



Germanischer Lloyd

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested in accordance with the relevant requirements of the GL Type Approval System.

Certificate No. 33 800 - 06 HH

Company Essve Produkter AB
P.O.Box 770
191 27 Sollentuna, SWEDEN

Product Description PIPE PENETRATIONS THROUGH A 60 CLASS DIVISIONS

Type FS-Flex D

Environmental Category None

Technical Data / Range of Application TECHNICAL DATA:
The FS-Flex D pipe penetration consist of:
Penetration sleeve made of steel welded or bolted into the bulkhead / deck filled with D-24B Calcium Silicate Blanket and closed with Firestop Sealant 3000

Length of penetration sleeve and its insulation is to be carried out according to Doc.No. FSH-O-081-04, Rev. D enclosed to this certificate.

Range of Application
The FS-Flex D pipe penetration is approved for use in bulkheads and decks of class A-15, 30, 60 as well as of B-class and watertight/gas tight bulkheads for:

- Carbon steel, stainless steel pipes up to 273 mm
- Copper pipes up to 108 mm

Test Standard Test Requirements for Sealing Systems of Bulkhead and Deck Penetrations of Germanischer Lloyd: 2003. IMO Res. 754(18): 1993

Documents - Test reports SINTEF, Norway:
No.103070.30, 103070.28B, 103070.40B, 103070.40A
- In house Watertightness Test Report No FSR-I-029-98 and Gastightness Test Report FSR-C-260-06

Remarks None

Valid until 2011-09-13

Page 1 of 1

Type Approval Symbol



File No. II.J.01

Hamburg, 2006-09-14

Germanischer Lloyd

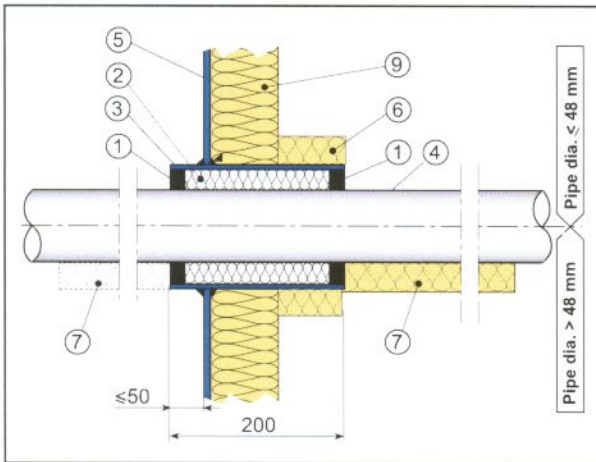
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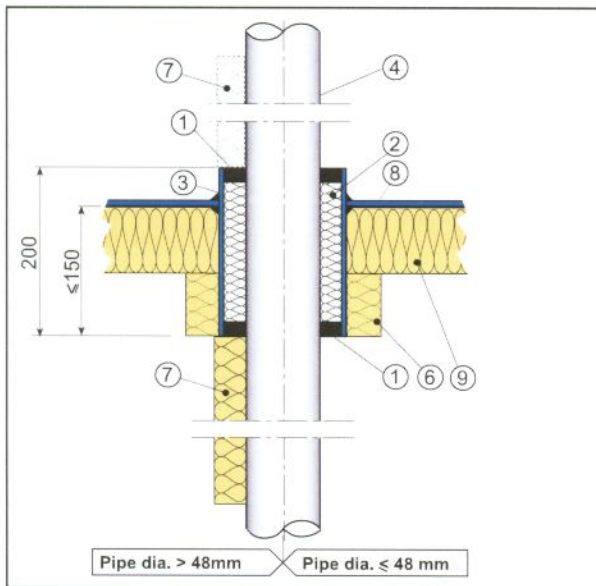
This certificate is issued on the basis of "Guidelines for the Performance of Type Approvals Part 1, Procedure".



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.), 2 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	250 kPa (25 mWC) without reinforcement
Gas tightness	30 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.

