

HSME Corporation
8, Hawjeonsandan-5ro, Gangseo-gu, Busan,
Republic of Korea

Lloyd's Register Asia

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Date 27 September 2018
Your ref -
Our ref BUS/TYK/BUS1806271/O
-7869

Welcome to the Lloyd's Register List of Type Approval.

Lloyd's Register (LR) is one of the world's foremost ship classification societies.

We are a leading independent technical inspection, certification and advisory organisation, operating worldwide in the marine, offshore and industrial sectors.

We aim to provide risk management solutions to enhance our clients' quality, safety, environmental and business performance.

We are pleased to inform you that the Type Approval Certificate of the subject product is granted and will be included in the appropriate part of the List of Lloyd's Register Type Approved Products. These lists appear, in English, on the Lloyd's Register web site which is updated regularly (<http://www.cdlive.lr.org/information/>).

Please find enclosed herewith a Type Approval Certificate, associated Marine Design Appraisal Documents, a copy of List Entry for presentation to your company and PQA report.

Please be noted that this Type Approval is conditional upon you complying with the requirements of the LR Type Approval procedure, it should also be noted that any change in the conditions under which approval was given that affect the validity of the Certificate must be notified to Lloyd's Register without delay.

We believe that your relationship with LR will prove a valuable promotion resource for your company and we look forward to a long and mutually beneficial partnership in the future.

Yours truly,



Lloyd's Register Asia
T. Y. Kim
Busan Port Office

T. Y. Kim
Surveyor

Busan Port Office

Lloyd's Register Asia

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Working together for a safer world

Type Approval Certificate Extension

This is to certify that Certificate No. 16/40056(E1) for the undernoted products is extended and renumbered as shown.

This certificate is issued to:

PRODUCER	HSME Corporation
PLACE OF PRODUCTION	8, Hwajeonsandan 5-ro, Gangseo-gu, Busan, Korea, Republic of.
DESCRIPTION	Stainless steel double ferrule compression type tube fittings
TYPE	M Tube Fittings
APPLICATION	High pressure tube connections for use in marine, offshore and industrial piping systems with hydraulic system fluids, fuel oil, lubricating oil, fresh water, salt water, sanitary, gas, steam and condensate.
DESIGN CODE STANDARD	Part 5, Chapter 12 of the Rules and Regulations for the Classification of Ships (July, 2018) IACS UR P2 'Rules for piping design, construction and testing'

RATINGS

Tube O.D. (inch, mm)		Working Pressure (kgf/cm ²)
1/8"	3	650
3/16"	4	612
1/4"	6	584
5/16"	8	552
3/8"	10	527
1/2"	12	503
5/8"	16	474
3/4"	18	434
7/8"	22	366
1"	25	352

Certificate No.	16/40056(E2)
Issue Date	10 July 2018
Expiry Date	09 July 2023
Sheet	1 of 3



Y. D. Kong

Busan Technical Support Office
Lloyd's Register Marine & Offshore

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Pressure-temperature ratings: designed to ASME B31.3

MATERIALS

ASTM A276 Type 316/316L JIS G4303 SUS316/316L
 ASTM A479 Type 316/316L JIS G3214 SUS F316/316L
 ASTM A182 F316/316L

PERFORMANCE TEST

Representative samples of joints have been tested in accordance with the requirements as specified in IACS UR P2.11 (Rev.4 2016) as follows:-

- 1) Tightness test
- 2) Repeated assembly test
- 3) Burst test
- 4) Vibration test & Pressure pulsation test
- 5) Pull-out test

OTHER CONDITIONS

Where the tube fittings are intended to be installed on a ship classed with LR, the following conditions of acceptance will be applicable:-

- 1) The tube fittings are to be installed and tested in accordance with Part 5, Chapter 13, Section 2, of the Rules and Regulations for the Classification of Ships in so far as applicable.
- 2) The tube fittings are to be made, installed and tested to appropriate pipe class requirements in accordance with Part 5, Chapter 12 of the Rules and Regulations for the Classification of Ships in so far as applicable.
- 3) If compression couplings include any components which are sensitive to heat, they are to be of approved fire resistant type.
- 4) The fittings are to be installed in accordance with the manufacturer's instructions.
- 5) Attention is drawn to Section 3.6 of IMO MSC/Circular.851 – Guidelines on Engine Room Oil Fuel Systems which describes that compression couplings require careful attention to tightening procedures and torques to avoid leaks or damage to the pipe when subjected to overtightening and they should not be used in the fuel supply line of the (oil engine) injection pumps and spill system.

Certificate No. 16/40056(E2)
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 Sheet 2 of 3



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LIMITATION

- 1) Type Approval does not eliminate the need for normal inspection survey procedures required by the Rules and Regulation.
- 2) If the specified standards are amended during the validity of this certificate, the product is to be re-approved prior to it being supplied to vessels to which the amended standards apply.
- 3) (in case of applications other than Marine) The application of this Type Approval Certificate will be limited to the relevant scope of the Specified standards and acceptance thereof by the local authorities.

"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 attached Design Appraisal Document No. 16/40056(E2) and its supplementary Type Approval Terms and Conditions form part of this Certificate.

All other details remain as the previous Certificate No. 16/40056(E1) and associated Design Appraisal Documents to which this extension should be attached.

Certificate No. 16/40056(E2)
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Sheet 3 of 3



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Lloyd's
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Issue number	0

DESIGN APPRAISAL DOCUMENT

Date 10 July 2018	Quote this reference on all future communications BTS/ENG/M183842
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LLOYD'S REGISTER TYPE APPROVAL SYSTEM, 2014.

Issued to: HSME Corporation

for: M Tube Fittings

TYPE APPROVAL CERTIFICATE No. 16/40056(E2)

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

Request for Marine Services, Form 2502TA dated 17 July 2018

Application Checklist - Appendix to Form 2502TA

Production Quality Assessment Form (Form - PQA) dated 17 July 2018

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



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Part 1A
Subject: Pipe Fittings
Product: Compression Fittings (Part 1A)

Producer/Licence No.		Description of Product			Remarks	Cert. No.																																	
Type	Details of Approval	Application																																					
HSME Corporation 8, Hwajeonsandan 5-ro, Gangseo-gu, Busan, Korea, Republic of.	M Tube Fittings Stainless steel double ferrule compression type tube fittings Stainless steel fittings: <table border="1" data-bbox="405 1093 847 1536"> <thead> <tr> <th colspan="2">Tube O.D.</th> <th rowspan="2">Working Pressure (kgf/cm²)</th> </tr> <tr> <th>inch</th> <th>mm</th> </tr> </thead> <tbody> <tr> <td>1/8"</td> <td>3</td> <td>650</td> </tr> <tr> <td>3/16"</td> <td>4</td> <td>612</td> </tr> <tr> <td>1/4"</td> <td>6</td> <td>584</td> </tr> <tr> <td>5/16"</td> <td>8</td> <td>552</td> </tr> <tr> <td>3/8"</td> <td>10</td> <td>527</td> </tr> <tr> <td>1/2"</td> <td>12</td> <td>503</td> </tr> <tr> <td>5/8"</td> <td>16</td> <td>474</td> </tr> <tr> <td>3/4"</td> <td>18</td> <td>434</td> </tr> <tr> <td>7/8"</td> <td>22</td> <td>366</td> </tr> <tr> <td>1"</td> <td>25</td> <td>352</td> </tr> </tbody> </table>	Tube O.D.		Working Pressure (kgf/cm ²)	inch	mm	1/8"	3	650	3/16"	4	612	1/4"	6	584	5/16"	8	552	3/8"	10	527	1/2"	12	503	5/8"	16	474	3/4"	18	434	7/8"	22	366	1"	25	352	High pressure tube connections for use in marine, offshore and industrial piping systems with hydraulic system fluids, fuel oil, lubricating oil, fresh water, salt water, sanitary, gas, steam and condensate.	Expires: 09 July 2023 See certificate for other conditions.	16/40056(E2)
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