

# HEVAC/HVCA Installation Frame (I/F)

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## Drawings

Please visit our website to download the installation drawings, which are located on the relevant product download section.

## Applies to...

- Actionair SmokeShield PTC
- Actionair FireShield

## Health and safety

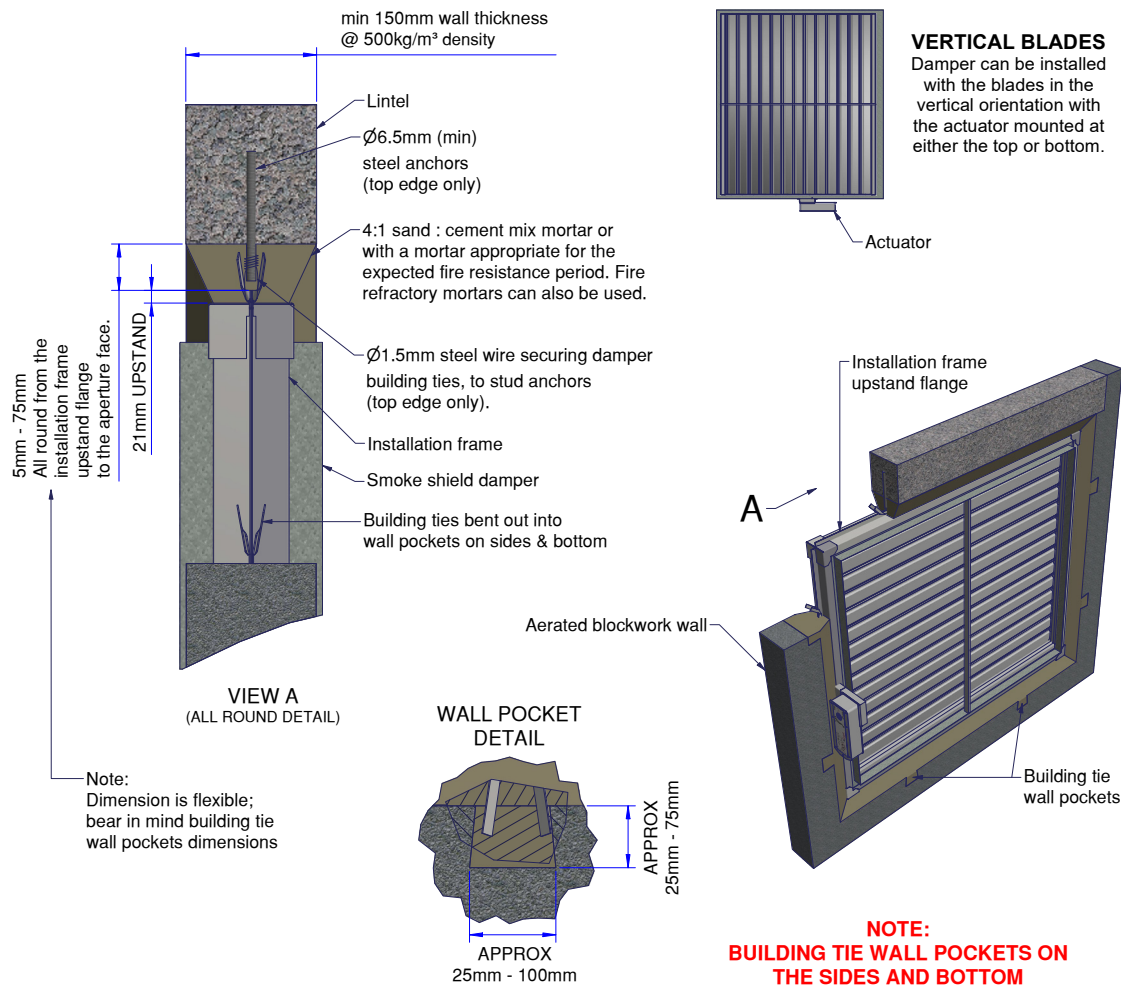
- This process must be undertaken by competent persons. More than one person may be required to ensure the safe handling of large dampers and other materials. Use must be made of access equipment to ensure unsafe practices are not used to approach walls or difficult access areas.
- Standard site PPE should be used (minimum steel toe cap boots, hard hat); together with any protective eyewear, gloves and masks, when drilling or cutting is being undertaken. The latter should also be used when handling the wall construction materials, as defined by the material suppliers. If loud equipment is being used, hearing protection should be used.
- All waste materials should be collected and disposed of as defined by the relevant supplier.
- Actuators: All wiring should be carried out in accordance with the wiring details provided by the IEE and BS regulations and by a competent person. Care must be taken when installing and inspecting dampers, as they are likely to close without warning due to loss of electrical power or a temperature rise in the ductwork. This is their prime function. Do not insert any items, fingers or limbs between the blades. Larger dampers must be handled in accordance with current regulations and good practice due to weight.

# CE Installation Method Overview

Also available are non-standard, BS-476, non-CE options. Please contact our Sales team for more information.

Application	Installation Method	
	Actionair SmokeShield	Actionair FireShield
Vertical Damper Installation in an I/F in a Masonry Wall	Page 3, [AA/F10702]	Page 3, [AA/F10703]
Horizontal Damper Installation in an I/F in Slab		Page 4, [AA/F10701]

- The methods in this manual should be followed to ensure a CE-marked installation. This CE installation document covers single dampers only. If a multiple damper assembly or, if a non-standard install is required, talk to us as early as possible in the project to get important stakeholders engaged and ensure an installation solution can be found.
- The instructions are based on the tested method using Actionair SmokeShield PTC and FireShield products.
- Our SmokeShield dampers are designed to be used with fire separating elements to maintain fire compartments. The SmokeShield is an actuated failsafe close damper with low smoke leakage, often referred to in the industry as a Fire/Smoke damper.
- Under the Fire Damper Product standard BS EN 15650 our Fire Damper products are tested to BS EN 1366-2 and classified under BS EN 13501-3.
- For smoke control, the product you use should be tested to BS EN 12101-8 and drive open, drive closed without failsafe position, see our website for information on the Actionair SmokeCommand smoke control damper documentation and suitable installation methods.



## Vertical Damper Installation in an I/F in a Masonry Wall

Actionair SmokeShield PTC - [AA/F10702]

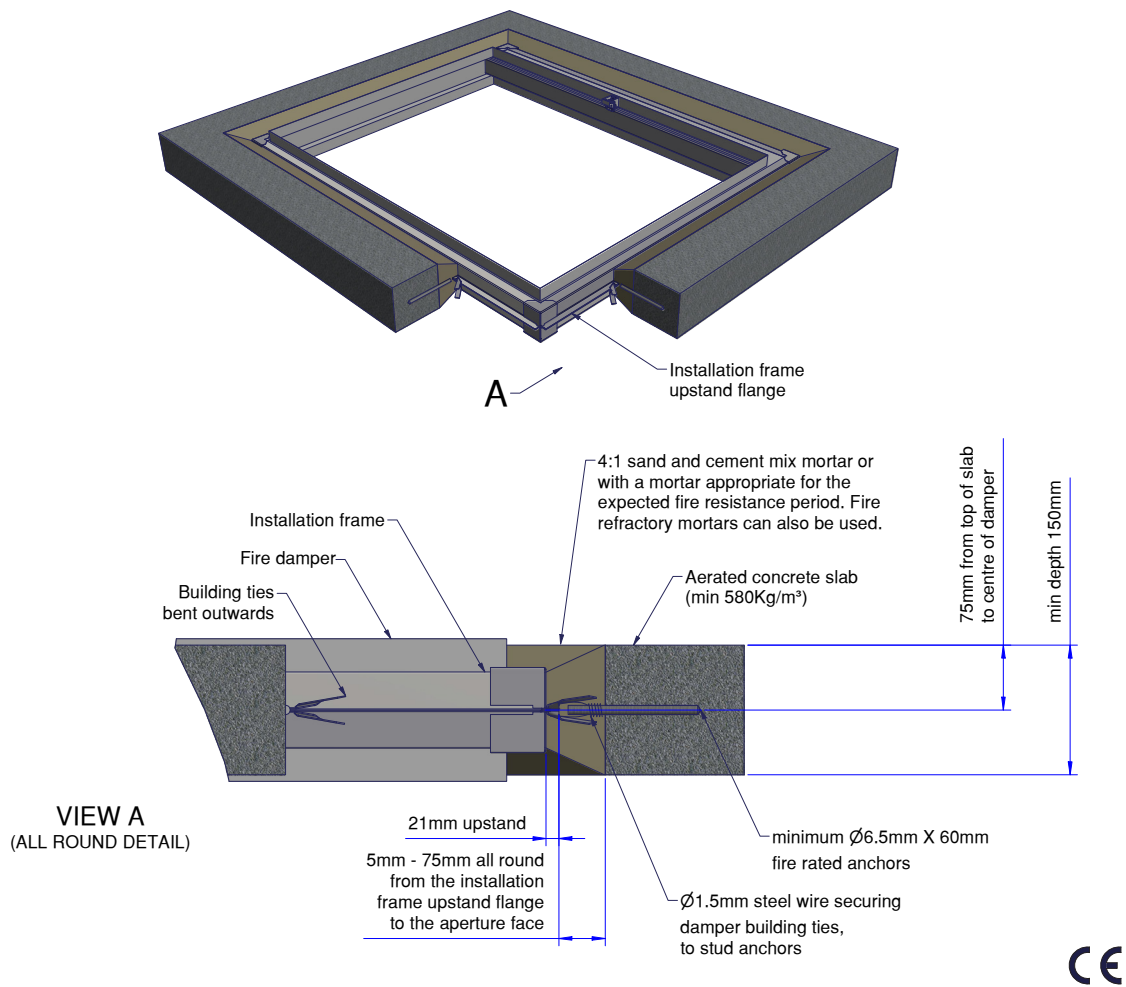
Actionair FireShield - [AA/F10703]

### Installation Method

1. Measure the positions of the building ties on the HEVAC frame.

Mark up the lintel at the top of the hole in the wall to give positions that match to the building ties. Drill into the lintel and fit stud anchors or similar steel fixings (min  $\varnothing 6.5\text{mm} \times 60\text{mm}$ ).

2. Turn out the building ties on the damper and offer the damper into position, supporting from underneath with a block of wood or board, which will need to be removed when the mortar is in position.
3. Using a steel wire, wrap this round the building ties and the stud anchors in the lintel at the top, to hold the damper in position (Note: This will also maintain the quality of the link between the damper, the infill mortar and the wall should a fire occur).
4. Add mortar from both sides of the damper and infill to the HEVAC frame. Take care not to infill past the line on the interface shroud.



## Horizontal Damper Installation in an I/F in Slab

Actionair FireShield - [AA/F10701]

### Installation Method

1. Measure the positions of the building ties on the HEVAC frame.
2. Mark up the inside edges of the hole in the slab to give positions that match to the building ties. Drill into the floor slab and fit stud anchors (min  $\varnothing 6.5\text{mm}$  x 60mm or similar) leaving them protruding into the opening.
3. Turn out the building ties on the damper and offer the damper into position.
4. Using steel wire (min  $\varnothing 1.5\text{mm}$ ) wrap this round the building ties and the stud anchors to hold the damper in position (Note: This will also maintain the quality of the link between the damper, the infill mortar and the floor slab should a fire occur).
5. Shutter beneath the damper (if required) and add mortar from the top of the slab and infill to the HEVAC frame. Take care not to infill past the line on the interface shroud if the motor is to be fitted above the slab.
6. When the mortar is firm remove the shuttering (if applied) and infill with more mortar to the HEVAC frame from below the slab. Do not infill past the line on the interface shroud if the motor is to be fitted below the slab.

# Self Latching Removable Release Mechanism Cassette

The cassette mechanism is completely removable from the FireShield Damper by manually releasing the retaining clip.

This allows replacement of the cassette without the use of tools

Simple hand operation enables the damper curtain to be reset and latched in the fully Open Position.

This increases the ease and speed with which the FireShield Damper can be reset following periodic functional testing in accordance with British Standard BS9999:2008 Code of Practice for fire safety.

The thermal actuator in the form of a helical memory metal compression spring is produced from a special Cu-Zn-Al brass alloy.

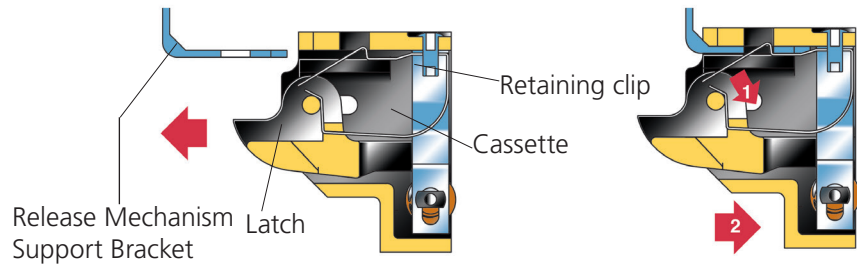
On temperature rise this expands and at 72 °C, causes the FireShield damper blades to release.

On cooling, the spring reverts to the close-coiled state offering the significant advantage of repeated operation, unless it has reached temperatures in excess of 170 °C, where it will remain extended, preventing reset.

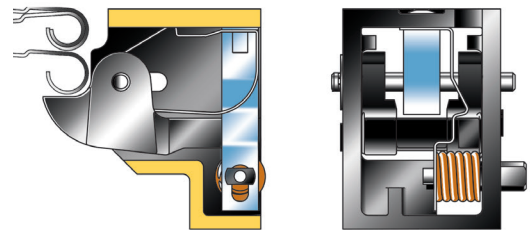
Cassettes are only available for 72 °C. For Dampers where alternative thermal link temperatures are required a chain-link can be offered in place of a cassette. Electrical release is only available with a cassette i.e. 72 °C.

Please refer to Actionair Sales Office.

Please note: For dampers with dimensions of 150mm and below ensure that there is adequate access to enable re-setting.

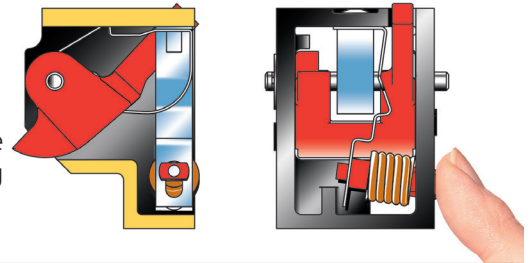


## Set Position



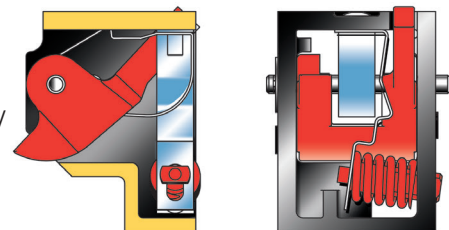
## Manual Operation

Manual Operation for periodic functional testing in accordance with BS9999:2008 Code of Practice for Ventilation and Air Conditioning Ductwork.



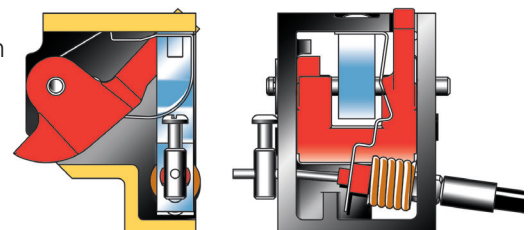
## Thermal Actuator Operation

Memory metal coil springs, specially designed to fully expand at 72 °C and actuate damper closure.



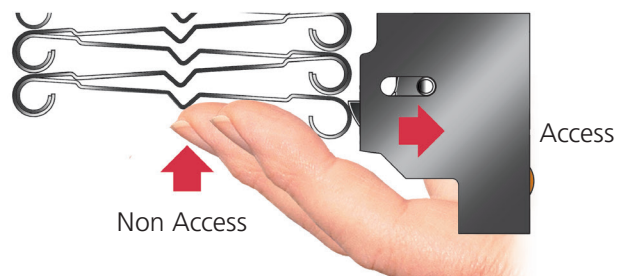
## Remote Release Operation

Remote release operation to close the FireShield Damper is by Bowden cable with Manual action or Electrical 230V AC or 24V AC and DC Electro Magnet fail-safe action and independent of the thermal actuator. Bowden outer sleeve can be fitted from either side of cassette.



## Reset Operation

Single hand operation. Each blade pushes the latch back under spring tension. On full blade reset the latch springs out to secure.





# Actuators

## Control Mode Installation Procedure

1. Remove transit plate and recycle.
2. Slide the interface and mode assembly into the shroud. Ensure the slots in the interface casing and the drive coupling located on the rear of the interface are in line.
3. Push the assembly fully home until the interface sprung retaining pin engages through the locating hole in the damper shroud (snaplock™).
4. The control mode can be fitted in any of three orientations i.e. vertically down, horizontally and vertically up (For height restrictions). This can easily be carried out by the following:
5. Remove and retain screw (8mm A/F) and washer, through the position indicator on the control mode.
6. Remove the control mode and interface adapter plate.
7. Taking care not to disturb the drive hexagon. Replace the interface adapter plate and control mode in the new orientation.
8. Replace the washer and screw tight (Max 5Nm) Select a suitable position for the Electrical Thermal Release (ETR) to be mounted through the ductwork.
9. Ideally this should be in the top half of the duct and/ or above the level of the interface.
10. Apply the self-adhesive template (located on the rear of the ETR) and drill the necessary holes (Ø3mm & Ø9.5 & Ø11mm). Push the ETR through the duct and ensure both screws are used to hold it in position. Both screws should be tightened fully to ensure that both sections of the ETR are closed together. It is a safety feature, if both sections are not closed the unit will not operate. For ductless installations the ETR should be fitted onto the damper spigot (not casing) above the damper interface shroud and in accordance with the fitting instructions. If the ETR is not fitted in the exact manner described above, the unit will not operate.
11. 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 SmokeShield PTC damper to allow air to pass through it using the winder provided, this may be necessary if electrical power isn't available yet. The ETR is not operable in this instance, the damper will not release automatically if the temperature rises or a fire occurs.
12. The unit must be wired as detailed. When power is available, the unit must be checked for correct electrical operation. Power on to reset, power off to release.
13. 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 resets. 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.
14. The ETR cable must not cut to shorten or lengthen, and care must be taken not to damage it. Either will render the unit inoperable and void any warranties. This is due to a built in safety feature.



# Periodic Maintenance

## Manufacturer Recommended Service Intervals

- After commissioning and handover (see DW145 check sheet), in order to remain compliant with 15650:2010, we recommend that you follow a regular service and inspection programme to ensure correct operation of dampers in the event the damper is required to actuate.
- In addition to regular physical inspections (in accordance with 15650:2010) we recommend using a dedicated damper control panel with a digital reporting mechanism (such as an Actionpac LNS system) to frequently monitor and report on regular remote damper testing.
- Ensure maintenance is performed in line with the latest best practice and relevant local or specialist guidance.
- Our recommended service intervals for life safety products are as follows:

Interval	Action	Competence
6 Months	Check Actuator Wiring (if applicable) for Damage	Specialist Persons
6 Months	Check Limit Switch Wiring (if applicable) for Damage	Specialist Persons
6 Months	Check Damper Cleanliness, Clean and Lubricate if necessary.	Specialist Persons
6 Months	Check Condition of Blades and Seals, report and rectify if necessary.	Specialist Persons
6 Months	Check for blade obstructions	Specialist Persons
6 Months	Check Damper Release Mechanism (through activation or release of the ETR or Thermal Fuse Device)	Specialist Persons
6 Months	Check damper is left in normal operational position after inspection.	Specialist Persons
Monthly	Complete actuation of damper from control panel (if installed) and check all faults. Consult specialist persons to investigate any reported faults.	Facility Manager

- \*Specialist Persons: A recognised and experienced person with prior experience in the inspection and assessment of the functional safety of smoke and fire damper products. If in doubt, please consult with our technical support team for advice. To talk about our OEM maintenance inspections, contact our nationwide service team.

## BS EN 15650:2010 - Ventilation for Buildings

### - Fire Dampers

- Section 8.3 states regular testing/ inspection should be undertaken to meet regulatory requirements, or at intervals not exceeding six months.
- A comprehensive example of the maintenance procedure is given in Annex D of the standard. Some

automatic systems may allow more frequent testing (48hr or less) and this may be required by a national standard.

## Approved Document B, Volume 2

- Clause 10.12 states adequate means of access must be provided to allow inspection, testing and maintenance of both fire damper and its actuating mechanism.

## BS 9999:2017 - Code of Practice for the Fire Safety in the Design, Management and Use of Buildings - Annex I

### Smoke Control Systems

- For means of escape states actuation of the system should be simulated once a week. It should be ensured that any fans and powered exhaust ventilators operate correctly, smoke dampers close (or open in some systems), natural exhaust ventilators open, automatic smoke curtains move into position, etc.

### Three Monthly

- In addition to the checks recommended in V.2, V.3 and V.4, the actuation of all smoke control systems should be simulated once every three months. All zones should be separately tested and it should be ensured that any fans and powered exhaust ventilators operate correctly, smoke dampers close (or open in some systems) etc.

### Yearly

- In addition to the following checks should be made for annual inspections and tests of the following to be carried out by competent persons, for any defects to be logged and the necessary action taken, and for certificates of testing to be obtained.
  - Fire detection and fire alarm systems;
  - Self-contained luminaires with sealed batteries, if more than 3 years old;
  - Sprinkler, drencher and watermist systems;
  - Smoke ventilators and smoke control systems;
  - Fire dampers

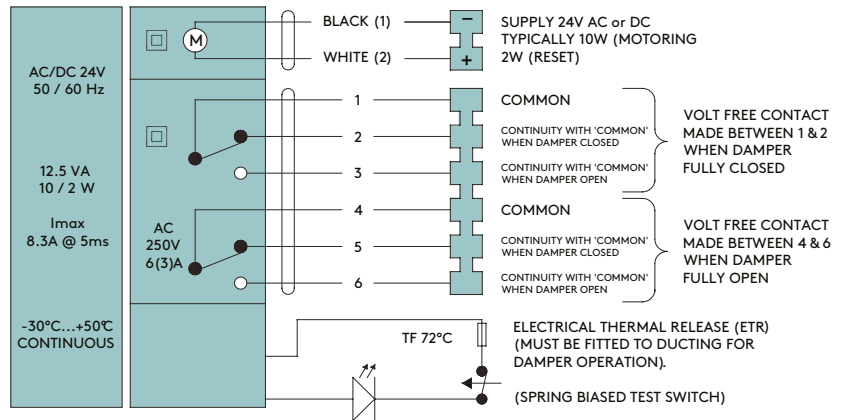
## BS 9999:2017 - Code of Practice for the Fire Safety in the Design, Management and Use of Buildings - Annex W

Maintenance of air conditioning and ventilation equipment including air filters, motors, fire dampers and their controls, smoke detectors and alarms is of paramount importance both in preventing fire and in ensuring that measures taken to mitigate its consequences are effective when needed. Arrangements should be made for all fire dampers to be tested by a competent person on completion of the installation and at least annually, and to be repaired or replaced immediately if found to be faulty. Spring-operated fire dampers should be tested annually and fire dampers situated in dust-laden and similar atmospheres should be tested much more frequently, at periods suited to the degree of pollution.

# I/F Damper Wiring Diagrams

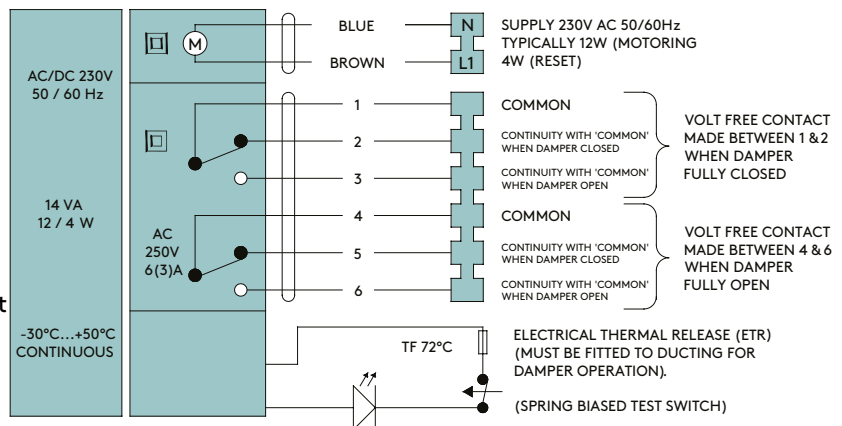
## Mode 5

Supply On – Damper motors open.  
 Supply Off – Damper spring closes.  
 Electrical Thermal Release.  
 External mechanical position indicator with pointer.  
 Close Time ≈ 22 secs.  
 Open Time ≈ 60 secs.  
 (Connect 24V via a safety isolating transformer.)  
 IP54 Rated.



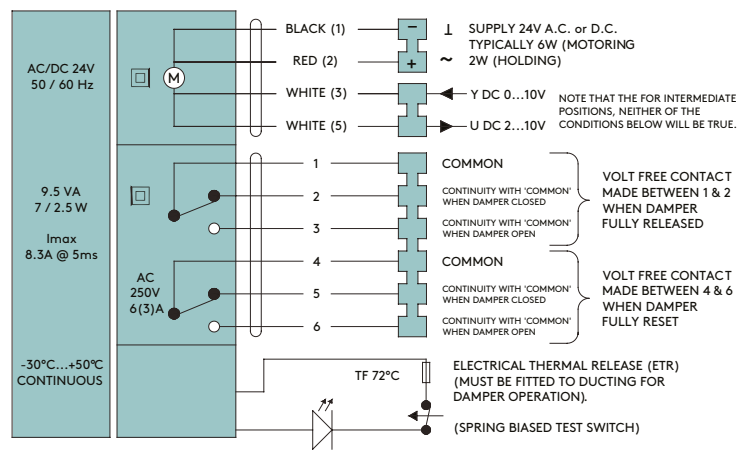
## Mode 6

Supply On – Damper motors open.  
 Supply Off – Damper spring closes.  
 Electrical Thermal Release.  
 External mechanical position indicator with pointer.  
 Close Time ≈ 22 secs.  
 Open Time ≈ 60 secs.  
 (To isolate from main power supply, the system must incorporate a device which disconnects the phase conductors, with at least 3mm contact gap.)



## Mode 5-3P

Supply On – Damper motors open.  
 Supply Off – Damper spring closes.  
 The M5-3P is controlled by standard 0...10V control signal. The actuator motors to the position specified by the control signal. If the ETR is activated, power supply lost or removed the device springs the damper to the fail-safe position.  
 Electrical thermal release (ETR)  
 (Must be fitted to ducting for damper operation).  
 Spring close time ≈ 18 seconds  
 Motor open time ≈ 120 seconds  
 (Connect 24V via a safety isolating transformer.)  
 IP54 Rated.



DIAGRAMS SHOWS ACTUATOR IN FULLY CLOSED STATE



# I/F Dimensional Data

## SmokeShield PTC

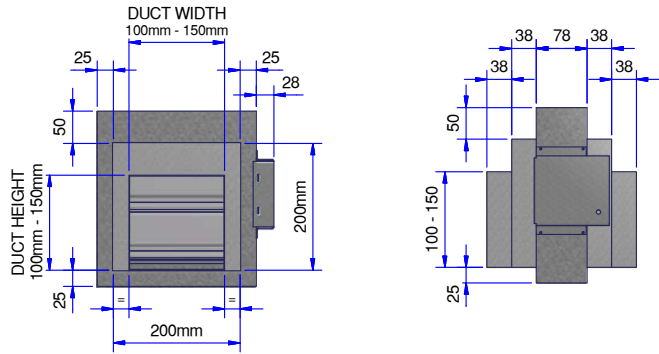
### Base Dampers

#### Rectangular Dampers Series 501

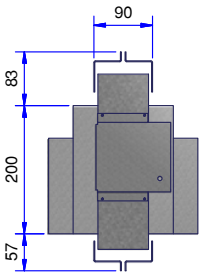
For Rectangular Dampers spigots are 5mm under duct size.  
Widths and heights available in 1mm increments.

### Dampers with I/F Installation Frames

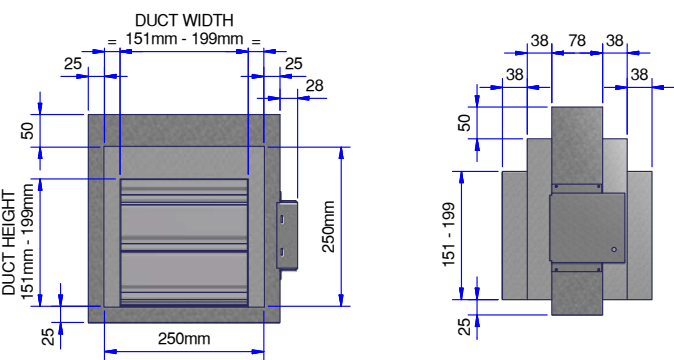
FOR DUCT WIDTHS AND HEIGHTS OF 100-150MM



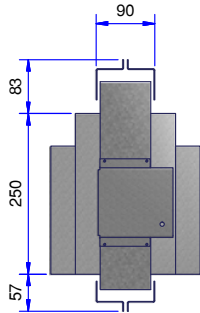
OVERALL WIDTH OF INSTALLTION FRAME IS 314mm  
OVERALL HEIGHT OF INSTALLATION FRAME IS 340mm



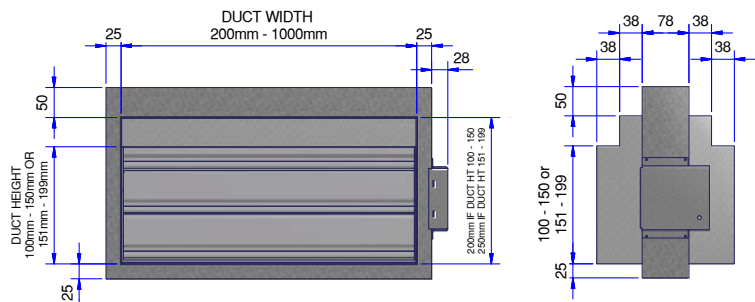
FOR DUCT WIDTHS AND HEIGHTS OF 151-199MM



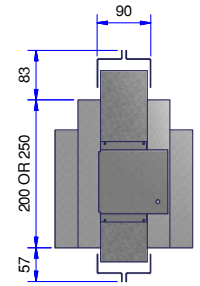
OVERALL WIDTH OF INSTALLATION FRAME IS 364mm  
OVERALL HEIGHT OF INSTALLATION FRAME IS 390mm



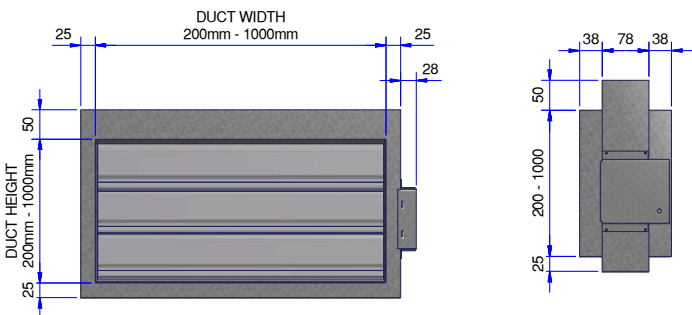
FOR DUCT WIDTHS 200MM WITH HEIGHTS OF 100-199MM



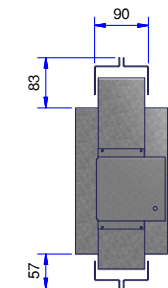
FOR OVERALL HEIGHTS SEE 100 - 150mm  
OR 151 - 199mm AS ABOVE



FOR DUCT WITH WIDTHS AND HEIGHTS OF 200 - 1000MM



OVERALL WIDTH OF INSTALLATION FRAME DUCT WIDTH + 114mm - OVERALL HEIGHT OF INSTALLATION FRAME DUCT HEIGHT + 140mm



Base Dampers

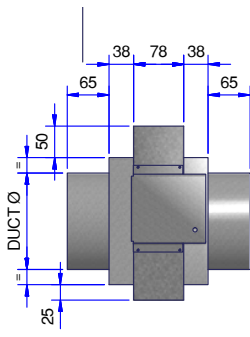
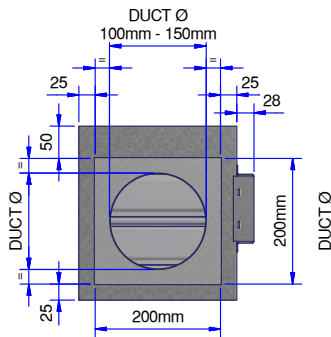
Circular Dampers Series 601

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

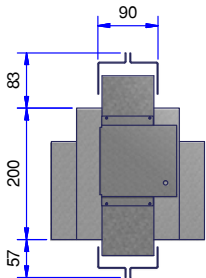
Dampers with I/F Installation Frames

Circular Dampers Series 601

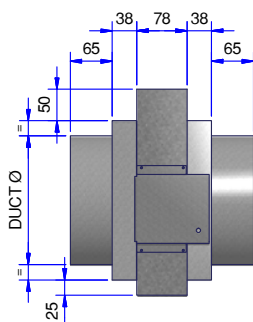
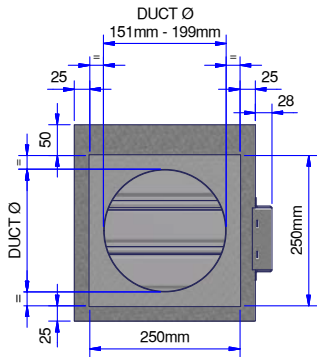
FOR DAMPERS 100-150MM



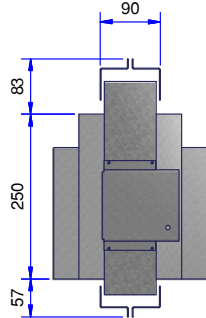
OVERALL WIDTH OF INSTALLTION FRAME IS 314mm  
OVERALL HEIGHT OF INSTALLATION FRAME IS 340mm



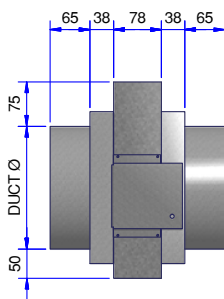
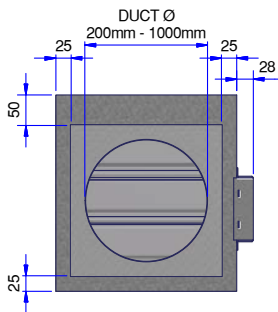
FOR CIRCULAR DAMPERS SERIES 601, DIAMETERS 151-199MM



OVERALL WIDTH OF INSTALLATION FRAME IS 364mm  
OVERALL HEIGHT OF INSTALLATION FRAME IS 390mm

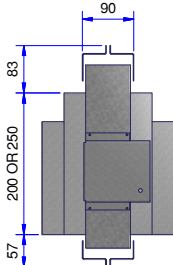


FOR CIRCULAR DAMPERS SERIES 601, DIAMETERS 200-1000MM



OVERALL WIDTH OF INSTALLATION FRAME = DUCT DIA + 166MM

OVERALL HEIGHT OF INSTALLATION FRAME = DUCT DIA + 190MM



FOR DUCT DIAMETERS BETWEEN 970mm - 1000mm  
OVERALL WIDTH OF FLANGE WIDTH IS 1198mm  
OVERALL HEIGHT OF INSTALLATION FRAME IS 1195mm

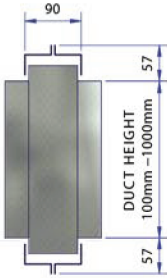
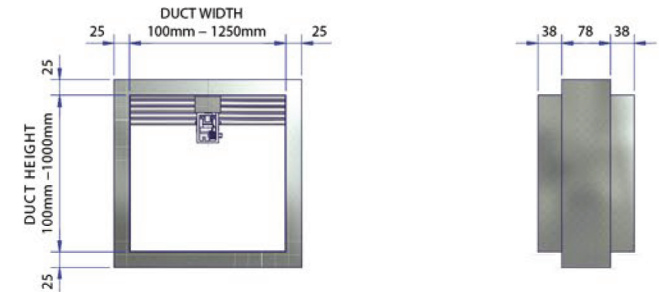
FireShield

Base Dampers

HEVAC / HVCA I/F

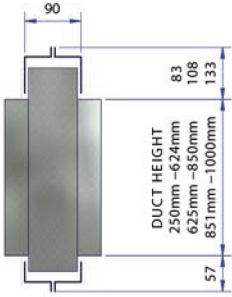
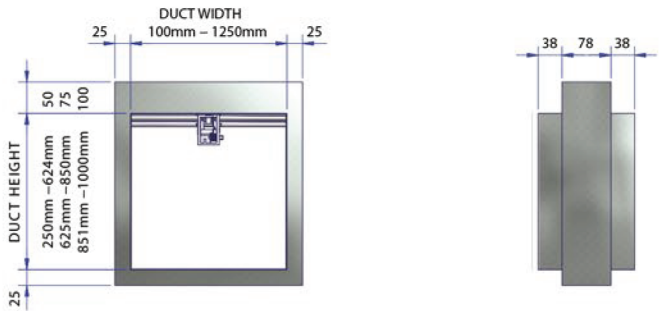
**Series 101**  
FireShield Dampers with blades partly in airstream (Damper spigots 5mm under duct size) 100 - 249 high, blades effectively outside airstream

OVERALL WIDTH OF INSTALLATION FRAME IS DUCT WIDTH + 114



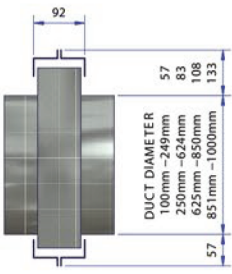
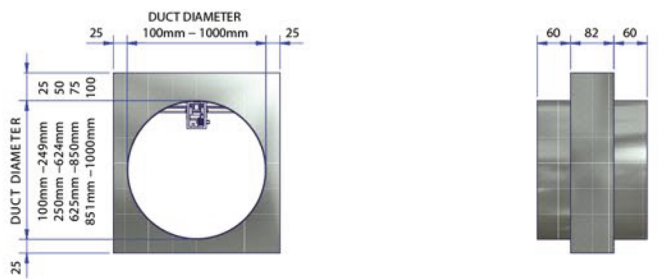
**Series 201**  
FireShield Dampers with blades effectively outside airstream (Damper spigots 5mm under duct size) 100 - 249 high, use Series 101 Damper as blades effectively outside airstream

OVERALL WIDTH OF INSTALLATION FRAME IS DUCT WIDTH + 114



**Series 301**  
FireShield Dampers with blades effectively outside airstream (Damper spigots 3mm under duct size)

OVERALL WIDTH OF INSTALLATION FRAME IS DUCT WIDTH + 114



# Troubleshooting

Product Commissioning & Maintenance Available

Below is a quick guide to problems that may be encountered.

Please note modifications made to units will invalidate warranties etc

Fault	Possible problem	Recommended action
Interface Mode Assembly does not fit into the shroud on the damper.	Damper drive shaft not in line with shroud	Gentle adjustment made by manually setting blades to fully closed
	Mode not in released position	Release clutch on motor using manual key. Check the slot on rear of interface
	Slots on the non-access side of the shroud may be blocked (due to removal of transit plate prior to backfilling)	Ensure adequate clearance
Control mode does not operate electrically	The ETR is not correctly fitted to duct	Screw fix to duct ensuring both parts of the ETR are fully together. Do not over tighten
	The mode is incorrectly wired	Check wiring in accordance with procedures
	The ETR cables have been damaged or tampered with	Replace with new mode
Control Mode operates, but limited, or no movement of damper blades is observed	The mode is not correctly synchronised with the interface	Remove motor from interface. Check motor in fully released state. Set position of interface, and refit motor with label upmost, include motor location pointer and washer
	The damper is damaged or poorly installed	New damper or re-install
	Interface not fitted correctly to damper	Fit interface correctly, ensure retaining pin protrudes through location hole in the shroud
	Foreign matter is impeding blade movement	Check and remove
	Motor location pointer omitted	Fit new pointer
	Mode not screwed down correctly	Check and tighten

# Inspection and handover check sheet

This certificate applies only to Swegon Fire Dampers. The installer must complete this installation certificate when installing fire and smoke dampers. A separate certificate must be completed for each individual fire and smoke damper.

	Question	Action	
1	Are the dampers the correct type?	Confirm damper is correct type for the application	
2	Are the dampers located correctly?	The damper location is to be checked against the installation drawings/details	
3	Are the dampers correctly identified?	Unique system ID to be clearly indicated on the damper or other agreed location.	
4	Have supports for both the damper and the adjacent ductwork been installed in accordance with the approved manner?		
5	Are the dampers fitted in the correct orientation?	Confirm the damper is installed with any actuators (if applicable) on the left or right hand side. Not on the top or the bottom (i.e. blade pivot running vertically) unless permitted under the respective DoP.	
6	Is access through the ductwork, to the damper unobstructed?	Unobstructed space should be provided for safe access to the damper. This must include access through ceiling voids and adjacent services. Damper installer to advise the system designer if problems are foreseen.	
7	Has the space around the damper and within the opening been left clear and not been used for other services?	Other services within the installation opening will invalidate the installation method. Damper installer to advise the lead contractor if problems are foreseen.	
8	Using the access opening provided, check that blades open and close.	Check position of damper blades.	
9	Has the damper been checked for internal cleanliness, free from damage and that vertical casings in particular are free from debris?	With the damper in the closed position, inspect for damage.	
10	Has the damper been released to simulate operation of the thermal release? (Damper drop test)	Ensure damper operation is free from interference.	
11	Have the damper blades been re-set following drop test and the access panel replaced?	After re-setting the damper, check the position shown on the blade position indicator is correct.	
12	At the time of damper handover, is the fire barrier and penetration seal complete?	Damper installer to record on the handover register if any following trades are still to complete their activities.	
13	Is the damper installation complete and available for handover prior to system commissioning?	Obtain the relevant acceptance of the damper installation from the CDM coordinator.	
14	Is the completed handover register cross-referenced back to the identification codes listed in the system designers damper schedule?		

Damper Unique System I.D: .....

Name of installation location:.....

Address:.....

Installation location identification section/floor/room: .....

Damper product type: .....

Release fuse temperature: .....

Notes/Considerations: .....

Installed by: .....

Company Name: .....

Address: .....

Company Telephone No: .....

Installers Name: .....

Installers Telephone No: .....

Date of installation: .....

It is hereby verified that the damper detailed above has been installed and tested according to the manufactures recommendations:

Installers signature: ..... Date: .....