User manual

M120



Desiccant dehumidifier

190TGB-1008-H1402

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Important user information

Intended use

Munters dehumidifiers are intended to be used for the dehumidification of air. Any other use of the unit, or use which is contrary to the instructions given in this manual, can cause personal injury and damage to the unit and other property.

No modification of the unit is allowed without prior approval by Munters. Attachment or installation of additional devices is only allowed after written agreement by Munters.

Warranty

The warranty period is valid from the date the unit left our factory, unless otherwise stated in writing. The warranty is limited to a free exchange of parts or components which have failed as a result of defects in materials or workmanship.

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 fabrication number. This information is stamped on the identification plate, see section *Marking*.

It is a condition of the warranty that the unit for the full warranty period is serviced and maintained as described in section *Service and maintenance*. The service and maintenance must be documented for the warranty to be valid.

Safety

Information about dangers are in this manual indicated by the common hazard symbol:



WARNING!

Indicates a possible danger that can lead to personal injury.



Indicates a possible danger that can lead to damage to the unit or other property, or cause environmental damage.

NOTE! Highlights supplementary information for optimal use of the unit.

Conformity with Directives

The dehumidifier is in conformity with the essential safety requirements of the Machinery Directive 2006/42/EC, the Low Voltage Directive 2006/95/EC, the RoHS Directive 2011/65/EC and the EMC Directive 2004/108/EC. The dehumidifier is manufactured by an ISO 9001:2008 accredited manufacturing organisation.

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NOTE! This manual contains information which is protected by copyright laws. It is not allowed to reproduce or transmit any part of this manual without written consent from Munters.

Please send any comments regarding this manual to:

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1 Introduction

1.1 About this manual

This manual is written for the user of the dehumidifier. It contains necessary information for how to install and use the dehumidifier in a safe and efficient way. Read through the manual before the dehumidifier is installed and used.

Contact your nearest Munters office if you have any questions regarding the installation or the use of your dehumidifier.

This manual must be stored in a permanent location close to the dehumidifier.

1.2 Unintended use

- The dehumidifier is not intended for outdoor installation.
- The dehumidifier is not intended for use in classified areas where explosion safety compliant equipment is required.
- The dehumidifier must not be installed near any heat generating devices that can cause damage to the equipment.



Do not sit, stand, or place any objects on the unit.

1.3 Safety

Every measure has been taken in the design and manufacture of the dehumidifier to ensure that it meets the safety requirements of the directives and standards listed in the EC Declaration of Conformity.

The information in this manual shall in no way take precedence over individual responsibilities or local regulations.

During operation and other work with a machine it is always the responsibility of the individual to consider:

- The safety of all persons concerned.
- The safety of the unit and other property.
- The protection of the environment.

The types of dangers that are indicated in this manual are described in section Important user information.



WARNING!

- The unit must not be splashed with or immersed in water.

- All electrical installations must be carried out by a qualified electrician and in accordance with local regulations.

- The unit must be connected to an earthed electrical outlet.

- Do not connect the unit to other mains voltage than specified on the identification plate.
- Do not operate the unit if the power plug or cord is damaged, risk of electrical shock.

- Do not pull the plug with wet hands, risk of electrical shock.

- Do not insert fingers or any other objects into the air vents, rotating fans are inside.
- Do not cover the unit as that can block air intake or outlet and cause a fire.
- If the unit has overturned, cut the power immediately.

- Always contact Munters for service or repair.

1.4 Marking



Figure 1.1 Identification plate position



Figure 1.2 Identification plate

2 Dehumidifier design

2.1 Product description

The dehumidifier is designed to efficiently dehumidify air. Its very compact construction incorporates sections held together by four bolts.

The sections contain fans that are driven by a common motor, a direct gear driven desiccant rotor and a reactivation airflow heater. The two end casings contain distribution chambers with isolated sections that provide a precise balance for dehumidification and reactivation airflows. Its rugged casing is constructed from corrosion resistant die cast aluminium.

The electrical equipment complies with the EN 60204-1 standard. The dehumidifier is manufactured according to uniform European standards and the established requirements for CE-marking.

2.2 Principle of operation

The desiccant rotor is the adsorption dehumidifying component in the unit. The rotor structure is comprised of a large number of small air channels.

The desiccant rotor is made of a composite material that is highly effective in attracting and retaining water vapour. The rotor is divided in two zones. The airflow to be dehumidified, **process air,** passes through the largest zone of the rotor and then leaves the rotor as **dry air.** Since the rotor rotates slowly, the incoming air always meets a dry zone on the rotor, thus creating a continuous dehumidification process.

The airflow that is used to dry the rotor, **reactivation air**, is heated. The reactivation air passes through the rotor in the opposite direction to the process air and leaves the rotor as **wet air** (warm, moist air). This principle enables the dehumidifier to work effectively, even at freezing temperatures.



1. Dry air

- 2. Reactivation air
- 3. Process air
- 4. Wet air
- A. Rotor
- B. Filter
- C. Process fan
- D. Heater
- E. Fan motor
- F. Reactivation fan
- G. Filter

Figure 2.1 Principle of operation

3 Transport, inspection and storage

3.1 Transport



Figure 3.1 Handles

If possible, use a pallet loader to move the dehumidifier. Use the two handles in the casing to lift it (see *8.3, Technical data* for weight data.)

Use the original packaging when shipping the unit.

3.2 Inspection of delivery

- 1. Inspect the delivery and compare with the delivery note, order confirmation or other delivery documentation. Make sure that everything is included and nothing is damaged.
- 2. Contact Munters immediately if the delivery is not complete in order to avoid installation delays.
- 3. If the unit is to be put into storage prior to installation, see section *Storing the equipment*.
- 4. Remove all packaging material from the unit, and make sure that no damage has occurred during transportation.
- 5. Any visible damage must be reported in writing to Munters within 5 days and prior to installation of the unit.
- 6. Dispose of the packaging material according to local regulations.

3.3 Storing the equipment

Follow these instructions if the dehumidifier is to be stored prior to installation:

- Place the dehumidifier in an upright position on a horizontal surface.
- Re-use the packaging material to provide protection for the unit.
- Protect the dehumidifier from physical damage.
- Store the dehumidifier under cover and protect it from dust, frost, rain and aggressive contaminants.

4 Installation

4.1 Safety

WARNING!

Do not connect the unit to other mains voltage than specified on the identification plate.

The unit must be connected to an earthed electrical outlet.

Do not operate the unit if the power plug or cord is damaged.

CAUTION!

Do not sit, stand, or place any objects on the unit.

4.2 Site requirements

The M120 is intended for indoor installation. The unit should be placed in an upright position horizontally standing on fixing lugs on a level surface. Suitable wall bracket (article no. 19030113) or floor foundation fittings (article no. 19020851) can be obtained as optional extras, see *Figure 4.1*.

When the dehumidifier is to be out of use for an extended period, the hose connections should be removed as shown in *Figure 4.3*.



Figure 4.1 Wall bracket (option)

Figure 4.2 In operation

Figure 4.3 Not in use

1 = Fixed duct 2 = Flexible hose

Avoid installing the dehumidifier where there is a risk of water entering the unit, or in a very dusty environment.

For unit and service dimensions, see section 8.1, Dimensions and service space.

NOTE! It is important that the intended installation site meets the requirements in order to achieve the best possible performance and trouble-free operation.

NOTE! Check that the unit is level after the complete installation. If required the unit can be bolted to the floor using the fixing holes in the bottom of the unit.

4.3 Connection of ducts and hoses

Follow the instructions below when attaching ducts or flexible hoses to the air connections. The process and reactivation air inlet and dry air outlet can be connected to a duct system or be used with free inlet and outlet.

The wet air outlet must always be connected to a duct or hose, which must be fitted at a downward angle (away from the dehumidifier) so that condensation is drained.

- Duct length must be kept as short as possible to minimise static pressure loss.
- All duct and hose connections must be air tight and vapour tight to ensure full performance.
- The wet air duct or hose must be mounted at a downward angle so that condensation can be drained. The wet air hose or duct must have suitable drainage at low temperatures to prevent pooling of condensate. Alternatively, condensation can be avoided by insulating the duct with at least 25 mm of insulation.
- Cover the duct opening for outdoor air with mesh to prevent birds and rodents from entering the unit. Position the opening so that rain and snow cannot enter the duct.
- The wet air duct or hose must be corrosion resistant and able to withstand temperatures up to 70 °C.
- The wet air is normally transported outdoors. In large premises where the dehumidifier is outside of the space to be dehumidified, the wet air can be led away near the unit. Position the outlet so that the wet air does not blow towards moisture-sensitive objects.
- The minimum distance between the reactivation inlet or wet air outlet and the wall is 0.5 m.
- The dry air outlet should be connected either to a duct system or to a short pipe, about 1000 mm, to stop rainwater or flushing water etc. from entering the dehumidifier. If this step is taken the unit will meet with the protective class IP44.

CAUTION!

If there is a risk of freezing temperatures, the wet air ducts must be insulated.

NOTE! Noise reduction can be achieved by connecting ducts to the dehumidifier.



Figure 4.4 Required duct works, side view

- 1 Dry air
- 2 Reactivation air
- 3-Wetair
- 4 Process air



Figure 4.5 Required duct works, front view

- A Wire screen mesh approx. 10 mm
- B Removable rubber sleeve
- C Rotor inspection opening

Included with the delivery is a 2.5 m long power cable with a plug for connection to an earthed outlet. The voltage and frequency are specified on the unit identification plate, see section *1.4, Marking*.

4.5 Continuous fan operation

If continuous fan operation is required remove the cover plate to the right of the humidistat socket, see *Figure 4.6*. Set switch B to the down position. Refit the cover plate.

4.6 Connecting the humidistat



Figure 4.6 Connecting the humidistat

When the dehumidifier is to be controlled by a humidistat, remove the switch cover (A), move the switch to the AUT position and replace the cover. On delivery the switch is set to the MAN position. The humidistat is connected by inserting the humidistat plug in to the socket marked HYG located next to the terminal block cover.

A room humidity sensor is to be mounted 1-1.5 m above the floor. It must be positioned so that it is not directly exposed to dry air from the unit or to humid air flowing in through opening doors. Position it away from heat sources and direct sunlight.

The humidistat must be a single-stage humidistat and connected so that the control circuit closes when relative humidity increases. The connection cable must be screened and equipped with a copper conductor with a minimum cross-section area of 2×0.75 mm².

Follow the instructions below to assemble and connect the humidistat connection kit (Article No. 19024039E).

CAUTION!

We recommend that only a qualified electrician should connect the humidistat plug to the cable.





Figure 4.7 Connection of leads and humidistat connection kit assembly

A - Lead connections

B - Screen connections

- 1. Connect the leads to pins 1 and 2, and the screen to the earth pin. Lead connections
- 2. Affix the terminal (2) to the plug (1)
- 3. Tighten the terminal screws (3)
- 4. Affix the cover (4) to the plug (1)
- 5. Affix the flange (5) to the cover (4)

4.7 Reactivation airflow adjustment

Estimate the pressure drop in the duct system for reactivation and wet air according to the following:

- Each metre length of Ø 80 mm duct gives a pressure drop of 1.0 Pa (0.1mm wg).
- Each 90° or 45° bend on an Ø 80 mm duct gives a pressure drop of 1.0 Pa (0.1mm wg)
- Outlet Ø 80 mm (possibly with a mesh screen) gives a pressure drop of 20.0 Pa (2.0 mm wg)
- If the total pressure drop exceeds 100 Pa (10 mm wg) the orifice plate in the inlet should be removed.

In doubtful cases a check measurement of the airflow should be made as follows:

- Connect a manometer to the pressure tapping point for the reactivation air. If the dehumidifier is connected to the duct, a hole is made in the duct near the dehumidifier to provide a connection point for the manometer, see *Figure 4.8*.
- Read the pressure drop on the manometer and follow the instructions in *Table 4.1*.

Measured p	Demonto		
at 50 Hz	at 60 Hz	Remarks	
80-180 Pa (8-18 mm wg)	160-280 Pa (16-28 mm wg)	Allowed Airflow	
Less than 80 Pa (8 mm wg)	Less than 160 Pa (16 mm wg)	Insufficient Airflow (REMOVE ORIFICE PLATE)	

Table 4.1 Pressure drop over orifice plates



Figure 4.8 Measuring the pressure drop

Manometer (eg.u-tube)

Orifice Plate 50Hz or 60Hz

30

50-

0.

40 m³/h

20

15

10

.0

10

Airflow, I/s

25 mm WG



Figure 4.9 Reactivation airflow as a function of the pressure drop over the orifice plate (shaded area=permitted area).

10 12

Airflow, I/s

50-

0<u>1</u>

5 Operation

5.1 Safety

WARNING!

Do not operate the unit if the power plug or cord is damaged.

Do not insert fingers or any other objects into the air vents.

The unit can restart automatically without warning following a power failure.

CAUTION!

Do not sit, stand, or place any objects on the unit.

5.2 Start

Remove the protective covers from both inlet and outlet openings. (At delivery all openings are sealed with plastic protective covers).

1. Check that there are no obstructions in either the duct systems inlet and outlet openings.

2. Check that the orifice plate in the reactivation air intake is marked for the correct frequency (Hz). On delivery the orifice plate for 50 Hz is fitted.

3. Check the identification plate to make sure that the dehumidifier delivered is for the voltage and frequency you require.

4. If continuous fan mode is required see section 4.5, Continuous fan operation.

5. Connect the dehumidifier to the mains power and check that it is operating. The rotation of the rotor can be viewed by removing the plastic plug on the side of the unit, see *Figure 4.5*.



Figure 5.1 Unit at delivery

1 - Protective covers

$NOTE! \ \textit{The dehumidifier will restart automatically after a power cut.}$

5.2.1 Manual operation

Set the MAN-AUT selector switch to position MAN.



5.2.2 Automatic operation

Set the MAN-AUT selector switch to position AUT.

5.3 Stop the unit

To stop the unit, disconnect it from the power source or use the external circuit breaker.

6 Service and maintenance

6.1 General

WARNING!

- Do not attempt to repair, dismantle or modify this unit.

- Remove the mains plug from the socket before starting any maintenance work.

The dehumidifier is designed for continuous use over a long period of time with a minimal amount of supervision. Under normal operating conditions, maintenance requirements are minimal. The service interval depends mainly on the operational conditions and working environment.

NOTE! It is recommended to contact Munters for service or repair. Operating faults can occur if the unit is maintained insufficiently or incorrectly.

Munters Service can offer a service plan adapted to suit the conditions of a specific installation. See contact addresses on the back page of this manual.

6.2 Maintenance schedule

Munters recommends the following maintenance schedule. The schedule contains inspection and maintenance procedures as well as the recommended intervals for units used under normal operating and environmental conditions. If the process air contains a lot of dust, preventative maintenance should be performed at shorter intervals than those specified below.

Component	Inspection / I	Inspection / Maintenance				
Component	3-6 months	12 months				
Process and Reactivation filter.	Clean the filter, grating, retainer and cover ⁽¹⁾ and change filter if needed.	Change the filter and clean the grating, retainer and cover.				
Unit housing.	Check for physical damage and clean unit exterior if necessary.	Check for physical damage and clean unit exterior if necessary.				
Humidistat.	N/A	Check sensor functions and calibrate if necessary. Contact your Munters product service department as required				
(1) When replacing the filter cassette, check that the arrow is pointing towards the dehumidifier.						

Table 6.1 Maintenance schedule

A. Screw B. Cover

C. Grating D. Retainer

F. Fan inlet cone

E. Filter (article no. 19013498)

6.3 Filter replacement

M120



Figure 6.1 Filter assembly (reactivation side)

- 1. Remove the screws (A) holding the cover.
- 2. Remove the cover (B) and take out the filter cassette (C, D, E).
- 3. Release the retainer (D) and remove the filter (E) from the grating (C).
- 4. Clean the grating, retainer and cover.
- 5. Mount the new filter and grating in the retainer.
- 6. Mount the filter cassette and tighten the screws (A).
- 7. Repeat the procedure for the process filter.

7 Fault tracing

Fault symptom	Possible Cause	Corrective action
Unit has stopped.	Failure of the electrical supply	Check power supply to the unit .
	The thermostat on the heater has tripped because of a clogged filter or any other	Press the reset button on the thermal cut-out after removing the obstruction
	obstruction in the duct system.	Check that the temperature at the reactivation air intake does not exceed 45°C.
		Check that the supply voltage is not more than 10% above that specified on the data plate.
		Check that the impeller runs freely.
		Check the motor's power consumption (maximum 0.26A).
		Set the operating mode to manual mode and check that the dehumidifier starts
	Humidistat switched to automatic mode by mistake with no humidistat connected.	Set the operating mode to manual mode and check that the dehumidifier starts
	Humidistat fault (automatic modes).	Set the operating mode to manual mode and check that the dehumidifier starts. If the unit starts, the humidistat is probably faulty.
		Check the humidistat by seeing if the dehumidifier starts when the humidistat setpoint is reduced. Reset the humidistat set point after the check. Calibrate the humidistat if necessary or replace it.
Dehumidification capacity has decreased.	Rotor stopped	Remove plastic plug from the inspection opening, situated on the side of the unit, and check that the rotor is turning (approximately 8 rph)
	Reactivation airflow incorrect	Check reactivation airflow as specified under section 4.7, Reactivation airflow adjustment.
	Reactivation heater not operating	Check that the reactivation heater is operating by measuring the power consumption. Example: At 230V 50Hz the total power consumption is approximately 5.7A.

Table 7.1 Fault tracing list

8 Technical specification

8.1 Dimensions and service space



Width (A)	Width (B)	Height(C)	Diam. (D)	Diam. (E)	Service- space (F)	Weight
425 mm	481 mm	425 mm	100 mm	80 mm	1000 mm	26 kg

Table 8.1 Dimension and weight

8.2 Capacity diagram

Approximate capacity in kg/h. For detailed information, please contact your nearest Munters location.



Figure 8.1 Capacity diagram

- 1. Temperature, process air (°C)
- 2. Relative Humidity, process air (% RH)

3. Dehumidification capacity (kg/h) (moisture removal (kg/hour)

8.3 Technical data

Process air ⁽¹⁾			
Free-blowing air 50 Hz (m³/h)	180		
Free-blowing air 60 Hz (m³/h)	210		
Rated airflow (m ³ /h)	120		
Available static pressure 50 Hz (Pa)	200		
Available static pressure 60 Hz (Pa)	360		
Fan motor power (kW)	0,030		
Reactivation air ⁽¹⁾			
Rated airflow (m ³ /h)	35		
Available static pressure (Pa)	100		
Fan motor power (kW) ⁽²⁾	-		
Total power, voltage and current			
Total Power (kW)	1,3		
Voltage (V)	115	220	230
Rated current 50 Hz (A)	10,9	6,3	5,7
Rated current 60 Hz (A)	11,6	6,6	6,0
Reactivation air heater			
Heater power (kW)	1,2		
Temperature increase across heater	100		
Miscellaneous data			
Drive motor power (W)	18		
Max noise level unducted (dBa)	48		
IEC protective class	IP44		
Impact test acc. to IEC-60068-2-27 (3)	20 G for 25 ms		
Rotor type	HPS		
Weight (kg)	26		
Environmental conditions			
Operating temperature (°C)	-40 +40		
Maximum installation altitude, above sea level (m)	2000		
Transport and storage temperature (°C)	-40 +70		
(1) Figures quoted are based on fan inlet temperature of 20 $^\circ\text{C}$, and an air definition of the temperature of 20 $^\circ\text{C}$, and the temperature of 20 $^\circ\text{C}$.	ensity of 1,2 kg/m ³	·	·
(2) Common motor for process and reactivation fans			
(3) Resistance checked in 3 directions			

Table 8.2 Technical data

8.4 Sound data

N	Correction Kok dB at ISO-band centre frequency, Hz									
Noise path	dB(A)*	Lwt	63	125	250	500	1000	2000	4000	8000
А	66	76	-5	-5	-6	-11	-28	-24	-27	-27
В	62	68	-14	-7	-3	-8	-16	-13	-17	-22
С	60	66	-13	-10	-3	-8	-14	-13	-18	-26
D	56	57	-22	-18	-11	-3	-7	-7	-16	-23

Table 8.3 Sound data



SYMBOLS:

 L_{wt} = Total noise level dB (rel. 10⁻¹²W)

 L_w = Noise power level in octave band dB (rel. 10⁻¹²W)

 K_{ok} = Correction for calculating $L_w(L_w = L_{wt} + K_{ok})$

 $dB(A) = Rated noise level at 100m^2 room absorption$

A = Noise path to dry air system

B = Noise path to the surroundings. Freeblowing

C = Noise path to the surroundings. Dry air duct, length 1 m

D = Noise path to the surroundings. Duct connected.

* Equivalent sound absorption area, 10m²

9 Scrapping

The unit must be scrapped in accordance with applicable legal requirements and regulations. Contact your local authorities.

The rotor material is not combustible, and should be deposited like glass fibre materials.

If the rotor has been exposed to chemicals that are dangerous to the environment the risk must be assessed. The chemicals can accumulate in the rotor material. Take the necessary precautions to comply with applicable legal requirements and regulations.

WARNING!

If the rotor is to be cut in pieces, wear a suitable CE marked face mask selected and fitted in accordance with the applicable safety standards to protect from the dust.



10 Contact Munters

AUSTRIA	Munters GmbH Air Treatment Zweigniederlassung Wien	Eduard-Kittenberger-Gasse 56, Obj. 6 A-1235 Wien
BELGIUM	Munters Belgium nv Air Treatment	Blarenberglaan 21c B-2800 Mechelen
DENMARK	Munters A/S Air Treatment	Ryttermarken 4 DK-3520 Farum
FINLAND	Munters Finland Oy Kuivaajamyynti	Hakamäenkuja 3 FI-01510 VANTAA
FRANCE	Munters France SAS Air Treatment	106, Boulevard Héloise F-95815 Argenteuil Cedex
GERMANY	Munters GmbH Air Treatment-Zentrale	Hans-Duncker-Str. 8 D-21035 Hamburg
ITALY	Munters Italy S.p.A Air Treatment	Strada Piani 2 I-18027Chiusavecchia IM
NETHERLANDS	Munters Vochtbeheersing	Energieweg 69 NL-2404 HE Alphen a/d Rijn
POLAND	Munters Sp. z o.o. Oddzial w Polsce Air Treatment	ul. Swietojanska 55/11 81-391 Gdynia
SPAIN	Munters Spain SA Air Treatment	Europa Epresarial. Edificio Londres. C/Playa de Liencres 2. 28230 Las Matas. Madrid
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