CLIMIA

CTK 190 mobile air dehumidifier

Operating manual

Edition 2.0
english

Bedienungs-anleitung

deutsch

Instrucciones de operación

español

Manuel d'utilisation

français

Manuale d'uso

italiano

Gebruiks-handleiding

nederlands


Climia

Content

Carefully read this operating manual prior to commissioning/using the units!
This operating manual is a translation of the German original.

This manual is an integral part of the unit and must always be kept in the vicinity of the installation location or on the unit itself.

1.0 Safety information

General safety notes

Carefully read the operating manual before placing the unit in service for the first time. It contains useful tips and notes as well as hazard warnings to prevent injury or material damage. Failure to follow the directions in this manual can endanger persons, the environment and the equipment itself and will void any claims for liability.

- Keep this operating manual and the refrigerant data sheet near to the unit.
- This unit may only be installed and operated as described in this manual.
- Independent conversion and/or modification of any kind is strictly prohibited.
- National regulations in connection with installation must be observed.
- Children must not be left unsupervised when close to the unit.
- For safety reasons, people with mental, physical or other health limitations must not operate this unit unattended.
- The unit is not permitted to be operated with damaged cables. The unit must be repaired by a specialist immediately.
- The unit may only be operated via a power supply with earthing.
- The use of extension cables is not recommended.
- The air filter must be cleaned at intervals of no more than 2 weeks.
- The unit is not permitted to be operated in the vicinity of heat sources.
- The unit must be transported upright. Residue from the condensate must be drained off before transport. The unit must be stood upright for 1 hour prior to commissioning.
- Combustible substances and pressure containers must be kept at least 50 cm from the unit.
- The unit must not be stored and operated in rooms with oil, gas or sulphur.
- The unit must always be switched off with the on/off switch.
- Do not place anything on the unit in particular heavy or hot objects.
- Repairs may only be carried out by authorised and certified specialist personnel.
- This unit must be disposed of professionally in accordance with environmental protection.
- The safety notes in regards to the room sizes and the flammability of the refrigerant must not be removed from the unit.
- The unit may only be operated in well ventilated areas.
- The unit can be used by children 8 years and up and by persons without physical, mental or other health limitations if this knowledge has been obtained via the necessary safety notes.
- Children must never play with the unit.
- Cleaning the unit must not be carried out by children without parental/guardian supervision.
- The unit is intended for indoor use only (excluding laundry rooms).

The following notes must be observed in full:

- The units must not be operated at an ambient temperature below 5 °C.
- The units may not be set up or operated in explosive environments.
- The units must not be installed or operated in atmospheres containing oil, sulphur, chlorine, salt or dust.
- Never insert foreign objects into the units.
- The units may not be exposed to direct jets of water.
- An unobstructed air inlet and air outlet must be guaranteed at all times.

- The air-inlet grille must always be kept free of dirt and loose objects.
- The units must not be covered during operation.
- The units must be installed upright and in a stable position.
- The units must not be transported while they are running.
- All electrical cables on the outside of the units must be protected against damage (e.g. by animals etc.).
- Before each change of location, the condensate containers must be emptied.
- Appropriate hazard prevention measures must be taken to prevent risks to people when performing installation, repair, maintenance or cleaning work on the units.
- The units and components should not be exposed to any mechanical load, extreme levels of humidity or direct exposure to sunlight.

Additional safety notes when handling refrigerant R290

Warning of inflammable substances

- The refrigerant R290 fulfils the requirements of the European F-Gas regulation.
- The unit contains 0.122 kg of the refrigerant R290.
- The maximum permitted amount of refrigerant R290 is 0.3 kg.
- The unit must not be burned, drilled or pierced.
- Only use cleaning agents which have been approved by the manufacturer for cleaning.
- The unit must never be operated in rooms with naked flames (e.g. gas heaters, open fireplaces, etc.).
- Refrigerant circuit components must not be deformed.
- The contained refrigerant R290 is colourless and odourless.
- The unit must not be stored or operated in rooms which have a room area of 6 m^2 or less.
- The accumulation of refrigerant due to leakages can lead to a fire and explosions in rooms which are too small due to the development of heat or ignition sources.
- The units must be stored carefully. Mechanical damage must be avoided.
- Intervention in the refrigeration circuit may only be done by certified specialist personnel taking into account the safety notes of the manufacturer.
- Maintenance and repairs may only be carried out by authorised personnel who have the corresponding knowledge in regards to flammable refrigerant.

WARNING!
Do not use anything other than the agent recommended by the manufacturer to speed up a possible defrosting process or to clean the unit. The unit may only be operated and stored in rooms where there are no devices with potential ignition sources. Do not go below the minimum room area of 5 m^2. Note that leaking refrigerant is colourless and odourless. The unit must not be burned or pierced!

Safety instructions for the operator

The operational safety of the units and components is only assured providing they are used as intended and in a fully assembled state.

- This unit may only be installed and operated as described in this manual.
- Independent conversion and/or modification of any kind is strictly prohibited.
- Children must not be left unsupervised when close to the unit.
- For safety reasons, people with mental, physical or other health limitations must not operate this unit unattended.
- The unit is not permitted to be operated with damaged cables. The unit must be repaired by a specialist immediately.
- The unit may only be operated via a power supply with earthing.
- The use of extension cables is not recommended.
- The air filter must be cleaned at intervals of no more than 2 weeks.
- The unit is not permitted to be operated in the vicinity of heat sources.
- The unit must be transported upright. Residue from the condensate must be drained off before transport. The unit must be stood upright for 1 hour prior to commissioning.
- Operating the units in rooms with potential ignition sources (naked flames, gas or electrical heaters, fireplaces) is prohibited.
- The unit may only be installed, operated and stored in rooms larger than 6 m^2.
- Protective covers (grilles) over moving parts must not be removed from units that are in operation.
- Do not operate units or components with obvious defects or signs of damage.
- Contact with equipment parts or components can lead to burns or injury.
- The units and components must not be exposed to any mechanical load, extreme levels of humidity or extreme temperatures.
- Never drill through the housing cover or have the unit come into contact with fire.
- Rooms in which refrigerant may escape must be adequately aerated and ventilated. Otherwise there is danger of suffocation.
- All housing parts and unit openings, e.g. air inlets and outlets, must be free from foreign objects, liquids and gases.
- Do not leave the units running for an extended period unsupervised.

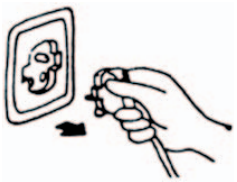
Improper use can cause serious damage to the unit.
Read this manual carefully before commissioning!

Do not allow children to play with the unit

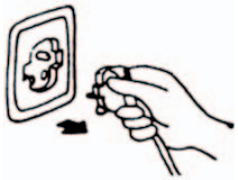
Never cover the air inlets and outlets.

Do not stand or sit on the unit.

Unplug the power plug when not in use for a long period.



Unplug the power plug before cleaning the unit.



Ensure the voltage is correct (220-240 V AC, 50 Hz).

Do not disassemble housing parts (consult a specialist company).

Do not operate the unit with defective cables or sockets.

The unit and in particular the control panel must not come into contact with water.

Safety instructions for certified specialist personnel

- **Check the work area**
  Before starting work on units with combustible refrigerants, ensure that any potential ignition sources are removed and the risk of igniting the refrigerants is eliminated. The aforementioned safety notes for repairing the units must be observed at all times. Work may only be carried out by authorised specialist personnel with knowledge of handling combustible refrigerants!

- **Prepare the work area**
  Any persons present must be informed about the repair process accordingly and persons not involved must vacate the work area. Working in rooms with limited space is prohibited. Ensure that sufficient space is available at the workplace. Ensure that the ambient conditions are suitable for working with combustible refrigerants.

- **Identify refrigerant leaks, check the atmosphere**
  Refrigerant may unexpectedly escape when working on the refrigerant circuit. Ensure that the atmosphere in the workplace is not combustible at all times by using suitable refrigerant detectors. Be sure to ensure that the refrigerant detector used is suitable, approved and calibrated for use with refrigerant R290.

- **Provide fire extinguishers**
  Provide appropriate fire extinguishers before starting work. For this purpose, dry powder or CO_2 fire extinguishers are suitable.

- **Remove any potential ignition sources**
  Leaking refrigerant in combination with corresponding ignition sources can lead to an explosion. All ignition sources must therefore be kept away from the work area at all times! This also includes the smoking of cigarettes. Inform all persons present that this includes the affixing of safety notes and the closing off of the work area.

- **Sufficient ventilation**
  Before starting work, ensure that the work area is outdoors or has sufficient ventilation. A continuous ventilation stream is required while working.
  The safety of the persons working must be guaranteed by the exhaust air equipment: potentially leaking refrigerant must be lead away safely and drained into the atmosphere in an optimum manner.

- **Checking the refrigerant circuit**
  If electronic components need to be replaced, ensure that the spare parts have the same function and identical technical specifications. The maintenance and replacement regulations of the manufacturer must always be observed and complied with. Please contact the support of the manufacturer with any problems or queries.

  The following safety checks must be carried out when using combustible refrigerants:
  - The fill level adjusts to the size of the rooms in which the unit is located.
  - The exhaust air equipment and its outlets function properly and are not blocked or obstructed.

- **Checking the electronic components**
  A component and safety check must be carried out before repairing and maintaining electronic components. If safety cannot be ensured due to a defect on a component, installation must not take place until safety can be guaranteed again. If the defect on the spare part cannot be remedied and downtime of the unit is no longer acceptable, an adequate temporary solution must be arranged. The owner/operator of the unit must be informed about this. The detailed safety check must include the following aspects:
  - Capacitors are discharged. A safe discharge process must be employed to prevent flying sparks.
  - There must be no electronic components active or uninsulated wires while filling, repairing or cleaning.
  - There must be no earthing of the system.

- **Repairs to closed components**
  Before repairing closed components/housing parts, the unit must be free from voltage. If carrying out the repairs free from voltage cannot be avoided, the critical points of potential refrigerant leakages must be checked using a leak detector. The following notes must be observed when working on electronic components if the housing is changed in such a way that its safety is influenced. This also relates to cases where the lines are damaged, there is excessive or incorrect pin assignment, connections are not assigned in the original way or similar deviations to the expected condition are determined.

- **Repairing intrinsically safe components**
  Do not introduce permanent inductive or capacitive loads into the existing circuits without ensuring that the maximum permitted voltages and amperages of the assemblies and lines are not exceeded. Intrinsically safe components are individual components that can be operated in the presence of flammable substances. The test equipment must be adjusted according to the situation-dependent conditions. Only use components which are officially approved by the manufacturer as spare parts. Unapproved components can cause a fire in the event of a leakage in the refrigerant circuit.

- **Wiring**
  Lines must be checked for the following damage:
  - Damage to the insulation -
  Corrosion at the contact points
  - Excessive pressure on the lines
  - Damage due to vibrations
  - Damage due to sharp edges
  - Damage due to other influences not mentioned here
  Also consider the ageing of the material and continuous vibration loads due to compressors or fans when checking.

- **Identify combustible refrigerant**
  Do not use any potential ignition source when searching for refrigerant leaks under any circumstance. The use of a leak detection lamp or other similar units with a naked flame is not permitted.
  1. Ensure that the components are installed correctly.
  2. Ensure that sealing materials are not changed in such a way that combustible gases or objects could penetrate into the interior of the components.
  3. Spare parts must correspond to the manufacturer's specifications.

NOTE!
The use of silicones can influence the effectiveness of leak detection devices!
Intrinsically safe components must not be insulated before starting work!

- **Leak detection methods**
  The following leak detection methods are permitted for systems with combustible refrigerants. Electronic equipment must be used for detecting leaks. These must be selected with the sensitivity matched to the situation and recalibrated if necessary (calibration must take place in a refrigerant-free environment). The leak detection device must be adjusted to the lowest flammability limit (LFL) of the refrigerant. Liquid leakage instruments are permitted for most refrigerants. Chlorinated substances are the exception here as the chlorine in combination with the refrigerants can cause corrosion on the copper cables. If a leak is detected, all potential open ignition sources must be removed immediately. If a leak has been detected in the system which requires reworking of the piping in the form of soldering, the system must be completely free of refrigerant or, if possible, the affected part disconnected from the system using stopcocks. The affected system parts must be flushed with oxygen-free nitrogen run before and during the repair work.

- **Emptying and evacuating the system**
  If the refrigerant circuit must be opened for repairs or other reasons, this must be carried out in a safe and professional way. In any event, proceed with extreme caution since ignition may occur at any time!

- **Leak detection methods**
  The following leak detection methods are permitted for systems with combustible refrigerants. Electronic equipment must be used for detecting leaks. These must be selected with the sensitivity matched to the situation and recalibrated if necessary (calibration must take place in a refrigerant-free environment). The leak detection device must be adjusted to the lowest flammability limit (LFL) of the refrigerant. Liquid leakage instruments are permitted for most refrigerants. Chlorinated substances are the exception here as the chlorine in combination with the refrigerants can cause corrosion on the copper cables. If a leak is detected, all potential open ignition sources must be removed immediately. If a leak has been detected in the system which requires reworking of the piping in the form of soldering, the system must be completely free of refrigerant or, if possible, the affected part disconnected from the system using stopcocks. The affected system parts must be flushed with oxygen-free nitrogen run before and during the repair work.

- **Emptying and evacuating the system**
  If the refrigerant circuit must be opened for repairs or other reasons, this must be carried out in a safe and professional way. In any event, proceed with extreme caution since ignition may occur at any time!
  Stick to the following procedure:
  1. Drain the refrigerant
  2. Flush the system with insert gas
  3. Evacuate
  4. Repeat steps 2 to 3 if required
  5. Opening the system by cutting or soldering
  The system must be flushed with oxygen-free nitrogen in order to guarantee safety. The flushing process must be repeated multiple times if necessary.
  Do not use compressed air or oxygen for the flushing process!
  After evacuating, flushing takes place by filling with dried nitrogen until the operating pressure is reached and then the system must be evacuated again. This flushing process must often be repeated until there is no more refrigerant in the system. After the last flushing, the system must be brought to the ambient pressure in order to start work. The flushing process is indispensable when soldering work is required on the piping. Ensure that the vacuum pump outlet is not near an ignition source and continuous ventilation is guaranteed.

- **Filling process**
  The following requirements for the general specifications must also be fulfilled during the filling process:
  - Ensure that no contamination occurs from other refrigerants (residues in the filling system).
  - Keep the lines as short as possible to minimise the likelihood of residues forming.
  - Filling bottles and cylinders must be stood upright.
  - Ensure that the system is earthed before filling.
  - Label the system with the refrigerant type designation after filling
  - Never exceed the maximum fill level. The system must be checked for leaks (pressure test!) before filling. The system must be checked for leaks once more after filling and before commissioning. Check for leaks again when leaving the work space.

- **Labelling when shutting down**
  If a unit must be taken out of operation and the refrigerant must be disposed of, the unit must be labelled with the date and a signature. Ensure that the note remains attached to the combustible refrigerant.

- **Transportation of units which contain combustible refrigerants**
  National provisions must be observed.

- **Storing of units which contain combustible refrigerant**
  National provisions must be observed.

- **Transportation without the original packaging**
  If the units are transported without the original packaging, they must be packed in such a way that mechanical damage is prevented. The units must be transported upright.

2.0 Environmental protection and recycling

Disposal of packaging

All products are packed for transport in environmentally friendly materials. Make a valuable contribution to reducing waste and sustaining raw materials. Only dispose of packaging at approved collection points.

Disposing of the units and their components

Only recyclable materials are used in the manufacture of the units and components.
Help protect the environment by ensuring that the units or components (for example batteries) are not disposed of in household waste, but only in accordance with local regulations and in an environmentally safe manner, e.g. using authorised disposal and recycling specialists or council collection points.

3.0 Guarantee

As a prerequisite for any guarantee claims to be considered, it is essential that the ordering party or its representative complete and return the "certificate of warranty" to Climia Intakt GmbH at the time when the units are purchased and commissioned.
The guarantee conditions are listed in the "General terms and conditions of business and supply". Furthermore, only the parties to a contract can conclude special agreements beyond these conditions. In this case, contact your contractual partner in the first instance.

4.0 Intended use

The units are designed exclusively for drying and dehumidification purposes on the basis of their structural design and equipment. The units must not be used for any other purpose.

The units are only permitted to be operated by people with the relevant training and understanding of how to handle them.

Any different or additional use shall be classed as non-intended use. The manufacturer/supplier assumes no liability for damages arising from non-intended use. The user bears the sole risk in such cases.
Intended use also includes working in accordance with the operating and installation instructions and complying with the maintenance requirements.

5.0 Transportation and packaging

The units are shipped in sturdy transport packaging. Check the unit immediately after delivery and make a note of any damage (please take photos of the damage) or missing parts on the delivery note. Inform the forwarding agent and contractual partner.
Please keep the packaging safely for any returns.
Claims under guarantee made at a later date will not be accepted.

6.0 Air dehumidification

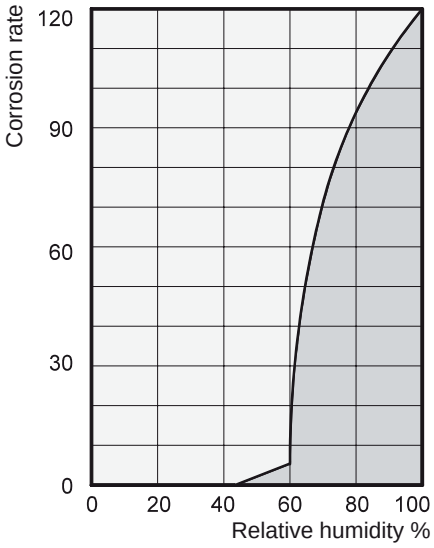
The correlations occurring when air is dehumidified are based on physical laws.
These are depicted here in graphical form in order to provide you with a brief overview of the principles of air dehumidification.

Using
Climia air dehumidifiers

- Even if windows and doors are well insulated, water and moisture are still capable of penetrating thick concrete walls.
- The water required for setting in the production of concrete, mortar and plaster etc. may only be diffused after 1-2 months.
- Even moisture trapped in the masonry after high-water or a flood is released very slowly.
- The same is also true of moisture contained in stored materials for example.

The moisture (water vapour) released from parts of a building or materials is absorbed by the surrounding air. As a result, the moisture content increases, which ultimately gives rise to corrosion, mould, rot, peeling of paint and other unwanted damage.

By way of example, the diagram shows the corrosion rate of metal in different levels of humidity.



It is evident that the corrosion rate below 50% relative humidity (RH) is low, and below 40% is negligible.

The corrosion rate increases significantly above 60% RH. This threshold for damage as the result of humidity also applies to other materials, such as powdery substances, packaging, wood and electronic units.

Buildings may be dried in a variety of ways:

1. **By heating and air exchange:**

   The air in the room is heated in order for moisture to be removed and then this air is fed outside. All of the energy that is involved is lost together with the moist air that is released.

2. **By air dehumidification:**

   The moist air that is present within an enclosed space is continuously dehumidified according to the condensation principle.

With regard to energy consumption, air dehumidification has one distinct advantage:

Energy expenditure is limited exclusively to the air volumes present. The mechanical heat that is released by the dehumidification process is fed back into the room.

Under normal use, the air dehumidifier uses approximately 25% of the energy that is required for the "heating and ventilating" principle.

Relative air humidity

Our ambient air is a gaseous mixture which always contains a certain volume of water in the form of water vapour. This volume of water is specified in g per kg of dry air (absolute moisture content).

1m^3 of air weighs approx. 1.2 kg at 20°C

Depending on the temperature, each kg of air is only capable of absorbing a certain volume of water vapour. Once this capacity has been reached, the air is referred to as "saturated" and has a relative humidity (RH) of 100 %.

Relative humidity is understood to mean the ratio between the current quantity of water vapour in the air and the maximum possible quantity of water vapour at the same temperature.

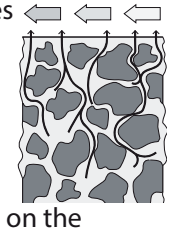
The ability of the air to absorb water vapour increases as the temperature rises. I.e. the maximum possible (absolute) water content becomes greater as the temperature rises.

Temp.	Water vapour content in g/m³ at humidity of			
°C	40%	60%	80%	100%
-5	1.3	1.9	2.6	3.3
+10	3.8	5.6	7.5	9.4
+15	5.1	7.7	10.2	12.8
+20	6.9	10.4	13.8	17.3
+25	9.2	13.8	18.4	23.0
+30	12.9	18.2	24.3	30.3

Drying materials

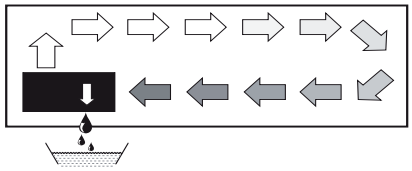
Building materials and structures are capable of absorbing considerable volumes of water, such as brick 90-190 l/m³, heavy concrete 140-190 l/m³ and limestone 180-270 l/m³.
The drying of moist materials such as masonry is effected as follows:

- The moisture moves from the inside of the material to its surface

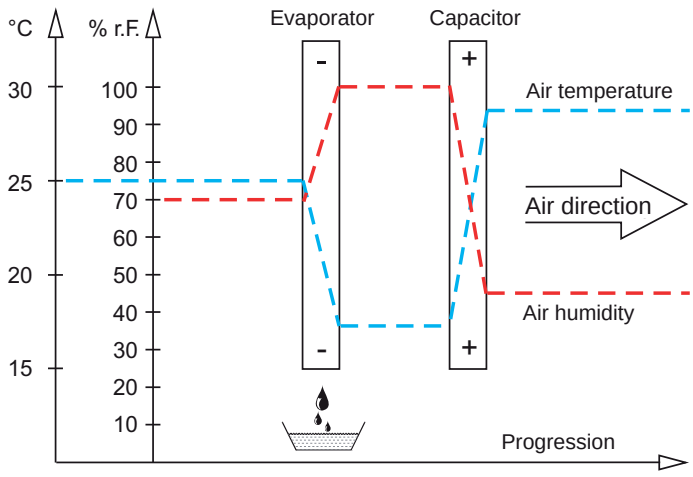


- Evaporation occurs on the surface = Transfer of water vapour to the ambient air
- The air containing water vapour is constantly circulated through the air dehumidifier. The air is dehumidified and, slightly heated, leaves the unit in order to re-absorb water vapour
- In this way, the moisture contained in the material is reduced gradually.
  The material is dried!

The accumulated condensate is collected in the unit and drained off from there.



As it flows through or over the evaporator, the air stream is cooled to dew point. The water vapour condenses, and is collected in a condensate trap from where it is drained off.

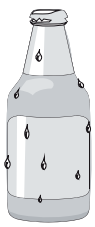


Water vapour condensation

Because the capacity for the maximum possible volume of water vapour increases as the air is heated, the volume of water vapour contained remains constant and so relative humidity falls.

In contrast, because the capacity for the maximum possible volume of water vapour decreases as the air is cooled, the volume of water vapour contained remains constant and so relative humidity increases.
If the temperature continues to fall, the capacity for the maximum possible volume of water vapour is reduced so much so that it is ultimately equal to the volume of water vapour contained in the air.
This temperature is referred to as the dew point. If the air is cooled to below dew point, the volume of water vapour in the air will become greater than the maximum possible volume of water vapour.
At this point, the water vapour begins to precipitate.
This condenses to water and moisture is removed from the air.

Examples of condensation include steamed-up window panes in winter, or the moisture on the outside of a cold drinks bottle.



As the relative humidity of the air increases, so too does the dew point, making it easier for the temperature to fall below it.

Condensation heat

The energy transferred to the air from the condenser consists of:

1. The amount of heat derived beforehand in the evaporator.

2. The electrical drive energy.

3. The condensation heat released by liquefying the water vapour.

Energy must be supplied when liquid is converted into a gas. This energy is designated as evaporation heat. It does not cause any increase in temperature, but is required to convert a liquid into a gas. Conversely, energy is released when gas is liquefied, this is designated as condensation heat.

The amount of energy from evaporation heat and condensation heat is the same.
For water, this is:
2250 kJ/kg (4.18 kJ = 1kcal)

From this it is evident that the condensation of water vapour causes a large quantity of energy to be released.

If the moisture that is to be condensed is not introduced by evaporation in the room itself, but from outside, e.g. through ventilation, the condensation heat released contributes to the heating of the room.

With drying operations, a heat cycle is created, whereby heat is consumed for evaporation and released for condensation. When dehumidifying fed air, a larger contribution of heat is created, which manifests itself as a temperature increase.

Generally speaking, the time required for the drying process is not only dependent on the output of the unit, but is determined to a greater extent by the speed at which the material or building section loses its moisture.

7.0 Unit description

The units have been designed for universal and straightforward air dehumidification.

Their compact dimensions allow the unit to be transported and set up with ease.

The units operate in accordance with the condensation principle and are equipped with a hermetically sealed refrigerant system, heat gas defrosting, low-noise and low-maintenance fan and connection cable with plug.

The fully automatic control, the variable hygrostat, the condensate container with integrated overflow protection and the connection nozzle for condensate drainage guarantee fault-free continuous operation.

The units conform to the fundamental health and safety requirements of the appropriate EU regulations.

The units are dependable and offer ease of operation.

The units are used in all locations, where dry air is a must and where economic consequential damage (such as that caused by mould) must be prevented.

The units may be used for the drying and dehumidification of areas such as:

- Living rooms, bedrooms, shower rooms or cellar rooms
- Weekend homes and caravans
- Warehouses, archives, laboratories
- Bathrooms, wash rooms and changing rooms etc.
- Basements, storage rooms

Operating sequence

The units are switched on and off by the power key.

The fan extracts the moist room air through the intake grill with filter, evaporator and the condenser behind.

Heat is removed from the room air on the cold *evaporator*. The air is then cooled to below dew point. The water vapour contained in the room air is then deposited as condensate or rime on the evaporator fins.

On the *condenser* (heat exchanger), the cold and dehumidified air is warmed up again and discharged back into the room via the outlet grill with a temperature increase of around 5 - 10 °C above the room temperature.

The processed, dry air then re-mixes with the room air. Continuous circulation of the room air through the unit gradually reduces the relative humidity (% RH) in the room to the desired humidity level.

Depending on the room air temperature and the relative humidity, condensed water will drip into the condensate trap and then through the integrated discharge nozzle into the condensate container below either continuously or only during the defrosting phases.

A float is installed inside the condensate container. In the event that the container is full, the float will activate a microswitch which will switch off dehumidification mode.

The units switch off and the "container full" indicator light on the control panel illuminates. This extinguishes again when the empty condensate container is re-inserted.
The units then restart after aswitch-on delay of around 3 minutes.

In unattended continuous operation with an external condensate connection, the condensate that occurs is drained continuously via a hose connection.

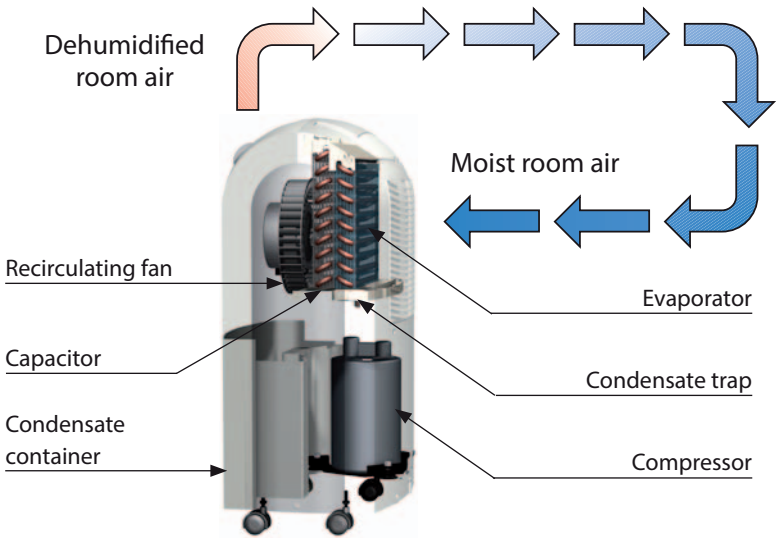


Fig. 1 Schematic depiction of the workings of the air dehumidifier

8.0 Set-up

For the best economic and safe use of the units, the following notes must be followed in full:

- The units must be set up in an upright and level position, to ensure that the condensate can drain freely
- To ensure optimum air circulation, the units should be set up in the centre of the room, where possible
- Ensure that the room air can be sucked in and discharged without hindrances
- Observe a minimum clearance of 50 cm from walls at all times
- Units must never be set up in the immediate vicinity of heaters or other sources of heat
- Air circulation is improved if the unit is set up approx. 1 m above the ground
- The room being dried or dehumidified must be closed to the surrounding atmosphere
- Avoid having opened windows and doors etc., and avoid frequent entry to or exit from the room as much as possible
- The units may not be used in environments containing a great deal of dust or chlorine, or in places with atmospheres containing ammonia
- The output of the unit is entirely dependent on the conditions inside the room, room temperature, relative humidity and observance of the set-up instructions

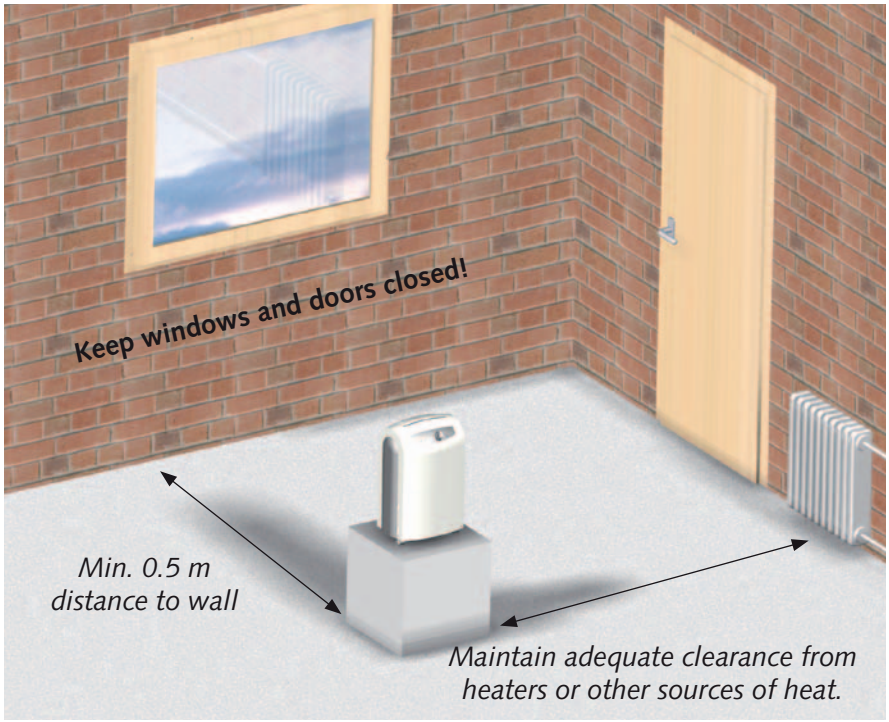


Fig. 2 Schematic depiction of how to set up the air dehumidifier

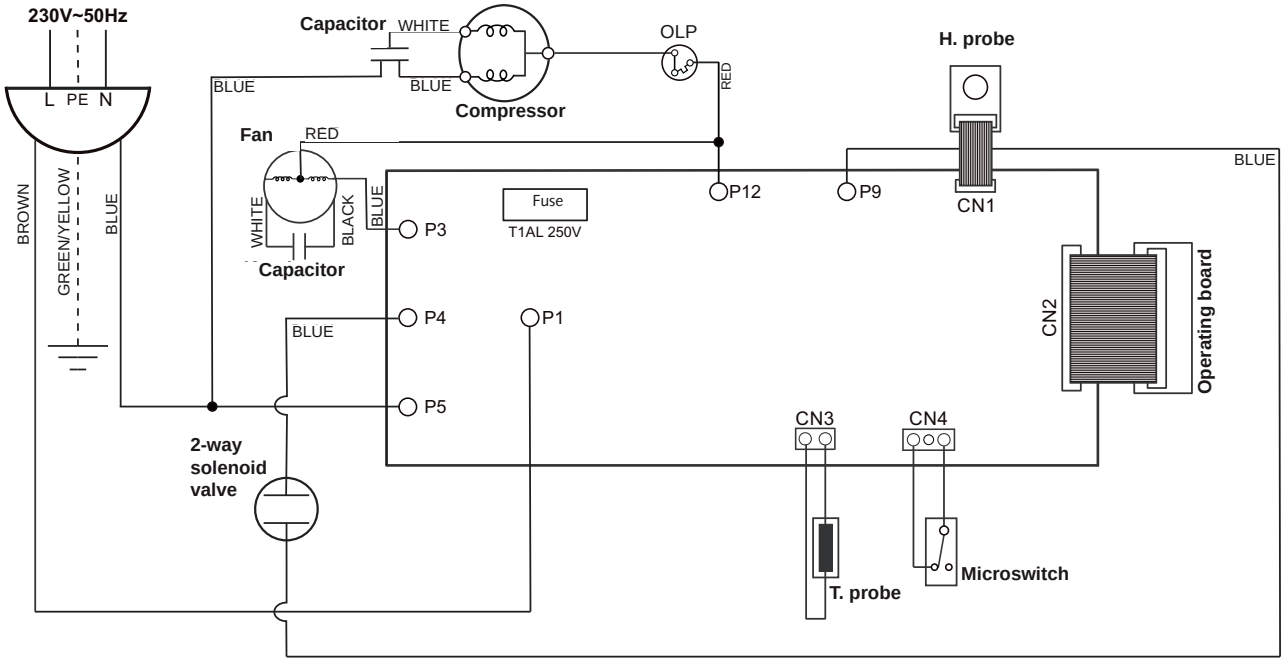
9. 0 Electrical wiring

- The units are operated with 230V / 50Hz alternating current
- The electrical connection is established using a built-in mains cable with earthed safety plug
- Extensions to the connection cable may only be carried out by authorised electricians, subject to the length of the cable, connected load of the unit and taking into consideration how the unit is used at its location

NOTE
The electrical connection to the units must be made at feed-points with residual current devices in accordance with VDE 0100, Section 704.
When installing the units in extremely damp environments such as laundry rooms, showers etc., the unit must secured with a residual current device provided by the customer in accordance with the regulations.

CAUTION!
All cable extensions must only be used in fully unreeled or reeled off condition.

10.0 Electrical wiring diagram



11.0 Commissioning

Before commissioning the unit or if local requirements dictate, the air-inlet grill and air-outlet grill must be checked for contamination.

NOTE
A contaminated grille or filter must be cleaned or replaced immediately.

Important notes prior to commissioning

- All extensions to the electrical connection must be of a sufficient cable size and must only be used fully rolled out or unrolled
- Never use the power supply connection cable as a pull cord
- After being switched on, the units operate fully-automatically until switched off by the hygrostat or float when the condensate container is full
- The condensate container must be inserted properly
  The unit cannot be operated if the condensate container is not inserted properly!
- In order to prevent damage to the condenser, the units are equipped with a mechanism that prevents the compressor being immediately switched back on after it is switched off
  The units do not switch back on until a waiting time of around 3 minutes has elapsed!
- If the units work in continuous operation with an external condensate drainage connection, refer to the relevant section

NOTE
*In room temperatures below **10°C** and relative humidity below **40%**, economical use of the unit can no longer be guaranteed.*

NOTE
Note that the compressor does not switch on until a waiting time of 3 minutes has elapsed. ***Restart protection!***

Commissioning the units

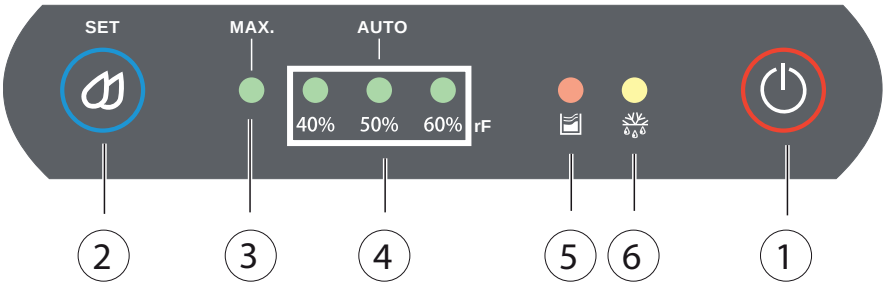
1. Connect the unit's electrical connection to a properly installed mains socket.
2. Open the air flap on the top of the unit.
3. Press the power key.

CAUTION!
The units are only permitted to be operated with the air flap open in order to prevent overheating.

4. Use the set key to select the desired humidity level in the installation room.

NOTE
The devices can be switched ON and OFF via an external time (accessory) if required.

Control panel



① **Power key**
The POWER key switches the unit on and off.

② **SET key**
Use the SET key to select the desired humidity in the installation room.

③ **"MAX." status light**
This light indicates that the unit is in continuous operation.

④ **"AUTO." status light**
These lights indicate which humidity level has been set.

⑤ **"Container full" indicator light**
This light indicates that the condensate container is full and must be emptied

⑥ **"Defrost mode" indicator light**
This light indicates that the automatic defrost system that is integrated in the unit has switched on the defrost cycle

Adjusting units/moisture

The unit's dehumidification power is entirely dependent on the conditions inside the room, the room temperature, the relative humidity and observance of the notes in the "Set-up" chapter.

NOTE
The maximum possible dehumidification power is only obtained when the air flap is opened completely.

The higher the room temperature and relative air humidity, the higher the dehumidification power.

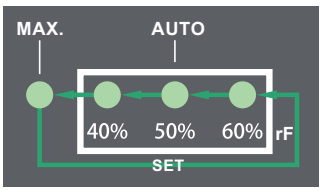
A relative humidity of around 45 to 60 % is sufficient in living rooms. The air humidity should not exceed 40 to 45 % in warehouses, archives, etc.

The set target value can be read off from the status lights "AUTO" and "MAX".

In automatic mode ("AUTO"), the unit operates fully automatically and switches off automatically after reaching the set target value.

In continuous operation ("MAX.") the unit works without interruption and ensures maximum dehumidification.

The setpoint is changed by pressing the SET key. The LED display changes from right to left.



Adjusting the discharge direction

The dehumidified room air is discharged on the top of the unit. The pivotable air flap [S] is used to adjust the discharge direction.

Press the air flap's rear surface [D] to open it.

The front folds upwards. The air direction can be adjusted infinitely.

The following notes must also be observed in full:

- If possible, open the air flap completely to direct the air flow upwards
- Ensure that the air can discharge without hindrances **This is the only way to guarantee optimum unit operation!**
- Ensure that sensitive objects such as house plants are not placed directly in the air flow emerging from the unit

Automatic defrost system

The moisture contained in the room air condenses when cooling and coats the evaporator fins with rime or ice depending on the air temperature and the relative humidity (% RH).

The automatic defrost system that is integrated in the unit switches the defrost cycle on if required.

The rime or ice that has accumulated on the exchanger surfaces is defrosted using heat gas as required.

This defrosting method is particularly fast and effective, and guarantees high dehumidification performance.

Dehumidification mode is only paused for a short time during the defrost phase.

The "Defrost mode" indicator light indicates that the defrost cycle is running.

NOTE
If the room temperature is sufficiently high, the surface of the fins will not be cold enough for frost formation to occur, rendering defrosting unnecessary.
Therefore, the air dehumidifier works economically.

NOTE
The built-in hygrostat is not a calibrated measuring instrument and is located inside the unit.
The averaged air humidity in the installation room may deviate from the set value under certain circumstances.

Emptying the condensate container

The integrated condensate container must be emptied from time to time.

Dehumidification mode is switched off if the condensate container is full.
The "Container full" indicator light indicates that the unit has switched off.

1. Pull the full container forwards and out carefully.

2. Pour the water into a drain.

NOTE
After being emptied, the condensate container incl. float must be checked for damage, contamination etc.

3. Re-insert the emptied container carefully into the unit.

The "Container full" indicator light extinguishes and the unit continues to run automatically.

NOTE
The unit can only be started once the condensate container has been inserted correctly.

Continuous operation with external condensate outlet

The units are equipped with a special connection nozzle on the left side.
A standard 1/2" water hose can be connected to this.

CAUTION!
There is no unit overflow protection in this variant.

1. To do this, use a suitable tool to release the cover [F] from the unit wall.
   Only required for the first connection!

2. Connect a sufficiently long and suitable drain hose to the connection nozzle that is now exposed.

In unattended permanent operating mode, the condensate should preferably be drained into a lower-level drain.
If using an external collection container (pan, bucket, etc.), the unit must be placed at a correct height.

CAUTION!
Ensure that the drainage hose is placed at an incline to the drain to allow the condensate to drain without hindrance!

Leakage control device

The unit is equipped with a leakage control device to prevent damage in the event of refrigerant loss.

If the unit detects a leak, the compressor is switched off. The fan continues to operate without interruption in order to prevent an accumulation of refrigerant.

NOTE
By switching the compressor off and on again, the unit initially continues to run in normal operation until the leakage control device switches the compressor off again.

CAUTION!
A lack of refrigerant can cause damage to the unit. If a lack of refrigerant is detected (continuous fan operation when the compressor is not running), the unit must be taken out of operation immediately!
Work on the refrigerant system and on the electrical equipment must only be conducted by a specially authorised specialist!
The leakage control device must not be viewed as a replacement for maintenance work and damage checks!

12.0 Shutdown

Use the POWER key to switch the unit off.

If the units are inactive for longer periods, disconnect them from the mains power supply.

Empty the condensate container completely and dry with a clean cloth.
Beware of dripping condensate!

The units must be cleaned and dried completely before storing.

When storing the units, cover with a plastic sheet/film if necessary and store in an upright position in a sheltered and dry location.

The units are only permitted to be stored upright in a suitable storage location that is protected against dust and direct sunlight.

13.0 Unit transport

The units are equipped with four foot rollers and an additional handle for easy and convenient transport.

- Before each change of location, switch off the unit and remove the power plug from the mains socket
- Empty the condensate bucket completely.

NOTE
Beware of dripping condensate.
After switching off the units, the evaporator may continue to defrost under the influence of the ambient temperature.

- If residual moisture remains on the evaporator or water remains in the condensate container, the units must only be transported in an upright position
- The transport rollers are only suitable for use on level and smooth ground
- The units must be carried when transporting on rough terrain or uneven surfaces

CAUTION!
The mains cable must never be used as a pull cord or fixing device.

14.0 Care and maintenance

NOTE
Regular care and maintenance is fundamental to a long service life and fault-free operation of the unit.

All moving parts have a low-maintenance permanent coat of lubricant. The entire refrigerant system is designed as a maintenance-free, hermetically sealed system and may only be repaired by a specialist.

CAUTION!
Before undertaking any work on the units, the power plug must be removed from the mains socket.

- Observe the regular care and maintenance intervals
- In accordance with the operating conditions, the units must be checked as required but at least yearly by a specialist to ensure that they are in a condition that is safe to use
- Only clean the units with a dry or damp cloth
  Do not use a water jet!
- Never use abrasive or solvent-based cleaners
- Even with heavy contamination, use only suitable cleaners
- Check the inlet and outlet grille for contamination on a regular basis
  Clean or replace if required!

Cleaning the condenser and evaporator

The unit housing must be opened to allow the inside of the unit to be cleaned and to provide access to electrical components.

NOTE
Adjustment and maintenance work may only be carried out by authorised and qualified technicians.

- Clean the condenser and the evaporator by blowing, vacuuming or using a soft brush

  Do not use water jets!

NOTE
When cleaning the exchanger, particular care must be taken because the fine aluminium fins bend very easily.

- Clean the interior surfaces on the units, the condensate traps with hose connection, the fan and the fan housing carefully
- Check all unit components for damage and repair if necessary
- Carefully refit all parts that were removed in reverse order

CAUTION!
An electrical safety check must be carried out in accordance with VDE 0701 after any work on the units.

Filter cleaning

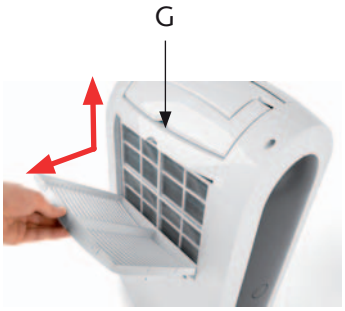
To prevent damage to the unit, it is equipped with an intake grill with integrated air filter.

In order to prevent power losses or unit faults, the intake grill with filter must be inspected as required, but every 2 weeks at the latest, and cleaned if necessary.

1. Use the hygrostat to switch the unit off.

2. Remove the power plug from the mains socket.

3. Reach into the recess [G], push the intake grill backwards slightly and pull it upwards and out of the unit's rear wall.



4. Remove the filter that is behind the intake grill.

CAUTION!
The unit is not permitted to be operated without the air filter fitted!

5. Clean the air filter with lukewarm water or a vacuum cleaner.

6. Heavier contamination may be remedied by rinsing the filter in a lukewarm (max. 40°C) soap solution.
Finally, always rinse the filter carefully with clear water and allow to dry!

7. Also check the intake grill for contamination and clean if necessary.

8. Before refitting grill and filter, ensure that they are fully dry and that no damage has been sustained.

NOTE
Heavily contaminated or damaged air filters must be replaced with new parts.
Only original spare parts may be used.

15.0 Troubleshooting

The units are manufactured using state-of-the-art production methods and tested several times to verify their correct function.

However, if a functional fault should occur, the unit should first be checked in accordance with the following list.

NOTE
Adjustment and maintenance work may only be carried out by authorised and qualified technicians.

The unit does not start:

- Check the hygrostat's setting
  The set value must be lower than the relative humidity in the installation room!
- Check the power supply and the power fuse provided by the customer *230V/1~/50 Hz*
- Check the power plug and the cable for damage
- Check the condensate bucket's fill level and seating
  The "Bucket full" indicator light must not be illuminated!
- Check that the microswitch [MS] on the condensate bucket is functioning
- Check that the inlet and outlet are free *Overheating!*
- Check the fuse on the control board

The unit runs but condensate is not formed:

- Check the room temperature. *The operating range of the unit is between 6 °C and 32°C*
- Check the air humidity *min. 40% RH required*
- Check the intake grill and air filter for contamination **Clean or replace if required!**
- Have the heat exchanger fins checked for contamination ***This work requires the unit to be opened and must therefore only be carried out by an authorised specialist company!***
- Check that the compressor is functioning correctly. If it is not operational while the fan is running, then the leakage control device has disabled the compressor. Check the refrigerant system for leaks.

The unit is loud or condensate runs out:

- Check whether the unit is on a stable and even base
- Check whether the unit is standing upright and stably
- Have the condensate trap or the connection nozzles checked to see whether there are dirt deposits on them ***This work requires the unit to be opened and must therefore only be carried out by an authorised specialist company!***

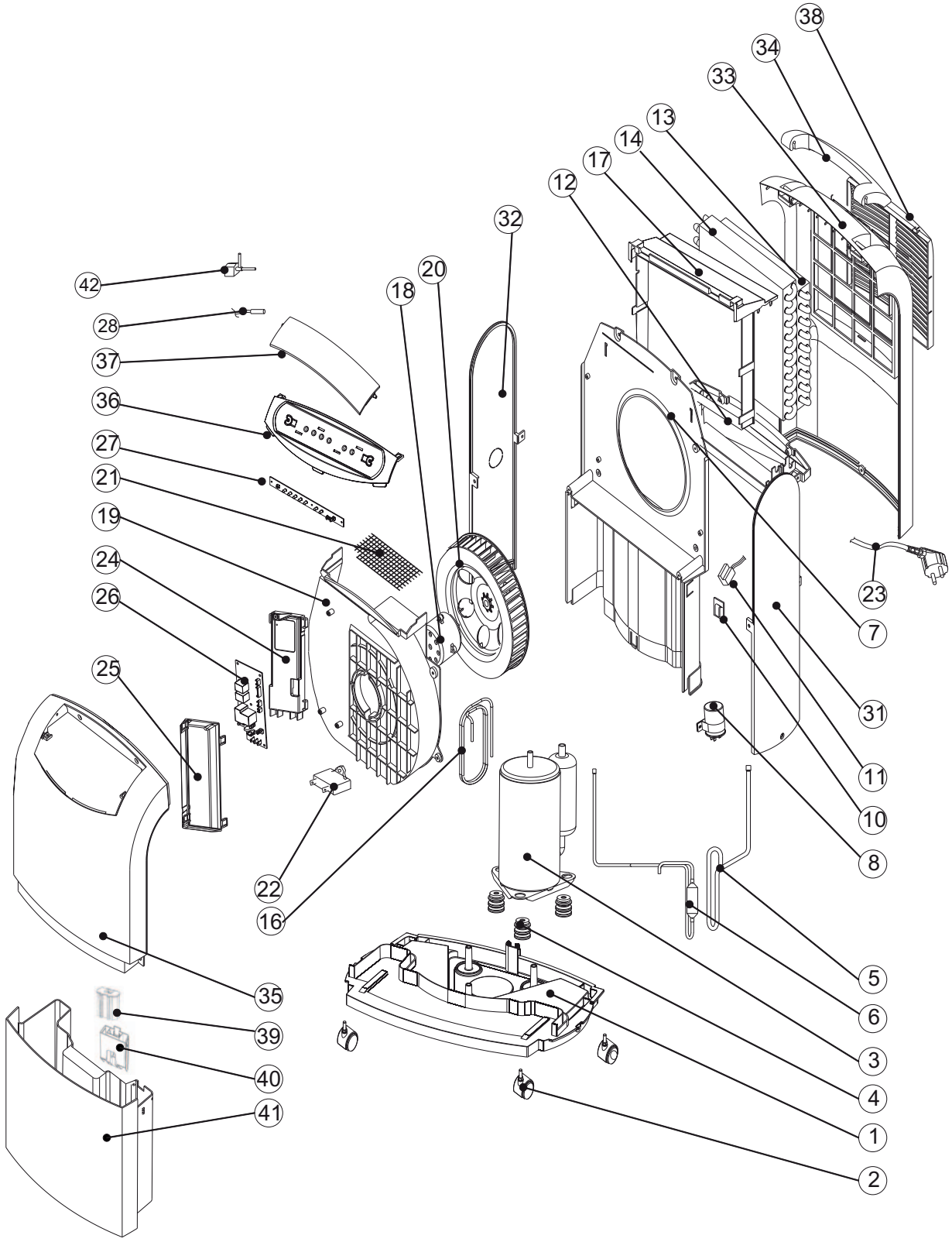
CAUTION!
Work on the refrigerant system and on the electrical equipment must only be conducted by a specially authorised specialist!

NOTE
The units work with environmentally-friendly and ozone-neutral R290 refrigerant. The mixture of refrigerant and oil within the unit must be disposed of properly in accordance with the statutory or locally-applicable regulations.

NOTE
If the unit fails to function correctly after the checks have been carried out, contact an authorised specialist.

CTK 190 mobile air dehumidifier

16.0 Unit illustration



We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

17.0 Spare parts list

No.	Designation
1	Base plate
2	Conveyor rollers
3	Compressor, cpl.
4	Vibration dampers
5	Suction pipe
6	High pressure distribution
7	Centre wall
8	Condenser (compressor)
11	Microswitch
12	Condensate trap
13	Fin vaporiser
14	Fin condenser
16	Capillary
17	Support plate
18	Fan motor
19	Fan housing
20	Fan wheel
21	Protection grid
22	Condenser (fan motor)
23	Mains cable with plug
24	Board housing
25	Cover (board housing)
26	Control board
27	Operating board
28	Antifreeze sensor
31	Side covering, right
32	Side covering, left
33	Back wall
34	Transport handle
35	Front wall
36	Operating panel
37	Air flap
38	Intake grill
39	Float, cpl.
40	Float housing
41	Condensate container cpl.
42	Solenoid valve, cpl.

When ordering spare parts, please always state the EDP no. and unit number (see name plate)!

18.0 Maintenance log

Unit type: ..... **Unit number: .....**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Unit cleaned - outside -																				
Unit cleaned - inside -																				
Fan blade cleaned																				
Fan housing cleaned																				
Condenser cleaned																				
Evaporator cleaned																				
Fan function checked																				
Air-inlet grid with filter cleaned																				
Unit checked for damage																				
Safety devices checked																				
All fastening screws checked																				
Electrical safety check																				
Test run																				

Comments: .....

.....

.....

1. Date: .... Signature	2. Date: .... Signature	3. Date: .... Signature	4. Date: .... Signature	5. Date: .... Signature
6. Date: .... Signature	7. Date: .... Signature	8. Date: .... Signature	9. Date: .... Signature	10. Date: .... Signature
11. Date: .... Signature	12. Date: .... Signature	13. Date: .... Signature	14. Date: .... Signature	15. Date: .... Signature
16. Date: .... Signature	17. Date: .... Signature	18. Date: .... Signature	19. Date: .... Signature	20. Date: .... Signature

Unit to be maintained only by authorised specialist personnel in accordance with the statutory regulations.

CTK 190 mobile air dehumidifier

Technical data

Series		CTK 190
Operating range, temperature	°C	6 to 32
Operating range, humidity	% RH	40 to 100
Dehumidification capacity max.	l/day	32
At 30 °C/80 % RH	l/day	30
At 20 °C/70 % RH	l/day	17
At 15 °C/60 % RH	l/day	10
Max. airflow volume	m^3/h	190
Condensate container capacity	Litres	5
Refrigerant	---	R290
Refrigerant quantity	g	122
Min. room size	m^2	6
GWP		3
CO_2 equivalence		0.00
Power supply	V/Ph/Hz	220-240/1~/50
Max. rated current consumption	A	2.80
Fuse		T1AL 250V
Max. power consumption	kW	0.565
At 20 °C/70 % RH	kW	0.42
At 15 °C/60 % RH	kW	0.38
Max. specific energy consumption (SEC)	kWh/l	0.45
At 20 °C/70 % RH	kWh/l	0.59
At 15 °C/60 % RH	kWh/l	0.91
Sound pressure level L_{pA} 1m	dB (A)	51
Depth	mm	274
Width	mm	390
Height	mm	612
Weight	kg	17
EDP no.		1610325

We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

CLIMIA

EC – Declaration of Conformity

Original Declaration of Conformity

CE

We hereby declare that the units named below, as produced and sold by us, satisfy the relevant basic requirements of the EC directives, EC safety standards and product-specific EC standards.

Name of Manufacturer:	**Intakt GmbH** Climia - Klima- und Wärmetechnik Niemeierstraße 13 D - 32758 Detmold
Name of the CE representative:	**Intakt GmbH** Climia - Klima- und Wärmetechnik Niemeierstraße 13 D - 32758 Detmold
Equipment (machinery) variant:	Air dehumidifier
Series / Class: Series / Class Number:	CLIMIA CTK 190 2180...
Delegated regulations (EU):	2011/65/EU:2011 2014/30/EU:2014 2014/35/EU:2014
Applicable standards:	DIN EN 12102-1:2018 DIN EN 55014-1:2017; DIN EN 55014-2:2015 DIN EN 60335-1:2012; DIN EN 60335-2-40:2014 DIN EN 61000-3-2:2015; DIN EN 61000-3-3:2014 DIN EN 62233:2008

Detmold, 9 February 2021

Intakt GmbH

Signature, Manager Director

CTK 190 mobile air dehumidifier

Intakt GmbH
Climia - Klima- und Wärmetechnik
Niemeierstraße 13
D - 32758 Detmold