



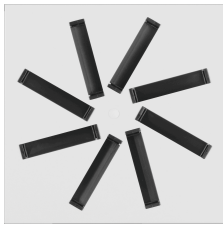
# **České vysoké učení technické v Praze**

**Fakulta stavební**

**Katedra technických zařízení a budov**

## **Příloha č.3**

**Návrh distribučních prvků**



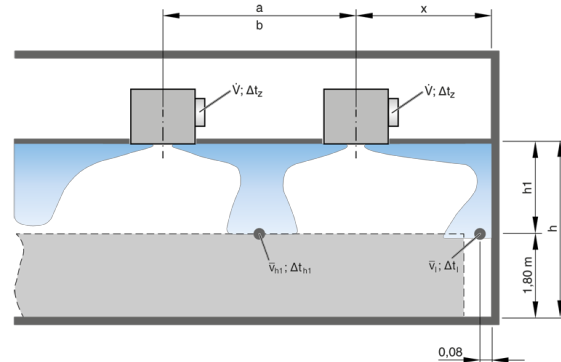
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	300x8	
Total amount	1	

## VDW-Q-Z-H-M/300x8

### Input Data

Strategy: Single row diffuser arrangement	
Volume flow V	140 m <sup>3</sup> /h
Distance a	1,9 m
Distance x	1,9 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

### Schematic side view



### Results

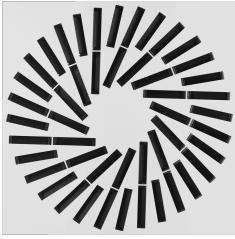
Distance (h <sub>1</sub> + x) l	3,0 m
Effective air velocity v <sub>eff</sub>	5,6 m/s
Throw distance L <sub>s</sub>	4,3 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,11 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,31 K
Velocity at l v <sub>l</sub>	0,13 m/s
Temperature difference at l Δt <sub>l</sub>	-0,21 K
Thermal output – cooling Q <sub>cool</sub>	-469 W

### Acoustic results

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	19	26	29	32	31	22	18	< 15	< 15	< 15	18	21
damper blade position 45°	22	25	27	32	31	21	15	< 15	< 15	< 15	17	21
damper blade position closed	36	28	28	30	33	24	21	< 15	< 15	< 15	19	22

### Description

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



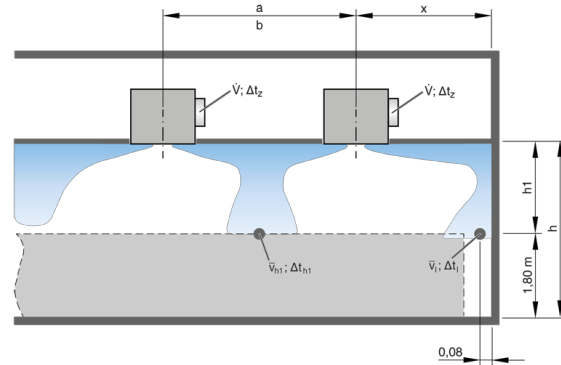
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/600x48**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
600x48  
1

**Input Data**

**Schematic side view**

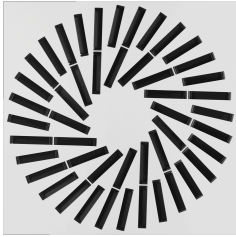


**Acoustic results**

	$\Delta p_i$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	7	17	20	22	17	18	< 15	< 15	< 15	< 15	12	14
damper blade position 45°	14	21	26	28	21	20	16	< 15	< 15	< 15	15	16
damper blade position closed	50	33	31	35	30	29	27	27	22	15	28	30

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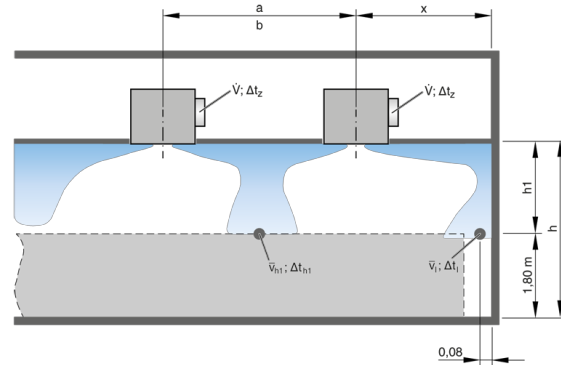
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	600x48	
Total amount	1	

**VDW-Q-Z-H-M/600x48**

**Input Data**

Strategy: Single row diffuser arrangement	
Volume flow V	450 m3/h
Distance a	1,8 m
Distance x	1,8 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

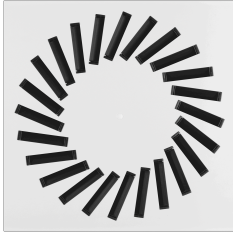
Distance (h <sub>1</sub> + x) l	2,9 m
Effective air velocity v <sub>eff</sub>	3,2 m/s
Throw distance L <sub>s</sub>	2,8 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,16 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-1,73 K
Velocity at l v <sub>l</sub>	0,19 m/s
Temperature difference at l Δt <sub>l</sub>	-1,19 K
Thermal output – cooling Q <sub>cool</sub>	-1 506 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	11	19	25	29	24	16	< 15	< 15	< 15	< 15	9	13
damper blade position 45°	16	22	25	29	24	22	15	< 15	< 15	< 15	15	18
damper blade position closed	46	29	27	33	30	26	24	18	< 15	< 15	23	24

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



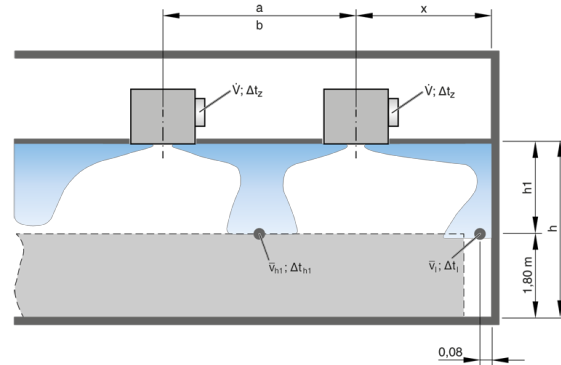
**VDW-Q-Z-H-M/500x24**

Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	500x24	
Total amount	1	

**Input Data**

Strategy: Single row diffuser arrangement	
Volume flow V	350 m <sup>3</sup> /h
Distance a	3,0 m
Distance x	2,9 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

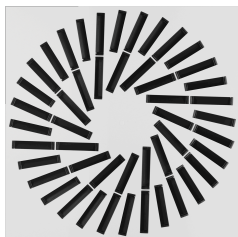
Distance (h <sub>1</sub> + x) l	4,0 m
Effective air velocity v <sub>eff</sub>	4,6 m/s
Throw distance L <sub>s</sub>	3,8 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,15 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,43 K
Velocity at l v <sub>l</sub>	0,14 m/s
Temperature difference at l Δt <sub>l</sub>	-0,28 K
Thermal output – cooling Q <sub>cool</sub>	-1 171 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	21	30	35	39	34	26	20	< 15	< 15	< 15	21	24
damper blade position 45°	27	30	33	37	32	27	24	< 15	< 15	< 15	22	24
damper blade position closed	65	35	35	38	34	31	31	25	16	18	29	31

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



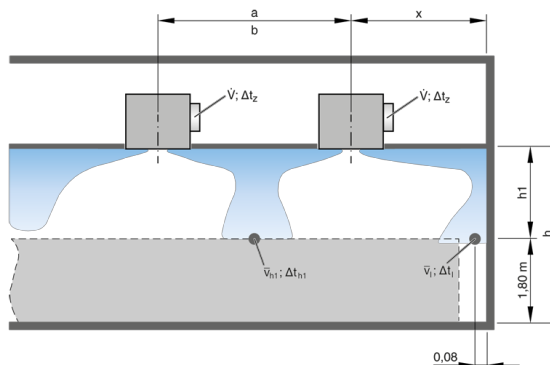
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/600x48**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
600x48  
1

**Input Data**

**Schematic side view**

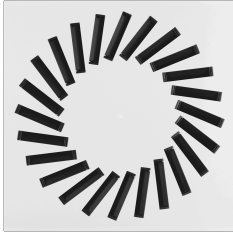


**Acoustic results**

	$\Delta p_i$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	12	28	30	32	27	27	22	< 15	< 15	< 15	21	23
damper blade position 45°	25	31	35	37	30	28	26	22	< 15	< 15	24	26
damper blade position closed	90	42	39	42	37	37	35	35	34	29	36	39

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Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



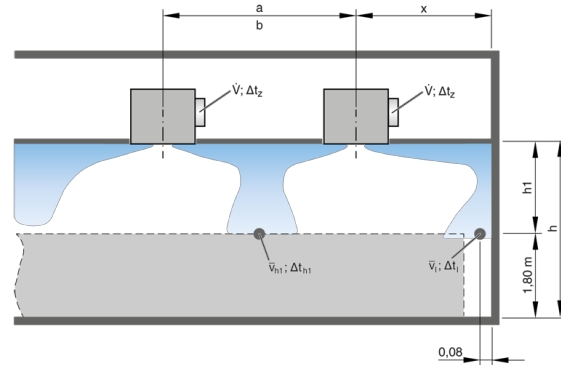
**VDW-Q-Z-H-M/500x24**

Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	500x24	
Total amount	1	

**Input Data**

Strategy: Single row diffuser arrangement	
Volume flow V	341 m <sup>3</sup> /h
Distance a	3,0 m
Distance x	2,9 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

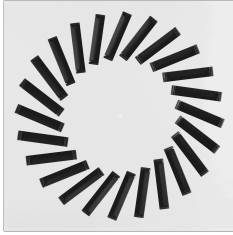
Distance (h <sub>1</sub> + x) l	4,0 m
Effective air velocity v <sub>eff</sub>	4,5 m/s
Throw distance L <sub>s</sub>	3,7 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,15 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,43 K
Velocity at l v <sub>l</sub>	0,14 m/s
Temperature difference at l Δt <sub>l</sub>	-0,28 K
Thermal output – cooling Q <sub>cool</sub>	-1 141 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	20	29	35	38	33	26	19	< 15	< 15	< 15	20	23
damper blade position 45°	26	29	33	36	32	26	23	< 15	< 15	< 15	21	23
damper blade position closed	62	34	34	37	33	31	30	24	15	17	28	30

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



Construction style  
System  
Connection  
Damper blade for volume flow rate balancingM  
Nominal size  
Total amount

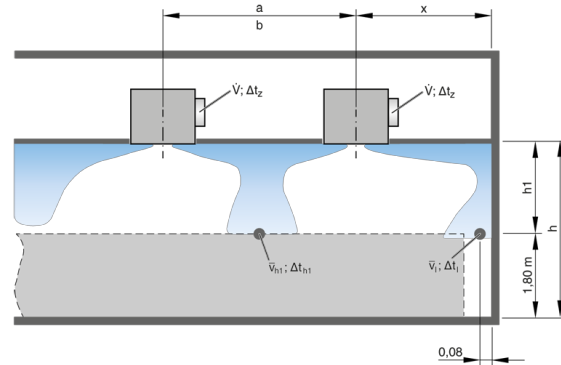
**VDW-Q-Z-H-M/500x24**

Q Square  
Z Supply air  
H Horizontal  
With damper blade  
500x24  
1

**Input Data**

Strategy: Multi row diffuser arrangement  
Volume flow V 280 m3/h  
Distance a 2,8 m  
Distance b 2,8 m  
Distance x 3,0 m  
Distance h<sub>1</sub> 1,1 m  
Supply air to room air temperature -10 K

**Schematic side view**



**Results**

Distance (h<sub>1</sub> + x) l 4,1 m  
Effective air velocity v<sub>eff</sub> 3,7 m/s  
Throw distance L<sub>s</sub> 3,1 m  
Velocity at h<sub>1</sub> v<sub>h1</sub> 0,20 m/s  
Temperature difference at h<sub>1</sub> Δt<sub>h1</sub> -0,45 K  
Velocity at l v<sub>l</sub> 0,11 m/s  
Temperature difference at l Δt<sub>l</sub> -0,27 K  
Thermal output – cooling Q<sub>cool</sub> -937 W

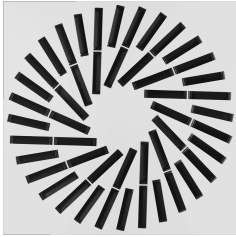
**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	13	23	32	33	27	18	< 15	< 15	< 15	< 15	12	16
damper blade position 45°	17	22	29	31	25	20	15	< 15	< 15	< 15	14	16
damper blade position closed	42	28	32	32	27	26	24	16	< 15	< 15	22	24

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.





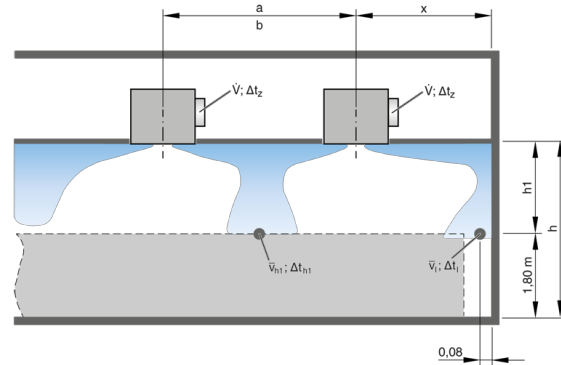
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/600x48**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
600x48  
1

**Input Data**

**Schematic side view**

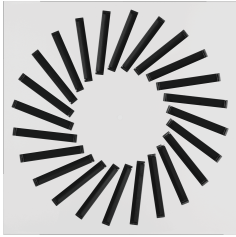


**Acoustic results**

	$\Delta p_i$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	12	27	30	31	27	27	21	< 15	< 15	< 15	21	23
damper blade position 45°	25	31	34	36	29	28	26	22	< 15	< 15	24	26
damper blade position closed	88	41	39	41	37	37	35	35	33	28	36	38

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Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



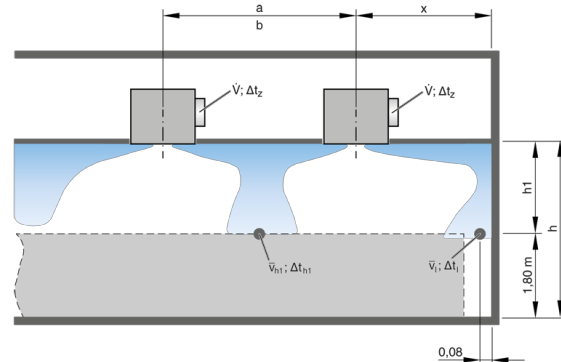
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	600x24	
Total amount	1	

**VDW-Q-Z-H-M/600x24**

**Input Data**

Strategy: Multi row diffuser arrangement	
Volume flow V	302 m3/h
Distance a	2,8 m
Distance b	2,5 m
Distance x	2,0 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

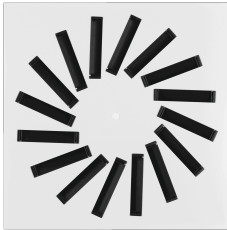
Distance (h <sub>1</sub> + x) l	3,1 m
Effective air velocity v <sub>eff</sub>	2,8 m/s
Throw distance L <sub>s</sub>	2,4 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,18 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,56 K
Velocity at l v <sub>l</sub>	0,14 m/s
Temperature difference at l Δt <sub>l</sub>	-0,43 K
Thermal output – cooling Q <sub>cool</sub>	-1 011 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	7	< 15	21	23	18	< 15	< 15	< 15	< 15	< 15	2	7
damper blade position 45°	10	< 15	< 15	20	17	< 15	< 15	< 15	< 15	< 15	6	8
damper blade position closed	21	15	< 15	< 15	19	15	< 15	< 15	< 15	< 15	8	10

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



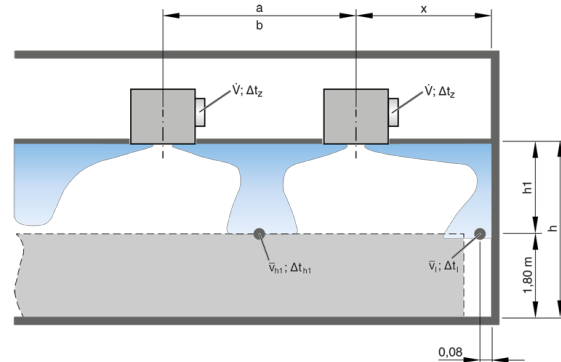
**VDW-Q-Z-H-M/400x16**

Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	400x16	
Total amount	1	

**Input Data**

Strategy: Multi row diffuser arrangement	
Volume flow V	140 m <sup>3</sup> /h
Distance a	4,1 m
Distance b	2,7 m
Distance x	1,7 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

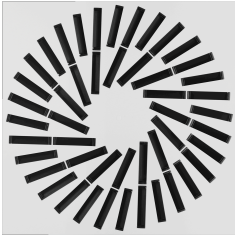
Distance (h <sub>1</sub> + x) l	2,8 m
Effective air velocity v <sub>eff</sub>	2,8 m/s
Throw distance L <sub>s</sub>	2,3 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,07 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,37 K
Velocity at l v <sub>l</sub>	0,10 m/s
Temperature difference at l Δt <sub>l</sub>	-0,33 K
Thermal output – cooling Q <sub>cool</sub>	-469 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	5	< 15	27	< 15	< 15	< 15	< 15	< 15	< 15	< 15	-4	1
damper blade position 45°	6	< 15	21	16	15	< 15	< 15	< 15	< 15	< 15	-2	3
damper blade position closed	12	< 15	27	16	< 15	< 15	< 15	< 15	< 15	< 15	3	5

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



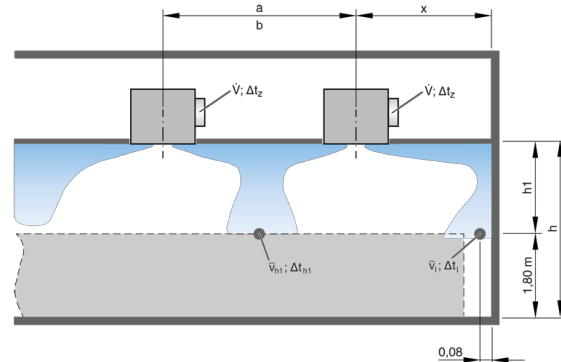
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/600x48**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
600x48  
1

**Input Data**

**Schematic side view**

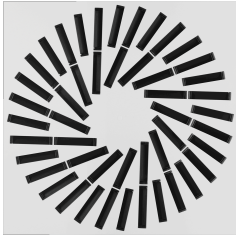


**Acoustic results**

	$\Delta p_t$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	9	22	25	27	22	23	15	< 15	< 15	< 15	16	18
damper blade position 45°	18	26	30	32	25	24	21	15	< 15	< 15	19	21
damper blade position closed	66	37	35	38	33	33	31	31	27	21	31	34

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



Construction style  
System  
Connection  
Damper blade for volume flow rate balancingM  
Nominal size  
Total amount

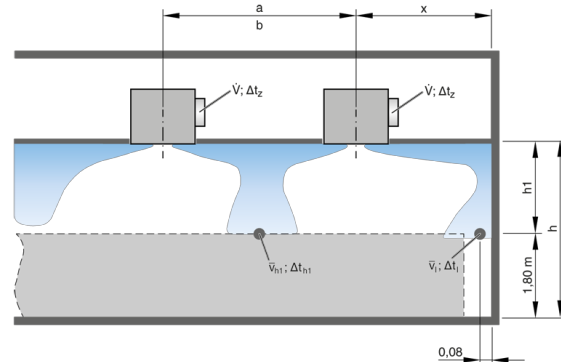
**VDW-Q-Z-H-M/600x48**

Q Square  
Z Supply air  
H Horizontal  
With damper blade  
600x48  
1

**Input Data**

Strategy: Multi row diffuser arrangement  
Volume flow V 450 m3/h  
Distance a 4,1 m  
Distance b 2,8 m  
Distance x 1,7 m  
Distance h<sub>1</sub> 1,1 m  
Supply air to room air temperature -10 K

**Schematic side view**



**Results**

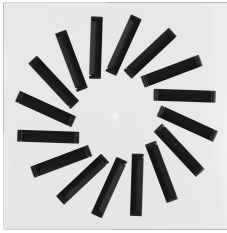
Distance (h<sub>1</sub> + x) l 2,8 m  
Effective air velocity v<sub>eff</sub> 3,2 m/s  
Throw distance L<sub>s</sub> 2,8 m  
Velocity at h<sub>1</sub> v<sub>h1</sub> 0,15 m/s  
Temperature difference at h<sub>1</sub> Δt<sub>h1</sub> -1,38 K  
Velocity at l v<sub>l</sub> 0,20 m/s  
Temperature difference at l Δt<sub>l</sub> -1,23 K  
Thermal output – cooling Q<sub>cool</sub> -1 506 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	11	19	25	29	24	16	< 15	< 15	< 15	< 15	9	13
damper blade position 45°	16	22	25	29	24	22	15	< 15	< 15	< 15	15	18
damper blade position closed	46	29	27	33	30	26	24	18	< 15	< 15	23	24

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



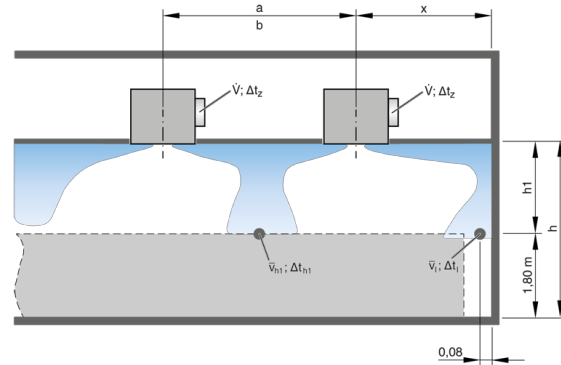
**VDW-Q-Z-H-M/400x16**

Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	400x16	
Total amount	1	

**Input Data**

Strategy: Single row diffuser arrangement	
Volume flow V	210 m3/h
Distance a	1,5 m
Distance x	1,5 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

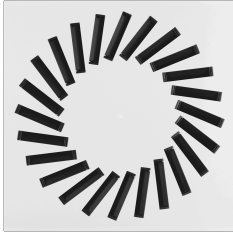
Distance (h <sub>1</sub> + x) l	2,6 m
Effective air velocity v <sub>eff</sub>	4,2 m/s
Throw distance L <sub>s</sub>	3,4 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,12 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,49 K
Velocity at l v <sub>l</sub>	0,16 m/s
Temperature difference at l Δt <sub>l</sub>	-0,35 K
Thermal output – cooling Q <sub>cool</sub>	-703 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	12	21	34	26	26	17	< 15	< 15	< 15	< 15	12	15
damper blade position 45°	14	22	30	29	27	18	< 15	< 15	< 15	< 15	12	16
damper blade position closed	27	24	33	30	27	22	20	< 15	< 15	< 15	18	20

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.

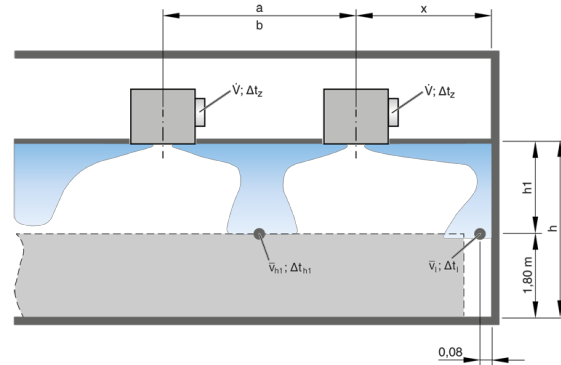


**VDW-Q-A-H-M/500x24**

Construction style	Q	Square
System	A	Extract air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	500x24	
Total amount	1	

**Input Data**

**Schematic side view**

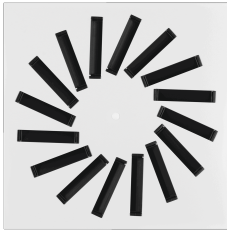


**Acoustic results**

	$\Delta p_i$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	11	26	28	27	23	22	24	< 15	< 15	< 15	23	24
damper blade position 45°	20	28	34	34	29	25	22	15	< 15	< 15	20	22
damper blade position closed	61	36	36	39	36	32	30	29	24	22	29	32

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



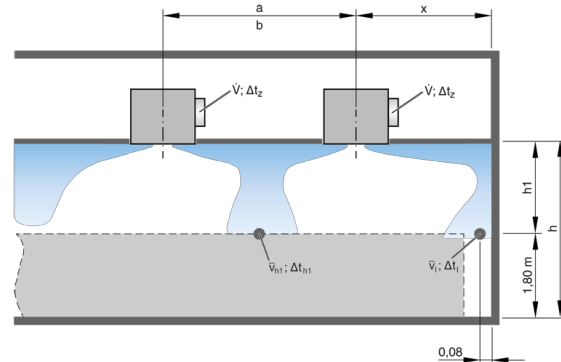
**VDW-Q-Z-H-M/400x16**

Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	400x16	
Total amount	1	

**Input Data**

Strategy: Single row diffuser arrangement	
Volume flow V	178 m <sup>3</sup> /h
Distance a	1,5 m
Distance x	1,5 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

Distance (h <sub>1</sub> + x) l	2,6 m
Effective air velocity v <sub>eff</sub>	3,5 m/s
Throw distance L <sub>s</sub>	2,9 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,10 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,49 K
Velocity at l v <sub>l</sub>	0,14 m/s
Temperature difference at l Δt <sub>l</sub>	-0,35 K
Thermal output – cooling Q <sub>cool</sub>	-596 W

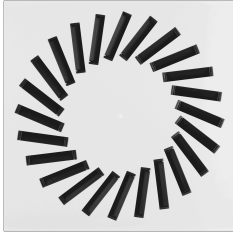
**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	9	16	32	20	21	< 15	< 15	< 15	< 15	< 15	6	10
damper blade position 45°	10	17	26	24	22	< 15	< 15	< 15	< 15	< 15	6	11
damper blade position closed	19	19	30	24	21	17	< 15	< 15	< 15	< 15	12	14

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.





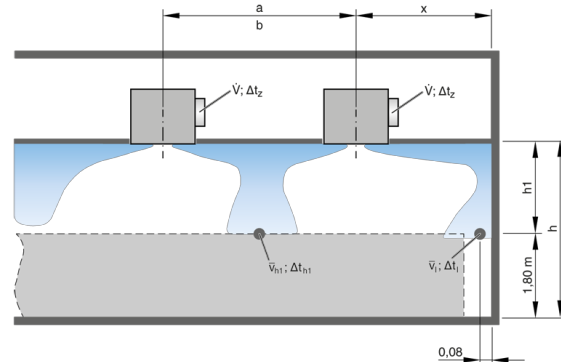
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	500x24	
Total amount	1	

**VDW-Q-Z-H-M/500x24**

**Input Data**

Strategy: Multi row diffuser arrangement	
Volume flow V	280 m <sup>3</sup> /h
Distance a	2,8 m
Distance b	2,8 m
Distance x	3,0 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

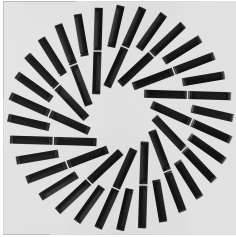
Distance (h <sub>1</sub> + x) l	4,1 m
Effective air velocity v <sub>eff</sub>	3,7 m/s
Throw distance L <sub>s</sub>	3,1 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,20 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,45 K
Velocity at l v <sub>l</sub>	0,11 m/s
Temperature difference at l Δt <sub>l</sub>	-0,27 K
Thermal output – cooling Q <sub>cool</sub>	-937 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	13	23	32	33	27	18	< 15	< 15	< 15	< 15	12	16
damper blade position 45°	17	22	29	31	25	20	15	< 15	< 15	< 15	14	16
damper blade position closed	42	28	32	32	27	26	24	16	< 15	< 15	22	24

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



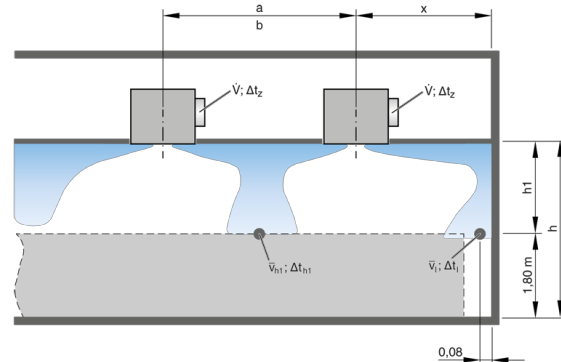
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/600x48**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
600x48  
1

**Input Data**

**Schematic side view**

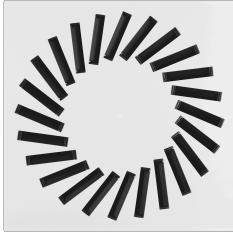


**Acoustic results**

	$\Delta p_t$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	9	22	25	27	22	23	15	< 15	< 15	< 15	16	18
damper blade position 45°	18	26	30	32	25	24	21	15	< 15	< 15	19	21
damper blade position closed	66	37	35	38	33	33	31	31	27	21	31	34

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



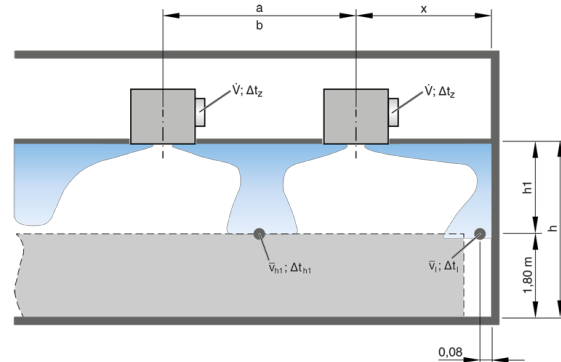
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	500x24	
Total amount	1	

**VDW-Q-Z-H-M/500x24**

**Input Data**

Strategy: Multi row diffuser arrangement	
Volume flow V	225 m <sup>3</sup> /h
Distance a	2,8 m
Distance b	2,5 m
Distance x	1,7 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

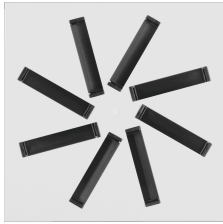
Distance (h <sub>1</sub> + x) l	2,8 m
Effective air velocity v <sub>eff</sub>	3,0 m/s
Throw distance L <sub>s</sub>	2,5 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,16 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,47 K
Velocity at l v <sub>l</sub>	0,14 m/s
Temperature difference at l Δt <sub>l</sub>	-0,40 K
Thermal output – cooling Q <sub>cool</sub>	-753 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	9	15	28	27	20	< 15	< 15	< 15	< 15	< 15	4	8
damper blade position 45°	11	15	25	25	18	< 15	< 15	< 15	< 15	< 15	6	9
damper blade position closed	27	21	29	26	20	20	17	< 15	< 15	< 15	15	17

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



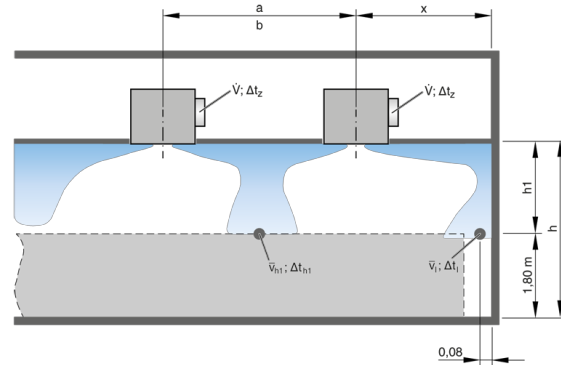
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	300x8	
Total amount	1	

**VDW-Q-Z-H-M/300x8**

**Input Data**

Strategy: Single row diffuser arrangement	
Volume flow V	70 m <sup>3</sup> /h
Distance a *)	0,0 m
Distance x	1,5 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

Distance (h <sub>1</sub> + x) l	2,6 m
Effective air velocity v <sub>eff</sub>	2,8 m/s
Throw distance L <sub>s</sub>	2,3 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,03 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,59 K
Velocity at l v <sub>l</sub>	0,08 m/s
Temperature difference at l Δt <sub>l</sub>	-0,25 K
Thermal output – cooling Q <sub>cool</sub>	-234 W

**Notes \*)**

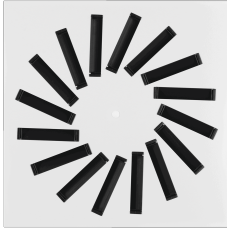
Distance a Value too small!

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	5	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	-6	-1
damper blade position 45°	6	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	-7	-1
damper blade position closed	9	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	-3	2

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



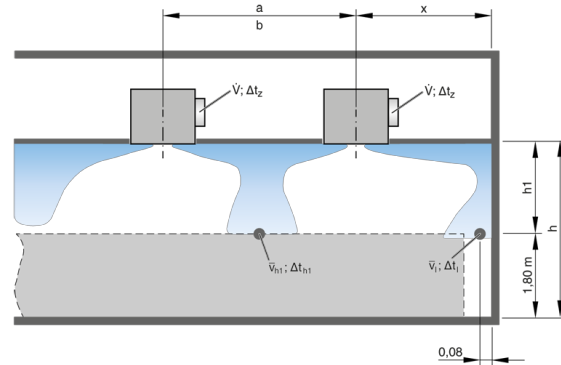
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/400x16**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
400x16  
1

**Input Data**

**Schematic side view**

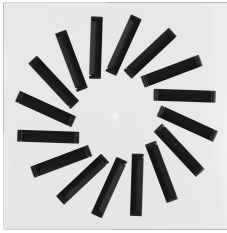


**Acoustic results**

	$\Delta p_i$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	< 5	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	2	4
damper blade position 45°	6	< 15	15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	2	4
damper blade position closed	15	16	25	23	19	< 15	< 15	< 15	< 15	< 15	6	8

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.

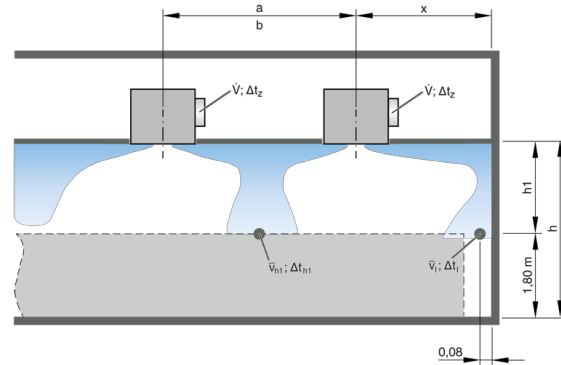


**VDW-Q-A-H-M/400x16**

Construction style	Q	Square
System	A	Extract air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	400x16	
Total amount	1	

**Input Data**

**Schematic side view**

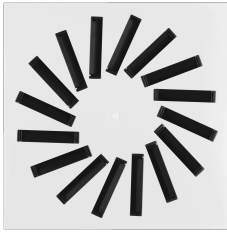


**Acoustic results**

	$\Delta p_t$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	< 5	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	3	5
damper blade position 45°	6	< 15	15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	3	5
damper blade position closed	15	16	26	23	20	< 15	< 15	< 15	< 15	< 15	6	8

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



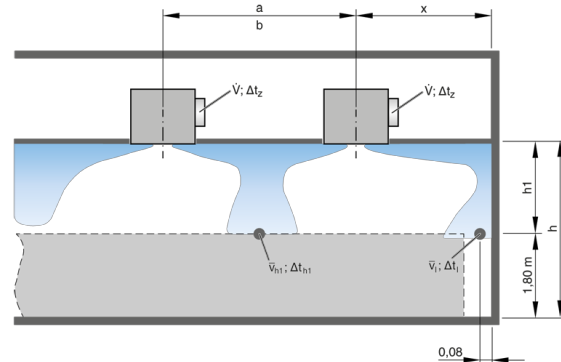
**VDW-Q-Z-H-M/400x16**

Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	400x16	
Total amount	1	

**Input Data**

Strategy: Single row diffuser arrangement	
Volume flow V	178 m <sup>3</sup> /h
Distance a	2,4 m
Distance x	1,4 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

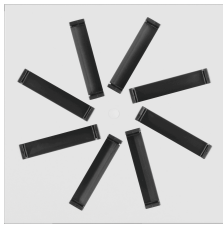
Distance (h <sub>1</sub> + x) l	2,5 m
Effective air velocity v <sub>eff</sub>	3,5 m/s
Throw distance L <sub>s</sub>	2,9 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,10 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,40 K
Velocity at l v <sub>l</sub>	0,14 m/s
Temperature difference at l Δt <sub>l</sub>	-0,36 K
Thermal output – cooling Q <sub>cool</sub>	-596 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	9	16	32	20	21	< 15	< 15	< 15	< 15	< 15	6	10
damper blade position 45°	10	17	26	24	22	< 15	< 15	< 15	< 15	< 15	6	11
damper blade position closed	19	19	30	24	21	17	< 15	< 15	< 15	< 15	12	14

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



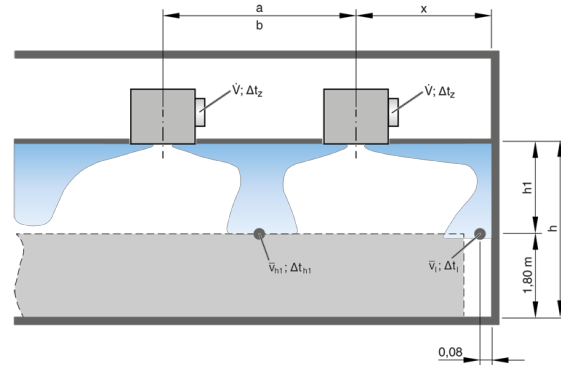
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	300x8	
Total amount	1	

### VDW-Q-Z-H-M/300x8

#### Input Data

Strategy: Single row diffuser arrangement	
Volume flow V	70 m <sup>3</sup> /h
Distance a	2,2 m
Distance x	0,6 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

#### Schematic side view



#### Results

Distance (h <sub>1</sub> + x) l	1,7 m
Effective air velocity v <sub>eff</sub>	2,8 m/s
Throw distance L <sub>s</sub>	2,3 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,05 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,29 K
Velocity at l v <sub>l</sub>	0,12 m/s
Temperature difference at l Δt <sub>l</sub>	-0,38 K
Thermal output – cooling Q <sub>cool</sub>	-234 W

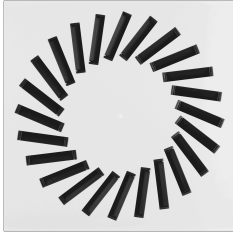
#### Acoustic results

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	5	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	-6	-1
damper blade position 45°	6	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	-7	-1
damper blade position closed	9	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	-3	2

#### Description

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.





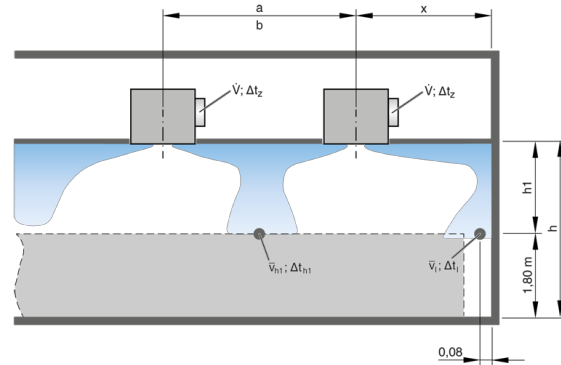
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/500x24**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
500x24  
1

**Input Data**

**Schematic side view**

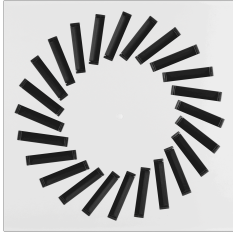


**Acoustic results**

	$\Delta p_t$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	8	22	25	23	18	18	21	< 15	< 15	< 15	19	21
damper blade position 45°	15	24	31	30	26	21	18	< 15	< 15	< 15	16	18
damper blade position closed	47	32	34	36	33	29	26	24	17	17	25	27

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



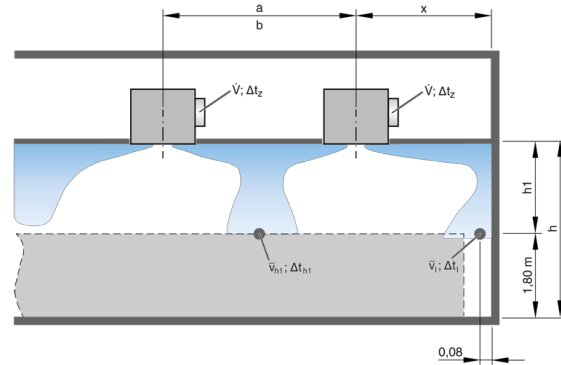
**VDW-Q-Z-H-M/500x24**

Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	500x24	
Total amount	1	

**Input Data**

Strategy: Single row diffuser arrangement	
Volume flow V	271 m3/h
Distance a	2,2 m
Distance x	1,3 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

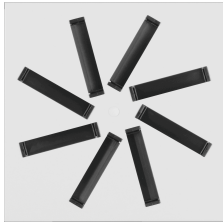
Distance (h <sub>1</sub> + x) l	2,4 m
Effective air velocity v <sub>eff</sub>	3,6 m/s
Throw distance L <sub>s</sub>	3,0 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,12 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,51 K
Velocity at l v <sub>l</sub>	0,18 m/s
Temperature difference at l Δt <sub>l</sub>	-0,46 K
Thermal output – cooling Q <sub>cool</sub>	-907 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	13	21	31	32	26	17	< 15	< 15	< 15	< 15	11	15
damper blade position 45°	16	21	29	30	24	19	< 15	< 15	< 15	< 15	12	15
damper blade position closed	39	27	31	31	26	25	23	15	< 15	< 15	21	23

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



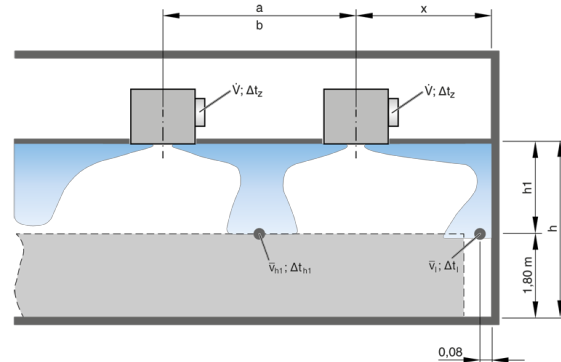
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	300x8	
Total amount	1	

## VDW-Q-Z-H-M/300x8

### Input Data

Strategy: Single row diffuser arrangement	
Volume flow V	70 m <sup>3</sup> /h
Distance a	3,0 m
Distance x	0,4 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

### Schematic side view



### Results

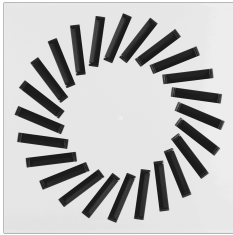
Distance (h <sub>1</sub> + x) l	1,5 m
Effective air velocity v <sub>eff</sub>	2,8 m/s
Throw distance L <sub>s</sub>	2,3 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,04 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,25 K
Velocity at l v <sub>l</sub>	0,13 m/s
Temperature difference at l Δt <sub>l</sub>	-0,43 K
Thermal output – cooling Q <sub>cool</sub>	-234 W

### Acoustic results

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	5	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	-6	-1
damper blade position 45°	6	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	-7	-1
damper blade position closed	9	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	-3	2

### Description

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



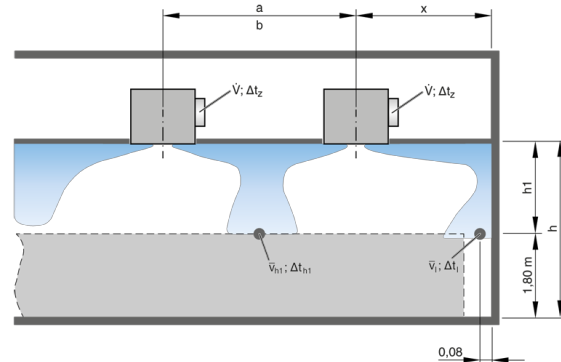
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/500x24**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
500x24  
1

**Input Data**

**Schematic side view**

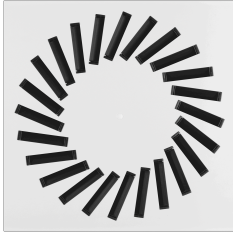


**Acoustic results**

	$\Delta p_t$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	8	22	25	23	18	18	21	< 15	< 15	< 15	19	21
damper blade position 45°	15	24	31	30	26	21	18	< 15	< 15	< 15	16	18
damper blade position closed	47	32	34	36	33	29	26	24	17	17	25	27

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



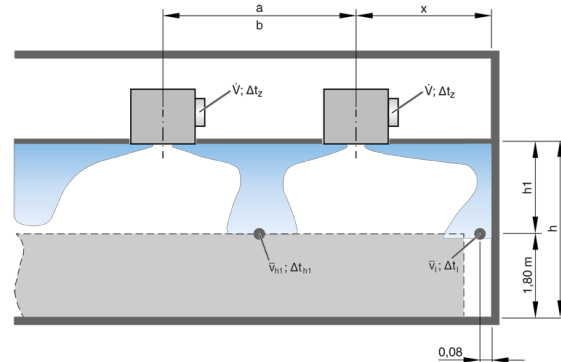
**VDW-Q-Z-H-M/500x24**

Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	500x24	
Total amount	1	

**Input Data**

Strategy: Single row diffuser arrangement	
Volume flow V	271 m <sup>3</sup> /h
Distance a	3,0 m
Distance x	1,6 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

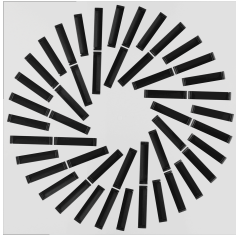
Distance (h <sub>1</sub> + x) l	2,7 m
Effective air velocity v <sub>eff</sub>	3,6 m/s
Throw distance L <sub>s</sub>	3,0 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,11 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,43 K
Velocity at l v <sub>l</sub>	0,16 m/s
Temperature difference at l Δt <sub>l</sub>	-0,41 K
Thermal output – cooling Q <sub>cool</sub>	-907 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	13	21	31	32	26	17	< 15	< 15	< 15	< 15	11	15
damper blade position 45°	16	21	29	30	24	19	< 15	< 15	< 15	< 15	12	15
damper blade position closed	39	27	31	31	26	25	23	15	< 15	< 15	21	23

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

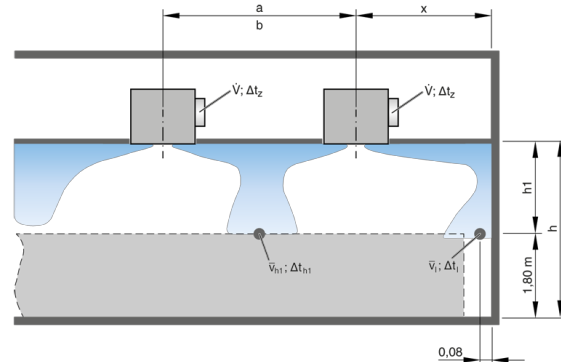
**VDW-Q-Z-H-M/600x48**

Q Square  
Z Supply air  
H Horizontal  
M With damper blade  
600x48  
1

**Input Data**

Strategy: Single row diffuser arrangement  
Volume flow V 420 m<sup>3</sup>/h  
Distance a 3,0 m  
Distance x 1,5 m  
Distance h<sub>1</sub> 1,1 m  
Supply air to room air temperature -10 K

**Schematic side view**



**Results**

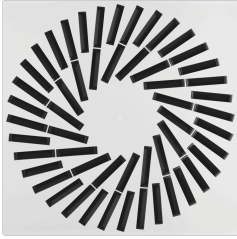
Distance (h<sub>1</sub> + x) l 2,6 m  
Effective air velocity v<sub>eff</sub> 3,0 m/s  
Throw distance L<sub>s</sub> 2,6 m  
Velocity at h<sub>1</sub> v<sub>h1</sub> 0,13 m/s  
Temperature difference at h<sub>1</sub> Δt<sub>h1</sub> -1,33 K  
Velocity at l v<sub>l</sub> 0,19 m/s  
Temperature difference at l Δt<sub>l</sub> -1,33 K  
Thermal output – cooling Q<sub>cool</sub> -1 406 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	10	17	23	27	22	< 15	< 15	< 15	< 15	< 15	7	11
damper blade position 45°	14	20	22	27	21	20	< 15	< 15	< 15	< 15	13	16
damper blade position closed	40	27	25	31	28	24	22	15	< 15	< 15	20	22

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



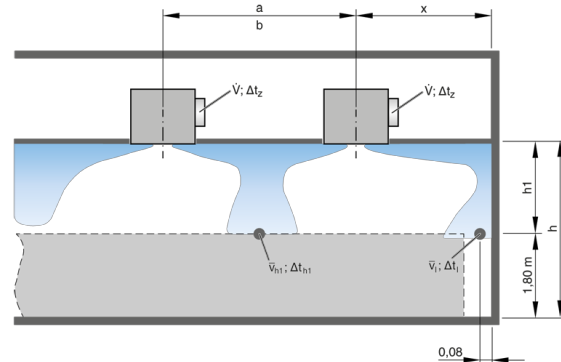
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/625x54**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
625x54  
1

**Input Data**

**Schematic side view**

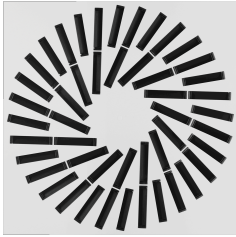


**Acoustic results**

	$\Delta p_i$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	17	35	36	37	32	31	31	26	16	< 15	30	31
damper blade position 45°	39	38	38	41	38	34	33	31	24	17	31	34
damper blade position closed	135	49	42	44	43	41	41	42	44	41	46	49

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



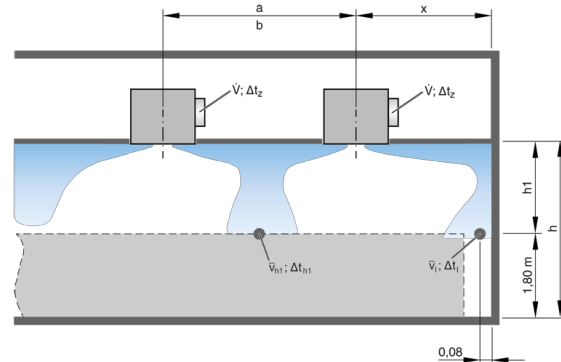
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	600x48	
Total amount	1	

**VDW-Q-Z-H-M/600x48**

**Input Data**

Strategy: Single row diffuser arrangement	
Volume flow V	450 m <sup>3</sup> /h
Distance a	3,0 m
Distance x	1,5 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

Distance (h <sub>1</sub> + x) l	2,6 m
Effective air velocity v <sub>eff</sub>	3,2 m/s
Throw distance L <sub>s</sub>	2,8 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,14 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-1,33 K
Velocity at l v <sub>l</sub>	0,21 m/s
Temperature difference at l Δt <sub>l</sub>	-1,33 K
Thermal output – cooling Q <sub>cool</sub>	-1 506 W

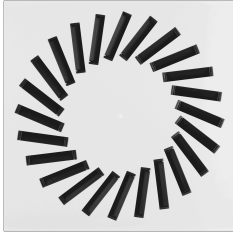
**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	11	19	25	29	24	16	< 15	< 15	< 15	< 15	9	13
damper blade position 45°	16	22	25	29	24	22	15	< 15	< 15	< 15	15	18
damper blade position closed	46	29	27	33	30	26	24	18	< 15	< 15	23	24

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.





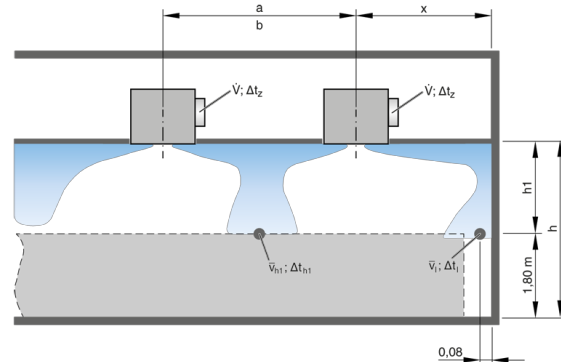
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	500x24	
Total amount	1	

**VDW-Q-Z-H-M/500x24**

**Input Data**

Strategy: Multi row diffuser arrangement	
Volume flow V	280 m <sup>3</sup> /h
Distance a	2,8 m
Distance b	2,8 m
Distance x	2,5 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

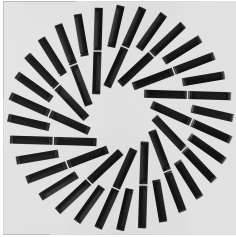
Distance (h <sub>1</sub> + x) l	3,6 m
Effective air velocity v <sub>eff</sub>	3,7 m/s
Throw distance L <sub>s</sub>	3,1 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,20 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,45 K
Velocity at l v <sub>l</sub>	0,13 m/s
Temperature difference at l Δt <sub>l</sub>	-0,31 K
Thermal output – cooling Q <sub>cool</sub>	-937 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	13	23	32	33	27	18	< 15	< 15	< 15	< 15	12	16
damper blade position 45°	17	22	29	31	25	20	15	< 15	< 15	< 15	14	16
damper blade position closed	42	28	32	32	27	26	24	16	< 15	< 15	22	24

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



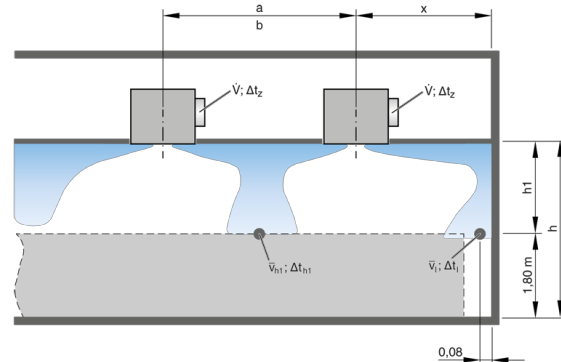
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/600x48**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
600x48  
1

**Input Data**

**Schematic side view**

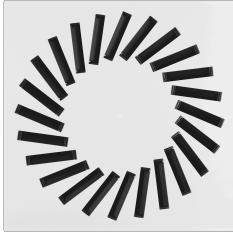


**Acoustic results**

	$\Delta p_t$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	8	21	24	26	21	22	< 15	< 15	< 15	< 15	15	18
damper blade position 45°	17	25	29	31	24	23	20	< 15	< 15	< 15	18	20
damper blade position closed	62	36	34	38	33	32	30	30	26	20	31	33

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



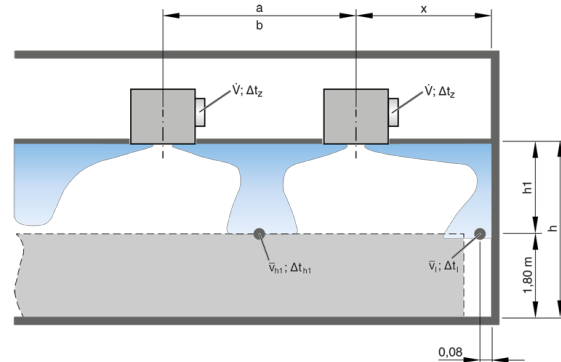
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	500x24	
Total amount	1	

**VDW-Q-Z-H-M/500x24**

**Input Data**

Strategy: Multi row diffuser arrangement	
Volume flow V	249 m <sup>3</sup> /h
Distance a	2,8 m
Distance b	2,5 m
Distance x	1,7 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

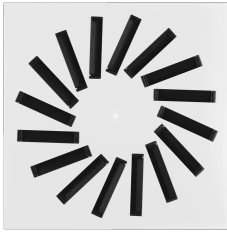
Distance (h <sub>1</sub> + x) l	2,8 m
Effective air velocity v <sub>eff</sub>	3,3 m/s
Throw distance L <sub>s</sub>	2,8 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,18 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,47 K
Velocity at l v <sub>l</sub>	0,15 m/s
Temperature difference at l Δt <sub>l</sub>	-0,40 K
Thermal output – cooling Q <sub>cool</sub>	-833 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	11	19	30	30	23	< 15	< 15	< 15	< 15	< 15	8	12
damper blade position 45°	14	19	27	28	21	17	< 15	< 15	< 15	< 15	10	12
damper blade position closed	33	24	30	29	23	23	20	< 15	< 15	< 15	18	20

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



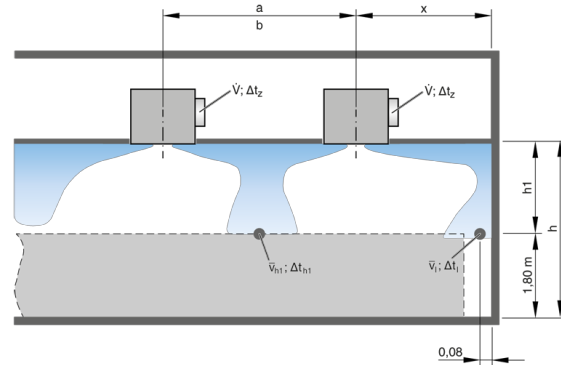
**VDW-Q-Z-H-M/400x16**

Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	400x16	
Total amount	1	

**Input Data**

Strategy: Multi row diffuser arrangement	
Volume flow V	140 m3/h
Distance a	4,1 m
Distance b	2,3 m
Distance x	1,7 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

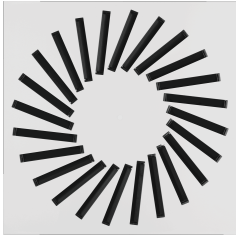
Distance (h <sub>1</sub> + x) l	2,8 m
Effective air velocity v <sub>eff</sub>	2,8 m/s
Throw distance L <sub>s</sub>	2,3 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,07 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,40 K
Velocity at l v <sub>l</sub>	0,11 m/s
Temperature difference at l Δt <sub>l</sub>	-0,33 K
Thermal output – cooling Q <sub>cool</sub>	-469 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	5	< 15	27	< 15	< 15	< 15	< 15	< 15	< 15	< 15	-4	1
damper blade position 45°	6	< 15	21	16	15	< 15	< 15	< 15	< 15	< 15	-2	3
damper blade position closed	12	< 15	27	16	< 15	< 15	< 15	< 15	< 15	< 15	3	5

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



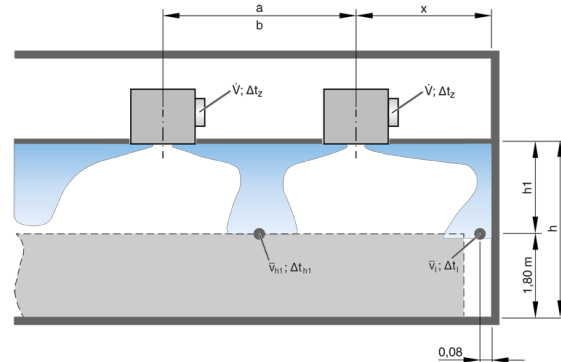
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/600x24**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
600x24  
1

**Input Data**

**Schematic side view**

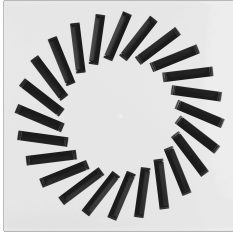


**Acoustic results**

	$\Delta p_t$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	5	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	< 15	3	5
damper blade position 45°	9	< 15	< 15	18	16	< 15	< 15	< 15	< 15	< 15	5	8
damper blade position closed	29	24	28	29	24	22	16	16	< 15	< 15	17	19

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



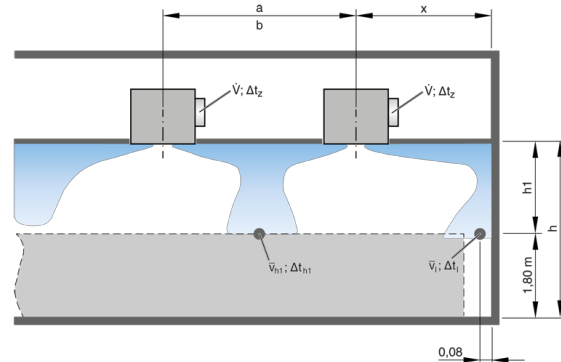
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	500x24	
Total amount	1	

**VDW-Q-Z-H-M/500x24**

**Input Data**

Strategy: Multi row diffuser arrangement	
Volume flow V	303 m <sup>3</sup> /h
Distance a	4,1 m
Distance b	2,7 m
Distance x	1,7 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

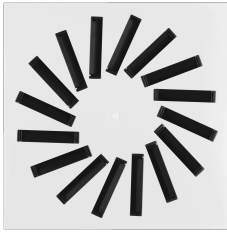
Distance (h <sub>1</sub> + x) l	2,8 m
Effective air velocity v <sub>eff</sub>	4,0 m/s
Throw distance L <sub>s</sub>	3,3 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,14 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,46 K
Velocity at l v <sub>l</sub>	0,18 m/s
Temperature difference at l Δt <sub>l</sub>	-0,40 K
Thermal output – cooling Q <sub>cool</sub>	-1 014 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	16	25	33	35	30	21	< 15	< 15	< 15	< 15	16	19
damper blade position 45°	20	25	31	33	28	23	18	< 15	< 15	< 15	16	18
damper blade position closed	49	30	33	34	29	28	26	19	< 15	< 15	25	26

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



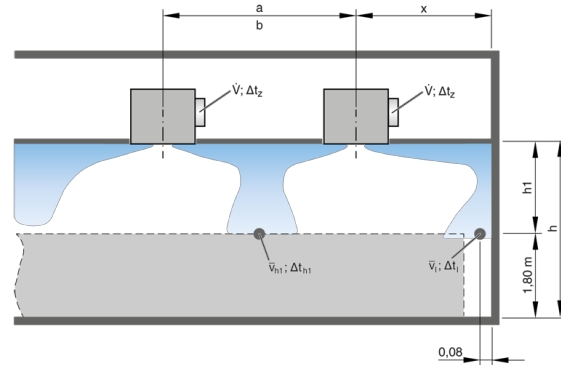
**VDW-Q-Z-H-M/400x16**

Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	400x16	
Total amount	1	

**Input Data**

Strategy: Single row diffuser arrangement	
Volume flow V	210 m3/h
Distance a	1,5 m
Distance x	1,5 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

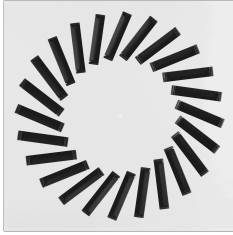
Distance (h <sub>1</sub> + x) l	2,6 m
Effective air velocity v <sub>eff</sub>	4,2 m/s
Throw distance L <sub>s</sub>	3,4 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,12 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,49 K
Velocity at l v <sub>l</sub>	0,16 m/s
Temperature difference at l Δt <sub>l</sub>	-0,35 K
Thermal output – cooling Q <sub>cool</sub>	-703 W

**Acoustic results**

	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	12	21	34	26	26	17	< 15	< 15	< 15	< 15	12	15
damper blade position 45°	14	22	30	29	27	18	< 15	< 15	< 15	< 15	12	16
damper blade position closed	27	24	33	30	27	22	20	< 15	< 15	< 15	18	20

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.



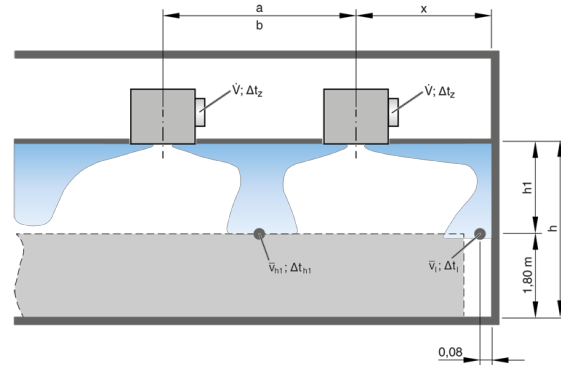
Construction style  
System  
Connection  
Damper blade for volume flow rate balancing  
Nominal size  
Total amount

**VDW-Q-A-H-M/500x24**

Q Square  
A Extract air  
H Horizontal  
M With damper blade  
500x24  
1

**Input Data**

**Schematic side view**



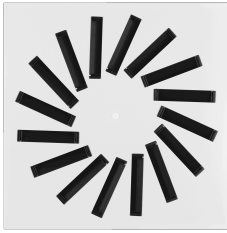
**Acoustic results**

	$\Delta p_i$ [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	11	26	28	27	23	22	24	< 15	< 15	< 15	23	24
damper blade position 45°	20	28	34	34	29	25	22	15	< 15	< 15	20	22
damper blade position closed	61	36	36	39	36	32	30	29	24	22	29	32

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.





**VDW-Q-Z-H-M/400x16**

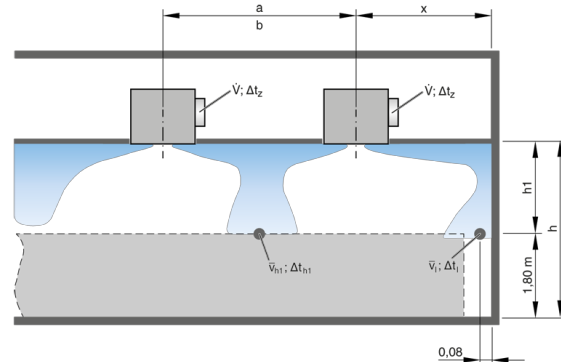
Construction style	Q	Square
System	Z	Supply air
Connection	H	Horizontal
Damper blade for volume flow rate balancing	M	With damper blade
Nominal size	400x16	
Total amount	1	

**Input Data**

Strategy: Single row diffuser arrangement

Volume flow V	178 m3/h
Distance a	1,5 m
Distance x	1,5 m
Distance h <sub>1</sub>	1,1 m
Supply air to room air temperature	-10 K

**Schematic side view**



**Results**

Distance (h <sub>1</sub> + x) l	2,6 m
Effective air velocity v <sub>eff</sub>	3,5 m/s
Throw distance L <sub>s</sub>	2,9 m
Velocity at h <sub>1</sub> v <sub>h1</sub>	0,10 m/s
Temperature difference at h <sub>1</sub> Δt <sub>h1</sub>	-0,49 K
Velocity at l v <sub>l</sub>	0,14 m/s
Temperature difference at l Δt <sub>l</sub>	-0,35 K
Thermal output – cooling Q <sub>cool</sub>	-596 W

**Acoustic results**

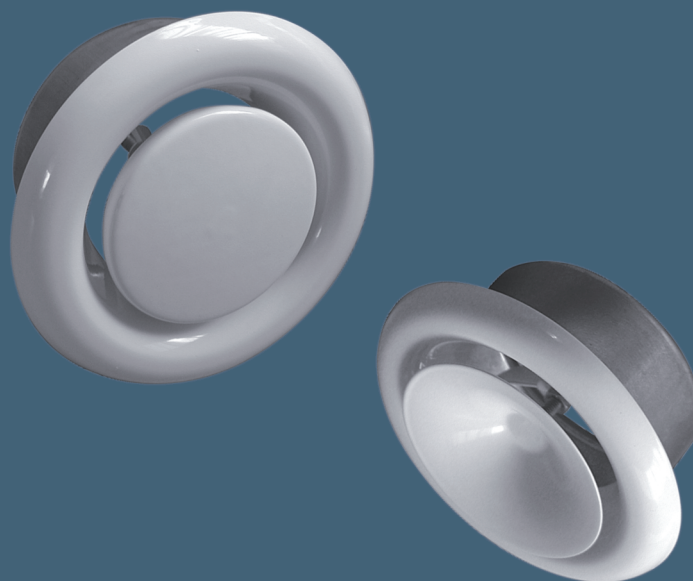
	Δp <sub>t</sub> [Pa]	LWA [dB(A)]	63Hz [dB]	125Hz [dB]	250Hz [dB]	500Hz [dB]	1kHz [dB]	2kHz [dB]	4kHz [dB]	8kHz [dB]	LWNC	LWNR
damper blade position open	9	16	32	20	21	< 15	< 15	< 15	< 15	< 15	6	10
damper blade position 45°	10	17	26	24	22	< 15	< 15	< 15	< 15	< 15	6	11
damper blade position closed	19	19	30	24	21	17	< 15	< 15	< 15	< 15	12	14

**Description**

Ceiling swirl diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones, for a maximum air change rate of 35 per hour. Diffuser face with individually manually adjustable air control blades for horizontal swirling supply air discharge creating high induction levels. For installation into all types of suspended ceilings. Ready-to-install component which consists of the diffuser face with radially arranged, individually adjustable black or white air control blades, and of a plenum box, equalising element (only supply air variants), side entry or top entry spigot, cross bar, and suspension holes or suspension lugs. The diffuser face is fixed to the cross bar with a central screw, concealed by a decorative cap. Spigot suitable for ducts to EN 1506 or EN 13180. Sound power level of the air-regenerated noise measured according to EN ISO 5135.

# MANDÍK<sup>®</sup>

## TALÍŘOVÝ VENTIL TVPM - TVOM



Tyto technické podmínky stanoví řadu vyráběných velikostí a provedení "TALÍŘOVÝCH VENTILŮ" (dále jen ventilů) TVPM pro přívod vzduchu a TVOM pro odvod vzduchu ø 80, 100, 125, 150, 160, 200. Platí pro výrobu, navrhování, objednávání, dodávky, montáž, provoz a údržbu.

**I. OBSAH**

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## II. VŠEOBECNĚ

### 1. Popis

- 1.1.** Ventily jsou koncový vzduchotechnický element určený pro distribuci vzduchu ve větraných nebo klimatizovaných prostorech. Plynulá regulace množství přiváděného vzduchu u přívodních kovových ventilů TVPM a regulace množství odváděného vzduchu u odvodních kovových ventilů TVOM se provádí otáčením talířů ventilů. Nastavená poloha "s" se po vyjmutí tělesa ventilu z pouzdra zajistí pojistnou maticí a ventil se opět nasadí do pouzdra. Tělesa ventilů jsou v pouzdrech usazena a zajištěna bajonetovými uzávěry.
- 1.4.** Ventily jsou určeny pro prostředí chráněné proti povětrnostním vlivům s klasifikací klimatických podmínek třídy 3K5, bez kondenzace, námrazy, tvorby ledu a bez vody i z jiných zdrojů než z deště dle EN 60 721-3-3 zm.A2.
- 1.5.** Ventily jsou určeny pro vzdušiny bez abrazivních, chemických a lepivých příměsí.
- 1.7.** Všechny rozměry a hmotnosti, pokud není uvedeno jinak, jsou v mm a kg.

### 2. Provedení

- 2.1.** Ventily jsou dodávány v těchto provedeních:
- pro přívod vzduchu - TVPM
  - pro odvod vzduchu - TVOM

### 3. Rozměry a hmotnosti

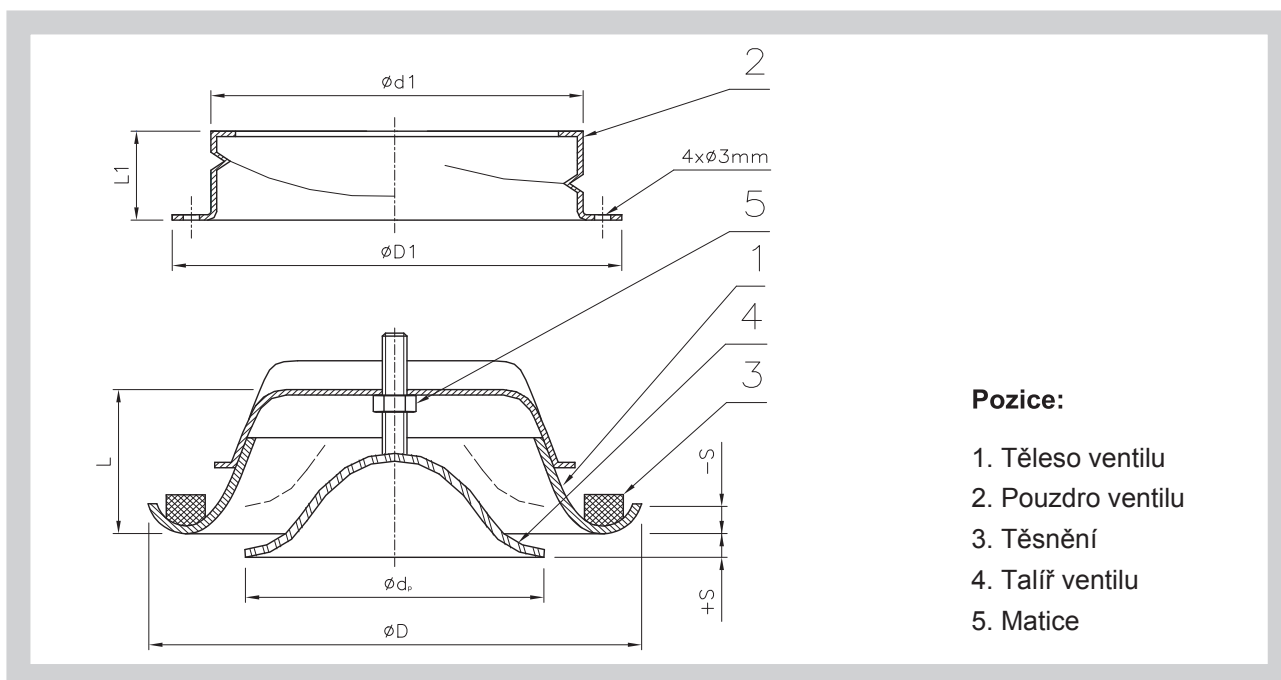
- 3.1.** Rozměry a hmotnosti ventilů

Tab. 3.1.1. Rozměry a hmotnosti

Jm. rozměr	øD	øD <sub>1</sub>	ød <sub>1</sub>	ødp	ødo	L	L <sub>1</sub>	Nastavení ventilu s		Hmotnost [kg]	
								TVPM	TVOM	TVPM	TVOM
<b>80</b>	115	105	79	80	60	42	50	9 až -3	12 až -15	0,150	0,125
<b>100</b>	138	125	99	93	75	40	50	10 až -3	10 až -10	0,190	0,170
<b>125</b>	164	150	124	115	99	46	50	15 až -7	9 až -17	0,270	0,230
<b>150</b>	202	175	149	135	118	50	50	15 až -5	10 až -15	0,390	0,350
<b>160</b>	211	185	159	148	129	54	50	15 až -10	5 až -20	0,420	0,380
<b>200</b>	248	225	199	196	157	63	50	20 až -3	20 až -25	0,590	0,510

3.2. Ventil pro přívod vzduchu TVPM

Obr. 1

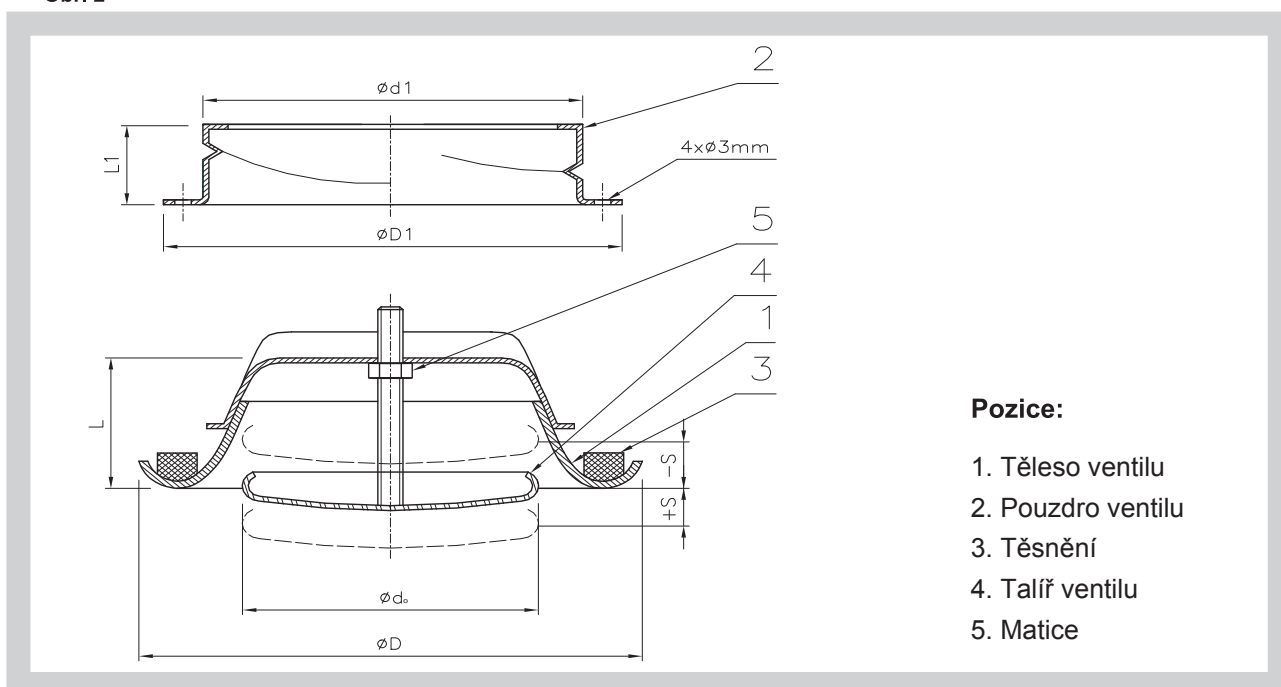


**Pozice:**

- 1. Těleso ventilu
- 2. Pouzdro ventilu
- 3. Těsnění
- 4. Talíř ventilu
- 5. Matice

3.3. Ventil pro odvod vzduchu TVOM

Obr. 2



**Pozice:**

- 1. Těleso ventilu
- 2. Pouzdro ventilu
- 3. Těsnění
- 4. Talíř ventilu
- 5. Matice

**4. Zabudování a umístění**

- 4.1. Ventily jsou určeny pro instalaci do podhledů, stěn a jiných stavebních konstrukcí.
- 4.2. Pro rovnoměrné proudění vzduchu u ventilů pro přívod i odvod vzduchu je nutné, aby rovný úsek navazujícího potrubí byl min. 250 mm.

III. TECHNICKÉ ÚDAJE

5. Výpočtové a určující veličiny

5.1. Základní parametry

- $\dot{V}$  [m<sup>3</sup>.h<sup>-1</sup>] objemový průtok vzduchu pro jeden ventil
- $s$  [mm] vzdálenost nastavení talířového ventilu od nulové polohy
- $\Delta p_c$  [Pa] celková tlaková ztráta při  $\rho = 1,2 \text{ kg/m}^3$
- $L_{WA}$  [dB(A)] hladina akustického výkonu

Tab. 5.1.1. Ventil pro přívod vzduchu - TVPM

Jm. rozměr	80	100	125	150	160	200
$\dot{V}_{max}$ [m <sup>3</sup> .h <sup>-1</sup> ]	60	90	150	200	200	250

Tab. 5.1.2. Ventil pro odvod vzduchu - TVOM

Jm. rozměr	80	100	125	150	160	200
$\dot{V}_{max}$ [m <sup>3</sup> .h <sup>-1</sup> ]	60	90	150	200	200	250

5.2. Tlakové ztráty a hladiny akustických výkonů

5.2.1. Ventil pro přívod vzduchu TVPM

Diagram 5.2.1. TVPM 80

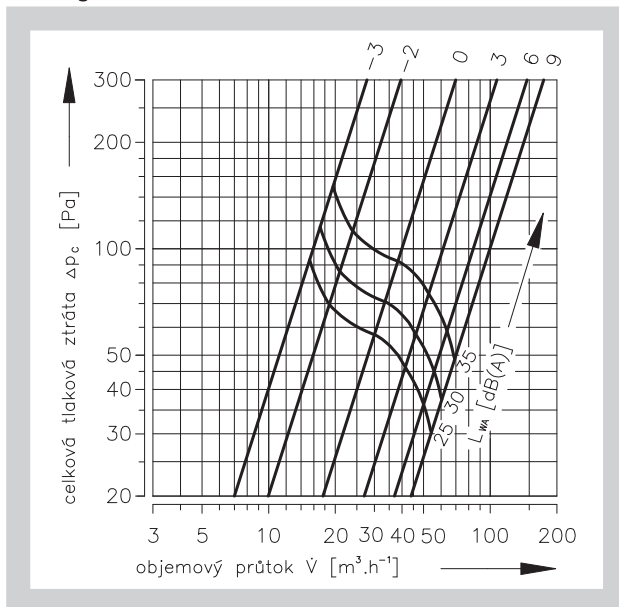


Diagram 5.2.2. TVPM 100

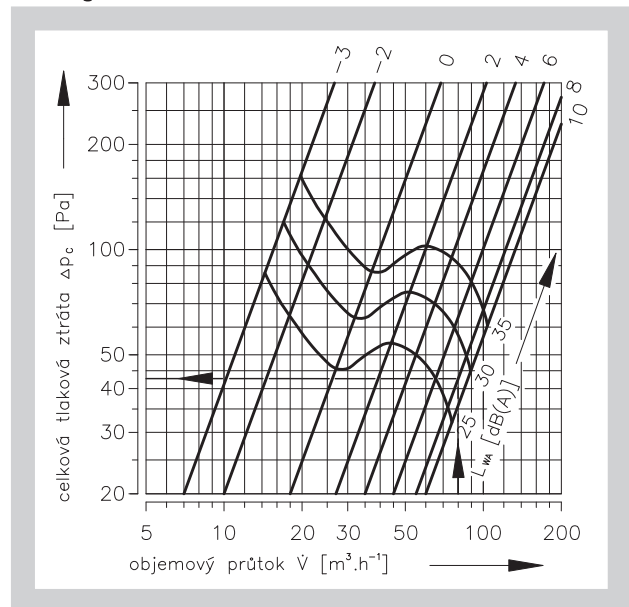


Diagram 5.2.3. TVPM 125

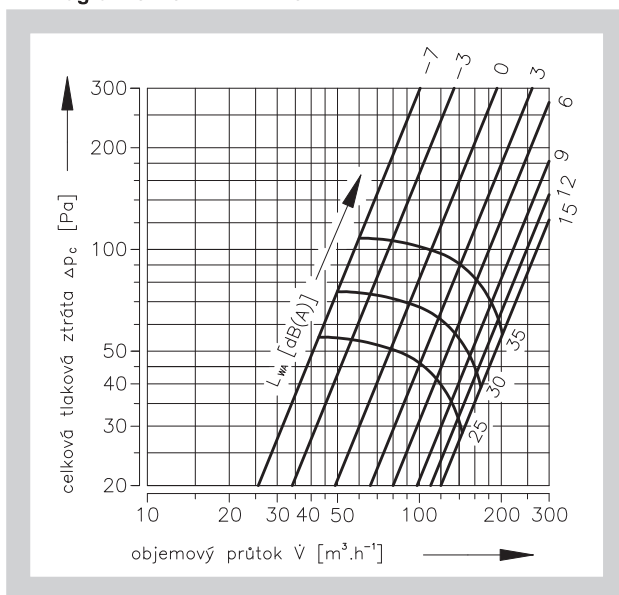


Diagram 5.2.4. TVPM 150

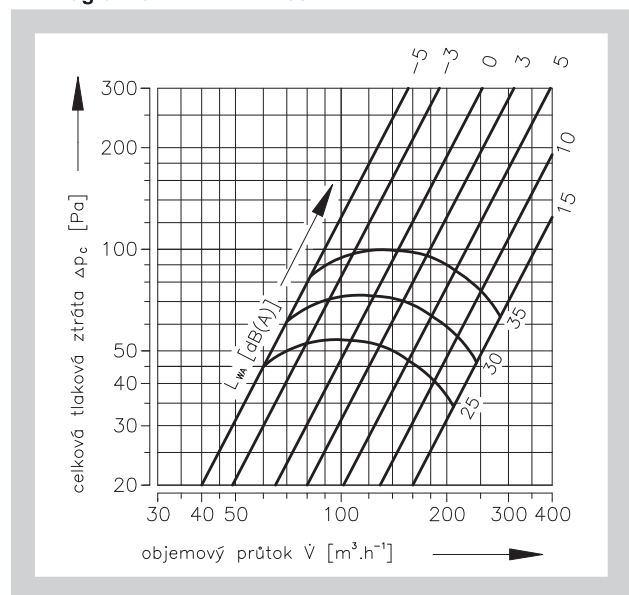


Diagram 5.2.5. TVPM 160

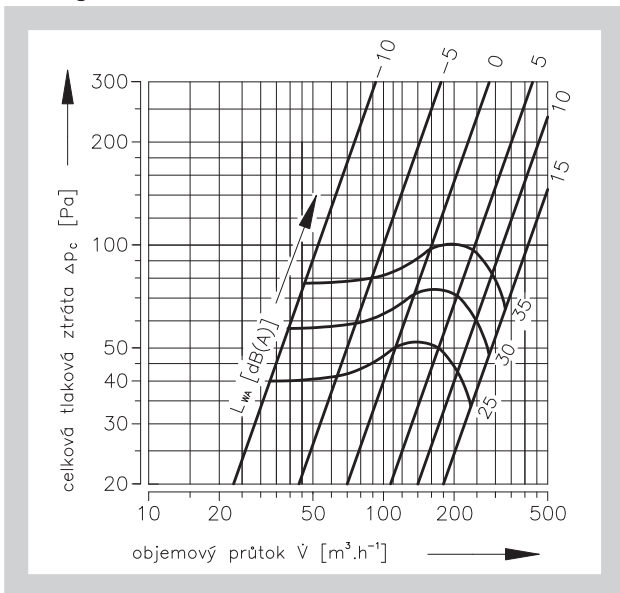
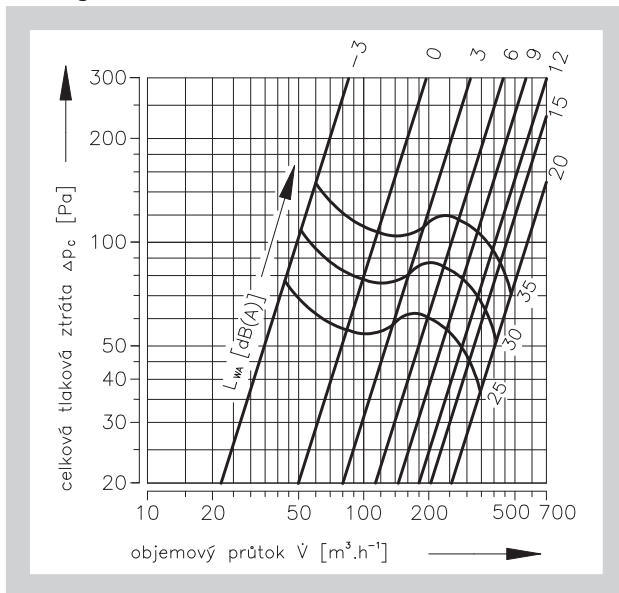


Diagram 5.2.6. TVPM 200



5.2.2. Ventil pro odvod vzduchu

Diagram 5.2.7. TVOM 80

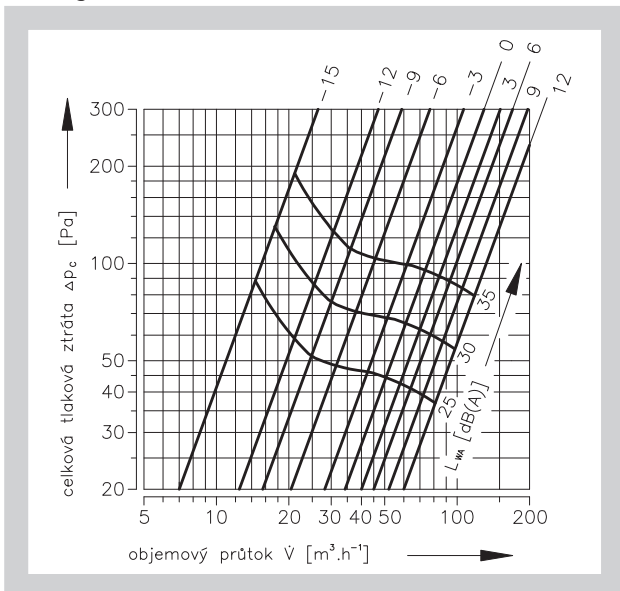


Diagram 5.2.8. TVOM 100

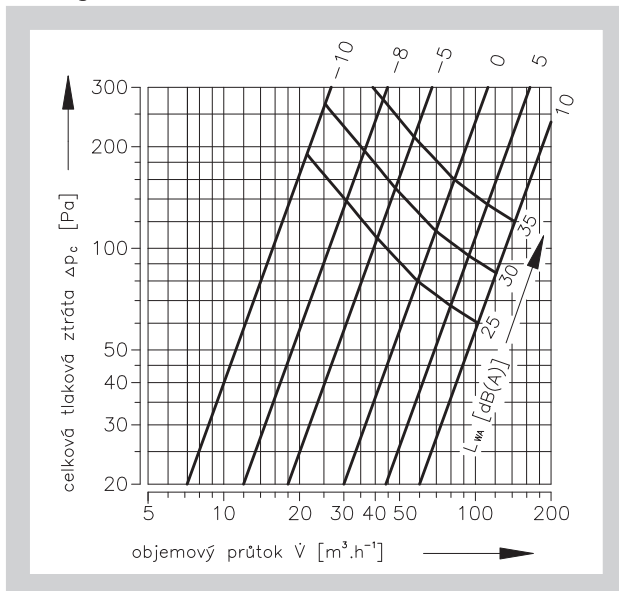


Diagram 5.2.9. TVOM 125

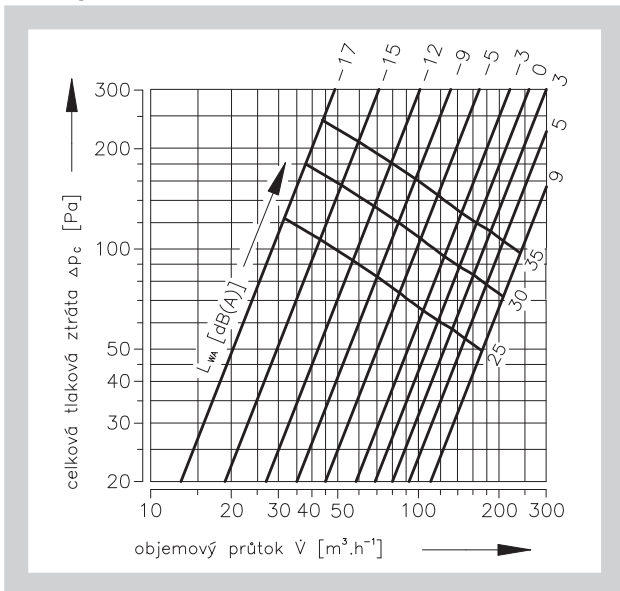


Diagram 5.2.10. TVOM 150

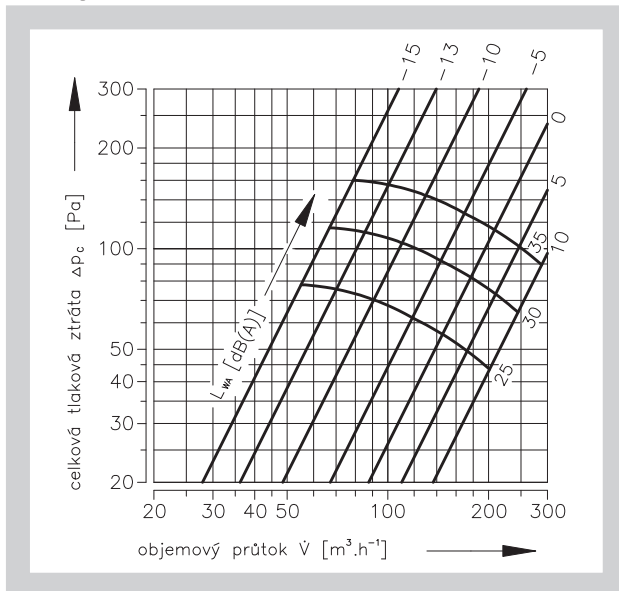


Diagram 5.2.11. TVOM 160

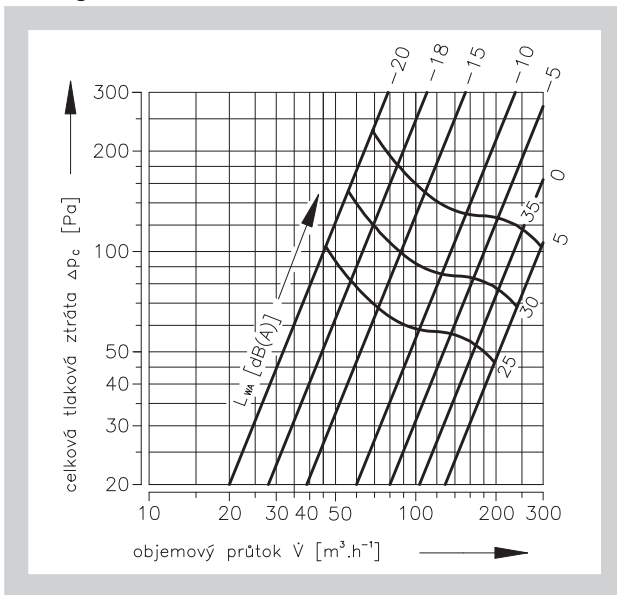
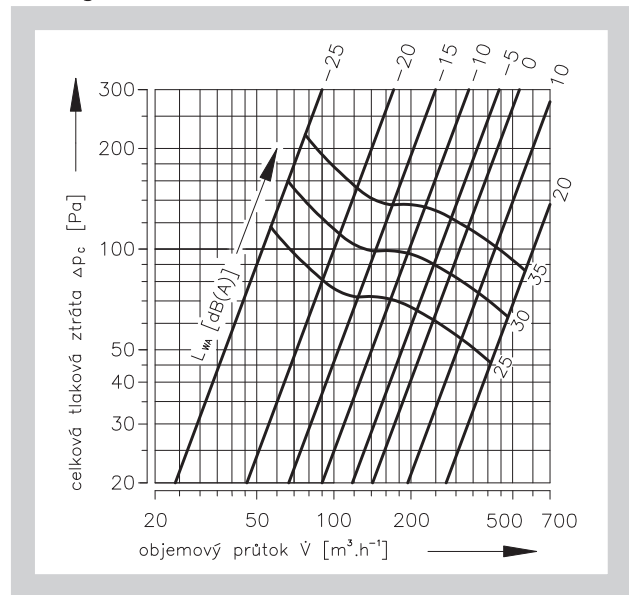


Diagram 5.2.12. TVOM 200



Obr. 3 Příklad

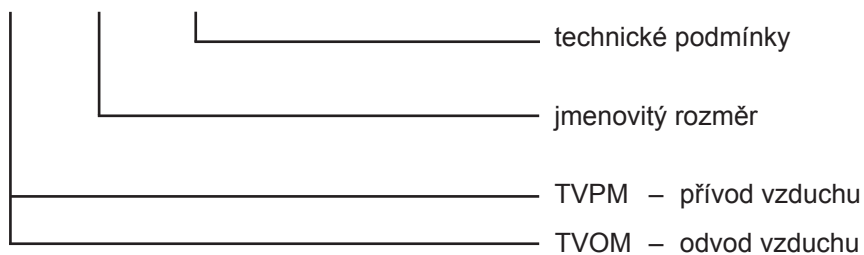
Zadaná data: Talířový ventil TVPM 100  
 $\dot{V} = 80 \text{ m}^3 \cdot \text{h}^{-1}$   
 $s = 8 \text{ mm}$

Diagram 5.2.2. :  $L_{WA} = 28 \text{ dB(A)}$   
 $\Delta p_c = 43 \text{ Pa}$

#### IV. ÚDAJE PRO OBJEDNÁVKU

##### 6. Objednávkový klíč

**TVPM 100 TPM 028/03**



#### V. MATERIÁL

##### 7. Materiál

7.1. Tělesa a talíře ventilů jsou vyrobeny z ocelového plechu s epoxypolyesterovým nátěrem bílé barvy RAL 9010, pouzdra ventilů jsou vyrobeny z pozinkovaného plechu.

#### VI. KONTROLA, ZKOUŠENÍ

##### 8. Kontrola

- 8.1. Rozměry se kontrolují běžnými měřidly dle normy netolerovaných rozměru používané ve vzduchotechnice.
- 8.2. Provádí se mezioperační kontroly dílu a hlavních rozměrů dle výkresové dokumentace.



## 9. Zkoušení

- 9.1. Všechna zařízení jsou po ukončení výroby testována z hlediska bezpečnosti a provozuschopnosti.

## VII. BALENÍ, DOPRAVA, PŘEJÍMKA, SKLADOVÁNÍ

### 10. Logistické údaje

- 10.1. Ventily se přepravují v kartónových obalech volně ložené krytými dopravními prostředky. Po dohodě s odběratelem je možné ventily přepravovat na paletách nebo v latěch. Při manipulaci po dobu dopravy a skladování musí být ventily chráněny proti mechanickému poškození. V případě použití obalů jsou tyto nevratné a jejich cena není zahrnuta v ceně ventilu.
- 10.2. Nebude-li v objednávce určen způsob přejímky, bude za přejímku považováno předání ventilů dopravci.
- 10.3. Ventily musí být skladovány v krytých objektech, v prostředí bez agresivních par, plynů a prachu. V objektech musí být dodržována teplota v rozsahu -5 až +40°C a relativní vlhkost max. 80%.
- 10.4. V rozsahu dodávky je kompletní talířový ventil.

### 11. Záruka

- 11.1. Výrobce poskytuje na ventily záruku 24 měsíců od data expedice.
- 11.2. Záruka zaniká při použití ventilů pro jiné účely, zařízení a pracovní podmínky než připouští tato norma nebo po mechanickém poškození při manipulaci.
- 11.3. Při poškození ventilu dopravou je nutné sepsat při přejímce protokol s dopravcem pro možnost pozdější reklamace.

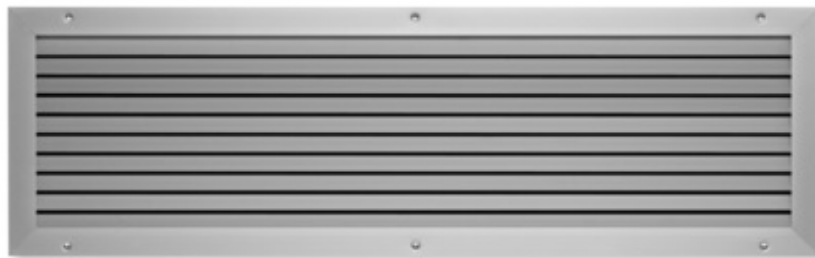
## VIII. MONTÁŽ, OBSLUHA, ÚDRŽBA A KONTROLY PROVOZUSCHOPNOSTI

### 12. Montáž

- 12.1. Montáž spočívá v instalaci ventilu do vzduchotechnického rozvodu.

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## Type AGS



### NON-VISION AIR TRANSFER GRILLES, MADE OF ALUMINIUM, WITH FIXED HORIZONTAL BLADES

Ventilation grille with angled blades

- Nominal sizes 225 × 125 – 1225 × 525 mm
- Volume flow rate range 4 – 535 l/s or 14 – 1926 m<sup>3</sup>/h
- Grille face made of aluminium with anodised finish
- 30 mm wide front border
- Countersunk holes

Optional equipment and accessories

- Grille face in RAL CLASSIC colours
- Installation subframe
- Matching rear frame for door installation

## APPLICATION

### Application

- Type AGS ventilation grille for air transfer applications
- For wall and door installation
- Non-vision grille for the covering of various types of openings

### Special characteristics

- Fixed blades
- Front border with countersunk holes
- Optional matching rear frame for door installation

### Nominal sizes

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

## DESCRIPTION

### Variants

- Single grille
- T: Single grille with matching rear frame for door installation

### Parts and characteristics

- Rectangular profile border sections
- Angle-shaped horizontal blades
- Factory fitted perimeter seal
- Matching rear frame for door installation, optional

### Accessories

- Installation subframe: For the fast and simple installation of ventilation grilles

### Materials and surfaces

- Border and blades made of aluminium
- Border and blades anodised, E6-C-0, natural colour
- P1: Border and blades powder-coated, RAL CLASSIC colour

### 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

## TECHNICAL INFORMATION

## TECHNICAL DATA

<b>Nominal sizes</b>	225 × 125 to 1225 × 525 mm
<b>Minimum volume flow rate</b>	4 – 145 l/s or 14 – 522 m³/h
<b>Maximum volume flow rate, with <math>L_{WA}</math> max. 40 dB(A) without attachments</b>	16 – 535 l/s or 58 – 1926 m³/h

### Geometric free area

H	L [mm]							
	225	325	425	525	625	825	1025	1225
H	$A_{geo}$							
mm	m²							
125	0.008	0.012	0.016	0.020	0.024	0.032	0.040	0.048
225		0.027	0.036	0.045	0.054	0.072	0.090	0.108
325			0.056	0.070	0.084	0.112	0.140	0.168
425					0.114	0.152	0.190	0.228
525							0.240	0.288

## QUICK SIZING

AGS, volume flow rate ranges

×  $L_{WA}$  = 40 dB(A) with unrestricted airflow+  $L_{WA}$  = 40 dB(A) with airflow restricted by 50 %

## SPECIFICATION TEXT

Non-vision ventilation grille, made of aluminium, rectangular, suitable for air transfer applications. Rectangular profile border. Preferably for wall and door installation.

Ready-to-install component which consists of a border and fixed horizontal blades.

Fixing holes for screw-fixing the grille to the installation surface.

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

### Special characteristics

- Fixed blades
- Front border with countersunk holes
- Optional matching rear frame for door installation

### Materials and surfaces

- Border and blades made of aluminium
- Border and blades anodised, E6-C-0, natural colour
- P1: Border and blades powder-coated, RAL CLASSIC colour

### Technical data

- Nominal sizes: 225 × 125 to 1225 × 525 mm
- Minimum volume flow rate (supply air): 4 – 145 l/s or 14 – 522 m<sup>3</sup>/h
- Maximum volume flow rate (supply air), at L<sub>WA</sub> max. 40 dB(A) without attachments: 16 – 535 l/s or 58 – 1926 m<sup>3</sup>/h

### 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: AGS-T/625×225

Attachments	Matching rear frame
Nominal size	625 × 225 mm
Installation subframe	Without
Exposed surface	Anodised, E6-C-0, natural colour

**AGS – T / 825×225 / / P1 – RAL ...**

1      2      3      4      5

### 1 Type

AGS    Single grille

### 2 Attachments

No entry: without (grille face only)

T    Matching rear frame for door installation

### 3 Nominal size [mm]

L × H

### 4 Installation subframe

No entry: without (grille face only)

A1    With (not with matching rear frame T)

### 5 Exposed surface

No entry: anodised, E6-C-0, natural colour

P1    Powder-coated, specify RAL CLASSIC colour

Gloss level

RAL 9010 50 %

RAL 9006 30 %

All other RAL colours 70 %

Dimensions and weight, Product details

---

## DIMENSIONS AND WEIGHT

The weight table shows the available nominal sizes

### AGS

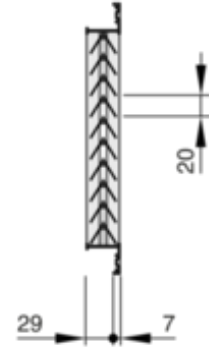
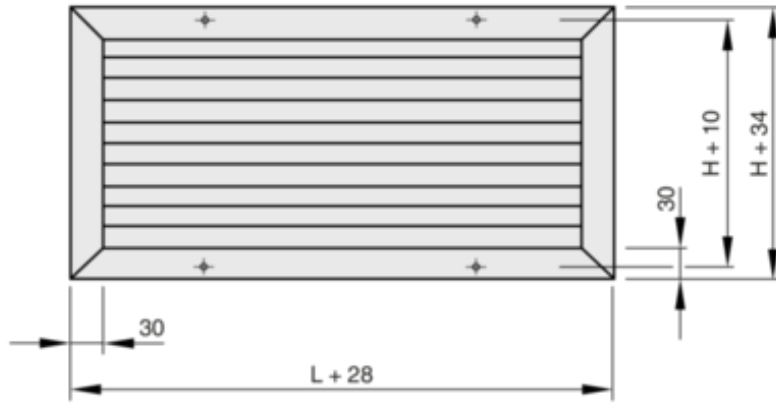
H	L [mm]							
	225	325	425	525	625	825	1025	1225
H	m							
mm	kg							
125	0.5	0.6	0.8	1.0	1.1	1.4	1.7	2.1
225		1.0	1.2	1.5	1.7	2.2	2.8	3.3
325			1.7	2.0	2.4	3.1	3.8	4.4
425					3.0	3.9	4.8	5.6
525							5.8	6.8

### AGS-T

H	L [mm]							
	225	325	425	525	625	825	1025	1225
H	m							
mm	kg							
125	0.7	1.0	1.2	1.4	1.6	2.1	2.5	2.9
225		1.4	1.7	2.0	2.3	2.9	3.6	4.2
325			2.2	2.6	3.0	3.8	4.6	5.4
425					3.7	4.7	5.7	6.7
525							6.8	8.0

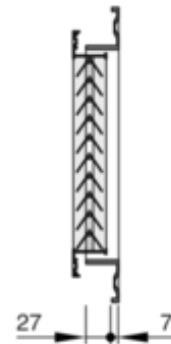
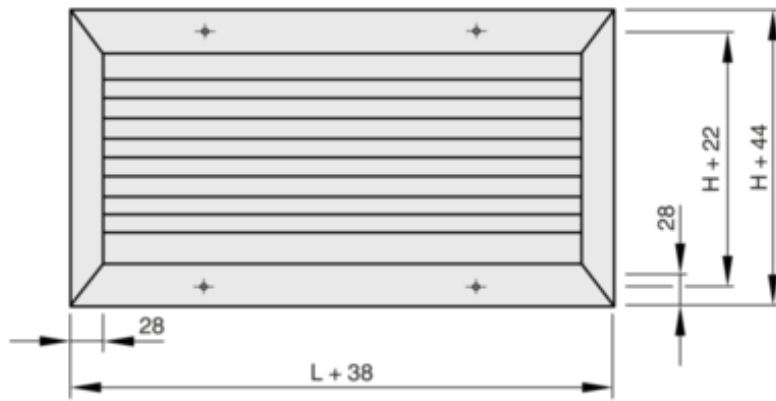
AGS, 30 mm wide front border





L Nominal length  
H Nominal height

AGS-T, 28 mm wide matching rear frame



L Nominal length  
H Nominal height

Matching rear frame

## PRODUCT DETAILS

Front border, 30 mm



Installation details, Basic information and nomenclature

---

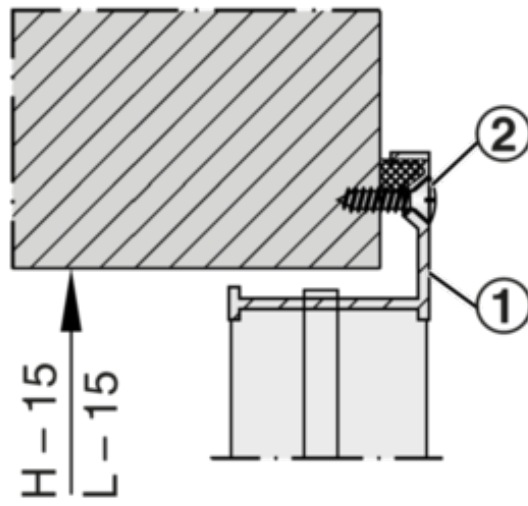
## INSTALLATION DETAILS

### Installation and commissioning

- Preferably for wall and door installation
- Installation with or without installation subframe
- Fix the border with screws
- Fix the matching rear frame (if any) with screws

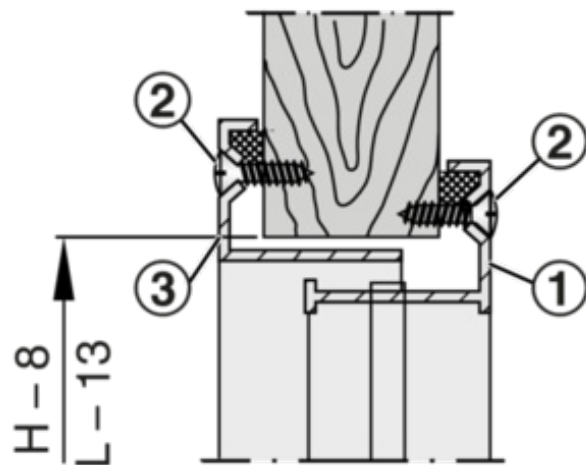
These are only schematic diagrams to illustrate installation details.

Ventilation grille AGS with screw fixing, without installation subframe



- ① Ventilation grille
- ② Fixing screw (by others)

Ventilation grille AGS-T with screw fixing and matching rear frame



- ① Ventilation grille
- ② Fixing screw (by others)
- ③ Matching rear frame

## 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)

## TROX GmbH

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## KATALOGOVÝ LIST

	<b>TLUMIČE HLUKU PŘESLECHOVÉ ( SPIRO )</b>	<b>KM 0028/94e</b>
		Vydání: 8/07
		Strana: 1
		Stran: 2

Přeslechový tlumič hluku PTH/50 (dále jen tlumič) je určen k tlumení hluku v kruhovém potrubí klimatizace a větrání.

### Provedení

Tlumiče jsou určeny k napojení na Flexo potrubí nebo na potrubí SPIRO podle KM 12 0301. Užívají se pro tlak do 1200 Pa.

Jeich vnitřní trouba je z děrovaného pozinkovaného plechu, vnější plášť je potrubí SPIRO rovněž z oboustranně pozinkovaného plechu s ochrannou vrstvou pozinkování 275 g/m<sup>2</sup>. Je možno doložit atestem a certifikátem výrobce. Mezi vnějším a vnitřním pláštěm je 50 mm vrstva minerální vlny (lze dodat i tlumiče s jinou tloušťkou vlny např. 100 mm).

Základní délky tlumičů jsou 500 a 1000 mm. Podle vypočtených útlumových hodnot mohou být dodány tlumiče v délkách od 400 do 1200 mm. Tlumiče jsou vhodné pro nízko a středotlaká větrací zařízení malých a středních průměrů, s rozsahem teplot od -30°C do +100°C, max. rychlostí vzduchu v potrubí 20 m.s<sup>-1</sup>, max. pracovním přetlakem 2000 Pa a max. podtlakem 1500 Pa.

K tlumičům je dodáván spojovací a těsnící materiál, pokud je požadován zákazníkem.

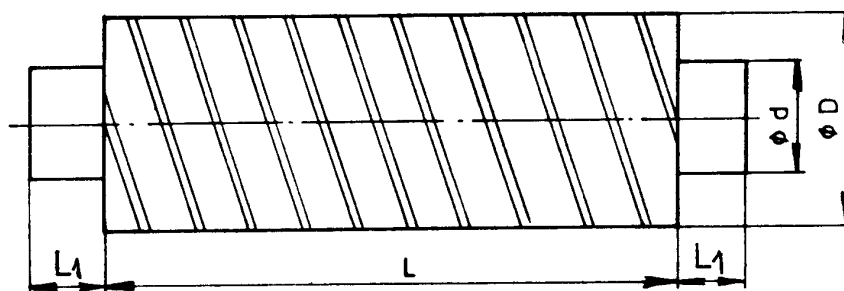
### Označování

Tlumič typu PTH, s tloušťkou minerální vlny 50 mm, jmenovitého průměru  $d = 100$  mm a délky  $L = 1000$  mm se označí:

Tlumič PTH/50 - 100 - 1000 KM 0028/94

### Technické údaje

Hlavní rozměry tlumičů a informativní hmotnosti jsou uvedeny na obr. 1 a v tab. 1.



Obr. 1 Hlavní rozměry

\*) Jmenovitý průměr  $d = 80$  až  $200$  má pro připojení navazujícího potrubí vnější průměr zmenšen o 1 mm,  $d = 225$  až  $355$  o 2 mm.

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 e-mail: [klimobchod@zvvz.cz](mailto:klimobchod@zvvz.cz)

Tab. 1 ROZMĚRY A HMOTNOSTI

d mm	D mm	L <sub>1</sub> mm	Hmotnost (kg)		d mm	D mm	L <sub>1</sub> mm	Hmotnost (kg)	
			L = 500	L = 1000				L = 500	L = 1000
80	180	60	3,44	6,22	<b>200</b>	300	60	7,55	13,73
<b>100</b>	200	60	3,98	7,20	225	315	60	7,95	14,47
<b>125</b>	225	60	5,30	9,66	<b>250</b>	355	60	9,24	16,78
150	250	60	6,05	11,02	280	400	60	10,76	19,50
<b>160</b>	250	60	6,04	11,02	315	400	80	10,38	18,88
180	280	60	6,95	12,65	<b>355</b>	450	80	11,99	21,75

Poznámka: Podtržené rozměry d jsou přednostní.

### Výkonové údaje

Naměřený útlum je srovnatelný se zahraničními výrobky a je uveden v tab. 2.

Měření provedla fa: KLIMACENTRUM a. s. Praha - odbor KLIMATIZACE

zpráva číslo: TA - 142 - 93

TA - 156 - 94

Tab. 2 ÚTLUMY TLUMIČŮ

Délka tlumiče L (mm)	Jmenovitý průměr d (mm)	D <sub>oct</sub> - dB v oktávových pásmech f - Hz							
		63	125	250	500	1000	2000	4000	8000
500	100	1	8	12	21	30	32	29	19
	125	1	7	10	17	29	30	23	16
	160	1	4	6	13	28	28	18	13
	200	1	3	5	11	24	20	13	11
	250	1	2	5	9	22	15	11	9
	355	1	2	3	7	17	11	9	7
1000	100	2	11	21	37	42	36	34	27
	125	2	9	16	32	41	35	32	23
	160	2	5	11	22	40	34	26	18
	200	2	4	9	20	39	33	20	15
	250	2	3	8	17	37	26	16	14
	355	2	2	5	11	26	15	13	12
500 + 1000 *)	125	3	13	25	47	52	44	42	30
	160	3	8	15	33	48	42	34	23
	200	3	7	14	29	46	40	26	20
	250	3	5	12	26	43	32	21	17
	355	3	4	7	17	34	22	17	15

\*) Spojení dvou tlumičů za sebou.

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**ZVVZ a. s.**

Dodavatel zařízení pro ekologii

# **NÁVOD K POUŽÍVÁNÍ**

**TLUMIČE HLUKU PŘESLECHOVÉ  
(SPIRO)**

Číslo podkladu: **KM 0028/94e**  
**Příloha 1**

Počet stran: 4

SRPEN 2007

## 1 ÚVOD

1.1 Návod k používání (dále jen návod) je určen všem uživatelům přeslechových tlumičů hluku (dále jen tlumiče). Návod obsahuje pokyny pro bezpečnost, dodávání, dopravu, přejímání, skladování, montáž, manipulaci, údržbu a likvidaci tlumičů.

1.2 Čištění a údržbu tlumičů smí provádět pouze poučení a zaškolení pracovníci podle pokynů a pod dohledem odpovědného pracovníka, v souladu s tímto návodem.

## 2 BEZPEČNOST

2.1 Bezpečnost je podmíněna kvalitou montáže do systému potrubního rozvodu.

## 3 DODÁVÁNÍ, DOPRAVA, PŘEJÍMÁNÍ, SKLADOVÁNÍ

### 3.1 Dodávání

3.1.1 V rozsahu dodávky je kompletní tlumič v objednaném provedení a průvodní technická dokumentace.

3.1.2 Průvodní technická dokumentace obsahuje:

- a) dodací list,
- b) seznam dokumentace,
- c) osvědčení o jakosti a kompletnosti dodávky,
- d) katalogový list vč. přílohy 1 - návod k používání.

### 3.2 Doprava

3.2.1 - dle požadavku odběratele

- volně bez obalu, ve vodorovné poloze, zajištěn proti otáčení a jinému volnému pohybu.

3.2.2 V obalu se dopravuje spojovací a těsnicí materiál (pokud je požadován zákazníkem).

### 3.3 Přejímání

3.3.1 Rozsah a způsob přejímky se provádí podle ujednání (smlouvy) mezi dodavatelem a odběratelem.

3.3.2 Při přejímce je nutné zkontrolovat, zda výrobek byl dodán v dohodnutém provedení a rozsahu (viz čl. 3.1.1) a včetně průvodní technické dokumentace (viz čl. 3.1.2), zda nebyl poškozen při dopravě.

### 3.4 Skladování

3.4.1 Tlumiče se skladují ve skladu, nebo krátkodobě pod přístřeškem (do 15 dnů) - (chránit před nepříznivými povětrnostními vlivy a mechanickým poškozením).

Relativní vlhkost nemá přesáhnout rosný bod.

## 4 MONTÁŽ A INSTALACE

### 4.1 Zahájení montáže

4.1.1 Před zahájením montáže je nutné zkontrolovat, zda tlumič byl uskladněn podle podmínek uvedených v čl. 3.4.1.

## 4.1.2 S tlumiči se manipuluje ručně v kožených rukavicích.

Při manipulaci s tlumiči je zakázáno:

- shazovat je z dopravního prostředku, házet s nimi, vláčet je po zemi apod.,
- manipulovat s nimi venku za deště.

Pracovníci, kteří vykonávají manipulaci s tlumiči nebo se na ní podílejí:

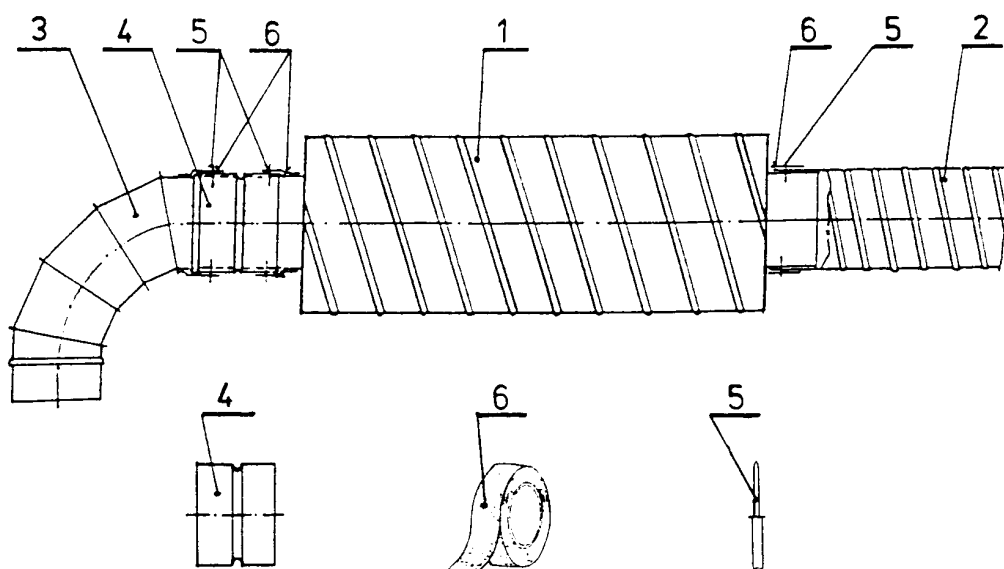
- jsou odpovědní za ochranu výrobků před poškozením a záměnou nebo ztrátou identifikace,
- nesmí používat manipulační techniku nebo manipulační a vázací prostředky, pokud by mohly být příčinou zhoršení jakosti výrobku.
- musí při manipulaci dbát bezpečnostních předpisů.

## 4.1.3 Umístění tlumičů se řídí projektem zařízení.

## 4.2 Postup montáže

- a) na hrdlo tlumiče se nasune trouba SPIRO (nebo FLEXO),
- b) spojené díly se svrtají navzájem cca 15 mm od konce trouby (dílu) a zajistí se nýty s trny 4 x 8,
- c) utěsnění se provádí 2 x ovinutím samolepící těsnící páskou.

Poznámka: Přeslechové tlumiče hluku je možno instalovat ve svislé i vodorovné poloze.



1. Tlumič
2. Trouba SPIRO (nebo FLEXO)
3. Tvarovka SPIRO
4. Vnější spojka
5. Nýt s trnem
6. Samolepící těsnící páska

Jmenovitý průměr hrdla	Počet nýtů
∅ 80 ÷ 315	3
∅ 355 ÷ 400	4

Obr. 1 Připojení tlumiče hluku

## 5 PROVOZ

5.1 Do provozu se uvádí klimatizační zařízení jako celek.

## 6 ÚDRŽBA A OPRAVY

6.1 V případech, kdy vzdušina obsahuje velké množství prachových částic (např. textilní průmysl), nebo kdy vlhkost vzdušiny je na rosném bodě, je nutné kontrolovat stav tlumiče a provést jeho čištění od usazenin (jak často určuje projekt) min. však 1 x za rok.

6.2 Opravy tlumičů se neprovádí.

## 7 LIKVIDACE

7.1 Po uplynutí životnosti tlumičů a jejich následné likvidaci je nutné postupovat podle předpisů platných v zemi jejich uživatele.

7.2 Použité materiály a jejich likvidace:

- rám z pozinkovaného plechu - šrotace
- výplň tlumiče (minerální vlna) - akreditovaná firma

## 8 ZÁRUKY

8.1 Doba záruky je dána mezi výrobcem a odběratelem.

8.2 Jakýkoliv zásah do konstrukce tlumiče a jeho manipulování a provozování v rozporu s tímto návodem činí záruku neplatnou.

## DODATEK

### Souvisící normy a předpisy

ČSN EN ISO 7235 Akustika. Laboratorní měřicí postupy pro tlumiče hluku v potrubí a (01 1663) vzduchotechnické koncové jednotky. Vložný útlum, vlastní hluk a celková tlaková ztráta

**Zpracovatel:** ZVVZ a. s. - DK - TPVK  
- ÚT - NOR

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