

TYPE APPROVAL CERTIFICATE**This is to certify:
That the Pipe Couplings**with type designation(s)
MorsafeIssued to
Hydratight Ltd
Darlaston WEST MIDLANDS, United Kingdomis found to comply with
ASME B31.3, Chemical Plant and Petroleum Refinery Piping, 1999
DNV-OS-E201 "Oil and Gas Processing Systems" April 2013
ASME B16.5, Pipe Flanges and Flanged Fittings, 2003
2010 ASME Boiler and Pressure Vessel Code VIII Div. 2 Rules for Construction of Pressure Vessels**Application :****Clamp with two different applications:**
securing pressurized ASME B16.5 flange connections with degraded bolting
maintenance barrier for ASME B16.5 flange connections during live bolt renewing**Temperature range: -101°C to 250°C (-150°F to 480°F)**
Max working pressure: Equal maximum ASME B16.5 rating pressure from CL150 and up and including CL1500
Sizes: All 4-bolt ASME B16.5 flange connections up and including CL1500 rating**Temperature range: -101°C to 250°C**
Max. working press.: 20 - 250 bar
Sizes: 0.5 - 3.0 InchesThis Certificate is valid until **2019-06-30**.Issued at **Høvik** on **2015-05-11**for **DNV GL**DNV GL local station: **Oslo Mooring, Diving & Offshore Equipment**Approval Engineer: **Walter Storesund**.....
Inger-Helene Hals
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Certificate No: **P-15294**
File No: **792.20**
Job Id: **262.1-019701-1**

Product description

Clamp with two different applications:

- securing pressurized ASME B16.5 flange connections with degraded bolting
- maintenance barrier for ASME B16.5 flange connections during live bolt renewing

Temperature range: -101°C to 250°C (-150°F to 480°F)

Max working pressure: Equal maximum ASME B16.5 rating pressure from CL150 and up and including CL1500

Sizes: All 4-bolt ASME B16.5 flange connections up and including CL1500 rating

Application/Limitation

Temperatures down to -101 °C provided pressure reduced to 50% of design pressure (at end of blow down).

Tolerances: ISO 2768-1 fine

Allowable external forces: Statoil TR 1968 Ver. 4 Appendix J.

Material requirements: Material selection based on minimum design temperature for the application, but minimum 300MPa yield strength. TA design assessment is based on EN10025-2 S355J2. Clamps for permanent application to have similar properties as the original flanges.

Design life: Allowable number of bolt pretensions is 200 before bolt replacement

Type Approval documentation

See [techdocs](#).

Tests carried out

- 3" CL150 with graphite gasket
- 1,5" CL300 with graphite gasket
- 1,5" CL600 with spiral wound gasket
- 1,5" CL600 with Ring Type Joint gasket
- 1,5" CL1500 with spiral wound gasket
- 1,5" CL1500 with Ring Type Joint gasket

Applied external forces according to Statoil TR 1968 Ver. 4 Appendix J.

Marking of product

Product to be marked with Type Approval Certificate Number.

Periodical assessment

Every 4 years