LNG CRYOGENIC APPLICATIONS

USING BUTTWELD TOP ENTRY TRIPLE OFFSET VALVES

For over 30 years, Vanessa has been developing flow technology for every part of the LNG chain – from gas source and liquefaction through to storage, transport and regasification. The new buttweld top entry valve configuration meets the emerging requirements for inline access - extraordinary repairs can now be performed after complete removal of internal components.

CRITICAL PERFORMANCE REQUIREMENTS

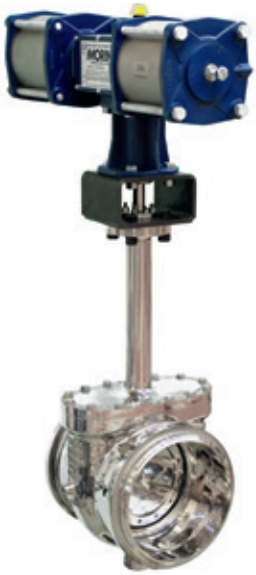
Operating and maintaining cryogenic valves have historically posed a huge challenge for the LNG sector. In many cases service engineers have had to enter the inside of the body of larger sized valves, putting themselves at great risk in terms of gas exposure. Such tasks usually required the use of gas masks, extraordinary safety measures and the constant monitoring of oxygen. Moreover, the bolted seats on many valves were made from soft materials with a short life expectancy, which made them prone to leakages.The challenge therefore was to develop a new cryogenic valve configuration that allowed extraordinary repairs to be carried out without any risk to service personnel while maintaining the high standards of reliability and robustness that have made our Series 30,000 cryogenic valve a leader in the market.

THE KEY ADVANTAGES OF ADOPTING VANESSA CRYOGENIC BUTTWELD TOP ENTRY VALVES

The Series 30,000 Cryogenic Configuration valve was developed specifically to meet the stringent safety requirements in cryogenic LNG production, in particular to overcome the issue of pipe load stress and to ensure tightness on higher pressures. Inherently fire safe thanks to a fully metal construction, the buttweld top entry configuration allows all internal components to be completely removed, when inline access is mandatory. This means that on-site personnel can safely carry out extraordinary offline repairs and maintenance, without any limitation dictated by valve size or pressure class. The number of flange connections has been reduced too, to comply with the latest safety standards (EN 1473 – NFPA 59A)

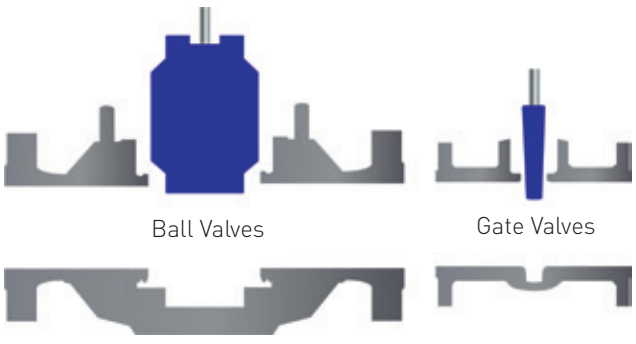
ADDITIONAL TECHNICAL ADVANTAGES OF USING SERIES 30,000 VALVES

- Torque values are consistent
- The valve is virtually maintenance free on clean liquid/gaseous cryogenic applications and does not require any specific maintenance programs
- In critical ESD applications, when BW connection is mandatory, the TOP ENTRY design represents the ideal solution

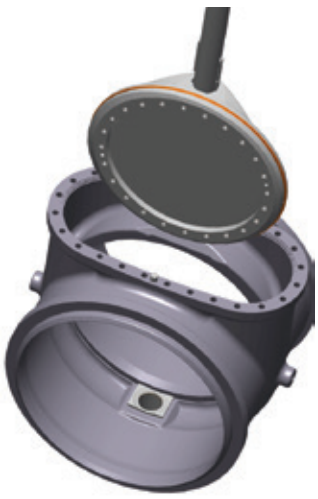


BW Top Entry Class 150

BW Top Entry Class 300 and higher



Other Top Entry Designs



Vanessa Series 30,000 Top Entry

VANESSA TOP ENTRY VERSUS SIDE ENTRY DESIGN

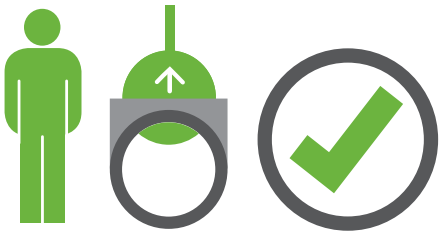
VANESSA BW TOP ENTRY DESIGN

TRIM ACCESSIBILITY

- Vanessa trim can be completely removed from the body - every component can be repaired or replaced
- Safe to repair, no exposure to safety risks of service personnel including unsolicited valve stroke and gas leakage
- Disc screws are securely retained - screw retention can be easily restored after repair

MAINTENANCE

- Compact body, the top flange is minimally affected by pipe loads
- No maintenance requirements thanks to 100% metal seating
- Extraordinary repairs can be carried out to fix tightness and operability-related issues
- When inline maintenance is mandatory, Vanessa top entry design allows for access without removing the valve body from the line - the entire valve trim can be extracted from the body and individual valve parts can be accessed to in total safety



BW SIDE ENTRY DESIGN*

TRIM ACCESSIBILITY

- Maintenance is carried out with direct exposure to safety risks of service personnel
- Service personnel are exposed to accidental strokes of the valve and gas leakage
- For large sizes, service engineers are required to enter the inside of the valve body, where there is a risk of exposure to gas (gas masks, extraordinary safety measures & constant monitoring of oxygen may be necessary)
- Side entry TOVs often feature bolted seats, which are necessary in order to remove the seal ring as this cannot be done without disassembling the seat first
- A bolted seat represents an additional leak path – also the material is usually soft 316 SS with short life expectancy especially if the valve is automated
- The number of bolts exposed to flow is doubled and no special devices are typically present to prevent the bolts from loosening

MAINTENANCE

- The side flange is affected by pipe loads and its oval shape cannot ensure tightness especially in higher pressures (class 300 and above)
- Maintenance operations are limited by valve size and pressure class
- Maintenance is only practical for valves in class 150
- Very difficult if not impossible to access valve internals for sizes lower than NPS 12 and replace sealing components for sizes >NPS 24

*NOTE: Some manufactures may describe this type of design as 'top entry' as well