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Features

- Proportional Torque Control for optimised torque performance.
- Unique *snaplock*™ drive interface ensures user friendly connection of Control Mode to Damper.
- Tested and approved to BS ISO 10294-1:1996, BS EN 1366-2:1999 and BS476 pt. 20:1987 Fire Test Standards.
- SmokeShield PTC is an LPCB approved product and conforms to the requirements of LPS1162 iss 2.
- Easy connection to square, rectangular, circular and flat oval ductwork.
- Unique and patented Electrical Thermal Release for ultimate safety.
- Halogen Free Low Smoke and Fume cabling supplied as a standard safety feature.
- Actionpac Damper Control System compatibility.
- VentShield PTC™ reverse action dampers for smoke release or exhaust applications.
- Pneumatic Option.

Dampers Designed and Built
 in Britain

SmokeShield PTC™

Proportional Torque Control
 Automatic Smoke and Fire Dampers



*action*air

Dampers Controls Fancoils

Ruskin Air Management Limited
www.ruskinuk.co.uk

Introduction



Actionair has always been at the forefront in the innovative development, design and manufacture of life safety dampers and associated controls. Now with the unique SmokeShield PTC™ range of Automatic Smoke and Fire Dampers Actionair continues this tradition.

The Range

The SmokeShield PTC™ range of Quality Engineered Dampers are suitable for air conditioning and ventilation systems requiring up to 2 hours (vertical) and 4 hours (horizontal) smoke and fire protection.

Refer to Installation and Maintenance Guide on our website for precise details.

These aerodynamic stainless steel interlocking opposed blade dampers are fail-safe spring close with manual or electrical reset control modes.

The VentShield PTC™ Damper range are reverse acting for smoke release or exhaust. (Manual system not available).

Proportional Torque Control

The control mode and *snaplock*™ drive interface provides the optimum mechanical advantage to the damper by delivering:

the right torque, in the right place, at the right time.

Specification

SmokeShield PTC™

Proportional Torque Control Automatic Smoke and Fire Dampers with 75mm x 0.5mm thick stainless steel aerodynamic interlocking blades incorporating synthetic seal, with steel blade end bearings and peripheral gasketing. Housed in a galvanised steel fully welded 1.2mm spigotted casing suitable for square, rectangular, circular or flat oval connections.

All PTC™ Dampers are supplied with the blades in the closed position to prevent the ingress of dirt and dust.

The totally enclosed precise movement

opposed blade drive shall be positioned out of airstream for protection against damage, be hard wearing and free running. The Control Mode/Damper connection shall be by means of the *snaplock*™ drive interface mechanism, which is totally independent of the ductwork. SmokeShield PTC™ Automatic Smoke and Fire Dampers with their appropriate control modes shall have spring Fail-Safe Closed operation. SmokeShield PTC™ Damper and selected Control Mode (M1, M5, M6 and M9) as supplied by Actionair.

SmokeShield PTC™

A. Fire Rated Damper in accordance with British Standard 5588: Part 9999: 1999 should be held in the Open Position by means of a Thermally Actuated Device set to operate at approximately 74 °C.

SmokeShield PTC™ Automatic Smoke and Fire Control Dampers are Fire Rated Dampers as they are held in the Reset (Open) Position by a Thermally Actuated Device (Control Mode 1 – Mechanical Fusible Link, Control Modes 5 and 6 – Electrical Thermal Release, Control Mode 9 – Pneumatic Thermal Release) operating at a temperature of approximately 72 °C ± 4 °C.

Note: Thermally activated devices are not supplied with VentShield Control Modes as standard.

VentShield PTC™

Proportional Torque Control Automatic Smoke Release Dampers with 75mm x 0.5mm thick stainless steel aerodynamic blades incorporating synthetic seal, with steel blade end bearings and peripheral gasketing. Housed in a galvanised steel fully welded spigotted casing suitable for square, rectangular, circular or flat oval duct connections.

The totally enclosed precise movement opposed blade drive shall be positioned out of airstream for protection against damage, be hard wearing and free running.

The Control Mode/Damper connection shall be by means of the *snaplock*™ drive interface mechanism, which is totally independent of the ductwork.

VentShield PTC™ Automatic Smoke Release Dampers with their appropriate control modes shall have spring Fail-Safe Open operation.

VentShield PTC™ Damper and selected Control Modes as supplied by Actionair.

Application Parameters

SmokeShield PTC™ and VentShield PTC™ Dampers to maximum width and height dimensions (see pages 16 and 17) can be used where the operating total system pressure is up to 1500 Pascals and duct velocities to 15m/second.

The SmokeShield PTC™ Damper blades are normally open and fail-safe to the closed position. This product is fire rated. The VentShield PTC™ Damper blades are normally closed and fail-safe to the open

position for smoke release or exhaust. Dampers may be installed both vertically and horizontally. In addition, for vertical installations, the damper may be installed with the blades running vertically. Airflow can be from either direction.

Actionair SmokeShield PTC™ and VentShield PTC™ Dampers are designed for applications in normal dry filtered air systems. If exposed to fresh air intakes and/or inclement conditions, the dampers should be subject to a planned inspection programme.

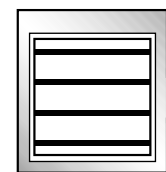
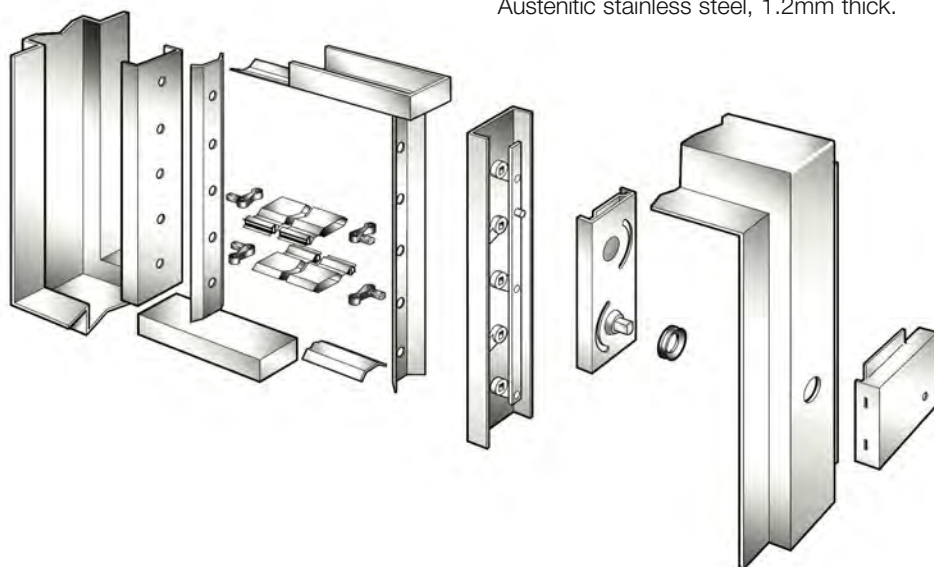
For specialist and/or aggressive applications, please refer to Actionair Sales Office.

Casing Features

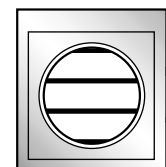
With double skin spigotted galvanised steel (to BS EN 10327) 1.2mm thick casing the SmokeShield PTC™ dampers comply to Class A and B of Eurovent Document 2/2 and Test Procedures for Classes A, B and C of HVCA Ductwork Specification DW144.

Damper casings are manufactured with fully welded spigotted connections suitable for Square, Rectangular, Circular and Flat Oval duct connections.

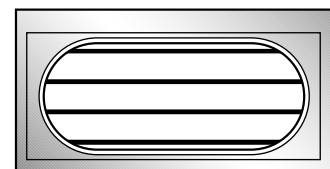
As an extra cost option, casings can be manufactured in 430 grade (Type 1.4016) Ferritic or 316 grade (Type 1.4401) Austenitic stainless steel, 1.2mm thick.



Type SPG Square / Rectangular



Type SPG Circular



Type SPG Flat Oval

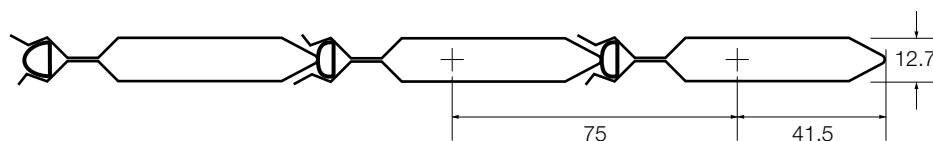
Blade Features

SmokeShield damper blades are aerodynamic double skin, Type 1.4016 (430) Ferritic stainless steel, which are 75mm x 0.5mm thick and interlock to form a positive smoke and fire resisting shield.

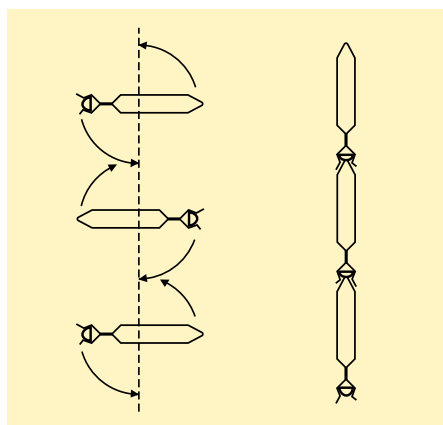
Incorporated within the blade profile is a synthetic seal to ensure low closed blade smoke leakage.

Stainless steel blade end bearing and peripheral gasketing maintain the low closed blade smoke leakage whilst allowing for expansion under full fire conditions.

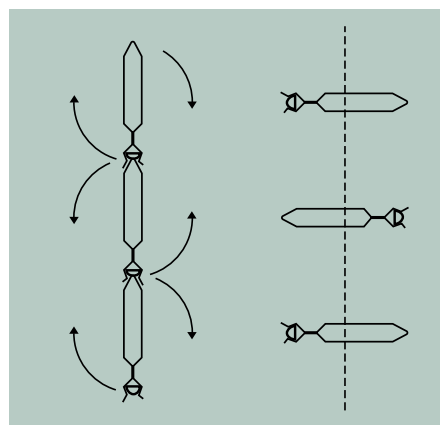
Optional Blade construction Type 1.4401 (316) Austenitic stainless steel.



SmokeShield PTC™ blade dimensions



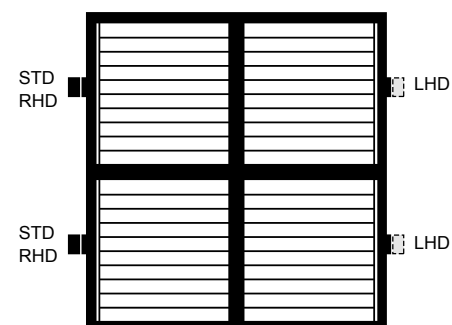
SmokeShield PTC™ fail-safe closed



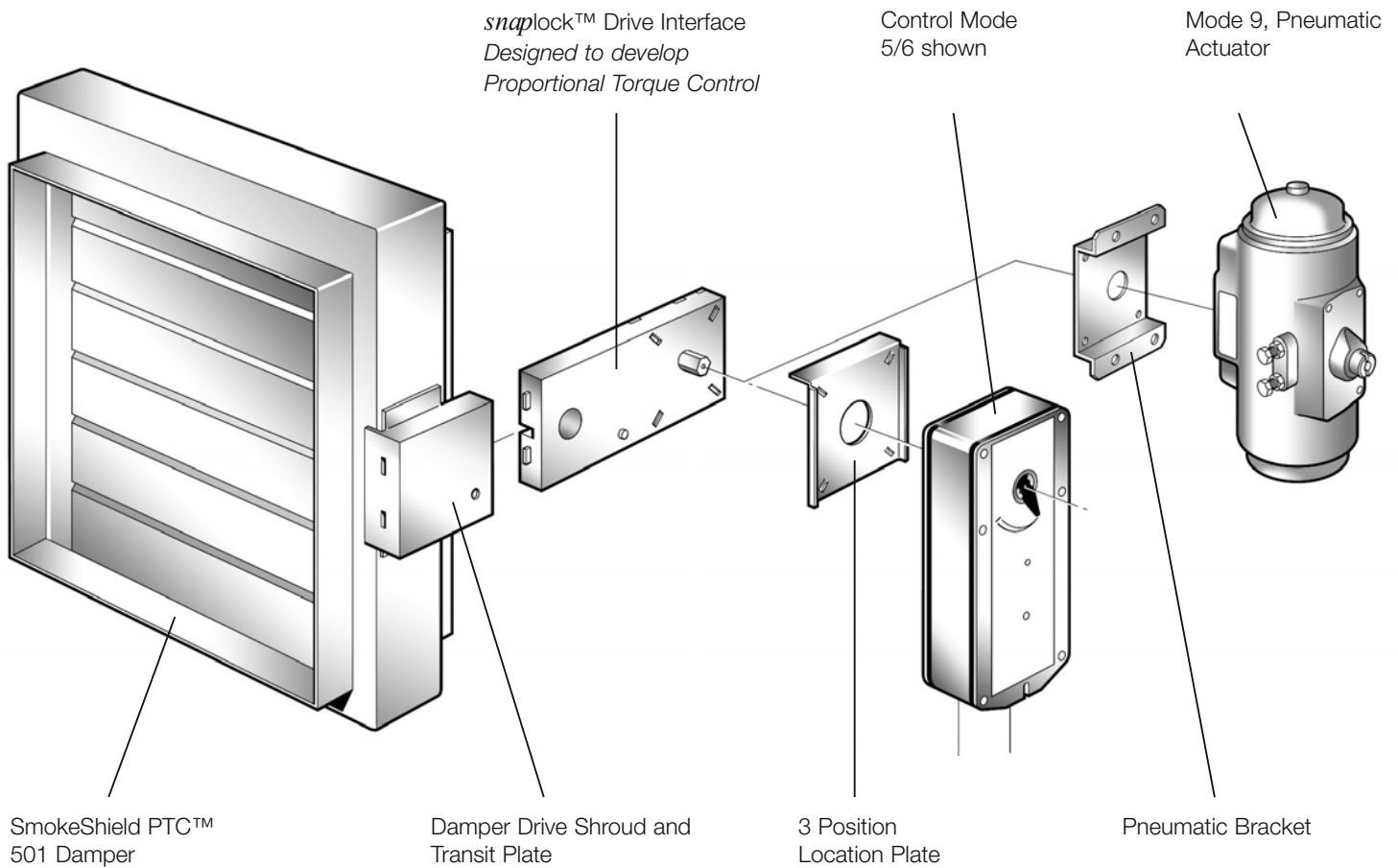
VentShield PTC™ fail-safe open

Multiple Assemblies

Square and rectangular casings are available in multiple module arrangements supplied complete with joining channels for site fixing by others.



Damper – Control Mode Interface (Right Hand Damper shown)



SmokeShield PTC™ Damper with unique *snaplock™* Damper/Control Mode Interface

Automatic Smoke and Fire Damper and Control Mode assembly with a unique and dedicated Proportional Torque Control for optimised Damper/Control Mode torque performance.

The unique *snaplock™* drive interface ensures user friendly, easy and secure connection of the Control Mode to the Damper.

The drive interface which is totally independent of the ductwork, eliminates the need for costly dedicated duct sections, and provides ease of connection to square, rectangular, circular and flat oval ductwork.

This drive interface guarantees that only the correct and certified Actionair products can be used.

Control Options

A choice of Control Modes are located outside of the ductwork for easy access and installation.

All SmokeShield Control Modes must be in the released position prior to connection.

Control Mode 1 Mechanical

Manual reset – with volt free contact for provision of external indication of damper status.

Not available on VentShield.

Control Modes 5 and 6 Electrical

Optimised motor/spring return control modes with remote reset-release facilities, with volt free contacts for provision of external indication, monitoring and control by means of an Actionpac damper control system, or by a suitable alternative proprietary control format.

The motorised Control Modes 5 and 6 can be fitted in 3 positions through 180° (see page 10) allowing maximum on-site installation flexibility. (Position 2 is supplied as standard).

Control Mode 9

Pneumatic

Note: VentShield PTC™ Dampers and associated control modes are reverse action with spring opening (Mode 1 not available).

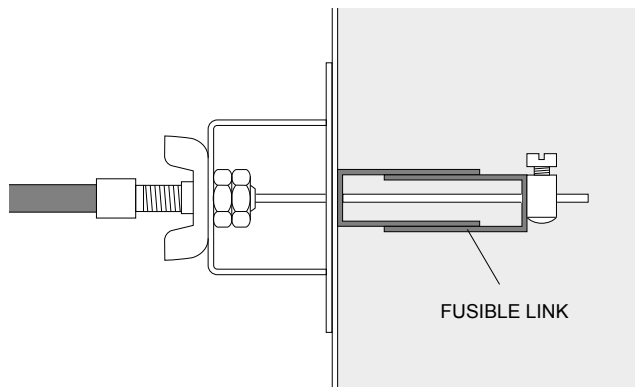
Thermal Links and Release Types (SmokeShield Only)

Mechanical Fusible Link - Control Mode 1

Fail-safe by means of a unique and patented Mechanical Fusible Link which operates at approx. 72 °C, complying with BS 9999 : 2008 (Ref 33.4.5.3).

The link assembly incorporates a safety feature that ensures the fail safe status of the damper if the link is not fitted on to the ductwork.

A manual test may be performed by simple unscrewing the wing nut situated on the fusible link.



Pneumatic Thermal Release (PTR) - Control Mode 9

Fail-safe is by means of a Pneumatic Thermal Release (PTR) which operates at 74°C, or if air supply is interrupted.



Electrical Thermal Release (ETR) - Control Modes 5 and 6

Fail-safe by means of a unique and patented electrical thermal release which operates at approx 72 °C or if power supply is interrupted, complying with BS 9999 : 2008 (Ref 33.4.5.3).

The ETR incorporates triple safety features, including an ingenious device that ensures the fail-safe status of the damper if the ETR is not fitted on to the ductwork.

A manual test switch allows periodic operation of the damper for testing purposes simulating actual fail-safe release under smoke/fire conditions.

For safety reasons the ETR/PTR is designed to operate once only when the activation temperature is reached.



ETR Indication light

As standard, a green LED lamp is built into the ETR housing. This gives the user a simple and clear visual check that the Actuator is receiving power, the ETR is correctly fitted, and the thermal fuse is intact.

Control Mode Details

Control Mode 5 PTC and Control Mode 6 PTC



Control Mode 5 PTC and Control Mode 6 PTC 60 seconds MAX Reset/ 22 seconds Release Operation.

These series of control modes achieve 60 seconds to drive to the end position, with a 22 second spring return time. This brings Actionair dampers in line with imminent European standardisation for fire and smoke control.

As with all PTC modes, this series uses the *snaplock™* interface. Fire rated dampers are primarily designed to be fitted into a wall or floor, and the interface displaces the mode from the line of the wall. Dampers may be installed and finally the mode removed from storage for easy fitting, thus preventing damage to the mode before it is required. End switches and LSF cable are provided as standard on all modes.

Versions are available to allow fail-safe close for fire safety (SmokeShield) or fail-safe open for smoke extract (VentShield).

The Electro Thermal Release (ETR) supplied for fire damper use has an integral fail-safe device to ensure that it is installed into the ductwork correctly. ETR units are not supplied with VentShield, because these are designed to fail-safe open.

End switches are provided with each mode, so that damper Reset and Release positions may be monitored. The mode is permanently attached to the mechanism driving the damper blades.

Control Mode 9 PTC



Control Mode 9 PTC

This mode has been developed to provide pneumatic operation of the damper and is available in spring return versions for fail-safe operation. A Pneumatic Thermal Release assembly (PTR) is available (SmokeShield only) to react to fire conditions. As with all PTC actuators, this series uses the *snaplock™* interface. Switch box and solenoid accessories available.

M9 PTC Pneumatic Thermal Release / Air Off – Fail-safe Close

M9 PTC Vent Pneumatic Air Off – Fail-safe Open

SmokeShield and VentShield

M5 PTC	10/2W (12.5VA _{MAX})	24V	end switches SPDT 250V 6(3)A	SmokeShield	Thermal Release / Power Off – Fail-safe Close*
M6 PTC	12/4W (14VA _{MAX})	230V	end switches SPDT 250V 6(3)A	SmokeShield	Thermal Release / Power Off – Fail-safe Close*
M5 PTC Vent	10/2W (12.5VA _{MAX})	24V	end switches SPDT 250V 6(3)A	VentShield	Thermal Release / Power Off – Fail-safe Open*
M6 PTC Vent	12/4W (14VA _{MAX})	230V	end switches SPDT 250V 6(3)A	VentShield	Thermal Release / Power Off – Fail-safe Open*
M5 PTC NON ETR	10/2W (12.5VA _{MAX})	24V	end switches SPDT 250V 6(3)A	SmokeShield	Power Off – Fail-safe Close
M6 PTC NON ETR	12/4W (14VA _{MAX})	230V	end switches SPDT 250V 6(3)A	SmokeShield	Power Off – Fail-safe Close
M5 PTC Vent NON ETR	10/2W (12.5VA _{MAX})	24V	end switches SPDT 250V 6(3)A	VentShield	Power Off – Fail-safe Open
M6 PTC Vent NON ETR	12/4W (14VA _{MAX})	230V	end switches SPDT 250V 6(3)A	VentShield	Power Off – Fail-safe Open

*SmokeShield Control Modes M5 PTC and M6 PTC are supplied as standard with the Electrical Thermal Release (ETR) (Not fitted to VentShield). The units Fail-safe by means of the unique and patented ETR device which operates at 72 °C, or if the power supply is off/interrupted. Complying with BS 9999 : 2008 (Ref 33.4.5.3). Part 9 1999. Non ETR versions Fail-safe when the power is off/interrupted.

Control Mode Details Continued

Control Mode 5 – 3P PTC



Control Mode 5 – 3P PTC with additional facility for third (Control) Position. 150 seconds Reset, 20 seconds Release.

This 3 position control mode allows a damper to be moved to both the reset and release position, with the additional facility to move the damper to a third control position. The mode is given a 2-10V DC signal, defining the position that the damper needs to be set at.

A return signal of 2-10V DC is provided to allow monitoring of position.

To support this actuator and allow positioning to be set local to the damper, Actionair have the **M5-3P 24V** and **M5-3P 230V** control units.

As with all PTC modes, this series uses the *snaplock™* interface. Fire rated dampers are primarily designed to be fitted into a wall or floor, and the interface displaces the mode from the line of the wall. Dampers may be installed and then the mode removed from storage for easy fitting, thus preventing damage to the mode before it is required. End switches, LSF cable, and Electro Thermal Release (ETR) are provided as standard (not fitted on VentShield).

Versions are available to allow fail-safe close for fire safety or fail-safe open for smoke venting.

Control Monitoring Station

M5-3P 24V and M5-3P 230V CMS Control Stations



M5 – 3P – CMS



M5 – 3P – CMS (230V)

The M5-3P CMS (Control Monitoring Station) this control unit gives the user the opportunity to set a control position using an integral potentiometer, or use an externally supplied control voltage. It provides visual (lamp) and volt free (relay) indication of damper position (Released, at Control Position, Reset). A terminal is provided to allow feedback of the 2-10V DC monitoring voltage. In addition, a fire alarm input may be made (NC) which will cause the damper to Release if the contact is broken. A second input is available to cause the damper to fully Reset to allow full air flow for smoke venting as an example. The fire alarm Release input takes precedence. Switches are provided that allow the unit to be driven to Release or Reset positions for testing purposes.

SmokeShield and VentShield

M5-3P PTC	24V 7/2W (10VA) end switches SPDT 250V 6(3)A	SmokeShield	Thermal Release / Power Off – Fail-safe Close	2-10V Set Position
M5-3P PTC NON ETR	24V 7/2W (10VA) end switches SPDT 250V 6(3)A	SmokeShield	Power Off – Fail-safe Close	2-10V Set Position
M5-3P PTC Vent	24V 7/2W (10VA) end switches SPDT 250V 6(3)A	VentShield	Thermal Release / Power Off – Fail-safe Open	2-10V Set Position
M5-3P PTC Vent NON ETR	24V 7/2W (10VA) end switches SPDT 250V 6(3)A	VentShield	Power Off – Fail-safe Open	2-10V Set Position

SmokeShield Control Modes M5 –3P PTC are supplied with the Electrical Thermal Release (ETR) (Not fitted to VentShield). The units Fail-safe by means of the unique and patented ETR device which operates at 72 °C, or if the power supply is off/interrupted. Complying with BS 5588 Part 9 1999. Non ETR versions Fail-safe when the power is off/interrupted.

Control Mode 5 – 2P PTC and Control Mode 6 – 2P PTC



SmokeShield and VentShield

M5-2P PTC	24V 12W (18VA), end switches SPDT 250V 6(3)A
M6-2P PTC	230V 8W (15VA), end switches SPDT 250V 6(3)A

Drive Open / Drive Closed. 60 seconds operation

This 2 position control mode has been developed to provide drive open/drive closed damper operation and it brings Actionair dampers in line with imminent European Standardisation for fire and smoke control, where for a given smoke control philosophy, or smoke source, a damper may be required to open or close to vent or contain the smoke. This is a radical alternative to the traditional spring return actuator, where upon power failure, instead of moving to fail-safe position, it remains in its desired emergency position. For any smoke control emergency situation, this is an absolute necessity. These modes do not have ETRs.

As with all PTC actuators, this series uses the *snaplock™* interface. All modes have LSF cables.

Application and Wiring - Smoke (with ETR)

SmokeShield Mode 1 PTC (Manual System)

Manual opening.
Spring instant closure via mechanical fusible link.

(SmokeShield version only, VentShield not available.)

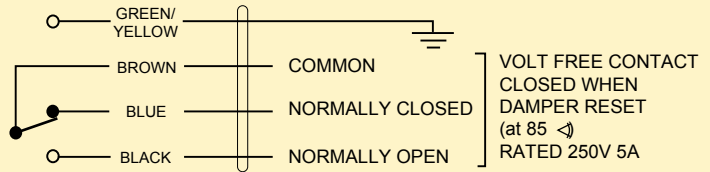


DIAGRAM SHOWS ACTUATOR IN FULLY RELEASED STATE

SmokeShield Mode 5 PTC (24V System)

The following applies for ETR version.
(ETR not supplied on VentShield.)

Supply On – Damper motors reset.
Supply Off – Spring release.
Electrical Thermal Release.
External mechanical position indicator with pointer.
Release Time ≈ 22 secs.
Reset Time ≈ 60 secs.

(Connect 24V via a safety isolating transformer.)

IP54 Rated.

AC/DC 24V
50 / 60 Hz

12.5 VA
10 / 2 W

*I*_{max}
8.3A @ 5ms

-30...+50 C
CONTINUOUS

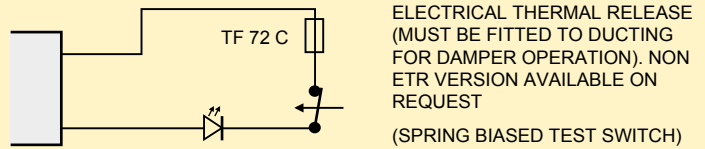
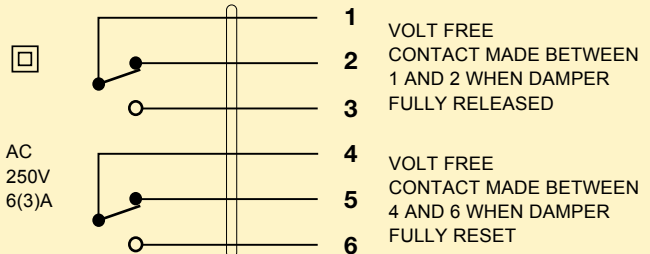
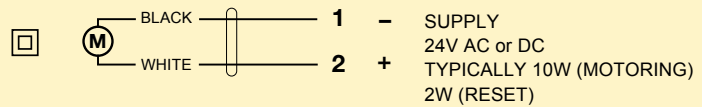


DIAGRAM SHOWS ACTUATOR IN FULLY RELEASED STATE

SmokeShield Mode 6 PTC (230V System)

The following applies for ETR version.
(ETR not supplied on VentShield.)

Supply On – Damper motors reset.
Supply Off – Spring release.
Electrical Thermal Release.
External mechanical position indicator with pointer.
Release Time ≈ 22 secs.
Reset Time ≈ 60 secs.

(To isolate from main power supply, the system must incorporate a device which disconnects the phase conductors, with a least 3mm contact gap.)

Note: 120V A.C. version also available.

IP54 Rated.

AC 230V
50 / 60 Hz

14 VA
12 / 4 W

-30...+50 C
CONTINUOUS

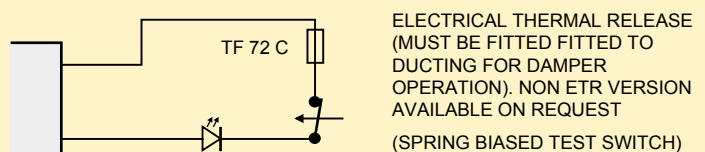
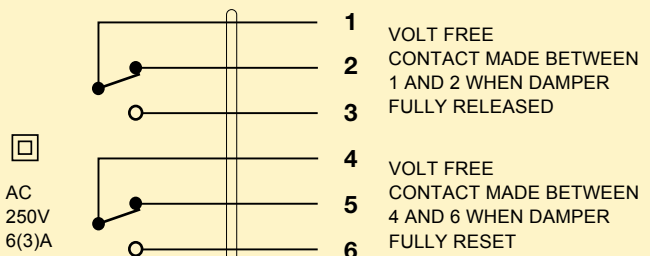
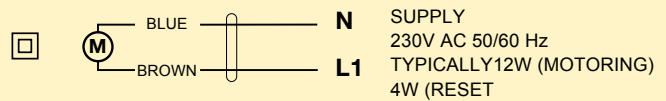


DIAGRAM SHOWS ACTUATOR IN FULLY RELEASED STATE

Application and Wiring - Vent (or Smoke Non-ETR)

VentShield PTC™ Dampers and associated Control Modes M5 and M6 are reverse action with spring opening.

VentShield Mode 5 (24V System)

Supply On – Damper motors reset.
Supply Off – Spring release.

Cable specification:
Si HF Low Smoke and Fume, Halogen Free, to IEC 754-1. Conforming to 73/23/EEC directive.

Release Time ≈ 22 secs.
Reset Time ≈ 60 secs.

(Connect 24V via a safety isolating transformer.)

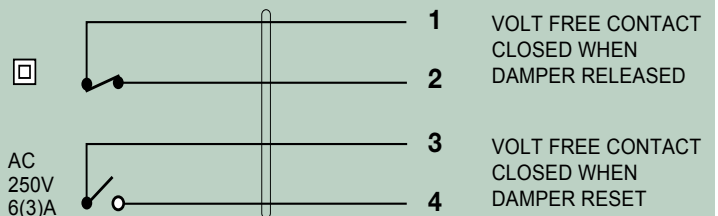
IP54 Rated

AC/DC 24V
50 / 60 Hz

12.5 VA
10/2 W

Imax
8.3A @ 5ms

-30...+50 C
CONTINUOUS



VentShield Mode 6 (230V System)

Supply On – Damper motors reset.
Supply Off – Spring release.

Cable specification:
Si HF Low Smoke and Fume, Halogen Free, to IEC 754-1. Conforming to 73/23/EEC directive.

Release Time ≈ 22 secs.
Reset Time ≈ 60 secs.

(To isolate from main power supply, the system must incorporate a device which disconnects the phase conductors, with a least 3mm contact gap.)

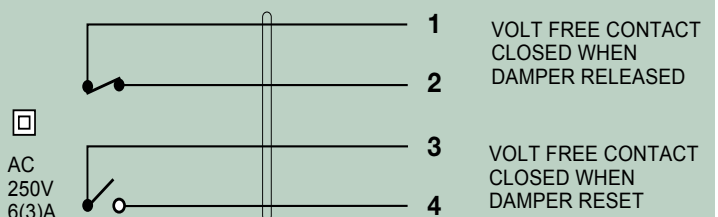
Note: 120V A.C. version also available.

IP54 Rated

AC 230V
50 / 60 Hz

14 VA
12/4 W

-30...+50 C
CONTINUOUS



General (Electrical)

One metre of halogen free low smoke and fume electric cable is also included with Control Modes 1, 5 and 6 for convenience of on site wiring. This also provides the distinct safety advantage of all electrics terminating outside the duct, eliminating potential in-duct fire hazards from wiring faults.

The Electrical Thermal Release is pre-wired with 0.5m halogen free low smoke and fume cabling to Control Modes 5 and 6. (Not supplied on VentShield).

A Manual test switch fitted on the ETR allows periodic operation of damper simulating actual fail-safe release under smoke/fire conditions.

(Prewired Connection boxes available as factory fitted option.)

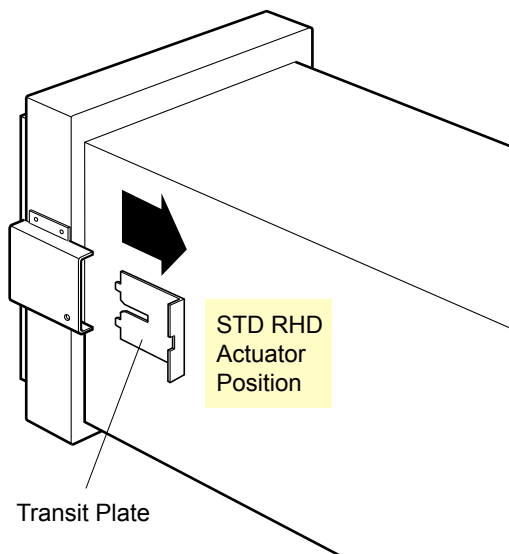
Control Modes 5 and 6 are available without the ETR where thermal operation is not required. (This would not comply with BS 9999 : 2008 or SmokeShield (Ref 33.4.5.3).

Smoke Shield or Vent Shield Mode 9 PTC (Pneumatic Operation)



Air On – Damper resets.
Air Off – Spring release.
Release time ≈ 2 – 4 secs.
Reset time ≈ 2 – 4 secs.
Air inlet – 6mm dia. quick fit coupling.
74 °C Pneumatic Thermal Link (PTR).
(PTR not supplied on VentShield.)
Air pressure ≈ 5.5 – 8.0 bar.
Air consumption to reset @ 5.5 bar – 535CC.
External mechanical position indicator.
Test operation by removing fusible link element.

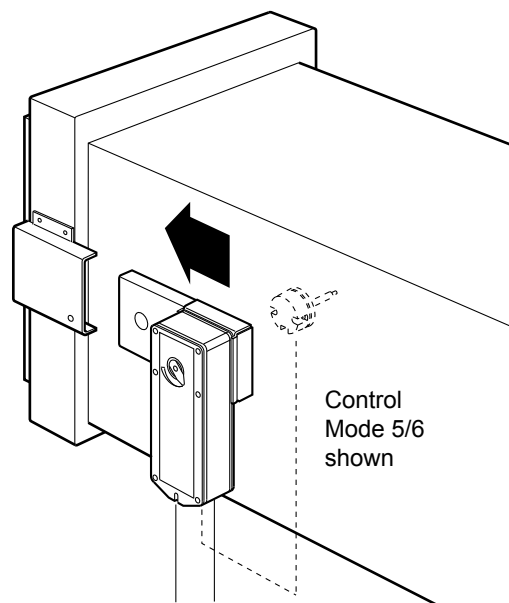
Damper Installation and Control Mode Fitting



Step 1

Install the SmokeShield PTC™ Automatic Smoke and Fire Damper (complete with transit plate) into the structure. Refer to Installation Systems on page 12 and 13 and Installation and Operating Instructions. Connect and fit ductwork to damper spigots. Remove transit plate and discard (recycle).

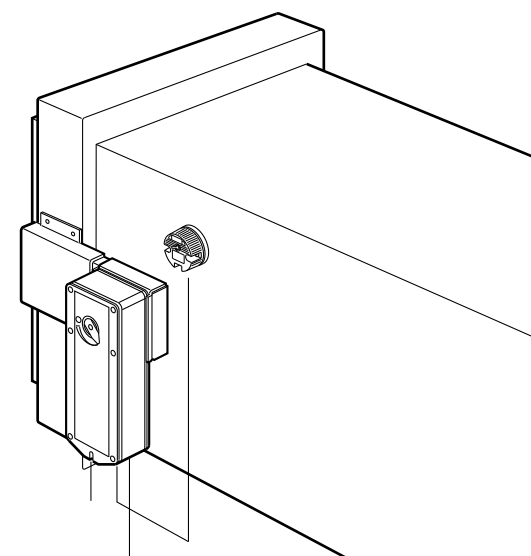
(Care must be taken when back filling to ensure that the snaplock™ retaining pin location hole and the entry slot of the damper drive shroud is clear of builders work debris).



Step 2

Slide the snaplock™ Drive Interface into the damper drive shroud, 'snaplock™' into position.

The 'snaplock™' feature provides a user friendly, easy and secure direct connection. It comes pre-set to enable direct fit to Smoke/VentShield damper.



Step 3 (Control Modes 5 and 6) and M5 - 3P

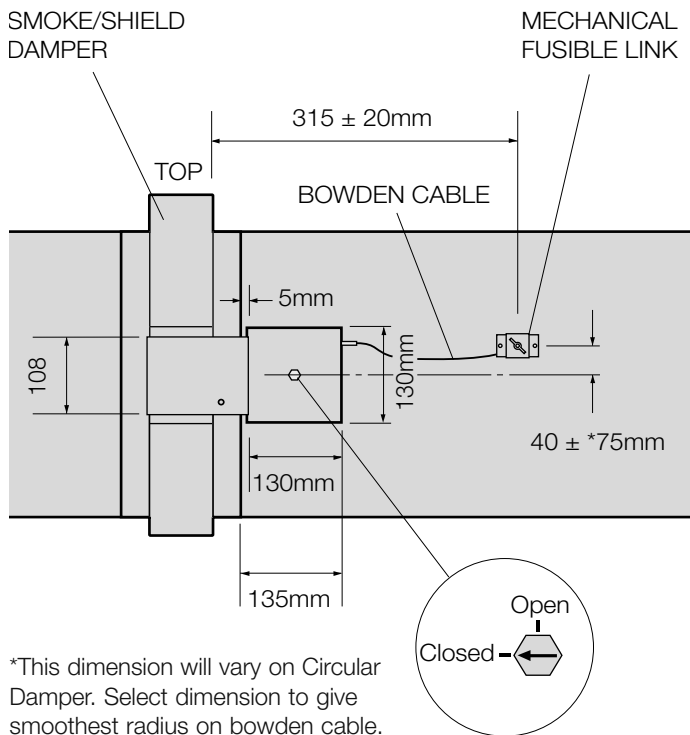
Identify location for the Thermal Release (not required on VentShield). Ideally, this should be fitted to the top half of the duct, adjacent to the control mode. Fit the self adhesive drilling template (supplied) in this position. Drill holes as detailed on the template. Using the 2 fixing screws provided, secure the Electrical Thermal Release to the duct. Connect electrically, and test operation.

As a safety feature the actuator will only operate if the ETR is correctly fitted to the duct.

Note: Non ETR version available.

Damper Installation and Control Mode Fitting Continued

Step 3 (Control Mode 1) SmokeShield only

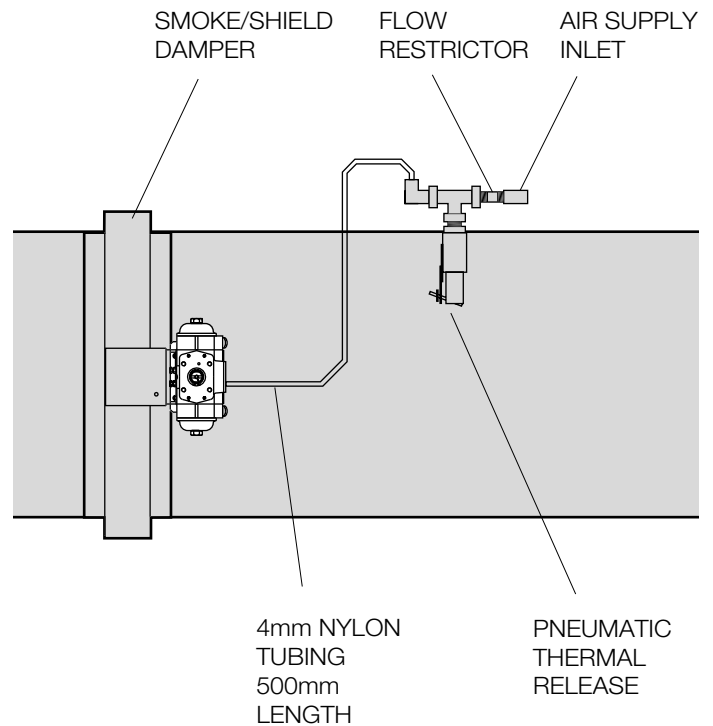


Mark the Fusible Link position on the duct as dimensioned in the diagram above.

Fit the self adhesive drilling template (supplied) in this position. Drill holes as detailed on template. Using the 2 fixing screws provided, secure the Fusible Link to the duct. Reset Damper using a 14mm A/F spanner, clockwise 1/4 turn. Test unit by simply unscrewing wing nut – Damper releases. For ductless installations a suitable sized plate or bracket must be fitted to the installation to allow the fitting of the Fusible Link.

As a safety feature the Control Mode will only operate if the Fusible Link is correctly fitted to the duct.

Step 3 (Control Mode 9)



1. Select position for PTR. (SmokeShield only). Ideally this should be in the top half of the duct and sufficiently close to the actuator to allow easy connection of the 4mm diameter nylon tube supplied.
2. Drill hole in selected position using a 30mm diameter hole cutter, removing any sharp edges.
3. Position PTR and drill the 4 off 3mm diameter fixing holes.
4. Remove PTR and apply approved fire retardant sealant on the duct around the hole.
5. Refit PTR and secure with the 4 off Pozi head screws provided.
6. Connect 4mm diameter tube to actuator and PTR.
7. Connect 6mm diameter tube to input side of PTR.
8. Connect air supply. Damper opens fully.
9. Test operation.

Installation Systems

Popular types of Installation Frame that are available.

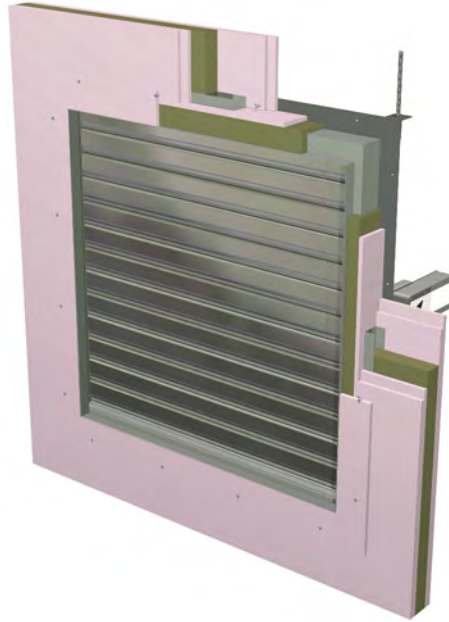
DWFX™ (DRY WALL FIX) Installation System

Typically for installation into Dry Wall, Stud Partitions.

HEVAC / HVCA Galvanised Steel Installation Frames

Typically for installation into Blockwork, Concrete walls and floors.

DWFX - F



DWFX - C



Specification

The Actionair DWFX-F installation method is BRE Tested to EN1366-2 for 90 minutes. (BRE test report 220895).

Classification E90/ES60 BS EN 13501.

The Actionair DWFX-F consists of a 1.2 mm galvanised steel peripheral flange with 50mm x 50mm x 3mm steel angle cleats with 14 x 24mm oval slots, welded to damper flange for drop rod support.

Specification

The Actionair DWFX-C installation method is BRE Tested to EN1366-2, BRE Test Report 231741.

Classification E120/ES120 BS EN 13501.

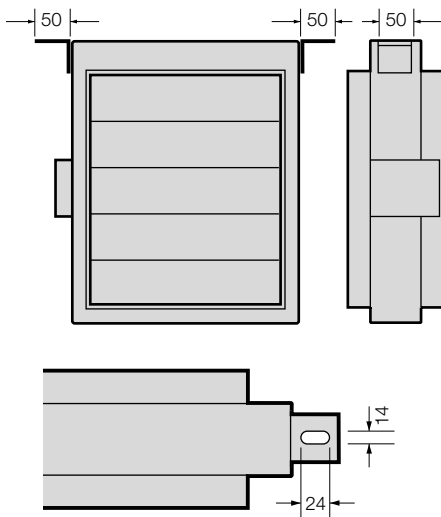
The Actionair DWFX-C consists of 50mm x 50mm x 3mm steel angle cleats with 14 x 24mm oval slots.

Fully welded to damper casing for drop rod support prior to wall construction.

DWFX-F Dimensional Data

See page 16 and 17.

DWFX-C Dimensional Data

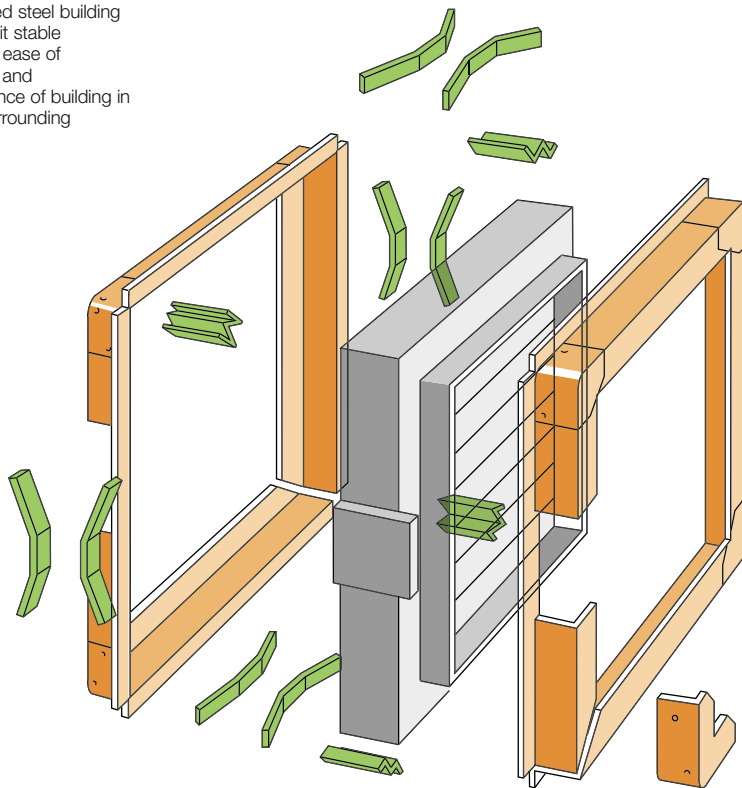


Comprehensive literature, outlining installation and features, is available for our DWFX systems. Go to our website:- www.actionair.co.uk

to view or download these as PDF files.

HEVAC / HVCA Galvanised Steel Installation Frames

Galvanised steel building ties permit stable handling, ease of transport and convenience of building in to the surrounding structure.



Galvanised Steel Installation Frames

(as required by HVC 6/5/83 Rev.1 July 1999.)

Installation frames are delivered to site as a complete assembly with the appropriate Damper fitted therein. The frame shall be installed centrally in the thickness of a brick, blockwork or concrete surrounding wall or floor, or in the case of thick walls or floors, so that the centre line of the frame

is at least 50mm away from the nearest face of the wall or floor in which the assembly is mounted. **The four tabs (building tie) forming each fixing point shall provide a positive fixing into the structure.** Multiple assembly dampers up to 1500 x 1500 or 2000 x 1000 can be fitted into fully assembled installation frames and delivered as one piece. Dampers in excess of these sizes will be

supplied in sections with the installation frame supplied in kit-form, Drg AA/F/8057. This drawing and method statement will be supplied for assembly to on site.

The maximum size of kit-form installation frames is 2500mm wide x 2000mm high.

a. In brick or blockwork walls the tabs shall be bent out and solidly built into the mortar joints between the brick or blockwork.

b. In the case of reinforced concrete walls and floors, the tabs shall be bent out and tied with wire to the reinforcing bars which will be deliberately left protruding into the opening.

The gap between the installation frame and builders work shall be backfilled with mortar or concrete on both sides of the flange.

Adjacent frame assemblies must be separated by builders work of a minimum thickness of 225mm (between installation frame upstand flanges) unless approval has been previously obtained from the appropriate Authority. For installations below this dimension please refer to Actionair Sales office.

In no case shall the HEVAC/HVCA frame and damper assembly be held in position merely by the adjacent ductwork, and it should be noted that in reinforced concrete structures (especially floors), it will not be sufficient to only backfill between the damper installation frame and the surrounding opening with mortar or fine aggregate concrete mix without provision for tying in the frame to the surrounding reinforced concrete structure.

Approved Installations

A binder containing approved installation illustrations is now available.

(Refer to Actionair Sales Office or visit our website, www.actionair.co.uk The illustrations are under the heading PRODUCTS DRAWINGS.)

Although the included methods have been tested and assessed, it is recommend, that these, as with all installation methods must be confirmed with Building Control /

Local Authority prior to manufacture.

Actionair can also provide applications of other proposed methods of installation, please contact our Sales Office to discuss your specific requirements.

These again are the responsibility of the client to ensure that these are acceptable to Building Control / Local Authority before construction commences.



Accessories

A range of indicator panels, push button switches and damper test units are also available. The housing for these units are manufactured in rigid ABS plastic. The Damper Connection Box is in galvanised steel.

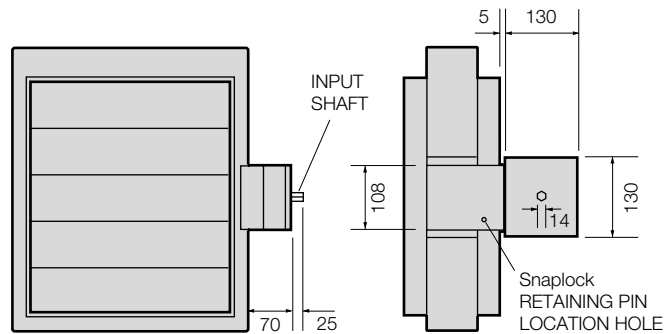
Electrical

	Damper Test Unit Reset and release indication. Spring bias (power OFF) test switch. Power normally ON.	DTU24	24V AC/DC
		DTU120	120V AC
		DTU230	230V AC
	Damper Status Indicator Reset and release indication.	DSI24	24V AC/DC
		DSI120	120V AC
		DSI230	230V AC
	Damper Control Unit Switch ON/OFF function. Reset and release indication.	DCU24	24V AC/DC
		DCU120	120V AC
		DCU230	230V AC
	Damper Release and Indication Module (DRIM) This is designed for control and monitoring of the electrically operated Smoke Shield PTC™ Fire and Smoke dampers. It will operate from 24V, 120V or 230V supplies, 50 or 60 Hz. Selection of the operating voltage is by use of internal links on the PCB,	prior to installation and connection of actuator and supply. The DRIM may be used singly to provide local damper control, or in pairs to provide control from either side of a damper. It can also operate 2 actuators when dampers are provided in 2 multiple sections.	LED position and operation indication is provided. Operation is by push button to close and twist to re-open damper. Tested to BS EN 61010 -1: 2001 and is CE compliant. IP44 rated. Operating range 5 - 40 °C.
	DRIM	24V – 230V AC/DC	
	M5 and M6 – 2P Damper Control Unit Switch power open/power close. Open and closed indication.	M52PDCU	24V AC/DC
		M62PDCU	230V AC
	Damper Connection Box (All Voltages).	DCB	24V – 230V AC/DC
	M5 – 3P – CMS Control Unit	M53PCMS	24V AC/DC
	230V M5 – 3P – CMS Control Unit	230V M53PCMS	230V AC
<h2>Pneumatic</h2>			
	Solenoid, (24V, 120V, or 230V). EEXD Solenoid, (24V, 120V, or 230V). Damper Status Beacon. Switchbox and Status Beacon. Zone 2 Switchbox and Status Beacon.		24 – 230V AC/DC

Control Mode Dimensions and Orientation

Mode 1 (SmokeShield only)

SmokeShield PTC™ Control Modes are located outside of the ductwork for ease of access and installation.



Modes 5 and 6 Three position 180° (Pivotable Control Mode)

SmokeShield PTC™ Control Modes are located outside of the ductwork for ease of access and installation.

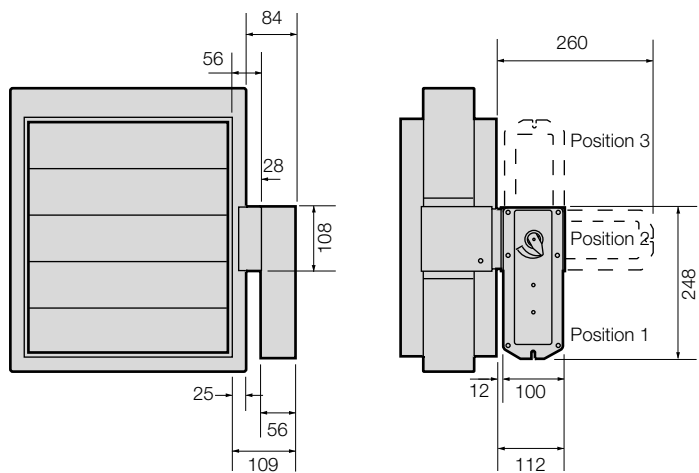
Control Modes 5 and 6 can be fitted in any one of three orientations i.e.

- Vertically down (Position 1)**
- Horizontally (Position 2), or**
- Vertically up (Position 3).**

This can be simply and easily carried out on site, by repositioning the Location Plate (see page 2) and Control Mode on to the *snaplock™* Drive Interface.

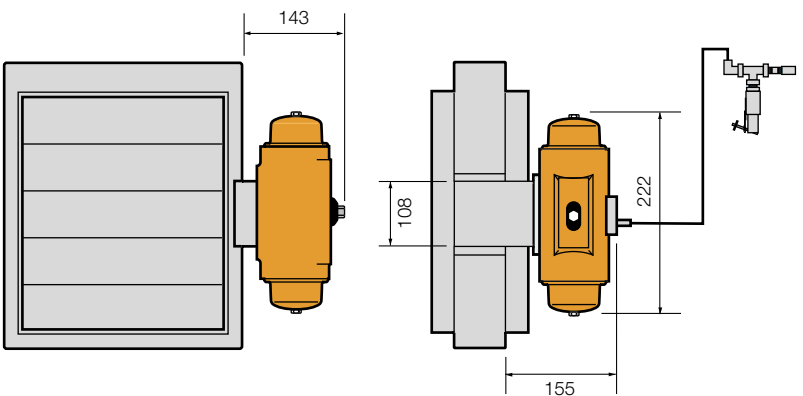
This flexibility ensures that the damper and control mode require the minimal amount of room.

(Supplied in position 2 as standard.)

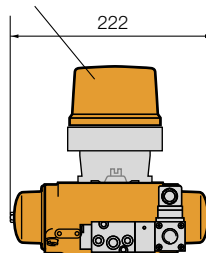


Mode 9 Pneumatic Control

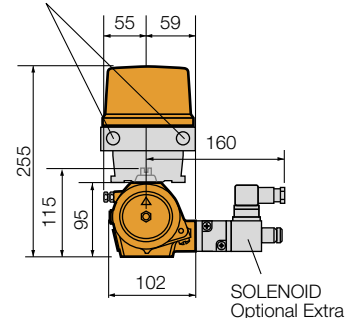
SmokeShield PTC™ Control Modes are located outside of the ductwork for ease of access and installation.



SWITCHBOX / STATUS BEACON
Optional Extra



CABLE ENTRY POINTS



Dimensional Data

For Rectangular Dampers spigots are 5mm under duct size.

* Widths and heights available in 1mm increments.

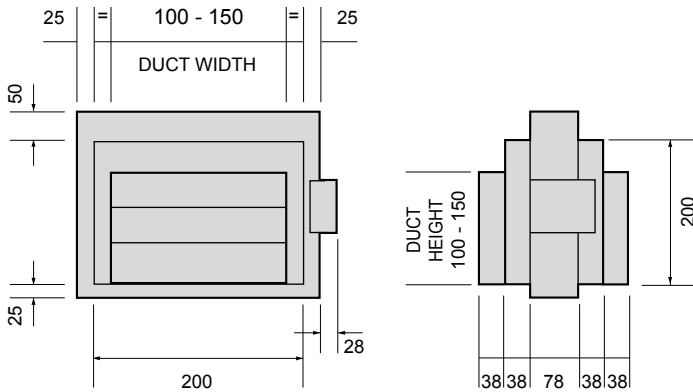
(For further details please refer to Actionair Sales Office.)

Basic Dampers

Rectangular Dampers Series 501 and 1501

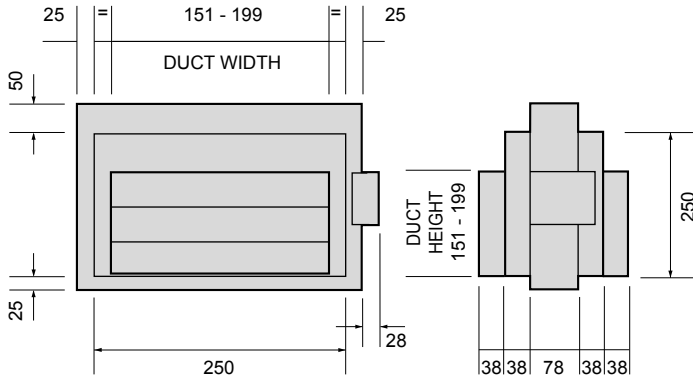
For Ducts with widths of 100- – 150mm*

For Ducts with heights of 100- – 150mm*

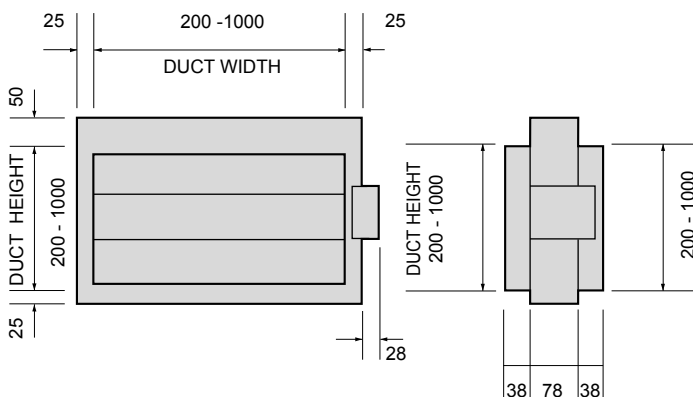


For Ducts with widths of 151- – 199mm*

For Ducts with heights of 151- – 199mm*



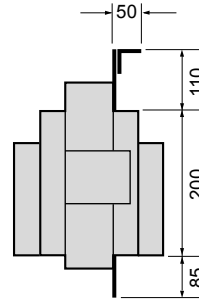
For Ducts with widths and heights of 200- – 1000mm*



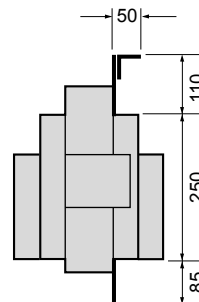
Dampers with Installation Systems

Dampers with DWFX-F

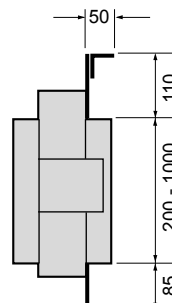
OVERALL FLANGE WIDTH = 370mm
OVERALL FLANGE HEIGHT = 395mm



OVERALL FLANGE WIDTH = 420mm
OVERALL FLANGE HEIGHT = 445mm

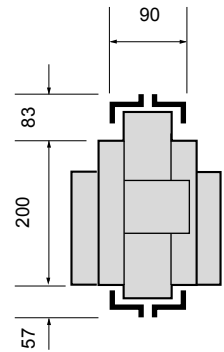


OVERALL FLANGE WIDTH = DUCT WIDTH + 170mm
OVERALL FLANGE HEIGHT = DUCT HEIGHT + 195mm

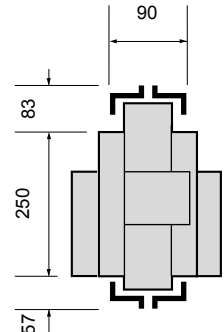


HEVAC / HVCA IF

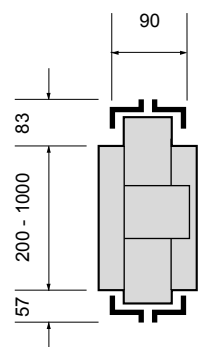
OVERALL WIDTH OF INSTALLATION FRAME IS 316mm
OVERALL HEIGHT OF INSTALLATION FRAME IS 340mm



OVERALL WIDTH OF INSTALLATION FRAME IS 366mm
OVERALL HEIGHT OF INSTALLATION FRAME IS 390MM



OVERALL WIDTH OF INSTALLATION FRAME IS DUCT WIDTH + 116mm
OVERALL HEIGHT OF INSTALLATION FRAME IS DUCT HEIGHT + 140MM



For Circular and Flat Oval Dampers spigots are 3mm under duct size.
 *Diameters and flat oval diameters in 1mm increments.

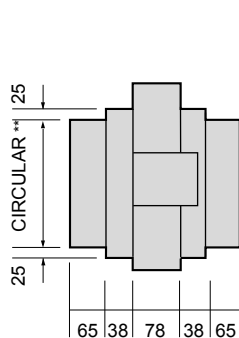
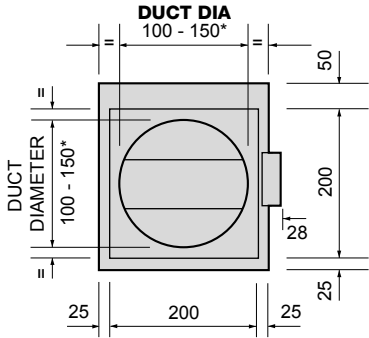
(For further details please refer to Actionair Sales Office.)

Basic Dampers

Dampers with Installation Systems

Circular Dampers Series 601 and 1601

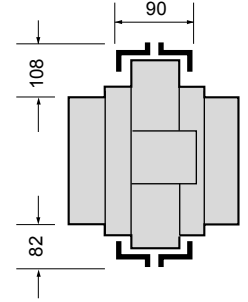
1mm Increments **



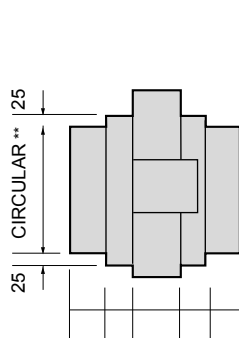
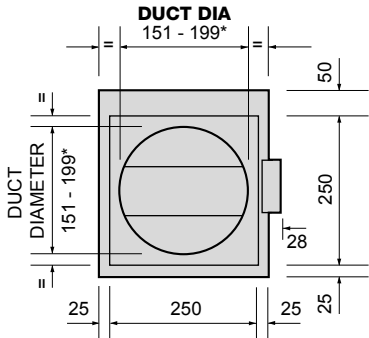
OVERALL FLANGE WIDTH = 370mm
 OVERALL FLANGE HEIGHT = 395mm

HEVAC / HVCA IF

OVERALL WIDTH OF INSTALLATION FRAME IS 316mm
 OVERALL HEIGHT OF INSTALLATION FRAME IS 340mm

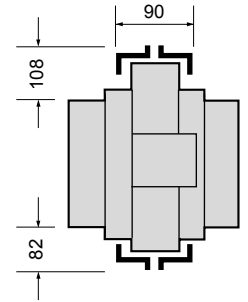


1mm Increments **

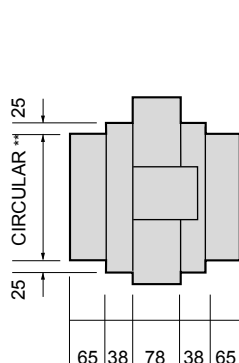
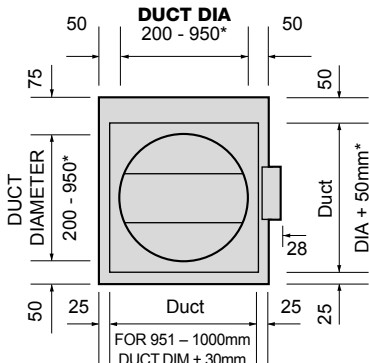


OVERALL FLANGE WIDTH = 420mm
 OVERALL FLANGE HEIGHT = 445mm

OVERALL WIDTH OF INSTALLATION FRAME IS 366mm
 OVERALL HEIGHT OF INSTALLATION FRAME IS 390mm

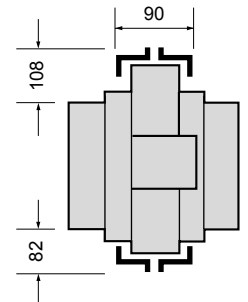


1mm Increments **



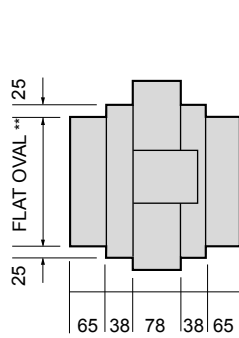
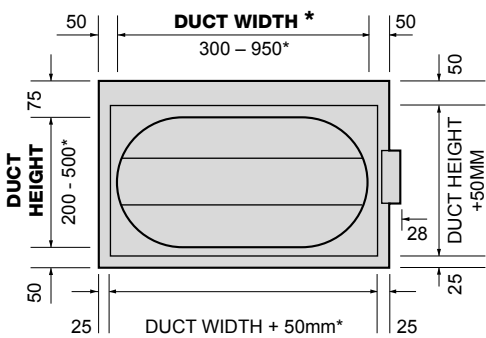
OVERALL FLANGE WIDTH = DUCT DIA. + 220mm
 OVERALL FLANGE HEIGHT = DUCT DIA. + 245mm

OVERALL WIDTH OF INSTALLATION FRAME IS DUCT DIA + 166mm
 OVERALL HEIGHT OF INSTALLATION FRAME IS DUCT DIA + 190mm



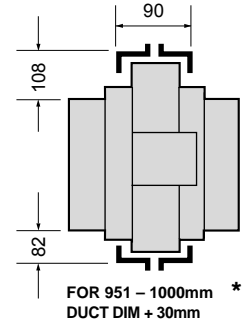
Flat Oval Dampers Series 701 and 1701

1mm Increments **



OVERALL FLANGE WIDTH = DUCT WIDTH + 220mm
 OVERALL FLANGE HEIGHT = DUCT HEIGHT + 245mm

OVERALL WIDTH OF INSTALLATION FRAME IS DUCT WIDTH + 166mm
 OVERALL HEIGHT OF INSTALLATION FRAME IS DUCT HEIGHT + 190mm



Acoustic Data

The data presented is from the Laboratory Determination of Acoustic and Aerodynamic Performance of SmokeShield PTC Automatic Smoke and Fire Control Dampers.

A programme of extensive tests was carried out in the Reverberation Chamber and North Transmission Chamber of Sound research Laboratories Limited, Holbrook Hall, Sudbury, Suffolk, generally in accordance with BRITISH STANDARDS Nos. 4196, 4773, 4856, 4857 and 4954.

This independent test facility is approved under the NAMAS Scheme.

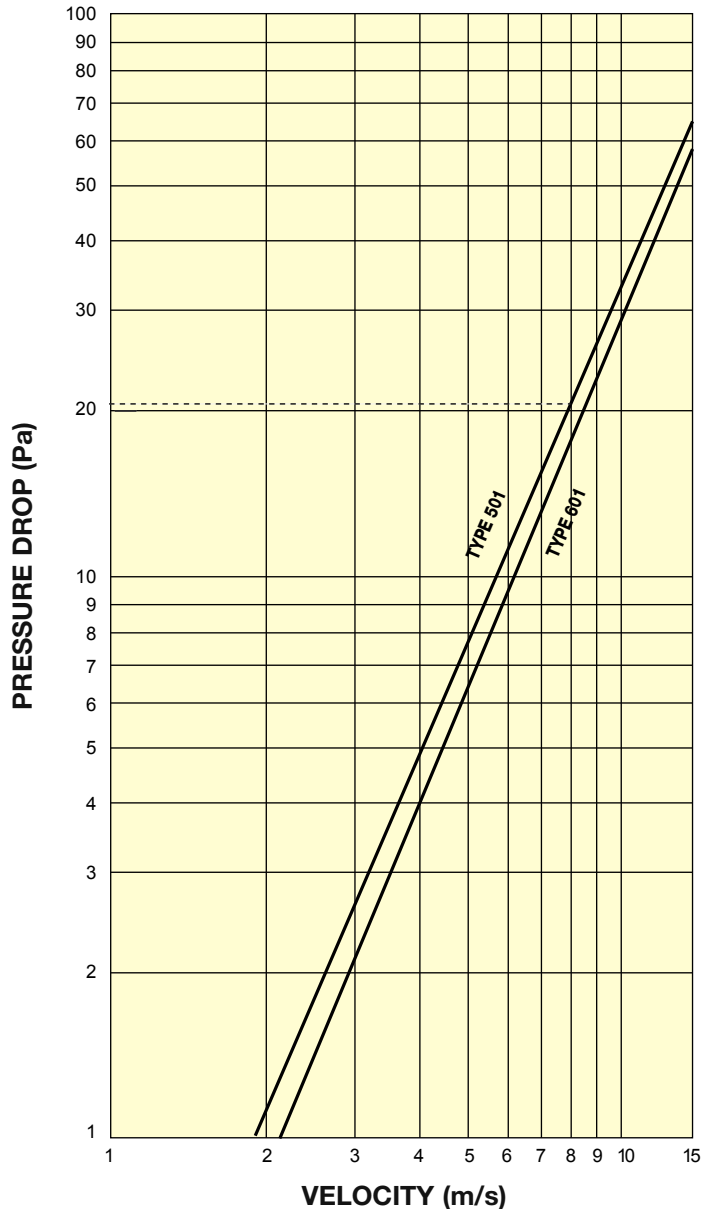
From the selection of a duct velocity within the operational parameters of the damper a resultant pressure drop from Graph 1 can be determined and the sum of these two components applied to the Velocity x Pressure Drop Vs Sound Power Level Graph. (Graph 2)

The graph is the result of a full range of acoustic tests on SmokeShield PTC™ Automatic Smoke and Fire Control Dampers with the blades set in their fully open position.

The Spectrum Correction Data is applied to the number obtained from the graph and a complete Sound Spectrum of Flow Generated Noise for both Outlet (in duct) and Breakout (casing radiated) can be obtained from Table 1.

Pressure Drop Vs Velocity

Graph 1



Example:

Duct with a design velocity of 8 m/sec.
SmokeShield PTC Damper Series 501
fully open.

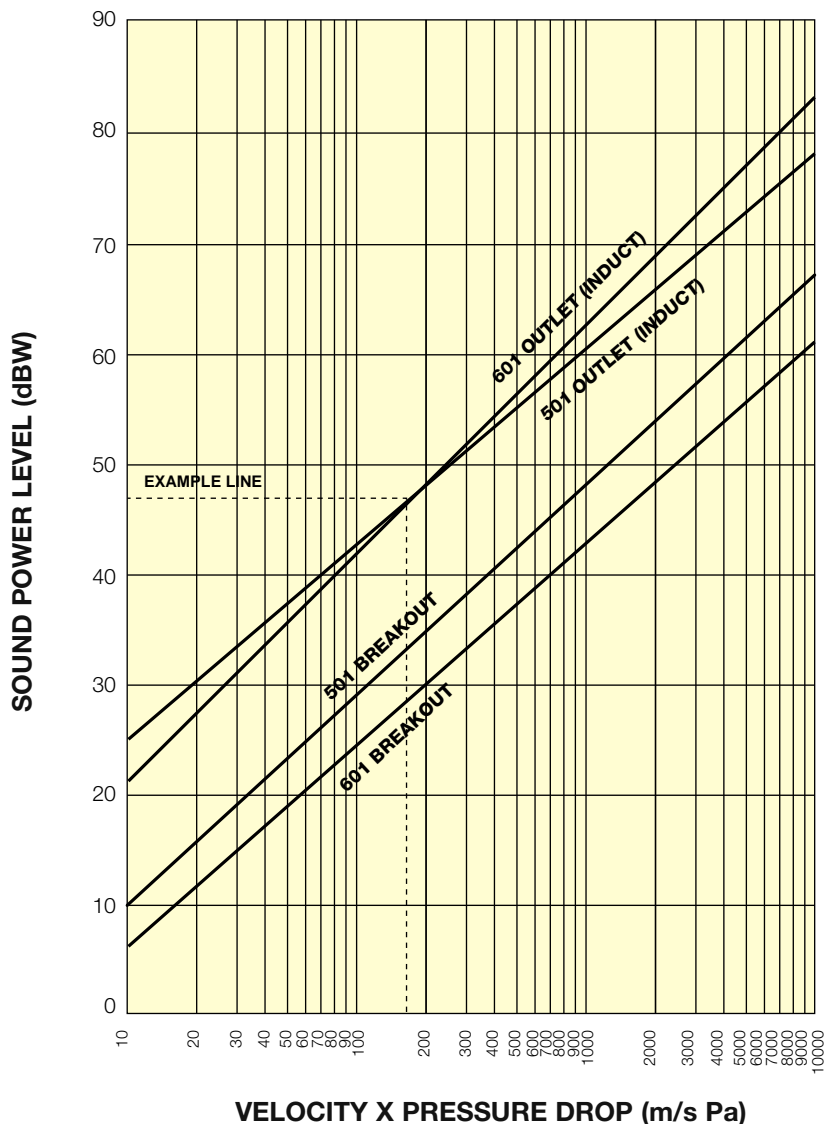
Pressure Drop = 21 Pa (Graph 1).
Multiply Velocity x Pressure Drop
 $8 \times 21 = 168$.

From Sound Power Graph (Graph 2) plot
168 on horizontal Velocity/Pressure axis
against 501 outlet (induct) graph to obtain
47 dBW on Vertical Sound Power Level

Axis. Add or subtract corrections to the
47 dBW to provide full spectrum analysis
using appropriate Correction Table.

Velocity (m/s) X Pressure Drop (Pa) Vs Sound Power Level (dBW)

Graph 2



Correction Tables

Table 1

SmokeShield PTC™ Outlet (Induct) Spectrum Corrections

Octave Band	Hz	63	125	250	500	1k	2k	4k	8k
Series 501	dB	5	4	5	5	3	1	-3	-5
Series 601	dB	9	4	4	5	3	1	-3	-6

Table 2

SmokeShield PTC™ Breakout Spectrum Corrections

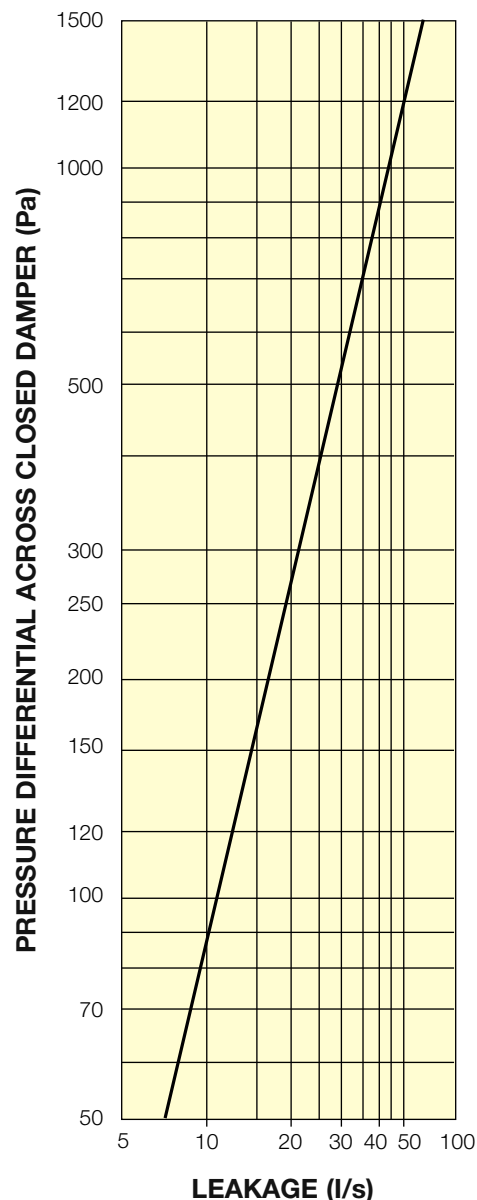
Octave Band	Hz	63	125	250	500	1k	2k	4k	8k
Series 501	dB	8	11	9	6	-3	-6	-14	-17
Series 601	dB	6	10	8	4	-3	-3	-11	-14

Damper Leakage

Graph 3

SmokeShield PTC™ and VentShield PTC™ closed blade leakage as tested on a damper 1000mm wide x 1000mm high.

Leakage data at Ambient temperature (Cold Smoke).



The SmokeShield PTC™ Damper has been fire tested to BS ISO 10294-1 and BS EN 1366-2. It achieved ES classification in accordance with BS ISO 10294-2:1999. ES classification allows a maximum of 200m³/ Hr/m² (corrected to 20 °C) hot gas leakage throughout the test at 300 Pa pressure differential across the damper.

Actionpac Damper Control Systems

Electro Mechanical Systems

Actionpac EMS - Standard Control and Monitoring System

Control and monitoring of Mode 5 or Mode 6 damper actuators in groups of 12, 24 or 36.

Actionpac EMB - Bespoke Control and Monitoring System Control Panel

The EMB Control Panels typically consists of the appropriate number of switches to provide individual or group control, LED indication for status monitoring and all necessary relays and timers to comply with the customer needs for fully or semi automatic damper operation. The EMB panels are purposely manufactured for any particular project to suit specific client requirements.

Addressable Systems

Actionpac 60/120 (LNS Standard) Intelligent Damper Control and Monitoring System

Actionpac 60 for the control/monitoring of up to 60 off SmokeShield dampers. Actionpac 120 for the control/monitoring of up to 120 off SmokeShield dampers.

Actionpac LNS3 Intelligent Damper Control and Monitoring System

The Actionpac LNS3 system represents a new generation of smoke/fire damper control. The system has been designed with the user in mind, providing an advanced tool that simplifies installation and commissioning of smoke/fire dampers and peripheral devices. The Panel PC operates on a Windows™ platform making it universally accepted and utilises solid state technology for optimum reliability.

It's server architecture delivers new benefits such as reduced commissioning time, simplified operation and scope for future growth.

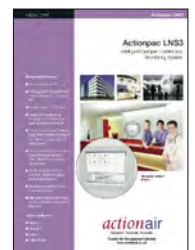
The Actionpac LNS3 system is designed to protect life and property from damage caused by smoke and fire, by providing the means to:-

- Compartmentalise fire zones.
- Reduce the spread of smoke and fire.
- Keep escape routes and fire-fighting access open.
- Allow pressurisation and smoke extract by combined operation of dampers and fans.

Benefits

- Completely flexible to meet practically any building's damper requirements
- Three levels of alarm priority
- Panel PC driven system with real-time graphic displays
- Panel PC utilises solid state technology for optimum reliability
- Full configuration and diagnostics from Panel PC

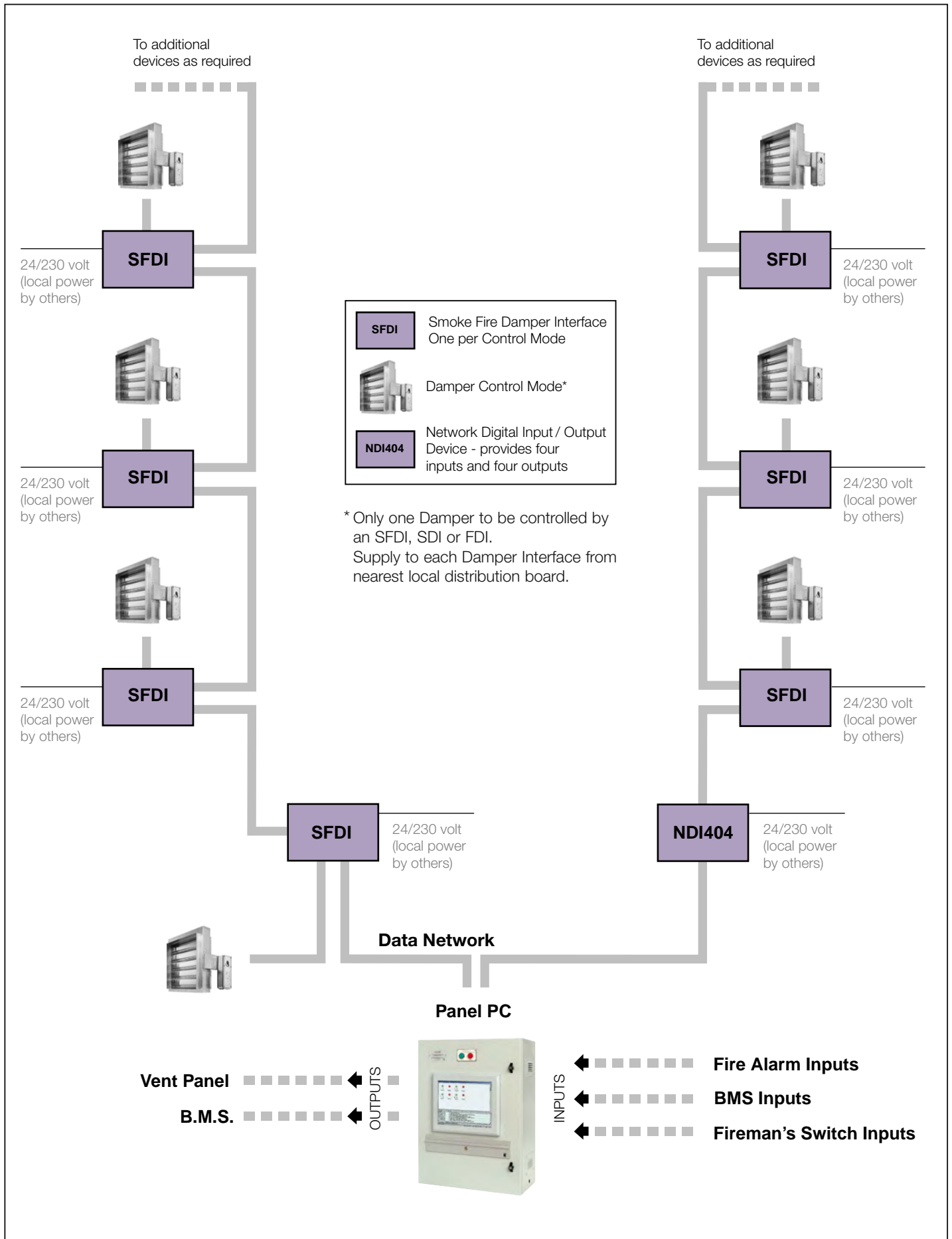
- Optional automatic scheduled Damper testing
- Multiple wiring configurations to include Radial or Loop Topology
- Damper operational count provided
- Flexibility to accommodate any last minute changes to strategy, zones, damper quantities, references and descriptions etc.
- Powerful and flexible functionality enables standardisation of software (no bespoke site specific versions required)
- Cause and effect scenarios easily accommodated
- Multiple options for monitoring dampers, individually or by group or zone - output contacts can be triggered when a predefined percentage within a group or zone change position
- System designed to cater for environmental occupancy as well as the building's smoke/ fire strategy. RS232 BMS link provided enabling a BMS to link directly to the system to read damper positions etc.
- Optional remote access available
- Graphical User Interface displays live damper status and details as well as cause and effect strategies
- Text fields facilitate clear description of device references and locations
- System wide activity logged and viewable for diagnostics and maintenance
- Allows for phased commissioning and future expansion
- CE marked, LVD and EMC compliant



Actionpac LNS3 Intelligent Damper Control and Monitoring System

Fully comprehensive brochures are available on all Actionpac products. Visit the Actionair website [w.w.w.actionair.co.uk](http://www.actionair.co.uk) and download the relevant pdf.

General Schematic of Actionpac LNS3 Damper Control System



Customer Service

Actionair provides quality products backed by a dedicated team committed to providing the very best in customer service.

Offering experienced technical backup, comprehensive sales and administrative customer support, product commissioning and maintenance service.

Maintenance

The SmokeShield PTC™ Dampers are designed for applications in normal dry filtered air systems and should be subjected to a planned inspection programme, with cleaning and light oil lubrication in accordance with BS9999. When exposed to fresh air intakes and/or inclement conditions this may need to be performed more regularly based on experience gained from previous inspections.

Approvals

Approved by The Loss Prevention Council for use in up to 4 hour constructions.

Refer to Installation and Maintenance Guide on our website for precise details.

The SmokeShield PTC™ Damper tested and assessed to BS ISO 10294-1, BS EN 1366-2 and BS 476 pt. 20. It achieved ES classification in accordance with BS ISO 10294-2:1999.

Low gas/smoke and fire integrity to Classification ES in vertical and horizontal test installations.

An LPCB approved product, compliant to the new Loss Prevention Council Design Guide for Fire Protection of Buildings.

Fire tested in vertical and horizontal applications under dynamic conditions by The Loss Prevention Council.

Corrosion tested to LPS 1162.

Complies with the latest DW 144 casing leakage specification.

The Electrical Control Modes satisfy the requirements of EN 50081-1 and EN 50082-1 electro magnetic compatibility.

Quality Assurance



Certification No.17
Assessed to ISO 9001



Approximate Weights (Kg)

Square or Circular Duct Size (mm)	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Series 501 Square	3.4	3.4	3.4	4.2	4.8	5.6	6.5	7.4	8.6	9.6	10.8	12.4	13.6	14.9	16.2	17.7	19.2	20.8	23.5
Series 501 Square + I/F	6.2	6.2	6.2	7.4	8.7	10.3	11.9	13.2	14.6	16.3	18.5	20.5	22.1	24.0	25.9	28.1	30.3	32.4	34.5
Series 601 Circular	5.3	5.3	5.3	6.1	7.2	8.4	9.6	11.2	12.6	14.0	15.9	17.5	19.1	20.7	22.5	24.3	26.2	29.3	32.1
Series 601 Circular + I/F	8.5	8.5	8.5	10.0	11.9	13.7	15.4	17.1	19.2	21.8	24.0	26.0	28.2	30.4	32.8	35.3	37.8	40.3	43.1

Control Mode 1 (SmokeShield only) (including drive interface) 4.1Kg

Control Modes 5, 5 - 3P, 5 - 2P, 6, 6 - 2P and 9 (including drive interface) 4.4Kg

The information contained herein is subject to change without notice due to continuing research and development.

Ordering Information

Example

Quantity	Series	Fixing Options	Duct Size	Control Mode	Accessories
3	SS501/PTC	IF	600(W) x 450(H)	M5	
Number of units required	<p>SS 501/PTC SmokeShield PTC™ Square or Rectangular (Fail-safe closed).</p> <p>SS 601/PTC SmokeShield PTC™ Circular (Fail-safe closed).</p> <p>SS 701/PTC SmokeShield PTC™ Flat Oval (Fail-safe closed).</p> <p>VS1501/PTC VentShield PTC™ Square or Rectangular (Fail-safe open).</p> <p>VS 1601/PTC VentShield PTC™ Circular (Fail-safe open).</p> <p>VS1701/PTC VentShield PTC™ Flat Oval (Fail-safe open).</p>	<p>1. DWFX-F Dry Wall Fixing System Flange plus Cleats</p> <p>2. DWFX-C Dry Wall Fixing System Cleats</p> <p>3. IF HEVAC / HVCA Installation Frame</p> <p>4. Other Special Fixings</p>	<p>M1 PTC Manual System</p> <p>M5 PTC 24V 10W (12.5VA)</p> <p>M6 PTC 230V 12W (14VA)</p> <p>M5 PTC Vent NON ETR 24V 10W (12.5VA)</p> <p>M6 PTC Vent NON ETR 230V 12W (14VA)</p> <p>M5 PTC NON ETR 24V 10W (12.5VA)</p> <p>M6 PTC NON ETR 230V 12W (14VA)</p> <p>M5 PTC Vent 24V 10W (12.5VA)</p> <p>M6 PTC Vent 230V 12W (14VA)</p> <p>M5-2P ON/OFF 24V 7W (10VA)</p> <p>M6-2P ON/OFF 230V 8W (12.5VA)</p> <p>M5-3P PTC 24V 7W (10VA)</p> <p>M5-3P PTC Vent NON ETR 24V 7W (10VA)</p> <p>M5-3P PTC NON ETR 24V 7W (10VA)</p> <p>M5-3P PTC Vent 24V 7W (10VA)</p> <p>M9 PTC Pneumatic Operation</p> <p>M9 PTC Vent NON PTR Pneumatic Operation</p>	<p>Electrical</p> <p>1. DTU Damper Test Unit Damper Test Unit For Control Modes. Spring bias test switch providing illuminated reset and release status</p> <p>2. DSI Damper Status Indicator Reset and Release Indication</p> <p>3. DCU Damper Control Unit Damper Control Unit for Control Modes. Switch ON/OFF function, reset and release indication</p> <p>4. DRIM Damper Release and Indication Module</p> <p>5. M52PDCU M5 and M6 -2P DCU Switch Power Open/Power Close. Open and Closed Indication</p> <p>6. DCB Connection Box For Control Modes 1, 5 and 6 (see page 10 for above)</p> <p>7. M5 – 3P - CMS</p> <p>8. 230V M5 – 3P - CMS</p> <p>Pneumatic</p> <p>24 Volt Solenoid, (24, 120, or 230 volt). Status Beacon, Switchbox and Status Beacon. PTR XNNN05017</p> <p>Mechanical</p> <p><i>snaplock™</i> Interface Locking Plate (See page 10)</p> <p>Actionpac Damper Control Systems</p> <p>(See page 20 and 21)</p>	

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is a ISO 9001 and 14001 registered
company.**

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Due to a policy of continuous product development the specification and details contained herein are subject to alteration without prior notice.

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