



Type Approval Certificate

This certificate is issued to:

PRODUCER Pennsylvania Machine Works Inc.

PLACE OF PRODUCTION 201 Bethel Avenue,
Aston,
Pennsylvania, 19014
United States of America

DESCRIPTION Pipe Unions

TYPE DN 6 to DN 40 Class 3000 with the options of Socket Weld, NPT(M), NPT(F),
BSPP(M) and BSPP (F) of material ASTM A 105.

DN 8 to DN 40 Class 3000 with the options of Socket Weld,
NPT(M), NPT(F), BSPP(M), BSPP (F) of material ASTM A 182 F316

SPECIFIED STANDARD Regulations for the Classification of Ships- July 2019
Rules and Regulations for Classification of Offshore Units -July 2019
Rules and Regulations for Classification of Naval Ships- January 2019
IACS UR P 2.11 – Rev 4 March 2016
ASME B 31.3 - 2016

Ratings 58 to 1088 PSIG at 100 °F.

Certificate No. 19/60003

Issue Date 22 Oct 2019

Expiry Date 21 Oct 2024

Sheet 1 of 2

Gopal Nair



Lloyd's Register Quality Assurance, Inc.
1330 Enclave Parkway, Suite 200,
Houston, Texas - 77077

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Limitations

- a) For application to specific systems refer to Rules and Regulations for the Classification of Ships- 2019 Part 5, Chapter 12 section 2.12 and table 12.2.7 & 12.2.8
- b) All pipe unions are metal to metal seated, there are 'no components which readily deteriorate' in case of fire and accordingly fire test is not carried out on the pipe unions.
- c) Pipe unions with threaded connections -where threaded sleeve joints and threaded couplings are used with carbon steel pipes within the limits given in Part 5, Chapter 12 Table 12.2.6 will be governing. Such joints are not to be used where fatigue, severe erosion or crevice corrosion is expected to occur or where flammable or toxic media is conveyed.
- d) Pipe unions with socket weld joints may be used in Class III systems with carbon steel pipes of any outside diameter. Socket weld fittings are to be of forged steel and the material is to be compatible with the associated piping. In particular cases, socket weld joints will be permitted for piping systems of Class I and II having outside diameter not exceeding 88,9 mm. Such joints are not to be used where fatigue, severe erosion or crevice corrosion is expected to occur or where toxic or asphyxiating media are conveyed, other than for carbon dioxide fire-extinguishing distribution piping,
- e) Shock and blast loading are not considered for naval applications and if required for specific naval projects shock and blast loading additional requirements should be considered.
- f) The pressure temperature rating listed is based on ESL test data provided during type approval testing for IACS UR P2.11 and for higher temperatures the applicable pressure should be reduced in consultation with the manufacturer of the pipe unions.

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid certificate."

The Design Appraisal Document No. 19/60003 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Certificate No. 19/60003
Issue Date 22 Oct 2019
Expiry Date 21 Oct 2024
Sheet 2 of 2

Gopal Nair



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DESIGN APPRAISAL DOCUMENT

Date 22 Oct 2019	Quote this reference on all future communication
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LLOYD'S REGISTER TYPE APPROVAL SYSTEM, 2014.

Issued to: Pennsylvania Machine Works Inc.

for: Pipe Unions

TYPE APPROVAL CERTIFICATE No. 19/60003

The undernoted documents have been reviewed for compliance with the requirements of the Lloyd's Register Type Approval System, 2014 and this Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

Form 2502 TA

LRNA Philadelphia Inspection and Surveillance report PRJ11088857

LRQA ISO Certificate 10223287

Pressure Pulsation and Vibration testing Infinity Testing Solutions 18010355

ESL Technology IACS UR PR 2-11 Testing ESL-19-011

Catalogue Female Socket and Male thread union

April 27, 2018

Nov 15, 2022

Dec 15, 2017

July 14, 2019

Feb 2019

Supplementary Type Approval Terms and Conditions

Type Approval certifies that a representative sample of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any product(s) designed or manufactured otherwise than in strict conformity with the said representative sample.

Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.

Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.

Lloyd's Register reserves the right to cancel or withdraw this Type Approval Certificate in accordance with the Lloyd's Register Type Approval System Procedure.

Gopal Nair
Principal Specialist
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Part 1A
 Subject: Pipe and Pipe Couplings
 Product: Bolted Clamp Connectors (Part 1A)

Producer/Licence No.	Description of Product				Cert. No.
	Type	Details of Approval	Application	Remarks	
Pennsylvania Machine Works Inc. 201 Bethel Avenue, Aston, Pennsylvania, 19014 United States of America	Pipe Unions	DN 6 to DN 40 Class 3000 with the options of Socket Weld, NPT(M), NPT(F), BSPP(M) and BSPP (F) of material ASTM A 105. DN 8 to DN 40 Class 3000 with the options of Socket Weld, NPT(M), NPT(F), BSPP(M), BSPP (F) of material ASTM A 182F316 58 to 1088 PSIG at 100 °F	Refer to Certificate No. 19/60003 for allowable marine applications and restrictions	Expires: 21 Oct 2024	19/60003