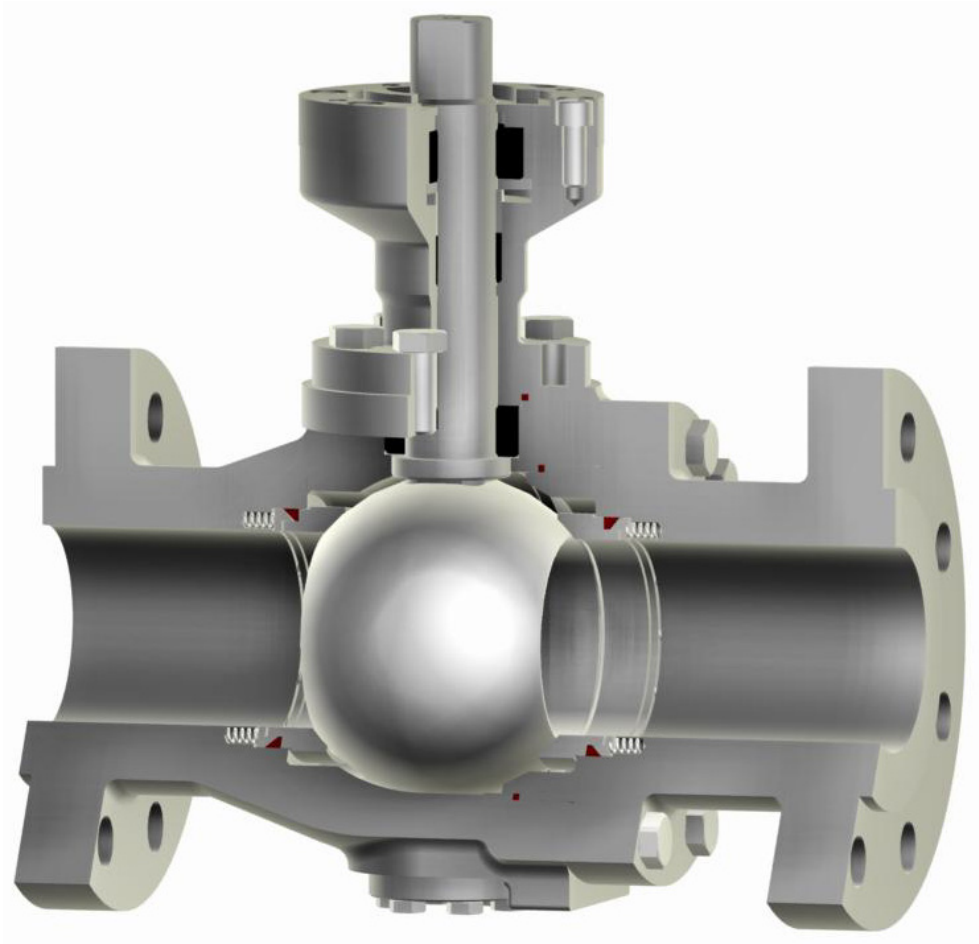




Two-Way Metal Seated Ball Valve Type 14-M



Design Characteristics

- ✓ Two piece body
- ✓ Trunnion mounted ball
- ✓ Blow out proof stem
- ✓ Live loaded stem packing
- ✓ Spring loaded seat system
- ✓ Fire Safe design optional

Design Standards

- ✓ EN 12516, EN 1983, ISO 5211, AD-2000
- ✓ ASME B16.34, API 608

Range of Application

- ✓ Diameter 1" to 24" / DN 25 to 600
- ✓ Class 150 to 2500 / PN 10 to 420
- ✓ -20°F to +1000°F / -60°C to +550°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
- 6 Stem
- 7 Lower Trunnion
- 8 Gland Washer
- 9 Bearing Bush
- 10 Bearing Cover
- 11 Extension
- 16 Plate Spring
- 17 Coil Spring
- 18 Body Gasket
- 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 Hexagonal Screw
- 31 Hexagonal Screw

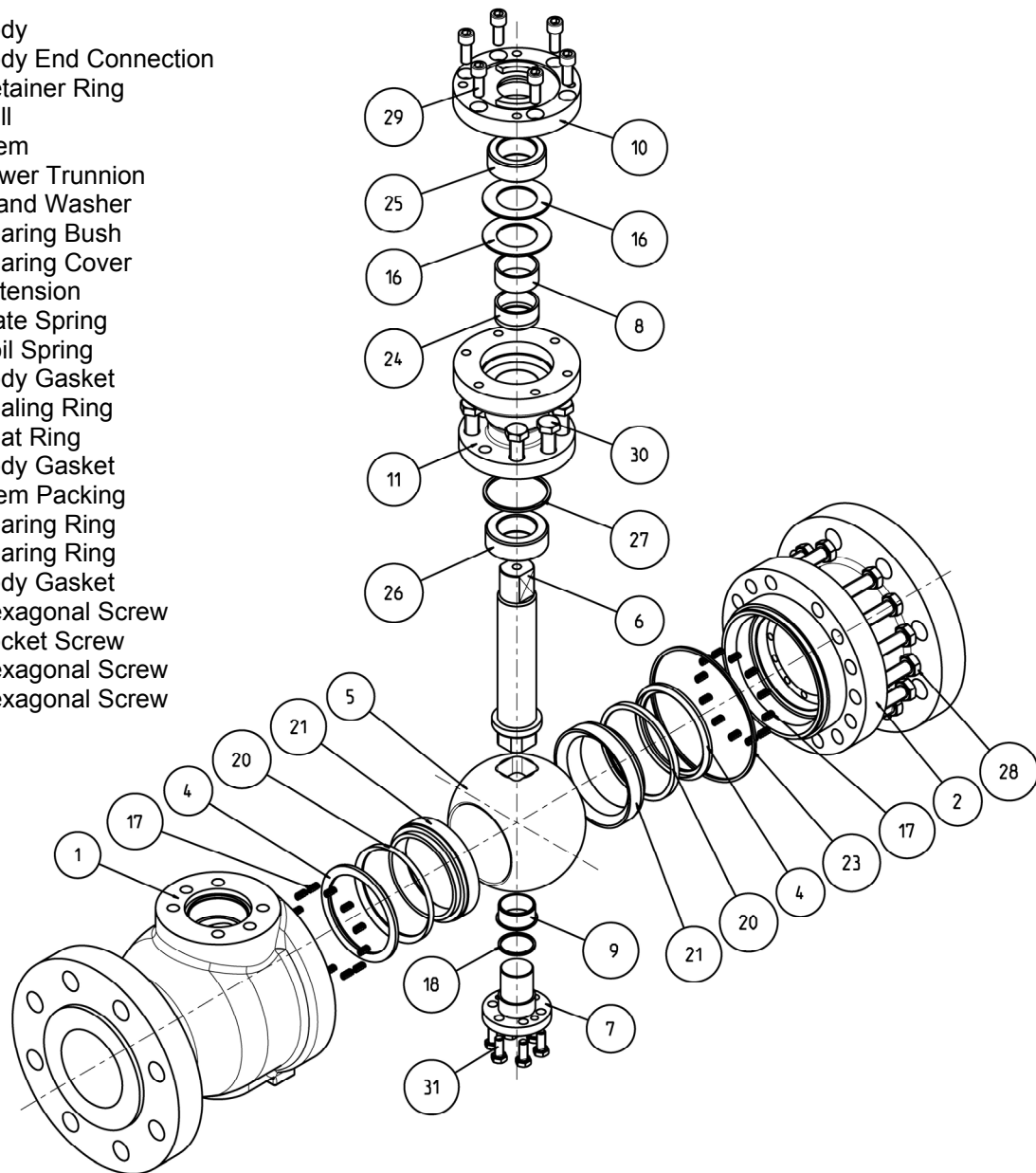


Fig. 1

Description

This PERRIN ball valve is a trunnion mounted ball design with a two piece split body housing. The spring loaded metallic 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 according 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 with blow out proof stem. The stem packing and sealings are "TA-Luft" certified for low fugitive emissions.



Parts List / Materials

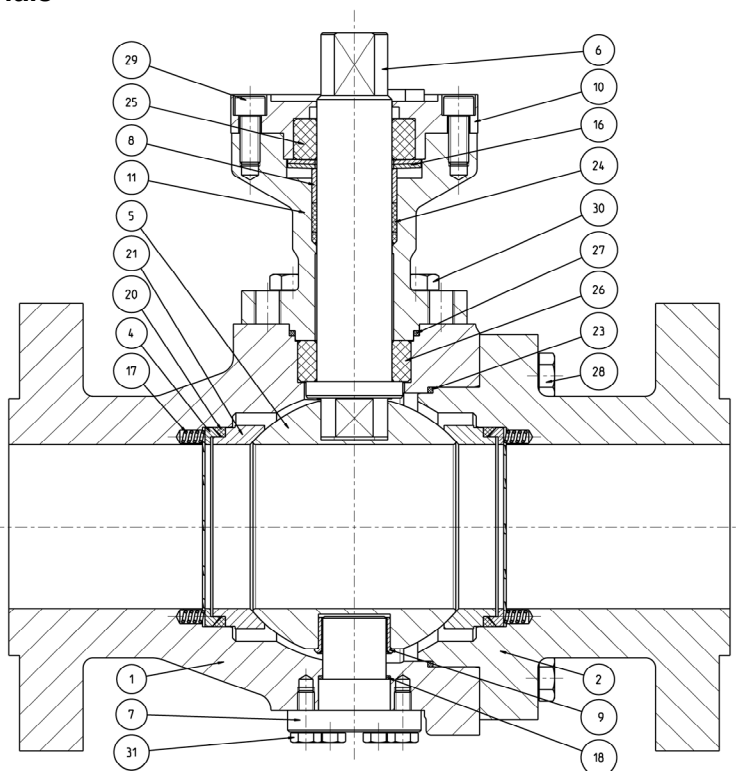


Fig.2

Item	Designation	ASME		DIN EN	
		-20°F up to +1000°F	-20°F up to +1000°F	-60°C up to +550°C	-10°C up to +450°C
1	Body	A351 CF8M	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")
4	Retainer Ring	Type 316	Type 316	1.4571	1.4571
5	Ball	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
6	Stem	Type 51 ²⁾ Type 316	Type 51 ²⁾ Type 316	1.4462 ²⁾ 1.4571	1.4462 ²⁾ 1.4571
7	Lower Trunnion	Type 316 coated	Type 316 coated	1.4571 coated	1.4571 coated
8	Gland Washer	Type 316	Type 316	1.4571	1.4571
9	Bearing Bush	Type 316 coated	Type 316 coated	1.4571 coated	1.4571 coated
10	Bearing Cover	Type 316	A105	1.4571	1.0460
11	Extension				
16	Plate Spring ³⁾	Type 301	AISI 6150	1.4310	1.8159
17	Coil Spring	Type 316	Type 316	1.4571	1.4571
18	Body Gasket	Graphite	Graphite	Graphite	Graphite
20	Sealing Ring				
21	Seat Ring	Type 316 coated Type 51 ⁴⁾ coated	Type 316 coated Type 51 ²⁾ coated	1.4571 coated 1.4462 ²⁾ coated	1.4571 coated 1.4462 ²⁾ coated
23	Body Gasket	Graphite	Graphite	Graphite	Graphite
24	Stem Packing				
25	Bearing Ring	Carbon	Carbon	Carbon	Carbon
26	Bearing Ring	Carbon-Antimony	Carbon-Antimony	Carbon-Antimony	Carbon-Antimony
27	Body Gasket	Graphite	Graphite	Graphite	Graphite
28	Hexagonal Screw	SS	SS	SS	SS
29	Socket Screw	SS	SS	SS	SS
30	Hexagonal Screw	SS	SS	SS	SS
31	Hexagonal Screw	SS	SS	SS	SS

Tab.1

1) Temperature limitation 300°C [576°F] acc. to German technical rule AD-2000 W5 if intercrystalline corrosion resistant is required

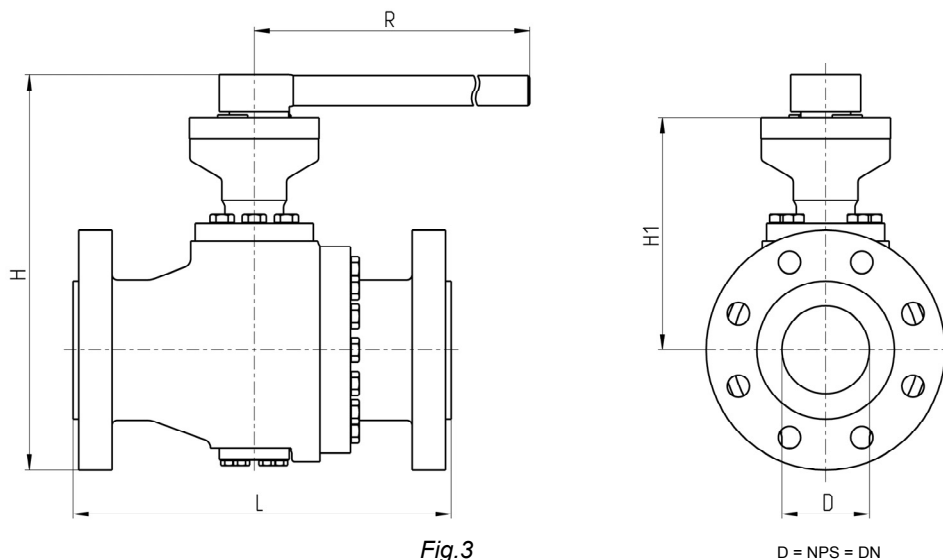
2) Temperature limitation 280°C [536°F]

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



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
1	25	7.8	198	4.5	114	12	300	5	127	75	8	18
1¼	32	8.4	214	4.7	119	12	300	5.5	140	124	10	22
1½	40	10.4	264	6.1	156	18	450	6.5	165	193	14	31
2	50	12.6	319	8.1	205	18	450	7	178	302	27	59
2½	65	13.5	343	8.5	215	18	450	7.5	190	510	46	101
3	80	16.1	409	10	253	28	700	8	203	772	55	121
4	100	17	434	10.4	265	28	700	9	229	1206	72	158

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
1	¾	7.6	192	4.5	114	12	300	5	127	48	7.5	17
1¼	1	7.8	198	4.5	114	12	300	5.5	140	75	9	20
1½	1¼	8.4	214	4.7	119	12	300	6.5	165	124	12	25
2	1½	10.4	264	6.1	156	18	450	7	178	193	16	35
2½	2	12.6	319	8.1	205	18	450	7.5	190	302	31	68
3	2½	13.5	343	8.5	215	18	450	8	203	510	53	116
4	3	16.1	409	10	253	28	700	9	229	772	63	139

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
1	25	7.8	198	4.5	114	12	300	6.5	165	75	11	24
1¼	32	8.4	214	4.7	119	12	300	7	178	124	15	33
1½	40	10.4	264	6.1	156	18	450	7.5	190	193	23	51
2	50	12.6	319	8.1	205	18	450	8.5	216	302	29	64
2½	65	13.5	343	8.5	215	18	450	9.5	241	510	50	110
3	80	16.1	409	10	253	28	700	11.12	282	772	57	125
4	100	17	434	10.4	265	28	700	12	305	1206	75	165

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
1	¾	7.6	192	4.5	114	12	300	6.5	165	48	9	20
1¼	1	7.8	198	4.5	114	12	300	7	178	75	13	28
1½	1¼	8.4	214	4.7	119	12	300	7.5	190	124	17	38
2	1½	10.4	264	6.1	156	18	450	8.5	216	193	26	58
2½	2	12.6	319	8.1	205	18	450	9.5	241	302	33	73
3	2½	13.5	343	8.5	215	18	450	11.12	282	510	55	121
4	3	16.1	409	10	253	28	700	12	305	772	66	144

Tab.5

Nominal Size		Class 600 - 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
1	25	7.8	198	4.5	114	12	300	8.5	216	75	12	26
1¼	32	8.4	214	4.7	119	18	450	9	229	124	17	37
1½	40	10.4	264	6.1	156	18	450	9.5	241	193	29	64

Tab.6

Nominal Size		Class 600 - *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
1	¾	7.6	192	4.5	114	12	300	8.5	216	48	10	22
1¼	1	7.8	198	4.5	114	12	300	9	229	75	14	31
1½	1¼	8.4	214	4.7	119	18	450	9.5	241	124	20	44

Tab.7



Nominal Size	PN 16 - PN 40 Dimensions [mm] acc. to DIN EN Standards			Face to Face DIN EN 558		Kv [m ³ /h]	Weights [kg]	
DN	H	H1	R	GR1	GR27		GR1	GR27
				L	L			
25	198	114	300	160	125	64	8	7
32	214	119	300	180	130	106	10	9
40	264	156	450	200	140	165	14	12
50	319	205	450	230	150	258	27	23
65	343	215	450	290	170	436	40	35
80	400	244	700	310	180	660	48	42
100	433	264	700	350	190	1031	63	54

Tab.8

Nominal Size	PN 100 Dimensions [mm] acc. to DIN EN Standards			Face to Face DIN EN 558		Kv [m ³ /h]	Weights [kg]	
DN	H	H1	R	GR1	GR27		GR1	GR27
				L	L			
25	206	114	300	160	125	64	12	10
32	214	119	300	180	130	106	17	15
40	269	157	450	200	140	165	29	25

Tab.9

Other dimensions and pressure classes on request.

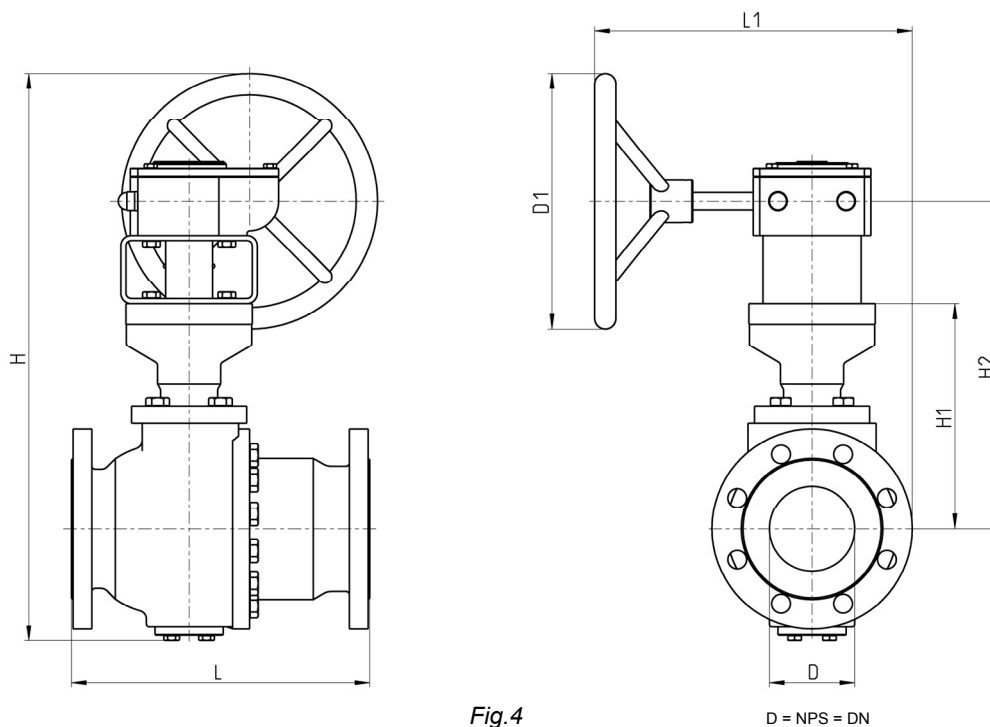


Fig.4

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	31.3	796	12.1	307	17	431	14.7	373	18	450	15.5	394	2714	134	295
8	200	40.5	1028	14.4	366	20	507	18	467	28	700	18	457	4825	221	486
10	250	47	1186	17.8	452	24.9	633	21	528	28	700	21	533	7840	354	778
12	300	51	1294	24	610	32.6	828	24	600	18	450	24	610	10856	508	1117
14	350	54.7	1390	23.6	600	35.4	898	28	699	18	450	27	686	14776	724	1593
16	400	62	1578	24.9	632	36.6	930	31	777	28	700	30	762	19300	990	2178
20	500	66.5	1689	27.6	700	42.9	1090	39	979	20	500	36	914	30157	2163	4759
24	600	79.1	2009	34	863	49.3	1253	41	1035	28	700	42	1067	43426	3205	7051

Tab.10

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	22	563	10.4	264	15	388	14.7	373	14	350	15.5	394	1206	101	223
8	6	31.3	796	12.1	307	17	431	14.7	373	18	450	18	457	2714	154	339
10	8	40.5	1028	14.4	366	20	507	18	467	28	700	21	533	4825	254	559
12	10	47	1186	17.8	452	24.9	633	21	528	28	700	24	610	7840	407	894
14	12	51	1294	24	610	32.6	828	24	600	18	450	27	686	10856	584	1284
16	14	54.7	1390	23.6	600	35.4	898	28	699	18	450	30	762	14776	833	1832
20	16	62	1578	24.9	632	36.6	930	31	777	28	700	36	914	19300	1139	2505
24	20	66.5	1689	27.6	700	42.9	1090	39	979	20	500	42	1067	30157	2487	5472

Tab.11



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]	H2 [inch]	H2 [mm]	L1 [inch]	L1 [mm]	D1 [inch]	D1 [mm]	L [inch]	L [mm]		kg	lbs
6	150	38	957	12	307	18	448	20	515	28	700	15.9	403	2714	174	383
8	200	45	1139	14	366	22	548	23	588	31	800	20	502	4825	277	608
10	250	50	1272	18	452	30	750	27	679	24	600	22	568	7840	427	938
12	300	56	1418	24	610	36	908	30	770	20	500	26	648	10856	668	1469
14	350	60	1532	24	600	39	990	35	888	20	500	30	762	14776	1034	2275
16	400	62	1571	25	632	40	1022	38	953	18	450	33	838	19300	1569	3452
20	500	76	1927	28	700	43	1083	40	1019	36	914	39	991	30157	2571	5656
24	600	85	2160	34	863	49	1246	47	1202	36	914	45	1143	43426	4240	9328

Tab.12

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	32	805	10.4	264	16	405	12	315	31	800	15.9	403	1206	145	319
8	6	38	957	12	307	18	448	20	515	28	700	20	502	2714	230	507
10	8	45	1139	14	366	22	548	23	588	31	800	22	568	4825	355	782
12	10	50	1272	18	452	30	750	27	679	24	600	26	648	7840	556	1224
14	12	56	1418	24	610	36	908	30	770	20	500	30	762	10856	862	1896
16	14	60	1532	24	600	39	990	35	888	20	500	33	838	14776	1308	2877
20	16	62	1571	25	632	40	1022	38	953	18	450	39	991	19300	2143	4714
24	20	76	1927	28	700	43	1083	40	1019	36	914	45	1143	30157	3533	7773

Tab.13

Nominal Size		Class 600 - 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
2	50	13	329	8.1	205	14	346	18	461	10	250	11.5	292	302	50	110
2½	65	13.5	343	8.5	215	14	356	18	461	14	350	13	330	510	68	150
3	80	15.9	403	10	253	17	435	20	510	24	600	14	356	772	85	187
4	100	17	437	10.4	265	22	563	23	588	31	800	17	432	1206	150	330
6	150	37	947	15	378	20	519	25	639	20	500	22	559	2714	300	660
8	200	46	1163	19	471	26	653	28	720	24	600	26	660	4825	600	1320
10	250	51	1308	21	531	33	829	33	842	18	450	31	787	7840	1100	2420
12	300	58	1461	25	634	37	932	35	900	20	500	33	838	10856	1500	3300
14	350	73	1859	28	710	43	1100	35	898	36	914	35	889	14776	1800	3960
16	400	81	2060	34	870	50	1260	38	972	36	914	39	991	19300	2200	4840
20	500	85	2167	37	940	52	1323	40	1019	36	914	47	1194	30157	3100	6820
24	600	90	2277	39	980	54	1363	43	1089	36	914	55	1397	43426	4900	10780

Tab.14

Nominal Size		Class 600 - *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
2	1½	10.4	264	6.1	156	14	346	18	461	10	250	11.5	292	193	47	103
2½	2	13	329	8.1	205	14	346	18	461	10	250	13	330	302	58	127
3	2½	13.5	343	8.5	215	14	356	18	461	14	350	14	356	510	75	165
4	3	15.9	403	10	253	17	435	20	510	24	600	17	432	772	94	206
6	4	17	437	10.4	265	22	563	23	588	31	800	22	559	1206	173	380
8	6	37	947	15	378	20	519	25	639	20	500	26	660	2714	345	759
10	8	46	1163	19	471	26	653	28	720	24	600	31	787	4825	690	1518
12	10	51	1308	21	531	33	829	33	842	18	450	33	838	7840	1265	2783
14	12	58	1461	25	634	37	932	35	900	20	500	35	889	10856	1725	3795
16	14	73	1859	28	710	43	1100	35	898	36	914	39	991	14776	2070	4554
20	16	81	2060	34	870	50	1260	38	972	36	914	47	1194	19300	2530	5566
24	20	85	2167	37	940	52	1323	40	1019	36	914	55	1397	30157	3565	7843

Tab.15



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 L	GR27 L		GR1	GR27
150	799	307	431	435	450	480	350	2320	117	101
200	1027	366	507	526	700	600	400	4124	192	167
250	1186	452	633	600	700	730	450	6701	307	267
300	1247	574	792	687	450	850	500	9279	441	384
350	1383	600	898	770	450	980	550	12629	630	547
400	1570	632	930	800	700	1100	762	16496	861	749
500	1698	700	1090	987	500	1250	914	25775	1881	1636
600	2023	863	1253	1049	700	1450	-	37116	2787	-

Tab.16

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 L	GR27 L		GR1	GR27
150	931	307	431	506	700	480	350	2320	151	132
200	1095	366	507	585	800	600	400	4124	240	209
250	1158	452	633	682	600	730	450	6701	371	322
300	1300	574	792	768	500	850	500	9279	580	505
350	1438	600	898	926	500	980	550	12629	899	782
400	1485	632	930	959	450	1100	762	16496	1364	1186
500	1925	700	1090	1010	914	1250	914	25775	2236	1944
600	2155	863	1253	1190	914	1450	-	37116	3687	-

Tab.17

Nominal Size	PN 100 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 L	GR27 L		GR1	GR27
50	329	205	470	480	250	230	150	258	43	38
65	343	215	484	487	350	290	170	436	59	51
80	403	253	585	542	600	310	180	660	74	64
100	437	265	735	645	800	350	190	1031	130	113
150	961	314	438	529	700	480	350	2320	261	227
200	1134	385	526	605	800	600	400	4124	522	454
250	1187	471	652	692	600	730	450	6701	957	832
300	1318	592	810	768	500	850	500	9279	1304	1134
350	1480	632	930	936	500	980	550	12629	1565	1361
400	1531	678	976	959	450	1100	762	16496	2200	1913
500	1947	722	1112	1010	914	1250	914	25775	3100	2696
600	2176	884	1274	1190	914	1450	-	37116	4900	4261

Tab.18

Other dimensions and pressure classes on request.



Top Works

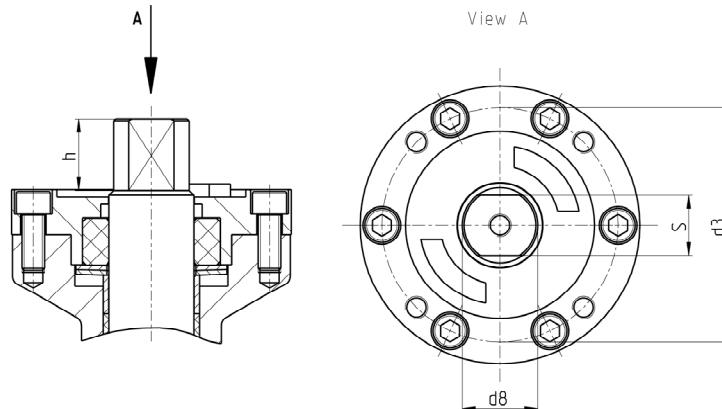


Fig.5

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
F35	94	3.7	65	2.6	356	14	98	3.9

Tab.19

Nominal Size		Actuator-Connection ISO 5211 Full Bore			**Feather keyway	Nominal Size		Actuator-Connection ISO 5211 *Single Reduced Bore		
NPS [inch]	DN [mm]					NPS [inch]	*SRB [inch]			
1	25	F07	F07	F07		1	¾	F07	F07	F07
1¼	32	F07	F10	F10		1¼	1	F07	F07	F07
1½	40	F07	F10	F10		1½	1¼	F07	F10	F10
2	50	F10	F10	F10		2	1½	F07	F10	F10
2½	65	F10	F10	F10		2½	2	F10	F10	F10
3	80	F12	F12	F12		3	2½	F10	F10	F10
4	100	F12	F12	F12		4	3	F12	F12	F12
6	150	F12	F14	F16		6	4	F12	F12	F12
8	200	F14	F16	F25		8	6	F12	F14	F16
10	250	F16	F25	F35		10	8	F14	F16	F25
12	300	F16	F25	F35		12	10	F16	F25	F35
14	350	F25	F35	F35**		14	12	F16	F25	F35
16	400	F25	F35	F35**		16	14	F25	F35	F35**
20	500	F35	F35**	F40**	20	16	F25	F35	F35**	
24	600	F35	F40**	F48**	24	20	F35	F35**	F40**	

Tab.20





Options

1) Seat system with protected spring area

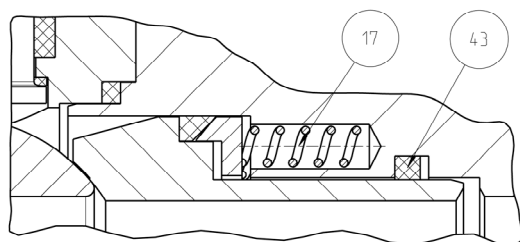


Fig.7

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) With bi-directional single seat system

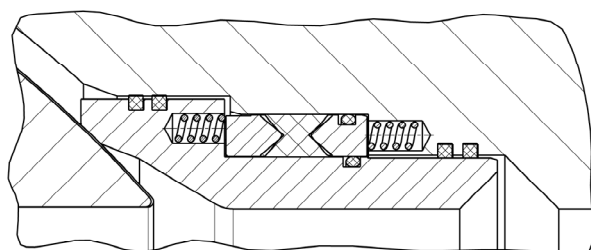


Fig.8

3) With high pressure seat system

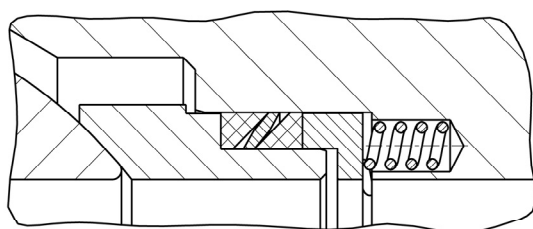


Fig.9



4) Ball Valve with uni-directional single seat system

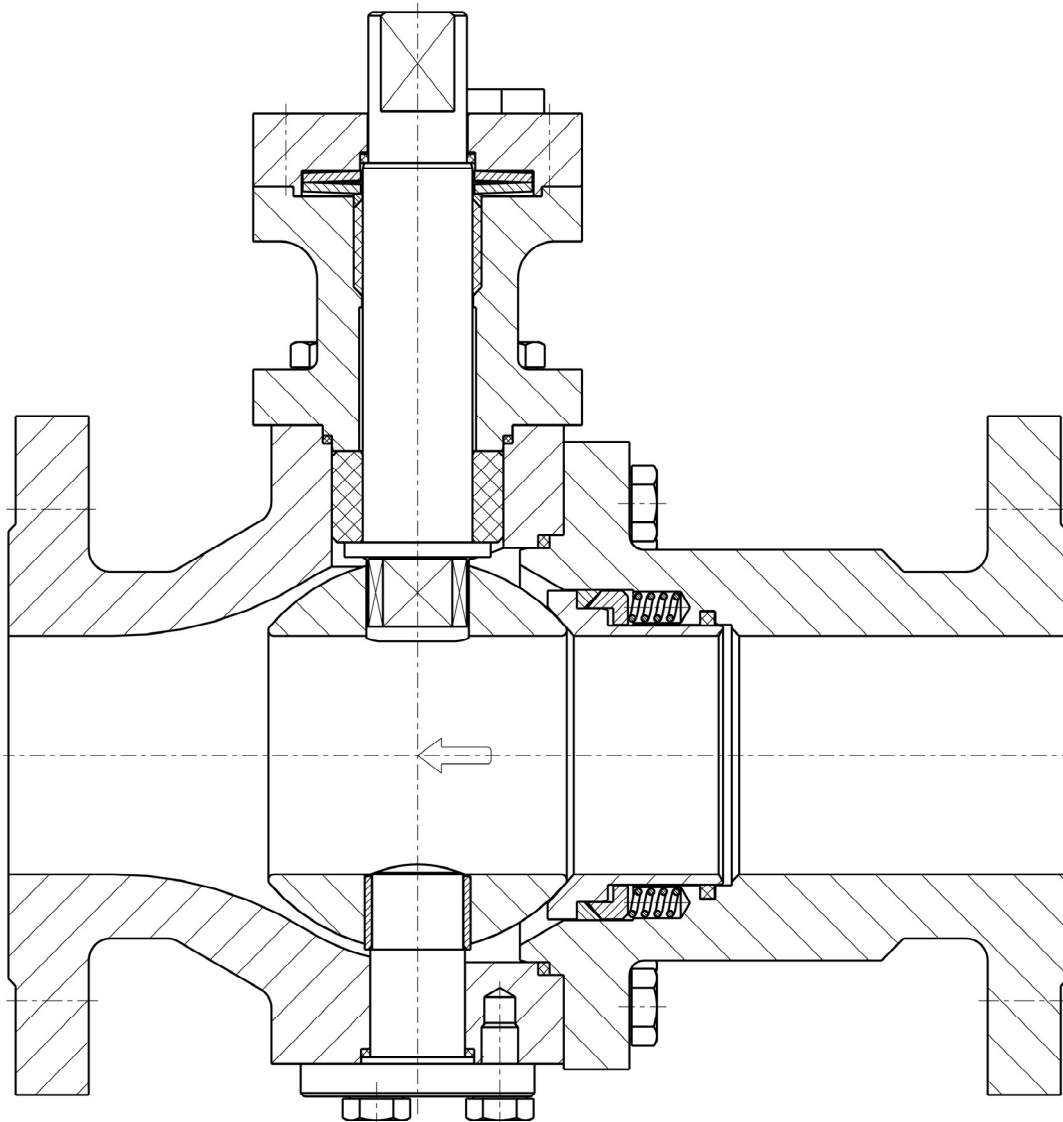


Fig.10



5) Adjustable stem packing

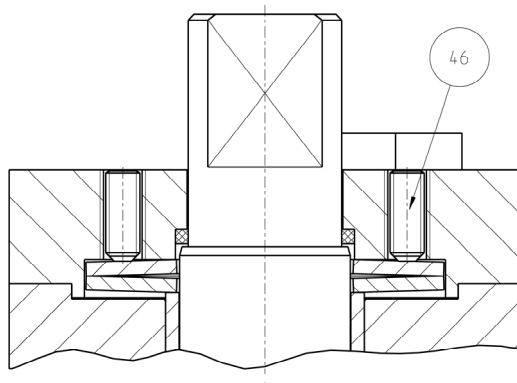


Fig.11

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.

6) Double-stage gland packing with purge connection

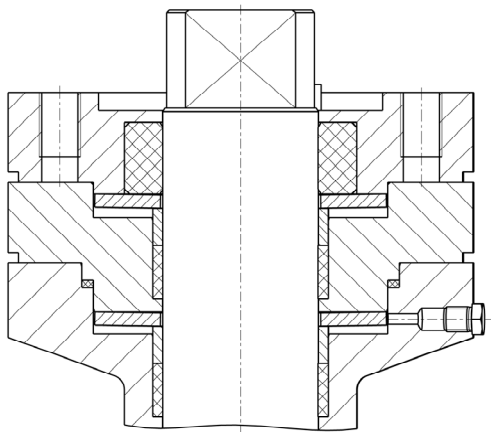


Fig.12

7) Double block and bleed with bleed and/or vent port

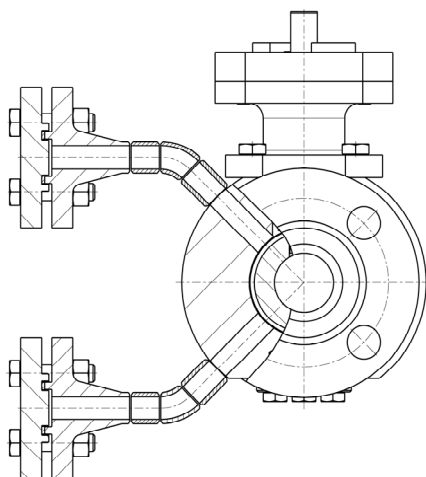


Fig.13

If required the valves can be equipped with bleed and vent ports.



8) Three piece body

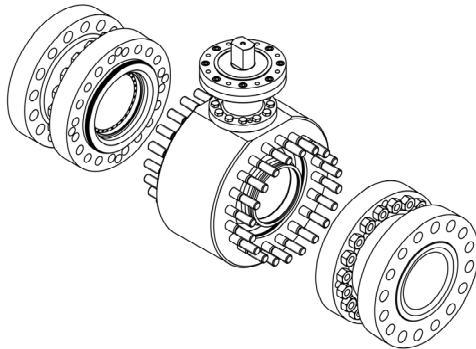


Fig.14

The three piece body construction for specific requirements.

9) Valve with heating jacket

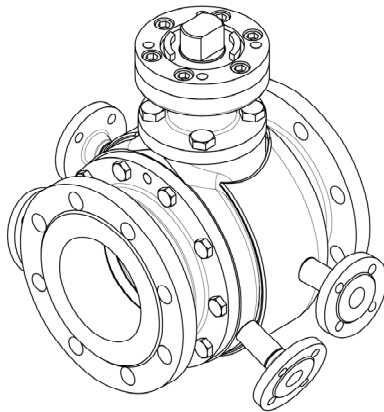


Fig.15

If required the valves can be designed with heating jacket.

Technical modifications are reserved.

