

KD VALVE

Severe Service Metal Seated Ball Valve





About KD

KyungDuk Industry Co., Ltd [KD VALVE], as a global leader in designing and manufacturing metal seated ball valve, has provided the best solutions for customers in worldwide industries for the past 30 years.

Our company is manufacturing products of superior quality based on various experience in all technical standards, meeting customer's special requirements. We have provided with the best solutions of products for longer use and offered minimal losses during the production process thorough Perfect Sealing and Zero Leakage.

We have guaranteed customers' maximum profits by longer periods of use. In addition, our company is committed to submitting rapid responses and best solutions for how customers manage their processes safely and efficiently. KD Valve philosophy concentrates more on customers' satisfaction and trust by providing products of the best quality.

- ❖ OIL and Gas
- ❖ Chemicals / Perochemicals
- ❖ Poly Silicon
- ❖ Onshore / offshore
- ❖ Metals and Minerals
- ❖ Power Generation
- ❖ Specialty Industries



Mission | Core Values



Mission

KDVALVE provides a better future for the global energy industry with innovative severe service metal seated ball valve.

Core Values

KD People's Power

KD People is a Control valve solutions Specialist focused on Energy industry.

We provide our customers with innovative knowledge-based engineering solutions to challenges of severe service applications

Vision

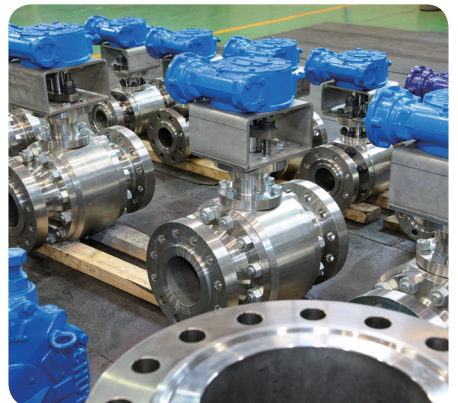
World's Leading Company to Control Valve Solution and Engineering Service by 2030

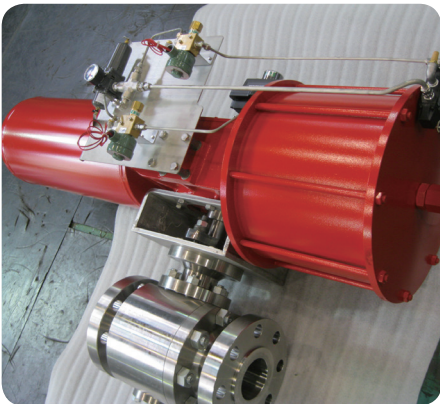
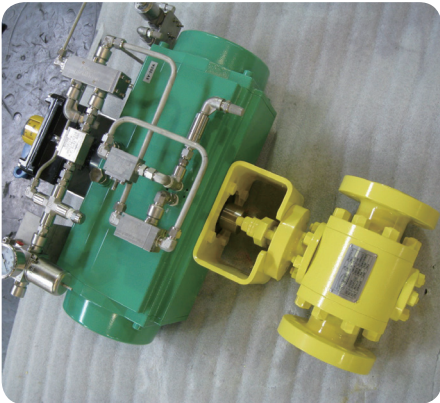
KD VALVE is stabilizing process in severe service and provides process control ball valve solutions for the global energy industry.

The best performance in the most demanding environment of high temperature and high pressure to provide the most valuable experience to customers.



Products







Quality Manufacturing | Engineering Design

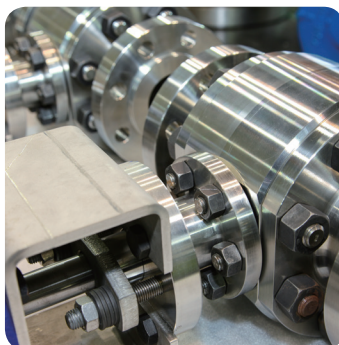


Manufacturing Valves | Long Experience

KD VALVE has a long history of building high-quality products based on core principles. We pursue quality, and to live up to that motto, we have developed our technologies and empowered our employees to achieve breakthroughs in metallurgy, design, build, and coating. This has enabled KD VALVE to serve major clients in industries, including oil/gas, petrochemicals, and polysilicon. This has allowed us to have valuable experience to build products of better quality and gain clients' trust by going beyond their expectations.

KDVALVE

**Commitment
for
Perfection**



Custom made | Hand-made

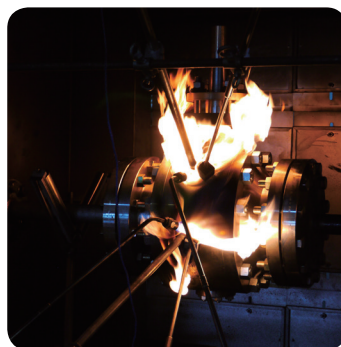
Making and providing best-in-class performance and quality requires us to pay great attention to details. That is why all of our products are made with precision and accuracy that only experts' hands can provide. Our designs are tailored to match customers' requirements, and every bit of the manufacturing process is supervised by expert personnel to ensure best quality and performance. What is different from other brands is that valves we produce for a certain client are unique as they are made only for the client with precision and integrity. Our goal is to be your partner that meets your needs

Quality Policy | Inspection System



CLIENTS

Satisfaction



Quality | Assurance

KD VALVE has exceeded the best-in-class quality and performance standards. We maintain major control program certifications, such as API 6D and Q1, ISO 9001:2000. We also reference many industrial standards and present results beyond customers' expectations. These are all due to our strict and stern quality management. Unlike other competitors, our team of experts inspects all the produces units to ensure that each one of them performs as expected. Our customized designs enable us to provide the best optimal solutions for any severe application.

Innovation | Technology

Since the very beginning, KD VALVE's object to provide the best-in-class has made it develop its own methods and process. The innovative KD VALVE metallurgical technology is a unique process that we invented to build the highest hardness in the industry that exceeds HRC80. This has made our valves become the best performers in the harshest conditions and applications. Moreover, our innovative pocketless designs seamlessly integrate our technology into Zero-leakage and Bubble-tight that shut off tightly for a perfect sealing unmatched by any other brand. We constantly develop to better serve our clients' needs.

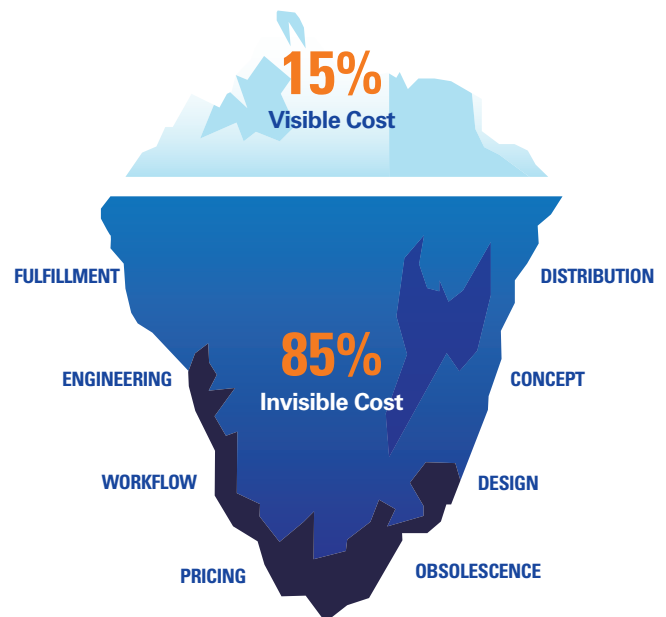


Total Cost of Ownership

Workers at KD VALVE believe that clients should get more than their investments. Keeping that in mind, we seek to deliver the best quality, service, and performance in order to provide the customers with benefits far beyond the visible costs (the prices of products).

The price of a product and the long term cost of using it (invisible costs) have large disparity between them. Performance is a deciding factor for a valve and the potential of maximizing efficiency. Low-quality products offer reduced return for the end-user compared with his or her spending as well as losses in raw materials of the plants. Using our technological advancements, innovation and design, to extend a valve's life is our goal. Giving the end-user the best performing valve comes with its benefits:

PRICE OF JOB THE TIP OF THE ICEBERG



Core Features and Benefits

- ❖ Our valve offers top of the market hardness value of HV 2000
Longer lifecycle and better performance than competition.
- ❖ KDVALVE with its Class VI standard that guarantees Zero-Leakage and Zero-Bubbles.
No leakage from plant and lost raw materials such as liquids or gas.
More efficiency leading to increase in revenue better production rate and quality.
- ❖ KDVALVE engineered to have long lifetime.
Cutting costs on maintenance or replacements.
Having longer maintenance intervals thus increasing plant operation time.
- ❖ Our excellent after sales services and key partners around the world are available to support you.
Less downtime and improved the plant life cycle and improved safety to Minimizing total cost of ownership.

Industries

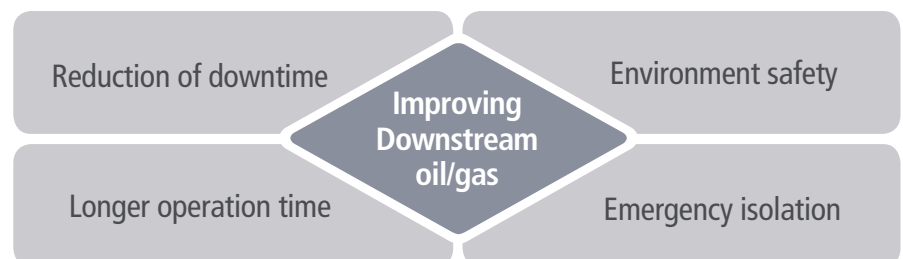
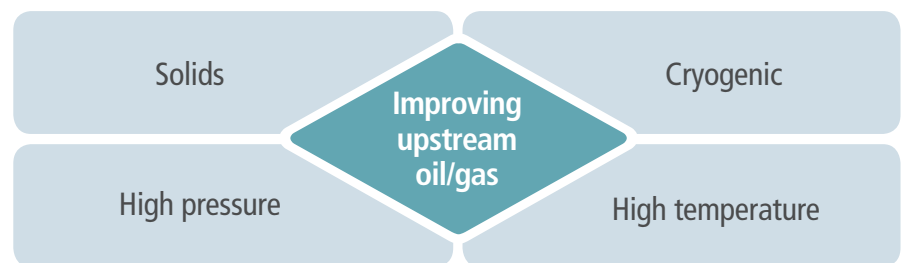


Improving critical areas in severe service applications for :

KD VALVE offers the best performance in the toughest environments. We put focus on improving the overall productivity of our clients' plants as well as maintaining the best standard in the industry with our best-in-class metal valves. Having exceeded the international standard, we are quite confident that KD VALVE can serve any industry with severe applications and provide results that go beyond our clients' expectations.

| Oil and Gas

KD VALVE introduced high technologies to offer long life cycle and high performance in the industry.



| Refining

Refining industry is one of the industrial fields that require the most reliable performances. KD VALVE has been leading in improving refining plants both domestically and internationally. The extreme demand of isolation and controlling are our expertise. Our valves are reliable for emergency isolation. Products from KD VALVE that are made with heavy solids can handle high pressures and temperatures. We have improved in many units of the refining process.





Industries

| Petrochemical/Chemicals

KD VALVE can offer solutions that can deal with various situations and applications.



| Power Plant

Building a power plant requires capable valves in critical areas. Our products have proved to solve many problems that arise from its operation. Our products introduce Zero-leakage and Zero-Bubble that tightly shut off to achieve superior quality which requires low or minimum maintenance. Indeed, KD VALVE is the best choice for the lowest maintenance cost.



| Mining

Strength and durability are two attributes of KD VALVE that help it perform best in the toughest environment and tackle slurry, not to mention handling of solids. You don't have to worry about downtime, leakage, safety, or efficiency.

| Specialty Industries

Many industries trust our products that deliver high performance and enhance their productivity. KD VALVE can be implemented wherever severe applications. KDVALVE truly brings a far better performance, durability, and strength.

Standard Features



Bubble tight bi-directional

Scraper seat design

Protects sealing surface of ball seat

Removes particles, foreign object, slurry, etc.

High Hardness of over HV2,000

Pocketless Design

Prevents buildup of solids inside the valve's body dead space

ISO5211 mounting plate for actuator

- ✦ Fugitive emissions sealing
- ✦ Standard full port design
- ✦ *Variety of construction materials
- ✦ Multi Layer packing protect external leakage
- ✦ Wide selection of options for the stem is available
- ✦ The seat spring provides ultimate sealing due to its elasticity during severe situations
- ✦ Live loaded Packing assures reliable performance
- ✦ Stem sealing requires no maintenance and gives low torque
- ✦ Anti-blowout stem
- ✦ Trunnion mounted and floating ball designs
- ✦ Full and reduced bore designs
- ✦ Jam free at high temperature
- ✦ Spring loaded seats results in bubble tight sealing at low pressure

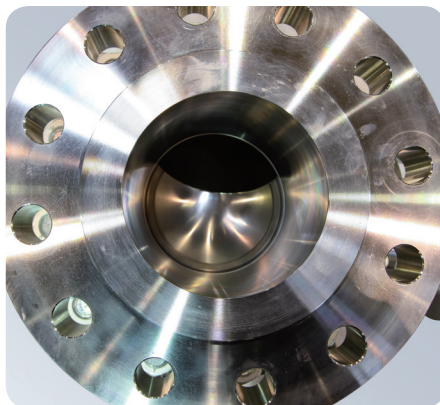
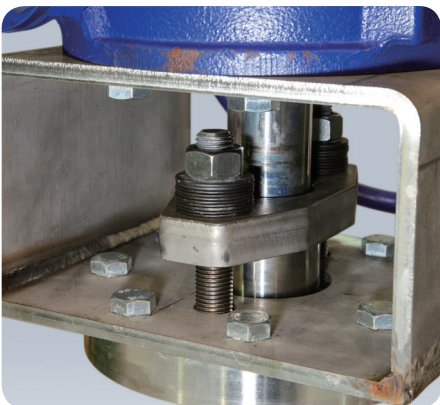
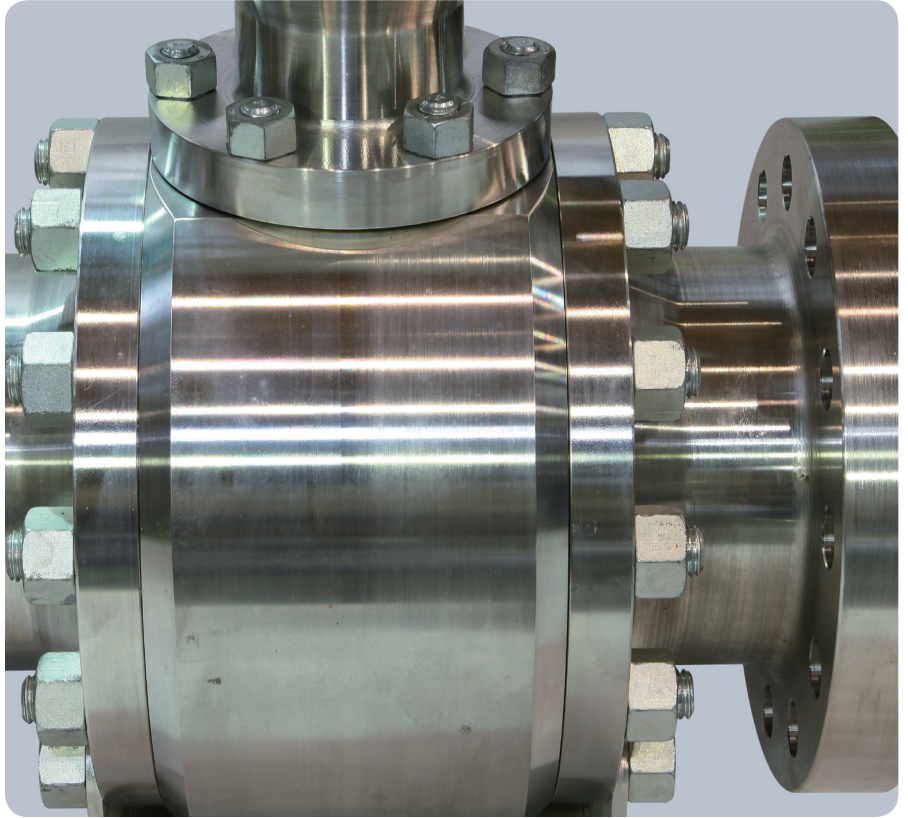
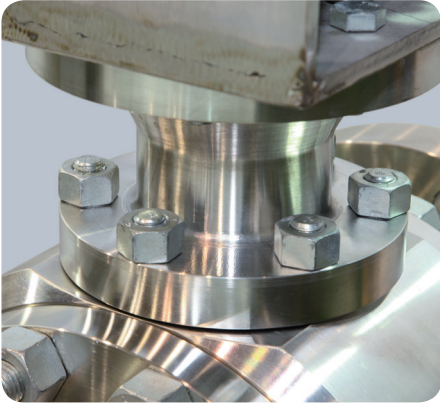




Special features

- ❖ Anti-wear down at abrasion and erosion applications, high temperature, and high pressure
- ❖ Anti-corrosion against major chemicals, such as Hydrogen Chloride, Sulfide Acid, Hydrogen Sulfide, Hydrogen Florid, Phosphate, Sea water, Alkali, etc.
- ❖ Scraper designed seats are a unique feature of KD VALVE as they give our products perfect sealing of ball seat surface. It is designed to keep the Zero-leakage and enhance the shut off as well as remove foreign objects, particles, and slurry. Our design also provides longer life cycles than other competitor.
- ❖ All of our products are customized from professional experts. Each product is unique, and it is made precisely to match our customer's needs.
- ❖ Manufacturing by our R&D team that has invented our proprietary metallurgical method and provided KD VALVE's products with erosion and corrosion resistance, durability, strength and thermal shock resistance.
- ❖ Innovative engineering and precise manufacturing to ensure low torque and more economical usage of the actuation
- ❖ Metal seat and ball gives zero leakage and tight shut off sealing performance
- ❖ Our valves' high hardness is considered best-in-class with values over HV2,000







Metal Seated Ball Valve for High Temperature Service

KD VALVE is available in Metal to Metal seat design to endure High temperatures of up to +700 °C, equipped with a special designed stem, packings, and loaded seat design. A valve is designed to allow high temperature isolation work, and the actuator, or operation part, is designed to be protected from high temperature service.

Range :

#150~#2500 /1/2 inch~32 inch

Standard :

API, ANSI, ASME, DIN, User Spec, etc.

Leakage Class :

ANSI B16.104 (FCI 70-2) Class VI



Case 1 KD VALVE replaces inferior products.

At ARDS unit in our client's plant, there is other brand of metal seat ball valves. However, there have been several issues reported by the end-user, such as external leakage due to the stem and gland packing wore down. In addition, the valve also suffered internal passing as both the ball and the seat had sustained serious damage. Durability deteriorated rapidly after 2~3 months of operation.

After upgrading their plant with KD VALVE products, the client was more than pleased to witness huge improvement. Zero-leakage with no internal passing has shown signs of less damage. These KD VALVE products are using now over 10 years without any trouble.



Metal Seated Ball Valve for High Abrasive and Erosion Service

Range :

#150~#2500 /1/2 inch~32 inch

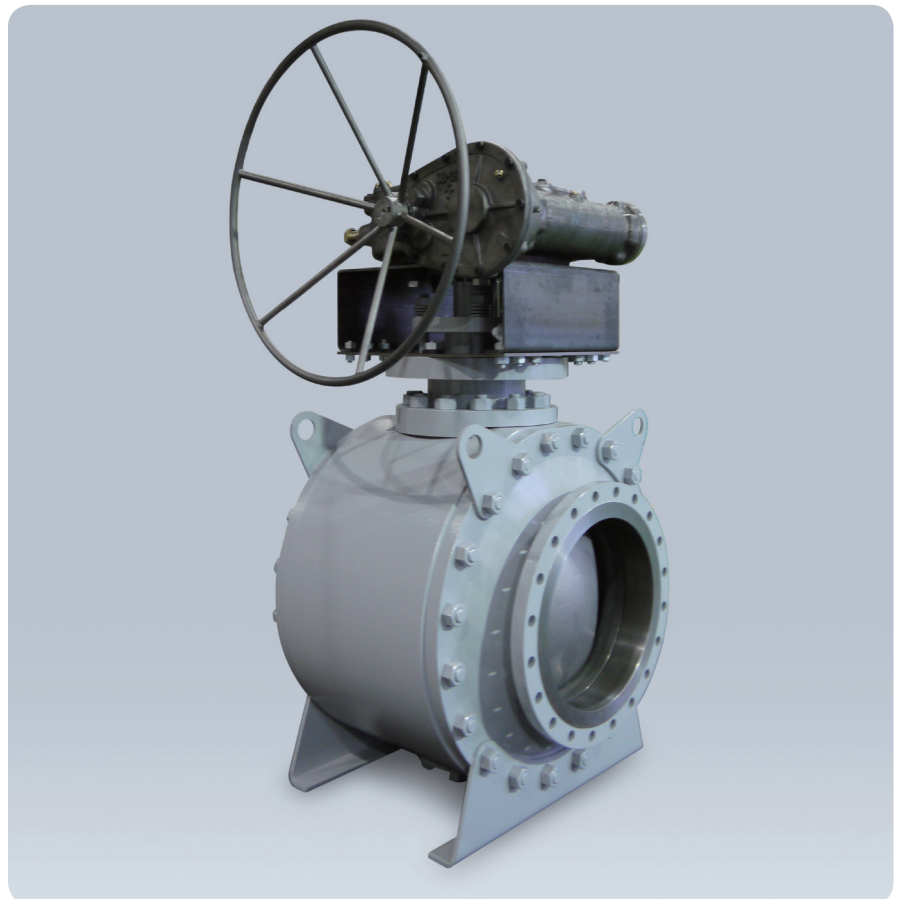
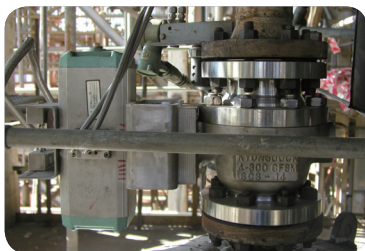
Standard :

API, ANSI, ASME, DIN, User Spec, etc.

Leakage Class :

ANSI B16.104 (FCI 70-2) Class VI

KD VALVE is available in Metal to Metal seat design for Abrasive and Erosion Service, equipped with special designed scraper design seat and high hardness material. The valve ball and seat is of high hardness material, and is not easily damaged from the service fluid. Bidirectional sealing and the scraper seat design enable KD VALVE's products to maintain the sealing and long-term operation. These are to prevent the damage from service fluid and erosion from inside passing.



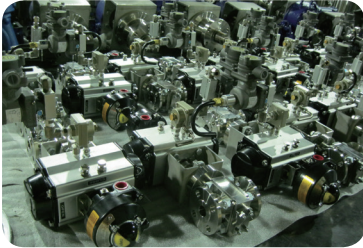
Case 2 Improving the conditions of the slurry separators

The slurry oil separator is used to reduce the solids of the oil. At our client's RFCC unit, a certain brand had supplied Metal Seated Ball Valve causing problems at site. It had serious sticking and leaking issues. The leakage was due to the worn-out stem and packing where the source of the leakage was from.

After switching to KD VALVE products, the plant's production was improved. It had no more sticking issues due to the capabilities of our manufacturing technologies. Zero leakage observed at 450°C in the treated stem.



Metal Seated Ball Valve for Polysilicon Service



KD VALVE is available in Metal to Metal seat design for Poly-Silicon Industries. The Scraper seat design and high hardness give the durability and the properties necessary to operate under severe conditions. The valve ball is not easily damaged by MGSI powder, so it can give you best-in-class lifecycle. Bidirectional sealing in addition to the scraper design will give the ultimate sealing to prolong the plant operation. Our innovative technologies prevent damage from service fluid and erosion. The valve also features Pocketless Design which eliminates the dead space that allows the powder to build up for a smooth valve operation and seat closure.



Case 3

KD VALVE's innovations for Polysilicon plants mark a new milestone for the industry. Our own technologies have helped improve our clients' production drastically. Before introducing our products, the products in the market were substandard, causing many faults and damages at the plant. For example, an inferior product has only one layer for the Stem packing, but KDVALVE has three-layer Multi Packing. Most of the other brands do not adopt live loading of stem packing but we provide it to maintain the integrity of the valve as well as protect materials from leaking. Our unique design features Zero-leakage as we have bi-directional sealing which will prevent powder from leaking to the spring unit. Innovative metallurgical technology helps us deliver best-in-class hardness to endure the harshest most severe conditions.

Range :

#150~#2500 / 1/2 inch~32 inch

Standard :

API, ANSI, ASME, DIN, User Spec, etc

Leakage Class :

ANSI B16.104 (FCI 70-2) Class VI

Valve Type :

Forged, Side Split Body

Segment Metal Seated Ball Valve for Powder Line Service

Range :

#150~#300 /1 inch~16 inch

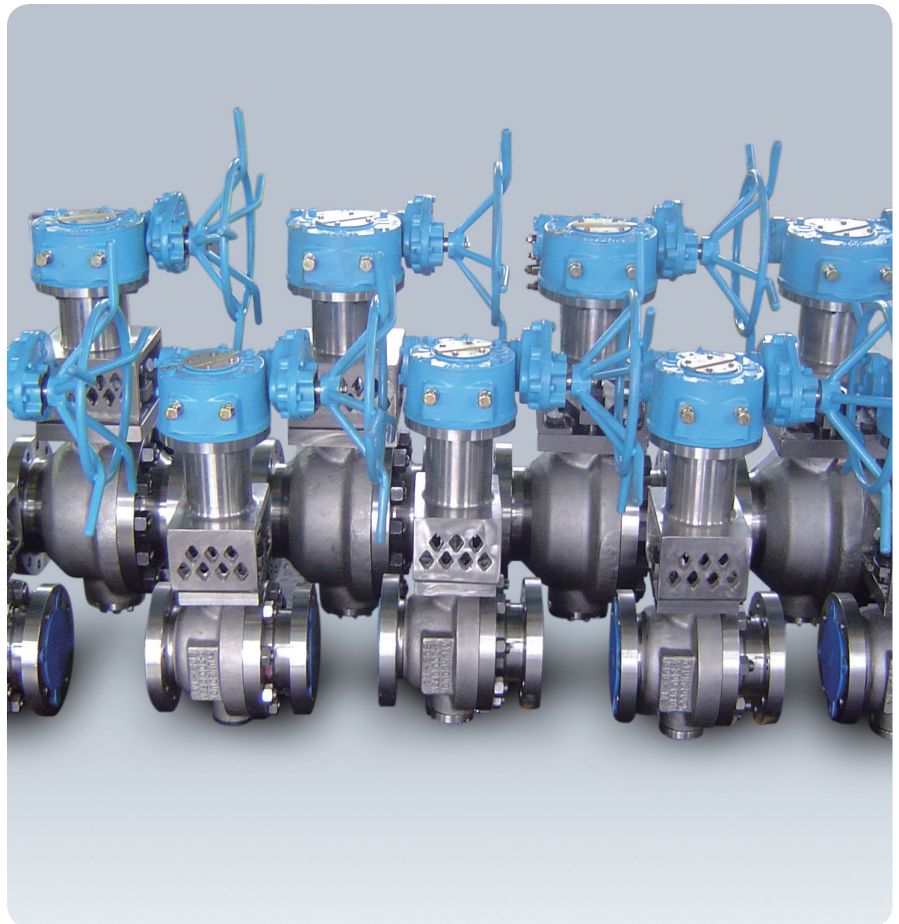
Standard :

API, ANSI, ASME, DIN, User Spec, etc.

Leakage Class :

ANSI B16.104 (FCI 70-2) Class VI

KD VALVE is available in Segment Metal to Metal seat design for high performance application, equipped with special designed scraper and spring loaded seat. KD VALVE's segment ball valve is superior performance in terms of powder and catalysts, such as a particle. The scraper seat design makes possible long-term operation by removing the fluid surface of the ball during valve operation.



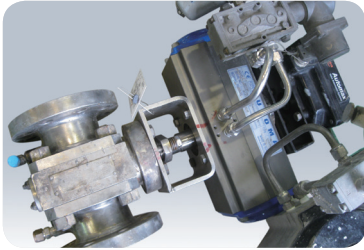
Case 4 The best handling of CCR units

Our clients wanting to get rid of problems surrounding their plants chose KD VALVE. The previous valves had issues of external leakage and internal passing that cost a budget to solve and contain.

Under high temperatures up to 340°C the KDVALVE managed to maintain the highest durability and performance with no maintenance or changing increasing the end user production and saving precious resources, money, and time.

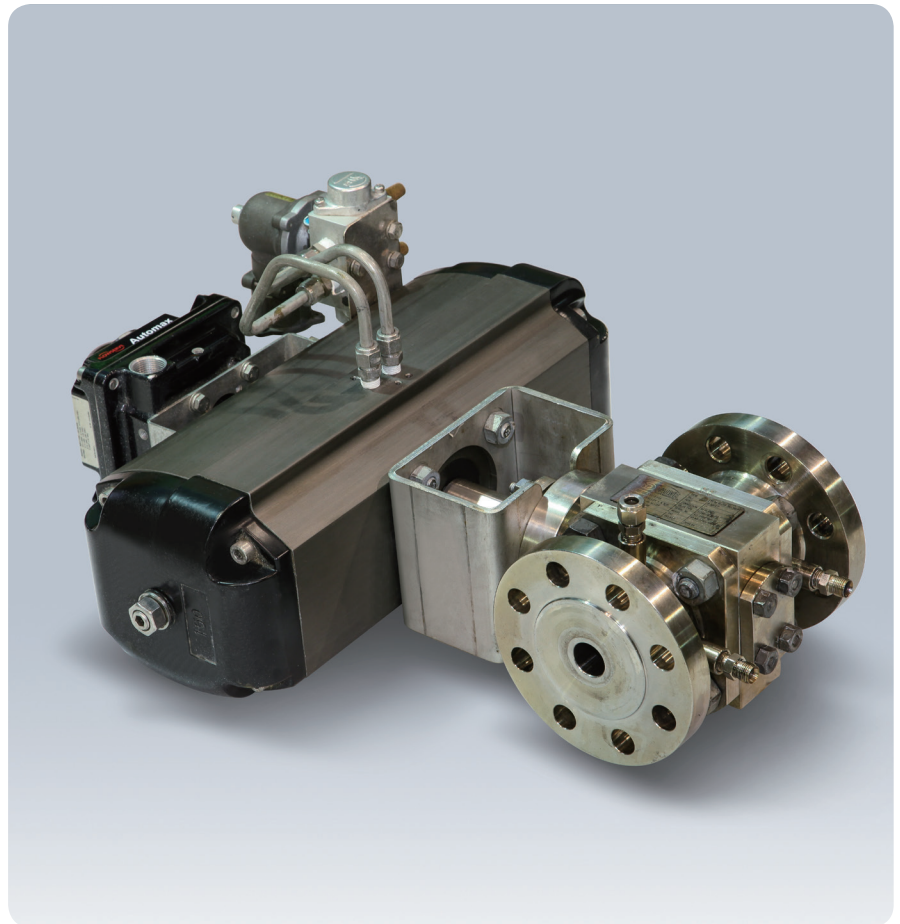


Steam Jacketed Metal Seated Ball Valve for High Performance Service



KD VALVE is available in Metal to Metal seat design for high performance application, equipped with special designed steam jacketed valve body.

KD VALVE's steam jacketed ball valve, designed to effectively maintain the temperature of the media. Jacketed ball valve design is Side entry split type valve body, it is safer than end entry type valve body.

**Range :**

#150~#300/1/2 inch~12 inch, User Spec

Standard :

API, ANSI, ASME, DIN, User Spec, etc

Leakage Class :

ANSI B16.104 (FCI 70-2) Class VI

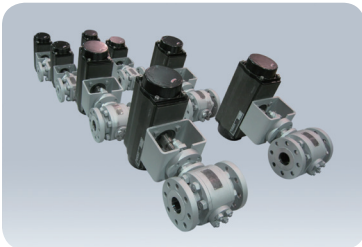
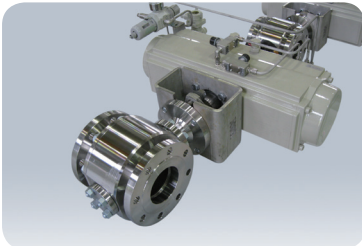
Steam Jacket Pressure : up to 10 barg

Valve Type : Forged, Side Split Body

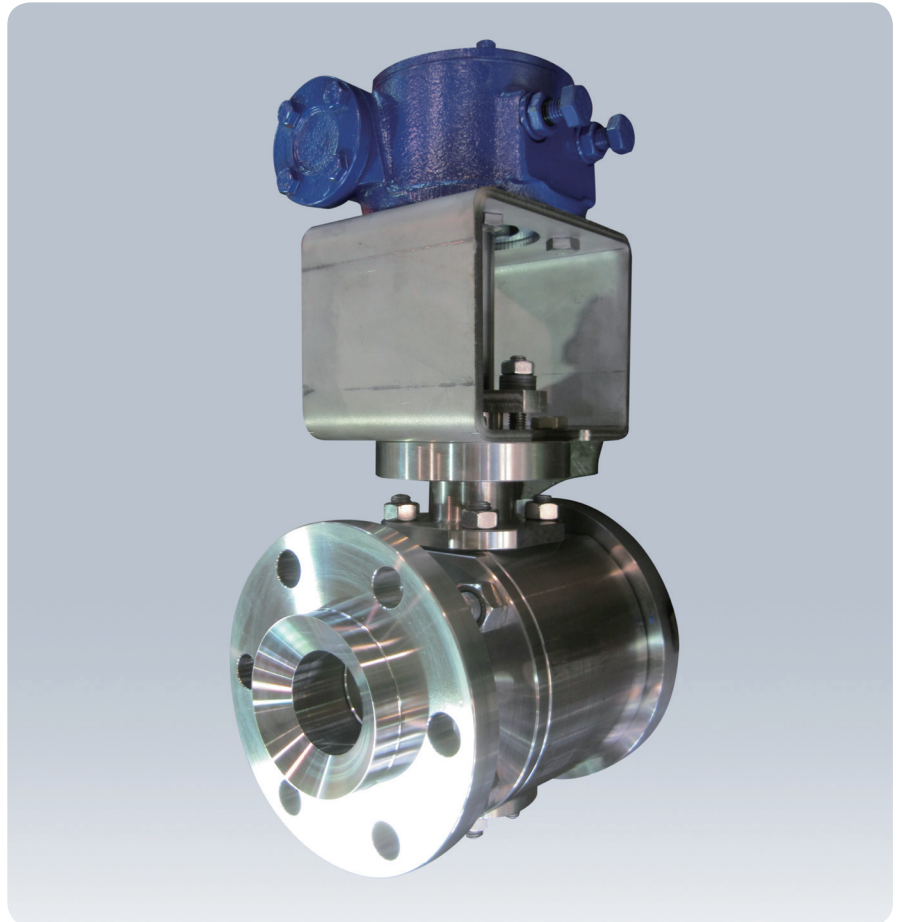
Case 5

The safety margins of a plant depend heavily on the valve's integrity. Severe operating conditions make it difficult to maintain a required temperature. KD VALVE design is to tackle the passing that happens inside the valve body which in return will cause a pump overloading problems. The design helps maintain the required temperature without compromising the integrity of the valve. It also helps prevent unwanted changes to the valve resulting from constant high temperature and pressure. Our valve is the most optimal choice for your specific requirements.

Flush Bottom Tank Metal Seated Ball Valve for High Abrasive Service



KD VALVE is available in Metal to Metal seat design for Abrasive Service in Flush Bottom Tank, equipped with special designed scraper seat and high hardness material. KD VALVE's Flush Bottom Tank Metal Seat Ball Valve is a trunnion-mounted ball design with a split forged body housing and an integral stem. The spring loaded scraper seat system and a live loaded stem packing also provide continuous tightness during rapid temperature changes.



Range :

#150~#600/1/2 inch~18 inch, User Spec

Standard :

API, ANSI, ASME, DIN, User Spec, etc

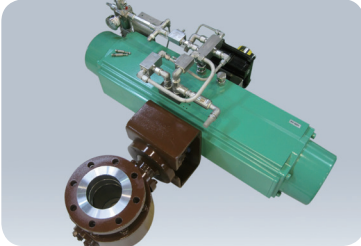
End Connection : Treaded, Socket Weld, Butt Weld, ANSI Flanged, Quick Clamp – Sanitary, Tube O.D., User Spec

Leakage Class :

ANSI B16.104 (FCI 70-2) Class VI



Metal Seated Ball Valve for Fugitive Emission Service | Actuated Metal Seated Ball Valve



KD VALVE is available in Metal to Metal seat design for Fugitive Emission environment, equipped with special designed a multi-layer stem packing.

KD VALVE has conducted a helium gas test for fugitive emission. And, the company has a lot of experience in processing hydrogen.



Range :

#150~#2500 / 1/2 inch~32 inch

Standard :

API, ANSI, ASME, DIN, User Spec, etc

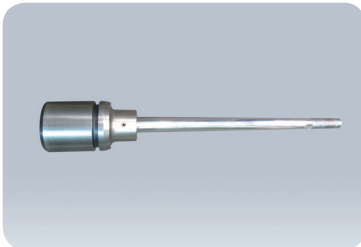
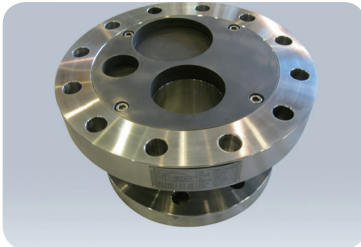
Leakage Class :

ANSI B16.104 (FCI 70-2) Class VI

KD VALVE supplies with standard manual operators for metal seat ball valves

- Lever / Hand wheel worm gear operators
All valves are designed with standard top flange ISO 5211 for easy mounting of remote actuating systems.
- Pneumatic and Hydraulic actuators for On-Off service
- Pneumatic and Hydraulic actuators for emergency shutdown service
- Electric motor operators for MOV service

Special Products for High Erosion Service



KD VALVE with its rich history and long experience in the valve industry has developed its own technologies to produce high hardness products which exceed HV2,000. Our main product line involves Metal Seated Ball Valve. However, our proprietary innovative technology can be used to develop special products.

High pressure drop and rise, high temperature, and erosive fluids can easily damage and wore out any surface or material. It is difficult and expensive to maintain a product made using conventional materials. KD VALVE uses our own metallurgical innovation to produce a high hardness product that handles the most extreme severe conditions and still performs exceptionally. The same technology can be used to produce special products for high erosion conditions.

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Performance guarantee

We take pride in our products. Our commitment is to offer you the highest standard of guarantee service. Aspiring to be lifelong partners, we want to go over and beyond to serve you. Our services include support, repair, guiding, and, of course, customization. Our services provide you with efficiency, reliability, and costs reduction.

We offer various solutions for our clients, and our experts are available at your service.

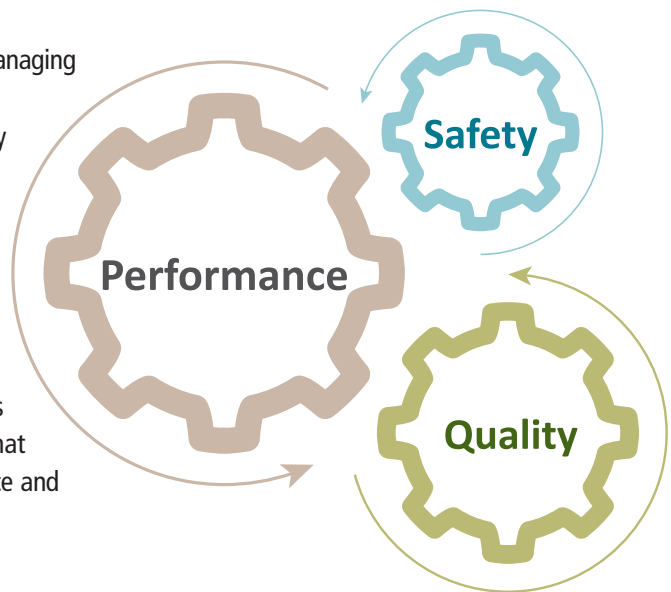
Support for projects, such as installation and guiding.

System inspection and routine maintenance Troubleshooting

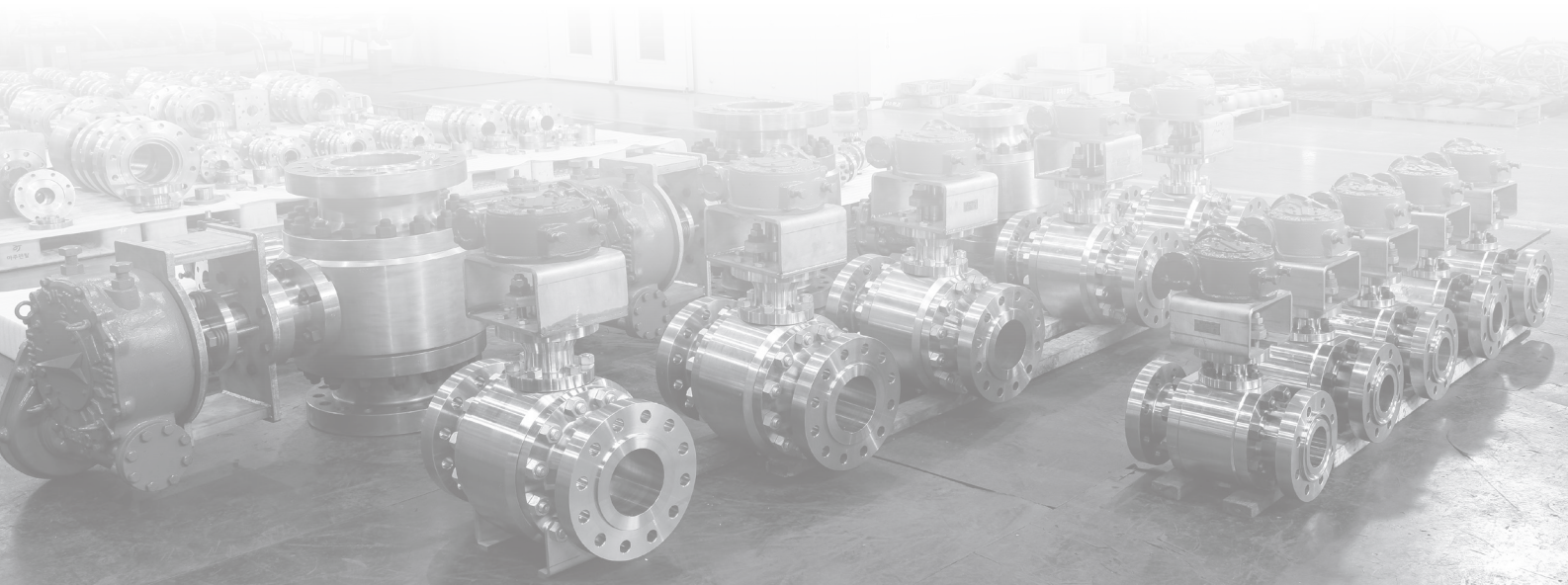
Refurbishing, Repairing, and modifying Valve repacking and managing

Customer Service Center 24 hours a day Testing the integrity of the valve Analyzing problems and develop fast reliable solutions

Due to our continuous development and improvements we have acquired application-specific products and managed to invent new technologies that helped us provide the customer with satisfying performance. Thus we commit to our products after sales and provide warranty so you can rest assured that whatever happens we are going to provide exceptional service and support.



- **EXCEPTIONAL PERFORMANCE**
- **VALVE KNOWLEDGE & EXPERIENCE**
- **RELIABILITY**
- **SAFETY**
- **GROWTH AND PROSPER**
- **BEYOND SATISFACTION RESULTS**



Customer's Trust

We proudly supplied many of the world's biggest companies. Our clients rely on our quality, performance, value added products to achieve the best results and production.

BASF
We create chemistry



Human Energy™



- ✦ Bubble Tight Bi-directional
- ✦ Scraper Seat Design
- ✦ High Hardness of over HV2000
- ✦ Pocketless Design
- ✦ Fugitive Emissions Sealing
- ✦ Live Loaded Packing assures reliable performance
- ✦ High Temperature



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