

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	HANSUN ENGINEERING CO LTD																											
Address	27, Noksansandan 361-ro, Gangseo-gu, Busan, Republic of Korea																											
Place of Production	HANSUN ENGINEERING CO LTD 27, Noksansandan 361-ro, Gangseo-gu, Busan, Republic of Korea																											
Type	Compression Fittings																											
Description	Bite type compression tube fittings for stainless, carbon steel and brass																											
Trade Name	Bite Type Tube fitting (JIS B2351)																											
Application	High pressure tube connections for use in marine, offshore and industrial piping systems with hydraulic systems fluids, fuel oil, lubricating oil, fresh water, salt water, sanitary, gas, steam and condensate																											
Specified Standard	Lloyd's Register Rules and Regulations for Classification of Ships, Part 5, Chapter 12, Section 5, July 2019 Lloyd's Register Type approval, July 2014, Test specification Number 2																											
Ratings	Inch Tubing : <table> <thead> <tr> <th rowspan="2">Tube O.D (inch)</th> <th colspan="3">Normal pressure ratings (psi)</th> </tr> <tr> <th>Stainless steel</th> <th>Carbon Steel</th> <th>Brass</th> </tr> </thead> <tbody> <tr> <td>4-15</td> <td>500</td> <td>500</td> <td>350</td> </tr> <tr> <td>16-22</td> <td>400</td> <td>400</td> <td>280</td> </tr> <tr> <td>25-28</td> <td>350</td> <td>350</td> <td>245</td> </tr> <tr> <td>30-38</td> <td>250</td> <td>250</td> <td>178</td> </tr> <tr> <td>40-50</td> <td>210</td> <td>210</td> <td>147</td> </tr> </tbody> </table> <p>(pressure 재 확인 필요) Temperature ratings: see the producer's catalogue</p>	Tube O.D (inch)	Normal pressure ratings (psi)			Stainless steel	Carbon Steel	Brass	4-15	500	500	350	16-22	400	400	280	25-28	350	350	245	30-38	250	250	178	40-50	210	210	147
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Additional Tests	The following tests have been carried out: - <ol style="list-style-type: none"> 1) Leakage test 2) Bursting test 3) Repeated assembly test 4) Pull-out test 5) Impulse and vibration test 6) Rotary flexure test 																											

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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 fittings are to be installed in accordance with the manufacture's instruction.
- 2) Attention is drawn to Section 1.3.6 of IMO MSC/Circ. 1321- Guidelines for Measures to prevent Fires in Engine-Rooms and Cargo Pump-Rooms and Cargo Pump-Rooms which describes that compression couplings require careful attention to tightening procedures and torques to avoid leaks or damage to the pipe when subjected to over-tightening 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 Design Appraisal Document No. LR2004265TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.