

# Certificate of Type Approval

*This is to certify that the design methodology and the manufacturing processes for the product identified below was found to be in compliance with the stated Regulations and Standards*


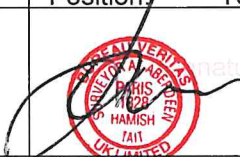
**Product:** Techlok Clamp Connectors

**Manufactured by:** Freudenberg Oil & Gas Technologies  
Unit 18, Baglan Industrial Park,  
Baglan, Port Talbot,  
West Glamorgan,  
Wales

**Specified regulations and standards:** API Specification 6A: 21<sup>st</sup> Edition: 2018  
ASME BPVC.VIII-1: 2019  
ASME BPVC.VIII-2: 2019  
BS EN ISO 15156: 2015  
ANSI/NACE MR0175: 2015

*We further certify that the manufacturer's arrangements for consistently manufacturing the product in accordance with the approved type have been assessed and found to be satisfactory.*

***This Type Approval Certificate is valid until: 05/11/2023***

<b>Issued by:</b>  Bureau Veritas UK Limited Craigshaw Business Park Craigshaw Road AB12 3AR Aberdeen	<b>Author:</b> Abdul Hashmi <b>Position:</b> Senior Engineer   <b>Date:</b> 03/09/2019	<b>Approved by:</b> Hamish Tait <b>Position:</b> Technical Manager   <b>Date:</b> 03/09/2019
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## Certificate Revision History

Revision	Reason for Revision
0	Initial Issue

## Schedule of Approval

### 1 Product Description:

**Techlok Clamp Connector**

Standard Duty Size Range:	<b>1"; 1-1/2"; 2"; 3"; 4"; 5"; 6"; 8"</b>
Light Duty Size Range:	<b>L14"; L16"; L18"; L20"; L24"</b>
Heavy Duty Size Range:	<b>H2"; H3"; H4"; H8"; H10"; H12"; H14"; H16"; H18"; H20"; H22"; H24"; H26"</b>

### 2 Application/Limitations:

Field of Application:	Offshore, Onshore, Petrochemical & Industrial
Temperature Range:	Material Dependant (Various)
Working pressure (Max.):	Temperature and Material Dependant (Various)

Note: Pressure rating must be based on the materials and temperature, and bolt material should be compatible with hub/clamp material.

#### Typical Use:

Fresh and sea water lines, drilling mud lines including choke and kill lines, wells service lines for cementing, fracturing, acidizing and flow testing-Hydrocarbon lines hydraulic lines including B.P.P. control lines, general service and utility lines.

The above-mentioned couplings are suitable for both Standard and Sour service (AA, BB, CC, DD, EE, FF & HH) as stated in the API Specification 6A: 21<sup>st</sup> Edition: 2018 and are also suitable for temperature classifications K, L, N, P, S, T, U, V, X & Y.

Couplings used at elevated temperatures (X & Y) shall be de-rated in accordance with the requirements of the latest editions of API Specification 6A, ASME BPVC.VIII-1 and ASME BPVC.VIII-2.

Couplings intended for offshore use are to be manufactured in accordance with the requirements of Product Specification Level (PSL) 3, as required.

Material Impact values shall be by agreement between the customer and Freudenberg Oil & Gas Technologies and shall adequately reflect the requirements of the intended field of service. If no agreement is been made, Impact tests shall be carried out in accordance with the procedures specified in ASTM A370 or ISO 148-1 using Charpy V-notch technique. When using ISO 148-1, a striker with a radius of 8 mm shall be used. In order to qualify a material for a given temperature rating, impact tests shall be performed at (or below) the lowest temperature. A minimum of three specimens shall be satisfactorily tested to qualify a heat of material. Wrought products may be tested in the longitudinal direction instead of the transverse direction and then shall exhibit a minimum average value of 27J, in accordance with Section 6.3.2.3 of API Specification 6A: 21<sup>st</sup> Edition: 2018.



### 3 Design Calculations /Drawings and Specifications:

VS0043 Rev. 0	Dimensions for standard hubs
VS0045 Rev. A	Dimensions for standard clamp segments
VS0044 Rev. 0	Dimensions for standard seals
14ABD00787 Rev. A	Bureau Veritas Certificate of Type Approval
V003-03-2016	Techlok connector technical data sheet
Report-01 Rev. 0	8in82 8inNBSch 40 - Techlok calculation (dated 30/10/2018)
Report-01 Rev. 0	1in11 1inNBSch 40S - Techlok calculation (dated 22/05/2019)
Report-02 Rev. 0	2in20 2inNB Sch 80S) - Techlok calculation (dated 22/05/2019)

### 4 Material Specifications:

The following pressure vessel/piping and offshore materials are considered as applicable to the Techlok clamp connectors. Other recognised industry material grades will also be considered acceptable, if used in conjunction with the design rules of ASME VIII.

Equivalent, or similar, material grades are also considered acceptable.

Specific customer requirements such as corrosion testing, impact testing, chemical analysis, deviation (from standard specifications) and special mechanical requirements shall be by agreement with Freudenberg Oil & Gas Technologies and are outside the scope of this Type Approval.

HUB	CLAMP	BOLTING / NUT	SEAL RING
ASTM A182 (F316L/F316, F347, F321, F22, F44, F51, F53, F55)	AISI 4130/ 4140	ASTM A193 (B7, B7M, B8, B16)	ASTM A182 (F316L/F316, F44, F51, F53, F55)
ASTM A105 N	ASTM A193 (B7)	ASTM A194 (7)	AISI 4140
ASTM A350 (LF2)	ASTM A350 (LF2)	ASTM A320 (L7, L43)	A564 (GR 630)
ASTM A694(F52, F60, F65, F70)	ASTM A182 (F304/F316, F22, F51)		A638 (GR 660)
AISI 4130			B564 (UNS N06625)
			B637 (UNS N07718)

Note: The components manufactured from F316L/F316, apart from seal rings, shall not be exposed to sour conditions. If exposed, the maximum operating temperature is restricted to 60°C as per BS EN ISO 15156: 2015 / NACE MR0175: 2015.

Unless otherwise specified (by agreement between customer and Freudenberg Oil & Gas Technologies) all wetted components shall comply with the requirements of BS EN ISO 15156: 2015 / NACE MR0175: 2015 when connectors are used in a sour environment.

### 5 Fabrication/Testing Procedures:

Bureau Veritas conducted an initial Audit to assess the quality management system (QMS) arrangements, carried out on 2<sup>nd</sup> – 4<sup>th</sup> April 2019 and detailed in Type Approval Audit Report No. BV-TYP-2019-01 Rev. 01, and practices in place for Techlok clamp connectors at Freudenberg Oil & Gas Technologies.

As a result of the Type Approval Audit, it was concluded by the Auditor that Freudenberg Oil & Gas Technologies have adequate systems in place which are in compliance with the specified regulations and standards and Bureau Veritas Type Approval Procedure (M&ODW-019 Rev. 04).

Note: For certificate retention refer to Section 8 of this Certificate of Type Approval.

**6 Type Test reports/Laboratory Reports/Certificates:**

Bureau Veritas has witnessed hydrostatic leak tests performed on a sample of Techlok clamp connector which are documented by the following inspection reports:

19ABD10408 Rev. 0

**7 Marking of Product:**

Product marking shall comply with the requirements of the applicable standards as listed in page 1 and relevant material specification(s) as detailed in section 4 of this certificate.

**8 Certificate Retention:**

The Type Approval is valid only if the certificate retention process is followed by the approval of manufacturer's quality management system (QMS) with annual surveillance by Bureau Veritas.

**9 Documentation to accompany each product:**

- Design Documents
- Detailed Engineering Drawings
- Calculation Report
- Specific Torque Values / Installation Procedure
- Operating Manual
- Manufacturing Record Book (MRB)\*

\* Note: The MRB shall be in accordance with the requirements of applicable standards as listed in page 1 and relevant material specification(s) as detailed in section 4 of this certificate.

**10 Comments:**

- 10.1 This Certificate of Type Approval is considered to contribute towards a Duty Holder's obligation for the verification of the equipment's design under the requirements of the following regulations:
- SI-913 (1996) The Offshore Installations and Wells (Design and Construction, etc.) Regulations
  - SI-2306 (1998) The Provision and Use of Work Equipment Regulations (PUWER)
- 10.2 Freudenberg Oil & Gas Technologies shall demonstrate all relevant documents including design reports and calculations on a case-by-case basis for each project specific product. Design reports shall also document limitations stated in section 2 of this Certificate of Type Approval.
- 10.3 This Type Approval certifies that the design methodology and the manufacturing processes for the Approved Type were found to be in compliance with the stated regulations and standards.
- When in-service this product shall be subject to Verification and Examination and comply with the applicable shelf state requirements.

**End of certificate**