

Actionair CSS Installation Guide

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Drawings

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

Applies to...

- Actionair CSS

Health and safety

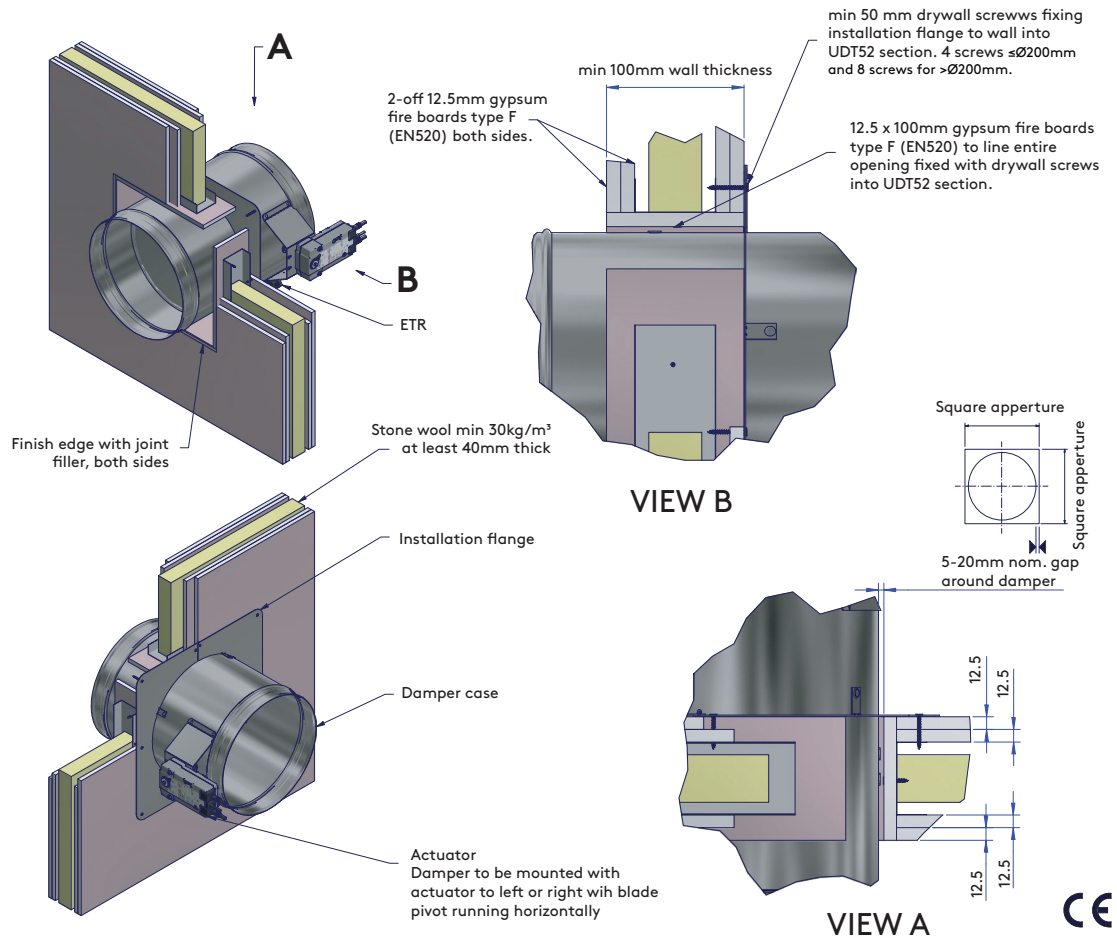
- This process must be undertaken by a competent person. More than one person may be required to ensure the safe handling of large dampers and other materials. Use must be made of access equipment to ensure unsafe practices are not used to approach walls or difficult access areas.
- Standard site PPE should be used (minimum steel toe cap boots, hard hat) together with any protective eye wear, gloves and masks, when drilling or cutting is being undertaken. The latter should also be used when handling the wall construction materials, as defined by the material suppliers. If loud equipment is being used, hearing protection should be used.
- All waste materials should be collected and disposed of as defined by the relevant supplier.
- 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.

CE Installation Method Overview

Application	Installation Method
	Actionair CSS
Vertical Application In A Plasterboard Wall	Page 3, [AA/F13440] 1xType F board each side. [AA/F12820] 2xType F boards each side.
Vertical Application In A Masonry Wall	Page 4, [AA/F12822]
Horizontal Application In A Slab	Page 5, [AA/F12821]

- The instructions are based on the tested method using Actionair CSS.
- Our CSS dampers are designed to be used with fire separating elements to maintain fire compartments. The CSS is an actuated failsafe close damper with low smoke leakage, often referred to in the industry as a Fire/Smoke damper.
- Under the Fire Damper Product standard BS EN 15650 our Fire Damper products are tested to BS EN 1366-2 and classified under BS EN 13501-3.
- For smoke control, the product you use should be tested to BS EN 12101-8 and drive open, drive closed without failsafe position, see our website for information on the Actionair SmokeCommand smoke control damper documentation and suitable installation methods.

Installation Methods



Vertical Damper Installation in a Plasterboard Wall.

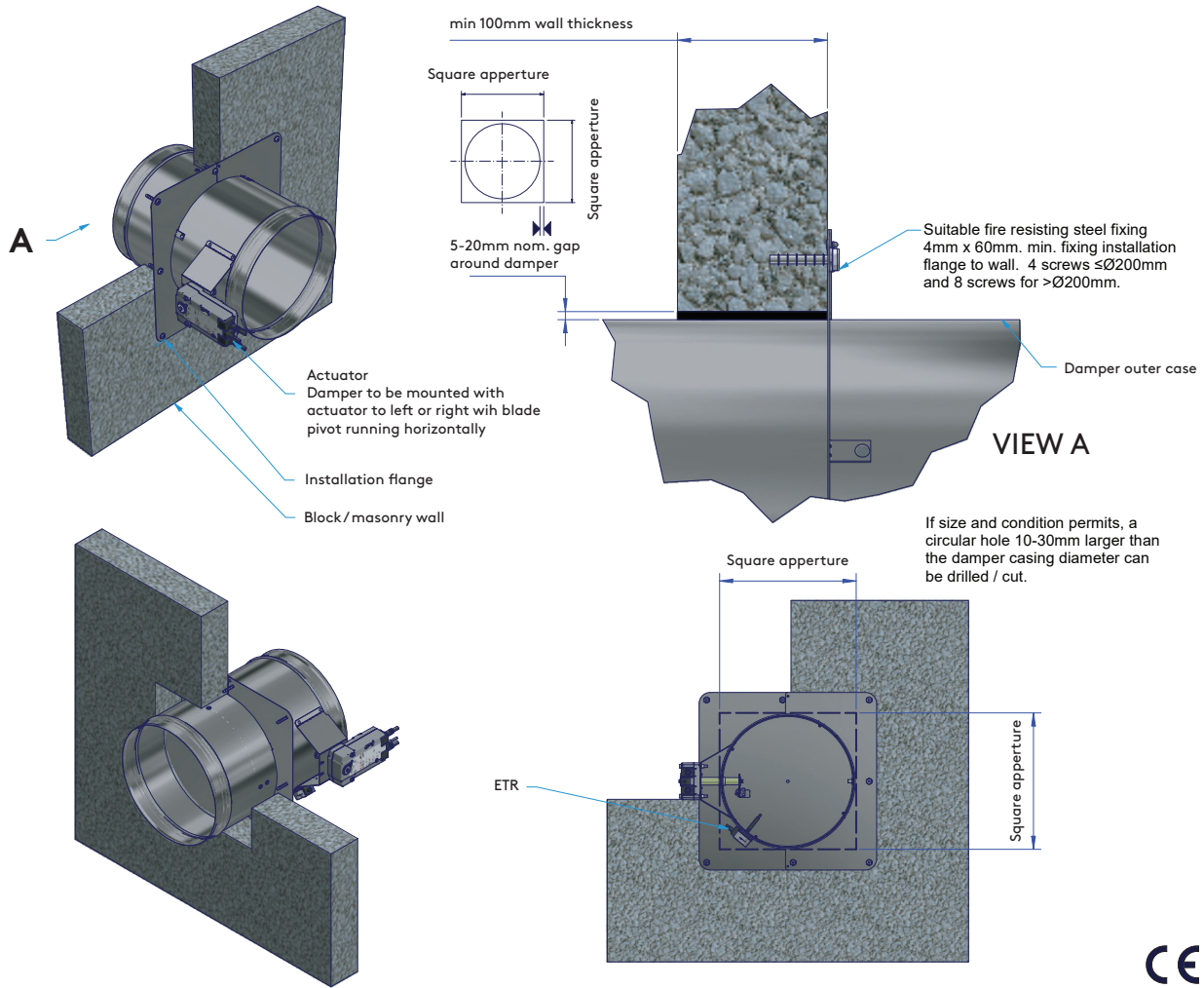
[AA/F13440] - 1xType F board each side

[AA/F12820] - 2xType F board each side

Installation Method

1. Measure the overall damper casing diameter.
2. Calculate the finished square hole size by adding 10-40mm to both width and height; calculate the hole to cut size by adding two board thickness to the finished hole width and height.
3. Mark out the hole on the partition and cut it out, cutting the top and bottom edges first to maintain wall stability.
4. 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.
5. Finish edges with joint filler.
6. Consider which side of the wall the actuator needs to be before fixing the damper.
7. 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 pick up and fix into the studs and tracking surrounding the aperture.
8. Clean damper and actuator from any debris.
9. 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.
10. Note: never use winding key if power is applied to actuator.
11. 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).
12. 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.

Actionair CSS Installation Guide



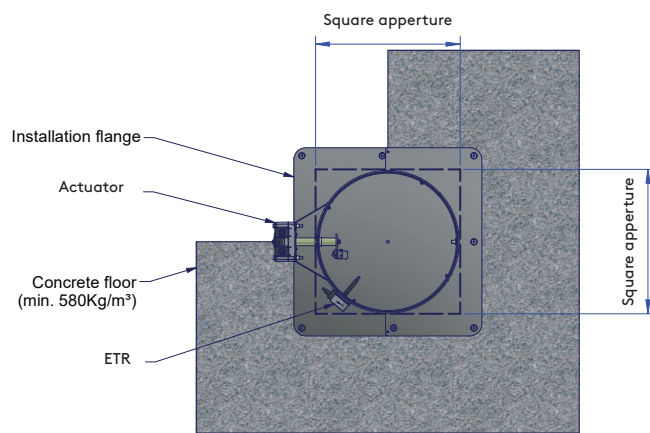
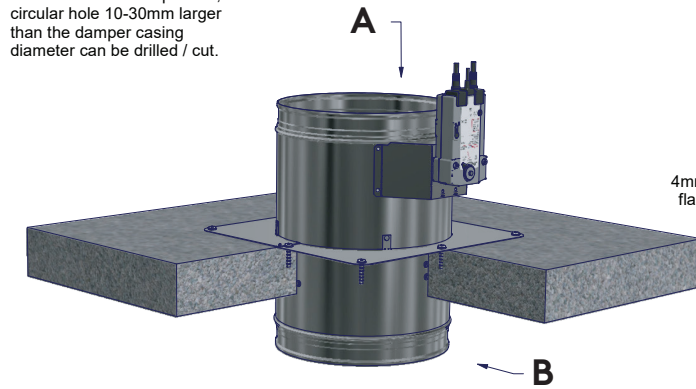
Vertical Damper Installation in a Masonry Wall.

Actionair CSS - [AA/F12822]

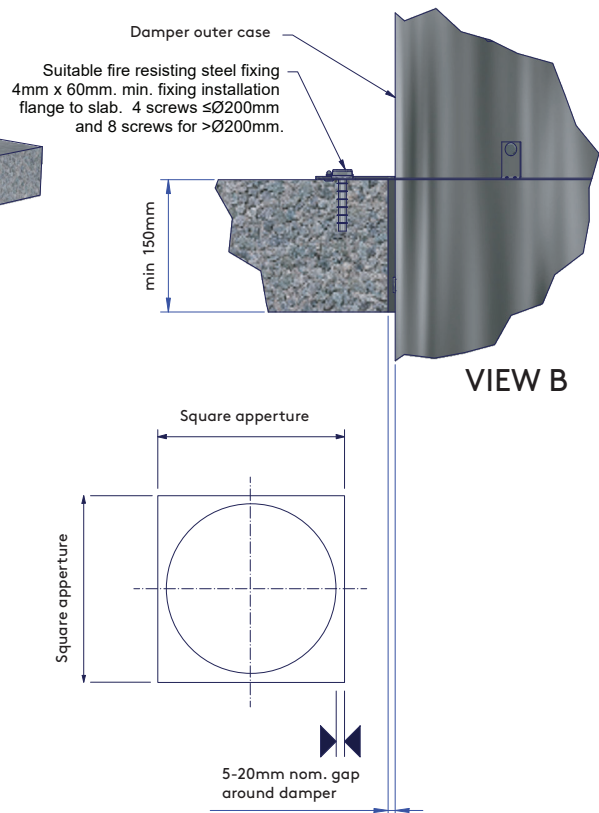
Installation Method

1. Measure the overall damper casing diameter. Calculate the finished square hole size by adding 10-40mm to both width and height.
2. Mark out the hole on the wall and cut it out, cutting the top and bottom edges first to maintain wall stability.
3. If size and condition permits, a circular hole 10-30mm larger than the damper casing diameter can be drilled / cut.
4. Consider which side of the wall the actuator needs to be before fixing the damper.
5. 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.
6. Clean damper and actuator from any debris.
7. 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.
8. Note: never use winding key if power is applied to actuator.
9. 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).

If size and condition permits, a circular hole 10-30mm larger than the damper casing diameter can be drilled / cut.



VIEW A



VIEW B



Horizontal Damper Installation in a Slab.

Actionair CSS - [AA/F12821]

Installation Method

- Measure the overall damper casing diameter. Calculate the finished square hole size by adding 10-40mm 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 10-40mm larger than the damper casing diameter can be drilled / cut.
 - Consider which side of the slab (above or below) 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 slab. 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 the 200mm minimum dimension we state must be confirmed as suitable by the structural engineer, as the wall or floor may require to be larger to maintain the required support or strength.

Periodic Maintenance

Manufacturer Recommended Service Intervals

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

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

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

BS EN 15650:2010 - Ventilation for Buildings

- Fire Dampers

- Section 8.3 states regular testing/ inspection should be undertaken to meet regulatory requirements, or at intervals not exceeding six months.

- A comprehensive example of the maintenance procedure is given in Annex D of the standard. Some automatic systems may allow more frequent testing (48hr or less) and this may be required by a national standard.

Approved Document B, Volume 2

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

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

Smoke Control Systems

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

Three Monthly

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

Yearly

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

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

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

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

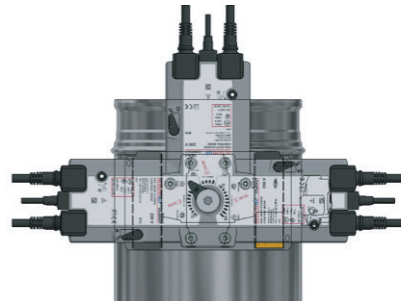
- Damper blade in closed position for the 'Fail-Safe-Closed' This is also a good opportunity to check the condition of the white seal around the circumference of the blade for any damage.

Pretensioning



Pretensioning the damper to ensure full closure. The damper blade is designed to be pretensioned with the actuator fitted.

Actuator Orientation



- 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

CSS Mode 5

(24V System)

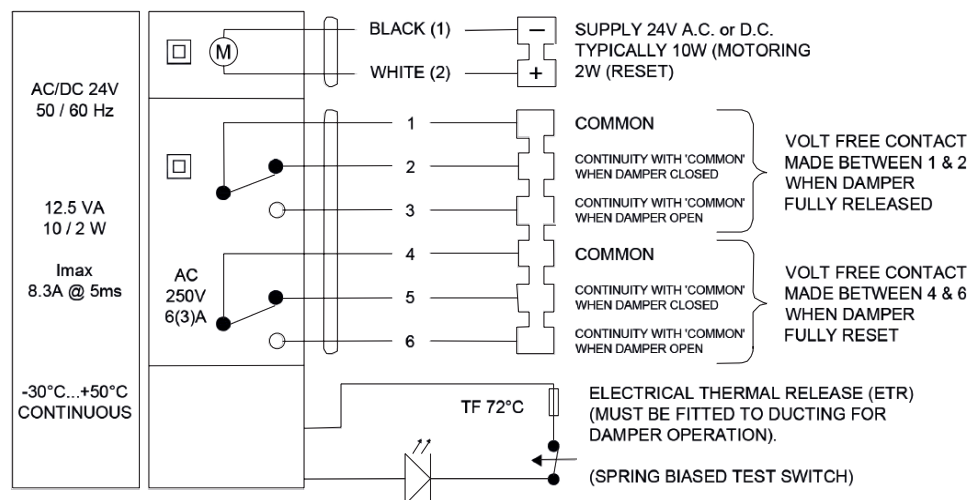
Supply on - Damper motors open
Supply off - Damper spring close

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



CSS Mode 6

(230V System)

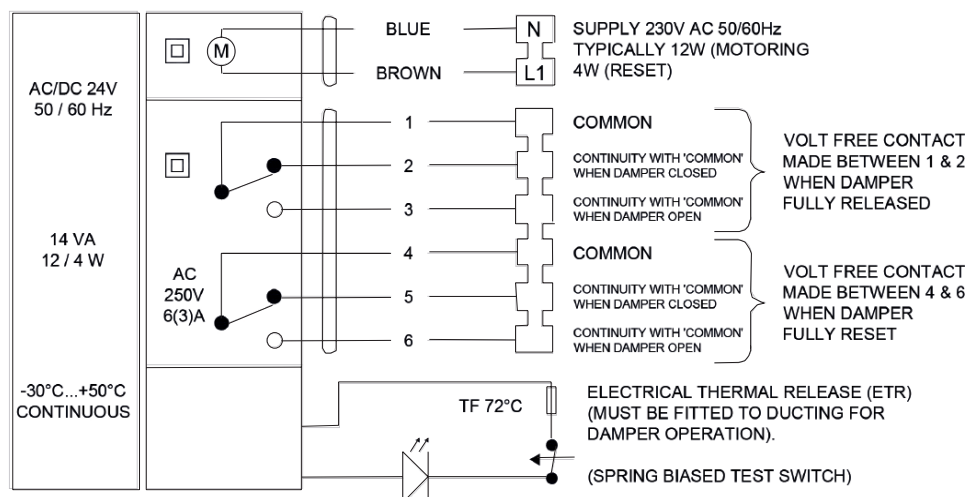
Supply on - Damper motors open
Supply off - Damper spring close

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)

IP54 rated



CSS Mode 5-3P

(24V System)

Supply on - Damper motors open
Supply off - Damper spring close

The M5-3P-1 is controlled by a standard 0...10V control signal. The actuator motors to the position specified by the control signal. If the ETR is activated, power supply lost or removed the device springs the damper to the fail-safe position.

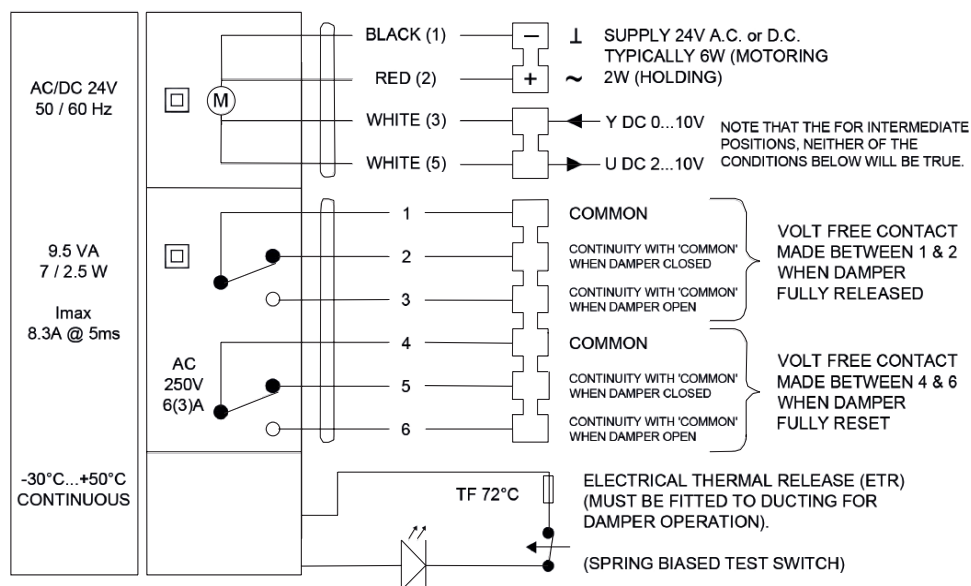
Electrical thermal release (ETR)
(Must be fitted to ducting for damper operation)

Spring close time ~ 16 seconds
Motor open time ~ 120 seconds

The SiHF connecting cable needs to be protected from sharp edges.

(Connect 24V via a safety isolating transformer.)

IP54 rated



DIAGRAMS SHOWS ACTUATOR IN FULLY CLOSED STATE

CSS Damper Dimensional Data

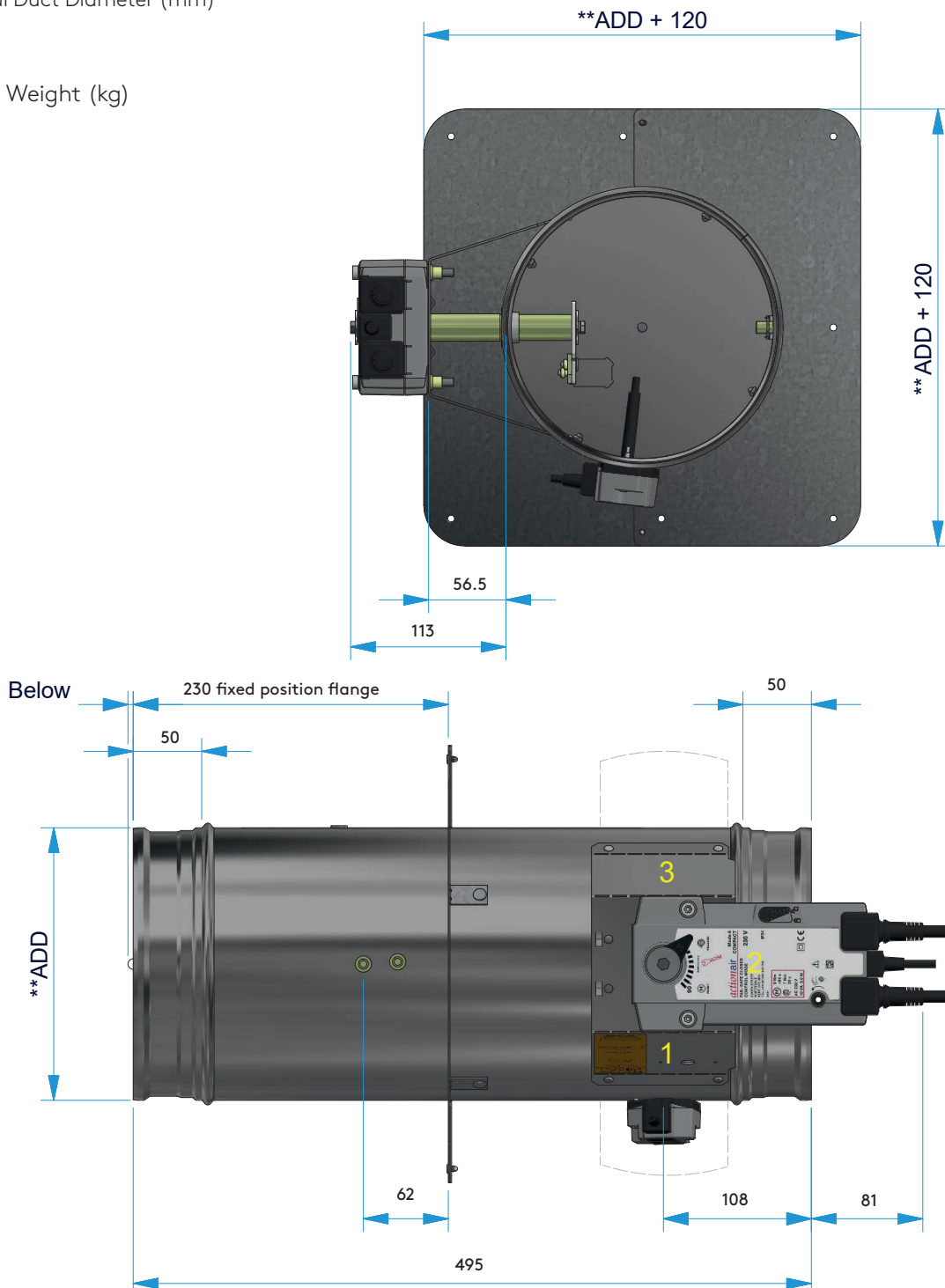
Dimensions

- Control can be mounted in one of three positions vertically down, horizontally (factory std) or vertically up.
- CSS 'ES' Rated Fire Dampers are available to fit 100, 125, 150, 160, 200, 250, 300, 315, 350 and 355mm circular ductwork.
- The blade on CSS dampers will exceed the casing on 350/355mm diameter dampers by 6.5/9mm.

**ADD - Actual Duct Diameter (mm)

Weights

- Dia (mm)/ Weight (kg)
- 100/3.5
- 125/3.9
- 150/4.5
- 160/4.7
- 200/5.4
- 250/6.5
- 300/7.5
- 315/7.9
- 350/8.6
- 355/8.7



Troubleshooting

Product Commissioning & Maintenance Available

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

Please note modifications made to units will invalidate warranties etc

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

Inspection and handover check sheet

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

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

Damper Unique System I.D:

Name of installation location:.....

Address:.....

Installation location identification section/floor/room:

Damper product type:

Release fuse temperature:

Notes/Considerations:

Installed by:

Company Name:

Address:

Company Telephone No:

Installers Name:

Installers Telephone No:

Date of installation:

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

Installers signature: Date: