

Chilled Ceiling Elements

Type WK-D-UL

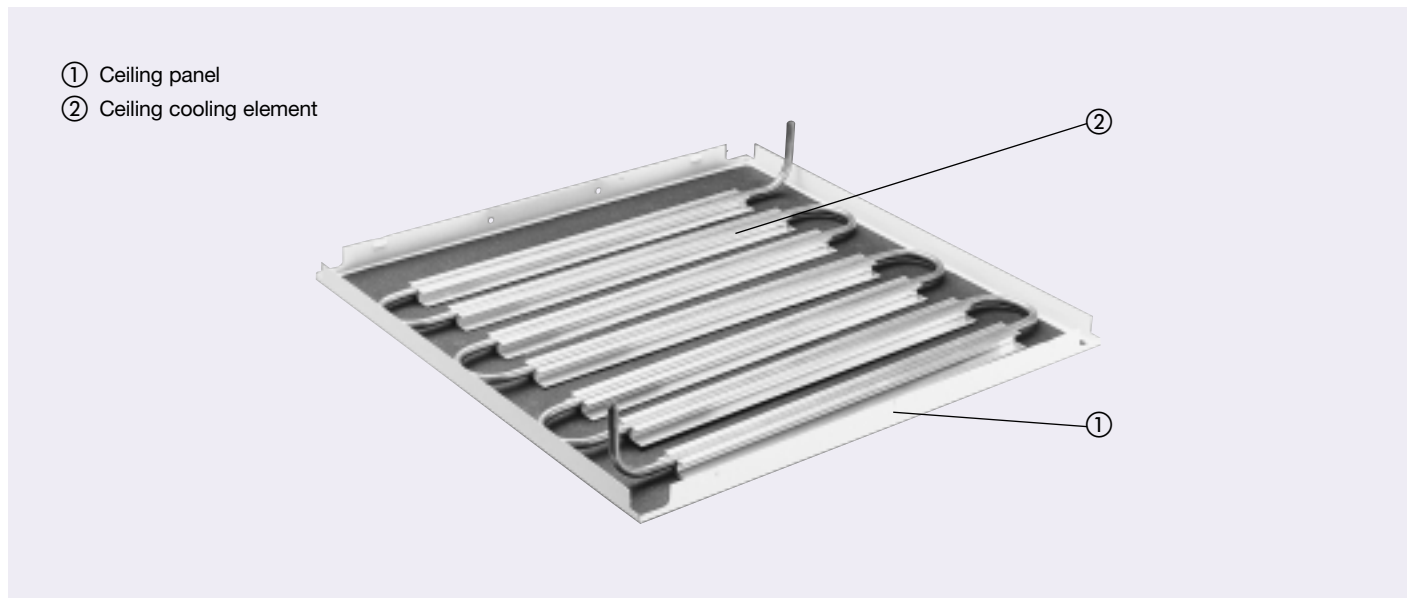
Combined with standard ceiling tiles



TROX[®] TECHNİK

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Description

Chilled ceiling elements type WK-D-UL are designed for the dissipation of internal heat loads, where the energy benefits of cooling by means of water are required. A high cooling capacity per unit area provides a low cost solution to the indoor environment. In particular the WK-D-UL cooling elements can be used with metal ceiling tiles provided by the customer, of all standard designs; they can also be combined with plasterboard ceilings. In the case of a continuous radiant chilled ceiling, approx. 55 % of the internal load is dissipated by radiation and approx. 45 % by convection.

The WK-D-UL cooling elements consist of thermal conduction bars into which a pipe meander is pressed in such a way that total contact is ensured; this guarantees optimum thermal conduction. To ensure proper contact with the ceiling tiles, the thermal conduction bars are fitted with a magnetic strip which is inserted in the centre in the case of steel tile ceilings, and with double-sided adhesive tape in the case of aluminium ceiling tiles and plasterboard ceilings.

Depending on the design of the ceiling tiles, additional safety fixing straps may be provided, in particular in the case of hinge

down ceiling types. To retrofit ceiling tiles in clamped substructures, the WK-D-UL ceiling cooling elements can also be equipped with tie-bars. This allows simple mounting in the ceiling substructure. Precisely adjusted support systems make bilateral height adjustment unnecessary.

Depending on the maximum required pressure loss, an appropriate number of cooling elements are interconnected to establish a water circuit. The ends of the cooling pipe are bent upwards so that circular connections with a diameter of 10 mm are available. Normally, the individual cooling elements are connected with flexible stainless steel overbraid hoses with push fit connectors on both ends. This type of connection is simple to perform, and therefore cost effective. Rigid pipe connections are also possible by means of soft soldering with induction solder terminals (without open flame).

The customer must test the entire system for leaks. This test is performed with air or water using the pressure drop method.

As with all chilled ceilings, the chosen chilled water flow temperature must not be lower than the dew point.

Construction · Dimensions · Capacity

Construction

The maximum possible number of parallel copper pipes in the cooling element is a function of the ceiling tile width. By varying the centre distances of the copper pipes the connections can always be arranged at one face. If the superstructure of the ceiling cooling elements is too high in the case of upwards bent connections, these connections can be executed as 180° bends. If the long side ceiling tile can be hinged down, the connections can also be positioned on the long side of the ceiling tile.

Accessories

Flexible hose – FS

Made of special plastic material with stainless steel overbraid push fit connectors fixed to each end.

Fixing straps – SB

To secure and press the cooling elements to the ceiling tile, design depending on the ceiling system, made of galvanised sheet steel.

Installation tie-bar – MT

For plasterboard ceilings, for temporary placement on the substructure, made of galvanised sheet steel.

Dimensions

The cooling elements can be supplied in all current ceiling tile dimensions.

Maximum length 2400 mm

Maximum width 750 mm

Weight 6 – 9 kg/m² (depending on design)

Pitch “T” is a function of width “B” of the ceiling tiles and of the required capacity. It is individually determined for each project.

Capacity

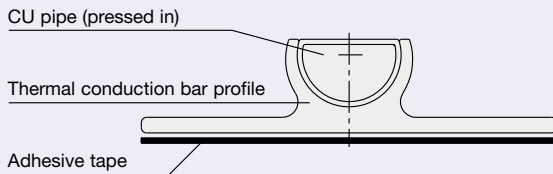
The capacity depends on many project-specific parameters such as temperature difference, ceiling tile design, type of ventilation system etc.

The maximum cooling capacity which can be achieved is 110 W/m² of active chilled ceiling.

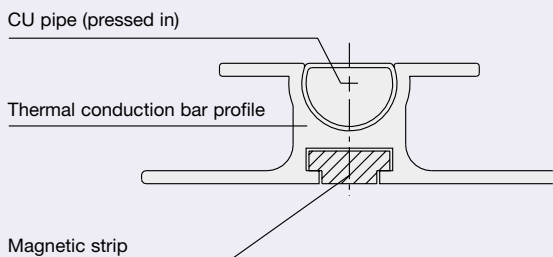
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Construction

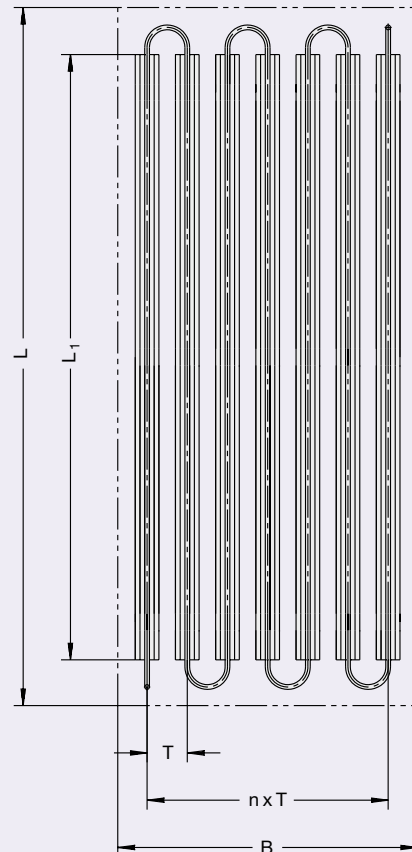
Thermal conduction bar with adhesive tape



Thermal conduction bar with magnetic strip



Dimensions



L = Length of the ceiling tile

B = Maximum width of the ceiling tile

L₁ = Maximum length of the thermal conduction bars

T = Pitch of the pipe meander

n = Number of pitches

Order Details

Specification Text

Chilled ceiling elements type WK-D-UL are suitable for use with metal ceiling tiles. In case of sheet steel type mounted optionally by means of magnetic strips or by bonding (in case of aluminium only bonding is possible) or held in place by its own weight in case of plasterboard ceilings.

The cooling elements consist of a pipe meander which is pressed into large-surface thermal conduction bars and, thus, ensures a good heat transmission. Optionally, a magnetic strip is inserted in the centre or a double-sided adhesive tape is provided over the entire width of the flange to ensure proper contact with the ceiling tiles.

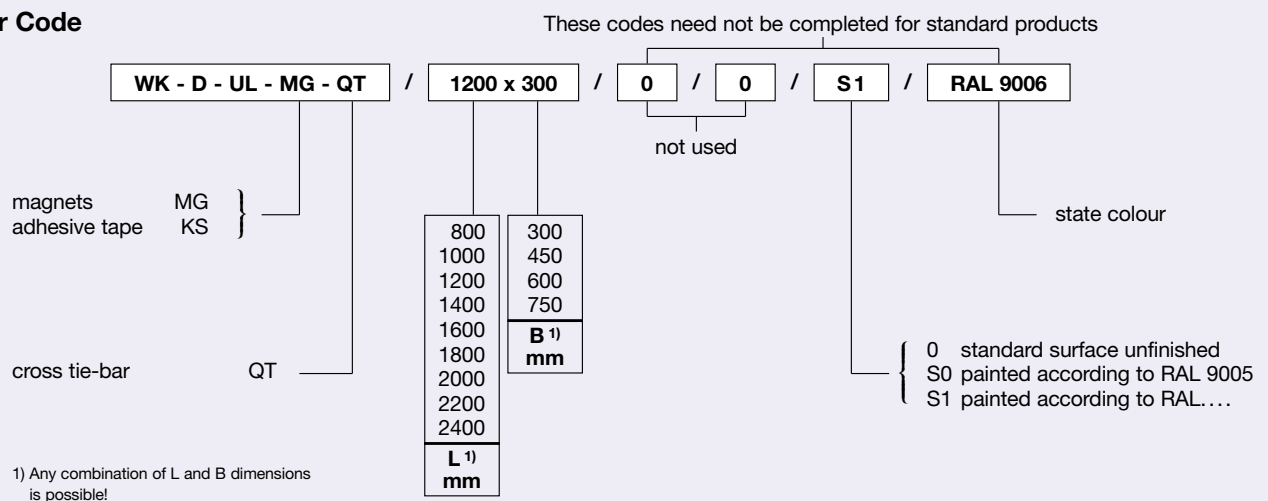
The pipe ends are bent upwards and can be interconnected either by means of flexible hoses or rigid Cu pipe bends. As an option, the cooling elements are integrated in the ceiling structure by means of special tie-bars before the ceiling tiles are installed.

Material:

Thermal conduction bars in aluminium, pipe meanders of copper, surface standard unfinished, optionally black (RAL 9005) stove-enamelled or painted according to RAL colour chart, cross tie-bar QT of galvanised sheet steel.

The flexible hose available as an accessory consists of a special plastic material with stainless steel overbraid fixing straps, and installation tie-bar is made of galvanised sheet steel.

Order Code



Accessories:

FS = flexible hose
SB = fixing straps
MT = installation tie-bar

Order Example

Make: TROX
Type: WK-D-UL-QT/1200 x 300/0/0/S1/RAL 9006
Accessories: FS
SB
MT (for plasterboard ceilings)