



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14308**

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

with type designation(s)
VOSS BV-10 Flared Couplings

Manufactured by
VOSS Fluid GmbH
WIPPERFÜRTH, Germany

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

Application

May be used for the following service: Hydraulic, lube - and fuel oil (not high pressure fuel oil injection), compressed air, steam and condensate, fresh and sea water

Temperature range: -20/-35°C to +100/200°C (see cert.)
Max. working press.: 250 to 800 bar (size and type dependent, see cert.)
Sizes: 6 to 42 mm.

This Certificate is valid until **2014-12-31**.

Issued at **Høvik** on **2013-09-23**

DNV local station: **Essen Business Support**

Approval Engineer: **Tom Berg-Nielsen**

for **Det Norske Veritas AS**

.....
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

VOSS 10° Flared Couplings.
Design: 24° flare fitting body.
The type approval is valid for all configurations of the coupling.

Materials:
Carbon steel: C22 / 11SMn30 or 11SMn30+c according to DIN EN 10277
Stainless steel: AISI 316 Ti Wno. 1.4571.

Application/Limitation

The couplings are approved for the following maximum static working pressures:

Series	Tube OD (mm)	Pressure (bar)
L	6, 8 and 10	800
L	12, 15 and 18	400
L	22, 28, 35 and 42	250
S	6, 8 and 10	800
S	12, 14 and 16	630
S	20, 25, 30 and 38	420

Temperature range:
-20°C to 100 °C (Perbunan O-rings)
-35°C to 200°C (Viton O-rings)

The working pressure is equal to the maximum nominal static pressure for working temperatures below 120 °C. For couplings at elevated temperatures, the maximum working pressure has to be reduced with the following factors:

Temp.	-35°C	-20 °C	50 °C	100 °C	150 °C	200 °C
Carbon Steel	-	1	1	1	0,89	0,81
Stainless Steel	1	1	0,95	0,85	0,77	0,71

Maximum working pressures to be reduced according to manufacturer's recommendations for systems with pulsating pressures or vibrations.

The wall thickness and material of the tubes to be in accordance with the current Rules of Det Norske Veritas. Minimum pipe wall thickness according to DNV Rules for Classification of Ships:

Pipe OD (mm)	Min. pipe wall thickness (mm)
10 - 12	1.6
13 - 17	1.8
20 - 38	2.0

The wall thickness of hydraulic pipes in cargo oil tanks in systems for remote control of cargo oil valve is not to be less than:
Carbon steel pipes = 4 mm
Stainless steel pipes = 2 mm

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

No product certificate will be required.

Type Approval documentation

The approval is based on the following documentation:

- Catalogue "Product group no. 6, tube couplings, 24° flared connection"
- Test certificate TKV/HI-WS 25.02.85 Anlage 1.
- Test certificate BU: TLV 141/87/1 dated 07.12.87
- Test certificate BU: TLV 006/90/1 dated 18.01.90
- Test certificate UB: EZV 001/93/1 dated 12.01.93
- Test certificate UB: EZV 078/92/1 dated 26.08.92
- Test certificate UB: AEL 225/05/1 dated 23.12.05
- DNV's retention survey report No.: ESN-06-6801-3

Tests carried out

Burst test, leakage test, vibration test, repeated assembly test, pullout test, and pressure pulsation test.

Marking of product

For traceability to this type approval the products are to be marked with:

- Manufacturer's trade mark: VOSS
- Type designation
- Size

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