

# TYPE APPROVAL CERTIFICATE

DNV-GL

This is to certify that the undernoted product(s) has/have been tested in accordance with the relevant requirements of the DNV GL Type Approval System.

Certificate No. **13 567 - 14 HH**

Company **Hansun Engineering Co., Ltd.**  
**27, Noksansandan 361-ro**  
**Busan 618-819, REPUBLIC OF KOREA**

Product Description **Tube Fittings**

Type **BITE-DIN2353 - LL, L and S - Series - Metallic Sealing**

Environmental Category **None**

Technical Data /  
Range of Application **Temperature Range for Fitting Materials with Metallic Seal:**  
**Steel: -20°C up to +120°C; Brass: -40°C up to +175°C;**  
**316 Stainless Steel: -60°C up to +300°C**

Series	Tube O.D.	Max. Working Pressure PN [bar]		
		Stainless Steel	Carbon Steel	Brass
Very Light (LL) Light (L)	4-8	100	100	70
	6-18	250	315	220
	18-22	160		
	22-42	100	160	112
Heavy (S)	6-14	630	630	441
	16-30	400	400	280
	30-38	315	315	220

For the selection of the tube fittings the service pressure specified in the catalogue is to be observed. Pressure reduction factors: refer to page 2

Test Standard **VI-7-8 Test Requirements for Components and Systems of Mechanical Engineering and Offshore Technology, Edition 2013.**

Documents **GL-Approval RefNo.: 13-098877 (Test reports), Audit Report dated 2014-03-20, ISO 9001:2009 Certificate 122404-2012-AQ-KOR-RvA. Test reports LL and S - Series dated 2015-06-11 and-17.**

Remarks **refer to page 2**

Valid until **2020-07-05**

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File No. **II.C.05**

**Hamburg, 2015-07-06**

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## Material of Fittings:

Carbon Steel: EN No: 1.0460; Stainless Steel: EN No: 1.4571; Brass: EN No: 2.0540

## Reduction of Pressure [%]:

Temperature °C	Material of Fittings	
-40°C up to +120°C	Carbon Steel	- - -
-60°C up to +175°C	Brass	30 %
-60°C up to + 20°C	Stainless Steel	- - -
-60°C up to + 50°C	Stainless Steel	4 %
up to +100°C	Stainless Steel	11 %
up to +200°C	Stainless Steel	20 %
up to +300°C	Stainless Steel	29 %

Reduction of Pressure is to be observed.

## APPROVED BITE TYPE TUBE FITTINGS for DIN 2353:

TUBE TO TUBE: 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). TUBE TO FEMALE PORT: Male Connector with O-Ring(DDOM-U/M), Male Connector(DDMC-R, DDMC-G, DDMC-M), Male Connector with ED-Ring(DDMC-GED, DDMC-MED), Male Connector(DDMC-N), Male Elbow(DDLM-R/M). TUBE TO MALE THREAD: Female Connector(DDFC-G/M). TUBE TO TUBE PORT /Adjustable Fittings): 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), Standpipe Reducer(DDKOR), Reducer(DDR), Swivel Reducing Adaptor(DDRED). TUBE PORT to FEMALE PORT: Adaptor with ED-Ring(DDA-GED/MED), Swivel Adaptor with ED-Ring(DDEGE-G/M). TUBE PORT to TUBE PORT: Swivel Union(DDUE). BANJO FITTINGS: Banjo Fittings with DKA-Ring(DDSWVE-G/M), High Pressure Banjo Fittings with DKA-Ring(DDWH-G/M), High Pressure Banjo Fittings(DDTH-G/M). GAUGE CONNECTOR & TEST COUPLINGS: Pressure Gauge Connector(DDGC-G), Swivel Gauge Adaptor(DDGE-G), Gauge Connector(DDGA-G), Tee Test Coupling(DDGMA), Test Coupling(DDEMA3). WELD FITTINGS: Welding Connector(DDAS), Welding Connector with DAK(DDASK), Welding Nipple(DDAK), Reducing Welding Nipple(DDAKR). ADAPTORS: Male Female Adaptor(DMFAD, DMFAE), Male Female Adaptor with ED-Ring(DMFAD-ED, DMFAE-ED). PLUGS and CAPS: Blanking Plug for Port with ED-Ring(DDVSTI-GED/MED), Blanking Plug with O-Ring(DDVSTI), Blanking Plug(DDVKA), Tube Cap(DDCA).

## Range of Application:

The Tube Fitting is type approved for applications in piping systems as specified in rules I-1-2, Section 11-D, see Table 11.14. Tube fittings with rubber sealing shall not be used in systems/locations where a flame resistance test acc. to table 11.14 is required.

## Limitation:

Valid until **2020-07-05**

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File No. **II.C.05**

Hamburg, **2015-07-06**

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**Application of Tube Fittings of Type DDBU, DDBL is not approved through tank walls and watertight deck- and bulkheads. For this application Welding Bulkhead Union of type DDBUW shall be used.**

**This certificate does not cover tube fittings with soft seals.**

**Scope of Tests:**

**Tightness & Leakage Test, Burst Pressure Test, Repeated Assembly Test, Pull-Out Test, Vibration & Pressure Pulsation Test.**

**Marking of Product:**

**For traceability to this Type Approval each product is to be marked with. Manufacture 's name or trade mark, size and type designation.**

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