

# 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.

<b>Manufacturer</b>	<b>HANSUN ENGINEERING CO LTD</b>			
<b>Address</b>	27, Noksansandan 361-ro, Gangseo-gu, Busan, Republic of Korea			
<b>Place of Production</b>	HANSUN ENGINEERING CO LTD 27, Noksansandan 361-ro, Gangseo-gu, Busan, Republic of Korea			
<b>Type</b>	Compression Fittings			
<b>Description</b>	Double ferrule compression type of tube fittings for stainless, carbon steel and brass			
<b>Trade Name</b>	S-Lok Type Tube Fittings			
<b>Application</b>	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.			
<b>Specified Standard</b>	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			
<b>Ratings</b>	Inch Tubing : Tube O.D (inch)	Normal pressure ratings (psi) Stainless steel	Carbon Steel	Brass
	1/8"	10,900	10,900	3,400
	3/16"	10,200	10,200	3,400
	1/4"	10,200	10,200	3,500
	5/16"	8,000	8,000	2,700
	3/8"	6,500	6,500	2,200
	1/2"	6,700	6,700	2,200
	5/8"	6,000	6,000	1,900
	3/4"	5,800	5,800	1,800
	7/8"	4,800	4,800	1,500
	1"	4,700	4,700	1,500
	1 1/4"	4,900	4,900	1,500
	1 1/2"	4,900	4,900	1,500
	Pressure-temperature rating : see manufacture's catalogue			

**Da-Young Kang**

Senior Specialist to Lloyd's Register Asia  
 A member of the Lloyd's Register Group

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

## Type Approval Certificate

### Additional Tests

The following tests have been carried out: -

- 1) Leakage test
- 2) Bursting test
- 3) Repeated assembly test
- 4) Pull-out test
- 5) Impulse and vibration test
- 6) Vacuum test
- 7) Rotary flexure 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 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. LR2004171TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.