

General instructions for safe use

ISO 9001 – ISO 14001 – ISO 45001

Istruzioni generali per un uso sicuro

ISO 9001 – ISO 14001 – ISO 45001

Allgemeine Anweisungen für einen Sicheren Gebrauch

ISO 9001 – ISO 14001 – ISO 45001

Instrucciones generales para un uso seguro

ISO 9001 – ISO 14001 – ISO 45001

Instructions générales pour une utilisation sûre

ISO 9001 – ISO 14001 – ISO 45001

Instrukcje ogólne dotyczące bezpiecznego użytkowania

ISO 9001 – ISO 14001 – ISO 45001

Общие указания для безопасного использования

ISO 9001 – ISO 14001 – ISO 45001

Általános utasítások a biztonságos használatához

ISO 9001 – ISO 14001 – ISO 45001

Generelle instruktioner for sikker anvendelse

ISO 9001 – ISO 14001 – ISO 45001

Allmänna instruktioner för säker användning

ISO 9001 – ISO 14001 – ISO 45001

Obecné pokyny pro bezpečné použití

ISO 9001 – ISO 14001 – ISO 45001

MT IG TK GEN 12 2025

THE ORIGINAL VERSION OF THESE
INSTRUCTIONS IS IN ITALIAN

EN

IT

DE

ES

FR

PL

RU

HU

DA

SV

CS

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ThermoKey®
Heat Exchange Solutions

General instructions for safe use

Quality Management System ISO 9001
Environmental Management System ISO 14001
Occupational Health and Safety Management System
ISO 45001

MT IG TK EN 12 2025

THE ORIGINAL VERSION OF THESE
INSTRUCTIONS IS IN ITALIAN



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READ CAREFULLY AND BE SURE TO THOROUGHLY UNDERSTAND ALL THE INFORMATION PROVIDED IN THESE INSTRUCTIONS BEFORE PLANNING AND, IN ALL CASES, BEFORE CARRYING OUT ANY HANDLING, UNPACKING, ASSEMBLING, POSITIONING AND COMMISSIONING OPERATION INVOLVING THE UNIT.



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The Manufacturer declines any and all liability for injuries to people or damage to property arising from failure to observe the indications in this document.



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The original version of this manual is in Italian and can be found on our website:
www.thermokey.com
The English translation conforms to the original and can be found on our website:
www.thermokey.com
Translations may contain mistakes. In case of doubt, always refer to the original Italian version or to its English translation.

PHILOSOPHY OF THE MANUAL

Para. § 255 of the applicative guidelines, revision 2, in the 2006/42/EC Machinery Directive suggests that instructions should be provided in electronic form on the Internet in order to prevent their loss and foster their updating.
Moreover, para. § 275 establishes that there should be correspondence between technical-commercial publications, such as catalogues, and the manual.
Many of the units manufactured by ThermoKey are customized for a specific plant or customer.
Due to the above-mentioned points, and considering that instruction readers are plant designers, installers and – finally - users, the technical documentation for correct unit designing and use follows the philosophy of drawing up a set of documents which, as a whole, are in fact defined as the MANUAL.

THE STRUCTURE OF THE MANUAL IS INDICATED HEREAFTER

GENERAL INSTRUCTIONS FOR SAFE USE (IG)
INSTRUCTIONS FOR HANDLING AND UNPACKING (IM)
INSTRUCTIONS AND TECHNICAL SPECIFICATIONS (TC)
SPECIFIC USE AND MAINTENANCE INSTRUCTIONS (IS)

The “General Instructions for Safe Use” provide information on safety and correct use. They include the following sections:

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▪ In the “Instructions for Handling and Unpacking” the required and permitted handling and unpacking operations of the various air-cooled units are indicated by means of numbered figures. In case of special air-cooled units, the correct information will be identified in the documentation by the order confirmation number.

To facilitate updating and avoid ambiguity of information, this part of the documentation on the unit consists of catalogues and other technical documentation supplied directly by ThermoKey and/or to be found on the Internet website: www.thermokey.com.



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▪ The IT chapter “Instructions and Technical Specifications” illustrates the technical data related to every single kind of unit, grouped into families. It includes:

- SIZES AND WEIGHTS
- SPACE TAKEN UP AND MINIMUM TECHNICAL SPACE
- AERAULIC PERFORMANCE AND ELECTRICAL DATA
- SOUND EMISSION LEVEL
- ELECTRICAL SCHEMES
- TECHNICAL BULLETIN

“Specific Use and Maintenance Instructions” are normally specific to every model and, where necessary, to each individual fan unit. They include:

- IS 1 - OPERATING INSTRUCTIONS
- IS 2 - OPERATING PROBLEMS
- IS 3 - MAINTENANCE
- IS 4 - SPARE PARTS



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IG 1. Preliminary notes

THE UNIT SHALL BE USED EXCLUSIVELY ACCORDING TO ITS INTENDED USE, AS SPECIFIED IN PARAGRAPH “PRELIMINARY NOTES ”.

- 1. As the preliminary notes are an essential part of the manual, they must be read with great care and fully understood.
- 2. This manual – a part of the technical documentation of the fan unit - may be integrated with further indications and partly modified for the benefit of customization, or non-standard operational conditions. Generally, the manual consists of a main part and of some technical annexes. For the sake of simplicity, hereafter, where not otherwise specified, reference shall be made to the manual meaning all the technical documentation necessary for the correct use of the fan unit.
- 3. Keep this manual throughout the entire life-cycle of the fan unit.
- 4. Pay great attention to the norms of use provided in this manual, since failure to observe them may damage the fan unit or property, and/or harm people or animals.
- 5. ThermoKey reserves the right to modify this manual at any time. The final text of the revisions shall always be made public through publication on the website: *www.thermokey.com*. To ascertain if you are equipped with the latest revision, consult the revision index.
- 6. The Manufacturer’s data and reference to the customer’s order number are indicated on the ID plate of the fan unit, including the order number and data specific to the unit.



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Reference to the order number is very important because it identifies possible customized solutions and limitations of use agreed upon between ThermoKey, as manufacturer, and the buyers in their capacity as users.

- 7. Non-original spare parts have to be previously approved by ThermoKey.
- 8. The unit conforms to the Essential Health and Safety Requirements laid down in the Machinery Directive 2006/42/EC, which apply to all the contemplated standard use conditions, or to those agreed with the customer.
- 9. Any other use from that contemplated and described in this manual and/or that has not been agreed between the User and ThermoKey before the manufacturing/commissioning of the fan unit are explicitly forbidden. Improper use of the fan unit may cause dangerous conditions, for which ThermoKey takes no liability.
- 10. The fan unit is designed for exclusive use with the refrigerants indicated in the order identified with the number on the unit ID plate.
- 11. Use of refrigerant fluids different from those explicitly indicated is prohibited.
- 12. To use ammonia and group 1 refrigerants, additional prescriptions and indications to those provided in this section may be necessary, which are provided in the manual of the fan unit.
- 13. The use of substances and fluids that may deteriorate, make unsafe or diminish the performance of the fan unit is forbidden.

14. All technical data related to the fan unit, all use restrictions and the minimum features of the installation site are given in the technical catalogues.

15. ThermoKey must be immediately contacted in the following cases: modifications are necessary, or it is necessary to carry out a variation to the fan unit after it has been manufactured, but before its start up; the operational conditions of the installation site are not the ones contemplated; a difference exists between what was foreseen before manufacturing and the actual state of the installation site; and in any case before carrying out any modification work. Failure to do so shall relieve ThermoKey from any and all responsibility.

16. Project designers, installers and/or users are required to enforce local norms and regulations concerning installation, use and disposal of the fan unit.

17. Wherever not better specified in this manual, the term qualified personnel shall always indicate any duly informed person, or any person under the supervision of a worker having such training, knowledge and experience as to be able to carry out the work properly and allow the supervised person to perceive the risks and avert any related hazard.

18. For warranty conditions refer to the terms agreed at the order stage.

19. This manual may not be reproduced, either totally or partially, unless the manufacturer gives its authorization in writing. Updated copies of this manual can be found on the website *www.thermokey.com*

IG 1.1. ARCHIMEDE SOFTWARE'S NOTES

- 1. The voltage is referred to the supplier's nominal data: fans consumption may vary with the air temperature and voltage system.
- 2. The unit may not be suitable for very corrosive atmosphere. For special applications contact ThermoKey. If a special fin material is selected(copper,coating),all the other materials of the unit remain standard(for detailed information please check the Technical description of the unit).
- 3. Dimensions and weight are not valid for all possible options! The overall dimensions on the data sheet relate to the units without controls /electrical panels (For more detailed information please refer to the Electrical Box Manual). In the case of horizontal air flow units the standard position of the connections is on the left looking at the finned pack.
- 4. Any noise caused by control systems, adiabatic system and so on, is not considered in the fan noise declaration. Actual values can also be subject to changes depending on the conditions of the installation.
- 5. The manual consists of 4 parts; IG = General instructions for safe use, IM = Instructions for handling and unpacking, TC = Instructions and technical specifications , IS = Specific use and maintenance instructions. If not expressly requested at the pre-Purchase Order stage, the TC and IS instructions must be downloaded by the user from *www.thermokey.com* as they will not be provided in paper format.

The installer is required to follow the instructions of the above manuals and of all the main electrical components’ manuals (e.g. fans, pumps, regulators).

6. The unit is equipped with fans that follow the efficiency requirements of ERP directive 2009/125/EC.

7. In accordance with EN 13487 the declared sound pressure level for this unit has been calculated in free-field conditions over a reflecting plane with a parallelepiped surface. With reference to ISO 3744, when the difference of measurement of

the unit in on and off stage is ≤ 6 dB (A) , the the sound measurement does not reach the accuracy as required by the Directive. Background noise values lower than 30dB (A) are typical of indoor and silent environments. The declaration of the sound pressure of the unit, stated on the ThermoKey data sheets, considers the background noise negligible.

8. S x x x x : id serial number of the combination of the standand options available on Archimede (listed and described in the ACCESSORIES section) and special on request. The code appears on the order confirmation (as a part of the model code description) and on the data plate of the unit . Note : For each range the available options are listed in the catalogue on the Table Options and Accessories . The register of combinations of options associated with the code S x x x x is available on request.

9. Delivery time for standard unit is considered ex works. For any special terms and conditions (ex. Large quantities,special items..) please contact Sales dept.

10. The standard unit is not self-draining: the choice of fluid (water / glycol) is closely related to the freezing point of the same and to the actual operating period of the unit. For a self-draining construction, please contact ThermoKey for a special offer.

11. The air throw declared in the data sheets is the distance from the fan when the air speed corresponds to 0.25m/s.The air throw ir referred only to the default air flow of the fan : for cubic , light cubic and commercial models with delta or single-phase operation, for dual flow models with connection defined by the series.

12. The dimensioning is made through a simulation of the selection program which does not take into account the influence of the installation conditions.

13. For the selection of the maximum operating pressure, the pressure related to the condensation temperature (i.e. middle point) is taken into account.

14. For fan units with microchannel cores, it is mandatory to respect the procedures available on ThermoKey website (Indications for the use of Tk micro cores).

15. Fluid Group related to Directive 2014/68 / CE.

16. The data on the fan label do not represent the worst absorption conditions.

17. The declared performances are suitable for HVAC applications with air flow in a free field on both coil and fan sides (e.g. avoid recirculation or any element that reduces airflow) and with uniform inlet temperatures to the coil (e.g. avoid conditions on which adjacent elements cause temperature variations at the unit inlet). For other critical applications (e.g. industrial, power) please contact ThermoKey.

18. ThermoKey reserves the right to change the technical data, drawings and prices of the Archimede software at any time and without prior notice. Please refer to the software release and EULA of the software in Section "?".

19. The Archimede software is based on Refprop's latest libraries of oils, refrigerants and blends. Data updates may result in different performances of the units than those of previous releases of Archimede.

20. Pay attention that the overall dimensions and weight of the unit equipped with EPS system, indicated in the technical sheet, refer to the model without electrical part and mounted evaporative panels, for variation of the possible option combinations please refer back to the following indications!

Take into consideration that the evaporative modules mounted on the side of the model protrude of 440mm all together on the width of the model footprint, whereas they do not affect the length and height dimensions of the model, moreover

the discharging tubes mounted on the models protrude of extra 320mm all together on the width of the model. Take into consideration that the control panels and connection piping protrude depending on the selected and requested combinations of 400mm from the extremities of the model.

Consider as 60 Kg each module (per fan) the operative weight of the evaporative modules mounted with wet panels. Pay attention that in the case of non optimal maintenance of the discharging drip-trays or of the discharging line, you should consider a possible store of water in the tray and of the sole discharging pipes of EPS system of about 30 Kg per module (per fan). Consider the pre-mounted connection piping of EPS system to water supply network on the model of about 25 Kg per unit. Consider weight of the possible pre-mounted control electrical panel of the EPS system on the model of about 35 Kg per unit.

21. In case of electric defrosting the external surfaces of the heating elements can exceed 600 °C (with static air of 20 °C). The compliance with EN378 is the responsibility of the designer/ installer, depending on the type of refrigerant. In case the difference between the refrigerant self-ignition temperature and Hot surface temperature is <100 K, it is mandatory to install devices that allow the unit cooler to work in any condition of use of the installed units.

22. System design and installation should also, where applicable, follow information presented in accepted industry guides such as the ASHRAE Handbooks. The manufacturer assumes no responsibility for equipment installed in violation of any code or regulation.

23. When personnel external to ThermoKey is lifting units during loading, unloading and installation phases, it is necessary to refer back to the criteria present in the norm UNI EN 13001.

IG 2. Legal notes

IG 2.1. ORIGINAL VERSION

The original version of this manual is in Italian and comes with every official translation of the manual. Translations, which are unauthorized by the manufacturer, are not to be deemed valid.

The use of unauthorized copies and/or translations of this manual and/or the use of translations lacking the original Italian version relieve ThermoKey from any possible consequence and liability in case of an accident.



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IG 2.2. LIMITATIONS TO THE USE OF THIS MANUAL

This user and maintenance manual was drawn up for the fan units destined to the European Community market, bearing the CE trademark.

This user and maintenance manual does not cover placing on the market and/or use of the units in countries outside the European Union.



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IG 2.3.CONTENT AND UNDERSTANDING OF THE MANUAL

Should project designers, installers and/or users (generally and comprehensively identified as operators) fail to find the required technical information on installation, use, maintenance and/or safe disposal of the unit in this manual, or should they have doubts on correct installation, use, maintenance and/or disposal procedures, they must get in touch with ThermoKey. This user and maintenance manual was drawn up to be as complete and clear as possible for its readers,

depending on their preparation and competencies.
Failure to understand the content of this manual, or incomplete understanding of the instructions contained in it, is a sufficient condition for immediately interrupting designing, installation, use, maintenance and/or disposal of the unit itself.



Should operators persist in their activity without having perfectly and completely understood this user and maintenance manual and/or without mastering all the know-how and indications required to carry out their activity, ThermoKey shall be relieved from any consequence and liability.

The term negligence to ThermoKey includes failure to notify whatever mistake, omission, misprint, incongruous factor, etc. in this manual relating to technical instructions and indications: project designers, installers and users (maintenance operators) have to promptly notify ThermoKey regarding situations that may reduce safety for people, property and the environment, and they must act with the required competence, professionalism, spirit of collaboration and diligence.



Any instance of negligent, reckless conduct or any action showing poor technical-professional competence shall release the manufacturer from any and all consequences and liability.

IG 2.4. LIABILITY
Manufacturer liability

The manufacturer is responsible for designing, building, testing and packing the fan unit in order to place it on the European Union market. The manufacturer guarantees that the fan unit is designed, built, tested and packaged in conformity with the essential requirements set out in the applicable Community directives, and that an appropriate conformity assessment has been carried out accordingly.
Although the manufacturer is not in charge of packaging removal, installation, commissioning, maintenance, disassembly and disposal, these instructions contain as much useful information as possible on these operations throughout the life cycle of the fan unit.
All unit parts have been designed, manufactured and tested so as to bear all reasonably foreseeable stress under expected use conditions and under reasonably foreseeable conditions: no safety and/or operating guarantee can be given if the units are used in conditions that are not explicitly contemplated by ThermoKey, and are therefore forbidden.



Installation, use, maintenance and/or disposal of the unit in forbidden conditions, not foreseen and/or anyway different from those contemplated by ThermoKey, relieve the latter from any and all consequences and liability.

Designer and installer liability

Installers and/or designers must evaluate the risks, prepare emergency, warning, notification and protection equipment and systems and have to also draft comprehensive instructions for the refrigeration plant/system on which the fan unit is installed, as prescribed by standard UNI EN ISO 5149-4.

The designers and/or installers are also responsible for establishing best means and procedures for handling and storing the unit outside the manufacturer premises and/or warehouses. More specifically, the designers and/or installers must verify the instructions supplied by the manufacturer and have them complied with during handling, transport and storage.

Incorrect assessment of risks, or inadequate selection of emergency, warning, notification and protection means and systems by designers and/or installers shall release ThermoKey from any and all consequences and liability.



Designers are person in charge of designing the refrigeration plant/system where the fan unit is installed: they are responsible for both performance and safety aspects.
Designers have the responsibility of choosing the most appropriate components for the plant they are designing according to on the restrictions of use imposed by the manufacturer.
Designers must be experienced and competent enough to clearly understand the content of this user and maintenance manual, as well as of other technical-commercial document relating to the unit and to ask the manufacturer for possible clarification in order to implement a functional, safe and state-of-the-art plant/system.
In particular, designers have to be able to detect the reasonably foreseeable operating conditions of the unit (conditions relating to the environment, fastening means, loads and stresses, connections to the electrical, fluid, plumbing/hydraulic systems, etc.) and to verify that the unit is suitable for such conditions.

Incorrect identification of the operating conditions of the unit by the designers releases ThermoKey from any consequences and liability.



If the project is broken down into several sections, the project manager -whoever this is- shall be deemed to be the project designer.
The installer is the person in charge of installation and implementation of the plant in conformity with project specifications, component specifications, as defined by their manufacturers, and good manufacturing practices.
Installers must be expert and competent enough to clearly understand this user and maintenance manual, as well as any other technical-commercial document relating to the unit, and to ask the manufacturer for any possible clarification in order to implement a plant/system which is functional, safe and complies with good manufacturing practices.

The staff involved in the various operations for unit installation and commissioning must be competent and trained. Insofar as is relevant, the minimum level to be guaranteed is the one indicated in EN 13313.



If installation is broken down into several steps, the installation coordinator -whoever this is -shall be deemed to be the installer.

Responsibilities of the refrigeration plant/system operator

The operator is the person who uses the plant and, therefore, the unit being the subject-matter of this user and maintenance manual. The operator is also responsible for unit maintenance.

The staff involved in the various operations for unit installation and commissioning have to be competent and trained. Insofar as is relevant, the minimum level to be guaranteed is the one indicated in EN 13313.

The plant/system operator must only work with competent and trained staff, equipped with the required individual protective equipment, and qualified for control, maintenance, repairs, emergency and disposal of the unit.
As ThermoKey is not involved in design of the refrigeration plant/system and is released from any and all consequences and/or liability originating from incorrect design/installation.

As the units may undergo technical modifications and/or updates by the manufacturer, the plant/system operator must verify compatibility between the plant/system and the new version of the unit.



IG 2.5 STATUTORY REGULATIONS AND STANDARDS APPLIED FOR MANUFACTURING THE UNIT

For the standards used by the manufacturer for building the unit always refer to ThermoKey Declaration sent with the unit.

IG 2.6.RELEVANCE OF EN 378 STANDARDS

EN 378 represents a set of four technical standards (EN 378-1, EN 378-2, EN 378-3 and UNI EN ISO 5149-4) which serve as major guidelines for the design, installation, operation, servicing and disposal of the plants and their related refrigeration units.

The standards included in this set are aimed at providing a comprehensive overview of the safety aspects that have to be taken into account by designers, installers, plant/system operators and servicing staff.

ThermoKey considers the enforcement of the standards of the EN 378 group of foremost importance for the safety of people, property and environment, in relation to the use of the air-cooled unit, subject of this manual, in a plant refrigeration system.

Failure to comply with the prescriptions of these standards may primarily cause, and not within certain limits

- either the risk of the refrigerant leaks or spillage, consequently leading to a fire or explosion, and/or harm to the health of people, damage to property and the environment;
- or the risk of accident for the people involved in the various stages such as installation, use, maintenance and disposal.

IG 3. Generic plates and labels



The user must ensure that the labels and plates applied on the unit by the manufacturer are in good order, readable and properly secured in place. If they get worn out, unreadable or, in any case, hardly understandable, labels and plates have to be replaced.

IG 4. General warnings and safety rules

IG 4.1. GENERAL

1. The air-cooled unit is contemplated for automatic, unsupervised use.
2. The designer and/or the installer will need to foresee fluid hammering.
3. The user shall be in charge of the fastening systems used in the fan unit and shall ensure that they have been designed in conformity with the ETAG requirements specifically relevant for this kind of support.
4. The users of fan units where hazardous fluids are used have to strictly adhere to the technical indications on fluid safety.
5. It is essential to provide for proper aeration of the area where fan units using potentially explosive or flammable fluids are fitted. Designers, installers and/or users must take this aspect into consideration.
6. Fans are designed for continuous operation S1 (continuous operation with constant load). If the fans are used with an ON/OFF regulation system, this control must not contemplate frequent switching (please read the fan data sheet).
7. In addition to the precautions contained in these chapters, specific instructions can be provided for each model (see ThermoKey website <http://www.thermokey.com/Manuali.aspx>).

IG 4.2. HANDLING, LOADING AND UNLOADING

1. The plant/system must be handled and moved during loading and unloading by qualified staff supplied with suitable equipment, perfectly in line with the indications provided by the manufacturer.
2. In particular, the operators in charge of handling the unit have to:
 - verify that the lifting equipment they are using can bear the unit weight with a significant safety margin,
 - ensure that no-one is standing within the outreach of the equipment used for unloading and, in any case, within the area where such activity is being carried out,
 - ensure that the unit is hooked up with appropriate hooks only by the points indicated by the manufacturer.

Failure to comply with any of the requirements above and, generally, any conduct posing a risk for the operators involved in unit handling, releases the manufacturer from any and all consequences and liability.

Failure to comply with the above-mentioned indications may cause harm to people such as:

- crushing
- severing of limbs

Moreover it may damage the unit preventing it from working appropriately.

IG 4.3. TRANSPORT

In case of sea freight or land transport in particular (bumpy) road conditions, it is necessary to remove all the parts that might get damaged from the units, as this may cause future breakdown and malfunctioning, or to pack the units in special material.

Unit disassembly and reassembly must be carried out only after receiving ThermoKey's authorisation and solely following its direct and precise instructions. Failure to comply with this requirement relieves ThermoKey from all future liability.

IG 4.4. WAREHOUSE STORAGE

If the unit has to be stored before it is installed (for one or more than one month), it is advisable to adopt the following precautions:

- leave the fan unit in its original packaging until installation or re-package it so as to assure an equivalent level of protection as the original packaging against atmospheric agents, dust, insects or small rodents,
- place in a covered area, with temperatures ranging between +15°C and +25°C and a percentage of humidity between 50% and 70%;
- ensure the unit is not exposed to corrosive liquids or vapours.
- the units cannot be stacked one on top of the other during storage and transport, unless this is explicitly contemplated.

Failure to comply with storage indications shall relieve ThermoKey from all liability for damage caused by inappropriate storage of the unit.

IG 4.5. NOTES ON FANS

If the unit is installed outdoors, but it is not started up immediately, it is advisable to switch on its fan(s) for 4-6 hours at least once a week to avoid damage to the electric motors.

IG 4.6. ELECTRICAL SAFETY

- 1. The electrical and hydraulic systems and the regulation units (optional) must be connected exclusively by qualified staff having the qualifications required by the legislation of the Country where the unit is going to be installed.
- 2. The fan unit is designed to operate within the voltage, frequency and current limits, and at the short-circuit conditions indicated on the ID plate.
- 3. A power switch must be installed upstream of the douser power line. This switch must give the opportunity to be locked in the open position (power not supplied to the unit) by means of a padlock, for instance.
- 4. The unit can also be supplied with a repair switch, needed during maintenance operations. In order to use them during maintenance operations, on several of our units an adequate access system at the customer expenses will have to be planned (as for a scaffolding, a moving platform or other mean to access the working place). This is necessary for example considering VType units and Table units with supplementary frames or non standard ThermoKey feet.
- 5. Each fan unit must feature one connection to the electrical mains. If additional connections are required, the plant designer, the installer or the user must provide power switches in order to allow safe use of the fan unit.
- 6. The protection class of the electrical equipment is IP54 and must not be reduced during the installation phase. Consequently, appropriate cable-glands have to be used, and, where necessary, plugs for the holes.
- 7. Installing the unit in environments classified as potentially explosive atmospheres is forbidden pursuant to Directive 1999/92/EC, except for Atex-certified units.
- 8. In case of fire, use an extinguishing substance suitable for use with live units.

IG 4.7. MECHANICAL SAFETY

- 1. The fan unit must be secured to a support capable of resisting the stresses occurring during normal operation, such as the weight of the fan unit fully assembled and filled with refrigerant, the effects of a seismic shock and the snow- or wind load for units installed outdoors. Besides this list, the designer shall check the foreseeable stresses with reference to the Eurocode or locally applicable standards.
- 2. The stability of the fan unit has to be safeguarded at all times. Fan units that operate after mounting on a flat surface must be fastened to this surface, and not just made to sit on it.
- 3. Based on the type of application, hung-up units may require the adoption of fall-prevention or retaining systems.
- 4. Should it be necessary to contemplate bracing, the same has to be placed and/or marked in such a way as not to generate a risk of tripping.
- 5. During maintenance, repairs or cleaning, always wear suitable protective equipment (gloves resistant to mechanical risks, as prescribed by standard EN 388, marked CE and above 1311) for the purpose of reducing the risk of injuries in case of contact with metal sheet tips or with the finned pack.
- 6. Accidental contact with the manifolds or piping may cause heat burns. Always wear suitable protective equipment.
- 7. For detailed information on the sound level of the unit, refer to the calculation tables and catalogues, or visit the

catalogue download area on our website: www.thermokey.com.

- 8. With reference to the overpressure risks, refer to the calculation tables or the catalogues for the units operating parameters and for the types of fluid to be filled. Tables and catalogues may be requested directly to ThermoKey or they can be downloaded from the website: www.thermokey.com
- 9. It is prohibited to use or add substances or solvents to the fluid indicated for use, for which the product has been designed. The following substances are regarded as aggressive: corrosive, toxic, flammable, explosive substances, and, generally, those belonging to group 1 fluids, according to Directive 97/23/EC (2014 /68 / EU from 19.07.2016).

IG 5. Unintended and prohibited use

Any different use from that specified in this manual is to be considered as unintended. While the fan unit is in operation, no activities are allowed near it, unless they take place at a suitable distance. Below is a list of foreseeable unintended uses:

- failure to disconnect the power supply by turning the power switch to position “O” (open) (or to disconnect the plug from the socket) before performing adjustment, resetting and maintenance operations;
- failure to carry out periodical maintenance and controls;
- structural modifications or changes to the unit operating logics;
- tampering with the protections and safety systems;
- presence of unauthorised people during routine operation;
- failure by operators and maintenance people to wear personal protective equipment;
- failure to install the recommended collective protective equipment.

The behaviours illustrated above are explicitly prohibited. Since it is not possible to eliminate residual risks due to unintended use, indications and instructions are provided to avoid such conduct. It is prohibited to remove or make unreadable the safety, danger and obligation signs featured on the unit. It is prohibited to remove or tamper with the protections featured on the unit. It is prohibited to make modifications to the fan unit.

IG 5.1. SPECIFIC PROHIBITIONS FOR AMMONIA UNITS

Ammonia is a potentially explosive, toxic and irritating substance, which poses a risk of fire, and may cause irreparable injury and harm, or even death.



IG 6. General residual risks

IG 6.1. PPE PERSONAL PROTECTIVE EQUIPMENT AND DANGERS

There are two categories of residual risks: general and specific risks. General residual risks are those which can be attributed to every fan unit, whatever the model or the application, and they are defined only based upon manufacturing technologies and solutions. General residual risks are examined in this part of the manual.

On the other hand, specific residual risks are peculiar to a family of units, to a model, or even to a single sample unit. Specific residual risks are listed in the documentation specifically related to the unit, not necessarily in the manual.

1. The unit has risks that have not been totally eradicated from a design point of view or with the installation of adequate protections.
2. Besides the instructions given in this manual and in the technical documentation of the fan unit in general, the user has to implement organizational measures to further reduce residual risks. These measures include giving unit operators both personal (PPE) and collective (CPE) protective equipment.
3. During unit installation, sufficient space is contemplated to limit such risks. To preserve said conditions, the corridors and the areas around the unit must always be:
 - free of obstacles (such as small ladders, tools, containers, boxes);
 - clean and dry;
 - well lit, if that is necessary.
4. Before disassembling the air cooled unit, which needs the lifting of the unit itself, it is mandatory to check the eventual corrosion of screws and lifting eyes. In the case of corrosion (even if little), before lifting the unit, substitute the screws and lifting eyes.

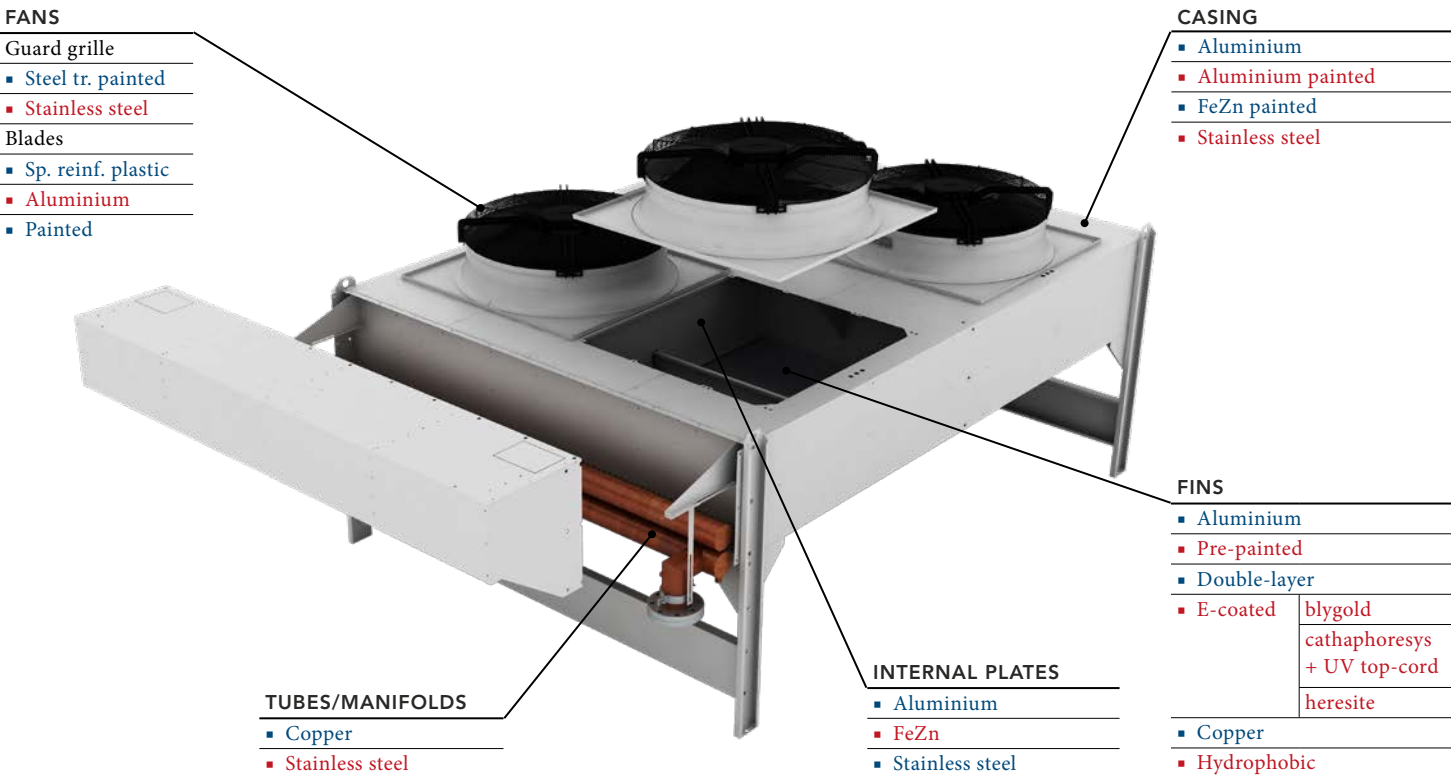
IG 6.1.1. Dismantlement and disposal

ThermoKey units are essentially made of:

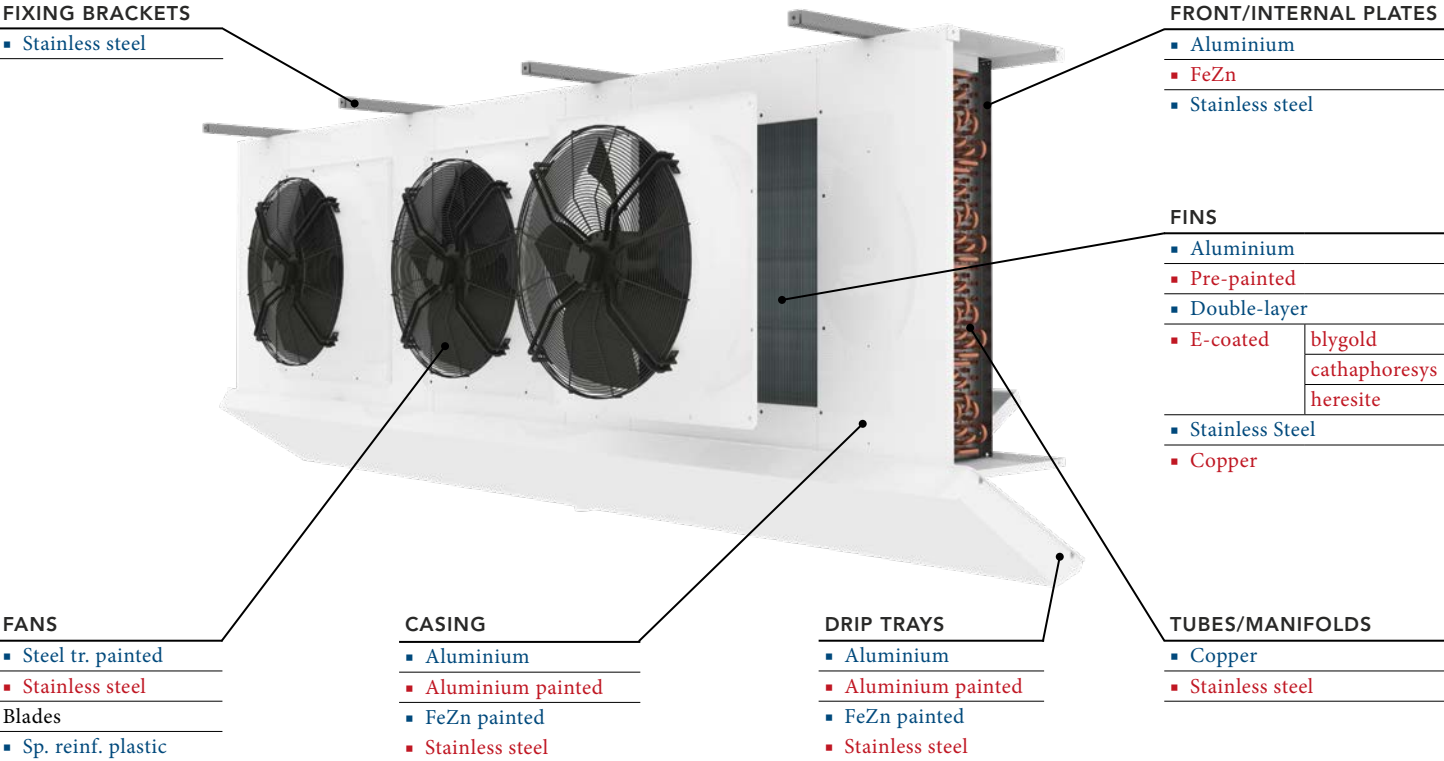
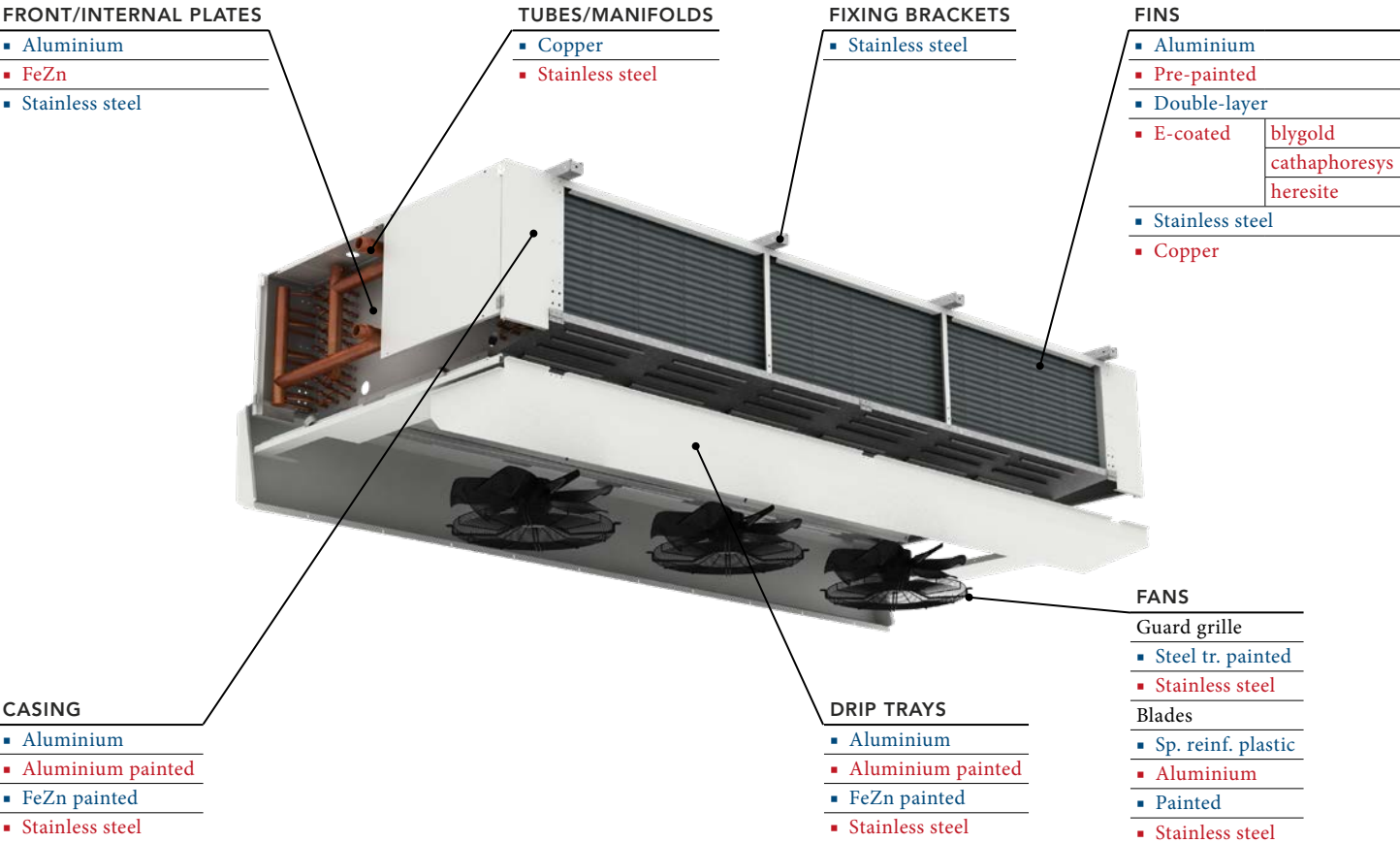
- Tubes: Copper / aluminium / stainless steel
- Fins: aluminium with or without protective treatment / copper / stainless steel
- Galvanized steel plates with or without painting, aluminium plates with or without painting, etc
- Steel
- Stainless steel
- Electrical parts: fans, panels and regulation systems

For a complete visual please refer back to the following schemes

Dry Coolers – Remote Condensers



Unit Coolers



The dismantlement and disposal operations must follow the EN378 norms and local in force norms in terms of environment security and work security.

The materials which constitute ThermoKey units are recyclable through mechanic separation. Our units, during functioning, have at they internal refrigerants and/or liquids and/or oils etc which must be beforehand recovered before the mechanical separation of the parts that constitute our unit, through actions such as for example:

- Inclination of the unit
- Blowing
- etc

DANGER DESCRIPTION OF THE DANGEROUS SITUATION

BURN *The operator (in particular situations or during maintenance) intentionally or unintentionally touches a cold or frozen surface.*

SOLUTION Use insulating gloves and/or wait for the cooling down/heating up of the surfaces.

ELECTROCUTION *Contact with live electrical parts during maintenance operations.*

SOLUTION As far as possible, maintenance operations have to be carried out with the unit switched off and exclusively by qualified, trained and authorized operators, supplied with appropriate PPE and insulating tools.

SHARP FINS *During operation and cleaning the operator may come into contact with the fins of the exchangers, which are sharp.*

SOLUTION The operator must be supplied with appropriate PPE.

STAGE DESCRIPTION OF THE DANGEROUS SITUATION

TRANSPORT It consists in transferring the unit from one location to another using suitable means.

HANDLING This consists in transferring the unit from and onto the means of transport as well as moving it inside the factory.

UNPACKING This consists in removing all the materials employed for packaging the unit.

ASSEMBLING It includes all the initial assembly operations required to prepare the unit for start up.

ORDINARY USE The use the unit is intended for (or considered as ordinary) in relation to its designing, manufacture and function.

ADJUSTMENT This includes adjustment, setup and calibration of all the devices which have to be registered for normal operation.

CLEANING This consists in removing dust, oil and processing/machining residues that might jeopardize the good functioning and use of the unit as well as the operator’s health/safety.

MAINTENANCE It consists in periodically checking the unit parts that can wear out or that have to be replaced.

DISASSEMBLING It consists in either complete or partly disassembly of the unit into its constituting parts, no matter what the reason for it is.

DEMOLITION It consists in the final removal of all the parts of the unit resulting from its final dismantling in order to allow for its disposal or for separate collection of its components in compliance with the procedures laid down by the applicable laws.

The Customer is responsible for the identification and selection of the adequate kind and category of suitable PPE.

The **PPE** used shall conform to product directives and shall bear the CE marking (for the European market).

	TRANSPORT	HANDLING	UNPACKING	MONTAGGIO	ORDINARY USE	ADJUSTMENT	CLEANING	MAINTENANCE	DISASSEMBLY	DISMANTLING
 OBLIGATION TO WEAR WORK CLOTHES M010										
 OBLIGATION TO WEAR SAFETY FOOT-GEAR M008										
 OBLIGATION TO WEAR GLOVES M009										
 OBLIGATION TO WEAR SAFETY GOGGLES M004										
 OBLIGATION TO WEAR A FACE SHIELD M013										
 OBLIGATION TO WEAR A MASK (*) M017										
 OBLIGATION TO WEAR A PROTECTIVE HELMET M014										

(*) only for the operations requiring contact with refrigerants

IG 6.2. AMMONIA LEAKS

If the operator notices:

- a leak of ammonia vapour or liquid ammonia from the unit or from its connections, or
- sudden and strong smell or irritation in the airways and eyes, or
- the activation of a warning/alarm device and/or a signal indicating a concentration of ammonia

he must get out of the room or, in any case, get away from the installation site of the unit and engage the emergency device.

The fault shall later be resolved by expert and trained staff.
Before entering the installation area/site, the operator shall:

- wear protections for the airways and the eyes, gloves and protective clothes suited for the circumstance,
- wait until the ammonia bubbles in the room or in the area where the damaged unit is installed have disappeared,
- be assisted by other members of staff who must be ready to act when necessary.

IG 6.3 INSTRUCTIONS FOR INJURY TREATMENT

Injuries deriving from contact with ammonia may cause:

- frostbites
- corrosive skin injuries

Assistance staff shall immediately:

- call for a doctor
- provide protection to the airways
- take the injured person to the shower and wash him/her with hot water (the injured person shall have to be placed under the shower with his/her clothes on).

IG 7. Positioning
General and common notes

For details on positioning operations, see the HANDLING and UNPACKING INSTRUCTIONS.

Besides these general and common procedures, specific indications can be contemplated for every model (see ThermoKey website: <http://www.thermokey.com/Manuali.aspx>).

Installation site

Preliminarily to the design stage, or at least before installation, the following datas shall be verified:

- the assembly surface is sufficiently resistant to bear the stresses exerted during operation, such as for instance the weight of the unit and of the refrigerant load,
- there is enough room to allow for servicing and maintenance
- the chosen installation place cannot be flooded,
- the natural or forced ventilation of the installation place is such as to avert dangerous concentrations of potentially explosive or flammable refrigerants,

- the local unit temperature, when not in use, does not exceed 50°C,
 - anti-vibration supports and hoses may be fitted on the hydraulic piping so as to limit vibration propagation through solid bodies as much as possible (<9.8m/s2),
 - the acoustic impact is adequate.
- For indoors installations, also verify that the installation room conforms to the prescriptions of standard EN 378-3 and to the other technical and legal specifications in force where the unit is installed.

For outdoors installations, check that:

- the position of the unit exceeds average snow height,
- the assembly surface is sufficiently resistant to bear the stresses of ordinary use such as for instance the weight of the unit, the refrigerant load and accidental loads (snow, wind and similar) macking reference also to EN 1991-5 standard.



M001

Prepare the space and the equipment required for installation.



M001

Special care is required when verifying the danger of galvanic corrosion. More specifically, the designer/installer must consider using a protection system.



M001

The installer/designer must also contemplate possible external vibrations, such as for instance traffic near roads, vibrations near airports, etc.

The installation of shock absorbers at the basis of the structure is recommended: refer to the catalogue or to the catalogue download area on our Internet website www.thermokey.com.
For stress assessment we recommend referring to standard EN 1991-6.



M001

Use of anti-vibration systems may alter the conditions of fan unit resistance to stresses (wind and its own vibrations especially).



M001

For pipe sizing, especially ammonia and group 1 refrigerant pipes, we recommend implementing standard EN 1998-6.

When choosing the installation site, a set of possible risks have to be taken into account, which may show up both during installation and during subsequent ordinary use and disassembling. It is up to designers, installers and/or users to evaluate the risks present at the installation site. A non-exhaustive but indicative list is given hereafter.



W011

The area near or the soil under the fan units may turn out to be slippery: signal this risk in an appropriate way.



W007

Bracing and, generally, all structures protruding from the fan unit may pose a risk of tripping.



W020

Suspended or hanging fan units and very large units may pose the risk of knocking one's head due to the installation height.



W008

Installations at a height (on roofs with terraces, on supporting structures or similar means exceeding 2 metres in height from the transit area) pose a risk of objects falling from above, which has to be reduced by means of CPE.



The use of ammonia and group 1 refrigerants may pose a risk of explosion as a result of an explosive atmosphere. At the design stage, all possible precautions must be taken to prevent such inconvenience.

IG 7.1.MINIMUM TECHNICAL SPACES

Minimum technical spaces can be of different types. This is why reference must be made to the specific indications supplied inside the technical documentation. Should they not be present, promptly ask ThermoKey for a copy.



M001

IG 7.2. INSPECTION UPON DELIVERY

Check that the data in the order confirmation are in line with those on the unit ID plate. Also check that the electrical parameters match the requirements. Do not install the unit if there are divergences in the parameters.



M001

If a flaw is detected in the fan unit during unpacking and/or installation, immediately notify the manufacturer and do not carry on with the subsequent steps without an explicit authorization.



M001

IG 7.3. UNPACKING THE UNIT

As the packaging can be of different types, it is necessary to refer to the specific indications provided inside the technical documentation. Should they not be present, promptly ask ThermoKey for a copy and do not carry on with any unpacking operation.



M001

IG 7.4 PLACEMENT

It is prohibited to stop within and pass by the outreach of any type of lifting equipment.



W001

After installation, the film protecting the unit body must be removed.

When installation requires work at a height or exposure to the risk of falling, do not use ladders, but follow the relevant national safety legislation in force



M001

As far as ordinary and extraordinary maintenance is concerned, as well as all phases of start up, it may be necessary to work at height. Please pay attention to the fact that the machine is supplied without any means of access. It will be the user/installer/plant designer to ensure the appropriate / suitable equipment that complies with the machine safety standards and consequently prepare the most suitable means of access to perform the specific activity safely. Permanent means of access are preferable (UNI EN ISO 14122 - 1- 2 - 3- 4) in any case compliant with current safety regulations.

Work at a height is only permitted if the weather conditions do not affect the safety of the involved workers.



W001

IG 8. Installation

Installation is the stage that follows fan unit placement, during which operations are performed to secure the unit to its support, bracing is placed, and parts likely to have been disassembled during handling are reassembled.



M001

Installation has to be performed in conformity to the indications given in the manual and those provided in standard EN 378-3.



M001

Mounting of the mechanical parts of the fan unit is to be carried out by the installer. The fan unit is equipped with mounting holes. Should the holes be too small in size, do not expand them without prior authorisation from ThermoKey.

The diameters of the mounting holes are the result of the manufacturer static calculations. The mounting elements have to take into account hole diameters.

Mounting elements have to be equipped with all suitable means to prevent coming loose.



M001

To size the anchoring or mounting devices of the fan units, follow the ETAG standards and refer to the technical catalogues published in the catalogue download area of our Internet website: www.thermokey.com.

For enhanced stability of the units installed outdoors against wind load, bracing may be fitted. The installer is in charge of selecting and sizing the bracing.

IG 9. Refrigeration and hydraulic connections



M001

It is strictly prohibited to place the headers according to the intake line, as they must not be moved away from their original position.

- When setting the joints of the IN/OUT piping, it is mandatory to check the gauge showing the refrigerant flow, which is fitted at the manifolds or flanges.
- Installation of upstream shut-off valves is recommended for easier maintenance. If installation of these valves creates risks, it is always up to the installer to foresee appropriate solutions for the circuit.
- For V-type condensers and dry coolers equipped with adiabatic systems, it is mandatory to drain water from the feeding system to prevent ice formation whenever the ambient temperature is expected to drop below 0°C.
- For the connections of the refrigerating and hydraulic circuits, it is obligatory to comply with the diameters of the existing attachments. Any kind of modification has to be agreed beforehand with the Customer Service of ThermoKey Spa, otherwise the manufacturer shall be relieved from all liability for harm to people and/or animals or damage to property, and for poorer performances than those declared. In such case, the Guarantee Conditions too shall no longer apply.

IG 9.1. HYDRAULIC CONNECTIONS

Hydraulic connections have to be set up in conformity with national or local legislation. The piping can be made of steel, zinc-coated steel or P.V.C. Pipes have to be accurately sized depending on the nominal refrigerant flow rate, pressure, pressure losses from the hydraulic circuit and the operating temperatures. All hydraulic connections have to be insulated by using appropriately thick, closed-cell material.

IG 9.2. PIPING INSTALLATION

- Fasten all the piping correctly to prevent mechanical damage following the correct assembly procedure and the indications given in the Technical Specifications of the download area on the website: www.thermokey.com
- While fastening, support the piping so as to prevent inappropriate stresses to the fastening systems.
- If the unit is installed in areas where personnel transit is authorized, place the piping so that it is not in the way, and ascertain that piping is connected with coupling tubes that cannot be easily removed,
- Use fastening devices that are suitable with the weight of the piping so that the whole burden does not fall onto the connections, causing breakage or detachment from the units.



In fan units where ammonia or explosive or flammable liquids are used, incorrect piping installation may lead to the risk of refrigerant leaks.

IG 9.3. WELDING

- When connections are made through welding, weld with precision and care to prevent leaks;
- avoid overheating while welding (excessive downsizing danger);
- use protection gases while welding (avoid excessive scaling);
- welding work on components under pressure may cause fire or explosions;
- carry out welding work only after draining the unit and discharging the pressure from it;
- make sure that loads and vibrations do not stress the unit;
- when welding the connections, it is prohibited to direct the flame towards the unit and/or to the installed electrical unit devices.

IG 10. Electrical connection

Electrical connections have to be made in conformity with the instructions provided in this manual, with the electrical diagrams supplied in the Instructions and Technical Specifications and with the regulations relating to electrical systems in force in the Country where the unit is installed.

The unit must be connected to a grounding system unit.

- All electrical connections have to be carried out by qualified staff, having the necessary technical requirements expected in the Country where the unit is installed.
- It is mandatory to check that the line voltage corresponds to the rating indicated on the unit ID plate.
- The designer/installer is in charge of selecting and sizing the unit power cable.
- When placing the power cable, we recommend using raceways or piping to protect the cable mechanically. We strongly recommend not placing the cable on the floor without fastening it.
- It is mandatory to use power cables whose type and minimum cross-section conforms to standard EN 60204-1 and, possibly, to the technical regulations in force in the Country of installation.
- The power and absorption values for sizing the electrical power line are given in the unit ID plate and/or in the technical catalogues.
- It is mandatory to supply the power system with a device to protect it against over-currents, such as a circuit breaker, and over-voltage.

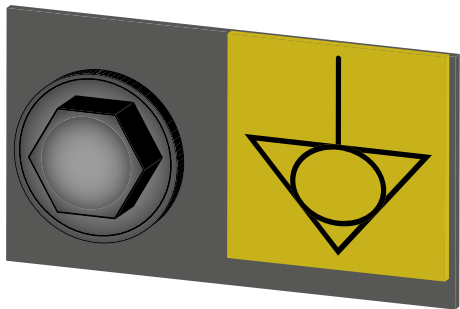


M001



M001

- The electrical cable must be passed through the switchboards and into the electrical boxes of the fan unit from the bottom, or in such a way as to reduce the risk of water infiltration. Always use cable glands.
- Protection against indirect electrical contacts is implemented by earthing the metal structure of the fan unit and through coordination with automatic switches for TT and TN-S distribution systems.



- At the power terminals to the switchboard, the yellow/green earthing cable must be left longer than the other leads so that, in case of pulling, it is the last one to detach from the terminals.
- In three- and one-phase models, the power line must be connected to the main power panel.
- If several units are assembled in series, they have to be included in an equipotential system: connection has to be made by means of a terminal bearing the symbol placed on the header side. The cross-section of the lead (coloured yellow/green) has to be equal to, or larger than the maximum cross-section of the power cable.
- For the electrical connections of the fans, where there is no switchboard, it is mandatory to refer to the wiring diagram provided in the junction box of the fans. Connecting TK thermal contacts in series is recommended to handle the alarm system.
- Use speed regulators with inverters supplied by ThermoKey exclusively. The use of different inverters has to be validated by ThermoKey Engineering Department.

IG 11. Refrigerants



M001

The information given in this paragraph is generic and does not replace that contained in the product and safety data sheets of the refrigerant in use.



M002

Always refer to the information given in the safety data sheets of the refrigerant.

IG 11.1 AMMONIA AS A REFRIGERANT FLUID

- Ammonia is toxic to the breathing system.
- Continued exposition, or severe exposition to ammonia vapours may cause ulcers in the conjunctive and cornea, glottis oedema, bronchial spasm, lung oedema and breathing failure.
- Ammonia is highly irritant to the eye mucous and, in humidity conditions, to the skin as well.
- Splashes of liquid ammonia may cause cold burns or other types of burns due to caustic action.
- Ammonia can be dangerous for water environments, in particular to fish.

IG 11.2 “H” HAZARD AND “P” PRECAUTIONS

All information of danger and caution can be found in Regulation EC 1272/2008. Below are just a few examples.

Hazard

- H221:** Flammable gas.
- H331:** Toxic, when inhaled.
- H314:** Causes serious skin burns and eye lesions.
- H400:** Very toxic to water organisms.
- EUH071:** Corrosive for the airways

Precaution

- P210:** Keep far from sources of heat/sparks/free flames/heated surfaces. – Do not smoke.
- P280:** Wear protective gloves/clothes. Protect your eyes/face.
- P260:** Do not breathe the vapours.
- P273:** Do not dispose of in the environment.
- P377:** In case of fire due to a gas leak, do not extinguish unless you can stop the leak/spill with no danger.
- P381:** Eliminate all sources of ignition.
- P303+P361+P353+315:** IN CASE OF CONTACT WITH THE SKIN (or with hair): promptly take off the contaminated garments. Rinse your skin/have a shower. Get in touch with a doctor immediately.
- P304+P340+P315:** WHEN INHALED: carry the injured person into the open air and place him/her in a restful position which may favour breathing. Consult a doctor immediately.
- P305+P351+P338+P315:** IN CASE OF CONTACT WITH THE EYES: rinse accurately for several minutes. Take off contact lenses, if any and easy to do so. Go on rinsing. Consult a doctor immediately.

IG 12. Inspectable fan units

Inspectable fan units allow access to the fan housing without completely removing the fans. This optional function is characterised by additional technical arrangements that are described in the Technical Specifications in the download area of our website: www.thermokey.com

The safety and final conformity of inspectable fan units with the legal requirements, where installation of optional devices (e.g. electrical interlocks, etc.) is at the user's discretion, are guaranteed exclusively after completion of installation as indicated by ThermoKey.



M001

ThermoKey®
Heat Exchange Solutions

Istruzioni generali per un uso sicuro

Sistema di Gestione Qualita' ISO 9001
Sistema di Gestione Ambiente ISO 14001
**Sistema di Gestione Sicurezza e Salute sul
posto di lavoro ISO 45001**

MT IG TK IT 12 2025

LA VERSIONE ORIGINALE DELLE PRESENTI ISTRUZIONI
È IN LINGUA ITALIANA



LEGGERE ATTENTAMENTE E COMPRENDERE COMPLETAMENTE TUTTE LE INFORMAZIONI CONTENUTE IN QUESTE ISTRUZIONI PRIMA DELLA PROGETTAZIONE ED IN OGNI CASO PRIMA DI EFFETTUARE QUALUNQUE OPERAZIONE DI MOVIMENTAZIONE, DISIMBALLAGGIO, MONTAGGIO, POSIZIONAMENTO E MESSA IN ESERCIZIO DELL'APPARECCHIO.



ThermoKey declina ogni responsabilità per danni a persone o cose derivanti dalla mancata osservanza delle indicazioni contenute nel presente documento.



L'originale del presente manuale è in **italiano** , ed è reperibile sul sito internet: **www.thermokey.com**
La traduzione in **inglese** è conforme all'originale ed è reperibile sul sito internet: **www.thermokey.com**
Le traduzioni in altre lingue possono contenere errori; in caso di dubbio fare sempre riferimento alla versione originale in italiano od alla sua traduzione in inglese.

LA FILOSOFIA DEL MANUALE

Il commento n. 255 delle linea guida applicative revisione 2 della direttiva macchine 2006/42/CE suggerisce di mettere a disposizione un formato elettronico reperibile su internet delle istruzioni per evitare il loro smarrimento e favorirne l'aggiornamento.

Inoltre il commento 275 impone che vi sia corrispondenza fra le pubblicazioni tecnico-commerciali, quali i cataloghi, ed il manuale.

Molte delle unità ventilate prodotte da ThermoKey sono personalizzate per uno specifico impianto o cliente. Sulla base dei punti sopra indicati e considerando che gli utilizzatori delle istruzioni sono i progettisti degli impianti, gli installatori ed infine gli utilizzatori, la documentazione tecnica per la corretta progettazione ed il corretto uso dell'unità ventilata segue la filosofia di comporsi di una serie di documenti che, nel loro insieme, vengono appunto definiti MANUALE. *Le Unità Ventilata prodotte da ThermoKey sono quasi-macchine ai sensi della direttiva 2006/42/CE: l'elenco dei requisiti essenziali applicati e rispettati è riportato nella Dichiarazione di Incorporazione allegata all'Unità. La quasi-macchina oggetto dei Manuali non deve essere messa in servizio finché la macchina finale in cui deve essere incorporata non è stata dichiarata conforme alle vigenti disposizioni legislative. Le indicazioni del presente Manuale e in quelli ad esso collegati sono riferite esclusivamente all'Unità Ventilata prodotta da ThermoKey: è compito del progettista/ installatore in qualità di fabbricante della macchina finale integrare i presenti manuali in quello della macchina completa, rispettando quanto qui riportato in ogni singola sezione.*

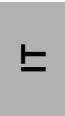
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Nelle Istruzioni Generali per un Uso Sicuro sono indicate le informazioni di sicurezza ed uso corretto comprendenti:

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▪ Nelle Istruzioni di Movimentazione e Disimballo sono indicate, mediante figure numerate, le operazioni necessarie e consentite per la movimentazione ed il disimballaggio delle varie unità ventilate. Nel caso di unità ventilate speciali le informazioni corrette saranno identificate nel documento dal numero di conferma d'ordine.

Per facilitare l'aggiornamento e la non ambiguità di informazioni, questa parte della documentazione dell'unità ventilata è costituita da cataloghi ed altra documentazione tecnica fornita direttamente da ThermoKey e/o reperibile sul sito internet www.thermokey.com.



M001

▪ Nel capitolo TC Istruzioni e Dati Tecnici sono riportate le informazioni tecniche rilevanti per ogni singola tipologia di unità ventilata, raggruppate in famiglie e comprendono:

- DIMENSIONI E PESI
- INGOMBRI E SPAZI TECNICI MINIMI
- DATI AERAILICI, PRESTAZIONALI ED ELETTRICI
- IL LIVELLO DI EMISSIONI SONORE
- SCHEMI ELETTRICI
- BOLLETTINO TECNICO

▪ Le Istruzioni Specifiche per l'Uso e la Manutenzione sono una parte specifica per ogni modello ed eventualmente per ogni unità ventilata specifica e comprendono:

- IS 1 - ISTRUZIONI DI FUNZIONAMENTO
- IS 2 - PROBLEMI DI FUNZIONAMENTO
- IS 3 - MANUTENZIONE
- IS 4 - PARTI DI RICAMBIO

PERICOLO	DESCRIZIONE DELLA SITUAZIONE PERICOLOSA
USTIONE	<i>L'operatore (in situazioni particolari o durante la manutenzione) tocca intenzionalmente o non intenzionalmente una superficie calda o gelata.</i>
SOLUZIONE	Usare guanti isolanti e/o attendere il raffreddamento/riscaldamento delle superfici
ELETTROCUZIONE	<i>Contatto con parti elettriche in tensione durante le operazioni di manutenzione.</i>
SOLUZIONE	Le operazioni di manutenzione devono, per quanto possibile, essere eseguite con l'unità fuori tensione e sono riservate ad operatori qualificati, formati ed autorizzati, dotati di opportuni DPI ed attrezzi isolanti.
ALETTATURA TAGLIENTE	<i>L'operatore nelle fasi di utilizzo e pulizia può venire a contatto con l'alettatura degli scambiatori che è tagliente.</i>
SOLUZIONE	L'operatore deve essere munito degli opportuni DPI.

FASE	DESCRIZIONE
TRASPORTO	Consiste nel trasferimento dell'apparecchiatura da una località all'altra mediante l'utilizzo di un apposito mezzo.
MOVIMENTAZIONE	Prevede il trasferimento dell'apparecchiatura da e su il mezzo utilizzato per il trasporto, nonché gli spostamenti all'interno dello stabilimento.
DISIMBALLO	Consiste nella rimozione di tutti i materiali utilizzati per l'imballaggio dell'apparecchiatura.
MONTAGGIO	Prevede tutti gli interventi di montaggio che preparano inizialmente l'apparecchiatura alla messa a punto.
USO ORDINARIO	Uso al quale l'apparecchiatura è destinata (o che è ritenuto usuale) in relazione alla sua progettazione, costruzione e funzione.
REGOLAZIONI	Prevedono la regolazione, la messa a punto e la calibrazione di tutti quei dispositivi che devono essere adattati alla condizione di funzionamento normalmente previsto.
PULIZIA	Consiste nell'asportare la polvere, l'olio e i residui vari che potrebbero compromettere il buon funzionamento e l'utilizzo dell'apparecchiatura, oltre che la salute/sicurezza dell'operatore.
MANUTENZIONE	Consiste nella periodica verifica delle parti dell'apparecchiatura che si possono usurare o che si devono sostituire.
SMONTAGGIO	Consiste nello smontaggio completo o parziale dell'apparecchiatura, per necessità di qualsiasi tipo.
DEMOLIZIONE	Consiste nella rimozione definitiva di tutte le parti dell'apparecchiatura risultanti dall'operazione di smantellamento definitivo, così da permettere l'eventuale riciclaggio o raccolta differenziata dei componenti secondo le modalità previste dalle vigenti norme di legge.

La responsabilità dell'identificazione e della scelta della tipologia e della categoria dei **DPI** adeguati e idonei è a carico del Cliente.
I **DPI** utilizzati dovranno rispondere alla direttive di prodotto e dotati di marcatura CE (per il mercato europeo).

	TRASPORTO	MOVIMENTAZIONE	DISIMBALLO	MONTAGGIO	USO ORDINARIO	REGOLAZIONI	PULIZIA	MANUTENZIONE	SMONTAGGIO	DEMOLIZIONE
 OBBLIGO INDUMENTI DA LAVORO M010										
 OBBLIGO CALZATURE DI SICUREZZA M008										
 OBBLIGO GUANTI M009										
 OBBLIGO OCCHIALI PROTETTIVI M004										
 OBBLIGO VISIERA PROTETTIVA M013										
 OBBLIGO MASCHERA (*) M017										
 OBBLIGO ELMETTO PROTETTIVO M014										

(*) solo per le fasi che prevedono contatto con i refrigeranti

IG 6.2. PERDITE DI AMMONIACA

- Nel caso in cui l'utilizzatore avverta:
- fuoriuscita di vapore di ammoniaca o ammoniaca liquida dall'unità o dai suoi collegamenti, oppure
 - improvvisi e forti odori od irritazioni alle vie respiratorie e visive, o ancora
 - l'attivazione di un dispositivo di allarme e/o segnalazione che rilevi la concentrazione dell'ammoniaca.

Abbandonare il locale o comunque il sito di installazione dell'unità ed azionare il dispositivo di emergenza

- Il ripristino del guasto dovrà essere eseguito da personale esperto e formato.
Prima dell'ingresso nel locale/sito di installazione l'addetto dovrà:
- indossare dispositivi di protezione per le vie respiratorie,per gli occhi,i guanti ed indumenti protettivi adeguati alla circostanza,
 - attendere la completa evacuazione delle sacche di ammoniaca presenti nel locale o nell'area dove l'unità danneggiata è installata,
 - essere assistito da personale pronto ad intervenire in caso di necessità.

IG 6.3 ISTRUZIONI PER IL TRATTAMENTO DELLE FERITE

- Le ferite derivate dal contatto con ammoniaca possono provocare:
- congelamento
 - ferite corrosive sulla pelle

- L'assistenza del personale dovrà immediatamente:
- avvertire il medico
 - procurare una protezione alle vie respiratorie
 - condurre il ferito nella doccia e lavarlo con acqua calda (il ferito dovrà essere posizionato sotto la doccia con gli indumenti)

IG 7. Posizionamento

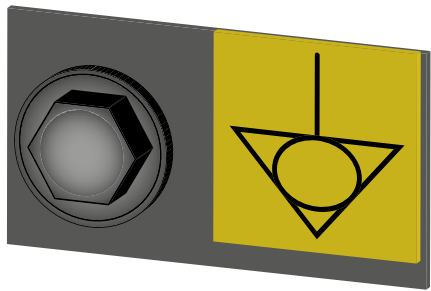
Note generali e comuni

Per i dettagli sulle operazioni si vedano le ISTRUZIONI per la MOVIMENTAZIONE ed il DISIMBALLO.

Oltre alle presenti norme generali e comuni, per ogni modello possono essere previste indicazioni specifiche indicazioni (vedere sito ThermoKey <http://www.thermokey.com/Manuali.aspx>).

Sito di installazione

- Già in fase di progetto od almeno prima dell'installazione deve essere verificato che:
- la superficie di montaggio sia sufficientemente resistente da sopportare le sollecitazione previste nell'uso, come ad esempio il peso proprio dell'unità e del carico di refrigerante,
 - ci sia uno spazio libero per consentire gli interventi di assistenza e di manutenzione
 - il luogo di installazione prescelto non sia allagabile,
 - la ventilazione del luogo di installazione, naturale o forzata, sia idonea ad impedire pericolose concentrazioni di



- ventilata e la coordinazione con interruttori automatici per i sistemi di distribuzione TT e TN-S.
- In prossimità dei morsetti di alimentazione al quadro elettrico, il filo giallo/verde di terra deve essere lasciato più lungo degli altri conduttori per garantire, in caso di trazione del cavo, sia l'ultimo conduttore a staccarsi dai morsetti.
- Nei modelli trifase e monofase la linea di alimentazione deve essere connessa al quadro generale.
- Se più unità ventilate vengono montate in serie, devono essere incluse in un sistema equipotenziale : il collegamento deve essere effettuato mediante un morsetto contrassegnato con il simbolo posto sulla fiancata lato collettori. La sezione di tale conduttore (di colore giallo/verde) deve essere uguale o maggiore alla massima sezione del cavo di alimentazione.
- Per i collegamenti elettrici dei ventilatori, dove non è presente il quadro elettrico, è obbligatorio fare riferimento allo schema elettrico riportato nella scatola di derivazione dei ventilatori. Si consiglia di collegare i termocontatti TK in serie per una gestione di allarme.
- Utilizzare esclusivamente regolatori di giri ad Inverter forniti da ThermoKey. L'utilizzo di Inverter diversi , deve essere validato dall'ufficio tecnico ThermoKey.

IG 11. Refrigeranti



M001



M002

Tutte le informazioni contenute nel presente paragrafo sono di natura generica e non sostituiscono quelle contenute nelle schede tecniche e di sicurezza del refrigerante impiegato.

Fare sempre riferimento alle informazioni contenute nelle schede di sicurezza del refrigerante.

IG 11.1 AMMONIACA COME FLUIDO REFRIGERANTE

- L'ammoniaca è tossica per l'apparato respiratorio,
- una prolungata esposizione od una esposizione severa a vapori di ammoniaca può provocare ulcerazioni alla congiuntiva ed alla cornea, edema alla glottide, broncospasmi, edema polmonare ed arresto respiratorio.
- l'ammoniaca è altamente irritante per le mucose oculari e, in presenza di umidità, per la pelle,
- schizzi di ammoniaca liquida possono causare ustioni da freddo od ustioni a causa della sua azione caustica,
- l'ammoniaca può essere pericolosa per l'ambiente acquatico, in particolare per i pesci.

IG 11.2 INDICAZIONI DI PERICOLO H E PRUDENZA P

Tutte le informazioni di pericolo e prudenza sono riportate nel regolamento CE 1272/2008.

Di seguito si riportano solo alcuni esempi:

Pericolo

H221: Gas infiammabile.

H331: Tossico se inalato.

H314: Provoca gravi ustioni cutanee e gravi lesioni oculari.

H400: Molto tossico per gli organismi acquatici.

EUH071: Corrosivo per il tratto respiratorio

Prudenza

P210: Tenere lontano dalle fonti di calore/scintille/ fiamme libere /superfici riscaldate. – Non fumare.

P280: Indossare guanti/indumenti protettivi/ Proteggere gli occhi/ il viso.

P260: Non respirare i vapori.

P273: Non disperdere nell'ambiente.

P377: In caso di incendio dovuto a perdita di gas, non estinguere a meno che non sia possibile bloccare la perdita senza pericolo.

P381: Eliminare ogni fonte di accensione.

P303+P361+P353+315: IN CASO DI CONTATTO CON LA PELLE (o con i capelli): togliersi di dosso immediatamente gli indumenti contaminati. Sciacquare la pelle/fare una doccia. Consultare immediatamente un medico.

P304+P340+P315: IN CASO DI INALAZIONE: trasportare l'infortunato all'aria aperta e mantenerlo a riposo in posizione che favorisca la respirazione. Consultare immediatamente un medico.

P305+P351+P338+P315: IN CASO DI CONTATTO CON GLI OCCHI: sciacquare accuratamente per parecchi minuti. Togliere le eventuali lenti a contatto se è agevole farlo. Continuare a sciacquare. Consultare immediatamente un medico.

IG 12. Unità ventilate ispezionabili

Le unità ventilate ispezionabili consentono di accedere al vano dei ventilatori senza rimuovere completamente i ventilatori stessi. Questa funzione, opzionale, richiede degli accorgimenti tecnici aggiuntivi descritti nelle Specifiche Tecniche dell'area download del sito www.thermokey.com

Per le unità ventilate ispezionabili nelle quali sia a cura dell'utilizzatore l'installazione dell'opzione (es. interblocchi elettrici ecc), la sicurezza e la conformità finale dell'unità ventilata alle norme di legge è garantita solo ed esclusivamente al pieno completamento dell'installazione, come indicato da ThermoKey.



M001

ThermoKey®
Heat Exchange Solutions

Allgemeine Anweisungen für einen Sicheren Gebrauch

ThermoKey S.p.a ist zertifiziert gemäß:

Qualitätsmanagementsystem ISO 9001

Umweltmanagementsystem ISO 14001

Arbeits- und Gesundheitsschutzmanagementsystem ISO 45001

MT IG TK DE 12 2022

DIE ORIGINALVERSION DIESER BETRIEBSANLEITUNG IST IN
ITALIENISCHER SPRACHE



M002

LESEN SIE DIE IN DIESEM HANDBUCH ENTHALTENEN INFORMATIONEN VOLLSTÄNDIG UND AUFMERKSAM DURCH, BEVOR SIE DAS PROJEKT PLANEN UND IN JEDEM FALL VOR JEDLICHER HANDHABUNG, DEM AUSPACKEN, DER MONTAGE, DER AUFSTELLUNG UND INBETRIEBNAHME DES GERÄTES.



M001

Der Hersteller haftet nicht für Personen- und/oder Sachschäden, die auf das Nichtbeachten der Anweisungen in diesem Handbuch zurückzuführen sind.

Das Original dieses Handbuchs in **italienischer** Sprache finden Sie auf unserer Internetseite **www.thermokey.com**

Die **englische** Übersetzung entspricht dem Original; Sie finden es auf unserer Internetseite **www.thermokey.com**

Übersetzungen können Fehler enthalten; im Zweifelsfall ist immer die Originalversion in italienischer Sprache oder die englische Übersetzung heranzuziehen.



W001

PHILOSOPHIE DES HANDBUCHS

Der § 255 des Leitfadens zur Maschinenrichtlinie 2006/42/EG, Revision 2, empfiehlt, die Betriebsanleitung in elektronischer Form und im Internet zur Verfügung zu stellen, um einen Verlust zu vermeiden und die Aktualisierung zu erleichtern. Außerdem schreibt § 275 vor, dass technisch-kaufmännischen Veröffentlichungen wie Kataloge und Betriebsanleitung miteinander übereinstimmen müssen.

Viele Geräte aus der Herstellung von ThermoKey sind kunden- oder anlagenspezifisch

Auf Grund der oben genannten Punkte und angesichts der Tatsache, dass die Anleitungsleser Planer, Installateure und schließlich auch die Anwender der Anlage sind, folgen die hier aufgeführten technischen Anweisungen der Philosophie aus einer Reihe von Unterlagen zu bestehen, die in ihrer Gesamtheit als HANDBUCH bezeichnet werden.

DER AUFBAU DES HANDBUCHS IST IM FOLGENDEN ANGEGBEN

ALLGEMEINE ANWEISUNGEN FÜR EINEN SICHEREN GEBRAUCH (IG)

ANWEISUNGEN FÜR DIE BEFÖRDERUNG UND DAS AUSPACKEN (IM)

ANWEISUNGEN UND TECHNISCHE DATEN (TC)

SPEZIFISCHE ANWEISUNGEN FÜR BETRIEB UND WARTUNG (IS)

In den **Allgemeinen Anweisungen für einen sicheren Gebrauch** sind auch die Informationen zur Sicherheit und zum sachgemäßen Gebrauch enthalten, sie umfassen:

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▪ In den "Anweisungen für Bewegung und Auspacken" sind mit nummerierten Abbildungen die erforderlichen und zulässigen Arbeitsschritte angegeben, um die verschiedenen Geräte zu bewegen und auszupacken. Bei Spezialgeräten werden die korrekten Informationen im Dokument mit der Nummer der Auftragsbestätigung gekennzeichnet.

Um die Aktualisierung zu erleichtern und Eindeutigkeit der Informationen zu gewährleisten , besteht dieser Teil der Unterlagen zu Geräten aus Katalogen und anderen technischen Dokumenten, die direkt von ThermoKey geliefert werden und/oder auf der Internetseite **www.thermokey.com** zu finden sind.



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▪ Im Kapitel AT "Anweisungen und technische Daten" sind die wichtigen technischen Informationen zu jedem einzelnen Gerätetyp aufgeführt, gruppiert nach Familien. Sie umfassen:

- ABMESSUNGEN UND GEWICHTE
- ABMESSUNGEN UND TECHNISCHER MINDESTPLATZBEDARF
- AERAULISCHE UND ELEKTRISCHE DATEN, LEISTUNGSANGABEN
- SCHALLEMISSIONEN
- SCHALTPLÄNE
- TECHNISCHES DATENBLATT

▪ Die "spezifischen Gebrauchs- und Wartungsanleitungen" sind spezifisch für jedes Modell und, wenn notwendig, auch für jedes individuelle Gerät mit Motorventilator. Sie umfassen:

- IS 1 - BETRIEBSANLEITUNG
- IS 2 - BETRIEBSSTÖRUNGEN
- IS 3 - WARTUNG
- IS 4 - ERSATZTEILE

- Anwesenheit von nicht autorisierten Personen während des normalen Betriebs;
- Nichtgebrauch der PSA (Persönliche Schutzausrüstung) durch die Bediener und Wartungstechniker;
- Fehlende Installation des empfohlenen Kollektivschutzes (Absturzsicherung)

Die eben beschriebenen Verhaltensweisen sind ausdrücklich verboten.

Da es nicht möglich ist, Restrisiken durch einen unsachgemäßen Gebrauch zu vermeiden, werden Hinweise und Anweisungen gegeben, um solches Verhalten zu verhindern. Es ist verboten, die an dem Gerät angebrachten Sicherheits-, Gefahren- und Gebotsschilder zu entfernen oder unleserlich zu machen.

Es ist verboten, die Schutzvorrichtungen des Gerätes zu entfernen oder abzuändern.

Es ist verboten Änderungen am Gerät vorzunehmen.

IG 5.1. SPEZIFISCHE VERBOTE FÜR GERÄTE MIT AMMONIAK

Ammoniak ist eine potenziell explosive, feuergefährliche, giftige und reizende Substanz, die irreparable Schäden oder sogar den Tod hervorrufen kann.



IG 6. Allgemeine Restrisiken

IG 6.1. GEFAHREN UND PSA PERSÖNLICHE SCHUTZAUSRÜSTUNGEN

Man unterscheidet allgemeine und spezifische Restrisiken. Die allgemeinen Restrisiken sind solche, die jedem Gerät unabhängig von ihrem Modell oder der Anwendung zugeschrieben werden können, da sie von der Technologie und den Konstruktionslösungen abhängen. Diese allgemeinen Restrisiken sind in diesem Abschnitt des Handbuchs enthalten.

Die spezifischen Restrisiken dagegen beziehen sich im Besonderen auf eine Familie, ein Modell oder auch ein einzelnes Exemplar eines Gerätes. Die spezifischen Risiken sind in den Unterlagen, spezifisch für das jeweilige Gerät aufgeführt und nicht notwendigerweise im Handbuch enthalten.

1. Von dem Gerät gehen Risiken aus, die bei der Entwicklung oder durch die Installation geeigneter Schutzvorrichtungen nicht vollständig eliminiert werden konnten.
2. Neben den Vorschriften in diesem Handbuch und in den technischen Unterlagen zum Gerät im Allgemeinen muss der Benutzer organisatorische Maßnahmen ergreifen, um die Restgefahren weiter zu verringern. Dazu gehört, dass das Personal, das am Gerät arbeitet, mit der persönlichen Schutzausrüstung (PSA) und mit kollektiven Schutzausrüstungen (KSA) ausgestattet wird.
3. Während der Installation des Geräts wird ein ausreichender Freiraum berücksichtigt, um diese Risiken einzuschränken. Zur Gewährleistung dieses Freiraums müssen die Korridore und die das Gerät umgebenden Bereiche folgendes erfüllen:
 - frei sein von Hindernissen (wie Leitern, Werkzeuge, Behälter, Kartons);
 - sauber und trocken sein;
 - gut beleuchtet sein, falls notwendig.
4. Bevor ein Gerät zur Demontage angehoben werden kann müssen alle Schrauben und Hebevorrichtungen auf Korrosion überprüft werden. Auch bei minimaler Korrosion sind die Schrauben und Hebevorrichtungen auszutauschen.

IG 6.1.1. Demontage und entsorgung

ThermoKey Kühler bestehen im Wesentlichen aus:

- Rohre: Kupfer / Aluminium / Edelstahl
- Lamelle: Aluminium mit oder ohne Schutzbehandlung / Kupfer / Edelstahl
- Verzinkte Stahlplatten mit oder ohne Lackierung, Aluminiumplatten mit oder ohne Lackierung usw.
- Stahl
- Rostfreier Stahl
- Elektrische Teile: Ventilatoren, Paneele und Regelsysteme

Für ein vollständigen Eindruck beziehen Sie sich bitte auf die folgenden Schemata

Die Demontage- und Entsorgungsvorgänge müssen den EN378-Normen und den lokal geltenden Normen in Bezug auf Umwelt- und Arbeitssicherheit entsprechen.

Die Materialien, aus denen ThermoKey Kühler bestehen, sind durch mechanische Trennung recycelbar. Unsere Einheiten enthalten während des Betriebs (bauseits) interne Kältemittel und/oder Flüssigkeiten und/oder Öle usw., die vor der mechanischen Trennung der Teile, aus denen unsere Geräte bestehen, durch Maßnahmen wie zum Beispiel:

- Neigung des Gerätes
- Ausblassen
- etc

GEFAHR BESCHREIBUNG DER GEFÄHRLICHEN SITUATION

VERBRENNUNGS-GEFAHR *Der Bediener berührt (unter besonderen Umständen oder bei der Wartung) absichtlich oder unabsichtlich eine heiße oder gefrorene Oberfläche:*

LÖSUNG Falls notwendig, Isolierhandschuhe verwenden und/oder warten, bis sich die Oberfläche abgekühlt/erwärmt hat.

ELETTROCUZIONE *Kontakt mit den unter Spannung stehenden Teilen während Wartungsarbeiten.*

LÖSUNG Bei den Wartungsarbeiten muss, soweit möglich, das Gerät spannungsfrei sein, und sie dürfen nur von qualifizierten, ausgebildeten und dazu ermächtigten Bedienern ausgeführt werden, die mit geeigneter PSA und Isolierwerkzeug ausgerüstet sind.

ALETTATURA TAGLIENTE *Der Bediener muss beim Gebrauch und bei der Reinigung auf die scharfen Lamellenkanten der Wärmetauscher achten.*

LÖSUNG Der Bediener muss mit der geeigneten PSA ausgestattet sein.

PHASE BESCHREIBUNG

TRANSPORT Besteht im Transport des Geräts mit einem geeigneten Mittel von einem Ort zu einem anderen Ort.

HANDLING Besteht im Transfer des Geräts vom und auf das für den Transport verwendete Fahrzeug sowie in der werksinternen Beförderung.

AUSPACKEN Besteht in dem Entfernen aller zum Verpacken benutzten Materialien.

MONTAGE Besteht in allen Montagearbeiten, die das Gerät auf die Einregulierung vorbereiten.

NORMALER GEBRAUCH Gebrauch, für den das Gerät auf der Grundlage der Entwicklung, des Baus und der Betriebsweise bestimmt ist (oder der als üblich angesehen wird).

EINSTELLUNGEN Bestehen in der Einstellung, der Einregulierung und der Eichung aller Vorrichtungen, die an die normalerweise vorgesehenen Betriebsbedingungen angepasst werden müssen.

REINIGUNG Besteht im Entfernen von Staub, Öl und Bearbeitungsrückständen, die den einwandfreien Betrieb und den Gebrauch des Geräts sowie die Gesundheit und Sicherheit des Bedieners beeinträchtigen könnten.

WARTUNG Besteht in der regelmäßigen Kontrolle der Geräteteile, die verschleifen können oder ersetzt werden müssen.

AUSBAU Besteht im kompletten oder teilweisen Zerlegen des Geräts, gleich aus welchen Gründen.

VERSCHROTTUNG Besteht im endgültigen Entfernen aller aus dem Zerlegen des Geräts hervorgehenden Teile, um eine eventuelle Wiederverwertung oder getrennte Sammlung der Bauteile zu ermöglichen, wie es von den einschlägigen gesetzlichen Normen vorgesehen ist.

Die Verantwortung für die Identifizierung und die Wahl des Typs und der Kategorie der geeigneten **PSA** liegt beim Kunden. Die verwendeten **PSA** müssen den Produktrichtlinien entsprechen und die CE-Kennzeichnung tragen (für den EU-Markt).

Instrucciones generales para un uso seguro

Sistema de Gestión de Calidad ISO 9001

Sistema de Gestión Medioambiente ISO 14001

**Sistema de Gestión de Salud y Seguridad
en el lugar de trabajo ISO 45001**

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LA VERSIÓN ORIGINAL DE ESTAS INSTRUCCIONES
SE REDACTÓ EN ITALIANO



M002

LEA CUIDADOSAMENTE Y COMPRENDA TOTALMENTE TODA LA INFORMACIÓN DE ESTAS INSTRUCCIONES ANTES DE REALIZAR EL DISEÑO Y, EN TODO CASO, ANTES DE EFECTUAR CUALQUIER OPERACIÓN DE DESPLAZAMIENTO, DESEMBALAJE, MONTAJE, EMPLAZAMIENTO Y PUESTA EN FUNCIONAMIENTO DEL EQUIPO.



M001

El fabricante no se hará responsable por daños personales o materiales que deriven de la inobservancia de las indicaciones descritas en este documento.

*La versión original de este manual ha sido redactada en **italiano** y está disponible en la página web **www.thermokey.com**.*

*La traducción al **inglés** es conforme con el documento original y está disponible en la página web **www.thermokey.com**.*

Las traducciones pueden contener errores. En caso de dudas, consulte siempre la versión original en italiano o su traducción al inglés.



W001

LA FILOSOFÍA DEL MANUAL

El comentario n.º 255 de las directrices de aplicación de la revisión 2 de la Directiva de Máquinas 2006/42/CE sugiere poner à disposición en la Internet un formato electrónico de las instrucciones para evitar perderlas y para facilitar su actualización. Además, el comentario 275 impone que haya correspondencia entre las publicaciones técnico-comerciales, como los catálogos, y el manual.

Muchas de las unidades ventiladas fabricadas por ThermoKey se personalizan para un cliente o una planta particular. Con base en los puntos arriba indicados, y tomando en cuenta que las instrucciones están destinadas a los diseñadores de las plantas, los instaladores y los usuarios, la documentación técnica para diseñar y usar correctamente la unidad ventilada está compuesta por varios documentos que, en conjunto, se definen como MANUAL.

CONTENIDO DEL MANUAL

INSTRUCCIONES GENERALES PARA UN USO SEGURO (IG)
INSTRUCCIONES DE DESPLAZAMIENTO Y DESEMBALAJE (IM)
INSTRUCCIONES Y DATOS TÉCNICOS (TC)
INSTRUCCIONES ESPECÍFICAS DE USO Y MANTENIMIENTO (IS)

PELIGRO DESCRIPCIÓN DE LA SITUACIÓN PELIGROSA

QUEMADURAS *En situaciones particulares o durante el mantenimiento, el operador toca una superficie caliente o helada intencional o accidentalmente.*

SOLUCIÓN Usar guantes aislantes o esperar a que las superficies se enfríen o se calienten.

ELECTROCUCIÓN *Contacto con partes eléctricas bajo tensión durante las operaciones de mantenimiento.*

SOLUCIÓN Las operaciones de mantenimiento deben ser realizadas, en la medida en que sea posible, con la unidad ventilada sin tensión, y están reservadas a los operadores calificados, capacitados, autorizados y provistos de herramientas aislantes y EPI adecuados.

ALETAS AFILADAS *Durante las fases de uso y limpieza, el operador puede entrar en contacto con las aletas de los intercambiadores, que son afiladas.*

SOLUCIÓN El operador debe llevar EPI adecuados.

FASE DESCRIPCIÓN

TRANSPORTE Consiste en el traslado del equipo de un lugar a otro utilizando un medio de transporte adecuado.

DESPLAZAMIENTO Prevé el traslado del equipo por y en dicho medio de transporte, así como su movimiento dentro de la fábrica.

DESEMBALAJE Consiste en retirar todo el material utilizado para embalar el equipo.

MONTAJE Prevé todas las operaciones de montaje que sirven para preparar inicialmente el equipo para el ajuste.

USO ORDINARIO Uso previsto o considerado normal para el equipo según su diseño, construcción y función.

REGULACIONES Prevé la regulación, el ajuste y el calibrado de todos los dispositivos que se tienen que adaptar a la condición de funcionamiento normalmente prevista.

LIMPIEZA Consiste en retirar el polvo, el aceite y los residuos de elaboración que podrían afectar el buen funcionamiento y uso del equipo, así como la salud y la seguridad del operador.

MANTENIMIENTO Consiste en controlar periódicamente las piezas del equipo que se desgastan y podrían requerir sustitución.

DESMONTAJE Consiste en desmontar el equipo, total o parcialmente, por necesidades de cualquier tipo.

DEMOLICIÓN Consiste en desmontar definitivamente todas las piezas del equipo (desmantelamiento definitivo) para permitir el reciclaje o la recogida selectiva de los componentes según previsto por las normativas legales vigentes.

La responsabilidad de identificar y elegir los tipos y categorías de **EPI** adecuados e idóneos le corresponde al cliente. Los **EPI** utilizados tendrán que cumplir con las directivas del producto y llevar el marcado CE (para el mercado europeo).

Instructions générales pour une utilisation sûre

**Le Système de Gestion de la Qualité est certifié
en conformité à la norme ISO 9001**

**Le Système de Gestion de l'Environnement est
certifié en conformité à la norme ISO 14001**

**Le Système de Gestion de la Sécurité est certifié
en conformité à la norme OHSAS 18001**

MT IG TK FR 12 2025

LA VERSION ORIGINALE DES PRESENTES INSTRUCTIONS
EST REDIGEE EN ITALIEN



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LIRE ATTENTIVEMENT ET COMPRENDRE ENTIÈREMENT TOUTES LES
INFORMATIONS CONTENUES DANS LES PRÉSENTES INSTRUCTIONS
AVANT LA PHASE DE CONCEPTION ET, DANS TOUS LES CAS, AVANT
D’EFFECTUER TOUTE OPÉRATION DE DÉPLACEMENT, DE DÉSEMBALLAGE,
DE MONTAGE, DE MISE EN PLACE ET DE MISE EN SERVICE DE L’APPAREIL.



M001

Le Constructeur décline toute responsabilité pour tout dommage causé à des personnes ou à des biens résultant de la non-observation des présentes instructions.

*L’original du présent manuel est en **italien** et il se trouve sur le site Internet **www.thermokey.com**
La traduction du manuel en anglais est conforme à l’original et elle se trouve également sur le site
Internet: **www.thermokey.com***



W001

Les traductions réalisées peuvent contenir des erreurs. En cas de doutes, référez-vous toujours à la version originale rédigée en italien ou à sa traduction en anglais.

LA PHILOSOPHIE DU PRESENT MANUEL

Le paragraphe n°255 du guide pour l’application de la 2ème révision de la directive Machines 2006/42/CE suggère de mettre à disposition les instructions sous format électronique sur Internet pour éviter de les perdre et pour faciliter leur mise à jour. En outre, le paragraphe 275 exige que le manuel et les documents technico-commerciaux, dont les catalogues, soient cohérents.

La plupart des unités ventilées produites par ThermoKey sont personnalisées pour une installation ou un client spécifique. En se fondant sur les motifs indiqués ci-dessus et en considérant que les lecteurs de cette notice d’instructions sont les concepteurs des installations, les installateurs et, enfin, les utilisateurs, la documentation technique pour la conception et l’utilisation correctes de l’unité ventilée, en accord avec sa philosophie, se compose d’une série de documents qui, réunis, sont définis comme le MANUEL.

LA STRUCTURE DU MANUEL EST INDIQUÉE CI-DESSOUS :

INSTRUCTIONS GENERALES POUR UNE UTILISATION SURE (IG)

INSTRUCTIONS POUR LA MANUTENTION ET LE DESEMBALLAGE (IM)

INSTRUCTIONS ET DONNEES TECHNIQUES (TC)

INSTRUCTIONS SPECIFIQUES D'UTILISATION ET D'ENTRETIEN (IS)

