

KYODO Insulated Low Leakage Damper

MODEL: LD-I

Introduction

Kyodo insulated low leakage dampers are used in ventilation systems to prevent the spread of toxic gases released in the fire between divisions during emergency. It also helps to enhance energy saving and environment in the HVAC system in normal situation.

The damper has been tested according to BS EN 1751: 1999 (comparable with AMCA 500-D-98) and meets the air tightness requirement. The damper is also highly reliable during emergency operation.

Applications

Building services and petroleum ventilation systems. The damper may be duct-connected or wall-mounted

Features

- Insulated blades
- Robust construction
- Low casing leakage
- Low blade leakage
- Low airflow resistance
- Manual, pneumatic, or electric operation

Dimensional Limits

The minimum size is 100mm wide x 100mm high. The maximum single module size is 2,000mm wide x 2,000mm high. Depth ranges from 150mm to 300mm.

Construction

Kyodo low leakage insulation damper frame is constructed of high quality galvanized steel / stainless steel with thickness of 1.2~3mm. 35mm flange with pre-punch holes for connection to duct flanges are provided.

The blades are constructed with 1.2~1.5mm galvanized steel or stainless steel, double skin aerofoil design bolted to 19mm solid shaft. Mechanical bushings are fitted on the non-drive side. The aerofoil design ensures low pressure loss, reduce flow disturbance and noise.

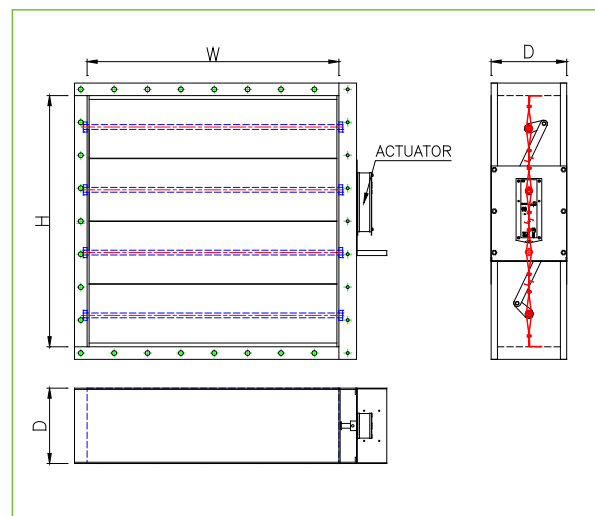
Dampers with multiple blades are fitted with a linkage to provide an opposed or parallel motion.

Robust blade links are welded to the drive shafts and connected together by flat bar. The linkage arrangement is contained within the flanges of the damper frame.

Insulation

The insulation contain no organics, and are unaffected by most chemicals except hydrofluoric acids, phosphoric acids, and concentrated alkaline. Any contact with water or thermal steam will not affect the physical properties after drying.

- Special requirements on the insulation materials are available upon request.
- U value data will be submitted for approval



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Leakage Rates

Testing conducted by BSRIA on standard production single module dampers has achieved

- UL555s Class I
- NORSOK Standard

Specifically we have achieved mean leakage rate of

- 0.040 m³/s/m² at a differential pressure of 2,000Pa.
- 0.002 m³/s/m² at a differential pressure of 50Pa.

Lower leakage rates can be achieved upon request.

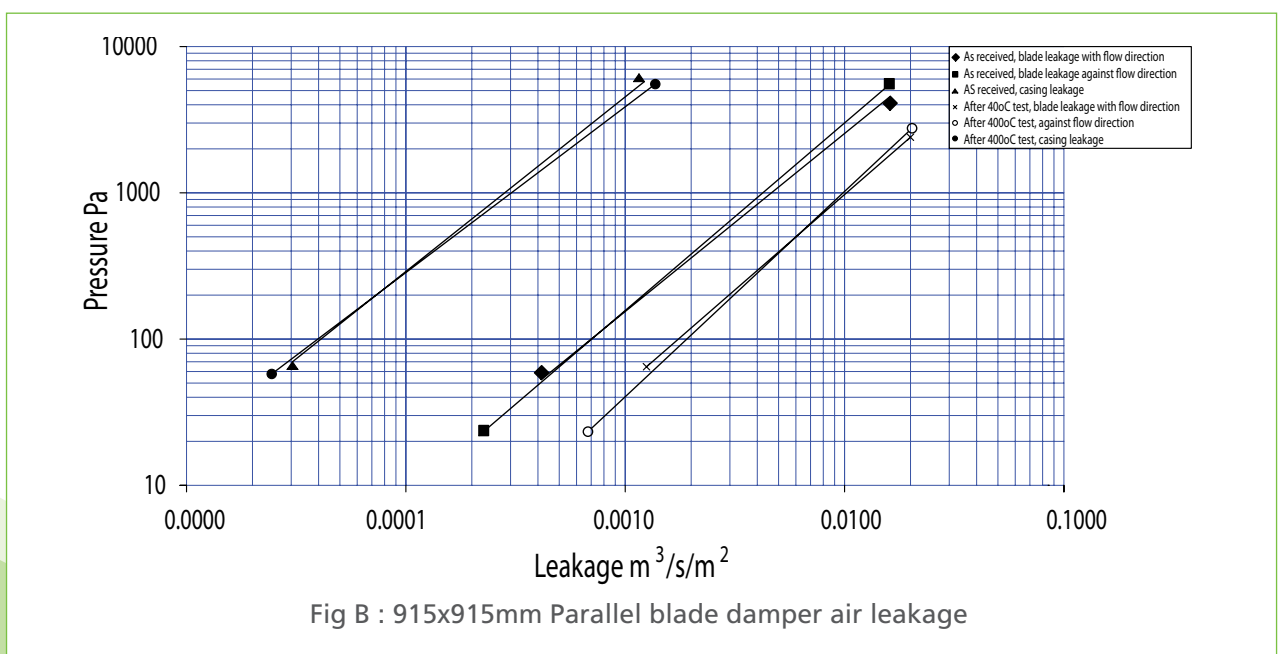
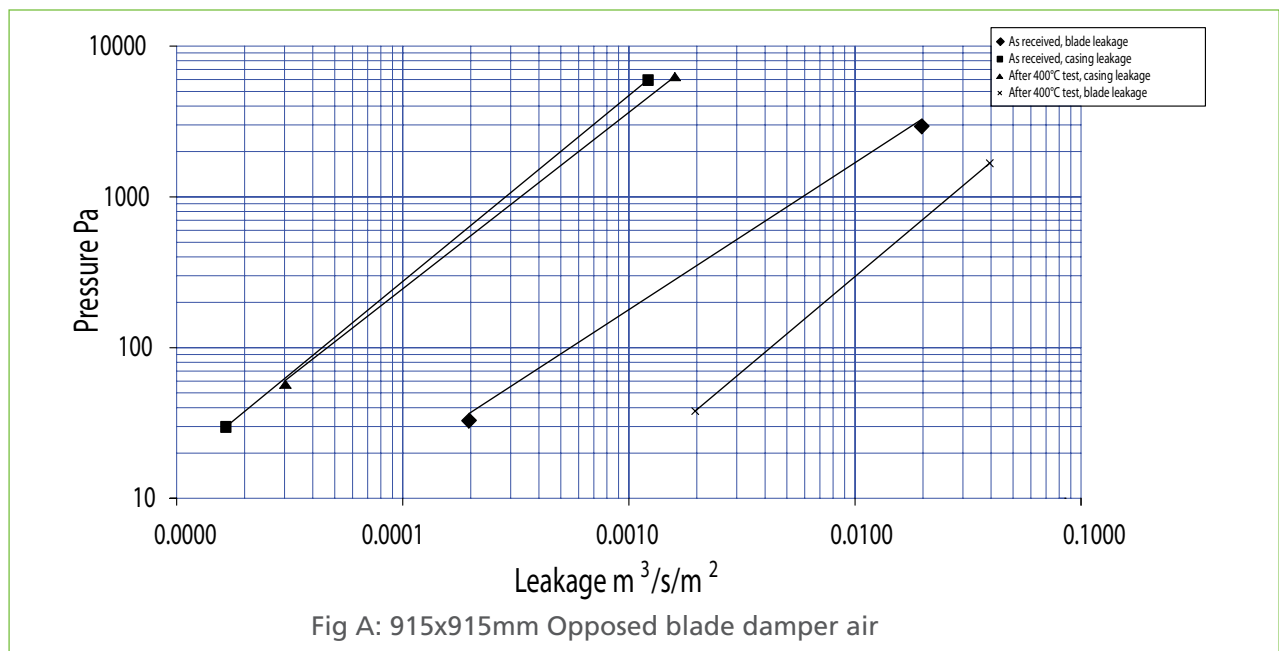
Performance Test

The test methods were taken from BS EN 1751:1999 "Ventilation for buildings - Air terminal devices - Aerodynamic testing of dampers and valves".

Methods were comparable with those used in American standard AMCA 500-D-98 "Laboratory methods for testing dampers for ratings".

Leakage tests within BS1886, DW144 and UL555S also used the same methods.

Additional leakage test is also conducted after subjecting the damper to 400°C hot air stream.



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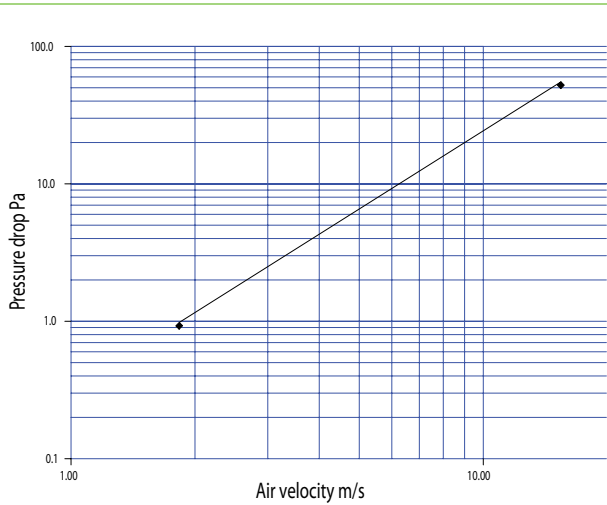


Fig C: 915x915mm Opposed blade pressure drop vs air velocity

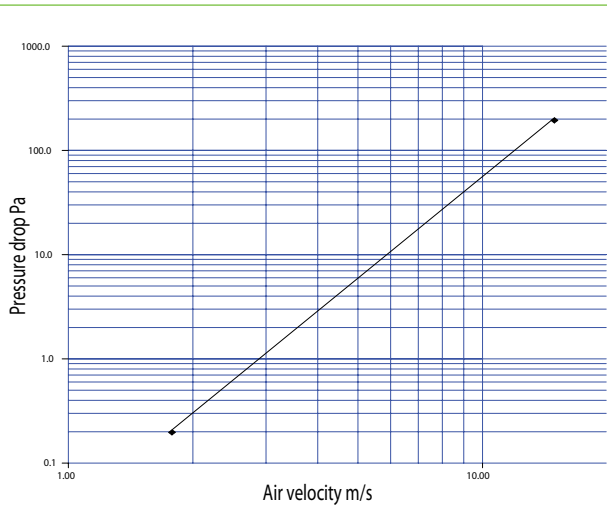


Fig D: 915x915mm Parallel blade pressure drop vs air velocity

Fire Resistance

The damper maintain integrity and resist the passage of flame for more than 60 minutes. The temperature on the external surface does not rise higher than 140°C above ambient and the temperature at any point on the insulation does not rise more than 180°C during the time period.

Cycle 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 again.



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ACTUATOR / LEVER

Different type of control option to choose from based on customer requirement.

Electrical Actuator [Model LD-I-E]



Options

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 opened and fully closed status can be signaled by microswitches mounted in to the electrical actuator which is positively connected to the damper blades.

Pneumatic Actuator [Model LD-I-P]



The Air Torque actuator offers the following characteristics:

- Reliability and high performance
- Wider product range permitting a more economical sizing selection
- Innovative and patented universal drive shaft and multifunction position indicator

For double action and spring return actuators the

- Minimum supply pressure is 2.5 Bar (36 PSI).
- Maximum supply pressure is 8 Bar (116 PSI).

Manual Lever

