
CERTIFICATE OF APPROVAL

No. ME0066

This is to certify that the referenced product of

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has been assessed against the requirements of the *warringtonfire – mideast certification scheme* and is approved for use within the scope of any test and/or assessment report(s) referenced.

FFC INSULATED & UNINSULATED STEEL VENTILATION DUCT SYSTEMS

This Assessment Summary has been prepared by **warringtonfire** and is a summary of the assessment reports referenced below. Full details of the constructions, justification for the conclusions given, along with validity statements are given in those reports and the supporting test reports.

This summary sheet covers the fire resistance performance of FFC INSULATED & UNINSULATED STEEL VENTILATION DUCT SYSTEMS as previously fire tested by BRE and subsequently assessed by **warringtonfire** to BS 476: Part 24: 1987 (ISO 6944: 1985) 'Method for the determination of the fire resistance of ventilation ducts' and up to the periods shown below.

Assessment Report Reference	Valid Until
WF Assessment Report No. 146438 Issue 4	1 st March 2012

Also, as part of the construction requirements for the ductwork system, reference is made to DW/144 - Specification for Sheet Metal Ductwork – Low, medium and high pressure/velocity air systems. Published by the Heating and Ventilating Contractors Association (HVCA) – 1998

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FFC INSULATED & UNINSULATED STEEL VENTILATION DUCT SYSTEMS

Scope: Mild steel, galvanised steel or stainless steel ventilation ducts, smoke extract/outlet ducts and kitchen extract ducts coated with FFC 250 with a nominal dry film thickness of 0.35mm.

Orientation: Horizontal and vertical.

Insulation: Uninsulated and insulated.

Maximum fire resistance periods:

Fire outside (duct A) – 240 minutes integrity and 240 minutes insulation.

Fire inside (duct B) - 180 minutes integrity and 120 minutes insulation

Rectangular ducts

The minimum construction requirements for the steel duct are as follows:

- Wall thickness - minimum 0.8mm-thick steel sheet (Table 1),
- Longitudinal seams - Pittsburgh Lock or Grooved Corner Seam,
- Cross joints - rolled steel angle flanged cross-joints or equivalent roll-formed sheet steel profile cross-joints (Tables 6 & 7),
- Maximum section length - 1600mm,
- Maximum size – 3000mm wide x 2500mm high (Table 1).

Table 1 minimum steel thickness for rectangular ducts

Type of duct	Maximum size of duct (longer side) - mm			
	≤400	≤800	≤1500	≤3000
Ventilation	0.8	1.0	1.0	1.2
Smoke outlet/extract	0.8 ¹	1.0	1.0 ²	1.2
Kitchen extract	0.8 ¹	1.0	1.0 ²	1.2

Note 1 – 0.8mm thick for fire resistance periods up to 120 minutes. 1.0mm thick for fire resistance periods over 120 minutes.

Note 2 – 1.0mm thick for fire resistance periods up to 120 minutes. 1.2mm thick for fire resistance periods over 120 minutes.

Stiffeners:

For duct sections with a size of more than 400mm longer side, (with the exception of ducts up to 600mm longer side x up to 1260mm long) the duct is fitted with stiffeners of at least S3 (DW/144) rating at mid-length, as listed in Tables 6 & 7. The stiffeners are fitted on all four sides and welded at the corners. This construction is suitable for duct sizes up to 2000mm wide x 1200mm deep. Where either duct dimension exceeds 1200mm a central tie rod is fitted per cross joint. For ducts larger than 2000mm x1200mm the duct is fitted with stiffeners at the required centres and additionally the sheet panels of the duct are stiffened by beading, cross-breaking or pleating. For ducts wider than 2500mm the centres of the tie rods should not exceed 1200mm.

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Duct supports:

Horizontal duct assemblies are supported by steel hangers that comprise a threaded steel studding drop rod on each side of the duct and a bearer (angle, slotted channel, channel or RHS) under the duct. Where duct systems exceed the tested duct dimensions the hangers (drop rods and bearers) supporting the duct assembly are increased in size to accommodate the extra loading imposed by the self-weight of the duct and any insulation.

For insulated horizontal ducts, the steel bearer of each hanger at the base of the duct supports a steel spreader plate (where required) and a calcium silicate board spacer, 100mm wide x 25mm thick. The steel bearer is located within the thickness of the insulation. Alternatively the calcium silicate board spacer may be made up with layers of the board to be of at least the same thickness as the insulation. The maximum design stresses that unprotected steel hangers can bear in the standard fire test are given in Table 2.

Table 2 Maximum stress in steel hangers

Fire resistance period - minutes	30	60	90	120	180	240
Stress limit – N/mm ²	25	15	12	10	8	6

The maximum spacing of the hangers is 1500mm centres. Where the duct width exceeds 1500mm, a central drop rod (same size as primary drop rods) is incorporated which supports the bottom of the duct (via the steel bearer) and also the top of the duct using a steel nut and large steel washer.

Vertical ducts: The construction of vertical ducts is the same as for horizontal ducts. In order to support the duct system in the vertical orientation, steel sections are fastened to the steel duct, either along the two longer or shorter sides or on all four sides. The steel sections either span across the opening in the concrete floor or form part of a cantilever bracket that is fastened to the building structure. Details of the support of vertical ducts are given in Figure 1 (FFC drawing no. FFC/DETAIL/01'B').

Penetration seal: The penetration seal system where the duct passes through fire compartment walls or floors is the same as that tested in BRE No. TE 92252 fire ratings of up to 240 minutes and BRE Nos. TE 201630 or 228446 for fire ratings of up to 120 minutes.

Insulation: A single or double layer of foil faced Cafco duct insulation is fastened to the outside of the duct with steel pins, 2.2mm diameter, which are pop-rieveted to the steel duct. The pins are spaced at nominal 400 mm centres along the sides and soffit of horizontal ducts. On the sides of the duct the pins are positioned along the centre line of each vertical side. Where the duct height exceeds 1000mm, the pins are positioned in rows starting 50mm in from each longitudinal edge and with one row in the centre. The maximum spacing between rows is 500mm. On the soffit of the duct the rows of pins are positioned 50mm in from each longitudinal edge of the duct, with extra rows between (depending on the width of the duct) so that the maximum spacing between rows is 500mm.

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The Cafco duct insulation board is pushed onto the steel pins and held in position with spring steel washers. On the soffit of horizontal ducts the ends of the pins are bent over to ensure that the washers are retained in position. All board-to-board joints are bonded with Cafco Quickset Adhesive. Aluminium foil tape is fitted over board joints. All board joints are staggered between the layers of board. Extra pieces of insulation are attached over joints in the duct and stiffeners to ensure that the required thickness of insulation is maintained between all steelwork of the duct and the outside. Vertical ducts are clad in the same manner but on all four sides, the longer sides being clad in the same manner as the soffit of horizontal ducts.

The required thickness of Cafco duct insulation is:

Table 3a - Duct A – Fire outside

Fire resistance period - minutes	30	60	90	120	180	240
Thickness – mm	30	40	50	60	80	100

Table 3b - Duct B – Fire inside

Fire resistance period - minutes	30	60	90	120
Thickness – mm	35	60	85	110

Table 3c – Kitchen extract duct – Fire outside

Fire resistance period - minutes	30	60	90	120
Thickness – mm	40	80	100	130

For kitchen extract ducts as detailed in the Annex of BS 476: Part 24.

Access doors:

Type 201 - details of the access door are shown in drawing no. FFC/AD/201 (Figure 2).

Type 202 - Details of the lagged access door are shown in drawing no. FFC/AD/202 (Figure 3).

Circular & flat oval ducts

The minimum construction requirements for circular and flat-oval straight seamed and spirally wound steel ductwork are as follows:

- Wall thickness - minimum 0.8mm-thick steel sheet (Tables 4a & 4b),
- Longitudinal seams - Grooved Seam or equivalent,
- Cross joints - rolled steel angle flanged cross-joints or equivalent roll-formed sheet steel profile cross-joints (Tables 8 & 9),

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Table 4a – Minimum steel thickness for circular ducts

Type of duct	Maximum nominal diameter of duct - mm			
	≤200	≤500	≤1000	≤1250
Ventilation	0.8	0.8	1.0	1.2
Smoke outlet/extract	0.8	1.0	1.0 ¹	1.2
Kitchen extract	0.8	1.0	1.0 ¹	1.2

Note 1 – 1.0mm thick for fire resistance periods up to 120 minutes. 1.2mm thick for fire resistance periods over 120 minutes.

Table 4b – Minimum steel thickness for flat oval ducts

Type of duct	Maximum surface area per metre length – m ² /m			
	≤1.2	≤2.0	≤2.6	≤3.83
Ventilation	0.8	0.8	1.0	1.2
Smoke outlet/extract	0.8	1.0	1.0 ¹	1.2
Kitchen extract	0.8	1.0	1.0 ¹	1.2

Note 1 – 1.0mm thick for fire resistance periods up to 120 minutes. 1.2mm thick for fire resistance periods over 120 minutes.

The spiral seam of spirally wound ducts must be at least equivalent to the grooved seam.

For flat oval ducts over 500mm wide x 150mm deep, tie rods, with a minimum diameter of 12mm, must be fitted between the top and bottom walls of the flat portion of the duct, as follows:

- for ducts between 500mm wide and 700mm wide, one tie rod is located at mid-width of the duct at 1000mm centres along the duct.
- for ducts between 701mm wide and 900mm wide, one tie rod is located at mid-width of the duct at 750mm centres along the duct.
- for ducts between 901mm wide and 1200mm wide, two tie rods are equi-spaced across the duct at 500mm centres along the duct.
- for ducts between 1201mm wide and 1800mm wide, tie rods are spaced at 250mm centres along the duct, alternating between one tie rod centrally located and two tie rods equi-spaced across the duct.

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Table 9a Example of minimum specification for steel duct up to 120 minutes

Specification for fire rated rectangular ventilation, smoke outlet/extract and kitchen extract ductwork with references based on DW/144

Longer side, up to - mm	Steel thickness - mm	Stiffening		Cross joint rating
		Maximum spacing - mm	Angle section rating	
400	0.8	-	-	J3 Figure 10/11
600	1.0	1250	S3 Figure 18/19	J4 Figure 10/11
800	1.0	1000	S3 Figure 18/19	J4 Figure 10/11
1000	1.0	800	S4 Figure 18/19	J4 Figure 10/11
1200	1.0	625	S4 Figure 18/19	J5 Figure 10/11
1500	1.0	625	S5 Figure 18	J5 Figure 10/11 with tie-rod
2000	1.2	500	S5 Figure 18	J5 Figure 10/11 with tie-rod
2500	1.2	500	S6 Figure 18	J6 (50mm x 5mm RSA) with tie-rod
3000	1.2	500	S6 Figure 18	J6 (50mm x 5mm RSA) with tie-rod

1. Cross joint fixing – rivet or spot weld @ 150mm centres.
2. Stiffener fixings – rivet, spot weld or huckbolt @ 150mm centres.
3. Longitudinal joints – Corner – Grooved corner or Pittsburgh lock seam
Sheet to sheet – grooved seam
4. Radius bends as DW/144 but, where required, splitters to be welded in.
5. All untreated steel, including spot welds, to be painted with a zinc rich primer.
6. Only steel/stainless steel rivets or huckbolts to be used.
7. All sealants to be intumescent.
8. All part identifications to be on inside of duct.
9. Tie-rods are steel rods, minimum size 10mm diameter.

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Table 5b Example of minimum specification for steel duct over 120 minutes

Specification for fire rated rectangular ventilation, smoke outlet/extract and kitchen extract ductwork with references based on DW/144

Longer side, up to - mm	Steel thickness - mm	Stiffening		Cross joint rating
		Maximum spacing - mm	Angle section rating	
400	1.0	-	-	J4 Figure 10/11
600	1.0	1250	S3 Figure 18/19	J4 Figure 10/11
800	1.0	1000	S3 Figure 18/19	J5 Figure 10/11
1000	1.2	800	S4 Figure 18/19	J5 Figure 10/11
1200	1.2	625	S4 Figure 18/19	J5 Figure 10/11
1500	1.2	625	S5 Figure 18	J5 Figure 10/11 with tie-rod
2000	1.2	500	S5 Figure 18	J5 Figure 10/11 with tie-rod
2500	1.2	500	S6 Figure 18	J6 (50mm x 5mm RSA) with tie-rod
3000	1.2	500	S6 Figure 18	J6 (50mm x 5mm RSA) with tie-rod

10. Cross joint fixing – rivet or spot weld @ 150mm centres.
11. Stiffener fixings – rivet, spot weld or huckbolt @ 150mm centres.
12. Longitudinal joints – Corner – Grooved corner or Pittsburgh lock seam
Sheet to sheet – grooved seam
13. Radius bends as DW/144 but, where required, splitters to be welded in.
14. All untreated steel, including spot welds, to be painted with a zinc rich primer.
15. Only steel/stainless steel rivets or huckbolts to be used.
16. All sealants to be intumescent.
17. All part identifications to be on inside of duct.
18. Tie-rods are steel rods, minimum size 10mm diameter.

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Table 6 – Ventilation duct - Fire outside (duct A) up to 2 hours Stability and Integrity to BS476 Part 24 and ISO 6944 - Rectangular Ductwork Specification

LONGEST SIDE	SHEET GAUGE	STD. STRAIGHT		STIFFENING			CROSS JOINTS	FLANGE FIXING TO DUCT	LONGITUDINAL JOINTS		RADIUS BENDS (Throat w/2 or otherwise)	
		Length	Beading	Maximum spacing	Fixing	Angle Section			Corner	Sheet	Throat Radius	No. of Splitters
Up to 400	0.8	1260, 1510 or 1600	Not required	Nil	Nil	Nil	J3 Flange Fig. 10/11 (Ductmate 35)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig. 2 or Pittsburgh Lock Fig. 3	Nil	150	Up to 300mm None over 300mm 1
401 up to 600	1.0	1260, 1510 or 1600	Not required	1260 centres	Spotweld rivet or huckbolt at 150 centres	Rating S3 Fig 18/19	J4 Flange Fig. 10/11 (Ductmate 35)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig. 2 or Pittsburgh Lock Fig. 3	Nil	150	Up to 500mm 1 over 500mm 2
601 up to 800	1.0	1260, 1510 or 1600	Not required	1000 centres	Spotweld rivet or huckbolt at 150 centres	Rating S3 Fig 18/19	J4 Flange Fig. 10/11 (Ductmate 35)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig. 2 or Pittsburgh Lock Fig. 3	Grooved seam or weld	150	2
801 up to 1000	1.0	1260, 1510 or 1600	Not required	800 centres	Spotweld rivet or huckbolt at 150 centres	Rating S4 Fig 18/19	J4 Flange Fig. 10/11 (Ductmate 35)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig. 2 or Pittsburgh Lock Fig. 3	Grooved seam or weld.	150	2
1001 up to 1200	1.0	1260, 1510 or 1600	Not required	800 centres	Spotweld rivet or huckbolt at 150 centres	Rating S4 Fig 18/19	J5 Flange Fig. 10/11 (Ductmate 45)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig. 2 or Pittsburgh Lock Fig. 3	Grooved seam or weld.	150	3
1201 up to 1500	1.0	1260, 1510 or 1600	At 300 Centres	800 centres	Spotweld rivet or huckbolt at 150 centres	Rating S5 Fig 18/19	J5 Flange Fig. 10/11 with tie rod (Ductmate 45)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig. 2 or Pittsburgh Lock Fig. 3	Grooved seam or weld.	150	3
1501 up to 2000 x 1200	1.2	1260, 1510 or 1600	At 300 Centres	800 centres	Spotweld rivet or huckbolt at 150 centres	Rating S5 Fig 18/19	J5 Flange Fig. 10/11 with tie rod (Ductmate 45)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig. 2 or Pittsburgh Lock Fig. 3	Grooved seam or weld.	150	3
1501 up to 2000 x 2000	1.2	1260, 1510 or 1600	At 300 Centres	500 centres	Spotweld rivet or huckbolt at 150 centres	Rating S6 Fig 18/19	J6 Flange 50 x 50 RSA	Rivet or Spotweld at 150 mm	Ras Fig. 2 or Pittsburgh	Grooved seam or weld.	150	3
2001 up to 2500	1.2	1260, 1510 or 1600	At 300 Centres	500 centres	Spotweld rivet or huckbolt	Rating S6 Fig	J6 Flange 50 x 50 RSA	Rivet or Spotweld at 150 mm	Ras Fig. 2 or Pittsburgh	Grooved seam or weld.	150	3

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Table 7 – Ventilation, smoke and kitchen extract ducts - Fire inside or outside (duct B) up to 2 hours Stability and Integrity to BS476 Part 24 and ISO 6944 - Rectangular Ductwork Specification

LONGEST SIDE	SHEET GAUGE	STD. STRAIGHT		STIFFENING			CROSS JOINTS	FLANGE FIXING TO DUCT	LONGITUDINAL JOINTS		RADIUS BENDS (Throat/2 or otherwise)	
		Length	Beading	Maximum spacing	Fixing	Angle Section			Corner	Sheet	Throat Radius	No. of Splitters
Up to 400	0.8	1260, 1510 or 1600	Not required	Nil	Nil	Nil	J3 Flange Fig 10/11 (Ductmate 35)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig 2 or Pittsburgh Lock Fig 3	Nil	150	Up to 300mm None over 300mm 1
401 up to 600	1.0	1260, 1510 or 1600	Not required	1260 centres	Spotweld rivet or huckbolt at 150 centres	Rating S3 Fig 18/19	J4 Flange Fig 10/11 (Ductmate 35)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig 2 or Pittsburgh Lock Fig 3	Nil	150	Up to 500mm 1 over 500mm 2
601 up to 800	1.0	1260, 1510 or 1600	Not required	1000 centres	Spotweld rivet or huckbolt at 150 centres	Rating S3 Fig 18/19	J4 Flange Fig 10/11 (Ductmate 35)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig 2 or Pittsburgh Lock Fig 3	Grooved seam or weld	150	2
801 up to 1000	1.0	1260, 1510 or 1600	Not required	800 centres	Spotweld rivet or huckbolt at 150 centres	Rating S4 Fig 18/19	J4 Flange Fig 10/11 (Ductmate 35)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig 2 or Pittsburgh Lock Fig 3.	Grooved seam or weld.	150	2
1001 up to 1200	1.0	1260, 1510 or 1600	Not required	800 centres	Spotweld rivet or huckbolt at 150 centres	Rating S4 Fig 18/19	J5 Flange Fig 10/11 (Ductmate 45)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig 2 or Pittsburgh Lock Fig 3.	Grooved seam or weld.	150	3
1201 up to 1500	1.0	1260, 1510 or 1600	At 300 Centres	800 centres	Spotweld rivet or huckbolt at 150 centres	Rating S5 Fig 18/19	J5 Flange Fig 10/11 with tie rod (Ductmate 45)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig 2 or Pittsburgh Lock Fig 3.	Grooved seam or weld.	150	3
1501 up to 2000 x 1200	1.2	1260, 1510 or 1600	At 300 Centres	800 centres	Spotweld rivet or huckbolt at 150 centres	Rating S5 Fig 18/19	J5 Flange Fig 10/11 with tie rod (Ductmate 45)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig 2 or Pittsburgh Lock Fig 3.	Grooved seam or weld.	150	3
1501 up to 2000 x 2000	1.2	1260, 1510 or 1600	At 300 Centres	500 centres	Spotweld rivet or huckbolt at 150 centres	Rating S5 Fig 18/19	J5 Flange Fig 10/11 with tie rod (Ductmate 45)	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig 2 or Pittsburgh Lock Fig 3.	Grooved seam or weld.	150	3
2001 up to 2500	1.2	1260, 1510 or 1600	At 300 Centres	500 centres	Spotweld rivet or huckbolt at 150 centres	Rating S6 Fig 18/19	J6 Flange 50 x 50 RSA with tie rod	Rivet or Spotweld at 150 mm Max. Centres	Ras Fig 2 or Pittsburgh Lock Fig 3.	Grooved seam or weld.	150	3

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Table 8 - Ventilation duct - Fire outside (duct A) up to 2 hours Stability and Integrity to BS476 Part 24 and ISO 6944 - Circular Ductwork Specification

DIAMETER	GAUGE	STD STRAIGHTS		STIFFENING			RADIUS BENDS		CROSS JOINT
		LENGTH	BEADING	MAX SPACING	FIXING	ANGLE SECTION	PRESSED	SEGMENTED	
UPTO 200	0.8	1510 Str Seam OR 3000 SPIRAL	NIL	-	-	-	FIG 127	FIG 128	SLIP JOINT WITH STEEL or STAINLESS STEEL RIVETS
201 TO UPTO500	0.8	1510 Str Seam OR 3000 SPIRAL	NIL	-	-	-	FIG 127 UP TO300	FIG 128	SPIRAL MATE OR FLAT PLATE
501 UPTO 710	1.0	1510 str Seam OR 2000 SPIRAL	NIL	-	-	-	-	FIG 128	SPIRAL MATE OR 40 x 40 x 3 RSA
711 UPTO 1000	1.0	1510 Str Seam OR 2000 SPIRAL	NIL	1000 CRS	SPOTWELD RIVET OR HUCKBOLT @ 150 CRS	40 x 40 x 3 RSA	-	FIG 128	SPIRAL MATE OR 40 x 40 x 3 RSA
1000 UPWARDS	1.2	2000 SPIRAL	NIL	1000 CRS	SPOTWELD RIVET OR HUCKBOLT @ 150 CRS	50 x 50 x 5 RSA	-	FIG 128	50 x 50 x 5 RSA

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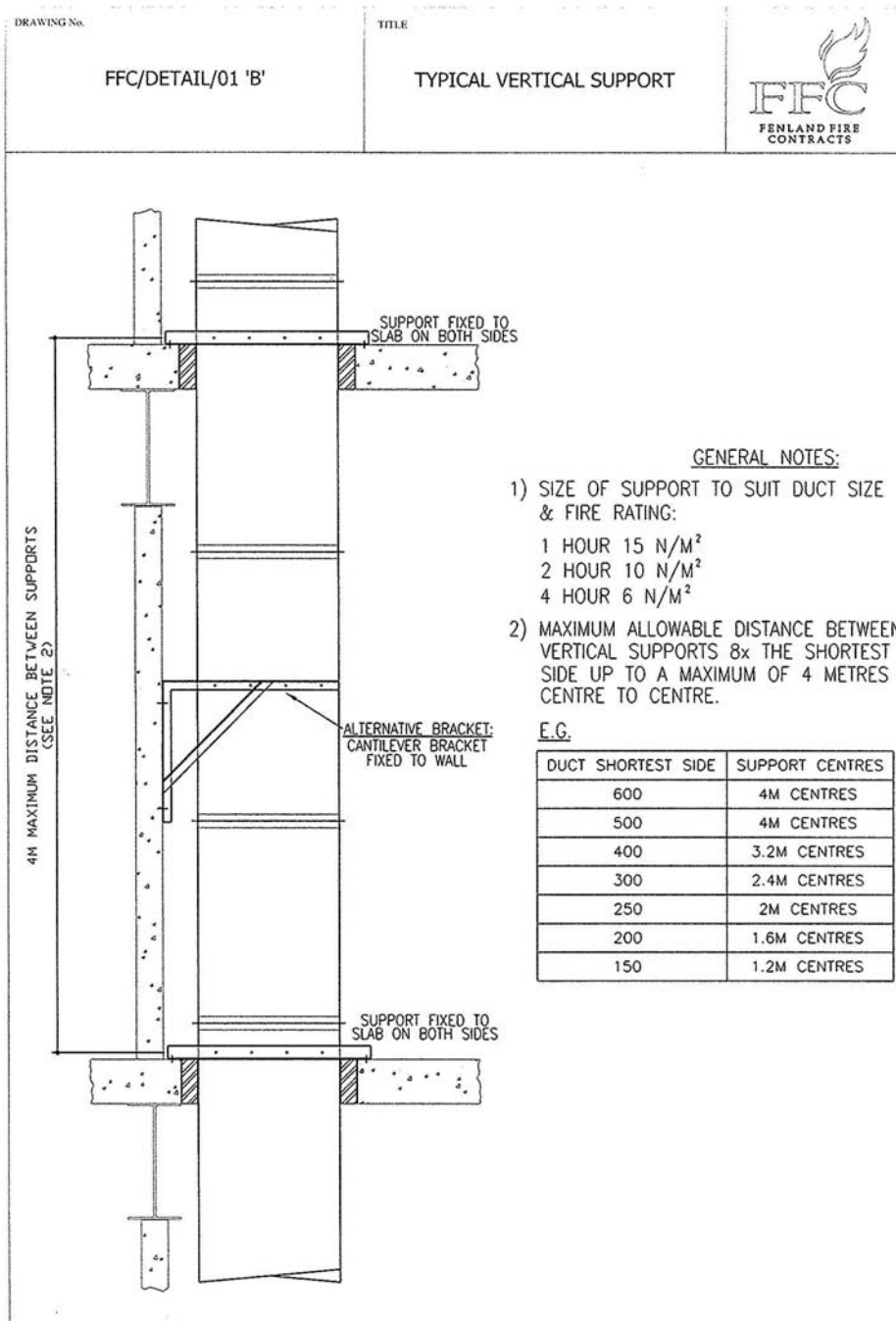
Table 9 – Ventilation, smoke and kitchen extract ducts - Fire inside or outside (duct B) up to 2 hours Stability and Integrity to BS476 Part 24 and ISO 6944 - Circular Ductwork Specification

DIAMETER	GAUGE	STD STRAIGHTS		STIFFENING			RADIUS BENDS		CROSS JOINT
		LENGTH	BEADING	MAX SPACING	FIXING	ANGLE SECTION	PRESSED	SEGMENTED	
UPTO 200	0.8	1510 Str Seam OR 3000 SPIRAL	NIL	-	-	-	FIG 127	FIG 128	SLIP JOINT WITH STEEL or STAINLESS STEEL RIVETS
201 TO UPTO500	1.0	1510 Str Seam OR 3000 SPIRAL	NIL	-	-	-	FIG 127 UP TO 300	FIG 128	SPIRAL MATE OR FLAT PLATE
501 UPTO 710	1.0	1510 Str Seam OR 2000 SPIRAL	NIL	-	-	-	-	FIG 128	SPIRAL MATE OR 40 x 40 x 3 RSA
711 UPTO 1000	1.0	1510 Str Seam OR 2000 SPIRAL	NIL	1000 CRS	SPOTWELD RIVET OR HUCKBOLT @ 150 CRS	40 x 40 x 3 RSA	-	FIG 128	SPIRAL MATE OR 40 x 40 x 3 RSA
1000 UPWARDS	1.2	2000 SPIRAL	NIL	1000 CRS	SPOTWELD RIVET OR HUCKBOLT @ 150 CRS	50 x 50 x 5 RSA	-	FIG 128	50 x 50 x 5 RSA

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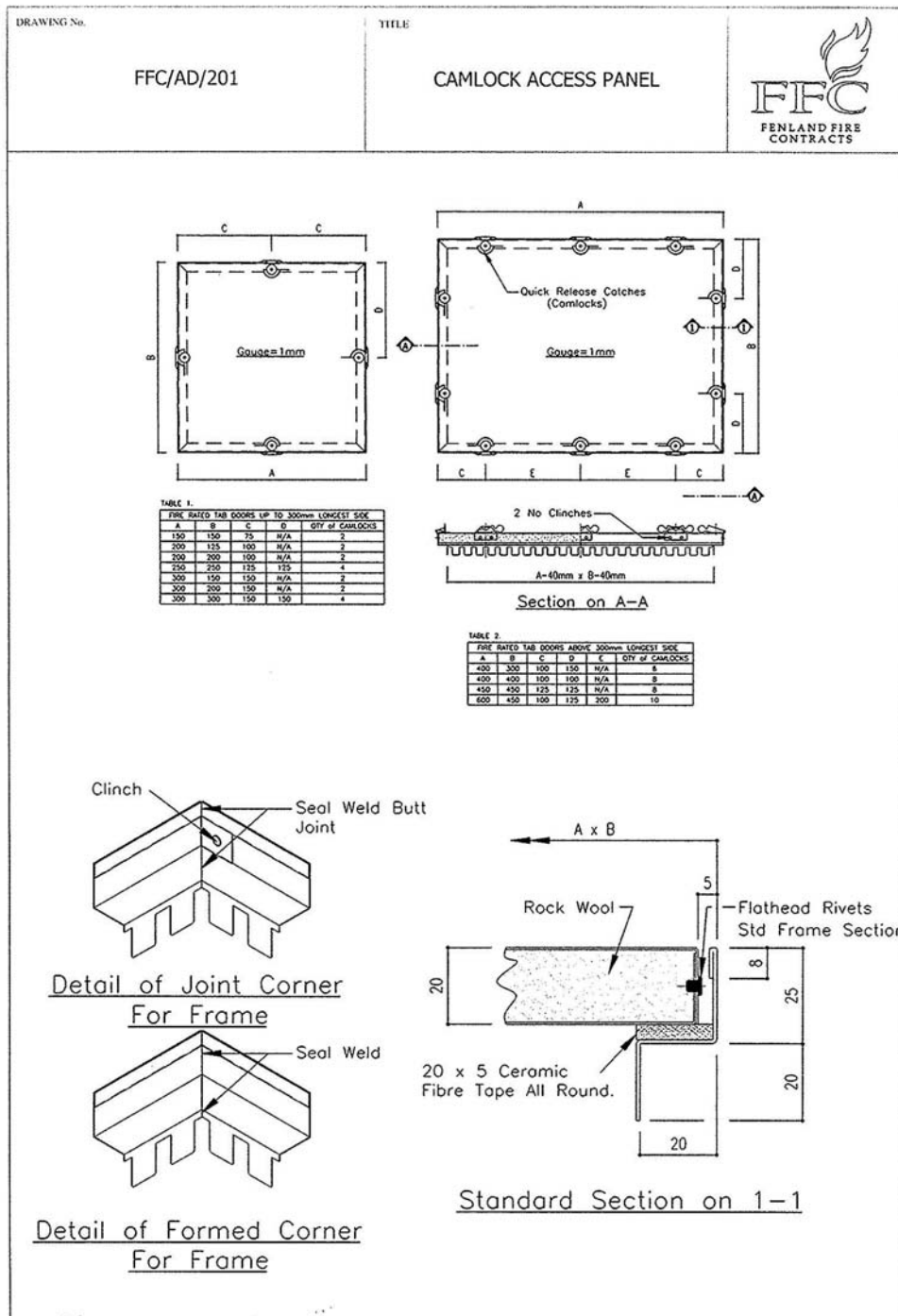
Figure 1 Support details for vertical ducts



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Figure 2 Access door type FFC/AD/201





Detail of Joint Corner
For Frame



Detail of Formed Corner
For Frame

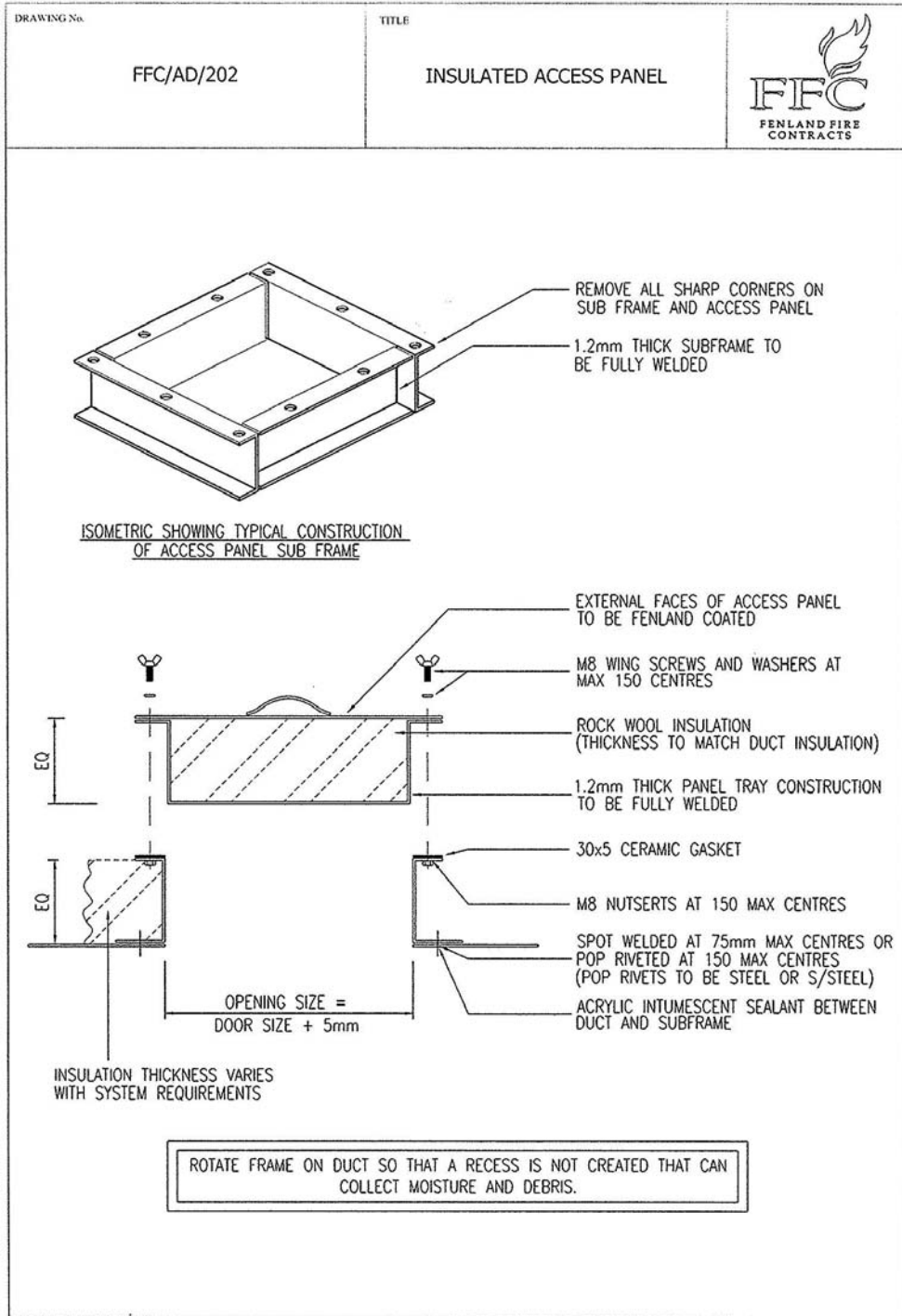


Standard Section on 1-1

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Figure 3 Access door type FFC/AD/202

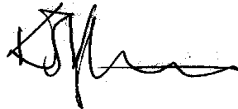


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Certification is awarded on the basis of initial type testing to BS 476: Part 24, initial inspection and ongoing surveillance of factory production control, and ongoing compliance with the scheme requirements including the use of labels supplied by **warringtonfire**. The currency of the certification may be verified at www.warringtonfire.net/mideast.

Signed for and on behalf of Warrington Certification



Sir Ken Knight
Chairman - Management Council

Issued: 13th April 2007
Revised: 18th July 2007
Valid to: 12th April 2012