

# CRS – Ceiling Radial Swirl Diffuser

## Model: CRS

The Holyoake CRS range of Radial Swirl Diffusers have been designed to provide high quality indoor air diffusion. The CRS comprises of radial deflection blades that produce a circular airflow pattern with a very strong ceiling effect. This diffuser is ideal for VAV applications, because the ceiling effect is maintained for minimal through to very high flowrates.

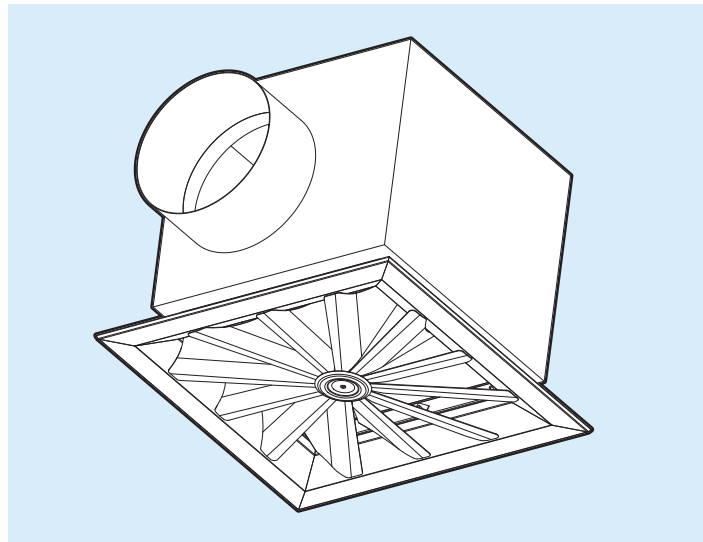
Ideal for large rooms, call centres and waiting rooms.

The CRS is able to achieve high room air diffusion quality due to the strong induction swirl pattern it produces. Strong induction draws room air up into the supply air flow path, which results in mixing at high level, reducing draughts and uneven temperature gradients.

## Installation

Installation is simple due to the square lay-in type design. The diffuser can be placed into the T-Rail system quickly and easily and the supply duct attached. Alternatively the diffuser may be conventionally mounted, or held using one of the Holyoake mounting systems, such as the the T-Rail Support Frame. The supply air can be fed vertically onto the back of the diffuser, or through a specifically designed side entry box.

## Specifically Designed Swirl Inducing Side Entry Box



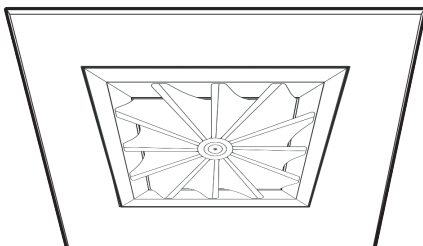
## Construction

The CRS is constructed entirely from aluminium metal. It is a lightweight, but robust diffuser that can be fitted easily into the ceiling space.

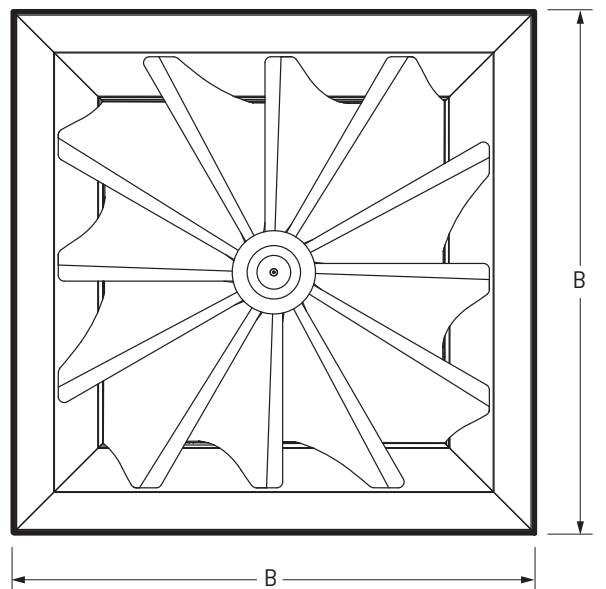
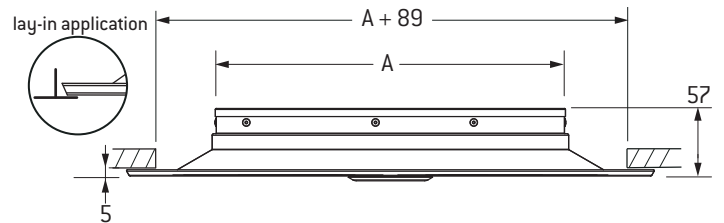
## Features

- Strong Ceiling Effect
- Radial Diffusion Pattern
- High Induction Swirl
- Easy Lay-in Installation
- Attractive Appearance

**Note:** The CRS300 can be mounted in a 595 x 595 panel for T-Rail mounting, see below.



## Ceiling Radial Swirl Diffuser



	Sizes Available (Neck Size) (mm)	
	CRS300	CRS450
A	295	445
B	445	595
Weights in Kg.		
Diffuser	0.9	1.45
CRS/Panel	2.00	N/A
Galv Box	4	6.5
Prem Box	1.5	2.5

Due to a policy of continuous development and improvement the right is reserved to supply products which may differ slightly from those illustrated and described in this publication.

## Model: **CRS300 Ceiling** Radial Swirl Diffuser

### 300 x 300 Nominal Neck

Duct Size	Flowrate (l/s)	25	50	75	100	125	150	200
150	Static Pressure (Pa)	2	6	12	23	40	55	95
	Throw (m)	na - na - 0.8	na - 0.6 - 1.8	0.6 - 1.5 - 2.2	1.3 - 2.4 - 3.3	1.6 - 2.7 - 3.4	1.9 - 3.0 - 3.9	2.2 - 3.3 - 4.2
	NC	-	-	32	37	42	47	54
200	Static Pressure (Pa)	2	4	9	15	24	34	60
	Throw (m)	na - 0.45 - 0.75	na - 0.6 - 1.3	0.65 - 0.9 - 1.8	0.85 - 1.5 - 2.2	1.4 - 1.8 - 2.5	1.7 - 2.4 - 3.3	2.1 - 2.7 - 3.9
	NC	-	-	23	26	31	36	42
250	Static Pressure (Pa)	1	4	9	15	23	33	58
	Throw (m)	na - 0.3 - 0.7	0.4 - 0.7 - 1.0	0.6 - 0.9 - 1.8	0.9 - 1.2 - 2.0	1.4 - 1.8 - 2.5	1.6 - 2.4 - 3.0	2.0 - 2.6 - 3.9
	NC	-	-	-	24	29	34	40

## Model: **CRS450 Ceiling** Radial Swirl Diffuser

### 450 x 450 Nominal Neck

Duct Size	Flowrate (l/s)	50	100	150	200	300	400	500	600
150	Static Pressure (Pa)	5	15	32					
	Throw (m)	na - na - 0.5	na - 0.6 - 1.2	0.3 - 1.0 - 1.8					
	NC	21	28	39					
200	Static Pressure (Pa)	1	5	11	18	40	72		
	Throw (m)	na - na - 0.3	na - 0.5 - 1.0	0.3 - 0.9 - 1.8	0.6 - 1.2 - 2.1	1.5 - 2.1 - 3.0	2.1 - 2.9 - 3.6		
	NC	22	26	32	36	47	56		
250	Static Pressure (Pa)	1	2	5	8	19	33	51	
	Throw (m)	na - na - 0.3	na - 0.5 - 1.0	0.3 - 0.9 - 1.8	0.6 - 1.2 - 2.1	1.5 - 2.0 - 3.0	2.1 - 2.7 - 3.6	2.1 - 3.0 - 4.2	
	NC	15	21	24	27	39	47	54	
300	Static Pressure (Pa)	-	2	3	6	11	21	30	43
	Throw (m)	-	0.2 - 0.5 - 1.0	0.3 - 0.9 - 1.8	0.6 - 1.1 - 2.1	1.4 - 2.0 - 3.0	2.1 - 2.3 - 3.6	2.1 - 3.0 - 4.2	2.5 - 3.6 - 4.6
	NC	-	17	22	23	34	41	48	53
350	Static Pressure (Pa)	-	1	2	5	10	17	26	41
	Throw (m)	-	0.2 - 0.5 - 1.0	0.3 - 0.8 - 1.8	0.6 - 1.1 - 2.1	1.1 - 1.8 - 3.0	1.8 - 2.3 - 3.3	1.8 - 3.0 - 4.2	2.5 - 3.6 - 4.6
	NC	-	14	21	23	31	38	46	51

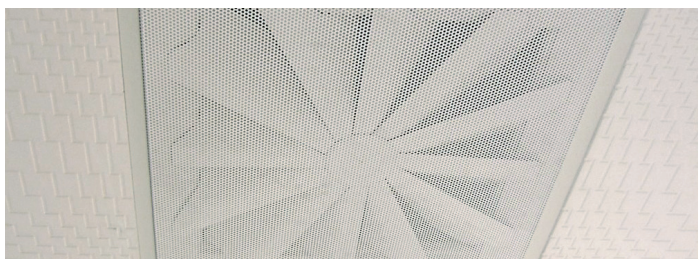
### Options

#### CRSP

The CRS may be supplied with a perforated face plate to provide a less open appearance. See performance notes for the effect on the performance data.

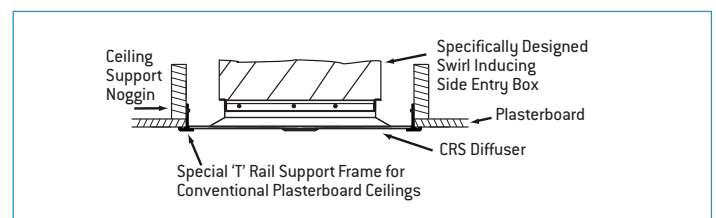
CRSP		Weights in Kg.		
$\Delta P_s$	x1.2	CRS300	CRS450	
Throw	x1.0	CRSP	0.83	1.31
NC	+3	'T' Rail Frame	0.46	0.64

#### Model: **CRSP**



#### 'T' Rail Support Frame

Lay in application – Special 'T' Rail Frame Option available for Surface Mounted applications.



### Notes on Performance Data

1. Performance data is based on a specifically designed side entry box.
2. Listed throw distances are to a terminal velocity (Vt) of 0.75 - 0.5 - 0.25m/s.
3. The NC values are based on a room absorption of 10dB re 10<sup>-12</sup> Watts.
4. "Duct Size" in tables above are plenum inlet sizes.
5. CRSP performance can be approximated by using the CRSP table.

# CFP, CFPP, CRS & CSS

## Product Ordering Key and Suggested Specifications

<b>CFP</b>	-	<b>450</b> <b>600</b> <b>615</b>	-	<b>12</b> <b>20</b> <b>24</b>	-	<b>R</b>	-	<b>SE</b> <b>TE</b>	-	<b>150</b> <b>200</b> <b>250</b> <b>300</b> <b>350</b>	-	<b>FINISH</b>
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ceiling Fixed Pattern	Diffuser Nominal Size	Number of Slots*	Circular Option	Side, or Top Entry Cushion Head Box	Duct Size	Holyoake White, Powder Coat						

\* Size & Slot Options - See Page 133D.

Ceiling Radial Induction Swirl Diffusers shall be Holyoake Model CFP. These diffusers shall be designed for use in Variable Air Volume (VAV) systems with radial, high induction, air flow patterns.

CFP shall maintain a COANDA effect at reduced volume and provide uniform temperature gradients throughout the occupied space.

CFP Diffusers shall be finished in powder coat and be supplied with a suitable side, or top entry box and be fitted with accessories and dampers where indicated.

All shall be as manufactured by Holyoake.

<b>CFPP</b>	-	<b>R</b>	-	<b>600</b>	-	<b>C</b>	-	<b>SE</b> <b>TE</b>	-	<b>150</b> <b>200</b> <b>250</b> <b>300</b>	-	<b>FINISH</b>
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Ceiling Fixed Pattern Pressed Steel	Circular Option	Diffuser Nominal Size	Optional Velocity Enhancer	Side, or Top Entry Cushion Head Box	Duct Size	Holyoake White, Powder Coat						

Ceiling Radial Swirl Diffusers shall be Holyoake Model CFPP 600 series. These diffusers shall be designed for use in Variable Air Volume (VAV) systems with radial, high induction, air flow patterns.

CFPP shall maintain a COANDA effect at reduced volume and provide uniform temperature gradients throughout the occupied space.

CFPP Diffusers shall be finished in powder coat and be supplied with a suitable side, or top entry box and be fitted with accessories and dampers where indicated.

All shall be as manufactured by Holyoake.

<b>CRS</b>	-	<b>P</b>	-	<b>300</b> <b>450</b>	-	<b>SE</b>	-	<b>150*</b> <b>200*</b> <b>250*</b> <b>300</b> <b>350</b>	-	<b>T</b>	-	<b>FINISH</b>
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Ceiling Radial Swirl	Optional Perforated Face Plate	Nominal Neck Size	Special Side Entry Box	Duct Size	Optional 'T' Rail Frame	Holyoake White, Powder Coat						

\* Note: Only these diameters are available on CRS 300

Ceiling Swirl Diffusers shall be Holyoake Model CRS. These shall be designed with a radial, high induction, air flow pattern. They shall maintain a COANDA effect at reduced volume and provide uniform temperature gradients throughout the occupied space.

CRS Diffusers shall be finished in powder coat and be supplied complete with a specifically designed swirl inducing side entry box and be fitted with accessories and dampers where indicated.

All shall be as manufactured by Holyoake.

<b>CSS</b>	-	<b>R</b>	-	<b>8</b> <b>16</b> <b>21</b> <b>24</b> <b>48</b>	-	<b>450T</b> <b>600T</b>	-	<b>SE</b> <b>TE</b>	-	<b>200</b> <b>250</b>	-	<b>FINISH</b>
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ceiling Slot Swirl	Circular Option	Number of Slots	'T-Rail' Size	Side, or Top Entry Box	Duct Size	Holyoake White, Powder Coat						

Ceiling Slot Swirl Diffusers shall be Holyoake Model CSS. These shall be designed with a radial, high induction, air flow pattern.

CSS diffusers shall maintain a COANDA effect at reduced volume and provide uniform temperature gradients throughout the occupied space. They shall have pattern blades which can be adjusted from the diffuser face to allow the air to be directed horizontally, or vertically.

CSS Diffusers shall be finished in powder coat and be supplied with a suitable side, or top entry box and be fitted with accessories and dampers where indicated.

All shall be as manufactured by Holyoake.

### Note

All ceiling diffusers, seismic restraints are required, but not supplied.

# CSS - VAV, CSS - VAV - E & CSS - VAV - LP

## Product Ordering Key and Suggested Specifications

**CSS – VAV** – **24** – **FINISH**  
**48**

Ceiling Slot Swirl VAV Diffuser

Number of Slots

Holyoake White, Powder Coat

Ceiling Slot Swirl VAV Diffusers shall be Holyoake Model CSS – VAV. These shall be designed with a radial, high induction, air flow pattern, providing strong ceiling effect (COANDA) and be capable of handling a wide range of air flows. Designed to control the temperature in an occupied space, by an externally controlled, pressure dependant damper. Controlled by a room thermostat and building management system (supplied by others), the CSS – VAV has a specifically designed, curved edge, single blade control damper, positioned by a 24 V AC variable actuator, via a 0 – 10 V DC control signal. CSS – VAV Diffusers shall be finished in Powder Coat and are complete with a 'Premi-aire™' Pre-Insulated box, with a 250 mm diameter inlet spigot. All shall be as manufactured by Holyoake.

**CSS – VAV – E** – **24** – **FINISH** – **OPTIONS**  
**48**

Ceiling Slot Swirl Electronic VAV Diffuser

Number of Slots

Holyoake White, Powder Coat

**CSS VAVE Tandem Unit,**  
 230/24 V AC Transformer,  
**Infra Red Remote Controller,**  
 'T Rail' Support Frame,  
 (For Surface Mounted Applications)

Ceiling Slot Swirl Electronic VAV Diffusers shall be Holyoake Model CSS – VAV – E. These shall be designed with a radial, high induction, air flow pattern, providing strong ceiling effect (COANDA) and be capable of handling a wide range of air flows. Designed to control the temperature in an occupied space, by a stand alone control system; with an externally controlled, pressure dependant damper\*. The CSS – VAV – E diffuser incorporates a supply air duct temperature sensor and a facia mounted room temperature sensor, allowing the specifically designed, curved edge, single blade control damper, positioned via a 24 V AC motor, to provide an infinite range of airflows, from minimum to maximum design flow rates. The space temperature set point is factory preset at a default of 21 degrees C, or may be adjusted from the face of the diffuser, via an Optional Infrared Remote Control. CSS – VAV – E diffusers shall be finished in powder coat and are complete with a 'Premi-Aire™' Pre-Insulated Side Entry box, with a 250 mm diameter inlet spigot and are suitable for Lay-in to a 'T Rail' ceiling grid, or may be surface mounted with an Optional 'T Rail' support frame. All shall be as manufactured by Holyoake. **A 'CSS-VAV-E Tandem' unit may be linked in parallel with the above, to provide the same airflow performance.\*** **\*An additional system static pressure device may be required, plus an input from the building system temperature control.**

**CSS – VAV – LP** – **16** – **FINISH**  
**24**  
**48**

Ceiling Slot Swirl VAV 'Low Profile' Diffuser

Number of Slots

Holyoake White, Powder Coat

Ceiling Slot Swirl VAV 'Low Profile' Diffusers shall be Holyoake Model "CSS – VAV – LP". These shall be designed with a radial, high induction, air flow pattern, providing strong ceiling effect (COANDA) and be capable of handling a wide range of air flows. Designed to control the temperature in an occupied space, by an externally controlled, pressure dependant damper. Controlled by a room thermostat and building management system (supplied by others), the CSS- VAV – LP has a specifically designed, curved edge, single blade control damper, positioned by a 24 V AC modulating actuator, via a 0-10 V DC control signal. CSS – VAV – LP Diffusers shall be finished in Powder Coat and are complete with a 'Low Profile' Premi-Aire™ Pre-Insulated box, with an oval spigot of 200, or 250 mm equivalent diameter. All shall be as manufactured by Holyoake

Series CSS Product Weights	
Sizes Available	Weights in Kg
CSS8	1.3
CSS16	2.4
CSS21	2.5
CSS24	2.5
CSS48	2.6
CSSR500 8	2.81
CSSR500 16	3.01
CSSR500 21	3.03
CSSR615 8	3.05
CSSR615 16	3.25

Series CSS Product Weights	
Sizes Available	Weights in Kg
CSSR615 21	3.35
CSSR615 24	3.35
CSSR615 48	3.45
450 GALV BOX	6.5
600 GALV BOX	6.5
450 PREM BOX	2.1
600 PREM BOX	2.7
500 DIA GALV PLENUM	2.94
615 DIA GALV PLENUM	3.14

**Note: All ceiling diffusers, seismic restraints are required, but not supplied.**