



Horizontal air discharge



With plenum box



With connecting frame



With butterfly damper



Square diffuser face

Ceiling diffusers

Type ADLR



For horizontal radial supply air discharge, with fixed air control blades – aluminium diffuser face

Circular and square ceiling diffusers for radial air discharge, for high comfort levels, ideal integration into suspended ceilings

- Nominal sizes 1, 2, 3, 4, 5, 6, 7, 8
- Volume flow rate range 20 – 650 l/s or 72 – 2340 m³/h
- Circular or square diffuser face
- Diffuser face made of aluminium with anodised finish
- For supply and extract air
- For variable and constant volume flows
- For suspended continuous plasterboard or grid ceilings
- High induction results in a rapid reduction of temperature differences and airflow velocities

Optional equipment and accessories

- Exposed diffuser face available in RAL CLASSIC colours
- Horizontal or vertical duct connection
- Plenum box with cord-operated damper blade and pressure tap

1

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Variants

Product examples

ADLR-A



ADLR-Q-A



ADLR-AR



ADLR-C



ADLR-*H



ADLR-Q-*V



Installation example

Installation in continuous ceilings



Description

For detailed information on plenum boxes see Chapter K1 – 1.5.

Application

- Type ADLR ceiling diffusers are used as supply air or extract air diffusers for comfort zones
- Attractive design element for building owners and architects with demanding aesthetic requirements
- Horizontal radial supply air discharge for mixed flow ventilation
- High induction results in a rapid reduction of temperature differences and airflow velocities (supply air variant)
- 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 suspended continuous plasterboard or grid ceilings

Variant

- Circular diffuser face
- Square diffuser face

Connection

- A: Diffuser face only
- AR: Vertical duct connection, with connecting frame
- C: Vertical duct connection with butterfly damper
- ZV: Vertical duct connection, with plenum box for supply air
- AV: Vertical duct connection, with plenum box for extract air
- ZH: Horizontal duct connection, with plenum box for supply air
- AH: Horizontal duct connection, with plenum box for extract air

Nominal sizes

- Circular diffuser face: 244, 300, 356, 412, 468, 542, 598, 654
- Square diffuser face: 593, 598, 618, 623
- Diffuser: 1, 2, 3, 4, 5, 6, 7, 8

Accessories

- Standard cross bar
- Duct cross bar
- Lip seal

Special characteristics

- Horizontal radial supply air discharge
- Diffuser face made of aluminium
- For suspended continuous plasterboard or grid ceilings
- Horizontal or vertical duct connection

Parts and characteristics

- Circular or square diffuser face with fixed air control blades
- Diffuser front frame
- Simple installation of the diffuser face due to central fixing screw with decorative cap

Materials and surfaces

- Diffuser face made of aluminium
- Connecting frame and butterfly damper made of coated sheet steel
- Plenum box made of galvanised sheet steel
- Lip seal made of rubber
- Attachments electrocoated RAL 9005, jet black
- Diffuser face powder-coated RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour

Installation and commissioning

- Preferably for rooms with a clear height up to 4.0 m
- Flush ceiling installation
- Horizontal or vertical duct connection
- If necessary, carry out volume flow rate balancing with 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 sizes – circular diffuser face	244, 300, 356, 412, 468, 542, 598, 654 mm
Nominal sizes – square diffuser face	593, 598, 618, 623 mm
Nominal sizes – diffuser	1, 2, 3, 4, 5, 6, 7, 8
Minimum volume flow rate	20 – 230 l/s or 72 – 828 m ³ /h
Maximum volume flow rate, with $L_{WA} \cong 50 \text{ dB(A)}$	515 – 650 l/s or 1854 – 2340 m ³ /h
Supply air to room air temperature difference	–10 to +10 K

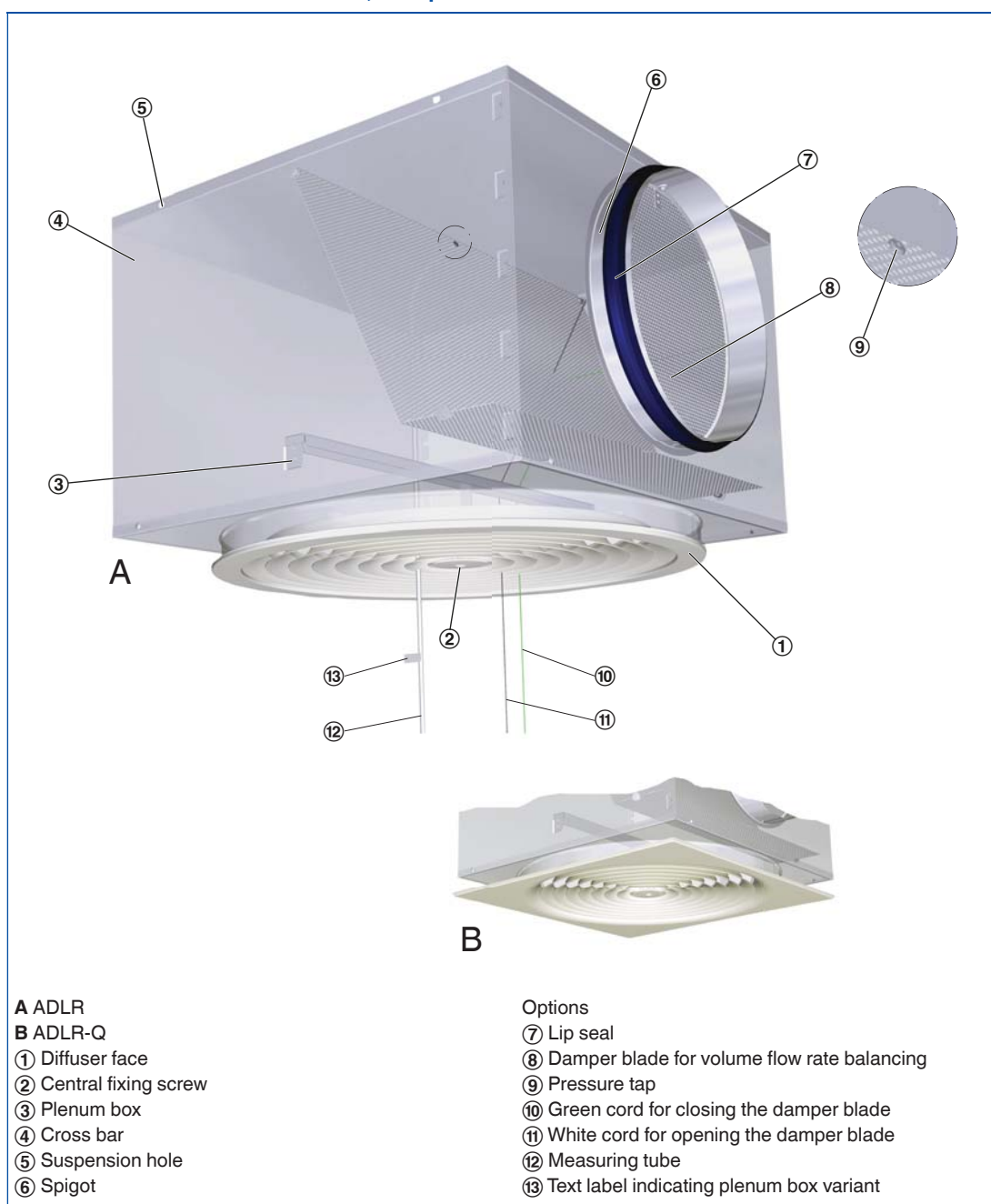
Function

Functional description

Ceiling diffusers direct the air from air conditioning systems 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. Ceiling diffusers allow for large volume flow rates. 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 ADLR ceiling diffusers have fixed blades. Horizontal air discharge is radial. The supply air to room air temperature difference may range from -10 to $+10$ K. To give rooms an aesthetic, uniform look, Type ADLR diffusers may also be used for extract air.

Schematic illustration of the ADLR, with plenum box for horizontal duct connection



Air patterns

Horizontal air discharge

Horizontal air discharge



Order code

ADLR

ADLR - Q - ZH - M - L / 598 x 4 / P1 - RAL ...

1 2 3 4 5 6 7

1 Type

ADLR Ceiling diffuser

2 Construction style

No entry: circular

Q Square

3 Connection

A Diffuser face only

AR Vertical, with connecting frame

C Vertical, with butterfly damper

ZV Vertical, supply air, with plenum box

AV Vertical, extract air, with plenum box

ZH Horizontal, supply air, with plenum box

AH Horizontal, extract air, with plenum box

4 Damper blade for volume flow rate balancing

No entry: none

M With

MN With cords and pressure tap
(only for connections ZH, AH)

5 Accessories

No entry: none

L With lip seal
(only for connections ZV, AV, ZH, AH)

6 Nominal size

ADLR (circular)

1 to 8

ADLR-Q (square)

593 x 1 to 7

598 x 1 to 7

618 x 1 to 8

623 x 1 to 8

Size of diffuser face plate x nominal size

7 Exposed surface

No entry: powder-coated RAL 9010,
pure white

P1 Powder-coated,
specify RAL CLASSIC colour

Gloss level

RAL 9010 50 %

RAL 9006 30 %

All other RAL colours 70 %

Order example

ADLR-Q-ZH-M-L/618x4

Construction style	Square construction
Construction	Plenum box for supply air, horizontal connection
Damper blade for volume flow rate balancing	With
Accessories	With lip seal
Nominal size	618 x 4
Exposed surface	RAL 9010, pure white, gloss level 50 %

ADLR-A, ADLR-AR (supply air)

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).

Exact values for all parameters can be determined with our Easy Product Finder design programme.

Quick sizing – sound power level and total differential pressure

Nominal size	\dot{V}		Δp_t Pa	L_{WA} dB(A)
	l/s	m ³ /h		
1	20	72	5	19
	40	144	20	34
	55	198	39	42
	70	252	63	49
2	35	126	3	<15
	70	252	11	25
	105	378	26	34
	140	504	46	42
3	55	198	3	18
	110	396	12	26
	165	594	27	36
	220	792	48	48
4	80	288	3	19
	160	576	13	29
	240	864	28	38
	320	1152	50	47
5	110	396	3	21
	220	792	13	31
	330	1188	29	44
	440	1584	52	63
6	150	540	4	20
	300	1080	16	36
	450	1620	36	50
	600	2160	65	64
7	200	720	5	23
	367	1320	16	37
	533	1920	35	51
	700	2520	60	64
8	230	828	5	25
	422	1518	15	37
	613	2208	32	48
	805	2898	56	60

ADLR-C (supply air)

Quick sizing – sound power level and total differential pressure

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

Nominal size	\dot{V}		Damper blade position			
			0°		45°	
			Δp_t	L_{WA}	Δp_t	L_{WA}
	l/s	m ³ /h	Pa	dB(A)	Pa	dB(A)
1	20	72	7	23	32	38
	35	126	21	35	98	53
	55	198	52	47	241	68
	60	216	62	49	287	72
2	35	126	3	<15	13	27
	70	252	13	26	54	46
	115	414	36	39	145	64
	160	576	70	50	280	78
3	55	198	3	18	16	29
	115	414	15	29	68	51
	175	630	34	40	158	70
	235	846	62	50	285	92
4	80	288	3	16	15	31
	155	558	13	29	58	50
	235	846	29	40	133	67
	310	1116	51	50	232	82
5	110	396	4	23	19	35
	180	648	10	30	51	50
	250	900	19	37	98	62
	325	1170	32	50	165	77
6	150	540	5	19	9	34
	240	864	12	31	23	47
	335	1206	23	41	46	59
	435	1566	38	50	121	71
7	200	720	7	26	14	35
	285	1026	13	35	29	46
	370	1332	22	43	49	55
	455	1638	34	50	75	64
8	230	828	8	28	12	33
	325	1170	16	36	24	42
	420	1512	27	44	41	50
	515	1854	40	50	61	57

ADLR-ZH (supply air)

Quick sizing – sound power level and total differential pressure

Nominal size	\dot{V}		Damper blade position					
			0°		45°		90°	
	l/s	m ³ /h	Δp_t	L_{WA}	Δp_t	L_{WA}	Δp_t	L_{WA}
			Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
1	20	72	7	19	9	15	19	17
	35	126	21	30	27	29	58	30
	55	198	51	41	67	41	144	43
	75	270	94	50	125	50	268	53
2	35	126	7	17	10	18	22	21
	65	234	25	31	33	32	74	35
	100	360	58	42	79	43	176	47
	130	468	98	51	134	52	298	56
3	55	198	7	18	8	19	21	21
	95	342	21	29	24	30	62	35
	145	522	49	41	56	41	144	48
	190	684	85	50	97	50	247	57
4	80	288	7	21	9	18	20	21
	135	486	20	30	26	29	56	34
	190	684	40	39	51	39	110	43
	250	900	69	50	89	49	191	52
5	110	396	10	22	15	22	36	28
	175	630	25	32	37	35	92	39
	240	864	47	41	70	45	173	49
	305	1098	76	50	113	54	279	59
6	150	540	9	23	12	25	26	26
	230	828	21	31	29	34	62	39
	310	1116	37	40	53	43	113	49
	400	1440	62	50	88	52	188	60
7	200	720	14	25	20	28	40	36
	290	1044	29	34	42	38	84	46
	380	1368	49	43	72	47	144	56
	465	1674	74	50	108	55	215	65
8	230	828	15	28	22	29	59	41
	325	1170	31	36	44	39	118	50
	420	1512	51	44	74	48	197	57
	515	1854	77	50	112	55	295	65

ADLR-ZV (supply air)

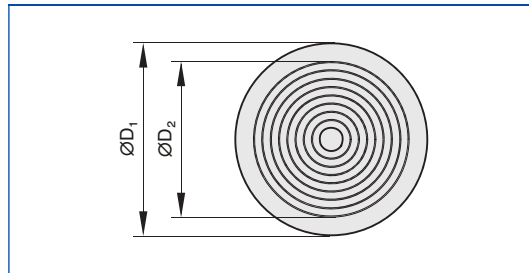
Quick sizing – sound power level and total differential pressure

Nominal size	\dot{V}		Damper blade position					
			0°		45°		90°	
	l/s	m ³ /h	Δp_t	L_{WA}	Δp_t	L_{WA}	Δp_t	L_{WA}
			Pa	dB(A)	Pa	dB(A)	Pa	dB(A)
1	20	72	6	15	9	18	20	16
	35	126	20	28	28	31	60	30
	55	198	49	41	69	43	148	43
	75	270	90	50	129	53	275	53
2	35	126	6	<15	9	19	21	19
	65	234	22	29	32	33	74	33
	100	360	53	41	76	45	175	46
	130	468	89	50	128	53	295	56
3	55	198	7	<15	10	17	21	21
	100	360	22	29	32	32	71	34
	150	540	49	40	72	44	160	46
	200	720	87	50	127	54	284	56
4	80	288	6	16	9	19	21	20
	140	504	20	29	27	31	64	33
	205	738	42	39	58	43	137	44
	270	972	73	50	101	52	237	53
5	110	396	8	22	14	25	37	26
	175	630	22	32	34	36	92	38
	240	864	40	41	65	46	174	49
	310	1116	67	50	108	55	290	59
6	150	540	8	25	11	24	25	24
	235	846	20	34	27	35	61	35
	320	1152	37	42	51	44	113	45
	410	1476	60	50	83	53	185	55
7	200	720	11	28	17	29	39	30
	290	1044	22	36	36	39	83	41
	380	1368	38	44	62	48	142	50
	470	1692	59	50	94	56	217	58
8	230	828	12	28	19	31	53	33
	310	1116	22	35	34	39	96	41
	390	1404	34	43	54	46	152	49
	470	1692	50	51	79	52	221	56



ADLR-A

Diffuser face ADLR



Dimensions

Nominal size	ØD ₁	ØD ₂	A _{eff}
	mm		m ²
1	244	192	0.0066
2	300	248	0.0161
3	356	304	0.0257
4	412	360	0.0349
5	468	416	0.0473
6	542	472	0.0544
7	598	528	0.0691
8	654	584	0.0843

ADLR-A

Variant

- Ceiling diffuser with circular diffuser face



Order code detail

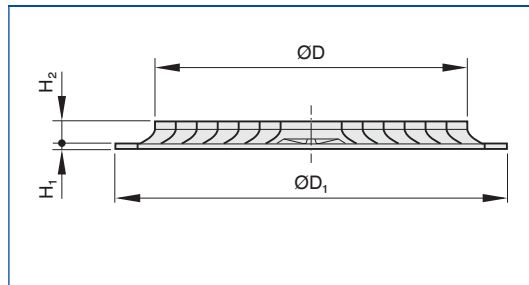
Nominal sizes

- Diffuser face:
244, 300, 356, 412, 468, 542, 598, 654
- Diffuser: 1, 2, 3, 4, 5, 6, 7, 8

Parts and characteristics

- Circular diffuser face
- Simple installation of the diffuser face due to central fixing screw

ADLR-A



Dimensions [mm] and weight [kg]

Nominal size	ØD ₁	H ₁	H ₂	ØD	m
	mm				kg
1	244	6	29	137	0.2
2	300	6	29	193	0.2
3	356	6	29	249	0.3
4	412	6	29	305	0.4
5	468	6	29	361	0.5
6	542	6	29	417	0.7
7	598	6	29	473	0.9
8	654	6	29	529	1.1

ADLR-AR



ADLR-AR

– AR –

Order code detail

Variant

- Ceiling diffuser with circular diffuser face
- With connecting frame

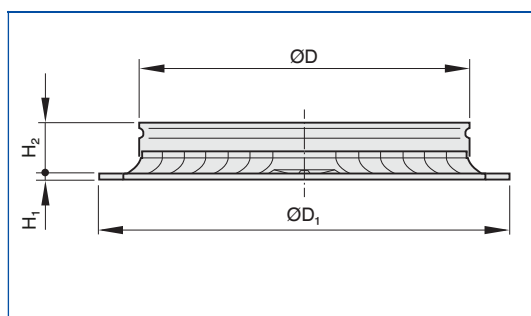
Nominal sizes

- Diffuser face:
244, 300, 356, 412, 468, 542, 598, 654
- Diffuser: 1, 2, 3, 4, 5, 6, 7, 8

Parts and characteristics

- Circular diffuser face
- Connecting frame for installation of the diffuser into vertical ducts
- Simple installation of the diffuser face due to central fixing screw with decorative cap

ADLR-AR



Dimensions [mm] and weight [kg]

Nominal size	ØD ₁	H ₁	H ₂	ØD	m	
					mm	kg
1	244	6	54	141		0.4
2	300	6	54	197		0.4
3	356	6	54	253		0.6
4	412	6	54	309		0.7
5	468	6	54	365		0.9
6	542	6	54	421		1.1
7	598	6	54	477		1.4
8	654	6	54	523		1.6

ADLR-C



ADLR-C

- C -

Order code detail

Variant

- Ceiling diffuser with circular diffuser face
- With connecting frame
- With butterfly damper

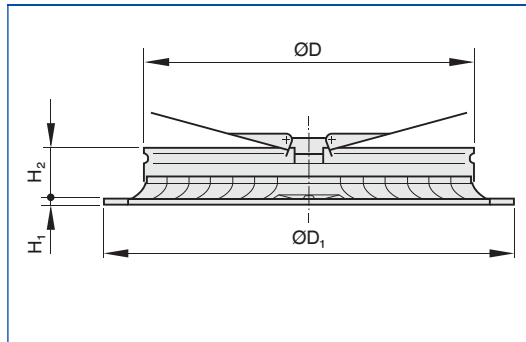
Nominal sizes

- Diffuser face: 244, 300, 356, 412, 468, 542, 598, 654
- Diffuser: 1, 2, 3, 4, 5, 6, 7, 8

Parts and characteristics

- Circular diffuser face
- Connecting frame for installation of the diffuser into vertical ducts
- Butterfly damper for volume flow rate balancing
- Simple installation of the diffuser face due to central fixing screw with decorative cap

ADLR-C



Dimensions [mm] and weight [kg]

Nominal size	ØD ₁	H ₁	H ₂	ØD	m
	mm				kg
1	244	6	54	141	0.7
2	300	6	54	197	1.0
3	356	6	54	253	1.3
4	412	6	54	309	1.7
5	468	6	54	365	2.1
6	542	6	54	421	2.7
7	598	6	54	477	3.1
8	654	6	54	523	3.7

ADLR-*H



ADLR-*H

- H -

Order code detail

Variant

- Ceiling diffuser with circular diffuser face
- With plenum box for horizontal duct connection

Nominal sizes

- Diffuser face:
244, 300, 356, 412, 468, 542, 598, 654
- Diffuser: 1, 2, 3, 4, 5, 6, 7, 8

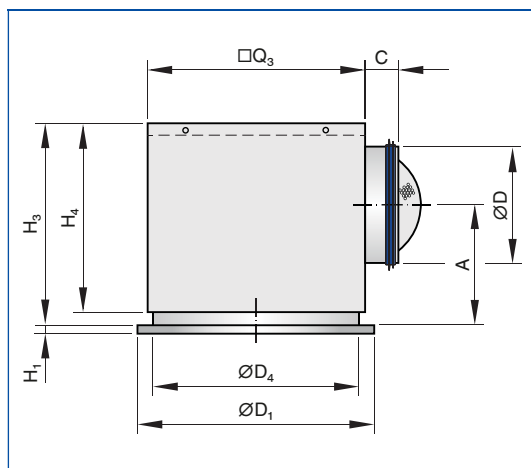
Parts and characteristics

- Circular or square diffuser face with fixed air control blades
- Diffuser front frame
- Simple installation of the diffuser face due to central fixing screw with decorative cap

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)

Circular diffuser face with plenum box for horizontal duct connection



Dimensions [mm] and weight [kg]

Nominal size	ØD ₁	H ₁	□Q ₃	H ₃	ØD ₄	H ₄	ØD	A	C	Plenum box	m
											kg
	mm										
1	244	6	266	255	202	220	123	161	48	AK-Uni-019	3.1
2	300	6	290	285	258	250	158	174	50	AK-Uni-020	3.7
3	356	6	372	330	314	295	198	199	50	AK-Uni-021	5.5
4	412	6	476	380	362	345	248	224	48	AK-Uni-022	8.2
5	468	6	476	380	426	345	248	224	48	AK-Uni-023	8.1
6	542	6	567	445	482	410	313	257	50	AK-Uni-024	11.2
7	598	6	590	445	578	410	313	257	50	AK-Uni-025	11.7
8	654	6	615	445	590	410	313	257	50	AK-Uni-026	12.5

Weights apply to the supply air variant

ADLR-*V



ADLR-*V

- V -

Order code detail

Variant

- Ceiling diffuser with circular diffuser face
- With plenum box for vertical duct connection

Nominal sizes

- Diffuser face:
244, 300, 356, 412, 468, 542, 598, 654
- Diffuser: 1, 2, 3, 4, 5, 6, 7, 8

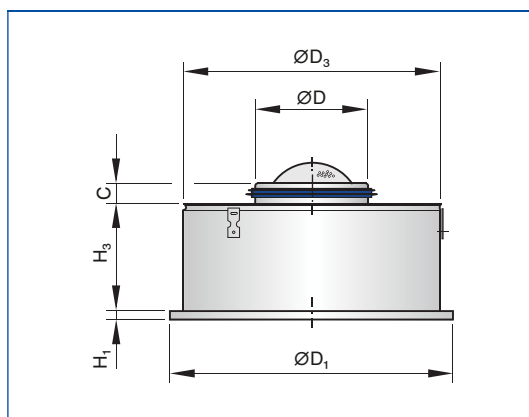
Parts and characteristics

- Circular or square diffuser face with fixed air control blades
- Diffuser front frame
- Simple installation of the diffuser face due to central fixing screw with decorative cap

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)

Circular diffuser face with plenum box for vertical duct connection



Dimensions [mm] and weight [kg]

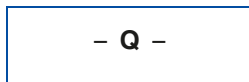
Nominal size	ØD ₁	H ₁	ØD ₃	H ₃	ØD	C	m
	mm						kg
1	244	6	202	227	123	50	1.7
2	300	6	258	227	158	50	2.2
3	356	6	314	227	198	50	3.0
4	412	6	370	261	248	50	3.9
5	468	6	426	261	248	50	4.7
6	542	6	482	292	313	50	5.8
7	598	6	538	292	313	50	6.9
8	654	6	594	292	313	50	8.1

Weights apply to the supply air variant

1

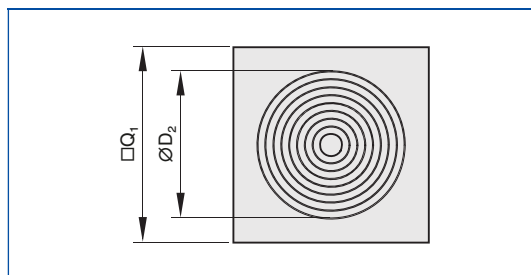


ADLR-Q-A



Order code detail

Diffuser face ADLR-Q



Dimensions

Nominal size	$\varnothing D_2$	A_{eff}
	mm	m ²
... x 1	192	0.0066
... x 2	248	0.0161
... x 3	304	0.0257
... x 4	360	0.0349
... x 5	416	0.0473
... x 6	472	0.0544
... x 7	528	0.0691
... x 8	584	0.0843

$\square Q_1$: 593, 598, 618, 623

ADLR-Q-A



Order code detail

Variant

- Ceiling diffuser with square diffuser face

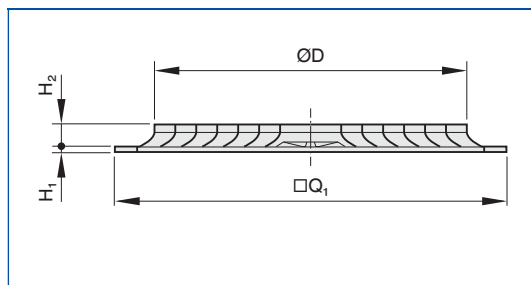
Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Diffuser: 1, 2, 3, 4, 5, 6, 7, 8

Parts and characteristics

- Circular or square diffuser face with fixed air control blades
- Diffuser front frame
- Simple installation of the diffuser face due to central fixing screw with decorative cap

ADLR-Q-A



Dimensions [mm] and weight [kg]

Nominal size	593 x ...	598 x ...	618 x ...	623 x ...	H_1	H_2	$\varnothing D$	m
	$\square Q_1$							
	mm							
... x 1	593	598	618	623	6	29	137	1.3
... x 2	593	598	618	623	6	29	193	1.3
... x 3	593	598	618	623	6	29	249	1.4
... x 4	593	598	618	623	6	29	305	1.5
... x 5	593	598	618	623	6	29	361	1.6
... x 6	593	598	618	623	6	29	417	1.8
... x 7	593	598	618	623	6	29	473	2.0
... x 8	593	598	618	623	6	29	529	2.2

ADLR-Q-AR



Order code detail

Variant

- Ceiling diffuser with square diffuser face
- With connecting frame

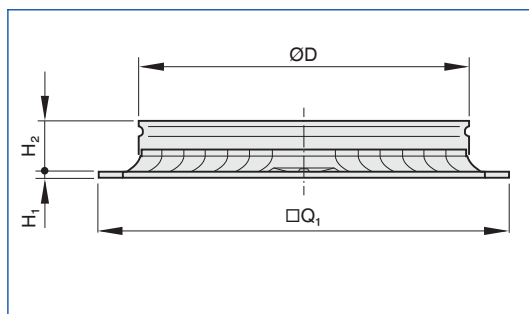
Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Diffuser: 1, 2, 3, 4, 5, 6, 7, 8

Parts and characteristics

- Circular or square diffuser face with fixed air control blades
- Diffuser front frame
- Simple installation of the diffuser face due to central fixing screw with decorative cap

ADLR-Q-AR



Dimensions [mm] and weight [kg]

Nominal size	593 x ...	598 x ...	618 x ...	623 x ...	H ₁	H ₂	ØD	m
	□Q ₁							
mm								
... x 1	593	598	618	623	6	54	141	1.5
... x 2	593	598	618	623	6	54	197	1.5
... x 3	593	598	618	623	6	54	253	1.7
... x 4	593	598	618	623	6	54	309	1.8
... x 5	593	598	618	623	6	54	365	1.9
... x 6	593	598	618	623	6	54	421	2.2
... x 7	593	598	618	623	6	54	477	2.4
... x 8	593	598	618	623	6	54	523	2.7

ADLR-Q-C

- C -

Order code detail

Variant

- Ceiling diffuser with square diffuser face
- With connecting frame
- With butterfly damper

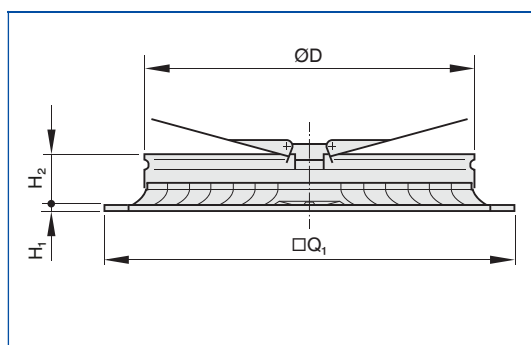
Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Diffuser: 1, 2, 3, 4, 5, 6, 7, 8

Parts and characteristics

- Circular or square diffuser face with fixed air control blades
- Diffuser front frame
- Simple installation of the diffuser face due to central fixing screw with decorative cap

ADLR-Q-C



Dimensions [mm] and weight [kg]

Nominal size	593 x ...	598 x ...	618 x ...	623 x ...	H ₁	H ₂	ØD	m	
	□Q ₁								kg
	mm								
... x 1	593	598	618	623	6	54	141	1.8	
... x 2	593	598	618	623	6	54	197	2.1	
... x 3	593	598	618	623	6	54	253	2.5	
... x 4	593	598	618	623	6	54	309	2.9	
... x 5	593	598	618	623	6	54	365	3.3	
... x 6	593	598	618	623	6	54	421	4.0	
... x 7	593	598	618	623	6	54	477	4.7	
... x 8	593	598	618	623	6	54	523	5.4	

ADLR-Q-*H



ADLR-Q-*H

– H –

Order code detail

Variant

- Ceiling diffuser with square diffuser face
- With plenum box for horizontal duct connection

Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Diffuser: 1, 2, 3, 4, 5, 6, 7, 8

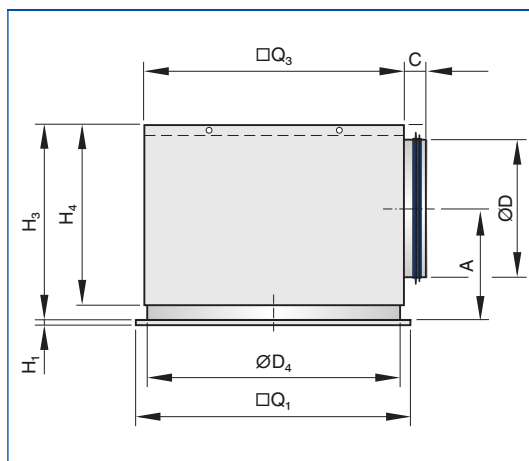
Parts and characteristics

- Circular or square diffuser face with fixed air control blades
- Diffuser front frame
- Simple installation of the diffuser face due to central fixing screw with decorative cap

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)

Square diffuser face with plenum box for horizontal duct connection



Dimensions [mm] and weight [kg]

Nominal size	593 x ...	598 x ...	618 x ...	623 x ...	H ₁	□Q ₃	H ₃	ØD ₄	H ₄	ØD	A	C	Plenum box	m			
	□Q ₁				mm										kg		
... x 1	593	598	618	623	6	266	255	202	220	123	161	48	AK-Uni-019	4.2			
... x 2	593	598	618	623	6	290	285	258	250	158	174	50	AK-Uni-020	4.8			
... x 3	593	598	618	623	6	372	330	314	295	198	199	50	AK-Uni-021	6.6			
... x 4	593	598	618	623	6	476	380	362	345	248	224	48	AK-Uni-022	9.3			
... x 5	593	598	618	623	6	476	380	426	345	248	224	48	AK-Uni-023	9.2			
... x 6	593	598	618	623	6	567	445	482	410	313	257	50	AK-Uni-024	12.3			
... x 7	593	598	618	623	6	590	445	578	410	313	257	50	AK-Uni-025	12.8			
... x 8	593	598	618	623	6	615	445	590	410	313	257	50	AK-Uni-026	13.6			

Weights apply to the supply air variant

ADLR-Q-*V



ADLR-Q-*V

- V -

Order code detail

Variant

- Ceiling diffuser with square diffuser face
- With plenum box for vertical duct connection

Nominal sizes

- Diffuser face: 593, 598, 618, 623
- Diffuser: 1, 2, 3, 4, 5, 6, 7, 8

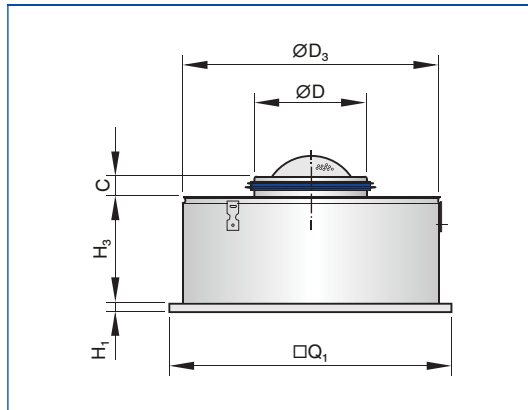
Parts and characteristics

- Circular or square diffuser face with fixed air control blades
- Diffuser front frame
- Simple installation of the diffuser face due to central fixing screw with decorative cap

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)

Square diffuser face with plenum box for vertical duct connection



Dimensions [mm] and weight [kg]

Nominal size	593 x ...	598 x ...	618 x ...	623 x ...	H ₁	ØD ₃	H ₃	ØD	C	m
	□Q ₁									
	mm									
... x 1	593	598	618	623	6	202	227	123	50	2.8
... x 2	593	598	618	623	6	258	227	158	50	3.3
... x 3	593	598	618	623	6	314	227	198	50	4.1
... x 4	593	598	618	623	6	370	261	248	50	5.0
... x 5	593	598	618	623	6	426	261	248	50	5.8
... x 6	593	598	618	623	6	482	292	313	50	6.9
... x 7	593	598	618	623	6	538	292	313	50	8.0
... x 8	593	598	618	623	6	594	292	313	50	9.2

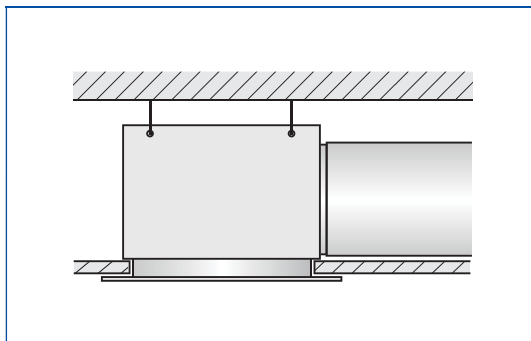
Weights apply to the supply air variant

1 Installation types

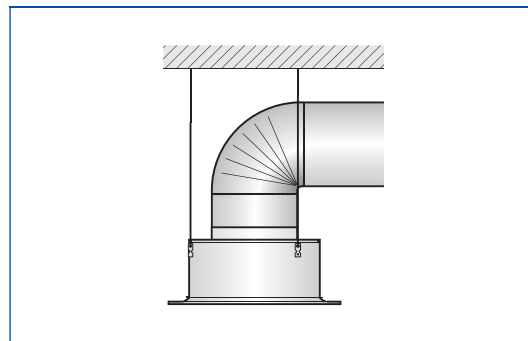
For more installation details see Chapter K1 – 1.6.

These are only schematic diagrams to illustrate installation details.

Flush ceiling installation with square plenum box for circular diffuser faces

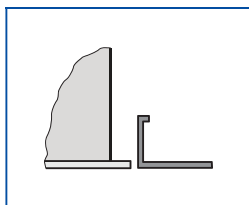


Freely suspended installation

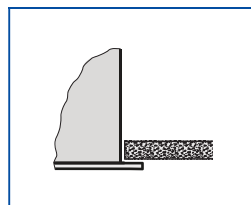


Ceiling systems

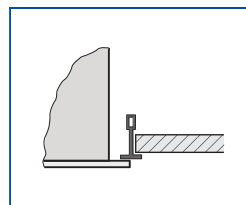
Grid ceiling



Continuous ceiling

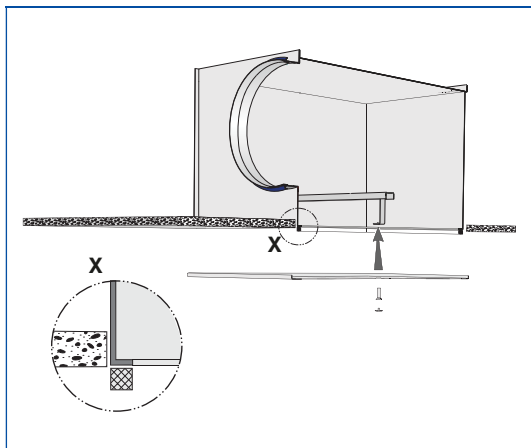


T-bar ceiling

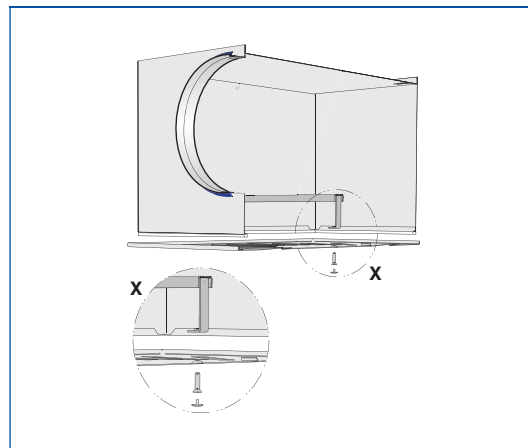


Diffuser face sealing and fixing

Diffuser face – sealing

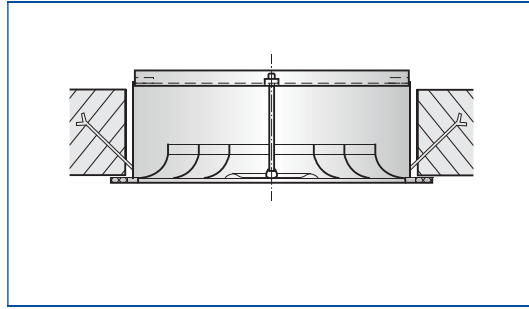


Diffuser face – central screw fixing

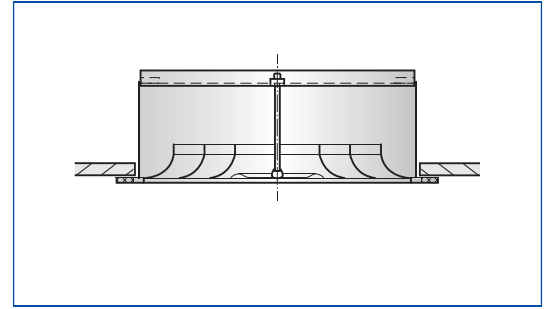


Installation
without plenum box

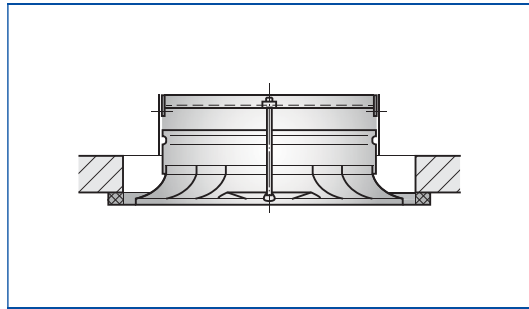
Installation with standard cross bar F0,
with fixing tabs mortared in



Installation with standard cross bar F0,
screw-fixed to ceiling



Installation with duct cross bar D0



Standard text

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

Ceiling diffusers with square or circular diffuser face. Supply air and extract air variants for comfort zones. Diffuser face with fixed air control blades for horizontal radial air discharge. For installation into all types of suspended ceilings.

Ready-to-install component which consists of the diffuser face with fixed, concentric air control blades, a diffuser front frame with perimeter seal and connecting frame, a damper blade or a plenum box.

Diffuser face suitable for central screw fixing. 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.

Special characteristics

- Horizontal radial supply air discharge
- Diffuser face made of aluminium
- For suspended continuous plasterboard or grid ceilings
- Horizontal or vertical duct connection

Materials and surfaces

- Diffuser face made of aluminium
- Connecting frame and butterfly damper made of coated sheet steel
- Plenum box made of galvanised sheet steel
- Lip seal made of rubber
- Attachments electrocoated RAL 9005, jet black
- Diffuser face powder-coated RAL 9010, pure white
- P1: Powder-coated, RAL CLASSIC colour

Technical data

- Nominal sizes – circular diffuser face: 244, 300, 356, 412, 468, 542, 598, 654 mm
- Nominal sizes – square diffuser face: 593, 598, 618, 623 mm
- Nominal sizes – diffuser: 1, 2, 3, 4, 5, 6, 7, 8
- Minimum volume flow rate: 20 – 230 l/s or 72 – 828 m³/h
- Maximum volume flow rate, with L_{WA} ≈ 50 dB(A): 515 – 650 l/s or 1854 – 2340 m³/h
- Supply air to room air temperature difference: -10 to +15 K

Sizing data

- \dot{V} _____ [m³/h]
- Δp_t _____ [Pa]
- L_{WA} Air-regenerated noise _____ [dB(A)]

Order options

1 Type

ADLR Ceiling diffuser

2 Construction style

No entry: circular

Q Square

3 Connection

- A** Diffuser face only
- AR** Vertical, with connecting frame
- C** Vertical, with butterfly damper
- ZV** Vertical, supply air, with plenum box
- AV** Vertical, extract air, with plenum box
- ZH** Horizontal, supply air, with plenum box
- AH** Horizontal, extract air, with plenum box

4 Damper blade for volume flow rate balancing

No entry: none

- M** With
- MN** With cords and pressure tap (only for connections ZH, AH)

5 Accessories

No entry: none

- L** With lip seal (only for connections ZV, AV, ZH, AH)

6 Nominal size

ADLR (circular)

1 to 8

ADLR-Q (square)

- 593 × 1 to 7**
- 598 × 1 to 7**
- 618 × 1 to 8**
- 623 × 1 to 8**

Size of diffuser face plate × nominal size

7 Exposed surface

No entry: powder-coated RAL 9010, pure white

- P1** Powder-coated, specify RAL CLASSIC colour

Gloss level

RAL 9010 50 %

RAL 9006 30 %

All other RAL colours 70 %

Ceiling diffusers

Basic information and nomenclature



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

Ceiling diffusers

Basic information and nomenclature

Product selection

	Ceiling swirl diffusers								
	AIRNAMIC	VDW	TDV-SilentAIR	RFD	FD	TDF-SilentAIR	VD	VDL	FDE
Diffuser face style									
Circular	●	●	●	●	●	●		●	
Square	●						●		●
Diffuser face									
Circular	●	●	●	●	●	●		●	
Square	●	●	●	●	●	●	●		●
Galvanised sheet steel		●	●	●	●	●		●	●
Aluminium				●			●		
Plastic	●								
Air control blades									
Fixed	●			●	●	●			●
Adjustable		●	●				●	●	
Plastic, black and white		●	●						
Duct connection									
Horizontal	●	●	●	●	●	●	●	●	●
Vertical		●	●	●	●	●	●	●	
FLEXTRO	●	●	●		●	●			
Attachments									
Damper blade	●	●	●	●	●	●			●
Pressure tap		●	●	●	●	●			●
Actuator							●	●	
Accessories									
Lip seal	●	●	●	●	●	●			●
Protective cage							●	●	
Extended border							●	●	
Nominal sizes									
Circular diffuser face	400, 600	300, 400, 500, 600, 625	300, 400, 500, 600, 625		300, 400, 500, 600, 625	300, 400, 500, 600, 625			
Square diffuser face	300, 600, 625	300, 400, 500, 600, 625, 825					425, 600, 775, 1050		600, 625
Spigot*				125, 160, 200, 250, 315, 400				315, 400, 630, 800	250, 315
Technical data									
Volume flow rate range [l/s]	13 – 385	7 – 470	11 – 315	4 – 330	9 – 235	10 – 295	95 – 1490	65 – 1080	51 – 365
Volume flow rate range [m³/h]	47 – 1386	25 – 1692	40 – 1134	14 – 1188	31 – 846	36 – 1026	342 – 5364	234 – 3888	184 – 1314
Supply air to room air temperature difference	-12 – +10 K						-12 – +15 K		-12 – +10 K
●	Possible								
	Not possible								

*Nominal diameter

Ceiling diffusers

Basic information and nomenclature

Product selection

1

	Design ceiling swirl diffusers		Ceiling swirl diffusers with perforated face plate
	XARTO	ADD	DCS
Diffuser face style			
Circular	●	●	●
Square	●		●
Diffuser face			
Circular	●	●	
Square	●	●	●
Galvanised sheet steel	●	●	●
Aluminium			
Plastic			
Air control blades			
Fixed	●	●	●
Adjustable			
Plastic, black and white			
Duct connection			
Horizontal	●	●	●
Vertical		●	●
FLEXTRO			
Attachments			
Damper blade	●	●	
Pressure tap		●	
Actuator			
Accessories			
Lip seal	●	●	
Protective cage			
Extended border			
Nominal sizes			
Circular diffuser face	600	250, 300, 450, 500, 600	
Square diffuser face	600, 625	250, 300, 450, 500, 600, 625	600, 625
Spigot*		125, 160, 200, 250, 315	125, 160, 200, 250, 315, 400
Technical data			
Volume flow rate range [l/s]	31 – 265	20 – 465	4 – 260
Volume flow rate range [m ³ /h]	110 – 954	72 – 1674	16 – 936
Supply air to room air temperature difference	-12 – +10 K		
●	Possible		
	Not possible		

*Nominal diameter

Ceiling diffusers

Basic information and nomenclature

Product selection

1

	Ceiling diffusers						
	VDR	ADLQ	DLQ	ADLR	DLQL	DLQ-AK	DLK-Fb
Diffuser face style							
Circular	●			●			
Square		●	●		●	●	●
Diffuser face							
Circular	●			●			
Square		●	●	●	●	●	●
Galvanised sheet steel			●		●	●	●
Aluminium	●	●		●			
Plastic							
Air control blades							
Fixed		●	●	●	●	●	●
Adjustable	●						
Plastic, black and white							
Duct connection							
Horizontal	●	●	●	●	●	●	●
Vertical	●			●	●		
FLEXTRO		●					
Attachments							
Damper blade		●	●	●	●		
Pressure tap		●	●	●			
Actuator	●						
Accessories							
Lip seal		●	●	●	●		
Protective cage							
Extended border							
Nominal sizes							
Circular diffuser face	630, 800			244, 300, 356, 412, 468, 542, 598, 654			
Square diffuser face		250, 300, 400, 500, 600, 625	250, 300, 400, 500, 600, 625	600 625	250, 300, 400, 500, 600	300, 400, 500, 600, 625	600, 625
Spigot*	315, 400, 630, 800						
Technical data							
Volume flow rate range [l/s]	175 – 1495	20 – 665	20 – 700	20 – 650	6 – 285	40 – 565	220 – 460
Volume flow rate range [m³/h]	630 – 5382	72 – 2394	72 – 2520	72 – 2340	22 – 1026	144 – 2034	792 – 1656
Supply air to room air temperature difference	-10 to +15 K	-10 to +10 K					
●	Possible						
	Not possible						

*Nominal diameter

Ceiling diffusers

Basic information and nomenclature

Principal dimensions

ØD [mm]

Outside diameter of the spigot

ØD₁ [mm]

Outer diameter of a circular diffuser face

ØD₂ [mm]

Diameter of a circular diffuser face style

ØD₃ [mm]

Diameter of a circular plenum box

□Q₁ [mm]

Outer diameter of a square diffuser face

□Q₂ [mm]

Dimensions of a square diffuser face style

□Q₃ [mm]

Dimensions of a square plenum box

H₁ [mm]

Distance (height) from the lower edge of the suspended ceiling to the lower edge of the diffuser face

H₂ [mm]

Height of a ceiling diffuser, from the lower edge of the suspended ceiling to the upper edge of the spigot

H₃ [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

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

m [kg]

Weight

Nomenclature

L_{WA} [dB(A)]

A-weighted sound power level of air-regenerated noise

 \dot{V} [m³/h] and [l/s]

Volume flow rate

Δt_z [K]

Supply air temperature difference

Δp_t [Pa]

Total differential pressure

A_{eff} [m²]

Effective air discharge area

All sound power levels are based on 1 pW.

Ceiling diffusers

Basic information and nomenclature

1 Sizing with the help of this catalogue

This catalogue provides convenient quick sizing tables for ceiling 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 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

$\dot{V} = 300 \text{ l/s}$ (1280 m³/h)
 Square ceiling diffuser, steel,
 with fixed air control blades
 Maximum sound power level 40 dB(A)
 with damper blade position 45°
 Four-way air discharge

Quick sizing

Type DLQ
 Nominal sizes: 600, 625
 Selected: DLQ/600

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.

The screenshot shows the 'Easy Product Finder' software interface. The main window is titled 'Projekt 1 - TROX Easy Product Finder - Standard des Projektes: Deutschland'. The interface is divided into several sections:

- Projektstruktur:** Shows 'Projekt 1' and 'Neue Position: Bestellkennzahl' with the value 'DLQ AK // 600 // 0 // 0 // 0 // RAL 9010'.
- Produktbaum:** A tree view showing product categories like 'Luftkurkklasse', 'Drallkurkklasse', 'Deckenluftkurkklasse', etc., with 'DLQ, ADLQ' selected.
- Eingabe (Input):**
 - Volumenstrom [m³/h]: 1.280 (792 - 2795)
 - Zwischenräume/Abstände [m]:
 - a: 6,00 (x2,0)
 - b₁: 1,20 (1,0 - 2,0)
 - x: 3,00 (x1,2)
 - l = b₁ + x = 4,2
 - Temperaturunterschied [K]:
 - ΔT_z: -8,0 (-12,0 - 4,4)
- Lufttechnische Ergebnisse (Air Technical Results):**

v ₁₀	=	0,15	m/s
ΔP ₁₀	=	-1,3	K
v ₁	=	0,32	m/s
ΔP ₁	=	-1,3	K
- Acustische Ergebnisse (Acoustic Results):**

Zu/A	dB(A)	Pa
dot	34	
LWA	38	
LWNC	32	

Ceiling diffusers

Basic information and nomenclature

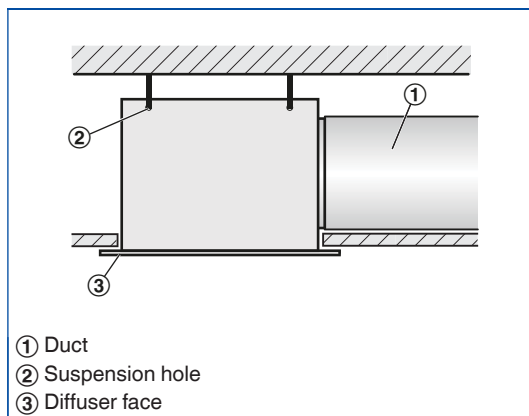
Description

Installation information

- Installation and making connections to be performed by others
- The optimum aerodynamic function is only achieved with flush ceiling installation
- The diffuser face is fixed to the plenum box cross bar using the central fixing screw
- Central fixing screw is concealed by a decorative cap

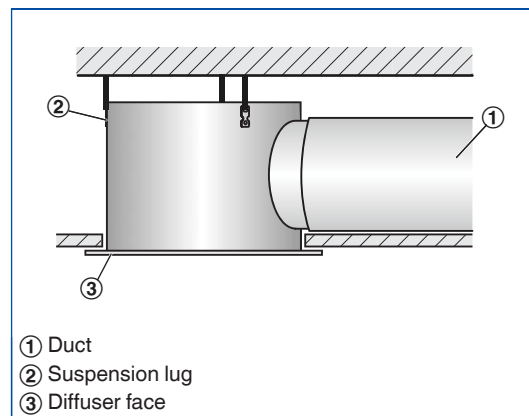
Installation types

Flush ceiling installation with square plenum box



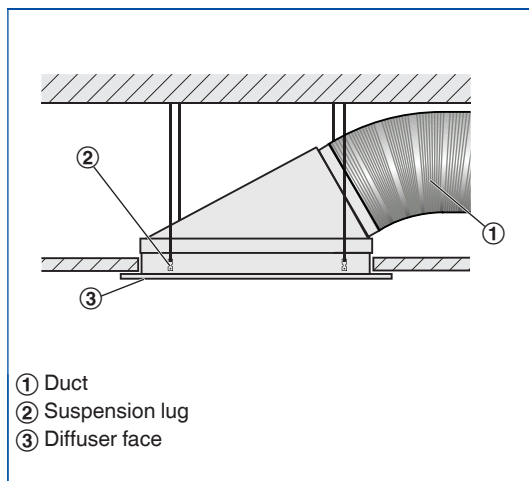
- Horizontal duct connection
- Four suspension holes
- Suspension with cords, wires or hangers, to be provided by others

Flush ceiling installation with circular plenum box



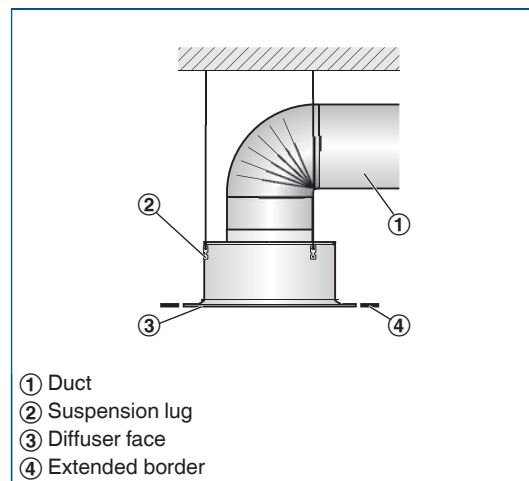
- Horizontal duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

Flush ceiling installation with plenum box FLEXTRO



- Spigot at 30° angle
- Four suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

Freely suspended installation



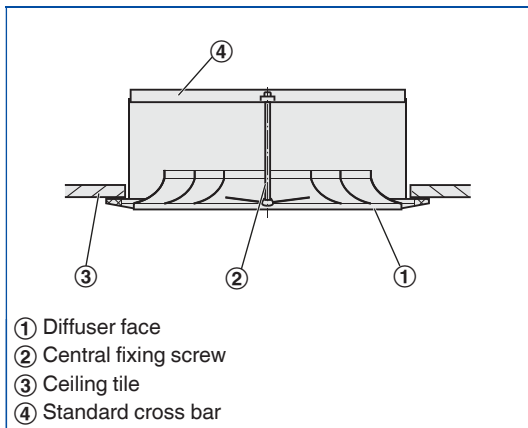
- Vertical duct connection
- Three suspension lugs
- Suspension with cords, wires or hangers, to be provided by others

Ceiling diffusers

Basic information and nomenclature

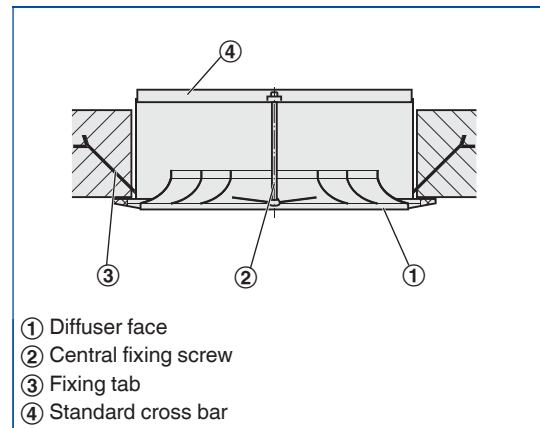
1 Installation without plenum box

Flush ceiling installation with standard cross bar G1, screw-fixed to ceiling



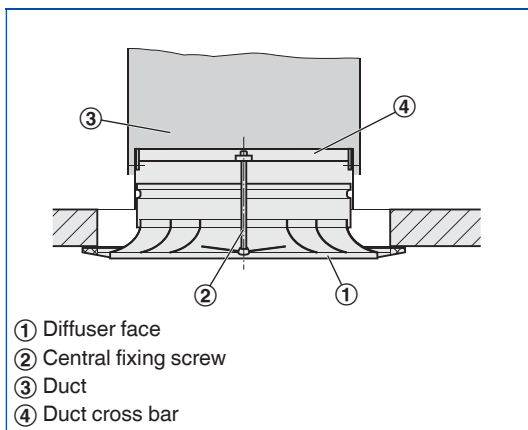
- No spigot
- Fixing of the standard cross bar to the ceiling tile is to be performed by others

Flush ceiling installation with standard cross bar G1, with fixing tabs mortared in



- No spigot
- The standard cross bar has to be mortared into the ceiling by others

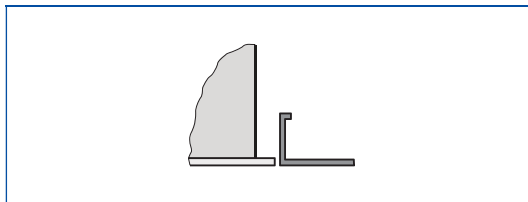
Flush ceiling installation with duct cross bar E1



- Vertical duct connection
- Fixing of the duct cross bar to the duct is to be performed by others

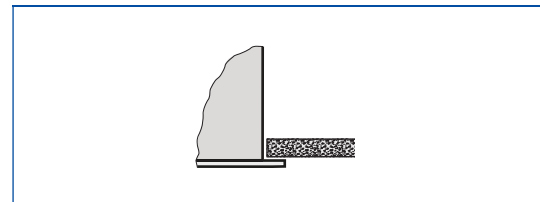
Ceiling systems

Installation into grid ceilings



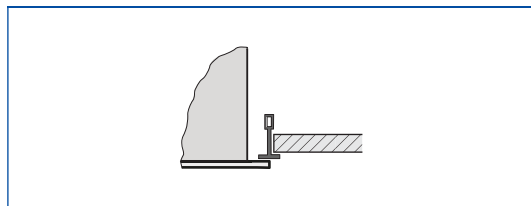
- Fix the plenum box to the ceiling
- The ceiling tile of the grid ceiling is independent of the ceiling diffuser
- Fix the diffuser face after the ceiling has been completed

Installation in continuous ceilings



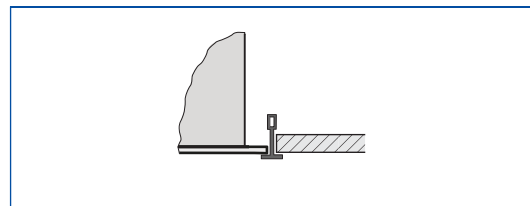
- Fix plenum box (including diffuser face, if necessary) to the ceiling
- Adjust plasterboard ceiling tile as required
- If necessary, fix the diffuser face after the ceiling has been completed

Installation in T-bar ceilings



- Fix the plenum box to the ceiling
- The T-bar ceiling is independent of the ceiling diffuser
- Fix the diffuser face below the T-bars after the ceiling has been completed

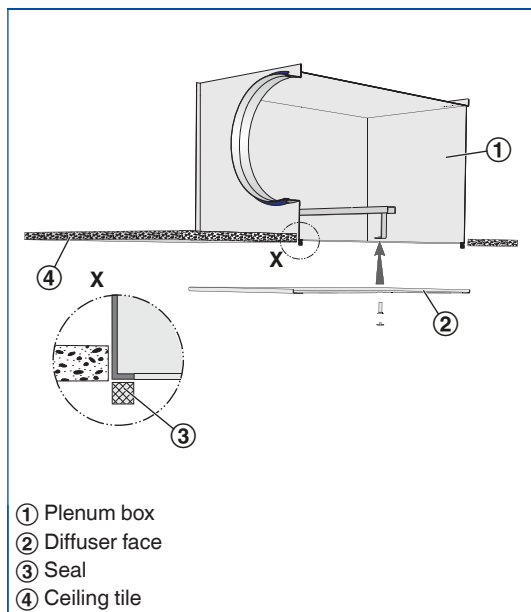
Installation in T-bar ceilings, diffuser face rests on T-bars



- Fix the plenum box to the ceiling, if necessary
- The diffuser rests on the T-bars

Diffuser face sealing and fixing

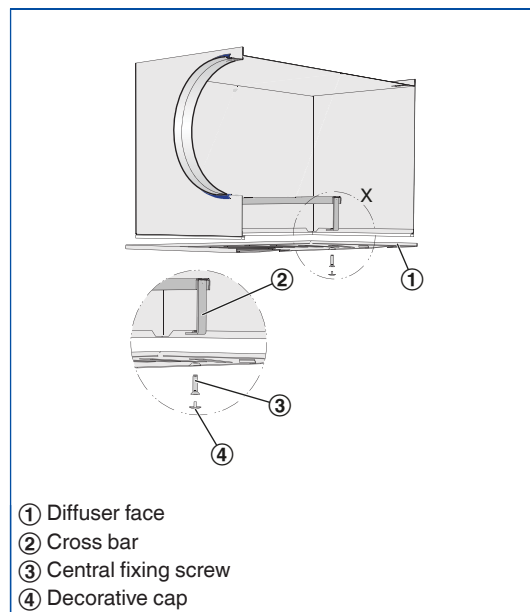
Diffuser face – sealing



- ① Plenum box
- ② Diffuser face
- ③ Seal
- ④ Ceiling tile

- The self-adhesive sealing tape (supplied) has to be applied to the return edges of the plenum box by others

Diffuser face – central screw fixing



- ① Diffuser face
- ② Cross bar
- ③ Central fixing screw
- ④ Decorative cap

- Using the central fixing screw, fix the diffuser face to the cross bar of the plenum box
- Attach the decorative cap

Ceiling diffusers

Basic information and nomenclature

Commissioning

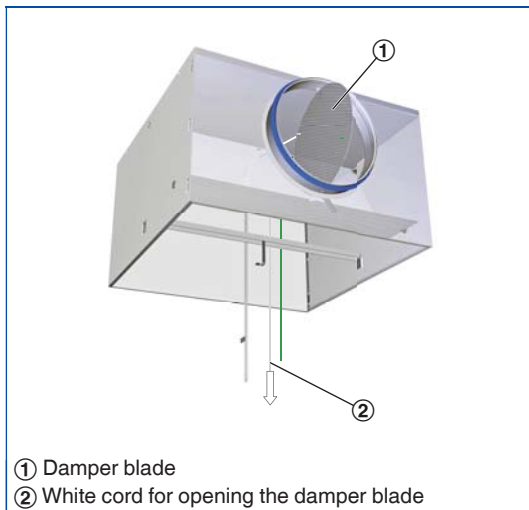
1

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.

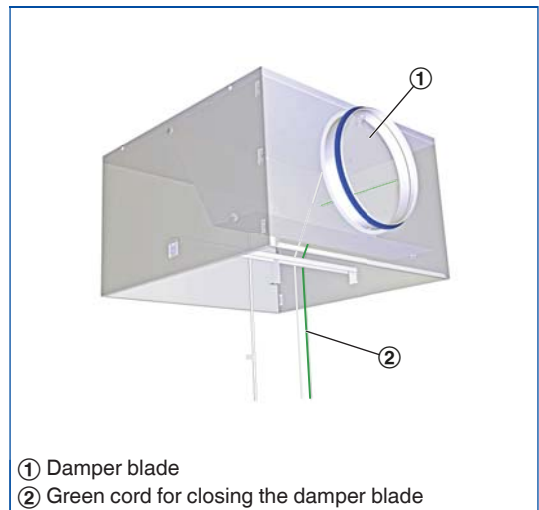
- AIRNAMIC, XARTO, FLEXTRO:
The diffuser face can be removed to access the damper blade; the damper blade can then be set in 15° intervals between 0 and 90°
- Ceiling diffusers with universal plenum box and damper blade (variant -M):
The diffuser face can be removed to access the damper blade; the damper blade can then be set to any position between 0 and 90°
- Ceiling diffusers with universal plenum box, damper blade and pressure tap (variant -MN):
The diffuser face need not be removed since the damper blade can be set with two cords (white and green).

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



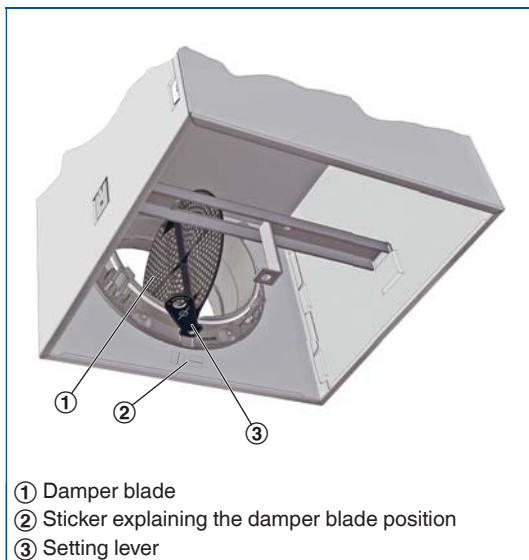
Open, 0°

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



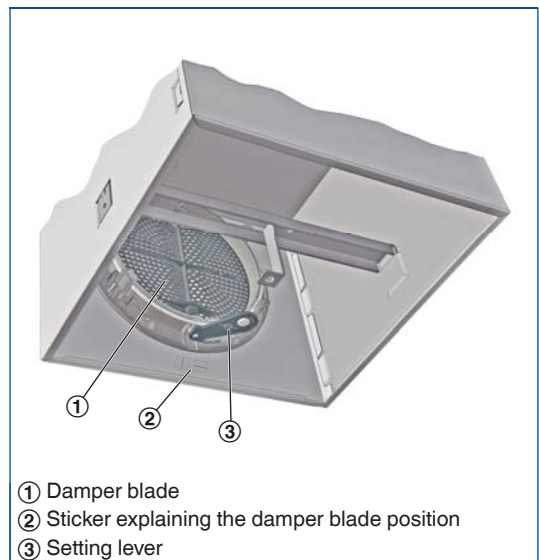
Closed, 90°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Open, 0°

AIRNAMIC, XARTO, FLEXTRO Volume flow rate balancing



Closed, 90°

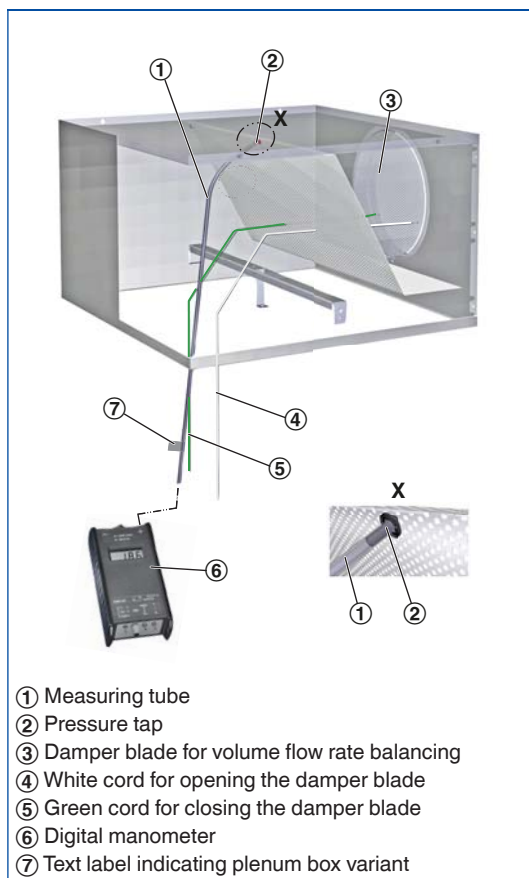
Volume flow rate measurement

Ceiling diffusers with universal plenum box, damper blade and pressure tap (variant -MN) allow for volume flow rate balancing even 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.

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



For K values for the AK-Uni plenum boxes refer to Chapter K1 – 1.5.

Volume flow rate calculation for air density 1.2 kg/m³

$$\dot{V} = C \times \sqrt{\Delta p_w}$$

Volume flow rate calculation for other air densities

$$\dot{V} = C \times \sqrt{\Delta p_w} \times \sqrt{\frac{1.2}{\rho}}$$