



Marine &amp; Offshore

Certificate number: 42938/B0 BV

File number: ACM 135/2750/2

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*

**HSME Corporation**

BUSAN - KOREA (REPUBLIC OF)

*for the type of product*

**MECHANICAL JOINTS - COMPRESSION COUPLINGS - PRESS TYPE**

**M Type TUBE FITTINGS**

**Requirements:**

Bureau Veritas Rules for the Classification of Steel 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: 05 Jan 2026**

**For Bureau Veritas Marine & Offshore,**

At BV PUSAN, on 05 Jan 2021,

Chang-Uk HONG



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](http://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

#### **M Type TUBE FITTINGS**

##### 1.1 Models

AU, AUR, AUB, ABL, AUA, AUBA, AL, ALR, AT, ATR, AX, AXR, AMC-N, AMCB-N, AMC-R, AMC-G, AMC-GB, AMC-UF, AMF-UO, AMC-NO, ALBM-N, ALBS-UP, ALM-N, ALM-R, ALM-GR, ALS-UP, ATRS-UP, ATBS-UP, ATRM-N, ATBM-N, ATBM-R, ACF-N, ACF-R, ACF-GG, ACBF-N, ALF-N, ATRF-N, ATBF-N, AR, AAB, ALA, ATRA, ATBA, ACSW, ALSW, ACBW, ALBW, ABUW, AC, AF, AFC, AEU

##### 1.2 Ratings

Temperature range (°C)	Stainless steel: - 196 up to + 600 Carbon steel: -28 up to + 450
Max. working pressure (bar)	352 up to 650
Size (mm / inch)	3 ~ 25 / 1/8" ~ 1"

- M tube fitting maximum working pressure at 20°C:

Tube O.D (inches)	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"	7/8"	1"
Tube O.D (mm)	3	4	6	8	10	12	16	18	22	25
Max working pressure (bar)	650	612	584	552	527	503	474	434	366	352

##### 1.3 Temperature range for sealing materials (°C)

When elastomer seal is used in the fitting, care must be taken according to the manufacturer's recommendations.

Seal material	Working temperature range (°C)
NBR	25 to + 110
FKM	- 28 to + 204
FFKM	- 30 to + 315

The pressure reduction factors according to the manufacturer's specification are to be observed.

Working temperature range (°C)	Pressure reduction factors Carbon steel	Pressure reduction factors Stainless steel
20	1.00	1.00
50	1.00	0.95
100	1.00	0.85
150	0.89	0.77
200	0.81	0.71
250	0.72	0.67
300	0.65	0.63
350	0.59	0.60
400	0.54	0.58
450	0.50	0.57
500	-	0.56
550	-	0.55
600	-	0.50

##### 1.4 Materials

Material	ASTM	JIS
Stainless steel	ASTM A276 Type 316/316L ASTM A479 Type 316/316L ASTM A182 F316/316L	JIS G4303 SUS316/316L JIS G3214 SUS F316/316L
Carbon steel	ASTM A108 ASTM A105	JIS G4041 S20C ~S53C JIS G4051 S20C ~ S53C

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

## **2. DOCUMENTS AND DRAWINGS**

- Type approval test plan Rev.1 at HSME Corporation test room dated from 19/03/2015 to 22/04/2015
- HSME Corporation catalogue "M Tube Fitting" including installation and operation instructions N° MT-3.2013 dated 2013

*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**

Tests carried out, witnessed by a Class Society's Surveyor:

- Repeated assembly test and tightness test reports dated 19/03/2015 and 26/03/2015
- Burst test at 4 times the maximum working pressure report dated 03/04/2015
- Vibration test and pressure pulsation test report dated 22/04/2015
- Pull-out test report dated 22/04/2015

Fire resistance test and vacuum test not performed

## **4. APPLICATION / LIMITATION**

4.1 May be used on board for services of Class I, Class II & Class III:

- Flammable fluids (flash point  $\leq 60^{\circ}\text{C}$ ) - cargo oil (4), crude oil washing (4), vent lines (3)
- Inert gas - water seal/scrubber effluent, main lines (2+4), distributions lines (4)
- Flammable fluids (flash point  $> 60^{\circ}\text{C}$ ) - cargo oil (4), fuel oil (2+3), lubricating oil (2+3), hydraulic oil (2+3), thermal oil lines (2+3)
- Sea water - bilge/ballast/cooling water (1), water/non-water filled fire extinguishing systems (3), fire main, tank cleaning/non-essential lines
- Fresh water - cooling water (1), condensate return (1), non-essential lines
- Deck drains (internal) (5), sanitary drains, scuppers and discharge (overboard)
- Sounding and venting - water tanks/dry spaces, oil tanks (flash point  $> 60^{\circ}\text{C}$ ) (2+3)
- Miscellaneous - starting/control air (1), service air (non-essential), brine, CO2 system (1), steam

(1)- Inside machinery spaces of category A – only approved fire resistant types.

(2)- 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.

(3)- Approved fire resistant types except in cases where such mechanical joints are installed on exposed open decks, as defined in SOLAS II-2/Reg. 9.2.3.3.2.2 (10) and not used for fuel oil lines.

(4) Only in pump rooms and open decks – only approved fire resistant types.

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

4.2 The reduction factors according to the manufacturer's specification are to be observed.

4.3 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 BUREAU VERITAS Rules.

4.4 The wall thickness and material of the tubes are to be in accordance with BUREAU VERITAS Rules.

4.5 The selection of pipes, fittings and seals must be compatible with the fluid to be conveyed and the maximum working temperature according to the manufacturer's recommendations.

4.6 The use of stainless steel is restricted as per BUREAU VERITAS Rules.

4.7 Threaded bulkhead fittings are not approved through watertight or fire bulkheads.

4.8 Assembly instructions given by the manufacturer are to be complied with.

## **5. PRODUCTION SURVEY REQUIREMENTS**

5.1 - The products are to be supplied by **HSME Corporation** in compliance with the type described in this certificate and in compliance with the requirements stated on the front page of this certificate.

5.2 - This type of product is within the category HBV of BUREAU VERITAS Rule Note NR 320.

5.3 - **HSME Corporation** has to make the necessary arrangements to have its works recognized by BUREAU VERITAS in compliance with the requirements of NR 320 for HBV products.

5.4 - No BUREAU VERITAS Certificate is required.

5.5 - For information, **HSME Corporation** has declared to Bureau Veritas the following production site:

**HSME Corporation**  
**8, Hwajeonsandan 5-ro**  
**Gangseo-gu**  
**BUSAN**  
**KOREA (REPUBLIC OF)**

## **6. MARKING OF PRODUCT**

The product shall be marked clearly and indelibly with at least:

- Manufacturer's name or logo
- Type designation
- Maximum working pressure
- Size

## **7. OTHERS**

It is **HSME Corporation'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° 42938/A0 BV issued by the Society.*

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