



## Series G Design Advantages

The Series G range of quick opening closures were developed to meet the unique and specific requirements of the Oil & Gas Pipeline Industry and to meet the growing demand for reliability in severe service applications.

Key features of the Series G Closure are –

- Heavy construction – fit for duty
- Integral safety alert valve mechanism
- Primary bolting that is not associated with the operating mechanism
- Proven and reliable design basis – the ASME BPV code
- Reinforced hub – enhanced versus competitors designs.
- Broad range of sealing options / solutions
- Wide range of materials of construction – Carbon, alloy, stainless steel etc.

The Series G Closure differentiates itself from current designs of Closures by addressing the following key areas –

### Sealing

All quick opening Closures utilize the use of a soft elastomeric seal to form the pressure boundary but manufacturers are frequently reduced to supplying a 'standard' grade that frequently results in seal failure or operating difficulty.

The flexibility of the Series G design enables a wide range of both seal section and elastomer materials to be adopted. The Series G can be supplied suitable for use with either pressure energized lip seal or traditional O-ring seal in a wide variety of materials including Buna N, Viton<sup>®</sup>, Aflas<sup>®</sup>, Kalrez<sup>®</sup> or similar specialty compound. For severe service applications the use of metalized gaskets can be incorporated.

### Clamp mechanism

Full 360° load bearing is achieved by an innovative clamp mechanism. This mechanism enables the full retraction of the clamp halves to enable unobstructed movement of the door and avoid the necessity to remove key material from locking contact surface common with other styles.

For added safety, the operating mechanism is arranged such that the operator is positioned to the side of the Closure and is provided with full and unobstructed view of the Closure safety features.



## **Primary bolting**

A key feature of the Series G is that the primary bolting used to retain the Clamp assembly is separate to the operating mechanism. This eliminates concerns of wear and corrosion within the operating mechanism and enables the Safety Alert Valve to be an integral function of the operating procedure.

## **Safety features**

The Series G Closure incorporates, as standard, a safety alert valve that forms an integral feature for operation of the Closure. The safety alert valve is design to encompass the primary bolting thereby preventing operation of the Closure until it is verified that the vessel / pipeline is properly depressurized.

By virtue of the primary bolting being separate to the operating mechanism, additional safety is achieved with the practice of only partially disengaging the securing bolting prior to actuating the opening mechanism.

All locking elements can be verified to be fully engaged by visual observation thereby meeting the requirements of UG-35.2(b)(3).

For applications requiring added levels of security, the Series G closure can be easily modified to accommodate the installation of a simple lock out, tag out feature or the installation of mechanical key interlock assemblies.

## **Heavy duty construction**

The Series G closure was designed to exceed the requirement of applicable design codes and address the unique requirements of Closures, which include –

- Reinforced hub with greater cross section to minimize the impact of stress caused during fabrication that cause deformation / warping of the pipe.
- Heavy duty hinge / davit assembly with simplified construction to improve handling during fabrication / heat treatment and insure suitability for long term outdoor operation, application of paint and environmental conditions.
- Specially profiled hub and door to centralize the door during installation, protect the seal and to minimize the effect of distortion during fabrication.

The general design and construction method used for the Series G eliminates any areas where moisture can collect and that would lead to corrosion of critical surfaces – especially in vertical configurations.