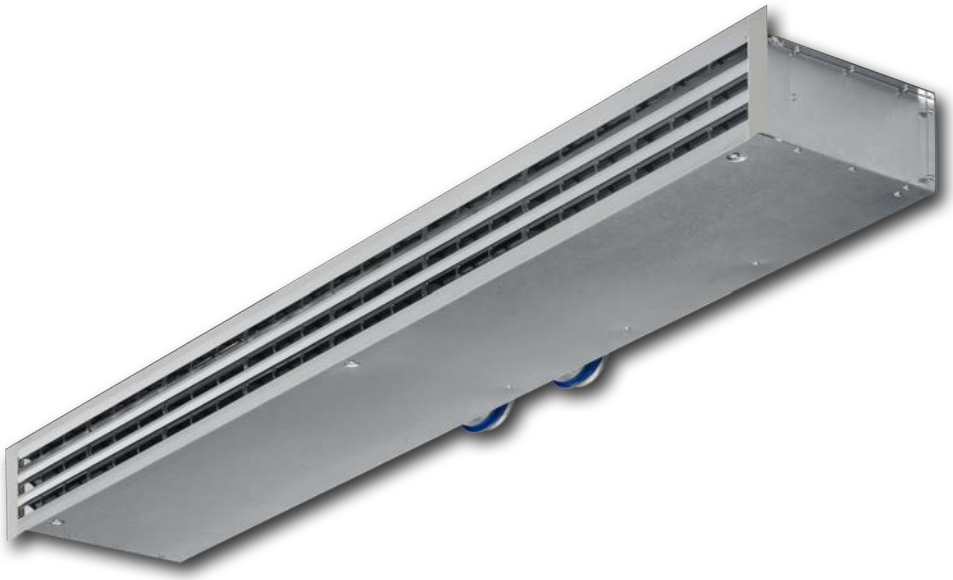
Slot diffusers for wall installation

Type VSD35-3-AZ



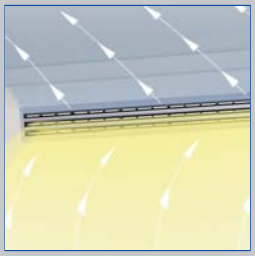
Ventilation and extract ventilation combined in one casing

Slot diffusers with 35 mm nominal width, used as supply and extract air combination

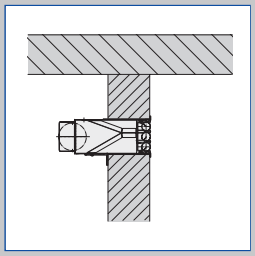
- Nominal length from 600 to 1200 mm, 3 slots
- Volume flow rate range 8 – 40 l/s or 30 – 144 m^3/h
- Diffuser face made of extruded aluminium sections
- For variable and constant volume flows
- High induction results in a rapid reduction of the temperature difference and airflow velocity
- Individually adjustable air control elements to meet individual local requirements

Optional equipment and accessories

- Exposed diffuser face available in RAL CLASSIC colours
- Damper blade for volume flow rate balancing, can be adjusted through the diffuser face
- Acoustic lining that ensures very good transmission loss
- Spring clip fixing
- End angles, fixing brackets



Angled one-way air discharge and extract air



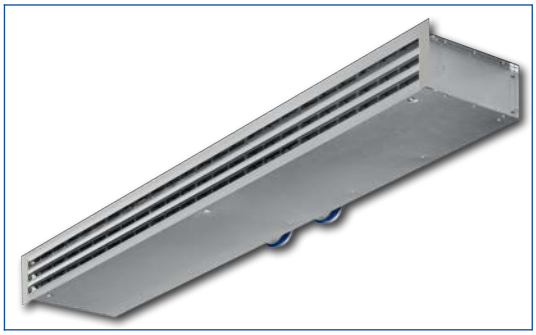
Wall installation

2

Variants

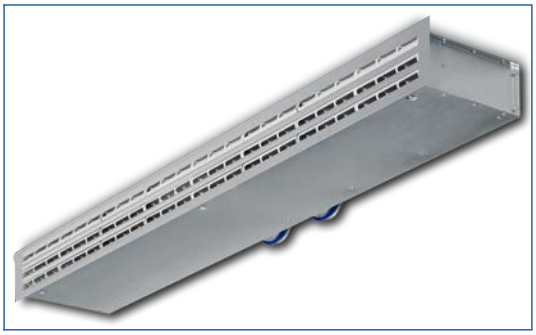
Product examples

VSD35-3-AZ



Black air control elements

VSD35-3-AZ/.../WW



White air control elements

Description

Application

- Type VSD35-3-AZ slot diffusers are used as supply and extract air combinations in comfort zones
- Angled one-way air discharge for turbulent flow (mixed flow ventilation)
- High induction results in a rapid reduction of the temperature difference and airflow velocity
- For variable and constant volume flows
- For supply air to room air temperature differences from –10 to +10 K
- For room heights up to 4 m (lower edge of suspended ceiling)
- For horizontal installation into walls and bulkheads

Variants

- VSD35-3-AZ-...: supply and extract air combination without acoustic lining (cross talk reduction)
- VSD35-3-AZ-...-ZT: supply and extract air combination with acoustic lining (cross talk reduction)
- VSD35-3-AZ-...: Black air control elements
- VSD35-3-AZ-.../WW: White air control elements

Plenum box and diffuser face fixing
- AK: Plenum box with rigid fixing
- AS: Plenum box with spring clip fixing

Nominal sizes

- L_N: 600, 750, 900, 1050, 1200 mm

Attachments

- Damper blade for volume flow rate balancing
- End angles

Accessories

- Lip seal
- Fixing brackets

Special characteristics

- Individually adjustable air control elements to meet individual local requirements
- High induction results in a rapid reduction of the temperature difference and airflow velocity
- Diffuser face has been optimised for maximum volume flow rate at low sound power levels
- Suitable for continuous linear arrangement

Parts and characteristics

- Diffuser face with individually adjustable air control elements
- Plenum box for horizontal duct connection
- Spring clip fixing (facilitates installing the diffuser face) or screw fixing

Construction features

- Spigot suitable for circular ducts to EN 1506 or EN 13180
- Spigot with groove for lip seal (if accessory lip seal has been ordered)

Materials and surfaces

- Diffuser face made from extruded aluminium sections
- Air control elements made of plastic, UL 94, V-0, flame retardant
- Plenum box and fixing brackets made of galvanised sheet steel
- End angle made of aluminium
- Lip seal made of rubber
- Acoustic lining is mineral wool
- Diffuser face with anodised finish, E6-C-0, natural colour
- P1: Powder-coated, RAL CLASSIC colour
- Air control elements similar to RAL 9005, black
- WW: Air control elements similar to RAL 9010, white

Mineral wool

- To EN 13501, fire rating class A1, non-combustible
- RAL quality mark RAL-GZ 388
- Biosoluble and hence hygienically safe according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU directive 97/69/EG
- Faced with glass fibre fabric as a protection against erosion through airflow velocities of up to 20 m/s
- Inert to fungal and bacterial growth

Installation and commissioning

- Preferably for rooms with a clear height up to 4.0 m
- For wall and bulkhead installation
- Horizontal duct connection
- If necessary, carry out volume flow rate balancing with the damper blade

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 data

Nominal length	600, 750, 900, 1050, 1200 mm
Number of slots	3
Minimum volume flow rate, with Δt	8 – 15 l/s or 30 – 54 m³/h
Maximum volume flow rate, with L_{WA} ≅ 50 dB(A)	25 – 40 l/s or 90 – 144 m³/h
Supply air to room air temperature difference	–10 to +10 K

Transmission loss

VSD35-3-AZ

Transmission loss – supply air

Nominal length	Centre frequency fm [Hz]				
	125	250	500	1000	2000
	D_t				
	dB				
600, 750, 900, 1050, 1200	14	7	7	4	4

Transmission loss – extract air

Nominal length	Centre frequency fm [Hz]				
	125	250	500	1000	2000
	D_t				
	dB				
600, 750, 900, 1050, 1200	14	7	7	4	4

VSD35-3-AZ-ZT

Transmission loss – supply air

Nominal length	Centre frequency fm [Hz]				
	125	250	500	1000	2000
	D_t				
	dB				
600, 750	16	13	14	16	25
900, 1050, 1200	18	12	14	21	26

Transmission loss – extract air

Nominal length	Centre frequency fm [Hz]				
	125	250	500	1000	2000
	D_t				
	dB				
600, 750	15	11	11	15	22
900, 1050, 1200	17	11	13	19	25

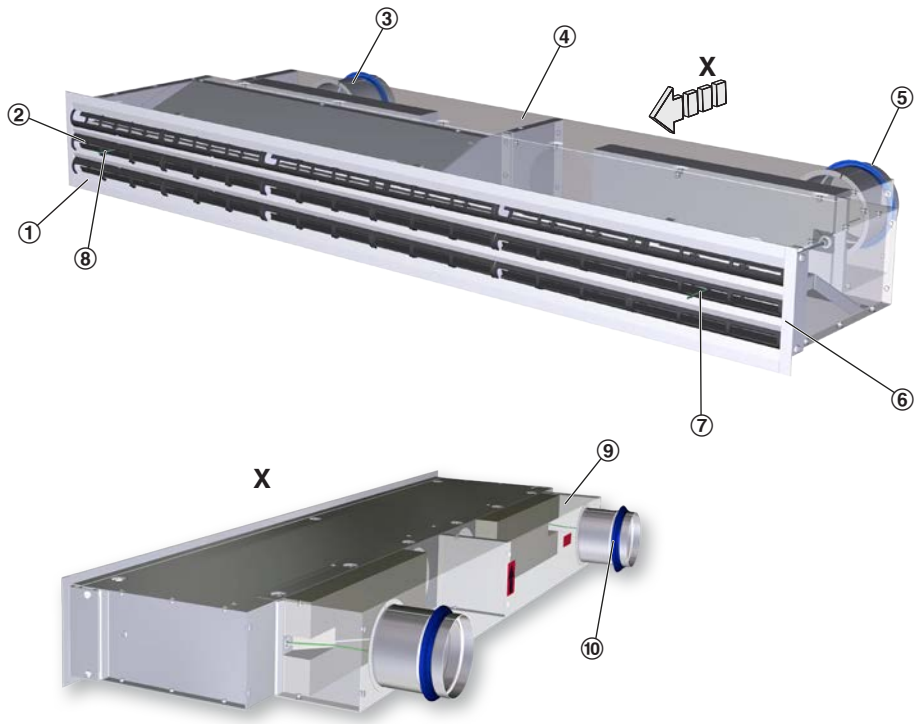
Function

2

Functional description

Slot diffusers direct the air from air conditioning systems at an angle into the room. The resulting airflow induces high levels of room air, thereby rapidly reducing the airflow velocity and the temperature difference between supply air and room air. The result is a mixed flow ventilation in comfort zones, with good overall room ventilation, creating only very little turbulence in the occupied zone.
Type VSD35-3-AZ slot diffusers have adjustable air control elements. The supply air to room air temperature difference may range from –10 to +10 K.
A damper blade (optional) simplifies volume flow rate balancing for commissioning.
Type VSD35-3-AZ diffusers are space saving supply and extract air combinations.

Schematic illustration of VSD35-3-AZ with acoustic lining



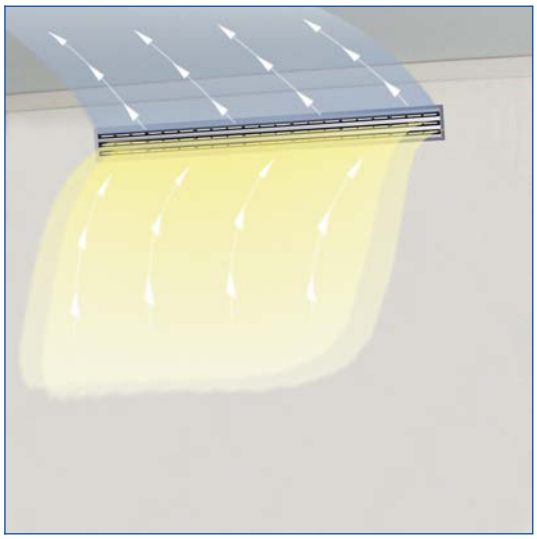
① Diffuser face
② Adjustable air control element
③ Extract air spigot
④ Plenum box
⑤ Supply air spigot
⑥ End angle
⑦ Cords for supply air
(white cord for opening, green cord for closing)
⑧ Cords for extract air
(white cord for opening, green cord for closing)

Optional
⑨ Acoustic lining (reduces room-to-room cross talk)
⑩ Lip seal

Air patterns

Angled air discharge

Angled one-way air discharge and extract air



Order code

VSD35-3-AZ

VSD35 – 3 – AZ – AS – ZT – M – L / 900 / C2 / W00 / P1 – RAL ... / WW
1 2 3 4 5 6 7 8 9 10

1 Type
VSD35-3-AZ Slot diffuser as supply and extract air combination

2 Connection
Plenum box
AK With rigid fixing
AS With spring clip fixing

3 Acoustic lining for cross talk reduction (accessory)
No entry: none
ZT With

4 Damper blade for volume flow rate balancing
No entry: none
M With

5 Accessories
No entry: none
L With lip seal

6 Nominal size [mm]
600
750
900
1050
1200

7 End pieces
No entry: none
C2 Both ends with factory fitted end angles

8 Fixing (accessory)
No entry: none
W00 Fixing brackets for fixing the diffuser to the wall (supplied separately)

9 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 %

10 Colour of air control elements
No entry: similar to RAL 9005, black
WW Similar to RAL 9010, white

Order example

VSD35-3-AZ-AS-ZT-M-L/900/C2/W00/P1-RAL 9010/WW

Connection	With spring clip fixing
Acoustic lining (accessory)	With
Damper blade for volume flow rate balancing	With
Accessories	Lip seal
Nominal size	900 mm
End pieces	End angles
Fixing	Fixing brackets
Exposed surface	RAL 9010, pure white, gloss level 50 %
Colour of air control elements	White

VSD35-3-AZ

Quick sizing tables provide a good overview of the volume flow rates and corresponding sound power levels and differential pressures.

The maximum volume flow rates apply to a sound power level of approx. 50 dB (A) with damper blade position 0°.

Quick sizing – sound power level and total differential pressure

Nominal length	$\dot{V}$		Damper blade position								
			0°			45°			90°		
			$\Delta p_{t\ supply\ air}$	$\Delta p_{t\ extract\ air}$	L_{WA}	$\Delta p_{t\ supply\ air}$	$\Delta p_{t\ extract\ air}$	L_{WA}	$\Delta p_{t\ supply\ air}$	$\Delta p_{t\ extract\ air}$	L_{WA}
	l/s	m^3/h	Pa		dB(A)	Pa		dB(A)	Pa		dB(A)
600	**8**	**30**	6	3	15	9	5	17	26	13	24
600	**15**	**54**	19	9	31	31	16	34	85	43	40
600	**25**	**90**	54	26	45	86	45	47	237	120	54
600	**30**	**108**	77	37	50	124	65	52	341	173	59
750	**10**	**37**	7	4	21	12	8	23	28	19	31
750	**20**	**72**	28	15	38	44	31	40	107	74	47
750	**25**	**90**	44	24	44	68	48	46	167	116	53
750	**30**	**108**	64	35	48	98	70	51	241	167	57
900	**12**	**44**	9	6	23	14	10	26	37	28	29
900	**20**	**72**	24	15	36	37	27	39	97	74	44
900	**30**	**108**	55	33	46	82	60	50	217	167	55
900	**35**	**126**	74	45	51	112	82	54	296	228	60
1050	**15**	**54**	12	8	28	17	15	30	58	39	38
1050	**25**	**90**	34	22	40	48	41	44	161	110	51
1050	**35**	**126**	66	43	49	95	80	53	316	215	60
1050	**40**	**144**	86	56	52	124	104	56	413	281	63
1200	**15**	**54**	11	8	26	20	13	29	55	41	38
1200	**30**	**108**	44	30	44	79	52	47	218	165	56
1200	**35**	**126**	60	41	48	107	71	52	297	225	60
1200	**40**	**144**	79	54	51	140	92	55	388	293	63

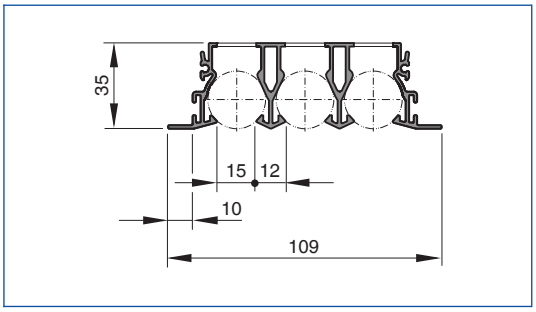
VSD35-3-AZ-ZT

Quick sizing – sound power level and total differential pressure

Nominal length	V̇		Damper blade position								
			0°			45°			90°		
			$\Delta p_{t\ supply\ air}$	$\Delta p_{t\ extract\ air}$	L_{WA}	$\Delta p_{t\ supply\ air}$	$\Delta p_{t\ extract\ air}$	L_{WA}	$\Delta p_{t\ supply\ air}$	$\Delta p_{t\ extract\ air}$	L_{WA}
	l/s	m³/h	Pa		dB(A)	Pa		dB(A)	Pa		dB(A)
600	8	30	13	9	18	13	10	18	22	17	20
600	15	54	42	30	35	43	35	36	73	58	36
600	20	72	74	53	44	76	62	44	130	104	44
600	25	90	116	83	50	119	96	51	203	162	50
750	10	36	19	15	24	12	16	25	32	31	26
750	15	54	43	33	36	44	36	37	73	69	37
750	20	72	76	58	44	68	65	46	129	122	44
750	25	90	118	91	51	98	101	52	202	191	50
900	12	44	19	14	24	14	17	24	45	36	26
900	20	72	51	37	38	37	44	37	118	95	39
900	25	90	79	58	44	82	69	43	184	149	45
900	30	108	114	83	49	112	100	48	265	215	50
1050	15	54	27	21	30	17	31	31	65	56	32
1050	25	90	76	59	44	48	86	45	182	155	45
1050	30	108	110	84	49	95	124	50	261	223	50
1050	35	126	149	115	53	124	169	54	356	304	54
1200	15	54	28	21	30	20	26	29	65	54	31
1200	20	72	49	38	38	79	45	37	116	95	39
1200	30	108	111	85	49	107	102	48	261	215	49
1200	35	126	151	115	53	140	139	52	355	292	53

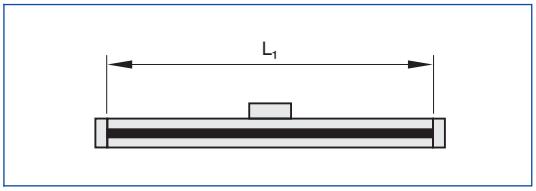
Profiles

VSD35-3-AZ

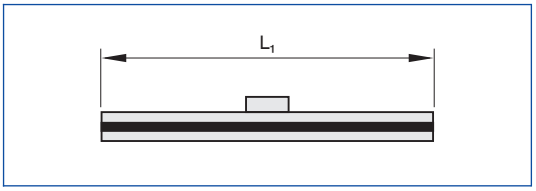


End pieces

End pieces on both ends

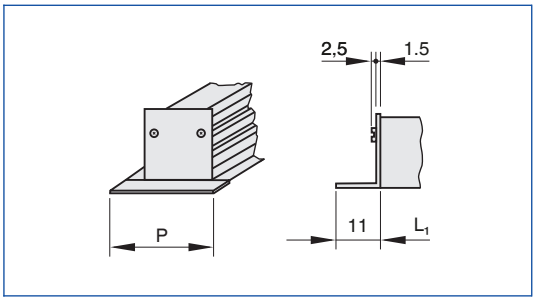


Without end piece



End angles

End angle C2



Profile with extended border

Dimensions

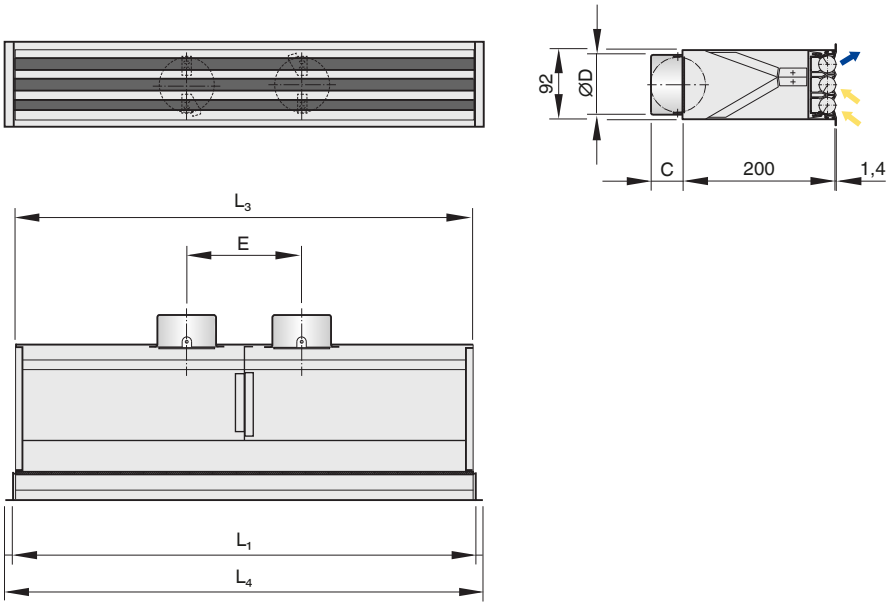
Variant	P
	mm
VSD35-3-AZ	109

Dimensions

Nominal length	A_{eff}	L_1
	m^2	mm
600	0.0039	600
750	0.0049	750
900	0.0058	900
1050	0.0068	1050
1200	0.0078	1200

Supply and extract air combination

VSD35-3-AZ



Dimensions [mm] and weight [kg]

Nominal length	L_1	L_3	L_4	ØD	C	E	m
	mm						kg
600	600	595	622	78	40	150	3.9
750	750	745	772	78	40	150	4.8
900	900	895	922	78	40	150	5.6
1050	1050	1045	1072	78	40	150	6.5
1200	1200	1195	1222	78	40	150	7.4

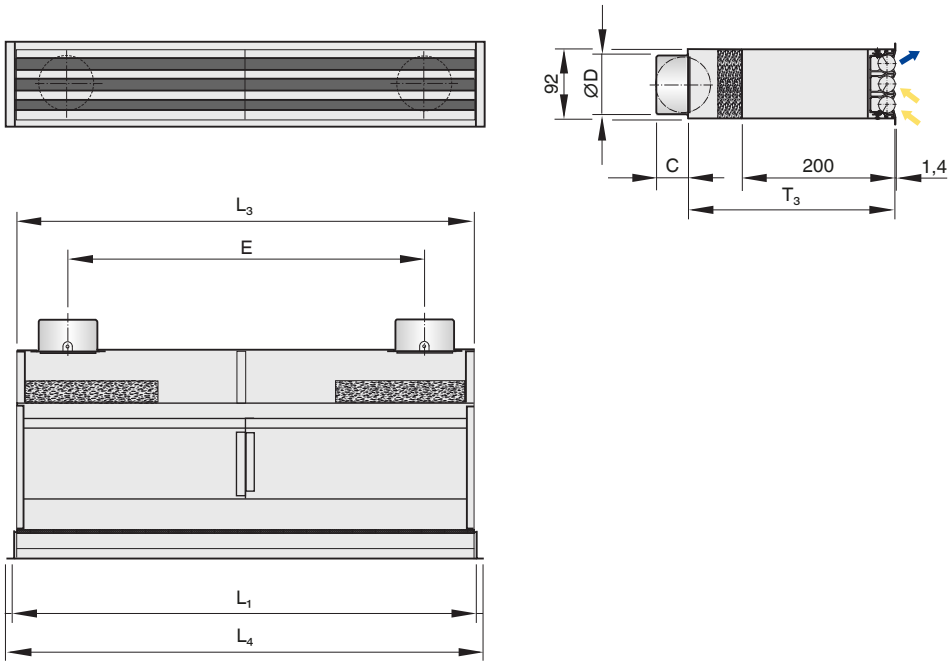
A_{eff}: One-way angled air discharge (supply air)

Supply and extract air combination

With acoustic lining

Retrofitting of the acoustic lining is not possible

VSD35-3-AZ-...-ZT

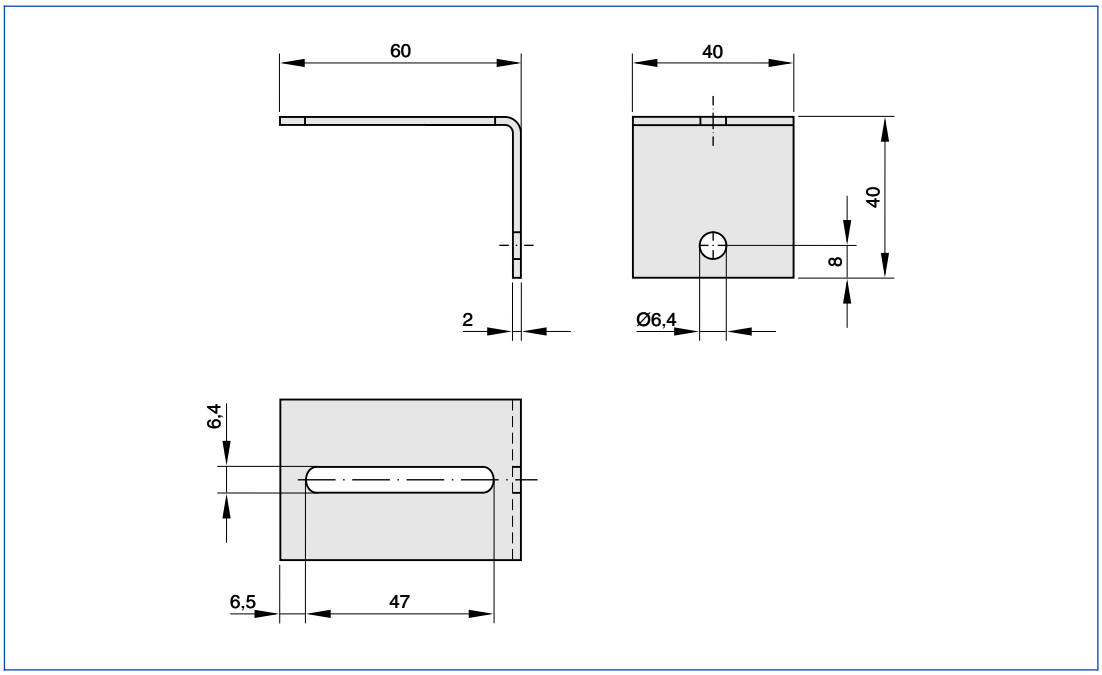


Dimensions [mm] and weight [kg]

Nominal length	L_1	L_3	L_4	T_3	ØD	C	E	m
	mm							kg
600	600	595	622	270	78	40	464	4.9
750	750	745	772	270	78	40	464	5.8
900	900	895	922	290	78	40	664	7.2
1050	1050	1045	1072	290	78	40	664	8.1
1200	1200	1195	1222	290	78	40	664	8.9

A_{eff}: One-way angled air discharge (supply air)

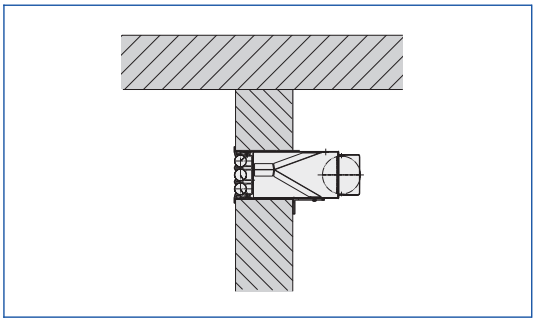
Fixing brackets (supplied separately)



For more installation details see Chapter K1 – 2.3

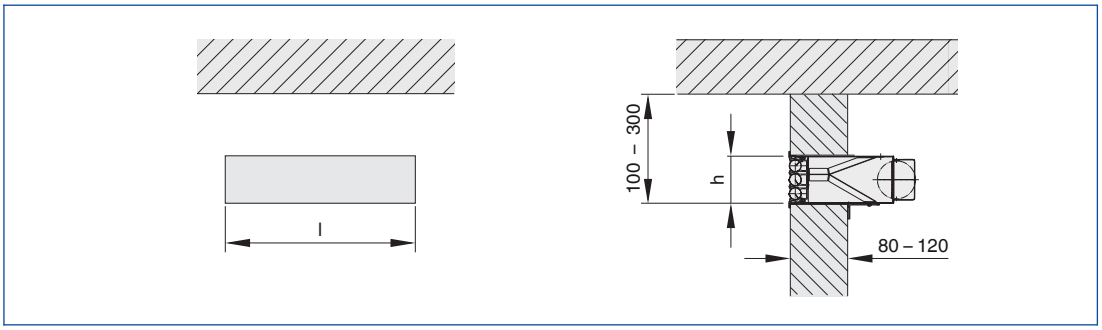
These are only schematic diagrams to illustrate installation details.

Slot diffuser installation with a fixing brackets



Installation dimensions

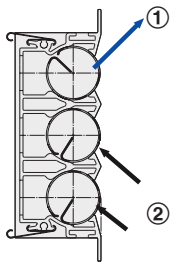
Installation opening



Dimensions

Nominal length	l	h
	mm	
600	612	98
750	762	98
900	912	98
1050	1062	98
1200	1212	98

VSD35-3-AZ air patterns



① Supply air
② Extract air

2

Standard text

Slot diffusers with individually manually adjustable air control elements and an aesthetically shaped face section with three slots, for angled one-way air discharge. Supply and extract air combination. For wall and bulkhead installation.
Ready-to-install component which consists of the diffuser face with individually adjustable black or white air control elements, and of a plenum box with a side entry spigot and a side extract air spigot.
Spring clip fixing or rigid fixing to the plenum box
Spigot suitable for circular ducts to EN 1506 or EN 13180.
Sound power level of the air-regenerated noise measured according to EN ISO 5135.
Transmission loss measured according to EN ISO 7235.

Special characteristics

- Individually adjustable air control elements to meet individual local requirements
- High induction results in a rapid reduction of the temperature difference and airflow velocity
- Diffuser face has been optimised for maximum volume flow rate at low sound power levels
- Suitable for continuous linear arrangement

Materials and surfaces

- Diffuser face made from extruded aluminium sections
- Air control elements made of plastic, UL 94, V-0, flame retardant
- Plenum box and fixing brackets made of galvanised sheet steel
- End angle made of aluminium
- Lip seal made of rubber
- Acoustic lining is mineral wool
- Diffuser face with anodised finish, E6-C-0, natural colour
- P1: Powder-coated, RAL CLASSIC colour
- Air control elements similar to RAL 9005, black
- WW: Air control elements similar to RAL 9010, white

Mineral wool
- To EN 13501, fire rating class A1, non-combustible
- RAL quality mark RAL-GZ 388
- Biosoluble and hence hygienically safe according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU directive 97/69/EG
- Faced with glass fibre fabric as a protection against erosion through airflow velocities of up to 20 m/s
- Inert to fungal and bacterial growth

Technical data

- Nominal length: 600, 750, 900, 1050, 1200 mm
- Number of slots: 3
- Minimum volume flow rate: 8 – 15 l/s or 30 – 54 m^3/h
- Maximum volume flow rate, with $L_{WA} \cong 50$ dB(A): 25 – 40 l/s or 90 – 144 m^3/h
- Supply air to room air temperature difference: –10 to +10 K

Sizing data

- $\dot{V}$ _____ [m^3/h]
- Δp_t _____ [Pa]
- L_{WA} Air-regenerated noise _____ [dB(A)]

Order options

1 Type
VSD35-3-AZ Slot diffuser as supply and extract air combination

2 Connection

Plenum box
☐ **AK** With rigid fixing
☐ **AS** With spring clip fixing

3 Acoustic lining for cross talk reduction (accessory)
No entry: none
☐ **ZT** With

4 Damper blade for volume flow rate balancing
No entry: none
☐ **M** With

5 Accessories
No entry: none
☐ **L** With lip seal

6 Nominal size [mm]
☐ **600**
☐ **750**
☐ **900**
☐ **1050**
☐ **1200**

7 End pieces
No entry: none
☐ **C2** Both ends with factory fitted end angles

8 Fixing (accessory)
No entry: none
☐ **W00** Fixing brackets for fixing the diffuser to the wall (supplied separately)

9 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 %

10 Colour of air control elements
No entry: similar to RAL 9005, black
☐ **WW** Similar to RAL 9010, white

2

Slot diffusers
Basic information and nomenclature

Slot diffusers

- Product selection
- Principal dimensions
- Nomenclature
- Sizing and sizing example
- Installation information
- Commissioning

Product selection

	Ceiling installation				Wall installation	
	VSD15	VSD35	VSD50	VSD35-Varyset	VSD50-1-LT	VSD35-3-AZ
Diffuser face						
Nominal width	15 mm	35 mm	50 mm	35 mm	50 mm	35 mm
Extended border	●	●	●	●	●	●
Aluminium	●	●	●	●	●	●
Diffuser fixing						
Concealed screw fixing		●	●			
Clamp fixing	●	●	●	●		
Spring clip fixing					●	●
Rigid connection	●					●
Air control elements						
Adjustable	●	●	●	●	●	●
Plastic, black and white	●	●	●	●	●	●
Air patterns						
Horizontal, one-way	●	●	●	●	●	●
Alternating horizontal	●	●	●	●		
Alternating angled	●	●	●	●		
Plenum box						
Galvanised sheet steel	●	●	●	●	●	●
Acoustic lining (cross talk reduction)	●	●	●		●	
Neck extension		●	●			
Asymmetric		●	●			
Attachments						
Damper blade	●	●	●		●	●
Accessories						
Lip seal	●	●	●		●	●
End plate		●	●	●		
End angles	●	●	●	●		●
End seal	●					
Nominal sizes						
Number of slots	1	1, 2, 3, 4	1, 2	1, 2, 3, 4	1	3
Nominal length	600, 700 800, 900 1000, 1100 1200, 1300 1400, 1500	600, 750 900, 1050 1200, 1350 1500, 1650 1800, 1950	600, 750 900, 1050 1200, 1350 1500, 1650 1800, 1950	900, 1050 1200, 1350 1500	550, 1175	600, 750 900, 1050 1200
Nominal size of spigot	80	100, 125 140, 160 200	125, 160 200	125, 160 180, 200	80, 100	80
Slot diffusers, linear run	●	●	●	●		
Corner section		●	●	●		
Technical data						
Volume flow rate range	7 – 30 (l/s)/m	15 – 135 (l/s)/m	20 – 120 (l/s)/m	8 – 90 (l/s)/m	10 – 70 l/s	8 – 40 l/s
	25 – 108 $(m^3/h)/m$	54 – 486 $(m^3/h)/m$	72 – 432 $(m^3/h)/m$	29 – 324 $(m^3/h)/m$	36 – 252 m^3/h	30 – 144 m^3/h
●	Possible					
	Not possible					

2

Principal dimensions

ØD [mm]
Outside diameter of the spigot

L_1 [mm]
Length of diffuser without end pieces

L_3 [mm]
Length of plenum box

P [mm]
Width of diffuser face – with extended border, if any

B_3 [mm]
Width of plenum box

H_3 [mm]
Height of slot diffuser with plenum box, from the lower edge of the suspended ceiling to the upper edge of the plenum box

Y [mm]
Neck extension – The neck length results from a fixed length plus the neck extension

A [mm]
Position of the spigot, defined by the distance of the spigot centre line to the lower edge of the suspended ceiling

C [mm]
Length of spigot

m [kg]
Weight

Nomenclature

f_m [Hz]
Octave band centre frequency

L_{WA} [dB(A)]
Sound power level of the air-regenerated noise

$\dot{V}$ [m^3/h] and [l/s]
Volume flow rate

Δp_t [Pa]
Total differential pressure

All sound power levels are based on 1 pW.

Sizing with the help of this catalogue

This catalogue provides convenient quick sizing tables for slot diffusers. The tables give supply air volume flow rates for all nominal sizes. The maximum volume flow rates are for an open damper blade. A smaller opening of the damper blade results in higher sound power levels and a higher total differential pressure. The tables show values for damper blade positions 0°, 45° and 90°. Sizing data for other volume flow rates and damper blade positions can be determined quickly and precisely using the Easy Product Finder design programme.

Sizing example

Given data

$\dot{V}$ = 60 l/s (216 m³/h)
Slot diffuser for ceiling installation
Maximum sound power level 40 dB(A)
with damper blade position 45°
Alternating angled air discharge

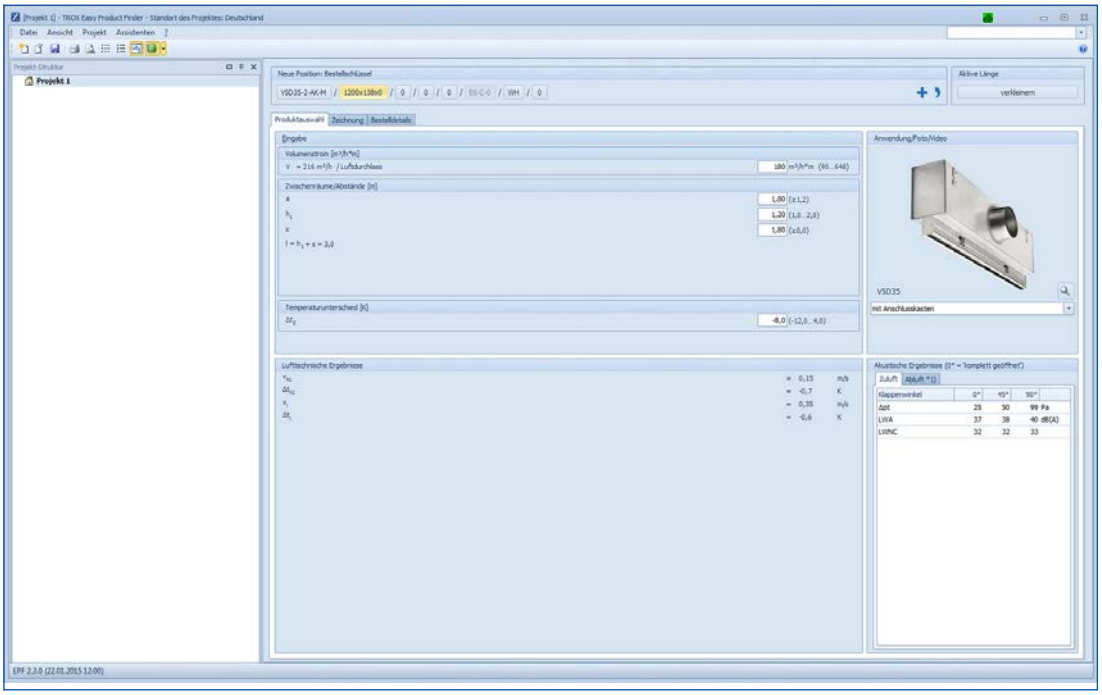
Quick sizing

Type VSD35
Nominal sizes: VSD35-1/1950×123, VSD35-2/1200×138, VSD35-1/1500×123, VSD35-3/600×158, VSD35-3/750×138
Selected: VSD35-2/1200×138

Easy Product Finder

The Easy Product Finder allows you to size products using your project-specific data.

You will find the Easy Product Finder on our website.



Description

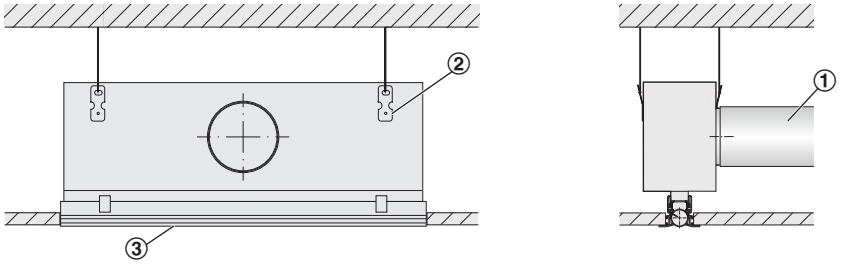
Installation information

- Installation and making connections to be performed by others
- The optimum aerodynamic function is only achieved with flush ceiling installation
- The actual diffuser can be fixed to the plenum box in three ways: concealed screw fixing, clamp fixing or spring clip fixing

2

Installation types

Installation with plenum box

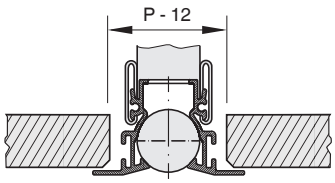


① Duct
② Suspension lug
③ Diffuser face

- Horizontal duct connection
- Four suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

Ceiling systems

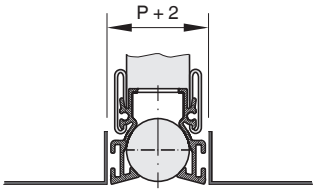
Continuous ceiling



Slot diffuser with extended border

- Fix the plenum box to the ceiling slab
- Adjust plasterboard ceiling tile as required

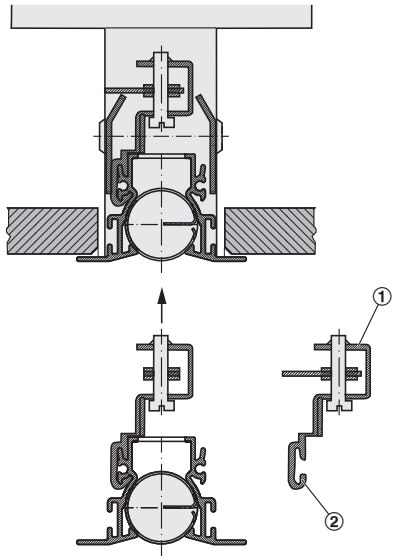
Ceiling panels with rectangular edges



Slot diffuser without extended border

- Fix the plenum box to the ceiling slab
- The ceiling tile or panel of a panelled ceiling has no contact with the diffuser

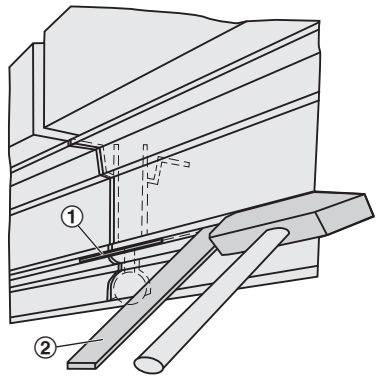
Concealed screw fixing



① Concealed screw fixing
② Support profile

- Concealed screw fixing with plenum box AS or DS
- Each slot diffuser is supplied with four concealed screw fixings
- If a slot diffuser with factory fitted end pieces has been supplied, first remove one of the end pieces
- Grasp each screw fixing by its support profile and slide the support profile onto the diffuser
- Position the screw fixings at regular distances on the diffuser
- Turn the tab of each screw fixing lengthways such that it is parallel to the diffuser face
- Push the diffuser face into the neck of the plenum box
- Turn the tab of each screw fixing by 90° and tighten the screws
- To remove the diffuser, follow the steps in reverse order

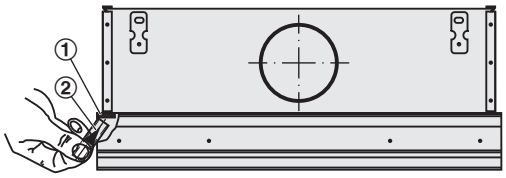
Continuous linear arrangement



① Connecting pin
② Flat bar

- Each slot diffuser (without end pieces) is supplied with two connecting pins
- Connecting pins are used to align slot diffusers for linear runs
- Insert the connecting pins into a slot diffuser
- Connect the next slot diffuser to it

End seal



① Intermediate seal
② End seal (tubular)

End seal for VSD15 only

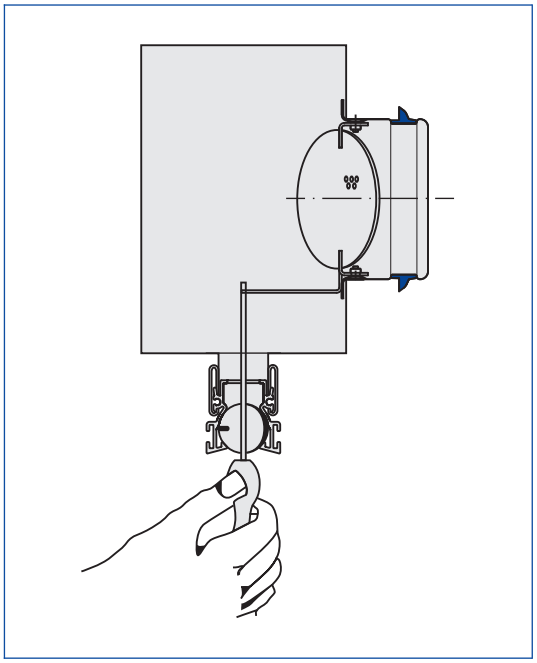
- Continuous linear runs require an end seal on each end to ensure that no air leaks
- End seals can be either factory fitted or fitted by others
- Single diffusers require end seals on both ends
- End seals are suitable only for slot diffusers without extended border

Volume flow rate balancing

When several diffusers are connected to just one volume flow controller, it may be necessary to balance the volume flow rates.

– Slot diffuser with plenum box and damper blade (variant -M): The damper blade can be adjusted even after the diffuser face has been installed.

Volume flow rate balancing



– Move the damper blade near the spigot in such a way that it is possible to insert a screw driver