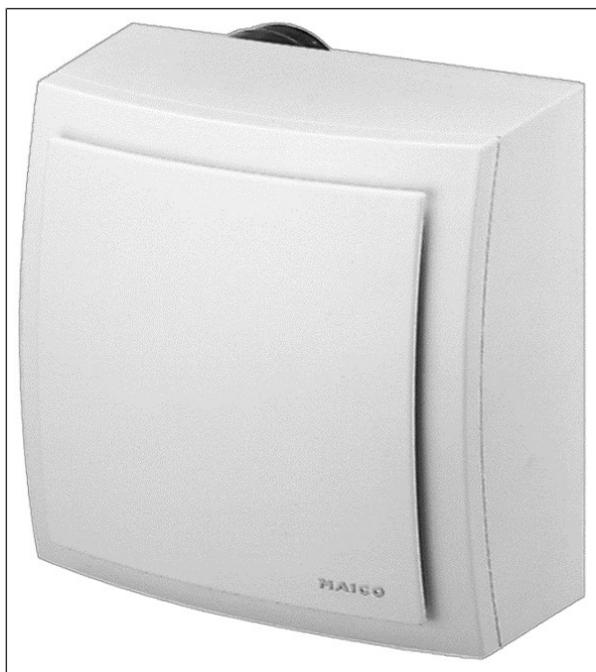


Installation and operating instructions



Surface-mounted exhaust air system for single-duct air extraction according to DIN 18017-3



ER-AP
ER-APB



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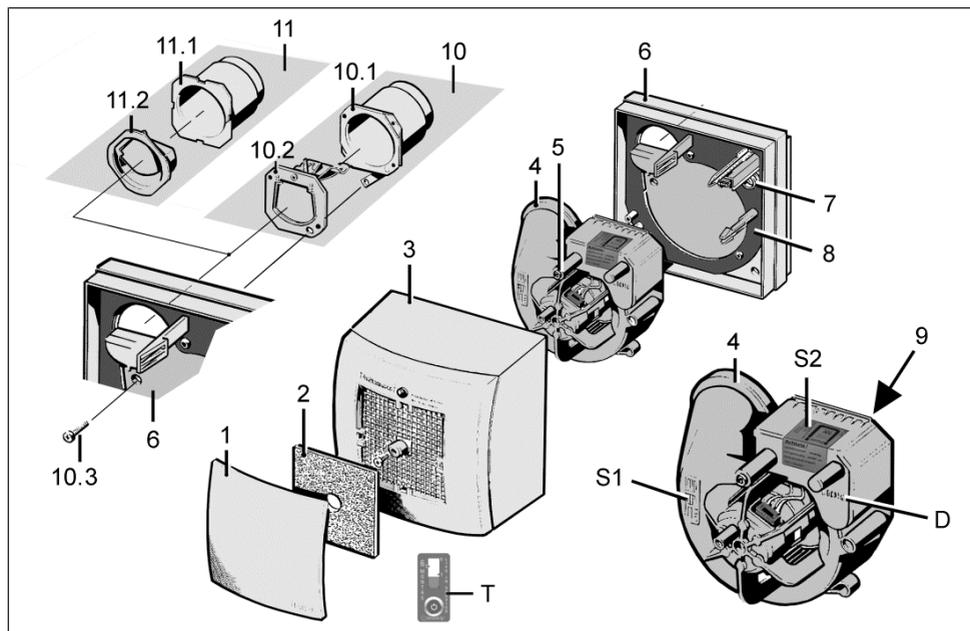
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Preface

Please read the instructions carefully before installing and using for the first time. Follow the instructions. Pass these instructions on to the owner for safekeeping.

Overview of ER AP/APB system



1 Scope of delivery

1	Cover
2	G2 air filter
3	Upper part of housing
4	ER EC fan insert
5	Sensor (H or F model)
6	Lower part of housing
7	Cable grommet
8	Housing floor seal
9	Electronic circuit boards
10.1	Metal exhaust socket with tab
10.2	Metal shut-off shutter with release mechanism
10.3	Fixing screw, to be provided by the customer
11	ER-AP: Plastic shutter without fire protection
11.1	Plastic exhaust socket
11.2	Plastic backflow preventer
D	Production date
S1	Rating plate
S2	TÜV sticker stating "Slide in blower unit in parallel"
T	Time strip

1 Scope of delivery

ER-AP surface-mounted housing

- Surface-mounted housing with plastic shut-off device for connection to the DN 75/DN 80 exhaust air duct.

ER-APB surface-mounted housing

- Surface-mounted housing with provided fire protection shut-off device for connection to the DN 75/DN 80 exhaust air duct.

Other components

- Air filter
- TimeStrip on title page of these instructions
- Installation and operating instructions

2 Additional information

Go directly to the product with a smartphone. Online at www.maico-ventilatoren.com



ER-APB



ER-AP

3 Specialist installer qualifications

Installation may only be carried out by **trained specialists** who have the necessary knowledge and experience in **ventilation engineering**. The unit must be connected in accordance with the national technical approval.

Only a **qualified electrician** is permitted to work on the electrics. You are deemed a qualified electrician if you are familiar with the relevant standards and guidelines, can competently and safely connect units to an electrical power supply in line with the Wiring diagrams [► 24] and are able to recognise and avoid risks and dangers associated with electricity on the basis of your technical training and experience.

4 Intended use

These fans are used to extract air from interior bathrooms and toilet rooms, storage rooms and kitchens with an outside window.

If operated other than stated in DIN 18017-3, the fans may also be used as standalone units (fitted on the wall or ceiling) or to extract air from other rooms (interior kitchen etc.).

The fans are only intended for domestic use and similar purposes.

5 Safety instructions and warnings

DANGER

Indicates a possibly hazardous situation which will result in death or serious injuries if not avoided.

WARNING

Indicates a possibly hazardous situation which could result in death or serious injuries if not avoided.

CAUTION

Indicates a possibly hazardous situation, which could result in minor to moderate injuries.

NOTICE

Indicates a possible situation, which could cause damage to the product or its surroundings.

6 Safety instructions

6.1 General safety instructions

The unit must not be used in the following situations under any circumstances:

⚠ DANGER Risk of combustion/fire from flammable materials, liquids or gases in the vicinity of the unit.

Do not place any flammable materials, liquids or gases near the unit, which may ignite in the event of heat or sparks and catch fire.

⚠ DANGER Explosion hazard due to gases and dust.

Explosive gases and dust may ignite and cause serious explosions or fire.

Never use unit in an explosive atmosphere (risk of explosion).

⚠ DANGER Explosion hazard due to explosive substances in the lab extraction units.

Explosive substances in lab extraction units may ignite and cause serious explosions or fire.

Aggressive substances may damage the unit. Never use unit in combination with a lab extraction unit (risk of explosion).

⚠ WARNING Risk to health from chemicals or aggressive gases/vapours.

Chemicals or aggressive gases/vapours may harm health, especially if they are distributed throughout the rooms by the unit.

Never use unit to distribute chemicals or aggressive gases/vapours.

NOTICE Damage to unit due to grease and oil vapours from range hoods.

Grease and oil vapours from range hoods may contaminate the unit and air ducts and reduce efficiency.

Never use unit to convey these substances.

NOTICE Damage to the unit when continuously conveying steam-saturated air.

Never use unit to convey steam-saturated air

NOTICE Damage to the unit due to imbalance of the impeller when conveying solid particles.

Never use unit to convey solid particles that could adhere to the unit.

NOTICE Unit damage during the construction phase, caused by soiling of the unit and air ducts.

Unit operation is not permitted during the construction phase.

Do not operate unit during the construction phase.

NOTICE Damage to unit in the event of moisture ingress.

IP X5 (protection against water jets).

Never use unit outdoors.

6.2 Safety instructions regarding installation, operation, cleaning and maintenance

⚠ DANGER Risks for children and people with reduced physical, sensory or mental capabilities or a lack of knowledge.

Unit may only be installed, commissioned, cleaned and maintained by persons who can safely recognise and avoid the risks associated with this work.

⚠ DANGER Danger of electric shock from operating the unit when not fully mounted.

Electric components are a potential source of electric shock.

If the unit is open, all off the supply circuits must be switched off (mains fuse off), secured against being accidentally switched back on and a visible warning sign must be attached.

Only operate the unit when it is completely installed.

⚠ DANGER Danger if the relevant regulations for electrical installations are not observed.

Before removing the housing cover or removing the fan insert and before installing the electrics, switch off all supply circuits, switch of mains fuse and secure it against being accidentally switched back on again. Attach a warning sign in a clearly visible place.

Be sure to observe the relevant regulations for electrical installation; e.g. DIN EN 50110-1. In Germany, particularly observe VDE 0100, with the corresponding sections.

A mains isolation device with contact openings of at least 3 mm at each pole is mandatory.

Only connect unit to permanently wired electrical installation and with NYM-O or NYM-J cables, depending on the unit variant, 3 x 1.5 mm² or 5 x 1.5 mm².

Units may only be operated using the voltage and frequency shown on the rating plate.

Unit may be energized even when at a standstill and may switch on automatically due to sensors (time delay, humidity etc.). Maintenance and fault finding only permissible when carried out by qualified electricians.

The degree of protection stated on the rating plate is only guaranteed if installation is undertaken correctly and if the connecting cable is correctly guided through the stepped grommet (The grommet must completely enclose the cable sheathing). The fan insert must also be engaged and the housing cover installed.

⚠ DANGER Danger due to fire transmission if an incorrect connection duct is connected to the ER housing. Always use the correct duct material for the respective ER housing.

if incorrect ceiling compound is used for exhaust air systems with an intermediate ceiling (PAM-GLOBAL RML or ceiling barrier system). Ensure that the gap remaining between the main duct and wall or ceiling is fully sealed with non-flammable materials resistant to deformation, such as concrete, cement mortar or plaster.

if the seal with the brickwork or wall boards is incorrect. If used outside the shaft, ensure that the gap remaining between the connection duct and brickwork/wall boards is fully sealed with non-flammable materials resistant to deformation, such as concrete, cement mortar or plaster and for the wall boards, special fire protection filler.

if the metal exhaust socket is incorrectly connected to the connection duct. 3 steel blind rivets are prescribed for the connection with the exhaust socket. These must not impair the shutter function. Before commissioning, ensure that the shut-off shutter moves with ease.

if the metal shut-off shutter is not correctly inserted and screwed down in the exhaust socket. During installation, it is essential that the shut-off shutter is correctly positioned and screwed down. The soldered strut must be correctly inserted and the shutter must move with ease.

⚠ DANGER Risk of injury in case of damaged unit.

Switch the unit off immediately if you discover damage or faults that could endanger persons or property.

Prevent from being switched back on until fully repaired.

⚠ WARNING Risk to health if filters are not replaced or if there are no air filters.

Heavily soiled or moist air filters can accumulate harmful substances (mould, germs, etc.). This may also happen if the unit is shut down for an extended period. If the air filter is missing, the unit and air ducts become soiled.

Never operate the unit without air filters.

Only use original filters.

Regularly change air filter when a filter change is indicated (LED or TimeStrip).

If the unit has not been used for a long time, always replace the air filters.

⚠ WARNING Risk of injury when working at heights.

Use appropriate climbing aids (ladders). Stability should be ensured, if necessary have the ladders steadied by a 2nd person. Ensure that you are standing securely and cannot lose your balance and that there is no one under the unit.

⚠ WARNING Risk of injury and risk to health from parts which may affect the ventilation system which are added or modified at a later date.

Parts (range hood, air-ventilated fireplace etc.) which are added or modified at a later date may result in health risks and operation which is not permitted. Parts may only be added or modified at a later date if system compatibility is established/ensured by a planning office. If using an exhaust air range hood or air-ventilated fireplace, this must be accepted by a regional master chimney sweep.

⚠ WARNING Risk of injury and health risk in the event of changes or modifications or if components which are not permitted are used.

The unit may only be operated with original components. Changes and modifications to the units are not permitted and release the manufacturer from any guarantee obligations and liability, e. g. if the housing is drilled at a point which is not permitted.

⚠ CAUTION Risk to health if unit is not correctly cleaned.

Clean the unit regularly, at least every 2 years. This is the only way of ensuring that the unit is running hygienically.

⚠ CAUTION Exercise caution when handling packaging materials.

Observe applicable safety and accident prevention requirements. Store packaging material out of the reach of children (risk of suffocation).

NOTICE Non-intended operation/impermissible operation due to incorrectly mounted unit.

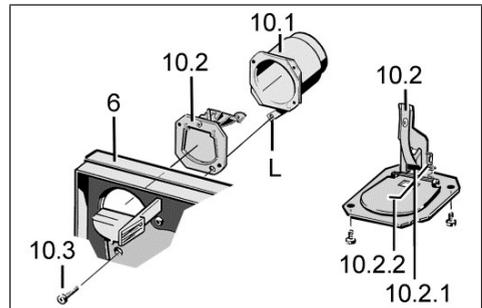
Only install unit in accordance with the planning documents.

In particular, note the information on ventilation channels and sound deadening.

Observe planning instructions regarding unit position and distance to other façade components. If necessary, use isolating elements.

6.3 ER-APB: Safety instructions for installation of the fire protection shut-off device

It is essential to observe the permissible installation positions: Permitted installation positions: [▶ 11].



6	Lower part of housing
10.1	Metal exhaust socket
10.2	Metal shut-off shutter
10.3	Retaining bolt
10.2.1	Soldered strut
10.2.2	Yoke spring

⚠ DANGER Danger to life due to fire transmission if the tab of the metal backflow preventer is incorrectly screwed on.

It is essential to fasten the metal backflow preventer and tab to the wall/ceiling with a suitable screw and metal dowel.

Fixing screw is to be provided by the customer.

⚠ DANGER For ER-APB connection outside the shaft: Danger to life due to fire transmission if the metal exhaust socket is incorrectly connected to the connection duct.

Connection according to: Preparations for the ER-APB ceiling installation (with fire protection). 3 steel blind rivets are prescribed for the connection with the connection socket. These must not impair the shutter function.

Before commissioning, ensure that the shut-off shutter moves with ease.

NOTICE The metal shut-off device is permanently closed if there is no soldered strut.

Check that the soldered strut is in the correct place before installation.

NOTICE Unpleasant smells from the main duct. Shut-off device does not close tightly in cases of improper installation.

Before mounting, check the correct installation position and check that the shut-off shutter functions.

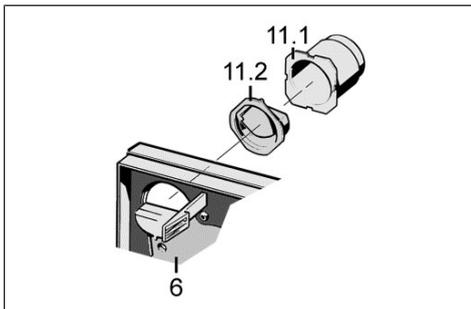
When installing on ceiling: Prepare metal shut-off device for upwards air outlet direction

1. When shut-off device is inserted, remove yoke spring. To do this, use pliers to pull yoke spring out of exhaust socket from above.
2. Check and ensure that shut-off shutter is fully functional.

6.4 Safety instructions for the installation of the plastic shutter

It is essential to observe the permissible installation positions: Permitted installation positions:

[▶ 11].



NOTICE Damage to unit, malfunctioning in the event of corrosion damage from mortar.

Wrap ventilation ducts, connected to the unit, with a suitable adhesive tape to protect against corrosion inside the brickwork, e.g. using cold-shrink tape.

NOTICE Odours may escape from the ventilation channel.

If the installation position is wrong, the plastic shutter will not close leak-tight.

Insert shutter at the top/to the right/to the left/to rear in the exhaust socket of the housing to fit the installation position. Ensure that the shutter closes entirely leak-tight.

7 System and product information

7.1 Certificates of approval

Certificates of approval on request.

According to the general requirements of the German Centre of Competence for Construction, whenever the ER AP/APB units are used, the certificate of approval or a copy of this must be present at the point of use for the

- ER-APB: Z-51.1-45 or
- ER-AP: Z-51.1-42

-> See "General building approval for ventilation units for single air extraction systems with shared exhaust air duct according to DIN 18017-3".

7.2 Installation conditions

If installed in accordance with DIN 18017-3, use is only permitted:

- in single air extraction systems with a common main duct;
- with permitted connection ducts;
- with unit to suit the system (Permitted exhaust air systems [▶ 9]);
- with surface installation on the wall or ceiling;
- if correctly installed as per the instructions in this manual and the general building approval ER-APB: Z-51.1-45 or ER-AP: Z-51.1-42;
- with sufficient space from the wall or ceiling;
- if unit is completely installed;
- with the correct air filters;
- with the outside air openings stated in the planning documents.

If the installation deviates from DIN 18017-3:

- ER-AP/ER-APB fans can also be used as stand-alone units.
- Installation in the wall or ceiling is permitted.
- They can also be used to extract air from another room, for example an interior kitchen.

7.3 Permitted exhaust air systems

Exhaust air system	ER-APB	ER-AP
PAM-GLOBAL RML cast ventilation system *	yes	no
Ceiling barrier system **	no	yes
System with fire-proof shaft *	yes	no
Air extraction system without fire protection **	yes	yes

* **ER-APB** can be used

- on the shaft, connection duct made of flexible aluminium duct;
- outside the shaft, connection duct made of steel folded spiral-seams duct.

** **ER-AP** can be used on the shaft or outside the shaft, connection duct made of flexible aluminium duct.

7.4 Unit versions

Unit type	Circuit board type	Start delay [s]	Overrun time [min]	speed controllable	Mains cable [mm ²]
ER AP 60, ER APB 60	Standard [9.1]			no	3 x 1.5
ER AP 100, ER APB 10	Standard [9.1]			yes	3 x 1.5
ER AP 60 VZ, ER APB 60 VZ, ER AP 100 VZ, ER APB 100 VZ	VZ circuit board [9.5]	50	6	no	5 x 1.5
ER AP 60 F, ER APB 60 F, ER AP 100 F, ER APB 100 F	F circuit board [9.4]	50	6	no	3 x 1.5
ER AP 60 G, ER APB 60 G, ER AP 100 G, ER APB 100 G	G board [9.2]			no	5 x 1.5
ER AP 60 H, ER AP 60 H, ER AP 100 H, ER APB 100 H	H board [9.3]		>6	no	5 x 1.5

i Tolerance of all time details max. + 20 %.

- **ER-APB**: Fire protection model with maintenance-free fire protection shut-off device K 90-18017 (metal backflow preventer with soldered strut).
- **ER-AP**: Model without fire protection. With maintenance-free plastic backflow preventer.

7.4.1 Product features

- DN 80 exhaust socket
- Control circuit board in fan insert
- Electrical plug connection for quick fan insert installation in the lower part of the housing. Fan insert secured with snap-fit fasteners.
- Upper part of housing with exhaust air filter. Trouble-free filter change without tools possible.

- Energy-saving motor with thermal overload protection. This switches itself off in the event of overheating and then back on again automatically after cooling down.
- The units may be subject to jet water in areas 1 and 2 (DIN VDE 0100-701: 2008-10 or HD 60 364-7:2007).
- Filter change indicator via TimeStrip (→ title page).

i The **time strip** is visibly attached to a location of your choice (e.g. next to the unit) and after the filter change interval has elapsed, it can be disposed of in the domestic waste. **Do not affix the time strip under the cover.** New time strips are included in the scope of delivery of the exchange air filter.

7.4.2 Controls (circuit board types)

ER-AP/ER-APB units are available in various models with various unit features.

These features depend on the control/circuit board type used in the fan insert.

- **Standard model**
- **VZ model:** With start delay and overrun time
- **F model:** Barrier-free. With light control for rooms without windows (min. switch-on brightness 30 lx, max. switch-off brightness on unit 0.3 lx). With start delay and overrun time.
- **G model:** With base load circuit. Continuous operation at 35 m³/h, high speed can be switched with optional switch.
- **H model:** Barrier-free. With humidity control. Overrun time controlled by program (Can also be operated manually with optional switch).

i The **switching variants and functions suited to the circuit board type** are described in these instructions. **Tolerance of all time details max. + 20 %**

8 Technical data

8.1 Environmental conditions and operating limits

- Permissible maximum temperature of air medium + 40 °C.
- The air supply to the home must be set up so that virtually no air can flow into the living areas from the kitchen, bathroom or WC.
- A room from which the air is to be extracted must be fitted with a non-closable, free supply air cross section of at least 150 cm², e.g. with Maico MLK door ventilation grille.

- ER units have resistance to interference in line with EN 55014-2 (depending on pulse type and an energy component of 1000 to 4000 V). These values can be exceeded when operating with fluorescent tubes. In this case, additional interference suppression measures (L, C or RC modules, protection diodes, varistors) are required.

8.2 Regulations for operation with fireplaces

Sufficient supply air intake must be ensured during operation with **air-ventilated fireplaces**. The maximum permitted pressure difference per residential unit is 4 Pa.

The unit may only be installed in residential units with air-ventilated fireplaces under the following conditions:

- the evaluation criteria drawn up by the responsible, regional master chimney sweep are met;
- Parallel operation of air-ventilated fireplaces for liquid or gaseous fuels and air-extracting equipment can be prevented using safety devices or
- the extraction of exhaust gas from the air-ventilated fireplaces is monitored by special safety devices. The ventilation system or the fireplaces must be switched off if the equipment is triggered.

8.3 Technical data table

Sound pressure level L _{WA7}	37 to 53 dB(A), depending on unit model
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For more technical data → rating plate.

For characteristic curves → www.maico-ventilatoren.com.

8.4 Storage

Only store unit horizontally in a suitable, dry room. Ambient temperature – 10 °C to + 60 °C.

Maico accepts no liability for corrosion damage caused by improper storage, e.g. storage in a damp environment.

9 Mounting preparations

i **Suitable mounting material is to be provided by the customer.**

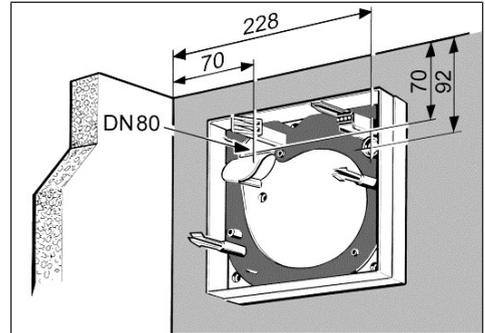
9.1 Requirements in line with approval

9.1.1 Approval provisions

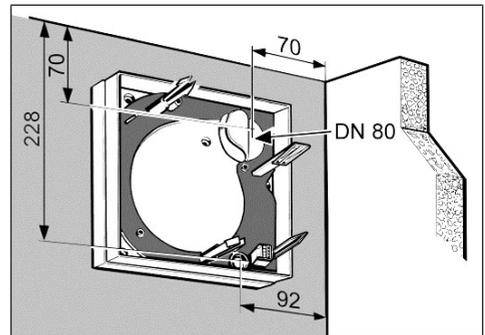
Approval provision	ER-APB	ER-AP
Number of units per floor, residential unit or fire zone	Max. 3 fans or 3 connections	Max. 2 fans or 2 connections
Shaft wall	min. 35 mm , board materials (F90)	min. 35 mm , board material, any
Connection ducts inside the shaft	AFR 80 flexible aluminium duct between the main duct in the shaft and unit, max. 2 m long (→ approval).	
Connection ducts outside the shaft	Steel folded spiral-seams duct , between the main duct in the shaft and the unit, max. 2 m long (→ approval).	Steel folded spiral-seams duct or flexible aluminium duct , between the main duct in the shaft and the unit, max. 2 m long (→ approval).
Duct elbows in the unit connection duct	Max. 90° bend, ascending	
Number of duct elbows permitted for wall installation	Max. 1 x 90°	Max. 2 x 90°
		
Number of duct elbows permitted for ceiling installation	Max. 2 x 90°	Max. 3 x 90°
		
Regulating equipment in the exhaust air duct	Not permitted	
Wall/ceiling opening for DN 80 unit connection duct	Brickwork or concrete: 130 mm. Board materials (F90): Outer Ø of pipe	

9.2 Permitted installation positions:

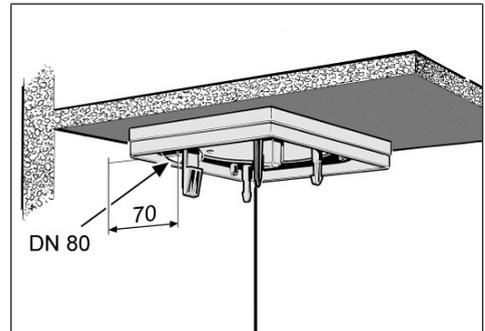
Wall installation, top left corner of room



Wall installation, top right corner of room



Ceiling installation

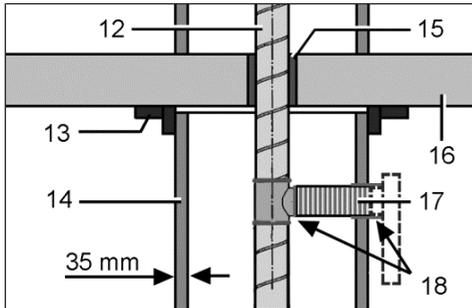


9.3 ER-APB: Preparations for installation with fire protection requirements

NOTICE Damage to unit, malfunctioning in the event of corrosion damage from mortar.

Wrap ventilation ducts, connected to the unit, with a suitable adhesive tape to protect against corrosion inside the brickwork, e.g. using cold-shrink tape.

9.3.1 Preparations for ER-APB wall installation (with fire protection)



12	Main duct (steel folded spiral-seams duct)
13	Spigot
14	Shaft wall
15	Ceiling compound
16	Floor ceiling
17	Connection duct: Flexible aluminium duct AFR 80
18	Sealing material, e.g. cold-shrink tape

i It is essential that requirements in line with approval are observed (Requirements in line with approval [▶ 11]).

9.3.2 Preparations for the ER-APB ceiling installation (with fire protection)

(Connection outside of the shaft)

1. Correctly attach main ventilation duct inside the shaft.
2. Apply ceiling compound. To do this, encase the ceiling and pour in the material from above.
3. Make a wall or shaft opening for the flexible aluminium duct.

⚠ DANGER Danger to life due to fire transmission in case of faulty ceiling compound. It is essential that the remaining gap between the main duct and the wall or ceiling is completely sealed with non-flammable materials that are resistant to deformation. For example, use concrete or cement mortar.

4. Connect the flexible aluminium duct to the main duct and seal for ventilation.
5. Cut flexible aluminium duct to length, observe a maximum duct length of 2 m.

i Dimension the length of the flexible aluminium duct so that it protrudes from the wall or shaft so that the ER connection socket can be attached later. Also attach a ventilation seal on the unit side.

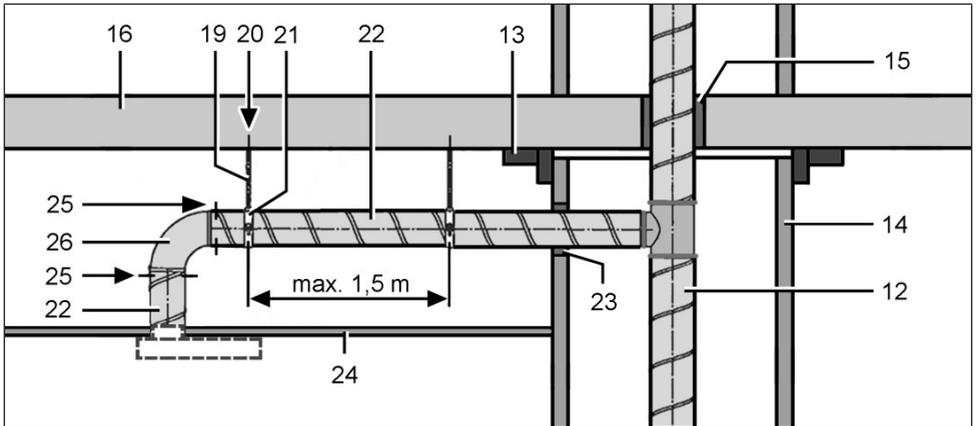
6. Ensure a suitable, level substructure.

i Compensate any unevenness in the wall or ceiling so that the housing can be installed without warping. Otherwise it may be that the fan insert can no longer be inserted into the housing or that the degree of protection indicated on the rating plate is no longer guaranteed.

7. Attach spigot made from shaft material F90 around the shaft.

i The spigot compensates for the length of the shaft walls in the event of a fire.

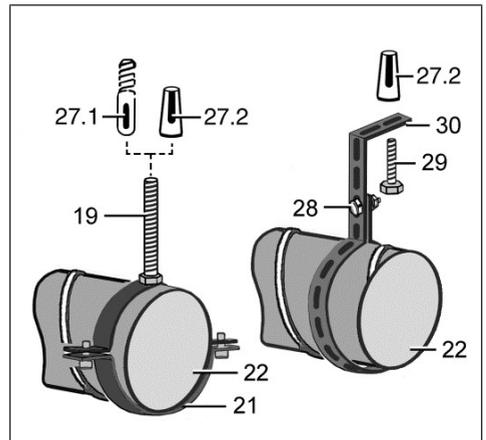
8. Continue with the safety test of the APB shut-off device: Electrically connecting the unit.



12	Main duct (steel folded spiral-seams duct)
13	Spigot
14	Shaft wall
15	Ceiling compound
16	Floor ceiling
19	Steel threaded rod / stair bolt
20	Duct attachment
21	Duct clamp / clamping band
22	Steel folded spiral-seams duct
23	Wall/board seal
24	Suspended ceiling
25	Steel screws or steel blind rivets (3 of each)
26	Steel duct bend
27.1	Anchor bolt / steel dowel
27.2	Metal expansion dowel
28	Retaining bolt with nut
29	Retaining bolt
30	Steel clamping band

i Keep a maximum distance of 1.5 m between the duct fastenings. It is essential to observe the installation instructions: Mounting preparations [► 10].

Duct attachment with duct clamp, alternatively duct attachment with clamping band



Danger due to fire transmission

⚠ DANGER Danger to life due to fire transmission if an incorrect connection duct is used on the APB housing when installed in the ceiling.

Always use steel folded spiral-seams ducts for the connection.

⚠ DANGER Danger to life due to fire transmission in case of faulty ceiling compound. It is essential that the remaining gap between the main duct and the wall or ceiling is completely sealed with non-flammable materials that are resistant to deformation. For example, use concrete or cement mortar.

⚠ DANGER Danger to life due to fire transmission if not flush with the brickwork or with panel building materials.

If used outside the shaft, seal the gap remaining between the connection duct and brickwork/wall boards with non-flammable materials resistant to deformation.

For example, use concrete or cement mortar for brickwork or special fire protection filler for wall boards.

Procedure

i It is essential to observe the installation instructions: Mounting preparations [► 10].

1. Correctly attach main duct inside the shaft.
2. Apply ceiling compound. To do this, encase the ceiling and pour in the material from above.
3. Make shaft opening for the DN 80 steel folded spiral-seams duct.
4. Fit duct attachments to the ceiling. Only use permitted, suitable mounting material.
5. Connect DN 80 steel folded spiral-seams duct to main duct and seal for ventilation, for example with cold-shrink tape.
6. Apply brickwork compound. Seal gap between brickwork and folded spiral-seams duct. The gap remaining must be fully sealed with non-flammable materials that are resistant to deformation. For example, use concrete or cement mortar or for wall boards, use fire protection filler.
7. Fasten duct bends with 3 steel screws or 3 steel blind rivets.
8. Make the DN 80 opening for the unit connection socket in the suspended ceiling (fire resistance is not required). It is essential to observe the permissible installation positions: Permissible installation positions for AP and APB fans.
9. Attach the suspended ceiling and provide a suitable, level substructure.

i It is imperative to compensate any unevenness in the wall or ceiling so that the lower part of the housing can be installed without warping. Otherwise it may be that the fan insert can no longer be inserted into the lower part of the housing or that the degree of protection indicated on the rating plate is no longer guaranteed.

10. Attach spigot made from shaft material F90 around the shaft.

i The spigot compensates for the length of the shaft walls in the event of a fire.

11. Continue with the safety-related test of the shut-off device: ER-APB: Safety instructions for installation of the fire protection shut-off device [► 7].

9.4 Preparations for wall, shaft or ceiling installation without fire protection

1. Carry out installation preparations as described: Requirements in line with approval [► 11]. However, comply with the specifications suitable for the exhaust air system in accordance with the applicable fire protection regulations.
 2. Permissible connection ducts for connection without fire protection requirements:
 - Shaft/wall installation: Flexible aluminium duct with DN 80 connection diameter, max. 2 m long, two 90° elbows.
 - Ceiling installation (connection outside of the shaft): Steel folded spiral-seams duct and/or flexible aluminium duct with DN 80 connection diameter, max. 2 m long, two 90° elbows.
 3. Use suitable mounting material for installation without fire protection.

9.5 Preparations for the electrical connection

⚠ DANGER Danger to life from electric shock.

Before laying the power cable, switch off all supply circuits. Switch off mains fuse, secure against being accidentally switched back on and position a visible warning sign.

i Always note the relevant specifications for electrical installations and when fitting equipment. In Germany, observe DIN VDE 0100 and the corresponding parts in particular.

1. Lay power cable to the installation location.

9.6 ER-APB shut-off device, ER-AP shutter

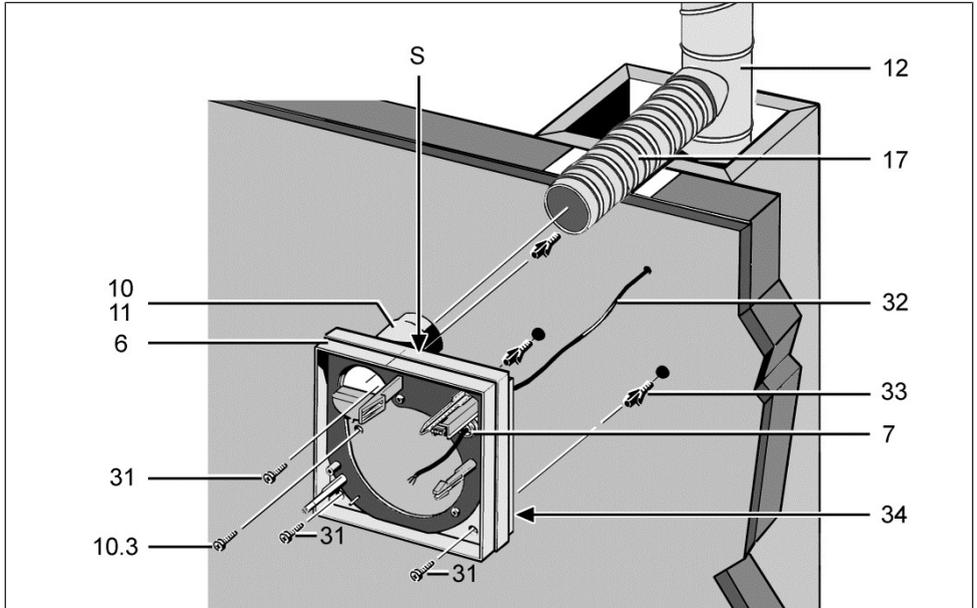
- **ER-APB** with maintenance-free fire protection shut-off device to prevent fire transmission. With metal exhaust socket and metal shut-off shutter and soldered strut with soldered strut locking device. This is approved for a PAM-GLOBAL RML cast iron ventilation duct system or a system with a fire-proof shaft.

i Also pay attention to the safety instructions: ER-APB: Safety instructions for installation of the fire protection shut-off device.

- **ER-AP** plastic shutter with plastic exhaust sockets and plastic backflow preventer. This is approved for use with a ceiling barrier system or an air extraction system without fire protection.

10 Housing installation

10.1 Wall installation, lower part of housing



6	Lower part of housing
7	Cable grommet
10	Metal connection socket with ER-APB shut-off device
10.3	ER-APB: Fixing screw, to be provided by the customer
11	Plastic connection socket with ER-AP plastic backflow preventer
12	Main duct (steel folded spiral-seams duct)
17	Connection duct: AFR 80 flexible aluminium duct
31	Fixing screw (3 items, to be provided by the customer)
32	Power cable

33	Dowel (to be provided by the customer)
34	Housing seal
S	Nominal opening for surface-mounted connection

i It is essential that the safety instructions provided in these instructions for the shut-off device or shutter are observed.

1. Switch off mains fuse, secure against being accidentally switched back on and position a visible warning sign.

2. Mark fixing holes on wall: 3x fixing holes for lower part of housing. For ER-APB, also 1x fixing hole for tab (ER-APB: Safety instructions for installation of the fire protection shut-off device [► 7]) of metal exhaust socket. It is essential that the permissible installation positions are observed.
3. Drill fixing holes and insert dowels. Suitable mounting material is to be provided by the customer.
4. Check ease of movement of shut-off shutter/backflow preventer. When installed, the shut-off shutter/backflow preventer must close automatically.
5. When the power cable is surface installed at position "S", knock out the housing segment at the nominal opening and cut small recesses into the cross struts on the rear of the lower part of the housing to route the ducts.

NOTICE Danger of short-circuits and damage to the unit. If the power cable is incorrectly fed or if the cable grommet is not fitted correctly, water may penetrate into the fan housing. The degree of protection cannot be guaranteed.

Pierce the cable grommet so that it tightly seals the power cable. Guide the surface-mounted or flush-mounted cables correctly into the intended cable grommet.

6. Pierce a round opening in the cable grommet with a grommet puncher.
7. Guide the power cable into the terminal compartment such that the cable grommet fits around the cable sheathing completely.

⚠ DANGER Fire may spread if connection duct is incorrectly installed.

Only use permitted duct material
Correctly attach connection duct to exhaust socket.

8. Pull connection duct out of wall/shaft.

NOTICE The noise level will increase if the housing seal is fitted incorrectly.

Ensure that the housing seal is correctly inserted into the lower part of the housing all the way round.

9. Check/ensure that housing seal is fitted correctly all the way round.
10. Slide connection duct up to stop above exhaust socket. Connection between connection duct and exhaust socket must be leak-tight, use cold-shrink tape for example.

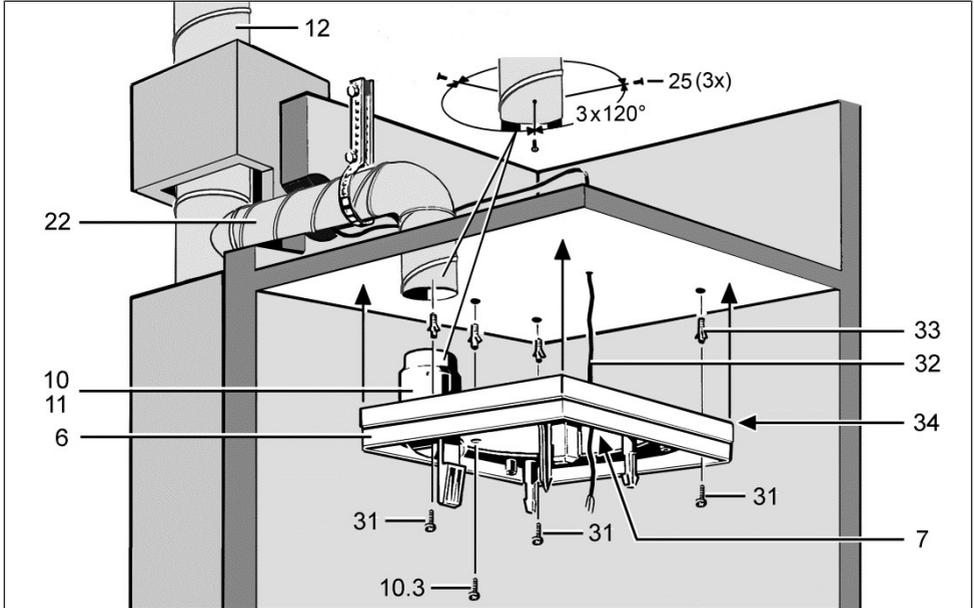
Prescribed mounting material

	Steel screw	Steel dowel
Masonry or concrete	●	●
Panel building materials	●	

i Keep gap remaining between the connection duct and wall board/brickwork/concrete as small as possible.

11. Use 3 screws to secure the bottom part of housing to the wall. For ER-APB, also screw down tab of connection socket with fixing screw. Suitable mounting material is to be provided by the customer. Again check ease of movement of shutter/backflow preventer. When installed, the shut-off shutter/backflow preventer must close automatically.

10.2 Ceiling installation, lower part of housing



6	Lower part of housing
7	Cable grommet
10	Metal connection socket with ER-APB shut-off device
10.3	ER-APB: Fixing screw, to be provided by the customer
11	Plastic connection socket with ER-APB plastic backflow preventer without fire protection
12	Main duct (steel folded spiral-seams duct)
22	Connection duct: steel folded spiral-seams duct. For ceiling barrier system or ventilation ducts without fire protection, flexible aluminium duct
25	Steel blind rivets (3 items / 120°), to be provided by the customer
31	Fixing screw (to be provided by the customer)
32	Power cable
33	Fixing screw (to be provided by the customer)
34	Housing seal

⚠ DANGER Risk of incorrect installation if non-permitted mounting material is used.
Only secure connection duct to ceiling with permitted mounting material (duct clamp or clamping band).

Prescribed mounting material

	Steel screw	Steel dowel
Masonry or concrete	•	•
Panel building materials	•	

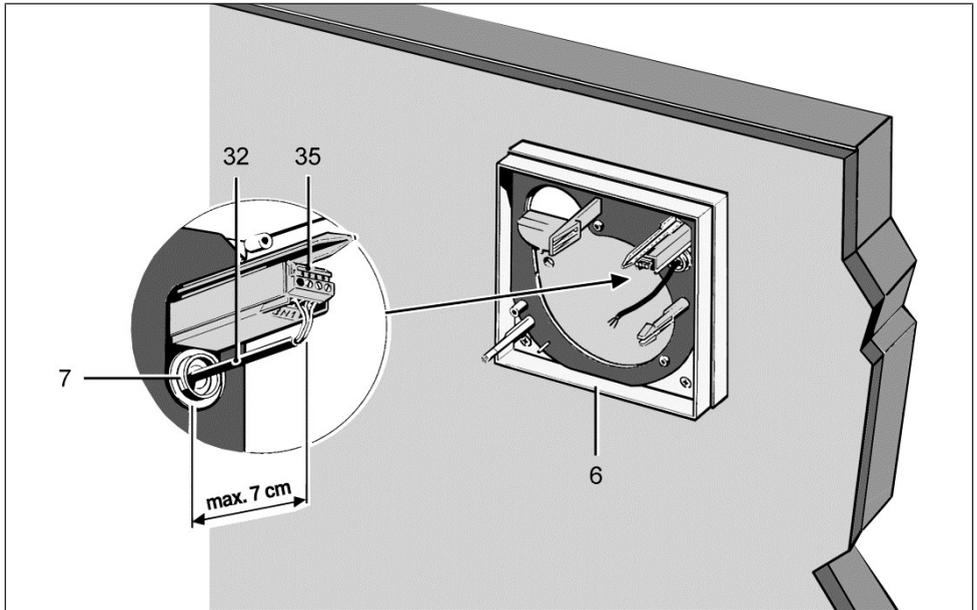
1. Install lower part of housing on ceiling as described in "Wall installation" chapter.

i It is essential that the hazard notes in: Mounting preparations [► 10] are observed.

i It is essential that the safety instructions for the shut-off device or shutter are observed: ER-APB: Safety instructions for installation of the fire protection shut-off device [► 7]

2. Check ease of movement of shut-off shutter/backflow preventer. When installed, the shut-off shutter/backflow preventer must close automatically.

11 Electrical connection



6	Lower part of housing
7	Cable grommet
32	Power cable
35	Connection terminal

i To prevent the unit and/or electric components from malfunctioning as a result of reverse polarity voltages and induction (incorrect ignition or glowing/flaring of LED, energy-saving or neon lamps), the unit and electric components connected in parallel, such as room lighting, should be connected via a double-pole switch.

⚠ DANGER Danger to life from electric shock.

Prior to accessing the connection terminals, switch off all supply circuits. Switch off mains fuse, secure against being accidentally switched back on and position a visible warning sign.

⚠ DANGER Danger from electric shock/The unit will be damaged if installed incorrectly with too long a power cable.

If the cable feed is too long inside the housing, the fan insert cannot be installed correctly. The power cable may be damaged when inserting the fan unit.

Area for mains connection labelled: Lay wires according to the contour. Note that the maximum spacing to the connection terminal box is 7 cm. Do not cut the power cable inside the housing too short.

NOTICE Risk of damage if ESD sensitive components on the board are touched.

Avoid direct touching of the components or contact surfaces.

NOTICE Damage to the unit if connected incorrectly.

For example, if an electric load is connected to terminal 4 or if connected to 2 phases. Connect the unit according to the wiring diagrams: Wiring diagrams [► 24]. Do not connect additional consumers to terminal 4.

NOTICE Risk of damage to unit in the event of short-circuits.

Cut off and insulate PE conductor and individual cable cores that are not required!

Always note the relevant specifications for electrical installations and when fitting equipment. In Germany, observe DIN VDE 0100 and the corresponding parts in particular. In rooms with baths or shower units, for example, this would be Part 701.

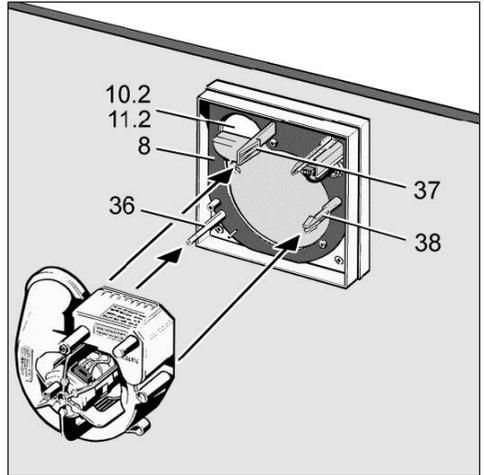
1. Switch off mains fuse, secure and fit warning sign.
2. Remove power cable's sheathing and cut to length as described.
3. Cut off and insulate PE conductor and individual cable cores that are not required!
4. Make electrical connection according to wiring diagram on terminal box: Wiring diagrams [► 24].

12 Installation of fan insert and upper part of housing

1. Switch off mains fuse and fit warning sign
2. Check ease of movement of shut-off shutter/backflow preventer. When installed, the shut-off shutter/backflow preventer must close automatically. For ER-APB, this must close automatically when the yoke spring used is pressed.

NOTICE Degree of protection not guaranteed if housing floor seal is positioned incorrectly.

Insert seal into lower part of housing, flat and without any creases, smooth out if necessary.



8	Sealing
10.2, 11.2	Shutter
36, 37, 38	Fixing points

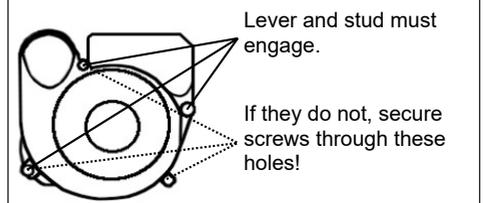
3. Check position of housing floor seal and correct if necessary.

NOTICE Function will be impaired if fan insert is not inserted correctly.

Ensure proper insertion in the locking hooks. If the fan insert is not firmly seated, screw it to the housing at the 3 positions shown in the figure above. Suitable mounting material is to be provided by the customer.

4. Check that all screw connections are tight.
5. Check ventilation ducts for dirt and clean if necessary.
6. Check that connection data matches technical data on the unit (→ Unit rating plate).

Note wiring diagrams in box base. Cables must not prevent the unit from being slid in.



→ Installation information in unit

- Slide fan insert evenly, in parallel, onto both studs. Ensure that the two locking tabs of the stud and the locking lever audibly engage so that the fan insert is secure.

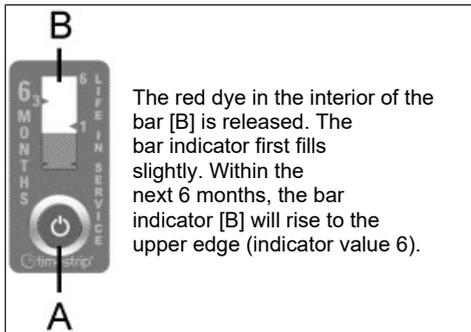
NOTICE Damage to the unit. Degree of protection is not guaranteed if in the wrong installation position.

Only fit upper part of housing with the Maico name in the bottom right.

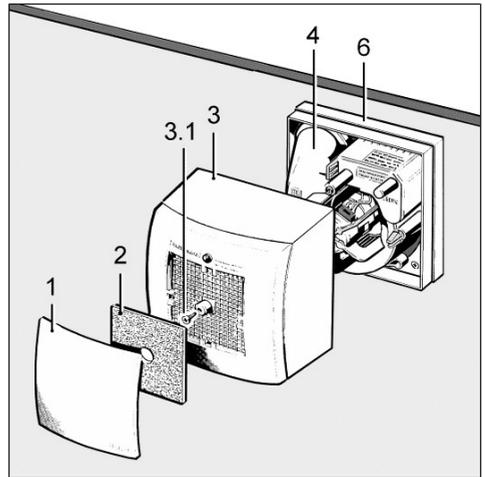
- Attach upper part of housing and fasten with central screw.

i Upper part of housing can only be fitted in one position. Ensure that the two arrows on the upper part of the housing and the words "exhaust socket" are facing the exhaust socket.

- Check that filter mat is fitted correctly.
- Affix time strip (→ Title page) and push the activation button all the way.



- Fit cover (MAICO name on bottom right). The cover must audibly click into place.



13 Commissioning

- Switch on mains fuse and remove warning sign.
- Run function test. To do this, switch unit on and off, observe delay times (for control models Controls (circuit board types) ▶ 10).
- Check that the unit is running smoothly. It is also important that the air can flow unhindered.
- Switch off unit.

Operating the unit

Depending on model and connection variant, use switches provided by customer to switch the unit on and off. Barrier-free units do not need switches. Alternative connection options are described (Wiring diagrams ▶ 24).

- Standard, VZ and G model:** The unit is switched on and off with switches that are to be provided by the customer.
- F model:** Barrier-free. The unit switches on once the room lighting is activated. Can also be operated manually with optional switch.
- H model:** Barrier-free, no switch needed. Can however also be operated manually with optional switch.

i If the unit is switched on and off manually, function in accordance with relevant standards is not always ensured.

i In the event of thermal overload, the unit switches off automatically. Wait until the motor has cooled down. Cool-down time may be up to 10 minutes. The unit switches back on automatically after cooling down.

14 Cleaning, maintenance

The unit is practically maintenance-free. The air filter simply needs replacing every 3 to 6 months, depending on the degree of soiling.

⚠ DANGER Danger to life from electric shock.

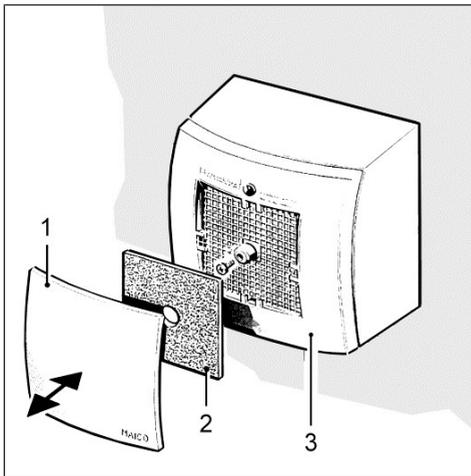
Prior to accessing the connection terminals, switch off all supply circuits. Switch off mains fuse, secure against being accidentally switched back on and position a visible warning sign.

NOTICE Risk of damage to unit if incorrect cleaning agent is used.

Only clean the cover using water.
Do not use aggressive cleaning agents.

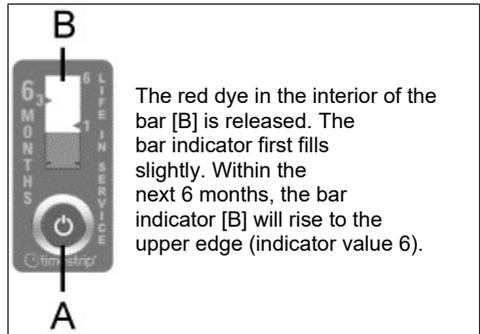
1. Clean housing components with dry cloth only.
2. If the cover or upper part of the housing is very dirty, clean with water.

Filter change



i Filter change interval every 3 to 6 months, depending on the degree of soiling.

1. Remove cover.
2. Take out filter mat and replace it.
3. Remove used TimeStrip.
4. Affix new time strip and push the activation button [A] all the way.



5. Place filter mat on intake grille of the upper housing part and replace cover. The cover must audibly click into place.

15 Fault rectification

i Fault finding and repairs only permissible when carried out by qualified electricians.

⚠ DANGER Danger to life from electric shock.

Prior to accessing the connection terminals, switch off all supply circuits. Switch off mains fuse, secure against being accidentally switched back on and position a visible warning sign.

Fault	Cause → Measure
Fan performance inadequate.	<p>Dirty filter. → Replace filter.</p> <p>Locking hook not engaged. → Engage fan insert correctly.</p> <p>Incorrect duct diameter. → Check diameter of the main duct.</p> <p>Supply air cross section is too small. → Increase the supply air cross section.</p>
VZ, F and H models: No fan overrun.	The external conductor L connected to terminal 1 is interrupted when the unit is switched off. → Connect unit as per wiring diagram.
VZ models: Unit starts up immediately and stops immediately if is switched off.	Terminals 1 and 3 are reversed. → Connect unit as per wiring diagram.
Fan is too loud.	<p>Dirty filter. → Replace filter.</p> <p>Fan insert incorrectly installed. → Insert fan insert correctly in accordance with these instructions.</p> <p>The main duct is undersized. → Re-calculate pressure losses.</p>
H model does not switch from base load to full load operation despite there being humidity in the room.	No rapid increase in humidity (7 % in 2 minutes) took place.
H model no longer switches back to base load operation or off even after a long period in full load operation.	The level has not yet fallen below reference value. After 1 h, the valve automatically switches from full load operation to base load operation after an overrun time of 15 minutes and resets the reference value.

Fault	Cause → Measure
Additional consumers connected to terminal 4.	<p>Damage to the unit if connected incorrectly.</p> <p>Do not connect additional consumers to terminal 4.</p> <p>The unit may only be connected according to the wiring diagrams (Wiring diagrams [► 24]).</p>

i **If the fault persists or reoccurs:** Disconnect the unit completely from the power supply. Let a qualified electrician determine the cause of the fault and eliminate it. If you have any question relating to troubleshooting: Service: +49 7720 6940.

16 Spare parts

i **Spare parts may only be sourced from and fitted by a specialist installer.**

Designation	Article no.
Cover ABD AP ER 60/100/Centro	E059.1037.0001
Housing GH AP ER 60/100/Centro	E059.1036.9001
GH AP ER 60/100 F	E059.1036.9101
Lower part of housing GHU ER-AP	E059.1035.9100
GHU ER-APB/Centro-APB	E059.1035.9200
Circuit boards ER AP/ APB:	E101.1012.9002
PL ER 60	E101.1014.9004
PL ER 60 VZ	E101.1012.9102
PL ER 60 G	E101.1014.9303
PL AP ER 60 F	E101.1014.9403
PL ER 60 I	E101.1014.9504
PL ER 60 GVZ	E101.1014.9207
PL ER 60 H	E101.1014.9801
PL ER 60 VZC	E101.1013.9002
PL ER 100	E101.1015.9004
PL ER 100 VZ	E101.1015.9601
PL ER 100 VZC	E101.1013.9102
PL ER 100 G	E101.1015.9303
PL AP ER 100 F	E101.1015.9403
PL ER 100 I	E101.1015.9502
PL ER 100 GVZ	E101.1015.9207
PL ER 100 H	

In case of questions, please contact:

Maico Elektroapparate-Fabrik GmbH
 Steinbeisstraße 20
 78056 Villingen-Schwenningen, Deutschland
 Tel. +49 7720 694 445
 Fax +49 7720 694 175
 E-mail: ersatzteilservice@maico.de

i Spare parts can be ordered at
www.shop.maico-ventilatoren.com.

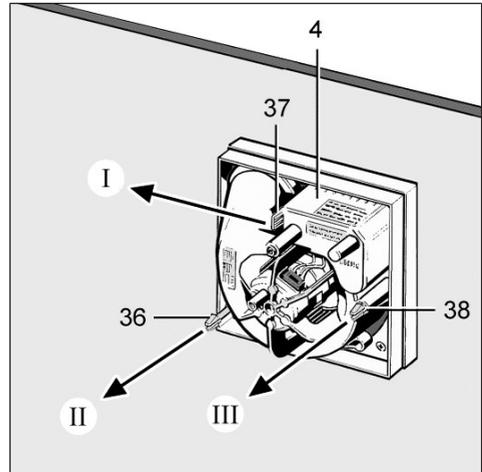


17 System and accessory components

17.1 Accessories

Designation	Article no.
Filter mat ZF 60/100: 5 items, filter class G2 in accordance with EN 779 with filter change display (time strip)	0093.0331
Sound-absorbing element ER-SE AP	0192.0679

18 Removing the housing



4	Fan insert	36	Locking tabs
37	Locking lever	38	Locking tabs

1. Switch off mains fuse, secure and fit warning sign.
2. Remove cover and upper part of housing.
3. Press locking lever slightly to the left (→ arrow I), release and raise the fan insert slightly.
4. Press together locking tabs of stud and raise fan insert slightly.
5. Press together locking tabs of stud and evenly pull entire fan insert out of lower part of housing in parallel (→ arrows I - III).
6. Installation is carried out in reverse order.

19 Environmentally responsible disposal

The ventilation unit and the packaging contain parts that can be recycled, and should not end up in the domestic waste.

Dispose of the **packaging material** in an environmentally-friendly way, in compliance with the regulations valid in the country where you are.

Dispose of the **air filter** in an environmentally-friendly way, in compliance with the regulations valid in the country where you are.

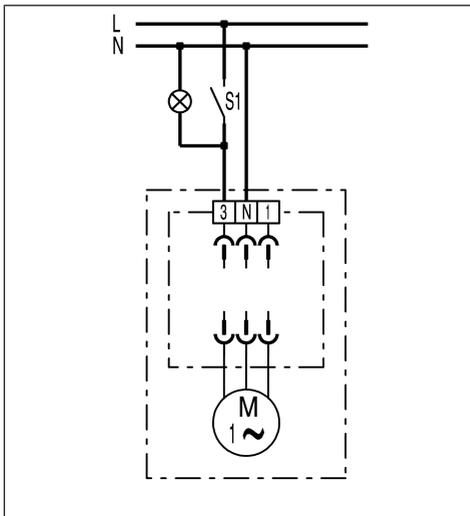
At the end of its service life, dispose of the **unit** in an environmentally-friendly way, in compliance with the regulations valid in the country where you are.

20 Wiring diagrams

20.1 Wiring diagrams ER AP/APB

ER-AP 60, ER-APB 60
ER-AP 100, ER-APB 100

Standard model



Switching on

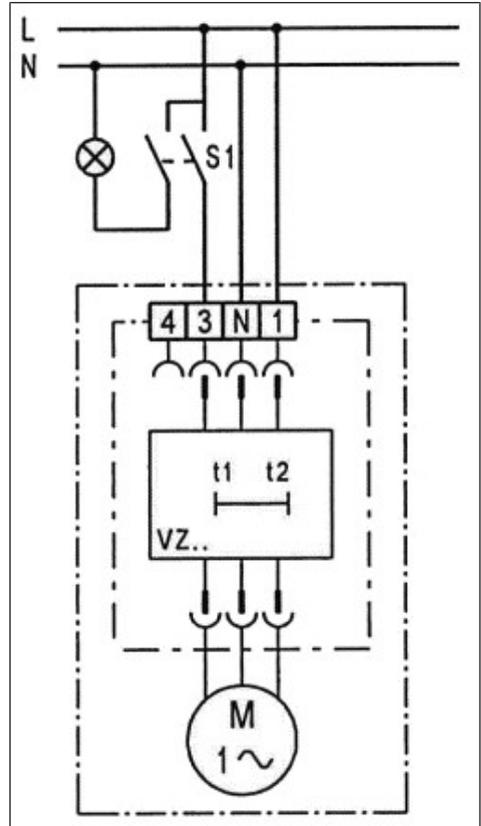
The unit starts up after switching on with switch S1 (room lighting).

Switching off

After switching off with switch S1, the unit also switches off.

ER-AP 60 VZ, ER-APB 60 VZ
ER-AP 100 VZ, ER-APB 100 VZ

VZ standard switching



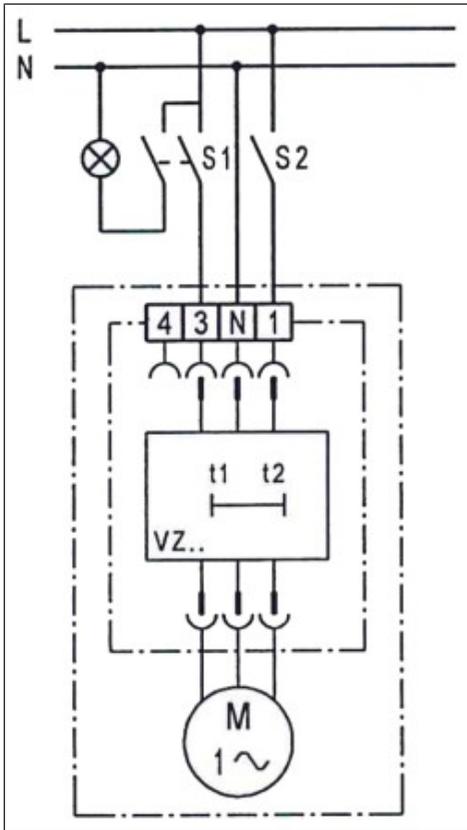
Switching on

The unit starts up approx. 50 seconds after switching on with switch S1 (room lighting).

Switching off

The unit has an overrun time of approximately 6 minutes after switching off with switch S1 and then switches off.

VZ switching variant 1

**Switching on**

The unit starts up approx. 50 seconds after switching on with switch S1 (room lighting) and switch S2.

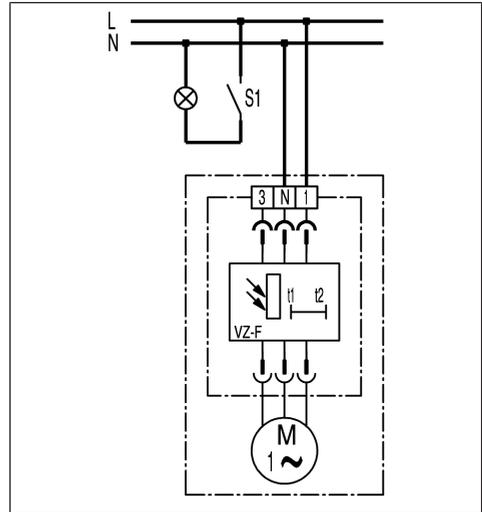
Switching off, scenario 1

The unit has an overrun time of approximately 6 minutes after switching off with switch S1 (room lighting) and then switches off.

Switching off, scenario 2

The unit is switched off directly with switch S2, i.e. regardless of the room lighting.

ER-AP 60 F, ER-APB 60 F
ER-AP 100 F, ER-APB 100 F

F standard switching:

The F fan is designed for installation in windowless, dark rooms. The unit is switched on wirelessly through the brightness of the room lighting by a light control unit. The unit starts up after approximately 50 seconds.

The minimum switch-on brightness is 30 lx on the front of the cover.

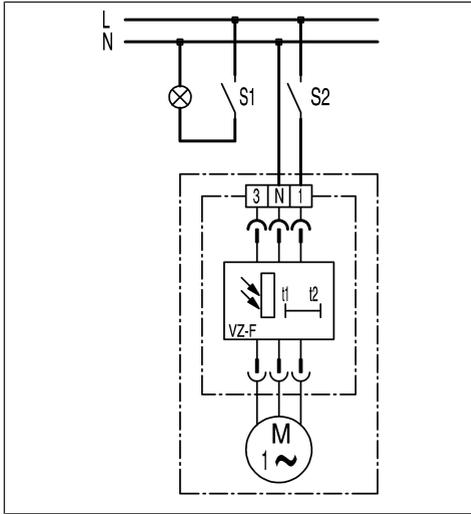
Switching on

The unit starts up approx. 50 seconds after switching on the room lighting with switch S1.

Switching off

The unit has an overrun time of approximately 6 minutes after switching off the room lighting with switch S1 and then switches off. For the unit to switch off, the room must be dark (max. lighting strength at the front of the cover is 0.3 lx).

F switching variant



Switching on

The unit starts up approx. 50 seconds after switching on the room lighting with switch S1. Switch S2 is closed.

Switching off, scenario 1

The unit has an overrun time of approximately 6 minutes after switching off with switch S1 (room lighting) and then switches off.

Switching off, scenario 2

The unit can be switched off directly with switch S2, i.e. regardless of the room lighting.

Function of the H model

Once the fan insert has been installed, the unit regulates to the current room humidity (relative humidity). This humidity value is saved as the first reference value. The reference value does not have to be specified manually.

If the room humidity increases by 7 % within 2 minutes, the fan automatically switches to the nominal load level (60 m³/h or 100 m³/h). The unit continues to run at nominal load level until the stored reference value is undercut again.

If the humidity falls below the saved reference value, the overrun operation starts with an overrun time of 15 minutes (nominal load) If the humidity does not fall below the reference value within 60 minutes, the unit switches back into the operating status before the humidity control was activated. The current humidity value is saved as the new reference value.

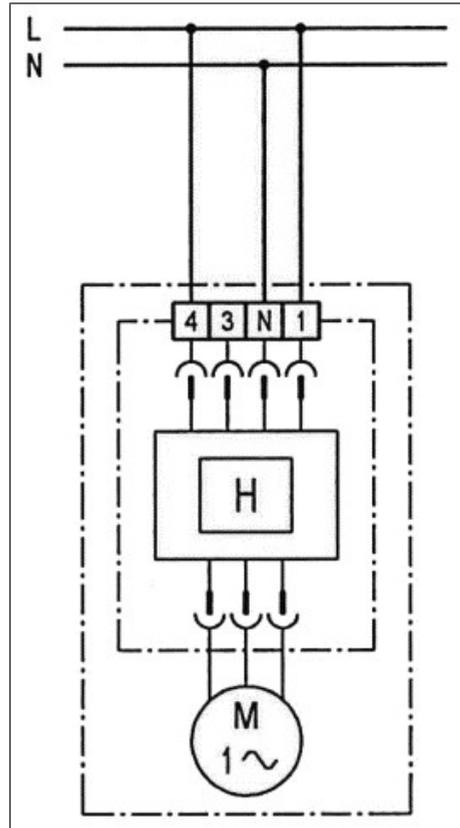
If the relative humidity falls below the reference value during operation, the newly established reference value is saved. ER ...H fans can also be operated using the light switch.

With "Light on", the fan starts in nominal load. Actuation via the light switch takes priority over the automatic humidity function. With "Light off", the unit continues to run until the remaining overrun time (15 minutes) has passed. The automatic humidity function is then assigned maximum priority again and controls the unit.

ER-AP 60 H, ER-APB 60 H

ER-AP 100 H, ER-APB 100 H

H standard switching



Unit with humidity control.

The switch-on and switch-off point is automatically set (Installation of fan insert and upper part of housing [► 19]).

Standard switching:**Permanent base load operation****Switching on**

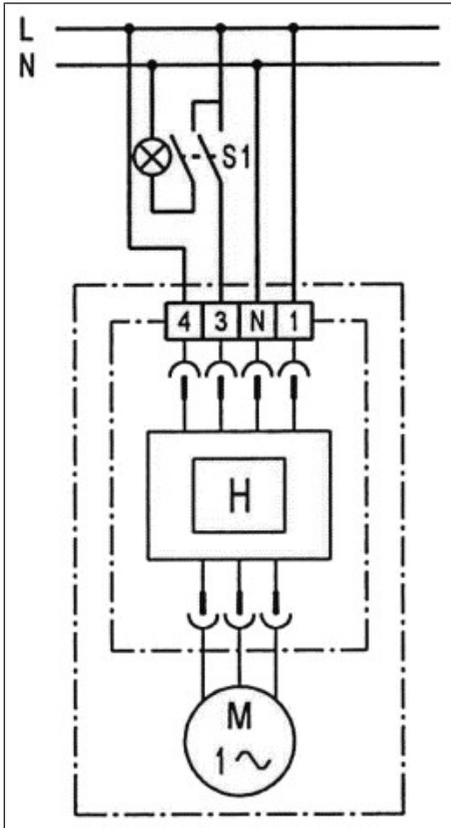
The unit is running in base load operation, humidity control is active. If the switch-on point is exceeded, the unit switches automatically over to full load mode.

Switching off

The unit switches automatically back to base load operation if the relative humidity falls below the switch-off point.

H switching variant 1

Permanent base load operation with pre-defined overrun time

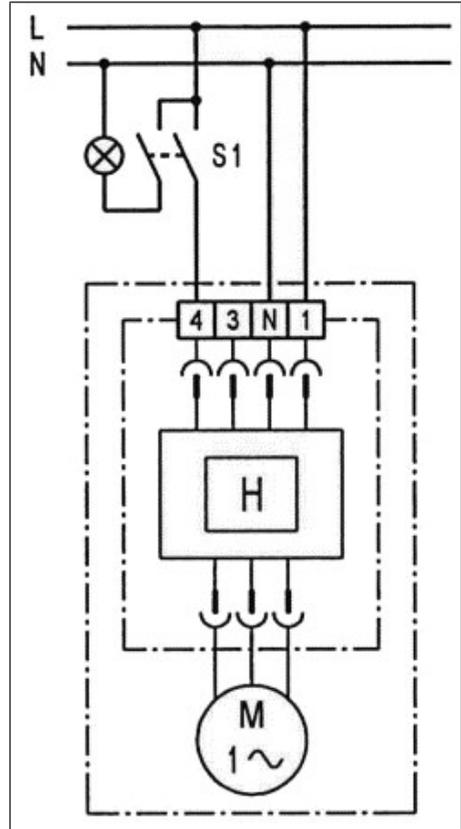
**Switching on**

The unit is running in base load operation. Humidity control is active, see standard switching. Switch S1 can manually be switched to full load operation.

Switching off

After switching full load operation off with S1, the unit continues in full load operation for an overrun time of 6 minutes. If, after this time, the humidity as measured at the unit:

- is higher than the saved reference value, the fan continues to run in full load operation until the humidity drops below the reference value. After the 15 minutes of overrun time, the fan switches back to base load operation.
- is lower than the saved reference value, the fan automatically switches back to base load operation after an overrun time of 15 minutes.

H switching variant 2**Manual base load operation****Switching on**

The unit is switched manually to base load with switch S1. Humidity control is active, see Standard switching.

Switching off

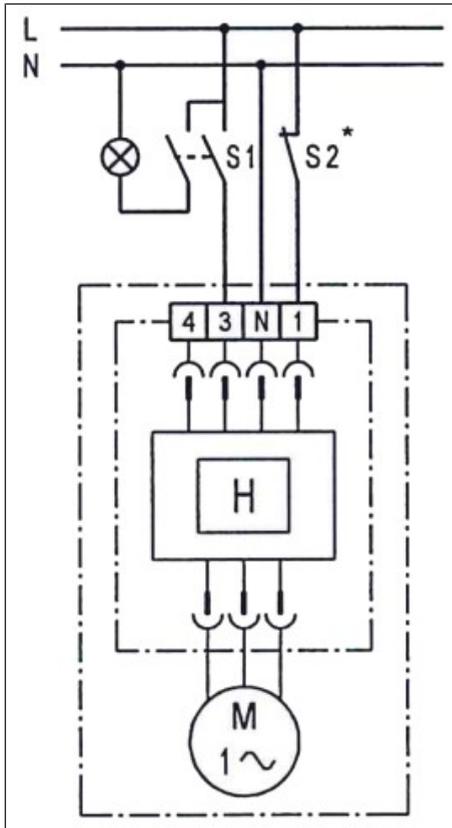
When manually switching off with switch S1, if the unit is in:

- full load operation, i.e. humidity is present, the unit continues to run until the humidity drops below the saved reference value. After the 15 minutes of overrun time, the fan switches back to base load operation.
- base load operation, the unit switches itself off automatically.

Note: The unit may start up automatically if switch S1 is open.

H switching variant 3

Manual full load operation with pre-defined overrun time.



Switching on

The unit is switched manually to full load with switch S1. Humidity control is active.

Switching off

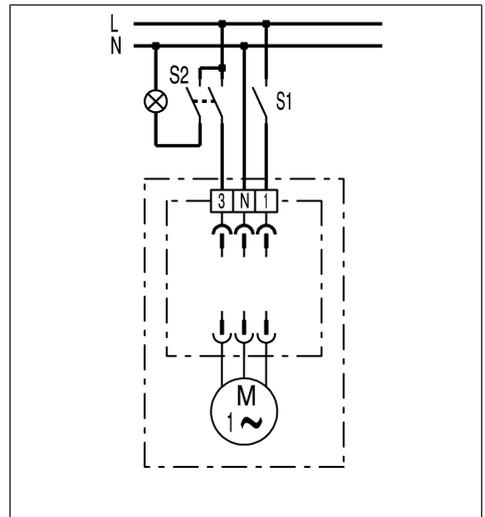
When switching off with S1, the unit continues in full load operation for an overrun time of 15 minutes. If, after this time, the humidity as measured at the unit:

- is higher than the saved reference value, the fan continues to run in full load operation until the humidity drops below the reference value. After the 15 minutes of overrun time, the fan switches back to base load operation.
- is lower than the saved reference value, the fan automatically switches off after an overrun time of 15 minutes.

If switch S1 is open, the unit can start up automatically as a result of high room humidity.

* **With switch S2**, the unit can also be switched off independently of the room lighting in the event of malfunctions caused by reverse polarity voltages, for example. The humidity function is then inactive.

ER-AP 60 G, ER-APB 60 G
ER-AP 100 G, ER-APB 100 G
G model



The unit with base load function can be run at base load or full load as required.

Switching on

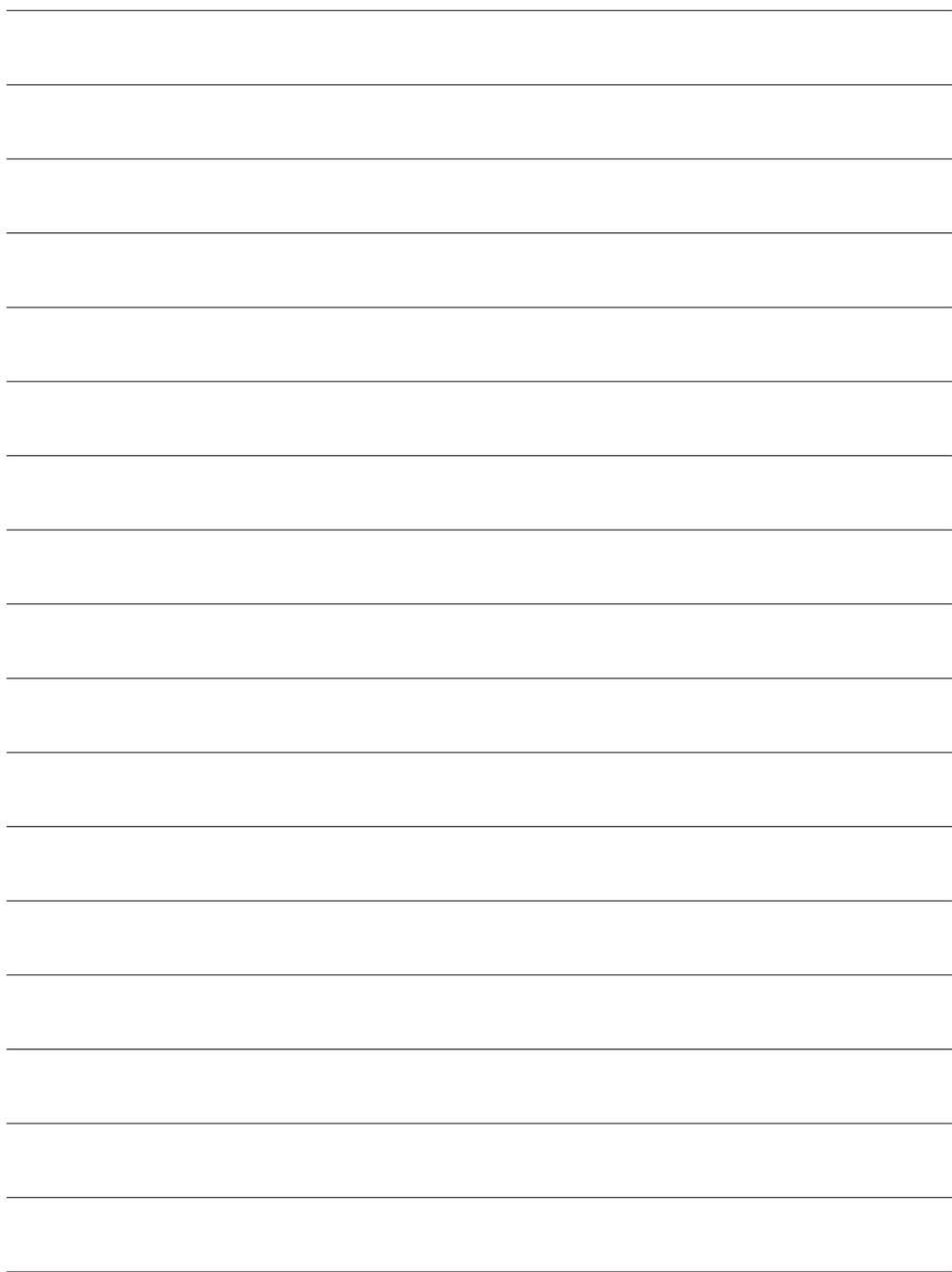
If switch S1 is pressed, the unit runs permanently in base load operation (continuous operation at low speed and low air volume). If the room lighting is also switched on with switch S2, the unit runs at full load (operation at high speed and maximum volumetric flow).

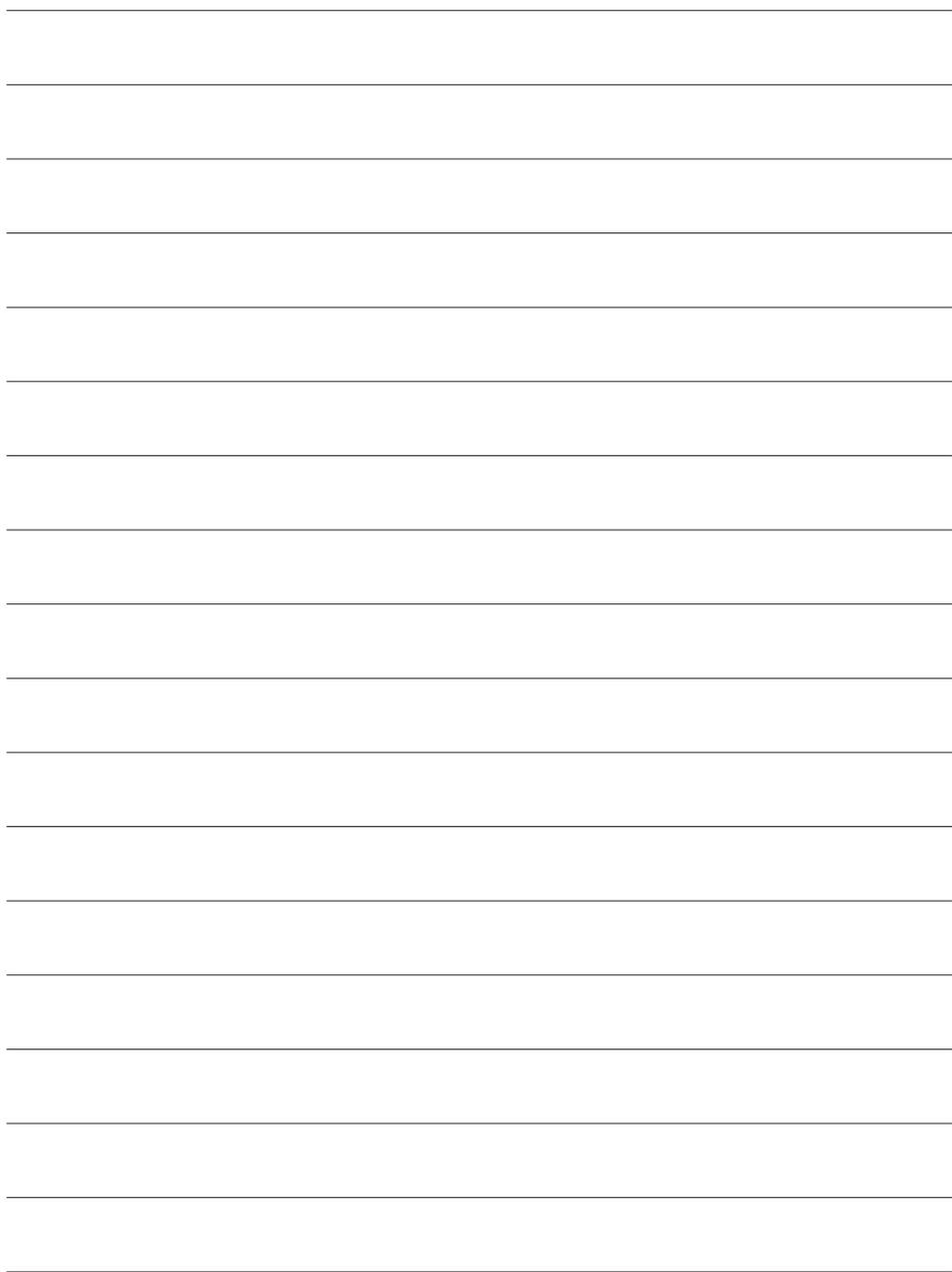
Switching back into base load operation

If the room lighting is switched off with switch S2, the unit switches back into the base load level.

Switching off

The unit can be switched off completely with switch S1. It doesn't matter what position switch S2 is in







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