

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	DIN type compression tube fittings for stainless, carbon steel and brass				
Trade Name	Bite Type Tube Fitting (DIN 2353)				
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	Metric Tubing : Series	Tube O.D (inch)	Normal pressure ratings (psi)		Brass
			Stainless steel	Carbon Steel	
	LL	4-8	100	100	70
	L	6-15	250	315	221
	L	18-22	160	-	-
	L	28-42	100	160	112
	S	6-14	630	630	441
	S	16-30	400	400	280
	S	30-38	315	315	221
	Temperature ratings: see the producer's catalogue				
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) 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. LR2004272TA and its supplementary Type Approval Terms and Conditions form part of this Certificate.