



# BENSON

## De-Stratification Fans

DS - 2 and Impellor Series



 **NORTEK**<sup>™</sup>  
GLOBAL HVAC





## DS Series

With any conventional air heating system warm air will rise to roof level by natural convection. In high buildings such as factories, warehouses and sports centres, this can result in high temperature gradients and consequently increased energy usage.

Benson de-stratification fans reverse the natural convection process, re-circulating warm air back to working level providing a permanent reduction in roof space temperature and uniform temperature distribution.

### Model Range

De-strat fans are available in five sizes, with mounting heights ranging from 4m to 18m and air volumes from 3,000 m<sup>3</sup>/h up to 11,000 m<sup>3</sup>/h.

DS units are supplied with a high efficiency axial fan with mesh finger guard, robust double skin cabinet with four point suspension and four way discharge with adjustable louvres.

Frost protection unit excluding integral thermostat also available.

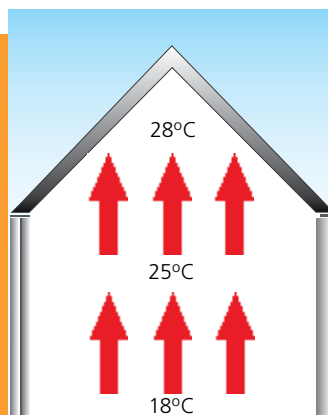
### Technical Data

		Model Ref				
		DS3-2	DS4-2	DS6-2	DS8-2	DS10-2
Minimum Mounting height	m	4	6	6	10	10
Maximum Mounting height	m	8	12	12	18	18
Primary air volume	m <sup>3</sup> /h	3,000	4,250	6,500	7,650	11,000
Electrical supply		230V 1N 50Hz				
Current rating	A	0.52	0.75	1.15	1.75	2.4
Absorbed power	kW	0.11	0.165	0.25	0.38	0.52
Sound pressure level <sup>1</sup>	dB(A)	44	48	54	57	59
Net weight	kg	15	21	19	21	27

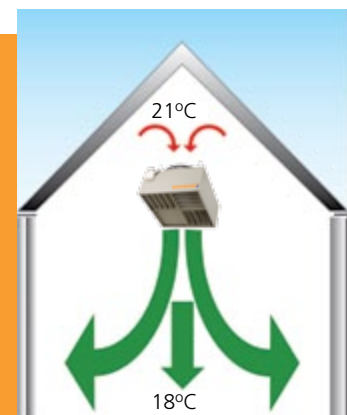
<sup>1</sup> Sound level @ 5m, Q=1, A=160m<sup>2</sup>

## Features

- > Heat recovery by re-circulating high level hot air back to occupancy level
- > Reduced fuel bills by eliminating excess heat loss through the roof
- > Heat reclaim from lighting and machinery
- > Improved comfort level for occupants
- > Reduced pre-heat time

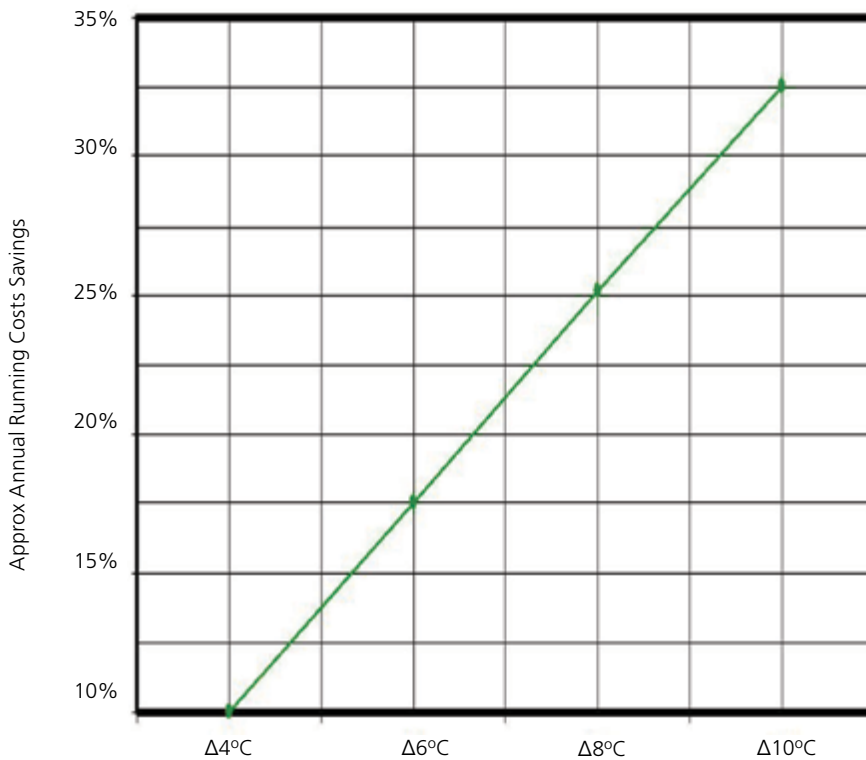


Without de-stratification heat rises resulting in poor distribution, increased heat loss and running costs.



The DS fan returns heat to the working zone for improved comfort and reduced running costs.

### Potential savings by reducing excess of heating stratification



ΔT Temperature gradient from floor to roof level

For effective de-stratification, sufficient fans must be installed to re-cycle heat from the full roof area.

### Installation

DS units are supplied ready for automatic operation with installation only requiring mounting and connection to a single phase electrical supply.

Standard units are supplied with an integral thermostat to operate the fan as soon as the roof space temperature rises above the set point.

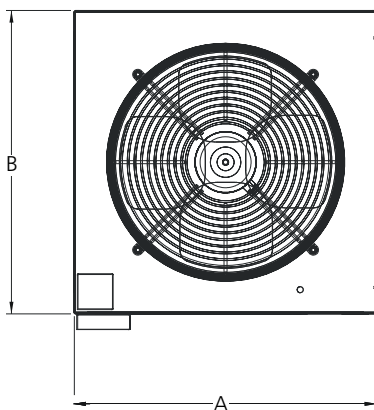
For frost protection applications units are supplied without thermostats to be linked to frost protection controls.

The four-way adjustable outlet blades allow the air direction and terminal velocity to be set to suit the application and mounting height.

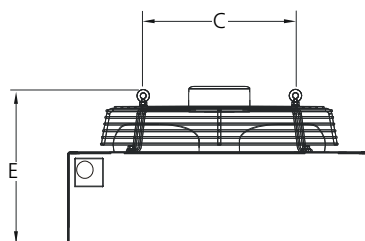
### Design Data

Select the DS unit to suit the mounting height required, ideally the units should be installed approximately 1 metre below the apex.

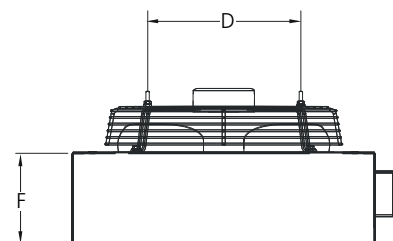
Calculate the volume of the building and multiply by two to determine the amount of air that needs to be re-circulated for effective de-stratification. Divide by the primary air volume of the unit to determine the number of units required.



Top view



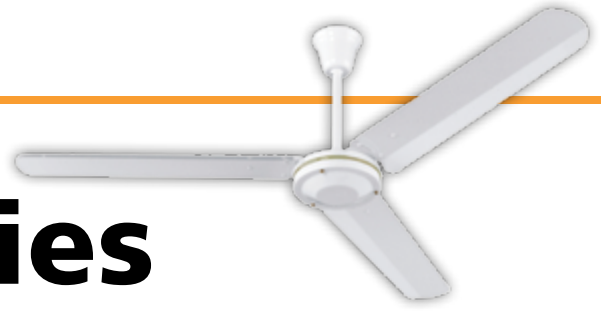
Side view



Front view

### Dimensions

		DS3-2	DS4-2	DS6-2	DS8-2	DS10-2
Width	A	474	573	573	573	724
Depth	B	474	573	573	573	724
Suspension Centres	C	332	400	365	400	440
Suspension Centres	D	332	400	365	400	440
Height	E	318	318	357	318	368
Casing Height	F	192	192	192	192	192



# Impellor Series

These quiet but powerful fans gently propel the warm air down into the working zone. The displacement of this pool of warm air from the roof void to low level has a positive impact in the reduction of fuel usage which, depending upon building height, can be as much as 15%.

Additionally, the air movement recommended has a distinctly beneficial effect on operative comfort levels by providing a high level of uniformity of warmth throughout the area where fans are applied.

### Height requirements

Ideally, the fan should be mounted above the lighting system and with a clearance of at least 750mm between the blades and the roof. The minimum height should take account any obstruction and the safety of personnel. The minimum recommended mounting height is 2.5m.

Calculate the buildings floor area in square metres, then divide the result by the floor area coverage for the fan size selected.

Bear in mind that the floor area coverage is based on maximum mounting height and this reduces if the fans are mounted lower.

### Motor Hub

Manufactured from die cast aluminium ensures elegance, durability and reliability.

### Blades

Each fan has three precision formed, dynamically balanced blades.

### Air Distribution

The fans gently move warm air back down to the lower working level.

### Controls

Benson offer two types of speed controllers, the first having the capability of controlling up to five fans, whilst the second has the capability of controlling up to twelve fans. As well as speed adjustment capabilities, the controls rocker switch can be utilised to propel the fan(s) backward as well as forward.

### Technical Data

Model		B-IMI400-C
Air displacement	m <sup>3</sup> /h	Up to 12,000 m <sup>3</sup> /h
Mounting heights	m	2.5-12
Floor coverage (at Max. height)	m <sup>2</sup>	130
Maximum fan centres	m	12
Clearance to walls	m	2.5
<b>Electrics</b>		
Supply	V/ph/hz	230/1/50
Fuse rating	amps	3
Motor	Watts	60
<b>Overall dimensions</b>		
Height	mm	940
Blade sweep	mm Ø	1400
Net weight	Kg	4.3

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