V62904

FD-C Series

Installation, Operation and Maintenance Instructions

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

Dampers will only be CE marked if:

- Installed as tested
- No deviation to design
- These instructions are followed

Third party approval will be required for any non-tested proposal.

Before commencing installation, the “Installation Check List” within DW/145 should be referred to. See "Damper Installation Certificate" on page 9.

A brand of MAICO

MANUFACTURERS OF AIR, FIRE AND SMOKE CONTROL PRODUCTS

FD-C Damper Installation, Operating & Maintenance Instructions

1. Storage

1.1 Dampers received on site should be stored in a purpose made storage area, where they can be protected from moisture, dust and impact damage until required. Dampers are designed for installation within internal normal dry filtered H&V systems.

2. Health and Safety

2.1 Only competent personnel may carry out the work outlined in this document.
2.2 Wear appropriate Personal Protective Equipment as required for safe working conditions and as site rules dictate.
2.3 Do not introduce fingers across the open blade or near to the spring loaded handle when releasing.
2.4 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.

3. Important

3.1 These instructions should be read in their entirety before commencing work. The installer must be familiar with the fire separating element construction detail that is produced by that particular manufacturer, and the "as tested" damper installation method, as appropriate for that fire separation barrier.
3.2 Do not over-tighten Fusible Link (FL). Do not force handle when FL assembly is set. Refer to sections 10 and 11 for testing.
3.3 Check internally that any debris has been removed and ductwork is connected. If set and locked open before installation, rough handling of the casing on larger sizes can cause the fusible link mechanism to actuate and close the damper. For existing dry walls – When cutting the opening for damper, and (partial) removal of stud is unavoidable, ensure the structure is sufficiently supported to conform to design specification.
3.4 Dry wall openings must be lined. Please see figure 1.

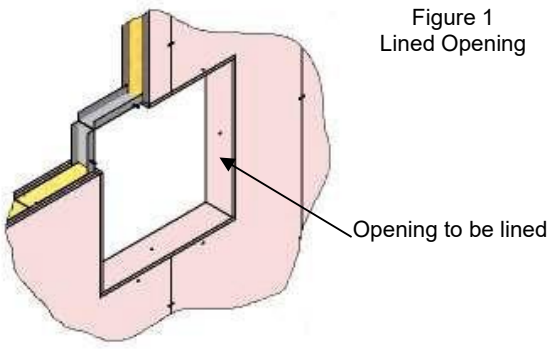


Figure 1
Lined Opening

3.5 Ensure that appropriate 'fire-rated' plasterboard is used throughout the construction of drywall partitions that need to act as fire-barriers. Ductwork to be fitted and connected in accordance with DW 144 / DW145. Aluminium rivets should be used (to act as breakaway-joint). If fire resisting ductwork is being fitted to the dampers use the appropriate tested fire resisting fastenings. The use of Tec Screws is not recommended.
3.6 In accordance with TR/19 and B&ESA DW144 and DW145 access doors/panels/flexi-duct should be fitted adjacent to the damper to allow commissioning, servicing and cleaning. Access doors should not be obstructed.
3.7 All installations are subject to local Building Control Approval (BCA). Tested Installations are detailed herein. If the proposed installation deviates to that shown, acceptance from BCA should be sought before proceeding.
3.8 Refer to main product brochure for full details and specification.
3.9 Where more than one duct penetrates a wall or floor, adjacent fire damper assemblies should be separated by a structural element with a minimum width of 200mm (to comply with BS EN1366-2. Sec'n 13.6), Exceptions to this are Ablative Batt penetration installations that also allows for overlapping plates.

4. Equipment required

4.1 Equipment and tools will vary dependent upon the fire barrier construction that the damper is being installed within. Standard equipment that are normally used for the building of the particular barrier should suffice. 4.2 Access-equipment as necessary (steps or platforms).
4.3 Cordless drill and various dia. drill bits / drivers to suit Installation Plate fixings, and duct connection fixings.

5. Preparation for Installation and General Notes

5.1 Before installation, the damper should be inspected to ensure that it has not been damaged and is in good condition following transportation and/or storage.

5.2 Check damper reference and size to site specification.

5.3 The damper is supplied with blade in the closed position and the Fusible Link held in place by orange transit tape.

5.4 Remove the tape. Unscrew fusible link (FL) anti-clockwise a couple of turns.

5.5 Perform quick test to check damper opens and self closes keeping fingers away from moving blade/handle.

5.6 Where more than one duct penetrates a wall or floor, adjacent fire damper assemblies should be separated by a structural element with a minimum width of 200mm (to comply with BS EN1366-2 sec'n13.6). Exceptions to this are Ablative Batt penetration installations that also allows for overlapping plates.

5.7 Install damper to site specification details and building codes of practice. (Refer to Tested Installation Methods contained herein).

5.8 Ensure that the ductwork is to be independently and adequately supported.

5.9 Note: All Fire Damper installations must be carried out to the satisfaction of the appropriate Building Control Officer and/or specifying authority.

5.10 The installation method contained herein assumes the wall has been built prior to the damper opening preparation. Optionally, the opening may already be present, in which case verify suitability, size and position accordingly.

5.11 Determine required position of damper. Check sufficient space exists to fit the product. Ensure any services (e.g. electrical/plumbing) within the structure or running close to the structure will not be affected. If existing stud/track is avoidable, ensure the structure is sufficiently supported to conform to design specification and that the opening is lined.

5.12 Where the structure is deeper than the casing length it may be necessary to connect ducting to the non-access side of the damper through the opening, before final fitting of the damper. Once this is done, slide the damper and ductwork assembly back through the opening until the Installation Plate butts up to the structural surface ready to be fixed.

Tested Installation Methods

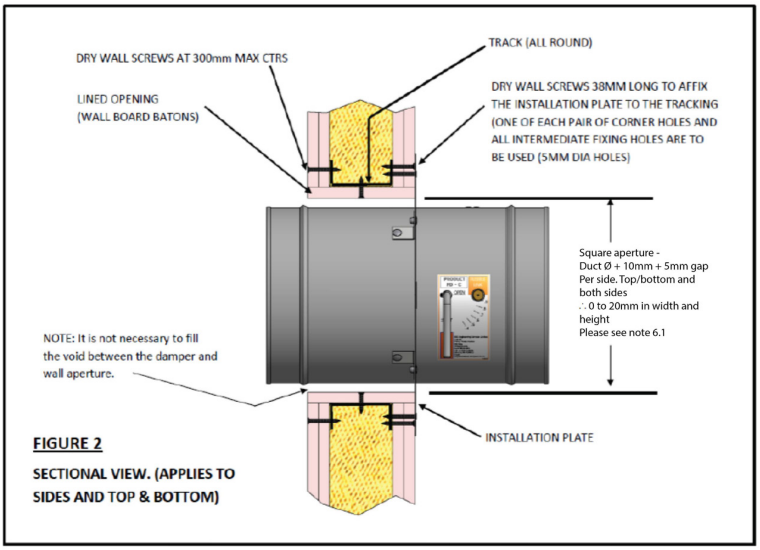


FIGURE 2

SECTIONAL VIEW. (APPLIES TO SIDES AND TOP & BOTTOM)

6. Dry wall Installation Procedure (refer to figure 2 and FD-C M9)

6.1 Finished aperture size is to be square and 20mm larger than the nominal damper diameter. This leaves 10mm nominal gap all round.

6.2 Preferably, prepare opening whilst building wall, or cut opening if wall already exists.

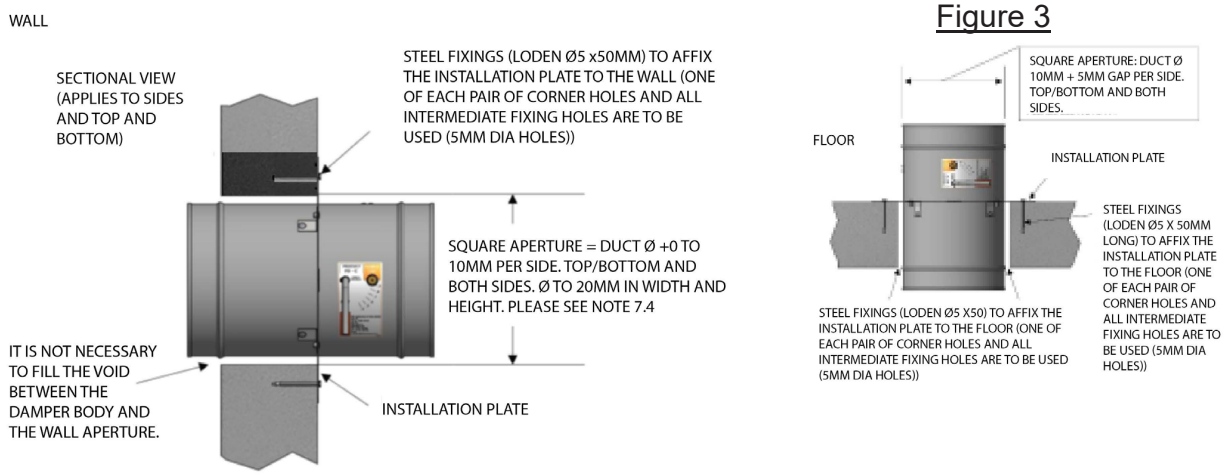
6.3 The hole must be 'lined out'.

6.4 Cut size = damper size + (2 x nominal gap size) + (2 x wall board thickness). See Fig 2.

6.5 e.g. for 150mm dia. damper, and 12.5mm wall board, cut hole should be 195mm (150+(2x10)+(2x12.5))
6.6 Mark out position and size of required cut size on the wall.
6.7 Using appropriate means, cut the hole in the wall and line opening by adding track and batons (fig 1).
6.8 Check opening size is correct.
6.9 Position damper centrally in opening and fix Installation Plate to wall using drywall screws of sufficient length to engage with track.
6.10 ALL Ø5mm fixing holes, except the 4off unused corner fixings must be used.
6.11 Install from ONE side. There is no need to fill void or add pattress on non-access side.
6.12 Test unit - (refer to sections 11).
6.13 Complete Installation check list. (sec'n 13).

7. Block wall and Floor Installation Procedure (refer to figure 3 and FD-C M10/M11)

Figure 3



7.1 Finished aperture size can be square or circular and 0 to 20mm larger than the nominal damper diameter. This leaves 10mm nominal gap all round. For core made apertures, please be aware of the rivet tails on the back of the installation plate. A shallow provision to be made as appropriate.
7.2 Preferably, prepare aperture whilst building wall/floor, or cut aperture if wall/floor already exists.
7.3 Cut size = finished size.
7.4 E.g. for 250 dia. damper, cut hole should be 270mm square or circular (250+20)
7.5 Mark out the position and size of the required aperture on the wall/floor.
7.6 Using appropriate means, cut the aperture in the wall/floor.
7.7 Position damper centrally in wall/floor aperture depth. Fix Installation Plate to wall or top face of floor.
7.8 There are a variety of proprietary fixings available. Fixings must be fire rated (steel, NOT aluminum or plastic). Check minimum dimension specification between fixing and edge of aperture. BSB recommend steel anchor type bolts Ø5mm minimum).
7.9 There is a pair of fixing holes at each of the installation plate corners, but only one fixing is required per corner. On larger dampers, there are also mid-span fixing holes that must be used. ALL Ø5mm fixing holes, except the 4 off unused corner fixings must be used.
7.10 Test Unit. (see section 11)
7.11 Complete Installation check list. (sec'n 13).

TABLE 1

Finished aperture sizes are based on 10mm nominal gap all round.

Damper Dia	Finished Aperture Dimension (mm)
100	120 x 120
125	145 x 145
150	170 x 170
160	180 x 180
200	220 x 220
250	270 x 270
300	320 x 320
315	335 x 335

8. MASONRY WALL BATT SURROUND (Refer to FD-C M8)

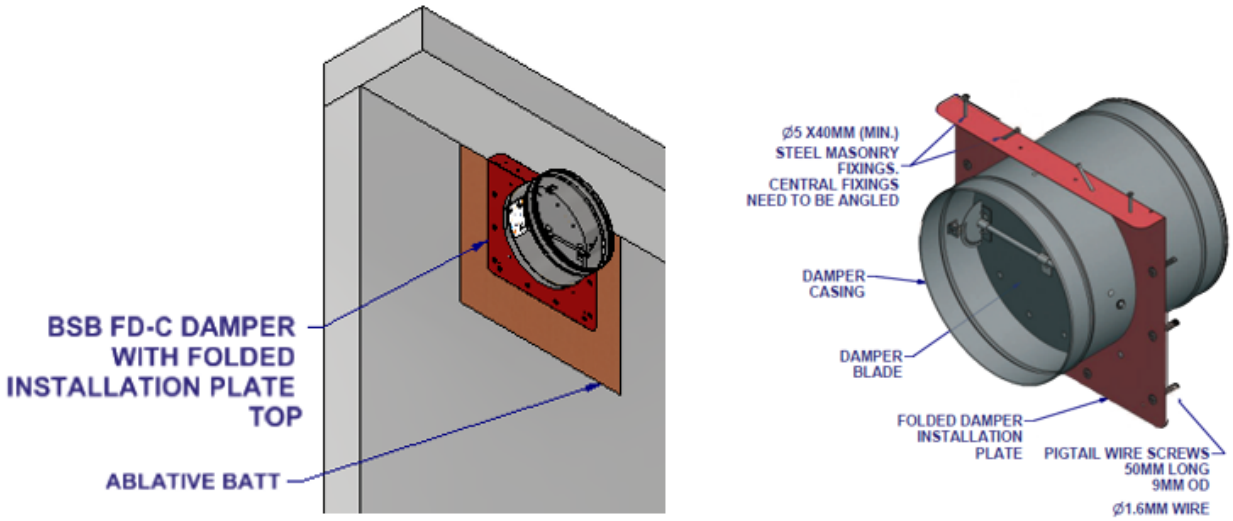


Fig 4

8.1 Folded Installation Plate Installation

8.1.1 The installation plate should be supplied 'factory folded'.

8.1.2 The damper should be installed within and affixed to the top of the aperature as shown in figure 4.

8.1.3 Fire batt material should be cut to suit void with zero clearance to produce an interference fit. The installation plate face, and all edges should be 'glued' in place, and a bead of intumescent mastic applied at all joints.

8.1.4 Note – two layers of 50mm min thickness are required to comply with the 'as tested' installation method.

8.1.5 Screw-in 50mm long spiral (pig tail) fixings through installation plate into batt material utilising one of the pair of corner holes, and all intermediate fixing holes

8.1.6 Recommended minimum void gap (per side) is 60mm and maximum 600mm. If folded, 40mm.

8.2 Fire Curtain (FC) Installation Method (Refer to FD-C M14).

8.2.1 Parts required and checks.

8.2.1.1 Damper.

8.2.1.2 Clamp plate attached to damper.

8.2.1.3 ST4.8mm dia x 19mm long safety self-tapping blunt point (qty to suit damper size). These are optional accessories at the time of purchase of dampers.

8.2.2 Prepare and install damper into position.

8.2.2.1 Remove clamp plate from the damper. The clamp plate will be screwed in corners of the damper frame for transportation.

8.2.2.2 One pair of M10 threaded drop rods are required to be suitably fixed to structure to hang vertically in a fire safe manner to fully support the weight of the damper. There is no limit on drop rod length.

8.2.2.3 To ease install, the drop rods can be joined using a coupling nut and pair of lock nuts to save having to spin the M10 nuts all the way along the length of the studding to the top cleat.

8.2.2.4 Upper drop rod length – The end should be ~100mm below the top damper cleats.

8.2.2.5 Lower drop rod end should be ~50mm below the bottom damper cleats.

8.2.2.6 Fix drop rod structure fixings in position to allow the drop rods to be positioned at a distance apart to match the pitch between the cleats either side of the damper.

8.2.2.7 Measure required length of upper drop rods as described above, cut to length.

8.2.2.8 Fit top drop rods into structure fixings.

8.2.2.9 Position damper by passing the top cleats through the two drop rods, and fitting a pair of M10 nuts to each drop rod underneath the cleats. Ensure damper is horizontal and at the required height by rotating the nuts as required.

8.2.2.10 Fully tighten structure fixings/drop rods and also each pair of cleat nuts to lock in position.

8.2.2.11 Measure required length of lower drop rods as described above, cut to length.

8.2.2.12 Pass the lower drop rods through bottom damper cleats and join to upper drop rods with coupling nut and lock nuts as view C of installation drawing.

8.2.2.13 Fit a pair of M10 nuts to each lower drop rod underneath the damper bottom cleats as per view D of installation drawing. Rotate and lock the nuts so that damper weight is equally shared across all four cleats, adjusting as necessary.

8.2.2.14 Fully tighten both bottom nut pairs.

8.2.2.15 Check all structure fixings and studding nuts are tight and secure.

8.2.2.16 Test damper for operation – refer to the section within IO+M.

8.2.3 Install FFC (Flexible Fire Curtain) material Fire curtain around damper.

8.2.4. Referring to the Firefly Installation guide (www.tbafirefly.com/fire-barriers/), decide where the FFC material vertical joints will need to be positioned. It's important not to have a joint close (within 100mm) to either side of the damper frame sides. For small dampers, it may be possible that no joint is necessary between the cleats depending on the overall wall dimensions and damper position.

8.2.4.1 Fit fire curtain vertical lengths either side of damper.

8.2.4.2 Measure damper position within the structure and mark on the fire curtain where the cut opening is to be located, allowing for extra FFC material as necessary to attach to the structure/overlap joints.

8.2.4.3 Finished opening cut size should be the damper size. Any excess can be left as ‘wrapping around’ the damper.

8.2.4.5 Cut opening in the FFC material to allow material to pass over damper. It is advisable to cut ‘a cross’ diagonally from the center of the damper to the inside of the damper case at this stage and cut to final size once FFC material is fixed to the structure/adjacent fire curtain vertical runs.

8.2.4.6 Install FFC material to the structure and if applicable, overlap butt joints to adjacent FFC material run.

8.2.4.7 Cut opening/trim FFC material to spigot size with a plus 10mm tolerance for each of the spigot sides.

8.2.4.8 Locate clamp plate in position sandwiching the FFC material. Screw to damper frame by piercing FFC material and ST4.8x19 safety self-tapping screws.

8.2.4.9 Tighten all screws to securely sandwich the FFC material.

8.2.4.10 If necessary for aesthetic purposes only, trim any excess FFC material protruding near the damper casing.

8.2.4.11 Wrap Penowrap around the entire length of the drop rods as per Installation drawing, keeping as close to the structure fixings and cleats as possible. Secure in place using steel cable ties (250-300mm pitch).

8.2.4.12 Check damper perimeter that FFC material is intact and that no gaps/ cuts or tears exist and that the overlapping butt joints and fixing to the structure remain intact.

8.2.4.13 Fit ductwork in accordance with DW145, using breakaway joints (aluminium rivets), and ensure ductwork is independently supported.

8.2.4.14 Continue with testing and commissioning as detailed in section 10.

9. Rotatable Cleats (Not FFC)

9.1 Rotatable Cleats are optional and where fitted should only be used to support the damper where the fire separation element is not yet in place, offering a temporary installation support. The cleats must not be the sole independent method of supporting the fire damper.

9.2 The cleats where requested, are supplied flat ready for bending out as and when required.

9.3 The cleats can be easily bent out at right angles by hand, using a medium size flat head screwdriver at one of the cleats pressed-out corners to start (see figure 7.).

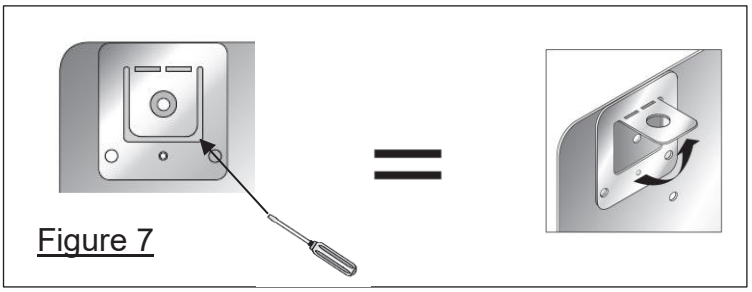


Figure 7

9.4 The cleats can be rotated through 90º and 180º to suit handle position of either side, top or bottom. A minimum of two cleats to be used per damper. (Refer to figure 8).

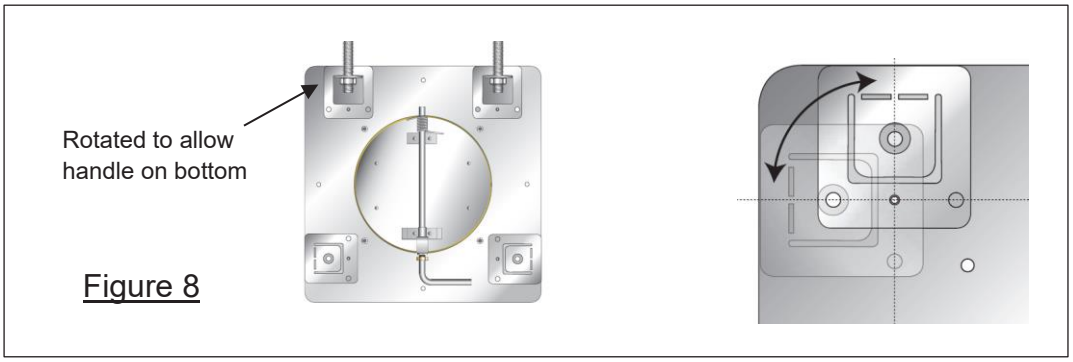


Figure 8

9.4 it is important to use a second nut as a locknut. Do not use nuts above the cleat, as this may restrict drop rod expansion in a fire condition. (Refer to figure 9).

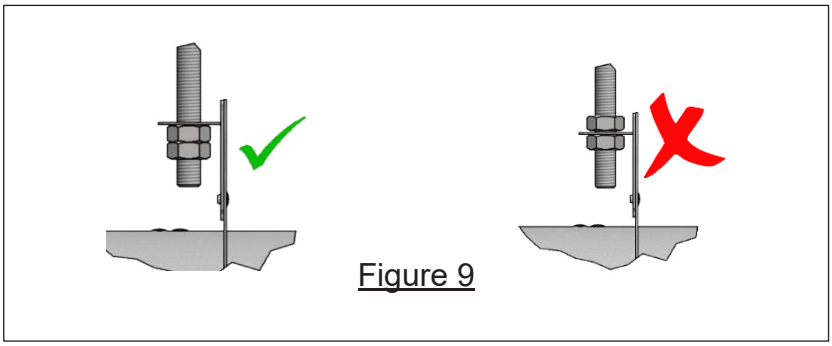


Figure 9

10. Commissioning

10.1 It is recommended that the blade is only opened and locked in position once the damper has been installed into the fire barrier and ductwork is connected. If set and locked open before installation, handling of the casing can cause the fusible link mechanism to actuate and close the blade. Dampers should always be checked that they are open and set correctly after installation.

10.2 **Do not over-tighten Fusible Link (FL)**. Use light finger pressure only. The mechanism relies on engaging toothed spring into retention slots to hold blade in position. Rotate handle whilst tightening FL 'feeling' for slots. Once engaged, it is only necessary to rotate a further ¼ turn.

10.3 **Do not force handle when FL assembly is set**. This will result in damage to mechanism rendering unit inoperable. Check the Installation conforms to specification. Refer to DW/145 E.2 and E.3 (appendix E check lists).

10.4 Test Damper as follows:-

10.4.1 Remove access doors/flexible duct as appropriate.

10.4.2 Check internally that any debris has been removed and the damper internals are clean.

10.4.3 Unscrew fusible link (FL) anti-clockwise a couple of turns. Open damper using handle and set to desired blade position. (Only set blade position if being used as additionally as an air balance damper, otherwise set to fully open). Retighten the FL.

10.4.4 Keeping hands and fingers out of way of the spring-loaded blade and handle, Unscrew the FL quickly. Check visually that the damper blade closes fully.

10.4.5 Set the damper blade to the required open position.

10.4.6 If damper operates satisfactorily, go to section 14 to complete checklist. If not, see Fault Finding Section 12.

10.4.7 It is important to log, and review maintenance frequency based on inspections and test history.

11. Maintenance and Test

11.1 In accordance with BS 9999 Annex W.1, inspection should be undertaken annually. Local regulations/conditions may override this with periodic Inspection being carried out more frequently where corrosive or dirty conditions prevail. The maintenance log should be reviewed at each inspection and the frequency adjusted as required dependent upon findings. (BSB recommend a maximum of 1 year between inspections starting more frequently initially and reduce frequencies only if conditions are proven to allow).

11.2 Before starting, note the damper blade position so that it can be left in same position after test.

11.3 Remove access doors/flexible duct as appropriate. Check damper is clean and free of dust and debris, clean if necessary, using lightly oiled rag to clean inside of the damper case and blade. DEB "duck oil" is recommended.

11.4 Where blade axles/bearings are corroded, apply 2 drops of oil and operate a few times. This will free up the operation.

11.5 Now test damper operation. Keeping hands and fingers out of the way of the spring-loaded handle, Unscrew the FL quickly. Check visually that the damper blade closes fully.

11.6 Reset the damper blade to its previously set-position at the start of this exercise.

11.7 **Do not over-tighten Fusible Link (FL).** Use light finger pressure only. The mechanism relies on engaging toothed spring into retention slots to hold blade in position. Rotate handle whilst tightening FL 'feeling' for slots. Once engaged, it is only necessary to rotate a further ¼ turn.

11.8 **Do not force handle when FL assembly is set.** This will result in damage to mechanism rendering unit inoperable.

11.9 If damper operates satisfactorily, complete maintenance log (this should be retained by facilities management).

11.10 If damper does not operate correctly, go to fault-finding section (section 12). Recording findings and corrective action necessary to facilitate repair in maintenance log.

11.10.1 **IMPORTANT**. When using powered duct cleaning equipment, with a powered rotary head, it is important that contact with the installed damper is not made, as this could result in damage to the damper internals.

12. Fault Finding

Symptom	Fault	Corrective Action
Damper does not travel fully open / close smoothly or has become stuck	Internal foreign object fouling blade	Inspect / remove items
		Clean and lubricate. (Refer to 11.3/11.4)
	Casing dented/damaged or not round	Minor damage may be corrected carefully with a soft mallet. (**BSB always recommend replacement of damaged dampers)**
	Damper internals have been exposed to moisture	Gently apply pressure to blade by hand to move open. Use Scotch Bright pad RED 07447 grade, wet with duck oil and clean the damper internally at the point where the blade closes. Wipe dry and leave clean. 'Massage' exposed peripheral blade seal until pliable.
Damper not in expected 'normal' state Not possible to set damper to open position.	Fusible link (FL) missing	Fit Fusible Link (FL) – Part No: 201448.
	Fusible link (FL) not tightened properly	Tighten Fusible Link (FL)
	Fusible Link (FL) has activated	Measure Fusible Link (FL) overall length, which is normally 29.5mm. If less than 28mm, replace with new link– Part No: 201448.
Fusible Link Mechanism too sensitive	Fusible Link (FL) has activated	Measure Fusible Link overall length, which is normally 29.5mm. If less than 28mm, replace with new link – Part No: 201448.
	Damper case damaged/not round	Check roundness. Reshape if minor adjustment needed. (BSB always recommend replacement of damaged dampers).
	Circlip on the handle lost/damaged	Contact BSB Tech Sales.
	Releases prematurely	Refer to 3.3.

For other symptoms not listed, please refer to BSB Technical Sales Office

13 Installation Check List

Damper Installation Certificate

Project Name: .....Date of Installation:..... .....

Installation Address ..... Postcode: .....

Location Identification (Section/Floor/Room): ....

The installer should complete this installation certificate when installing BSB Engineering dampers. A separate certificate must be completed for each individual damper. This certificate applies only to BSB Engineering dampers.

No.	Questions	Guidelines	Confirmed
1.	Are the dampers the correct type?	Confirm the damper is the correct type and model	**YES / NO**
2.	Are the dampers correctly identified individually?	Unique system identification and location reference aids commissioning and must be clearly indicated on the damper or agreed location	**YES / NO**
3.	Are the dampers located correctly?	The damper position shall be checked against the installation drawings and/or instructions	**YES / NO**
4.	Is the installation 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**
5.	Is the damper installed and fixed in accordance with the manufacturer's tested and approved methods?	Check the damper has been fixed correctly to the fire barrier and is independently supported from the ductwork	**YES / NO**
6.	Have access doors been fitted to the ductwork allowing the damper blades to be inspected?	Access doors are required for commissioning and servicing	**YES / NO**
7.	Is access through the ductwork to the damper unhindered?	Unobstructed space shall be provided for safe access to damper. Also consider access through ceiling's voids and adjacent service	**YES / NO**
8.	Is penetration only used by the damper and not used for the passage of other services?	The presence of other services will invalidate the approved installation method	**YES / NO**
9.	Using the access opening provide, has the damper been left in the open position?	Check blade position	**YES / NO**
10.	If motorised, is the correct power supply wired to the actuator and power is on?	Check power is on to the actuated damper, to ensure testing can be carried out	**YES / NO**
11.	Is the Thermal Fuse or Link correctly installed?	Confirm fitted correctly to ductwork/damper	**YES / NO**
12.	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 or fusible link removed to drop test	**YES / NO**
13.	Have the dampers been checked for internal cleanliness free from damage and debris?	With the damper in the closed position inspect for damage and contamination	**YES / NO**
14.	Have the dampers blades been re-set following the drop test and the access panel replaced?	Damper installer to record, on the register, any incomplete works relevant to the damper installation	**YES / NO**
15.	At the time of the damper handover, is fire damper installation completed in accordance with this check list?	Damper Installer to record, on the register, any incomplete works relevant to the damper installation	**YES / NO**
16.	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**
17.	Is the completed handover register cross referenced back to the identification codes listed in the system		**YES / NO**

Damper reference ID: .....**Damper product type:** .....

Notes/Considerations (Please use an additional sheet if applicable): .....

.....

Company name: .....

Company address: ..... Postcode:.....

Company telephone: .....Company website: .....

Installer's first name: .....Installer's Last name: .....

Installer's mobile:.....Email address :.....

Please provide the full name, contact number and email address of additional installers on a separate sheet.

I, the undersigned, confirm that the damper referenced in this certificate has been checked and installed to the manufacturer's tested method.

Signature: .....Name:.....Date: .....

FD-C Series

Installation, Operation and Maintenance Instructions

A brand of MAICO

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.

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Certificate No. 1464

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