FIREPRO®
Fire Duct Systems

Tools required

- Insulation knife or insulation saw
- Tape measure
- Trowel/spatula

Ancillary products

FIREPRO® Glue, self adhesive alumiunium foil tape, pigtail screws, stud welded pins & washers

Fixing and application

Hangers, bearers and flanges

Fire Duct products are approved to provide fire protection to steel ductwork, wholly constructed using steel fixings in accordance with current B&ES specification DW/144 and superseded specification DW/142.

Where there are constructional options within DW/144 and DW/142, these are expanded upon below. These details are primarily concerned with duct joint types and the suspension method.

DW/142 flanged cross joint types J3, J4, J5 and J6 are acceptable for use with the Fire Duct System, without modification.

Fire Duct Slab, Fire Duct Section or Fire Duct PSM may be installed either outside or inside the hanger system.

Bearers will require additional protection only when positioned outside the Fire Duct layer.

Drop rods will normally be protected with Fire Duct Section or with Fire Duct Slab blocks (see Figure 1).

Alternatively, the support steelwork may be sized so that separate protection is not required. Design of this 'unprotected support' method is independent of the Fire Duct System.

Item	Duct size (mm)		
	Up to 1500 x 1500	Up to 2000 x 2000	Up to 3000 x 3000
Max hanger centres (mm)	1500	1500	1500
Min drop rod size	M10	M10	M12
Min angle bearer (mm)	30 x 30 x 3	50 x 50 x 5	50 x 50 x 6

** DW/144 and DW/142 do not specifically cover ducts larger than 3m wide. Please contact ROCKWOOL for details*

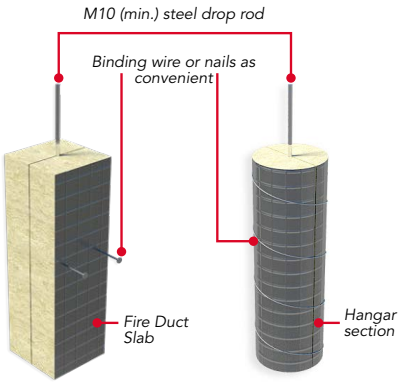


Figure 1
Isometric view of drop rod protection options

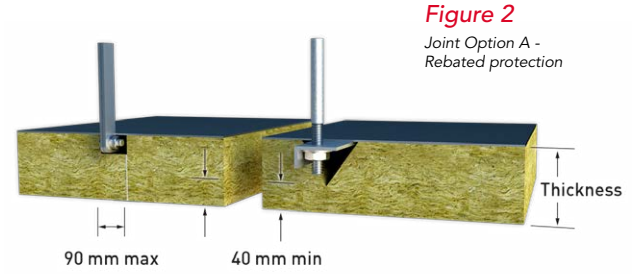
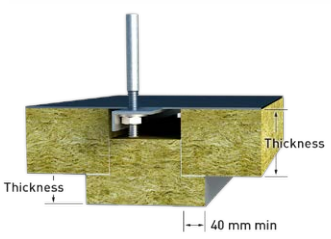
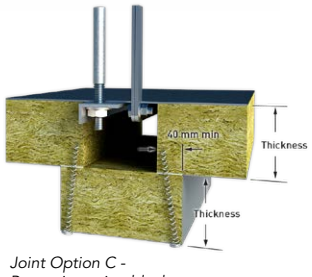


Figure 2
Joint Option A - Rebated protection



Joint Option B - Protection using 'T' section



Joint Option C - Protection using block cover strip

Protection of hangers outside Fire Duct System

Hangers outside the Fire Duct System are protected by cutting a rebate into a block of Fire Duct Slab, Fire Duct PSM or Fire Duct Section.

The rebate should be no larger than necessary to accommodate the bearer. The block should be glued and pinned in position (see Figure 2, Option A&B) or secured using pigtail screws (see Figure 2, Option C and Figure 3).

Other J Joints

If type J1 or J2 cross joints are fitted, then the joints must be upgraded to at least the J3 specification. This can be done by adding steel fixing bolts and fastenings in line with the J3 joint type. Also, a minimum S3 stiffener should be fitted to the duct adjacent to the cross joint. This will upgrade the cross-sectional stiffness of the duct.

Welded pins

Welded pins are spaced at 350mm maximum centres along the length of the duct and at 500mm maximum centres across the width and depth of the duct. Pins are required on all four sides of vertical ducts but may be omitted from the top face of horizontal ducts (see Figures 4&5).

ROCKWOOL FIREPRO® Glue

Instead of pigtail screws, longitudinal joints can be fixed with FIREPRO® Glue and nails, at 500mm centres.

ROCKWOOL FIREPRO® Glue has a pH value of 11. It is provided in 17kg drums and should always be stirred before use.

Where required, 1–1.5mm of glue should be applied to each Fire Duct joint. The glue is generally applied by spatula or trowel.

Where present, any foil facing must be removed from surfaces prior to the application of FIREPRO® Glue. Take care to remove any FIREPRO® Glue from all aluminum foil surfaces with a damp cloth.

Nails (for use only with mitre-joint 'glued' systems)

The use of mitre-joints at slab corners allows installation in situations where welding may not be practical.

All joints bonded with ROCKWOOL FIREPRO® Glue. Longitudinal corner joints secured with nails while the FIREPRO® Glue cures. The nail length is to be 2 x board thickness (see Figure 6 for positions).

Figure 3

Pigtail screw

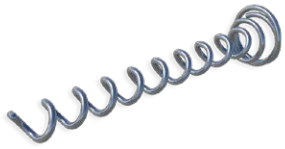


Figure 4

Steel pin arrangement where side panel does not exceed 1000mm and soffit panel does not exceed 600mm

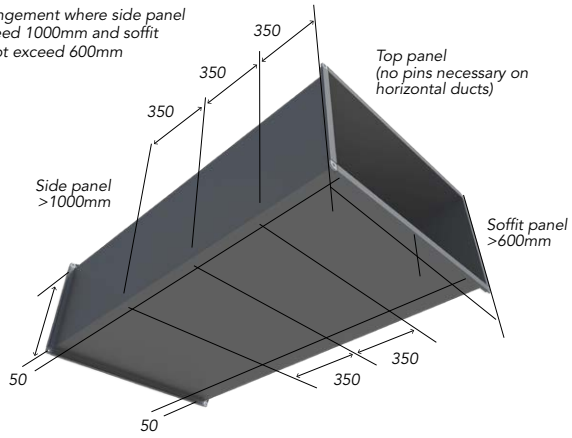


Figure 5

Steel pin arrangement where side panel is greater than 1000mm or soffit panel is greater than 600mm

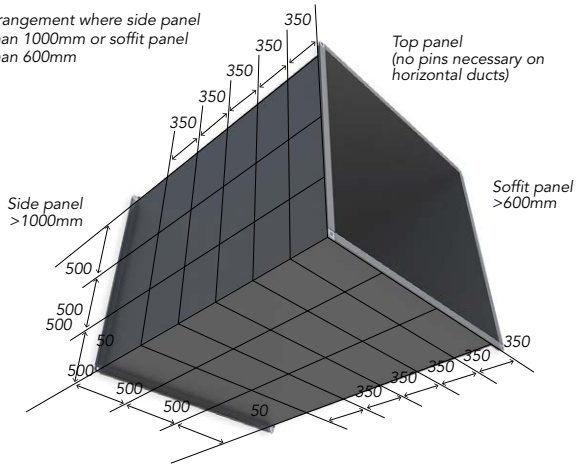
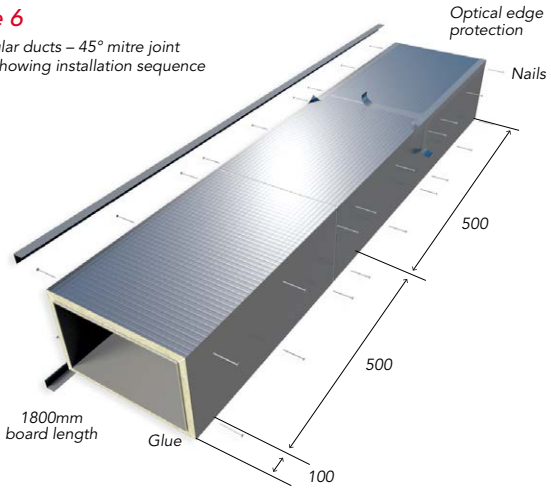


Figure 6

Rectangular ducts – 45° mitre joint system, showing installation sequence



Pigtail screws

Pigtail screws are to be used at all corner joints where FIREPRO® Glue is not used, and to secure cross joint cover strips.

Pigtail screws are to be positioned at 250mm maximum centres, and the screw length is to be 2 x slab thickness.

For horizontal ducts, pigtail screws must be inserted horizontally.

Optional edge protection

Light gauge metal angles may be glued in position to provide optional edge protection. The metal angles must be de-greased. Small pins may be required to hold the angle to the underside of the duct (see Figure 6).

Vapour barrier

Where a vapour barrier is required, all exposed Fire Duct edges and penetrations through the foil must be sealed using aluminium foil tape.

Wall penetrations, elbows, 2 and 3-sided applications and access hatches

Wall and floor penetrations

Support to duct sides is required at all penetrations for stability purposes. This support can be provided by:

- A 30 x 30 x 2mm mild steel angle frame fixed to the duct at the penetration mid-point. Steel rivets should be used at 300mm maximum centres (Figure 7)
- Locating the duct joint at the penetration mid-point.

In all cases, low density ROCKWOOL stone wool, typically RWA45, is packed tightly into the void between the Fire Duct product and the wall opening.

120mm wide blocks of Fire Duct are glued (or secured with pigtail screws) to the duct insulation and to the wall on both sides of the penetration.

All Fire Duct to wall joints are glued. Aluminium foil is located in Fire Duct joints at wall penetrations (as shown).

Proprietary penetration seals

Where proprietary penetration seals are used, compatibility with the separating element, duct construction and Fire Duct System must be demonstrated by independent test or assessment.

Figure 7

Steel angle frame support to duct at penetration mid point

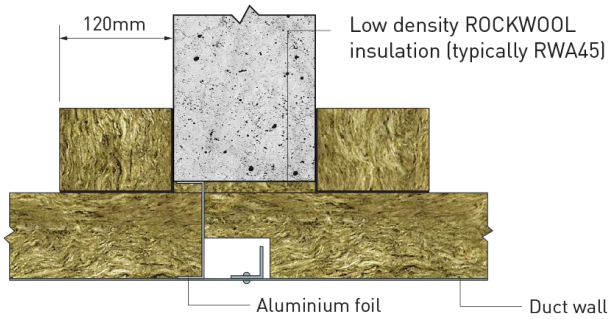


Figure 8

Typical elbow detail for rectangular ducts

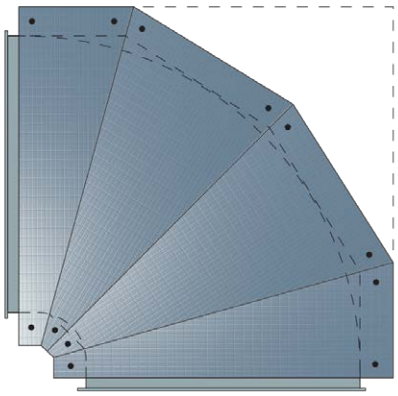
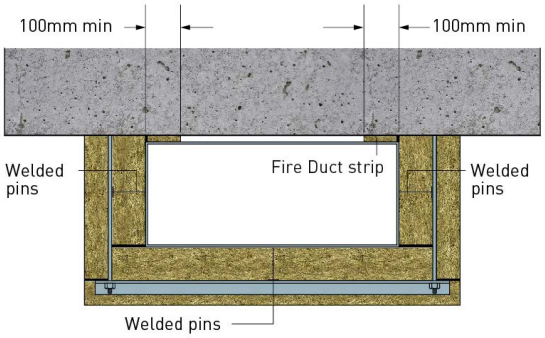


Figure 9

Three sided protection for rectangular ducts, using welded pin fixing method



Elbows (rectangular ducts)

Small elbows may simply be boxed or 'squared off'. Larger elbows may need to be protected by cutting fan shaped pieces, generally in accordance with the illustration (Figure 8).

2 and 3-sided applications (rectangular ducts)

The use of Fire Duct products incorporating welded pins is recommended for 2 and 3-sided applications.

The method illustrated (Figure 9) for three-sided applications, may also be used for two-sided applications where the duct is securely braced in the corner of a room.

Access hatches (rectangular ducts)

Steel access hatches which are constructed and fitted in accordance with DW/144 may be protected with Fire Duct Slab (Figure 10).

The Fire Duct cover may be fitted in any face of the duct. However, if the sliding cover is not in the horizontal plane the guides must be positioned so as to prevent movement of the cover due to weight, vibration etc.

The sliding cover must be a tight fit in the guides. No part of the arrangement may be within 50mm of edges or joints within the main duct protection layer of Fire Duct Slab.

All Fire Duct Slab joints (excluding sliding joints) are to be glued and pinned as previously detailed.

Access hatches (circular ducts)

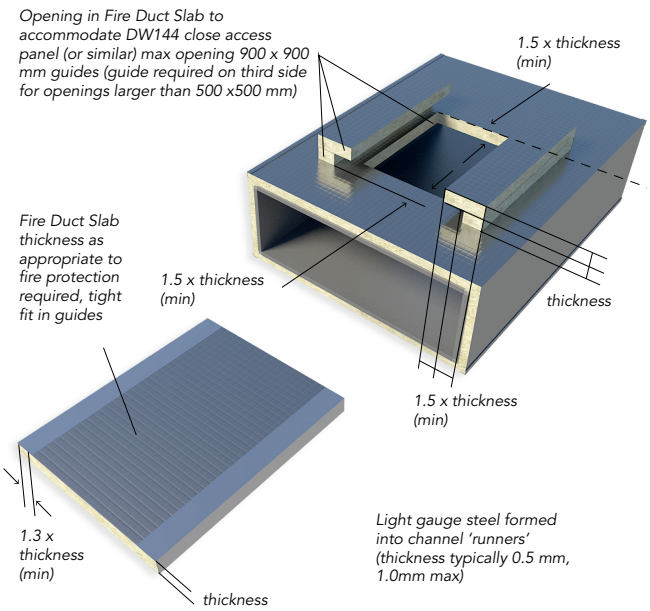
Details of access hatches for circular ducts are available on request.

Handling

The Fire Duct range of products is light, easy to handle and simple to fix. The products can be cut and shaped using knives, saws, etc.

Figure 10

Removable cover panel for steel access hatch



Ancillaries

Welded steel pins

Welded pins are generally spaced at 350mm maximum centres along the length of the duct and at 500mm maximum centres across the width and depth of the duct. Pins are required on all four sides of vertical ducts, but may be omitted from the top face of horizontal ducts (see Figures 5 and 6).

Details of alternative mechanically fixed pins are available from ROCKWOOL on request.

Construction detail	Requirement	Details of modification where needed	Within specification
1. Duct sheeting	Rigid steel (zinc-coated, alu-zinc coated, black or stainless)		
2. Sheet thickness	0.8mm or greater. See DW/144 for ducts larger than 1500mm		
3a. Welded pin fixing methods	Up to 1500 x 1500 mm: no additional system modifications		
	Up to 2000 x 2000mm: increase angle bearer size to 50 x 50 x 5mm min		
	Up to 3000 x 3000mm: increase angle bearer size to 50 x 50 x 6mm min		
	Increase drop rod diameter to M12 min		
	Up to 4000 x 4000mm: 50 x 50 x 6mm min. bearer. M12 min. drop rod		
	Incorporate additional drop rod mid-width through duct and bearer*		
	Weld (or fasten with with nuts and large washers) M15 min. strengthening rod. at mid-width of each flanged joint and penetration point to maintain cross section		
	Seal all holes with mastic		
	Above 4000 x 4000mm: 50 x 50 x 6mm bearer. M12 min. drop rod		
	Incorporate additional drop rods through duct and bearer to ensure 1500mm max. spacing along bearer*. Weld (or fas- ten with nuts and large washers) M15 min. strengthening rod at each flanged joint and penetration point to ensure 1500mm max. spacing along joint. Seal all holes with mastic.		
	*Additional drop rods to pass through duct and bearer. Rods to support bearer. 'Top' of duct to be held in position with steel nuts and large steel washers		
3b. Mitre-joint fixing methods		If duct dimensions exceed those shown, use welded steel pins as per Fire Duct system manual (see item 3a)	
½ hr HVAC & smoke extract	1500mm x 1500mm		
½ hr kitchen extract	1500mm x 1500mm		
1 hr HVAC & smoke extract	1500mm x 1500mm		
1 hr kitchen extract	1500mm x 1500mm		
1½ hr HVAC & smoke extract	1200mm x 1200mm		
2 hr HVAC & smoke extract	1000mm x 1000mm		
4. Flanged cross joint	Type J3, J4, J5 or J6 to HVAC specification DW/142 and DW/144	Strengthen joints (contact ROCKWOOL)	
5. Joint seal	May be included or omitted		
6. Constructional fixings	Steel		
7. Bearers	30 x 30 x 3mm (min.) steel angle. See item 3a for ducts larger than 1500mm		
8. Drop rods			
9. Drop rod anchors			
Fixed through steel suspension frame	Steel frame to be independently fire rated	Fire protect steelwork	
Fixed into concrete	Anchors to have confirmed fire rating. M10 (min.) mild steel. See item 3a for ducts larger than 2000mm	If fire rating is un-confirmed and anchor is all-steel, ie without plastic or chemical components; affix 300mm x 300mm collar of unfaced Fire Duct Slab to soffit with FIRE-PRO® Glue, keeping anchor central. Collar thickness to equal duct encasement layer. Optional self-tapping screws may be used to support collar. Glue adjacent Fire Duct drop rod protection to collar.	
10. Spacing of suspension system			
10a. Horizontal ducts	1500mm max. centres		
10b. Vertical ducts: 2 or 3 sided protection	1500mm max. centres	Install additional supports	
10c. Vertical ducts: 4 sided protection	Support at every floor (4 m max. centres)		
11. Stiffening of duct at penetration detail	Duct flange or 30 x 30 x 3mm steel angle frame fixed with steel fixings at 300mm max. centres. To be positioned within the width of the penetration. See item 3a for ducts larger than 3000mm.	Install steel angle frame	
12. Compartment wall	Fire rated masonry, concrete, brick, block, plasterboard or other fire rated construction		

Health & safety

The mechanical effect of fibres in contact with skin may cause temporary itching.

Cover exposed skin

When working in unventilated area wear disposable face mask.

Clean area using vacuum equipment.

Waste should be disposed of according to local regulations.

Rinse in cold water before washing.

Ventilate working area if possible.

Wear goggles when working overhead.