Contents

Health and safety ....................................... 1

Installation Methods ................................. 2
Flexible (dry partition) Walls .......................... 2
Rigid (Masonry) Walls construction .................. 3
Rigid (Masonry) Floor construction ................... 4

Commissioning and periodic maintenance ....... 5
Maintenance Requirements ........................... 5
Maintenance Guidelines ............................... 5
Cleaning procedure ..................................... 5
Mechanical operation procedure ..................... 5

Electrical ................................................ 5
Overview ................................................ 5
Control actuator wiring procedure ................... 5
Electrical connection and final operation test procedure 5
Replacement of actuator and ETR ..................... 6
  Removing ETR ........................................ 6
  Removing actuator fasteners ......................... 6
  Checking damper blade starting position ........... 6
  Pretensioning ........................................ 6
  Actuator Fitting ..................................... 6
  Fit new ETR or replace ETR thermal probe ......... 6

Wiring Diagrams ....................................... 7
  Electrical Connection and Final Operational Test ........................................... 7

Inspection and handover check sheet .............. 8

Health and safety

- This process must be undertaken by a competent person. More than one person may be required to ensure the safe handling of large dampers and other materials. Use must be made of access equipment to ensure unsafe practices are not used to approach walls or difficult access areas.
- Standard site PPE should be used (minimum steel toe cap boots, hard hat) together with any protective eyewear, gloves and masks, when drilling or cutting is being undertaken. The latter should also be used when handing the wall construction materials, as defined by the material suppliers. If loud equipment is being used, hearing protection should be used.
- All waste materials should be collected and disposed of as defined by the relevant supplier.
- Care must be taken when installing and inspecting dampers, as they are likely to close without warning due to loss of electrical power, or a temperature rise in the ductwork. This is their prime function.
- Do not introduce any items, fingers or limbs inside the damper casing.
- Larger dampers are heavy and must be handled in accordance with current local regulations and good practice.
- All wiring should be carried out in accordance with the wiring details provided, to the IEC regulations.
- Dampers are life safety products and must be treated with care during handling, storage and installation.
- Actionair CSS Dampers are designed for applications in normal dry filtered air systems and should be subjected to a planned inspection programme.
Installation Methods

Flexible (dry partition) Walls
Classification: E60S/E90

- Measure the overall damper casing diameter.
- Calculate the finished square hole size by adding 5mm ± 15mm to both width and height; calculate the hole to cut size by adding two board thickness to the finished hole width and height.
- Mark out the hole on the partition and cut it out, cutting the top and bottom edges first to maintain wall stability.
- Frame out the hole with steel studs and tracking. Cut suitably sized plasterboard strips to cover the studs and tracking and fix with dry wall screws.
- Finish edges with joint filler.
- Consider which side of the wall the actuator needs to be before fixing the damper.
- Slide the circular damper casing into the opening until the square flange is firmly positioned against the wall. Securely fix damper flange to the dry wall using drywall screws, making sure the screws pickup and fix into the studs and tracking surrounding the aperture.
- Clean damper and actuator from any debris.
- Perform commissioning and maintenance procedure as described in BS9999:2017, either electrically by pressing the test switch on the ETR or using the manual winding key.

- Note: never use winding key if power is applied to actuator.
- Note: Connecting ductwork omitted for clarity. Ductwork must be independently supported. There must be an appropriate break-away joint between the damper and connecting ductwork on both sides of assembly. Aluminium rivets or plastic cleats, clips, clamps and bolts etc. should be used for this, unless fire resisting ductwork is being used where fire resisting fixings should be used. A minimum of 200 mm construction element (wall/floor) between fire dampers installed in separate ducts and 75 mm between fire damper and a construction element (wall/floor).
- Note: Whilst the dimensions show the minimum clearance that can be achieved, this must be read in conjunction with the wall manufacturers specification, which must always be followed. If a manufacturer wall system has a minimum clearance of 250mm between openings, then this takes precedence over our guidance.
- Note: If your proposed installation details differ from that shown here, please discuss this with the Building Control Authority (BCA), referencing this documentation, associated fire tests, assessments, and other documentation shown below. Deviation from this drawing requires the approval of the relevant authority.
Rigid (Masonry) Walls construction

Classification: E60S/E90

- Measure the overall damper casing diameter. Calculate the finished square hole size by adding 10mm ± 5mm to both width and height.
- Mark out the hole on the wall and cut it out, cutting the top and bottom edges first to maintain wall stability.
- If size and condition permits, a circular hole 10-30mm larger than the damper casing diameter can be drilled / cut.
- Consider which side of the wall the actuator needs to be before fixing the damper.
- Slide the circular damper casing into the opening until the square flange is firmly positioned against the wall. Drill out the pre-punched flange fixing holes to accommodate suitable fire resisting steel fixings, (minimum M4x60mm) securely fix damper flange to wall.
- Clean damper and actuator from any debris.
- Perform commissioning and maintenance procedure, as described in BS9999:2017, either electrically by pressing the test switch on the ETR or using the manual winding key.
- Note: never use winding key if power is applied to actuator.

• Note: Connecting ductwork omitted for clarity. Ductwork must be independently supported. There must be an appropriate break-away joint between the damper and connecting ductwork on both sides of assembly. Aluminium rivets or plastic cleats, clips, clamps and bolts etc. should be used for this, unless fire resisting ductwork is being used where fire resisting fixings should be used. A minimum of 200 mm construction element (wall/floor) between fire dampers installed in separate ducts and 75 mm between fire damper and a construction element (wall/floor).
• Note: If your proposed installation details differ from that shown here, please discuss this with the Building Control Authority (BCA), referencing this documentation, associated fire tests, assessments, and other documentation shown below. Deviation from this drawing requires the approval of the relevant authority.
• Note: The actuator must be located on the right or left hand side of the damper fitted in any orientation.
Rigid (Masonry) Floor construction

Classification: E90S/E120

- Measure the overall damper casing diameter. Calculate the finished square hole size by adding 10mm ± 5mm to both width and height.
- Mark out the hole on the wall and cut it out, cutting the top and bottom edges first to maintain wall stability.
- If size and condition permits, a circular hole 10-30mm larger than the damper casing diameter can be drilled / cut.
- Consider which side of the wall the actuator needs to be before fixing the damper.
- Slide the circular damper casing into the opening until the square flange is firmly positioned against the wall. Drill out the pre-punched flange fixing holes to accommodate suitable fire resisting steel fixings, (minimum M4x60mm) securely fix damper flange to wall.
- Clean damper and actuator from any debris.
- Perform commissioning and maintenance procedure, as described in BS9999;2017, either electrically by pressing the test switch on the ETR or using the manual winding key.

- Note: never use winding key if power is applied to actuator.
- Note: Connecting ductwork omitted for clarity. Ductwork must be independently supported. There must be an appropriate break-away joint between the damper and connecting ductwork on both sides of assembly. Aluminium rivets or plastic cleats, clips, clamps and bolts etc. should be used for this, unless fire resisting ductwork is being used where fire resisting fixings should be used. A minimum of 200 mm construction element (wall/floor) between fire dampers installed in separate ducts and 75 mm between fire damper and a construction element (wall/floor).
- Note: If your proposed installation details differ from that shown here, please discuss this with the Building Control Authority (BCA), referencing this documentation, associated fire tests, assessments, and other documentation shown below. Deviation from this drawing requires the approval of the relevant authority.
- Note: The actuator must be located on the right or left hand side of the damper fitted in any orientation.
Commissioning and periodic maintenance

Maintenance Requirements
- Requirements as per BS9999:2017
- Arrangements should be made for all fire dampers to be tested by a competent person on completion of the installation and at least annually, and to be repaired or replaced immediately if found to be faulty.
- Spring-operated fire dampers should be tested annually, and fire dampers situated in dust-laden and similar atmospheres should be tested much more frequently, at periods suited to the degree of pollution.
- Arrangements should be made for periodic maintenance of any smoke detector system used to operate fire dampers and for such system(s) to be tested by a competent person after installation to determine whether detection occurs at the appropriate design smoke density. Any smoke detector system that is found to be faulty should be either repaired or replaced immediately.

Maintenance Guidelines
As detailed in the procedures outlined below.
- The units should be carefully inspected and cleaned.
- The units should then be lubricated with a light oil, by wiping this over all the surfaces.
- Actuators should be operated to ensure that it moves the blades from open to closed and the reverse.
- If the end switches (in the actuator) are being used, it should be checked that they are actually indicating that the blades are open or closed. This is done by running a cycle and checking both the blades (open and closed) and the indication that the micro switches are feeding back.

Cleaning procedure
- The units should be carefully inspected and cleaned using light lubricant.
- The units should then be lubricated with a light oil, by wiping this over all the surfaces.
- Actuators should be operated to ensure that it moves the blades from open to closed and the reverse.
- If the end switches (in the actuator) are being used, it should be checked that they are indicating that the blades are open or closed. This is done by running a cycle and checking both the blades (open and closed) and the indication that the micro switches are feeding back.
- If damper is stiff to operate lubricate blade ends, open and close damper successively until the damper moves with ease. (This may necessitate removal of the actuator and operating the blades manually by the drive shaft).
- Refit actuator and re-test.
- Clean off excessive lubricant.

Mechanical operation procedure
- As an interim check, the damper should be manually reset and released using the manual reset key provided, (refer to Control Actuator label) to ensure that correct mechanical operation is achieved. This feature may be used for system commissioning when electrical power is unavailable. Note however, the ETR is not operable without electrical power, and the damper will not close automatically should a temperature rise or fire occur. A manual test switch allows periodic operation of the damper for testing purposes, simulating actual fail-safe release under fire conditions.
- The associated electrical Control Actuators are available in 24V or 230V versions. Also available with 95° Probe as an option. Probe section only available as a spare replacement part.

Electrical

Overview
- Fail-safe is by means of a unique and patented Electrical Thermal Release (ETR) which operates at 72°C or if power supply is interrupted. The ETR incorporates a safety feature, that ensures the fail-safe status of the damper if the ETR is not fitted on to the ductwork.
- Additionally, a green LED lamp is built into the ETR housing. This gives the user a simple and clear visual check that the Actuator is receiving power, the ETR is correctly fitted, and the thermal fuse is intact.
- One metre of halogen free low smoke and fume electric cable is fitted to each control actuator for convenience of on-site wiring. This provides the distinct safety advantage of all electrics terminating outside the duct, eliminating potential in-duct fire hazards from wiring faults. The Electrical Thermal Release is pre-wired with 0.5m halogen free low smoke and fume cabling to the ‘COMPACT-M5’ and ‘COMPACT-M6’ actuators.
- A Manual test button on the ETR allows periodic operation of damper, simulating actual fail safe release under smoke/fire conditions.

Control actuator wiring procedure
- If integrating this unit with an ACTIONPAC damper control system please refer to the relevant catalogue and specific project details.

Electrical connection and final operation test procedure
- The unit must be wired as described in the Application and Wiring section.
- When power is available, the unit must be checked for electrical operation.
- Power on to motor open, power off to spring close.
- The unit must also be checked by moving and holding the test switch on the ETR to confirm that the damper closes.
- When pressure is removed from the switch the damper will re-open. This may be done after the initial installation test, to provide periodic operation of the damper to simulate actual fail-safe closure under fire conditions.
Replacement of actuator and ETR

**Removing ETR**
- Undo the 2 self-tapping screws with a No. 1 Pozi drive screwdriver and remove the ETR from the hole. Continuing to undo the 2 screws allows separation of the two pieces of the ETR. Replace old ETR with new (see below).

**Removing actuator fasteners**
- With power removed and the damper in the closed position wind the actuator anticlockwise 2-3 turns using the 5mm Allen key provided and activate the locking mechanism.
- Unscrew and remove the two bolts holding the actuator to the bracket using a 5mm Allen key. Unscrew and remove the bolt and washer holding the actuator to the shaft using an 8mm A/F spanner.

**Checking damper blade starting position**
- Damper blade in closed position for the ‘Fail-Safe-Closed’ This is also a good opportunity to check the condition of the white seal around the circumference of the blade for any damage.

**Pretensioning**
- The actuator can be fitted in one of three different positions depending on your preference. Now is the time to decide.
- If different from position supplied 2 M6 nuts (by others) will be required prior to changing.

**Actuator Fitting**
- Manually wind actuator clockwise to align the 2 fixing screw holes (see image right) and ½ turn anti-clockwise quickly to lock it for fail safe closed position.
- Screw fix actuator to bracket. Fit screw supplied with actuator through mudguard washer and into the drive shaft.
- Tighten screw into the shaft on the actuator end, 5Nm Max. torque.
- Fully reset and release actuator by manually winding to fully open and then releasing, noting blade contacts both ‘blade stop’ positions using manual reset key (5mm cranked Allen key) supplied with actuator.

**Fit new ETR or replace ETR thermal probe**
- For damper sizes greater than Ø100mm. fit the ETR into the pre-punched hole in the circular case using a No.1 Pozi drive screwdriver to tighten the two self-tapping screws supplied with the ETR.
- For damper size Ø100mm. Fit to pre-punched hole in the side of actuator bracket and through a grommet in case beneath. Tighten using a No.1 Pozi drive screwdriver to tighten the two self-tapping screws supplied with the ETR. NOTE fully tighten the ETR so that its two-part case is completely together to ensure electrical continuity inside.

**Electrical Connection and Final Operational Test**
- When power is available, the unit must be checked for electrical operation. Power on to motor open, power off to spring close (fail-safe-closed). The unit must also be checked by pushing and holding the test switch on the ETR to confirm that the damper closes. When pressure is removed from the switch the damper will re-open. This may be done after the initial installation test, to provide periodic operation of the damper to simulate actual fail-safe closure under fire conditions.
- Note: Application of supply voltage will automatically override the manual locking mechanism.
Wiring Diagrams

Smoke Shield Mode 5 PTC
(24V System)
Supply on - Damper motors open
Supply off - Damper spring close
Electrical thermal release (ETR)
(Must be fitted to ducting for damper operation)
Spring close time ~ 22 seconds
Motor open time ~ 60 seconds
(Connect 24V via a safety isolating transformer.)
IP54 rated

Smoke Shield Mode 6 PTC
(230V System)
Supply on - Damper motors open
Supply off - Damper spring close
Electrical thermal release (ETR)
(Must be fitted to ducting for damper operation)
Spring close time ~ 22 seconds
Motor open time ~ 60 seconds
(To isolate from main power supply, the system must incorporate a device which disconnects the phase conductors, with at least 3mm contact gap)
120V A.C. version available
IP54 rated

ACTIONAIR CSS (Installation Guide)

Swegon reserves the right to alter specifications.
**Inspection and handover check sheet**

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

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

Damper Unique System I.D: .................................................................................................................................
Name of installation location: ............................................................................................................................
Address: ...............................................................................................................................................................
Installation location identification section/floor/room: ............................................................................................
Damper product type: .............................................................................................................................................
Release fuse temperature: ......................................................................................................................................
Notes/Considerations: ...........................................................................................................................................
Installed by: ...........................................................................................................................................................
Company Name: ......................................................................................................................................................
Address: .................................................................................................................................................................
Company Telephone No: ........................................................................................................................................
Installers Name: ....................................................................................................................................................
Installers Telephone No: ........................................................................................................................................
Date of installation: ................................................................................................................................................

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

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