



DET NORSKE VERITAS

EC TYPE-EXAMINATION CERTIFICATE

Application of: Council Directive 96/98/EC of 20 December 1996 on Marine Equipment as amended by directive 2002/75/EC, issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Directorate. This certificate is issued by Det Norske Veritas under the authority of the Government of the Kingdom of Norway.

CERTIFICATE NO. MED-B-3782

This Certificate consists of 5 pages

This is to certify that the product

Penetrations through "A" class divisions: pipe, duct, trunk, etc penetrations

with the type designation(s)

FS-FLEX D Pipe Penetration

Manufactured by

**ESSVE Produkter AB
SOLLENTUNA, Sweden**

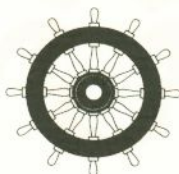
*is found to comply with the requirements in the following Regulations/Standards:
Annex A.1, item No. A.1/3.26b and Annex B, Module B in the Directive. SOLAS 74 as amended, Regulation II-2/9.3.1 and IMO FTP Code.*

Further details of the product and conditions for certification are given overleaf.

Place and date

Høvik, 2006-10-06

for DET NORSKE VERITAS AS



This Certificate is valid until

2009-09-22

Tore Morten Wetterhus

Tore Morten Wetterhus
Manager, MTPNO370
Department Systems & Components

Notified Body No. 0575



Håkon Laskemoen

Håkon Laskemoen
Surveyor

DNV local office:
DNV Stockholm



Notice: The certificate is subject to terms and conditions overleaf. Any significant changes in design or construction of the product, or amendments to the Directive or Standards referenced above may render this certificate invalid. The product liability rests with the manufacturer or his representative in accordance with Council Directive 96/98/EC, as amended.

The Mark of Conformity may only be affixed to the product and a Declaration of Conformity may only be issued when the production/product assessment module referred to in the council directive, is fully complied with.

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.



Cert. No.: MED-B-3782
Job Id.: 344.1-000362-3
File No.: A1/3.26B

Product description

“FS-Flex D Pipe Penetration”

Consisting of a 200 mm long steel sleeve welded or bolted to the bulkhead/deck with “Blanket D-24B” packed into the cavity between pipe and sleeve. The sleeve is sealed at both ends with a layer of 15 mm (nom.) thick FireStop Sealant 3000.

For further details see drawing in appendix.

Applications/Limitations

Approved for use as a pipe penetration system in class A-60 bulkheads and decks. Approved for use in class A-0, A-15 and A-30 when the penetration system (sleeve and pipe) is insulated as A-60.

The insulation materials used have to be approved according to the Marine Equipment Directive and bear the Mark of Conformity.

The product is to be supplied with its manual for installation and maintenance.

Type Approval documentation

Test reports Nos.

846007.04A and 846007.04B dated 18 September 1997 and 103070.30 dated 17 March 2004 from SINTEF NBL as, Trondheim, Norway

P00 8522 and P00 8555 dated 27 February 2001 from SP, Borås, Sweden,

103070.40 A and 103070.40 B dated 3 July 2006 from SINTEF NBL as, Trondheim, Norway.

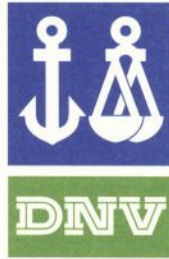
Assessment No. 846000.07/97.369 dated 29 October 1997 from SINTEF, Trondheim, Norway

Drawing No. FSH-O-081-04 Rev D, dated 26 September 2006 from the manufacturer (see appendix).

Tested according to IMO FTPC Part 3 (IMO Res. A.754(18)).


Marking of product

The product or packing is to be marked with name of manufacturer, type designation, fire-technical rating, Mark of Conformity and USCG Approval number if applicable (see overleaf).



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Mark of conformity

The manufacturer is allowed to affix the Mark of Conformity  according to Article 11 in the Council Directive 96/98/EC on Marine Equipment and issue a Declaration of Conformity, only when the module D or E or F of Annex B in the same directive is fully complied with.

- Module D: The quality system for production and testing shall be approved by the Notified Body.
- Module E: The quality system for inspection and testing shall be approved by the Notified Body.
- Module F: Compliance of the products to type as described in this EC Type-Examination Certificate must be verified by the Notified Body who also shall issue a Certificate of Conformity.

USCG Approval

An U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F), as allowed by the "Agreement between the United States of America and the EEA EFTA states on the mutual recognition of certificates of conformity for marine" signed 17 October 2005.





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Additional application/information for Watertightness/gastightness (Not part of the Marine Equipment Directive requirement)

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For further details see drawing in appendix.

Application/Limitation

Approved for penetration in steel bulkheads or steel decks limited to a pressure of 1.6 bar water tightness and 0.02 bar gas tightness (test pressure 2.5 bar and 0.03 respectively).

The penetration system is generally not to be used for penetrating boundaries of tanks.

Type Approval documentation

Test report FSR-C-260-06 dated 3 May 2006 (Gas tightness) and FSR-I-021-98 dated 10 March 1998 (Water tightness) both test reports from the manufacturer.

Tests carried out

Tested according to DNV Type Approval Programme 471.19-1 and Germanischer Lloyd’s Regulation for the Performance of Type Test Part 2, Test requirements for Sealing System of Bulkhead and Deck Penetrations.





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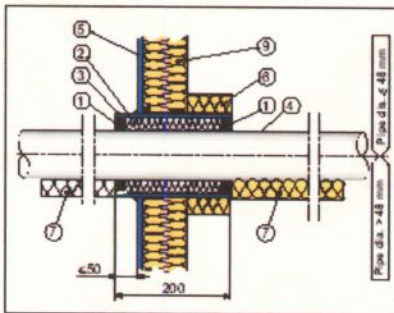
APPENDIX, REV. NO. 0

EC Type Examination Certificate, Certificate No. MED-B-3782

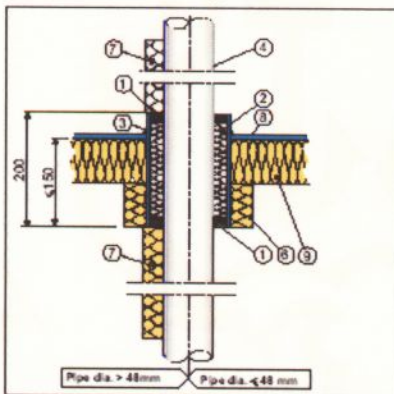


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			Type PD

Typical Bulkhead Penetration - Type SPD-B



Typical Deck Penetration - Type SPD-D



Key:

- 1 Firestop Sealant 3000, 15 thk (nom.)
- 2 D-24B Calcium Silicate Blanket
- 3 Steel sleeve 200 long (min.), 4 wall thk (min.), size from 60 up-to 375 O.D. or up-to 534 x 274 *
- 4 Steel pipe from 17 up-to 273 O.D.*
- 5 Bulkhead plate*
- 6 Sleeve insulation RW 80:
40 thk for sleeve < 150 O.D.*
50 thk for sleeve ≥ 150 O.D.*
- 7 Pipe insulation RW 80:
Pipe > 48.3 < 219 O.D. 50 thk x 600.
Pipe ≥ 219 < 273 O.D. = 50 thk x 450 each side *
- 8 Deck plate*
- 9 Division insulation to yard specification*

*Yard Supply

FS-Flex D

**Pipe penetration with elastomer
A0, A15, A30 & A60 Class**

Area of Use
Intended for single (SPD) and multiple (MPD) pipe penetrations below or above the waterline.

Special Properties
Movements or vibrations of the penetrating pipe are accepted.

Simple installation - no special tools required.

Changes, repairs or retrofits are made with ease.

Lightweight sleeve - no filling holes required.

FS-Flex D is tested to IMO Resolution A.754 (18).

Technical Data	
Fire Rating	A0, A15, A30 & A60
Watertightness	167 kPa (16,7 mWC) without reinforcement
Gas tightness	20 Pa
Sound Reduction	c. 50 dB
Resiliency	±1 mm, 100 Hz
Movements	± 20% of annulus

Moisture Protection
No moisture protection of seal surfaces required.

Technical Support
Contact FireSeal for specification, approval certification or any other details.

Also accepted for copper pipes ranging from 15 up-to 108 O.D. Pipes to be insulated both sides with RW 100, 50 thk and 600 length.



Recommendations for use of our products are based on tests and information we believe to be reliable. Manufacturer or seller are not responsible for products where the products are used under conditions beyond our control. Specifications are subject to change without notice.

END OF CERTIFICATE

