



Dual Expanding Plug Valve

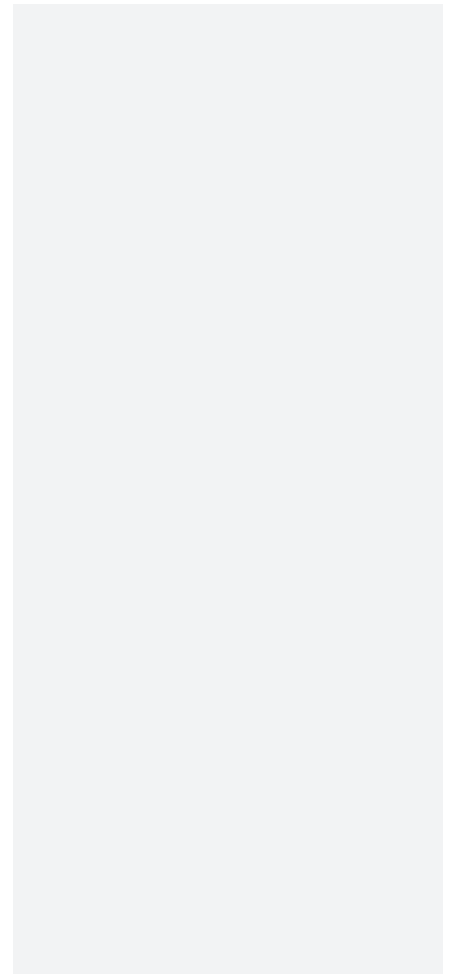
**VE**<sup>®</sup>



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

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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.



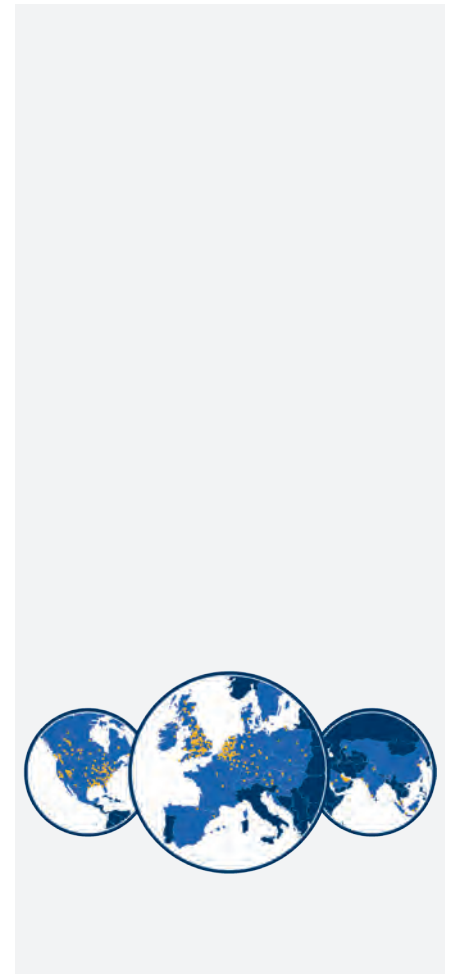
# Company profile

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, refuelling- and metering systems.

The VE® Valves are manufactured by highly skilled personnel in the Eriks Valve Enterprise factory in Bilbao Spain, 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 currently consists of more than 60 companies with branches in 27 countries. ERIKS has a strong position in Western Europe, the United States and presence in the Middle East and South-East Asia. ERIKS Group include well known valve companies such as Econosto, Siekmann Econosto, Mowta, Newdell, Diamond Gear, Valtor Offshore, Rawson, AMG-PESCH, Dansk Ventil Center, Industrial Controls and Quantum Supply. These companies provide a complete range of flow-control products such as valves, control-valves, instrumentation, actuation and accessories.



# 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

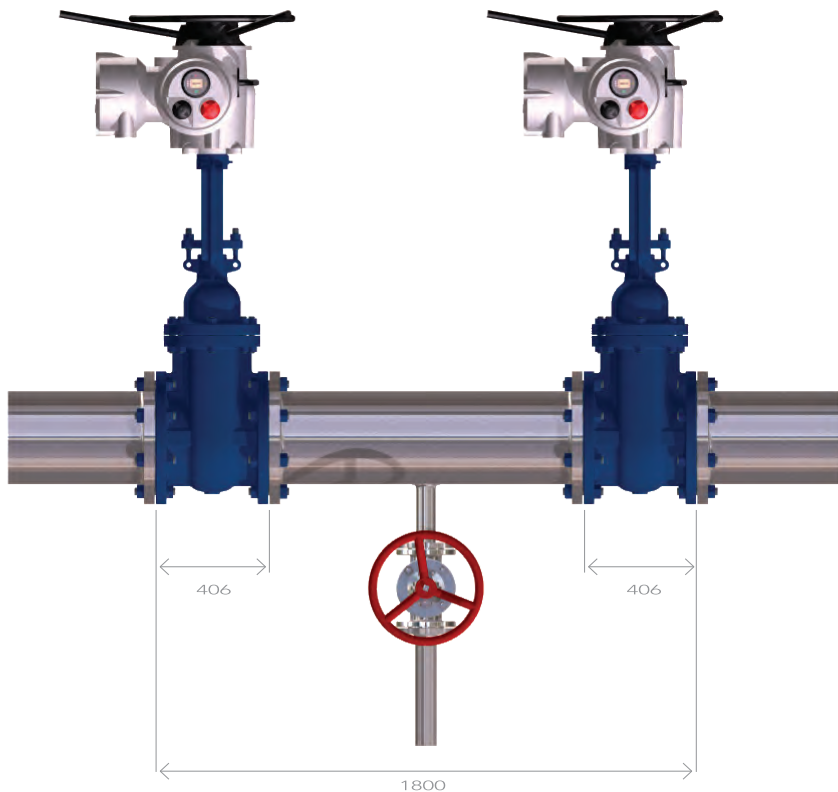
The VE® Dual Expanding Plug Valve provides a “zero leakage” solution, making the valve highly suitable for fueling stations in the aviation and marine industries. It is used on the truck-loading racks, as a tank shut-off valve and on the Jetty loading and unloading docking stations.



# Why use a **VE**<sup>®</sup> Dual Expanding Plug Valve

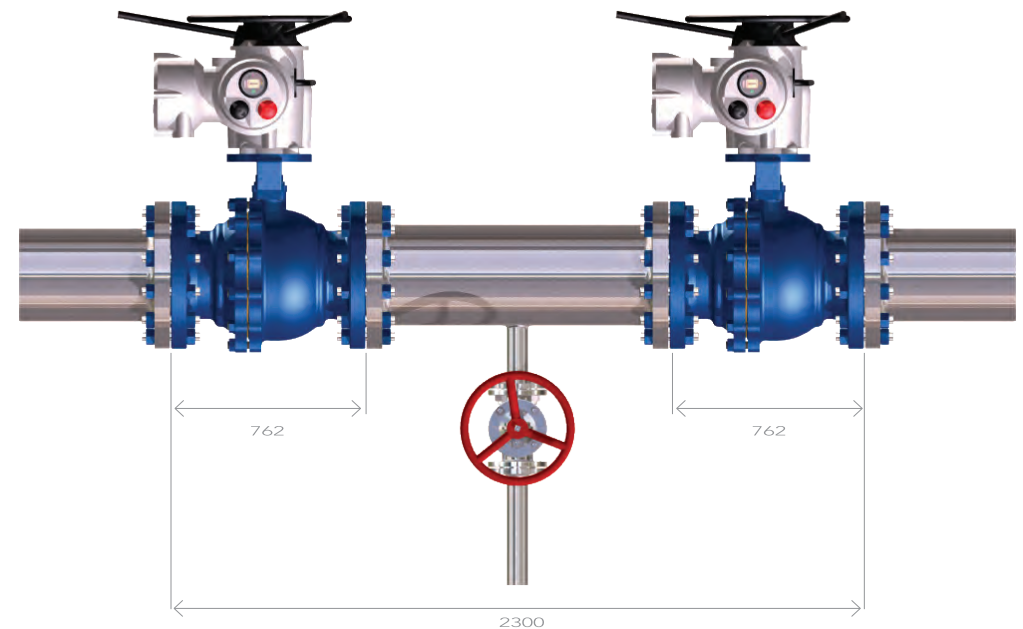
## Gate Valves

- 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

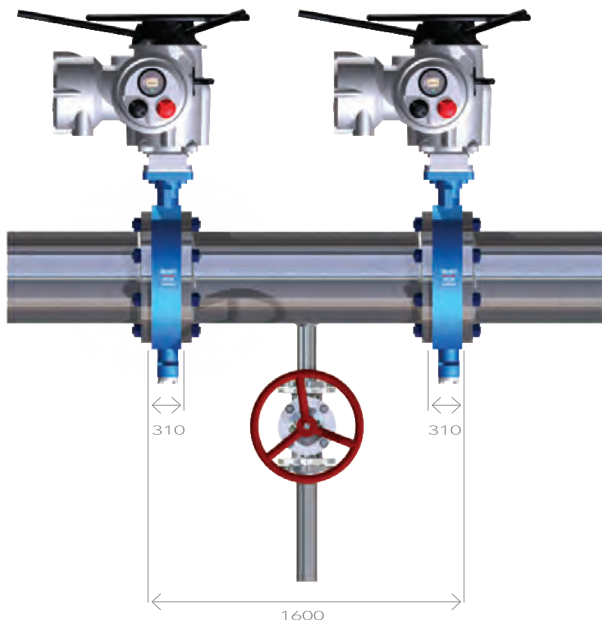
- No thermal pressure relief, only bleed function
- Seat deterioration due to abrasion increase maintenance intervals
- Large installation space required
- Two actuators, two input/output signal needed to operate the valves
- High operating torque requires larger actuation
- Expensive valve execution





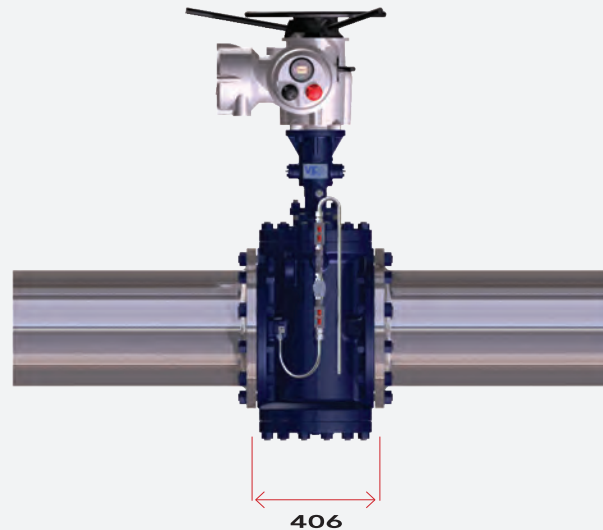
## Butterfly Valves

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



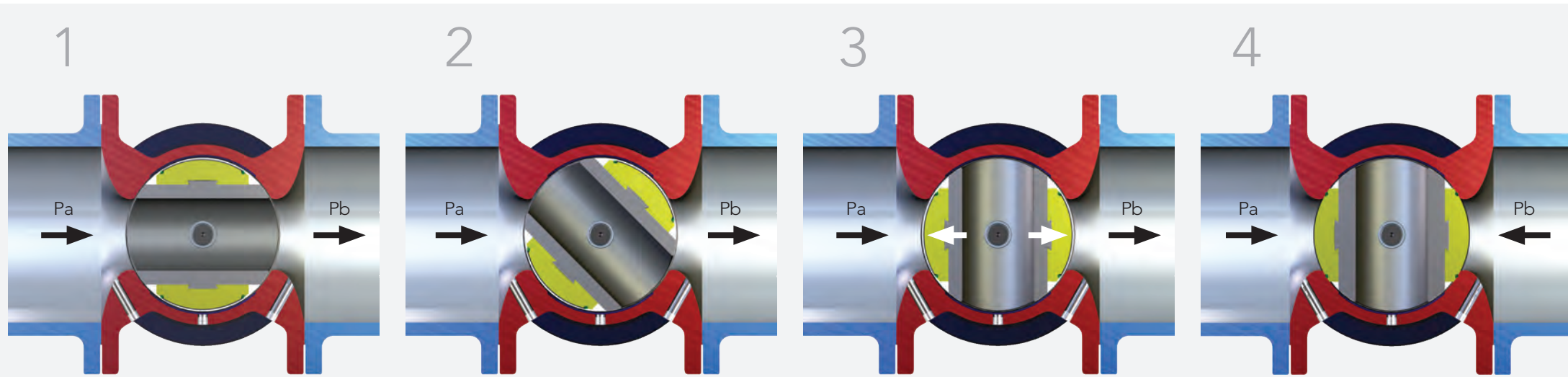
## Double Block and Bleed Solutions

- **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

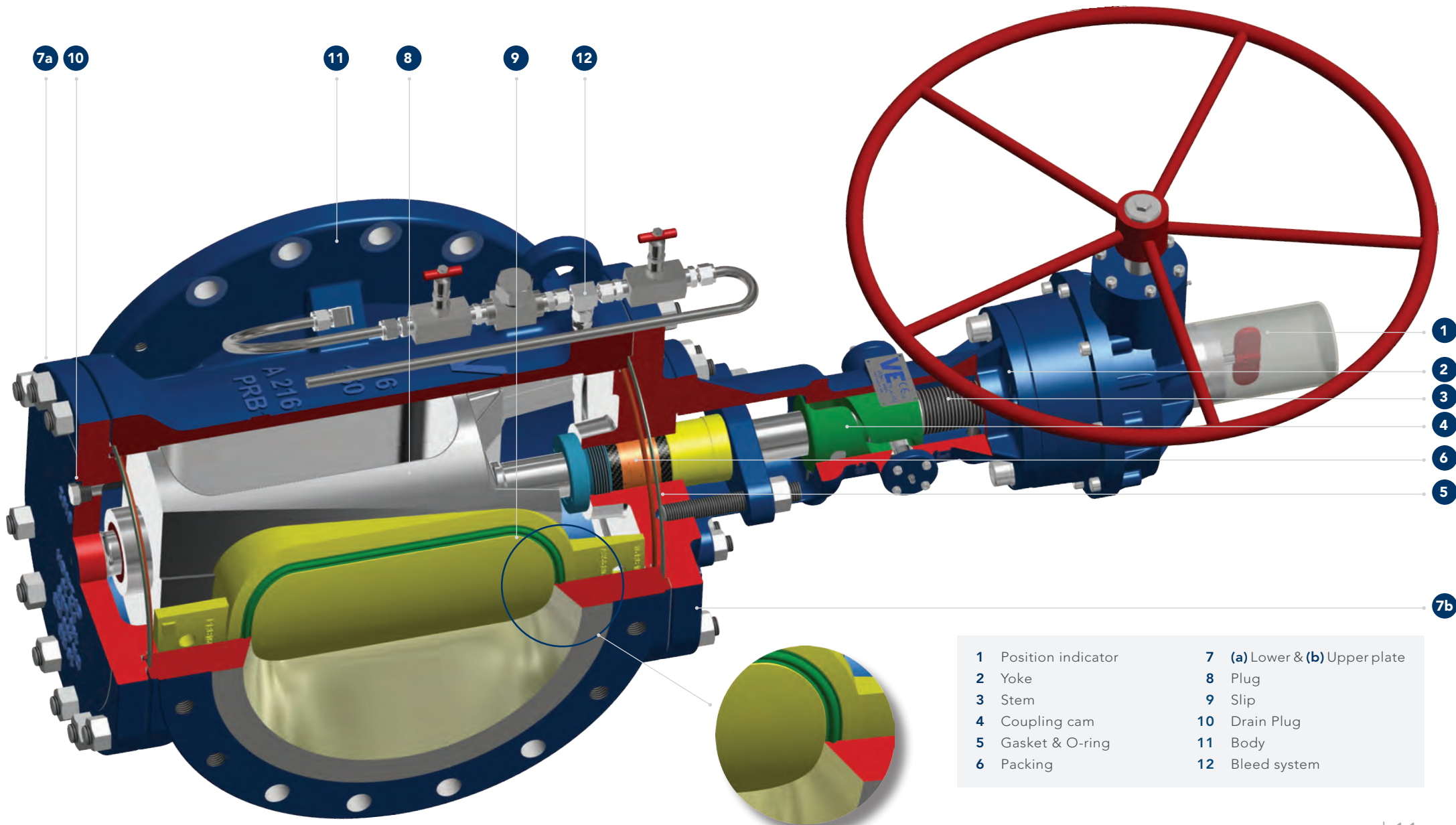
Once the plug has rotated 90°, the slips expand onto the body seats without causing any wear or abrasion to the seals.

## 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<sup>®</sup> 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

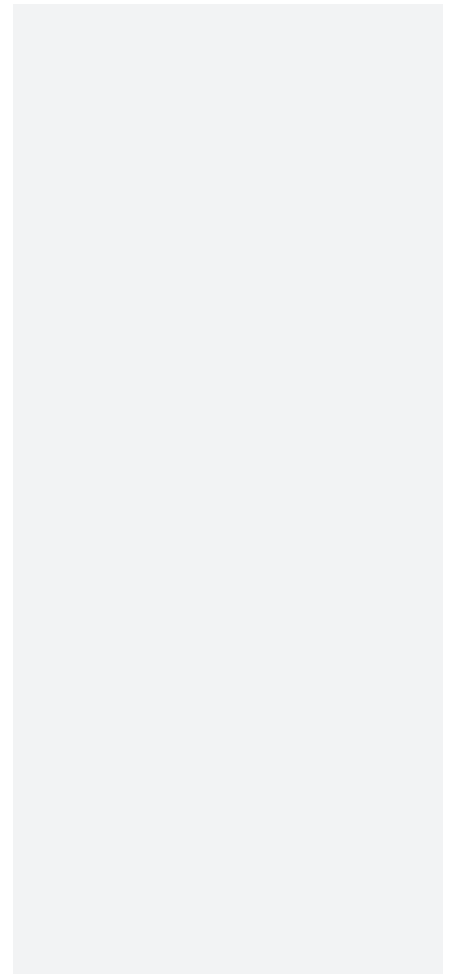
The VE<sup>®</sup> Dual Expanding Plug Valve exists in different executions:

- 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

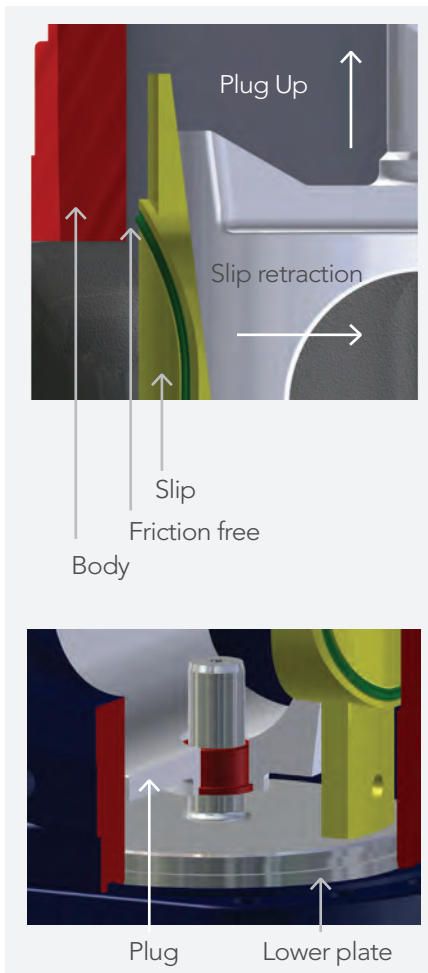
## Double Block & Bleed and Double Isolation (according to API-6D/ISO14313)

The VE<sup>®</sup> 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<sup>®</sup> 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.

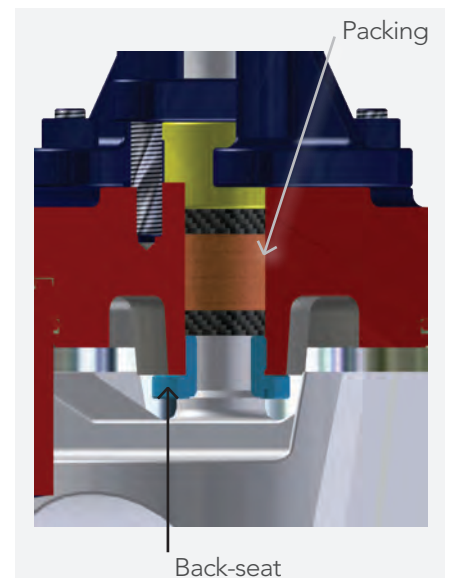
## Back seat design

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 down-loadable from our website [www.eriks-ve.com](http://www.eriks-ve.com).

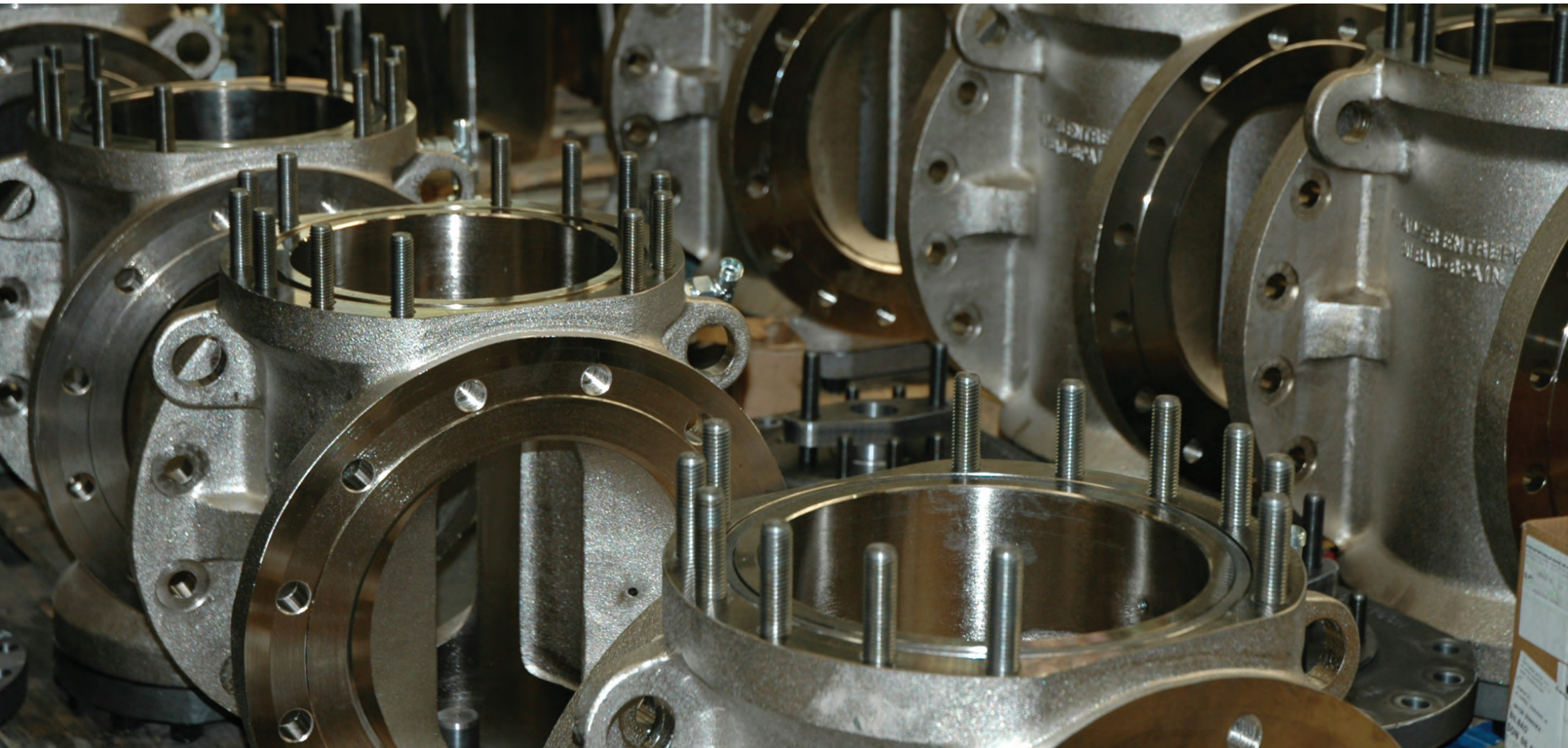
## Slips

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 colours, 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.

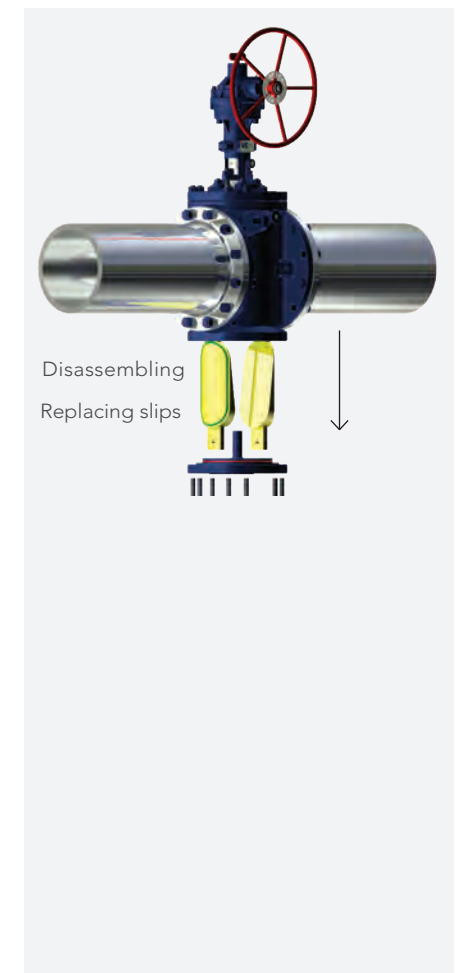
**WARNING:** make sure the line is depressurized and follow the instructions according to our "installation and operation manual", which is included with every valve or down-loadable from our website [www.eriks-ve.com](http://www.eriks-ve.com).

## 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 ANSI/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". Most manufacturers only protect the valve body and plug with an ENP-layer. But 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 guide-line. 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

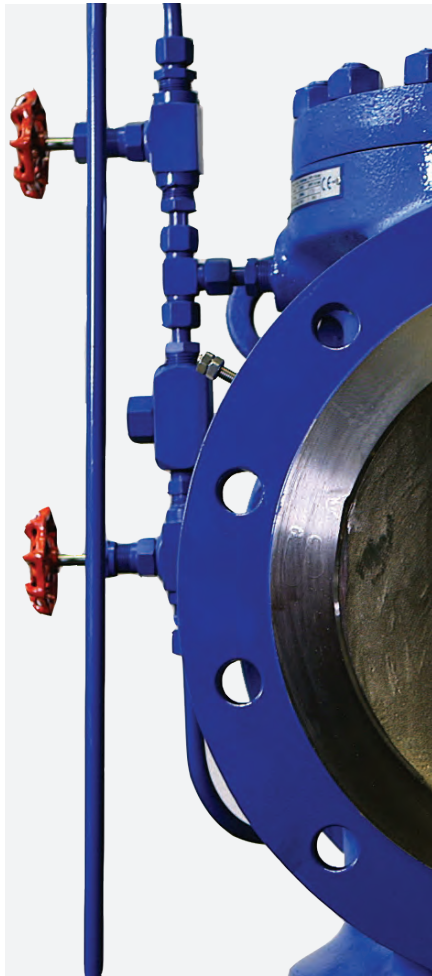
2 = Good-small volume increase and/or change in physical properties

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

*Viton® is a registered trademark of DuPont Performance Elastomers L.L.C.*

# 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.**

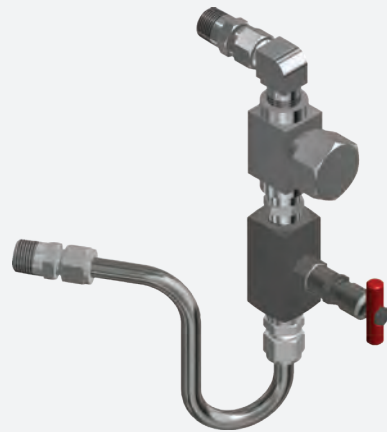
This system is a combination of an MBV and a TRB. Combining an automatic bleed of the body and also check the seal integrity of the Dual Expanding Plug Valve.

## **ABB: Automatic Body Bleed.**

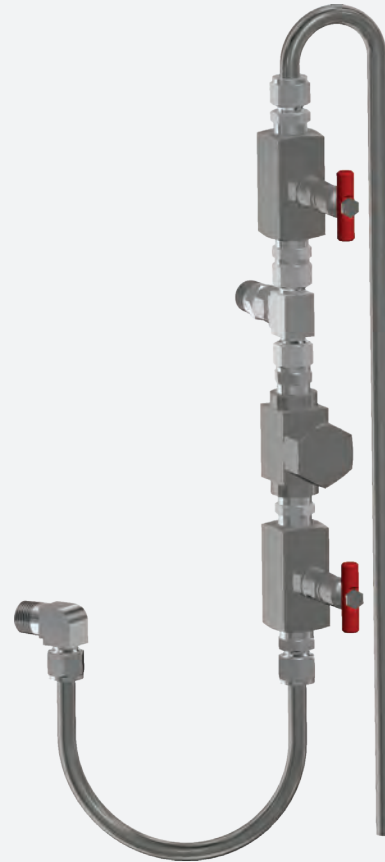
This system works when the valve is closing. The valve is opened mechanically before the VE® valve is fully closed, enabling the user to verify full closure when the bled fluid stops. There is also an isolating valve in the system with a lock open device, to avoid any human error. The bleed outlet should 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, upto 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<sup>®</sup> 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 ANSI b16.10& API 6D
- Flanged ended as per ANSI 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
- Electrolytic nickel plating - ENP
- Stud & nuts: anticorrosion treatment

## 4 Standard execution:

- ISO 9001:08
- PED 97/23/EC
- Atex 94/9/ec (CAT II 3 G/D T1 to T4)
- Fugitive emission certificate according to ISO 15848-1
- Fire safe according to API 607

## 5 Flanged connections according to:

- ANSI 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 97/23/EC
- API 6D
- MSS-SP-25



## 7 Casting material

- According to API 6D / ASME B16.34 / EN 1092-1 / PED 97/23/EC

## 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-corrossion treatment
Gland nut	ASTM A194 2H + Anti-corrossion treatment
Gasket	PSW. AISI 316L + Graphite
O-ring	Viton A
Friction bearing	AISI 316L
Body plate studs	ASTM A 193 B7 + Anti-corrossion treatment
Body plate nuts	ASTM A 194 2H + Anti-corrossion 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-corrossion treatment
Yoke nut	ASTM A 194 2H + Anti-corrossion 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 lbs

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 ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI.

	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 lbs

e\*\*= Shell wall thickness by API 6D

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

NOTE: Flanged ended as per ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI.

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	

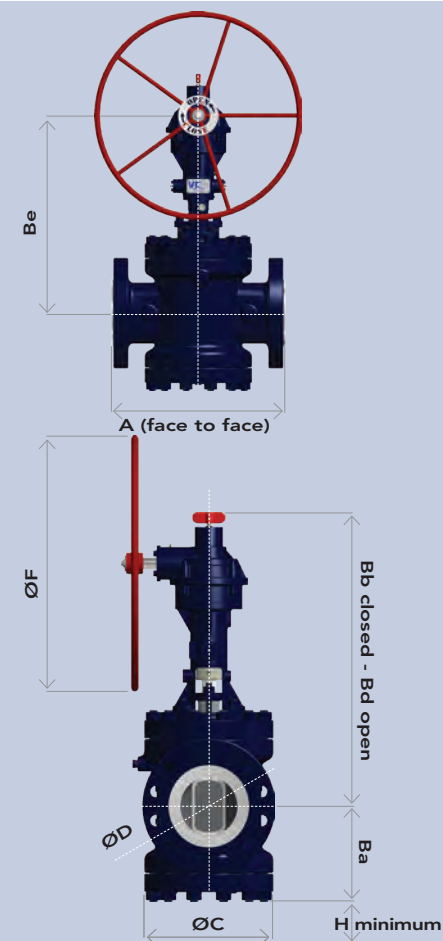
## Gear operated valves - Class 600 lbs

e\*\*= Shell wall thickness by API 6D

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

NOTE: Flanged ended as per ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI

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 lbs

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 ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI.

	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	

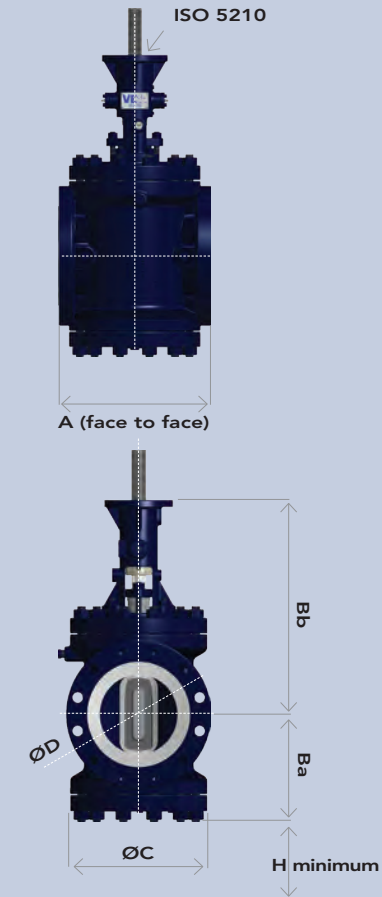
# Technical Data | Dimensions - figure 2300 - Reduced Bore

## Bare stem valves - Class 300 lbs

e\*\*= Shell wall thickness by API 6D

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

NOTE: Flanged ended as per ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI.

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 lbs

e\*\*= Shell wall thickness by API 6D

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

NOTE: Flanged ended as per ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI

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

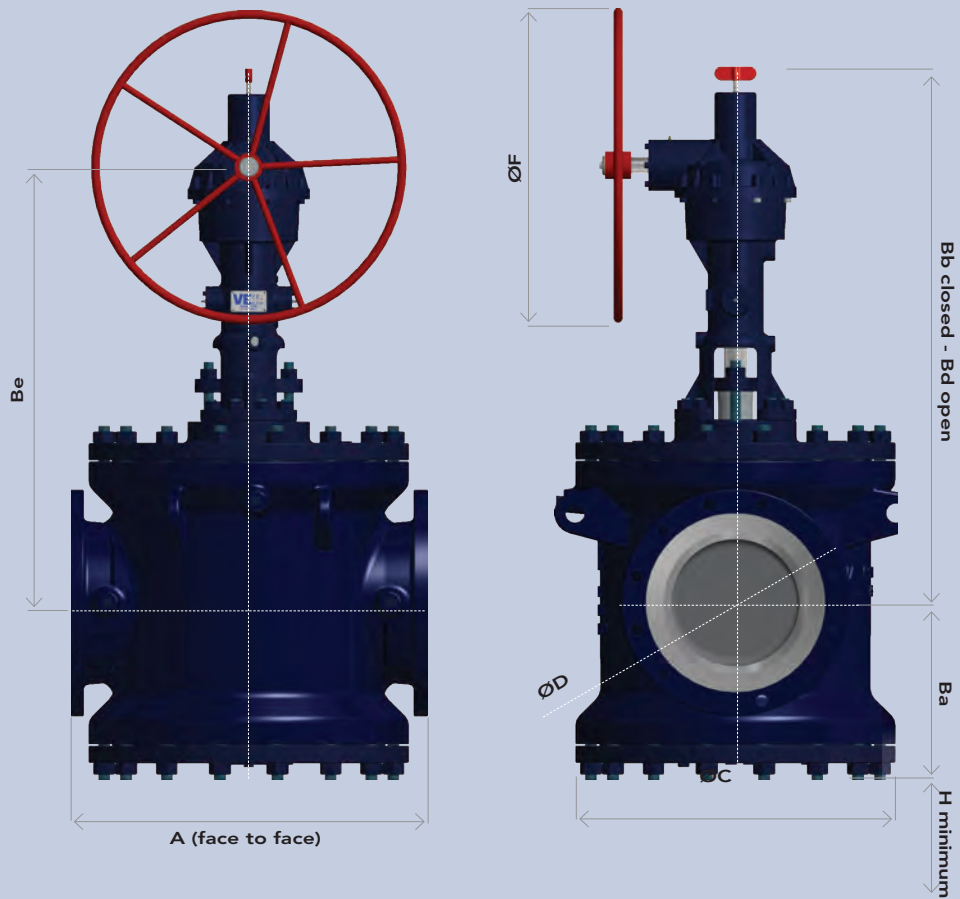
## Gear operated valves - Class 150 lbs

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 ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI.



# Technical Data | Dimensions - figure 2301 - Full Bore

## Gear operated valves - Class 300 lbs

e\*\*= Shell wall thickness by API 6D

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

NOTE: Flanged ended as per ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI.

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

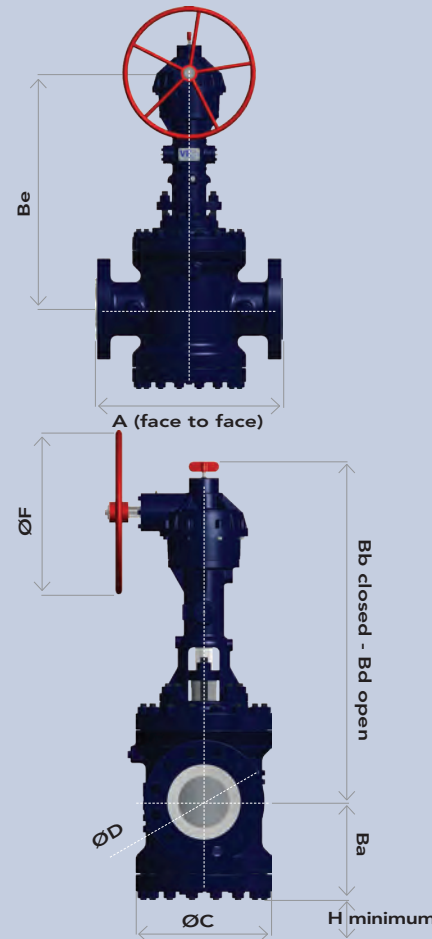
## Gear operated valves - Class 600 lbs

e\*\*= Shell wall thickness by API 6D

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

NOTE: Flanged ended as per ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI

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

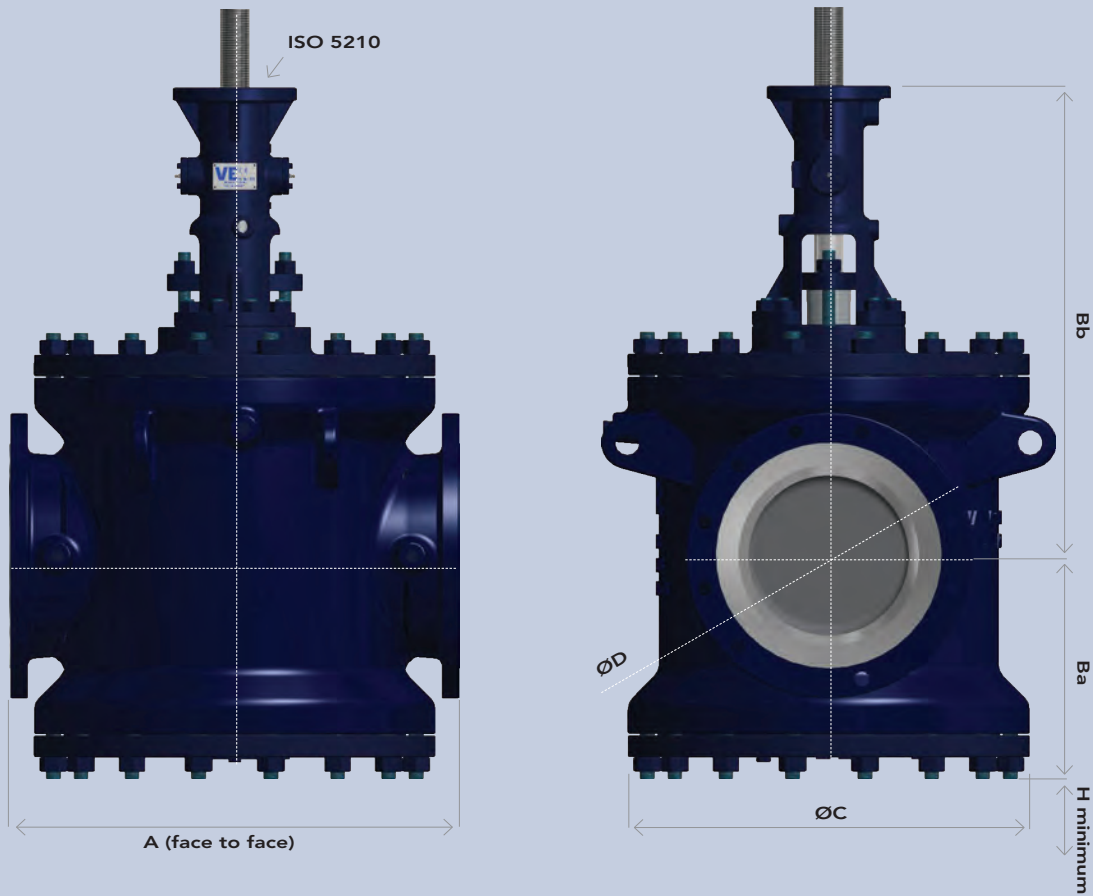
## Bare stem valves - Class 150 lbs

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 ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI.



# Technical Data | Dimensions - figure 2301 - Full Bore

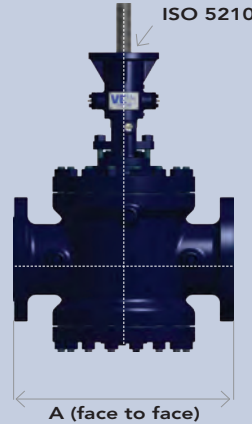
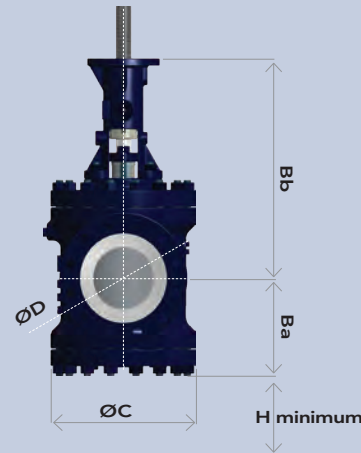
## Bare stem valves - Class 300 lbs

e\*\*= Shell wall thickness by API 6D

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

NOTE: Flanged ended as per ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI.

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 lbs

e\*\*= Shell wall thickness by API 6D

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

NOTE: Flanged ended as per ANSI B16,5 / EN-1092-1. The Dimensions are Shown in ANSI

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 spiralwound gasket
- Glandpacking-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](http://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 upto 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





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