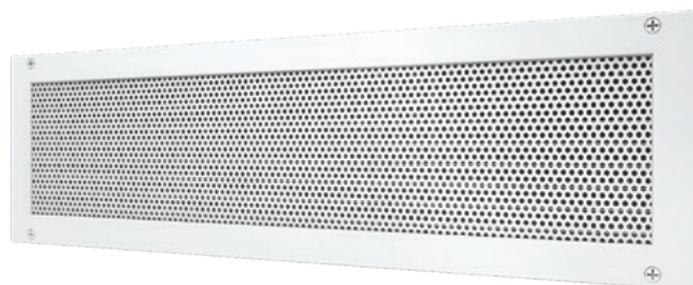


PRODUCT BROCHURE

SMARTEMP[®]
IN COMFORT



Auditorium Displacement Diffuser

ADS-FD

DESCRIPTION

The SMARTEMP® Auditorium Displacement Diffuser, type ADS-FD, mounted in the vertical face of auditorium steps, produces a low velocity displacement airflow pattern from a perforated discharge face made of powder coated galvanised steel. Air oozes out of the perforated face with minimal mixing producing a low velocity, low level lake of high quality supply air of enhanced ventilation effectiveness that floods the floor beneath the auditorium seats.

Velocities in the ankle regions of occupants are low, to prevent draughts. A low level occupancy microclimate of enhanced indoor air quality is created, in which convective currents from occupants rise upwards, drawing in the displacement airflow, enveloping the occupants in cooler, high quality air. Heat and contaminants stratify at a high level in concentrated form, where they are removed from the space (figure 1).

Due to stratification of heat, large supply-to-return temperature differentials are achievable – dependent on ceiling height – despite the relatively high supply air temperature (typically 19-20°C), thereby minimising fan energy requirements. Energy savings also accrue from the extended free cooling potential of the elevated supply air temperature, as well as from the reduced outdoor airflow rate requirements achieved by the improved ventilation effectiveness of the low level displacement supply.

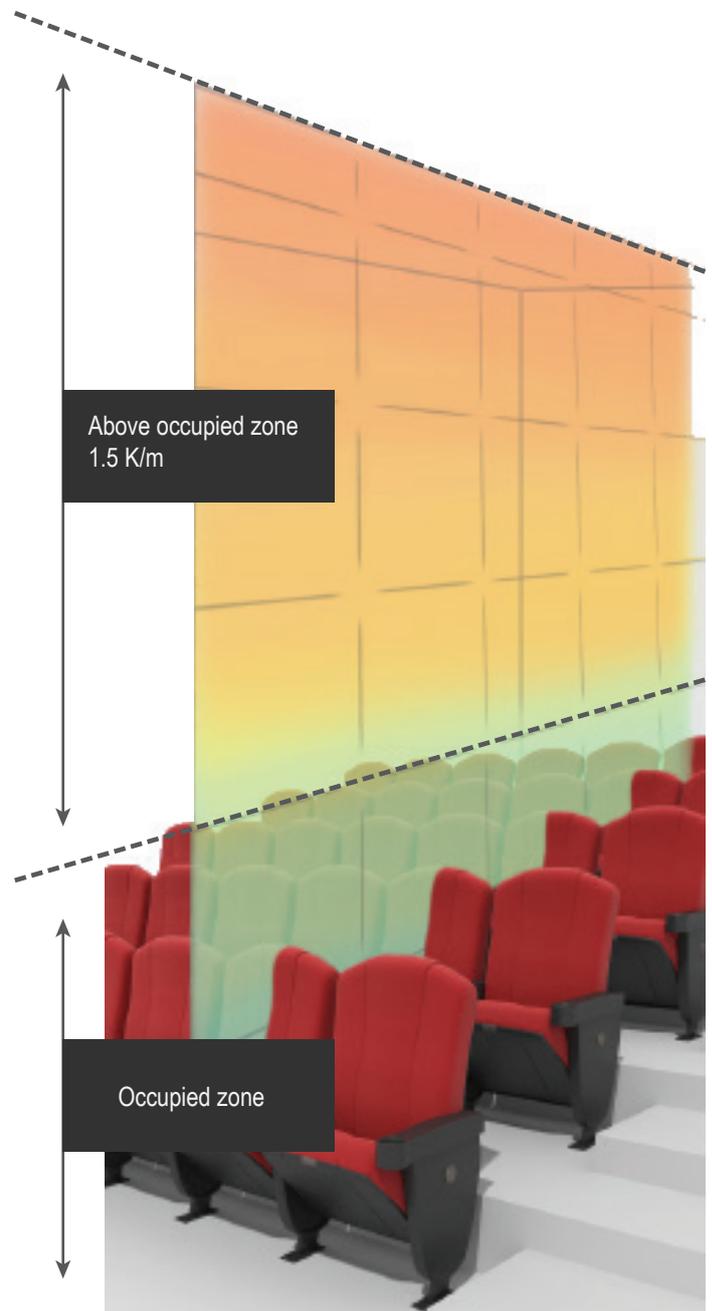


Figure 1

Displacement outlets guide supply air at 19 to 20°C to ooze (figure 2), with minimal turbulence, out of large perforated surfaces. Consequently, draught sensation is avoided by creating a non-turbulent, low velocity, ankle-high “lake” of dense air of about 21°C that spreads, flooding the floor.

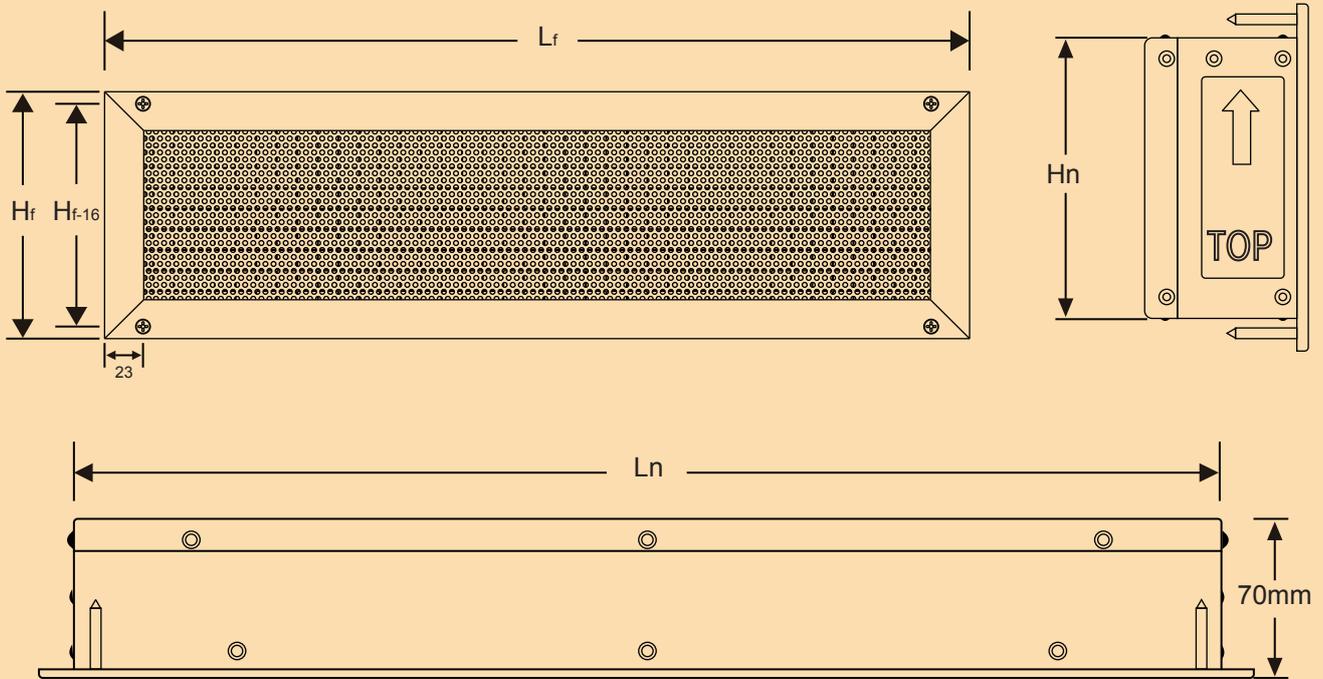
Fresh air from this “lake” is drawn up naturally by thermals rising from people, who are thus enveloped in the cool freshness that replenishes the warm, polluted plumes of convection rising above their heads. The ankle-to-facial vertical temperature gradient is about 2 K, producing approximately 23°C facial air temperature, which is ideal for sedentary comfort. The high exhaust temperature of up to 35°C provides heat recovery potential in winter.



Figure 2

TECHNICAL DATA

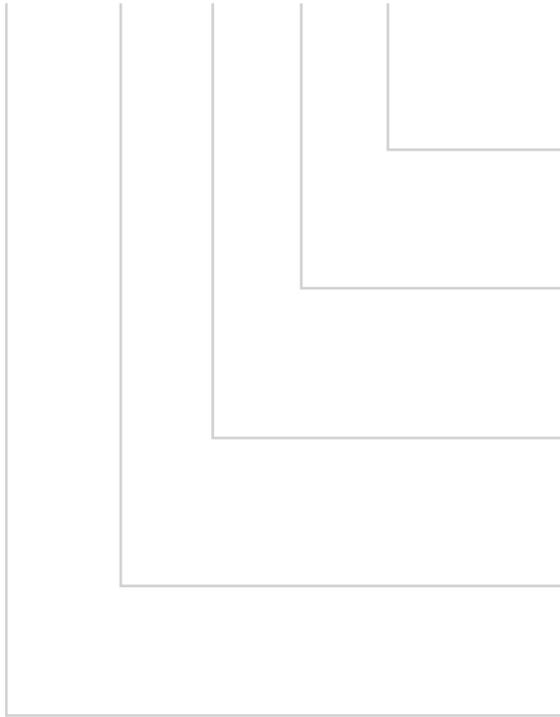
Hn Neck Height [mm]	Nominal Airflow per metre Vnom [L/s/m]	Hf Total Height [mm]	Lf Total Length [mm]	Total Pressure Loss [Pa]	Sound Power Level [dB(A)]
120	25	Hn+32	Ln+32	15	7
150	30	Hn+32	Ln+32	15	7
200	40	Hn+32	Ln+32	15	8
300	60	Hn+32	Ln+32	15	9



STANDARD Displacement Step Diffuser H = 120mm L = 500mm	Volume Flow Rate \dot{V}_A		Total Pressure Loss ΔP_t [Pa]	Sound Power Level LWA dB(A)
	L/s	m ³ /h		
	10	36	12	< 10
	12	45	18	10

ORDER DETAILS

ADS-FD- _____ - _____ - _____ - _____



COLOUR:

- RAL _____

NECK HEIGHT:

- 120 mm*
- Special height

LENGTH:

- 500 mm*
- Special length

FACE:

- F* - Flanged
- N - Flangeless

MODEL:

- Auditorium Displacement Step - Fixed Direction

Note:

*Standard, if no type code entered

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