

Passive chilled beams

Type PKV

TROX GmbH

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Product overview

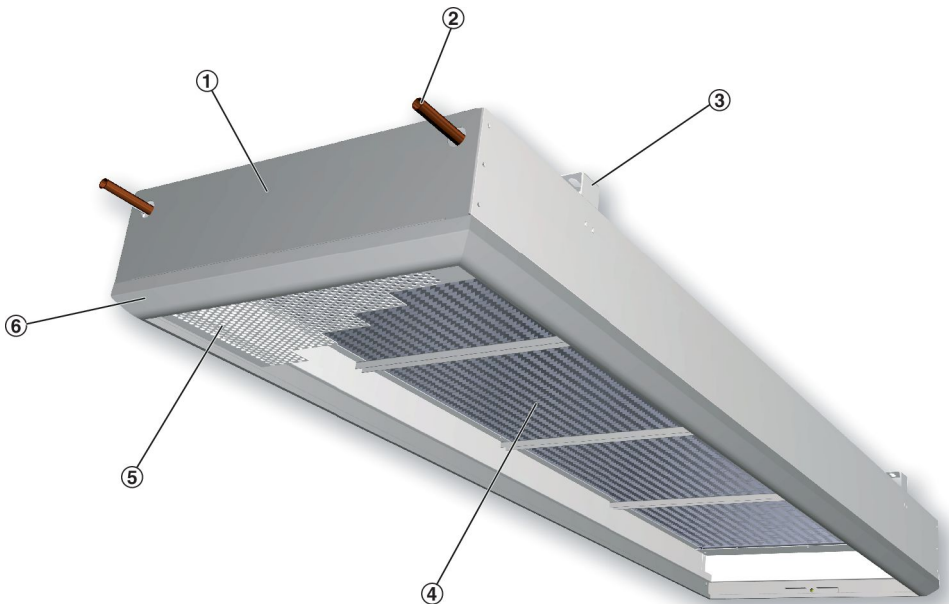


Fig. 1: Schematic illustration of the PKV

- | | | | |
|---|---|---|------------------------------------|
| ① | Casing | ④ | Heat exchanger |
| ② | Water connections, Ø12 mm, straight (90° bent upwards as an option) | ⑤ | Perforated metal facing (optional) |
| ③ | Hanging bracket | ⑥ | Aluminium frame (optional) |

General information

About this manual

This manual is intended for use by fitting and installation companies, in-house technicians, technical staff, instructed persons, and qualified electricians or air conditioning technicians.

It is essential that these individuals read and fully understand this manual before starting any work. The basic prerequisite for safe working is to comply with the safety notes and all instructions in this manual.

The local regulations for health and safety at work and the general safety regulations for the area of application of the ventilation unit also apply.

This manual must be given to the system owner when handing over the system. The system owner must include the manual with the system documentation. The manual must be kept in a place that is accessible at all times.

Illustrations in this manual are mainly for information and may differ from the actual design.

TROX Technical Service

To ensure that your request is processed as quickly as possible, please keep the following information ready:

- Product name
- TROX order number
- Delivery date
- Brief description of the fault

| | |
|--------|--|
| Online | www.troxtechnik.com |
| Phone | +49 2845 202-400 |

Warranty claims

The general delivery terms apply to warranty claims. For purchase orders placed with TROX GmbH, see Section VI, Warranty Claims, of the Delivery and Payment Terms of TROX GmbH, www.trox.de/en/.

Safety

Correct use

Passive chilled beams are used to dissipate high heat loads. Warm room air rises due to thermal buoyancy, is cooled by the heat exchanger, then slowly flows downwards again to the occupied zone. Heating operation is possible, but not recommended because of the unfavourable thermal conditions.

Incorrect use



WARNING!

Danger due to incorrect use!

Incorrect use of the unit can lead to dangerous situations.

Never use the unit:

- in areas with potentially explosive atmospheres (EX);
- in humid rooms;
- in rooms with aggressive or dust-laden air.

Personnel

Qualification

The work described in this manual has to be carried out by individuals with the qualification, training, knowledge and experience described below:

Specialized personnel

Specialised personnel are personnel, who due to their specialized training, skills, and experience, as well as knowledge of the applicable standards and regulations, are capable of executing the tasks assigned to them, and of recognizing possible hazards and avoiding them on their own.

Trained personnel

Trained personnel are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to carry out their assigned duties, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.

Technical data

| Description | Value |
|-------------------------------------|---|
| Cooling capacity | up to approx. 1000 W |
| Max. operating pressure, water side | 6 bar |
| Max. operating temperature | 75 °C |
| | (55 °C, when using flexible connecting hoses) |
| Minimum operating temperature | 6 °C |

Dimensions

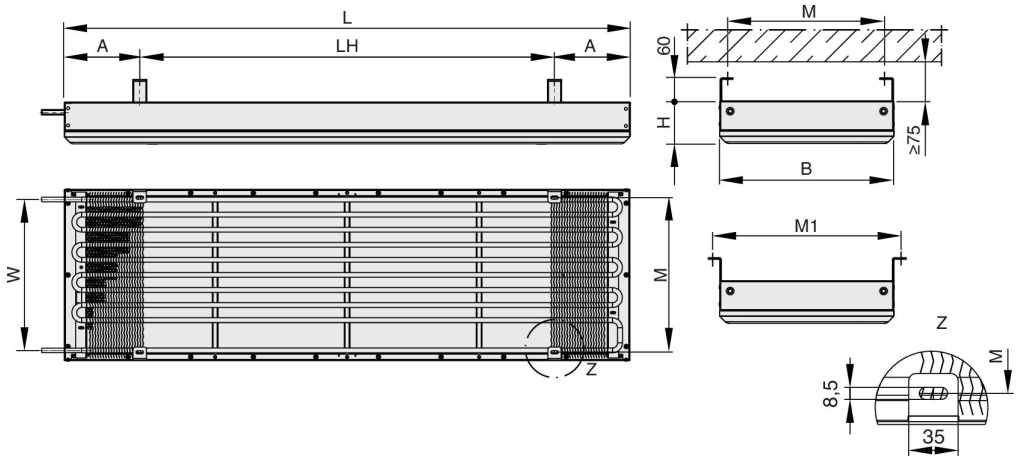


Fig. 2: Dimensions PKV

| | | Weights [kg] | | | | | | | | | | | | | | |
|---------|--------|--------------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|
| Variant | B [mm] | L [mm] | | | | | | | | | | | | | | |
| | | 1000 | | | 1500 | | | 2000 | | | 2500 | | | 3000 | | |
| | | H | | | H | | | H | | | H | | | H | | |
| | | 110 | 200 | 300 | 110 | 200 | 300 | 110 | 200 | 300 | 110 | 200 | 300 | 110 | 200 | 300 |
| PKV-0 | 295 | 9 | 11 | 13 | 12 | 15 | 18 | 15 | 19 | 23 | 18 | 23 | 28 | 22 | 27 | 33 |
| | 455 | 11 | 14 | 16 | 14 | 18 | 21 | 18 | 23 | 26 | 22 | 27 | 32 | 26 | 32 | 37 |
| | 575 | 12 | 15 | 17 | 17 | 21 | 24 | 22 | 27 | 31 | 26 | 32 | 36 | 31 | 37 | 43 |
| PKV-L | 295 | 10 | 12 | 14 | 14 | 17 | 20 | 18 | 22 | 26 | 21 | 26 | 31 | 26 | 31 | 37 |
| | 455 | 12 | 15 | 17 | 17 | 21 | 24 | 22 | 27 | 30 | 27 | 32 | 37 | 32 | 38 | 43 |
| | 575 | 14 | 17 | 19 | 21 | 25 | 28 | 26 | 31 | 35 | 32 | 38 | 42 | 38 | 44 | 50 |
| PKV-R-L | 295 | 12 | 14 | 16 | 17 | 20 | 23 | 21 | 25 | 29 | 26 | 31 | 36 | 31 | 36 | 42 |
| | 455 | 14 | 17 | 19 | 20 | 24 | 27 | 26 | 31 | 34 | 32 | 37 | 42 | 37 | 43 | 48 |
| | 575 | 16 | 19 | 21 | 24 | 28 | 31 | 31 | 36 | 40 | 37 | 43 | 47 | 44 | 50 | 56 |

| Weights [kg] | | | | | | | | | | | | | | | | |
|-----------------|--------|--------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|-----|
| Variant | B [mm] | L [mm] | | | | | | | | | | | | | | |
| | | 1000 | | | 1500 | | | 2000 | | | 2500 | | | 3000 | | |
| | | H | | | H | | | H | | | H | | | H | | |
| | | 110 | 200 | 300 | 110 | 200 | 300 | 110 | 200 | 300 | 110 | 200 | 300 | 110 | 200 | 300 |
| Contained water | 295 | 0.5 | | | 0.8 | | | 1.0 | | | 1.3 | | | 1.5 | | |
| | 455 | 0.8 | | | 1.2 | | | 1.5 | | | 1.9 | | | 2.3 | | |
| | 575 | 1.0 | | | 1.5 | | | 2.0 | | | 2.5 | | | 3.0 | | |

| Dimensions [mm] | | |
|-----------------|-----|------|
| L | A | LH |
| 1000 | 150 | 700 |
| 1500 | 200 | 1100 |
| 2000 | 300 | 1400 |
| 2500 | 400 | 1700 |
| 3000 | 600 | 1800 |

| Dimensions [mm] | | | |
|-----------------|-----|-----|-----|
| B | M | M1 | W |
| 295 | 250 | 330 | 240 |
| 455 | 410 | 490 | 400 |
| 575 | 530 | 610 | 520 |

| Dimensions [mm] | |
|-----------------|-----|
| | H |
| | 110 |
| | 200 |
| | 300 |

Transport and storage

Transport

CAUTION!

Danger of injury from sharp edges, sharp corners and thin sheet metal parts!

Sharp edges, sharp corners and thin sheet metal parts may cause cuts or grazes.

- Be careful when carrying out any work.
- Wear protective gloves, safety shoes and a hard hat.

NOTICE!

Carry the unit in pairs in order to prevent any damage.

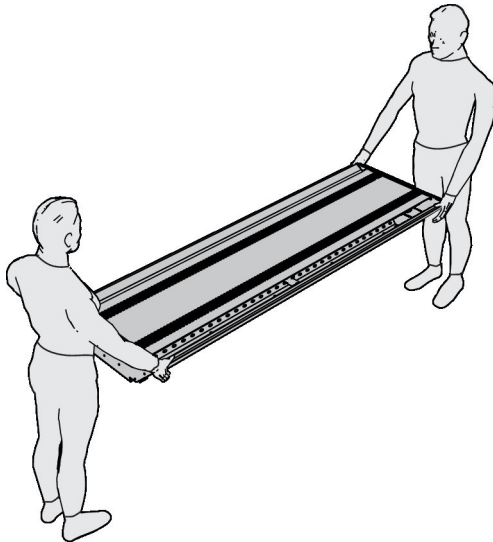


Fig. 3: Carrying the unit in pairs

Use only lifting and transport gear designed for the required load. Always secure the load against tipping and falling.

Upon delivery, carefully remove the packaging and check the unit for transport damage and completeness.

Storage

Please note:

- Store the unit only in its original packaging
- Protect the unit from the effects of weather
- Protect the unit from humidity, dust and contamination
- Storage temperature: –10 to 50 °C
- Relative humidity: 95 % max., non-condensing

Installation

Ceiling installation

Personnel:

- Trained personnel

Protective equipment:

- Industrial safety helmet
- Safety shoes
- Protective gloves

The PKV can be installed freely suspended or above an open cell ceiling.

Only work in pairs; preferably use a lift!

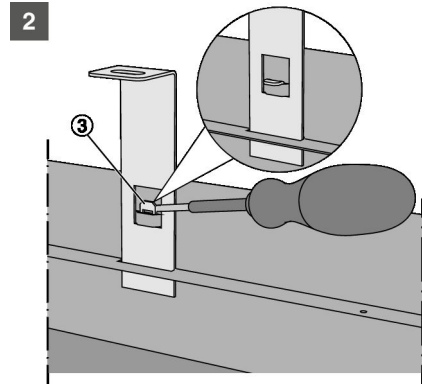


Fig. 5: Mounting the hooks

- ③ Bend the lug



DANGER!

Danger to life due to falling suspended loads!

- Only use fixing materials designed for the required load!
- Stand clear of suspended loads, unless properly secured!
- Check secure fixing after installation!

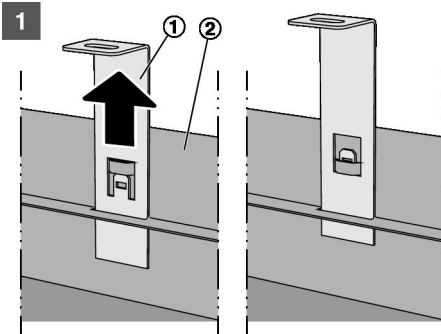


Fig. 4: Mounting the hooks with brackets

- ① Bracket
- ② PKV casing

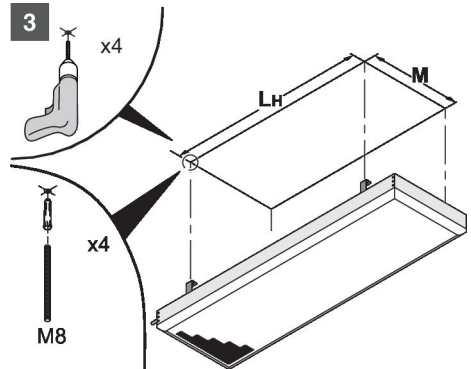


Fig. 6: Drilling holes

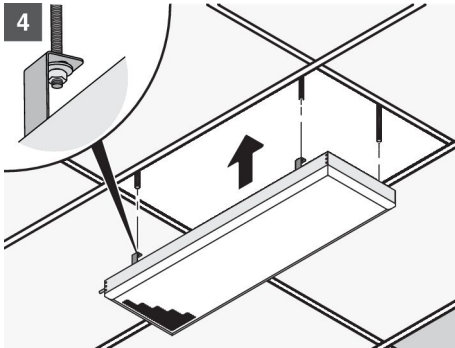


Fig. 7: Inserting the device into the ceiling

Transportation lock

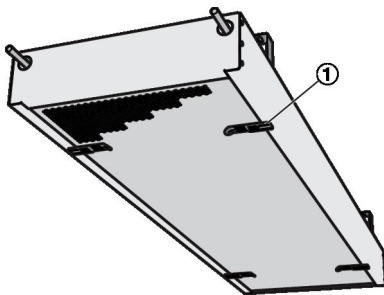


Fig. 8: Transportation lock

- ① Press the transport lock outwards and pull it out downwards.

Connecting the water pipes



CAUTION!

Hot surface!

Danger of burn or scald injuries when working on the hot water system.

Before working on the water-side connections, shut down the system, depressurise it and let it cool down.

The heat exchanger is fitted with one water flow and one water return connection.

Make sure that the water temperature does not fall below the dew point.

| Water connection on the device | Width across flats | Connection types |
|------------------------------------|--------------------|--|
| Copper tubes 12 × 1 mm | – | Solder joint (rigid) Flexible hoses (accessory) |
| External thread G 1/2" (flat seal) | SW22 | Screw connection (rigid) Flexible hoses (accessory) |
| Union nut G 1/2" (flat seal) | SW24 | Screw connection (rigid) Flexible hoses (accessory) |

Connect device with screw connection

Personnel:

- Specialized personnel

Protective equipment:

- Industrial safety helmet
- Safety shoes
- Protective gloves

Ensure that the surfaces for seals are clean

1. ▶ Insert seal and tighten screw connection by hand.

! NOTICE!

Damage to heat exchanger or pipe network!

Always use a suitable tool to counter the tightening force in order to prevent any damage!

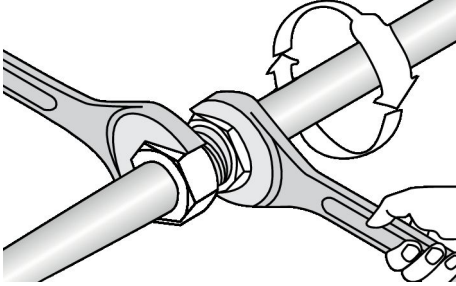


Fig. 9: Tightening the connection

2. ▶ Tighten threaded connections with a spanner.

! NOTICE!

Damage to the heat exchanger due to frost!

Only fill the heat exchanger if there is no danger of freezing!

Initial commissioning

Before you start commissioning, check the following points:

- Check that the cooling panels are fitted correctly
- Remove protective film, if any
- Ensure that all cooling panels and sails are clean and free from residues and foreign matter.

! NOTICE!

Hygienic requirements for ventilation and air conditioning systems must be carried out in accordance with VDI 6022, Sheet 1.

- Check water connections for correct installation (connection hoses with oxygen diffusion barrier)

! NOTICE!

The commissioning procedure is described in detail in BTGA regulation 3.002

- Carry out a leak and pressure test
- Flushing the system
- Filling and venting the water-bearing system
- Carry out hydraulic balancing of the control zones.
- Actual/target comparison of the water parameters of the filling water

! NOTICE!

Parallel consideration of the requirements for preventing damage in water circuits in accordance with VDI/BTGA 6044 (cold water and cooling circuits) and VDI 2035 Sheet 1 (for hot water - heating systems) is the responsibility of the competent person. The water-bearing system must be assessed as a whole so that it complies with the applicable regulations in both cooling and heating mode. Filling and supplemental must be filled into the system with the appropriate water quality in order to ensure the long-term operation of the system.

Pressure testing

A pressure test must be carried out pneumatically or hydraulically in closed water-based heating and chilled or cooling water circuits in accordance with the general rules of technology or BTGA 3.002, and recorded. The hydraulic test should be carried out with the appropriate filling water quality. A pneumatic test is carried out with air or inert gas.

Rinsing/Flushing

Rinsing removes unwanted dirt particles from the water circuit. We recommend flushing with the appropriate filling water quality and taking a water sample after the flushing process is complete. Make sure that the system is completely emptied after the flushing process and then filled with suitable filling water.

Filling the system

After flushing, the system must be filled with suitable filling and supplemental water. Manufacturers' information for all components installed in the system must be observed. Particular attention must be paid to compliance with the quality of the filling and supplemental water. During the water filling of the system, as well as during the necessary pressing or draining processes, it is recommended that these are permanently monitored.

Venting

Ensure complete venting to avoid problems in the system and to ensure full performance of the water-bearing systems. Since a continuously rising conduit to a venting point is usually impossible, thorough flushing is recommended until the system is air-free. Upstream installations must also be air-free so that no air is introduced into the ceiling system via supply lines.

Maintenance and cleaning

Maintenance

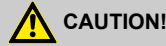
The water quality may change during operation. The water quality must be monitored and documented at regular intervals to prevent corrosion.

Cleaning

During cleaning, the following points must be observed:

- Clean surfaces with a damp cloth
- Use only common household cleaners, do not use any aggressive cleaning agents.
- Do not use cleaning agents that contain chlorine.
- Do not use equipment for removing stubborn contamination, e.g., scrubbing sponges or scouring cream, as it may damage the surfaces.
- The cleaning intervals given in the VDI 6022 standard apply.

Cleaning the heat exchanger



Hot surfaces!

Danger of burn injuries when working on the hot water system!

Before working on the water-side connections, shut down the system and let it cool down!

1. ▶ Push the perforated metal facing (Fig. 1/5) slightly up, tilt it a little, then remove it from below. Unhook the safety cables (if necessary) and completely remove the perforated grille.
2. ▶ Carefully clean the heat exchanger with an industrial vacuum cleaner. Be careful so as not to bend any blades. We recommend using a soft brush attachment for cleaning.



Contamination tends to deposit mainly above the heat exchanger. We therefore recommend cleaning both the top and the bottom of the heat exchanger.

3. ▶ After cleaning, attach the safety cables again, and insert the perforated metal facing.



Danger of head injuries from the fall of the perforated metal facing!

Check that the perforated metal facing and safety cables are securely fixed!