

PRODUCT BROCHURE

**SMARTEMP**<sup>®</sup>  
IN COMFORT



Rectangular Displacement Diffuser

**RDW-FD**

## DESCRIPTION

The SMARTEMP® Rectangular Displacement Diffuser, type RDW-FD (figure 1), produces a low velocity horizontal airflow pattern from a perforated rectangular discharge face made of powder coated galvanised steel. Air oozes out of the perforated face with minimal mixing, to produce a low velocity, low level lake of high quality supply air that floods the floor with displacement airflow (figure 2).

A low level occupancy microclimate of enhanced indoor air quality is created, in which convective currents from heat sources in the occupancy zone, such as occupants, equipment and lights, rise upwards, drawing in high quality replenishment air from the occupancy microclimate, to envelope the heat sources in cooler, high quality air. Heat and contaminants stratify at a high level in concentrated form, where they are removed from the space.

Due to stratification of heat, relatively large supply-to-return temperature differentials are achievable – dependent on ceiling height – despite the relatively high supply air temperature (typically 20°C), thereby minimising fan energy. Energy savings also accrue from the extended free cooling range typically achieved by the elevated supply air temperature, as well as from the potential to reduce outdoor airflow rates due to the improved ventilation effectiveness of the low level displacement supply.

This system is suitable for cooling only.



Figure 1

Figure 3: Displacement cassette installed in wall plenum



Figure 2

The RDW-FD is made of galvanised steel, powder coated.

The unit has a robust, maintenance-free, non-clogging design and is available with a circular or rectangular duct connection on the top, on the side or at the bottom. The perforated front is removable to access the air distribution mat and flow equalisation baffle.

### Three versions are available:

**Version 1:** With powder coated plenum, for fully exposed applications.

**Version 2:** With galvanised sheet-metal plenum, for installation in a wall.

**Version 3:** Without plenum, for installation into a builder's plenum integrated into a wall, counter or joinery.

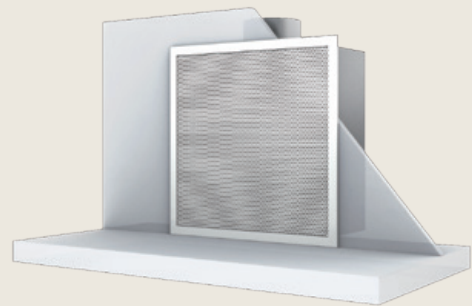
### OPTION

The front panel of the unit is optionally available in 1.5 mm thick galvanised steel for demanding spaces like sport centres or schools.



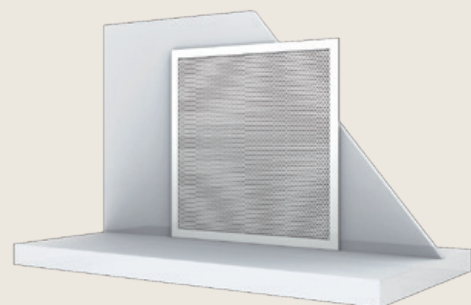
Version 1

**Displacement outlet for exposed installation with powder coated plenum**



Version 2

**Displacement outlet for in-wall installation including plenum in galvanised sheetmetal**



Version 3

**Displacement cassette for installation in a builder's plenum**

Figure 3



# INSTALLATION EXAMPLES

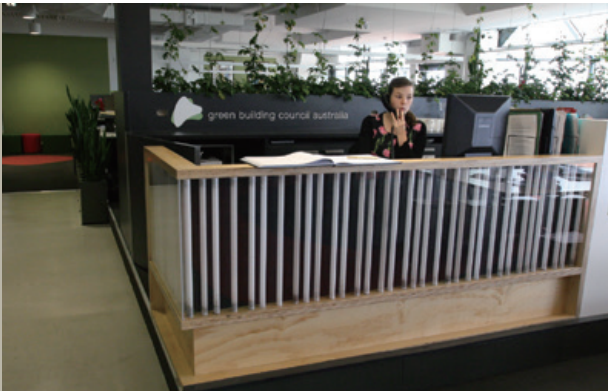


Figure 4  
Displacement cassette installed reception desk

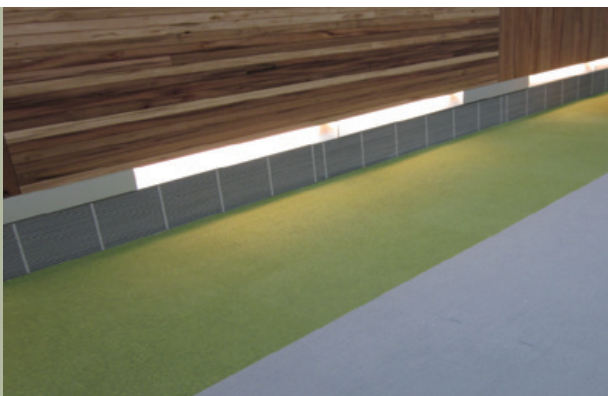


Figure 5  
Displacement cassette combined with linear bar grille



Figure 6  
Displacement cassette with vandal proof face

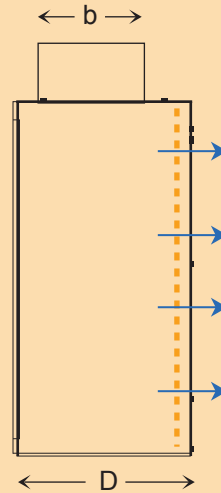
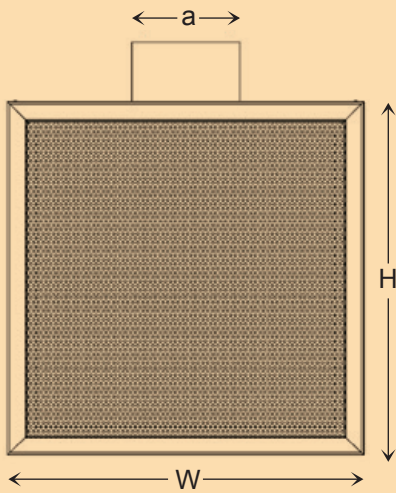


Figure 7  
Full-height displacement outlet integrated in column

# TECHNICAL DATA

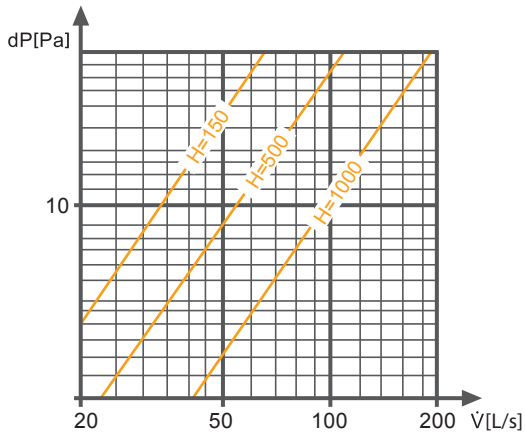
## DIMENSIONS

W Width [mm]	H Height [mm]	D Depth [mm]	a Spigot Width [mm]	b Spigot Depth [mm]	V <sub>min</sub> [l/s]	V <sub>max</sub> [l/s]	V <sub>nom</sub> [l/s]	L <sub>WA</sub> [dB(A)] @V <sub>nom</sub>	dP [Pa] @V <sub>nom</sub>
500	150	200	150	100	11.25	22.5	18.75	<20	14
500	500	200	300	100	37.5	75	62.5	<20	16
500	1000	300	300	200	75	150	125	<20	23
1000	150	200	300	100	22.5	45	37.5	<20	15
1000	500	200	500	100	75	150	125	<20	16
1000	1000	300	500	200	150	300	250	27	16



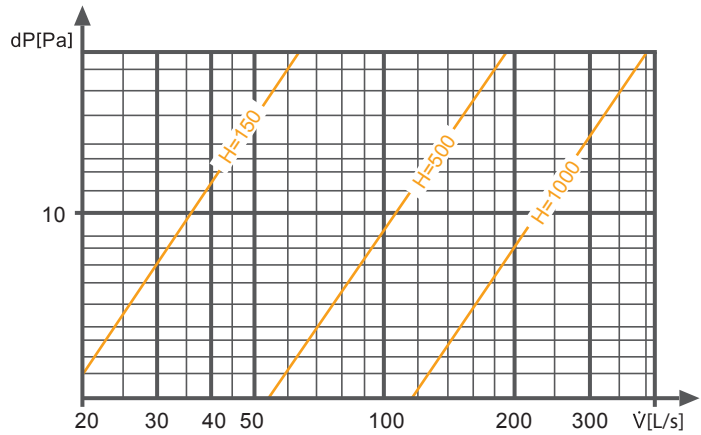
### TOTAL PRESSURE LOSS

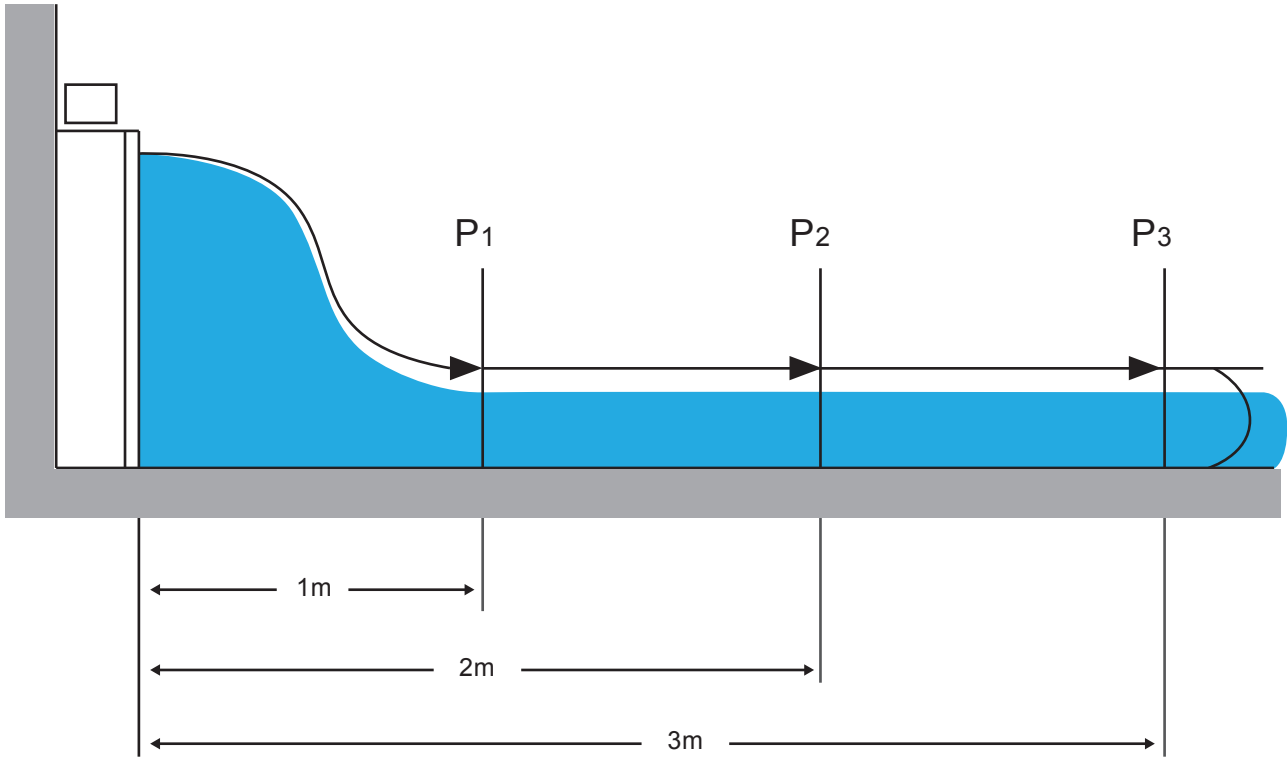
DIFFUSER WIDTH 500 mm



### TOTAL PRESSURE LOSS

DIFFUSER WIDTH 1000 mm

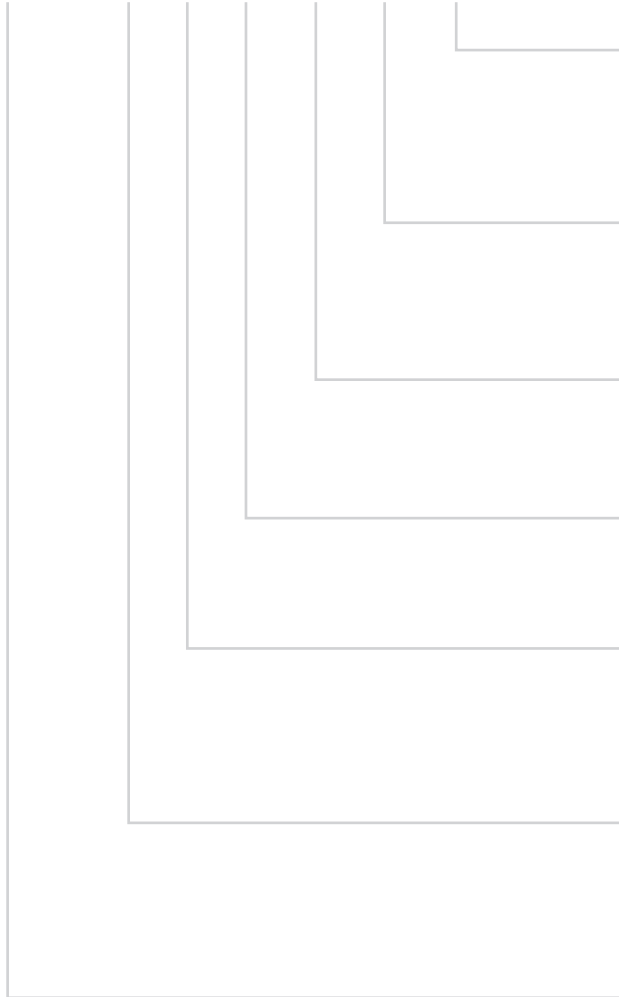




Room Air Velocities @ $dT = -3K$	Width [mm]							
	500				1000			
	Height [mm]	$\dot{V}$ [L/s]	$v @ P_1$ [m/s]	$v @ P_2$ [m/s]	$v @ P_3$ [m/s]	$\dot{V}$ [L/s]	$v @ P_1$ [m/s]	$v @ P_2$ [m/s]
150	19	0.262	0.189	0.152	37.5	0.276	0.207	0.180
	23	0.349	0.257	0.194	45	0.335	0.247	0.210
500	62.5	0.312	0.261	0.188	125	0.333	0.284	0.254
	75	0.363	0.313	0.230	150	0.374	0.345	0.295
1000	125	0.355	0.323	0.260	250	0.370	0.338	0.245
	150	0.380	0.335	0.291	300	0.390	0.339	0.274

# ORDER DETAILS

RDW-FD-\_\_\_\_-\_\_\_\_-\_\_\_\_-\_\_\_\_-\_\_\_\_-\_\_\_\_



**FACE THICKNESS:**

- 1 mm\*
- 1.5 mm

**COLOUR:**

- RAL 9003 (Signal White)\*
- RAL \_\_\_\_\_

**SPIGOT:**

- Ø or a x b

**HEIGHT:**

- 150/500/1000

**WIDTH:**

- 500/1000/1500

**VERSION:**

- 1: with exposed/powdercoated plenum
- 2: with concealed plenum
- 3: Cassette type without plenum

**MODEL:**

- Rectangular Displacement Wall - Fixed Direction

**Notes:**

\* Standard, if no type code entered

## TENDER TEXT

Furnish and install SMARTEMP Rectangular Displacement Diffusers, type RDW-FD, constructed with an air baffle plate and an distribution mat behind the operative diffuser face that creates a uniform, low velocity distribution of supply air across the entire face of the diffuser. The diffuser face shall be removable for cleaning. The diffuser frame shall be constructed of aluminium extruded profiles with mitred corners. The perforated baffle shall be constructed of 1 mm thick sheet-metal. The optional plenum shall be optionally powder coated to the colour specified. The perforated discharge face shall be constructed of 1 mm thick – or of 1.5 mm thick if specified – sheet-metal, powder coated to the colour specified.

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