



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, BF, 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

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

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

Issued at **Høvik** on **2013-08-09**

for **Det Norske Veritas AS**

DNV local station: **Changwon**

Approval Engineer: **Tom Berg-Nielsen**

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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
BHLF 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 ≤ 60 °C)</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 > 60°C)</u>		<u>Sounding/ vent</u>	
8	Cargo oil lines	27	Water tanks/Dry spaces
9	Fuel oil lines	28	Oil tanks (flash point > 60°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°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 °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
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