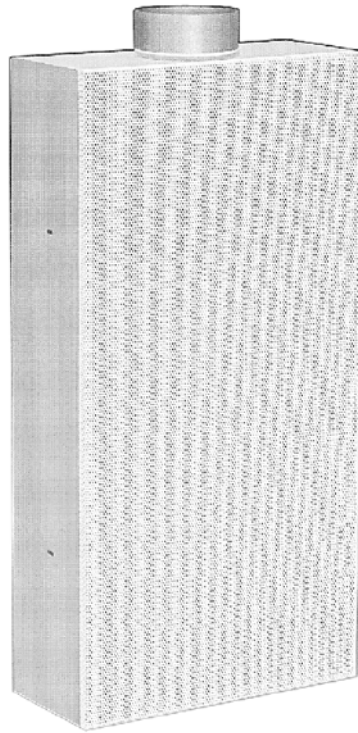




Wall displacement diffuser WQA



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Wall Displacement Diffuser Model WQA

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Wall Displacement Diffuser Model WQA

Description

Large rooms such as industrial halls in which high amounts of harmful substances are produced are best ventilated by means of a **low-turbulence displacement air flow** (displacement ventilation). This is due to the fact that in low-turbulence displacement air flows the supply air enters the room **at low velocities** (approx. 0.2 m/s). The **fresh air sinks to the floor**, spreads itself and displaces the contaminated air towards the air discharge openings. Natural convection currents from the heat sources inside the room causes the air to rise to the upper levels. Consequently the heat loads of these heat sources are eliminated together with the air. To support these convection currents, the air discharge diffusers should be mounted at the top.

The wall displacement diffuser **can be fitted directly to the wall**. However, it **can also be flush mounted in the wall**. The wall displacement diffuser can be connected directly to spiral ducts.

To ensure a uniform distribution over the entire air diffuser area, an air distribution plate or a filter pocket (standard) is installed. The filter pocket cleans the supply air and ensures a completely uniform intake of fresh air over the entire diffuser area of the grille. The filter can be easily changed by removing the perforated faceplate of the wall displacement diffuser.

For simple system regulation, it is possible to fit various throttle and measuring devices to the wall displacement diffuser. Depending on the design of the connecting piece, a hit-and-miss damper or a throttle damper can be fitted to the connecting piece.

For easy cleaning on the inside and outside, all wall displacement diffusers can be opened.

Construction

Filter pocket (-FT)

- Synthetic fibre

Filter mat (-FV)

- Synthetic fibre

Faceplate and housing

- Galvanised sheet steel (standard) (-0000)
- Sheet steel painted to RAL 9010 (white) (-9010) or RAL colour can be freely selected (-xxxx)
- Stainless steel 1.4301 (painted in the colour sand silver) (-V2-SAND)
- Stainless steel 1.4571 (painted in the colour sand silver) (-V4-SAND)

Air diffuser plate (-LV)

- Galvanised sheet steel

The WQA can be manufactured as painted aluminium model (at an extra charge) up to a size of 1000x1000 mm. The WQA is not available as anodised aluminium model.

Model

- WQA-R-... - with round connection spigot
- WQA-K-... - with rectangular connection spigot
- WQA-...-O-... - top connection spigot
- WQA-...-U-... - Bottom connection piece
- WQA-...-H-... - Rear connection spigot
- WQA-...-L/R-... - Connection spigot on the right- or left-hand side
- WQA-...-...-FT-... - with filter pocket (standard)
- WQA-...-...-LV-... - with air diffuser plate (standard for WQA-...-H).
- WQA-...-H-FV-... - with filter mat

Accessories

Throttling element (-DV1) (only WQA-R-...)

- Sheet steel

Rubber lip seal (-GD1) (WQA-R only)

- Special rubber

Hit-and-miss damper (SS-K) (WQA-K-... only)

- Electrolytically galvanised sheet steel

Fastening

screw mounting

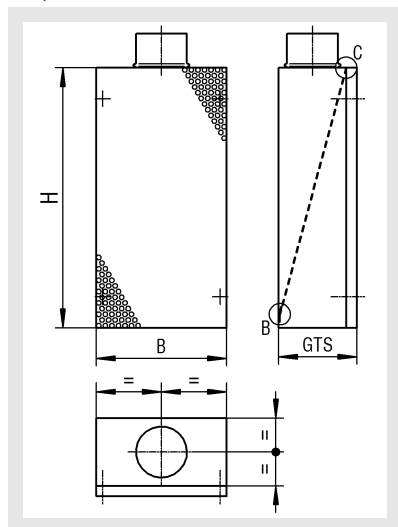
- Standard

Wall Displacement Diffuser Model WQA

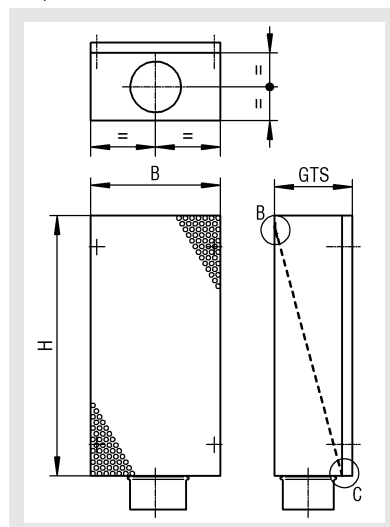
Connection options

(with air diffuser plate)

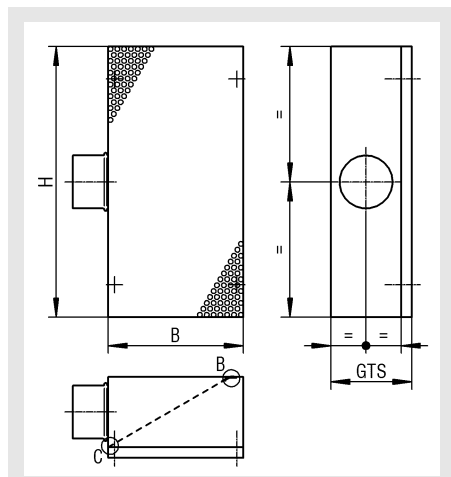
WQA-...-O-...



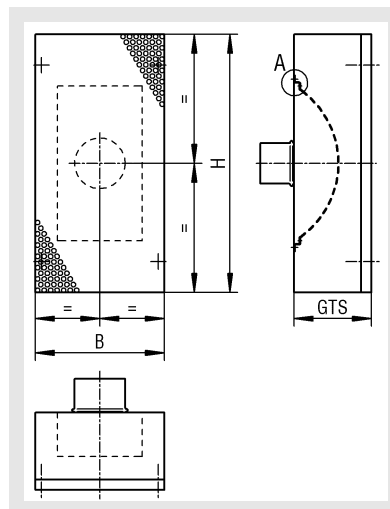
WQA-...-U-...



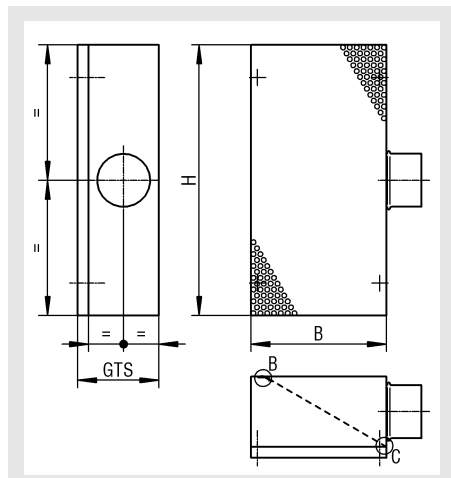
WQA-...-L-...



WQA-...-H-...



WQA-...-R-...



Model	Filter pocket (-FT)	Air diffuser plate (-LV)	Filter mat (-FV)
WQA-...-H-...	-	X (standard)	X
WQA-...-O / U-...	X ($\geq H=500$)	X ($< H=500$)	X
WQA-...-L / R-...	X ($\geq B=500$)	X ($< B=500$)	X

- = not possible

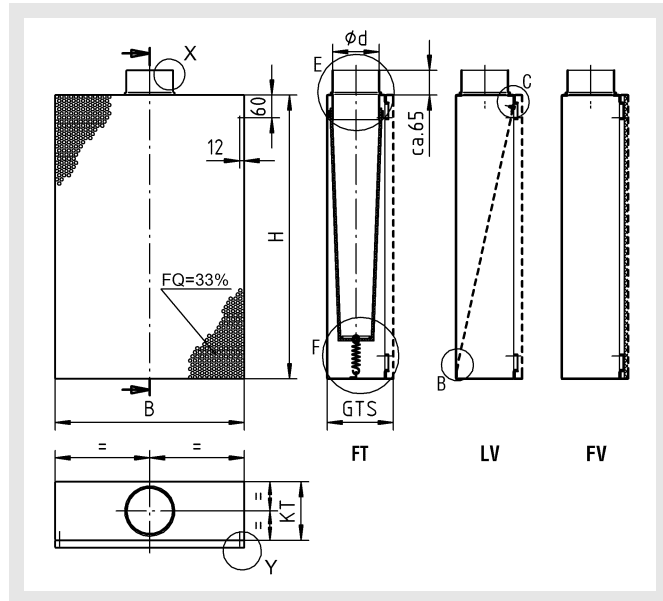
x = possible

Wall Displacement Diffuser Model WQA

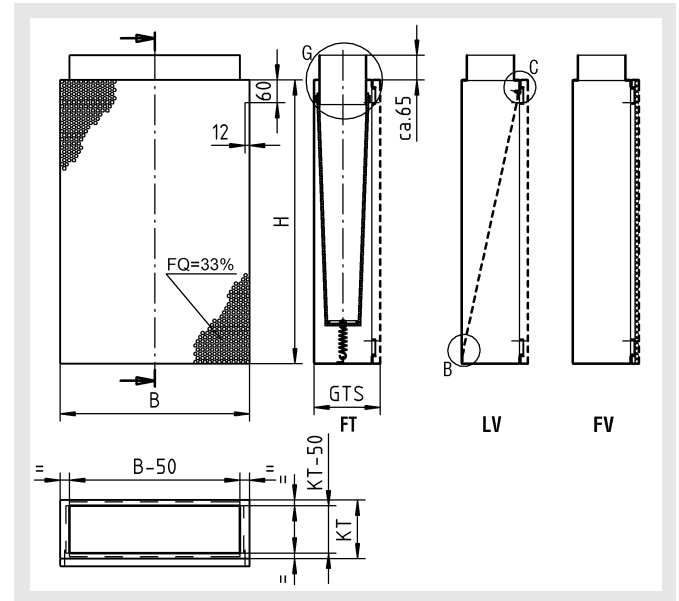
Models and dimensions

Dimensions

WQA-R-...-FT / -LV / -FV-...



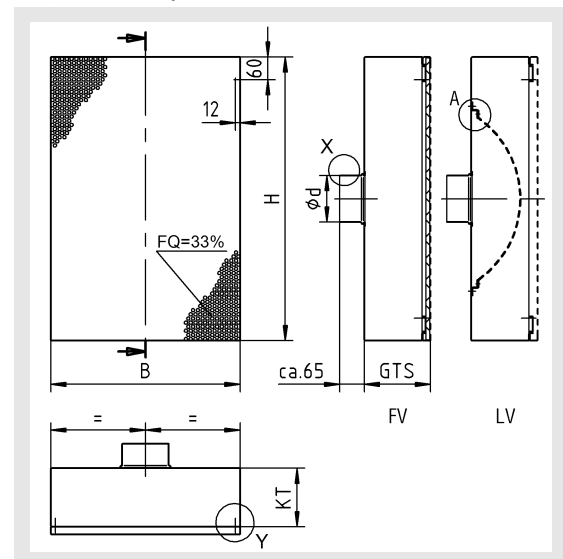
WQA-K-...-FT / -LV / -FV-...



Available sizes

		Width				
		250	500	750	1000	
Height	150	ød	98	98	98	98
		GTS	150	150	150	150
	300	ød	98	98	123	158
		GTS	150	150	175	200
	450	ød	98	123	158	198
		GTS	150	175	200	250
	500	ød	98	123	158	198
		GTS	150	175	200	250
	600	ød	98	158	198	198
		GTS	150	200	250	250
	750	ød	123	158	198	223
		GTS	175	200	250	275
	1000	ød	123	198	223	298
		GTS	175	250	275	350

WQA-...-H-FV / -LV-...



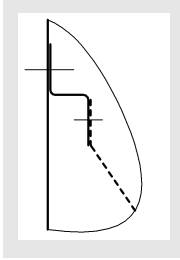
$$KT = GTS - 20 \text{ [mm]}$$

All combined widths and heights available.
Special dimensions available at an extra charge.
Models in several pieces are available after technical clarification.

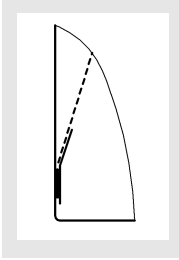
Wall Displacement Diffuser Model WQA

Air diffuser plate

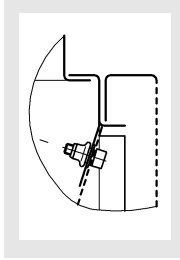
Detail A



Detail B



Detail C



Filter pocket fastening

Detail E



Detail F

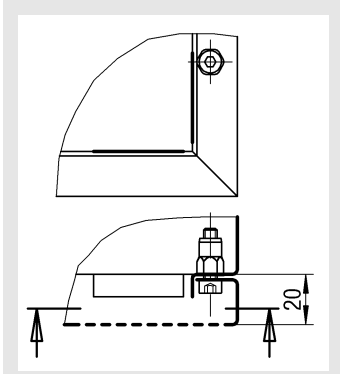


Detail G



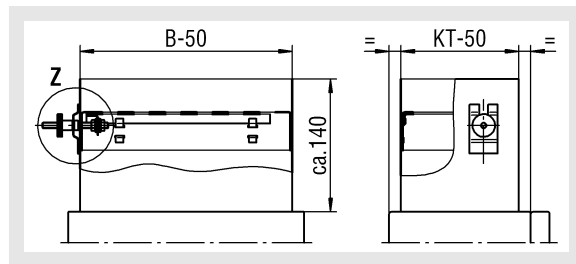
Screw mounting

Detail Y

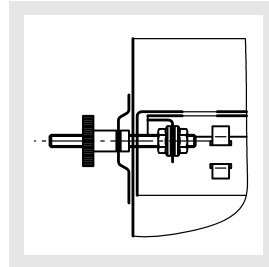


Dimensions of accessories

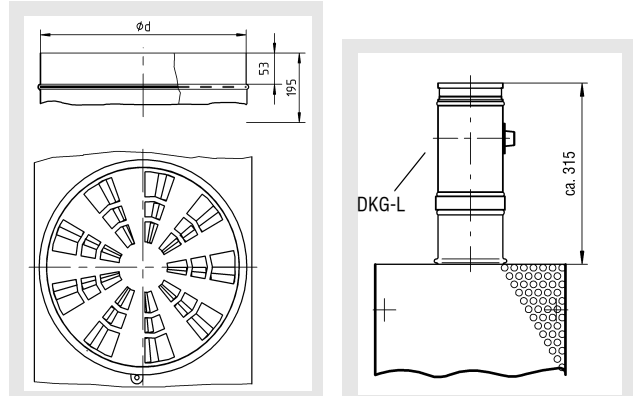
Hit-and-miss damper (-SS, WQA-K-... only)



Detail Z



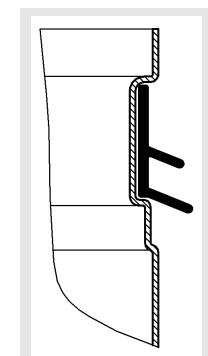
Throttling element (-DV1, WQA-R-... only)



The throttling element is only available for ϕD from 158 to 298!
For dimensions smaller than $\phi D=158$, the damper DKG can be used. (is delivered completely mounted).

Rubber lip seal (-GD1, WQA-R-... only)

Detail X



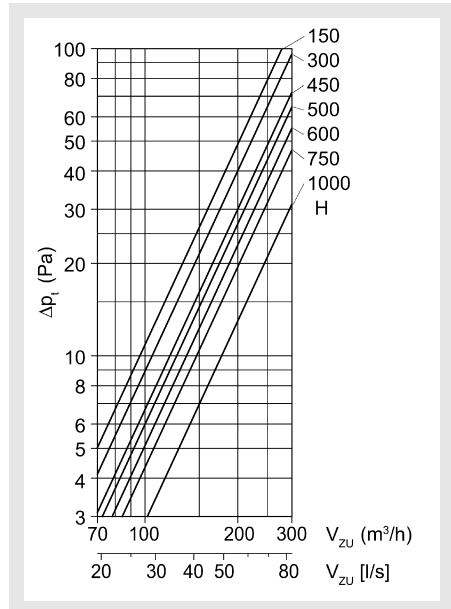
Wall Displacement Diffuser Model WQA

Technical data

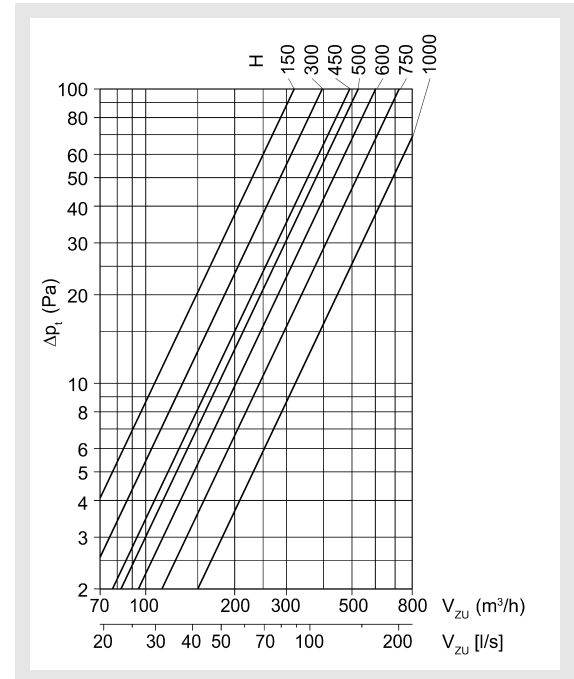
Pressure loss

For the preselection of the supply air volume (V_{ZU}), see Page°8

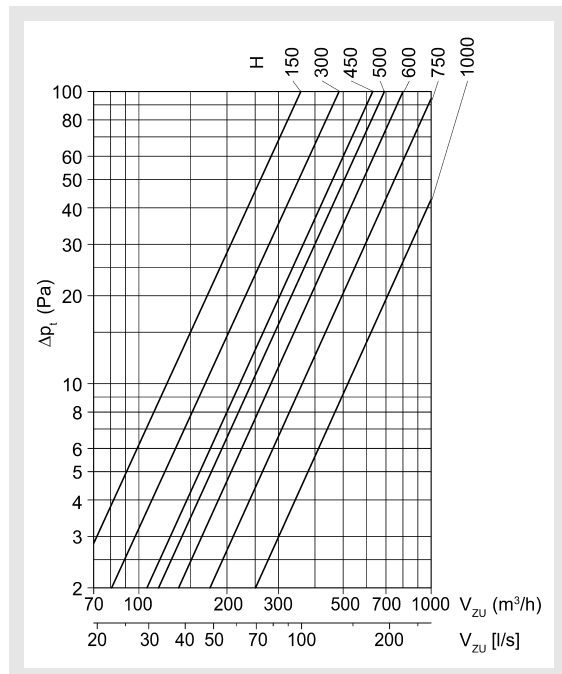
WQA / B = 250



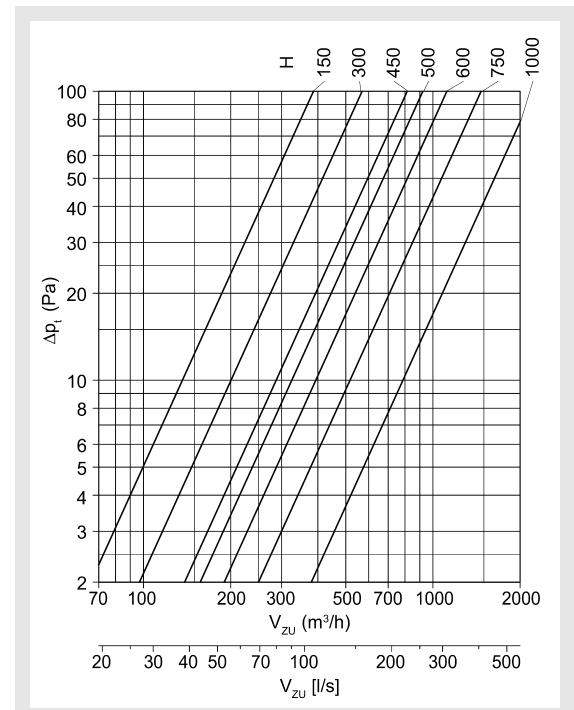
WQA / B = 500



WQA / B = 750



WQA / B = 1000

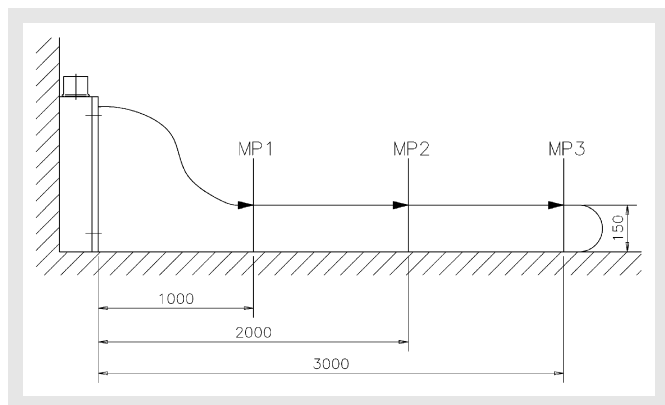


Wall Displacement Diffuser Model WQA

Velocity data and noise level at -3 Kelvin

H (mm)	v _K (m/s)		B (mm)																								
			250						500						750						1000						
			V _{ZU}		MP (m)			V _{ZU}		MP (m)			V _{ZU}		MP (m)			V _{ZU}		MP (m)							
			(m³/h)	[l/s]	1	2	3	(m³/h)	[l/s]	1	2	3	(m³/h)	[l/s]	1	2	3	(m³/h)	[l/s]	1	2	3					
150	min	3	81	22,6	0,75	0,48	0,29	81	22,6	0,34	0,25	0,19	81	22,6	0,22	0,19	0,13	81	22,6	0,16	0,13	0,11					
	medium	5	136	37,8	1,43	0,93	0,64	136	37,8	0,67	0,51	0,35	136	37,8	0,37	0,30	0,22	136	37,8	0,28	0,21	0,11					
	max	7	190	52,8	2,07	1,45	1,05	190	52,8	1,03	0,80	0,60	190	52,8	0,61	0,47	0,39	190	52,8	0,43	0,31	0,26					
300	min	3	81	22,6	0,37	0,24	0,17	81	22,6	0,20	0,16	0,10	128	35,6	0,22	0,20	0,11	212	58,8	0,23	0,20	0,17					
	medium	5	136	37,8	0,70	0,48	0,34	136	37,8	0,28	0,21	0,15	214	59,4	0,30	0,25	0,22	353	98,1	0,36	0,32	0,26					
	max	7	190	52,8	1,09	0,88	0,61	190	52,8	0,43	0,38	0,27	300	83,3	0,45	0,40	0,31	494	137,2	0,56	0,50	0,38					
450	min	3	81	22,6	0,28	0,21	0,14	128	35,6	0,22	0,17	0,11	212	58,8	0,24	0,22	0,17	333	92,4	0,31	0,27	0,22					
	medium	5	136	37,8	0,42	0,32	0,26	214	59,4	0,33	0,28	0,20	353	98,1	0,39	0,34	0,29	554	153,9	0,42	0,39	0,33					
	max	7	190	52,8	0,61	0,51	0,38	300	83,3	0,40	0,36	0,29	494	137,2	0,53	0,50	0,44	776	215,6	0,57	0,51	0,44					
500	min	3	81	22,6	0,25	0,19	0,13	128	35,6	0,20	0,15	0,10	212	58,8	0,22	0,20	0,15	333	92,4	0,28	0,25	0,20					
	medium	5	136	37,8	0,38	0,29	0,23	214	59,4	0,30	0,25	0,18	353	98,1	0,35	0,31	0,26	554	153,9	0,38	0,35	0,30					
	max	7	190	52,8	0,55	0,46	0,34	300	83,3	0,36	0,32	0,26	494	137,2	0,48	0,45	0,40	776	215,6	0,51	0,46	0,40					
600	min	3	81	22,6	0,22	0,17	0,10	212	58,8	0,25	0,24	0,16	333	92,4	0,25	0,22	0,20	333	92,4	0,22	0,20	0,15					
	medium	5	136	37,8	0,30	0,26	0,20	353	98,1	0,40	0,38	0,30	554	153,9	0,46	0,43	0,37	554	153,9	0,33	0,30	0,25					
	max	7	190	52,8	0,42	0,38	0,27	494	137,2	0,60	0,59	0,47	776	215,6	0,66	0,62	0,58	776	215,6	0,44	0,42	0,36					
750	min	3	128	35,6	0,25	0,20	0,13	212	58,8	0,20	0,16	0,15	333	92,4	0,25	0,21	0,17	422	117,7	0,26	0,27	0,22					
	medium	5	214	59,4	0,36	0,34	0,17	353	98,1	0,34	0,28	0,25	554	153,9	0,30	0,29	0,28	703	195,3	0,30	0,30	0,28					
	max	7	300	83,3	0,48	0,44	0,38	494	137,2	0,48	0,39	0,30	776	215,6	0,48	0,43	0,36	964	267,7	0,39	0,41	0,40					
1000	min	3	128	35,6	0,25	0,16	0,10	333	92,4	0,30	0,20	0,10	422	117,7	0,27	0,13	0,11	753	209,9	0,23	0,25	0,20					
	medium	5	214	59,4	0,30	0,27	0,17	554	153,9	0,36	0,28	0,25	703	195,3	0,22	0,21	0,15	1255	348,6	0,27	0,31	0,28					
	max	7	300	83,3	0,39	0,35	0,30	776	215,6	0,54	0,44	0,38	964	267,7	0,36	0,32	0,20	1758	488,3	0,47	0,45	0,42					
				v _{max} (m/s)								v _{max} (m/s)								v _{max} (m/s)							

$V_{ZU \min} : v_K = 3 \text{ m/s} < 20 \text{ dB(A)}$
 $V_{ZU \text{ mittel}} : v_K = 5 \text{ m/s} \cong 25 \text{ dB(A)}$
 $V_{ZU \max} : v_K = 7 \text{ m/s} \cong 30 \text{ dB(A)}$

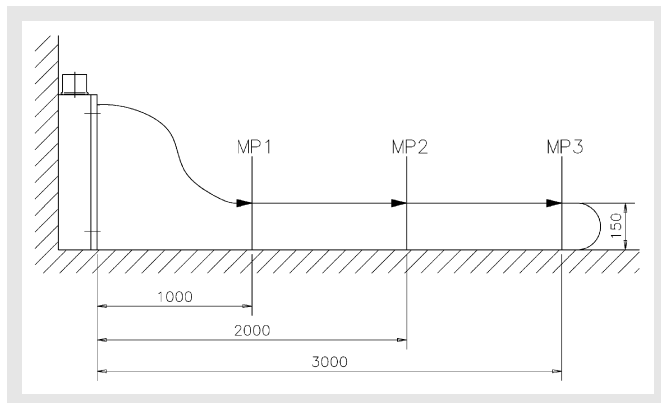


Wall Displacement Diffuser Model WQA

Velocity data and noise level at -6 Kelvin

H (mm)	v _K (m/s)		B (mm)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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			V _{ZU} (m³/h) [l/s]		MP (m)			V _{ZU} (m³/h) [l/s]		MP (m)			V _{ZU} (m³/h) [l/s]		MP (m)			V _{ZU} (m³/h) [l/s]		MP (m)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

$V_{ZU \text{ min}}$: v_K = 3 m/s < 20 dB(A)
 $V_{ZU \text{ mittel}}$: v_K = 5 m/s $\approx$ 25 dB(A)
 $V_{ZU \text{ max}}$: v_K = 7 m/s $\approx$ 30 dB(A)



Legend

V_{ZU} (m³/h) = Supply air volume
 V_{ZU} [l/s] = Supply air volume
 v_K (m/s) = Spigot velocity
 v_{max} (m/s) = Maximum end velocity of jet
 MP (m) = Measuring point
 Δp_t (Pa) = Pressure loss
 B (mm) = Width
 H (mm) = Height
 GTS (mm) = Total depth of plenum box with faceplate
 KT (mm) = Depth of plenum box without faceplate

Wall Displacement Diffuser Model WQA

Order code WQA

01	02	03	04	05
Type	Model	Spigot position	Filter pocket / air diffuser plate	Material
Example				
WQA	-R	-O	-FT	-SV

06	07	08	09	10
Paint	Width	Height	Depth	Spigot diameter
-0000	-0250	-0600	-GTS	-SDS

11	12	13
Rubber lip seal	Hit-and-miss damper	Damper
-GD0	-SN	-DVO

Sample

WQA-R-O-FT-SV-0000-0250-0600-GTS-SDS-GD0-SN-DVO

Wall displacement diffuser type WQA | with round connection spigot | connection spigot from above | with filter pocket | galvanised sheet steel | without paint | width 250 mm | height 600 mm | standard total depth of plenum box | standard spigot diameter | without rubber lip seal | without hit-and-miss damper | without damper

Order details

01 - Type

WQA = Wall air displacement diffuser type WQA

02 - Model

R = with round connection spigot

K = with rectangular connection spigot

03 - Spigot position

O = Connection spigot from above

U = Connection spigot from below

H = Rear connection spigot

L = Connection spigot on the left-hand side

R = Connection spigot on the right-hand side

04 - Filter pocket / air diffuser plate

FT = with filter pocket (not available for WQA-...-H-..., not available for WQA-...-O/U-... H<500 mm and for WQA-...-L/R-... W<500 mm)

LV = with air diffuser plate (standard for WQA-...-H-...; available for WQA-...-O/U-... H<500 mm and for WQA-...-L/R-... with W<500 mm)

FV = with filter mat (available for all types)

05 - Material

SB = Sheet steel (only available with paint)

SV = Galvanised sheet steel (standard)

V2 = Stainless steel, 1.4301 (V2A) (painted in the colour sand silver)

V4 = Stainless steel, 1.4571 (V4A) (painted in the colour sand silver)

AL = Aluminium (only painted and possible only up to max. 1000 x 1000 mm)

06 - Paint

0000 = Without paint (standard)

9010 = RAL colour 9010 (white)

xxxx = RAL colour can be freely selected

SAND = Sand silver (only for V2 and V4)

07 - Width

0250 = Width 250 mm

0500 = Width 500 mm

0750 = Width 750 mm

1000 = Width 1000 mm

Wall Displacement Diffuser Model WQA

08 - Height

0150 = Height 150 mm
0300 = Height 300 mm
0450 = Height 450 mm
0500 = Height 500 mm
0600 = Height 600 mm
0750 = Height 750 mm
1000 = Height 1000 mm

09 - Depth

GTS = Total depth of plenum box (standard) (plenum box + face-plate 20 mm)
xxx = Freely selectable total depth of plenum box (always with 3 digits, max. 500 mm)

10 - Spigot diameter

SDS = Standard spigot diameter
xxx = Spigot diameter in mm (always with 3 digits)

11 - Rubber lip seal

GD0 = Without rubber lip seal (standard)
GD1 = With rubber lip seal (only available for WQA-R-...)

12 - Hit-and-miss damper

SN = Without hit-and-miss damper (standard)
SS = With hit-and-miss damper (only available for WQA-K-...)

13 - Damper

DV0 = Without damper (standard)
DV1 = With damper (only possible with WQA-R-..., only available for D=158-298 mm, for D=78-138 mm only damper DKG available)

Wall Displacement Diffuser Model WQA

Specification texts

Wall displacement diffuser **type WQA** with removable perforated sheet steel faceplate for easy cleaning according to VDI 6022. Suitable for low-turbulence supply air entry at low air entry velocities. Consisting of housing and faceplate made of galvanised sheet steel (standard), sheet steel painted to RAL 9010 (white) or stainless steel painted in the colour sand silver. To achieve even air distribution, a removable synthetic fibre filter mat, alternatively an air diffuser plate made of perforated sheet steel, is installed. The displacement diffuser can also be provided with a high-quality powder coating in a RAL colour. Suitable for installation in or to walls.

- with round connection spigot
Product: SCHAKO **type WQA-R-...**
- with rectangular connection spigot
Product: SCHAKO **type WQA-K-...**

Models:

- WQA-...-O-...: Top connection spigot
- WQA-...-U-...: Bottom connection spigot
- WQA-...-H-...: Rear connection spigot
- WQA-...-L-...: Connection spigot on the left-hand side
- WQA-...-R-...: Connection spigot on the right-hand side
- WQA-...-...-FT-...: with filter pocket (standard)
- WQA-...-...-LV-...: with air diffuser plate (standard for WQA-...-H).
- WQA-...-H-FV-...: with filter mat

Accessories:

- Rubber lip seal (-GD1), made of special rubber (WQA-R-... only).
- Hit-and-miss damper (-SS) for simple air volume regulation (WQA-K-... only).
- Throttling element (-DV1) for simple air volume regulation (WQA-R-... only).