



OTHER DAMPERS

Functional Requirements

Other forms of damper may be required for dedicated duties. Examples of such are:

- Volume control dampers to enable system balancing.
- Pressure relief damper for pressure control in Non-Hazardous areas.
- Fan shut-off dampers for bypass prevention on twin fan installations.

Whichever component is required, it should be suitable for installation in any plane at any angle with the exception of Pressure Relief Dampers, which are usually fixed in the vertical position only. All dampers should be constructed to with stand, and be able to close against, the expected total head pressure created by its closure. Pressures in the order of 250Pa may be generated adjacent to a fan.

Technical Guide

Performance

The static pressure loss through shut-off and volume control dampers, when in the open blade position with a face air velocity of 10m/s, should not exceed 35Pa. Pressure loss through back draught and pressure relief dampers should be suitable for their function.

Damper air stream leakage rates should not exceed 0.15m³/s/m² of damper duct face area, with a total pressure differential across the closed damper of 2000Pa.

Volume Control Dampers

Volume control dampers should be constructed with opposed blades, being capable of being manually adjusted and locked in any position.

Pressure Relief Dampers

Pressure relief dampers should have parallel action blades controlled automatically by tension spring or counterbalance weight, set to restrict blade opening until a pre-set pressure is exceeded. The pressure relief set point should be site adjustable.

Fan Shut-off Dampers

Shut-off dampers may have parallel or opposed action aerofoil section blades. Dampers for circular ductwork should be rectangular with circular spigot connections. Blade operating linkages should be located out of the air stream in an integral enclosure that can easily be removed to allow maintenance. Linkage stops should be provided to prevent overtravel in both open and closed positions.

Dampers should be capable of opening and closing in any attitude or orientation over the full compressed air pressure range and the HVAC system air pressure range up to a maximum differential pressure using 100% associated fan pressure.

Blades should operate within the overall casing length. The dampers should be suitable for pneumatic operation and should be complete with a spring return actuator capable of





overcoming the maximum torque imposed by the damper. The damper should fail “closed” on loss of pneumatic air or electrical supply.

Shut-off dampers should be provided with the following features: -

- a) A 3-port, 2-way normally energised, electrical solenoid valve suitable for remote operation. In the event of this valve being de-energised, it should close the damper by venting to atmosphere.
- b) A 3-port, 2-way manually operated test valve, push to vent/pull to reset (vent normally closed). Test button to be clearly engraved “PUSH TO TEST”.
- c) A pneumatic, single action, spring return type actuator arranged to close the damper on loss of pneumatic supply pressure. The spring rating should be such that the damper remains open should the pneumatic air supply decay to its lowest operating pressure and ensure that the blades close firmly with either fast or slow relief of air pressure.
The return spring may alternatively be mounted externally to the external actuator but within the casing.
- d) The damper should be fitted with two volt-free proximity switches to indicate open and closed positions. These switches should not “changeover” until the blades are within 5% of the desired position.
- e) Stainless steel filters should be fitted to all pneumatic air inlets and air vents to prevent particulate contaminant ingress.

The manually operated valve (b) should be arranged to permit reverse airflow, through bottled air supply connection to the vent port, so that the damper can be powered open after an emergency situation when the main air supply is not available.

Air pressure quick relief valves are considered to improve closure speed and to reduce the likelihood of actuator contamination and are recommended for all shut-off dampers. The purchaser should confirm operating pneumatic air pressures and temperatures.

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