

## RELIABLE ENGINEERED PRODUCTS

Tube Turns Quick Opening Closures (QOC)

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T-BOLT CLOSURE



THREADED QUICK OPENING CLOSURES (QOC)



YOKE STYLE QUICK OPENING CLOSURES (QOC)



TOOL-LESS<sup>®</sup> QUICK OPENING CLOSURES (QOC)

# SERVING THE PIPELINE, ENERGY AND PETROCHEMICAL INDUSTRIES SINCE 1927

Tube Turns Division of Sypris Technologies Inc. manufactures a family of Quick Opening Closure (QOCs) in sizes ranging from 2" to 72". Our closures are manufactured from a wide variety of ASME approved materials including Carbon Steel, Stainless Steel (304, 304L, 316, 316L, Duplex and Super Duplex), Monel®, Inconel®, Hastelloy® and other exotic materials as specified by our customers. Tube Turns can design and manufacture the complete line of closures to international standards including ASME Section VIII Division I and Division II, PD 5500 / BS EN 13445. Tube Turns closures satisfy design requirements in ASME Section VIII, Division 1, B31.3, B31.4, & B31.8. All QOCs can be designed for either horizontal or vertical application and can be equipped with such accessories as sight glasses, nozzles, drains, gauges, sampling ports and safety interlocks. Connection types including full and reduced access as well as mitred designs for inclined or declined vessels are available. Sypris Technologies, Tube Turns Division offers the most diverse and complete QOC product portfolio in the world.

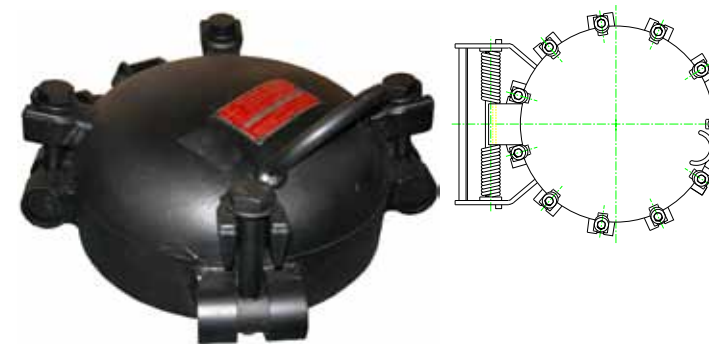
## TYPICAL CLOSURE APPLICATIONS

- Filters
- Basket Strainers
- Filter Separators
- Decompression Chambers
- Sand Blasting Systems
- Pig Launcher and Receivers
- Seawater Injection Filters
- Carbon Filters
- Subsea Systems
- LNG Processing
- Hydrocyclones
- Metering Skids
- Fuel Conditioning Skids
- Containment Systems
- Production Platforms
- Storage Tanks
- Manways
- Inspection Ports
- Reactors
- Sock Filters
- Bag Filters
- Amine Filters
- FPSO (Floating Production Storage and Offloading)
- City Gates



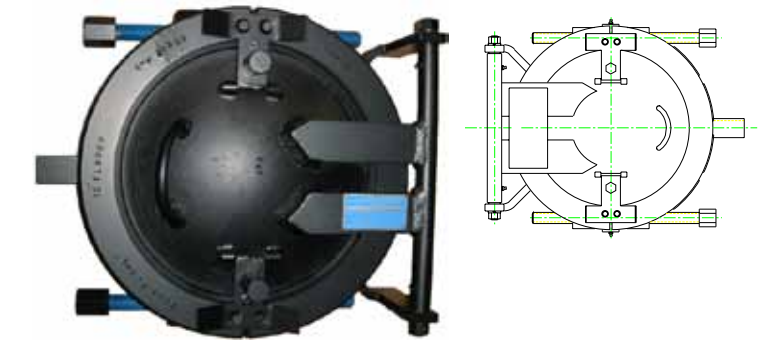
## CLOSURE PRODUCTS

### T-BOLT STYLE CLOSURES



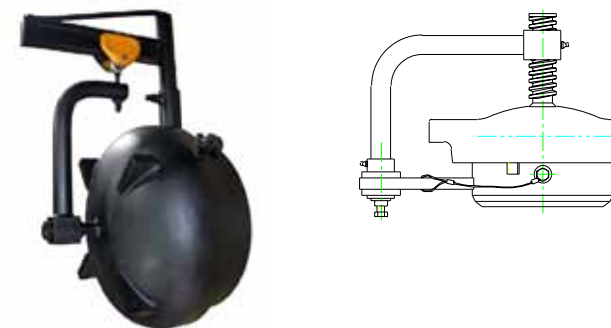
Tube Turns T-Bolt Closures are designed for nominal pressure applications. T-Bolt closures are available for horizontal and vertical applications. Safety plus operating advantages and weight savings over flanged manways make our T-Bolt Closures ideal for applications such as storage tanks, mixing equipment, filters, separators, inspection ports, tower access, reactor access and hand holes on processing equipment. T-bolts can be supplied in specialty applications such as sanitary equipment, medical waste and hyperbaric chambers. Size Range 6" – 66" Pressures up to 500PSI.

### YOKE STYLE QUICK OPENING CLOSURES (QOC)



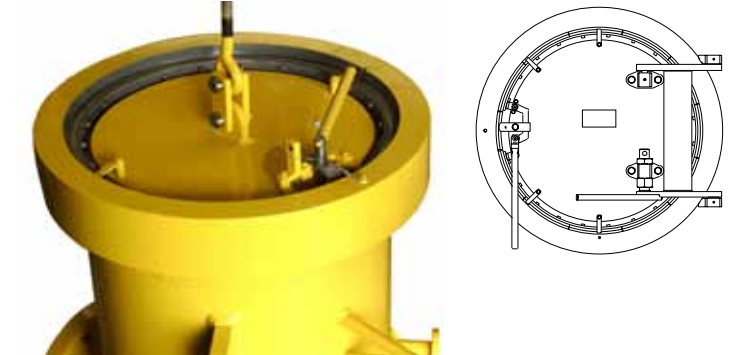
Tube Turns Double Yoke Style Closures are widely accepted throughout the world for applications where frequent access is required or where the blind flanges are cumbersome and time consuming. Yoke Style Closures can be equipped with operating aids to simplify the opening and closing tasks. Devices such as breakover wrenches and chain and sprocket drives are available. Size range 2" – 72" Pressure range ANSI 150 - 2500.

### THREADED QUICK OPENING CLOSURES (QOC)



Design is simple yet robust. Heavy duty davit assembly is furnished for effective alignment of head and hub. Components are manufactured utilizing precision CNC machining to provide accurate and consistent dimensions. Threaded closures are economically priced with attractive lead times to meet the most demanding customer requirements. Size Range 2" – 24" pressures ANSI 150 - ANSI 900  
Size Range 26" – 36" pressure ANSI 150 - ANSI 600.

### TOOL-LESS® QUICK OPENING CLOSURES (QOC)



Tool-less® closures are high pressure quick opening closures (QOC) supplied in the vertical or horizontal configuration. The Tool-less® is designed to be opened and closed by one person in one minute without the use of additional tools. Tool-less® closures are suitable for use on natural gas filter separators where filter element replacement requires frequent vessel access. Horizontal Tool-less® closures include double-pivot heavy duty hinge while the vertical closures can be furnished with a robust davit to raise the door once unlocked. Size Ranges 8" – 72" Pressure range ANSI 150 – ANSI 2500.