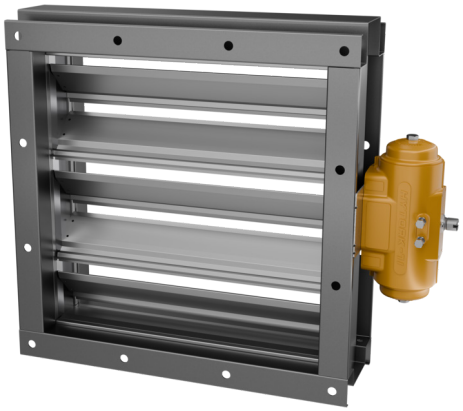
FlowShield
Marine Shutoff Damper

With (Hytork) Actuator



1. Description

The ActionAir shut-off damper is designed to isolate duct runs and compartments against both hazardous and safe atmospheres. Tested to EN1751, it achieves class 3 blade leakage and class C case leakage independently tested by BSRIA.

2. Tests, approvals and certification

- CSAcertification (Ex) category 2 equipment
- Corrosion Tested - EN60068-2-52 severity 2 conditions
- Vibration Tested – EN60068-2-6 (5Hz to 350Hz @2g)
- Case and blade leakage to EN1751. Class C case and Class 3 blade

3. Health and Safety

- Care must be taken when installing and inspecting dampers, as they are likely to close without warning due to loss of electrical power. This is their prime function.
- **Do not introduce any items, fingers or limbs between the blades.**
- Larger dampers are heavy and must be handled in accordance with current local regulations and good practice.
- All wiring should be carried out in accordance with the wiring details provided, to the IEC regulations.

4. General Information

- The Actionair Marine Shutoff Damper is suitable for both vertical and horizontal applications, with airflow in either direction.
- The Actionair Marine Shutoff Dampers are supplied with the blades in the fully interlocked closed position to avoid damage during transit and installation. It is recommended that the dampers remain closed until actual date of commissioning. All dampers must be treated with care during handling, storage and installation.
- Actionair Marine Dampers are designed for applications in normal dry filtered air systems and should be subjected to a planned inspection programme.

5. Installation - see below.

6. Maintenance & Cleaning

- Dampers are supplied in two casing and blade material options: -

  1/ Galvanised Steel casing and 430 Stainless steel blades, only suitable for installation in dry filtered systems.

  2/ 316 Stainless steel casing and blades and drive - more suited for corrosive conditions, but even this will rapidly corrode and fail if not properly maintained, when used in air intake systems at sea. The addition of a mist eliminator is highly recommended, and access must be provided for maintenance.

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7. Testing

Two levels of testing exist.

- Routine testing - Monthly, or in accordance with maintenance programme, release and reset damper (via control system). Check remote indication or visual check of mechanical pointer as appropriate.
- Visual check at damper - At commissioning and at least once a year, check damper operation by removing and re-applying power to actuator.
- Visually check blades for damper closed and open positions.

Prove remote indication if applicable.

8. Routine Maintenance

- Depending upon environmental conditions, each damper will merit its own cleaning regime. Particularly hostile areas.
- 'Frequency of maintenance' should be determined by collecting historical data from previous visits, and for this reason, commence maintenance programmes.
- Dampers in 'Dry Filtered Air' require very limited maintenance. When exposed to fresh air intakes and/or inclement conditions this may require monthly cleaning and lubrication maintenance to be performed.

9. Cleaning

- Using light lubricant, clean all exposed surfaces, using a cloth.
- Remove all traces of surface staining, as this will deteriorate further causing deeper material corrosion.
- For 316 stainless steel blades and case, pay specific attention to the blade rivets where crevice corrosion will cause rapid failure of blades if not kept in check.
- If damper is stiff to operate lubricate blade ends, open and close damper successively until the damper moves with ease. (This may necessitate removal of the actuator and perating the blades manually by the drive shaft).
- Refit actuator and re-test.
- Clean off excessive lubricant.

10. Damper installation

All installations shall be carried out in accordance with the relevant Marine/Offshore Authority requirements.

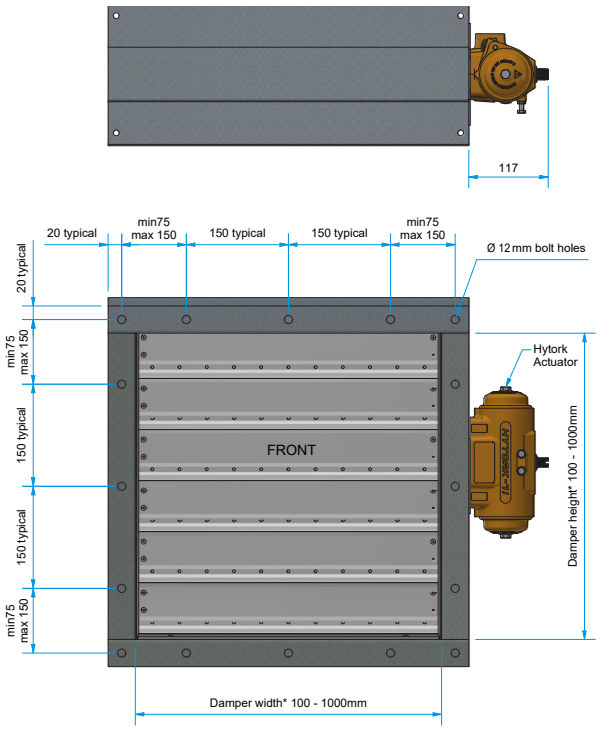
Bolt holes provided as standard on the damper flanges (unless otherwise stated) at 150mm maximum centres. Matching hole positions are necessary on mating coaming/duct flanges.

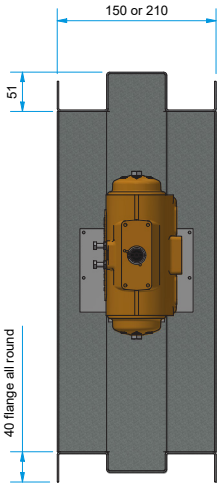
Apply sealant/gasket to mating flanges and position damper.

Bolt square/rectangular dampers using suitable steel bolts minimum M8 diameter and minimum M6 diameter on circulars.

Single Damper Assembly

Tested and approved to size of 1000x1000mm





***1 mm increments**

Figure 1

11. Control Modes (3 positions) (Refer to figure 3)

Correctly sized actuators are designed to fit only to the relevant sized damper.

IMPORTANT - please ensure damper blades are in the fully closed position prior to mounting actuators. Failure to do so may damage drive shafts and render the damper inoperable.

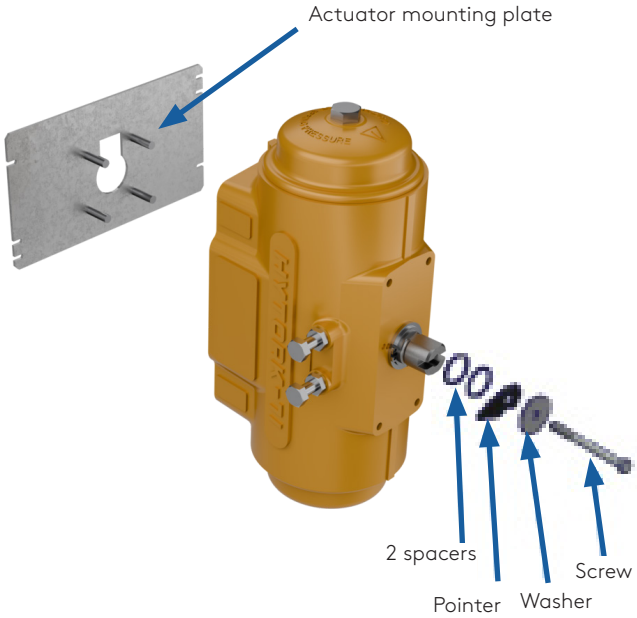
12. Mechanical Operation check

As an interim check, the damper should be manually reset and released to ensure that correct mechanical operation is achieved.

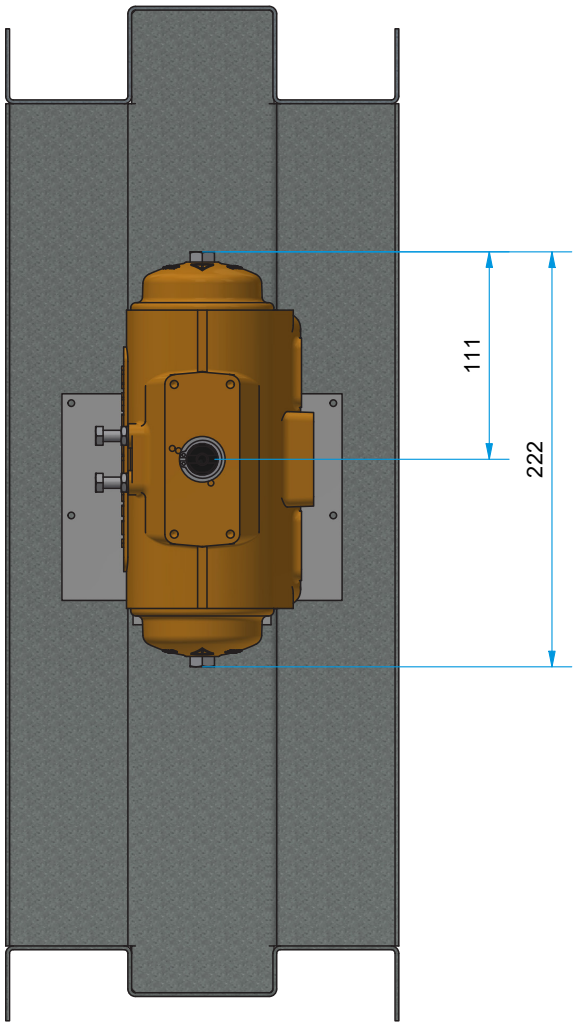
13. Electrical Connection

The unit must be wired as described in the Application and Wiring section 16.

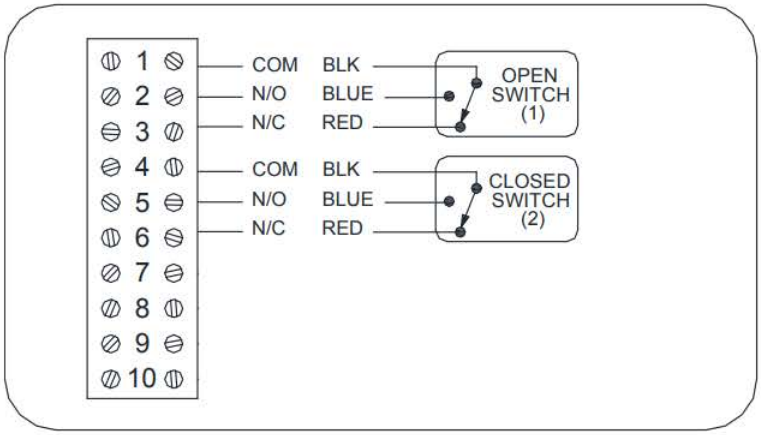
14. Actuator Installatiion



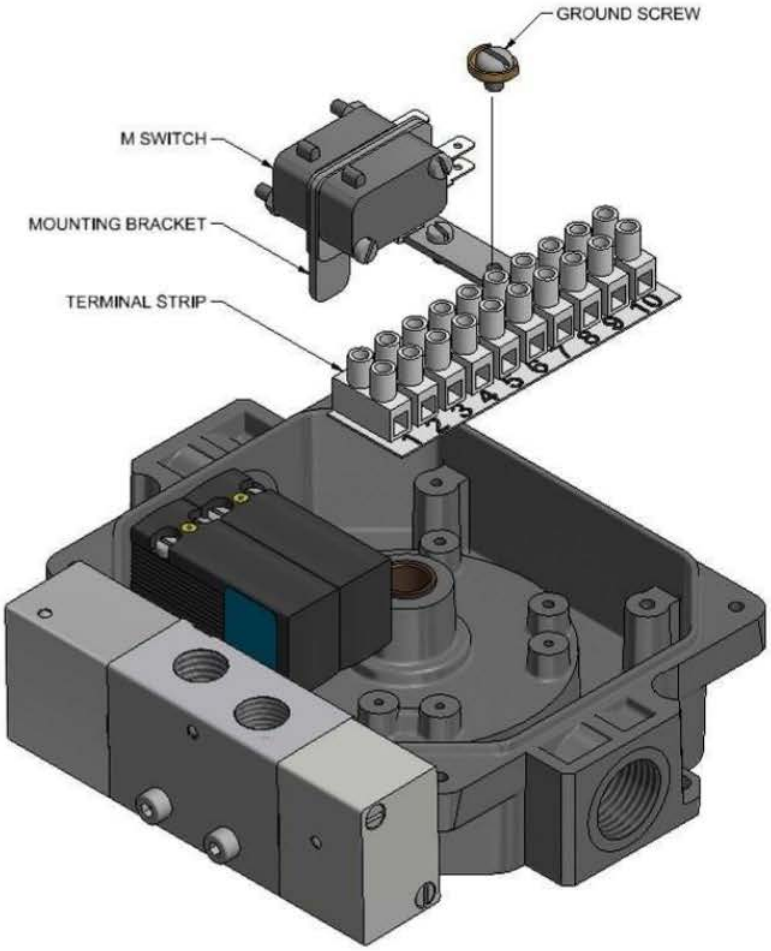
15. Three position Actuator mounting & dimensional date



16. Standard Application & Wiring



Topworx beacon for Hytork actuator



Trouble shooting:

Fault	Possible problem	Recommended action
Damper fails to open or partially opens	Insufficent air pressure / leak / blockage	Check correct 5 bar (minimum) air pressure is present at actuator
	Actuator mounting plate fitted incorrectly	Refer to Actuator installation - Actuator / Transit / Mounting Plate alignment figure 6
	Actuator open 'End Stop' adjustment incorrect	Refer to Actionair Technical sales office
Damper fails to fully close when air pressure is removed	Damper not correctly synchronised with the actuator	Remove air supply to actuator. Remove actuator from damper. Fully close damper. Refit actuator in accordance with Actuator installation - Actuator / Transit / Mounting Plate alignment figure, page 3.
Damper fails fully close when Fusible Link element is removed	Air supply connections incorrect	Check fittings. (Refer to page 3) Refer to Actionair Technical sales office
	Actuator closed 'End Stop' adjustment incorrect	Refer to Actionair Technical sales officea