



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14310**

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

with type designation(s)
VOSS 2S Cutting Ring Couplings

Manufactured by
VOSS Fluid GmbH
WIPPERFÜRTH, Germany

is found to comply with
Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment
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 the following: Hydraulic, fuel - and lube oil (not high pressure fuel oil injection), compressed air, steam and condensate and fresh and sea water

Temperature range: -20°C to +120°C
Max. working press.: 160 to 630 bar size and type dependent
Sizes: 6 mm to 42 mm

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

Issued at **Høvik** on **2013-09-23**

DNV local station: **DNV Essen**

for **Det Norske Veritas AS**

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

VOSS 2S Couplings

Design: Bite type pipe couplings. Bite rings provide the sealing with one or two edges. 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 316Ti 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, 10, 12, 15 and 18	315
L	22, 28, 35 and 42	160
S	6, 8, 10, 12 and 14	630
S	16, 20, 25 and 30	400
S	38	315

The working pressure is equal to the maximum nominal static pressure for working temperatures below 120 °C. For higher temperature approval has to be considered in each case.

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

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

Pipe OD (mm)	Min. pipe wall thickness (mm)
10 - 12	1.6
13 - 17	1.8
20 - 42	2.0

The wall thickness of hydraulic pipes in cargo oil tanks in systems for remote control of cargo oil valves 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 recommend by the manufacturer.

No product certificate will be required.

Type Approval documentation

The approval is based on the following documentation:

- Catalogue "Product Group no. 2, Tube couplings with cutting ring connection"
- Test certificate TKV/HI-WS 25.02.85 Anlage 2.
- Test certificate BU: TLV 141/87/1 dated 87.12.07
- Test certificate BU: TLV 006/90/1 dated 90.01.18
- Test certificate UB: EZV 070/92/1 dated 92.06.05
- Test certificate UB: EZV 157/92/1 dated 93.01.07
- Test certificate UB: AEL 225/05/01 dated 05.12.23
- DNV's retention survey report No.: ESN-06-6801-1

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