

API6D / 6DSS / 6A / 17D

BALL AND GATE VALVES

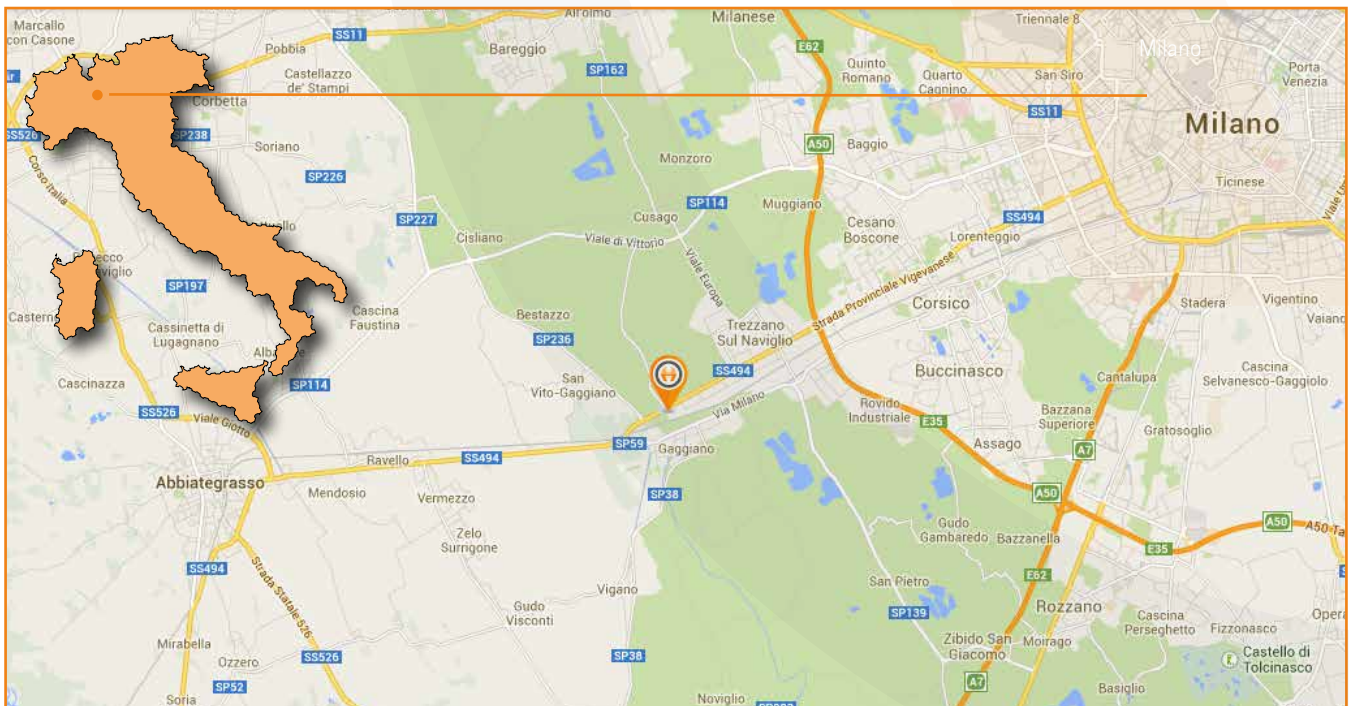
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for further information about HIT VALVE's products and for sales enquiries, contact our Sales department at sales@hitvalve.com



COMPANY PROFILE

HIT VALVE is a privately owned Italian supplier of engineered valve solutions for a wide spectrum of industrial applications.

Our **range of products** includes:

-  TRUNNION MOUNTED BALL VALVES
side-entry, top-entry and fully-welded design
-  THROUGH-CONDUIT SLAB GATE VALVES
fabricated, forged or cast body
-  DOUBLE EXPANDING GATE VALVES
-  CONTROL BALL VALVES

For any detail about Control Ball Valves, check our dedicated catalogue.



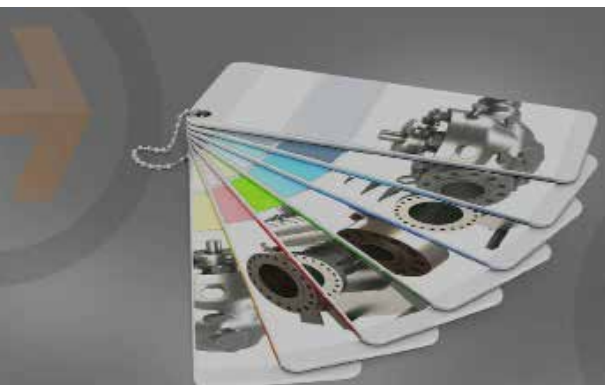
INDUSTRIES

Oil & Gas
 Exploration & Production
 Pipelines & Processing Plants
 Refining & Petrochemical
 LNG
 Power
 FPSO & Shipbuilding

MAIN APPLICATIONS

platform water systems
 flare systems
 ballast systems
 subsea umbilical riser and flowlines
 gas compression/treatment systems
 production separation systems
 metering skids
 storage/manifold
 pig launch
 bypass
 mainline pipeline
 line break detection systems
 pig traps
 pump/compression stations
 HIPPS
 slurry services
 FPSO turret

WHY HIT VALVE



INNOVATION

ALWAYS LOOKING AHEAD, BACKED BY EXPERIENCE

Driven by the evolving needs of the Oil & Gas demanding industry in terms of performance and reliability, we are committed to **develop the best technical solutions** for our Customers.

In this continuous challenge forward, we are backed by the **long experience and extensive know-how** of our management and engineering teams.

ITALIAN KNOW-HOW

100 % made in Italy

Our products are **100 % designed, engineered, assembled and tested in our Gaggiano (Milan) premises**. We can rely on a team of local managers and engineers with strong background in product design and manufacturing, and count on a nearby **network of qualified raw materials and components suppliers and subcontractors**.

FLEXIBILITY

CUSTOMIZED SOLUTIONS FOR ANY APPLICATIONS

Our design can be engineered to meet the most stringent requirements and provide our Customers with the most effective solution at the best value. We have the expertise and skill sets to offer **tailor-made solutions** to suit any Projects' specifications, including critical and severe services.

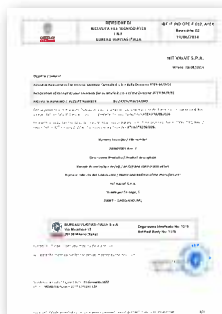
ISO 9001



CE-PED



CE-ATEX



ISO 14001



OHSAS 18001



RELIABILITY

CERTIFIED QUALITY, FIELD PROVEN PERFORMANCE

Throughout our history since 2006 we have built a strong track record by successfully delivering thousands of valves now installed in a large scope of onshore, offshore and subsea applications. Our valves, our quality system and our facility meet the highest international quality and product standards: **ISO 9001, API 6D/6DSS/6A/17D, CE-PED, CE-ATEX, ISO 14001, OHSAS 18001, EN 14141, IEC 61508**. In order to grant performance and dependability to our supplies, HIT VALVE's products undergo a **stringent and extensive sequence of tests and inspections**.



SERVICE

CUSTOMER FOCUSED, SHORT LEAD TIME

HIT VALVE is a **privately owned company**, which favors a **partnering approach** with Customers and grants flexibility and quick response times for all inquiries, clarification and support. We have gained a reputation for achieving exceptional Customer service by combining experience, proven technology, high-end engineered solutions at competitive prices.



GLOBAL PRESENCE

SERVING OUR CUSTOMERS AROUND THE WORLD

We offer our products through a widespread network of distributors/partners providing valuable consulting and support services all over the world. This **wide geographical presence** enables us to provide our Customers with global availability and deep local knowledge.



API 6D



API 6DSS



API 6A



API 17D



- FPAL
- ACHILLES JOS
- EAC (formerly GOST)
- CRN

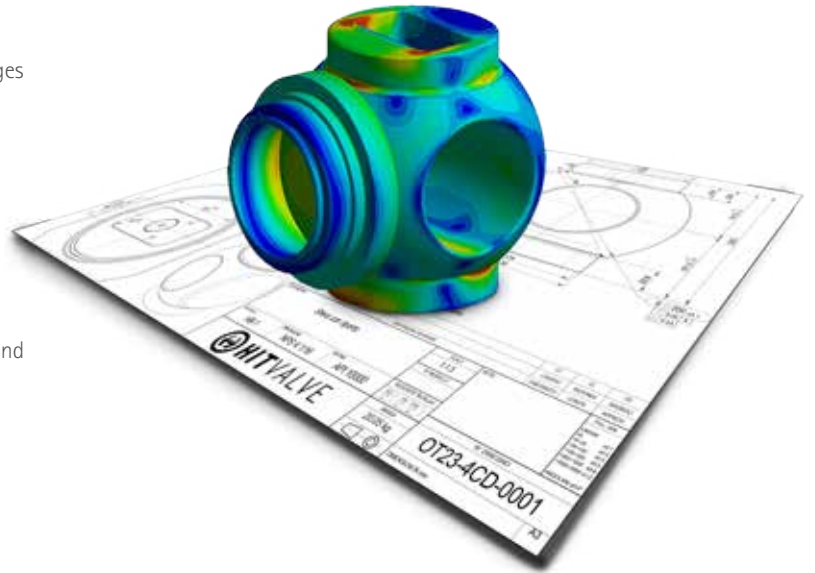
OUR CAPABILITIES

IN-HOUSE ENGINEERING AND R&D

Our design department comprises highly trained and experienced engineers who operate the most advanced engineering technologies and tools to ensure proper product performance since the earlier stages of design:

- solid modeling
- finite element analyses
- fluid dynamic analyses
- stress analyses

Research & Development resources are also dedicated to study, test and develop new products, materials and solutions in order to meet and exceed industry standards and Customer's needs.



MANUFACTURING

Our modern facility is equipped with the latest assembly and testing equipment to ensure complete control over the manufacturing process. The strong technical hands-on experience of our shopfloor personnel ensures the state-of-the-art fabrication of reliable and durable valves.



HIT VALVE relies on a large network of qualified and reputable Italian suppliers for :

- raw materials
- machining
- welding
- hard-facing
- painting

All vendors are assessed and selected through an appropriate qualification process. Timeliness and quality of their deliveries are constantly monitored through expediting.



QUALITY CONTROL AND TESTING

Rigorous control over the whole manufacturing process is crucial in our business. At HIT VALVE we run a Quality Management System aimed at achieving zero defect performance.

Highly trained and certified technicians test and control 100 % of our production by using advanced equipment and instruments.



PRODUCT STANDARDS AND CUSTOMER SPECIFIC TESTS

STANDARD

- › Stem Backseat Test
- › Hydrostatic Shell Test
- › Hydrostatic Seat Test
- › Low Pressure Gas Test
- › Cavity Relief Test
- › Functional Test
- › Anti-static Test

OPTIONAL

- › Torque Test
- › Endurance Test (cycling)
- › Drift Tool Test
- › Double Isolation and Bleed Test (DIB-1, DIB-2)
- › DB&B Test
- › High Pressure Gas Test
- › Drive Train Strength Test
- › Fugitive Emission Test
- › Low Temperature/Cryogenic Test
- › High Temperature Test
- › TAT to MESC 77/300A
- › Firesafe Test
- › Hyperbaric Test
- › Others



Series

HIT VALVE's **Trunnion Mounted Ball valves**, designed in accordance with **API 6D, 6DSS, 6A and 17D** standards, are high-integrity valve solutions engineered for Oil & Gas applications where **tight shut-off at high and low pressure** is required.

They are available in an **extensive assortment of designs, materials, sizes and pressure classes** to meet any customer's requirements.

HIT VALVE's design incorporates **a variety of technically advanced standard as well as optional features to suit any installations**, from general applications to critical service conditions.

Characterized by robust engineering and field-proven reliability, HIT ball valves offer ease of installation and maintenance, high performance, flexible solutions.

*BALL VALVES ENGINEERED
TO MEET ANY NEED*

HB-1
side-entry ball valve



HB-2
top-entry ball valve



HB-3
fully-welded ball valve



HB-4
twin ball valve, DBB



TECHNICAL SPECIFICATIONS

SIZE RANGES & PRESSURE RATINGS

	ASME UP TO CL.600	ASME CL. 900	API 3000	ASME CL. 1500	API 5000	ASME CL. 2500	API 10000	API 15000
HB-1	2" to 60"	2" to 48"	1"13/16 to 11"	2" to 36"	1"13/16 to 11"	2" to 16"	1"13/16 to 11"	1"13/16 to 9"
HB-2	2" to 60"	2" to 48"	1"13/16 to 11"	2" to 36"	1"13/16 to 11"	2" to 16"	1"13/16 to 11"	1"13/16 to 9"
HB-3	2" to 60"	2" to 48"	-	2" to 36"	-	2" to 16"	-	-
HB-4	3/4" to 24"	3/4" to 24"	3/4" to 11"	3/4" to 20"	3/4" to 11"	3/4" to 12"	3/4" to 11"	3/4" to 9"

Other sizes, reduced bore sizes and pressure classes are available upon request

TEMPERATURE RANGE

- Low temperature down to - 125°C
- High temperature + 220°C to + 400°C

For any requirement of temperature outside of the ranges here indicated, please contact your HIT VALVE sales representative at sales@hitvalve.com.

OPERATION

Manual lever, gearbox, actuator
(electric, pneumatic, hydraulic, gas-over-oil actuators)

APPLICABLE DESIGN STANDARDS

DESIGN	BODY THICKNESS	BOLTING	FACE-TO-FACE DIMENSIONS	DRIVE TRAIN SIZING (MAST)	FIRESAFE
API 6D/ISO 14313 API 6A/ISO 10423 API 6DSS/ISO 14723	ASME VIII-1, VIII-2 ASME B16.34 API 6A/ISO 10423	ASME VIII-1, VIII-2 ASME B16.34 API 6A/ISO 10423	API 6D/ISO 14313 API 6DSS/ISO 14723 ASME B16.10 API 6A/ISO 10423	ASME VIII-1, VIII-2 API 6A/ISO 10423	ISO 10497/API 607 API 6FA BS 6755
OTHERS	Materials: ASME II-D, ASTM, API Flanges: ASME B16.5, API 6A/ISO 10423 NDT: ASME, ASTM		Welding: ASME IX Weld ends: ASME B16.25 Sour service: NACE MR-0175/ISO 15156		

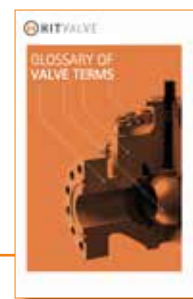
MATERIAL SELECTION

BODY	BALL/SEATS	STEM	SEATING	SEALS	BOLTING
CARBON STEEL › A105 › WCB › LCC › LF2 › LF3 › F60/F65 STAINLESS STEEL › 316 › 321 › 347 › 13Cr › 13Cr4Ni › 17-4PH › 6Mo › Nitronic DUPLEX SS SUPERDUPLEX SS NICKEL ALLOYS › Inconel › Monel TITANIUM	CARBON STEEL › A105 › LF2 › LF3 › F60/F65 STAINLESS STEEL › 316 › 321 › 347 › 13Cr › 13Cr4Ni › 17-4PH › 6Mo › Nitronic DUPLEX SS SUPERDUPLEX SS NICKEL ALLOYS › Inconel › Incoloy › Monel › Stellite TITANIUM	CARBON STEEL › 4140 › LF3 › F60/F65 STAINLESS STEEL › 316 › 13Cr › 13Cr4Ni › 17-4PH › 6Mo › Nitronic DUPLEX SS SUPERDUPLEX SS NICKEL ALLOYS › Inconel › Monel TITANIUM	SOFT SEATING › RPTFE › NYLON › PEEK › PCTFE METAL SEATING › TCC › ENP › CCC › Ni-SiC	› RPTFE › FKM › HNBR › FFKM › Graphite	CARBON STEEL › B7/2H › L7/7 › B7M/2HM › L7M/7M › L43/7 STAINLESS STEEL › B8/8 › B8M/8M › 660 SUPERDUPLEX SS NICKEL ALLOYS › Inconel TITANIUM

DESIGN FEATURES

DESIGN FEATURES	HB-1 SIDE-ENTRY BALL VALVE	HB-2 TOP-ENTRY BALL VALVE	HB-3 FULLY-WELDED BALL VALVE	HB-4 TWIN-BALL VALVE
API 6D/6DSS Design and Construction	STANDARD	STANDARD	STANDARD	STANDARD
API 6A/ISO 10423 Design and Construction	STANDARD	STANDARD	N/A	STANDARD
Face to Face Dimensions to API 6D/6DSS and ASME B16.10	STANDARD	STANDARD	STANDARD	N/A
Face-To-Face Dimensions to API 6A	STANDARD	STANDARD	N/A	N/A
Trunnion Mounted	STANDARD	STANDARD	STANDARD	STANDARD
Independent Stem and Ball	STANDARD	STANDARD	STANDARD	STANDARD
Floating Seats	STANDARD	STANDARD	STANDARD	STANDARD
Soft Seat (with Insert)	STANDARD	STANDARD	STANDARD	STANDARD
Primary Metal – Secondary Soft Seats	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Metal-To-Metal Seats	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
O-Ring Type Seals	STANDARD	STANDARD	STANDARD	STANDARD
Polymeric Lip-Seals	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Self-Relieving Seats (SR)	STANDARD	STANDARD	STANDARD	STANDARD
Double Isolation and Bleed (DIB-1)(Double Piston Effect)(DPE Seats)	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Double Isolation and Bleed (DIB-2)(Dual Seat)(SR+DPE)	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Double Block & Bleed (DBB)	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Full or Reduced Bore	AS REQUESTED	AS REQUESTED	AS REQUESTED	AS REQUESTED
Flanged Ends / Welded Ends / Hub Ends	AS REQUESTED	AS REQUESTED	AS REQUESTED	AS REQUESTED
Transition Pups For Welded Ends	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Antistatic Device	STANDARD	STANDARD	STANDARD	STANDARD
Anti Blowout Stem	STANDARD	STANDARD	STANDARD	STANDARD
Double Body Barrier	STANDARD	STANDARD	STANDARD	STANDARD
Triple Stem Barrier	STANDARD	STANDARD	STANDARD	STANDARD
Vent Plug	STANDARD	STANDARD	STANDARD	STANDARD
Bleed Valve	OPTIONAL	OPTIONAL	OPTIONAL	STANDARD
Drain Plug	STANDARD	STANDARD	STANDARD	N/A
Stem Injection Fitting	STANDARD	STANDARD	STANDARD	OPTIONAL
Seat Injection Fitting	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Seat Pocket Overlay	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Seal Areas Overlay	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Wetted Parts Overlay	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Body Internal Lining	OPTIONAL	N/A	N/A	OPTIONAL
Extended Stem for Underground Installation	OPTIONAL	OPTIONAL	OPTIONAL	N/A
Extended Bonnet for Low or High Temperature	OPTIONAL	OPTIONAL	OPTIONAL	N/A
Locking Device	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Lifting Lugs/Valve Support	STANDARD	STANDARD	STANDARD	STANDARD
Manual or Actuated Operation	AS REQUESTED	AS REQUESTED	AS REQUESTED	AS REQUESTED
Firesafe Design	STANDARD	STANDARD	STANDARD	STANDARD
› In-Line Maintenance	NO	YES	NO	NO
› On-Site Maintenance	YES	YES	YES (FOR STEM SEALS ONLY)	YES

For an in-depth description of the features and for more specific technical data, please check our Valve Glossary at www.hitvalve.com.





HB-1, 20" 150, soft seated, CS/SS, offshore, Korea



HB-3, 48" 600, soft seated, CS+ENP, extension lubricated 2,9 m from c/l, c/w gas over oil actuator underground service, Iraq



HB-2, 18"x14" 2500, metal seated, CS/DSS/SDSS c/w pup pieces 650 mm, DIB-1 tested offshore, Norway



HB-3, 4"/ 12"/ 40" 600, soft seated, CS+ENP, onshore, Russia



HB-4, 1" 1500, soft seated, DSS offshore, Mexico

HB-1 SIDE-ENTRY BALL VALVE

The body is made of **two or three forged parts** and the ball is supported by **trunnion** or on **bearing retainers** held by end adaptors. In such a way the line pressure loads are transferred to the valve body granting a smooth rotation of the ball with low torque values.

One of the most common and trusted designs used in the Oil & Gas industry.

The **bolted body construction** grants high **field maintainability** (easy removal of the valve body from the pipeline for inspection and on-site maintenance) and allows the use of **forged components** in various grades of CS, SS and exotic materials (suitable to severe service conditions).

Competitiveness in terms of **costs and delivery**.

Design in accordance with **API 6D/6A/6DSS/17D**.

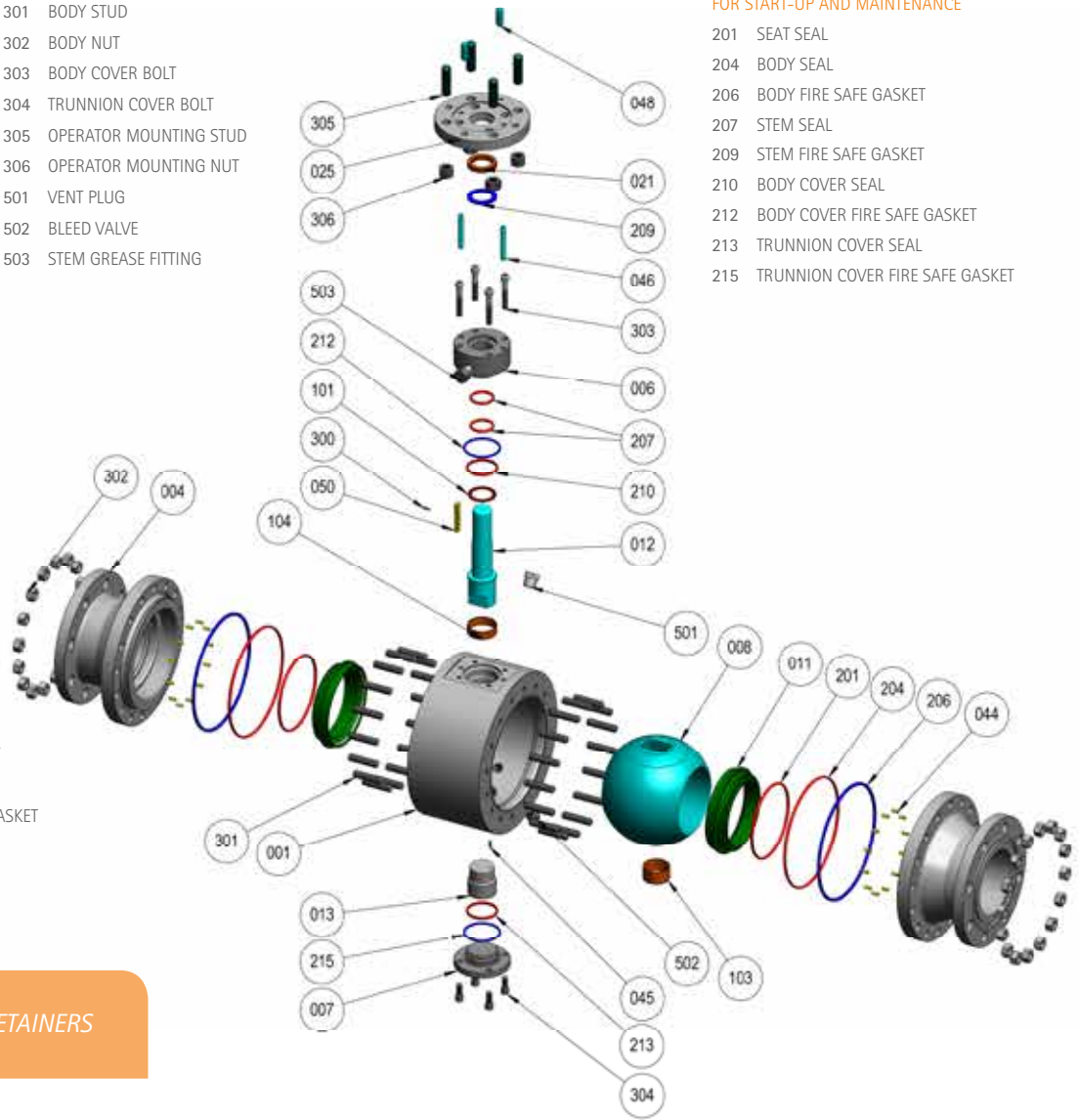
Manual or actuated configuration.

BILL OF MATERIALS

- 001 BODY
- 004 CLOSURE
- 006 BODY COVER
- 007 TRUNNION COVER
- 008 BALL
- 011 SEAT RING w/ INSERT
- 012 STEM
- 013 TRUNNION
- 021 SPACER RING
- 025 OPERATOR FLANGE
- 044 SEAT SPRING
- 045 ANTI STATIC DEVICE
- 046 DOWEL PIN
- 048 OPERATOR FLANGE PIN
- 050 STEM KEY
- 101 STEM WASHER
- 103 LOW FRICTION BEARING
- 104 LOW FRICTION STEM BEARING
- 201 SEAT SEAL
- 204 BODY SEAL
- 206 BODY FIRE SAFE GASKET
- 207 STEM SEAL
- 209 STEM FIRE SAFE GASKET
- 210 BODY COVER SEAL
- 212 BODY COVER FIRE SAFE GASKET
- 213 TRUNNION COVER SEAL
- 215 TRUNNION COVER FIRE SAFE GASKET
- 300 STEM KEY CAPSCREW
- 301 BODY STUD
- 302 BODY NUT
- 303 BODY COVER BOLT
- 304 TRUNNION COVER BOLT
- 305 OPERATOR MOUNTING STUD
- 306 OPERATOR MOUNTING NUT
- 501 VENT PLUG
- 502 BLEED VALVE
- 503 STEM GREASE FITTING

RECOMMENDED SPARE PARTS FOR START-UP AND MAINTENANCE

- 201 SEAT SEAL
- 204 BODY SEAL
- 206 BODY FIRE SAFE GASKET
- 207 STEM SEAL
- 209 STEM FIRE SAFE GASKET
- 210 BODY COVER SEAL
- 212 BODY COVER FIRE SAFE GASKET
- 213 TRUNNION COVER SEAL
- 215 TRUNNION COVER FIRE SAFE GASKET



≥ 12" WITH BEARING RETAINERS

HB-2 TOP-ENTRY BALL VALVE

This configuration featuring a **cast or forged body** closed by a **bolted bonnet** allows to **minimize the number of potential leak paths**.

Full in-line service and maintenance. Without dismantling the valve from the pipeline, the removal of the bonnet allows free access to the body cavity, where ball and seats can be also dislodged, serviced and re-assembled with a set of maintenance tools.

Upon completion of in-line maintenance the integrity of the **seat seals can be easily checked** by pressurizing the body cavity.

The body is sized to grant **maximum rigidity against pipeline forces** even when the trim is removed for service.

The valve can be welded directly onto the pipeline assembly.

Suitable for critical service conditions where **on-site field reparability and quick turnaround** are needed or in areas where space is limited, such as platform decks.

A design for installation on vertical pipes with horizontal stem (e.g. platforms risers) is available.

Design in accordance with **API 6D/6A/6DSS/17D**.

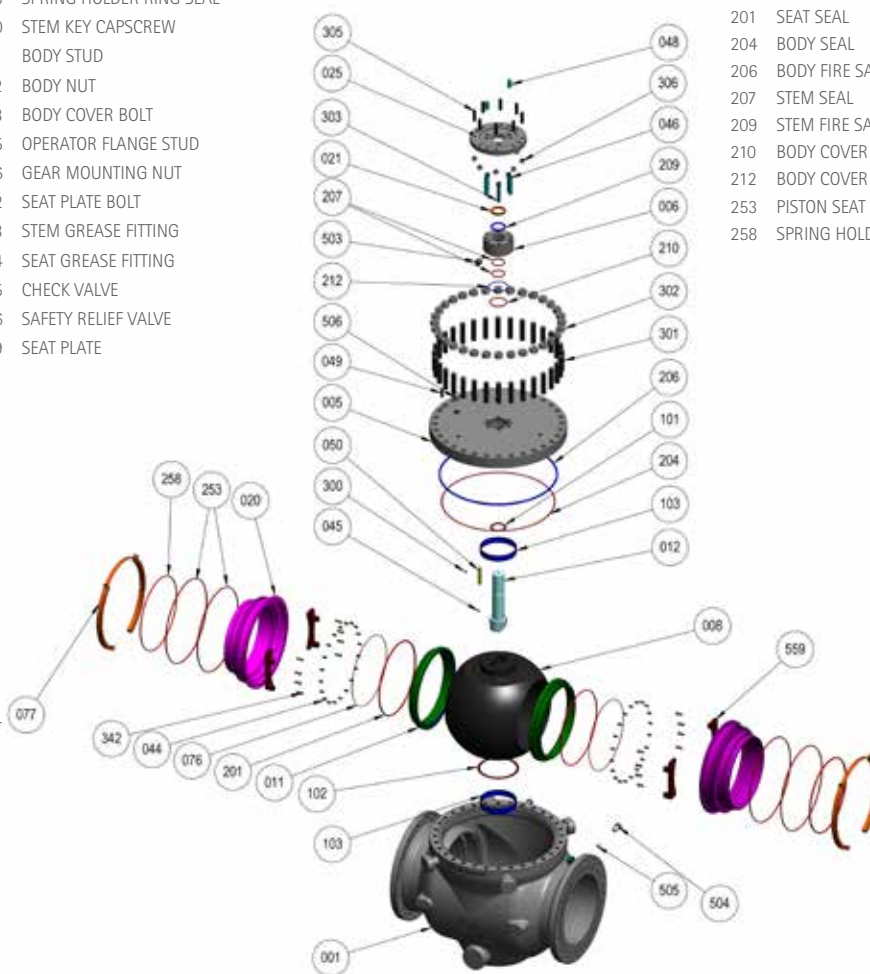
Manual or actuated configuration.

BILL OF MATERIALS

001 BODY	253 PISTON SEAT GREASE INJECTION SEAL
005 BONNET	258 SPRING HOLDER RING SEAL
006 BODY COVER	300 STEM KEY CAPSCREW
008 BALL	301 BODY STUD
011 SEAT RING w/INSERT	302 BODY NUT
012 STEM	303 BODY COVER BOLT
020 SPRING HOLDER RING	305 OPERATOR FLANGE STUD
021 SPACER RING	306 GEAR MOUNTING NUT
025 OPERATOR FLANGE	342 SEAT PLATE BOLT
044 SEAT SPRING	503 STEM GREASE FITTING
045 ANTI STATIC DEVICE	504 SEAT GREASE FITTING
046 DOWEL PIN	505 CHECK VALVE
048 OPERATOR FLANGE PIN	506 SAFETY RELIEF VALVE
049 BONNET PIN	559 SEAT PLATE
050 STEM KEY	
076 BACK SEAT SEAL	
077 SPACER	
101 STEM WASHER	
102 TRUNNION WASHER	
103 LOW FRICTION BEARING	
201 SEAT SEAL	
204 BODY SEAL	
206 BODY FIRE SAFE GASKET	
207 STEM SEAL	
209 STEM FIRE SAFE GASKET	
210 BODY COVER SEAL	
212 BODY COVER FIRE SAFE GASKET	

RECOMMENDED SPARE PARTS FOR START-UP AND MAINTENANCE

076 BACK SEAT SEAL
201 SEAT SEAL
204 BODY SEAL
206 BODY FIRE SAFE GASKET
207 STEM SEAL
209 STEM FIRE SAFE GASKET
210 BODY COVER SEAL
212 BODY COVER FIRE SAFE GASKET
253 PISTON SEAT GREASE INJECTION SEAL
258 SPRING HOLDER RING SEAL



HB-3 FULLY-WELDED BALL VALVE

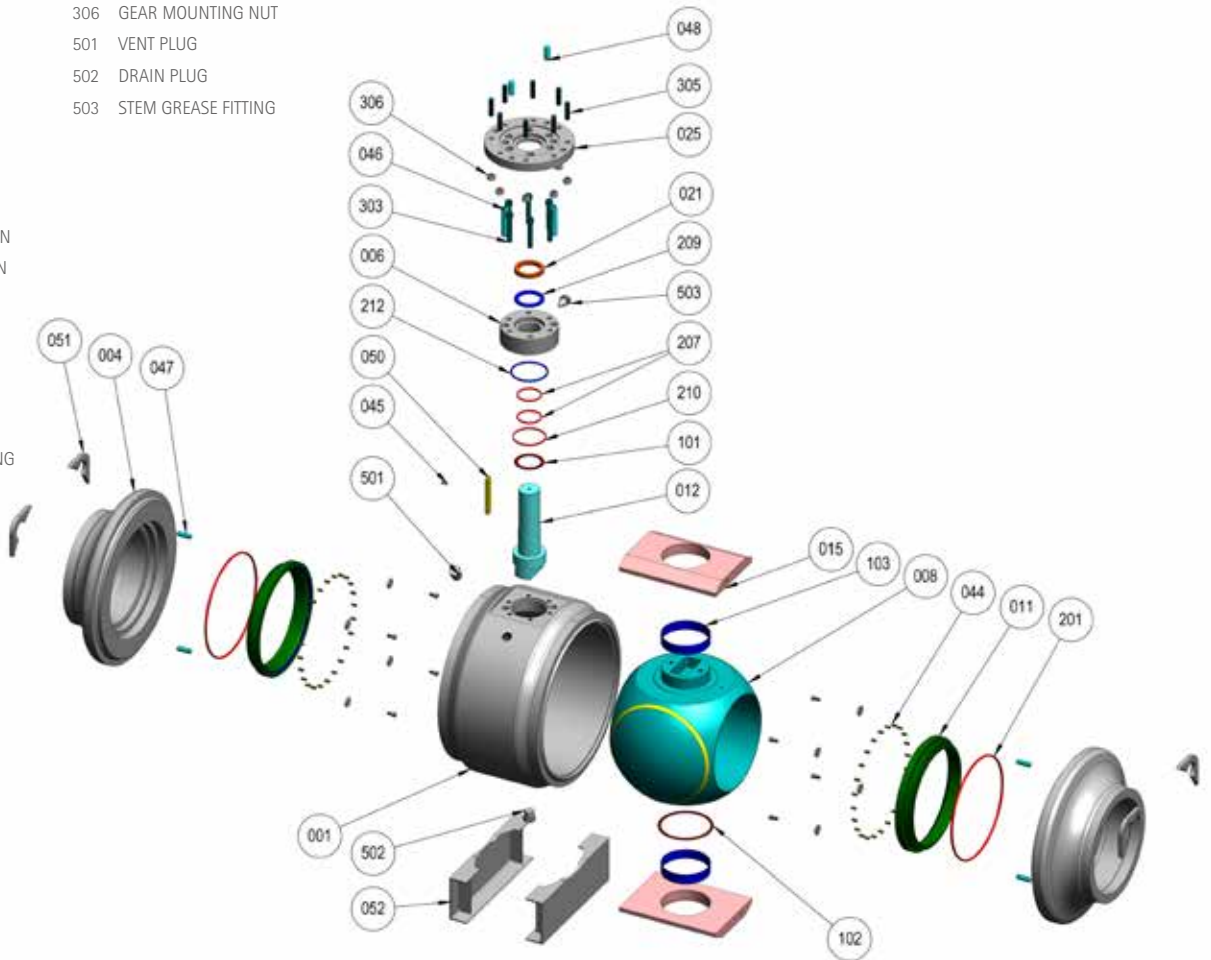
3-piece design with no bolted bonnet or body joints, which **reduces the quantity of potential leak paths**.
 Typically used for applications where maintenance is not required, like **gas transmission pipelines, underground/remote installations, subsea lines**.
 The split body design arrangement allows for the use of forged materials in various grades (CS, SS, exotic materials) complying with the **most severe service conditions**.
 The forged design is typically used for **high pressure valves and critical applications** where the integrity of the pressure envelope is of paramount importance.
 It allows to **save valve weight** in applications where the weight of the equipment significantly impacts on the installation.
 Design in accordance with **API 6D/6DSS**.
 Manual or actuated configuration.

BILL OF MATERIALS

- | | |
|--------------------------|----------------------------|
| 001 BODY | 209 STEM FIRE SAFE GASKET |
| 004 CLOSURE | 210 BODY COVER SEAL |
| 006 BODY COVER | 212 BODY FIRE SAFE GASKET |
| 008 BALL | 303 BODY COVER BOLT |
| 011 SEAT RING w/INSERT | 305 OPERATOR MOUNTING STUD |
| 012 STEM | 306 GEAR MOUNTING NUT |
| 015 BEARING RETAINER | 501 VENT PLUG |
| 021 SPACER RING | 502 DRAIN PLUG |
| 025 OPERATOR FLANGE | 503 STEM GREASE FITTING |
| 044 SEAT SPRING | |
| 045 ANTI STATIC DEVICE | |
| 046 DOWEL PIN | |
| 047 BEARING RETAINER PIN | |
| 048 OPERATOR FLANGE PIN | |
| 050 STEM KEY | |
| 051 LIFTING LUG | |
| 052 VALVE SUPPORT | |
| 101 STEM WASHER | |
| 102 TRUNNION WASHER | |
| 103 LOW FRICTION BEARING | |
| 201 SEAT SEAL | |
| 207 STEM SEAL | |

RECOMMENDED SPARE PARTS FOR START-UP AND MAINTENANCE

- | |
|---------------------------|
| 207 STEM SEAL |
| 209 STEM FIRE SAFE GASKET |
| 210 BODY COVER SEAL |
| 212 BODY FIRE SAFE GASKET |



HB-4 TWIN BALL VALVE

Double Block & Bleed (DBB) configuration consisting of two main in-line isolation valves and a bleed valve located in-between to vent the trapped fluid.

This arrangement allows to reduce the number of potential leak paths with subsequent enhancement of the system **isolation reliability**.

Remarkable benefits in terms of **space/weight** and **cost saving** (product and installation reduced costs).

Small sizes are typically used for **instrumentation applications**.

Flanged or flangeless design.

Design in accordance with **API 6D/6A/6DSS/17D**.

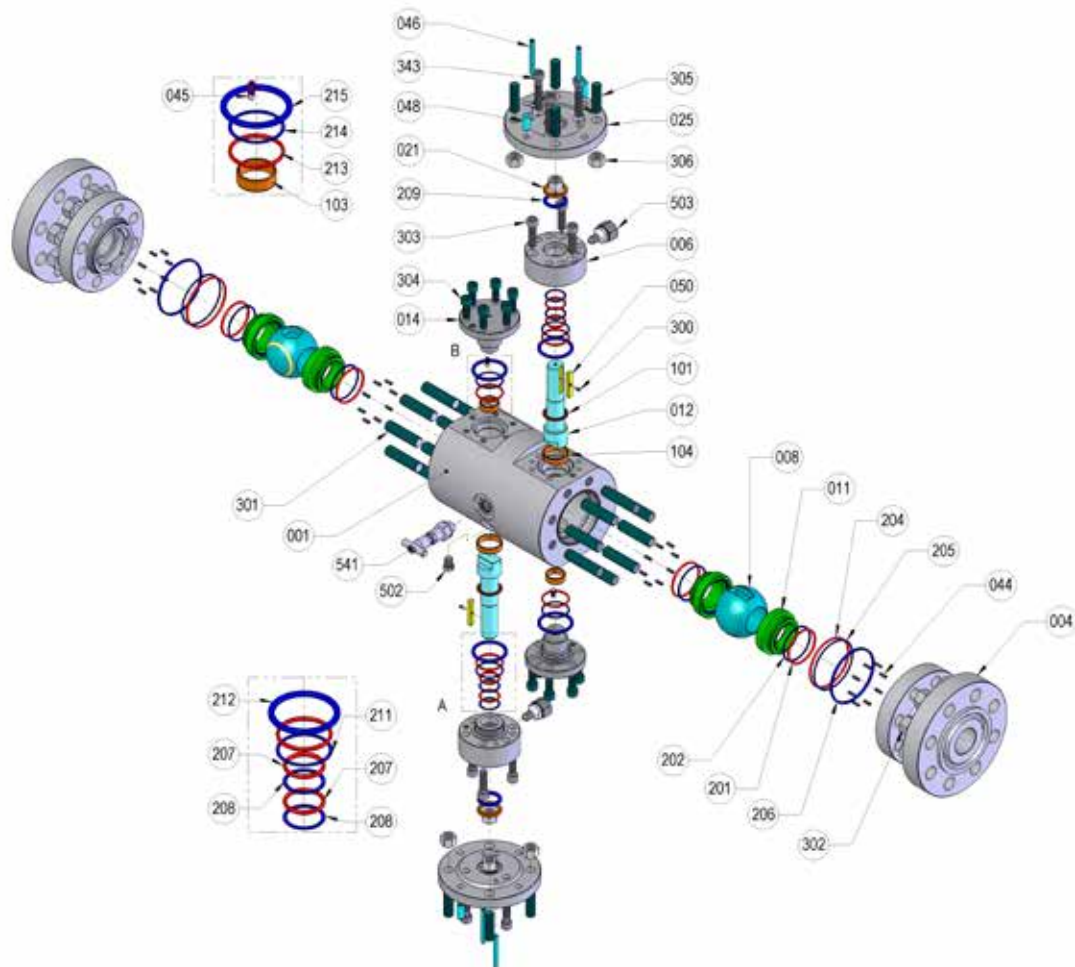
Manual or actuated configuration.

BILL OF MATERIALS

001	BODY	304	TRUNNION COVER BOLT
004	CLOSURE	305	OPERATOR MOUNTING STUD
006	BODY COVER	306	OPERATOR MOUNTING NUT
008	BALL	343	OPERATOR FLANGE BOLT
011	SEAT RING W/INSERT	502	PLUG
012	STEM	503	STEM GREASE FITTING
014	FLANGED TRUNNION	541	NEEDLE VALVE
021	SPACER RING	*	ONLY HIGH PRESSURE
025	OPERATOR FLANGE		
044	SEAT SPRING		
045	ANTI-STATIC DEVICE		
046	DOWEL PIN		
048	OPERATOR FLANGE PIN		
050	STEM KEY		
101	STEM WASHER		
103	LOW FRICTION BEARING		
104	LOW FRICTION STEM BEARING		
201	SEAT SEAL		
202	SEAT BACK-UP *		
204	BODY SEAL		
205	BODY BACK-UP *		
206	BODY FIRE SAFE GASKET		
207	STEM SEAL		
208	STEM BACK-UP *		
209	STEM FIRE SAFE GASKET		
210	BODY COVER SEAL		
211	BODY COVER BACK-UP *		
212	BODY COVER FIRE SAFE GASKET		
213	TRUNNION COVER SEAL		
214	TRUNNION BACK-UP *		
215	TRUNNION COVER FIRE SAFE GASKET		
300	STEM KEY CAPSCREW		
301	BODY STUD		
302	BODY NUT		
303	BODY COVER BOLT		

RACOMMENDED SPARE PARTS

201	SEAT SEAL	209	STEM FIRE SAFE GASKET
202	SEAT BACK-UP *	210	BODY COVER SEAL
204	BODY COVER SEAL	211	BODY COVER BACK-UP *
205	BODY BACK-UP *	212	BODY COVER FIRE SAFE GASKET
206	BODY FIRE SAFE GASKET	213	TRUNNION COVER SEAL
207	STEM SEAL	214	TRUNNION BACK-UP *
208	STEM BACK-UP *	215	TRUNNION COVER FIRE SAFE GASKET



Series

HIT VALVE **gate valves** offer safe and reliable shut-off solutions in any **above ground, underground or subsea** applications, including critical environments.

Designed and manufactured in accordance with **API 6D, 6DSS, 6A** and **17D** standards, our gate valves are available in a variety of body configurations, body and trim materials and stem packings to meet specific customer's needs and application parameters.

*HIGH-END SHUT-OFF
GATE VALVE SOLUTIONS*

HG-1/F

through conduit slab gate valve, forged body



HG-1/C

through conduit slab gate valve, cast body



HG-2

double expanding gate valve



HG-3

through conduit fabricated slab gate valve



TECHNICAL SPECIFICATIONS

SIZE RANGES & PRESSURE RATINGS

	ASME UP TO CL.600	ASME CL. 900	API 3000	ASME CL. 1500	API 5000	ASME CL. 2500	API 10000	API 15000
HG-1/F	2" to 16"	2" to 16"	1"13/16 to 11"	2" to 16"	1"13/16 to 11"	2" to 16"	1"13/16 to 11"	1"13/16 to 9"
HG-1/C	2" to 60"	2" to 48"	-	2" to 36"	-	2" to 16"	-	-
HG-2	2" to 48"	2" to 48"	1"13/16 to 11"	2" to 36"	1"13/16 to 11"	2" to 16"	1"13/16 to 11"	1"13/16 to 9"
HG-3	2" to 60"	2" to 48"	-	2" to 36"	-	-	-	-

Other sizes, reduced bore sizes and pressure classes are available upon request

TEMPERATURE RANGE

- Low temperature down to - 125°C
- High temperature + 220°C to + 400°C

For any requirement of temperature outside of the here ranges indicated, please contact your HIT VALVE sales representative at sales@hitvalve.com.

OPERATION

Manual lever, gearbox, actuator
(electric, pneumatic, hydraulic, gas-over-oil actuators)

APPLICABLE DESIGN STANDARDS

DESIGN	BODY THICKNESS	BOLTING	FACE-TO-FACE DIMENSIONS	DRIVE TRAIN SIZING (MAST)	FIRESAFE
API 6D/ISO 14313 API 6DSS/ISO 14723 API 6A/ISO 10423	ASME VIII-1, VIII-2 ASME B16.34 API 6A/ISO 10423	ASME VIII-1, VIII-2 ASME B16.34 API 6A/ISO 10423	API 6D/ISO 14313 API 6DSS/ISO 14723 ASME B16.10 API 6A/ISO 10423	ASME VIII-1, VIII-2 API 6D/ISO 14313 API 6DSS/ISO 14723 API 6A/ISO 10423	ISO 10497/API 607 API 6FA
OTHERS	Materials: ASME II-D, ASTM, API Flanges: ASME B16.5, API 6A/ISO 10423 NDT: ASME, ASTM		Welding: ASME IX Weld ends: ASME B16.25 Sour service: NACE MR-0175/ISO 15156		

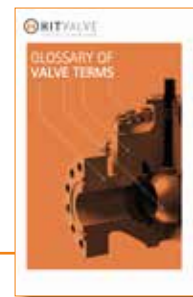
MATERIAL SELECTION

BODY	SLAB/SEATS	STEM	SEATING	SEALS	BOLTING
CARBON STEEL › A105 › WCB › LCC › LF2 › LF3 › F60/F65 › EN 10028 S355 › A516 Gr.70 STAINLESS STEEL › 316 › 321 › 347 › 13Cr › 13Cr4Ni › 17-4PH › Nitronic DUPLEX SS SUPERDUPLEX SS NICKEL ALLOYS › Inconel › Monel TITANIUM	CARBON STEEL › A105 › LF2 › LF3 › F60/F65 › EN 10028 S355 › A516 Gr.70 STAINLESS STEEL › 316 › 321 › 347 › 13Cr › 13Cr4Ni › 17-4PH › Nitronic DUPLEX SS SUPERDUPLEX SS NICKEL ALLOYS › Inconel › Incoloy › Monel › Stellite TITANIUM	CARBON STEEL › 4140 › LF3 › F60/F65 STAINLESS STEEL › 316 › 13Cr › 13Cr4Ni › 17-4PH › Nitronic DUPLEX SS SUPERDUPLEX SS NICKEL ALLOYS › Inconel › Monel TITANIUM	SOFT SEATING › RPTFE › NYLON › PEEK › PCTFE METAL SEATING › TCC › ENP › Ni-SiC	› RPTFE › FKM › HNBR › FFKM › GRAPHITE	CARBON STEEL › B7/2H › L7/7 › B7M/2HM › L7M/7M › L43 STAINLESS STEEL › B8/8 › B8M/8M › 660 SUPERDUPLEX SS NICKEL ALLOYS › Inconel TITANIUM

DESIGN FEATURES

DESIGN FEATURES	HG-1/C GATE VALVE FORGED BODY	HG-1/F GATE VALVE CAST BODY	HG-2 DOUBLE EXPANDING GATE VALVE	HG-3 GATE VALVE FABRICATED BODY
API 6D/6DSS Design and Construction	STANDARD	STANDARD	STANDARD	STANDARD
API 6A/ISO 10423 Design and Construction	STANDARD	STANDARD	STANDARD	N/A
Face to Face Dimensions to API 6D/6DSS and ASME B16.10	STANDARD	STANDARD	STANDARD	STANDARD
Face-To-Face Dimensions to API 6A	STANDARD	STANDARD	STANDARD	N/A
Independent Stem and Obturator (Slab)	STANDARD	STANDARD	STANDARD	STANDARD
Floating Seats	STANDARD	STANDARD	N/A	STANDARD
Primary Metal Secondary Soft	STANDARD	STANDARD	N/A	STANDARD
Metal-To-Metal Seats	OPTIONAL	OPTIONAL	STANDARD	OPTIONAL
O-Ring Type Seals	STANDARD	STANDARD	STANDARD	STANDARD
Polymeric Lip-Seals	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Self-Relieving Seats	STANDARD	STANDARD	N/A	STANDARD
Full or Reduced Bore	AS REQUESTED	AS REQUESTED	AS REQUESTED	AS REQUESTED
Flanged Ends / Welded Ends / Hub Ends	AS REQUESTED	AS REQUESTED	AS REQUESTED	AS REQUESTED
Transition Pups For Welded Ends Valves	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Stem Backseat	STANDARD	STANDARD	N/A	STANDARD
Double Body Barrier	STANDARD	STANDARD	STANDARD	STANDARD
Triple Stem Barrier	STANDARD	STANDARD	STANDARD	STANDARD
Vent Plug	STANDARD	STANDARD	STANDARD	STANDARD
Bleed Valve	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Drain Plug	STANDARD	STANDARD	STANDARD	STANDARD
Stem Injection Fitting	STANDARD	STANDARD	STANDARD	STANDARD
Seat Injection Fitting	OPTIONAL	OPTIONAL	N/A	OPTIONAL
Seat Pocket Overlay	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Seal Areas Overlay	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Wetted Parts Overlay	OPTIONAL	OPTIONAL	OPTIONAL	N/A
Locking Device	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL
Lifting Lugs/Valve Support	STANDARD	STANDARD	STANDARD	STANDARD
Manual or Actuated Operation	AS REQUESTED	AS REQUESTED	AS REQUESTED	AS REQUESTED
Firesafe Design	STANDARD	STANDARD	STANDARD	STANDARD
Normal Acting	STANDARD	STANDARD	STANDARD	STANDARD
Reverse Acting	OPTIONAL	OPTIONAL	N/A	OPTIONAL
Rising Stem Design	STANDARD	STANDARD	STANDARD	STANDARD
Non-Rising Stem Design	OPTIONAL	OPTIONAL	N/A	N/A
Gate Skirt	OPTIONAL	OPTIONAL	STANDARD	OPTIONAL
In-Line Maintenance	YES	YES	YES	YES
On-Site Maintenance	YES	YES	YES	YES

For an in-depth description of the features and for more specific technical data, please check our Valve Glossary at www.hitvalve.com.





HG-1, 8" 400, soft seated, CS+ENP, impact test at -55°, onshore, Russia



HG-3, 48" 600, metal seated, CS+ENP above-ground installation, Europe



HG-1, 1" 13/16 API 10000, metal seated, CS/SS+TCC API 17D subsea, Gulf of Mexico



HG-3, 20" 600, soft seated, CS+ENP underground and above ground installation, Europe



HG-2, 3" 600, metal seated, DSS+TCC offshore, UK

HG-1/F THROUGH CONDUIT SLAB GATE VALVE, FORGED BODY

This body design makes this valve model **suitable for high pressure and critical applications** where the integrity of the pressure envelope is of paramount importance (**low or high temperature and subsea**).

Available in a **wide range of materials** (CS, SS, exotic materials).

Size limitations up to 16".

Bolted top-entry design allowing **fast and easy in-line maintainability**. Without dismantling the valve from the pipeline, the removal of the bonnet allows free access to the body cavity, where gate and seats can be also dislodged, serviced and re-assembled. No need for special tools.

Full through-conduit port to allow pigging operations and to minimize pressure drop and turbulence.

The flat sealing surfaces between the slab and the seats ensures a bubble-tight shut-off even for the metal-seated configuration.

Reduced quantity of potential leak paths.

The body is sized to grant **maximum rigidity against pipeline forces** even when the trim is removed for service.

The valve can be welded directly onto the pipeline.

Possibility of reverse acting and equalized bore for fail closed operation.

Design in accordance with **API 6D/6A/6DSS/17D**.

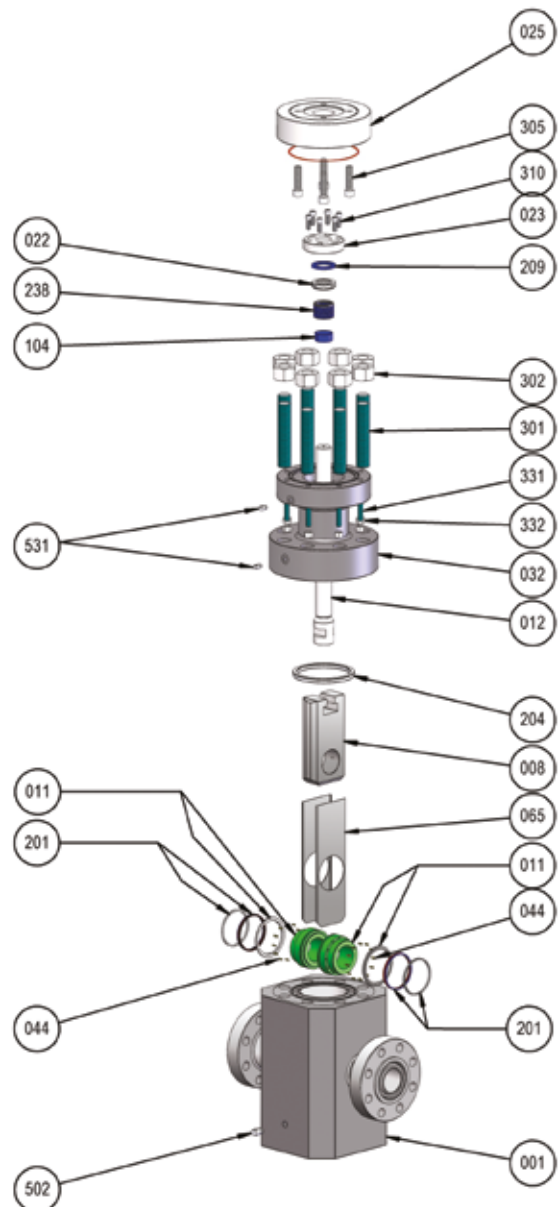
Manual or actuated configuration.

BILL OF MATERIALS

- 001 BODY
- 008 GATE
- 011 SEAT
- 012 STEM
- 022 LATERN
- 023 PACKING FLANGE
- 025 OPERATOR FLANGE
- 032 YOKE
- 044 SPRING
- 065 SKIRT
- 104 STEM BEARING
- 201 SEAT SEAL
- 204 BODY SEAL
- 209 STEM FIRE SAFE GASKET
- 238 PACKING
- 301 BODY STUD
- 302 BODY NUT
- 305 OPERATOR MOUNTING STUD
- 310 STUD
- 331 YOKE STUD
- 332 YOKE NUT
- 502 BLEED FITTING
- 531 EXTENSION VENT

RECOMMENDED SPARE PARTS FOR START-UP AND MAINTENANCE

- 104 STEM BEARING
- 201 SEAT SEAL
- 204 BODY SEAL
- 209 STEM FIRE SAFE GASKET
- 238 PACKING



HG-1/C THROUGH CONDUIT SLAB GATE VALVE, CAST BODY

This body design makes this valve model **suitable for high pressure and critical applications** where the integrity of the pressure envelope is of paramount importance (**low or high temperature and subsea**).

Available in a wide range of materials (CS, SS, exotic materials).

Full size range is available.

Bolted top-entry design allowing **fast and easy in-line maintainability**. Without dismantling the valve from the pipeline, the removal of the bonnet allows free access to the body cavity, where gate and seats can be also dislodged, serviced and re-assembled. No need for special tools.

Full through-conduit port to allow pigging operations and to minimize pressure drop and turbulence.

The flat sealing surfaces between the slab and the seats ensures a **bubble-tight shut-off** even for the metal-seated configuration.

Reduced quantity of potential leak paths.

The body is sized to grant **maximum rigidity against pipeline forces** even when the trim is removed for service.

The valve can be welded directly onto the pipeline.

Possibility of reverse acting and equalized bore for fail closed operation.

Design in accordance with **API 6D/6A/6DSS/17D**.

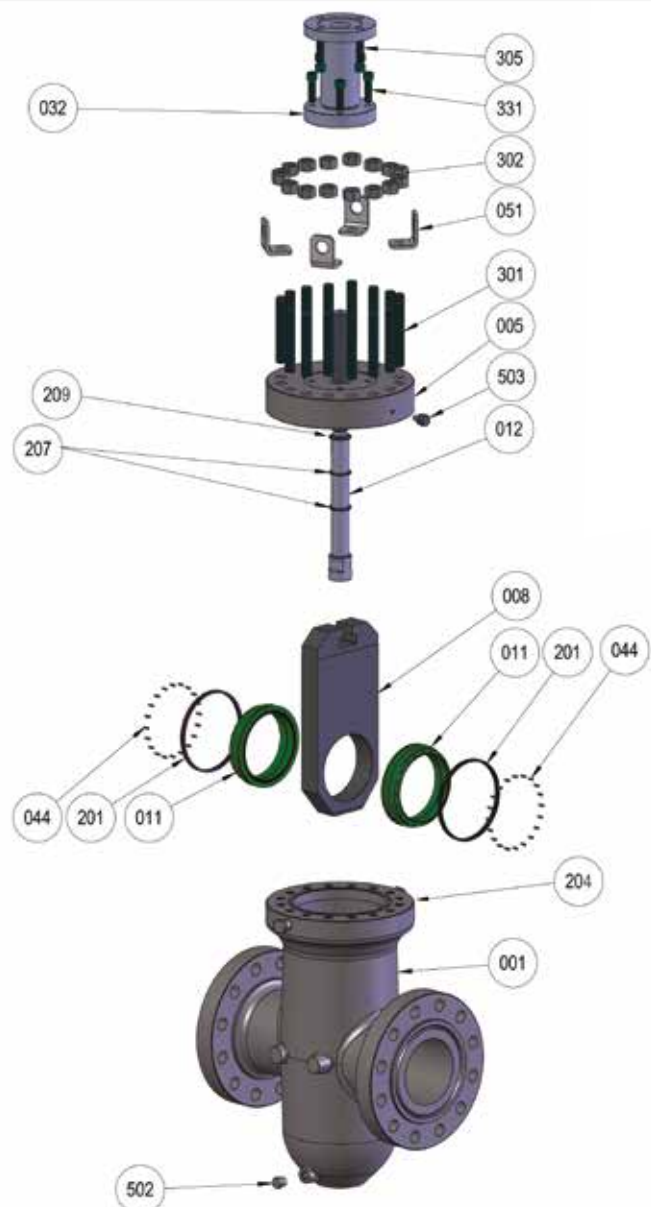
Manual or actuated configuration.

BILL OF MATERIALS

001	BODY
005	BONNET
008	GATE
011	SEAT
012	STEM
032	YOKE
044	SPRING
051	LIFTING LUG
201	SEAT SEAL
204	BODY SEAL
207	STEM SEAL
209	STEM FIRE SAFE GASKET
301	BODY STUD
302	BODY NUT
305	OPERATOR MOUNTING STUD
331	EXTENSION STUD
502	BLEED FITTING
503	STEM GREASE FITTING

RECOMMENDED SPARE PARTS FOR START-UP AND MAINTENANCE

201	SEAT SEAL
204	BODY SEAL
209	STEM FIRE SAFE GASKET
207	STEM SEAL



HG-2 DOUBLE EXPANDING GATE VALVE

Advanced design comprising a full bore port and a 2-piece obturator.

It provides an enforced mechanically activated sealing function between gate and seats in both high and low pressure. No line pressure is required to seal the gate.

High reliability. Proven performance in critical applications, e.g. natural gas, oil well drilling systems, ESD, deepwater installations.

Cast or forged body construction.

Bolted top-entry design allowing fast and easy in-line maintainability. Without dismantling the valve from the pipeline, the removal of the bonnet allows free access to the body cavity, where gate and seats can be also dislodged, serviced and re-assembled. No need for special tools.

Full port to allow pigging operations and to minimize pressure drop and turbulence.

Metal/non-sliding seats guaranteeing low contact stresses for an extended life of seat sealing surfaces.

Double block and bleed. Double isolation is obtained by means of the two seats with the possibility of venting the space between the seats. It can be achieved in closed (standard) or open position.

Tungsten carbide HVOF hard faced seats and gates providing resistance of sealing surfaces to wear, galling and abrasion.

Design in accordance with API 6D/6A.

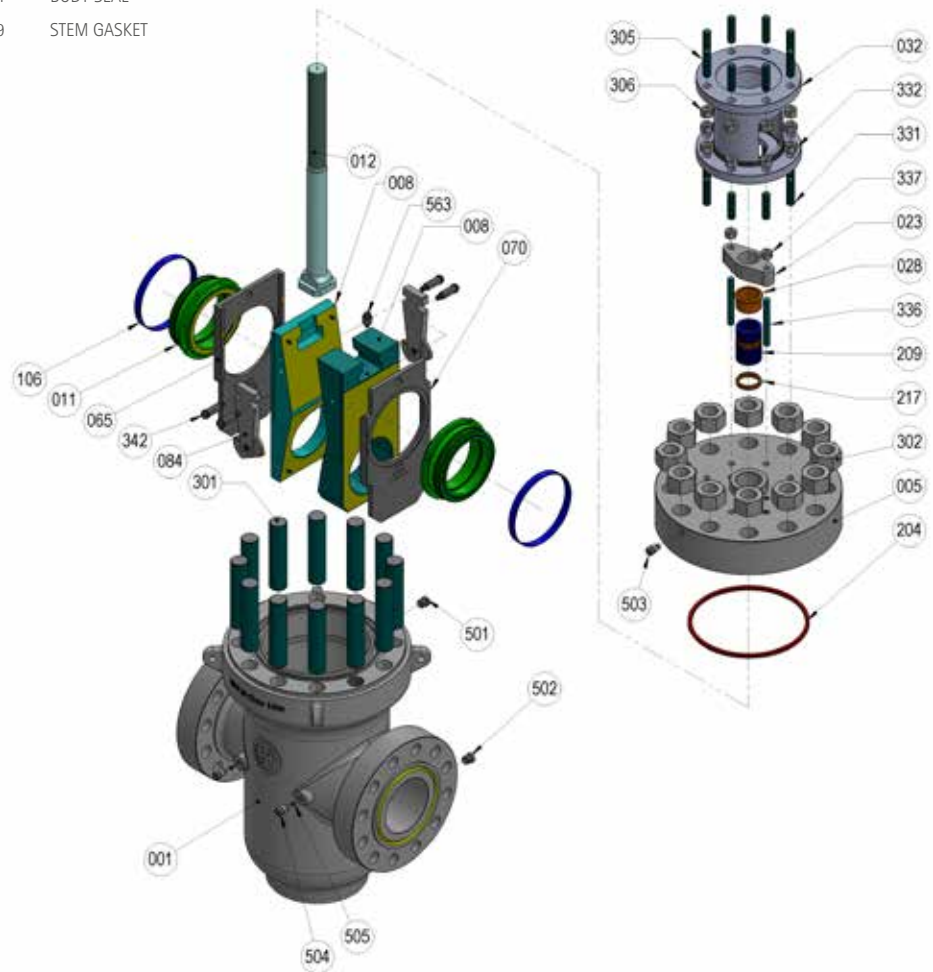
Manual or actuated configuration.

BILL OF MATERIALS

- 001 BODY
- 005 BONNET
- 008 GATE
- 011 SEAT
- 012 STEM
- 023 PACKING FLANGE
- 028 GLAND BUSHING
- 032 YOKE
- 065 SKIRT
- 070 SKIRT
- 084 LEVER
- 106 BUSHING
- 204 BODY SEAL
- 209 STEM GASKET
- 217 STEM LOWER SPACER RING
- 301 BODY STUD
- 302 BODY NUT
- 305 OPERATOR FLANGE STUD
- 306 OPERATOR MOUNTING NUT
- 331 YOKE STUD
- 332 YOKE NUT
- 336 NUT
- 337 STUD
- 342 BOLT PLATE
- 501 VENT PLUG
- 502 PLUG
- 503 STEM GREASE FITTING
- 504 SEAT GREASE FITTING
- 505 CHECK VALVE
- 563 STOP BOLT

RACOMMENDED SPARE PARTS

- 204 BODY SEAL
- 209 STEM GASKET



HG-3 THROUGH CONDUIT FABRICATED SLAB GATE VALVE

Fabricated body construction providing **maximum strength combined with minimum size and weight**. The rectangular configuration permits reduction of the body cavity to the minimum required to house the gate and seat assemblies.

Typically used for **low pressure and standard services/applications**.

Most popular gate valve design thanks to ease of maintenance, versatility, **cost/delivery competitiveness**.

Bolted top-entry design allowing **fast and easy in-line maintainability**. Without dismantling the valve from the pipeline, the removal of the bonnet allows free access to the body cavity, where gate and seats can be also dislodged, serviced and re-assembled. No need for special tools.

Full through-conduit port to allow pigging operations and to minimize pressure drop and turbulence.

The flat sealing surfaces between the slab and the seats ensures a **bubble-tight shut-off** even for the metal-seated configuration.

Reduced quantity of potential leak paths.

The body is sized to grant maximum **rigidity against pipeline forces** even when the trim is removed for service.

The valve can be welded directly onto the pipeline.

Possibility of reverse acting and equalized bore for fail closed operation.

Design in accordance with **API 6D**.

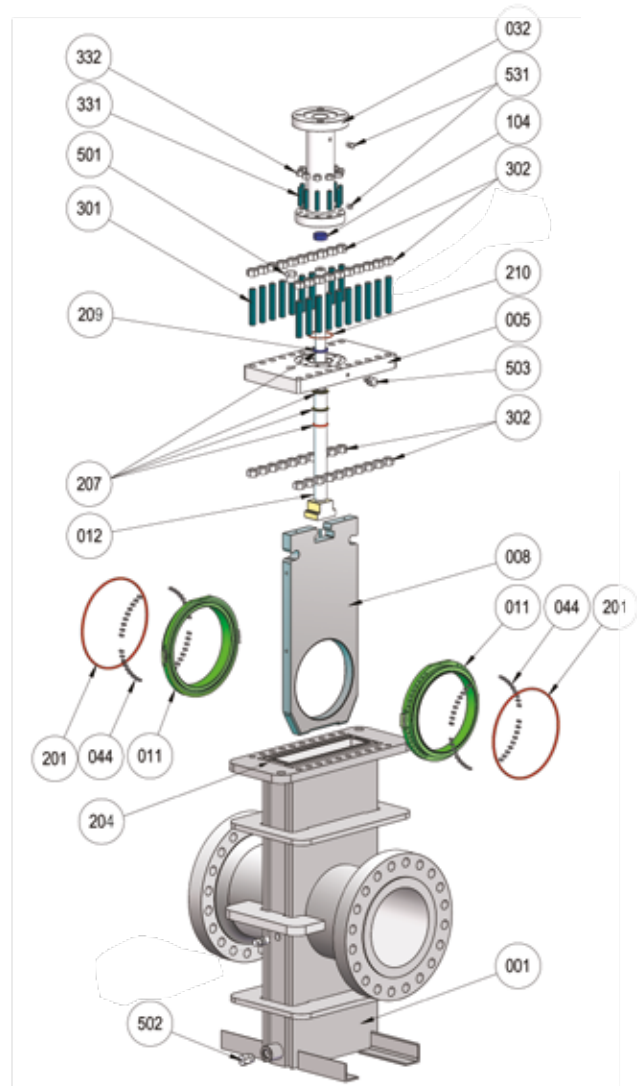
Manual or actuated configuration.

BILL OF MATERIALS

001	BODY
005	BONNET
008	GATE
011	SEAT
012	STEM
032	YOKE
044	SPRING
104	STEM BEARING
201	SEAT SEAL
204	BODY SEAL
207	STEM SEAL
209	STEM FIRE SAFE GASKET
210	BONNET SEAL
301	BODY STUD
302	BODY NUT
331	YOKE STUD
332	YOKE NUT
501	VENT FITTING
502	BLEED FITTING
503	STEM GREASE FITTING
531	EXTENSION VENT

RECOMMENDED SPARE PARTS FOR START-UP AND MAINTENANCE

201	SEAT SEAL
204	BODY SEAL
207	STEM SEAL
209	STEM FIRE SAFE GASKET



SPECIAL APPLICATIONS

HIT VALVE has a proven track record as a supplier for special, critical, heavy duty valves.

HIGH TEMPERATURE +220°C TO +400°C

- side-entry and top-entry configurations
- cast or forged construction
- extended bonnet for insulation allowance
- metal and graphite seals
- inherently firesafe design
- adjustable stem packing with live load which guarantees performance also under thermal cycles
- low friction coating on seating surfaces for torque requirements
- materials compliant with stricter requirements
- selection of hard facing technologies (ENP, CCC, NiSiC) suitable for any service



HB-1, 18" 1500, metal seated, SS high temperature, onshore, China

LOW TEMPERATURE DOWN TO -125°C

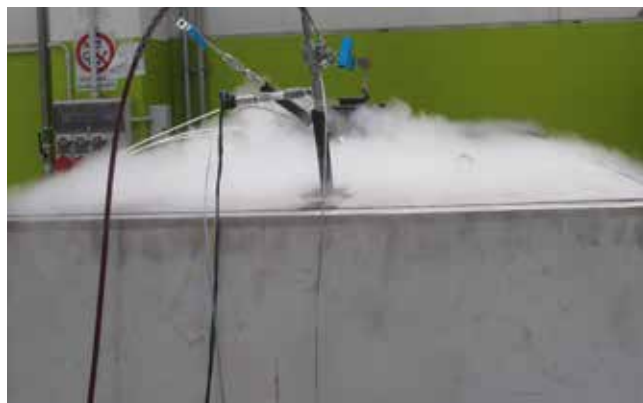
- side-entry and top-entry configurations
- cast or forged construction
- extended bonnet with vapor space to maintain the stem packing within the suitable temperature range
- enhanced seat and seal design to guarantee leak tightness
- low friction coating on seating surfaces for torque requirements
- compliance to fugitive emission (FE) standards
- materials compliant with stricter requirements
- additional inspection and testing



HB-1, 4" 2500, soft seated, DSS, offshore, UK

Need a custom valve for any application and service condition?

Contact our engineering department to find the most appropriate solution.



Low temperature test -110°C

SUBSEA

- cast or forged construction
- designed to API 6DSS/17D
- additional static and dynamic environmental sealing
- CRA overlay on sealing surfaces and/or on process wetted areas
- hard facing of seating surfaces
- ROV interfaces to API 17H/ISO 13628-8
- materials compliant with stricter requirements
- additional testing (hyperbaric, cycling/endurance, PR2,...)
- single contact point (valve, actuator, HPU, umbilical, etc)



HB-3, 20" 1500, soft seated, CS/DSS, 100 cycles test, subsea, India.

HIGH INTEGRITY PRESSURE PROTECTION SYSTEM (HIPPS)

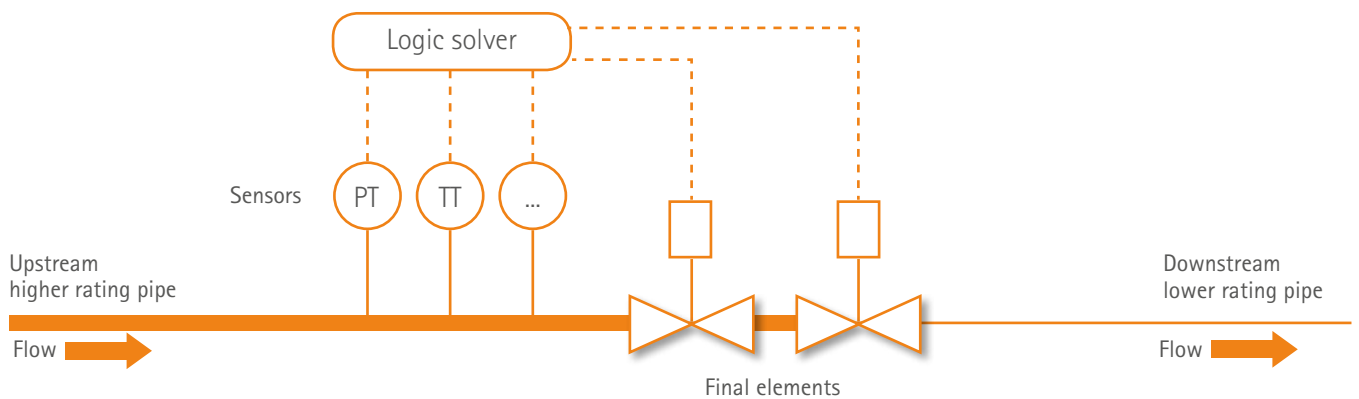
- specific application of a Safety Instrumented System (SIS) designed to protect a downstream pipe from overpressure; the use of HIPPS has gained popularity over the last years as ultimate protection system.
- IEC standard describes HIPPS as a 'complete loop'; it consists as a minimum of process sensors (pressure, temperature, flow, level, etc), a logic solver (CPU, PES, PLC, etc) and a final element.
- HIT VALVE can act as a 'one stop shop'. Along with our internal skilled resources and know-how in valves and instrumentation, we partner with leading Italian Companies of automation and software solutions to provide full-range competence and assistance to the Project.
- HIT VALVE package can meet SIL 4 (Safety Integrity Level) according to IEC 61508

ONE STOP SHOP

- One supplier, one negotiation, one point of purchase
- Shorter communication stream, one contact for problem solving
- HIT VALVE responsible for the supply of the complete unit
- Time & cost saving

FULL-RANGE COMPETENCE AND ASSISTANCE TO THE PROJECT

- HIPPS treated as a complete loop
- Full support to Customer from FEED phase
- Reliability of the complete system
- Possibility to test the complete unit



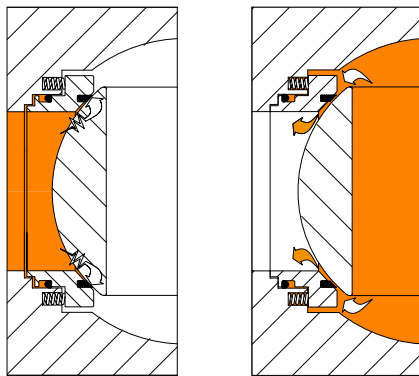
IEC STANDARD DEFINES A "HIPPS" AS A "COMPLETE LOOP"

TECHNICAL HIGHLIGHTS / BALL VALVES

SEAT DESIGNS

SELF RELIEVING SEAT (UNI-DIRECTIONAL)

Also known as **SINGLE PISTON EFFECT**, this design guarantees the sealing against pressure acting on the tail side of the seat ring (upstream). Pressure produces a force (piston effect) that pushes the seat against the ball: the higher the pressure, the greater the piston force. Conversely, pressure acting on the head side (downstream) of the seat results in a force that urges away the seat from the ball, hence relieving the body cavity pressure into the line.

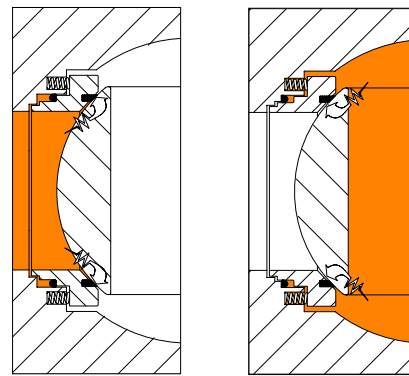


Block

Relief

DOUBLE PISTON EFFECT (BI-DIRECTIONAL)

This design allows sealing capability against pressure coming from upstream or downstream. In either cases, pressure results in a force that pushes the seat against the ball granting the required tightness. A bidirectional seat cannot relieve any body cavity pressure.



Block

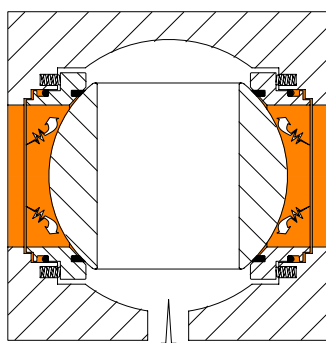
Block

VALVE FUNCTIONS

DOUBLE BLOCK & BLEED (DBB)

In closed position, a DBB valve provides a seal against pressure from both ends of the valve with a means of venting/bleeding the cavity between the seating surfaces.

To obtain this, both seats of a valve have to seal upstream. Thus, only a trunnion mounted ball valve can feature the DBB function, whereas a floating ball valve cannot.



Block

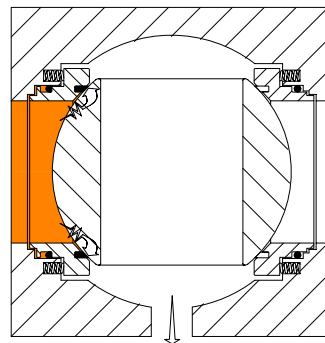
Bleed

Block

DOUBLE ISOLATION & BLEED (DIB)

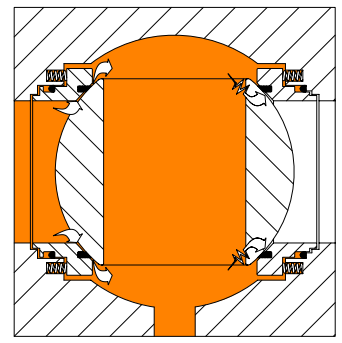
A DIB valve provides a double barrier through the pipe against pressure from a single source with a means of venting/bleeding the cavity between the seating surfaces.

To obtain the DIB function at least one seat has to be bi-directional (**DIB-2**). When both seats are bi-directional, DIB is provided in both directions (**DIB-1**). A DIB valve always assures a DBB function but not viceversa.



Block

Bleed



Block

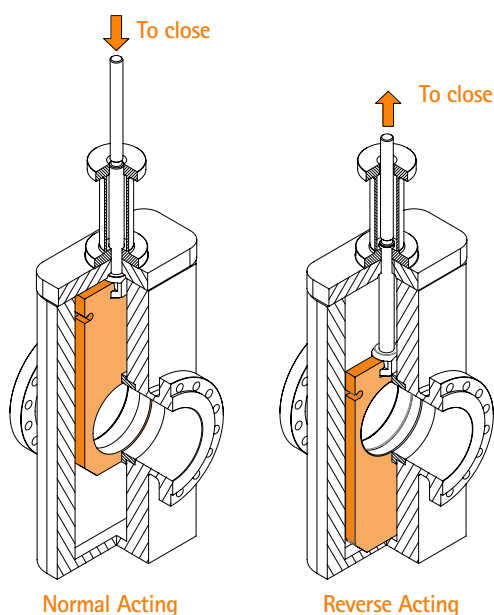
TECHNICAL HIGHLIGHTS / GATE VALVES

NORMAL ACTING vs REVERSE ACTING

Two different configurations are available depending on the fail safe position to be obtained.

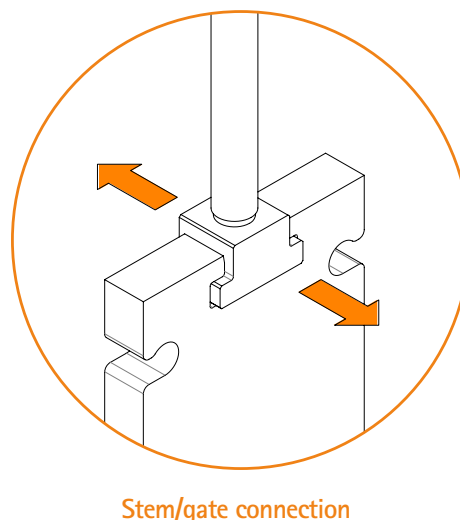
In Normal Acting configuration the gate has to be moved downwards to close the valve, the opposite of the Reverse Acting design, where the gate has to be moved upwards to close.

Normal Acting is used for fail to open and Reverse Acting for fail to close applications.



STEM/GATE CONNECTION

The connection between stem and gate is achieved by a T-head stem and corresponding slot in the gate to allow the gate itself to float along the pipeline axis, without imposing lateral forces to the stem.

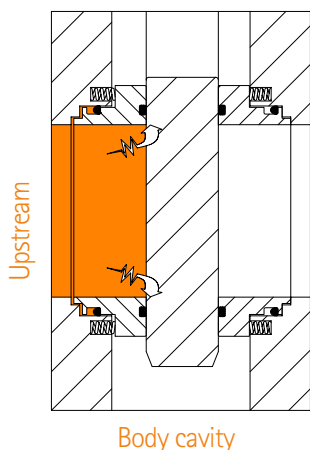


WORKING PRINCIPLE OF THE SEATS

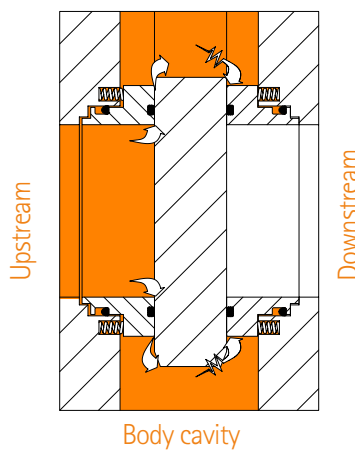
The floating seats are forced against the gate by the springs action allowing sealing capability at low pressure differential.

Upstream pressure, in close position, pushes simultaneously the upstream seat against the gate and the gate against the downstream seat, granting tightness of both seats. In open position the two seats guarantee double block and bleed function.

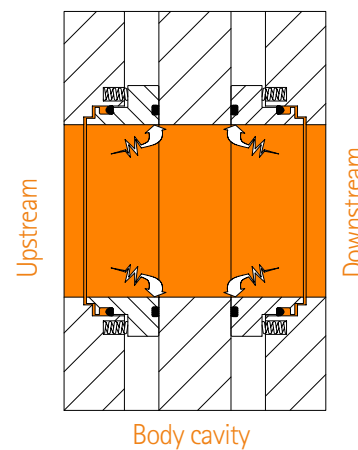
Upstream seat tightness



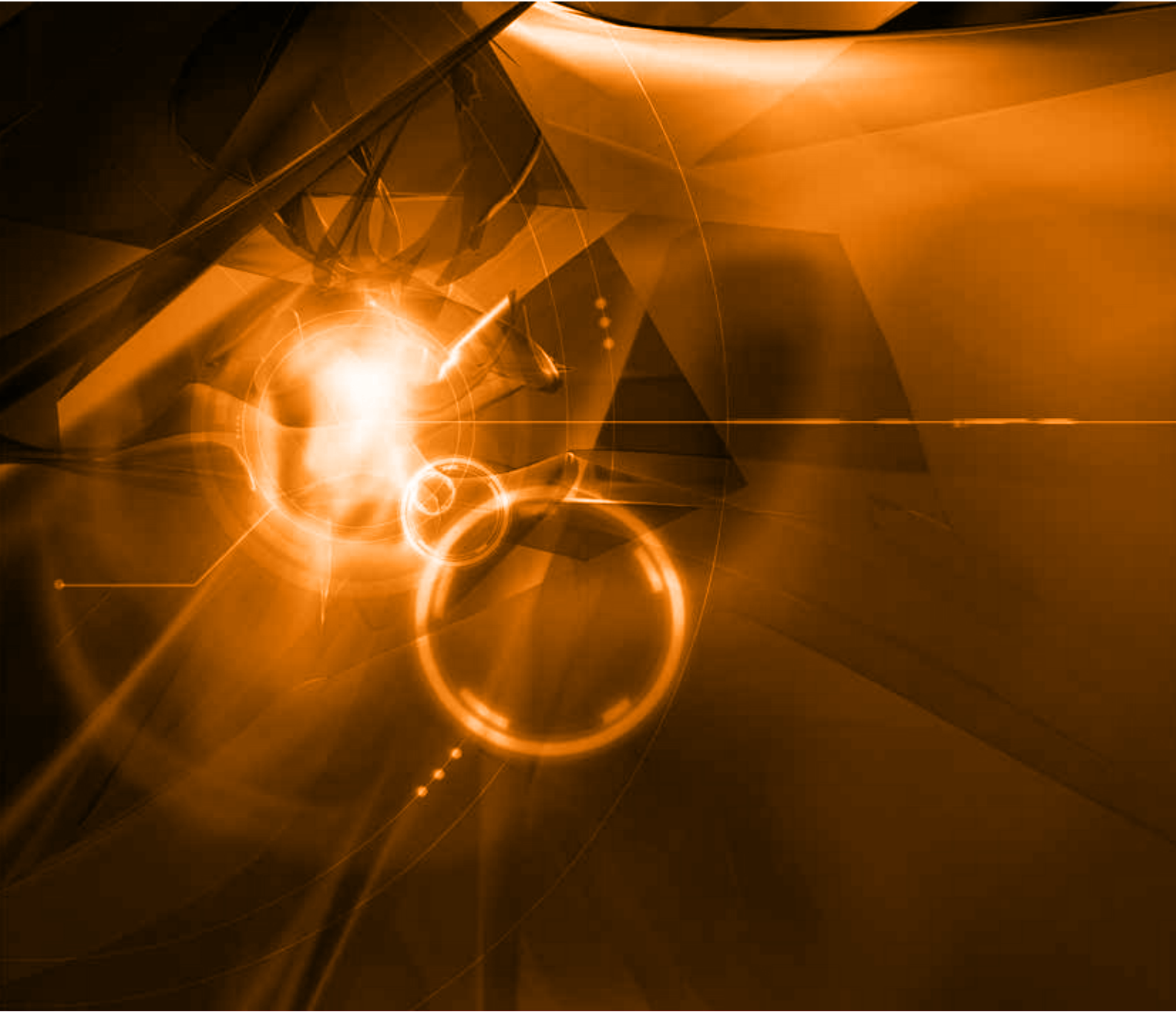
Downstream seat tightness



Seats tightness in open position



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