

User's Manual

MK30D, MK45D, MK60D, MK90D



Dehumidifier Cooling unit



Important user information

Intended use of equipment

Munters dehumidifiers are intended to be used for the dehumidification of air. All other uses of the equipment, or use which is contrary to the instructions given in this manual, can cause personal injury and/or machine damage.

Warranty and obligations

The warranty period is valid from the date the equipment left our factory, unless otherwise advised in writing. The warranty is limited to a free exchange including free freight of the faulty unit or components, which have failed as a result of faulty quality or defects in manufacture. Munters guarantees that the unit supplied has undergone thorough testing to ensure that it meets the specifications given here. All warranty claims must include proof that the fault has occurred within the warranty period and that the unit has been used in accordance with the specifications. All claims must specify the unit type and manufacturing number. This information is stamped on the unit identification plate, see the section Marking.

It is a condition of the warranty that the unit for the full warranty period is serviced and maintained by a qualified Munters engineer or Munters approved engineer. Access to specific and calibrated test equipment is necessary. The service and maintenance must be documented for the warranty to be valid.

Always contact Munters for service or repair. Operating faults can occur if the unit is maintained insufficiently or incorrectly.

Note!

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Safety

In this publication hazardous activities are indicated and preceded by the common hazard symbol.



WARNING!

is used in this publication to indicate a possible danger that could lead to personal injury. An instruction is normally given, followed by a short explanation, plus the possible effects if the instruction is not followed.



CAUTION!

is used in this publication to indicate a possible danger that could lead to damage to the machine or other equipment and/or cause environmental damage. An instruction is normally given, followed by a short explanation, plus the possible environmental effect if the instruction is not followed.

NOTE! *Used to accentuate supplementary information that is required for problem-free use or optimal use of the unit.*

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1 Introduction

1.1 General

The Munters MKD-series dehumidifiers are available in four (4) different sizes and they can easily be moved to locations where dehumidification of air is required.



WARNING!

It is the responsibility of the operator to read and understand this service manual and other information provided, and to use the correct operating procedures.

Read the entire manual before the initial start-up of the dehumidifier. Awareness of the correct operating procedure for the machine and its safety devices is important, to avoid damage or injury.

1.2 Unpacking of the units MK30D-MK60D



WARNING!

If the dehumidifier has been laid down during transport, it is imperative that you place it in upright position for at least 1 hour before put into service!

Follow these steps to unwrap the unit and make it ready for use

- 1 Open the cardboard box in the top
- 2 Tilt the box with the handle and wheels towards the floor
- 3 Pull the handle of the dehumidifier and wheel the dehumidifier out of the box still lying down
- 4 Tilt the dehumidifier to an upright position
- 5 Loosen the knobs, pull the handle up to the desired height and retighten the knobs
- 6 Remove the protective foil on the control panel

1.3 Unpacking of the unit (MK90D)



WARNING!

If the dehumidifier has been laid down during transport, it is imperative that you place it in upright position for at least 1 hour before put into service!

- 1 Unwrap and lift the box from the dehumidifier
- 2 Lift the dehumidifier clear of the pallet
- 3 Connect the drain outlet stub which is supplied with the dehumidifier

1.4 Marking

MK30D-MK60D: The identification plate is placed behind the bucket inside the dehumidifier.

MK90D: The identification plate is placed at the side of the dehumidifier

036345		
Model:	MK 60D	
Item No.:	351186	
Munters MK 60D		
Refrigerant output	kW	2,7
Air Volume	m3/h	725
Refrigerant/Load	kg	R407C/0,65
Max. system pressure	bar	24
Voltage	V/Hz	1N 230+PE/50
Max. charging current	A	4,9
Max. power input	kW	1,12
Operating range	C	3-32
IP	□	x4
□	□	□
□	□	□
□	□	□
Serial No.:		0502210712345
Hermetically sealed Contains fluorinated greenhouse gases covered by the Kyoto Protocol		
Munters GmbH Hans-Duncker-Strasse 8 D-21035 Hamburg Telefon 040/7 3416-01 Telefax 040/7 3416-131	Munters Europe AB Isarfjordsgatan 1 S-16426 Kista Telefon 046 8626 6363 Telefax 046 8626 6365	

1.5 Transport of the dehumidifier

NOTE! Observe local working environment rules as regards heavy lifting

Two people or a crane can move the dehumidifier. See the instructions below

2 people	Hoist/crane
Lift as shown below	Lifting using a cargo strap
	

The wheels are positioned such that the machine can be pulled upstairs without damage to the cabinet or stairs.

1.6 Stacking

Max. two dehumidifiers should be stacked on top of each other. Press the handle of the lower dehumidifier to the bottom before stacking. The handle then fits a notch on the upper dehumidifier.

1.7 Operation principle

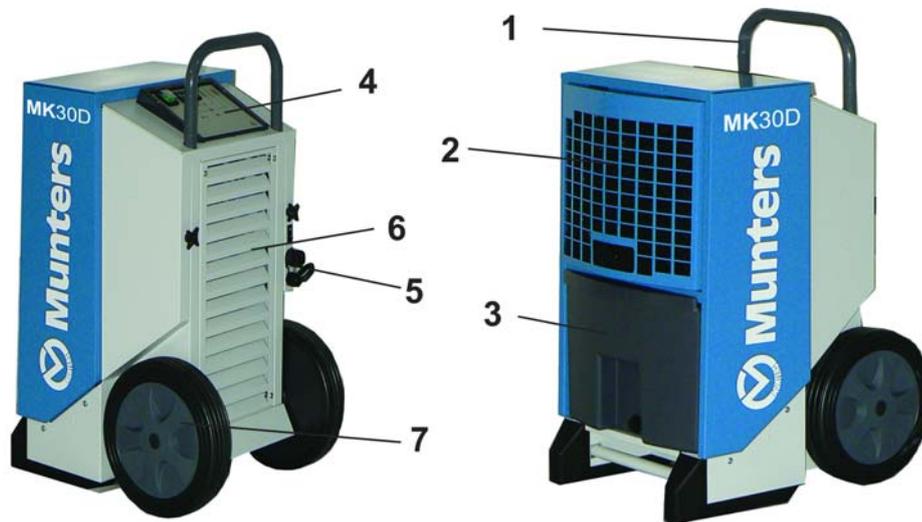
The following describes the air flow through the dehumidifier:

1. A fan draws in humid air through a filter to the dehumidifier
2. The air is cooled down and humidity/water drops are led down to the water tank
3. The air is reheated by the operation of the dehumidifier (approx. increase in temperature is +5 °C)



Due to the repeated air circulation through the dehumidifier, the air humidity is continuously reduced whereby achieving rapid but gentle drying. The dehumidifier will operate continuously if not a humidity sensor is connected.

1.8 Main components



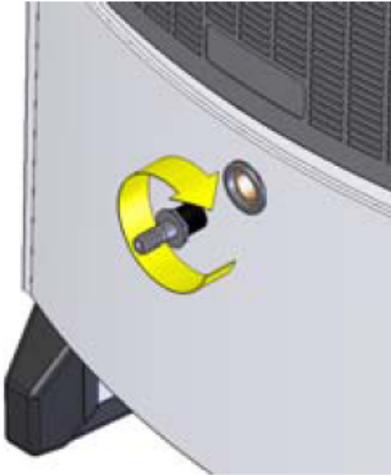
- 1 Handle
- 2 Supply air inlet with PPI filter behind the grill
- 3 Water tank (MK30D-MK60D)
- 4 Control panel
- 5 Power cable
- 6 Dry air outlet
- 7 Wheels

1.9 Water tank (MK30D-MK60D)

Water is collected in the water tank. Alternatively, you can also setup the dehumidifier for permanent drainage with the adapter for hose connection. When the water tank is full, the dehumidifier shuts off automatically. Operation of the unit is not possible while the water tank is removed.

1.10 Drip tray (MK90D)

The drip tray catches condensation and is fitted with an outlet branch that has a 1/2" tapping (enclosed)



2 Installation

Place the dehumidifier

- in the middle of a room if possible to ensure good air circulation
- where air can be sucked in freely through the filter and blown out on the opposite side
- with a minimum distance on the supply air side from a wall of about 600 mm. The minimum distance on the dry air side should be 3 m
- away from any source of heat e.g. a radiator

In addition, ensure that windows and doors are closed in the room to be dehumidified.



2.1 Electrical connection

The dehumidifier is complete with cable and plug and ready for connection to a 230V/50Hz socket with a 10A fuse or a 16A circuit breaker.

2.2 Connection of humidistat

The connection socket for the humidistat is located at the power cable entry.

The humidistat shall be mounted 1–1.5 m. above the floor and positioned so that it is not exposed directly to dry air from the unit or incoming moist air from opening and closing doors. It may not be placed close to a heat source or so that it is exposed to direct sunlight. The humidistat shall be a single stage humidistat and connected so that the controlling circuit closes as relative humidity increases. The connecting cable shall be screened and have copper conductors with a minimum cross-section area of $2 \times 0.75 \text{ mm}^2$.



2.3 Remote signals

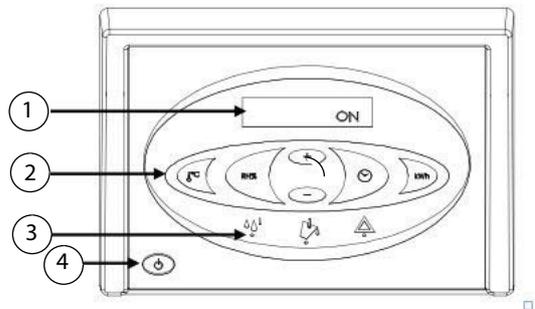
If an external alarm or run signal is required use terminal 24 and 25 which are connected by an electronic relay. The run signal to be connected at terminal 22 and 23. If an error occurs there is no longer connection and the alarm will start. Max 24V DC and 1,5mA.

3 Operation

3.1 Control panel

All functions are controlled from the integrated control panel.

- 1 Display
- 2 Function keys
- 3 Status indicators
- 4 Main switch



Main functions

- Manual or auto operation (built-in adjustable hygostat).
- External hygostat socket.
- .Display of temperature, relative air humidity, hours and kWh consumption
- Hour counter and kWh consumed without 230V connection.
- Adjustable service interval counter.

Operation described in the user guide in this manual.

3.2 Switching on/off

The table below shows operation of the on/off function and display texts

Key	Display
	ON constant operation
	INT HYG ON operation controlled by internal hygostat
	INT HYG STOP if internal hygostat set point is reached
	EXT HYG ON operation controlled by external hygostat
	EXT HYG STOP if external hygostat set point is reached
	Switch off
	The green LED indicates active dehumidification

3.3 Internal hygrostat operation

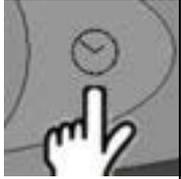
Step	Key	Feed back
Press and hold		HYG SET RHxxx% - will flash for 5 seconds. The dehumidifier will then switch to internal hygrostat controlled operation with set point (once the set point is reached, the display will show INT HYG STOP).
		Press +/- briefly to set the RH% value in during the above 5 second period. The new value will be saved after a further 5 second period after the last key is pressed
Press		HYG OFF - will flash for 5 seconds. The dehumidifier will then switch to constant operation

3.4 External hygrostat operation

If an external hygrostat is connected, the machine will automatically switch over to using it. Any adjustment of the set point must now be made on the external hygrostat. (once the set point is reached, the display will show **EXT HYG STOP**)

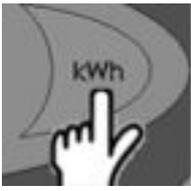
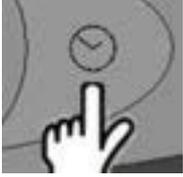
3.5 Hour counter

The built in hour counter logs the total number of operating hours (cannot be reset) and the number of hours left until the next service, which can be adjusted. The service hour counter is disabled upon delivery.

Step	Key	Feed back
Press and hold		<p>SERVICE xxxh shows the number of hours to the next authorised service. This value is saved automatically after 5 seconds of flashing, and the function will activate if not already activated. When the set number of hours for service intervals has expired, the display will switch to SERVICE. Press +/- briefly to set a new service value. The new value will be saved 5 seconds after the last key is pressed</p>
		<p>Press +/- briefly to set a new service value. The new value will be saved 5 seconds after the last key is pressed</p>
Press		<p>SET SERVICE OFF- deactivates the service timer function</p>

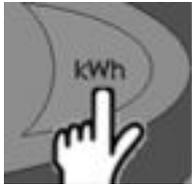
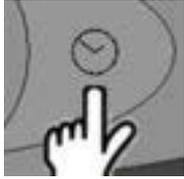
3.6 Display texts

The table below shows how to operate the operating information functions

Key	Feedback
	XX°C shows the current room temperature
	Actual RH% shows the actual relative air humidity value measured
	XX kWh , shows total energy consumption. Cannot be reset
	xxxxh shows the total number of operating hours for the machine. Cannot be reset

3.7 Text displays when not connected to mains

The machine has a built-in battery to allow reading text displays when not connected to the mains. The following texts can be read when not connected to the mains:

Key		Feedback
hold down and press once	 	Displays total energy consumption in kWh.
hold down press once	 	Shows total number of operating hours for the dehumidifier

3.8 Replacing the memory battery

If the hour counters cannot be read when disconnected from mains, it is probably due to flat memory battery. Replacement procedure:



WARNING!

Always disconnect from the mains before changing battery

	Action	
1	Slacken the screws on both side of the control panel, and carefully lift the panel up using the top edge	
2	Cut the cable tie holding the battery. Replace the battery, using a new cable tie max. 2.5 mm wide. Use Alkaline AAA batteries only Illustration of PCB with battery included in the wiring diagram on page 22.	

3.9 Error messages

An overview of possible errors which prevent normal operation.

3.9.1 MK30D-MK60D

Error messages	Illustration	Cause	Remedy
Yellow light on centre LED with emptying symbol and FULL on display . See emptying guide below, or check pump outlet		Water container is full or fault on water pump (accessory)	See emptying guide below, or check pump outlet
Red light on right warning LED HIGH TEMP on display		Pressure or temperature in high pressure element too high	Check filter and dehumidifier for dirt in airways
Red light on right warning LED AMBIENT TEMP on display		Room temperature out of normal range	Place the dehumidifier in the specified temperature range, between 3°-32°C
Red light on right warning LED SENSOR FAIL on display. One of the internal sensors is defective. Use the +/- keys to toggle between 3 possible errors		SENSOR FAIL	
		1: EVAP FAIL Evaporator thermometer defective	Requires an authorised service technician
		2: COND FAIL Condenser thermometer defective	Requires an authorised service technician
		3: ROOM FAIL The internal room thermometer is defective	Requires an authorised service technician
Red light on right warning LED LP STOP on display		Leak in cooling circuit	Requires an authorised service technician

3.9.2 MK90D

Error messages	Illustration	Cause	Remedy
Red light on right warning LED HIGH TEMP on display .		Water container is full or fault on water pump (accessory)	See emptying guide below, or check pump outlet
Red light on right warning LED HIGH TEMP on display		Pressure or temperature in high pressure element too high	Check filter and dehumidifier for dirt in airways
Red light on right warning LED AMBIENT TEMP on display		Room temperature out of normal range	Place the dehumidifier in the specified temperature range, between 3°-32°
Red light on right warning LED SENSOR FAIL on display. One of the internal sensors is defective. Use the +/- keys to toggle between 3 possible errors		SENSOR FAIL	
		1: EVAP FAIL Evaporator thermometer defective	Requires an authorised service technician
		2: COND FAIL Condenser thermometer defective	Requires an authorised service technician
		3: ROOM FAIL The internal room thermometer is defective	Requires an authorised service technician
Red light on right warning LED LP STOP on display		Leak in cooling circuit	Requires an authorised service technician

4 Maintenance and Service

The unit includes mechanical and electrical parts and the unit is often placed in a rough environment where the components are exposed to different climate conditions. Therefore the unit will need preventive maintenance on a regular basis.

Proper maintenance of the unit is necessary in order to achieve trouble-free operation. This section contains description of the recommended monthly and annual maintenance.



CAUTION!

Always disconnect the power cable from the unit before doing any preventive maintenance!

4.1 Monthly preventive maintenance (MK30D-MK60D)

Follow this procedure to carry out the monthly preventive maintenance:

- 1 Open the front grill by tilting it outwards
- 2 Remove the filter. Either rinse it with lukewarm soapy water or vacuumclean it if the filter is only a little dirty. Change the filter if it is very dirty.
- 3 Clean the water tank
- 4 Remove the two screws in each side and tilt the jacket outwards about 30°
- 5 Lift the jacket up and clear of the dehumidifier
- 6 Clean the evaporator coil by brushing with a soft brush and vacuum-clean/compressed air. Mount the jacket and put the water tank back in place **Note!** Check that the water tank is fitted correctly

4.2 Monthly preventive maintenance (MK90D)

Follow this procedure to carry out the monthly preventive maintenance:

- 1 Open the front grill by tilting it outwards
- 2 Remove the filter. Either rinse it with lukewarm soapy water or vacuum clean it if the filter is only a little dirty. Change the filter if it is very dirty
- 3 Clean the drip tray **Note!** When you refit the drip tray, make sure that the back edge of the drip tray rests on the edge inside the dehumidifier.
- 4 Remove the two screws in each side and tilt the jacket outwards about 30°
- 5 Lift the jacket up and clear of the dehumidifier
- 6 Clean the evaporator coil by brushing with a soft brush and vacuum-clean/compressed air
- 7 Mount the jacket

4.3 Annual preventive maintenance (MK30D-MK90D)

Follow this procedure to carry out the annual preventive maintenance:

- 1 Carry out the monthly maintenance as described above
- 2 Vacuum-clean the unit; be very thorough with the condenser and the evaporator. If the unit is very dirty move on to step 3 and 5 otherwise move on to step 5
- 3 Spray water based soap on the:
 - Evaporator-/condenser coil
 - Fan bladesusing a household spray or the like
- 4 Carefully clean the unit (be extra careful around the fins) with water, however, not directly on electrical components
- 5 Check the fan
- 6 Mount front- and rear jacket and water tank (Only MK30D-MKD60)
- 7 Check and tighten all cover plate screws as necessary
- 8 Check that the hour meter is running.

5 Trouble shooting

Use the table below to localise and correct problems or errors:

Problem	Possible Cause	Action
<ul style="list-style-type: none"> Dehumidifier will not start Display not switched on 	Plug not in mains socket	Check dehumidifier is connected to the mains. Check the mains socket if necessary by connecting another electrical appliance
<ul style="list-style-type: none"> Dehumidifier will not start Green light not on HYG STOP shown on display 	The hygostat has measured air humidity lower than the set point, and switched off to save power	Reduce hygostat set point, or switch to manual operation. See the section on Internal hygostat operation, chapter.3.3.
	Room temperature is below 3 °C and the dehumidifier is automatically put out of operation	Wait for the temperature to rise above 3 °C
<ul style="list-style-type: none"> Yellow light on display shows Full 	Container full or pump (accessory) blocked	Empty water container or clear pump blockage
<ul style="list-style-type: none"> Dehumidifier running Green light on SERVICE flashing on display 	Service interval set has expired	Service the product as specified in the section on service counter expiry
<ul style="list-style-type: none"> Dehumidifier running When RH% activates, the display shows SENSOR FAIL 	RH% sensor defective	Replace RH% sensor
<ul style="list-style-type: none"> kWh and hours without power not displayed 	Memory battery flat	Replace battery. See chapter 3.8

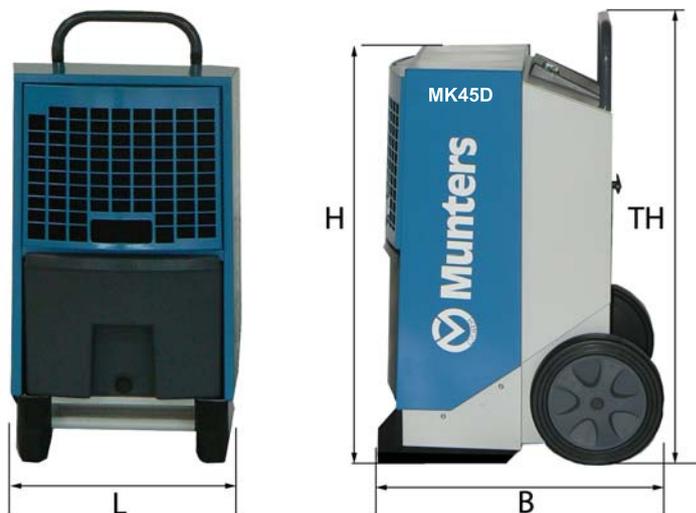
NOTE! • *If the machine is not working properly, switch off immediately!*

• *Before starting troubleshooting, wait for one minute, as the electronics could have cut off the machine for safety reasons y*

If the dehumidifier will not restart, contact Munters. This also applies if the machine runs without condensing any water. There may be a fault on the cooling circuit which will require a service technician

6 Technical Specification

6.1 Dimensions MK30D-MK60D



mm	MK30D	MK45D	MK60D
L	414	539	539
B	506	530	530
H	736	822	903
TH	1023	1190	1270

6.2 Dimensions MK90D

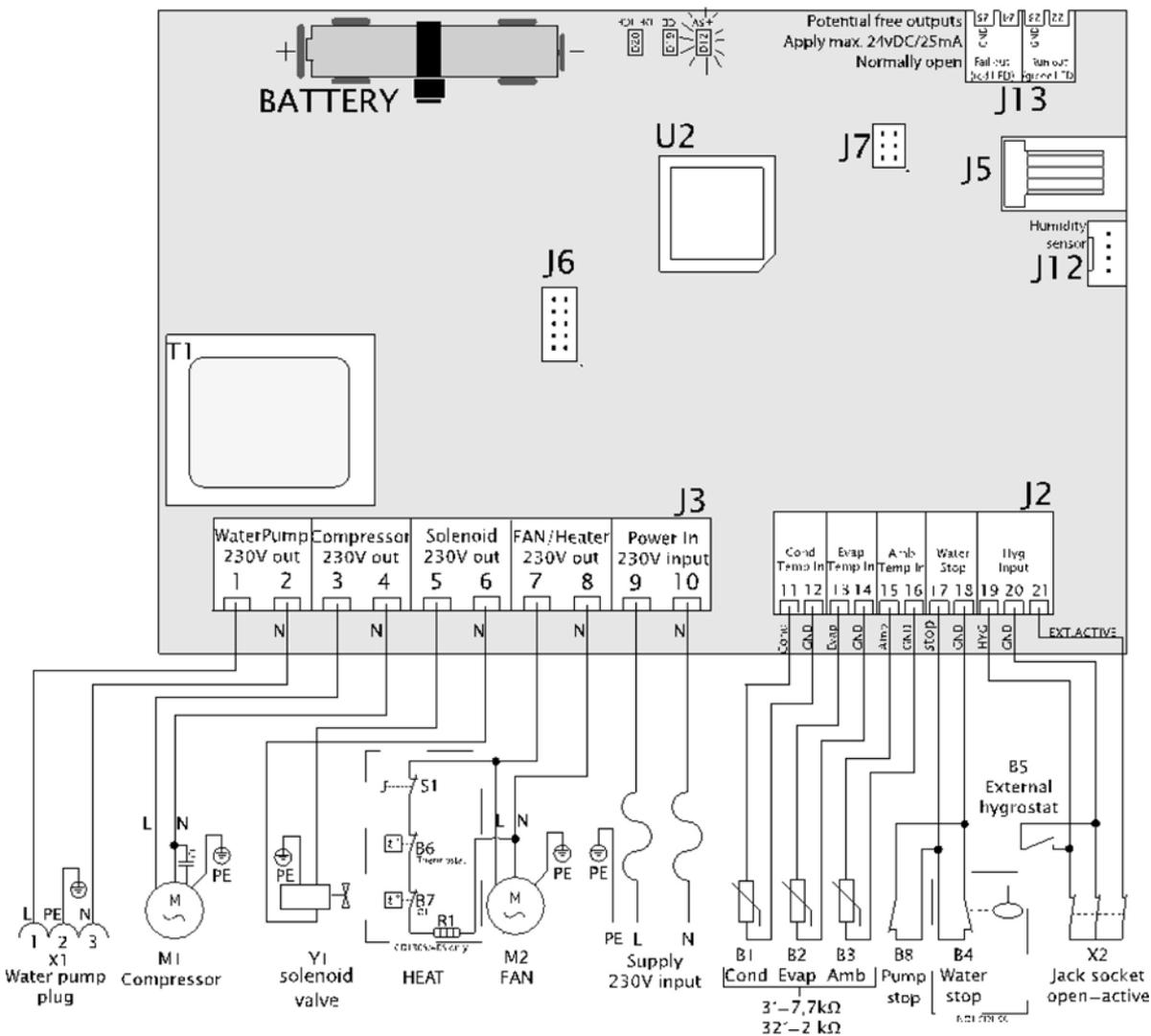


6.3 Technical data

		MK30D	MK45D	MK60D	MK90D
Operating range - humidity	%RH	40-100			
Operating range - temperature	°C	3-32			
Power supply	V/Hz	230/50			
Max. amperage	A	2,7	3,6	4,9	7,2
Max. input	kW	0,59	0,81	1,12	1,65
Air output	m ³ /h	250	350	725	1000
Refrigerant	--	R134a	R407C	R407C	R407C
Refrigerant charge	kg	0,410	0,450	0,650	1,6
Water tank capacity	l	7,1	13,8	13,8	--
Sound level 1 m distance	dB	56	59	62	62
Weight	kg	32	42	46	62
Safety class	IP	x4			
Filter	PP1	15			
kWh	%	+/- 5%			

7 Wiring diagrams

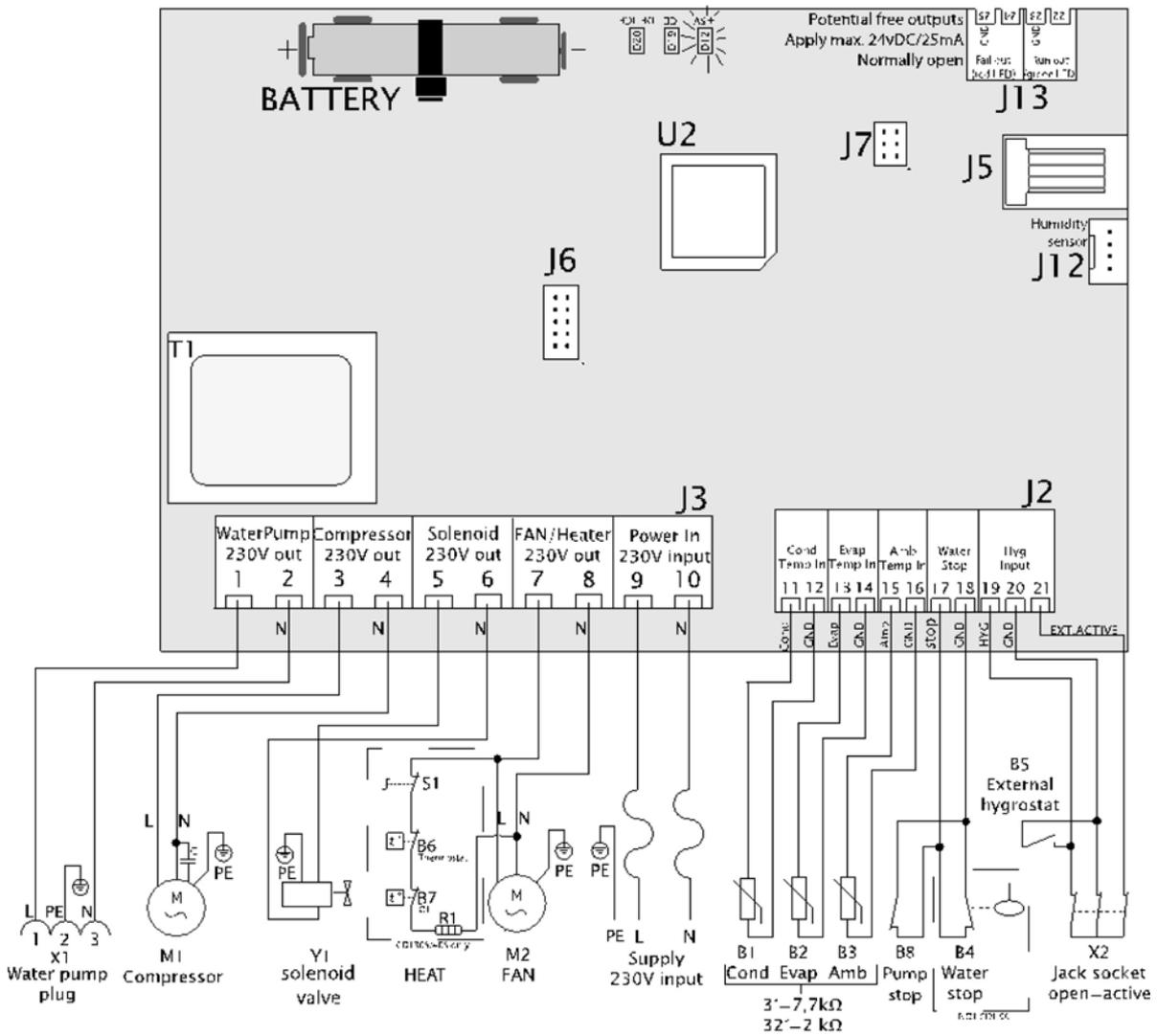
7.1 MK30D-MK60D



Description on next page

Pos	Description	Pos	Description
B1	Condensor surface temp. sensor	J6	Not in use
B2	Condensor surface temp. sensor	J7	Factory settings
B3	Ambient temp. sensor	J12	Internal hygrostat
B4	"Full water tank" sensor	J13	Extra output
B5	External hygrostat (accessory)	M1	Cooler compressor
B6	Thermostat (3OS/40S only)	M2	Fan motor
B7	Over Temperature (3OS/40S only)	R1	Heating element (3OS/40S only)
B8	External pump alarm (accessory)	S1	Heating element on/off (3OS/40S only)
D12	LED +5V DC supply control	T1	Transformer
D19	LED Ice on evaporator surface	U2	CPU
D20	LED Defrosting active	X1	Water pump plug
J2	Low voltage connections	X2	Jack plug for external hygrostat
J3	230V connections	Y1	Solenoid valve (pressure equalisation)
J5	Not in use		

7.2 MK90D

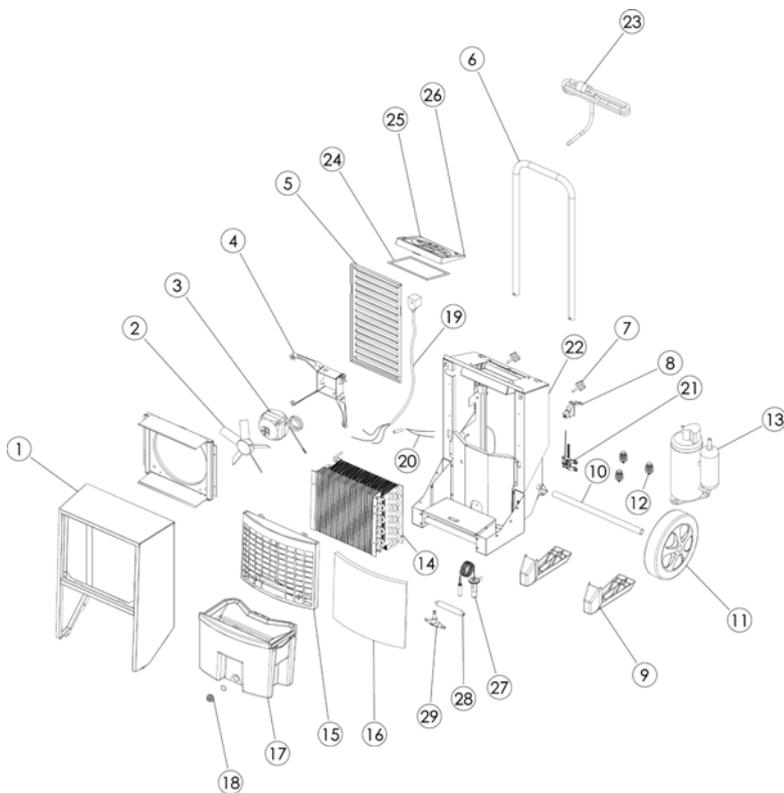


Description on next page

Pos	Description	Pos	Description
B1	Condensor surface temp. sensor	J6	Not in use
B2	Condensor surface temp. sensor	J7	Factory settings
B3	Ambient temp. sensor	J12	Internal hygostat
B4	na	J13	Extra output
B5	External hygostat (accessory)	M1	Cooler compressor
B6	na	M2	Fan motor
B7	na	R1	na
B8	External pump alarm (accessory)	S1	na
D12	LED +5V DC supply control	T1	Transformer
D19	LED Ice on evaporator surface	U2	CPU
D20	LED Defrosting active	X1	Water pump plug
J2	Low voltage connections	X2	Jack plug for external hygostat
J3	230V connections	Y1	Solenoid valve (pressure equalisation)
J5	Not in use		

8 Spare part lists

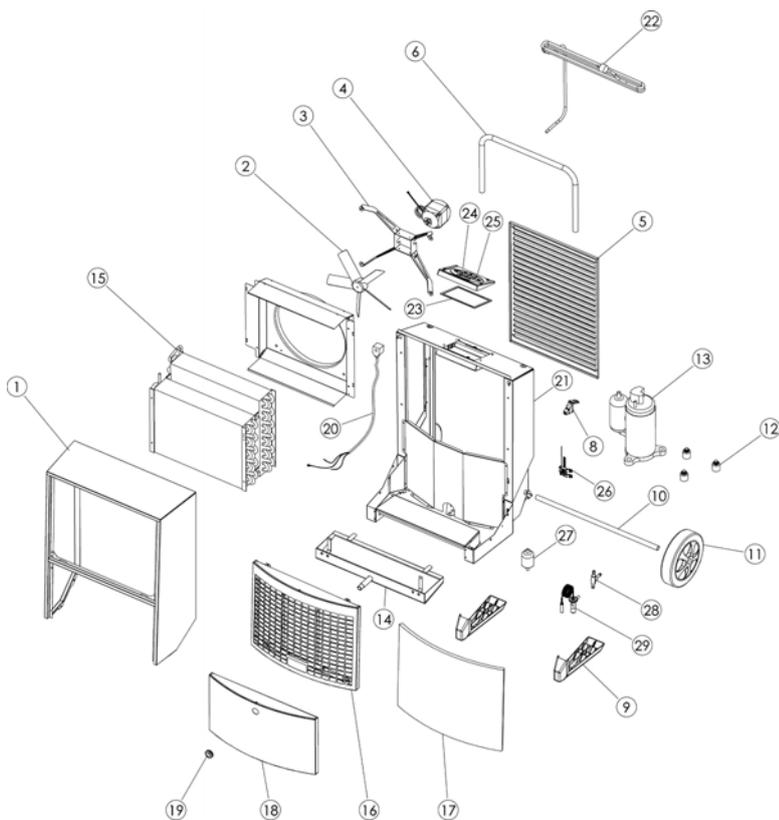
8.1 MK30D-MK60D



Pos	MK30D	MK45D	MK60D	Description
1	9077036741	9077036986	9077037110	Front cover complete
2	9077036826	9077036826	9077037101	Fan blades
3	9077032857	9077032857	9077032873	Fan motor
4	9077032854	9077032854	9077032880	Fan mount
	9077072410	9077072410	9077072398	Fan complete (pos 2,3,4)
5	9077036744	9077036960	9077037106	Exhaust grille
6	9077036762	9077036959	9077036959	Handle
7	9077036847	9077036847	9077036847	Finger screw M6/15, 2 pcs
8	9077072418	9077072418	9077072418	Mounting jacket RJ plug
9	9077036730	9077036983	9077036983	Foot — 2 pcs
10	9077036844	9077037094	9077037094	Wheel axle
11	9077036731	9077036731	9077036731	Wheels — 2 pcs
12	9077036896	9077036971	9077036971	Vibration dampers, 3 pcs. for compressor

Pos	MK30D	MK45D	MK60D	Description
13	9077036895	9077036961	9077037107	Compressor
14	9077036743	9077064863	9077037102	Condenser / Evaporator surfaces
15	9077072258	9077072260	9077072262	Front grille, including filter
16	9077036755	9077036957	9077037104	Filter, air
17	9077036737	9077036988	9077036988	Container, complete
18	9077036845	9077036845	9077036845	Threaded plug, complete
19	9077036740	9077036740	9077036740	Solenoid coil
20	9077036733	9077036733	9077036733	Water stop sensor
21	9077072416	9077072416	9077072416	Sensor set AMB / RH%
22	9077071053	9077071057	9077071057	Cable set complete incl. sensors
23	9077072414	9077072414	9077072414	Power cord 3,5 m. with plug
24	9077037173	9077037173	9077037173	Junction box gasket
25	9077071049	9077071049	9077071049	Control panel complete, incl display
26	9077072412	9077072412	9077072412	Main PCB
27	na	9077046167	9077038570	Thermo valve with clip
28	9077036758	9077037105	9077037105	Dry filter
29	9077036893	9077036893	9077036893	Solenoid valve 1 / 4"

8.2 MK90D



Pos	Number	Description
1	9077037135	Front cover complete
2	9077037125	Fan blades
3	9077032880	Fan mount
4	9077037124	Fan motor
		Fan, complete, (pos 2,3,4)
5	9077037130	Exhaust grille
6	9077037129	Handle
8	9077072418	Mounting jacket RJ plug
9	9077037134	Foot — 2 pcs
10	9077037133	Wheel axle
11	9077036731	Wheels, 3 pcs. for compressor
12	9077036971	Vibration dampers

Pos.	Number	Description
13	9077037131	Compressor
14	9077072420	Drip tray
15	9077037126	Condensor / Evaporator surfaces
16	9077072263	Front grille, including filter
17	9077037128	Filter, air
18	9077071062	Lower front plate
19	9077046627	Hose spigot 1/2"
20	9077036740	Solenoid coil
21	9077071063	Cable set complete incl. sensors
22	9077072414	Power cord 3,5 m. with plug
23	9077037173	Junction box gasket
24	9077071049	Control panel complete, incl. display
25	9077072412	Main PCB
26	9077072416	Sensor set AMB / RH%
27	9077011662	Dry filter
28	9077037136	Solenoid valve 1/4 "
29	9077038571	Thermal expansion valve with clip

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