



Marine & Offshore

Certificate number: 36793/B0 BV

File number: ACM 135/2730/01

Product code: 2161H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

HANSUN ENGINEERING CO.,LTD

Busan - KOREA (REPUBLIC OF)

for the type of product

PIPE FITTINGS

S-LOK and BITE TYPE TUBE FITTINGS (JIS B 2351, DIN 2353)

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 25 May 2025

For Bureau Veritas Marine & Offshore,

At BV PUSAN, on 25 May 2020,

Chang-Uk HONG



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristarm.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=vqdy11hegj>

BV Mod. Ad.E 530 June 2017

This certificate consists of 4 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

S-LOK and BITE Type tube fittings (JIS B 2351, DIN 2353)

1.1 Design

- The S-LOK tube fittings consist of a body, a front ferrule, a back ferrule and a nut.
- The BITE type tube fittings for DIN 2353 and JIS B2351 consist of a body, a sleeve and a nut.

1.2 Ratings

- S-LOK tube fittings allowable working pressure

Size	Carbon Steel	Stainless Steel	Brass Steel
	Max. Working pressure (psi)	Max. Working pressure (psi)	Max. Working pressure (psi)
1/8"	10,900	10,900	3,600
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

- BITE type tube fittings JIS B2351 allowable working pressure

Size (mm)	Carbon Steel	Stainless Steel	Brass Steel
	Max. Working pressure (bar)	Max. Working pressure (bar)	Max. Working pressure (bar)
4 - 15	500	500	350
16 - 22	400	400	280
25 - 28	350	350	245
30 - 38	250	250	175
40 - 42	210	210	147

- BITE type tube fittings for DIN 2353 allowable working pressure

Series	Stainless Steel		Carbon / Brass Steel	
	Size (mm)	Max. Working pressure (bar)	Size (mm)	Max. Working pressure (bar)
Very Light (LL)	4 - 8	100	4 - 8	100
Light (L)	6 - 15	250	6 - 18	315
	18 - 22	160	-	-
	28 - 42	160	22 - 42	160
Heavy (S)	6 - 14	630	6 - 14	630
	16 - 25	400	16 - 30	400
	30 - 38	315	38	315

1.3 Temperature range for sealing materials (°C)

NBR (e.g. Perbunan®)	-40 / 110	FKM (e.g. Viton®)	-28 / 204	PTFE (e.g. Teflon®)	-60 / 240
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The pressure reduction factors according to the manufacturer's specification are to be observed.

1.4 Material specification

Fittings	Stainless steel SUS 316/316L / Carbon Steel / Brass
Seals	NBR / FKM / PTFE

When elastomer seal is used in the fitting, care must be taken according to the manufacturer's recommendations.

When other choices of materials are used per manufacturer's recommendations, the BV agreement is to be obtained.

2. DOCUMENTS AND DRAWINGS

- Catalogue S-Lok 201310 S-lok tube fittings
- Catalogue DIN 201207 Bite type fittings
- Catalogue BITE 201207 Bite type fittings

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS**3.1 Tests carried out, witnessed by Classification Societies:****- Tightness & Leakage Test :**

HSET-DNV-1304-001, HSET-DNV-1305-001, HSET-DNV-1306-001 (S-Lok)
 HSET-BV-1406-001, HSET-BV-1406-002, HSET-BV-1406-003 (S-Lok)
 HSET-DNV-1304-002, HSET-DNV-1305-002, HSET-DNV-1306-002 (JIS B2351)
 HSET-BV-1406-004, HSET-BV-1406-005, HSET-BV-1406-006 (JIS B2351)
 HSET-DNV-1304-003, HSET-DNV-1305-003, HSET-DNV-1306-003 (DIN 2353)
 HSET-BV-1403-001, HSET-BV-1403-002, HSET-BV-1403-003 (DIN 2353)

- Repeated Assembly & Leakage Test :

HSET-DNV-1304-004, HSET-DNV-1305-004, HSET-DNV-1306-004 (S-Lok)
 HSET-BV-1406-016, HSET-BV-1406-017, HSET-BV-1406-018 (S-Lok)
 HSET-DNV-1304-005, HSET-DNV-1305-005, HSET-DNV-1306-005 (JIS B2351)
 HSET-BV-1406-013, HSET-BV-1406-014, HSET-BV-1406-015 (JIS B2351)
 HSET-DNV-1304-006, HSET-DNV-1305-006, HSET-DNV-1306-006 (DIN 2353)
 HSET-BV-1404-001, HSET-BV-1404-002, HSET-BV-1404-003 (DIN 2353)

- Bursting Pressure Test :

HSET-DNV-1304-007, HSET-DNV-1305-007, HSET-DNV-1306-007 (S-Lok)
 HSET-BV-1406-007, HSET-BV-1406-008, HSET-BV-1406-009 (S-Lok)
 HSET-BV-1406-019, HSET-BV-1406-020, HSET-BV-1406-021 (S-Lok)
 HSET-DNV-1304-008, HSET-DNV-1305-008, HSET-DNV-1306-008 (JIS B2351)
 HSET-BV-1406-010, HSET-BV-1406-011, HSET-BV-1406-012 (JIS B2351)
 HSET-BV-1406-022, HSET-BV-1406-023, HSET-BV-1406-024 (JIS B2351)
 HSET-DNV-1304-009, HSET-DNV-1305-009, HSET-DNV-1306-009 (DIN 2353)
 HSET-BV-1403-004, HSET-BV-1403-005, HSET-BV-1403-006 (DIN 2353)
 HSET-BV-1406-025, HSET-BV-1406-026, HSET-BV-1406-027 (DIN 2353)

- Vibration and Pressure Pulsation Test :

HSET-DNV-1304-010, HSET-DNV-1305-010, HSET-DNV-1306-010 (S-Lok)
 HSET-BV-1408-001, HSET-BV-1409-002 (S-Lok)
 HSET-DNV-1304-011, HSET-DNV-1305-011, HSET-DNV-1306-011 (JIS B2351)
 HSET-BV-1408-002, HSET-BV-1408-003 (JIS B2351)
 HSET-DNV-1304-012, HSET-DNV-1305-012, HSET-DNV-1306-012 (DIN 2353)
 HSET-BV-1409-001, HSET-BV-1409-002 (DIN 2353)

- Pull-out Test :

HSET-DNV-1304-013, HSET-DNV-1305-013, HSET-DNV-1306-013 (S-Lok)
 HSET-BV-1406-004, HSET-BV-1406-005, HSET-BV-1406-006 (S-Lok)
 HSET-DNV-1304-014, HSET-DNV-1305-014, HSET-DNV-1306-014 (JIS B2351)
 HSET-BV-1407-007, HSET-BV-1407-008, HSET-BV-1407-009 (JIS B2351)
 HSET-DNV-1304-015, HSET-DNV-1305-015, HSET-DNV-1306-015 (DIN 2353)
 HSET-BV-1407-010, HSET-BV-1407-011, HSET-BV-1407-012 (DIN 2353)

- Vacuum Test:

HSET-BV-1407-001, HSET-BV-1407-002, HSET-BV-1407-003 (S-Lok)

3.2 Fire endurance test not carried out.

4. APPLICATION / LIMITATION

4.1 May be used on board for the services of class I, II, III piping systems: Hydraulic oil, fuel oil (not high pressure fuel oil injection), lubricating oil, compressed air, steam and condensate, fresh and sea water, sanitary systems.

4.2 Not to be used when fire resistant type is required.

4.3 The reduction factors according to the manufacturer's specification regarding wall thickness and temperature are to be observed.

4.4 The sealing material is to be compatible with the fluid to be conveyed and the maximum working temperature.

4.5 In all cases, the associated pipes are to be suitably supported and anchored. The joints are to be at any time accessible, excepting inside tanks where permitted by the BUREAU VERITAS rules.

4.6 The wall thickness and material of the tubes are to be in accordance with BV Rules.

4.7 The use of stainless steel is restricted as per BUREAU VERITAS rules.

4.8 Threaded bulkhead fittings are not approved through watertight or fire bulkheads.

4.9 Assembly instructions given by the manufacturer are to be complied with.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be supplied by **HANSUN ENGINEERING CO.,LTD** in compliance with the type described in this certificate and in compliance with the requirements stated on the front page of this certificate.

5.2 This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 **HANSUN ENGINEERING CO.,LTD** has to make the necessary arrangements to have its works recognised by BUREAU VERITAS in compliance with the requirements of NR 320 for HBV products.

5.4 For information, **HANSUN ENGINEERING CO.,LTD** has declared to Bureau Veritas the following production site(s):
HANSUN ENGINEERING CO.,LTD: 27, Noksansandan 361 -Ro, Gangseo-gu, Busan, KOREA (REPUBLIC OF)

6. MARKING OF PRODUCT

Each fitting shall be marked with:

- Manufacturer's name or logo

- Type designation

- Size

7. OTHERS

It is **HANSUN ENGINEERING CO.,LTD's** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

This certificate supersedes the Type Approval Certificate No. 36793/A0 BV issued by the Society.

***** END OF CERTIFICATE *****