CSRD, CSRV & CVT – VAV Diffusers

All models are designed to control the temperature in a space by having the ability to change the supply air volume.
All diffusers have a standard outer body that is sized to lay-in to a standard 600mm wide ceiling grid (Frame Type 2).
The outer body is shaped to give a radial diffusion pattern and strong ceiling effect across a wide range of flow rates.

CVT shown. CSRD & CSRV have a choice of either a flat face plate, or a profiled face plate as shown for CVT.

Model: **CSRD**

The CSRD is a manually adjustable diffuser. It is fitted with an adjustable volume balancing disc damper

Model: **CSRV**

The CSRV is an externally controlled pressure dependant VAV diffuser. It contains an adjustable disc damper which is driven open and closed by a 24 V AC electric actuator. Control of the damper can be from a wall mounted thermostat, or from a building management system.

Model: **CVT**

CVT Features:

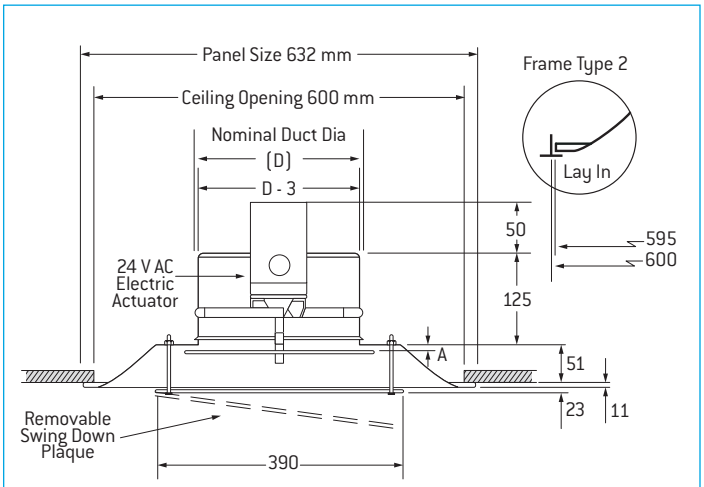
- Stand Alone Control.
- Adjustable Set Point.
- Concealed Room Temperature Sensor.
- Fully Modulating Damper.
- Reverse Acting for Heating.
- Excellent Air Distribution.
- Infrared Remote Control Option.

The Holyoake CVT diffuser is a stand alone pressure dependant VAV diffuser, designed to automatically control a conditioned space without the need for a complex controller, or a wall mounted thermostat. Because all of the control components are built into the CVT diffuser, all that is required is a 24 V AC feed (optional transformer available) and a system static pressure control device. Products suitable for providing pressure dependent control can be found in Section G and Section K of the Holyoake Industries Component Manual.

The CVT diffuser utilises the induced room air flowing over an on-board sensing element to control the space temperature. The temperature set point for the occupied space can be directly adjusted from the face of the diffuser, or via an Infrared Remote Control option. Incorporated within the diffuser is a supply air temperature sensor, that reverses the action of the damper depending on whether the supply air system is in heating, or cooling mode. The damper itself is controlled by a time proportional floating actuator, that gives the diffuser an infinite range of adjustment between the minimum and maximum settings.

The outer body of the CVT diffuser is constructed from a single piece of pressed steel. This pressing has been specifically designed to maintain a strong ceiling effect irrespective of the flow rate. This design feature gives the diffuser the excellent air distribution performance that is required for a variable volume diffuser. The airflow performance for the CVT diffuser is detailed on the following page.

By combining the flexibility of a fully integrated stand alone control system, with excellent air distribution performance, the CVT diffuser becomes the solution of choice for any VAV diffuser application.



CSRV and CVT, Frame Type 1, Surface Mount.

Damper Position 'A'		
DUCT DIA (D)	Minimum Opening	Maximum Opening
150	10	42
175	10	42
200	10	42
250	15	42
300	15	42
350	15	42

Standard Set-Up/Performance Data Notes

1. The performance data for the CSRD, CSRV & CVT diffusers relates to two different damper positions, Minimum and Maximum (Dimension 'A'), for each size of diffuser.
2. CSRD, CSRV & CVT diffusers are available with neck sizes ranging from 150 mm up to 350 mm diameter.
3. All sizes of diffuser, by default, have a face size designed to 'lay-in' to a standard 600 mm wide "T-Rail" ceiling System (Frame Type 2).
4. The diffuser can be supplied suitable for surface mounting (Frame Type 1).
5. The Standard version has by default a 230 V AC Supply Pack (Transformer). Specify 230 V AC, or 24 V AC when ordering.

Models: **CSRD, CSRV & CVT**

Inlet Static Pressure 13 Pa											
	Minimum Opening					Maximum Opening					NC
Nominal Duct Dia (D)	Flow m³/s	Vp	Throw (m) at Vt (m/s)			Flow m³/s	Vp	Throw (m) at Vt (m/s)			at Maximum Opening
		Pa	0.25	0.5	0.75		Pa	0.25	0.5	0.75	
150	0.016	0.6	0.6	0.4	0.3	0.033	2.8	0.9	0.6	0.4	17
175	0.019	0.5	0.7	0.4	0.3	0.051	2.7	1.2	0.7	0.5	17
200	0.021	0.3	0.8	0.5	0.3	0.068	2.6	1.5	0.8	0.6	17
250	0.037	0.4	1.4	0.7	0.5	0.089	2.2	2.0	1.2	0.8	17
300	0.044	0.3	1.4	0.8	0.6	0.117	1.9	2.3	1.3	0.9	17
350	0.058	0.2	1.5	0.9	0.7	0.157	1.7	2.7	1.5	1.1	17

Inlet Static Pressure 25 Pa											
	Minimum Opening					Maximum Opening					NC
Nominal Duct Dia (D)	Flow m³/s	Vp	Throw (m) at Vt (m/s)			Flow m³/s	Vp	Throw (m) at Vt (m/s)			at Maximum Opening
		Pa	0.25	0.5	0.75		Pa	0.25	0.5	0.75	
150	0.024	1.4	0.9	0.5	0.4	0.047	5.5	1.2	0.8	0.6	20
175	0.028	1.0	1.0	0.6	0.4	0.065	5.2	1.5	1.0	0.7	20
200	0.030	0.6	1.3	0.6	0.5	0.083	4.8	1.7	1.1	0.8	20
250	0.052	0.8	1.8	1.0	0.6	0.121	4.0	2.6	1.5	1.0	20
300	0.061	0.5	1.9	1.1	0.7	0.160	3.6	2.7	1.8	1.2	20
350	0.084	0.4	2.0	1.2	0.8	0.220	3.6	3.3	2.1	1.5	20

Inlet Static Pressure 38 Pa											
	Minimum Opening					Maximum Opening					NC
Nominal Duct Dia (D)	Flow m³/s	Vp	Throw (m) at Vt (m/s)			Flow m³/s	Vp	Throw (m) at Vt (m/s)			at Maximum Opening
		Pa	0.25	0.5	0.75		Pa	0.25	0.5	0.75	
150	0.029	2.1	0.9	0.6	0.5	0.058	8.3	1.5	0.9	0.6	27
175	0.035	1.6	1.1	0.7	0.5	0.081	7.9	1.9	1.2	0.7	27
200	0.038	1.0	1.4	0.9	0.6	0.103	7.5	2.3	1.4	0.8	27
250	0.065	1.5	2.0	1.2	0.8	0.148	6.1	2.9	1.8	1.3	27
300	0.075	0.8	2.2	1.3	0.8	0.197	5.5	3.0	2.2	1.5	27
350	0.103	0.6	2.3	1.4	1.0	0.270	5.1	3.7	2.9	2.3	27

Inlet Static Pressure 50 Pa											
	Minimum Opening					Maximum Opening					NC
Nominal Duct Dia (D)	Flow m³/s	Vp	Throw (m) at Vt (m/s)			Flow m³/s	Vp	Throw (m) at Vt (m/s)			at Maximum Opening
		Pa	0.25	0.5	0.75		Pa	0.25	0.5	0.75	
150	0.033	2.7	1.2	0.7	0.5	0.066	10.8	1.6	0.9	0.7	33
175	0.040	2.1	1.3	0.8	0.6	0.092	10.3	2.1	1.2	0.9	33
200	0.045	1.4	1.5	1.0	0.7	0.118	9.8	2.5	1.5	1.0	33
250	0.074	1.5	2.2	1.4	0.8	0.169	7.9	3.2	2.0	1.4	33
300	0.087	1.1	2.3	1.5	0.9	0.226	7.2	3.3	2.4	1.6	33
350	0.119	0.7	2.4	1.6	1.1	0.310	7.2	3.5	2.5	1.9	33

Performance Note

The air volume performance for pressure dependent diffusers is only valid if the pressure behind the diffuser is finely maintained.

600 x 600 Nominal Size	Approximate Weight Kg
CSRD	5.0
CSRV	5.4
CVT	5.6

CSRD, CSRL, CSRLA & CSRV

Product Ordering Key and Suggested Specifications

CSRD	–	PROFILED	–	200 DIA	–	600 x 600*	–	TYPE 2	–	FINISH
Ceiling Square Round Neck Plaque Diffuser		Face Plate, Flat, or Profiled		Neck Size		Module Size		Frame Type 1 = Surface 2 = Lay-in		Holyoake White Powder Coat

Series CSRD Plaque type diffusers shall be of steel construction with a manual disc damper for volume control adjustment. The Plaque shall have horizontal retaining clips to prevent accidental removal and shall swing down for easy access to the damper.

All shall be as manufactured by Holyoake.

CSRL	–	300 DIA	–	600 x 600	–	TYPE 1	–	ACCESSORIES	–	FINISH
Ceiling Square Louver Face Round Neck Diffuser		Neck Size		Module Size/ Ceiling Opening		Frame Type 1 = Surface 2 = Lay-in		BD85 EGR SB		Holyoake White Powder Coat

Series CSRL Louver Face ceiling diffusers shall be of steel construction with readily removable centre core. Each CSRL louver shall be a single pressing with no corner joints, so that the whole assembly provides performance similar to that of a circular diffuser with a square face appearance. Purpose made accessories shall be available for pattern control and volume adjustment.

All shall be as manufactured by Holyoake.

CSRLA	–	200 DIA	–	300 x 300	–	TYPE 2	–	ACCESSORIES	–	FINISH
Ceiling Square Louver Face Round Neck Adjustable Diffuser		Neck Size		Module Size/ Ceiling Opening		Frame Type 1 = Surface 2 = Lay-in		BD85 EGR SB		Holyoake White Powder Coat

Series CSRLA Louver Face ceiling diffusers shall be of steel construction with readily removable centre core, fitted with moveable vanes for vertical, or horizontal air throw adjustment. Each louver shall be a single pressing with no corner joints, so that the whole assembly provides performance similar to that of a circular diffuser with a square face appearance. Purpose made accessories shall be available for pattern control and volume adjustment.

All shall be as manufactured by Holyoake.

CSRV	–	FLAT	–	300 DIA	–	600 x 600*	–	TYPE 2	ACTUATOR	–	FINISH
Ceiling Square Round Neck Variable Volume Plaque Diffuser		Face Plate, Flat, or Profiled		Neck Size		Module Size		Frame Type 1 = Surface 2 = Lay-in	24 V AC/230 V AC Electric		Holyoake White Powder Coat

Series CSRV Plaque type diffusers shall be of steel construction with electric disc damper for automatic, or adjustable volume control. The CSRV Plaque shall have horizontal retaining clips to prevent accidental removal and shall swing down for easy access to actuator.

All shall be as manufactured by Holyoake.

* Only Nominal Face Size Available.

Note

Seismic restraints will be required, but not supplied.

Product Ordering Key and Suggested Specifications

CSR-VL	–	250 DIA	–	600 x 600*	–	TYPE 2	–	ACTUATOR	–	FINISH
Ceiling Square Louver Face Round Neck Variable Volume Diffuser		Neck Size		Module Size		Frame Type 1 = Surface 2 = Lay-in		24 V AC/230 V AC Electric		Holyoake White Powder Coat

Series CSR-VL variable volume diffusers shall be louver faced and shall match exactly the appearance of fixed volume diffusers of similar type. Minimum volume shall be fixed and directed, so that a non-varying primary air stream maintains a ceiling effect, to ensure that the varying flow will always be entrained with it, preventing dumping. Actuators shall be factory installed and be either electric, or pneumatic as required by the control system. Each louver shall be a single pressing with no corner joints, so that the whole assembly provides performance similar to a circular diffuser, with a square face appearance.

All shall be as manufactured by Holyoake.

CVT	–	300 DIA	–	600 x 600*	–	TYPE 2	–	ACTUATOR	–	FINISH
Ceiling Square Round Neck Variable Volume Plaque Diffuser		Neck Size		Module Size		Frame Type 1 = Surface 2 = Lay-in		24 V AC/230 V AC Electric		Holyoake White Powder Coat

Series CVT variable volume pressure dependant plaque diffusers shall be of steel construction and are to be stand alone in operation. The diffuser is to incorporate a space temperature sensor, as well as a supply air temperature sensor. The signals received from these sensors are to be used to control a fully modulating damper, to give an infinite range of airflow, from the minimum to maximum design flow rates. The space temperature set point is able to be adjusted from the face of the diffuser, or via an Optional Infrared Remote Control. The diffuser is to accommodate surface mounting or, be able to "lay-in" to a standard 'T-Rail' system.

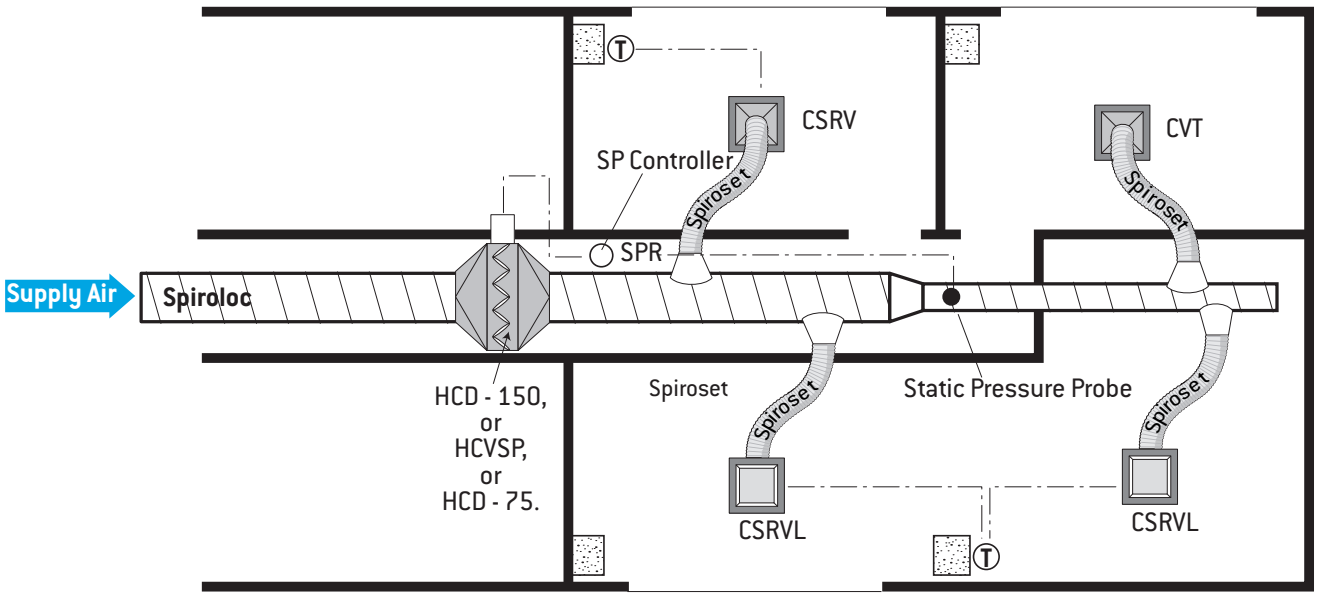
All shall be as manufactured by Holyoake.

Note

Seismic restraints will be required, but not supplied.

* Only Nominal Face Size Available.

Typical Application of VAV System Components



Application Notes

1. Zone sizes normally range from one to ten diffusers.
2. Static pressure sensing should be from a point acceptable as average zone duct pressure.
3. Thermostat (T) may be mounted on diffuser face.