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Wire Locking

A Smarter Alternative

Wire locking is widely used in the aerospace industry to guard against components such as securing bolts and nuts on tube fittings working loose during service.

Until recently, the technique was rarely employed on subsea instrumentation fittings. In fact, Parker has ample field data to show that its two-ferrule compression fittings provide reliable performance over more than 40 years – making locking devices unnecessary.

However, now that energy companies are seeking to recover oil and gas from ever deeper offshore locations, the cost of retrieving subsea equipment for routine maintenance, repair or overhaul is escalating even further.

In response, some OEMs are starting to fit wire locks to instrumentation tube compression fittings for deep sea applications, primarily to indicate that the fitting is secure and has not been tampered with or undergone any mechanical change since installation.

The disadvantages of wire locking

Unfortunately, wire locking is not without its disadvantages. It involves the use of pre-drilled parts – which cannot easily be retrofitted – and is only suitable for some types of fittings. The wire that is used is normally stainless steel, which is sharp and difficult to manipulate. And in the case of wire-locked compression tube fittings, it is important that the wire is not tensioned in such a way that it could cause the nut to rotate slightly and potentially compromise connection integrity.

The biggest downside of wire locking is its cost. Correct installation demands skill and is time consuming – it can take anywhere between five and 15 minutes per component, depending on accessibility. On a typical subsea xmas tree containing several hundred instrumentation tube compression fittings this can easily account for tens of hours of extra assembly time.

Unique 'fit-and-forget' solution

There is now a highly cost-effective alternative to wire locks for two-ferrule instrumentation compression tube fittings.

Called WireFree, this patent-pending locking clamp was originally developed by Parker for a major manufacturer of subsea xmas trees, which sought a better alternative to wire locking compression tube fittings.

The clamp is about five times stronger than a wire lock, can be fitted in minutes and is equally suitable for new and retrofit applications. It is also ideal for replacing existing wire locks during standard MRO operations – the wire merely needs to be removed first.

Parker's WireFree compression fitting locking clamp is fabricated almost entirely from 6Mo stainless steel for superb corrosion resistance, with an open construction that minimizes crevices.

Quick and easy installation

Supplied preassembled as a single part, WireFree is particularly simple to install. Depending on configuration, it comprises one or more flexible clamp arms with pre-attached rigid support plates. The support plates incorporate self-retaining M4 socket head cap screws and Spiralock self-locking thread technology.

To lock both compression nuts on a standard 90˚ elbow fitting, for example, the installer simply places the clamp arms around the nuts and tightens a single securing screw to the recommended torque.

No modification, realignment or disassembly of the fitting is involved and the entire installation process typically takes less than two minutes.

Main features

- **Unique wire-free design – five times stronger than wire locks**
- **Typically less than two minutes to install**
- **6Mo stainless steel construction with minimal crevices**
- **Supplied preassembled – no separate parts**
- **Straight, elbow, tee and cross configurations**
- **Models for 1/4 - 1 inch (6 - 25 mm) fittings, with more sizes to follow**

Parker believes that its new WireFree locking clamps offer an ideal solution for OEMs seeking a more reliable and cost-effective alternative to wire locking instrumentation tube compression fittings on deep sea equipment. They are also likely to prove popular for topside equipment such as compressors and hydraulic power units.

WireFree locking clamps are available in elbow, as well as straight, tee and cross configurations.

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