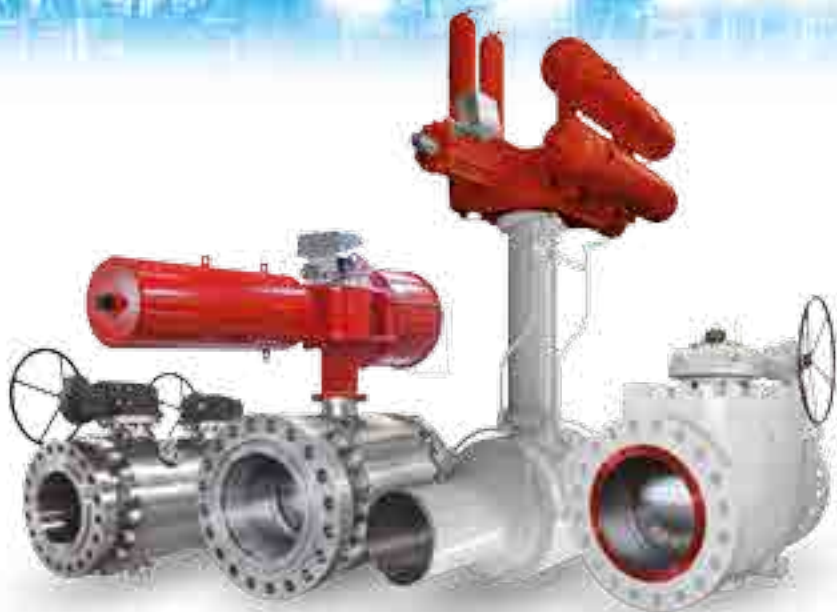


IDK-LOK[®]
Ball Valves



**High
Performance
Valves**

Company Profile



I am Noh, Eun-sik, CEO of DK-Lok Corp., the enterprise specializing in industrial process ball valves as well as the instrumentation fittings and valves.

We, DK-Lok Corp. strive to ensure customer satisfaction by providing products of the highest performance and quality.

Recently, we have strengthened our ball valve business by incorporating the world best ball valve technology from Italy, where the best performance and quality ball valves are manufactured.

Product offerings have been expanded to include not only API6D ball valves of carbon steel or exotic materials but also valves for drilling/offshore plants and subsea applications.

With the advent of LNG industry growth, cryogenic ball valves are offered with the state-of-the-art low temperature testing facility in house.

For instrumentation fittings and valve business, we have completed extensive intermix tests where the leading competitor's fittings are intermixed with DK-Lok fittings and tested as defined in ASTM F-1387.

All the 70 possible combinations of intermixed fittings at 5 different sizes are tested and passed the nine mandatory tests as well as two more supplement tests defined by F-1387.

All the tests were witnessed by TUV Rheinland, proving DK-Lok fitting are as good as the major competitor in terms of performance and quality.

Globally, DK-Lok Corp. is widely recognized for its technical capacity

as well as high level of customer satisfaction.

Through active overseas market development, we have successfully tapped into global overseas markets and currently we are exporting our products to nearly 50 different countries.

We keep on strengthening our basis for growth through continued product facility investment, human resources training, and R&D, toward the development of new technology.

Technically, we are the second at the global level and first at the national level, to have acquired the certifications of ASME N, NPT, NS stamp all together.

Moreover, we have received product certification and testing from global certification agencies, API, LR, GL, ABS, DNV, RWTUV, NK, and KR. Hence, we are able to ensure the provision of high quality products and service that meet the product quality needs of global high tech industry customers.

Our priority will be, above all, to achieve the highest product quality and technical capacity to meet the product quality needs of our customers, to contribute to value creation for our customers, and thereby ensure mutual development and become the world's best company in our industry.

CEO and Chairman,
Eun-Sik Noh, Ph. D.

DK-LOK CORPORATION is a South Korean Company listed at KOSDAQ since 2010, manufacturing ball valves and instrumentation fittings and valves. We are in business since 1986.

The Company is based in Gimhae, near Busan which is the second largest city of the country. Surrounding area of Gimhae is known for heartland of mechanical industries, ship-buliding and offshore plants, petro-chemical factories and automotive industries.

Thanks to its quality and reliability, the Company appears in the approved vendor lists of major clients worldwide for most of its products.

DK-LOK manufacturing facilities have surface of 27,000sqm in total, out of which 5,000 dedicated exclusively to the Ball Valves and DBB production and testing. It includes facility for:

- Cryogenic test facility (up to 24")
- Double-Head test benches
- 450TON horizontal test bench (up to 26")

- 1200TON horizontal test bench (up to 40")
- Gas test facility
- Fugitive Emission test facility

DK-LOK manufactures high quality and high performance ball valves and DBBs to be used in all services including the most severe condition, such as highly corrosive environment, high and low temperature and so on.

In addition to the above, we guarantee immediate response by our technical team for any possible

problem arising on the field which requires our assistance.

- Applications**
- Oil and Gas Pipelines
 - Power Plants
 - Refineries
 - Onshore and Offshore installations
 - Subsea
 - LNG Plants and Terminals
 - FPSO and FSO



General Information



All our valves are designed by our technical team headed by Italian manager, with over 25 years of experience in the field, which carefully evaluates all technical specifications in order to provide the best technical solution to comply with the client requirement and, whenever possible, to advise potential improvements in order to supply a better service. Our valves are manufactured using any kind of material depending on client requests and technical evaluation including but not limited to: Carbon Steel (including low temperature), Stainless Steel, Duplex and Superduplex, Inconel, Incoloy, Titanium and CRA (corrosion resistance alloy) clad materials.

The design is made using the latest technologies in 3D and 2D FEA (Finite Element Analysis) to simulate the different stress conditions of components under various circumstances. Our R&D department is also continuously looking for new technologies and tests to ensure the reliability of our equipment in different conditions. Finally, all our raw materials and finished products are fully in accordance with applicable international standards, internal procedures and customer requirements.

Enquiry Analysis

Upon receipt of an Order, the DK-LOK Contract Management team is there to work in close co-operation with the client. In this phase, all doubts shall be clarified before order confirmation.

Order Confirmation and Contract Review

After receive Order, the DK-LOK Contract Management Team will ensure that each project is accurately defined and planned, since the early stages. The project progress is continuously tracked during entire process of design, production, assembly and testing phases. By understanding the Customer needs and expectations, the Contract Management Team, in coordination with Engineering and Operations Departments, will be able to find the best solution for any issue or problem which may arise during the Project execution, with the aim to meet the product quality and the delivery time that satisfy the Project requirements.

Engineering Development and Planning

DK-LOK is committed to manufacture and continuously develop best in class on-off and control valves, to meet the increasingly stringent demands of the energy and process industries. We have in-house engineering and design capability to manufacture safe, reliable and state-of-the-art products. We have developed a number of products and systems for which we maintain intellectual property rights and patents.

Engineering Verification and Validation

DK-LOK ball valves are designed in accordance with the most common industry standards. We are able to develop specific designs for critical applications using FEA and other design standards as well.

Production Schedule

Showing all steps of manufacturing from contract review to customer's delivery.

Products

VBST



Trunnion Side Entry Ball Valve

VBSS



Trunnion Side Entry Ball Valve Subsea

DBST



DBB Trunnion Side Entry Ball Valve

GATV



Gate Valve

BTEV



Butterfly Valve

VBWB



Trunnion Welded Body Ball Valve

VBTS



Trunnion Top Entry Ball Valve Subsea

DBTT



DBB Trunnion Top Entry Ball Valve

CHKD



Check Valve

GLBV



Globe Valve

VBTT



Trunnion Top Entry Ball Valve

VBSF



Floating Split Body Ball Valve

DBSF



DBB Floating Split Body Ball Valve

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Material Specification

The material selection for the valve components is based on the specified service condition. The sizing of the body, as well as the sizing of the trim, is based on the mechanical properties of the selected materials.

We follow specific guidelines to define elastomer properties and groove geometry using materials suitable for AED (anti - explosive - decompression). Our suppliers are qualified to supply thermoplastic static and dynamic seals and gasket suitable for extreme conditions in high or cryogenic temperature.

We also cooperate in R&D to develop advanced types of coatings for our metal-to-metal ball valves with the aim of increasing quality and reduce torque valves.

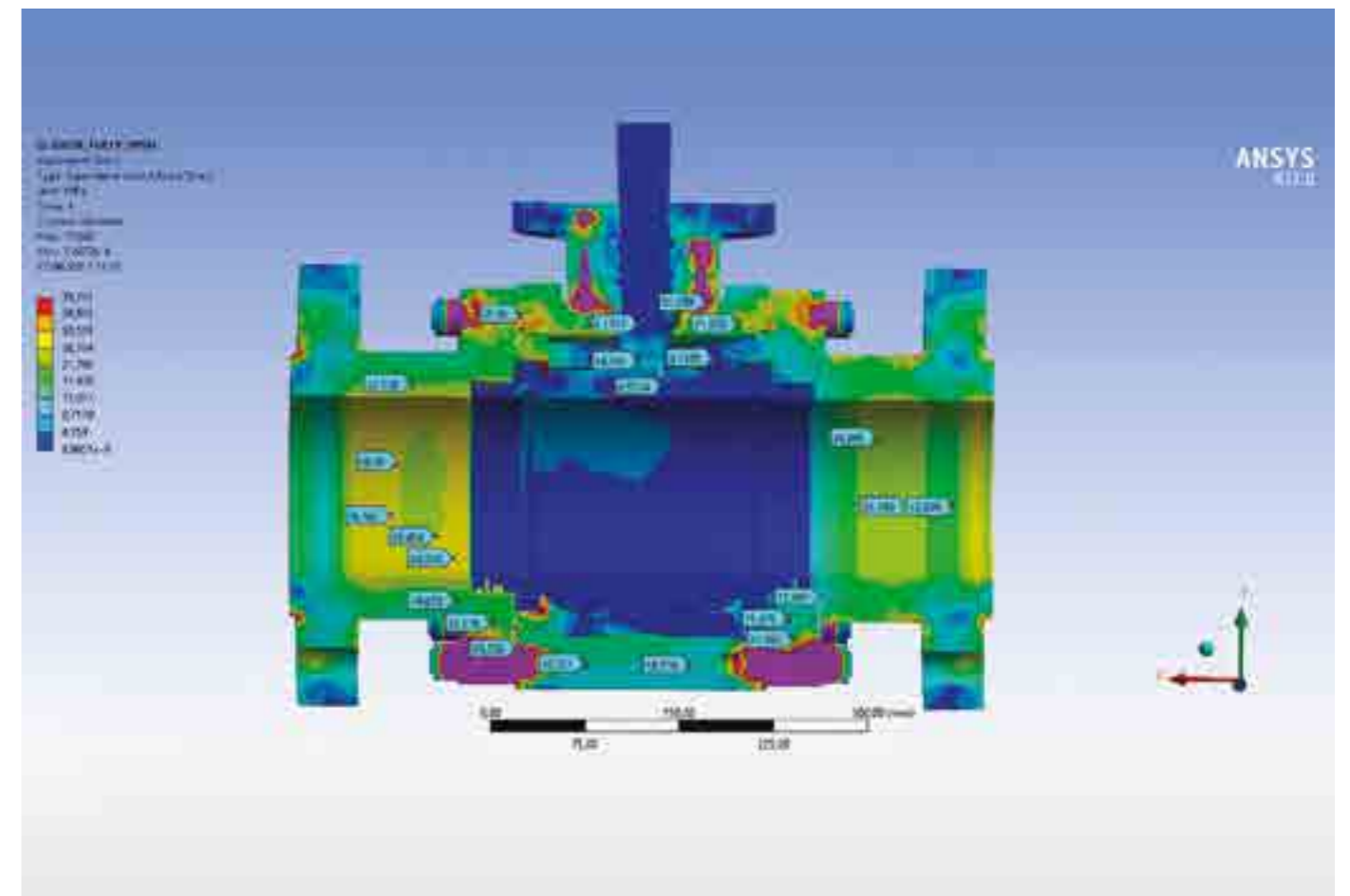
Materials	General Type	T. (°C)		Materials	General Type	T. (°C)	
		min.	max.			min.	max.
ASTM A105N	Carbon Steel	-29	427	ASTM B348 Ti Gr.5	Titanium	-196	427
ASTM A182 F6a Class 1	Martensitic	-29	371	ASTM B574 UNS N06022	Hastelloy C-22	-196	677
ASTM A182 F6NM	Martensitic SS	-101	371	Tungsten Carbide Coating	WC (TC)	-196	350
ASTM A182 F316	Austenitic Stainless Steel	-196	538	Cromium Carbide Coating	CrC	-29	450
ASTM A182 F316L	Austenitic Stainless Steel	-196	454	GRAPHITE	Graphite gasket	-196	600
ASTM A182 F316H	Austenitic Stainless Steel	-196	538	GRAPHOIL	Graphite gasket	-196	600
ASTM A182 F304	Austenitic Stainless Steel	-196	538	HNBR	Elastomer	-40	150
ASTM A182 F304L	Austenitic Stainless Steel	-196	425	(Hydrogenated Nitriles - Therban)			
ASTM A182 F304H	Austenitic Stainless Steel	-196	538	FKM (Viton A)	Elastomer	-20	204
ASTM A182 F44	Superaustenitic 6Mo	-101	400	FKM (Viton AED)	Elastomer	-20	204
ASTM A182 F51	Duplex	-50	315	FKM (Viton B)	Elastomer	-20	204
ASTM A182 F53	Super Duplex	-50	315	FKM (Viton GF)	Elastomer	-20	204
ASTM A182 F55	Super Duplex	-50	315	FKM (Viton GLT)	Elastomer	-33	204
ASTM A182 F11 Class 1 & 3	Low Alloy Steel	-29	595	FKM (Viton GLT)	Elastomer	-46	204
ASTM A182 F22 Class 1 & 3	Low Alloy Steel	-29	595	Kalrez	Elastomer	-20	250
ASTM A182 F316LN	Austenitic Stainless Steel	-196	538	Aflas	Elastomer	0	200
ASTM A479 XM-19	Austenitic Stainless Steel	-196	650	Nylon 12G	Plastic	-60	100
ASTM A479 Type 410	Martensitic SS	-29	371	Nylon SMX (Graphite)	Plastic	-60	140
ASTM A216 WCB	Cast Carbon Steel	-29	427	Nylon Devlon V	Plastic	-60	160
ASTM A217 WC6	Cast Carbon Steel	-29	538	PCTFE (Kel-F)	Plastic	-196	100
INCOLOY 825	Nickel Alloy	-196	538	PEEK	Plastic	-50	220
INCONEL 625	Nickel Alloy	-196	427	PEEK	Plastic	-196	220
ASTM A350 LF2 Class 1	Low Temp. Carbon Steel	-50	425	PTFE+GRAFITE (RPTFE)	Plastic	-196	200
ASTM A350 LF3	Low Temp. Carbon Steel	-101	345	PTFE+ELGILOY (LIP SEAL)	Plastic	-196	220
ASTM A351 CF3	Austenitic Stainless Steel	-196	425	ASTM A193 B7 / A194 2H	Bolts / Nuts	-48	538
ASTM A351 CF3M	Austenitic Stainless Steel	-196	427	ASTM A193 B7M / A194 2HM	Bolts / Nuts	-48	538
ASTM A351 CF8	Austenitic Stainless Steel	-196	538	ASTM A193 B8 Class 1/A194 G.8	Bolts / Nuts	-196	815
ASTM A351 CF8M	Austenitic Stainless Steel	-196	538	ASTM A193 B8 Class 2	Bolts	-196	538
ASTM A352 LC3	Low Temp. Carbon Steel	-101	343	ASTM A193 B8M	Bolts	-196	427
ASTM A352 LCB	Low Temp. Carbon Steel	-46	345	Class 1/A194 G.8M			
ASTM A352 LCC	Low Temp. Carbon Steel	-50	345	ASTM A193 B16	Bolts	-29	593
ASTM A694 F60	High strength C.S.	-46	425	ASTM A194 G.4L	Nuts	-101	593
ASTM A564 Type 630	Precip. Hard. (17-4PH)	-29	315	ASTM A 320 L7 / A194 G.4 or G.7	Bolts / Nuts	-101	427
ASTM A564 Type 630 H1150D	Precip. Hard. (17-4PH)	-46	315	ASTM A 320 L7M / A194 G.7M	Bolts / Nuts	-73	538
ASTM A564 Type 630 H1150M	Precip. Hard. (17-4PH)	-101	315	ASTM A 320 L43	Bolts	-101	371
ASTM B637 G.718	Inconel 718	-50	538	ASTM A638 G.660	Bolts (Precip. Hard. S.alloy)	-100	371
ASTM B348 Ti Gr.2	Titanium	-196	427				



Finite Element Analysis

DK-LOK operates the most advanced computerized graphic system (CAD and 3D Inventor) and conducts Finite Element Analyses (FEA) to simulate various load conditions by means of Ansys software for verification and validation stress levels of components suitability for the intended service.

These tools are routinely used throughout the design process to allow an effective exploration of the possible alternatives (sensitivity analyses); stress tests by strain gauges are also systematically carried out to validate FE models.



Non-Destructive Testing (NDT)

We analyze the materials and welding through NDT in order to make sure of their quality and identify potential defects which cannot be detected by visual examination.

Our in-house NDT methods:

- Ultrasonic Testing (UT)
 - Dye Penetrant Inspection (DPI)
 - Magnetic Particle Inspection (MPI)
 - Positive Material Identification (PMI)
 - Radiographic Testing X-Ray (RT)
- are mostly carried out on weldings and casting by technicians certified in accordance with EN473,

ASNT-TC-1A and/or ISO9712; such testing is subcontracted to 3rd parties or performed directly by the raw materials manufacturer who will supply us the material certificate and original film related to the radiographies performed.



Machining

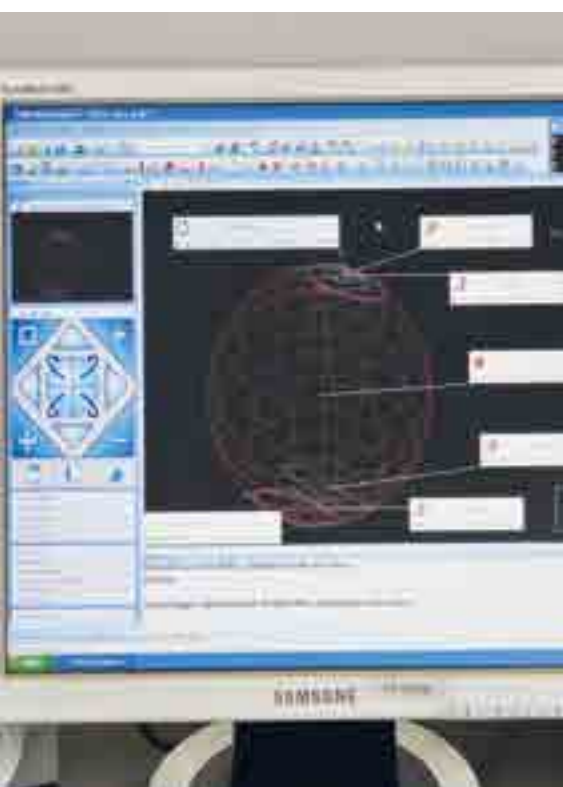
In DK-LOK facility you will find the most advanced generation of machine tools, selected with the utmost attention to their quality between few highly recognized manufacturers.

The quality of the machine tools, associated to the ability of our skilled shop foremen and operators, can guarantee the quality of the finished products to be in full compliance to the drawings and to the information of the Engineering Team,

enhancing cost saving and lead time reduction as the full control of the critical manufacturing processes is the way to obtain the highest level of quality.



Quality Control



Assembling



Testing

DK-LOK, in addition to the NDT testing already mentioned, can perform Hydro-Air test on its vertical dual head and horizontal test benches

(up to 40" or by use of counterflanges up to 60") in addition to HP Gas, Fugitive Emission Test and Torque Test. Additionally, in order to

comply to the requests from the LNG business, we have 2 cryogenic test benches where we can test up to 24" at -196 °C.

Hydraulic Body Shell & Seat Test



Self Relieving Test



Pneumatic Seat Test



Functional & Torque Test



Torque Verification



Special Testing

Double Piston Effect

High Pressure Gas Test Bunker Facility



Cryogenic Test - Up to -196°C



API 6A - Drift Test



High Temperature Test - Up to +500°C



API 6A - PR2 Validation



TAT SHELL



TAT SHELL MESC SPE 77/300

Fugitive Emission



ISO 15848-1/TA-LUFT

Painting



Quality System

DK-LOK is an ISO 9001:2015 Quality System accredited company: our Quality Assurance Department works to ensure that all engineering, manufacturing and testing activities are conducted in order to meet the requirements of ISO 9001.

ISO accreditation ensures a customized high quality service, performed by experienced personnel, to support and satisfy our customers, with safe company operation aimed at obtaining of higher profits with better use of resources and more conscious decision making with shorter reaction time.

DK-LOK is an OHSAS 18001 Occupational Health and Safety Management Systems & ISO 14001 Environmental Management System accredited company. It is our responsibility to ensure the health and safety of our employees and to safeguard the communities and environments in which we operate and live.

We desire to preserve the integrity and reputation of our company and to help our Employees, Workers and Directors to avoid misconduct; we have to ensure compliance with legal



and regulatory requirements as well as with our internal policies and directives.

We aim to act in an ethical and socially responsible manner within the laws, customs and traditions of the countries in which we operate.

Our ambition is to avoid negative environmental impacts, enhance positive effects and contribute to sustainable development. This applies to all our activities.

Fire Safe / Fugitive Emission 15848-1&2 / TAT SHELL MESC SPE 77/300

DK-LOK all complete range valves are designed and certified to meet the Fire Safe requirements according to API6FA and the Fugitive Emission requirements according to ISO 15848/1. Qualification tests covering the whole production range have been witnessed by licensed third party inspection institute.



Certification

Imphasire 6D more than Material Certification and Traceability



API 6D Specification for Pipeline Valves: DK-LOK valves can be designed according to Product Specification 6D requirements and, if explicitly required in the purchase order (as applicable), API monogram can be supplied.



It is our responsibility and purpose to maintain, throughout all manufacturing and assembling processes, a complete and clear traceability of all pressure containing and retaining parts: materials for under pressure components, including bolting and welding consumables used in the

manufacture or assembly of the valve, can be supplied with a specific and fully traceable material test report; each valve is identified by a Serial Number stated on dedicated material certificate and pressure test report; all pressure containing and retaining parts are certified according to EN10204 3.1, other parts can be supplied according to EN 10204 2.2.

A Third Part inspector can witness every production activity, starting from raw material production to final pressure test and issue a certificate in accordance with EN 10201 3.2. All valves can be supplied with a Certificate of Compliance with the requirements of the purchase order.

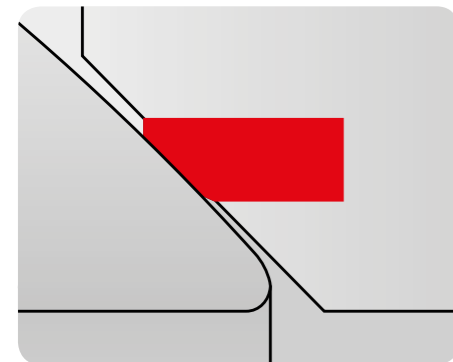


Design Features

Seat Material Selection

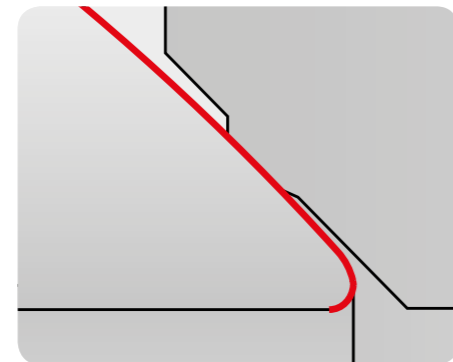
Soft Seat

The soft ring is inserted in the metal seat holder and together they provide sealing between body and ball.



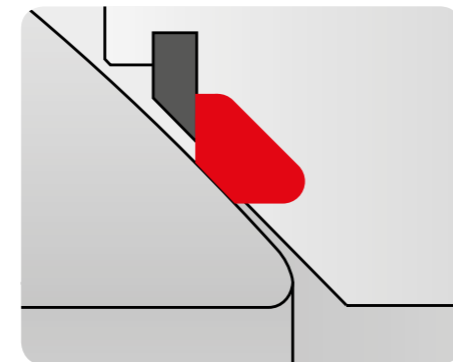
Metal-to-Metal Seat

This type of seat is requested when the temperature exceeds the maximum allowed by the elastomer ring used for soft seated valves or in case of highly corrosive or dirty medium which could lead to the damage of the insert. In such cases we provide a full metal-to-metal seat by increasing the hardness of the base material by using special coating based on Carbides (Tungsten or Chromium) or Stellite 6.



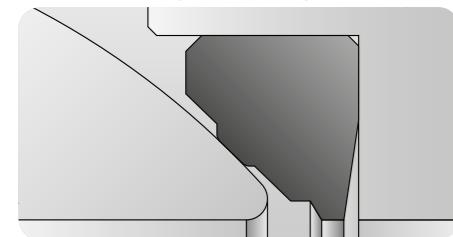
Primary Soft and Secondary Metal

A resilient material is inserted into the metal seat holder to provide a soft action in addition to the metal sealing between the ball and the seat rings. In case of fire, soft insert goes burnt and spring loaded seats insure metal to metal sealing.

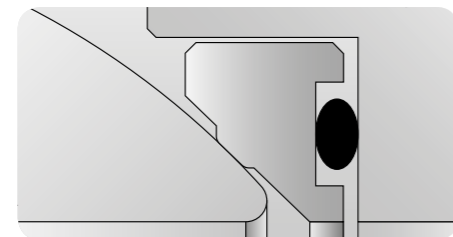


Seat Configuration

Floating Type Only



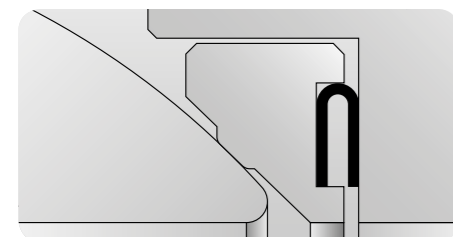
Soft Seated



Metal to Metal Seated Dirty Service



Metal to Metal Seated High Temperature



Metal to Metal Seated Low Temperature



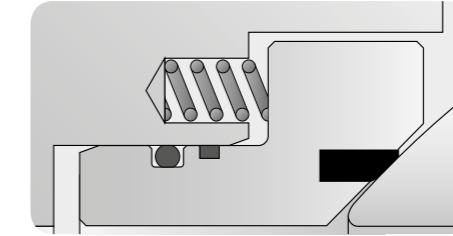
Seat Design

Seat Design

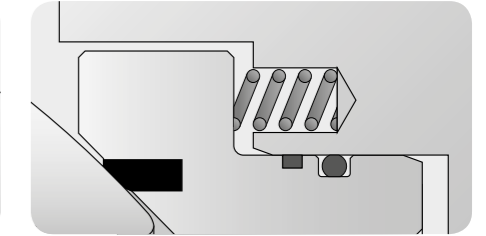
Self Relieving or Single Piston Effect Seat

Independent floating spring-loaded seats are in contact with the ball, when the pressure comes from the line, in order to provide an effective tight seal even at low differential pressures. When there is an over pressurization into the body (due to thermal effects or leakage), one or both the seats release the over pressure into the line avoiding the body blow up.

Upstream



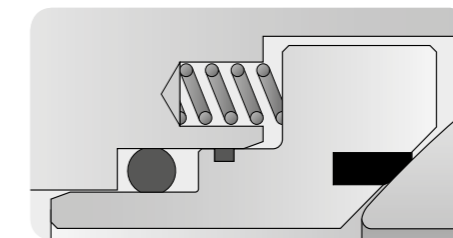
Downstream



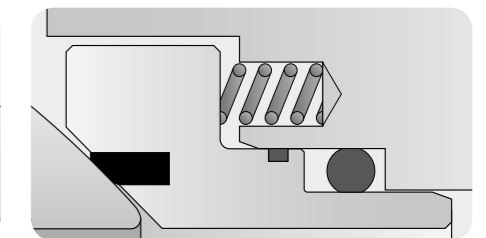
Double Piston Effect Seat

Independent floating spring-loaded seats are always in contact with the ball to provide an effective tight seal even at low differential pressures. Body cavity over pressure in this case can be released through a relief valve to atmosphere.

Upstream



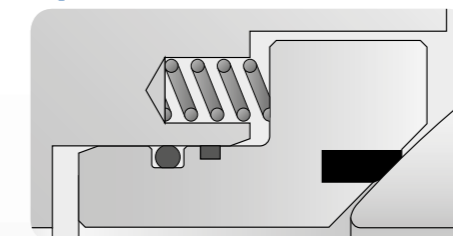
Downstream



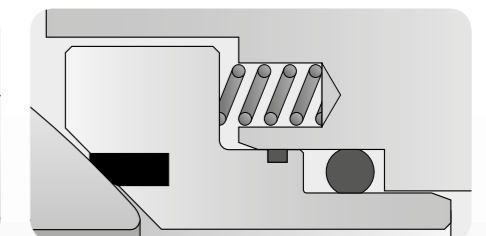
Upstream Seat Self Relieving and Downstream Seat Double Piston Effect

Combination of double piston effect seat on the downstream side and single piston effect on the upstream seat is available on request. This configuration maintains the sealing capacity of the valve in case of failure of the upstream seat and release of the body cavity over pressure through the upstream seat.

Upstream



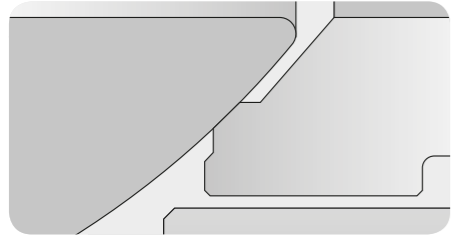
Downstream



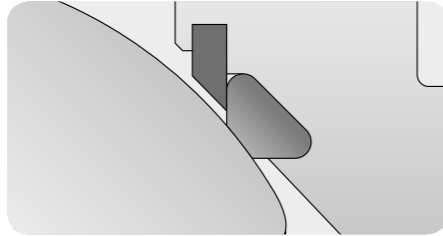
Design Features

Seat Configuration

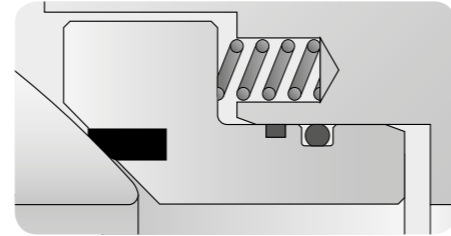
Trunnion Type Only



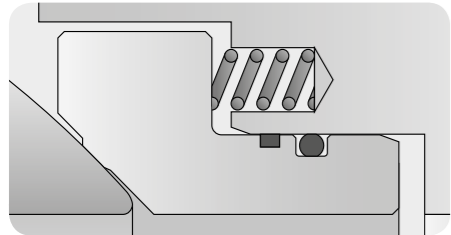
Metal to Metal Seated



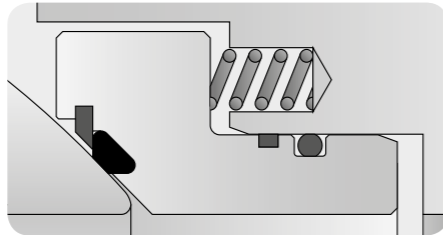
Delta Ring Seal



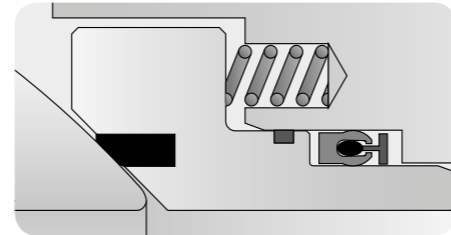
SPE Seat - Soft Seated - O-R Seals



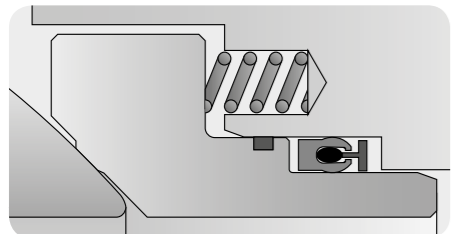
SPE Seat - Metal Seated - O-R Seals



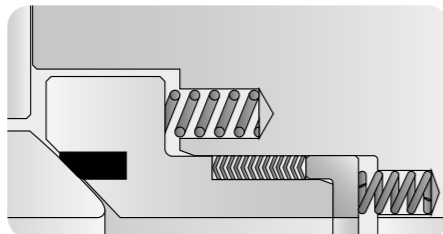
SPE Seat - Metal Seated Delta Ring Seal



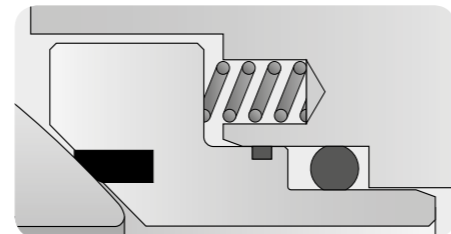
SPE Seat - Soft Seated Lip Seal



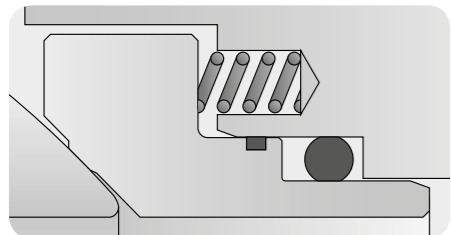
SPE Seat - Metal Seated - Lip Seal



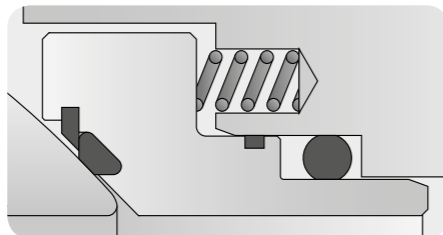
DPE Seat - Soft Seated - PTFE V Pack



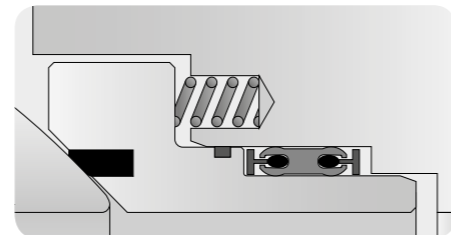
DPE Seat - Soft Seated - O-R Seals



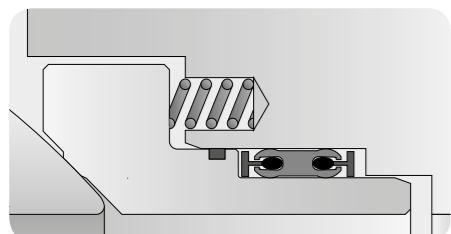
DPE Seat - Metal Seated - O-R Seals



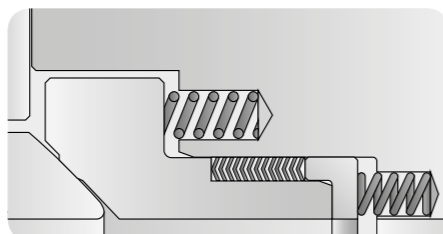
DPE Seat - Metal Seated Delta Ring Seal



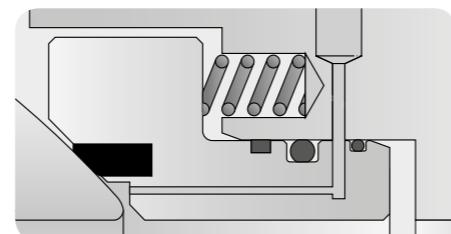
DPE Seat - Soft Seated Lip Seal



DPE Seat - Metal Seated Lip Seal



DPE Seat - Metal Seated Graphite V Pack

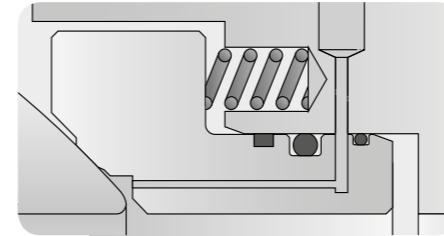


SPE Lubricated Seat - Soft Seated O-R Seals

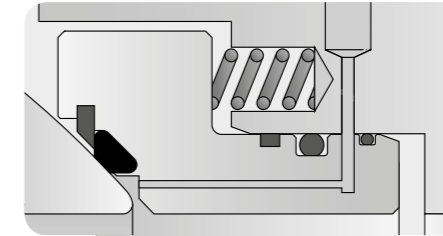
Design Features

Seat Configuration

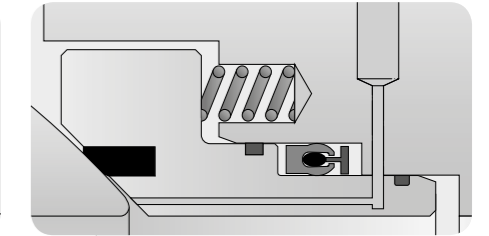
Trunnion Type Only



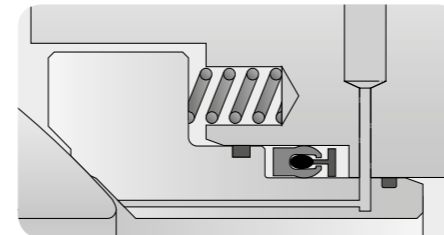
SPE Lubricated Seat - Metal Seated O-R Seals



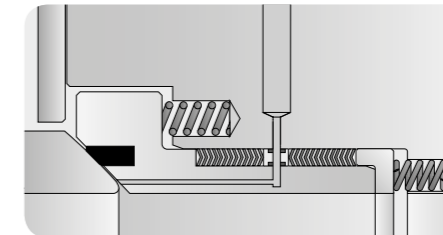
SPE Lubricated Seat - Metal Seated Delta Ring Seal



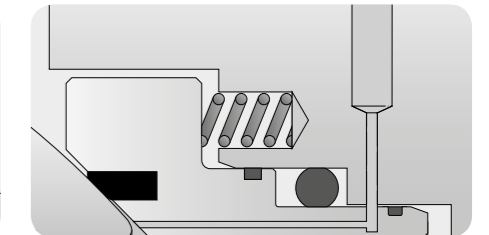
SPE Lubricated Seat - Soft Seated Lip Seal



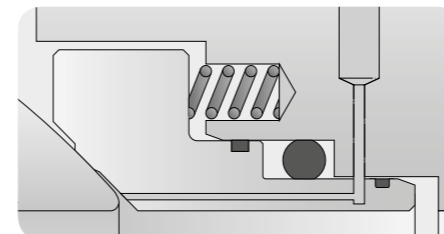
SPE Lubricated Seat - Metal Seated Lip Seal



SPE Lubricated Seat - Soft Seated PTFE V Pack



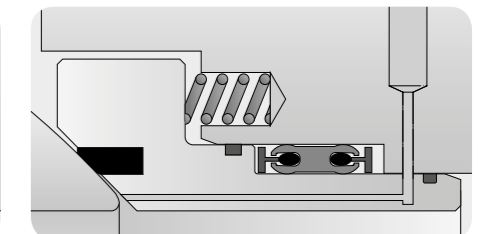
DPE Lubricated Seat - Soft Seated O-R Seals



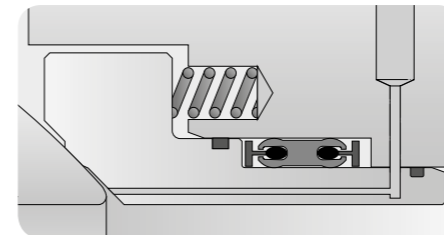
DPE Lubricated Seat - Metal Seated O-R Seals



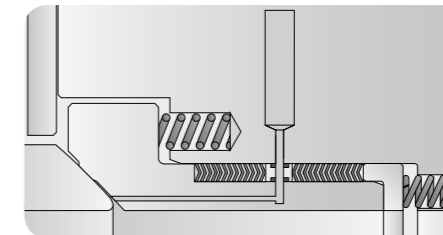
DPE Lubricated Seat - Metal Seated Delta Ring Seal



DPE Lubricated Seat - Soft Seated Lip Seal



DPE Lubricated Seat - Metal Seated Lip Seal



DPE Lubricated Seat - Metal Seated Graphite V Pack

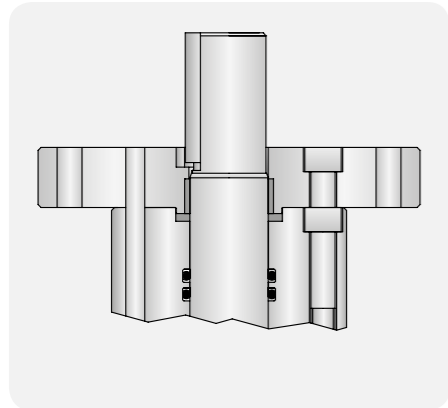
SPE (Single Piston Effect) ▶
DPE (Double Piston Effect)



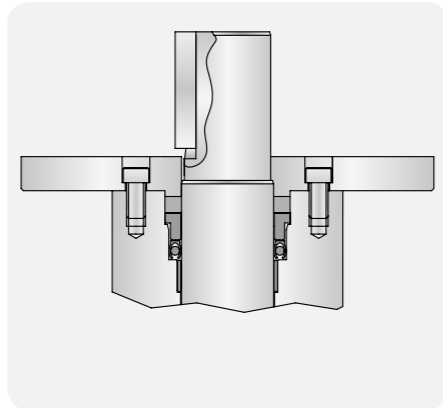
Design Features

Stem Configuration

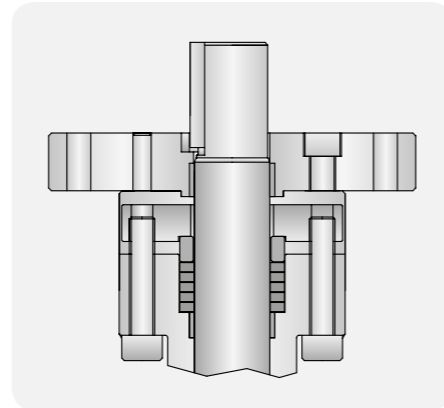
Trunnion Type Only



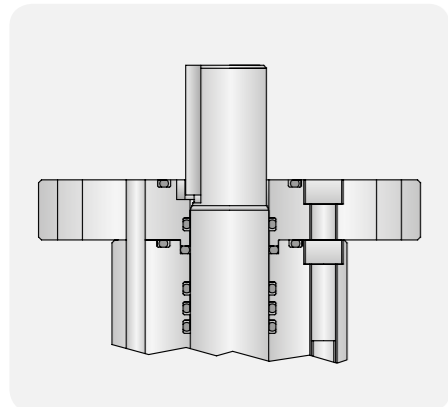
O-R Seals.



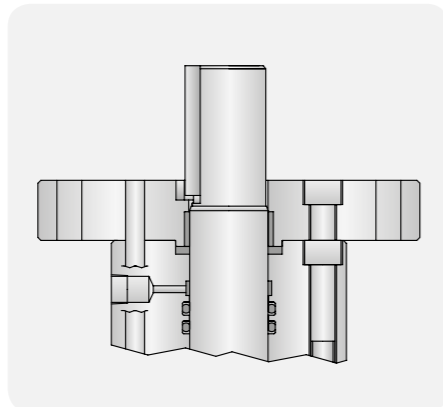
Lip Seals.



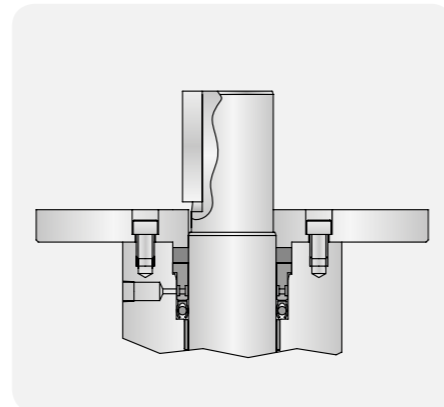
Graphite "V" Seals.



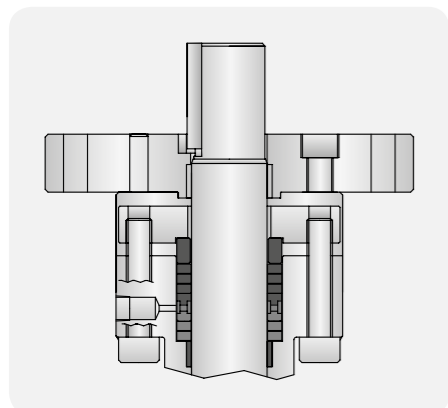
O-R Seals Subsea.



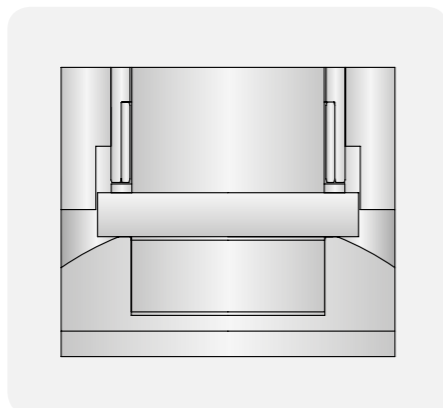
O-R Seals Lubricated.



Lip Seals Lubricated.



Graphite "V" Seals Lubricated.



Anti-Blow Out System Body Retainer.

Fire Safe Design

Static Gasket Fire Safe Ring (Graphite)



Dynamic Gasket Fire Safe Stem and Seat Packing Rings (ARM Graphite)



Qualified Gasket and Seals in according ISO 15848-1&2 / Shell Mesc TAT / Ta-Luft

Stem and Seat "V" Packing Rings (Thermoplastic)



Stem and Seat "V" Packing Rings (ARM Graphite)



Elastomer Seal



Lip Seal (Thermoplastic)



Ring Joint R, RX, BX



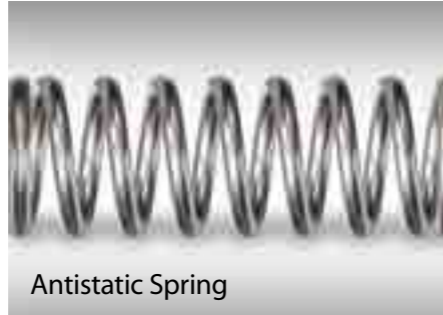
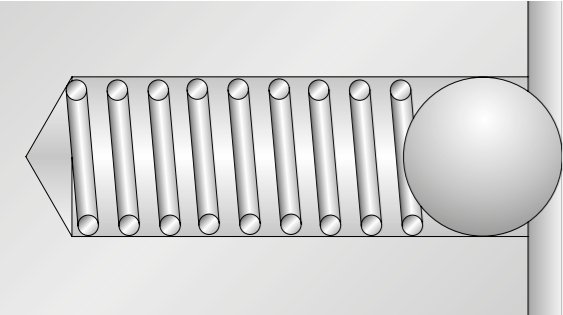
Design Features

Antistatic Device

The electrical conductivity between the ball and the valve body

and between the stem and the valve body is guaranteed

by an antistatic device.



Antistatic Spring



Antistatic Ball



Ball Seat Alignment

Mechanical stops ensure control over ball rotation and permit accurate mounting of actuators on valves in-line.



Locking Device

The locking device system concurs to block the valve in the opening or closing position through a padlock. Available also in the version with blocking in position of opening and closing applicable for manual lever and gearbox operation.



Special Application

Underground



Cryogenic



High Temperature



Sub-Sea



Special Features

Fittings & Injectors

Stem Grease Injection

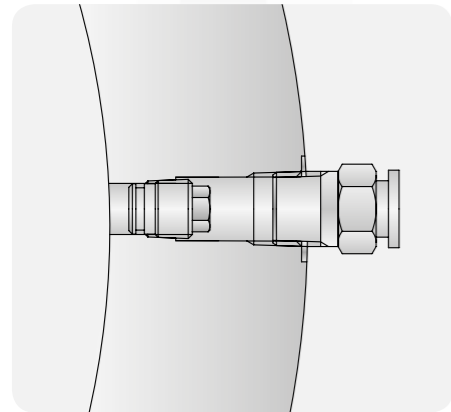
Upon request, an emergency stem sealant injection point can be provided between the second and the third gasket to temporarily seal the stem until the primary seal is restored. The grease fitting incorporates a check valve designed to prevent leakage to the environment, still allowing grease injection.



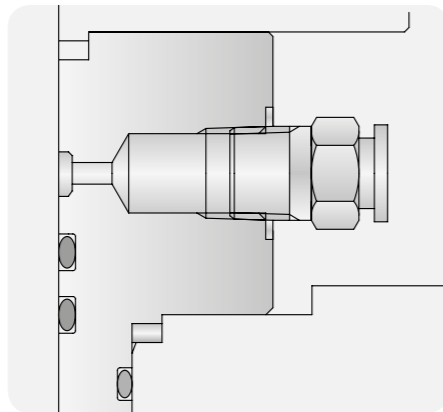
Seat Grease Injection

Valve seats are equipped with a sealant injection system to provide emergency sealing between seat and ball. The injection system comprises the grease fitting with the relevant sealing cover and the integral check valve. An additional check valve is fitted in the main valve body thickness in order to provide a second barrier to fluid leakage. The system is designed to allow sealant grease injection into the valve in service; the sealant is distributed on the seating surface between seat and ball. The seat grease injection system is recommended for soft seated

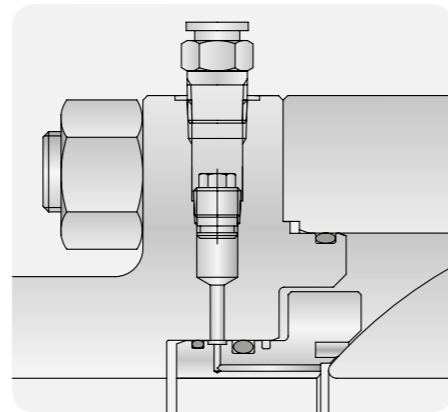
valves while is redundant in case of metal seated valves where the risk of damaging the seating surface is less likely thanks to the hardness of the surfaces.



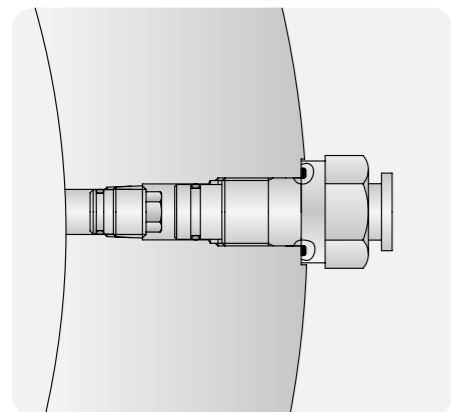
Seat Injector with separate Check Valve - NPT Thread. Center Body Position.



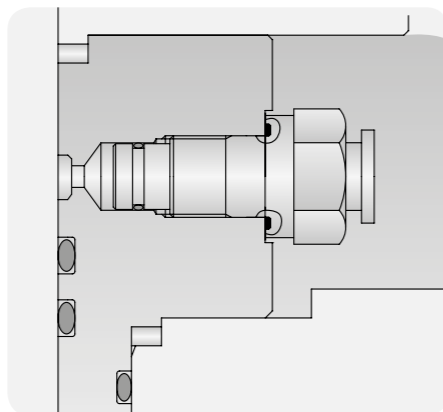
Stem Grease Injector NPT Thread. Gland Plate Position.



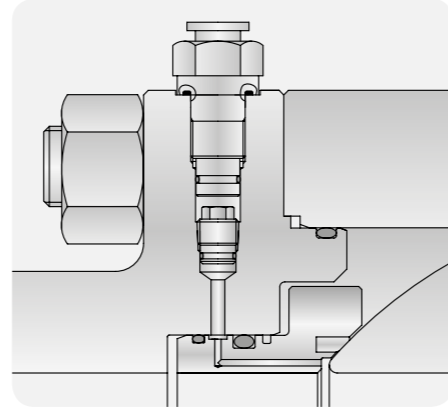
Seat Injector with separate Check Valve - NPT Thread. Closure Position.



Seat Injector with separate Check Valve - Thread ISO 228-1 Double Seal. Center Body Position.

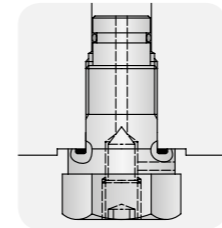


Stem Grease Injector Thread ISO 228-1 - Double Seal. Gland Plate Position.

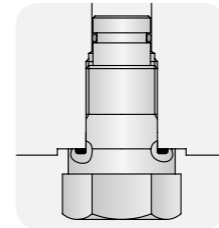


Seat Injector with separate Check Valve - Thread ISO 228-1 Double Seal. Closure Position.

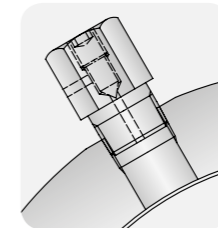
Vent & Drain



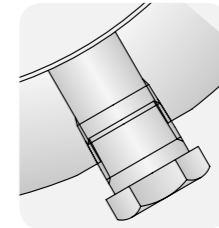
Bleeder Double Seal - Thread Iso 228-1



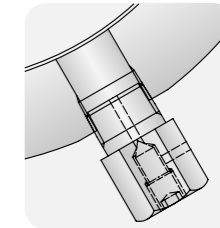
Plug Double Seal - Thread Iso 228-1



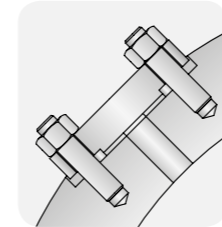
Vent Bleeder NPT Thread



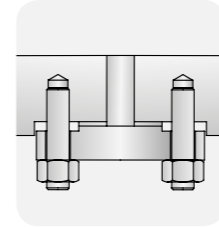
Drain Plug NPT Thread



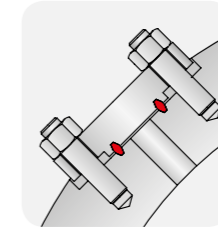
Drain Bleeder NPT Thread



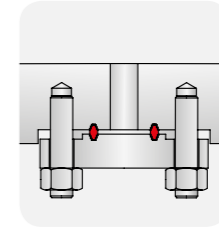
Vent Blind Flange RF 250-500 Aarh



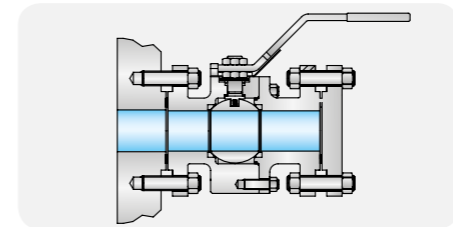
Drain Blind Flange RF 250-500 Aarh



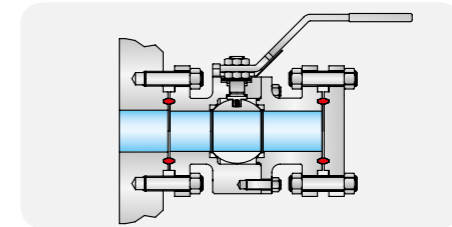
Vent Blind Flange RTJ



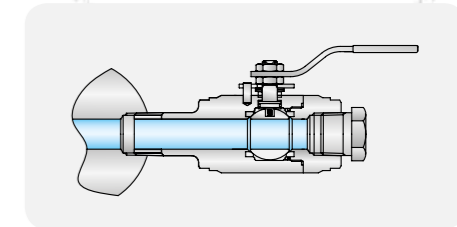
Drain Blind Flange RTJ



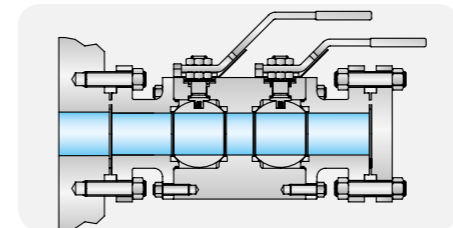
Vent/Drain Floating Ball Valve + Blind Flange RF



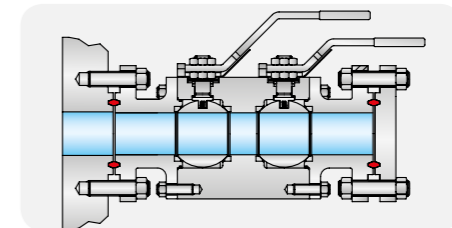
Vent/Drain Floating Ball Valve + Blind Flange RTJ



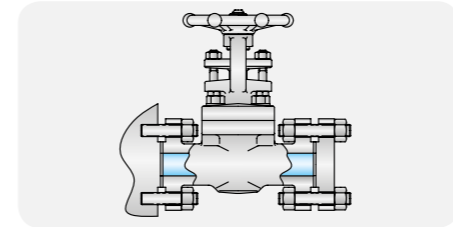
Vent/Drain Threaded Ball Valve + Threaded Plug



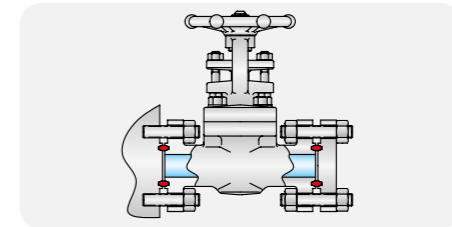
Vent/Drain Floating DBB Ball Valve + Blind Flange RF



Vent/Drain Floating DBB Ball Valve + Blind Flange RTJ



Vent/Drain Globe Valve + Blind Flange RF



Vent/Drain Globe Valve + Blind Flange RTJ



Special Features

Coatings

Carbide Coatings

Applied Thickness:

- Tungsten Carbide: 150 ~ 400 μ microns. (wear, corrosion).
- Chromium Carbide: 150 μ ~ 400 μ microns. (wear, corrosion, temperature).



HVOF/D-Gun Processes



E.N.P. (Electroless Nickel Plating on TRIM Components)

E.N.P. is Normally Applied to Obtain:

- Wear Resistance.
- Corrosion Resistance.
- Low Friction.

Applied Thickness:

- 25 μ microns.
- 50 μ microns.
- 75 μ microns.
- HV (64 HRC) with 520 °C H.T.
- 950 HV (68 HRC) with 400 °C H.T.



Bolts Coatings



DK-LOK can supply valves with special bolt coatings designed to inhibit corrosion.

Whether it is cadmium or zinc electroplating, Teflon/Xylan PTFE fluorocarbon, or other specialty coatings, all protect our products from conditions and environments that readily corrode unprotected bolts.

Coating Operating Temperatures

Cadmium Electroplating

- High Service Temp: 608° F.
- Low Service Temp: N/A; solid below 607° F.

Zinc or Zinc-Nickel Electroplating

- High Service Temp: 788° F.
- Low Service Temp: N/A; solid below 788° F.

Hot Dip Galvanizing

- High Service Temp 800° F.
- Low Service Temp: N/A; solid below 800° F.

DuPont Teflon® 857G Series PTFE

- High Service Temp: 500° F.
- Low Service Temp: N/A.

Xylan® 1400 Series PTFE

- High Service Temp: 450° F continuous, 550° F intermittent.
- Low Service Temp: - 320° F.

Xylar 2® Cermet

- High Service Temp: up to 1000° F.
- Low Service Temp: N/A.

Zinc Phosphate

- Ambient Temperature.

Standard Coating Options Available

- Xylan® PTFE.
- Xylar® Cermet.
- DuPont® 857G Series PTFE.
- SermaGard® 1105/1280 Cermet.
- Hot Dip Galvanizing.
- Mechanical Galvanizing (up to 1-1/2" dia., 5 lbs. wt., and/or 16" length per unit.).
- Zinc Phosphate.

Standard Plating Options Available

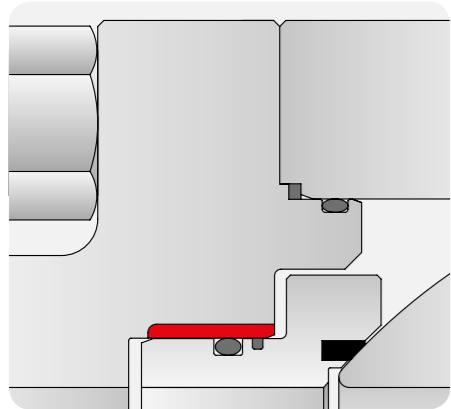
- Zinc.
- Zinc-Nickel.



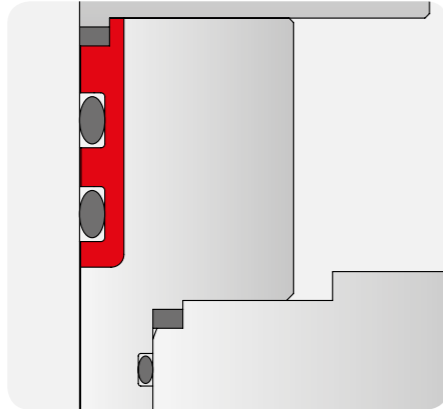
Special Features

Weld Overlays / Cladding and Internal Lining

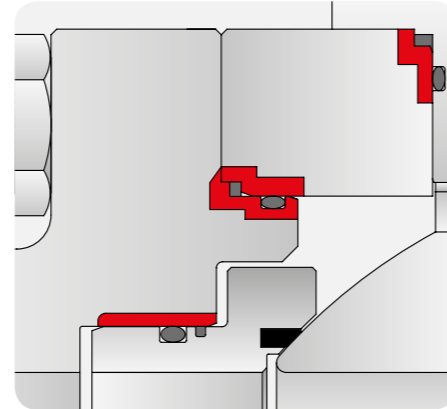
Trunnion Type Only



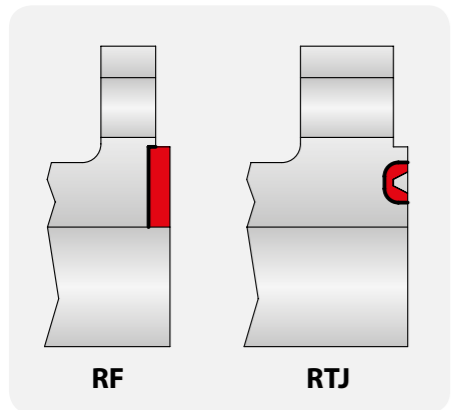
Seat Pocket Welded Overlay
3 mm finished thickness Dynamic seal area.



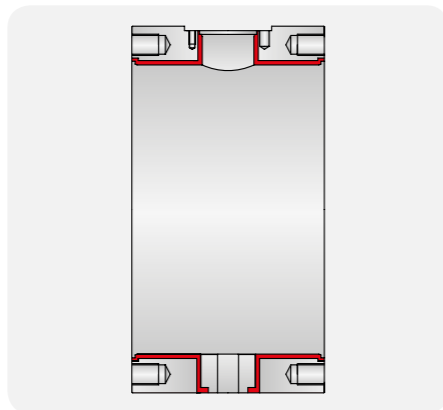
Stem Pocket Welded Overlay
3 mm finished thickness Dynamic seal area.



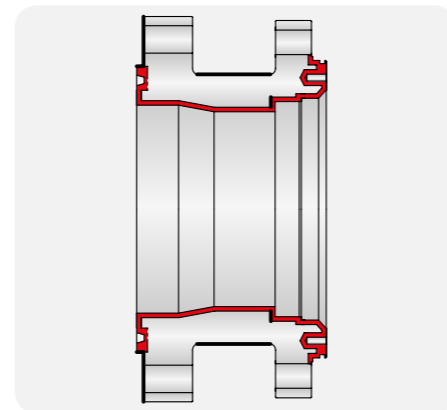
Seals Area Welded Overlay
3 mm finished thickness Dynamic and static seals area.



End Flange Welded Overlay
3 mm finished thickness Static seal area.

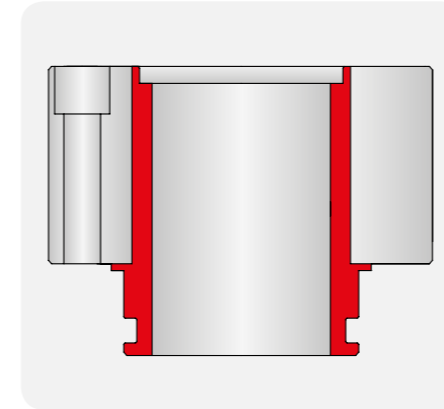


Body Weld Overlay On All Wetted Parts
3 mm finished thickness.

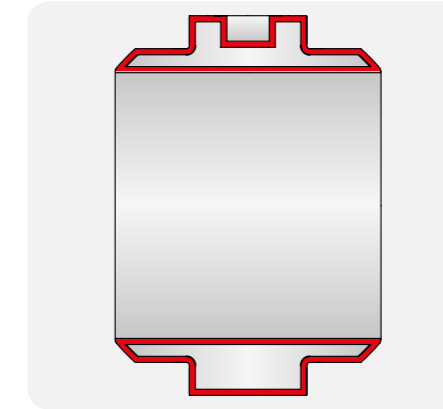


Closure Weld Overlay On All Wetted Parts
3 mm finished thickness.

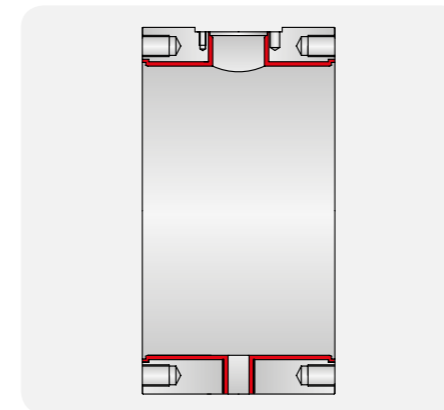
Cladding is designed for sour environment and is able to reduce cost impact without compromising on quality and technical performance. Cladded valves are basically supplied in lieu of solid CRA (Corrosion Resistant Alloy) materials (Nickel Alloys such as Inconel and Incoloy) If requested, we can manufacture valves in Carbon Steel with a CRA weld overlay of 3 mm thickness (or more in case of special requirements).



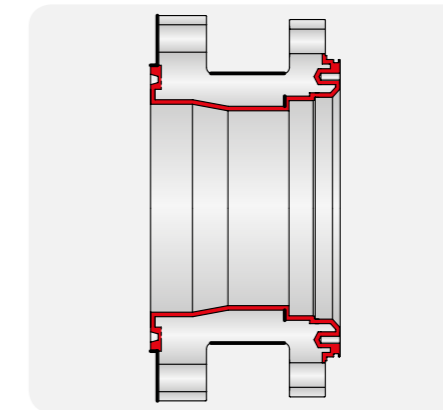
Gland Plate Weld Overlay On All Wetted Parts
3 mm finished thickness.



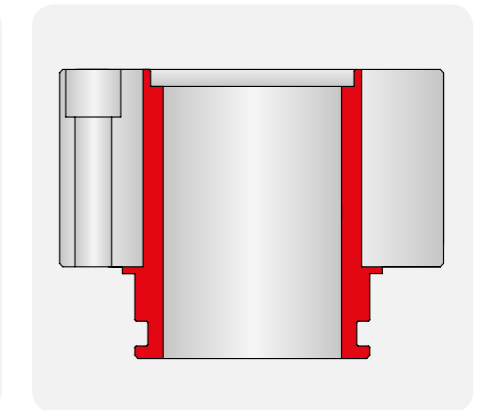
Ball Fully Cladded
3 mm finished thickness.



Body Internal Lining On All Wetted Parts
min. 300 microns thickness.

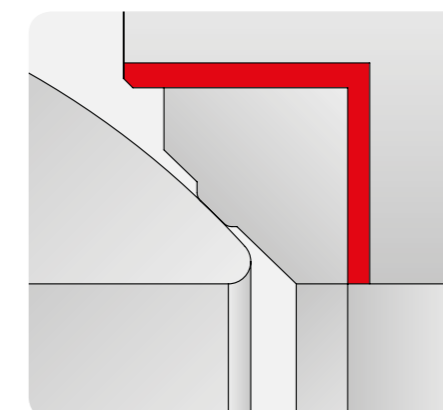


Closure Internal Lining On All Wetted Parts
min. 300 microns thickness.

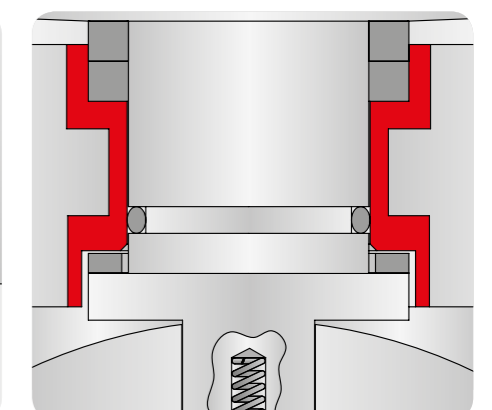


Gland Plate Internal Lining On All Wetted Parts
min. 300 microns thickness.

Floating Type Only



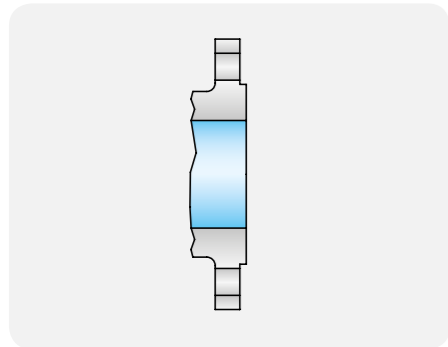
Seat Pocket Welded Overlay
3 mm finished thickness Static seal area.



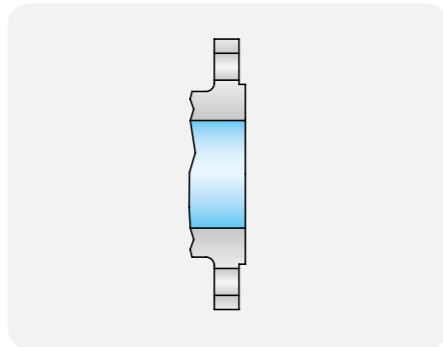
Stem Pocket Welded Overlay
3 mm finished thickness Static seal area.

Special Features

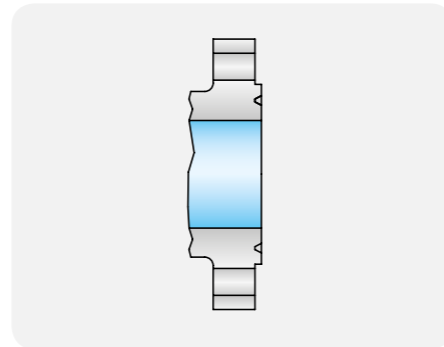
Valve Ends Types



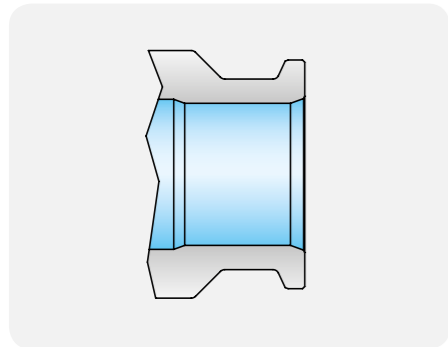
RF 250-500 AARH



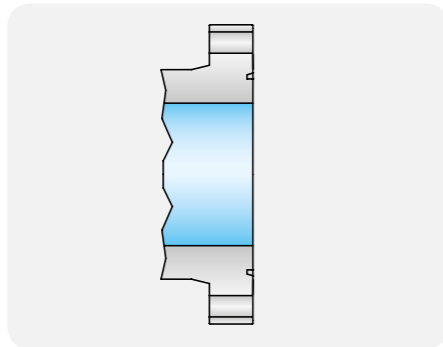
RF-Smoot 125-250 AARH



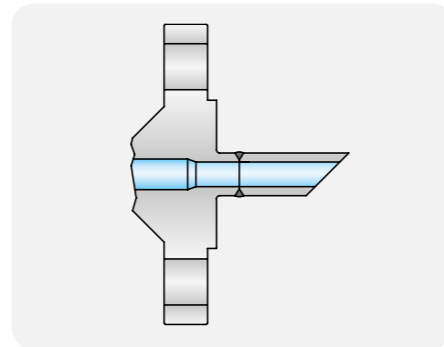
RTJ



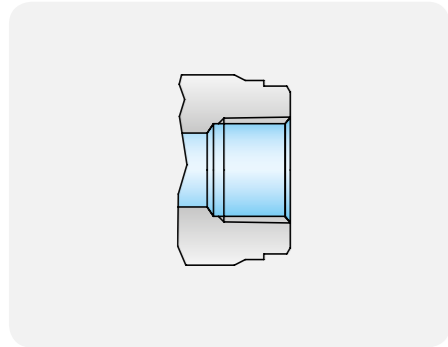
HUB-Clamp



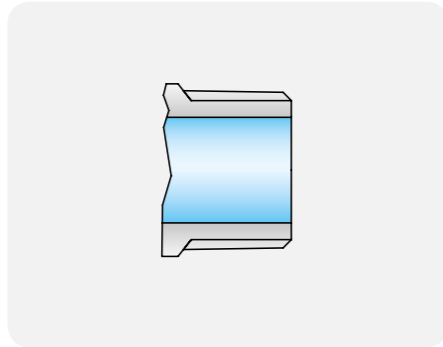
Compact Flange



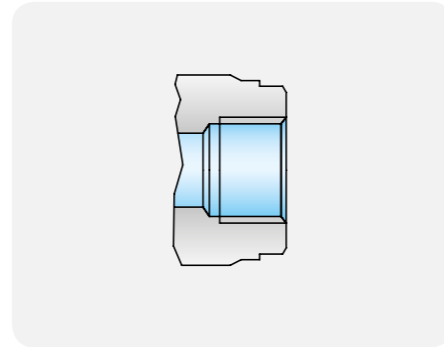
RF + Quill



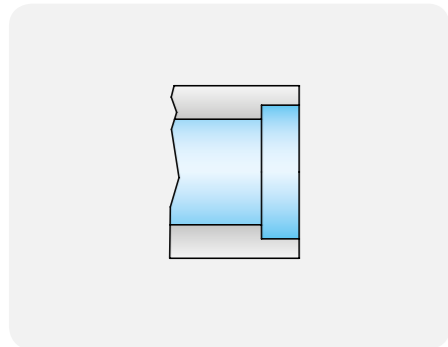
Thread NPT-F



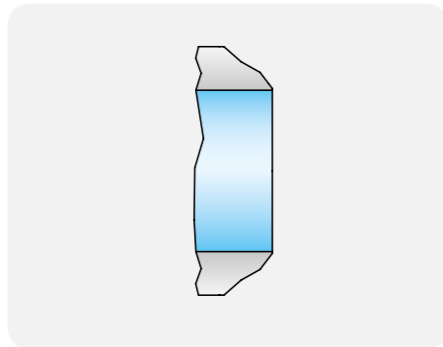
Thread NPT-M



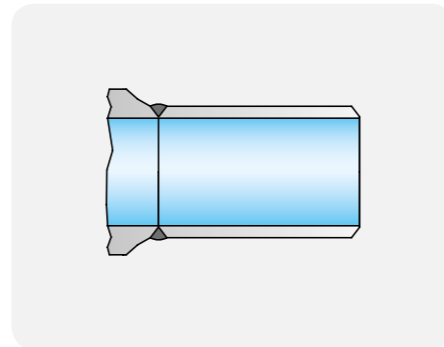
Thread ISO 228-1



SW



BW



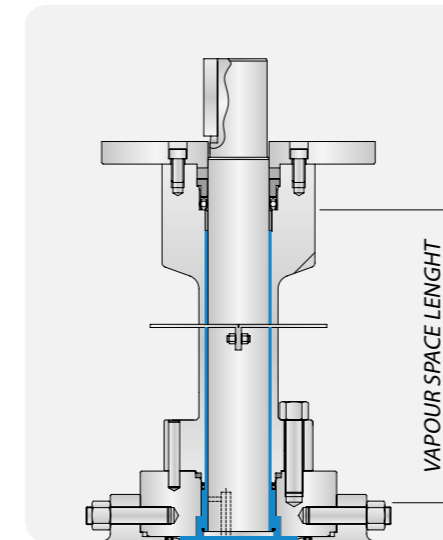
Bw+Welded Transition Pup Piece

Extended Bonnet & Stem Extension

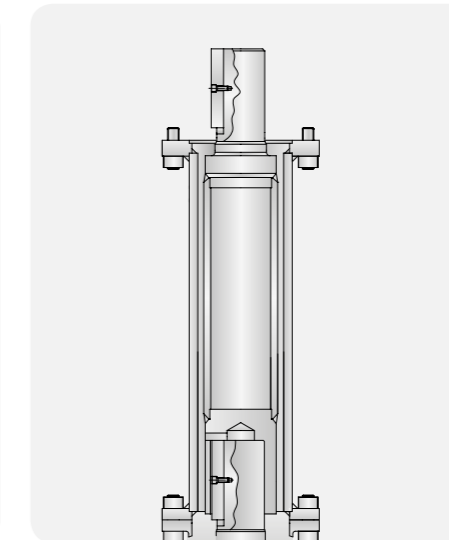
Insulated Extended Stem & Underground Stem Extension can be provided making the valve suitable for inaccessible areas or buried service.

The piping of the grease injection system and of the vent and drain connections are extended to the top of the extension to ease their access. Cryogenic Extended Bonnet With Drip Collar & High Temperature Extended Bonnet Live Load Packing

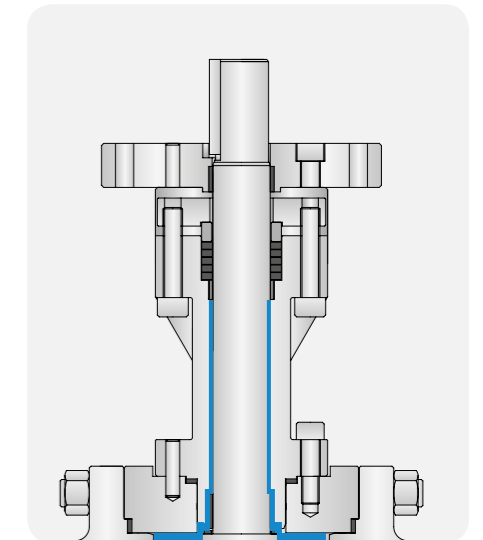
can be provided making the valve suitable for extreme temperature according to customer requirements.



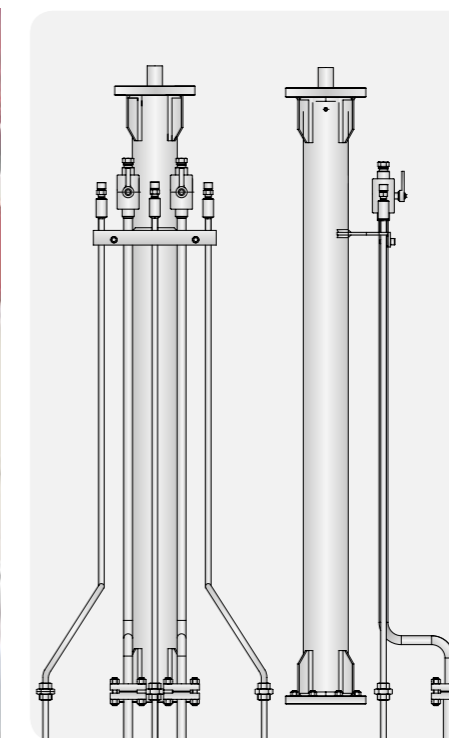
Cryogenic Extended Bonnet With Drip Collar



Insulation Extended Stem



High Temperature Extended Bonnet Live Load Packing



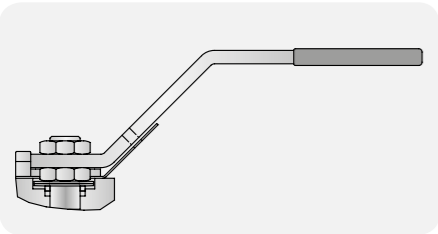
Underground Stem Extension



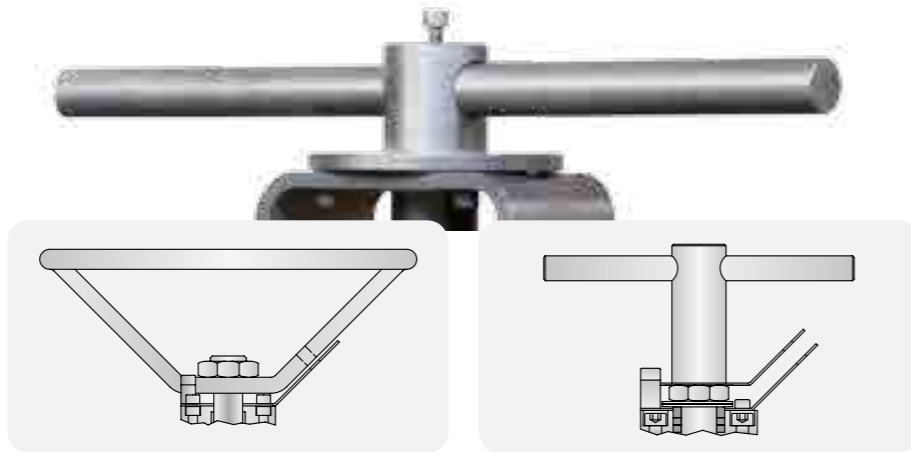
Operators

Manual

Floating Type Only



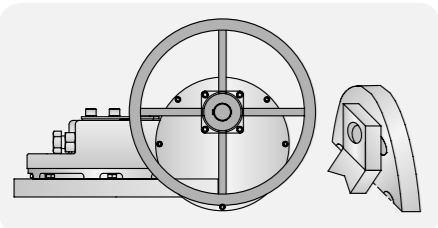
Lever with Locking Device



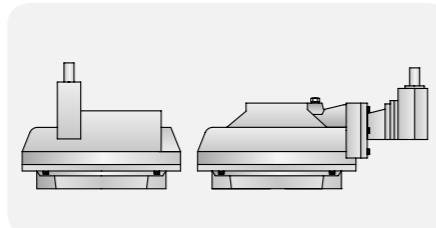
Handwheel with Locking Device

T - Lever with Locking Device

Floating & Trunnion



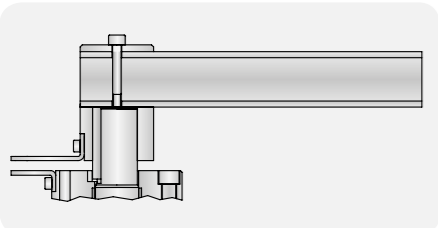
Gearbox with Handwheel & Locking Device



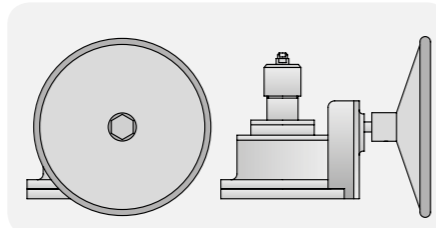
Gearbox Turn to 90°



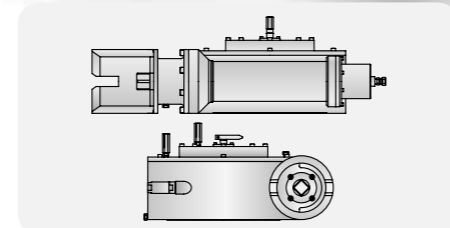
Trunnion Type Only



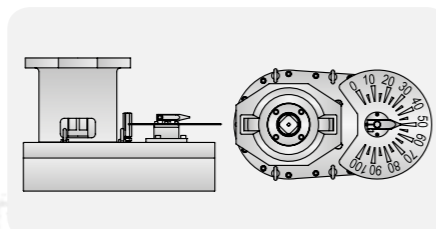
Lever with Locking Device



Subsea Manual Gearbox + Handwheel



Subsea Manual Gearbox + Horizontal ROV



Subsea Manual Gearbox + Vertical ROV



Actuated

Pneumatic

Single Effect, Spring Return.
Double Effect, with Hydraulic
Manual Override Double Effect,
with Mechanical Manual
Override.



Linear Hydraulic



Hydraulic

Single Effect, Spring Return.
Hydraulic Double Acting.



Subsea

Actuators customised to meet the
different conditions depending
on the sea depth or special interface
to allow roV connection.



Electric Actuator

- Directly mounted.
- Underground valve, with extended stem, reduction gear and motor above ground level.
- Underground valve, with directly mounted reduction gear, extended handwheel spindle, motors above ground level.



Gas Over Oil

Actuation power provided by line pressure.



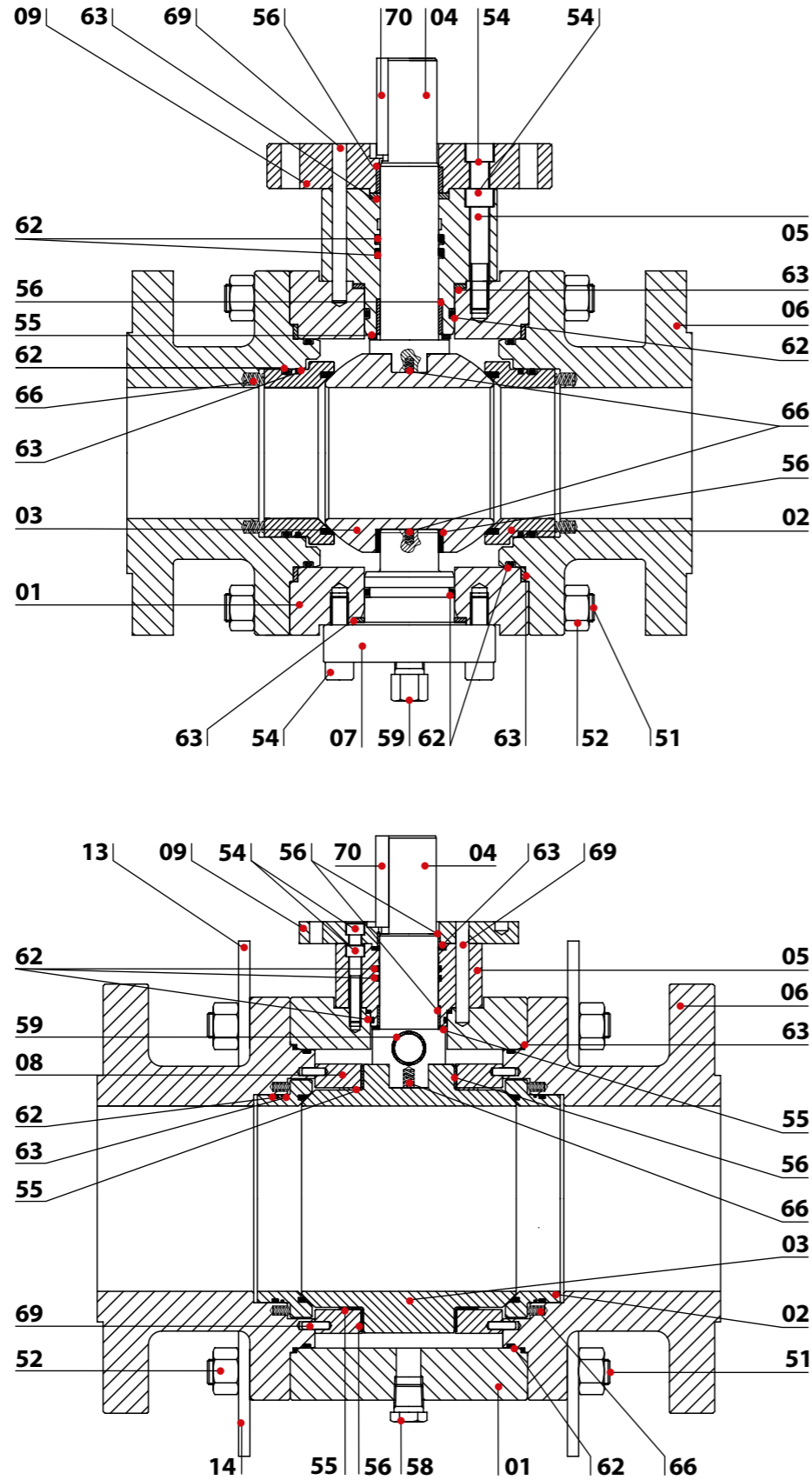
Side Entry

Main Features

- Bolted Body - All Forged Construction.
- Soft / Metal Seated.
- Self Relieving or Double Piston Effect.
- Anti Blow-Out Stem.
- Double Block & Bleed.
- Fire Safe API 6FA - API 607 ISO 14097.
- Antistatic Device.
- Emergency Sealant Injection to Stem & Seats.
- Materials in Accordance to NACE MR 01.75
- Above / Under Ground Installation.

Valve Parts

Pos.	Description
01	Body
02	Seat / Insert
03	Ball
04	Stem
05	Stem cover
06	Flange
07	Trunnion
08	Ball Support
09	Operator Flange
13	Lifting Lugs
14	Valve Support
51	Stud
52	Nut
54	Screw
55	Thrust Washer
56	Thrust Bearing
58	Plug
59	Bleeder
62	Seal
63	Gasket
66	Spring
69	Pin
70	Key



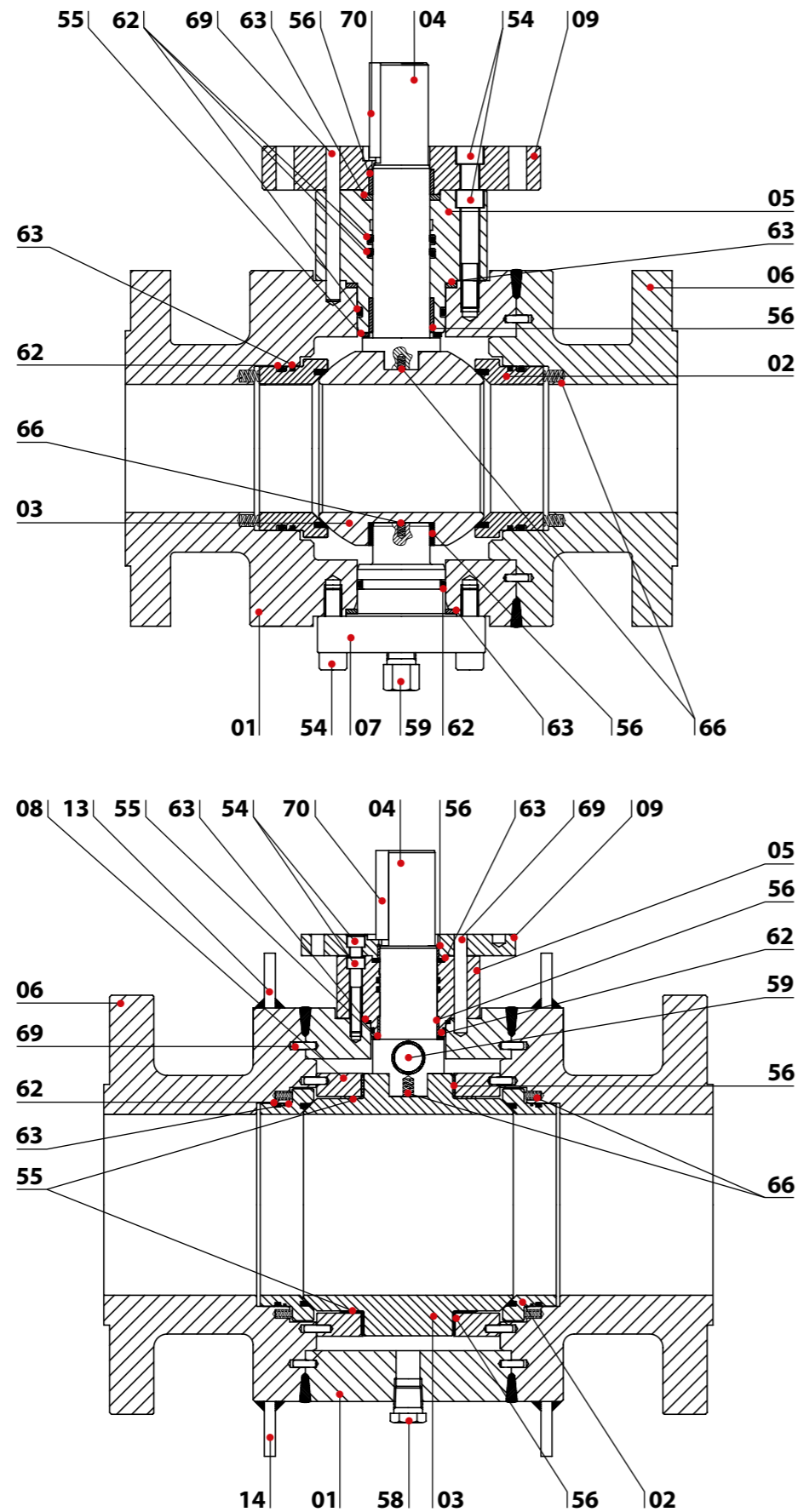
Welded Body

Main Features

- Welded Body - Cast or Forged body and closure.
- Soft / Metal Seated.
- Self Relieving or Double Piston Effect Seat .
- Anti Blow-Out stem.
- Double Block & Bleed.
- Fire Safe API 6FA - API 607 ISO 14097.
- Antistatic device.
- Emergency sealant injection to stem & seats.
- Materials in accordance to NACE MR 01.75.
- Above / under ground installation.

Valve Parts

Pos.	Description
01	Body
02	Seat Insert
03	Ball
04	Stem
05	Stem cover
06	Flange
07	Trunion
08	Ball Support
09	Operator Flange
13	Lifting Lugs
14	Valve Support
54	Screw
55	Thrust Washer
56	Thrust Bearing
58	Plug
59	Bleeder
62	Seal
63	Gasket
66	Spring
69	Pin
70	Key



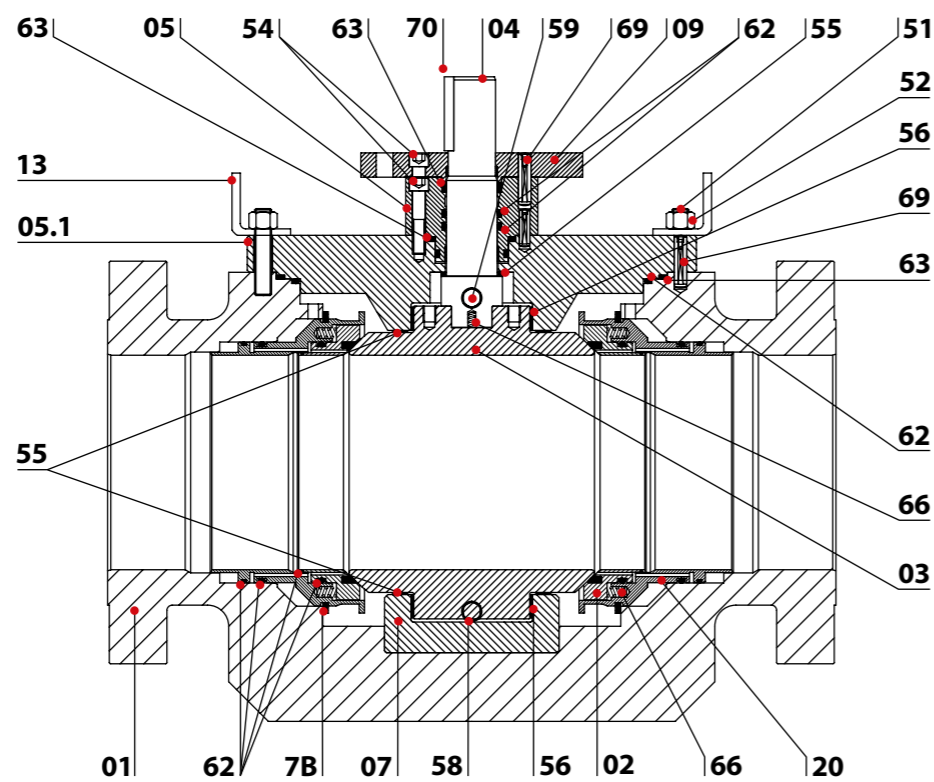
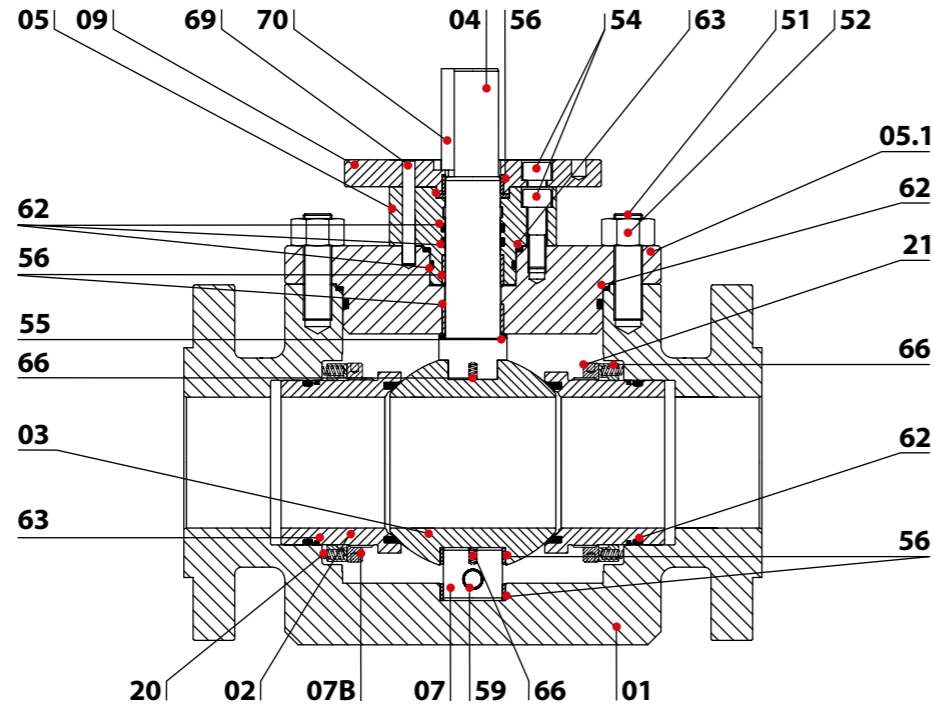
Top Entry

Main Features

- Bolted Bonnet - Cast Body/Forged Bonnet and Trim (forged body available on request).
- Soft / Metal Seated.
- Self Relieving or Double Piston Effect Seat.
- Anti Blow-Out stem.
- Double Block & Bleed.
- Fire Safe API 6FA - API 607 ISO 14097.
- Antistatic device.
- Emergency sealant injection to stem & seats.
- Materials in accordance to NACE MR 01.75
- Above / below ground installation
- Full in-line maintenance, either with vertical and horizontal stem.

Valve Parts

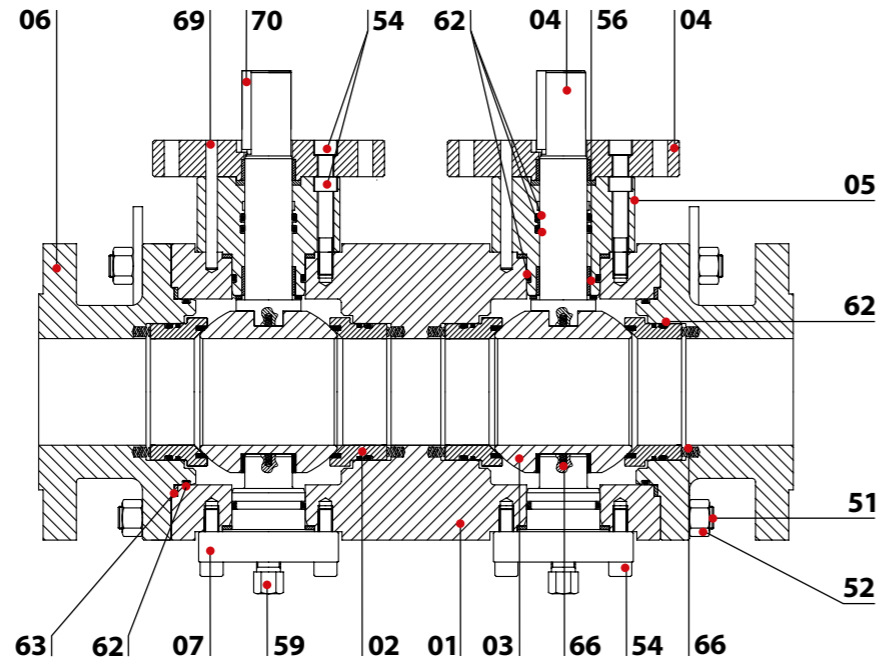
Pos.	Description
01	Body
02	Seat / Insert
03	Ball
04	Stem
05	Stem cover
05.1	Body Cover
07	Trunnion
07B	Spacer Ring
20	Ring for Spring
09	Operator Flange
13	Lifting Lugs
51	Stud
52	Nut
54	Screw
55	Thrust Washer
56	Thrust Bearing
58	Plug
59	Bleeder
62	Seal
63	Gasket
66	Spring
69	Pin
70	Key



Double Block & Bleed

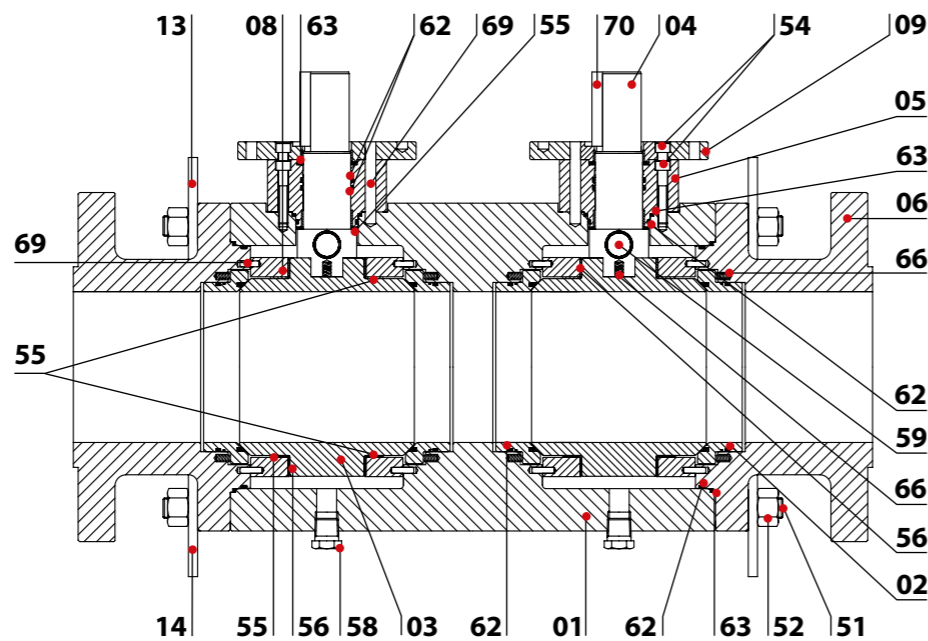
Main Features

- Forged Body, bonnet and Trim.
- Split Body.
- Soft / Metal Seated.
- Self Relieving or Double Piston Effect Seat
- Anti Blow-Out stem.
- Bleed Type (Needle or Globe valve).
- Fire safe API 6FA - API 607 ISO 14097.
- Antistatic device.
- Emergency sealant injection to stem & seat.
- Materials in accordance to NACE MR 01.75
- Above ground installation.



Valve Parts

Pos.	Description
01	Body
02	Seat / Insert
03	Ball
04	Stem
05	Stem cover
06	Flange
07	Trunnion
08	Ball Support
09	Operator Flange
13	Lifting Lugs
14	Valve Support
51	Stud
52	Nut
54	Screw
55	Thrust Washer
56	Thrust Bearing
58	Plug
59	Bleeder
62	Seal
63	Gasket
66	Spring
69	Pin
70	Key



Bleed Types



Bleeder Bonnet



Bleeder Needle Bonnet



Bleeder Needle Flanged

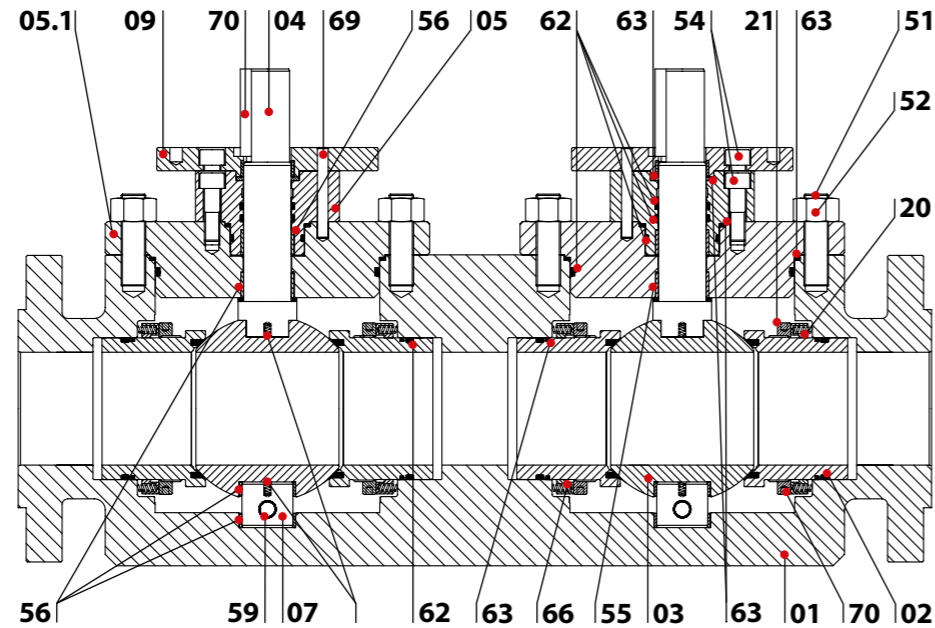


O. S. & Y Type Globe Valve

Double Block & Bleed

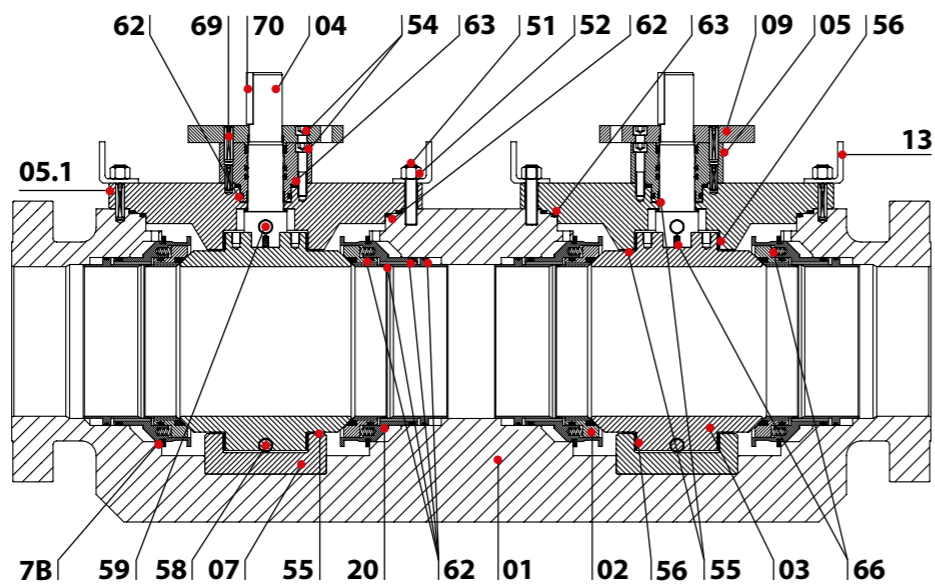
Main Features

- Forged Body, bonnet and Trim.
- Soft / Metal Seated.
- Self Relieving or Double Piston Effect Seat Anti Blow-Out stem.
- Bleed Type (Needle or Globe valve).
- Fire safe API 6FA - API 607 ISO 14097.
- Antistatic device.
- Emergency sealant injection to stem & seat.
- Materials in accordance to NACE MR 01.75.
- Above ground installation
- Full In-Line Maintenance either with vertical and horizontal stem.



Valve Parts

Pos.	Description
01	Body
02	Seat / Insert
03	Ball
04	Stem
05	Stem cover
05.1	Body Cover
07	Trunnion
7B	Spacer Ring
09	Operator Flange
13	Lifting Lugs
20	Ring for Spring
51	Stud
52	Nut
54	Screw
55	Thrust Washer
56	Thrust Bearing
58	Plug
59	Bleeder
62	Seal
63	Gasket
66	Spring
69	Pin
70	Key



Bleed Types



Bleeder Bonnet



Bleeder Needle Bonnet



Bleeder Needle Flanged

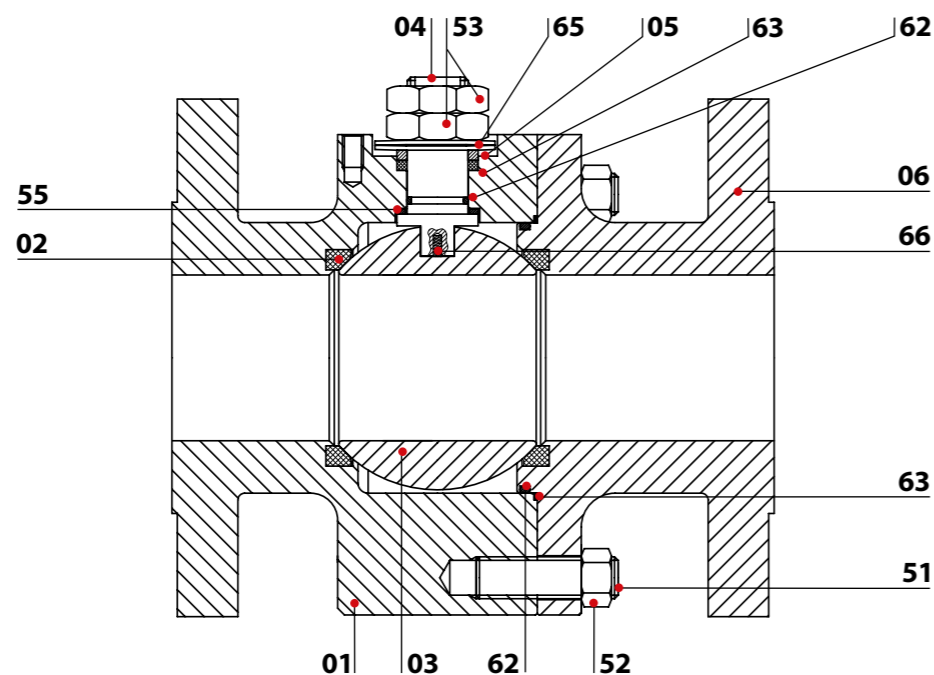


O. S. & Y Type Globe Valve

Floating Split Body

Main Features

- Split Body - All forged construction.
- Soft / Metal Seated.
- Self Relieving.
- Anti Blow-Out stem.
- Fire safe API 6FA - API 607 ISO 10497.
- Antistatic device.
- Materials in accordance to NACE MR 01.75.



Valve Parts

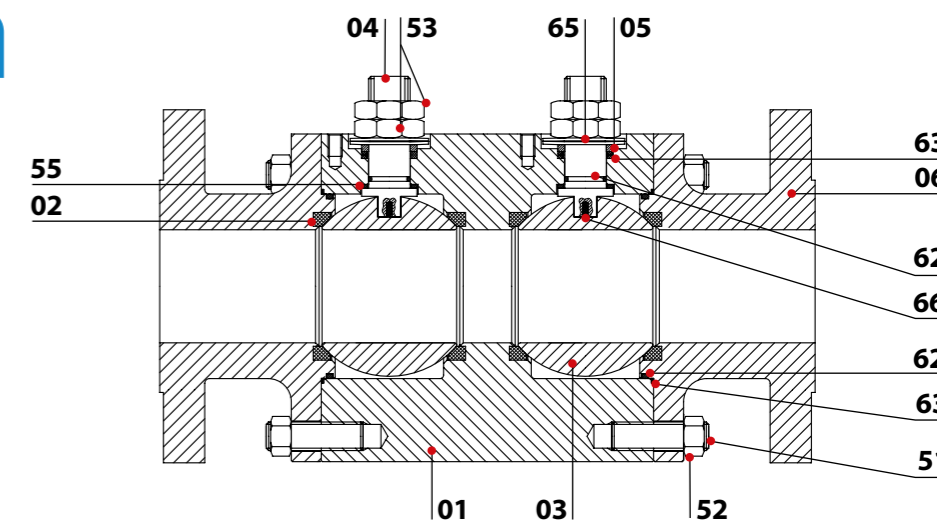
Pos.	Description
01	Body
02	Seat
03	Ball
04	Stem
05	Gland
06	Flange
51	Stud
52	Nut
53	Stem Nut
55	Thrust Washer
62	Seal
63	Gasket
65	Spring Washer
66	Antistatic Spring



Floating DBB

Main Features

- Split Body - All forged construction.
- Soft / Metal Seated.
- Self Relieving.
- Anti Blow-Out stem.
- Fire safe API 6FA - API 607 ISO 10497.
- Antistatic device.
- Materials in accordance to NACE MR 01.75.



Valve Parts

Pos.	Description
01	Body
02	Seat
03	Ball
04	Stem
05	Gland
06	Flange
51	Stud
52	Nut
53	Stem Nut
55	Thrust Washer
62	Seal
63	Gasket
65	Spring Washer
66	Antistatic Spring



Gate

API 600

Gate valves serve as efficient on-off valves with flow in either direction. In such a design, a wedge slides across a general passageway in order to control fluid flow (like a sliding gate - hence, the name). One of the most significant characteristics of this type of valves is its straight-through, unobstructed passageway when set in the "full open" position. This is made possible by the wedge lifting entirely out of the passageway. As a result, gate valves are characterized by a minimum of turbulence and pressure drop in operation. While gate valves are good for applications requiring these two factors, they are not recommended for installations in which throttling would be a function. They are designed for on/off service.

Body and Bonnet

Bodies and bonnets are high quality cast and afterwards precisely machined, directing the attention to prevent stress concentration. The bodies of gate valves consist of a straight through port that guarantees

minimal turbulence and resistance to flow. In both designs, bolted bonnet and pressure seal, the bodies consist of guide slots to accommodate the wedge during opening or closing of the valve. Bonnets are made either of one piece only - the yoke then being an integral part of it - or have two pieces, depending on the size of the valve. This ensures the perfect alignment with the body what leads to an accurate opening and closing.

Stem

The stems of gate valves are forged from one piece and ACME threaded, then machined and finally provided with a smooth finishing in order to minimize friction. In gate valves, the union of stem and wedge shall be in T form, designed to prevent the stem disengaging itself from the wedge while being in service. This design includes a conical raised surface that presses the seat against the bonnet backseat in the fully open position.

Flexible Wedge

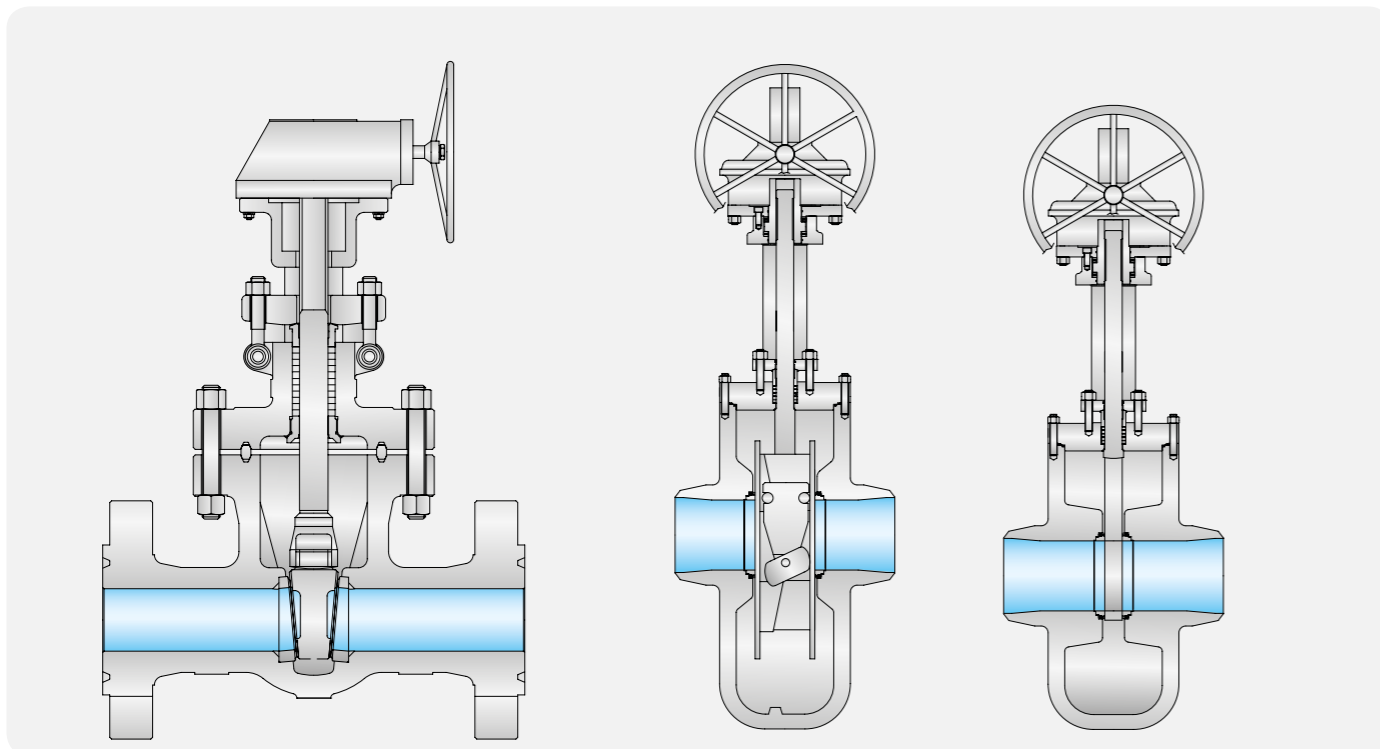
All gate valves 3" and above feature a flexible wedge unless

otherwise specified by the customer. The flexible wedge shifts along the body of the valve during opening and closing, being held in position by a guide slot that minimizes the friction between body seat and wedge. This design is especially suitable to compensate slight thermal deformations produced by the pipe or the valve itself safeguarding a better sealing between body and wedge seats.

API 6D

Through Conduit Slab and Expanding Design

- Body forged and or cast.
- Valve maintenance on pipeline.
- Suitable for pigging.
- Full and reduce bore.
- Soft and metal seated.
- Double Block & Bleed.
- Rising and non-rising stem version.
- Options with clean device for dirty service.
- High temperature, low temperature, abrasive and corrosive service.



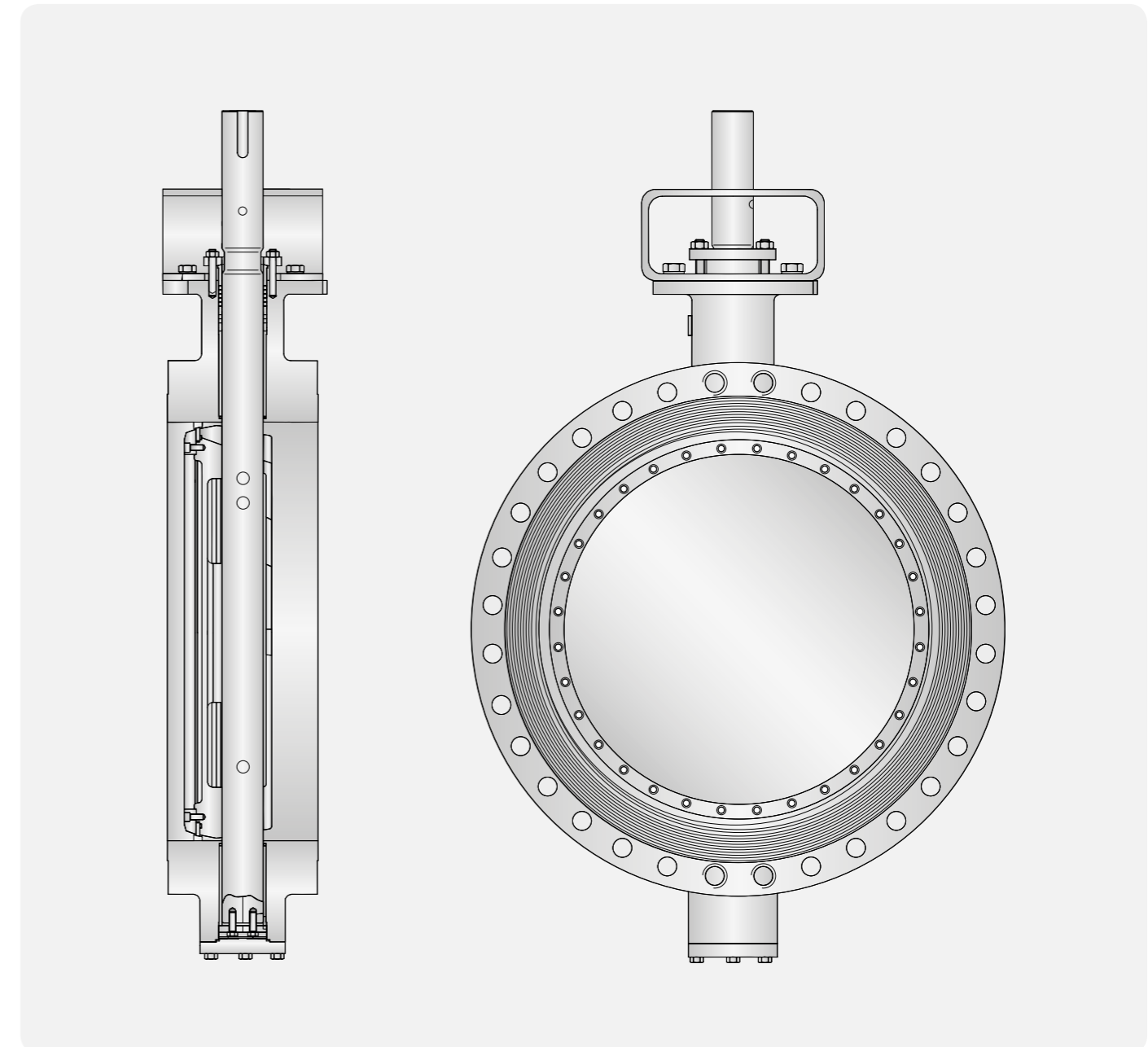
Triple Eccentric Butterfly Valve

Features and Application

Triple eccentric butterfly valve series is the newly-developed long-life and energy-saving products. The sealing is metal to metal, which could be changed to be seal ring to metal, stainless steel plate and composite graphite to metal.

Under the working condition of high temperature and high pressure, it still has a stable sealing performance. Our company adopts optimization design and new technology, so that the torque is low allowing easier operation, gaining the point of energy-saving, labor-saving and reliable sealing performance, to ensure the high-reliability of corrosion-resistance,

stand fire and wear-resistance. This product is widely used in petroleum, natural gas, piped gas pharmaceutical industry, food industry, industrial environmental, water treatment and shipping industry.



Check

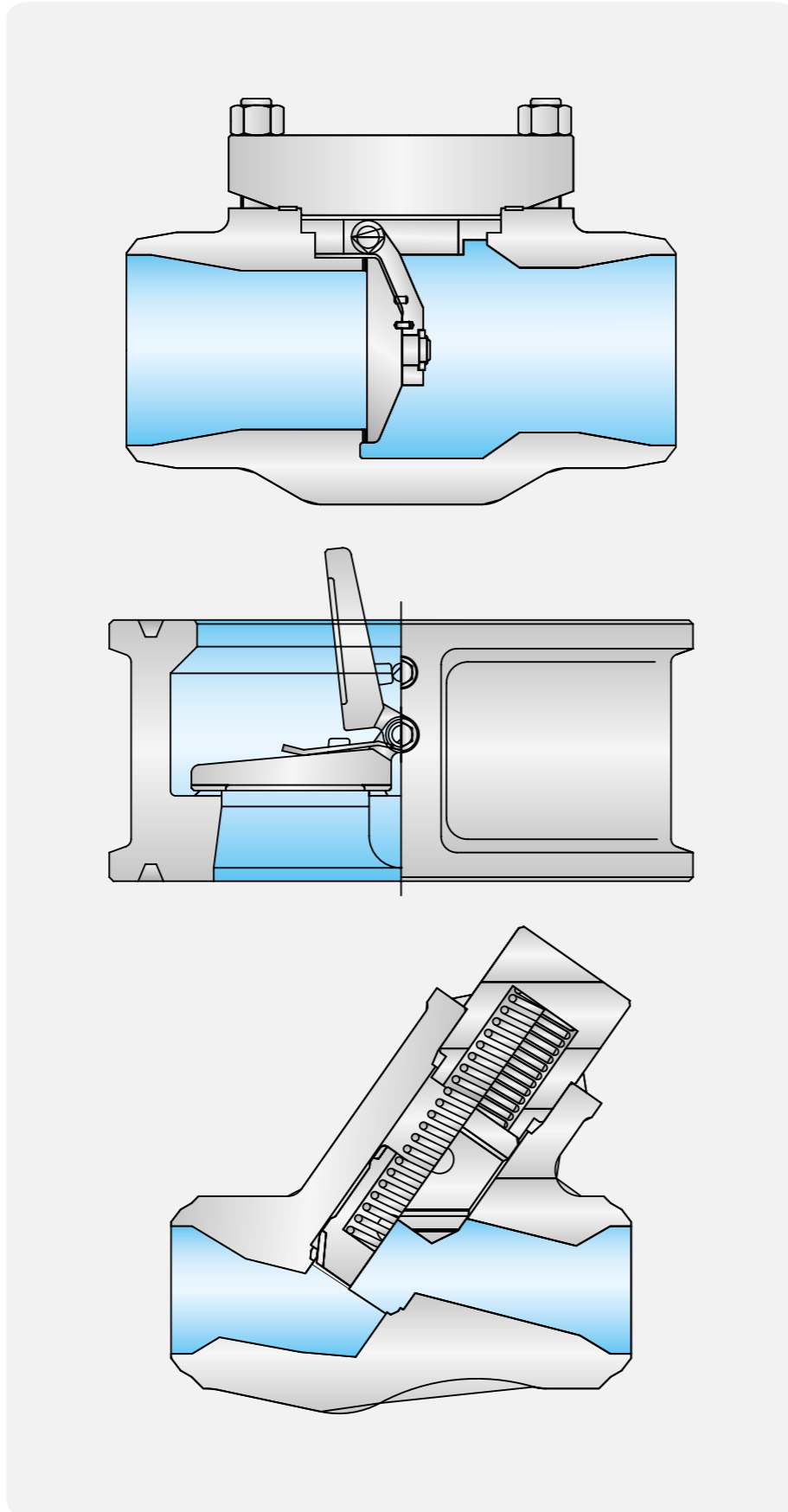
While not a valve in the traditional sense, check valves serve an important application - namely to prevent flow in one direction while allowing it in the other. A check valve is self-actuated and designed to prevent fluid from flowing back into the system (prevent reverse flow). Real-life applications include preventing backflow into an injection line or into a pump. The fluid flow opens the valve by forcing a disk or ball in one direction. When the flow stops, the disk or ball is seated and closes the valve. They can be installed in horizontal or vertical upward flow piping.

Body and Cover

Bodies and covers are high quality cast and afterwards precisely machined, directing the attention to prevent stress concentration. The design characteristic of check valves is the unobstructed passageway, with a full-opening when required.

Body and Cover Gasket

The design of the body/cover gasket varies depending on the class of the valve. Class 150 to 600 check valves consist of a male - female connection with a graphite or spiral wound gasket. Class 900 and above check valves consist of a ring type joint. In pressure seal designs, the sealing is achieved through a gasket that takes advantage of the internal pressure of the line. The material most commonly used is high purity graphite being located between the body and the body retainer ring.



Globe

All globe valves utilize the "port closure" concept of valves. By this, it means that fluid passes through a specific opening (rather than a general passageway, as in the case of gate valves), and the fluid is controlled by means of a stem-mounted disc or inserted plug in that area. Even without a straight bore, these globe types are superior in two key aspects - throttling and serviceability under frequent use. They are better at the throttling function because they allow fluid to exit uniformly around the circumference of a seat, rather than "slicing" down to limit passage through a narrowly restricted area.

Stem

The stems of globe valves are forged from one piece and ACME threaded, then machined and finally provided with a smooth finishing in order to minimize friction.

Body and Bonnet Gasket

The design of the body-bonnet gasket varies depending on the class of the valve. Class 150 to 600 globe valves consist of a circular male-female connection with a graphite or spiral wound gasket. Class 900 and above globe valves consist of a ring type joint. In pressure seal designs the sealing is achieved through a gasket that takes advantage of the internal pressure of the line. The material most commonly used is high-purity graphite being located between the body and the body retainer ring.

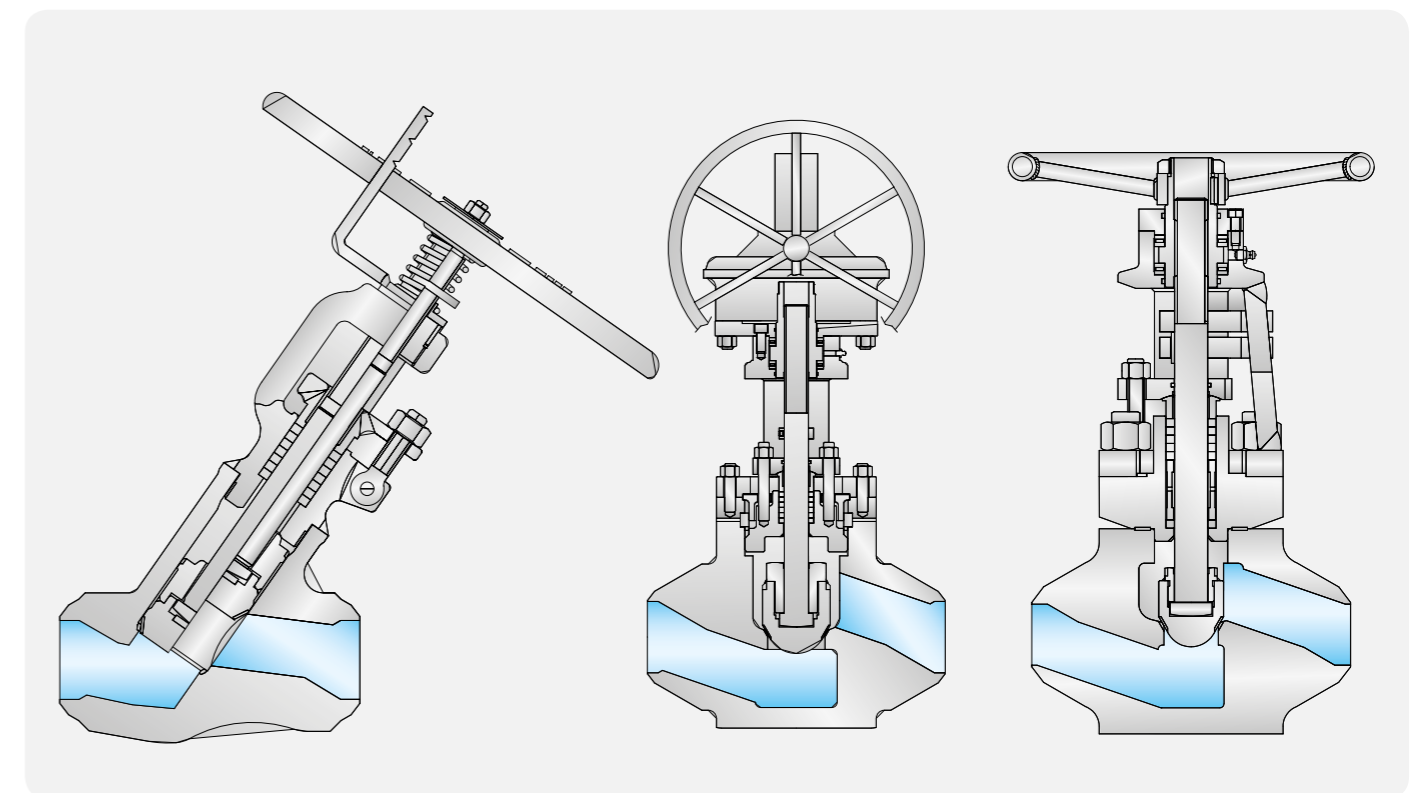
Body and Bonnet

Bodies and bonnets are high quality cast and afterwards precisely machined, directing the attention to prevent stress concentration. Bonnets are made either of one

piece only - the yoke then being an integral part of it - or have two pieces, depending on the size of the valve. This ensures the perfect alignment with the body what leads to an accurate opening and closing. Bodies of globe valves are designed considering the same characteristics as gate valves, which in this case means that the disc is guided in bigger valve sizes or high pressure service in order to avoid vibrations and better seat.

Backseat

All globe valves have backseat threaded in the bonnet, or for the pressure seal valves, welded to the bonnet. The hard facing is stellite 6 or equivalent.



After Sales

Our service staff will find the best solution for you. Specially-trained staff around the globe can react quickly to your needs and in urgent cases we will provide immediate assistance onsite.

For spare parts or valve servicing, please contact DK-LOK. Please have the following information ready:

- Manufacturing/serial number of the product and/or spare part number.
- Particular application used.

- Description or details of the problem, and any specific questions you have.



Service

- Survey and inspection on site, storage and preservation process evaluations Valve installation (valve positioning, orientation, actuator installation, protection, inspection touch up, installation and construction support, welding and cleaning procedures and support).

- Pre-commissioning and commissioning phases (flooding, line pressure testing, dewatering/drying, line pressure testing, repositioning, preservation).
- Witness Start-up/commissioning.
- Start-up Training (operation & maintenance team).
- Troubleshooting.

- Onsite Valve and Actuator evaluation, preservative and preventative Maintenance procedures.
- Full reporting.



DK-Lok Worldwide

Reference List



DK-LOK Corporation

7, Golden Root-Ro 129 Beon Gil, Juchon-Myeon,
Gimhae City, South Korea 50969

Ph. +82 55 338 0114

Fax +82 55 901 0146

valvesinfo@dklok.com

Ph. +82 70 4707 9690

www.dklok.com



• Seoul

South Korea

Gimhae City •

Busan •