

Quick Opening Closure APF-QOC



APADANA PETRO FARAYAND

Knowledge is our difference

Apadana Petro Farayand quick opening closures have no blind flanges, a welcome benefit when frequent access to vessels is required. We manufacture a family of closures in sizes ranging from 2" to 72 "for any pressure from ASME Class 150 through to 2500. Quick opening closures provide both a practical and an economical solution for a variety of applications.

Usage

- Blowdowns
- Scrapper and Pig Traps
- Access opening on Scrubbers, Filters, Strainers, etc.
- Chemical Reactors
- Pressure Vessels
- Shell and Tube Heat Exchangers
- Autoclave Doors
- Manways in Pressure Vessels
- Meter Provers
- Terminal Manifolds
- Storage Tanks

Different Types

- QHC II
- FLS
- QTB

Introduction

Quick opening closures are pressure retaining structures designed to provide access to pipelines and pressure vessels. Our closures are built to meet all required international design codes and can be used in horizontal, vertical, inclined or declined applications. Approved Design ASME VIII Div.1 states that "Quick-actuating or quick opening closures are those that permit substantially faster access to the contents space of a pressure vessel than would be expected with a standard bolted flange connection. The design is inherently safe since the door cannot be physically opened unless and until the vessel's internal pressure has been fully relieved. The reason for this is that the internal pressure acting on the door provides the sealing pressure of the trapezoidal gasket on the segment ring. This force goes on improving with increasing internal pressure. Our experience is that an internal pressure as low 0.5 bar can provide enough sealing force for a gas tight connection.

QHC II type

The QHC II Manual Single-Bolt Yoke Style Closure is compact in size and functional in design and faster, easier operation. A typical unit consists of a forged hub, a hinged blanking head, split-yoke clamps, operating bolts, and a self-energizing O-ring gasket. The door mechanism which fitted between the clamp and hub transmits the pressure load around the full 360° circumference of the clamp. Materials of construction are in accord with ASME specifications, and manufacture complies with applicable rules of the applicable ASME code for pressure piping and with the ASME Boiler and Pressure Vessel Code. QHC II closure operation is smooth and direct, and even the largest unit can be opened or closed by one person with standard wrenches in a matter of minutes. Turning of the actuating bolt - accomplished by one operator using only standard hand tools - spreads the yoke halves until they are fully separated, allowing the head to be swung open on its hinge. There is no need to tug, hammer or struggle with bulky lugs and threads.



FLS type

Apadana Petro Farayand has designed and developed a new quick opening closure. Closures provide horizontal or vertical access to any pressure vessel in seconds. Compared with other quick-opening closures they can be operated safely at remarkable speed in any size of unit can be opened or closed in less than a minute, with no special tools required. This closure system is safe and easy to operate and may be used in a broad range of applications. Operation of the closure can be accomplished by one person without the use of tools. The integration of the locking segments, locking mechanism and door handle into the door provides a compact and efficient design. To open the door, the handle requires only a quarter turn, which moves the locking segments from their stowed position. The internal components of the locking mechanism are protected by a weather seal and are stainless or plated to protect them from rust and corrosion. The O-ring groove is machined into the door with the hub O-ring seat area recessed to protect the seat during maintenance. This configuration assures a positive seal when the door is closed and locked. The segments mechanism which fitted between the door and hub, transmits the pressure load uniformly around the full 360 ° circumference of the hub.

The safe operation of the closure is ensured by a redundant design in which the closure cannot be opened without the removal of the pressure alert valve and the movement of the safety lock. The pressure alert valve also provides the operator an indication of the presence of any residual pressure in the vessel should the operator inadvertently attempt to open the closure prior to all pressure on the vessel being relieved. Additionally, the safety lock mechanism prevents the door handle from being moved to the open position until after the pressure alert valve has been safely removed. The safety lock must also be returned to the locked position in order for the pressure alert valve to be installed.



QTB type

Apadana Petro Farayand Turn Bar Closures are designed for horizontal and vertical applications. Safety plus operating advantages and weight savings over flanged manways make our QTB Closures ideal for applications such as storage tanks, mixing equipment, filters, separators, inspection ports, tower access, reactor access and hand holes on processing equipment. QTB closures can be supplied in specially applications such as sanitary equipment, medical waste and hyperbaric chambers, size range 6 " - 66 " pressures up to 500 psi. High strength bolts are employed with special bolting for sour and/or low temp service. A slab rectangular bar has been fully welded on top of the door to transmits the bolts force uniformly on hub. The self-energizing "O" ring seal and corresponding groove is situated in the hub portion of the closures to ensure there is no mismatch upon closing or seal slippage to cause anything less than ideal contact and sealing performance. Safety benefits include requiring the bolts to be slackened off an extra turn or two before they will swing out of the holding system, should there be internal pressure the head will lift marginally and be restrained by the cap lugs alerting the operator to the residual pressure.

Knowledge is our difference...

We believe that investment in research and development is an essential component for long-term success. Computational Fluid Dynamics is a reliable tool for design optimization, troubleshooting, and product development. Flow distribution is critical in all gas-liquid and liquid-liquid vessels. CFD modeling is used by engineers at APADANA PETRO FARAYAND to simulate flow conditions and vessel geometry. The modeling provides a close approximation of the fluid flow and temperature profile inside the vessel.



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