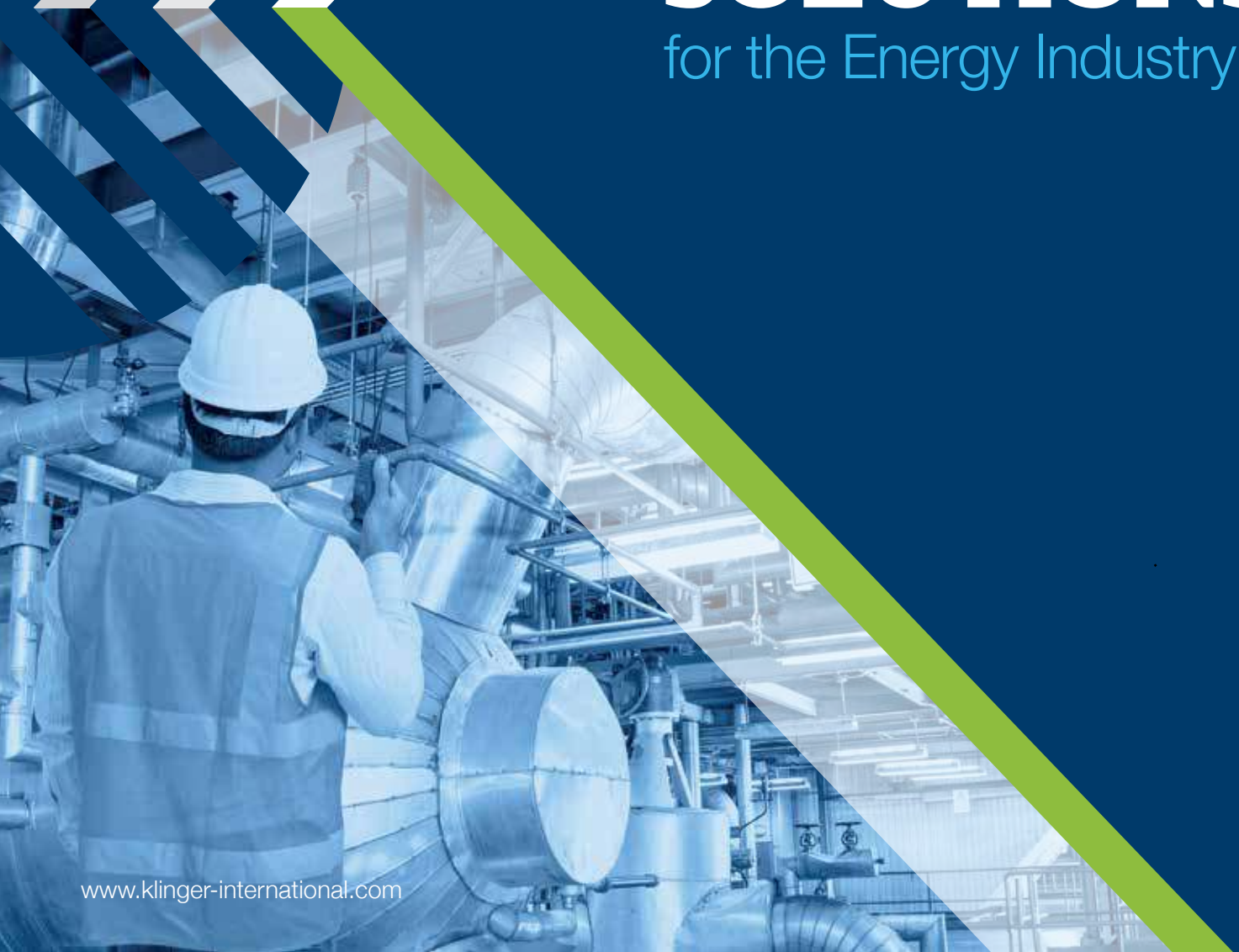
KLINGER
trusted. worldwide.

SOLUTIONS

for the Energy Industry



www.klinger-international.com

KLINGER GROUP

Visionary by Tradition

KLINGER is the world's leading manufacturer and provider of sealing and fluid control solutions.

Founded in 1886 as a family enterprise, the pioneer in gasket technology today has evolved into a globally operating corporate group comprising independent global manufacturing, sales and service companies that offer unique know-how and expert on-site consulting services in 60 countries around the world.

Our customers include leading companies from a wide range of industries from manufacturing, infrastructure and automotive to marine, oil & gas, chemicals, pulp & paper, as well as energy, food & beverage, and pharmaceuticals. KLINGER employs around 2,900 people worldwide with total annual sales of around 686 million euros.

€ 686 MIO. ANNUAL SALES

686 million euros in revenue generated by the KLINGER Group per year.

2,900 EMPLOYEES

Our global workforce is 2,900 people strong.

80 MARKETS

The KLINGER Group has already exported to 80 countries and counting.

18 PRODUCTION SITES

The KLINGER Group manufactures gaskets, valves, instrumentation, expansion joints and hoses in almost 20 countries.

60 COUNTRIES

The KLINGER Group subsidiaries and representatives are at home all over the world.

93 LOCATIONS

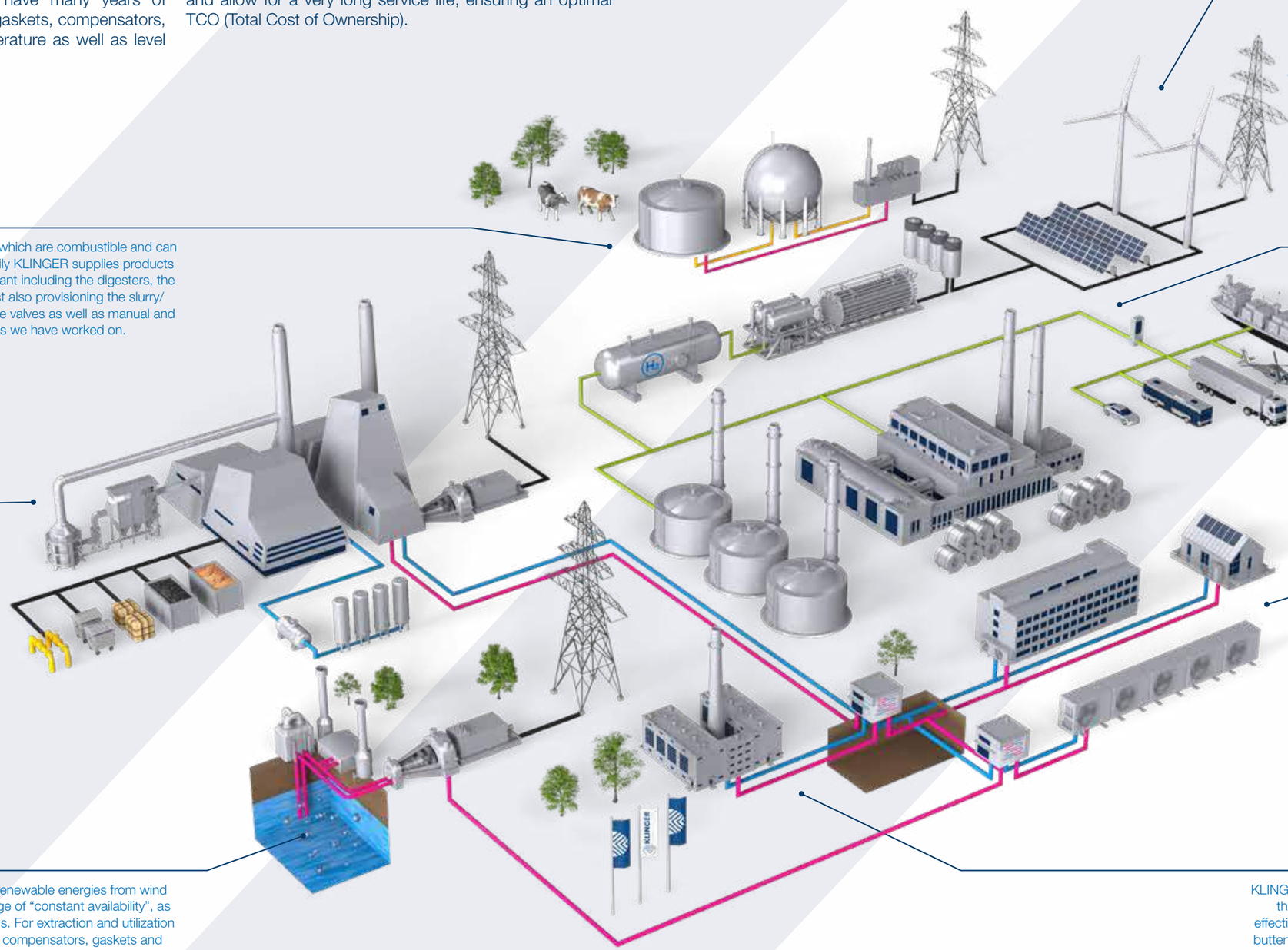
With a presence in more than 90 locations worldwide, KLINGER is an international enterprise.

KLINGER® trusted. worldwide.

PLANT VIEW

KLINGER Energy Industry Solutions

In all kinds of power plants, heat pumps, P2X installations and district heating installations, you will find products manufactured by KLINGER. We have many years of experience as a supplier of valves, gaskets, compensators, gas detection, pressure and temperature as well as level measurement instruments. KLINGER products within the energy industry reduce operating and maintenance costs and allow for a very long service life, ensuring an optimal TCO (Total Cost of Ownership).



BIOGAS

Biogas is mainly comprised of hydrocarbons which are combustible and can produce heat and energy when burnt. Primarily KLINGER supplies products for biogas production for all sections of the plant including the digesters, the gas mixing and gas-to-grid connections whilst also provisioning the slurry/ water sections of the plant. Typically knife gate valves as well as manual and actuated butterfly valves are used in the plants we have worked on.

THERMAL ENERGY

In all types of power plants, you will find products manufactured by KLINGER.
Our product line includes a complete range of ball valves, butterfly valves, actuators, compensators, water level fittings, high pressure valves, control valves, pressure/ vacuum valves, steam traps, safety valves and gaskets. KLINGER supplies gas detection, pressure and temperature as well as level measurement instruments for the energy industry.

GEOTHERMAL ENERGY

Geothermal energy complements the mix of renewable energies from wind power and solar energy and has the advantage of “constant availability”, as there is independence from climatic conditions. For extraction and utilization of geothermal energy KLINGER offers valves, compensators, gaskets and instruments that are designed to work under high temperatures and with variable flow rates, aggressive gases and crystallized salts, securing optimal performance.

RENEWABLE ENERGY

KLINGER provides safe and reliable solutions in sealing technology in the renewable energy industry, including solar and wind power generation. KLINGER is well known in the industry as a supplier of metallic gaskets and joining materials. Nowadays, a low carbon economy is no longer a bonus, but a necessity. Slip rings, a major component found in wind turbines, are such an example.

P2X

P2X is essential in achieving a carbon-neutral society that meets an increasing demand for energy. Through electrolysis it furthermore offers a competitive option for energy storage. Fossil fuels are being replaced by renewable energy such as wind, solar, and hydropower. At KLINGER we provide comprehensive industrial solutions tailored to individual requirements. We consider operating costs as well as the energy requirements.

HEAT PUMPS

A heat pump extracts thermal energy from the environment (air, soil, groundwater) and converts it into heating energy for buildings and hot water using electricity. In recent years, heat pumps have been getting more and more popular in both homes and larger applications because of their high efficiency. KLINGER has a wide range of products it offers towards heat pump manufacturers. We have many years of experience, proven functionality, quality and longevity.

ENERGY DISTIBUTION

KLINGER energy distribution products are designed to deliver the highest possible energy efficiency, reliability and cost-effectiveness. These include a wide range of shut-off ball and butterfly valves, butterfly control valves, valves with long stem for underground installation, hot tapping and branching valves for expanding existing distribution pipe networks. KLINGER’s compensators are a flexible and yet very vital component to be able to keep process systems tight.

VALVES

BALLOSTAR BALL VALVE KHA

The new KHA – the multi-talented product for many applications.

The Ballostar KHA offers a more stable bolting of the body with shorter bolts for greater mechanical stability with regard to thermal expansion.

A wide range of types due to the modular construction system characterizes these three-piece ball valves. Three kinds of connections, six types of sealing elements and three stuffing box designs ensure that Ballostar KHA ball valves are suitable for many different operating conditions within the heat and power sector.

FIRE SAFETY

The ball valve can be used for Fire-safe applications at any given time as the basic design is already certified per default.

IMPROVED CORROSION PROTECTION

KLINGER Advanced Corrosion Protection is a newly developed, special coating procedure with galvanic coating ensuring improved protection against corrosion.

ANTISTATIC AS STANDARD

The Ballostar KHA features antistatic components as standard equipment in accordance with ISO 7121 / EN 1983, respectively.

TA LUFT (VDI 2440)

The standard stuffing box meets the requirements of TA Luft (VDI 2440). Double sealing at the body section by means of the KLINGERSIL C-4430 soft gasket protects against external leakages and meets the highest helium emission testing requirements.

OXYGEN DESIGN

Due to the fact that increased concentrations of oxygen lead to greater fire and explosion hazards, a valve must therefore meet certain prerequisites in terms of oxygen.

BALLOSTAR BALL VALVE KHE

BENEFITS / PROPERTIES

Due to the two-piece body design, the risk of an external leakage is reduced, because there is just one sealing area between body and flanged end piece. Offers modular selectable system components (operating stem and sealing elements). Split body KHE valves are prepared for a wide range of operating conditions.

SPECIFICATIONS

- Maintenance-free
- Supports pressurization on both sides
- Ball with cylindrical full bore
- Sealing in accordance with EN 12266-1 – leakage rate A
- Metal seat for abrasive media
- Operating stem sealed by O-rings
- Operating stem extension
- Oxygen version (oil- and grease-free)
- Gas version

BALLOSTAR BALL VALVE KHI

BENEFITS / PROPERTIES

Two-piece body, flanged ends on both sides. In addition, the ball valve housing comes with a test and drain valve, which enables the pressure to be relieved without having to open the pipeline when the ball is closed. This is a significant advantage as it allows for leak-testing at any time.

SPECIFICATIONS

- Maintenance-free, Fire-safe
- TA Luft
- Double block and bleed
- Oxygen, gas and vacuum version
- Certified acc. to EN 488:2019
- High temperature version up to 260 °C

BALLOSTAR BALL VALVE KHSVI

BENEFITS / PROPERTIES

One-piece ball valves have a fully welded body with welding ends on both sides. They are fit for underground district heating trenches and buried pipelines. The test and drain valve welded to the ball valve housing allows the pressure to be relieved intermediately while the ball is closed.

SPECIFICATIONS

- Fire-safe applications and certified in accordance with API Standard 607, and EN ISO 10497 by Lloyd's Register
- Approval granted for utilization with gaseous oxygen at operating pressures of up to 16 bar and operating temperatures of up to 60 °C
- Double block and bleed function ensures that only one instead of two valves is needed
- This alternative solution is especially useful for installations with limited space

INTEC BALL VALVES FOR HYDROGEN & OXYGEN

BENEFITS / PROPERTIES

High temperature ball valves for P2X applications. Mixture of steam and hydrogen. (operating: 300 °C at 2.2 barG / design: 380 °C at 3.5 barG). Mixture of air and oxygen. (operating: 408 °C at 0.1 barG / design: 480 °C at 0.5 barG)
INTEC K221-S-HT: floating ball, metal seated, single side spring loaded seat ring.
INTEC K211-S-HT: trunnion-mounted ball, metal seated, both sides spring-loaded seat rings.

SPECIFICATIONS

- Standard materials (WCB/1.0619, ASTM 351-CF8M/1.4408)
- Special materials (Duplex, Hastelloy, etc.) on request
- Seat ring and ball hart metal coated
- Gas-tight
- Fire-safe acc. to API 607 and DIN EN ISO 10497

MONOBALL BALL VALVE KHO

BENEFITS / PROPERTIES

The Monoball KHO is a fully welded ball valve and has been successfully used in the field of district energy and industrial technology for more than 30 years. Continuing this success, we have brought the Monoball valve series to the next technological level. Durability, functionality, no maintenance required and user-friendliness were the top priorities during development.

SPECIFICATIONS

- PN16-40
- DN15–250
- Material: cast steel, stainless steel
- Temperature: -5 °C to 200 °C
- Permanently elastic, maintenance-free sealing system comprises corrosion-resistant, prestressed stainless steel belleville washers
- Graphite-reinforced PTFE sealing rings

BALL VALVE KHD-FW

BENEFITS / PROPERTIES

Fully welded ball valves. Space-saving, long service life, maintenance-free. 30 years of effective service life, maintenance-free, and the same life as the pipeline. End connections are 360° welded onto the body eliminating any possible leakage through the body. Lightweight and space-saving, and thanks to the self-lubricating bearing valves are basically maintenance-free. With spring-loaded body seals, KHD-FW fully welded ball valves offer excellent thermal expansion tolerance.

SPECIFICATIONS

- Pressure rating PN16, PN25, PN40
- DN15–1,400
- Material: carbon-steel, stainless steel
- Temperature: -20 °C to 200 °C
- Full bore and reduced bore
- Long service life, maintenance-free. Anti-blowout stem for safety. Trunnion-mounted on larger size

TANDEM DUO BALL VALVE

BENEFITS / PROPERTIES

The duo ball valve is designed for applications with extremely high safety requirements. These are two compact ball valves arranged in series, which are switched in parallel via a switching linkage by means of a single INTEC 40KS spring-loaded unit.

SPECIFICATIONS

- Pressure of max. Δp 31 bar and a temperature application range of -34 °C to 40 °C
- Available with a floating ball or trunnion-mounted ball as well as soft or metal seated execution
- All ball seat systems naturally fulfill the leakage rate A according to EN 12266 and are absolutely gas-tight

BUTTERFLY VALVE WAFER KKD-81

BENEFITS / PROPERTIES

Wafer with centering holes for PN10/16, NBR seat. Application: Liquids, gases or powdered media (depending on seat type). Double O-ring seal in stem, bottom bearing in bronze, bushing and top bearing in Delrin, bushing ensures long life. Short face to face and low weight. Exchangeable seat. Actuator flange ISO 5211 for easy mounting of pneumatic or electric actuator.

SPECIFICATIONS

- Material: Cast iron ASTM A 126-B w/blue coating, (Ductile cast iron ASTM A395 ≥ DN700)
- Pressure class: PN16: DN40–600
- Seat type: NBR
- Other seat material available
- Temperature NBR: -10 °C to 80 °C

BUTTERFLY VALVE LUGGED KKD-81

BENEFITS / PROPERTIES

Application: Liquids, gases and powdery media (depending on seat type). Lugged type is bolted on the flange and ensure 100 % centering. Double O-ring seal in the spindle, as well as the bottom bearing in the bronze bushing and the top bearing. Mounting flange ISO 5211 for easy mounting of pneumatic or electric actuator.

SPECIFICATIONS

- Ductile cast iron ASTM A395 w/blue coating
- Pressure class: PN10, PN16, ANSI150LB
- Stem: stainless steel ANSI 316
- Spindle: stainless steel ANSI 410
- Handle/notched disc: DN40–300: FCD 45-SG iron/ galvanized steel
- Reduction gear: DN40–600: SG iron
- Seat: EPDM/EPT
- Connection: mounting on DIN flanges PN10 / PN16
- Temperature: EPDM: -20 °C to 120 °C

BUTTERFLY VALVE KKY

BENEFITS / PROPERTIES

KKY series butterfly valves for chemically demanding applications such as chlorine dioxides and acids used in e.g. pulp bleeching processes. Butterfly valves can be used as control or shutoff valve. Fitted with handle or with manual gear. Valves come with PTFE lining and are installed between flanges.

SPECIFICATIONS

- Valve material carbon-steel (CF8M available) with PTFE, FEP or PFA lining
- Pressure class for valves are PN10-25 and ANSI Class 150 (Class 300 flange drillings also available)
- Standard sizes are DN80–DN600 (3”–24”)

BUTTERFLY VALVE KKD-82

BENEFITS / PROPERTIES

KKD series butterfly valves are suitable for different substances. Flow medias such as steam, water and standard gases can be controlled or valves can be used as closing valve in different process applications. Fitted with handle or manual gear. Butterfly valves have metal or PTFE seat and are to be installed between flanges.

SPECIFICATIONS

- Valve materials CF8M (carbon-steel available)
- Pressure classes in EN standard are PN10-40 and ANSI Class 150 and 300
- Standard sizes are DN80–600 (3”–24”) but is available up to DN1,200 (48”) on request

LUGGED DOUBLE ECCENTRIC BUTTERFLY VALVE KKD-82

BENEFITS / PROPERTIES

Application: Liquids, gases and vapors at high temperatures. Short face to face and low weight compared to alternative valve types. Double eccentric shutoff reduces wear on the seat. Simple mounting of pneumatic, hydraulic and electric actuators. Blowout-proof stem design. ATEX 94/9/CE II cat 2 GD.

SPECIFICATIONS

- Material: ASTM A216 Gr. WCB
- Pressure class: PN10-16, ANSI 150 lbs ANSI 150 lbs
- Disc: stainless steel ANSI 304
- Seat: PTFE
- Stem: ANSI 304
- Gland packing: PTFE
- Leak rate: ISO 5200 Rate A (No leakage)
- Temperature: PTFE: -29 °C to 160 °C

BUTTERFLY VALVE KKD-FW

BENEFITS / PROPERTIES

Triple eccentric butterfly valve with flexible metal seal is excellent as shut-off or control valve for the use in district heating, cooling and wide range of applications. Made of high-quality materials, the butterfly valve follows design features triple offset geometry with state of art U-type flexible metal sealing offering excellent shut-off characteristics and is suitable for wide range of temperatures.

SPECIFICATIONS

- Pressure rating: PN10, PN16, PN25
- DN300–1,400
- Material: carbon-steel, stainless steel
- Temperature: -10 °C to 200 °C
- End Type: welding end, flanges
- Bore: full and reduced bore
- Leakage: class EN 12266-1 Rate B

TRIPLE ECCENTRIC BUTTERFLY VALVE KKD-83

BENEFITS / PROPERTIES

Triple eccentric design reduces wear. Zero leakage bidirectional tight shut-off. Friction-free operation. With laminated resilient disc ring. Service application: Hydraulic, petroleum, natural gas, chemical, power.

SPECIFICATIONS

- Size range: 3”–48”
- Valve material: stainless steel, carbon-steel
- End connections: wafer type, lug type, flange type, butt-weld type
- Seat ring material: laminated type (SS304 + Graphite)
- Disc material: stainless steel, carbon-steel
- Stem material: stainless steel

GATE VALVE KSD

BENEFITS / PROPERTIES

KSD series gate valves with hand wheel for flow media such as steam, water and standard gases. Gate valves have a metal seat and are flanged, welded or threaded.

SPECIFICATIONS

- Valve materials carbon-steel and CF8M, ANSI class 800
- Higher pressure classes optionally available
- Standard sizes DN10–DN50 (3/8”–2”)

GATE VALVE KSD

BENEFITS / PROPERTIES

KSD series gate valves with hand wheel or with manually operated gear for flow media such as steam, water and standard gases. Gate valves have metal seat and come with flanges or butt-weld ends.

SPECIFICATIONS

- Valve materials carbon-steel and CF8M
- EN pressure classes PN10-40 and ANSI classes 150 and 300. Higher pressure classes optionally available
- Standard sizes DN80–DN600 (3”–24”), but up to DN1,200 (48”) optionally available

GLOBE VALVE KAD

BENEFITS / PROPERTIES

KAD series globe valves with hand wheel or with manually operated gear for flow media such as steam, water and standard gases. Globe valves have a metal seat and come with flanges or butt-weld ends.

SPECIFICATIONS

- Valve materials carbon-steel and CF8M
- EN pressure classes PN10-40 and ANSI classes 150 and 300. Higher pressure classes optionally available
- Standard sizes DN80–DN400 (2”–16”)

GLOBE VALVE KAD

BENEFITS / PROPERTIES

KAD series globe valves with hand wheel for flow media such as steam, water and standard gases. Globe valves have a metal seat and come with flanges, welded or threaded ends.

SPECIFICATIONS

- Valve materials carbon-steel and CF8M
- Pressure class ANSI class 800. Higher pressure classes are optionally available
- Standard sizes DN10–DN50 (3/8”–2”)

PISTON VALVE KVN

BENEFITS / PROPERTIES

KVN series piston valve with hand wheel for flow media as steam, water and standard gases. Piston valves can be used as control or shut-off valves. The piston valve has a unique graphite seat system which allows its use in contamination media substitution, for example globe valves. Valve connection with welding ends, threads and flanges.

SPECIFICATIONS

- Material: steel 1.0619
- Pressure class: PN40
- Bonnet: steel 1.0619
- Hand wheel: steel
- Stem: stainless steel
- Piston: stainless steel 1.4104
- Lantern: Sint-C10. ≥ DN65:GG-20
- Valve rings: KLINGER KX module
- Temperature: -10 °C to 120 °C up to 40 bar Max. 400 °C up to 22 bar

CHECK VALVE KRD

BENEFITS / PROPERTIES

KRD series check valves are suitable for different substances such as steam, water, air and for most standard process medias such as pulp, but also for burning gases and liquids. Check valves are swing type with metal seat, flanges or weld ends.

SPECIFICATIONS

- Valve materials carbon-steel and CF8M
- Pressure classes in EN standard are PN10-40 and ANSI Class 150 and 300. Higher pressure classes are available by request
- Standard sizes are DN80–DN600 (3”–24”) but up to DN900 (36”) optionally available

CHECK VALVE KRC

BENEFITS / PROPERTIES

Flange connection PN10. Application: Steam, water, oil and non-aggressive liquids. For horizontal or vertical installation with upward flow direction. Compact. Build-in stop to ensure that disc does not hit tube walls. Due to the design the disc is self-sealed with horizontal mounting.

SPECIFICATIONS

- Type: R
- Material: Steel
- Pressure class: PN10
- Disc: Steel
- Seat/stem: ANSI 304
- Options: Body and disc in acid-proof stainless steel Larger or smaller dimensions. Other connections: PN6, 16, 25, 40, 64, ANSI 150 lbs or 300 lbs

Y-STRAINER KFD

BENEFITS / PROPERTIES

Y-strainers are devices for mechanically removing unwanted solids from liquid, gas or steam lines by means of a perforated or wire mesh straining element. They are used in pipelines to protect pumps, meters, control valves, steam traps, regulators and other process equipment. Application: Water, fluids, oil and gas.

SPECIFICATIONS

- Exchangeable filter, standard with exhaust plug
- Many options regarding filter sizes and materials
- Filter: Stainless steel
- Mesh size: (standard) – 1.0 mm ≤ DN50 – 1.25 mm DN65–80 – 1.6 mm, DN100–200
- Options: other mesh sizes, materials and pressure ratings

SLIDE GATE VALVE KSD

BENEFITS / PROPERTIES

KSD series gate valve with hand wheel or with pneumatic actuator suitable for different substances. Flow media such as pulp stock and dispersion waters. Gate valves come with metal seat, EPDM or PTFE seat and are installed between flanges.

SPECIFICATIONS

- Valve material CF8M (carbon-steel also available)
- Pessure classes in EN standard are PN10-25 and ANSI Class 150
- Standard sizes are DN50–600 (2”–24”) but is available up to DN1,200 (48”) on request

PLUG VALVE KPZ

BENEFITS / PROPERTIES

KPZ series plug valves are suitable for different challenging media such as black liquor and other substances that need a valve with no gap between body and closing element. Fitted with handle or manually operated gear. Plug valves feature RPTFE sleeve, reduced bore, with flanges or welded/threaded ends.

SPECIFICATIONS

- Valve materials Duplex, CF8M and carbon-steel (Hastelloy also available)
- Pressure classes ANSI class 150–600. Drillings for PN ratings available
- Standard sizes DN15–DN500 (1/2”–20”) but up to DN700 (28”) optionally available

NEEDLE VALVE

BENEFITS / PROPERTIES

The precision, adjustability, flexibility, and versatility makes it perfect for use in the energy sector. One of the biggest advantages of using a needle valve is its small opening. Even when fully retracted, the plunger does not allow fluid to flow. The fine-threaded screw that retracts the plunger controls the flow rate.

SPECIFICATIONS

- Valve body: A351 CF8M (ANSI 316)
- Pressure class: PN400/6,000 psi
- Seat: metal
- Stem: ANSI 316, rising
- Gland packing: PTFE, option RPTFE (graphite)

CONTROL VALVES

SELECTIONS

Globe-type control valves are normally controlled with pneumatic or even hydraulic actuators because of the control response time. Globe-type control valves are the most common type to control steam and gas media but can be used for most fluids. Operation type is linear movement.

CHARACTERISTICS

Globe-type control valves can be one-step control valves, but several pressure reducing points can additionally be installed inside the valve. This enables higher reduction without increasing the amount of cavitation and high noise volume.

BALL SEGMENT CONTROL VALVE

BENEFITS / PROPERTIES

A segmented ball valve has contoured V-notch segment in the ball. The V-notch ball allows positive shearing action and produces an inherent equal percentage flow characteristic. It provides non-clogging, high-capacity flow control. Application: regulation of water, fluids, air, gas, etc. Simple installation in flange ball valve. Broad range of V-port balls.

SPECIFICATIONS

- Pressure class: PN10, PN16 and 150 lbs
- Segment ball: stainless steel CF8(304)+Cr / CF8M+Cr
- Spindle/sleeve: stainless steel 17-4PH / Selflubricating PTFE / 316-PTFE / 304
- Seat seal: PTFE / metal 316+stellite
- Connection: flanges according to EN1092 / ANSI 16.5.
- Temperature: -29 °C to 180 °C (400 °C metallic seal)

CONTROL VALVE ELECTRIC ACTUATORS KEA

BENEFITS / PROPERTIES

Electric actuators comes as quarter turn or multiple turn models, and operation time is slower than in pneumatic actuators. The biggest advantage compared to pneumatic actuators is strength. Bigger valves need a large amount of force to operate and with electric actuators combined with gear units these high forces can be generated.

CHARACTERISTICS

Most of the actuators use electric power. Since there are different standards for electric power in different countries, the standard has to be known before selecting the actuator for the valve. Products are available for ATEX-areas and the most known data transfer protocols are supported by actuators from different suppliers.

CONTROL VALVE PNEUMATIC ACTUATORS KRP

BENEFITS / PROPERTIES

Pneumatic actuators are the most common actuators for quarter turn valves and control valves. Actuators can only be pneumatically operated (DA) or are designed to be operated by spring force (SR).

CHARACTERISTICS

Normal pressure in the actuator feed (air) is 4.5–6 barG. There are special products for ATEX-areas and products for different reliability levels (SIL) according to customer specifications. Can be produced in material 316 if high chemical resistance is required.

LIMIT SWITCHES

BENEFITS / PROPERTIES

When valves are moving only to open and closed positions without controlling fluids in the middle position, the valve actuator can be equipped with a device that gives a signal to the automation system when the valve is fully open or closed.

CHARACTERISTICS

Limit switches are operating with mechanical or inductive sensors. There are special products for ATEX-areas and products for different reliability levels (SIL) according to customer specifications.

POSITIONERS

BENEFITS / PROPERTIES

Positioners are devices that contribute to the control valve in positioning the actuator with the help of a control signal. They respond according to the input signal they receive pneumatically or electrically. These positioners supply output power to the actuator. Positioners move control valves to a specified position.

CHARACTERISTICS

Normal pressure for positioners (air) is 4.5–8 barG. There are special products for ATEX-areas and also products for different reliability levels (SIL) according to customer specifications. Customers receive position information, additionally as the positioner is able to communicate with several protocols within the automation system.

SOLENOID VALVES

BENEFITS / PROPERTIES

The valve actuator can be driven with a device that feeds the pneumatic air into the actuator to move the valve into open or closed position. Special features can be used to move the valve also in the middle positions to gain some control functions.

CHARACTERISTICS

Normal pressure for solenoid valves (air) is 4.5–8 barG. There are special products for ATEX-areas products for different reliability levels (SIL) according to customer specifications.

INSTRUMENTATION

TRANSPARENT GAUGES

BENEFITS / PROPERTIES

Transparent gauges are the most widespread type and used in all standard applications, especially where the medium is not transparent. For steam applications with pressures above 35 bar, where mica sheets are used to protect the glasses, the only option is to be able to see through the design. Finally, the transparency of the systems can be improved with an artificial light source that is mounted on the back and thereby improves visibility.

SPECIFICATIONS

- Application: water, liquids and steam
- Resistant to high temperatures
- Can be rotated 360°
- Pressure class up to 180 bar
- Design temperature up to 400 °C

MAGNETIC LEVEL GAUGE

BENEFITS / PROPERTIES

Particularly suitable for working with hazardous and toxic liquids and gases. These gauges deliver immediate, precise responses to level changes, ensuring clear, accurate readability. With continuous control, users can maintain an ongoing assessment of the fluid level. Offer both local and remote display options, as well as alarm switching capabilities for enhanced safety. Design requires minimal maintenance.

SPECIFICATIONS

- High-pressure capability, up to 312 bar
- 360-degree rotating display

REFLEX GAUGE

BENEFITS / PROPERTIES

Reflex systems are based on the reflection of light from a specially designed surface on the glass. In the gas or vapor phase, the light is reflected 100 % by the prismatic grooves, while the liquid phase absorbs the light, which to the eye will appear as a dark indication of the level.

SPECIFICATIONS

- Application: water, liquids, liquefied gases and steam
- Good light/dark contrast provides a clear reading
- Can be supplied with both left- and right-facing handle operation
- Resistant to high temperatures
- Can be rotated 360°
- Pressure class up to 180 bar
- Design temperature up to 400 °C

SIGHT FLOW INDICATOR

BENEFITS / PROPERTIES

Sight flow indicators are added to the process line to check for flow in the pipeline. For gaseous materials the flow is normally shown by a spinner behind the sight glass.

SPECIFICATIONS

Materials for sight flow indicators are carbon and stainless steel, but special materials are also available.

GASKETS

GRAPHITE PSM

BENEFITS / PROPERTIES

This product handles 450 °C in continuous operation in combination with high pressure. Graphite PSM is suitable for worn flange surfaces and excellent in steam applications. It does not stick on the flange and contains no adhesive. It is perforated steel insert which is very resistant to exhaust gases. Graphite PSM is also available as TA Luft-approved in type TSM.

With processes becoming ever more complex and environmental restrictions ever tighter, the requirements for sealing applications in the energy industry are more demanding than ever. KLINGER Denmark is helping its customers to minimize harmful emissions, increase reliability and reduce the cost to the operator.

SPECIFICATIONS

- Material: graphite with perforated steel insert, AAA non-stick surface
- Purity: 98 % alt. 99.82 %
- Density to customer specification
- Dimensions: standard sheet
  Size: 1,000–2,000 x 1,000–2,000 mm
- Thickness: 0.6, 0.8, 1, 1.5, 2, 3, 4, 5 and 6 mm
- Tolerances: thickness ±5 %, length ±5 mm, width ±5 mm
- Can be supplied as rings in DIN, ANSI, and user-defined dimensions

SEALEX

BENEFITS / PROPERTIES

Newly developed installation tape facilitates assembly and adjustment. Improved dimensional stability reduces the need for retightening. Suitable for aggressive media up to 260 °C at limited bolt loads. Adapts perfectly to worn and non-parallel flange surfaces. FDA certificate of conformity for food & pharma applications. Excellent for non-metallic and glass flanges. Suitable for large flange diameters.

SPECIFICATIONS

Sealing tape of expanded PTFE
Width and thickness, standard rolls: 3 x 1.5 mm – 30 m, 5 x 2 mm – 20 m, 7 x 2.5 mm – 15 m, 10 x 3 mm – 8 m, 10 x 3 mm – 25 m, 14 x 5 mm – 5 m, 14 x 5 mm – 25 m, 17 x 6 mm – 5 m, 20 x 7 mm – 5 m, 25 x 8 mm – 5 m

MILAM PSS

BENEFITS / PROPERTIES

High temperature materials up to 900 °C in continuous operation. Suitable for applications such as exhaust pipes, turbines, turbochargers and fuel lines. Unparalleled resistance to dry heat. NOTE! Not a high-pressure gasket, max 5 bar.

SPECIFICATIONS

- Mica with stainless steel insert
- AAA self-releasing surfaces
- Dimensions: standard sheet
- Size: 1,200 x 1,000 mm
- Thickness: 1.0 mm, 1.3 mm, 2.0 mm, 3.2 mm
- Tolerances: thickness: ±10 %, length: ±5 %, width: ±5 %
- Also comes delivered as rings in DIN, ANSI, and user-defined dimensions

TOP-CHEM 2000

BENEFITS / PROPERTIES

The perfect universal gasket for heavy-duty applications. Handles high temperatures in combination with high pressure up to 260 °C. The only PTFE gasket with a Fire-safe certificate API 6FA. Excellent for all types of aggressive media. Retained resillence = retorquing is not required. No aging. No cold flow. Extreme gas tightness.

SPECIFICATIONS

- Modified PTFE
- Dimensions: standard sheet
- Size: 1,500 x 1,500 mm
- Thickness: 1.0 mm, 1.5 mm, 2.0 mm, 3.0 mm
- Tolerances: length ±50 mm, width ±50 mm
- Can be supplied as rings in DIN, ANSI, and user-defined dimensions

TOP-CHEM 2003

BENEFITS / PROPERTIES

Suitable for low temperatures and large sealing surfaces. Excellent for all types of aggressive media. Retained resilience = retorquing is not required. No aging. Excellent adaption to bad flange surfaces. High gas tightness at low torque.

SPECIFICATIONS

- Modified PTFE
- Dimensions: standard sheet
- Size: 1,500 x 1,500 mm
- Thickness: 1.0 mm, 1.5 mm, 2.0 mm, 3.0 mm
- Tolerances: length ±50 mm, width ±50 mm
- Can be supplied as rings in DIN, ANSI, and user-defined dimensions

KLINGERSIL C-4400

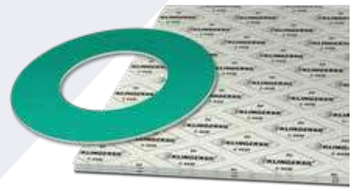
BENEFITS / PROPERTIES

The market's first asbestos-free gasket material with the most references worldwide. Its distinctive matrix imparts resistance to oils, water, steam, gases, salt solutions, fuels, alcohols, mild organic and inorganic acids, hydrocarbons, lubricants, and refrigerants.

- High-pressure material for broad industrial use
- Available in sheets and custom-cut gaskets
- Holds a rich variety of approvals, such as: DIN DVGW, SVGW and ÖVGW, TA Luft, BAM UVV 28, BS 7531 Grade Y, WRC+KTW+HTB, TÜV Poland, Germanischer Lloyd

SPECIFICATIONS

- Consists of aramid fibers bonded with NBR
- Dimensions: standard sheet
- Size: 1,000 x 1,500 mm, 2,000 x 1,500 mm
- Thicknesses: 0.5 mm, 1.0 mm, 1.5 mm, 2.0 mm, 3.0 mm



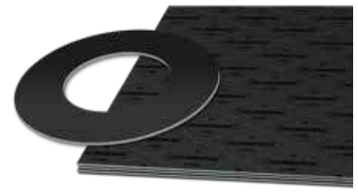
KLINGERSIL C-4430

BENEFITS / PROPERTIES

Universal gaskets for general use up to 250 °C. Very good pressure stability. Very suitable for steam and hot water. Does not stick to the flange.

SPECIFICATIONS

- Synthetic and fiberglass bound with NBR, AAA self-releasing surfaces
- Dimensions: standard sheet
- Size: 1,500 x 2,000 mm or 1,000 x 1,500 mm
- Thickness: 0.25 mm, 0.5 mm, 0.8 mm, 1.0 mm, 1.5 mm, 2.0 mm, 3.0 mm
- Additional thicknesses, sizes, and tolerances are available upon request
- Tolerance: thickness ±10 %, length ±50 mm, width ±50 mm



KLINGERSIL C-4500

BENEFITS / PROPERTIES

Superior-performance gasket material designed especially for the chemical industry. It combines carbon fibers and special heat-resistant additives with an NBR bonding. Higher temperatures, alkaline media. Superheated steam is a typical application scenario where operators also profit from its resistance against oils, gases, salt solutions, fuels, alcohols, moderate organic and inorganic acids, hydrocarbons, lubricants and refrigerants.

SPECIFICATIONS

- Carbon fibers and special heat-resistant additives bonded with NBR
- Resistant to creep and cold flow
- Dimensions: standard sheet
- Size 1,000 x 1,500 mm, 2,000 x 1,500 mm
- Thickness 0.5 mm, 0.6 mm, 0.8 mm, 1.0 mm, 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm
- Thickness according to DIN 28091-1
- Length: ±50 mm
- Width: ±50 mm

SPIRAL WOUND GASKET TYPE CR/CRIR

BENEFITS / PROPERTIES

Very suitable and common in heavy industry, chemicals and refinery applications. Handles between 450 °C–600 °C (graphite) in continuous operation. Suitable for applications with pressures up to 250 bar. There are multiple filling and metal materials to choose from. The standard is graphite.

SPECIFICATIONS

- Spiral wound gasket with filling material of graphite (550 °C), PTFE (260 °C), Mica (1,000 °C) or Mica & graphite (900 °C)
- The standard execution has the inner ring and winding in 316L steel / graphite and the outer ring in carbon-steel
- Also available in various stainless steel solutions
- Wide range of dimensions; DIN, ANSI, and user-defined

KAMMPROFILE GASKET

BENEFITS / PROPERTIES

Kammprofile gasket with facing materials graphite (550 °C), PTFE (260 °C), Mica (1,000 °C) and KLINGERSIL C-4430 (250 °C). Kammprofile gasket can also be manufactured from a range of core materials according to media compatibility and temperature considerations. Can be supplied as ring seal gaskets in DIN, ANSI, and user-defined dimensions.

SPECIFICATIONS

- Utilizes a serrated metal core with soft facing material
- High-pressure gasket with wide seating stress range
- Excellent tightness even at low bolt loads
- Suitable for a wide range of operating conditions
- Provides a high-integrity seal including for thermocycling and shock loading conditions
- Easy to handle and install
- Metallic core can be refurbished with a new facing layer and reused

STEELFLON WLP

BENEFITS / PROPERTIES

Applications: Suitable for a wide range of applications. Steelflon WLP reduces cross-section leakage through pre-compression of gasket and surface leakage through "O-ring effect". Furthermore, it reduces surface leakage of a flanged gasket in a particularly significant manner. Compared to a smooth metal flange, it provides improved ease of installation due to increased rigidity.

SPECIFICATIONS

- Meets leakage requirements under VDI Directive 2440 and TA Luft
- Starting at 10 N/mm² leakage rate 0.0001 mg/s m (DIN 28090-1)
- Media resistance of 1.4571 and/or PTFE
- No measurable creeping and high blow-off safety
- Quick replacement because gaskets do not stick to gasket surfaces
- Storage cost reduction due to gasket's universal nature (PN and class coverage with "unitec" design)
- Availability: 2.0 to 4.0 mm thick
- Special sizes: any diameter up to 4,500 mm

WELD RING GASKET

BENEFITS / PROPERTIES

Weld ring gaskets are designed for permanent leak-proof joints in critical piping systems. They consist of 2 metallic parts welded together on site. Used for hazardous media and as gasket between channel flanges and tube plates in heat exchangers because they can absorb motion. Weld ring gaskets are generally made of the same or a related material as the pipe or flange and are only used in pairs.

SPECIFICATIONS

- Zero leakage
- High temperature & pressure resistance (where conventional gaskets fail
- Excellent chemical resistance (can be made in any metal material)
- No maintenance required
- No aging e.g long service life
- Compact design compared to RTJ

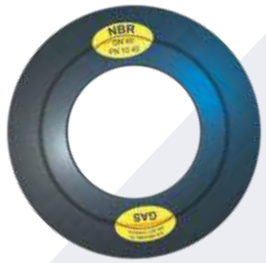
PTFE VIRGIN

BENEFITS / PROPERTIES

Application: Virtually all media, acids, bases, chemicals, and especially food. Supplied in sheets ranging from 0.10 to 12.0 mm, as well as custom-cut gaskets.

SPECIFICATIONS

- Type: PTFE
- Material: pure PTFE
- Color: white
- Density: 2.2 g/cm³
- Media resistance: see resistance table
- Approvals: meets FDA CFR21§177.1550
- Temperature: -150 °C to 260 °C, short-term 300 °C



KGS GII

BENEFITS / PROPERTIES

Suitable for temperatures up to 200 °C (with FKM). Ideal for low surface pressure and non-parallel flange surfaces. Versatile use with water, gases, wastewater, chemicals, etc. Commonly used in sewage treatment plants, waterworks, biogas plants, and the chemical industry. Highly compatible with plastic and fiberglass flanges, even under negative pressure. Available in designs with gas approval (DIN–DVGW) and drinking water approval (KTW). Customizable in various thicknesses, sizes, and tolerances upon request.

SPECIFICATIONS

- Elastomer with steel core
- Available elastomers: NR, NBR, EPDM, CSM, FKM
- Available in DIN: DN15–DN2,000 and PN6–PN40
- ANSI 1/2"–36" 150–300 lbs

GRAPHITE RINGS

BENEFITS / PROPERTIES

A general solution for your sealing requirements.

Graphite rings are widely used in many applications because of their large temperature range (-270 °C to +550 °C), chemical stability (all media except oxidizing media) and large pressure range (from vacuum to +1,000 bar depending on the application/valve design).

SPECIFICATIONS

- 98 % or 99.85 % purity
- Density from 1.4 g/cc to 1.8 g/cc
- All diameters possible

FOIL FOR LOW-EMISSION GRAPHITE RINGS

BENEFITS / PROPERTIES

This graphite foil is used to produce graphite rings with a leakage rate 100 times lower than standard rings. It is suitable for hydrogen applications.

SPECIFICATIONS

- 98 % or 99.85 % purity, all sizes

HIGH-PRESSURE SEAL

High-Pressure Seal / Bonnet Gasket / Brettschneider Ring

BENEFITS / PROPERTIES

Special design for high pressure. Stainless steel metal end caps reduce (obstruct) extrusion of graphite.

SPECIFICATIONS

- For pressures up to 1,000 bar

EXPANSION JOINTS & HOSES

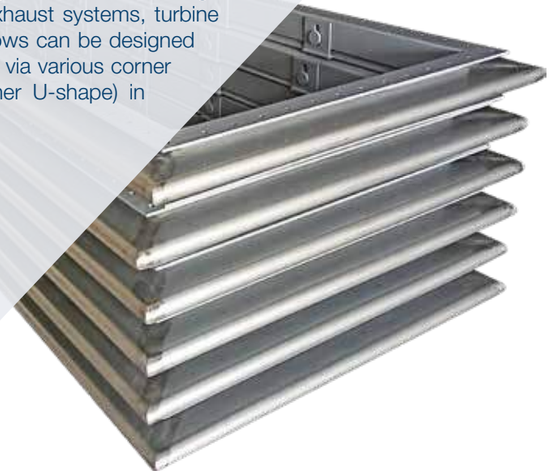
RECTANGULAR MEJ

BENEFITS / PROPERTIES

Rectangular metal expansion joints are designed to absorb movements in all directions i.e. axial, lateral and angular. The rectangular bellows are mostly designed for very low pressure applications such as ducts, exhaust systems, ventilation systems, etc. Rectangular metal expansion joints are commonly used in gas turbines exhaust systems, turbine and condenser connections, etc. i.e. in shipbuilding. The bellows can be designed and manufactured as U- and V-shapes and can be connected via various corner types (single/double/camera V-shape corners or round corner U-shape) in accordance with required operating conditions.

SPECIFICATIONS

» Size: custom
» Design pressure: up to 1 barG
» Design temperature: up to 850 °C
» Minimum reaction forces
» Bellow materials: CS, ANSI 304, 316L, 321
» Hardware materials: CS, ANSI 304, 316L, 321



KB TYPE

BENEFITS / PROPERTIES

Weld end expansion joints are equipped with carbon-steel or stainless steel pipe connections. Even though they can absorb movements in any direction, this model is mainly used for axial movements. If lateral movement is required, a universal type, with double bellows, would be more suitable. These types of expansion joints can be supplied with liners, covers, rods, hinges, or gimbals.

SPECIFICATIONS

» Size: DN25–1,000 (for other sizes – check with us)
» Design pressure: up to16 barG
» Design temperature: up to 400 °C
» Bellows material: ANSI 304, 316, 321 or nickel alloys

DF TYPE (FLOATING FLANGED)

BENEFITS / PROPERTIES

Floating flanged expansion joints feature rotatable flanges, which can be made from carbon-steel or stainless steel. Though they can absorb movements in any direction, this type is mainly used for axial movements. If lateral movement is required, a universal type, with double bellows, would be more suitable. Good for exhaust gas, liquid medium, and steam.

SPECIFICATIONS

» Size: DN25–1,000 (for other sizes check with us)
» Design pressure: up to 16 barG
» Design temperature: up to 400 °C
» Bellows material: ANSI 304, 316, 321 or nickel alloys
» Flange material: carbon-steel, stainless steel, customized
» Quick connection

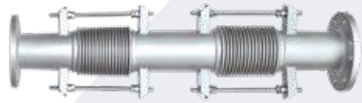
EXTERNALLY PRESSURIZED DB TYPE

BENEFITS / PROPERTIES

Externally pressurized expansion joints are an excellent solution for large axial displacement needs and where the pressure is high, and if you would like to avoid U-loops or be in control of your maintenance costs.

SPECIFICATIONS

» Design pressure: up to 40 barG
» Design temperature: up to 400 °C
» Bellows material: ANSI 304, 316, 321
» Flange material: carbon-steel, stainless steel
» Extreme gas tightness



RUBBER EXPANSION JOINTS

BENEFITS / PROPERTIES

Rubber as material, provides excellent flexibility in short lengths. Flanges manufactured from various grades of carbon and stainless steel and cast iron in according with various industry standards. Up to 110 °C working temp. and 16 bar working pressures, rubber expansion joints are used in a variety of applications especially to absorb vibrations.

SPECIFICATIONS

» Size: DN25–800
» Design pressure: up to 16 barG
» Design temperature: up to 110 °C
» Bellows material: EPDM, NBR, CR, SBR
» Flanged material: carbon-steel, stainless steel, nodular cast iron

Customizable, can be produced for your specific needs.

UNIVERSAL EXPANSION JOINTS WITH RODS

BENEFITS / PROPERTIES

Universal expansion joints can be used to absorb movements in piping systems due to earthquakes, ground settlements or landslides. These events can cause large movements in piping systems and cause critical piping systems to fail. For applications, i.e. seismic, tank farms/ oil terminals, this type of expansion joints are an excellent choice. They are designed to absorb large axial and lateral movements.

SPECIFICATIONS

» Size: DN32–1,000 (for other sizes check with us)
» Design pressure: up to 16 barG
» Design temperature: up to 400 °C
» Bellows material: ANSI 304, 316, 321
» Flanged & hardware material: CS / SS / customized

FABRIC EXPANSION JOINTS

BENEFITS / PROPERTIES

Fabric expansion joints from KLINGER are customized products. There are many various sizes, shapes, materials, and connection types. They are very flexible considered their lengths and can resist very high temperature, though the pressure is in the lower end. These expansion joints are used in a variety of applications especially in refineries and gas turbine installations.

SPECIFICATIONS

» Size: check with us, as these are mainly customized
» Design pressure: up to 0,5 barG
» Design temperature: up to 850 °C
For higher temperature, please check with us
» Bellows material: fabrics in various types
» Hardwares materials: CS / SS or customized

DISTRICT HEATING EXPANSION JOINTS

BENEFITS / PROPERTIES

District heating expansion joints are great for large displacements inside buildings. They are fitted with a shroud for protection against external damage and a liner to ensure smooth internal flow. Standard material for bellows is 316/316L and the balancer is carbon-steel painted white. These are also available in all stainless steel. Threaded connections up to DN65 and socket weld connections above DN65. They can be axially pre-set for movements. The liner minimizes pressure loss and “whistling” of the flow. Installation is easy & quick. Typically, one unit is sufficient for a 30-meter-high building.

SPECIFICATIONS

» Size: DN25–1,000 (for other sizes – check with us)
» Design pressure: up to 16 barG
» Design temperature: up to 400 °C
» Bellows material: ANSI 304, 316, 321 or nickel alloys
» Connections: carbon-steel, stainless steel, customized
» Quick connection

VIBRATION ABSORBERS

BENEFITS / PROPERTIES

These types are best in vibration systems. They are made as multi-layer bellows, which are good to dampen high frequency and low amplitude vibrations. They can be both with flanges and pipe connections. Typically also provided with limit rods / tie rods to restrain pressure thrust of bellows or limit excessive design movements. They are great where temperatures or pressures are too high for rubber expansion joints. Rubber washers can be used to reduce noise.

SPECIFICATIONS

» Size: DN50–500
» Design pressure: up to 16 barG
» Design temperature: up to 400 °C
» Bellows materials: ANSI 304, 316L, 321
» Flange material: carbon-steel, stainless steel

METAL HOSES

BENEFITS / PROPERTIES

Our flexible metal hoses are long-lasting as they are manufactured from stainless steel as braided and non-braided designs. The hoses can be used in multiple applications and for wide range of purposes. They can be supplied with various types of fittings/connections. They provide extremely good flexibility in terms of connections and transferring various types of process fluids from different installations and with different volumes. They have a long service life and require minimum servicing.

SPECIFICATIONS

» Size: DN6–150 (for other sizes check with us)
» Design pressure: up to 245 barG
» Design temperature: up to 400 °C
» Bellows material: ANSI 304, 316/316L, 321
» Flange & hardware material: CS / SS / customized

COMPRESSION PACKINGS

TOPLINE K3622 LE

BENEFITS / PROPERTIES

Expanded graphite packing with metal wire mesh jacketing around each yarn along with multiple metal wire reinforcements inside each yarn. Standard package: 8 m/roll.

SPECIFICATIONS

» Min. operating temperature: -240 °C
» Max. operating temperature: 650 °C
» Max. static pressure: 580 bar
» pH 0–14
» A fantastic plant-wide spool packing for block valves
» High purity of graphite: 99.5–99.9 %
» Passed API 622 3rd Edition FE tests along with Annex-C (high temperature) tests
» The packing exterior is densely impregnated with lubricating agents to reduce stem friction and a corrosion inhibitor to prevent pitting
» Sizes, square profile (mm): 3, 5, 6.5, 8, 9.5, 11,12.5, 14, 16, 17.5, 19, 20.5, 22, 25
» Tolerances: ±0.4 for 3, 5, 6.5. All others ±0.8

TOPLINE K3222 W

BENEFITS / PROPERTIES

» Min. operating temperature: -240 °C
» Max. operating temperature: 430 °C, 650 °C (steam)
» Max. static pressure: 280 bar
» Max. peripheral velocity: 20 m/s
» pH 0–14
» Excellent for superheated and saturated steam
» Excellent for servicing valves under harsh conditions
» Can also be used in low temperatures
» Permanent resilience
» Extremely dense, properly compressed
» Universal gasket for valves
» Pure exfoliated, expanded graphite gasket with Inconel wire

SPECIFICATIONS

» Dimensions of standard package: 8 m/roll
» Sizes, square profile (mm): 3.2, 5, 6.5, 8, 9.5, 11, 12.5, 14, 16, 17.5, 19, 20.5, 22, 25
» Tolerances: ±0.4 for 3.2, 5.0, 6.5. All others ±0.8

TOPLINE K3222

BENEFITS / PROPERTIES

» Min. operating temperature: -200 °C
» Max. operating temperature: 430 °C, suitable for high temperatures, depending on oxygen
» Max. static pressure: 175 bar
» Max. peripheral velocity: 20 m/s
» pH 0–14
» Packing for valve and pump servicing
» Can also be used in low temperatures
» Permanent resilience
» Extremely dense, properly compressed
» Universal gasket for valves
» Pure exfoliated, expanded graphite packing

SPECIFICATIONS

» Standard package: 8 m/roll
» Sizes, square profile (mm): 3.2, 5, 6.5, 8, 9.5, 11, 12.5, 14, 16, 17.5, 19, 20.5, 22, 25
» Tolerances: ±0.4 on 3.2, 5.0, 6.5. All others ±0.8

TOPLINE K3400

BENEFITS / PROPERTIES

» Max. operating temperature: 316 °C
» Max. peripheral velocity: 20 m/s
» pH 1–14a
» Braided structure: interlock
» Good resilience
» Good thermal conductivity
» Good chemical resistance to concentrated alkalies in kraft pulping
» Low friction
» Used in stuffing boxes of pumps and as end rings in high-temperature and pressure valves
» Typical applications within the pulp industry are digesters
» Excellent for feed water pumps

SPECIFICATIONS

» Pure filament carbon fiber impregnated with graphite and other lubricants
» Dimensions, standard package: 8 m/box
» Sizes, square profile (mm): 3.2, 5, 6.5, 8, 9.5, 11, 12.5, 14, 16, 19, 20, 22, 25
» Tolerances: ±0.4 for 3.2, 5.0, 6.5. All others ±0.8

TOPLINE K25

BENEFITS / PROPERTIES

» Min. operating temperature: -100 °C
» Max. operating temperature: 280 °C
» Max. static pressure: 250 bar
» Max. peripheral velocity: 20 m/s
» pH 2–12
» Good chemical resistance
» Excellent dimensional stability
» Temperature tolerant

SPECIFICATIONS

» K25 is an aramid fiber packing impregnated with a PTFE dispersion. Recommended for use in media containing suspended solid abrasive particles
» Standard package: 8 m/box
» Sizes, square profile (mm): 3.2, 5, 6.5, 8, 9.5, 11, 12.5,14, 16, 19, 20, 22, 25
» Tolerances: ±0.4 for 3.2, 5.0, 6.5. All others ±0.8

TOPLINE K54

BENEFITS / PROPERTIES

» Max. operating temperature: 260 °C (K54S up to 280 °C)
» Max. static pressure: 200 bar
» Max. peripheral velocity: 10 m/s (5 m/s for K54S)
» pH 0–14
» Suitable for aggressive media
» Pure, non-polluting gasket for foods and pharmaceuticals
» K54H – designed for pumps
» K54S – universal gasket

SPECIFICATIONS

» Pure PTFE gasket
» Dimensions, standard package: 8 m/roll
» Sizes, square profile (mm): 3.2, 5, 6.5, 8, 9.5, 11, 12.5, 14, 16, 17.5, 19, 20.5, 22, 25
» Tolerances: ±0.4 for 3.2, 5.0, 6.5. All others ±0.8

K4313

BENEFITS / PROPERTIES

K4323 has the combined properties of aramid and PTFE for rotary and reciprocating jobs. Strong aramid corner posts resist extrusion from stuffing box while ensuring unwanted particles are excluded. This reduces the detrimental effects of abrasive and viscous media.

SPECIFICATIONS

» Max operating temperature: 260 °C
» Min operating temperature: -100 °C
» Max static pressure: 250 bar
» Max speed: 20 m/s
» pH 2–12
» Braided structure: KLINGERlock

PRODUCT OVERVIEW

Product and process mapping of the Energy Industry

KLINGER trusted. worldwide.

ENERGY SEGMENTS	EQUIPMENT	MEDIA	VALVES	GASKETS	COMPRESSION PACKINGS	EXPANSION JOINTS & HOSES
Renewable energy → **Wind turbine**	Nacelle equipment HEX cooling	**Water, Lubrication oil, Aviation fuel oil**	**Ballostar KHA, KHE,** Check valves	**KLINGERSIL C-4400 and C-4430, KGS GII, Sentry Reverse Integrity Gaskets**	**TopLine K4313**	Rubber expansion joints with flanges, metal expansion joints with flanges/weld ends Type: **SF/DF/KB, metal hoses**
	Wind turbine towers & foundation		**Ballostar KHA, KHE**	**top-chem 2000, Graphite**	**TopLine K54, TopLine K3222**	**Metal hoses**
	Accommodation, substation and helipad		**Ballostar KHA, KHE, Y-strainers, check valves,** Butterfly valves KKD-81	**Milam PSS, Graphite Rings**	**TopLine K3222**	Rubber expansion joints with flanges, metal expansion joints with flanges/weld ends Type: **SF/DF/KB, metal hoses**
Solar panel	Liquid heat transfer system	**Water, Thermal oil**	**Ballostar KHA, KHE,** Double block and bleed	**KLINGERSIL, NBR, Graphite Rings**	**TopLine K3622 LE**	Metal expansion joints with flanges/weld ends Type: **SF/DF/K, metal hoses**
	Accumulation tank		**Ballostar KHA, KHE,** Double block and bleed, **INTEC K811** – three-piece high-pressure ball valves			Metal expansion joints with flanges/weld ends Type: **SF/DF/KB, metal hoses**
P2X → **P2X, incl. electrolyzers, infrastructure, storage, distribution, fueling**	Electrolyzer processes incl. alkaline electrolysis, membrane electrolysis	**Demineralized water, Hydrogen, Odorous gases, Oxygen**	**Ballostar KHA, KHE, Double block bleed, INTEC K811** – three-piece high-pressure ball valves, Tandem duoball valves, RK-Proball, duoball valves	**KLINGERSIL C-4500, top-chem 2000, top-chem 2003, KGS GII**	**TopLine K54**	Rubber expansion joints with flanges, metal hoses
	Utility cooling	**Water, Thermal oil**	**Ballostar KHA, KHE,** Double block and bleed	**KGS GII**	**TopLine K3622 LE**	Rubber expansion joints with flanges, metal hoses
	Waste heat handling		**Ballostar KHA, KHE, double block bleed, INTEC K811** – three-piece high-pressure ball valves	**KGS GII**	**TopLine K3622 LE**	Metal expansion joints with flanges/weld ends Type: **SF/DF/KB, metal hoses**
	Gas compression, distribution & tanks	**Gases, Water**	**INTEC K200** – two-piece flanged ball valves, **INTEC K811** – three-piece high-pressure ball valves	**KLINGERSIL C-4500, top-chem 2000, top-chem 2003, KGS GII, Steelflon WLP**	**TopLine K54**	Metal expansion joints with flanges/weld ends Type: **SF/DF/KB, metal hoses**
	Hydrogen fueling stations	**Hydrogen**	**INTEC K200** – two-piece flanged ball valves, **INTEC K811** – three piece high-pressure ball valves	**Spiral Wound Gaskets, Steelflon WLP**	**TopLine K54**	
Biogas → **Biogas**	Feed and digestor system	**Manure, household or industrial fibrous waste Biogas; raw as well as treated gas**	Knife gate valves, butterfly valves, segment ball valves	**KGS GII, Graphite Rings**	**TopLine K4313**	Rubber expansion joints with flanges, metal expansion joints with flanges/weld ends Type: **SF/DF/KB & Vibration absorbers, metal hoses**
	Gas system	**Gases**	**Ballostar KHA, KHE, Y-strainers**	**KLINGERSIL C-4400 and C-4430, top-chem 2000, top-chem 2003, Milam PSS**	**TopLine K54**	Metal expansion joints with flanges/weld ends Type: **SF/DF/KB, metal hoses**
Geothermal → **Geothermal**	Direct underground water feed system	**Mineral-rich underground water, Water, Low-pressure and medium-pressure steam, Condensate**	**KH(SV)I, KHA, INTEC K200** – two-piece flanged ball valves	**Spiral Wound Gaskets CRIR, Steelflon WLP**	**TopLine K3222 / K3622 LE**	Rubber expansion joints with flanges, metal expansion joints with flanges/weld ends Type: **SF/DF/KB & vibration absorbers**
	Turbine system (same concept as thermal energy)		**KH(SV)I, KHA, INTEC K200** – two-piece flanged ball valves, **INTEC K811** – three-piece high-pressure ball valves, segment ball valves, triple eccentric butterfly valves	**Spiral Wound Gasket CRIR, Graphite Rings**	**TopLine K3222 / K3622 LE**	For gas turbines **Fabric/metal expansion joints, metal hoses**
	Underground water for heat pumps		**Ballostar KHA, KH(SV)I, KHO**	**KLINGERSIL**	**TopLine K3400**	Rubber expansion joints with flanges, metal expansion joints with flanges/weld ends Type: **SF/DF/KB & vibration absorbers**

PRODUCT OVERVIEW

Product and process mapping of the Energy Industry

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ENERGY SEGMENTS	EQUIPMENT	MEDIA	VALVES	GASKETS	COMPRESSION PACKINGS	EXPANSION JOINTS & HOSES
Thermal energy	**Boiler**	**Feed water (LP, MP or HP)** **Steam (LP, MP or HP)** **Condensate** **Acid** **Fuel oil or natural gas** **Incondensable gases** **Flue gas** **Desulfurization liquid** **Lubrication oil**	**Ballostar KHA, KHE, level gauges, KSP, KAD, KVN,** 2-, 3-way control valves	**KLINGERSIL, Graphite Rings**	**TopLine K54, TopLine K3622 LE**	Metal expansion joints with flanges/weld ends Type: **SF/DF/KB, metal hoses**
Thermal power plants	**Turbine**			**Graphite, Graphite Rings**	**TopLine K3400, TopLine K3622 LE**	For gas turbines **Fabric/metal expansion joints, metal hoses**
	Feed water system Deaerator		**Magnetic level gauges**	**Spiral Wound Gaskets, Steelflon WLP**	**TopLine K4313, TopLine K3622 LE**	Metal expansion joints with flanges/weld ends Type: **SF/DF/KB, metal hoses**
	Flue gas cleaning		**Ballostar KHE,** double and triple eccentric, butterfly valves with teflon seats	**Spiral Wound Gaskets CR, Steelflon WLP, Graphite Rings**	**TopLine K3622 LE**	
	Fuel system (biofuels, fossil fuels)		Butterfly valves	**KGS GII, Graphite Rings**	**TopLine K4313**	
	Water treatment			**NBR, EPDM, FKM**	**TopLine K3622 LE**	
	Incineration plant		**Ballostar KHA, KHE,** butterfly valves	**Ceramic Gasket Braid**	**TopLine K4313**	
	Engine (diesel, gas, emergency diesel)		**Ballostar KHA, KHE,** control valves	**Spiral Wound Gaskets, Steelflon WLP, NBR, Graphite Rings**	**TopLine K4313**	
Heat pumps	**Compressor components**	**Ammonia and R cooling media** **Sea, lake or underground water** **Treated district heating / distribution water**	**Ballostar KHA, INTEC K200** – two-piece flanged ball valves, **INTEC K811** – three-piece high-pressure ball valves	**KLINGERSIL**	**TopLine K54**	Metal expansion joints, rubber expansion joints, metal hoses
Heat pumps	**Water intake system**		**Ballostar KHA, KHE**	**O-ring**	**TopLine K4313, TopLine K54**	Metal expansion joints, rubber expansion joints
	Hot water District heating supply		**KHO, KHD-FW, KKD-FW,** butterfly valves	**KLINGERSIL, KGS GII, Graphite Rings**	**TopLine K4313, TopLine K54**	Metal expansion joints, rubber expansion joints
Energy distribution	**District heating – transmission**	**Treated water / demineralized water** **Seawater** **Treated cooling water**	**KHO, KH(SV)I, KHD-FW, KKD-FW,** Check valves, butterfly valves, double and triple eccentric	**Spiral Wound Gaskets CRIR, Glass, Ceramic and Mica, Graphite Rings**	**TopLine K3222, TopLine K4313**	Metal expansion joints with flanges/weld ends Type: **SF/DF/KB/DH**
District heating and district cooling	**District heating – distribution**		**KHO, KHD-FW, KKD-FW,** check valves	**Spiral Wound Gaskets CRIR, Glass, Ceramic and Mica**	**TopLine K54, TopLine K3222**	Metal expansion joints with flanges/weld ends Type: **SF/DF/KB/DH**
	District cooling – water intake		Butterfly valves super duplex and bronze, strainers, check valves	**KLINGERSIL**	**TopLine K4313**	Rubber expansion joints with flanges
	District cooling – distribution		**KHO, KH(SV)I, KHD-FW, KKD-FW,** check valves	**KLINGERSIL, KGS GII, Graphite Rings**	**TopLine K54, TopLine K4313**	

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