



# DET NORSKE VERITAS

## TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14426**

This is to certify that the  
**Pipe Couplings, Bite and Compression Type**

with type designation(s)

**BU, BBU, BMC-R, BLMC, BMC-G, BOM, BFC, BBFC, BGC, BC, BHUM, BHUF, BHBM, BHBf, BCW, BBUW, BA-R, BA-G, BR, BL, BLM, BLLM, BBL, BOLM, BLF, BSLM, BHLM, BHLf, BHBLM, BHBLf, BLA, BT, BBTM, BRTM, BBTF, BRTF, BBTA, BX, BP, BJ, BN, BS**

Manufactured by

**DK Tech Corp**  
**Kyungnam -, Republic of Korea**

is found to comply with

**Det Norske Veritas' Rules for Classification of Ships**  
**Det Norske Veritas' Standards for Certification 2.9 No. 5-792.20**

Application

**May be used for: hydraulic oil, fuel and lube oil (not high-pressure fuel oil injection), compressed air, steam and condensate, fresh and sea water, sanitary systems**

<b>Temperature range:</b>	<b>-20°C to 300°C</b>
<b>Max. working press.:</b>	<b>Dependent on size and temperature, see cert.</b>
<b>Sizes:</b>	<b>6, 8, 10, 12, 15, 16, 18, 20, 25, 28 and 30mm</b>

This Certificate is valid until **2016-12-31**.

Issued at **Høvik** on **2013-08-09**

DNV local station: **Changwon**

Approval Engineer: **Tom Berg-Nielsen**

for **Det Norske Veritas AS**

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**Marianne Spæren Marveng**  
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.

The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

## Product description

Pipe couplings. Single bite type.

BU Straight Union  
BBU Straight Bulkhead Union  
BMC-R Male Connector  
BLMC Long Male Connect.  
BMC-G Male Conn. Cu-Gasket  
BOM Male Conn. O-Seal  
BFC Female Connector  
BBFC Bulkhead Female Connector  
BGC Gauge Connector  
BC Cap  
BHUM Hose Male Union  
BHUF Hose Female Union  
BHBM Hose Bulkhead Male Un.  
BHBF Hose Bulkhead Female U.  
BCW Welding Connector  
BBUW Welding Bulkhead Union  
BA-R Adapter  
BA-G Adapter  
BR Reducer  
BL Union Elbow  
BLM Male Elbow  
BLLM Long Male Elbow  
BBL Bulkhead Elbow  
BOLM O-Seal Male Elbow  
BLF Female Elbow  
BSLM Banjo Elbow  
BHLM Hose Male Elbow  
BHLMF Hose Female Elbow  
BHBLM Hose Bulkh. Male Elbow  
BHBLF Hose Bulkh. Female Elbow  
BLA Positionable Elbow  
BT Union Tee  
BBTM Male Branch Tee  
BRTM Male Run Tee  
BBTF Female Branch Tee  
BRTF Female Run Tee  
BBTA Positionable Branch tee  
BRTA Positionable Run Tee  
BX Cross  
BP Plug  
BJ Jig  
BN Nut  
BS Sleeve

### Materials:

Forged Bodies:	Carbon steel S20C-S48C,	Stainless steel SUS316- SUS304
Barstock Bodies:	Carbon steel S20C-S48C,	Stainless steel SUS316- SUS304
Cold Formed Nuts:	Carbon steel S10C-S20C,	
Barstock Nuts:	Carbon steel S20C-S48C,	Stainless steel SUS316- SUS304
Sleeves:	Carbon steel S10C,	Stainless steel SUS316- SUS304

## Application/Limitation

The couplings may be used in the following piping systems:

Systems		Systems	
<u>Flammable fluids (Flash point <math>\leq 60^{\circ}\text{C}</math>)</u>		<u>Fresh water</u>	
1	Cargo oil lines	21	Cooling water system
2	Crude oil washing lines	22	Condensate return
3	Vent lines	23	Non-essential system
<u>Inert gas</u>		<u>Sanitary/Drains/Scuppers</u>	
4	Water seal effluent lines	24	Deck drains (internal)
5	Scrubber effluent lines	25	Sanitary drains
6	Main lines	26	Scuppers and discharge (overboard)
7	Distribution lines		
<u>Flammable fluids (Flash point <math>&gt; 60^{\circ}\text{C}</math>)</u>		<u>Sounding/ vent</u>	
8	Cargo oil lines	27	Water tanks/Dry spaces
9	Fuel oil lines	28	Oil tanks (flash point $> 60^{\circ}\text{C}$ )
10	Lubrication oil lines		
11	Hydraulic oil		
12	Thermal oil		
<u>Sea Water</u>		<u>Miscellaneous</u>	
13	Bilge lines	29	Starting/control air
14	Fire main and water spray	30	Service air (non-essential)
15	Foam systems	31	Brine
16	Sprinkler system	32	CO2 system
17	Ballast system	33	Steam
18	Cooling water system		
19	Tank cleaning services		
20	Non-essential system		

Normal working pressure defined at  $20^{\circ}\text{C}$ :

Pipe O.D. mm	Norm. press. Bar	Pipe O.D. mm	Norm. press. Bar
6	470	16	392
8	441	18	343
10	431	25	323
12	426	28	294
15	412	30	274

At elevated temperatures the pressure will have to be derated. Consult manufacturers catalogue for details.

Carbon steel couplings are not allowed for seawater.

Couplings used for low temperature gas may only be used for accessory lines and instrumentation lines with external diameters of 25 mm and less. DNV Rules Pt.5, Ch.5, Sec.6, C509

Threaded bulkhead unions type BBU, BHBM, BHBF, BBL, BHBLM and BHBLF may not be used on watertight bulkheads.

Couplings made of mild steel may only be used at temperatures below  $-10^{\circ}\text{C}$  when the materials are normalised.

The approval is only valid when the couplings are assembled with tubing of correct temper and tolerances as recommended by the manufacturer. These couplings are not to be used on tubes in cold fabricated (hard temper) conditions.

The wall thickness and material of the tubes to be in accordance with the current Rules of Det Norske Veritas.

## **Type Approval documentation**

Reference documents:

- Manufacturer's catalogue
- Test witnessed by DNV. Reports dated 2000-04-21 and 2000-06-01
- DNV Retention Survey Report 2005-01-05
- Dk Tech Corp. Burst Pressure Test Reports DKQ-050105-001
- DNV Retention Survey Report 2008-11-20
- Dk Tech Corp. Burst Pressure Test Reports DKQ-081120-003/-004, witnessed by DNV

## **Tests carried out**

Leakage, Repeated Assembly, Burst Pressure, Pull-Out, Vibration and Pressure Pulsation Test

## **Marking of product**

For traceability to this type approval, each coupling is at least to be marked with:

- Manufacturer's trade mark
- Type designation
- Size

## **Certificate Retention Survey**

For retention of the Type Approval, a DNV Surveyor shall perform a survey - before the expiry date of this certificate - to verify that the conditions for the type approval are complied with. The Surveyor shall perform the following tasks on samples selected at random from stock or from the running production:

- Verify that the dimensions of the couplings comply with Type Approved documentation.
- Verify that the material composition complies with Type Approved documentation.
- Witness burst testing.

END OF CERTIFICATE