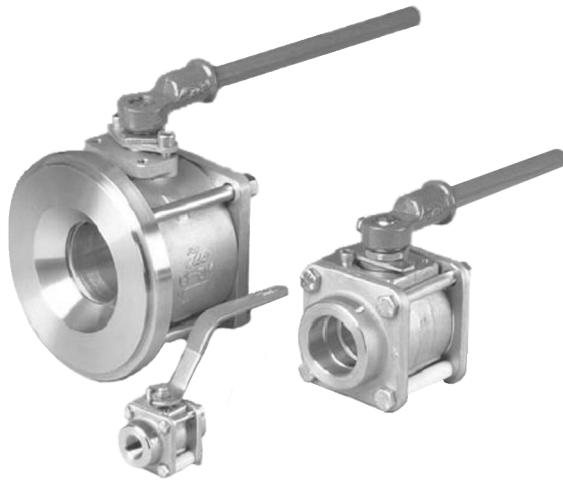


## Ball valve with full or reduced Bore, 3-piece body construction



NPS 1/4"-4"  
DN 8-100

### Application

- General industry, power stations, chemical industry
- Paper industry, food industry, pharmaceutical industry

### Operating data

- Temperature range, depending on the operating pressure and the seat material, -10 °C to +200 °C
- Permissible operating pressure: see table page 2

### Design

- Three-piece body
- Design according to BS 5351
- Connections:
  - NPT thread: ASME B1.20.1
  - BSP tread: ISO 228
  - SW: ANSI B16-11 (mm)
  - BW: ANSI B16-25 Sch 40-80
- Test according to BS 6755 Part 1
- The valves meet the safety requirements of the Pressure Equipment Directive 97/23/EC (PED) appendix I for fluids of the group 1 and 2.

### Standard variants

- Bottom tank valve (Fig F21 A and F21)
- Seat in:
  - PTFE + Glass Fibre
  - PTFE + Graphite
  - PTFE + Stainless Steel powder
  - PEEK
  - UHMWPE
- Seal O'ring in EPDM, Nitrile, FEP
- Oval handle (up to 2"), T handle
- Locking device
- ATEX version in accordance with 94/9/EC directive

### Remarks

- Seat selection 8226.21
- Operating instructions 8226.81

### On all enquiries/orders please specify

- |                         |                           |
|-------------------------|---------------------------|
| 1 Type                  | 6 Medium                  |
| 2 PN                    | 7 Operating temperature   |
| 3 DN                    | 8 Pipe connection         |
| 4 Working pressure      | 9 Standard variants       |
| 5 Differential pressure | 10 Type series booklet n° |



## Working pressures

PN	Material	Working pressure in bar for temperature °C							
		-10 °C	50 °C	65 °C	100 °C	120 °C	150 °C	200 °C	250 °C
16	A 105	16,00	16,00	16,00	16,00	15,80	15,60	15,10	14,40
	CF8M	14,70	14,30	13,80	12,50	12,00	11,40	10,60	9,80

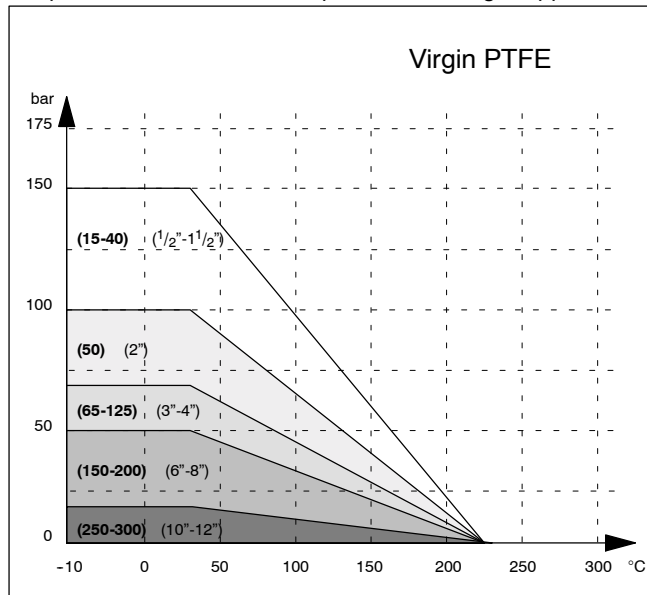
PN	Material	Working pressure in bar for temperature °C							
		-10 °C	50 °C	65 °C	100 °C	120 °C	150 °C	200 °C	250 °C
70	A350 LF2	67,20	66,00	64,50	61,00	60,40	59,50	57,50	55,00
	A479 316L	54,40	52,50	50,50	45,80	43,90	41,10	37,50	35,20

## Temperature limits of seats

The values that are shown are an approximation to reality based on our own past experience.

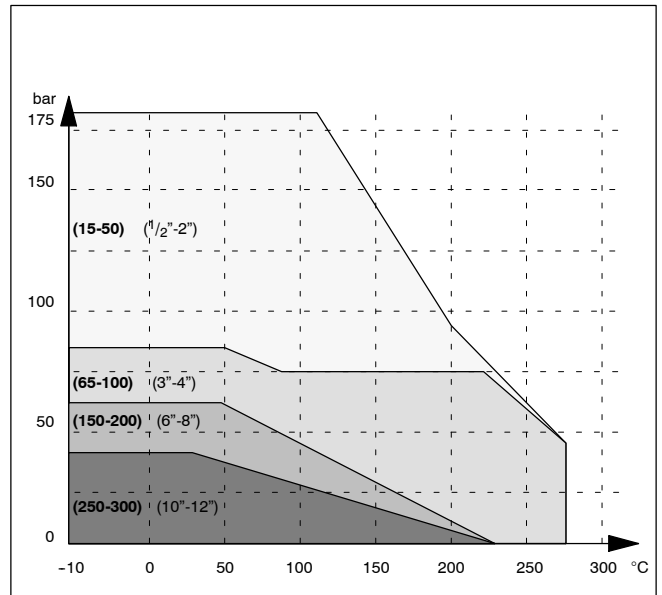
### Virgin PTFE:

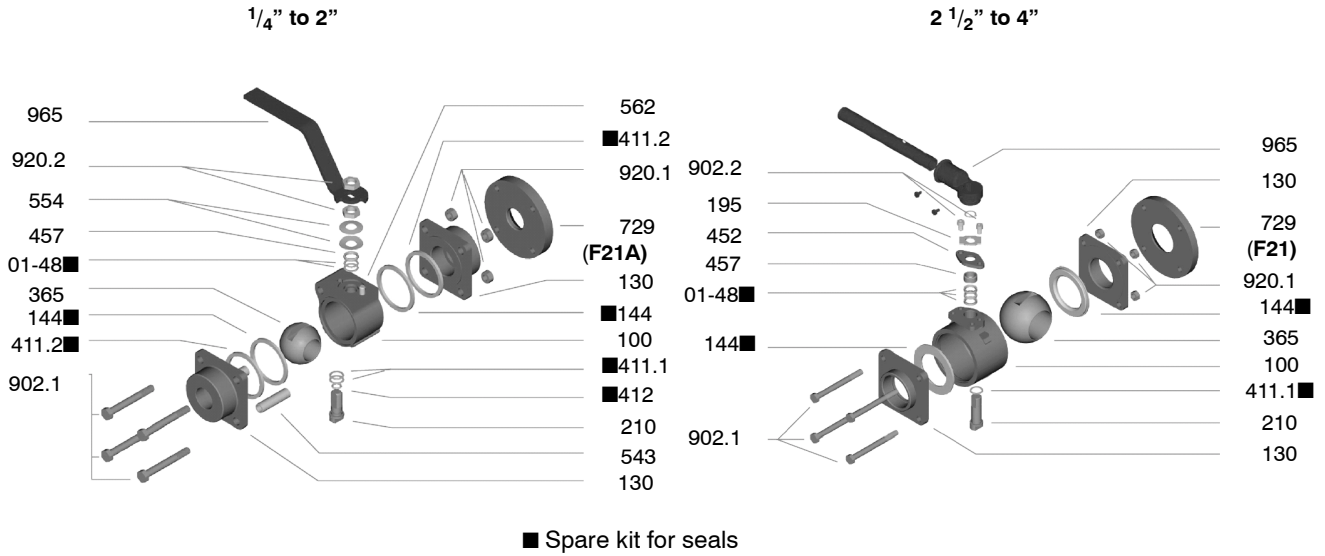
Inert to most media, low friction coefficient, subject to temperature limitations. Good performance in gas applications.



### Other Seats:

For precise determination and choice of seat see seat selection 8226.21



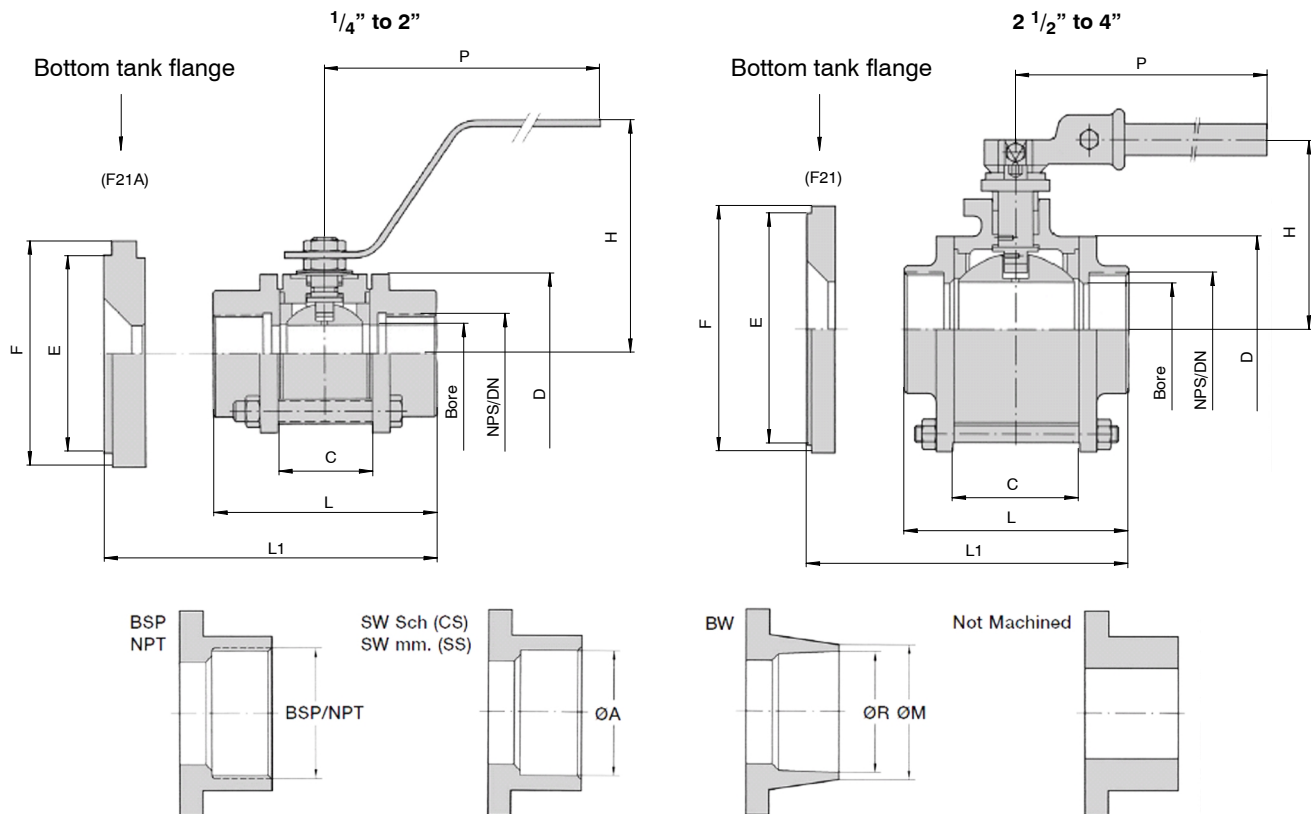


## Materials

Part no.	Name of parts	Stainless Steel Version	Cast Steel Version
100	Body	DN ≤ 2" : ASTM A479 316L (1.4404) DN > 2" : ASTM A351 CF8M (1.4408)	DN ≤ 2" : ASTM A350 LF2 DN > 2" : ASTM A105
130	Body Connector	DN ≤ 2" : ASTM A479 316L (1.4404) 2" < DN ≤ 3" : ASTM A351 CF8M (BW: ASTM A351 CF3M) DN 4" : ASTM A351 CF3M	DN ≤ 2" : ASTM A350 LF2 DN > 2" : ASTM A216 WCC (1.0619)
195	Stop Plate (DN > 1")	DN ≤ 2" : Steel nickel plated DN > 2" : Steel zinc plated	Steel zinc plated
210	Stem	ASTM A479 316 (1.4401)	ASTM A479 316 (1.4401)
365	Ball	DN ≤ 1 1/4" : ASTM A479 316 (1.4401) DN > 1 1/4" : 1.4408	DN ≤ 1 1/4" : ASTM A479 316 (1.4401) DN 1 1/2", 2" : 1.4408 DN ≥ 2 1/2" : 1.4027
411.2	Body Seal	DN ≤ 2" : PTFE DN ≥ 2 1/2" : N/A	DN ≤ 2" : FPM (Viton®) DN 2 1/2" & 3" : N/A DN 4" : PTFE
412	Stem O'ring	DN ≤ 1" & 2" : FPM (Viton®) DN ≥ 2 1/2" : N/A	DN ≤ 1" : FPM (Viton®) DN ≥ 2" : FPM (Viton®)
452	Gland Flange	DN ≤ 2" : N/A DN ≥ 2 1/2" : Stainless Steel	N/A
457	Gland Ring	ASTM A479 316	ASTM A479 316
543	Spacer	Nylon®	Nylon®
554	Washer	1.4122 (SS)	Blued steel
562	Stop Pin	Stainless steel	Steel
729	Bottom Flange	ASTM A479 316	N/A
902.1	Bolt or Stud Bolt	DIN 267/11 A2-70	DIN 267 8.8-8
902.2	Gland Bolt	DN ≤ 2" : N/A DN ≥ 2 1/2" : DIN 267/11 A2-70	N/A
920.1	Body nut	DIN 267/11 A2-70	DIN 267 8.8-8 (DN 3" & 4" : ASTM A194 2HM)
920.2	Stem nut	DN ≤ 2" : DIN 267/11 A2-70 DN ≥ 2 1/2" : N/A	Steel
965	Hand lever	DN ≤ 1" : SS+Plastic DN > 1" : GGG 40	DN ≤ 1" : Steel coated DN > 1" : GGG 40
01-48	Gland Packing	DN ≤ 1" : PTFE+C+Graphite DN 1 1/4" & 1 1/2" : PTFE, Type "U" form DN ≥ 2" : PTFE	
144	Seat	PTFE	
411.1	Stem Seal	DN ≤ 1" : PTFE+C+Graphite DN > 1" : PTFE	

## Dimensions

### Valves with handles



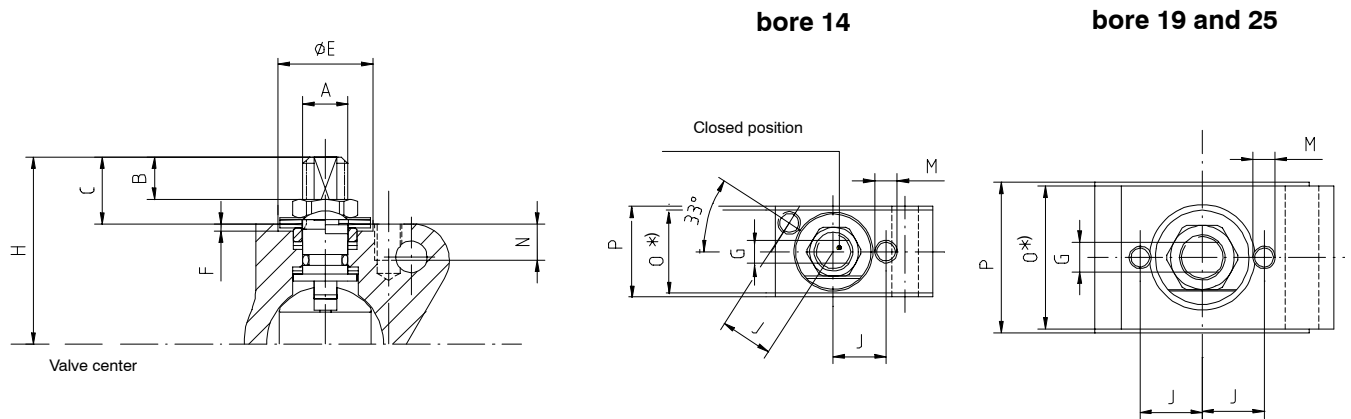
Reduced Bore														
NPS	DN	Bore	Rating	Dimensions					Weight <sup>1)</sup> (kg)	End connections				
				L	C	D	H	P		BSP ISO 228	NPT ASME B1.20.1	SW mm A	SW Sch A	BW M/ R
3/4"	20	14	PN 70	70	24	53	88	150	1,2	3/4"	3/4"	23,5	27,4	28/19
1"	25	19		86	31	66	92		1,4	1"	1"	30,5	34,1	35/25
1 1/4"	32	25		100	40	70	104		1,9	1 1/4"	1 1/4"	38,5	42,7	43/32
1 1/2"	40	32		106	47	87	103	200	3,1	1 1/2"	1 1/2"	43,5	49,0	50/38
2"	50	38		121	57	100	110		4,5	2"	2"	53,5	61,0	62/51
2 1/2"	65			see full bore										
3"	80	65	PN 16	156	86	128	144	250 <sup>2)</sup>	10,0	3"	3"	84,5	89,5	89/78
4"	100	76		178	102	150	154		17,0	4"	4"	114,9	-	114/102

Full Bore															Variant	
NPS	DN	Bore	Rating	Dimensions					Weight <sup>1)</sup> (kg)	End connections					Bottom flange F21 A and F21	
				L	C	D	H	P		BSP ISO 228	NPT ASME B1.20.1	SW mm A	SW Sch A	BW M/ R	F/ E	L1
1/4"	8	14	PN 70	70	24	53	88	150	0,9	1/4"	1/4"	8,5	14,5	14/9	75/65	61,0
3/8"	10	14								3/8"	3/8"	14,5	18,5	18/12		
1/2"	15	14								1/2"	1/2"	18,5	21,8	22/14		
3/4"	20	19		200	86	31	66	92	1,5	3/4"	3/4"	23,5	27,4	28/19	80/70	73,5
1"	25	25			100	40	70	104	2,1	1"	1"	30,5	34,1	35/25	90/80	85,0
1 1/4"	32	32			106	47	87	103	3,1	1 1/4"	1 1/4"	38,5	42,7	43/32	110/100	96,5
1 1/2"	40	38			121	57	100	110	4,9	1 1/2"	1 1/2"	43,5	49,0	50/38	125/115	109,0
2"	50	51	143	70	114	106	7,1	2"	2"	53,5	61,0	62/51	150/140	126,5		
2 1/2"	65	65	PN 16	156	86	128	144	250 <sup>2)</sup>	10,0	2 1/2"	2 1/2"	76,6	74,4	76/63	170/144	141,0
3"	80	76		178	102	150	154		12,0	3"	3"	84,5	89,5	89/78	205/168	164,0
4"	100	102		243	139	238	212		500	17,0	-	-	-	-	108/100	-

1) VU only

2) Cod. CS: P=350

## Coupling flange dimensions

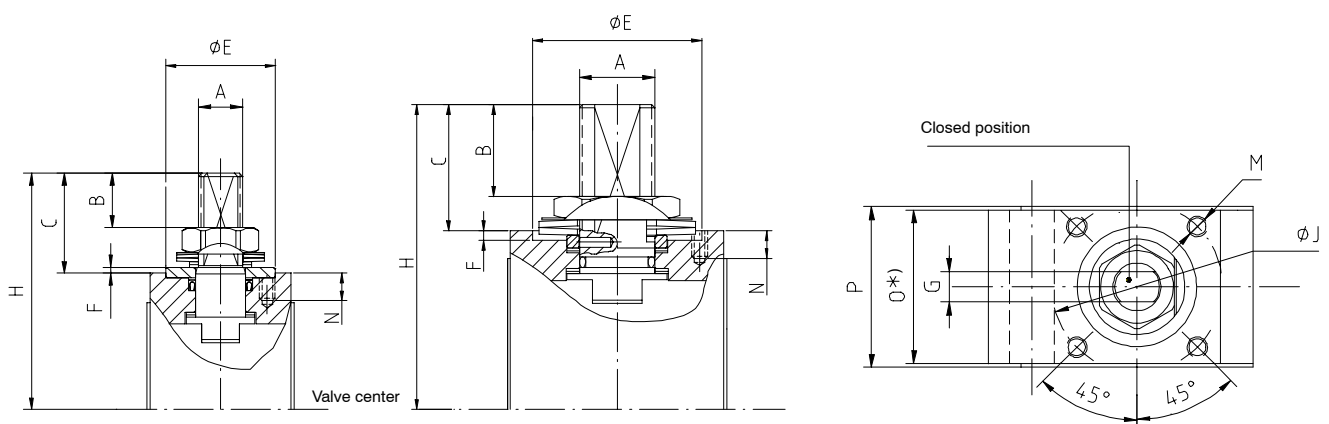


\*) Maximum bracket width

DN reduced bore	DN full bore	bore	A	B	C	E	F	G	H	J	M	N	O	P
3/4"	1/4"	14	M10x1,5	9,5	15,0	21	1,5	6	41,5	14,0	M6x1	8	22	24
	3/8"													
	1/2"													
1"	3/4"	19	M10x1,5	9,5	12,5	21	4,0	6	45,5	14,0	M6x1	8	29	31
1" 1/4	1"	25	M12x1,5	10,5	18,0	28	2,0	8	53,0	16,5	M6x1	8	38	40

### bore 32 and 38

### bore 51



\*) Maximum bracket width

DN reduced bore	DN full bore	bore	A	B	C	E	F	G	H	J	M	N	O	P
1" 1/2	1" 1/4	32	M14x1,5	17,5	32,0	35	2	9	75,5	50	M6x1	10	45	47
2"	1" 1/2	38	M14x1,5	17,5	32,0	35	2	9	82,0	50	M6x1	10	55	57
-	2"	51	M24x2	29,5	40,5	54	3	19	97,5	70	M8x1	12	68	70

For coupling flange dimension, bore > 51.  
Please, consult us.

## Hydraulic characteristics / Operating torques

### Full bore

NPS	DN	Bore	Kvo	Cvo	Operating torque <sup>1)</sup> in Nm
1/4"	8	14	9	11	8
3/8"	10	14	9	11	
1/2"	15	14	26	30	
3/4"	20	19	43	50	10
1"	25	25	77	90	12
1" 1/4	32	32	128	150	18
1" 1/2	40	38	213	250	30
2"	50	51	385	450	42
2" 1/2	65	65	650	760	75
3"	80	76	1274	1490	120
4"	100	102	1893	2215	150

### Reduced bore

NPS	DN	Bore	Kvo	Cvo	Operating torque <sup>1)</sup> in Nm
3/4"	20	14	10	12	8
1"	25	19	21	25	10
1" 1/4	32	25	43	50	12
1" 1/2	40	32	68	80	18
2"	50	38	103	120	30
2" 1/2	65	51	188	220	42
3"	80	65	282	330	75
4"	100	76	509	595	120

<sup>1)</sup> The safety coefficient to define the adapted actuator is not included in the torque value.

The values shown throughout this table are an average of the real values. These values have been taken under ideal conditions of clean water, room temperature, unfilled PTFE, daily handling and without safety rate. For different types of services and conditions, we suggest that the following corrective factors be used.

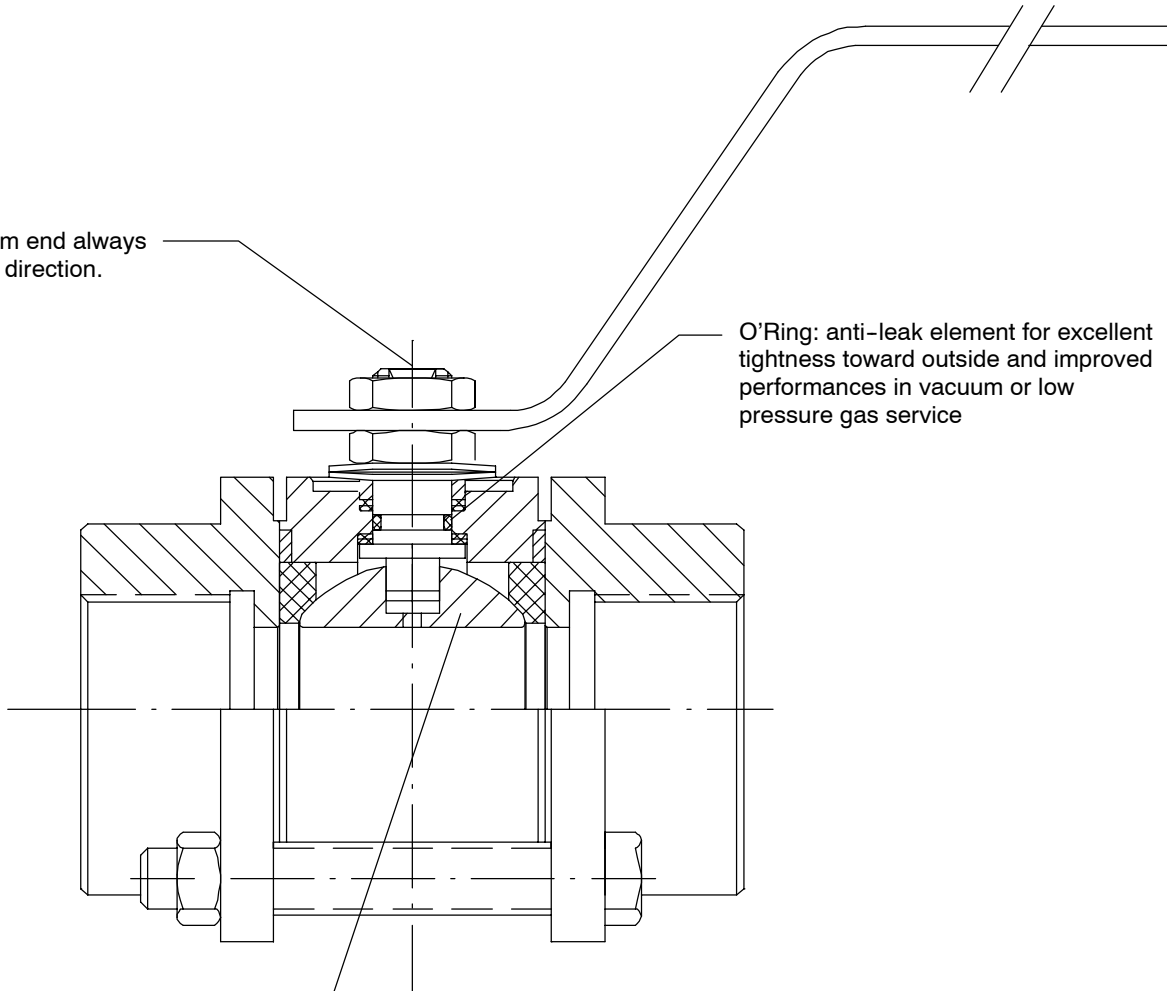
Corrective factors	
Filled PTFE seats	1,2-1,4
Long inactivity	2 (min.)
Nondry gases	1,5
Dry gases (natural gases)	1,7
Powder	1,3
Drying-out-fluids	1,2

Recommended bolt torques			
Bore	Item 902.1	Stainless Steel Version (Nm)	Cast Steel Version (Nm)
14	M6	9	12
19-25	M8	21	29
32-38	M10	37	52
51	M12	62	87
65			
76	M14	95	133
102			

**Product Features - to our Customers' Benefit**

Double D stem end always showing flow direction.

O'Ring: anti-leak element for excellent tightness toward outside and improved performances in vacuum or low pressure gas service



The superior quality of the ball surface results in lower operating torques and longer service life thus reducing actuation and maintenance costs.



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