

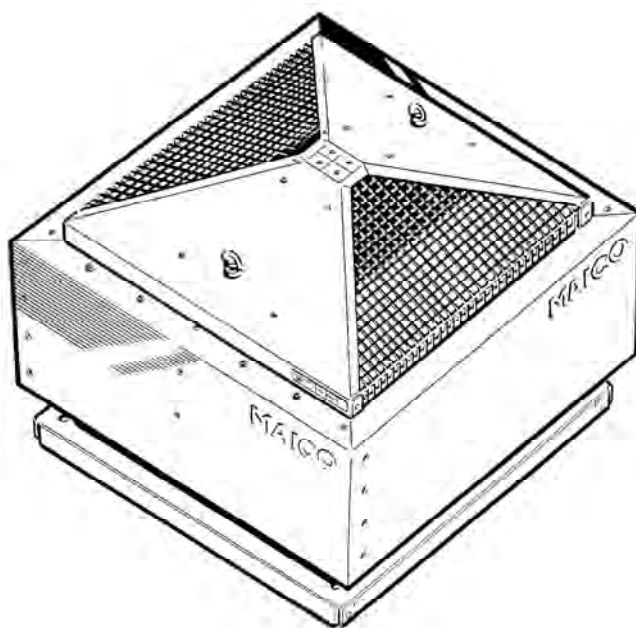
Dachventilatoren mit Regelung
Roof fans with control unit



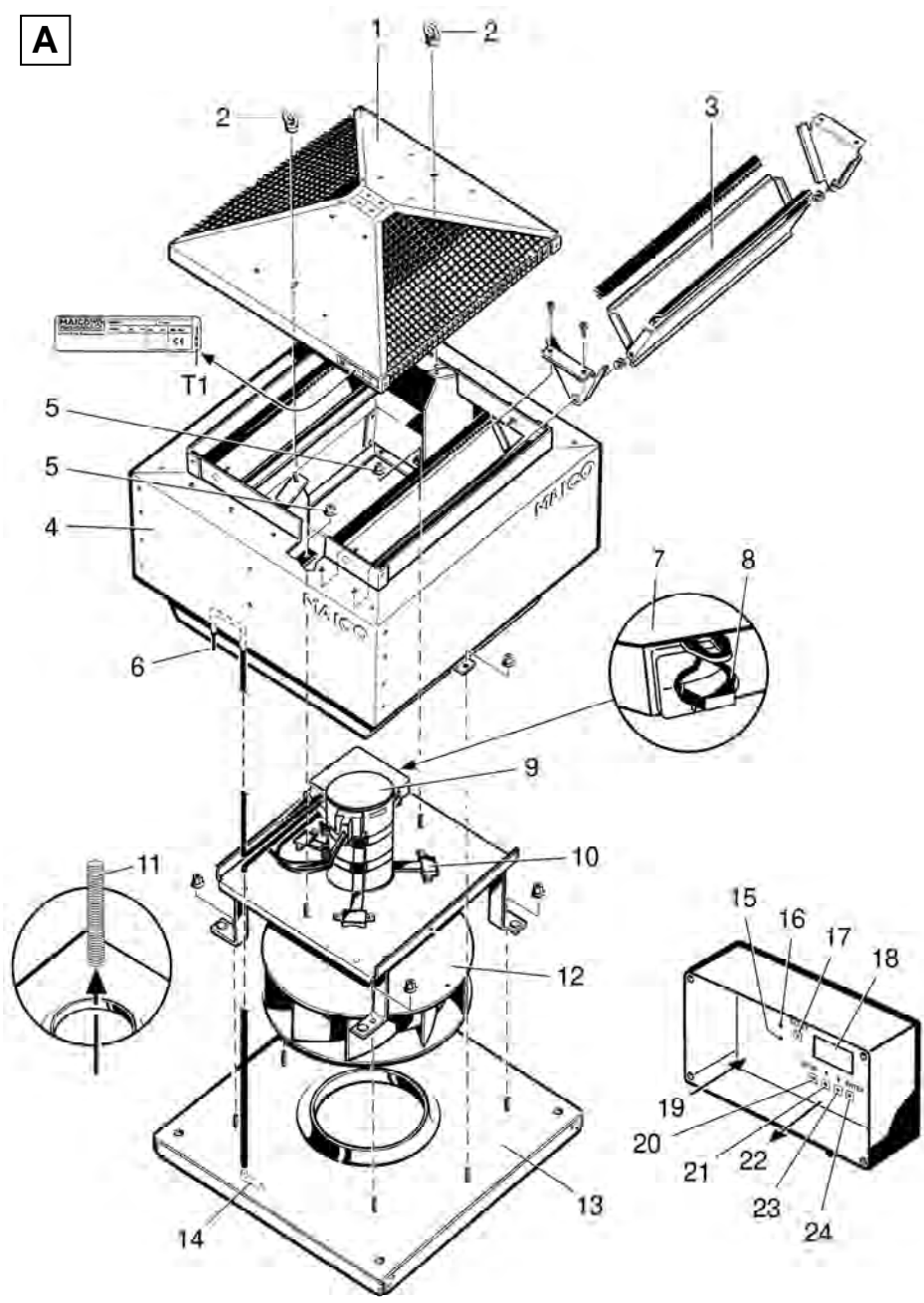
GRD 22
GRD 25
GRD 31

Montage- und Betriebsanleitung
Mounting and Operating instructions

(D) (GB)



A



GRD 22, GRD 25 and GRD 31

Table of contents

1. Scope of delivery	11
2. Warning symbols used.....	11
3. Product information	11
Product description	12
4. Technical data.....	12
Dimensions and weight.....	12
Maximum values for volumetric flows and static pressure.....	12
5. Environmental conditions and operating limits.....	12
6. Essential safety instructions	13
General safety instructions.....	13
Intended use	13
Predictable misuses	13
Safe and correct practices during operation.....	13
7. Transport and storage.....	13
8. Installation preparation.....	13
Requirements at installation site	13
Installation preparations	14
Installation tips	14
9. Assembly	14
GRD unit	14
Control unit.....	15
Electrical connection	15
Start-up	16
10. SETUP	
(only for trained specialists).....	16
CPs menu	16
CAs menu	16
11. Maintenance	17
12. Cleaning.....	17
13. Alarms.....	18
14. Fault rectification.....	19
15. Dismantling	19
16. Disposal.....	19
17. Wiring diagram.....	20

1. Scope of delivery

GRD.. Roof fan with control unit, pressure connection, kit operating instructions.

2. Warning symbols used

Warning symbols



Danger to life

Non-observance can lead to death or serious bodily injuries.



Danger of injury

Non-observance can lead to minor or more serious bodily injuries.

NOTICE

Property damage

Non-observance can lead to damage to property.

Other symbols



INFO symbol: Text passages marked with this symbol contain important information and tips.



List symbol: Here you will find important information about the corresponding subject.



Request for action symbol:

Here you are asked to take action. Follow the instructions given in the order stated.

3. Product information

Fig. A: GRD unit

- 1 Unit roof
- 2 Ring nut
- 3 Shutter
- 4 Housing
- 5 Nut
- 6 Pressure line
- 7 Terminal box
- 8 Lockable service switch
- 9 Motor
- 10 Motor mounting with bracket
- 11 Empty ducting
- 12 Impeller
- 13 Roof flashing
- 14 Pressure line
- T Rating plate

Acknowledgements

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This instruction is a translation of the German original operating instructions.
We are not responsible for mistakes or printing errors and retain the right to make technical modifications without giving prior notice.

Fig. B Control unit

- 15 Alarm indicator light, (red LED)
- 16 ON = Operating display (green LED)
- 17 RESET button
- 18 Display, (display field)
- 19 Power cable (W3)
- 20 SETUP button
- 21 ↑ - Selector button
- 22 Shielded control cable (W2) to the GRD unit, 6-core
- 23 ↓ - Selector button
- 24 ENTER button

Product description

GRD.. units

These roof fans are used for the controlled extraction of air from apartments and rooms, for example for:

- central air extraction with volumetric flows that differ in each apartment (Centro System) or
- air extraction from rooms and manufacturing areas

GRD units are developed for use in outdoor areas (protection class IP X5).

GRD units are mounted on a roof socket, see accessories for flat, pitched, corrugated or trapezoidal roofs. They have a vertical, upward air outlet and are equipped with airstream-operated shutters.

The GRD unit is operated with the supplied control unit (electronic constant volumetric flow and constant pressure control unit). Here, the specialist installer can make important settings and adjust the unit to the operating parameters.

GRD units can be separated locally from the mains using the service switch [7], for cleaning purposes for example. After removing the unit roof [1], the lockable service switch [7] must be set to "0" and secured with a padlock.

Control unit

The control unit can be operated either as a constant volumetric flow controller (operating mode CAs) or as a constant pressure controller (operating mode CPs).

- CAs: Constant volumetric flow, 2 different volumetric flows can be set, e.g. for day/night operation.
- CPs: Constant pressure, 2 different pressures can be set, e.g. for exhaust air systems compliant with DIN 18017.

The integrated automatic soft start and soft stop ensures that the fan starts up and stops in a controlled manner.

4. Technical data

See rating plate.

Dimensions and weight

- Please refer to the valid catalogue for dimensions.
- Weight:
 - GRD 22: 27 kg
 - GRD 25: 31 kg
 - GRD 31: 42 kg

Maximum values for volumetric flows and static pressure

	CAs	CPs
GRD 22	1400 m ³ h	400 Pa
GRD 25	1800 m ³ h	500 Pa
GRD 31	2700 m ³ h	500 Pa

5. Environmental conditions and operating limits

- Maximum permitted temperature of the air medium: + 50 °C
- The control unit is only approved for interior installation.

6. Essential safety instructions

General safety instructions

- Read the operating instructions through carefully before starting up.
- Keep the instructions.
- **Installation is only permitted when carried out by trained specialists.**
- **Electrical connections and repairs are only permitted when carried out by trained specialists.**
- Only use fitters and electricians who are sure-footed and comfortable working at height.
- The unit must not be used as a toy.
- Only connect the unit to a permanent electrical installation.
 - Permitted cable cross section: 1.5 mm².
 - Use a flexible connection cable.
 - Mains isolation device required with openings of at least 3 mm at each pole.
 - Use a 6-core, shielded control cable.
- The unit may only be operated using the voltage and frequency shown on the rating plate.
- Only operate the unit when it is completely installed.
- Modifications and alterations to the unit are not permitted and release MAICO from any guarantee obligations and liability.
- Ensure that foreign bodies cannot be sucked into the unit and duct.
- Never operate without protective grille with free inlet.

Intended use

- For **central air extraction**, with volumetric flows that differ in each apartment (Centro System).
- Also for **air extraction** in restaurants, machinery rooms, workshops, manufacturing areas, industrial buildings, etc.
- For installation on roof socket (for flat, sloping, corrugated or trapezoidal roofs).
- Should only be installed in a horizontal position. It must be ensured that the shutters can function correctly.

Predictable misuses

The unit should not be used:

- Close to flammable materials, liquids or gasses.
- In explosive atmospheres.

Safe and correct practices during operation

- **Danger of injury.** Do not insert any objects in the air channel or the unit.
- **In the case of installation with free inlet: danger from rotating impeller.** Do not get too close to the unit, to avoid hair, clothing or jewellery being drawn into the unit. Use a Maico SG protective grille, for example.

7. Transport and storage

Transport

- Make sure that the GRD unit is not damaged, tipped or knocked over during transport.
- Only lift the GRD unit at the two fixed ring nuts, using suitable lifting gear, e.g. a load hook.
- Observe the slewing point (central).
- The permitted maximum load for lifting gear, chains, ropes, etc. must be sufficient for the transport weight (see Chapter 4).
- Do not stand under a suspended load during transportation.

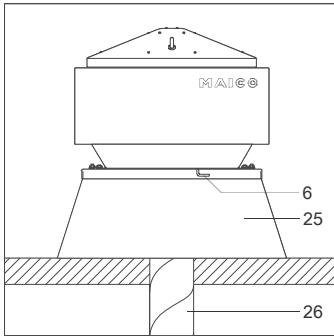
8. Installation preparation

Requirements at installation site

- Observe the permissible roof load.
- Only screw the GRD onto a suitable roof socket, in order to prevent leaks.
- Use only roof sockets from the current Maico main catalogue.

Installation preparations

- Install the ventilation ducts and roof socket correctly.

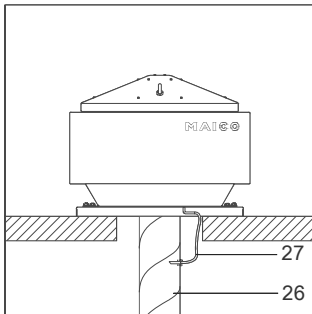


- 6 Pressure line
- 25 Roof socket
- 26 Ventilation duct

If the exhaust air duct is connected directly to the fan unit, install the supplied pressure connection kit [27] (Art. no. 0093.0151.0000).



If the fan is fitted in combination with a roof socket, the pressure connection kit does not have to be installed.



- 26 Ventilation duct
- 27 Pressure connection kit

- Drill two \varnothing 2...2.5 mm holes in the ventilation duct [26]. Screw in the pressure connection kit plastic nipple [27] and connect the compressed air hose.

- The support surface for the GRD unit and the control unit must be level.
- Lay a permanent power cable to the installation location.
- Lay a permanent 6-core, shielded control cable (diameter 0.25 to 0.34 mm²), between the GRD unit and the control unit installation location.

Installation tips

- Observe the planning documents drawn up by the engineering office.
- Use appropriate insulation, sound-deadening and installation material in the area between the roof flashing [13] and roof socket.
- If necessary, use Maico ELA.. flexible cuffs.

9. Assembly

GRD unit



Danger to life caused by inadequate mounting of the roof fan.

- The fixing points on the roof socket must match up with the 4 drilled holes in the roof flashing.
- Provide mounting material of a sufficient size (screws with diameter of 10 mm, min. strength class 8.8).



Risk of cuts from metal housing plates with sharp edges.

- Wear protective gloves.

- Remove both ring nuts [2] and unit roof [1].
- Remove the terminal box cover [7].
- Feed the power and control cables into the GRD terminal box [7] from below through the empty ducting [11].
- Carefully locate the GRD unit on the roof socket.

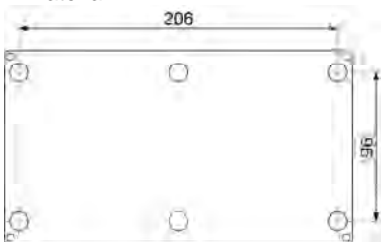
- Securely screw the roof flashing [4] to the roof socket with 4 screws.

i Only install the GRD unit horizontally so that operation of the shutters is guaranteed.

- Check the shutter function of both shutter pairs. To do this, bring both shutter halves to the middle as far as they will go and release them. If they are functioning correctly, they will return to their starting position automatically.

Control unit

- Install the control unit housing at the installation site using suitable mounting material.



Electrical connection



Danger to life from electric shock

- Switch the mains fuse off.
- Position a warning notice to avoid the unit being accidentally switched back on.

NOTICE Danger of short-circuits through incorrect feeding of the power cable into the terminal box.

- Feed the power cable correctly into the terminal box from below through the empty ducting and ensure tension relief.

GRD unit

- Attach the 6-core, shielded control unit control cable W2 [22] to the connection terminal in the terminal box [7], by reference to the wiring diagram on Page 12.

- Connect the shielding braid from the control cable W2 to the grounding terminal in the terminal box. Use cable end sleeves to connect the fine shielding braid.
- Connect the power cable to the connecting terminal in the terminal box [7], by reference to the wiring diagram on Page 20.
- Check that the technical data has been adhered to, by reference to the rating plate [T].
- Replace the terminal box cover [7] and screw it in place.
- Set service switch back to the position "I".
- Replace the unit roof [1].

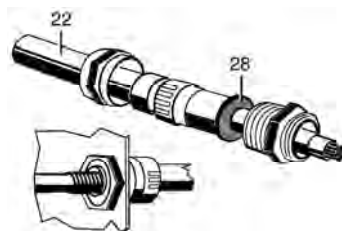
NOTICE Damage to the unit from tools or installation material left inside the unit.

- Before reinstalling the unit roof [1], make sure that no tools or installation material have been left inside the GRD unit.

- Replace the ring nuts [2] and tighten them to a torque of 30 Nm.

Control unit

- Carefully knock through the required cable feed-in points in the housing.
- Place the supplied grommets in position and feed the connection cables through the grommets cable feed-in points.
- Attach the 6-core, shielded control unit control cable W2 [22] and power cable W3 [19] to the connection terminals in the terminal box [7], by reference to the wiring diagram on Page 20.
- Attach the shielding braid from the control cable W2 [22] as shown in the picture.



Start-up

- Ensure that the fan is correctly connected and that the air can flow unhindered.
- Switch on ventilation system with separate on/off switch. The following information appears on the control unit display
 - the current volumetric flow in m³/h,
 - the atmospheric air pressure in Pa
 - the alarm display (if activated)
- Press and the hold the SETUP button [20] until the text SETUP appears in the display.
- Check that the fan impeller is running quietly.

10. SETUP (only for trained specialists)

- Ensure that the fan is correctly connected and that the air can flow unhindered.
- Remove the housing cover, in order to start the SEUP menu.
- Press and the hold the SETUP button [20] until the text SETUP appears in the display.

Here, you can activate and modify the setting values (see CAs menu and CPs menu tables).

Selection values (Y/N) and input values (0...9) can be modified using the arrow keys ↑ and ↓. A value is confirmed with ENTER and the next menu item appears.

Input values made up of more than one digit have to be confirmed after each digit with ENTER.

i **Notes**

- The CAs menu or the CPs menu appears, depending on the setting.
- Always carry out SETUP completely. If necessary, press ENTER as many times as is necessary, until the operating display appears again.
- Pressing SETUP quits the Setup menu directly. The operating display appears.
- In the case of an alarm display indicated by the LED [15] showing red, press and hold the RESET button until the LED goes out.

- The alarm display flashes red during the initialisation phase that follows switching the mains fuse on.

CPs menu

Display or selection value	Description
LANGUAGE? x	Selected language (D, GB or F)
FAN TYPE GRD xx	Selected fan (GRD 22, GRD 25 or GRD 31)
WORKING MODE xxx	Select CPs working mode. (CAs or CPs)
Pa K1? xxxx	Define setpoint for constant pressure, e.g. for daytime operation (only if switching contact K1 has +12 V applied).
Pa K3? xxxx	Define setpoint for constant pressure, e.g. for nighttime operation (only if switching contact K3 has +12 V applied).
END CONFIG	SETUP menu ends. The operating display appears.

Tab. 2: CPs menu items

CAs menu

Display or selection value	Description
LANGUAGE? x	Selected language (D, GB or F)
FAN TYPE GRD xx	Selected fan (GRD 22, GRD 25 or GRD 31)
WORKING MODE xxx	Select CAs working mode. (CAs or CPs)
m ³ h K1? xxxx	Define setpoint for constant volumetric flow, e.g. for daytime operation (only if switching contact K1 has +12 V applied).

Display or selection value	Description
m ³ h K3? xxxx	Define setpoint for constant volumetric flow, e.g. for nighttime operation (only if switching contact K3 has +12 V applied).
PRESS. ALARM? x	Compressed air alarm On = Y(es) / Off = N(o) "Y": If the reference pressure is exceeded, the alarm display [15] lights up red. "N": END CONFIG. SETUP menu ends. The operating display appears.
ΔP FAN xxx Pa	Enter permissible pressure increase at the reference volumetric flow, e.g. in the case of filter contamination.
INIT Pa REF? x	"Y": Start reference volumetric flow input. "Y": END CONFIG. SETUP menu ends. The operating display appears.
m ³ h INIT xxxx	Input maximum reference volumetric flow. The reference pressure is calculated.
Pa REF INIT. — xxxx m ³ h xxxx Pa	Fan starts. The calculated static pressure value is saved, approximately one minute after the initialised volumetric flow is reached in the fan. The current pressure and volumetric flow are displayed.
END CONFIG	SETUP menu ends. The operating display appears.

Tab. 3: CAs menu items

Always replace the housing cover and screw it in place at the end of the parameter setting process.

11. Maintenance

GRD units require no maintenance.

12. Cleaning



DANGER

**Danger to life.
Unit is powered up.**

Disconnect the unit completely from the mains power supply. To do this, switch the service switch off.



DANGER

Danger of injury from rotating impeller after switching off!

➤ Wait until the impeller is stationary before opening the housing.



CAUTION


Risk of cuts from metal housing plates with sharp edges.

➤ Wear protective gloves.

- Remove unit roof [1] before cleaning.
- Switch the GRD unit off by setting the service switch [8] to position "0" and secure it against being switched back on with a padlock.
- Clean the GRD unit.
- Set service switch [8] back to position "I".
- Replace the unit roof and fix in place with both rings, tightened to a torque of 30 Nm.

13. Alarms

The following alarm messages can appear in the control unit display.

 Use the arrow keys to display further information about fault rectification.

- **Call on the services of a trained electrician any time there is a fault.**
- **Repairs should only be carried out by a trained electrician.**



Danger to life.
Unit is powered up.
 ➤ Switch the mains fuse off.

Fault	Countermeasure
FAN ALARM	Malfunction at the fan. Check – wiring – connection cables – mains power connection
PRESS. ALARM	– Pressure is too high in the air channel. Alarm display [15] lights up.
Pa INIT ALARM ^{1) 2)} Volumetric flow is too low.	Current volumetric flow is smaller than the required volumetric flow. Fan performance is insufficient. Counter-pressure in the ventilation system is higher than the pressure generated by the fan. Remedy: – Modify the volumetric flow. – Modify the layout of the ventilation system. – Install a more powerful fan.
Pa INIT ALARM ^{1) 2)} Volumetric flow is too high.	The required volumetric flow cannot be achieved as the value is outside the working scope of the fan.

Fault	Countermeasure
Pa INIT ALARM ^{1) 2)} Pressure is not stable.	Pressure is too unstable. – Modify the setting of the required volumetric flow. – Modify the layout of the ventilation system.
CA ALARM The volumetric flow is too low.	The required volumetric flow <u>cannot</u> – be reached. – be held constant, as the counter pressure generated by the fan is too high.
CA ALARM Volumetric flow is too high.	The required volumetric flow cannot be held constant as the value is outside the working scope of the fan.
CP ALARM Pressure is too high	Minimum volumetric flow reached. The measured pressure is still higher than the required pressure.
CP ALARM Pressure is too low.	Maximum volumetric flow reached. The measured pressure is still lower than the required pressure.
DATA ERROR ¹⁾	Data error. – Press RESET button, resets system to factory setting. – Contact the Service Hotline if the fault continues.

Tab. 4: Fault rectification

1) Alarm display [15] = On. Relay R1 in alarm state (Relay LED = On)

2) Reference pressure cannot be determined. Motor switches to soft stop mode. To restart, press and hold the REST button [17] until the alarm display goes out. The control unit now works as per its settings, but without pressure alarm. If a pressure alarm should be set up, troubleshoot the cause of the fault and eliminate it, e.g. system pressure or volumetric flow too high. Then set the parameter.

14. Fault rectification

- Call on the services of a trained electrician any time there is a fault.
- Repairs should only be carried out by a trained electrician.



**Danger to life.
Unit is powered up.**
➤ Switch the mains fuse off.

Fault	Countermeasure
Unit doesn't run	<ul style="list-style-type: none"> – Check the fault display at the control unit. – Check whether the mains fuse and service switch are switched on.

Tab. 2: Fault rectification

In the case of a repair:



**Danger to life.
Unit is powered up.**
➤ Disconnect the GRD unit completely from the mains power supply. To do this, remove the unit roof [1].
Switch the GRD unit off by setting the service switch to position "0" and secure it against being switched back on with a padlock.



Danger of injury from rotating impeller after switching off!
➤ Wait until the impeller is stationary before opening the housing.



Risk of cuts from metal housing plates with sharp edges.
➤ Wear protective gloves.

15. Dismantling



**Danger to life.
Unit is powered up.**
➤ Switch mains fuse and service switch off.



Dismantling should only be carried out by a trained electrician.

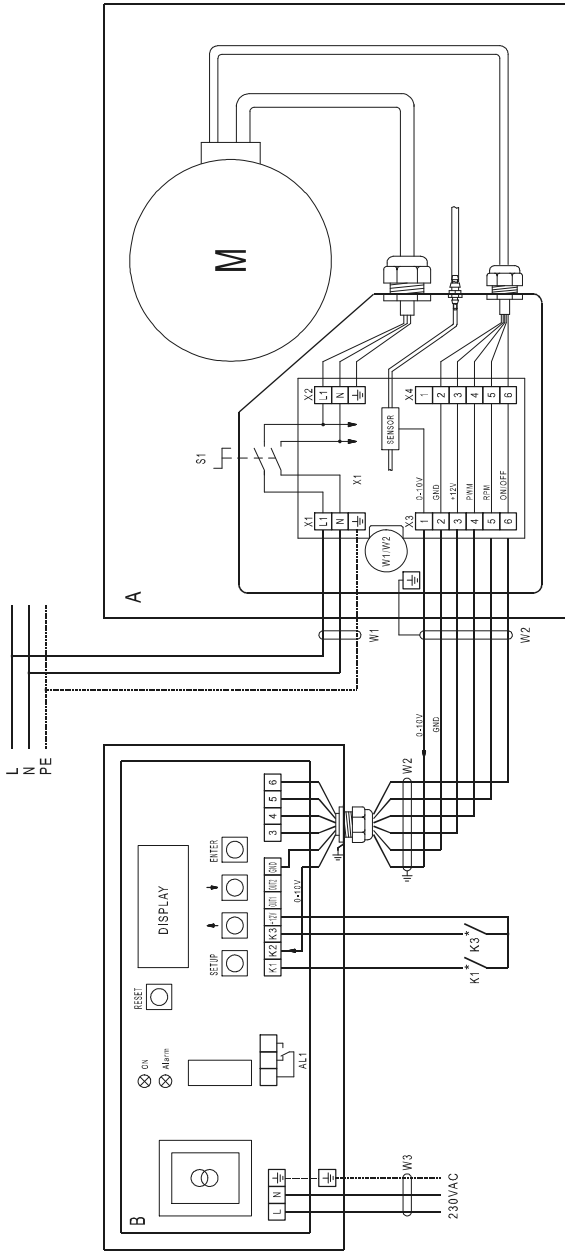
16. Disposal



Not in domestic waste.
The unit contains in part material that can be recycled and in part substances that should not end up as domestic waste.

- Dispose of the unit once it has reached the end of its working life according to the regulations valid where you are.

17. Schaltbild / Wiring diagram



- B** Regelung
Control unit
- L3** Netzleitung Regelung (bauselts)
Power cable for control unit (to be supplied by the customer)
- K1** geschlossen → Softstart
closed → Softstart
- offen → Softstop
 - open → Soft stop
- K3** geschlossen → Absenkbetrieb aktiv, z. B. Nachtbetrieb
closed → Lowering mode active; e.g. nighttime operation
- offen → Absenkbetrieb inaktiv
 - open → Lowering mode inactive
- * Achtung: Für K1 und K3 vergoldete Kontakte benutzen
Note: Use gold-plated contacts for K1 and K3
- A** GRD-Gerät
GRD unit
- L1** Netzleitung GRD-Gerät, 1,5 mm² (bauselts)
Power cable for GRD unit, 1.5 mm² (to be supplied by the customer)
- L2** Steuerverleitung mit Abschirmung 0,25 bis 0,34 mm² (bauselts)
Shielded control cable, 0.25 to 0.34 mm² (to be supplied by the customer)
- M** Ventilatormotor
Fan motor
- S1** Reparaturschalter
Service switch