

# GRL

Rectangular egg crate grille for transfer/extract air and wall/ceiling mounting



## QUICK FACTS

- For exhaust- or transfer air
- 91% free area
- Handles large airflows
- Cleanable
- Installed using mounting frame FHA/FHB or commissioning box TRG
- Standard colour White RAL 9003
  - 5 alternative standard colours
  - Other colours upon request

AIR FLOW - SOUND PRESSURE ROOM (Lp10A) *)						
GRL Size	25 dB(A)		30 dB(A)		35 dB(A)	
	l/s	m <sup>3</sup> /h	l/s	m <sup>3</sup> /h	l/s	m <sup>3</sup> /h
200-100	25	90	40	144	55	198
300-100	40	144	70	252	100	360
400-100	47	169	80	288	130	468
500-100	70	252	105	378	150	540
300-150	80	288	120	432	160	576
400-150	115	414	150	540	190	684
500-150	100	360	165	594	230	828
400-200	115	414	195	702	270	972
500-200	125	450	265	954	350	1260
600-200	145	522	280	1008	375	1350
600-300	215	774	400	1440	510	1836

\*)  $L_{p10A}$  = Sound pressure incl. A-filter with 4 dB room attenuation and 10 m<sup>2</sup> room absorption area.

The table shows data for extract air, rectangular GRL, in combination with TRG and a pressure drop of 50 Pa.

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# Technical description

## Design

The GRL grille consists of a framework that holds a number of fixed and very thin horizontal and vertical aluminium vanes in position. The grille is supplied with countersunk screw holes in its surface if the sum of its width and height exceeds 700 mm.

## Materials and surface treatment

The grille is manufactured in extruded aluminium profiled sections and is painted.

- Standard colour:
  - White semi-gloss, lustre 40, RAL 9003/NCS S 0500-N
- Alternative standard colours:
  - Silver gloss, lustre 80, RAL 9006
  - Grey aluminium gloss, lustre 80, RAL 9007
  - White semi-gloss, lustre 40, RAL 9010
  - Black semi-gloss, lustre 35, RAL 9005
  - Grey semi-gloss, lustre 30, RAL 7037
- Non-painted finish and other colours available on request.

## Customizing

The grille can be supplied in sizes other than the standard sizes, to special order.

The maximum dimensions are 1200 x 1200 mm (W x H).

Please contact your nearest sales representative for further information.

## Accessories

### Commissioning box:

TRG. Manufactured in galvanized sheet steel. It includes a removable damper, mounting frame with air distribution plate, fixed measurement tapping and sound absorbent insulation covered by a reinforced surface layer, to Fire Resistance Class B-s1,d0 according to EN ISO 11925-2. Tightness class C on the housing according to SS-EN 12237.

### Mounting frame with damper

FHA. Manufactured of galvanised sheet steel, with a slide damper in the rear. Can be used of the TRG as a simpler alternative. N.B.! No flow measurement function.

### Mounting frame

FHB. Made of galvanised sheet steel. Used if no commissioning box is installed. N.B.! No flow measurement function.

## Project planning

The grille can be installed in a wall, ceiling or in window benches. Stocked sizes according to table under the section Ordering key, see Standard range. When GRL is used as a transfer air unit it is combined with the product CTK/CTM.

### Free area

To obtain the free area, the nominal area of the grille is multiplied by the factor  $f=0.91$ .

Example:

Grille: GRL 400-200

Nominal area of grille:

$$(0.4 - 0.02) \times (0.2 - 0.02) = 0.0684 \text{ m}^2$$

$$\text{Free area of grille: } 0.91 \times 0.0684 = 0.062 \text{ m}^2$$

## Installation

The grille requires the fitter to cut an opening according to the nominal width and height dimensions specified. Press the moun-



ting frame (FHA/FHB) into the duct and secure it in position with blind rivets. Then press the grille into the mounting frame. Sealant is applied between the commissioning box and mounting frame to avoid leakage. If a TRG commissioning box is used, pull the telescopic mounting frame out of the box. Push the box from the rear into the opening and secure the box to the building structure with mounting brackets or hangers. Push the telescopic mounting frame into the box from the room side and secure it to the sides with blind rivets. Then press the grille into the mounting frame. If the sum of the width and height of the grille exceeds 700 mm, the grille will have to be secured with screws to the wall via the countersunk screw holes. See Figure 1.

## Commissioning

Commissioning must be carried out with the grille installed. The measurement tubes and damper cords pulled through the grille.

The k-factor is found in the product label and can also be found in the relevant k-factor guide which is to be found at [www.swegon.com](http://www.swegon.com).

## Maintenance

The grille can be cleaned when necessary using lukewarm water and detergent. If the TRG commissioning box is used, the inside of this should be vacuum cleaned when needed. The duct system is accessible without the use of tools. The grille is first pulled off the mounting frame. The measurement plate is then taken out of the mounting frame and the damper unit is removed by turning the damper out its bayonet fastener.

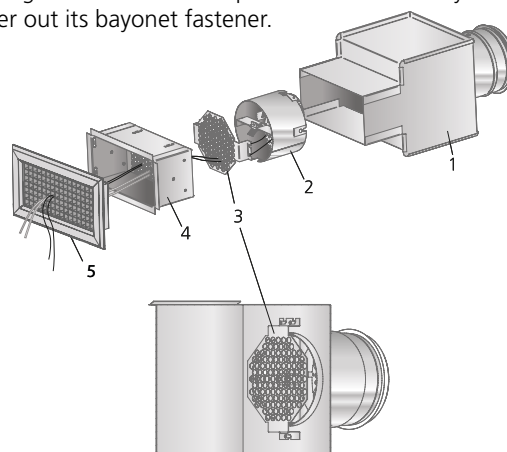


Figure 1. Installation. Commissioning. To secure the damper action (2) in the duct connection and to secure the octagonal perforated face plate (3) against the duct connection.

1. Commissioning box
2. Damper action
3. Octagonal air distribution plate
4. Mounting frame
5. Grille

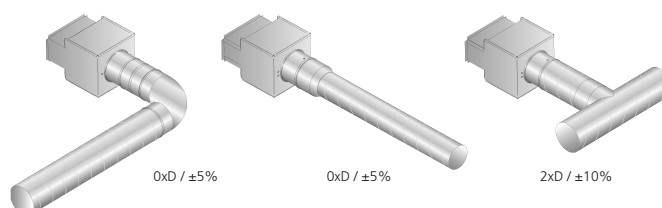


Figure 2. Installation alternatives, applies for all connections (B, K, L)

## Sizing

- Sound level dB(A) applies to rooms of 10 m<sup>2</sup> equivalent absorption area.
- Sound attenuation (ΔL) below is shown in the octave band. Orifice attenuation is included in the values.

$L_w$  = Sound power level

$L_{p10A}$  = Sound pressure level dB (A)

$K_{ok}$  = Correction for producing the  $L_w$  value in the octave band

$L_w = L_{p10A} + K_{OK}$  gives the frequency divided octave band

## Sound data

### GRL – Exhaust air

#### Sound power level $L_w$ (dB)

Table  $K_{OK}$

Size	Mid-frequency (octave band) Hz							
GRL	63	125	250	500	1000	2000	4000	8000
All	2	5	3	3	0	-8	-24	-30
Size	Mid-frequency (octave band) Hz							
GRL+TRG	63	125	250	500	1000	2000	4000	8000
200-100	4	9	7	1	0	-10	-18	-23
300-100	4	9	7	1	-1	-9	-16	-19
400-100	7	13	7	1	-2	-7	-17	-22
500-100	7	13	8	0	-2	-9	-16	-22
300-150	4	9	7	2	-2	-8	-14	-21
400-150	5	10	6	2	-2	-6	-13	-22
500-150	6	12	6	1	-3	-7	-16	-24
400-200	3	8	4	2	-2	-10	-19	-25
500-200	8	12	5	2	-3	-7	-13	-25
600-200	8	12	6	1	-3	-7	-13	-26
600-300	3	4	3	1	-1	-5	-10	-14
Tol. ±	2	2	2	2	2	2	2	2

#### Sound attenuation ΔL (dB)

Table ΔL

Size	Mid-frequency (octave band) Hz							
GRL	63	125	250	500	1000	2000	4000	8000
200-100	15	10	6	2	0	0	0	0
300-100	14	9	4	2	0	0	0	0
400-100	13	8	4	1	0	0	0	0
500-100	12	7	3	1	0	0	0	0
600-100	11	6	3	1	0	0	0	0
800-100	10	5	2	0	0	0	0	0
1000-100	9	4	1	0	0	0	0	0
300-150	13	8	4	1	0	0	0	0
400-150	12	7	3	1	0	0	0	0
500-150	11	6	3	1	0	0	0	0
600-150	10	5	2	0	0	0	0	0
800-150	9	4	1	0	0	0	0	0
1000-150	8	3	1	0	0	0	0	0
400-200	10	5	2	0	0	0	0	0
500-200	10	5	2	0	0	0	0	0
600-200	9	4	1	0	0	0	0	0
800-200	8	3	1	0	0	0	0	0
1000-200	8	3	1	0	0	0	0	0
600-300	6	2	1	0	0	0	0	0
Size	Mid-frequency (octave band) Hz							
GRL+TRG	63	125	250	500	1000	2000	4000	8000
200-100	28	21	10	11	5	13	12	12
300-100	25	17	10	11	8	13	10	11
400-100	24	16	9	10	8	12	10	11
500-100	23	15	9	9	8	11	10	11
300-150	21	12	8	8	14	14	10	11
400-150	19	10	8	10	12	12	11	11
500-150	20	11	8	8	8	11	9	10
400-200	21	12	9	8	8	10	12	12
500-200	20	11	8	7	7	9	11	11
600-200	19	10	4	4	4	8	10	10
600-300	12	7	3	2	2	4	7	7
Tol. ±	2	2	2	2	2	2	2	2

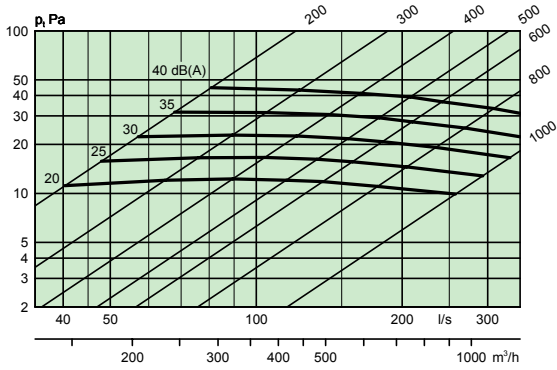
## Sizing diagrams

### GRL - Exhaust air

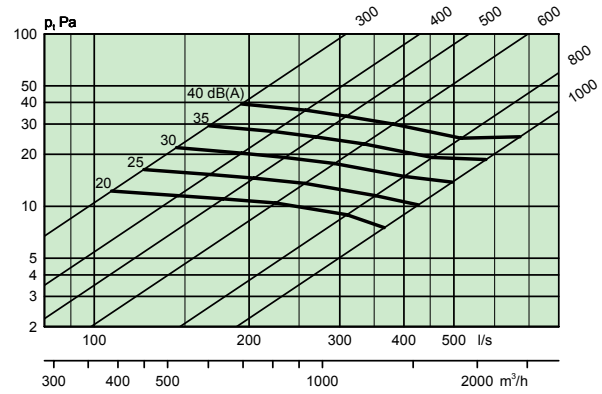
#### Air flow - Pressure drop - Sound level

- The graphs must not be used for commissioning
- The dB(A) values are for rooms with normal acoustic absorption of 4 dB.
- The dB(C) value lies normally 6-9 dB above the dB(A) value.

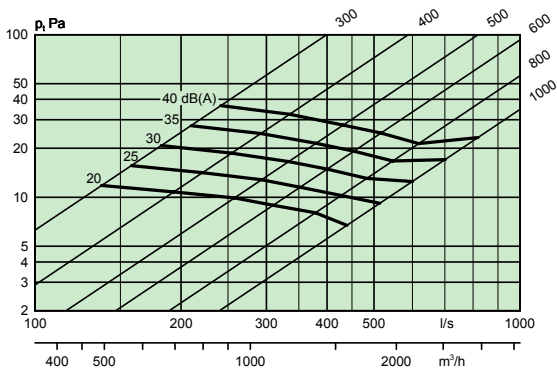
#### GRL + FHB, Height = 100, Exhaust air



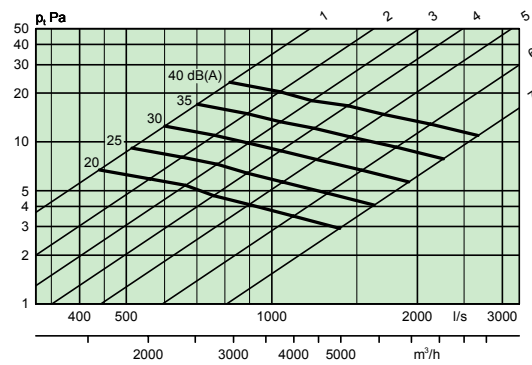
#### GRL + FHB, Height = 150, Exhaust air



#### GRL + FHB, Height = 200, Exhaust air



#### GRL + FHB, Height = 300, 400, 500, 600, 800 Exhaust air



#### Size designation

- |                                |                       |
|--------------------------------|-----------------------|
| 1 = 600-300                    | 5 = 1000-500, 800-600 |
| 2 = 600-400, 800-300           | 6 = 1000-600, 800-800 |
| 3 = 565-565, 800-400, 1000-300 | 7 = 1000-800          |
| 4 = 1000-400, 800-500          |                       |

## GRL with damper FHA

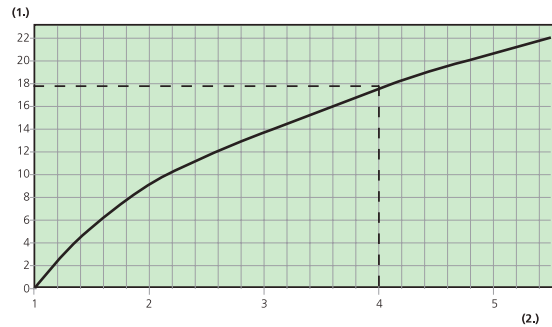
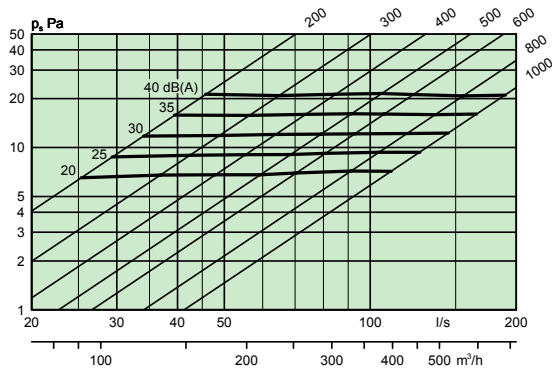
### Airflow - Pressure drop - Sound level

- Data apply to fully open FHA damper. Corrections for throttled damper are made in accordance with the graphs and tables under the heading Sound Data Correction. The pressure drop for the grille must be added to the data for FHA. The sound level need not be added.
- The graphs must not be used for commissioning.
- dB(A) value applies to a normally attenuated room (4 dB room attenuation).
- dB(C) value lies normally 6-9 dB above the dB(A) value.

## Sound data corrections for GRL with FHA

The sound values stated for the grille plus damper are valid when the damper is in the fully open position. In order to obtain the sound level for a throttled damper, first calculate the pressure drop ratio between throttled and open damper. Then go to the graph to the right. The value obtained is added to the sound level for an open damper. The maximum throttling ratio  $\Delta p_{\text{throttled}} / \Delta p_{\text{open}}$  is 5,5 for all sizes.

### FHA Height 100 mm, Open damper



- (1.) = dB(A)-increase
- (2.) = Throttle ratio =  $\Delta p_{\text{throttled}} / \Delta p_{\text{open}}$

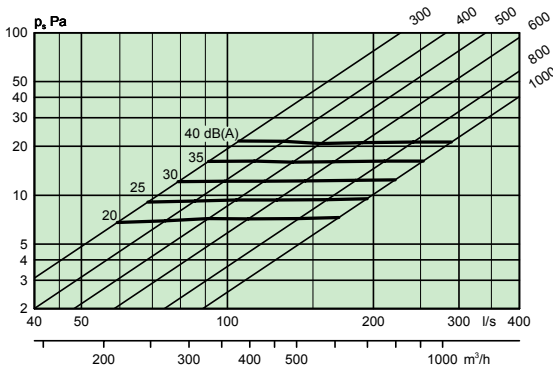
Example:

FHA 1000 x 200. Requisite air flow is 250 l/s at 40 Pa.  
 $\Delta p$  open damper: 10 Pa  
 $\Delta p$  throttling: 40 Pa

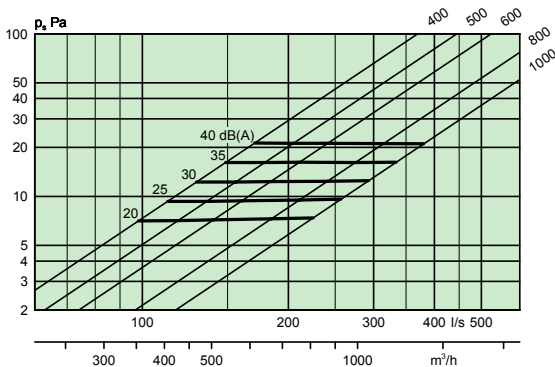
$$\frac{40}{10} = 4 \leq 5,5 \rightarrow \text{OK}$$

Sound increase according to diagram, 18 dB(A). The total sound level is then 25 + 18 = 43 dB(A).

### FHA Height 150 mm, Open damper



### FHA Height 200 mm, Open damper



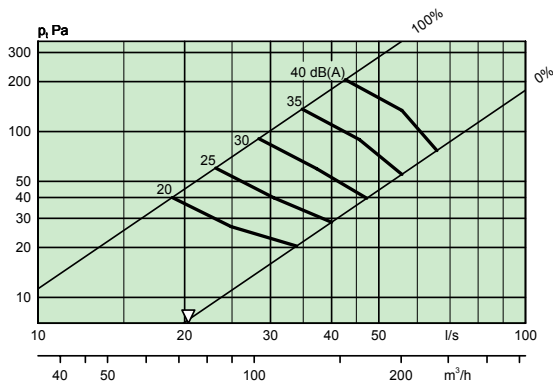
## Sizing diagrams

### GRL + TRG - Exhaust air

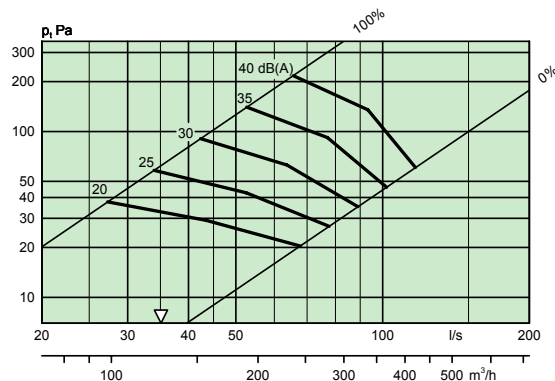
#### Air flow - Pressure drop - Sound level - Throw

- The graphs must not be used for commissioning.
- The dB(A) values are for rooms with normal acoustic absorption of 4 dB.
- The dB(C) value lies normally 6-9 dB above the dB(A) value.
- For a TRG with duct connection on short side (K) or on the long side (L), the sound level increases by approximately 2 dB(A) and the pressure drop by approximately 10%.

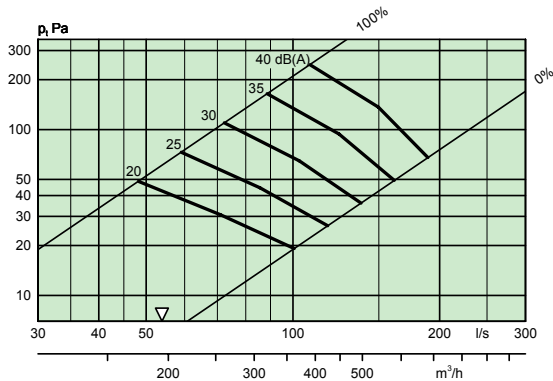
GRL 200 x 100 TRG-B Ø125, Exhaust air



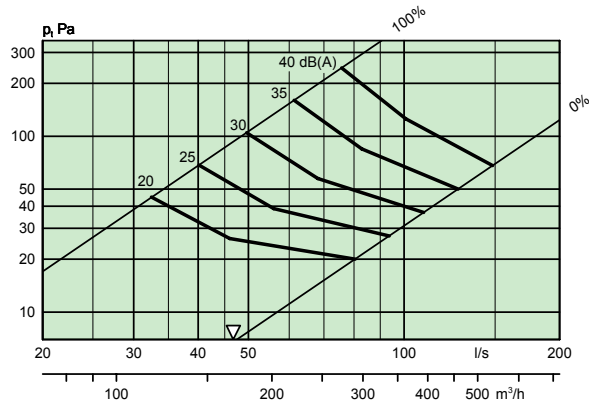
GRL 300 x 100 TRG-B Ø160, Exhaust air



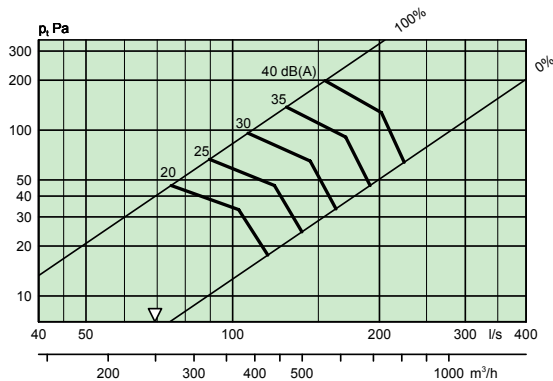
GRL 300 x 150 TRG-B Ø200, Exhaust air



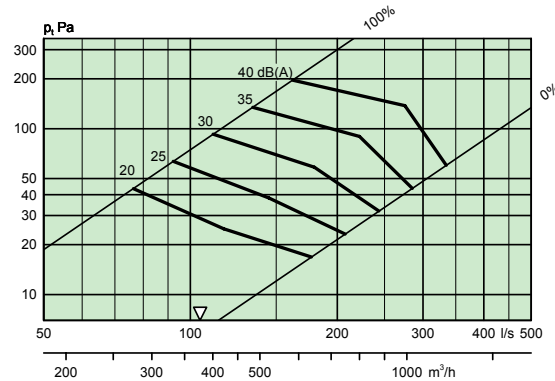
GRL 400 x 100 TRG-B Ø160, Exhaust air



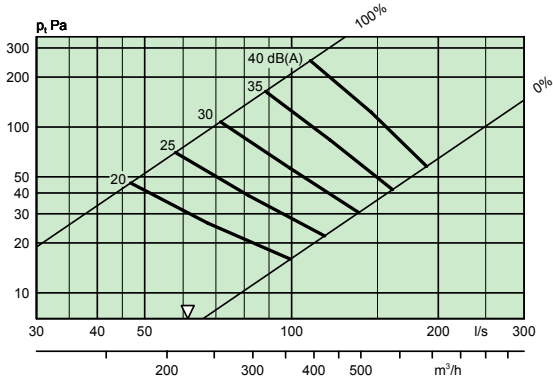
GRL 400 x 150 TRG-B Ø250, Exhaust air



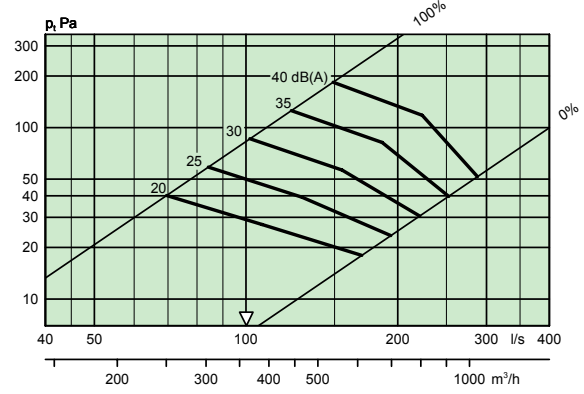
GRL 400 x 200 TRG-B Ø250, Exhaust air



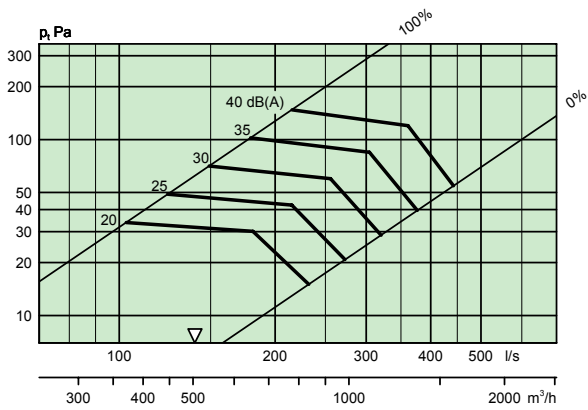
**GRL 500 x 100 TRG-B Ø200, Exhaust air**



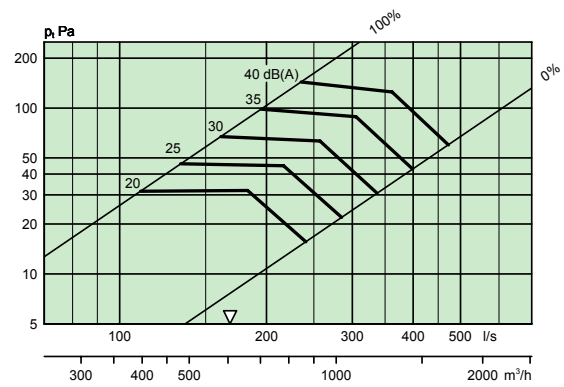
**GRL 500 x 150 TRG-B Ø250, Exhaust air**



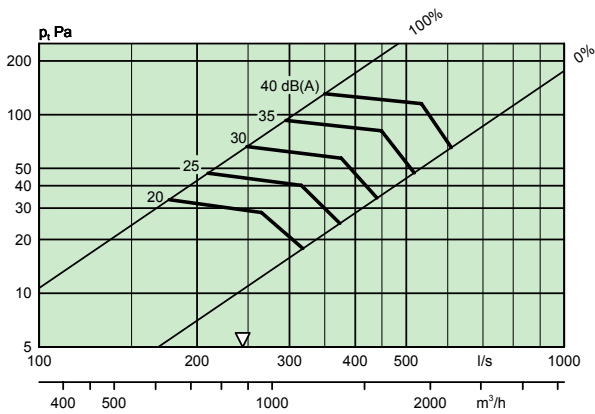
**GRL 500 x 200 TRG-B Ø315, Exhaust air**



**GRL 600 x 200 TRG-B Ø315, Exhaust air**



**GRL 600 x 300 TRG-B Ø400, Exhaust air**





# Dimensions and weights

**Table of dimensions TRG**

Size	A	B	C	ØD	F	I	G	Weight,kg
200-100	203	100	80	124	175	98	195	2.7
300-100	303	100	100	159	210	115	230	3.9
400-100	403	100	100	159	210	115	230	4.7
500-100	503	100	120	199	245	135	270	7.5
300-150	303	150	120	199	270	135	270	5.3
400-150	403	150	145	249	305	160	320	6.8
500-150	503	150	145	249	305	160	320	7.8
400-200	403	200	145	249	330	160	320	8.5
500-200	503	200	180	314	360	194	387	9.8
600-200	603	200	180	314	360	194	387	11.0
600-300	603	300	215	399	495	244	487	13.2

**Table of dimensions and weights (kg)**

Size	Weight ,kg
200-100	0,3
300-100	0,4
400-100	0,5
500-100	0,6
300-150	0,5
400-150	0,6
500-150	0,7
400-200	0,7
500-200	0,8
600-200	0,9
600-300	1,0

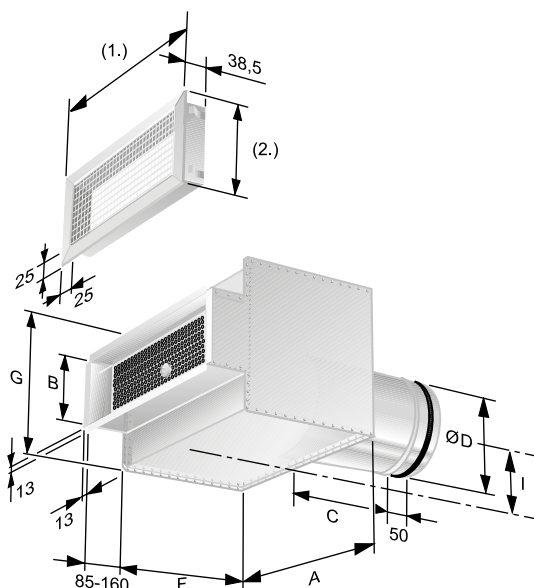


Figure 3. GRL.

- 1. = Nom. width + 30 mm
- 2. = Nom. height + 30 mm

In order to obtain the exact dimensions of the grille, the figures in the GRL diagram above must be added to the nominal dimensions.

Hole making size, fixing frame FHB = nominal dimensions. (Grille size designation.)

Size of the opening, TRG= nominal dimensions + 5 mm (Size designation of the grille + 5mm).

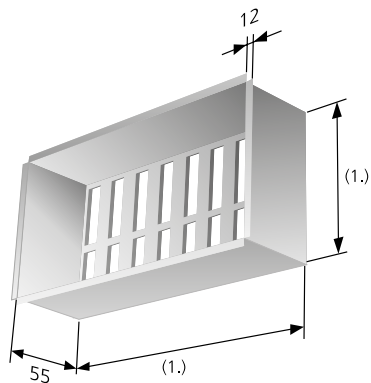


Figure 4. Fixing frame with sliding damper FHA.

1. = Nom. -3 mm

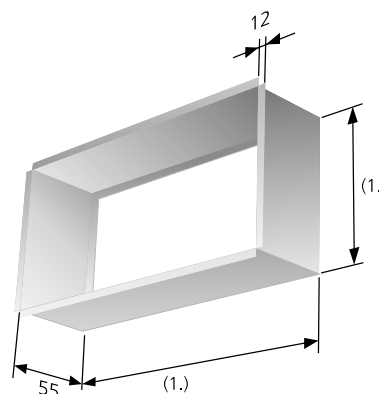


Figure 5. Fixing frame FHB.

1. = Nom. -3 mm

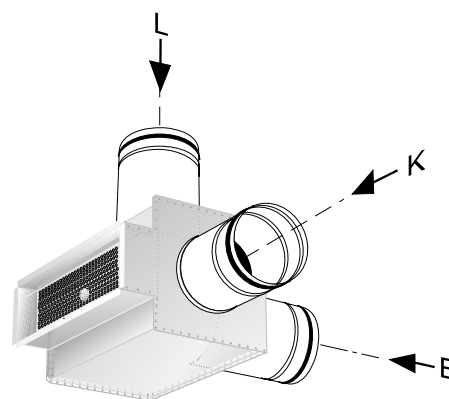


Figure 6. Connection alternatives for TRG.

- B = Connection back
- K = Connection short side
- L = Connection long side

# Ordering key

## Product

Grille for wall / ceiling	GRL	c	-aaa	-bbb
Version				
Nom. width See size table				
Nom. height See size table				

## Accessories

Commissioning box with removable damper and measuring unit	TRG	d	-aaa	-bbb	-ccc	-d
Version						
Nom. width 200, 300, 400, 500, 600						
Nom. height 100, 150, 200, 300						
Connection size: 125, 160, 200, 250, 315						
Connection alternative: B, K, L						

Standard range:	200-100-125
	300-100-160
	300-150-200
	400-100-160
	400-150-250
	400-200-250
	500-100-200
	500-150-250
	500-200-315
	600-200-315

Mounting frame with damper	FHA	a	-aaa	-bbb
Version				
Nominal width				
Nominal height				

Fixing frame	FHB	b	-aaa	-bbb
Version				
Nominal width				
Nominal height				

# Specification example

Swegon's rectangular grille for wall/ceiling mounting of the type GRL with the commissioning box TRG, having the following functions:

- Fixed square egg crate core
- Powder-coated in white, RAL 9003/NCS S 0500-N
- Cleanable commissioning box TRG with removable commissioning damper including a lockable adjustment, measurement function with low method error and internal acoustic attenuation with reinforced surface layer.

Size: GRLc aaa - bbb with TRGd aaa - bbb - ccc - d xx items