Introduction

The growing demand for multi storey apartment, hotels and flats requires safe evacuation of smoke and toxic gases within the stairwell and corridor area to allow time for the safe evacuation of the occupants.

Smoke Shaft Ventilation PTC™ dampers have been designed for installation within the smoke evacuation risers in multi storey buildings.

SSV series dampers will give up to 1.56m² free area for the evacuation of smoke and toxic gases within the stairwell lobby and corridor areas of the building.

Specification

Smoke Shaft Ventilation System (Series SSV)

Proportional Torque Control (PTC™).

Automatic Smoke Release Dampers with 75mm x 0.5mm thick stainless steel aerodynamic interlocking blades incorporating synthetic seal, with steel blade end bearings and peripheral gasketting. Housed in a galvanised steel fully welded casing with either a flanged or flangeless sleeve for Grille connection.

The control mode/damper connection shall be by means of the snaplock™ drive interface mechanism, which is reverse mounted so as not to obstruct installation into the builders opening.

Models

Frames can be supplied either with or without a flange return, depending on the fixing arrangements suitable for the builders opening.

Grille Fixings

Grilles are prepared with countersunk screw holes in the flange to suit size 8 screws (by others).

Damper Fixings

Dampers should be secured using suitable M6/M8 fire rated anchors at 200mm CTRS to secure the damper sleeve to the wall structure. (Drillings and anchors by others).

Grille

Materials

Extruded Aluminium frame with 51mm border flange.

Frames/Borders

51mm Frame borders are supplied as standard with the SSV damper, optional 25mm borders available.

Grille Finish

Depending on size standard finish is either stove enamel silver RAL9006 or White RAL9010 (20% gloss) or Polyester powder, other finishes available.

Note: Grille selection can affect the free area value of the damper.
### Dimensional Data

#### Standard Sized Units SSV Type F (Flanged)

<table>
<thead>
<tr>
<th>DRG No.</th>
<th>Description</th>
<th>Structural Opening</th>
<th>Nom Damper Nom Grille</th>
<th>Product</th>
<th>Free Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTC080</td>
<td>SSV Damper</td>
<td>1083 x 1083</td>
<td>1000 x 1000</td>
<td>SSV Vent</td>
<td>0.80m²</td>
</tr>
<tr>
<td></td>
<td>Bar Grille</td>
<td>1071 x 1071</td>
<td>44W - GNOG</td>
<td>0.75m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(or) Egg Crate Grille</td>
<td>1071 x 1071</td>
<td>44W - ECG</td>
<td>0.92m²</td>
<td></td>
</tr>
<tr>
<td>PTC081</td>
<td>SSV Damper 1W x 2H</td>
<td>1083 x 2083</td>
<td>1000 x 2000</td>
<td>SSV Vent</td>
<td>1.54m²</td>
</tr>
<tr>
<td></td>
<td>Bar Grille</td>
<td>1071 x 2071</td>
<td>44W - GNOG</td>
<td>1.44m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(or) Egg Crate Grille</td>
<td>1071 x 2071</td>
<td>44W - ECG</td>
<td>1.78m²</td>
<td></td>
</tr>
<tr>
<td>PTC082</td>
<td>SSV Damper 2W x 1H</td>
<td>2083 x 1083</td>
<td>2000 x 1000</td>
<td>SSV Vent</td>
<td>1.56m²</td>
</tr>
<tr>
<td></td>
<td>Bar Grille</td>
<td>2083 x 2096</td>
<td>44W - GNOG</td>
<td>1.46m²</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(or) Egg Crate Grille</td>
<td>2083 x 2096</td>
<td>44W - ECG</td>
<td>1.79m²</td>
<td></td>
</tr>
</tbody>
</table>

#### Structural Opening Size

- Min Width = 283mm
- Max Width = 1083mm
- Min Height = 383mm
- Max Height = 1083mm

---

**Smoke Shaft Ventilation System**

[www.actionair.co.uk](http://www.actionair.co.uk)
**Dimensional Data**

**Standard Sized Units SSV Type S (Sleeved)**

**SSV for External High Temperature Applications**

**View A**

**View B**

**Reverse mounted actuators**

---

**Customers Nominal Damper Width**

*(Actual = CNDW – 5.2mm)*

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**O/ALL Width = CNDW + 97mm**

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**O/ALL Height = CNDH + 80mm**

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**DIMENSIONAL DATA STANDARD SIZED UNITS SSV TYPE S (SLEEVED)**

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**Suitable external louvre/grille to finish opening.**

(Refer to Actionair Sales Office).

* Customer to allow for clearance and builders tolerances on site.

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**M8 STEEL FIXINGS AT 200mm CENTRES**

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**www.actionair.co.uk**
Smoke Shaft Ventilation System

Control Options

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

Drive Open / Drive Closed. 60 seconds operation
This 2 position control mode has been developed to provide drive open/drive closed damper operation and it brings Actionair dampers in line with imminent European Standardisation for fire and smoke control, where for a given smoke control philosophy, or smoke source, a damper may be required to open or close to vent or contain the smoke. This is a radical alternative to the traditional spring return actuator, where upon power failure, instead of moving to fail-safe position, it remains in its desired emergency position. For any smoke control emergency situation, this is an absolute necessity. These modes do not have ETRs.

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

Versions are available combined with protective enclosures (Hot/Shield) to provide further protection for 60 mins at 300 °C or 30 mins at 600 °C.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Voltage</th>
<th>Current</th>
<th>End Switches</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5-2P PTC</td>
<td>24V 12W (18VA)</td>
<td>250V 6(3)A</td>
<td>SPDT</td>
<td>XNN00296</td>
</tr>
<tr>
<td>M6-2P PTC</td>
<td>230V 8W (15VA)</td>
<td>250V 6(3)A</td>
<td>SPDT</td>
<td>XNN00297</td>
</tr>
</tbody>
</table>

Control Options

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

A.C. 230V
50 / 60 Hz
15 VA
(8W / 0.5W)
Imax 8.3A
Ø 5ms
-30... +60 C
CONTINUOUS

Damper Release and Indication Module

This is designed for control and monitoring of the electrically operated A-60 Marine Fire Dampers. It will operate from 24, 120 or 230 volt supplies, 50 or 60 Hz. Selection of the operating voltage is by use of internal links on the PCB, prior to installation and connection of actuator and supply.

The DRIM may be used singly to provide local damper control, or in pairs to provide control from either side of a damper. It can also operate 2 actuators when dampers are provided in 2 multiple sections.

LED position and operation indication is provided.

Operation is by push button to close and twist to re-open damper.

Tested to BS EN 61010 -1: 2001 and is CE compliant.

IP44 rated.

Operating range 5 - 40 degrees C.
## Accessories
### Electrical

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

<table>
<thead>
<tr>
<th>Damper Test Unit</th>
<th>DTU24</th>
<th>24V AC/DC</th>
<th>XNNN00010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DTU120</td>
<td>120V AC</td>
<td>XNNN00305</td>
</tr>
<tr>
<td></td>
<td>DTU230</td>
<td>230V AC</td>
<td>DNNN0029</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Damper Status Indicator</th>
<th>DSI24</th>
<th>24V AC/DC</th>
<th>DPNN00412</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DSI120</td>
<td>120V AC</td>
<td>XNNN00308</td>
</tr>
<tr>
<td></td>
<td>DSI230</td>
<td>230V AC</td>
<td>DPNN00413</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Damper Control Unit</th>
<th>DCU24</th>
<th>24V AC/DC</th>
<th>XNNN00309</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DCU120</td>
<td>120V AC</td>
<td>XNNN00310</td>
</tr>
<tr>
<td></td>
<td>DCU230</td>
<td>230V AC</td>
<td>XNNN00311</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Damper Release and Indication Module (DRIM)</th>
<th>DRIM</th>
<th>24V – 230V AC/DC</th>
<th>XNNN00589</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>M5 and M6 – 2P Damper Control Unit</th>
<th>M52PDCU</th>
<th>24V AC/DC</th>
<th>XNNN00313</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M62PDCU</td>
<td>230V AC</td>
<td>XNNN00314</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Damper Connection Box (All Voltages)</th>
<th>DCB</th>
<th>24V – 230V AC/DC</th>
<th>XNNN00312</th>
</tr>
</thead>
</table>
Smoke Shaft Ventilation System

Ordering Information

**Damper Example**

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Series</th>
<th>Outer Sleeve</th>
<th>Structural Opening</th>
<th>Control Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>SSV1501/PTC</td>
<td>F</td>
<td>1000 x 2000</td>
<td>M5 - 2P</td>
</tr>
</tbody>
</table>

**Number of units required**

SSV1501/PTC / F
Smoke/Shaft Vent
Square or rectangular with peripheral sleeve with flange return.

SSV1501/PTC / S
Smoke/Shaft Vent
Square or rectangular with peripheral sleeve.

**Width x Height**

Refer to page 3 and 4 for minimum and maximum opening sizes.

**Notes:**

- Fire rated versions also available - Fail Safe Closed.

**Grille Example** *(Note: Grille type selection by customer. Grille size will be selected by Actionair)*

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Flange Style</th>
<th>Model</th>
<th>Screw Fixing</th>
<th>Paint Finish</th>
<th>Structural Opening</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>44W</td>
<td>ECG</td>
<td>F1</td>
<td>3</td>
<td>988 x 1988</td>
</tr>
</tbody>
</table>

**Number of units required**

- **25W** – 25mm flat surface flange having mitred and welded corners.
- **44W** – 44mm wide flat surface flange having mitred and welded corners.

**Egg Crate Grille**

EGG
Egg crate grille with a fixed core.

**Bar Grilles**

GN0G
Narrow blade bar grille having 0° deflection, 3.5mm blade on 19mm pitch.

GN15G
Narrow blade bar grille having 15° deflection, 3.5mm blade on 19mm pitch.

GN30G
Narrow blade bar grille having 30° deflection, 3.5mm blade on 19mm pitch.

**Width x Height**

Refer to page 3 and 4 for minimum and maximum opening sizes.

**Notes:**

- Fire rated versions also available - Fail Safe Closed.

*For further application, technical and pricing information, please refer to Actionair Sales Office.*
Acoustic Data

The data presented is from the Laboratory Determination of Acoustic and Aerodynamic Performance of Smoke Shaft Ventilation System (Series SSV) Automatic Smoke Release Dampers.

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

This independent test facility is approved under the NAMAS Scheme.

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

The graph is the result of a full range of acoustic tests on SSV Smoke Release Dampers with the blades set in their fully open position.

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

Pressure Drop Vs Velocity

Graph 1

<table>
<thead>
<tr>
<th>PRESSURE DROP (Pa)</th>
<th>VELOCITY (m/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
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<td>80</td>
<td>80</td>
</tr>
<tr>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Pressure Drop Vs Velocity Graph

1. EXAMPLE LINE
2. TYPE SSV

www.actionair.co.uk
Velocity (m/s) X Pressure Drop (Pa) Vs Sound Power Level (dBW)

Graph 2

![Graph 2: Velocity (m/s) X Pressure Drop (Pa) Vs Sound Power Level (dBW)](image)

Correction Tables

**Table 1**
SSV PTC™ Outlet (Induct) Spectrum Corrections

<table>
<thead>
<tr>
<th>Octave Band</th>
<th>Hz</th>
<th>63</th>
<th>125</th>
<th>250</th>
<th>500</th>
<th>1k</th>
<th>2k</th>
<th>4k</th>
<th>8k</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series SSV</td>
<td>dB</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>-3</td>
<td>-5</td>
</tr>
</tbody>
</table>

**Table 2**
SSV PTC™ Breakout Spectrum Corrections

<table>
<thead>
<tr>
<th>Octave Band</th>
<th>Hz</th>
<th>63</th>
<th>125</th>
<th>250</th>
<th>500</th>
<th>1k</th>
<th>2k</th>
<th>4k</th>
<th>8k</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series SSV</td>
<td>dB</td>
<td>8</td>
<td>11</td>
<td>9</td>
<td>6</td>
<td>-3</td>
<td>-6</td>
<td>-14</td>
<td>-17</td>
</tr>
</tbody>
</table>

Damper Leakage

**Graph 3**

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

Leakage data at ambient temperature (Cold Smoke).
Actionpac Damper Control Systems

Electro Mechanical Systems
Actionpac EMS - Standard Control and Monitoring System
Control and monitoring of Mode 5 or Mode 6 damper actuators in groups of 12, 24 or 36.

Addressable Systems
Actionpac 60/120 (LNS Standard) Intelligent Damper Control and Monitoring System
Actionpac 60 for the control/monitoring of up to 60 off SSV dampers.
Actionpac 120 for the control/monitoring of up to 120 off SSV dampers.

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

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

The Actionpac LNS3 system is designed to protect life and property from damage caused by smoke and fire, by providing the means to:
- Compartmentise fire zones.
- Reduce the spread of smoke and fire.
- Keep escape routes and fire-fighting access open.
- Allow pressurisation and smoke extract by combined operation of dampers and fans.

Benefits
- Completely flexible to meet practically any building’s damper requirements
- Three levels of alarm priority
- Panel PC driven system with real-time graphic displays
- Panel PC utilises solid state technology for optimum reliability
- Full configuration and diagnostics from Panel PC
- Optional automatic scheduled Damper testing
- Multiple wiring configurations to include Radial or Loop Topology
- Damper operational count provided
- Flexibility to accommodate any last minute changes to strategy, zones, damper quantities, references and descriptions etc.

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

General Schematic of Actionpac LNS3 Damper Control System

One SFDI required per Damper/Section. Supply to each Damper Interface from nearest local distribution board.

For further application, technical and pricing information, please refer to Actionair Sales Office.
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