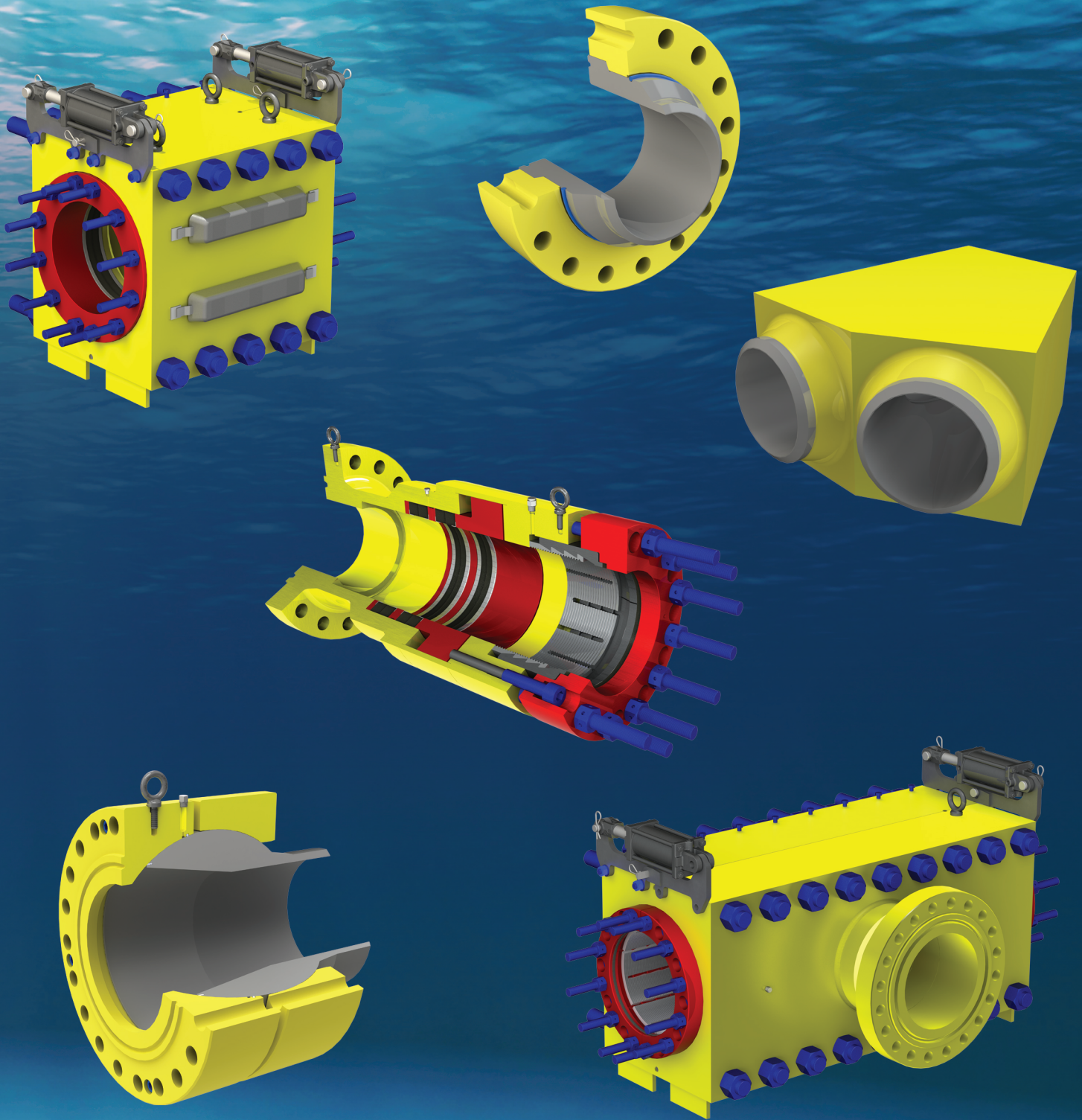


# TITAN

SUBSEA INNOVATIONS

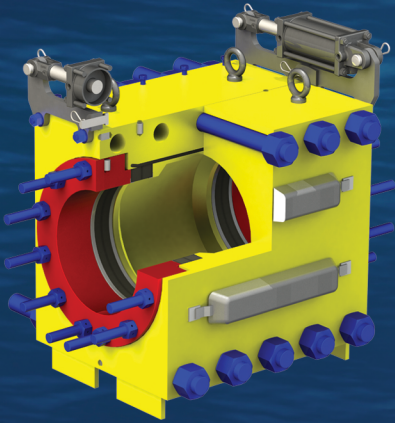


**SUBSEA PIPELINE CONNECTOR SPECIALIST**



# TITAN SUBSEA INNOVATIONS, LLC

Titan Subsea Innovations, LLC is a Houston-based subsea pipeline connector company that provides unique engineered solutions for new construction, repairs, tie-ins, abandonments, and re-routes. In conjunction with engineered solutions, Titan Subsea Innovations provides offshore technical support for product installations. Titan offers quick turnaround deliveries to clients using stock components that are essential for performing emergency pipeline repairs.

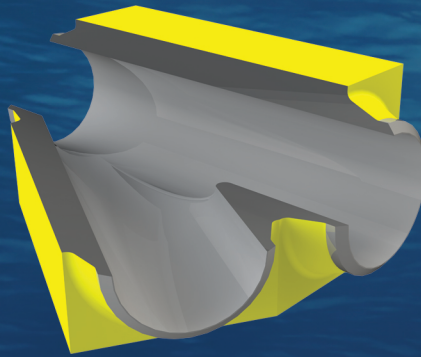


## LEAK REPAIR CLAMP

The Titan Leak Repair Clamps are split sleeve fittings designed to encapsulate a localized leak on the pipeline. Titan offers a Full Structural design which includes internal grips to reinforce the structural integrity of the pipeline and the Non-Structural design which has no gripping mechanism, only mechanically energized.

- Hydraulic cylinders and hinges to assist with opening/closing of the clamp during installation
- Cathodic Protection
- Mechanically Energized Seals
- Standard Viton Seals

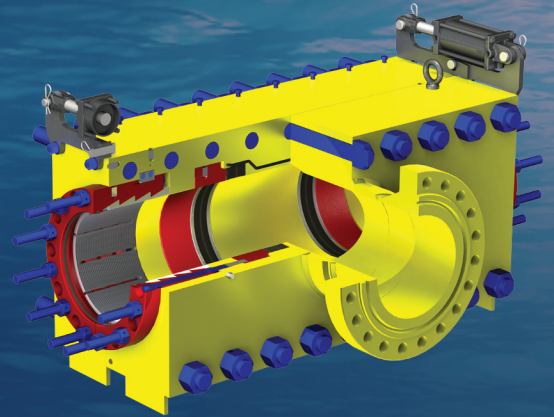
Diverless options available. Please contact us for further information.



## PIGGABLE WYES

Titan Subsea Innovations Piggable Wye is a "Y" shaped pipeline fitting designed to facilitate the pigging and cleaning of lateral subsea pipeline systems which tie-in to major transmission lines. The wye is a flow combiner for subsea pipeline tie-ins with two inlets which flow out the single exhaust end of the wye. The finished machined product consists of two piping inlets, each configured at an angle of 15 degrees from the centerline of the fitting for a 30 degree included angle of entry between the two inlets.

Titan offers the Piggable Wye in two designs: "Asymmetrical" and "Symmetrical." Both designs readily accept standard pipeline pigs. Titan offers the wye in a WE x WE x WE or RTJ x RTJ x RTJ configuration.



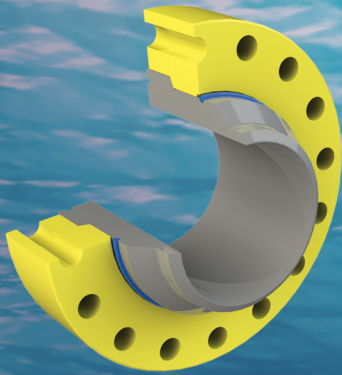
## INTEGRITEE™ TAP FITTING

The Titan IntegriTee™ Tap Fitting provides the means to hot tap subsea pipelines without having to shut down the pipeline.

- Collet Gripping System is fully reversible and will remain attached even if the fitting is reopened after installation
- Standard Viton Seals
- Full Pressure End Load for Structural Reinforcement to the Pipeline
- "Inboard" Seal design greatly reduces pressure containing area of the fitting.



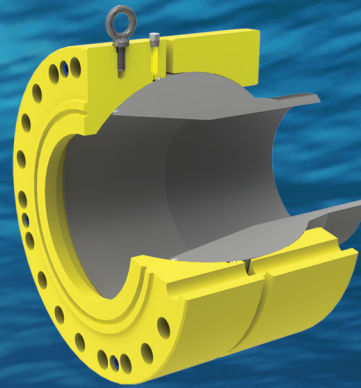
# INNOVATIVE ENGINEERED SOLUTIONS



## SWIVEL RING FLANGE

The swivel ring flanges adjust for bolt hole misalignment in the field via rotational adjustment of the bolt hole pattern on the flange ring relative to the spool- piece.

- 360° bolt hole rotation to align with mating flange holes for ease of bolt insertion
- Removable Retainer Ring feature permits cleaning of ring groove prior to installation
- Compliant design to ASME, Section VIII requirements
- RTJ & RF seal faces available



## TITAN MISALIGNMENT FLANGE

The Titan Misalignment Flange provides ease of makeup to an industry standard flange face where rotational and angular misalignment induces complications. These features significantly reduce installation time by easing the assembly process and removes stresses that would otherwise be induced by forced rotation and articulation of the spool piece during makeup.

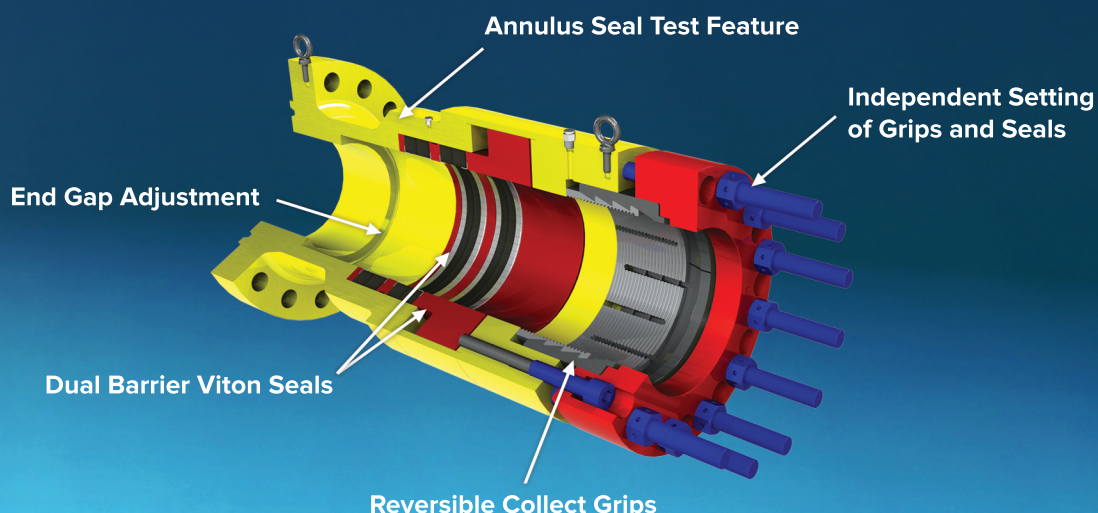
- Provides angular adjustment of +10° (20° included)
- 360° bolt hole rotation to align with mating flange holes for ease of bolt insertion
- Repeatable, integral metal-to-metal seal
- Annulus test port and seal test feature
- RTJ & RF seal faces available

## TITAN MECHANICAL END CONNECTOR

The Titan Mechanical Connector is utilized to accomplish pipeline repairs, and to assist with other Subsea projects such as reroutes and abandonments which require the insertion of a flanged tie-in point into an existing pipeline system.

The Titan Mechanical Connector has been developed to help offshore pipeline companies accomplish these projects in a timely and cost-effective manner, while providing the required long-term operational integrity for the subsea environment.

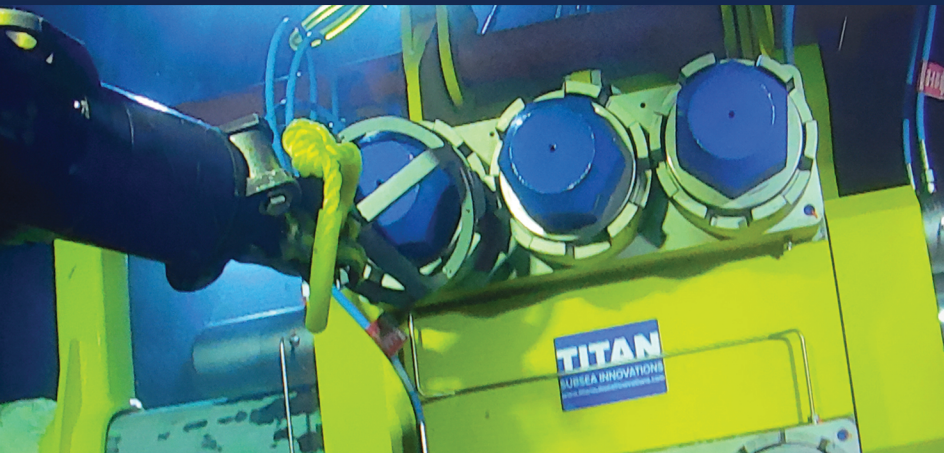
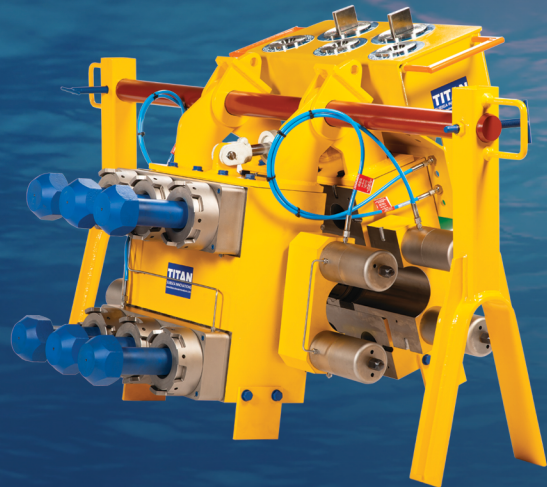
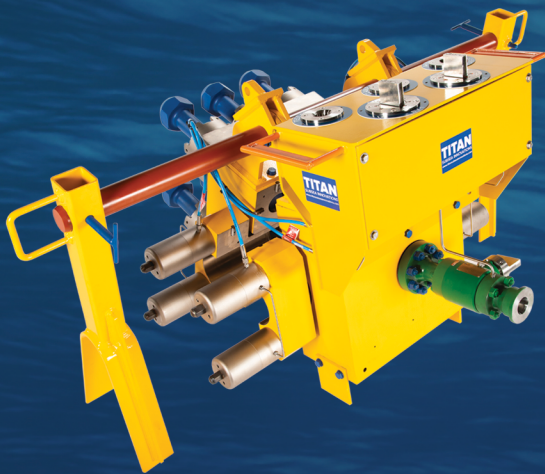
Diverless options available. Please contact us for further information.





# Titan Diverless IntegriTee™ Tap

The Titan Diverless IntegriTee™ Tap Fitting is a split, mechanical hot tap fitting which provides the means to hot tap existing Deepwater flow lines and pipelines without having to shut down the pipeline. The Titan Diverless IntegriTee™ Tap is installed by a remote operating vehicle(ROV) in water depth up to 10,000 fsw. The Tap Fitting provides permanent sealing integrity and adds structural reinforcement for the design life of the pipeline.



**Titan designed, manufactured, and successfully installed a 6" x 2" 8900psi Diverless IntegriTee™ Tap Fitting in 5,100 feet of water making it the World's Deepest hot tap installation.**

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