ADVANCEDAIR

INNOVATION IN ACTION

Model TWS

Swirl Diffusers

Model TWS

Advanced Air's new range of high performance TWS ceiling swirl diffusers have been designed to deliver the high air change rates required to meet the demand of high loads. The circular pattern of deflection vanes, creates an effective swirl motion that has excellent entrainment and provides the highest level of occupancy comfort.

Construction

All units are constructed from steel with PVC components and are available with a matching range of top or side entry plenum boxes. Volume control can be achieved with a damper mounted within the plenum inlet spigot.

Range & Air Patterns

Swirl diffusers are available in five standard ceiling module sizes (300, 400, 500 and 600) as per dimensional table. Custom sizes are also available.
The blades have been designed so they can be removed and reset in the opposite position. This allows the air pattern to be changed for example if the diffuser is positioned close to a wall.

Plenum Boxes

The plenum boxes for supply diffusers are supplied with a perforated plate to ensure an even airflow across the diffuser blades. There is the option of top entry or side entry spigots which can be supplied with an optional volume control damper with a hand locking quadrant or cord operated that can be adjusted through the diffuser blades.

Finish

The standard diffuser finish is White Polyester Powder RAL 9010 semi-gloss with matt black deflection blades. Other panel colours are available on request as well as the option of white deflection blades.

Performance

The tabulated performance data for each listed size of diffuser is based on cooling and heating applications. Pressure drop is stated in Pascal's (N/m2). Throws stated are to a terminal velocity of 0.5m/s and used as a maximum value will give a velocity of less than 0.25m/s within the occupied space.
Noise Levels are based on the peak values on NR curves.

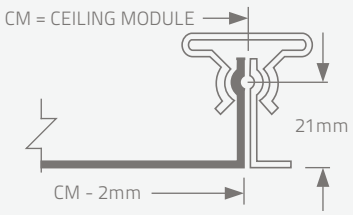
Features

- **Available in 5 standard sizes.**
- **High air volume capability.**
- **Lightweight.**
- **Available with top or side entry plenum.**
- **Low noise level.**
- **Attractive appearance with a flat blade design.**
- **Special face sizes available on request.**

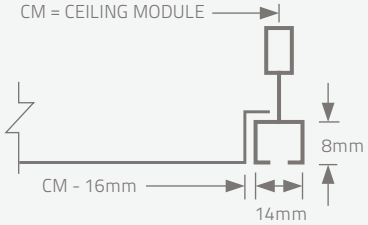
Face Models & Frame Type

Frame Types

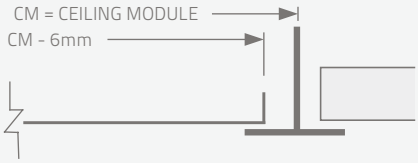
Type M Metal Pan (Snap-in)



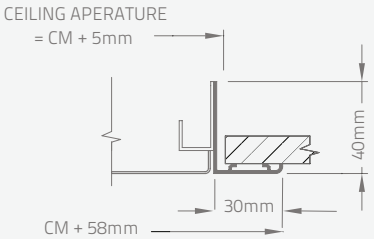
Type TL Tegular



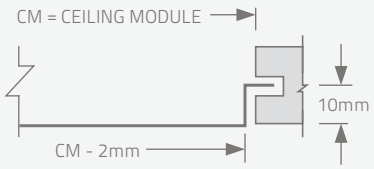
Type L Lay-in



Type S Surface Mount with Removable Face



Type SP Spline



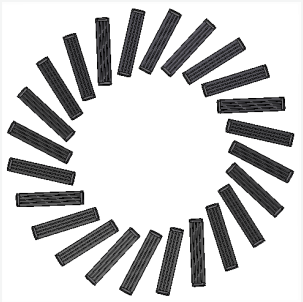
For one directional exposed T-bar or fully concealed grid. One spline on two opposite sides, steel lift bracket on others.

Face Model Types

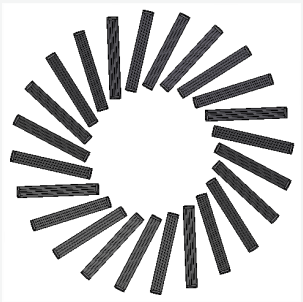
308

416

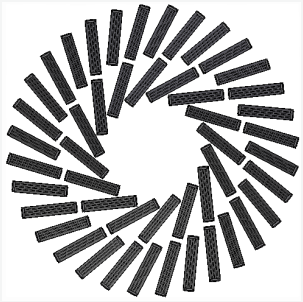
524



624



648



Dimensional Data

Dimensional Details

Diffuser Type	Ceiling Module Size	Dim 'A'	Dim 'B'	Dim 'A'	Dim 'B'	Spigot Dia mm
		Side Entry Plenum		Top Entry Plenum		
308	300x 300	262	260	262	180	160
416	400 x 400	363	260	362	180	160
524	500 x 500	462	300	462	180	200
624	600 x 600	550	350	550	200	250
648	600 x 600	550	415	550	300	315

The plenum box has a flange complete with a neoprene seal that is fitted to the back of the diffuser. The diffuser is secured to the plenum by a screw through the centre to a support bar in the plenum. A plastic insert is fitted to the screw head to give an esthetically pleasing finish.

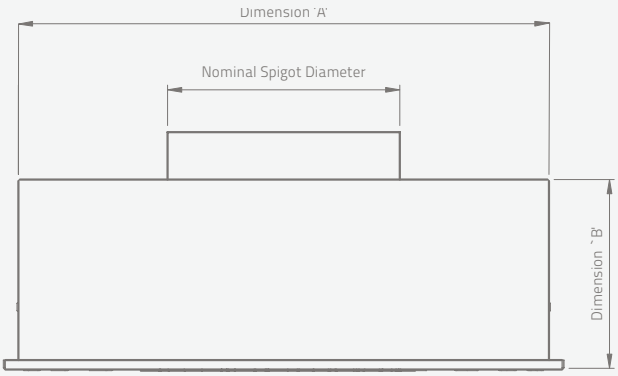
The diffuser has a 15mm return edge around the perimeter.

Other spigot sizes are available and to determine the height of the plenum box add 100mm to the spigot size.

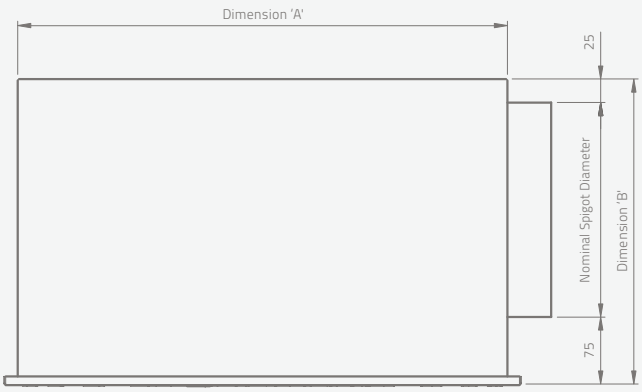
The plenum box can be supplied with an opposed blade damper fitted within the neck of the spigot, this can be cord operated from the face of the diffuser. Alternatively it can be operated by a hand locking quadrant (HLQ), access to plenum via the ceiling void.

Alternative face sizes are available upon request

Top Entry Plenum Box



Side Entry Plenum Box



Performance Data

Quick Selection Chart

Diffuser Type	Minimum Airflow @ 1200 Centres			Maximum Airflow				
	l/s	Guide NR	Discharge Velocity m/s	l/s	Guide NR	Centres	Discharge Velocity m/s	Active Area m2
308	16	<20	2.0m/s	55	35	1200	6.9m/s	0.008
416	32	<20	2.1m/s	105	35	1800	7.0m/s	0.015
524	46	<20	2.2m/s	140	35	2400	6.7m/s	0.021
624	75	<20	2.3m/s	190	35	3000	5.9m/s	0.032
648	100	<20	2.5m/s	230	35	3600	5.8m/s	0.040

The chart right is for guidance only and noise levels are based on a room absorption of 6db.

Diffuser Spacing Performance

Diffuser Type	Installation Type	Minimum Air Volume l/s	Centre Line Spacing Between Diffusers									
			1200mm		1800mm		2400mm		3000mm		3600mm	
			l/s	P (Pa)	l/s	P (Pa)	l/s	P (Pa)	l/s	P (Pa)	l/s	P (Pa)
308	Single Row of diffusers	16	63	40	52	36	63	40	65	40	-	-
	Multiple rows		55	36	50	50	55	36	60	40	-	-
416	Single Row of diffusers	32	95	37	90	30	110	40	120	46	-	-
			28	3	45	7	65	15	85	27	-	-
524	Single Row of diffusers	46	130	40	120	27	140	33	150	38	-	-
	Multiple rows		-	-	55	9	75	18	100	20	-	-
624	Single Row of diffusers	75	140	18	145	17	160	20	170	25	215	35
	Multiple rows		-	-	65	4	85	6	115	11	170	23
624	Single Row of diffusers	100	180	23	180	23	195	24	200	25	230	32
	Multiple rows		-	-	90	4	20	6	120	9	180	22

The maximum air volumes stated are those recommended for comfort cooling conditions.

Diffuser Throw

Throws are to a wall or colliding airstream to achieve comfort condition.

	Model				
Air Vol/s	308	416	524	634	648
16	<0.7	-	-	-	-
20	<0.7	-	-	-	-
30	0.9m	<0.7	-	-	-
40	1.2m	<0.7	-	-	-
50	1.5m	0.8m	<0.7	-	-
60	2.0m	0.9m	0.7m	<0.7	-
70	-	1.0m	0.8m	0.7m	-
80	-	1.1m	1.0m	0.8m	-
90	-	1.3m	1.1m	0.8m	0.8m
100	-	1:5m	1.0m	1.1m	0.9m
120	-	1.8m	1.4m	1.2m	1.2m
140	-	-	2.0m	1.4m	1.4m
160	-	-	-	1.7m	1.5 m
180	-	-	-	1.8m	1.7m
200	-	-	-	2.0m	1.8m
220	-	-	-	2.2m	2.0m
240	-	-	-	2.5m	2.2m
260	-	-	-	-	2.5m
280	-	-	-	-	2.6m
300	-	-	-	-	2.8m

Performance Notes
The performance data is based on 12oC temperature differential on cooling and 10oC on heating with the maximum terminal velocity within the occupied zone off 0.25m/s.

NR levels are based on a normal office space having a 6 db room absorption.

Throws are based on a ceiling height of 2.7 to 3.3m ceiling.

How To Specify or To Order

"Twister" Square Ceiling Swirl Diffuser – Model TWS

TWS - 624 - S I - 250 - L - AW

Model
- TWS Multi Insert Blade

Diffuser Size
300mm Face, 8 Air Slots 308
400mm Face, 16 Air Slots 416
500mm Face, 24 Air Slots 524
600mm Face, 24 Air Slots 624
600mm Face, 48 Air Slots 648

Plenum Box Entry

Side Inlet	SI
Top Inlet	TI

Spigot Size
160, 200, 250, 315

Frame Style

-	T-Bar Lay-in	L
-	Spline	SP
-	Metal Pan Snap-In	M
-	Surface Mount	S
-	Tegular	TL

Other Face Sizes and Blade Patterns are available subject to technical evaluation.

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

Accessories

-	None (default)	—

Air Balancing Devices

-	Single Blade Damper Cord operated	IDG
-	Single Blade Damper Hand Locking Quadrant	IDQ

Finish

-	RAL 9010 semi gloss white (default)	AW
-	Aluminium RAL 9006	AL
-	Special Custom Colour	SP
-	Black Deflection Blades (default)	BDB
-	White Deflection Blades	WDB

Suggested Specification:
Ceiling air diffusers shall be Advanced Air Model Series 6500 of the sizes Supply and install Advanced Air Model TWS "Twister" Ceiling Swirl Diffuser of the sizes and capacities on the drawings and air distribution schedules. The diffuser face to be manufactured from 1.2mm galvanised mild steel with plastic removable inserts. The diffusers are to be complete with plenum box manufactured from 0.8mm galvanised mild steel including a perforated baffle plate to ensure even airflow over the diffuser blades.

The diffuser overall face dimensions are to suit the project ceiling suspension system and shall have a white polyester powder finish RAL 9010 semi-gloss.