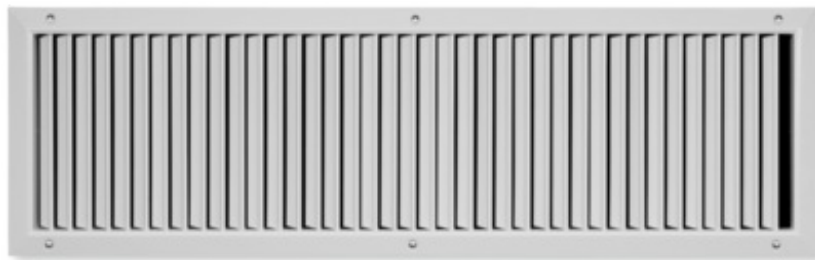


## Type TRS



### VENTILATION GRILLES, MADE OF SHEET STEEL, WITH INDIVIDUALLY ADJUSTABLE, VERTICAL BLADES

Ventilation grille with droplet shaped blades

- Nominal sizes 225 × 75 to 1225 × 325 mm
- Volume flow rate range 11 – 1305 l/s or 40 – 4698 m<sup>3</sup>/h
- Grille face made of sheet steel, powder-coated
- Front border with countersunk holes, 27 mm wide

Optional equipment and accessories

- Grille face in RAL CLASSIC colours
- Grille face made of galvanised sheet steel, without powder coating
- Installation subframe
- Installation subframe for fitting filter media
- Attachments for volume flow rate balancing and air direction control
- Concealed screw fixing

## APPLICATION

### Application

- Ventilation grille of Type TRS as supply air or extract air variant for comfort zones and industrial zones
- Directed supply air discharge for mixed flow ventilation
- Blades are adjustable to meet different local requirements
- For variable and constant volume flows
- For supply air to room air temperature differences from  $-12$  to  $+4$  K
- For installation in walls, sills and rectangular ducts

### Special characteristics

- Individually adjustable blades
- Countersunk holes or concealed screw fixing
- Optional installation subframe and casing for the fitting of filter media

### Nominal sizes

- Nominal length: 225, 325, 425, 525, 625, 825, 1025, 1225 mm
- Nominal height: 75, 125, 225, 325 mm

Other dimensions upon request

## DESCRIPTION

### Variants

#### Fixing

- Countersunk holes
- C11: Concealed screw fixing

### Parts and characteristics

- Sloped border with chamfered inside edge
- Individually adjustable, vertical blades
- Factory fitted perimeter seal

### **Attachments**

- AG, AS, D, DG: For volume flow rate balancing and for air direction control

### **Accessories**

- Installation subframe: For the fast and simple installation of ventilation grilles
- Filter casing: Frame with filter element and spring clip fixing

### **Construction features**

- Asymmetrically supported blades
- Border with countersunk holes or concealed screw fixing

### **Materials and surfaces**

- Border and blades made of galvanised sheet steel
- Border and blades powder-coated RAL 9010, pure white
- P1: Border and blades powder-coated, RAL CLASSIC colour
- S7: Border and blades made of galvanised sheet steel, not powder-coated

### **Standards and guidelines**

- Sound power level of the air-regenerated noise measured according to EN ISO 5135

### **Maintenance**

- Maintenance-free as construction and materials are not subject to wear
- Inspection and cleaning to VDI 6022

## **TEKNISK INFORMATION**

Function, Technical data, Quick sizing, Specification text, Order code

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## FUNCTION

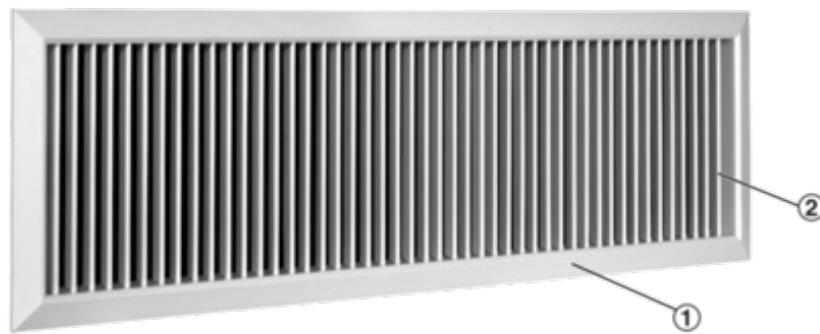
### Functional description

Ventilation grilles are air terminal devices for the supply air and extract air of ventilation and air conditioning systems. They direct the supply air into the room. Ventilation grilles with adjustable blades allow for adapting the discharge direction to the local conditions. The result is a mixed flow ventilation in comfort zones and industrial zones, with good overall room ventilation.

Induction slows the airflow down, i.e. the airflow velocity decreases as the distance from the grille increases. The distance at which the airflow velocity reaches a certain defined value, e.g. 0.2 m/s, is called throw distance. The supply air jet from wall grilles that are installed near the ceiling achieves a larger throw distance than a free jet (from a grille that is not installed near the ceiling). Single grilles, groups of grilles and continuous horizontal runs all achieve different throw distances.

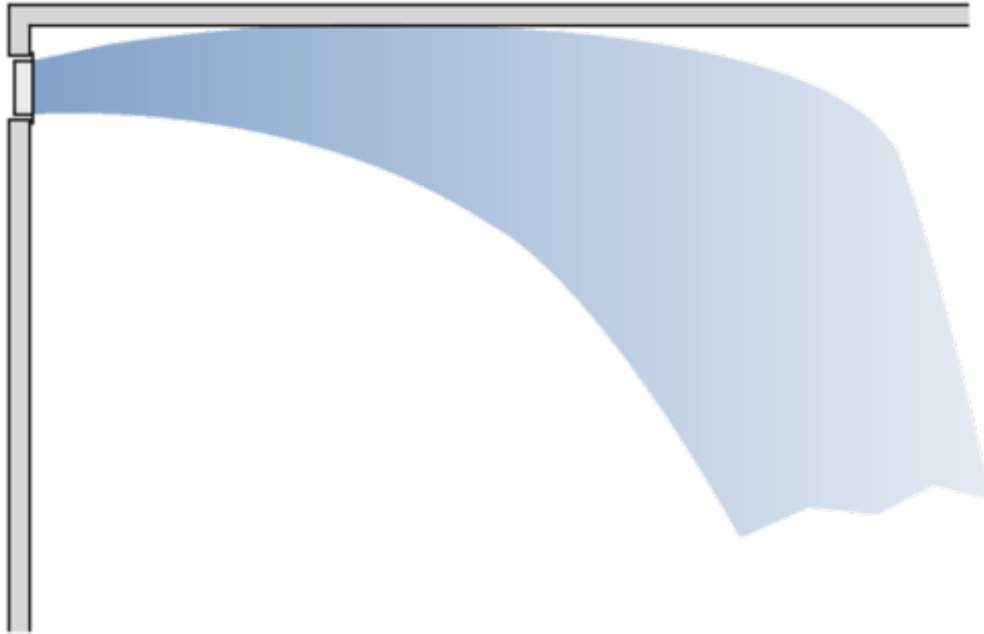
In cooling mode it is necessary to take account of the jet deviation towards the occupied zone, which increases as the supply air to room air temperature difference increases and the discharge velocity decreases. In heating mode the supply air jet deviates towards the ceiling. This has no negative effect on the airflow velocity in the occupied zone, but it may affect the complete ventilation of the room.

### Schematic illustration of a ventilation grille with transverse blades



- ① Front border
- ② Transverse blades

### Air pattern in cooling mode, with ceiling effect, sectional view



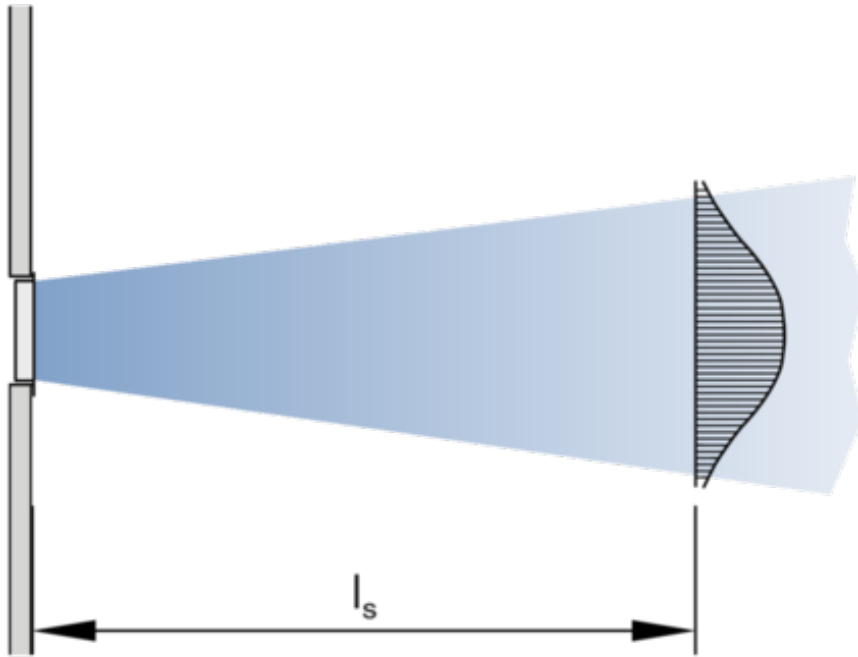
Distance from ceiling  $\leq 0.3$  m

Air pattern with ceiling effect, sectional view

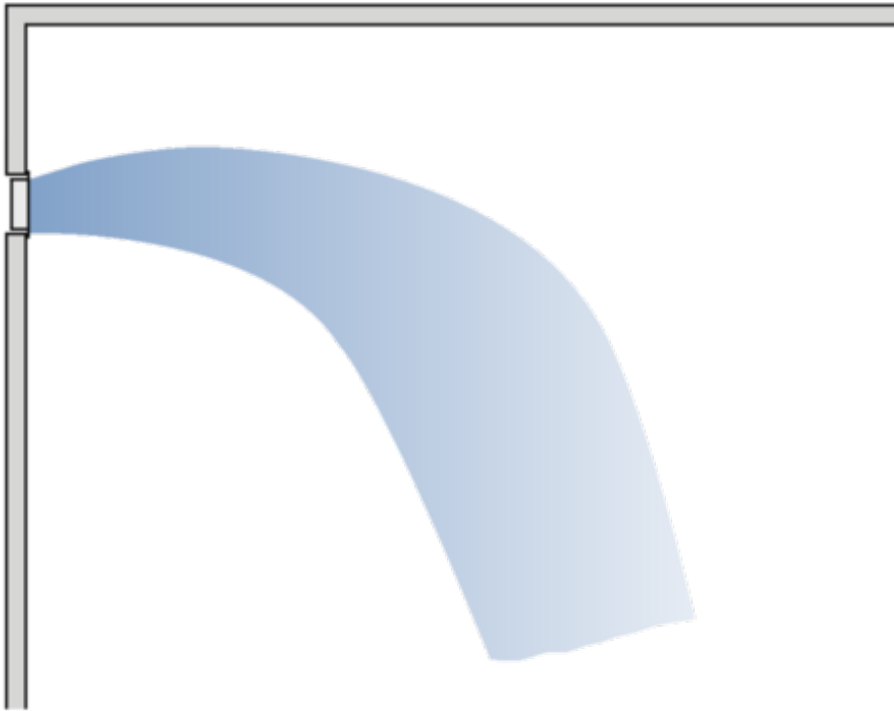


Distance from ceiling  $\leq 0.3$  m

Air pattern with ceiling effect, top view

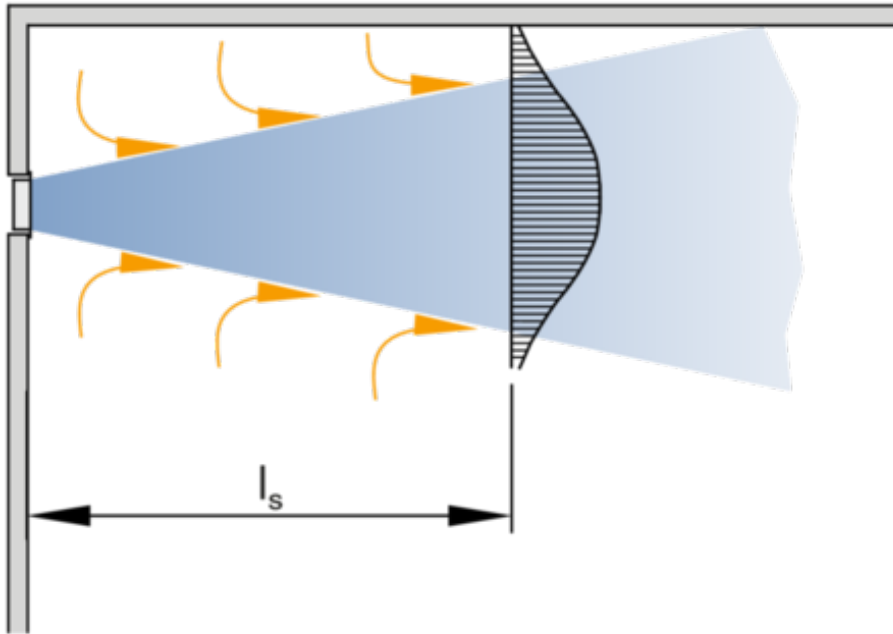


Air pattern in cooling mode, without ceiling effect, sectional view



Distance from ceiling  $\leq 0.8$  m

Air pattern without ceiling effect, sectional view

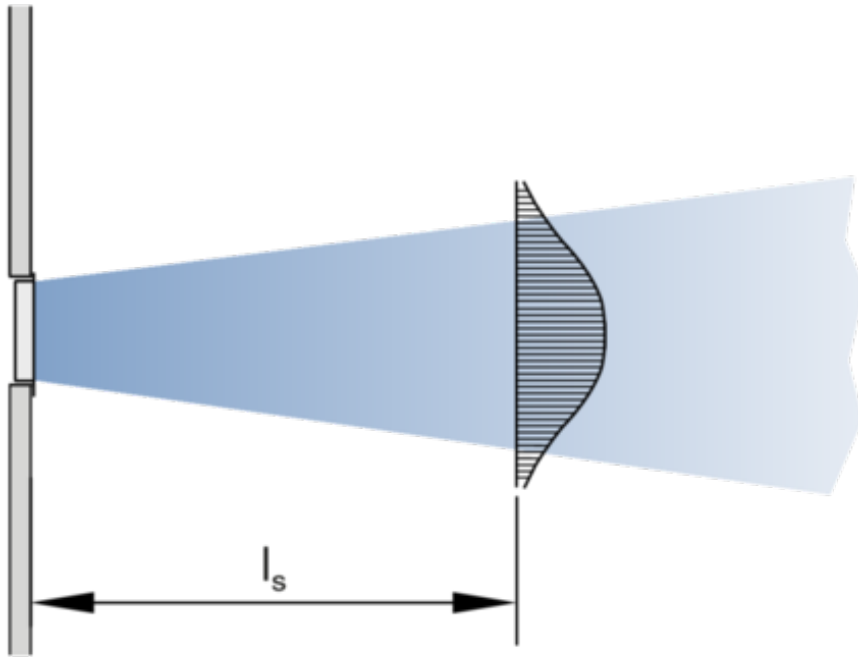


Distance from ceiling  $\leq 0.8$  m

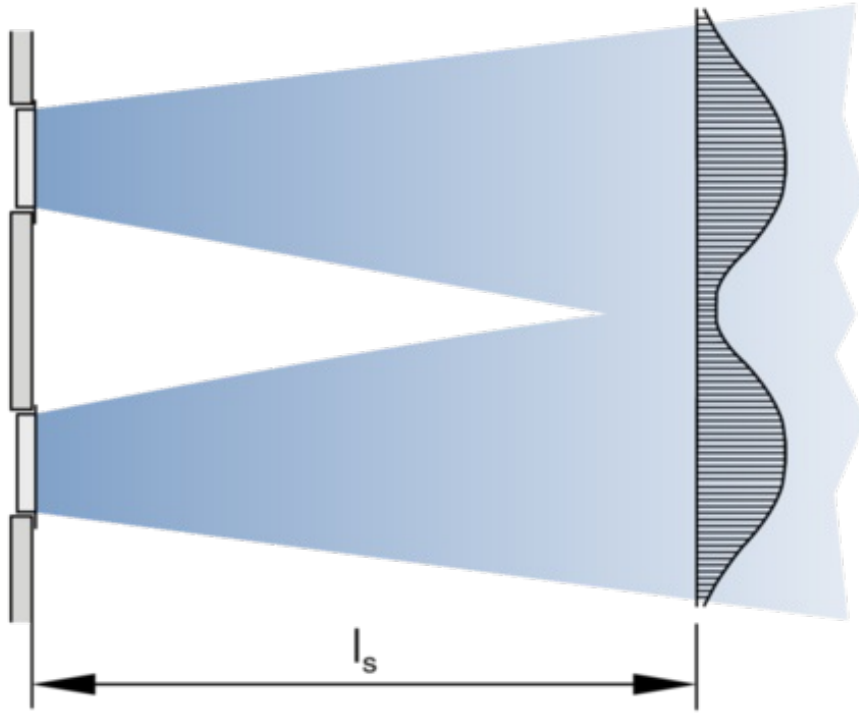
Without a ceiling effect the way of the air jet is shorter than with a ceiling effect.

Air pattern without ceiling effect, top view



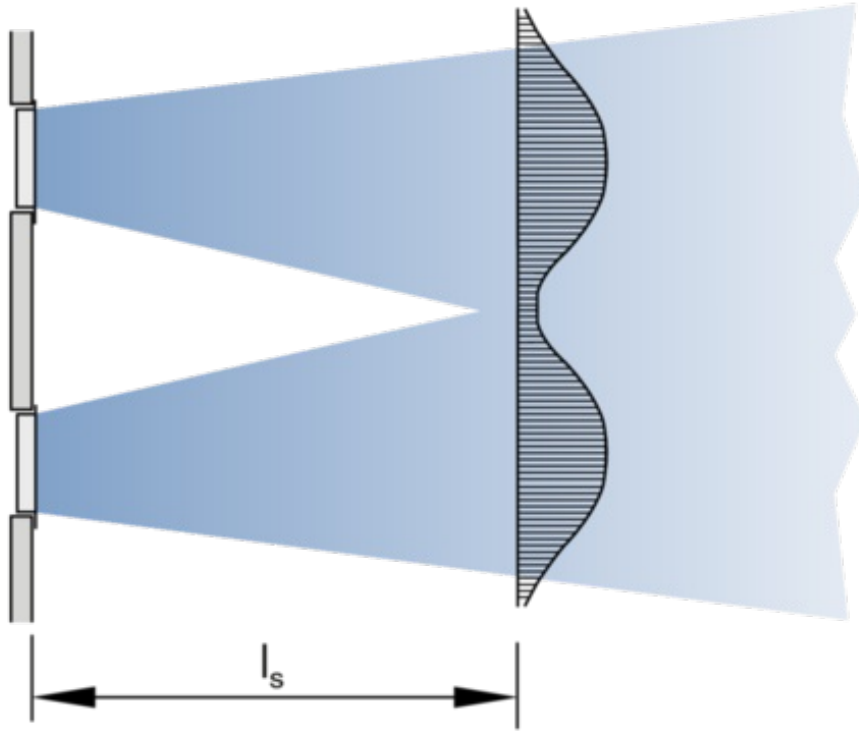


Air pattern with ceiling effect, group of grilles, top view



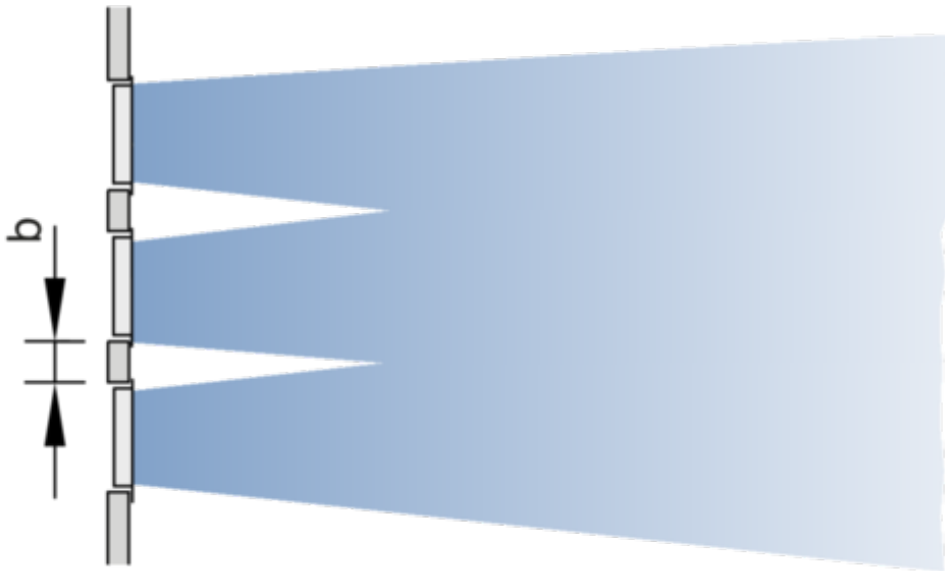
Distance between single grilles  $\geq 0.15 \times l_s$

Air pattern without ceiling effect, group of grilles, top view



Distance between single grilles  $\geq 0.2 \times l_s$

Air pattern, group of grilles, top view



$$b < 0.1 \times l_s$$

Several single grilles arranged in a row and with not much distance between them have the same effect as a continuous horizontal run.

## TECHNICAL DATA

<b>Nominal sizes</b>	225 × 75 to 1225 × 325 mm
<b>Minimum volume flow rate</b>	11 – 410 l/s or 40 – 1476 m³/h
<b>Maximum volume flow rate, with <math>L_{WA}</math> max. 40 dB(A) without attachments</b>	62 – 1305 l/s or 223 – 4698 m³/h
<b>Supply air to room air temperature difference</b>	–12 to +4 K

Volume flow rates apply to supply air

### Geometric free area

H	L [mm]							
	225	325	425	525	625	825	1025	1225
H	$A_{geo}$							
mm	$m^2$							
75	0.007	0.011	0.015	0.018	0.022	0.029	0.036	0.043
125	0.015	0.022	0.030	0.037	0.044	0.059	0.074	0.089
225	0.030	0.045	0.060	0.075	0.090	0.119	0.149	0.179
325		0.068	0.090	0.113	0.135	0.180	0.225	0.269

### Effective air discharge area (supply air)

H	L [mm]							
	225	325	425	525	625	825	1025	1225
H	$A_{eff}$							
mm	$m^2$							
75	0.007	0.011	0.014	0.018	0.021	0.029	0.036	0.043
125	0.014	0.021	0.029	0.036	0.043	0.057	0.072	0.086
225	0.029	0.043	0.057	0.072	0.086	0.114	0.142	0.172
325		0.064	0.086	0.108	0.129	0.172	0.214	0.256

### Effective area of extract air grille

H	L [mm]							
	225	325	425	525	625	825	1025	1225
H	A <sub>eff</sub>							
mm	m <sup>2</sup>							
75	0.006	0.009	0.011	0.014	0.016	0.022	0.028	0.033
125	0.011	0.016	0.022	0.028	0.033	0.044	0.055	0.066
225		0.033	0.044	0.055	0.066	0.090	0.110	0.134
325			0.066	0.083	0.100	0.134	0.170	0.200

## QUICK SIZING

TRS, volume flow rate ranges

× L<sub>WA</sub> = 40 dB(A) with unrestricted airflow+ L<sub>WA</sub> = 40 dB(A) with airflow restricted by 50 %

## SPECIFICATION TEXT

Ventilation grilles, rectangular, made of sheet steel, for supply and extract air. Aesthetic sloped border with chamfered inside edge Preferably for wall and sill installation but also suitable for rectangular ducts.

Ready-to-install component which consists of a border and individually adjustable, vertical blades.

Concealed screw fixing or countersunk holes, for installation into an installation subframe or fixing onto an installation surface.

Sound power level of the air-regenerated noise measured according to EN ISO 5135.

### Special characteristics

- Individually adjustable blades
- Countersunk holes or concealed screw fixing
- Optional installation subframe and casing for the fitting of filter media

### Materials and surfaces

- Border and blades made of galvanised sheet steel

- Border and blades powder-coated RAL 9010, pure white
- P1: Border and blades powder-coated, RAL CLASSIC colour
- S7: Border and blades made of galvanised sheet steel, not powder-coated

#### Technical data

- Nominal sizes: 225 × 75 to 1225 × 325 mm
- Minimum volume flow rate (supply air): 11 – 410 l/s or 40 – 1476 m<sup>3</sup>/h
- Maximum volume flow rate (supply air), at L<sub>WA</sub> max. 40 dB(A) without attachments: 62 – 1305 l/s or 223 – 4698 m<sup>3</sup>/h
- Supply air to room air temperature difference: –12 to +4 K

#### Sizing data

- V \_\_\_\_\_ [m<sup>3</sup>/h]
- Δp<sub>t</sub> \_\_\_\_\_ [Pa]

#### Air-regenerated noise

- L<sub>WA</sub> \_\_\_\_\_ [dB(A)]

This specification text describes the general properties of the product. Texts for variants can be generated with our Easy Product Finder design programme.

## ORDER CODE

**Order example: TRS-DG/825×225/A1/C11**

Attachments	Damper unit with opposed action blades and air direction control
Nominal size	825 × 225 mm
Installation subframe	With
Fixing	Concealed screw fixing
Exposed surface	Powder-coated RAL 9010, pure white

**Order example: TRS-EF/825×225**

Attachments	None
Nominal size	825 × 225 mm
Exposed surface	Powder-coated RAL 9010, pure white

**TRS – AG / 825x225 / A1 / C11 / P1 – RAL ...**

**1**

**2**

**3**

**4**

**5**

**6**

**1** Type

TRS Single grille

**2** Attachments

A Without (grille face only)

AG Damper unit, opposed action blades

AS Hit and miss damper

D Air direction control, blades installed at 90° to the front blades, independently adjustable

DG D combined with AG

**3** Nominal size [mm]

L × H

**4** Installation subframe

No entry: none

A1 With

**5** Fixing

No entry: countersunk holes

C11 With concealed screw fixing

**6** Exposed surface

No entry: powder-coated

RAL 9010, pure white

P1 Powder-coated, specify RAL CLASSIC colour

S7 Grille face made of galvanised sheet steel, without powder coating

Gloss level

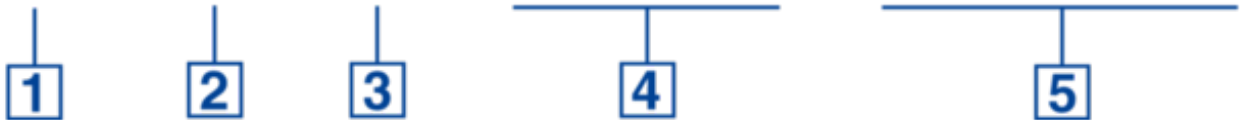
RAL 9010 50 %

RAL 9006 30 %

All other RAL colours 70 %



# TRS – EF – AS / 825x225 / P1 – RAL ...



## 1 Type

TRS Single grille

## 2 Construction

EF Installation subframe with filter element and spring clip fixing

## 3 Attachments

A Without

AS Hit and miss damper

## 4 Nominal size [mm]

L x H

## 5 Exposed surface

No entry: powder-coated

RAL 9010, pure white

P1 Powder-coated, specify RAL CLASSIC colour

Gloss level

RAL 9010 50 %

RAL 9006 30 %

All other RAL colours 70 %

# E-EF / 825x225



## 1 Type

E-EF Replacement filter medium

## 2 Nominal size [mm]

L x H

Dimensions and weight, Product details

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## DIMENSIONS AND WEIGHT

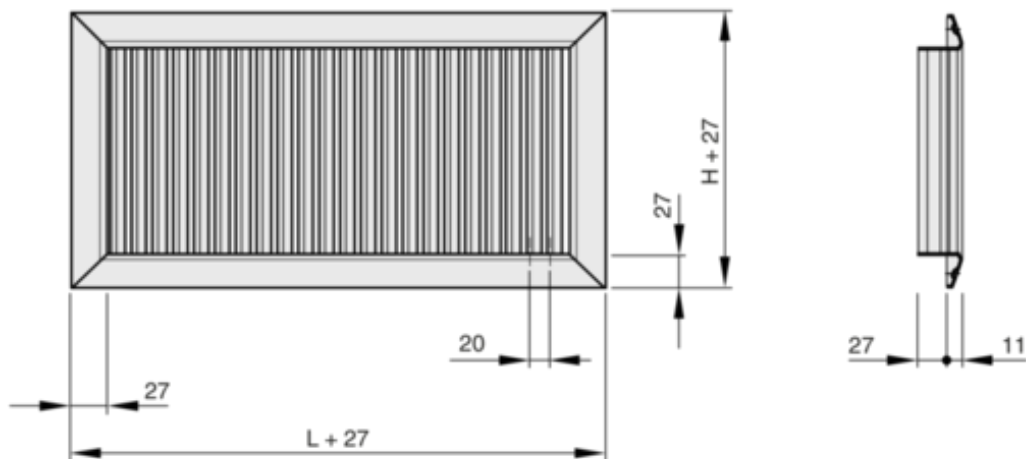
The weight table shows the available nominal sizes

### TRS

H	L [mm]							
	225	325	425	525	625	825	1025	1225
H	m							
mm	kg							
75	0.4	0.5	0.7	0.8	0.9	1.2	1.5	1.8
125	0.5	0.7	0.8	1.0	1.2	1.6	1.9	2.3
225	0.7	1.0	1.2	1.5	1.8	2.3	2.8	3.3
325		1.3	1.6	2.0	2.3	3.0	3.7	4.4

Weights apply to ventilation grilles without attachments

### TRS, 27 mm wide front border



L Nominal length  
H Nominal height

## PRODUCT DETAILS

Front border, 27 mm

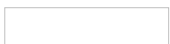


Installation examples, Installation details, Commissioning, Basic information and nomenclature

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## INSTALLATION EXAMPLES

Wall installation



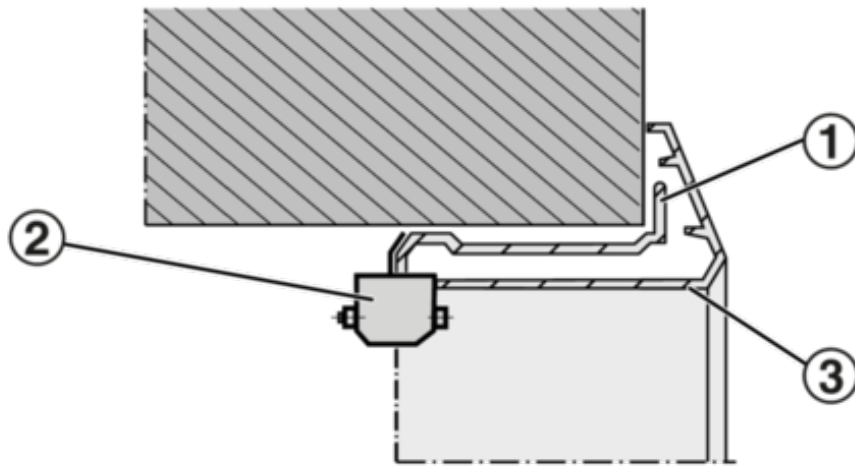
## INSTALLATION DETAILS

### Installation and commissioning

- Installation preferably in walls, sills and rectangular ducts
- Installation with installation subframe is recommended
- If no installation subframe is used, the border should be fixed with screws

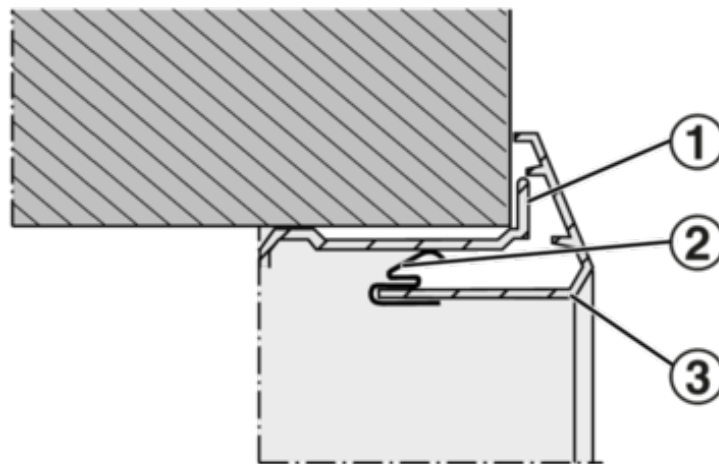
These are only schematic diagrams to illustrate installation details.

Ventilation grille with concealed screw fixing



- ① Installation subframe
- ② Concealed screw fixing
- ③ Ventilation grille

Ventilation grille with spring clip fixing



- ① Installation subframe
- ② Spring clip
- ③ Ventilation grille

## COMMISSIONING

### Volume flow rate balancing

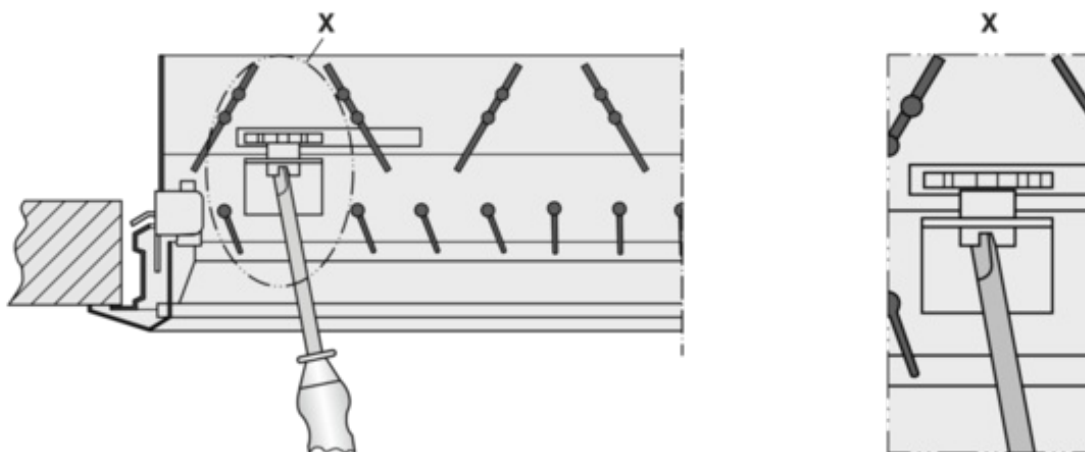
When several ventilation grilles are installed on the same duct, it may be necessary to balance the volume flow rates.

- AG: Damper unit with opposed action blades, adjustable, secured with a locking screw
- AS: Damper unit with hit and miss damper, adjustable, secured with a locking screw

### Air pattern

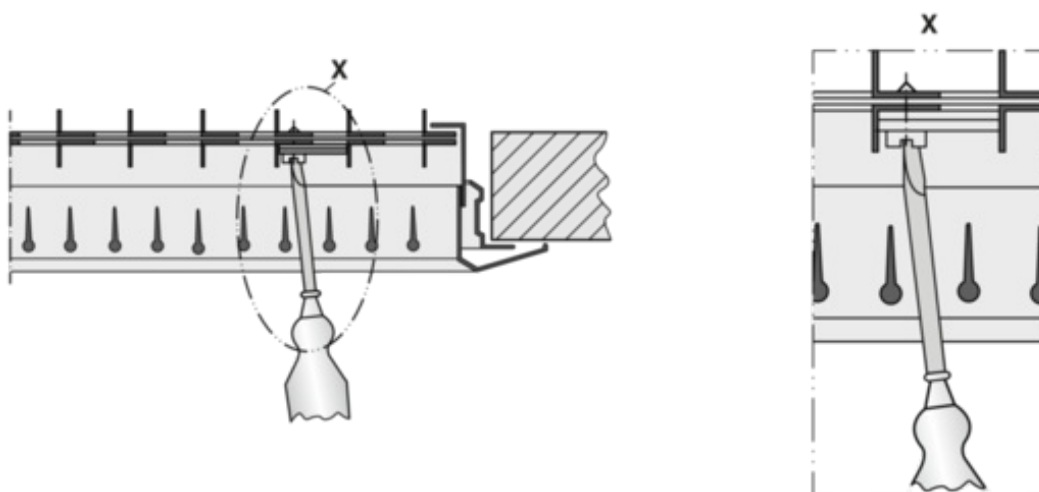
- Adjustable blades: Set the air control blades individually or together and depending on the local conditions
- D, DG: Air control blades, fitted at 90° to the front blades, can be adapted to the local conditions

Volume flow rate balancing -\*G



Attachments -AG, -DG and Types AGW, DGW

Volume flow rate balancing -S



Attachments -AS, -KS, -RS and Type ASW

## BASIC INFORMATION AND NOMENCLATURE

### Principal dimensions

#### **L [mm]**

Nominal length of the ventilation grille

#### **H [mm]**

Nominal height of the ventilation grille

#### **m [kg]**

Weight

### Nomenclature

#### **L<sub>WA</sub> [dB(A)]**

Sound power level of the air-regenerated noise

#### **V [m<sup>3</sup>/h] and [l/s]**

Volume flow rate

#### **Δp<sub>t</sub> [Pa]**

Total differential pressure

#### **l<sub>S</sub> [m]**

Distance from single grille or horizontal run section (throw distance)



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