



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. F-19632

This is to certify that the
Fire Damper

with type designation(s)
Single and Multiblade Fire Damper Types FDB2-EL, FDB2-PNL, FDB2-PNR and FDB2-SP

Manufactured by
Halton Oy
LAHTI, Finland

is found to comply with
Det Norske Veritas' Offshore Standards
Det Norske Veritas' Rules for Classification of Ships
Det Norske Veritas' Interpretation of SOLAS 1974 Convention as Amended

Application
The damper is approved for use in ducts penetrating bulkhead or deck Class A-0 to A-60.
Size of damper: Max 2000 x 1900 mm. Min. 100 x 100 mm.
Application/Limitations see overleaf.

Høvik, 2011-02-02
for Det Norske Veritas AS



This Certificate is valid until
2012-12-31

Petter Langnes
Head of Section

DNV local office:
Helsinki

Rolf Emilsen
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.: F-19632
 File No.: 472.22
 Job Id.: 262.1-004834-8

Product description

"Single and Multiblade Fire Damper Types, FDB2-EL, FDB2-PNL, FDB2-PNR and FDB2-SP" composed of actuator operated fire dampers with 1 mm damper blades and 210 mm deep casing made from 3 to 10 mm galvanized, painted steel plates or stainless steel (AISI304, 316 or 316L). The coaming and fire dampers are insulated on both exposed and unexposed side with 75 mm thick Paroc Slab 110, Paroc Slab 100, or any other equivalent and approved A-class insulation. Actuator is fitted on exposed side.
 For A-0 approved dampers, no insulation required.
 The casing to be welded or bolted to the bulkhead/deck by Ø10 mm bolts spaced 150 mm apart. For use of gaskets, if any, see Application/Limitation below.

The Fire damper is also manufactured at the premises of:
 Halton Ventilation (Shanghai) Co. Ltd.
 Lingang New City, Pudong,
 Shanghai, The People's Republic of China.

Application/Limitation

The fire dampers of type FDL-EL, FDB2-EL, FDB2-PNL, FDB2-PNR and FDB2-SP are approved for use in duct penetrating bulkheads and decks with fire rating as follows:

FIRE DAMPER TYPE	SIZE (W x H)	FIRE RATING, BULKHEAD INSTALLATION:	FIRE RATING, DECK INSTALLATION:
FDB2-EL/ PNL/PNR	2000 x 1900	A-0: No insulation dwg, LH-5219 Rev. A A-15 or A-30 – with insul. dwg. LH-5187 Rev. C	A-0 No insulation dwg. LH-5219 Rev. A A-15 – with insul. dwg. LH-5187 Rev. C
FDB2-EL/ PNL/PNR	1200 x 1600	A-0: No insulation dwg. LH-5219 Rev. A A-15 or A-30 – with insul. dwg. LH-5187 Rev. C A-60 – with insul. dwg. LH-5189 Rev. D	A-0: No insulation dwg. LH-5219 Rev. A A-15 or A-30 – with insul. dwg. LH-5187 Rev. C A-60 – with insul. dwg. LH-5189 Rev. D
FDB2-EL/ PNL/PNR/ SP	100 x 100	A-0: No insulation dwg. LH-5219 Rev. A A-15 or A-30 – with insul. dwg. LH-5187 Rev. C. A-60 – with insul. dwg. LH-5189 Rev. D	A-0: No insulation dwg. LH-5219 Rev. A A-15 or A-30 – with insul. dwg. LH-5187 Rev. C. A-60 – with insul. dwg. LH-5189 Rev. D

DAMPER MODULES,	TWO DAMPERS TOGETHER	FOUR DAMPERS TOGETHER
FDB2 size of one damper:	W is ≤ 1000mm, the H is ≤ 1900mm	W is ≤ 1000mm, the H is ≤ 1600mm
FDB2 size of one damper:	W is 1000mm < W ≤ 1200mm, H is ≤ 1600mm Installation dwgs. See drawings in Statement VTT-S-3542-10	W is 1000mm < W ≤ 1200mm, H is ≤ 1400mm. Installation dwgs. See drawings in Statement VTT-S-3542-10

Blade gaskets other than Silicon LTE and/or Intumex LSK may be used if having equivalent fire technical and functional properties, and approved according to IMO FTPC Part 1.

When gaskets between frame and coaming are used, they must be approved according to IMO FTPC Part 1.
 The fire dampers to be automatic operated with fusible link by actuators of following type:

For FDB2-EL (electrical):

- Belimo AF-24, BF-24-HL, BLF-230, BF-230-2-HL, SF24 ALON, SR24/120/230. (All min. 12 Nm torque). (*)
 The following modulating actuators are also part of this approval: AF24-SR, AF24-MFT, AF24-MFT2 and AF24LON (all min. 15 Nm torque).
- Schischek ExMax 15-SF, RedMax 15-SF / 5.10-SF or InMax 15-F. (*)
- Siemens GGA 326.1E., GGA, GGA126 (*)

For FDB2-PNL (linear pneumatic):

- Roder 245N. (*)

For FDB2-PNR (rotary pneumatic):

- Air Torque AT 100/101 S10 B or EL-O-MATIC ES40. (*)





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(*) Actuators of same make but with different size as mentioned above may also be used, provided that they have similar installation arrangement and equivalent fire technical and functional properties.

The fire dampers may also be spring loaded with fusible link or manual operated by handle without fusible link.

The arrangement of the fire dampers and necessary insulation of damper casing and ducting in the vicinity of the partition is subject for approval in each case. For further details see test report.

Each product is to be supplied with its manual for installation and use.

Type Approval documentation

Certification in accordance with Standard for Certification No. 1.2, Type Approval, April 2009.

Test report Nos. RTE 679/04, RTE762/04, RTE1083/04 and RTE 4422/04(03), all dated 17 May 2004. Test report Nos. RTE 1133/05 and RTE 1134/05, both dated 24 May 2005. Test report No. VTT-S-10161-07 dated 23 November 2007. VTT-S-7445-10 and VTT-S-7447-10 dated 27 September 2010, VTT-S-8566-10 and VTT-S-8567-10 dated 27 October 2010, All from VTT, Espoo, Finland.

Drawing Nos. LH-5187 Rev. C dated 27 February 2008, LH-5189 Rev. D dated 13 December 2007, LH-5219 Rev. A dated 1 February 2011 all from Halton Oy.

Statement No. VTT-S-11343-06 dated 29 November 2006 (concerning reduced coaming lengths). Statement No. VVT-S-5668-08 dated 02 July 2008 (concerning modulating actuators). Statement No. VVT-S-3913-09 dated 16 June 2009 (concerning coaming thickness >5 mm up to 10 mm). Statement No. VVT-S-1381-10 dated 16 February 2010 (concerning pneumatic actuators). Statements VTT-S-3542-10 dated 28 April 2010 (Damper modules), and VTT-S-9239-10 dated 2 December 2010 (A-0 fire dampers) All from VTT, Espoo, Finland.

Retention Survey Report dated 03 November 2008 from DNV Helsinki.

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

Marking of product

The product is to be marked with name of manufacturer, type designation and fire-technical rating.

Certificate Retention Survey

Det Norske Veritas' surveyor is to be given permission to perform Certification Retention Surveys at any time during the validity period of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Standard for Certification No. 1.2 item 4.

