



Marine & Offshore

Certificate number: 40273/B0 BV

File number: ACM 135/2750/1

Product code: 2161H

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
PIPE FITTINGS
 DIN Type TUBE FITTINGS (DIN 2353)

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: 10 Nov 2025

For Bureau Veritas Marine & Offshore,
 At BV PUSAN, on 10 Nov 2020,
 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. 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.

The electronic version is available at: <http://www.veristarp.com/veristarnb/jsp/viewPublicPdfType.jsp?id=8eqkjkfsxu>
 BV Mod. Ad.E 530 June 2017

This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

I. PRODUCT DESCRIPTION

DIN Type tube fittings (DIN 2353)

1.1 Models

EU, EBU, EBUW, EUR, EL, EBL, ET, ETR, EX, ELM-R, ELM-MK, EMC-N, EMC-R, EMC-GB, EMC-MK, EMC-MB, EMC-GE, EMC-ME, EMC-UF, EMC-MF, EFC-G, EFC-M, EFC-GG, EGA-GG, EGE-GG, EAS, EAK, EASK, EAKR, ELA, EBTA, ERTA, ER, EKOR, EA-GE, EA-ME

1.2 Ratings

Temperature range (°C)	Stainless Steel: - 60 to + 400 Steel: - 40 to + 120
Max. working pressure (bar)	100 to 630
Tube O.D. (mm)	4 to 42

Pressure ranges at 20°C:

- DIN type tube fittings made of stainless steel

LL Series	Tube O.D (mm)	4	6	8	10	12					
	Max working pressure (bar)	100	100	100	100	100					
L Series	Tube O.D (mm)	6	8	10	12	15	18	22	28	35	42
	Max working pressure (bar)	315	315	315	315	315	315	160	160	160	160
S Series	Tube O.D (mm)	6	8	10	12	14	16	20	25	30	38
	Max working pressure (bar)	630	630	630	630	630	400	400	400	400	315

- DIN type tube fittings made of steel

LL Series	Tube O.D (mm)	4	6	8	10	12					
	Max working pressure (bar)	100	100	100	100	100					
L Series	Tube O.D (mm)	6	8	10	12	15	18	22	28	35	42
	Max working pressure (bar)	315	315	315	315	315	315	160	160	160	160
S Series	Tube O.D (mm)	6	8	10	12	14	16	20	25	30	38
	Max working pressure (bar)	630	630	630	630	630	400	400	400	400	315

1.3 Temperature range for sealing materials (°C)

When sealing materials (O-Rings) are used in the fittings EAK, EASK, EAKR, care must be taken according to the manufacturer's recommendations:

Seal material	Working temperature range(°C)
NBR	- 35 to + 100
FKM	- 25 to + 200
PTFE (Teflon)	- 60 to + 240

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

Fitting material	Working temperature range (°C)	Pressure reduction
Stainless Steel	- 60 to + 20	-
	- 60 to + 50	4%
	+ 100	11%
	+ 200	20%
	+ 300	29%
	+ 400	33%
Steel	- 40 to + 120	-

1.4 Materials

Part Names	Materials
Fittings	Stainless steel 316: ASTM A276 Type 316/ A182 F316, X6CrNiMoTi 17-12-2 to DIN 17440 (1.4571)
	Steel: ASTM A108 / A105, JIS G4051 S20C - S45C, DIN1651 / 9SMn28K
Seals	NBR, FKM, PTFE (Teflon)

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

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

2. DOCUMENTS AND DRAWINGS

- DIN type approval test plan Rev.0 dated 23/01/2014

- HSME Corporation catalog including installation instructions and tube guide N°DIN-2 dated July 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 Classification Societies:

- Repeated assembly test and tightness test reports dated 06/02/2014, 13/02/2014, 20/02/2014

- Burst test report dated 27/02/2014

- Vibration test and pressure pulsation test report dated 27/03/2014

- Pull-out test report dated 06/03/2014

- Fire endurance test and vacuum test not carried out

4. APPLICATION / LIMITATION

4.1 May be used on board for the services of class I, II, III piping systems: Hydraulic and lubricating oil, fuel oil, thermal oil, compressed air, steam and condensate, fresh water and sanitary.

4.2 Not to be used when fire resistant type is required.

4.3 Not to be used in systems exposed to vacuum.

4.4 The reduction factors according to the manufacturer's specification regarding wall thickness and temperature are to be observed.

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 BUREAU VERITAS Rules.

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

4.7 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.

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

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

4.10 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 NR320 and as such does not require a BV product certificate.

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 For information, **HSME Corporation** has declared to Bureau Veritas the following production site(s):

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

6. MARKING OF PRODUCT

Each fitting shall be at least marked with:

- Manufacturer's name or logo
- Size
- Material

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 No. 40273/A0 BV issued by the Society.

*** END OF CERTIFICATE ***