

Square and Rectangular Louvre Face Ceiling Diffuser

Model SA

Features

- **Low Profile Design**
- Ultra Slim 47mm Diffuser Depth
- 14 Square/ Rectangular Air Patterns
- Removable Core
- Extruded Aluminium Sections
- Welded Construction
- Supply or Return Air Applications
- Optional Opposed Blade Damper
- Purpose Designed Steel or Phenolic Panel Plenum Boxes



Air Diffusion

Grilles Diffusers Louvres Chilled Beams

Ruskin Air Management Limited
www.ruskinuk.co.uk

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Introduction

The Model SA louvre face ceiling diffuser incorporates a low profile design, which results in an ultra slim diffuser depth of just 47mm. A pleasing aesthetic appearance blends with most ceilings especially modular systems. The ultra slim depth makes the diffuser ideal for installations with a limited ceiling void height.

All diffusers are manufactured from high quality extruded aluminium sections featuring a welded frame and core construction.

A choice of 14 different square or rectangular diffuser air patterns or either 1 way, 2 way, 2 way corner, 3 way or 4 way are available for supply air applications and matching return air. An angular style inner core assembly provides a fixed horizontal air pattern, capable of handling a sizeable quantity of air at a given pressure drop and noise level.

Inner cores are easily removable allowing on site access or should internal room layouts be altered; the core may be substituted for an alternative air pattern whilst the frame remains unchanged. To maintain a 4 way appearance, internal blanking baffles can be supplied to give the desired air pattern. A retention cord is fitted to each inner core.

The standard 32mm wide flange is designed for surface mount or tee bar installation; otherwise a variety of flange styles are available to suit Recessed, Tegular or clip in Spring Tee types of ceiling grid systems.

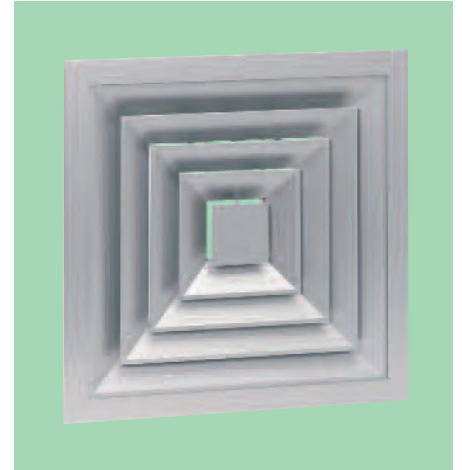
Each diffuser can be fitted with an optional opposed blade damper. The damper is designed as an air trimming device and is operated via a screw cam through the diffuser neck with the core removed.

Purpose designed and correctly selected plenum boxes, in either sheet metal or pre-insulated phenolic panel construction, are available to ensure the performance and characteristics of the diffuser.

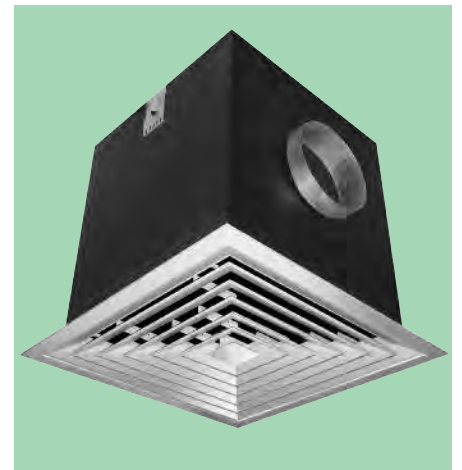
For uniform air distribution it is recommended that plenum boxes are supplied with an equalising grid.



Standard 4 Way Air Pattern



4 Way Diffuser with Sheet Metal Plenum Box having Side Entry Spigot



4 Way Diffuser with Pre-Insulated Plenum Box having Side Entry Spigot

To speed up on site installation time, the plenum box / pan adaptor and diffuser can be factory fitted together then delivered as a complete assembly to be simply installed as one unit.

As standard the Model SA diffuser is applied with a polyester powder white finish to RAL9010 (20% gloss), or silver to RAL9006. Other special finishes are available on request.

Diffuser Specification

Material

Complete assembly from extruded aluminium sections.

Construction

Outer frame and inner core sections mitred and welded. Inner core located into outer frame using spring and bar with a retention cord fitted to each unit.

Standard Installation Method

Standard is plain flange for surface mount by screw fixing through neck or lay in tee bar installation (Type F0 fixing). Access for installation is with the core removed.

Installation Options

Countersunk screw holes in flange (Type F1 fixing).

Clip in Spring Tee style fixing, confirmation of the ceiling type and spring tee is required (Type F8 fixing).

If a plenum box or pan adapter is required, the diffuser can be supplied already fixed to the box as a prefabricated assembly. The box/diffuser assembly is then supported with on site fixings (by others).

Accessories

Opposed Blade Damper, (either with or without plenum box) operated by screw cam with the core removed.

Matching Plenum Box or Pan Adapter, side or top entry circular, square or rectangular spigots available with spigot dampers if required.

Rear quadrant Blanking Plates to maintain diffuser appearance. Plates manufactured from plated steel and painted black.

Finish

Standard is White Polyester Powder Coat to RAL9010 (20% gloss) or Silver Polyester Powder Coat to RAL9006. Alternative special finishes are also available on request.

Standard Model Types

1 Way Air Pattern

SA 1G = Square 1 Way air pattern, diffuser only.

SA 1LG = Rectangular 1 Way air pattern with blades parallel to longest side, diffuser only.

SA 1SG = Rectangular 1 Way air pattern with blades parallel to the shortest side, diffuser only.

2 Way Air Pattern

SA 2G = Square 2 Way Opposite air pattern, diffuser only.

SA 2LG = Rectangular 2 Way Opposite air pattern with blades parallel to the longest side, diffuser only.

SA 2SG = Rectangular 2 Way Opposite air pattern with blades parallel to the shortest side, diffuser only.

SA 2CG = Square 2 Way Corner air pattern with blades split equally across the diagonal, diffuser only.

SA 2CG (left) = Rectangular 2 Way Corner air pattern with blades split unequally across diagonal with shortest side discharging left, diffuser only.

SA 2CG (right) = Rectangular 2 Way Corner air pattern with blades split unequally across diagonal with shortest side discharging right, diffuser only.

3 Way Air Pattern

SA 3G = Square 3 Way air pattern, diffuser only.

SA 3LG = Rectangular 3 Way air pattern with blades parallel to the longest side, diffuser only.

SA 3SG = Rectangular 3 Way air pattern with the blades parallel to the shortest side, diffuser only.

4 Way Air Pattern

SA 4G = Square or Rectangular 4 Way air pattern, diffuser only.

If an opposed blade damper is required the code reference letter G is replaced by R to denote that a damper is to be fitted (i.e. SA 4R = 4 Way air pattern diffuser with OBD fitted).

All Model SA air patterns are viewed from the diffuser face.

Diffuser Specification

Square Size Range

Standard 32mm : Flat Flange and 27mm : Bevel Edge Flange

Size Range Square (Standard Sizes)

Nom Neck Size	Actual Neck Size	Min Cut Out Size	Overall Size
150 x 150	147 x 147	223 x 223	298 x 298
225 x 225	222 x 222	298 x 298	373 x 373
300 x 300	297 x 297	373 x 373	448 x 448
375 x 375	372 x 372	448 x 448	523 x 523
447 x 447	444 x 444	520 x 520	595 x 595
450 x 450	447 x 447	523 x 523	598 x 598

Size Range : Square (NON standard Sizes)

Nom Neck	Size Actual Neck Size	Min Cut Out Size	Overall Size
200 x 200	197 x 197	273 x 273	348 x 348
250 x 250	247 x 247	323 x 323	398 x 398
350 x 350	347 x 347	423 x 423	498 x 498
400 x 400	397 x 397	473 x 473	548 x 548
525 x 525	522 x 522	598 x 598	673 x 673
600 x 600	597 x 597	673 x 673	748 x 748

25TW/8 or 16 Tegular Flange

Size Range Square (Standard Size)

Nom Neck Size	Actual Neck Size	Min Cut Out Size	Overall Size
338 x 338	343 x 343	474 x 474	483 x 483
348 x 348	345 x 345	484 x 484	493 x 493
438 x 438	435 x 435	574 x 574	583 x 583
448 x 448	445 x 445	584 x 584	593 x 593

10W Recessed Flange

Size Range : Square (Standard Size)

Nom Neck	Size Actual Neck Size	Min Cut Out Size	Overall Size
421 x 421	418 x 418	478 x 478	495 x 495
521 x 521	518 x 518	578 x 578	595 x 595

Rectangular Size Range

Standard 32mm : Flat Flange and 27mm : Bevel Edge Flange

Standard Sizes : Rectangular

Nom Neck Size	Actual Neck Size	Min Cut Out Size	Overall Size
225 x 150	222 x 147	298 x 223	373 x 298
300 x 150	297 x 147	373 x 223	448 x 298
375 x 150	372 x 147	448 x 223	523 x 298
450 x 150	447 x 147	523 x 223	598 x 298
300 x 225	297 x 222	373 x 298	448 x 373
375 x 225	372 x 222	448 x 298	523 x 373
450 x 225	447 x 222	523 x 298	598 x 373
375 x 300	372 x 297	448 x 373	523 x 448
450 x 300	447 x 297	523 x 373	598 x 448
450 x 375	447 x 372	523 x 448	598 x 523

NON Standard Size Range : Rectangular

Nom Neck Size	Size Actual Neck Size	Min Cut Out Size	Overall Size
525 x 150	522 x 147	598 x 223	673 x 298
600 x 150	597 x 147	673 x 223	748 x 298
525 x 225	522 x 222	598 x 298	673 x 373
600 x 225	597 x 222	673 x 298	748 x 373
525 x 300	522 x 297	598 x 373	673 x 448
600 x 300	597 x 297	673 x 373	748 x 448
450 x 375	447 x 372	523 x 448	598 x 523
525 x 375	522 x 372	598 x 448	673 x 523
600 x 375	597 x 372	673 x 448	748 x 523
525 x 450	522 x 447	598 x 523	673 x 598
600 x 450	597 x 447	673 x 523	748 x 598
750 x 450	747 x 447	823 x 523	898 x 598
1050 x 450	1047 x 447	1123 x 523	1198 x 598
525 x 600	522 x 597	598 x 673	673 x 748

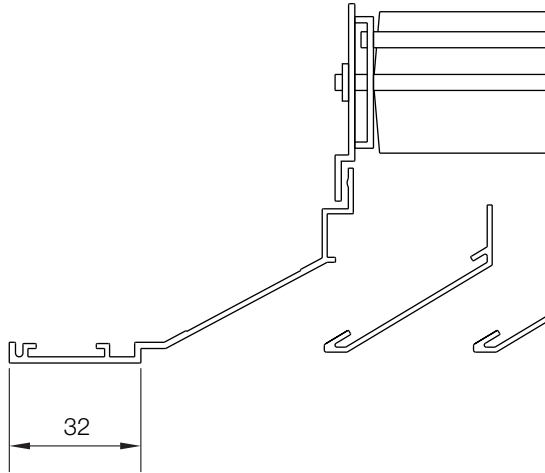
Rectangular Diffusers 25TW/8 or 16 Tegular Flange and 10W Recessed Flanges are only available upon special request, please refer to Air Diffusion Sales Office.

Flange Styles

Standard Fixings - FO

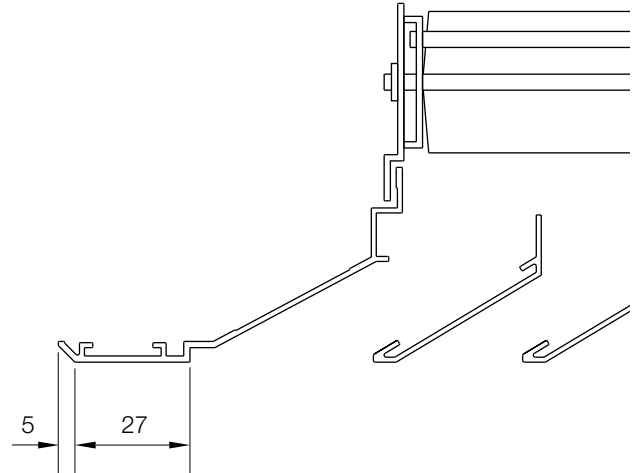
Standard 32W

(Also suitable for F1 or F8 fixing).



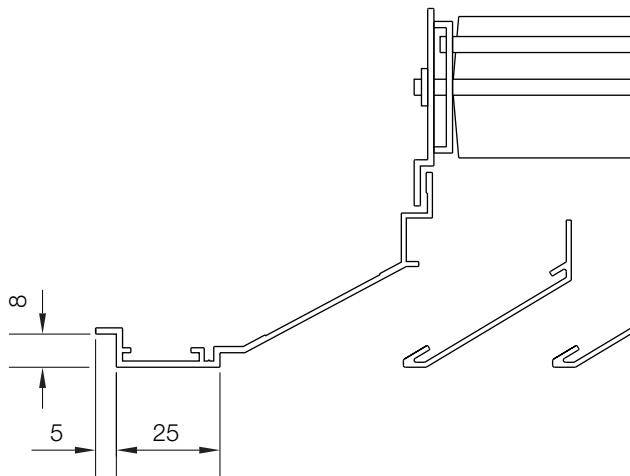
Bevel Edge Diffuser Frame 27BW

(Also suitable for F1 or F8 fixing).



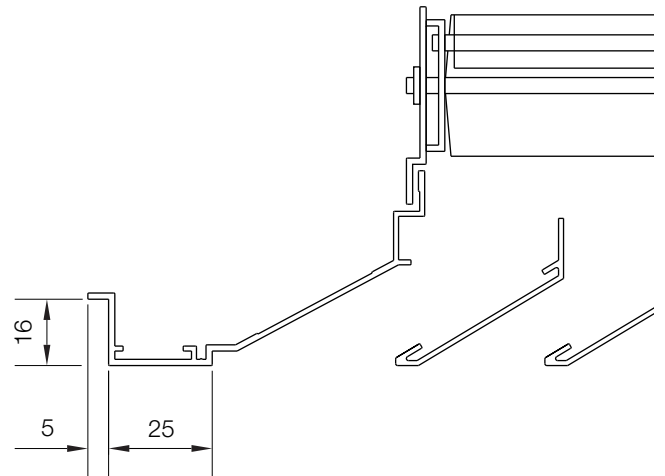
8mm Tegular / 25TW 8

(Also suitable for "lay in" tile replacement).



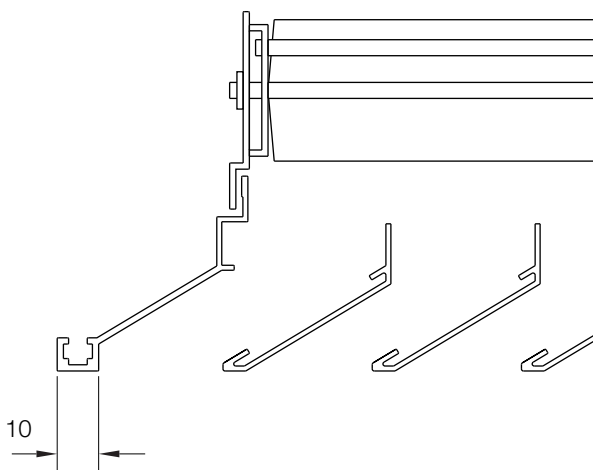
16mm Tegular / 25TW 16

(Also suitable for "lay in" tile replacement).



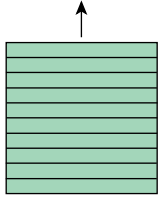
10W Recessed Mini Flange

(Also suitable for F8 fixing).

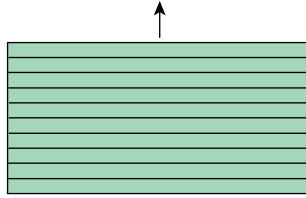


Air Patterns

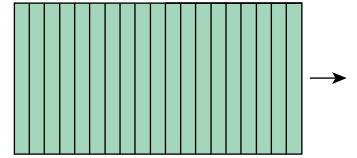
1 Way Discharge



SA1

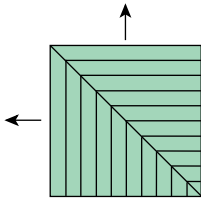


SA1L

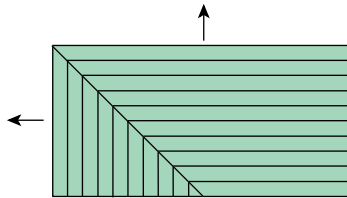


SA1S

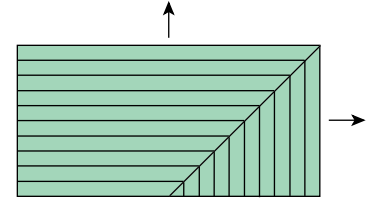
2 Way Discharge



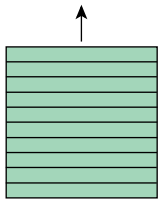
SA2C



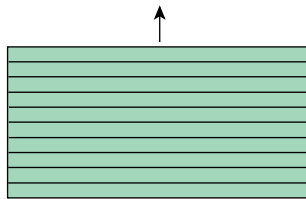
SA2C (left)



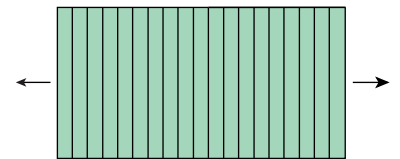
SA2C (right)



SA2

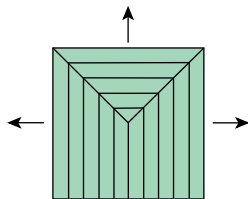


SA2L

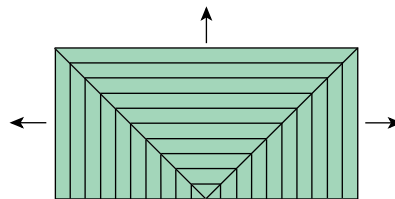


SA2S

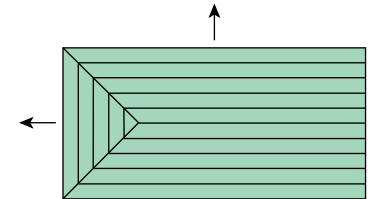
3 Way Discharge



SA3

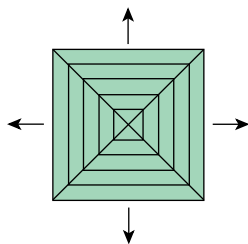


SA3S

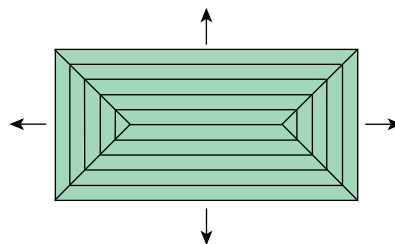


SA3L

4 Way Discharge



SA4



SA4

All Model SA air patterns are viewed from the diffuser face.

Selection Guide – Diffuser

Performance Notes

Throw is based on a temperature differential of 10°C cooling to a terminal velocity of 0.5m/s to give average room velocity of 0.18m/s with a room height of 2.7m when mounted flush with an unobstructed flat ceiling. Sound power and pressure levels are based on supply with dampers open.

Maximum recommended air volume for 10° Cooling unobstructed ceiling application

Ceiling Height m	2.4	2.7	3.0	3.3	3.7	4.0	4.5	6.0
Volume 1 way l/s	80	125	200	250	300	370	450	950
Volume 2 way l/s	160	250	400	500	600	740	900	1900
Volume 3 way l/s	240	375	600	750	900	1110	1350	2850
Volume 4 way l/s	320	500	800	1000	1200	1480	1800	3800

Throw Details

When SA diffusers are used in installation where there is no ceiling effect, the throw would be reduced by approximately 40%. This would also produce a deeper air stream from the horizontal.

Selection of Blanking Plates

For diffusers supplied with 4 way face appearance and required for 3, 2 or 1 way throw, rear quadrant blanking plates can be fitted to give desired air pattern. For selection of diffuser the following factors should be applied and selection made from 4 way appearance data.

3 WAY Air volume required divided by 0.75

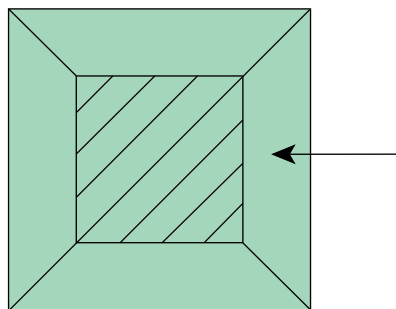
2 WAY Air volume required divided by 0.50

1 WAY Air volume required divided by 0.25

Blanking plates are manufactured from steel and painted black. Plates can be removed if required or added to at a later date. Partial blanking plates are also available on request.

If required for supply or extract

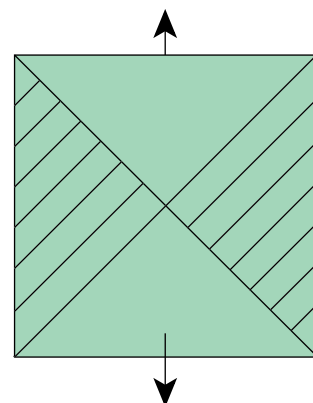
Square blanking plates for blanking down a larger size of diffuser to operate at lower volumes.



Square Blank Plate

Example

450 x 450 blanked to 300 x 300 Active



SA4 Blanked 2 Way Active

Example

2 WAY AIR PATTERN 150 l/s THROW 5.0

$150/0.50 = 300$ l/s

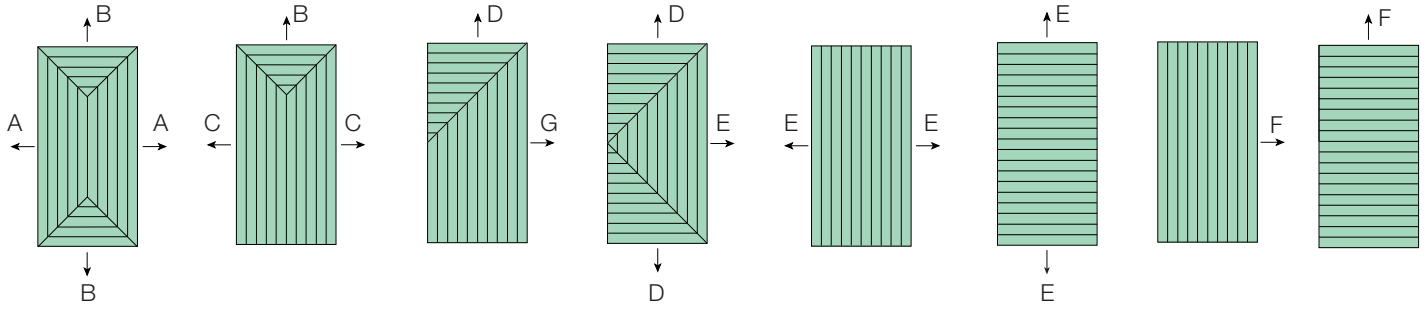
SELECT 450 x 450 BLANKED 2 WAY

THROW 4.9m NRLW 22 Pa 7.5

Model SA - Square Louvre Face Ceiling Diffuser Performance Tables

Square	Neck Velocity M/s:	1	1.25	1.5	1.75	2	2.5	3	3.5	4	4.5
Size mm	Total Pressure Pa:	3.5	5.3	7.5	10	13	21	30	40	53	67
150	Volume l/s	23	28	34	39	45	56	68	79	90	101
	Sound Power NRLW	-	11	17	21	26	31	35	42	47	52
	4 Way Throw	0.6	0.9	1.2	1.5	1.8	2.1	2.4	3.0	3.4	4.0
	3 Way Throw	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.7	4.3
	2 Way Throw	1.5	1.8	2.4	2.7	3.0	3.7	4.6	5.5	6.1	6.7
	1 Way Throw	2.1	2.4	3.0	3.7	4.3	5.2	5.8	6.1	6.7	7.0
225	Volume l/s	50	63	76	89	100	127	177	187	202	228
	Sound Power NRLW	-	12	18	22	26	32	38	43	47	52
	4 Way Throw	1.2	1.5	1.8	2.1	2.4	3.0	3.4	4.0	4.6	5.2
	3 Way Throw	1.5	1.9	2.2	2.6	3.0	3.5	4.0	4.6	5.2	5.8
	2 Way Throw	2.1	2.4	3.0	3.7	4.3	5.2	6.1	6.4	7.0	7.3
	1 Way Throw	2.7	3.4	4.3	4.9	5.2	5.8	6.4	6.7	7.3	7.9
300	Volume l/s	90	112	135	158	180	225	270	315	360	405
	Sound Power NRLW	-	13	18	23	27	33	40	44	48	53
	4 Way Throw	1.5	1.8	2.1	2.4	3.0	3.7	4.3	5.2	5.5	6.1
	3 Way Throw	1.8	2.0	2.4	3.0	3.7	4.0	4.9	5.5	6.1	6.4
	2 Way Throw	2.7	3.4	4.0	4.6	5.2	5.7	6.2	7.0	7.6	7.9
	1 Way Throw	3.4	4.3	4.9	5.2	5.5	6.1	6.7	7.3	7.9	8.2
375	Volume l/s	140	176	211	246	281	351	422	492	562	633
	Sound Power NRLW	-	14	20	24	28	35	40	44	49	54
	4 Way Throw	1.8	2.1	2.7	3.0	3.7	4.3	5.2	5.5	6.1	7.0
	3 Way Throw	2.0	2.4	3.0	3.4	3.7	4.9	5.5	6.1	6.4	7.3
	2 Way Throw	3.0	3.7	4.6	5.2	5.8	6.4	7.0	7.4	7.9	9.4
	1 Way Throw	4.0	4.6	5.2	5.5	6.0	6.7	7.3	7.7	8.2	9.7
450	Volume l/s	202	253	303	354	405	506	607	709	810	911
	Sound Power NRLW	10	16	22	28	33	38	42	46	51	57
	4 Way Throw	2.1	2.4	3.0	3.7	4.0	4.9	5.5	6.1	7.0	7.4
	3 Way Throw	2.4	2.7	3.4	4.0	4.3	5.5	6.1	6.4	7.6	7.9
	2 Way Throw	3.7	4.3	4.9	5.5	6.0	6.7	7.3	7.9	9.4	9.7
	1 Way Throw	4.3	4.9	5.2	5.8	6.3	7.0	7.6	8.2	9.7	10.0
525	Volume l/s	277	344	413	482	551	689	827	965	1100	1240
	Sound Power NRLW	11	17	23	30	35	40	44	48	53	58
	4 Way Throw	2.1	2.7	3.4	4.0	4.6	5.5	6.1	6.4	7.7	8.0
	3 Way Throw	2.4	3.0	3.7	4.3	4.9	5.8	6.4	7.3	7.9	8.4
	2 Way Throw	4.0	4.9	5.5	5.8	6.1	7.0	7.6	9.0	9.7	10.4
	1 Way Throw	4.6	5.2	5.8	6.1	6.4	7.3	7.9	9.4	10.0	10.7
600	Volume l/s	360	450	540	630	720	900	1080	1260	1440	1620
	Sound Power NRLW	12	18	25	31	37	42	45	50	55	59
	4 Way Throw	2.4	3.0	3.7	4.3	4.9	5.8	6.1	7.4	7.7	8.4
	3 Way Throw	2.7	3.4	4.0	4.6	5.2	6.0	6.4	7.6	8.4	8.7
	2 Way Throw	4.3	5.2	5.5	6.0	6.4	7.0	7.9	9.4	10.0	10.7
	1 Way Throw	4.6	5.2	5.8	6.3	6.7	7.3	8.2	9.7	10.4	11.0

Model SA - Rectangular Louvre Face Ceiling Diffuser Performance Tables

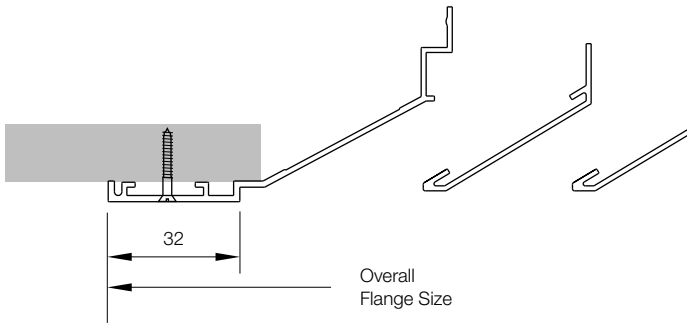


Neck	Neck Velocity M/s:	1	1.25	1.5	1.75	2	2.5	3	3.5	4	4.5
Size mm	Total Pressure Pa:	3.5	5.3	7.5	10	13	21	30	40	53	67
300 x 150	Volume l/s	45	56	67	79	90	112	135	157	180	202
	Sound Power NRLW	-	12	18	22	26	32	38	43	47	52
	Throw A	1.3	1.6	1.9	2.2	2.7	3.3	3.9	4.6	5.0	5.6
	Throw B	0.6	0.9	1.2	1.5	1.8	2.1	2.4	3.0	3.4	4.0
	Throw C	1.3	1.8	2.1	2.4	2.7	3.5	3.9	4.3	5.0	5.7
	Throw D	1.2	1.5	1.8	2.1	2.4	3.0	3.3	3.9	4.5	5.1
	Throw E	1.5	1.8	2.1	2.4	3.0	3.7	4.3	5.2	5.5	6.1
	Throw F	2.3	2.7	3.2	3.6	4.0	4.7	5.5	6.7	7.9	8.9
	Throw G	2.0	2.5	2.9	3.4	3.8	4.5	5.4	6.3	7.0	7.7
450 x 150	Volume l/s	67	84	101	118	135	168	202	236	270	303
	Sound Power NRLW	-	13	19	23	27	33	39	44	48	53
	Throw A	1.6	1.9	2.3	2.6	3.2	4.0	4.7	5.2	5.8	6.6
	Throw B	0.6	0.9	1.2	1.5	1.8	2.1	2.4	3.0	3.4	4.0
	Throw C	1.7	2.0	2.6	2.8	3.4	4.0	4.7	5.3	5.8	6.6
	Throw D	1.2	1.5	1.8	2.1	2.4	3.0	3.3	3.9	4.5	5.1
	Throw E	1.7	2.0	2.6	2.9	3.6	4.2	5.1	5.4	6.0	6.9
	Throw F	2.6	3.1	3.5	3.8	4.5	5.8	6.7	7.5	9.0	10.0
	Throw G	2.2	2.7	3.2	3.7	4.2	5.2	6.2	7.0	7.8	8.3
600 x 150	Volume l/s	90	112	135	157	180	225	270	315	360	405
	Sound Power NRLW	-	13	19	23	27	34	40	45	49	54
	Throw A	1.8	2.2	2.6	3.0	3.6	4.2	5.4	5.8	6.7	7.4
	Throw B	0.6	0.9	1.2	1.5	1.8	2.1	2.4	3.0	3.4	4.0
	Throw C	2.0	2.3	2.9	3.4	3.9	4.5	5.4	5.8	6.7	7.4
	Throw D	1.2	1.5	1.8	2.1	2.4	3.0	3.3	3.9	4.5	5.1
	Throw E	2.0	2.3	3.0	3.4	4.0	4.6	5.6	5.8	6.6	7.3
	Throw F	2.8	3.3	3.9	4.5	5.2	6.2	7.6	8.6	10.0	11.0
	Throw G	2.5	2.9	3.6	4.2	4.8	5.7	6.7	7.5	8.2	9.2
450 x 225	Volume l/s	101	126	152	177	202	253	304	354	405	459
	Sound Power NRLW	-	14	19	23	27	34	41	46	50	55
	Throw A	1.8	2.2	2.8	3.1	3.8	4.4	5.3	5.9	6.6	7.4
	Throw B	1.2	1.5	1.8	2.1	2.4	3.0	3.4	4.0	4.6	5.2
	Throw C	2.0	2.3	2.9	3.4	3.9	4.6	5.4	5.8	6.8	7.5
	Throw D	1.5	1.8	2.1	2.4	3.0	3.7	4.3	5.2	5.5	6.1
	Throw E	2.1	2.4	3.0	3.7	4.0	4.9	5.5	6.1	7.0	7.4
	Throw F	2.8	3.3	4.1	4.7	5.3	6.6	7.8	8.9	10.2	11.3
	Throw G	2.3	2.8	3.3	3.9	4.2	5.1	6.1	6.9	7.8	8.4
600 x 225	Volume l/s	135	169	202	236	270	337	405	472	540	607
	Sound Power NRLW	-	14	20	24	28	35	40	44	49	54
	Throw A	2.1	2.6	3.2	3.9	4.2	5.0	5.8	6.3	7.3	7.7
	Throw B	1.2	1.5	1.8	2.1	2.4	3.0	3.4	4.0	4.6	5.2
	Throw C	2.1	2.2	3.1	3.9	4.0	5.2	5.8	6.4	7.5	7.7
	Throw D	1.5	1.8	2.1	2.4	3.0	3.7	4.3	5.2	5.5	6.1
	Throw E	2.1	2.7	3.4	4.0	4.6	5.5	6.1	6.4	7.7	8.0
	Throw F	3.0	3.8	4.3	5.1	5.9	6.8	8.3	9.8	10.8	12.0
	Throw G	2.5	2.9	3.6	4.2	4.8	5.7	6.7	7.5	8.2	9.2

Neck	Neck Velocity M/s:	1	1.25	1.5	1.75	2	2.5	3	3.5	4	4.5
Size mm	Total Pressure Pa:	3.5	5.3	7.5	10	13	21	30	40	53	67
450 x 300	Volume l/s	135	169	202	236	270	338	405	472	540	607
	Sound Power NRLW	-	14	20	24	28	35	40	44	49	54
	Throw A	2.0	2.3	2.9	3.5	3.9	4.7	5.7	6.4	6.7	7.2
	Throw B	1.5	1.8	2.1	2.4	3.0	3.7	4.3	5.2	5.5	6.1
	Throw C	2.0	2.6	3.2	3.9	4.2	5.1	5.7	6.4	7.4	7.7
	Throw D	1.9	2.0	2.8	3.4	3.8	4.5	5.3	5.8	6.6	7.2
	Throw E	2.1	2.7	3.4	4.0	4.6	5.5	6.1	6.4	7.7	8.0
	Throw F	3.0	3.8	4.3	5.1	5.9	6.8	8.3	9.8	10.8	12.0
	Throw G	2.3	2.8	3.3	3.9	4.2	5.1	6.1	6.9	7.8	8.4
600 x 300	Volume l/s	180	225	270	315	360	450	540	630	720	810
	Sound Power NRLW	-	14	21	25	30	37	41	45	50	55
	Throw A	2.1	2.7	3.4	4.0	4.5	5.5	6.1	6.4	7.7	8.0
	Throw B	1.5	1.8	2.1	2.4	3.0	3.7	4.3	5.2	5.5	6.1
	Throw C	2.3	2.9	3.5	4.2	4.8	5.7	6.1	6.9	7.7	8.2
	Throw D	1.9	2.0	2.8	3.4	3.8	4.5	5.3	5.8	6.6	7.2
	Throw E	2.4	3.0	3.7	4.3	4.9	5.8	6.1	7.4	7.7	8.4
	Throw F	3.6	4.2	4.9	5.6	6.4	8.0	9.2	10.4	12.0	13.1
	Throw G	2.5	2.9	3.6	4.2	4.8	5.7	6.7	7.5	8.2	9.2
450 x 375	Volume l/s	169	211	253	295	337	422	506	590	675	759
	Sound Power NRLW	-	14	21	25	30	36	40	45	50	55
	Throw A	2.1	2.4	3.0	3.7	4.0	4.9	5.5	6.1	7.0	7.4
	Throw B	1.8	2.1	2.7	3.0	3.7	4.3	5.2	5.5	6.1	7.0
	Throw C	2.0	2.6	3.3	3.9	4.5	5.4	6.0	6.3	7.6	7.9
	Throw D	1.2	1.5	1.8	2.1	2.4	3.0	3.3	3.9	4.5	5.1
	Throw E	2.1	2.8	3.4	4.0	4.6	5.5	6.2	6.4	7.7	8.1
	Throw F	3.3	4.0	4.7	5.3	6.1	7.6	9.0	10.2	11.9	13.2
	Throw G	2.3	2.8	3.3	3.9	4.2	5.1	6.1	6.9	7.8	8.4
600 x 450	Volume l/s	270	337	405	472	540	675	810	945	1008	1215
	Sound Power NRLW	11	17	23	30	35	40	44	48	53	58
	Throw A	2.3	2.9	3.6	4.2	4.8	5.7	6.0	7.3	7.6	8.3
	Throw B	2.1	2.4	3.0	3.7	4.0	4.9	5.5	6.1	7.0	7.4
	Throw C	2.7	3.3	3.8	4.4	5.0	6.0	6.5	7.6	7.9	8.6
	Throw D	2.4	3.2	3.9	4.5	5.1	6.0	6.5	7.7	8.0	8.7
	Throw E	2.8	3.4	4.1	4.7	5.3	6.2	6.5	7.8	8.1	8.5
	Throw F	3.8	4.8	5.7	6.3	7.2	8.9	10.1	11.8	12.5	14.7
	Throw G	2.5	2.9	3.6	4.2	4.8	5.7	6.7	7.5	8.2	9.2
750 x 450	Volume l/s	337	422	506	590	675	843	1012	1182	1350	1519
	Sound Power NRLW	11	17	24	30	36	41	45	49	55	59
	Throw A	2.7	3.4	4.1	4.7	5.3	6.2	6.5	7.8	8.2	8.8
	Throw B	2.1	2.4	3.0	3.7	4.0	4.9	5.5	6.7	7.0	7.4
	Throw C	2.1	2.2	3.1	3.9	4.0	5.2	5.8	6.4	7.5	7.7
	Throw D	2.4	3.2	3.9	4.5	5.1	6.0	6.5	7.7	8.0	8.7
	Throw E	3.3	4.1	4.8	5.5	6.0	7.4	9.2	10.0	14.9	-
	Throw F	4.0	4.9	5.7	6.5	7.3	8.6	10.3	11.3	13.2	14.8
	Throw G	-	-	-	-	-	-	-	-	-	-
1050 x 450	Volume l/s	472	590	709	827	945	1181	1417	1654	-	-
	Sound Power NRLW	14	20	27	33	38	43	47	52	-	-
	Throw A	3.1	3.8	4.6	5.2	6.0	6.9	7.2	8.5	-	-
	Throw B	2.1	2.4	3.0	3.7	4.0	4.9	5.5	6.7	-	-
	Throw C	3.3	4.0	4.8	5.7	6.2	7.2	9.3	10.0	-	-
	Throw D	2.4	3.2	3.9	4.5	5.1	6.0	6.5	7.7	-	-
	Throw E	3.8	4.7	5.4	6.0	6.8	8.0	10.2	12.0	-	-
	Throw F	4.7	5.6	6.8	7.5	8.6	10.2	13.0	15.0	-	-
Throw G	-	-	-	-	-	-	-	-	-	-	

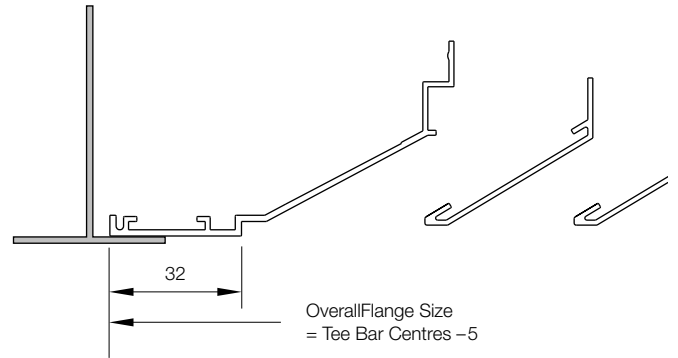
Installation Guide

32W Surface (Standard fixing - FO)

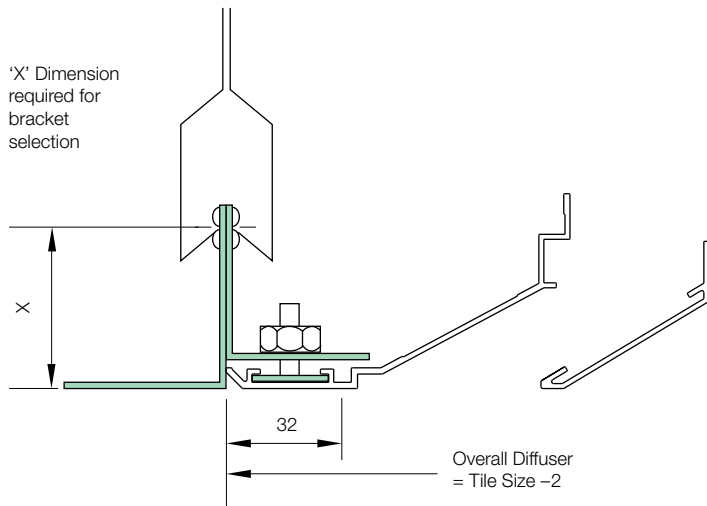


(Shown with F1 Fixing)

32W Tee Bar

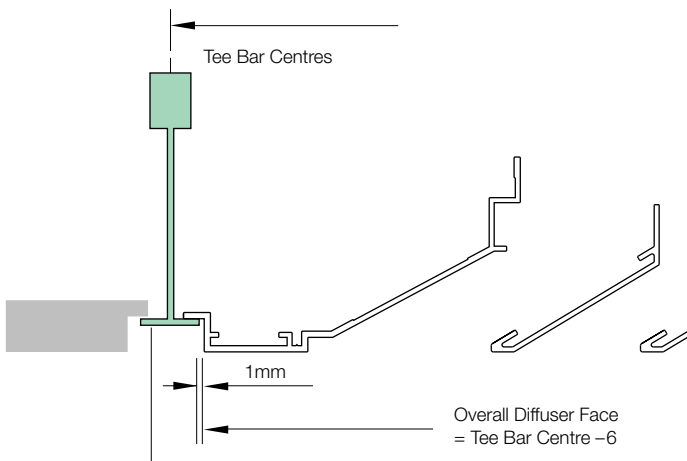


27BW 'Spring Tee' Ceiling Alignment Clip Frame



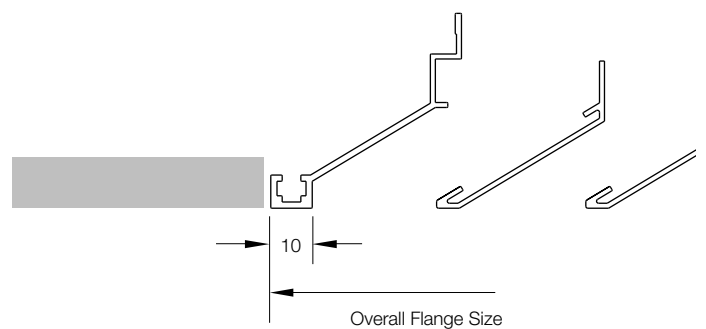
Type F8 - Ceiling Alignment Clip Fixing
(Details of ceiling system and clip to be supplied).

25TW/8 or 25TW/16 Tegular Edge



(Size of Tee Bar to be advised)

10W Recessed Flange



Model SA Louvre Face Ceiling Diffuser

Dimensions – Square Diffuser

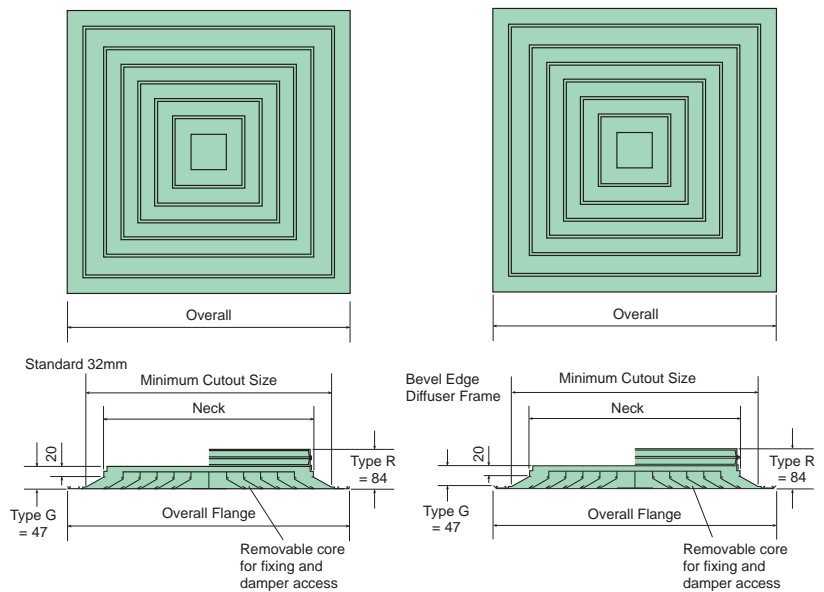
Standard 32mm : Flat Flange and 27mm : Bevel Edge Flange

Size Range Square (Standard Sizes)

Nom Neck Size	Actual Neck Size	Min Cut Out Size	Overall Size
150 x 150	147 x 147	223 x 223	298 x 298
225 x 225	222 x 222	298 x 298	373 x 373
300 x 300	297 x 297	373 x 373	448 x 448
375 x 375	372 x 372	448 x 448	523 x 523
447 x 447	444 x 444	520 x 520	595 x 595
450 x 450	447 x 447	523 x 523	598 x 598

Size Range : Square (NON standard Sizes)

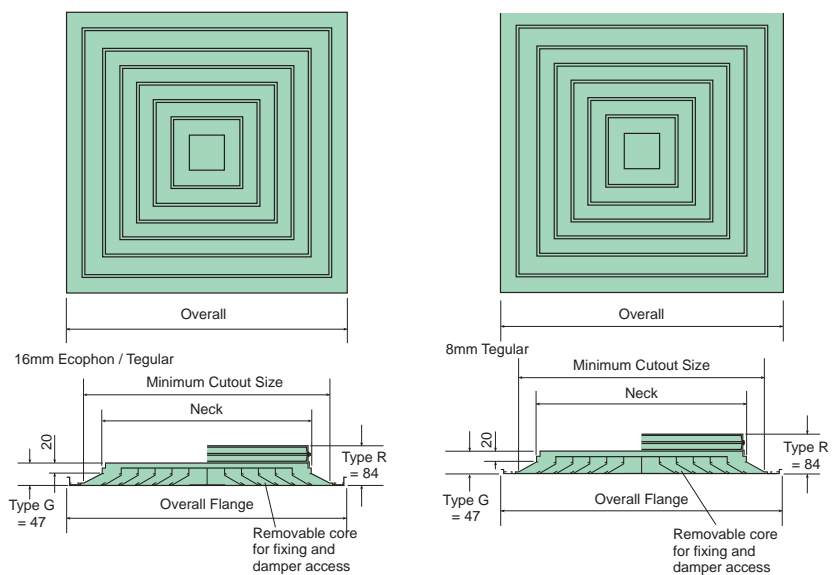
Nom Neck	Size Actual Neck Size	Min Cut Out Size	Overall Size
200 x 200	197 x 197	273 x 273	348 x 348
250 x 250	247 x 247	323 x 323	398 x 398
350 x 350	347 x 347	423 x 423	498 x 498
400 x 400	397 x 397	473 x 473	548 x 548
525 x 525	522 x 522	598 x 598	673 x 673
600 x 600	597 x 597	673 x 673	748 x 748



25TW/8 or 16 Tegular Flange

Size Range Square (Standard Size)

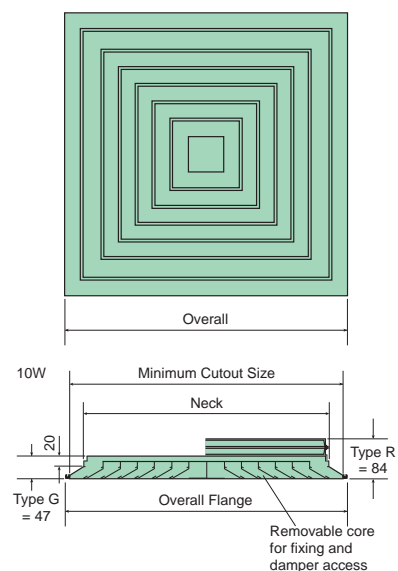
Nom Neck Size	Actual Neck Size	Min Cut Out Size	Overall Size
338 x 338	343 x 343	474 x 474	483 x 483
348 x 348	345 x 345	484 x 484	493 x 493
438 x 438	435 x 435	574 x 574	583 x 583
448 x 448	445 x 445	584 x 584	593 x 593



10W Recessed Flange

Size Range : Square (Standard Size)

Nom Neck	Size Actual Neck Size	Min Cut Out Size	Overall Size
421 x 421	418 x 418	478 x 478	495 x 495
521 x 521	518 x 518	578 x 578	595 x 595



Dimensions – Rectangular Diffuser

Standard 32mm : Flat Flange and 27mm : Bevel Edge Flange

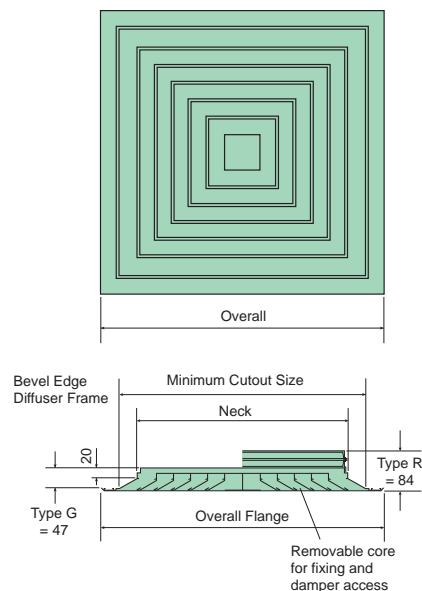
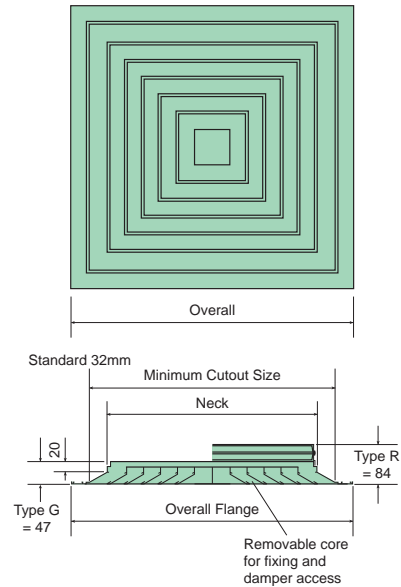
Dimensional Data

Standard Size Range : Rectangular

Nom Neck Size	Actual Neck Size	Min Cut Out Size	Overall Size
225 x 150	222 x 147	298 x 223	373 x 298
300 x 150	297 x 147	373 x 223	448 x 298
375 x 150	372 x 147	448 x 223	523 x 298
450 x 150	447 x 147	523 x 223	598 x 298
300 x 225	297 x 222	373 x 298	448 x 373
375 x 225	372 x 222	448 x 298	523 x 373
450 x 225	447 x 222	523 x 298	598 x 373
375 x 300	372 x 297	448 x 373	523 x 448
450 x 300	447 x 297	523 x 373	598 x 448
450 x 375	447 x 372	523 x 448	598 x 523

NON Standard Size Range : Rectangular

Nominal Neck	Size Actual Neck Size	Min Cut Out Size	Overall Size
525 x 150	522 x 147	598 x 223	673 x 298
600 x 150	597 x 147	673 x 223	748 x 298
525 x 225	522 x 222	598 x 298	673 x 373
600 x 225	597 x 222	673 x 298	748 x 373
525 x 300	522 x 297	598 x 373	673 x 448
600 x 300	597 x 297	673 x 373	748 x 448
450 x 375	447 x 372	523 x 448	598 x 523
525 x 375	522 x 372	598 x 448	673 x 523
600 x 375	597 x 372	673 x 448	748 x 523
525 x 450	522 x 447	598 x 523	673 x 598
600 x 450	597 x 447	673 x 523	748 x 598
750 x 450	747 x 447	823 x 523	898 x 598
1050 x 450	1047 x 447	1123 x 523	1198 x 598
525 x 600	522 x 597	598 x 673	673 x 748



For Rectangular Diffusers 25TW/8 or 16 Tegular Flange and 10W Recessed Flanges are only available upon special request. Please refer to Air Diffusion Sales Office.

Ordering Information – Diffuser

Example

Flange Style 32W	Model SA4	Damper R	Fixing F0	Finish 83	Size
<p>32W – 32mm wide flat flange (Standard).</p> <p>27BW – 27mm wide bevel edge flange.</p> <p>25TW8 – 25mm wide stepped flange to suit 8mm “Tegular” style ceiling grid.</p> <p>25TW16 – 25mm wide stepped flange to suit 16mm “Tegular” style ceiling grid.</p> <p>10W – 10mm wide flange to suit recessed style ceiling grid.</p>	<p>SA1 – Square Louvre Face Diffuser, 1 way air pattern.</p> <p>SA1L – Rectangular Louvre Face Diffuser, 1 way air pattern, with blades parallel to longest side.</p> <p>SA1S – Rectangular Louvre Face Diffuser, 1 way air pattern, with blades parallel to shortest side.</p> <p>SA2 – Square Louvre Face Diffuser, 2 way opposite air pattern.</p> <p>SA2C – Square Louvre Face Diffuser, 2 way corner air pattern.</p> <p>SA2L – Rectangular Louvre Face Diffuser, 2 way opposite air pattern, with blades parallel to longest side.</p> <p>SA2S – Rectangular Louvre Face Diffuser, 2 way opposite air pattern, with blades parallel to shortest side.</p> <p>SA2C (left) – Rectangular Louvre Face Diffuser, 2 way corner left air pattern.</p> <p>SA2C (right) – Rectangular Louvre Face Diffuser, 2 way corner right air pattern.</p> <p>SA3 – Square Louvre Face Diffuser, 3 way air pattern.</p> <p>SA3L – Rectangular Louvre Face Diffuser, 3 way air pattern, with blades parallel to longest side.</p> <p>SA3S – Rectangular Louvre Face Diffuser, 3 way air pattern, with blades parallel to shortest side.</p> <p>SA4 – Square or Rectangular Louvre Face Diffuser, 4 way air pattern.</p>	<p>G – Diffuser only.</p> <p>R – Diffuser with OBD fitted.</p>	<p>F0 – No fixing.</p> <p>F1 – Countersunk screw holes in flange.</p> <p>F8 – Spring Tee (details of ceiling type required).</p>	<p>0 – Mill Finish Extruded Aluminium.</p> <p>82 – Silver Polyester Powder Coat to RAL9006.</p> <p>83 – White Polyester Powder Coat to RAL9010 (20% Gloss).</p> <p>4 – Black Eggshell Stove Enamel Finish.</p> <p>6 – Special Finish (Details required separately).</p>	<p>See Page 13/14</p>

Important Note:

If the overall size is critical then it must be clearly stated on the order.

All Model SA air patterns are viewed from the diffuser face.

All orders must be addressed to AIR DIFFUSION, Ruskin Air Management Limited.

Plenum Box Specification Sheet Metal

Material

Standard is a minimum of 0.7mm thick galvanised or zinc coated steel.

Construction

Plenum boxes are generally fabricated in 3 sections having tray ends, which are either mechanically joined or spot welded to form an airtight seal. Flush ends (no tray indents) are also available. As standard, spigots are side entry and located centrally. All boxes are supplied with plain edges, as standard, (F0 fixing).

Standard Installation Method

The tray ends of the plenum box incorporate a 15mm indent, on each side to allow for 8mm drop rod fixings, which gives space for holes to be drilled (by others) without disturbing the active section.

Installation Options

Fixing lugs can be factory fitted if preferred or special fixing methods (by others) may be used.

For plenum boxes having flush ends separate hanging brackets/fixing lugs need to be fitted to allow independent support of diffuser and plenum box.

Accessories

Joggled style plenum boxes or pan adapters.

Spigot dampers include; quadrant, teleflex operation or cord operated.

12mm thick Class 'O' internal lining.

Equalising grids (50% free area perforated mesh).

Turning Vanes.

Fixing lugs or special fixings (by others).

Flush Ends (No Indent).

Finish

Self finish galvanised or zinc coated steel as standard.

Black paint can be applied to internal faces if required.

Standard Model Types

PBS – 1 Standard unlined plenum box with either 1 number centrally located circular or square/rectangular **side** entry spigot having no damper or equalising grid.

PBS – 2 Standard unlined plenum box with either 1 number centrally located circular or square/rectangular **top** entry spigot having no damper or equalising grid.

PBS – 3 Unlined **joggled** plenum box with 1 number centrally located circular or square/rectangular **side** entry spigot having no damper or equalising grid.

PA – 1 Unlined pan adapter with 1 number centrally positioned circular or square/rectangular spigot having no damper or equalising grid.

Plenum Box Specification – Pre-Insulated Phenolic Panels

Material

Rigid phenolic insulation panels are faced on both sides with a protective low vapour permeable, 25 micron black aluminium foil reinforced with a 5mm glass tissue scrim. With a nominal density of 55 – 60 kg/m, an average compressive strength of 249 Kpa and an average flexural strength of 1,200 Kpa when tested to BS 2972: 1989.

Environmental Properties

The phenolic insulation panels are entirely CFC and HCFC free with zero Ozone Depletion Potential (ODP).

Moisture Resistance

Each panel has a >90% closed cell structure which means they are resistant to moisture penetration and are non-wicking. Moisture Vapour Transmission of Foil Facing, 1.21 x 10 g/MNS.

Heat Resistance

Suitable for a continuous operating temperature of 70° C and a maximum temperature of 80° C

Thermal Performance

Thermal conductivity on the standard panel is 0.021 W/m.K at 10° C (mean).

Fire and Smoke

The panels are resistant to burning and

the spread of flame. To satisfy Building Regulations/Standards, a Class O/low risk has been achieved when subjected to tests in accordance with the following;

BS 476: Part 6 (Fire tests on building materials and structures. Method of test for fire propagation for products); and

BS 476: Part 7 (Fire tests on building materials and structures. Method of test to determine the classification of the surface spread of flame of products).

Construction

Pre-insulated plenum boxes are constructed from individual panel sections and bonded along each edge using a tape and heat treatment process to form an airtight seal. A steel spigot collar is fitted and located centrally in either plenums or pan adapters. As standard all boxes are supplied with straight edges and are secured to the diffuser neck by screws or pop rivets.

Standard Installation Method

Due to the lightweight nature of the plenum boxes the combined diffuser and plenum can be supported on the ceiling grid, (subject to verification with ceiling supplier).

Installation Options

Pre-drilled angles/lugs can be factory fitted to the plenum or pan adapter to provide separate drop rod or wire support fixing.

Accessories

Spigot dampers including; quadrant, teleflex operation or cord operated.

Equalising grids (50% free area mesh)

Turning Vanes.

Finish

Non-reflective black foil on inside and outside faces

Standard Model Types

PWS – 1: Pre-insulated standard square/rectangular side entry plenum box, having 1 centrally positioned spigot.

PWS – 2: Pre-insulated standard square/rectangular top entry plenum box having 1 centrally positioned spigot.

PWA- 1: Pre-insulated standard top entry pan adapter, having 1 centrally positioned spigot.

Selection Guide – Plenum Boxes

Pressure Drop and Sound Ratings

The pressure drop given is for supply diffuser with damper fully open. When the diffuser is installed with plenum box, the pressure loss of the box has to be added to the diffuser.

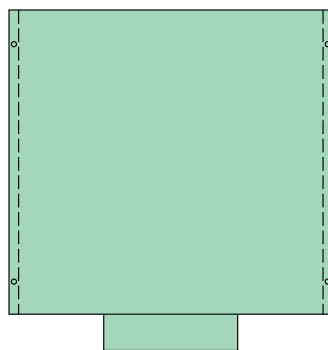
Spigot Velocity m/s	1.5	2.0	2.5	3.0	3.5	4.0
Pressure Drop Pa*	2	4	6	8	12	16
Sound Level NR*	-	-	25	30	35	40

* The figures given are approximate - dependent upon spigot entry conditions.

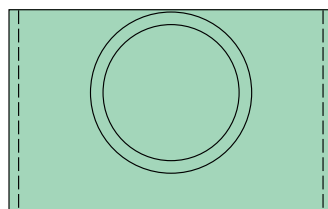
Plenum Box Spigot Volumes

Diameter (mm)	Spigot velocity m/s					
	1.5	2.0	2.5	3.0	3.5	4.0
100	10	15	19	22	26	30
125	18	24	30	35	41	47
150	25	34	42	51	60	68
160	35	46	58	70	82	94
200	45	60	75	91	109	121
225	58	77	96	117	137	151
250	71	95	120	142	170	191
275	86	115	145	172	205	230
300	103	139	172	208	240	275
315	120	160	200	240	280	320
350	140	188	235	280	328	375
400	185	245	310	370	430	495

Air volumes in l/s.

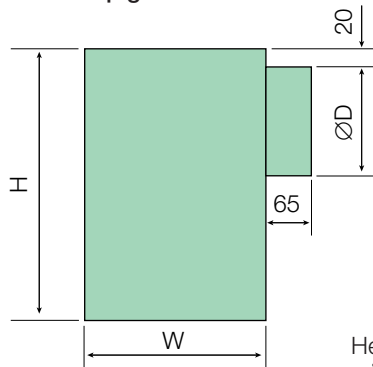


Typical arrangement – Model PBS-1 with circular spigot

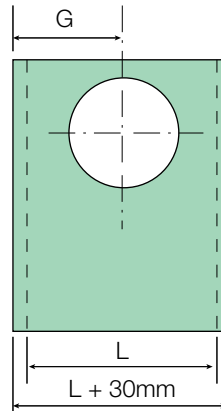


Dimensions – Plenum Boxes – Sheet Metal

Type PBS-1 Circular Spigot

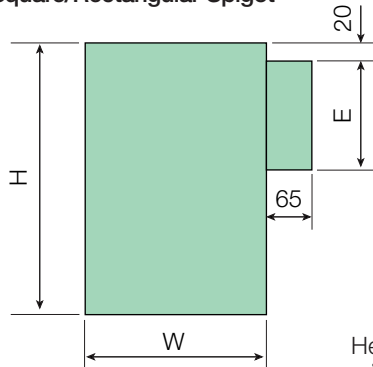


Height (H) = D + 100
min as standard

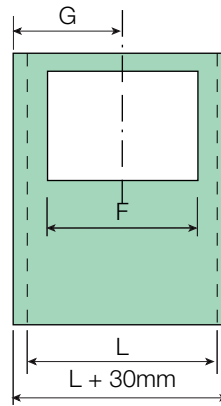


Spigot Damper can be supplied if required.
Top entry box Type PBS-2

Type PBS-1 Square/Rectangular Spigot

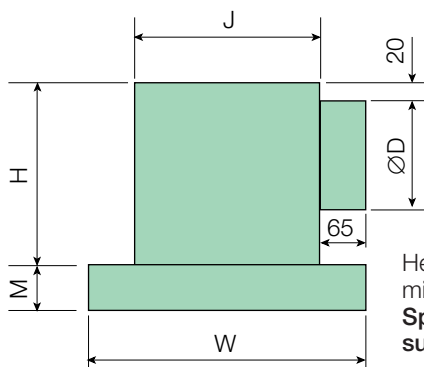


Height (H) = E + 100
min as standard

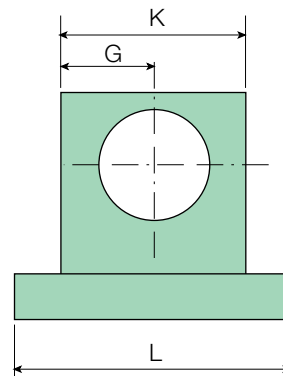


Spigot Damper can be supplied if required.
Top entry box Type PBS-2

Type PBS-3 Joggled Box – Circular Spigot

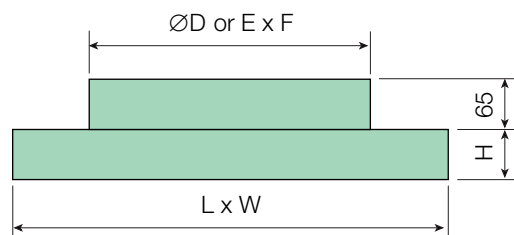


Height H = D + 100mm
minimum as standard
Spigot Damper can be supplied if required



Opposed Blade Damper can be mounted in Plenum Box. Alternative position would be behind diffuser.

Type PA-1 Pan Adaptor

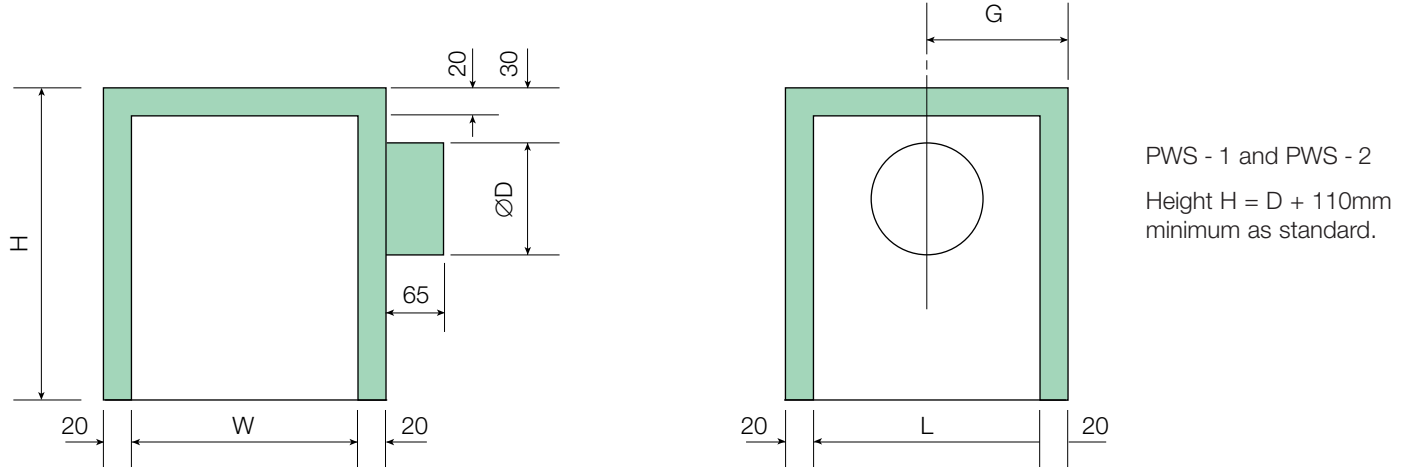


H Min. without damper 30mm
H Min. with damper 80mm

For uniform air distribution it is recommended that plenum boxes are supplied with an equalising grid.

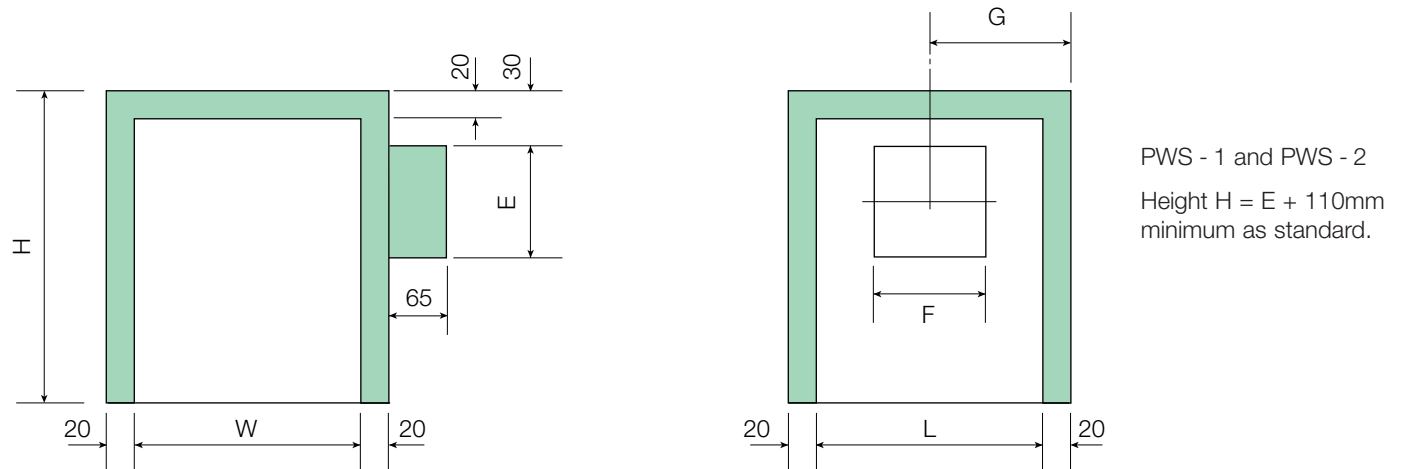
Dimensions Plenum Boxes – Pre-Insulated Phenolic Panels

Type PWS - 1 = Circular, Side Entry Spigot (shown)
 Type PWS - 2 = Circular, Top Entry Circular Spigot



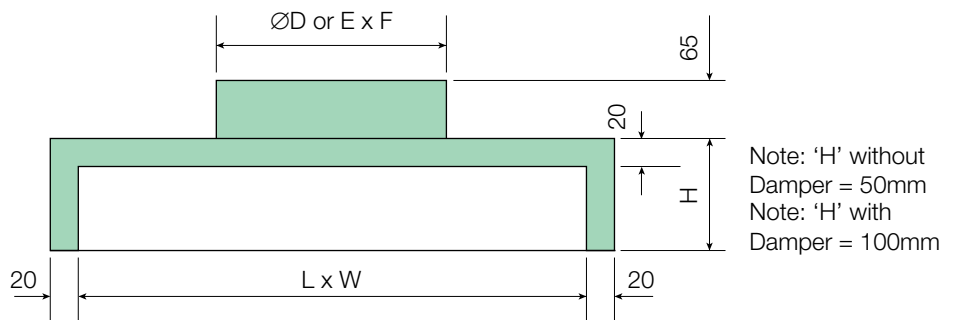
Pre - Insulated Rigid Phenolic Panels

Type PWS - 1 = Square / Rectangular Side Entry Spigot (shown)
 Type PWS - 2 = Square / Rectangular Top Entry Spigot



Pre - Insulated Rigid Phenolic Panels

Type PWA - 1 = Pan Adaptor with Circular
 or Square / Rectangular Spigot



Pre - Insulated Rigid Phenolic Panels

Ordering Information – Plenum Boxes

Example

Model PBS-1	Internal Lining U	Spigot Damper N	Options 0	Dimensions
Sheet Metal				
<p>PA-1 – Pan Adapter to suit square/rectangular diffuser with square or circular top entry.</p> <p>PBS-1 - Plenum box to suit square/rectangular diffuser with circular or square side entry spigot.</p> <p>PBS-2 - Plenum box to suit square/rectangular diffuser with circular or square top entry spigot.</p> <p>PBS-3 - Plenum box to suit square/rectangular diffuser with circular or square top entry spigot.</p>	<p>U – Standard Unlined Plenum Box</p> <p>L – 12mm Class ‘O’ Internal Lining.</p>	<p>N – Plain spigot no damper</p> <p>Q – Quadrant damper fitted to spigot.</p> <p>T – Teleflex damper fitted to spigot.</p> <p>C – Cord operated damper fitted to spigot.</p>	<p>0 – No options</p> <p>1 – Internal faces painted black.</p> <p>2 – Equalising grid 50% free area mesh.</p> <p>3 – Fixing lugs fitted to side of plenum.</p> <p>4 – Profile ends on each end of plenum.</p> <p>5 – Hemmed Edge for secret strap fixing.</p>	See example below
Pre-Insulated Phenolic Panel				
<p>PWA-1 – Pan Adapter to suit square/rectangular diffuser with square or circular top entry.</p> <p>PWS-1 - Plenum box to suit square/rectangular diffuser with circular or square side entry spigot.</p> <p>PWS-2 - Plenum box to suit square/rectangular diffuser with circular or square top entry spigot.</p>	Pre-Insulated	<p>N – Plain spigot no damper</p> <p>Q – Quadrant damper fitted to spigot.</p> <p>T – Teleflex damper fitted to spigot.</p> <p>C – Cord operated damper fitted to spigot.</p>	Hanging Brackets as Standard	See example below

Dimensions PBS - 1, PBS - 2, PWS - 1 and PWS - 2 Example

Neck Size	Plenum Height	Circular Spigot Diameter	OR	(Sq. / Rect.Spigot Width x Height)	Centre Line of Spigot
L x W 450 x 450	H 350	∅D 250		C x E 0	G 0

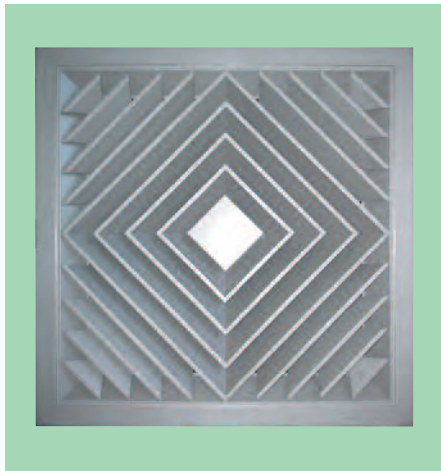
Dimensions PA - 1, PBS - 3 and PWA - 1 Example

Neck Size	Plenum Height	Circular Spigot Diameter	OR	(Sq. / Rect.Spigot Width x Height)	Centre Line of Spigot	Joggled Section	Joggled Height
L x W 450 x 450	H 75	∅D 250		C x E 0	F 0	J x K 0	M 0

‘0’ Denotes Standard.

Important Note: All orders must be addressed to AIR DIFFUSION, Ruskin Air Management Limited.

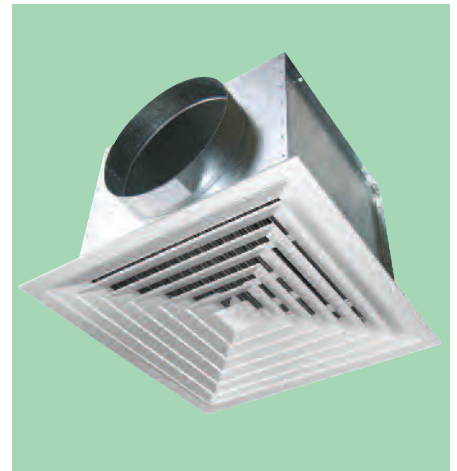
Model SA – Photo Gallery



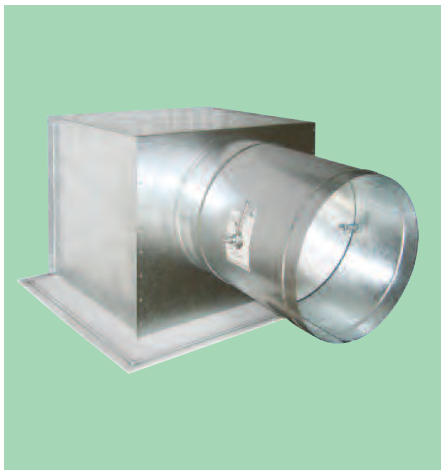
Special 4 Way Air Pattern



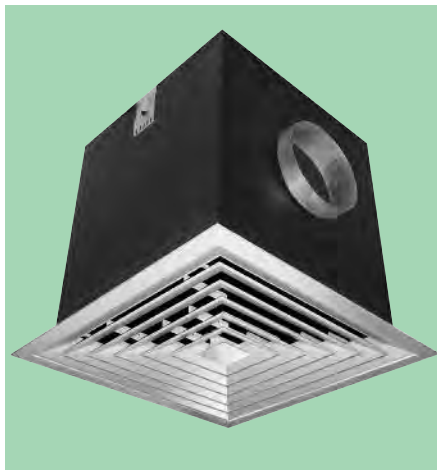
Typical Installation with Side Entry Plenum



4 Way Diffuser with Sheet Metal Plenum Box having Side Entry Spigot



Sheet Metal Plenum Box with Quadrant Spigot Damper



4 Way Diffuser with Pre-Insulated Plenum Box having Side Entry Spigot



Hanging Bracket for Pre-Insulated Plenum Box



Rear view of Diffuser with OBD fitted



Front view of Diffuser with Core removed

Product Range

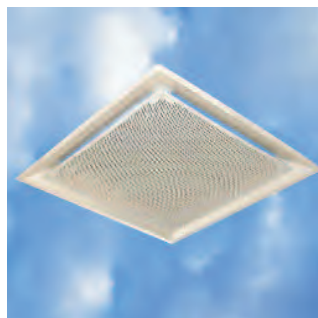
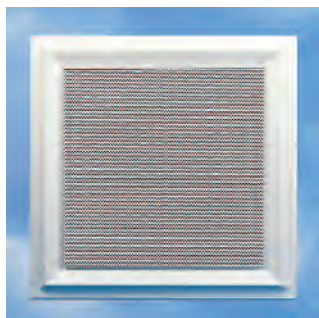
Swirl, Displacement and High Induction Diffusers



Circular Diffusers and Air Valves



Perforated and Louvre Face Ceiling Diffusers



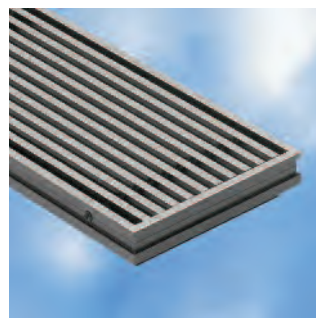
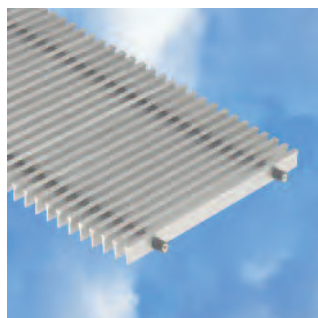
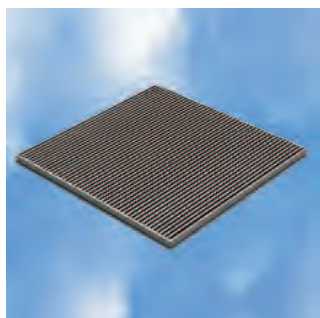
Slot and Fixed Blade Diffusers



Cylinder and Jet Nozzle Diffusers

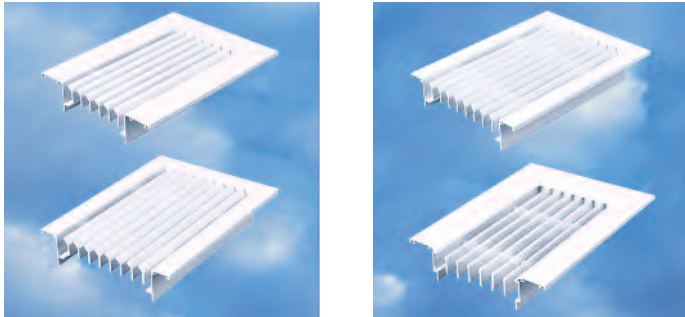


Floor Grilles



Product Range

Linear Grilles



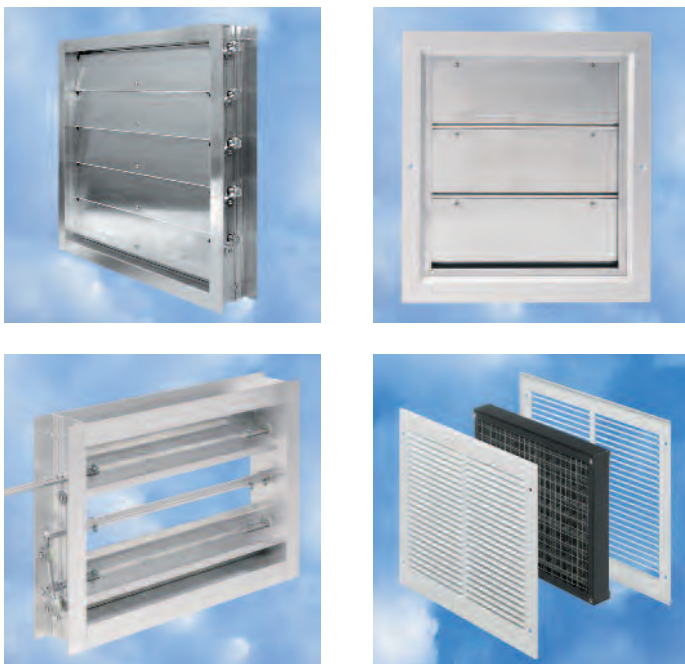
Wall and Ceiling Grilles



External Louvres



Miscellaneous



- Swirl, Displacement and High Induction Diffusers
- Perforated and Louvre Face Ceiling Diffusers
- Slot and Fixed Blade Linear Diffusers
- Cylinder and Jet Nozzle Diffusers
- Circular Diffusers and Air Valves
- Floor Grilles
- Linear Bar Grilles
- Grilles
- External Louvres
- Miscellaneous

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Due to a policy of continuous product development the specification and details contained herein are subject to alteration without prior notice.

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is available for all Air Diffusion products.
Visit our website at www.air-diffusion.co.uk**

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Air Diffusion

Grilles Diffusers Louvres Chilled Beams