

WRG 180 EC

GB Mounting and Operating Instructions



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1. Introduction

1.1 Product description

This product from the advanced Maico WRG 180 EC model range is a heat recovery unit with an efficiency rate of 90 % and energy-saving fans for a constant volumetric flow. The new generation is characterised by:

- air flow rates that can be adjusted continuously through the operating panel
- a filter status display on the unit
- a new frost-protection system for optimum unit performance, even at very low external temperatures
- low noise levels

When delivered, the unit is ready for service. All operating elements are installed and tested before leaving the factory. During installation, the unit has to be connected to the air channels, the condensation connection, the mains power and a controller.

The installer can modify the required air flow for each setting through the operating panel at the unit. You will find an exact description in Chapter 4.

The WRG 180 EC is designed for a maximum ventilation power of 180 m³/h at a resistance of 150 Pa in the channel system.

1.2 Scope of delivery

- Ventilation unit.
- These mounting, operation and maintenance instructions.

1.3 Symbols in this manual



WARNING symbol:

Here, extreme care and caution are called for. In the case of malpractice, there is a direct risk of injury to the system operator or to a third party. Non-observance can cause damage to the ventilation system.



INFO symbol:

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

- **Symbol for lists:**
Here, you will find important information about the subject.

- **Symbol for requests for action:**
Here, you are asked to take action. Follow the instructions given, in the order stated.

Acknowledgements:

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Translation of the original manual. We are not responsible for mistakes or printing errors and retain the right to make technical modifications without giving prior notice.

2. Essential safety instructions

2.1 General safety instructions

- Electrical installation and repairs are only permitted when carried out by trained specialists.
- Ask your installer to instruct you in the ventilation unit and operating unit.
- Switch the ventilation unit off immediately if you discover damage or faults that could endanger persons or property. Prevent further use.
- Disconnect the ventilation unit from the mains before any cleaning or maintenance work. (Switch off mains fuse in fuse box and position a clearly visible warning notice to avoid the unit being accidentally switched back on.)
- Do not modify the unit in any way. Only use original spare parts. Danger of injury. MAICO does not assume any liability for modified units or parts from other manufacturers.
- Never operate the ventilation unit without all duct connections and sound absorbers. Sound absorbers significantly reduce the noise emissions.
- Never operate the ventilation unit without a filter.
- Check the filter regularly for dirt and damage. See "Maintenance" chapter.
- After the unit has been switched off for some while, e.g. in the summer, replace the filters before starting up again to ensure complete hygiene.

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The unit is not intended to be used by people whose physical, sensory or mental capabilities are not sufficient for them to understand and put into practice the safety information provided in these instructions. This limitation also applies to children.

The unit may however be safely used by such persons if they are supervised by someone responsible for their safety or if they are instructed in a suitable way.

2.2 Intended use

- The WRG 180 EC unit is a central ventilation unit with heat recovery for venting and extracting air in one or more rooms.
- The unit usually extracts the exhaust air from kitchens, bathrooms and WCs with high odour and humidity levels and feeds fresh air to the bedrooms and living rooms.
- For the controlled ventilation of apartments and single family-unit houses.
- The ventilation unit may only be used in line with the calculations carried out by the Engineering office.

2.3 Predictable misuses

Maico is not liable for damages caused by usage not for the intended purpose.

The unit should not be used:

- close to flammable materials, liquids or gases.
- for the conveying of chemicals, aggressive gases or vapours.
- in potentially explosive atmospheres
- in swimming pools
- for drying out new builds
- in combination with laboratory extractors.
- in combination with extractor hoods that are connected directly to the controlled domestic ventilation exhaust air channel.

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For energy usage reasons, we recommend using extractor hoods in circulating air mode.

2.4 Regulations for fulfilling the passive energy house criteria

2.4.1 Frost protection equipment for the heat exchanger

In order to guarantee continuous ventilation, the outside air must be preheated, when outside air temperatures fall below 0°C.

We recommend the following components for installation in the outside air inlet:

- EW earth heat exchanger system or
- Electrical preheating register ERH 12-1, see Chapter 9.4. The switching temperature can be set at the rotary knob, see supplied instructions.

2.4.2 Switching off a hydraulic heat register

When a hydraulic heat register is installed in the supply air channel, the heat register must be protected against frost damage. This can be guaranteed by switching off the unit.

We recommend installing the thermostat TH 10 as a safety device, see wiring diagram. The switch-off temperature must be set to 7 °C at the thermostat.

2.5 Regulations for operation with fireplaces

Observe the current rules from the German Federation of Chimney Sweeps (Evaluation criteria for the joint operation of fireplaces – domestic ventilation – extractor hoods) as well as other pertinent regulations and guidelines.

The ventilation unit may only be installed in rooms, apartments or living units of a comparable size with air-ventilated fireplaces, if:

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



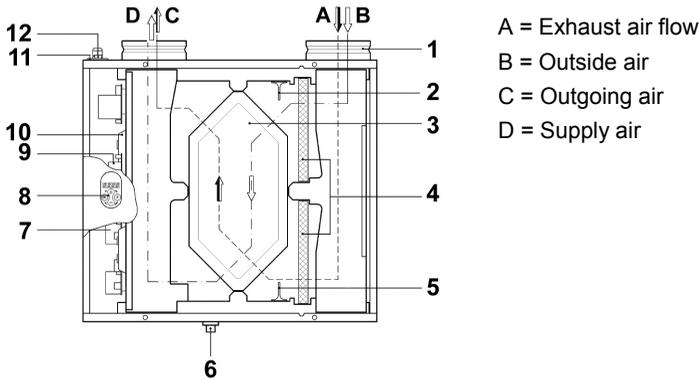
Only operate the ventilation system at the same time as an air-ventilated fireplace if using differential pressure control.

NOTICE

The ventilation unit may not be installed in living units with air-ventilated fireplaces that are connected to exhaust gas systems, which themselves have multiple connections. Combustion air ducts must be capable of being blocked. In the case of solid fuel fireplaces, any blocking device may only be operated manually.

3. Construction

3.1 Exploded view



A = Exhaust air flow
 B = Outside air
 C = Outgoing air
 D = Supply air

3.2 Unit components

1	Coupling	For the connection of the supply air and exhaust air channel
2	Sensor for room air temperature	Measures the temperature of the exhaust air leaving the building
3	Heat exchanger	Guarantees the heat transfer between both air flows.
4	Filter	To filter both air flows
5	Sensor for outside temperature	Measures the temperature of the outside air
6	Connection for condensation run-off	The condensation run-off is connected here
7	Outgoing air fan	Conveys the used air to the outside
8	Control panel	Interface between user and control electronics
9	Main board	Contains the control electronics for the basic functions
10	Supply air fan	To feed fresh air into the room
11	PG screw connection for room air control	
12	PG screw connection for 230 V power supply	

4. Operation

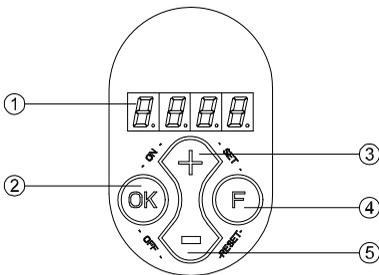
4.1 General

A product from the WRG 180 EC range is a highly developed heat recovery fan, which, thanks to the latest electronic controller, combines minimum energy consumption and maximum comfort in a single unit. A micro-processor controller guarantees the safe operation of the fan and ensures that the defined air volume values remain constant. The WRG 180 EC is equipped with an operating panel with display. This makes it possible to make a continuous air volume adjustment and to read off the operating data without opening the ventilation unit.

4.2 LED display system and operating panel

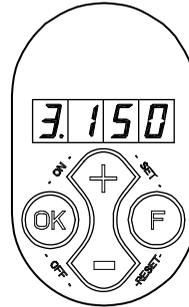
The WRG 180 EC is equipped with an operating panel. This is used to call up and/or modify settings.

The operating panel has four buttons and a display.



- 1 Display
- 2 "OK" button (confirm, ready, reset filter status display)
- 3 "Increase parameter value" button
- 4 Function button
- 5 "Lower parameter value" button

The lefthand area of the display shows the ventilation level or the parameter type. The righthand area shows the read-out value, e.g. the defined air volume.



Example:

From the display, you can read off that the unit is operating at ventilation level 3, with a flow rate of 150 m³/h.

The 4 buttons have the following functions:

- F** Function button / Switch parameter menu on and off
- +** Next parameter / Increase value
- Previous parameter / Lower value
- OK** Switch setting menu on and off / manual error reset / filter status display reset

Further commands can be entered with button combinations.

- F and + (set)** Confirm parameter value
- F and - (reset)** Reset parameter value back to factory setting
- OK and + (ON)** Switch on unit
- OK and - (OFF)** Switch off unit

In the case of an operating procedure carried out using function buttons, the corresponding button is identified by quote marks and bold print in the manual.

Example: - Press "OK" button

4.3 Anti-frost protection

The frost protection system ensures that the secondary side of the heat exchanger (exhaust air side) does not freeze up as a result of an imbalance between supply and exhaust flow. An optimal control of the volumetric flows is carried out, dependent on temperature and pressure loss at the heat exchanger.

4.4 Filter status display

The unit is equipped with a filter status display that indicates when a filter change is necessary. You will find more information in sections 7.2 and 8.1.

5. Installation

5.1 General

The steps required to install the unit can be summed up as follows.

1. Setting up the unit.
2. Connecting the channels.
3. Connecting the condensation run-off.
4. Electrical connection: Connection of the room air control and the mains power.
5. The WRG 180 EC must be installed in line with the following requirements.
 - Quality requirements of ventilation systems in closed rooms.
 - Quality requirements of balanced ventilation in closed rooms.
 - Volume calculations in line with building statutes.
 - Regulations for ventilation in closed rooms and residential buildings.
 - Safety regulations for low-voltage installations.
 - Regulations for sewage connection in closed rooms and residential buildings.
 - Additional regulations laid down by local utility companies.
 - Mounting instructions for the WRG 180 EC.

5.2 Wall assembly

Use the special wall bracket for wall mounting. See Chapter 11.3, Accessories.

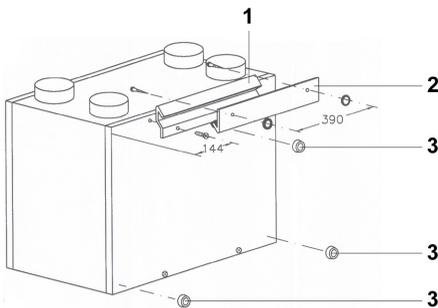


Danger of injury if installed on a wall that is too weak.

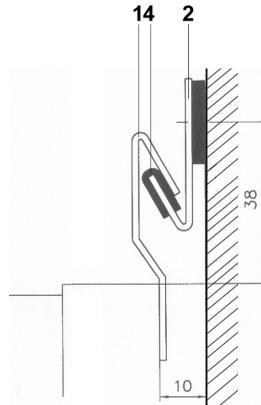
Only install the ventilation unit on a wall with sufficient load-bearing capacity. Prescribed is a solid wall with at least 200 kg/m².

Plasterboard or metal stud walls are not sufficient. In this case, additional measures such as double-walls or additional studs are required.

- Fix the track (1) to the ventilation unit with the 6 tapping screws supplied.
- Glue both rubber buffers (3) on the rear of the unit.
- Fix the holding plate (2) to the wall with suitable mounting material, which is to be supplied by the customer. Make sure it is horizontal.

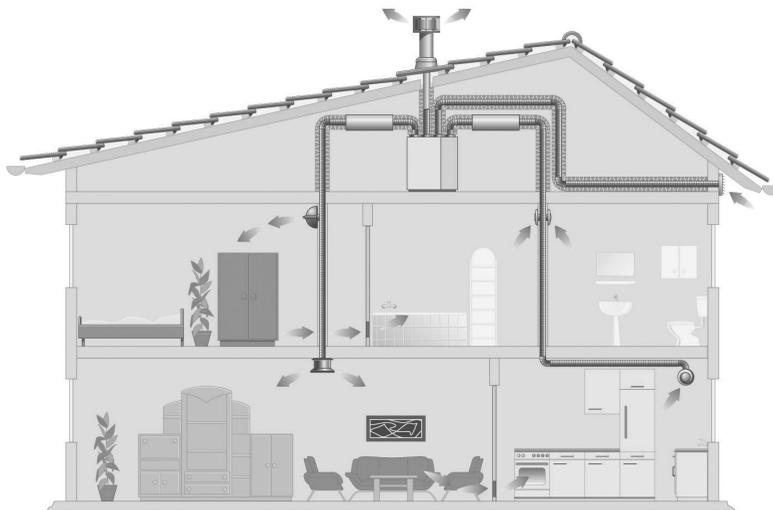


- Locate the edge protection profile (4) on the holding plate (2).
- Hang the ventilation unit (weight approx. 50 kg) on the holding plate (2). Make sure that the holding plate and the track line up completely and that the ventilation unit is lying against the wall with both rubber buffers in place.

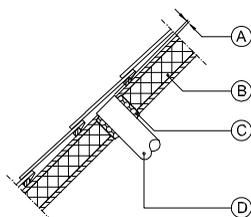


5.3 Connecting the channels

The exhaust air channel does not need a control valve. The air volumes are controlled by the unit itself. In order to prevent the build-up of condensation at the outside and outgoing air channels, these channels must be insulated from outside as far as the unit.



- The outside air feed should be installed on the shaded side of the building, e.g. on the wall or under an overhang. If the outside air is sucked in from underneath the roof tiles, it must be ensured that there is no build-up of condensation in the roof shell and that no water can penetrate. Supply air can be sucked in from underneath the roof tiles if air can flow unhindered from below and above in the roof area and if the building drainage system does not vent out under the roof tiles.



- A Spacing 10 mm over the roof beam support
- B Roof insulation
- C Foam seal
- D The pipe for the air balancing must be carefully insulated and equipped with a moisture barrier

- The exhaust air channel is to be fed through the roof shell such that no condensation can build up in the roof shell.
- The exhaust air channel between the WRG 180 EC and the roof outlet should be designed such that the build up of surface condensation is excluded.
- An insulated roof outlet must be used for ventilation purposes.
- The highest permitted resistance in the channel system at maximum ventilation power is 150 Pa. Increased resistance in the channel system reduces the maximum ventilation power.
- The position of the exhaust air opening and the position of the building drainage system vent should be chosen in such a way to avoid cross-contamination through odours.
- Select the position for the supply air valve so that contamination and draughts are avoided.

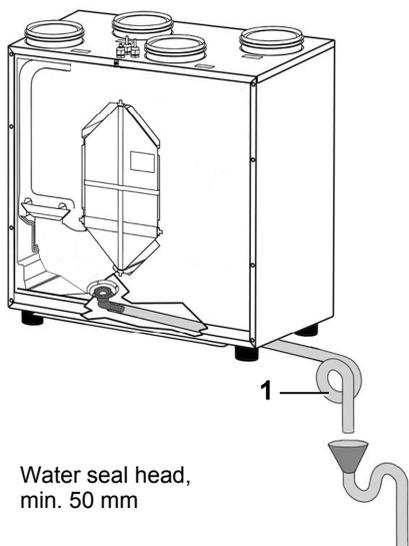
Sufficient overflow openings must be installed, shutter gap 2 cm.

5.4 Connecting the condensation run-off

Condensation is produced during heat recovery and has to be removed correctly via the condensation run-off. The piping for the condensation run-off for the Maico WRG 180 EC is fed through the lower panel.

The condensation run-off connection (external diameter 20 mm) must be screwed into the underside of the unit by the installer.

The drain hose is connected to the condensation run-off connection and a siphon.



- 1 Water seal head, min. 50 mm

Please note The siphon (see figure) needs a water seal head of at least 50 mm.

Install an open drip funnel with another siphon at the drainage system, to receive the condensation.

This disconnects the ventilation unit from the drainage system and it prevents a build up of germs at the unit.

Please note It is not permitted to install several siphons one after the other without duct separation.

- If there is high humidity in the room where the unit is installed, insulate the drain hose and the condensation run-off connection to avoid condensation.
- Now pour water into the condensation run-off in the ventilation unit. Check that the connection is not leaking.

5.5 Sound insulation

Sound emissions from the ventilation system are dependent on many factors, e.g. the construction of the building, ventilation components, etc.

- For this reason, install the ventilation system as per the planning and/or manufacturer specifications.



The system must be adjusted following installation. This work has to be logged in writing.

5.5.1 Ventilation unit housing emissions

It is not recommended that you install the ventilation unit in the living area, kitchen or bathroom as the housing noise emissions exceed 35 dB(A).

Recommendation: Install the ventilation unit in a room that has a sufficient level of sound insulation from the remaining living areas.

5.5.2 Designing the air channels



Observe the prescribed sound pressure level of < 25 dB(A) in living areas and < 30 dB(A) in functional areas. Silencers must be installed in the ventilation channels.

Recommendation: Install telephony sound absorbers to reduce the sound transfer between the individual rooms.

5.6 Electrical connection

The WRG 180 EC must be installed in line with local requirements. The advice given in this manual must be observed



The unit may only be connected to the mains power after the supply and exhaust air channels have been connected.

Only qualified electricians are permitted to make the electrical connections, in compliance with the wiring diagram below. A fixed cabling is prescribed for the mains connection, in a distribution box, for example.

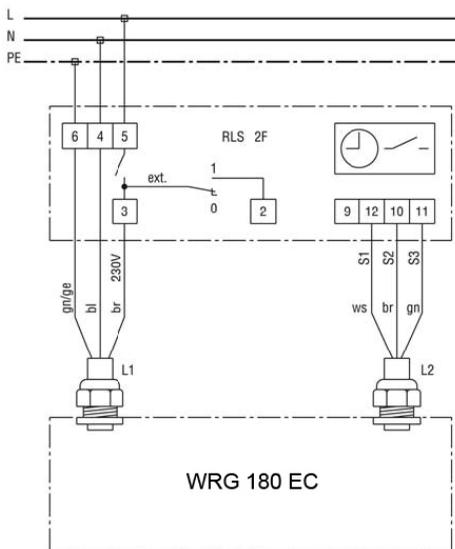
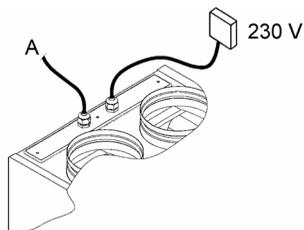


Caution: Risk of an electric shock. Malpractices run the risk of death.

Always switch off the mains fuse in the fuse box before starting work on the electrical installation and post a warning sign to prevent this being switched back on by mistake.

5.6.1 Connecting the room air control

The room air control should be connected to cable (A) on the top of the unit.



The power supply phase must be connected to terminal 5 on the room air control so that the unit can be powered off.

5.6.2 Switching on the ventilation unit

- Set the required operating mode using the selector switch.

The fans in the ventilation unit start up. The ventilation unit runs at the selected ventilation level.

When using a timer, the ventilation unit runs according to the programmed time intervals, alternating between ventilation level 2 or 1.

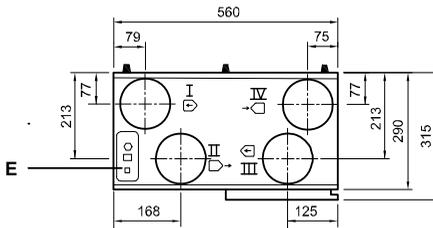
Please refer to the Room air control RLS 2 F manual for further information.

5.6.3 Ventilation levels

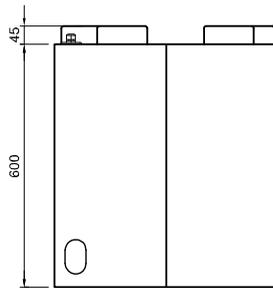
Ventilation level	Function
Off	Ventilation off
Ventilation level 1	Reduced ventilation: Ventilation unit runs permanently at ventilation level 1.
Ventilation level 2	Nominal ventilation: Ventilation unit runs permanently at ventilation level 2.
Automatic	Timer automatic: Timer switches automatically between ventilation level 2 and 1. Programming with red and blue riders: <ul style="list-style-type: none"> • Time periods with red riders: Ventilation level 2. • Time periods with blue riders: Ventilation level 1.
Ventilation level 3	Intensive ventilation. Ventilation unit runs permanently at ventilation level 3. Operating indicator light lights up.

- i** Please refer to the Room air control RLS 2 F manual for information about programming the timer with a daily or weekly programme.

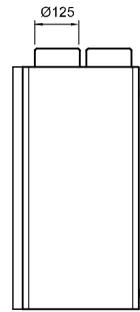
5.7 Connections and dimensions of the WRG 180 EC



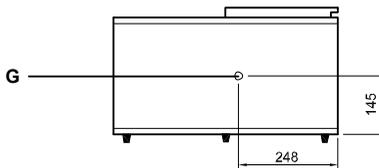
A



B



C



D

- I Supply air DN125
- II Outgoing air DN125
- III Exhaust air DN125
- IV Outside air DN125

- A Top view
- B Front view
- C Side view
- D Bottom view
- E Electrical connection
- G Condensation run-off connection

6. Start-up

6.1 Switching ventilation unit on and off

The ventilation can be switched on or off in two different ways:

1. Through the corresponding program buttons, whereby the ventilation unit remains connected to the power supply; only the fans are switched off when switching off.
2. The ventilation unit is powered off by switching off at the operator unit.
3. The unit is powered off by switching the room air control off.

Switching on

- Switch the ventilation unit on at the operator panel.
- Through the program buttons: Press the "OK" and "+" buttons at the same time to switch the ventilation unit on. This is only possible if the ventilation unit was switched off through the program buttons.

The first digit in the display indicates the position of the three-step switch.



>3S

Switching off at the operator unit

- Press the "OK" and "-" buttons at the same time, to switch the ventilation unit off. OFF appears in the display.
- Switch the ventilation unit off at the operator panel.



>3S



Warning

If it is intended to carry out work on the inside of the ventilation unit, the unit must always be disconnected from the mains power by switching it off through the program buttons and then switching off at the operator unit.

6.2 Setting air volumes

The WRG 180 EC air volumes for levels 1, 2 and 3 are factory-set to 75, 100 and 150 m³/h respectively. The performance of the unit is dependent on the quality of the channel system and the filter resistance.

Important:

- Level 1: Must always be lower than level 2.
- Level 2: Must always be lower than level 3.
- Level 3: Volume adjustable between 70 and 180 m³/h.

If these conditions are not fulfilled, the air volume is automatically switched to the higher level.

The air volumes can be changed as follows. In the example here, the air volume for level 3 is increased from 150 to 180 m³/h:

1. Press button "F" for approx. 3 seconds to activate the settings menu.



2. Select the required parameter with the "+" button (U1 = Level 1, U2 = Level 2, U3 = Level 3). U4, U5 and U9 have no function with the WRG 180 EC.



3. Press the "OK" button for 1 second to display the value of the selected parameter.



4. The value of the selected parameter can be changed with the "+" or "-" buttons.



5. The modified value can now be:

- A: saved;**
- B not saved;**
- C reset to factory setting.**

- A:** Press and hold buttons "F" and "+" (first "F", then "+") to save the modified value. The value flashes three times to confirm that it has been saved. The display continues to show this modified value.

Press button "OK", to return to the settings menu. If required, further values can be changed now (see steps 2 to 5).

Continue with step 6.



- B** Press the "OK" button to return to the settings menu without saving the modified value. The previous value is retained.

If required, further values can be changed now (see steps 2 to 5). Continue with step 6.



- C** Press "F" and "-" at the same time to return to the factory setting. The factory setting value flashes three times as confirmation. The modified value is discarded. The factory setting value remains in the display.

Press button "OK", to return to the settings menu. If required, further values can be changed now (see steps 2 to 5).

Continue with step 6.



6. Press the "F" button for 1 second to quit the settings menu.



6.3 Settings made by the installer

It is possible to make changes to further control unit settings. Because some settings can impact on the trouble-free operation of the ventilation unit, these are located in a separate set of parameters for the installer. This means that these parameters can only be modified by the installer.

Please refer to Chapter 6.6.2 for information on how these changes are made.

I1 Fixed pressure imbalance

This can be used to generate an excess pressure (+) and/or a negative pressure (-) in the building.

Positive pressure imbalance (+): The outgoing air fan ventilates less than the supply air fan by the defined value [m³].
 Negative imbalance (-): The supply air fan ventilates less than the outgoing air fan by the defined value [m³].

I2 Contactless step 11.

This setting defines the ventilation position if no switching contact is connected with the position; the unit starts to run with the ventilation position defined here.

I3 No function.

I4 Switch cable level 1.

Defines which position of the step switch corresponds to cable 1 from the central controller.

I5 Switch cable level 2.

Defines which position of the step switch corresponds to cable 2 from the central controller.

I6 Switch cable level 3.

Defines which position of the step switch corresponds to cable 3 from the central controller.

I7 Pressure imbalance permitted?

Here the definition is made whether, for example, the frost protection may access the pressure balance.

I8/ I9/ I11/ I12 and I14

Have no function for the WRG 180 EC.

I10 Constant pressure switched off.

This is the setting that defines whether the ventilation and air extraction units always work with constant volumetric flow or whether they switch over to constant pressure operation if a particular resistance is exceeded.

I13 Filter message.

This setting defines whether the filter notification should appear on the display.

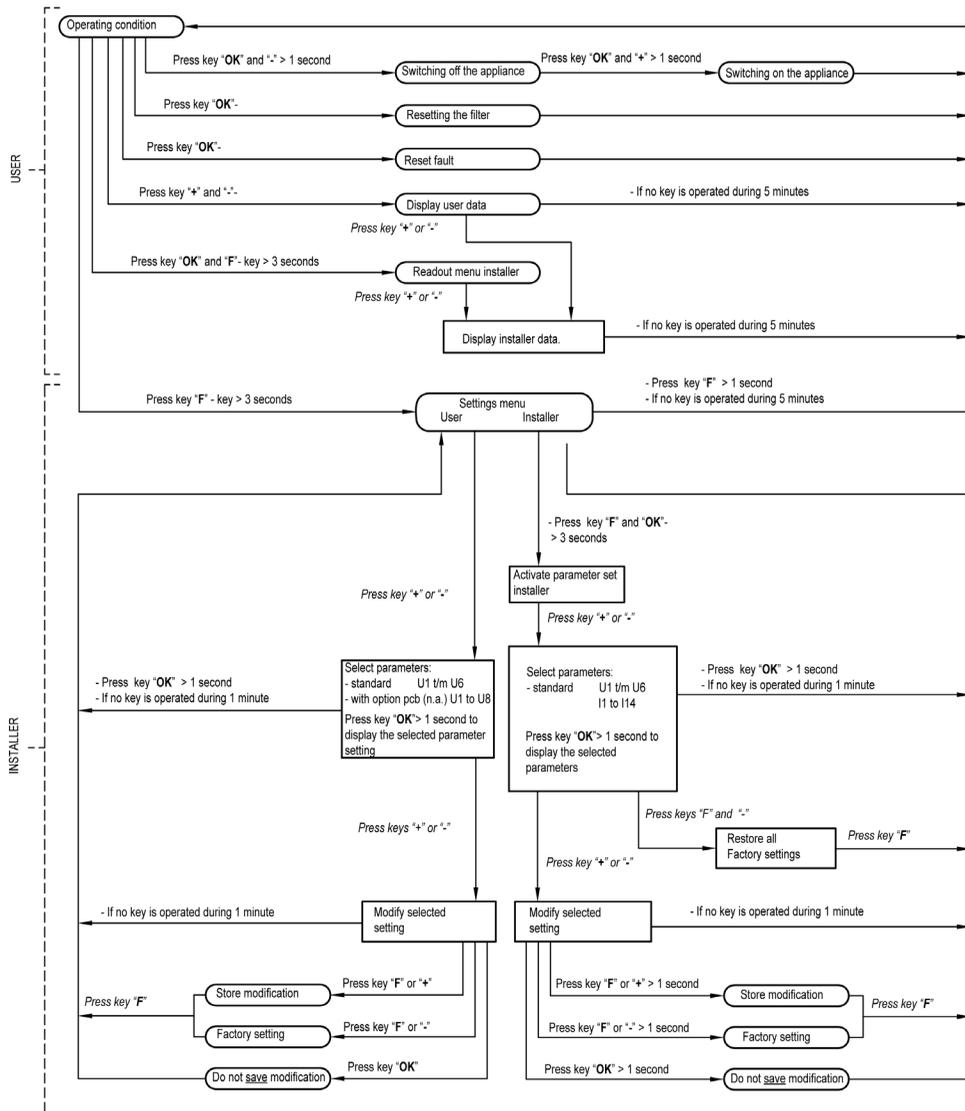
Please refer to the table in section 6.6.3 for the factory settings.

6.4 Menu structure display

The menu structure is divided up into a display and a setting part.

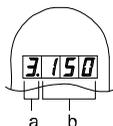
The number of visible parameters is dependent on the parameter set. There is the "User" parameter set for the user while there is a more extensive "Installer" parameter set for the installer. It can be activated and deactivated by pressing and holding the "F" and "OK" buttons down together for 1 second.

6.4.1 Menu structure diagram



6.5 Read-off value settings

In standard operational mode, the display shows the current level of the room air control and corresponding exhaust air volume setting. The position of the step switch (position 1, 2 or 3) is shown in the lefthand window and the exhaust air volume is shown to the right of the decimal point.



- a Room air control level
- b Exhaust air volume

6.5.1 Calling up the settings by the user

Using the "+" and "-" buttons, the user can also call up other relevant data (step 0 to step 4). The step numbers are not displayed. See the following table for calling up the user data. After a timeout of 5 minutes during which time no button has been pressed, the display reverts to the standard operation mode. You can scroll through the menu with the "+" button. The "-" button is only used to return to step 0. Set values cannot be changed in this menu.



6.5.2 Calling up the settings by the installer

There is a more extensive program for the installer for calling up data. All data available to the installer can be called up by pressing and holding the "F" and "OK" buttons at the same time for approx 3 seconds. However, the values cannot be modified or changed in this menu.

After this menu is called, it always opens with step number 7 (see following table). The installer and user data is called with the "+" button and the "-" is used to return to step 0. This menu is automatically closed if no button is pressed for 5 minutes and the display reverts to the standard operation mode.

In the case of a fault, the fault number appears in the display.



> 3s



	Step no.	Display (example)	Description	Comments
User	No. 1	2, 100	Current outgoing air fan level [m ³ /h]	
	No. 2	C0	Operating mode message code	C0 = No message C3 = The supply air fan is running in constant pressure mode C6 = The outgoing air fan is running in constant pressure mode C7 = Correction of the maximum air volume
	No. 3	bP.1	No function	
	No. 4	tP.9	Outside temperature [°C]	In the case of temperatures below 0°C Display tP.9
	No. 5	tS.21	Inside temperature [°C]	
Installer	No. 6	In. 1	No function	
	No. 7	u.156	Current supply air volumetric flow [m ³ /h]	
	No. 8	u.156	Current exhaust air volumetric flow [m ³ /h]	
	No. 9	t.180	Current supply air channel pressure [Pa]	
	No. 10	A.180	Current exhaust air channel pressure [Pa]	
	No. 11	u0.0	Frost protection status	0 = Not activated, 1 to 4 = Imbalance, 5 = Supply air fan off
	No. 12	St.9	Outgoing air temperature [°C] (Sensor not connected as standard)	St. 75 if not connected
	No. 13	Pt.18	Outgoing air temperature [°C] (Sensor not connected as standard)	Pt.75 if not connected

6.6 Changing settings

Certain set values can be changed by both the user and the installer, in order to customise the unit to the current situation.

6.6.1 Changing settings by the user

The user can change 3 settings, namely U1, U2 and U3 (see table in section 6.6.3) U4, U5 and U8 have no function with the WRG 180 EC. How to change these settings is fully explained in section 6.2 and is also shown in the menu structure diagram in section 6.4.1.

6.6.2 Changing settings by the installer

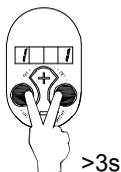
The installer can change more set values than the user. If parameters are incorrectly set, the performance of the unit is affected. For this reason, make sure the parameters are correctly set.

Please refer also to the menu structure diagram in section 6.4.1 and the table in section 6.6.3. Starting from operational mode, the following steps are required for changing settings. The example of changing parameter I7 from 1 to 0 is used here.

1. Press button "F" for approx. 3 seconds to activate the settings menu.



2. Press button "F" and "OK" for approx. 3 seconds to activate the parameter set for the installer.



3. The required parameters can be called by pressing and holding the "+" and "-" buttons down together for 3 seconds.



4. Pressing the "OK" button calls this setting.



5. Press and hold the "+" and "-" buttons down together for 3 seconds to modify the value.



6. The modified value can now be:

A saved;

B not saved;

C reset to the factory setting.

A Press and hold buttons "F" and "+" (first "F", then "+") to save the modified value. The value flashes three times to confirm that it has been saved. The display continues to show this modified value. Press the "OK" button, to return to the settings menu. If required, further values can be changed now (see steps 2 to 5). Continue with step 7.



B Press the "OK" button to return to the settings menu without saving the modified value. The previous value is retained. Continue with step 7.



C Press and hold buttons "F" and "-" (first "F", then "-") to save the modified value. The value flashes three times to confirm that it has been saved. The factory setting value is retained. The modified value is discarded. Press the "OK" button to return to the settings menu. Continue with step 7.



7. Press the "F" for 1 second to quit the settings menu.



6.6.3 Setting options table

The parameters that can be set by the user are identified with "U". Those for the installer are identified with "I" (main board).

	Adjustable parameters	Description	Setting range	Factory setting
User	U 1	Volume level 1	70 – 170 (max - 10)	75
	U 2	Volume level 2	70 – 175 (max - 5)	100
	U 3	Volume level 3	70 – 180	150
	U 4	No function	No function	10
	U 5	No function	No function	22
	U 8	No function	No function	0
Installer	I 1	Fixed imbalance	-100.. +100	0
	I 2	Contactless step	0, 1, 2, 3	1
	I 3	No function	2, 3	2
	I 4	Switch cable level 1	0, 1, 2, 3	1
	I 5	Switch cable level 2	0, 1, 2, 3	2
	I 6	Switch cable level 3	0, 1, 2, 3	3
	I 7	Imbalance permitted	0,1	1 (Yes)
	I 8	No function	No function	0
	I 9	No function	No function	0
	I 10	Constant pressure switched off	0,1	0 (No)
	I 11	No function	0, 1, 2, 3	0
	I 12	No function	- 30 .. + 30	0
	I 13	Filter message on / off	1.0	1 (On)
	I 14	No function	1.0	0

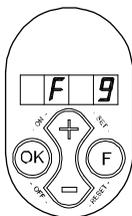
You will find a description of these settings in section 6.2 for U1, U2 and U3 and in section 6.3 for I1 – I14.

7. Fault

7.1 Fault analysis

If the control system recognises a fault, this is shown on the display by a number with an "F" in front of it. If a 3-way switch with filter status display is installed, the LED on the 3-way switch also starts to flash.

The fault **F9** is shown here as an example. That means that there is a fault in the cabling to the outside temperature sensor or in the sensor itself.

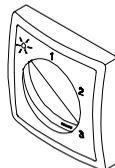
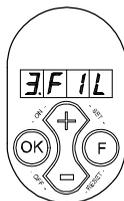


The unit stays in fault mode until the corresponding problem has been resolved. Then the unit carries out an automatic reset (Autoreset) and the display reverts to operational mode.

The table in section 7.3 contains an overview of the faults, the possible causes and the measures that need to be taken.

7.2 Filter status display

If the message "FIL" appears in the display, the filters have to be exchanged.



After changing the filters, the filter status display has to be reset by pressing the "OK" button.

The display "FIL" flashes briefly and then the display reverts to operational mode.



7.3 Display of the codes

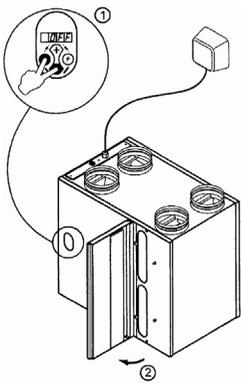
Table of fault codes

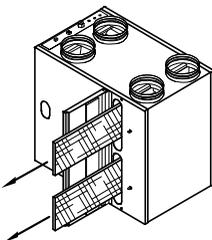
Fault code	Cause	User measures	Installer measures
F2	The supply air fan is no longer working	<ul style="list-style-type: none"> • Contact installer. 	<ul style="list-style-type: none"> • Exchange the supply air fan; it is defective
F5	The outgoing air fan is no longer working	<ul style="list-style-type: none"> • Contact installer 	<ul style="list-style-type: none"> • Exchange the outgoing air fan; it is defective
F9	The sensor that measures the temperature of the supply air is defective	<ul style="list-style-type: none"> • Contact installer 	<ul style="list-style-type: none"> • Check the cabling from the sensor to the main board. • Check the cable connection at the sensor. • Replace the sensor.
F10	The sensor that measures the temperature of the exhaust air is defective	<ul style="list-style-type: none"> • Contact installer 	<ul style="list-style-type: none"> • Check the cabling from the sensor to the main board. • Check the cable connection at the sensor. • Replace the sensor.

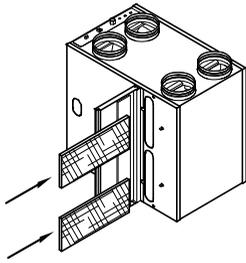
8. Maintenance

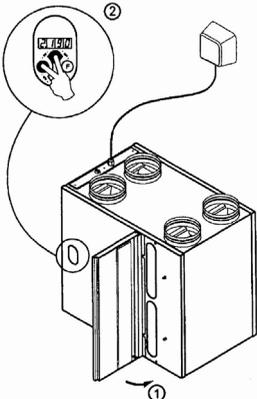
8.1 Maintenance by the user

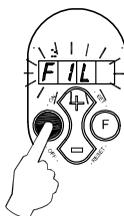
The maintenance to be carried out by the user is restricted to regular cleaning and exchanging the filter. The filter only needs to be cleaned if the text "FIL" appears in the display. The filters have to be changed annually. The unit should not be operated without a filter.

- 1 Switch the unit off at the operating panel by pressing and holding the "OK" and "-" buttons down at the same time for 3 seconds. Open the filter shutter. 

- 2 Pull the filter out and replace it. Take note of the direction in which the filter was pulled out. 

3. Insert the filter in the same way in which the previous one was pulled out. 

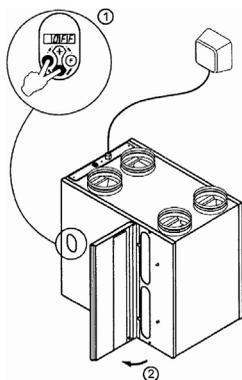
- 4 Close the filter shutter and switch the unit on at the operating panel by pressing and holding the "OK" and "+" buttons down at the same time for 3 seconds. 

- 5 The filter status display has to be reset after cleaning or exchanging the filter by pressing the "OK" button for 1 second. The display flashes briefly to confirm and then reverts to operational mode. 

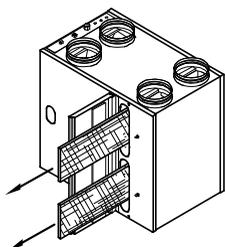
8.2 Maintenance by the installer

The maintenance to be carried out by the installer covers cleaning the heat exchanger and the fans. Depending on the operating conditions, this maintenance work needs to be done every three years.

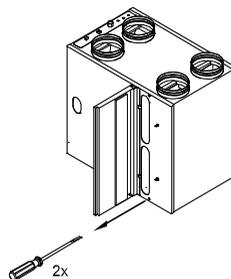
- 1 Switch the unit off at the operating panel by pressing and holding the "OK" and "-" buttons down at the same time for 3 seconds and switch off the mains power supply. Open the filter shutter.



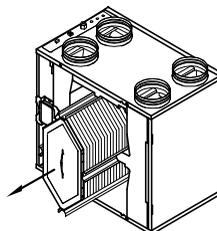
- 2 Pull the filter out.



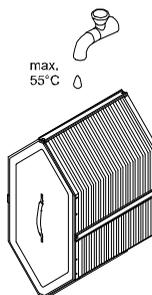
- 3 Remove the front cover.



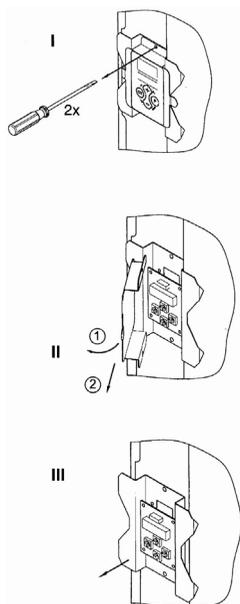
- 4 Pull the heat exchanger out. Be careful not to damage the foam components in the unit.



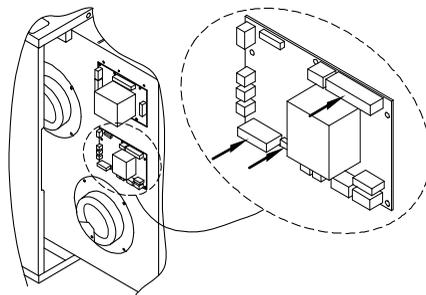
- 5 Clean the heat exchanger with warm water (max. 55 °C) and standard washing up liquid. Rinse off the heat exchanger with warm water.



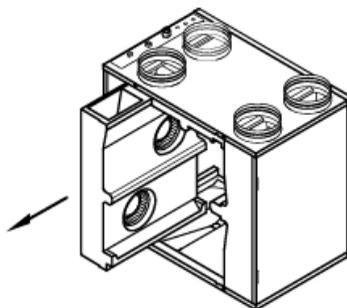
6 Remove the operating panel.



7 Pull out the slider that the main board is mounted on. Remove all connectors from the main board that are connected with the feed through plate. Remove the earthing wire from the housing.

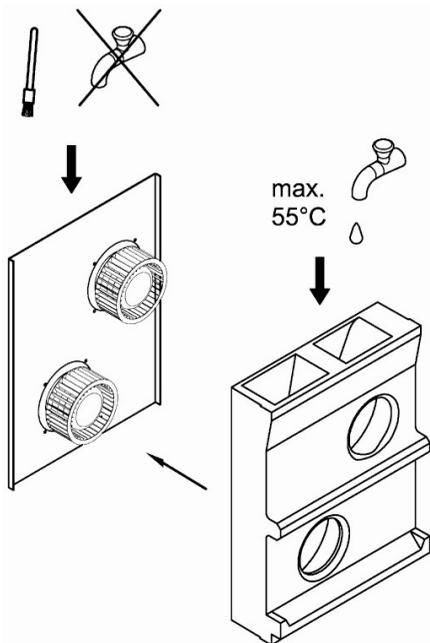


8 Remove the ventilator unit.



9 Remove the spiral housing.

- 10 Clean the fan with a soft brush. The balancing weights may not be moved out of place.



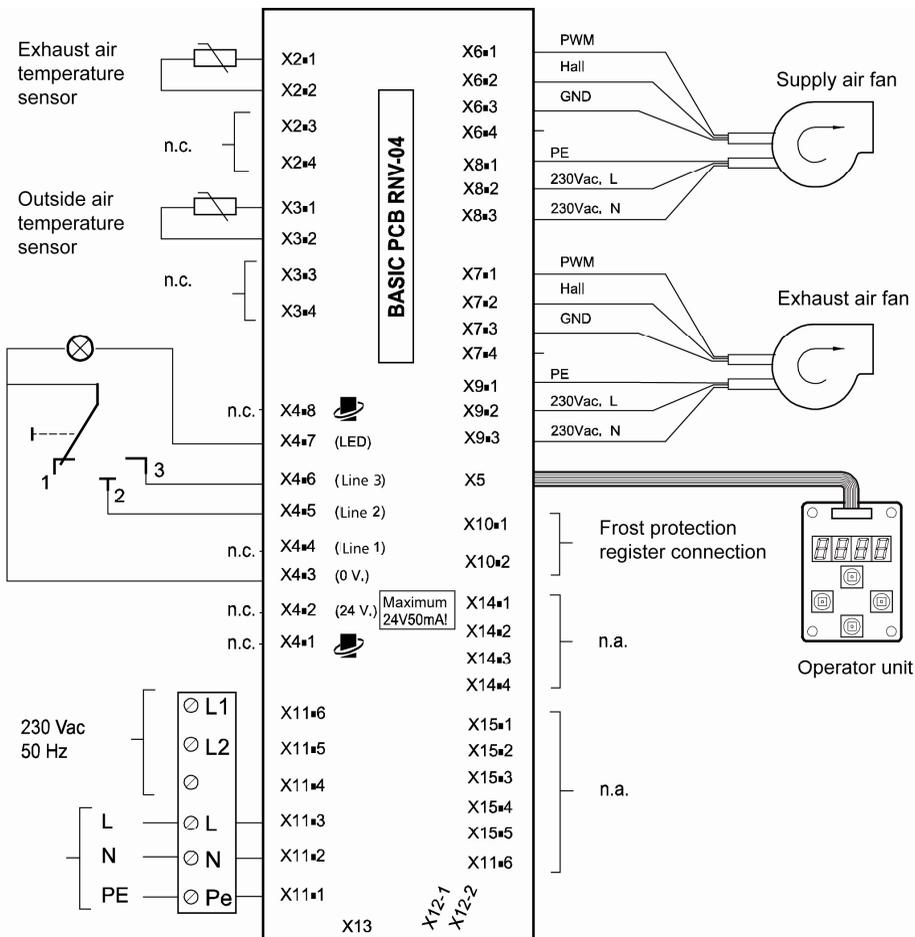
- 11 Reinsert the spiral housing in the ventilation unit.
 12 Reinsert the fan in the ventilation unit.
 13 Refit the earthing wire and plug the connectors removed earlier back into their correct positions.
 14 Mount the operating panel.
 15 Reinsert the heat exchanger in the unit.
 16 Screw the front cover back on.
 17 Reinsert the filter in the unit with the clean side towards the heat exchanger.
 18 Close the filter shutter.
 19 Switch the mains supply back on.
 20 Switch the unit on at the operating panel by pressing and holding the "OK" and "+" buttons down at the same time for 3 seconds.



- 21 The filter status display has to be reset after exchanging the filter by pressing the "OK" button for 1 second.

9. Wiring plans / Diagrams

9.1 WRG 180 EC simplified diagram

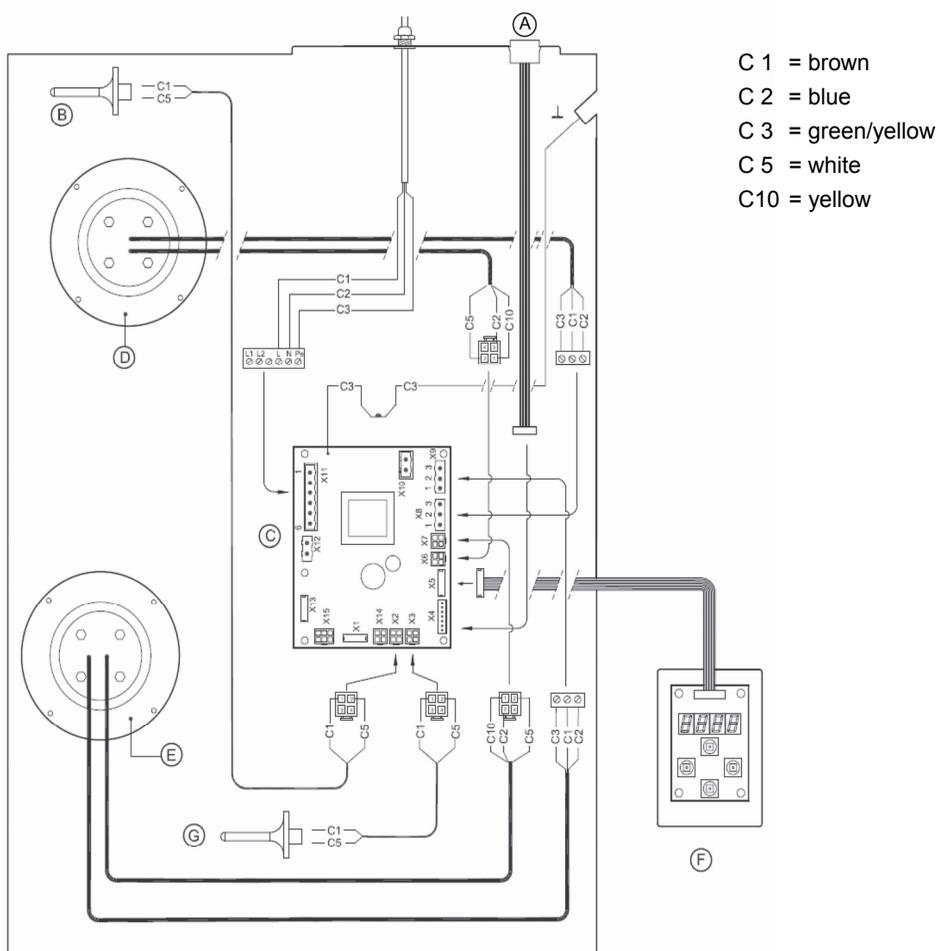


9.2 WRG 180 EC wiring diagram

1 = Reduced ventilation

2 = Nominal ventilation

3 = Intensive ventilation



A = Room air control

B = Exhaust air temperature sensor

C = Central control circuit board

D = Supply air fan

E = Outgoing air fan

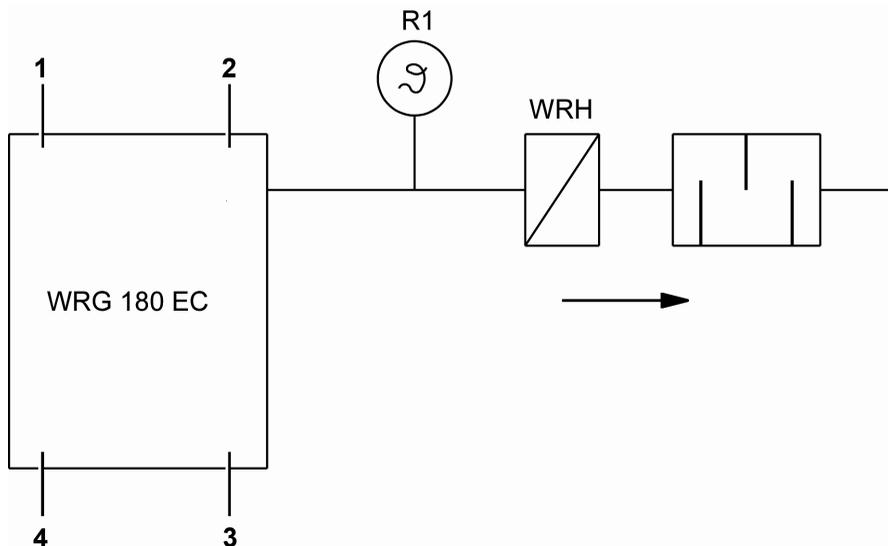
F = Operator unit

G = Outside air temperature sensor

9.3 WRG 180 EC + RLS 2 F + WRH in the supply air channel

Protection of a hydraulic heat register against frost damage.

A hydraulic heat register must be protected against frost damage with a safety device.

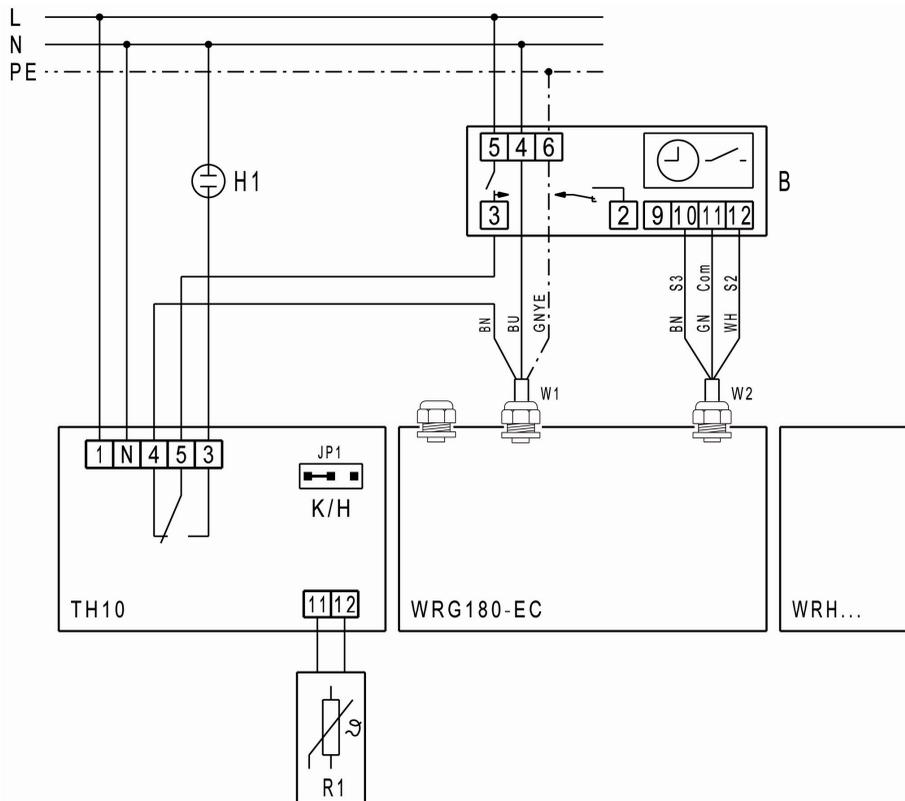


- 1 Exhaust air
- 2 Supply air
- 3 Outgoing air
- 4 Outside air

- R1 Temperature sensor
- WRH Water air heater

Recommendation:

Install the thermostat TH 10 as safety device. Set the switch-off temperature to 7°C and the differential temperature to 3 K. Optionally, the switch-off temperature can be adjusted manually using the setting wheel at the TH 10.



H1	230 V fault indication light (to be supplied by the customer), e.g. glow lamp	TH10	Thermostat with temperature sensor R1
B	Room air control RLS 2 F (control unit with timer)	R1	Temperature sensor, installation in the supply air channel ahead of the WRH
W1	230 VAC connecting cable	WRG 180 EC	Ventilation unit
W2	Control cable for room air control	WRH..	Water air heater
JP1	Plug jumper JP1 on operating mode "K". Relay switches the WRG 180 EC off as the temperature drops.		

9.4 WRG 180 EC + electrical air heater

If the heat recovery unit is installed in a passive-energy house, pre-heating of the outside air is necessary, in order to guarantee a permanent air exchange.

It warms up cold outside air and keeps the heat exchanger free of frost.

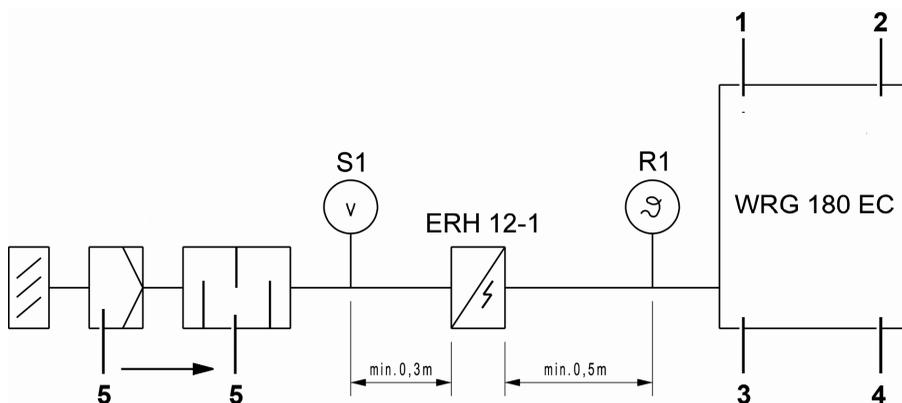
If the outside air temperature gets too cold, the external frost protection heating of the ERH 12-1 switches on and guarantees an uninterrupted ventilation operation.

The air flow controller sensor "S1" must be installed in the direction of flow, **at least 30 cm** ahead of the electrical air heater.

We recommend the filter box TFE 12-4 (with G4 filter) to protect the electrical heat register against dirt.

An earth heat exchanger operating as an air or brine collector can be used to keep the heat exchanger free of frost.

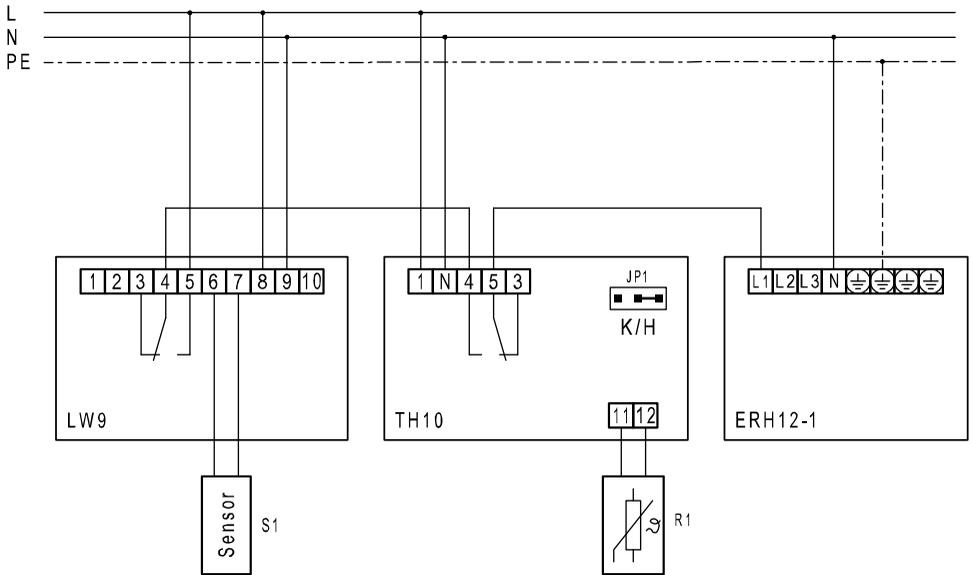
i For external heat register, filter box, outside air and outgoing air channel: These must be diffusion-resistant insulated to protect against condensation.



- 1 Exhaust air
- 2 Supply air
- 3 Outgoing air
- 4 Outside air
- 5 Optional

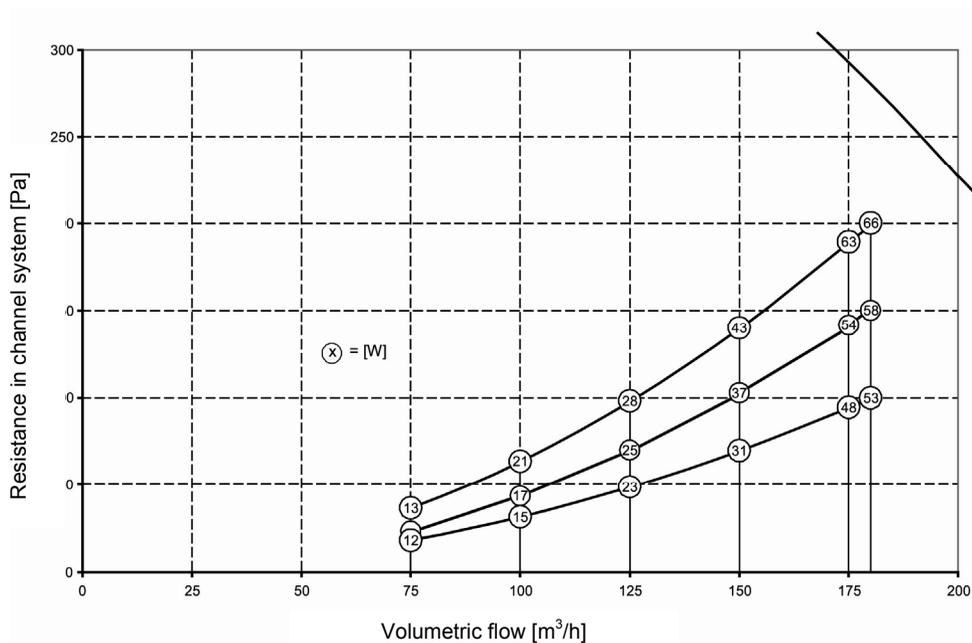
- S1 Air flow monitor sensor
- R1 Temperature sensor
- ERH 12-1 Electric air heater (preheating register)

i The minimum distance for S1 and R1 must be maintained



- LW 9 Air flow monitor
- S1 Air flow monitor sensor /
Installation ahead of the
ERH 12-1
- TH10 Thermostat
- R1 Temperature sensor /
Installation after the ERH 12-1
- JP1 Plug jumper JP1 on operating
mode "H". Relay switches on
as the temperature drops.
- ERH 12-1 Electric air heating

9.5 Air power diagram



The value in the circle is the power level per fan (in watts).

10. Technical data

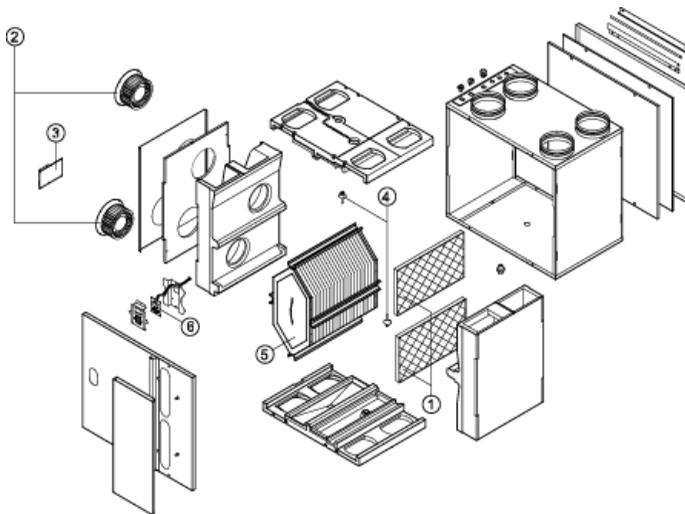
		WRG 180 EC		
Power supply [V, Hz]		230/50		
Degree of protection [IP]		31		
Dimensions (W x H x D) [mm]		560 x 600 x 315		
Connection diameter [mm]		Ø 125		
External diameter of the condensation run-off [mm]		Ø 20		
Weight [kg]		25		
Filter class		G4 (F7)		
Ventilation setting		1	2	3
Ventilation power [m ³ /h]		75	100	150
Permitted resistance in the channel system [Pa]		18 - 40	30 - 68	60 - 150
Power consumption [W]		24 - 26	30 - 42	62 - 86
Current input [A]		0.17 - 0.18	0.23 - 0.28	0.43 - 0.57
Cos φ		0.58 - 0.59	0.61 - 0.64	0.64 - 0.67
Sound level L _w (A)	Static pressure [Pa]	40	80	160
	Housing emission [dB(A)]	32	39	48
	"Exhaust air" channel [dB(A)]	31	37	45.5
	"Supply air" channel [dB(A)]	49	56	66

11. Service

11.1 Exploded view of the WRG 180 EC

When ordering spare parts, as well as the corresponding part numbers (see expanded view), the heat recovery unit type designation,

the serial number, the year of construction and the component designation also have to be quoted:



11.2 WRG 180 EC spare parts

No.	Article designation	Article number
1	Filter set	0093.0060.0000
2	Fan	0156.0121.0000
3	Main board	0101.1351.0000
4	Temperature sensor	0157.1064.0000
5	Heat exchanger	0192.0412.0100
6	Operating panel with display	0157.1065.0000

Example:

Unit type	WRG 180 EC
Year of construction	2007
Part	Fan
Article number	0156.0121.0000
Quantity	1



Unit type, serial number and year of construction are stated on the rating plate on the unit.

We reserve the right to make modifications

MAICO works continuously at further improving its products and reserves the right to make changes without notice.

11.3 WRG 180 EC accessories

Accessory / Product type	WRG 180 EC	Article no.
Air filter, replacement, 2 x G4	WRF 180 EC	0093.0060
Air filter, replacement, 2 x F7	WRF 180 EC-7	0093.0047
Room air control with timer	RLS 2 F	0157.0806
Thermostat	TH 10	0157.0764
Air flow monitor	LW 9	0157.0779
Electric air heating	ERH 12-1	0082.0101
Filter box	TFE 12-4	0149.0075
Sound absorber	RSR 12/50	0092.0322

12. Disposal

12.1 Packaging

i **Do not dispose of 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 packaging materials in accordance with local regulations.

12.2 Air filter

- Dispose of the air filter according to local regulations.

12.3 Old units

i The old unit must be dismantled by a specialist company and disposed of correctly.

