



Marine & Offshore

Certificate number: 29152/B0 BV

File number: ACM 135/2704/01

Product code: 2170H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

Tube-Mac Piping Technologies LTD
Ontario - CANADA

for the type of product

PIPE COUPLING WITH O-RING SEAL
PYPLOK Compression coupling swage type

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units
- BUREAU VERITAS Rules for the Classification of Naval Ships

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 07 Nov 2022

For Bureau Veritas Marine & Offshore,

At BV PORT EVERGLADES CENTRE, on 07 Nov 2017,
Flavio Rosas



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

PYPLOK Compression coupling swage type with 2 O-ring seals each end

1.1 Maximum Operating Pressure rating according to type of pipe and size - psi (bar)

Tube/Pipe (Inch)	1/4"	3/8"	1/2"	5/8"	3/4"	1"	1-1/4 "	1-1/2"	2"
NPS Carbon Steel	5000 (345)	5000 (345)	4917 (339)	-	4833 (333)	4750 (328)	4708 (325)	4708 (325)	4000 (276)
NPS SS316	6000 (414)	6000 (414)	5900 (407)	-	5800 (400)	5700 (393)	5650 (390)	5650 (390)	4800 (331)
NPS Cu/Ni	2830 (195)	2830 (195)	2830 (195)	-	2830 (195)	2772 (191)	2758 (190)	2685 (185)	2322 (160)
O.D. Carbon Steel	5833 (402)	4833 (333)	5083 (351)	5083 (351)	5000 (345)	4833 (333)	4833 (333)	4708 (325)	4000 (276)
O.D. SS316	7000 (483)	5800 (400)	6100 (421)	6100 (421)	6000 (414)	5800 (400)	5800 (400)	5650 (390)	4800 (331)
O.D. Cu/Ni	3411 (235)	2830 (195)	2975 (205)	2975 (205)	2932 (202)	2830 (195)	2830 (195)	2758 (190)	2322 (160)

Tube/Pipe (mm)	6	8	10	12	15	16	18	20
Metric Carbon Steel	5417 (374)	5167 (356)	5000 (345)	4833 (333)	4835 (335)	4833 (333)	3750 (260)	4708 (325)
Metric SS316	6526 (450)	6200 (428)	6000 (414)	5800 (400)	5800 (400)	5800 (400)	4500 (310)	5650 (390)
Metric Cu/Ni	3150 (217)	3034 (209)	2932 (202)	2831 (195)	-	2831 (195)	-	2758 (190)

Tube/Pipe (mm)	22	25	28	30	35	38	42
Metric Carbon Steel	3690 (255)	4708 (325)	3625 (250)	4708 (325)	3560 (245)	4708 (325)	4708 (325)
Metric SS316	4405 (305)	5650 (390)	4350 (300)	5650 (390)	4275 (295)	5650 (390)	5650 (390)
Metric Cu/Ni	-	2758 (190)	-	2758 (190)	-	2758(190)	2758(190)

Tube/Pipe (mm)	44.5	50	57	60
Metric Carbon Steel	-	5100 (293)	-	4000 (276)
Metric SS316	-	4250 (352)	-	4800 (331)
Metric Cu/Ni	450 (31)	2482 (171)	450 (31)	2337 (161)

1.2 Temperature range (°C) depending on sealing material according to manufacturer's recommendations

O-ring seal	Temperature (°C)
Perbunan	-20°C / +180°C
Viton	-20°C / +200°C

1.3 Material specification

Part	Material
Fittings	Carbon Steel (ASTM A350 Grade LF2, ASTM A105) Stainless Steel (ASTM A479 Grade 316/316L, Grade S32205, Grade S32750) Copper Nickel (Alloy 71500, 70/30 CuNi)
O-ring	Perbunan Viton

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

2. DOCUMENTS AND DRAWINGS

- Catalogue PYPLOK Fittings dated 09/2017

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

- PYPLOK Type test programme dated 20/08/2009
- Hydraulic Proof Pressure test N°C5126A dated 31/07/2009
- Hydraulic Proof Pressure test N°C7513A dated 01/08/2009
- Gas leakage test N°C5126C dated 01/08/2009
- Gas leakage test N°C7513C dated 01/08/2009
- Minimum Hydraulic Burst Pressure test N° C5126B dated 31/07/2009
- Minimum Hydraulic Burst Pressure test N° C7513B dated 01/08/2009
- Hydraulic Impulse/Fatigue test N° C5126D dated 01/08/2009
- Hydraulic Impulse/Fatigue test N° C7513D dated 01/08/2009
- Vibration test N° C5126E dated 01/08/2009
- Vibration test N° C7513E dated 01/08/2009
- Fire Resistance test (acc ISO 19921) N°01.17787.01.802 dated 14/03/2013
- Pull-out test N° 18.18055.16.612 dated 11/10/2016 witnessed by a Class Society' Surveyor

4. APPLICATION / LIMITATION

4.1 The couplings with O-ring may be used for piping system of Class I, II, & III :

- **Flammable fluids (flash point $\leq 60^{\circ}\text{C}$)** - cargo oil (2), crude oil washing (2), vent lines
- **Inert gas** - water seal/scrubber effluent, main lines (1+2), distributions lines (2)
- **Flammable fluids (flash point $> 60^{\circ}\text{C}$)** - cargo oil (2), fuel oil (1), lubricating oil (1), hydraulic oil (1), thermal oil lines (1)
- **Sea water** - bilge/ballast/cooling water, water/non-water filled fire extinguishing systems, fire main, tank cleaning/non-essential lines
- **Fresh water** - cooling water, condensate return, non-essential lines
- **Deck drains (internal)** (3), sanitary drains, scuppers and discharge (overboard)
- **Sounding and venting** - water tanks/dry spaces, oil tanks (flash point $> 60^{\circ}\text{C}$) (1)
- **Miscellaneous** - service air (non-essential), brine, steam, starting/control air, CO2 system

(1)- *Not inside machinery spaces of category A or accommodation spaces. May be accepted in other machinery space provided the joints are located in easily visible and accessible positions.*

(2)- *Only in pump rooms and open decks*

(3)- *Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.*

4.2 The seal material is to be compatible with the fluid to be conveyed and the maximum working temperature in accordance with the manufacturer's instructions.

4.3 Austenitic stainless steel is not to be used for sea water applications.

4.4 The use of copper-nickel alloy is to be restricted as per the requirements of the Society's Rules.

4.5 In all cases, the associated pipes are to be suitably supported and anchored. The joints are to be at any time accessible, excepting inside tanks where permitted by the Society's rules.

4.6 Couplings and O-rings are to be assembled with pipes in accordance with the assembly instructions given by the manufacturer.

4.7 The approval does not cover any pipes penetration through watertight bulkheads and fire divisions.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be supplied by **Tube-Mac Piping Technologies LTD** in compliance with the type described in this certificate.

5.2 This type of product is within the category HBV of Bureau Veritas Rule Note NR320.

5.3 **Tube-Mac Piping Technologies LTD** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products

For information, **Tube-Mac Piping Technologies LTD** has declared to Bureau Veritas the following production site:

Tube-Mac Piping Technologies LTD
853 Arvin Ave, Stoney Creek, ON, L8E 5N8, Ontario,
CANADA

6. MARKING OF PRODUCT

Each product shall be clearly marked with at least:

- Manufacturer's name or logo
- Type designation
- Size

7. OTHERS

It is **Tube-Mac Piping Technologies LTD**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

This certificate supersedes the Type Approval Certificate N° 29152/A3 BV issued by the Society.

***** END OF CERTIFICATE *****