

# Information Sheet

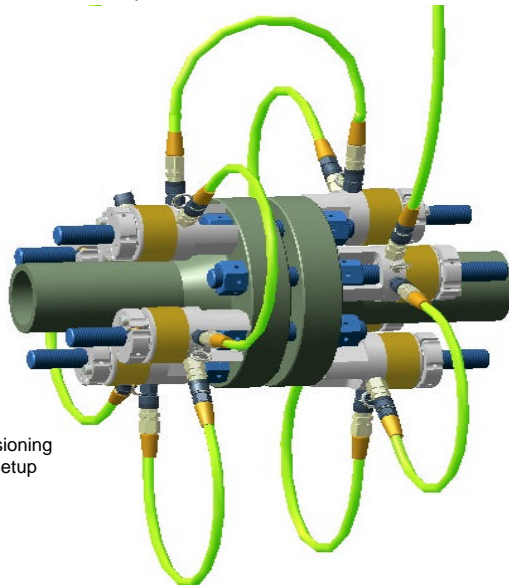
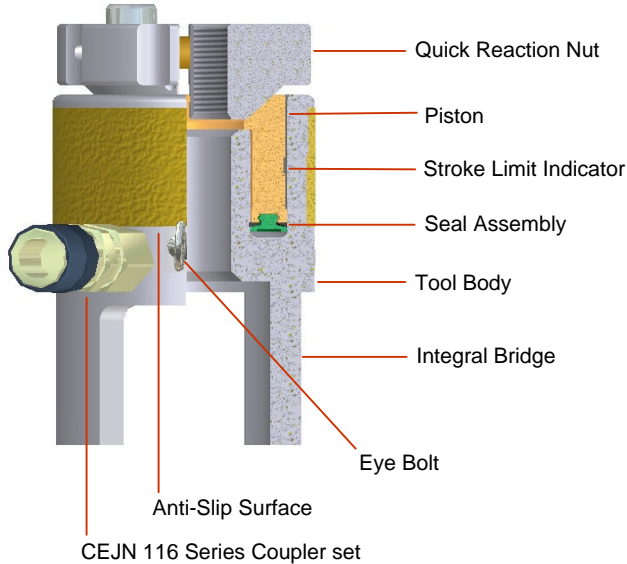


## Bolt Tensioning - Introduction

Bolt Tensioning is a simple and reliable method of applying a preload to a fastener assembly. Bolt tensioning applies a force directly to the bolt and stretches it axially, eliminating most of the factors which provide control problems using other tightening methods such as torque tightening.

A Tensioner is placed over each stud on the joint. They are then interconnected via a harness assembly to a single pump unit. This allows each tool to be pressurised simultaneously providing even loading around the joint. A stretch is applied directly to the bolt which is then retained by the bolts nuts. This in turn provides the clamping force necessary to seal the joint.

## TITON SUBSEA TENSIONER - COMPONENTS



Typical Tensioning application setup

### Piston

The piston features a stroke limit indicator and incorporates an operator safe over-stroke feature, where if maximum stroke is exceeded the oil is directed inward of the tool and away from the operator.

### Seal Assembly

A simple clip-in self energising seal provides 'high cycle' seal life and eliminates the need for time consuming seal adjustments.

### Quick Reaction Nut

Allows the rapid application and removal of the reaction nut by eliminating the need to run the nut down the stud assembly.

Simply click open the nut, slide it over the stud assembly and click it shut again at the appropriate point on the stud.

Eliminates the need to clean full length of stud assembly on de-tensioning applications during IRM work.

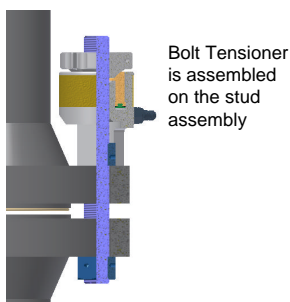
Estimated time savings of over 50% can be noted when using quick reaction nuts instead of standard solid nuts – saving valuable diving time.

### Coupler Assembly

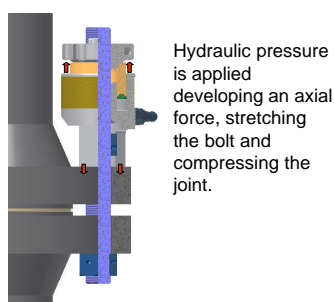
Simple 'quick disconnect' coupler system offers quick connection and removal of the harness assembly.

### Anti-Slip Surface

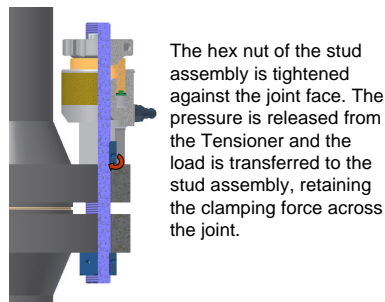
A renewable Anti-Slip grip surface improves tool handling.



Bolt Tensioner is assembled on the stud assembly



Hydraulic pressure is applied developing an axial force, stretching the bolt and compressing the joint.



The hex nut of the stud assembly is tightened against the joint face. The pressure is released from the Tensioner and the load is transferred to the stud assembly, retaining the clamping force across the joint.