MOTORIZED MARINE FIRE DAMPER

MODEL: FSD-E
FSD-P

Introduction

Fire / Smoke Dampers are used in ventilation systems to prevent the spread of toxic smoke and fire between divisions.

Description

Class A for Deck and Bulkhead Applications. Kyodo fire dampers satisfy 60 minutes requirements for stability and integrity according to Chapter II-2, Regulation 3 of **SOLAS** 1974, as amended. Tested according to IMO International Code for Application of **FTP** Fire Test Procedures Annex 1, part 3.

Complies to Marine Equipment Directive 96/98/EC(MED).

USCG (U.S. Coast Guard) approval number: Marine Fire Damper: 164.139/EC0575/4922, FSD-E and FSD-P: 164.139/EC0575/5085.

0575/YY
YY denotes last two digits of the number of the year in which the damper is produced.

DNV

DET NORSKE VERITAS

EC TYPE-EXAMINATION CERTIFICATE

Kyodo-Allied Technology Pte Ltd
Singapore, Singapore

Applications

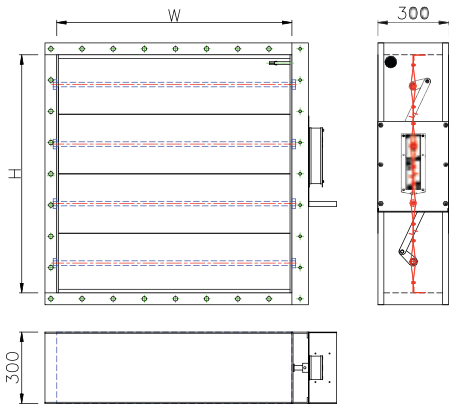
Marine, Process and General Ventilation Systems.

Features

- Robust construction
- Low casing leakage
- Low blade leakage
- Low airflow resistance
- Manual, pneumatic, or electrical operation

Dimensional Limits

The minimum size is 200mm wide x 200mm high. The maximum single module size is 1000mm wide x 1000mm high.



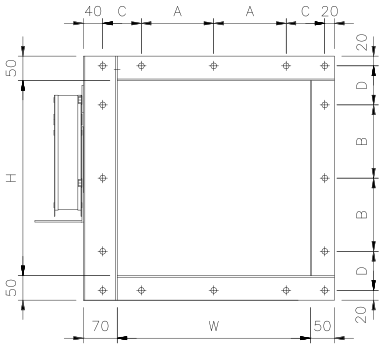
Construction

Kyodo fire/smoke damper frame is constructed of high quality galvanized steel with thickness of 3-5mm according to SOLAS. 50mm flange with pre-punch holes for connection to duct flanges are provided (refer to tabulation below for hole spacing).

The blades are constructed with 1.5mm stainless steel, double skin aerofoil design bolted to 19mm solid shaft. When full opened, the blades will not protrude outside the outer frame. The aero-foil design ensures low pressure loss, reduce flow disturbance and noise.

Stainless steel jamb seal and blade edge seal are incorporated to achieve low leakage rate.

The damper is Class A0-A60 when suitably insulated. It is accepted by most of the recognized classification societies.



All dimension are in mm

A	130 (W<250)
	150 (W≥250)
B	130 (W<250)
	150 (W≥250)
C	Minimum 80, maximum 130
D	Minimum 80, maximum 130

Leakage Rates

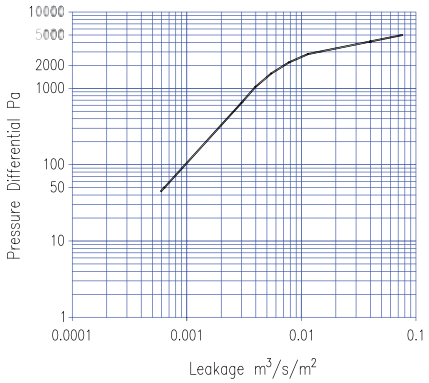
Kyodo fire/smoke damper has achieved a mean leakage rate of

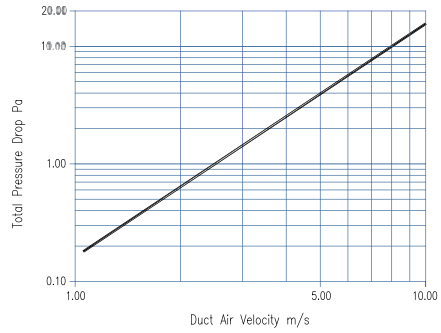
- 0.040 $m^3/s/m^2$ at a differential pressure of 2,000Pa
- 0.002 $m^3/s/m^2$ at a differential pressure of 50Pa

For special requirement, our damper can achieve low leakage rate up to differential pressure of 5,000Pa and above.

Performance Tested

The test methods were taken from BS EN 1751:1999, methods were comparable with those used in American standard AMCA 500-D-98. Leakage tests within BS1886, DW144 and UL555S also used the same methods.

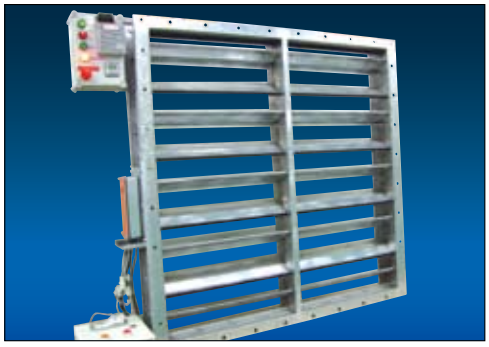




Full aerodynamic performance data is presented above (based on 1000mm x 1000mm damper) which is based on tests conducted. Total pressure loss measured across the fire / smoke damper when the blades are fully open.

Cycling Test

The damper is cycle tested for 60,000 cycles. The operation of the damper is controlled by the actuator unit modified to give repeated opening and closing cycles. One cycle comprises of the damper starting from the closed position, fully opened and then completely closed.



Actuator

BELIMO

Electrical Actuator For Model FSD-E:

1. AC 24V 50/60Hz or DC 24V 10VA 7/2W
2. AC 230V 50/60Hz 12.5VA 8/3V

The damper is fitted with an electrical control system which enables rapid opening and closing of the damper blades.
Remote indication of blade fully open and fully closed status can be signalled by microswitches mounted in to the electrical actuator which is positively connected to the damper blades.

The details of electrical control are described in the following text.

1. ELECTRICAL CONTROL SYSTEM

Control voltage 24 VAC/VDC (230VAC) is supplied to the junction box. This is connected via microswitch/ fusible link assembly to the drive actuator. This control voltage provides the motive force to open the damper blades in which position it will remain as long as the control voltage is maintained. Isolation of the actuator from the control voltage supply allow the spring return forces in the actuator to rotate it back through 90° to the damper "closed" position. This is the basis of the "fail safe closed" mode of control.

The movement of the damper blades is accomplished with a rotary, single-acting, spring return actuator which is directly attached to one of the blade drive shafts. The other blades are connected to the drive shaft by means of a linkage mechanism. The damper open and closed conditions are selected by energising or de-energising the control voltage supply.

1.1 Normal operation

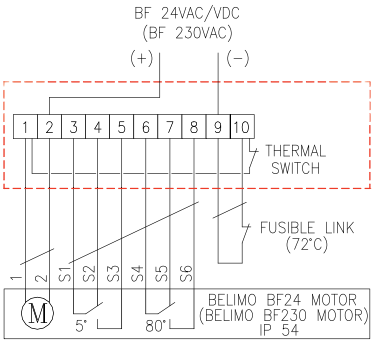
A) Selecting damper "OPEN" will energise control voltage supply. Control voltage will then pass via the microswitch/fusible link assembly into damper actuator hence opening the damper.

B) Selecting damper "CLOSED" will de-energise the control voltage supply. The spring return actuator closed the damper.

1.2 Automatic damper closing

A) The damper will automatically "CLOSED" if the temperature of the air within the damper duct exceeds 72ºC thus breaking the fusible link which allows the microswitch to go into the "CLOSED" position thus de-energise the spring return actuator.

B) If the damper operating control voltage supply is also controlled by the Platform Fire, Gas or Smoke detection systems, the damper will automatically CLOSE if any of these safety systems are activated i.e. the control voltage supply is de-energised.



The type BF… & BF…-T spring-return actuator is intended for the operation of fire and smoke dampers in ventilation and air-conditioning systems.

The BF… & BF…-T actuator moves the damper to its normal working position while tensioning the return spring at the same time. If the power supply is interrupted, the energy stored in the spring moves the damper back to its safe position.

Electrical Thermal Release

The BAE72 & BAE72-S Thermoelectric tripping device operates in conjunction with a spring return actuator to drive a motorized fire damper to its “safe” position in the event of the preset maximum temperature being exceeded.

The device is normally connected to the BKN230-24… communications and power unit. In systems with no such unit, the device is connected in series with the power supply of the spring-return actuator (use only 24 V actuators).

The BAE72 tripping device employs two thermal trips Tf1 and Tf2.

Thermal trip Tf1 operates if the ambient temperature exceeds 72 °C. Replaceable thermal trip Tf2 operates if the temperature inside the duct exceeds 72 °C. Both trips cause the power supply to be interrupted permanently so that it cannot be uncancelled. Note: BAE72 the Tf1 cannot be reset or replaced.

If the power supply is interrupted, the energy stored in the spring moves the damper back to its safe position.

SCHISCHEK EXPLOSIONPROOF

Electrical Actuator (Schischek) For Model FSD-E:

24…230 VAC/DC 50…60 Hz

For hazardous area under Zone 1, 2, 21 and 22 Schischek actuators will be used. Closing time is 1 sec., 3 sec. or 10 sec. (adjustable on site).

AIR TORQUE

Pneumatic Actuator For Model FSD-P:

Max. pressure 8 bar

The Air Torque actuator offers an economical solution when is required to lock the actuator in the fully-open (90°) or fully-closed (0°) position. The actuator can be supplied with a special bolt and locking device to permanently lock the actuator in position by using a padlock and preventing unwanted operation.

The actuator type, size, operating pressure, output torque, direction of rotation, orientation of failure mode, operating temperature and drive type are determined by actuator designation.

Supply pressure:

For Double Acting and Spring Return actuators the maximum supply pressure is: 8 Bar (116 PSI). Minimum supply pressure is 2.5 Bar (36 PSI).