



## ***Confirmation of Product Type Approval***

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 08/SEP/2018. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until 22/APR/2020 subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

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.

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.

**Product Name: Tube Fittings**

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

**Presented to:**

HANSUN ENGINEERING CO., LTD.  
27, NOKSANSANDAN 361 (SAMBAEGYUKSIBIL)-RO  
GANGSEO-GU  
Korea, Republic of

**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 (SCRP), 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 (DDLML-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)

**Tier:** 3

**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. 2. Not to be used if fittings are required to be approved with fire resistant in accordance with 4-6-2/Table 10 of the Steel Vessel Rules. 3. 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. 4. All Bulkhead fittings are not considered water tight or fire tight penetration without separate approval of penetration detail. 5. In Classes I and II piping systems in general, for joining sections of hydraulic pipes and for steering gear, controllable pitch propeller and propulsion related hydraulic systems, their use is limited to the following restrictions: less than 20 mm ND for 103 bar; above 20 mm to 25mm ND for 82.8 bar and above 25 mm to 50 mm ND for 41.4 bar. 6. In other hydraulic oil systems, they may be used without pressure limitation only for connection for equipment, such as pumps, valves, cylinders, accumulators, gauges and hoses. Straight thread O-ring type fittings may be used for connections to equipment in hydraulic oil piping without pressure and service limitation, but are not to be used for joining sections of pipes.

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

**Notes / 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 S-LOK: Tightness & Leakage Test, Bursting Test, Repeated Assembly Test, Pull-Out Test, Vibration & Pressure Pulsation Test Bite - DIN 2353 Type: Tightness & Leakage Test, Bursting Test, Repeated Assembly Test, Pull-Out Test, Vibration & Pressure Pulsation Test Bite - JIS B 2351 Type: Tightness & Leakage Test, Bursting Test, Repeated Assembly Test, Pull-Out Test, Vibration & Pressure Pulsation 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 15-BK1323051-2-PDA, dated 23/Apr/2015 remains valid until 22/Apr/2020 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

**ABS Rules:** 2015 Steel 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 2015 Mobile Offshore Drilling Units Rules: 1-1-4/9.7, 1-1/A2 and A3, 4-2-2/1.3, 4-2-2/11.1 & 4-2-2/17

**National Standards:** ASME B31.1 (2014), SAE J1926 (2010), ASME B1.1 (2003), JIS B2351 (2012), DIN 2353 (2013)

**International Standards:**

**Government Authority:**

**EUMED:**

**Others:**

Hansun Engineering Catalog: S-LOK Tube Fittings (2013.10) Bite-JIS B2351 Tube Fittings (2012.07) Bite-DIN 2353 Tube Fittings (2012.07)

Model Certificate	Model Certificate No	Issue Date	Expiry Date
PDA	15-BK1323051-2-PDA	30/APR/2015	22/APR/2020



ABS Programs

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 was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. 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.