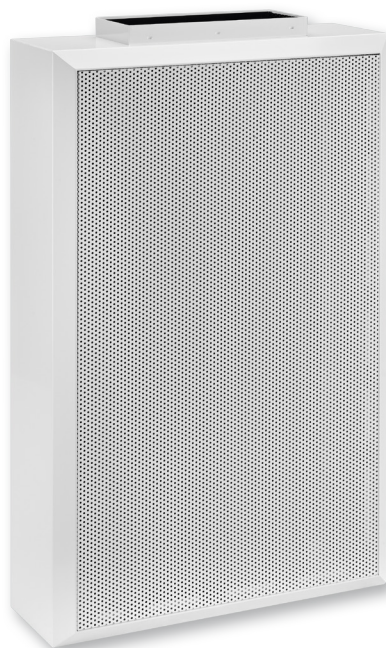


Displacement flow diffusers for installation on a wall

Type QLF



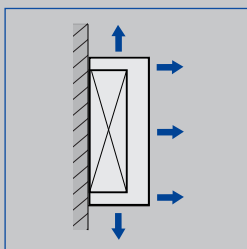
Rectangular casing, one-way or three-way air discharge, for industrial and comfort zones

Slender, space saving displacement flow diffusers in an unusual design with chamfered front edges

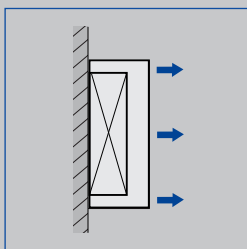
- Nominal widths 300 – 1250 mm, nominal heights 450 – 2000 mm
- Volume flow rate range 15 – 865 l/s or 54 – 3114 m³/h
- Perforated plate, square pitch
- Rectangular duct connection
- Duct connection at the top or bottom
- Equalising element (perforated sheet metal basket)

Optional equipment and accessories

- Exposed surface in RAL CLASSIC colours
- Fixing material



QLF-3



QLF-1

Type		Page
QLF	General information	QLF – 2
	Function	QLF – 3
	Technical data	QLF – 5
	Quick sizing	QLF – 6
	Specification text	QLF – 10
	Order code	QLF – 11
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	Dimensions and weight	QLF – 13
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Application

Application

- Type QLF displacement flow diffusers are used as supply air units for industrial and comfort zones
- 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 ventilation and air conditioning also of larger internal spaces

such as shop floors or auditoriums, 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 or three-way air discharge
- Duct connection at the top or bottom

Nominal sizes

- B: 300, 450, 600, 750, 1000, 1250 mm
- H: 450, 600, 750, 1000, 1250, 1500, 1750, 2000 mm

Description

Variants

- QLE-F: Spigot at the top
- QLF-U: Spigot at the bottom
- QLF-*-1: One-way air discharge
- QLF-*-3: Three-way air discharge

Parts and characteristics

- Casing
- Front frame with inserted perforated plate
- Perforated sheet metal basket
- Side parts with optional perforated sheet metal inserts for three-way air discharge

Useful additions

- Fixing brackets and screws

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, such as auditoriums or shop floors, with several regularly arranged units.

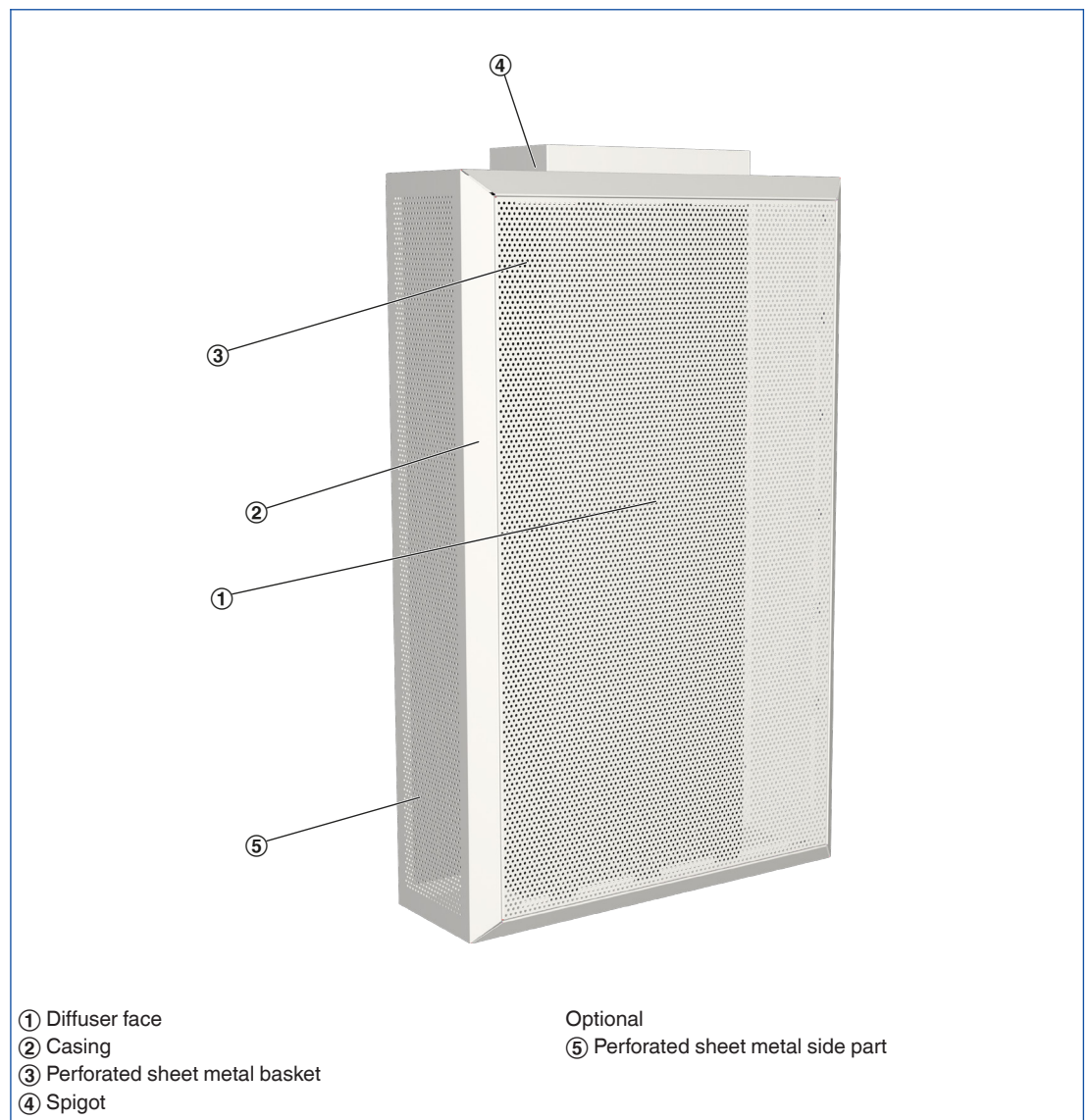
Displacement ventilation is characterised by low airflow velocities and low turbulence. The air quality in the occupied zone is very high.

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.

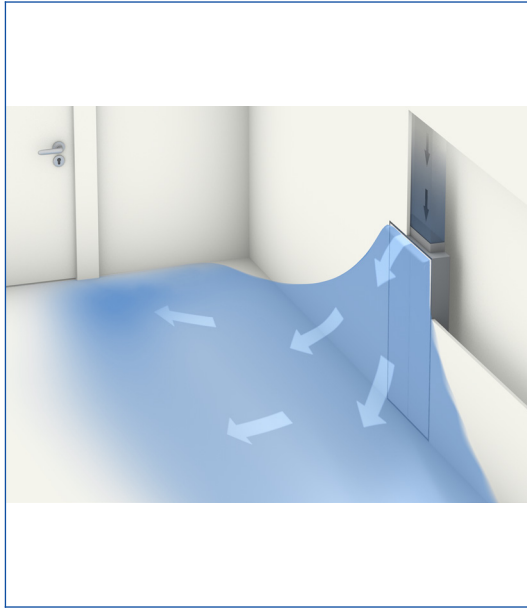
Type QLF displacement flow diffusers are fitted with a perforated sheet metal basket as an equalising element; it distributes the supply air flow equally across the entire diffuser area. The perforated sheet metal diffuser face helps to equalise the airflow further. One-way or three-way air discharge.

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 QLF with rectangular spigot at the top

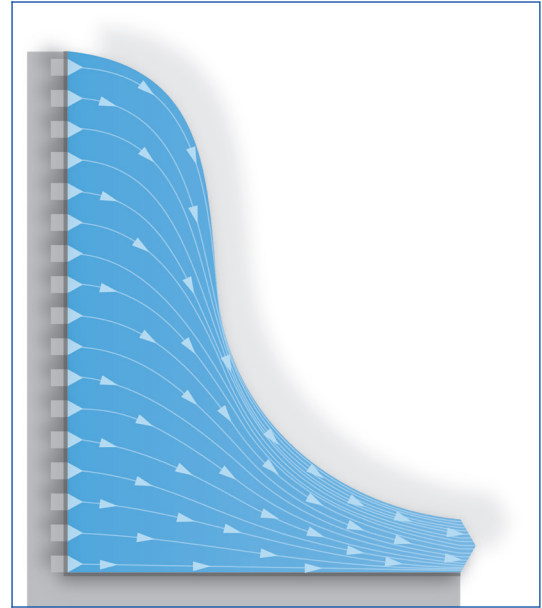


Low-turbulence displacement ventilation
airflow pattern



Three-dimensional representation

Low-turbulence displacement ventilation
airflow pattern



Side view

Nominal sizes (B × H)	300 × 450 to 1250 × 2000 mm
Minimum volume flow rate, at 0.1 m/s	15 – 355 l/s or 54 – 1278 m ³ /h
Maximum volume flow rate, at 0.3 m/s	40 – 865 l/s or 144 – 3114 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.

QLF*-1, height 450 – 1000, 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				
300 x 450	15	54	0.11	<3	<15	<
	25	90	0.19	4	<15	<
	35	126	0.26	9	<15	<
	40	144	0.30	11	<15	<
450 x 450	20	72	0.10	<3	<15	<
	35	126	0.17	3	<15	<
	40	144	0.20	3	<15	<
	60	216	0.30	8	<15	<
300 x 600	20	72	0.11	3	<15	<
	30	108	0.17	6	<15	<
	40	144	0.22	11	<15	<
	55	198	0.31	20	15	<
450 x 600	30	108	0.11	<3	<15	<
	45	162	0.17	4	<15	<
	65	234	0.24	8	<15	<
	80	288	0.30	12	<15	<
600 x 600	35	126	0.10	<3	<15	<
	60	216	0.17	<3	<15	<
	90	324	0.25	3	<15	<
	110	396	0.31	5	<15	<
450 x 750	35	126	0.10	<3	<15	<
	60	216	0.18	6	<15	<
	80	288	0.24	12	<15	<
	100	360	0.30	18	19	3.33
600 x 750	45	162	0.10	<3	<15	<
	75	270	0.17	<3	<15	<
	105	378	0.23	4	<15	2.23
	135	486	0.30	7	<15	3.14
750 x 750	55	198	0.10	<3	<15	<
	90	324	0.16	<3	<15	1.28
	135	486	0.24	<3	<15	2.17
	170	612	0.30	4	<15	2.93
600 x 1000	60	216	0.10	<3	<15	0.91
	100	360	0.17	3	<15	1.76
	140	504	0.23	7	<15	2.71
	180	648	0.30	11	<15	3.76
750 x 1000	75	270	0.10	<3	<15	0.89
	125	450	0.17	<3	<15	1.67
	175	630	0.23	4	<15	2.53
	225	810	0.30	6	<15	3.45

<: 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

QLF*-1, height 1250 – 2000, 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				
600 × 1250	75	270	0.10	<3	<15	1.12
	125	450	0.17	5	<15	2.10
	175	630	0.23	10	<15	3.18
	225	810	0.30	16	21	4.33
750 × 1250	95	342	0.10	<3	<15	1.13
	140	504	0.15	<3	<15	1.77
	220	792	0.23	5	<15	2.98
	285	1026	0.30	9	<15	4.01
750 × 1500	110	396	0.10	<3	<15	1.34
	185	666	0.16	3	<15	2.33
	260	936	0.23	7	<15	3.36
	340	1224	0.30	12	17	4.48
1000 × 1500	145	522	0.10	<3	<15	1.36
	250	900	0.17	3	<15	2.24
	360	1296	0.24	6	<15	3.14
	455	1638	0.30	10	18	3.90
750 × 1750	125	450	0.10	<3	<15	1.58
	215	774	0.16	5	<15	2.72
	305	1098	0.23	9	<15	3.85
	400	1440	0.30	16	22	5.04
1000 × 1750	170	612	0.10	<3	<15	1.72
	295	1062	0.17	4	<15	2.70
	415	1494	0.24	7	<15	3.58
	530	1908	0.30	12	23	4.38
1250 × 1750	210	756	0.10	<3	<15	1.85
	360	1296	0.16	4	<15	2.64
	510	1836	0.23	7	17	3.33
	665	2394	0.30	13	26	3.97
1000 × 2000	190	684	0.10	<3	<15	2.13
	330	1188	0.17	5	<15	3.19
	470	1692	0.24	9	18	4.13
	605	2178	0.30	15	27	4.96
1250 × 2000	240	864	0.10	<3	<15	2.45
	415	1494	0.17	5	<15	3.32
	590	2124	0.24	10	21	4.04
	760	2736	0.30	16	31	4.65

<: 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

QLF-*-3, height 450 – 1000, 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				
300 × 450	25	90	0.10	4	<15	<
	35	126	0.14	9	<15	<
	50	180	0.20	18	26	<
	65	234	0.26	30	36	<
450 × 450	35	126	0.11	3	<15	<
	50	180	0.16	5	<15	<
	65	234	0.21	9	<15	<
	80	288	0.25	14	22	<
300 × 600	35	126	0.11	8	<15	<
	50	180	0.15	17	26	<
	65	234	0.20	28	35	<
	85	306	0.26	48	45	<
450 × 600	40	144	0.10	3	<15	<
	65	234	0.15	8	<15	<
	85	306	0.20	14	23	<
	105	378	0.25	21	31	<
600 × 600	55	198	0.10	<3	<15	<
	80	288	0.15	3	<15	<
	110	396	0.20	5	<15	<
	135	486	0.25	7	<15	<
450 × 750	50	180	0.10	4	<15	<
	80	288	0.15	12	20	<
	105	378	0.20	20	30	1.75
	130	468	0.25	30	38	2.33
600 × 750	70	252	0.10	<3	<15	<
	100	360	0.15	4	<15	1.09
	135	486	0.20	7	<15	1.59
	170	612	0.25	11	22	2.13
750 × 750	80	288	0.10	<3	<15	<
	120	432	0.15	<3	<15	1.09
	160	576	0.20	3	<15	1.54
	200	720	0.25	5	<15	2.02
600 × 1000	90	324	0.10	3	<15	0.86
	135	486	0.15	6	<15	1.37
	185	666	0.20	11	24	1.97
	230	828	0.25	18	32	2.54
750 × 1000	105	378	0.10	<3	<15	0.85
	160	576	0.15	3	<15	1.35
	215	774	0.20	5	<15	1.86
	265	954	0.25	8	18	2.34

<: 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

QLF-*-3, height 1250 – 2000, 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				
600 × 1250	115	414	0.10	4	<15	1.12
	175	630	0.15	10	21	1.74
	230	828	0.20	16	31	2.33
	290	1044	0.25	26	40	2.98
750 × 1250	140	504	0.10	<3	<15	1.17
	200	720	0.15	4	<15	1.66
	265	954	0.20	8	16	2.19
	340	1224	0.25	13	25	2.80
750 × 1500	160	576	0.10	3	<15	1.41
	240	864	0.15	6	<15	2.02
	320	1152	0.20	10	22	2.61
	400	1440	0.25	16	31	3.17
1000 × 1500	215	774	0.10	<3	<15	1.50
	335	1206	0.15	5	15	2.02
	440	1584	0.20	9	25	2.43
	550	1980	0.25	14	33	2.82
750 × 1750	185	666	0.10	3	<15	1.78
	280	1008	0.15	8	17	2.46
	375	1350	0.20	14	28	3.09
	475	1710	0.25	22	36	3.72
1000 × 1750	250	900	0.10	3	<15	2.04
	390	1404	0.15	7	20	2.60
	515	1854	0.20	12	30	3.03
	640	2304	0.25	18	38	3.41
1250 × 1750	310	1116	0.10	3	<15	2.37
	455	1638	0.15	6	20	2.77
	605	2178	0.20	10	30	3.11
	750	2700	0.25	16	38	3.40
1000 × 2000	280	1008	0.10	3	<15	2.81
	445	1602	0.15	8	24	3.43
	590	2124	0.20	15	34	3.87
	735	2646	0.25	23	42	4.25
1250 × 2000	355	1278	0.10	3	<15	3.56
	525	1890	0.15	8	24	3.98
	695	2502	0.20	13	34	4.32
	865	3114	0.25	21	42	4.60

<: 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 and industrial zones with special demands on architecture and design. With one-way or three-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 or three-way air discharge
- 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):
300 × 450 – 1250 × 2000 mm
- Minimum volume flow rate, at 0.1 m/s:
15 – 355 l/s or 54 – 1278 m³/h
- Maximum volume flow rate, at 0.3 m/s:
40 – 865 l/s or 144 – 3114 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

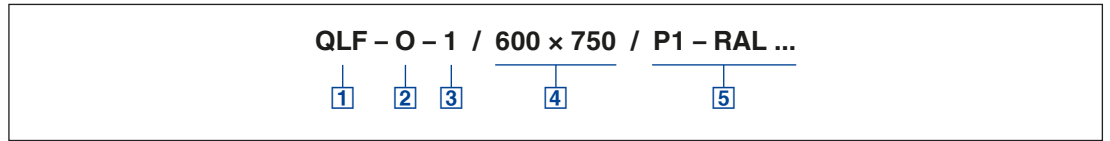
- \dot{V} _____
[m³/h]

- Δp_t _____
[Pa]

Air-regenerated noise

- L_{WA} _____
[dB(A)]

QLF



1 Type

QLF Displacement flow diffuser

2 Connection

Rectangular spigot

O Top

U Bottom

3 Air discharge

1 One-way

3 Three-way

4 Nominal size [mm]

B × H

Order example: QLF-O-3/450×750/P1-RAL 9016

Connection	Rectangular spigot at the top
Air discharge	Three-way
Nominal size	450 × 750 mm
Exposed surface	RAL 9016, traffic white, gloss level 70 %

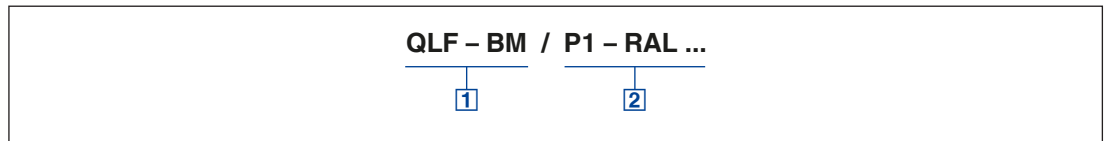
5 Exposed surface

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 %

QLF-BM



1 Type

QLF-BM Fixing material for Type QLF displacement flow diffusers

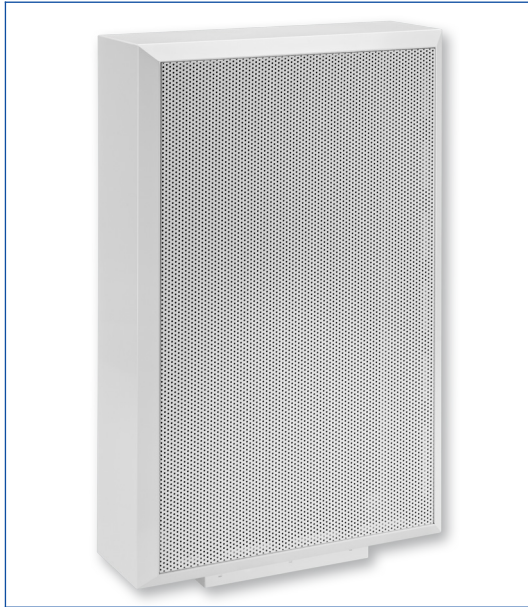
2 Oberfläche

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 %

QLF-U-1

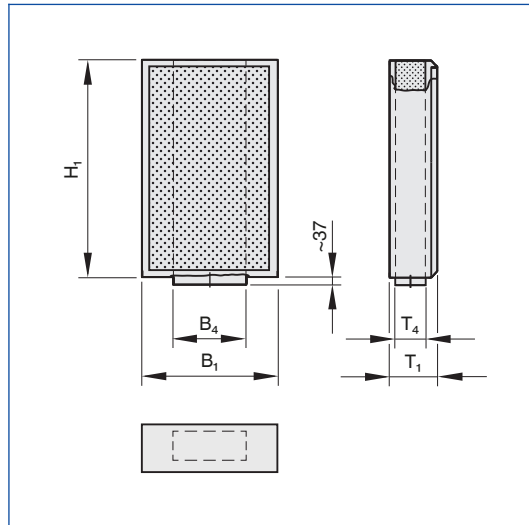


QLF-O-3

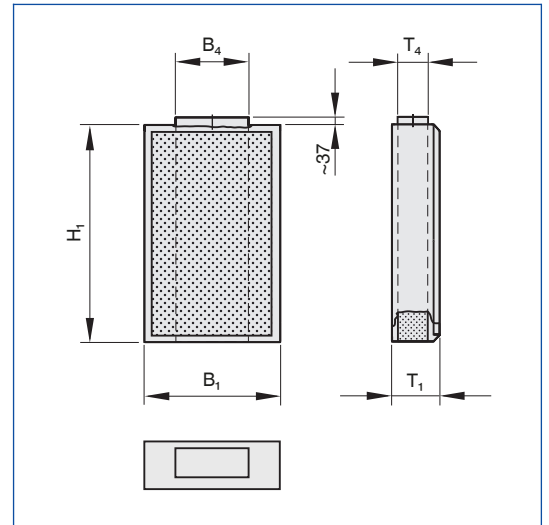


The nominal size (nominal width x nominal height) is equal to the discharge opening.

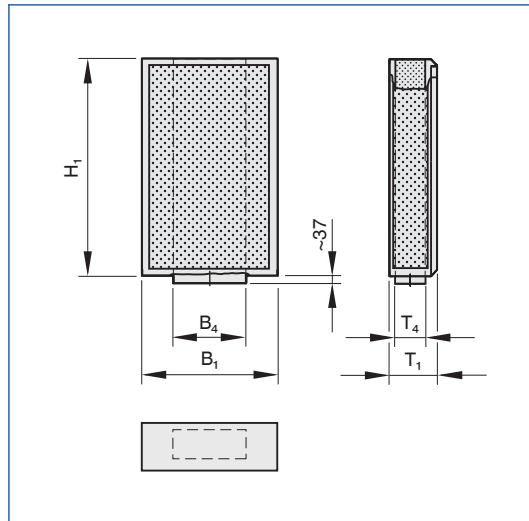
QLF-U-1



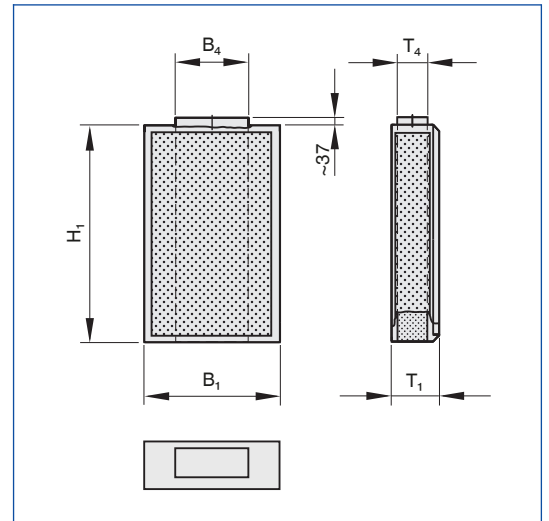
QLF-O-1



QLF-U-3



QLF-O-3



QLF

Nominal size	B ₁	H ₁	T ₁	B ₄	T ₄	m
	mm	mm	mm	mm	mm	kg
300x450	370	520	185	160	80	9
450x450	520	520	185	300	80	11
300x600	370	670	185	160	80	10
450x600	520	670	185	300	80	14
600x600	670	670	235	360	150	17
450x750	520	820	185	300	80	16
600x750	670	820	235	360	150	18
750x750	820	820	235	625	150	25
600x1000	670	1070	235	360	150	20
750x1000	820	1070	235	625	150	31
600x1250	670	1320	235	360	150	25
750x1250	820	1320	235	625	150	37
750x1500	820	1570	235	625	150	43
1000x1500	1070	1570	287	715	200	54
750x1750	820	1820	235	625	150	49
1000x1750	1070	1820	287	715	200	62
1250x1750	1320	1820	287	890	200	72
1000x2000	1070	2070	287	715	200	69
1250x2000	1320	2070	287	890	200	81

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.