OLS

MOTORIZED FIRE-SMOKE DAMPER

Efficient & Reliable Fire Control Saves Lives & Protect Property

TOXIC SMOKE

THE SILENT KILLER

INDIRECT HARM

During a fire, smoke and toxic gases expand under fire pressure, forcing their way out of the fire zone and percolating rapidly to other parts of the building. They travel through ventilation ductwork to rapidly reach the building's occupants, harming them even when they are not directly exposed to a fire.

EVACUATION & FIRE FIGHTING HINDERED

A smoke-logged building is difficult and hazardous to evacuate, partly due to the confusion and panic that smoke creates, and fire fighting becomes more difficut as the sight of fire is obscured.

CONTROLLED FIRE & SPREAD HELPS FIRE-FIGHTING & REDUCES LOSSES

Efficiently sealed ducting can control the spread of smoke, and high temperature toxic gases throughout the building.

> Reduce chances of losing lives
> Reduce potential financial losses.

"80% of fire-related deaths are caused by smoke inhalation."

OLS MOTORIZED DAMPER FSD 415

With primary aim of developing the most effective duct closure to prevent smoke & fire spread, the OLD research and development laboratories have derived at the

FSD 415 - a Motorized Fire-Smoke Damper boasting extremely low leakage factor and product reliability

Tried and tested, the FSD 415 is an effective measure in saving lives and protecting properties during a fire.

> OLS Fire-Smoke Dampers effectively isolate fire zones, ensuring escape and fire fighting access routes are clear of fire and smoke.

OLS Motorized Fire-Smoke Dampers

The model FSD 415 motorized fire-smoke dampers have been designed with carefully selected components to ensure efficient and reliable operation. Stainless steel components are used on moving parts to prevent seizure during a fire. The FSD 415 is designed to withstand thermal shock from fire and hot gases so that blade distortion is minimized, reducing smoke leakage.

The dampers effectively isolate fire zones, ensuring escape and fire fighting access routes are clear of fire and smoke. When an HVAC system is turned off, the fire-smoke dampers still offer protection against the spread of fire and smoke.

Construction Features

The FSD 415 motorized fire-smoke dampers are constructed of high quality hot-dipped galvanized steel except:

Damper bearing: BRONZE
Jamb seal: STAINLESS STEEL
Blade Edge Seal: SILICON

To Minimize Leakage:

- Stainless steel compression jamb seal is incorporated on the vertical frames
- Silicon seal incorporated on the blade edge

Damper sleeve: 2 mm thick galvanized steel full-welded at each corner.

Blade: 1.2 mm thick specially formed grooves for rigidity

- Two 'V' grooves
- One 'U' groove

The blades with 13 mm square steel axles at each end pivot on bronze bushes. Interconnecting blade linkages are located outside the air stream and pivot on stainless steel pins to prevent seizure.

In-wall Installation: Actuator may be installed inside a compartment on the damper which can be easily accessed by removing the access panel outside the duct as shown on figure 1.

Wall-mounted Installation: Actuator installed outside the wall, no actuator compartment will be provided as shown on figure 2.

FEATURES

+ Withstand pressure of 2000 Pa
+ Fire rating of 3 hours
+ Low pressure loss
+ Damper operation: Electric / Pneumatic actuator

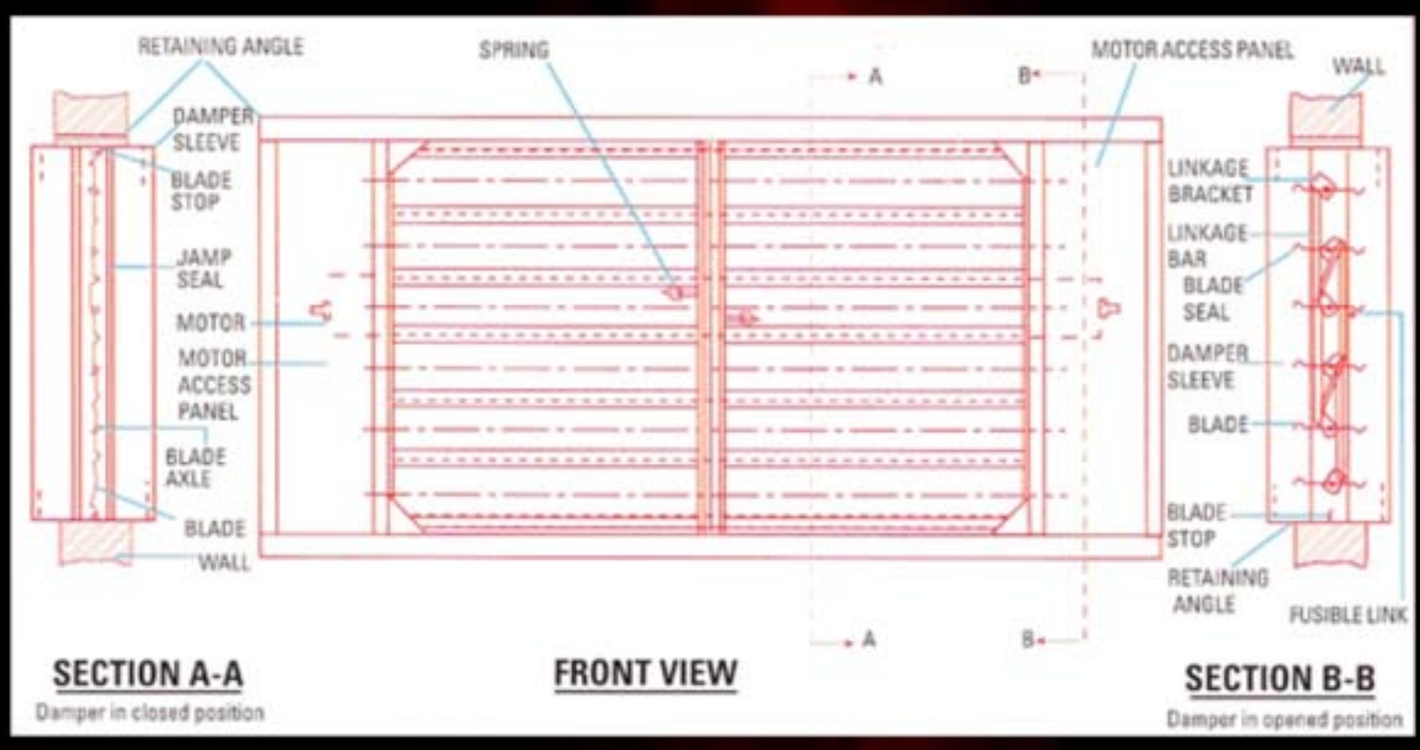


Figure 1 :
Motorized Fire-Smoke Damper with Motor Compartment

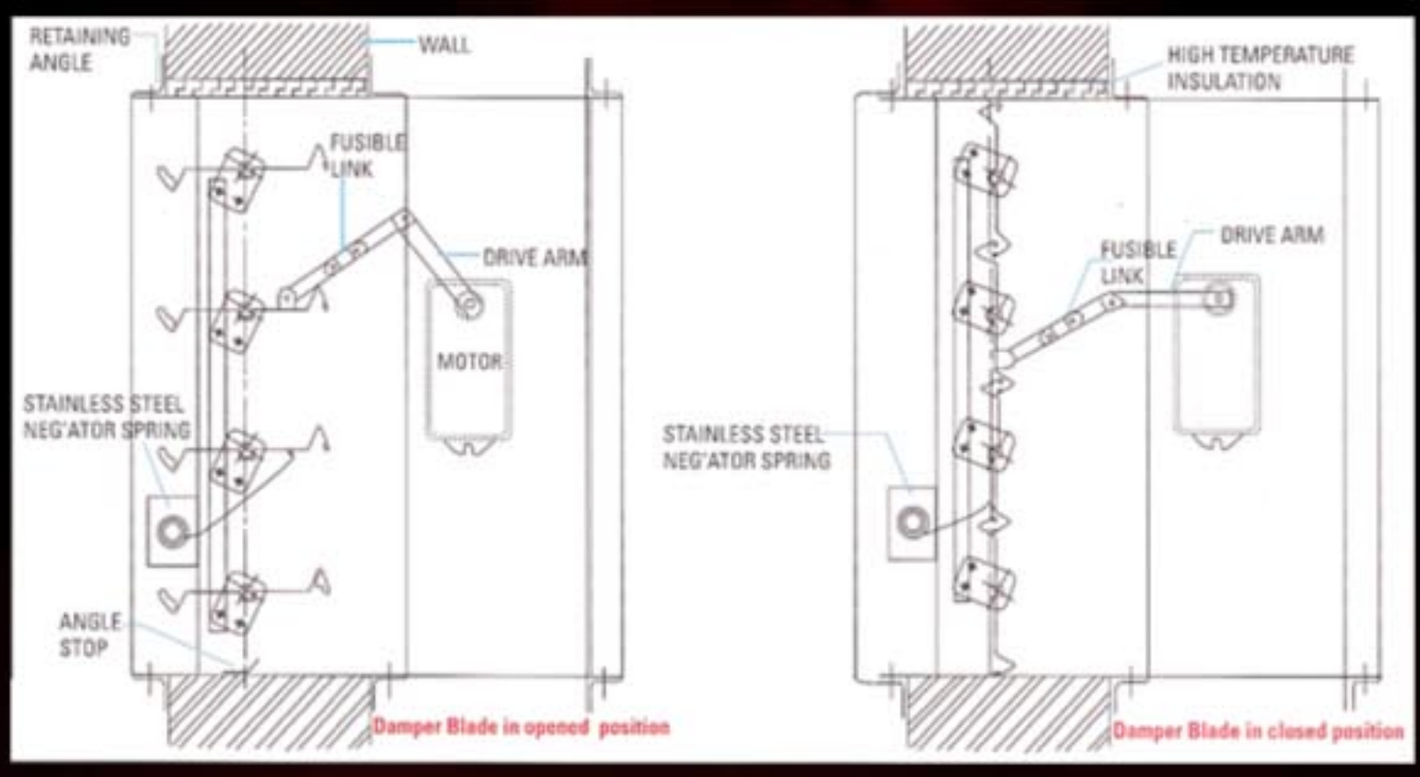


Figure 2:
Motorized Fire-Smoke Damper without Motor Compartment



Operation of OLS Motorized Fire-Smoke Dampers

MULTI-LEVEL OPERATIONAL FEATURES

Normal operation: opened position

During fire:

- Local response Thermal fusible link automatically closes damper in response to high temperatures in immediate vicinity
- Broad response Dampers close in response to alarm system signal
  Thermal fusible link triggered by smoke detector
  Thermal fusible link triggered by remote fire alarm
  - > Efficient & reliable system that prevents fire and smoke spread to other zones

SMART OPERATIONAL FEATURES

Fail-Safe Position

Dampers are equipped with spring-return type electric / pneumatic actuator
Returns the damper to closed position (fail-safe position) during power failure

The dampers should be connected to a central control for remote monitoring and regular testing of the damper function.

Zone Isolation

Dampers can be interlocked to the HVAC system such that when the plant is not in operation (e.g. off-hours), dampers can be closed to provide isolated zones, preventing the possible spread of smoke / fire in an unoccupied building.

Added Fire Strategy

During a fire, the motorized fire-smoke dampers can form part of a “Fire Strategy” and be used to ventilate pressurized escape routes.

Zones are cleared of smoke for safe evacuation

Specific and remote damper re-opening allows fire team to access smoke-cleared zones

ADDITIONAL FEATURES

OLS motorized fire-smoke dampers provide the following additional control features to the building owner:

Fire-smoke dampers may be integrated into the “Fire Control Strategy” and the plan control systems.

Safety function can be: Regularly and easily tested locally Tested from central remote location.

Provide continuous monitoring of damper positions (operating and safe positions). Any necessary maintenance or repair work can be readily identified and carried out easily.

Performance Tested

Tested according to British Standard B.S. 476 : Parts 20 and 22

Fire resistance of up to 3 hours at the temperature of 1000°C
Size: 1940 x 1200 mm (i.e. excluding the motor compartments)

The damper was also tested for air leakage, pressure loss and pressure rating. The results of the tests are shown on charts 1, 2 and 3, respectively.

Tested according to Australian Standard, A.S. 1682.1 Part 1

Air Leakage Test: Only 0.45% across damper (pressure differential of 1000 pascals, duct velocity of 10.2m/s.)
Size: 1940 x 1200 mm

Tested according to ISO 7244

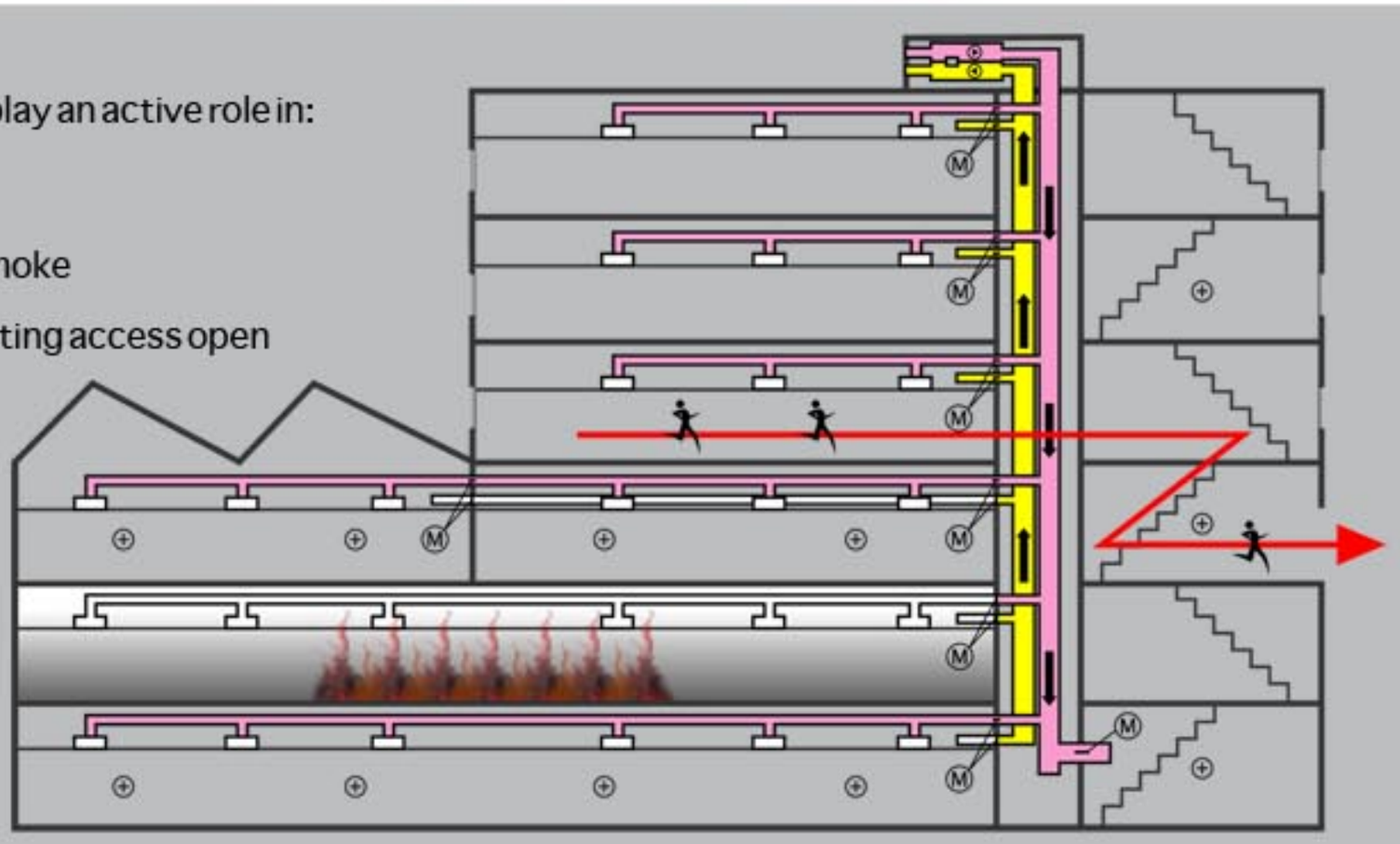
Pressure Test: Maximum deflection of 3.2 mm equivalent to 1/250 of blade length.
Size: 1940 x 1200 mm

OLS Motorized Fire-Smoke dampers play an active role in:

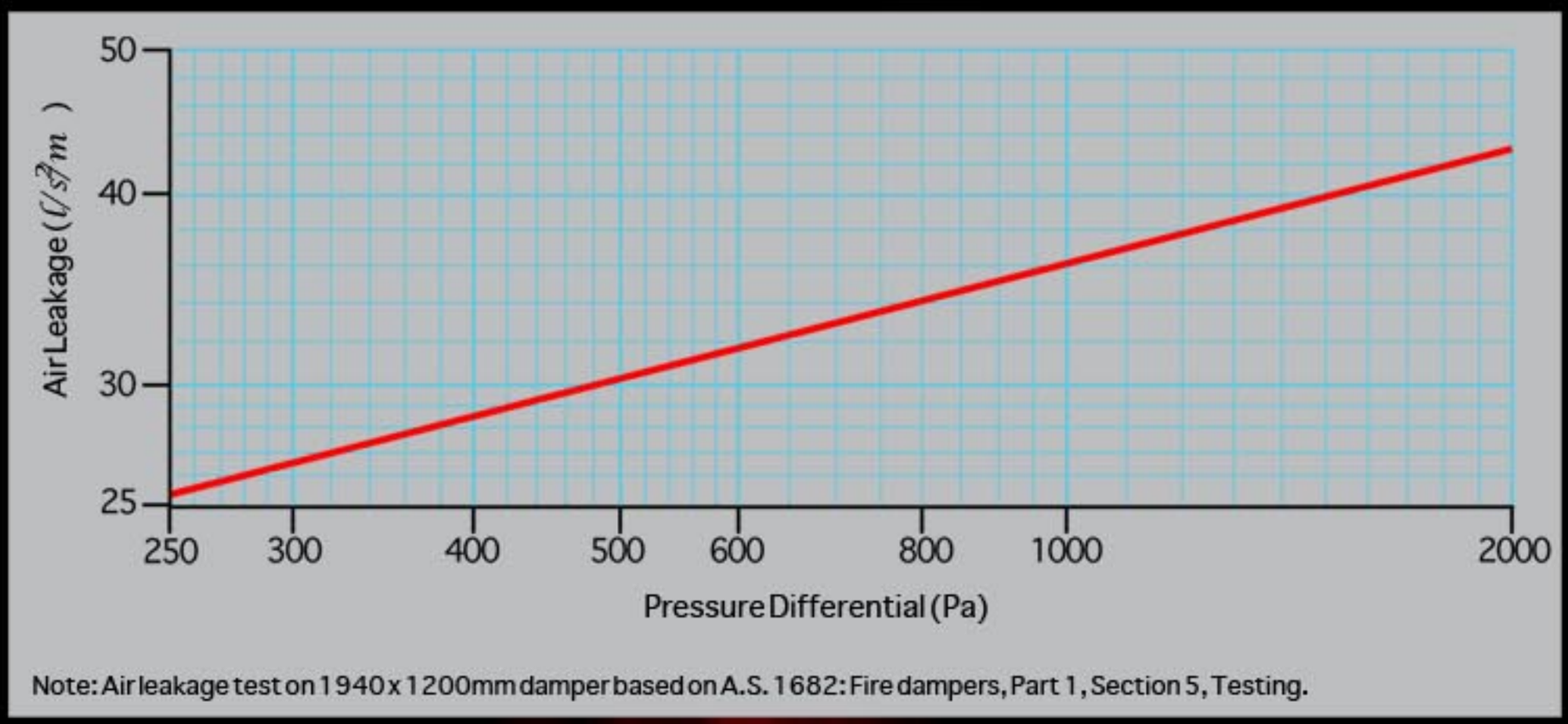
> Isolating fire zones

> Reducing the spread of flame and smoke

> Keeping escape routes and fire-fighting access open



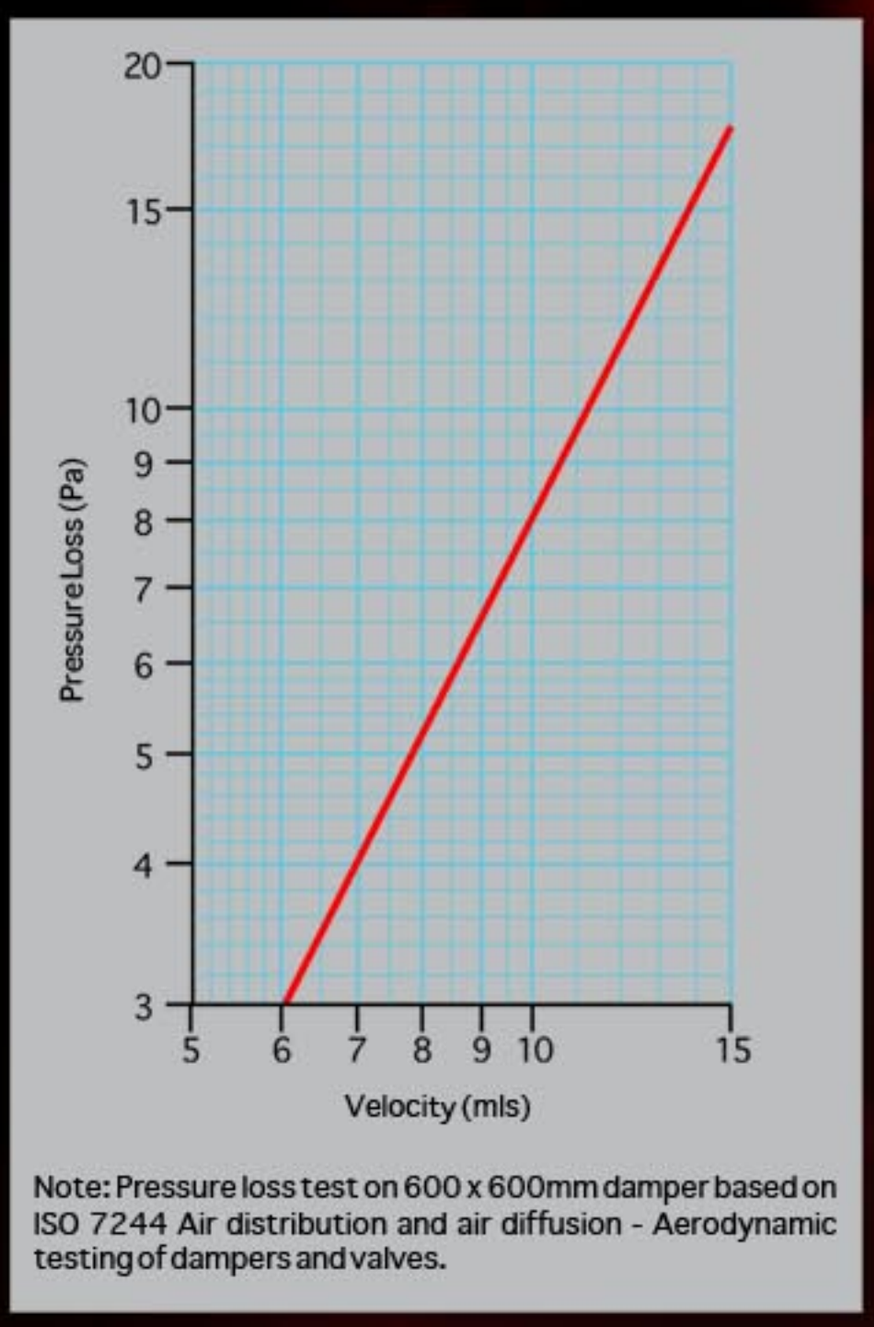
When an HVAC system is turned off, the Fire-Smoke dampers still offer protection against the spread of flame and low-temperature smoke. The safety function can be tested at regular intervals from the control panel.



Note: Air leakage test on 1940 x 1200mm damper based on A.S. 1682: Fire dampers, Part 1, Section 5, Testing.

Chart 1: Air Leakage

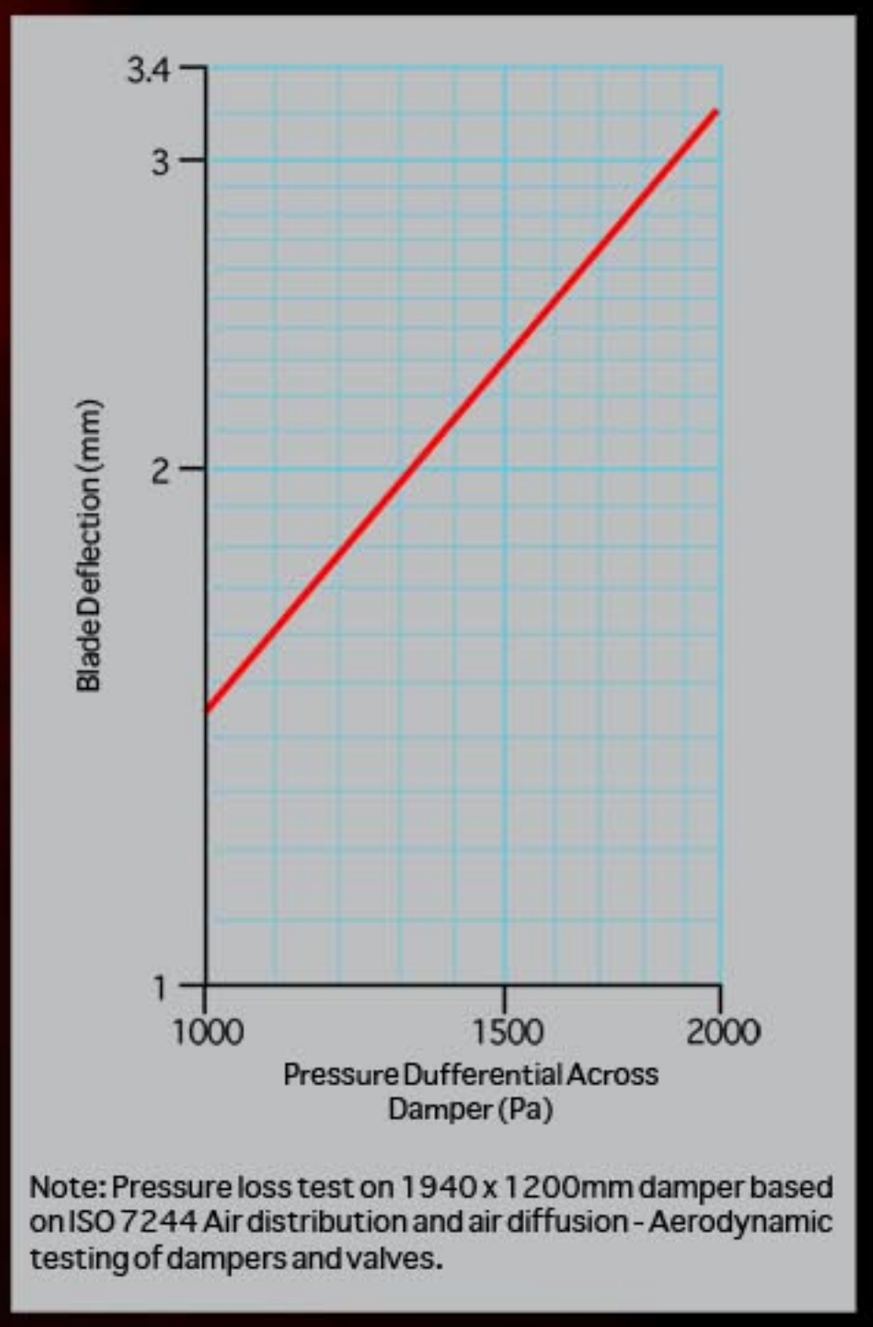
Note: Air leakage test on 1940 x 1200 mm damper based on A.S. 1682: Fire dampers, Part 1, Section 5, Testing



Note: Pressure loss test on 600 x 600mm damper based on ISO 7244 Air distribution and air diffusion - Aerodynamic testing of dampers and valves.

Chart 2: Pressure Loss

Note: Pressure loss test on 600 x 600 mm damper based on ISO 7244: Air distribution and air diffusion – Aerodynamic testing of dampers and valves.



Note: Pressure loss test on 1940 x 1200mm damper based on ISO 7244 Air distribution and air diffusion - Aerodynamic testing of dampers and valves.

Chart 3: Pressure Test

Note: Pressure test on 1940 x 1200 mm damper based on ISO 7244: Air distribution and air diffusion – Aerodynamic testing of dampers and valves.

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