



Rua do Progresso, lote 15
4760-841 Vilarinho das Cambas
V.N. Famalicão- Portugal



Tel: +351 252 303 210
www.vincovalves.com
comercial@vincovalves.com

**HYDROGEN
BALL VALVES**
FLOWING YOUR ENERGY

COMPANY



1 TECHNICAL INFORMATION 4-7

- General Features
- Fire Safe Design
- Fugitive Emissions
- Anti Explosive Decompression
- Hydrogen Embrittlement Resistance
- Cleanliness and Packing
- Contamination Free System

2 VALVES SERIES 8-21

INDUSTRIAL



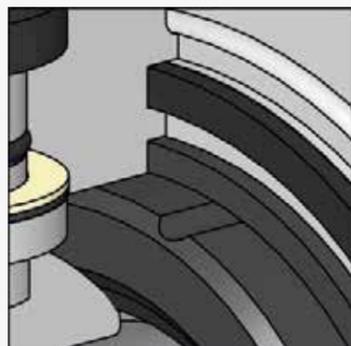
FUELING



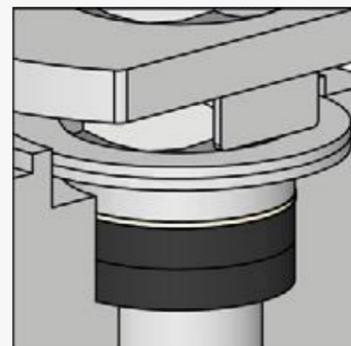
3 OPTIONS 22-23

- Lockable Handle
- Stem Extension
- Fire Fail Safe
- Double Block Bleed
- Bracket and Actuator
- Other Series

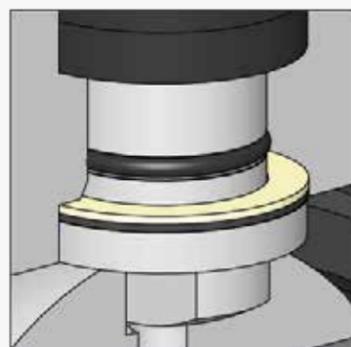
GENERAL FEATURES



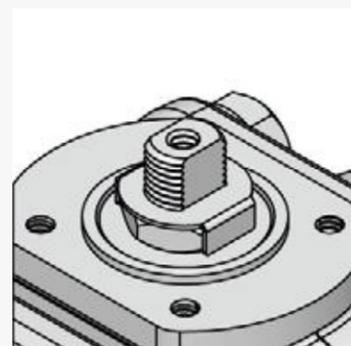
Double encapsulated body seals for extra resistance and tightness performance



Self-adjust live loaded packing system ensures longer service without maintenance and spare parts replacement

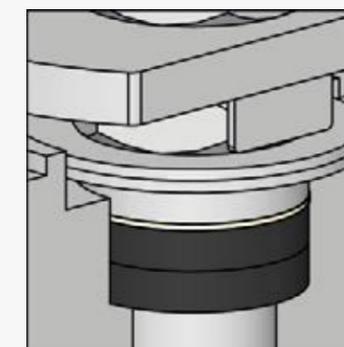
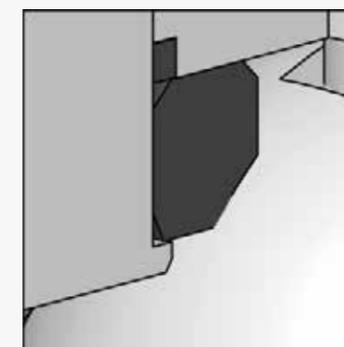
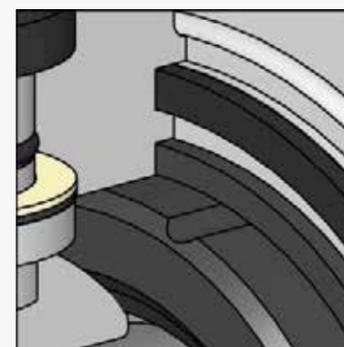


Anti-static device ensures the electrical conductivity between body, end, ball and stem according to European directive 2014/34/EU (ATEX)



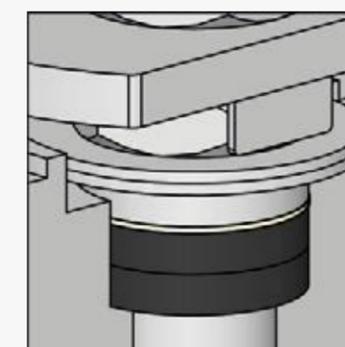
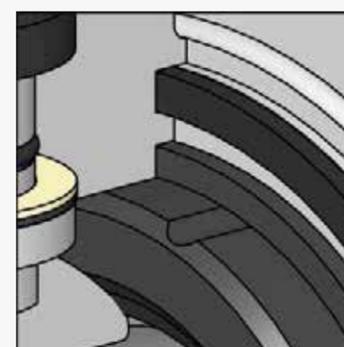
Top flange fitted with ISO 5211 providing universal connection for automation

FIRE SAFE DESIGN



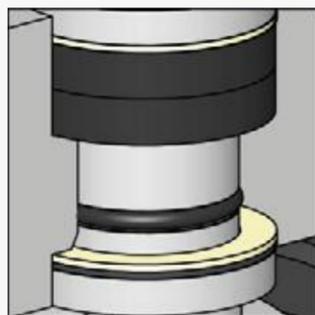
Firesafe design according to ISO 10497 and API 607 for critical services. Primary layer of TFE prevents graphite contamination into the media assuring the cleanliness of the processes. A metal backseat system allows the sealing in the event of a fire ensuring the tightness of the process.

FUGITIVE EMISSIONS



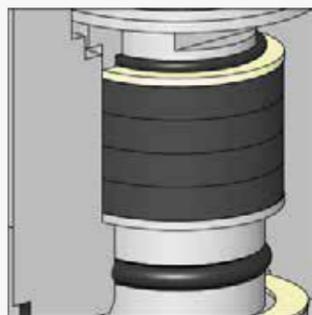
Fugitive emissions design according to ISO 15848 and TA LUFT / VDI 2440 reducing the potentially emission to the environment, the hydrogen losses and the risk of ignition.

ANTI EXPLOSIVE DECOMPRESSION

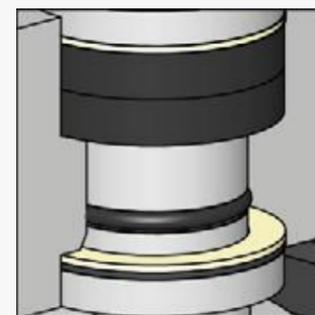


Explosive Decompression (ED) or Rapid Gas Decompression (RGD) is a failure mechanism associated with high pressure gas media. High pressure gas can reach easily the o’ring chambers. When the pressure is released, as when the valve is closed, the remaining gas located in the chamber expands causing fissures and o’ring failure.

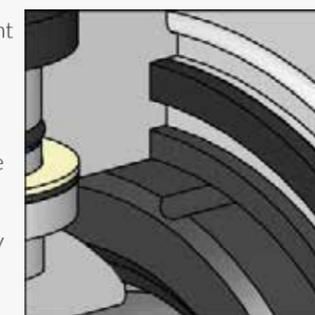
The best solution to avoid this failure mechanism is the application of Anti Explosive Decompression (AED) o’rings. These o’rings applied in hydrogen valves are tested and certified in accordance with the requirements of norsok M-710 ensuring high safety levels.



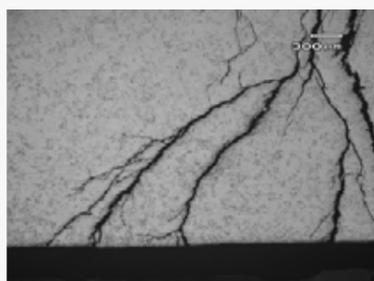
CONTAMINATION FREE SYSTEM



High purity hydrogen is an important requirement in some processes to guarantee high levels of quality and process performance and efficiency while keeping the valve with the firesafe safe design. To perform this the valves are designed with double insulation system where the first line is made from inert polymeric materials isolating the hydrogen media from any contact with graphite parts. This design is capable to avoid any contamination ensuring the high purity levels of the processes.



HYDROGEN EMBRITTLEMENT RESISTANCE



The metallic pressure retaining and wetted parts are stainless steel ensuring high levels of hydrogen embrittlement resistance.

OPTIONAL CLEANLINESS AND PACKING



The valves can be degreased to achieve high levels of cleanliness and prevent hydrogen autoignition in service. Afterwards this the valves are packed and sealed in individual protective plastic bags with silica to prevent contamination and humidity problems.

CERTIFICATION

CONSTRUCTION STANDARDS

TEST STANDARDS

Fuelling Stations Certification acc. to ISO 19880-3 (intended process)

CE Certification acc. to TPED 2010/35/EU (intended process)

CE Certification acc. to PED 2014/68/EU

Fire Safe Design acc to API 607 Ed.6 / ISO 10497

CE Certification acc. to ATEX II 2GD 2014/34/EU

Company Quality System Certified acc. to ISO 9001

ASME B16.34

ISO 17292-1

ASME B16.25 & B36.10M

ASME B16.11

ASME B1.20.1

ISO 7.1

ISO 19 880-3

Test applied:

Hydrostatic shell and seat test

Pneumatic shell and seat test

Helium Test

Available Upon Request

EN 10204 type 3.1 certificate is available for each valve

CFH Series

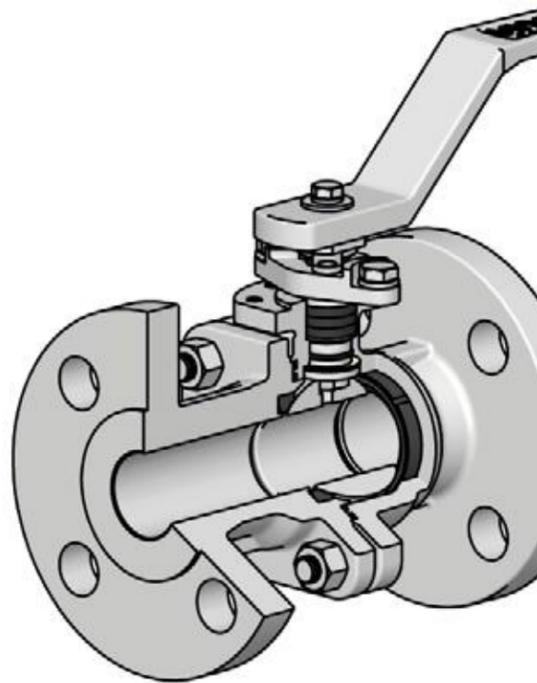
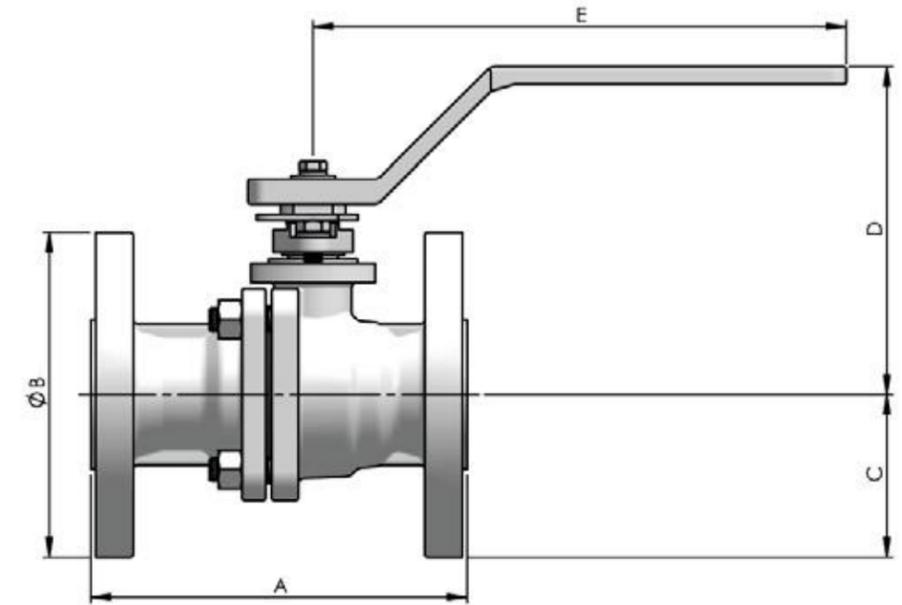
2 Way Floating
Investment Cast

The CFH Series is a cast floating ball valve specifically designed for industrial hydrogen applications up to PN40 (40 bar / 4 MPa). Concerning the high flammability of the hydrogen, the design includes some important considerations about safety, low emissions, internal tightness and contamination issues. These requirements are achieved through a special design of the sealing systems with the inclusion of a double insulation layer. The first layer is composed of polymeric materials and the secondary by expanded graphite. The first layer ensures high levels of tightness and prevents any contamination with small particles that may be released by the graphite seals. On the other hand, graphite layers are the best solution to increase the tightness capabilities and to provide the firesafe design increasing the safety and the quality of the solution. In addition, the packing system is equipped with a RGD o-ring to prevent failures due to high decompressions which may lead to massive leakage and hydrogen contamination on the line. These combined solution helps providing clean hydrogen to the applications by ensuring high levels of safety, low emissions, internal tightness and no contamination. It is available with welding or threaded connections making this series the best solutions for industrial low pressure systems.

DIN PN 16 / 40
Full Bore: DN15 - 200

INDUSTRIAL RANGE

DESIGN TEMPERATURE
-50°C to 240°C



| PART | STANDARD | |
|-----------------|--------------------|-----------------|
| | CARBON STEEL | STAINLESS STEEL |
| Body / Ends | 1.0619 | 1.4408 |
| TRIM | Ball | 1.4408 |
| | Stem | 1.4401 / 4 |
| Seats | C-RPTFE | |
| O'ring | FKM AED | |
| Packing & Seals | C-RPTFE & Graphite | |
| Bolting | Gr 8.8 | A4 CL70 |

| DN | PN | BORE | A | | | B | C | D | E | ISO 5211 |
|-----|----|------|-----|-----|-----|-----|------|------|-----|----------|
| | | | F1 | F4 | F5 | | | | | |
| 65 | 16 | 62 | 290 | 170 | - | 185 | 92.5 | 185 | 360 | F07 |
| 80 | 16 | 75 | 310 | 180 | - | 200 | 100 | 200 | 360 | F10 |
| 100 | 16 | 100 | 350 | 190 | - | 220 | 110 | 235 | 480 | F10 |
| 150 | 16 | 150 | - | - | 350 | 300 | 150 | GEAR | | F14 |
| 200 | 16 | 201 | - | - | 400 | 430 | 215 | GEAR | | F16 |

| DN | PN | BORE | A | | B | C | D | E | ISO 5211 |
|-----|----|------|-----|-----|-----|-------|-----|-----|----------|
| | | | F1 | F4 | | | | | |
| 15 | 40 | 15.1 | 130 | 115 | 95 | 47.5 | 95 | 150 | F04 |
| 20 | 40 | 20.6 | 150 | 120 | 105 | 52.5 | 105 | 180 | F04 |
| 25 | 40 | 25.4 | 160 | 125 | 115 | 57.5 | 110 | 180 | F04 |
| 32 | 40 | 31.8 | 180 | 130 | 140 | 70 | 130 | 210 | F05 |
| 40 | 40 | 38.1 | 200 | 140 | 150 | 75 | 135 | 210 | F05 |
| 50 | 40 | 49 | 230 | 150 | 165 | 82.5 | 165 | 300 | F07 |
| 65 | 40 | 62 | 290 | 170 | 185 | 92.5 | 185 | 360 | F07 |
| 80 | 40 | 75 | 310 | 180 | 200 | 100 | 200 | 360 | F10 |
| 100 | 40 | 00 | 350 | 190 | 235 | 117.5 | 235 | 480 | F10 |

CFH Series

2 Way Floating
Investment Cast

The CFH Series is a cast floating ball valve specifically designed for industrial hydrogen applications up to CL300 (750 psi / 4.9 MPa). Concerning the high flammability of the hydrogen, the design includes some important considerations about safety, low emissions, internal tightness and contamination issues. These requirements are achieved through a special design of the sealing systems with the inclusion of a double insulation layer. The first layer is composed of polymeric materials and the secondary by expanded graphite. The first layer ensures high levels of tightness and prevents any contamination with small particles that may be released by the graphite seals. On the other hand, graphite layers are the best solution to increase the tightness capabilities and to provide the firesafe design increasing the safety and the quality of the solution. In addition, the packing system is equipped with a RGD o-ring to prevent failures due to high decompressions which may lead to massive leakage and hydrogen contamination on the line. These combined solution helps providing clean hydrogen to the applications by ensuring high levels of safety, low emissions, internal tightness and no contamination. It is available with welding or threaded connections making this series the best solutions for industrial low pressure systems.

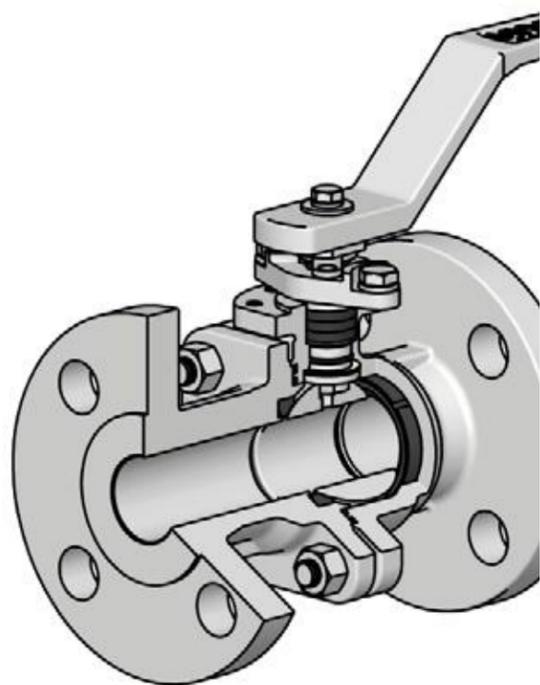
ASME CL 150 / 300

Full Bore: ½" - 8"

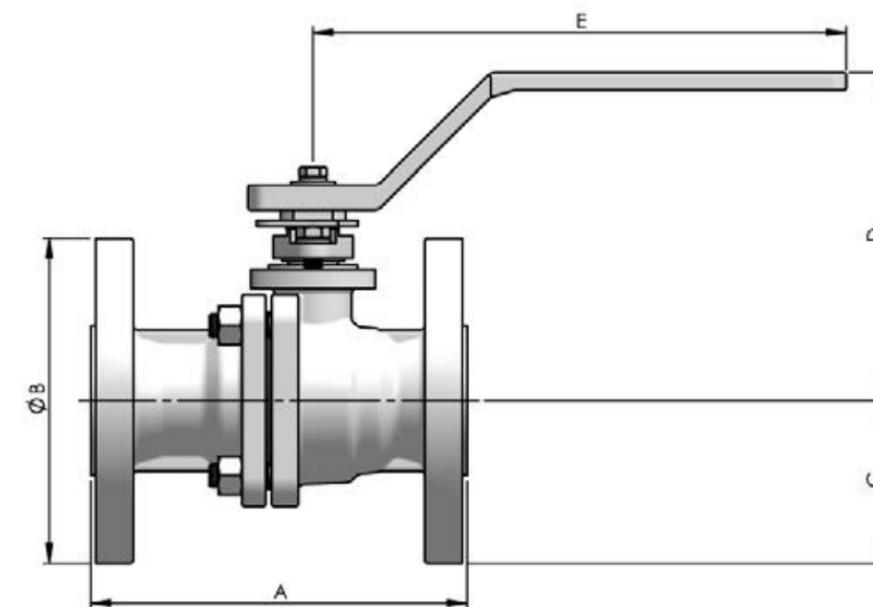
INDUSTRIAL RANGE

DESIGN TEMPERATURE

-50°C to 240°C



| PART | STANDARD | |
|-----------------|--------------------|-------------------|
| | CARBON STEEL | STAINLESS STEEL |
| Body / Ends | A216 WCB | A351 CF8M |
| TRIM | Ball | A351 CF8M |
| | Stem | A479 316/L |
| Seats | C-RPTFE | |
| O'ring | FKM AED | |
| Packing & Seals | C-RPTFE & Graphite | |
| Bolting | A193 Gr. B7 | A193 Gr. B8M cl.2 |



| DN | CLASS | BORE | A | B | C | D | E | kg | ISO 5211 |
|-----|-------|------|-----|-----|-------|------|-----|------|----------|
| ½" | 150 | 15.1 | 108 | 90 | 45 | 95 | 150 | 1.8 | F04 |
| ¾" | 150 | 20.6 | 117 | 100 | 50 | 105 | 180 | 2.7 | F04 |
| 1" | 150 | 25.4 | 127 | 110 | 55 | 110 | 180 | 3.5 | F04 |
| 1½" | 150 | 38.1 | 165 | 125 | 62.5 | 135 | 210 | 6.5 | F05 |
| 2" | 150 | 49 | 178 | 150 | 75 | 165 | 300 | 12 | F07 |
| 2½" | 150 | 62 | 190 | 180 | 90 | 185 | 360 | 18 | F07 |
| 3" | 150 | 75 | 203 | 190 | 95 | 200 | 360 | 24.5 | F10 |
| 4" | 150 | 100 | 229 | 230 | 115 | 235 | 480 | 40 | F10 |
| 6" | 150 | 150 | 394 | 280 | 140 | GEAR | | 120 | F14 |
| 8" | 150 | 201 | 457 | 345 | 172.5 | GEAR | | 220 | F16 |

| DN | CLASS | BORE | A | B | C | D | E | kg | ISO 5211 |
|-----|-------|------|-----|-----|-------|------|-----|-----|----------|
| ½" | 300 | 15.1 | 140 | 95 | 47.5 | 95 | 150 | 2.3 | F04 |
| ¾" | 300 | 20.6 | 152 | 115 | 57.5 | 105 | 180 | 3.7 | F04 |
| 1" | 300 | 25.4 | 165 | 125 | 62.5 | 110 | 180 | 5 | F04 |
| 1½" | 300 | 38.1 | 190 | 155 | 77.5 | 135 | 210 | 9.5 | F05 |
| 2" | 300 | 49 | 216 | 165 | 82.5 | 165 | 300 | 14 | F07 |
| 2½" | 300 | 62 | 241 | 190 | 95 | 185 | 360 | 21 | F07 |
| 3" | 300 | 75 | 282 | 210 | 105 | 200 | 360 | 31 | F10 |
| 4" | 300 | 100 | 305 | 255 | 127.5 | 235 | 480 | 53 | F10 |
| 6" | 300 | 150 | 403 | 320 | 160 | GEAR | | 145 | F14 |
| 8" | 300 | 201 | 502 | 380 | 190 | GEAR | | 270 | F16 |

XFH Series

2 Way Floating
Investment Cast

The XFH Series is a cast floating ball valve specifically designed for industrial hydrogen applications up to CL600 (1500 psi / 9.9 MPa). Concerning the high flammability of the hydrogen, the design includes some important considerations about safety, low emissions, internal tightness and contamination issues. These requirements are achieved through a special design of the sealing systems with the inclusion of a double insulation layer. The first layer is composed of polymeric materials and the secondary by expanded graphite. The first layer ensures high levels of tightness and prevents any contamination with small particles that may be released by the graphite seals. On the other hand, graphite layers are the best solution to increase the tightness capabilities and to provide the firesafe design increasing the safety and the quality of the solution. In addition, the packing system is equipped with a RGD o-ring to prevent failures due to high decompressions which may lead to massive leakage and hydrogen contamination on the line. These combined solution helps providing clean hydrogen to the applications by ensuring high levels of safety, low emissions, internal tightness and no contamination. It is available with welding or threaded connections making this series the best solutions for industrial low pressure systems.

ASME CL 300 / 400 / 600

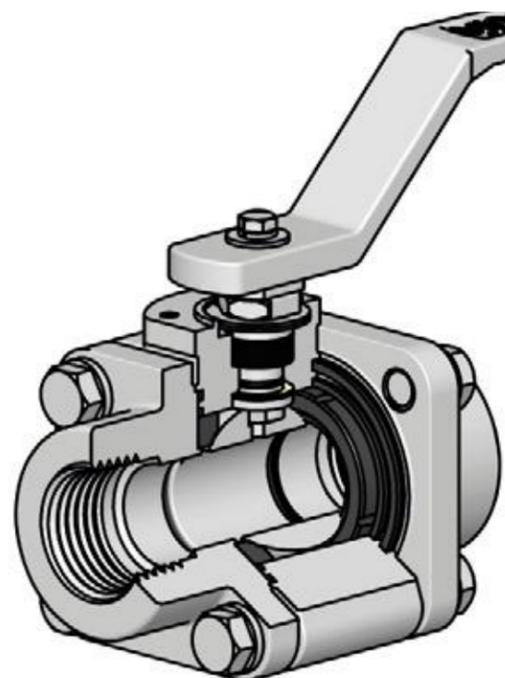
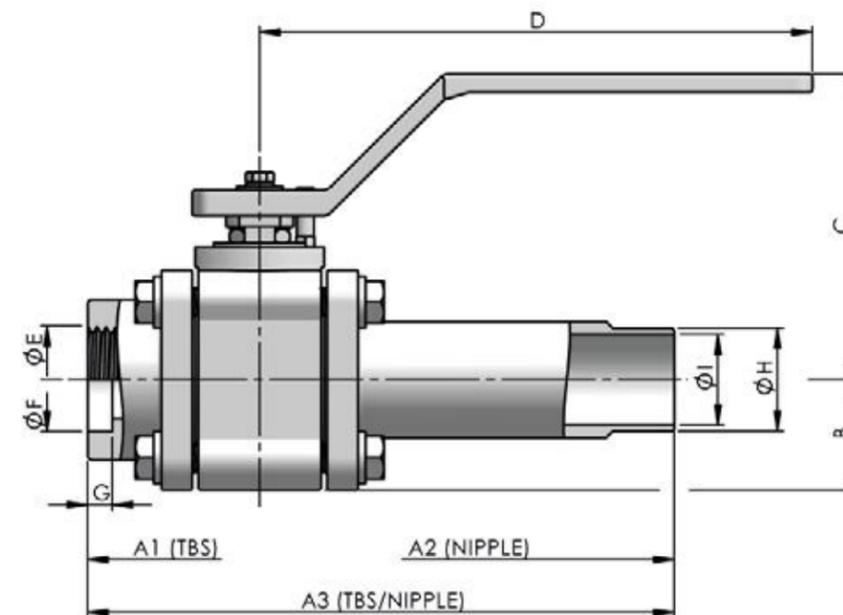
Full Bore: 3/8" - 4"

Reduced Bore: 1/2" - 4"

INDUSTRIAL RANGE

DESIGN TEMPERATURE

-50°C to 240°C



| PART | STANDARD | |
|-----------------|--------------------|-------------------|
| | CARBON STEEL | STAINLESS STEEL |
| Body / Ends | A216 WCB | A351 CF3M |
| TRIM | Ball | A351 CF8M |
| | Stem | A479 316/L |
| Seats | C-RPTFE | |
| O'ring | FKM AED | |
| Packing & Seals | C-RPTFE & Graphite | |
| Bolting | A193 Gr. B7 | A193 Gr. B8M cl.2 |

| DN | CLASS | BORE | A1 | A2 | A3 | B | C | D | E | F | G | H | I | kg | ISO 5211 | | |
|--------|-------|------|-----|-----|-------|------|-----|-----|------------------------------------|---|---|---|---|---------|----------|-------------|-----|
| 3/8" | 600 | 11.9 | 70 | - | - | 24 | 75 | 150 | NPT / BSPT SW BW & BW Nipple | | | | | | | | |
| 1/2" | 600 | 15.1 | 75 | 250 | 162.5 | 26.5 | 80 | 150 | | | | | | | | 1 | F03 |
| 3/4" | 600 | 20.6 | 90 | 260 | 175 | 32.5 | 95 | 180 | | | | | | | | 1.2 / 1.6 | F03 |
| 1" | 600 | 25.4 | 100 | 270 | 185 | 36 | 100 | 180 | | | | | | | | 2 / 2.5 | F04 |
| 1 1/4" | 600 | 31.8 | 115 | 280 | 197.5 | 43 | 120 | 210 | | | | | | | | 3 / 3.5 | F04 |
| 1 1/2" | 600 | 38.1 | 125 | 290 | 207.5 | 48 | 125 | 210 | | | | | | | | 4.5 / 6 | F05 |
| 2" | 600 | 49 | 165 | 310 | 237.5 | 72 | 145 | 300 | | | | | | | | 6 / 7 | F05 |
| 2 1/2" | 400 | 62 | 190 | 330 | 260 | 87 | 175 | 360 | | | | | | | | 10.5 / 11.5 | F07 |
| 3" | 400 | 75 | 215 | 350 | 282.5 | 97 | 190 | 360 | | | | | | | | 17.5 / 19 | F07 |
| 4" | 300 | 100 | 265 | 390 | 327.5 | 122 | 230 | 480 | | | | | | | | 25.5 / 26.5 | F10 |
| | | | | | | | | | | | | | | 45 / 47 | F10 | | |

SFH Series

2 Way Floating
Forging

The SFH Series is a forged floating ball valve specifically designed for industrial hydrogen applications up to CL800 (136 bar / 13.6 MPa). Concerning the high flammability of the hydrogen, the design includes some important considerations about safety, low emissions, internal tightness and contamination issues. These requirements are achieved through a special design of the sealing systems with the inclusion of a double insulation layer. The first layer is composed of polymeric materials and the secondary by expanded graphite. The first layer ensures high levels of tightness and prevents any contamination with small particles that may be released by the graphite seals. On the other hand, graphite layers are the best solution to increase the tightness capabilities and to provide the firesafe design increasing the safety and the quality of the solution. In addition, the packing system is equipped with a RGD o'ring to prevent failures due to high decompressions which may lead to massive leakage and hydrogen contamination of the line. These combined solution help providing clean and true green hydrogen to the applications by ensuring high levels of safety, low emissions, internal tightness and no contamination. It is available with welding or threaded connections making this series the best solutions for compact and permanent systems.

ASME CL 800

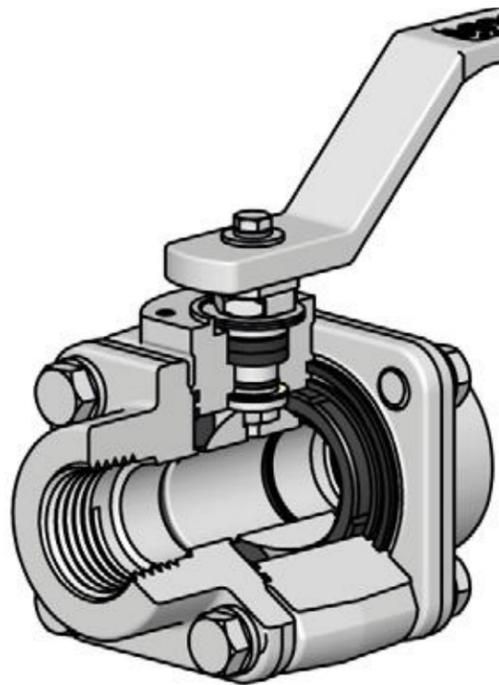
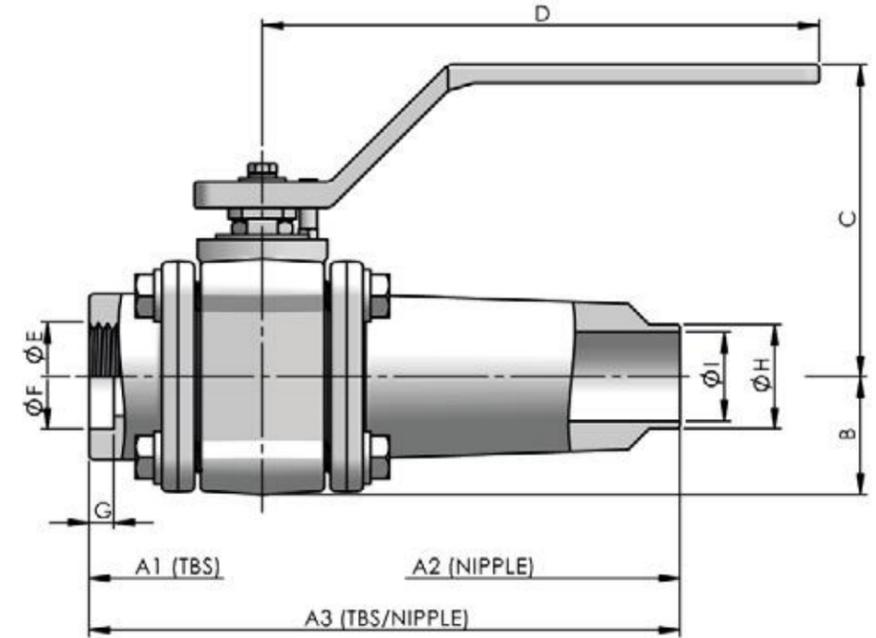
Full Bore: ½" - 1½"

Reduced Bore: ¾" - 2"

INDUSTRIAL RANGE

DESIGN TEMPERATURE

-50°C to 240°C



| PART | STANDARD | |
|-----------------|------------------------|-------------------|
| | CARBON STEEL | STAINLESS STEEL |
| Body / Ends | A105 N / A350 LF2 cl.1 | A182 F316/L |
| TRIM | Ball | A351 CF8M |
| | Stem | A479 316/L |
| Seats | C-RPTFE | |
| O'ring | FKM AED | |
| Packing & Seals | C-RPTFE & Graphite | |
| Bolting | A193 Gr. B7 | A193 Gr. B8M cl.2 |

| DN | CLASS | BORE | A1 | A2 | A3 | B | C | D | E | F | G | H | I | kg | ISO 5211 |
|-----|-------|------|-----|-----|-------|------|-----|-----|------------------------------------|---|---|---|---|-----------|----------|
| ½" | 800 | 15.1 | 75 | 250 | 162.5 | 27.5 | 80 | 150 | NPT / BSPT SW BW & BW Nipple | | | | | 1.5 / 2.5 | F03 |
| ¾" | 800 | 20.6 | 90 | 260 | 175 | 33.5 | 95 | 180 | | | | | | 2.5 / 3.5 | F04 |
| 1" | 800 | 25.4 | 100 | 270 | 185 | 37 | 100 | 180 | | | | | | 3 / 5 | F04 |
| 1¼" | 800 | 31.8 | 115 | - | - | 44 | 120 | 210 | | | | | | 5 | F05 |
| 1½" | 800 | 38.1 | 125 | 290 | 207.5 | 49 | 125 | 210 | | | | | | 7 / 9 | F05 |

HFH Series

2 Way Floating
Barstock / Forging

The HFH Series is a barstock floating ball valve specifically designed for hydrogen fueling applications up to CL1500 (3600 psi / 24.8 MPa). Concerning the high flammability of the hydrogen, the design includes some important considerations about safety, low emissions, internal tightness and contamination issues. These requirements are achieved through a special design of the sealing systems with the inclusion of a double insulation layer. The first layer is composed of polymeric materials and the secondary by expanded graphite. The first layer ensures high levels of tightness and prevents any contamination with small particles that may be released by the graphite seals. On the other hand, graphite layers are the best solution to increase the tightness capabilities and to provide the firesafe design increasing the safety and the quality of the solution. In addition, the packing system is equipped with a RGD o'ring to prevent failures due to high decompressions which may lead to massive leakage and hydrogen contamination on the line. These combined solution helps providing clean hydrogen to the applications by ensuring high levels of safety, low emissions, internal tightness and no contamination. It is available with welding or threaded connections making this series the best solutions for high pressure fueling systems.

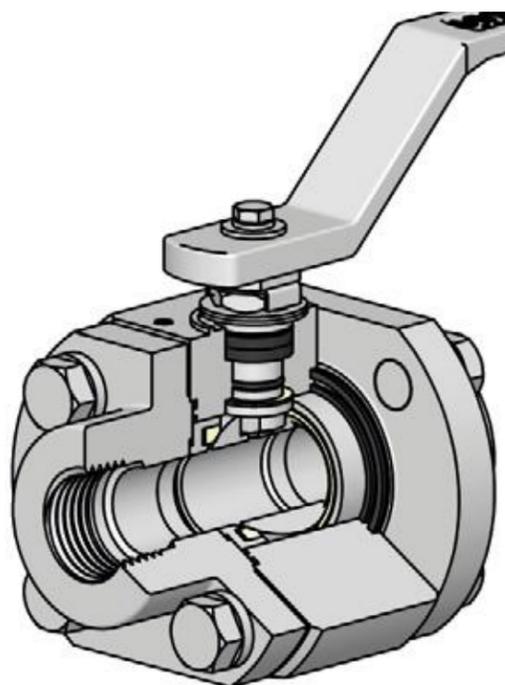
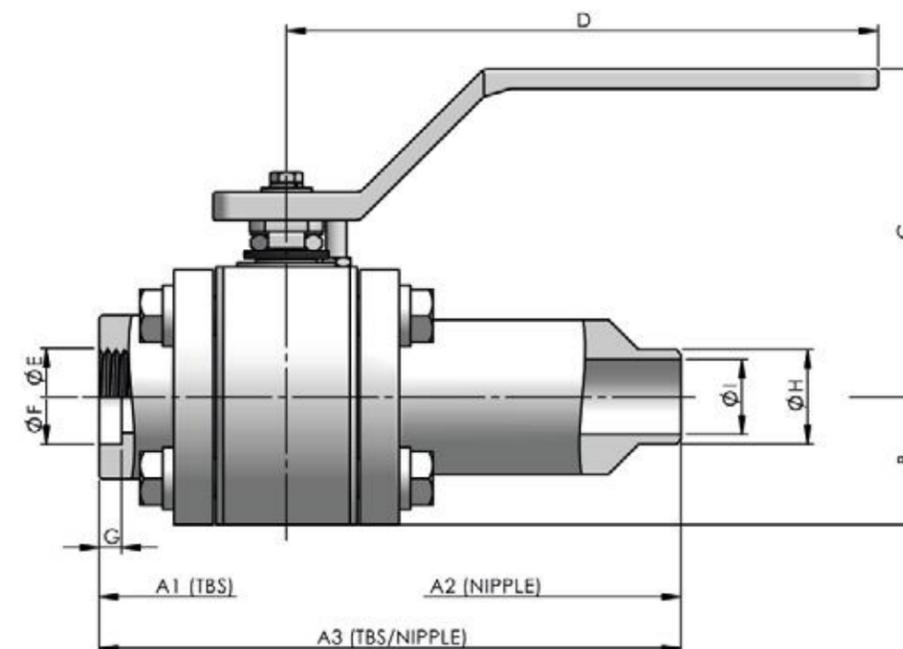
ASME CL1500

Full Bore: ½" - 1½"
Reduced Bore: ¾" - 2"

FUELING RANGE

DESIGN TEMPERATURE

-50°C to 280°C



| PART | | STANDARD STAINLESS STEEL |
|-----------------|------|-----------------------------|
| Body / Ends | | A479 316/L |
| TRIM | Ball | HS. ST. ST. |
| | Stem | HS. ST. ST. |
| Seats | | PEEK |
| O'ring | | FKM AED |
| Packing & Seals | | C-RPTFE & Graphite |
| Bolting | | A193 Gr. B8M cl.2 |

| DN | CLASS | BORE | A1 | A2 | A3 | B | C | D | E | F | G | H | I | kg | ISO 5211 |
|-----|-------|------|-----|-----|-------|------|-----|-----|------------------------------------|---|---|---|---|-------------|----------|
| ½" | 1500 | 15.1 | 90 | 260 | 175 | 33.5 | 95 | 180 | NPT / BSPT SW BW & BW Nipple | | | | | 3 / 4 | F04 |
| ¾" | 1500 | 20.6 | 105 | 270 | 187.5 | 37 | 100 | 180 | | | | | | 4 / 6 | F04 |
| 1" | 1500 | 25.4 | 120 | 280 | 200 | 45.5 | 115 | 210 | | | | | | 7 / 9 | F05 |
| 1¼" | 1500 | 31.8 | 140 | 290 | - | 55.5 | 125 | 210 | | | | | | 10 / 13 | F05 |
| 1½" | 1500 | 38.1 | 160 | 305 | 232.5 | 66.5 | 140 | 300 | | | | | | 15.5 / 19.5 | F07 |

HFH Series

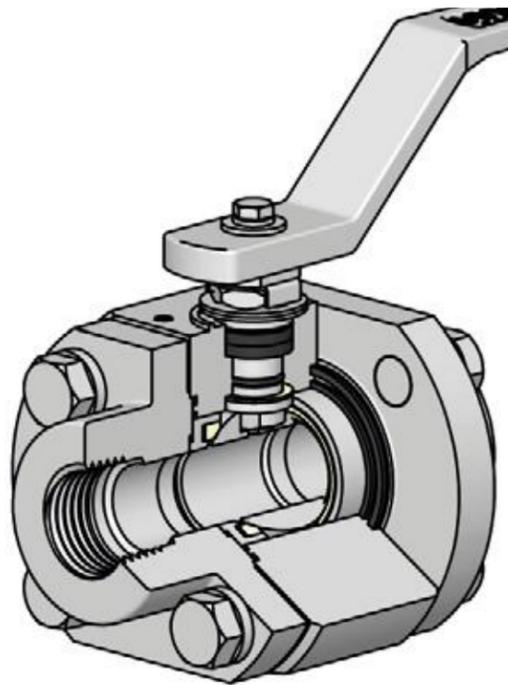
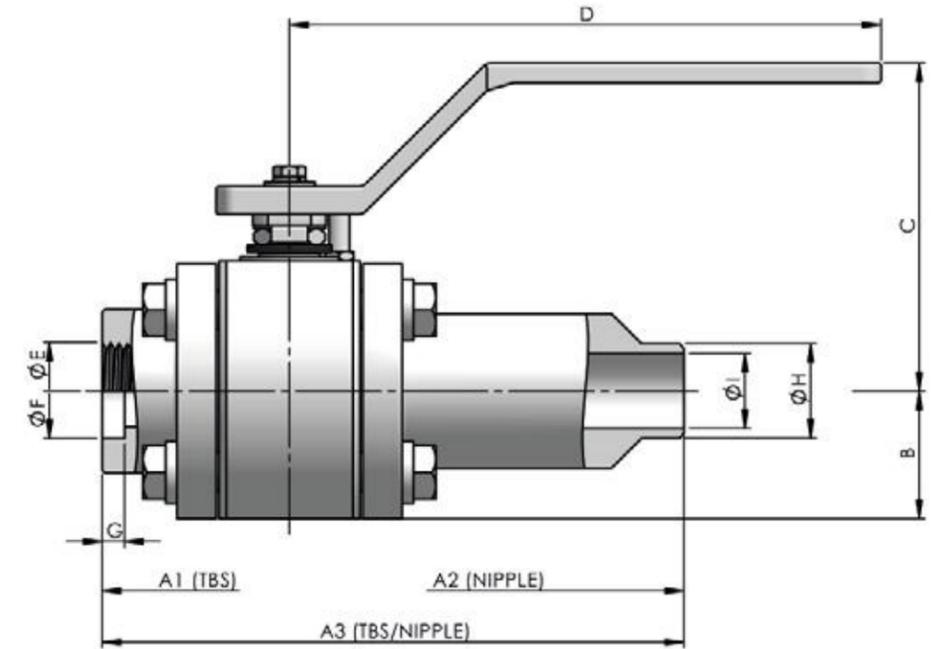
2 Way Floating
Barstock / Forging

The HFH Series is a barstock floating ball valve specifically designed for hydrogen fueling applications up to CL2500 (6000 psi / 41.3 MPa). Concerning the high flammability of the hydrogen, the design includes some important considerations about safety, low emissions, internal tightness and contamination issues. These requirements are achieved through a special design of the sealing systems with the inclusion of a double insulation layer. The first layer is composed of polymeric materials and the secondary by expanded graphite. The first layer ensures high levels of tightness and prevents any contamination with small particles that may be released by the graphite seals. On the other hand, graphite layers are the best solution to increase the tightness capabilities and to provide the firesafe design increasing the safety and the quality of the solution. In addition, the packing system is equipped with a RGD o'ring to prevent failures due to high decompressions which may lead to massive leakage and hydrogen contamination on the line. These combined solution helps providing clean hydrogen to the applications by ensuring high levels of safety, low emissions, internal tightness and no contamination. It is available with welding or threaded connections making this series the best solutions for very high pressure fueling systems.

ASME CL2500
Standard Bore: ½" - 1"

FUELING RANGE

DESIGN TEMPERATURE
-50°C to 280°C



| PART | | STANDARD STAINLESS STEEL |
|-----------------|------|-----------------------------|
| Body / Ends | | A479 316/L |
| TRIM | Ball | HS. ST. ST. |
| | Stem | HS. ST. ST. |
| Seats | | PEEK |
| O'ring | | FKM AED |
| Packing & Seals | | C-RPTFE & Graphite |
| Bolting | | A193 Gr. B8M cl.2 |

| DN | CLASS | BORE | A1 | A2 | A3 | B | C | D | E | F | G | H | I | kg | ISO 5211 |
|----|-------|------|-----|-----|-------|------|-----|-----|----------------|----|---|---|---|---------|----------|
| ½" | 2500 | 11.9 | 90 | 260 | 175 | 33.5 | 80 | 150 | NPT / BSPT | SW | | | | 2.5 / 4 | F03 |
| ¾" | 2500 | 15.1 | 105 | 270 | 187,5 | 37 | 95 | 180 | | | | | | 6.5 / 9 | F04 |
| 1" | 2500 | 20.6 | 120 | 280 | 200 | 45.5 | 105 | 180 | BW & BW Nipple | | | | | | F04 |

HFH Series

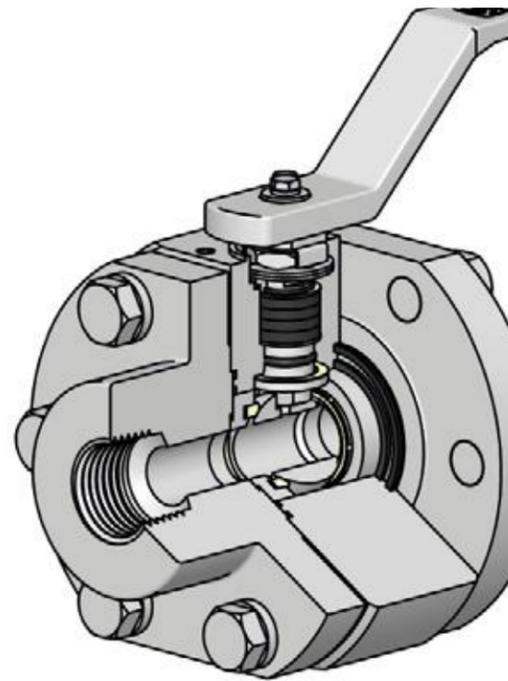
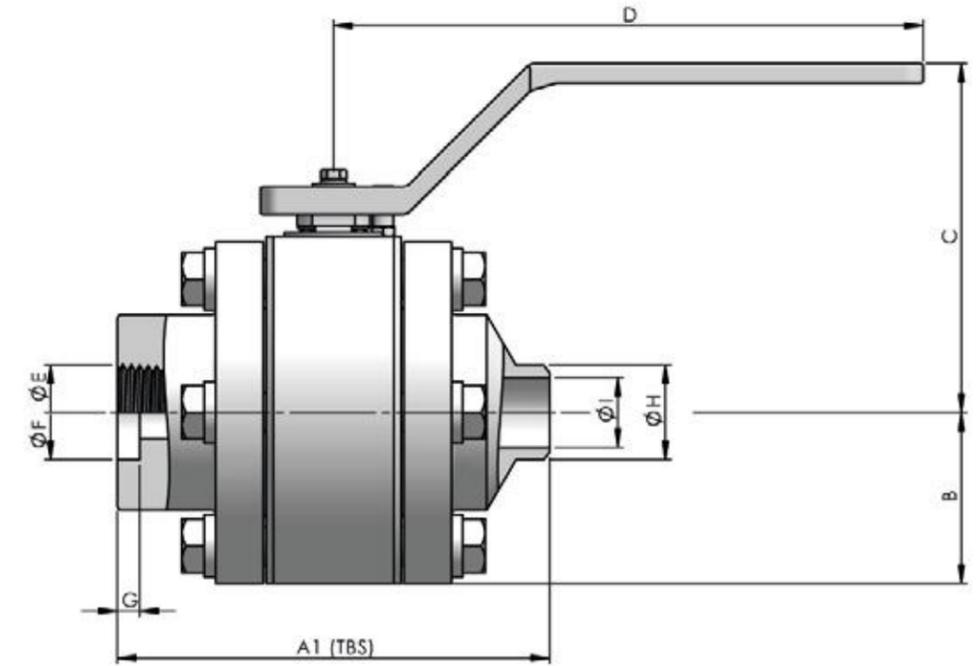
2 Way Floating
Barstock / Forging

The HFH Series is a barstock floating ball valve specifically designed for hydrogen fueling applications up to CL4000 (10000 psi / 68.9 MPa). Concerning the high flammability of the hydrogen, the design includes some important considerations about safety, low emissions, internal tightness and contamination issues. These requirements are achieved through a special design of the sealing systems with the inclusion of a double insulation layer. The first layer is composed of polymeric materials and the secondary by expanded graphite. The first layer ensures high levels of tightness and prevents any contamination with small particles that may be released by the graphite seals. On the other hand, graphite layers are the best solution to increase the tightness capabilities and to provide the firesafe design increasing the safety and the quality of the solution. In addition, the packing system is equipped with a double RGD o'ring to prevent failures due to high decompressions which may lead to massive leakage and hydrogen contamination on the line. These combined solution helps providing clean hydrogen to the applications by ensuring high levels of safety, low emissions, internal tightness and no contamination. It is available with welding or threaded connections making this series the best solutions for ultra high pressure fueling systems.

ASME CL4000
Standard Bore: ½" - 1"

FUELING RANGE

DESIGN TEMPERATURE
-50°C to 280°C



| PART | | STANDARD STAINLESS STEEL |
|-----------------|------|-----------------------------|
| Body / Ends | | A479 316/L |
| TRIM | Ball | HS. ST. ST. |
| | Stem | HS. ST. ST. |
| Seats | | PEEK |
| O'ring | | FKM AED |
| Packing & Seals | | C-RPTFE & Graphite |
| Bolting | | A193 Gr. B8M cl.2 |

| DN | CLASS | BORE | A1 | B | C | D | E | F | G | H | I | kg | ISO 5211 |
|----|-------|------|-----|------|-----|-----|------------|---|---|---|------|-----|----------|
| ½" | 4000 | 9 | 110 | 40 | 90 | 150 | NPT / BSPT | | | | 5 | F04 | |
| ¾" | 4000 | 13 | 125 | 45.5 | 105 | 180 | SW | | | | 7 | F04 | |
| 1" | 4000 | 19 | 140 | 61 | 125 | 210 | BW | | | | 11.5 | F05 | |

MANUAL OPERATION



LOCKABLE HANDLE

The lockable handle is a safety device that prevents the unintended rotation of the obturator due to vibrations, turbulent flows or unauthorized actions leading to potentially severe malfunctions in the process. This occurrence can be prevented by the application of a lockable mechanism to prevent the valve from closing or opening. Small sizes are equipped with a trigger that allows to lock the position of the handle in closed or open position without the need of a padlock. Nevertheless, all sizes can be equipped with a padlock.



STEM EXTENSION

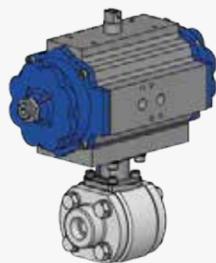
Inaccessible locations, insulation of the piping, extreme temperatures and others are usually conditions found in several processes where easier operation solutions are required. In these kind of applications, a stem extension can be the solution to decrease the restrictions and insure the safe operation of the processes. The standard stem extension is equipped with a secondary stem packing system containing eventual emissions to the atmosphere. Other options are also available upon request.



OVAL HANDLE

The standard handle is sometimes too long to fit in tiny spaces that are available for the valves in a process. An oval handle could be the best way to reduce the size of the valve without losing the operation capabilities. This solution strongly decreases the surrounding space needed for each valve improving the compactness of the installation.

AUTOMATIC OPERATION

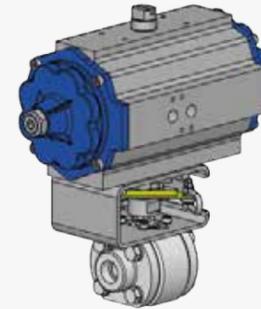


BRACKET AND ACTUATOR

Automation of the processes is a growing and necessary investment to reduce the manual interventions, which will prevent the eventual mistakes by a manual operation and enhance the processes to better performances. Following these requirements, the valves can also be fully automated. For instance, the valve can be equipped with a pneumatic actuator, a solenoid valve and a limit switch. These accessories will allow the remote actuation of the valve and the control of its position.

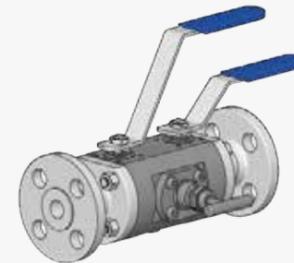


SPECIFIC APPLICATIONS



FIRE FAIL SAFE

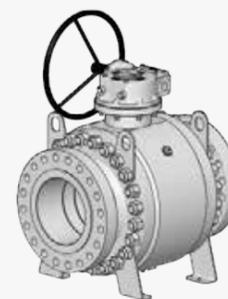
Flammable gases and chemicals are often used in processes across several industries. To prevent the widespread of a fire event in these facilities, a fire fail safe valve may be used as a safety device, which will trigger an automatic emergency shutoff. The fire fail safe valve is designed to be activated at the set temperature of the system by the fusible link breakage. This breakage will lead to the line shutoff.



DOUBLE BLOCK AND BLEED

Some processes require repetitive sampling for analysis to guarantee high quality levels of the process products. The best way to achieve this is the installation of a DBB valves. This kind of valves consists of two ball valves used to trap the fluid and a middle valve used to extract the sample. With this kind of valves, usually applied as a forked section, it is possible to trap and remove a sample from the system without stopping the process. This valve type is also frequently used for instrumentation protection.

SPECIAL SERVICE



TRUNNION DESIGN

Severe service or higher sizes demands special design to achieve high levels of quality and safety insurance. The trunnion version is the best solution to improve reliability and the life time of the valve without maintenance due to its unique seat design and ball fixation. These features reduces the misalignment, extra torque and wear when compared with floating version.