



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-13863**

This is to certify that the
Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

with type designation(s)
1SN-2SN-2ST-2SC

Manufactured by
Volz Gruppe GmbH
DEILINGEN, Germany

is found to comply with
Det Norske Veritas' Rules for Classification of Ships
Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70

Application

The hose assemblies may be used in the following piping systems onboard ships: Fuel oil, hydraulic oil, lubrication oil, fresh water cooling system, sea water cooling system, compressed air

Temperature range: -40°C- +125°C
Max. working press.: 40 bar to 415 bar dependent of size and type
Sizes: DN5-DN50 (3/16"-2")

Høvik, 2011-06-30
for Det Norske Veritas AS



DNV local office:
Essen

This Certificate is valid until
2015-06-30


Marianne Spæren
Head of Section


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-13863
File No.: 791.70
Job Id.: 262.1-010931-1

Product description

1 or 2 wire braid reinforced flexible rubber hoses with permanently attached couplings, according to EN853 type 1SN/ 2SN/ 2ST.

2 wire braid reinforced flexible rubber hoses with permanently attached couplings, according to EN857 type 2SC.

Materials:

Inner tube: Oil resistant synthetic rubber (Nitrile)
Reinforcement: 1 or 2 steel wire braids .
Cover: Abrasion-, ozone- and weather resistant synthetic rubber.

Hose manufacturer: Manuli Rubber Industries S.p.a, Italy

End couplings: Volz couplings, ref TA certificate P-13110

Application/Limitation

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the holder (named as manufacturer) of this certificate.

Hose assemblers other than the certificate holder (manufacturer), shall be authorized by a written authorization from the certificate holder to deliver under this Type Approval. The hoses assemblies shall be in compliance with an assembly procedure issued by the certificate holder. The assembler's qualification shall be documented by burst testing of the hose assemblies. The extent of testing is to be decided between the assembler and the local DNV surveyor.

Each hose assembly is before delivery to be hydraulic pressure tested to 1.5 times the working pressure, and delivered with the manufacturer's/assemblers pressure test report and CoC (certificate of compliance) with reference to this Type Approval Certificate.

The hoses can be used in short lengths for ordinary machinery purposes in the systems mentioned on the front page. Before fitting the hose into a system, full compatibility with the medium must be ensured. Hoses used for continuous operation at temperatures higher than 100°C will have their lifetime reduced. In such cases more frequent inspections and planned exchange should be a part of the maintenance program.

The hoses must only be fitted in places where they are always accessible.
Flexible hoses of these types are not to be used on boiler fronts.

The hoses are to be mounted in accordance with the manufacturer's instructions.

It must be possible to shut off from the system all flexible hoses used in systems for compressed air, lube. oil, fuel oil and petroleum base hydraulic oil.

Hose assemblies with couplings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalized.

For use with compressed air or gases, the cover of the hose has to be prickled.



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Max. working pressure Type 1SN

Inner dia inch	Inner dia mm	Working pressure bar				Coupling Ferrule			
		1SN	2SN	2ST	2SC	1SN	2SN	2ST	2SC
3/16	5	250	415	415	-	N-PF3	N-PF3	N-PF2	-
1/4	6	225*	400*	400*	400*	N-PF3	N-PF3	N-PF2	N-PF3
5/16	8	215	350	350	350	N-PF3	N-PF3	N-PF2	N-PF3
3/8	10	180	330	330	330	N-PF3	N-PF3	N-PF2	N-PF3
1/2	12	160*	275*	275*	275*	N-PF3	N-PF3	N-PF2	N-PF3
5/8	16	130	250	250	250	N-PF3	N-PF3	N-PF2	N-PF3
3/4	19	105	215	215	215	N-PF3	N-PF3	N-PF2	N-PF3
1	25	90*	165*	165*	165*	N-PF3	N-PF3	N-PF2	N-PF3
1 1/4	31	65	125	125	-	N-PF3	N-PF11	N-PF2	-
1 1/2	38	50*	90*	90*	-	N-PF3	N-PF11	N-PF2	-
2	51	40	80	80	-	N-PF3	N-PF11	N-PF2	-

The *marked hoses are tested as representative for the range.

Type Approval documentation

Manufacturers catalogue edition 01/2006.

Impulstesting report for 1SN: No 05/080-1-2, 05/076-1, 05/081-1, 05/082-2

Impulstesting report for 2SN: No 05/080-2-4, 05/076-2, 05/081-2, 05/082-1

Impulstesting report for 2ST: No 05/080-3-1, 05/076-3-1, 05/081-3, 05/082-3

Impulstesting report for 2SC: No 05/080-4, 05/076-4-1, 05/081-4

Burst testing report 1SN: No. 05/080-1-1, 05/076-1-1, 05/081-1-1, 05/082-2-2

Burst testing report 2SN: No. 05/080-2-5, 05/076-2-1, 05/081-2-1, 05/082-1-1

Burst testing report 2ST: No. 05/080-3-2, 05/076-3-2, 05/081-3-1, 05/082-3-1

Burst testing report 2SC: No. 05/080-4-1, 05/076-4-3, 05/081-4-1

Fire testing report 1SN: No.1352,-3,-4,-5.0IS0110/05

Fire testing report 2SN: No.1356,-7,-8,-9.0IS0110/05

Fire testing report 1SN: No.1360,-1,-2,-3.0IS0110/05

Fire testing report 1SN: No.1364,-5,-6.0IS0110/05

Retention survey report dated 2011-05-18

Tests carried out

Hose, by Manuli : Dimensional check, Burst, Change in length, Impulse, Cold flexibility, Oil resistance, Ozone resistance. According to EN853/857.

Hose assembly with couplings, by Volz: Burst testing acc. to EN ISO 1402, Impulse testing acc. to EN ISO 6803, Fire testing acc. to ISO 15540:1999.

Marking of product

For traceability to this Type Approval, the hoses are to be marked by an embossed system with:

- Manufacturers logo
- Type designation
- Nominal size
- Quarter and year of production.



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Certificate Retention Survey

For retention of the Type Approval, DNV Surveyor shall perform a survey every second year, to verify that the conditions for the type approval are complied with and to witness the following tests on a selection of sizes:

- Dimensional check.
- Change in length
- Leakage test
- Burst test

The tests shall be performed in accordance with procedures given in Det Norske Veritas' Standard for Certification No. 2.9, Type Approval programme 5-791.70, "Type Approval of Flexible Hoses of Non-Metallic Material".
The tests are to be performed with the type of couplings fitted that are Type Approved with the hoses.

END OF CERTIFICATE