



Dual Expanding Plug Valve

VE[®]



Dual Expanding Plug Valve | Double Block and Bleed | Double Isolation

Content

| | |
|--|----|
| Company profile | 5 |
| Markets and applications | 6 |
| Double block and bleed solutions | 8 |
| Working principal | 10 |
| Cross section-view and features | 11 |
| VE® Dual Expanding Plug Valve | 13 |
| Elastomer sealing and O-rings | 18 |
| Pressure relief & bleed system | 20 |
| Gear operated | 22 |
| Actuator operated | 23 |
| General data VE® Dual Expanding Plug Valve | 24 |
| Technical Data Dimensions - figure 2300 - Reduced Bore | 26 |
| Technical Data Dimensions - figure 2301 - Full Bore | 34 |
| Additional information | 42 |

Our engineers have more than 20 years of experience in designing and manufacturing Dual Expanding Plug Valves, providing customers with an excellent service and innovative solutions.



Company profile

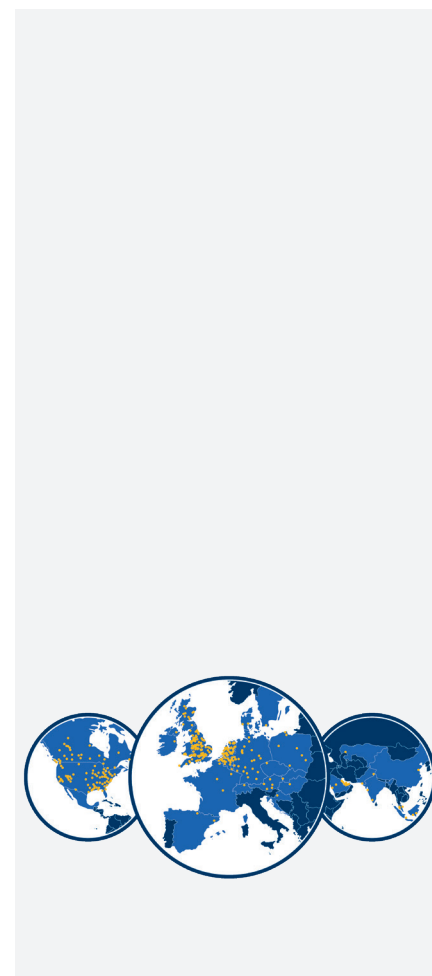
ERIKS-VE comprises the innovative design, manufacture and service of high integrity double block & bleed Dual Expanding Plug Valves. The VE® Dual Expanding Plug Valve is a well-recognized brand and accepted by most of the leading industrial companies in the field of tank storage, refinery, bulk loading, naval and aviation, refueling- and metering systems.

The VE® Valves are manufactured by highly skilled personnel in the ERIKS Valve Enterprise factory in Capelle aan den IJssel, the Netherlands, ensuring our customers and the environment a safe and reliable valve solution. ERIKS Valves Enterprise is ISO 9001 licensed, PED/CE certified and API 6D approved. We are part of the ERIKS group, a leading, innovative supplier and service provider to the process industry and original equipment manufacturers.

The ERIKS Group

ERIKS is a leading, innovative supplier to the process industry and equipment manufacturers, fulfilling the twin roles of specialist and broad MRO supplier. ERIKS has branches in 17 countries, with a strong position in Western Europe and North America, alongside a presence in Asia.

For more information about ERIKS visit www.eriks.com.



Markets and Applications



Tank Storage

Traditional (gate) valves may degrade in time resulting in loss of product or risk of contamination. The VE® Dual Expanding Plug Valve has proven to be a superior solution for such applications whereby valves are frequently operated and zero-leakage is required.

Multi-product Manifolds

Manifolds are operated frequently, zero-leakage is an absolute necessity when switching from one product to another, thus preventing contamination. Increasingly, plants are being operated by a plant management system, automation of the valve is a very important aspect. Unlike some conventional valves the VE® Dual Expanding Plug Valve is highly suitable for automation, due to the low-torque valve and the minimum wear of the sealing element. Our experienced engineers in the field of valve automation can help and support you to select the right combination, providing a safe and reliable solution.



Metering Stations

The VE® Dual Expanding Plug Valve has proven itself in the most critical applications where “zero-leakage” is required. In highly critical applications such as Metering Stations even a small leak will cause an error in the calibration of the flow-meter, resulting in an incorrect flow measurement which can have major financial impact.

Aviation & Marine Fueling Stations

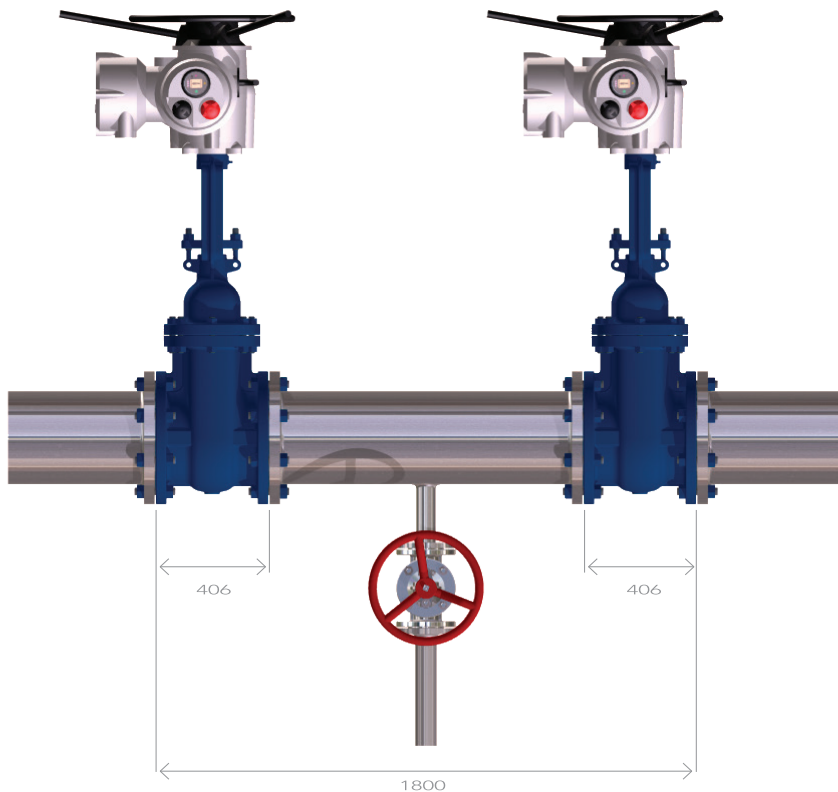
The VE® Dual Expanding Plug Valve provides a “zero leakage” solution, making the valve highly suitable for fueling stations in the aviation and marine industries. It is used on the truck-loading racks, as a tank shut-off valve and on the Jetty loading and unloading docking stations.



Why use a **VE**[®] Dual Expanding Plug Valve

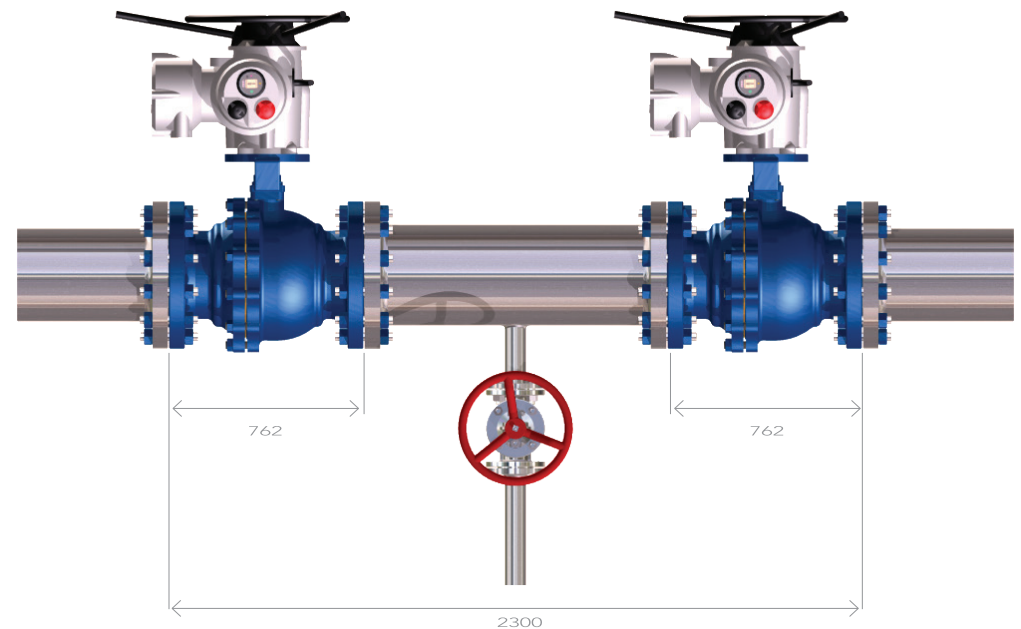
Gate Valves

- No thermal pressure relief, only bleed function
- Seat wearing increase – frequent maintenance intervals
- Large installation space required
- Two actuators, two input/output signal needed to operate the valves
- Two valves, more joints, higher maintenance costs



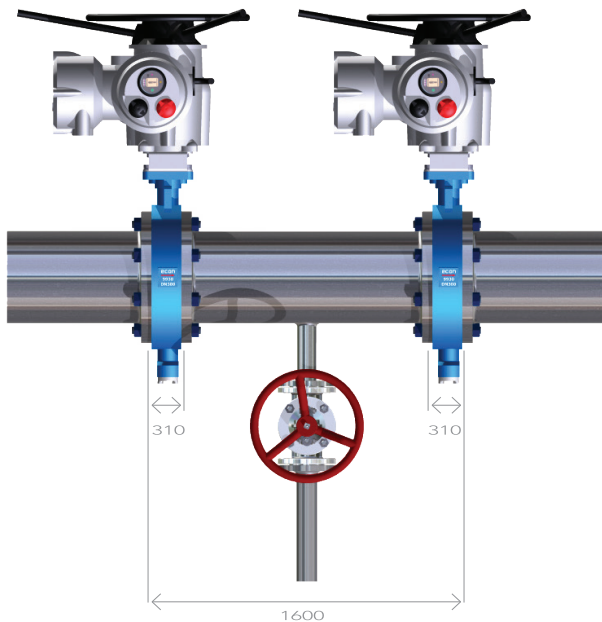
Ball Valves

- No thermal pressure relief, only bleed function
- Seat deterioration due to abrasion increase maintenance intervals
- Large installation space required
- Two actuators, two input/output signal needed to operate the valves
- High operating torque requires larger actuation
- Expensive valve execution



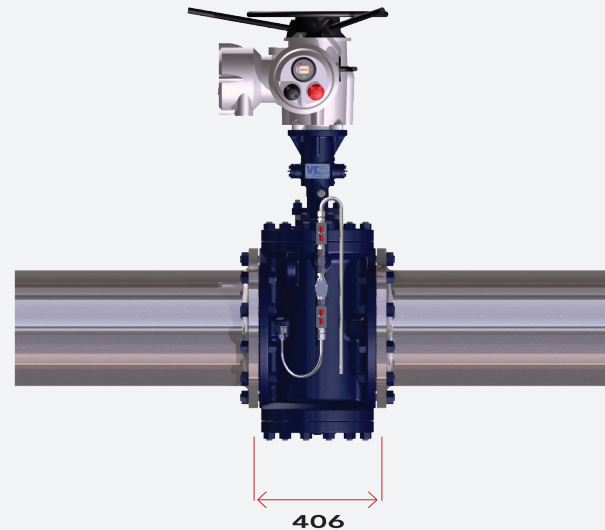
Butterfly Valves

- No thermal pressure relief, only bleed function
- Not piggable
- Large installation space required
- Two actuators, two input/output signal needed to operate the valves



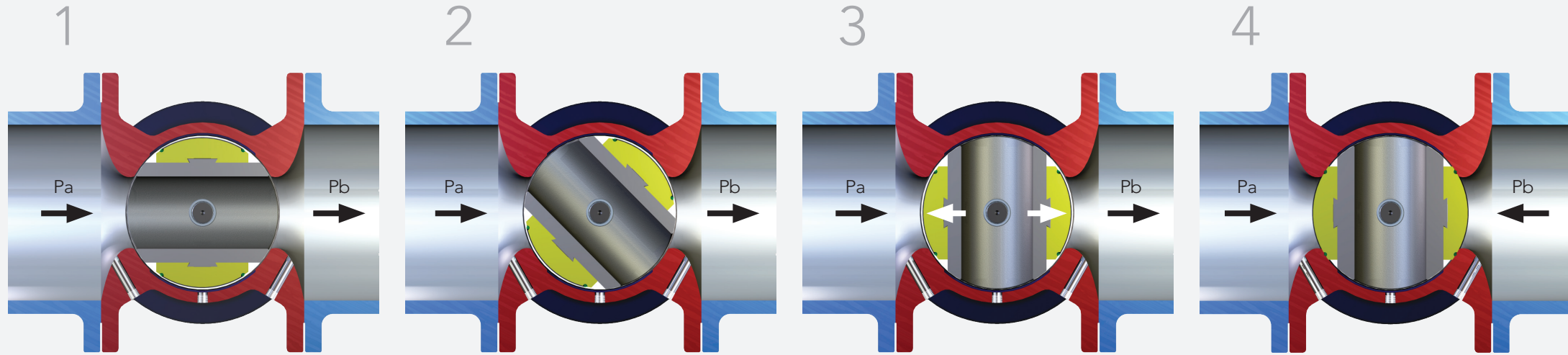
Double Block and Bleed Solutions

- **Permanent integral thermal relief and bleed function**
- **In-line maintenance in case of seal replacement**
- **Very short installation space required**
- **Double Isolation function, according API-6D/ISO14313**
- **Only 1 actuator required to operate the valve**



For many years different valves and valve combinations have been used as a solution for blocking and bleeding, sampling or draining lines. Traditional valves (gate) or valve combinations can degrade over time and result in loss of product and frequent maintenance. Unlike other valve types, the VE® Dual Expanding plug valve creates an optimum seal without causing any abrasion and wear. Providing a “zero-leakage” solution, upstream and downstream, securing a long life-time of the seals and valve, as well as a low opening- and closing torque. This unique design is combined with a bleed function, all in one valve, saving space as well as providing a reliable, safe and economical solution.

Working principle



Valve is open

When the valve is fully open, both seals are protected from the flow path

Valve is closing plug is rotating

Valve plug and slips rotate to place seals in closing position, during rotation there is no contact between the body and seals.

Valve is almost closed expansion of the slips

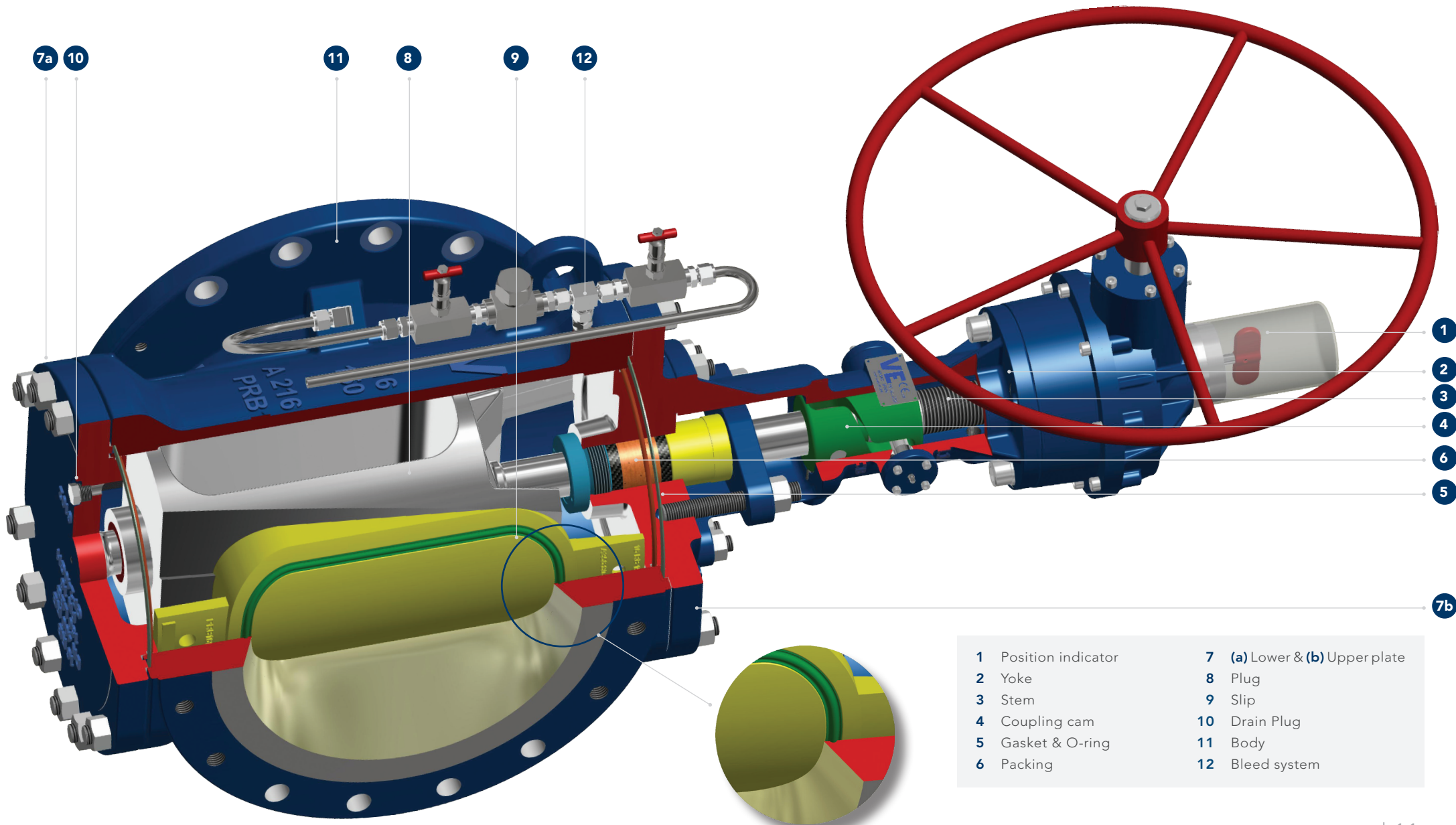
Once the plug has rotated 90°, the slips expand onto the body seats without causing any wear or abrasion to the seals.

Valve is closed

Double Block & Bleed

The elastomer seals are fully compressed.

Cross Section – View and Features



- | | | | |
|---|--------------------|----|-----------------------------|
| 1 | Position indicator | 7 | (a) Lower & (b) Upper plate |
| 2 | Yoke | 8 | Plug |
| 3 | Stem | 9 | Slip |
| 4 | Coupling cam | 10 | Drain Plug |
| 5 | Gasket & O-ring | 11 | Body |
| 6 | Packing | 12 | Bleed system |



VE[®] Dual Expanding Plug Valve

The dual expanding plug valve has been developed to substitute the principle of two in-line valves with a drain and or bleed valve, as further described and shown in the previous page. The special design of the sealing mechanism minimizes wear, securing a long lasting safe and reliable flow control solution.

Four different versions

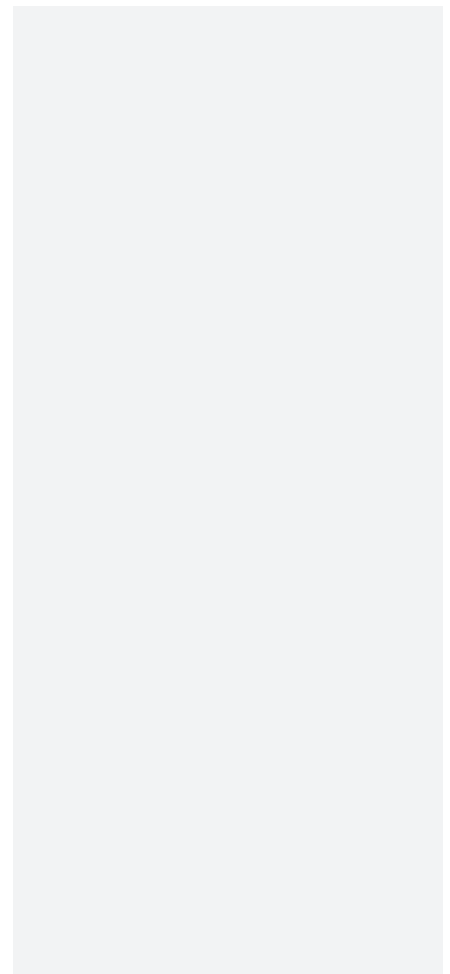
The VE[®] Dual Expanding Plug Valve exists in different executions:

- Figure no. 2300 Reduced Bore – Standard Version
- Figure no. 2301 Full Bore Piggable
- Figure no. 2302 Full Bore Pig-launcher
- Figure no. 2304 Four-Way Diverter Valve

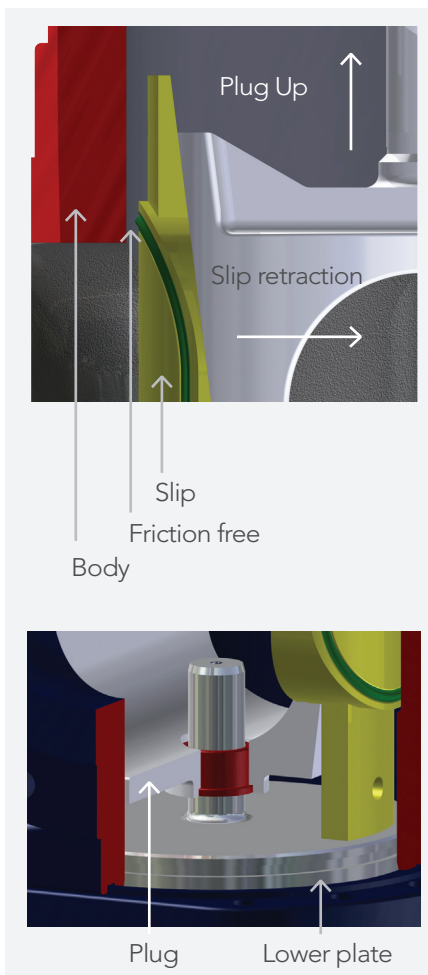
Double Block & Bleed and Double Isolation (according to API-6D/ISO14313)

The VE[®] Dual Expanding Plug Valve provides two seating surfaces, each of which, seal to both directions. When the valve is in closed position, each individual seal is fully isolating not allowing any leakage, either from downstream or upstream or from the body cavity. In case of body cavity overpressure, venting/bleeding is provided by a thermal relief. Therefore the downstream pipeline is fully isolated from upstream pressure without the need for pressure balancing.

The VE[®] Dual Expanding Plug Valve provides several different bleed systems and a pressure relief device according to the requirements of API 6D. Page 20 and 21 show an overview and description of all the different options. Custom solutions can also be produced on request.



VE® Dual Expanding Plug Valve



Zero leakage | non-abrasive sealing

The sealing principle of most valves, e.g. gate, butterfly and ball valves, is based on shear or friction force. This causes gradual wear of the sealing material and increases the required torque to open or close the valve, especially when the valve is automated.

The unique sealing mechanism on the dual expanding plug valve is designed so, the slips retract, preventing abrasion of the elastomer seals during operation. This ensures long seal life as well as a lower opening and closing torque requirement and prolongs the overall life of the valve.

Fugitive emission certified

The VE® Dual Expanding Plug Valve is TA-LUFT FUGITIVE EMISSION Certified, complying with the stringent ISO 15848-1 2006 Annex B, to the highest stability grade C03. The VE® Dual Expanding Plug Valve provides not only a “zero-leakage” solution but also safe-guards the environment, in full compliance with the latest emission regulations.

Innovative lower trunnion design

The VE® Dual Expanding Plug Valve has a special designed lower trunnion, which prevents accumulation of particles and dirt in the lower part of the valve body. This accumulation could otherwise cause malfunction of the plug-system. Our unique lower trunnion design minimizes this effect securing a consistent and reliable operation of the valve.

Special “fugitive emission” packing-system

This unique packing design provides special sealing properties even under the most stringent conditions. Due to the special packing system the VE® Dual Expanding Plug Valve is awarded the FUGITIVE EMISSION Certification according to ISO 15848-1 2006 Annex B.

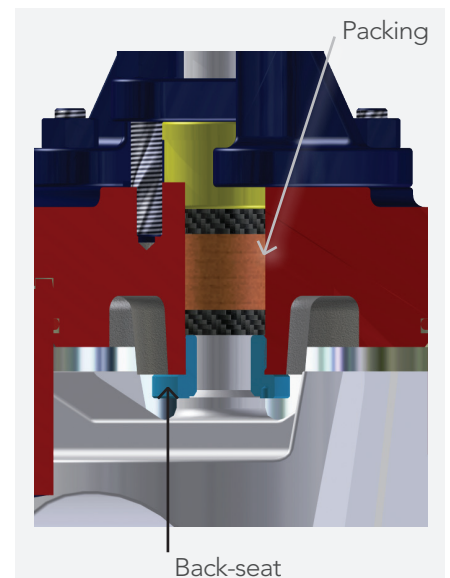
Back seat design

In case of stem-leakage the special “back seat” design provides the possibility to re-adjust the packing-gland or add additional gland packing-rings during field operation.

WARNING: take all the necessary safety measures, follow the instructions according to our “installation and operation manual”, which is included with every valve or downloadable from our website www.eriks-ve.com.

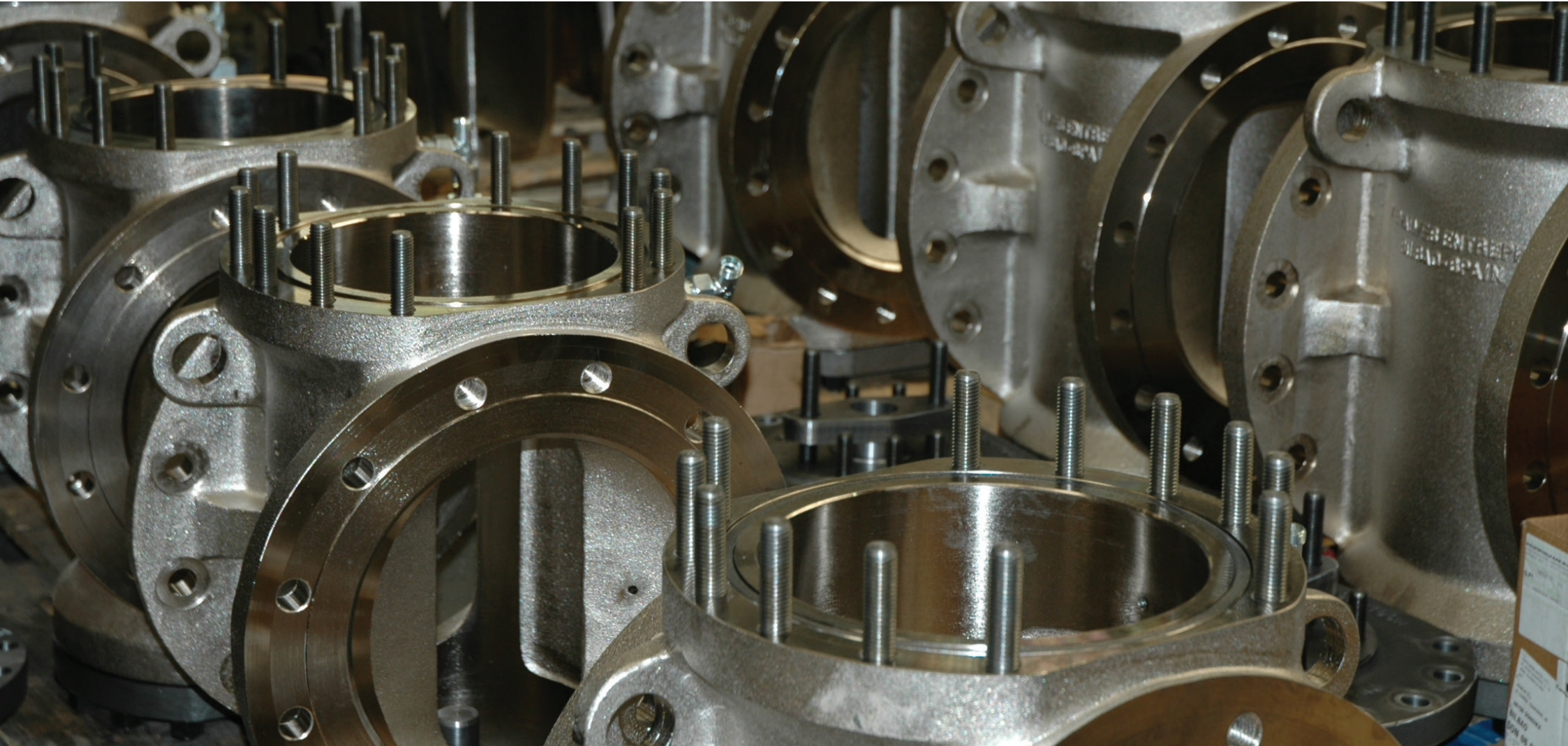
Slips

The special slip-design provides the VE® Dual Expanding Plug Valve a unique sealing-system. The primary seals is an elastomer which is fully vulcanized on to the metal. An additional safety seal is achieved by a metal-to-metal contact between the metal-slip and internal valve-body. The sealing and contact area of valve-body is fully ENP-coated ensuring a corrosion-free contact with the slips. The slips have a Manganese Phosphate anti-corrosion treatment. There is complete spare-part program available. Used slips can easily be removed and replaced.



Painting – Standard Dark Blue

In addition to the ENP-protection of the body and the upper- and lower pate, the VE® Dual Expanding Plug Valves are protected with a primer layer and a dark-blue painting. Other colors, paint combinations or paint thicknesses are available on customer request.



VE® Dual Expanding Plug Valve

Easy in-line maintenance

The VE® Dual Expanding Plug Valve can be serviced in-line ensuring minimum down-time and saving cost. Make sure all necessary precautions are taken for the media involved. Servicing can be done from the top or the bottom of the valve. Disassembling the lower-plate allows the slips to be easily be extracted and replaced by new slips.

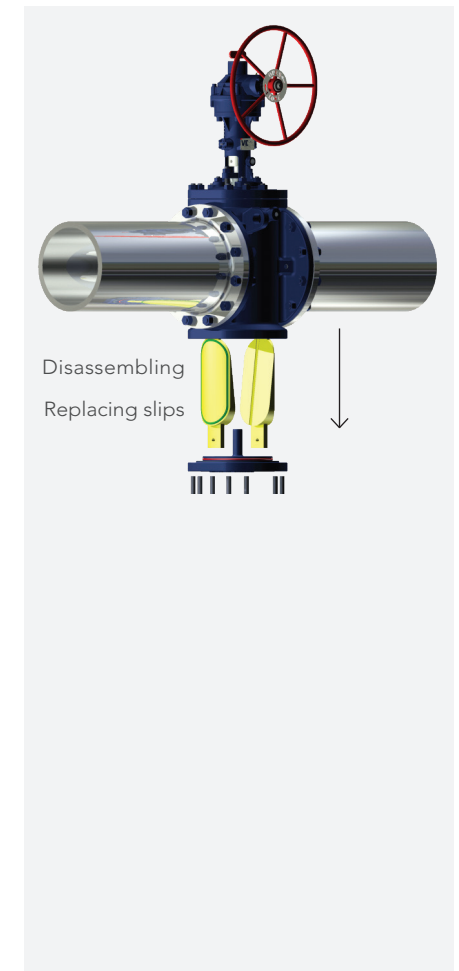
WARNING: make sure the line is depressurized and follow the instructions according to our “installation and operation manual”, which is included with every valve or down-loadable from our website www.eriks-ve.com.

Fire-safe certified

The VE® Dual Expanding Plug Valves not only provides a fire safe solution to the outside environment, but due to the innovative combination of a primary elastomer sealing system and a unique secondary metal-to-metal seal design, ensures a fire-safe solution down-stream as well as up-stream. The VE® Dual Expanding Plug Valve is certified according to ASME/API Standard 607, Fifth Edition-2005 and ISO 10497-2010.

All wetted parts – ENP protection

To prevent corrosion in the valve and ensure a long-life functioning, all the crucial parts are “Electroless Nickel Plated”. In the VE® Dual Expanding Plug Valve all wetted parts have an ENP anti-corrosion layer, including the upper- and lower plate. Securing herewith a proper anti-corrosion protection of the trunnion and prevent malfunction of the plug-sealing system. The VE® Dual Expanding Plug Valves are ENP-coated up-to 24” inch. The larger sizes are hard-chrome plated.



Elastomer Sealing and O-rings



The elastomer sealing-system is a crucial part of the valve which may be subject to toxic or aggressive media and high pressures or temperatures. To secure the proper function of this part and ensure a long service-life of the sealing-system, special moldings have been created to ensure an optimum vulcanizing-process of the elastomer on-to the metal surface of the slip.

This vulcanizing-process becomes even more crucial when highly chemical resistant elastomers are required due to toxic and aggressive media. The right selection of the elastomer is vital for the proper function of the seal, our highly experienced engineers can help and advise you with the selection.

Multi-seal ERT – suitable for MTBE

Fuels with high contents of solvents, MTBE or other additives can cause deterioration of the elastomer seal. Together with the Elastomer Research & Development engineers of the ERIKS group, the VE® valves meets these challenges with it's new and innovative sealing solutions.

Research Laboratory Chemical-Resistance

The engineers at "Elastomer Research Laboratory" of ERIKS, can help you to provide a custom-made sealing solution. Providing us with a sample of your media, our laboratory engineers can determine and advise you the most suitable elastomer solution.

Selection Guide

| Chemical and process environment | NBR | HNBR | Viton® A | Viton® B | Multi-Seal ERT |
|---|-----|------|----------|----------|----------------|
| Crude Oil | 3 | 2 | 1 | 1 | 1 |
| Automotive and Aviation Fuels | 3 | 2 | 1 | 1 | 1 |
| Automotive Fuels Oxygenated with MEOH, ETOH, MTBE, etc. | NR | NR | NR | 2 | 1 |
| Engine Lubricating Oil, SE and SF grades | 3 | 3 | 2 | 1 | 1 |
| Engine Lubricating Oil, SG and SH grades | 3 | 3 | 3 | 2 | 1 |
| Aliphatic Hydrocarbon Process - Fluids, Chemicals | 1 | 1 | 1 | 1 | 1 |
| Aromatic Hydrocarbon Process - Fluids, Chemicals | NR | NR | 2 | 2 | 1 |
| Aqueous Fluids, Steam, Mineral Acids | NR | NR | 3 | 2 | 1 |
| Strong Base, High pH, Caustic, Amines | NR | NR | NR | NR | 1 |
| Low Molecular Weight Carbonyls (MTBE, MEK, MIBK, etc.) | NR | NR | NR | NR | 2 |

This selection guide is a guideline. Always consult our technical engineers, as different concentrations of media could have a negative effect on the physical properties of the elastomer.

1 = Excellent- minimal volume increase and/or change in physical properties

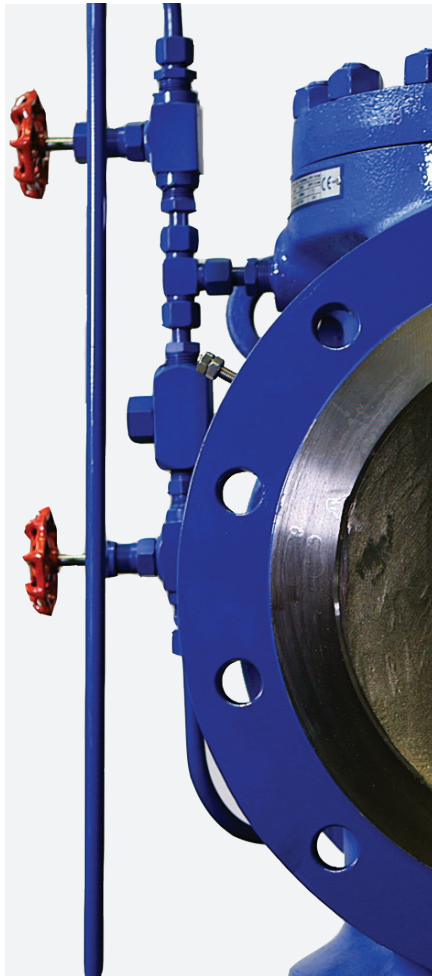
2 = Good-small volume increase and/or change in physical properties

3 = Moderate-acceptable amount of volume increase and/or change in physical properties

NR = Not Recommended/Excessive volume increase and/or change in physical properties

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Pressure Relief & Bleed System



The VE® Dual Expanding Plug Valve provides several different bleed systems and a pressure relief device according to the requirements of API 6D. Due to the Double Block function of the VE® Dual Expanding Plug Valve, thermal expansion of the liquid in the body cavity can cause a significant increase of the pressure. To prevent this effect all VE® Dual Expanding Plug Valves must be installed with a pressure relief device.

In order to satisfy customers demand, ERIKS-VE® has developed several types of Bleed systems. All these systems can be customized with additional equipment like gauges, electronic flow-sensors etc.

MBB: Manual Body Bleed.

Hand operated bleed valve. The VE® Dual Expanding Plug Valve must always be bled in closed position. Bleed outlet should be plumbed for drainage to a reservoir.

TRB: Thermal Relief to Body.

This system includes a thermal relief valve in order to relieve pressure build up which might occur in the body cavity from thermal expansion. The thermal relief valve automatically operates when the pressure in the body cavity goes 1.5 Bar (22psi) above pipeline pressure, unless the isolation valve is closed.

MBTR: Manual Bleed and Thermal Relief.

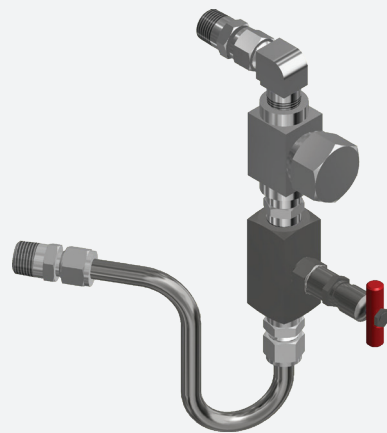
This system is a combination of an MBV and a TRB. Combining an automatic bleed of the body and also check the seal integrity of the Dual Expanding Plug Valve.

ABB: Automatic Body Bleed.

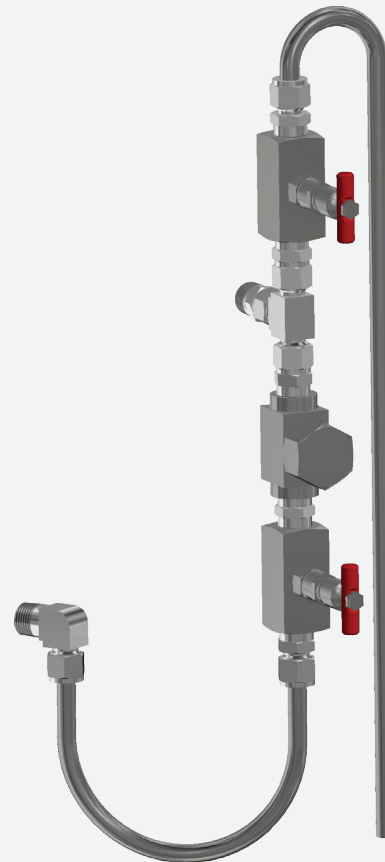
This system works when the valve is closing. The valve is opened mechanically before the VE® valve is fully closed, enabling the user to verify full closure when the bled fluid stops. There is also an isolating valve in the system with a lock open device, to avoid any human error. The bleed outlet should be plumbed for drainage to a reservoir.



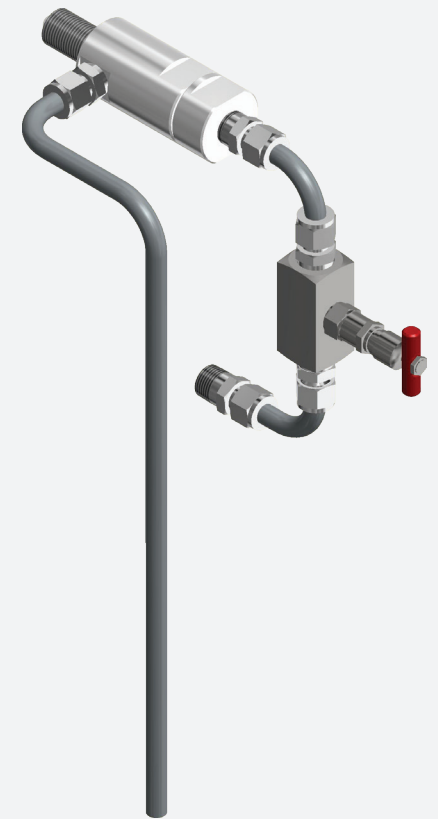
Manual **B**ody **B**leed



Thermal **R**elief to **B**ody



Manual **B**leed and Thermal **R**elief



Automatic **B**ody **B**leed

Gear Operated

The VE® Dual Expanding Plug Valve is standard provided with a gear. On request the valve can also be handwheel operated, up to 6”.

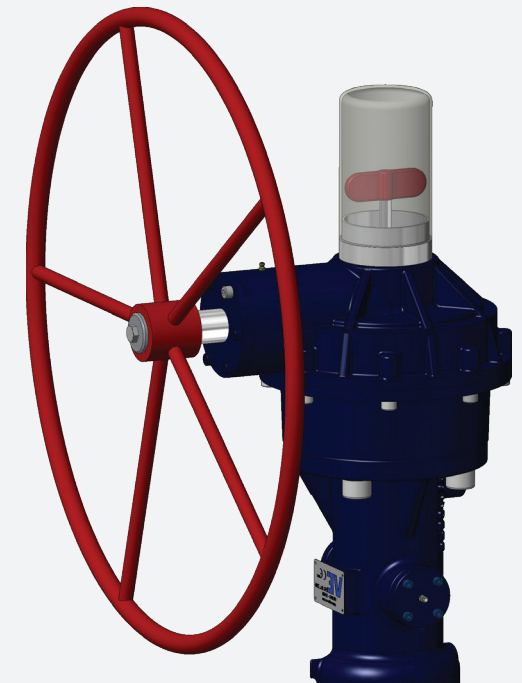
Position Indication

The VE® Dual Expanding Plug Valve can be provided with limit switches or sensors, providing a signal to indicate the position of the valve. It is also possible to mount a visual indicator, showing the open- or close position of the valve.

These is an option to provide these gear operators with couplings for electric actuators in accordance with ISO 5210.

| Type | Ratio | Efficiency factor | Thrust Capacity | | Output Torque |
|------|-------|-------------------|-----------------|---------------|---------------|
| | | | Br-Al NUT | Ni-resist NUT | |
| FL-0 | 4:1 | 3,2 | 8000 N | 8000 N | 500 Nm |
| FL-1 | 4:1 | 3,2 | 18200 N | 13600 N | 1030 Nm |
| FL-2 | 4:1 | 3,2 | 36300 N | 25000 N | 2070 Nm |
| FL-3 | 4:1 | 3,2 | 45400 N | 45400 N | 4140 Nm |
| FL-4 | 6:1 | 4,8 | 82500 N | 82500 N | 7750 Nm |

| | | | | | | | | | | | |
|-------------------|----|------|------|------|------|------|------|------|------|------|--|
| Input speed | 12 | 20 | 40 | 60 | 80 | 100 | 120 | 140 | 160 | 180 | |
| Correcting factor | 1 | 0,99 | 0,96 | 0,93 | 0,90 | 0,87 | 0,84 | 0,81 | 0,78 | 0,75 | |



Actuator Operated

The VE® Dual Expanding Plug Valve is suitable for most commonly used multi-turn electric actuators. The unique design of the valve provides a very low opening- and closing torque, beneficial when sizing the actuator. The ERIKS-VE engineers can help you select the right actuator size and support you with technical advice.

Information required to select the correct size actuator:

- Pressure in the installation, both design and operating
- Opening/closing time, preventing water hammer
- Environmental protection (e.g. Ex-area, IP-classification)
- Electrical power, AC/DC voltage
- Duty cycle
- Communication protocol (e.g. Bus, HART)
- Pressure relief system*

** Thermal expansion in the valve cavity can cause difficulties when opening the valve, therefore automated valves always require a pressure relief system.*

See page 21 for the different types of pressure relief and bleed systems.

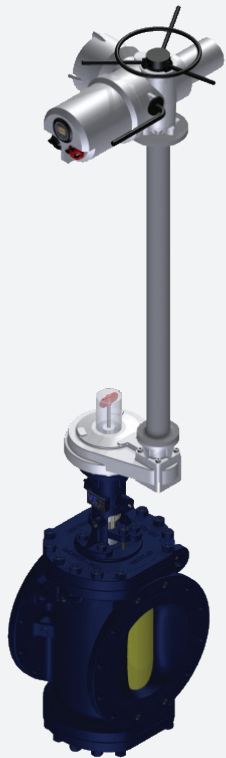
Pneumatic Actuation

The VE® Dual Expanding Plug Valves can be supplied with pneumatic actuation. The actuator will be fully custom made designed and tested to suit the specified requirements.



Extensions

The VE[®] Dual Expanding Plug Valve can easily be supplied with vertical and/or horizontal extensions. These are custom made and our sales team will require detailed customer information when the valve is ordered.



1 Design, dimensions and marking according to:

- Design as per API 599 & API 6D
- Face to face as per ASME B16.10 & API 6D
- Flanged ended as per ASME B16.5 / EN-1092-1

2 Characteristics:

- Friction free
- Dual expanding
- Double block & bleed and double isolation & bleed (according to API-6D/ISO14313)

3 Construction:

- 3 Parts construction: body, lower plate, upper plate
- Trunnion mounted
- Antistatic design
- Seating slips (slips are replaceable through the lower or upper plate)
- Reduce bore or full bore
- Low emission packing & gaskets according to ISO 15848-1
- Electroless Nickel plating - ENP
- Stud & nuts: anticorrosion treatment

4 Standard execution:

- ISO 9001:08
- PED 2014/68/EU
- Fugitive emission certificate according to ISO 15848-1
- Fire safe according to API 607

5 Flanged connections according to:

- ASME B16.5:
 - Raised face smooth finish, stock finish or ring type joint
- ASME B16.47 Serie A (MSS-SP-44) or Serie B:
 - Raised face smooth finish, stock finish or ring type joint (applicable for valves $\geq 30''$)
- Top of flange as per ISO 5210 (f10 / f14 / f25...)

6 Marking in accordance with:

- European directive PED 2014/68/EU
- API 6D
- MSS-SP-25

7 Casting material

- According to API 6D / ASME B16.34 / EN 1092-1 / PED 2014/68/EU

8 Elastomers material:

- Viton A / B / GF
- HNBR
- Multi Seal ERT

9 Testing according to:

- API 6D
- API 598
- EN-12266-1 / EN-12266-2
- BS 6755 part 1

10 Operation devices:

- Handwheel
- Gear box
- Actuator linear / multi turn
- Pneumatic actuator

11 Bleed systems:

- Manual body bleed
- Thermal relief upstream
- Manual body bleed with thermal relief upstream
- Automatic body bleed
- Remote leak detection system
- Bi-directional body bleed with thermal relief

12 Bottom drain plug:

- Standard included

13 Optional

- Limits switches
- Locking device
- Cable gland
- Extensions

There are several possible extensions, please contact our technical engineers to help you with the right option and dimensions. Where valves are located in an elevated, difficult to access position, the VE® Dual Expanding Plug Valve can be provided with chain-wheels for easy operation.

Standard bill of material

| Part | Description |
|----------------------|--|
| Body | ASTM A 216 WCB + ENP |
| Lower plate | ASTM A 216 WCB + ENP |
| Upper plate | ASTM A 216 WCB + ENP |
| Plug | ASTM A 216 WCB + ENP |
| Slip | ASTM A 536 80-55-06 + Viton A + Mang. Phosp. Coating |
| Yoke | ASTM A 216 WCB |
| Backseat | ASTM A 182 f6A |
| Gland | ASTM A 182 f6A |
| Packing | Graphite |
| Gland flange | S355J0G3 |
| Gland stud | ASTM A193 B7 + Anti-corrosion treatment |
| Gland nut | ASTM A194 2H + Anti-corrosion treatment |
| Gasket | PSW. AISI 316L + Graphite |
| O-ring | Viton A |
| Friction bearing | AISI 316L |
| Body plate studs | ASTM A 193 B7 + Anti-corrosion treatment |
| Body plate nuts | ASTM A 194 2H + Anti-corrosion treatment |
| Coupling cam | F158 cemented |
| Stem | ASTM A 182 F6A |
| Cam pin | 17-4PH H900 |
| Guide pin | 17-4PH H900 |
| Radial bearing | Standard |
| Pin plate | ASTM A 105 |
| Pin plate bolt | Steel |
| Grease fitting | Stainless steel |
| Yoke stud | ASTM A 193 B7 + Anti-corrosion treatment |
| Yoke nut | ASTM A 194 2H + Anti-corrosion treatment |
| Drain plug | ASTM A 105 |
| Bleeds | Stainless steel |
| ERIKS VE name plates | Stainless steel |

Technical Data | Dimensions - figure 2300 - Reduced Bore

Gear operated valves - Class 150

| Dimensions | 2" | 3" | 4" | 6" | 8" | 10" | 12" | 14" | 16" | 18" | 20" |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| A | 178 | 203 | 229 | 266 | 292 | 330 | 355 | 381 | 406 | 432 | 813 |
| e** | 9 | 10,5 | 11 | 12 | 12,7 | 14,5 | 16 | 16,6 | 17,5 | 18,2 | 19 |
| Ba | 115 | 130 | 155 | 205 | 260 | 205 | 330 | 370 | 480 | 480 | 492 |
| Bb closed | 410 | 425 | 455 | 565 | 628 | 664 | 880 | 803 | 1150 | 1270 | 1400 |
| Bd open | 440 | 455 | 485 | 613 | 676 | 712 | 928 | 880 | 1227 | 1360 | 1490 |
| BE | 344 | 359 | 389 | 492 | 555 | 591 | 705 | 803 | 940 | 1105 | 1236 |
| C | 145 | 190 | 225 | 260 | 305 | 320 | 405 | 510 | 570 | 605 | 630 |
| D | 152 | 191 | 229 | 279 | 343 | 406 | 483 | 535 | 595 | 635 | 699 |
| F | 300 | 300 | 300 | 300 | 300 | 450 | 450 | 650 | 850 | 850 | 850 |
| H* | 150 | 200 | 250 | 300 | 350 | 400 | 500 | 550 | 600 | 680 | 780 |
| Gear Box | FL-0 | FL-0 | FL-0 | FL-1 | FL-1 | FL-1 | FL-1 | FL-2 | FL-2 | FL-3 | FL-3 |
| Turn open/close | 27 1/2 | 27 1/2 | 27 1/2 | 36 1/2 | 36 1/2 | 36 1/2 | 36 1/2 | 46 1/2 | 46 1/2 | 41 1/2 | 41 1/2 |
| CV | 235 | 452 | 810 | 1456 | 2519 | 3990 | 5097 | 6532 | 7556 | 9432 | 13652 |
| Weight (Kg.) | 55 | 72 | 81 | 155 | 220 | 287 | 372 | 496 | 563 | 980 | 1483 |

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

NOTE: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.

| | 24" | 30" | 36" | |
|--|--------|--------|--------|--|
| | 914 | 1270 | 1980 | |
| | 20,6 | 26 | 28 | |
| | 551 | 777 | 870 | |
| | 1486 | 2028 | 1834 | |
| | 1574 | 2209 | 2006 | |
| | 1285 | 1866 | 1989 | |
| | 775 | 946 | 1150 | |
| | 815 | 984 | 1168 | |
| | 1000 | 1000 | 1000 | |
| | 870 | 1245 | 1370 | |
| | FL3 | FL-4 | FL-4 | |
| | 41 1/2 | 46 1/2 | 46 1/2 | |
| | 19660 | 30719 | 44235 | |
| | 2020 | 4215 | 6640 | |

Technical Data | Dimensions - figure 2300 - Reduced Bore

Gear operated valves - Class 300

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.

| Dimensions | 2" | 3" | 4" | 6" | 8" | 10" | 12" | 14" | 16" | 18" | 20" | |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--|
| A | 216 | 283 | 305 | 403 | 419 | 457 | 502 | 762 | 838 | 914 | 994 | |
| e** | 9,5 | 12 | 12,7 | 16 | 17,5 | 19 | 20,6 | 22,2 | 25 | 25,4 | 27 | |
| Ba | 115 | 130 | 155 | 205 | 280 | 315 | 345 | 380 | 430 | 520 | 676 | |
| Bb Closed | 410 | 425 | 455 | 590 | 705 | 780 | 1060 | 1260 | 1420 | 1580 | 1720 | |
| Bd Open | 440 | 455 | 485 | 638 | 753 | 828 | 1108 | 1305 | 1510 | 1670 | 1810 | |
| Be | 344 | 359 | 389 | 517 | 632 | 707 | 986 | 1040 | 1100 | 1305 | 1513 | |
| C | 145 | 190 | 225 | 300 | 350 | 410 | 490 | 540 | 600 | 610 | 620 | |
| D | 165 | 210 | 254 | 318 | 381 | 445 | 520 | 580 | 650 | 711 | 720 | |
| F | 300 | 300 | 300 | 450 | 650 | 650 | 850 | 850 | 850 | 850 | 850 | |
| H* | 150 | 200 | 250 | 300 | 360 | 450 | 550 | 320 | 700 | 770 | 850 | |
| Gear Box | FL-0 | FL-0 | FL-0 | FL-1 | FL-1 | FL-1 | FL-2 | FL-2 | FL-2 | FL-3 | FL-3 | |
| Turn open/close | 27 1/2 | 27 1/2 | 27 1/2 | 36 1/2 | 36 1/2 | 46 1/2 | 46 1/2 | 46 1/2 | 46 1/2 | 41 1/2 | 41 1/2 | |
| CV | 235 | 452 | 810 | 1456 | 2519 | 3990 | 5097 | 6150 | 7556 | 10620 | 13652 | |
| Weight (Kg.) | 70 | 100 | 185 | 285 | 390 | 525 | 650 | 1010 | 1815 | 1970 | 3643 | |

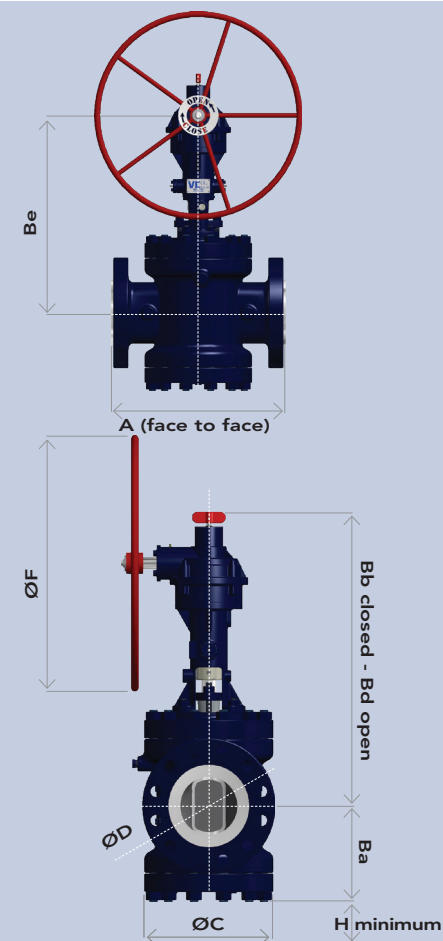
Gear operated valves - Class 600

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

NOTE: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.

| Dimensions | 2" | 3" | 4" | 6" | 8" | 10" | 12" | 14" | 16" |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| A | 292 | 356 | 432 | 559 | 660 | 787 | 838 | 920 | 991 |
| e** | 11 | 12,7 | 16 | 19 | 25,4 | 28,5 | 31,7 | 34,9 | 38,1 |
| Ba | 130 | 145 | 160 | 250 | 340 | 395 | 445 | 475 | 505 |
| Bb Closed | 445 | 470 | 580 | 835 | 1015 | 1120 | 1346 | 1364 | 1396 |
| Bd Open | 475 | 500 | 658 | 893 | 1092 | 1197 | 1434 | 1456 | 1484 |
| Be | 379 | 404 | 507 | 762 | 941 | 1046 | 1145 | 1160 | 1195 |
| C | 165 | 210 | 260 | 345 | 405 | 485 | 570 | 590 | 665 |
| D | 165 | 210 | 254 | 318 | 381 | 445 | 560 | 603 | 685 |
| F | 300 | 300 | 450 | 650 | 850 | 850 | 850 | 850 | 850 |
| H* | 150 | 200 | 260 | 332 | 420 | 520 | 608 | 640 | 670 |
| Gear Box | FL-0 | FL-0 | FL-1 | FL-1 | FL-2 | FL-2 | FL-2 | FL-3 | FL-3 |
| Turn open/close | 27 1/2 | 27 1/2 | 36 1/2 | 36 1/2 | 46 1/2 | 46 1/2 | 41 1/2 | 41 1/2 | 41 1/2 |
| CV | 235 | 452 | 810 | 1456 | 2519 | 3990 | 5097 | 6730 | 7556 |
| Weight (Kg.) | 110 | 220 | 275 | 405 | 675 | 980 | 1530 | 1900 | 2105 |



Technical Data | Dimensions - figure 2300 - Reduced Bore

Bare stem valves - Class 150

| Dimensions | 2" | 3" | 4" | 6" | 8" | 10" | 12" | 14" | 16" | 18" | 20" |
|-----------------|-----|------|-----|------|------|------|------|--------|--------|--------|--------|
| A | 178 | 203 | 229 | 266 | 292 | 330 | 355 | 381 | 406 | 432 | 813 |
| e** | 9 | 10,5 | 11 | 12 | 12,7 | 14,5 | 16 | 16,6 | 17,5 | 18,2 | 19 |
| Ba | 115 | 130 | 155 | 205 | 260 | 205 | 330 | 370 | 480 | 480 | 492 |
| Bb | 260 | 275 | 305 | 390 | 453 | 489 | 705 | 803 | 940 | 965 | 1063 |
| C | 145 | 190 | 225 | 260 | 305 | 320 | 405 | 510 | 570 | 605 | 630 |
| D | 152 | 191 | 229 | 279 | 343 | 406 | 483 | 535 | 595 | 635 | 699 |
| H* | 150 | 200 | 250 | 300 | 350 | 400 | 500 | 550 | 600 | 680 | 780 |
| Turn open/close | 7 | 7 | 7 | 9 | 9 | 9 | 9 | 11 1/2 | 11 1/2 | 11 1/2 | 10 1/2 |
| ISO 5210 | F10 | F10 | F10 | F14 | F14 | F14 | F14 | F16 | F16 | F16 | F25 |
| CV | 235 | 452 | 810 | 1456 | 2519 | 3990 | 5097 | 6532 | 7556 | 9432 | 13652 |
| Weight (Kg.) | 35 | 50 | 61 | 130 | 195 | 268 | 348 | 463 | 529 | 870 | 1370 |

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

NOTE: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.

| | 24" | 30" | 36" | |
|--|--------|-------|-------|--|
| | 914 | 1270 | 1980 | |
| | 20,6 | 26 | 28 | |
| | 551 | 777 | 870 | |
| | 1112 | 1670 | 1800 | |
| | 775 | 946 | 1150 | |
| | 815 | 984 | 1168 | |
| | 870 | 1245 | 1370 | |
| | 10 1/2 | 18 | 18 | |
| | F25 | F25 | F30 | |
| | 19660 | 30719 | 44235 | |
| | 1890 | 3980 | 6600 | |

Technical Data | Dimensions - figure 2300 - Reduced Bore

Bare stem valves - Class 300

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

NOTE: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.

| Dimensions | 2" | 3" | 4" | 6" | 8" | 10" | 12" | 14" | 16" | 18" | 20" | |
|-----------------|-----|-----|------|------|------|--------|--------|--------|--------|--------|--------|--|
| A | 216 | 283 | 305 | 403 | 419 | 457 | 502 | 762 | 838 | 914 | 991 | |
| e** | 9,5 | 12 | 12,7 | 16 | 17,5 | 19 | 20,6 | 22,2 | 25 | 25,4 | 27 | |
| Ba | 115 | 130 | 155 | 205 | 280 | 315 | 345 | 380 | 430 | 520 | 676 | |
| Bb | 260 | 275 | 305 | 390 | 530 | 605 | 850 | 950 | 1050 | 1210 | 1314 | |
| C | 145 | 190 | 225 | 260 | 350 | 410 | 490 | 540 | 600 | 610 | 620 | |
| D | 165 | 210 | 254 | 279 | 381 | 445 | 520 | 580 | 650 | 711 | 775 | |
| H* | 150 | 200 | 250 | 300 | 360 | 450 | 550 | 620 | 700 | 770 | 850 | |
| Turn open/close | 7 | 7 | 7 | 9 | 9 | 11 1/2 | 11 1/2 | 11 1/2 | 11 1/2 | 10 1/2 | 10 1/2 | |
| ISO 5210 | F10 | F10 | F10 | F14 | F14 | F14 | F16 | F16 | F16 | F25 | F25 | |
| CV | 235 | 452 | 810 | 1456 | 2519 | 3990 | 5097 | 6150 | 7556 | 10620 | 13652 | |
| Weight (Kg.) | 55 | 85 | 154 | 230 | 320 | 495 | 610 | 970 | 1780 | 1910 | 3580 | |

Bare stem valves - Class 600

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

NOTE: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.

| Dimensions | 2" | 3" | 4" | 6" | 8" | 10" | 12" | 14" | 16" | |
|-----------------|-----|------|-----|------|--------|--------|--------|--------|--------|--|
| A | 292 | 356 | 432 | 559 | 660 | 787 | 838 | 920 | 991 | |
| e** | 11 | 12,7 | 16 | 19 | 25,4 | 28,5 | 31,7 | 34,9 | 38,1 | |
| Ba | 130 | 145 | 160 | 250 | 340 | 395 | 445 | 475 | 505 | |
| Bb | 295 | 320 | 405 | 660 | 805 | 910 | 972 | 992 | 1022 | |
| C | 165 | 210 | 260 | 345 | 405 | 485 | 570 | 590 | 665 | |
| D | 165 | 210 | 254 | 318 | 381 | 445 | 560 | 603 | 685 | |
| H* | 150 | 200 | 260 | 332 | 420 | 520 | 608 | 640 | 670 | |
| Turn open/close | 7 | 7 | 9 | 9 | 11 1/2 | 11 1/2 | 10 1/2 | 10 1/2 | 10 1/2 | |
| ISO 5210 | F10 | F10 | F14 | F14 | F16 | F16 | F25 | F25 | F25 | |
| CV | 235 | 452 | 810 | 1456 | 2519 | 3990 | 5097 | 6730 | 7556 | |
| Weight (Kg.) | 115 | 185 | 215 | 395 | 585 | 945 | 1190 | 1810 | 2055 | |

Technical Data | Dimensions - figure 2301 - Full Bore

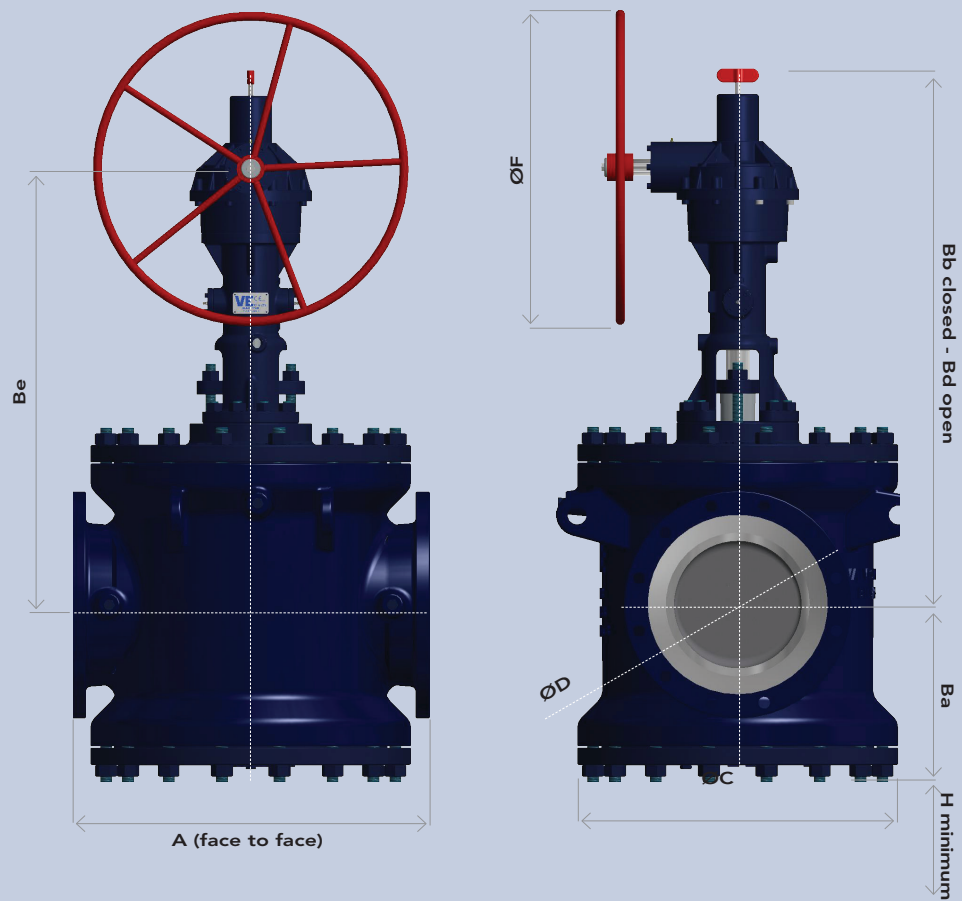
Gear operated valves - Class 150

| Dimensions | 4" | 6" | 8" | 10" | 12" | 14" | 16" | 18" | 20" | 24" |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| A | 432 | 534 | 635 | 788 | 915 | 864 | 889 | 1082 | 1220 | 1397 |
| e** | 11 | 12 | 12,7 | 14,5 | 16 | 16,6 | 17,5 | 18,2 | 19 | 20,6 |
| Ba | 370 | 428 | 478 | 524 | 556 | 605 | 641 | 680 | 741 | 828 |
| Bb Closed | 772 | 916 | 1149 | 1348 | 1410 | 1494 | 1684 | 1843 | 2027 | 2198 |
| Bd Open | 798 | 976 | 1209 | 1408 | 1470 | 1569 | 1759 | 1918 | 2115 | 2286 |
| Be | 489 | 559 | 654 | 676 | 890 | 1095 | 1156 | 1352 | 1553 | 2100 |
| C | 280 | 325 | 355 | 365 | 370 | 440 | 450 | 520 | 620 | 780 |
| D | 229 | 279 | 343 | 406 | 483 | 535 | 595 | 610 | 699 | 815 |
| F | 300 | 300 | 300 | 450 | 450 | 650 | 850 | 850 | 850 | 1000 |
| H* | 407 | 470 | 526 | 546 | 622 | 665 | 706 | 760 | 815 | 911 |
| Turn open/close | 27 1/2 | 36 1/2 | 36 1/2 | 36 1/2 | 36 1/2 | 46 1/2 | 46 1/2 | 41 1/2 | 41 1/2 | 41 1/2 |
| CV | 2173 | 5103 | 9450 | 16821 | 24570 | 30240 | 41580 | 65500 | 70875 | 105084 |
| Gear Box | FL-0 | FL-1 | FL-1 | FL-1 | FL-2 | FL-2 | FL-2 | FL-3 | FL-3 | FL3 |
| Weight (Kg.) | 250 | 440 | 580 | 660 | 1010 | 1290 | 1590 | 2280 | 2840 | 3360 |

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

NOTE: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.



Technical Data | Dimensions - figure 2301 - Full Bore

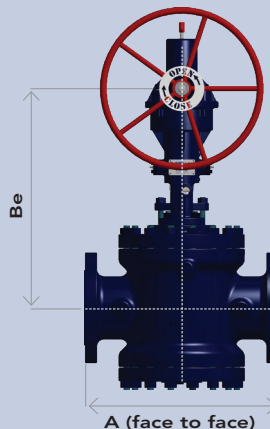
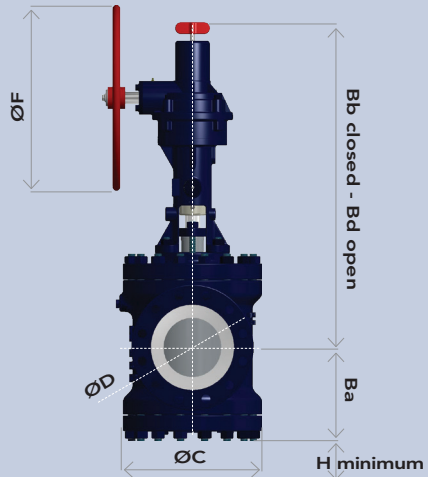
Gear operated valves - Class 300

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

NOTE: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.

| Dimensions | 4" | 6" | 8" | 10" | 12" | 14" | 16" |
|-----------------|--------|--------|--------|--------|--------|--------|--------|
| A | 457 | 559 | 686 | 826 | 965 | 864 | 889 |
| e** | 12,7 | 16 | 17,5 | 19 | 20,6 | 22,2 | 25 |
| Ba | 370 | 428 | 478 | 524 | 566 | 610 | 641 |
| Bb Closed | 772 | 916 | 1149 | 1348 | 1410 | 1540 | 1648 |
| Bd Open | 798 | 975 | 1209 | 1423 | 1485 | 1615 | 1723 |
| Be | 460 | 594 | 854 | 1073 | 1114 | 1234 | 1304 |
| C | 280 | 325 | 355 | 365 | 370 | 410 | 450 |
| D | 257 | 318 | 381 | 445 | 520 | 580 | 650 |
| F | 300 | 450 | 650 | 650 | 850 | 850 | 850 |
| H* | 407 | 470 | 526 | 576 | 622 | 650 | 706 |
| Turn open/close | 27 1/2 | 36 1/2 | 36 1/2 | 46 1/2 | 46 1/2 | 46 1/2 | 46 1/2 |
| CV | 2079 | 5103 | 9450 | 16159 | 23625 | 29845 | 39690 |
| Gear Box | FL-0 | FL-1 | FL-1 | FL-2 | FL-2 | FL-3 | FL-3 |
| Weight (Kg.) | 270 | 450 | 600 | 850 | 1085 | 1410 | 1830 |

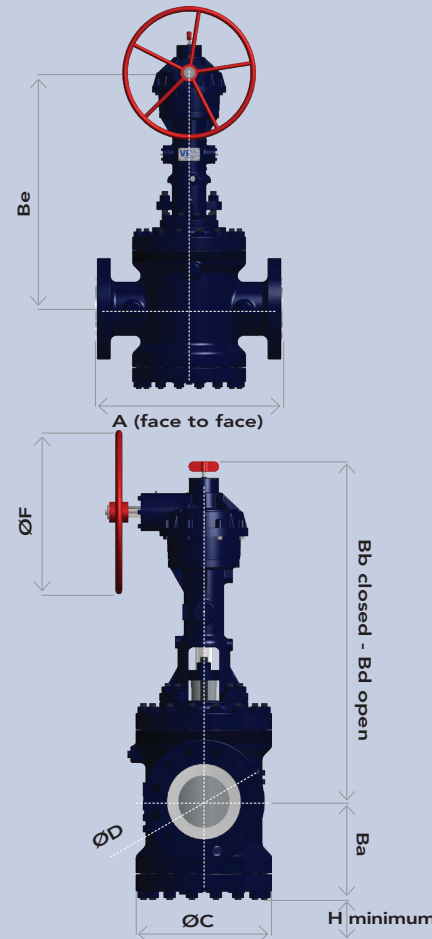
Gear operated valves - Class 600

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

NOTE: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.

| Dimensions | 4" | 6" | 8" | 10" | 12" |
|-----------------|--------|--------|--------|--------|--------|
| A | 535 | 660 | 660 | 787 | 838 |
| e** | 16 | 19 | 25,4 | 28,5 | 31,7 |
| Ba | 370 | 275 | 340 | 395 | 445 |
| Bb Closed | 992 | 1148 | 1235 | 1435 | 2151 |
| Bd Open | 1050 | 1206 | 1310 | 1510 | 2239 |
| Be | 737 | 793 | 877 | 1081 | 1796 |
| C | 280 | 400 | 542 | 640 | 770 |
| D | 260 | 356 | 419 | 510 | 580 |
| F | 450 | 450 | 850 | 850 | 850 |
| H* | 407 | 430 | 470 | 590 | 710 |
| Turn open/close | 36 1/2 | 36 1/2 | 46 1/2 | 46 1/2 | 41 1/2 |
| CV | 1980 | 5103 | 9450 | 15890 | 22850 |
| Gear Box | FL-1 | FL-1 | FL-2 | FL-2 | FL-2 |
| Weight (Kg.) | 370 | 610 | 795 | 1045 | 1445 |



Technical Data | Dimensions - figure 2301 - Full Bore

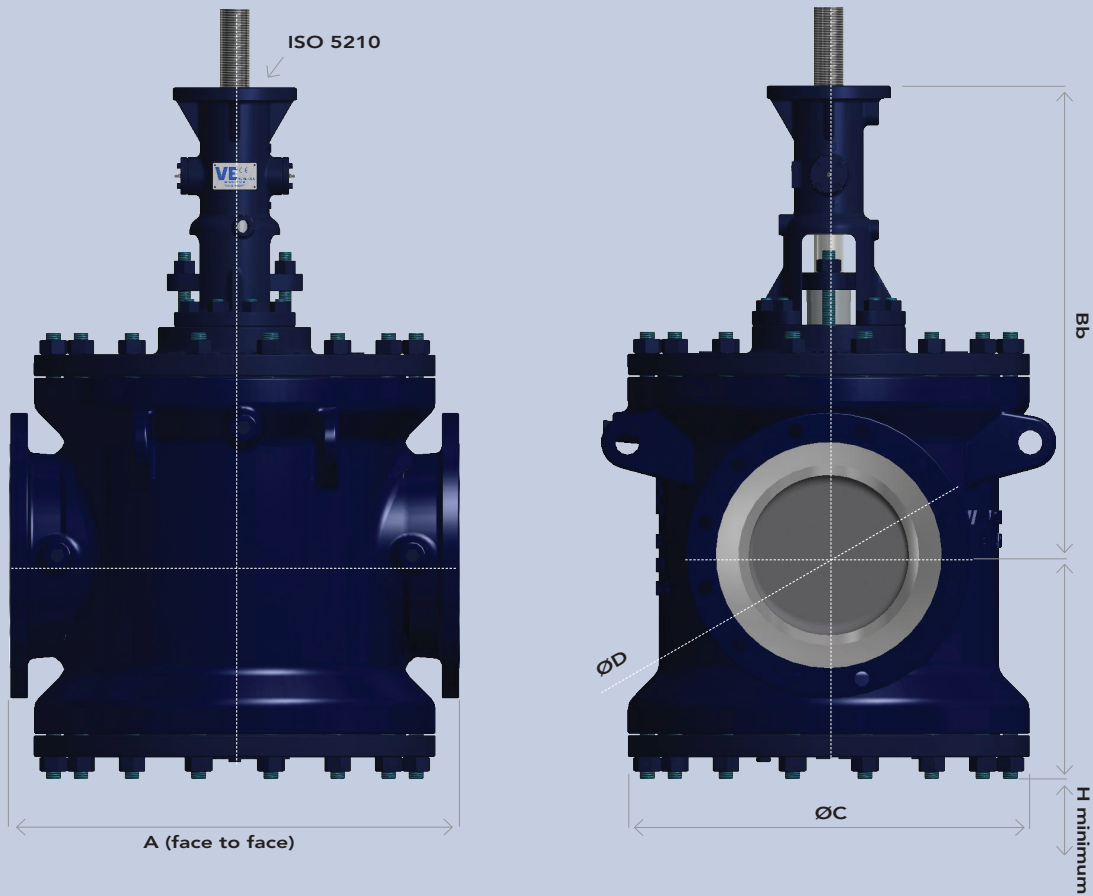
Bare stem valves - Class 150

| Dimensions | 4" | 6" | 8" | 10" | 12" | 14" | 16" | 18" | 20" | 24" |
|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| A | 432 | 534 | 635 | 788 | 915 | 864 | 889 | 1082 | 1220 | 1397 |
| e** | 11 | 12 | 12,7 | 14,5 | 16 | 16,6 | 17,5 | 18,2 | 19 | 20,6 |
| Ba | 370 | 428 | 478 | 524 | 566 | 605 | 641 | 680 | 741 | 828 |
| Bb | 635 | 726 | 850 | 676 | 890 | 1095 | 1156 | 1320 | 1553 | 2100 |
| C | 280 | 325 | 355 | 365 | 370 | 440 | 450 | 520 | 620 | 780 |
| D | 229 | 257 | 343 | 406 | 483 | 507 | 580 | 610 | 635 | 710 |
| H* | 407 | 470 | 526 | 546 | 622 | 665 | 706 | 760 | 815 | 911 |
| ISO 5210 | F10 | F14 | F14 | F14 | F14 | F16 | F16 | F25 | F25 | F25 |
| Turn open/close | 27 1/2 | 36 1/2 | 36 1/2 | 36 1/2 | 36 1/2 | 11 1/2 | 11 1/2 | 10 1/2 | 10 1/2 | 10 1/2 |
| CV | 2173 | 5103 | 9450 | 16821 | 24570 | 30240 | 41580 | 65500 | 70875 | 105084 |
| Weight (Kg.) | 220 | 390 | 530 | 620 | 970 | 1250 | 1550 | 2230 | 2790 | 3320 |

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

NOTE: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.



Technical Data | Dimensions - figure 2301 - Full Bore

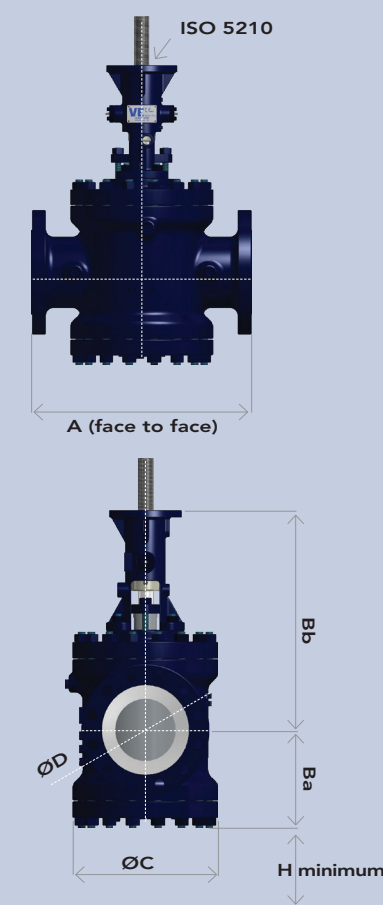
Bare stem valves - Class 300

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

NOTE: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.

| Dimensions | 4" | 6" | 8" | 10" | 12" | 14" | 16" |
|-----------------|------|------|------|--------|--------|--------|--------|
| A | 457 | 559 | 686 | 826 | 965 | 864 | 889 |
| e** | 12,7 | 16 | 17,5 | 19 | 20,6 | 22,2 | 25 |
| Ba | 370 | 428 | 478 | 524 | 566 | 605 | 641 |
| Bb | 416 | 772 | 1110 | 1395 | 1448 | 1570 | 1695 |
| C | 280 | 325 | 355 | 365 | 370 | 410 | 450 |
| D | 257 | 318 | 381 | 445 | 520 | 580 | 610 |
| H* | 407 | 470 | 526 | 576 | 622 | 650 | 706 |
| ISO 5210 | F10 | F14 | F14 | F14 | F16 | F16 | F16 |
| Turn open/close | 7 | 9 | 9 | 11 1/2 | 11 1/2 | 11 1/2 | 11 1/2 |
| CV | 2079 | 5103 | 9450 | 16159 | 23625 | 27565 | 39690 |
| Weight (Kg.) | 250 | 420 | 575 | 820 | 1020 | 1360 | 1780 |



Bare stem valves - Class 600

e**= Shell wall thickness by API 6D

H*= Minimum space required under the valve in order to replace slips.

NOTE: Flanged ended as per ASME B16,5 / EN-1092-1. The dimensions are shown in ASME.

| Dimensions | 4" | 6" | 8" | 10" | 12" | |
|-----------------|------|------|--------|--------|--------|--|
| A | 535 | 660 | 794 | 940 | 1215 | |
| e** | 16 | 19 | 25,4 | 28,5 | 31,7 | |
| Ba | 370 | 275 | 331 | 410 | 566 | |
| Bb | 635 | 691 | 741 | 945 | 1660 | |
| C | 280 | 400 | 542 | 640 | 770 | |
| D | 260 | 356 | 419 | 510 | 580 | |
| H* | 407 | 430 | 470 | 590 | 622 | |
| ISO 5210 | F14 | F14 | F16 | F16 | F25 | |
| Turn open/close | 9 | 9 | 11 1/2 | 11 1/2 | 10 1/2 | |
| CV | 1980 | 5103 | 9450 | 15890 | 22850 | |
| Weight (Kg.) | 340 | 580 | 765 | 1005 | 1405 | |

Additional Information

Spare parts

ERIKS-VE stock a complete range of spare parts for the VE® Dual Expanding Plug Valve. All VE® Valves have a unique traceability charge number mentioned on the body of the valve and on the tag-plate. With this unique number ERIKS-VE engineers are able to identify and supply you with the correct parts.

Complete Spare-Kit

- O-ring Elastomer
- Body seal spiral wound gasket
- Gland packing-set

Slip Renewal Program

ERIKS-VE have a Slip Renewal Program available whereby used slips can be reconditioned and vulcanized again with a new elastomer seal. This way used slips can be re-used. Where large numbers of valves are used in the field, customers are advised to order some additional spare slips to ensure a continual supply for easy maintenance. The elastomer sealing material of the slip is mentioned on the tag-plate of the valve body.

Field Service and Technical Support

The ERIKS-VE website (www.eriks-ve.com) shows your nearest distributor or service workshop, who will be able to provide you with support or spare parts. ERIKS-VE also has a Field-Service Team available which can support you in field repairs, commissioning and other required services.

How to order

To ensure the fastest response to your enquiry, the information below should be supplied to our Sales Team.

- Size and pressure class, e.g. size 6" – class 150
- Manual operated (handwheel up to 6", >8" gear) or actuator operated (e.g. electrical)
- Figure no. 2300 (Reduced Bore – Standard Version)
- Materials – Standard Version or Special Materials
- Elastomer Sealing Materials Slips
- Pressure Relief & Bleed System
- Paint specification – in case not according to Standard Version





ERIKS Nederland

Cypresbaan 63
2908 LT Capelle aan den IJssel
The Netherlands

T +31 88 855 85 58
E sales@eriks-ve.com
www.eriks-ve.com