

# FD-C Damper Installation, Operating & Maintenance Instructions

## **1. Storage**

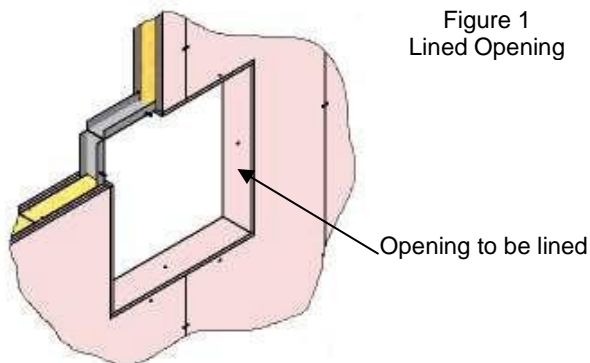
- 1.1 Dampers received on site should be stored in a purpose made storage area, where they can be protected from moisture, dust and impact damage until required. Dampers are designed for installation within internal normal dry filtered H&V systems.

## **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.



- 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.

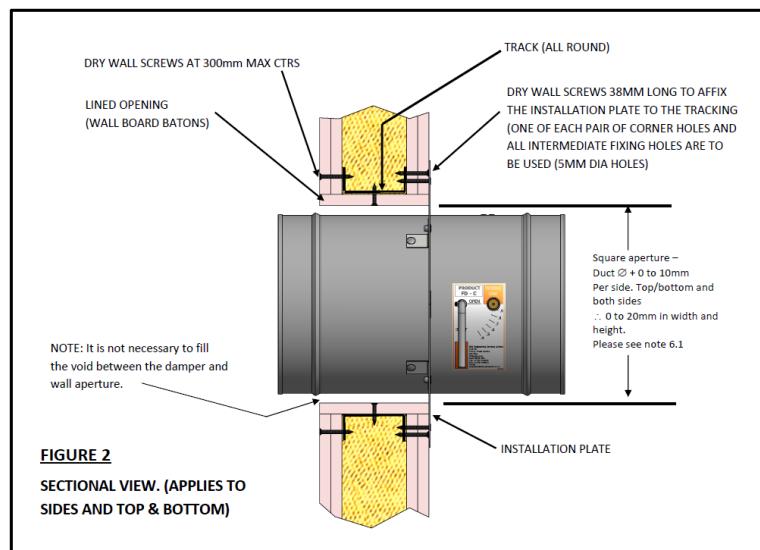
## **4. Equipment required**

- 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 / Smoke 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

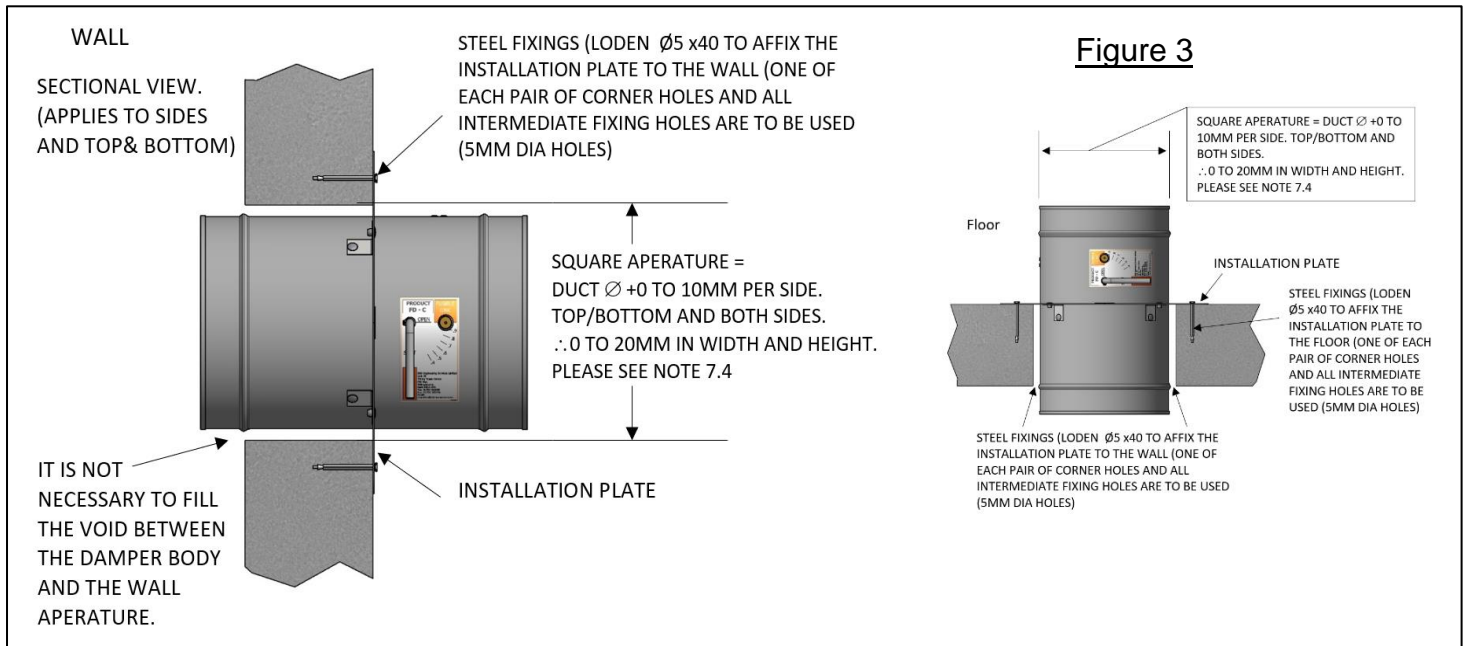


## 6. Dry wall Installation Procedure (refer to figure 2)

- 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 4 off 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 10).
- 6.13 Complete Installation check list. (sec'n 14).

**7. Block wall and Floor Installation Procedure (refer to 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 14).

**TABLE 1**

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

Damper Dia	Finished Aperture Dimension
100	120 x 120
125	145 x 145
150	175 x 175
160	185 x 185
200	220 x 220
250	270 x 270
300	320 x 320
315	335 x 335

## 8. Ablative Batt Installation Procedure.

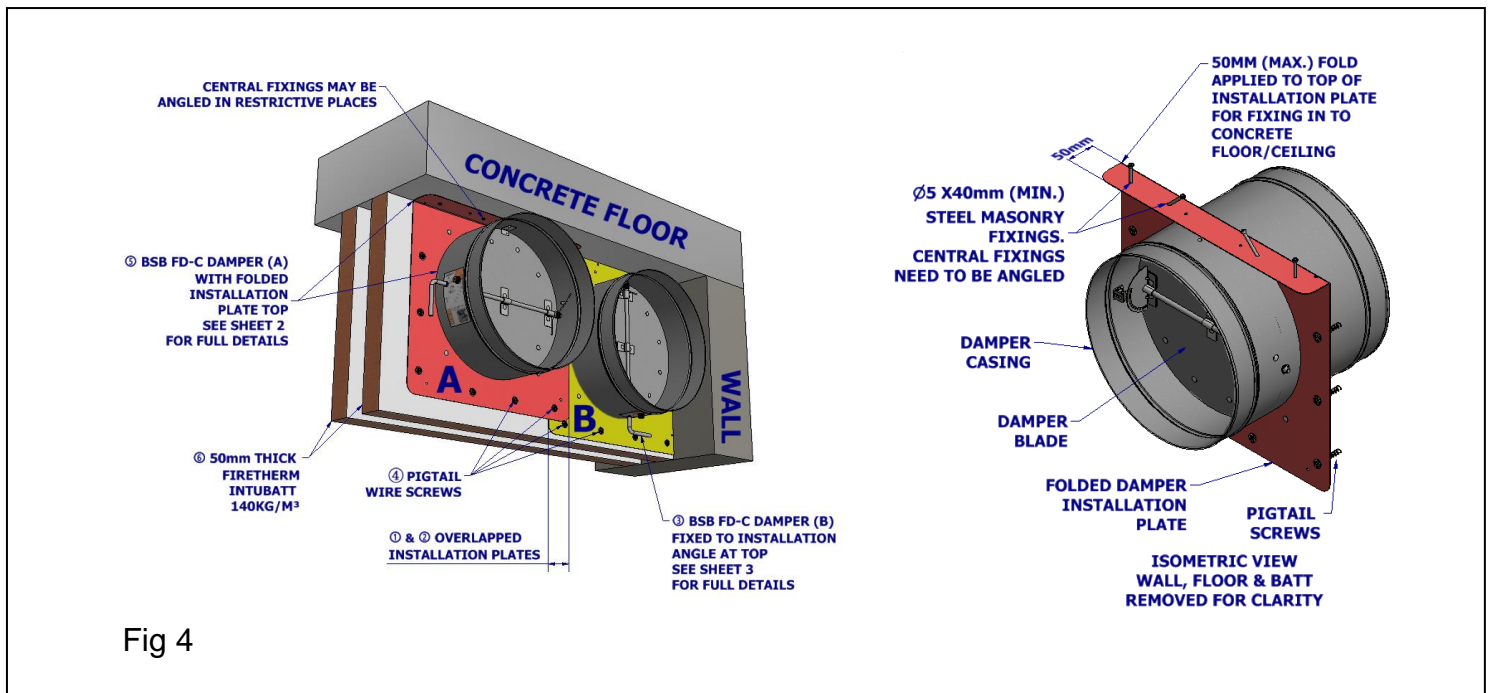


Fig 4

### 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 aperture 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 Cut down installation plate installation

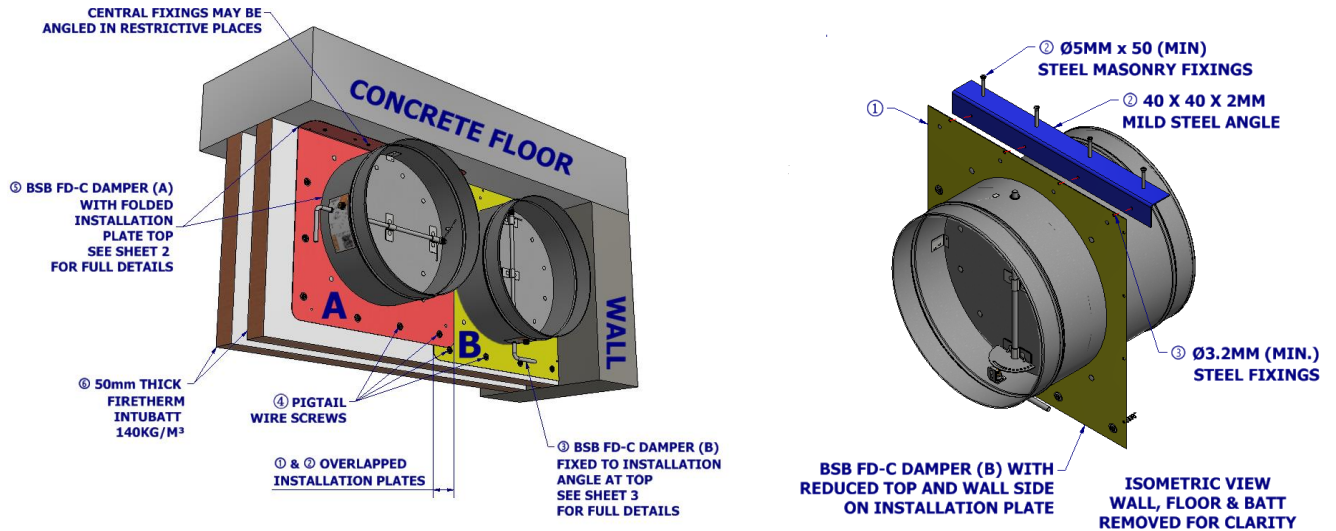


Fig 5

### 8.2.1 Reduced installation plate.

8.2.2 The installation plate is recommended to be supplied 'factory cut'. All four sides can be supplied cut down where required.

8.2.3 A length of steel supporting angle should be affixed to the top of the opening as shown in fig. 5

8.2.4 The damper should be installed within and affixed to the top supporting angle.

8.2.5 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.

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

8.2.7 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. (It may be necessary to drill additional fixing holes depending on plate size reduction).

8.2.8 Recommended minimum void gap (per side) is 40mm and maximum 600mm.

### 8.3 Overlapping installation plate installation (refer to fig 6)

8.3.1 It is permissible to overlap the installation plate with another installation plate where two dampers are near to each other.

8.3.2 The two overlapping plates should be secured together by drilling 3.2mm dia holes and using steel rivets mirroring the existing fixing pitches.

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

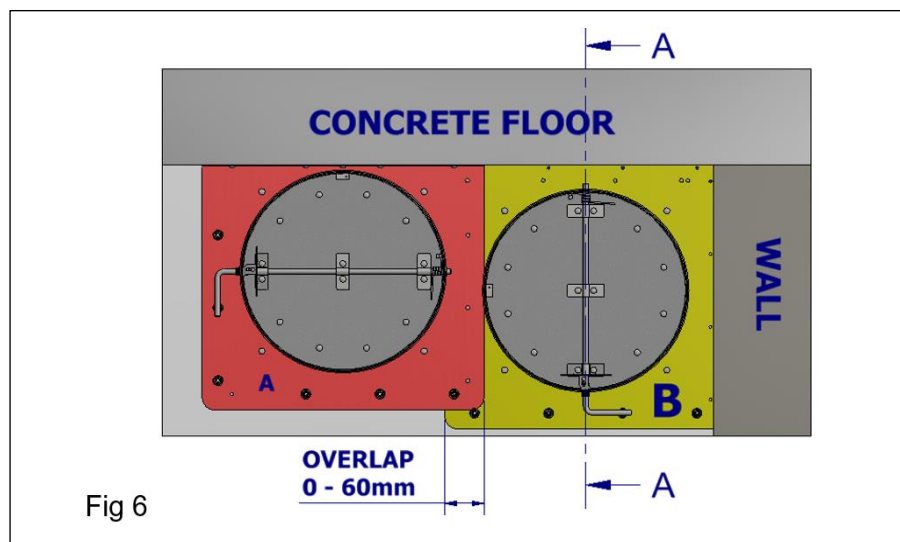
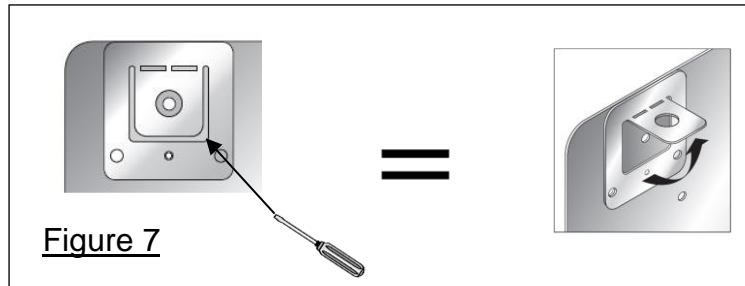


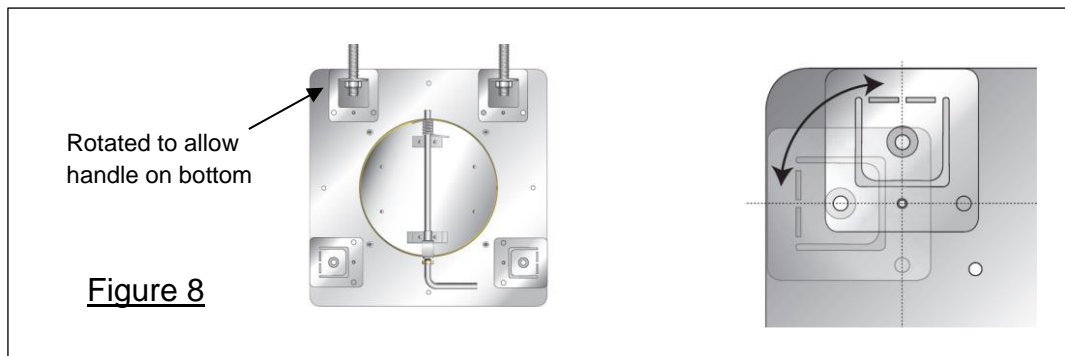
Fig 6

## 9. Rotatable Cleats

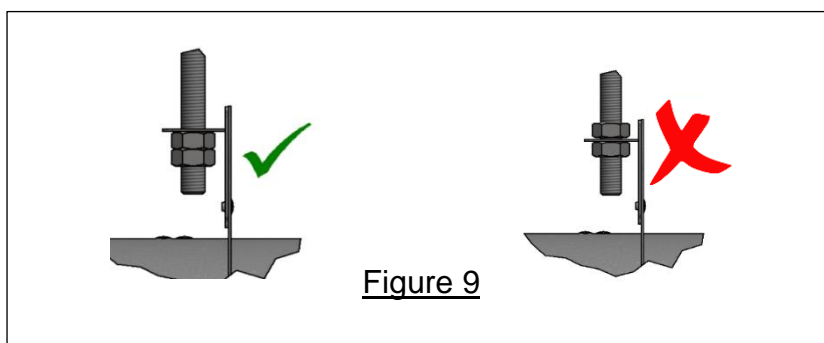
- 9.1 Rotatable Cleats are optional and where fitted should only be used to support the damper where the fire separation element is not yet in place, offering a temporary installation support. The cleats must not be the sole independent method of supporting the fire damper.
- 9.2 The cleats where requested,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



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



## **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.  
**Do not force handle when FL assembly is set.** This will result in damage to mechanism rendering unit inoperable.
- 10.3 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. <b>(BSB always recommend replacement of damaged dampers)</b>
	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	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.
Fusible Link Mechanism too sensitive	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.
Not possible to set damper to open position.	Fusible Link (FL) has activated	Measure FL overall length, which is normally 29.5mm. If less than 28mm, replace with new link.

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



**13 Installation Check List**

DAMPER DIA & REFERENCE NO.:	DAMPER LOCATION:					
WALL/FLOOR APERTURE SIZE						
WIDTH	HEIGHT					
DAMPER INSTALLED BY: .....						
Print name						
Signature:	Company:					
	Date:					
DAMPER BLADE POSITION (CIRCLE APPROPRIATE POSITION)						
0.6	0.5	0.4	0.3	0.2	0.1	FULL OPEN
FINAL INSPECTION BY: .....						
(Print name)						
Signature:	Company:					
	Date:					

**This document to be provided to and kept with service records until the equipment referenced is removed.**



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