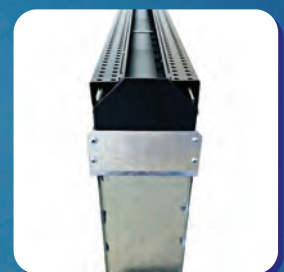
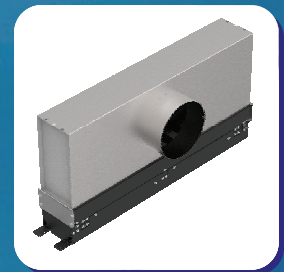
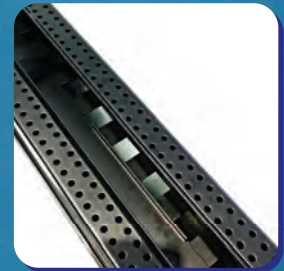


VARIABLE VOLUME LINEAR BAR CEILING DIFFUSERS

VLB 1

- ✿ INTEGRATES WITH MLM & THE BMS
- ✿ JOIN END TO END
- ✿ HORIZONTAL/VERTICAL FLOW PATTERN
- ✿ HEATING AND COOLING
- ✿ TERMINAL REHEAT AVAILABLE
- ✿ CONTROL THE PERIMETER EFFECTIVELY
- ✿ EXCELLENT THROW & FLOW
- ✿ ATTRACTIVE LINEAR LENGTHS



FEATURES

When a buildings thermal efficiency is paramount, the ideal solution to limit thermal losses or gains through its exterior is required. The Rickard Variable Volume Linear Bar Diffuser (VLB) is an ideal solution to control a buildings internal perimeter zone or be an aesthetically attractive alternative to plate diffusers in internal zones. A VLB's flow pattern can be adjusted to create a vertical curtain of conditioned air to act as a barrier to external thermal loads or a horizontal flow pattern that creates good mixing without drafts.

Rickard VLB linear bars are designed to be joined end-to-end to create uninterrupted lengths of attractive linear bar.



PERFORMANCE

Rickard VAV Diffusers control Room Temperature by adjusting the volume of air at the diffuser outlet. By changing the diffusers exit geometry, Coanda, Air Velocity and Throw is maintained at minimum and maximum volume. This technology prevents cold air from dumping at minimum, ensures excellent ventilation, air mixing, Air Change Effectiveness (ACE) and therefore thermal comfort (ADPI). Rickard VAV diffusers reduce pressure loss in the system due to their aerodynamic design and the absence of restrictions in the duct work.

OPERATION

Room temperature is intelligently controlled by varying the supply air volume in accordance with demand.

Used in conjunction with our MLM controls, maximum and minimum supply air volumes may be adjusted to suit the particular design conditions.

A further useful feature of the RICKARD VLB is the ease with which the direction of airflow may be adjusted.

ENERGY SAVINGS

Green Building Benefits. Receive Management, Indoor Environmental Quality and Energy Efficiency Credits by using Rickard VAV Diffusers.

Rickard MLM controls use energy efficiently. Rickard MLM Diffusers use 2.4 VA (24VDC 100mA) only when the motor is running. MLM24 Power Supply Units use 40VA (220VAC 2A) or (115VAC 35A) max and can supply up to 15 diffusers. MLM Master Communications Units (MCU2) use 10VA (24VAC 4A) max and can connect to 60 diffusers.

CONTROLS

Master/Slave changes are achieved by installing a wall thermostat that is activated using Rickard's Free Software. Electronically adjustable maximum and minimum damper limits allow designed airflow volumes to be achieved. Global manual commands (all diffusers can be driven open) reduce commissioning costs. Cost effective standalone, LonWorks and BACnet BMS integration.

INSTALLATION SAVINGS

A perforated plate running next to the diffuser nozzle makes it easy to plaster the ceiling up to the nozzle edge.

Optional Jubilee Clamp saves time and material when attaching the flex.

CAPITAL & OPERATING COST

Low diffuser height can reduce a buildings overall cost by reducing the height of the ceiling void.

MAINTENANCE

Diffuser life cycle testing gives peace of mind far beyond our two year warranty period (Electronic diffuser range). Life cycle testing is based on 3000 operating hours and 4000 control cycles per year and is the equivalent of 30 years of service.

The VLB diffusers active section and plenum is constructed from corrosion resistant mill galvanized sheet steel and the diffuser bars are coated black with epoxy powder coating.

No regular maintenance is required.

AESTHETICS

Rickard VLB's are designed to be joined end-to-end to create uninterrupted lengths of attractive linear bar. The Linear Bar Nozzle is finished in a high quality black epoxy powder coated finish. The Perforated ceiling plate running next to the nozzle makes it easy for the plaster to bond to the diffuser and the nozzle acts as straight edge to ensure a high quality finish.

SAFETY

Working plastic components are moulded in glass reinforced Makrolon - Makrolon is flame retardant and chlorine and bromine free when burnt. The Rickard Electronic actuators are moulded in Makrolon and are UL Certified.

WARRANTY

Rickard offers a 2 year manufacturer's warranty on its Electronic VAV diffusers. Please see Terms and Conditions for a full description of our warranty.



APPLICATION

VAV COOLING AND HEATING

VAV COOLING AND HEATING WITH TERMINAL REHEAT

STAND ALONE OR BMS CONTROLS

REMOTE SETPOINT

When a buildings thermal efficiency is paramount, the ideal solution to limit thermal losses or gains through its exterior is required. The Rickard Variable Volume Linear Bar Diffuser (VLB) is an ideal solution to control a buildings internal perimeter zone or be an aesthetically attractive alternative to plate diffusers in internal zones. RICKARD Variable Volume Linear Bar Diffusers (VLB) are intended to heat or cool zones where load fluctuations vary. The Variable Volume Linear Bar Diffusers (VLB), as its name implies, automatically regulates the air volume entering the conditioned space and in turn controls the temperature.

The Rickard MLM controller automatically changes it's control direction as supply temperatures switch from heating to cooling and vice versa. Please note that a changeover sensor should be fitted for this function to work.

Top-up heaters are available if required. This is achieved by fitting a Rickard Neck Heater and Triac.

A VLB's flow pattern can be adjusted to create a vertical curtain of conditioned air to act as a barrier to external thermal loads or a horizontal flow pattern that creates good mixing without drafts.

Rickard VLB linear bars are designed to be joined end-to-end to create uninterrupted lengths of attractive linear bar.

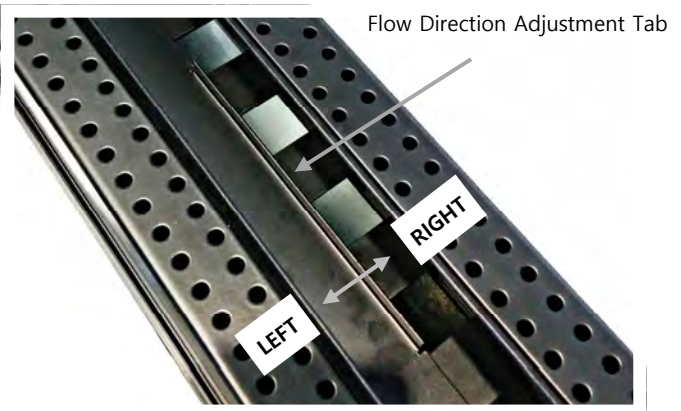
NOTE: No onboard sensing is available: A remote wall thermostat is required in zones where top-up heating is fitted.

OPERATION

FLOW DIRECTION ADJUSTMENT

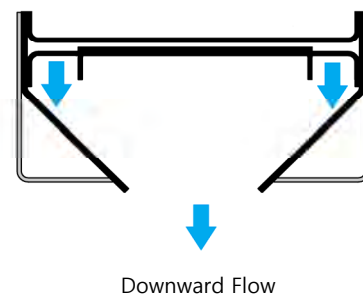
A useful feature of the RICKARD VLB is the ease with which the direction of airflow may be adjusted. Although airflow direction is not normally changed once the system is operational, it does simplify the ordering procedure. The choice of one-way (vertical) or two-way (horizontal blow) is easily implemented on site by simply shifting the flow directional plate left or right.

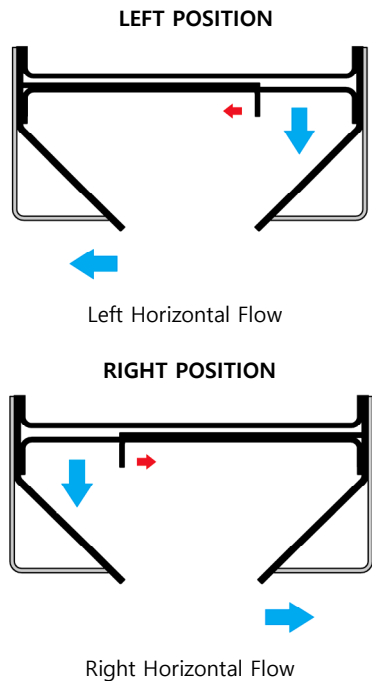
Air is generally directed vertically downwards for better room penetration, especially when the VLB is in the heating mode.



FLOW DIRECTION ADJUSTMENT	FLOW DIRECTION
Centre	Vertically Downwards
Left	Left Horizontal
Right	Right Horizontal

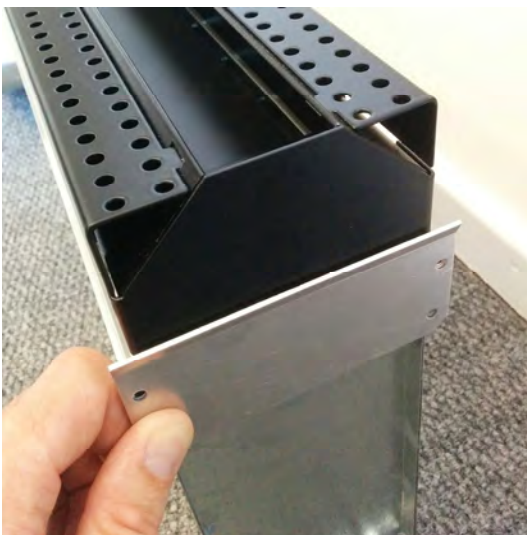
CENTRE POSITION





JOINING END-TO-END

Remove both end plates from the ends you wish to join and connect using the alignment tabs fitted.



SELECTION

The first consideration when designing a system is to calculate the required supply air volume and temperature to satisfy room conditions at maximum heat loads. It is recommended that ducting is sized using static regain design principles. Supply air velocities in branch ducts should be between 3.5 and 7.5m/s (650 and 1500ft/min).

THROW

This is the distance from the centre of the diffuser to the point at which the supply air velocity has reduced to 0.25m/s (50ft/min) when measured 25mm (1 inch) below the ceiling. Coning occurs when two airstreams travelling in opposite directions meet and result in a downward moving cone of air (applies to horizontal flow). A similar effect is experienced should a diffuser be positioned at a distance from the wall that is less than its throw. The air will strike the wall and flow in a downward direction such that the point at which the air reaches a velocity of 0.25m/s (50ft/min), the sum of the horizontal and vertical travel of the air is equal to the diffuser throw.

NOISE LEVEL REQUIREMENTS

PLEASE CONTACT RICKARD FOR NOISE DATA.

DUCT STATIC PRESSURE

Diffuser performance has been established using diffuser neck TOTAL pressure, although that which is normally known or measured is duct STATIC pressure. What happens between the duct and the diffuser depends on the length and type of flexible duct being used. For simplicity, it can be assumed that the duct STATIC pressure is approximately equal to the diffuser neck total pressure. This is a valid assumption for systems where flexible duct lengths are not excessive and can be explained briefly as follows:

The static pressure loss due to friction in the flexible duct ($\pm 10\text{Pa}$ or 0.04ins Wg) would normally be about the same as the velocity pressure in the neck of the diffuser and since total pressure is the sum of static and velocity pressure. Although the tables reflect diffuser performance for neck total pressures ranging from 30-70Pa (0.12-0.28ins Wg), caution should be exercised when selecting diffuser outside the 30-50Pa (0.12-0.20ins Wg). At lower pressures air movement and induction may be insufficient and at higher pressures draughts and excessive noise may result. Best results are obtained when diffusers are selected at pressures of 30-40Pa (0.12-0.16ins Wg).

MOUNTING METHODS

TYPES

LENGTH	NECK SIZE
600mm	150mm
900mm	200mm
1200mm	250mm
1500mm	300mm

NECK SIZES & TRACK LENGTHS

LINEAR BAR TYPES

VLB Linear Bar Diffusers are only available with a single linear nozzle.

VLB's are designed to fit Plastered Ceilings (Surface Mount) only.

VLB's controls are mounted to the outside of the plenum on a removable access panel that gives access to the motor.

Rickard VLB Diffuser tracks are designed to be joined end-to-end to create uninterrupted lengths of attractive linear bar. The linear bar nozzles are finished in a high quality matt black epoxy powder coating as standard.

OPTIONS

HEATING OPTION

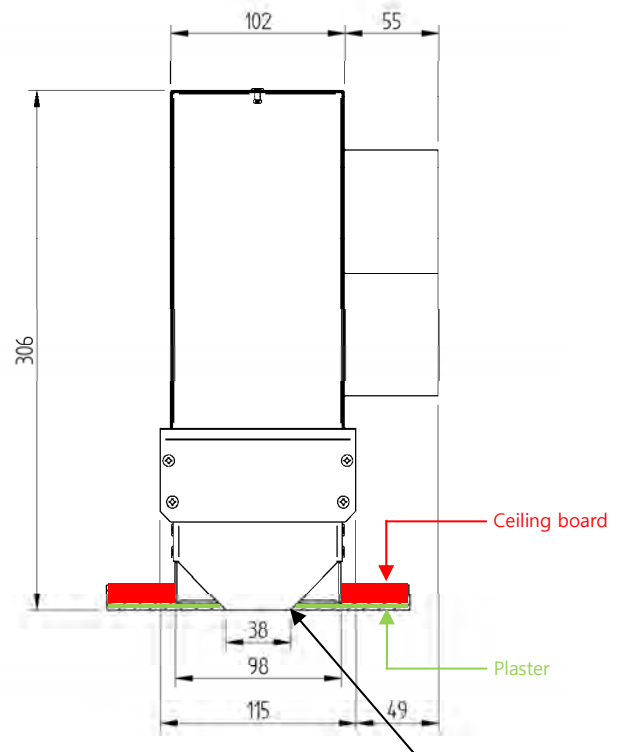
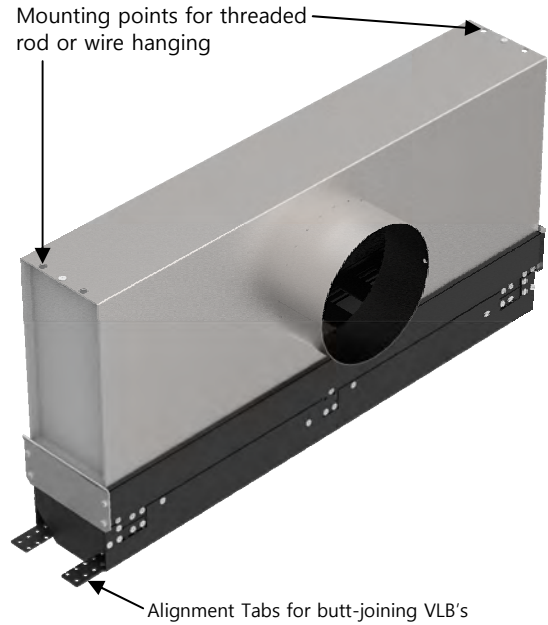
VLB's are also available with built in heaters. Please see the Electric Heating Section for more Information on this option.

SENSING OPTIONS

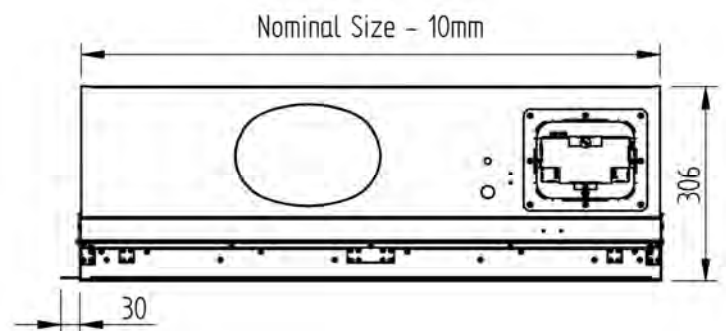
VLB's need to be connected to a Master Diffuser or a remote thermostat. Onboard Sensing is not available.

Sensing options available:

- Wired Wall Thermostat
- Wired Wall Thermostat with Occupancy Sensing
- Wired Wall CO2 Thermostat
- Wireless RF Wall Thermostat
- Wireless RF Pod Sensor



Plaster to edge of Nozzle



PERFORMANCE DATA

VLB 600 - FULLY OPEN - HORIZONTAL & VERTICAL FLOW						
NECK TOTAL PRESSURE (Pa)	10	20	30	40	50	60
FLOW (l/s)	27	39	49	58	65	71
THROW (m)	5,1	7,5	8,3	9,1	9,3	10,2

VLB 900 - FULLY OPEN - HORIZONTAL & VERTICAL FLOW						
NECK TOTAL PRESSURE (Pa)	10	20	30	40	50	60
FLOW (l/s)	43	62	78	90	100	110
THROW (m)	3,2	5,4	6,9	7,9	8,1	9,2

VLB 1200 - FULLY OPEN - HORIZONTAL & VERTICAL FLOW						
NECK TOTAL PRESSURE (Pa)	10	20	30	40	50	60
FLOW (l/s)	54	80	99	115	129	140
THROW (m)	3,0	3,9	4,5	4,9	5,2	5,3

VLB 1500 - FULLY OPEN - HORIZONTAL & VERTICAL FLOW						
NECK TOTAL PRESSURE (Pa)	10	20	30	40	50	60
FLOW (l/s)	69	100	124	143	161	176
THROW (m)	3,0	3,8	4,1	4,5	4,9	5,3

Throw is measured 25mm below the ceiling following a line through the centre of the diffuser at the point at which the air velocity reaches 0.25m/s.

Performance Data applies to Standard Air having a density of 1.2 kg/m³.



H&M STORE (V&A Waterfront), CAPE TOWN