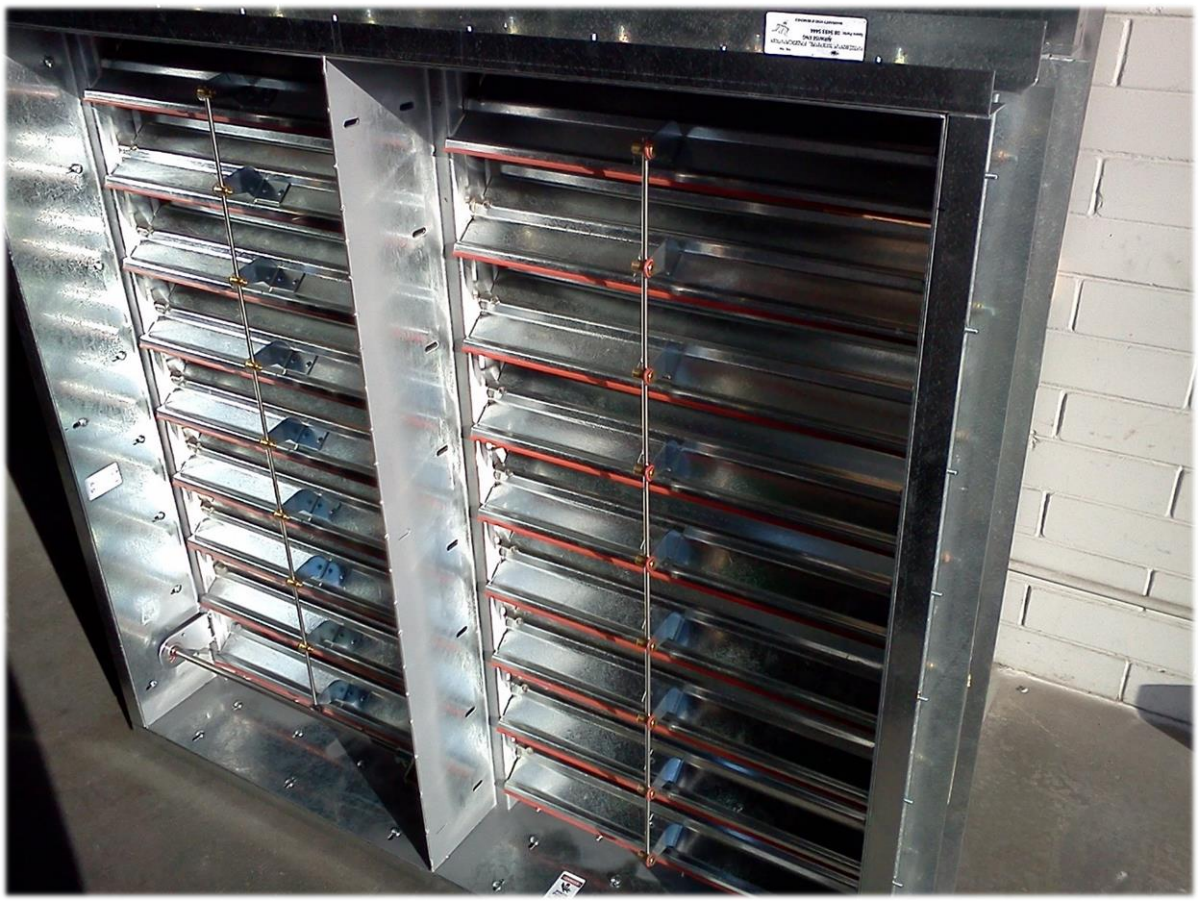
airwise engineering
TRIDENT METAL FABRICATION
ABN: 98 160 501 673 / ACN: 160 501 673

Office & Factory: 5 Church Road
Maddington WA 6109
Mailing Address: PO Box 166
Maddington WA 6989
Phone: (08) 9493 5444
Fax: (08) 94935344
Email: marie@airwise.com.au

Motorised Fire Smoke Dampers



Blendair® Fire and Smoke Damper

Manufactured by Airwise Engineering

Overview

The Blendair® MFSD - Motorised Fire Smoke Damper is designed to provide efficient airflow control and to impede the spread of fire and/or smoke through wall or slab openings to other fire compartments of an air handling system.

This range of dampers finds its application in building construction and the mining industry where ventilation, heating, cooling or air-conditioning systems are employed.

The design principle is based on the blade/s being connected to a solid jack shaft which uses an electronic actuator for airflow control. The damper is installed in a wall or slab opening between two fire compartments of an air handling system with the blade/s housed within the damper frame **and within the wall or slab**.

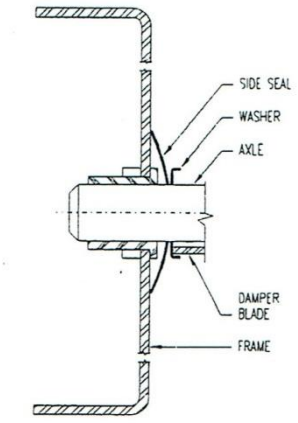
When closed the blades seal against each other, the sealing angles and the stainless steel sprung blade end seal within the press-formed steel casing. The opening, closing or modulation of the blade/s is normally initiated by control signals. When the temperature in the air system reaches the rated thermal limit, separation of the Fusible Link will release the spring action closer and close the damper. **NOTE: this closure will occur regardless of control signals.**

Specification Data

Motorised Fire and Smoke Damper

- Damper frames are manufactured from 2.5mm and press-formed 2.0mm zinc-coated ("galvanised") steel, complying with AS 1397 with a coating class not less than Z275.
- Damper frames are welded at all four corners, 7 x 12mm rounded slots are punched into the casing where applicable to allow for the fitting of the fixing angles and variations in wall thickness.
- Damper blades are press-formed 1.6mm zinc-coated ("galvanised") steel with joggle lips pressed into blade ends to allow overlap and fitted with a high temperature seal. **NOTE: fire only versions do not have this seal.**

- Damper Blades are end sealed by sprung stainless steel side seals fitted to the damper casing.



CROSS-SECTION AT AXLE
SHOWING CONTINUOUS SPRING
STAINLESS STEEL SIDE SEAL

- Blade axles are ½" stainless steel mounted in sintered - Fan6 - Bronze bushes and mechanically fixed by 6mm stainless steel bolts and nuts to the blades.
- Dampers are fitted with a knee-action spring closer operated by a 'once only' Fusible Solder Link (74° C nominal) and operating on a ½" stainless steel jack-shaft.
- Blades are linked by ¼" stainless rod/s carried in brass or stainless steel Trunions and attached to each blade via stainless steel blade link brackets.
- Mounting is via "false" roll-formed 2.0mm TDF and "right angle" brackets with 7 x 12mm slots at 150mm pitch to allow for variations in wall or slab thickness.
- Maximum air velocity: 8m/s (without relief fitted) 13m/s (with relief fitted). These values are recommendations from experimental tests carried out by the CSIRO.
- Airflow orientation is bi-directional whether horizontal or vertical.
- Mounting hardware ¼" zinc plated cup-head bolts and serrated nuts for each set of slotted mounting holes in frame & mounting angles/"false" TDF's.
- Thermal Link access is from motor side only.
- Minimum wall 80mm.
- Blendair® Dampers meet the requirements of AS1682 – AS1530.
    - ♦ FRL -/240/- in masonry wall.
    - ♦ FRL -/120/- in plasterboard wall.
    - ♦ FRL -/240/- in concrete slab.

Blendair® Slab Motorised Fire Smoke Damper undergoing leakage and fire integrity testing. Oven temperature is a maximum 1100°C duration 241minutes.

All Australian manufactured dampers must undergo these tests.

Notes

1. **Dampers are manufactured to airway dimension**. Therefore a 400 square airway will give an overall size of 404mm +/_ 2mm. This example would have a nominal 0.16m² airway and a 0.116m² minimum.
2. It should be avoided to install Motorised Fire Smoke Dampers near the supply fan which may cause blade flutter and thus excessive wear of the blade bearings and fitting. This may result in premature failure.
3. When fitting actuators wherever possible fit externally for ease of electrical connection, testing and service. Internal mounting should only be used where dictated by space constraints and cannot be avoided.

4. There are limitations on smaller dampers. It should also be recognized that smaller dampers may suffer significant increases in pressure drop.

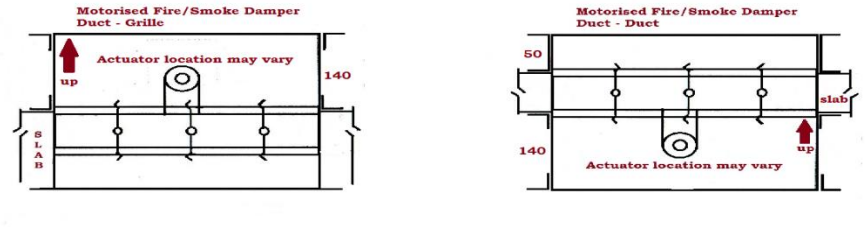
Installation

IMPORTANT: The installation of Motorised Fire/Smoke Dampers must comply with the requirement of AS 1682, Part 2. Deviation from any Clause of the Standards must be approved by a Regulatory Authority.

Basic Regulations:

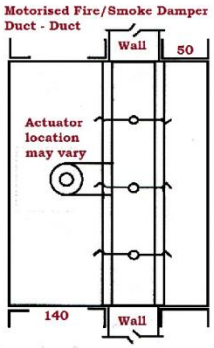
1. Dampers shall be installed in the fully opened position only. With the exception of Motorised Fire/Smoke Dampers No intermediate blade position is allowed.
2. Damper frame (casing) must fully penetrate the wall opening.
3. Pivot point of damper blades must be fully contained within the penetrated wall element.

Standard Fitting MFSD Slab Dampers

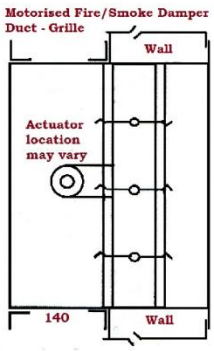


4. Clearance between wall opening and damper body (frame) must be such to allow adequate insulating material, PLUS expansion factor for fire situation.
   Recommended clearance formulae:
   5mm + ½% of linear length dimension (width/height)
5. The clearance space between the damper and the penetrated wall opening must be fully packed with approved insulating material to prevent free flow of combustible materials (e.g. smoke). Material must maintain fire integrity up to 1000 degree C.

6. Mounting Flanges must cover the clearance (2 x Clearance). Contractor may have to fit larger flanges if clearance exceeds recommended sizes.
7. Ensure that access to damper is provided for maintenance purposes (e.g. access panel in duct).
8. Install damper according to instruction labels regarding air-flow direction and orientation.



Standard Fitting



Other Installation Hints:

5. Remove one set of mounting flanges from one side of damper.
6. Insert damper into wall opening.
7. Pack clearance space between damper casing and wall opening with insulating material to meet above requirements.
8. Re-fit mounting flanges, nuts & bolts to damper and tighten, ensuring that flanges are butting tight against the wall and that damper is fitted squarely.
9. Ensure that damper closure is not impeded by any obstruction, incorrect installation (e.g. twisted, out of square), or damage to damper or contamination to blade bearings (e.g. building dust).

10. Check proper closing operation.
11. When fitting duct please ensure that appropriate damper sleeve connections are used to allow proper duct 'breakaway' in a fire situation (refer AS 1682, part 2 – Appendix B: Examples).
12. Ensure that an adequate access panel is fitted to duct to allow easy maintenance to damper.

Inspection and Maintenance.

Fire dampers are a critical passive safety feature within a buildings HVAC system. Their maintenance and inspection is covered by Australian Standard 1851-2005. This standard requires building owners to inspect a minimum 20% of the fire dampers annually and rotate this inspection so that all dampers have been inspected by the end of the fifth year.

Maintenance: Is a component of this inspection procedure and Actions including cleaning, lubrication, adjustment and component replacement should be performed at the manufacturers recommended intervals (see Airwise O&M document; Maintenance) to minimize the risk of malfunction.

Inspection: Visual examination of the damper to establish its physical condition, installation, cleanliness, freedom from obstruction or damage and identity.

Testing: At each inspection the damper should also be tested for correct function. Where necessary thermal links should be released to ensure the damper closes and/or latches as it should – NOTE: thermal links have a lifespan and need periodical replacement.

After Inspection and/or testing a report should be provided. This report should include:

- **A list of the location of the dampers inspected and their identity.**
- **Whether the damper passed or failed inspection.**
- **In the event of failure a detailed reason for that failure should be provided and if possible a recommendation for corrective action.**

airwise engineering
TRIDENT METAL FABRICATION
ABN: 98 160 501 673 / ACN: 160 501 673