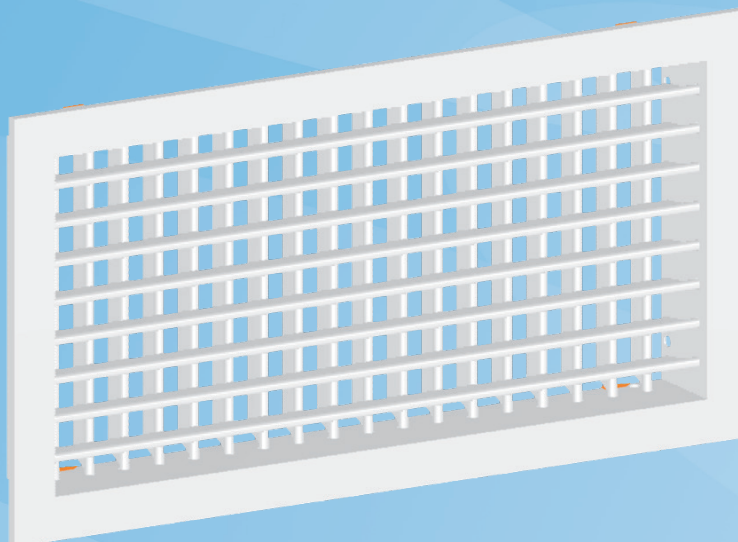


Halton WTS

Grille



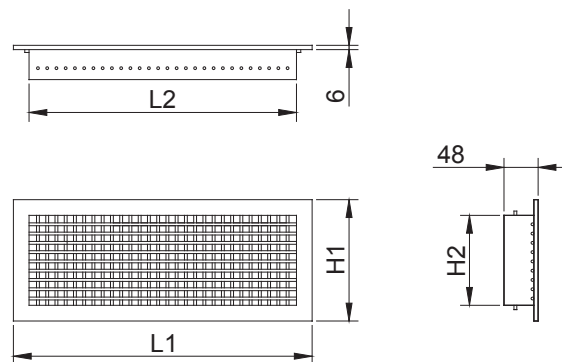
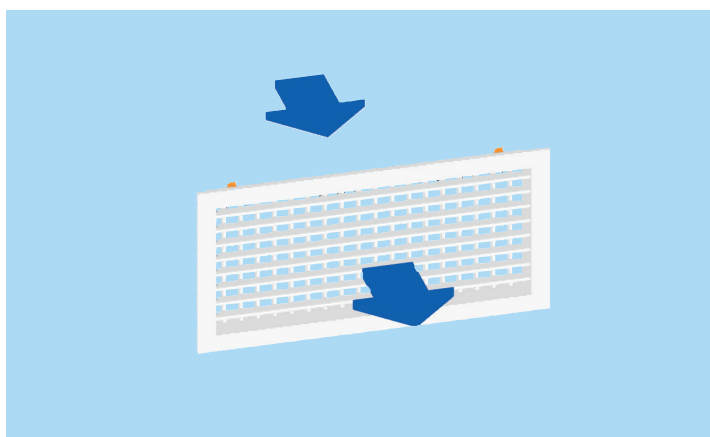
- Horizontal air supply, suitable also for exhaust
- Adjustable vertical rear vanes, adjustable horizontal front vanes
- Robust steel construction
- Detachable grille enables cleaning of the grille and ductwork

Accessories

- Airflow adjustment damper
- Plenum options with measurement and adjustment functions
- Installation frame

MATERIAL AND FINISHING

PART	MATERIAL	FINISHING	NOTE
Frame	Steel	Epoxy-painted, (std RAL 9010 50% gloss)	Special colours available
Vertical vanes	Steel	Epoxy-painted, (std RAL 9010 50% gloss)	Special colours available
Horizontal vanes L<600mm	Steel	Epoxy-painted, (std RAL 9010 50% gloss)	
Horizontal vanes L>600mm	Aluminium	Epoxy-painted, (std RAL 9010 50% gloss)	
Installation frame	Galvanised steel		
Plenum box / spigot	Galvanised steel		



Function

Supply air is supplied through the horizontal front and vertical rear vanes into the space. The supply air mixes with room air in front of the grille.

The flow pattern can be adjusted by changing the angles of the adjustable vanes.

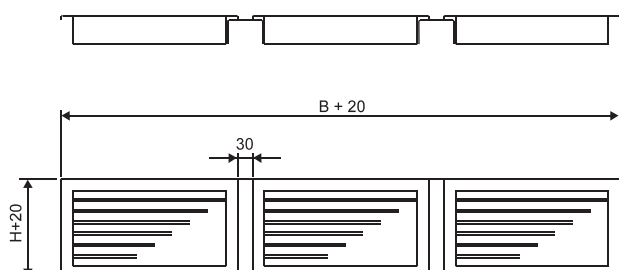
In wall installations, the recommended distance from the ceiling is 200 mm, when the supply air is directed to the ceiling.

The grille can also be used as an exhaust unit.

DIMENSIONS

LxH	L1	L2	H1	H2
200x100	220	176	120	76
250x100	270	226	120	76
300x100	320	276	120	76
300x150	320	276	170	126
400x150	420	376	120	126
400x200	420	376	220	176
600x200	620	576	220	176
800x200	820	776	220	176
1000x200	1020	976	220	176
600x300	620	576	320	276
800x300	820	776	320	276
1000x300	1020	976	320	276
1000x400	1020	976	420	376
1200x400	1220	1176	420	376

With OD (airflow adjustment damper) total depth = 48 mm + 45 mm.

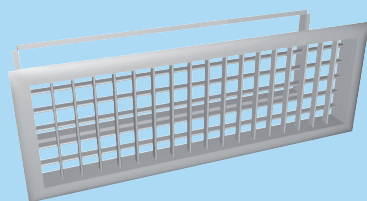


Special dimensions

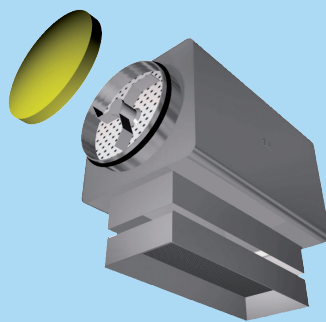
In addition to these standard sizes, other dimensions are available by special order. The maximum size is 1500mm x 600mm

ACCESSORIES

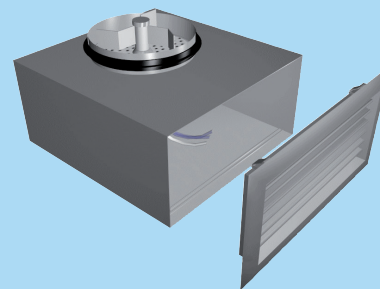
ACCESSORY	CODE	DESCRIPTION
Balancing plenum	PRI	For balancing & equalising the airflow and attenuating the duct noise
Plenum	BDR	Plenum for duct connection (with or without attenuation material)
Airflow measurement and adjustment unit	MSM	For supply installation
Airflow measurement and adjustment unit	MEM	For exhaust installation
Sound attenuation	IN	Mineral wool for the BDR plenum box. Polyester fiber for the PRI plenum box.
Flow adjustment damper	OD	Aluminium opposite blade damper for airflow adjustment
Installation frame	IF	For installation without plenum
Visible screw fastening	SF	Screw fastening
Concealed screw fastening	CC	For installation with BDR plenum or IF frame



Installation frame (IF)



PRI balancing plenum

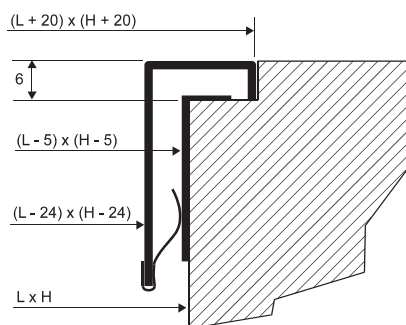


BDR plenum box

Installation

The grille is connected to the duct either directly using the IF installation frame, or using a PRI balancing plenum or BDR plenum.

Clips fastening (standard)



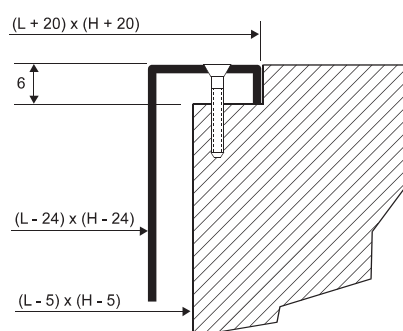
The grilles are delivered with clips fastening as standard.

Clips fastening is used with PRI, BDR and IF.

Concealed screw fastening

Concealed screw fastening is possible when the grille is installed with an installation frame (IF) or with a BDR plenum; not with a PRI balancing plenum. Holes are provided for screws in BDR.

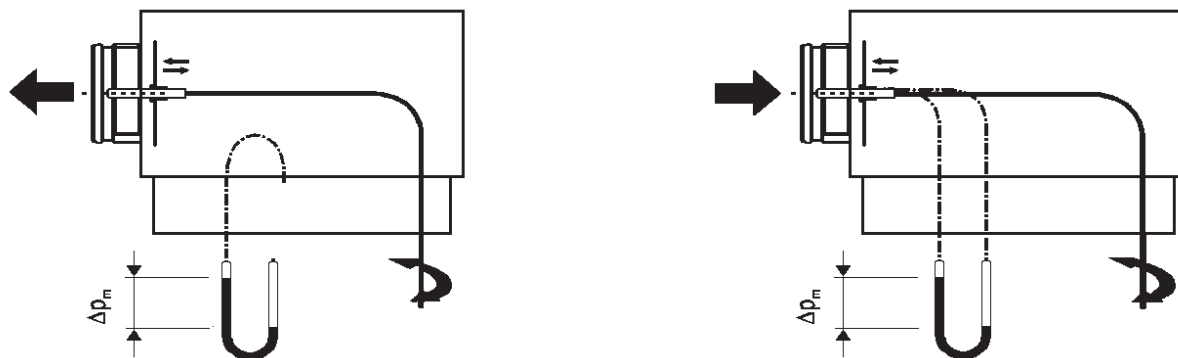
Visible screw fastening



For large grilles, we recommend using visible screw fastening. The auto screws, 4.2x25 (bevel headed screw) are supplied.

The dimensions of the installation holes are LxH when an installation frame is used, and (L-5)x(H-5) without installation frame.

Adjustment



In order to enable airflow adjustment and measurement of airflow rate we recommend connecting the grille to a BDR plenum or PRI balancing plenum equipped with the MSM/MEM module.

The supply flow rate is determined by using the measurement and adjustment module MSM and the exhaust flow rate by measuring the static pressure of the plenum.

Detach the grille and pass the tubes and control spindle through the grille.

Measure the differential pressure with a manometer.

The flow rate is calculated using the formula below.

$$q_v = k * \sqrt{\Delta p_m}$$

Adjust the airflow rate by rotating the control spindle until the desired setting is achieved.

Lock the damper position with a screw.

Replace the tubes and spindle into the plenum and replace the grille.

K-factor for installations with different safety distances (D= duct diameter).

PRI	Supply	>8xD	min 3xD	Exhaust~>8xD
125	200x100	10.1	12.6	12.4
160	300x100	17.0	21.7	19.7
200	300x150	27.8	33.9	31.1
250	400x150	47.2	55.5	43.4
250	400x200	51.2	55,5	53.7
315	600x200	82.7	93.1	85.6
315	800x200	79.3	83.3	116.4

BDR	>6xD	min 3xD
100	6	7
125	10	12
160	19	22
200	28	32
250	49	51
315	77	83

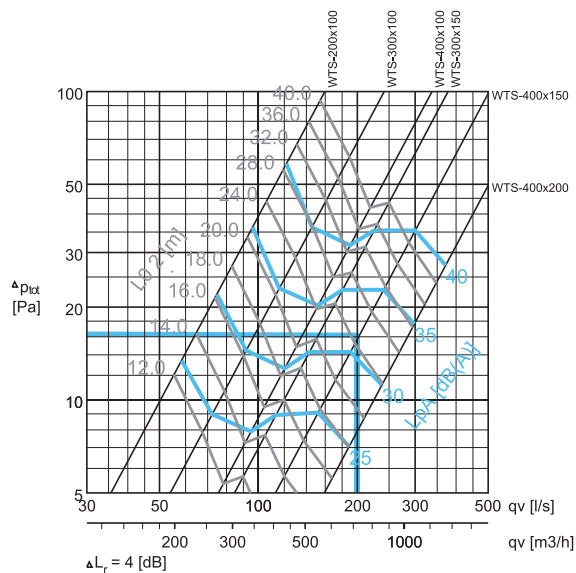
Airflow adjustment damper OD

The airflow rate can also be adjusted by turning the damper blades behind the grille with a screwdriver. The measurement is carried out when grille is installed.

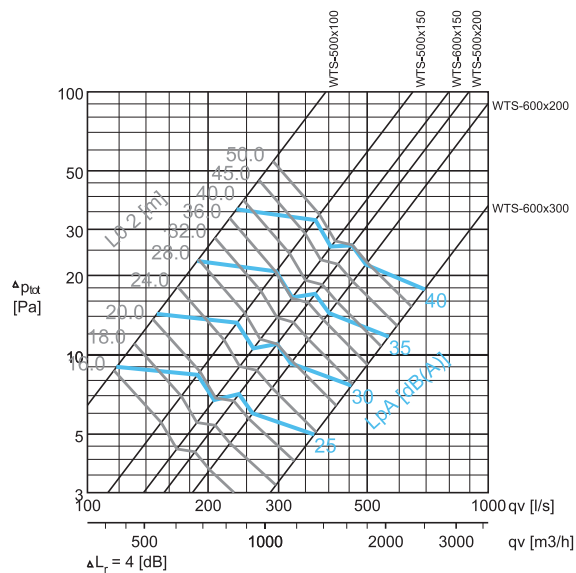
Pressure drop, throw pattern and sound data

WTS, wall installation at a distance of 200 mm from the ceiling (with Coanda effect)

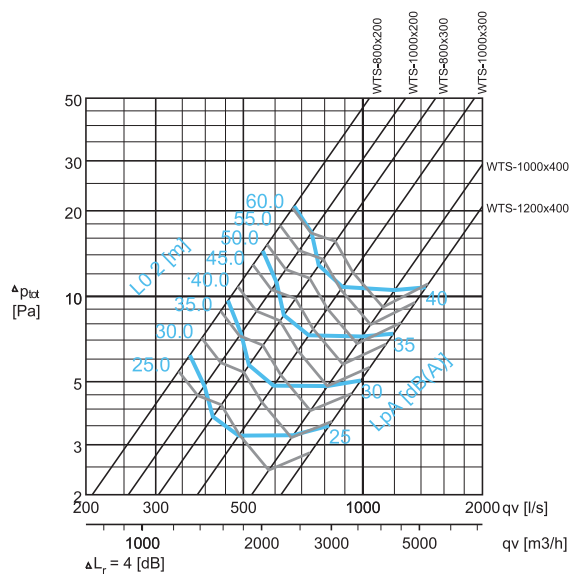
200x100, 300x100, 400x100, 300x150, 400x150, 400x200



500x100, 500x150, 600x150, 500x200, 600x200, 600x300



800x200, 1000x200, 800x300, 1000x300, 1000x400, 1200x400



Selection example :

Requirements : $qv = 200$ l/s
 $L_{pA} \leq 35$ dB(A)
 $L_{0,2} \leq 25$ m

Selection : WTS-400x150
 $L_{pA} = 31$ dB(A)
 $L_{0,2} = 24$ m
 $\Delta p_{tot} = 16$ Pa

Note :

When there is no coanda effect (installation greater than 200 mm from ceiling) the throw pattern must be multiplied by 0.7.

Sound power level with od damper

Use of an OD opposite blade damper, will result in increased pressure loss. The resulting increase in sound level is computed from the selection chart value and the formula below:

$$L_{pA} = \Delta L_p + L_{pA}$$

$$K_p = \frac{\text{Adjusted pressure drop}}{\text{Pressure drop in selection chart}}$$

Example :

WTS-400x150 + OD

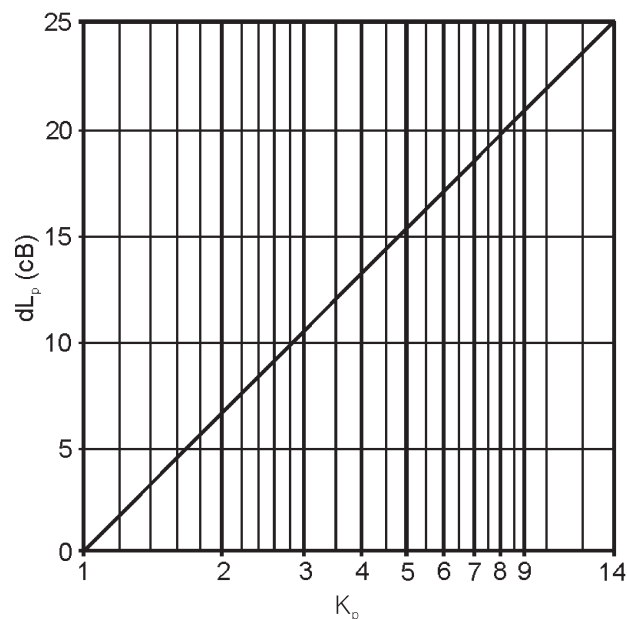
$q_v = 200 \text{ l/s}$

$L_{pA} = 31 \text{ dB(A)}$ without damper OD

$\Delta P_s = 48 \text{ Pa}$ (desired pressure drop)

$K_p = 48/16 = 3$

$L_{pA} = 31 + 11 = 42 \text{ dB(A)}$

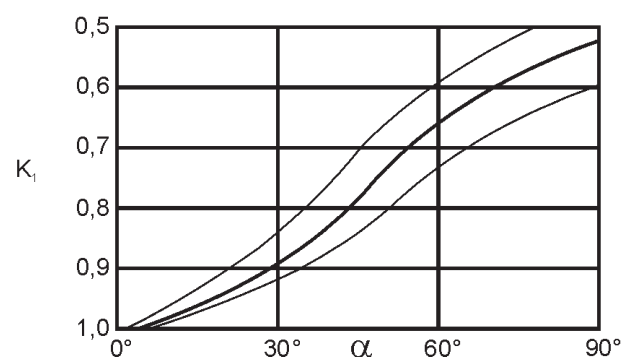


Throw length correction factor

When the throw length is adjusted with the rear vanes, the actual throw length is obtained by multiplying the value obtained from the selection chart by the correction coefficient K_1 .

$$L_{0.2}(\alpha) = K_1 \times L_{0.2}$$

The correction coefficient K_1 is the average for the various grille sizes.



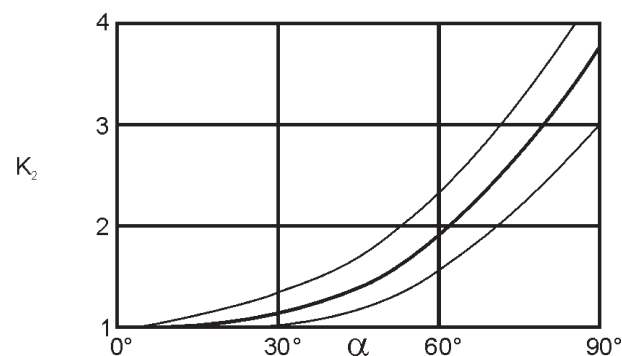
Angle between vanes

Pressure drop correction factor

When the throw length is adjusted with the rear vanes, the actual pressure drop is obtained by multiplying the value obtained from the selection chart by the correction coefficient K_2 .

$$\Delta P_s(\alpha) = K_2 \times \Delta P_s$$

The sound level increases when pressure drop is increased. The correction coefficient K_2 is the average for the various grille sizes.



Angle between vanes

SOUND LEVEL DATA

	qv	ΔPst	ΔPtot	F (Hz)						LpA	NR	NC	
	(l/s)			(m³/h)	(Pa)	(Pa)	125	250	500				1000
200x100	58	209	8	13	26	27	26	24	21	16	25	21	18
	75	270	14	22	29	30	31	29	27	22	30	26	24
	96	346	23	36	33	34	36	34	32	29	35	31	29
	122	439	36	58	36	38	40	39	38	34	40	37	34
200x150	53	191	3	5	23	23	20	16	27	3	25	26	23
	81	292	7	11	29	30	28	25	31	14	30	30	28
	114	410	13	22	34	36	35	33	34	24	35	34	31
	153	551	23	39	39	41	41	39	37	32	40	36	34
300x100	72	259	5	9	28	28	27	24	20	13	25	20	18
	92	331	9	14	32	32	32	29	26	20	30	25	24
	116	418	14	23	35	36	37	34	31	26	35	30	29
	145	522	22	36	39	40	41	39	37	32	40	36	34
300x150	113	407	5	9	30	30	28	24	19	10	25	20	18
	143	515	8	14	34	34	33	29	24	17	30	25	23
	180	648	13	23	37	38	37	34	30	24	35	30	29
	225	810	20	35	41	42	42	40	35	30	40	36	34
400x100	95	342	5	8	29	29	28	24	19	12	25	20	18
	120	432	7	13	33	33	32	29	25	18	30	25	24
	152	547	12	20	37	37	37	35	30	25	35	31	29
	190	684	18	32	40	41	41	40	36	32	40	36	35
400x150	152	547	5	9	31	30	28	24	18	9	25	20	18
	190	684	8	14	35	34	33	29	24	16	30	25	23
	240	864	13	23	38	39	37	34	30	23	35	30	29
	299	1076	20	35	42	43	42	40	35	29	40	36	34
400x200	188	677	4	7	32	31	28	23	16	6	25	19	17
	237	853	6	11	36	35	33	29	22	13	30	25	23
	297	1069	9	18	40	39	38	34	28	21	35	30	29
	369	1328	14	27	44	43	42	39	34	28	40	35	34
500x100	118	425	6	9	31	30	28	24	19	11	25	20	18
	149	536	9	14	34	34	32	29	24	17	30	25	23
	188	677	14	23	38	38	37	34	30	24	35	30	29
	235	846	22	36	41	42	42	40	36	30	40	36	34
500x150	188	677	5	8	32	31	28	24	17	8	25	20	18
	237	853	7	13	36	35	33	29	23	15	30	25	23
	296	1066	11	21	39	39	38	34	29	22	35	30	29
	371	1336	18	33	43	44	42	39	35	29	40	35	34
500x200	239	860	4	7	33	31	28	23	16	6	25	20	18
	298	1073	6	11	37	36	33	28	22	13	30	25	23
	369	1328	9	17	41	40	38	34	28	20	35	30	29
	458	1649	13	26	45	44	43	39	34	27	40	35	34
600x150	207	745	4	7	33	31	28	24	16	6	25	20	18
	260	936	6	11	37	35	33	29	23	13	30	25	23
	325	1170	9	17	41	40	37	34	29	21	35	30	29
	406	1462	14	26	44	44	42	39	35	28	40	35	34
600x200	258	929	3	6	34	32	28	22	14	3	25	20	18
	322	1159	5	9	38	37	33	28	20	10	30	25	23
	401	1444	8	14	42	41	38	33	26	17	35	30	29
	496	1786	12	22	46	45	43	39	33	24	40	35	34
600x300	369	1328	2	5	36	32	28	21	12	3	25	20	18
	458	1649	4	8	40	37	33	27	19	7	30	25	24
	567	2041	6	12	44	42	38	33	25	14	35	30	29
	698	2513	9	18	47	46	43	38	31	22	40	35	34
800x200	366	1318	3	6	36	33	29	4	14	3	25	21	19
	457	1645	5	10	40	38	34	17	21	10	30	26	25
	559	2012	7	14	44	42	39	28	27	17	35	31	30
	671	2416	10	21	47	46	43	38	33	24	40	35	34
800x300	421	1516	2	4	37	34	28	20	9	3	25	19	17
	519	1868	3	6	41	38	33	26	16	5	30	25	23
	638	2297	4	9	45	43	38	32	23	12	35	30	29
	782	2815	7	13	50	47	43	37	29	18	40	36	35
1000x200	397	1429	2	5	36	33	28	21	11	3	25	19	18
	491	1768	4	7	40	37	33	27	17	7	30	25	23
	603	2171	6	11	44	42	38	32	24	14	35	30	29
	738	2657	9	17	47	46	43	38	30	20	40	35	34
1000x300	489	1760	2	3	38	34	28	19	7	3	25	20	18
	601	2164	2	5	42	39	33	25	14	5	30	25	23
	739	2660	4	7	46	43	38	31	21	10	35	31	29
	900	3240	6	11	50	48	44	36	28	16	40	36	35
1000x400	670	2412	2	3	38	34	27	18	5	3	25	20	17
	818	2945	2	5	42	39	32	24	12	4	30	25	23
	997	3589	3	7	46	44	38	30	19	8	35	30	29
	1211	4360	5	11	50	48	43	36	26	12	40	35	34
1200x400	815	2934	2	3	38	33	27	17	3	3	25	19	17
	983	3539	3	5	42	38	32	23	10	4	30	24	23
	1178	4241	4	7	46	43	37	29	17	7	35	29	28
	1419	5108	5	11	51	48	42	35	24	11	40	35	34

LpA values presented with room attenuation 4 dB (red 10m² - sab). When using room attenuation 8 dB (red 25m² - sab): LpA - 4dB. NR/NC noise criteria

Servicing

Remove the grille by gently drawing it out by the frame. Use a screwdriver if necessary.
Clean the parts by wiping them with a damp cloth.
Push the grille back into place until the springs lock (or fix by screwing on the concealed screws).

Option: with balancing plenum PRI + MEM or BDR + MEM

Remove the measurement and adjustment module by gently pulling the shaft (NB not the control spindle)
Wipe the parts with a damp cloth, instead of immersing in water.
Remount the measurement and adjustment module by pushing in the shaft until the module meets the stopper.
Push the grille back into place until the springs lock.

Suggested Specifications

The grille shall have adjustable horizontal front vanes and adjustable vertical rear vanes, and an 18 mm wide flat frame, epoxy-painted with a white (RAL 9010) colour.

The frame shall be made of steel. The vertical vanes shall be made of steel.

Where the length of the grille is smaller than 600 mm, the horizontal vanes shall be made of steel.

Where the length of the grille is greater than 600 mm, the horizontal vanes shall be made of aluminium.

The supply air jet shall be directable by changing the vane angles of the front and rear vanes.

The grille shall be connected to the duct using an installation frame.

Alternative 1

The grille shall be connected to the ductwork using a plenum, with mineral wool as sound insulation material.

Alternative 2

The grille shall be connected to the ductwork using a balancing plenum, which comprises sound attenuation material made of polyester fibre with a washable surface.

The plenum shall comprise an airflow measurement and adjustment unit.

The grille shall be removable in order to provide access to the measurement and adjustment module in the plenum.

Product Code

WTS-L-H

L = Length
200,+50,...,1200

H = Height
100,+50,...,600

Specifics and accessories

FS = Fastening
CL Clips
SF Screw fastening
CC Concealed screw fastening

CO = Colour
W White
X Special colour

Code example

WTS-200-100, FS=CL,CO=W

Sub products

BDR Plenum
PRI Plenum
IF Installation frame (Grilles)
OD Opposed blade damper (Grilles)