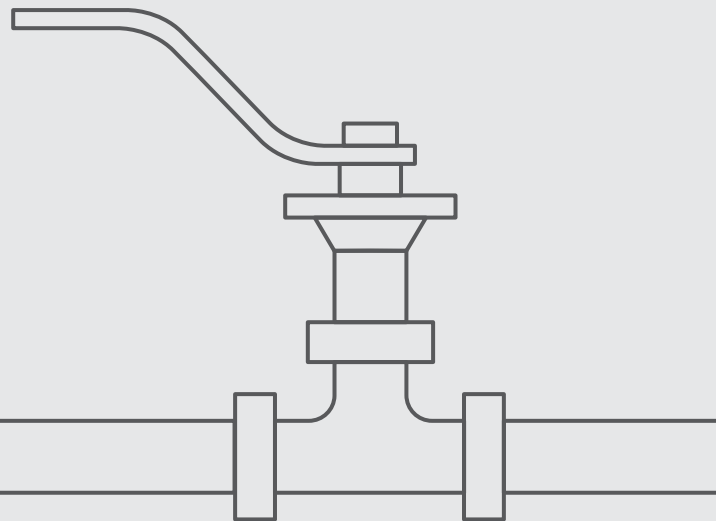


HYDROGEN SERVICE

PRODUCT CATALOG

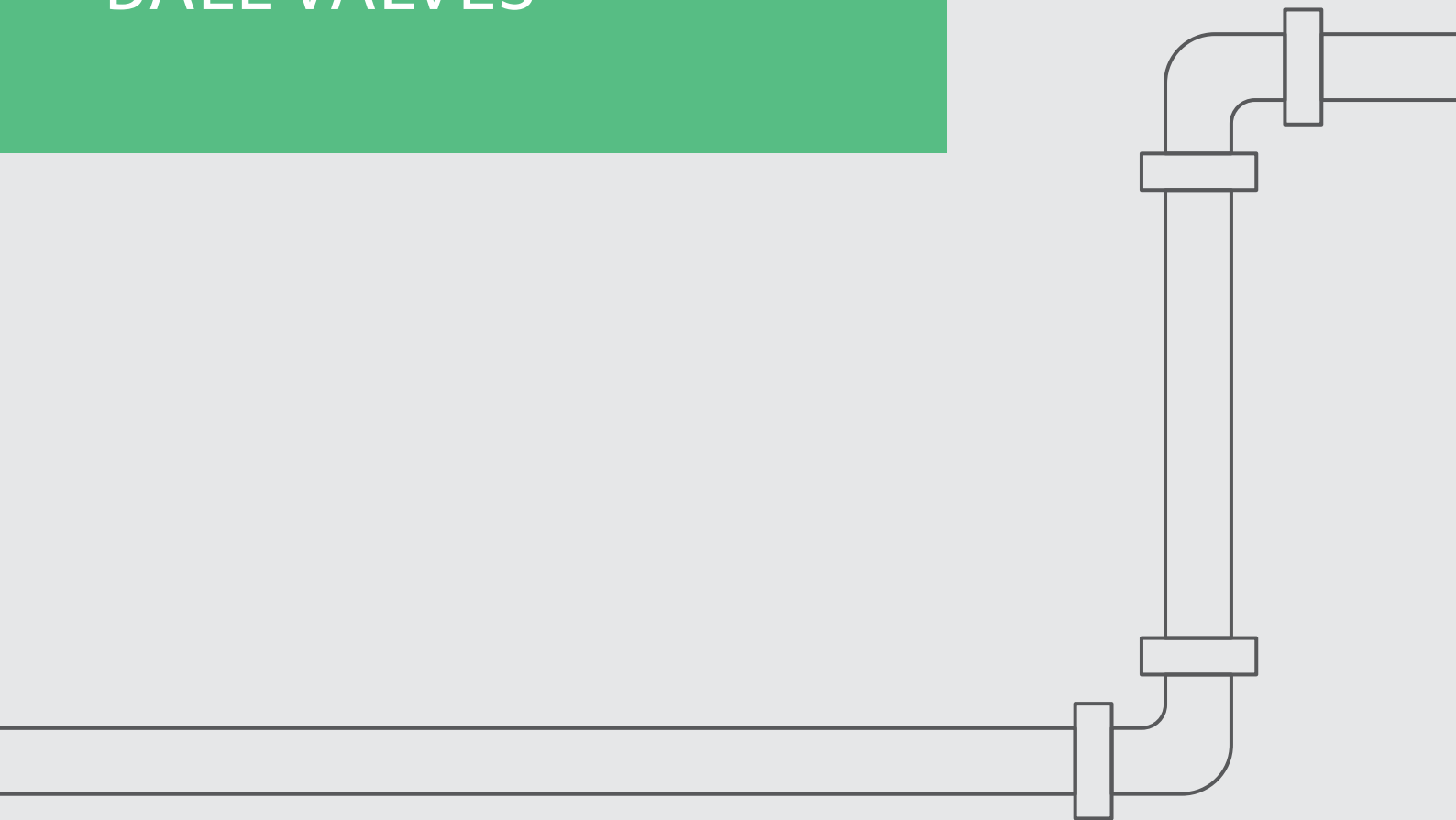






HYDROGEN SERVICE

BALL VALVES





Hydrogen Service Ball Valves (H)

Habonim's hydrogen service ball valves are designed and tested to provide safe and durable use within diverse hydrogen application and address some leading industrial standards. With decades of proven safe and long-lasting use in hydrogen applications Habonim Hydrogen-service ball valves delivers reliability and integrity for industrial demanding applications.

Habonim is offering a full range of ball valves for hydrogen-use based on the legacy products families to cover low to very-high pressures, shut-off or control use, regular, multiport, Double Block & Bleed or custom-made designs, valve automation packages and much more.

Hydrogen

Hydrogen light atomic weight and molecule structure turning hydrogen-use equipment sealing into a challenge requires special designs, mechanisms and expertise. Hydrogen is highly combustion and flammable making leakage prevention an essence for safety and integrity of systems and materials selection should consider hydrogen effects as Hydrogen Embrittlement (HE).

Design

Habonim Hydrogen-use ball valves incorporate some design elements to best accommodate the hydrogen media:

Double Stem Sealing

Habonim HermetiX patented stem seal is used with additional O-ring sealing.

The HermetiX polymeric, non-graphite stem seal design is certified for ISO15848-1 and API641 fugitive emission prevention standards, tested with He.

An additional O-ring stem seal is added as additional sealing point.

This design has been successfully tested for 100,000 open/close cycles under pressure without any maintenance or seals replacements and well performs in demanding hydrogen applications for decades.

Hydrogen-use material compatibility

All material used for the valve constructions are specified for safe use with hydrogen media.

Metallic materials to be used in the valves are selected to withstand the hydrogen embrittlement effects and are compatible for hydrogen use.

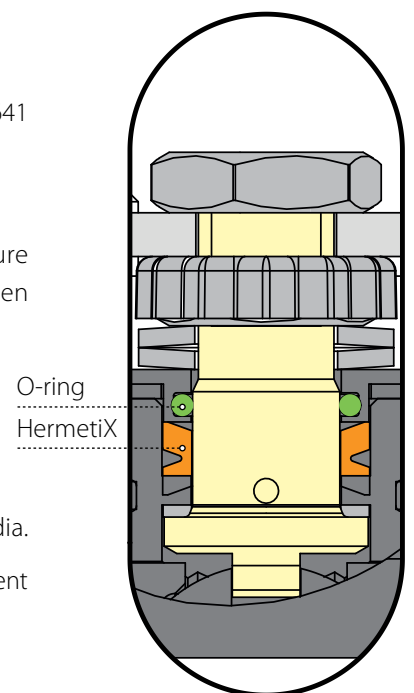
Testing & Certifications

Some of the ball valves series are tested or certified for specific standard relevant for hydrogen use such as:

ISO19880-3:2018 Gaseous hydrogen – fueling stations valve

TPED – Transportable Pressure Equipment Directive

Marine classification (on demand): DNV GL, LR, BV, ABS, KR, RINA





Hydrogen Service Ball Valves (H)

Total HermetiX integrity package

Materials selection for Hydrogen use

Unless explicitly specified in our Ordering Codes for Hydrogen Service, when using our valves for Hydrogen Service (Feature "H") material selection should be:

- Body & ends - Stainless steel.
- Inner seal - Viton or consult Habonim.

Zero fugitive-emission stem sealing

- HermetiX stem sealing design with zero fugitive emission sealing capability.
- Tested according to ISO 15848-1 and API641 standards.
- Up to 500,000 cycles of operation with no maintenance.
- Field proven for millions of cycles.

Double body sealing

- Body double sealing for superior atmospheric sealing.
- Fugitive emission prevention.

Fire safe

- Design compatible with API 607 and ISO 10497.
- Clean fire-safe construction for no graphite contamination of the media flow.

Inline superior sealing

Quick Selection Table

Total Hermetix™ | **Port:** Standard Port Full Port Tube Size
 Ordering Code | **End Connections:** Threaded Cone & Thread Flanged Welded

	Category	Ball Valve	Design Type	OC	Series	TH	Port	End Con.	Valve Size (Inches)										MWP (ANSI Class)							
									1/4	3/8	1/2	5/8	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16
Temperature: -60°C - +260°C (-76 °F ÷ +500 °F)	High Pressure	Trunnion	Threaded body	<input checked="" type="checkbox"/>	H99	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1,000bar (15,000psi)																
			3 Piece	<input checked="" type="checkbox"/>	H96	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2500																	1500
		Floating	Threaded body	<input checked="" type="checkbox"/>	H29	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1,000bar (15,000psi) with TPED - 700bar (10,000psi)															
			Threaded body	<input checked="" type="checkbox"/>	H24	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	*500bar (7,250psi) Class 2500				2500 / 1500											
	Industrial Use	Trunnion	3 Piece	<input checked="" type="checkbox"/>	See Industrial	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	900/600/300/150																
			2 Piece	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	600/300/150																	
		Floating	3 Piece	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	900/600/400/300/150															
			2/1 Piece	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	300/150/PN40/PN16															
			DS/DBB	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	600/300/150/PN16															
			Multiport / Diverter	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	600/300/150															
	Control	<input checked="" type="checkbox"/>	See Control	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	900/400/300/150/PN40/PN16																	

* with TPED - Class 2500

Hydrogen Service High Pressure Floating Ball Threaded body

Technical Information

Operation

Maximum Working pressure 1,000bar (15,000psi), with TPED mark up to 700bar (10,000psi)

Working temperature: -60°C up to +260°C (-76°F up to +500°F).

Design

- Threaded body
- Automation-ready with standard ISO 5211 connecting plate
- Total HermetiX Integrity package with:
ISO15848-1 and API 641 emission standard certificated design
ISO10497 and API607 fire-safe standard certificated design
Double body sealing

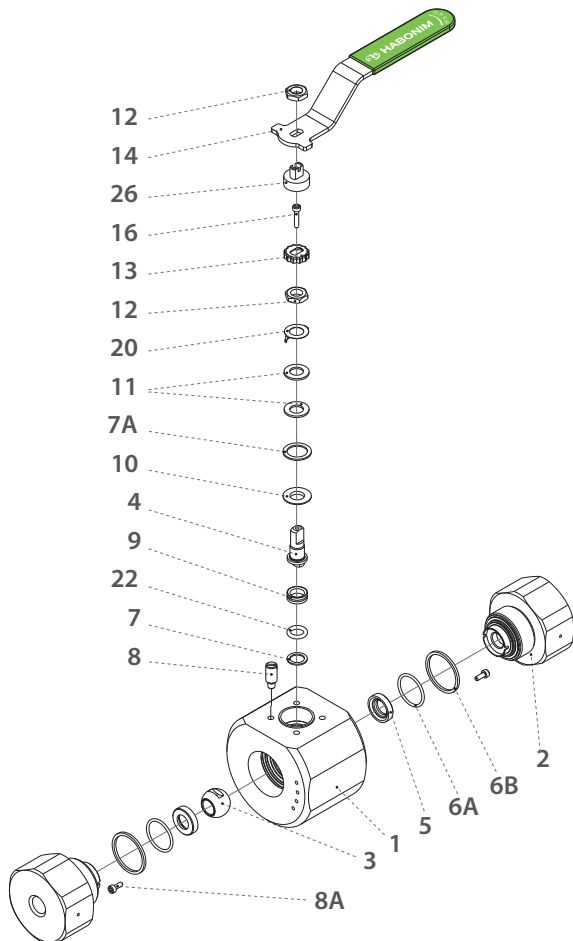
Testing & Certifications

- ISO19880-3:2018 Gaseous hydrogen – fueling stations valve, Tested up to 700bar use (internal test with He)
- TPED, Certified (up to 700bar MWP)
- 100% shell & inline leak tested
- Marine classification (on demand): DNV GL, LR, BV, ABS, KR, RINA, others

Materials

- Stainless steel body & ends.
- All materials compatible for Hydrogen use.

Components & materials



Item	Description	Material specification	Qty.
1	Body	Acc. Ordering Code	1
2	End	Acc. Ordering Code	2
3	Ball	Acc. Ordering Code	1
4	Stem	Acc. Ordering Code	1
5	Seat	Acc. Ordering Code	2
6A	Body Inner seal	Acc. Ordering Code	2
6B	Body external seal	Acc. Ordering Code	2
7	Stem thrust seal	PEEK, CF PEEK, PCTFE	1
7A	Anti-abrasion ring	PEEK, CF PEEK, PCTFE	1
8	Stop pin	S. Steel	1
8A	Dowel Pin	S. Steel	2
9	Stem seal	CF PTFE, TFM	1
10	Follower	S. Steel	1
11	Disc spring	S. Steel	2
12	Stem nut	S. Steel	2
13	Locking clip	S. Steel	1
14	Handle	S. Steel	1
18	Sleeve	PVC	1
16	Bolt for adaptor	S. Steel	1
20	Anti static device	S. Steel	1
22	O-ring	Acc. Ordering Code	1
26	Adaptor	S. Steel	1



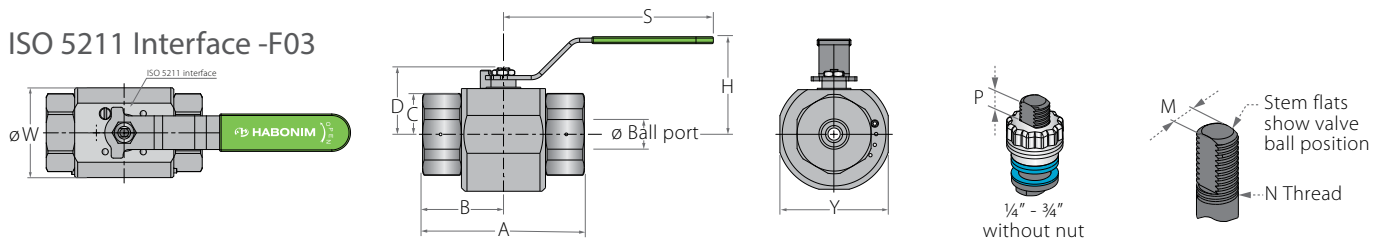
Hydrogen Service High Pressure Floating Ball Threaded body

End connections

Valve size code	Connection			Minimum orifice mm(inch)	Cv	Kv	
02	Medium Pressure Cone & Threaded	CTM	1/4"	Tube Size	2.8	0.33	0.29
03		CTM	3/8"		5.2	1.17	1.01
06		CTM	9/16"		7.9	4.39	3.80
07		CTM	3/4"		11.15	20.63	17.85
10		CTM	1"		11.15	9.81	8.49
02	High Pressure Cone & Threaded	CTH	1/4"	Thread Size	2.4	0.24	0.21
03		CTH	3/8"		3.2	0.43	0.37
06		CTH(F562C40)	9/16"		6.4	2.34	2.02
10		CTH	1"		11.15	20.63	17.85
02	Threaded	NPT/BSPP/DIN3852/BSPT	1/4"	Thread Size	6.35	1.62	1.40
03		NPT/BSPP/DIN3852/BSPT	3/8"		9.52	5.76	4.98
05		NPT/BSPP/DIN3852/BSPT	1/2"		11.15	8.6	7.44
07		NPT/BSPP/DIN3852/BSPT	3/4"		11.15	5.06	4.38
10		NPT/BSPP/DIN3852/BSPT	1"		11.15	4.7	4.07

Valve dimensions

ISO 5211 Interface -F03



Full port	Unit	Ball port	A	B	C	D	H	M	N	P	W	S	Y
DN8	mm	11.15	116.4	58.2	33.00	48.00	70.5	5.54	3/8" UNF	11.1	85	151	80.5
1/4"	inch	0.44	4.58	2.29	1.30	1.89	2.77	0.22		0.43	3.46	5.94	3.17
DN10	mm	11.15	116.4	58.2	33.00	48.00	70.5	5.54		11.1	85	151	80.5
3/8"	inch	0.44	4.58	2.29	1.30	1.89	2.77	0.22		0.43	3.46	5.94	3.17
DN12	mm	11.15	116.4	58.2	33.00	48.00	70.5	5.54		11.1	85	151	80.5
1/2"	inch	0.44	4.58	2.29	1.30	1.89	2.77	0.22		0.43	3.46	5.94	3.17
DN14	mm	11.15	116.4	58.2	33.00	48.00	70.5	5.54		11.1	85	151	80.5
9/16"	inch	0.44	4.58	2.29	1.30	1.89	2.77	0.22		0.43	3.46	5.94	3.17
DN20	mm	11.15	116.4	58.2	33.00	48.00	70.5	5.54		11.1	85	151	80.5
3/4"	inch	0.44	4.58	2.29	1.30	1.89	2.77	0.22		0.43	3.46	5.94	3.17
DN25	mm	11.15	136.4	68.2	33.00	48.00	70.5	5.54		11.1	85	151	80.5
1"	inch	0.44	5.37	2.685	1.30	1.89	2.77	0.22		0.43	3.46	5.94	3.17

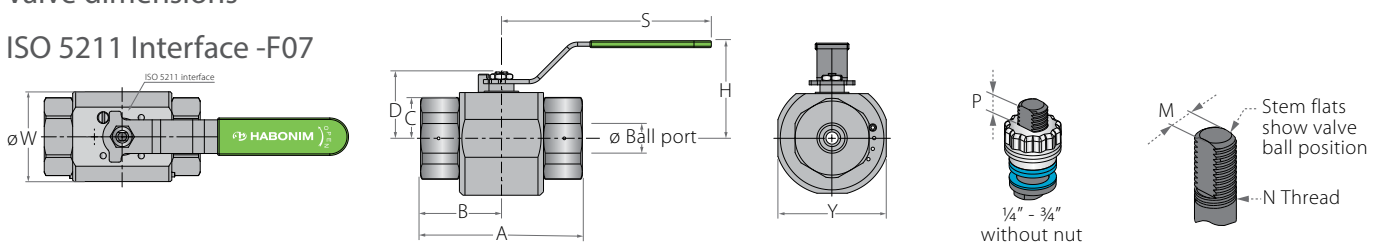
Hydrogen Service High Pressure Floating Ball Threaded body

End connections

Valve size code	Connection			Minimum orifice mm(inch)	Cv	Kv
10	Medium Pressure Cone & Threaded	CTM	1" Tube Size	14.3	14.11	12.21
15		CTM	1 1/2" Tube Size	20.6	50.41	43.60
07	Threaded	NPT/BSPP/DIN3852/BSPT	3/4" Thread Size	19	30.93	26.76
10		NPT/BSPP/DIN3852/BSPT	1" Thread Size	20.6	23.79	20.58

Valve dimensions

ISO 5211 Interface -F07



Full port	Unit	Ball port	A	B	C	D	H	M	N	P	W	S	Y
DN20	mm	20.6	215	107.5	48.25	68.00	95	8.65	3/16" UNF	8	119	273	116
3/4"	inch	0.81	8.46	4.23	1.90	2.67	3.74	0.34		0.31	4.68	10.75	0.56
DN25	mm	20.6	215	107.5	48.25	68.00	95	8.65		8	119	273	116
1"	inch	0.81	8.46	4.23	1.90	2.67	3.74	0.34		0.31	4.68	10.75	0.56
DN32	mm	20.6	215	107.5	48.25	68.00	95	8.65		8	119	273	116
1 1/4"	inch	0.81	8.46	4.23	1.90	2.67	3.74	0.34		0.31	4.68	10.75	0.56
DN38	mm	20.6	215	107.5	48.25	68.00	95	8.65		8	119	273	116
1 1/2"	inch	0.81	8.46	4.23	1.90	2.67	3.74	0.34		0.31	4.68	10.75	0.56

Ordering Code System

"Mandatory option" options are marked with **green background** | "Standard offer" options are marked with **light green background**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
0	3			F	H	2	9	W	-	6	6	M	M	L	H	G	/	C	T	M								
Size		Features			Series	Design	Body/Ends material		Ball material	Stem material	Seat material	Inner Seal	Outer Seal	End Connection			Special features											

Size (1-2)		
Code	inch	mm
02	1/4"	8
03	3/8"	10
05*	1/2"	13
06	5/16"	15
07	3/4"	20
10	1"	25
15	1 1/2"	40

* Not applicable for CTM/CTH

Features (3-6)	
F	Fire safe
H	Hydrogen use
O	Clean assembly for O2 service
B	Body size B (700bar / 10,00psi)
Series (7-8)	
29	HP Float 3 piece
Design (9)	
W	Total HermetiX Integrity package
Body/Ends material (11-12)	
6	S. Steel 316L

Ball material (13)	
M	High Strength S. Steel
Stem material (14)	
M	High Strength S. Steel
Seat material (15)	
L	Virgin PEEK
Inner Seal Material (16)	
H	HNBR
V	Viton
A	TFM
G	Expanded graphite

Outer Seal Material (17)	
G	Expanded graphite
A	TFM
H	HNBR
V	Viton
End connections (19-22)	
CTM	Conned & Threaded Medium pressure
CTH	Conned & Threaded High pressure
NPT	ASME B1.20.1 - National Pipe Taper thread
BSPP	ISO228-1 - Pipe Parallel thread
DIN3852	DIN3852 - Pipe Parallel thread
BSPT	EN 10226 - Pipe Taper thread



Hydrogen Service High Pressure Floating Ball 3 Piece Threaded-Body

Technical Information

Operation

Maximum Working Pressure:
 Size 1/4"-1/2" - 500bar (7,250psi)
 Size 3/4"-1 1/2" - Class2500 414bar (6,000psi)
 Working temperature: -60°C up to +260°C (-76°F up to +500°F).

Design

- Threaded body
- Automation-ready with standard ISO 5211 connecting plate
- Total HermetiX Integrity package with:
 ISO15848-1 and API 641 emission standard certificated design
 ISO10497 and API607 fire-safe standard certificated design
 Double body sealing

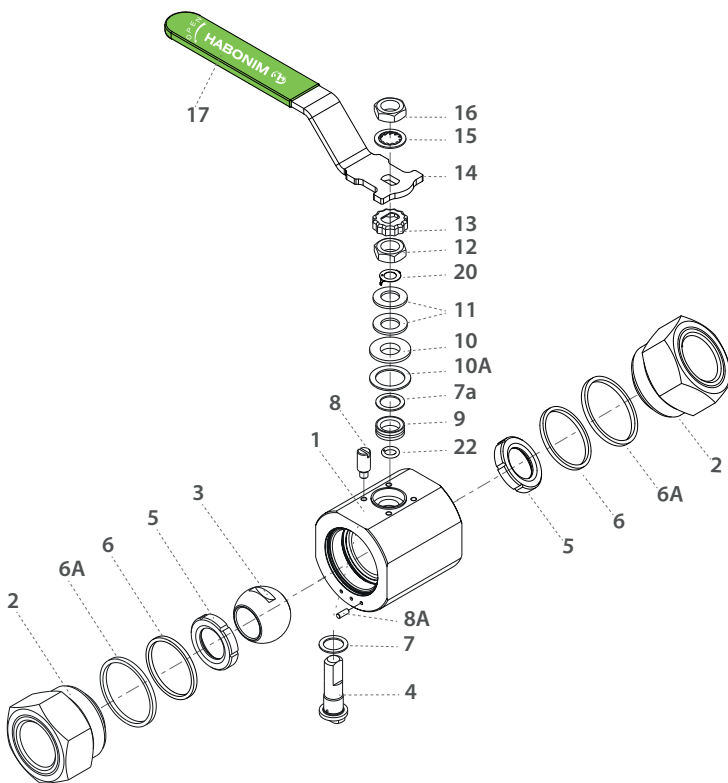
Testing & Certifications

- TPED Certified, up to 414bar (6,000psi) MWP
- 100% shell & inline leak tested
- Marine classification (on demand): DNV GL, LR, BV, ABS, KR,
- RINA, others

Materials

- Stainless steel body & ends
- All materials compatible for Hydrogen use

Components & materials



Item	Description	Material specification	Qty.
1	Body	Acc. Ordering Code	1
2	End	Acc. Ordering Code	2
3	Ball	Acc. Ordering Code	1
4	Stem	Acc. Ordering Code	1
5*	Seat	Acc. Ordering Code	2
6*	Inner seal	Acc. Ordering Code	2
6A*	Outer seal	Acc. Ordering Code	2
7*	Stem thrust seal	PEEK, CF PEEK, PCTFE	1
7a*	Anti-abrasion ring	PEEK, CF PEEK, PCTFE	1
8	Stop pin	S. Steel	1
8A	Dowel Pin	S. Steel	1
9*	Stem seal	CF PTFE, TFM	1
10	Follower	S. Steel	1
10A*	Slide bearing	S. Steel	1
11	Disc spring	S. Steel	2
12	Stem nut	S. Steel	1
13	Locking clip	S. Steel	1
14	Handle	S. Steel	1
15	Serrated washer	S. Steel	1
16	Handle nut	S. Steel	1
17	Sleeve	PVC	1
20	Anti static device	S. Steel	1
22	O-ring	Acc. Ordering Code	1
23	Tag (not shown)	S. Steel	1

* Repair kit components

H24

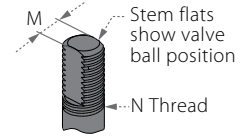
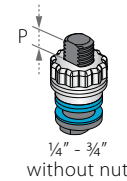
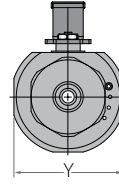
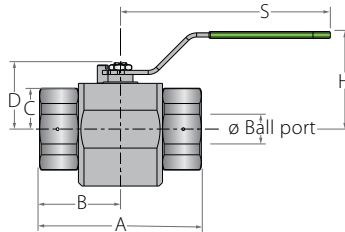
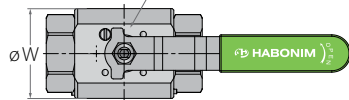
1/4"-1/2" | DN8-DN15 | PN500 (7,250PSI)

3/4"-1 1/2" | DN20-DN40 | CLASS 2500 PN420 (6,000PSI)

Hydrogen Service High Pressure Floating Ball 3 Piece Threaded-Body

Valve dimensions

ISO 5211 Interface



Std. port	Full port	Unit	Ball port	A	B	C	D	H	M	N	P	W	S	Y	weight kg/lb	kv cv
	DN8	mm	11.15	91	45.5	21.50	37.90	42.1	5.54	3/8" UNF	11.1	54	179	45	0.8	4.3
	1/4"	inch	0.44	3.58	1.79	0.84	1.49	1.66	0.22		0.43	2.12	7.05	1.77	1.76	5.00
DN15	DN10	mm	11.15	91	45.5	24.50	37.90	42.1	5.54	3/8" UNF	11.1	54	179	45	0.8	6.9
1/2"	3/8"	inch	0.44	3.58	1.79	0.84	1.49	1.66	0.22		0.43	2.12	7.05	1.77	1.76	8.00
DN20	DN15	mm	14.3	104.25	52.12	23.90	40.30	45	5.54	3/8" UNF	11.1	62	179	60	1.27	10
3/4"	1/2"	inch	0.56	4.10	2.05	0.94	1.59	1.77	0.22		0.43	2.44	7.05	2.36	2.79	12.00
DN25	DN20	mm	20.6	126.6	63.3	37.90	55.60	60.3	7.54	7/16" UNF	15.4	84.5	193	77	2.1	28
1"	3/4"	inch	0.81	4.98	2.49	1.49	2.19	2.37	0.29		0.60	3.32	7.60	3.03	4.63	32.00
DN32	DN25	mm	25.4	137.25	68.62	42.50	60.2	68.7	7.54	7/16" UNF	15.4	93	193	85	2.9	49
1 1/4"	1"	inch	1.00	5.40	2.70	1.67	2.37	2.70	0.29		0.90	3.66	7.60	3.34	6.39	57.00
DN40	DN32	mm	31.8	161.94	80.97	43.55	73.00	81.1	8.7	9/16" UNF	19.6	99	287	95	4.8	69
1 1/2"	1 1/4"	inch	1.50	6.37	3.18	1.71	2.87	3.19	3.19		0.77	3.89	11.30	3.74	10.58	80.00

Ordering Code System

"Mandatory option" options are marked with **green background** | "Standard offer" options are marked with **light green background**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	30
0	5			F	H	2	4	W	-	6	6	M	M	L	H	G	/	N	P	T								
Size		Features				Series		Design	Body/Ends material			Ball material	Stem material		Seat material	Inner Seal	Outer Seal	End Connection				Special features						

Size (1-2)		MWP bar (psi)		
Code	inch	mm	414 (6,000)	500 (7,250)
02	1/4"	8	+	+
03	3/8"	10	+	+
05	1/2"	15	Full port	Std. port only
07	3/4"	20	+	n/a
10	1"	25	+	n/a
12	1 1/4"	32	+	n/a
15	1 1/2"	40	Std. port only	n/a

Features (3-6)	
H	Hydrogen Service
F	Fire safe
B	Full port
O	Clean assembly for O2 service

Series (7-8)	
24	HP Float 3 piece

Design (9)	
W	Total HermetiX Integrity package

Body/Ends material (11-12)	
6	S. Steel 316L

Ball material (13)	
M	High Strength S. Steel

Stem material (14)	
M	High Strength S. Steel

Seat material (15)	
L	Virgin PEEK

Inner Seal Material (16)	
H	HNBR
V	Viton
T	PTFE
G	Expanded graphite

Outer Seal Material (17)	
G	Expanded graphite
T	PTFE
H	HNBR
V	Viton

End connections (19-22)	
Threaded Ends	
NPT	ASME B1.20.1 - National Pipe Taper thread
BSPP	ISO228-1 - Pipe Parallel thread
DIN3852	DIN3852 - Pipe Parallel thread
BSPT EN 10226	10226 - Pipe Taper thread
AS5202	AS 5202 on-face gasket sealing threaded connection
MNPT	Male NPT
SAE J1926-A	SAE J1926-A
Welded	
XBW80	Extended butt weld ends (sch80)