



# Katherm HK

Ready-to-install trench heaters for heating or cooling with EC tangential fan

## ► Assembly and installation instructions

Keep these instructions in a safe place for future use!

# 1.43 Katherm HK

## Ready-to-install trench heaters with EC tangential fan

### Assembly and installation instructions

#### Key to symbols:



#### Caution! Danger!

*Non-compliance with this information can lead to serious personal injuries or damage to property.*



#### Danger from electrocution!

*Non-compliance with this information can lead to serious personal injuries or damage to property by electrocution.*

#### Carefully read these instructions in full prior to any assembly and installation work!

Anyone involved with the installation, commissioning and use of this product is obliged to pass these instructions on to trades people who are involved at the same time or subsequently, as well as to end users or operators. Retain these instructions until final decommissioning!

**We reserve the right to make content or design-related changes without prior notice!**

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## 1. Intended use

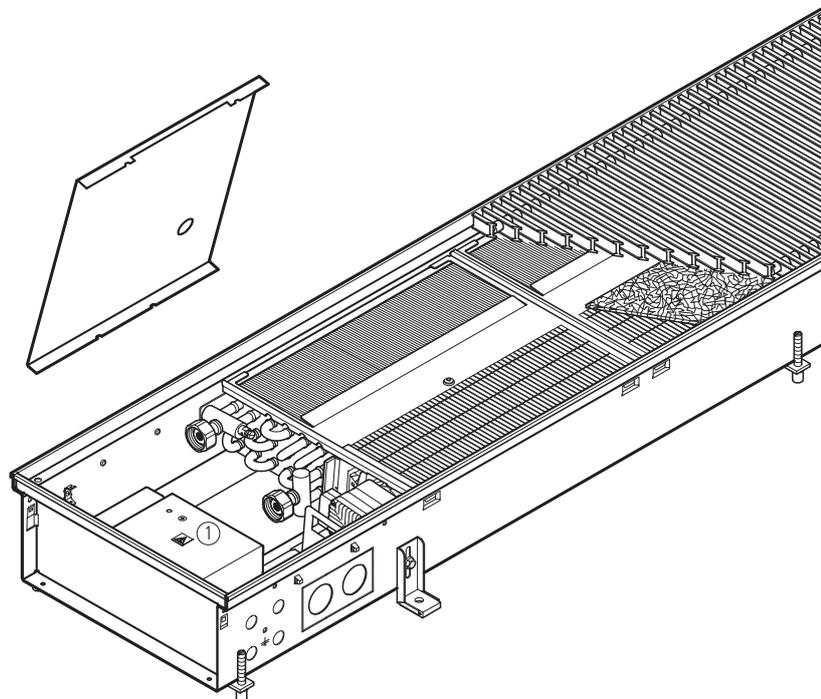
### 1.1 Description



Kampmann Katherm HK trench heaters are built in line with the state of the art and recognised safety regulations. Nevertheless their use can result in danger to people or damage to the unit or other material property if they are not properly installed or properly used.

Katherm HK trench heaters should only be used indoors (e.g. residential properties, offices, showrooms etc.) They are not suitable for use in humid environments, such as swimming pools or outdoors. Protect the products from any moisture during installation. Check the application with the manufacturer in case of any doubt. Any use other than the use specified above is deemed not to be correct and proper. The operator of the unit is solely responsible for any damage arising as a result of this. Intended use is deemed to include observing the installation instructions described in these instructions.

The installation of this product requires specialist knowledge of heating, cooling, ventilation and electrical engineering. This knowledge, generally learned in vocational training in the fields mentioned in section 2, is not described separately. Damage caused by improper installation is the responsibility of the operator.



① 24 V terminal strip (shown here and in the following drawings as connection box)

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## Assembly and installation instructions

### 1.2 Limits of operation and use

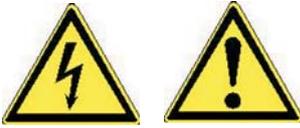
| Limits of operation              |           |                |
|----------------------------------|-----------|----------------|
| Min./max. water temperature      | °C (°F)   | 5-120 (41-248) |
| Min./max. air intake temperature | °C (°F)   | 15-40 (59-104) |
| Min./max. air humidity           | %         | 15-75          |
| Max. operating pressure          | bar (psi) | 10 (145)       |
| Min./max. glycol percentage      | %         | 25-50          |

The following values provide further guidance.

The water used should be free of contamination, such as suspended substances and reactive substances.

| Water quality                                    |       |                |
|--|-------|----------------|
| pH*1   |       | 8-9            |
| Conductivity*1                                   | µS/cm | < 700          |
| Oxygen content (O <sub>2</sub> )                 | mg/l  | < 0.1          |
| Hardness   | °dH   | 4-8.5          |
| Sulphur ions (S)                                 |       | not measurable |
| Sodium ions (Na <sup>+</sup> )                   | mg/l  | < 100          |
| Iron ions (Fe <sup>2+</sup> , Fe <sup>3+</sup> ) | mg/l  | < 0.1          |
| Manganese ions (Mn <sup>2+</sup> )               | mg/l  | < 0.05         |
| Ammonia ions (NH <sup>4+</sup> )                 | mg/l  | < 0.1          |
| Chlorine ions (Cl)                               | mg/l  | < 100          |
| CO <sub>2</sub>                                  | ppm   | < 50           |
| Sulfate ions (SO <sub>4</sub> <sup>2-</sup> )    | mg/l  | < 50           |
| Nitrite ion (NO <sub>2</sub> <sup>-</sup> )      | mg/l  | < 50           |
| Nitrate ion (NO <sub>3</sub> <sup>-</sup> )      | mg/l  | < 50           |

## 2. Safety information



Make sure that installation, assembly and maintenance work on electrical units is only performed by a qualified electrician (in compliance with NEC regulations). Wiring should comply with the applicable NEC regulations and provisions laid down by the regional electricity providers. Non-compliance with the regulations and operating instructions can result in the units malfunctioning with consequential damage and danger to people. There is a danger of fatal injury caused by wires being crossed due to incorrect wiring! Disconnect all parts of the system from the mains power supply and prevent them from being reconnected before starting any connection and maintenance work!

Please read this manual in full to ensure correct and proper installation.

### Please note the following safety-related information:

- Disconnect all parts of the system that are being worked on.
- Ensure that the system cannot be accidentally re-connected!
- Before commencing installation/maintenance work, wait until the fan has come to a standstill after the unit has been switched off.
- Caution! Pipes, casings and fittings can become very hot or very cold depending on the operating mode!
- Qualified personnel must have undergone training to provide them with adequate knowledge of the following:
  - Safety and accident prevention regulations
  - Guidelines and recognised technical regulations, i.e. National Electric Code (NEC)
  - CSA and UL standards
  - Technical wiring regulations issued by the regional electricity providers

### Modifications to the unit

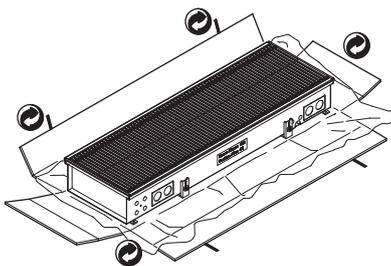
Do not undertake any modifications or upgrades on Katherm HK without discussing them with the manufacturer as they can impair the safety and operation of the unit.

Do not carry out any measures on the unit not described in this manual. Make sure that on-site systems and cabling are suitable for connection to the intended system!



The trench heater has openings provided for the installation of a potential equalisation line.

## 3. Designs/Scope of Delivery



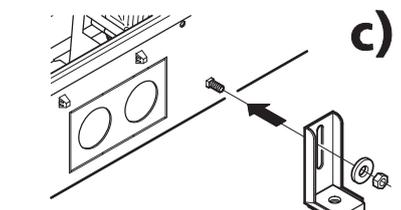
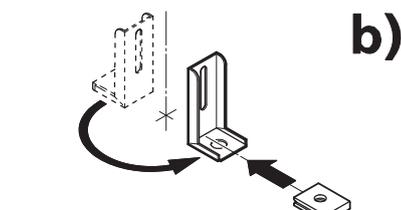
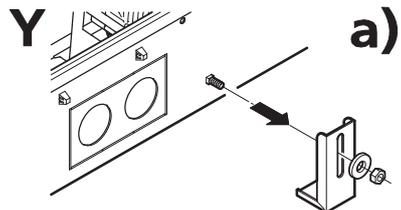
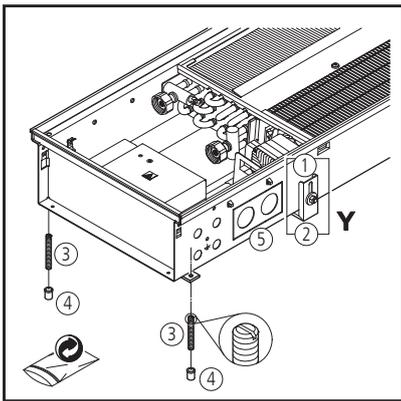
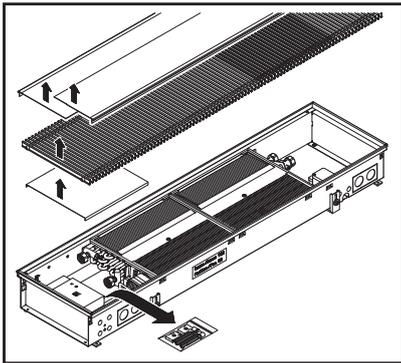
Katherm HK are supplied as standard with:

- Height adjustment feet, room-side, ① rubber pads for acoustic decoupling ② (with screed); screws and dowels to be provided by others,
- Raised floor adjustment feet with adjustment screws ③ and sound insulation ④.

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Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

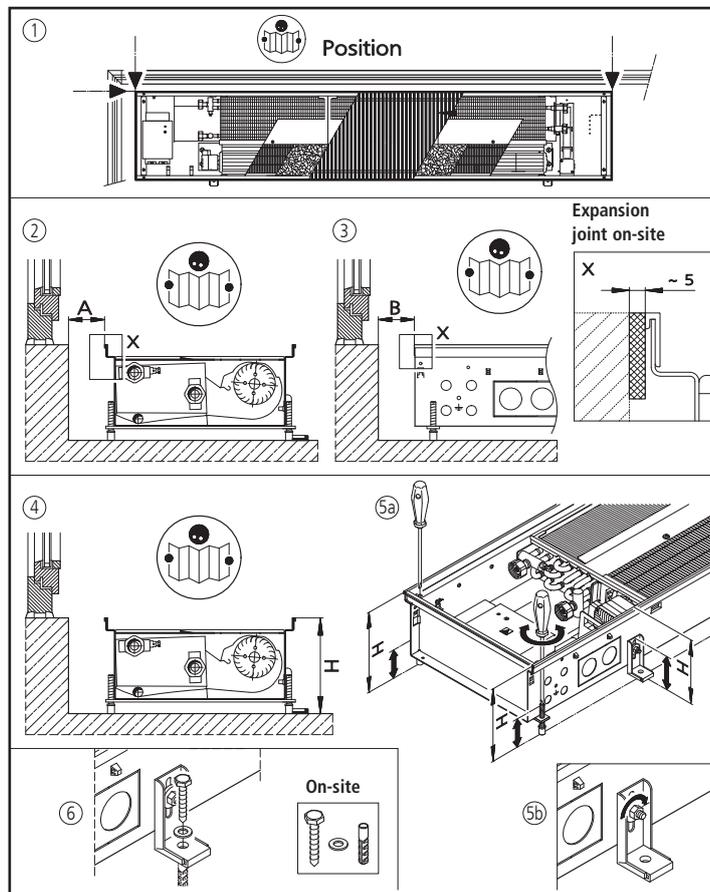


### 4. Alignment and positioning

#### 4.1 Alignment using height-adjustment feet and raised floor brackets

- Remove the outer film and the packaging.
- Flap open the transparent protective cover.
- Arrange the convector on the window side.
- Then level the trench heater and adjust the height using the adjustment feet ① with rubber pads for acoustic decoupling ② and adjustment screws on the raised floor brackets ③ with sound decoupling ④.
- Use screws and dowels to fix the height-adjustment feet on the room side with rubber pads.

#### 4.2. Positioning and fixing at the installation site



Move the Katherm HK into its final installation position ①. Pay attention to the prescribed spacings to walls and façades ② and ③ on site. Align the Katherm HK into its final horizontal position (④, ⑤a and ⑤b) and fix the Katherm HK for the floor with screws and rawplugs (supplied by others) ⑥.

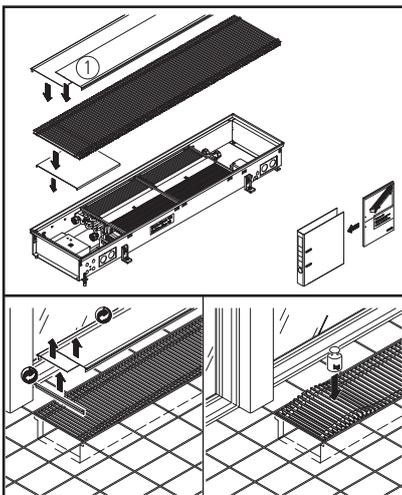
| Arrangement of air outlet/convector      |                         |
|--|-------------------------|
| Katherm HK 320 with trench height 130 mm | window-side arrangement |
| Katherm HK 290 with trench height 160 mm | window-side arrangement |

## 5. Water connections

- Use the pipe openings in the floor trench for the water-side connection ⑤.
- Remove the punched pipe entry opening or use the round connection openings for electrical wiring. Screw the thermostat valve and the return shut-off valve using an appropriate sealant (e.g. NEO Fermit) to the Eurokonus connections on the convector.
- Then fit the flow and return pipes.
- Perform a pressure test.
- Adhere these installation instructions very visibly to the Katherm HK for subsequent trades.
- Cover the grille and Katherm HK with the transparent installation cover to protect it from dirt or cement.

**Important! Grilles are suitable for foot traffic. Avoid point loads (e.g. chair legs).**

## 6. Screed works



- ① Dust and protective cover:  
(Remove the transparent dust and protective cover before commissioning the unit)

Before commencing screeding, check whether

- the water connection has been correctly done,
- the electrical connection has been correctly done,
- the height of the trench heater and air flow direction are correct,
- the grille is covered (Caution! Cement destroys the surface of the grille!),
- sound insulation (not with raised floors) is fitted underneath the trench heater,
- there are no sound bridges to the concrete slab, especially close to the height-adjustment feet,
- requisite empty pipes have been laid,
- appropriate materials have been used to seal all openings and punched openings of the Katherm HK from the ingress of screed.
- seal the openings and punched openings on the trench when using screed or other low-viscosity floor coverings.

### Important!

- Do not allow screed or the floor to press the Katherm HK. Provide expansion joints if necessary.
- Roll-up grilles packed separately, for instance when using installation covers to protect the trenches from dirt, are rolled up in the factory. The grille can become slightly over-long due to the steel springs extending. Unrolling the grille and laying it flat for a few hours can return the grille to its original length. Laying the grille into the trench, as shown on the figure above, helps it to fit more easily into the frame.

# 1.43 Katherm HK

Ready-to-install trench heaters with EC tangential fan

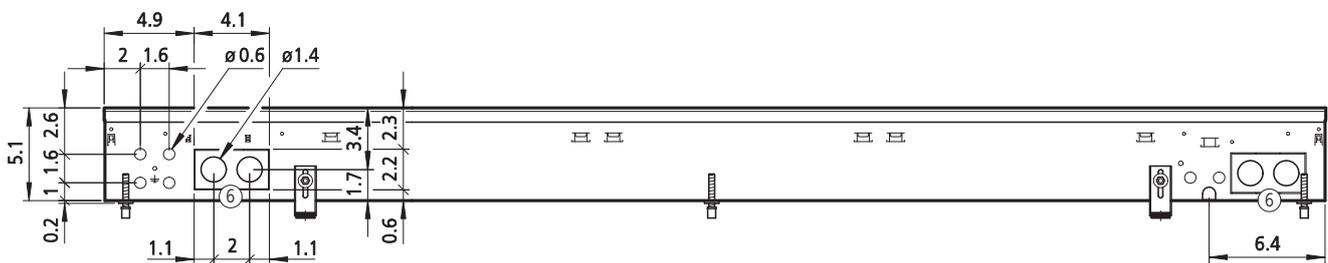
## Assembly and installation instructions

### 7. Water connection / Pipe openings

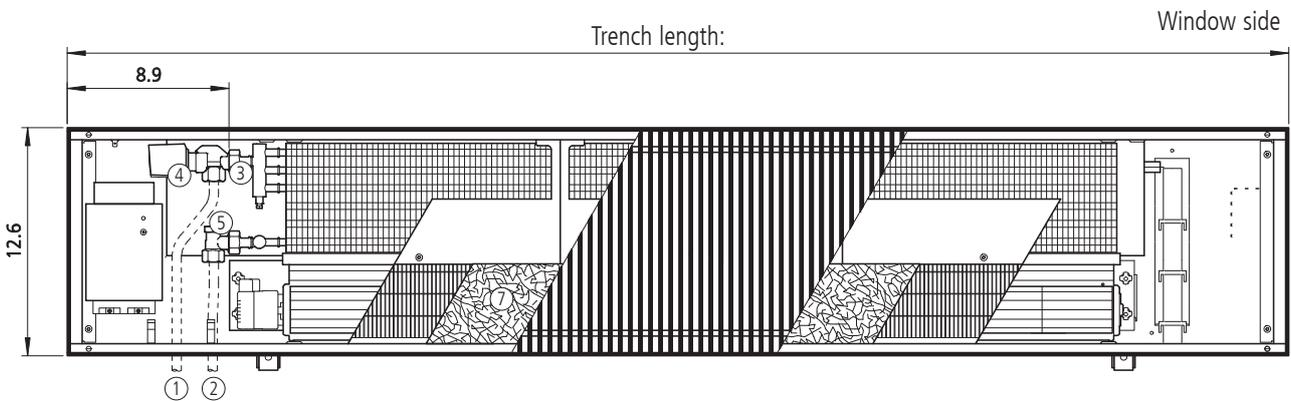
#### Katherm HK 320, 2-pipe, trench height 130 mm (dimensions in inch)

- ① Heating/Cooling supply
- ② Heating/cooling return
- ③ 1/2" valve body, axial, type 346914 and/or type 346911 (flow-dependent)
- ④ Thermoelectric actuator, type 146906
- ⑤ 1/2" return shut-off valve, angled, type 145953
- ⑥ Pipe openings, punched
- ⑦ Filter (optional)

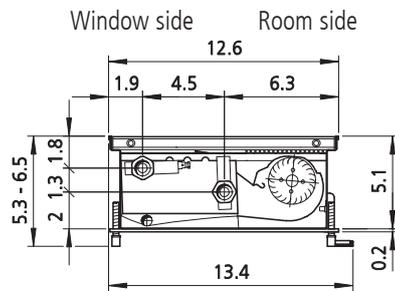
Alternative: Valve kit type 143241 or type 143211 (flow-dependent)



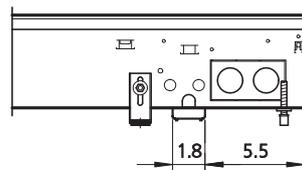
Front view, connection openings



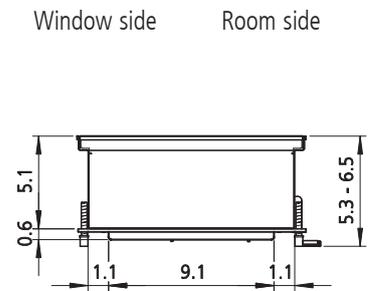
Plan view, water connection on room-side



Cross-section (cooling or heating)  
Example; Roll-up grille



Front view  
with built-in condensation pump

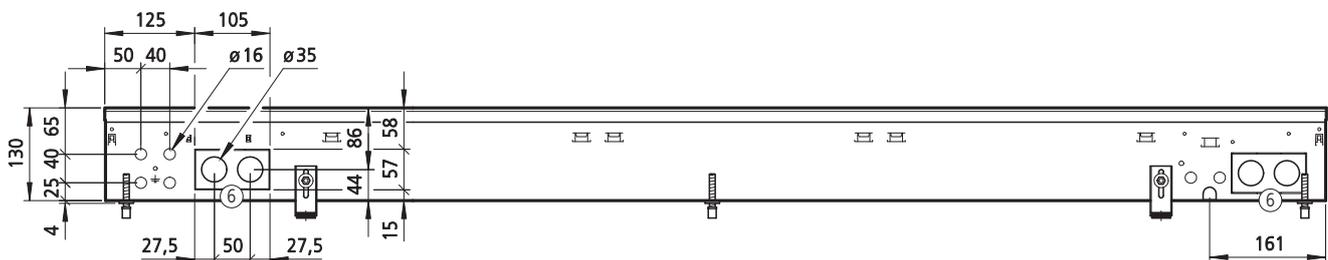


Side view  
with built-in condensation pump

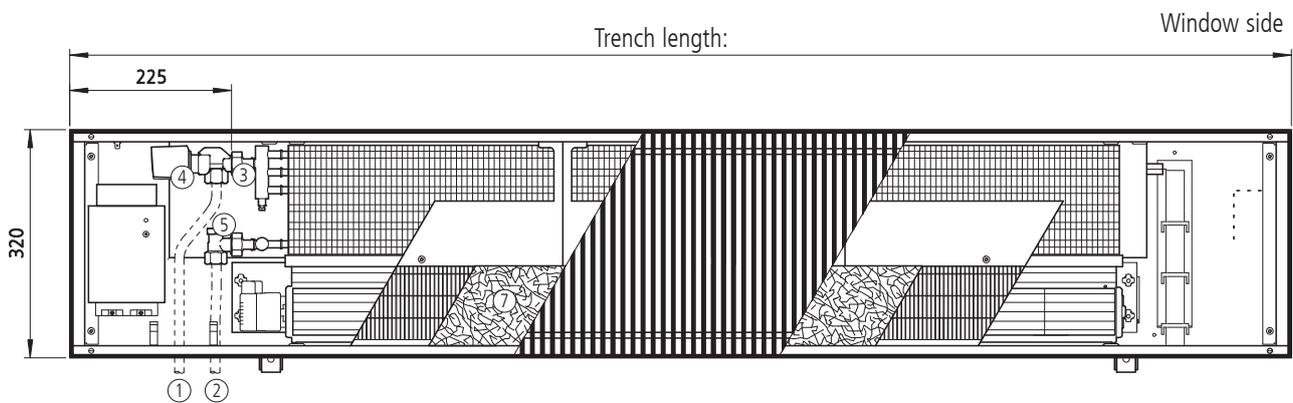
#### Katherm HK 320, 2-pipe, trench height 130 mm (dimensions in mm)

- ① Heating/Cooling supply
- ② Heating/cooling return
- ③ 1/2" valve body, axial, type 346914 and/or type 346911 (flow-dependent)
- ④ Thermoelectric actuator, type 146906
- ⑤ 1/2" return shut-off valve, angled, type 145953
- ⑥ Pipe openings, punched
- ⑦ Filter (optional)

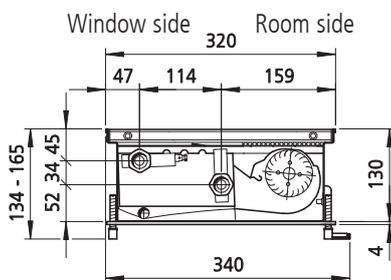
Alternative: Valve kit type 143241 or type 143211 (flow-dependent)



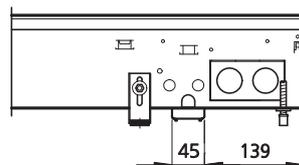
Front view, connection openings



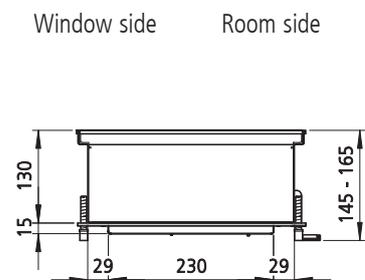
Plan view, water connection on room-side



Cross-section (cooling or heating)  
Example; Roll-up grille



Front view  
with built-in condensation pump



Side view  
with built-in condensation pump

# 1.43 Katherm HK

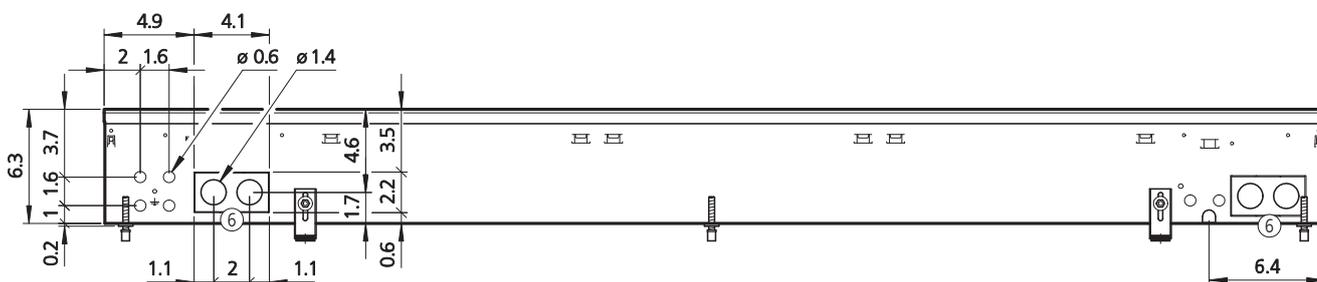
Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

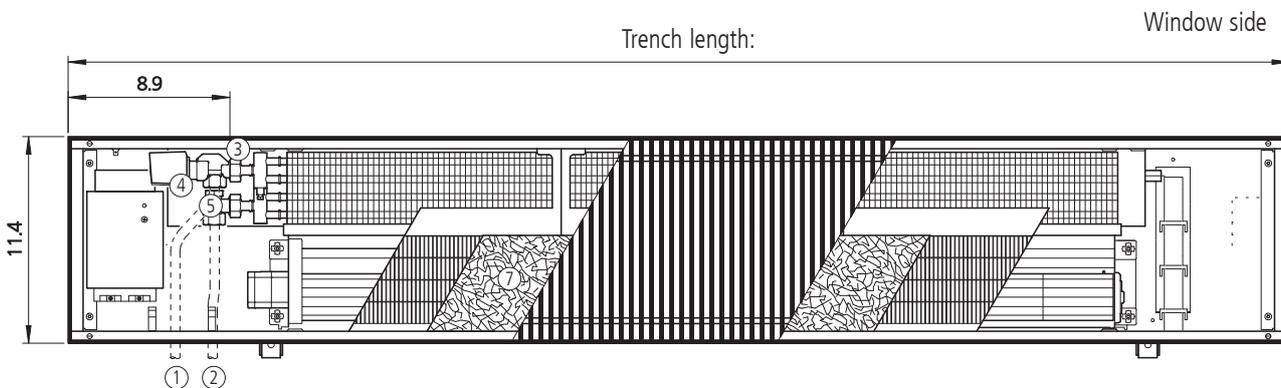
### Katherm HK 290, 2-pipe, trench height 160 mm (dimensions in inch)

- ① Heating/Cooling supply
- ② Heating/cooling return
- ③ 1/2" valve body, axial, type 346914 and/or type 346911 (flow-dependent)
- ④ Thermoelectric actuator, type 146906
- ⑤ 1/2" return shut-off valve, angled, type 145953
- ⑥ Pipe openings, punched
- ⑦ Filter (optional)

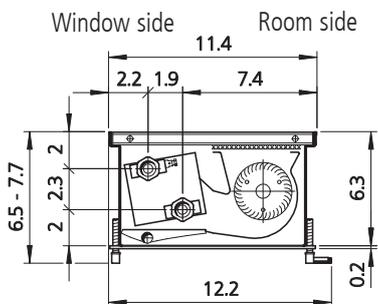
Alternative: Valve kit type 143241 or type 143211 (flow-dependent)



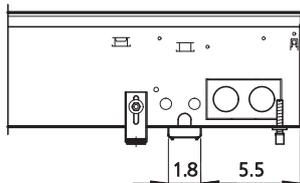
Front view, connection openings



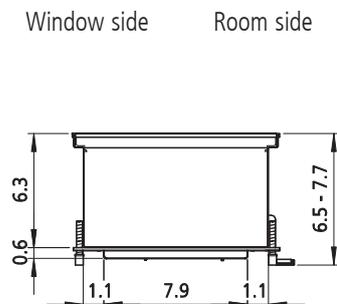
Plan view, water connection on room-side



Cross-section (cooling or heating)  
Example; Roll-up grille



Front view  
with built-in condensation pump

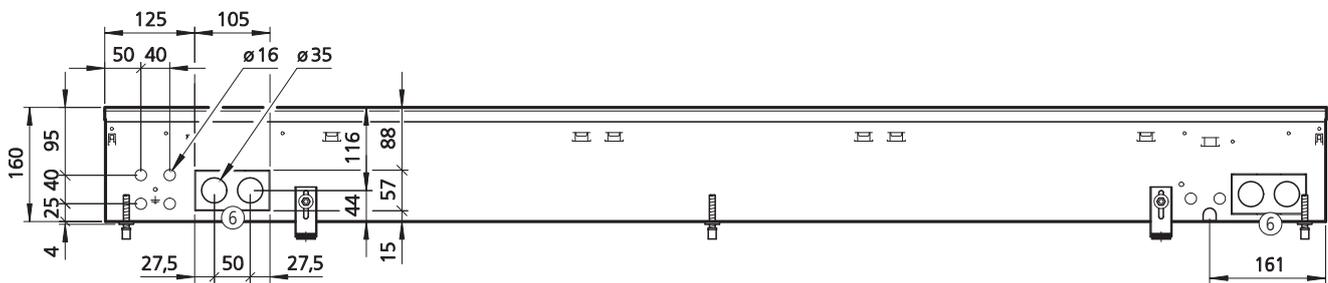


Side view  
with built-in condensation pump

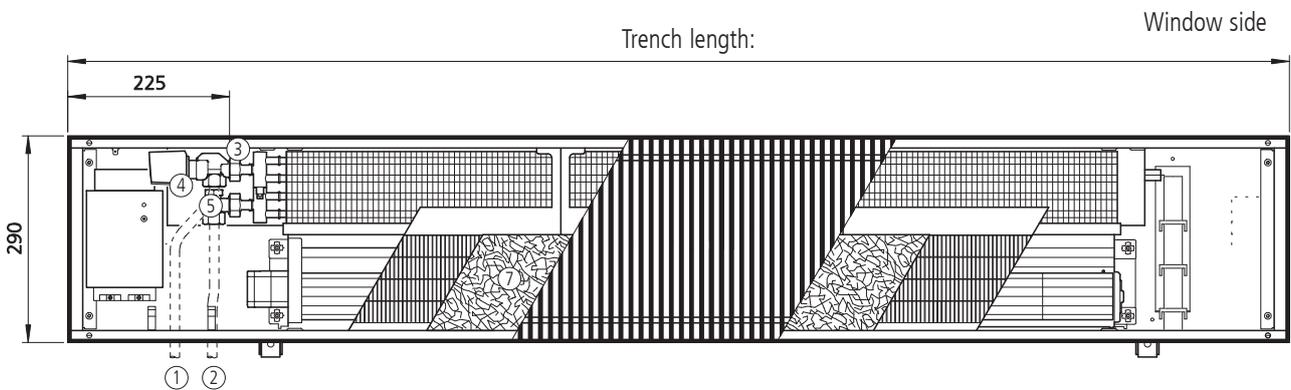
#### Katherm HK 290, 2-pipe, trench height 160 mm (dimensions in mm)

- ① Heating/Cooling supply
- ② Heating/cooling return
- ③ 1/2" valve body, axial, type 346914 and/or type 346911 (flow-dependent)
- ④ Thermoelectric actuator, type 146906
- ⑤ 1/2" return shut-off valve, angled, type 145953
- ⑥ Pipe openings, punched
- ⑦ Filter (optional)

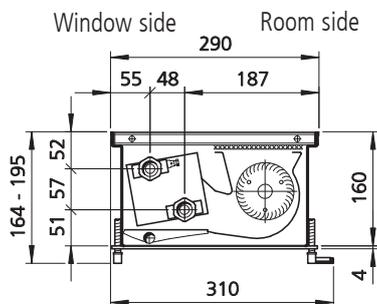
Alternative: Valve kit type 143241 or type 143211 (flow-dependent)



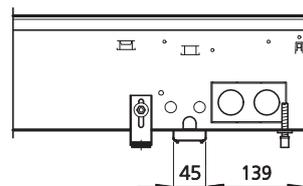
Front view, connection openings



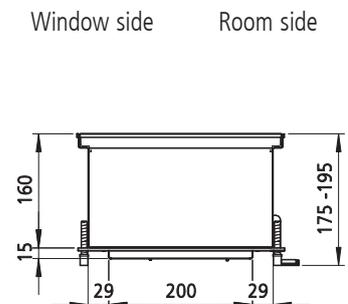
Plan view, water connection on room-side



Cross-section (cooling or heating)  
Example; Roll-up grille



Front view  
with built-in condensation pump



Side view  
with built-in condensation pump

# 1.43 Katherm HK

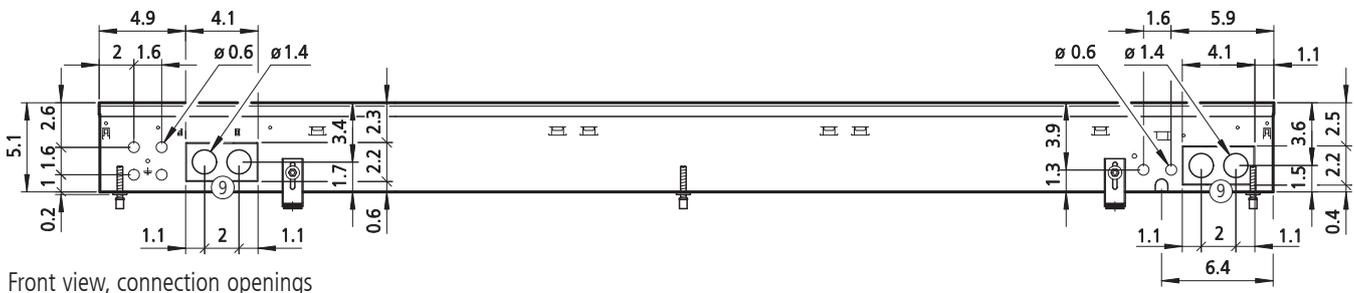
Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

### Katherm HK 320, 4-pipe, trench height 130 mm (dimensions in inch)

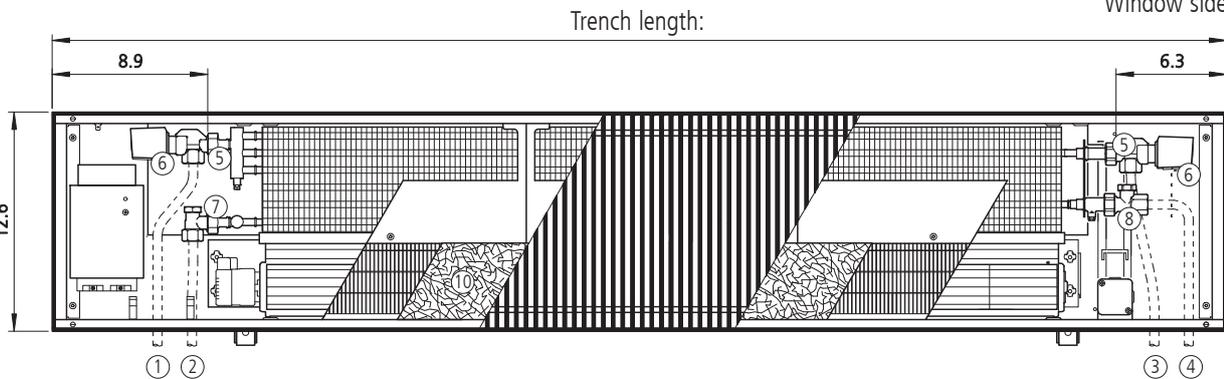
- ① Supply pipe for cooling
- ② Return pipe for cooling
- ③ Supply pipe for heating
- ④ Heating return
- ⑤ 1/2" valve body, axial, type 346914 and/or type 346911 (flow-dependent)
- ⑥ Thermoelectric actuator, type 146906
- ⑦ 1/2" return shut-off valve, angled, type 145953
- ⑧ 1/2" return shut-off valve, straight, type 145952
- ⑨ Pipe openings, punched
- ⑩ Filter (optional)

Alternative: Valve kit type 143441 or type 143411 (flow-dependent)



Front view, connection openings

Window side

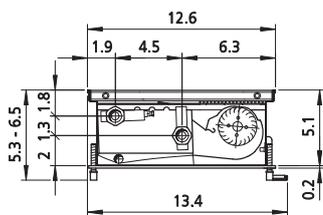


Plan view, water connection on room-side

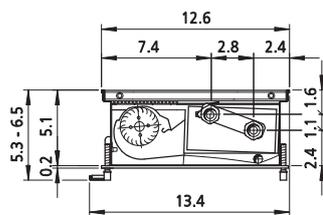
Window side Room side

Room-side Window side

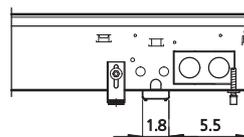
Window side Room-side



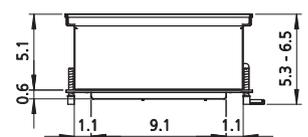
Cross-section (cooling)  
Example: Roll-up grille



Cross-section (heating)  
Example: Roll-up grille



Front view  
with built-in condensation pump



Side view  
with built-in condensation pump



# 1.43 Katherm HK

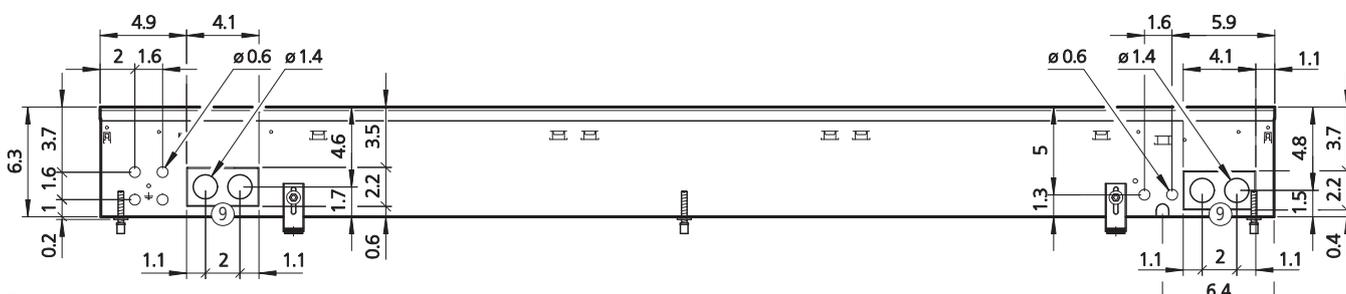
Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

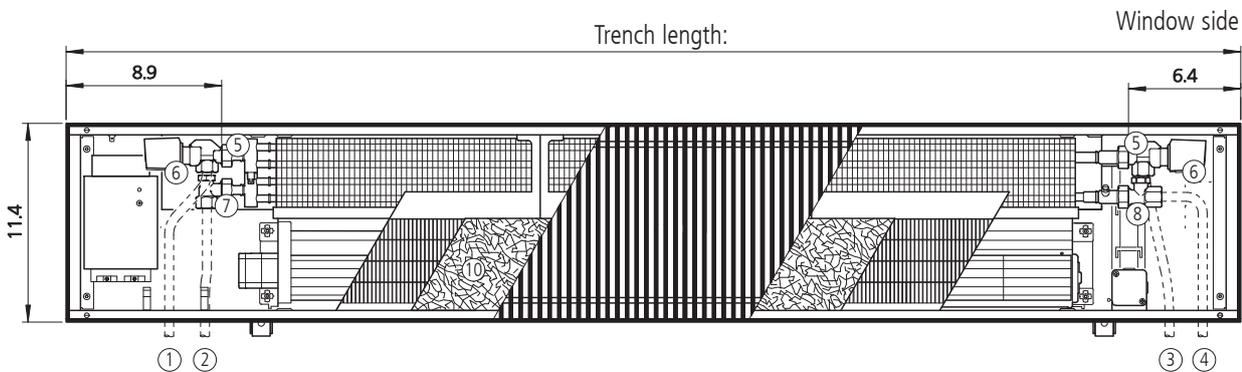
### Katherm HK 290, 4-pipe, trench height 160 mm (dimensions in inch)

- ① Supply pipe for cooling
- ② Return pipe for cooling
- ③ Supply pipe for heating
- ④ Heating return
- ⑤ 1/2" valve body, axial, type 346914 and/or type 346911 (flow-dependent)
- ⑥ Thermoelectric actuator, type 146906
- ⑦ 1/2" return shut-off valve, angled, type 145953
- ⑧ 1/2" return shut-off valve, straight, type 145952
- ⑨ Pipe openings, punched
- ⑩ Filter (optional)

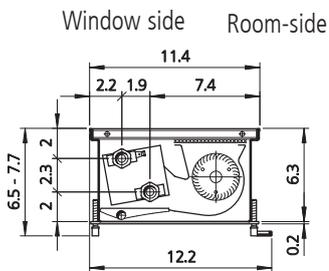
Alternative: Valve kit type 143441 or type 143411 (flow-dependent)



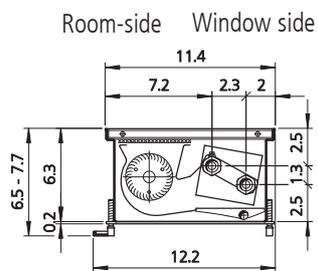
Front view, connection openings



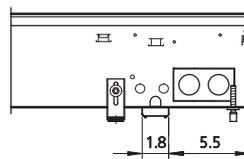
Plan view, water connection on room-side



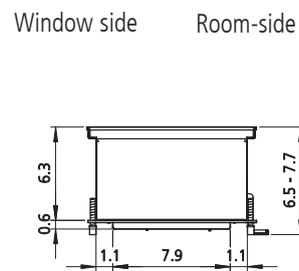
Cross-section (cooling)  
Example: Roll-up grille



Cross-section (heating)  
Example: Roll-up grille



Front view  
with built-in condensation pump

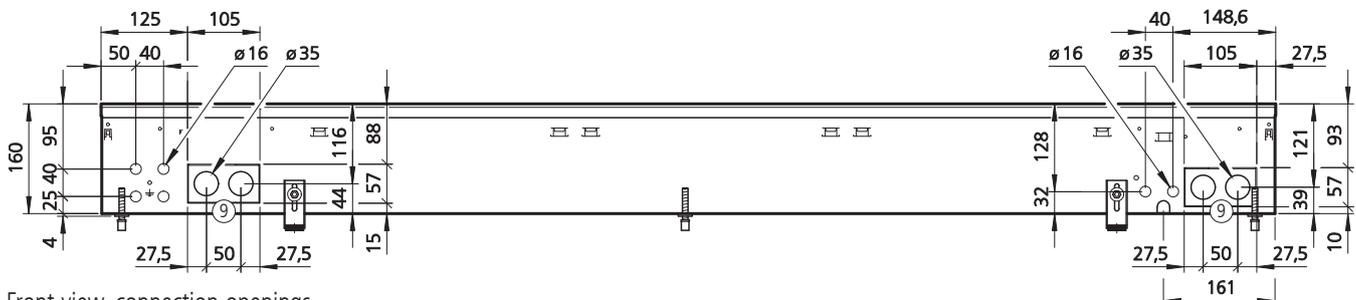


Side view  
with built-in condensation pump

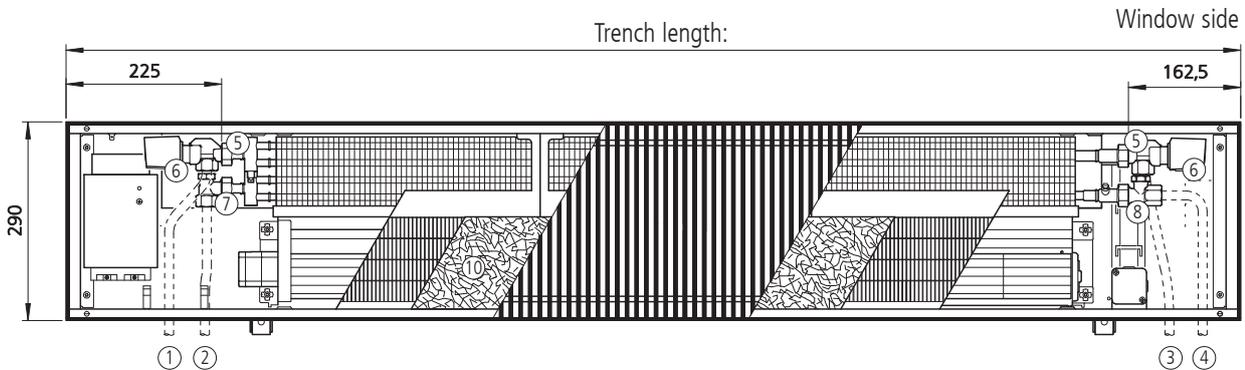
#### Katherm HK 290, 4-pipe, trench height 160 mm (dimensions in mm)

- ① Supply pipe for cooling
- ② Return pipe for cooling
- ③ Supply pipe for heating
- ④ Heating return
- ⑤ 1/2" valve body, axial, type 346914 and/or type 346911 (flow-dependent)
- ⑥ Thermoelectric actuator, type 146906
- ⑦ 1/2" return shut-off valve, angled, type 145953
- ⑧ 1/2" return shut-off valve, straight, type 145952
- ⑨ Pipe openings, punched
- ⑩ Filter (optional)

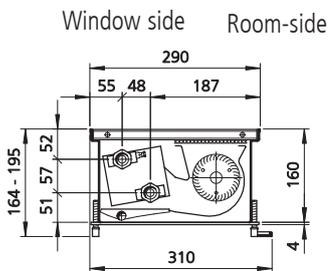
Alternative: Valve kit type 143441 or type 143411 (flow-dependent)



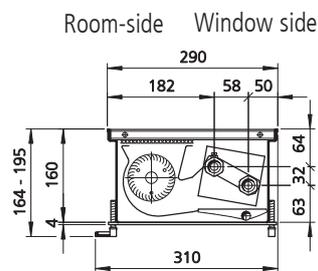
Front view, connection openings



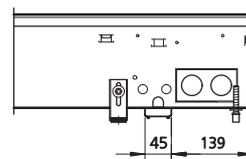
Plan view, water connection on room-side



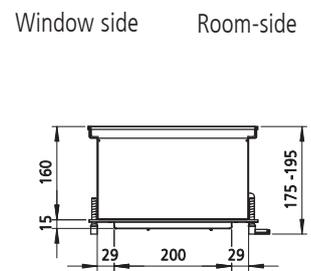
Cross-section (cooling)  
Example: Roll-up grille



Cross-section (heating)  
Example: Roll-up grille



Front view  
with built-in condensation pump



Side view  
with built-in condensation pump

# 1.43 Katherm HK

Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

### 8. Katherm HK optionally with supply air function

#### 8.1 Katherm HK with supply air modules



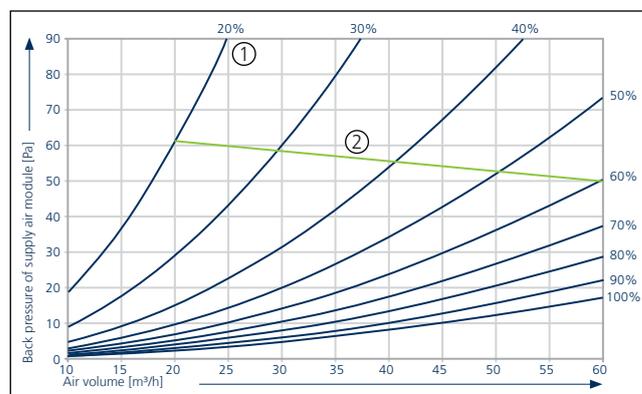
Figure Katherm HK with supply air modules

#### Function of supply air with supply air modules

The conditioned primary air enters through a variable number of supply air modules below the trench unit. It escapes through an outlet slot arranged along the length of the trench unit and mixes with the secondary air heated or cooled by the convector before emerging into the room. Optimum shielding can be provided in front of the glazing with a slow and low-turbulence leaving air velocity. The volume of air supplied can be conveniently adjusted via the variable number of supply air modules per trench and the continuously adjustable slider. Up to 60 m<sup>3</sup>/h of primary air can be supplied per supply air module. High volumetric flow combined with low slider position can lead to noticeable air flow noises (see adjacent diagram).

The designs of Katherm HK with supply air can be adapted on a project-by-project basis. The trench widths are then +20 mm larger compared to the standard widths of Katherm HK models. The trench heights increase by +35 mm (HK 320) or +20 mm (HK 290).

#### Slider positions<sup>1)</sup>



- ① — Slider position
- ② — Limit of perceptible air flow noises

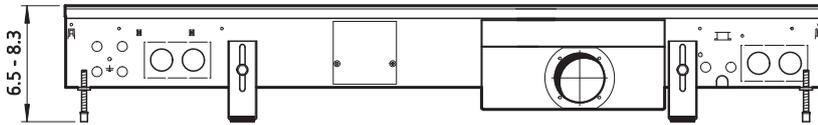
<sup>1)</sup> The slider position corresponds to the percentage of the open cross-sectional area of the supply air inlet.

# Katherm HK 1.43

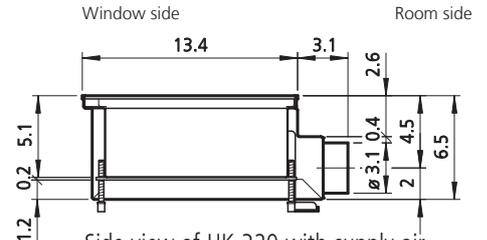
Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

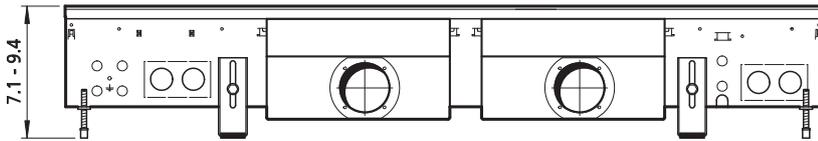
### Dimensions: Katherm HK with supply air modules (dimensions in inch)



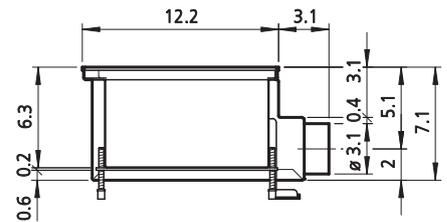
Front view of HK 320 (example shows 1 supply air module)



Side view of HK 320 with supply air module

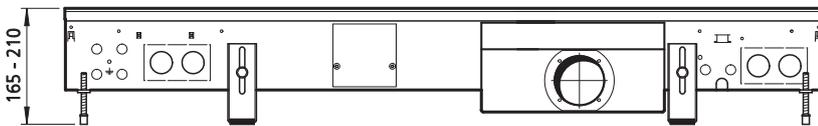


Front view of HK 290 (example shows 2 supply air modules)

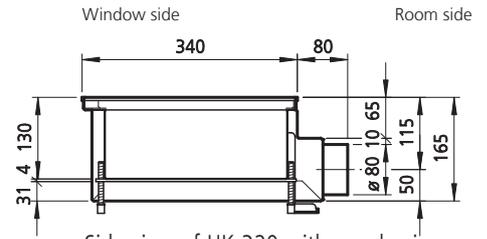


Side view of HK 290 with supply air modules

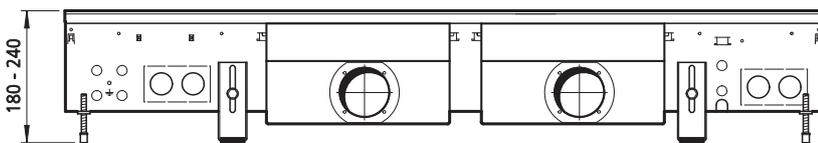
### Dimensions: Katherm HK with supply air modules (dimensions in mm)



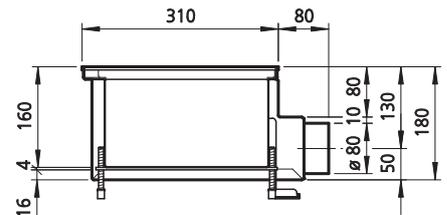
Front view of HK 320 (example shows 1 supply air module)



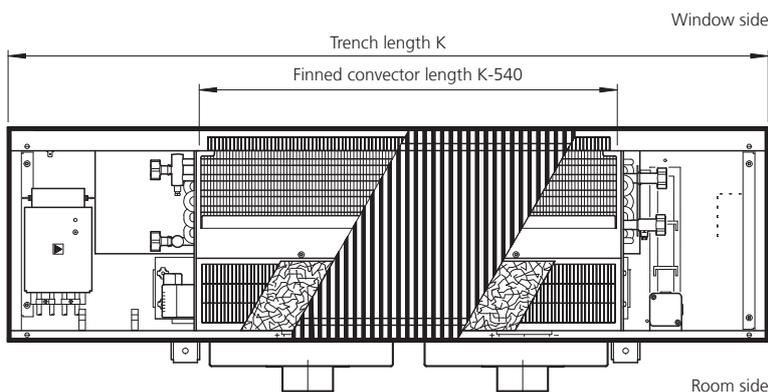
Side view of HK 320 with supply air module



Front view of HK 290 (example shows 2 supply air modules)



Side view of HK 290 with supply air modules



Top view (view without cover panel)

| Katherm HK       | Unit length |              | Max. number of supply air modules |
|------------------|-------------|--------------|-----------------------------------|
|                  | [mm]        | [inch]       |                                   |
| HK 320<br>HK 290 | 915 / 950*  | 36.0 / 37.2* | 1                                 |
|                  | 1200        | 47.2         | 2                                 |
|                  | 1700        | 66.9         | 3                                 |
|                  | 2000        | 78.7         | 4                                 |
|                  | 2500        | 98.4         | 5                                 |
|                  | 3000        | 118.1        | 6                                 |

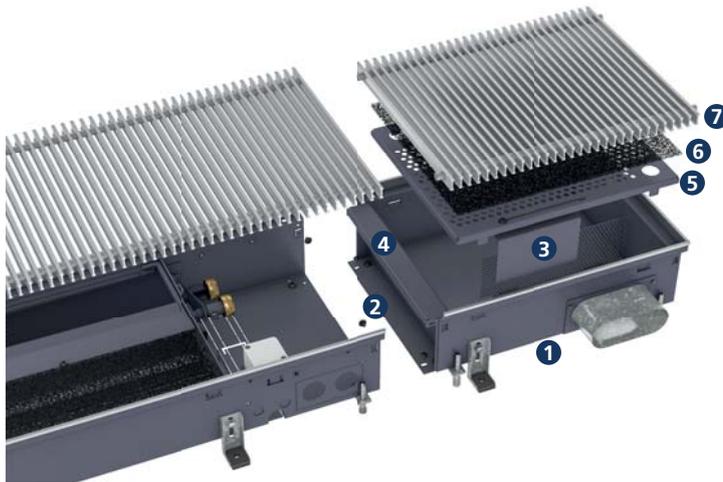
\* with Katherm HK 290

# 1.43 Katherm HK

Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

### 8.2 Katherm HK – Supply air ducts ZL



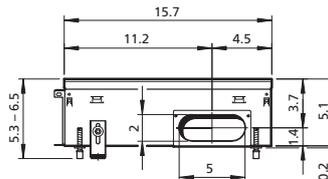
- 1 Supply air duct with supply air spigots
- 2 Connecting brackets
- 3 Supply air slider
- 4 Reinforcing struts
- 5 Perforated plate
- 6 Filter
- 7 Example of Optiline roll-up grille

Combination of Katherm HK with supply air trench (filter optional accessory)

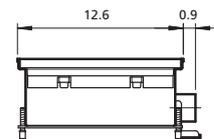
The Katherm supply air trench ZL is available for all trench heaters (Katherm range). This represents a 400 mm long trench, which can be fitted to all designs of Katherm units. Treated supply air can also be fed into rooms through the Katherm supply air trench ZL. This is achieved with different sizes/ designs of spigots for the most diverse trench dimensions.

| Trench width | Trench length | Trench height | Supply air spigot       | Max. air volume (noiseless) |
|--------------|---------------|---------------|-------------------------|-----------------------------|
| [mm (inch)]  | [mm (inch)]   | [mm (inch)]   | [mm (inch)]             | [m³/h (cfm)]                |
| 320 (12.6)   | 400 (15.7)    | 130 (5.1)     | oval 51x128 (2.0 x 5.0) | 70 (41.2)                   |
| 290 (11.4)   | 400 (15.7)    | 160 (6.3)     | DN 80 (Ø 3.1)           | 60 (35.3)                   |

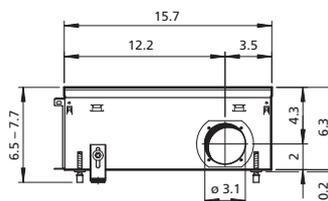
(dimensions in inch)



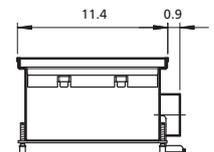
Supply air duct, oval, for Katherm HK 320/130



Side view

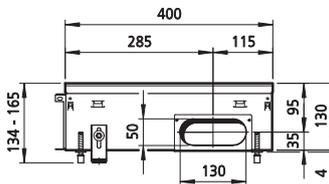


Supply air duct DN 80 for Katherm HK 290/160

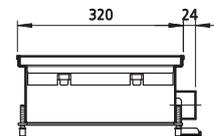


Side view

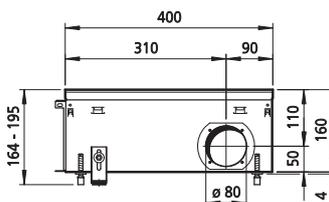
(dimensions in mm)



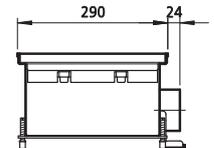
Supply air duct, oval, for Katherm HK 320/130



Side view

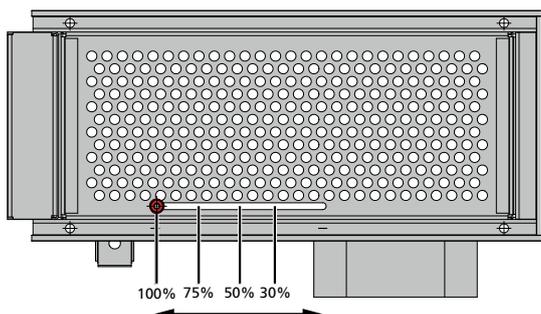


Supply air duct DN 80 for Katherm HK 290/160



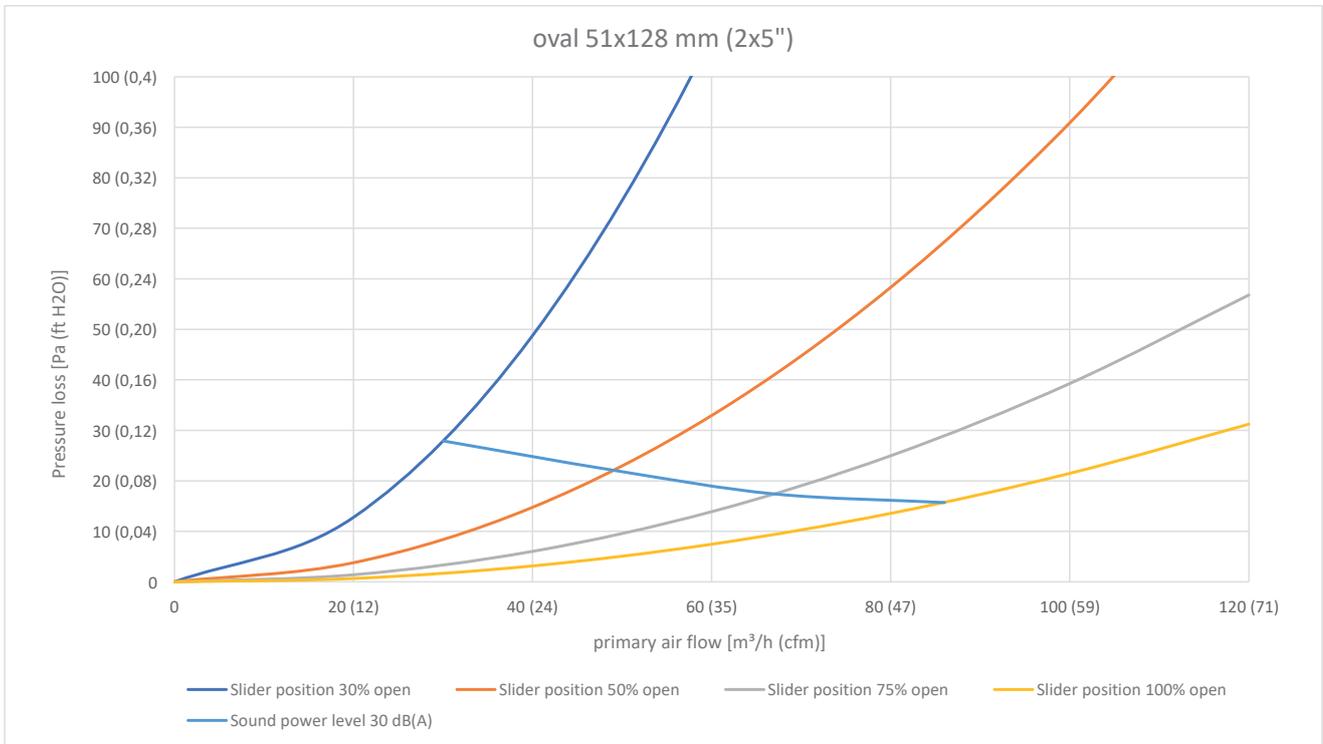
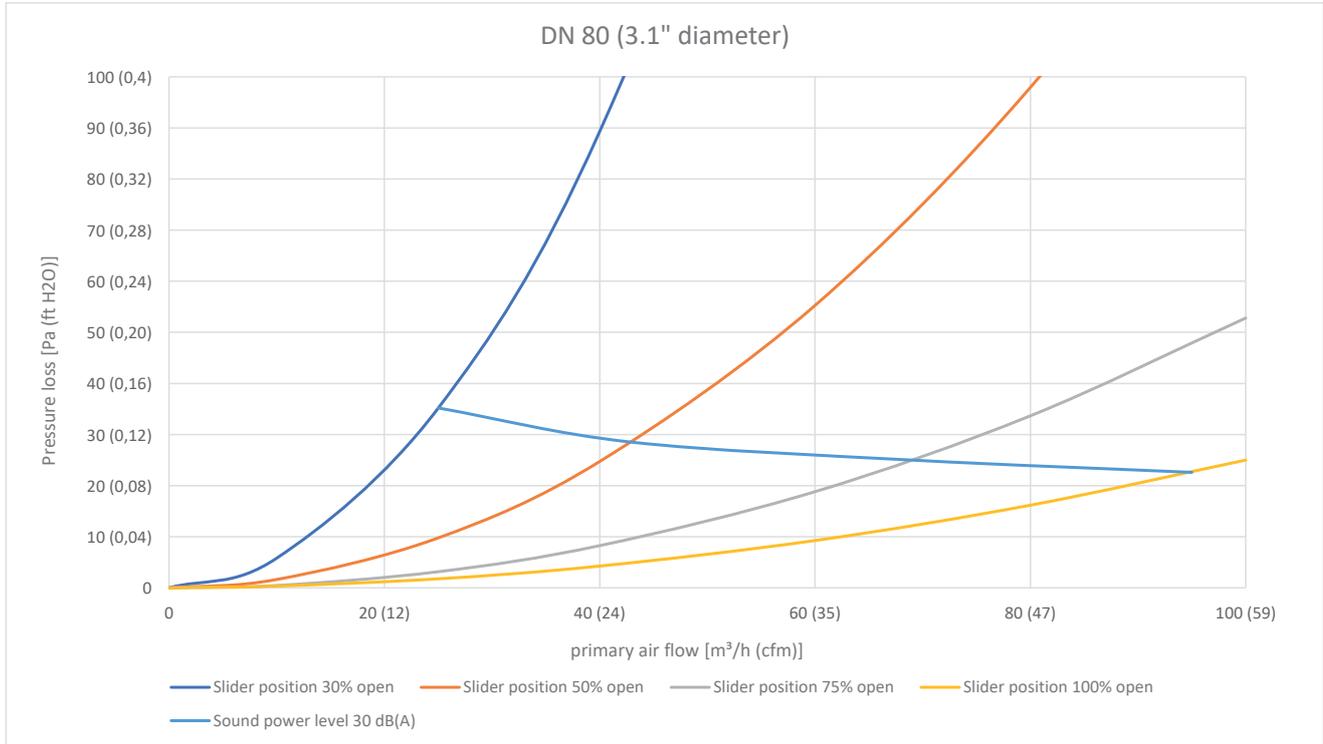
Side view

#### Adjusting the slider positions



The supply air model, like all standard Katherm units, is adjusted in height via the adjustment screws and fixed to the floor via the adjustment feet. To set the desired flow rate at the supply air module, you can move the slider in various positions. The illustration on the left shows 4 different slider positions (100%, 75%, 50% and 30% open). They are also shown in the design diagrams below, where you can read off the desired pressure losses, sound levels and air flow rates. Intermediate values can be interpolated.

#### Design diagrams



# 1.43 Katherm HK

## Ready-to-install trench heaters with EC tangential fan

### Assembly and installation instructions

## 9. Condensation drainage

### 9.1. General information

A differentiation is made between two fundamentally different designs when operation the Katherm HK in cooling mode: dry cooling and wet cooling, both in 2-pipe and 4-pipe mode.

If the Katherm HK trench unit is used to cool room air, condensation can be produced at certain cooling water temperatures, room temperatures and room humidity levels. Katherm HK are fitted as standard with a condensation tray for condensation drainage. The condensation is collected by the tray underneath the heat exchanger and discharged and forward to the drain opening for discharge.

The condensation tray is designed in such a way that it can be fully removed to the room side for complete cleaning.

It is crucial that the prescribed service intervals (see chapter 10 Service) for the condensation tray and condensation pump (if necessary) are maintained for correct operation.

### Maximum condensation produced per Katherm HK (at 100% fan speed, 2-pipe system)

| Air intake                |               | 27°C (80.6 °F) / 48% |       |                      |       |                      |       | 30°C (86°F) / 70%    |       |       |
|---------------------------|---------------|----------------------|-------|----------------------|-------|----------------------|-------|----------------------|-------|-------|
| Cooling water temperature |               | 6/12°C (42.8/53.6°F) |       | 7/12°C (44.6/53.6°F) |       | 8/14°C (46.4/57.2°F) |       | 6/12°C (42.8/53.6°F) |       |       |
| Katherm HK                | Trench length |                      | [l/h] | [cfh]                | [l/h] | [cfh]                | [l/h] | [cfh]                | [l/h] | [cfh] |
|                           | [mm]          | [inch]               |       |                      |       |                      |       |                      |       |       |
| 320/130                   | 915           | 36                   | 0,32  | 0,011                | 0,3   | 0,011                | 0,21  | 0,007                | 1,83  | 0,065 |
|                           | 1200          | 47,2                 | 0,5   | 0,018                | 0,47  | 0,017                | 0,32  | 0,011                | 3,01  | 0,106 |
|                           | 1700          | 66,9                 | 0,75  | 0,026                | 0,7   | 0,025                | 0,47  | 0,017                | 4,67  | 0,165 |
|                           | 2000          | 78,7                 | 0,95  | 0,034                | 0,88  | 0,031                | 0,59  | 0,021                | 6,03  | 0,213 |
|                           | 2500          | 98,4                 | 1,17  | 0,041                | 1,09  | 0,038                | 0,71  | 0,025                | 7,61  | 0,269 |
|                           | 3000          | 118,1                | 1,49  | 0,053                | 1,38  | 0,049                | 0,89  | 0,032                | 9,98  | 0,352 |

Condensation can be drained away in the Katherm HK in two different ways:

- condensation drainage with a natural gradient
- condensation drainage using the condensation pump kit

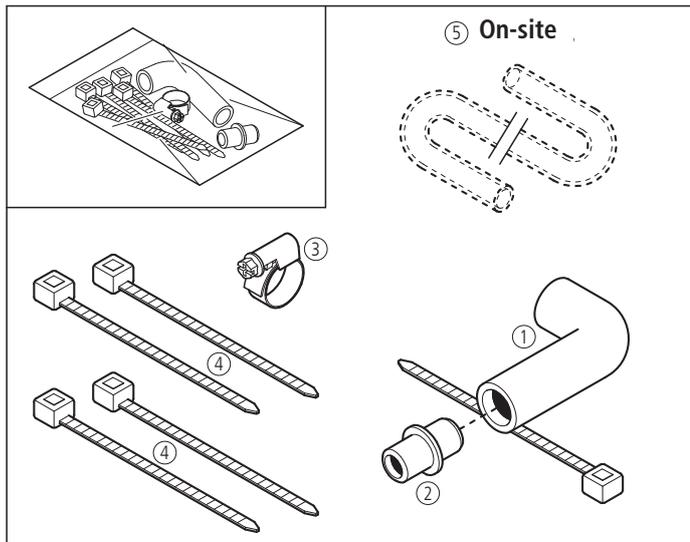
To ensure the drainage of condensation from the Katherm HK, the gradient needs to be at least 2%, without restriction and without rising sections of pipe. Make sure that the condensation drainage line is laid without kinks. Take into account all applicable regulations, such as the use of a ball trap, when connecting the condensation line to the sewer system. Protect the trap from drying out. Consider the use of water vapour-impermeable insulation depending on the pipe material used for the condensation drain. You will need to use a condensation pump should a natural gradient be impossible on site (see Section 9.2).

## 9.2 Condensation drainage with a natural gradient

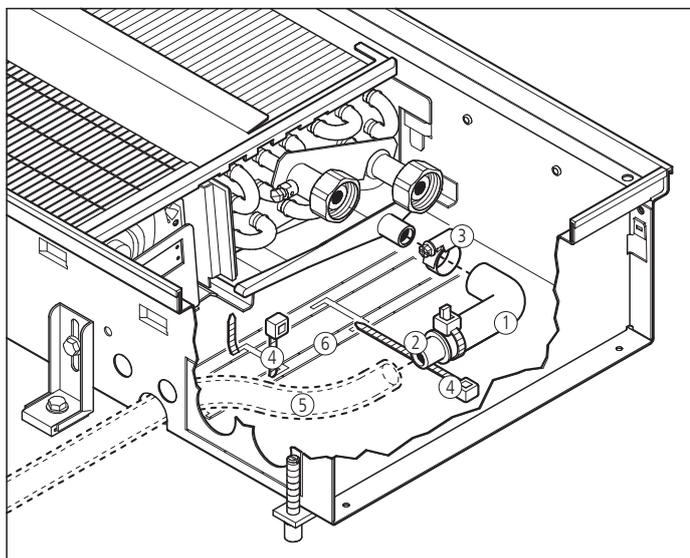
### 9.2.1 Condensation drainage kit with a natural gradient

We recommend ordering a supplementary kit as an accessory to drain the condensation in the event of a natural gradient.

### 9.2.2 Connection of condensation drain kit with a natural gradient for Katherm HK 320, H = 130 mm / Katherm HK 290, H = 160 mm



- ① Condensate bend
- ② Coupling section
- ③ Hose clamp
- ④ Cable tie
- ⑤ On-site condensation line (not included)
- ⑥ Cut-outs in base (pre-punched)



#### How to use the supplementary kit:

**Step 1:** Connect the coupling piece ② to connect the condensate bend section ①. You will need a cable tie to fix it in place.

**Step 2:** Then use the hose clamp to fix the condensate bend section to the outlet connection of the condensation tray.

**Important!** We recommend proceeding in the same way when using on-site components for condensation drainage

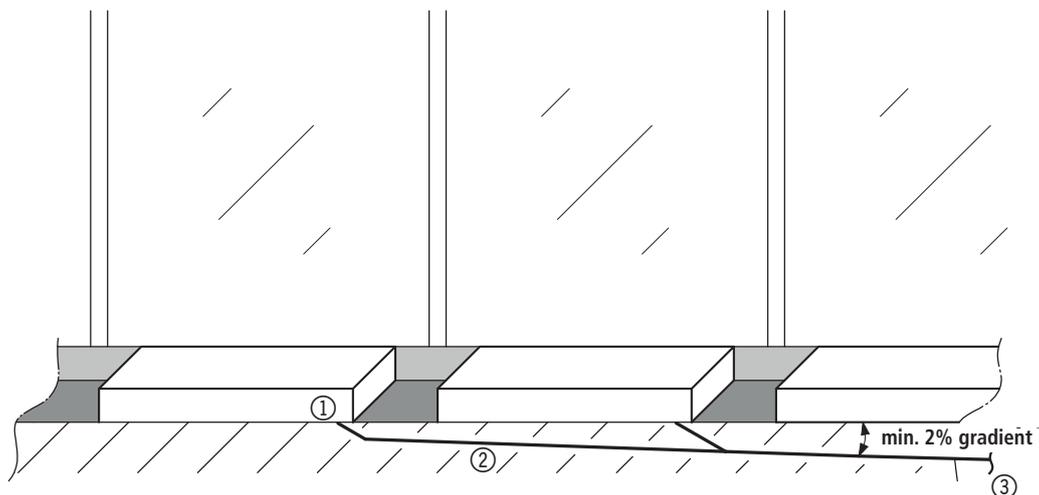
# 1.43 Katherm HK

Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

### 9.2.3 On-site condensation drainage with a natural gradient

The following drawing shows the on-site condensation connection of the Katherm HK with a natural gradient to a condensation collecting pipe.



- ① Katherm HK condensation connection – collecting pipe
- ② Condensation collecting pipe
- ③ **Important:** Connect the condensation collecting pipe to the waste water network in accordance with all applicable technical standards and regulations; note in particular any necessary vents, traps etc.

#### 9.2.4 Additional on-site condensation drainage:

- ① Condensate bend
- ② Coupling section
- ③ Hose clamp
- ④ Cable tie
- ⑤ On-site condensation pipe
- ⑥ Cut-outs in base (pre-punched)

Additional on-site condensation drainage needs to be provided at this point. The on-site condensation pipe can be fixed by cable ties to the openings provided by the pre-punched openings in the base to maintain the necessary gradient.

If a steeper gradient is needed on site for the condensation drain pipe, the pre-punched openings on the base can be removed as required ⑥.

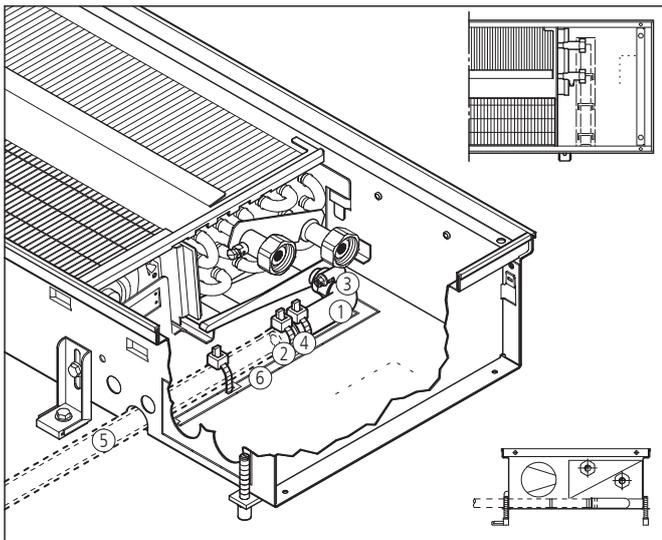


Fig.: Additional on-site condensation drain pipe

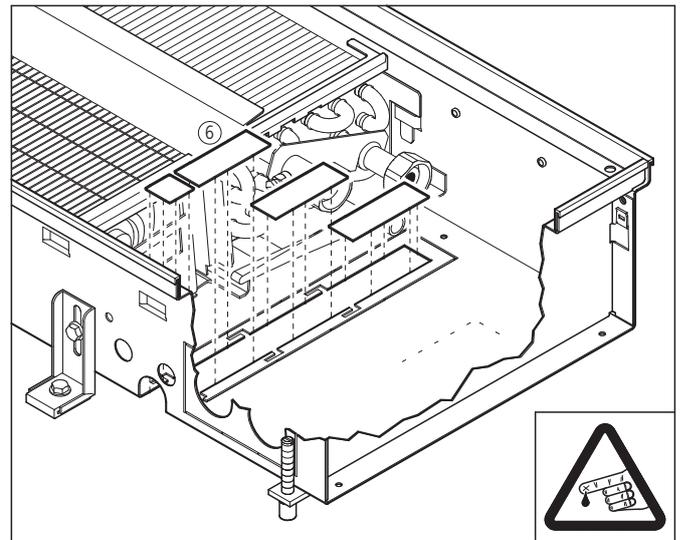


Fig.: Possible openings needed on the base

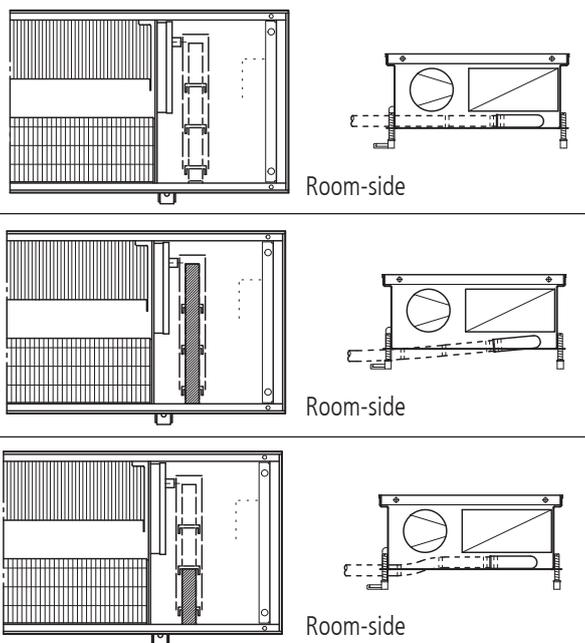
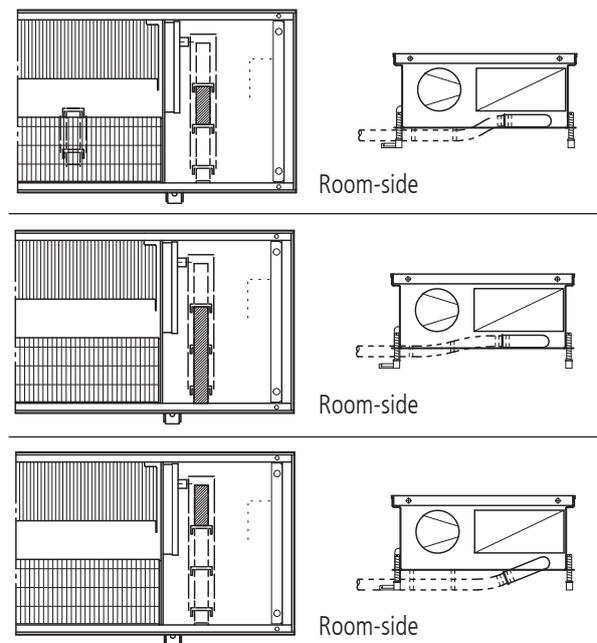


Fig.: Options to remove sections of the base and routing of on-site condensation drain pipe

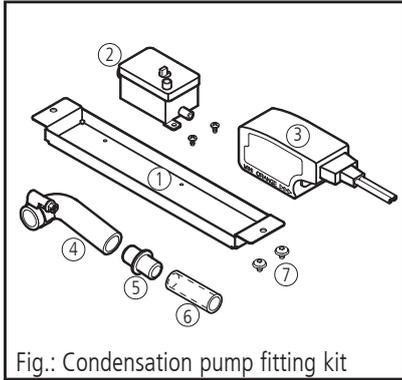


# 1.43 Katherm HK

Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

### 9.3 Condensation drainage using the condensation pump kit



- ① Mounting bracket for float module
- ② Float module
- ③ Pump unit
- ④ Condensate bend
- ⑤ Coupling section
- ⑥ Condensate hose
- ⑦ Metal screws
- ⊗ Fixing with cable ties provided

If condensation drainage is provided by a condensation pump, any condensation produced cannot be discharged by a natural pipe gradient so that a condensation pump kit needs to be bought as an accessory for the Katherm HK.

The condensation pump kit for the Katherm HK can either be supplied loose or factory-fitted.

The following drawing shows the principle of condensation drainage using a condensation pump.

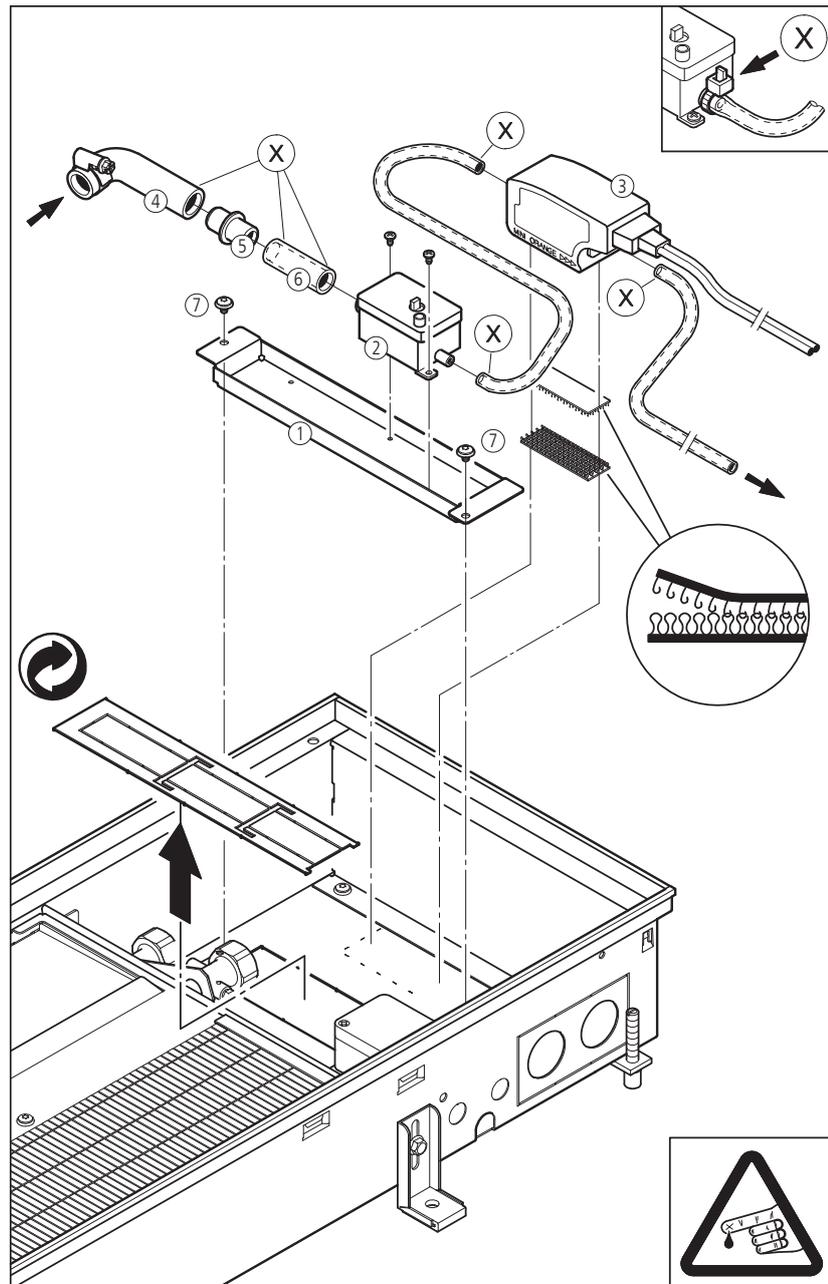
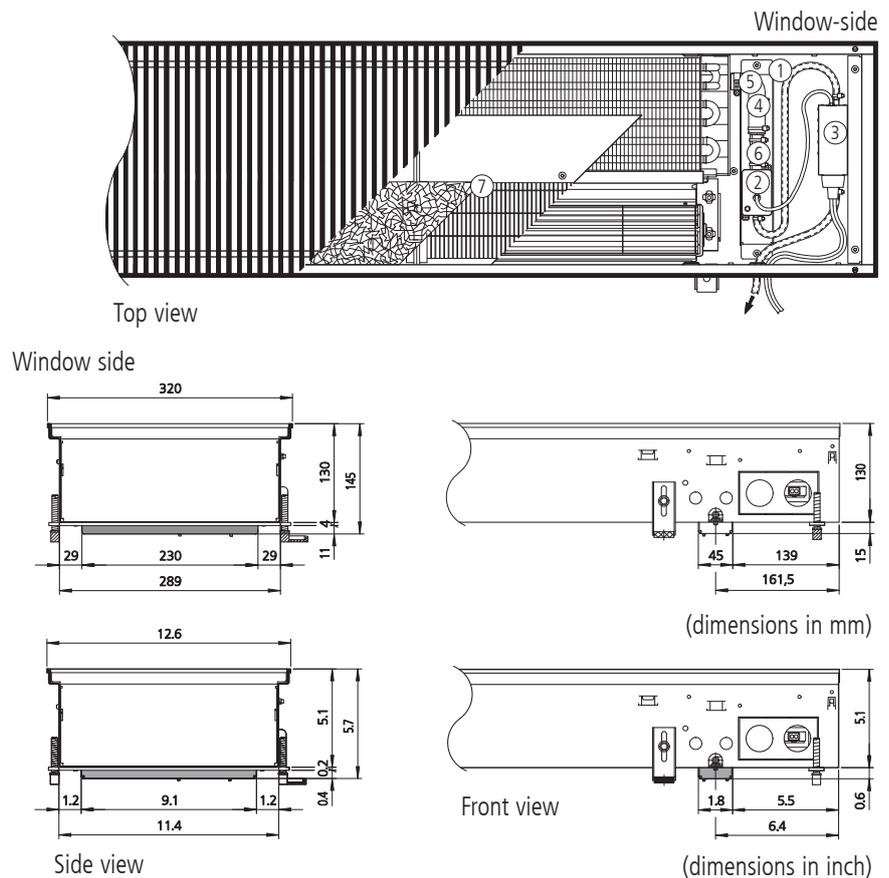


Fig.: Installation of condensation pump fitting kit

#### 9.3.1 Connection fitting kit for Katherm HK 320, H = 130 mm / HK 290, H = 160 mm

**Important!** Note the increase in the height of the trench when the fitting kit is installed. First fit the condensation pump fitting kit before fitting the valves for the water connection (with 4-pipe systems).



Katherm HK 320, H = 130 mm, 2-pipe, extended trench height with condensation pump\*

- ① Mounting bracket for float module
- ② Float module
- ③ Pump unit
- ④ Condensate bend with clamp
- ⑤ Condensate tray outlet connector
- ⑥ Condensation hose section
- ⑦ Filter (optional)

**Step 1:** Remove the narrow punched panel of the base of the unit on the right-hand connection side. Position the retaining bracket for the float module ① and use the screws provided to fix it in place.

**Step 2:** Fix the pump unit ② to the base of the trench using the double-sided velcro provided.

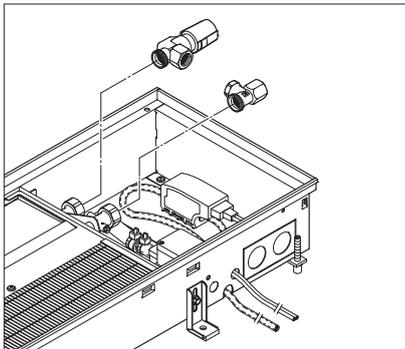
**Step 3:** Insert the float module ③ into the retaining bracket and use the screws provided to fix it in place.

\* With Katherm HK 290, H = 160 mm, the installation position of the condensation tray and thus also the corresponding dimensions are identical to those of the Katherm HK 320, H = 130 mm. Only the dimensions of the trench height differ.

# 1.43 Katherm HK

## Ready-to-install trench heaters with EC tangential fan

### Assembly and installation instructions

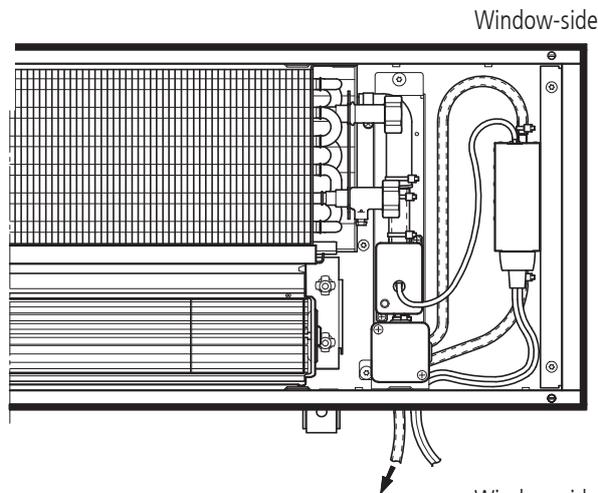


Recommended order of assembly

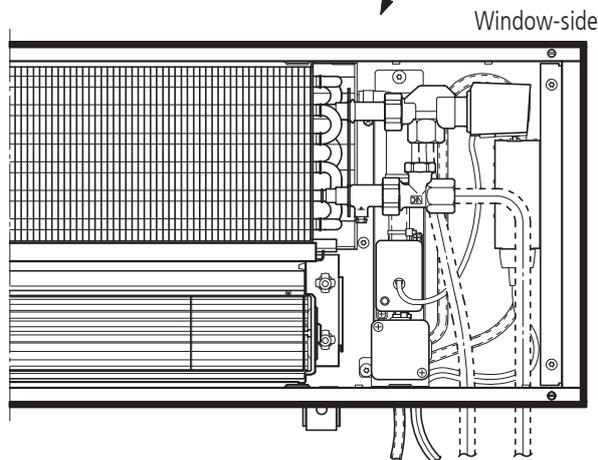
1. Condensation pump fitting kit
2. Valves with actuator

**Step 4:** Fix a section of condensate hose ⑥ to the float module with a cable tie provided. Use the coupling section ⑤ to connect the condensation hose section to the condensation bend section ④. You will need cable ties to fix it in place. Then use the hose clamp to fix the condensation bend section to the outlet connection of the condensation tray ⑧.

**Step 5:** Please refer to the separate manufacturer's installation instructions and the electrical wiring information for further steps to ensure the correct installation of the condensate pump.



Example: Plan view of Katherm HK 320 with condensation pump fitting kit installed\*

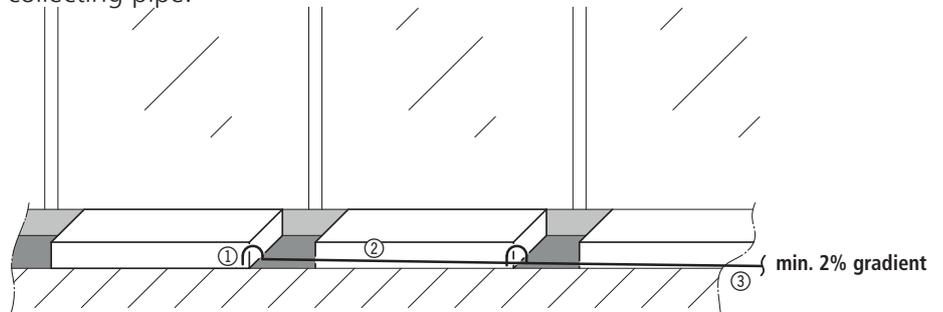


Example shown: Katherm HK 320, 4-pipe with valves fitted

\* With Katherm HK 290, H = 160 mm, the installation position of the condensation tray and thus also the corresponding dimensions are identical to those of the Katherm HK 320, H = 130 mm. Only the dimensions of the trench height differ.

#### 9.3.2 On-site condensation drainage with a condensation pump

The following drawing shows the on-site condensation connection of the Katherm HK with condensation pump connected to a condensation collecting pipe.



- ① Katherm HK condensation connection – collecting pipe
- ② Condensation collecting pipe
- ③ **Important:** Connect the condensation collecting pipe to the waste water network in accordance with all applicable technical standards and regulations; note in particular any necessary vents, traps etc.

#### 9.3.3 Condensation pump connection data

|                            |  |
|----------------------------|--|
| Max. delivery height       | 10 m (33 ft)                               |
| Max. pump volume           | 12 l/h (3.2 GPH)                           |
| Supply voltage             | 100-230 V (separate mains supply required) |
| Power consumption          | 16 W                                       |
| Condensation pressure line | 5'x1/4" (hose connection)                  |

#### 10. Number of height-adjustment feet and raised floor feet

| Katherm HK       | Trench length [inch] | Quantity of height-adjustment feet | Quantity of raised floor brackets |
|------------------|----------------------|------------------------------------|-----------------------------------|
| HK 320<br>HK 290 | 36.0/37.4*           | 2                                  | 2                                 |
|                  | 47.2                 | 2                                  | 3                                 |
|                  | 66.9                 | 2                                  | 4                                 |
|                  | 78.7                 | 2                                  | 4                                 |
|                  | 98.4                 | 2                                  | 5                                 |
|                  | 118.1                | 2                                  | 5                                 |

\* applies to Katherm HK 290

# 1.43 Katherm HK

## Ready-to-install trench heaters with EC tangential fan

### Assembly and installation instructions

#### 11. Maintenance

##### 11.1 Information / Maintenance / Maintenance intervals

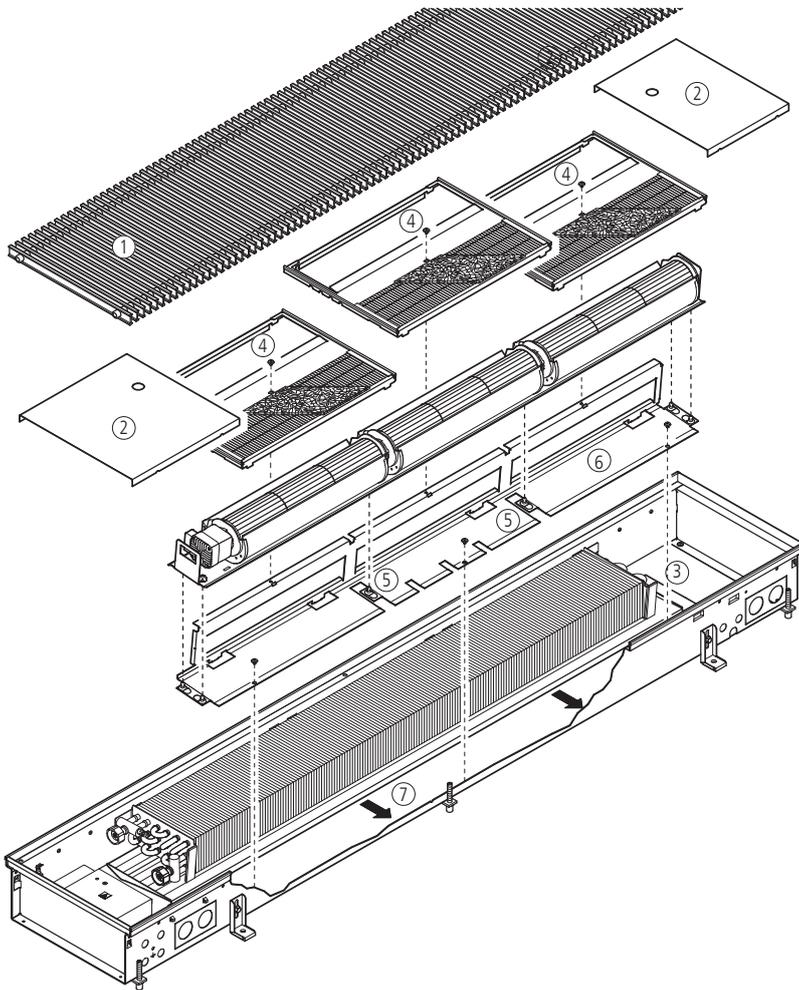
The section below describes maintenance work on the Katherm HK needed for optimum and trouble-free operation of the equipment. If there are signs of increased wear during regular checks, adjust the required maintenance intervals to the actual wear and tear.

Only permit trained qualified personnel to perform maintenance work on Katherm HK trench heaters in compliance with the installation and operating instructions as well as any regulations currently in force.

Regularly maintain and inspect Katherm HK units to ensure their proper function and performance.

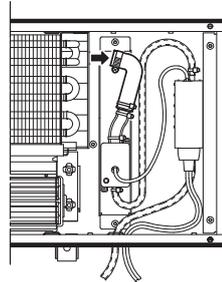
| Maintenance task   | Maintenance interval |
|--|----------------------|
| <b>Floor trench</b><br>Check the floor trench (internally) for dirt, damage and corrosion.   | Every 6 months       |
| <b>Filter</b><br>Regularly check the filters installed above the tangential fans for any impermissible dirt, damage and noises.<br>Clean the filters carefully by tapping or vacuuming them in the event of dirt.<br>Never use a cleaning agent to clean the filters!<br>Replace the filters if they are heavily soiled.   | Every 3 months       |
| <b>Fan / Finger guard</b><br>Check the tangential fans and finger guards for dirt, damage and corrosion.<br>Clean the fan shafts carefully with a cloth if dirty.  | Every 6 months       |
| <b>Heat exchanger/carrier</b><br>Check the built-in heat exchanger for dirt, damage, corrosion and leak-tightness.<br>Carefully vacuum the heat exchanger if dirty.  | Every 3 months       |
| <b>Condensate tray</b><br>Check the condensation tray for dirt, damage, leak-tightness and correct drainage. Remove any condensation deposits from the condensation tray.  | Every 3 months       |
| <b>Condensation drain / condensation pump</b><br>Check the condensation drain for dirt, damage, leak-tightness and correct drainage. Remove any condensation deposits from the drain or drain connector.<br>Check the condensation pump and float switch for dirt and correct operation.<br>Clean the condensation pump and float switch if necessary.<br><br><b>Important:</b> Carry out an initial service on the condensation pump and float switch directly after commissioning! | Every 3 months       |
| <b>Waterside connections / valves</b><br>Monitor the waterside connections, valves and threaded connections for leak-tightness, dirt and correct working order.  | Every 6 months       |
| <b>Grilles</b><br>Check the grilles for dirt, damage and corrosion. Use a cloth to carefully clean the grilles if dirty.   | Every 6 months       |
| <b>Electrical wiring / control box</b><br>Check that the electrical connections are tight and undamaged.   | Every 6 months       |

#### 11.2 Cleaning the condensation tray



Example: Katherm HK 320

#### Optional pump



#### Important:

Disconnect all parts of the system from the mains power supply and prevent them from being reconnected before starting any maintenance work.

Before commencing maintenance work, wait until the fan has come to a standstill after the unit has been switched off.

Inspect the condensation tray every 3 months for dirt, condensation deposits, damage and leak-tightness and clean and repair if necessary. Adjust the maintenance intervals to suit the actual level of wear and tear if there are signs of increased wear/dirt during regular checks.

Risk of injury from sharp metal parts! Wear protective gloves!

#### Dismantling / Assembly steps:

1. Remove the grille from the Katherm HK ①
2. Remove the cover plates for the connections and return end and between if necessary ②.
3. Loosen the clamp from the condensate bend section and carefully pull the condensate bend section from the condensate tray drain connection ③.
4. Loosen the screws for the section sheets and remove them carefully from the brackets on the floor trench walls ④.
5. Carefully remove the motor connection plug from the tangential fan.
6. Carefully remove the tangential fans from the mounting bolts ⑤ on the centre wall ⑥.
7. Loosen the screws on the central wall and remove the central wall from the trench.
8. Pull the condensation tray arranged underneath the heat exchanger to the room side of the trench ⑦.  
Important: Do not remove the condensation tray.
9. Clean the condensation tray.
10. Fit the aforementioned components in reverse order.



# 1.43 Katherm HK

Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

### 12. Consumption figures

| Katherm HK - Power consumption (P)* / Current consumption (A) |               |        |                   |           |          |           |          |           |          |           |          |           |
|---|---------------|--------|-------------------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| Design<br>Katherm HK  | Trench length |        | Speed setting [%] |           |          |           |          |           |          |           |          |           |
|   | [mm]          | [inch] | 20                |           | 40       |           | 60       |           | 80       |           | 100      |           |
|   |               |        | P<br>[W]          | I<br>[mA] | P<br>[W] | I<br>[mA] | P<br>[W] | I<br>[mA] | P<br>[W] | I<br>[mA] | P<br>[W] | I<br>[mA] |
| HK 320  | 915           | 36.0   | 4.7               | 49.0      | 5.0      | 52.0      | 5.6      | 58.0      | 6.5      | 67.0      | 7.9      | 82.0      |
|   | 1200          | 47.2   | 4.9               | 51.0      | 5.5      | 57.0      | 6.5      | 67.0      | 8.4      | 86.0      | 11.4     | 118.0     |
|   | 1700          | 66.9   | 5.3               | 55.0      | 6.5      | 67.0      | 9.0      | 93.0      | 13.3     | 137.0     | 16.4     | 169.0     |
|   | 2000          | 78.7   | 9.8               | 102.0     | 11.0     | 114.0     | 13.0     | 135.0     | 16.7     | 173.0     | 22.9     | 237.0     |
|   | 2500          | 98.4   | 10.2              | 106.0     | 12.0     | 124.0     | 15.5     | 160.0     | 21.6     | 224.0     | 27.8     | 288.0     |
|   | 3000          | 118.1  | 10.6              | 110.0     | 12.9     | 134.0     | 17.9     | 185.0     | 26.5     | 275.0     | 32.7     | 339.0     |
| HK 290  | 950           | 37.2   | 1.3               | 18.0      | 1.6      | 19.0      | 2.5      | 26.0      | 4.6      | 44.0      | 8.4      | 74.0      |
|   | 1200          | 47.2   | 2.6               | 34.0      | 3.1      | 37.0      | 4.8      | 50.0      | 8.8      | 109.0     | 16.1     | 143.0     |
|   | 1700          | 66.9   | 3.9               | 51.0      | 4.8      | 56.0      | 7.3      | 76.0      | 13.4     | 127.0     | 24.4     | 218.0     |
|   | 2000          | 78.7   | 5.6               | 73.0      | 6.8      | 80.0      | 10.4     | 108.0     | 19.1     | 180.0     | 34.7     | 309.0     |
|   | 2500          | 98.4   | 6.9               | 90.0      | 8.4      | 99.0      | 12.9     | 134.0     | 23.7     | 224.0     | 43.1     | 383.0     |
|   | 3000          | 118.1  | 9.6               | 126.0     | 11.7     | 138.0     | 18.0     | 186.0     | 33.0     | 312.0     | 60.0     | 534.0     |

\* Add an additional power consumption of 1 W per valve drive type 146906.

## 13. Electrical wiring

Personnel:

- Installation personnel
- Qualified electrician

Protective equipment:

- Safety shoes
- Protective gloves
- Workwear



Only allow qualified electricians to perform electrical work. Further connections, for instance to building control systems or external controllers, may be necessary. Refer to the manufacturer's literature in this respect.

- Wire the unit in accordance with the enclosed wiring diagram.
- Only wire the unit in accordance with currently applicable NEC guidelines, as well as Technical Wiring Regulations stipulated by the regional energy supply companies.
- Only connect the unit to fixed cables.



**Important:**

Provide an all-pole mains separator in the wiring on site that can be reliably secured to avoid the system being reconnected (e.g. a lockable switch with a contact opening of at least 3 mm up to a rated voltage of 480 V).

No protective measures are indicated in the Kampmann wiring diagrams. These must be provided additionally when installing the system and when connecting the units in accordance with NEC and the regulations of each of the respective energy supply companies.



**Important:**

In the event of on-site valve control, the cooling valve must be closed when the fans are switched off.

# 1.43 Katherm HK

Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

### 13.1 Overview of controls



The unit comes in a series of different electrical versions. Connect it via a terminal strip in the electrical junction box, which is located on the side of the unit's water connection. Wire the unit as per the wiring diagram, which is different for each version.

| Design                   | Art. no. suffix |
|--------------------------|-----------------|
| Electro-mechanical, 24 V | _24             |

Ask a qualified electrician to determine the type of cable and cable cross-sections: the cable cross sections basically depend on the fuses for the cable length and the wiring capacity of the electric motors on site .

### Maximum electrical power / current consumption

| Design<br>Katherm HK | Control | Trench length |        | Maximum<br>power<br>consumption<br>[W] | Maximum<br>current<br>consumption<br>[mA] |
|----------------------|---------|---------------|--------|--|---|
|                      |         | [mm]          | [inch] |  |   |
| HK 320               | *24     | 915           | 36.0   | 7.9                                    | 82.0                                      |
|                      |         | 1200          | 47.2   | 11.4                                   | 118.0                                     |
|                      |         | 1700          | 66.9   | 16.4                                   | 169.0                                     |
|                      |         | 2000          | 78.7   | 22.9                                   | 237.0                                     |
|                      |         | 2500          | 98.4   | 27.8                                   | 288.0                                     |
|                      |         | 3000          | 118.1  | 32.7                                   | 339.0                                     |
| HK 290               | *24     | 950           | 37.2   | 8.4                                    | 74.0                                      |
|                      |         | 1200          | 47.2   | 16.1                                   | 143.0                                     |
|                      |         | 1700          | 66.9   | 24.4                                   | 218.0                                     |
|                      |         | 2000          | 78.7   | 34.7                                   | 309.0                                     |
|                      |         | 2500          | 98.4   | 43.1                                   | 383.0                                     |
|                      |         | 3000          | 118.1  | 60.0                                   | 534.0                                     |

#### 13.2 24 V electromechanical electrical model

##### Product features

The operating voltage must be provided by a central on-site 24 V DC voltage supply.

Kampmann offers a range of switching power units in different output classes as accessories for the voltage supply (24 V DC).

The fan automatically switches off in the event of a motor fault.



Fig.: Clock thermostat

The clock thermostat type 30456 permits the operation and temperature control of 24 V electromechanical **Katherm** HK 320 and HK 290 units.

The room temperature is set by sensor-controlled functional keys.

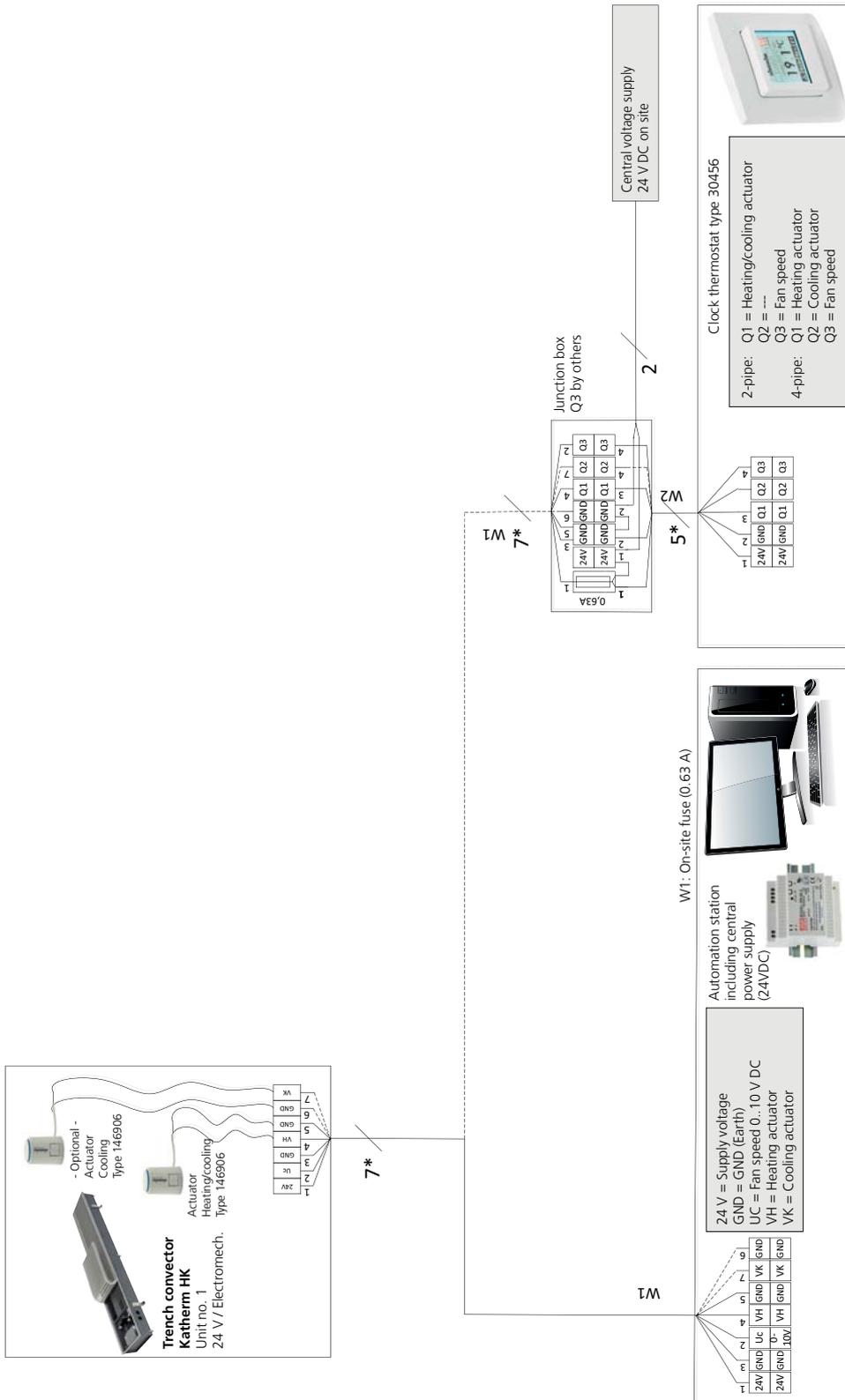
Complete with 10-stage fan speed adjustment in manual and automatic operating mode, including automatic summer/winter changeover and a day or week program.

# 1.43 Katherm HK

Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions

### Electrical cabling - Control via clock thermostat, type 30456



\* Lay shielded cables (e.g. IY(ST)Y, 0.8 mm), separately from high-voltage cables.  
W1: Voltage supply (on-site fuse, 0.64 A) and control signal for fan and actuator.



#### Important:

In the event of on-site valve control, the cooling valve must be closed when the fans are switched off.



# 1.43 Katherm HK

Ready-to-install trench heaters with EC tangential fan

## Assembly and installation instructions



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49811 Lingen

**Manufacturer:** KAMPMANN GmbH & Co. KG  
**Address:** Friedrich-Ebert-Str. 128-130  
49811 Lingen

**Country:** Germany

**Country:** Germany

**Party Authorized To Apply Mark:** Same as Manufacturer  
**Report Issuing Office:** Intertek Deutschland GmbH, Kaufbeuren

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| <b>Product:</b>     | Heating And Cooling Equipment [CSA C22.2#236:2015 Ed.5]<br>Trench Heating / Cooling convectors  |
| <b>Brand Name:</b>  |   |
| <b>Models:</b>      | Katherm QK may be followed by nano; followed by one to four numbers; followed by 24; followed by three numbers; followed by /; followed by three numbers; followed by /; followed by two to five numbers; followed by R-Rost, L- Rost; followed by one to three numbers; followed by alu. natur elox, steel, wood or brass.<br><br>Katherm HK may be followed by 2-Lt., 4-Lt.; followed by 24; followed by three numbers; followed by /; followed by three numbers; followed by /; followed by two to five numbers; followed by R-Rost, L- Rost; followed by one to three numbers; followed by alu. natur elox, steel, wood or brass.<br><br>Baseboard HK.<br>Baseboard QK. |



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**Country:** Poland

**Party Authorized To Apply Mark:** Same as Manufacturer  
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[Kampmann.ca/katherm-hk](http://Kampmann.ca/katherm-hk)

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