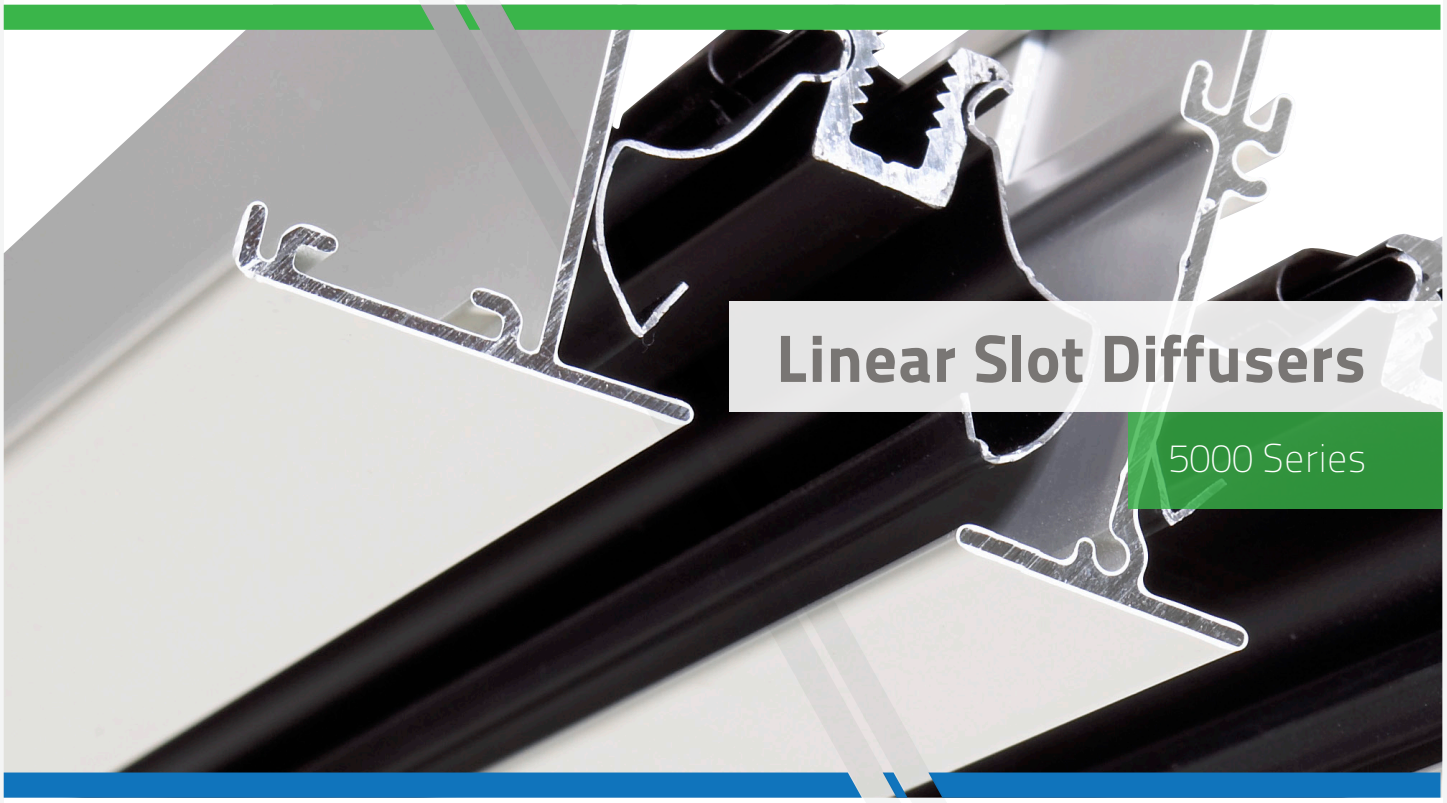
ADVANCEDAIR

INNOVATION IN ACTION



Linear Slot Diffusers

5000 Series

Linear Slot Diffusers 5000 Series

The Series 5000 Linear Slot Ceiling Diffuser has been specially designed to provide both the unobtrusive appearance required for architectural excellence, and the full 180° pattern controller adjustment at minimum NC levels required for high engineering performance.

The Series 5000 Diffuser provides stable diffusion under large amounts of air with both constant and changing load conditions. This is particularly suitable for variable air volume systems.

The Series 5000 Diffusers are available to suit many applications with several choices of mounting frames. Standard finish is a high quality, powder coated finish for long life and easy cleaning.

The diffusers are available with mitred corner end caps and feature die-formed components to provide consistent quality and performance.

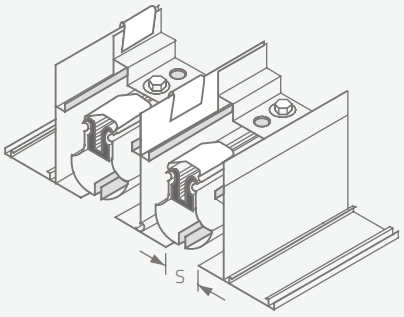
- **Aluminium Construction**
- **'Ice Tong' Pattern Controllers**

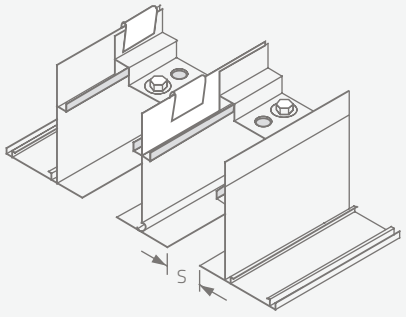
Supply Models:		Return Models:	
5050	13mm Slot	5050R	13mm Slot
5075	19mm Slot	5075R	19mm Slot
5010	25mm Slot	5010R	25mm Slot

Linear Slot Diffusers 5000 Series

Features:

- The volume and direction of the discharge air can be adjusted by moving the pattern controllers.
- Available with 1 to 8 slots.
- Choice of three slot widths to suit capacity requirements.
- The maximum length of the pattern controller is 900mm. Diffusers longer than 900mm are provided with multiple pattern controller sections.
- Selections of frames and mounting sub-frames for various types of installations.
- Diffusers are supplied in lengths of up to 1800mm in a single section.
- Ideal for continuous length applications.
- Multiple-sections are supplied with alignment strips on the frames and sub-frames to provide superior, positive on-site alignment.
- Model 5000R returns and the Model 5000 supply diffusers are identical except for the omission of pattern controllers.
- Mounting sub-frames are cut to length for assembly on-site.
- Material: Extruded aluminium frame with corrosion-resistant steel pattern controllers.
- Finish: AW Appliance White polyester powder finish RAL 9010 semi-gloss with black pattern controllers as standard. Other finishes are available.





Supply Model				Return Model			
5050	S	=	13mm slot	5050R	S	=	13mm slot
5075	S	=	19mm slot	5075R	S	=	19mm slot
5010	S	=	25mm slot	5010R	S	=	25mm slot

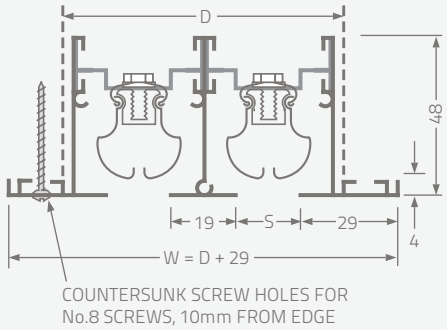
Frame Types and Mounting

Sub-Frame Combinations for Hard Ceilings

Standard Frame

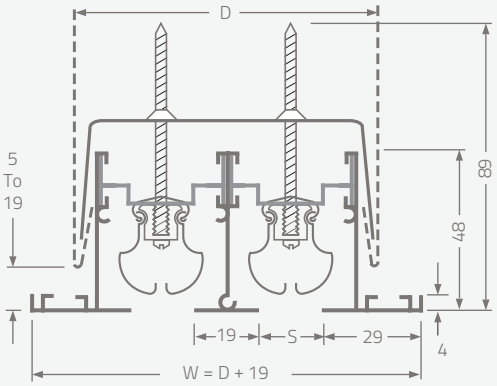
Type A
- Flange Frame
- Screw Mounting

Type B
- Flange Frame
- Duct Mounting, less screw holes

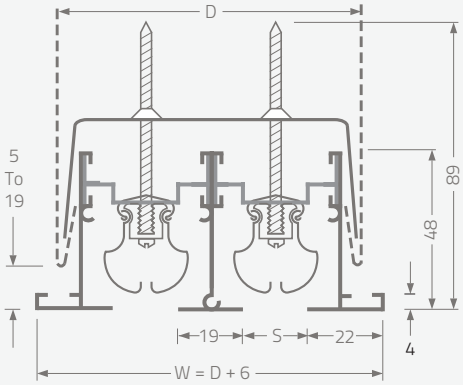


Standard Frame

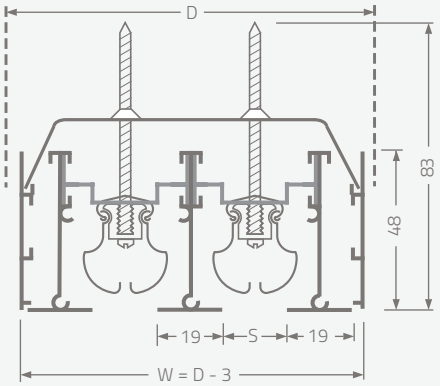
Type C
- Flange Frame
- Concealed Mounting



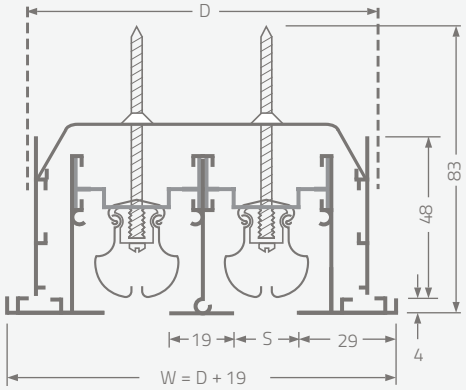
Type D
- Flange Frame, Narrow Margin
- Concealed Mounting



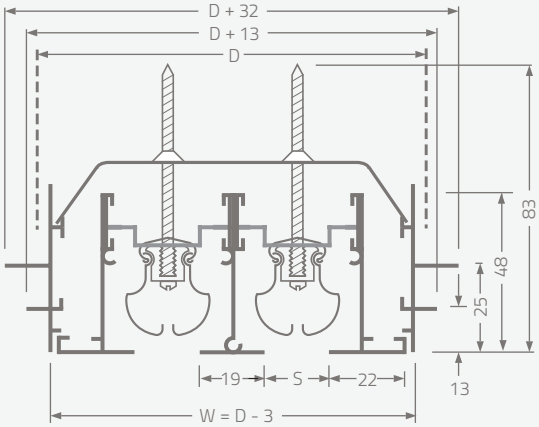
Type E
- Flush Frame and Sub-Frame
- Concealed Mounting



Type F
- Flange Frame and Sub-Frame
- Concealed Mounting



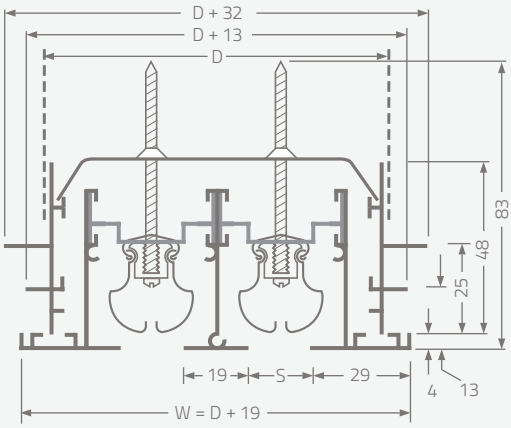
Type G
- Flush Frame with Plaster and Tile Sub-Frame
- Concealed Mounting



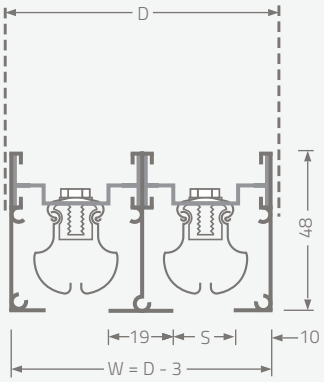
Frame Types and Mounting

Sub-Frame Combinations for Hard Ceilings

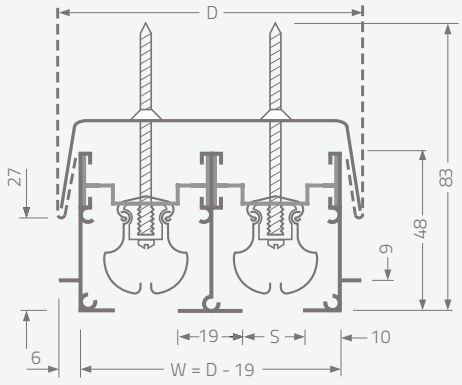
Type H
- Flange Frame with Plaster and Tile Sub-Frame
- Concealed Mounting



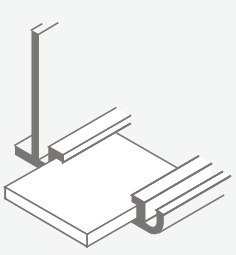
Type M
- Flush Frame
- Duct Mounting
- Flangeless Frame



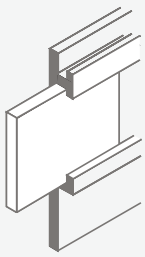
Type N
- Spline Frame Ceiling
- Concealed Mounting



Alignment Strips
Alignment strips on the frames and sub-frames provide superior, positive alignment on multiple section assemblies.



Frame



Sub-frame

D = Duct Size

S = Slot Width

W = Overall Face Width

Standard Frames are the most commonlyspecified and readily available from stock.

For duct dimensions D see next page.

Dimensions are in mm.

For the availability of other frames and supporting methods, contact Advanced Air direct.

Duct Width

D Dimension for Available Frames

Units: mm

Frame Type	No. of Slots	5050 5050R S=13	5075 5075R S=19	5010 5010R S=25
A B	1	41	48	54
	2	73	86	98
	3	105	124	143
	4	137	162	187
	5	168	200	232
	6	200	238	276
	7	232	276	321
	8	264	314	365

Units: mm

Frame Type	No. of Slots	5050 5050R S=13	5075 5075R S=19	5010 5010R S=25
F N H	1	51	57	64
	2	83	95	108
	3	115	133	152
	4	146	171	197
	5	178	210	241
	6	210	248	286
	7	241	286	330
	8	273	324	375

Frame Type	No. of Slots	5050 5050R S=13	5075 5075R S=19	5010 5010R S=25
C D	1	51	57	64
	2	83	95	108
	3	114	133	152
	4	146	171	197
	5	178	210	241
	6	210	248	286
	7	241	286	330
	8	273	324	375

Frame Type	No. of Slots	5050 5050R S=13	5075 5075R S=19	5010 5010R S=25
G	1	64	70	76
	2	95	108	121
	3	127	146	165
	4	159	184	210
	5	191	222	254
	6	222	260	298
	7	254	298	343
	8	286	337	387

Frame Type	No. of Slots	5050 5050R S=13	5075 5075R S=19	5010 5010R S=25
E	1	57	64	70
	2	89	102	115
	3	121	140	159
	4	152	178	203
	5	184	216	248
	6	216	254	292
	7	248	292	337
	8	279	330	381

Frame Type	No. of Slots	5050 5050R S=13	5075 5075R S=19	5010 5010R S=25
M	1	35	41	48
	2	67	79	92
	3	98	117	137
	4	130	156	181
	5	162	194	225
	6	194	232	270
	7	225	270	314
	8	257	308	359

Overall Length Dimensions and End Cap **Position**

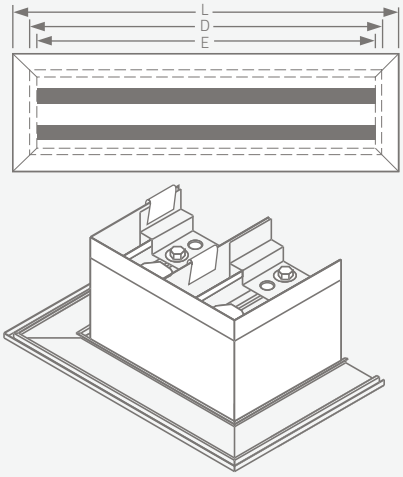
Frame Type	M M		F F		M O / F O		M C / F C		O O		O C		C C	
	E	L	E	L	E	L †	E	L	E	L	E	L	E	L
A, B	D-13	D+25	D-13	D+38	D-6	D+13	D-5	D+14	D	D	D-2	D-2	D-3	D-3
C	D-13	D+25	D-13	D+38	D-6	D+13	D-5	D+14	D	D	D-2	D-2	D-3	D-3
D	D-13	D+13	D-13	D+25	D-6	D+6	D-5	D+11	D	D	D-2	D-2	D-3	D-3
E	D-22	D	–	–	D-11	D	D-10	D+2	D	D	D-2	D-2	D-3	D-3
F, H	D-19	D+19	D-19	D+19	D-10	D+10	D-8	D+11	D	D	D-2	D-2	D-3	D-3
G	D-3	D	D-3	D	D-14	D	D-13	D+2	D	D	D-2	D-2	D-3	D-3
M*, N*	D-2	D-2	–	–	D-1	D-1	D-2	D-2	D	D	D-2	D-2	D-3	D-3

= Configurations FO and FC: Add 6mm for frame types A, B, C, D, F, G and H. Not available on frame types E, M and N.

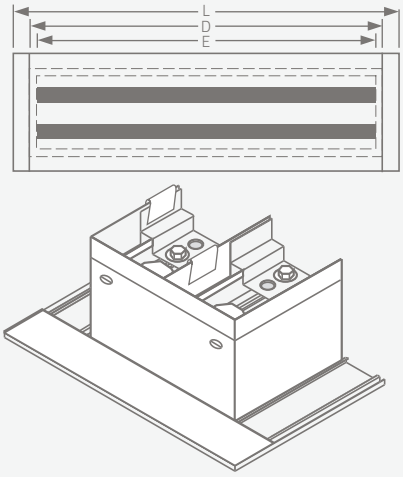
* These types have a flangeless mitred end cap which is the same extrusion profile as the frame.

D = Duct length E = End Cap Position L = Overall Length

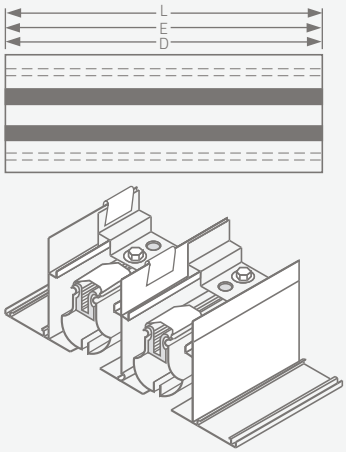
M - Mitred End Cap (Standard)



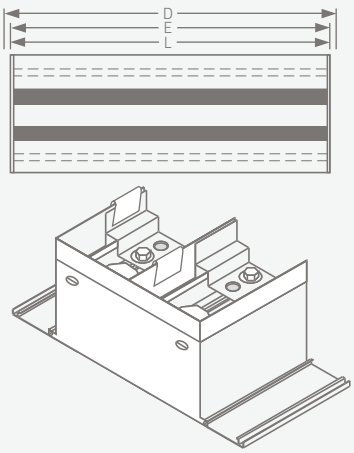
F - Flanged End cap



O - Open End



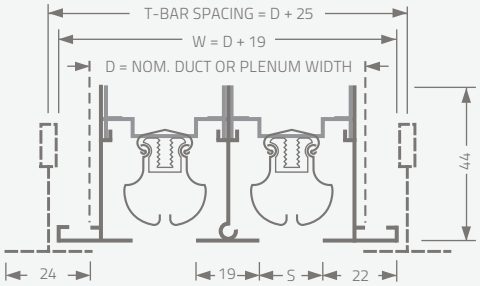
C - Flat End cap



Standard Lay-in T-Bar Application

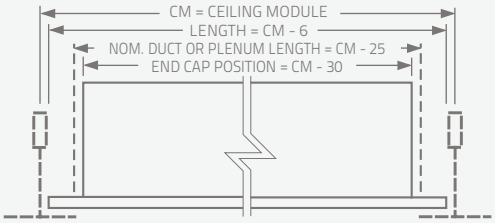
Type T Frame

For standard 24mm or 14mm face lay-in T-Bar



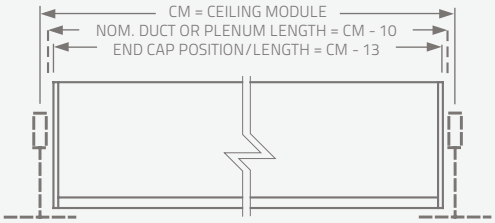
Type MM

Mitred End Caps (standard)



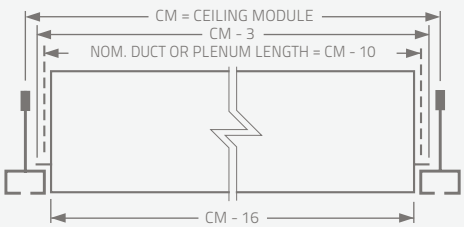
Type CC

Flat End Caps



End Cap Configuration

Type FL Frame



Designed and fabricated specifically to integrate with standard exposed grid T-Bar Ceiling Systems.

Available in nominal lengths to suit metric ceiling grid modules.

Metric module lengths: 500, 600, 1200 and 1500 mm.

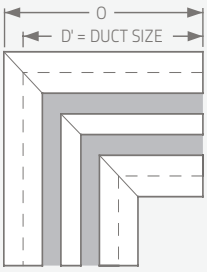
Also available in custom lengths for special applications and in multiple-section assemblies for continuous paired T-Bar ceilings.

Duct Width D Dimension

(Frames T and FL)

No. of Slots	Metric Units mm		
	5050 (R) S = 13	5075 (R) S = 19	5010 (R) S = 25
1	38	44	51
2	70	83	95
3	102	121	140
4	133	159	184
5	165	197	229
6	197	235	273
7	229	273	318
8	260	311	362

Options and Accessories



D' = Duct Size	
No. of Slots	D'
1 to 4	300
5 to 8	600

The standard mitred corner is 90°. Units are factory welded with precision to match and align with the associated straight leg.
Units are supplied with factory installed blank-offs in the slot (painted black) and are inactive.
For compound angles, contact the sales office.

90° Mitred Corners

5050MC ▪ **13mm Slot**

5075MC ▪ **19mm Slot**

5010MC ▪ **25mm Slot**

90° Mitred Corner Dimension 'O'

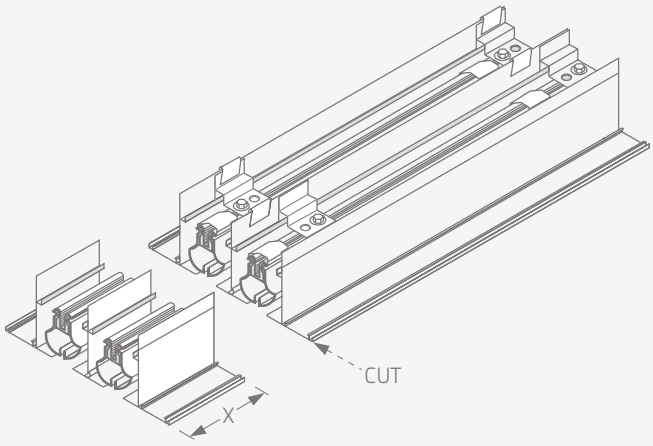
No. of Slots	Frame Type				
	A, B	C, F, H	D	E, G, J	M, N
1 – 4	313	308	302	296	299
5 – 8	613	608	602	596	599

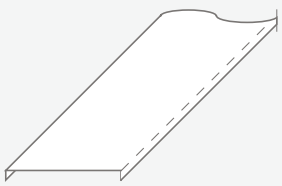
Dimensions are in mm.

On Site Trimming of Diffusers

If "X" is less than 75mm at either end (150mm total), standard Model 5000 or 5000R can be site-cut.

- Factory-Cut Diffusers Model 5000 or 5000R are ordered for a specific length from the factory, but can be trimmed as much as 150mm in length, (75mm from each end) with a fine tooth, high speed carbon steel metal cutting blade.





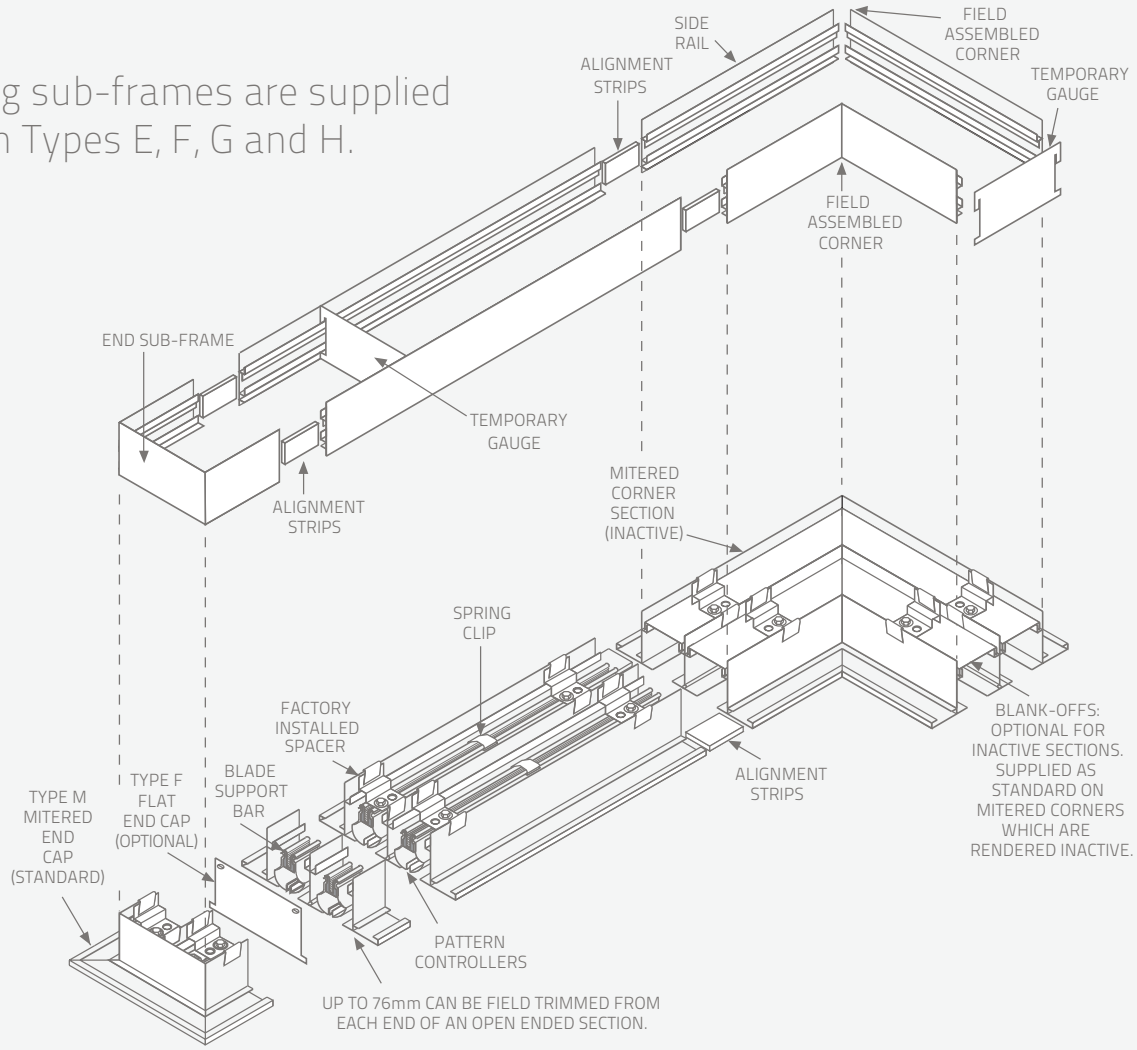
Shipped in 1800mm lengths to be site-cut.

BO Blanking Plates

- Cold-Rolled Steel
- Fits over Neck
- Black Finish

Typical Diffuser and Sub-Frame **Assembly**

Mounting sub-frames are supplied only with Types E, F, G and H.



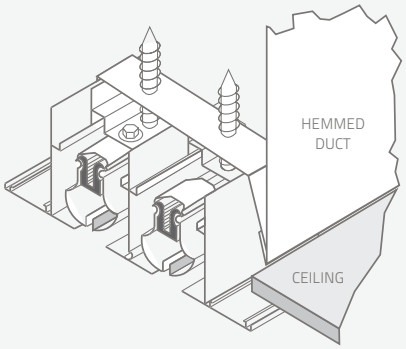
Diffuser Assembly Features:

- Diffusers can be joined together end to end to form long continuous slots.
- The standard Type M end cap is mitred and offers a superior architectural finish on the visible surface.
- The optional Type F end cap can be installed on-site.
- The optional Type C flat end cap may be used where the diffuser ends at a wall or other stopping point.
- The standard 90° mitred corner section is factory welded and fully assembled to ensure a smooth professional finish. They are inactive.
- Alignment strips are factory supplied as standard on all multiple-section frame and sub-frame assemblies and ensure close and positive alignment between sections.

Sub-Frame Features:

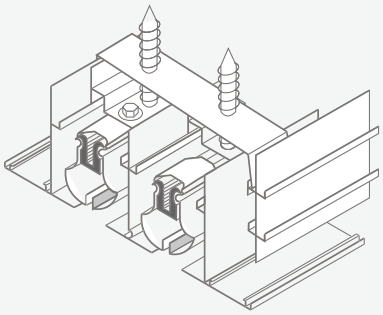
- Supplied with Frame Types E, F, G and H.
- Assures a clean, accurately dimensioned opening to receive the diffuser.
- Allows the diffuser to be installed at the end of the job, minimizing risk of damage or contamination from paint or plaster.
- Diffuser can be simply removed and replaced without damage to architectural ceiling finishes.
- Types E, F, G and H are ideal as a wet plaster ground. In this case they should be installed sufficiently proud to allow for the finished ceiling thickness.
- Types E and G are designed to leave a diffuser totally flush with the finished ceiling.
- Types F and H are designed to leave a surface mount diffuser appearance.
- Type E may also be used where a diffuser runs flush along a wall.

Typical Diffuser and Sub-Frame **Assembly**



Hemmed Duct Preparation Types C and D

- Far and away the most popular type of installation. Simple and quick.
- Diffuser simply pushes up into duct until the legs of the factory supplied mounting straps locate into the hems of the duct.
- Factory supplied levelling screws then draw the diffuser up until it is tight and snug with the ceiling.
- Duct should be fabricated with a 13mm hem on both long sides and opened approximately 3mm.



Auxiliary Sub-Frame Preparation Types E, F, G and H

- Sub-frame should be attached to inside of duct and/or a framed ceiling opening as deemed necessary.
- Factory supplied mounting straps locate into an extrusion slot in the sub-frame. Installation of diffuser is similar to the hemmed duct method shown to the left.

Continuous Run Dimensions

The example on the right illustrates a typical 3 slot installation with two 90° mitred corner sections.

1 Type 'CO' End Cap configuration.

2, 6 'MC' Mitred Corner Section.

3, 4, 5 Type 'OO' End Cap configuration.

7 Type 'MO' End Cap configuration.

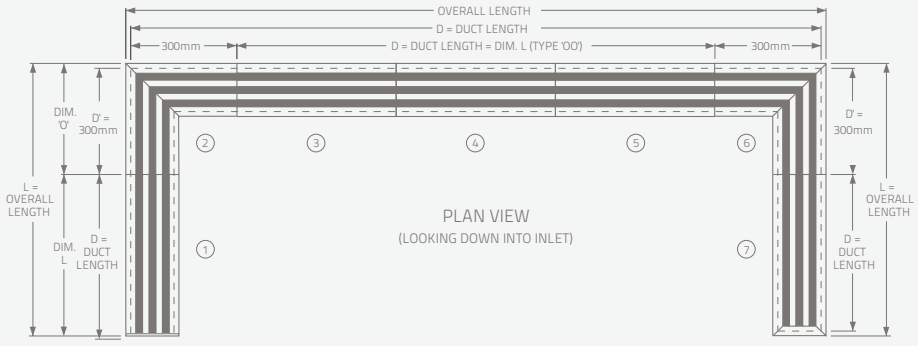
Each straight section, regardless of total duct length may be ordered as a single section.

Example:

1, 7 Each section may be ordered as a single item, regardless of total length.

3, 4, 5 One section may be ordered, regardless of total length.

Multiple-sections are sub-divided by the factory into equal length sections at the factories' discretion.



Note:
It is extremely difficult to achieve a perfect installation where compound mitres are involved such as above when all sections are ordered from the factory fabricated to suit finished duct dimensions. This is due to on-site tolerance variations which may prevent proper alignment and butting together of individual sections due to insufficient material.
It is recommended that section Æ, Ø or ƒ is ordered oversize by 75mm and cut to suit site conditions. 'OO' configuration lengths can be trimmed by up to 150mm. 75mm from each end.

How To Specify or To Order

Extruded Aluminium Linear Slot Diffuser ▪ Model Series 5000

5075 – 900 x 2 Slot - C - AW - MM - BO

Model
- Linear Slot Diffuser 50

Slot Width / Fabrication
- Supply 13mm 50
  19mm 75
  25mm 10
- Return 13mm 50R
  19mm 75R
  25mm 10R
- Mitred Corner 13mm 50MC
  19mm 75MC
  25mm 10MC
- Blank-offs 13mm 50BO
  19mm 75BO
  25mm 10BO

Nom. Length
(mm)

No. Of Slots
- 1 to 8

Accessories
- Angle Cut One End AC1
- Angle Cut Both Ends AC2

End Cap Configuration
- Mitred Mitred (default) MM
- Mitred Open MO
- Mitred Flat MC
- Open Open OO
- Open Flat OC
- Flat Flat CC
- Flanged Flanged FF
- Flanged Open FO
- Flanged Flat FC

Finish
- Appliance White (default) AW
- Aluminium AL
- Mill MI
- Special SP

Frame or Frame/Sub-Frame Combination
- Flange Frame, Screw Holes A
- Flange Frame, No Screw Holes B
- Flange Frame, Concealed Mounting C
- Flange Frame, Concealed Mounting D
- Flush Frame/Sub-frame E
- Flange Frame/Sub-frame F
- Flush Frame/Plaster Sub-frame G
- Flange Frame/Plaster Sub-frame H
- Flangeless Frame M
- Spline Frame, Concealed Mounting N
- Flange Frame, T-Bar Lay-in T
- Threadline/Fineline® Frame FL

(Show complete Model Number and Size, unless "Default" is desired)

Notes:
1. Flanged end caps (FF) may be shipped loose upon request for on-site attachment and are intended for use with site cut sections or for use by stocking representatives.
2. It is helpful to include a sketch for multiple units with mitred corners and angle cuts. Specify exact outside length of duct run and angles.
3. For lay-in T-Bar installations, specify nominal T-Bar opening length.

Performance Data

Plenum Supply Model 5075 ▪ 19mm Slot

No. of Slots	Pressure Drop	H V	1 1	3 3	12 8	19 15	26 17	36 25	47 32
1	Flowrate per length (l/s/m)		8	15	31	39	46	54	62
	Throw (m)	H	0.3 - 0.6	0.6 - 1.8	1.2 - 2.1	1.8 - 2.7	2.1 - 3.0	2.1 - 3.0	2.4 - 3.4
		V	0.6	1.8	3.0	3.7	4.0	4.3	4.6
	NC Level		—	—	16	21	26	30	33
2	Flowrate per Length(l/s/m)	15	31	62	77	93	108	124	
	Throw (m)	H	0.3 - 0.9	0.9 - 2.7	2.1 - 3.0	2.7 - 3.7	3.0 - 4.3	3.0 - 4.6	3.4 - 5.8
		V	0.9	2.4	3.4	4.6	5.5	6.1	6.4
	NC Level		—	—	19	24	29	33	36
3	Flowrate per Length(l/s/m)	23	46	93	116	139	163	186	
	Throw (m)	H	0.3 - 1.5	1.5 - 3.0	2.4 - 4.0	3.0 - 4.6	3.7 - 6.1	4.0 - 6.4	4.3 - 7.0
		V	1.8	3.0	4.6	5.8	6.1	7.3	7.6
	NC Level		—	11	21	26	31	35	38
4	Flowrate per Length(l/s/m)	31	62	124	155	186	217	248	
	Throw (m)	H	0.3 - 2.1	2.1 - 3.7	3.0 - 4.6	3.7 - 6.1	4.3 - 7.0	4.6 - 7.3	5.8 - 7.9
		V	1.5	3.4	5.5	6.4	7.6	8.2	9.1
	NC Level		—	12	22	27	32	36	39
5	Flowrate per Length(l/s/m)	39	77	155	194	232	271	310	
	Throw (m)	H	0.6 - 2.1	2.1 - 4.3	3.0 - 6.1	4.3 - 7.0	4.9 - 7.6	6.1 - 8.2	6.4 - 8.8
		V	1.8	3.7	5.5	7.6	8.5	9.1	10.4
	NC Level		—	13	23	28	33	37	40
6	Flowrate per Length(l/s/m)	46	93	186	232	279	325	372	
	Throw (m)	H	0.9 - 2.4	2.4 - 4.6	3.7 - 6.4	4.6 - 7.3	6.1 - 8.2	6.4 - 9.1	7.0 - 9.8
		V	2.1	4.0	6.4	7.6	9.1	9.8	11.0
	NC Level		—	14	24	29	34	38	41
7	Flowrate per Length(l/s/m)	54	108	217	271	325	379	434	
	Throw (m)	H	1.2 - 2.4	2.7 - 5.8	4.0 - 7.0	5.8 - 7.9	6.4 - 8.8	7.0 - 9.8	7.6 - 10.7
		V	2.4	4.9	6.7	8.8	10.1	10.7	12.2
	NC Level		—	14	24	29	34	38	41
8	Flowrate per Length(l/s/m)	62	124	248	310	372	434	495	
	Throw (m)	H	1.5 - 2.7	2.7 - 6.1	4.3 - 7.3	6.1 - 8.5	7.0 - 9.8	7.6 - 10.4	7.9 - 11.3
		V	2.4	5.2	6.4	9.1	10.7	12.2	12.8
	NC Level		—	15	25	30	35	39	42

NC Correction Factors for Various Lengths

Length (m)	0.6	1.2	1.8	2.4	2.7	3.0	4.6	6.1	7.6	9.1
Supply	- 3	0	+ 2	+ 3	+ 4	+ 5	+ 8	+ 10	+ 11	+ 13
Return	0	+ 3	+ 4	+ 6	+ 7	+ 8	+ 10	+ 11	+ 12	+ 13

Throw Correction Factors for Various Lengths

Length (m)	0.6	1.2	1.8	2.4	3.0	3.7
Multiplier	0.70	1.0	1.25	1.40	1.55	1.70

Plenum Correction

	NR	Δ(PPa)
Top Entry	+5dBA	X1.5
Side Entry	+10dBA	X2

Guidance Sizing for Spigots

Spigot Velocity m/s	2	2.5	3.0	3.5	4.0
Guide NR Level	20	25	30	35	40

H - Horizontal Installation
V - Vertical Installation
Performance Notes:

1. Horizontal throws are based on the same direction of all slots.
2. Horizontal throws are given at 0.5 and 0.25m/s terminal velocities.
3. Vertical throws are given at 0.25 m/s terminal velocity.
4. Throw values are based on a 1.2m section. For other lengths, use the correction factor table above.
5. NC values are based on a 1.2m section, horizontal throw. For other lengths, use the correction factor table above. For vertical throw, deduct 10 dB.
6. Data derived from tests conducted in accordance with ANSI/ ASHRAE Standard 70 – 1991.