AT-FSD Series

A brand of MAICO

V12204

Installation, Operation and Maintenance Instructions

MANUFACTURERS OF AIR, FIRE AND SMOKE CONTROL PRODUCTS CE

THESE INSTALLATION INSTRUCTIONS MUST BE READ IN THEIR ENTIRETY BEFORE COMMENCING WORK TO ENSURE COMPLIANCE

Dampers not installed as tested will not be CE marked and will invalidate the warranty.

Before commencing installation, the "Installation Check List" within DW/145 should be referred to, a version is on Page 9 at the back of this document.

1. Application

1.1 This Fire Smoke damper has been designed for use within fire separation barriers, typically above doorways and within ceiling voids to allow the movement of air, between the occupied area and extraction riser and are intended as an unducted installation and fixed providing fire resistance when the damper is closed.

1.2 On receipt of a signal from the fire alarm system or by local temperature rise, the damper closes, thus preventing the spread of fire and smoke.

1.3 Dampers are designed for installation within normal dry filtered air systems. Any application involving corrosive and/or aggressive hostile environmental conditions (e.g. swimming pools and coastal applications) may invalidate our warranty and should be referred to BSB Sales Office.

2. Health and safety

2.1 Only competent personnel may carry out the work outlined in this document.
Current IET wiring regulations must be adhered to (refer to Important Safety Notice on Page 2).
Appropriate Personal Protective Equipment as required for safe working conditions and as site rules dictate must be used.

2.2 Dampers may be heavy and care in moving and installing must be taken. Larger dampers will require suitable lifting and supporting equipment, with due consideration given for manual handling. Do not lift the damper via the blades, as this may impact on its operation.

2.3 Where dampers are only accessible with the need for additional elevation, any equipment used should be done so with due consideration to the Work at Height regulations 2005 and current site rules.

2.4 All work should be carried out in accordance with HSE guidelines and regulations and any specific local site rules.

3. Health and Safety continued

Important Safety Notice

3.1 It is the responsibility of the person installing the electrical equipment to ensure that the installation meets the requirements of the IET wiring regulations and is therefore 'fit for purpose'.

3.2 Factors such as correct selection of components, cable management, cable sizing, protective devices and earth bonding are all critical and should be checked prior to testing and power-up.

3.3 Any other regulations applicable to the equipment being installed such as the current health and safety legislation must also be adhered to. The equipment is a life safety product and should be inspected periodically. This includes visual inspection, electrical and function testing of the installed equipment.

3.4 Combination of power supply voltage and safety extra-low voltage are not permitted at both auxiliary Switches.

3.5 Do not lift the damper via the blades, as this may impact on its operation.

4. Important

4.1 These instructions should be read in their entirety before commencing work. The installer must be competent with the manufacturers products.

4.2 Actuators are IP54 rated – Check actuator connection box is suitably located.

4.3 All installations are subject to local Building Control Approval (BCA). Tested Installations are detailed herein. If the proposed installation has minor variations to that shown, acceptance from BCA should be sought before proceeding. Manufacturers are not permitted to approve any deviations from the tested installation method.

5. Equipment Required

5.1 Equipment and tools will vary dependent upon the fire barrier construction that the damper is being installed within. Standard equipment normally used for the building of the particular barrier should suffice.

5.2 Access-equipment as necessary.

5.3 Temporary support equipment (to retain damper in position).

5.4 Cordless drill for relevant wall applications.

5.5 7mm masonry drill bit for masonry wall applications.

5.6 Philips screwdriver to suit grille fixings.

5.7 Drill bit to suit fixing head type.

6. Damper

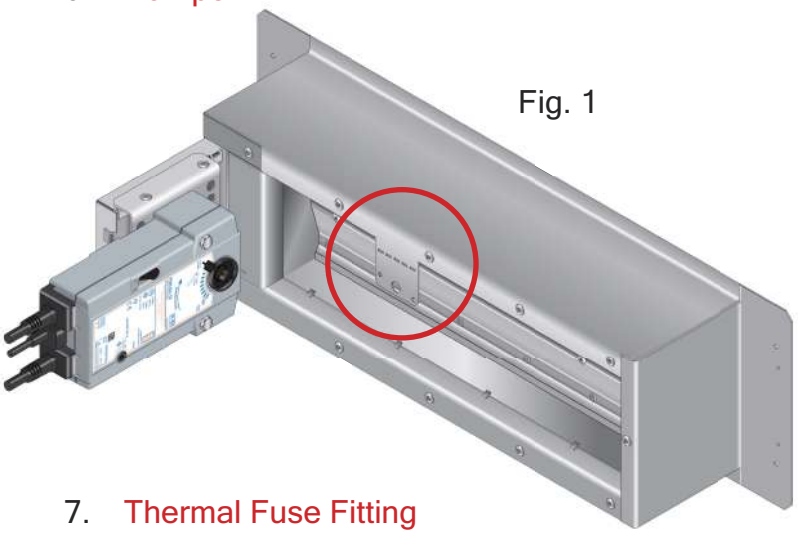


Fig. 1

The AT-FSD series damper is rectangular by design, has a transfer drive box to the rear, where the actuator is reverse mounted. A thermal fuse bracket is built in and forms part of the case.

Installation details are given on pages 5 & 6.

7. Thermal Fuse Fitting

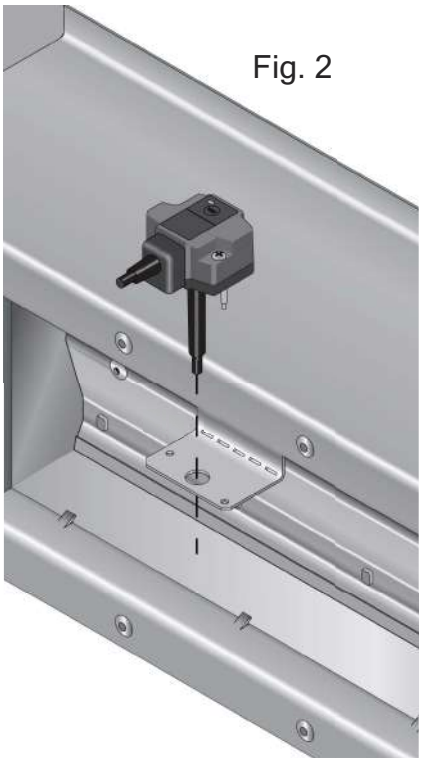


Fig. 2

The thermal fuse probe should be checked for damage, paying attention to the tip before fitting. Ensure the connecting fixed cable is undamaged and report any findings. The thermal fuse should be fitted using the provided fixings to the thermal fuse fixing bracket which is integral with the damper sleeve and is delivered flat to prevent damage during transit. See Fig 1,

The thermal fuse bracket should be folded out 90° at the perforation before fixing the thermal fuse in place.

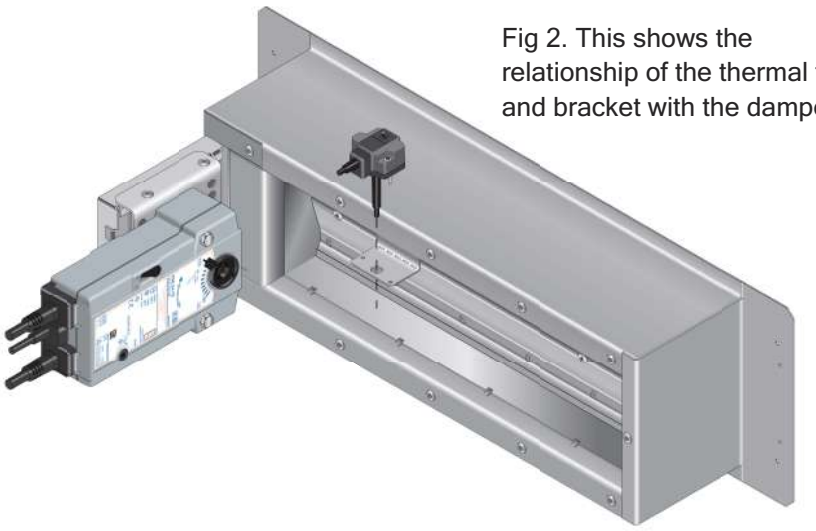


Fig 2. This shows the relationship of the thermal fuse and bracket with the damper.

8. Actuator Function

8.1 The AT-FSD series damper is designed to be open in a non-fire condition, and to failsafe closed on an alarm input, power failure or tripping of the thermal fuse rated at 72°C.

8.2 A BSB PML-TF actuator (spring return closed, c/w thermal fuse) is used to drive the damper blades to the open position for every day free flow ventilation. It will fail-safe spring closed on an alarm input, power failure or tripping of the thermal fuse due to local temperature rise resulting from a fire.

8.3 Actuators are supplied in easy identifiable coloured housings with matching thermal fuse heads.

Grey Housing - 24 volt option

Orange Housing - 230 volt option

9. Actuator Wiring

	BSB PML24 -TF	BSB PML230 -TF
Electrical data		
Nominal voltage	AC/DC 24 V	AC 230 V
Nominal voltage frequency	50/60 Hz	50/60 Hz
Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V	AC 198...264V
Power consumption in operation	4 W	5W
Power consumption in rest position	1.4 W	2.1 W
Power consumption for wire sizing	6 VA	10 VA
Power consumption for wire sizing note	Imax 8.3 A @ 5 ms	Imax 4 A @ 5 ms
Auxiliary switch	2 x SPDT	2 x SPDT
Switching capacity auxiliary switch	1 mA...3 (0.5 inductive) A, AC 250 V	1 mA...3 (0.5 inductive) A, AC 250 V
Switching points auxiliary switch	5° / 80°	5° / 80°
Connection supply/control	Cable 1 m, 2 x 0.75mm² (halogen-free)	Cable 1 m, 2 x 0.75mm² (halogen-free)
Connection auxiliary switch	Cable 1 m, 6 x 0.75mm² (halogen-free)	Cable 1 m, 6 x 0.75mm² (halogen-free)
Cable length thermoelectric tripping device	1 m	1 m
Functional data		
Manual override	With position stop	With position stop
Angle of rotation	Max. 95°	Max. 95°
Running time motor	<60 s / 90°	<60 s / 90°
Running time spring-return	20 s @ -10...55°C / <60 s @ -30...-10°C	20 s @ -10...55°C / <60 s @ -30...-10°C
Sound power level motor	<55 dB(A)	<55 dB(A)
Sound power level spring-return	<67 dB(A)	<67 dB(A)
Spindle drive	Form fit 12x12 mm, Continuous hollow shaft	Form fit 12x12 mm, Continuous hollow shaft
Normal operation temperature range	-30°C...+55°C	-30°C...+55°C
Position indication	Mechanically, with pointer	Mechanically, with pointer
Service life	Min. 60,000 safety positions	Min. 60,000 safety positions
Safety		
Response temperature thermal fuse	Duct outside temperature 72°C Duct inside temperature 72°C	Duct outside temperature 72°C Duct inside temperature 72°C
Degree of protection IEC/EN	IP54 in all mounting positions	IP54 in all mounting positions
EMC/LVD	CE according to 2014/30/EU	CE according to 2014/30/EU
Maintenance	Maintenance-free	Maintenance-free
Weight		
Weight	1.5kg	1.5kg

BSB PML24-TF & BSB PML230-TF
ELECTRICAL CONNECTIONS
DAMPER ENERGISED OPEN / SPRING CLOSED OPTION

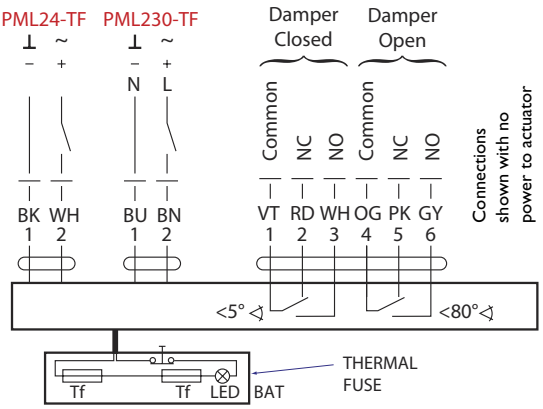
- Wiring diagram shows switch positions based on no power to actuator
- Damper required normally open
- Spring close on removal of power or thermal fuse activation

⚠ **24V AC/DC:** Connect via safety isolation transformer

230V AC: For disconnection from the supply, a separate device must be incorporated in the fixed wiring (at least 3mm contact gap in all poles)

Six core signal cable:

- For damper closed indication use terminals 1 & 2
- For damper open indication use terminals 4 & 6
- Open indication when using set-point position use terminals 1 & 3
- Terminals 1 & 4 can be linked where required as an option
- Unused cores should be isolated
- Connecting cables need to be protected from sharp edges



PML Actuators

All PML Actuators fitted with a thermal fuse are supplied with one metre of halogen-free low smoke and fume cable for the two core power cable and six core status cable. Thermal fuse cable supplied is 500mm long.

The thermal fuse probe requires fixing to the bent out bracket where one Ø9.5mm hole and two Ø2.5mm securing holes are required.

All PML Actuators are double insulated and do not require to be earthed.

Cable runs:
Where the PML Actuator is 230volt, the power and indication cables must be run separately to be compliant with BS 7671.

10. Installation Procedure

The following installation procedure must be read before attempting the installation and followed to ensure that the damper is installed as tested and fully complies with building regulations and local authority compliance.

Where dampers cannot be installed to a tested installation method, the installer should seek an acceptable solution together with the principal designer and building control to agree a practical and acceptable solution as stated in DW 145.

Dampers that are received must be protected from dust, moisture and impact damage and placed or stored in a dry protected area until required. Particular care must be given to the thermal fuse.

10.1 These instructions are based on the most common Dry Line installation, with applicable references made for concrete/masonry wall installations.
10.2 Remove all packaging carefully and check that there is no damage.
10.3 Check the damper label for reference and correct damper size.
10.4 Check the actuator label for correct voltage.
Grey Housing = 24 volt and Orange Housing = 230 volt.
10.5 Determine required location of damper and check that sufficient space exists to fit the damper. Where a grille is also required, check that space is available to allow fitting.
10.6 The fire separation barrier should be checked to ensure that it meets the fire rating called for before preparing the opening for the damper.
10.7 Actual damper sleeve size is provided 10mm below nominal size. This allows 5mm per side clearance. The use of a 5mm packing piece between the bottom of the case and aperture opening will assist installation.
10.8 Finished wall aperture must equal nominal damper size +5mm -0mm.
10.9 Dry wall aperture must be lined out with track and plasterboard on all four internal sides as per Fig 3 and Fig 4.

Fig. 3
Typical Aperture Detail

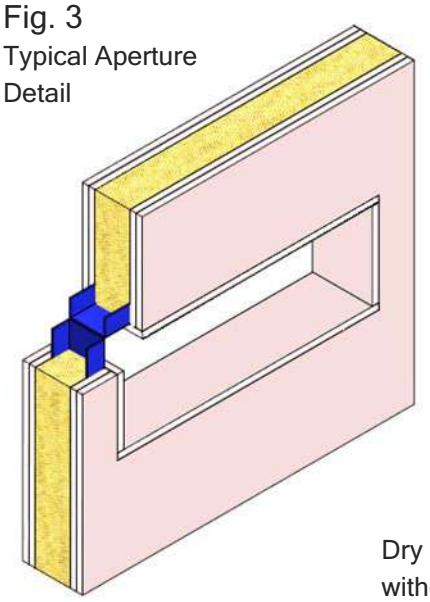
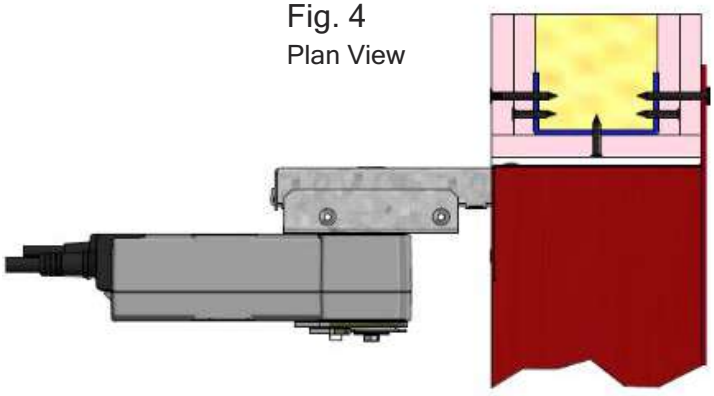


Fig. 4
Plan View



It is important to ensure that the fixing screws penetrate the track and make a secure fixing.

Dry Wall and Masonry aperture to be made to the damper nominal size without any additional tolerance.

10. Installation Procedure continued

10.10 Before installing damper into wall, prepare all electrical connections
Refer to page 4 for wiring details.

10.11 The thermal fuse bracket is deliberately left flat for transit and storage. This will require manually folding out 90° and then fixing the thermal fuse in place using the two PZ2 head self tap screws provided with the thermal fuse.

10.12 Test the damper operation by fully opening and closing the damper. This can be completed by using the thermal fuse test switch or, where power is not available the winding key provided.

10.13 Mid-set point facility (optional extra). See section 11.

10.14 Position damper centrally within the prepared opening, using temporary packing spacers on bottom if required. Mark the hole positions, indicated “A” in Fig 5.

10.15 Drill the four marked “A” holes as marked on the barrier surface, two per side (there may be 3 per side depending on the damper height). For drywalls, use 3.5 dia x 38mm long drywall screws into the outer most damper fixing holes, ensuring the screws pick up the track lining the hole, so that the required fire integrity of the installation will not be compromised. Take care not to use the inner “B” holes that are reserved for the grille fitting if required.

10.16 Masonry walls. Use 5mm dia x 40mm minimum steel fixings drilling out flange “A” holes (Fig 5) as required. Do not use aluminium/zinc or plastic fixings or plugs.

10.17 It is not necessary to apply intumescent mastic between the damper and aperture joint for fire integrity purposes, but may be applied if an airtight joint is required for everyday use.

Fig. 5

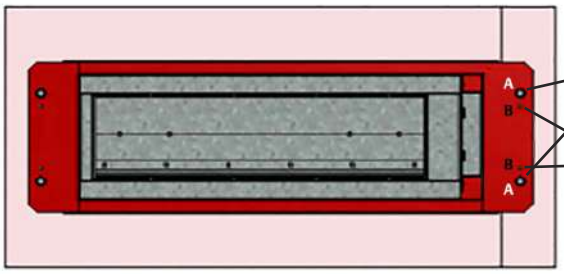
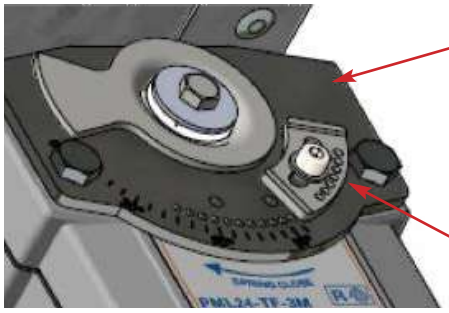


Fig. 6



11. Product Option

11.1 ACTUATOR MID-SET POINT

11.1.1 The PML actuator can be supplied where requested with Mid-Set point facility as an optional extra. This will allow a mid-set point between 30° to 90° to be applied to the actuator (Fig 6) allowing the damper to be set for every-day system air balancing, whilst maintaining the failsafe function. The limiter plate has a threaded hole to accept the cap screw that allows the limit stop to be fixed at the selected set point. The set point limit stop has a curved slot that allows for adjustment between the 30° to 90° range.

11.1.2 Set point facility. Where the option of a set point has been requested and provided to the actuator. Set the damper set point position (see Fig 6) by loosening the cap head screw with a 2.5mm A/F allen key on the positional limiter stop. Once the correct stop position has repositioned retighten the screw.
If further balancing adjustment is required, it will be necessary to remove damper from the wall for adjustment to be carried out if access is not available from actuator side of wall.

11.1.3 Open indication – Open indication is available at 5° and greater when using the mid-set point facility. Use connections S1 & S3 which provides a false negative to show damper open status.

12. Grille Optional - Fig. 7

12.1 A purpose made grille can be supplied as an optional extra.

12.2 Following damper installation and confirming correct position, using a 3.5mm drill bit for dry walls, drill through the damper side flanges (holes B) and into the track lining out the aperture. For masonry walls use a larger drill bit to suit rawl fixings for masonry wall applications. Plastic rawl plugs can be used for the grille fixings.

12.3 Fit the grille using the matching coloured screws provided being careful not to scratch or damage the paint finish using the inner fixing holes “B”. Large height grilles will have three fixing holes per side.

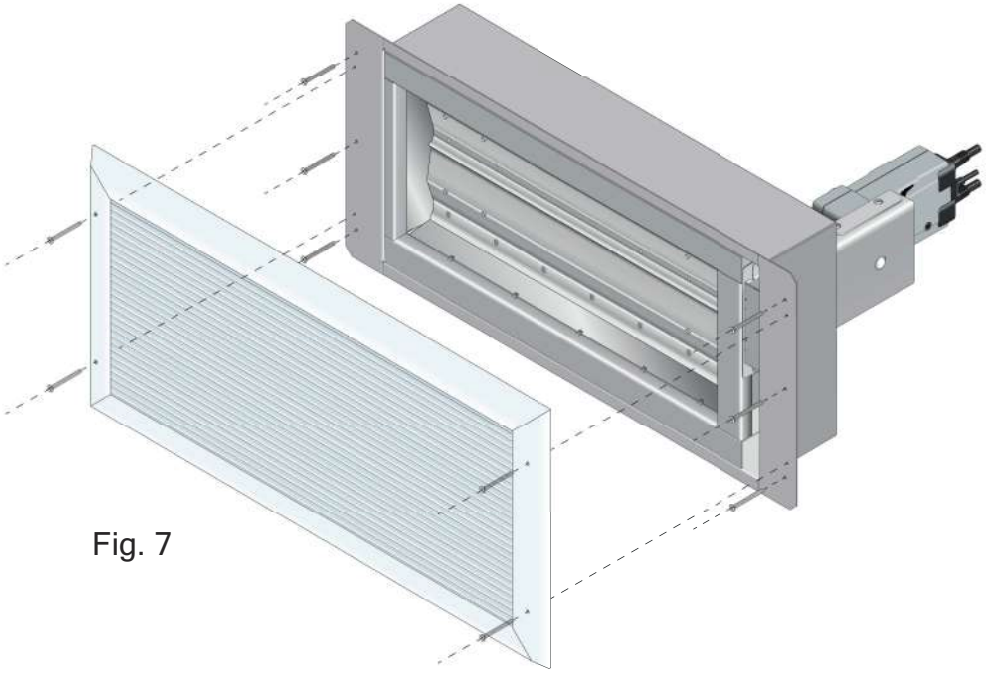
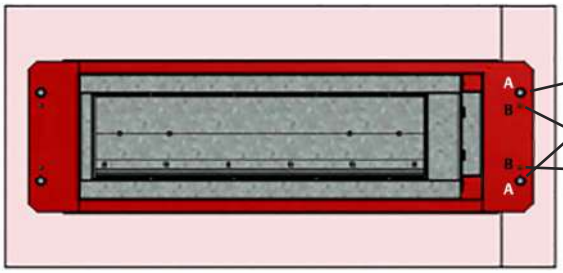


Fig. 7



A.
Flange Fixing Holes

B.
Grille Fixing Holes

13. Fault Finding

SYMPTOM	FAULT	ACTION
No movement from actuator when wired	• No power • Incorrect voltage • Wired incorrectly	Check power supply /wiring
	• Damaged/tripped thermal fuse	Replace thermal fuse
	• Actuator faulty • Actuator/damper not synchronised	Refer to BSB sales office
Damper blades do not travel to fully open or closed positions	Foreign object inbetween damper blades	Visually inspect and remove any obstruction carefully
	Damper seized	Refer to BSB sales office
	Incorrect power supply voltage	Check supply voltage
	Mid-set point incorrectly adjusted	Check mid-set point is in correct position
Noisy damper during operation	Requires cleaning/lubricating	Refer to maintenance

14. Routine Inspection, Testing and Maintenance

14.1 Routine inspection and maintenance should be carried out in accordance with BS 9999 Annex 1.

14.2 Annual inspections and performance tests by competent persons should be programmed in with the site maintenance schedule. Any defects found to be logged and the necessary action taken, and for certificates of inspection and tests to be obtained.

14.3 Remove grille and place with fixing screws in a safe place. Visually inspect the internal damper elements for signs of damage, corrosion, obstructions, dirt/dust etc. If there are any obstructions or if the damper blades/gasket seals are dirty, they need to be cleaned and lubricated using a light spray (duck oil recommended). There should be no more than a thin film of lubricant applied. Remove excess lubricant as this can attract dirt and dust which can have a negative effect on dampers remaining clean.

14.4 The damper status (blade position) needs to match the fire/smoke strategy of the building control system often known as the cause and effect. Each damper should be verified individually that it correctly responds to the input and gives correct feedback to the damper control panel.

14.5 Test the damper operation using the test button on the thermal fuse head. This is a momentary button and will require you to press and hold to prove electrically operation fully closed and once fully closed, release and confirm blades auto reset open. Damper operation testing can also be done via the damper control panel.

14.6 Following the maintenance of each damper, ensure that it is left in its normal state. Record all work that has been undertaken in the maintenance log and ensure that the grille is replaced.

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15. Recycling

15.1 BSB recognises the need to preserve resources and reduce emissions and are actively working towards and introducing more efficient ways of manufacturing.
BSB supports and recommends that good waste management practice be adopted on all new and refurbishment projects, regardless of size. This not only reduces emissions, preserves raw materials and saves energy, but also reduces costs long term.
The AT-FSD series damper is 100% recyclable as it is manufactured all in a steel construction.

15.2 The PML actuator contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed including the WEEE regulations.

16. Inspection and Handover Check Sheet

This check sheet applies to the BSB fire damper series. The installer and system designer should complete this handover check sheet list to ensure the installation is compliant before handover.
A separate check sheet must be completed for each individual damper.

No.	Question	Guidelines	Confirmed
01	Are the dampers the correct type?	Confirm the damper is the correct type and model.	YES / NO
02	Are the dampers individually correctly identified?	Unique system identification and location reference aids commissioning and must be clearly indicated on the damper or agreed location.	YES / NO
03	Are the dampers located correctly?	The damper position shall be checked against the installation drawings/details.	YES / NO
04	Is the method tested and approved for the type of barrier that is being protected?	Ensure modifications have not been made to the tested method.	YES / NO
05	Have supports for both the damper and connected ductwork been installed in accordance with the tested and approved method?	The damper has been independently supported from the ductwork where fitted.	YES / NO
06	Have access doors been fitted to the connecting ductwork?	Access doors are required for commissioning and servicing.	YES / NO
07	Is access through the ductwork, to the damper unobstructed?	Unobstructed space shall be provided for safe access to damper. Also consider access through ceiling voids and adjacent services.	YES / NO
08	Are the dampers fitted in the correct orientation?	Blades are horizontal.	YES / NO
09	Has the space around the damper, and within the penetration, been left clear and not been used for the passage of other services?	The presence of other services will invalidate the installation method.	YES / NO
10	Using the access opening provided, has the damper been left in the open position?	Check blade position	YES / NO
11	Have the damper blades been released to simulate failure of thermal release mechanism (damper ‘drop test’)?	Test button on thermal fuse probe shall be used.	YES / NO
12	Has the damper been checked for internal cleanliness and is free from damage?	With the damper in the closed position inspection for damage and contamination.	YES / NO
13	Have the dampers blades been re-set following the drop test and the access panel replaced?	After re-setting the damper blades, check position shown on blade position indicator is correct.	YES / NO
14	At the time of the damper handover, is the fire barrier and penetration seal complete?	Damper installer to record, on the handover register, if any following trades have still to complete their activities.	YES / NO
15	Is the damper installation completed and available for handover prior to system commissioning?	Obtain relevant acceptance of the damper installation from the system designer	YES / NO
16	Is the completed handover register cross referenced back to the identification codes listed in the system designer’s damper schedule?	Obtain relevant acceptance of the damper installation from the system designer	YES / NO

Other Air, Fire and Smoke Control Products in the BSB Range:

For full details of the complete BSB Product Range, please refer to our individual product brochures, sales office or website.

BSB Engineering Services Limited
Unit 56, Trinity Trade Centre, Mill Way, Sittingbourne, Kent ME10 2PD, UK • Tel: +44 (0)1795 422609
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