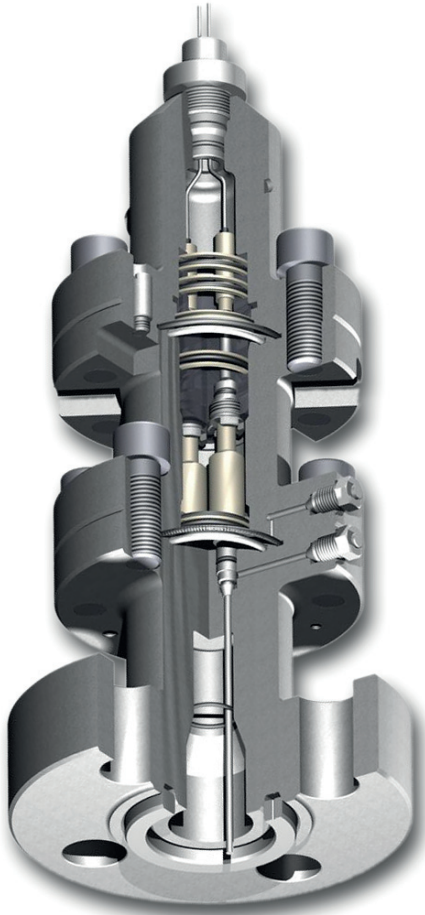


WellConnect™ Subsea WHO Electrical Penetrator

The Wellhead Outlet (WHO) Penetrator is a Dry Mateable Subsea Electrical Connector designed to provide continuous electrical connection through Wellhead equipment. Typically this will be from a Tree mounted Wet mateable Connector to a Diver/ROV Connector situated at the Junction Box. The connector is mounted to a Flange which is then mounted to a pre-machined face on Wellhead equipment. The mating half of the Connector is terminated to an Oil Filled Subsea Jumper via an Omnitec Mk 2 interface.



Key Performance Features

- Flexible Design Suiting any Wellhead Prep
- Ease of termination
- Scoop Proof Contact Pins
- Earth Continuity
- 2 Live Contacts

Qualification Testing

- Contact Resistance
- Insulation Resistance
- Proof Voltage
- Hydrostatic Pressure Test
- PR2 Test (Pressure & Thermal Cycle)
- Vibration Test
- Gas Test
- Reverse Pressure Test

Operational Requirements

- Location within completion: Subsea, Wellhead
- Rated Pressure: 15,000 Psi
- Test Pressure: 22,500 Psi
- Working Temperature range: 0°F to 300°F (-18°C to 150°C)
- Storage Temperature range: -40°F to 158°F (-40°C to 70°C)
- Deployment Water Depth: 0-10,000ft (0-3,048m)

Mechanical Requirements

- Crimp Termination Strength: >75% UTS of Cable
- Cable Pull Out Force: >1300 lbf (5783N)
- Connection Cycle Life: >100
- Sealing: M-M Primary, Elastomeric Secondary
- Orientation: Keyed interfaces

Electrical Specification

- Maximum Working Voltage: 1000 Vdc
- Test Voltage: 2500 Vdc
- Maximum Working Current: 5 A
- Maximum contact resistance at 20°C: <2.5m
- Insulative Resistance at 20°C: > 10G Ω
- Insulative Resistance at 121°C: > 500M Ω
- Number of Contacts: 2/3
- Electrical Insulation Thermoplastic, Elastomer or Dielectric Fluid

Material Specification

- Housing Options: Stainless Steel 316 SAF 2205, 17-4PH
- Stainless Steel or HS Cupronickel in compliance with ISO15156/NACE MR0175
- Contact Gold Plated Copper Alloy
- Insulation: PEEK 450G or Equivalent
- Seal Options: Hydrogenated Nitrile Rubber, Fluorosilicone, Rubber or Silicone

Design Philosophy

- Ease of Termination
- Electrical Contacts: 2+1 or 1+1 (2 lives +1 Earth)
- Crimp Termination
- Pressure Testable

Interfaces

- WHO Interface API and Grayloc Sealing Flanges, as per customers requirements.
- Including as minimum; 1-11/16", 2-1/16" - APIBX 150, 152 Ring
- Tree Cable Termination 1/8" Encapsulated/Hydraulic Tube or 1/4" Encapsulated/Hydraulic Tube
- Oil Filled Jumper/Hose Termination Omnitec Mk 2 Fitting

