

CSS-VAV – Ceiling Slot Swirl VAV Diffuser

Model: CSS-VAV Diffuser

The Holyoake CSS – VAV is an externally controlled pressure dependant* VAV diffuser, complete with an adjustable blade control damper, positioned by a 24 V AC variable actuator, via a 0-10 V DC control signal.

*Performance data on the following pages is based on static pressure behind the diffuser being maintained. All testing was carried out using Spiro-set Semi-Rigid Aluminium ducting. For all VAV applications we would recommend the use of Spiro-set ducting.

Control of the diffuser is via a room thermostat and building management system (supply and installation by others).

Designed to control the temperature in a space by having the ability to change the supply air volume between a minimum and maximum, as detailed in the performance data.

(The Primary Air Temperature is not controlled by this system and would require an input from the building system temperature control).

As standard the CSS – VAV is suitable for lay-in applications into a typical 600 mm ceiling grid and comprises of the following:-

CSS 24 or CSS 48 Ceiling Slot Swirl Diffuser.

Premi-Aire™ Pre-Insulated box.

Single blade control damper.

24 V AC modulating motor with 0-10 V DC control signal.

The CSS – VAV is one of the strongest performing diffusers on the market, with proven induction technology, strong ceiling effect and capable of handling a wide range of air flows.

Using the CSS range of Square Ceiling Slot Swirl diffusers with slots set in a radial angled pattern, providing a circular swirling airflow, which achieves strong room air induction into the supply air path, creating mixing at high level, reducing draughts and uneven temperature gradients.

The whole CSS-VAV assembly, including diffuser, supply plenum box, damper and motor, is a light weight 9.6 kg.

Installation

Installation is simple due to the light weight, square, lay-in design. The assembly can easily be placed into the 'T – Rail' ceiling grid and the supply duct connected to the side entry damper spigot.

Construction

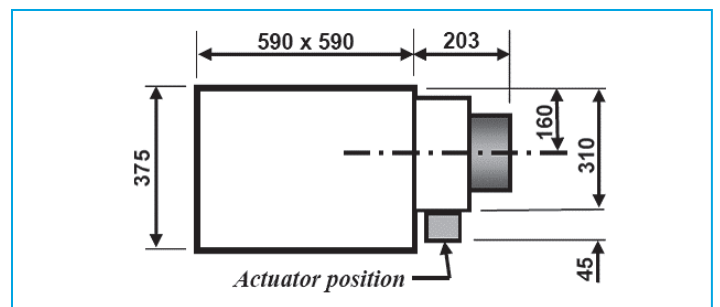
The CSS VAV face plate is constructed of powder coated zinc coated steel (aluminium option available, contact your local Holyoake branch) with tough UV stabilised air pattern elements, available in black, or white. The supply plenum box is assembled from Premi-Aire™ board and is complete with a galvanised steel connecting spigot and aluminium single blade damper, with a 24 V AC modulating motor, positioned for easy access for wiring and maintenance through an adjoining ceiling tile.

Features

- Lightweight Premi-Aire™ Box Construction.
- Infinite Range of Throw Patterns.
- High Induction Swirl.
- 24 V AC Modulating Actuator.
- 0-10 V DC Positioning Control.
- Pressure Dependant Control.



Technical Data	
Swirl Type	CSS24, or CSS48
Box Type	Premi-Aire™
Thermal Rating	R1.0
Control Damper	Single Blade
Actuator	24 V AC, c/w 0-10 V DC Signal
Spigot Diameter	250mm
Gross Weight	9.6 kg



Inlet Static Pressure 13Pa - CSS24-VAV-250-SBD

Damper Position	Actuator Signal	Flow m ³ /s	Throw (m) at Vt(m/s)			NC
			0.25	0.5	0.75	
100% Open	10 VDC	0.175	2.7	1.8	1.1	32
75% Open	7.5 VDC	0.159	2.5	1.6	0.9	31
50% Open	5 VDC	0.106	1.4	0.8	n/a	27
25% Open	2.5 VDC	0.052	0.8	n/a	n/a	26
20% Open	2 VDC	0.042	0.7	n/a	n/a	25
Min Position	0 VDC	0.023	0.3	n/a	n/a	21

Inlet Static Pressure 20Pa - CSS24-VAV-250-SBD

Damper Position	Actuator Signal	Flow m ³ /s	Throw (m) at Vt(m/s)			NC
			0.25	0.5	0.75	
100% Open	10 VDC	0.213	3.2	2.3	1.6	36
75% Open	7.5 VDC	0.199	3.0	2.1	1.4	33
50% Open	5 VDC	0.134	2.2	1.3	0.7	29
25% Open	2.5 VDC	0.062	1.0	0.1	n/a	27
20% Open	2 VDC	0.055	0.8	n/a	n/a	26
Min Position	0 VDC	0.030	0.5	n/a	n/a	22

Inlet Static Pressure 25Pa - CSS24-VAV-250-SBD

Damper Position	Actuator Signal	Flow m ³ /s	Throw (m) at Vt(m/s)			NC
			0.25	0.5	0.75	
100% Open	10 VDC	0.237	3.4	2.5	1.8	42
75% Open	7.5 VDC	0.221	3.3	2.4	1.7	37
50% Open	5 VDC	0.147	2.3	1.5	0.8	30
25% Open	2.5 VDC	0.073	1.2	0.3	n/a	29
20% Open	2 VDC	0.063	1.0	0.1	n/a	27
Min Position	0 VDC	0.034	0.6	n/a	n/a	23

Inlet Static Pressure 30Pa - CSS24-VAV-250-SBD

Damper Position	Actuator Signal	Flow m ³ /s	Throw (m) at Vt(m/s)			NC
			0.25	0.5	0.75	
100% Open	10 VDC	0.258	3.5	2.7	2.0	49
75% Open	7.5 VDC	0.243	3.4	2.5	1.8	44
50% Open	5 VDC	0.162	2.5	1.6	0.9	34
25% Open	2.5 VDC	0.078	1.2	0.3	n/a	30
20% Open	2 VDC	0.068	1.1	0.2	n/a	28
Min Position	0 VDC	0.038	0.6	n/a	n/a	24

Inlet Static Pressure 40Pa - CSS24-VAV-250-SBD

Damper Position	Actuator Signal	Flow m ³ /s	Throw (m) at Vt(m/s)			NC
			0.25	0.5	0.75	
100% Open	10 VDC	0.300	3.9	3.0	2.4	57
75% Open	7.5 VDC	0.278	3.7	2.8	2.2	50
50% Open	5 VDC	0.190	2.9	2.0	1.3	36
25% Open	2.5 VDC	0.091	1.3	0.8	n/a	32
20% Open	2 VDC	0.079	1.2	0.3	n/a	29
Min Position	0 VDC	0.042	0.7	n/a	n/a	25

*Note

The air volume performance for VAV diffusers is dependant on static pressure behind the diffuser being maintained.

CSS-VAV 600 48 – Performance Data

Inlet Static Pressure 13Pa - CSS48-VAV-250-SBD

Damper Position	Actuator Signal	Flow m ³ /s	Throw (m) at Vt(m/s)			NC
			0.25	0.5	0.75	
100% Open	10 VDC	0.200	3.1	2.1	1.5	30
75% Open	7.5 VDC	0.178	2.7	1.8	1.4	29
50% Open	5 VDC	0.104	1.8	1.2	0.7	26
25% Open	2.5 VDC	0.050	1.6	0.6	n/a	24
20% Open	2 VDC	0.045	1.5	0.5	n/a	23
Min Position	0 VDC	0.020	0.4	n/a	n/a	20

Inlet Static Pressure 20Pa - CSS48-VAV-250-SBD

Damper Position	Actuator Signal	Flow m ³ /s	Throw (m) at Vt(m/s)			NC
			0.25	0.5	0.75	
100% Open	10 VDC	0.250	3.8	2.7	2.0	35
75% Open	7.5 VDC	0.222	3.5	2.4	1.7	32
50% Open	5 VDC	0.130	2.0	1.5	0.8	26
25% Open	2.5 VDC	0.062	1.6	0.7	0.3	24
20% Open	2 VDC	0.054	1.6	0.7	0.3	24
Min Position	0 VDC	0.026	0.4	n/a	n/a	20

Inlet Static Pressure 25Pa - CSS48-VAV-250-SBD

Damper Position	Actuator Signal	Flow m ³ /s	Throw (m) at Vt(m/s)			NC
			0.25	0.5	0.75	
100% Open	10 VDC	0.275	3.9	3.0	2.3	40
75% Open	7.5 VDC	0.247	3.8	2.7	2.0	35
50% Open	5 VDC	0.145	2.4	1.7	1.1	27
25% Open	2.5 VDC	0.071	1.7	1.2	0.7	26
20% Open	2 VDC	0.062	1.6	0.7	0.3	24
Min Position	0 VDC	0.030	0.8	n/a	n/a	20

Inlet Static Pressure 30Pa - CSS48-VAV-250-SBD

Damper Position	Actuator Signal	Flow m ³ /s	Throw (m) at Vt(m/s)			NC
			0.25	0.5	0.75	
100% Open	10 VDC	0.300	4.2	3.3	2.6	47
75% Open	7.5 VDC	0.280	3.9	3.0	2.3	43
50% Open	5 VDC	0.180	2.7	1.8	1.4	32
25% Open	2.5 VDC	0.082	1.7	1.2	0.7	28
20% Open	2 VDC	0.070	1.7	1.2	0.7	27
Min Position	0 VDC	0.034	0.8	n/a	n/a	22

Inlet Static Pressure 40Pa - CSS48-VAV-250-SBD

Damper Position	Actuator Signal	Flow m ³ /s	Throw (m) at Vt(m/s)			NC
			0.25	0.5	0.75	
100% Open	10 VDC	0.350	4.5	3.6	2.9	54
75% Open	7.5 VDC	0.320	4.3	3.4	2.7	49
50% Open	5 VDC	0.206	3.1	2.1	1.5	35
25% Open	2.5 VDC	0.100	1.8	1.2	0.7	31
20% Open	2 VDC	0.082	1.7	1.2	0.7	29
Min Position	0 VDC	0.040	1.5	0.5	n/a	23

*Note

The air volume performance for VAV diffusers is dependant on static pressure behind the diffuser being maintained.