

GTH

Rectangular double deflection grille



QUICK FACTS

- For supply air
- Adjustable air deflectors
- Cleanable
- Installed using mounting frames FHB / FHA or commissioning box TRG
- Standard colour White RAL 9003
 - 5 alternative standard colours
 - Other colours upon request

AIR FLOW - SOUND PRESSURE ROOM (Lp10A) *)						
GTH Size	25 dB(A)		30 dB(A)		35 dB(A)	
	l/s	m³/h	l/s	m³/h	l/s	m³/h
200-100	28	101	44	158	50	180
300-100	42	151	48	173	78	281
400-100	40	144	52	187	90	324
500-100	65	234	78	281	125	450
300-150	60	216	70	252	130	468
400-150	95	342	115	414	150	540
500-150	93	335	110	396	155	558
400-200	98	353	120	432	180	648
500-200	145	522	170	612	250	900
600-200	145	522	225	810	350	1260

Data in the table applies to supply air for the combination GTH + TRG at a total pressure drop of 50 Pa.

*) L_{p10A} = Sound pressure incl. A-filter with 4 dB room attenuation and 10 m² room absorption area.

Contents

Technical description	3
Design	3
Materials and surface treatment.....	3
Special versions.....	3
Accessories	3
Planning	3
Free area.....	3
Installation	3
Commissioning with TRG	3
Maintenance.....	3
Environment	3
Sizing	4
GTH with damper FHA.....	6
GTH with TRG – Supply air.....	7
Dimensions and weight	9
Order key	10
Specification example	10

Technical description

Design

The grille consists of a frame which holds in place a number of horizontal and vertical adjustable blades of very thin aluminium. The grille is supplied with countersunk screw holes when the sum of the width and height exceed 700 mm.

Materials and surface treatment

The grille is manufactured in extruded aluminium and 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.

Special versions

In addition to the 10 sizes kept in stock, other dimensions are available to order. The maximum dimensions are 1200 x 600mm (W x H). Please contact your nearest sales representative for further information.

Accessories

Commissioning box:

TRG. Manufactured in galvanised sheet steel. It includes a removable damper, distribution plate, fixed measurement outlet, acoustic attenuation with 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 in galvanised sheet steel, with a sliding damper. Can be used as a simpler alternative to the TRG.

Mounting frame:

FHB. Manufactured in galvanised sheet steel. For when the commissioning box is not used.

Planning

The shape of the grille blades makes the diffuser suitable for wall mounting. Stocked sizes according to the table under the section Dimensions and weights.

Free area

To obtain the free area, the nominal area of the grille is multiplied by the factor $f = 0.71$.

Example:

Grille: GTH 400 – 200

Nominal area of grille: $(0.4 - 0.02) \times (0.2 - 0.02) = 0.0684 \text{ m}^2$

Free area of grille: $0.71 \times 0.0684 = 0.049 \text{ m}^2$

Installation

The hole is cut using the nominal width and height dimensions. The fixing frame (FHA/FHB) is pushed into the duct and fixed in position using blind rivets. Sealant is applied between the commissioning box and mounting frame to avoid leakage. The grille is then pressed in place onto the fixing frame. When the TRG commissioning box is used, the telescopic frame is first pulled out of the box. The box is then pushed into place from behind the



hole and attached to the framework of the building using either perforated band or blind rivets. The telescopic mounting frame is pushed into the box from the room side and fixed to the sides using blind rivets. The grille is subsequently pressed into place in the mounting frame. If the sum of the width and height of the grille exceeds 700 mm, the grille should be screwed into place on the wall through the countersunk holes. See Figure 1.

Commissioning with TRG

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 is also in the relevant k-factor guide which is to be found at www.swegon.com. See Figure 1.

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.

Environment

The Declaration of construction materials is available at www.swegon.com.

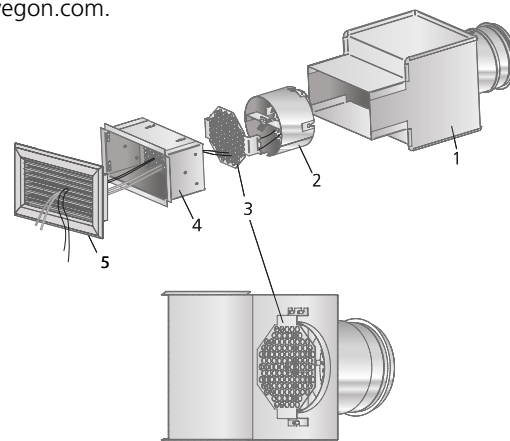


Figure 1. Installation. Commissioning.

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

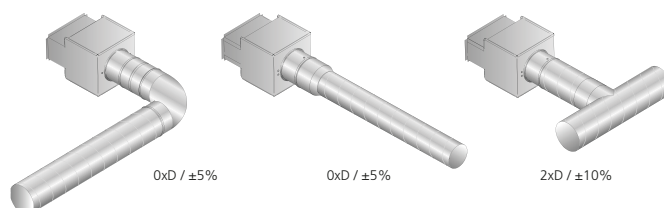


Figure 2. Installation alternatives, applies for all connections (B, K, L)

Sizing

- Sound pressure level dB(A) applies to rooms with 10 m² equivalent sound absorption area.
- Sound attenuation (ΔL) below is shown in the octave band. Orifice attenuation is included in the values.
- The throw $I_{0.2}$ is applicable to isothermal conditions. The graphs presents the data for the GTH mounted with the upper edge 200 mm from the ceiling. To correct the throw $I_{0.2}$ for other distances between the upper edge and the ceiling, please see Technical Section.
- Recommended maximum under temperature is 6 K.
- For calculating the width of the air stream, air velocities in the occupied zone or sound levels in rooms with other dimensions, please refer to our web calculation softwares available for download at www.swegon.com.

Sound data – GTH – 45° – Supply air

Sound power level L_w (dB)

Table K_{OK}

Size	Mid-frequency (octaveband) Hz							
GTH	63	125	250	500	1000	2000	4000	8000
All sizes	4	5	5	3	-1	-4	-13	-17
Size	Mid-frequency (octaveband) Hz							
GTH+TRG	63	125	250	500	1000	2000	4000	8000
200-100	2	4	5	1	0	-10	-19	-27
300-100	5	8	6	1	-1	-9	-18	-24
400-100	7	11	6	1	-2	-9	-18	-24
500-100	5	9	5	1	-2	-8	-17	-22
300-150	5	9	5	2	-2	-8	-17	-21
400-150	6	10	5	2	-1	-8	-19	-24
500-150	6	10	5	2	-2	-8	-19	-24
400-200	5	9	3	3	-2	-8	-17	-23
500-200	6	10	5	3	-2	-9	-20	-25
600-200	6	10	5	3	-2	-9	-19	-25
Tol. $\pm$	2	2	2	2	2	2	2	2

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 attenuation ΔL (dB)

Table ΔL

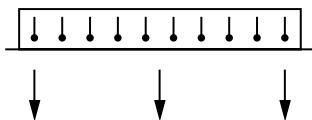
Size	Mid-frequency (octaveband) Hz							
GTH	63	125	250	500	1000	2000	4000	8000
200-100	15	10	6	2	0	0	0	0
300-100	14	9	4	2	0	0	0	0
400-100	13	8	4	1	0	0	0	0
500-100	12	7	3	1	0	0	0	0
600-100	11	6	3	1	0	0	0	0
800-100	10	5	2	0	0	0	0	0
1000-100	9	4	1	0	0	0	0	0
300-150	13	8	4	1	0	0	0	0
400-150	12	7	3	1	0	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
Size	Mid-frequency (octaveband) Hz							
GTH+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
Tol. $\pm$	2	2	2	2	2	2	2	2

Engineering graphs

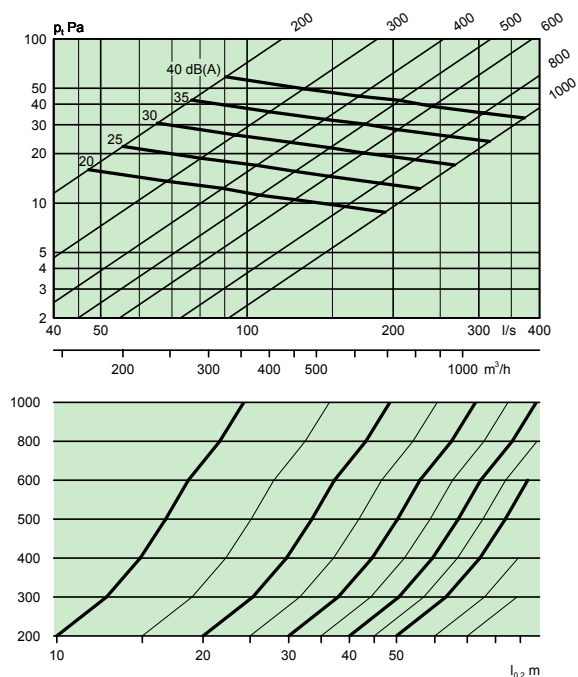
GTH

Air flow – Pressure drop – Sound level – Throw

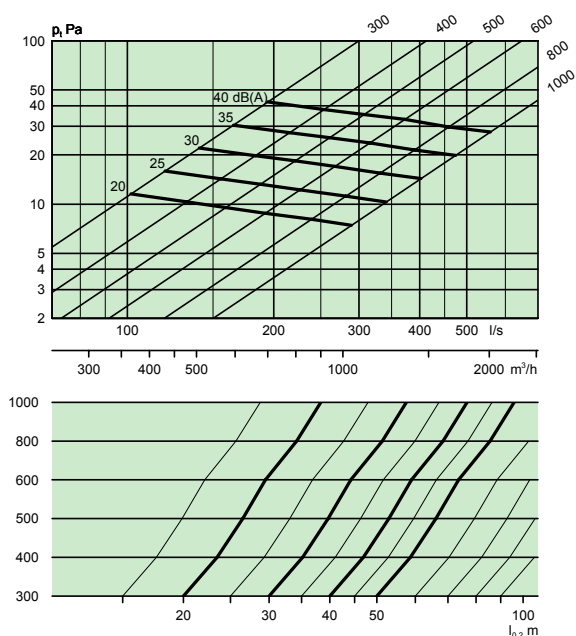
- Data applies for deflectors in strait position. For a 45° spread angle, add 2 dB to the stated dB(A) values.
- dB(A) value applies to a normally attenuated room (4 dB room attenuation).
- The graphs must not be used for commissioning.
- The dB(C) value is normally 6-9 dB higher than the dB(A) value.
- The throw for a 45° spread pattern is shown in the diagram for the GTH + TRG.



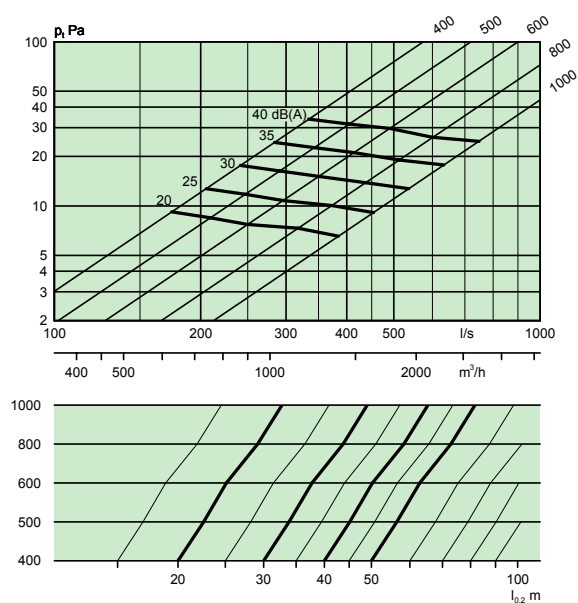
GTH – height 100, 0° spread pattern



GTH – height 150, 0° spread pattern



GTH – height 200, 0° spread pattern

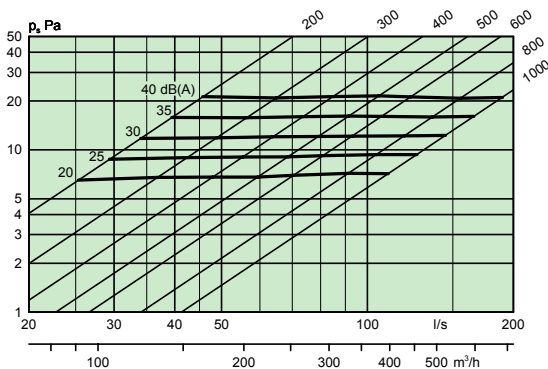


GTH with damper FHA

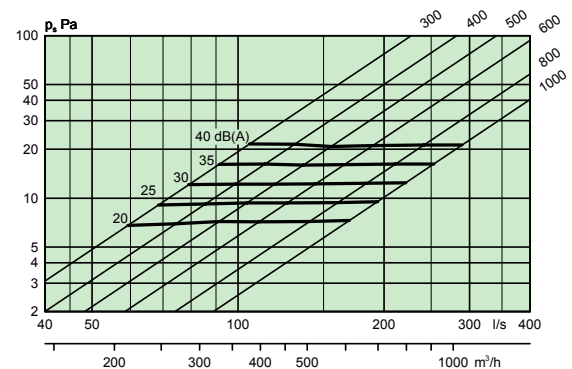
Airflow – Pressure drop – Sound level

- Data applies 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.

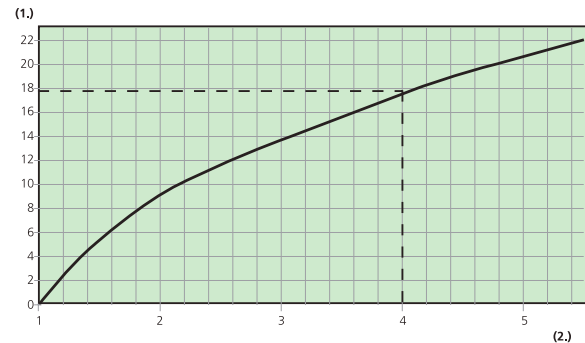
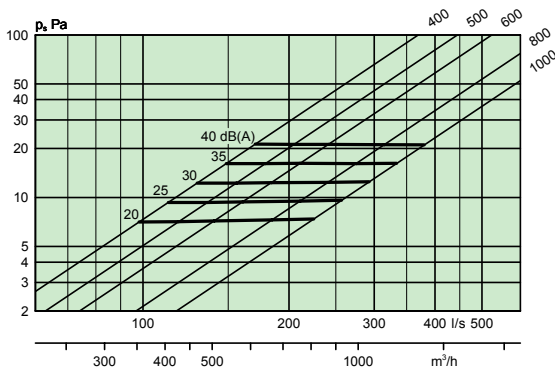
FHA – height 100 mm, open damper



FHA – height 150 mm, open damper



FHA – height 200 mm, open damper



Sound data corrections for GTH 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.

(1.) = dB(A)-increase

(2.) = Throttle ratio = $\Delta p_{\text{throttled}} / \Delta p_{\text{open}}$

Example:

FHA 1000 x 200. Required air flow is 250 l/s at 40 Pa.

Δp open damper: 10 Pa

Δp throttling: 40 Pa

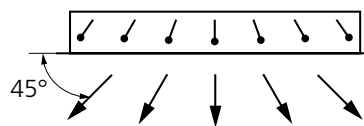
$$\frac{40}{10} = 4 \leq 5,5 \rightarrow \text{OK}$$

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

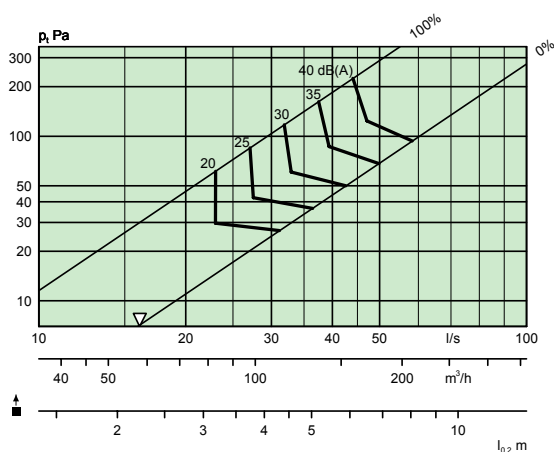
GTH with TRG – Supply air

Air flow – Pressure drop – Sound level – Throw

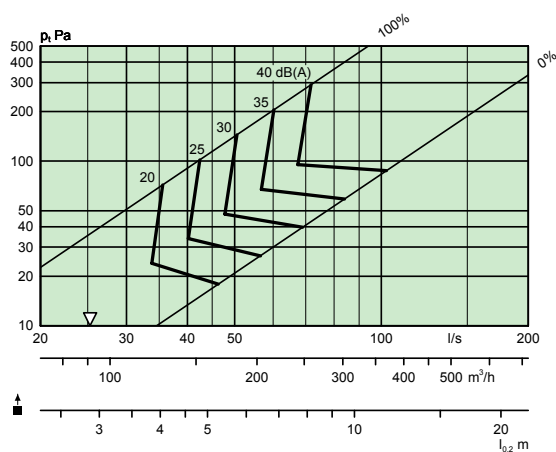
- Data apply for air deflectors set at 45°.
- The graphs must not be used for commissioning
- ∇ = min. airflow to obtain sufficient commissioning pressure.
- dB(A) value applies to a normally attenuated room (4 dB room attenuation).
- The dB(C) value is normally 6-9 dB's higher than the dB(A) value.
- For the TRG with duct connection on short side (K) or in the long side (L), the sound level increases by approx. 2 dB(A) and the pressure drop by approx. 10%.



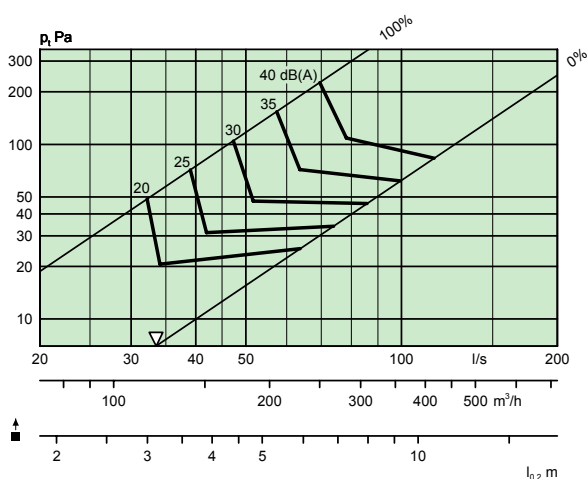
GTH 200 x 100 + TRG Ø 125, supply air



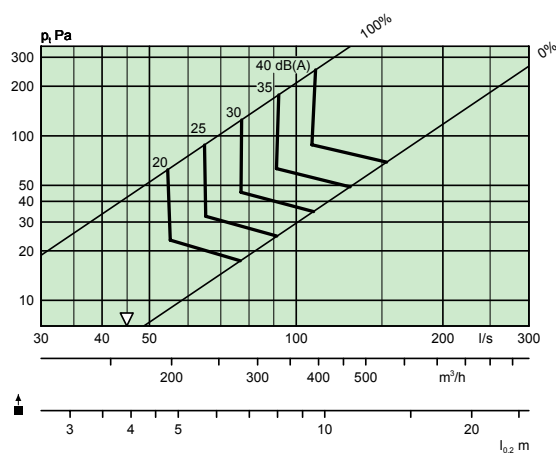
GTH 300 x 100 + TRG Ø 160, supply air



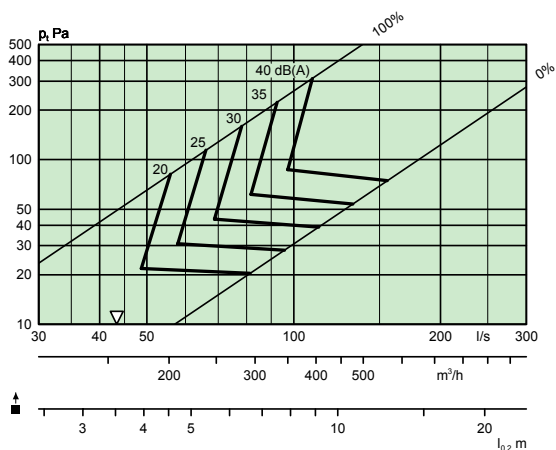
GTH 400 x 100 + TRG Ø 160, supply air



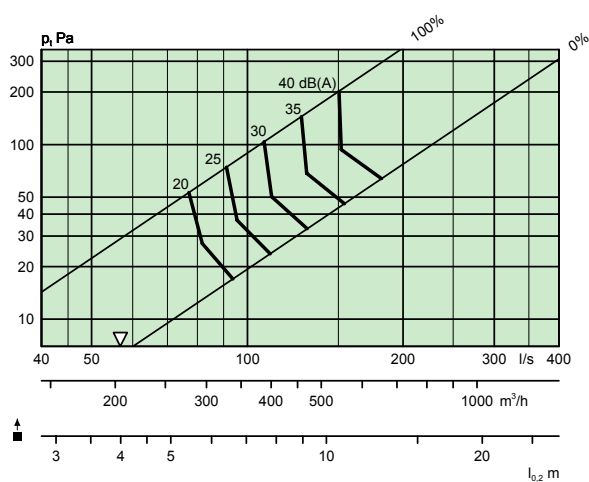
GTH 500 x 100 + TRG Ø 200, supply air



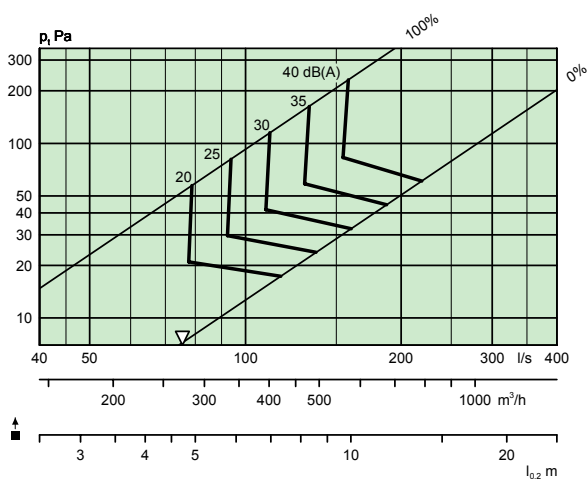
GTH 300 x 150 + TRG Ø 200, supply air



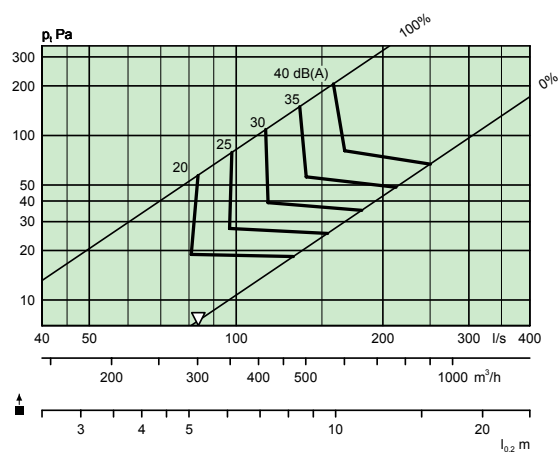
GTH 400 x 150 + TRG Ø 250, supply air



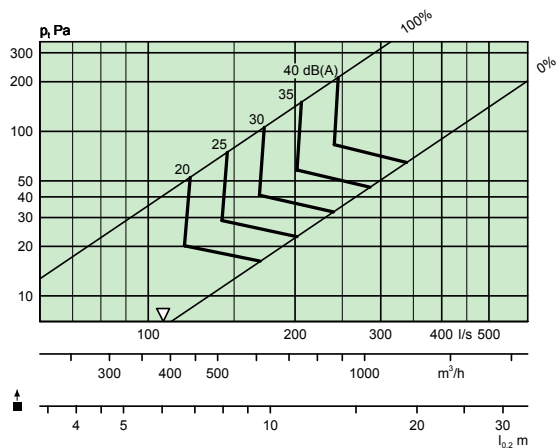
GTH 500 x 150 + TRG Ø 250, supply air



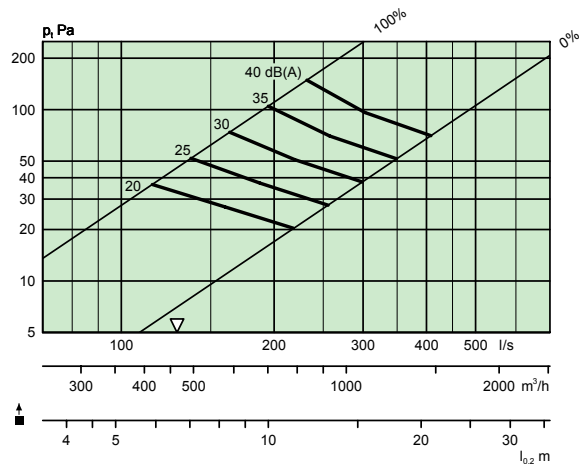
GTH 400 x 200 + TRG Ø 250, supply air



GTH 500 x 200 + TRG Ø 315, supply air



GTH 600 x 200 + TRG Ø 315, supply air



Dimensions and weights

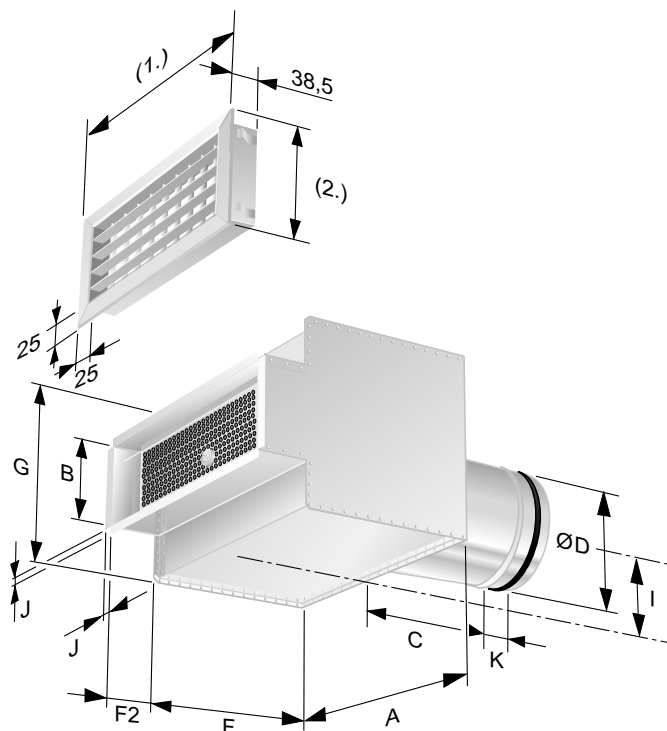


Figure 3. GTH/TRG.
(1.) Nominal width + 30 mm
(2.) Nominal height + 30 mm

In order to obtain the exact dimensions of the grille, the figures in the GTH 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).

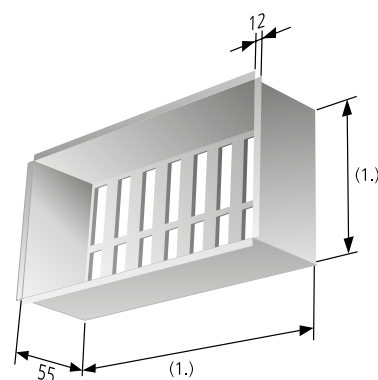


Figure 4. Fixing frame with sliding damper FHA..
(1.) = Nom. -3 mm

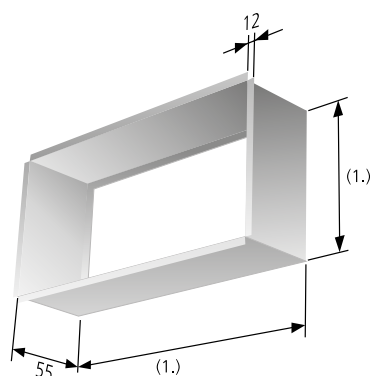


Figure 5. fixing frame FHB. (1.) = Nom. -3 mm

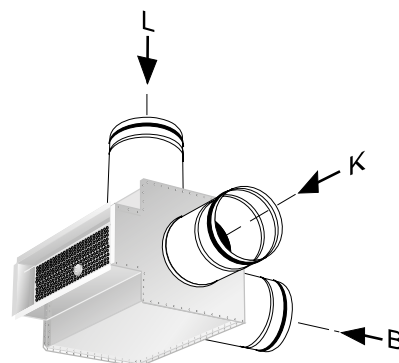


Figure 6. Connection alternatives for TRG.
B = Connection back
K = Connection short side
L = Connection long side

TRG

Size Nominal dimensions	A	B	C	ØD	F	F2	I	G	J	K	Weight (kg)
200-100	203	100	80	124	175	85-160	98	195	13	50	2,7
300-100	303	100	100	159	210	85-160	115	230	13	50	3,9
400-100	403	100	100	159	210	85-160	115	230	13	50	4,7
500-100	503	100	120	199	245	85-160	135	270	13	50	7,5
300-150	303	150	120	199	270	85-160	135	270	13	50	5,3
400-150	403	150	145	249	305	85-160	160	320	13	50	6,8
500-150	503	150	145	249	305	85-160	160	320	13	50	7,8
400-200	403	200	145	249	330	85-160	160	320	13	50	8,5
500-200	503	200	180	314	360	85-160	194	387	13	50	9,8
600-200	603	200	180	314	360	85-160	194	387	13	50	11,0

GTH

Size Nominal dimensions	Weight (kg)
200-100	0,4
300-100	0,5
400-100	0,6
500-100	0,7
300-150	0,7
400-150	0,8
500-150	1,01
400-200	1,1
500-200	1,3
600-200	1,5

Order key

Product

Double deflection grille	GTH	c	-aaa	-bbb
Version:				
Nominal width, see size table				
Nominal height, see size table				

Accessories

Commissioning box with removable damper	TRG	d	-aaa	-bbb	-ccc	-d
Version:						
Nominal width: 200, 300, 400, 500, 600						
Nominal height: 100, 150, 200						
Connection size: 125, 160, 200, 250, 315						
Connection alternatives: 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	a	-aaa	-bbb
Version:				
Nominal width				
Nominal height				

Specification example

Swegon's double deflection grille of type GTH with the commissioning box TRG, having the following functions:

- Adjustable horizontal and vertical deflectors.
- 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.

Accessories:

Fixing frame with damper	FHAa	xx items
Fixing frame	FHBa	xx items
Size	GTHc aaa-bbb + TRGd aaa-bbb-ccc-d	