

Displacement flow diffusers for installation on a wall

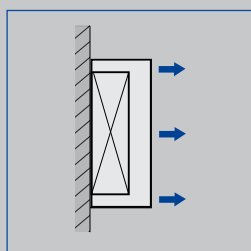
Type QLE



Perforated sheet metal basket



Removable diffuser face



QLE

Rectangular casing, one-way air discharge, for comfort zones

Compact height, space saving displacement flow diffusers

- Nominal widths 1000 – 1500 mm, nominal heights 150 – 750 mm
- Volume flow rate range 15 – 340 l/s or 54 – 1224 m³/h
- Perforated plate, square pitch
- Rectangular duct connection
- Duct connection at the top or bottom
- Equalising element (perforated sheet metal basket)
- Removable diffuser face

Optional equipment and accessories

- Exposed surface in RAL CLASSIC colours

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Application

Application

- Type QLE displacement flow diffusers are used for comfort conditioning applications
- Attractive design element for building owners and architects with demanding aesthetic requirements
- Floor-standing installation on walls, either individually or several units arranged in a row
- Low-velocity airflow, causing only low levels of induction and resulting in low-turbulence displacement ventilation.
- Excellent air quality in the occupied zone
- Draught-free and economical air conditioning also of larger internal spaces with several displacement flow diffusers in a regular arrangement
- For variable and constant volume flows
- For supply air to room air temperature differences from –6 to –1 K

Special characteristics

- One-way air discharge
- Diffuser face hooks onto the casing, hence easy to remove
- Duct connection at the top or bottom

Nominal sizes

- B: 1000, 1250, 1500 mm
- H: 150, 300, 450, 600, 750 mm

Description

Variants

- QLE-O: Spigot at the top
- QLE-U: Spigot at the bottom

Parts and characteristics

- Casing with plinth
- Removable diffuser face made of perforated sheet metal
- Perforated sheet metal basket

Construction features

- Spigot suitable for rectangular ducts

Materials and surfaces

- Casing, diffuser face and perforated sheet metal basket made of galvanised sheet steel
- Casing and diffuser face powder-coated

RAL 9010, pure white

- Casing rear and perforated sheet metal basket dip coated RAL 9005, jet black
- P1: 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

Functional description

Displacement flow diffusers discharge the air from air conditioning systems with a low velocity and near the floor. The low-turbulence airflow creates a pool of fresh air that covers the entire floor area. The convection from people and other heat sources causes the fresh air from the pool to rise and create comfortable conditions in the occupied zone.

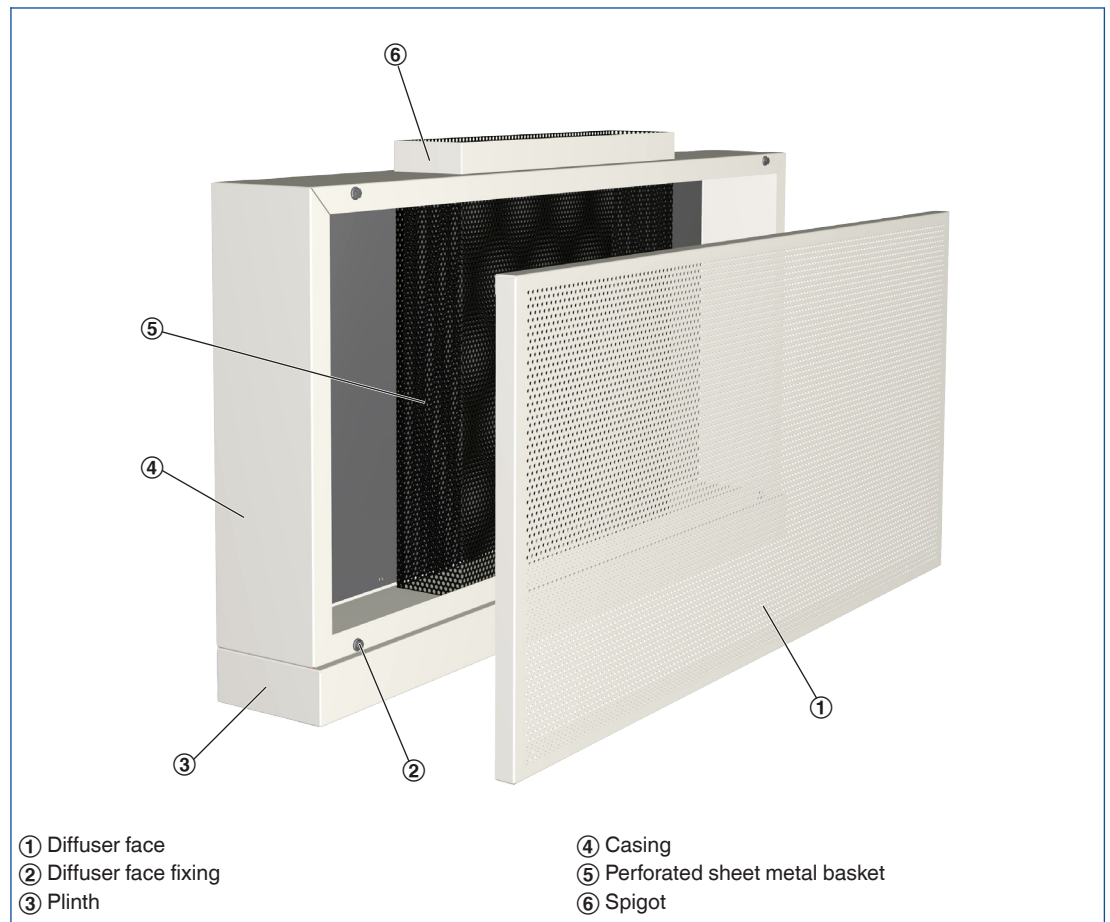
This draught-free and economical type of ventilation is also suitable for large internal spaces, with several regularly arranged units. Displacement ventilation is characterised by low airflow velocities and low turbulence. The air quality in the occupied zone is very high.

Displacement ventilation with air discharge near the floor is suitable only for cooling. The maximum supply air to room air temperature difference is -6 K .

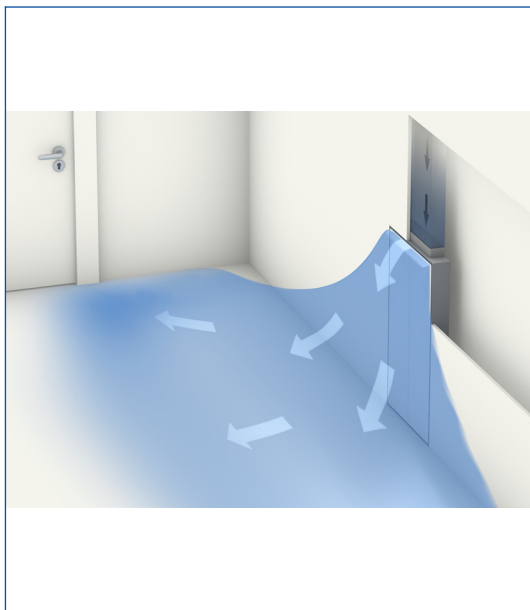
Type QLE displacement flow diffusers are fitted with a perforated sheet metal basket as an equalising element; it distributes the supply air flow equally across the entire diffuser area. The perforated sheet metal diffuser face helps to equalise the airflow further. One-way air discharge.

With displacement ventilation, i.e. air discharge near the floor, extract air units should be installed in the upper part of a room, above the occupied zone.

Schematic illustration of QLE with rectangular spigot at the top

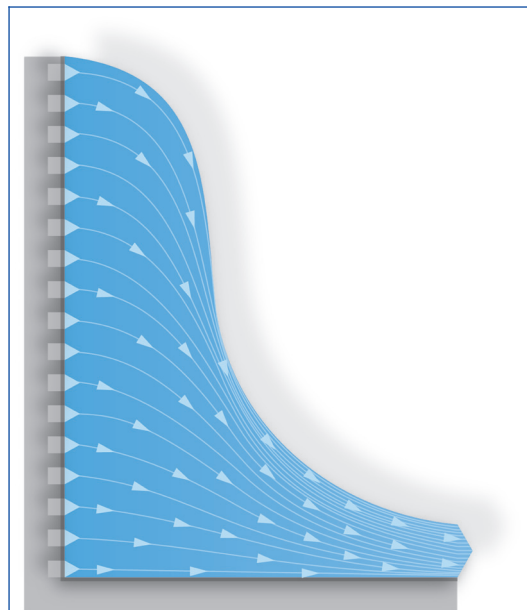


Low-turbulence displacement ventilation
airflow pattern



Three-dimensional representation

Low-turbulence displacement ventilation
airflow pattern



Side view

Nominal sizes (B × H)	1000 × 150 to 1500 × 750 mm
Minimum volume flow rate, at 0.1 m/s	15 – 115 l/s or 54 – 414 m ³ /h
Maximum volume flow rate, at 0.3 m/s	45 – 340 l/s or 162 – 1224 m ³ /h
Supply air to room air temperature difference	–6 to –1 K
Sound power level, at 0.3 m/s	42 dB(A) max.

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

QLE, height 150 – 450, sound power level, total differential pressure and near zone

Nominal size	\dot{V}		v_0 m/s	Δp_t Pa	L_{WA} dB(A)	L_{nz} m
	l/s	m ³ /h				
1000 × 150	15	54	0.10	<3	<15	<
	25	90	0.17	<3	<15	<
	30	108	0.20	<3	<15	<
	45	162	0.30	3	20	<
1250 × 150	20	72	0.11	<3	<15	<
	30	108	0.16	<3	<15	<
	40	144	0.21	<3	16	<
	55	198	0.29	4	26	<
1500 × 150	25	90	0.11	<3	<15	<
	40	144	0.18	<3	16	<
	55	198	0.24	4	26	<
	70	252	0.31	7	33	<
1000 × 300	30	108	0.10	<3	<15	<
	45	162	0.15	<3	<15	<
	70	252	0.23	5	19	<
1250 × 300	40	144	0.11	<3	<15	<
	65	234	0.17	5	17	<
	90	324	0.24	9	27	<
	115	414	0.31	14	35	<
1500 × 300	45	162	0.10	<3	<15	<
	75	270	0.17	6	21	<
	105	378	0.23	12	32	<
	135	486	0.30	20	40	<
1000 × 450	45	162	0.10	<3	<15	<
	75	270	0.17	3	<15	<
	105	378	0.23	5	21	<
	135	486	0.30	9	29	<
1250 × 450	55	198	0.10	<3	<15	<
	95	342	0.17	4	17	<
	135	486	0.24	9	29	<
	170	612	0.30	14	36	<
1500 × 450	70	252	0.10	<3	<15	<
	115	414	0.17	7	23	<
	160	576	0.24	13	34	<
	205	738	0.30	21	42	<

<: 0.2 m/s are not achieved

The near zone values are based on a supply air to room air temperature difference of –3 K

QLE, height 600 – 750, sound power level, total differential pressure and near zone

Nominal size	\dot{V}		v_0 m/s	Δp_t Pa	L_{WA} dB(A)	L_{nz} m
	l/s	m ³ /h				
1000 × 600	60	216	0.10	<3	<15	<
	100	360	0.17	<3	<15	<
	140	504	0.23	4	20	<
	180	648	0.30	7	28	<
1250 × 600	75	270	0.10	<3	<15	<
	125	450	0.17	3	17	<
	175	630	0.23	7	27	<
	225	810	0.30	11	35	<
1500 × 600	90	324	0.10	<3	<15	<
	150	540	0.17	5	22	<
	210	756	0.23	10	33	1.37
	270	972	0.30	16	41	1.84
1000 × 750	75	270	0.10	<3	<15	<
	125	450	0.17	3	<15	1.25
	175	630	0.23	5	21	1.88
	225	810	0.30	9	29	2.57
1250 × 750	95	342	0.10	<3	<15	0.65
	155	558	0.17	4	17	1.15
	220	792	0.23	8	28	1.71
	280	1008	0.30	14	35	2.26
1500 × 750	115	414	0.10	<3	<15	0.64
	190	684	0.17	6	23	1.09
	265	954	0.24	12	33	1.56
	340	1224	0.30	20	41	2.04

<: 0.2 m/s are not achieved

The near zone values are based on a supply air to room air temperature difference of –3 K

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

Displacement flow diffusers for air discharge near the floor, suitable for comfort zones with special demands on architecture and design.

With one-way air discharge for low-turbulence displacement ventilation. Rectangular casing for installation on a wall.

Ready-to-install component which consists of a casing with spigot at the top or bottom, a perforated sheet metal basket as an equalising element, and a perforated sheet metal diffuser face.

Spigot suitable for rectangular ducts.

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

Special characteristics

- One-way air discharge
- Diffuser face hooks onto the casing, hence easy to remove
- Duct connection at the top or bottom

Materials and surfaces

- Casing, diffuser face and perforated sheet metal basket made of galvanised sheet steel
- Casing and diffuser face powder-coated

RAL 9010, pure white

- Casing rear and perforated sheet metal basket dip coated RAL 9005, jet black
- P1: Powder-coated, RAL CLASSIC colour

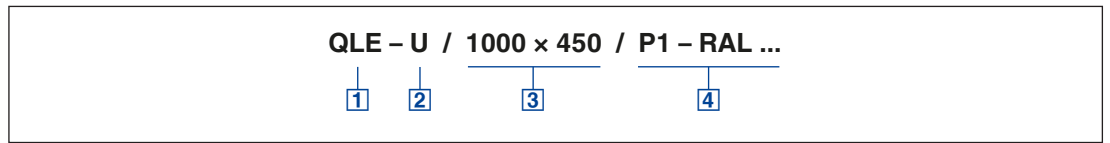
Technical data

- Nominal sizes (B × H):
1000 × 150 – 1500 × 750 mm
- Minimum volume flow rate, at 0.1 m/s:
15 – 115 l/s or 54 – 414 m³/h
- Maximum volume flow rate, at 0.3 m/s:
45 – 340 l/s or 162 – 1224 m³/h
- Supply air to room air temperature difference:
–6 to –1 K
- Sound power level, at 0.3 m/s: 42 dB(A) max.

Sizing data

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

QLE



1 Type

QLE Displacement flow diffuser

2 Connection

Rectangular spigot

O Top

U Bottom

3 Nominal size [mm]

B × H

Nominal width B

1000

1250

1500

Nominal height H

150

300

450

600

750

All sizes can be combined

Order example: QLE-U/1250×300/P1-RAL 9016

Connection

Rectangular spigot at the bottom

Nominal size

1250 × 300 mm

Exposed surface

RAL 9016, traffic white, gloss level 70 %

4 Exposed surface

No entry: powder-coated

RAL 9010, pure white

P1 Powder-coated, specify RAL CLASSIC colour

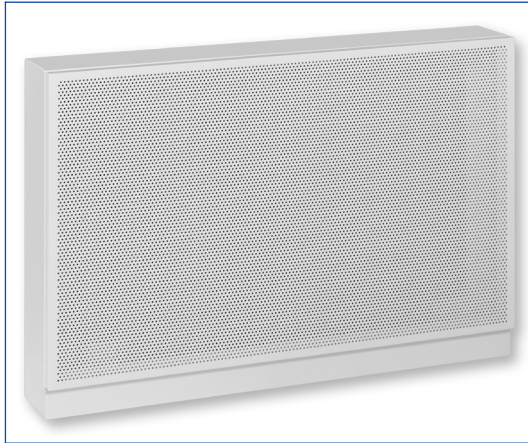
Gloss level

RAL 9010 50 %

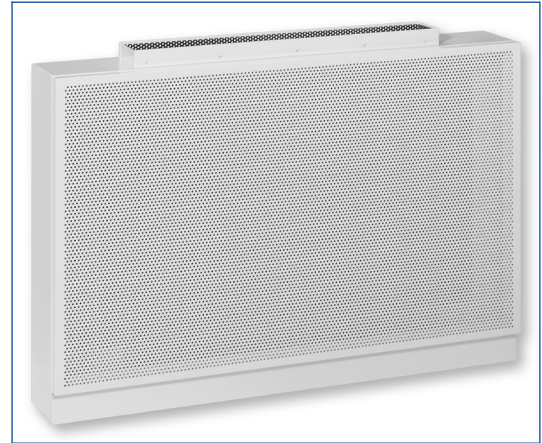
RAL 9006 30 %

All other RAL colours 70 %

QLE-U

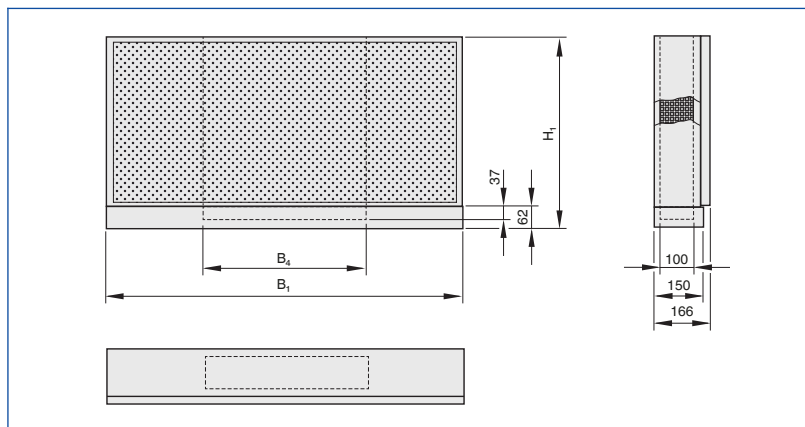


QLE-O

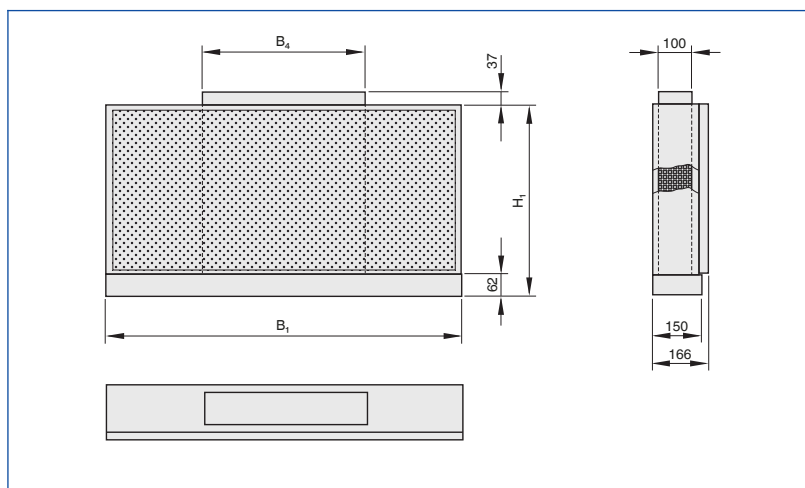


The nominal size (nominal width × nominal height) is equal to the discharge opening.

QLE-U



QLE-O



QLE

Nominal size	B ₁ mm	H ₁ mm	B ₄ mm	m kg
1000×150	1060	272	350	10
1250×150	1310	272	350	12
1500×150	1560	272	350	14
1000×300	1060	422	350	13
1250×300	1310	422	350	15
1500×300	1560	422	350	17
1000×450	1060	572	485	16
1250×450	1310	572	485	19
1500×450	1560	572	485	22
1000×600	1060	722	700	21
1250×600	1310	722	700	24
1500×600	1560	722	700	27
1000×750	1060	872	770	24
1250×750	1310	872	770	28
1500×750	1560	872	770	32



Installation and commissioning

- With displacement ventilation and air discharge near the floor, extract air devices should be installed in the upper part of a room, above the occupied zone.

Principal dimensions

 B_1 [mm]

Width of diffuser face

 B_4 [mm]

Width of a rectangular spigot

 $\varnothing D$ [mm]

Outer diameter of the spigot

 $\varnothing D_1$ [mm]

Casing diameter

 H_1 [mm]

Height of diffuser face

 T_1 [mm]

Casing depth

 T_4 [mm]

Depth of a rectangular spigot

 m [kg]

Weight

Nomenclature

 L_{WA} [dB(A)]

A-weighted sound power level of air-regenerated noise

 \dot{V} [m^3/h] and [l/s]

Volume flow rate

 v_0 [m/s]

Theoretical airflow velocity across the diffuser area, at a distance of 0 m from the diffuser face

 L_{nz} [m]

Near zone of the displacement flow diffuser, where the comfort criteria may not be achieved
The near zone is at least 0.5 m, independent of

the airflow velocity

At distance L_{nz} the airflow velocity is 0.2 m/s max., measured 0.1 m above the floor

 Δt_z [K]

Supply air to room air temperature difference, i.e. supply air temperature minus room temperature

 Δp_t [Pa]

Total differential pressure

 A_{eff} [m^2]

Effective air discharge area

All sound power levels are based on 1 pW.