

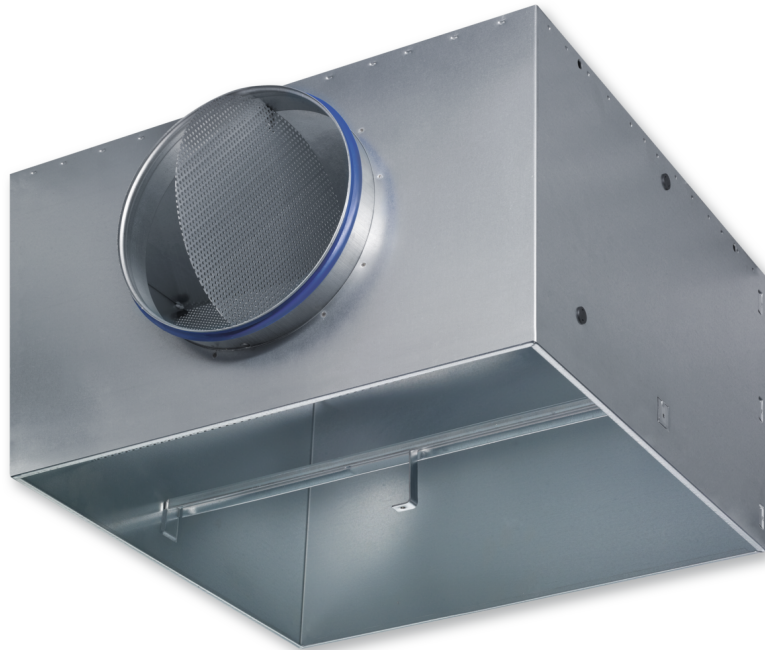
Square diffuser face with square plenum box



For circular diffuser faces

Plenum boxes

AK-Uni



Square plenum box for universal connection of ceiling diffusers type VDW, TDV, RFD, FD, TDF, TID, ADLQ, DLQ, ADLR, DLQL

Standard plenum box for supply and extract air for square diffuser faces and for all type TDV, RFD, TID, ADLQ, DLQ, ADLR and DLQL diffusers.

- Plenum box made of galvanised sheet steel
- For all types of ceiling systems
- Horizontal duct connection
- Permanent equalising element that ensures an optimum airflow through the diffuser face (supply air variant)
- For comfort zones and industrial zones

Optional equipment and accessories

- Damper unit for volume flow rate balancing
- Pressure tap and cord-operated damper blade for volume flow rate balancing
- Lip seal

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General information

Application

- Plenum boxes for the connection of square and to some extent circular diffuser faces to circular ducts, suitable for supply air or extract air applications
- For diffuser faces of types VDW, TDV, RFD, FD, TDF, TID, ADLQ, DLQ, ADLR, DLQL, with central screw fixing
- For variable and constant volume flows

Special features

- Plenum box made of galvanised sheet steel
- For all types of ceiling systems
- For square and to some extent circular diffuser faces
- Horizontal duct connection
- For comfort zones and industrial zones

Variants

- AK-Uni-...-ZL: Supply air
- AK-Uni-...-AL: Extract air

Parts and characteristics

- Casing with spigot and cross bar for fixing the diffuser face
- Permanent equalising element that ensures a uniform airflow through the diffuser face (supply air variant)
- Simple installation of the diffuser face due to central fixing screw with decorative cap

Attachments

- M: Damper element for volume flow rate balancing
- MN: Pressure tap and cord-operated damper blade for volume flow rate balancing with the diffuser face in place

Accessories

- Lip seal

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

- Casing, cross bar and spigot made of galvanised sheet steel
- Equalising element made of galvanised, perforated sheet steel
- Lip seal made of Evoprene

Maintenance

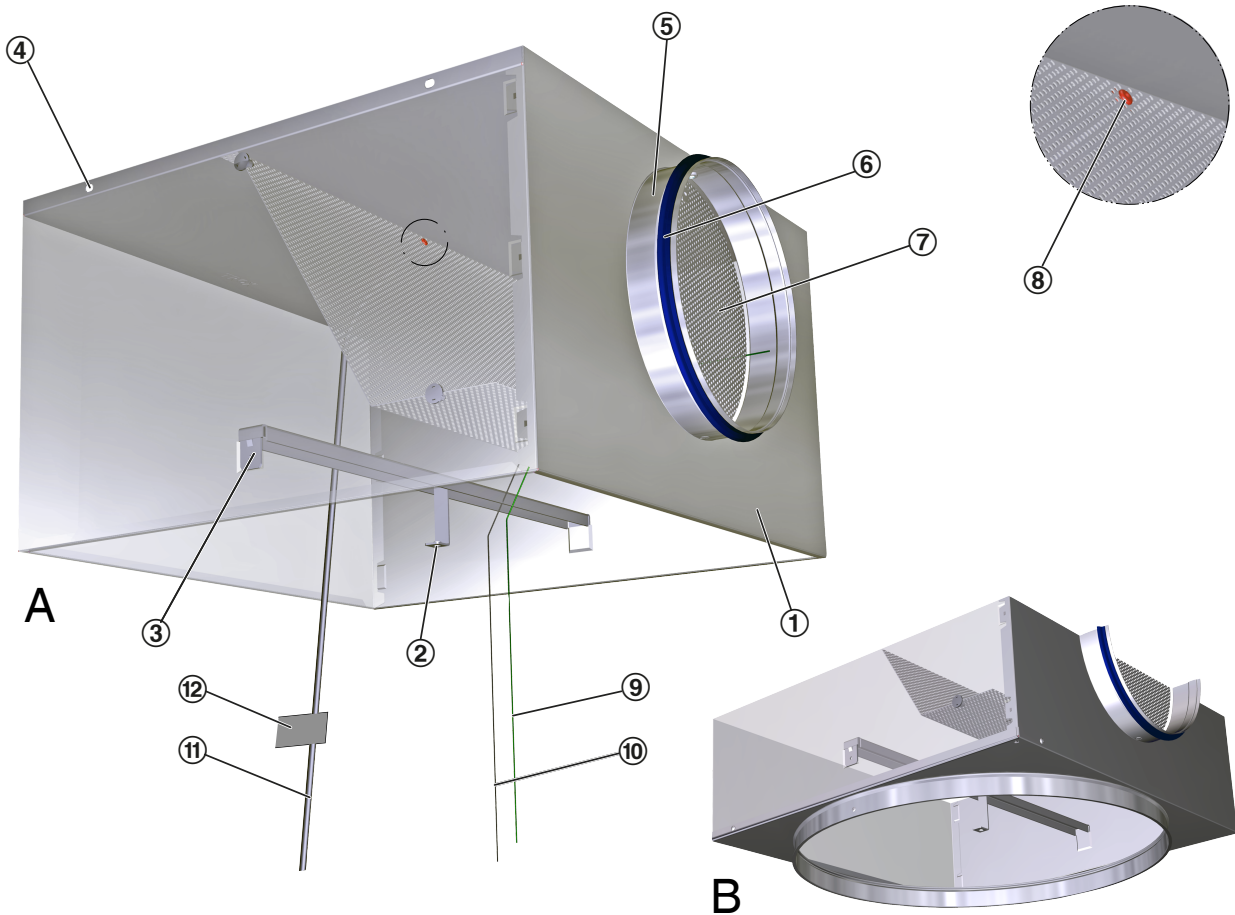
- Low-maintenance as construction and materials are not subject to wear
- Inspection and cleaning to VDI 6022

Function

Plenum boxes are used to connect ceiling diffusers to circular ducts and to fix the diffuser face. Type AK-Uni plenum boxes are fitted with an equalising element that ensures that the air is evenly distributed to the room. A damper blade (optional)

simplifies volume flow rate balancing for commissioning. Pressure tap and cord-operated damper blade (optional) allow for volume flow rate balancing with the diffuser face in place.

Schematic illustration of square plenum box with horizontal spigot



A Plenum box for square diffuser faces

B Plenum box for circular diffuser faces

① Plenum box

② Central fixing screw

③ Cross bar

④ Suspension hole

⑤ Spigot

Optional

⑥ Lip seal

⑦ Damper blade for volume flow rate balancing

⑧ Pressure tap

⑨ Green cord for closing the damper blade

⑩ White cord for opening the damper blade

⑪ Measuring tube

⑫ Text label indicating plenum box variant

Technical data

The following technical data applies for supply air. The K values can be used to calculate the corresponding reference pressure drops for the volume flow rate to be set.

Supply air Plenum boxes for square diffuser faces

Standard combinations

Variant	Diffuser face variant							
	VDW-Q		TDV-SA-Q		FD-Q		TDF-SA-Q	
	Nominal size	K value	Nominal size	K value	Nominal size	K value	Nominal size	K value
AK-Uni-001	300 × 8	36.9	300	47.7	300	36.5	300	47.7
AK-Uni-002	400 × 16	70.7	400	82.1	400	70.7	400	82.1
AK-Uni-003	500 × 24	87.1	500	100.5	500	92.7	500	100.5
AK-Uni-004	600 × 24 625 × 24	125.8	600 625	145.5	600 625	125.8	600 625	145.5
AK-Uni-005	600 × 48	154.8	158.9					
AK-Uni-006	625 × 54	158.9						
AK-Uni-007	825 × 72	262.2						

Standard combinations

Variant	Diffuser face variant					
	ADD-Q		ADLQ DLQ		ADLR-Q	
	Nominal size	K value	Nominal size	K value	Nominal size	K value
AK-Uni-002			400	108.2		
AK-Uni-008			250	36.2		
AK-Uni-009			300	53.4		
AK-Uni-011			600 625	260.0		
AK-Uni-010			500	173.7		
AK-Uni-019	250	27.4			1	29.8
AK-Uni-020	300	52.2			2	53.3
AK-Uni-021	400	79.9			3	86.2
AK-Uni-022	450	128.7			4	128.7
AK-Uni-023	500	143.4			5	150.6
AK-Uni-024					6	206.8
AK-Uni-025	600 625	245.7			7	231.9
AK-Uni-026					8	254.7

Alternative combinations

Variant	Diffuser face variant					
	VDW-Q		FD-Q		ADLQ DLQ	
	Nominal size	K value	Nominal size	K value	Nominal size	K value
AK-Uni-004					600< 625<	182.4
AK-Uni-005	600 × 24 625 × 24	125.8	600 625	125.8	600< 625<	182.4
AK-Uni-006	625 × 24	125.8	625	125.8	625<	182.4
AK-Uni-010	500 × 24>	104.1	500>	103.5		
AK-Uni-011	600 × 24> 625 × 24>	141.9	600> 625>	141.9		
AK-Uni-012	600 × 24> 625 × 24>	141.9	600< 625<	141.9	600 625	260.0
AK-Uni-012	600 × 48>	182.0				
AK-Uni-027	625 × 24>	141.9	625>	141.9	625	260.0
AK-Uni-027	625 × 54>	191.4	82.1			

< Spigot smaller than in the case of the standard plenum box

< Spigot larger than in the case of the standard plenum box

Plenum boxes for circular diffuser faces

Standard combinations

Variant	Diffuser face variant			
	TDV-SA-R		ADLR	
	Nominal size	K value	Nominal size	K value
AK-Uni-013	300	47.7		
AK-Uni-014	400	82.1		
AK-Uni-015	500	100.5		
AK-Uni-016	600 625	145.5		
AK-Uni-019			1	29.8
AK-Uni-020			2	53.3
AK-Uni-021			3	86.2
AK-Uni-022			4	128.7
AK-Uni-023			5	150.6
AK-Uni-024			6	206.8
AK-Uni-025			7	231.9
AK-Uni-026			8	254.7

Alternative combinations

Variant	Diffuser face variant							
	VDW-R		FD-R		TDF-SA-R		ADLR	
	Nominal size	K value	Nominal size	K value	Nominal size	K value	Nominal size	K value
AK-Uni-013	300 × 8	33.8	300	36.5	300	47.7	2	53.3
AK-Uni-014	400 × 16	70.7	400	70.7	400	82.1	4>	112.6
AK-Uni-015	500 × 24	83.0	500	94.4	500	100.5		
AK-Uni-016	600 × 24 625 × 24	124.3	600 625	124.3	600 625	145.5	7<	184.1
AK-Uni-017	600 × 48	158.3						
AK-Uni-017	600 × 24 625 × 24	124.3	600 625	124.3			7	184.1
AK-Uni-018	625 × 24	122.5	625	122.5			8<	183.9
AK-Uni-022	400 × 16>	67.1	400>	67.1				
AK-Uni-024	500 × 24>	101.3	500>	111.8				
AK-Uni-025	600 × 24> 625 × 24>	131.4	600> 625>	131.4				
AK-Uni-025	600 × 48>	186.0						
AK-Uni-026	625 × 24>	129.9	625>	129.9				

< Spigot smaller than in the case of the standard plenum box

> Spigot larger than in the case of the standard plenum box

Plenum boxes for Type RFD diffuser faces

Standard combinations

Variant	Nominal size	RFD without discharge nozzle		RFD with discharge nozzle	
		K value			
AK-Uni-028	125	12.4		17.9	
AK-Uni-029	160	18.7		26.3	
AK-Uni-030	200	25.5		43.9	
AK-Uni-031	250	46.4		68.4	
AK-Uni-032	315	82.0		103.0	
AK-Uni-033	400	124.3		134.4	

Specification text

This specification text describes the general properties of the product. Texts for variants can be generated with our Easy Product Finder design program.

Specification text

Square plenum boxes for the connection of square and to some extent circular diffuser faces to circular ducts, suitable for supply air or extract air applications. For installation into all kinds of suspended ceilings. Ready-to-install component which consists of the plenum box, permanent equalising element (only supply air variants), side entry spigot, cross bar, and suspension holes. 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.

Special features

- Plenum box made of galvanised sheet steel
- For all types of ceiling systems
- For square and to some extent circular diffuser faces
- Horizontal duct connection
- For comfort zones and industrial zones

Materials and surfaces

- Casing, cross bar and spigot made of galvanised sheet steel
- Equalising element made of galvanised, perforated sheet steel
- Lip seal made of Evoprene



Order code

AK-Uni - 002 - ZL - M - L
| | | | |
1 2 3 4 5

1 Type

AK-Uni Plenum box

2 Variant

001 – 033

3 System

ZL Supply air

AL Extract air

4 Damper blade for volume flow rate balancing

No entry required: None

M With

MN With cord and pressure tap

5 Accessories

No entry required: None

L with lip seal

Order example: AK-Uni-003-ZL-MN-L

Variant

003

Air conditioning system

Supply air

Damper unit for volume flow rate balancing

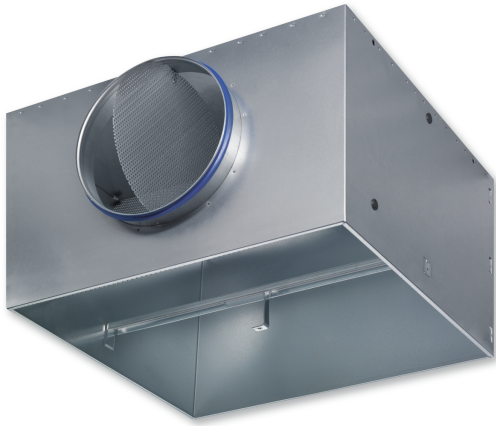
Volume flow rate adjustment with cords and pressure tap

Accessories

With lip seal

Variants

AK-Uni-004-ZL-M-L



For square diffuser faces

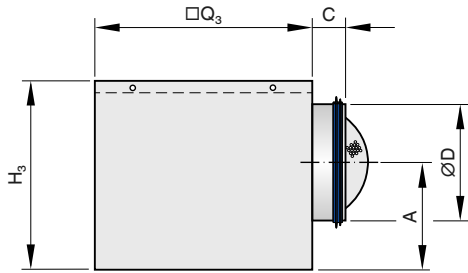
AK-Uni-016-ZL-M-L



For circular diffuser faces

Dimensions and weight

Universal plenum box AK-Uni for square diffuser faces

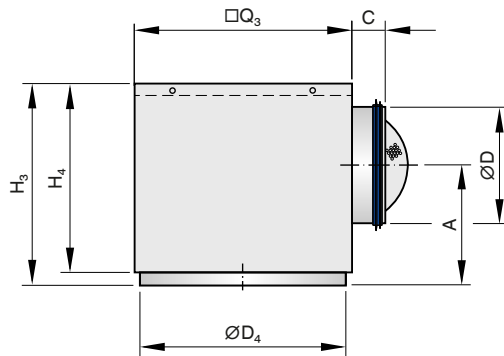


AK-Uni for square diffuser faces

Variant	ØD	□Q ₃	H ₃	A	C	m
	mm					kg
AK-Uni-001	158	290	250	139	50	3.0
AK-Uni-002	198	372	295	164	50	4.5
AK-Uni-003	198	476	295	164	50	6.0
AK-Uni-004	248	567	345	199	48	8.2
AK-Uni-005	248	590	345	189	48	8.6
AK-Uni-006	248	615	345	189	48	9.0
AK-Uni-007	313	806	410	222	50	16.0
AK-Uni-008	158	216	250	139	50	2.2
AK-Uni-009	158	266	250	139	50	2.7
AK-Uni-010	248	476	345	189	48	6.6
AK-Uni-011	313	567	410	222	50	9.2
AK-Uni-012	313	590	410	222	50	9.6
AK-Uni-027	313	615	410	222	50	10.2

Weights apply to the supply air variant.

Universal plenum box AK-Uni for circular and square diffuser faces with circular face style

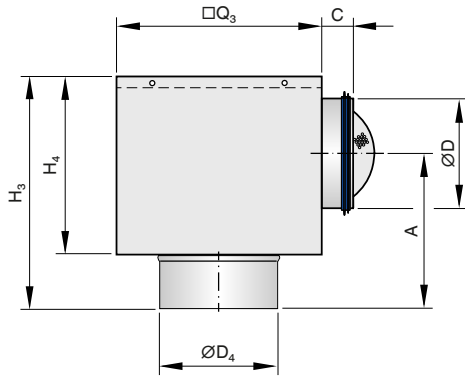


AK-Uni for circular diffuser faces

Variant	$\square Q_3$	H_3	$\varnothing D_4$	H_4	$\varnothing D$	A	C	m
	mm							
AK-Uni-013	290	285	278	250	158	174	50	3.4
AK-Uni-014	372	330	362	295	198	199	50	5.1
AK-Uni-015	476	330	460	295	198	199	50	6.9
AK-Uni-016	567	380	557	345	248	234	48	9.3
AK-Uni-017	590	380	578	345	248	224	48	9.7
AK-Uni-018	615	380	590	345	248	224	48	10.3
AK-Uni-019	266	255	202	220	123	161	48	2.9
AK-Uni-020	290	285	258	250	158	174	50	3.5
AK-Uni-021	372	330	314	295	198	199	50	5.2
AK-Uni-022	476	380	362	345	248	224	48	7.8
AK-Uni-023	476	380	426	345	248	224	48	7.6
AK-Uni-024	567	445	482	410	313	257	50	10.5
AK-Uni-025	590	445	578	410	313	257	50	10.8
AK-Uni-026	615	445	590	410	313	257	50	11.4

Weights apply to the supply air variant.

Universal plenum box AK-Uni for RFD and TID



AK-Uni for type RFD and TID diffuser faces

Variant	□Q ₃	H ₃	ØD ₄	H ₄	ØD	A	C	m
	mm							kg
AK-Uni-028	216	255	125	195	98	170	50	2.5
AK-Uni-029	266	280	160	220	123	182	48	3.0
AK-Uni-030	290	310	200	250	158	194	50	3.5
AK-Uni-031	476	355	250	295	198	219	50	7.5
AK-Uni-032	567	395	315	345	248	244	48	10.0
AK-Uni-033	615	470	400	410	313	277	50	12.0

Project-specific solutions



For low construction heights in the suspended ceiling, plenum boxes with 2 smaller spigots are also available, which have a lower installation height.

Product details

Commissioning

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.

- Ceiling diffusers with square plenum box and damper unit (variant -M): The diffuser face can be removed to access the damper unit; the damper unit can then be set to any position between 0 and 90°
- Ceiling diffusers with square plenum box, damper unit and pressure tap (variant -MN): The diffuser face need not be removed as the flow adjustment damper can be set with 2 cords (white and green).

Volume flow rate measurement

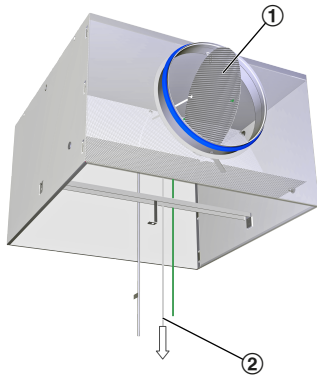
Ceiling diffusers with square plenum box, damper unit and pressure tap (variant -MN) enable volume flow rate balancing with the diffuser face in place.

- Connect the measuring tube to the digital manometer
- Read the effective pressure
- Read the volume flow rate off the characteristic or calculate it
- If necessary, adjust the damper blade position with the cords

A characteristic is included with each AK-Uni plenum box.

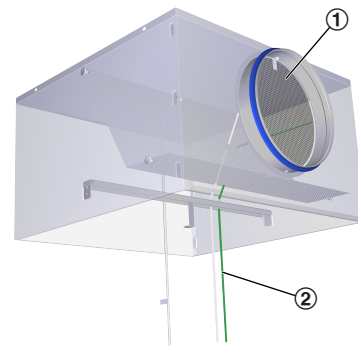
These are only schematic diagrams to illustrate installation details.

AK-Uni-...-MN Volume flow rate balancing



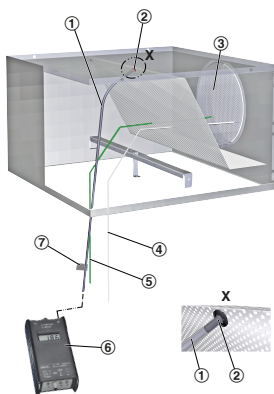
- ① Damper blade
 - ② White cord for opening the damper blade
- Open, 0°

AK-Uni-...-MN Volume flow rate balancing



- ① Damper blade
 - ② Green cord for closing the damper blade
- Closed (maximum restriction), 90°

AK-Uni-...-MN volume flow rate measurement



- ① Measuring tube
- ② Pressure tap
- ③ Damper blade for volume flow rate balancing
- ④ White cord for opening the damper blade
- ⑤ Green cord for closing the damper blade
- ⑥ Digital manometer
- ⑦ Text label indicating plenum box variant (to be provided by others)

Volume flow rate calculation for air density 1.2 kg/m³

$$q_v = C \times \sqrt{\Delta p_w}$$

Volume flow rate calculation for other air densities

$$q_v = C \times \sqrt{\Delta p_w} \times \sqrt{\frac{1,2}{\rho}}$$

Nomenclature

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 the spigot

ØD [mm]

Outer diameter of the spigot

ØD₄

Outer diameter of a circular diffuser face

H_s [mm]

Height of a ceiling diffuser with plenum box, from the lower edge of the suspended ceiling to the upper edge of the plenum box or of the spigot

m [kg]

Weight

Q_s [mm]

Dimensions of a square plenum box

q_v [m³/h]; [l/s]

Volume flow rate

Lengths

Lengths are given in [mm] unless stated otherwise.