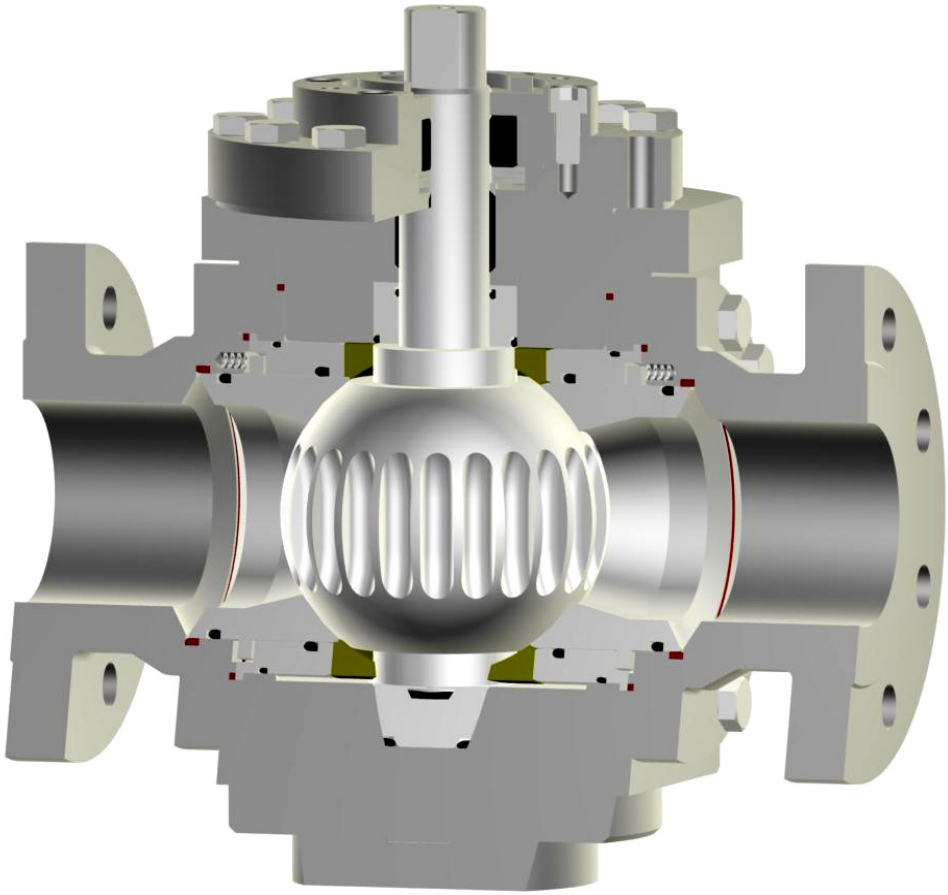
Two-Way Metal Seated Ball Valve
Type 16-R



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 +392°F / -60°C to +200°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
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	Screw
29	Screw
30	Screw
35-39	Round Rings
44	Cover
46	Cavity Leaf

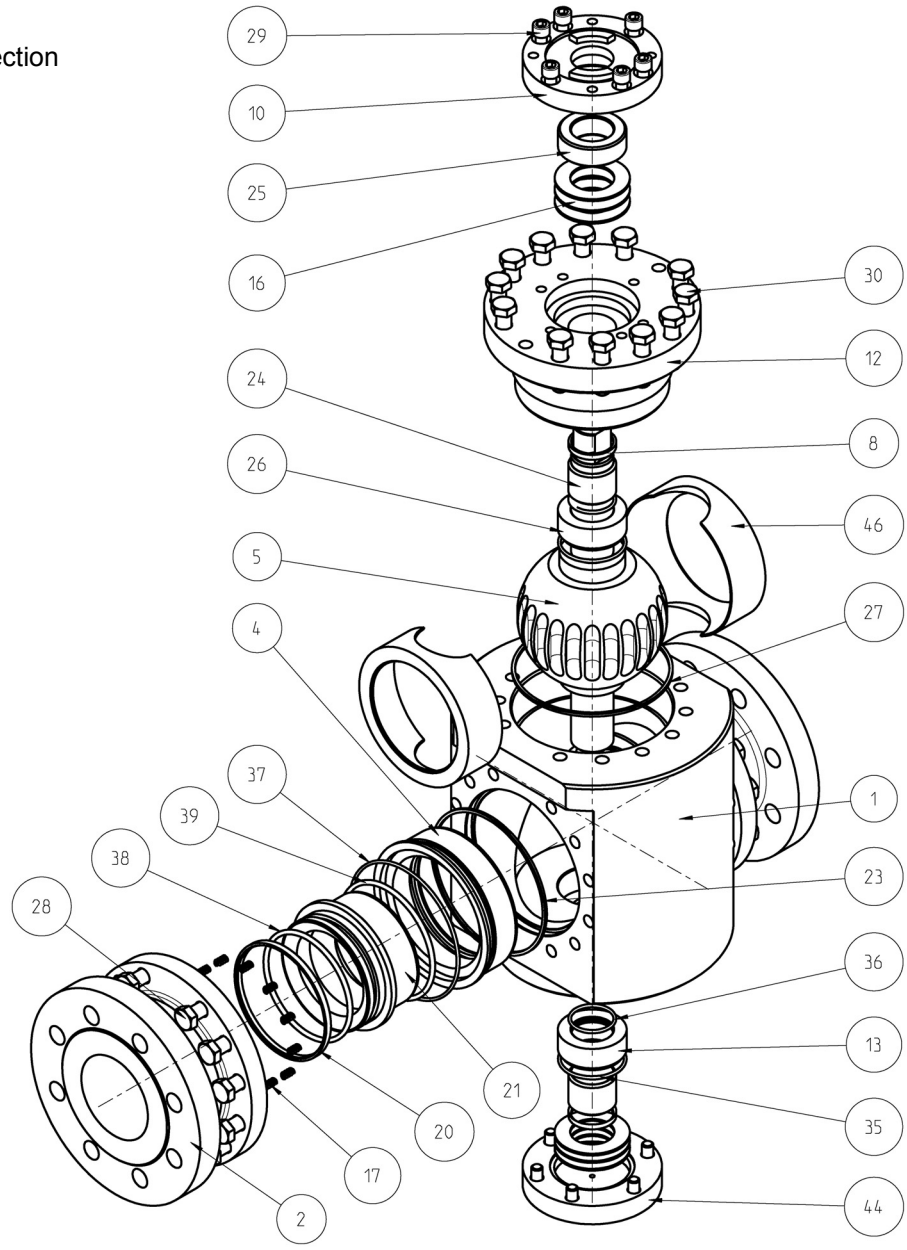


Fig.1

Description

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

The valve is equipped with an integral actuator mounting flange for actuator connection according to ISO 5211. 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

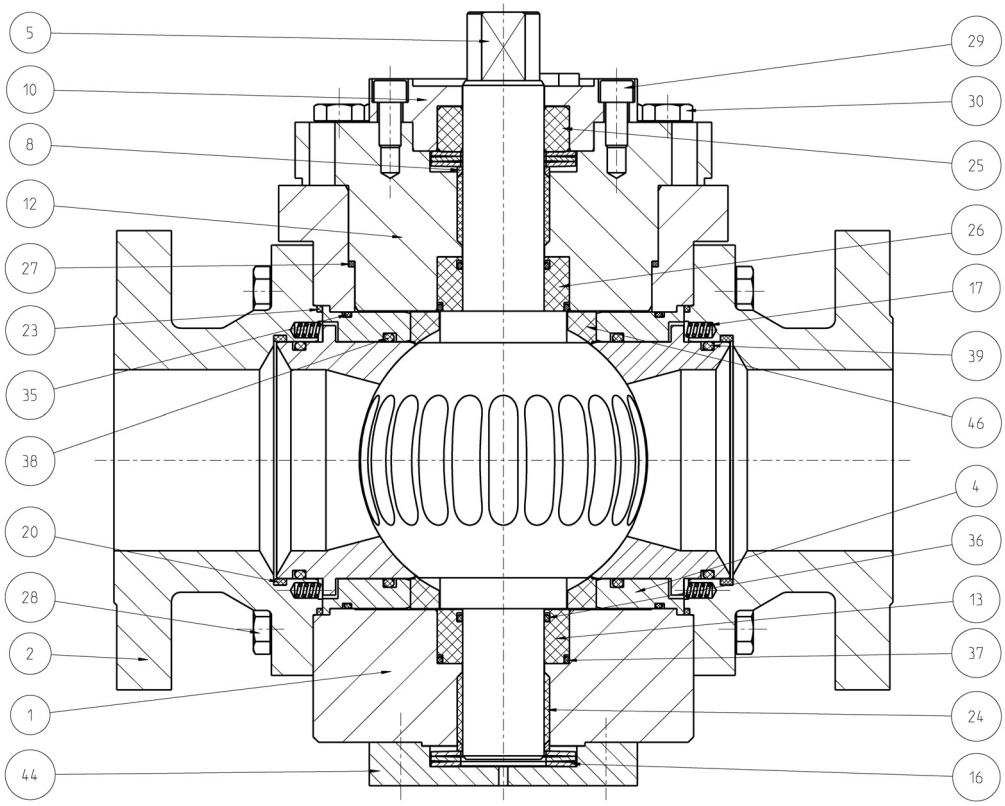


Fig.2

Item	Designation	ASME		DIN EN	
		-20°F up to +392°F	-20°F up to +392°F	-60°C up to +200°C	-10°C up to +200°C
1	Body	A351 CF8M Type 316 (up to 2")	A216 WCB A105 (up to 2")	1.4408[1)] 1.4571 (up to 2")	1.0619 1.0460 (up to 2")
2	Body End Connection				
4	Retainer Ring	Type 316	Type 316	1.4571	1.4571
5	Ball with Stem	Type 316 coated A351 CF8M coated	Type 316 coated A351 CF8M coated	1.4571 coated 1.4408[1)] coated	1.4571 coated 1.4408[1)] coated
8	Gland Washer	Type 316	Type 316	1.4571	1.4571
10	Bearing Cover	Type 316	A105	1.4571	1.0460
12	Cover	Type 316 / A351 CF8M	A105 / A216 WCB	1.4571 / 1.4408[1)]	1.0460 / 1.0619
13	Bearing Ring	PEEK	PEEK	PEEK	PEEK
16	Plate Spring[3)]	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	Type 316 coated	Type 316 coated	1.4571 coated	1.4571 coated
23	Body Gasket	Graphite	Graphite	Graphite	Graphite
24	Stem Packing				
25	Bearing Ring	Carbon	Carbon	Carbon	Carbon
26	Bearing Ring	PEEK	PEEK	PEEK	PEEK
27	Body Gasket	Graphite	Graphite	Graphite	Graphite
28	Screw	SS	SS	SS	SS
29	Screw	SS	SS	SS	SS
30	Screw	SS	SS	SS	SS
35-39	Round Rings	Polymer / Elastomer	Polymer / Elastomer	Polymer / Elastomer	Polymer / Elastomer
44	Cover	Type 316	A105	1.4571	1.0460
46	Cavity Leaf	Mod. PTFE	Mod. PTFE	Mod. PTFE	Mod. PTFE

Tab.1

1) Temperature limitation 300°C [576°F] acc. to German technical rule AD-2000 W5 if intercrystalline corrosion resistant is required
2) Temperature limitation 280°C [536°F]
3) Material 2.4668 (Inconel 718) is generally required for operating temperature over 200°C [392°F]
4) Materials for lower / higher temperature on request

Technical Data

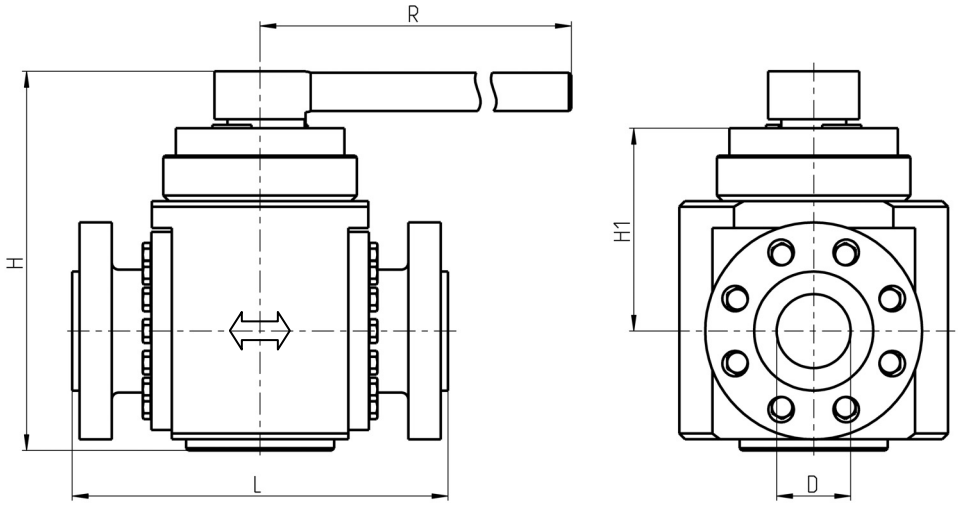


Fig.3

D = NPS = DN = Nominal Size
m = Weight

CLASS 150 - Full Bore

NPS [inch]	DN [mm]	H		H1		L Perrin Standard		m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[lbs]	[kg]
½	15	6,2	158	3,5	89	6,5	165	48	22
¾	20	6,8	173	3,7	95	7,5	190	55	25
1	25	7,4	188	4,1	105	8,5	216	59	27
1¼	32	8,3	210	4,7	120	9	229	77	35
1½	40	9,4	238	5,3	135	9,5	241	97	44
2	50	10	255	5,8	147	11,5	292	130	59
2½	65	12,6	320	7	178	13	330	200	91
3	80	13,8	351	7,8	199	15	380	260	118
4	100	14,7	373	8,3	211	17	430	409	186

Tab.2

CLASS 300 - Full Bore

NPS [inch]	DN [mm]	H		H1		L Perrin Standard		m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[lbs]	[kg]
½	15	6,2	158	3,5	89	6,5	165	51	23
¾	20	6,8	173	3,7	95	7,5	190	57	26
1	25	7,4	188	4,1	105	8,5	216	64	29
1¼	32	8,3	210	4,7	120	9	229	59	27
1½	40	9,4	238	5,3	135	9,5	241	106	48
2	50	10	255	5,8	147	11,5	292	136	62
2½	65	12,6	320	7	178	13	330	211	96
3	80	13,8	351	7,8	199	15	380	273	124
4	100	14,7	373	8,3	211	17	430	409	186

Tab.3

PN 16 – PN 40

DN [mm]	H [mm]	H1 [mm]	L [mm] Perrin Standard	m [kg]
15	158	89	210	23
20	173	95	230	26
25	188	105	230	29
32	210	120	230	37
40	238	135	260	46
50	255	147	300	61
65	320	178	340	93
80	343	191	380	120
100	363	201	430	226

Tab.4

Other dimensions and pressure classes on request.

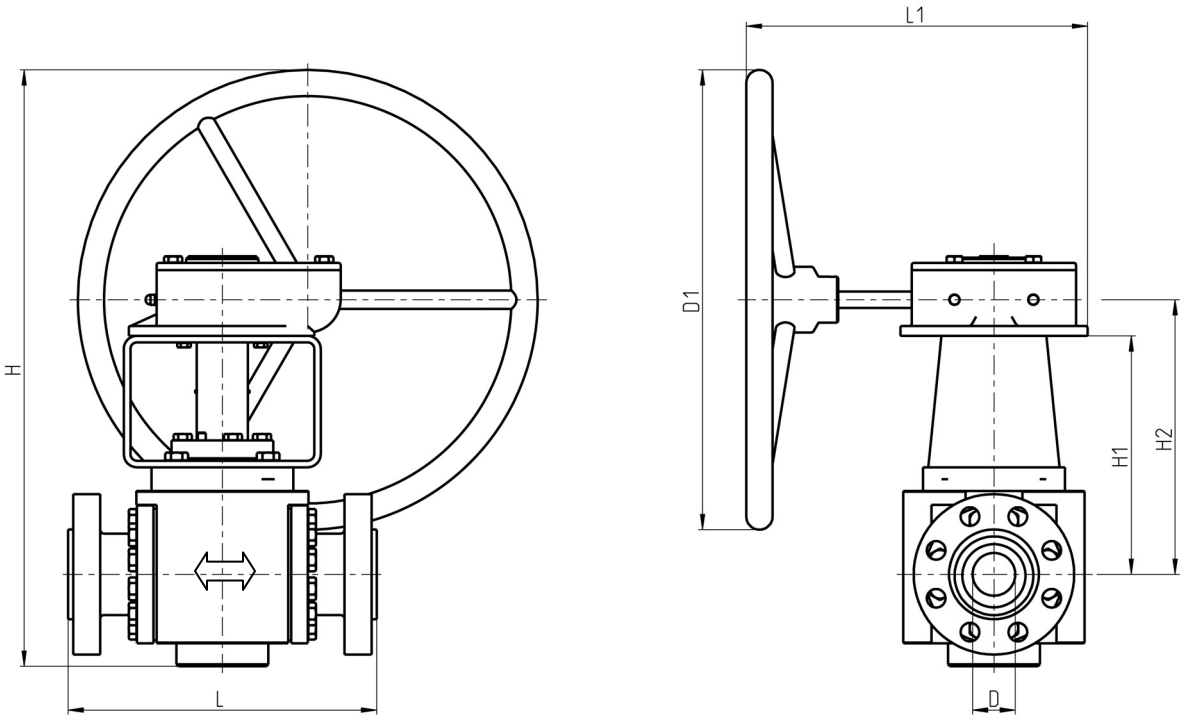


Fig.4

D = NPS = DN = Nominal Size
m = Weight

CLASS 150 - Full Bore

NPS [inch]	DN [mm]	H		H1		H2		L1		D1		L Perrin Standard		m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[lbs]	[kg]
6	150	33	850	10	265	19	485	20	515	18	450	22	559	605	275
8	200	41	1044	12	303	21	523	23	588	28	700	26	660	840	382
10	250	45	1133	14	360	23	580	29	725	28	700	31	787	1267	576
12	300	51	1306	16	415	24	615	30	770	35	900	33	850	1749	795

Tab.5

CLASS 300 - Full Bore

NPS [inch]	DN [mm]	H		H1		H2		L1		D1		L Perrin Standard		m	
		[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[inch]	[mm]	[lbs]	[kg]
6	150	37	940	12	307	17	431	24	610	28	700	22	559	726	330
8	200	43	1098	14	366	20	507	31	790	31	800	26	660	1397	635
10	250	45	1155	18	452	25	633	28	718	24	600	31	787	1976	898
12	300	53	1338	24	610	33	828	31	792	20	500	33	850	2583	1174

Tab.6

PN 16

DN [mm]	H [mm]	H1 [mm]	H2 [mm]	L1 [mm]	D1 [mm]	L [mm] Perrin Standard	m [kg]
150	757	265	389	435	450	550	269
200	964	303	444	526	700	650	370
250	1094	360	541	600	700	775	561
300	1319	421	639	687	900	850	790

Tab.7

PN 40

DN [mm]	H [mm]	H1 [mm]	H2 [mm]	L1 [mm]	D1 [mm]	L [mm] Perrin Standard	m [kg]
150	889	265	389	506	700	550	315
200	1032	303	444	585	800	650	617
250	1066	360	541	682	600	775	879
300	1147	421	639	768	500	850	1142

Tab.8

Other dimensions and pressure classes on request.

Top Works

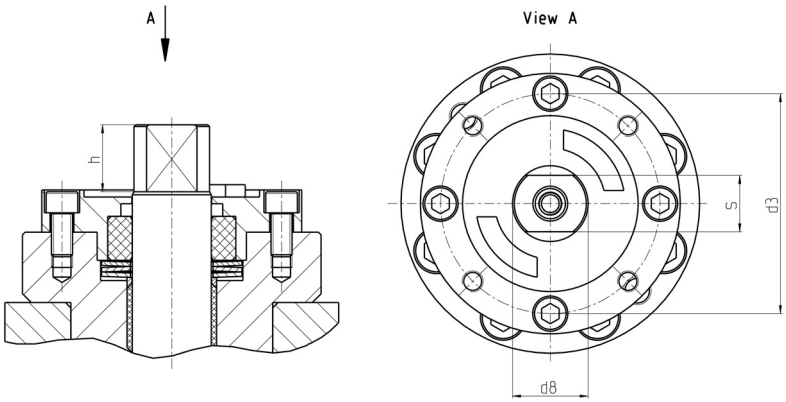


Fig.5

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.9

Actuator-Connection ISO 5211
Full Bore

NPS [inch]	DN [mm]	CLASS / PN	
		150 / 16	300 / 40
½	15	F07	F07
¾	20	F07	F07
1	25	F07	F07
1¼	32	F07	F10
1½	40	F07	F10
2	50	F10	F10
2½	65	F10	F10
3	80	F12	F12
4	100	F12	F12
6	150	F12	F14
8	200	F14	F16
10	250	F16	F25
12	300	F16	F25

Tab.10

Pressure / Temperature Diagram

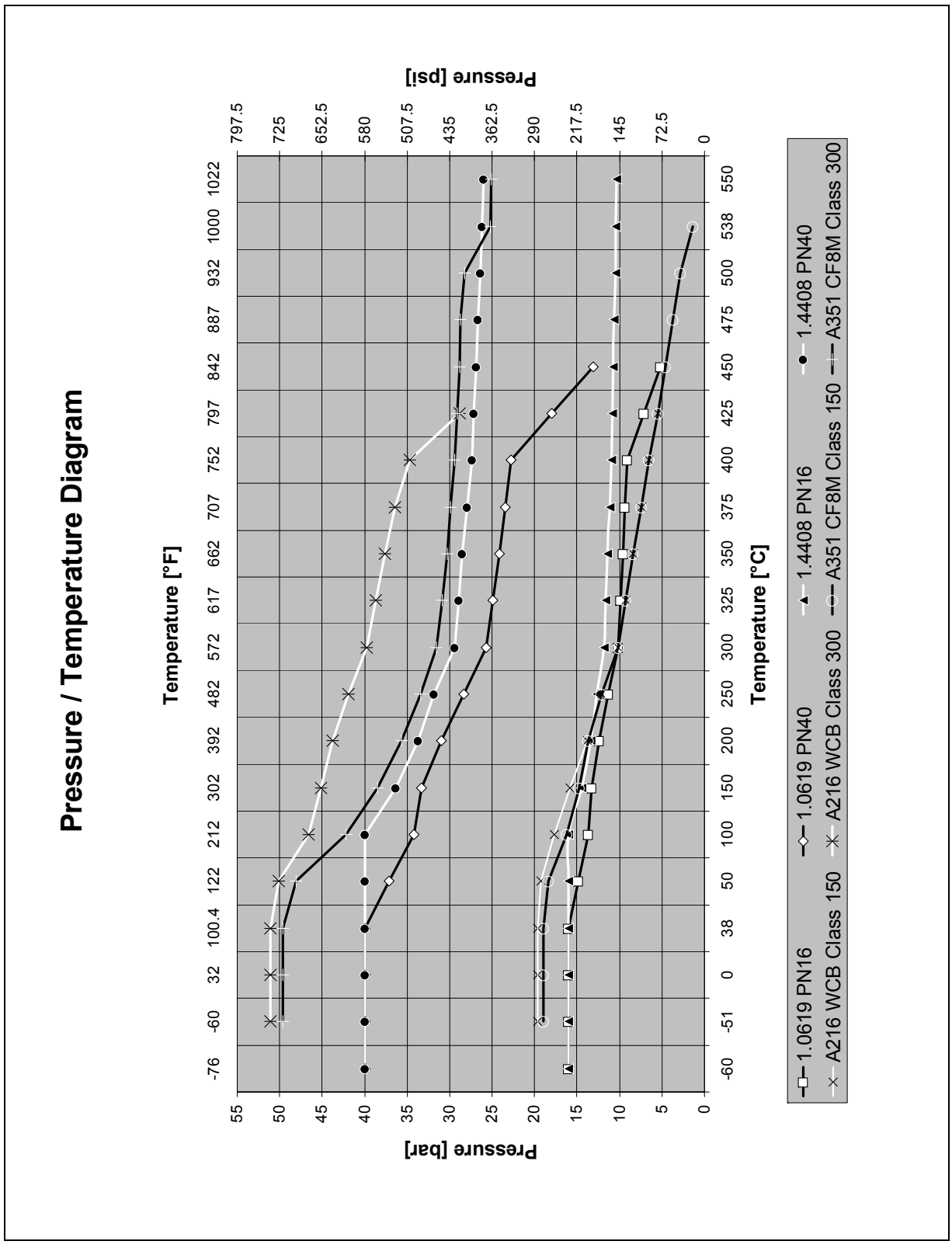


Fig.6

Options

1) Seat system with protected spring area

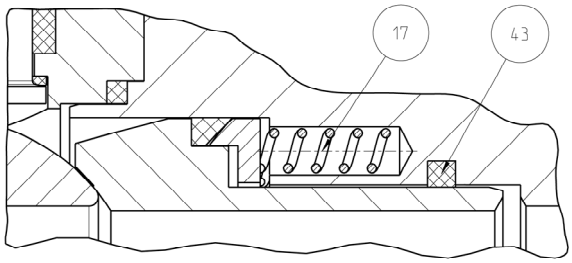


Fig.7

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

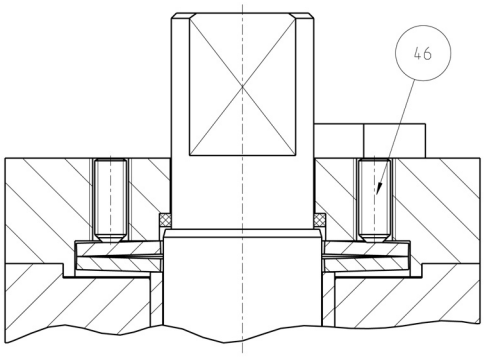


Fig.8

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

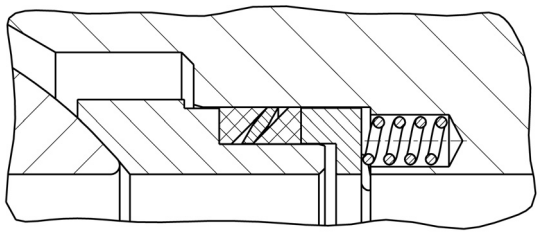


Fig.9

4) Double-stage gland packing with sniffing connection

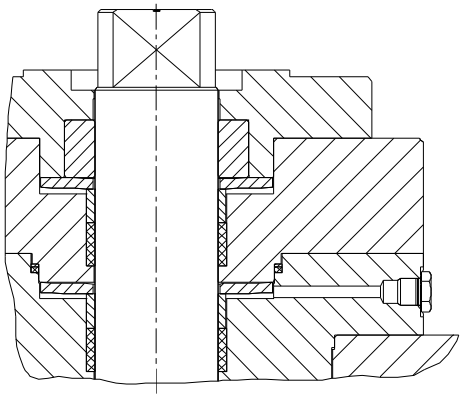


Fig.10

5) Valve with heating jacket

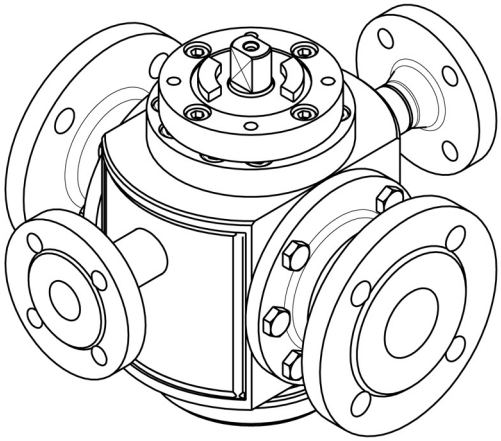


Fig.11

Technical modifications are reserved.

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