



## Confirmation of Product Type Approval

**Company Name:** HANSUN ENGINEERING CO., LTD.

**Address:** 27, NOKSANSANDAN 361 (SAMBAEGYUKSIBIL)-RO, GANGSEO-GU, BUSAN, Korea, Republic of

**Product:** Tube Fittings

**Model(s):** S-LOK Type Tube Fittings Bite Type Tube Fittings (JIS B 2351) Bite Type Tube Fittings (DIN 2353)

**Endorsements:**

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	20-2064242-PDA	30-DEC-2020	29-DEC-2025
Manufacturing Assessment (MA)	20-4284485	22-MAY-2020	21-MAY-2025
Product Quality Assurance (PQA)	NA	NA	NA

### Tier

3 - Type Approved, unit certification not required

### Intended Service

Flammable Fluids (Flash point, less than or equal to 60 degree Celsius): Cargo oil lines, Crude oil washing lines, Vent lines Inert Gas System: Water seal effluent lines, Scrubber effluent lines, Main lines, Distributions lines Flammable Fluids (Flash point, greater than 60 degree Celsius): Cargo oil lines, Fuel oil lines, Lubricating oil lines, Hydraulic oil, Thermal oil Sea Water System: Blige lines, Fire main and water spray, Foam system, Sprinkler system, Ballast system, Cooling water system, Tank cleaning, Non-essential system Fresh Water System: Cooling water system, Condensate return, Non-essential system Sanitary/Drains/Scuppers System: Deck drains (internal), Sanitary drains, Scuppers and discharge (overboard) Sounding/Vent System: Water tanks/Dry spaces, Oil tanks (f.p, greater than 60 degree Celsius) Miscellaneous System: Starting/Control air, Service air (non-essential), Brine, CO2 system, Steam

### Description

S-LOK Type Tube Fittings (Double Ferrule Type)

Straight Union (SU), Union Elbow (SL), Reducing Union (SUR), Union Tee (ST), Union Cross (SX), Bulkhead Union (SUB), Male Connector (SMC-N/R/G), Thermocouple Connector (SMCT), Metal Gasket Connector (SOM), Bulkhead Male Connector (SMCB), 45 degree Male Connector (SLBM), Male Elbow (SLM), Male Run Tee (STRM), Male Branch Tee (STBM), Female Connector(SCF), Gauge Connector (SCG), Bulkhead Female Connector (SCBF), Female Elbow (SLF), Female Run Tee (STRF), Female Branch Tee (STBF), Reducer (SR), Bulkhead Adapter (SAB), Male Adapter (SAM), Female Adapter (SAF), Female Adapter (SAG), Port Connector (SCP), Reducing Port Connector (SCR), AN Union (SUA), AN Bulkhead Union (SUBA), AN Adapter (SAA), SAE Male Connector (SMCS), Positionable SAE Male Elbow (SLS), Positionable 45 degree SAE Male Elbow (SLBS), Positionable SAE Male Run Tee (STRS), Positionable SAE Male Branch Tee (STBS), O-Seal Straight Thread Connector (SCOS), O-Seal Pipe Thread Connector (SCOP), Male Pipe Weld Connector (SCW), Male Pipe Weld Elbow (SLW), Tube

Socket Weld Connector (SCSW), Tube Socket Weld Elbow (SLSW), Welding Bulkhead Union (SBUW), Plug (SP), Cap (SC), Tube Insert (SI), Nut (SN), Front Ferrule (SFF), Back Ferrule (SFB), Ferrule Set (SFS)

#### Bite Type Tube Fittings (JIS B 2351)

Straight Union (BU), Union Elbow(BL), Union Tee(BT), Straight Bulkhead Union (BBU), Bulkhead Elbow(BBL), Long Male Connector (BLMC), Male Connector (BMC-R/G, BOM), Male Elbow (BLM), Long Male Elbow (BLLM), O-Seal Male Elbow (BOLM), Banjo Elbow (BSLM), Male Branch Tee (BBTM), Male Run Tee (BRTM), Bulkhead Female Connector (BBFC), Female Connector (BFC), Gauge Connector (BGC), Female Elbow (BLF), Female Branch Tee (BBTF), Female Run Tee (BRTF), Jig (BJ), Cap (BC), Plug (BP), Net (BN), Sleeve (BS), Hose Male Union (BHUM), Hose Female Union (BHUF), Hose Bulkhead Male Union (BHBM), Hose Bulkhead Female Union (BHBF), Hose Male Elbow (BHLM), Hose Female Elbow (BHLF), Hose Bulkhead Male Elbow (BHBLM), Hose Bulkhead Female Elbow (BHBLF), Welding Connector(BCW), Welding Bulkhead Union (BBUW), Adapter(BA-R), Adapter (For Copper Gasket) (BA-G), Reducer(BR), Positionable Elbow (BLA), Positionable Branch Tee (BBTA), Positionable Run Tee (BRTA)

#### Bite Type Tube Fittings (DIN 2353)

Straight Union (DDU), Union Elbow (DDL), Reducing Union (DDUR), Union Tee (DDT), Union Cross (DDC), Reducing Tee (DDTR), Bulkhead Union (DDBU), Welding Bulkhead Union (DDBUW), Bulkhead Union Elbow (DDBL), Male Connector (DDOM-U/M., DDMC-M, DDMC-R, DDMC-G, DDMC-GED, DDMC-MED, DDMC-N), Male Elbow (DDL-M/R/M), Female Connector (DDFC-G/M), Adjustable Elbow (DDLA), Adjustable Branch Tee (DDBTA), Adjustable Run Tee (DDRTA), Swivel Adjustable Elbow (DDEW), Swivel Adjustable Branch Tee (DDET), Swivel Adjustable Run Tee (DDEL), Stand Pipe Reducer (DDKOR), Reducer (DDR), Swivel Reducing Adaptor (DDRED), Adaptor (DDA-GED/MED), Swivel Adaptor (DDEGE-G/M), Swivel Union (DDUE), Banjo Fittings (DDSWVE-G/M), High Pressure Banjo Fittings (DDWH-G/M), High Pressure Banjo Fittings (DDTH-G/M), Pressure Gauge Connector (DDGC-G), Swivel Gauge Adaptor (DDGE-G), Gauge Connector (DDGA-G), Tee Test Coupling (DDGMA), Test Coupling (DDEMA3), Welding Connector (DDAS), Welding Connector (DDASK), Welding Nipple (DDAK), Reducing Welding Nipple (DDAKR), Male Female Adaptor (DMFAD, DMFAE, DMFAD-ED, DMFAE-ED), Blanking Plug for Port (DDVSTI-GED/MED), Blanking Plugs with O-Ring (DDVSTI, DDVKA), Tube Cap (DDCA), Nut (DDN), Cutting Ring (DDSWVE-G/M)

#### Ratings

1. Raw Material: Stainless Steel, Carbon Steel, Brass

2. Temperature Range:

Stainless Steel: -196 ~ 649 Degree Celsius

Carbon Steel: -54 ~ 426 Degree Celsius

Brass: -54 ~ 204 Degree Celsius

3. Tube Size & Pressure Ratings: as per attached manufacturer's specification

#### Service Restrictions

1. Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

2. Not to be used if fittings are required to be fire resistant type in accordance with 4-6-2/Table 10 of the Marine Vessels Rules. The same tube fittings are not the fire resistant type.

3. Application of mechanical Joints is to be subjected to service conditions in accordance with 4-6-2/Table 10 of the Marine Vessels Rules.

4. All Bulkhead fittings are not considered watertight or fire tight penetration without separate approval of penetration detail.

5. Threaded joints are to comply with the followings:

a) The taper-thread joints are not to be used for toxic and corrosive fluid services and for all services of temperatures exceeding 495 degree Celsius.

b) For Classes I and II piping, the pressure rating of taper-thread joints is to comply with 4-6-2/5.5.5 (a) of the Marine Vessels Rules.

c) Taper-thread joints up to 80 mm nominal diameter for hydraulic oil system may be used without pressure limitation for connection to equipment only, such as pumps, valves, cylinders, accumulators, gauges and hoses. When such fittings are used solely to join sections of pipe, they are to be in accordance with 4-6-2/5.5.5(a) of the Marine Vessels Rules. However, hydraulic systems for the following services are to comply with 4-6-2/5.5.5(a) of the Marine Vessels Rules in all respects:

- Steering gear hydraulic systems

- Controllable pitch propeller hydraulic systems

- Hydraulic systems associated with propulsion or propulsion control

d) For hydraulic oil piping, straight thread 'o'-ring type fittings may also be used for connections to equipment, without pressure and service limitation, but are not to be used for joining sections of pipe.

### Comments

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

### Notes, Drawings and Documentation

Drawing No. S-LOK\_201310, Revision: -, S-LOK Tube Fittings

Drawing No. DIN\_201207, Revision: -, Bite-DIN 2353 Tube Fittings

Drawing No. JIS\_201207, Revision: -, Bite-JIS B2351 Tube Fittings

Notes: The following tests have been carried out.

1. HSET-BV-1403-001 & Etc

S-LOK: Tightness & Leakage Test, Bursting Test, Reassembly & Leakage Test, Pull-Out Test, Vibration & Pressure Pulsation Test, Vacuum Test

Bite - DIN 2353 Type: Tightness & Leakage Test, Bursting Test, Reassembly & Leakage Test, Pull-Out Test, Vibration & Pressure Pulsation Test

Bite - JIS B 2351 Type: Tightness & Leakage Test, Bursting Test, Reassembly & Leakage Test, Pull-Out Test, Vibration & Pressure Pulsation Test

2. HSET-LR-1403-001 & Etc

S-LOK: Tightness & Leakage Test, Bursting Test, Reassembly & Leakage Test, Pull-Out Test, Vibration & Pressure Pulsation Test, Vacuum Test, Rotary Flexure & Hydrostatic Test

Bite - DIN 2353 Type: Tightness & Leakage Test, Bursting Test, Reassembly & Leakage Test, Pull-Out Test, Vibration & Pressure Pulsation Test, Rotary Flexure & Hydrostatic Test

Bite - JIS B 2351 Type: Tightness & Leakage Test, Bursting Test, Reassembly & Leakage Test, Pull-Out Test, Vibration & Pressure Pulsation Test, Rotary Flexure & Hydrostatic Test

3. HSET-DNV-1304-001 & Etc, HSET-DNV-1911-001 & Etc

S-LOK: Tightness & Leakage Test, Bursting Test, Repeated Assembly Test, Pull-Out Test, Vibration & Pressure Pulsation Test, Vacuum Test

Bite - DIN 2353 Type: Tightness & Leakage Test, Bursting Test, Repeated Assembly Test, Pull-Out Test, Vibration & Pressure Pulsation Test, Vacuum Test

Bite - JIS B 2351 Type: Tightness & Leakage Test, Bursting Test, Repeated Assembly Test, Pull-Out Test, Vibration & Pressure Pulsation Test, Vacuum Test

4. HSET-NK-1405-001 & Etc

S-LOK: Tightness & Leakage Test

Bite - DIN 2353 Type: Tightness & Leakage Test, Vacuum Test

Bite - JIS B 2351 Type: Tightness & Leakage Test, Vacuum Test

**Term of Validity**

This Product Design Assessment (PDA) Certificate remains valid until 29/Dec/2025 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

**ABS Rules**

2020 Marine Vessel Rules: 1-1-4/7.7, 1-1/A3 and A4, 4-6-2/5.5.5, 4-6-2/5.9, 4-6-2/5.15, 4-6-2/5.17 & 4-6-7/3.5.1

**International Standards**

ASME B31.1 (2020)

ASME B1.1 (2019)

JIS B2351 (2000)

DIN 2353 (2013)

**EU-MED Standards**

NA

**National Standards**

NA

**Government Standards**

NA

**Other Standards**

Hansun Engineering Catalog:

S-LOK Tube Fittings (2013.10)

Bite-JIS B2351 Tube Fittings (2012.07)

Bite-DIN 2353 Tube Fittings (2012.07)



A handwritten signature in black ink, appearing to read 'James J. White'.

Corporate ABS Programs  
American Bureau of Shipping  
Print Date and Time: 12-Jan-2021 11:51

ABS has used due diligence in the preparation of this certificate, and it represents the information on the product in the ABS Records as of the date and time the certificate is printed.

If the Rules and/or standards used in the PDA evaluation are revised or if there is a design modification (whichever occurs first), a PDA revalidation may be necessary.

The continued validity of the MA is dependent on completion of satisfactory audits as required by the ABS Rules. The validity of both PDA and MA entitles the product to receive a **Confirmation of Product Type Approval**.

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or prior to the effective date of the ABS Rules and standards applied at the time of PDA issuance. ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. The manufacturer is responsible to maintain compliance with all specifications applicable to the product design assessment. Unless specifically indicated in the description of the product, certification under type approval does not waive requirements for witnessed inspection or additional survey for product use on a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.