Operating and installation instructions

REMKO MXD series

Ceiling cassettes for cooling and heating

MXD 204, MXD 264, MXD 354, MXD 524

Read these operating instructions carefully before commissioning / using this device!

These instructions are an integral part of the system and must always be kept near or on the device.

Subject to modifications; No liability accepted for errors or misprints!

Translation of the original

Table of contents

1 Safety and usage instructions

1.1 General safety notes

Carefully read the operating manual before commissioning the units or their components for the first time. It provides useful tips and notes such as hazard warnings to prevent injury and material damage. Failure to follow the directions in this manual can endanger persons, the environment and the equipment itself or its components and will void any claims for liability.

Store this manual and the information required for the operation of this system (e.g. refrigerant datasheet) in the vicinity of the unit.

The refrigerant used in the system is flammable. If applicable, observe the local safety conditions.

Warning of inflammable substances!

1.2 Identification of notes

This section provides an overview of all important safety aspects for proper protection of people and safe and fault-free operation.The instructions and safety notes contained within this manual must be observed in order to prevent accidents, personal injury and material damage.

Notes attached directly to the units must be observed in their entirety and be kept in a fully legible condition.

Safety notes in this manual are indicated by symbols. Safety notes are introduced with signal words which help to highlight the magnitude of the danger in question.

DANGER!

Contact with live parts poses an immediate danger of death due to electric shock. Damage to the insulation or individual components may pose a danger of death.

DANGER!

This combination of symbol and signal word warns of a situation in which there is immediate danger, which if not avoided may be fatal or cause serious injury.

WARNING!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may be fatal or cause serious injury.

CAUTION!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may cause injury or material and environmental damage.

NOTICE!

This combination of symbol and signal word warns of a potentially hazardous situation, which if not avoided may cause material and environmental damage.

This symbol highlights useful tips and recommendations as well as information for efficient and fault-free operation.

1.3 Personnel qualifications

Personnel responsible for commissioning, operation, maintenance, inspection and installation must be able to demonstrate that they hold a qualification which proves their ability to undertake the work.

1.4 Dangers of failure to observe the safety notes

Failure to observe the safety notes may pose a risk to people, the environment and the units. Failure to observe the safety notes may void any claims for damages.

In particular, failure to observe the safety notes may pose the following risks:

- The failure of important unit functions.
- The failure of prescribed methods of maintenance and repair.
- Danger to people on account of electrical and mechanical effects.

1.5 Safety-conscious working

The safety notes contained in this manual, the existing national regulations concerning accident prevention as well as any internal company working, operating and safety regulations must be observed.

1.6 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.

- The units and components may only be set up, installed and maintained by qualified personnel.
- Protective covers (grills) 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.
- Rooms in which refrigerant may escape shall be adequately aerated and ventilated. Otherwise, a risk of suffocation or fire exists.
- Do not leave children unsupervised when close to the system.
- Commissioning must be performed by authorised specialists exclusively. Deficient commissioning may lead to water leaks, electric shocks or fire. Commissioning must take place as described in the user manual.
- Only instruct authorised specialist personnel to perform maintenance or servicing.
- The system is filled with a flammable refrigerant. Never thaw any frozen unit components independently!
- Do not operate any further devices that produce high heat or naked flames in the same room.
- All housing parts and unit openings, e.g. air inlets and outlets, must be kept clear.
- The units must be inspected by a service technician to ensure that they are safe to use and fully functional at least once yearly. Visual inspections and cleaning may be performed by the operator when the units are disconnected from the mains.

1.7 Safety notes for installation, maintenance and inspection

- The refrigerant R32 used in the system is flammable. If applicable, observe the local safety conditions.
- Keep the cooling circuit clear of other gases and foreign substances. Only fill the cooling circuit with the refrigerant R32.
- Only use the accessories, components and appropriately marked parts provided. The use of non-standardised components may result in water leaks, electric shocks and fire.
- Only install and store the units in rooms larger than 4 m^2. With a failure to comply, leaks may result in the room filling with a flammable mixture!

  The minimum room size of 4 m^2 required for installation and storage pertains to the basic fill quantity of the unit. This varies according to the installation type and total fill quantity of the system. The calculation must take place in accordance with valid DIN standards. Make sure that the installation site is suitable for safe unit operation.
- Only mount the unit components on structurally suitable brickwork.
- The units must not be installed in rooms in which further devices that produce heat are operated (heaters, open hearths).
- Make sure the installation room is sufficiently ventilated.
- Interventions in the cooling circuit are only possible after completely draining the refrigerant. Never solder or grind unit components!
- Note that refrigerant may be odourless.
- Never operate the air conditioning unit in a humid room, such as a bathroom or laundry room. If the humidity is too high, this can cause short circuits on electrical parts.
- The product must be correctly earthed at all times, otherwise it may induce electric shocks.
- Attach the condensate drain as described in the operating manual. The inadequate drainage of condensate can lead to water damage in your apartment.

- All persons who intervene in the cooling circuit must hold a valid certificate from the chamber of industry and commerce, which confirms their ability to work with refrigerant.
- Appropriate hazard prevention measures must be taken to prevent risks to people when performing installation, repair, maintenance or cleaning work on the units.
- The setup, connection and operation of the units and its components must be undertaken in accordance with the usage and operating conditions stipulated in this manual and comply with all applicable regional regulations.
- Regional regulations and laws as well as the Water Ecology Act must be observed.
- The power supply should be adapted to the requirements of the units.
- Units may only be mounted at the points provided for this purpose at the factory. The units may only be secured or mounted on stable structures, walls or floors.
- The units and components should not be operated in areas where there is a heightened risk of damage. Observe the minimum clearances.
- The units and components must be kept at an adequate distance from flammable, explosive, combustible, abrasive and dirty areas or atmospheres.
- Safety devices may not be modified or bypassed.
- The connection of the indoor unit must be established as a permanent connection; a detachable, reusable connection is not permissible.

1.8 Unauthorised modification and changes

Modifications or changes to units and components are not permitted and may cause malfunctions. Safety devices may not be modified or bypassed. Original replacement parts and accessories authorised by the manufactured ensure safety. The use of other parts may invalidate liability for resulting consequences.

1.9 Intended use

Depending on the model, the units and the additional fittings with which they are equipped are only intended to be used as an air-conditioner for the purpose of cooling or heating the air in an enclosed space.

Any different or additional use is a non-intended use. The manufacturer/supplier assumes no liability for damages arising from a 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.

The threshold values specified in the technical data must not be exceeded.

1.10 Warranty

For warranty claims to be considered, it is essential that the ordering party or its representative complete and return the "certificate of warranty" to REMKO GmbH & Co. KG at the time when the units are purchased and commissioned.

The warranty conditions are detailed in the "General business and delivery conditions". 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.

1.11 Transport and packaging

The devices are supplied in a sturdy shipping container. Please check the equipment immediately upon delivery and note any damage or missing parts on the delivery and inform the shipper and your contractual partner. For later complaints can not be guaranteed.

⚠ WARNING!

Plastic films and bags etc. are dangerous toys for children!

Why:

- Leave packaging material are not around.

- Packaging material may not be accessible to children!

1.12 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.

Disposal of equipment and components

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

2 Technical data

2.1 Unit data

Series		MXD 204	MXD 264	MXD 354	MXD 524
Operating mode		Ceiling cassette for inverter multisplit outdoor units for cooling and heating			
Nominal cooling output [1)]	kW	2.05	2.64	3.51	5.27
Nominal heat capacity [2)]	kW	2.34	3.22	3.81	6.00
Application area (room volume), approx.	m^3	60	80	110	160
Adjustment range, room temperature	°C	+17 to +30			
Operating range	°C	+17 to +32			
Refrigerant		R32			
Operating pressure max. / per cooling cycle	kPa	4200/1500			
Air flow volume per stage	m^3/h	450/500/580		450/530/650	500/650/800
Sound pressure level per stage [3)]	dB (A)	35/38/42	33/36/39	34/37/41	36/42/48
Sound power (turbo mode)	dB (A)	53		58	59
Power supply	V/Ph/Hz	230/1~/50			
Enclosure class	IP	X 0			
Electrical rated power consumption, cooling [1)]	W	40			102
Electrical rated power consumption, heating [2)]	W	40			102
Electrical rated current consumption, cooling [1)]	A	0.18			0.44
Electrical rated current consumption, heating [2)]	A	0.18			0.44
Refrigerant injection pipe connection	Inches (mm)	1/4 (6.35)	1/4 (6.35)	1/4 (6.35)	1/4 (6.35)
Refrigerant suction pipe connection	Inches (mm)	3/8 (9.52)	3/8 (9.52)	3/8 (9.52)	1/2 (12.70)
Condensate drainage connection	mm	25	25	25	25
Condensate pump, flow rate, max.	mm WS	500			

Series		MXD 204	MXD 264	MXD 354	MXD 524
Cassette dimensions					
Length	mm	570	570	570	570
Width	mm	570	570	570	570
Depth	mm	260	260	260	260
Cover dimensions					
Length	mm	647	647	647	647
Width	mm	647	647	647	647
Depth	mm	50	50	50	50
Weight	kg	15.0		16.0	18.0
Cover weight	kg	2.5	2.5	2.5	2.5
Serial number		1324...	1325...	1326...	1327...
EDP no.		1623390	1623392	1623394	1623396

[1)] Air intake temperature TK 27 °C / FK 19 °C, outside temperature TK 35 °C, FK 24 °C, max. air flow volume, 5 m pipe length

[2)] Air intake temperature TK 20 °C, outside temperature TK 7 °C, FK 6 °C, max. air flow volume, 5 m pipe length

[3)] Distance 1 m free field

For information on energy efficiency, see the operating instructions for the relevant outdoor unit

2.2 Unit dimensions

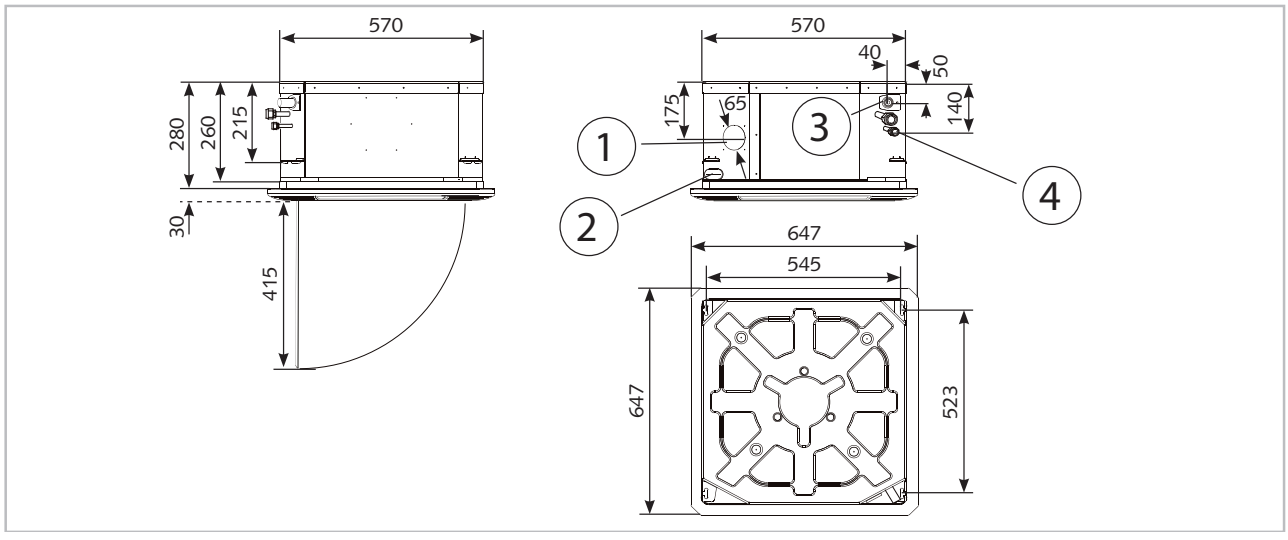

Fig. 1: Dimensions MXD 204-524 (all measurements in mm)

1: Fresh air connection
2: Implementing the electrical control line
3: Condensate drainage connection
4: Refrigerant piping connection

3 Design and function

3.1 Unit description

The indoor unit is used to extract heat from the indoor room being cooled. The outdoor unit then expels this heat to the outside.

If combined heating/cooling units are operated as heaters, the heat absorbed by the outdoor unit can be discharged by the indoor unit into the room being heated.

The unit series has the "Heating" priority, i.e. the units that are in heating or automatic mode can switch off other units in the system that are running in cooling mode.

The unit is designed to be mounted high up on indoor area.

It is operated by an infrared remote control.

The indoor unit consists of a fin evaporator, evaporator fan, controller and condensate tray. The indoor unit can be combined with REMKO outdoor units from the MVT 603 DC, 903 DC, 1053 DC and 1403 DC range that provide sufficient combination options. The outdoor unit is controlled by the controller in the indoor unit.

A cabled remote control and a condensate pump are available as accessories.

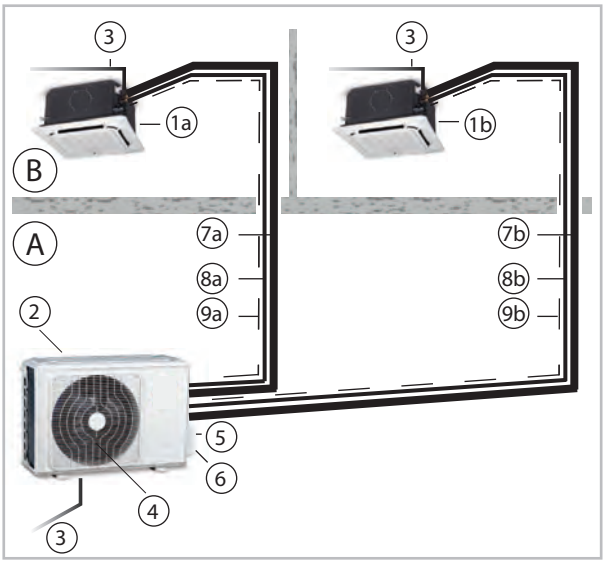

Fig. 2: System layout (in the example: MVT 903 DC with 2 MXD 354)

A: Outdoor area
B: Indoor area
1 a,b: Indoor units
2: Outdoor unit
3: Condensate drainage line
4: Condenser fan
5: Power supply
6: Shut-off valve
7 a,b: Suction pipes
8 a,b: Injection pipes
9 a,b: Control lines

Refrigerant piping is used to connect the indoor unit to the outdoor unit.

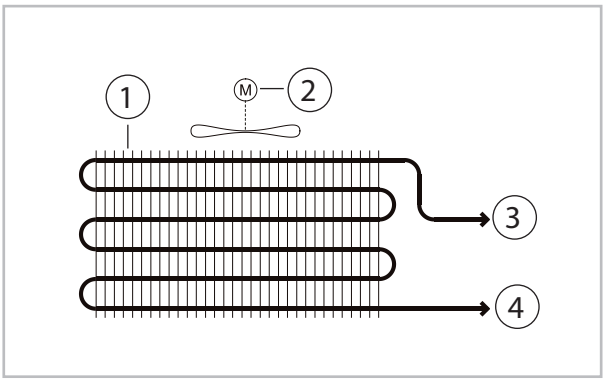

Fig. 3: Cooling cycle schematic

1: Evaporator
2: Evaporator fan
3: Suction pipe connection
4: Injection pipe connection

4 Operation

4.1 General notes

The indoor unit is easily operated using the standard infrared remote control. The indoor unit beeps to acknowledge the correct transmission of data. If it is not possible to program the indoor unit with the remote control, then it can also be manually operated. The indoor unit can also be operated via an optional cabled remote control.

Manual mode

The indoor units can be put into operation manually. Press the "MANUAL" key on the cover's receiver unit to first activate automatic mode and then cooling mode. Pressing the button a third time switches the unit off. Pressing the button again switches back to automatic mode. The unit that has cooling mode activated manually becomes the leading unit within the entire system. In manual mode, the following settings apply:

Cooling mode: 24 °C, fan speed: AUTO

Heating mode: 26 °C, fan speed: AUTO

Press a key on the infrared remote control to interrupt manual mode.

Infrared remote control

The infrared remote control sends the programmed settings a distance of up to 6 m to the receiver of the indoor unit. Data will only be received correctly if the remote control is pointed at the receiver and no objects are obstructing the transmission path.

First insert the supplied batteries (2 each, type AAA) into the remote control. To do so, pull off the flap of the battery compartment and insert the batteries correctly by polarisation (see marks).

Fig. 4: Maximum distance

Alarms are indicated by a code (see chapter Troubleshooting and customer service).

NOTICE!

Immediately replace flat batteries with a new set, otherwise there is a risk of leakage. It is recommended that the batteries are removed if the equipment is shut down for longer periods.

Help save on energy consumption in stand-by mode! If the device, system or component is not in use, we recommend disconnecting the power supply. Components with a safety function is excluded from our recommendation!

4.2 Display on indoor unit

Display on indoor unit

The LED indicators illuminate to indicate the settings:

OPERATION LED green = unit switched on

TIMER LED yellow = timer programmed

DEF/FAN LED red = defrosting active/recirculation mode

ALARM LED red = alarm present

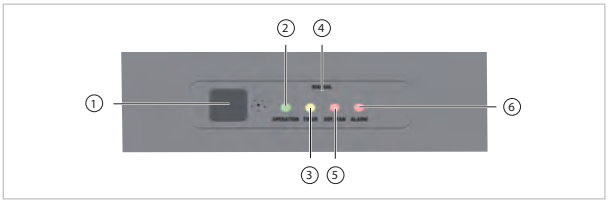

Fig. 5: Display on the unit

1: Unit for receiving signals from the remote control
2: Operation display
3: Timer indicator
4: Manual operation key
5: Defrosting fan
6: Malfunction indication

4.3 Keys on the remote control

Fig. 6: Keys on the remote control

① **"ON/OFF" key**

Press this key to switch the air conditioning unit on and off.

② **"MODE" key**

Operating mode selection. This key is used to set the desired operating mode. The automatic, cooling, dehumidification, heating and recirculation modes are available.

③ **"FAN" key**

Fan speed Use this key to select the desired fan speed. The automatic, low, medium and high functions are available. Note: In the dehumidification operating mode, the fan speed cannot be set manually.

④ **"SLEEP" key**

Activates/deactivates the "SLEEP" function.

Pressing this key will automatically increase or decrease the target temperature by 1 °C within an hour in cooling and heating mode respectively. Press this key to maintain the most convenient temperature and save energy. This function is only available in "Cooling", "Heating" and "Auto" modes. If the unit is working in "SLEEP" mode, this activity is interrupted by pressing the "MODE", "FAN", "Speed" or "ON/OFF" keys.

⑤ **"FRESH" key (without function)**

⑥ **"TURBO" key (without function)**

⑦ **"SELF CLEAN" key (without function)**

⑧ **"UP ARROW" and "DOWN ARROW" keys**

Press this key to increase the setpoint in steps of 1 °C up to a maximum of 30°C.

Press this key to decrease the setpoint in steps of 1°C to a minimum of 17°C.

⑨ **„SILENCE/FP“ key**

Activates/deactivates the silent mode. Pressing the key for longer than 2 seconds activates the unit's frost protection function.

In silent unit mode, the compressor runs at a lower frequency, and the indoor unit fan rotates at a slower speed. This obtains particularly silent unit operation.

The frost protection function can only be activated in heating mode. The unit operates with a fixed setpoint of 8°C. The indoor unit displays "FP". Pressing the ON/OFF, SLEEP, FP, Mode, FAN or up or down arrow key, the frost protection function is deactivated. Press the this key to activate the unit start delay time.

Note please!

Both functions are not available when connecting to the MVT unit series!

⑩ "TIMER ON" key

This key initiates the automatic switch-on time for the unit. Each press of this key increases the delay time by 30 minutes. When the set time on the display exceeds 10.0, each press of the button increases the set time by 60 minutes. To deactivate the delay time, set the time to 0.0.

⑪ "TIMER OFF" key

This key can be used to program the delayed switch-off time. Each press of this key increases the switch-off time by 30 minutes. When the set time on the display exceeds 10.0, each press of the button increases the set time by 60 minutes. To deactivate the switch-off time, set the time to 0.0

⑫ 3-D swing mode

Press this key to start or stop the swing mode. With the 2-point key, you can adjust the horizontal fin on the left side. Press this key once to change the angle by 6 degrees. Pressing the key for 2 seconds stops the swing function. When the swing function is stopped, LC appears on the display for three seconds.

⑬ "FOLLOW ME" key

This key can be used to activate/deactivate the FOLLOW ME function. In this mode, the room temperature is measured on the remote control. This sends a signal to the indoor unit every 3 minutes. If the remote control does not send a signal to the indoor unit for 7 minutes, this mode is automatically deactivated.

⑭ "LED" key

This activates/deactivates the display on the indoor unit.

Indicators on the LCD

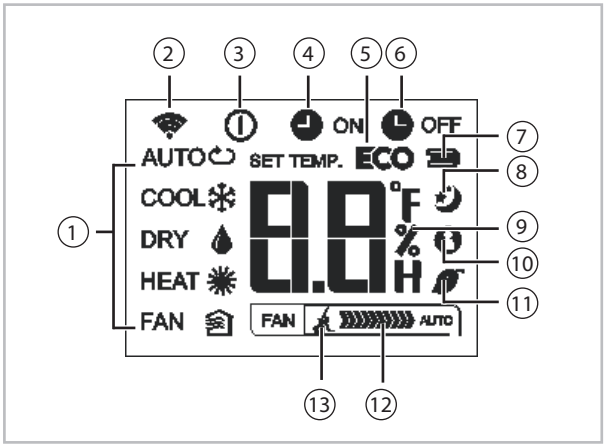

Fig. 7: Indicators on the LCD

1: Mode display - shows the current operating modes including Auto (↻), Cooling(❄), Dehumidifying (💧), Heating (☀), Fan (≋) and back to Auto (↻) mode.
2: Signal transmission symbol. This symbol appears when signals are being transmitted from the remote control to the indoor unit.
3: ON/OFF symbol. This symbol appears when the "ON/OFF" key is pressed. Pressing this key again causes the indicator to go out.
4: TIMER ON symbol. This symbol appears when TIMER ON is switched on.
5: ECO function (not available)
6: TIMER OFF symbol. This symbol appears when TIMER OFF is switched on.
7: Battery status (weak)
8: Sleep symbol. This symbol appears when the "Sleep" function is activated. Pressing this key again causes the indicator to go out.
9: Temperature/Timer symbol. Shows the temperature setting (-17°C~30°C). If "FAN" mode is selected, the temperature setting is not displayed. In Timer mode, the ON and OFF settings appear for the TIMER.
10: FOLLOW ME symbol. This symbol appears when the "Follow me" function is activated.
11: Ion generator display active (optional)
12: Fan speed symbol. This is where the selected fan speeds are displayed: AUTO (no indicator) and the three fan speed settings: ✻ (slow), ✻ (medium) and ✻ (fast). The fan speed is set to "Automatic" when either "Auto" or "Dehumidification" mode is activated.
13: Silent mode active (optional)

The illustration of the LCD with all of the symbols present is only intended to provide a clearer overview. During operation, only those symbols relevant to the respective functions appear on the display.

Key functions

A symbol is shown on the display to indicate that the settings are being transferred.

"Auto" mode

Make sure that the indoor unit is connected to the power supply, and is switched on.

The operating mode indicator on the display of the indoor unit begins to flash.

1. Press the **"MODE"**key to select "Auto" mode.
2. Press the **"UP/DOWN"**key to set the desired temperature. The temperature can be set between 17 and 30°C, in increments of 1°C.
3. Press the **"ON/OFF"**key to switch the air conditioning unit on.

Fig. 8: "Auto" mode

In "automatic" mode, the cooling unit automatically selects among cooling, recirculation and heating operation and tries to reach the setpoint set on the remote control

"Cooling", "Heating" and "Recirculation" mode

Make sure that the indoor unit is connected to the power supply, and is switched on.

1. Press the **"MODE"**key to select from operating modes "Cooling", "Heating" or "Recirculation".
2. Press the **"UP/DOWN"**key to set the desired temperature. The temperature can be set between 17 and 30°C, in increments of 1°C.
3. Press the **"FAN"**key to select from the four fan speeds (Auto, slow, medium and fast).
4. Press the **"ON/OFF"**key to switch the air conditioning unit on.

Fig. 9: "Cooling", "Heating" and "Recirculation" mode

"Dehumidification" mode

Make sure that the indoor unit is connected to the power supply, and is switched on.

The operating mode indicator on the display of the indoor unit begins to flash.

1. Press the **"MODE"**key to select "Dehumidifying" mode.
2. The temperature setting on the remote control has no effect on unit operation.
3. Press the **"ON/OFF"**key to switch the air conditioning unit on.

Fig. 10: "Dehumidification" mode

In "Dehumidification" mode, it is not possible to set the fan speed. This is already controlled automatically.

"Timer" mode

Press the "TIMER ON" key to set the "Auto on" time and the "TIMER OFF" key to set the "Auto off" time for the unit.

Setting the "Auto on" time

1. Press the "TIMER ON" key. The remote control shows "TIMER ON", the last "Auto on" time setting and the symbol "H" appears on the display. The unit is now ready to reset the "Auto on" time and to start "TIMER ON" mode.
2. Press the "TIMER ON" key again to set the desired "Auto on" time. Each time the key is pressed, the time is increased by half an hour between 0 and 10 hours, and by an hour between 10 and 24 hours.
3. Once these settings have been made, there is a one second delay before the remote control transmits the signal to the indoor unit. Then, after approx. two seconds, the "H" symbol disappears from the LCD display, and the set temperature appears again on the display.

Fig. 11: "Timer" mode

Setting the "Auto off" time

1. Press the "TIMER OFF" key. The remote control shows "TIMER OFF", the last "Auto off" time setting and the symbol "H" appears on the display. The unit is now ready to reset the "Auto off" time and to stop "TIMER OFF" mode.
2. Press the "TIMER OFF" key again to set the desired "Auto off" time. Each time the key is pressed, the time is increased by half an hour between 0 and 10 hours, and by an hour between 10 and 24 hours.
3. Once these settings have been made, there is a one second delay before the remote control transmits the signal to the indoor unit. Then, after approx. two seconds, the "H" symbol disappears from the LCD display, and the set temperature appears again on the display.

- *When Timer mode is selected, the remote control automatically transfers the timer signal to the indoor unit for the specified period of time. Therefore, you should hold the remote control in a location where it can transfer the signal to the indoor unit without interference.*
- *The effective operation for the time settings by the remote control for the timer function is restricted to the following settings:*
  0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 9.5, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24.

Example TIMER function settings

"TIMER ON" (Auto on mode)

Example:

You want the air conditioning unit to switch on six hours from the time it was programmed.

1. Press the "TIMER ON" key. The last operating time setting for the timer, and the "H" symbols, appear on the display.
2. Press the "TIMER ON" key until the desired start time is shown in the "TIMER ON" area on the remote control.
3. Wait for 3 seconds and the temperature appears again in this area of the digital display. The "TIMER ON" indicator stays lit, and this function is activated.

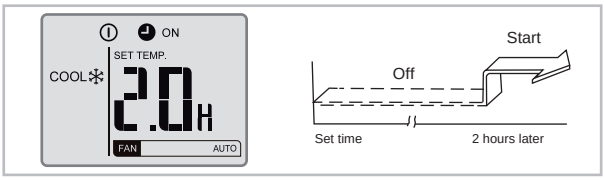

Fig. 12: "TIMER ON" example

"TIMER OFF" (Auto off mode)

Example:

You want the air conditioning unit to switch off 4 hours from the time it was programmed.

1. Press the "TIMER OFF" key. The last operating time setting for the timer, and the "H" symbols, appear on the display.
2. Press the "TIMER OFF" key until "10H" is shown in the "TIMER OFF" area on the remote control.
3. Wait for 3 seconds and the temperature appears again in this area of the digital display. The "TIMER OFF" indicator stays lit, and this function is activated.

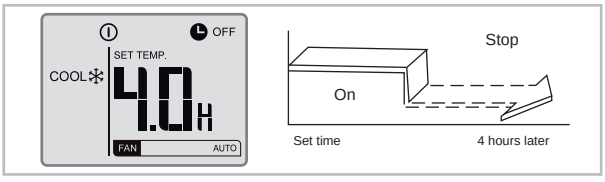

Fig. 13: "TIMER OFF" example

Combined TIMER (setting "TIMER ON" and "TIMER OFF" at the same time)

"TIMER OFF ⇨ "TIMER ON"

(On ⇨ Stop ⇨ Start)

Example:

You want the air conditioning unit to switch off in two hours from the time it was programmed, and switch back on ten hours later.

1. Press the "TIMER OFF" key.
2. Press the "TIMER OFF" key again until the desired stop time is shown in the "TIMER OFF" area on the remote control.
3. Press the "TIMER ON" key.
4. Press the "TIMER ON" key again until "10H" is shown in the "TIMER ON" area on the remote control.
5. Wait for 3 seconds and the temperature appears again in this area of the digital display. The "TIMER ON" and "TIMER OFF" indicators stay lit, and this function is activated.

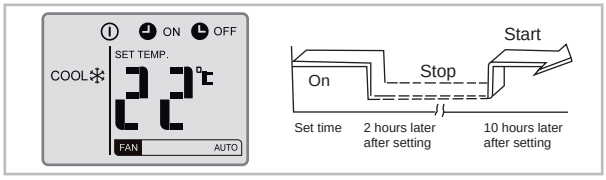

Fig. 14: "TIMER OFF" / "TIMER ON" example

"TIMER ON ⇨ "TIMER OFF"

(Off ⇨ Start ⇨ Stop)

Example:

You want the air conditioning unit to switch on in two hours from the time it was programmed, and switch back off five hours later.

1. Press the "TIMER ON" key.
2. Press the "TIMER ON" key again until "2.0H" is shown in the "TIMER ON" area on the remote control.
3. Press the "TIMER OFF" key.
4. Press the "TIMER OFF" key again until "5.0H" is shown in the "TIMER OFF" area on the remote control.
5. Wait for 3 seconds and the temperature appears again in this area of the digital display. The "TIMER ON" and "TIMER OFF" indicators stay lit, and this function is activated.

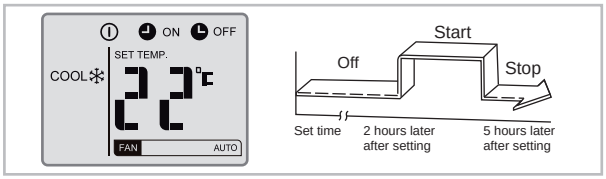

Fig. 15: "TIMER ON" / "TIMER OFF" example

SLEEP function

The sleep function saves energy while you sleep. This function is activated by pressing the key on the remote control. Press the key before going to sleep. In cooling mode, the unit automatically increases the set room temperature by 1 °C after 1 hour. After one more hour, the room temperature is increased by an additional 1 °C. In heating mode, the room temperature is decreased within the first two hours of operation by 2°C. After 7 hours of unit operation, the unit switches automatically off in cooling and heating mode.

This function is not available in the recirculation and dehumidification operating modes!

Fig. 16: "Sleep" function

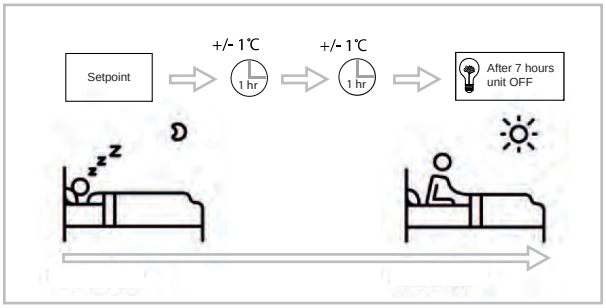

Fig. 17: Sleep function

5 Installation instructions for qualified personnel

Important notes prior to installation

Observe the operating manuals for the indoor unit and the outdoor unit when installing the entire system.

- Transport the unit in its original packaging as close as possible to the installation location. You avoid transport damage by doing so.
- Check the contents of the packaging for completeness and check the unit for visible transport damage. Report any damage immediately to your contractual partner and the shipping company.
- Lift the unit on the corners and not on the refrigerant or condensate drainage connections.
- The refrigerant piping (injection and suction pipe), valves and connections must be insulated against vapour density. If necessary also insulate the condensate drainage line.
- Select an installation location which allows air to freely flow through the air inlet and outlet (see section "Minimum clearances").
- Do not install the unit in the immediate vicinity of devices which generate intensive thermal radiation. Installation in the vicinity of thermal radiation reduces the unit output.
- Install the refrigerant piping from the indoor unit to the outdoor unit.
- Seal off open refrigerant piping with suitable caps or adhesive strips to prevent the infiltration of moisture and never kink or compress the refrigerant piping.
- Only use the union nuts supplied with the refrigerant piping. These should only be removed shortly before connecting the refrigerant piping.
- Carry out all electrical wiring in accordance with applicable DIN and VDE standards.
- Ensure the electrical cables are properly connected to the terminals. Otherwise there is a risk of fire.
- Service openings should be provided in the suspended ceiling to allow for maintenance access.

Installation materials

The indoor unit is attached to the wall by a wall bracket and 4 screws (to be provided by the customer). Use the installation material provided to complete the installation. Wall plugs, trapezoidal sheet metal supports, steel profiles, fixing clamps for refrigerant and condensate drainage lines (as well as laying ducts) and connection fittings for condensation pipes must be provided by the customer.

Selection of installation location

The indoor unit is specifically designed for horizontal mounting in suspended ceilings with Euro-raster dimensions. However, it can also be installed in suspended ceilings with different dimensions. Take into account the installation height of the equipment.

Minimum clearances

Observe the minimum clearances to allow access for maintenance and repair work and facilitate optimum air distribution.

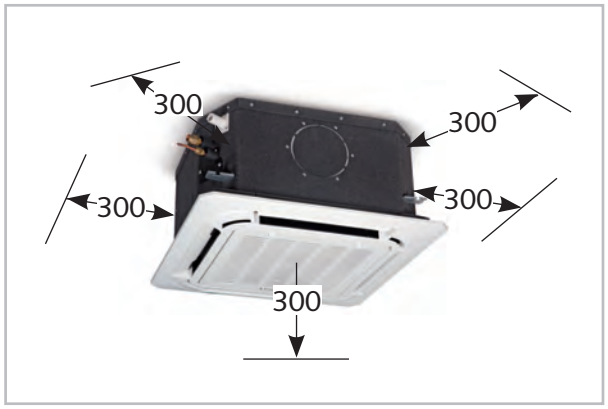

Fig. 18: Minimum clearances MXD 204-524 (all measurements in mm)

6 Installation

! NOTICE!

Installation should only be performed by authorised specialists.

Unit installation

The unit is mounted with the cover face down on four threaded rods. Take into account the ceiling grid and any other installations.

1. Use the dimensions of the ceiling cassette to mark the fixing points for the threaded rods on structural parts approved to support the static load above the suspended ceiling (Fig. 19).
2. Fit the indoor unit onto the threaded rods and use the lower nuts to level the unit (Fig. 20).
3. Adhere to a ceiling clearance of at least 35 mm. Connect the refrigerant piping, electrical cables and condensate drainage line to the indoor unit as described below.
4. Check again that the unit is level.
5. The final task is to tighten the counter nuts and attach the cover.

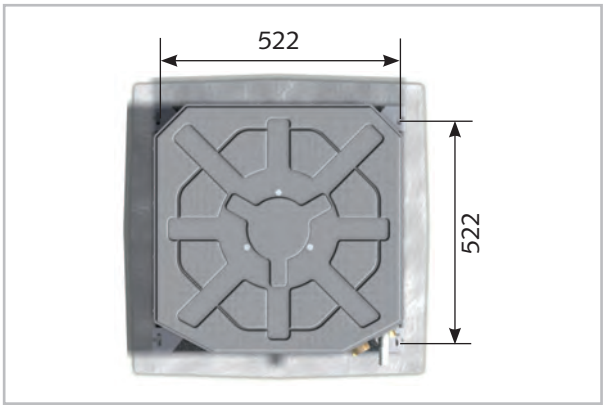

Fig. 19: Hooking in the unit (MXD 204-524)

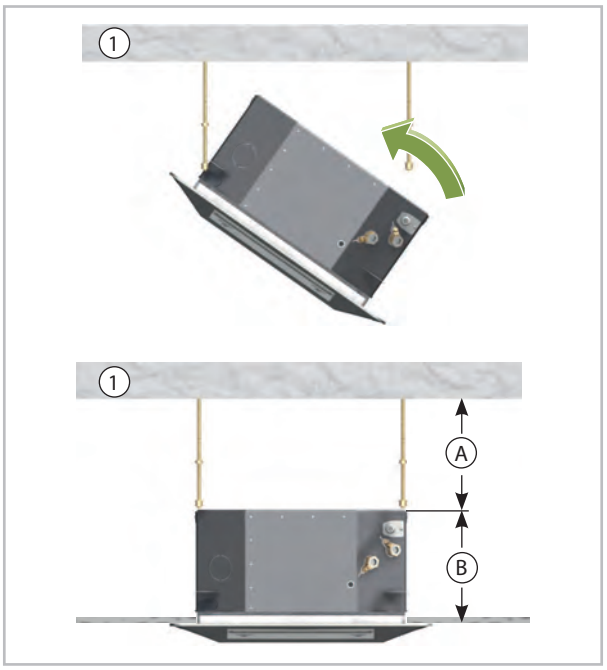

Fig. 20: Hooking in the unit (MXD 204-524)

1: Structural component
A: Min. 35 mm
B: 265 mm

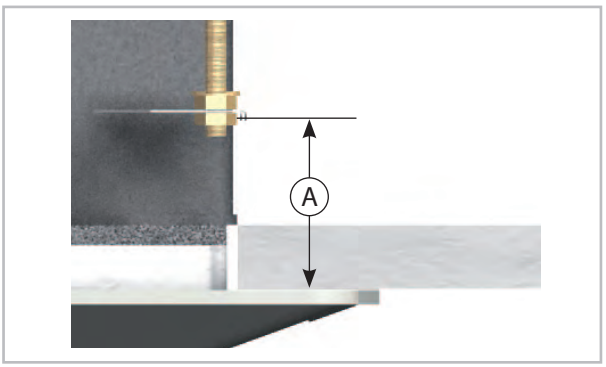

Fig. 21: Fastening the unit

A: Distance A

	MXD 204-524
Distance A	70 mm
Suspended unit	545 mm x 525 mm

Connection of refrigerant piping

The refrigerant piping connection provided by the customer takes place on one corner of the unit, inside the suspended ceiling. It may be necessary to fit a reducing or extending adapter to the outdoor unit. These fittings are included with the outdoor unit as an accessory kit. Once installed, the connections should be insulated to make them vapour diffusion proof.

Power	Outdoor unit			Refrigerant piping		Indoor unit MXD 204-524		
Indoor unit	Connection		Reducer / flared adapter	Refrigerant piping		Reducer / flared adapter	Connection	
	IP	SP	SP	IP	SP	SP	IP	SP
2.0 kW	1/4"	3/8"	-	1/4"	3/8"	-	1/4"	3/8"
2.6 kW	1/4"	3/8"	-	1/4"	3/8"	-	1/4"	3/8"
3.5 kW	1/4"	3/8"	-	1/4"	3/8"	-	1/4"	3/8"
5.2 kW	1/4"	3/8"	FA 3/8" OU -> 1/2" IU	1/4"	1/2"	-	1/4"	1/2"

Note: SP = suction pipe (large pipe), IP = injection pipe (small pipe)

! NOTICE!

A detachable connection may only be established outside the room. To connect the indoor units, use only the supplied, non-detachable union nuts or provide a firm connection.

Fresh air connection

The unit is prepared for the intake of fresh air.

Fig. 22: Fresh air connection

1: Fresh air connection

- Observe the regional regulations concerning air treatment.
- Fit a collar with a nominal diameter of 65 mm to the fresh air connection (Fig. 23).

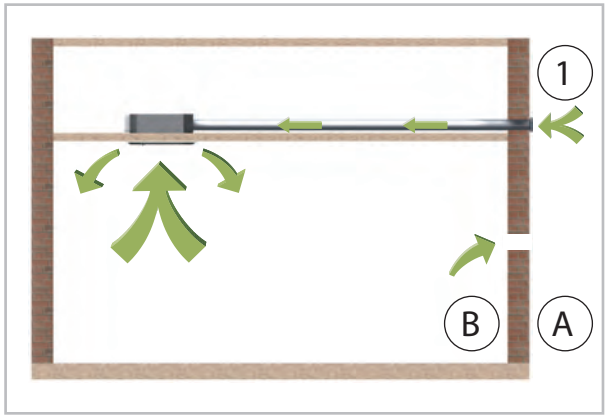

Fig. 23: Fresh air connection

1: Outdoor air intake
A: Outside
B: Inside

! NOTICE!

The unit is factory filled with dry nitrogen for leak testing purposes. The pressurised nitrogen is released when the union nuts are undone.

- The fresh air content should not exceed 10 % of the nominal air flow rate for the unit. The fresh air supply should be controlled by an additional speed-regulated fan.
- The air at the outdoor air intake should be sucked in through a dust filter at a maximum rate of 2.5 m/s to prevent the ingress of rain water.
- The fan should be connected to a separately protected electrical supply that is to be provided by the customer.

In addition, the polystyrene partition wall that is framed in the following illustration must be removed with a knife (Fig. 24).

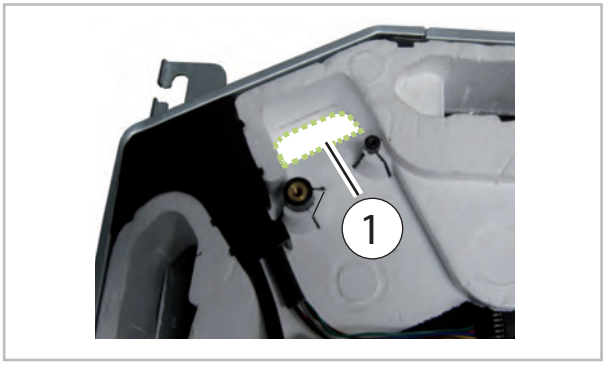

Fig. 24: Fresh air inlet

1: Fresh air inlet

7 Condensate drainage connection and safe drainage

- The condensate drainage line should have an incline of min. 2%. This is the responsibility of the customer. If necessary, fit vapour-diffusion-proof insulation.
- If the level of the condensate drainage line on the unit is above that of the outlet, route the pipe vertically upwards and then with an incline to the drain.
- Route the unit's condensate drainage line freely into the drain line. The diameter of the condensate nozzle is 25 mm. If the condensate runs directly into a sewer pipe, fit a trap to prevent any unpleasant odours.
- When operating the unit at outside temperatures below 4 °C, ensure the condensate drainage line is laid to protect it against frost. If necessary, fit a pipe heater.
- Following installation, check that the condensate run off is unobstructed and ensure that the line is durably leak tight.

Condensate drainage connection

If the temperature falls below the dew point, condensate will form on the cooling fins during cooling mode. A collection tray together with a condensate pump and liquid level switch are fitted as standard below the cooling fins. If the liquid level switch trips a protective shutdown due to inadequate removal of the condensate, the pump will switch on immediately and run on for approx. three minutes.

Safe drainage in the event of leakages

Local regulations or environmental laws, for example the German Water Resource Act (WHG), can require suitable precautions to protect against uncontrolled drainage in case of leakage to provide for safe disposal of escaping air conditioning fluid or hazardous media.

! NOTICE!

The maximum capacity of the condensate pump is 500 mm WS. External influences, such as air-side back pressure, contamination, or wear may cause a reduction in performance. To ensure safe operation function, we recommend a maximum conveyor height of 450 mm should not be exceeded!

! NOTICE!

If condensate is removed via a duct in accordance with DIN EN 1717, ensure that any microbiological contamination present on the wastewater side (bacteria, fungi, viruses) cannot enter the unit connected to it.

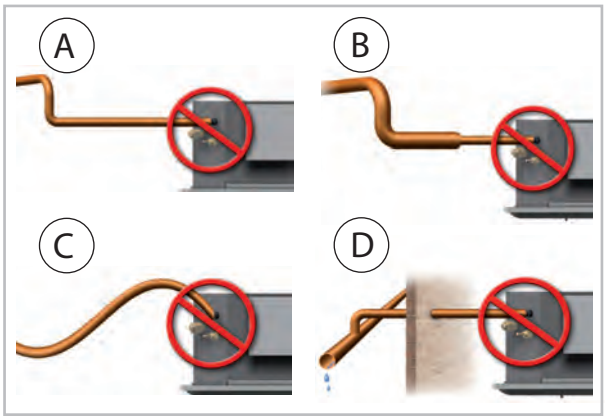

Fig. 25: Condensate drainage connection - incorrect!

A: Riser pipe too far away
B: Condensate drainage line too large/small
C: No incline
D: Cannot freely drain away

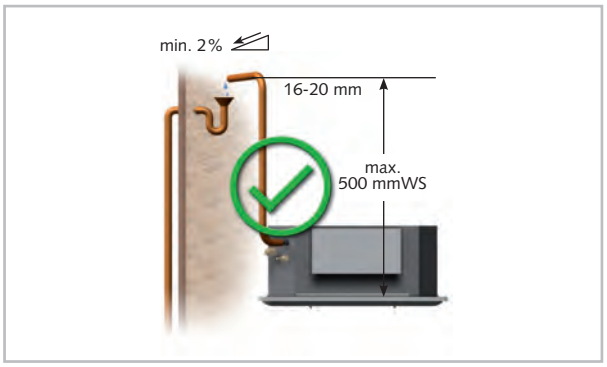

Fig. 26: Condensate drainage connection - correct!

8 Electrical wiring

8.1 General information

A protected power supply cable is to be connected to the outdoor unit and a four-core control line with a minimum cross-section of 1.5mm^2. To avoid EMC interference, only use shielded cable for this purpose and connect the shielding on both sides.

DANGER!

All electrical installation work is to be performed by specialist companies. Disconnect the power supply when connecting the electrical terminals.

NOTICE!

The electrical connection for the units must be made at a separate feedpoint with a residual current device in accordance with local regulations and should be laid out by an electrician.

- We recommend to install a main / repair switch on the building near the indoor unit.
- The terminal blocks for making the connections are located inside of the unit. After opening the cover, they are reachable.
- If a condensate pump is available as an accessory, when using a turn off switch of the pump stop the power supply to the indoor unit.

8.2 Unit connection

Make the connection as follows:

1. Open the air inlet grill.
2. Loosen the switch cabinet's cover (Fig. 28).
3. Feed the voltage-free cable through the edge protection rings on the control box and clamp the cable in the strain relief.
4. Then connect the cable in accordance with the connection diagram.
5. Connect the electrical plugs on the cover to the mating connectors on the cassette. It is not possible to incorrectly connect these.
6. Re-install all disassembled parts.

Fig. 27: Switch cabinet access

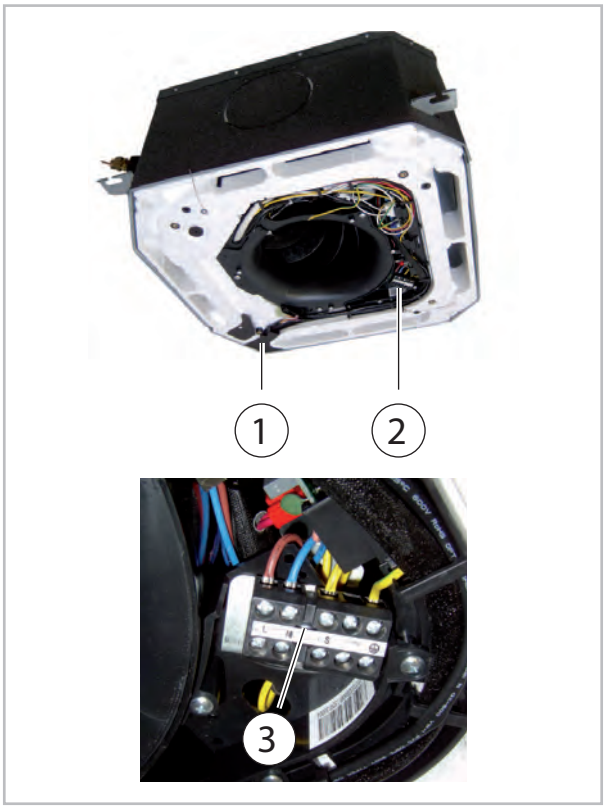

Fig. 28: Unit connection

1: Power supply infeed
2: Remove the switch cabinet's cover
3: Control line from outdoor unit connection

Check all plugged and clamped terminals to verify that they are seated correctly and make permanent contact. Tighten as required.

8.3 Electrical wiring diagram

Connection MVT 603 DC-1403 DC

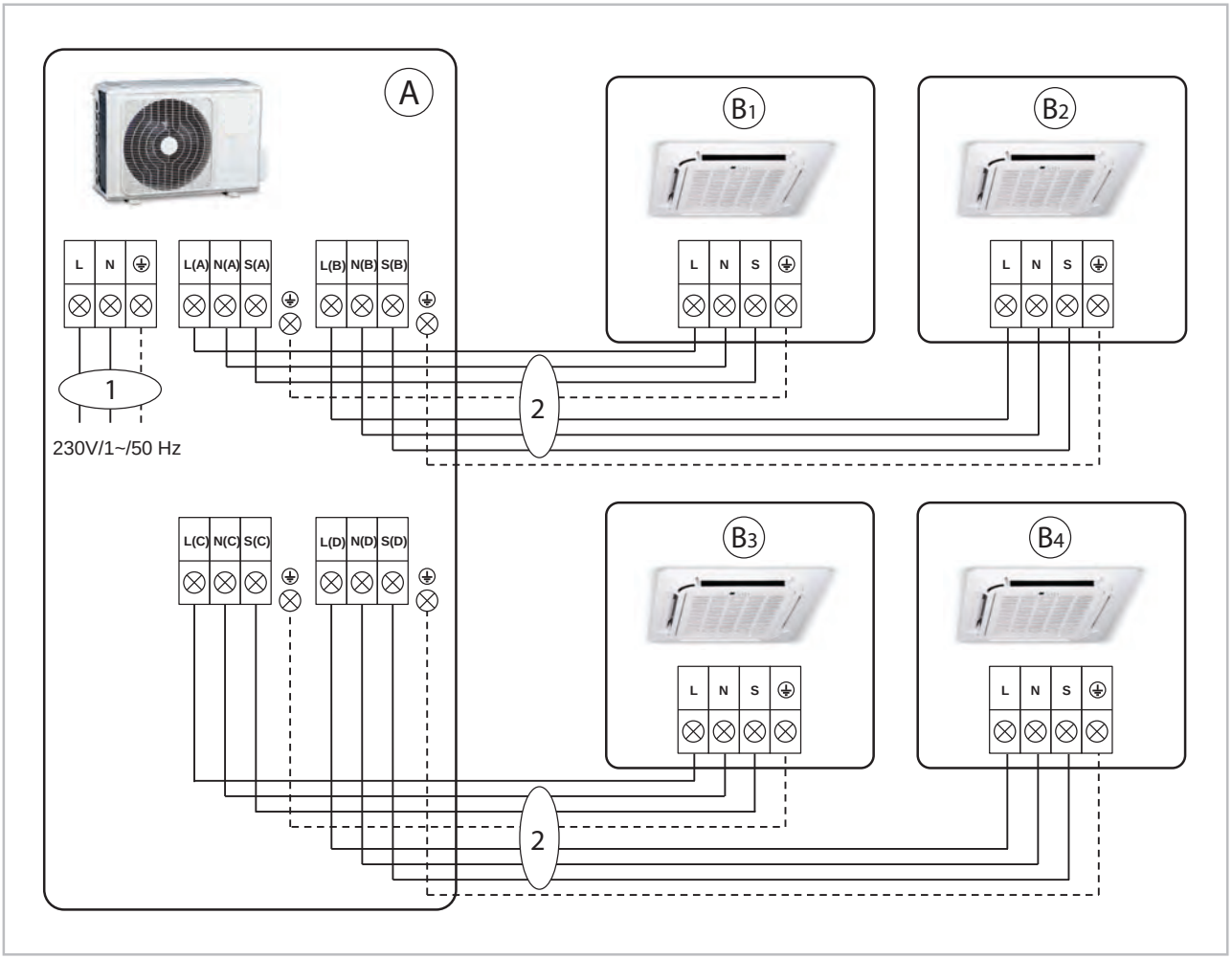

Fig. 29: Electrical wiring diagram

A: Outdoor unit MVT 603 DC-1403 DC
B: Indoor units MXD 204-524
1: Power supply
2: Communication lines

8.4 Electrical drawings

MXD 204-524

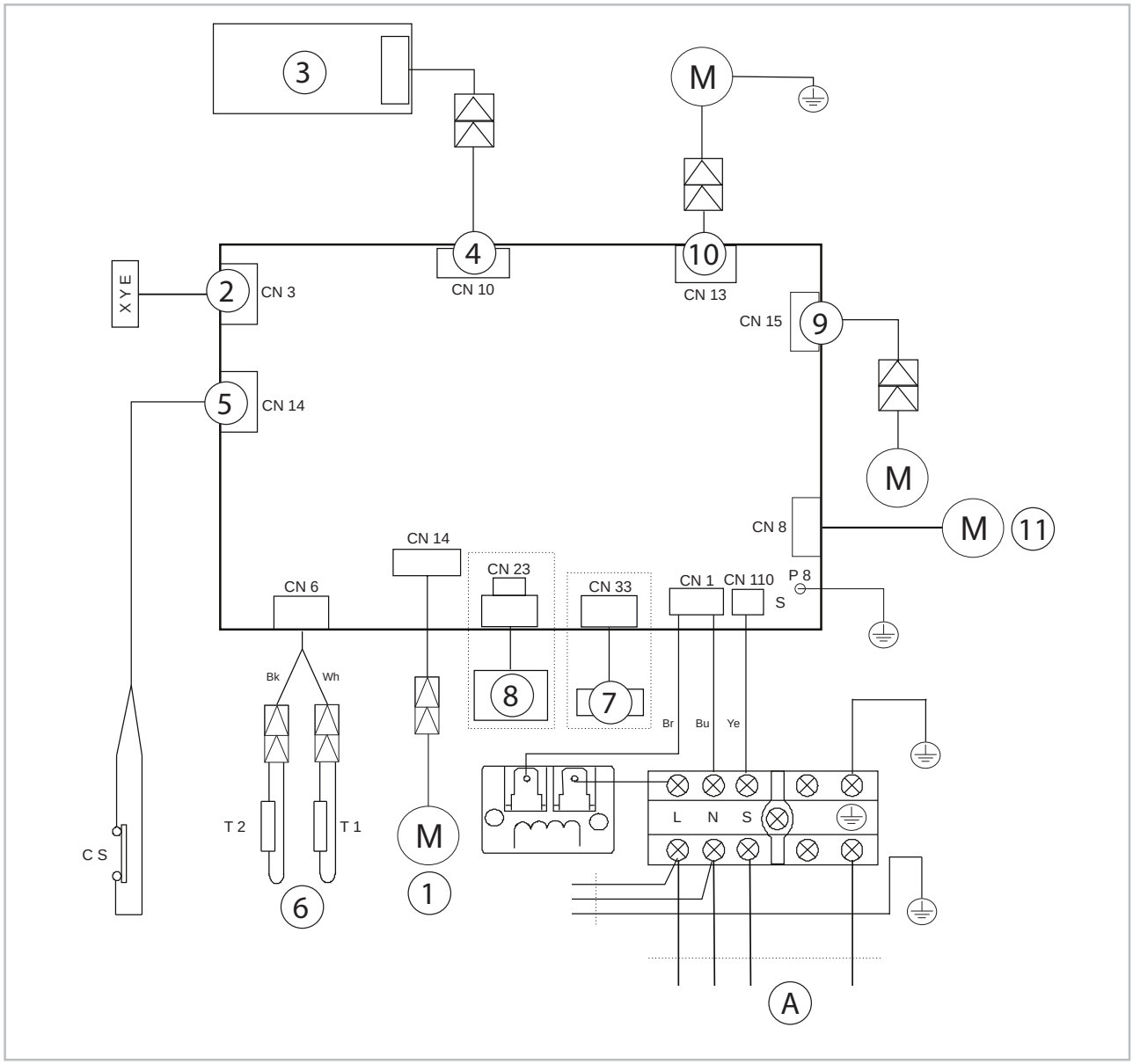

Fig. 30: Electrical drawings

A: Control board power supply
1: Swing motor
2: Cabled remote control connection option
3: Display/circuit board
4: Display board connection
5: Condensate liquid level switch
6: Suction pipe probe, room temperature probe
7: Potential-free alarm contact, closes if a malfunction is present
8: Potential-free ON/OFF, unit operation when contact closed, jumper JR6 must be removed for this to function
9: Evaporator fan motor
10: Connection of condensate pump
11: Connection for an external fan (fresh air fan). This is a 230 V connection that can be loaded with up to 200 W. Controller: if the fan on the indoor unit turns on, the contact is supplied with power. As soon as the fan turns off or the ceiling cassette is switched off, it is de-energised

8.5 Connection of a superordinate controller provided by the customer

Connection of a cable remote control with week program (MCC-1 controller):

1. For the electrical power supply, it is necessary to provide a power supply of 230V/1~/50 Hz at the MCC-1 controller. This is connected to the L, N, PE terminals.

2. For the communication between the MCC-1 controller and the ceiling cassettes of type MXD 203-523, a 3-core shielded control line is required. The minimum cross-section should be 0.75 mm^2. This is connected to the X, Y and E terminals of the MCC-1 controller and with the indoor units. Subsequently loop the control line from the X, Y and E terminals to all indoor units.

3. The 120 Ohm resistors included in the scope of supply of the MCC-1 controller are connected to the X and Y terminals of the controller, and to the X and Y terminals of the last indoor unit in the series.

4. A DIP switch S1 and a rotary switch S2 are located on the control board of the MXD ceiling cassettes. These facilitate the addressing of the respective indoor units. Ensure that the connected indoor units are programmed for the different addresses accordingly. The setting of the DIP switch must take place while in a de-energised state, as follows:

Rotary swich	DIP swich	Adress
		0-15
		16-31
		32-47
		48-63

5. After successful addressing of the indoor units, these appear with the respective address in the display of the MCC controller and are ready for operation.

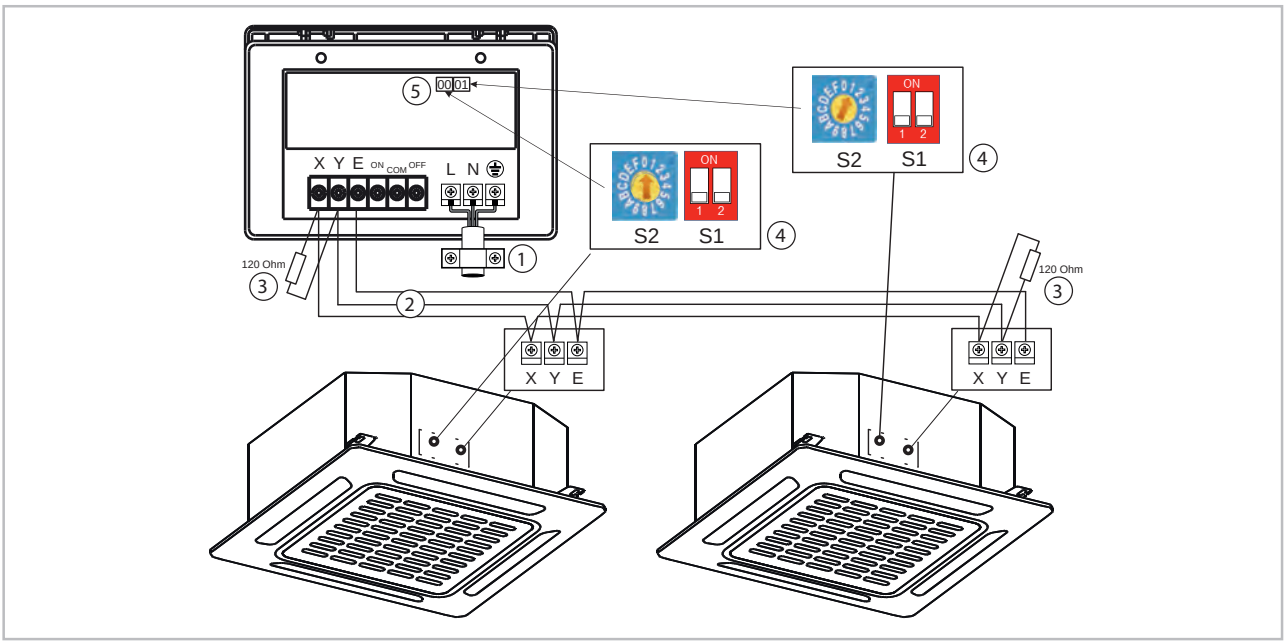

Fig. 31: Connection of the MCC 1 controller

9 Commissioning

NOTICE!

Commissioning should only be performed by specially trained personnel and documented after the certificate has been issued. Observe the operating manuals for the indoor unit and outdoor unit when commissioning the entire system.

Functional test for cooling mode

Check the DIP switch settings on the PCB, as illustrated on chapter "Choice of unit". If necessary, set the DIP switches to the appropriate indoor unit type.

1. Switch the supply voltage on.
2. Use the remote control to turn on the unit and select the cooling mode, maximum fan speed and lowest nominal temperature.
3. Measure and record all the required values in the commissioning report and check the safety functions.
4. Check the control system for the unit using the functions described in the chapter "Operation". Timer, temperature setting, fan speeds and changing to air circulation or dehumidifying mode.
5. Check the correct function of the condensation line by pouring distilled water into the condensation tray. A bottle with a spout is recommended for pouring the water into the condensation tray.

Functional test for heating mode

1. Switch the supply voltage on.
2. Use the remote control to switch on the unit and select the heating mode, maximum fan speed and highest nominal temperature.
3. Measure and record all the required values in the commissioning report and check the safety functions.
4. Measure the air intake temperature of the ceiling mounted cassette and the room temperature approx. 1.5 m above the floor. In the event of deviation, correct any temperature difference by means of the DIP switch SW1.
5. Check the control system for the unit using the functions described in the chapter "Operation". Timer, temperature setting, fan speeds.

Final tasks

- Reassemble all disassembled parts.
- Familiarise the operator with the system.

NOTICE!

Check that the shut-off valves and valve caps are tight after carrying out any work on the cooling cycle. Use appropriate sealant products as necessary.

10 Shut-down

Temporary shut-down

1. Allow the indoor unit to run for 2 to 3 hours in air circulation mode or in cooling mode at the maximum temperature setting in order to remove any residual moisture from the unit.
2. Shut down the system using the remote control.
3. Switch off the voltage supply to the unit.
4. Check the unit for visible signs of damage and clean it as described in the chapter "Care and maintenance"

Permanent shut-down

Ensure that equipment and components are disposed of in accordance with the applicable regulations, e.g. through authorised disposal and recycling specialists or at collection points.

REMKO GmbH & Co. KG or your contractual partner will be pleased to provide a list of certified firms near you.

11 Troubleshooting and customer service

The equipment and components are manufactured using state-of-the-art production methods and tested several times to verify their correct function. If malfunctions should occur, please check the functions as detailed in the list below. For installations with an indoor unit and outdoor unit, refer to the chapter "Troubleshooting and customer service" in both manuals. Please inform your dealer if the unit is still not working correctly after all the functional checks have been performed!

Malfunctions

Fault	Possible cause	Checks	Remedy
The unit does not start or switches it self off	Power outage, undervoltage, defective mains fuse / main switch in off position	Are all other electrical installations functioning correctly?	Check voltage if necessary wait until turned on again.
	Damaged mains cable	Are all other electrical installations functioning correctly?	Repair by a specialist
	Wait time after switching on is too short	Have approx. 5 minutes elapsed since the restart?	Schedule longer waiting periods
	Temperature outside operating range.	Are the fans in the indoor unit and outdoor component working correctly?	Take into account the temperature range for the indoor unit and outdoor component
	Electrical surges caused by thunderstorms	Have there been lightning strikes in the area recently?	Switch off the mains breaker and switch it back on. Have it checked by a specialist
	Fault in external condensation pump	Did the pump shut down due to a fault?	Check and if necessary clean the pump
The unit does not respond to the remote control	Transmission distance too far / receiver affected by interference	Does the indoor unit beep when pressing a button?	Reduce the distance to less than 6 m or change position
	Defective remote control	Is the unit running in manual mode?	Replace the remote control
	Receiver or transmitter unit exposed to excessive solar radiation	Does it function correctly in the shade?	Place the receiver & transmitter unit in the shade
	Electromagnetic fields are interfering with transmission	Does it function when switching off possible sources of interference?	Signal is not transmitted when interference sources are operational
	Button in remote control jammed / two buttons pressed at same time	Does the “Send” symbol appear on the display?	Release the button / press only one button
	Batteries in remote control are flat	Have new batteries been inserted? Is the display incomplete?	Insert new batteries
The unit is running with reduced or without cooling / heating output	Filter is unclean / air inlet / outlet blocked by foreign objects	Have the filters been cleaned?	Clean the filters

Fault	Possible cause	Checks	Remedy
	Windows and doors open. Heating/cooling loads increased	Have there been any structural / usage-related changes?	Close windows and doors / install additional units
	Neither cooling nor heating mode has been set	Does the cooling symbol appear on the display?	Correct the settings for the unit
	Fins on outdoor component blocked by foreign objects	Is the fan on the outdoor component running? Are the fins unobstructed?	Check the fan or winter controller, reduce the air resistance
	Leaking refrigerant circuit	Are there signs of frost on the fins of the indoor unit?	Repair by specialist
	Outdoor component iced up	Check outdoor component. Has the cassette sensor on the outdoor component been correctly positioned?	De-ice and fit the sensor at the point where the most ice forms
Condensation discharge on unit	Drainage pipe on collection container clogged / damaged	Can the condensation drain off without any obstruction?	Clean the drainage pipe and collection container
	Faulty external condensation pump or float	Is the collection tray full of water and the pump not running?	Call out a specialist to replace the pump
	Condensation has not drained away and has collected in the condensation line	Is there a steady fall on the condensation pipe? Check there is no blockage in the pipe	Ensure there is a fall when laying the condensation pipe and clean the pipe
	Condensation does not drain off	Are the condensation lines unblocked and laid on a slope? Are the condensation pump and float switch functioning correctly?	The condensation line must have a fall. If necessary, clean the pipe. A faulty condensation pump and float switch should be replaced
	Float is stuck or jammed due to excessive dirt	Are the LEDs on the receiver unit of the indoor unit flashing?	Should be cleaned by specialist firm

NOTE

If the outdoor unit makes noises at low outside temperatures, even although it is switched off, this is not a malfunction. This is the winding of the compressor being run briefly in order to heat up the oil within it and also to guarantee the viscosity at low ambient temperatures. If you do not use the unit in the winter then you can switch off the breaker. Switch it back on again at least 12 hours before the next time that the unit will be required!

Malfunction indicated by flashing code

Error description	Number of flashes per second)	LED timer
EEPROM error, indoor unit	1	OFF
Communication error between indoor unit and outdoor unit	2	OFF
Evaporator fan motor speed control not OK	4	OFF
Room air temperature probe faulty	5	OFF
Evaporator temperature probe faulty	6	OFF
No cooling capacity after 30 minutes	7	OFF
Condensate pump liquid level switch triggered	8	OFF
Safety shut-down due to increased power consumption	1	ON
Outdoor unit air inlet temperature probe faulty	2	ON
Condenser outlet temperature probe faulty	3	ON
Temperature probe for heat gas line faulty	4	ON
EEPROM error, outdoor unit	5	ON
Condenser fan speed control not OK	6	ON
Suction pipe temperature probe in AT faulty	7	ON
Inverter error	1	FLASHES
Over/undervoltage error	2	FLASHES
Safety shut-down compressor excess temperature	3	FLASHES
Safety shut-down due to low outside temperature	4	FLASHES
Compressor control faulty	5	FLASHES
Mode conflict	6	FLASHES
Low pressure alarm (optional per unit model)	7	FLASHES
Overheating protection (optional per unit model)	8	FLASHES

[1)] LED [1] In the figure below

[2)] LED [2] In the figure below

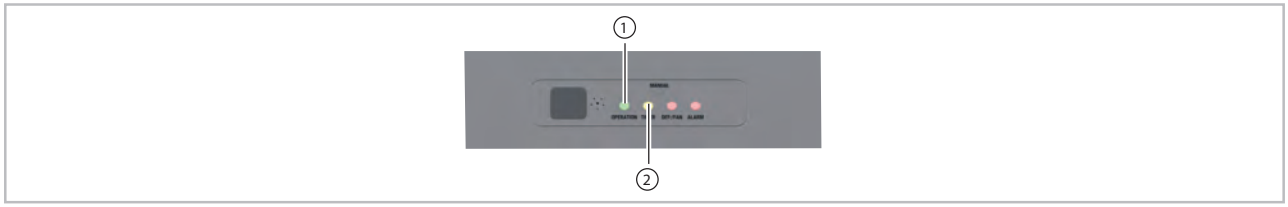

Fig. 32: Malfunction indicated by flashing code

12 Care and maintenance

Regular care and observation of some basic points will ensure trouble-free operation and a long service life.

DANGER!

Prior to performing any work, ensure the equipment is disconnected from the voltage supply and secured to prevent accidental switch-on!

Care

- Ensure the unit is protected against dirt, mould and other deposits.
- Only clean the unit using a damp cloth. Do not use any caustic, abrasive or solvent-based cleaning products. Do not use a jet of water.
- Clean the fins on the unit prior to long shut-down periods.

Maintenance

- It is recommended that you take out a maintenance contract with an annual service from an appropriate specialist firm.

This enables you to ensure the operational reliability of the plant at all times!

Cleaning the cover on the indoor unit

1. Disconnect the power supply to the unit.
2. Open and fold down the air inlet guard on the cover. The filter is held in place by the flaps screwed in at the side of the guard (Fig. 33 *on page 33*).
3. Clean the guard and cover with a soft, damp cloth.
4. Switch the power supply back on.

Type of task Checks/maintenance/inspection	Commissioning	Monthly	Half-yearly	Yearly
General	●			●
Check voltage and current	●			●
Check function of compressor/fans	●			●
Dirt on condenser/evaporator	●	●		
Check the refrigerant volume	●		●	
Check condensate drainage	●		●	
Check insulation	●			●
Check moving parts	●			●
Sealing test for cooling cycle	●			●[1)]

[1)] see note

NOTICE!

Statutory regulations require an annual leak test for the cooling cycle dependant on the refrigerant quantity. Inspection and documentation of the work performed is to be carried out by specialist technicians.

Air filter for indoor unit

Clean the air filter at intervals of no more than 2 weeks. Reduce this interval if the air is especially dirty.

Cleaning the filter

1. Disconnect the power supply to the unit.
2. Open and fold down the air inlet guard on the cover. The filter is held in place by the flaps screwed in at the side of the guard (Fig. 33).
3. Tilt the filter and lift it out (Fig. 33).
4. Clean the filter with a commercially available vacuum cleaner (Fig. 34). To do so, turn the dirty side so it is facing upwards.
5. Dirt can also be removed by carefully cleaning with lukewarm water and mild cleaning agents. The dirty side should be face down (Fig. 35).
6. If water is used, let the filter dry out properly in the air before fitting it back into the unit.
7. Carefully insert the filter. Ensure that it locates correctly.
8. Close the cover as described above but in reverse order.
9. Switch the power supply back on.
10. Switch the unit back on.

Cleaning the condensate pump

The indoor unit includes a built-in condensate pump for pumping the condensate to a drain at a higher level.

The pump is more or less maintenance-free. The condensate drainage lines should be checked for dirt at regular intervals. Clean them as required.

If an external pump is also used, observe the maintenance and care instructions in the separate operating instructions.

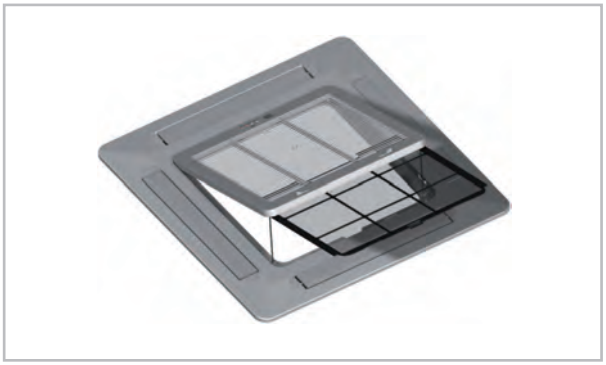

Fig. 33: Pull out the filter

Fig. 34: Cleaning with a vacuum cleaner

Fig. 35: Cleaning with lukewarm water

13 Exploded view of the unit and spare parts list

13.1 Exploded view of the unit

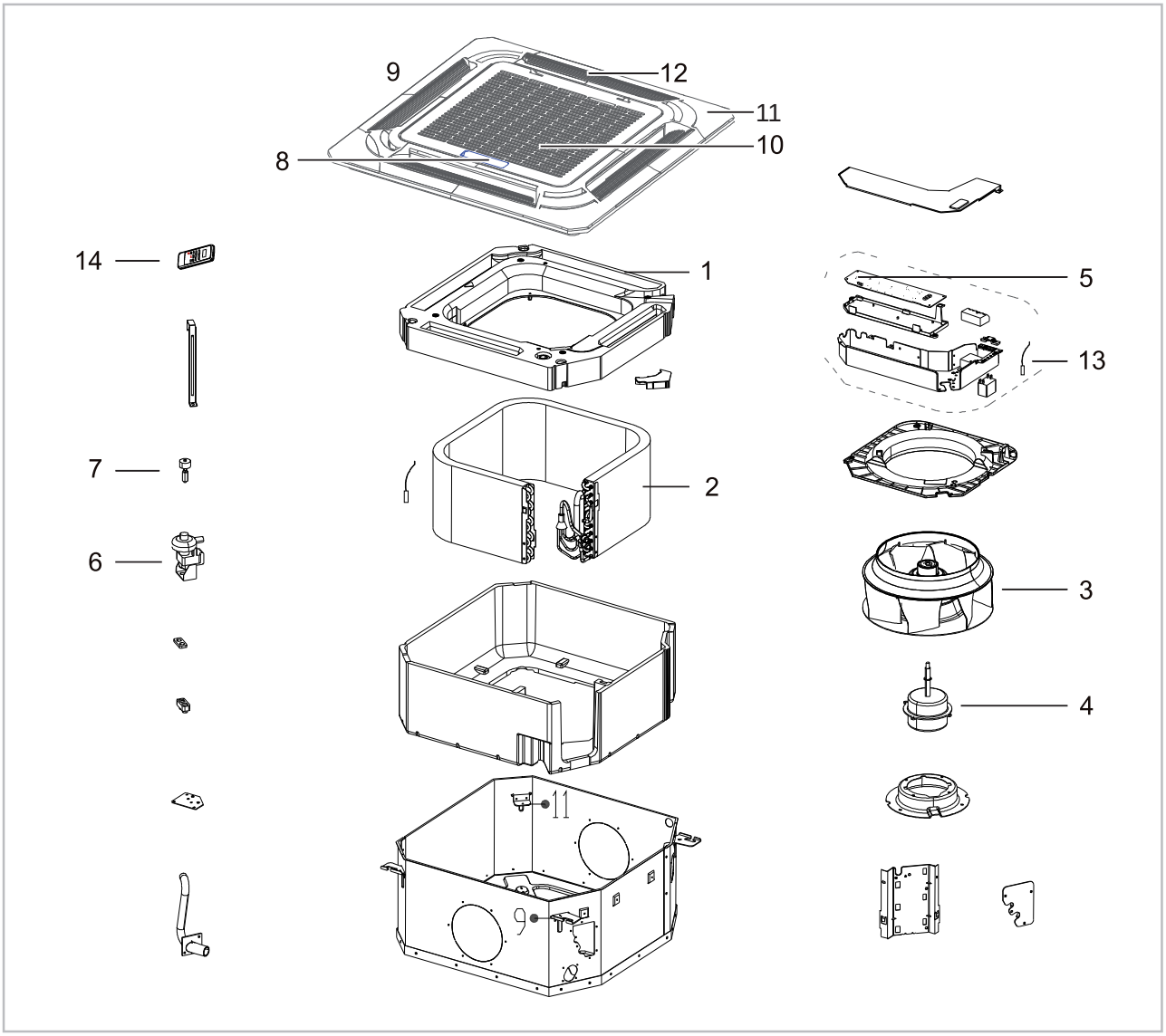

Fig. 36: Exploded view of the unit MXD 204-524

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

13.2 Spare parts list

IMPORTANT!

To ensure the correct delivery of spare parts, please always the device type with the corresponding serial number (see type plate)

No.	Designation
1	Condensate tray
2	Evaporator
3	Fan wheel
4	Evaporator fan motor
5	Control board
6	Condensation pump cpl.
7	Condensate liquid level switch
8	Display board
9	Cover, compl.
10	Air filter
11	Fin motor
12	Outlet fins, set of 4
13	Temperature probes, set
14	IR remote control

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REMKO MXD series

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