

## High Temperature Smoke Dampers

Model 2590  
300°C for 120 mins



### 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.

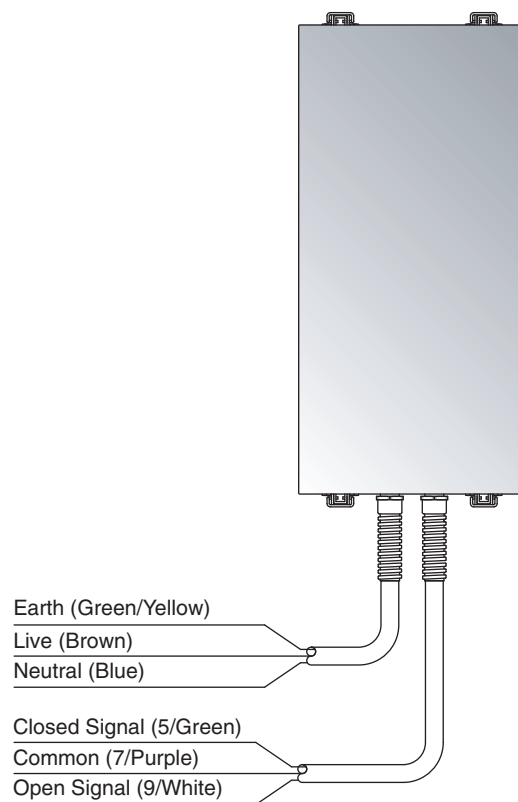
### Blade Indication - Micro switches

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

## Wiring Details

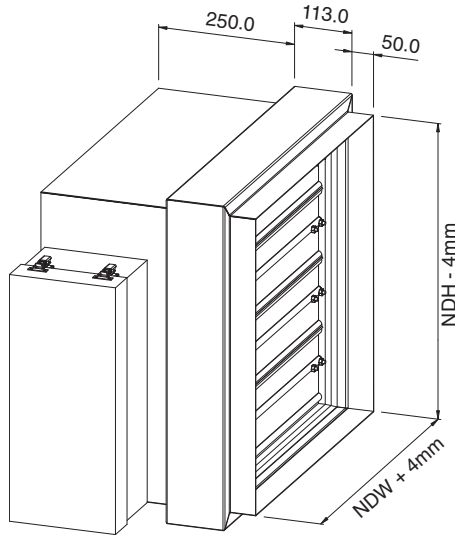
The 2590 type dampers with electrical actuators enclosed in a thermal enclosure are supplied to site with the flying leads to the actuator coiled up for on-site connection.

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

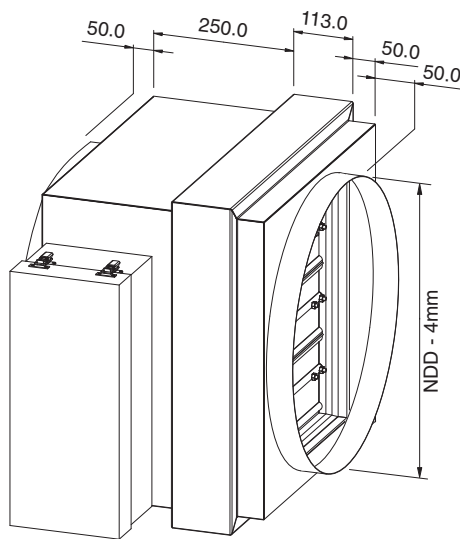
Overall Casing Width/Height = Duct Width/Height + 50mm

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)			
<b>Model</b>		<b>Bearings</b>	
	300°C/120mins High Temperature Smoke Damper                    259		Grade 303 S/S (Up To 650°C)    4
<b>Operation</b>		<b>Construction</b>	
	Right Hand Drive                    0		No Fusible Link                    1
	Left Hand Drive                    2	<b>Material</b>	
	Drive Both Sides (Multiple Sections) 5		Galvanised Mild Steel            0
<b>Duct Connection</b>			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		
<b>Mounting Type</b>			
	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.

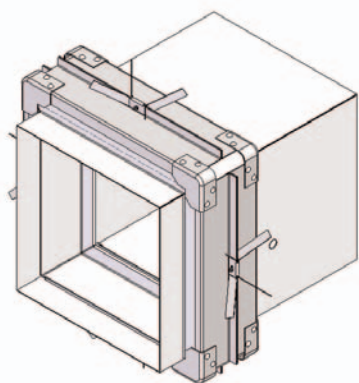
Smoke dampers shall have factory fitted installation frames to HVCA 20.1.83 specification and the Mechanical Contractor shall allow for all additional framing, supports and bracing securing the damper to the structure to the satisfaction of the Building Control Officer

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

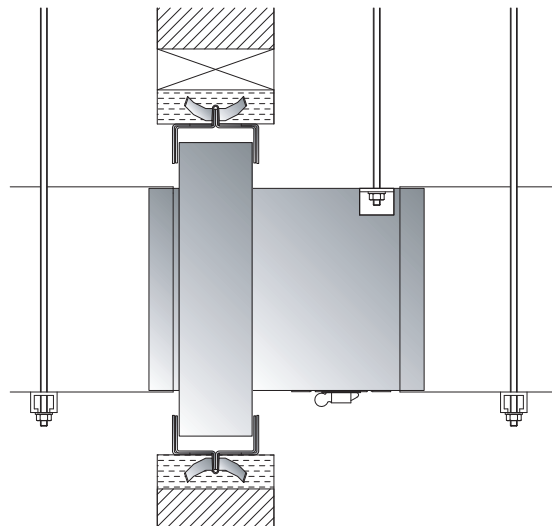
### Installation Accessories

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.

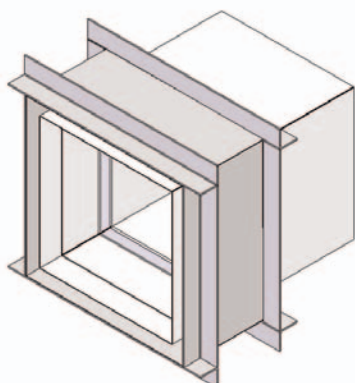
#### HEVAC Installation Frame



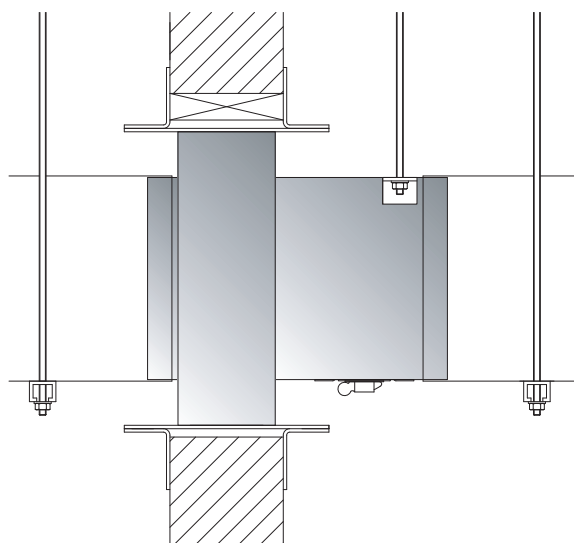
The HEVAC Installation frame allows the damper to be built directly into masonry walls and concrete floors. It allows the damper to expand in fire conditions, thus maintaining the integrity of the wall or floor.



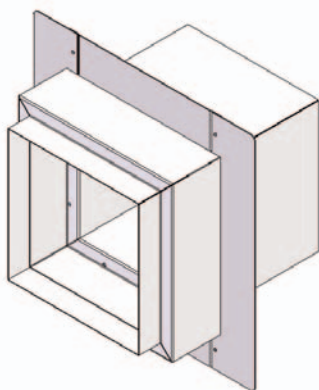
#### Sleeve and Angle Frame



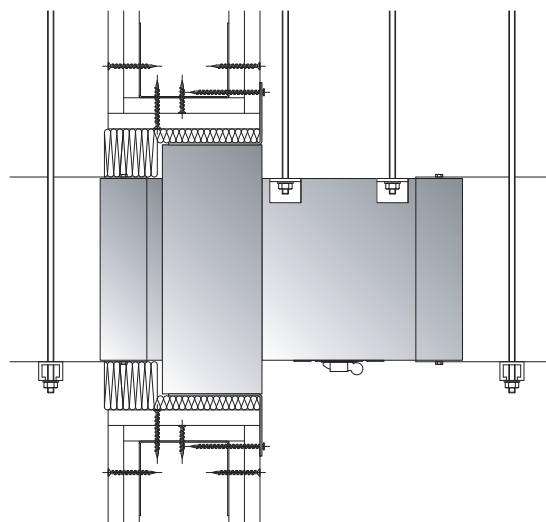
The Sleeve and Angle frame installation can be used as an alternative to the HEVAC frame. A sleeve can be factory fitted to the damper and additional angles are fixed to the flange which sandwiches the wall at the same time.



#### Dry Wall Frame

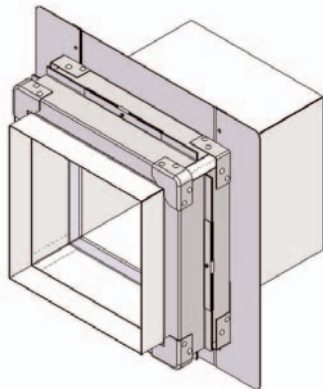


Dry wall frames can be used in all installations where the damper is being installed into dry wall partitions or together with fibrous curtains. The frame offers a means of connecting the damper assembly with the partition.

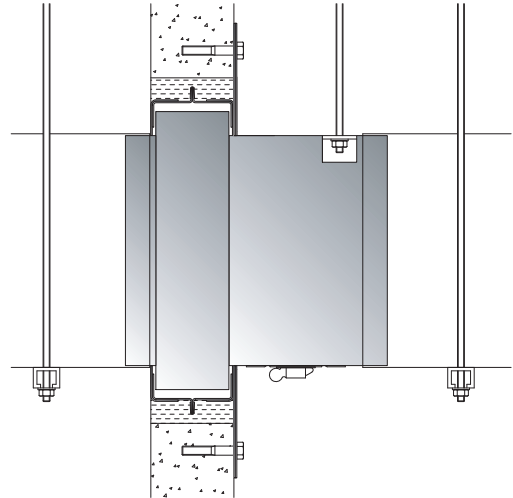


## Installation Accessories

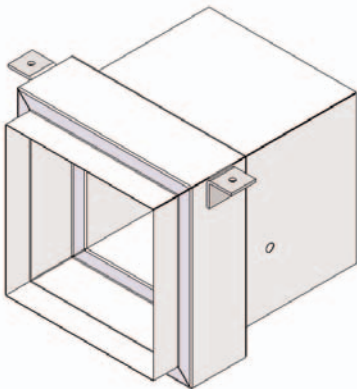
### HEVAC/Dry Wall Frame Combination Frame



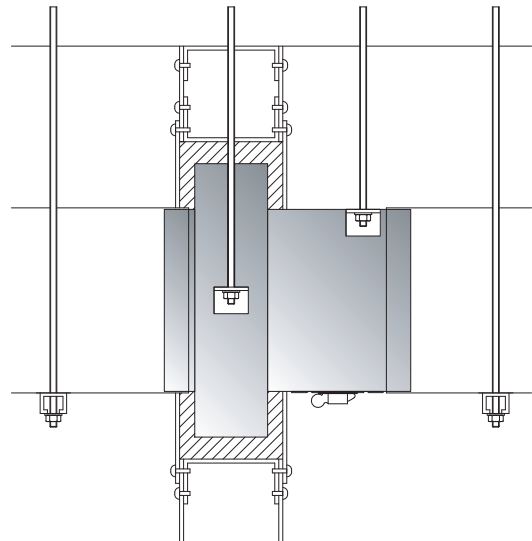
The HEVAC/Dry Wall Combination Frame is an alternative method of connecting the damper assembly with the partition while also incorporating the HEVAC frame.



### Cleats



All Advanced Air dampers can be supplied with cleats to offer independent support with drop rods secured from the structure. A variety of cleat styles and fixing locations are available, please contact Advanced Air Sales to discuss specific requirements.



**Note:** It is important that the appropriate installation accessory is used to suit on site requirements. For a fire barrier to maintain its integrity in a fire situation the damper must be securely installed and the damper should be independently supported. Advanced Air are able to discuss your requirements and help with selections.

### Guide to Installation Methods for Fire and Smoke Damper

Advanced Air have produced a methods of installation guide for fire and smoke dampers where BRE have assessed the performance of Advanced Air dampers installed in a variety of methods. The guide covers 20 installations in concrete/masonry walls and floors, partition walls, fibrous curtains and also dampers mounted away from the wall. Please contact Advanced Air for further details.

### Installation Orientation

Advanced Air dampers have been tested when installed in both the vertical (wall) and horizontal (floor) positions.

Installation Method For Advanced Air Fire Smoke, Smoke & Fire Dampers	
DAMPERS IN PRE-FORMED VERTICAL OR HORIZONTAL STRUCTURAL OPENING WITH EXPANSION FRAME	
<p><b>Installation Notes:</b></p> <ol style="list-style-type: none"> <li>Vertical Dampers work Best When To Have An Appropriately Sized Limit To Ensure An Opening Clearance For The Expansion Frame. (See Note 1)</li> <li>Expansion Seal Must Have A Structural And Fire Rated Compatibility With Both The Barrier And The Damper Unit And Must Be Applied Carefully To Ensure The Fire Barrier Is Not Damaged During Fire Conditions.</li> <li>Expansion Frame To Have Factory Applied Galvanized Steel Building Type Which Should Be Bent Out Prior To The Application Of Fire Protection Seal. (See Note 2)</li> <li>An Accession Cover Is To Be Fitted On The Appropriate Side Of The Barrier That Is Free Of Other Services Or Obstructions.</li> <li>Independent Support Of Ductwork Either Side Of The Fire Compartment.</li> <li>Dampers Suspensions Must Be Secured To The Soffit. Contractor To Ensure The Drop Rods Are Anchored Head To Soffit Of The Barrier They Are Supporting.</li> <li>On Both Support Connections Do Not Install Ductwork Up To The Damper Case. (When Overlay Is Recommended To Allow For Ductwork Expansion In Fire Situation. See Low Resistance Hanger To Secure Ductwork To Damper Soffit).</li> </ol>	
<p><b>Installation Requirements:</b></p> <p>Structural/Reinforcement Barrier With Clearance Opening To Suit The Damper Expansion Frame.</p> <p>The Frame Shall Be Detailed Centrally In The Thickness Of A Brickwork Or Concrete Surrounding Wall Or Floor. Or In The Case Of Thin Walls Or Floors, So That The Centre Line Of The Frame Is At Least 20mm Away From The Innermost Face Of The Wall Or Floor In Which The Assembly Is Mounted.</p> <p>In Ductwork Or Stack Work: The Seal Shall Be Bent Out And Fully Built Into The Header Joints Between The Sections Of Stack Work Using Header Bars. For Alternative Methods Of Fire Stopping, Please Contact Advanced Air.</p> <p>In The Case Of Reinforced Concrete Walls And Floors: The Seal Shall Be Bent Out And Tied With Wire To The Reinforcement From Which It Shall Be Formed And Fully Built Into The Header Joints Between The Sections Of Stack Work Using Header Bars. For Alternative Methods Of Fire Stopping, Please Contact Advanced Air.</p> <p>In No Case Shall The Header, Frame And Damper Assembly Be Held In Position Merely By The Adhesive Ductwork Seal. It Shall Be Held In Position Centrally Between The Sections Of Stack Work. Or Fire Appropriate Concrete Fire Retardant Products To Suit The Frame To The Surrounding Reinforced Concrete Structure.</p> <p>Expansion Seal To Be Applied Between The Barrier Opening And The Damper Unit Expansion Frame. (See Note 2)</p>	
<p><small>Designer: Daniel Shotton, L200 Series, Fire Smoke.</small></p> <p><small>For More Advice Please Contact Our Sales And Technical Services Departments Please Contact Our Customer Service Office.</small></p> <p><small>L200 Series - Carbon Free Dampers Fire Protection: 120°C/250°F (1 Hour) - Report No. 12/09/01 For 1 Hour &amp; 300°C/572°F (1 Hour) - Report No. 12/09/02 For 2 Hours Maximum Duct Size 300 x 300mm, Maximum Duct Size 300 x 300mm</small></p> <p><small>L200 Series - Fire Smoke Dampers Fire Protection: 120°C/250°F (1 Hour) - Report No. 12/09/01 For 1 Hour &amp; 300°C/572°F (1 Hour) - Report No. 12/09/02 For 2 Hours Maximum Duct Size 300 x 300mm, Maximum Duct Size 300 x 300mm</small></p> <p><small>L200 Series - Low Leakage Fire Smoke Dampers Fire Protection: 120°C/250°F (1 Hour) - Report No. 12/09/03 For 1 Hour &amp; 300°C/572°F (1 Hour) - Report No. 12/09/04 For 2 Hours Maximum Duct Size Up To 1000 x 1000mm</small></p> <p><small>THIS METHOD OF INSTALLATION FOR ADVANCED AIR DAMPERS HAS BEEN ASSESSED BY BRE (BRE/CES 998/13) BUT IT IS STRONGLY RECOMMENDED THAT IT IS ACCEPTED BY THE LOCAL AUTHORITY PRIOR TO BEING USED.</small></p> <p><small>ADVANCED AIR (UK) LIMITED Unit 10, Office Park, PO Box 113, Brimsley Nottingham, NG16 6JL, England Telephone: (01949) 753244 Fax: (01949) 763222</small></p> <p><small>FRAMES &amp; ACCESSORIES 1007 001 Page 33 of 65</small></p> <p><small>THE POSITION OF ADVANCED AIR (UK) LTD DD-0007-015 C</small></p>	

### 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.



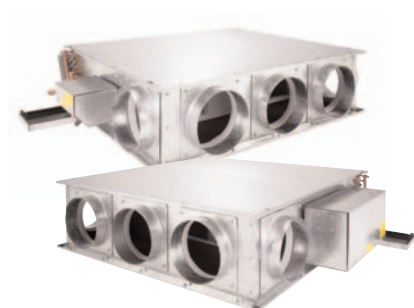


## Other Products From Advanced Air

### 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.



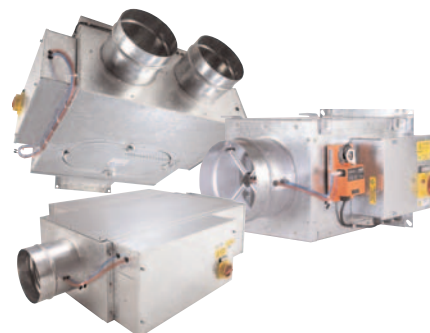
### Fan Coil Units

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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