

FDO – A0(A60) Fire and gas damper



Overview

- Type approved by most recognized classification societies, class A0 – A60 fire damper when suitably insulated
- Available as ATEX approved
- Fixed frame of painted, galvanized or stainless steel. Blades stainless or galvanized steel. Flanges available as an option
- Blades contain seals (effective up to 270 Celsius degrees)
- Nominal fuse release temperature 50, 74 or 100 Celsius degrees. Other temperatures available
- Very low leakage
- 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 have an effect on this temperature range. Other temperatures available on request

FDO leakage class according to standard EN1751:2014

| SIZE ØD (mm) | CLOSED DAMPER LEAKAGE | CASING LEAKAGE |
|--------------|-----------------------|----------------|
| 100 | 2 | C |
| 125 | 2 | C |
| 160 | 3 | C |
| 200 | 3 | C |
| 250 | 3 | C |
| 315 | 3 | C |
| 400 | 3 | C |
| 500 | 4 | C |

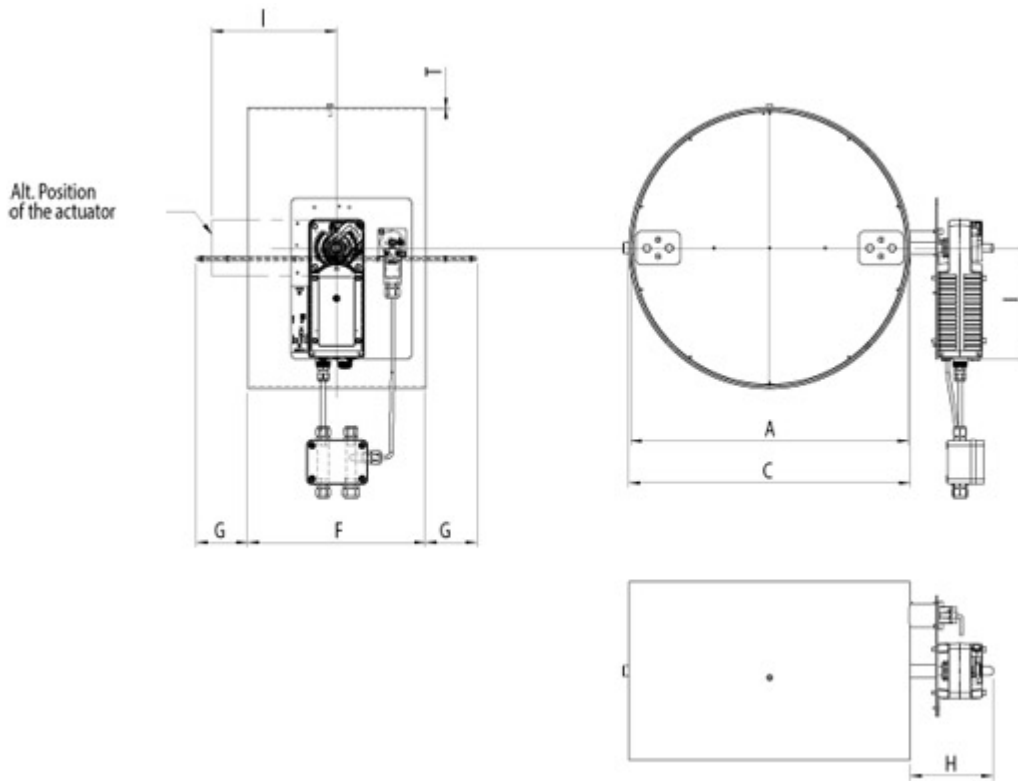
Specification

Halton FDO fire dampers are type-approved class A0(A60) fire dampers for use in marine and offshore ventilation systems. The FDO can be installed in circular ducts. All fire dampers have a fusible link and they prevent the spread of fire within ventilation ductwork. When the blade is in the open position, the device does not cause significant pressure loss, noise 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.

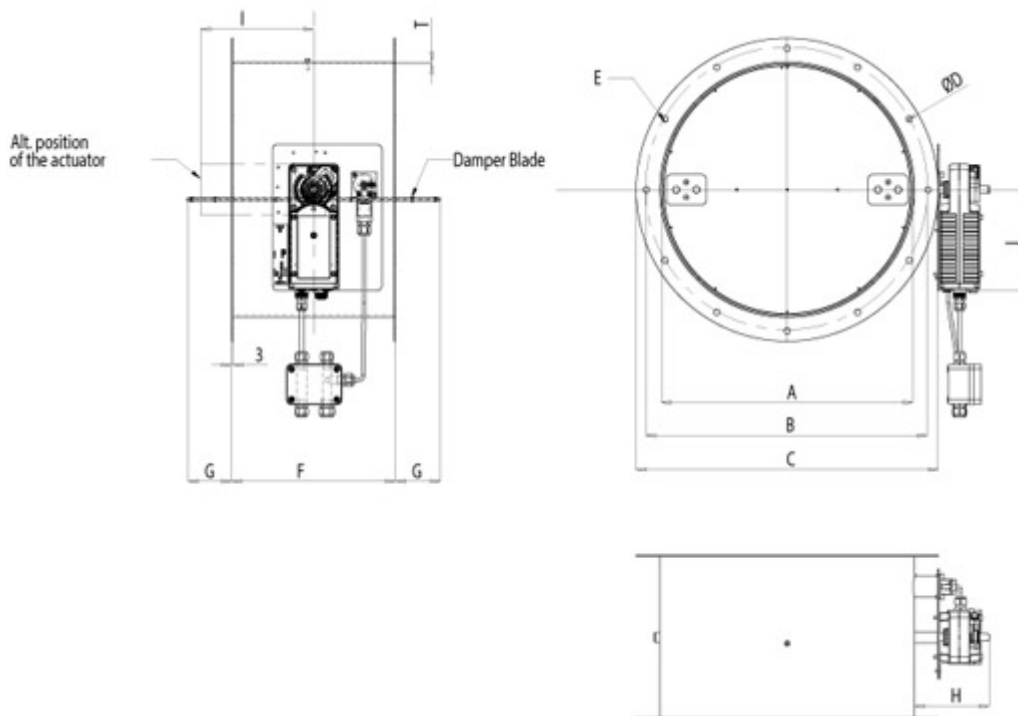
Dimensions and Material Thickness

FDO fire dampers meet international standards for circular ducts (Ø100-500 mm). Sizes Ø100 and Ø125 are not available of stainless steel. Sizes starting from Ø160 can be manufactured with 1 mm division. Flanges and drilling available as an option and according to ISO 15138 standards. Special flanges and drilling available on request. Frame material thickness 3 mm or according to SOLAS. Flap is made of two sheets, each of them being 1 mm thick (riveted together).

General FDO drawing (without flanges)



General FDO drawing (with flanges)



FDO dimensions without flanges (standard)

| Damper size | Inside dimensions | Outside dimensions | Material thickness | Housing Left | Blade | FDO-EL | | | | FDO-PNR | | |
|-------------|-------------------|--------------------|--------------------|--------------|-------|---------------------------|-----|-----------|-----|-----------------|-----|---------------|
| | | | | | | Eledrive CSQP / Schischek | | Belimo BF | | Air Torque AT50 | | Air Torq AT10 |
| Ø | A | C | T | F | G | H | I | H | I | H | I | H |
| 100 | 100,8 | 108 | 3,6 | 200 | – | 150 | 200 | 115 | 200 | 145 | 215 | 165 |
| 125 | 125 | 133 | 4 | 200 | – | 150 | 200 | 115 | 200 | 145 | 215 | 165 |
| 160 | 160 | 166 | 3 | 200 | – | 150 | 200 | 115 | 200 | 145 | 215 | 165 |
| 200 | 200 | 206 | 3 | 320 | – | 150 | 200 | 155 | 200 | 145 | 215 | 165 |
| 250 | 250 | 256 | 3 | 320 | – | 150 | 200 | 115 | 200 | 145 | 215 | 165 |
| 315 | 315 | 321 | 3 | 320 | – | 150 | 200 | 115 | 200 | 145 | 215 | 165 |
| 400 | 400 | 408 | 4 | 320 | 43 | 150 | 200 | 115 | 200 | 145 | 215 | 165 |
| 500 | 500 | 508 | 4 | 320 | 93 | 150 | 200 | 115 | 200 | 145 | 215 | 165 |

FDO dimensions with flanges (as an option)

| Damper size | Inside dimensions | Bolt circle | Outside dimensions | Material thickness | Bolt holes | Bolt holes Qty | Housing Length | Blade | FDO-EL | | | |
|-------------|-------------------|-------------|--------------------|--------------------|------------|----------------|----------------|-------|---------------------------|-----|-----------|-----|
| | | | | | | | | | Eledrive CSQP / Schischek | | Belimo BF | |
| Ø | A | B | C | T | D | E | F | G | H | I | H | I |
| 100 | 100,8 | 120 | 200 | 3,6 | 8,5 | 4 | 206 | – | 150 | 200 | 115 | 200 |
| 125 | 125 | 150 | 225 | 4 | 8,5 | 4 | 206 | – | 150 | 200 | 115 | 200 |
| 160 | 160 | 185 | 260 | 3 | 8,5 | 4 | 206 | – | 150 | 200 | 115 | 200 |
| 200 | 200 | 225 | 300 | 3 | 8,5 | 4 | 326 | – | 150 | 200 | 155 | 200 |
| 250 | 250 | 280 | 350 | 3 | 12 | 4 | 326 | – | 150 | 200 | 115 | 200 |
| 315 | 315 | 355 | 415 | 3 | 12 | 8 | 326 | – | 150 | 200 | 115 | 200 |
| 400 | 400 | 450 | 500 | 3 | 12 | 8 | 326 | 40 | 150 | 200 | 115 | 200 |
| 500 | 500 | 560 | 600 | 3 | 12 | 12 | 326 | 90 | 150 | 200 | 115 | 200 |

Material and Finishing

| PART | MATERIAL | FINISHING |
|---------------------------|---|-----------------------|
| Frame | Carbon steel | Painted or galvanised |
| Frame | Stainless steel EN 1.4301 (AISI304), EN 1.4404 (AISI316L), EN 1.4432 (AISI316L) | – |
| Blades | Steel | – |
| 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) | – |

Product Models and Accessories

Halton FDO is available with following actuators:

- FDO-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.
- FDO-PNR: Pneumatic rotating actuator
- FDO-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:

- FDO-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 .
- FDO-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.

- FDO-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

Weights of standard Halton Marine FDO dampers (kg) without an actuator

FDO weight without flanges

| SIZE ØD (mm) | KG |
|--------------|------|
| 100 | 4 |
| 125 | 4,5 |
| 160 | 4,6 |
| 200 | 7,5 |
| 250 | 9 |
| 315 | 12 |
| 400 | 17 |
| 500 | 22,5 |

FDO weight with flanges

| SIZE ØD (mm) | KG |
|--------------|------|
| 100 | 5 |
| 125 | 5,7 |
| 160 | 6,1 |
| 200 | 9,5 |
| 250 | 11 |
| 315 | 14,5 |
| 400 | 20,1 |
| 500 | 26,3 |

Weights stated above do not include flanges or any actuator.

Examples of actuator weights: FDO-EL CSQP +3,5 kg, BF230 +3,2 kg, BLF230 +1,7 kg, ExMax or Redmax or InMax +3,5 kg, FDO-PNR AT100 (AISI) +6,2 kg, AT150 (AISI) 3 kg, FDO-SP +1 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

(D)=Diameter

100-500

(FA)=Fire Approval

(C1) ABS American Bureau of Shipping

(C2) MED Marine Equipment Directive

(C3) LRS Lloyds Register

(C4) DNV Det Norske Veritas – GL

(EX)=Atex Class

(NA) No ATEX class (safe area)

(X1) EX II 2 G (Zone 1)

(SF)=Flange Option

(H0) Eurovent flange in circular connections

(H1) Eurovent flange + loose flange in circular connections

(HA) Eurovent flanges

(N0) ISO15138 flange drilling in circular connection

(N1) ISO15138 flange drilling + Loose flange in circular connection

(NA) Circular connections without flanges

(NR) ISO15138 flange drilling

(FS)=Frame dimensioning

(HS) Halton Standard dimensioning

(SO) SOLAS dimensioning

(MA)=Material

(CS) Carbon steel

(SS) Stainless steel EN1.4301

(AS) Stainless steel EN1.4404

(LS) Stainless steel EN1.4432

(FM)=Frame Material

(A3) Stainless steel (3.0) EN1.4404

(A4) Stainless steel (4.0) EN1.4404

(C3) Carbon steel (3.0)

(C4) Carbon steel (4.0)

(L3) Stainless steel (3.0) EN1.4432

(L4) Stainless steel (4.0) EN1.4432

(S3) Stainless steel (3.0) EN1.4301

(S4) Stainless steel (4.0) EN1.4301

(FI)=Finishing

(NA) Not Assigned (acid treatment)

(PN) Painting

(PX) Special Painting C5-M ISO12944

(HG) Hot galvanized

(RE)=Actuator

(S1) Spring

(P0) Pneumatic – Air Torque, AT101, Aluminium

(P3) Pneumatic – Air Torque, AT104, AISI316

(E7) Electric BF120 -2 -HL

(Z3) Ex proofed ExMax 5.10 SF

(Z2) Ex proofed ExMax 15 SF

(R2) Ex proofed RedMax 15-SF

(I1) InMax 15-SF

(E3) Electric BF230-2-HL

(E1) Electric BF24-2-HL

(L1) Electric BLF24-HL

(L5) Electric BLF230-HL

(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-15A2E 120/230V

(Q3) Pneumatic Rot AT051, AL

(Q4) Pneumatic Rot AT054, AISI316

(FU)=Fuse

144 °C

100 °C

95 °C

74 °C

72 °C

70 °C

65 °C

50 °C

(AC)=Accessories

(E1) Junction box, plastic IP65 :

(E2) Ex proofed junction box, IP65, T6 :

(L1) Limit switch, 1 pcs IP66 :

(L2) Limit switch, 2 pcs IP66 :

(L3) Ex proofed limit switch, 1 pcs IP65 :

(L4) Ex proofed limit switch, 2 pcs IP65 :

(M1) Solenoid valve 24 VDC :

(M2) Solenoid valve 230 VAC :

(M3) Ex Solenoid valve 24 VDC (Brass) (Norgren)

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

(P1) Pneumatic valve, manual

(S3) SN2 auxiliary switch

(ST) Stainless steel tubing

Code example

FDO-100,FA=C2,SF=HA,FS=SO,MA=CS,FM=C3,FI=PN,RE=C2,FU=50,ZT=N,AC=L1