



Supply air unit

WAX-LI

CE compliant according to European regulations



Wall-mounted axial fan – Low Impulse (WAX-LI) for low-pulse supply air

The TROX X-FANS supply air unit WAX-LI (wall-mounted axial fan Low Impulse):

- Enables volume flow rates of up to 25,000 m³/h at a supply air flow velocity of 1 m/s – the volume flow rate can be adjusted by using a frequency converter
- Requires an external wall opening of only 1 m² – for the volume flow rate of 25,000 m³/h, a wall opening of more than 7 m² would be required in the case of natural supply air flow
- Saves energy, as the thermal insulation of the building envelope is maintained (U value 1 W/m²K – similar to a commercially available window)
- Can be used in all systems for smoke extraction with smoke layer formation
- Can be combined in different variants of mechanical and natural smoke extraction systems
- Can be straightforwardly installed even in existing buildings: pre-assembled system with outdoor and indoor unit and small dimensions
- Is protected against vandalism due to electrically locked door locks
- Complies with supply air flow according to special construction regulations and special construction guidelines (DIN 18232-5)

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General information

Application

The WAX-LI supply air unit enables a low-pulse supply air flow necessary for smoke extraction with small supply air openings in the building. This is achieved by means of a textile distribution element placed in a wall opening which, in the event of smoke extraction, enables low-pulse supply air to be provided by means of a large surface area. The WAX-LI can be used in all systems for smoke extraction with smoke layer formation. Other applications requiring low-pulse supply air are also conceivable. The supply air is adapted by means of variable frequency drive in the range from 10,000 m³/h to 25,000 m³/h at an inflow speed of max. 1 m/s. The opening in the external wall is only 1 m². Due to the inflow from the textile distribution element used, the size of the wall opening is reduced several times over compared to a conventional supply air flow. The thermal insulation of the building envelope remains intact, the U value is 1 W/m²K, and is thus comparable to that of a commercially available window.

Special characteristics

- The WAX-LI only requires a wall opening area of approx. 1 m² for 25,000 m³/h additional supply air
- The supply air flow velocity of < 1 m/s according to DIN 18232-5 is achieved
- The thermal insulation of the building envelope remains intact due to a U value of 1 W/m²K

Nominal sizes

- WAX-LI NG 800 together with WAX damper NG 800, variant 2

Variants

- none

Classification, standards and guidelines

- Supply air flow according to special construction regulations and special construction guidelines MVVTB and DIN 18232-5

Parts and characteristics

- WAX-LI casing
- Textile distribution element

- Axial fan without guide vanes and motor in inlet
- Electronic door locks

Accessories

- WAX damper, thermally insulated
- Frequency converter

Material and surfaces

- The WAX-LI is made of galvanized sheet metal (also available with RAL powder coating)
- Textile distribution element made of fabric material: tear-resistant, air-permeable, flame-retardant

Technical data

- Supply air flow velocity: < 1 m/s according to DIN 18232-5
- Volume flow rate: 10,000 m³/h – 25,000 m³/h
- Wall opening: 1 m² (1050 mm x 1050 mm)
- U value: 1 W/m²K
- Supply voltage of actuator: 230 V

Fan:

- Supply voltage: 400 V
- Shaft power max.: 4.0 kW
- Nominal current, max.: 8.5 A
- Nominal speed, max.: 1500 rpm

Disclosure of Chemicals

- RoHS EU Directive 2011/65/EU (RoHS)
 - This product or single variants comply with EU Directive 2011/65/EU (RoHS) on the restriction of the use of certain hazardous substances in electrical and electronic equipment. For more information, please refer to our Environmental Product Declarations.
- REACH 1907/2006 (EC Regulation REACH)
 - This product or single variants comply with the provisions of EC Regulation No. 1907/2006, also known as REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals). For more information, please refer to our Environmental Product Declarations.

Function

In order to effectively keep escape and rescue routes free of smoke in the event of a fire, a very low-pulse supply air with uniform velocity near the floor is indispensable for smoke extraction with layering. This applies to both mechanical smoke extraction systems and natural smoke extraction systems. In order to guarantee these low velocities in the supply air flow, large supply air areas are normally required in the building envelope.

The WAX-LI supply air unit enables a low-pulse supply air flow necessary for smoke extraction with small supply air openings in the building. This is achieved by means of a textile distribution element placed in a wall opening which, in the event of smoke

extraction, enables low-pulse supply air to be provided by means of a large surface area. The WAX-LI can be used in all systems for smoke extraction with smoke layer formation. Other applications requiring low-pulse supply air are also conceivable. The supply air is adapted by means of a variable frequency drive in the range from 10,000 m³/h to 25,000 m³/h at an inflow speed of max. 1 m/s. The opening in the external wall is only 1 m². Due to the inflow from the textile distribution element used, the size of the wall opening is reduced several times over compared to a conventional supply air flow. The thermal insulation of the building envelope remains intact, the U value is 1 W/m²K, and is thus comparable to that of a commercially available window.

Specification text

This specification text describes the general properties of the product. Texts for variants can be generated with our product configurator.

Specification text

The supply air unit WAX-LI enables a low-pulse additional supply air flow < 1 m/s with small openings in the building envelope, which is necessary for smoke extraction. The system consists of an external, insulated supply air damper, which seals the building envelope with low-leakage when not in use. The thermal insulation of the outdoor unit has a U value of 1.0 W/m²K. The indoor unit consists of a supply air fan and a textile distribution element. In operation, the outdoor unit and the indoor unit open, the fan fills the textile distribution element with air. Through its

surface area of 7 m², an airflow of up to 25,000 m³/h can be provided with a supply air flow velocity of 1 m/s.

Straightforward installation due to pre-assembled systems consisting of an outdoor and indoor unit.

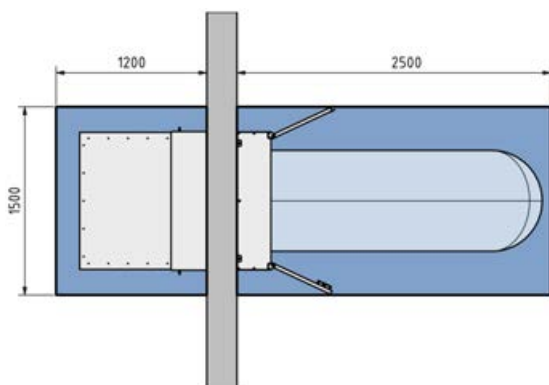
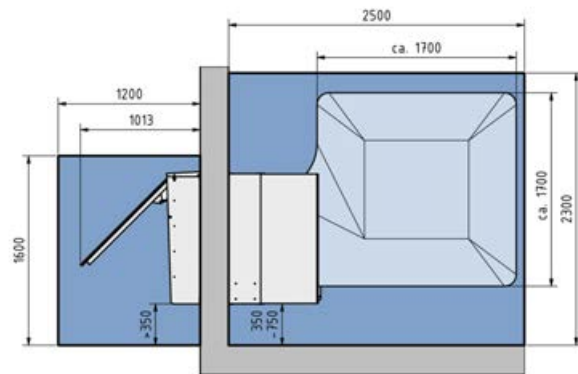
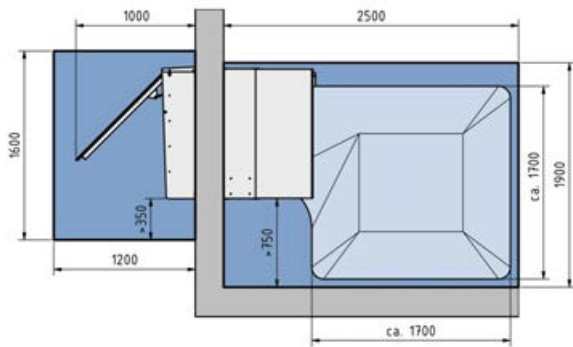
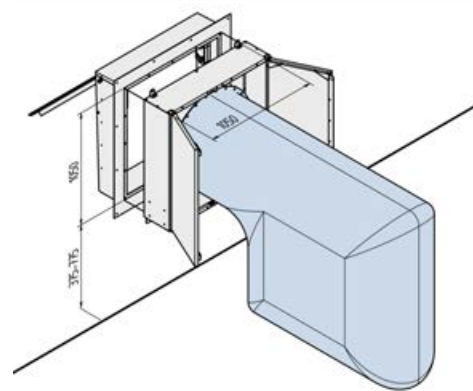
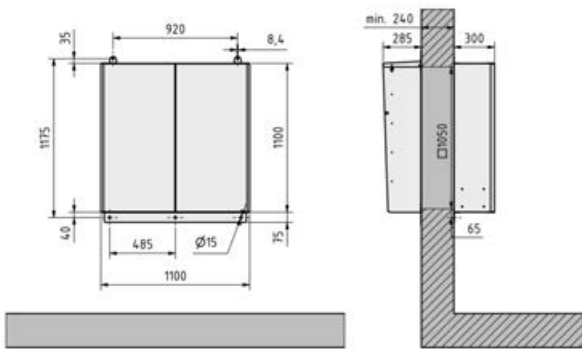
Volume flow rate: 10,000 – 25,000 m³/h

Control: variable frequency drive

Opening in external wall: 1 m²

Necessary open space in the building: width = 1.5 m × length = 2.5 m

Dimensions



Product details

Additional supply air in the fire room

When smoke is removed through the layering, two horizontally separate layers are created:

- the layer of smoke directly underneath the ceiling and
- the layer with reduced smoke in the lower area.

Escape and rescue routes thus remain smoke-free.

Background:

The hot thermal jet that develops as a result of the fire transports pollutants and soot particles upwards into the ceiling area and picks up air from the surroundings. Consequently, both its volume and its mass are increased, while its temperature is reduced at the same time. In order for the layers to form and for effective smoke extraction to be possible in the first place, the thermal jet in the lower area must be replaced **close to the floor** and **low-pulse** by non-contaminated **supply air**. The layer is ultimately limited to the room height, where the dissipated smoke volume flow rate matches the volume flow rate transported upwards. The pressure losses created during this flow process at the exhaust and supply air openings must be overcome there. If natural smoke extraction equipment is used, this must take place by the uplift pressure resulting from the difference in density between the smoke layer, the outdoor air and the density of the smoke layer. If removal is a mechanical process, this pressure loss must be overcome by means of the smoke exhaust fan. As a rule, low-smoke layers of at least 2.5 m above the floor are used in rooms with an area of more than 200 m². The necessary thermal air jet can only build up at low flow velocities. If the speed is too high, it is destroyed, which prevents it from layering. **The supply air flow velocity** is therefore an important criterion for both mechanical and natural smoke extraction systems. It should not exceed 1 m/s.

