

# TuBore™ clean valves



## Introduction

### 48 series - the TuBore™ line

The TuBore™ series is Habonim's line of sterile ball valves for the pharmaceutical, bioprocessing, food and beverage industries. The valves comply with ASME BPE standard for applications in which sterility, cleanability and drainability are essential for product quality.

Because the TuBore™ valve port diameter is identical to the tube inner diameter, no expansion or contraction can take place inside the system resulting in full drainage and no traces that could cause contamination. The TuBore™ line excels at maximum flow capacity and minimum pressure drop and provides low-torque tight shutoff.

The TuBore™ series is grouped into three geometric designs according to the ASME BPE, ISO 1127 and DIN 11850 tube dimension specifications.

Only FDA and USP Class VI compliant polymers or elastomers are used in the TuBore™ series.

To avoid rouging on austenitic stainless steel surfaces and corrosion attack on welding areas, low ferrite cast or forged bar materials are used and polished. Upon request, electro-polished surface finishes are available.

Purge and drain ports are available upon request to facilitate CIP/SIP operation.

Diverter and various multiport configurations based on the TuBore™ model are also available.

## Technical summary

<b>48 series</b>	TuBore™
<b>Size range</b>	3/8" - 6 (DN10 - DN150) Series depended
<b>Pressure range</b>	Vacuum 10 <sup>-6</sup> Tor to 50 bar (750 psi)
<b>Temperature range</b>	-60 °C to +230 °C (-76 °F to +446 °F)
<b>Materials</b>	Stainless steel A351 CF3M, A479 316L, EN 10222-5 1.4435, Alloy C22, Alloy C276
<b>End connections</b>	Welded, clamped
<b>Operation</b>	Lever or gear operated, pneumatic or electric actuation
<b>Service</b>	Pharmaceutical, bioprocessing, cosmetics, food & beverage

## Standards of compliance

<b>Factory certification</b>	ISO 9001:2015	Quality management system
<b>Valve design &amp; tests</b>	ASME BPE:2016	Valve design
	BS EN ISO 1127:1997	Stainless steel tubes - Dimensions and tolerances
	DIN 11850 (Range 2)	Stainless steel tubes - Dimensions and tolerances
	EN 10226-1:2004, API 598:2016	Testing of metallic valves - Pressure tests, test procedures and acceptance criteria.
	API 607:2016, ISO 10497:2010 ISO 15848-1:2015	Testing of valves - Fire type-testing requirements Industrial valves - measurement, test and qualification procedures for fugitive emissions
<b>Certifications</b>	PED 2014/68/EU Module H	Pressure equipment directive
	ATEX 2014/34/EU	Equipment and protective systems intended for use in potentially explosive atmospheres (optional for actuated unit only)
<b>Documentation</b>	EN 10204:2004 2.2/3.1/3.2	Metallic materials - types of inspection documents

### Polishing and Electro-polishing

To minimize contamination and to avoid corrosion/roughing problems, inner surfaces which come into direct or indirect contact with the flow media are polished and, upon request, electro-polished.

For cast/forged valves the body, ball, seat retainer (2" size and above) and the end connections are polished internally. For rolled bar valves, additional polishing is carried out the body and end connections outer surfaces.

When requested, electro-polishing is carried out on the body, ball, seat retainer (2" size and above) and end connections.

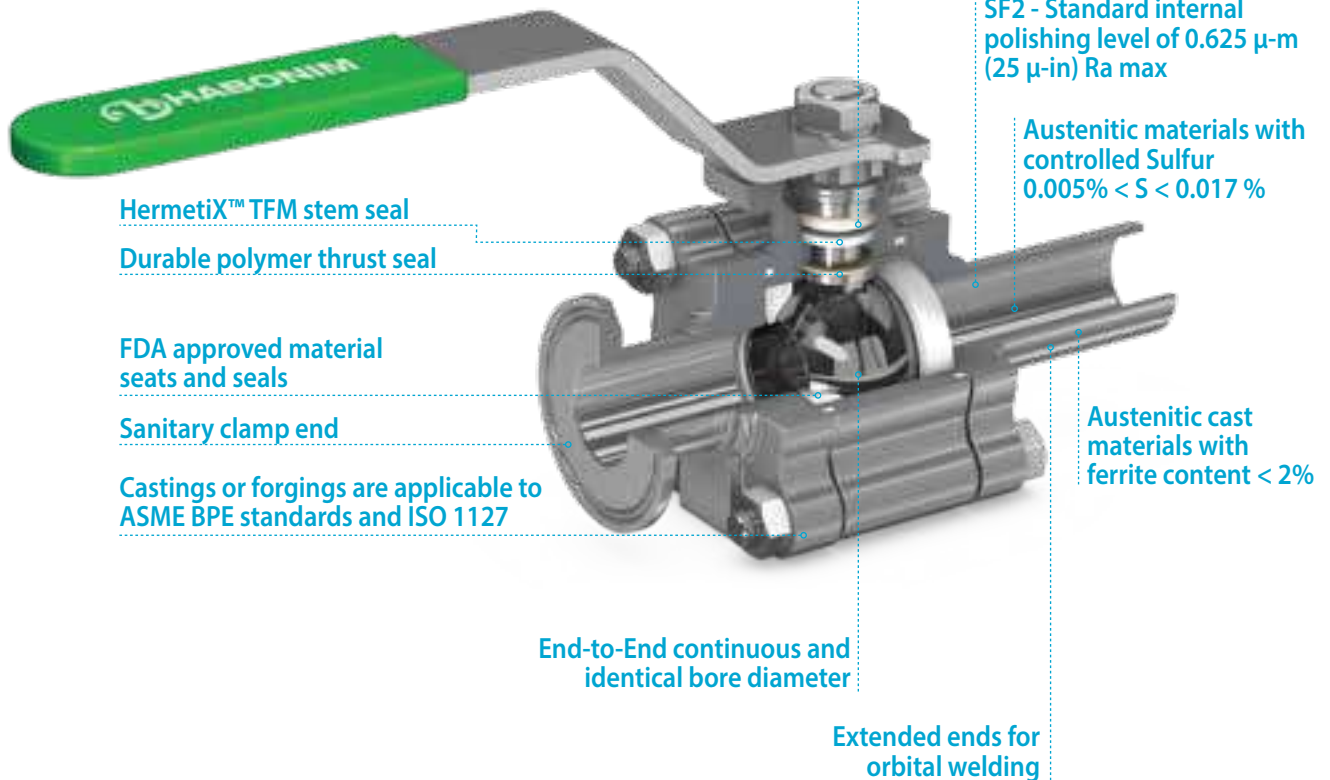
The standard TuBore™ line polishing level is 0.625 μ-m (25 μ-in) Ra max. Higher levels of surface finish up to 0.375 μ-m (15 μ-in) Ra max are available, including internal and external electro-polishing.

Habonim does not use Animal Derived Ingredients (ADI's) in its surface finishing processes.

Ra Reading for Metallic Contact Surfaces			
Product			
ASME BPE	Ra Max.		Habonim
Surface designation	μ-in.	μ-m	Code
SF1	20	0.51	G32
SF2*	25	0.64	G24
Mechanically Polished and Electropolished			
ASME BPE	Ra Max.		Habonim
Surface designation	μ-in.	μ-m	Code
SF4	15	0.38	E32
SF5	20	0.51	E24
SF6	25	0.64	E18

\* SF2 is the TuBore™ line standard surface finish, no need to add 'G24' suffix

### 48X series TuBore™ with ISO 15848-1 certified stem seal



# Floating Ball Valves

<b>TuBore™ clean valves</b>	General	ASME BPE standard	ISO 1127 standard	DIN 11850 standard	Ordering code system
-----------------------------	---------	-------------------	-------------------	--------------------	----------------------

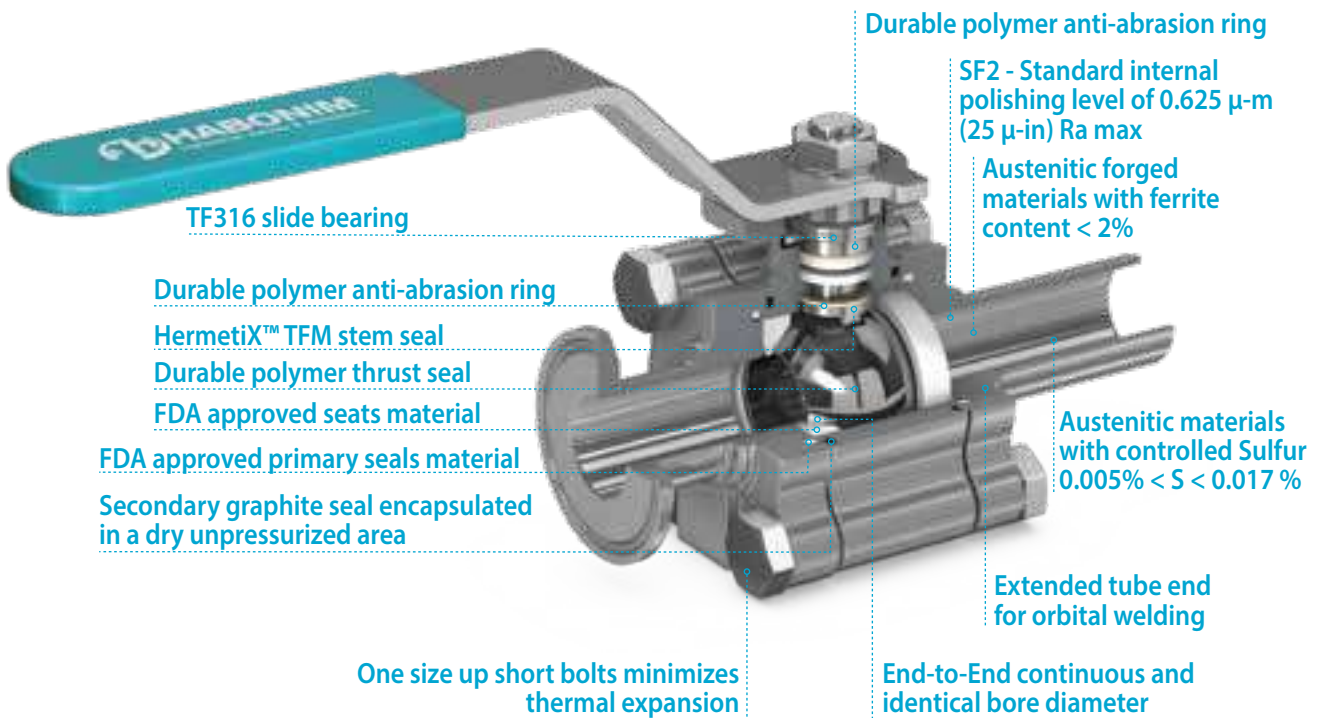
## Austenitic ferrite content

To avoid rouging on austenitic stainless steel surfaces and corrosion attack on welding areas, low ferrite cast or forged bar materials are used. The standard TuBore™ cast valves have a ferrite level of < 2%, and the TuBore™ forged bar valves < 1%.

## Effect of sulfur % on orbital welds

Orbital welding provides precise control of the arc gap and thus better control of the heat input, allowing for uniform penetration. Orbital welds are typically carried out as a single-pass weld using a square-butt end preparation. The TuBore™ one-piece, solid, extended welded ends are accurately machined and designed with sufficient length to allow free movement of the orbital welding machine around the circumference. The result: a quality weld and minimum labor time. For critical applications using small-diameter, thin-walled tubing, low-sulfur materials with sulfur concentrations of 0.001-0.005% are routinely and successfully welded, including allowances made for higher weld bead width-to-depth ratio. However, the more complex welding procedures and the specialized personnel required to achieve these exceptional surface finish and corrosion resistance specifications involve extra costs. Thus the standard Habonim's TuBore™ 316L/CF3M welded ends have a controlled sulfur content of 0.005-0.017%.

## 48G series - Graphite-free fire safe design valve and ISO 15848-1 certified valve



### Cleaning and Assembling

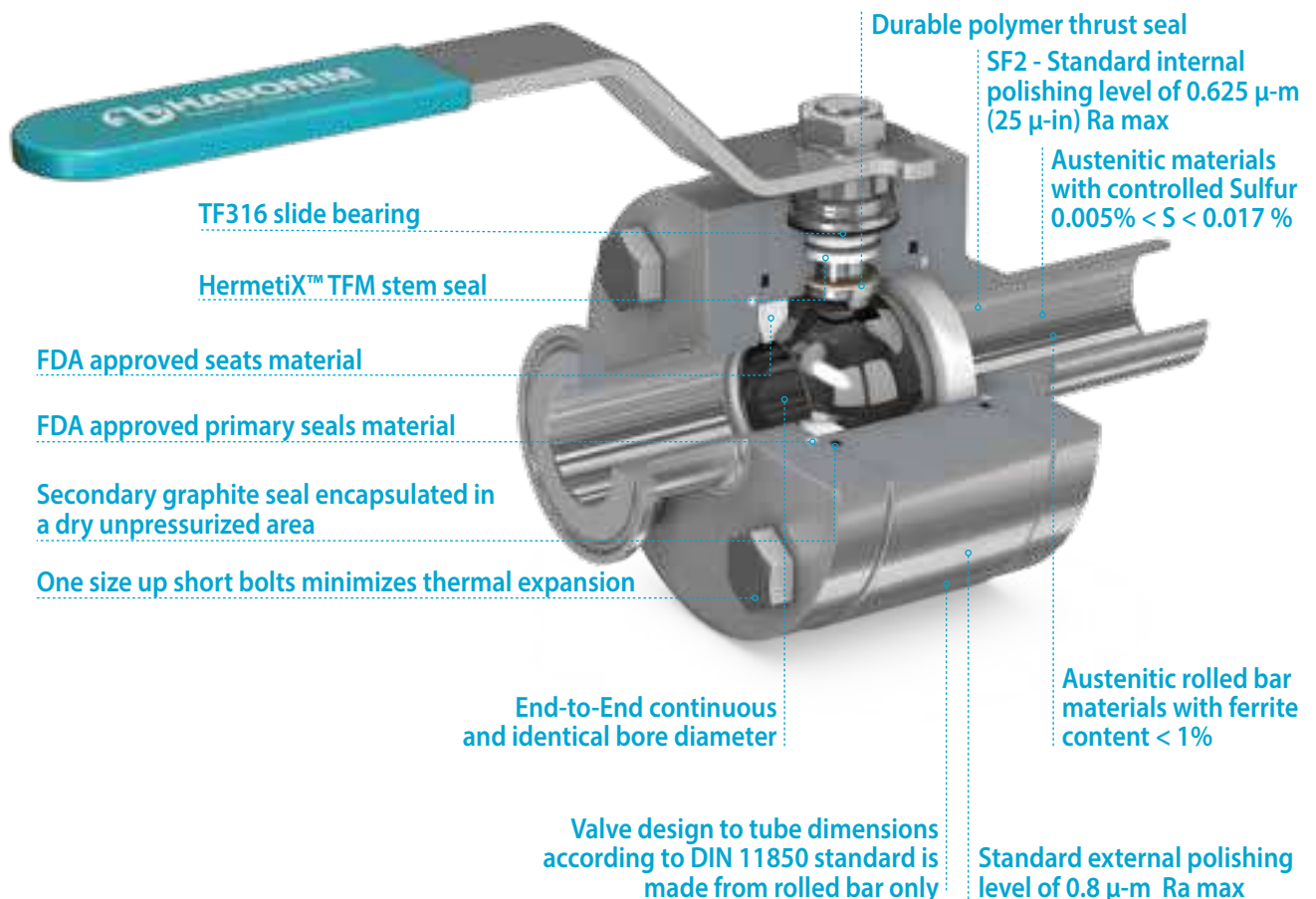
Habonim's meticulous cleaning, assembly and inspection procedure for the TuBore™ line ensures the stringent cleanliness required by Bioprocessing, Pharmaceutical and Oxygen services.

Habonim uses a state of the art, environmentally friendly, alkaline-based automatic degreasing system with multiple stages of cleaning, rinsing and drying chambers to ensure that particles, grease, metal chips and other contamination hazards that can be introduced by a poor deburring process or shop dirt are removed thoroughly before the assembly process begins. Upon completion of the cleaning process, the valves are assembled in an oil free restricted area by qualified personnel who are specially trained to perform this task. The employees wear clean working clothes and latex gloves throughout the procedure. The equipment and tools are cleaned before use and the work surfaces are covered with a clean polyethylene sheet before performing the valve assembly.

### Testing and packaging

All valves are 100% helium leak tested according to the EN 1779 vacuum test method - A.3 Leakage  $\leq 1E-6$  Pa\*m<sup>3</sup>/sec. Packaging is done in the same cleanroom where the cleaning process was completed. Finished (dry, completed, inspected and approved) valve end connections are capped with non-shedding end caps. Finished valves are removed from the cleanroom environment only after being bagged and sealed in a clean polyethylene bag.

## 48G series - External and internal polish bar made valve line, Graphite-free fire safe design valve and ISO 15848-1 certified valve



# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

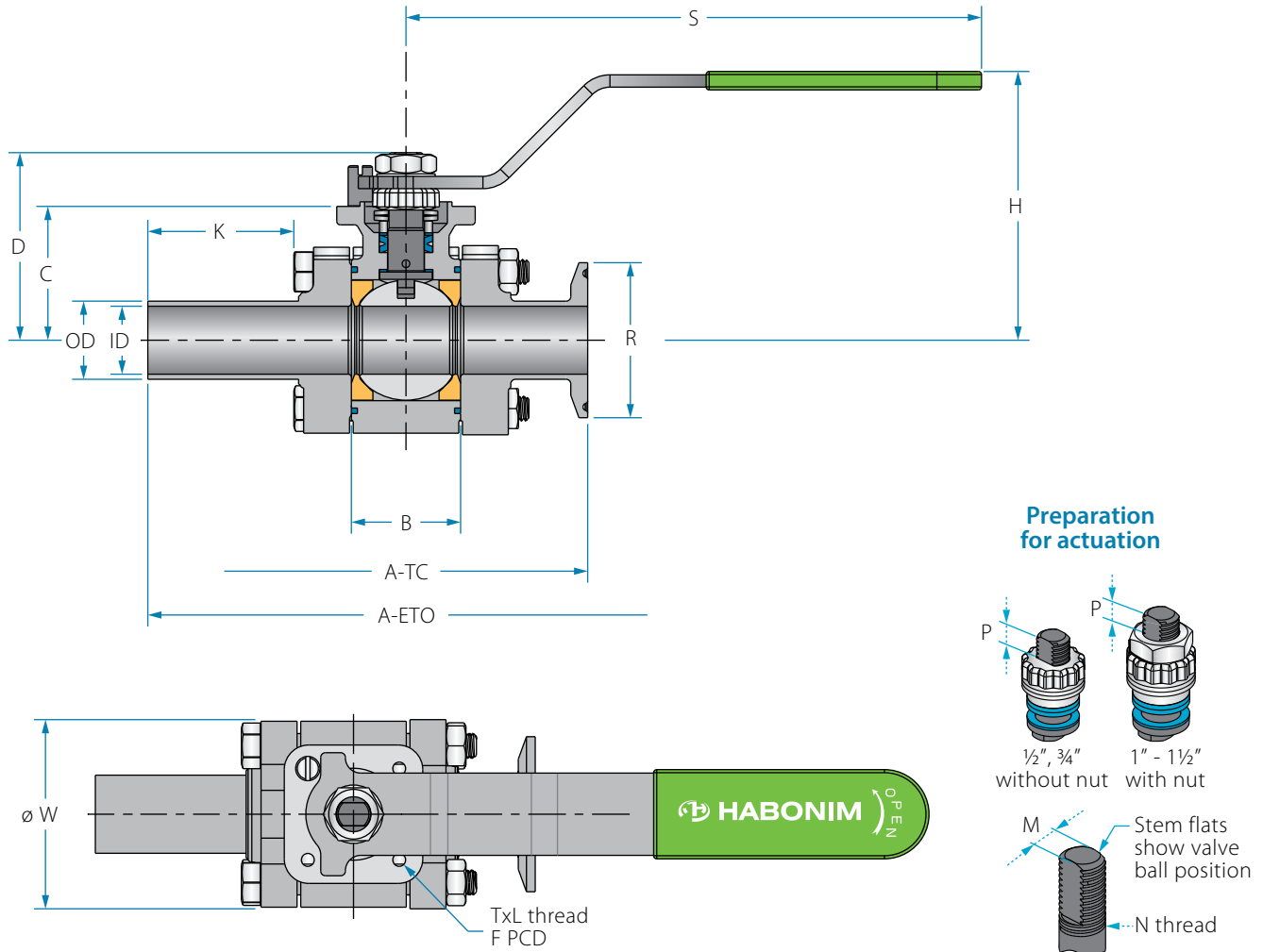
ISO 1127  
standard

DIN 11850  
standard

Ordering code  
system

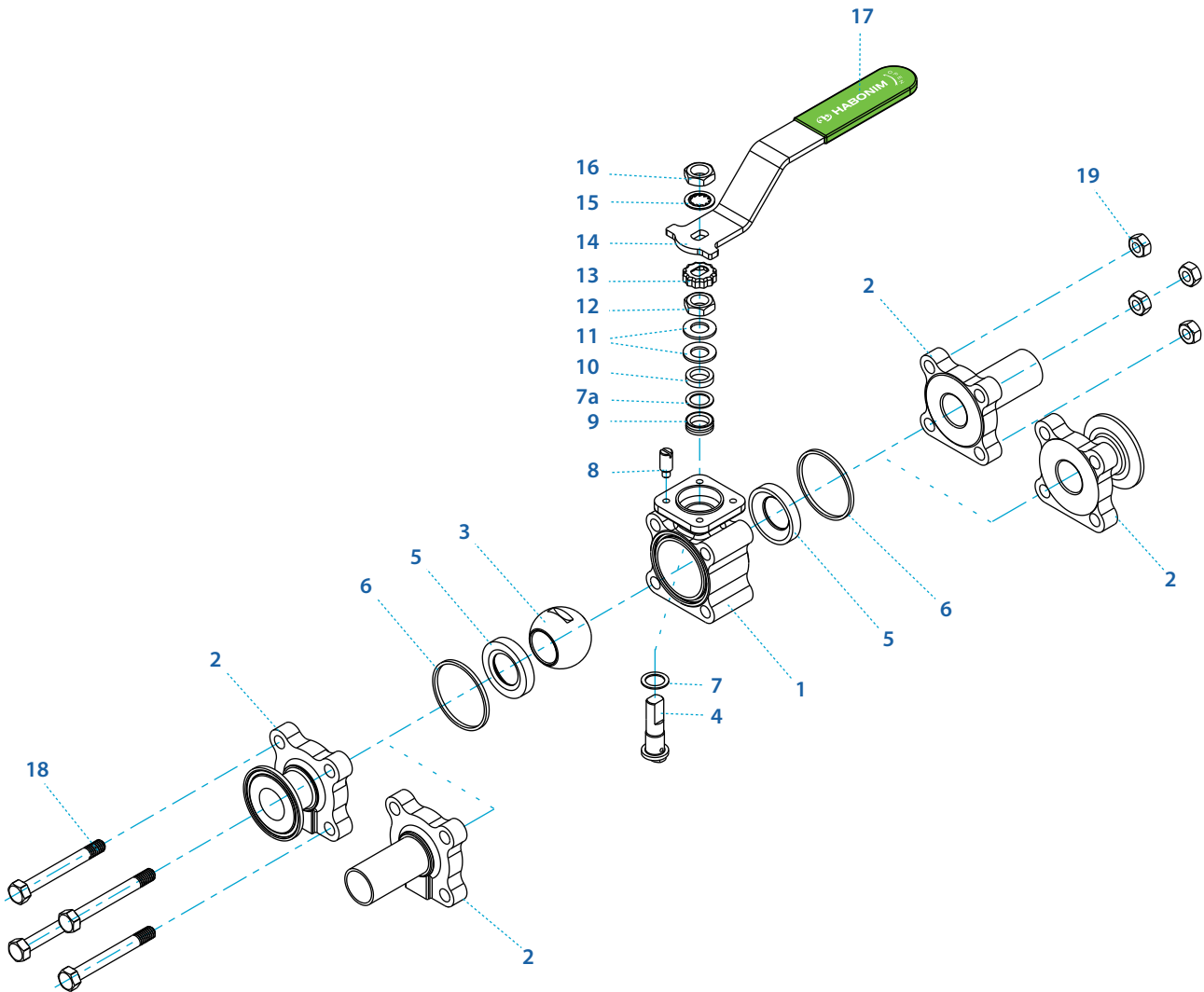
Size ½"- 1½" | DN15-DN40 | Class 300 | 48X/48<sup>(1)</sup> Series

## Valve dimensions



TuBore™ size	Unit	OD	ID	A ETO	A TC	B	C	D	H	K	S	W	RTC	M	N	P	F	TxL	Weight kg/lb	Kv Cv
DN15	mm	12.70	9.40	137.00	89.00	20.60	29.00	38.00	61.60	41.50	150.00	45.75	25.20	5.54	⅜"	6.65 (F03)	36.00	M5X10	0.90	8
½"	inch	0.50	0.37	5.39	3.50	0.81	1.14	1.50	2.42	1.63	5.91	1.80	0.99	0.22	UNF	0.26	1.42	M5X10	2.00	9
DN20	mm	19.05	15.75	147.00	102.00	24.60	36.00	45.00	67.90	43.90	150.00	52.10	25.20	5.54	⅜"	6.65 (F03)	36.00	M5X10	1.00	29
¾"	inch	0.75	0.62	5.79	4.00	0.97	1.42	1.77	2.67	1.73	5.91	2.05	0.99	0.22	UNF	0.26	1.42	M5X10	2.10	34
DN25	mm	25.40	22.10	168.00	118.00	35.50	43.50	61.00	84.80	43.90	187.00	60.45	50.40	7.54	7/16"	7.40 (F04)	42.00	M5X10	1.70	53
1"	inch	1.00	0.87	6.61	4.65	1.40	1.71	2.41	3.34	1.73	7.36	2.38	1.98	0.30	UNF	0.29	1.65	M5X10	3.80	62
DN40	mm	38.10	34.80	186.00	141.00	50.00	55.50	85.00	107.10	44.00	236.00	79.15	50.40	8.71	9/16"	8.50 (F05)	50.00	M6X12	3.50	150
1½"	inch	1.50	1.37	7.31	5.57	1.97	2.19	3.35	4.22	1.73	9.29	3.12	1.98	0.34	UNF	0.33	1.97	M6X12	7.70	175

Components & materials



Item	Description	Material specification	Qty.
1	Body	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	1
2	Ends	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276,	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, Virgin PEEK	2
6*	Body seal	PTFE	2
7*	Stem thrust seal	Virgin PEEK, TFM <sup>(2)</sup>	1
7a**	Anti-abrasion ring	Virgin PEEK, TFM <sup>(2)</sup>	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1

Item	Description	Material specification	Qty.
10	Follower	B783 316L	1
11	Disc spring	A693 631 17-7PH	2
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Locking clip	A167 304	1
14	Handle	S.St. A240 430	1
15	Serrated washer	A240 410	1
16	Handle nut	EN3506-2 A4-80, A194 Gr 8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	4
19	Body nut	EN3506-2 A4-80, A194 Gr 8M	4
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

<sup>(1)</sup> 48 Series is Habonim's standard valve design without the HermetiX™ stem seal construction.

<sup>(2)</sup> This material cannot be used as part of the 48X or 48G design.

\* Repair kit components

\*\* Only with HermetiX™ stem seal

# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

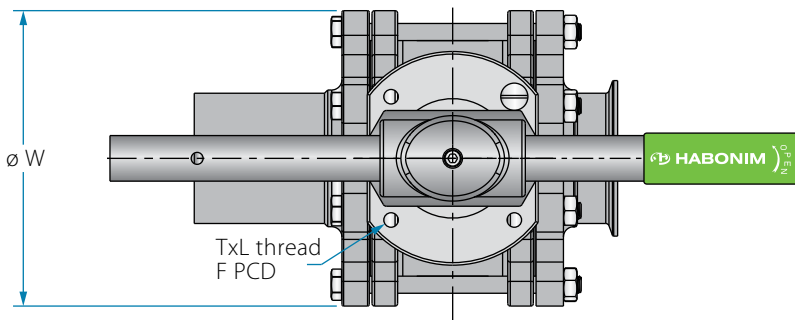
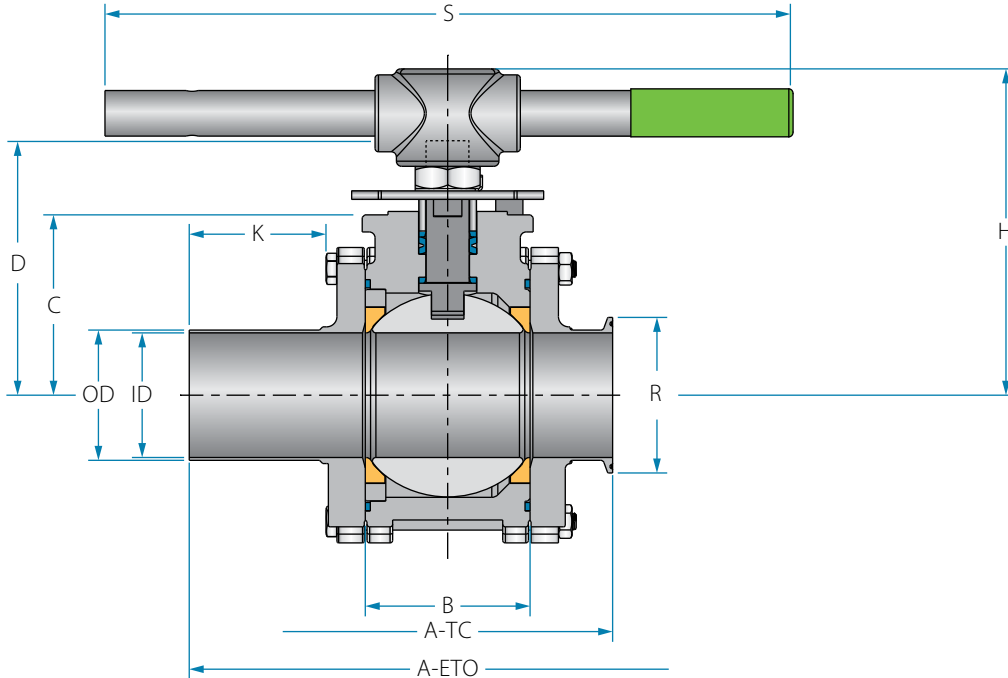
ISO 1127  
standard

DIN 11850  
standard

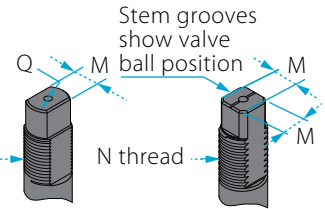
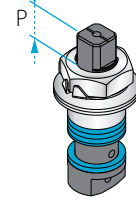
Ordering code  
system

Size 2"- 6" | DN50-DN150 | Class 150<sup>(3)</sup> | 48X/48<sup>(1)</sup> Series

## Valve dimensions



### Preparation for actuation



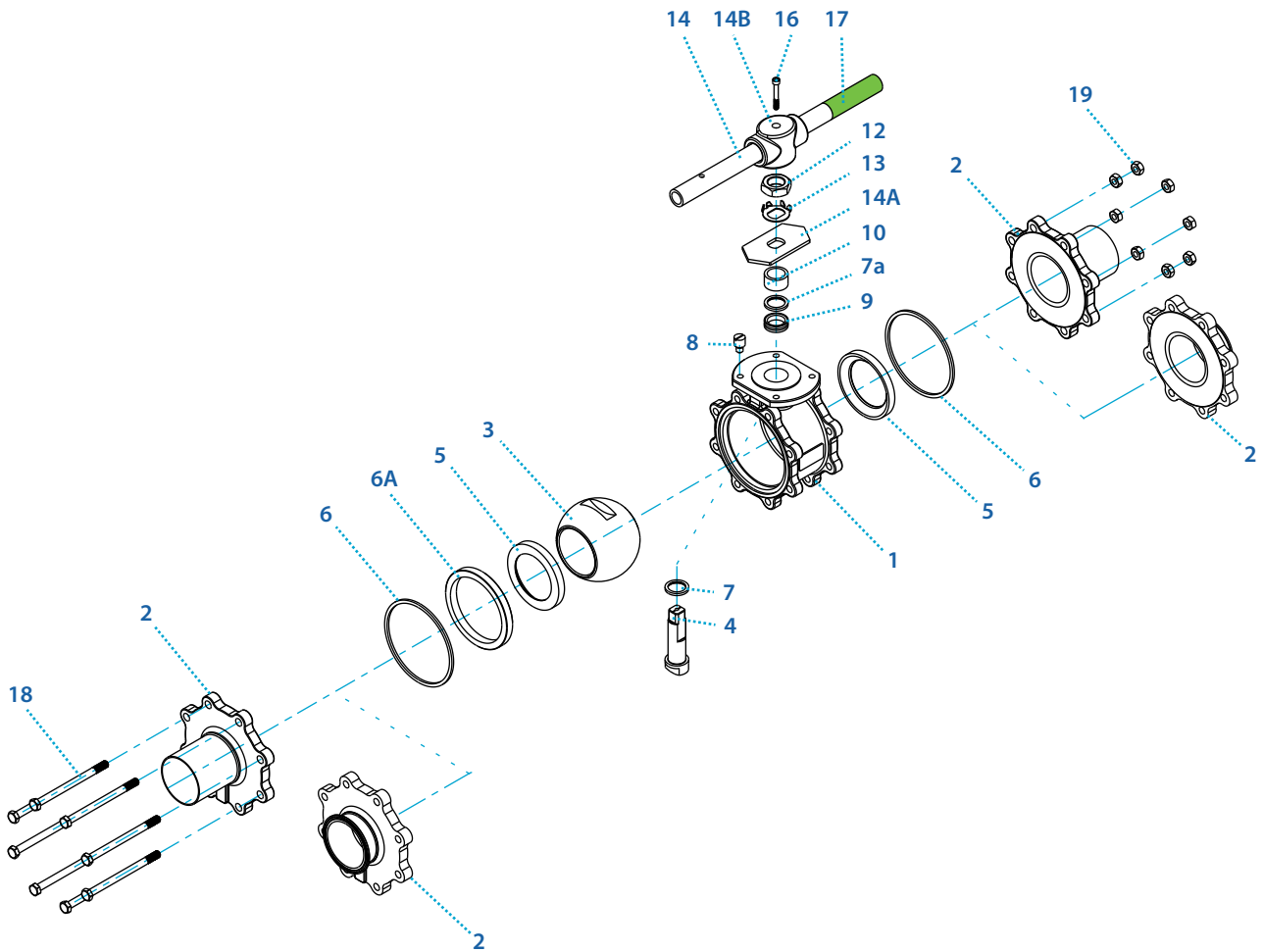
DD

Square

TuBore™ size	Unit	OD	ID	A ETO	A TC	B	C	D	H	K	S	W	R TC	M	M-DD	N	P	F	TxL	Weight kg/lb	Kv Cv
DN50	mm	50.80	47.50	223.00	184.00	72.70	70.00	112.10	143.10	45.00	256.00	108.00	64.20	-	13.90	M20x2.5	14.60 (F07)	70.00	M8X12	9.40	410
2"	inch	2.00	1.87	8.77	7.23	2.86	2.76	4.41	5.63	1.77	10.08	4.25	2.53	-	0.55	M20x2.5	0.57	2.76	M8X12	20.80	480
DN65	mm	63.50	60.20	250.40	169.10	83.35	98.30	144.90	185.10	57.20	401.00	153.10	77.40	18.90	15.90	1" -14	16.70 (F10)	102.00	M10X20	13.70	581
2½"	inch	2.50	2.37	10.00	6.66	3.28	3.87	5.70	7.29	2.25	15.79	6.03	3.05	0.74	0.63	UNS-2A	0.66	4.02	M10X20	30.30	680
DN80	mm	76.20	72.90	302.00	193.00	96.40	105.50	152.20	192.40	70.00	401.00	172.80	90.90	18.90	15.90	1" -14	16.70 (F10)	102.00	M10X20	17.70	748
3"	inch	3.00	2.87	11.90	7.60	3.80	4.15	5.99	7.57	2.75	15.79	6.80	3.58	0.74	0.63	UNS-2A	0.66	4.02	M10X20	39.10	875
DN100	mm	101.60	97.38	317.50	236.20	123.00	124.00	170.60	210.80	61.00	619.00	216.80	118.90	18.90	15.90	1" -14	16.70 (F10)	102.00	M10X20	31.30	1333
4"	inch	4.00	3.83	12.50	9.30	4.84	4.88	6.71	8.30	2.40	24.37	8.54	4.68	0.74	0.63	UNS-2A	0.66	4.02	M10X20	69.20	1560
DN150	mm	152.40	146.86	460.00	328.00	180.00	179.00	248.50	303.00	82.00	916.50	326.80	166.50	28.45	23.75	1½"-12	26.20 (F12)	125.00	M12x20	78.00	3218
6"	inch	6.00	5.78	18.11	12.91	7.09	7.05	9.78	11.93	3.23	36.08	12.87	6.56	1.12	0.94	UNF-1A	1.03	4.92	M12x20	172.00	3765



Components & materials



Item	Description	Material specification	Qty.
1	Body	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	1
2	Ends	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276,	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, Virgin PEEK	2
6*	Body seal	PTFE	2
6A	Support ring	A479 316L, B574 N06022	1
7*	Stem thrust seal	Virgin PEEK, TFM <sup>(2)</sup>	1
7a**	Anti-abrasion ring	Virgin PEEK, TFM <sup>(2)</sup>	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1

Item	Description	Material specification	Qty.
10	Follower	B783 316L	1
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Tab lock washer	A240 304	1
14	Handle	S.St. A240 316/316L	1
14A	Stop plate	A240 430	1
14B	Wrench head	A351 CF8M	1
16	Wrench bolt	EN3506-1 A2-70/A4-80, A193 Gr B8/B8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	4
19	Body nut	EN3506-2 A4-80, A194 Gr 8M	4
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

\* Repair kit components

\*\* Only with HermetiX™ stem seal

<sup>(1)</sup> 48 Series is Habonim's standard valve design without the HermetiX™ stem seal construction.

<sup>(2)</sup> This material cannot be used as part of the 48X or 48G design.

<sup>(3)</sup> 2" (DN50) size maximum pressure rating is Class 300.

# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

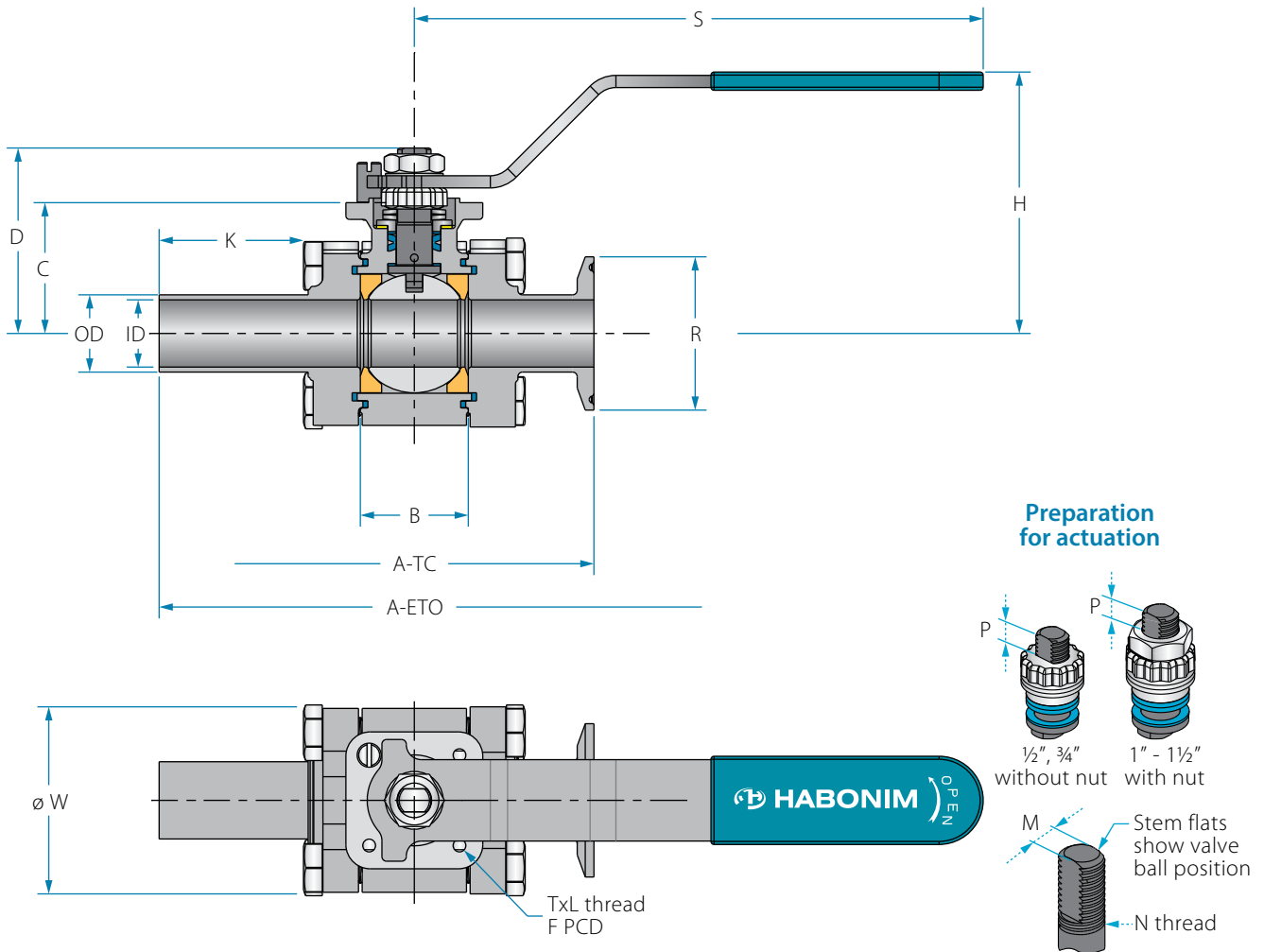
ISO 1127  
standard

DIN 11850  
standard

Ordering code  
system

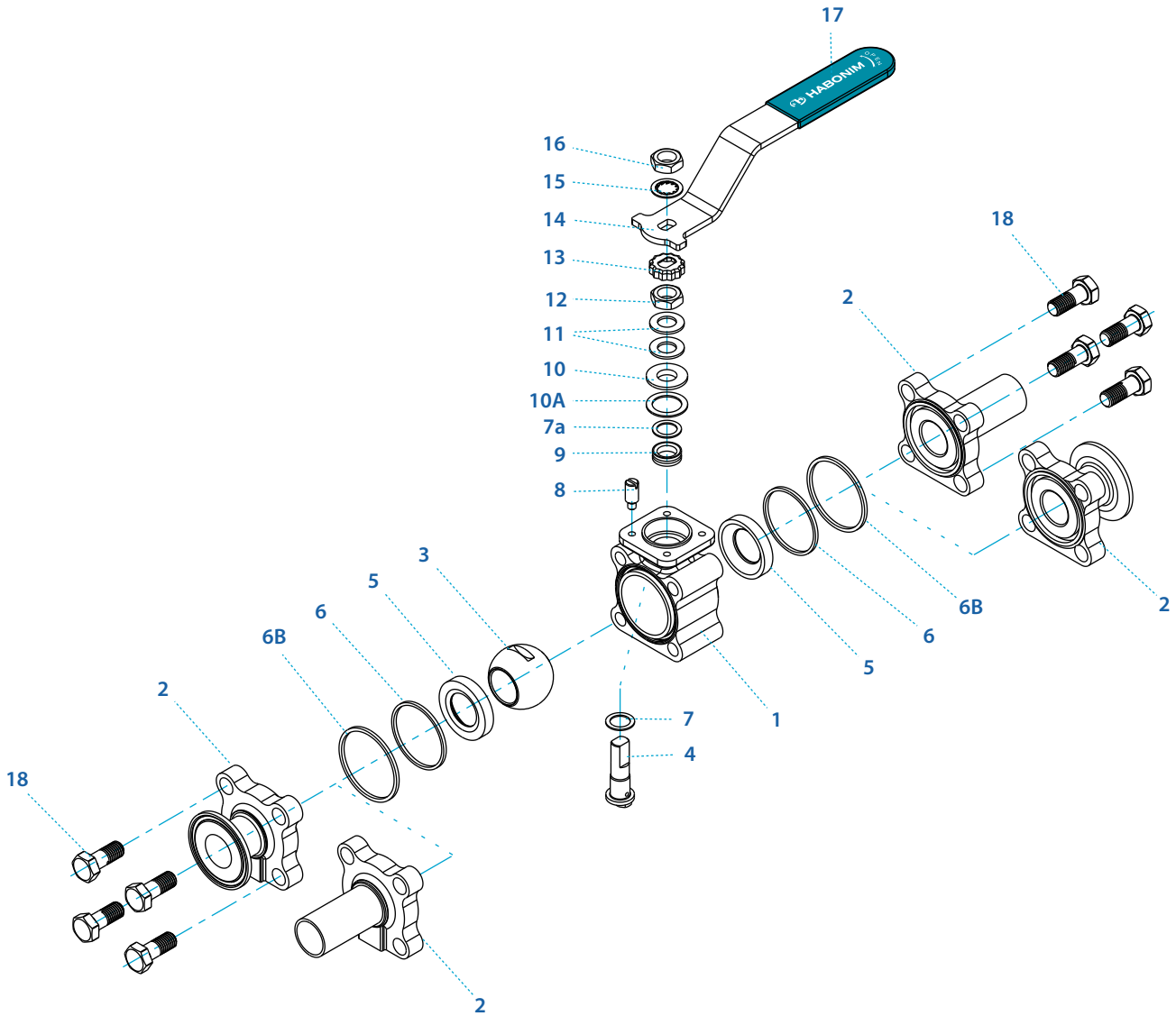
Size ½"- 1½" | DN15-DN40 | Class 300 | 48G Series

## Valve dimensions



TuBore™ size	Unit	OD	ID	A ETO	A TC	B	C	D	H	K	S	W	RTC	M	N	P	F	TxL	Weight kg/lb	Kv Cv
DN15	mm	12.70	9.40	137.00	89.00	20.60	29.00	38.00	61.60	41.50	150.00	45.75	25.20	5.54	⅜"	6.65 (F03)	36.00	M5X10	0.90	8
½"	inch	0.50	0.37	5.39	3.50	0.81	1.14	1.50	2.42	1.63	5.91	1.80	0.99	0.22	UNF	0.26	1.42	M5X10	2.00	9
DN20	mm	19.05	15.75	147.00	102.00	24.60	36.00	45.00	67.90	43.90	150.00	52.10	25.20	5.54	⅜"	6.65 (F03)	36.00	M5X10	1.00	29
¾"	inch	0.75	0.62	5.79	4.00	0.97	1.42	1.77	2.67	1.73	5.91	2.05	0.99	0.22	UNF	0.26	1.42	M5X10	2.10	34
DN25	mm	25.40	22.10	168.00	118.00	35.50	43.50	61.00	84.80	43.90	187.00	60.45	50.40	7.54	7/16"	7.40 (F04)	42.00	M5X10	1.70	53
1"	inch	1.00	0.87	6.61	4.65	1.40	1.71	2.41	3.34	1.73	7.36	2.38	1.98	0.30	UNF	0.29	1.65	M5X10	3.80	62
DN40	mm	38.10	34.80	186.00	141.00	50.00	55.50	85.00	107.10	44.00	236.00	79.15	50.40	8.71	9/16"	8.50 (F05)	50.00	M6X12	3.50	150
1½"	inch	1.50	1.37	7.31	5.57	1.97	2.19	3.35	4.22	1.73	9.29	3.12	1.98	0.34	UNF	0.33	1.97	M6X12	7.70	175

Components & materials



Item	Description	Material specification	Qty.
1	Body	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	1
2	Ends	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, PTFE, Virgin PEEK, PCTFE (KEL-F)	2
6*	Body inner seal	PTFE	2
6B*	Body outer seal	Graphite	2
7*	Stem thrust seal	Virgin PEEK	1
7a*	Anti-abrasion ring	Virgin PEEK	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1

Item	Description	Material specification	Qty.
10	Follower	B783 316L	1
10A*	Slide bearing	TF316	1
11	Disc spring	A693 631 17-7PH	2
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Locking clip	A167 304	1
14	Handle	S.St. A240 430	1
15	Serrated washer	A240 410	1
16	Handle nut	EN3506-2 A4-80, A194 Gr 8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	8
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

\* Repair kit components

# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

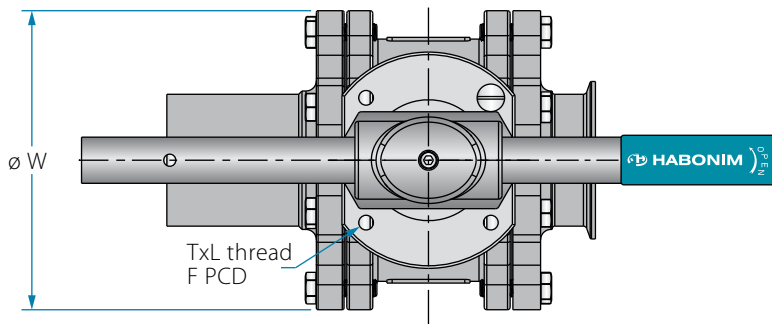
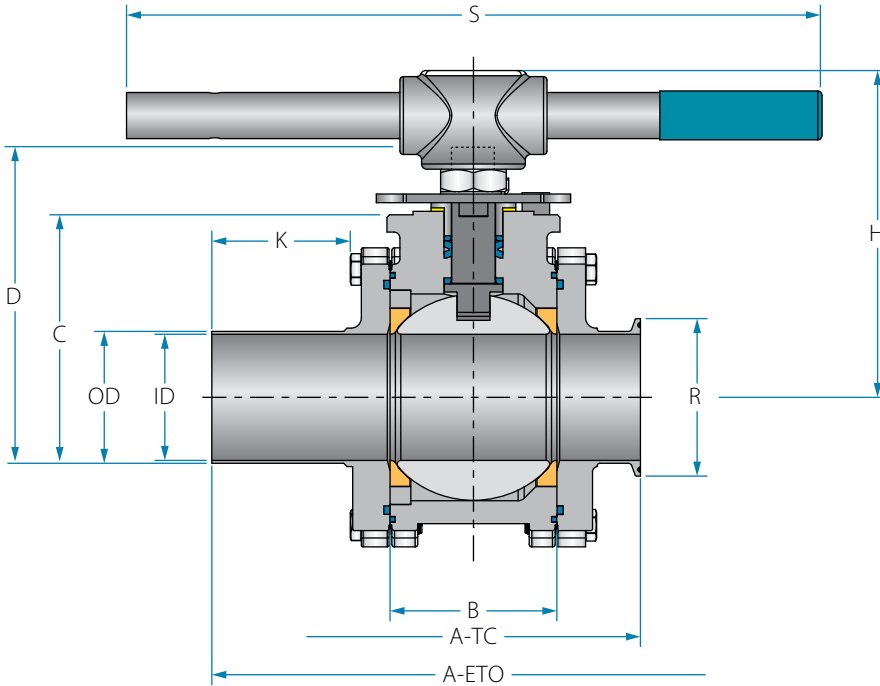
ISO 1127  
standard

DIN 11850  
standard

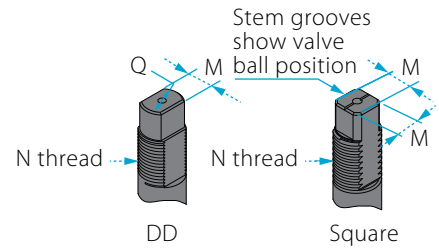
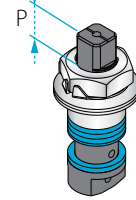
Ordering code  
system

Size 2"- 6" | DN50-DN150 | Class 150<sup>(1)</sup> | 48G Series

## Valve dimensions

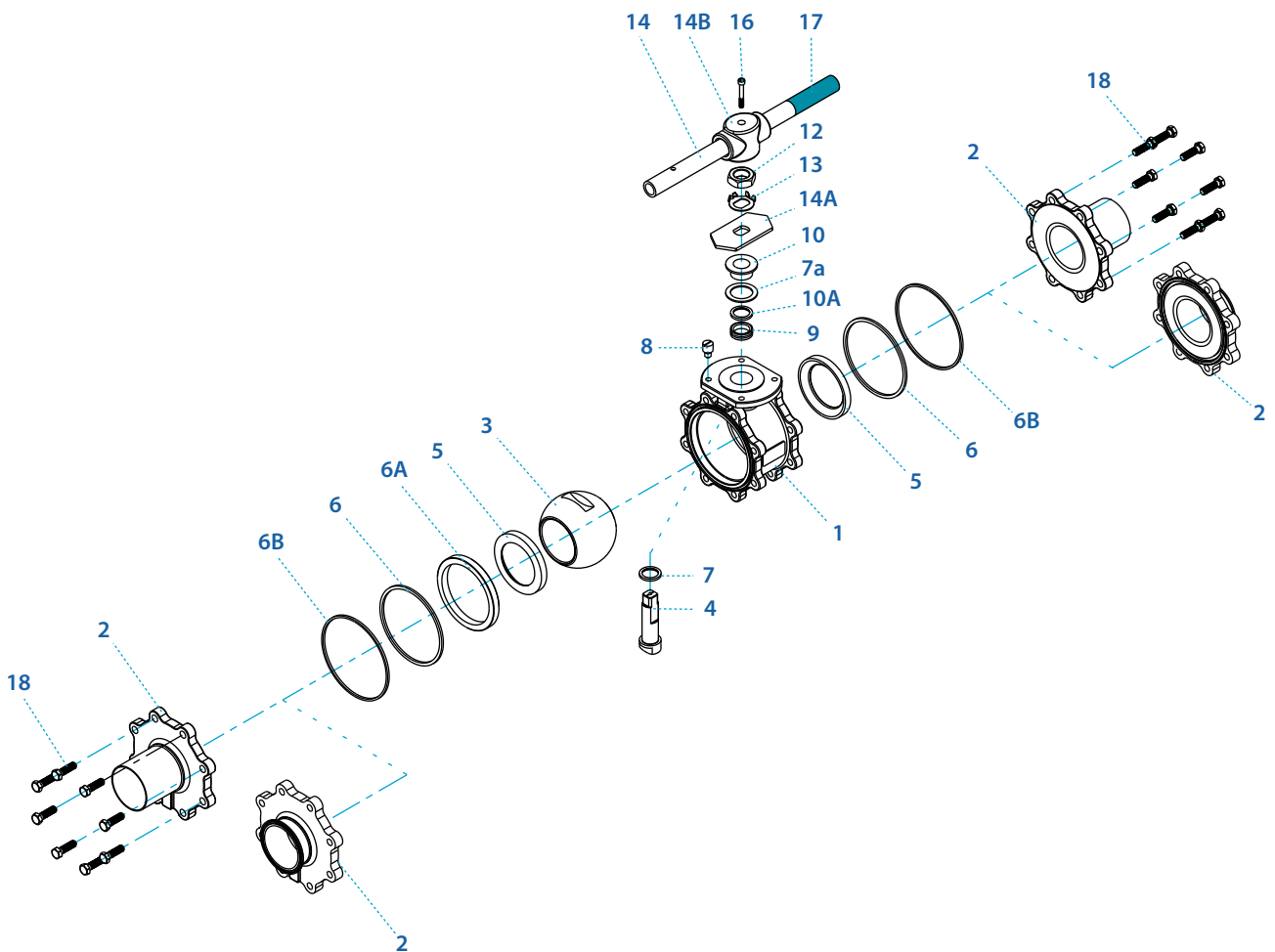


### Preparation for actuation



TuBore™ size	Unit	OD	ID	A ETO	A TC	B	C	D	H	K	S	W	R TC	M	M-DD	N	P	F	TxL	Weight kg/lb	Kv Cv
DN50	mm	50.80	47.50	223.00	184.00	72.70	70.00	112.10	143.10	45.00	256.00	108.00	64.20	-	13.90	M20x2.5	14.60 (F07)	70.00	M8X12	9.40	410
2"	inch	2.00	1.87	8.77	7.23	2.86	2.76	4.41	5.63	1.77	10.08	4.25	2.53	-	0.55		0.57	2.76		20.80	480
DN65	mm	63.50	60.20	250.40	169.10	83.35	98.30	144.90	185.10	57.20	401.00	153.10	77.40	18.90	15.90	1" -14	16.70 (F10)	102.00	M10X20	13.70	581
2½"	inch	2.50	2.37	10.00	6.66	3.28	3.87	5.70	7.29	2.25	15.79	6.03	3.05	0.74	0.63	UNS-2A	0.66	4.02		30.30	680
DN80	mm	76.20	72.90	302.00	193.00	96.40	105.50	152.20	192.40	70.00	401.00	172.80	90.90	18.90	15.90	1" -14	16.70 (F10)	102.00	M10X20	17.70	748
3"	inch	3.00	2.87	11.90	7.60	3.80	4.15	5.99	7.57	2.75	15.79	6.80	3.58	0.74	0.63	UNS-2A	0.66	4.02		39.10	875
DN100	mm	101.60	97.38	317.50	236.20	123.00	124.00	170.60	210.80	61.00	619.00	216.80	118.90	18.90	15.90	1" -14	16.70 (F10)	102.00	M10X20	31.30	1333
4"	inch	4.00	3.83	12.50	9.30	4.84	4.88	6.71	8.30	2.40	24.37	8.54	4.68	0.74	0.63	UNS-2A	0.66	4.02		69.20	1560
DN150	mm	152.40	146.86	460.00	328.00	180.00	179.00	248.50	303.00	82.00	916.50	326.80	166.50	28.45	23.75	1½"-12	26.20 (F12)	125.00	M12x20	78.00	3218
6"	inch	6.00	5.78	18.11	12.91	7.09	7.05	9.78	11.93	3.23	36.08	12.87	6.56	1.12	0.94	UNF-1A	1.03	4.92		172.00	3765

Components & materials



Item	Description	Material specification	Qty.
1	Body	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	1
2	Ends	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, PTFE, Virgin PEEK, PCTFE (KEL-F)	2
6*	Body seal	PTFE	2
6A	Support ring	A479 316L, B574 N06022	1
6B*	Body outer seal	Graphite	2
7*	Stem thrust seal	Virgin PEEK	1
7a**	Anti-abrasion ring	Virgin PEEK	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1

Item	Description	Material specification	Qty.
10	Follower	B783 316L	1
10A*	Slide bearing	TF316	1
11	Disc spring	A693 631 17-7PH	2
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Tab lock washer	A240 304	1
14	Handle	S.St. A240 316/316L	1
14A	Stop plate	A240 430	1
14B	Wrench head	A351 CF8M	1
16	Wrench bolt	EN3506-1 A2-70/A4-80, A193 Gr B8/B8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	4
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

\* Repair kit components

<sup>(1)</sup> 2" (DN50) size maximum pressure rating is Class 300.

# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

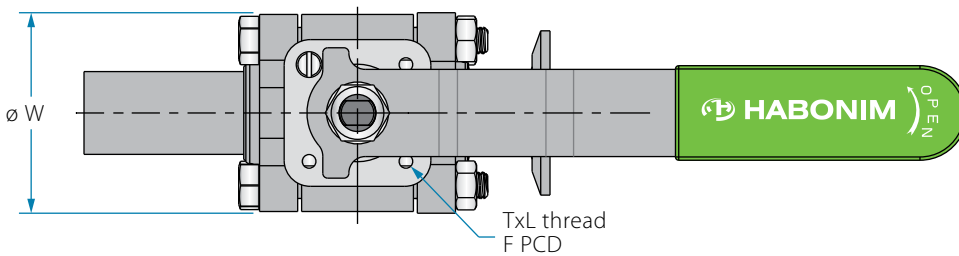
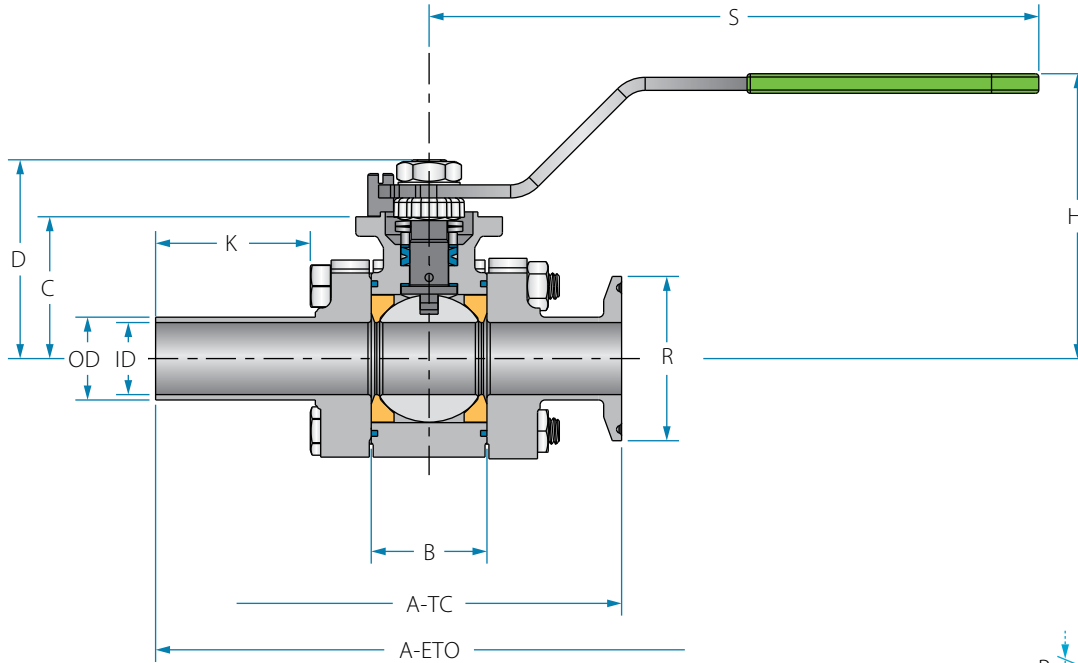
ISO 1127  
standard

DIN 11850  
standard

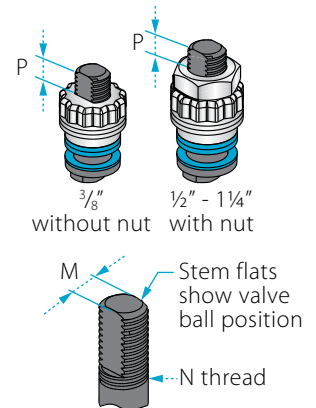
Ordering code  
system

Size 3/8"- 1 1/4" | DN10-DN32 | Class 300 | 48X/48<sup>(1)</sup> Series

## Valve dimensions

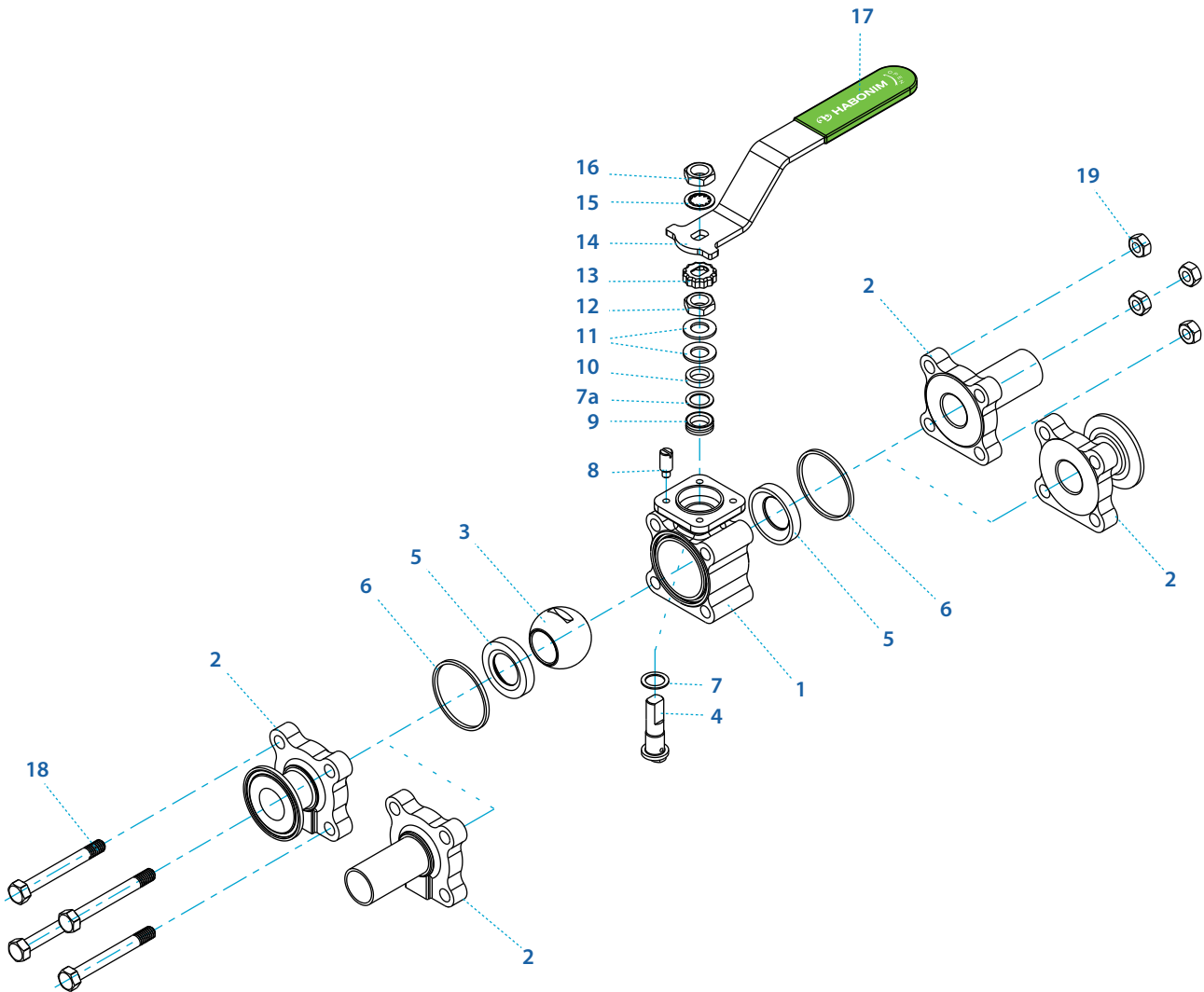


### Preparation for actuation



TuBore™ size	Unit	OD	ID	A ETI	A TCI	B	C	D	H	K	S	W	R TCI	M	N	P	F	TxL	Weight kg/lb	Kv Cv
DN10	mm	17.20	14.00	147.00	89.00	24.60	35.30	44.30	67.90	47.00	150.00	54.00	25.00	5.54	3/8" UNF	6.50 (F03)	36.00	M5x6	1.00	9
3/8"	inch	0.68	0.55	5.79	3.50	0.97	1.39	1.74	2.67	1.85	5.91	2.13	0.98	0.22		0.26	1.42		2.20	10
DN15	mm	21.30	18.10	164.00	118.00	31.70	38.20	55.70	86.00	49.00	187.00	61.00	50.50	7.50	7/16" UNF	5.50 (F04)	42.00	M5x10	1.75	30
1/2"	inch	0.84	0.71	6.46	4.65	1.25	1.50	2.19	3.39	1.93	7.36	2.40	1.99	0.30		0.22	1.65		3.85	35
DN20	mm	26.90	23.70	168.00	118.00	35.50	43.50	61.00	89.00	49.00	187.00	61.00	50.50	7.50	7/16" UNF	7.20 (F04)	42.00	M5x10	2.00	48
3/4"	inch	1.06	0.93	6.61	4.65	1.40	1.71	2.40	3.50	1.93	7.36	2.40	1.99	0.30		0.28	1.65		4.40	56
DN25	mm	33.70	29.70	186.00	141.00	50.00	51.50	81.00	105.00	49.00	236.00	80.00	50.50	8.67	9/16" UNF	8.00 (F05)	50.00	M6x12	4.00	98
1"	inch	1.33	1.17	7.32	5.55	1.97	2.03	3.19	4.13	1.93	9.29	3.15	1.99	0.34		0.31	1.97		8.80	114
DN32	mm	42.40	38.40	200.00	-	56.30	48.20	77.70	100.00	49.00	236.00	91.00	64.00	8.67	9/16" UNF	8.00 (F05)	50.00	M6x12	5.00	145
1 1/4"	inch	1.67	1.51	7.87	-	2.22	1.90	3.06	3.94	1.93	9.29	3.58	2.52	0.34		0.31	1.97		11.00	170

Components & materials



Item	Description	Material specification	Qty.
1	Body	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	1
2	Ends	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276,	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, Virgin PEEK	2
6*	Body seal	PTFE	2
7*	Stem thrust seal	Virgin PEEK, TFM <sup>(2)</sup>	1
7a**	Anti-abrasion ring	Virgin PEEK, TFM <sup>(2)</sup>	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1

Item	Description	Material specification	Qty.
10	Follower	B783 316L	1
11	Disc spring	A693 631 17-7PH	2
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Locking clip	A167 304	1
14	Handle	S.St. A240 430	1
15	Serrated washer	A240 410	1
16	Handle nut	EN3506-2 A4-80, A194 Gr 8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	4
19	Body nut	EN3506-2 A4-80, A194 Gr 8M	4
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

<sup>(1)</sup> 48 Series is Habonim's standard valve design without the HermetiX™ stem seal construction.

<sup>(2)</sup> This material cannot be used as part of the 48X or 48G design.

\* Repair kit components

\*\* Only with HermetiX™ stem seal

# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

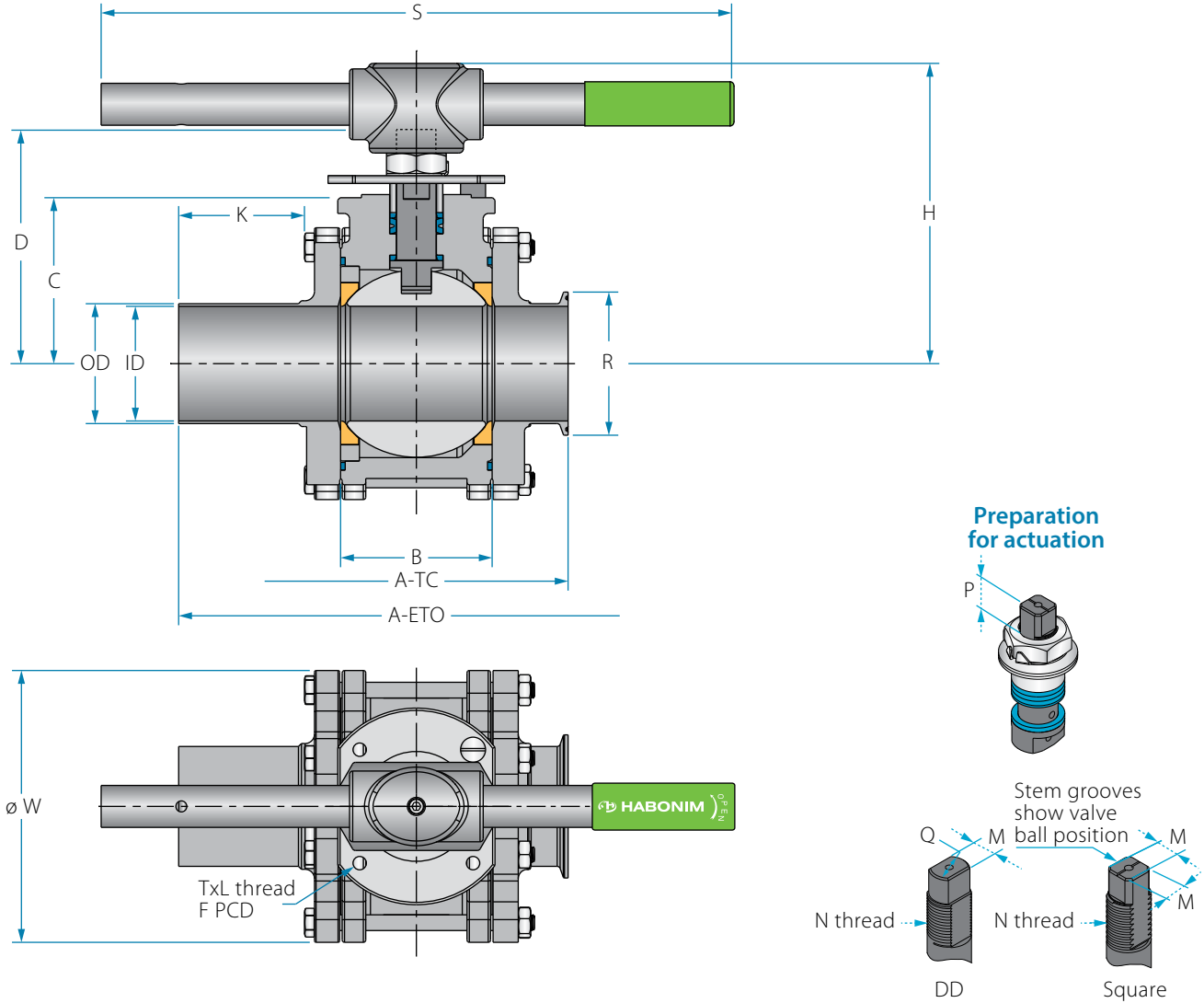
ISO 1127  
standard

DIN 11850  
standard

Ordering code  
system

Size 1½" - 3" | DN40-DN80 | Class 150 | 48X/48<sup>(1)</sup> Series

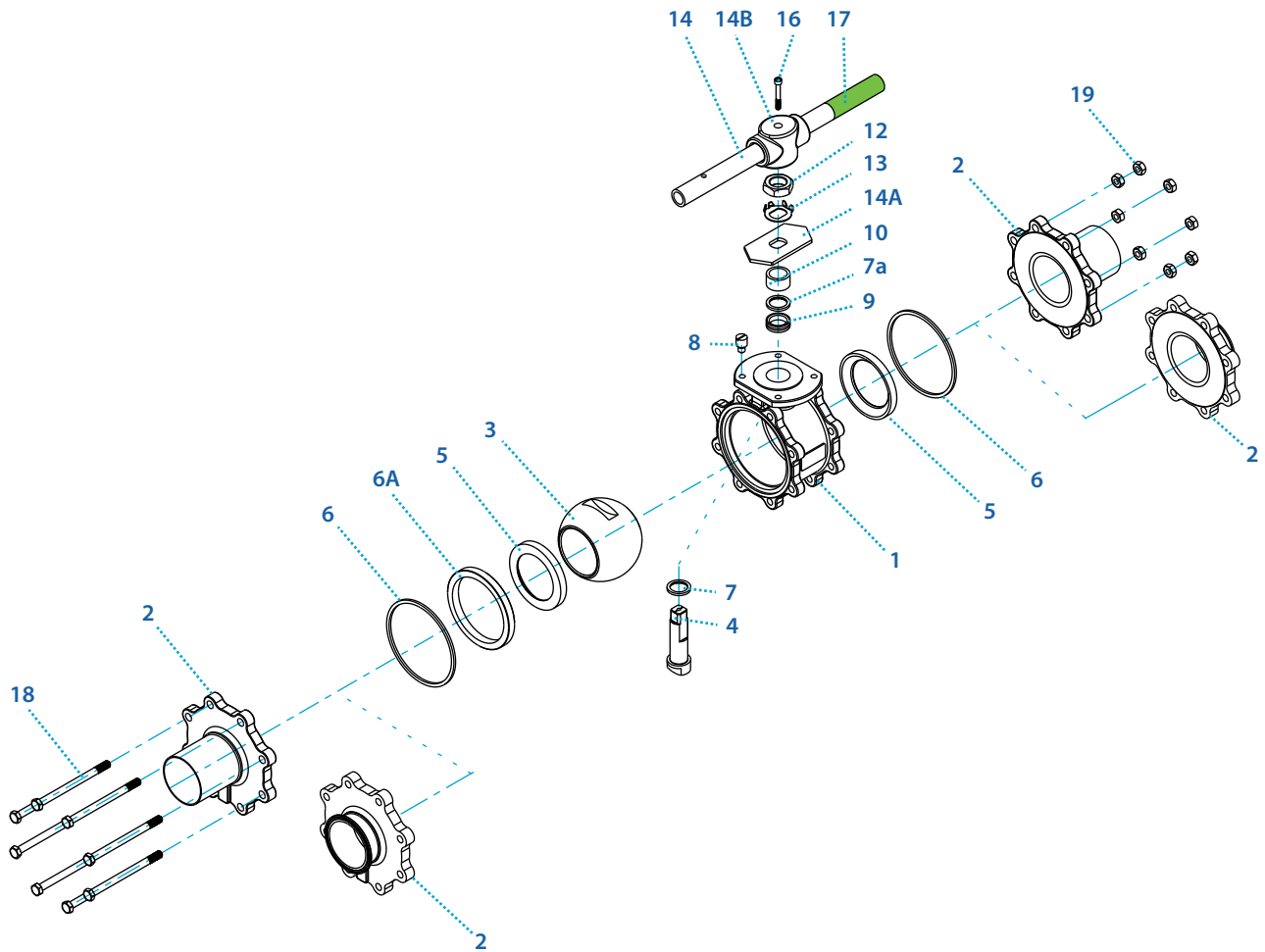
## Valve dimensions



TuBore™ size	Unit	OD	ID	A ETI	A TCI	B	C	D	H	K	S	W	R TCI	M	M-DD	Q	N	P	F	TxL	Weight kg/lb	Kv Cv
DN40	mm	48.30	44.30	223.00	184.00	72.70	70.00	112.10	143.10	45.00	401.00	108.00	64.00	-	13.90	20.00	M20	14.00 (F07)	70.00	M8x10	9.50	168
1½"	inch	1.90	1.74	8.78	7.24	2.86	2.76	4.41	5.63	1.77	15.79	4.25	2.52	-	0.55	0.79		0.55	2.76		20.90	196.0
DN50	mm	60.30	56.30	250.40	169.10	83.35	98.30	144.90	185.10	57.20	401.00	139.70	77.50	18.90	15.90	22.70	1"-14	16.70 (F10)	102.00	M10x12	14.00	385
2"	inch	2.37	2.22	9.86	6.66	3.28	3.87	5.70	7.29	2.25	15.79	5.50	3.05	0.74	0.63	0.89	UNF-2A	0.66	4.02		30.80	450.0
DN65	mm	76.10	72.10	302.00	193.00	96.40	105.50	152.20	192.40	70.00	40.10	160.00	91.00	18.90	15.90	22.70	1"-14	16.70 (F10)	102.00	M10x12	17.70	581
2½"	inch	3.00	2.84	11.89	7.60	3.80	4.15	5.99	7.57	2.76	1.58	6.30	3.58	0.74	0.63	0.89	UNF-2A	0.66	4.02		38.94	680.0
DN80	mm	88.90	84.30	349.00	236.00	108.80	114.10	160.70	200.00	80.00	600.00	177.00	106.00	18.90	15.90	22.70	1"-14	16.70 (F10)	102.00	M10x12	26.00	106
3"	inch	3.50	3.32	13.74	9.29	4.28	4.49	6.33	7.87	3.15	23.62	6.97	4.17	0.74	0.63	0.89	UNF-2A	0.66	4.02		57.20	1240.0



Components & materials



Item	Description	Material specification	Qty.
1	Body	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	1
2	Ends	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276,	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, Virgin PEEK	2
6*	Body seal	PTFE	2
6A	Support ring	A479 316L, B574 N06022	1
7*	Stem thrust seal	Virgin PEEK, TFM <sup>(2)</sup>	1
7a**	Anti-abrasion ring	Virgin PEEK, TFM <sup>(2)</sup>	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1

Item	Description	Material specification	Qty.
10	Follower	B783 316L	1
11	Disc spring	A693 631 17-7PH	2
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Tab lock washer	A240 304	1
14	Handle	S.St. A240 316/316L	1
14A	Stop plate	A240 430	1
14B	Wrench head	A351 CF8M	1
16	Wrench bolt	EN3506-1 A2-70/A4-80, A193 Gr B8/B8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	4
19	Body nut	EN3506-2 A4-80, A194 Gr 8M	4
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

<sup>(1)</sup> 48 Series is Habonim's standard valve design without the HermetiX™ stem seal construction.

<sup>(2)</sup> This material cannot be used as part of the 48X or 48G design.

\* Repair kit components

\*\* Only with HermetiX™ stem seal

# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

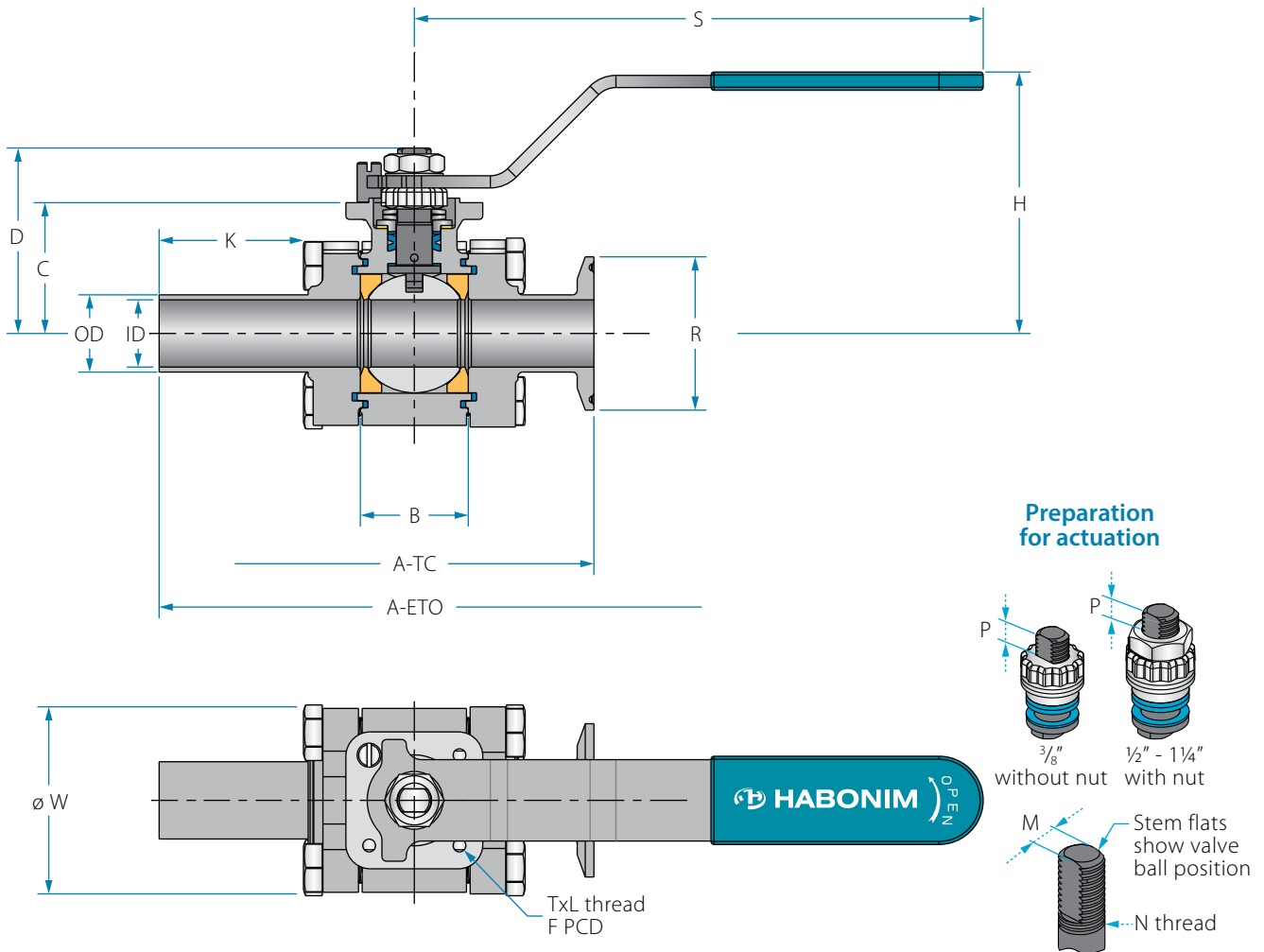
ISO 1127  
standard

DIN 11850  
standard

Ordering code  
system

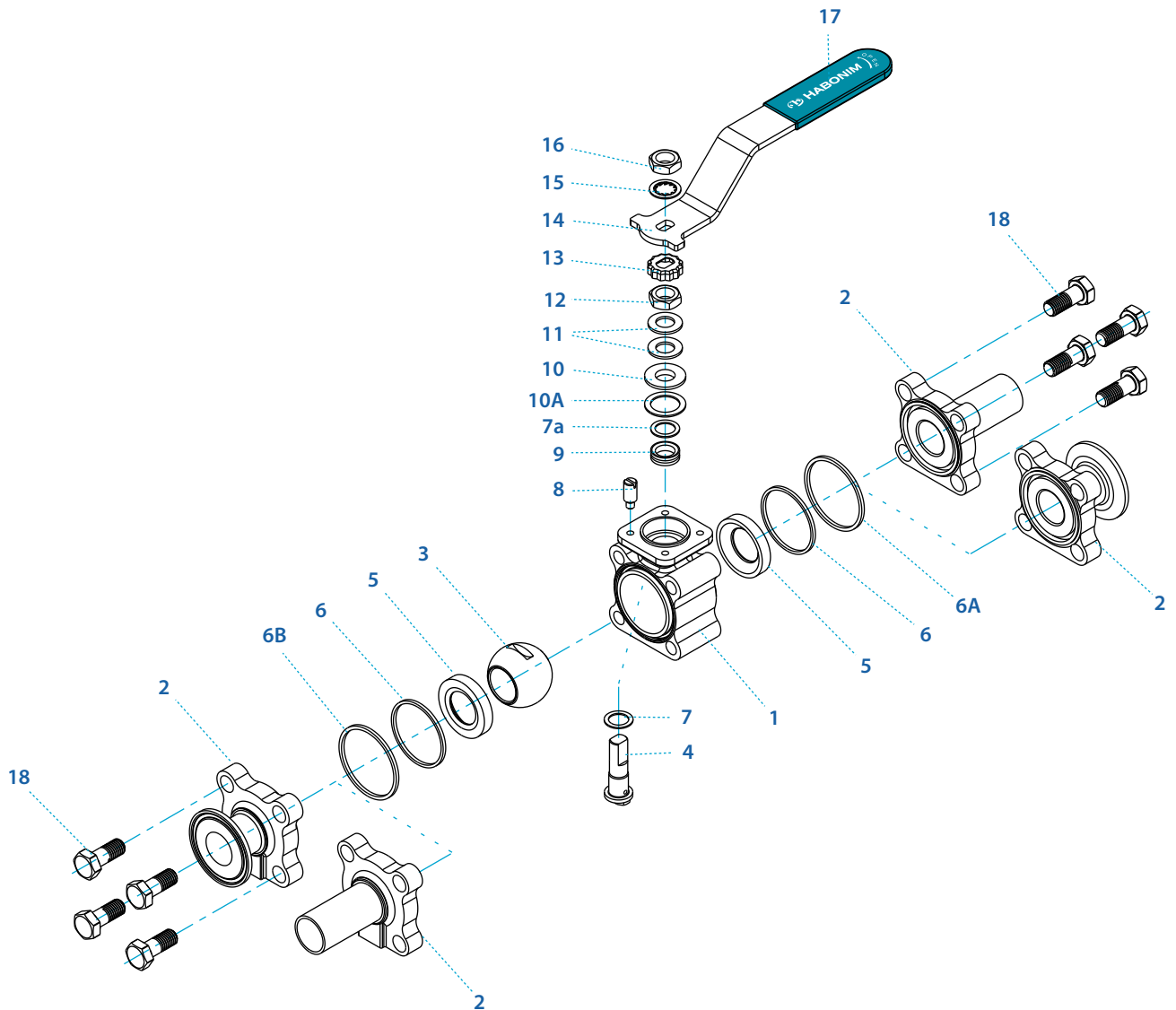
Size 3/8"- 1 1/4" | DN10-DN32 | Class 300 | 48G Series

## Valve dimensions



TuBore™ size	Unit	OD	ID	A ETC	A TCI	B	C	D	H	K	S	W	R TCI	M	N	P	F	TxL	Weight kg/lb	Kv Cv
DN10	mm	17.20	14.00	147.00	89.00	24.60	35.30	44.30	67.90	47.00	150.00	54.00	25.00	5.54	3/8" UNF	6.50 (F03)	36.00	M5x6	1.00	9
3/8"	inch	0.68	0.55	5.79	3.50	0.97	1.39	1.74	2.67	1.85	5.91	2.13	0.98	0.22		0.26	1.42	M5x6	2.20	10
DN15	mm	21.30	18.10	164.00	118.00	31.70	38.20	55.70	86.00	49.00	187.00	61.00	50.50	7.50	7/16" UNF	5.50 (F04)	42.00	M5x10	1.75	30
1/2"	inch	0.84	0.71	6.46	4.65	1.25	1.50	2.19	3.39	1.93	7.36	2.40	1.99	0.30		0.22	1.65	M5x10	3.85	35
DN20	mm	26.90	23.70	168.00	118.00	35.50	43.50	61.00	89.00	49.00	187.00	61.00	50.50	7.50	7/16" UNF	7.20 (F04)	42.00	M5x10	2.00	48
3/4"	inch	1.06	0.90	6.61	4.65	1.40	1.71	2.40	3.50	1.93	7.36	2.40	1.99	0.30		0.28	1.65	M5x10	4.40	56
DN25	mm	33.70	29.70	186.00	141.00	50.00	51.50	81.00	105.00	49.00	236.00	80.00	50.50	8.67	9/16" UNF	8.00 (F05)	50.00	M6x12	4.00	98
1"	inch	1.33	1.17	7.32	5.55	1.97	2.03	3.19	4.13	1.93	9.29	3.15	1.99	0.34		0.31	1.97	M6x12	8.80	114
DN32	mm	42.40	38.40	200.00	-	56.30	48.20	77.70	100.00	49.00	236.00	91.00	64.00	8.67	9/16" UNF	8.00 (F05)	50.00	M6x12	5.00	145
1 1/4"	inch	1.67	1.51	7.87	-	2.22	1.90	3.06	3.94	1.93	9.29	3.58	2.52	0.34		0.31	1.97	M6x12	11.00	170

Components & materials



Item	Description	Material specification	Qty.
1	Body	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	1
2	Ends	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, PTFE, Virgin PEEK, PCTFE (KEL-F)	2
6*	Body inner seal	PTFE	2
6B*	Body outer seal	Graphite	2
7*	Stem thrust seal	Virgin PEEK	1
7a*	Anti-abrasion ring	Virgin PEEK	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1

Item	Description	Material specification	Qty.
10	Follower	B783 316L	1
10A*	Slide bearing	TF316	1
11	Disc spring	A693 631 17-7PH	2
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Locking clip	A167 304	1
14	Handle	S.St. A240 430	1
15	Serrated washer	A240 410	1
16	Handle nut	EN3506-2 A4-80, A194 Gr 8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	8
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

\* Repair kit components

# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

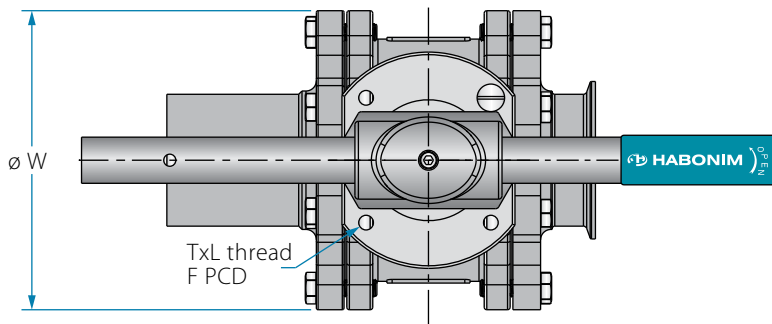
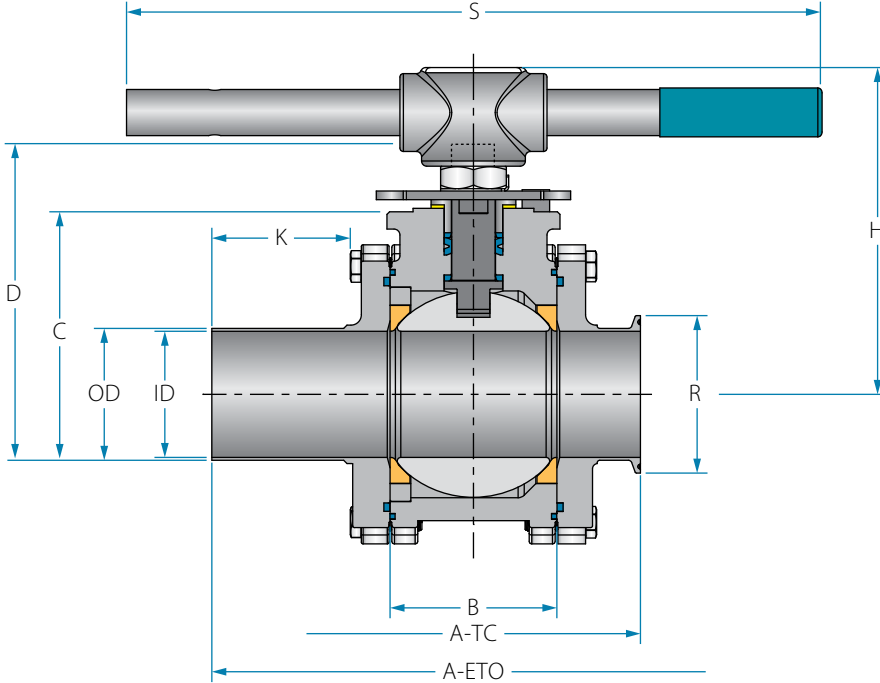
ISO 1127  
standard

DIN 11850  
standard

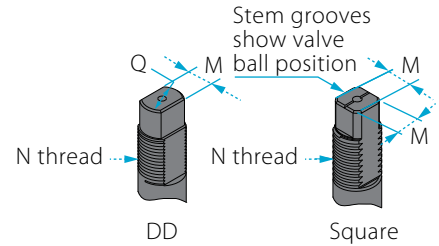
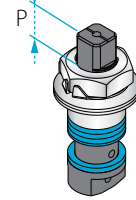
Ordering code  
system

Size 1½" - 3" | DN40-DN80 | Class 150 | 48G Series

## Valve dimensions

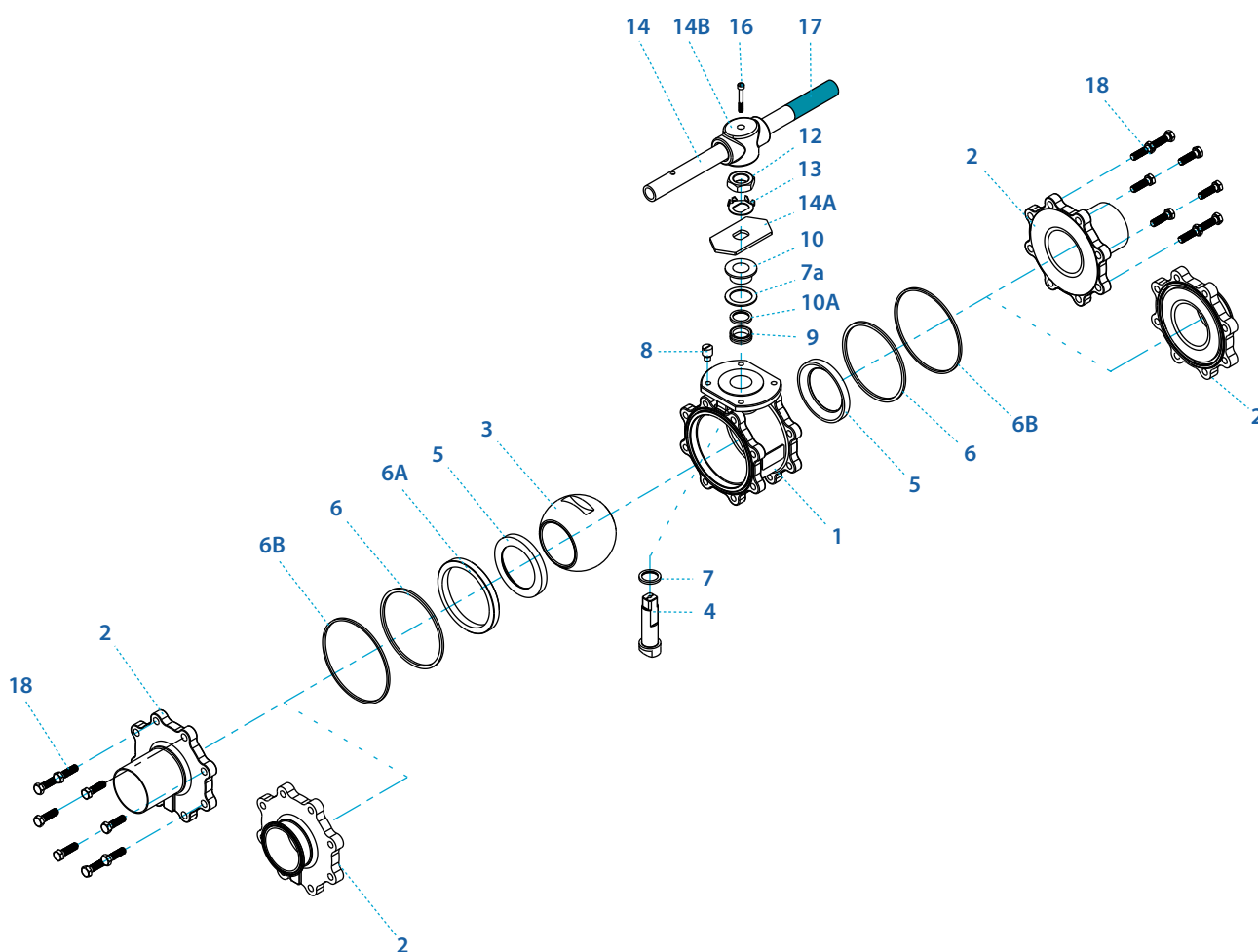


### Preparation for actuation



TuBore™ size	Unit	OD	ID	A ETI	A TCI	B	C	D	H	K	S	W	RTCI	M	M-DD	Q	N	P	F	TxL	Weight kg/lb	Kv Cv
DN40	mm	48.30	44.30	223.00	184.00	72.70	70.00	112.10	143.10	45.00	401.00	108.00	64.00	-	13.90	20.00	M20	14.00 (F07)	70.00	M8x10	9.50	168
1½"	inch	1.90	1.74	8.78	7.24	2.86	2.76	4.41	5.63	1.77	15.79	4.25	2.52	-	0.55	0.79		0.55	2.76		20.90	196.0
DN50	mm	60.30	56.30	250.40	169.10	83.35	98.30	144.90	185.10	57.20	401.00	139.70	77.50	18.90	15.90	22.70	1"-14	16.70 (F10)	102.00	M10x12	14.00	385
2"	inch	2.37	2.22	9.86	6.66	3.28	3.87	5.70	7.29	2.25	15.79	5.50	3.05	0.74	0.63	0.89	UNF-2A	0.66	4.02		30.80	450.0
DN65	mm	76.10	72.10	302.00	193.00	96.40	105.50	152.20	192.40	70.00	40.10	160.00	91.00	18.90	15.90	22.70	1"-14	16.70 (F10)	102.00	M10x12	17.70	581
2½"	inch	3.00	2.84	11.89	7.60	3.80	4.15	5.99	7.57	2.76	1.58	6.30	3.58	0.74	0.63	0.89	UNF-2A	0.66	4.02		38.94	680.0
DN80	mm	88.90	84.30	349.00	236.00	108.80	114.10	160.70	200.00	80.00	600.00	177.00	106.00	18.90	15.90	22.70	1"-14	16.70 (F10)	102.00	M10x12	26.00	106
3"	inch	3.50	3.32	13.74	9.29	4.28	4.49	6.33	7.87	3.15	23.62	6.97	4.17	0.74	0.63	0.89	UNF-2A	0.66	4.02		57.20	1240.0

### Components & materials



Item	Description	Material specification	Qty.
1	Body	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	1
2	Ends	A351 CF3M, EN 10222-5 1.4435, A494 CW-12MW, A494 CX-2MW	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, PTFE, Virgin PEEK, PCTFE (KEL-F)	2
6*	Body seal	PTFE	2
6A	Support ring	A479 316L, B574 N06022	1
6B*	Body outer seal	Graphite	2
7*	Stem thrust seal	Virgin PEEK	1
7a**	Anti-abrasion ring	Virgin PEEK	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1

Item	Description	Material specification	Qty.
10	Follower	B783 316L	1
10A*	Slide bearing	TF316	1
11	Disc spring	A693 631 17-7PH	2
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Tab lock washer	A240 304	1
14	Handle	S.St. A240 316/316L	1
14A	Stop plate	A240 430	1
14B	Wrench head	A351 CF8M	1
16	Wrench bolt	EN3506-1 A2-70/A4-80, A193 Gr B8/B8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	4
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

\* Repair kit components

# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

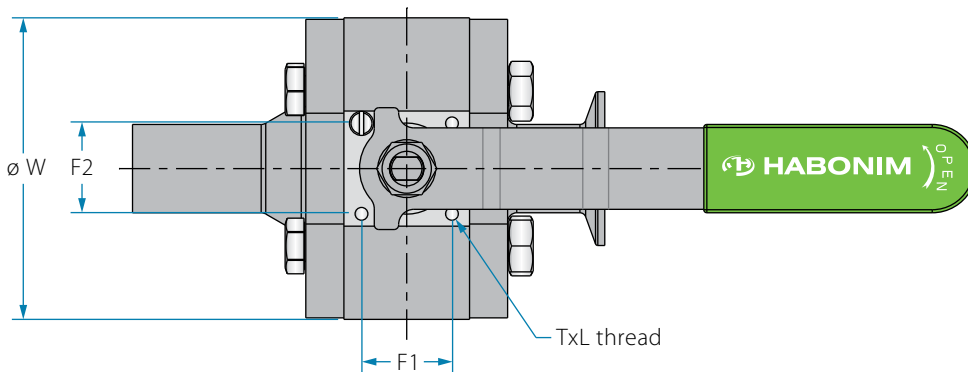
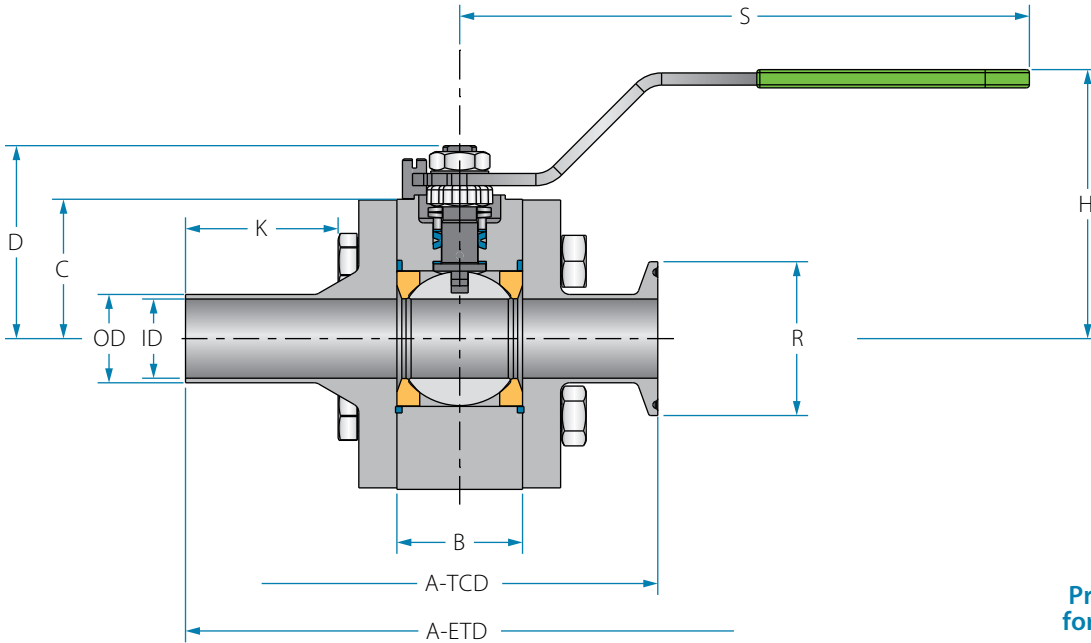
ISO 1127  
standard

DIN 11850  
standard

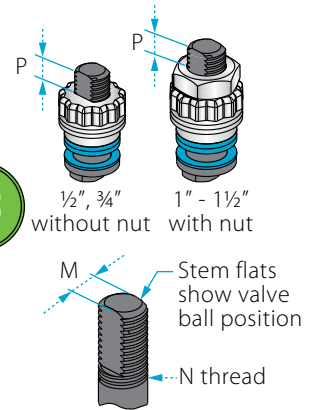
Ordering code  
system

Size 3/8"- 1 1/2" | DN10-DN40 | Class 300 | 48X/48<sup>(1)</sup> Series

## Valve dimensions

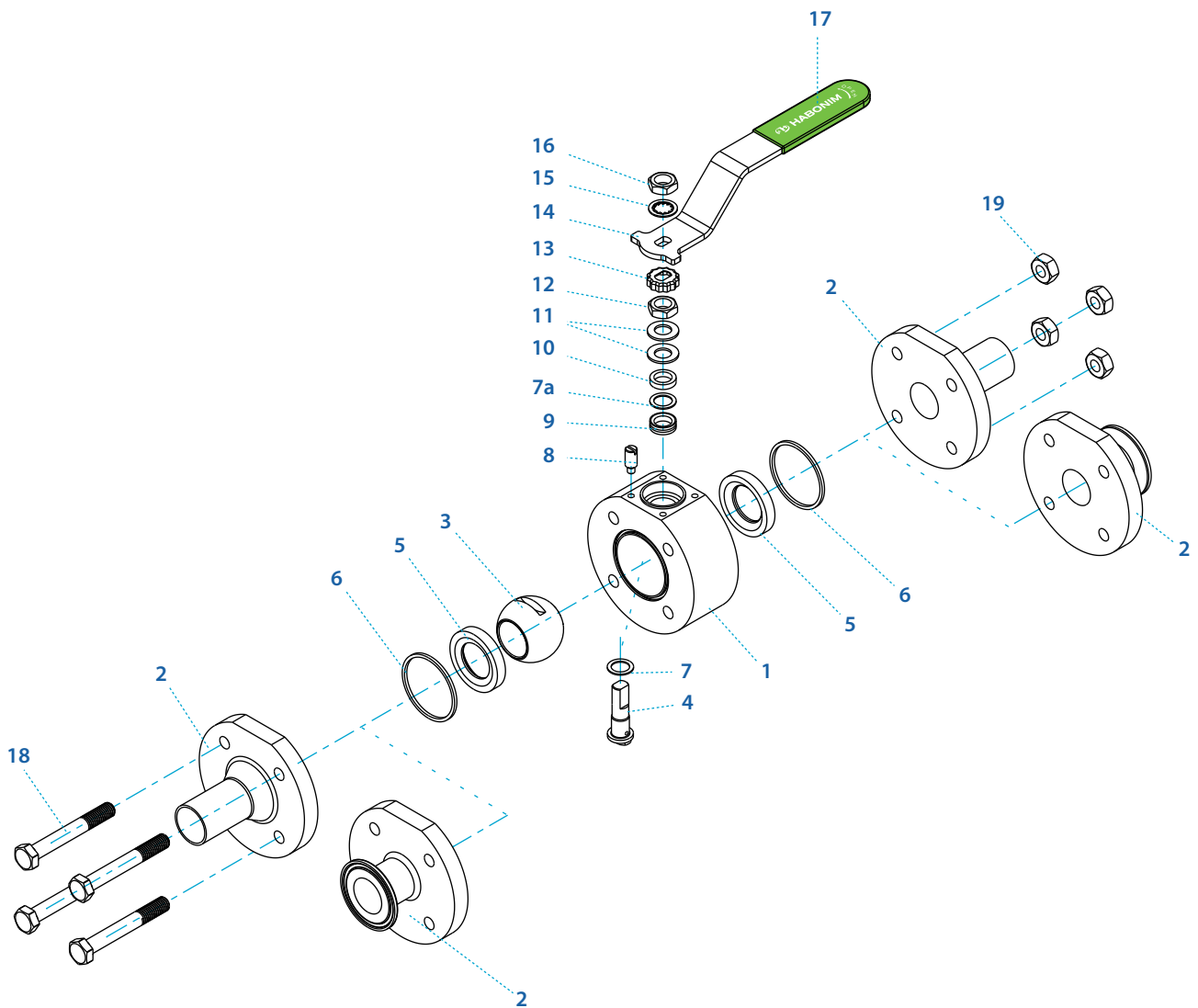


### Preparation for actuation



TuBore™ size	Unit	OD	ID	A ETD	A TCD	B	C	D	H	K	S	W	R TCD	M	N	P	F1	F2	TxL	Weight kg/lb	Kv Cv
DN10	mm	13.00	10.00	100.00	90.00	20.60	29.00	38.00	46.30	41.50	115.00	69.00	34.00	5.54	3/8" UNF	7.20	-	32.00	M5X6	1.00	9
3/8"	inch	0.51	0.39	3.94	3.54	0.81	1.14	1.50	1.82	1.63	4.53	2.72	1.34	0.22	3/8" UNF	0.28	-	1.26	M5X6	2.20	10
DN15	mm	19.00	16.00	110.00	95.00	24.60	36.00	45.00	49.40	44.00	115.00	69.00	34.00	5.54	3/8" UNF	6.65	15.00	34.00	M5X10	1.30	30
1/2"	inch	0.75	0.63	4.33	3.74	0.97	1.42	1.77	1.94	1.73	4.53	2.72	1.34	0.22	3/8" UNF	0.26	0.59	1.34	M5X10	2.85	35
DN20	mm	23.00	20.00	120.00	110.00	31.70	36.00	45.00	61.00	44.00	146.00	79.00	34.00	5.54	3/8" UNF	6.65	20.00	36.00	M5X10	2.20	48
3/4"	inch	0.91	0.79	4.72	4.33	1.25	1.42	1.77	2.40	1.73	5.75	3.11	1.34	0.22	3/8" UNF	0.26	0.79	1.42	M5X10	4.85	56
DN25	mm	29.00	26.00	180.00	130.00	41.30	43.50	61.00	85.00	44.00	187.00	94.00	50.50	7.54	7/16" UNF	7.40	29.70	29.70	M5X10	2.80	97
1"	inch	1.14	1.02	7.09	5.12	1.63	1.71	2.41	3.35	1.73	7.36	3.70	1.99	0.30	7/16" UNF	0.29	1.17	1.17	M5X10	6.20	114
DN32	mm	35.00	32.00	190.00	140.00	48.40	55.50	85.00	99.00	46.00	237.00	99.00	50.50	7.54	7/16" UNF	7.40	35.35	35.35	M5X10	4.40	145
1 1/4"	inch	1.38	1.26	7.48	5.51	1.91	2.19	3.35	3.90	1.73	9.33	3.90	1.99	0.30	7/16" UNF	0.29	1.39	1.39	M5X10	9.70	170
DN40	mm	41.00	38.00	200.00	150.00	56.30	48.25	77.75	103.00	46.00	237.00	109.00	50.50	8.71	9/16" UNF	8.50	35.35	35.35	M6X12	8.00	168
1 1/2"	inch	1.61	1.50	7.87	5.91	2.22	1.90	3.05	4.06	1.73	9.33	4.29	1.99	0.34	9/16" UNF	0.33	1.39	1.39	M6X12	17.60	196

Components & materials



Item	Description	Material specification	Qty.
1	Body	A479 316L, EN 10222-5 1.4435, Alloy C22 B574 N06022, Alloy C276 B574 N10276	1
2	Ends	A479 316L, EN 10222-5 1.4435, Alloy C22 B574 N06022, Alloy C276 B574 N10276	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, Virgin PEEK	2
6*	Body seal	PTFE	2
7*	Stem thrust seal	Virgin PEEK, TFM <sup>(2)</sup>	1
7a**	Anti-abrasion ring	Virgin PEEK, TFM <sup>(2)</sup>	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1
10	Follower	B783 316L	1

Item	Description	Material specification	Qty.
11	Disc spring	A693 631 17-7PH	2
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Locking clip	A167 304	1
14	Handle	S.St. A240 430	1
15	Serrated washer	A240 410	1
16	Handle nut	EN3506-2 A4-80, A194 Gr 8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	4
19	Body nut	EN3506-2 A4-80, A194 Gr 8M	4
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

<sup>(1)</sup> 48 Series is Habonim's standard valve design without the HermetiX™ stem seal construction.

<sup>(2)</sup> This material cannot be used as part of the 48X design.

\* Repair kit components

\*\* Only with HermetiX™ stem seal

# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

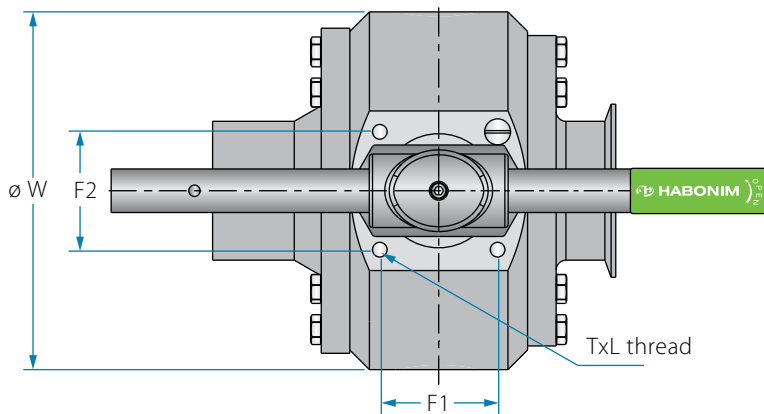
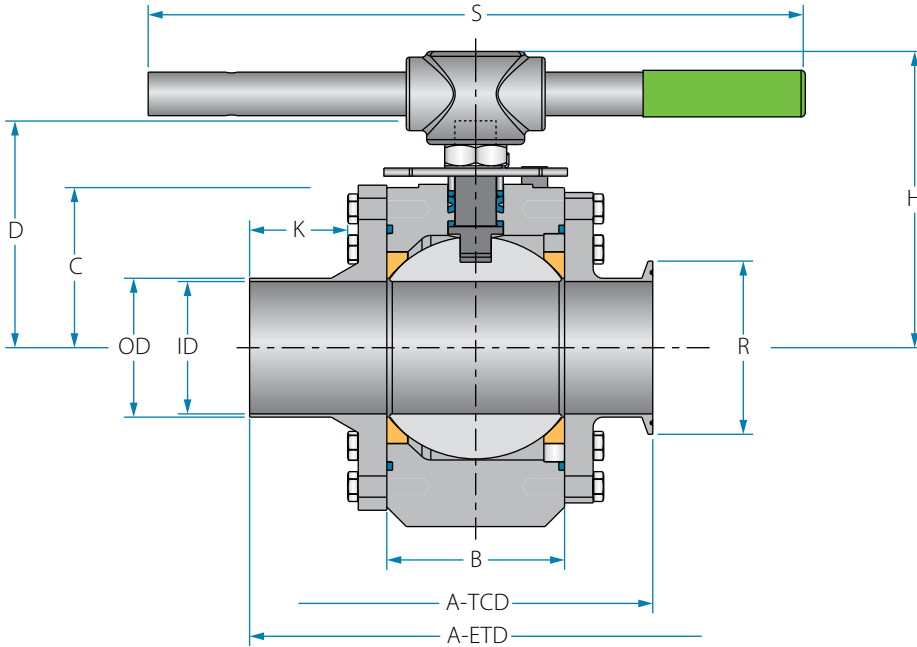
ISO 1127  
standard

DIN 11850  
standard

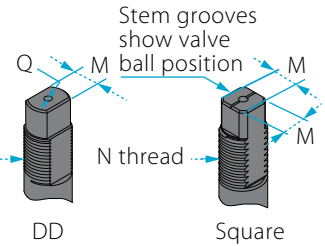
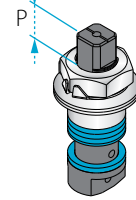
Ordering code  
system

Size 2"- 4" | DN50-DN100 | Class 150 | 48X/48<sup>(1)</sup> Series

## Valve dimensions



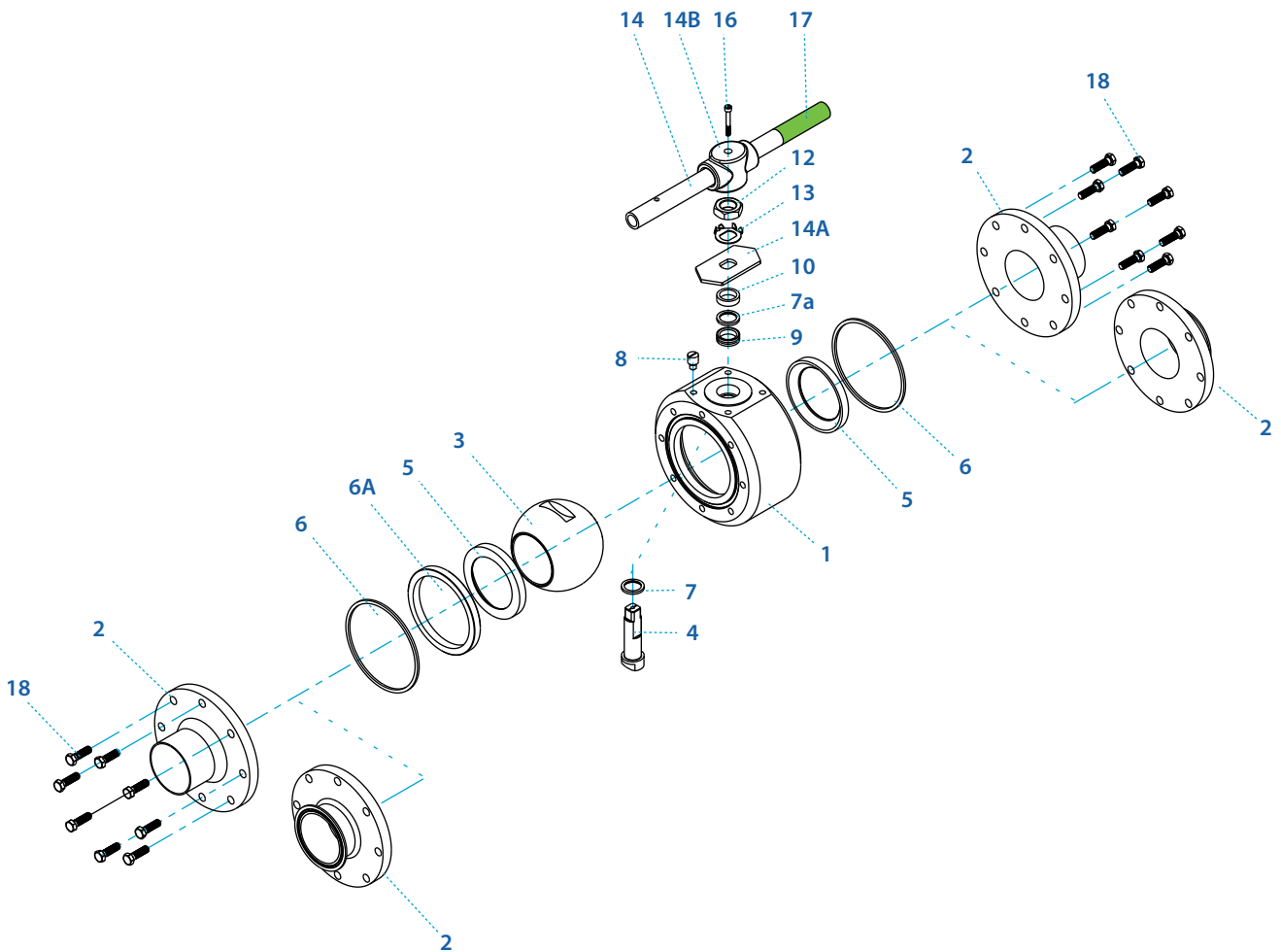
### Preparation for actuation



TuBore™ size	Unit	OD	ID	A ETD	A TCD	B	C	D	H	K	S	W	R TCD	M	M-DD	N	P	F1	F2	TxL	Weight kg/lb	Kv Cv
DN50	mm	53.00	50.00	100.00	90.00	72.70	70.00	112.10	129.30	45.00	401.00	139.00	64.00	-	13.90	M20x2.5	14.60	70.00	49.50	M8X12	12	385
2"	inch	2.09	1.97	3.94	3.54	2.86	2.76	4.41	5.09	1.77	15.79	5.47	2.52	-	0.55	M20x2.5	0.57	2.76	1.95	M8X12	25	450
DN65	mm	70.00	66.00	110.00	95.00	83.40	98.30	144.90	169.20	57.20	401.00	164.00	91.00	18.90	15.90	1" -14	16.70	102.00	100.00	M10X20	19	581
2½"	inch	2.76	2.60	4.33	3.74	3.28	3.87	5.70	6.66	2.25	15.79	6.46	3.58	0.74	0.63	UNS-2A	0.66	4.02	3.94	M10X20	41	680
DN80	mm	85.00	81.00	120.00	110.00	112.00	105.50	152.20	184.50	70.00	401.00	199.00	106.00	18.90	15.90	1" -14	16.70	102.00	120.00	M10X20	30	1060
3"	inch	3.35	3.19	4.72	4.33	4.41	4.15	5.99	7.26	2.75	15.79	7.83	4.17	0.74	0.63	UNS-2A	0.66	4.02	4.72	M10X20	66	1240
DN100	mm	104.00	100.00	180.00	130.00	123.00	179.00	248.50	193.50	61.00	401.00	224.00	119.00	18.90	15.90	1" -14	16.70	102.00	140.00	M10X20	40	1402
4"	inch	4.09	3.94	7.09	5.12	4.84	7.05	9.78	7.62	2.40	15.79	8.82	4.69	0.74	0.63	UNS-2A	0.66	4.02	5.51	M10X20	88	1640



Components & materials



Item	Description	Material specification	Qty.
1	Body	A479 316L, EN 10222-5 1.4435, Alloy C22 B574 N06022, Alloy C276 B574 N10276	1
2	Ends	A479 316L, EN 10222-5 1.4435, Alloy C22 B574 N06022, Alloy C276 B574 N10276	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, Virgin PEEK	2
6*	Body seal	PTFE	2
6A	Support ring	A479 316L, B574 N06022	1
7*	Stem thrust seal	Virgin PEEK, TFM <sup>(2)</sup>	1
7a**	Anti-abrasion ring	Virgin PEEK, TFM <sup>(2)</sup>	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1

Item	Description	Material specification	Qty.
10	Follower	B783 316L	1
10A*	Slide bearing	TF316	1
11	Disc spring	A693 631 17-7PH	2
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Tab lock washer	A240 304	1
14	Handle	S.St. A240 316/316L	1
14A	Stop plate	A240 430	1
14B	Wrench head	A351 CF8M	1
16	Wrench bolt	EN3506-1 A2-70/A4-80, A193 Gr B8/B8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	4-8-12
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

<sup>(1)</sup> 48 Series is Habonim's standard valve design without the HermetiX™ stem seal construction.

<sup>(2)</sup> This material cannot be used as part of the 48X or 48G design.

\* Repair kit components

\*\* Only with HermetiX™ stem seal

# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

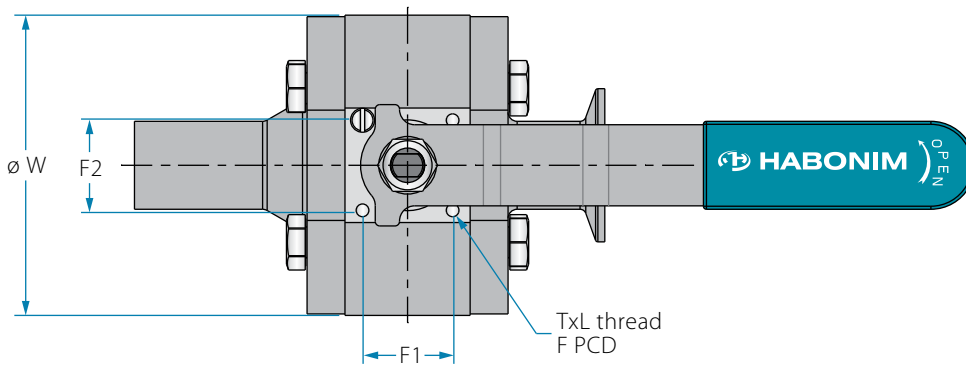
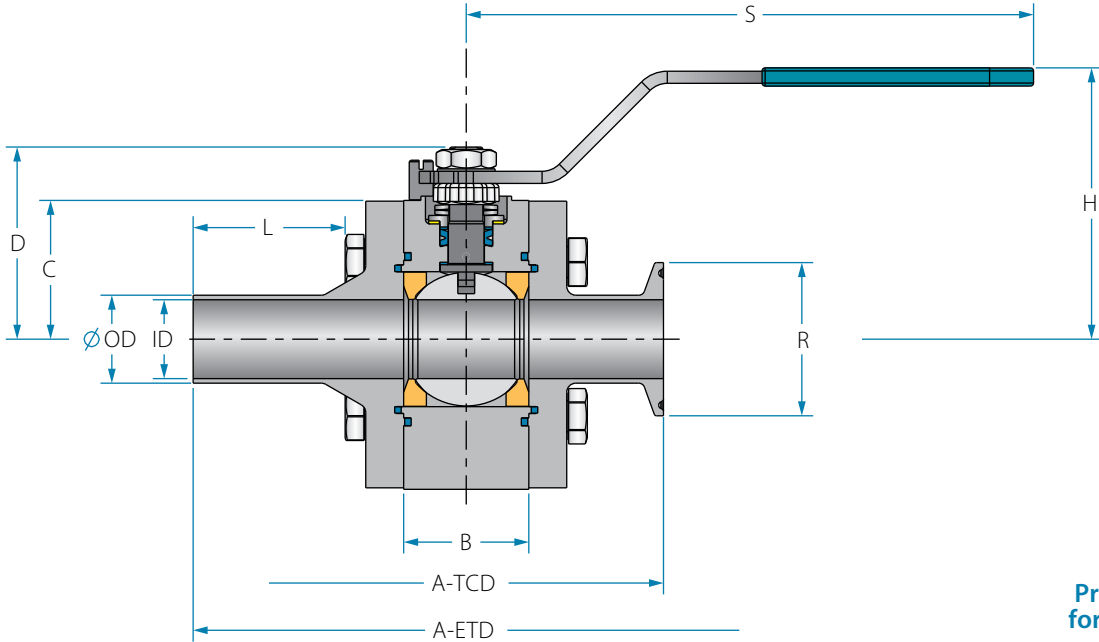
ISO 1127  
standard

DIN 11850  
standard

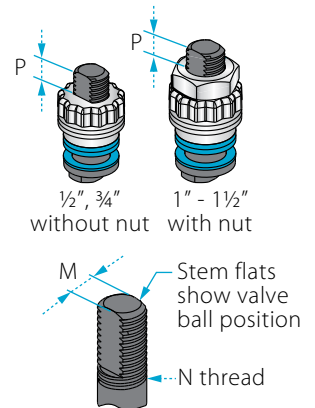
Ordering code  
system

Size ½"- 1½" | DN15-DN40 | Class 300 | 48G Series

## Valve dimensions

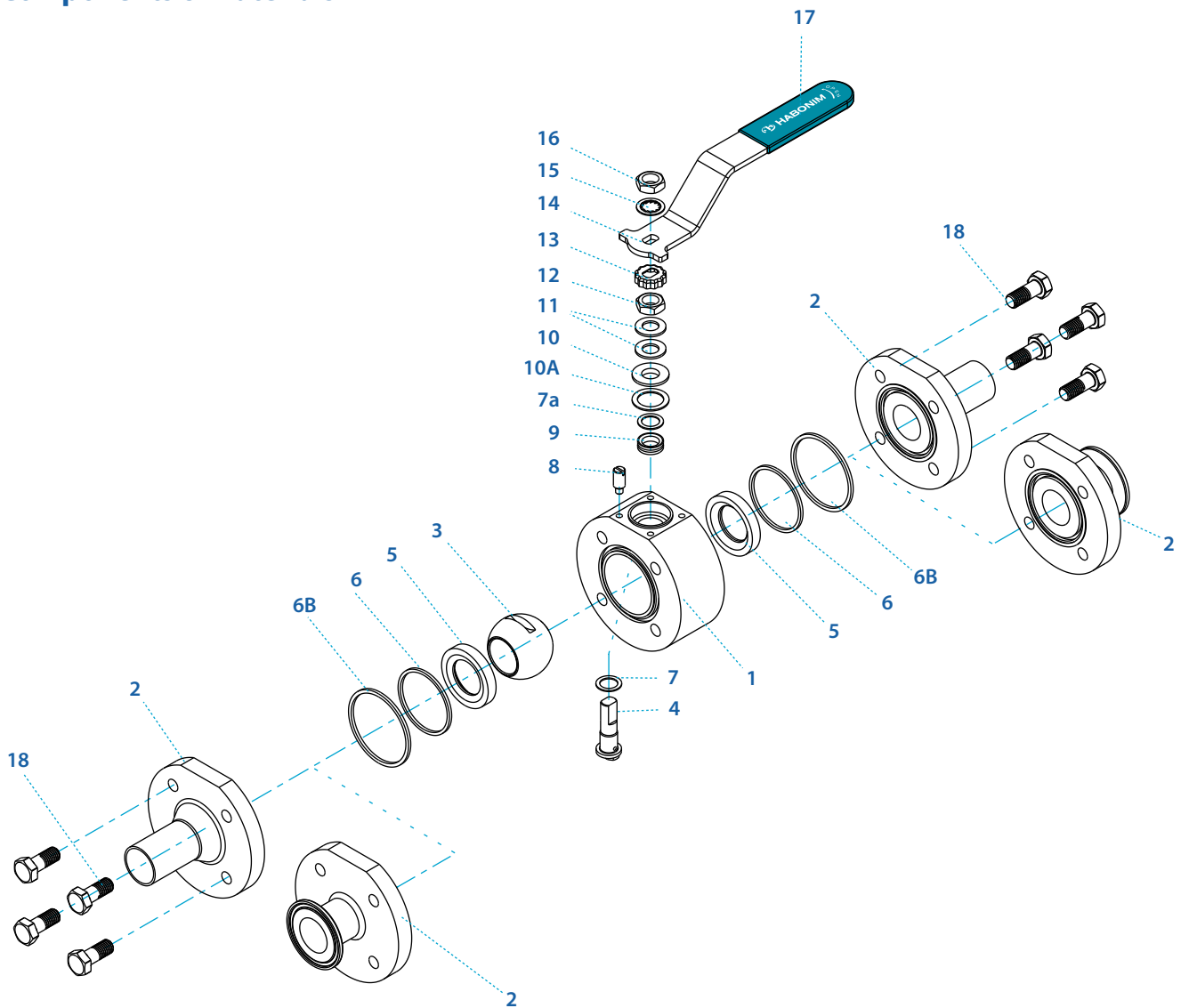


### Preparation for actuation



TuBore™ size	Unit	OD	ID	A ETD	A TCD	B	C	D	H	K	S	W	R TCD	M	N	P	F1	F2	TxL	Weight kg/lb	Kv Cv
DN10	mm	13.00	10.00	100.00	90.00	20.60	29.00	38.00	46.30	41.50	115.00	69.00	34.00	5.54	¾" UNF	7.20	-	32.00	M5X6	1.00	9
¾"	inch	0.51	0.39	3.94	3.54	0.81	1.14	1.50	1.82	1.63	4.53	2.72	1.34	0.22		0.28	-	1.26		2.20	10
DN15	mm	19.00	16.00	110.00	95.00	24.60	36.00	45.00	49.40	44.00	115.00	69.00	34.00	5.54	¾" UNF	7.20	15.00	34.00	M5X6	1.30	30
½"	inch	0.75	0.63	4.33	3.74	0.97	1.42	1.77	1.94	1.73	4.53	2.72	1.34	0.22		0.28	0.59	1.34		2.85	35
DN20	mm	23.00	20.00	120.00	110.00	31.70	36.00	45.00	61.00	44.00	146.00	79.00	34.00	5.54	¾" UNF	7.20	20.00	36.00	M5X8	2.20	48
¾"	inch	0.91	0.79	4.72	4.33	1.25	1.42	1.77	2.40	1.73	5.75	3.11	1.34	0.22		0.28	0.79	1.42		4.85	56
DN25	mm	29.00	26.00	180.00	130.00	41.30	43.50	61.00	85.00	44.00	187.00	94.00	50.50	7.54	7/16" UNF	7.20	29.70	29.70	M5X8	2.80	97
1"	inch	1.14	1.02	7.09	5.12	1.63	1.71	2.41	3.35	1.73	7.36	3.70	1.99	0.30		0.28	1.17	1.17		6.20	114
DN32	mm	35.00	32.00	190.00	140.00	48.40	55.50	85.00	99.00	46.00	237.00	99.00	50.50	7.54	7/16" UNF	8.00	35.35	35.35	M6X10	4.40	145
1¼"	inch	1.38	1.26	7.48	5.51	1.91	2.19	3.35	3.90	1.73	9.33	3.90	1.99	0.30		0.31	1.39	1.39		9.70	170
DN40	mm	41.00	38.00	200.00	150.00	56.30	48.25	77.75	103.00	46.00	237.00	109.00	50.50	8.71	9/16" UNF	8.00	35.35	35.35	M6X10	8.00	168
1½"	inch	1.61	1.50	7.87	5.91	2.22	1.90	3.05	4.06	1.73	9.33	4.29	1.99	0.34		0.31	1.39	1.39		17.60	196

Components & materials



Item	Description	Material specification	Qty.
1	Body	A479 316L, EN 10222-5 1.4435, Alloy C22 B574 N06022, Alloy C276 B574 N10276	1
2	Ends	A479 316L, EN 10222-5 1.4435, Alloy C22 B574 N06022, Alloy C276 B574 N10276	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, PTFE, Virgin PEEK, PCTFE (KEL-F)	2
6*	Body inner seal	PTFE	2
6B*	Body outer seal	Graphite	2
7*	Stem thrust seal	Virgin PEEK	1
7a*	Anti-abrasion ring	Virgin PEEK	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1

Item	Description	Material specification	Qty.
10	Follower	B783 316L	1
10A*	Slide bearing	TF316	1
11	Disc spring	A693 631 17-7PH	2
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Locking clip	A167 304	1
14	Handle	S.St. A240 430	1
15	Serrated washer	A240 410	1
16	Handle nut	EN3506-2 A4-80, A194 Gr 8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	4
19	Body nut	EN3506-2 A4-80, A194 Gr 8M	4
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

\* Repair kit components

# Floating Ball Valves

**TuBore™ clean valves**

General

ASME BPE  
standard

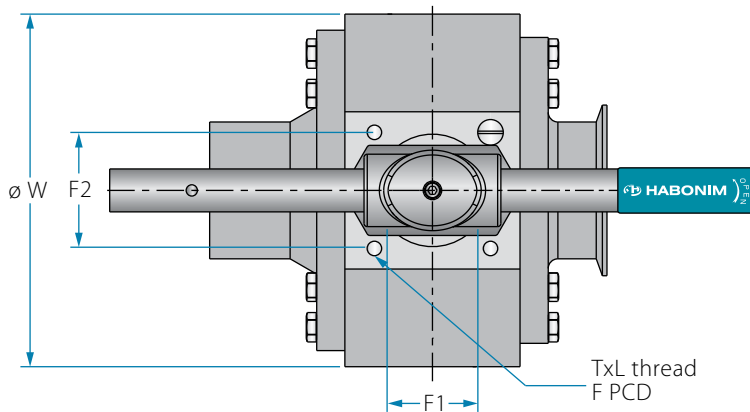
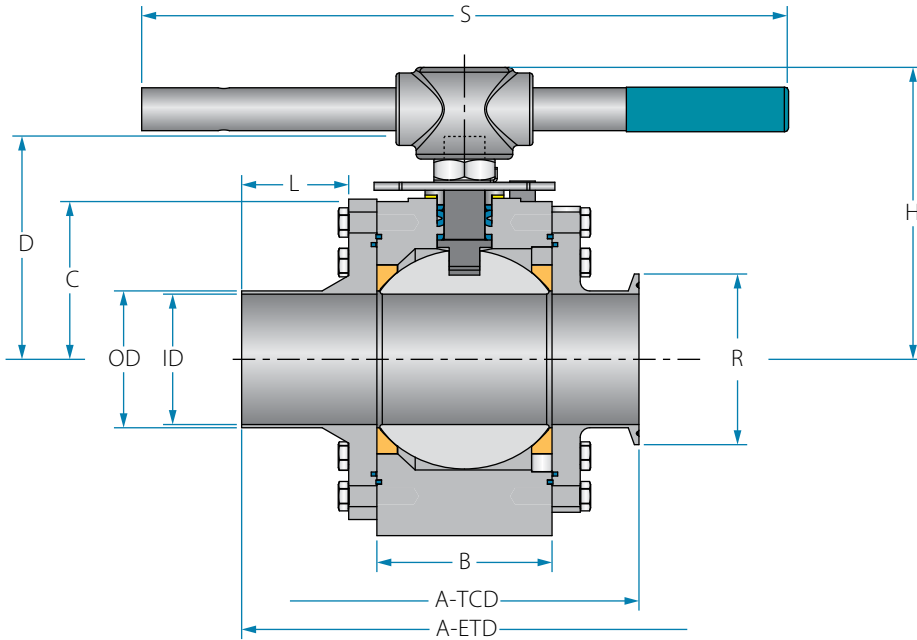
ISO 1127  
standard

DIN 11850  
standard

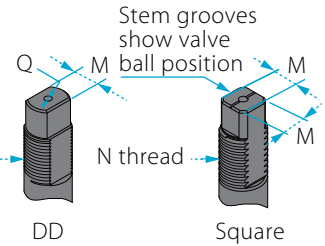
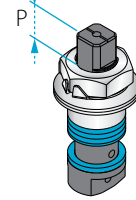
Ordering code  
system

Size 2"- 4" | DN50-DN100 | Class 150 | 48G Series

## Valve dimensions

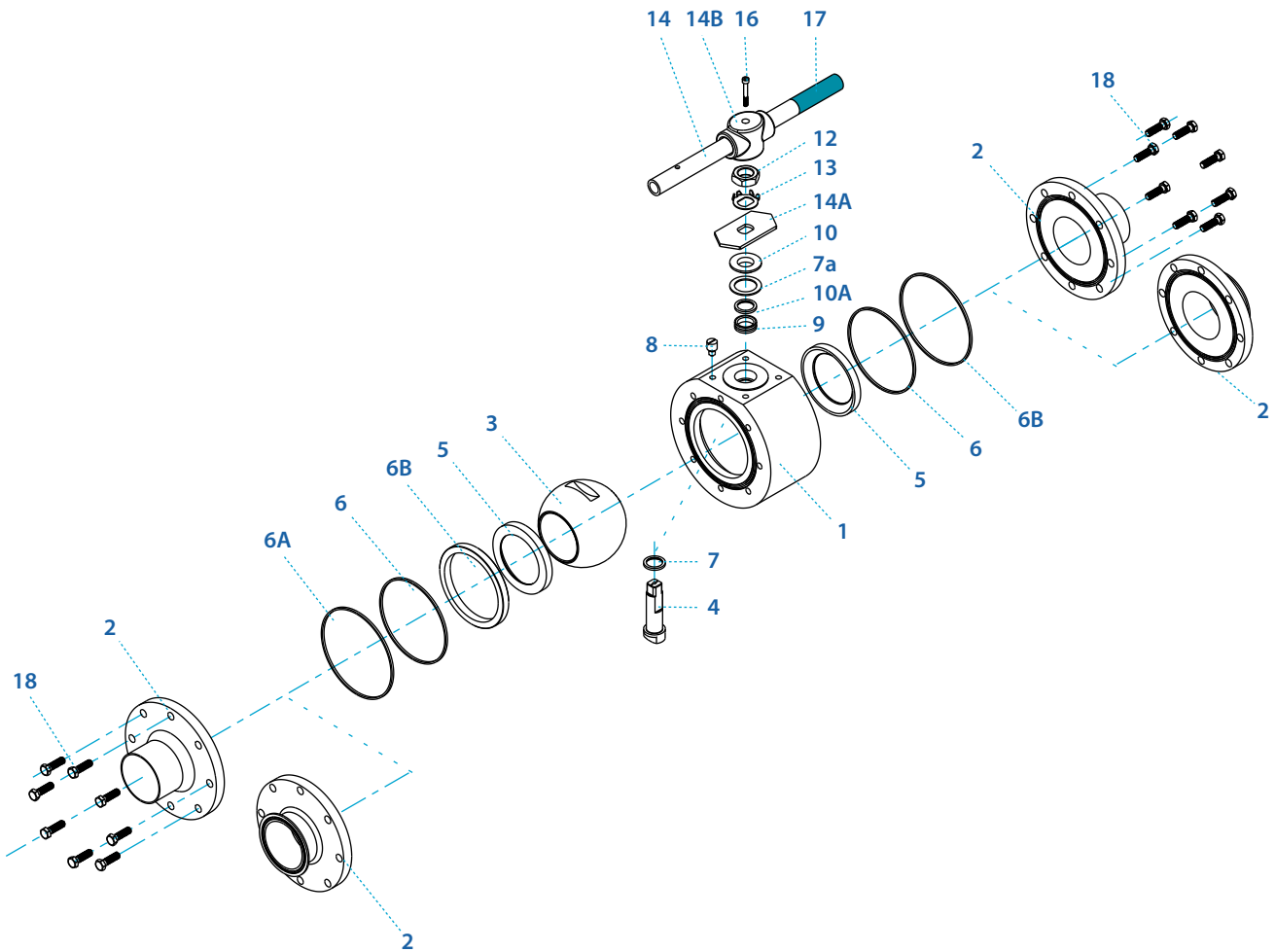


### Preparation for actuation



TuBore™ size	Unit	OD	ID	A ETD	A TCD	B	C	D	H	K	S	W	R TCD	M	M-DD	N	P	F1	F2	TxL	Weight kg/lb	Kv Cv
DN50	mm	53.00	50.00	100.00	90.00	72.70	70.00	112.10	129.30	45.00	401.00	139.00	64.00	-	13.90	M20x2.5	14.60	70.00	49.50	M8X12	12	385
2"	inch	2.09	1.97	3.94	3.54	2.86	2.76	4.41	5.09	1.77	15.79	5.47	2.52	-	0.55	M20x2.5	0.57	2.76	1.95	M8X12	25	450
DN65	mm	70.00	66.00	110.00	95.00	83.40	98.30	144.90	169.20	57.20	401.00	164.00	91.00	18.90	15.90	1" -14	16.70	102.00	100.00	M10X20	19	581
2½"	inch	2.76	2.60	4.33	3.74	3.28	3.87	5.70	6.66	2.25	15.79	6.46	3.58	0.74	0.63	UNS-2A	0.66	4.02	3.94	M10X20	41	680
DN80	mm	85.00	81.00	120.00	110.00	112.00	105.50	152.20	184.50	70.00	401.00	199.00	106.00	18.90	15.90	1" -14	16.70	102.00	120.00	M10X20	30	1060
3"	inch	3.35	3.19	4.72	4.33	4.41	4.15	5.99	7.26	2.75	15.79	7.83	4.17	0.74	0.63	UNS-2A	0.66	4.02	4.72	M10X20	66	1240
DN100	mm	104.00	100.00	180.00	130.00	123.00	179.00	248.50	193.50	61.00	401.00	224.00	119.00	18.90	15.90	1" -14	16.70	102.00	140.00	M10X20	40	1402
4"	inch	4.09	3.94	7.09	5.12	4.84	7.05	9.78	7.62	2.40	15.79	8.82	4.69	0.74	0.63	UNS-2A	0.66	4.02	5.51	M10X20	88	1640

Components & materials



Item	Description	Material specification	Qty.
1	Body	A479 316L, EN 10222-5 1.4435, Alloy C22 B574 N06022, Alloy C276 B574 N10276	1
2	Ends	A479 316L, EN 10222-5 1.4435, Alloy C22 B574 N06022, Alloy C276 B574 N10276	2
3	Ball	A351 CF3M, A479 316L, B574 N06022, B574 N10276	1
4	Stem	A479 316L, A564 Gr.630 H1150D 17-4PH, B574 N06022, B574 N10276	1
5*	Seat	TFM, PTFE, Virgin PEEK, PCTFE (KEL-F)	2
6*	Body inner seal	PTFE	2
6A	Support ring	A479 316L, B574 N06022	1
6B*	Body outer seal	Graphite	2
7*	Stem thrust seal	Virgin PEEK	1
7a*	Anti-abrasion ring	Virgin PEEK	1
8	Stop pin	A582 303	1
9*	Stem seal	TFM	1

Item	Description	Material specification	Qty.
10	Follower	B783 316L	1
10A*	Slide bearing	TF316	1
11	Disc spring	A693 631 17-7PH	2
12	Stem nut	EN3506-2 A4-80, A194 Gr 8M	1
13	Tab lock washer	A240 304	1
14	Handle	S.St. A240 316/316L	1
14A	Stop plate	A240 430	1
14B	Wrench head	A351 CF8M	1
16	Wrench bolt	EN3506-1 A2-70/A4-80, A193 Gr B8/B8M	1
17	Sleeve	PVC	1
18	Body bolt	EN 3506-1 A2-70 / A4-80	4-8-12
20	Anti static spring	A313 302	1
21	Anti static plunger	A479 304	1
23	Tag (not shown)	A167 304	1

\* Repair kit components

# Floating Ball Valves

## TuBore™ clean valves

General

ASME BPE  
standard

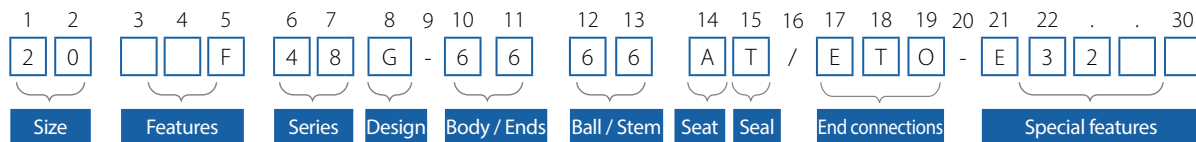
ISO 1127  
standard

DIN 11850  
standard

Ordering code  
system

## Ordering code system

The HABONIM TuBore™ ball valve identification code



Size		
Code	inch	mm
02	1/4"	8
03	3/8"	10
05	1/2"	15
07	3/4"	20
10	1"	25
12	1 1/4"	32
15	1 1/2"	40
20	2"	50
25	2 1/2"	65
30	3"	80
40	4"	100
60	6"	150

Features	
A	Anti-Static
F	Fire safe
D	Diverter, Bottom entry
S	Diverter, Side entry
I	High purity Class 10000 assembly room
Q	Cavity filler seats
R	Flush tank
M	Ammonia service
K	Chlorine service
V	Vacuum service

Series	
48	3 piece TuBore™

Design	
	Basic design
X	HermetiX™ stem seal
G	HermetiX™ graphite-free fire safe stem seal, FDA compliant wetted parts

Body / Ends	
3	S. St. EN10222-5 1.4435 Forged
6	S. St. A351 CF3M/ A479 316L
P	S. St. A182 316L Forged
C	Alloy-C276 A494 CW-12MW
W	Alloy-C22 A494 CX-2MW

Ball / Stem	
6	S. Steel A479 316L
M	17-4PH A564 Gr 630 H1150D
C	Alloy-C276 B574 N10276
W	Alloy-C22 B574 N06022

Seat	
A	TFM
L	Virgin PEEK

Seal	
T	PTFE
G	Expanded graphite
I	Impregnated Graphite

End connections	
Welded	
ETO	Extended tube ASME BPE
ETI	Extended tube ISO 1127
ETD	Extended tube DIN11850
Clamp	
TC	Tri-clamp ASME BPE
TCI	Tri-clamp ISO 2852
TCD	Tri-clamp DIN

Special features	
G..	Internal surface finish (G32)
E..	Electropolish (E24,E32)
B	Valve made from rolled bar
J2N05	Jacketed valve - Number of ports (2), type (NPT) and size (1/2")
WR	DD stem

Valve special stem seals	
HC	High cycle service
ORV	Viton O-ring based
ORB	NBR O-ring based
ORE	EPDM O-ring based

The 48 series is cleaned for pharma/API service as standard, no need for extra prefix.

In some applications the available options above are limited to specific sizes please consult with Habonim for details





[www.habonim.com](http://www.habonim.com)

**Habonim USA**

Toll Free Phone: 1-866-261-8400  
Toll Free Fax: 1-866-243-9959  
[sales\\_usa@habonim.com](mailto:sales_usa@habonim.com)

**Habonim EUROPE**

Tel: +34 640 384 759  
[sales\\_eu@habonim.com](mailto:sales_eu@habonim.com)  
[sales\\_international@habonim.com](mailto:sales_international@habonim.com)

**Habonim AUSTRALIA**

Tel: +61 400 001 988  
[sales\\_au@habonimau.com](mailto:sales_au@habonimau.com)

**Habonim CHINA**

Tel: + 86 21 64453190 \*146  
[sales\\_china@habonim.com](mailto:sales_china@habonim.com)

**Habonim ISRAEL**

Tel: +972-4-6914911  
Fax: +972-4-6914935  
[sales\\_international@habonim.com](mailto:sales_international@habonim.com)

**Habonim UK**

Tel: +44-1633-484554  
Fax: +44-1633-482252  
[sales\\_uk@habonim.com](mailto:sales_uk@habonim.com)

**Habonim SINGAPORE**

Tel: +65 6296 7828  
Fax: +65 6299 3184  
[sales\\_Singapore@habonim.com](mailto:sales_Singapore@habonim.com)



[www.habonim.com](http://www.habonim.com)



Three piece valves Cat.

