

Hydraulic Control for Subsea and Onshore Christmas Trees

Parker Autoclave Engineers Medium Pressure Connectors
Application Story



ENGINEERING YOUR SUCCESS.

Hydraulic Control for Christmas Trees

Medium-pressure Parker Autoclave Engineers coned-and-threaded tube fittings deliver proven, high-integrity solutions for the 15,000 PSI connections required for hydraulic services to subsea and on-shore ‘christmas trees’.

Parker Autoclave Engineers valves, fittings and tube are the preferred solution for connecting hydraulic services that run from offshore platforms and vessels to all of the different configurations of subsea ‘Christmas trees’ for hydraulic control on offshore, and similarly for onshore oil and gas production wellheads.

Handling the pressures

The first and most fundamental requirement in this application is the ability to handle the pressures involved. Tree manufacturers apply API monograms to their trees to show they are rated for 15,000 PSI service (although these pressures are continually tending to rise as oil and gas production moves to more remote and deeper environments).

In this application, the Parker Autoclave Engineers Medium Pressure valves, fittings and tube with their 20,000 PSI ratings provide the required pressure-handling performance.

The connector of choice

Coned and threaded fittings are the primary type of fittings used in this application over other forms of coupling technology.

Coned and threaded fittings have always been preferred connection, and the inherent conservatism in this and many other critical and safety related areas of oil and gas production, mean that they are invariably the connector of choice.

Parker Autoclave Engineers valves, fittings and tube dominate this particular application field. This stems partly from the historical reason that Parker Autoclave Engineers designed and developed the original coned joint (many users will refer to this connector by our name, even sometimes when it comes from another manufacturer of coned and threaded fittings) and the fact that our connections were in original design specifications for this type of equipment. Today, Parker Autoclave Engineers fittings

are preferred by most leading Christmas tree manufacturers, and this has a significant impact on our current dominant market share and ongoing business opportunities (Parker Autoclave Engineers has considerably more than 50% of the market).



Parker Autoclave Engineers cone and threaded medium pressure fitting (up to 20,000 PSI).

Why Parker’s coned-and-threaded fittings?

- Industry-standard solution for this application
- Up to 20,000 PSI metal-to-metal sealing
- World’s most extensive track record in this application
- Design leadership in this oil and gas application
- Designed to meet or exceed API 17D wellhead specifications
- Comprehensive choice of anti-corrosion materials
- Also consider related markets: TUTUs, HPU’s, chemical injection.

Parker's Expertise

Parker has the longest and broadest track record and experience in this application, and we are not aware of a single failure of our fittings in this application when the coned joint is correctly formed and correct make-up procedures have been followed.

Other reasons for ongoing preference are based on the continued work and support in this sector provided by Parker Autoclave Engineers to its customers.

Examples of these factors include:

- The company's work in designing and manufacturing to meet or exceed API wellhead specifications
- The availability of dedicated support engineers to help specifiers and designers working in this area
- The comprehensive choice of fittings manufactured using the best and preferred anti-corrosion materials (including 6Mo, Super Duplex and Inconel 625 alloys - as well as a sour service option)
- And the very high quality manufacturing procedures of the company.

One advantage over some other connection technologies (such as welded joints for example) is the ability to break and remake fittings for maintenance and repair purposes.

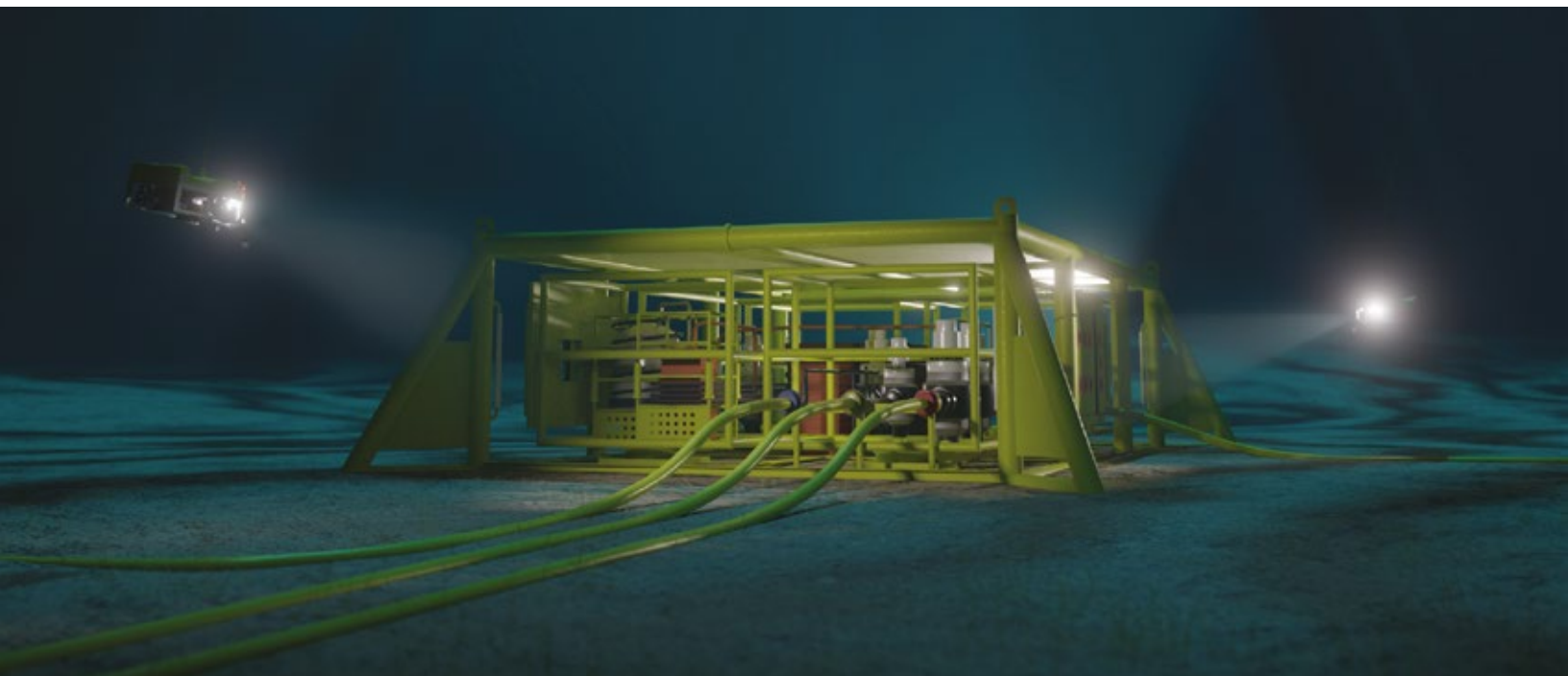
In today's safety conscious oil and gas world we know of one user that lifts its 'christmas trees' every 6 to 7 years, and replaces all of the fittings purely as a precautionary measure. There is no technical need to change the fittings, this is a safety-is-paramount strategy on behalf of the user (other concerns such as corrosion would also factor in this kind of decision of course).



Parker Autoclave Engineers valves, fittings and tubing.



Parker Autoclave Engineers sour service fitting (up to 30,000 PSI).



The Product

Parker Autoclave Engineers Medium Pressure cone and thread connectors.

Specification:

- This is a coned-and-threaded connection designed for fluid and gas handling applications in the chemical/ petrochemical, research, and oil and gas industries.
- Rated for working pressures to 20,000 PSI (1379 bar).
- Available in comprehensive range of shapes (straight, elbow, tee, cross, bulkhead) in 1/4", 3/8", 9/16", 3/4", 1" and 1-1/2" sizes.
- Manufactured from cold worked 316/316L stainless steel as standard (other materials available optionally).
- Operating temperatures from -423°F (-252°C) to 1200°F (649°C).

Key benefits of cone and thread:

- Metal to metal seal
- No elastomer sealing materials
- Uncompromising reliability under rigorous pressure/ thermal cycling
- No maintenance required
- Easy and quick to assemble
- Low torque assembly provides high sealing force
- Incorrect assembly visible via weep hole (check can be done using compressed air)
- Can disassemble/reassemble repeatedly
- High factor of safety
- Anti vibration option

Note that we manufacture imperial sizes only, which are preferred in most of the major applications we target.

Parker Autoclave Engineers also offers a comprehensive selection of small-bore instrumentation valves for medium pressure applications, including ball, needle, relief and check valve designs - plus safety heads with rupture discs - and multi-valve manifolds. Pneumatic/electric-actuated valve designs also available for high risk processes or unmanned areas.

