


Type Approval Certificate Extension

This is to certify that Certificate No. 02/10007 for the undernoted products is extended and renumbered as shown.

This certificate is issued to:

PRODUCER	Union Metal Industrial Co., Ltd.
PLACE OF PRODUCTION	152 Block - 12 Lot, Namdong Industrial Complex, 725-13, Gojan-Dong, Namdong-Gu, Inchon-City, 405-822 Korea
DESCRIPTION	Uni-Lok Tube Fitting
TYPE	Stainless steel double ferrule compression type tube fittings, inch and metric sizes
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.
STANDARD	LR Rules and Regulations for the Classification of Ships, Part 5, Chapter 12, July 2006 JIS B 2351 - 1990: 25 MPa bite type tube fittings for hydraulic use

Certificate No.	02/10007 (E1)
Issue Date	1 March 2007
Expiry Date	28 February 2012
Sheet	1 of 3



N. Terashita
Yokohama Design Support Office
Lloyd's Register Asia

*Lloyd's Register Asia, registered office:
71 Fenchurch Street, London EC3M 4BS*

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RATINGS

Inch Tubing:-

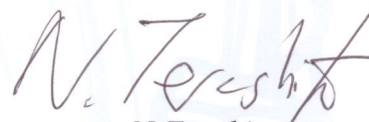
<u>Tube O.D. (inch)</u>	<u>Nominal pressure ratings (psi)</u>
1/16"	5,600 to 12,000
1/8"	8,500 to 10,900
3/16"	5,400 to 10,200
1/4"	4,000 to 10,200
5/16"	4,000 to 8,000
3/8"	3,300 to 6,500
1/2"	2,400 to 6,200
5/8"	2,900 to 6,000
3/4"	2,400 to 5,800
7/8"	2,000 to 4,800
1"	2,400 to 4,700

Metric Tubing:

<u>Tube O.D.(mm)</u>	<u>Nominal pressure ratings (psi)</u>
3	8,500 to 10,900
4	5,400 to 10,200
6	4,000 to 10,200
8	4,000 to 8,000
10	3,200 to 6,400
12	2,400 to 6,200
16	2,900 to 6,000
18	2,500 to 5,900
20	2,400 to 5,800
22	2,000 to 4,800
25	2,400 to 4,700

Pressure-temperature ratings : see the producer's catalogue

Certificate No. 02/10007 (E1)
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 Sheet 2 of 3



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**OTHER
CONDITIONS**

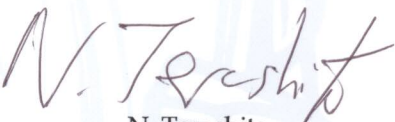
- 1) The fittings are to be installed in accordance with the manufacturer's instructions.
- 2) Attention is drawn to Section 3.6 of IMO MSC/Circular.851 – Guidelines on Engine-Room Oil Fuel Systems which describes that compression couplings require careful attention to tightening procedures and torques 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.

"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 Asia of any modification or changes to the equipment in order to obtain a valid certificate."

The attached Design Appraisal Document No. 02/10007 (E1) and its supplementary Type Approval Terms and Conditions form part of this Certificate.

All other details remain as the previous Certificate No. 02/10007 to which this extension should be attached.

Certificate No.	02/10007 (E1)
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Part 1

Subject: Pipe Fittings

Product: Compression Fittings

Producer/Licence No.		Description of Product			Cert. No.																																																
Producer/Licence No.	Type	Details of Approval	Application	Remarks	Cert. No.																																																
Union Metal Industrial Co., Ltd. 152 Block - 12 Lot, Namdong Industrial Complex, 725-13, Gojan-Dong, Namdong-Gu, Incheon-City, 405-822 Korea	Uni-Lok tube fitting	Stainless steel double ferrule compression type tube fittings, inch and metric sizes Inch tubing:- <table border="0"> <tr> <td>Tube O.D. (inch)</td> <td>Nominal Pressure Ratings (psi)</td> </tr> <tr> <td>1/16"</td> <td>5,600 to 12,000</td> </tr> <tr> <td>1/8"</td> <td>8,500 to 10,900</td> </tr> <tr> <td>3/16"</td> <td>5,400 to 10,200</td> </tr> <tr> <td>1/4"</td> <td>4,000 to 10,200</td> </tr> <tr> <td>5/16"</td> <td>4,000 to 8,000</td> </tr> <tr> <td>3/8"</td> <td>3,300 to 6,500</td> </tr> <tr> <td>1/2"</td> <td>2,400 to 6,200</td> </tr> <tr> <td>5/8"</td> <td>2,900 to 6,000</td> </tr> <tr> <td>3/4"</td> <td>2,400 to 5,800</td> </tr> <tr> <td>7/8"</td> <td>2,000 to 4,800</td> </tr> <tr> <td>1"</td> <td>2,400 to 4,700</td> </tr> </table> Metric tubing:- <table border="0"> <tr> <td>Tube O.D. (mm)</td> <td>Nominal Pressure Ratings (psi)</td> </tr> <tr> <td>3</td> <td>8,500 to 10,900</td> </tr> <tr> <td>4</td> <td>5,400 to 10,200</td> </tr> <tr> <td>6</td> <td>4,000 to 10,200</td> </tr> <tr> <td>8</td> <td>4,000 to 8,000</td> </tr> <tr> <td>10</td> <td>3,200 to 6,400</td> </tr> <tr> <td>12</td> <td>2,400 to 6,200</td> </tr> <tr> <td>16</td> <td>2,900 to 6,000</td> </tr> <tr> <td>18</td> <td>2,500 to 5,900</td> </tr> <tr> <td>20</td> <td>2,400 to 5,800</td> </tr> <tr> <td>22</td> <td>2,000 to 4,800</td> </tr> <tr> <td>25</td> <td>2,400 to 4,700</td> </tr> </table> Pressure-temperature ratings : see the producer's catalogue Tested to JIS B 2351 - 1990	Tube O.D. (inch)	Nominal Pressure Ratings (psi)	1/16"	5,600 to 12,000	1/8"	8,500 to 10,900	3/16"	5,400 to 10,200	1/4"	4,000 to 10,200	5/16"	4,000 to 8,000	3/8"	3,300 to 6,500	1/2"	2,400 to 6,200	5/8"	2,900 to 6,000	3/4"	2,400 to 5,800	7/8"	2,000 to 4,800	1"	2,400 to 4,700	Tube O.D. (mm)	Nominal Pressure Ratings (psi)	3	8,500 to 10,900	4	5,400 to 10,200	6	4,000 to 10,200	8	4,000 to 8,000	10	3,200 to 6,400	12	2,400 to 6,200	16	2,900 to 6,000	18	2,500 to 5,900	20	2,400 to 5,800	22	2,000 to 4,800	25	2,400 to 4,700	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: 28 February 2012 See certificate for other conditions.	02/10007 (E1)
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