Fire Rated Vertical Laminated Duct

Laminated duct systems are fire rated laminated plasterboard enclosures for building services. They are designed to provide fire and acoustic isolation for electrical, plumbing and air-handling services. The laminated duct systems are constructed from three layers of either 13mm or 16mm FireShield and metal angle framing.

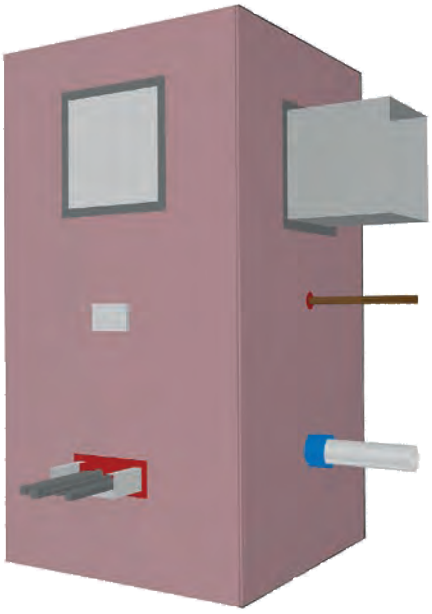
Laminated duct systems are suitable for use with fire rated penetrations including access panels, cable trays and power points.

Laminated ducts can form one up to four sides of a fire rated enclosure. They can be easily joined to other plasterboard, masonry or concrete walls with an equivalent or higher fire rating.

Unless otherwise stated, laminated duct systems are non-load bearing and must not support roof, ceiling or floor loads.

For acoustic upgrades [*Refer to Section 3.6.1*].

FIRE RATED VERTICAL LAMINATED DUCT



KLVD1-KLVD2

FRAME: 50x50mm, x 0.7mm BMT steel angles
DUCT LINING: 3 layers of 13mm or 16mm **FireShield** laminated together
[13mm **FireShield** can be substituted with 13mm **TruRock**]
[16mm **FireShield** can be substituted with 16mm **TruRock**]
[Laminated Vertical Duct can be 1, 2, 3 or 4 sided]
[Refer to 'Framing' for Maximum Height and Maximum Width dimensions]

FRL	System	Plasterboard Lining	Plasterboard Thickness (mm)	Sound Insulation Rw (Rw + Ctr)
– /90/90 rated from both sides Fire Report FAR 1660	KLVD1	3 layers of 13mm FireShield	39	37 (34)
– /120/120 rated from both sides Fire Report FAR 1660	KLVD2	3 layers of 16mm FireShield	48	38 (35)

General Requirements

	Fire Rated
Only joint the face layer. As a minimum to achieve the FRL, only use paper tape and: › Two coats of **MastaBase**/**MastaLongset**, or › Three coats of MastaLite.	✔
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.	✔
Use fire sealant on all gaps and around perimeter, vermiculite plaster is not permitted.	✔

For acceptable modifications or variations to fire rated systems. *[Refer To Section 2.3 Fire Resistance]*

Maximum Height and Width Dimensions

Max Duct Width (m)	Max Duct Height (m)
Unlimited	3.0
3.0	3.6
2.4	4.2
1.8	4.8
1.2	5.4

1 Dimensions apply to both KLVD1 and KLVD2 systems

Plasterboard Layout

	Fire Rated
Vertical Layout	
Stagger butt joints by 600mm minimum on adjoining sheets and between layers.	✔
First layer butt joints must be backed by a steel angle of minimum 50mm width.	✔
Stagger recessed edges by 300mm minimum between layers.	✔

Minimise butt joints by using long sheets.

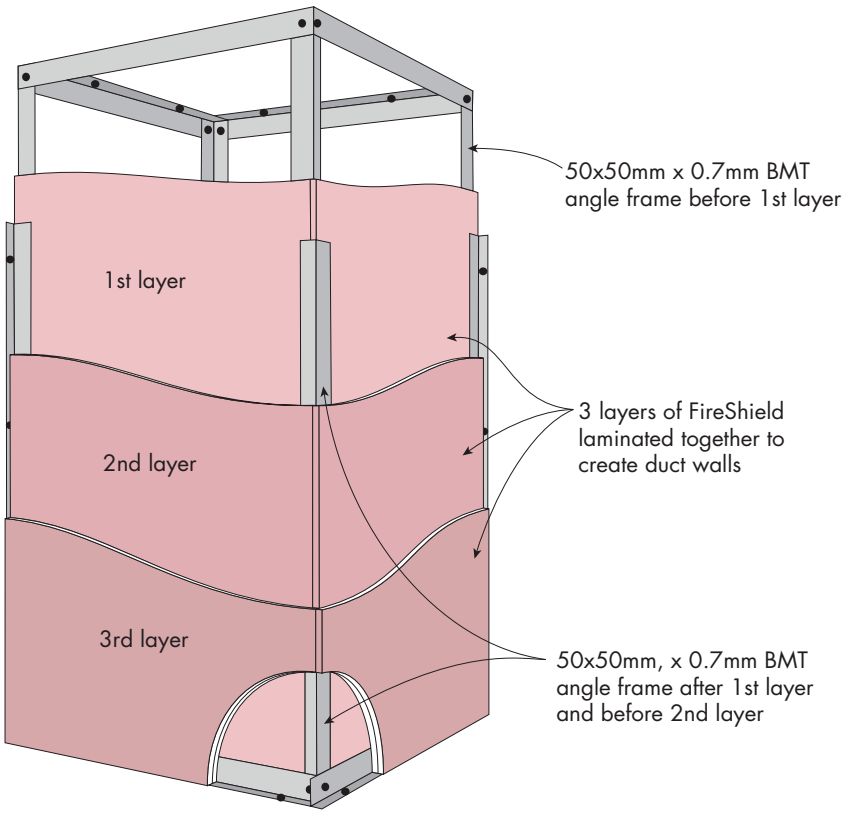


FIGURE 1 **Framing and Plasterboard Layout**

Plasterboard Fixing

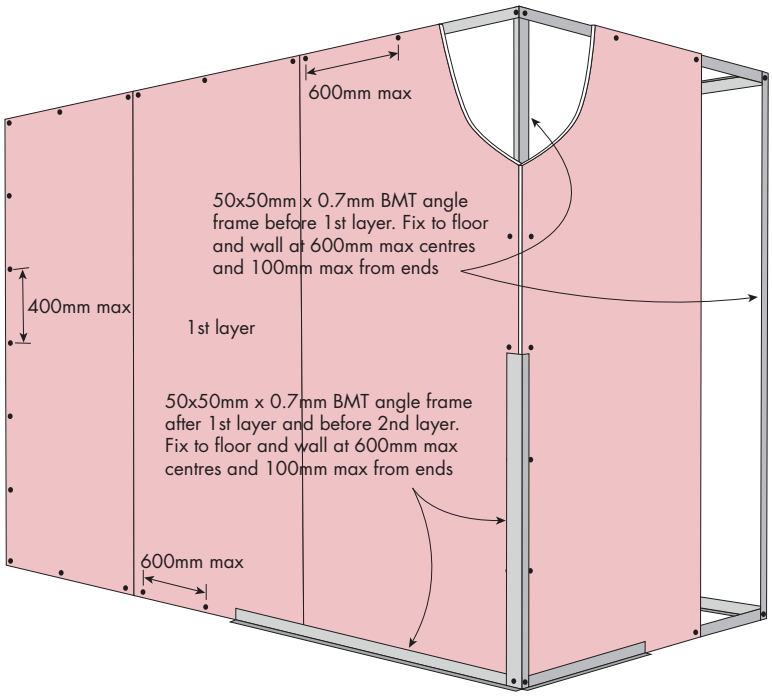
	Fire Rated
Use the 'Screw Only Method'. Stud adhesive is not permitted.	✔
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✔
Laminating screws can be used to fix butt joints in the second and third layer.	✔

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL ANGLE

Plasterboard Thickness	1st Layer	2nd Layer	3rd Layer
13mm	25mm screw	40mm screw*	60mm screw*
16mm	30mm screw	45mm screw*	65mm screw*

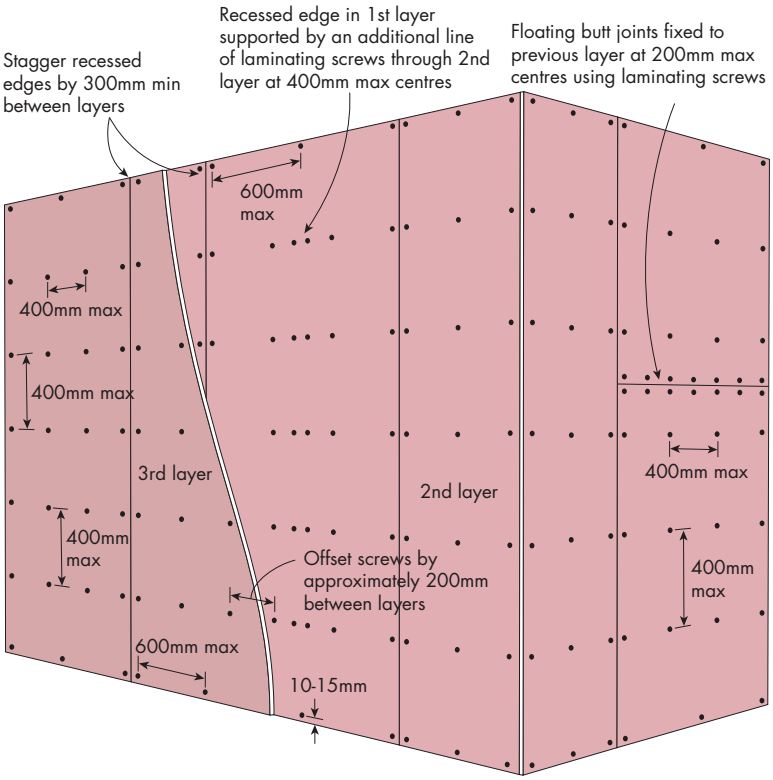
For steel ≤ 0.75mm BMT minimum 6g fine thread needle point screws.
For steel ≥ 0.75mm BMT minimum 6g fine thread drill point screws.
*38mm –10g Laminating screws may be used as detailed in installation diagrams.

FIGURE 2 Steel Angle Frames and 1st Layer



Fixing	Screw Only Method
Frame 1	Steel Angle 50x50mm x 0.7mm BMT. Installed before 1st layer
Frame 2	Steel Angle 50x50mm x 0.7mm BMT. Installed between 1st and 2nd layers.
Sheet Layout	1st, 2nd and 3rd layers: All Vertical
Fasteners	Perimeter screws 10-15mm from sheet edges.
Sheet Perimeter	Screw fix to steel angle at 400mm max centres vertically and 600mm max horizontally.
Field	2nd layer: Laminate to 1st layer at 400mm max centres vertically and horizontally. 3rd layer: Laminate to 2nd layer at 400mm max centres vertically and horizontally.
Recessed Edges	1st layer: Once 2nd layer is installed, support the recessed edge in the 1st layer with an additional double line of laminating screws through 2nd layer at 400mm max centres. Stagger recessed edges by 300mm min between layers. 2nd layer: Laminate to 1st layer at 400mm max centres. 3rd layer: Laminate to 2nd layer at 400mm max centres.
Butt Joints	1st layer: Fix at 200mm max centres to additional horizontal steel angle. Stagger butt joints by 600mm min on adjoining sheets and between layers. 2nd layer: Laminate to 1st layer at 200mm max centres. 3rd layer: Laminate to 2nd layer at 200mm max centres
Internal and External corners	All layers: Fix to angle at 400mm max centres vertically
Fire Sealant	Use fire sealant on all gaps and around perimeter to maintain fire and acoustic integrity. *[Refer to Construction Details]*
Jointing Face Layer	As a minimum, only use paper tape with either two coats of MastaBase / MastaLongset or three coats of MastaLite. *[Refer to Section 4]*

FIGURE 3 2nd and 3rd Layers



FIRE RATED
LAMINATED VERTICAL DUCT

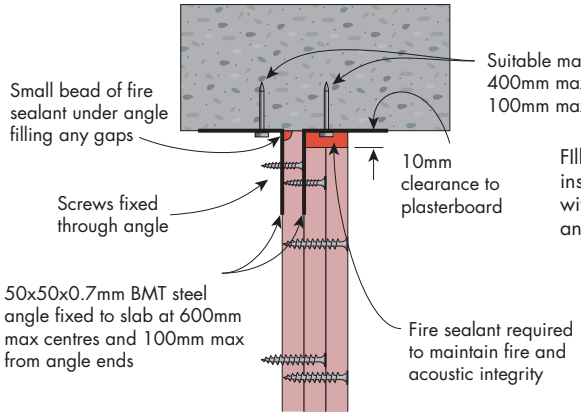


FIGURE 4 Laminated Duct Head to Slab
Elevation

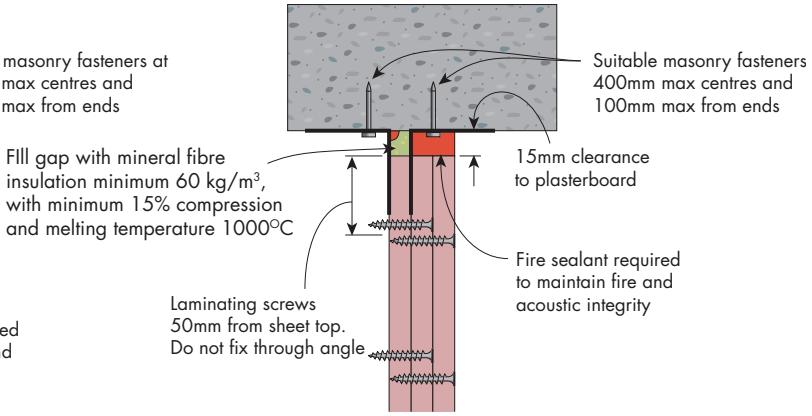


FIGURE 5 Laminated Duct Deflection Head to Slab
Elevation

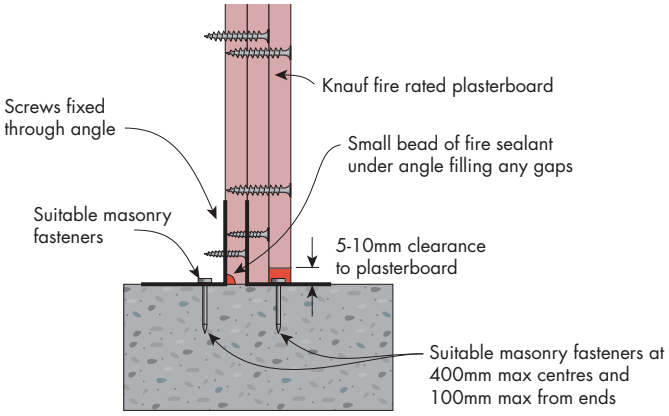


FIGURE 6 Laminated Duct Base to Slab
Elevation

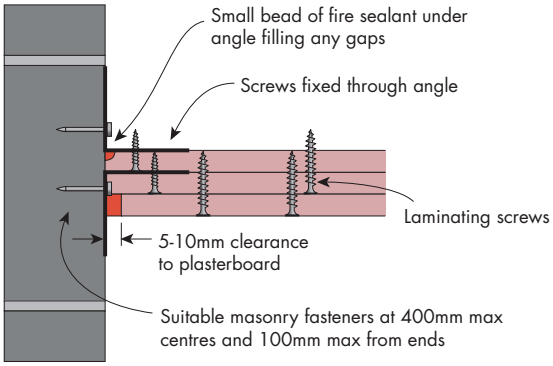


FIGURE 7 Laminated Duct to Masonry Wall
Plan view

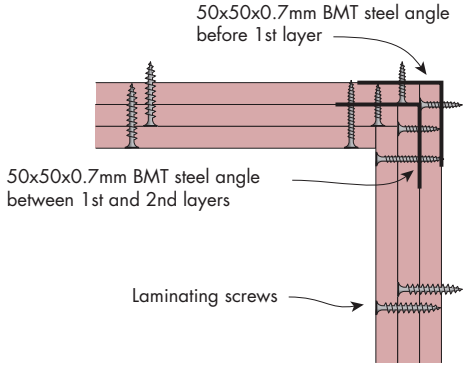


FIGURE 8 Laminated Duct Internal Corner
Plan view

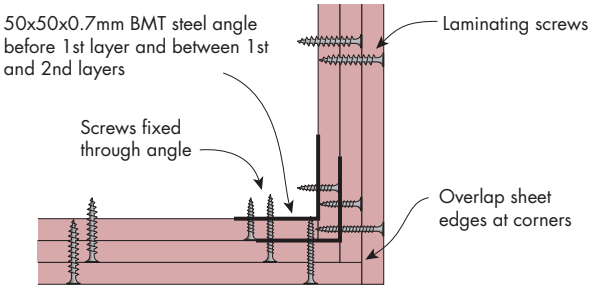


FIGURE 9 Laminated Duct External Corner
Plan view

FIRE RATED
LAMINATED VERTICAL DUCT

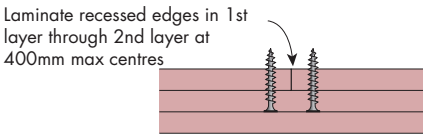


FIGURE 10 Laminated Duct Recessed Edge in 1st Layer
Plan view

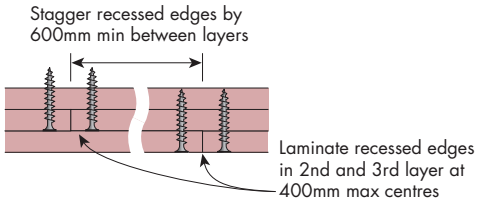


FIGURE 11 Laminated Duct Recessed Edge in 2nd and 3rd Layer
Plan view

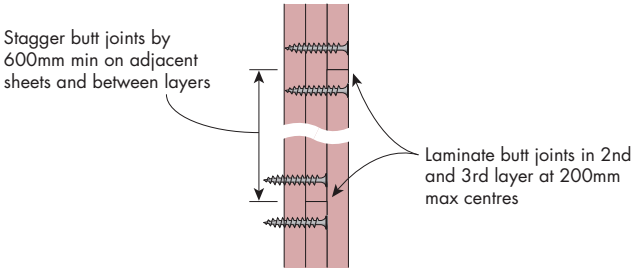


FIGURE 12 Laminated Duct Butt Joint in 2nd and 3rd Layer

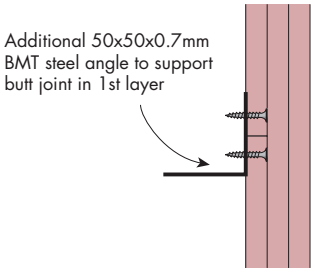


FIGURE 13 Laminated Duct Butt Joint in 1st Layer

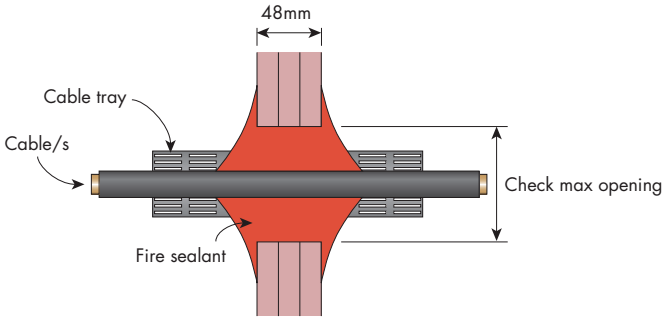


FIGURE 14 Typical Cable Tray Penetration
Up to 2 hours FRL
Example Only

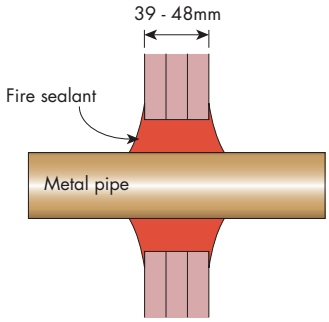


FIGURE 15 Typical Metal Pipe Penetration
Up to 2 hours FRL
Example Only

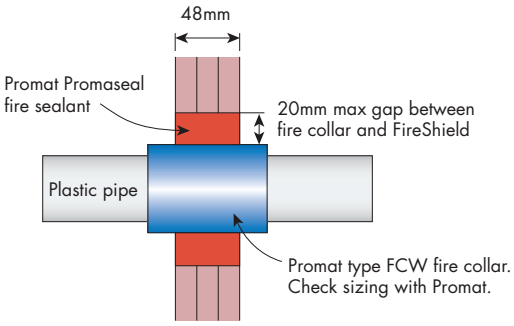


FIGURE 16 Typical Fire Collar Penetration
Up to 2 Hours FRL
Example Only