

Dampers for Fire & Smoke Applications

Fire Smoke, Smoke & High Temperature Smoke



BS EN1366 -2 Fire Smoke Dampers, ES240 Classification.

Release Mechanisms To Suit All Requirements

300°C for 2 Hour Rated Smoke Dampers

Overview

Advanced Air have for over 30 years been a leading manufacturer of fire and fire smoke dampers. Our products are designed to the highest standard to save lives while also giving flexibility to the day to day demands of building construction. The design of our new fire smoke damper range has been in collaboration with our parent company Nailor Industries to meet the demands of the UL 555S and BS EN 1366 fire tests. We are the only manufacturer who currently produces one damper that meets both standards.

To ensure we meet the highest standard our dampers have been independently tested and witnessed by the Building Research Establishment (BRE).

Originally fire smoke dampers were designed as a fire damper with an actuator, and its purpose was to fail safe close at 74°C. However having the actuator allows the damper to be closed when a fire/smoke alarm is activated therefore preventing the spread of smoke through the ductwork. With the many different requirements of smoke control in building designs, this has resulted in fire smoke dampers having to perform different functions. This has led to our range developing into three sections.



Fire Smoke

These dampers are designed to close when the temperature reaches 74°C. Fitted with an actuator the damper can be sent to its safe position when power is disconnected. Once the damper has been subjected to 74°C the thermal fuse activates, therefore the dampers can not be reopened unless the thermal fuse or fusible link has been reset. These dampers comply with the building regulations as set out in Revision Document 'B' 2006.

Smoke

These dampers are used to manage smoke only and will operate until such time as the actuator stops functioning. They can be installed in a wall or within the ductwork. As the design is the same as the fire smoke excluding a fusible link. In the fully closed position, no power, the damper will maintain stability/integrity for up to four hours.



High Temperature

With the development of ductwork systems to operate at higher temperatures and with there being no current BS test standard for this product, Advanced Air have developed a test where our dampers operate continuously at 300°C for up to 2 hours. This test has been adopted by the industry until such time as the new European/BS smoke standard has been published. These dampers are normally mounted within the fire rated ductwork and can be supplied spring open/close or modulating.



All Advanced Air dampers are designed for application in ventilation and air conditioning systems in which it is assumed that the air way is normally clean and the temperature and humidity are controlled. For external installations or all other applications, in the first instance, please contact Advanced Air Sales.

Actuators

With a wide range of damper actuators now available from Honeywell, Belimo and Johnson's, Advanced Air's unique linkage arrangement allows us to offer a variety of options and features.

These can include using modulating spring return actuators on volume control dampers. A 30 Nm actuator on smoke dampers and High Temperature smoke dampers supplied with actuators that operate at 176°C for 1/2 Hour without a thermal enclosure. Please contact Advanced Air sales for more details on the latest options available.

Test Standard Overview

BS476 is no longer a standard for testing fire or fire smoke dampers. It was originally a method to test fire doors under static conditions but was adopted for fire and fire smoke damper applications. The International standard ISO10294-1:1996 and European standard EN1366-2:1999 were later developed to bring continuity to testing throughout Europe and is designed specifically for the testing of fire and leakage rated fire dampers.

In 2002 this European Standard was accepted as the new British Standard and this was published as BS EN 1366 -2. This is the Standard that design engineer's should adopt in their standard specifications. Associated document BS 10294-2 states the standard method of classification of the test performance of dampers. Please see below more details on the test procedure and classification.

BS EN 1366-2:1999 Test Standard

Stage 1 - The damper is installed into the wall or floor of the furnace and is allowed to cure. The damper is then subjected to a 50 cyclic slam shut test.

Stage 2 - The damper is subjected to a leakage test at ambient conditions with the damper blades in the closed position. A pressure of 300Pa is applied and the leakage is measured and this must not exceed that listed in the classification table.

Stage 3 - The damper is then set to the open position with a 0.15 m/s air velocity across the blades. The furnace is then started, the damper blades must fully close within 2 minutes. The 300Pa pressure is set within the first 5 minutes of the test and the leakage is then measured throughout the test. The damper is then subjected to temperatures up to 1050°C and 1150°C when tested between 2 and 4 hours.

The damper is then issued with a classification as per the table below, followed by the number of minutes the damper was successfully tested to.

Fire Test Performance Criteria For Fire Resisting Dampers

Classification	Size To Be Tested	Leakage Limit At Ambient Temperature m ³ /(h.m ²)	Fire Test	
			Leakage Limit m ³ /(h.m ²)	Temperature Rise Limit °C Mean/Max
E	Max	Not Required	360*	Not Required
E-S	Max	200	200*	Not Required
	Min	200	No Test	Not Required
EI	Max	Not Required	360*	140/180
EI-S	Max	200	200*	140/180
	Min	200	No Test	No Test

*Leakage limits only apply after 5 mins from the start of the test.

Classification Key: E = Integrity, I = Insulation, S = Leakage

Advanced Air dampers have achieved the following classification:

Fire/Smoke Dampers (2500 Series): **ES240**.

Size tested, Minimum: 200mm x 200mm, Maximum: 1500mm x 1000mm for units in the horizontal and vertical positions.

BS EN 1366 Fire Smoke Dampers



Electrical Release Fire Smoke Dampers - Type 2530 Page 6

The 2530 has been designed to meet the demands of quick and easy maintenance and control. The unit includes a control box that connects the actuator to an electrical thermal fuse where the power is cut to the actuator when 74°C is reached. The actuator on loss of power closes the blades within 15 secs, the damper linkage locks off the blades ensuring any failure of the actuator will not reopen the blades. The control box also has a test facility where blade operation can be visually checked. The actuator includes built in micro switches that gives blade position to BMS.

Hand Control Fire Smoke Dampers - Type 2540 Page 10

Although in the fire smoke damper range, this unit is effectively a fire damper with a hand control to reset. The damper is held in the open position by a locking mechanism that incorporates a fusible link set at 74°C. When the fusible link breaks the damper closes. The damper can be reset using the handle mounted on the side but will only remain open providing the fusible has been replaced. This damper hand control can be removed on-site to allow for an actuator to be fitted.



Mechanical Release Fire Smoke Dampers - Type 2550 Page 14

The 2550 damper relies on the actuator to open and close the damper. The unit is designed with a mechanical override so when duct temperature reaches 74°C a fusible link breaks the connection between the actuator and the damper and a built in spring slams the blades shut. With the fusible link broken, the blades will remain closed.

The actuators can be mounted internally which allows for large multiple section dampers and the damper drive can also be linked together to enable one actuator to control more than one section.

UL Specification Fire Smoke Dampers

As the 2500 series damper has been developed with Nailor Industries in America and Canada where the damper has also been tested to UL555 and UL555S. The test is different to the BS standard as the damper is fire tested for 3 hours and when the test is completed the furnace is turned off and high pressure water is sprayed at the damper through a fireman's hose.

Airfoil Blade Fire Smoke Dampers - Type 1220 Page 18

The 1220 damper uses the same 2500 blade design but with a different frame style. These dampers can only be supplied with special flanges so that it can be fitted within a sleeve as UL only allows installation into walls and floors using sleeve and angle arrangement.

The units can only be supplied with electrical thermal sensor and actuators that we have tested and UL listed and these have to be supplied fitted. The units will be supplied complete with UL labels.



Smoke Dampers

The requirement for smoke dampers has expanded over the years as ductwork system design has developed to the stage where building management systems are able to control smoke in a fire situation. These dampers do not have a fusible link and can operate at higher temperatures due to the high temperature bearings. The units are normally fitted within ducts but can be installed in floors or walls when supplied with a HEVAC frame. As the design is the same as the fire smoke excluding a fusible link. In the fully closed position, no power, the damper will maintain stability/integrity for up to four hours.



Smoke Dampers - Type 2560 Page 20

The 2560 is based on the same design as the 2550 damper but it does not have a fusible link. These units can be supplied either spigotted or flanged. The flanged models are normally fitted in fire rated ductwork with the linkage covered. These dampers can operate at high temperatures but are generally restricted by the maximum operating temperature of the actuator.

Units can be supplied in multiple sections and the actuators can be mounted externally or internally.

High Temperature Smoke Dampers

With the development of ductwork systems and fans able to handle higher temperatures there has been a requirement for dampers to operate for at least 300°C for 1 hour. Through exhaustive testing, Advanced Air have developed the 2590 range that will continuously operate at 300°C for either 1 or 2 hours when the Actuators are fitted with a protective enclosure. Through additional testing we can also offer actuators that power open/close and modulating thereby offering a complete range of high temperature dampers.

300°C/120mins High Temperature Smoke Damper - Type 2590 Page 24

Based on the 2560 smoke damper this damper has been modified to handle the higher temperature by including stainless steel bearings. The two hours has been achieved using a spring return actuator which is housed within our newest enclosure that includes fast release catches for easy access. The enclosure is also fitted with enclosed terminal block for easy wiring.



300°C/60mins High Temperature Smoke Damper - Type 2590 Page 28

This damper is restricted to 1 hour due to the damper actuators however it meets the requirements of most specifications. With the current actuators this unit can be supplied spring return, power open and power close and also modulating. All actuators would be housed within our latest enclosure that includes fast release catches easy access and terminal block with glands for wiring.

Electrical Release Fire Smoke Dampers

Type 2530

The model 2530 is designed to close and stay closed in a fire situation creating a 4 hour fire rated barrier to stop the spread of fire, smoke and toxic fumes. The 2530 incorporates the new unique interlocking opposed blade design that eliminates the need for blade seals which burn out during fire conditions. The blade profile is of aerodynamic double skin construction, and gives a metal to metal seal, which achieves low leakage performance as stipulated in BS EN1366-2 ES classification for 240 minutes in both horizontal and vertical installations.

The 2530 includes a unique and versatile jackshaft arrangement with an electrical thermal fuse rated at 74°C. When the temperature is reached the actuator power is disengaged and then the actuator closes the blades within 15 seconds. The blades are then held in the closed position by the knee-lock mechanism therefore not relying on the actuator to hold the blades closed.

The jackshaft arrangement allows multiple section units to be connected and driven by one actuator depending on torque requirements. The 2530 damper is available with spigotted connections. Various installation options are available, examples are detailed in our Methods of Installation Manual. This product is flexible and versatile and can be modified to meet most special requirements on size and installation.



Features & Benefits

- Independently tested to the BS EN1366 -2 test for integrity and leakage requirements achieving an ES240 classification.
- Unique double skin blade design that achieves low leakage tested to British and American standards without the need for synthetic blade seals.
- Closure maintained by the unique “knee-lock” mechanism which prevents blades from re-opening the damper.
- Wide range of actuators are available from Belimo, Honeywell and Johnson's to meet most requirements.
- Junction box including test button that allows easy site wiring connection.
- All components fitted to the damper so installation simple and straight forward, therefore no additional modification to ductwork.

Material Specification

Blades: Double skin 1.0mm galvanised mild steel as standard. Double skin 1.0mm grade 430 stainless steel optional

Frame: 1.6mm galvanised mild steel standard, 1.6mm grade 430 stainless steel optional

Frame Corners: Die formed corner channels, button locked for strength and rigidity

Casings: 1.2mm galvanised mild steel standard, 1.2mm grade 430 stainless steel optional

Casing Corners: Welded mitre corners finished with aluminium aerosol spray.

Linkage: External linkage. Enclosed within the frame and out of air stream. Zinc electroplated mild steel.

Bearings: Oil filled sintered bronze up to 200°C.

Axles: 12.7mm diameter zinc electroplated mild steel bolted directly through the blade.

Jackshaft: Zinc electroplated mild steel.

Top, Bottom & Side Jamb Seals: Cambered grade 301 stainless steel.

Control Options

Standard Operation - Fail Safe Closed

The spring return actuator is set-up when without power the blades will be fully closed. The power supply is connected through an electrical thermal fuse rated at 74°C mounted within a junction box on the outside of the damper with the sensor within the air stream. When power is applied the blades go to the fully open position. In alarm condition the power is removed the damper blades close within 15 seconds. When 74°C is reached the thermal fuse breaks the connection to the actuator so the damper will not open. Also mounted on the junction box is a test button that when pressed will break the power supply to the actuator so the blade operation can be checked. When released the power supply returns to the actuator.

Fail Safe Open

The spring return actuator is set-up when without power the blades will be fully open. The power supply is connected through an electrical thermal fuse rated at 74°C mounted within a junction box on the outside of the damper with the sensor within the air stream. When power is applied the blades go to the fully closed position. In alarm condition the power is removed the damper blades open within 15 seconds. When 74°C is reached the thermal fuse breaks the connection to the actuator so the damper will not close. Also mounted on the junction box is a test button that when pressed will break the power supply to the actuator so the blade operation can be checked. When released the power supply returns to the actuator.

Modulating - Volume Control

The 2530 can be supplied with a modulating spring return actuator that allows the blades to be adjusted therefore giving volume control option. With power using 0-10v signal the damper blades can be set anywhere between fully open and fully closed. Depending on how the actuator is set at the factory the damper can be fail safe closed or open. This option also includes electrical thermal fuse and test button.

Blade Indication - Micro switches

To give indication of the blade position to BMS or similar, integral micro switches are supplied as standard.

Please Note: All 2530 dampers must be supplied with actuators factory fitted.

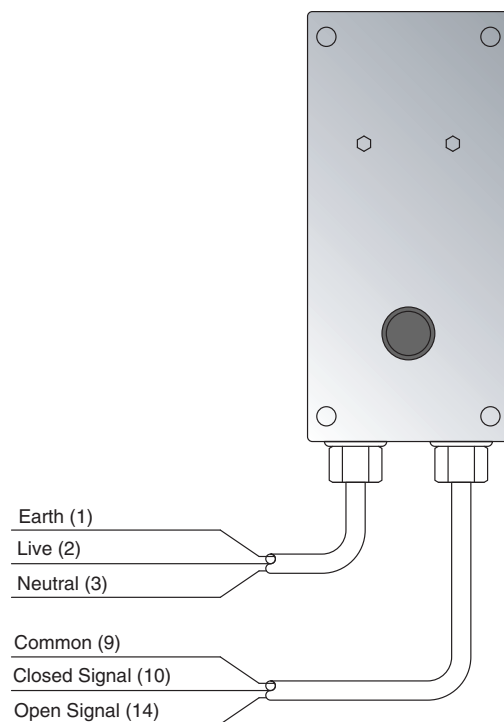
Wiring Details

The 2530 is designed so all connections are made directly into the connection box. The box is supplied with cable glands to facilitate customer cables, as shown in diagram, and the cable connections are made to the numbered connections inside the box as shown. The power connections are made in the base of the box, while the optional signal connections are made in the lid.

The actuator and thermal cut out are supplied pre-wired as standard. For all connections, it is the responsibility of the contractor to comply with current IEE regulations within the United Kingdom, or the respective regulations within other countries where applicable.

Please note, when using the 2530 with Advanced Air control systems, please refer to specific control system wiring details.

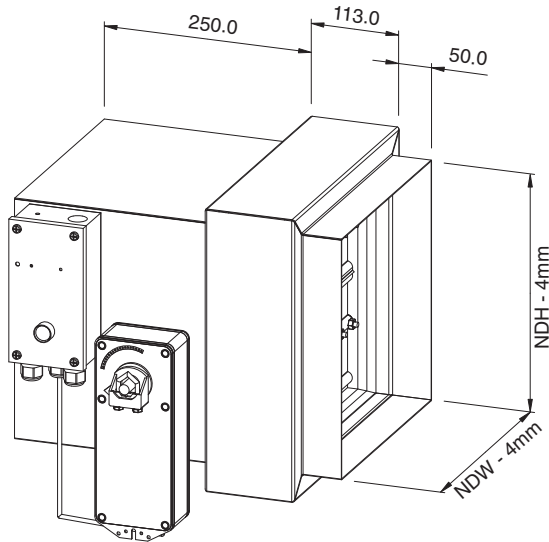
For further details, please contact Advanced Air Sales.



2530 type dampers are not supplied with cables as standard, detail shows customer connections via cables for indication purposes only.

Dimensional Detail

Rectangular Spigotted Models



NDW - Nominal Duct Width
NDH - Nominal Duct Height

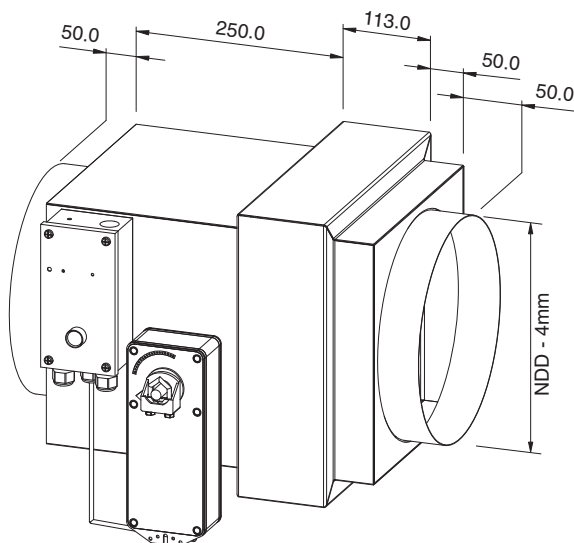
Overall Casing Width/Height = Duct Width/Height + 50mm

Minimum Single Section Duct Size: 100mm x 100mm
Maximum Single Section Duct Size: 750mm x 1000mm

For damper sizes below 200mm width or height, the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

Circular Spigotted Models



NDD - Nominal Duct Diameter

Overall Casing Width/Height = Duct Diameter + 75mm

Minimum Single Section Duct Size: Ø100mm
Maximum Single Section Duct Size: Ø750mm

For damper sizes below Ø200mm the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

For all other spigot and frame types, contact Advanced Air Sales.

Multiple Section Units

For requirements over the maximum allowable single section size, Advanced Air dampers can be provided in multiple section arrangements. Please contact Advanced Air Sales for further details.

Where multiple arrangements of dampers are required to be fitted, the installer should submit their proposed arrangement to the relevant local authority of fire officer responsible for installation,

How to Order or To Specify

Electrical Release Fire Smoke Dampers - Type 2530

		2 5 3 0 - 1 1 (0 2 1)			
Model				Bearings	
Electrical Release				Oilite (200°C)	1
Fire Smoke Damper	253			Construction	
				74°C Release	2
Operation				Material	
Right Hand Drive	0			Galvanised Mild Steel	0
Left Hand Drive	2			430 Grade Stainless Steel Blades, Galvanised Mild Steel Casing	1
Drive Both Sides (Multiple Sections)	5			430 Grade Stainless Steel Blades and Casing	2
Duct Connection					
Rectangular Spigot	1				
Circular Spigot	2				
Flat-Oval Spigot	3				
Mounting Type					
None (default)	0				
HEVAC/HVCA Frame	1				
Dry Wall/HEVAC					
Combination Frame	6				
Dry Wall Flange	7				

Notes:

- Cleats are available as an additional accessory. For further details of installation accessories, please refer to page 32
- Actuators must be factory fitted

Suggested Specification - Motorised Fire Smoke Dampers

Fire smoke dampers shall be provided in the supply ductwork in positions as indicated on the drawings and shall be suitable for mounting in the horizontal or vertical plane. They shall be certified by the manufacturer to have been tested to the time temperature curve test of BS ISO 10294-1 for a period of 4 hours with a classification of ES 240 as stated in BS ISO 10294-2

Fire smoke dampers shall have factory fitted installation frames to HVCA 10.1.83 specification and the mechanical contractor shall allow for additional framing, supports and bracing to secure the damper to the structure to the satisfaction of the Building Control Officer.

Fire smoke dampers shall be manufactured with galvanised blades of double skin construction. The blades shall be housed within a galvanised mild steel casing with spigot connections, stainless steel side jamb seal and oilite bearings. The fire smoke damper shall have an electrical thermal fuse rated at 74°C, therefore, once the temperature is reached, the damper actuator will fully close the blades in not less than 16 seconds.

The electrical thermal fuse shall be pre-wired at the factory together with the actuator into a junction box which shall be mounted externally on the damper.

The fire smoke damper shall operate up to 1500Pa at a maximum velocity of 20m/s. All fire smoke dampers shall be independently supported of the ductwork on each side of the damper blades casing. Mounting frames, supports and sleeves shall be approved by the requisite Fire Authorities and Building Control.

All fire smoke dampers shall be the model 2530 as manufactured by Advanced Air (U.K.) Ltd or equal and approved

Hand Control Fire Smoke Dampers

Type 2540

The 2540 has been designed to offer the most flexibility from a reset-able basic fire damper to a full fire smoke damper with actuator.

The basic 2540 is a hand control unit that is complete with a mechanical fusible link rated at 74°C that on reaching temperature will instantly close the damper blades. Through a simple modification the damper can be upgraded to full fire smoke with actuator and electrical thermal fuse.

The model 2540 is designed to close and stay closed in a fire situation creating a 4 hour fire rated barrier to stop the spread of fire, smoke and toxic fumes. The 2540 incorporates the new unique interlocking opposed blade design that eliminates the need for blade seals which burn out during fire conditions. The blade profile is of aerodynamic double skin construction, and gives a metal to metal seal, which achieves low leakage performance as stipulated in BS EN1366-2 ES classification for 240 minutes in both horizontal and vertical installations.

The 2540 damper is available with spigotted connections. Various installation options are available, examples are detailed in our Methods of Installation Manual. This product is flexible and versatile and can be modified to meet most special requirement on size and installation



Features & Benefits

- Independently tested to the BS EN1366 -2 test for integrity and leakage requirements achieving an ES240 classification.
- Unique double skin blade design that achieves low leakage tested to British and American standards without the need for synthetic blade seals.
- Closure maintained by the unique “knee-lock” mechanism which prevents blades from re-opening the damper.
- Wide range of actuators are available from Belimo, Honeywell and Johnson's to meet most requirements on control option conversion.
- Junction box including test button that allows easy site wiring connection.
- All components fitted to the damper so installation simple and straight forward, therefore no additional modification to ductwork.

Material Specification

Blades: Double skin 1.0mm galvanised mild steel as standard. Double skin 1.0mm grade 430 stainless steel optional

Frame: 1.6mm galvanised mild steel standard, 1.6mm grade 430 stainless steel optional

Frame Corners: Die formed corner channels, button locked for strength and rigidity

Casings: 1.2mm galvanised mild steel standard, 1.2mm grade 430 stainless steel optional

Casing Corners: Welded mitre corners finished with aluminium aerosol spray.

Linkage: External linkage. Enclosed within the frame and out of air stream. Zinc electroplated mild steel.

Bearings: Oil filled sintered bronze up to 200°C.

Axles: 12.7mm diameter zinc electroplated mild steel bolted directly through the blade.

Jackshaft: Zinc electroplated mild steel.

Top, Bottom & Side Jamb Seals: Cambered grade 301 stainless steel.

Electrical Conversion Control Options

Spring Closed

The actuator without power the blades will be in the closed position and when power applied the blades will fully open. In alarm the power would be removed the damper blades fully close within 16 seconds. When the mechanical fusible link reaches 74°C it breaks breaking the connection with the actuator. The blades would not reopen until the fusible link is replaced.

Spring Open - Fail Safe Closed

The damper without power the blades will be in the open position and when power applied the blades will close fully shut. In alarm the power would be removed and the blades will fully open within 16 seconds until the mechanical fusible link reaches 74°C the blades will instantly shut by breaking the connection to the actuator.

Modulating - Volume Control

The actuators without power the blades will be in the closed position and when power is applied the blades will fully open. From the open position through a signal 0-10 volts the damper blades can be adjusted between fully open and fully closed allowing volume control. In alarm the power is removed closing the blades within 16 seconds. When the mechanical link reaches 74°C it breaks the connection to the actuator.

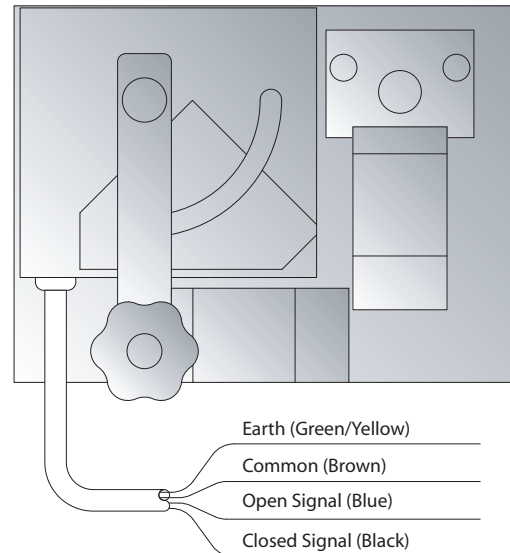
Blade Indication - Micro switches

To give indication of the blade position to BMS or similar, integral micro switches are supplied as standard.

Wiring Details

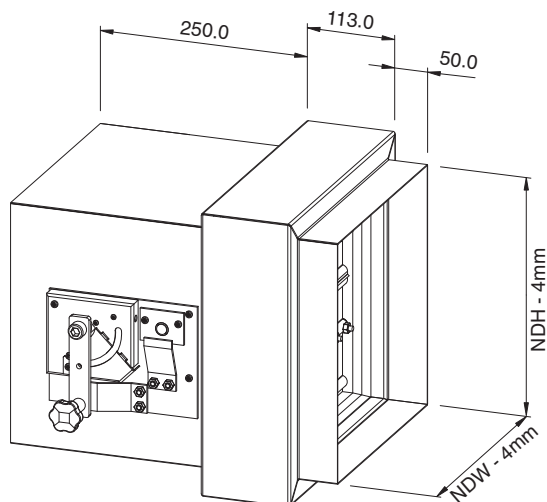
The 2540 is supplied with a flying lead as standard. All connections to the cable are to be made as per the wiring diagram (right).

For further details, please contact Advanced Air Sales.



Dimensional Detail

Rectangular Spigotted Models



NDW - Nominal Duct Width
NDH - Nominal Duct Height

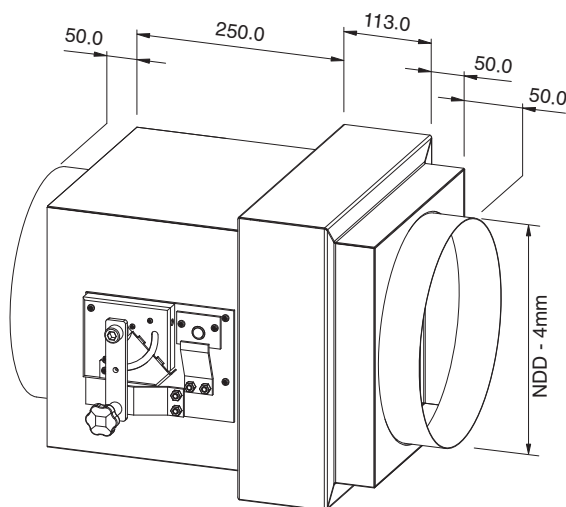
Overall Casing Width/Height = Duct Width/Height + 50mm

Minimum Single Section Duct Size: 100mm x 100mm
Maximum Single Section Duct Size: 750mm x 1000mm

For damper sizes below 200mm width or height, the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

Circular Spigotted Models



NDD - Nominal Duct Diameter

Overall Casing Width/Height = Duct Diameter + 75mm

Minimum Single Section Duct Size: Ø100mm
Maximum Single Section Duct Size: Ø750mm

For damper sizes below Ø200mm the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

For all other spigot and frame types, contact Advanced Air Sales.

Multiple Section Units

For requirements over the maximum allowable single section size, Advanced Air dampers can be provided in multiple section arrangements. Please contact Advanced Air Sales for further details.

Where multiple arrangements of dampers are required to be fitted, the installer should submit their proposed arrangement to the relevant local authority of fire officer responsible for installation,

How to Order or To Specify

Hand Control Fire Smoke Dampers - Type 2540

		2 5 4 0 - 1 1 (0 0 1)			
Model				Bearings	
Hand Control				Oilite (Up To 200°C)	3
Fire Smoke Damper	254			Construction	
				74°C Fusible Link	0
Operation				Material	
Right Hand Drive	0			Galvanised Mild Steel	0
Left Hand Drive	2			430 Grade Stainless Steel Blades, Galvanised Mild Steel Casing	1
Drive Both Sides (Multiple Sections)	5			430 Grade Stainless Steel Blades and Casing	2
Duct Connection					
Rectangular Spigot	1				
Circular Spigot	2				
Flat-Oval Spigot	3				
Mounting Type					
None (default)	0				
HEVAC/HVCA Frame	1				
Dry Wall/HEVAC					
Combination Frame	6				
Dry Wall Flange	7				

Notes:

- Cleats are available as an additional accessory. For further details of installation accessories, please refer to page 32

Suggested Specification - Hand Control Fire Smoke Dampers

External Test and Reset Fire Dampers

External test and reset fire dampers shall be provided in the positions as indicated on the drawings and be suitable for mounting in the horizontal or vertical plane. They shall be certified by the manufacturer to have been tested to the temperature time curve of BS ISO 10294 for a period of 4 hours with a classification of ES 240 as stated in BS ISO 10294-2.

All external test and reset fire dampers shall have a factory fitted installation to HVCA 20.1.83 specification and the Mechanical Contractor shall allow for all additional framing, supports and bracing securing the damper to the structure, to the satisfaction of the Building Control Officer.

All external test and reset fire dampers shall be manufactured with galvanised blades of double skin construction. The blades shall be housed within a galvanised mild steel casing with stainless steel side jamb s, oilite bearings and spigot connections. The fire damper shall be supplied with an external testing and replaceable mechanical fusible link to activate at 74°C, allowing the blades to instantly return to the fully closed position via the mechanical spring. The fire damper shall be complete with integral micro switches with volt free contacts for remote blade position indication.

The external test and reset fire dampers shall operate up to 1500 Pa positive or negative pressure at a maximum velocity of 20m/s.

All external test and reset fire dampers shall be Model 2540 as manufactured by Advanced Air (UK) Ltd or equal and approved.

Mechanical Release Fire Smoke Dampers

Type 2550

The model 2550 is designed to close and stay closed in a fire situation creating a 4 hour fire rated barrier to stop the spread of fire, smoke and toxic fumes. The 2550 incorporates the new unique interlocking opposed blade design that eliminates the need for blade seals which burn out during fire conditions. The blade profile is of aerodynamic double skin construction, and gives a metal to metal seal, which achieves low leakage performance as stipulated in BS EN1366-2 ES classification for 240 minutes in both horizontal and vertical installations.

The 2550 includes a unique and versatile jackshaft arrangement with a mechanical fusible link rated at 74°C. In alarm condition the power to the actuator is removed closing the blades within 16 seconds. When the temperature is reached the fusible link breaks the connection between the actuator and the blades. The blades are then held in the closed position by the knee-lock mechanism and can not be reopened until the fusible link has been replaced.

The jackshaft arrangement allows multiple section units to be connected and driven by one actuator depending on torque requirements. The 2550 damper is available with spigotted connections. Various installation options are available, examples are detailed in our Methods of Installation Manual. This product is flexible and versatile and can be modified to meet most special requirements on size and installation.



Features & Benefits

- Independently tested to the BS EN1366 -2 test for integrity and leakage requirements achieving an ES240 classification.
- Unique double skin blade design that achieves low leakage tested to British and American standards without the need for synthetic blade seals.
- Closure maintained by the unique “knee-lock” mechanism which prevents blades from re-opening the damper.
- Wide range of actuators are available from Belimo, Honeywell and Johnson's to meet most requirements.
- Junction box that allows easy site wiring connection.
- All components fitted to the damper so installation simple and straight forward, therefore no additional modification to ductwork.

Material Specification

Blades: Double skin 1.0mm galvanised mild steel as standard. Double skin 1.0mm grade 430 stainless steel optional

Frame: 1.6mm galvanised mild steel standard, 1.6mm grade 430 stainless steel optional

Frame Corners: Die formed corner channels, button locked for strength and rigidity

Casings: 1.2mm galvanised mild steel standard, 1.2mm grade 430 stainless steel optional

Casing Corners: Welded mitre corners finished with aluminium aerosol spray.

Linkage: External linkage. Enclosed within the frame and out of air stream. Zinc electroplated mild steel.

Bearings: Oil filled sintered bronze up to 200°C.

Axles: 12.7mm diameter zinc electroplated mild steel bolted directly through the blade.

Jackshaft: Zinc electroplated mild steel.

Top, Bottom & Side Jamb Seals: Cambered grade 301 stainless steel.

Control Options

Standard Control - Spring Closed

The actuator without power the blades will be in the closed position and when power applied the blades will fully open. In alarm the power would be removed the damper blades fully close within 16 seconds. When the mechanical fusible link reaches 74°C it breaks breaking the connection with the actuator. The blades would not reopen until the fusible link is replaced.

Spring Open - Fail Safe Closed

The damper without power the blades will be in the open position and when power applied the blades will close fully shut. In alarm the power would be removed and the blades will fully open within 16 seconds until the mechanical fusible link reaches 74°C the blades will instantly shut by breaking the connection to the actuator.

Modulating - Volume Control

The actuators without power the blades will be in the closed position and when power is applied the blades will fully open. From the open position through a signal 0-10 volts the damper blades can be adjusted between fully open and fully closed allowing volume control. In alarm the power is removed closing the blades within 16 seconds. When the mechanical link reaches 74°C it breaks the connection to the actuator.

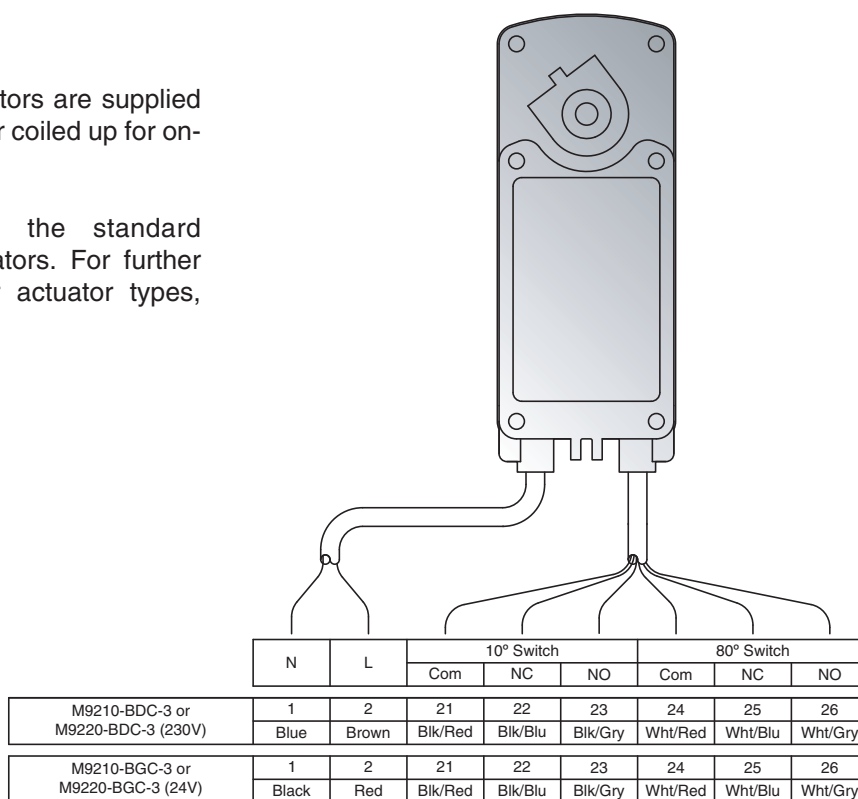
Blade Indication - Micro switches

To give indication of the blade position to BMS or similar micro switches that can be supplied integral to the actuator or mounted within the damper.

Wiring Details

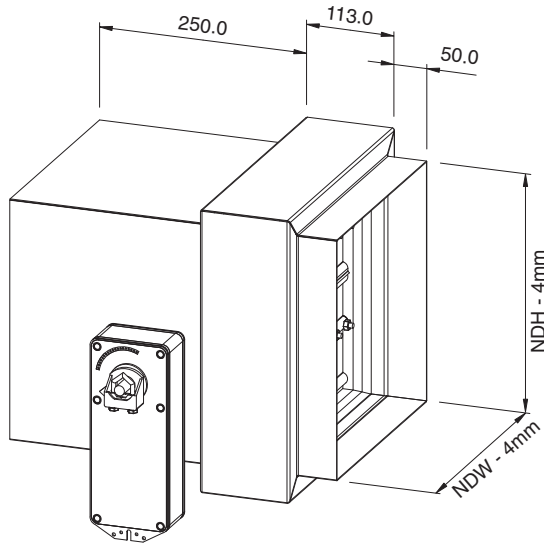
2550 type dampers with electrical actuators are supplied to site with the flying leads of the actuator coiled up for on-site connection.

The wiring diagram (right) shows the standard connections for all Johnson type actuators. For further details, or full wiring details for other actuator types, please contact Advanced Air Sales.



Dimensional Detail

Rectangular Spigotted Models



NDW - Nominal Duct Width
NDH - Nominal Duct Height

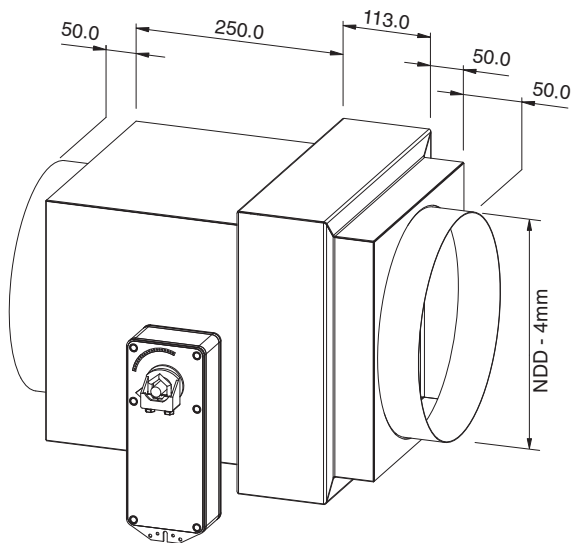
Overall Casing Width/Height = Duct Width/Height + 50mm

Minimum Single Section Duct Size: 100mm x 100mm
Maximum Single Section Duct Size: 750mm x 1000mm

For damper sizes below 200mm width or height, the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

Circular Spigotted Models



NDD - Nominal Duct Diameter

Overall Casing Width/Height = Duct Diameter + 75mm

Minimum Single Section Duct Size: Ø100mm
Maximum Single Section Duct Size: Ø750mm

For damper sizes below Ø200mm the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

For all other spigot and frame types, contact Advanced Air Sales.

Multiple Section Units

For requirements over the maximum allowable single section size, Advanced Air dampers can be provided in multiple section arrangements. Please contact Advanced Air Sales for further details.

Where multiple arrangements of dampers are required to be fitted, the installer should submit their proposed arrangement to the relevant local authority of fire officer responsible for installation,

How to Order or To Specify

Mechanical Release Fire Smoke Dampers - Type 2550

		2 5 5 0 - 1 1 (0 0 1)			
Model				Bearings	
Mechanical Release				Oilite (Up To 200°C)	3
Fire Smoke Damper	255			Construction	
				74°C Fusible Link	0
Operation				Material	
Right Hand Drive	0			Galvanised Mild Steel	0
Left Hand Drive	2			430 Grade Stainless Steel Blades, Galvanised Mild Steel Casing	1
Drive Both Sides (Multiple Sections)	5			430 Grade Stainless Steel Blades and Casing	2
Duct Connection					
Flanged Frame	0				
Rectangular Spigot	1				
Circular Spigot	2				
Flat-Oval Spigot	3				
Rectangular Sleeve	4				
Mounting Type					
None (default)	0				
HEVAC/HVCA Frame	1				
Dry Wall/HEVAC					
Combination Frame	6				
Dry Wall Flange	7				

Notes:

- Cleats are available as an additional accessory. For further details of installation accessories, please refer to page 32

Suggested Specification - Mechanical Release Fire Smoke Dampers

Fire Smoke dampers shall be provided in the positions as indicated on the drawings and shall be suitable for mounting in the horizontal or vertical plane. They shall be certified by the manufacturer to have been tested to the temperature time curve of BS ISO 10294 for a period of 4 Hours with a classification of ES 240 as stated in BS ISO 10294-2.

All fire smoke dampers shall have factory fitted installation frames to HVCA 20.1.83 specification and the Mechanical Contractor shall allow for all additional framing, supports and bracing to secure the damper to the structure to the satisfaction of the Building Control Officer.

All fire smoke dampers to be manufactured with galvanised blades of double skin construction. The blades shall be housed within a galvanised mild steel casing with stainless steel side jambs and spigot connections. The fire smoke damper shall have a mechanical fail safe fusible link in the air stream set at 74° C which breaks the connection with the actuator causing the blades to slam shut. (The actuator shall be factory fitted.)

The fire smoke dampers shall operate up to 1500 Pa positive or negative pressure at a maximum velocity of 20 m/s.

All fire smoke dampers shall be independently supported of the ductwork on each side of the blades and mounting frames, supports and sleeves are to be approved by the requisite Fire Authorities and Building Control Officer.

All Fire Smoke Dampers to be Model 2550 as manufactured by Advanced Air (UK) Ltd or equal and approved.

UL Specification, Airfoil Blade Fire Smoke Dampers

Type 1220

The model 1220 has been designed to meet the test requirements of UL555 (fire) and UL555S (high temperature/smoke). The 1220 incorporates the new unique interlocking opposed blade design that eliminates the need for blade seals which burn out during fire conditions. The blade profile is of aerodynamic double skin construction, and gives a low leakage metal to metal seal, that prevents the spread of spread of fire, smoke and toxic fumes.

The 1200 includes a unique and versatile jackshaft arrangement with an electrical thermal fuse rated at 74°C. When the temperature is reached the actuator power is disengaged and then the actuator closes the blades within 15 seconds. The blades are then held in the closed position by the knee-lock mechanism therefore not relying on the actuator to hold the blades closed.

The 1220 is UL555 Dynamic Fire Damper, 1 1/2 and 3 hour label (File No:9492)
UL555S classified Smoke Damper, Leakage Class I or II at 250 or 350°F (File No:9492)

The 1220 can be supplied in multiple sections in line with the maximum sizes tested. The actuator has to be factory fitted and be of a type that has successfully tested on the 1220 at elevated temperatures. Damper installation to be as UL specification that is sleeve and angle. All 1220 are supplied with the UL labeling stating classification.



Features & Benefits

- Independently tested UL555 and UL555S
- Unique double skin blade design that achieves low leakage tested to British and American standards without the need for synthetic blade seals.
- Closure maintained by the unique “knee-lock” mechanism which prevents blades from re-opening the damper.
- Wide range of actuators are available from Belimo, Honeywell and Johnson's to meet most requirements.
- Junction box including test button that allows easy site wiring connection.
- Damper can be supplied with Sleeves for easier installation.

Material Specification

Frame: 127 x 22 x 1.6mm (5" x 7/8" x 16ga.) galvanised steel hat channel.

Blades: 2.0mm (14 ga.) equivalent galvanised steel formed airfoil on 125mm (5") centres. Opposed action.

Linkage: Concealed in frame. 2.7mm (12 ga.) plated steel.

Bearings: Ø12.7mm (Ø1/2") self-lubricating oilite bronze.

Axles: Ø12.7mm (Ø1/2") plated steel double bolted to blades.

Jackshaft: Ø12.7mm (Ø1/2") cadmium plated steel.

Jamb Seals: Stainless Steel.

Control Options

Spring Closed

The actuator without power the blades will be in the closed position and when power applied the blades will fully open. In alarm the power would be removed the damper blades fully close within 16 seconds. When the mechanical fusible link reaches 74°C it breaks breaking the connection with the actuator. The blades would not reopen until the fusible link is replaced.

Blade Indication - Micro switches

To give indication of the blade position to BMS or similar micro switches that can be supplied integral to the actuator or mounted within the damper.

Actuator Details

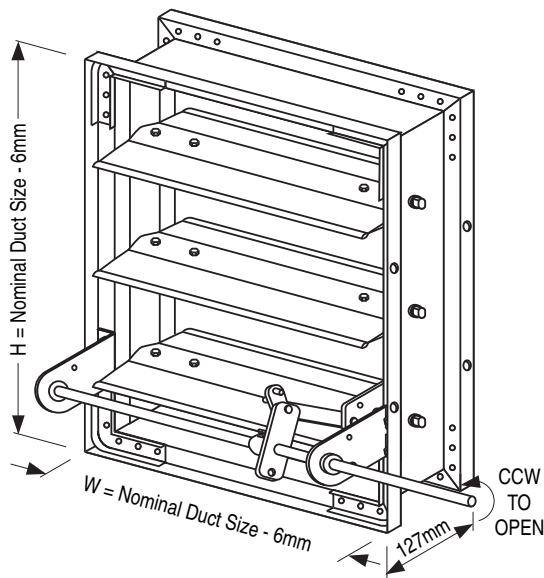
The UL specification 1220 damper can only be supplied with a specific range of actuators. For details on the full list of actuators available with the damper and all wiring details, please contact Advanced Air sales for further details.

Dimensional Detail

Sleeve Frame Models

Model 1220 1 1/2 Hour Label

Model 1220-3 3 Hour Label



Minimum Single Section Duct Size:
203mm x 203mm (8" x 8")

Maximum Single Section Duct Size:
914mm x 1210mm (36" x 48") Vertical Mount
813mm x 1219mm (32" x 48") Horizontal Mount

Note: In all correspondence with Advanced Air, duct sizes are stated as width x height.

For all other spigot and frame types, contact Advanced Air Sales.

Multiple Section Units

For requirements over the maximum allowable single section size, Advanced Air dampers can be provided in multiple section arrangements.

Maximum Multiple Section Duct Size (1 1/2 Hour Label Only):

Vertical Mount: 3658mm x 2438mm (144" x 96")

Horizontal Mount: 3251mm x 2438mm (128" x 96")

Note: 3 hour rated multiple section assemblies are not permitted.

Please contact Advanced Air Sales for further details.

Smoke Dampers

Type 2560

The 2560 has been designed to allow the extraction of smoke and toxic fumes during fire conditions. The 2560 incorporates the new unique interlocking opposed blade design that eliminates the need for blade seals which burn out during fire conditions. The blade profile is of aerodynamic double skin construction, and gives a metal to metal seal, which achieves low leakage performance.

The 2560 includes a unique and versatile jackshaft arrangement and knee-lock mechanism that holds the blades closed in the event of the actuator failure. In the fully closed position, with power off, the damper will maintain stability and integrity for 4 hours.

The jackshaft arrangement allows multiple section units to be connected and driven by one actuator depending on torque requirements. The 2560 damper is available with spigotted connections. Various installation options are available, examples are detailed in our Methods of Installation Manual. This product is flexible and versatile and can be modified to meet most special requirements on size and installation.



Features & Benefits

- In the fully closed position, with power off, the damper will maintain stability and integrity for 4 hours.
- Unique double skin blade design that achieves low leakage tested to British and American standards without the need for synthetic blade seals.
- Closure maintained by the unique “knee-lock” mechanism which prevents blades from re-opening the damper.
- Wide range of actuators are available from Belimo, Honeywell and Johnson's to meet most requirements.
- Junction box including test button that allows easy site wiring connection.
- All components fitted to the damper so installation simple and straight forward, therefore no additional modification to ductwork.

Material Specification

Blades: Double skin 1.0mm galvanised mild steel as standard. Double skin 1.0mm grade 430 stainless steel optional

Frame: 1.6mm galvanised mild steel standard, 1.6mm grade 430 stainless steel optional

Frame Corners: Die formed corner channels, button locked for strength and rigidity

Casings: 1.2mm galvanised mild steel standard, 1.2mm grade 430 stainless steel optional

Casing Corners: Welded mitre corners finished with aluminium aerosol spray.

Linkage: External linkage. Enclosed within the frame and out of air stream. Zinc electroplated mild steel.

Bearings: Oil filled sintered bronze up to 200°C standard. Optional grade 303 stainless steel up to 650°C is also available.

Axles: 12.7mm diameter zinc electroplated mild steel bolted directly through the blade.

Jackshaft: Zinc electroplated mild steel.

Top, Bottom & Side Jamb Seals: Cambered grade 301 stainless steel.

Control Options

Fail Safe Closed

The spring return actuator is set-up when without power the blades will be fully closed. When power is applied the blades go to the fully open position. In alarm condition the power is removed the damper blades close within 15 seconds.

Fail Safe Open

The spring return actuator is set-up when without power the blades will be fully open. When power is applied the blades go to the fully closed position. In alarm condition the power is removed the damper blades open within 15 seconds.

Modulating - Volume Control

The 2560 can be supplied with a modulating spring return actuator that allows the blades to be adjusted therefore giving volume control option. With power using 0-10v signal the damper blades can be set anywhere between fully open and fully closed. Depending on how the actuator is set at the factory the damper can be fail safe closed or open.

Power Open and Closed - No fail safe Position

The damper blades are powered open and powered closed that allows the damper to be controlled during a fire situation. When power fails the damper blades will stop and stay in that position.

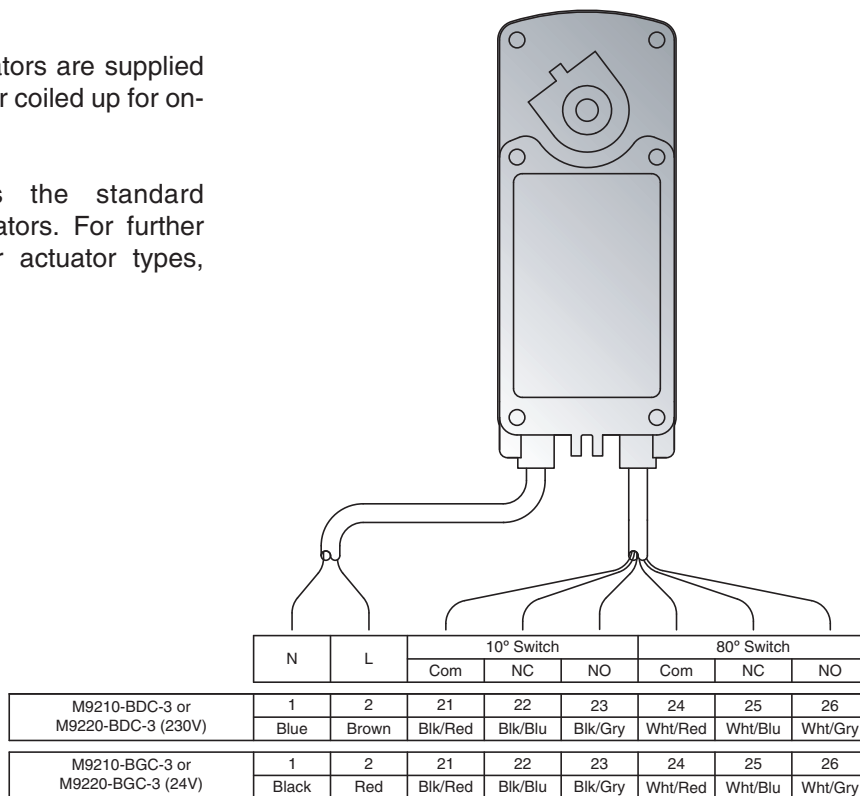
Blade Indication - Micro switches

To give indication of the blade position to BMS or similar micro switches that can be supplied integral to the actuator.

Wiring Details

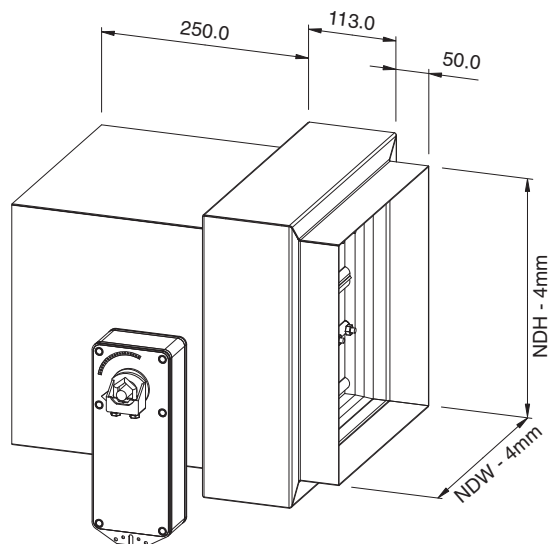
2560 type dampers with electrical actuators are supplied to site with the flying leads of the actuator coiled up for on-site connection.

The wiring diagram (right) shows the standard connections for all Johnson type actuators. For further details, or full wiring details for other actuator types, please contact Advanced Air Sales.



Dimensional Detail

Rectangular Spigotted Models



NDW - Nominal Duct Width
NDH - Nominal Duct Height

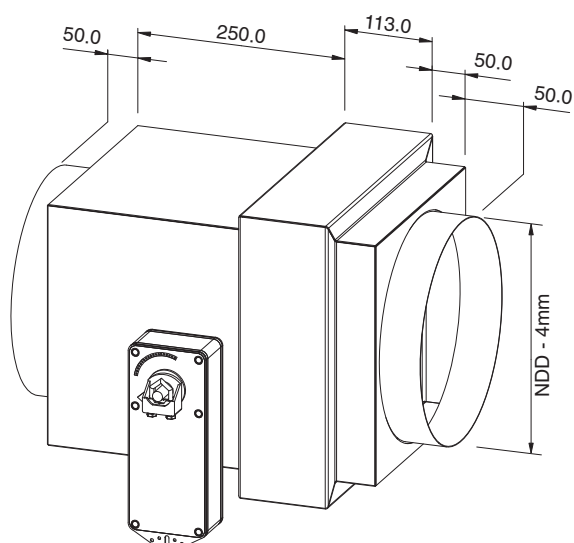
Overall Casing Width/Height = Duct Width/Height + 50mm

Minimum Single Section Duct Size: 100mm x 100mm
Maximum Single Section Duct Size: 750mm x 1000mm

For damper sizes below 200mm width or height, the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

Circular Spigotted Models



NDD - Nominal Duct Diameter

Overall Casing Width/Height = Duct Diameter + 75mm

Minimum Single Section Duct Size: Ø100mm
Maximum Single Section Duct Size: Ø750mm

For damper sizes below Ø200mm the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

For all other spigot and frame types, contact Advanced Air Sales.

Multiple Section Units

For requirements over the maximum allowable single section size, Advanced Air dampers can be provided in multiple section arrangements. Please contact Advanced Air Sales for further details.

Where multiple arrangements of dampers are required to be fitted, the installer should submit their proposed arrangement to the relevant local authority of fire officer responsible for installation,

How to Order or To Specify

Smoke Dampers - Type 2560

		2 5 6 0 - 1 1 (0 0 1)		
Model	_____			Bearings
Smoke Damper	256			Oilite (Up To 200°C) 3
				Grade 303 S/S (Up To 650°C) 4
Operation	_____			Construction
Right Hand Drive	0			No Fusible Link 1
Left Hand Drive	2			Material
Drive Both Sides (Multiple Sections) 5				Galvanised Mild Steel 0
Duct Connection	_____			430 Grade Stainless Steel Blades, Galvanised Mild Steel Casing 1
Flanged Frame	0			430 Grade Stainless Steel Blades and Casing 2
Rectangular Spigot	1			
Circular Spigot	2			
Flat-Oval Spigot	3			
Rectangular Sleeve	4			
Mounting Type	_____			
None (default)	0			
HEVAC/HVCA Frame	1			
Dry Wall/HEVAC				
Combination Frame	6			
Dry Wall Flange	7			

Notes:

- Cleats are available as an additional accessory. For further details of installation accessories, please refer to page 32

The 2560 can be supplied with Honeywell Actuator (S20 230/24F) with 200°C oilite bearings for operation up to 176°C for 30mins. Please contact Advanced Air sales for more details.

Suggested Specification - Smoke Dampers

Smoke control dampers shall be provided in the positions as indicated on the drawings and shall be suitable for mounting in the horizontal or vertical plane. They shall be certified by the manufacturer to have been tested to the temperature time curve of BS ISO 10294, for a period of 4 hours with a classification of ES 240 in the fully closed position with power off.

Smoke control dampers shall have factory fitted installation frames to HVCA 10.1.83 specification and the Mechanical Contractor shall allow for all additional framing, supports and bracing securing the damper to the structures, to the satisfaction of the Building Control Officer.

All smoke control dampers shall be manufactured with galvanised blades of double skin construction. The blades shall be housed within a galvanised mild steel casing with stainless steel side jambs, oilite bearings and spigot connections

The smoke control damper shall be supplied with a factory fitted actuator, complete with integral micro switches and controlled mechanical fail safe operation of not more than 20 seconds.

The fire smoke dampers shall operate up to maximum velocity of 20 m/s.

All smoke control dampers to be model 2560 as manufactured by Advanced Air (UK) Ltd or equal and approved.

300°C/120mins High Temperature Smoke Dampers

Type 2590

The 2590 has been designed to operate at 300°C for 2 hours to allow the extraction of smoke and toxic fumes during fire conditions. The 2590 incorporates the new unique interlocking opposed blade design that eliminates the need for blade seals which burn out during fire conditions. The blade profile is of aerodynamic double skin construction, and gives a metal to metal seal, which achieves low leakage performance.

The 2590 includes a unique and versatile jackshaft arrangement and knee-lock mechanism that holds the blades closed in the event of the actuator failure.

The jackshaft arrangement allows multiple section units to be connected and driven by one actuator depending on torque requirements. The 2590 damper is available with spigotted connections. Various installation options are available, examples are detailed in our Methods of Installation Manual. This product is flexible and versatile and can be modified to meet most special requirements on size and installation.



Features & Benefits

- In the fully closed position, with power off, the damper will maintain stability and integrity for 4 hours.
- Independently tested and witnessed by LPCB.
- Unique double skin blade design that achieves low leakage tested to British and American standards without the need for synthetic blade seals.
- Closure maintained by the unique “knee-lock” mechanism which prevents blades from re-opening the damper.
- Wide range of actuators are available from Belimo, Honeywell and Johnson's to meet most requirements.
- All components fitted to the damper so installation simple and straight forward, therefore no additional modification to ductwork.

Material Specification

Blades: Double skin 1.0mm galvanised mild steel as standard. Double skin 1.0mm grade 430 stainless steel optional

Frame: 1.6mm galvanised mild steel standard, 1.6mm grade 430 stainless steel optional

Frame Corners: Die formed corner channels, button locked for strength and rigidity

Casings: 1.2mm galvanised mild steel standard, 1.2mm grade 430 stainless steel optional

Casing Corners: Welded mitre corners finished with aluminium aerosol spray.

Linkage: External linkage. Enclosed within the frame and out of air stream. Zinc electroplated mild steel.

Bearings: Grade 303 stainless steel up to 650°C.

Axles: 12.7mm diameter zinc electroplated mild steel bolted directly through the blade.

Jackshaft: Zinc electroplated mild steel.

Top, Bottom & Side Jamb Seals: Cambered grade 301 stainless steel.

Control Options

Spring Open

The damper with power on will go to the closed position and power off will return to the open position

Spring Closed

The damper without power the blades will be in the open position and when power applied the blades will close fully shut

Modulating - Volume Control

When power is applied the blades will fully close. From the closed position through a signal 0-10 volts the damper blades can be adjusted between fully open and fully closed allowing volume control. In alarm the power is removed opening the blades within 16 seconds.

Power Open and Closed - No fail safe position

The damper blades are powered open and powered closed that allows the damper to be controlled during a fire situation. When power fails the damper blades will stop and stay in that position.

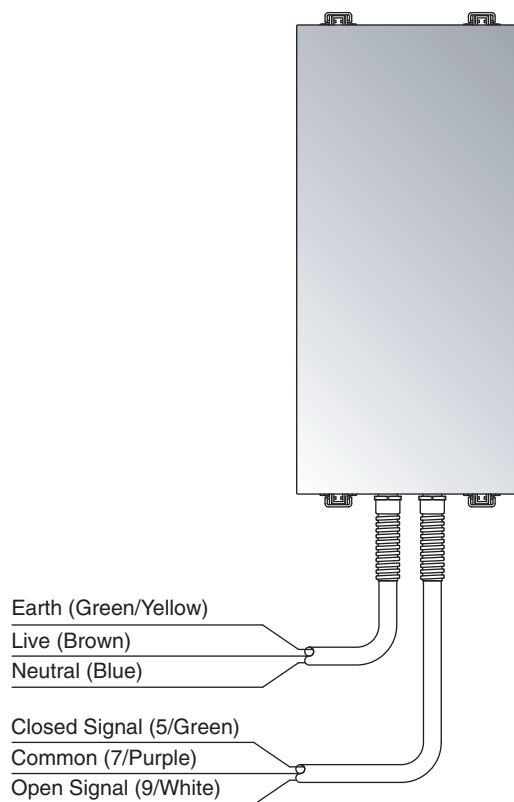
Blade Indication - Micro switches

To give indication of the blade position to BMS or similar, integral micro switches are supplied as standard.

Wiring Details

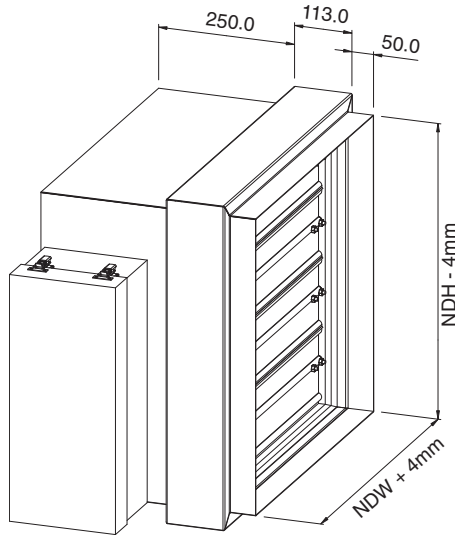
The 2590 type dampers with electrical actuators enclosed in a thermal enclosure are supplied to site with the flying leads to the actuator coiled up for on-site connection.

The wiring diagram (right) shows the standard connections for all Advanced Air type actuator enclosures. For further details, or full wiring details for other actuator types, please contact Advanced Air Sales.



Dimensional Detail

Rectangular Spigotted Models



NDW - Nominal Duct Width
NDH - Nominal Duct Height

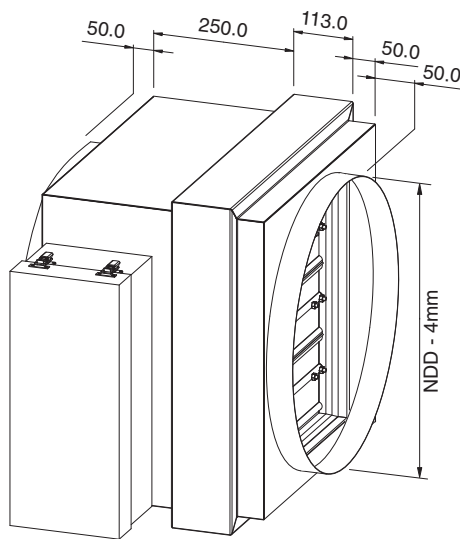
Overall Casing Width/Height = Duct Width/Height + 50mm

Minimum Single Section Duct Size: 100mm x 100mm
Maximum Single Section Duct Size: 750mm x 1000mm

For damper sizes below 200mm width or height, the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

Circular Spigotted Models



NDD - Nominal Duct Diameter

Overall Casing Width/Height = Duct Diameter + 75mm

Minimum Single Section Duct Size: Ø100mm
Maximum Single Section Duct Size: Ø750mm

For damper sizes below Ø200mm the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

For all other spigot and frame types, contact Advanced Air Sales.

Multiple Section Units

For requirements over the maximum allowable single section size, Advanced Air dampers can be provided in multiple section arrangements. Please contact Advanced Air Sales for further details.

Where multiple arrangements of dampers are required to be fitted, the installer should submit their proposed arrangement to the relevant local authority of fire officer responsible for installation,

How to Order or To Specify

300°C/120mins High Temperature Smoke Dampers - Type 2590

2 5 9 0 - 1 1 (0 0 1)			
Model		Bearings	
	300°C/120mins High Temperature Smoke Damper 259		Grade 303 S/S (Up To 650°C) 4
Operation		Construction	
	Right Hand Drive 0		No Fusible Link 1
	Left Hand Drive 2	Material	
	Drive Both Sides (Multiple Sections) 5		Galvanised Mild Steel 0
Duct Connection			430 Grade Stainless Steel Blades, Galvanised Mild Steel Casing 1
	Flanged Frame 0		430 Grade Stainless Steel Blades and Casing 2
	Rectangular Spigot 1		
	Circular Spigot 2		
	Flat-Oval Spigot 3		
	Rectangular Sleeve 4		
Mounting Type			
	None (default) 0		
	HEVAC/HVCA Frame 1		
	Dry Wall/HEVAC		
	Combination Frame 6		
	Dry Wall Flange 7		

Notes:

- Cleats are available as an additional accessory. For further details of installation accessories, please refer to page 32

Suggested Specification - 300°C/120mins High Temperature Smoke Dampers

300°C Smoke dampers shall be provided in the positions as indicated on the drawings and shall be suitable for mounting in the horizontal or vertical plane.

They shall be certified by the manufacturer to have been tested to the time temperature curve of BS ISO 10294-1 and shall maintain their integrity for a period of up to 4hours in the fully closed position with power off.

All smoke dampers shall be manufactured with galvanised blades of double skin construction. The blades shall be housed within a galvanised mild steel casing with stainless steel side jambs, stainless steel bearings and spigot connections.

The actuator shall be thermally protected and include integral micro switches to provide remote indication of blade status. The actuator shall be factory fitted.

The fire smoke dampers shall operate up to 1500 Pa positive or negative pressure at a maximum velocity of 20 m/s.

The manufacturer shall certify the high temperature smoke dampers have been independently tested and witnessed for operation at 300°C under static conditions.

Smoke dampers shall have factory fitted installation frames to HVCA 20.1.83 specification and the Mechanical Contractor shall allow for all additional framing, supports and bracing securing the damper to the structure to the satisfaction of the Building Control Officer

All fire dampers shall be the Model 2590, 120 mins as manufactured by Advanced Air (UK) Ltd or equal and approved.

300°C/60mins High Temperature Smoke Dampers

Type 2590

The 2590 has been designed to operate at 300°C for 1 hour to allow the extraction of smoke and toxic fumes during fire conditions. The 2590 incorporates the new unique interlocking opposed blade design that eliminates the need for blade seals which burn out during fire conditions. The blade profile is of aerodynamic double skin construction, and gives a metal to metal seal, which achieves low leakage performance.

The 2590 includes a unique and versatile jackshaft arrangement and knee-lock mechanism that holds the blades closed in the event of the actuator failure.

The jackshaft arrangement allows multiple section units to be connected and driven by one actuator depending on torque requirements. The 2590 damper is available with spigotted connections. Various installation options are available, examples are detailed in our Methods of Installation Manual. This product is flexible and versatile and can be modified to meet most special requirements on size and installation.



Features & Benefits

- In the fully closed position, with power off, the damper will maintain stability and integrity for 4 hours.
- Independently tested and witnessed by LPCB.
- Unique double skin blades design that achieves low leakage tested to British and American standards without the need for synthetic blade seals.
- Closure maintained by the unique “knee-lock” mechanism which prevents blades from re-opening the damper.
- Wide range of actuators are available from Belimo, Honeywell and Johnson's to meet most requirements.
- All components fitted to the damper so installation simple and straight forward, therefore no additional modification to ductwork.

Material Specification

Blades: Double skin 1.0mm galvanised mild steel as standard. Double skin 1.0mm grade 430 stainless steel optional

Frame: 1.6mm galvanised mild steel standard, 1.6mm grade 430 stainless steel optional

Frame Corners: Die formed corner channels, button locked for strength and rigidity

Casings: 1.2mm galvanised mild steel standard, 1.2mm grade 430 stainless steel optional

Casing Corners: Welded mitre corners finished with aluminium aerosol spray.

Linkage: External linkage. Enclosed within the frame and out of air stream. Zinc electroplated mild steel.

Bearings: Grade 303 stainless steel up to 650°C.

Axles: 12.7mm diameter zinc electroplated mild steel bolted directly through the blade.

Jackshaft: Zinc electroplated mild steel.

Top, Bottom & Side Jamb Seals: Cambered grade 301 stainless steel.

Control Options

Spring Open

The damper with power on will go to the closed position and power off will return to the open position

Spring Closed

The damper without power the blades will be in the open position and when power applied the blades will close fully shut

Modulating - Volume Control

When power is applied the blades will fully open. From the open position through a signal 0-10 volts the damper blades can be adjusted between fully open and fully closed allowing volume control. In alarm the power is removed closing the blades within 16 seconds.

Power Open and Closed - No fail safe Position

The damper blades are powered open and powered closed that allows the damper to be controlled during a fire situation. When power fails the damper blades will stop and stay in that position.

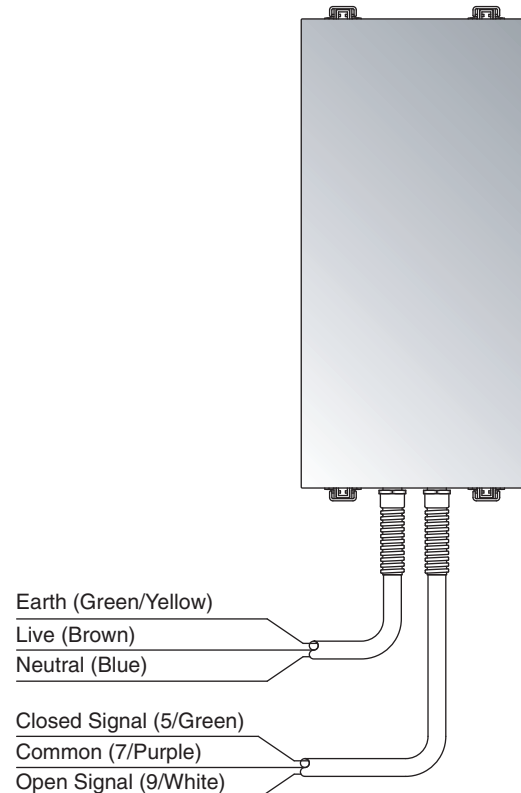
Blade Indication - Micro switches

To give indication of the blade position to BMS or similar, integral micro switches are supplied as standard.

Wiring Details

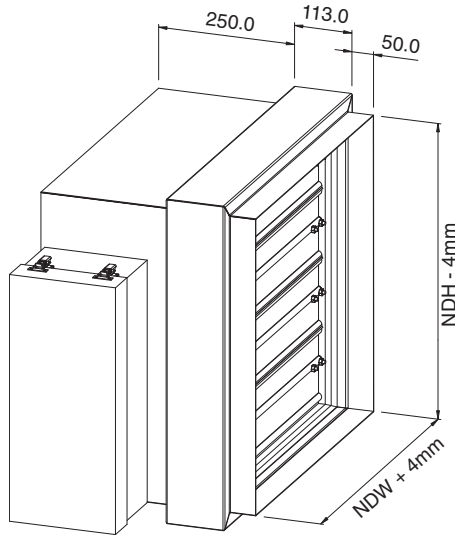
The 2590 type dampers with electrical actuators enclosed in a thermal enclosure are supplied to site with the flying leads to the actuator coiled up for on-site connection.

The wiring diagram (right) shows the standard connections for all Advanced Air type actuator enclosures. For further details, or full wiring details for other actuator types, please contact Advanced Air Sales.



Dimensional Detail

Rectangular Spigotted Models



NDW - Nominal Duct Width
NDH - Nominal Duct Height

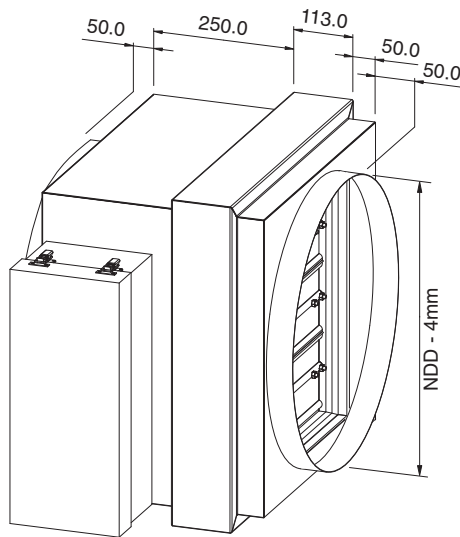
Overall Casing Width/Height = Duct Width/Height + 50mm

Minimum Single Section Duct Size: 100mm x 100mm
Maximum Single Section Duct Size: 750mm x 1000mm

For damper sizes below 200mm width or height, the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

Circular Spigotted Models



NDD - Nominal Duct Diameter

Overall Casing Width/Height = Duct Diameter + 75mm

Minimum Single Section Duct Size: Ø100mm
Maximum Single Section Duct Size: Ø750mm

For damper sizes below Ø200mm the casing length increases. Please contact our Advanced Air sales for full dimensional details.

Right Handed Unit Shown

For all other spigot and frame types, contact Advanced Air Sales.

Multiple Section Units

For requirements over the maximum allowable single section size, Advanced Air dampers can be provided in multiple section arrangements. Please contact Advanced Air Sales for further details.

Where multiple arrangements of dampers are required to be fitted, the installer should submit their proposed arrangement to the relevant local authority of fire officer responsible for installation,

How to Order or To Specify

300°C/60mins High Temperature Smoke Dampers - Type 2590

2 5 9 0 - 1 1 (0 0 1)			
Model		Bearings	
300°C/60mins High Temperature Smoke Damper	259	Grade 303 S/S (Up To 650°C)	4
Operation		Construction	
Right Hand Drive	0	No Fusible Link	1
Left Hand Drive	2	Material	
Drive Both Sides (Multiple Sections)	5	Galvanised Mild Steel	0
Duct Connection		430 Grade Stainless Steel Blades, Galvanised Mild Steel Casing	1
Flanged Frame	0	430 Grade Stainless Steel Blades and Casing	2
Rectangular Spigot	1		
Circular Spigot	2		
Flat-Oval Spigot	3		
Rectangular Sleeve	4		
Mounting Type			
None (default)	0		
HEVAC/HVCA Frame	1		
Dry Wall/HEVAC			
Combination Frame	6		
Dry Wall Flange	7		

Notes:

- Cleats are available as an additional accessory. For further details of installation accessories, please refer to page 32

Suggested Specification - 300°C/60mins High Temperature Smoke Dampers

300°C Smoke dampers shall be provided in the positions as indicated on the drawings and shall be suitable for mounting in the horizontal or vertical plane.

They shall be certified by the manufacturer to have been tested to the time temperature curve of BS ISO 10294-1 and shall maintain their integrity for a period of up to 4hours in the fully closed position with power off.

All smoke dampers shall be manufactured with galvanised blades of double skin construction. The blades shall be housed within a galvanised mild steel casing with stainless steel side jambs, stainless steel bearings and spigot connections.

The actuator shall be thermally protected and include integral microswitches to provide remote indication of blade status. The actuator shall be factory fitted.

The fire smoke dampers shall operate up to 1500 Pa positive or negative pressure at a maximum velocity of 20 m/s.

The manufacturer shall certify the high temperature smoke dampers have been independently tested and witnessed for operation at 300°C under static conditions.

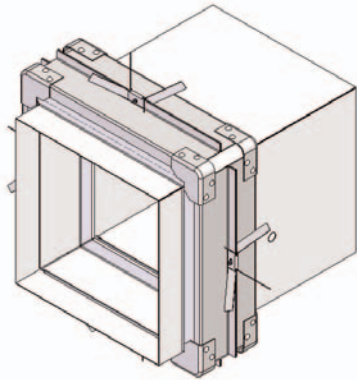
Smoke dampers shall have factory fitted installation frames to HVCA 20.1.83 specification and the Mechanical Contractor shall allow for all additional framing, supports and bracing securing the damper to the structure to the satisfaction of the Building Control Officer

All fire dampers shall be the Model 2590, 60 mins. as manufactured by Advanced Air (UK) Ltd or equal and approved.

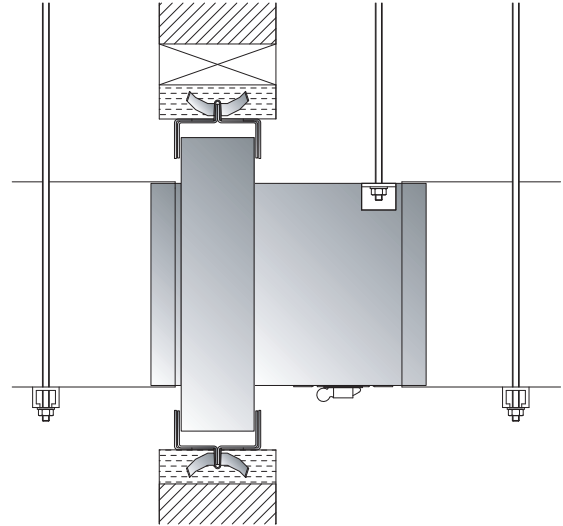
Installation Accessories

Advanced Air fire smoke dampers can be installed in a variety of walls and floors and to assist with installation dampers can be supplied with accessories to suit. All accessories are factory fitted with following available as standard.

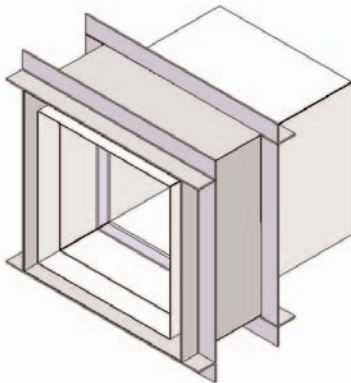
HEVAC Installation Frame



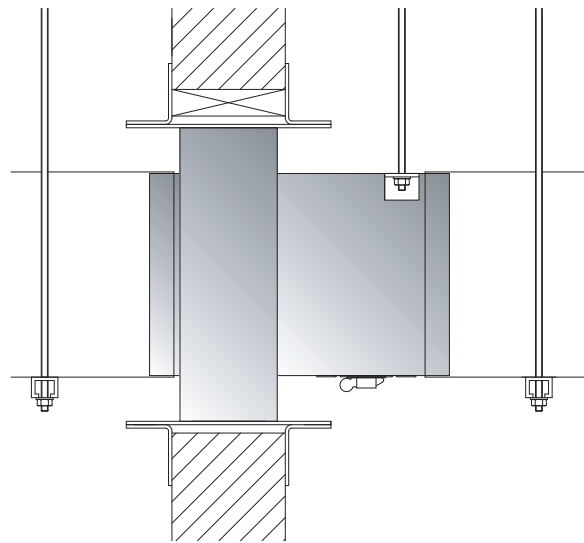
The HEVAC Installation frame allows the damper to be built directly into masonry walls and concrete floors. It allows the damper to expand in fire conditions, thus maintaining the integrity of the wall or floor.



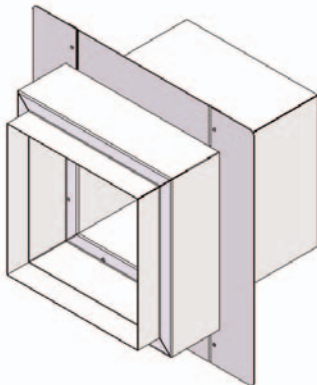
Sleeve and Angle Frame



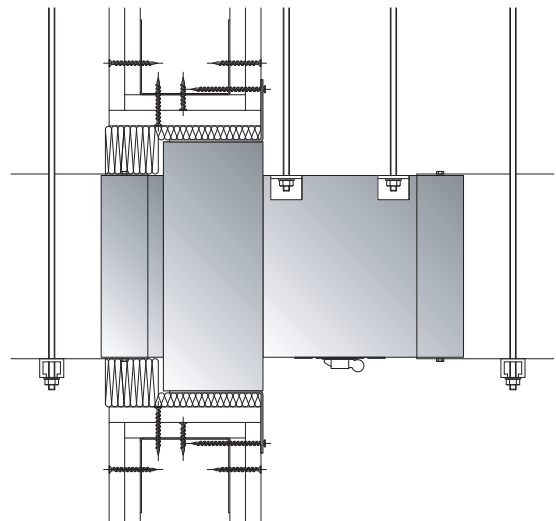
The Sleeve and Angle frame installation can be used as an alternative to the HEVAC frame. A sleeve can be factory fitted to the damper and additional angles are fixed to the flange which sandwiches the wall at the same time.



Dry Wall Frame



Dry wall frames can be used in all installations where the damper is being installed into dry wall partitions or together with fibrous curtains. The frame offers a means of connecting the damper assembly with the partition.



Fire and Smoke Damper Control Systems

It has long been established that the spread of smoke is not only damaging to a buildings structure, but it can be potentially fatal to human life. In recognition of this, Advanced Air have over a number of years developed a comprehensive range of Fire/Smoke damper control systems and panels to suit all building design applications and budgets. Advanced Air's range now includes five different panels to suit all building requirements.

Advanced Air recognises the need for 'value engineering' and continues to work closely with project consultants and customers to ensure that the most suitable and cost effective systems are used on each project. A brief overview of our control systems range is detailed below, please contact Advanced Air Sales for further details.

Control System Range

System 42

The System 42 is an addressable damper control system that can control and monitor up to 4032 dampers. Operating on a network of up to 8 panels. At each damper a decoder is installed providing a unique address, which enables each damper to be controlled individually or as a group. Power to the dampers is installed from local distribution boards and is terminated at each damper via a 13amp spur unit fused at 1amp. Building Management System (BMS) monitoring is via a Modbus link, and volt free contacts can provide general fault and alarm signals from the panel.



System 42 (S)

The system 42(S) is the standard version of the addressable system 42, complete with 24 alarm/override inputs as standard. From one panel you can control up to 504 dampers on 4 control loops. Up to 72 further inputs can be installed in a standard panel, with an extra 24 inputs on an extended version.

System 12

The system 12 is a hard-wired control panel that is built up in modules of 4. It can be manufactured to control and monitor up to 120 dampers. A unique feature of the panel is that up to 7 additional push buttons/display panels can be installed remotely. This is especially useful when space to install the panel is at a premium.



System 11

The system 11 is a hard-wired control panel manufactured to customer's requirements with unlimited scope on the number of alarm inputs and dampers controlled.

System 10

The system 10 is a hard-wired panel designed with small projects in mind. The panel comes in 4 sizes, controlling 12, 24, 36 and 48 dampers on up to 4 alarm zones. All dampers are panel driven at either 24v or 230v.

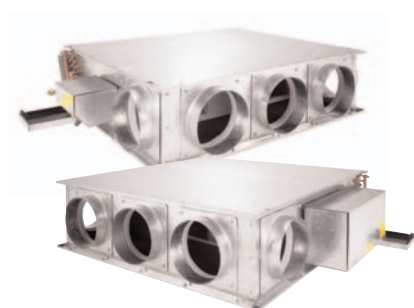


Other Products From Advanced Air

Air Control Products

We offer a range of Low leakage fire smoke dampers, tested to BS ISO 10294, which are used to prevent the spread of fire and smoke in a ventilation system. Our range also includes smoke and high temperature smoke dampers, which can be used up to 300°C for 120 minutes. The Advanced Air curtain fire dampers provide a wide range of models suitable for most applications.

A variety of control dampers from value solutions to a low leakage, low pressure drop, airfoil blade type can be supplied with a variety of control options, including motorised and manual control.



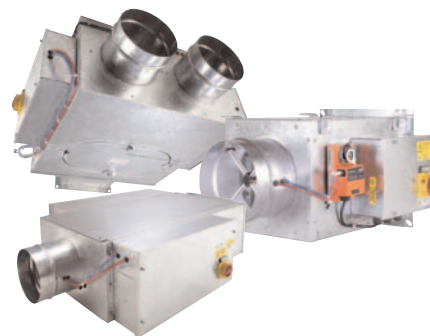
Fan Coil Units

Advanced Air and Nailor Industries have over 10 years experience in manufacturing bespoke and project specific fan coil units. As a result Advanced Air have invested in the development of the latest range of Energy Efficient and versatile Fan Coil Units in accordance with today's building regulations.

Advanced Air's energy efficient EPIC range of fan coil units offer infinite volume control and pressure independence and the CLASSIC range can be supplied with brush-less dc (EC), AC external rotor motor or fan deck options

VAV Terminal Units

Advanced Air offers a variety of Single Duct and Dual Duct units for different types of variable air volume systems. We also manufacture Fan Powered VAV units that use advance brush-less dc motors to give lower energy consumption and simpler commissioning.



Air Distribution Equipment

We manufacture an extensive range of grilles and diffusers including louvred face diffusers, linear slot diffusers, linear bar grilles, eggcrate grilles and door transfer grilles. All are supplied in a variety of finishes, powder coated to RAL9010 as standard, with other colours available.

In addition, we manufacture floor swirl diffusers which supply a low velocity, helical discharge air pattern, and also the "Twister" ceiling swirl diffuser. Also available is a range of external weather louvers that compliment the building design and are suitable for most wall configurations.

For more information on these products,
Please contact Advanced Air Sales

Advanced Air 

A Member of the Nailor Industries International Group

Fan Coil Units - Air Distribution Equipment - VAV Terminal Units
Air Control Products - Damper Control Panels - Electric Duct Heaters - Access Doors

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