batuVALVE

API 6D Pig Ball Valve

Your Solution Partner

1978 - ∞

batuVALVE

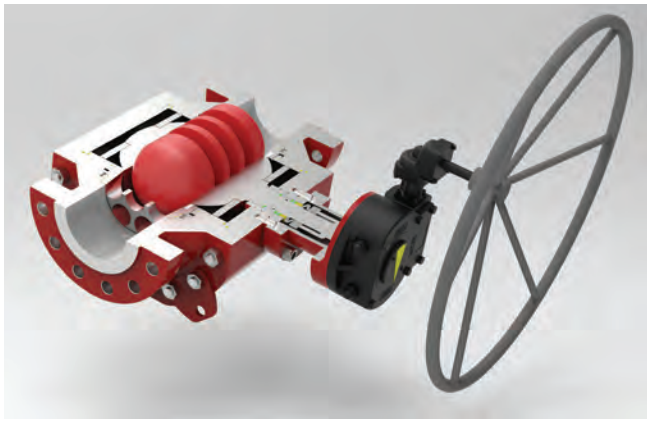
Batusan, with the trademark BatuValve started manufacturing Ball Valves in 1978. Since then, continues to serve the industry with dedication to quality, product innovation and commitment to customer service. We manufacture all our products %100 in our production facility in Turkey. We use European originated raw materials. Our trust in our products allows us to provide 2 year unlimited warranty.

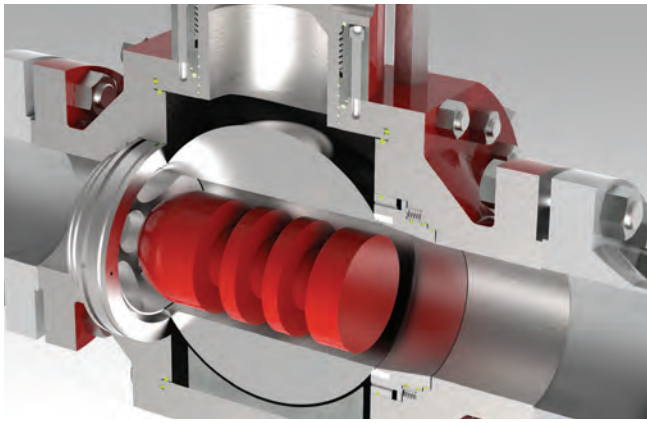
Our main product line is Ball Valves. We also produce Check valves, Strainers and Flow Indicators. Being a leader manufacturer in Turkey Since 1978. Apart from the Turkish industry, we export our products with pride to Germany, Bulgaria, Serbia, Poland, Croatia, Bosnia-Herzegovina, Greece, Lebanon, Saudi Arabia, Russia, Iran, Egypt, Yemen, Afghanistan, Austria, Vietnam, Equador, Colombia Brasil, Ukraine, France, Algeria, Morocco, Tunisia, Gabon and so on. We also produce OEM products for some of the most known global brands from Italy, Germany, Austria, etc.

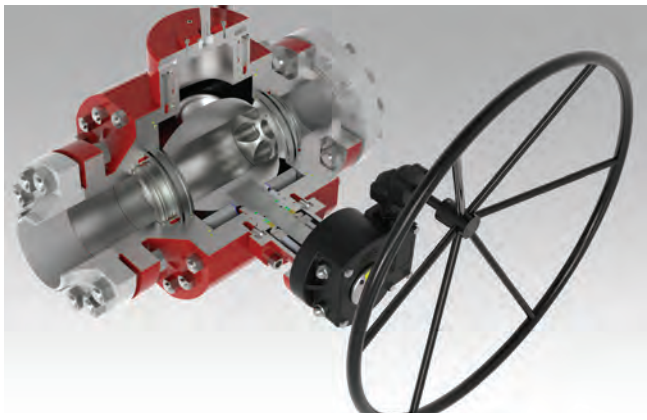
Our products have been installed throughout the world, handling a wide variety of applications in the Gas, Oil, Refining, Chemical, Food, Power Generation and Pipeline Transmission industries.

We have been emphasizing R&D department and always expanding our product line serving the needs of our customers. We have most of the Industrial valve manufacturing certificates, including;

ISO 9001: 2015, API 6D “0695”, TSE, TS 9809, TSE EN 331, TSE 3148, TSE TS 16767, TSE TS 11494, TOV SOD CE 0036, TOV iT 18 ATEX 056 AR, TA LUFT, EN 14432, API 6FA FIRE SAFE, API 607, FIRE SAFE, ISO 10497 FIRE SAFE, EAC-1, EAC-2, ROS TEKHNADZOR, TH 02, HYGIENE, GAS, GAZMER, EGAS, BELARUS







FEATURES	
DIMENSIONS	2" - 24"
CONNECTIONS TYPES	RF / RTJ
WORKING PRESSURE	CLASS 150 / 300 / 600 / 900 / 1500 / 2500 (PN 20 / 50 / 100 / 150 / 250 / 420)
WORKING TEMPERATURE	-46 °C -.+210 °C
OPERATİON	LEVER / GEAR BOX

STANDARDS	
VALVES DESİNG	API 6D / ISO 17292 / ISO 14313 / ASME B 16.34
DIMENSIONS	BATUSAN SPECIAL
CONNECTIONS	ASME B 16.5
FIRE-SAFE	API 6FA / API 607 / ISO 10497
TESTING	API 6D / API 598 / ISO 14313
ISOLATION TYPE	DBB / DBB-1 / DBB-2

PIG BALL VALVES ADVANTAGES OVER TRADITIONAL PIG LAUNCHER SYSTEMS

Pig Ball Valve, normally consists of Pig Launching & Pig Receiving valve, is a device for loading and receiving cleaning pigs and detecting tools to clean the internal pipe periodically, and it is especially widely used in Oil & Gas pipeline industry. The field tested pig valve offers durability, reliability service for oil and gas applications to improve the piping transportation efficiency. It can be easily and safely used with most of the popular pig styles, either one-piece molded pigs or the spherical pigs that are intended for use in pig ball valves.

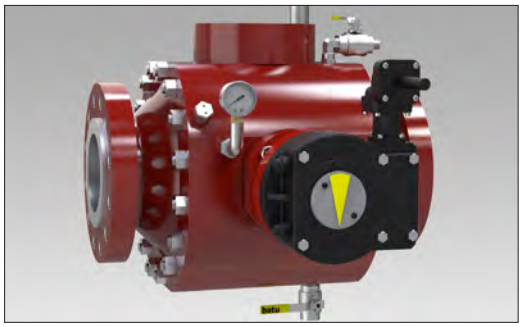
Pig Ball Valve advantages over the traditional barrell style pig launcher & receivers :

- Smaller Footprint reduces the space required for pigging facilities
- Simple configuration means a reduced requirement for infrastructre and decreases field construction time.
- Less Equipment and functionally simple design means fewer valves and controls to operate, minimizes training and maintanence costs.
- Built-in features means safer operations for operations personnel and less man power.
- Reduce emissions by more than %80 compared to traditional pig launching methods, saving the valuable medium.
- Overall Pig Ball Valves allows cost savings ranging between %25 to %60 over traditional pig launcher and receiver systems.

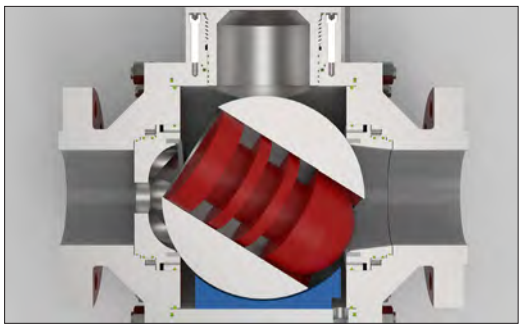
BATU PIG BALL VALVE ADVANTAGES OVER OTHER PIG BALL VALVES

Batu Pig Valves can be customizable to match customer requirements. Customizable face to face lengths, customizable ball sizes to accomodate different pigs or other special features can be implemented.

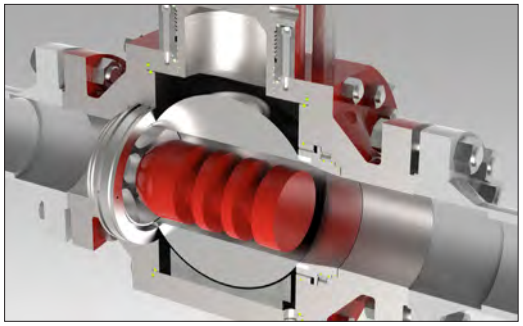
- Batu Pig Valves are CNC Machined from forged steel.
- Batu Pig Valves have oversized balls that accommodes longer pigs which allows wider range of pig selections.
- Batu Pig Valves have a guide implemented to restrain pinchinng of the pig and to avoid obstructing of the system during loading.
- Double Block and Bleed construction allows it to be used as a traditional block valve reducing the number of valves required in the pigging facility.
- Designed in accordance to NACE for sour service.
- Alternative materials are available for different conditions.
- All Batu Pig valves are equiped with ROTORK gearboxes
- Batu Pig valves are constructed with %100 European origin materials and %100 manufactured in Turkish facilities.



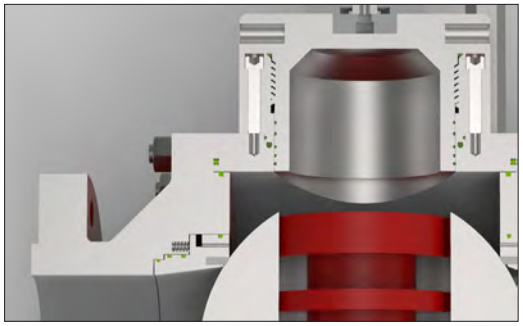
Batu Pig ball valves have a top pressure releasing valve, have a bottom liquid and debree drain valve and most importantly have a visibly placed manometer to observe inside pressure during operation for extra safety measures.



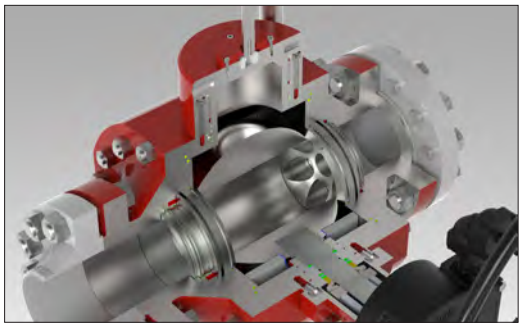
Batu Pig ball valves use a special guiding piece that ensures the pigs to not to bepinched during operation and provides smooth operation during use.



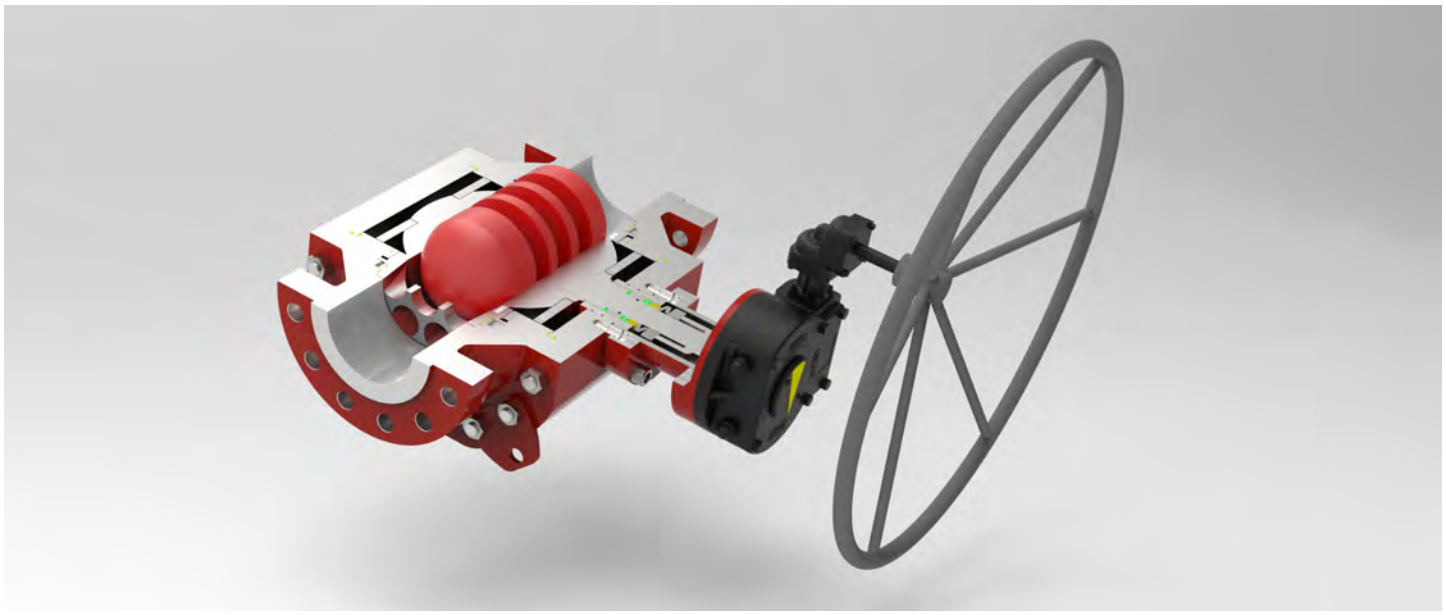
Grease injectors allow longer service life by allowing regular and easier service and can also be used for emergy sealant injection to seal leaks.



Extra safety measures are taken to make the Batu Pig Valves to be leak free.



Robust Cap design allows easy operation and leak free operation. sağlam kapak



Batu Valve is committed safety and quality. Our pig valves conform to the following design & testing standards:

API American Petroleum Institute

SPEC. 6D Specification for Pipeline Valves

SPEC. 6FA* Fire Test for Valves

STD. 607* Fire Test for Quarter-turn Valves and Valves Equipped with Nonmetallic Seats

STD. 598 Valve Inspection and Testing

SPEC. Q1 Specification for Quality Programs for the Petroleum and Natural Gas Industry

ANSI/ASME American National Standard Institute/American Society of Mechanical Engineers

B1.20.1 Pipe threads, general purpose

B16.5 Pipe flanges & flange fittings

B16.34 Valves - Flanged, Threaded and Welding End

B31.3 Process Piping

ISO International Organization for Standardization

ISO 9001 Quality Management Systems

ISO 15156 Materials for use in H2S containing environments in oil & gas production

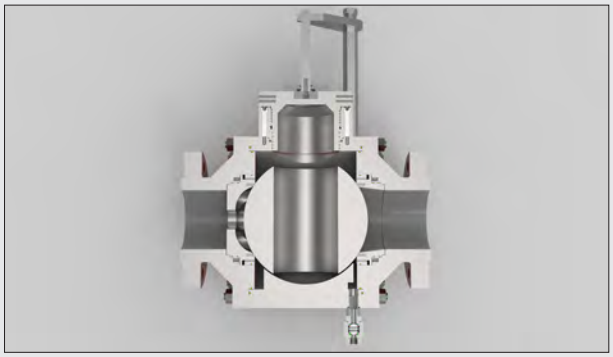
ISO 10497* Testing of valves - fire type-testing

NACE National Association of Corrosion Engineers

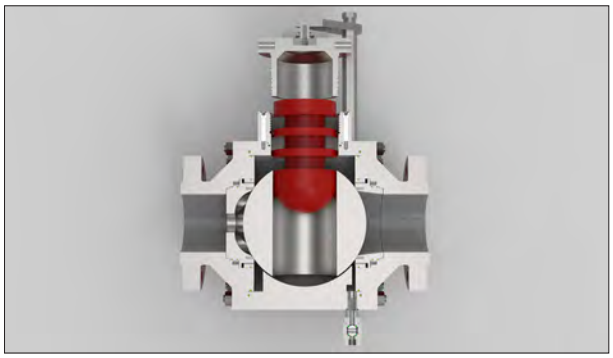
MR0175 Materials for use in H2S containing environments in oil & gas production

LAUNCHING THE SCRAPER PIG

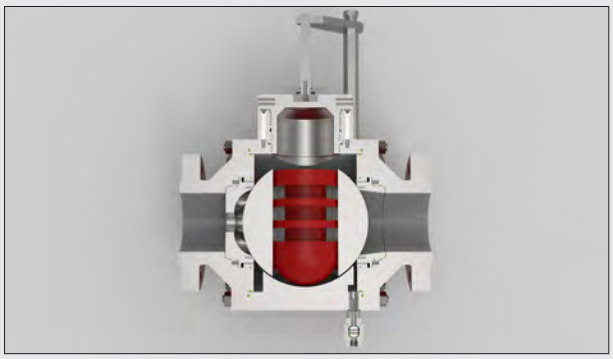
Before opening any fittings or removing the closure make sure the ball is in the closed position. Caution must be used when opening any fittings or the closure. Venting gases or draining the valve may be hazardous and caremust be taken not to pollute the ground or atmosphere. Use proper safety precautions. When opening all vent fittings and drains, make sure to do it slowly.



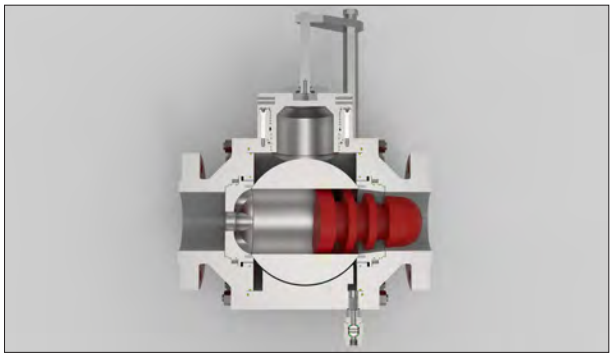
STEP 1
Close the pig valve to achieve positive shot off in both directions. Slowly vent the body cavity and watch the manometer to see the pressure drop to zero.



STEP 2
Remove the entry cap insert the pig into ball cavity.



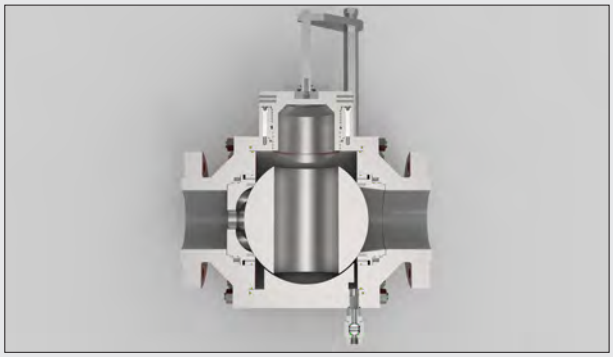
STEP 3
Reinstall the entry cap. Close all bleed valves and pressure releasing valves.



STEP 4
Open pig valve. Flow and pressure moves the pig downstream.

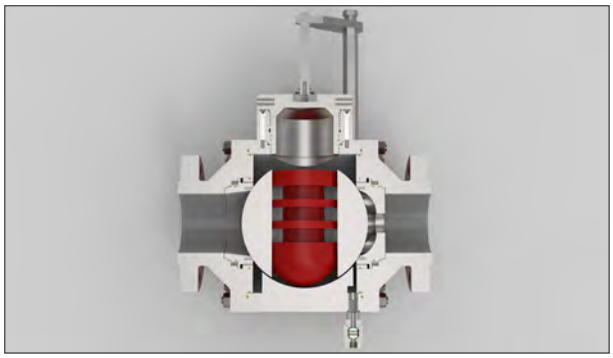
RECEIVING THE SCRAPER PIG

Before opening any fittings or removing the closure make sure the ball is in the closed position. Caution must be used when opening any fittings or the closure. Venting gases or draining the valve may be hazardous and caremust be taken not to pollute the ground or atmosphere. Use proper safety precautions. When opening all vent fittings and drains, make sure to do it slowly.

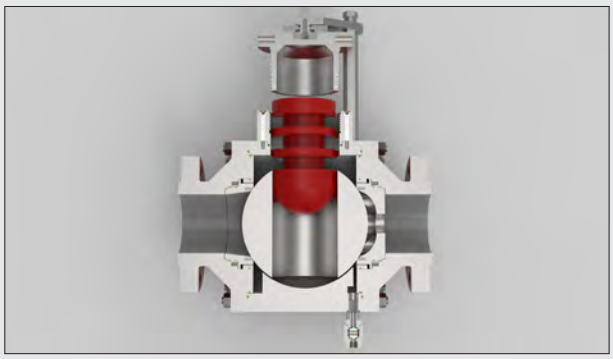


STEP 1
Receive the pig.

Slowly went the body cavity and watch the manometer to see the pressure drop to zero.

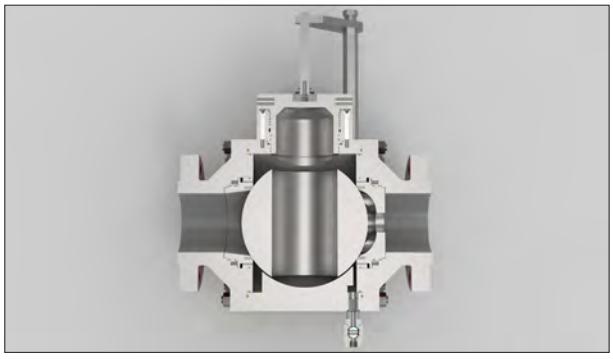


STEP 2
Close the pig valve to achieve positive shot-off in both directions.



STEP 3
Remove the entry cap.

Remove the pig from the ball cavity. Open the drain plug and remove the debris.

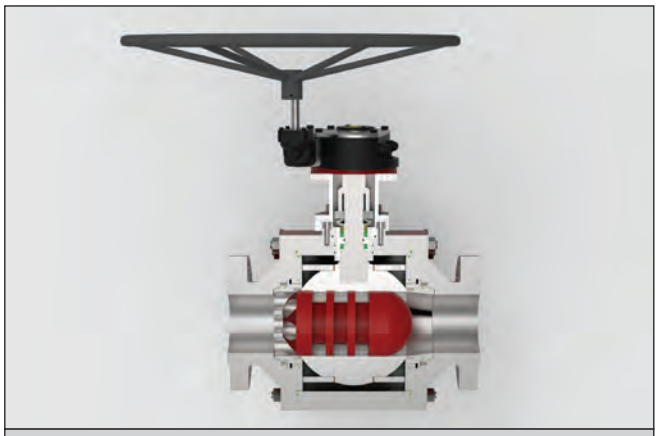


STEP 4
Reinstall the entry cap. Close all bleed valves.

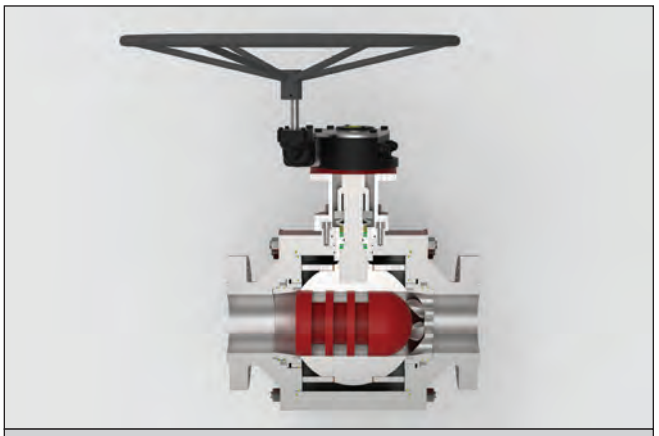
Open the pig valve into the flowing position.

OPERATIONAL CONFIG

Left To Right Flow Direction / Operation From Left Side

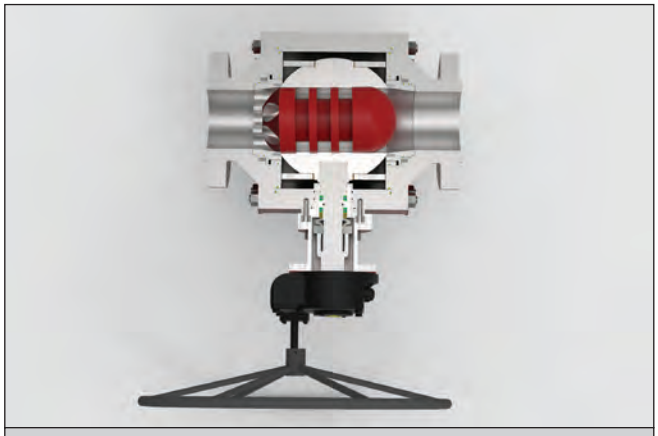


Launching pig ball valve with baffle

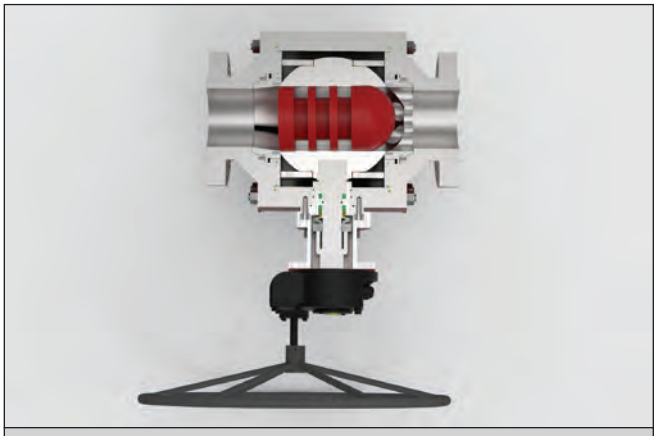


Receiving pig ball valve with baffle

Left To Right Flow Direction / Operation From Left Side



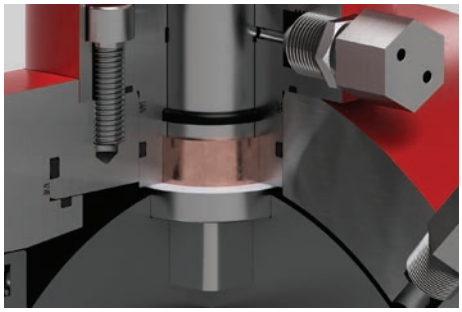
Launching pig ball valve with baffle



Receiving pig ball valve with baffle

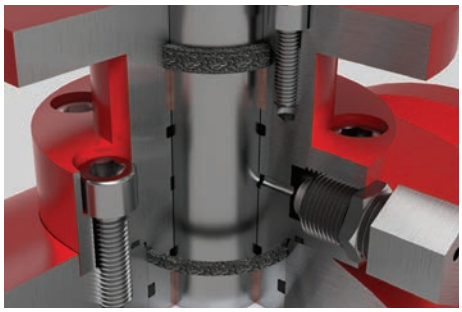
*** The Launcher and the receiver both comes with baffles. This way they can be used both in left side operational config or right side operational config.

ANTI–BLOWOUT STEM DESIGN



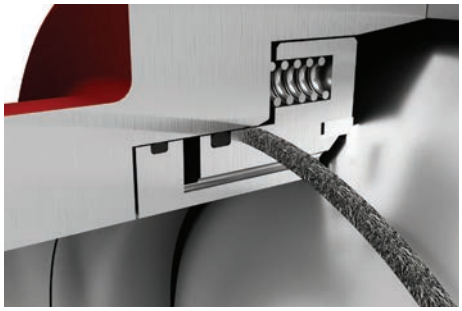
Our Ball valves are designed and manufactured in such a way that when the movement shaft holders and seals are removed, it will not be possible for the stem to go out of the valve due to the effect of pressure, as described by the standards. The stem is designed with a wide lower flange. In this way, the body cover part prevents the stem from dislodging and prevents a possible explosion. This feature allows the shaft seal to be replaced even when the valve is under pressure.

FIRE-SAFE DESIGN

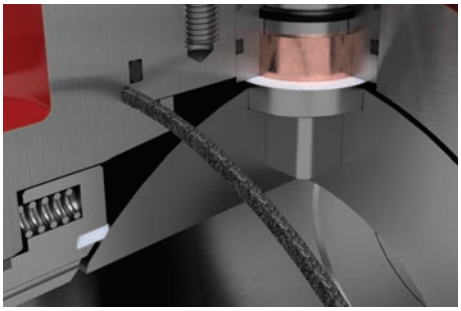


Bonnet

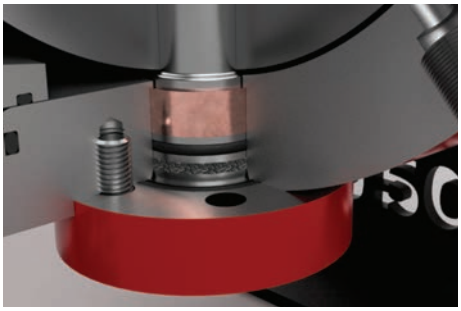
BatuValve ball valves have been subjected to fi re tests in accordance with API 6Fa and ISO 10497 standards. Regardless of the soft seat material, they will likely be damaged when exposed to fire conditions. BatuValve offers a fire resistant design that can greatly prevent leaks from seals when valves are damaged by fire. If Teflon and O'ring materials are damaged, a metal-to-metal seal is formed between the secondary metal seat and the ball. The slot-to-body graphite seals, graphite body seals, and graphite gasket end caps are designed to withstand high temperature and will remain undamaged.



Seat

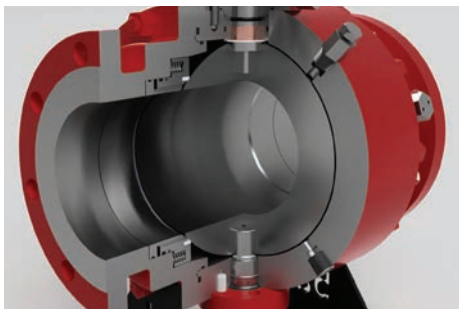


Body



Trunnion

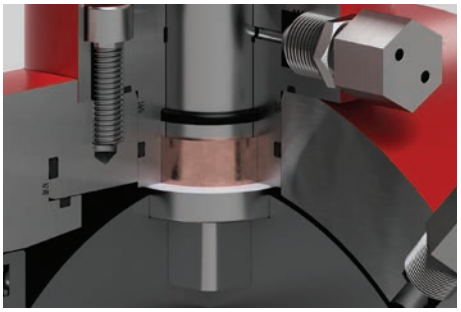
DRAIN & VENT DESIGN *



Valves are manufactured with drain and vent discharge outlets designed in accordance with the connection dimensions defined by the standards for the safe discharge of the pressurized fluid or gas remaining in the body when the valves are brought to the closed position.

** Specify during the order.*
BATUSAN reserves the right to change design, construction and material while staying within the standards.

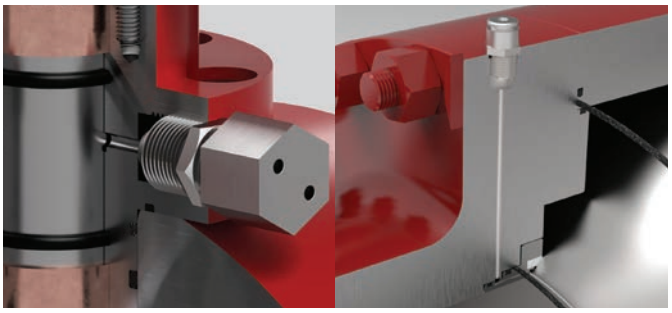
ANTI STATIC DESIGN



Ball Valves used in flammable and combustible fluid circuits such as petrol, LPG, LNG must be protected against static electricity. The spring and ball used in the stem ensure that any static electricity that may occur is grounded to the pipeline. In this way, the electrostatic charge that may occur on the ball is prevented.

BATU Ball Valves are designed and manufactured in accordance with these requirements.

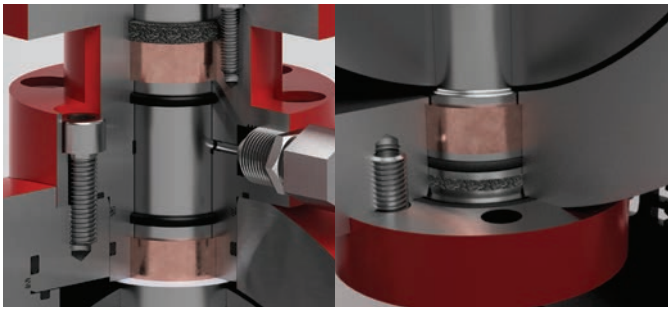
LUBRICATION AND EMERGENCY SEALANT INJECTION *



Bonnet Cover

Glacers on the bonnet and covers allow easy lubrication of the drive shaft and the hoops. Lubrication should be carried out periodically. These greaser can be used to inject sealant in emergency situations such as fire and other accidents.

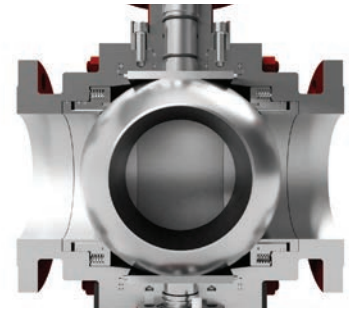
LOW TORQUE



Throat Seat

All split body trunnion ball valves have a very low torque value. Every valve produced is subjected to torque test.

HIGH PRESSURE – LOW PRESSURE SEALING DESIGN



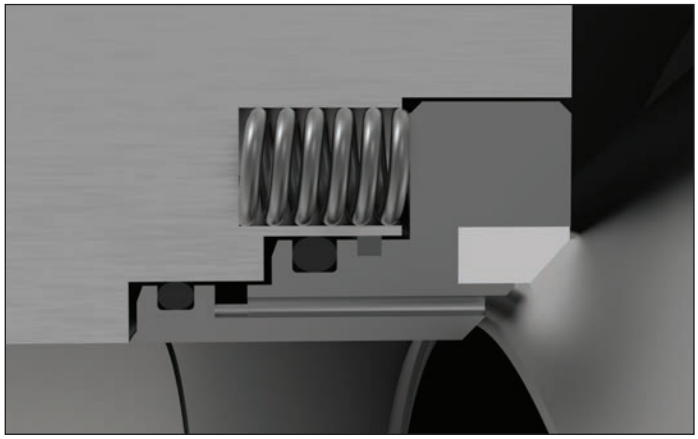
The sealing performance of the ball valves at higher pressures are more important than at low pressures. At high pressures, sealing is ensured by forming a good contact between the sealing ring and the ball surface with the effect of the fl uid pressure applied from the back surface of the Sealing seat ring. When the pressure behind the ring reaches a low value, this contact force decreases. In this case, the spring force supporting the seat ring ensures enough force is applied so the contact between the sealing ring and the ball surface and the sealing function are maintained.

** Specify during the order.*

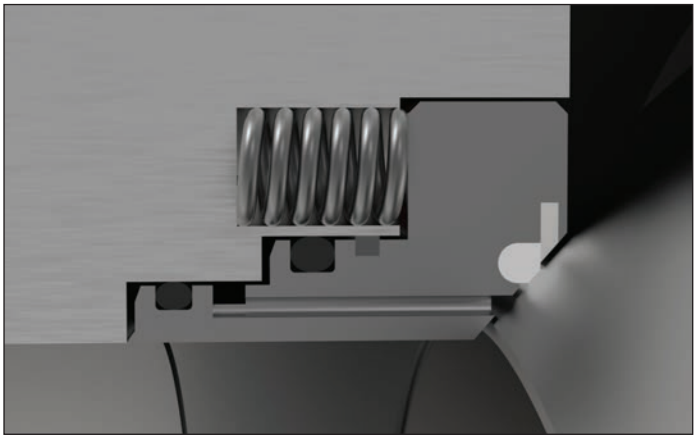
BATUSAN reserves the right to change design, construction and material while staying within the standards.

SEAT RING DESIGN

SOFT SEAT DESIGN



Soft Seat Design



*Primary Metal Secondary Soft Seat Design **

In standard trunnion ball valves, a flexible tefon material is placed between the seat and the ball to provide a soft seating motion and sealing in addition to the metal-to-metal fit.

METAL TO METAL SEAT DESIGN *

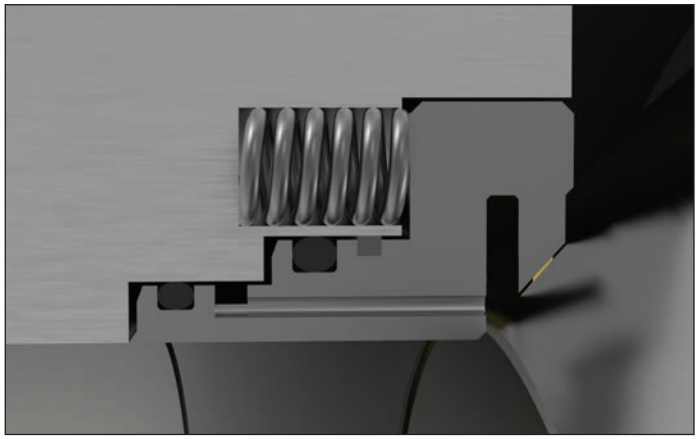
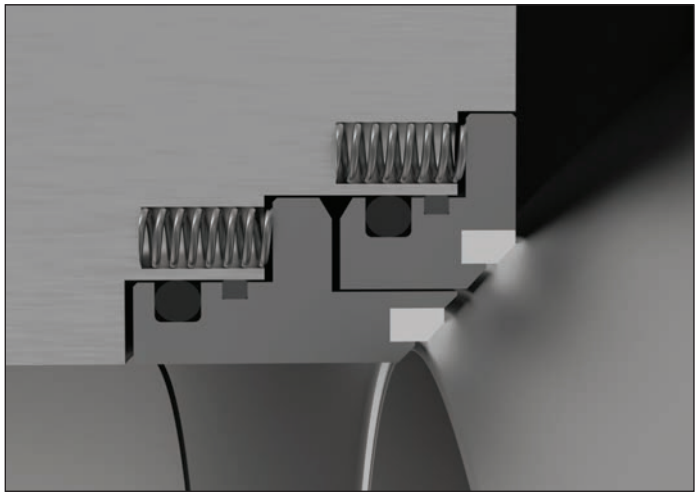
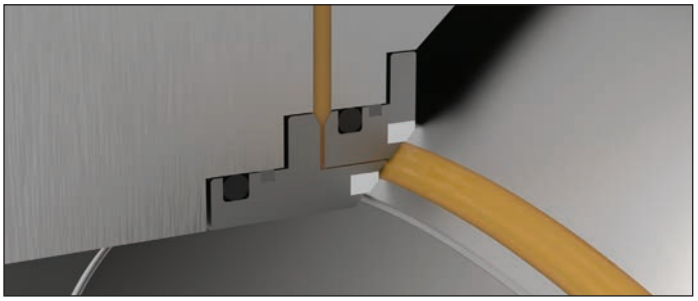


*Figure-3 - Metal to metal hoop design**

If there are abrasive substances in the pipeline or temperatures that prevent the use of Teflon, metal-to-metal hoop designs may be preferred. The areas where the ball and the seat touch each other have a hard surface.

DOUBLE SEAT DESIGN *





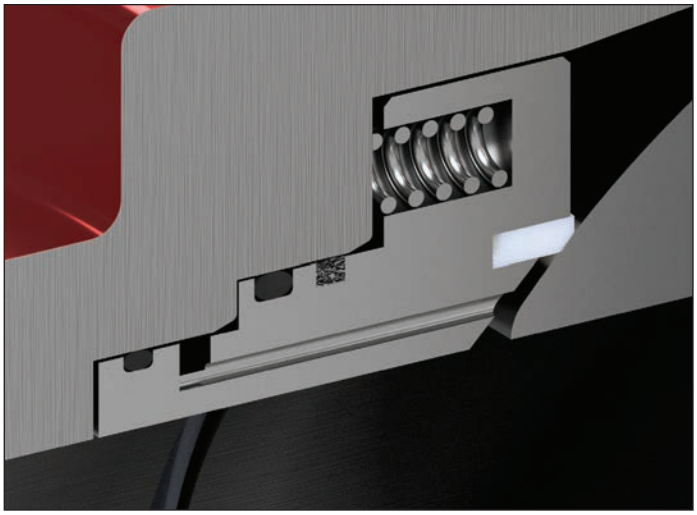
Trunnion valves use double seat and double teflon to achieve greater sealing.

* *Specify during the order.*

BATUSAN reserves the right to change design, construction and material while staying within the standards.

SEAT

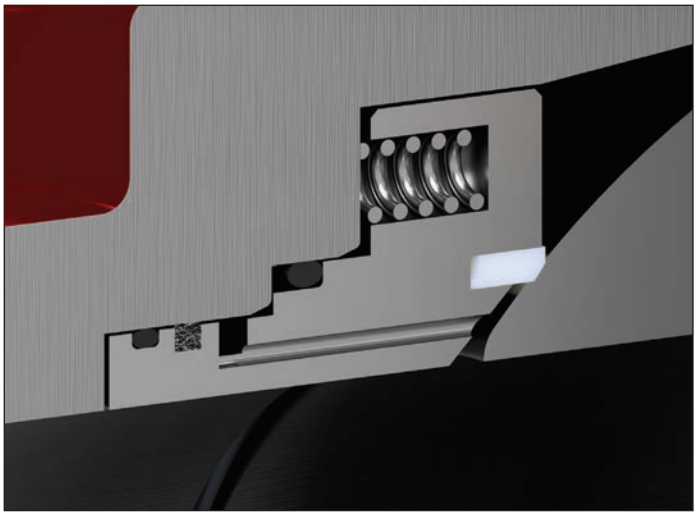
SINGLE PISTON EFFECT (SPE)



This is the standard type of bearing. When pressure is applied from both sides, SPE bearings are pushed towards the ball by the piston effect, providing a tight closing and sealing. If the pressure in the body cavity exceeds the pressure on either side of the line while the valve is in the closed position, the bearing on that side will be pushed back and the body pressure will be discharged to the low-pressure side of the line. Due to this feature, SPE type bearings are also called “Self-pressure relieving”, which discharge high pressure on their own.

Typical Application Areas: Pipeline ball valves in liquid services where it is necessary to prevent pressure increase in the body cavity due to temperature changes.

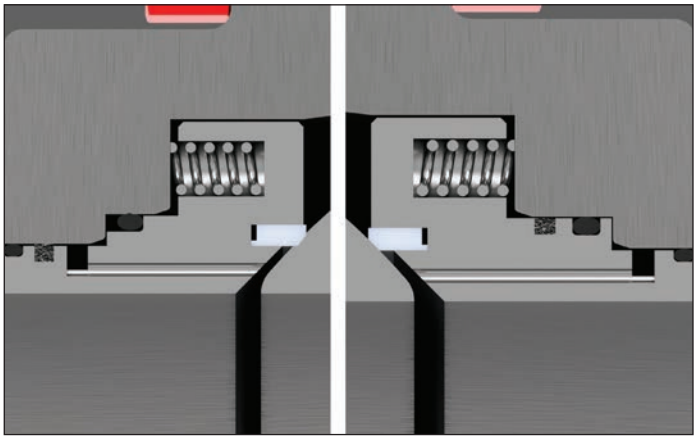
DOUBLE PISTON EFFECT (DPE) *



It is an optional ring-seat type. DPE seats are designed to be pushed towards the ball by the piston effect in both cases, whether the pressure comes from the valve body cavity or from the upstream or downstream side of the pipeline. DPE seated valves do not automatically release the pressure in the body cavity. Therefore, it is recommended to use a relief valve in liquid services.

Typical application areas; It is recommended in welded body valves when it is necessary to create an additional safe barrier between the upstream and downstream sides and where the maintenance of the seats is not foreseen.

SINGLE/ DOUBLE PISTON EFFECT COMBINATION (SPE-DPE) *



Upstream of the line, the SPE seat provides self-pressure relief. Downstream, the DPE seat provides a double barrier in case of damage to the upstream seat. This configuration includes a preferred installation orientation with the SPE seat facing upwards. With SPE-DPE configurations, the cavity discharge always occurs via the SPE seat.

Typical applications: Booster valves, Pig launchers / receivers. The DPE seat provides double insulation to the Pig trap and also allows automatic relief of the body cavity in the event of pressure build-up.

** Specify during the order.*
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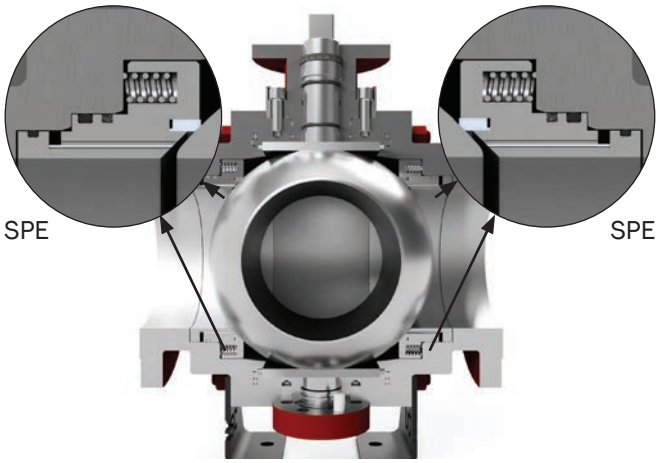
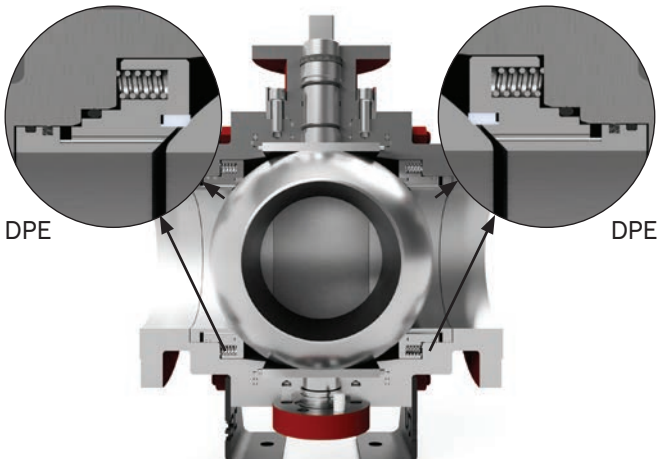
DOUBLE BLOCK AND BLEED DESIGN (DBB)



This is the standart seat type. When pressure is applied on both sides, SPE-SPE seats are pushed towards the ball with the effect of a piston, providing a tight closing and sealing. If the pressure in the stem cavity rises above the pressure on either side of the line while the valve is in the closed position, the seat on that side will be pushed back and the in-shell pressure will be released to the low pressure side of the line. Due to this feature, SPE type seats are also called “Self pressure relieving”, which releases high pressure by itself. Typical Fields of Application: Pipeline ball valves in fluid services where the pressure increase in the body cavity due to temperature changes is required.

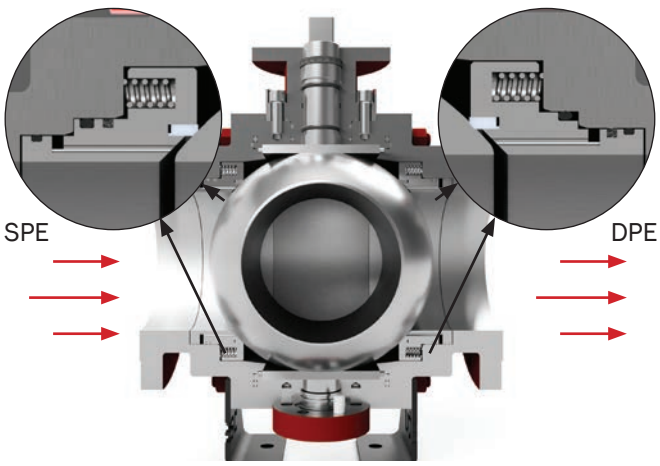
DOUBLE ISOLATION AND BLEED (DIB 1) *



It is an optionally available seat type. DPE seats, whether the pressure comes from the valve body cavity or from the upper or lower side of the pipeline; In both cases, it is designed to be pushed towards the sphere by the piston effect. DPE seated valves do not automatically relieve pressure in the body cavity. For this reason, the use of a drain valve is recommended in fluid services.

Typical application areas; where it is necessary to create an additional safety barrier between the upstream and downstream sides and where maintenance of the seats is not envisaged. It is also recommended for valves with welded body.

DOUBLE ISOLATION AND BLEED (DIB 2) *



On the upstream side of the line, the SPE seat provides self-pressure relief. On the downstream side, the DPE seat provides a double barrier in case the upstream seat is damaged. This confi guration includes a preferred installation direction with the SPE seat facing up. With SPE-DPE confi gurations, the cavity pressure evacuation always takes place via the SPE seat side .

** Specify during the order.*

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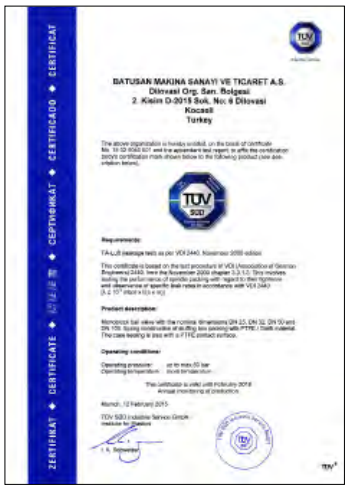

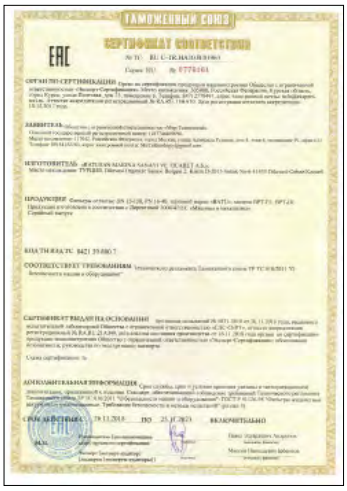

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Batu Valve Türkiye

Shifting from traditional pigging systems to pig ball valve technology

The adoption of pig ball valve technology in the oil and gas industry represents a significant step forward in pipeline maintenance, offering a more efficient, safe, and environmentally friendly alternative to traditional pigging systems.

By Zahra Farrokhi,
Batu Valve Türkiye

The oil and gas industry is seeking innovative pipeline maintenance technologies that balance increasing energy demands with environmental consciousness. Pigging systems, crucial for pipeline integrity and cleanliness, are a key focus area (Energy Sector Innovations, 2020; Sustainable Pipeline Management, 2023).

Traditional pigging systems, while effective, have drawbacks such as extensive infrastructure, complex maintenance, and environmental concerns. Space limitations in offshore platforms and urban areas have further highlighted the need for more adaptable and sustainable alternatives (Spatial Challenges in Urban and Offshore Pipeline Maintenance, 2023).

Pig Ball Valve systems have emerged as a promising solution, consolidating the functions of traditional pigging systems into a compact, efficient unit. These systems enhance operational efficiency and minimize environmental impact (Pipeline Efficiency Reports, 2022). As the industry prioritizes sustainability, the adoption of advanced technologies like Pig Ball Valves is set to reshape pipeline maintenance practices.

Industry adoption examples

- **Offshore projects**: The adoption of BATU Pig Ball Valves in offshore projects, particularly in the North Sea, represents a significant stride towards modernizing traditional pipeline operations in challenging environments (Regulatory Compliance in Offshore Operations, 2021). The BATU Pig Ball Valve system addresses challenges by offering a compact design that reduces the spatial footprint traditionally required for pigging operations (Technological Advancements in Pipeline Maintenance, 2020).
- **Transcontinental pipelines**: Operators of transcontinental pipelines prioritize efficiency and reliability (Transcontinental Pipeline Maintenance Innovations, 2022). Adopting the BATU Pig Ball Valve system allows them to reduce the frequency and complexity of maintenance operations (Pipeline Operation Innovations, 2021). This trend reflects an industry-wide move towards technologies that can withstand the demands of managing extensive pipeline networks across diverse geographical terrains.
- **Refinery upgrades**: Refineries in regions like the United States and the Middle East seek to improve operational safety and efficiency (Case Studies on Refinery Upgrades, 2021). Transitioning to BATU Pig Ball Valves marks a significant upgrade over traditional pigging systems (Pipeline Technology Training and Development, 2021). These newer systems reduce operational downtimes and enhance safety measures, leading to shorter maintenance windows and fewer safety incidents (Safety Improvements in Pipeline Operations, 2021).

Figure 1. Displaying innovative Pig Ball Valves (Launcher and Receiver) in two distinct sizes: 16-inch (Class #300) and 8-inch (Class #900), designed specifically for maintenance operations.

Overview of traditional pig launcher systems

Traditional pigging systems have been a cornerstone of pipeline maintenance for decades, utilizing barrel-style launchers and receivers to propel 'pigs' through pipelines (Pipeline Technology Journal, 2021). These systems require significant infrastructure, including large barrels and intricate valving, which can be costly to install and maintain (Operational Economics in Pipelines, 2021).

From an operational perspective, pigs are pressurized within barrels before being inserted into pipelines. This process necessitates extensive infrastructure and space, which can be particularly challenging in offshore or urban environments where space is limited (Spatial Challenges in Urban and Offshore Pipeline Maintenance, 2023). Additionally, manual handling of pigs during insertion and retrieval poses safety risks to operators, who may be exposed to potential injuries or accidents (Pipeline Technology Training and Development, 2021).

Environmental concerns also arise from emissions released during pigging processes, contributing to greenhouse gas emissions and potential regulatory compliance issues (Environmental Impact of Pipeline Technologies, 2023). As urban and offshore settings increasingly demand more efficient use of space and stricter environmental controls, traditional pigging systems face compatibility challenges, driving the need for innovative solutions that can address these concerns (Innovative Pipeline Solutions, 2023).

Introducing pig ball valve technology

Pig Ball Valve technology represents a revolutionary advancement in pipeline maintenance, consolidating the functionalities of launching and receiving pipeline pigs within a single, streamlined ball valve unit. This integrated design eliminates the need for separate and bulky launchers and receivers, significantly reducing the physical footprint and simplifying pipeline system architecture (Pipeline Efficiency Reports, 2022).

The Pig Ball Valve enables the insertion and retrieval of pigs through the same valve that controls the pipeline's flow, maintaining flow control and pressure integrity without compromising the pipeline's primary function. This multifunctional capability facilitates a seamless transition between operating modes, enhancing operational flexibility and reducing downtime (Innovative Pipeline Solutions, 2023).

Adopting Pig Ball Valve technology yields several operational advantages. Its streamlined design reduces the need for manual handling of equipment, mitigating safety risks associated with conventional pigging methods. Additionally, the closed system design minimizes potential environmental risks, such as leaks or emissions during the pigging process, aligning with increasing environmental regulations and sustainability goals (Environmental Safety in Pipeline Operations, 2022).

The ease of use and reduced infrastructural demands of Pig Ball Valves make them ideal for challenging environments like offshore platforms or urban settings, where space constraints are significant concerns. This adaptability is particularly valuable as the industry prioritizes sustainability and seeks less intrusive methods of pipeline maintenance, enabling more efficient, safer, and environmentally friendly operations (Sustainable Pipeline Management, 2023).

Figure 2. Pig Ball Valves, showcasing the innovative pig insertion point or 'pig door' for efficient maintenance operations.

Advantages of pig ball valves

- Compact and efficient design, reducing spatial and infrastructural demands
- Reduced installation and maintenance time, crucial for continuous operations
- Enhanced safety due to fewer parts and decreased accidents
- Environmental benefits from sealed valves that reduce emissions
- Cost savings over the lifecycle due to reduced downtime and operational expenses
- Customizability and versatility to accommodate various pigs

Disadvantages of pig ball valves

- Higher initial investment compared to traditional systems
- Limited track record and reliability data due to being a newer technology
- Need for specialized knowledge and training for installation and management

Comparative analysis

Operational efficiency and time savings: Pig Ball Valve systems reduce maintenance time by up to 40%, minimizing downtime and increasing productivity. (Global Pipeline Efficiency Group, 2023)
Cost-effectiveness: Up to 30% reduction in operational costs over five years and a 50% decrease in downtime, leading to significant cost savings. (TechnoOil Energy, 2022)
Environmental impact: Sealed design of Pig Ball Valves results in a 25% reduction in emissions compared to traditional pigging systems. (Journal of Sustainable Oil and Gas Engineering, 2024)

The future of pipeline maintenance

Pig ball valve technology offers a paradigm shift in pipeline maintenance, addressing many of the limitations inherent in traditional pigging systems. Its design promotes operational efficiency, safety, cost-effectiveness, and environmental sustainability. These attributes make it a superior choice for contemporary pipeline operations, especially in sectors where space, safety, and environmental regulations are of paramount concern. While the initial investment and need for specialized training could be seen as drawbacks, the long-term benefits in reduced operational costs and enhanced safety and environmental compliance present a compelling case. The widespread adoption of such innovative technologies is crucial as the industry moves towards more sustainable practices and seeks to balance operational demands with environmental stewardship.
For operators and stakeholders considering the transition to pig ball valves, the evidence supports that this technology is not just a viable alternative but a necessary evolution in pipeline maintenance that aligns with future industry standards and regulatory demands. As the oil and gas industry continues to navigate the challenges of meeting energy demands while minimizing environmental impact, the adoption of advanced technologies like pig ball valves will play a critical role in shaping a more sustainable and efficient future. ■

About the company

BATU Valve is a pioneering force in the oil and gas industry, revolutionizing pipeline maintenance with its innovative Pig Ball Valve technology. Founded by a team of experienced engineers and industry experts, BATU is committed to developing cutting-edge solutions that address the complex challenges faced by modern pipeline operators. To learn more about them visit https://www.batuvalve.com.