

Guidelines

Distance Guide

Dry Coolers - Remote Condensers

MT GL_TK EN 07 2026

THE ORIGINAL VERSION OF THESE
INSTRUCTIONS IS IN ENGLISH

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TC 1. INTRODUCTION

This guideline defines the minimum installation clearances required for the proper positioning of ThermoKey remote air-cooled units (dry coolers and remote condensers) with round tube technology, in order to guarantee proper airflow conditions, reduce the risk of air recirculation, and support safe access for operation and maintenance.

The correct placement of remote ventilated units is a critical aspect of the design process. These units require large volumes of fresh air and adequate clearance on all sides to ensure optimal thermal and aerodynamic performance.

To operate efficiently, units must be positioned so that fresh air can freely enter the intakes while minimizing the recirculation of hot discharge air. Recirculation occurs when warm discharge air is drawn back into the coil inlets, reducing cooling capacity and compromising overall system efficiency.

LAYOUT CONSIDERATIONS

Based on Thermokey field experience and technical expertise, the following recommendations define the minimum installation clearances for typical layouts. Compliance with these guidelines helps reduce air recirculation, maintain unit performance, and facilitate maintenance activities.

During the design phase, several factors must be evaluated when selecting the installation area. The installation site shall be evaluated considering, but not limited to, the following factors:

- Space limitations: walls, surrounding buildings, existing equipment, sound barriers, landscape screening structures or any nearby additional obstacle that may influence airflow or promote recirculation.
- Presence of nearby heat sources (such as air discharge outlets, duct terminations, or similar devices) that could affect the temperature of the air drawn into the unit.
- Proximity to neighboring properties: ensuring that discharge air does not enter building air intakes or areas frequently occupied by people.
- Prevailing winds: wind direction and site morphology (valleys, narrow passages, building corridors) may alter airflow and increase the risk of hot-air return.
- Piping layout and service access: ensuring adequate space for piping, maintenance, and safe access to all components.
- Potential future system expansion, which may require additional clearance.
- For installations subject to winter conditions and snow accumulation, the unit shall be elevated sufficiently to prevent obstruction of airflow and required clearance spaces.
- In the presence of strong winds, even if the installation complies with the specified layout and guidelines, there remains a risk of hot air recirculation, uneven airflow distribution, and performance degradation.

In all cases, local codes that require additional clearances shall take precedence over these recommendations.

SPECIAL CASES

The following applications are not fully covered by these guidelines and may require a dedicated evaluation by ThermoKey.

1. **Large installations (number of units > 5):** a dedicated evaluation may be required due to the increased risk of airflow interaction and air recirculation effects.
2. **Installations with adiabatic spray systems (AFS/WFS):** the presence of spray nozzles requires a minimum clearance between units greater than that required for units operating in full dry mode (*Note a*).

3. **Installations with adiabatic pad systems (EPS):** the presence of pads requires a minimum clearance between units greater than that required for units operating in dry mode (*Note b*).
4. **Installations with potential airflow interference:** all cases in which nearby units or obstacles may affect the uniformity of air temperature at the fans and/or generate pressure losses impacting fan performance.
5. **Units equipped with blow-through fans configuration:** all such configurations require a dedicated evaluation by ThermoKey.

Notes

- a. For units equipped with adiabatic systems (AFS, WFS, or EPS), the installation height used for determining the required clearances on the charts shall be considered equal to 0 m, irrespective of their actual mounting height. This requirement is necessary to maintain optimum adiabatic efficiency, avoid mutual air recirculation effects between units, and ensure sufficient access for maintenance operations.
- b. For EPS systems, a minimum clearance of 2 m shall be maintained to allow inspection and pad replacement.
- c. Where future installation of adiabatic retrofit kits is planned, the corresponding clearances shall be considered from the initial design stage.

WORKING AND MAINTENANCE AREA

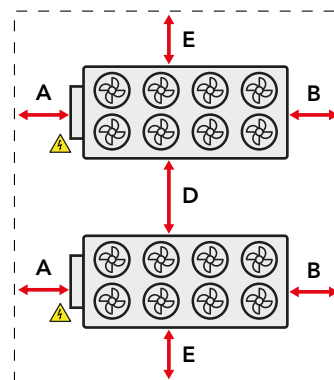
In addition to the installation clearances specified in this guide, sufficient space shall be provided for safe installation, operation, inspection, and maintenance of the unit and associated equipment. The installer shall verify compliance with local regulations and ensure adequate access to all serviceable components.

The installer shall ensure adequate access for:

- Maintenance activities around the unit.
- Piping connections, as well as maintenance and replacement of valves and other components installed on the Thermokey unit or in the surrounding plant.
- Inspection, cleaning, repair, or replacement of heat exchanger coils, fans, and associated components and circuits.
- Access to all components subject to periodic inspection, servicing, or replacement, as specified in the Thermokey installation manual, applicable standards, or local regulations.
- Electrical panels, including the door swing area and the working clearances required by applicable regulations. As a general guideline (derived from NEC or EU standards), a free space of 1.5-2.0 m shall be maintained in front of electrical equipment to ensure safe access and operation.

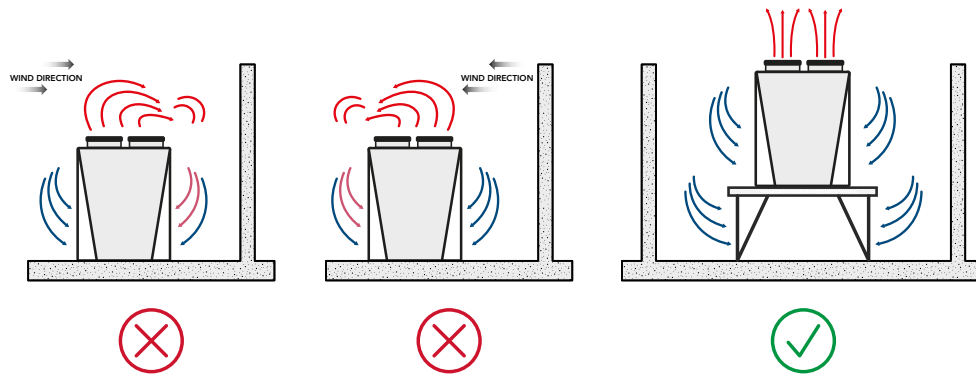
As a minimum, the following distances shall be maintained:

- **A = front clearance (electrical panel side)**
- **B = rear clearance**
- **D = clearance between units**
- **E = side clearance**
- **A, B $\geq$ 1.5–2 m** $\rightarrow$ minimum clearance required to ensure access to the electrical panel (to be doubled for face-to-face installations) and to allow maintenance operations. For V-type units, this clearance is determined by maintenance access requirements; for table-type units, it is determined by airflow requirements.



INSTALLATION NEAR WALLS

The fan discharge area shall remain completely unobstructed in order to prevent air recirculation and ensure uniform airflow across the coil surface. Elevating the unit so that the fan cowlings are level with or above adjacent structures may reduce the negative effects of wind. The installer is responsible for selecting a suitable support structure and verifying its load-bearing capacity.



MULTI-UNITS INSTALLATION

Unit layout and orientation shall be carefully evaluated with respect to the prevailing wind direction. Arrays of units can create a continuous wall of discharge air, which may be redirected towards the air intakes due to wind effects. Adequate spacing between units is essential to minimize air recirculation and ensure stable performance.

IMPORTANT REMINDERS

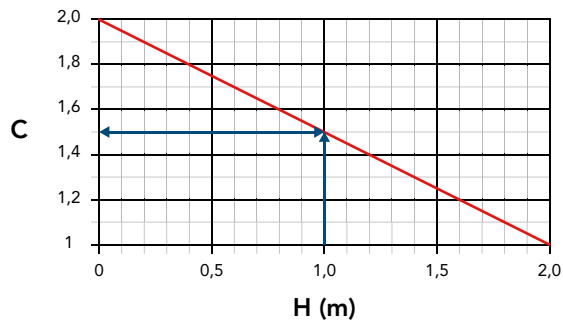
- All dimensions indicated in this guide are minimum values and may need to be increased depending on site conditions.
- Performance data provided by Thermokey selection software refer to free-field conditions, with no surrounding obstacles other than the ground plane.
- The recommendations apply to installations of up to 5 units; larger installations require additional engineering evaluation.
- Units equipped with adiabatic systems (AFS, WFS, EPS) require increased clearances and dedicated consideration.
- Before installation, verify the load-bearing capacity of the supporting structure.
- Before commissioning, remove all packaging and transport protection.

If installation conditions differ from those described in this guide, additional clearances may be required.

If uncertainties arise or if a specific installation configuration is not covered by these guidelines, please contact Thermokey Technical and Customer Support at: www.thermokey.com/contact-us.

TC 2. TABLE TYPE LAYOUT

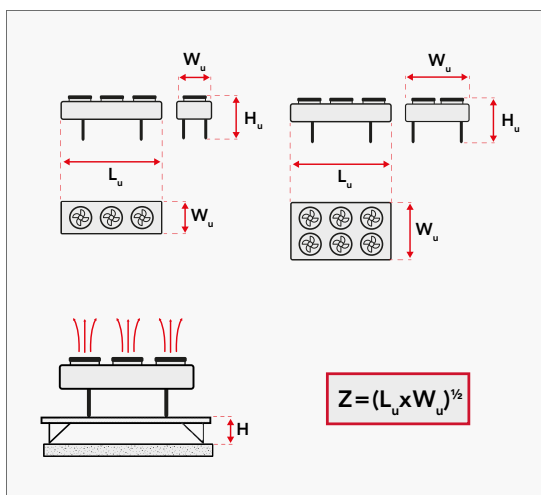
During unit design and installation, the following minimum clearances shall be considered to ensure proper operation and optimized airflow.



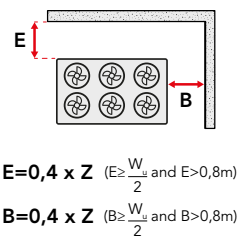
H = Height from the ground (m)

C = Coefficient (for multiple units)

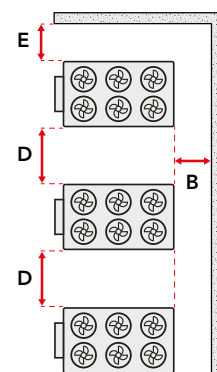
VERTICAL AIRFLOW



Single Unit



Multiple Units



$$D = 0,25 \times Z \times C$$

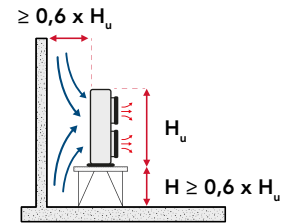
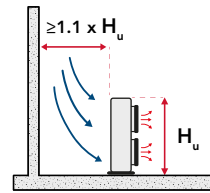
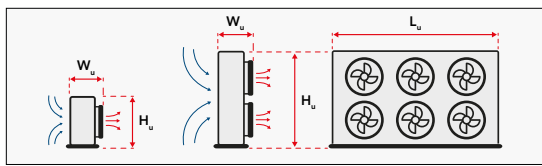
$$E = 0,4 \times Z \times C \quad (E \geq \frac{W_u}{2} \text{ and } E > 0,8\text{m})$$

$$B = 0,4 \times Z \times C \quad (B \geq \frac{W_u}{2} \text{ and } B > 0,8\text{m})$$

Notes

- For vertical airflow units, the area above the fan discharge shall be unobstructed. If an overhead obstacle is present, a minimum clearance between the fan outlet and the obstacle shall be at least 6x the fan diameter.
- When the unit is installed on an elevated platform, the structure shall be designed according to the operating weight of the equipment and shall feature open-mesh grid or structure to avoid additional pressure losses on the air side.

HORIZONTAL AIRFLOW



Notes

- For horizontal airflow units, the area in front of the fan discharge shall remain unobstructed. If an obstacle is present, the minimum clearance between the fan outlet and the obstacle shall be at least 4x the fan diameter.
- When the unit is installed on an elevated platform, the structure shall be designed according to the operating weight of the equipment and shall feature open-mesh grid or structure to avoid additional pressure losses on the air side.

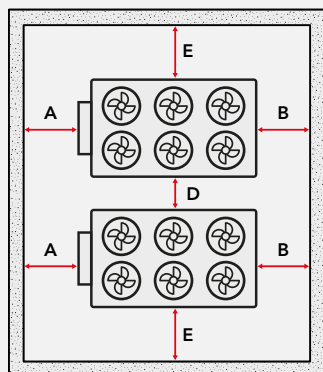
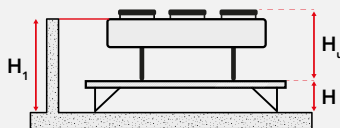
EXAMPLE — TABLE-TYPE UNITS

Customer request: 2x units installed side by side, vertical airflow, model GH2590CN5-02VQ2EF(EC)S

What are the required clearances at ground level (when surrounded by walls)?

Unit features:

- Model: GH2590CN5-02VQ2EF(EC)S;
- Equipment: box mounted
- Unit dimensions:
 - L_u (unit length) = 8,42 m
 - H_u (unit height) = 1,52 m
 - W_u (unit depth) = 2,40 m



H = height from the ground
 H_1 = height of the wall
 A = front clearance (electrical panel side)
 B = rear clearance
 D = clearance between units
 E = side clearance

CASE 1: $H = 0$ m

- $D = 2,25$ m
- $A = 3,6$ m (min 1,5-2,0m)
- $B = 3,6$ m (min 1,5-2,0m)

CASE 2: $H = 1$ m

- $D = 1,68$ m
- $A = 2,7$ m ($\geq$ min : 1,5-2,0m)
- $B = 2,7$ m ($\geq$ min : 1,5-2,0m)

CASE 3: $H = 2$ m

- $D = 1,13$ m
- $A = 1,8$ m ($\geq$ min : 1,5-2,0m)
- $B = 1,8$ m ($\geq$ min : 1,5-2,0m)

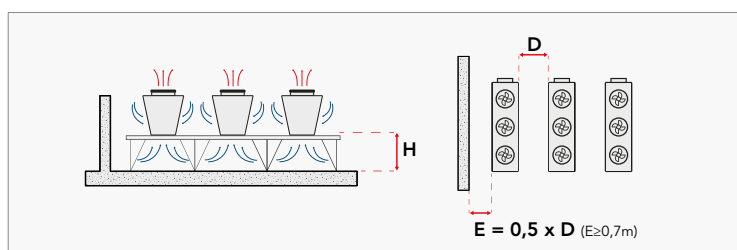
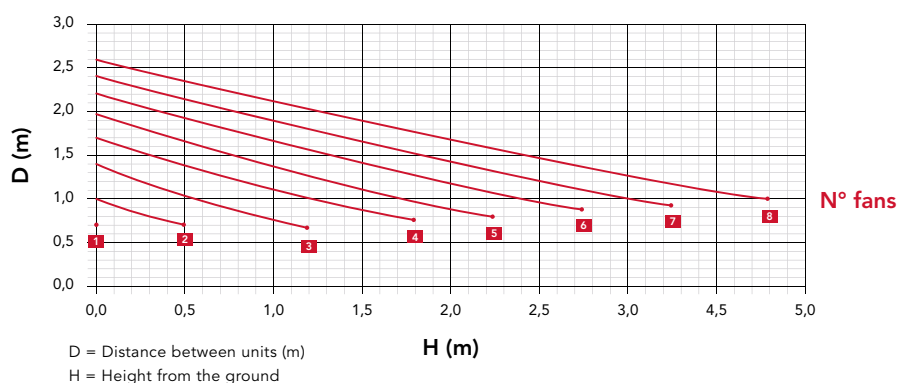
Remember:

- $H + H_u \geq H_1 \rightarrow$ In case of wall, fan plate level must be at least at the same level of wall height.
- It is necessary to maintain the minimum clearance on the connections side and electrical panel side for maintenance operations and access to controls ($A, B = \text{min} : 1,5-2,0\text{m}$)
- In case of high value of H, it is suggested $D=0$

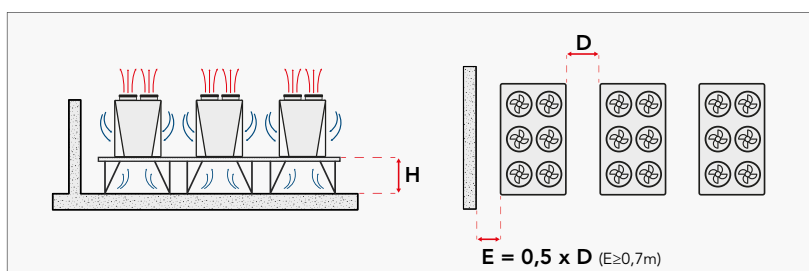
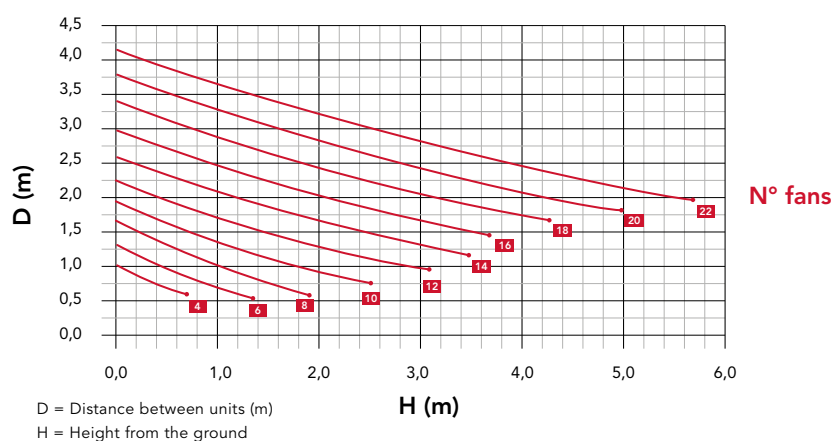
TC 3. V-TYPE LAYOUT

During unit design and installation, the following minimum clearances shall be considered to ensure proper operation and optimized airflow.

MINI JUMBO



JUMBO / SUPER JUMBO



Notes

- For v-type units, the area above the fan discharge shall be unobstructed. If an overhead obstacle is present, a minimum clearance between the fan outlet and the obstacle shall be at least 6x the fan diameter.
- When the unit is installed on an elevated platform, the structure shall be designed according to the operating weight of the equipment and shall feature open-mesh grid or structure to avoid additional pressure losses on the air side.

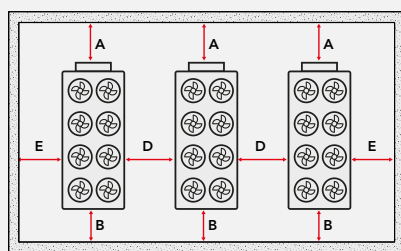
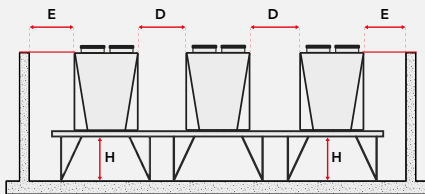
EXAMPLE — V-TYPE UNIT

Customer request: 3 units side by side model SJWH2890CN5-02Q2EIAF(EC)S

What are the required clearances at ground level or in installations with limited space around the unit (e.g. when surrounded by walls)?

Unit features:

- Model: SJWH2890CN5-02Q2EIAF(EC)S;
- Equipment: box mounted/rep switches mounted/antivibrations mounted
- Dimensions:
 - L_u (unit length) = 10,25 m
 - H_u (unit height) = 3,02 m
 - W_u (unit depth) = 2,4 m



H = height from the ground
 A = front clearance (electrical panel side)
 B = rear clearance
 D = clearance between units
 E = side distance

CASE 1: H = 0 m

- D = 3,0 m
- E = 1,5 m
- A = min : 1,5-2,0 m
- B = min : 1,5-2,0 m

CASE 2: H = 3,0 m

- D = 1,75 m
- E = 0,88 m
- A = min : 1,5-2,0 m
- B = min : 1,5-2,0 m

Remember:

- In case of wall, wall height must be at same level of fan plate.
- It is necessary to maintain the minimum clearance on the connections side and electrical panel side for maintenance operations and access to controls (A,B = min : 1,5-2,0m)



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