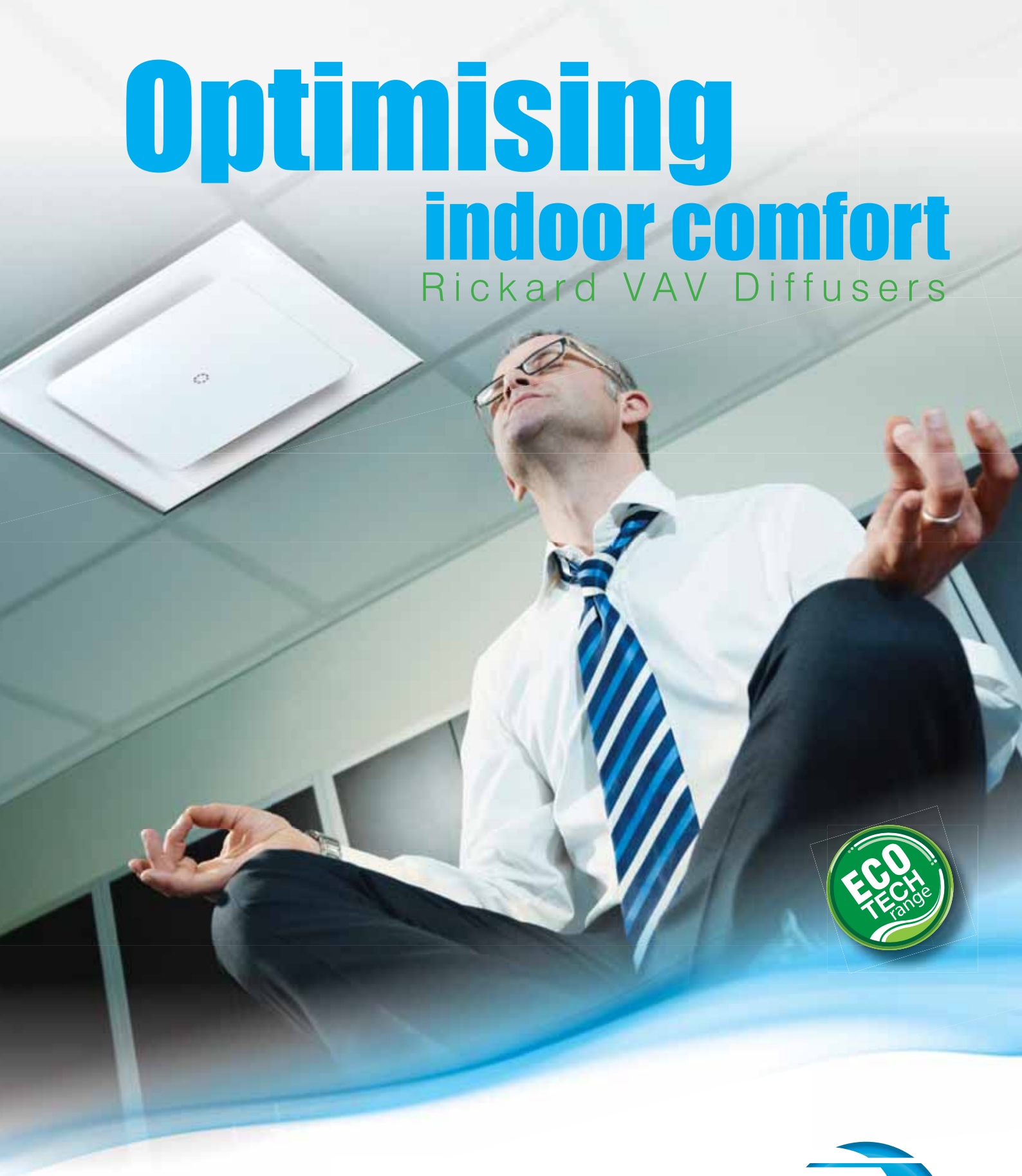
Optimising indoor comfort

Rickard VAV Diffusers



- Reduces power consumption by lowering demand on air handling system
- Provides occupant with total control over their environment
- Simple, easy to install plug and play system
- Compatible with most commonly used Building Management Systems (BMS)

FANTECH
Intelligent Ventilation

The drive for comfort and energy efficiency

There is a growing need for products that help create comfortable indoor spaces while maintaining a healthy and productive working environment. At the same time, new government policies and the dramatic increase in energy costs have created greater demand for products and systems that utilize energy efficient technologies. These new demands are now being driven by architects, engineers and developers to create buildings that offer both the optimal working conditions while saving energy consumption and reducing greenhouse gas emissions.

The RICKARD range of Variable Air Volume (VAV) diffusers helps meet these demands and is a cost effective system that is simple to operate and very reliable.

A highly effective design

Rickard VAV diffusers have a number of unique attributes that ensure they provide optimum performance over a long period of time. The diffusers feature a modern “flush” to ceiling/wall stylish look and aerodynamically shaped components that minimise noise while improving air flow characteristics.

All Rickard VAV diffusers are finished in a chip resistant baked acrylic paint which comes white as standard, but can be ordered in a wide range of colours.

Rickard diffusers do not require routine maintenance, but in-case a repair is required, all mechanical components are easily accessible from inside the room. As a result any maintenance is simple, low cost and can be carried out with minimal disruption to the room occupants.

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RICKARD

Ensures individual occupant comfort and productivity

Rickard VAV diffusers help to provide a well ventilated indoor environment that maintains a consistent and comfortable temperature in most types of applications. They eliminate the negative impact undesirable thermal conditions can have on output, accuracy and productivity.

Rickard diffusers achieve this by allowing only the required amount of conditioned air to enter the space. This air volume is determined by the temperature in the space and the set-point on the diffuser's in-built temperature sensor or wall thermostat. The set-point on individual diffusers can be easily adjusted by the occupant, giving them total control over their environment during any part of the day.

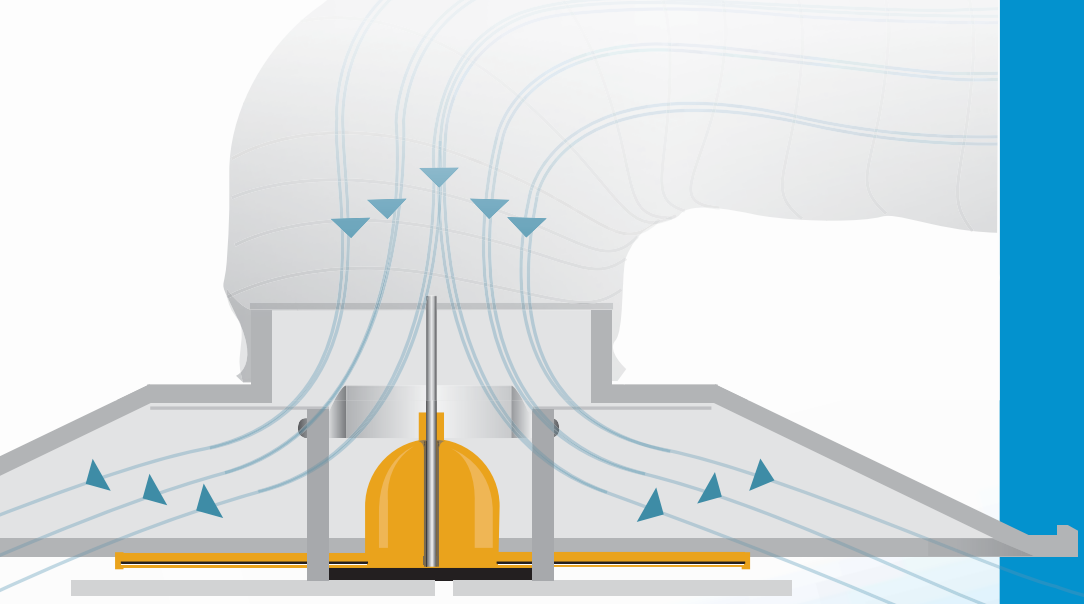
Rickard VAV diffusers provide excellent supply air distribution, which ensures uncomfortable drafts, or air dumping are minimised. Air is discharged from the square diffuser in a 360 degree pattern and circulated around the room and up through the centre to ensure the air within the space is thoroughly mixed and the space is kept at the desired temperature.

Simple and energy saving solution

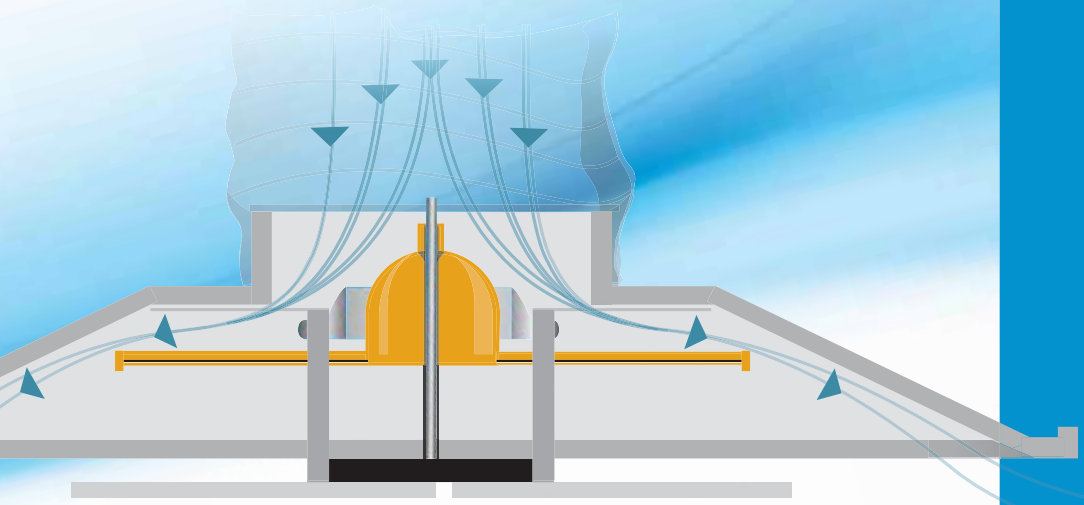
A key benefit of Rickard VAV diffusers is their ability to potentially reduce the energy consumption of a building by reducing the demand on the air handling system. They achieve this by allowing only the required volume of hot or cold air to enter the conditioned space according to the set point. If the required air volume reduces, the diffuser's aperture size also reduces which creates additional pressure in the ductwork. This pressure signals to the air conditioning system to slow down which in turn saves fan energy. If the air volume required increases, the diffuser's aperture opens allowing more conditioned air to enter the space.

The incentive for building owners and tenants to have energy efficient rental spaces has never been higher. Rickard VAV diffusers can also help achieve Green Building Credits for Building Management, Indoor Environmental Quality and Energy Efficiency.

Rickard VAV diffusers are easy to install and set up, and will function effectively when the building's air conditioning systems are in either cooling or heating mode. All Rickard ceiling diffusers are either installed in suspended tiled ceilings with "T" frames or standard plaster board using a standard ceiling frame.



Aperture fully opened to allow 100% of air flow to enter space



Aperture almost fully closed to allow only 10% of air flow to enter space

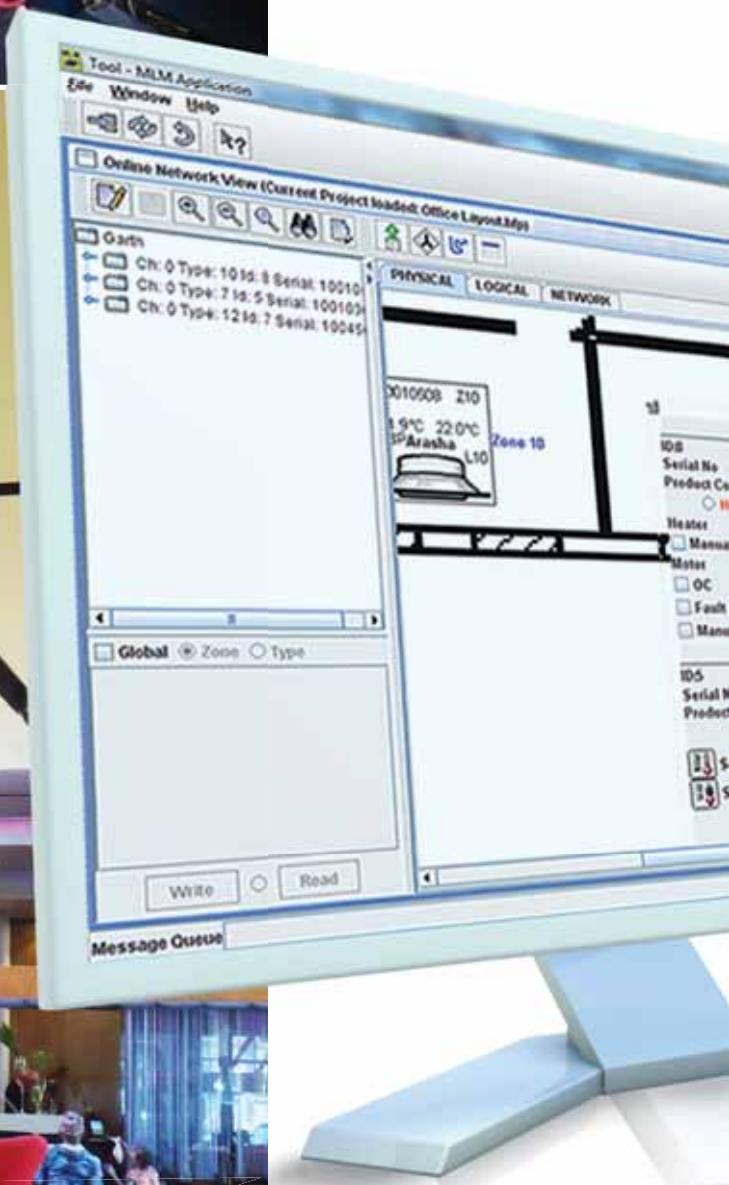
An extensive range to suit most applications and mounting positions

Rickard VAV diffusers are available as:

System controlled, electronically powered, plug and play models.

Standalone, mechanically controlled, thermally powered models

Each VAV diffuser model is available in various configurations which are suitable for numerous applications or mounting positions. The range comes in square, linear slot and bulkhead models.


Tool - MLM Application
File Window Help
Online Network View (Current Project loaded: Office Layout.mdp)
Garth
PHYSICAL
LOGICAL
NETWORK
Zone 10
Global
Zone
Type
Write
Read
Message Queue

Electronic VAV Diffusers

The Rickard range of VAV electronic diffusers has been developed as an intelligent and complete system that can work on its own or when integrated into a BMS. The system aims to provide superior thermal comfort in every part of a building while minimising energy consumption and maintaining effective air mixing.

Electronic diffusers can be individually programmed to provide occupants with total control over their environment. This can be achieved in both single diffuser, single office applications and large open areas where a number of diffusers are required.

System flexibility

The Rickard range of VAV electronic diffusers uses a modular system design that is extremely reliable and easy to install. It can be used with most types of buildings, regardless of their size, due to the simplicity of its design and the flexibility of the system software. It is made up of six core components:

- The Master Communication Unit (MCU)
- On-board master Controller
- Master diffuser
- Wall thermostat
- Diffuser
- Power Supply

The system can be very simple with one Rickard diffuser, controlled by either the on-board master controller or a wall thermostat.

The system can also be scaled up. A maximum of 60 diffusers can be accommodated on a single Master Communication Unit (MCU) and multiple MCU's can be connected to the BMS if more than 60 diffusers are required. Up to 15 diffusers can be connected to a single power supply, and these can be split into multiple zones.

The diffusers can be individually controlled by either a wall thermostat or the on-board controller that sends its signal back to the BMS. The entire system is then monitored and changes are made through a PC using the Rickard stand-alone software or a BMS.

Rickard Electronic diffusers have adopted an easy to install "plug and play" system that uses simple, automotive grade, daisy chain connections. This helps to minimise the cost of installation and eliminates the risk of using the incorrect connectors.

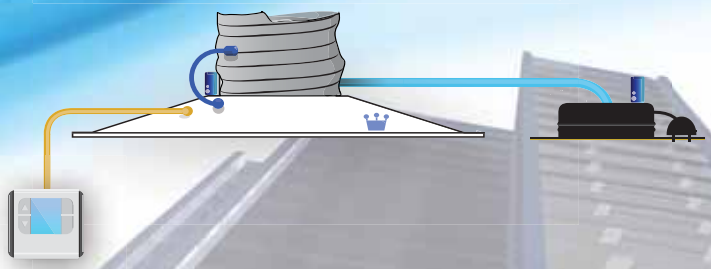
For new installations of Rickard Electronic Diffusers, duct design that achieves static regain is highly recommended. If retrofitting to existing ducting that cannot be changed, a relief ring can be installed at the end of a duct run to release air pressure when the diffusers close.

The flexibility of the Rickard electronic VAV system enables it to be installed in both small single diffuser applications and large multi level projects involving thousands of diffusers.

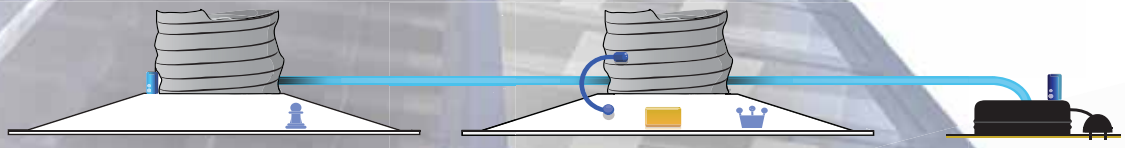
The Rickard design examples shown below illustrate the flexibility of the system.

Key

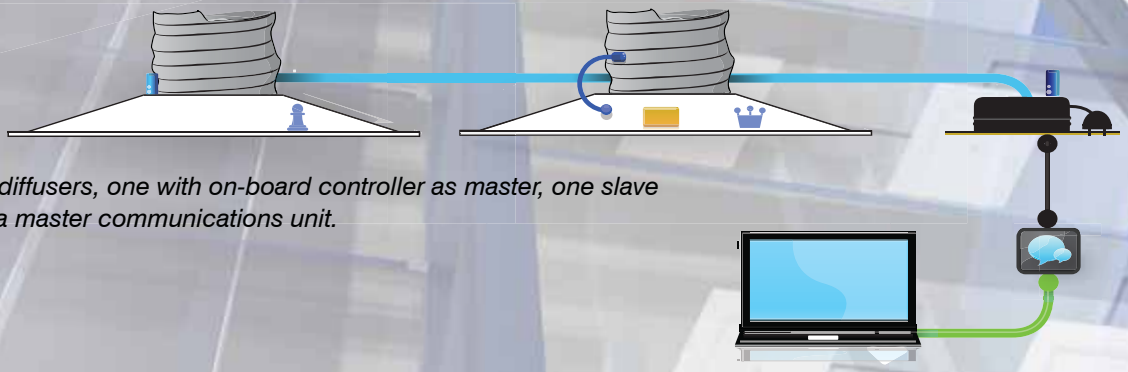
- Master diffuser
- Slave diffuser
- On board master controller
- Power supply module (240V)
- Master communication & module
- Comms termination
- Thermostat
- Slave cable 6m
- Stat cable 6m
- Comms cable
- Ethernet (TCP/IP)
- Change over sensor



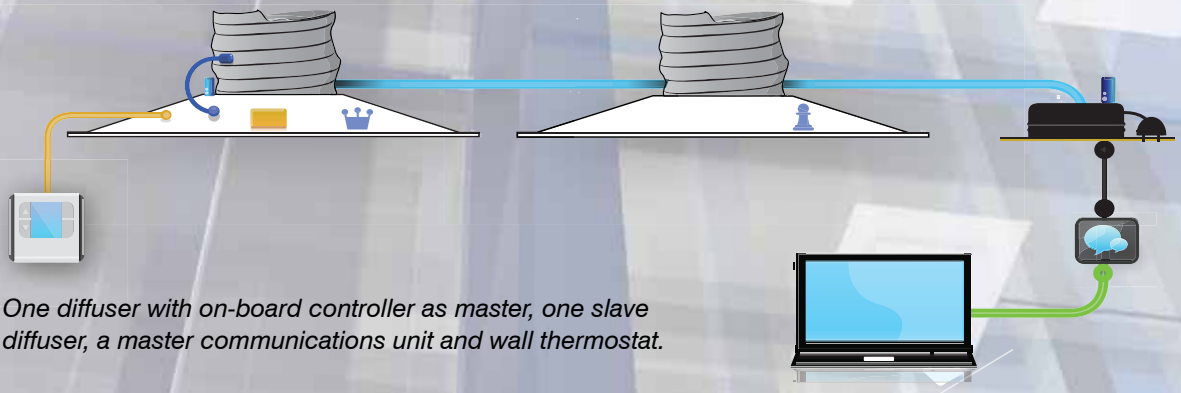
One diffuser with wall thermostat as master.



Two diffusers, one with on-board controller as master and one slave.



Two diffusers, one with on-board controller as master, one slave and a master communications unit.



One diffuser with on-board controller as master, one slave diffuser, a master communications unit and wall thermostat.

Combinations are possible where room temperature is read from diffuser, set point read from wall thermostat and diffusers monitored from Rickard software.

Flexible control options

A key benefit for any electronic ventilation system within a building is its compatibility with a range of control systems.

The Rickard wall thermostat can control a single diffuser or up to 60 diffusers. The standard thermostat monitors temperature and controls the set point, while the version with occupancy sensing can detect a vacant zone, and through the BMS, automatically switch off that zone. Generally for larger more complex applications, the electronic diffusers connect to the BMS protocols on the market; LonWorks and BACnet or the Rickard standalone software.

Easy to install, commission and re-program

Rickard's easy to use software is perfect for all applications where a BMS system is not being utilised within the building. This standalone software has been developed for commissioning and setting diffuser parameters, monitoring the network and logging diffuser activity. Its user friendly graphics have easy to follow instructions and simple colour-coded diffuser icons for set up and commissioning. This software makes it simple to convert a slave diffuser to a master, set minimum and maximum temperature settings, and perform all commissioning from below the ceiling with a PC. Changes to office layouts are easy as each diffuser can be easily re-positioned and re-programmed according to its new environment.

The software allows you to view and monitor the temperature conditions of up to 15 diffusers at a time and 60 diffusers (one MCU) in total. It also allows you to view additional groups of up to 60 diffusers. The system can also log faults, which ensures that any issues can be detected centrally and resolved with the full view of the entire system.

The Rickard software can show you how each diffuser is connected within the zone and which diffusers make up each zone. By selecting the diffuser parameters you wish to log, data can also be viewed in an easy to understand chart and exported for storage and analysis if required. This ensures that any corrections or adjustment to the system can be made accurately and with minimum disturbance to the building occupants.

Electronic VAV diffuser with occupancy sensor

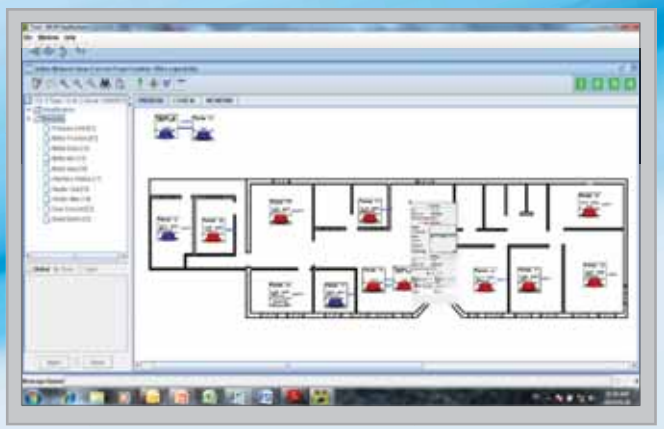
Occupancy Sensor

The Rickard VAV electronic diffuser system is also available with occupancy sensing capability. This unique option is available within the diffuser itself and a specially designed wall thermostat, which means no additional sensor or wiring is required. This technology closes the opening of the diffuser if it detects the room to be unoccupied and opens it again when it detects an occupant present. The timing of this operation is controlled by an exit room delay which is factory preset to 15 minutes, but can be easily changed to best suit the individual occupant using the Rickard software.

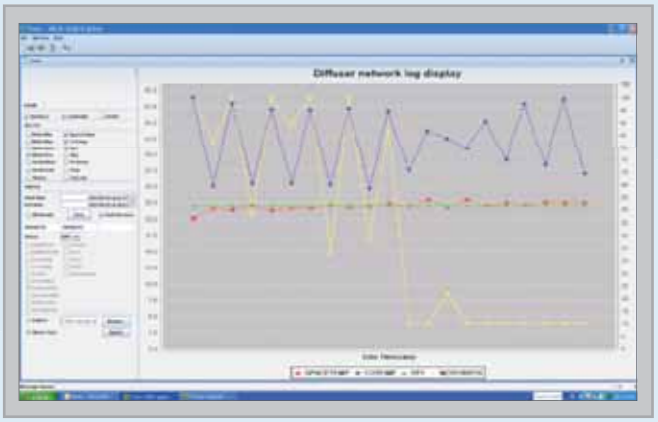
If the diffuser with occupancy sensing is controlled by a BMS, it can also automatically turn the room lights off and on. This can lead to significant cost savings as the building requires less energy to operate its lighting and cooling/heating systems.

Occupancy sensing capabilities can also be added to an existing Rickard Electronic VAV system by replacing the diffuser and making alterations to the software settings. It can also be achieved by adding the wall thermostat with occupancy sensing.

Thermostat with occupancy sensing



Rickard's software uses simple user friendly graphic



Rickard's software can show diffuser activity and room temperature

Air Flow Sensor

All Rickard electronic diffusers are also available with air flow sensing. This feature enables the commissioning to occur easier and faster, as air flow and total pressure measurements can be viewed and monitored through the Rickard MLM software and a BMS.

The Air Flow Sensor can be fitted to each diffuser for accurate air flow calculations, or to one diffuser per zone to provide an indication of air flow in that zone. The air flow sensing feature will also include a commissioning mode that will allow a maximum flow value to be limited to design volumes under maximum load conditions. This will ensure diffusers do not supply more air than intended.

Square electronic VAV ceiling diffusers

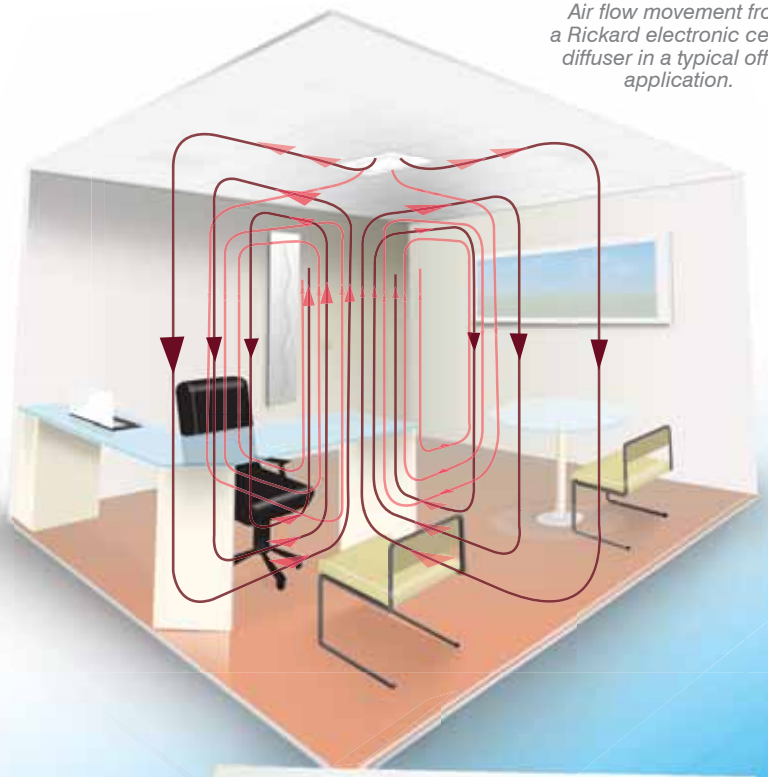
The square electronic diffusers are available in 3 distinctive styles: square to square, square to circular and square to swirl. The square to square and square to circular diffusers produce low noise levels and are designed for general building zones where uniform radial discharge is the preferred supply air distribution pattern. The square to swirl diffuser is a more efficient solution for generating high induction between supply and room air.

Room temperature is controlled and maintained by varying the supply air volume in accordance with demand. Air volume control is achieved through the vertical up and down movement of the control disc mechanism within the diffuser. This increases or decreases the aperture size which allows more or less air to enter the occupied space. This effectively maintains constant air movement in the room at discharge volumes from 100% down to approximately 10%. An electric actuator drives the position of the control disc in response to a signal received from the temperature sensor.

All square electronic ceiling diffusers are available in the industry's most popular neck sizes; 150, 200, 250 and 300mm. The square to square and square to circular diffusers are available in 2 overall sizes, 495 x 495mm and 595 x 595mm. The square to swirl diffuser only comes in the 595 x 595mm size. All square electronic models are also available with the in-built occupancy sensor.

595 X 595mm Square to Square diffuser

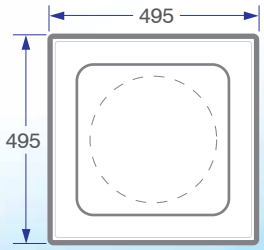
595 X 595mm Square to Round diffuser



Air flow movement from a Rickard electronic ceiling diffuser in a typical office application.

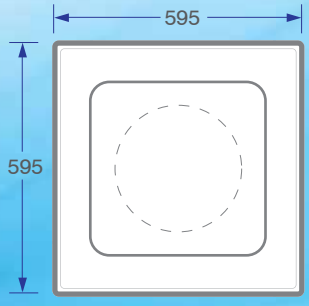
Range dimensions

Square to square style



Neck/Spigot size:

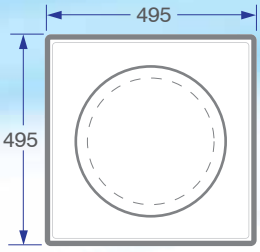
Ø150
Ø200
Ø250
Ø300



Neck/Spigot size:

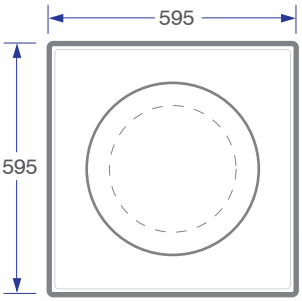
Ø150
Ø200
Ø250
Ø300
Ø350

Square to Round style



Neck/Spigot size:

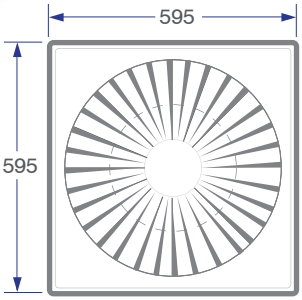
Ø150
Ø200
Ø250
Ø300



Neck/Spigot size:

Ø150
Ø200
Ø250
Ø300
Ø350

Square to Swirl style



Neck/Spigot size:

Ø150
Ø200
Ø250
Ø300

Dimensions in mm

Square to Swirl diffuser

Linear slot electronic VAV ceiling diffusers

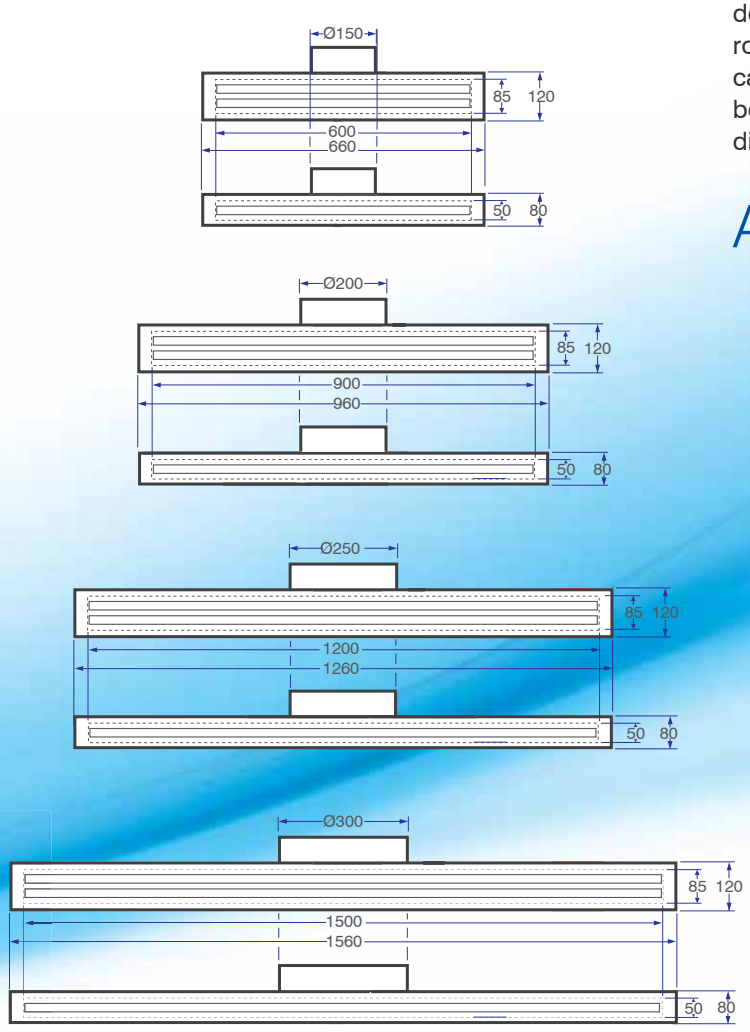
Rickard linear slot diffusers provide an effective means of distributing conditioned air into the perimeter zones of a building where the temperature control requirements are the most demanding. The slim, attractive shape of the diffuser ensures that its subtle design works with most architectural styles. At the same time its superior aerodynamic design ensures that the air distribution creates no drafts, is quiet and highly efficient.

A linear slot electronic VAV ceiling diffuser must be connected to a wall thermostat (temperature sensor) for it to perform as a master diffuser. The diffuser can then operate with one or more slave diffusers, or as a standalone system to provide the required amount of conditioned air to the area. This amount of conditioned air is determined by the temperature in the space and the set point on the wall thermostat.

Air volume control on the linear slot diffuser is achieved with the opening and closing of vanes driven by an electric actuator. This increases or decreases the aperture size which allows more or less air to enter the occupied space. This will effectively maintain a comfortable temperature at discharge volumes from 100% down to approximately 10%.

Range dimensions

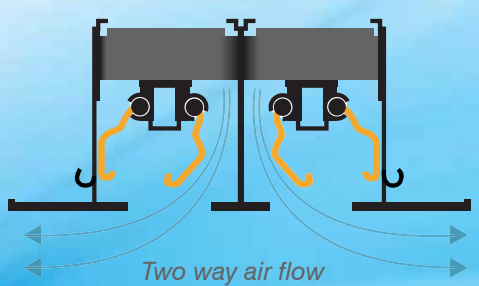
One and two slots styles



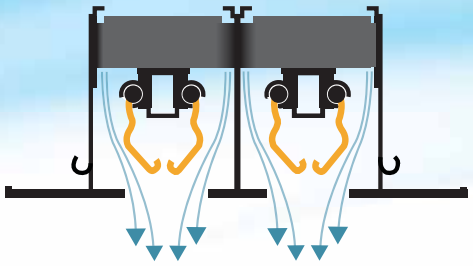
Dimensions in mm

The air flow direction from the diffuser can be changed so it blows in the opposite direction, the same direction, or vertically downward for better room penetration in rooms with high ceilings. These changes can be made easily by the occupant from below the ceiling without affecting the diffuser's performance.

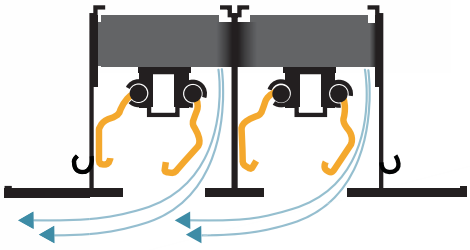
Air flow direction



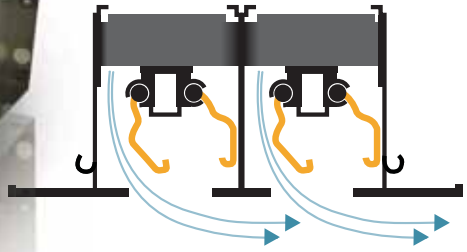
Two way air flow



One way air flow - downward



One way air flow - left



One way air flow - right

Electronic Wall/Bulkhead VAV Diffusers

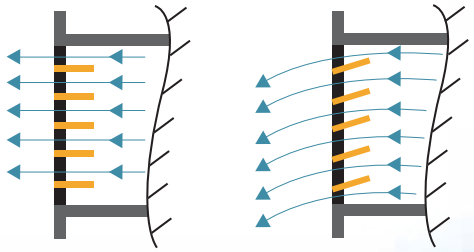
The Rickard electronic wall/bulkhead VAV diffusers are normally used in sidewalls or bulkheads where restricted ceiling voids exist or covered ceilings are not available. They are very effective at distributing air across long offices but, when only a short distance is required, the angle of the double deflection blades within the housing are simply changed to reduce the throw.

A comfortable room temperature is maintained by varying the supply air volume in accordance with demand. This is achieved by opening or closing the diffuser's aperture which is a set of air foil shaped aluminium vanes, driven by a 24V AC electric actuator.

Like the linear slot electronic diffusers, the movement of the vanes is determined by the temperature in the space and the set point on the wall thermostat. Depending on the demands required, these diffusers maintain air volumes ranging from 100% to 10% which effectively mixes the air and maintains a more healthy and productive environment.

The electronic wall/bulkhead diffusers are available in 2 heights, 100mm and 150mm. The 100mm size is available in lengths from 300 to 650mm and the 150mm size comes in lengths from 500 to 700mm.

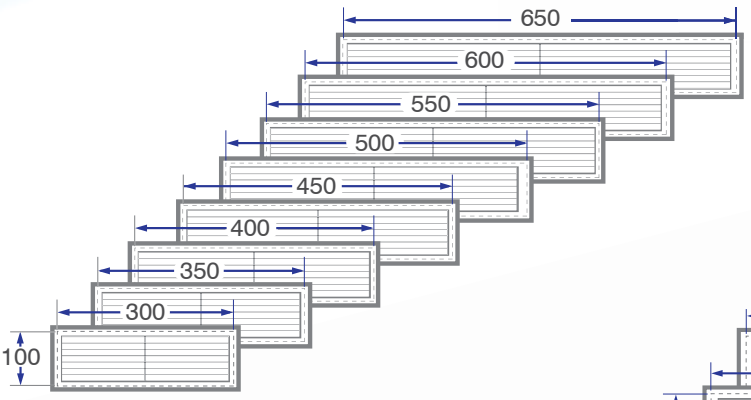
The wall/bulkhead diffuser has no in-built temperature sensor so it must be connected to a wall thermostat for it to be changed to a master diffuser. The diffuser can then operate with one or more slave diffusers or as a standalone system to provide the required amount of conditioned air to the area.



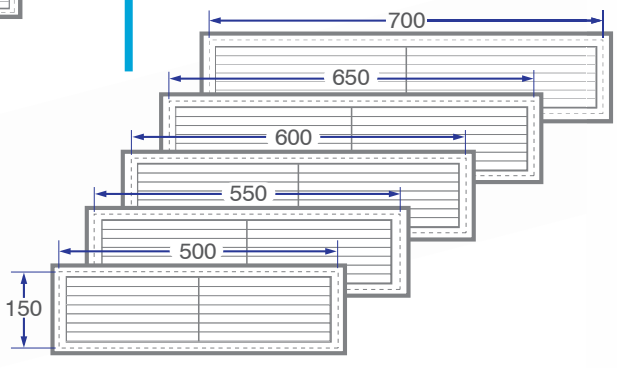
Angle of blades can be changed to reduce the throw.

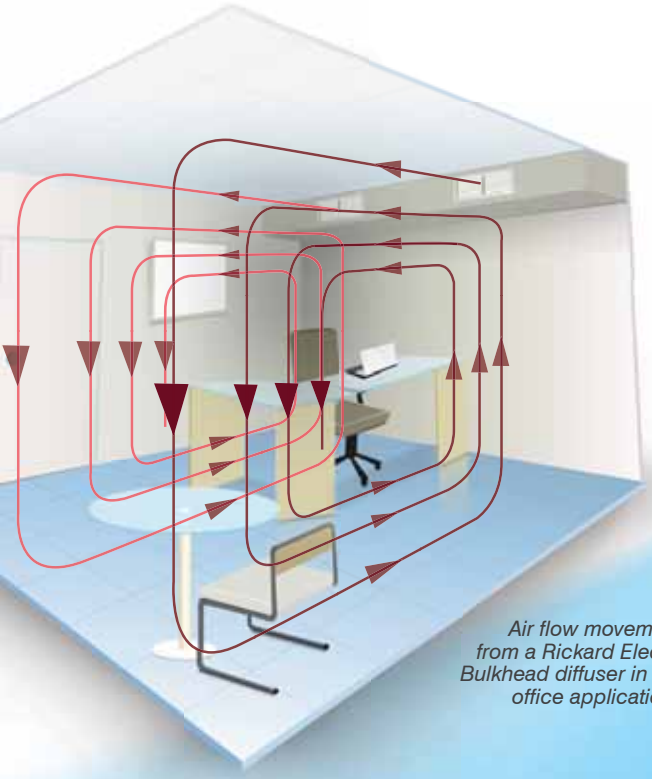
Range dimensions

100mm height



150mm height





Air flow movement from a Rickard Electronic Bulkhead diffuser in a typical office application.

Thermo-Disc VAV ceiling diffusers

The Rickard thermo-disc ceiling diffuser is a mechanically controlled, thermally powered VAV diffuser. It requires no external temperature sensors such as a wall thermostat as each diffuser contains its own in-built temperature sensing and volume control mechanism.
Its overall appearance and construction is very similar to the electronically controlled diffusers, but has the advantage that it requires no external wiring or power supply.

As with the electronic version, air volume control is achieved through the vertical up and down movement of the control disc within the diffuser. In the case of the thermo-disc diffuser, this movement is caused by the expansion and contraction of the diffuser's mechanism at set temperatures.

This increases or decreases the aperture size which allows either more or less conditioned air to enter the space and effectively maintain a constant air movement from 100% down to 25% of maximum air volume.

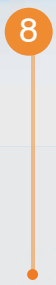
Setting and adjusting the room temperature set point is easily achieved by rotating the adjustment rings; blue ring for cooling and red ring for heating. The rings have calibrated temperature markings from 19°C to 24°C to suit individual occupant choice. To access these rings when installed, occupants simply rotate the diffuser trim-plate counter-clockwise and remove it from the diffuser back pan.

Thermo-disc Diffuser Components

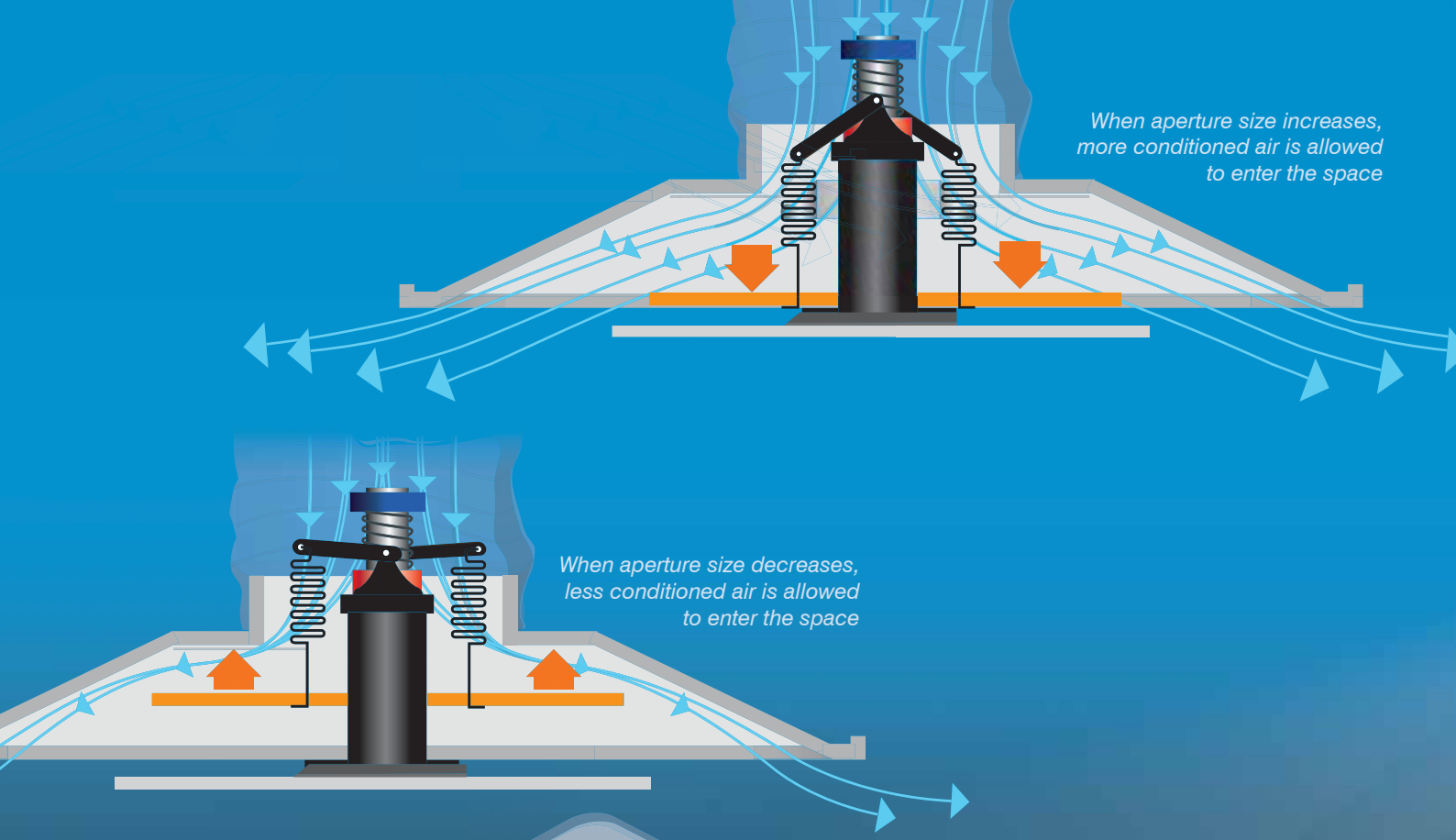
1. Thermal Mechanism
2. Room Temperature Set-point Adjustment Ring (Cooling mode)
3. Induction Tube
4. Room Temperature Set-point Adjustment Ring (Heating mode)
5. Control Disc Minimum Stop Adjustment Ring
6. Control Disc
7. Diffuser Trim-plate
8. Diffuser Backpan

595 X 595mm Square to Square diffuser

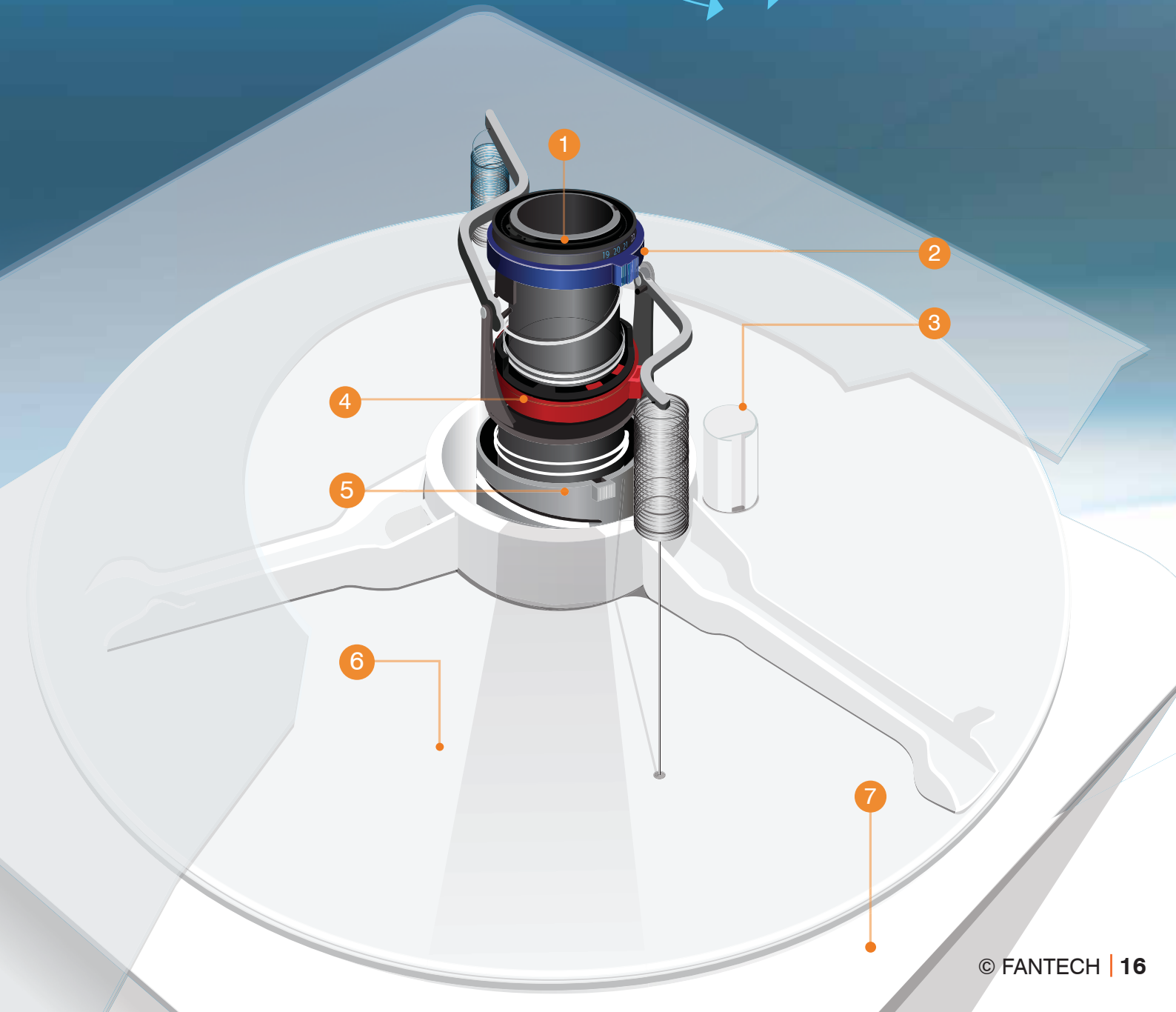
595 X 595mm Square to Round diffuser



Reverse side view of Thermo-disc VAV diffuser


When aperture size increases,
more conditioned air is allowed
to enter the space

When aperture size decreases,
less conditioned air is allowed
to enter the space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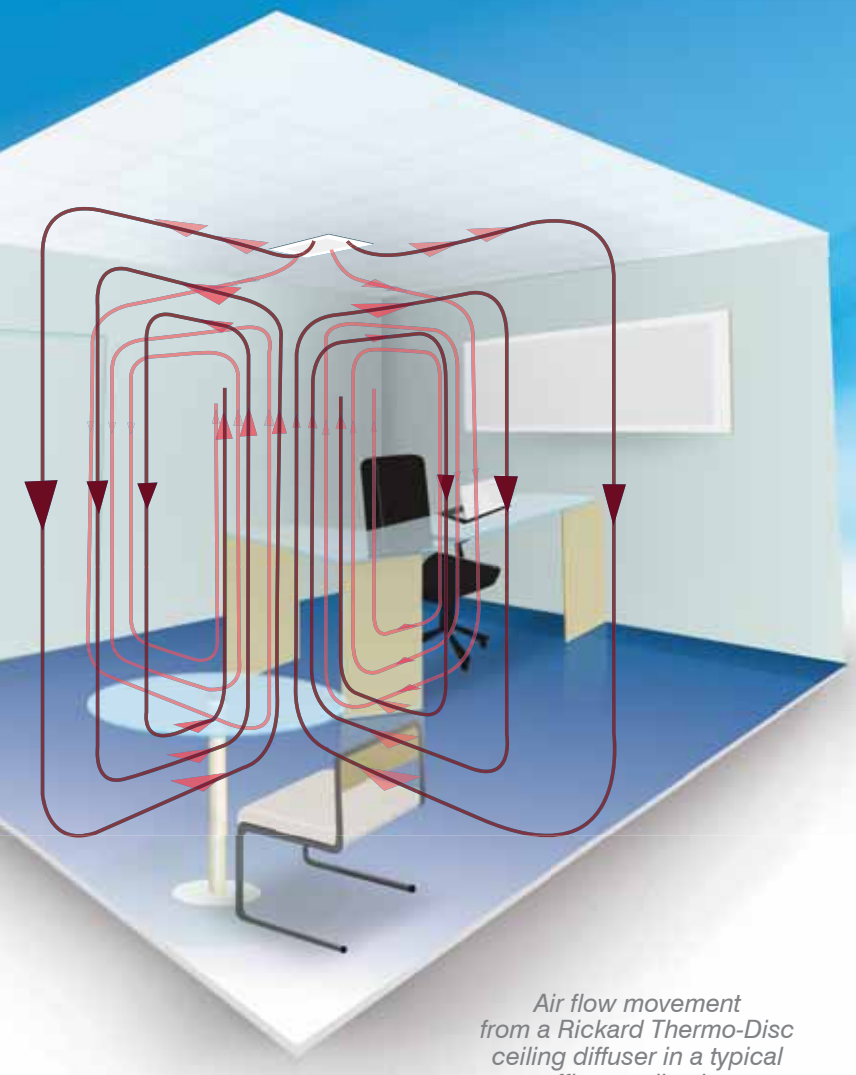
Thermo-Disc VAV ceiling diffusers

The thermo-disc diffuser is lightweight, easy to install and ideal as a retrofit solution. They aim to provide comfort in buildings that are mostly well ventilated, but experience specific areas that are either too hot or too cold and cause a reduction in comfort. This is often a result of internal factors such as computers, photocopiers and a high number of occupants but can also be attributed to a buildings orientation and lack of shading.

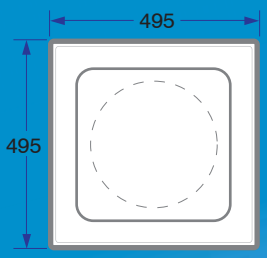
The thermo-disc diffusers are available in two styles; square to square and square to round, and neck sizes ranging from 150 to 300mm. Each neck size is available in finished dimensions of 495 and 595mm square.



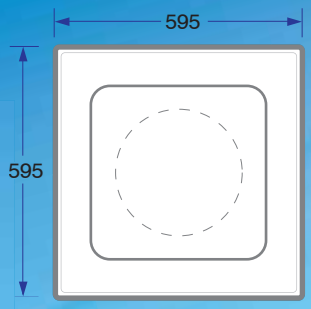
Air flow movement from a Rickard Thermo-Disc ceiling diffuser in a typical office application

Range dimensions

Square to Square style

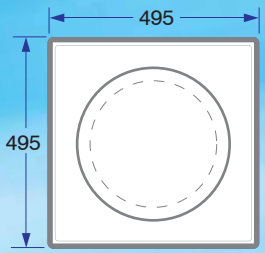


Neck/Spigot size:
Ø150
Ø200
Ø250
Ø300

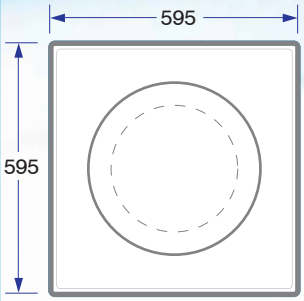


Neck/Spigot size:
Ø150
Ø200
Ø250
Ø300

Square to Round style



Neck/Spigot size:
Ø150
Ø200
Ø250
Ø300



Neck/Spigot size:
Ø150
Ø200
Ø250
Ø300

Dimensions in mm

Diffuser specifications and performance

Electronic Variable Disc Diffuser Range

Square to Square Diffuser

Square to Circle Diffuser

Neck size (mm)	Style	Part Numbers* 495mm x 495mm	Part Numbers* 595mm x 595mm		Neck Total Pressure (Pa) 20	30	40	50	60	70	80	90	100
150	□	VSD1501S495	VSD1501S595	Air flow (L/s)	63	77	88	99	108	117	125	133	140
				Throw (m)	2.0	2.1	2.7	3.0	3.3	3.5	3.7	4.0	4.2
	○	VCD1501S495	VCD1501S595	NC Level (NC)	-	-	-	-	26	28	31	33	35
200	□	VSD2001S495	VSD2001S595	Air flow (L/s)	96	118	137	153	169	184	195	207	218
				Throw (m)	2.0	2.6	3.0	3.2	3.6	3.9	4.2	4.5	4.7
	○	VCD2001S495	VCD2001S595	NC Level (NC)	-	27	28	29	30	33	36	38	40
250	□	VSD2501S495	VSD2501S595	Air flow (L/s)	140	171	198	221	242	261	279	296	313
				Throw (m)	2.4	2.6	3.2	3.5	3.9	4.2	4.5	4.7	5.1
	○	VCD2501S495	VCD2501S595	NC Level (NC)	-	27	29	31	33	36	38	40	42
300	□	VSD3001S495	VSD3001S595	Air flow (L/s)	176	216	250	280	307	332	355	377	398
				Throw (m)	2.5	2.8	3.3	3.7	4.2	4.6	4.8	5.2	5.4
	○	VCD3001S495	VCD3001S595	NC Level (NC)	27	28	30	32	35	37	39	41	43
350	□	Not available	VSD3501S595	Air flow (L/s)	246	301	349	389	426	461	492	523	551
				Throw (m)	2.7	3.2	3.6	4.1	4.5	5.0	5.5	5.7	5.9
	○	Not available	VCD3501S595	NC Level (NC)	27	28	30	32	35	38	40	43	45

Square to Swirl Diffuser

Neck size (mm)	Part Numbers* 595mm x 595mm		Neck Total Pressure (Pa) 30	40	50	60	70
150	VSW1501S595	Air flow (L/s)	68	79	88	96	104
		Throw (m)	1.8	2.1	2.3	2.5	2.7
		NC Level (NC)	26	29	31	33	35
200	VSW2001S595	Air flow (L/s)	112	130	145	159	172
		Throw (m)	2.2	2.5	2.8	3.1	3.3
		NC Level (NC)	28	31	33	35	37
250	VSW2501S595	Air flow (L/s)	159	183	205	225	243
		Throw (m)	2.9	3.3	3.7	4.1	4.4
		NC Level (NC)	29	33	35	37	39
300	VSW3001S595	Air flow (L/s)	194	224	250	274	296
		Throw (m)	2.9	3.3	3.7	4.1	4.4
		NC Level (NC)	30	33	36	38	40

Electronic Variable Linear Diffuser

Neck size (mm)	Width size (mm)	Part Numbers# Single Slot (80mm, high)	Part Numbers# Dual Slot (120mm, high)		Neck Pressure (Pa) 30	40	50	60	70	Neck Pressure (Pa) 30	40	50	60	70	Neck Pressure (Pa) 30	40	50	60	70
150	600	VLN6001/1	VLN6001/2	Air flow (L/s)	41	48	53	59	64	54	62	69	76	82	41	48	53	59	64
				Throw (m)	4.5	4.8	5.1	5.4	5.6	3.2	3.4	3.6	3.8	3.9	6.4	6.9	7.3	7.6	7.9
				NC Level (NC)	30	33	35	37	39	30	33	35	37	39	30	33	35	37	39
200	900	VLN9001/1	VLN9001/2	Air flow (L/s)	71	82	92	99	108	85	98	109	120	129	71	82	92	99	108
				Throw (m)	5.5	5.9	6.3	6.6	6.8	3.9	4.2	4.4	4.6	4.8	7.8	8.4	8.9	9.3	9.7
				NC Level (NC)	32	35	37	39	41	32	35	37	39	41	32	35	37	39	41
250	1200	VLN12001/1	VLN12001/2	Air flow (L/s)	96	111	124	135	146	118	137	153	168	181	96	111	124	135	146
				Throw (m)	6.4	6.9	7.3	7.6	7.9	4.5	4.8	5.1	5.4	5.6	9.0	9.7	10.3	10.7	11.2
				NC Level (NC)	33	36	38	40	42	33	36	38	40	42	33	36	38	40	42
300	1500	VLN15001/1	VLN15001/2	Air flow (L/s)	118	136	151	166	179	155	179	199	218	236	118	136	151	166	179
				Throw (m)	7.1	7.7	8.1	8.5	8.8	5.0	5.4	5.7	6.0	5.2	10	10.8	11.5	12.0	12.5
				NC Level (NC)	34	37	39	41	43	34	37	39	41	43	34	37	39	41	43

Performance data applicable for Dual Slot Linear Diffusers only

Throw data is taken 25mm below the ceiling on a line through the centre of the diffuser with the control disc fully open & an air velocity is at 0.25m/s.

Noise criteria levels apply to a single diffuser mounted in a room having a Sound Absorption of 10dB in octave bands having centre frequencies from 125Hz to 8000Hz (ie. the difference between Sound Pressure Level (dB re: 10^{-6} Pa) and Sound Pressure Level (dB re: 10^{-12} Pa) is equal to 10dB). These levels represent only the noise generated by the diffuser and do not take into account any duct-borne noise.

Diffusers are factory set for a minimum of 30% of the maximum flow levels reflected above. It should be noted that minimum air flow settings are approximate & may require to be reset on site to compensate for actual site system pressures.

Electronic Variable Bulkhead Diffuser

Width size (mm)	Part Numbers# (100mm, high)		Standard Electric Duct Static Pressure (Pa)			
			20	30	40	50
300	WBD3001/100	Air flow (L/s)	58	75	90	95
		Throw (m)	5.2	6.4	7.2	8.3
		NC Level (NC)	28	32	36	38
350	WBD3501/100	Air flow (L/s)	80	102	113	122
		Throw (m)	7.2	8.2	9.5	10.1
		NC Level (NC)	29	33	37	39
400	WBD4001/100	Air flow (L/s)	100	130	149	155
		Throw (m)	7.8	8.6	10.4	10.7
		NC Level (NC)	29	33	36	38
450	WBD4501/100	Air flow (L/s)	105	140	153	160
		Throw (m)	7.0	8.4	9.1	10.7
		NC Level (NC)	29	33	37	39
500	WBD5001/100	Air flow (L/s)	110	144	162	170
		Throw (m)	8.4	9.4	10.0	11.4
		NC Level (NC)	29	34	37	39
550	WBD5501/100	Air flow (L/s)	120	156	185	200
		Throw (m)	8.2	9.5	10.6	11.7
		NC Level (NC)	30	34	38	40
600	WBD6001/100	Air flow (L/s)	135	178	205	216
		Throw (m)	8.6	9.9	11.4	12.6
		NC Level (NC)	30	34	38	40
650	WBD6501/100	Air flow (L/s)	160	215	252	275
		Throw (m)	8.8	10.3	11.7	13.0
		NC Level (NC)	30	33	38	41

Width size (mm)	Part Numbers# (150mm, high)		Standard Electric Duct Static Pressure (Pa)			
			20	30	40	50
500	WBD5001/150	Air flow (L/s)	165	219	258	292
		Throw (m)	8.7	10.0	11.4	12.8
		NC Level (NC)	30	35	39	41
550	WBD5501/150	Air flow (L/s)	190	250	288	302
		Throw (m)	8.8	10.5	11.2	12.8
		NC Level (NC)	30	34	38	41
600	WBD6001/150	Air flow (L/s)	215	285	330	350
		Throw (m)	9.2	11.6	13.1	15.9
		NC Level (NC)	31	35	38	41
650	WBD6501/150	Air flow (L/s)	230	300	350	370
		Throw (m)	9.4	10.3	13.0	15.0
		NC Level (NC)	32	35	39	42
700	WBD7001/150	Air flow (L/s)	267	329	378	410
		Throw (m)	9.7	11.0	14.0	15.0
		NC Level (NC)	32	35	39	42

Electronic Control Range

Part Numbers	Description
RICK-OBCKIT	On-Board Controller
RICK-WSKIT	No occupancy sensor
RICK-OCWSKIT	With occupancy sensor
RICK-MLMPS	Power supply unit
RICK-CU-USB	USB connection module

Master Communication Module	
Part Numbers	**Description**
RICK-CU-RICK	Base model
RICK-CU-BNIP	BacNet/ IP BMS Interface
RICK-CU-BNTP	BacNet ms/ tp BMS Interface
RICK-CU-LW	LonWorks BMS Interface

Control Cables	
Part Numbers	**Description**
RICK-CA-SLA6	6M Slave Cable
RICK-CA-SLA8	8M Slave Cable
RICK-JOIN	Slave Cable Joiner
RICK-CA-CU20	PSU to MCU Comms Cable 20m Long
RICK-CA-CU40	PSU to MCU Comms Cable 40m Long
RICK-CA-CU80	PSU to MCU Comms Cable 80m Long
RICK-INSULATION	Diffuser Tile Insulation

Relief Ring	
Part Numbers	**Neck size**
RELIEF200	200mm
RELIEF250	250mm
RELIEF300	300mm
RELIEF350	350mm

Thermal Variable Disc Diffuser Range

Square to Square Diffuser

Square to Round Diffuser

Neck size (mm)	Style	Part Numbers			Neck Total Pressure (Pa)								
		495mm x 495mm	595mm x 595mm		20	30	40	50	60	70	80	90	100
150	□	VSD1504S495	VSD1504S595	Air flow (L/s)	63	77	88	99	108	117	125	133	140
	○	VCD1504S495	VCD1504S595	Throw (m)	2.0	2.1	2.7	3.0	3.3	3.5	3.7	4.0	4.2
				NC Level (NC)	-	-	-	-	26	28	31	33	35
200	□	VSD2004S495	VSD2004S595	Air flow (L/s)	96	118	137	153	169	184	195	207	218
	○	VCD2004S495	VCD2004S595	Throw (m)	2.0	2.6	3.0	3.2	3.6	3.9	4.2	4.5	4.7
				NC Level (NC)	-	27	28	29	30	33	36	38	40
250	□	VSD2504S495	VSD2504S595	Air flow (L/s)	140	171	198	221	242	261	279	296	313
	○	VCD2504S495	VCD2504S595	Throw (m)	2.4	2.6	3.2	3.5	3.9	4.2	4.5	4.7	5.1
				NC Level (NC)	-	27	29	31	33	36	38	40	42
300	□	VSD3004S495	VSD3004S595	Air flow (L/s)	176	216	250	280	307	332	355	377	398
	○	VCD3004S495	VCD3004S595	Throw (m)	2.5	2.8	3.3	3.7	4.2	4.6	4.8	5.2	5.4
				NC Level (NC)	27	28	30	32	35	37	39	41	43

* Add OC to part number to order diffusers with Occupancy Sensor
* Add AS to part number to order diffusers with Air Flow Sensor
* Add OCAS to part number to order diffusers with Occupancy and Air Flow Sensors
\# Add AS to part number to order diffusers with Air Flow Sensor

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