

FDL – A0(A60) Palopelti



Overview

- Type-approved by most recognized classification societies: class A0 without insulation, A15-A60 when suitably insulated
- Shock and vibration tested
- Blades with intumescent seals
- A closed damper fulfils the requirement of leakage class (EN1751:2014) from class 1 to class 2 depending on the size. Details are available from Halton Marine
- Casing leakage (EN1751:2014) class B
- The nominal fuse release temperatures are 50 °C, 74 °C or 100 °C. Other temperatures are available
- Can be installed in any position
- Automatic electrical, pneumatic or spring operation system available
- Maximum duct pressure for damper construction 5000 Pa and maximum air velocity 15 m/s
- Normal operation temperature for damper between -50 °C to +80 °C. Actuator and component selection can affect this temperature range. Other temperatures available on request
- Available as ATEX approved
- SIL 2 safety assessment certificate available for the damper on specific terms

Specification

Halton FDL fire dampers are type-approved class A0(A60) fire dampers for use in offshore, marine and navy ventilation systems. The FDL can be installed in rectangular or circular ducts. The FDL dampers are used to prevent the spread of fire within the ventilation ductwork. All fire dampers have a fusible link and spring return actuator. When the blades are in the open position, the device

does not cause significant pressure loss or flow disturbance. Fire dampers are set from outside and can be installed in any position. An open-closed indicator is visible on the outside of the damper. Fire dampers with non-standard dimensions can also be supplied on request.

Dimensions

The Halton FDL fire dampers are manufactured according to international standards for both rectangular (width B 100-1300 mm and height H 100-1200 mm, 1 mm division) and circular ducts (Ø100-1250 mm). Modular constructions are available for bigger sizes. Non-standard dimensions and flange drilling are available on request.

Standard flange width 27 mm. Flanges and drilling also available according to ISO 15138 standards.

Blades are made of two sheets, each of them being 1 mm thick (sandwich design).

Modular construction sizes up to 2660×2460 mm.

Frame material thickness 3 mm or 3-5 mm according to SOLAS.

Frame thickness according to SOLAS

DIMENSIONS	S
If B or H \geq 100, but \leq 449	3
If B or H \geq 450 but \leq 649	4
If B or H \geq 650	5

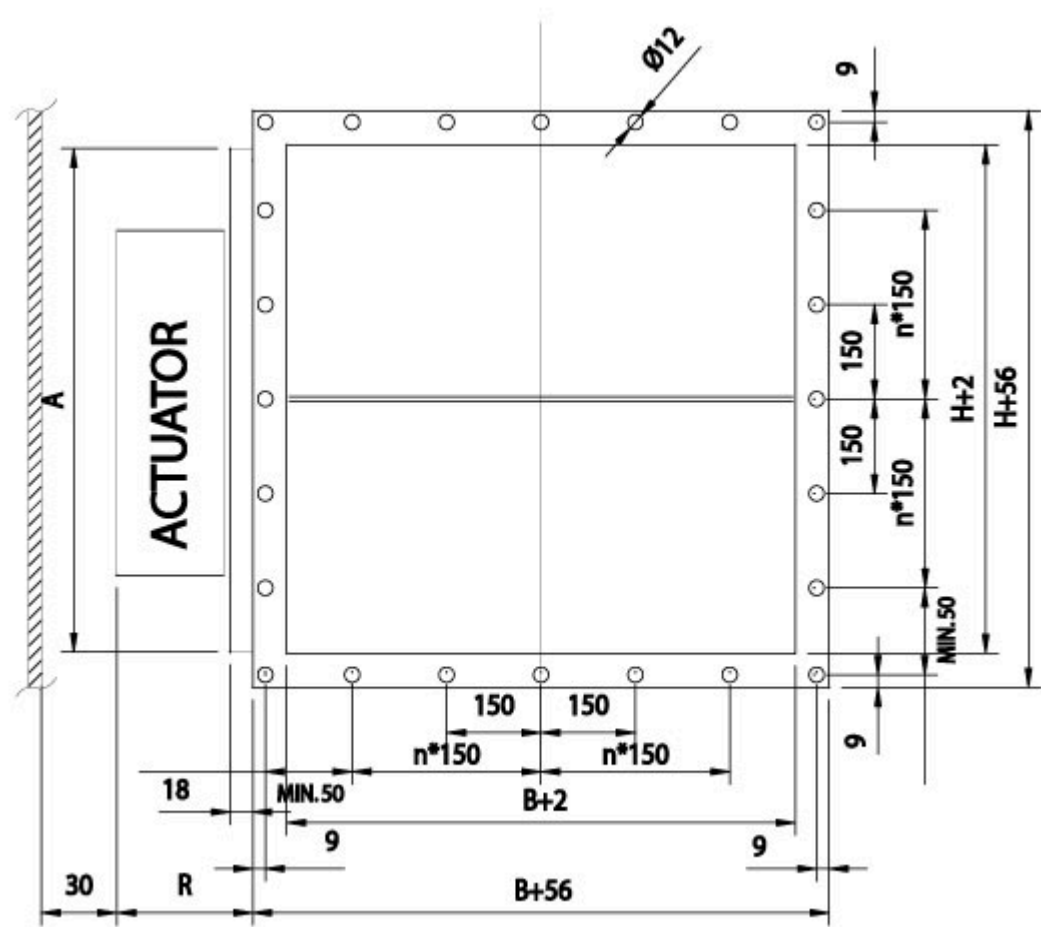
Frame thickness according to SOLAS, Edition Dec. 2015

DIMENSIONS	S
If A < 0.075 m ²	3
If A \geq 0.075 and A \leq 0.45 m ²	4
If A > 0.45 m ²	5

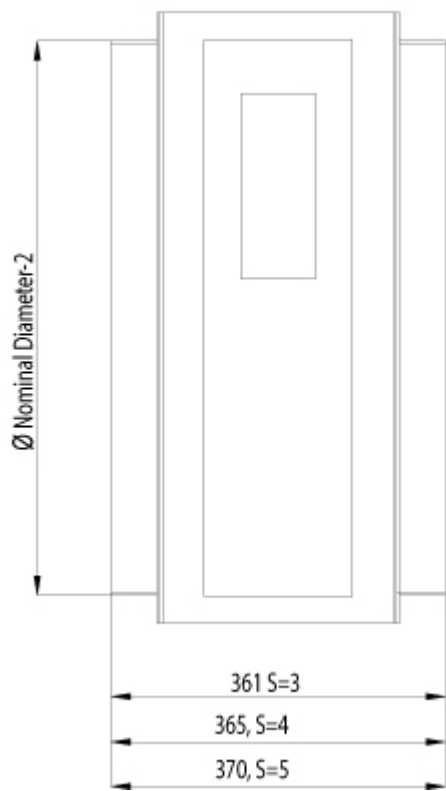
Actuator effect in dimensions

ACTUATOR		R	A
Electrical (EL)	BF230, BF24, BF120	100	H \leq 300 = 300, H>300 =H
Pneumatic (PNR)	Pneumatic rotating actuator AT100	170	H \leq 300 = 300, H>300 =H
Pneumatic (PNR)	Pneumatic rotating actuator AT200	190	H \leq 350 = 350, H>350 =H
Spring (SP)	Spring	140	H

The above table contains only some examples of actuators and their effect on dimensions.



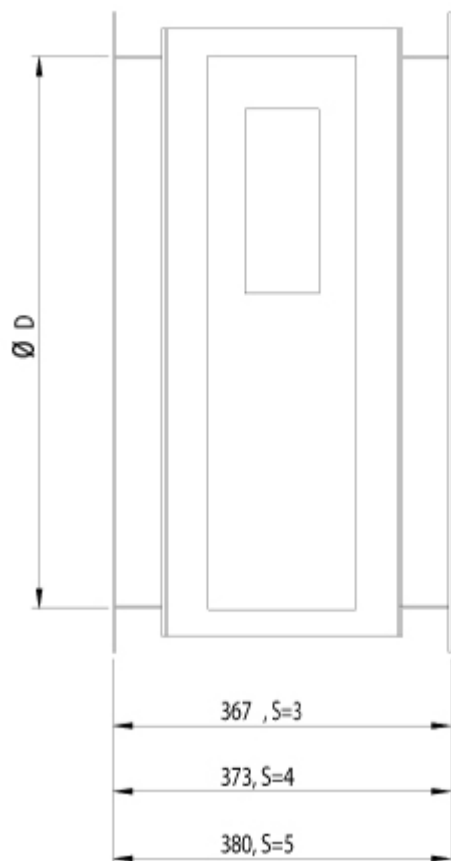
With circular connections



FDL, top



FDL circular, with connection flanges



DAMPER HEIGHT H	TOTAL DEPTH WITH BLADES OPEN
< 250 mm	212 mm
≥ 250 mm <300 mm	250 mm
≥ 300 mm <350 mm	212 mm
≥ 350 mm	240mm

Material and Finishing

PART	MATERIAL	FINISHING
Frame	Carbon steel	Painted or galvanized
Frame	Stainless steel EN 1.4301 (AISI304), EN 1.4404 (AISI316L), EN 1.4432 (AISI316L)	–
Blades	Steel	Galvanized
Blades	Stainless steel EN 1.4301 (AISI304), EN 1.4404 (AISI316L), EN 1.4432 (AISI316L)	–
Maintenance-free bearings	Stainless steel EN 1.4404 (AISI316L)	–
Shafts	Stainless steel EN 1.4404 (AISI316L)	–

Standard frame material thickness 3-5 mm according to SOLAS.

Product Models and Accessories

Halton FDL is available with following actuators:

- FDL-EL: Electrical spring return motor; standard actuators being 24 V or 230 V or 120 V. The motor contains built-in open-closed limit switches. Separate junction box included in the EL-model. A wide range of Ex actuators available, including a one second closing time function as an option.
- FDL-PNR: Pneumatic rotating actuator.
- FDL-SP: Manual spring-actuated damper with fusible link.

DOT: manual override function available for PNR and EL models.

HSO: Halton Smart Override function for HVAC damper black-start available for PNR and EL models. With automatic reset function when power and/or pneumatic air supply is reinstated.

A wide range of accessories available.

Operation Principles

In the event of a temperature rise in ductwork:

- FDL-EL: fusible link releases and cuts off operating voltage to the spring return motor, allowing the spring to close the damper blades. The fire damper opens automatically when the fuse has been changed and the operating voltage to the motor is re-established.
- FDL-PNR: fusible link releases and cuts off operating pressure to the spring return actuator,

allowing springs to close the damper blades. The fire damper opens automatically when the fuse has been changed and the pneumatic air supply is re-established.

- FDL-SP: fusible link releases allowing the spring to close the damper blades. When the fuse has been changed, the fire damper must be reset into open position manually.

Weights

Weight of standard Halton Marine FDL dampers without an actuator (kg)

H/ HEIGHT (mm)	B / WIDTH (mm)												
	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300
100	5 (5)	7 (7)	9 (9)	10 (10)	12 (13)	14 (15)	15 (22)	17 (25)	19 (27)	20 (30)	22 (32)	24 (35)	25 (37)
200	7 (7)	9 (9)	11 (11)	12 (12)	14 (16)	16 (18)	18 (26)	20 (28)	22 (31)	23 (34)	25 (36)	27 (39)	29 (41)
300	9 (9)	11 (11)	13 (13)	15 (15)	17 (19)	19 (21)	21 (30)	23 (32)	25 (35)	27 (38)	29 (41)	31 (43)	33 (46)
400	11 (11)	13 (13)	15 (15)	17 (17)	20 (22)	22 (24)	24 (33)	26 (36)	28 (39)	30 (42)	32 (45)	34 (48)	37 (51)
500	13 (16)	16 (19)	18 (22)	21 (25)	23 (27)	25 (30)	28 (38)	30 (41)	32 (44)	35 (47)	37 (50)	39 (54)	42 (57)
600	15 (18)	18 (21)	20 (24)	23 (27)	25 (30)	28 (33)	30 (41)	33 (45)	35 (48)	38 (51)	40 (55)	43 (58)	46 (61)
700	18 (25)	21 (28)	23 (32)	26 (35)	29 (39)	32 (42)	34 (46)	37 (50)	40 (53)	42 (57)	45 (60)	48 (64)	51 (67)
800	20 (27)	23 (31)	25 (35)	28 (38)	31 (42)	34 (46)	37 (50)	40 (53)	43 (57)	46 (61)	49 (64)	51 (68)	54 (72)
900	22 (31)	25 (35)	28 (39)	32 (42)	35 (46)	38 (50)	41 (54)	44 (58)	47 (62)	50 (66)	53 (70)	56 (74)	59 (78)
1000	24 (33)	27 (37)	31 (41)	34 (45)	37 (50)	40 (54)	44 (58)	47 (62)	50 (66)	53 (70)	57 (74)	60 (78)	63 (82)
1100	26 (36)	30 (41)	33 (45)	37 (49)	40 (54)	44 (58)	47 (62)	51 (67)	54 (71)	58 (75)	61 (79)	65 (84)	68 (88)
1200	28 (39)	32 (44)	36 (48)	39 (52)	43 (57)	46 (61)	50 (66)	54 (70)	57 (75)	61 (79)	65 (84)	68 (88)	72 (92)

D2 ØD	WEIGHT
(mm)	kg
100	8 (8)
125	8 (8)
160	12 (12)
200	13 (13)
250	19 (19)
315	20 (20)
400	27 (27)
500	35 (43)
630	46 (62)
800	62 (89)
1000	83 (118)
1250	113 (162)

(Frame thickness according to SOLAS)

Examples of actuator weights: FDL-EL BF230 +3,2 kg, BFN +1,4 kg, ExMax /Redmax +3,5 kg, CSQP +3 kg. FDL-PNR AT100 +2,1 kg, AT100 as AISI316 4,4 kg, AT200 +3,2kg, AT200 as AISI316 +6,2 kg, FDL-SP +1 kg. Control enclosure +4 kg.

Installation

Installation and maintenance instructions are with each fire damper delivery. Copies of Operation and Maintenance manuals are available from Halton Marine Sales offices and distributors.

Product Code

(S)=Shape of Connection

(A) Circular (D1)

(C) Circular (D2)

(R) Rectangular

(W)=Width

100-1300

(H)=Height

100-1200

(D)=Diameter
100-1250

(FA)=Fire Approval
(C1) ABS American Bureau of Shipping
(C2) MED Marine Equipment Directive
(C3) LRS Lloyds Register
(C4) DNV Det Norske Veritas
(C5) BV Bureau Veritas
(C6) GL Germanischer Lloyds
(C7) USCG United States Coast Guard
(C9) RMRS Russian Maritime Register

(SF)=Flange Option
(H0) Connection flange in circular connections
(H1) Connection + loose flange in circular connections
(HA) Flanges (2 sides)
(HB) Counter flanges (2 sides)
(HC) Counter flange (1 side)
(NA) Not Assigned (circular connection)

(FS)=Frame dimensioning
(HS) Halton Standard dimensioning
(S0) SOLAS dimensioning

(MA)=Material
(AS) Stainless steel (1.0) EN1.4404
(CS) Carbon steel (1.0)
(LS) Stainless steel (1.0) EN1.4432
(SS) Stainless steel (1.0) EN1.4301

(FM)=Frame Material
(A3) Stainless steel (3.0) EN1.4404
(A4) Stainless steel (4.0) EN1.4404
(A5) Stainless steel (5.0) EN1.4404
(C3) Carbon steel (3.0) EN1.4404
(C4) Carbon steel (4.0) EN1.4404
(C5) Carbon steel (5.0) EN1.4404
(L3) Stainless steel (3.0) EN1.4432
(L4) Stainless steel (4.0) EN1.4432
(L5) Stainless steel (5.0) EN1.4432
(S3) Stainless steel (3.0) EN1.4301
(S4) Stainless steel (4.0) EN1.4301
(S5) Stainless steel (5.0) EN1.4301

(FI)=Finishing
(HG) Hot galvanized
(NA) Not Assigned (acid treatment)
(PN) Painting

(RE)=Actuator

(E1) Electric BF24-2-HL
 (E3) Electric BF230-2-HL
 (E7) Electric BF120-HL
 (K0) Electric BFN24.1
 (K1) Electric BFN24-T.1
 (K2) Electric BFN230.1
 (K3) Electric BFN230-T.1
 (I1) InMax 15-SF
 (P0) Pneumatic – Air Torque, AT101, Aluminium
 (P1) Pneumatic Lin Roder 245N
 (P2) Pneumatic Lin Roder 300N
 (P3) Pneumatic – Air Torque, AT104, AISI316
 (Q1) Pneumatic – Air Torque, AT201, Aluminium
 (Q2) Pneumatic – Air Torque, AT204, AISI316
 (R2) Ex-proofed RedMax 15-SF
 (S1) Spring
 (T1) Electric BF24-T-2.1HL
 (T3) Electric BF230-T-2.1HL
 (Z2) Ex-proofed ExMax 15-SF
 (Z3) Ex-proofed ExMax 5-10SF
 (C1) Electric CSQP-05A1E 24V
 (C2) Electric CSQP-05A2E 120/230V
 (C3) Electric CSQP-10A1E 24V
 (C4) Electric CSQP-10A2E 120/230V
 (C5) Electric CSQP-15A1E 24V
 (C6) Electric CSQP-14A2E 120/230V

(FU)=Fuse

144 °C

100 °C

95 °C

74 °C

72 °C

70 °C

65 °C

50 °C

(AC)=Accessories

(BC) Belimo Casing

(E1) Junction box IP66/67 (Plastic) (Ensto)

(E2) EX junction box IP66/T6 (GRP) (Ensto)

(E4) Connectors (FD) (Wieland & Hensel))

(L1) Limit switch 1 pcs IP66 (Plastic) (Bernstein)

(L2) Limit switch 2 pcs IP66 (Plastic) (Bernstein)

(L3) EX Limit switch 1 pcs (Plastic) (Bartec)

(L4) EX Limit switch 2 pcs (Plastic) (Bartec)

(M1) Solenoid valve 24 VDC (Aluminium) (SMC)

(M2) Solenoid valve 230 VAC (Aluminium) (SMC)

(M3) EX solenoid valve 24 VDC (Brass) (Norgren)

(M4) EX solenoid valve 230 VAC (SS) (Norgren)

(P1) Pneumatic valve manual (Aluminum) (SMC)

(S3) SN2 auxiliary switch (Belimo)
Stainless steel tubing (AISI316) (Halton)
(ED) DOT handle (manual overdrive) (Steel) (Halton)

Code example

FD3/R-1300-1200,FA=C1,SF=HA,FS=SO,MA=CS,FM=C5,FI=HG,RE=Z2,FU=50,ZT=N,AC=E2