

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Fire Damper**

with type designation(s)
FDO MARINE FIRE DAMPER

Issued to

Halton Marine Oy
LAHTI, Finland

is found to comply with
DNV GL offshore standards
DNV GL rules for classification – Ships
DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations

Application :

Approved for use in ducts penetrating bulkheads and decks of Class A-0 to A-60.

This certificate is recognized by Transport Canada.

Product approved by this certificate is accepted for installation on all vessels classed by DNV GL.

Issued at **Høvik** on **2018-09-25**

for **DNV GL**

This Certificate is valid until **2023-09-24**.

DNV GL local station: **Helsinki**

Approval Engineer: **Thorvald Furuseth**

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Mårten Schei-Nilsson
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.



Job Id: **262.1-017247-4**
 Certificate No: **TAF00000CF**
 Revision No: **2**

Product description

"FDO MARINE FIRE DAMPER"

Automatic/Manual (no fuse) actuator/spring operated fire damper.

For further details, see the below tables under Application/Limitation and Type Approval documentation.

The fire damper may be manufactured at the premises of:

- Halton Marine Oy, Lahti, Finland.
- Halton Ventilation Co. Ltd, Shanghai, The People's Republic of China.

Application/Limitation

The fire damper is approved for installation in A-class steel bulkheads and decks as given in below tables. Other applications are subject to case-by-case approval.

Table 1 - Fire Dampers for A-0 bulkhead

Test report 712-18TD-IMO							
Fire Damper Dimensions [mm]	Actuator (*)	No. of blades	Thickness damper frame [mm]	Thickness damper blades [mm]	Hight damper blades [mm]	Gasket fire damper	Fusible link
FDO Ø250	Schiscek InMax-15-SF	1	3	2	241	FireX	No Fuse
FDO Ø160	Schiscek InMax-15-SF	1	3	2	151	FireX	No Fuse
FDO Ø500	Petz industries Pi QT.Ex-MFD10	1	3	2	491	FireX	FT.Ex-72° Petz Industry

- Gasket between frame and coaming: Tetrakem 1027.
 - Damper is fixed to the coaming with M10 bolts and nuts.
 - Material frame, fire damper and blades: Stainless steel EN 1.4404
 - No insulation required.

Table 2 - Fire Dampers for A-15 bulkhead

Test report 718-18TD-IMO							
Fire Damper Dimensions [mm]	Actuator (*)	No. of blades	Thickness damper frame [mm]	Thickness damper blades [mm]	Hight damper blades [mm]	Gasket fire damper	Fusible link
FDO Ø250 *)	Schiscek InMax-15-SF	1	3	2	241	FireX	No Fuse
FDO Ø160 **)	Schiscek InMax-15-SF	1	3	2	151	FireX	No Fuse

- Gasket between frame and coaming: Tetrakem 1027.
 - Damper is fixed to the coaming with M10 bolts and nuts.
 - Material frame, fire damper and blades: Stainless steel EN 1.4404

*) Insulation details for FDO Ø250 A-15 standard

- Total length of the duct, coaming damper is 888 mm (unexposed side 450 mm and exposed side 388 mm).
- The unexposed side of the coaming (450 mm) is insulated with 30 mm thick "Ultimate Marine 66" (manufactured by Isover with density 66 kg/m³).
- The exposed side of the coaming and damper (388 mm) is insulated with 25 mm thick "Ultimate Marine 66" (manufactured by Isover with density 66 kg/m³).

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- ***) Insulation details for FDO Ø160 A-15 standard
- Total length of the duct, coaming damper is 478 mm (unexposed side 100 mm and exposed side 328 mm).
 - The unexposed side of the coaming (100 mm) is insulated with 30 mm thick "Ultimate Marine 66" (manufactured by Isover with density 66 kg/m³).
 - The exposed side of the coaming and damper (328 mm) is insulated with 25 mm thick "Ultimate Marine 66" (manufactured by Isover with density 66 kg/m³).

Table 3 - Fire Damper for A-60 bulkhead

Test report 442-13TD-IMO						
Fire Damper Dimensions [mm]	No. of blades	Thickness damper frame [mm]	Thickness damper blades [mm]	Hight damper blades [mm]	Gasket fire damper	Fusible link
FDO Ø500	1	3	2	Ø500	FireX	Kausalan Terä OY
<ul style="list-style-type: none"> - Total length of the duct, coaming damper is 1350 mm (unexposed side 900 mm and exposed side 450 mm). - The unexposed side of the coaming (850 mm) is insulated with 80 mm thick "Paroc Marine Wired mat 100" (manufactured by Paroc Group Oy with density 98 kg/m³) and additional layer with same thickness and length 280 mm. - The exposed side of the coaming and damper (450 mm) is insulated with 80 mm thick "Paroc Marine Wired mat 100" (manufactured by Paroc Group Oy with density 98 kg/m³) and additional layer with same thickness and length 200 mm. - Damper is fixed to the coaming by welding or bolted (M10 bolts and gasket Pyrocryl). - Material frame and fire damper: Steel 316. - Material blades: AISI 316. - Actuator: BF 230 Belimo or CSQP Elodrive (*). 						

Table 4 - Fire Damper for A-60 bulkhead

Test report 430-13TD-IMO						
Fire Damper Dimensions [mm]	No. of blades	Thickness damper frame [mm]	Thickness damper blades [mm]	Hight damper blades [mm]	Gasket fire damper	Fusible link
FDO Ø500	1	3	2	Ø500	FireX	Kausalan Terä OY
<ul style="list-style-type: none"> - Total length of the duct, coaming damper is 1350 mm (unexposed side 900 mm and exposed side 450 mm). - The unexposed side of the coaming (850 mm) is insulated with 80 mm thick "Paroc Marine Wired mat 100" (manufactured by Paroc Group Oy with density 98 kg/m³) and additional layer with same thickness and length 280 mm. - The exposed side of the coaming and damper (450 mm) is insulated with 80 mm thick "Paroc Marine Wired mat 100" (manufactured by Paroc Group Oy with density 98 kg/m³) and additional layer with same thickness and length 200 mm. - Damper is fixed to the coaming by welding or bolted (M10 bolts and gasket Pyrocryl). - Material frame and fire damper: Steel 316 - Material blades: Galvanized steel - Actuator: AT051 Air Torque or ExMax Schiscek (*). 						

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Table 5 - Fire Damper for A-60 deck

Test report VTT-S-08754-13						
Fire Damper Dimensions [mm]	No. of blades	Thickness damper frame [mm]	Thickness damper blades [mm]	Hight damper blades [mm]	Gasket fire damper	Fusible link
FDO Ø500	1	3	2	Ø500	-	Kausalan Terä OY
<ul style="list-style-type: none"> - Total length of the duct, coaming damper is 1150 mm (unexposed side 700 mm and exposed side 450 mm). - The unexposed side of the coaming (650 mm) is insulated with 80 mm thick "Paroc Marine Wired mat 100" (manufactured by Paroc Group Oy with density 92 kg/m³) and additional layer with same thickness and length 200 mm. - The exposed side of the coaming and damper (450 mm) is insulated with 80 mm thick "Paroc Marine Wired mat 100" (manufactured by Paroc Group Oy with density 92 kg/m³). - Damper is fixed to the coaming by welding or bolted (M10 bolts and gasket Pyrocryl). - Material frame, fire damper and blades: Stainless steel EN 1.4404. - Actuator: Belimo NF24A-SR-S2, Air Torque AT051 S12 B or Artjärven Laatujuosi OY Spring (*). 						

Table 6 - Fire Damper for A-60 deck

Test report VTT-S-07638-13						
Fire Damper Dimensions [mm]	No. of blades	Thickness damper frame [mm]	Thickness damper blades [mm]	Hight damper blades [mm]	Gasket fire damper	Fusible link
FDO Ø500	1	3	2	Ø500	Thermosil FireX	Kausalan Terä OY
<ul style="list-style-type: none"> - Total length of the duct, coaming damper is 950 mm (unexposed side 500 mm and exposed side 450 mm). - The unexposed side of the coaming (450 mm) is insulated with 80 mm thick "Paroc Marine Wired Mat 100 (manufactured by Paroc Group Oy with density 87 kg/m³)". - The exposed side of the coaming and damper (450 mm) is insulated with 80 mm thick "Paroc Marine Wired Mat 100" (manufactured by Paroc Group Oy with density 87 kg/m³). - Gasket between frame and coaming: Pyrocryl. - Damper is fixed to the coaming with M10 bolts and nuts. - Material frame, fire damper and blades: Stainless steel EN 1.4404. - Actuator: Elodrive CSQP-15A1E or Air Torque AT051 S12 B (*). 						

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Table 7 - Fire Damper for A-30 deck

Test report VTT-S-07638-13						
Fire Damper Dimensions [mm]	No. of blades	Thickness damper frame [mm]	Thickness damper blades [mm]	Hight damper blades [mm]	Gasket fire damper	Fusible link
FDO Ø500	1	3	2	Ø500	Thermosil FireX	Kausalan Terä OY
<ul style="list-style-type: none"> - Total length of the duct, coaming damper is 950 mm (unexposed side 500 mm and exposed side 450 mm). - The unexposed side of the coaming (450 mm) is insulated with 80 mm thick "Paroc Marine Wired Mat 100" (manufactured by Paroc Group Oy with density 87 kg/m³). - The exposed side of the coaming and damper (450 mm) is insulated with 80 mm thick "Paroc Marine Wired Mat 100" (manufactured by Paroc Group Oy with density 87 kg/m³). - Damper is fixed to the coaming by welding or bolted (M10 bolts and gasket Pyrocryl). - Material frame and fire damper: Carbon steel or Stainless steel EN 1.4404. - Material blades: Galvanized steel or Stainless steel EN 1.4404. - Actuator: Belimo BLF24 HL, Artjärven Laatujuosi OY Spring or Schiscek ExMax-5.10- YF. 						

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

The insulation used during testing is to be regarded as minimum insulation for all fire ratings, and is not to be removed if the fire damper is to be used in in divisions with lower fire ratings

The damper shall be capable of being closed from both sides of the bulkhead or deck

The fire damper is to be operated automatically and manually according to SOLAS II-2, Reg. 9.7.

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

Type Approval documentation

Certification in accordance with Class Programme DNVGL-CP-0338, October 2017.

Test report No. 712-18TD-IMO, dated 2018-03-29 and No. 718-18TD-IMO dated 2018-03-16 both from VTT Expert Services Ltd, Espoo, Finland

Test report No. 430-13TD-IMO, dated 22 November 2013 and No. 442-13TD-IMO dated 28 January 2014 both from TUV EESTI, Maardu, Estonia.


Test report No. VTT-S-07638-13 dated 4 November 2013 and No. VTT-S-08754-13 dated 17 January 2014 both from VTT Expert Services Ltd, Espoo, Finland.

Statement No. VTT-S-00593-16 dated 5 February 2016 from VTT Expert Services Ltd, Espoo, Finland (regarding manual overriding)

Drawing no. LH-5200 issue B dated 10 February 2014 from Halton Marine Oy.

Statement ST 002-14 dated 201-03-10 from TUV Eesti OÜ.

Letter concerning the change of the product name, dated 2014-03-10 from VTT Expert Services Ltd.




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Tests carried out

Tested according to IMO 2010 FTP Code part 3.

Marking of product

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



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Transport Canada Approval

Based on the procedures laid down in the Transport Canada Publication entitled "*Approval Procedures for, Life Saving Equipment and Structural Fire Protection Products (TP 14612)*", DNV GL confirms that the products listed in this certificate are in accordance with Transport Canada's requirements.

Periodical assessment

DNV GL's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Programme DNVGL-CP-0338, Section 4.