SUREFIRE INSTALLATION MANUAL

SUREFIRE
CERTAIN TO SUCCEED

Comprehensive Range of Fire and Smoke Rated Ductwork to EN 15871 and EN 12101-7

Suitable for applications including passive duct, smoke extract, kitchen extract, pressurisation, above escape corridors and isolation rooms.

Available in both uninsulated (with integrity ratings of 2 hours) and fully insulated.

Tested to EN 1366 – 1/8/9

firas
Fitted by accredited installers

ASFP IRELAND

CE
CE Marked for all harmonised standards.



AMS
AIR MOVEMENT SUPPLIES

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www.airmovementsupplies.ie

AMF-58 Rev.0





SUREFIRE
CERTAIN TO SUCCEED

Introduction

SureFire is a fully tested EN standard system for all fire and smoke rated applications. All smoke extracts must be tested under EN 12101-7 and be rated to EN 1366-8 and EN 1366-9. This harmonised standard requires the ductwork section to be CE Marked. All multi compartment ducts must be fully insulated.

SureFire ductwork complies with the standard EN 15871 and fire rated against EN 1366-1 in both uninsulated and insulated versions. Only after this standard is harmonised can a CE mark be affixed.

SureFire ductwork is suitable for use in a kitchen extract, smoke extract, pressurisation, passive and over escape corridors and for maintaining compartmentation.

SureFire ductwork is the product of years of design and testing since 2005. It is traded in the UK, mainland Europe, even in the Far East all by independent manufacturers under many marketing names.

AMS Air Movement Supplies is one of the largest ventilation suppliers with headquarters in Dublin with worldwide ambition. With trading partners in Turkey, China, Europe and many others, we are a continually expanding global brand. We are the largest stockist of diffusers, dampers, flexible ducting with many fans from duct to roof, wall to ceiling, a one stop oasis to the time-pressured contractor.

We are the only Irish-based manufacturer of grilles, louvres, fan assemblies and silencers, along with spiral, DW144 ductwork and a full range of fire rated products including ductwork, silencers, access doors, smoke extract fans and much, much more.

AIR MOVEMENT SUPPLIES

SUREFIRE
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SureFire Installation manual

Comprehensive Range of Fire and Smoke Rated Ductwork to EN 15871 and EN 12101-7

CONTENTS

SureFire Ratings 2

SureFire Limitations 2

General Horizontal Requirements: Uninsulated EN1366-1/9 3

General Horizontal Requirements: Insulated EN1366-1/8 3

General Vertical Risers: Uninsulated EN1366-1/9 4

General Vertical Risers: Insulated EN1366-1/8 4

Penetrations Seals: Uninsulated Horizontal Solid Wall EN1366-1/9 4

Penetrations Seals: Uninsulated Horizontal Flexible Wall EN1366-1/9 4

Penetrations Seals: Insulated Horizontal Solid Wall EN1366-1/8 5

Penetrations Seals: Insulated Horizontal Flexible Wall EN1366-1/8 5

Penetrations Seals: Vertical Risers Solid Floor 5

Access Doors 6

Weight Charts 7

Company profile 9

021120

SureFire Ratings

Standard
EN 15871

Classifications
EN 13501-3

Test
EN 1366-1

Type
Fire Resistant

Ratings
EI 90 (v_e i ↔ o) S
EI 60 (h_o I ↔ o) S
EI 120 (v_e h_o o → i) S
E 60 (v_e h_o o → i) S
E 120 (v_e i ↔ o) S
E 120 (v_e h_o o → i) S
Access Door EI 90 (v_e h_o i ↔ o) S

Standard
EN 12101-7

Classifications
EN 13501-4

Test
EN 1366-8/9

Type
Smoke Extract

Ratings
E 60 (v_e h_o i ↔ o) S
EI 60 (h_o) S1500 multi
EI 90 (v_e h_o i ↔ o) S
EI 90 (v_e) S1500 multi

CE Marked
CE

"Fire tests gold and adversity tests the brave."
— Seneca

SureFire® Limitations

Mininum size
200 × 200 mm

Insulation
2 layer × 38 mm thick

Smoke test pressure
1500 Pa

Access doors max
450 × 450 mm

CE Markings
All harmonised standards

Larger size requirement
1250 × 1000 mm

Integrity + Stability
120 minutes (h_o + v_e)

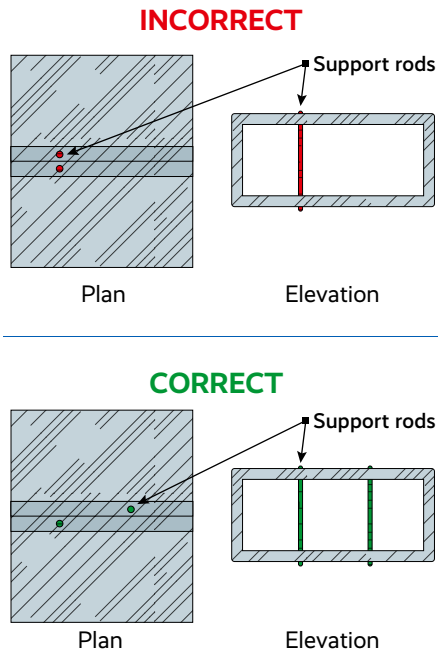


General Horizontal Requirements:

Uninsulated Ductwork (EN 1366 -1/9)

1. Ope is cut to size plus 120mm, e.g. 500×500mm requires 620×620mm ope.
2. Bearers are 40×40×2.5mm plain channel with 10mm rods, square plate washers and 10mm nuts on top and bottom of bearer *(see Fig. 12, page 7)*.
3. Maximum distance between bearers is 1500mm.
4. The first bearer outside the penetration seal on either side must be max 500mm and the second must not be more than 1,000mm from the penetration seal *(see Fig.13, page 8)*.
5. Within each penetration ope the duct must have a flanged joint or a stiffener placed within it.
6. All flange joints to be fitted with mastic above and below gasket. All sealed along corners with FS702 Fire Mastic *(see Fig. 10, page 6)*.
7. Ensure lengths are fitted together with tie-rods mounted within the flange opposing each other *(see Fig. 1)*.
8. 10mm nuts and bolts used to connect corners with flange clamps set @150mm centres max.
9. Install any **SureFire**® access doors as standard *(see instruction under access door, page 6)*.

Fig. 1 *Duct flange connections*



General Horizontal Requirements:

Insulated Ductwork (EN 1366 -1/8)

1. Install uninsulated duct *(see steps 1-7 above)*.
2. First layer of insulation is fitted flush to the plasterboard cover plate, tight to the duct and finished with 75mm overlap and held temporarily by Ali-Tape provided *(see Fig. 2)*.
3. The second layer is staggered from the first and overlaps the first layers joint by 75mm *(see Fig. 2)*.
4. 76mm steel pins are welded through the double layer of insulation without piercing the **SureFire**® metal duct at 350mm centres on 2 sides. One being the side with the joint overlap and always on the underside without exception.
5. The width of the duct determines the amount of pins required set at 350mm centres. For example, a 1250mm wide duct requires 4 pins across and 5 pins typically along a 1500mm length of ductwork (all start at 50mm in and then at 350mm centres or less).

   An 800mm wide duct requires 3 pins in the width and 5 along the length. The minimum amount of pins is 10 on both sides. (duct width of 450mm max).
6. The penetration seal requires plasterboard cover plates, picture frame insulation cover plates and a third layer penetration collar (150mm), detailed in Fig. 3.

See simple fit instructions, page 6.

Fig. 2 *Insulation*

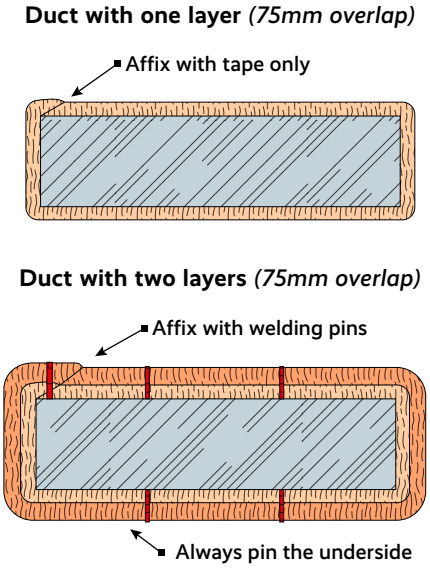
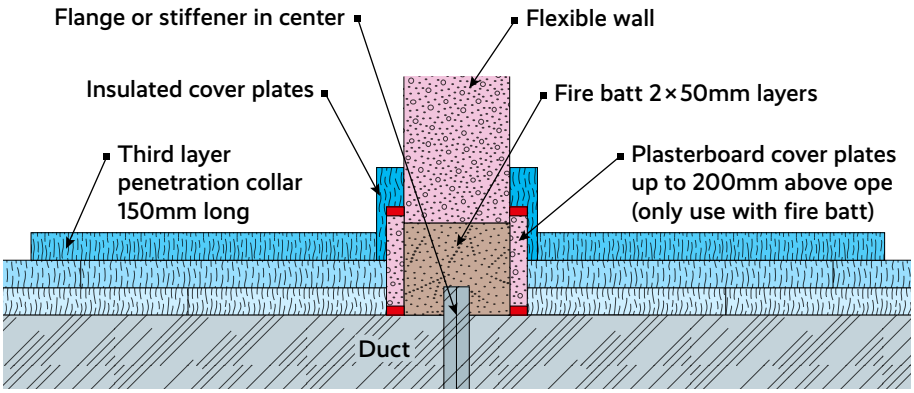


Fig. 3 *Horizontal insulation method in flexible wall*



7. Plasterboard and picture frame insulation cover plates are fitted with 3.85mm plasterboard screws and washers, into groundings at 250mm max centres.
8. Tabbed **SureFire**® access doors 70mm deep can be fitted as standard to be flush with the uninsulated ductwork *(see pg. 6)*.
9. All 10mm bearer rods should be fitted to suitable anchors in accordance with manufacturer's instruction.

General Vertical Risers

Uninsulated Ductwork (EN 1366 -1/9)

1. Ductwork joints remain the same as on page 3, General Horizontal Requirements - Uninsulated. Bearers are set at 4 metres max.
2. Use of cantilever brackets or 40×40×2.5mm plain channel fixed to concrete by appropriate anchors and set to fit under the exposed stiffeners on ductwork *(see Fig. 4)*.
3. Brackets to be permanently connected to stiffeners by M10 nuts and bolts.

General Vertical Risers

Insulated Ductwork (EN 1366 – 1/8)

1. After duct is attached insulation can be applied as described on page 3, steps 2-7 General Horizontal Requirements - Insulated.
2. Cantilever bracket to be external to insulation or where necessary can be included within the insulation wrap.

Penetration Seals

Uninsulated Horizontal Solid Wall (EN 1366 1/9)

1. Ope is cut to the duct size plus 120mm, e.g. 500×500mm requires 620×620mm ope.
2. Ensure duct flange or stiffener is mounted within ope.
3. Fill remaining ope with cement, mortar or firecrete.
4. Alternatively fit 50 mm fire batt or insulation both sides after duct install is complete, as shown in Fig. 5 (flexible wall).
5. After ope is filled use plasterboard cover plates. Fit flush to wall on both sides of penetration using 3.85mm plasterboard screws and washers into support groundings at 250mm centres.

Penetration Seals

Uninsulated Horizontal Flexible Wall (EN 1366 1/9)

1. Ope is cut to the duct size plus 120mm and prepared by builder in letter box type finish *(see Fig. 6)*.
2. After duct is fitted, builder fills with 50mm fire batt or 96kg/m^3 insulation friction tight and sealed with fire rated mastic. After ope is filled with Fire Batt use plasterboard cover plates, see Fig. 5.
3. Then plasterboard cover plates on either side to cover ope fixed with 3.85mm plasterboard screws and washers @ 250mm max centres and sealed with FS702 fire mastic. Cover plates can be up to 200mm above ope.

Fig. 4 *Vertical Riser*

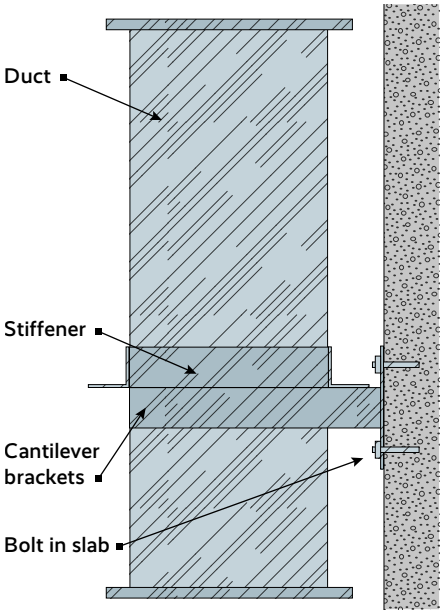


Fig. 5 *Penetration Seal – Flexible wall uninsulated*

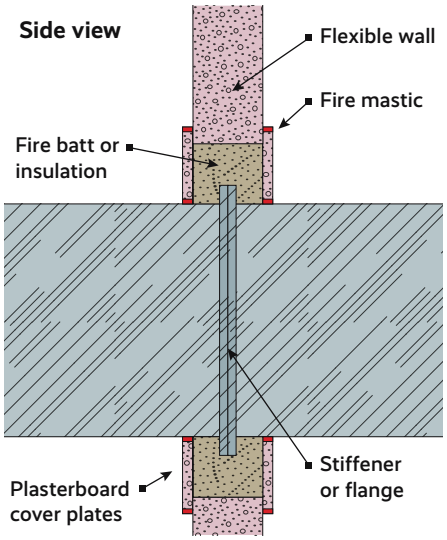
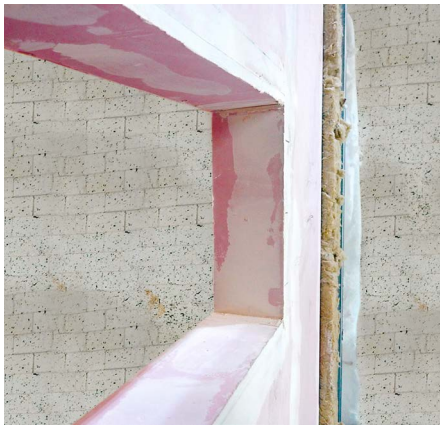


Fig. 6 *Letter box ope in flexible wall*

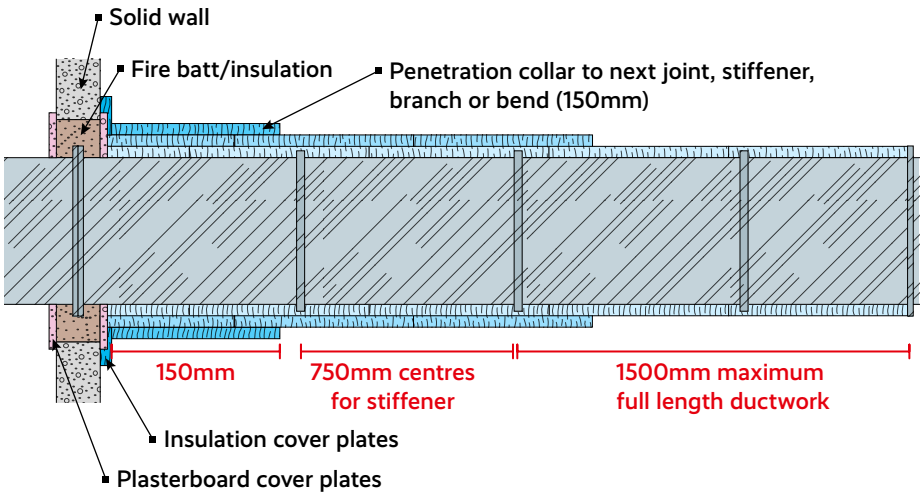


Penetration Seals

Insulated Horizontal Solid Walls (EN 1366 – 1/8)

1. Ope is cut to the size plus 120mm, e.g 500×500mm requires 620×620mm ope.
2. Ensure flange or stiffener is installed within ope.
3. After duct installation is complete, see page 3, steps 1-5 General Horizontal Requirements - Insulated. Builder can fill ope with cement, firecrete, mortar and penetration seal is complete.
4. Alternatively use 96kg/m^3 insulation and/or 50mm fire batt both sides friction tight and seal with fire mastic. If fire batt is used, then add the plasterboard cover plates around duct ope *(see Fig. 8)*.
5. Picture frame insulation cover plates are then fitted over the plasterboard cover plate as shown Fig. 7/8.

***Fig. 7** Penetration seal – Solid wall insulated one side only*

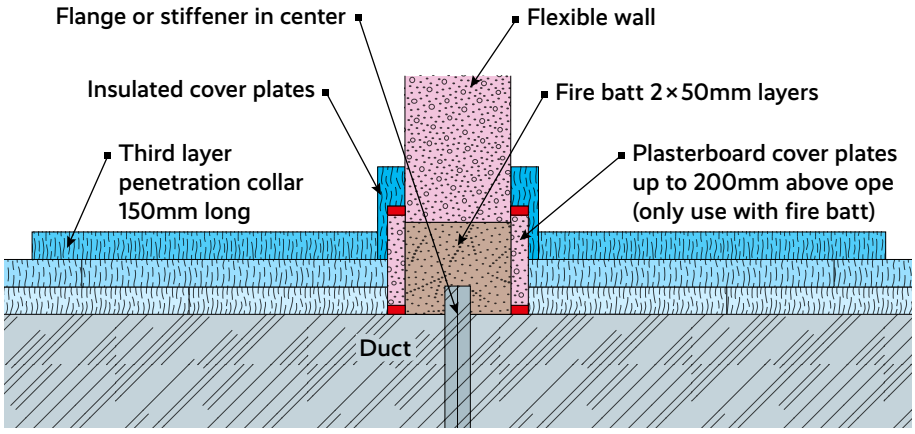


Penetration Seals

Insulated Flexible Wall (EN 1366 – 1/8)

1. Ope is cut to the duct size plus 120mm, e.g. 500×500mm requires 620×620mm ope.
2. Ensure duct joint stiffener is installed within the ope.
3. After duct install is complete (see page 3 steps 1-5 General Horizontal Requirements - Uninsulated) and before insulation is applied, builder to fill ope with 50mm coated fire batt, around ductwork within the ope, friction tight, flush to surface and finish with a plastered cover plate on either side screwed to the groundings with 3.85mm plasterboard screws at 250mm centres.
4. First and second layer of insulation as detailed on page 3, steps 2-7 General Horizontal Requirements - Insulated.
5. Then a layer of picture frame insulation cover plate is fitted on either side and held by plasterboard screws 3.85mm *(see Fig. 8)*.
6. Then install the penetration collar (150mm) on either side of the penetration seal *(see Fig. 8)*.
7. Where an insulated duct finishes at the ope and an uninsulated is applied on the other side, the uninsulated side finishes with plasterboard cover plates, as shown in Fig. 7 above.

***Fig. 8** Finished penetration seal horizontal in flexible wall*



Penetration Seals

Vertical Risers Insulated Duct

1. Proceed to page 4, steps 1 and 2 General Vertical Requirements - Insulated.
2. Fill ope with cement/firecrete/mortar and the penetration seal is complete.
3. For ductwork installation, see page 4, steps 1 and 2 General Vertical Risers - Insulated.

Fig. 9 *Penetration seal – vertical insulated with cement*

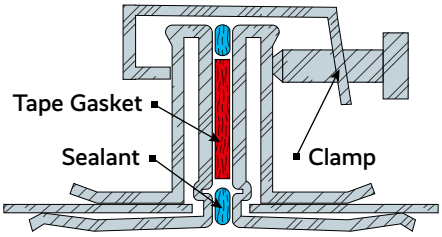


Access Door - SF/AD and SF/AD/76

The maximum size of the access door is 450×450mm. Access doors must be fitted to top or sides of the duct, as follows:

- Fit to duct giving consideration for clearance and ease of use.
- The size of ope is calculated as door size -30mm, e.g. 400×400mm door, ope size cut 370×370mm.
- Mark the ductwork and cut opening.
- Fit the tabbed frame, hammering tabs securely to the ductwork, on top and sides, all around, as per Fig.11.
- For kitchen extract ductwork to be compliant to the specification DW172, access doors are installed at 2-metre centres.
- There are 2 types of access doors, one for uninsulated and one for insulated. The uninsulated 30mm deep door is identified as SF/AD. The insulated door is called the SF/AD/76.
- Access doors should never be fitted on the underside, to avoid leakage.

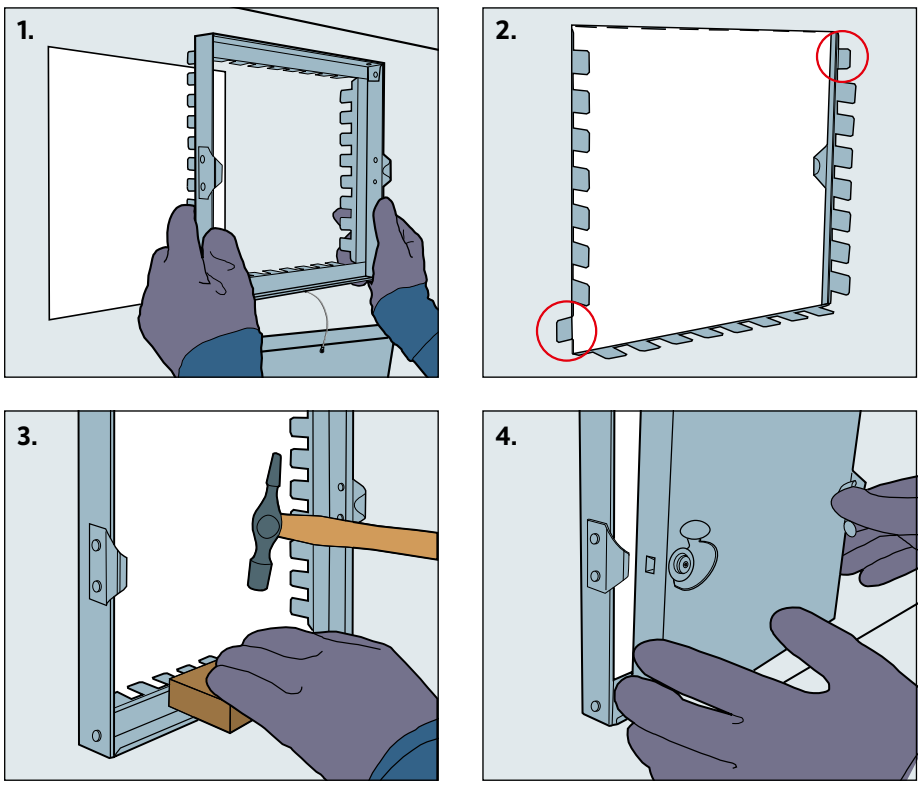
Fig. 10 *Flange assembly*



Access door fitting

1. Measure and cut ope.
2. Affix frame with temporary tabs (see Fig. 11.2).
3. Hammer all tabs securely to the ductwork, on top and sides, subject to access.
4. Fit door and tighten camlocks.

Fig. 11 *Access door fitting*



Simple fit *(insulated)* penetration seal instructions

1. Fit uninsulated duct.
2. Fit fire batt both sides of ope.
3. Install first and second layer of insulation.
4. Fit picture frame insulation cover plate.
5. Fit 3rd layer penetration seal.

Weight chart for EN 15871 ductwork

EN 1366–1 Passive/Pressurisation/Kitchen — Uninsulated

Weight chart for EN 15871 Ductwork *(kg per linear metre)*																					
mm / mm	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
250	12	13	14	15	17	18	19	20	21	22	24	25	26	27	28	29	30	32	33	34	35
300	13	14	16	17	18	19	20	21	22	24	25	26	27	28	29	30	32	33	34	35	36
350	14	16	17	18	19	20	21	23	24	25	26	27	28	29	31	32	33	34	35	36	37
400	16	17	18	19	20	21	22	24	25	26	27	28	30	31	32	33	34	35	36	38	39
450	17	18	19	20	22	23	24	25	26	27	28	30	31	32	33	34	35	36	38	39	40
500	18	19	21	22	23	24	25	26	27	29	30	31	32	33	34	35	37	38	39	40	41
550	19	21	22	23	24	25	26	27	29	30	31	32	33	34	36	37	38	39	40	41	42
600	21	22	23	24	25	26	28	29	30	31	32	33	34	36	37	38	39	40	41	43	44
650	22	23	24	25	27	28	29	30	31	32	33	35	36	37	38	39	40	41	43	44	45
700	23	24	25	27	28	29	30	31	32	33	35	36	37	38	39	40	42	43	44	45	46
750	24	26	27	55	29	30	31	32	34	35	36	37	38	39	40	42	43	44	45	46	47
800	26	45	28	29	30	31	32	34	35	36	37	38	39	41	42	43	44	45	46	47	49
850	27	28	29	30	32	33	34	35	36	37	38	40	41	42	43	44	45	46	48	49	50
900	28	29	30	32	33	34	35	36	37	38	40	41	42	43	44	45	46	48	49	50	51
950	29	31	32	33	34	35	36	37	39	40	41	42	43	44	45	47	48	49	50	51	52
1000	31	32	33	34	35	36	37	39	40	41	42	43	44	46	47	48	49	50	54	52	54

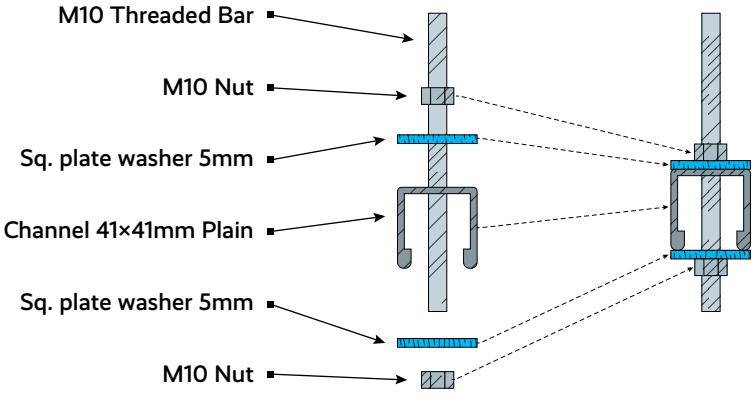
Weight chart for EN 12101–7 ductwork

EN 1366–9 Single Compartment — Uninsulated - Smoke extract

Weight chart for EN 12101-7 Ductwork *(kg per linear metre)*																					
mm / mm	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
250	13	15	16	18	20	21	22	24	25	26	28	30	31	32	33	35	37	38	39	41	42
300	15	16	17	20	21	23	24	25	26	28	30	31	33	34	35	36	39	40	41	43	44
350	16	17	19	22	23	24	26	27	28	29	32	33	34	36	37	38	41	42	43	45	46
400	19	21	22	23	25	26	27	28	30	31	34	35	36	37	39	40	43	44	45	47	48
450	21	22	24	25	26	27	29	30	31	33	35	37	38	39	41	42	45	46	47	48	50
500	23	24	25	27	28	29	30	32	33	34	37	39	40	41	42	44	47	48	46	50	52
550	24	26	27	28	30	31	32	33	35	36	39	40	42	43	44	45	49	50	51	52	54
600	26	27	28	30	31	32	34	35	36	37	41	42	43	45	46	47	51	52	53	54	56
650	28	29	30	31	33	34	35	36	38	39	43	44	45	46	48	49	53	54	55	56	58
700	29	30	32	33	34	36	37	38	39	41	44	46	47	48	49	51	54	56	57	58	60
750	33	35	36	37	39	40	41	42	44	45	46	47	49	50	51	53	56	58	59	60	62
800	35	36	38	39	40	42	43	44	45	47	48	49	51	52	53	54	58	60	61	62	64
850	37	38	40	41	42	43	45	46	47	48	50	51	52	54	55	56	60	62	63	64	66
900	39	40	41	43	44	45	46	48	49	50	52	53	54	55	57	58	62	64	65	66	67
950	41	42	43	44	46	47	48	50	51	52	53	55	56	57	58	60	64	66	67	68	69
1000	42	44	45	46	47	49	50	51	53	54	55	56	58	59	60	62	66	68	69	70	71

All fitted with 41×41 plain channel and 10mm threaded rod using 10mm square washers.

Fig. 12 *Rod and bracket assembly*



Weight chart for EN 15871 ductwork including insulation

EN 1366–1 Multi-compartment — Kitchen extract - Two layers

Weight chart for EN 15871 Ductwork including insulation *(kg per linear metre)*																					
mm / mm	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
250	23	26	28	30	33	35	37	40	42	44	46	49	51	53	56	58	60	62	65	67	69
300	26	28	34	33	35	37	40	42	44	46	49	51	53	56	58	60	62	65	67	69	72
350	28	31	33	35	37	40	42	44	47	49	51	53	56	58	60	63	65	67	69	72	74
400	31	33	35	38	40	42	44	47	49	51	54	56	58	60	63	65	67	70	72	74	76
450	33	35	38	40	42	44	47	49	51	54	56	58	61	63	65	67	70	72	74	77	79
500	35	38	40	42	45	47	49	51	54	56	58	61	63	65	68	70	72	74	77	79	81
550	38	40	42	45	47	49	52	54	56	58	64	63	65	68	70	72	74	77	79	81	83
600	40	42	45	47	49	52	54	56	59	61	63	65	68	70	72	75	77	79	81	84	86
650	43	45	47	49	52	54	56	59	61	63	65	68	70	72	75	77	79	81	84	86	88
700	45	47	50	52	54	56	49	61	63	66	68	70	72	75	77	79	82	84	86	88	91
750	47	50	52	54	57	59	61	63	66	68	70	73	75	77	79	82	84	86	89	91	93
800	50	52	54	57	59	61	63	66	68	70	73	75	77	80	82	84	86	89	91	93	96
850	52	54	57	59	61	64	66	68	70	73	75	77	80	82	84	86	89	91	93	96	98
900	55	57	59	61	64	66	68	71	73	75	77	80	82	84	87	89	91	93	96	98	100
950	57	59	61	64	66	68	71	73	75	78	80	82	84	87	89	91	94	96	98	100	103
1000	59	62	64	66	68	71	73	75	78	80	82	84	87	89	91	94	96	98	100	103	105

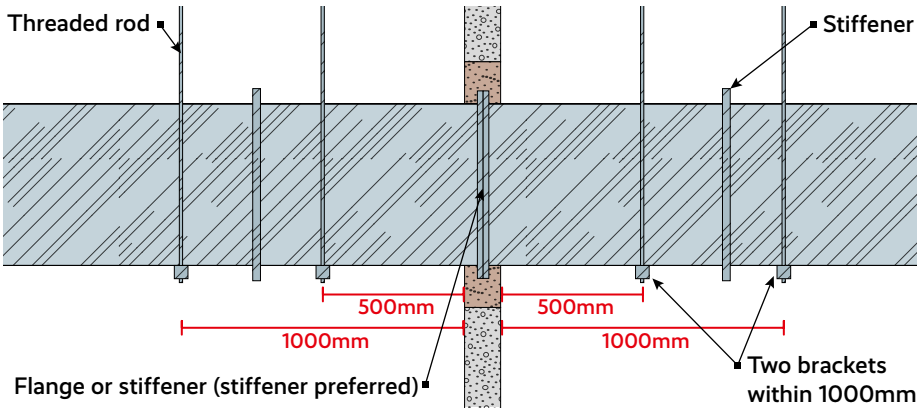
Weight chart for EN 12101–7 ductwork including insulation

EN 1366–8 Multi-compartment — Smoke extract - Two layers

Weight chart for EN 12101-7 Ductwork including insulation *(kg per linear metre)*																					
mm / mm	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
250	23	26	28	32	34	36	38	41	43	45	49	51	53	55	58	60	63	65	68	70	72
300	26	28	30	34	37	39	41	43	46	48	51	54	56	58	60	63	66	68	71	73	75
350	28	31	33	37	39	41	44	46	48	51	54	56	59	61	63	66	69	71	74	76	78
400	33	35	37	40	41	44	46	49	51	53	57	59	62	64	66	68	72	74	77	79	81
450	35	38	40	42	44	47	49	51	54	56	60	62	64	67	69	71	75	77	80	82	84
500	38	40	42	45	47	49	52	54	56	58	63	65	67	69	72	74	78	80	83	85	87
550	41	43	45	47	50	52	54	57	59	61	65	69	70	72	74	77	81	83	86	88	90
600	43	45	48	50	52	55	57	59	61	64	68	70	73	75	77	80	84	56	89	91	93
650	46	48	50	53	55	57	60	62	64	66	71	73	76	78	80	82	87	89	92	94	96
700	48	51	53	55	58	60	62	64	67	69	74	76	78	81	83	85	90	92	95	97	99
750	54	56	58	61	63	65	67	70	72	74	77	79	81	83	86	88	93	95	97	100	102
800	56	59	61	63	66	68	70	72	75	77	79	82	84	86	89	91	96	98	100	103	105
850	59	62	64	66	68	71	73	75	78	80	82	84	87	89	91	94	99	101	103	106	108
900	62	64	67	69	71	74	76	78	80	83	85	87	90	92	94	96	102	104	106	109	111
950	65	67	69	72	74	76	79	81	83	85	88	90	92	95	97	99	105	107	109	112	114
1000	68	70	72	75	77	79	81	84	85	88	91	93	95	97	100	102	108	110	112	115	117

M10 Rod, 41×41 Plain Channel or 82×41 Plain Channel where highlighted in Red.

Fig. 13 *Duct hangers*







AMS
AIR MOVEMENT SUPPLIES

Company profile - ISO 9001:2015

AMS Air Movement Supplies has served the Irish market under many names since 1998. We offer a complete package that is unrivalled as we are the only Irish manufacturer of grilles, dampers and fire rated ductwork. Our 40,000 sq. foot warehouse contains a vast array of diffusers, fans, flexibles and channels. Our turnaround times are renowned and we are acutely aware how much time costs to a delayed contractor.

We are **ISO 9001** certified and have completed an FPC *(Factory Production Control)* audit which is appraised annually and ensures the quality of all our products. Adherence to strict environmental protection policies and manufacturing methodology produces efficiency in materials that has made us one of the lowest producers of metal waste in Ireland.

Technical support and training

AMS Air Movement Supplies know the importance of getting a suitable fire system and have been involved with testing for over 15 years. We therefore provide a technical support service to all our clients and can provide a Continuing Professional Development (CPD) session on the latest EN regulations for your staff.

Principals in design and construction

SureFire is the product of many years of on-site experience and has deliberately used flanges, stiffeners and threaded rods interchangeably in strengthening to provide flexible solutions on-site where space and other criteria make fitting difficult. It is abundantly obvious to most that height is always at a premium and this flexibility allows us to minimise the height requirements for **SureFire** fitters by replacing stiffeners with threaded rods where needed.

Please contact us directly at **sales@airmovementsupplies.ie**.

AMS
AIR MOVEMENT SUPPLIES

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" You don't have to hold a position to be a leader. "
— Henry Ford

SUREFIRE
CERTAIN TO SUCCEED

