

Technical Documentation

Floor-mounted linear diffusers type LDU



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Floor-mounted linear diffusers type LDU

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Notes

Dimensions stated in this brochure are in mm.

Dimensions stated in this brochure are subject to General Tolerances according to DIN ISO 2768-vL.

Straightness and twist tolerances for extruded aluminum profiles according to DIN EN 12020-2.

Length tolerance: $\leq 1,5 \text{ m} \pm 1,5 \text{ mm};$
 $\geq 1,5 \text{ m} \pm 2,0 \text{ mm}.$

The surface finishes meet standard indoor use requirements, i.e. room climate requirements according to DIN EN ISO 7730. Other finishes meeting special use requirements are available on request.

You will find the actual tender documentations at the end of this document.

They are available in word format at your local dealership or at www.LTG-AG.de.

Floor-mounted linear diffusers type LDU

Views of unit



Floor-mounted linear diffuser type LDU 30/1/8 with lateral air connection



Floor-mounted linear diffuser type LDU 30/1/U with air connection from below



Floor-mounted linear diffuser type LDU 30/1/- for pressurized floors

Application

The floor-mounted linear diffuser type LDU has been designed to condition office and conference rooms as well as entrance halls. It complements passive cooling by structural components in the floor and provides basic ventilation for faster temperature regulation.

It is ideal for all-air heating and may be combined with static heating surfaces to save space.

Installation, positioning

Installation along the facade, integrated in the screed of a floor cavity or in a false floor.



Floor-mounted linear diffuser type LDU 30/1/..., installed

Advantages

- High thermal and acoustic comfort
- Compact design
- Output reserves in flow rate/temperature reduction
- Mechanically solid, non-combustible version
- Subtle integration in the floor
- Low maintenance costs and cleaning times thanks to removable air diffuser

Specification

| | |
|--|---|
| Slot rows | 1 row, 2 rows (lateral air connection) |
| Components visible from inside the room | Powder coated similar to RAL, silky gloss |
| Air distribution box | Galvanized sheet steel |
| Air connection/ accessories | Seitlich, von unten (nur 1-reihig), andere Anschlüsse auf Anfrage. A polystyrene casting core is supplied detached. Air connection from below: with additional integrated height adjustable steel feet, seal for the supply air tube, and two clamping claws. |
| Diffuser length [mm] | 800, 1000, other lengths on request |
| Air connection [mm] | Ø 79 (1 row, lateral), Ø 99 (2 rows, lateral), other dimensions see pages 5 and 6 |

Floor-mounted linear diffusers type LDU

Functionality

The floor-mounted linear diffusers type LDU provide high-induction mixing of the supply air with individual jets parallel to the facade.

By providing rapid reduction of air speed and temperature differential, its field of application is larger than that of known swirl and displacement air diffusers.

Indoor air flow, thermal comfort

Air guidance, by plenum boxes either in the floor cavity with lateral connection, through the floor/slab, or from a pressurized floor.

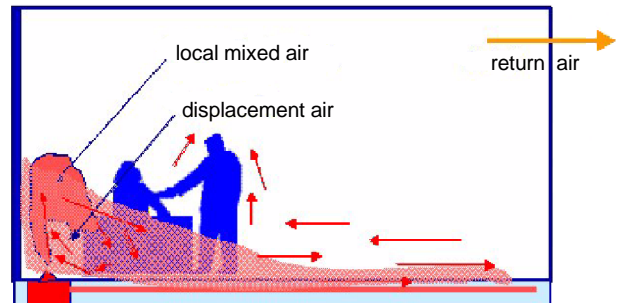
With unimpeded jet propagation in front of the facade, the occupied zone, as determined by EN 13779, may be exceeded without affecting comfort.

Supply air is rapidly mixed over the diffuser and the resulting flow, in the cooling mode, travels through the occupied zone as a low-impulse displacement flow at low speed. In the heating mode or near heating sources, air is directed towards the ceiling.

Unlike typical displacement air flow, vertical temperature gradients in the occupied zone are below EN 13779 limits.

Due to combined mixed air/displacement air ventilation, the indoor air flow and, thus, thermal comfort in the occupied zone remain virtually unaffected by moderate supply air variations and supply air temperature.

Flow pattern with mixed air/displacement air allowing low temperatures up to -9 K.



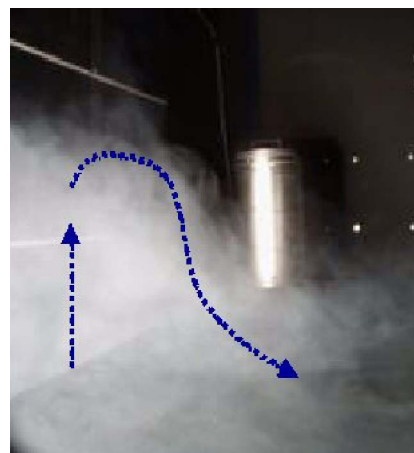
Picture 1a: Visualization of indoor air flow, start, 70 m³/h and -4 K



Picture 1b: Progression of jet development, 70 m³/h and -4 K



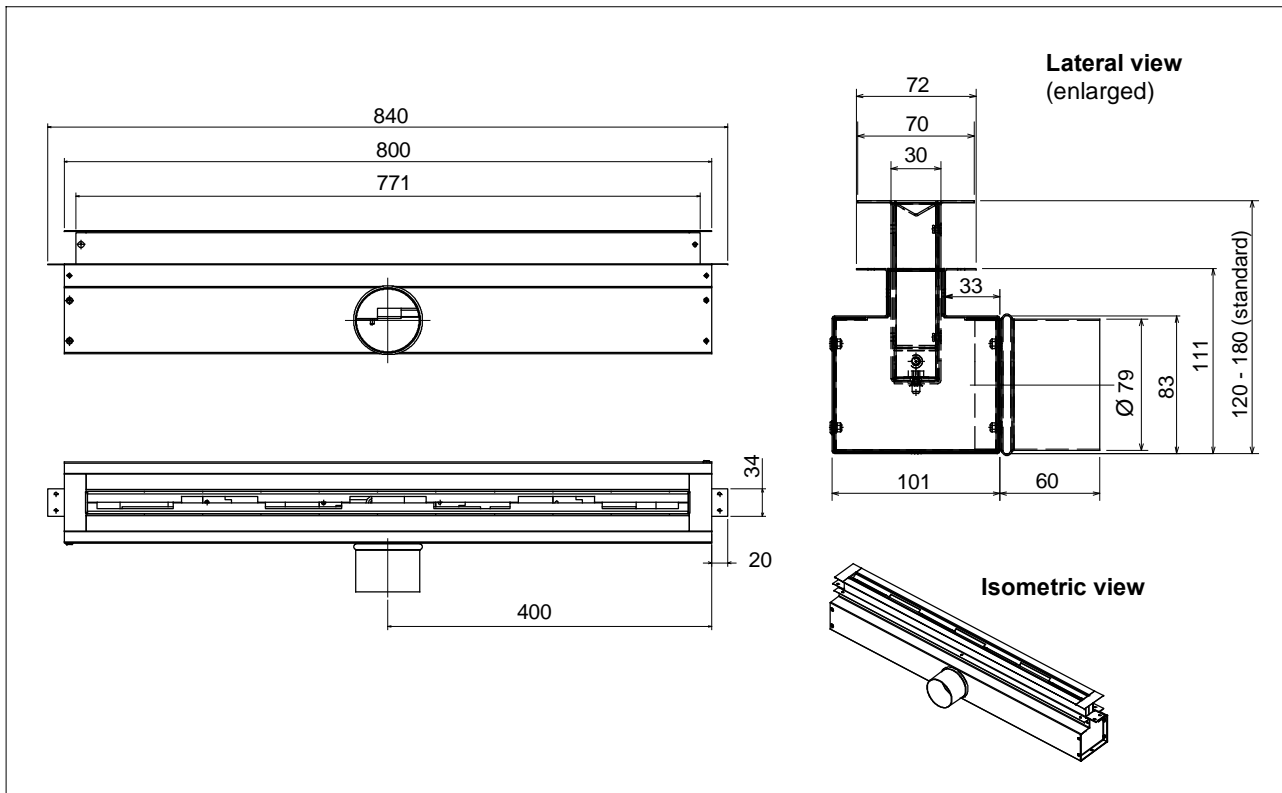
Picture 2: Visualization of indoor air flow, 45 m³/h and -6 K



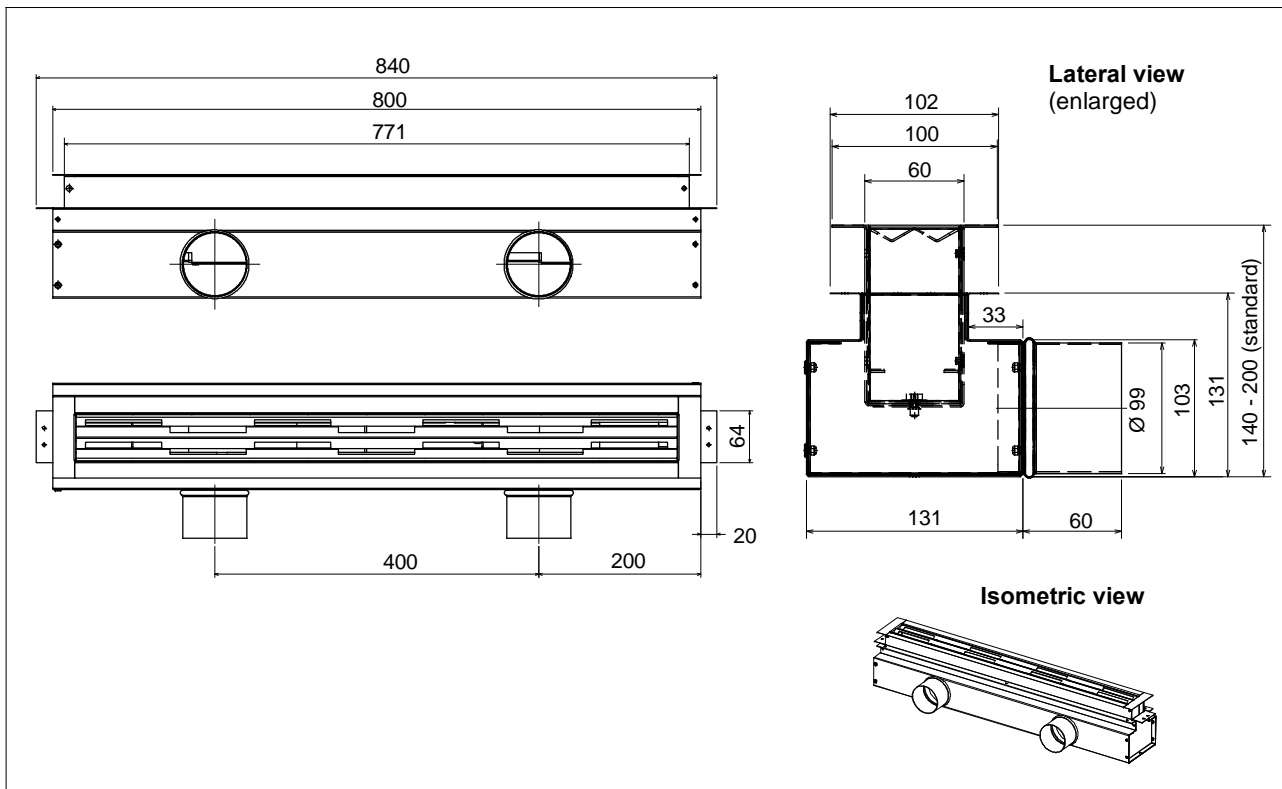
Picture 3: Visualization of indoor air flow, situation with a desk at 20 cm distance to diffuser, 45 m³/h and -7 K, desk distance 0,2 m, foot area closed

Floor-mounted linear diffusers type LDU

Dimensions type LDU 30/1/S (1 slot), lateral connection

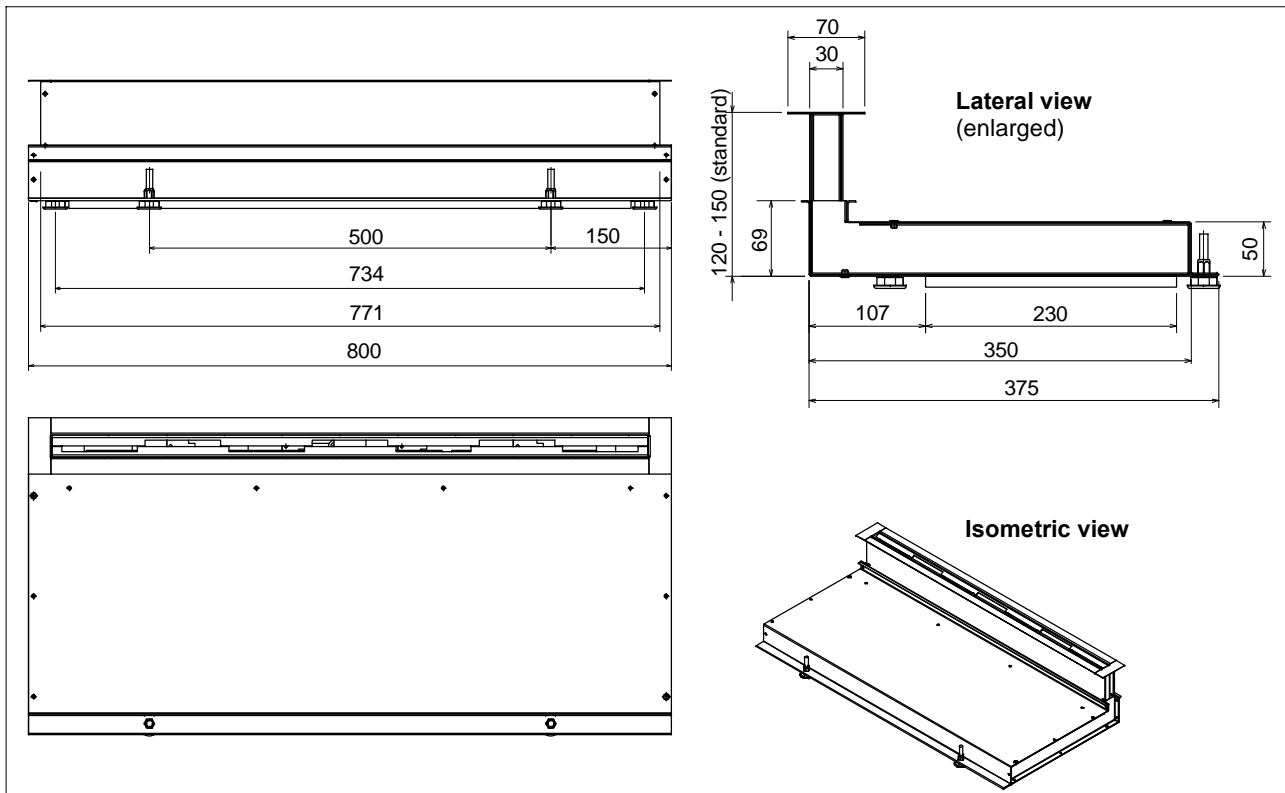


Dimensions type LDU 30/2/S (2 slots), lateral connection

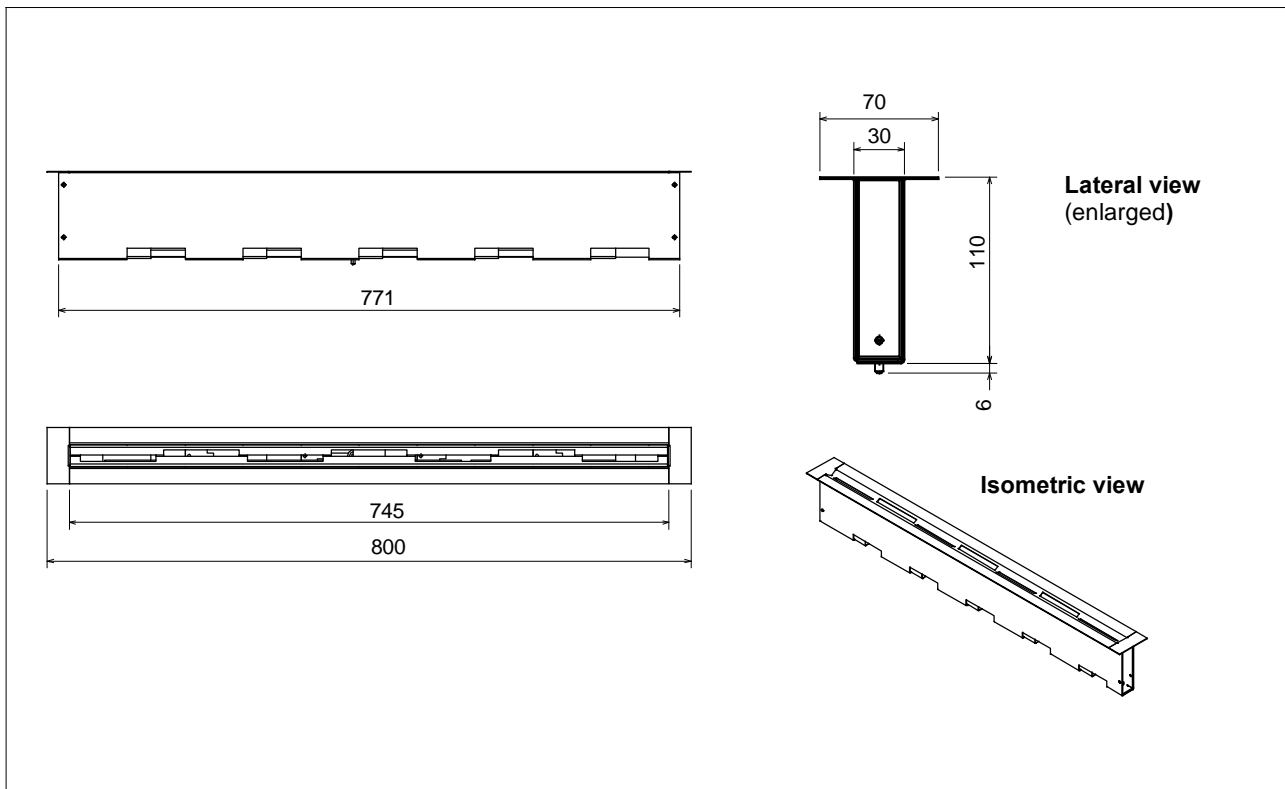


Floor-mounted linear diffusers type LDU

Dimensions type LDU30/1/U (1 slot), air connection from below



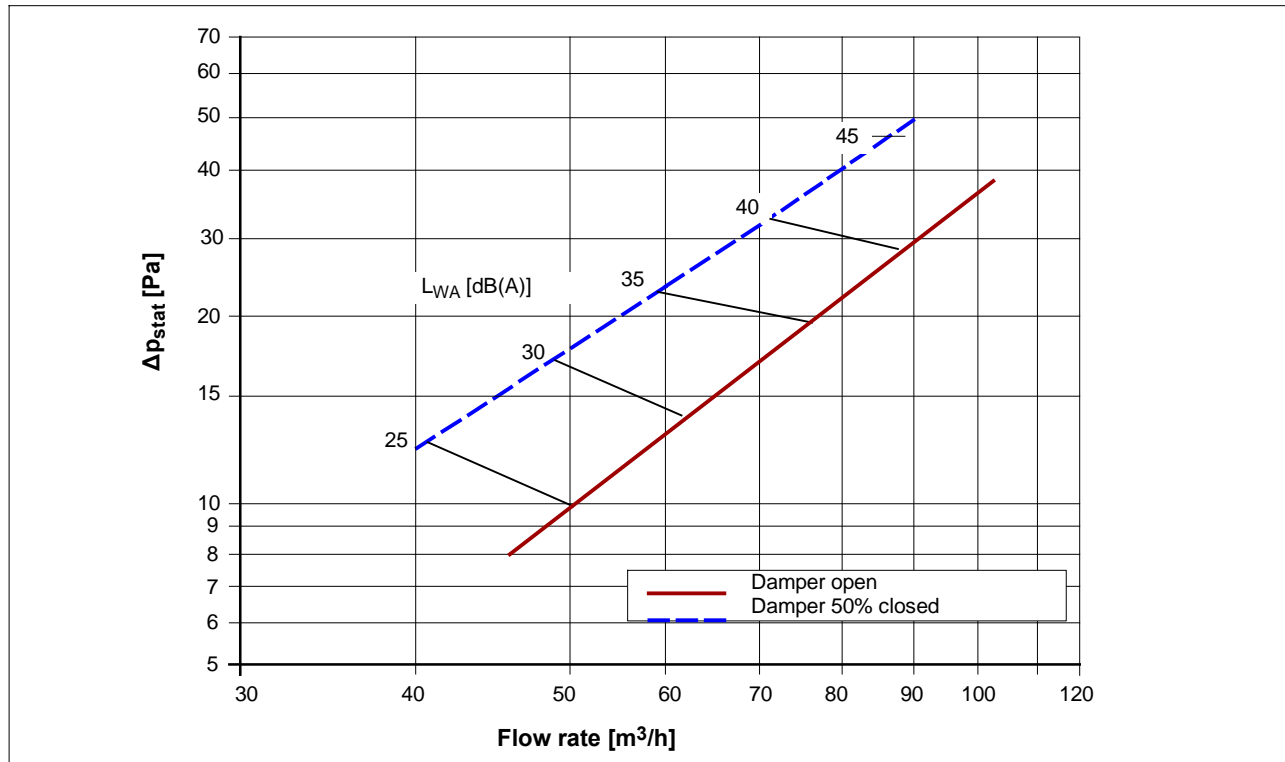
Dimensions type LDU30/1/- (1 slot), for pressurized floors



Floor-mounted linear diffusers type LDU

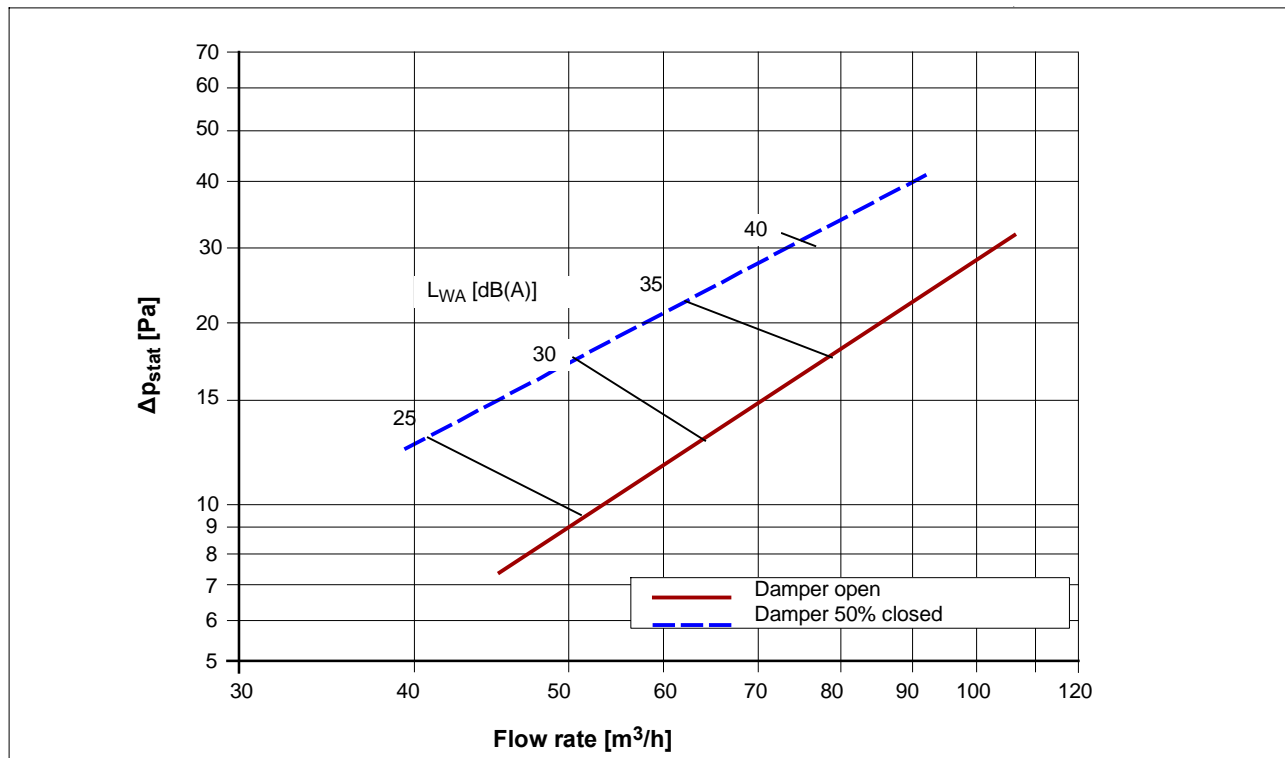
Sound power level and static pressure loss

Type LDU 30/1/S/800, 1 x Ø 79 (1 slot), lateral air connection, length 800 mm



Sound power level and static pressure loss

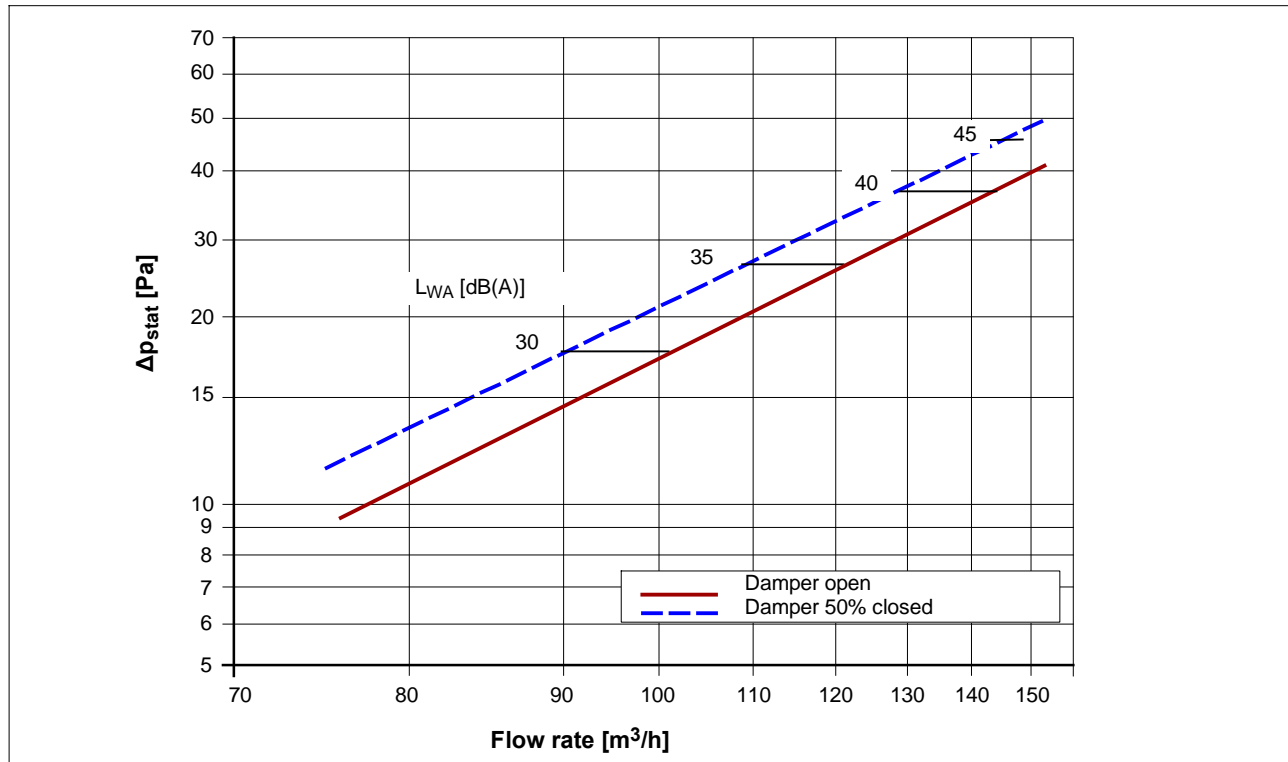
Type LDU 30/1/S/1000, 1 x Ø 79 (1 slot), lateral air connection, length 1000 mm



Floor-mounted linear diffusers type LDU

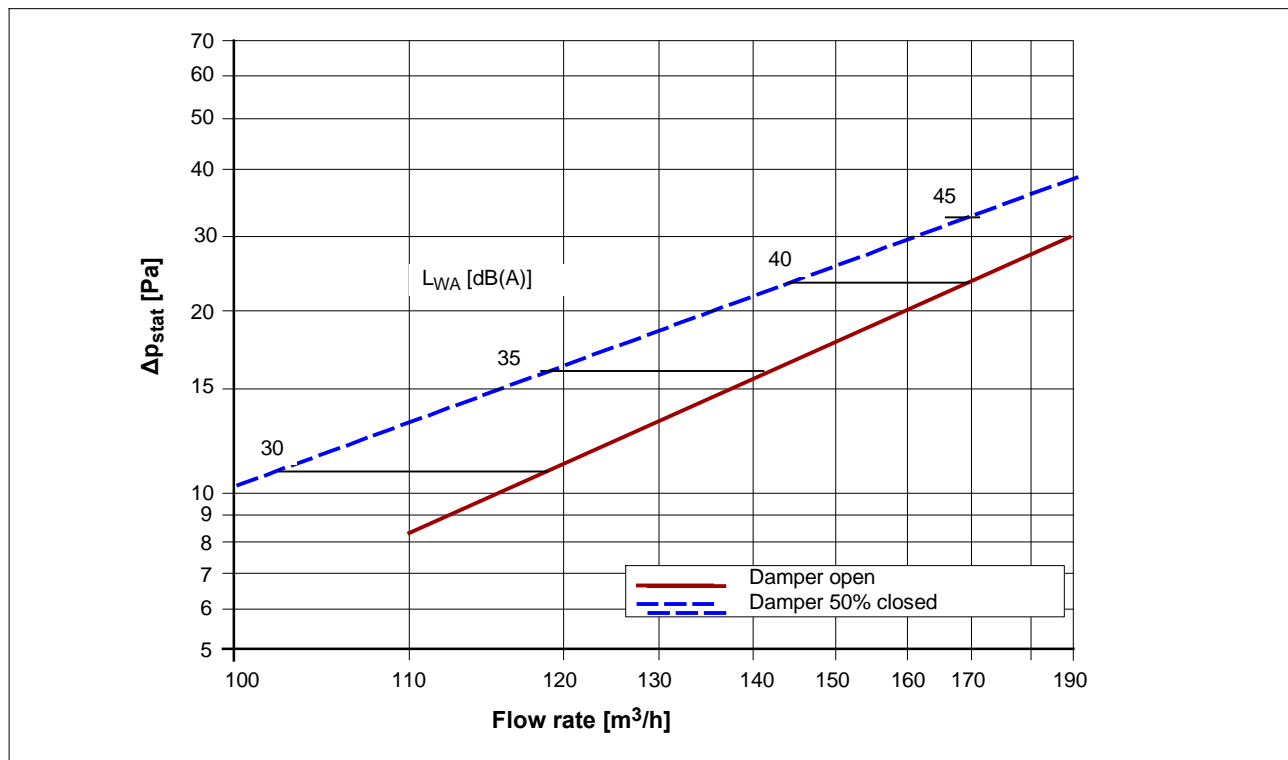
Sound power level and static pressure loss

Type LDU 30/2/S/800, 2 x Ø 99 (2 slots), lateral air connection, length 800 mm



Sound power level and static pressure loss

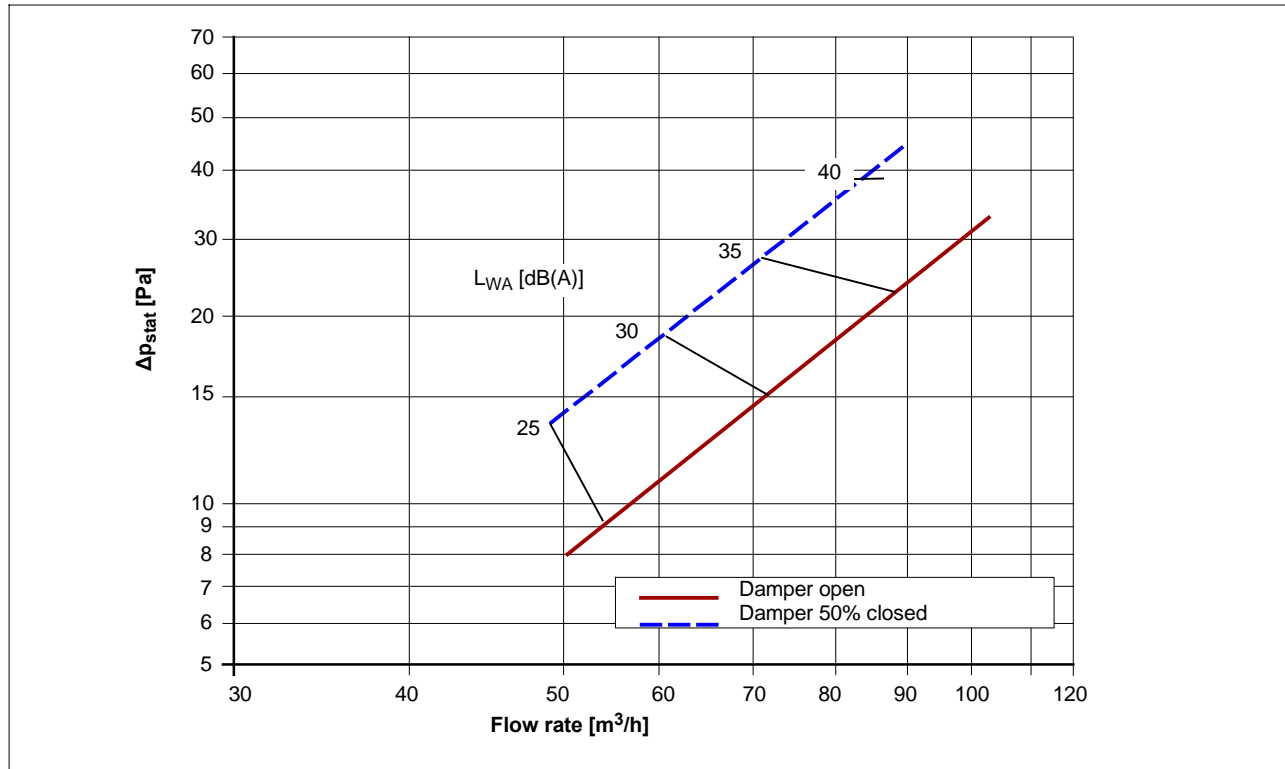
Type LDU 30/2/S/1000, 2 x Ø 99 (2 slots), lateral air connection, length 1000 mm



Floor-mounted linear diffusers type LDU

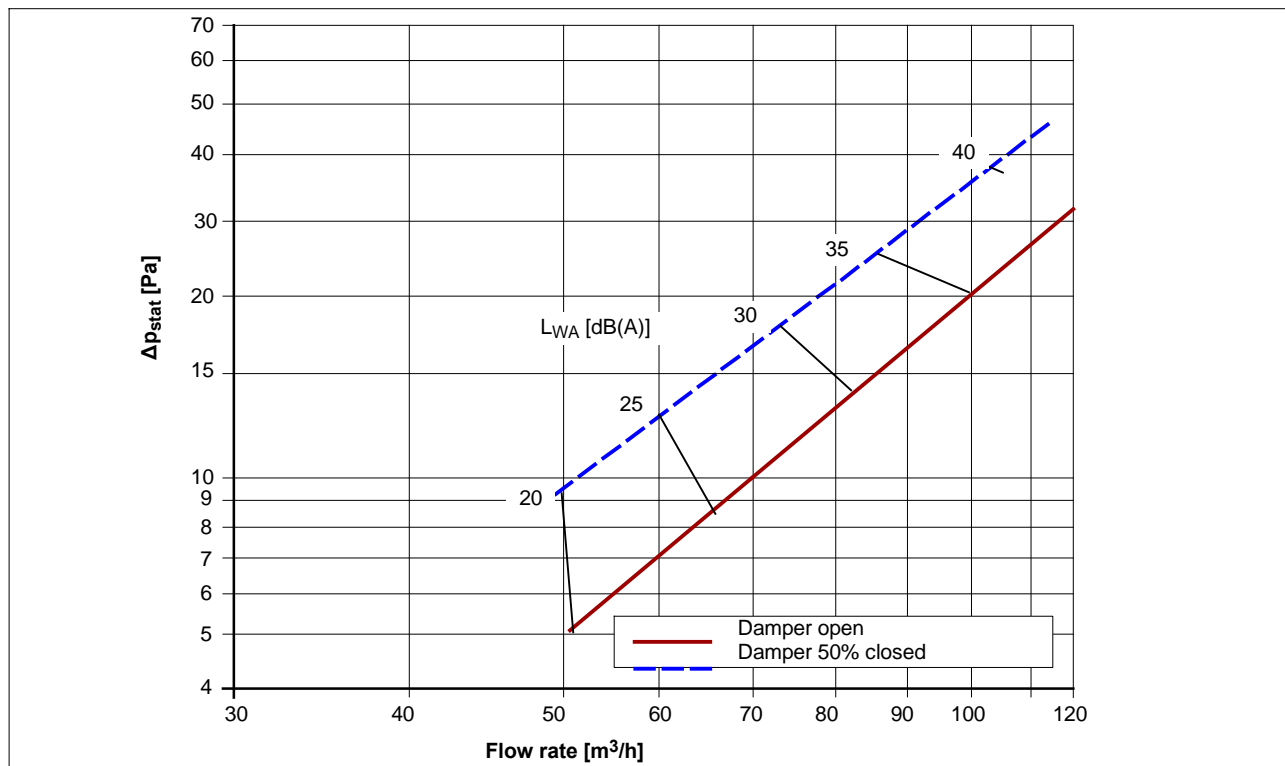
Sound power level and static pressure loss

Type LDU 30/1/-/800 (1 slot), for pressurized floors, air connection from below, length 800 mm



Sound power level and static pressure loss

Type LDU 30/1/-/1000 (1 slot), for pressurized floors, air connection from below, length 1000 mm



Floor-mounted linear diffusers type LDU

Assembly, installation

Lateral air connection (via floor cavity)

Before casting the screed insert the air connection box in the supporting plate cutout for the screed.

The insertion shaft for the linear diffuser is sealed using the casting core included in the delivery. Having completed the floor work and laid the floor covering, remove the core and insert the diffuser.

Air connection from below (via floor)

Before installing the false floor fix the air connection box to the unfinished floor using structure-borne sound insulated clamping brackets. A circumference seal on the casing bottom surrounds the supply air tube coming out of the solid floor.

Position tolerances on site are compensated by adjusting the height of the feet integrated in the air connection box.

The insertion shaft for the linear diffuser is sealed using the casting core included in the delivery. Having completed the floor work and laid the floor covering, remove the core and insert the diffuser.

Air connection in the pressurized floor (via floor cavity)

The insertion shaft for the linear diffuser is sealed using the casting core included in the delivery. Having completed the floor work and laid the floor covering, remove the core and insert the diffuser.

The following applies to all versions:

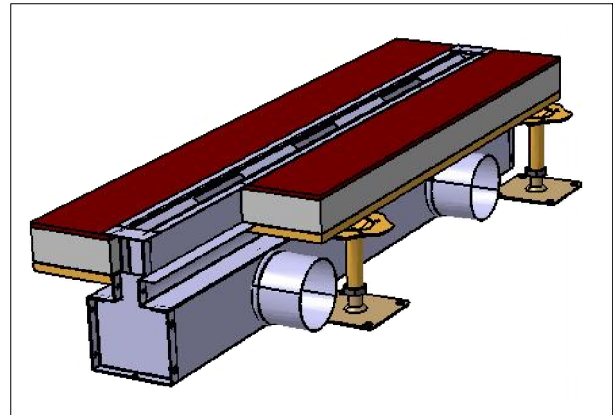
Height tolerances are compensated in the given range via slide socket or by adjusting the height of the diffuser. The supply flow may easily be adjusted using the integrated throttle slide and performing a pressure measurement.

Maintenance

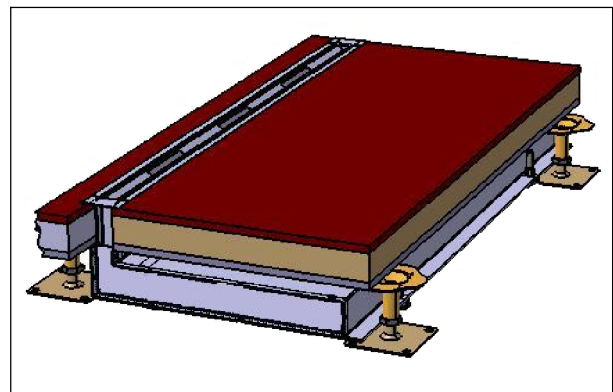
The diffuser insert may easily be removed from the shaft of the air distribution box. The insert may be cleaned with the diffuser and throttle slide removed.

For cleaning, access the air connection box integrated in the floor using a vacuum cleaner nozzle.

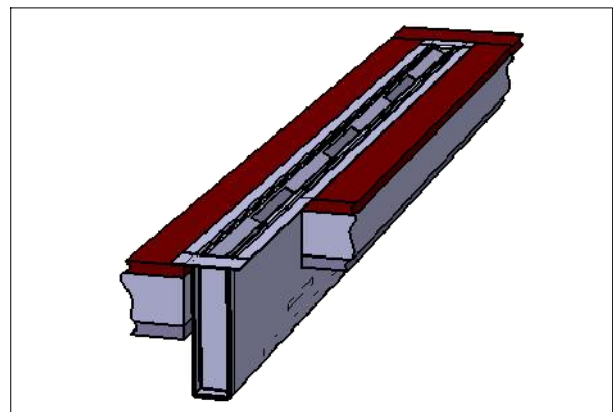
All surfaces are metal smooth and easy to clean.



Installation example type LDU 30/1/S, with lateral air connection



Installation example type LDU 30/1/U, air connection from below



Installation example type LDU 30/1/-, for pressurized floors

Floor-mounted linear diffusers type LDU

Nomenclature

LDU 30 / 1 / S / 1000 / RAL 9007 / 2 / 80

Diffuser width [mm]: 30

Number of slot rows:

(only for lateral
air connection)

Air connection:

$$\text{lateral} = \mathbf{S}$$

below = U

without air connection box = -
(for pressurized floors)

Nominal length [mm]: **800**
 1000

Surface finish:
powder coated
(silky gloss)

Number of connecting sockets:

1
2
3
4

Connecting diameter [mm]:

Lateral connection $\varnothing = 79$

$\varnothing = 79$

Connection from below $\emptyset = 79$

Specification and Schedule of Prices

Floor-mounted Linear Diffuser LDU

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| Qty. | Description | Unit price in € | Total price in € |
|------|--|--------------------|---------------------|
| | <p>High-induction, floor-mounted linear diffuser optimized for mixed air ventilation close to the facade, followed by an all room displacement ventilation meeting high comfort requirements.</p> <p><u>The unit consists of:</u></p> <ul style="list-style-type: none"> - Linear diffuser of galvanized sheet steel, powder coated, insertion from above with integrated rate setting. The supply air jet is split into individual high-induction jets. Visible diffuser surface with silky gloss finish, with additional clear varnish coat for scratch protection. <ul style="list-style-type: none"> o 1 slot LDU 30/1 o 2 slots LDU 30/2 - Air distribution box with lateral air connection [S] of galvanized sheet steel, suitable to connect flexible air conveying lines in the false floor, with lateral connecting socket, with longitudinal support brackets on top to fix the diffuser to the carrier plate. Casting core of polystyrene to cover the air distribution box's upper diffuser opening when pouring screed and for protection prior to commissioning. <p><u>Technical Data</u></p> <p>Length (standard): 800 mm, 1000 mm Flow rate: 30 - 170 m³/h Pressure loss: 10 - 50 Pa Sound power level: 28 - 40 dB(A) Range of operation: cooling mode up to -9 K heating mode</p> <p><u>Powder coat standard colors:</u> grey aluminum (similar to RAL 9007) silky gloss</p> <p>Manufacturer: LTG Aktiengesellschaft Series: LDU 30/..</p> <p>Special Versions /Accessories (on request, additional charge):</p> <p><u>Linear Diffuser:</u></p> <ul style="list-style-type: none"> o Powder coat special color _____ (similar to RAL ...) <p><u>Air distribution box (1 slot only):</u></p> <ul style="list-style-type: none"> o Air distribution box with air connection from below [U] of galvanized sheet steel, suitable for connection through the floor, foot traffic resistant version, seal surrounding the supply air duct coming out of the solid floor, with height-adjustable feet to compensate position tolerances on site, and structure-borne sound insulated clamping brackets to fix the air distribution box to the unfinished floor. o Without air distribution box for pressurized floors [-], suitable for air connection via floor cavity. | | |

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The Program for Room Air Technology

Key components

Air diffusers for ceilings, walls and floors: LTG System clean®, linear diffusers, displacement air diffusers, swirl diffusers Coandavent®, LTG chilled beam cool wave®, Induction units Klimavent®, Induction unit Coandatrol®, Fan coil units Raumluft · Ceiling fan coil units Ventotel® · Decentralized facade ventilation units Univent® · Airflow control units · labair® system: components for lab ventilation



LTG Engineering Services

Technical services for investors, architects, engineers and plant builders during design, construction and operation of buildings. Reliable and precise data relating to the ventilation of air conditioning system are given already before realization of the project, determined by measurements, calculations, building simulations and experiments.

The Program for Process Air Technology

Key components

Axial, radial and tangential fans · Fahrtwind Simulators · LTG Filtration Technology: fans, suction nozzles, dampers, filters, separators, compactors · LTG Humidification Technology: air humidifiers, product humidifiers

LTG Engineering Services

Technical services during development and operation of assembly groups, machines and plants · Analysis, simulation, optimization · Customized solutions · Mobile filtration lab/ filter engineering on site