



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. P-14185

This is to certify that the
Pipe Couplings, Flared or Welded Nipple Type

with type designation(s)
SAE 37° Flared tube fittings

Manufactured by
BMT Co., Ltd.
Kyungnam, Republic of Korea

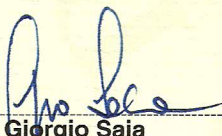
is found to comply with
Det Norske Veritas' Rules for Classification of Ships
Det Norske Veritas' Standards for Certification 2.9 No. 5-792.20

Application

Application System: Hydraulic, fuel oil(not high pressure fuel oil injection), lubrication oil, compressed air, steam and condensate, sanitary systems, fresh and sea water cooling. Fittings with O-rings shall not be used for oil.

Temperature range: -55°C to +400°C
Max. working press.: 1000 psi to 5000 psi (69 to 345 bar) dep. on sizes and threads, see cert.
Sizes: See certificate

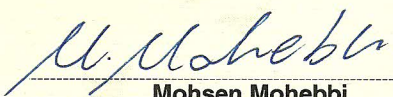
Høvik, 2012-08-18
for Det Norske Veritas AS


Giorgio Saia
Acting Head of Section



DNV local office:
DNV Pusan Station

This Certificate is valid until
2016-06-30


Mohsen Mohebbi
Surveyor

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.



Certificate No.: P-14185
File No.: 792.22
Job Id.: 262.1-004578-2

Product description

37° flared pipe couplings.

Type designations:

JU – Union	JOMC-G-O-Ring Seal Male Connector
JUE - Union Elbow	JOMC-U-O-Ring Seal Male Connector
JUT - Union Tee	JOME-O-Ring Seal Male Elbow
JUC - Union Cross	JOHME-O-Ring Seal 45° Male Elbow
JBHU - Bulkhead Union	JOBT-O-Ring Seal Branch Tee
JBUW - Weld Bulkhead Union	JORT-O-Ring Seal Run Tee
JFBU - Female Bulkhead Union	JMSC-Male Swivel Connector
JBUE - Bulkhead Union Elbow	JOSMC-O-Ring Seal Male Swivel Connector
JMC - Male Connector	JFSC-Female Swivel Connector
JME - Male Elbow	JSE-Swivel Elbow
JMRT - Mae Run Tee	JSRT-Swivel Run Tee
JMBT - Male Branch Tee	JSBT-Swivel Branch Tee
JHME - 45° Male Elbow	JP-Plug
JFC - Female Connector	JPC-Tube Cap
JFE - Female Elbow	JRA-Reducer Adapter
JFRT - Female Run Tee	JLN-Bulkhead Lock Nut
JFBT - Female Branch Tee	JN-Nut
JS-Sleeve	

Material: 316 Stainless steel, ASTM A182, ASTM A479
O-rings: NBR

Application/Limitation

Maximum working pressure:

Nom. Tube O.D [Inches]	SAE St. Threads Union and Bulkhead [psi]
1/8	5000
3/16	5000
1/4	5000
5/16	5000
3/8	5000
1/2	4500
5/8	3500
3/4	3500
7/8	3000
1	3000
1 1/4	2500
1 1/2	2000
2	1500

For couplings at elevated temperatures, the maximum working pressure has to be reduced with the following factors:

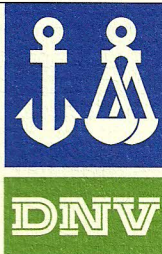
Temp.	20 °C	50 °C	100 °C	150 °C	200 °C	250 °C	300 °C	350 °C	400 °C
Stainless Steel	1	0,95	0,85	0,77	0,71	0,67	0,63	0,6	0,58

Fitting with O-rings have maximum working temperature: 100°C

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

Fittings with O-rings are not allowed for oil.

The approval is only valid when the couplings are assembled with tubing of correct temper and tolerances as recommended by the manufacturer.



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Type Approval documentation

Drawings:

JU-2 rev. 0 dated 2007-11-07
JU-32 rev.0 dated 2007-11-07
JMC-2 rev. 0 dated 2007-11-07
JMC-32 rev. 0 dated 2007-11-07
JUE-2 rev. 0 dated 2007-11-07
JUE-32 rev. 0 dated 2007-11-07
JS-2 rev. 0 dated 2007-11-07
JS-32 rev. 0 dated 2007-11-07
JN-2 rev. 0 dated 2007-11-08
JN-32 rev. 0 dated 2007-11-07

Catalogue from BMT Co., LTD: SAE 37° Flared Tube Fittings dated 2007-08-13
Doc No. : BMT-071214-01, rev. 0, describing wall thickness
Test report no. BTR-0801-01, BTR-0801-02, BTR-0801-03, BTR-0801-04, DNV witnessed
Initial survey report, dated 2008-01-15
Product test report dated 18-05-2012
Retentionsurvey checklist dated 2012-05-18

Tests carried out

Leakage, repeated assembly, burst, vibration and pulsation.

Marking of product

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

- Brand name
- Material grade
- Heat code number (Material identification No.)

Certificate Retention Survey

For retention of the Type Approval, a DNV Surveyor shall perform a survey - every second year and before the expiry date of this certificate to verify that the conditions for the type approval are complied with. The Surveyor shall witness burst testing of samples of couplings selected at random from stock or from the running production as a part of this survey.

END OF CERTIFICATE