



## BR 26s · Ball valve

With floating or trunnion-mounted ball · DIN- and ANSI Version



### Application

High-performance ball valve with long-term reliable shut-off performance suitable for various fields of applications in industrial processes:

- **Nominal size:** DN 15 to 800 and NPS $\frac{1}{2}$  to 32 // DN 80 to 400 and NPS3 to 16
- **Nominal pressure:** PN 10 to 40 and cl150/300 // PN 63 to 160 and cl600 to 900
- **Temperature:** -196 to +550 °C, depending on version and materials used
- **Technical data of the high-pressure versions on request**

The ball valves can be used in the chemical and petrochemical industries, power and utilities, gas transportation and storage as well as other plants.

The adaptation of the valve construction allows it to be used with media containing solids as well as in cryogenic or high-temperature applications.

The BR 26s Ball valve has the following properties, depending on the version:

- **Body version**
  - Two-piece flanged body (up to DN 400 / NPS16)
  - Three-piece flanged body
- **Seat version**
  - Soft-seated, not spring-loaded
  - Soft-seated, spring-loaded
  - Soft-seated, with metal chambering and spring-loaded
  - Metal-seated, spring-loaded on both sides
- **Body material**
  - Steel
  - Stainless steel
  - High-alloy steels and special materials
- **Other features**
  - High-grade materials used for seals
  - Better casting quality
  - Bearings suitable for higher loads
  - Anti-static design
  - Blowout-proof shaft
  - Maintenance-free, spring-loaded packing meets requirements stipulated by TA Luft (2002)
  - Fire-safe according to API 607 4th edition
  - Face-to-face dimensions according to EN 558 or ASME B16.10/API 6D
  - Flange according to EN 1092 or ASME B16.5/API 6D
  - Actuator design according to ISO 5211

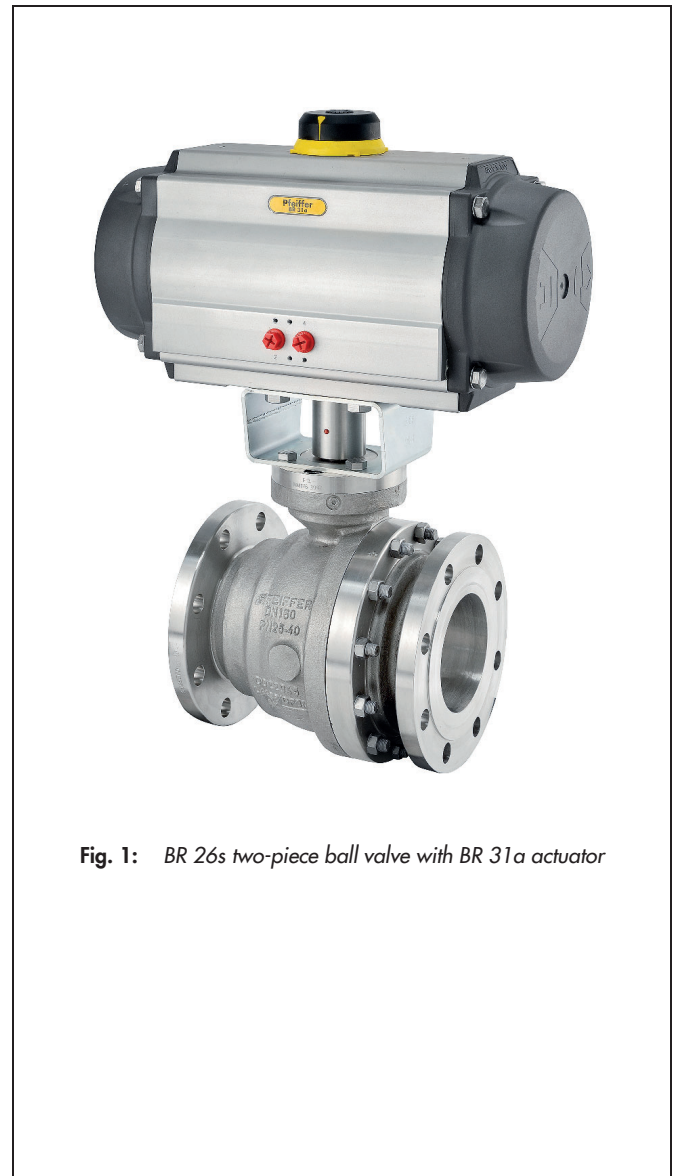


Fig. 1: BR 26s two-piece ball valve with BR 31a actuator

- **Fields of application**

- Alkaline solutions
- Acids
- Gases
- Steam
- Hydrocarbons
- Medium containing solids
- Vacuum
- And much more

- **Versions**

- Manually operated ball valve with lever
- Manually operated ball valve with gear
- Ball valve with pneumatic actuator
- Ball valve with electric actuator
- Ball valve with hydraulic actuator
- Suitable for fast-closing actuators

- **Special versions**

- Body heating
- Various types of flanges and end connections
- Modified seat rings with chambering, other materials
- Non-stick coating inside body
- Rinsing ports and rinsing nozzles
- Version for media containing solids
- Low-temperature version
- High-temperature version
- High-pressure version
- Special materials
- And much more

- **Additional equipment and mounting parts**

The following accessories are available (separately or in combination):

- Backup packing
- Shaft extension
- Locking devices
- Equipment for partial stroke testing
- Limit switch
- Solenoid valves
- Air pressure reducing station with filter
- Pressure gauge mounting blocks
- Positioner
- And much more

Further accessories are available on request to meet customer specifications.

- **Dichtringe**

All seat rings used in PFEIFFER ball valves are designed for low torques and provide excellent shut-off performance. They allow the valves to be opened and closed in all operating conditions.

In floating ball valves, seat rings that are not spring-loaded are usually used on both sides. Alternatively, a seat ring spring-loaded on one side can be selected to match severe operating conditions.

Trunnion-mounted ball valves have active seat rings which have metal chambering.

All sealing systems are optimized by applying FEM calculations and have been proven in practice. As a result, excellent shut-off performance is achieved in conventional applications as well as during extreme operating conditions and even in the event of a fire in the plant.

When abrasive media or media at high temperatures are used, the floating or trunnion-mounted ball valves can be used with metal-to-metal sealing systems with hard coatings. These valves have a very hard surface and excellent wear resistance. Additionally, their torque characteristic is hardly affected by varying environmental conditions, such as fluctuations in temperature or pressure.

A suitable metal-to-metal sealing system is available for all medium with increased requirements. Besides the high grade standard coatings, versions are also available with highly resistant materials and suitable for reduced torque or very frequent switching in on/off service. Please contact PFEIFFER if you are planning to use these sealing systems.

All sealing systems (except for the special versions) are designed to meet fire-safe requirements available in all nominal sizes.

To meet special requirements, a wide range of solutions are available, e.g. solutions with encapsulated springs, low-temperature sealing faces as well as versions suitable for media containing solids.

- **Fail-safe position**

Depending on how the pneumatic actuator is mounted to the valve, the ball valve has two fail-safe positions which become effective when the air pressure in the actuator is relieved or when the supply air fails.

- **Ball valve with fail-close actuator (FC):**

Upon failure of the air supply, the ball valve closes. The ball valve opens against the force of the springs when the air pressure rises.

- **Ball valve with fail-open actuator (FO):**

Upon failure of the air supply, the ball valve opens. The ball valve closes against the force of the springs when the air pressure rises.

- **Advantages of the live-loaded sealing system**

- Maintenance-free and self-adjusting
- Two active seat rings
- Highest level of sealing, even under extreme pressure and temperature fluctuations
- Longer service life
- Smaller rise in torque due to an increase in temperature. As a result, smaller actuators can be used.
- **All in all: extremely economic!**

**Table 1: General technical data:**

<b>Nominal size</b>	DN 15 to 800 and NPS½ to 32
<b>Nominal pressure</b>	PN 10 to 40 or cl150 and cl300 as well as up to max. PN 160 or cl900
<b>Design</b>	Flanges acc. to EN 1092 and ANSI B16.5 / API 6D Two-pieced body up to DN 400 / NPS16 Three-pieced body DN 450 and higher / NPS18 and higher
<b>Temperature range</b>	Acc. to pressure-temperature diagram
<b>Seat leakage</b>	<b>Soft seated:</b> Test P12 – EN 12266-1, leakage rate A Class VI – ANSI/FCI 70-2-1991 <b>Metal to metal:</b> Test P12 – EN 12266-1 Leakage rate B (optional A) Class V – ANSI/FCI 70-2-1991 (optional Class VI)
<b>Face-to-face dimensions</b>	EN 558 R1 or R27/R15 ASME B16.10 or API 6D – regular pattern High pressure in PN 63 and higher or cl600 and higher: EN 558 R2 bzw. ASME B16.10 or API 6D – regular pattern
<b>Flange type</b>	EN 1092-1 Form B1 up to PN 40 EN 1092-1 Form B2 for PN 63 and higher ASME B16.5 RF smooth finish
<b>Permissible operating pressures</b>	Acc. to pressure-temperature diagram

**Table 2: Materials:**

<b>Body</b>	1.0619 - A216 WCB / WCC	1.6220 – A352 LCB/LCC	1.4408 – A351 CF8M
	Optional special materials for body		
<b>Ball</b>	1.4408 – A351 CF8M · Optional HSB3 metal-to-metal sealing system		
<b>Shaft</b>	1.4462 – A182 F51 optional 1.4980 – AISI 660		
<b>Seat rings</b>	TFM (PTFE), PTFE compounds, PEEK, special plastics Optional HSB3 metal-to-metal sealing system		
<b>Spring for seat ring</b>	1.4310 / 1.4401 / 2.4668		
<b>Packing</b>	PTFE V-rings Optional Inconel wire reinforced graphite / fiber yarn packing		
<b>Bearing bush</b>	PTFE-glass Optional stainless steel reinforced by PTFE / glass/carbon/graphite compound Optional stainless steel bushings with hard coating		
<b>Body gasket</b>	PTFE / graphite, optional graphite / graphite		
<b>Surface treatment</b>	Standard treatment: C steel with manganese phosphate coating		

**Table 3: kvs and Cv coefficients**

DN / NPS	15 / ½	25 / 1	40 / 1½	50 / 2	80 / 3	100 / 4	125 / 5	150 / 6	200 / 8
<b>kvs</b>	12	49	116	178	422	610	954	1575	2810
<b>Cv</b>	14	57	135	207	491	709	1108	1830	3260

DN / NPS	250 / 10	300 / 12	350 / 14	400 / 16	450 / 18	500 / 20	600 / 24	700 / 28 <sup>1)</sup>	800 / 32
<b>kvs</b>	4400	6360	8656	11250	14239	17571	23185		33714
<b>Cv</b>	5104	7378	10041	13050	16517	20382	26895		39108

<sup>1)</sup> on request

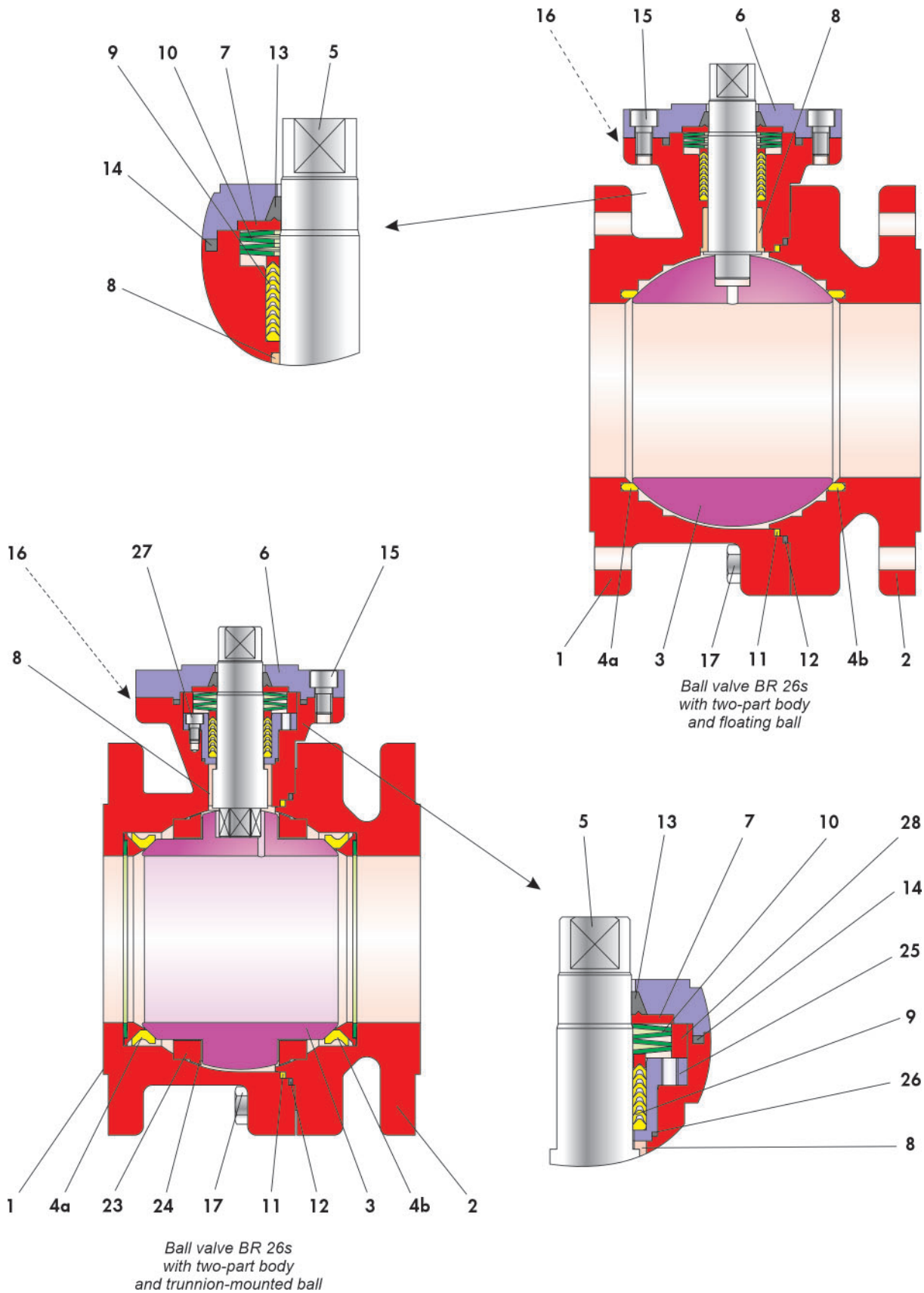
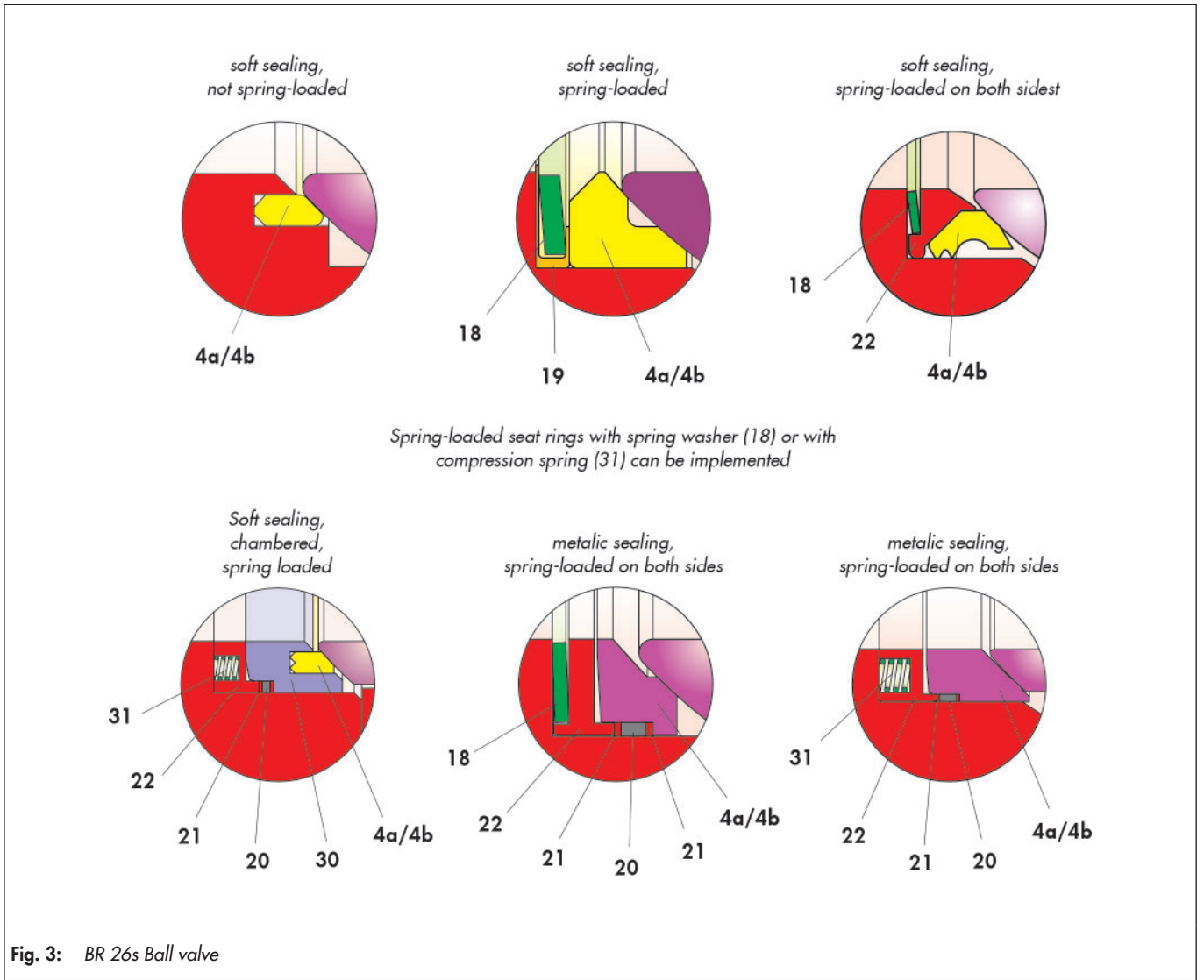


Fig. 2: BR 26s Ball valve



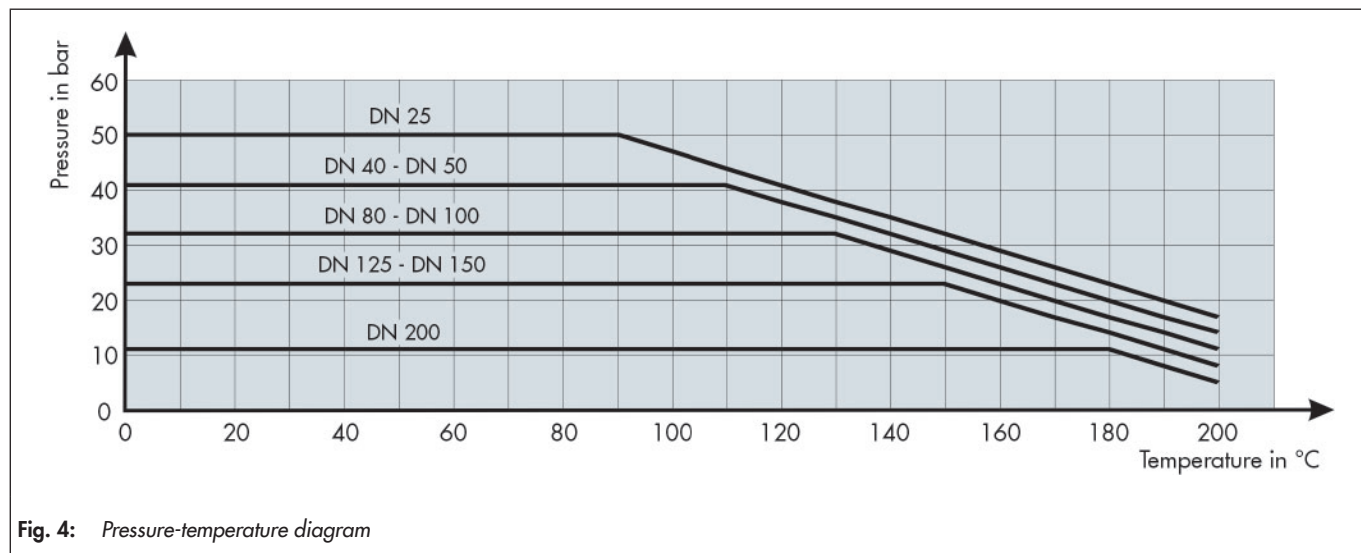
**Table 4:** Parts list

Item	Designation
1	Mail body
2	Body
3	Ball
4	Seat ring
5	Shaft
6	Stuffing box flange
7	Bush
8	Bearing bush
9	Packing
10	Set of spring washers
11	Ring
12	Ring
13	Ring
14	Ring
15	Screw

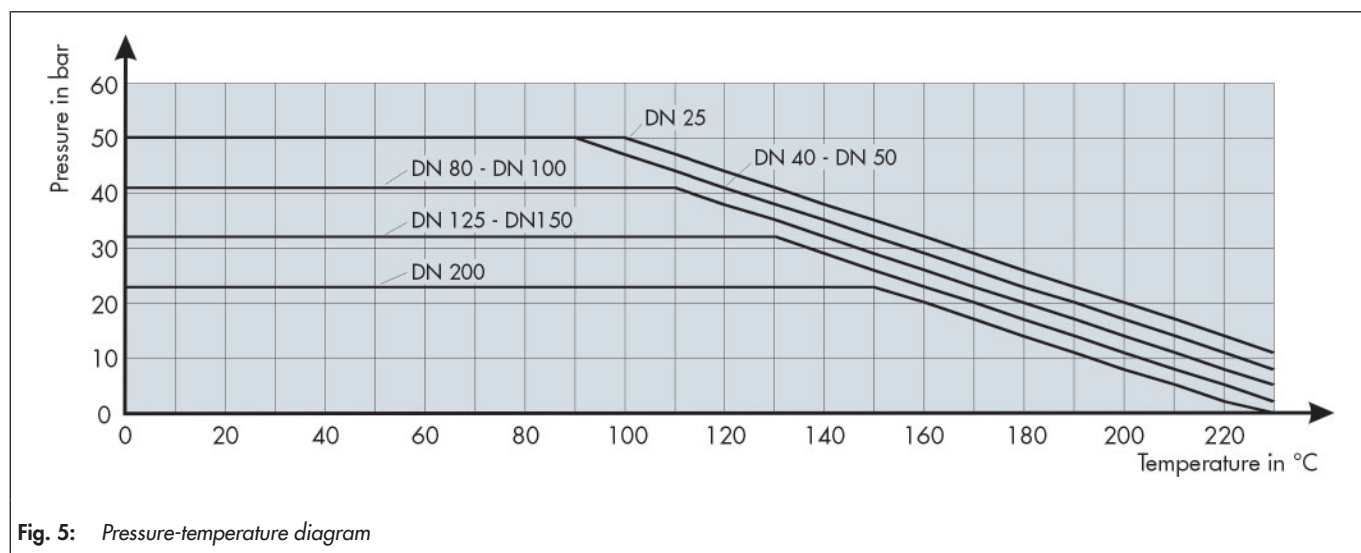
Item	Designation
16	Locking screw
17	Screw
18	Spring washer
19	Spring washer jacket
20	Ring
21	Thrust ring
22	Thrust ring
23	Bearing shell
24	Bearing
25	Packing bearing
26	Ring
27	Screw
28	Center ring
30	Chamber
31	Compression spring

## Pressure-temperature diagrams

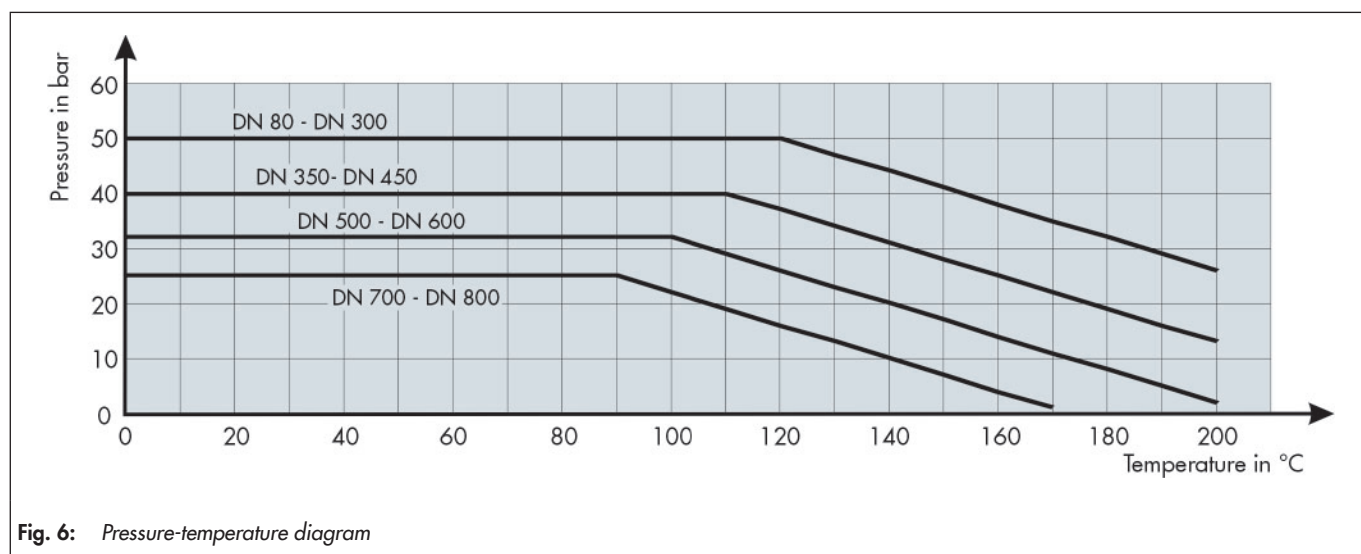
- PTFE sealing system (floating ball)



- PTFE/carbon sealing system (floating ball)

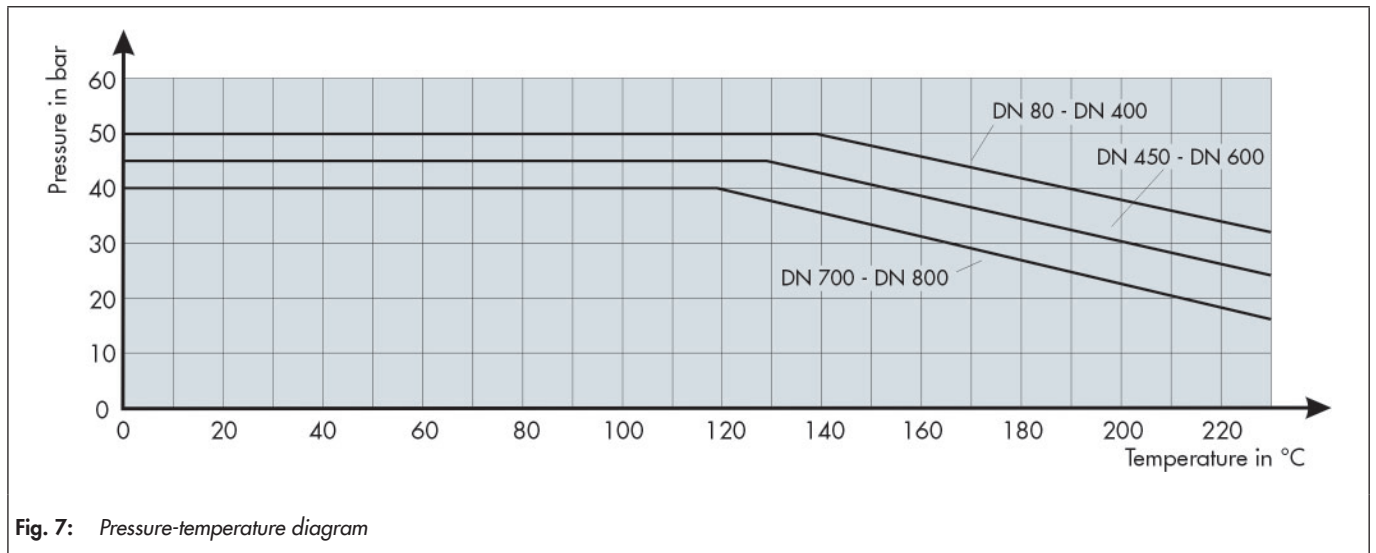


- PTFE sealing system (trunnion-mounted ball)

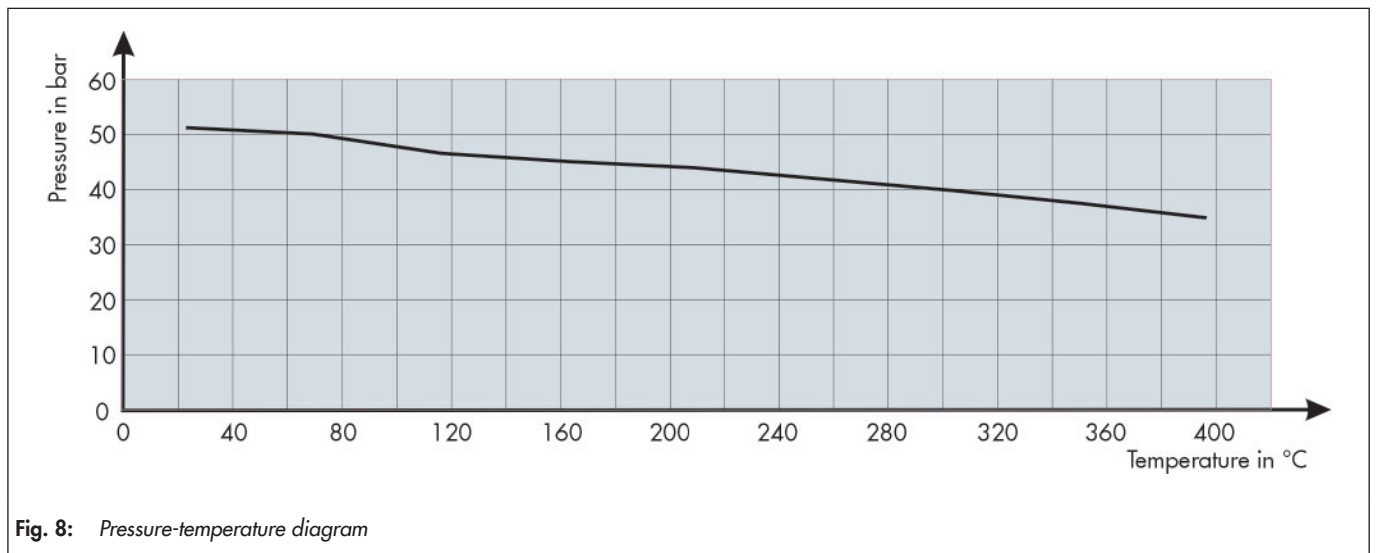




- PTFE/carbon sealing system (trunnion-mounted ball)



- HSB3 sealing system (floating and trunnion-mounted balls)



**i Info**

- The pressure-temperature ratings of the pressure-bearing body parts meet the requirements stipulated in DIN EN 12516-1 and ASME B16.34. Contact Pfeiffer to find out the individual pressure limits when the pressure specifications are above the specifications given in the standards.
- The pressure-temperature diagrams are based on the specified sealing system and always depend on the ball valve version.
- Please contact Pfeiffer for more details on the pressure and temperature limits for sealing systems made of other plastics or for sealing systems suitable for specific operating conditions.

## Torques

**Table 5:** Maximum torques for shafts and ball valve version

DN / NPS	1.4571 A182 F316Ti	1.4462 A182 F51	1.4980 AISI660	PN10	PN25 cl150	PN25	PN40 cl300
15 / ½	36	81	108	Floating ball			
25 / 1	150	338	451				
40 / 1 ½	291	654	872				
50 / 2	291	654	872				
80 / 3	444	998	1331	Floating ball or trunnion-mounted ball			
100 / 4	444	998	1331				
125 / 5	964	2170	2894				
150 / 6	1774	3992	5323				
200 / 8	3180	7156	9541	Trunnion-mounted ball			
250 / 10	3180	7156	9541				
300 / 12	6723	15126	20168				
350 / 14	6723	15126	20168				
400 / 16	14401	32403	43204				
450 / 18	14401	32403	43204				
500 / 20	26786	60628	80837				
600 / 24	54726	123133	164177				
700 / 28	54726	123133	164177				
800 / 32	94319	212218	282957				

**Table 6:** Sealing system for floating ball: TFM seat ring

Differential pressure $\Delta p$ in bar		0	5	10	16	20	25	30	40	50
DN / NPS	ISO	Breakaway torque Mdl in Nm								
15 / ½	F03 / SW09	5	6	7	7	8	9	10	11	13
25 / 1	F05 / SW14	10	12	15	17	19	21	24	28	33
40 / 1 ½	F07 / SW17	20	24	28	33	36	40	44	52	60
50 / 2	F07 / SW17	30	35	41	47	52	57	62	73	84
80 / 3	F10 / SW19	60	71	81	94	102	113	123	144	-
100 / 4	F10 / SW19	90	110	130	154	171	191	211	251	-
125 / 5	F12 / SW24	170	232	294	368	418	480	-	-	-
150 / 6	F14 / SW30	240	300	360	432	480	-	-	-	-
200 / 8	F16 / SW36	330	450	570	-	-	-	-	-	-

**Table 7:** Sealing system for floating ball: PTFE/carbon seat ring

Differential pressure $\Delta p$ in bar		0	5	10	16	20	25	30	40	50
DN / NPS	ISO	Breakaway torque Mdl in Nm								
15 / ½	F03 / SW09	7	8	9	9	10	12	13	14	17
25 / 1	F05 / SW14	13	16	20	22	25	27	31	36	43
40 / 1 ½	F07 / SW17	26	31	36	43	47	52	57	68	78
50 / 2	F07 / SW17	39	46	53	61	68	74	81	95	109
80 / 3	F10 / SW19	78	92	105	122	133	147	160	187	215
100 / 4	F10 / SW19	117	143	169	200	222	248	274	326	-
125 / 5	F12 / SW24	221	302	382	478	543	624	705	-	-
150 / 6	F14 / SW30	312	390	468	562	624	702	780	-	-
200 / 8	F16 / SW36	429	585	741	928	1053	-	-	-	-



**Table 8: Metal-to-metal sealing system for floating ball: HSB3 in high-temperature version**

Differential pressure $\Delta p$ in bar		0	5	10	16	20	25	30	40	50
DN / NPS	ISO	Breakaway torque Mdl in Nm								
15 / ½	F03 / SW09	19	22	24	27	29	32	34	39	44
25 / 1	F05 / SW14	25	36	48	61	70	81	93	115	138
40 / 1 ½	F07 / SW17	40	56	72	91	104	120	136	168	200
50 / 2	F07 / SW17	50	70	90	114	130	150	170	210	250
80 / 3	F10 / SW19	119	178	238	309	356	-	-	-	-
100 / 4	F10 / SW19	200	294	388	501	-	-	-	-	-

**Table 9: Sealing system for trunnion-mounted ball: TFM seat ring with metal chambering**

Differential pressure $\Delta p$ in bar		0	5	10	16	20	25	30	40	50
DN / NPS	ISO	Breakaway torque Mdl in Nm								
80 / 3	F10 / SW19	59	68	77	87	94	103	112	129	147
100 / 4	F10 / SW19	73	92	111	133	149	167	186	224	262
125 / 5	F12 / SW24	115	154	194	241	273	312	351	430	509
150 / 6	F14 / SW30	148	201	255	319	362	415	468	575	682
200 / 8	F16 / SW36	256	365	474	604	692	800	909	1127	1345
250 / 10	F16 / SW36	373	539	705	904	1037	1202	1368	1700	2032
300 / 12	F25 / VK50	500	744	989	1282	1478	1722	1966	2455	2944
350 / 14	F25 / VK50	706	1071	1436	1874	2166	2530	2895	3625	-
400 / 16	F30 / VK65	995	1431	1867	2389	2738	3174	3610	4481	-
450 / 18	F30 / VK65	996	1735	2473	3360	3951	4689	5428	6905	-
500 / 20	F35 / VK80	1857	3302	4747	6482	7638	9083	10528	-	-
600 / 24	F40 / VK100	2593	4771	6949	9562	11304	13482	15660	-	-
700 / 28	F40 / VK100	2641	6023	9405	13464	16170	19552	-	-	-
800 / 32	F48 / VK120	4577	10501	16426	23535	28271	34199	-	-	-

**Table 10: Sealing system for trunnion-mounted ball: PTFE/carbon seat ring with metal chambering**

Differential pressure $\Delta p$ in bar		0	5	10	16	20	25	30	40	50
DN	ISO	Breakaway torque Mdl in Nm								
80 / 3	F10 / SW19	77	88	100	113	122	134	146	168	191
100 / 4	F10 / SW19	95	120	144	173	194	217	242	291	341
125 / 5	F12 / SW24	150	200	252	313	355	406	456	559	662
150 / 6	F14 / SW30	192	261	332	415	471	540	608	748	887
200 / 8	F16 / SW36	333	475	616	785	900	1040	1182	1465	1749
250 / 10	F16 / SW36	485	701	917	1175	1348	1563	1778	2210	2642
300 / 12	F25 / VK50	650	967	1286	1667	1921	2239	2556	3192	3827
350 / 14	F25 / VK50	918	1392	1867	2436	2816	3289	3764	4713	5662
400 / 16	F30 / VK65	1294	1860	2427	3106	3559	4126	4693	5825	6959
450 / 18	F30 / VK65	1295	2256	3215	4368	5136	6096	7056	8977	10897
500 / 20	F35 / VK80	2414	4293	6172	8427	9929	11808	13686	17443	21202
600 / 24	F40 / VK100	3371	6202	9033	12431	14696	17527	20358	26020	31683
700 / 28	F40 / VK100	3372	7232	11091	15722	18810	22669	26529	34248	41967
800 / 32	F48 / VK120	6427	13175	19922	28019	33417	40164	46912	60407	73902

**Table 11: Metal-to-metal sealing system for trunnion-mounted ball: HSB3**

Differential pressure $\Delta p$ in bar		0	5	10	16	20	25	30	40	50
DN / NPS	ISO	Breakaway torque Mdl in Nm								
80 / 3	F10 / SW19	106	123	140	161	175	192	209	243	277
100 / 4	F10 / SW19	124	162	199	244	274	312	349	424	499
125 / 5	F12 / SW24	170	220	269	328	368	418	467	566	665
150 / 6	F14 / SW30	243	321	399	493	555	634	712	868	1024
200 / 8	F16 / SW36	274	453	632	847	991	1170	1349	1708	2066
250 / 10	F16 / SW36	372	657	942	1284	1512	1797	2081	2651	3221
300 / 12	F25 / VK50	573	881	1410	1912	2246	2665	3083	3919	4756
350 / 14	F25 / VK50	735	1435	2136	2976	3536	4237	4937	6337	7738
400 / 16	F30 / VK65	1232	2067	2903	3905	4574	5409	6244	7915	9586
450 / 18	F30 / VK65	1335	2520	3705	5127	6075	7260	8445	10815	13185
500 / 20	F35 / VK80	2306	4885	7464	10558	12621	15200	17779	22936	-
600 / 24	F40 / VK100	3321	7063	10804	15294	18288	22029	25771	33254	-
700 / 28	F40 / VK100	3644	9324	15003	21819	26362	32042	37722	49081	-
800 / 32	F48 / VK120	4898	14785	24672	36537	44446	54334	64221	83995	-

**Table 12: Metal-to-metal sealing system for trunnion-mounted ball: HSB3 in high-temperature version**

Differenzdruck $D_p$ in bar		0	5	10	16	20	25	30	40	50
DN / NPS	ISO	Losbrechmomente Mdl in Nm								
80 / 3	F10 / SW19	106	127	149	174	192	213	234	277	320
100 / 4	F10 / SW19	124	170	216	272	309	355	401	494	586
125 / 5	F12 / SW24	170	230	290	361	409	469	529	648	768
150 / 6	F14 / SW30	243	347	450	575	609	762	865	1073	1280
200 / 8	F16 / SW36	274	527	779	1082	1284	1537	1790	2295	2800
250 / 10	F16 / SW36	372	742	1111	1555	1851	2221	2590	3330	4069
300 / 12	F25 / VK50	574	1141	1708	2389	2842	3410	3977	5111	6245
350 / 14	F25 / VK50	735	1697	2658	3812	4581	5543	6504	8427	10350
400 / 16	F30 / VK65	1232	2410	3587	5000	5942	7120	8298	10653	13008
450 / 18	F30 / VK65	1335	3036	4736	6776	8137	9837	11537	14938	18339
500 / 20	F35 / VK80	2306	5677	9049	13094	15792	19163	22534	29277	36020
600 / 24	F40 / VK100	3321	8385	13449	19525	23576	28640	33704	43831	53959
700 / 28	F40 / VK100	3644	11474	19304	28700	34964	42793	50623	66283	81943
800 / 32	F48 / VK120	4898	18602	32306	48751	59715	73419	87123	114531	141940

**i Info**

The above listed torques are based on an opening ball valve at the specified differential pressure. The measurements were made using water containing corrosion inhibitor at room temperature and waiting one day before opening the valve. Factors, such as temperature, pressure, medium, on/off switching frequency and idles times, are taken into account on selecting and sizing the actuator. Contact Pfeiffer in case of doubt.

## Dimensions and weights:

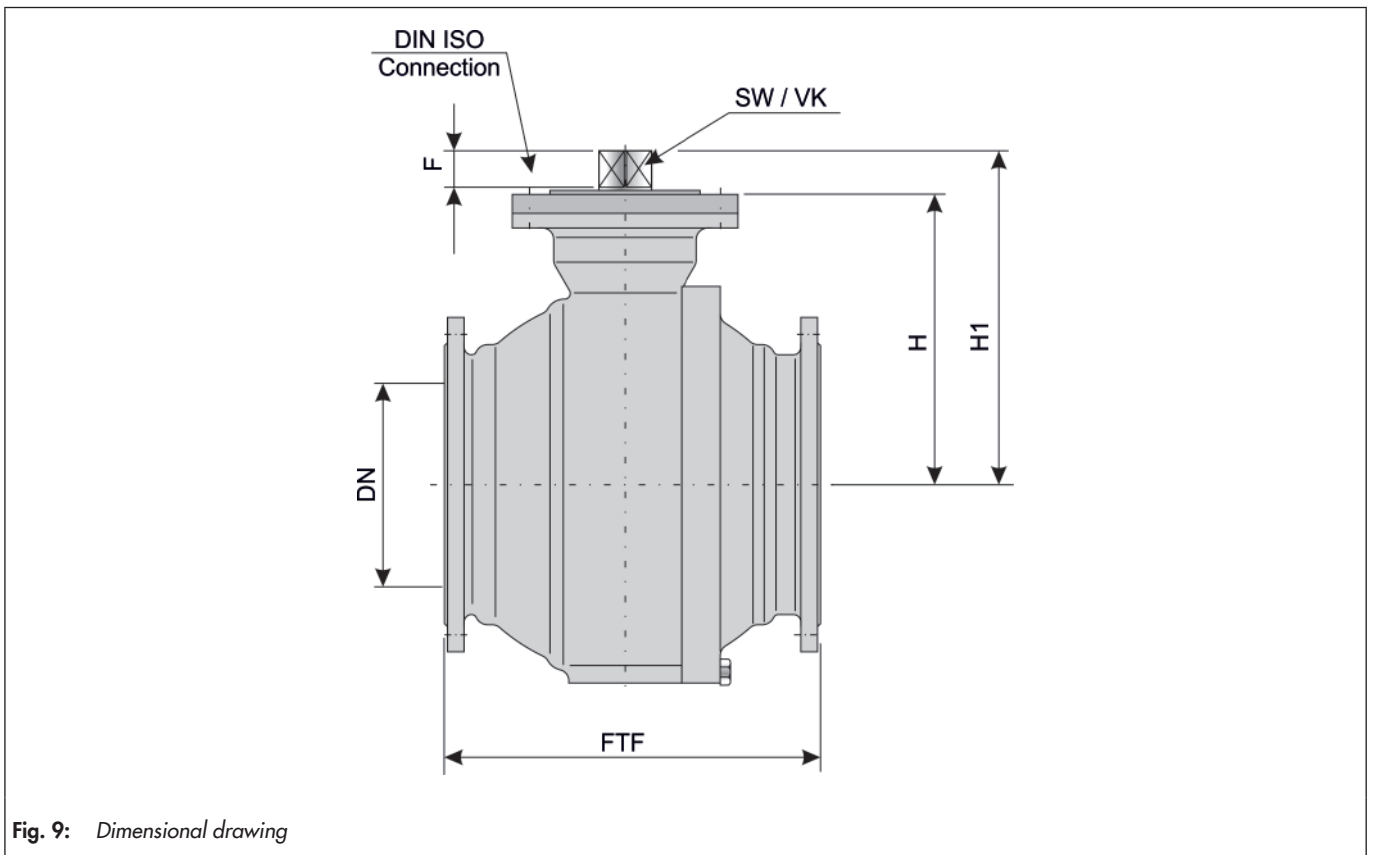


Table 13: Dimensions in mm and weights in kg

DN / NPS	FTF R1	FTF R27/15	FTF cl150	FTF cl300	H	H1	F	SW/VK	DIN ISO	Weight R1	Weight R27/15	Weight cl150	Weight cl300
15 / ½	130	115	108	140	46	60	9	SW9	F03	2.8	2.8	2.2	2.7
25 / 1	160	125	127	165	58	77	14	SW14	F05	4.7	4.4	4.5	4.7
40 / 1 ½	200	140	165	191	85	107	17	SW17	F07	9.5	8.9	9.2	9.6
50 / 2	230	150	178	216	93	115	17	SW17	F07	12.0	11.4	11.0	12.5
80 / 3	310	180	203	283	147	173	19	SW19	F10	24	27	28	32
100 / 4	350	190	229	305	162	188	19	SW19	F10	40	38	38	49
125 / 5	400	325	356	381	225	256	24	SW24	F10	75	70	78	82
150 / 6	480	350	394	403	231	268	30	SW30	F14	102	97	93	110
200 / 8	600	400	457	502	269	313	36	SW36	F16	202	147	172	212
250 / 10	-	450	533	568	320	364	36	SW36	F16	-	276	291	348
300 / 12	-	500	610	648	386	444	50	VK50	F25	-	470	443	501
350 / 14	-	550	686	762	485	543	50	VK50	F25	-	625	586	814
400 / 16	-	762	762	838	490	577	65	VK65	F30	-	734	662	947
450 / 18	-	864	864	914	596	656	65	VK65	F30	-	1141	1067	1370
500 / 20	-	914	914	991	605	696	80	VK80	F35	-	2464	2400	2820
600 / 24	-	1067	1067	1143	679	789	100	VK100	F40	-	3462	3420	3970
700 / 28	-	1245	1245	1346	749	859	100	VK100	F40	-	5018	4960	5720
800 / 32	-	1372	1372	1524	863	995	120	VK120	F48	-	7222	7110	7840

## Selection and sizing of the ball valve

1. Determine the required nominal size.
2. Select the valve taking into account the required materials and other equipment within the pressure-temperature limits.
3. Select the appropriate actuator with the required torque at the differential pressure and include sufficient safety reserve.
4. Select additional equipment for actuator control and feedback.

### Ordering text:

- Series 26s Ball Valve
- Temperature: ....
- Pressure: ....
- Medium: ....
- Planned on/off switching frequency: ....
- Optional: Ball bearing
- DIN or ANSI version
- DN/NPS ..... and PN/Class .....
- End connections: ....
- Body material
- Packing material
- Optional special equipment
- Actuator (brand name): ....
- Mounting location of actuator
- Signal pressure ..... bar
- Fail-safe action
- Limit switch (brand name): ....
- Solenoid valve (brand name): ....
- Optional position transmitter (brand name): ....
- Others

## Associated data sheets

- For pneumatic Quarter-turn actuator ▶ TB 31a

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### Info

*All details relevant for the ordered version which deviate from those in the technical specifications can be taken from the corresponding order confirmation, if required.*

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