



Technical Data & Selection Procedure

Ravistar dampers



Volume Control
Fire & Smoke
Opposed Blade
Pressure Regulating

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Volume Control Dampers

Extruded Aluminium Low Leakage Aerofoil Blade - Model WDD

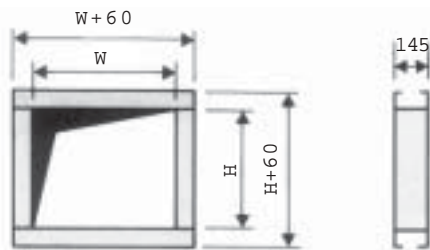
Introduction

The Ravistar range of duct dampers has been designed to provide positive control of air within ducted heating, ventilation and air conditioning systems. The range is constructed from high quality aluminium extrusions and is suitable for flanged connection within square & rectangular, duct systems. A wide range of control options is available and includes electric and manual operators.

Description

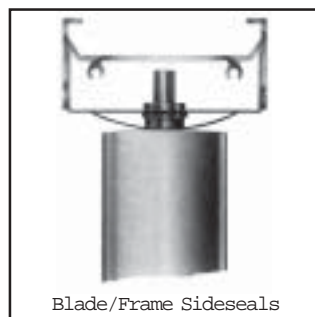
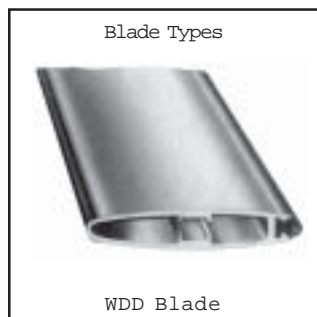
Frames and blades are constructed from high quality extruded aluminium sections. Frames are screw fixed and sealed to eliminate casing leakage. Blades are pivoted on pvc bushes and operate through pvc gear system which is fully enclosed within the damper frame.

Dimensions



Features

- Stainless steel side seal gaskets.
- Fully enclosed blade linkage mechanism.
- Square, rectangular, duct connections.
- All operating gear out of ducted airway.
- Electric or manual control options.
- Opposed blade operation.
- Aerofoil blade section.
- PVC gear operation.
- Lockable/removable control knob operator.
- Blade position indicator.
- Robust aluminium blade and frame construction.



Control Options

Standard

M=Manually operated knob. Damper blades may be locked in any position and if necessary the knob may be removed. (Only suitable for duct sizes 150mm-1000mm). For larger sizes suitable handles are provided.

Special

S=Spindle extended from damper case and suitable for connection to actuator (75mm long x 12mm dia).

Note : Electric actuators on/off, modulating, spring return, without spring return of torque rating suitable for the dampers can be supplied.

Specification

Duct mounted dampers shall be Ravistar type WDD, constructed from aluminium extrusion frames & blades, assembled on pvc bushes & operate through pvc gear system which is fully enclosed within the damper frame.

Ordering

Type	Duct Size W x H	Control
W D D	600x300	M

Legend

Type : W D D

Duct Size : Specify nominal duct size (mm) square and rectangular - width x height (mm)

Control : M = Manual Knob Operator

Note : For air handling unit application, these dampers can be provided with Face & Bypass arrangements.

Performance Data

Full acoustic and aerodynamic performance is presented below

Total Pressure Loss (Pa) is the difference in pressure, for each blade position, measured within a ducted system connecting the inlet and outlet flanges of the damper.

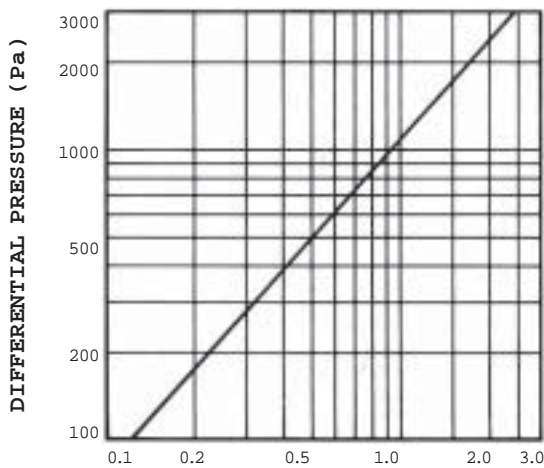
LwNR Level is the peak level on an NR curve based on sound power level ref. 10^{-12} Watts.

Data is based on a damper size 300x300 mm. Corrections for other sizes should be made using the table below.

Duct Area (m ²)	Correction (dB)
0.01	-10
0.05	-3
0.10	0
0.15	+2
0.20	+4
0.50	+7
1.00	+10

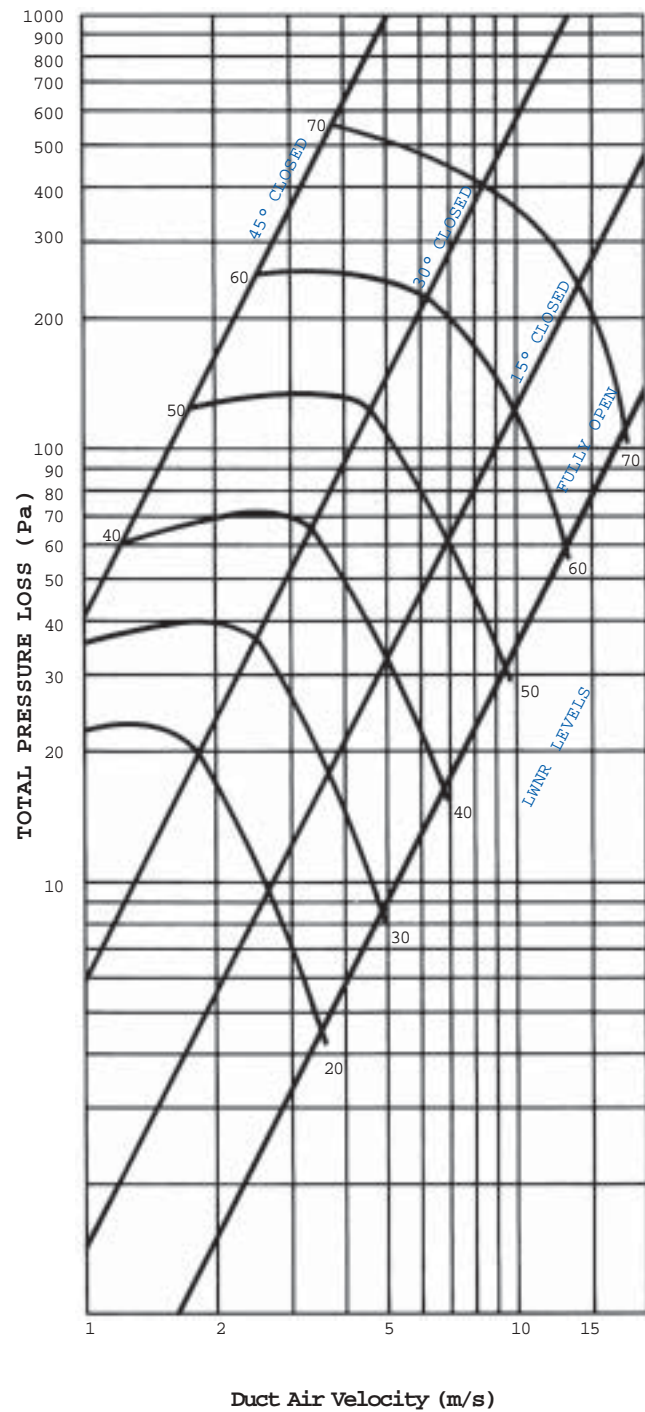
WDD in-duct Blade Leakage Characteristic

Blade Leakage is the air flow leakage under positive duct pressure through the blade system when fully closed.



Blade Leakage Rate (litres/second/m² duct area)

WDD Pressure Loss and Noise Generation Characteristics



Galvanised Iron Low Leakage Aerofoil Blade - Model WLDX

Introduction

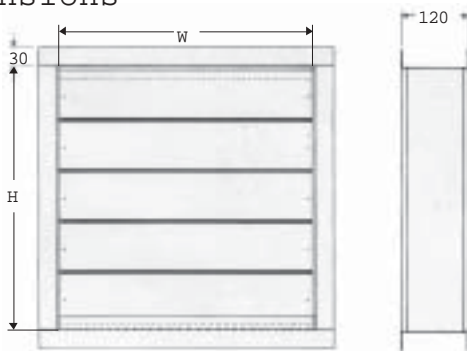
The Ravistar range of volume control dampers are particularly suitable for use with air handling units and for air control within ductwork systems where high air velocities and pressures are encountered. The range is constructed with G.I. fully interlocking blades on steel shafts running the length of each blade thus giving the damper exceptional strength. A wide range of control options are available, including manual & electric operators.

Description

Fully interlocking high quality 24 gauge galvanised steel aerofoil blades on 19mm dia hollow steel shafts within a 16 gauge galvanised flanged frame. The blade shafts pivoted on bronze bushes terminate in G.I. Discs and operate through an opposed blade linkage system. The unique design of the interlocking blades together with the stainless steel side seal gasketing enable good air shut-off to be achieved.



Dimensions



Features

- Aerofoil interlocking galvanised steel blades, for minimum leakage.
- Steel shafts through blades for high strength.
- Opposed blade operation for optimum air distribution and control.
- Operating gear out of ducted airway.
- Electric or manual control options.
- Stainless steel side seal gaskets, to ensure low closed blade leakage.
- Large single module units upto 1200x1200mm
- Multiple units upto 6000x3000mm.
- Welded G.I. frames for rigidity.



Control Options

Standard

M=Manually operated knob. Damper blades may be locked in any position and if necessary the knob may be removed. (Only suitable for duct sizes 150mm-1000mm). For larger sizes suitable handles are provided.

Special

S=Spindle extended from damper case and suitable for connection to actuator (75mm long x 12mm dia).

Specification

Duct dampers and Air Handling Unit dampers shall be Ravistar Type WLDX constructed with 24 swg galvanised steel aerofoil blades on 19mm dia. steel shafts running the full length of the blades and pivoting on bronze bushes. The dampers shall be of opposed blade operation with all operating gear out of the ducted airway. The blades shall be fully interlocking and be capable of use for control and isolation of air flow.

Galvanised Iron Low Leakage Flat Blade - Model WDD-GI

These dampers are similar to Model WLDX except with the following specification.

Specification

GI sheet construction low leakage volume control damper with flat V type opposed blade operation, 20 swg G.I. blade 100mm wide 18 swg G.I. frame 120mm wide, galvanised steel spindle, self lubricating bronze bushes, blade. Linkage fully enclosed, stainless steel side seal gaskets, neoprene gaskets on blade tips complete with PVC knob operation and status indicator lockable in closed / open position, the linkage system shall be GI flats.

Ordering

Type	Duct Size	Control
WLDX	1500x1000	M
Specify non-standard flanges and other requirements separately.		

Legend

- Type : WLDX
- Duct Size : Specify nominal duct size (mm). Always width x height (mm)
- Control : M = Manual quadrant control

Performance Data

Full acoustic and aerodynamic performance is presented below

Total Pressure Loss (Pa) is the difference in pressure, for each blade position, measured within a ducted system connecting the inlet and outlet flanges of the damper.

LwNR Level is the peak level on an NR curve based on sound power level ref. 10^{-12} Watts.

Data is based on a damper size 500x500. Corrections for other sizes should be made using the table below.

Duct Area (m ²)	Correction (dB)
0.50	0
1.0	+3dB
1.5	+5dB
2.0	+6dB
3.0	+8dB
4.0	+9dB

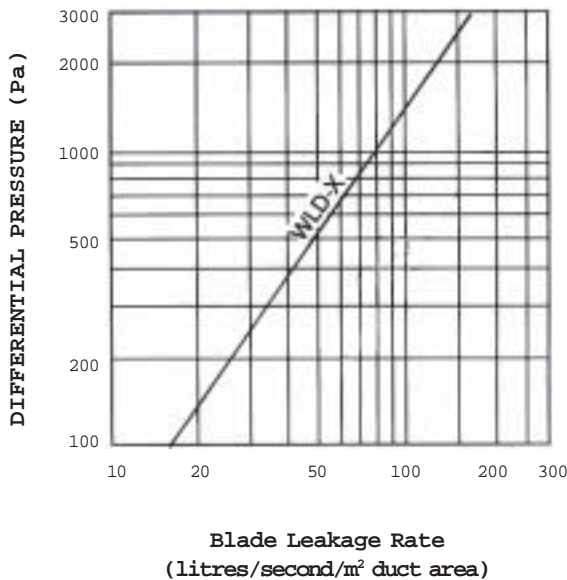
For damper sizes under 500mm high correct the graph data as follows:

Damper Height	LwNR Addition	Pressure Multiplier
400mm	+8dB	1.8
300mm	+15dB	4.0

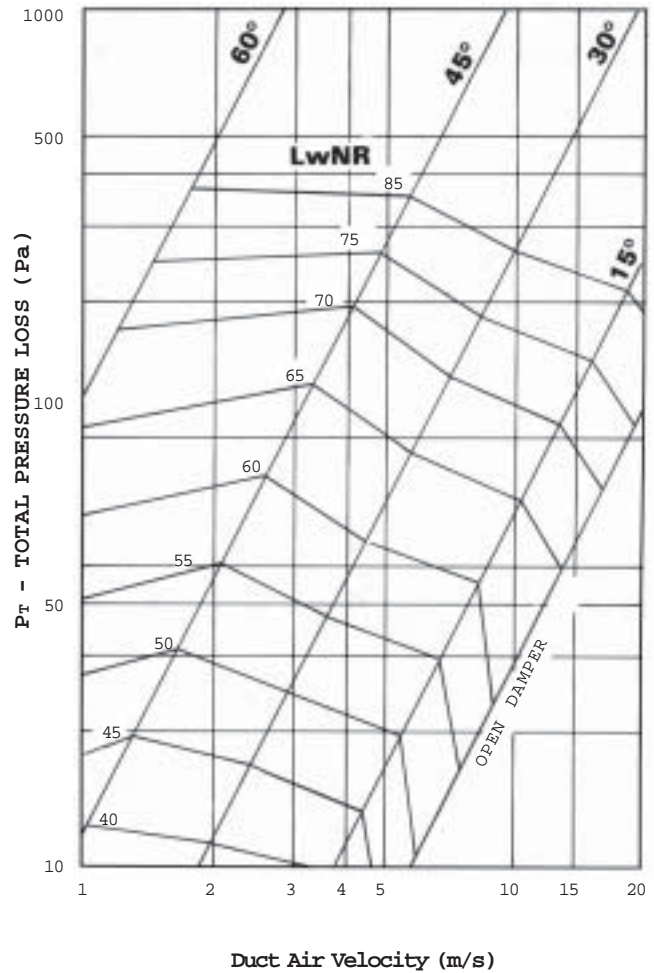
The corrections are necessary to allow for the blanking plates top and bottom.

Blade Leakage Characteristic

Blade Leakage is the air flow leakage under positive duct pressure through the blade system when fully closed.



WLDX Pressure Loss and Noise Generation Characteristics



Fire & Smoke Dampers - Model WGD

Introduction

The Ravistar range of Fire & Smoke Dampers has been specifically designed to be positioned within the duct system to prevent the free passage of smoke & fire. The range is constructed from heavy gauge galvanised iron sheet having multiple opposed blade construction. The blades are fitted with chrome plated spindles operating in self lubricating sintered bronze bushes with stainless steel side seal gaskets to prevent spread of smoke & fire. The operating linkage is fully enclosed. **These Dampers are fire tested by CBRI Roorkee for 90 minutes fire rating as per UL555-1995.**

Description

GI sheet construction fire & smoke dampers with flat V type opposed blade operation, 16 swg G.I. blade 150mm wide, 16 swg G.I. frame 165mm wide, chrome plated spindle, self lubricating bronze bushes, blade. Linkage fully enclosed, stainless steel side seal gaskets on the sides.

Features

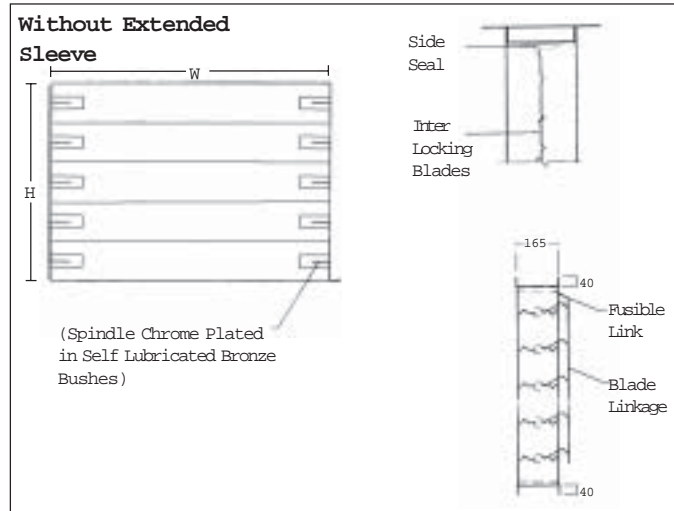
- Robust & fully welded construction.
- Heavy duty interlocking blades.
- Fully enclosed blade linkage mechanism.
- Stainless steel side seal gaskets.
- Self lubricating sintered bronze bushes.

Control Options

Fusible link, solenoid operation and electric actuators.

Dimensions and Types

The dampers are available with and without extended sleeve of G.I. steel. The dampers without extended sleeve are with



G.I. flanged frame suitable for duct mounting. The dampers with extended sleeve are with G.I. frame positioned in G.I. sleeve suitable for wall mounting.

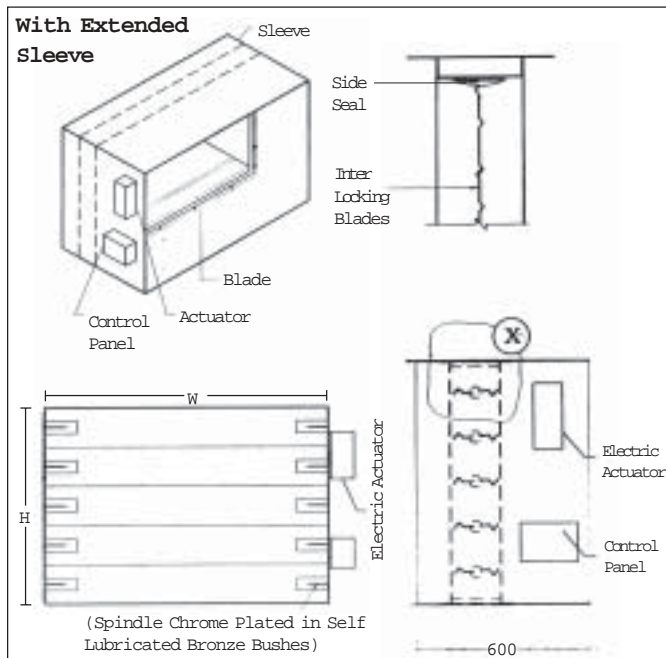
Specification

Model WGD - The casing is constructed of 16 swg G.I. sheet, the blades are flat V type formed from 16 swg G.I. sheet and fixed with chrome plated spindles housed in self lubricating sintered bronze bushes. The drive mechanism consists of galvanised steel flat linkage system completely encased & outside the air stream.

Control Options

Ravistar range of fire & smoke dampers are available with following control options :-

1. **With Fusible Link and Spring Mechanism**
The damper is held open by a replaceable fusible link rated at 74 C (U.L. stamped). In the event of the increase in temperature the fusible link shall melt & the damper shall close shut with spring action.
- 2a. **With on/off actuator without spring return, control panel and temp-sensor.**
The damper is held open by the 24V Ac/Dc actuator. The actuator shall close the damper on receiving a signal



from the smoke detector/fire panel or temperature sensor through the control panel which is field mounted or mounted on the casing if required. The power supply required is 220V A.C.

2b. With on/off spring return actuator, control panel & temp. sensor.

The control is same as in item (2a) above except that the actuator is of the spring return type and in case of power not available during smoke/fire condition the spring actuator shall ensure the closure of the damper.

3. Solenoid

The blades are held in open position by solenoid against spring loaded linkage mechanism. On receiving signal the solenoid actuates and releases the blades to shut off.

Details of Control Options

1. Rating of Electric Actuator

	Actuator torque	Damper Area
Spg. Return	7 NM	upto 1.0 m ²
	16 NM	upto 2.4 m ²
W/o Spg. Return	10 NM	upto 1.2 m ²
	15 NM	upto 2.4 m ²

2. Solenoid Mechanism

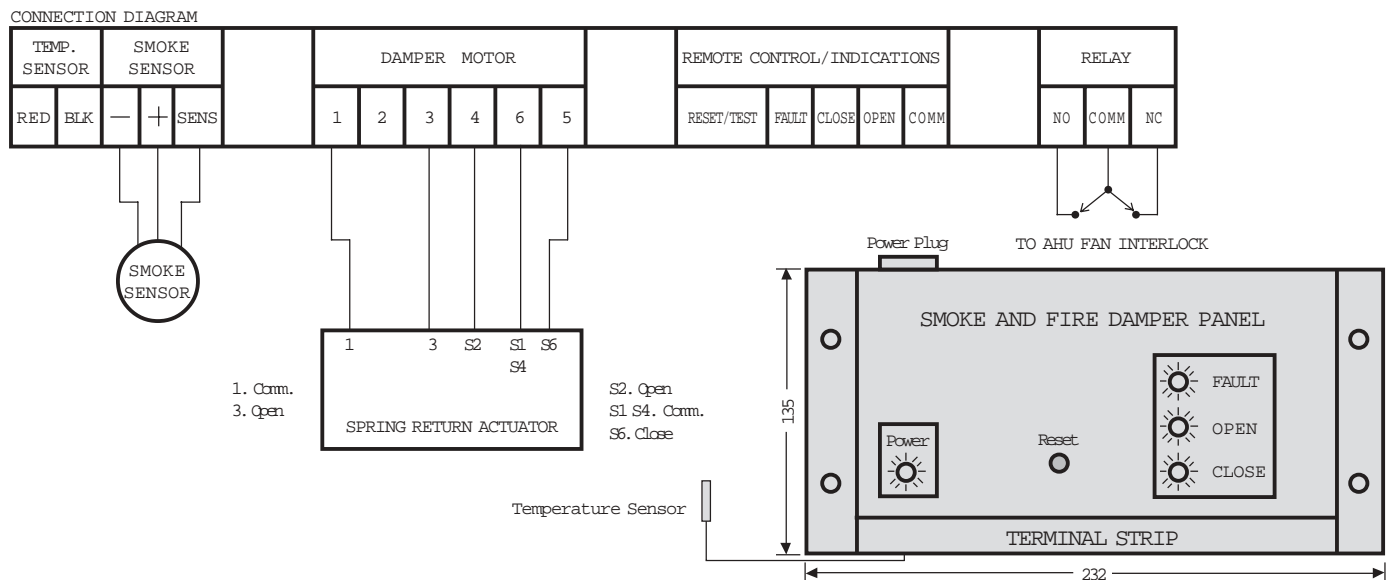
Light Duty - upto 0.8 Mt²

Heavy Duty - upto 2.4 Mt²

Ordering

Model	Type	Size W x H	Location of actuator
W G D	With sleeve	1000x600	LH/RH Entry Air

**Typical Connection Details for Control Panel
Connection Diagram for 24V AC Spring Return Actuator**



Legend

Type : W G D

Smoke and Fire Damper Panel

Smoke and fire damper panel is designed to operate motorised Damper. It closes the damper in case the temperature in the duct increases more than 74°C or it gets smoke signal from the smoke sensor. The panel can also operate Damper by external signal from Fire panel etc.

The panel has been provided with audio and visual alarm and has independent indicators to indicate Damper open, Damper close, Fault, Power ON and audio alarm. The panel is also provided with test/reset push button.

One set of 5Amp. 230V AC change over contacts is provided. which can be used to trip off the AHU fan and operate external audio alarm in case of fire or smoke.

Specification

Input voltage : 230V ± 10% 50 Hz AC

Power consumption : 10W max.

Fault Temperature : 74 ± 5°C

Indications/Controls

Power : Indicate that the power / supply has been connected to the panel and ready for operation.

Fault : Indicates when smoke is sensed by smoke sensor or the temperature in side the duct increases more than the fault temperature.

Open : Indicates when damper is open.

Close : Indicates when damper is close.

Reset/Test : When the reset/test push button is pressed continuously the damper get closed and reopen when released. It also reset fault alarm when fault has been cleared.



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M/s Ravistar India Pvt. Ltd.
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New Delhi-110019

No. 212(1)/FR/2000
September 19, 2000

Dear Sir,

This refers to the fire endurance & hosestream on your specimen (2nos) of Ravistar Multiflap (7Nos) fire damper which were carried out as per UL:555-1995 on September 15, 2000 and September 19, 2000 in presence of your Shri R.K. Khosla, Managing Director.

The Multiflap (7nos) fire damper of opening size 1000mm x 1000mm were mounted vertically on September 15, 2000 and September 19, 2000 in the Wall Furnace with the upstream side facing the furnace (fusible link was placed to the exposed face) and downstream side facing the furnace (fusible link was placed to the unexposed face) respectively. The furnace was regulated according to standard heating condition as specified in UL:555-1995.


During the fire endurance & hose-stream evaluation the maximum gap in between the flaps was measured on both the specimen of Ravistar multi-flap fire damper and found the permissible limit as per clause 10 of UL:555-1995.

The Ravistar multi-flap (7nos) fire damper specimen (2nos) supplied by M/s Ravistar India Pvt. Ltd., New Delhi was able to successfully withstand the standard fire for 90 minutes rating in the upstream & downstream position.

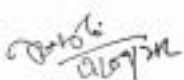
It is to be noted that Institute's responsibility is only limited to the technical evaluation of multiflap (7nos) fire damper specimen installed by the firm. It is in no way responsible for any procedural, legal commercial and operational matters.

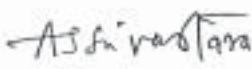
Thanking you,

Yours faithfully


(T.P. Sharma)


(Suvir Singh) Co-Investigator

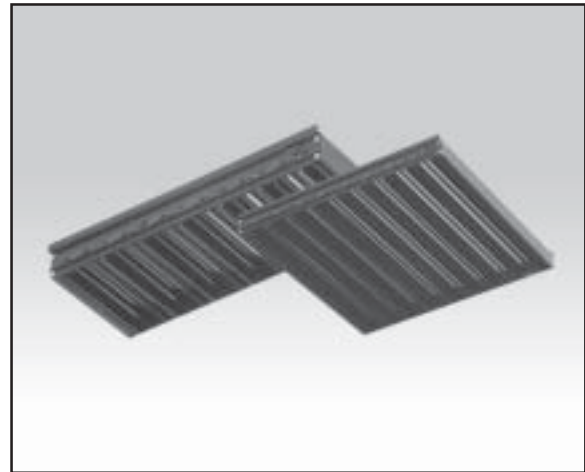

(S.B. Gupta) Evaluation Officer


(A.S. Srivastava) Evaluation Officer

Opposed Blade Dampers - Model OBSS

Introduction

Ravistar make opposed blade volume control dampers for grilles and diffusers has been designed to provide positive control of air. The range is constructed from high quality aluminium alloy extrusions and available for installation on the neck of grilles / diffusers, and also in the duct collars. These dampers are available in anodised matt black finish for long life and non visibility. These dampers are key operated from the front face of grilles / diffusers.



Features

- Robust construction for lifelong service.
- Smooth gear operation from front face of grilles / diffusers.
- Black (matt) anodised for non visibility.
- Blades are pretensioned with stainless steel spring wire.

Option

These dampers are also available as an option in fully mild steel construction painted with matt black.
Model - MS-OBSS.

Ordering

Model	W	L
OBSS	300	300

Pressure Regulating Dampers - Model PRD

Introduction

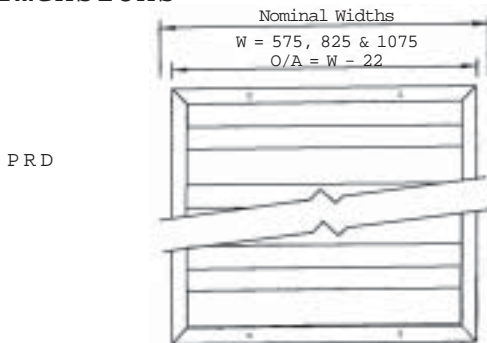
Ravistar PRD pressure regulating dampers are designed to maintain a preset constant pressure differential across a partition wall or within a duct system. The damper incorporates a finely balanced aerofoil blade which is capable of regulating room or duct pressures within a tolerance band of ± 3 Pa over a wide air flow range.

Control pressures are factory set to customer requirements but may be adjusted in service by changing the blade weights. Typical applications include operating theatres, laboratories, or clean rooms where cascade systems may be used to regulate room pressures. They are also suitable for zone pressurisation systems for smoke control in the event of fire.

Description

Pressure regulating dampers are manufactured from high quality aluminium alloy extrusions and assembled using screw fixing, welding and soldering techniques to form a robust construction. The blade pivot mechanism incorporates nylon bushes and stainless steel pins to ensure maintenance free operation.

Dimensions



Features

- Passive, balanced blade principle requires no power supply.
- Close tolerance control with preset pressures between 15 Pa and 75 Pa.
- Wide air handling capacity between 17 l/s and 2900 l/s.
- Suitable for supply or exhaust applications.
- Easy-clean surfaces suitable for medical applications.
- May be integrated with external louvres or internal grilles for through the wall installations.

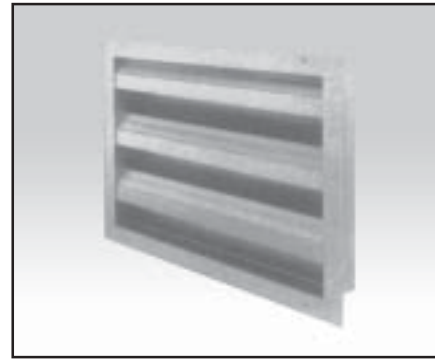
Finishes

- Standard a) Epoxy Polyester Powder Coated off white/pure white.
b) Natural anodised.

Other powder coating finishes available on request.

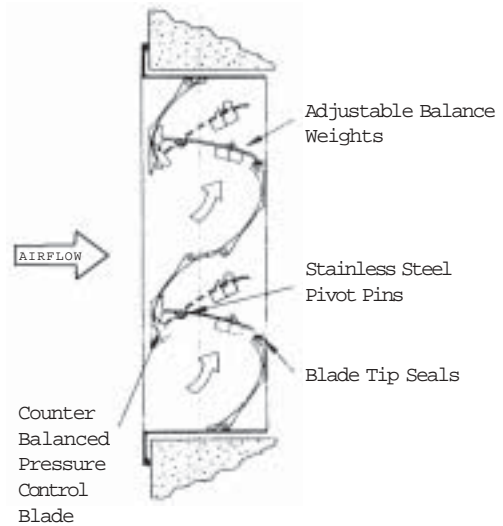
Specification

Room pressure control shall be by Ravistar PRD pressure regulating dampers, supplied pre-set to maintain a control pressure of ...Pa over a flow range of ...l/s to ...l/s, within a tolerance of ± 3 Pa.



Ordering

When ordering, state type, nominal width, height and required control pressure. Quantity should be specified separately.

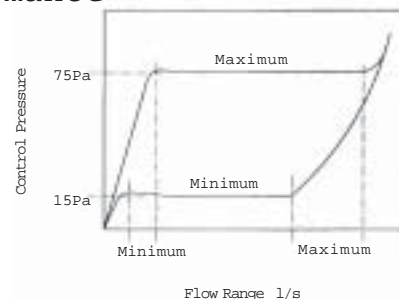


Model	Width	Height	Pressure
PRD	750	525	15Pa

Legend

Type : PRD

Performance



- Specifications and data are subject to change without prior notice due to continuous product development.
- Normal tolerances shall be applicable.



Ravistar India Pvt. Ltd.

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