



Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product. This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 01/JUN/2020. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until 26/APR/2020 subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Pipe Fittings
Model Name(s): Crossover Fitting 2F x 3F

Presented to:
SANDONG METAL IND. CO., LTD.
24-25 2 SANEOPDANJI 2-GIL
WAEGWAN-EUP
Korea, Republic of

| | |
|------------------------------|--|
| Intended Service: | Installation on Interconnection Piping between Drilling Equipment |
| Description: | API Specification 6A Fitting Fig. 1502 Crossover 2F x 3F |
| Tier: | 3 |
| Ratings: | Design Pressure: 15,000 psi Design Temperature: -29 degrees Celsius ~ 82 degrees Celsius (Temperature Classification: P) Steel Grade/Standard: AISI 4130 / ASTM A29, AISI 4140 / ASTM A29, SCM 440 / KS D 3867 |
| Service Restrictions: | 1. Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined. 2. All fittings are to be installed in accordance with the Manufacturer's assembly instructions and 4-6-2/9.6 of the Steel Vessels Rules. 3. Copies of the certificate of material test reports are to be made available to the attending Surveyor and are to be traceable to the material used. |
| Comments: | 1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product. 2. The material test report is to be made available to the attending Surveyor. (Tensile Strength: Minimum 110 KSI, Yield Strength: Minimum 90 KSI) 3. The test report of the Charpy impact test as per 2010 API Specification 6A is to be made available to the attending Surveyor. 4. The proof document for service in H2S containing environment in accordance with 2009 NACE MR0175 is |

to be made available to the attending Surveyor.

Notes / Documentation:

Drawing No.: X06A066A1, Fitting FIG 1502 Crossover 2F X 3F, Revision: 0

Term of Validity:

This Product Design Assessment (PDA) Certificate 15-BK1359967-PDA-DUP, dated 28/Aug/2015 remains valid until 26/Apr/2020 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

ABS Rules:

2015 Steel Vessels Rules: 1-1-4/7.7, 1-1/A3 and A4, 4-6-2/9.6, 4-6-2/5.15 2015 Mobile Offshore Drilling Units Rules: 1-1-4/9.7, 1-1/A2 and A3, 4-2-2/1.3, 6-1-6/Table 1 2012 (Up-dated February 2014) Guide for the Classification of Drilling Systems: Section 4/Table 1 (Components: Interconnecting Piping), Section 5 and 6

National Standards:

2010 API Specification 6A 2014 ASME B31.3 2009 NACE MR0175


International Standards:

Government Authority:

EUMED:

Others:

| Model Certificate | Model Certificate No | Issue Date | Expiry Date |
|-------------------|----------------------|-------------|-------------|
| PDA-DUP | 15-BK1359967-PDA-DUP | 28/AUG/2015 | 26/APR/2020 |



ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.