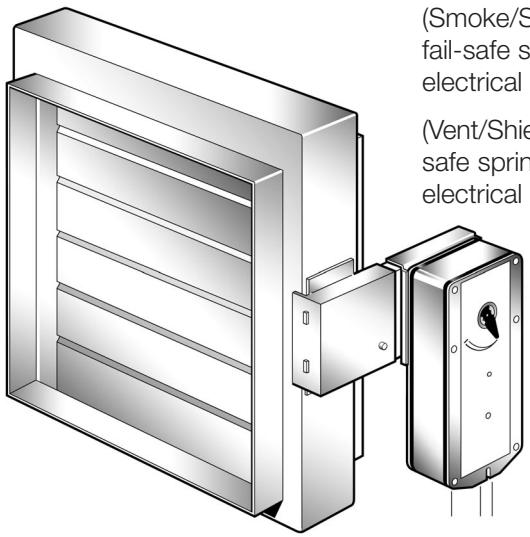
Installation and Operating Instructions

Actionair

Smoke/Shield PTC, Vent/Shield PTC, Hot/Shield PTC, and Hot/Shield Vent PTC

Index



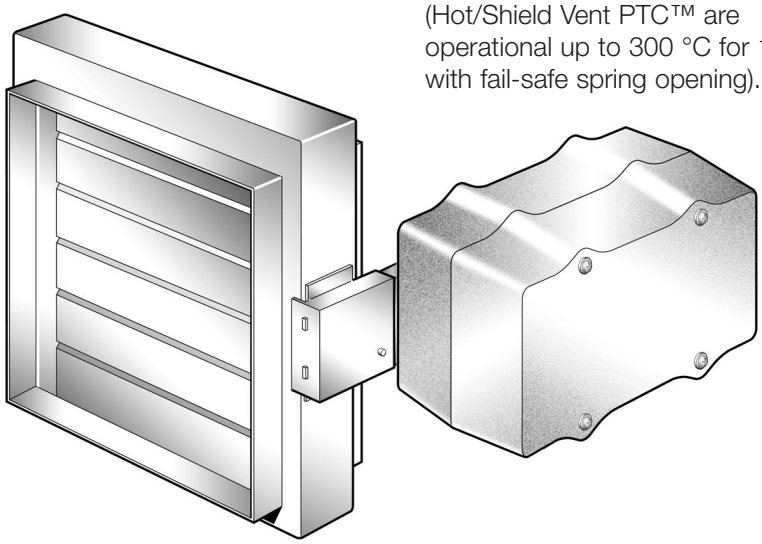
(Smoke/Shield PTC™ Modes 1,5 & 6 fail-safe spring close with manual or electrical reset).

(Vent/Shield PTC™ Modes 5 & 6 fail-safe spring open with manual or electrical reset).

Smoke/Shield PTC Modes 5 and 6 shown.

(Hot/Shield PTC™ Modes 5 & 6 are operational up to 300 °C for 1 hour with fail-safe spring closure).

(Hot/Shield Vent PTC™ are operational up to 300 °C for 1 hour with fail-safe spring opening).



Hot/Shield PTC Modes 5 and 6 shown.

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Health and Safety

All wiring should be carried out in accordance with the wiring details provided, the IEE and BS regulations, by a competent person.

Care must be taken when installing and inspecting dampers, as they may close without warning due to a variety of reasons. Particularly this may be in the case of loss of electrical power, or fire signal to temperature rise in the ductwork. This is their prime function. Do not introduce any items, fingers or limbs between the blades.

Prior to handling, check the weight of the unit and adopt suitable handling techniques.

General Information

The PTC™ range of dampers are suitable for both horizontal and vertical applications, for airflow in either direction.

PTC™ dampers to their maximum width and height dimensions can be used where the operating total system pressure is up to 1500 Pa and duct velocities to 15m/second.

All Smoke/Fire dampers are life safety products and should be treated with care during handling, storage and installation.

PTC™ dampers are designed for applications in normal dry filtered air systems and should be subject to a planned inspection programme, cleaning and light oil lubrication in accordance with good industry practice. 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.

Specialist or aggressive environments may be unsuitable for this type of damper. This should have been checked with the Customer Service department at the time of order. If there are concerns this should be addressed before installation.

For assistance with applications other than those described please contact our Customer Service Office.

Please note all installations must be carried out in accordance with the approval of the relevant local authority.

Damper Installation

All installations must be made in accordance with approval of the relevant local authority and if HEVAC/HVCA frames have been supplied, also in accordance with HEVAC specification HVC 6/5/83, extracts of which are given below.

Installation frames are delivered to site as a complete assembly with the appropriate PTC™ damper fitted therein.

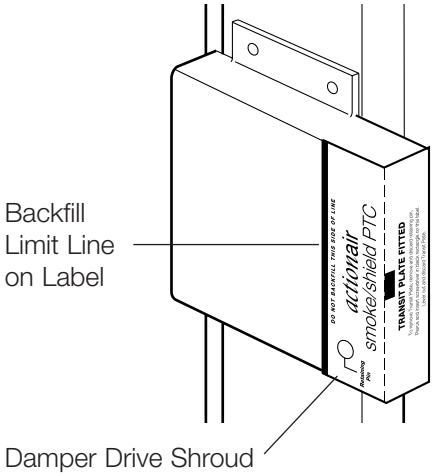
The damper shall be installed centrally in the thickness of a brickwork or concrete surrounding wall or floor, or in the case of thick walls or floors, so that the centre line of the frame is at least 50mm, but not more than 75mm, away from the nearest face of the wall or floor, in which the assembly is mounted.

Care must be taken not to backfill past the line marked on the label on the shroud. If this does occur it will inhibit the fitting and removal of the interface.
(See diagram on the right).

The four tabs (building ties) forming each fixing point shall provide a positive fixing into the structure.
In brickwork or blockwork walls the tabs shall be bent out and solidly built into the mortar joints between the brickwork or blockwork.
In the cases of reinforced concrete walls or 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 builder's work of a minimum thickness of 225mm (between installation frame upstand flanges unless approval has been previously obtained from the appropriate Authority).
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 surrounding opening with mortar or fine aggregate concrete mix without provision for tying in the frame to the surrounding reinforced concrete structure.

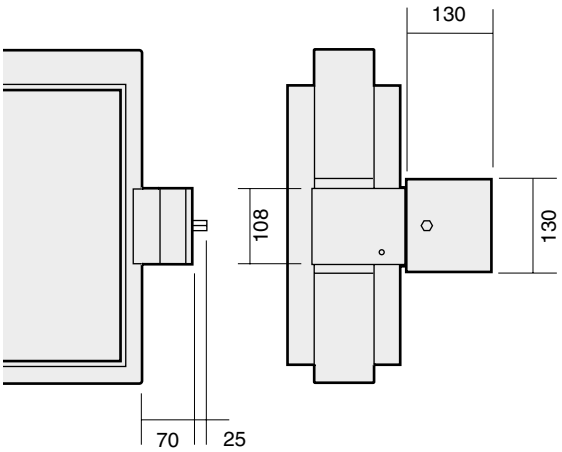
When fitting the ductwork care must be taken to ensure that the ductwork is independently supported and not relying on the damper as a structural anchor, all in accordance with Ductwork Specification DW144. Access doors should also be fitted as required by DW144.

For Hot/Shield PTC and Hot/Shield Vent PTC dampers fitted to thickened fire rated ductwork, please refer to notes on page 7.

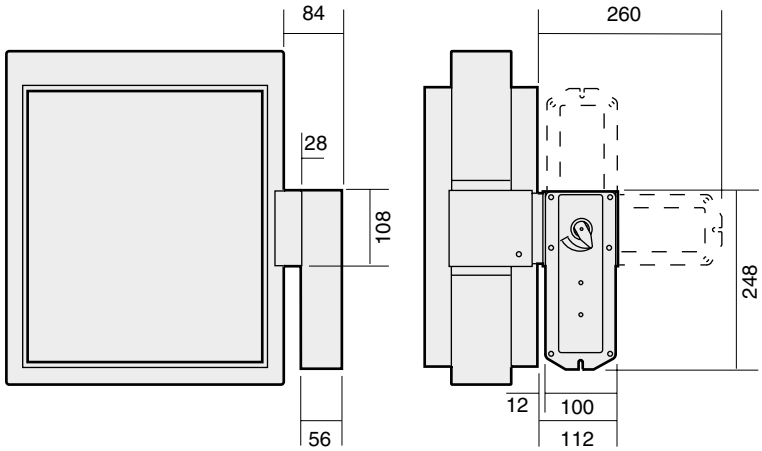


Control Mode Dimensional Data

Mode 1 (Smoke/Shield only)



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



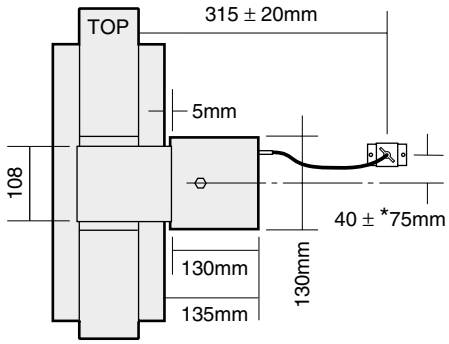
Smoke/Shield PTC™ Control Modes are located outside of the ductwork for ease of access and installation.

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 and Control Mode on to the *snap*lock™ Drive Interface.

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

Mode 1 Installation Procedure



*This dimension will vary on circular damper. Select dimension to give smoothest radius on bowden cable.

1. Prepare ductwork
Prepare ductwork for Mechanical fusible link as detailed below. (For ductless installations, a suitable sized plate or bracket must be fitted to the installation, to allow the fusible link fixing details to be achieved).

- Within the Mode 1 kit of parts, is a self adhesive fusible link drilling template label.
- This template should be positioned on the duct in accordance with the dimensions shown above.
- Using a 3.0mm dia bit, drill 2 fixing holes.
- Using a 25mm dia hole cutter, drill the central hole.
- Remove sharp edges.

2. Fit Control Mode

- Remove transit plate from damper shroud, and discard.
- Slide the interface and mode assembly into the shroud, having ensured that the slots in the interface case and the drive coupling are in line.
- Push the assembly fully home until the spring retaining pin engages through the location hole in the shroud (*snap*lock™).
- (The mode 1 option, unlike the mode 5/6, does not have the facility of alternative actuator fixing positions).

3. Fit Mechanical Fusible Link

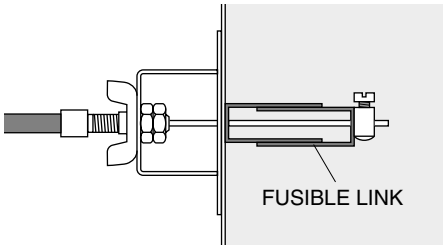
- Locate the fusible link assembly in the prepared hole in duct.
- Using the 2 self tapping screws provided, secure the assembly.

4. Electrical Connections

- Where use is to be made of the integral microswitch for indication purposes, this should be wired as described in the section 'Application and wiring'.

5. Reset and Test Unit

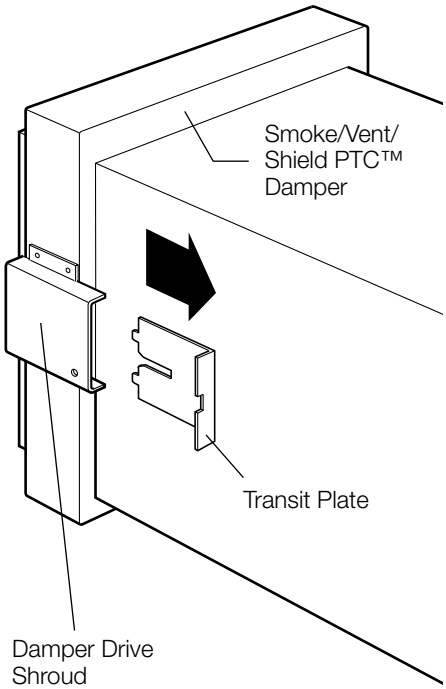
- **If the mechanical fusible link is not fitted to the ductwork, it will not be possible to reset the unit. – This is a safety feature.**
- Using a 14mm A/F spanner, rotate the input shaft clockwise to reset the damper.
- NOTE: After resetting, never leave the spanner attached to the reset shaft.
- Test unit by simply unscrewing wing nut of the fusible link assembly. This will result in the damper releasing. Check for damper closure.

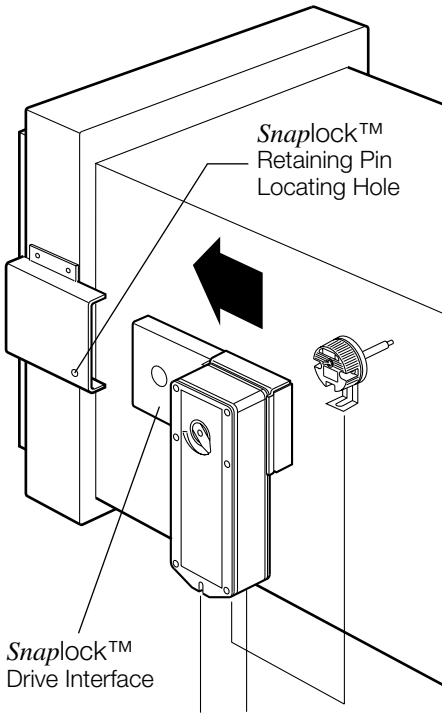


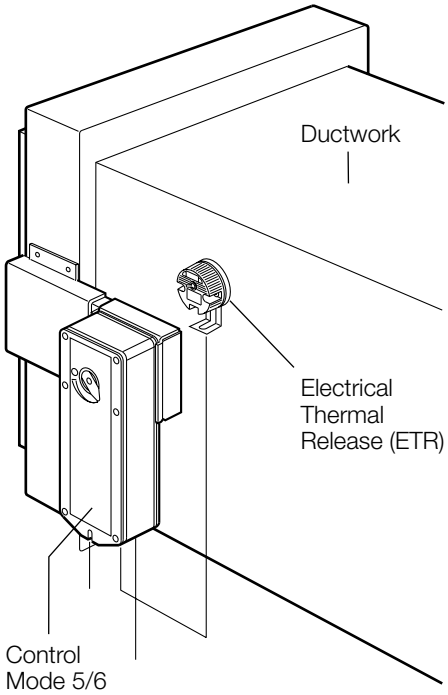
- Re-tighten the wing nut.
- Using a 14mm A/F spanner, rotate the input shaft clockwise to reset the damper.
- Remove spanner.

Note: It will not be possible to reset the control mode if the fusible link is not correctly installed.

Mode 5 and 6 Installation Procedure







Remove transit plate and discard.

Slide the interface and mode assembly into the shroud, having ensured that the slots in the interface case and the drive coupling are in line.

Push the assembly fully home until the sprung retaining pin engages through the location hole in the shroud (*snap*lock™). If due to space restrictions, it is necessary to rotate the mode through 90° to alternative position see page 3, this may be achieved by doing the following:

- Remove the screw (8mm A/F) through the position indicator on the mode. Retain the screw and washer.
- Remove the mode and location plate.
- Taking care not to disturb the drive hexagon, replace the location plate in the new orientation.
- Replace the mode in the new orientation.
- Replace the washer and screw tight.

Select a suitable position for the Electrical Thermal Release (ETR) to be mounted through the ductwork. Ideally this should be in the top half of the duct and/or above the interface. Apply the self-adhesive template and drill the necessary holes.

Push the ETR through the duct and ensure that both screws are used to hold it into position. Both screws should be tightened fully to ensure that both sections of the ETR are closed up together. This is a safety feature and should both sections not be closed the unit will not operate.

If the ETR is not fitted to the ductwork, the unit will not operate.

For ductless installations the ETR should be fitted onto the damper spigot (not casing) above the damper shroud, and in accordance with these fitting instructions.

The damper should be manually reset and released, using the winder provided, to ensure that correct mechanical operation is achievable.

It is possible to mechanically lock open the Smoke/Shield PTC damper to allow air to pass through it by using the winder provided. This may be necessary if electrical power is not available. However the ETR is not operable in this instance and the damper will not release automatically should the temperature rise or a fire occur.

The unit must be wired as described in Section Application and Wiring details.

When power is available the unit must be checked for correct electrical operation. Power on to reset, power off to release.

The unit must also be checked by pushing, and holding, the test switch on the ETR to confirm that the damper releases. When pressure is removed from the switch the damper will reset. This may also be done after the initial installation test, to provide periodic operation of the damper to simulate actual fail-safe release under smoke/fire conditions.

The cable connecting the mode and the ETR must not be shortened and care should be taken not to damage it. Shortening and/or damaging the cable will render the unit inoperable. This is due to a built in safety feature.

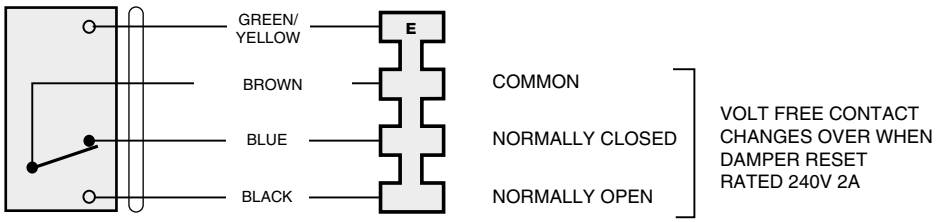
Vent/Shield PTC™ dampers and associated control modes 5 and 6 are reverse acting with spring action opening.

Smoke/Shield PTC Application and Wiring

If integrating this unit with an Actionpac damper control system (LNS or EM) please refer to the relevant catalogue and specific project details.

Vent/Shield PTC™ dampers and associated control modes 5 and 6 are reverse acting with spring action opening.

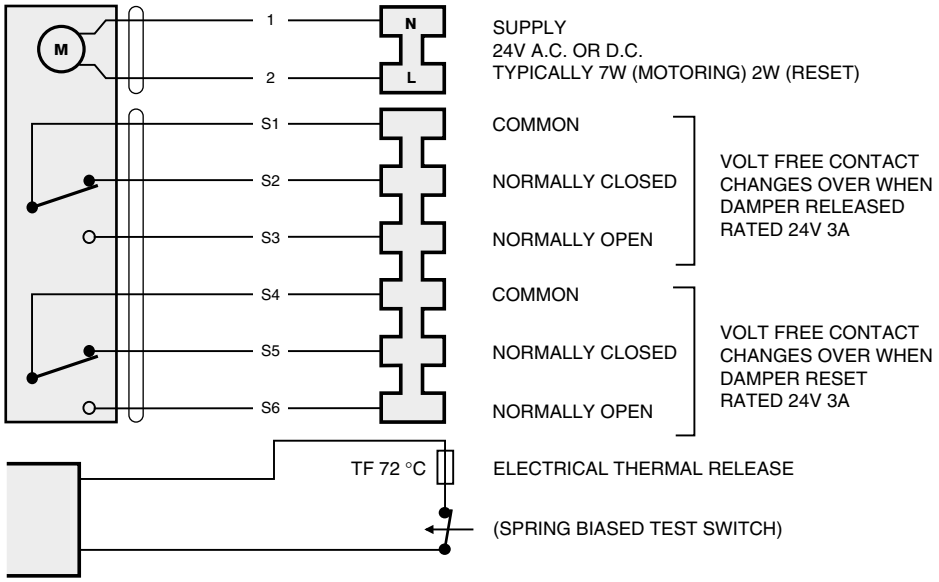
Mode 1 (Manual System)
Manual opening.
Spring instant closure via mechanical fusible link.
(Smoke/Shield version only, Vent/Shield not available.)



Mode 5 (24V System)
Power On – Damper motors open.
Power Off – Spring closure or via Electrical Thermal Release.

External mechanical position indicator with pointer.
Release Time ≈ 16 secs.
Reset Time ≈ 140 secs.

(Connect 24V via a safety isolating transformer.)

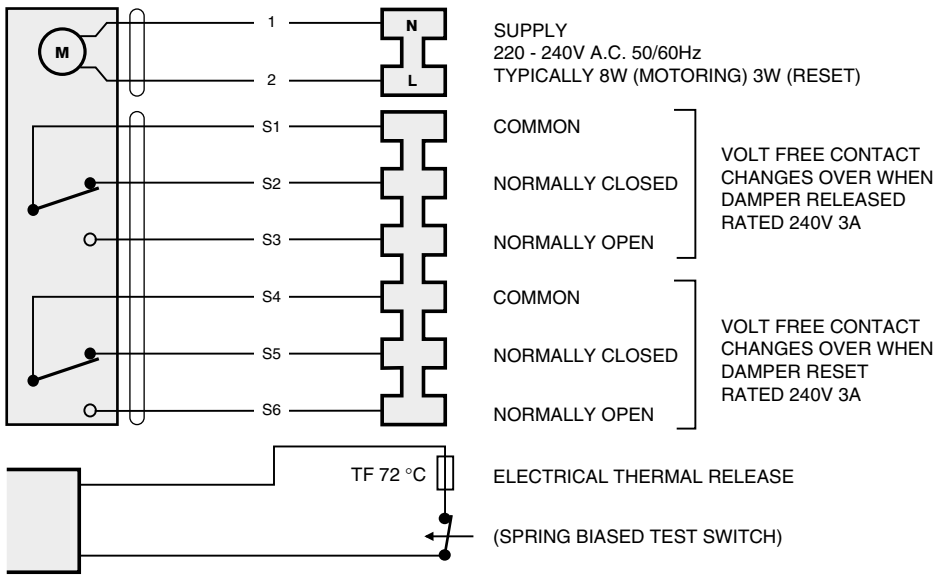


Mode 6 (230V System)
Power On – Damper motors open.
Power Off – Spring closure or via Electrical Thermal Release.

External mechanical position indicator with pointer.
Release Time ≈ 16 secs.
Reset Time ≈ 1c secs.

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

For non ETR applications refer to specific product label on Mode, prior to electrical connections.



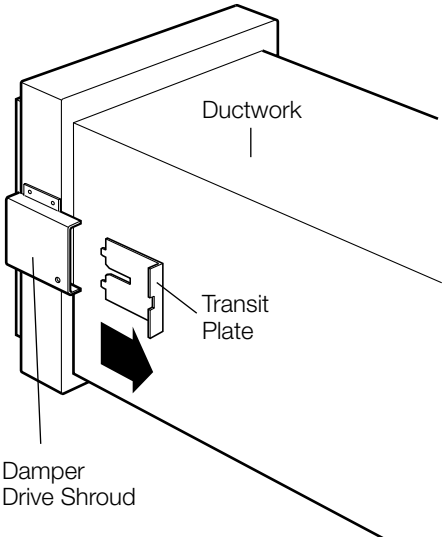
General

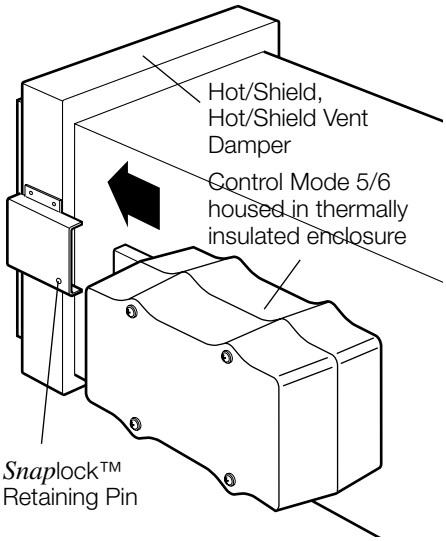
One metre of halogen free low smoke and fume electric cable is also included with each control mode for convenience of on site wiring. This also provides the distinct safety advantage of all electrics terminating outside the duct, eliminating potential in-duct fire hazards from wiring faults.

The Electrical Thermal Release is pre-wired with 0.5m halogen free low smoke and fume cabling to Control Modes 5 and 6.
A Manual test switch fitted on the ETR allows periodic operation of damper simulating actual fail-safe release under smoke/fire conditions.

Smoke/Shield and Vent/Shield PTC™ Dampers and associated Control Modes 5 and 6 are available without the ETR where thermal operation is not required.

Damper Installation and Control Mode Fitting

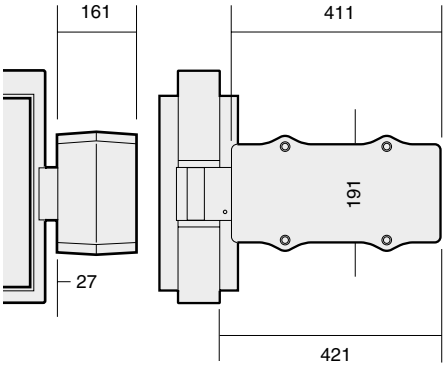




Install the Hot/Shield PTC™ Damper (complete with factory fitted damper shroud and transit plate) into the structure, connect and fit ductwork to damper spigots. Remove transit plate and discard. Slide the *snap*lock™ drive interface into the damper drive shroud, *snap*lock™ into position. (See page 2.)

(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).

Dimensional Data



Series 2501

The above dimensional data is for guide/general arrangement purposes.

Please contact our Customer Service Office for details when incorporating thickened fire rated ductwork.

Hot/Shield PTC Application and Wiring

Hot/Shield Vent PTC™ Dampers and associated Control Modes are reverse action with spring operation

Mode HM5 (24V System)
Power On – Damper motors open.
Power Off – Spring closure.

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

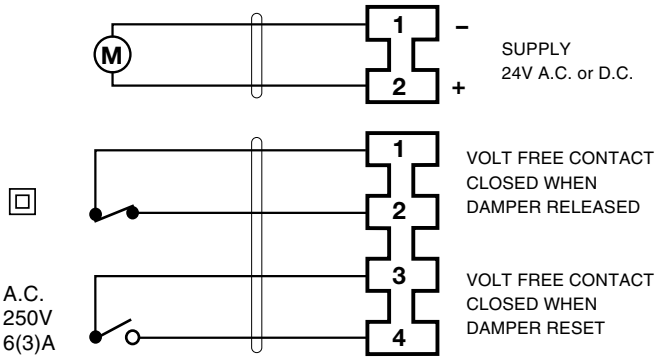
Release Time ≈ 16 secs.
Reset Time ≈ 140 secs.

(Connect 24V via a safety isolating transformer.)

A.C./D.C.24V 50 / 60 Hz

10 V A 7/2 W

–30...+50 °C CONTINUOUS



Mode HM6 (230V System)
Power On – Damper motors open.
Power Off – Spring closure.

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

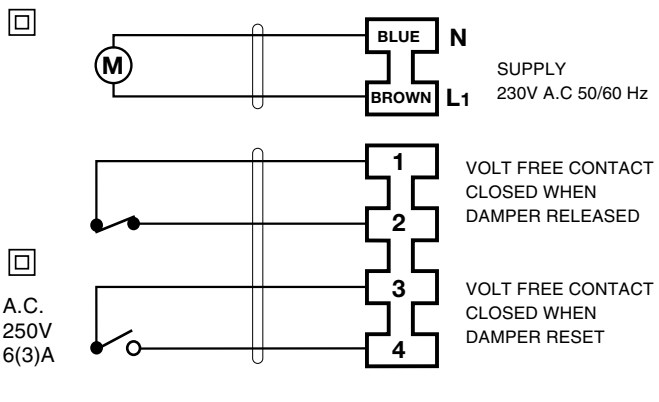
Release Time ≈ 16 secs.
Reset Time ≈ 140 secs.

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

A.C. 230V 50 / 60 Hz

12.5 V A 8 / 3 W

–30...+50 °C CONTINUOUS



Dimensional Data

Series 2501 and 3501 Basic Damper (square/rectangular)

The following data is relevant to square/rectangular dampers Series 2501 and 3501 when incorporating;

STD Standard 1.2mm (approx) sheet steel ductwork.

THK Thickened fire rated ductwork up to 15mm thick.
(For dimensional data outside of these parameters, refer to Customer Service Office).

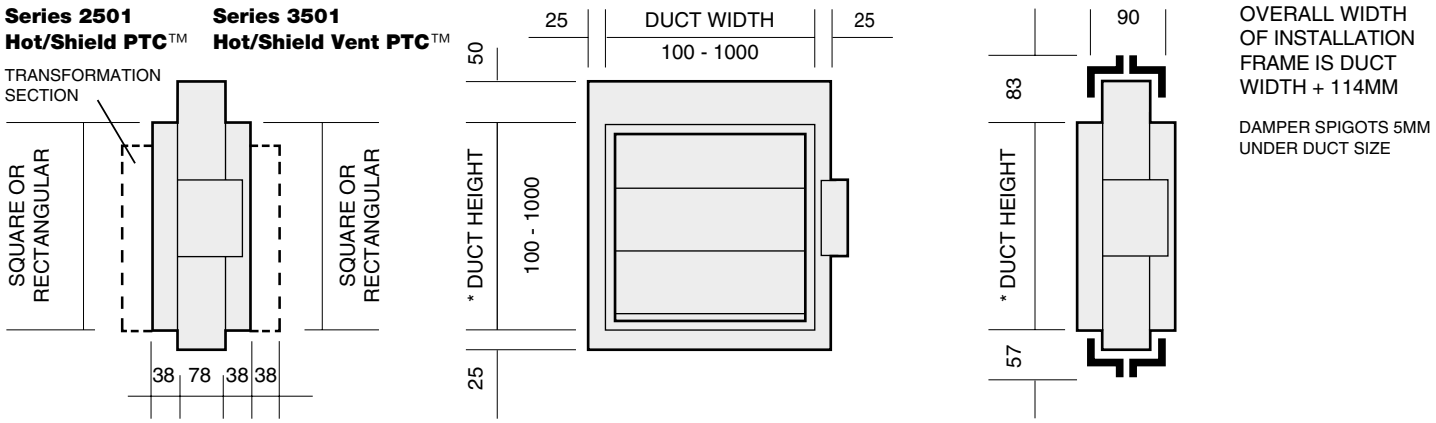
1. Transformation sections only required when duct widths and/or heights is less than 200mm, or if THK thickened fire rated ductwork is greater than 15mm.

2. The following dampers with duct widths and/or heights as listed will be complete with transformation sections: Duct widths and/or heights between 100mm – 175mm, will have nominal damper size of 200mm. Duct widths and/or heights between 176mm – 200mm, please refer to Customer Service Office.

3. Dampers with duct widths and/or heights of between 200mm – 1000mm are supplied as nominal damper sizes and without transformation sections.

4. Always refer to Customer Service Office for dimensional data when incorporation THK thickened fire rated ductwork, especially when thicker than 16mm.

Series 2501 Hot/Shield PTC™ **Series 3501 Hot/Shield Vent PTC™**



Series 2601 and 3601 Basic Damper (circular)

The following data is relevant to circular dampers Series 2601 and 3601 when incorporating;

STD (Standard 1.2mm (approx) sheet steel ductwork).

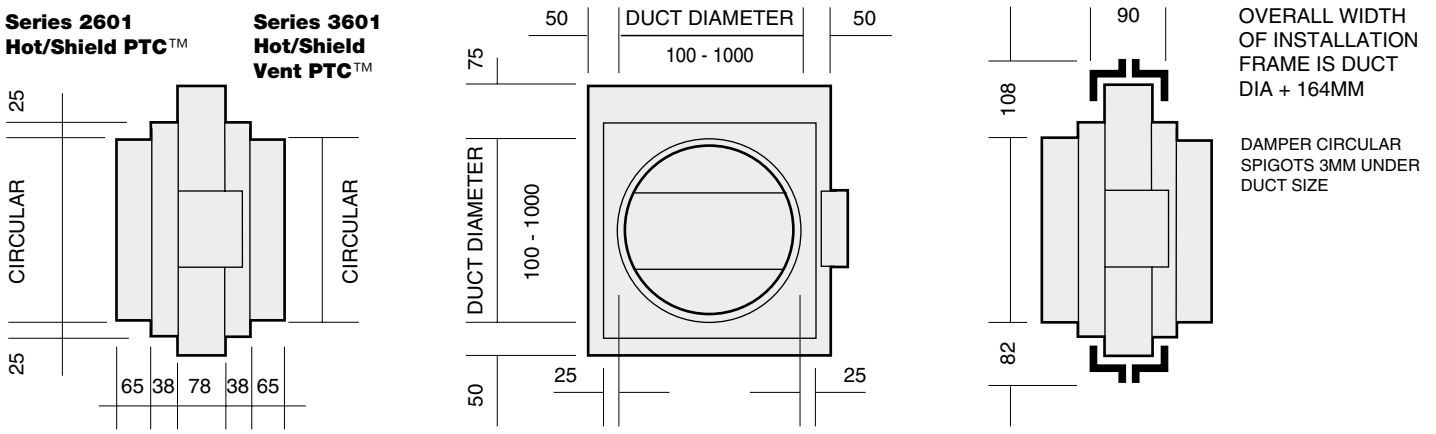
THK (Thickened fire rated ductwork up to 35mm thick) (for dimensional data outside of these parameters, refer to Customer Service Office).

5. Transformation sections are always included.

6. Dampers with duct diameters between 100mm diameter – 150mm diameter, will have nominal damper size of 200mm diameter. Dampers with duct diameters between 151mm diameter – 982mm diameter, will have nominal damper size +50mm. Dampers with a nominal damper size between 983mm diameter – 1000mm diameter, please refer to Customer Service Office.

7. Always refer to Customer Service Office for dimensional data when incorporation THK thickened fire rated ductwork, especially when thicker than 35mm.

Series 2601 Hot/Shield PTC™ **Series 3601 Hot/Shield Vent PTC™**



Multiple Assemblies

Square and rectangular casings are available in multiple module arrangements, supplied complete with blanking strips for site assembly by others. Additional support as well as provision for thermal expansion (4mm/metre) should be allowed for on multiple assemblies.
When fitted to fire rated ductwork, please refer to customer service office. Multiple assemblies require installation approval by the relevant local authority.

Troubleshooting

Below is a quick guide to problems that may be encountered. For detailed actions, reference to the main document is necessary.
Please note modifications made to units will invalidate warranties etc.

Product Commissioning and Maintenance Available.

Interface Mode Assembly does not fit into the shroud on the damper. Key:– SSM1 Smoke/Shield Mode 1 SSM5 Smoke/Shield Mode 5 SSM6 Smoke/Shield Mode 6 VSM5 Vent/Shield Mode 5 VSM6 Vent/Shield Mode 6 HSM5 Hot/Shield Mode 5 HSM6 Hot/Shield Mode 6 HSVM5 Hot/Shield Vent Mode 5 HSVM6 Hot/Shield Vent Mode 6	**SSM1, SSM5, SSM6, HSM5 & HSM6** •Check mode is in released position. **VSM5, VSM6, HSVM5 & HSVM6** •Check mode is in reset position. •Check damper drive shaft is in line to shroud, adjustment is made by manually setting blades to fully closed. •The slots on the non-access side of the shroud may be blocked (due to removal of transit plate prior to backfilling) - ensure adequate clearance. •Check alignment of drive coupling slot in interface. If out of line, the mode output drive is out of	synchronisation with the interface drive. The mode will require to be removed, and the refitted correctly as follows: **SSM5, SSM6, HSM5 & HSM6** Remove mode. (Ensure released.) Align interface coupling with slot on interface. Refit mode with product label uppermost. (Including location plate and washer.) **VSM5, VSM6, HSVM5, & HSVM6** Remove mode. (Ensure reset.) Align interface coupling with slot on interface. Refit mode with product label uppermost.(Including location plate and washer.)
Smoke/Shield Control Mode 1 does not latch to reset position. **Control Mode 1 difficult to install/remove from interface shroud.**	•Mechanical fusible link not fitted correctly to duct. •In released position, rotate the shaft fractionally with 14mm A/F spanner whilst installing/removing.	The wing nut on the fusible link is not fully screwed clockwise to end travel.
Control Mode (5 and 6) does not operate electrically.	•The ETL is not correctly fitted to duct. •The mode is incorrectly wired.	•The ETL cables have been damaged or tampered with.
Control Mode operates, but limited, or no movement of damper blades is observed.	•The mode is not correctly synchronised with the interface •The damper is damaged or poorly installed. •The retaining pin in the interface is not protruding through the location	hole in the shroud. •Foreign matter is impeding blade movement. •Location plate omitted. •Mode not screwed down correctly.
Interface assembly cannot be removed.	•Mode is at incorrect position. **SSM5, SSM6, HSM5, HSM6** - release position permits removal. **VSM5, VSM6, HSVM5, HSVM6** - reset position permits removal.	•Interface coupling slot misaligned - try carefully manually adjusting blade slightly.

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