

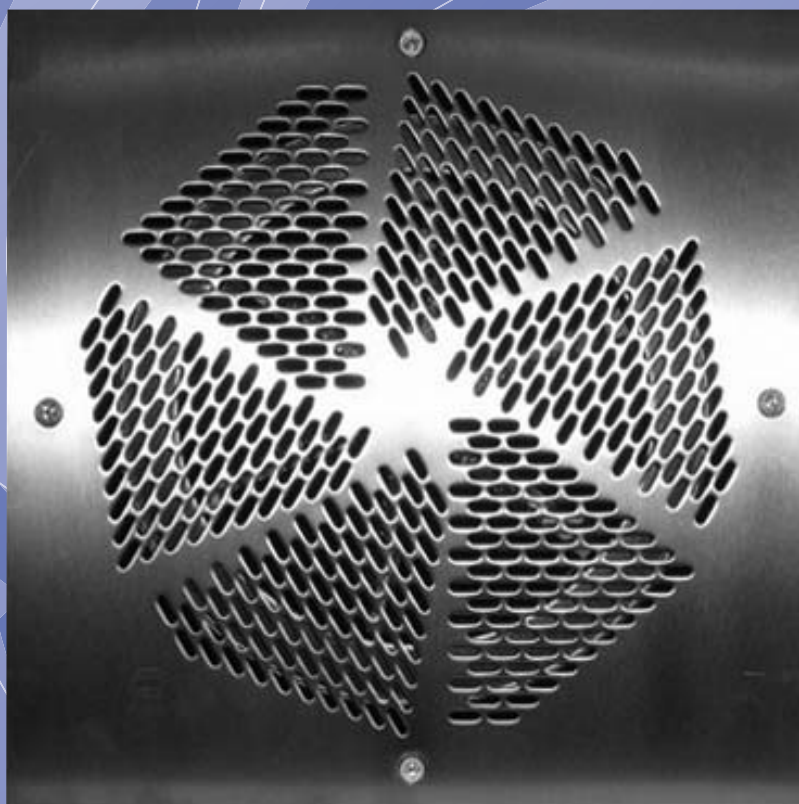
SERIES ST

Displacement Step
Diffusers

PUBLICATION

DIFFUSERS 19

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Features

- Robust Steel Fascia
- Diffuser or Swirl type discharge
- High Capacity
- Square, Circular or Rectangular Patterns
- Optional Damper Control



GILBERTS

SERIES ST

Displacement Step Diffusers

Introduction

Gilberts ST Series provides a range of diffusers suitable for auditoriums, sports stadia, movie theatres and other similar applications. In design practice the units are particularly suited for vertical installation in steps or risers under and around theatre seating areas. From here the air is introduced at floor level using the displacement principle where the air is introduced at low volumes and low velocity with the diffusers providing a wide dispersed horizontal spread of air. This ensures air movement is comfortable without the risk of drafts or cold spots. The cool air can diffuse through the occupied space to provide comfort conditions.

The ST Series provides two specific diffuser designs.

Type STG is a two way throw design that offers good performance and superb economy. Manufactured from mild steel units comprise of 1.2mm blades centrally split both left and right handed at an increasing deflection angle to provide a good

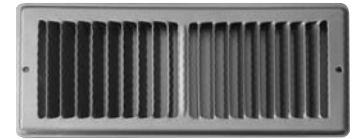
discharge and spread of air. Optional air volume control is achieved from the diffuser face by sliding an adjustment control.

Type STC and STS offer 2mm thick stainless steel fascias with slotted radial swirl air distribution patterns punched into either a square or circular face plate. Concealed behind the fascia a series of radial impeller vanes generate the swirl effect which allows the unit to deliver comparatively high air volumes with rapid mixing and entrainment in the conditioned space. A rotating disc volume control damper is optionally available with the damper simply adjusted forwards or backwards to regulate the air volume.

Series STG are supplied as standard in a Polyester Powder Satin Silver and STC and STS a natural brushed stainless finish. Other colours and finishes available on request.

Features

- Robust Steel Fascia
- Diffuser or Swirl type discharge
- High Capacity
- Square or Rectangular Patterns
- Optional Damper Control



Whilst robust Series ST is not specifically designed for floor installation or pedestrian traffic. Please consult with the office for floor applications.

Selection Procedure

Firstly establish the total air volume required for the step area and consider the maximum velocity required at a set distance away. Normally the minimum distance for occupation would be 400mm away from the diffuser but tables are provided to cover most variances.

Once these parameters are established you can use the tables on page 5 to match your velocity profile (as determined above) with a particular diffuser type. Each table provides numerous velocity intervals allowing you to use the tables to establish an individual unit air volume.

Simply take the total air volume required and divide by the unit air volume to arrive at the required diffuser quantity.

Once this is identified diffusers can then be positioned (usually equidistantly) according to your design within the step walls.

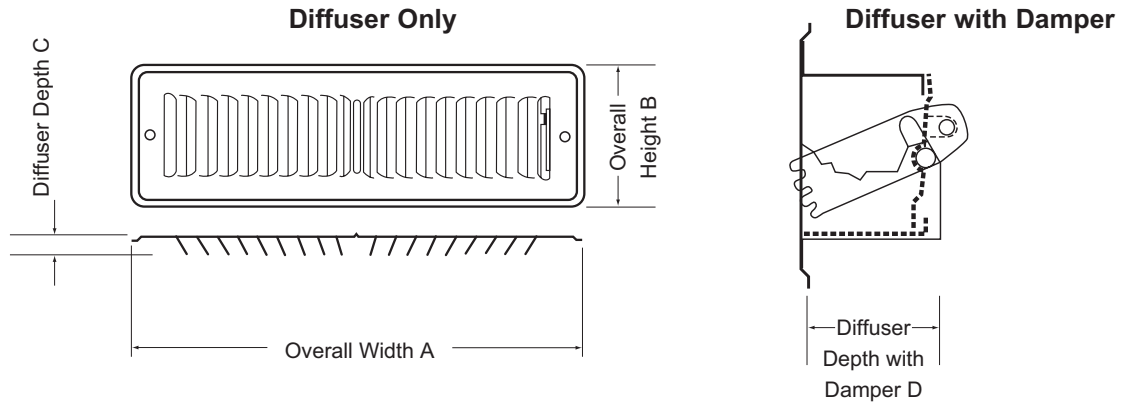
Example

A small stepped auditorium is 6m wide and comprises of 5 rows of steps with seats placed at 600mm centres on each step. At 10 seats per row we therefore have 50 seats in total. Assuming that a fresh air provision is all that is needed for this area a standard volume of 10 l/s per person would establish a total air volume requirement of 500 l/s.

Using the STG Size 1 as the chosen product selection and based on a maximum velocity limit of 0.2m/sec at 400mm from the face of the unit the Series STG table on page 5 indicates that an air volume of 10l/s is required. 10l/s gives a velocity of 0.15m/s with a noise level of less than NR25 and a pressure drop of just 0.3 Pa.

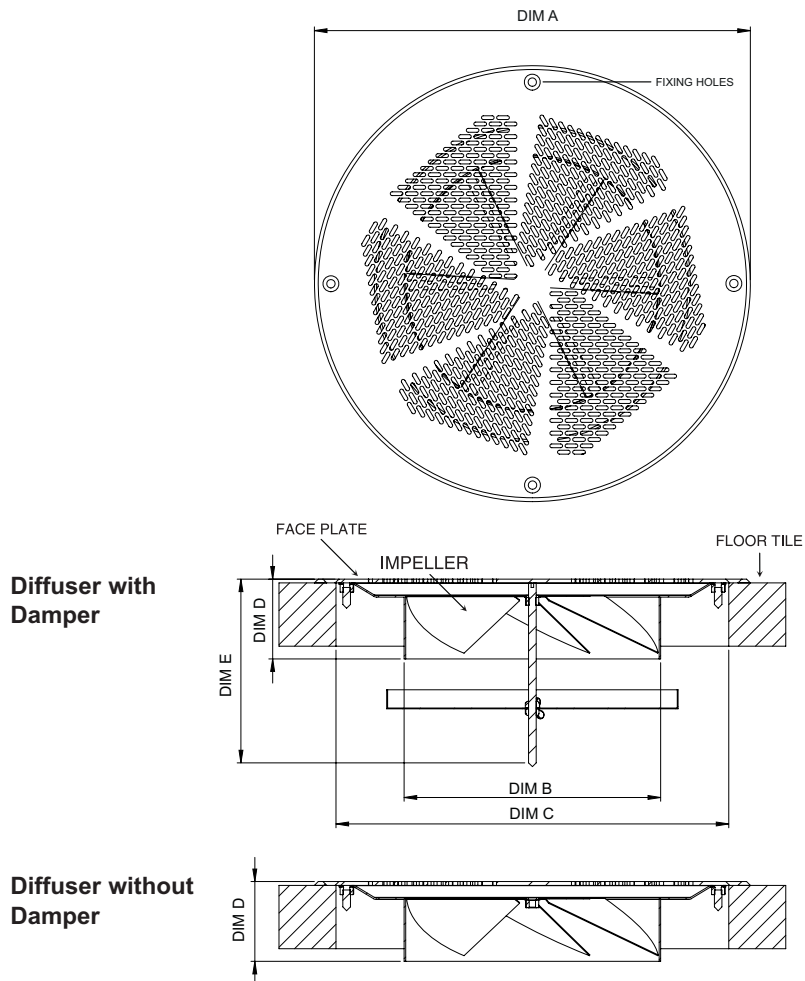
Returning to the total air volume previously calculated of 500l/s we can now divide this by 10l/s to determine a total requirement of 50 diffusers (or 10 diffusers per step). Positioning diffusers on equidistant 600mm centres in this instance provides a convenient match with the seat spacing centres.

Type STG/1



Series	Size	Dim A	Dim B	Aperture Size	Dim C	Dim D
STG	1	286	132	254x102	11	45

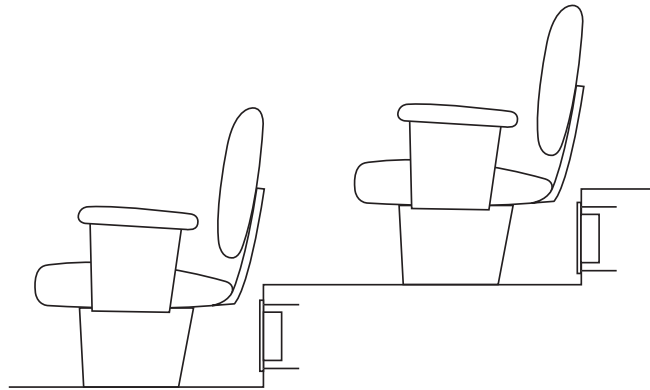
Type STC Circular Face



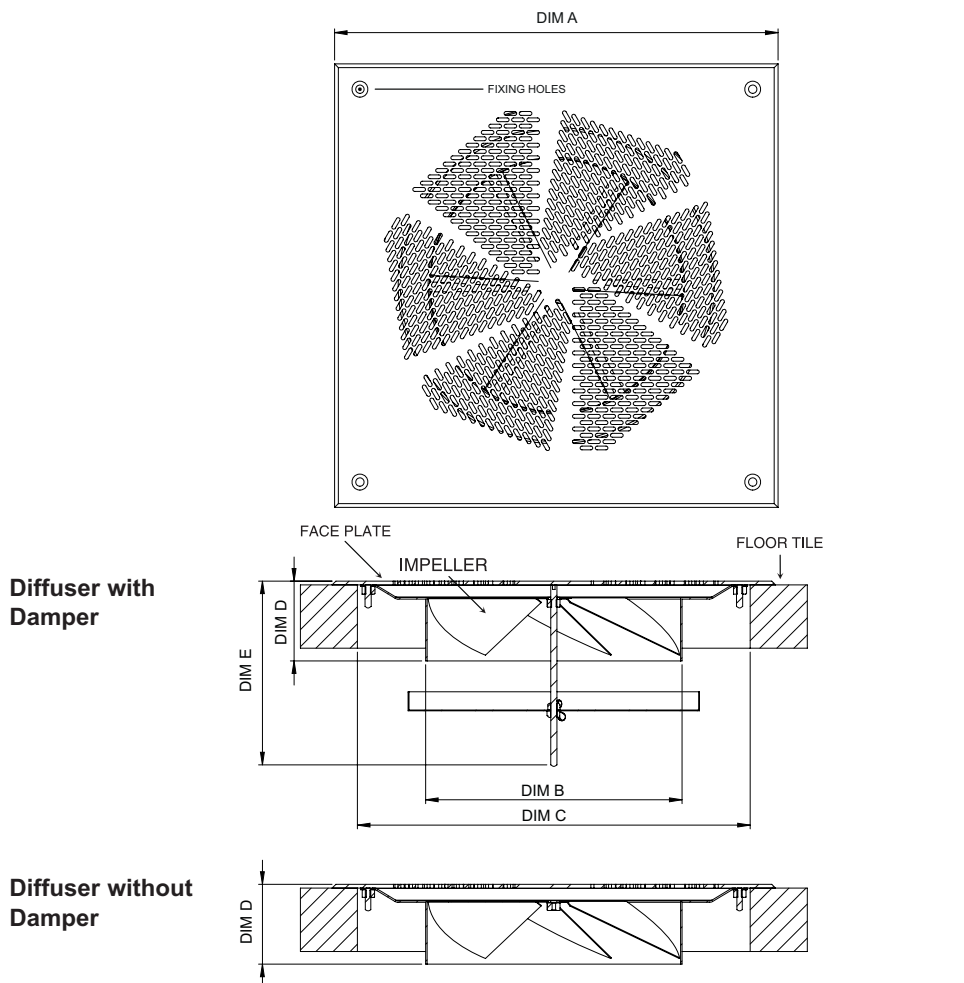
Series	Size	Dim A (Dia)	Dim B	Dim C	Dim D	Dim E
STC	1	223	110	197	60	145
STC	2	274	145	243	62	145



Underseat Application



Type STS



Series	Size	Dim A (Sq)	Dim B	Dim C	Dim D	Dim E-
STS	1	260	110	197	60	145
STS	2	300	145	243	62	145



Performance Data

Series STG

Size 1

Air Volume L/S	Pressure Drop Pa.	Noise Level NR	Velocity @ 200mm from face (90 degree even spread at 45 degrees from centreline) M/s	Velocity @ 400mm from face (90 degree even spread at 45 degrees from centreline) M/s	Velocity @ 600mm from face (90 degree even spread at 45 degrees from centreline) M/s	Velocity @ 800mm from face (90 degree even spread at 45 degrees from centreline) M/s
10	0.3	<25	0.35	0.15	0.03	0.01
15	0.7	<25	0.75	0.56	0.37	0.11
20	1.3	<25	1.03	0.71	0.41	0.26
25	2.1	<25	1.23	1.04	0.47	0.29
30	3.0	<25	1.37	1.36	0.69	0.48

Series STC & STS

Size 1

Air Volume L/S	Pressure Drop Pa.	Noise Level NR	Velocity @ 200mm from face (90 degree even spread at 45 degrees from centreline) M/s	Velocity @ 400mm from face (90 degree even spread at 45 degrees from centreline) M/s	Velocity @ 600mm from face (90 degree even spread at 45 degrees from centreline) M/s	Velocity @ 800mm from face (90 degree even spread at 45 degrees from centreline) M/s
10	7.6	27	0.25	0.22	0.18	0.10
15	13.2	28	0.39	0.37	0.24	0.21
20	23	29	0.60	0.53	0.43	0.33
25	39	32	0.65	0.62	0.60	0.40
30	56	36	0.80	0.71	0.63	0.45

Series STC & STS

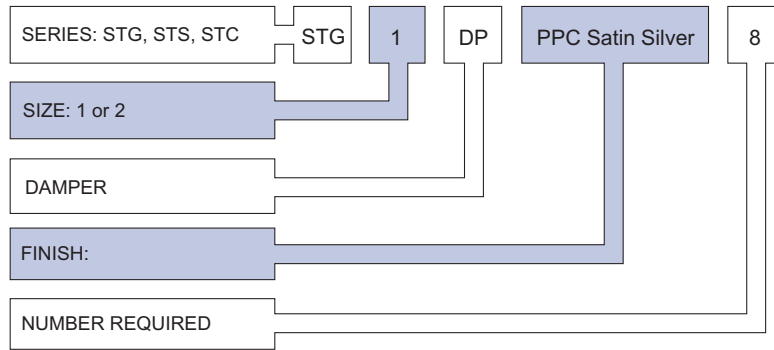
Size 2

Air Volume L/S	Pressure Drop Pa.	Noise Level NR	Velocity @ 200mm from face (90 degree even spread at 45 degrees from centreline) M/s	Velocity @ 400mm from face (90 degree even spread at 45 degrees from centreline) M/s	Velocity @ 600mm from face (90 degree even spread at 45 degrees from centreline) M/s	Velocity @ 800mm from face (90 degree even spread at 45 degrees from centreline) M/s
10	2.5	<25	0.15	0.13	0.12	0.07
15	5.7	<25	0.21	0.20	0.16	0.12
20	10.5	<25	0.25	0.27	0.26	0.17
25	16.5	<25	0.42	0.35	0.33	0.30
30	26	<25	0.60	0.44	0.43	0.25

SERIES ST

Displacement Step Diffusers

Ordering Specification



Finish

Standard Finish: Type STG - Polyester Powder Satin Silver.
Type STS & STC – Brushed Stainless Steel

Special Finishes: Polyester Powder finish to Stock BS or RAL colour.

Fixing

Standard flange screw fixing using self tapping screws provided.

GILBERTS

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