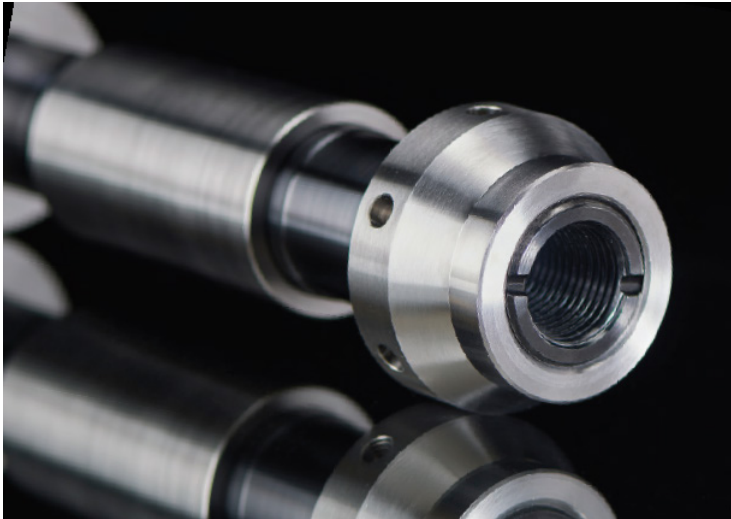




**Next Generation
Hydraulic Coupling Bolts**



HYCOBOLT The next generation alternative to conventional fitted bolts on rotating machinery:

- Reduce vibration
- Eliminate coupling slippage
- No re-machining
- Lower life cycle costs
- Eliminate outage delays from stuck bolts
- Quicker and easier to install
- Ensure concentricity
- Direct retrofit
- Simple, safe and reliable

The most advanced hydraulic coupling bolt, delivering high performance torque transmission for critical high load rotating shafts and couplings. The HYCOBOLT is a direct retrofit replacement or alternative to a conventional coupling bolt, providing significant benefits through both operational improvements in coupling performance and time saving during plant maintenance periods. The benefits of the HYCOBOLT can be fully exploited when used in high value capital equipment where demanding performance requirements and maximising availability are a priority.

The innovative HYCOBOLT design overcomes the problems of conventional and previous generation coupling bolts with a fast and reliable installation and removal process. The overall coupling performance and capacity is improved by the introduction of the HYCOBOLT supporting the most demanding applications and upgrade paths. The HYCOBOLT offers a significant return on capital investment through time saving, predictable and controlled work-flow scheduling, and maximisation of plant availability.

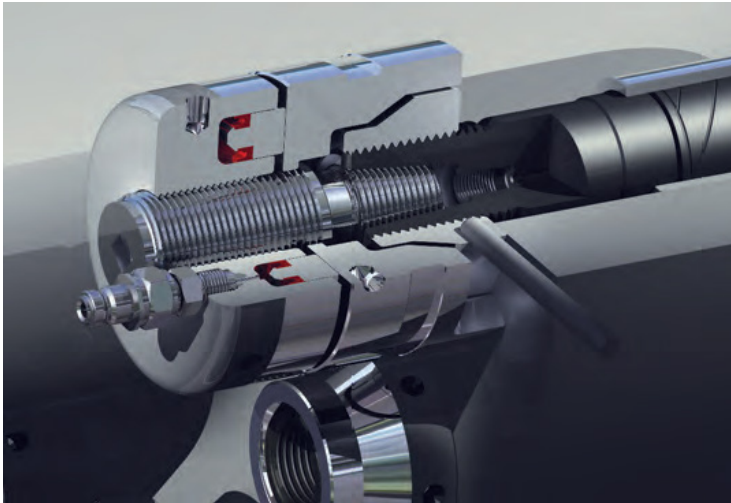
Hydraulic coupling bolt technology is an established solution for the Power Generation industry and is supported by major OEMs. The HYCOBOLT can be used in all types of equipment from conventional steam to high efficiency gas turbines, hydro and wind turbines; also large electric motor drives, marine propulsion shaft lines and heavy rotating machinery.

MULTIPLE APPLICATIONS

- Steam turbines
- Gas turbines
- Hydro
- Wind
- Large electric motor drives
- Marine propulsion shaft lines
- Heavy rotating machinery



**Next Generation
Hydraulic Coupling Bolts**



THE HYCOBOLT ADVANTAGE

- Innovative design
- 30 years experience
- Achievable hole preparation
- Internal seals for superior bolt removal
- Fully nitrided bolt
- Improved installation & removal process
- Simplified compact hydraulic tooling
- Extensive development and test programme
- Reduced bolt stresses

BENEFITS

- Maximise plant availability
- Effective planning
- Time saving solution
- Improved overall coupling performance
- Supports turbine upgrade paths
- Improved site safety
- Reduce unplanned rework
- Reduce vibration
- Reliability



MAXIMISE AVAILABILITY

- No coupling slippage or stuck bolts
- No hole damage or re-machining
- Fast and easy to install and remove
- Concentricity established and held

AVAILABILITY

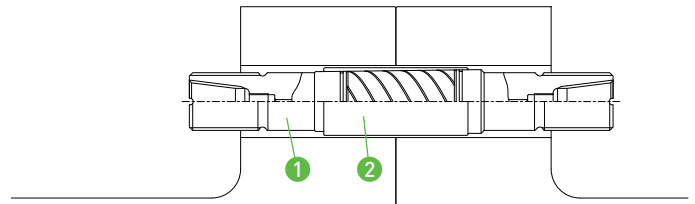
- Retrofit design
- Established
- OEM supported
- User preferred
- All turbines & coupling designs



Hydraulic Coupling Bolt Installation and Removal

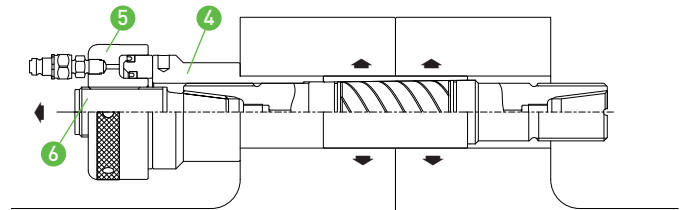
The HYCOBOLT Assembly is Positioned Into the Coupling

- Easy to Install in Clearance Condition
- Achievable Hole Preparation
- Retrofit Design
- All Types of Turbine & Coupling
- Reliable



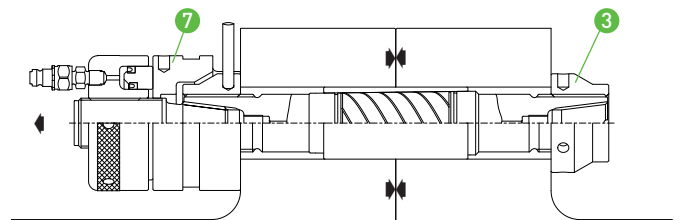
Controlled Expansion of the Sleeve by the Action of the Internal Tapered Bolt & Sleeve

- Fully Fitted Condition Achieved
- No Coupling Slippage or Stuck Bolts
- Fast & Easy to Install & Remove
- Concentricity Established & Held
- Black Nitride Surface Treatment of Bolt



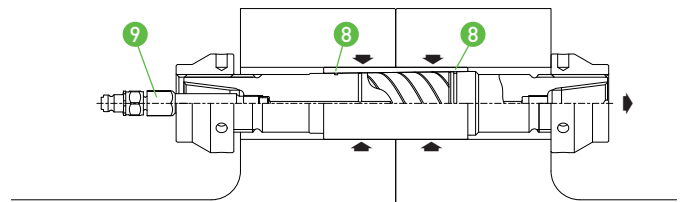
Hydraulic Tensioning Provides Balanced Loading of the HYCOBOLT

- Superior Installation & Removal Process
- Simplified Compact Hydraulic Tooling
- Proven & Safe Taper Thread Connection
- Controlled & Even Bolt Loading
- Unique HYCOBOLT Elongation Verification



After De-tensioning the HYCOBOLT is Removed by Oil Injection of the Internal Taper

- Unique Sealing for Bolt Removal
- Clearance Condition is Re-established
- Predictable & Effective Planning
- No Hole Damage or Re-machining
- The HYCOBOLT is completely Reusable



Key:

- | | |
|---------------------|------------------|
| 1. HYCOBOLT | 6. Puller |
| 2. Sleeve | 7. Load Bridge |
| 3. Nut | 8. Optional Seal |
| 4. Expansion Bridge | 9. Injector |
| 5. Tensioner | |