

HOME VENTILATION WITH HEAT RECOVERY

# Flush-mount installation kit M-WRG-II M (frame construction)

for flush-mounting ventilation units from the  
M-WRG-II series, with optional ductwork connection  
for connecting flexible pipes or flat ductwork



INSTALLATION MANUAL

Part no. 744002EN Week 28/2023 EN



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# 1 Introduction

## 1.1 Notes on this installation manual



This installation manual contains important information that should be followed when installing the M-WRG-II M installation kit for the M-WRG-II ventilation units.

- ▶ Read all the instructions carefully before installing the kit to avoid possible risks and mistakes.
- ▶ When assembly is complete, give these instructions to the home owner, caretaker or property manager.
- ▶ These instructions are part of the product. Keep the instructions in a safe place for future reference.

### **⚠ WARNING**

- ▶ Follow ALL danger and warning instructions and notes on precautionary measures.
- ▶ Read sections “2 Safety instructions” on page 7 and “3 Planning notes” on page 10 carefully.

## 1.2 Description

This manual describes how to flush-mount the M-WRG-II M installation kit (item 1 in Fig. 1) in frame constructions. In a new build or a retrofit, if a complete wall aperture is planned for the installation kit, the optional filler piece M-WRG-II M/Fü (item 2 in Fig. 1) can be used to pack out the wall. Flush-mount flat ductwork or flexible pipe systems can be connected using the ductwork connection adapter M-WRG-II AD-UP (item 3 in Fig. 1) which is available as an option. The ductwork connection adapter can be used on the extract air side, supply air side or on both sides of the installation kit as required. The combination of installation kit M-WRG-II M and ductwork connection adapter M-WRG-II AD-UP is suitable for applications in which the wall is not thick enough for the integrated into wall installation kit M-WRG-II M-U<sup>2</sup>.

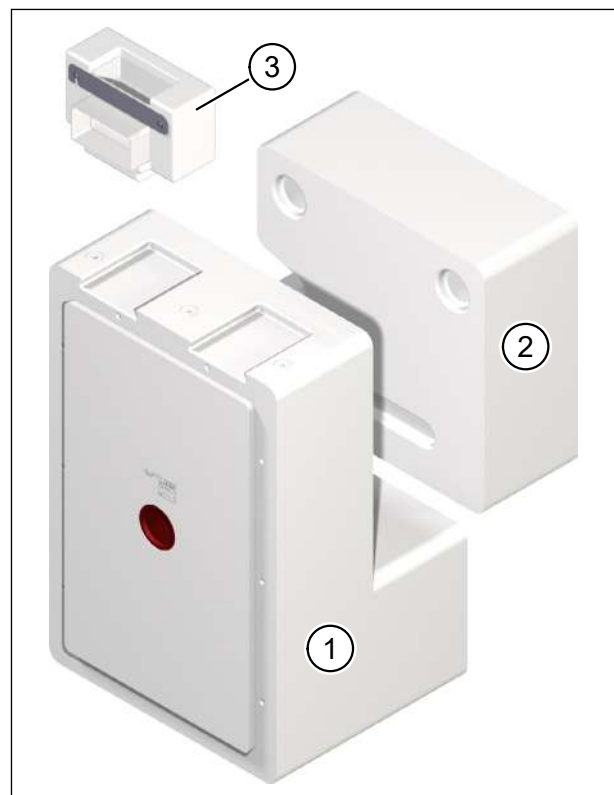


Fig. 1: Installation kit M-WRG-II M with optional filler piece M-WRG-II M/Fü and ductwork connection adapter M-WRG-II AD-UP

### 1.3 Target group

The activities described in this manual must only be carried out by specialised personnel with the following qualifications:

- Training in the installation and commissioning of electrical devices
- Training in electrical hazards and the local safety requirements
- Knowledge of the relevant standards and directives
- Knowledge and observance of this document and all the safety instructions

### 1.4 Nameplates

The nameplates are attached in two places:

- on the plaster cover (item 1 in Fig. 2)
- beside the cable inlet for the mains and control cables (item 1 in Fig. 3)

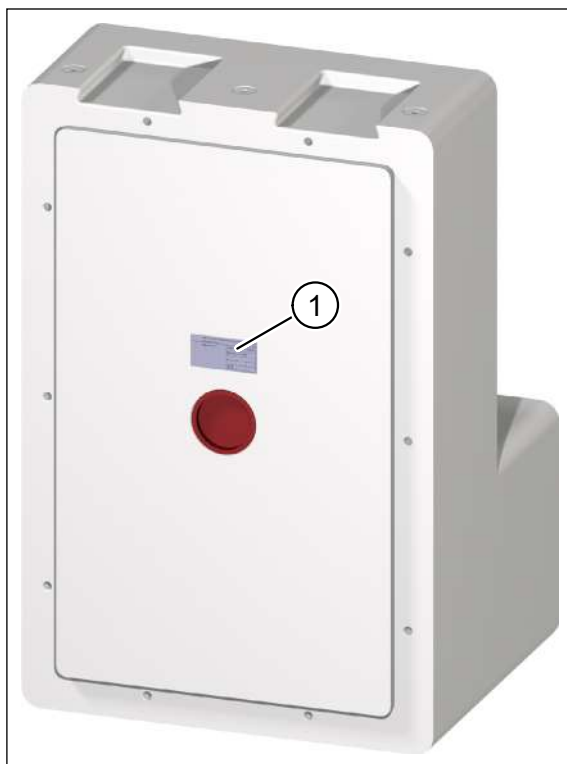


Fig. 2: Nameplate on the plaster cover



Fig. 3: Nameplate beside cable inlet

### 1.5 Storage

Store the installation kit in its original packaging in a dry place where the temperature ranges between 0 °C and +40 °C.

## 1.6 Revision index

<b>Edition</b>	<b>Manual</b>	<b>Date</b>
3 <sup>rd</sup> edition	Installation manual for flush-mount installation kit M-WRG-II M (frame construction)	Week 28/2023 EN

## 1.7 Explanation of the symbols used

- ▶ This symbol indicates an action to be taken.
- This symbol indicates a list.

## 1.8 Supplementary documents

<b>Manual</b>	<b>Part no.</b>
Installation manual for M-WRG-II ventilation units	744004EN
Installation manual for outer wall terminals M-WRG-II ES, M-WRG-II KSR	744005EN
Operating instructions for M-WRG-II P (-F, -FC), M-WRG-II E (-F, -FC) ventilation units	744007EN

Table 1: Supplementary documents

## 2 Safety instructions

This manual contains notes that you must follow for your own personal safety and to avoid injury and damage to property. They are highlighted by warning triangles and are shown as follows according to the level of danger.

### 2.1 Hazard classification

#### **DANGER**

The signal word designates a hazard with a **high** degree of risk which, if it is not avoided, will result in death or severe injury.

#### **WARNING**

The signal word designates a hazard with a **medium** degree of risk which, if it is not avoided, will result in death or severe injury.

#### **CAUTION**

The signal word designates a hazard with a **low** degree of risk which, if it is not avoided, could result in minor or moderate injury.

#### **NOTICE**

A note as used in this manual contains important information about the product or about a part of the manual to which particular attention should be paid.

### 2.2 Notes on using the ventilation units safely

#### 2.2.1 Fire protection

Follow the generally applicable fire safety requirements when planning and installing the unit.

#### 2.2.2 Operation with fireplaces

- When M-WRG-II ventilation units are used in conjunction with fireplaces, an additional safety device (underpressure or differential pressure monitor) is needed to monitor operation and to switch off the (230 V) power supply to the units when necessary.
- Follow the requirements of the German Fire Code (FeuVo) when planning and installing the unit.
- Contact the local chimney sweep before the end of the planning phase.
- Have the chimney sweep approve the operation of the ventilation unit.
- Correct use of a ventilation system set up with the decentralised ventilation unit requires the possibility of shutting off combustion air pipes and flue systems for solid fuel fireplaces during periods in which the fireplaces are not in use.

### 2.2.3 Installation in wet areas

The following rules from DIN VDE 0100-701/702 (IEC 60364-7-701) apply to installation of M-WRG-II ventilation units in wet areas:

- Protection zone 0: The unit must NOT be installed in this area.
- Protection zone 1: The unit must only be installed with the “integrated into wall” U<sup>2</sup> variant. The extract and supply air valves must be installed in the top part of the wall or in the ceiling.
- Protection zone 2 and other zone: The unit may be installed in this area.

Country-specific standards/regulations on observing the protection zones for installation in rooms with bathtub or shower must also be followed.

### 2.2.4 Condensate drain

The heat recovery process in our ventilation units causes condensation. This condensation is dissipated via the exhaust air pipe.

- If M-WRG-II P ventilation units are used, a condensate connection should be provided (see section 9.12 on page 36).
- With M-WRG-II E ventilation units (with enthalpy heat exchanger) there is no condensation if the following requirements are fulfilled:
  - The ventilation unit is operated as described in “Intended use” (see section 2.5 on page 9) and the “Rules for correct usage” chapter of the operating instructions.
  - There is no exceptional loading due to very high atmospheric humidity.

### 2.2.5 Starting and using the ventilation unit

- Do not start up the ventilation unit until it is fully installed.
- Always make sure that the cover is closed and locked in place before using the ventilation unit.
- Please note that the ventilation unit must not be used without the outer wall terminal for safety reasons.

### 2.3 Notes on using the ventilation units

- This unit may be used by children from 8 years old and by persons of restricted physical, sensory or mental abilities or persons lacking experience and knowledge if they are supervised or have been instructed in how to use the unit safely and understand the associated hazards. Do not allow children to play with the unit. Cleaning and user maintenance must not be carried out by children unless they are supervised.
  - ▶ Follow the regulations applicable in your country concerning the age from which people may be permitted to operate the ventilation unit.



- The ventilation unit must always be freely accessible for operation and maintenance.
  - ▶ Make sure that the ventilation unit is not covered or obstructed when the room is subsequently decorated and furnished, otherwise it cannot be operated and it will not be possible to replace the air filters. You should therefore maintain a clearance of at least 15 cm in front of the ventilation unit cover.
  - ▶ Make sure that the supply and extract air openings are not covered when the room is subsequently decorated and furnished, otherwise the ventilation unit's functions may be impaired.

## 2.4 Note on use in conjunction with room air conditioners

Condensation may form in the ventilation unit if the outdoor air temperature and humidity are high, but the room temperature is cool.

For these conditions, we recommend using the M-WRG-II E ventilation unit with enthalpy heat exchanger. This has the advantage of removing both sensible and latent heat from the supply air. As a result, the air is dehumidified as well as being precooled. The room air conditioner needs to do less work, so the user saves money on the reduced power consumption.

## 2.5 Intended use

- The ventilation unit is designed to ventilate living spaces and rooms used for quasi-residential purposes. It can also be installed in offices, surgeries, etc. The ventilation unit is installed in a perpendicular position in the external wall. Any different or more extensive usage will be regarded as contrary to the intended use.
- The intended use also includes compliance with all the notes in the operating instructions.
- The ventilation unit must not be operated without air filters or outer wall terminal.
- The ventilation unit is intended for use in rooms with normal room air humidity levels of approx. 40 % to 70 % RH. It must not be installed in rooms in which the relative humidity during operation constantly exceeds 80 %.
- The ventilation unit's functions may be impaired or the unit may be damaged in rooms with a lot of dust (e.g. model-making) or corrosive gas emissions (e.g. blueprint shop, cleaning).
- For any use contrary to the intended use, Meltem Wärmerückgewinnung GmbH & Co. KG shall accept no liability for any damage that may occur and offers no warranty that the ventilation unit will work perfectly and correctly.

## 3 Planning notes

### 3.1 Requirements for the installation wall

The installation kit can be installed in frame constructions with walls that are at least 24 cm thick (including internal plaster, external render and insulation).

- ▶ For wall structures that are 63 cm thick or more, you will need 100 cm long outdoor and exhaust air pipes (M-WRG-LR 100, part no. 5580).

#### NOTICE

The installation kit fixes the ventilation pipes with a 2° fall to the external wall.

- Allow the kit to protrude into the external thermal insulation composite system (ETICS) as this is the only way to allow the ventilation pipes to pass far enough through and so be fixed in place.
- When fitting the ETICS, make sure that the ventilation pipes maintain their 2° fall.

### 3.2 Positioning the ventilation unit indoors

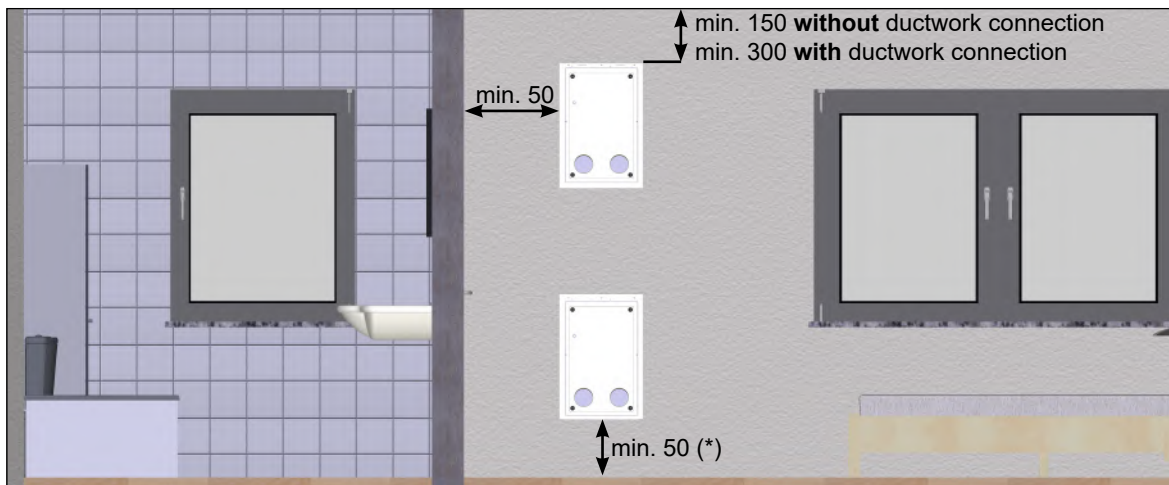


Fig. 4: Minimum distances and options for positioning the M-WRG-II M installation kit, dimensions in millimetres

- (\*) If a condensate connection (see section 9.12 on page 36) is used, the minimum dimensions must be adapted to suit the local conditions. This applies, in particular, if condensate is drained inwards, e.g. via a greywater outlet.

The ventilation unit must be installed indoors in a perpendicular position on an external wall.

- The flush-mount installation (wall box) kit must be installed so that the openings for extract air and supply air point up.
- For a standard room height of 2.50 m, the best effect for air exchange is achieved if the top edge of the unit with the supply and extract air openings is roughly 300 mm below the ceiling.
- A 110 x 54 mm flat ductwork system or a 75 mm flexible pipe system can be connected using the optional ductwork connection adapter M-WRG-II AD-UP. You will find examples of this in section 9.2 from page 21.

- ▶ Maintain the following minimum distances (see Fig. 4 and Fig. 5):
  - **If there is no flat ductwork or flexible pipe system** connected using the ductwork connection adapter:  
the distance between the top edge of the wall box and the ceiling must be at least 150 mm to prevent an air short circuit.
  - **If there is a flat ductwork or flexible pipe system** connected using the ductwork connection adapter:  
the distance between the top edge of the wall box and the ceiling must be at least 300 mm, otherwise there will not be enough space for connecting flat ductwork or flexible pipes.
  - The distance between the side and bottom edges of the wall box and adjacent surfaces should be at least 50 mm (exception: if a condensate connection is used, see (\*) in Fig. 4 on page 10). The ventilation unit will be easier to operate if this minimum distance is maintained. It also allows the air filter to be replaced without obstruction.
  - The lateral distance between two wall boxes must not be less than 200 mm to prevent an air short circuit between the ventilation units.

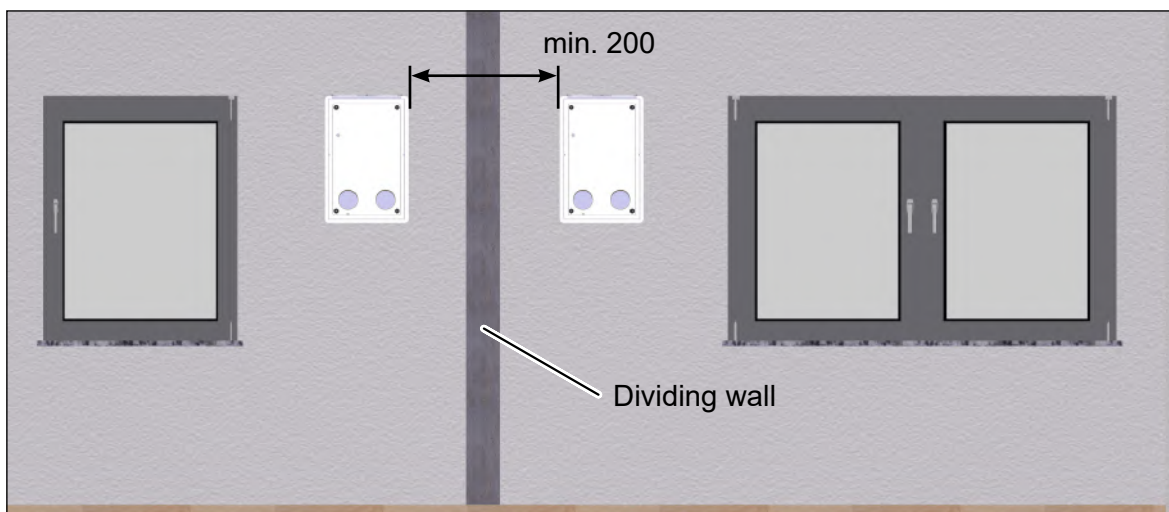


Fig. 5: Lateral minimum distance between two wall boxes, dimensions in millimetres

- ▶ If the room height is greater than 2.50 m, position the ventilation unit so that the unit can be operated and filters can be maintained unaided (without steps, ladders, etc.). Alternatively you can order a ventilation unit that can be operated externally.

#### NOTICE

Follow the notes in Table 2 on page 26 when planning the unit. This contains information about the types of mains and control cable for each ventilation unit and the recommended operating options.

### 3.3 Unrestricted access to the ventilation unit

The ventilation unit must always be freely accessible for operation and maintenance.

- ▶ Make sure that the ventilation unit is not covered or obstructed when the room is subsequently decorated and furnished, otherwise it cannot be operated and it will not be possible to replace the air filters. You should therefore maintain a clearance of at least 15 cm in front of the ventilation unit cover.
- ▶ Make sure that the supply and extract air openings are not covered when the room is subsequently decorated and furnished, otherwise the ventilation unit's functions may be impaired.

### 3.4 Additional planning notes when connecting a flexible pipe or flat ductwork system using the ductwork connection adapter M-WRG-II AD-UP

#### 3.4.1 Fire safety and soundproofing

##### **WARNING**

##### **Observe the relevant fire safety and soundproofing regulations**

- ▶ Observe the national regulations set out in DIN 4102 "Fire behaviour of building materials and building components" and, at the European level, in EN 13501 "Fire classification of construction products and building elements".
- ▶ Observe the regulations set out in DIN 4109 "Sound insulation in buildings", particularly the requirements for insulation against airborne and impact sound.
- ▶ Observe the building regulations applicable in your country.

#### 3.4.2 Flat ductwork

##### **NOTICE**

- ▶ Observe the following recommendations when using flat ductwork to avoid unnecessary pressure losses in the ducts.
  - Make sure that the cutouts for the flat ductwork do not affect the local static loading and thermal insulation requirements.
  - Horizontal runs in the external wall should be as short as possible.
  - The total length of a flat duct should not exceed 6 m, as permitted by the static calculations.
  - Minimise the number of bends in the flat ductwork.

### 3.4.3 Flexible pipes

#### NOTICE

- ▶ Observe the following recommendations when using flexible pipes to avoid unnecessary pressure losses in the pipes.
  - Always connect two flexible pipes to the flexible pipe connection.
  - The total length of each flexible pipe should not exceed 10 m.
  - Minimise the number of bends in the flexible pipes.
  - Run the two flexible pipes of a flexible pipe connection in parallel to one another. The minimum distance between the flexible pipes must not be less than 3 x the pipe diameter.

### 3.5 Retrospectively flush-mounting the installation kit

#### ⚠ WARNING

##### Danger from emerging gas or electric shock

- ▶ Make sure that there are no supply lines in the vicinity of the wall aperture (e.g. power, gas or water).
- ▶ Make sure that the wall aperture does not affect the local static loading requirements.
- ▶ If you are installing the kit retrospectively, run the flexible pipes in a suspended ceiling.

### 3.6 Electrical connection

The working voltage range of the ventilation unit is between 85 V AC and 265 V AC / 50 - 60 Hz.

#### NOTICE

If the ventilation unit is not equipped with a mains connection cable and plug or other means of disconnecting from the mains supply that has, at each pole, a contact opening width that conforms to the conditions of overvoltage category III for complete separation, then such an isolating unit (e.g. circuit breaker) must be integrated into the permanently installed electrical system in accordance with the installation regulations. The isolating unit must be identified as such and easy to access.

### 3.7 Planning example for installing the installation kit without a ductwork connection in a frame construction with 160 mm thick framing members

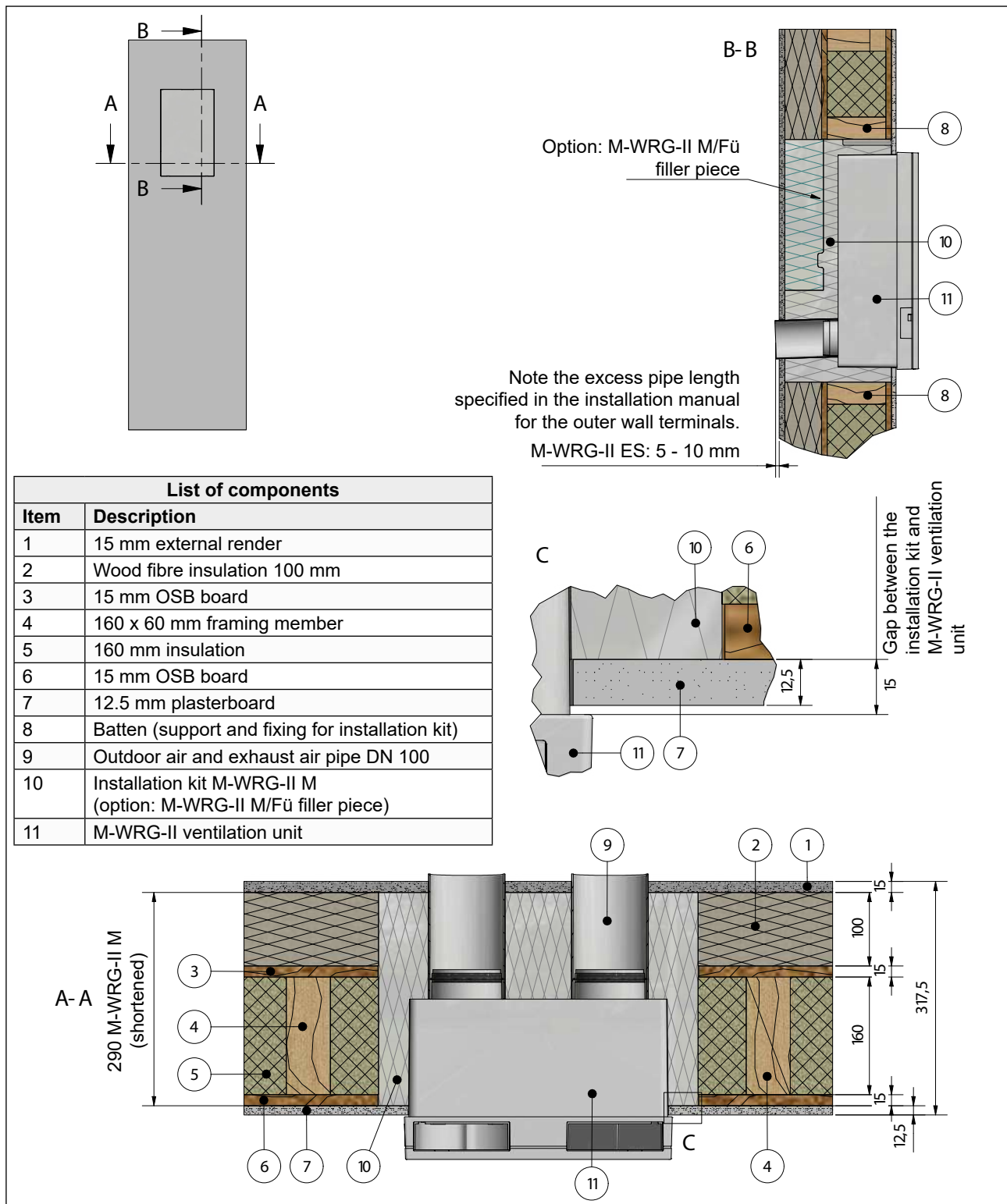


Fig. 6: Planning example for installing the installation kit without a ductwork connection in a frame construction with 160 mm thick framing members

### 3.8 Planning example for installing the installation kit with a ductwork connection in a frame construction with 160 mm thick framing members

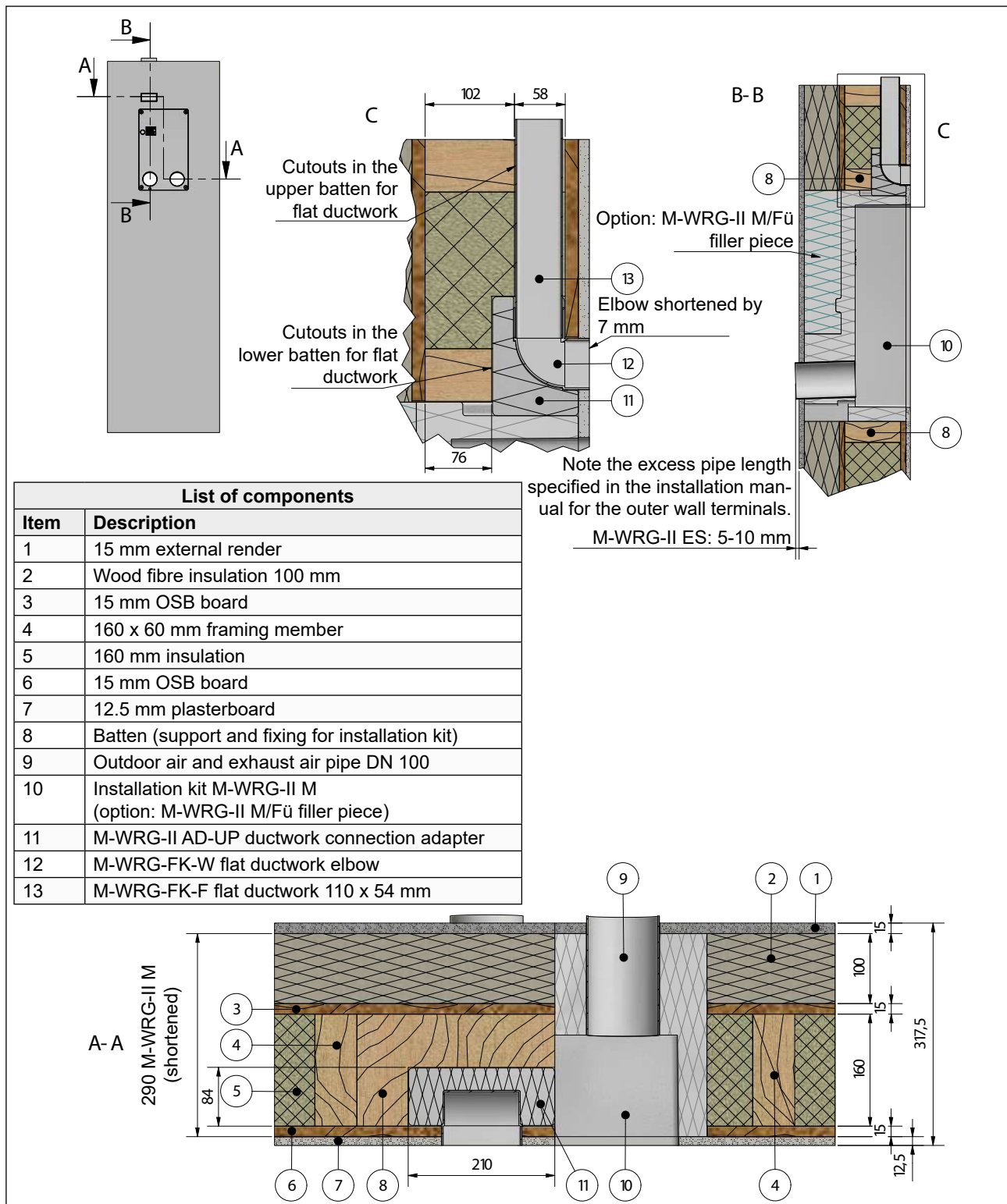


Fig. 7: Planning example for installing the installation kit with a ductwork connection in a frame construction with 160 mm thick framing members

## NOTICE

Frame constructions are implemented in many different ways, so it is not possible to provide a generally-applicable description for every variant. This planning example shows the installation in a frame construction with 160 mm thick framing members. The installation will have to be adapted accordingly for other framing member thicknesses or wall structures.

- ▶ If you are in any doubt, please send us a dimension drawing of your wall section so we can provide you with a custom solution.

## 4 Warranty and liability

### 4.1 Warranty

The following cases shall invalidate the warranty:

- The installation kit was not installed as described in the installation manual.
- The ventilation unit was not installed as described in the installation manual.
- The ventilation unit was flush-mounted without using a flush-mount installation kit.
- Genuine parts/genuine air filters were not replaced with genuine parts.
- Unapproved changes were made to the installation kit or ventilation unit.
- Repairs were not carried out by Meltem or by an authorised specialist company.
- The ventilation unit was operated without air filters and outer wall terminals.
- The warranty does not cover wearing parts such as air filters.

### 4.2 Liability

The manufacturer's liability shall not apply in the following cases:

- The installation kit was not installed as described in the installation manual.
- The ventilation unit was not installed as described in the installation manual.
- The ventilation unit was flush-mounted without using a flush-mount installation kit.
- Genuine parts/genuine air filters were not replaced with genuine parts.
- Unapproved changes were made to the installation kit or ventilation unit.
- Repairs were not carried out by Meltem or by an authorised specialist company.
- The ventilation unit was operated without air filters and outer wall terminals.



## 5 Items supplied

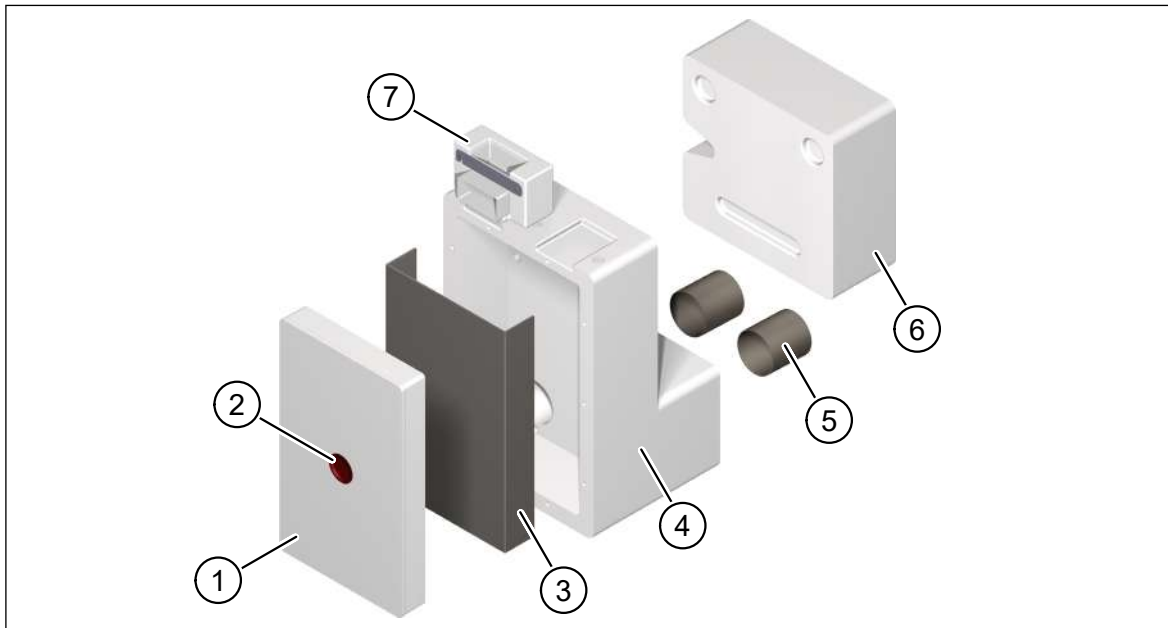


Fig. 8: Items supplied with the installation kit M-WRG-II M

### 5.1 Installation kit M-WRG-II M, part no. 710000

Item	Description	Quantity
1	Plaster cover for wall box	1 x
2	Signal cover	1 x
3	Cardboard insert	1 x
4	Wall box	1 x
5	Protective sleeve	2 x

### 5.2 Options

Item	Description	Part no.
6	Installation kit filler piece M-WRG-II M/Fü	735003
7	Ductwork connection adapter for flush-mount installation kit for the M-WRG-II series	731003
-	Plaster scrim M-WRG-II PG	735000

### 5.3 Installation materials required

Additional installation materials are needed for flush-mount installation. These must be ordered separately.

Item	Description	Part no.
-	Outdoor air and exhaust air pipe, DN 100, 2 x 0.5 m, M-WRG-LR 50	5574
-	If a condensate connection is used: Outdoor air and exhaust air pipes, DN 100, 2 x 0.5 m, exhaust air pipe with 1/2" male thread condensate connection, M-WRG-II LR 50-KA	735200

## 6 Dimensions of the installation kit

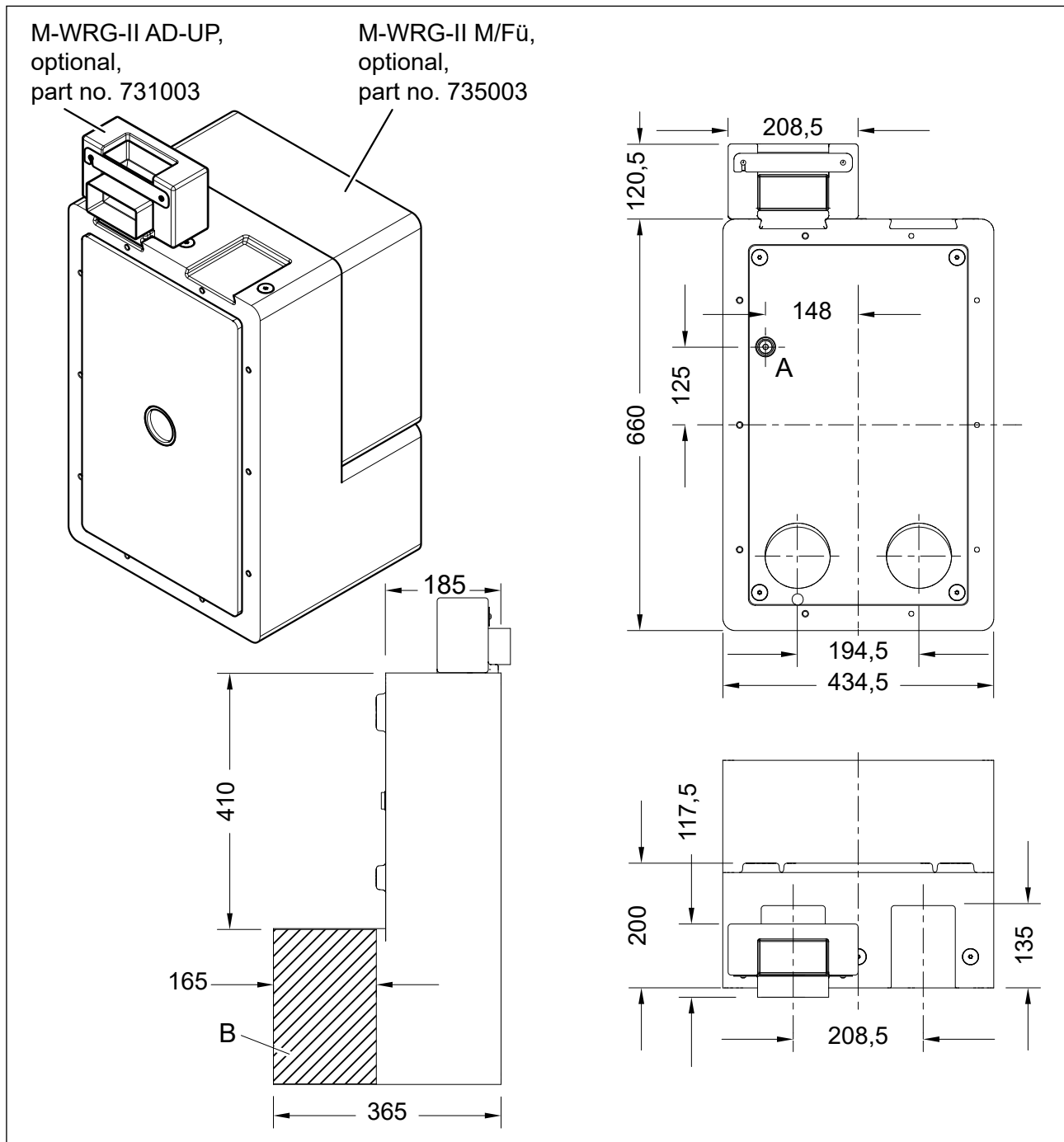


Fig. 9: Installation kit dimensions in millimetres

- A Cable inlet for the mains and control cables (a control cable is only needed for certain ventilation units, see Table 2 on page 26)
- B The installation kit can be shortened by up to 165 mm (to no less than 200 mm).

### NOTICE

With the M-WRG-II WM-M option, part no. 720003, the kit can be shortened at the factory to a minimum length of 185 mm. This dimension is subject to manufacturing tolerances.

## 7 Tools and equipment required

- Adhesive tape
- Expanding foam with abP (national technical test certificate of the DIBt) approval (“exact gap” foam is recommended)
- If necessary, wedges for fixing the wall box, 8 x  
alternatively use inflatable air cushions, 4 x, e.g. Amo-Bag from Würth, part no. 07156780
- If necessary, wedges for fixing the filler piece, 4 x  
alternatively use inflatable air cushions, 2 x, e.g. Amo-Bag from Würth, part no. 07156780
- Perforated tape for fixing flat ductwork or flexible pipes
- Permanently elastic sealant, solvent-free if applied to polystyrene
- Saw for cutting the channels in the frame construction
- Saw for cutting the ventilation pipes to length
- Sealing tape, 30 mm wide, e.g. Coroplast
- Sealing tape for bonding the wall box to the vapour barrier, e.g. Rissan<sup>®</sup> from SIGA
- Spirit level
- Styrofoam saw

## 8 General installation instructions

### NOTICE

- The installation must be carried out in accordance with the generally acknowledged rules of technology.
- Connections with adjacent components must be formed to absorb movements between the contact surfaces.
- Seal any connections that are exposed to driving rain with tapes, profiles or sealants such that they offer sufficient protection against the expected conditions.

### WARNING

#### Follow the relevant accident prevention regulations

- ▶ Follow the accident prevention regulations when setting up the installation location.
- ▶ Protect the outside area against falling parts.

## 9 Installing the installation kit

### NOTICE

Frame constructions are implemented in many different ways, so it is not possible to provide a generally-applicable description for every variant. This installation example shows the installation in a frame construction with 160 mm thick framing members. The installation will have to be adapted accordingly for other framing member thicknesses or wall structures.

- ▶ If you are in any doubt, please send us a dimension drawing of your wall section so we can provide you with a custom solution.

### 9.1 Creating a mount for the installation kit in a frame construction

- ▶ Commission an architect or design professional to include the mount for the installation kit at a suitable point in the construction drawing.
- ▶ Incorporate two wooden battens into the frame construction at the planned installation position:
  - The lower batten (item 1 in Fig. 10) acts as a support.

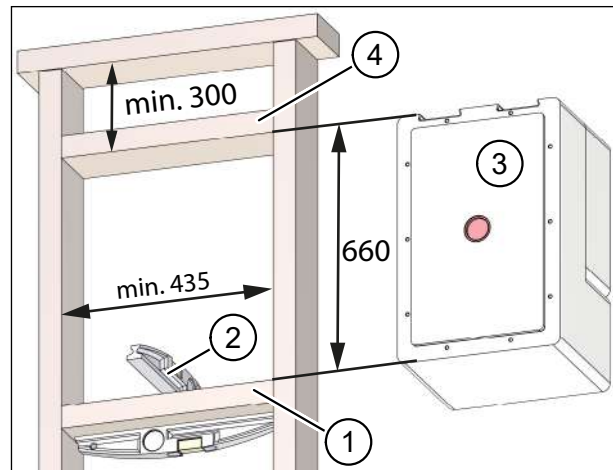


Fig. 10: Creating a mount for the installation kit in a frame construction – dimensions in millimetres

### NOTICE

- ▶ Use a spirit level (item 2 in Fig. 10) to check that the lower batten is exactly horizontal as this is the only way to ensure that any condensation will be carried outside by the 2° pipe fall in the installation kit (item 3 in Fig. 10).

- The upper batten (item 4 in Fig. 10) is used to fix the installation kit.

### NOTICE

- The installation kit is fixed in the optimum position with a vertical distance of 660 mm between the lower and upper batten (see Fig. 10). You can insert the installation kit temporarily while fixing the battens to ensure that the kit will fit perfectly.
- Maintain the following minimum distances:
  - At least 435 mm between the vertical framing members
  - At least 300 mm between the top edge of the wall box and the ceiling
  - At least 50 mm between the side and bottom edges of the wall box and adjacent surfaces

## 9.2 Sawing channels for flat ductwork or flexible pipes (only when connecting a flat ductwork or flexible pipe system)

### NOTICE

In combination with the optional ductwork connection adapter M-WRG-II AD-UP this installation kit allows you to connect a 110 x 54 mm flat ductwork system or a 75 mm flexible pipe system on the extract air side (item 1 in Fig. 11), on the supply air side (item 2 in Fig. 11) or on both sides. The installation example shown in this section is a configuration with a flat ductwork connection on the extract air side. Various sample configurations are illustrated in section 9.2.1 and section 9.2.2.

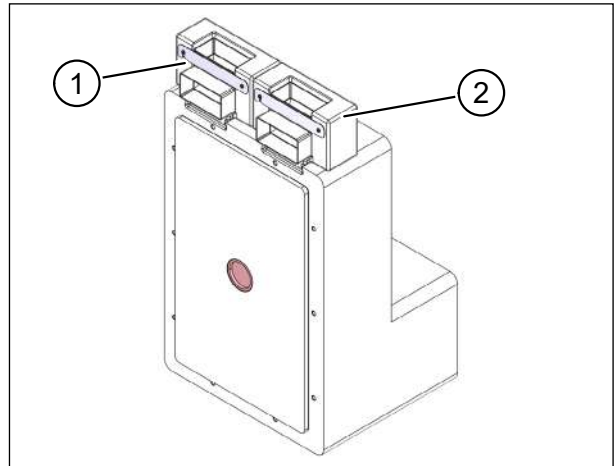


Fig. 11: Installation kit with ductwork connection adapter on the extract air and supply air sides

- ▶ Saw a channel 215 mm wide and 105 mm deep in the upper batten (item 1 in Fig. 12) for the ductwork connection adapter on the extract air side.
- ▶ Saw a channel in the ceiling joist (item 2 in Fig. 12) for the extract air duct.

### NOTICE

The dimensions of the channels for the flat ducts are:

- 120 mm wide (item A in Fig. 12)
- 60 mm deep (item B in Fig. 12)

The dimensions of the channels for the flexible pipes are:

- 175 mm wide (item A in Fig. 12)
- 85 mm deep (item B in Fig. 12)

- ▶ Check that the installation kit fits easily into the space.
- ▶ If necessary, saw channels for the rest of the flat ductwork as shown in your plans.

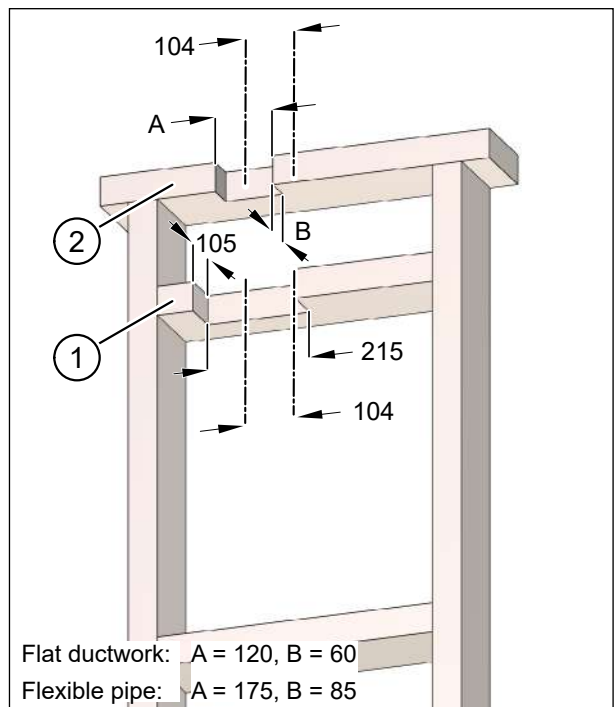


Fig. 12: Sawing channels for flat ductwork or flexible pipes, dimensions in millimetres

## NOTICE

- ▶ Observe the following recommendations when using flexible pipes to avoid unnecessary pressure losses in the pipes.
  - Always connect two flexible pipes to the flexible pipe connection.
  - The total length of each flexible pipe should not exceed 10 m.
  - Minimise the number of bends in the flexible pipes.
  - Run the two flexible pipes of a flexible pipe connection in parallel to one another. The minimum distance between the flexible pipes must not be less than 3 x the pipe diameter.

### 9.2.1 Example of a flat ductwork connection on the extract air side (multi-room version, only when connecting a flat ductwork system)

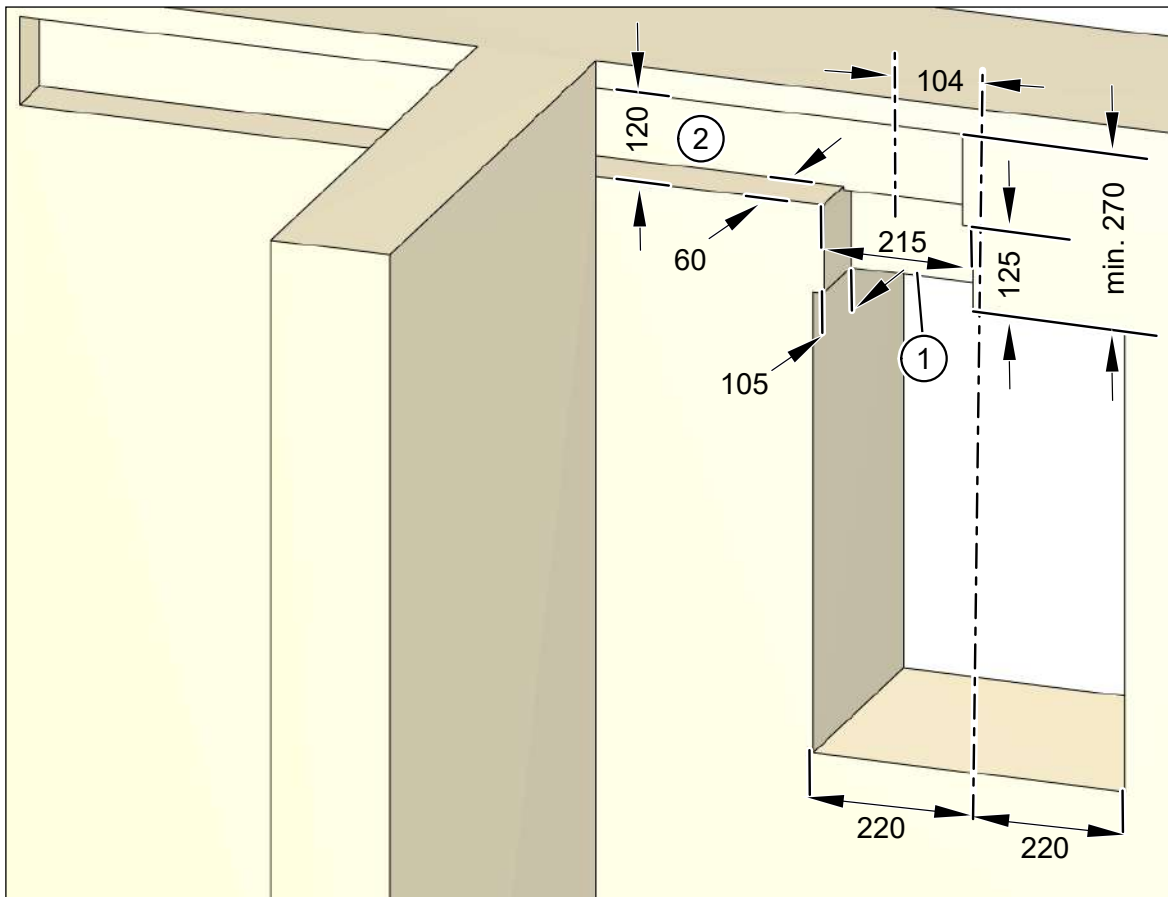


Fig. 13: Creating channel for ductwork connection on extract air side with flat ductwork (schematic representation)

- ▶ Create a channel (item 1 in Fig. 13) 215 mm wide and 105 mm deep (see Fig. 13) for the ductwork connection adapter (item 1 in Fig. 11 on page 21).
- ▶ Check that the installation kit with the ductwork connection adapter attached fits easily into the wall aperture.

- ▶ Create a channel 120 mm wide and 60 mm deep (see Fig. 13) for the extract air duct (item 2 in Fig. 13).
- ▶ If necessary, create channels for running other flat ductwork as shown in your plans.

#### NOTICE

The dimensions of the channels in the vicinity of the ductwork connection adapter are:

- 215 mm wide
- 105 mm deep

The dimensions of the channels for the flat ducts are:

- 120 mm wide
- 60 mm deep

### 9.2.2 Example of a flexible pipe connection on the extract air and/or supply air side (multi-room version, only when connecting a flexible pipe system)

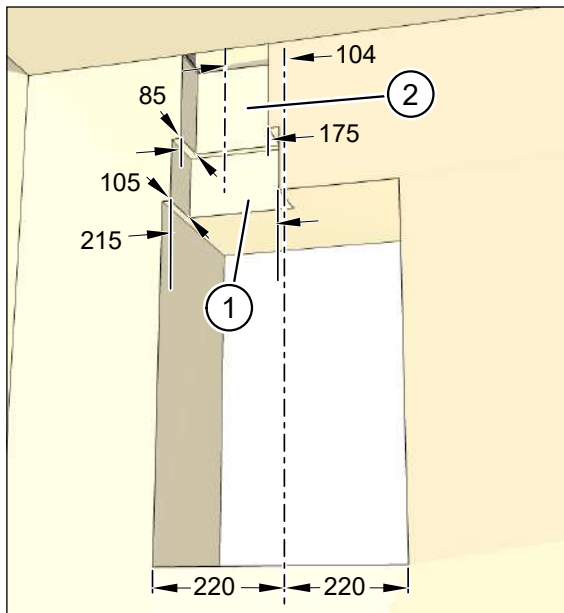


Fig. 14: Creating channels for flexible pipe connection on extract air side, dimensions in millimetres (schematic representation)

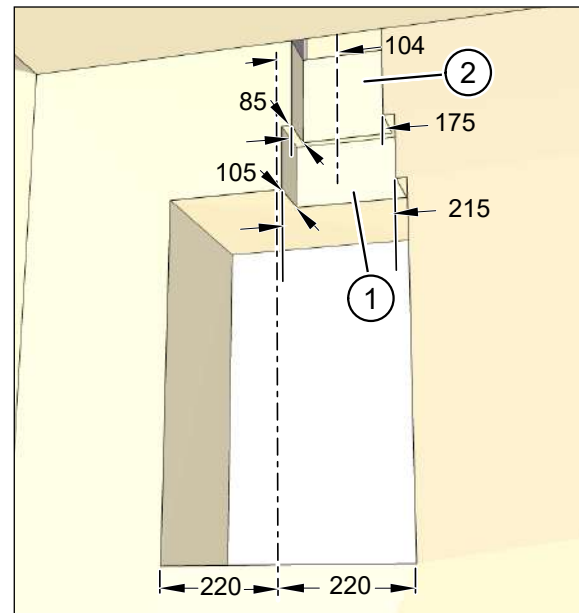


Fig. 15: Creating channels for flexible pipe connection on supply air side, dimensions in millimetres (schematic representation)

- ▶ Create the channels for the flexible pipe connection according to whether you intend to connect the flexible pipe system on the extract air side, supply air side or on both sides.
  - Example: Flexible pipe connection **on the extract air side** (item 1 in Fig. 14)
  - Example: Flexible pipe connection **on the supply air side** (item 1 in Fig. 15)
- ▶ Create a channel (item 1 in Fig. 14 or Fig. 15) 215 mm wide and 105 mm deep (see Fig. 14 or Fig. 15) for the ductwork connection adapter (item 1 in Fig. 11 on page 21).
- ▶ Create a channel (item 2 in Fig. 14 or Fig. 15) for the flexible pipe 175 mm wide and 85 mm deep as far as the flexible pipe outlet in the ceiling.
- ▶ Check that the installation kit fits easily into the wall aperture.

### NOTICE

The dimensions of the channels in the vicinity of the ductwork connection adapter are:

- 215 mm wide
- 105 mm deep

The dimensions of the channels for the flexible pipes are:

- 175 mm wide
- 85 mm deep

Fig. 16 contains a typical plan for running the flexible pipes. Always run 2 flexible pipes in the supply air or extract air room.

### NOTICE

► Observe the following recommendations when using flexible pipes to avoid unnecessary pressure losses in the pipes.

- Always connect two flexible pipes to the flexible pipe connection.
- The total length of each flexible pipe should not exceed 10 m.
- Minimise the number of bends in the flexible pipes.
- Run the two flexible pipes of a flexible pipe connection in parallel to one another. The minimum distance between the flexible pipes must not be less than 3 x the pipe diameter.

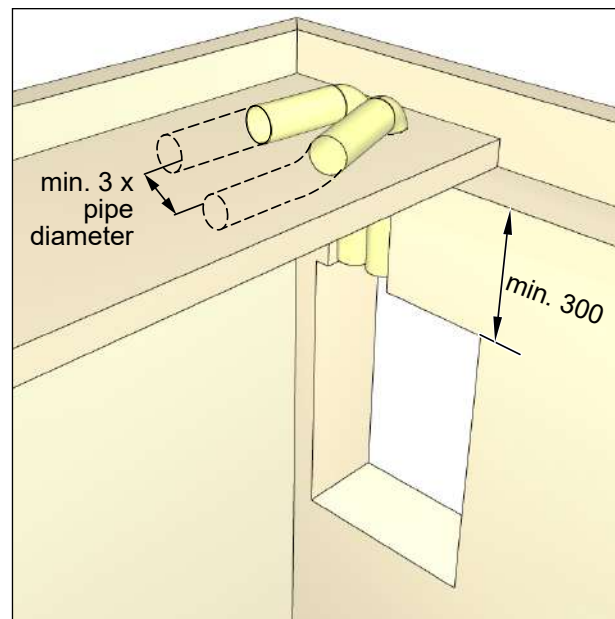


Fig. 16: Planning example for running flexible pipes (schematic representation)



### 9.3 Running the mains and control cables

#### **⚠ DANGER**

##### **Potentially fatal voltages**

- The electrical installation work must only be carried out by a qualified electrician.
- The VDE regulations or any special safety regulations applicable in your country apply to the electrical installation work.
- ▶ Before starting installation or maintenance work, disconnect the mains cable for connecting to the ventilation unit on all poles from the mains supply.
- ▶ Observe the five safety rules (DIN VDE 0105-100, EN 50110-1) for working on electrical systems:
  - Disconnect from mains (all-pole disconnection of a system from live parts)
  - Secure against reconnection
  - Check that the system is voltage-free
  - Earth and short-circuit
  - Cover or block off access to adjacent live parts

- ▶ Run the mains cable (item 1 in Fig. 17) and the control cable, if required (item 2 in Fig. 17). The cables should extend roughly 250 mm beyond the wall.
- ▶ Fix the mains cable and the control cable (if used) in position.

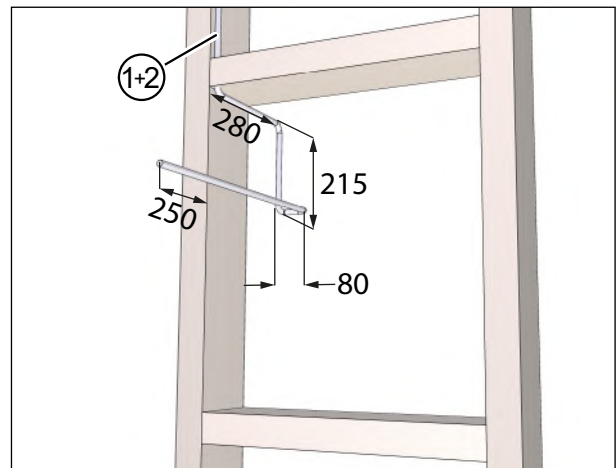


Fig. 17: Running the connecting cables, dimensions in millimetres

#### **NOTICE**

- Table 2 on page 26 and Table 3 on page 27 contain overviews of the recommended types of mains cable and control cable.
- A control cable is only needed for certain types of ventilation unit.
- The ventilation unit is equipped with an external control input as standard. The mains cable **NYM-J 4x1.5 mm<sup>2</sup>** is needed if this control input is used.

### 9.3.1 Cable types

Part no.	Type of ventilation unit	Type of mains cable	Type of control cable
700000 700001 700002 701000 701001 701002	M-WRG-II P M-WRG-II P-F M-WRG-II P-FC M-WRG-II E M-WRG-II E-F M-WRG-II E-FC	NYM-J 3x1.5 mm <sup>2</sup> or NYM-J 4x1.5 mm <sup>2</sup> (*)	No control cable
700010 700011 700012 701010 701011 701012	M-WRG-II P-T M-WRG-II P-T-F M-WRG-II P-T-FC M-WRG-II E-T M-WRG-II E-T-F M-WRG-II E-T-FC	NYM-J 3x1.5 mm <sup>2</sup> or NYM-J 4x1.5 mm <sup>2</sup> (*)	— InControl pushbutton sensor: J-Y (St) Y 10x2x0.6 mm / J-Y (St) Y 10x2x0.8 mm — Three-step rotary switch: J-Y (St) Y 4x2x0.6 mm / J-Y (St) Y 4x2x0.8 mm — BCD encoding: J-Y (St) Y 4x2x0.6 mm / J-Y (St) Y 4x2x0.8 mm
700020 700021 700022 701020 701021 701022	M-WRG-II P-M M-WRG-II P-M-F M-WRG-II P-M-FC M-WRG-II E-M M-WRG-II E-M-F M-WRG-II E-M-FC	NYM-J 3x1.5 mm <sup>2</sup> or NYM-J 4x1.5 mm <sup>2</sup> (*)	Building management system, Modbus, Loxone, KNX: J-Y (St) Y 2x2x0.6 mm / J-Y (St) Y 2x2x0.8 mm
700030 700031 700032 701030 701031 701032	M-WRG-II P-S 485 M-WRG-II P-S 485-F M-WRG-II P-S 485-FC M-WRG-II E-S 485 M-WRG-II E-S 485-F M-WRG-II E-S 485-FC	NYM-J 3x1.5 mm <sup>2</sup> or NYM-J 4x1.5 mm <sup>2</sup> (*)	Touch Control network: J-Y (St) Y 2x2x0.6 mm / J-Y (St) Y 2x2x0.8 mm

Table 2: Types of mains cable and control cable for each ventilation unit type

(\*) If the external control input is used

### 9.3.2 External control input

With the external control input supplied as standard, the M-WRG-II unit has an additional input terminal for 230 V AC (working voltage range: 85 V AC to 265 V AC / 50 - 60 Hz) to which a switch, time switch, motion detector or similar may be connected.

The external control input is equipped with a time-delay relay that can be used to set a switch-on delay and a run-on time:

- Switch-on delay: the M-WRG-II unit does not start until the set time has elapsed.
- Run-on time: the M-WRG-II unit does not switch to the previously active ventilation program until the set time has elapsed.

In addition, the following options are available for the external control input supplied as standard:

- M-WRG-II O/EST-1 (without switch-on delay, part no. 721005)
- M-WRG-II O/EST-2 (without run-on time, part no. 721006)

Windowless rooms can be ventilated in accordance with DIN 18017-3 in combination with the M-WRG-II O/NOF option (part no. 721004).

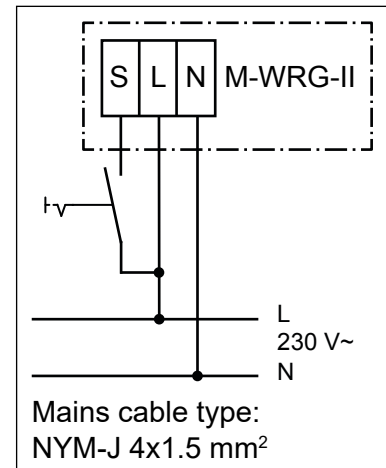


Fig. 18: Connection diagram for external control input

### 9.3.3 Option M-WRG-II O/EGG-AUS

Part no.	Option M-WRG-II O/EGG-AUS	Type of control cable
721003	“Unit OFF” input, e.g. via an external smoke detector or window contact	J-Y (St) Y 2x2x0.6 mm / J-Y (St) Y 2x2x0.8 mm
	Potential-free fault indicator output	J-Y (St) Y 2x2x0.6 mm / J-Y (St) Y 2x2x0.8 mm

Table 3: Option M-WRG-II O/EGG-AUS

The connection board for the M-WRG-II O/EGG-AUS option has 5 terminals (see Fig. 19):

- 3-pole connection for fault indicator output
- 2-pole connection for “Unit OFF” input

We recommend that you use separate cables for the input and output.

#### NOTICE

The M-WRG-II O/EGG-AUS option must be installed at the factory.

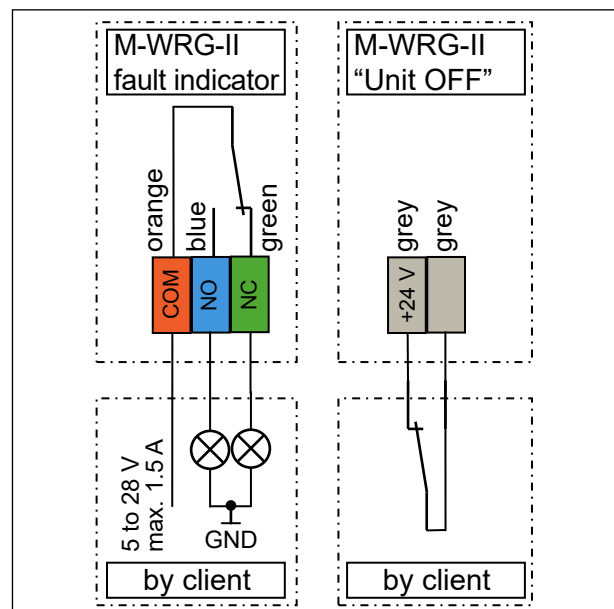


Fig. 19: Connection diagrams for M-WRG-II O/EGG-AUS option

## 9.4 Inserting and fixing the wall box

- ▶ Remove the plaster cover (item 1 in Fig. 20) and the cardboard insert (item 2 in Fig. 20) from the wall box (item 3 in Fig. 20).
- ▶ Apply assembly adhesive to the top of the lower batten (item 4 in Fig. 20) and the underside of the upper batten (item 5 in Fig. 20).

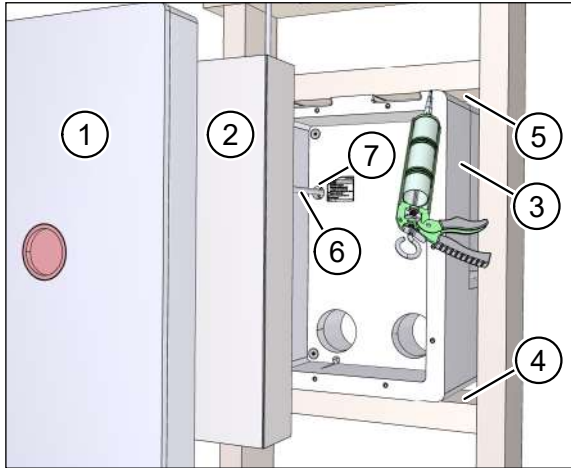


Fig. 20: Inserting and fixing the wall box

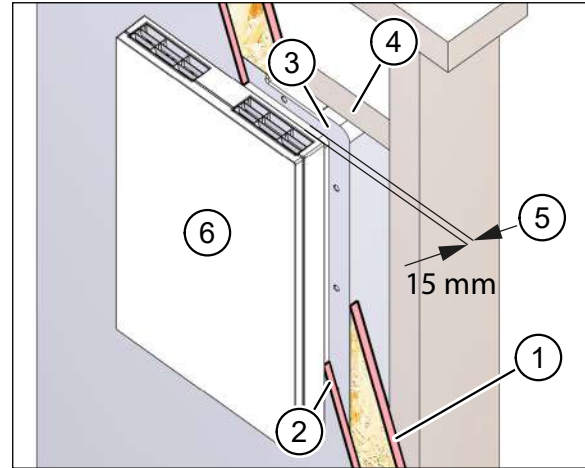


Fig. 21: Depth of plastering trim 15 mm

- ▶ Thread the mains cable and the control cable, if required (item 6 in Fig. 20), through the cable inlet in the wall box (item 7 in Fig. 20).
- ▶ Insert the wall box between the two battens. The structure of the subsequent internal wall cladding will determine how far the wall box needs to protrude above the batten. This installation example shows the following configuration:
  - The internal wall cladding consists of a 15 mm thick OSB board (item 1 in Fig. 21) and a 12.5 mm thick plasterboard (item 2 in Fig. 21).
  - The front surface of the wall box (item 3 in Fig. 21) protrudes 15 mm above the two battens (item 4 in Fig. 21). In this case, the OSB board ends flush with the front surface of the wall box.
  - The 15 mm gap (item 5 in Fig. 21) between the front surface of the wall box and the ventilation unit housing (item 6 in Fig. 21) is filled by the 12.5 mm thick plasterboard. The remaining 2.5 mm shadow gap can be grouted.

## NOTICE

- Note the following points when you insert the wall box between the two battens:
  - When it is subsequently installed, the ventilation unit (item 6 in Fig. 21, item 1 in Fig. 22) must be pushed into the wall box (item 3 in Fig. 21, item 2 in Fig. 22) as far as it will go. This is the only way to ensure that condensation cannot develop between the back panel of the ventilation unit and the wall box.
  - When the ventilation unit is pushed into the wall box as far as it will go, there remains a 15 mm gap (item 5 in Fig. 21, item 3 in Fig. 22) between the front surface of the wall box and the inserted ventilation unit. This gap is ideally filled by the top layer of the internal wall cladding.
  - If the top layer of the internal wall cladding (item 2 in Fig. 21, item 4 in Fig. 22) is less than 15 mm thick, the 15 mm gap (item 5 in Fig. 21, item 3 in Fig. 22) between the front surface of the wall box and the inserted ventilation unit is not completely filled, resulting in a shadow joint (item 6 in Fig. 22). This can be grouted.
  - If the top layer of the internal wall cladding (item 2 in Fig. 21, item 4 in Fig. 22) is more than 15 mm thick, the wall box must be shortened and moved forward by the amount in excess of 15 mm in order to enlarge the gap between the ventilation unit and wall box. Alternatively the final layer of the internal wall cladding can be chased out by the amount in excess of 15 mm.
  - Make sure that the wall box is perpendicular as this is the only way to ensure that any condensation will be carried outside by the 2° pipe fall.

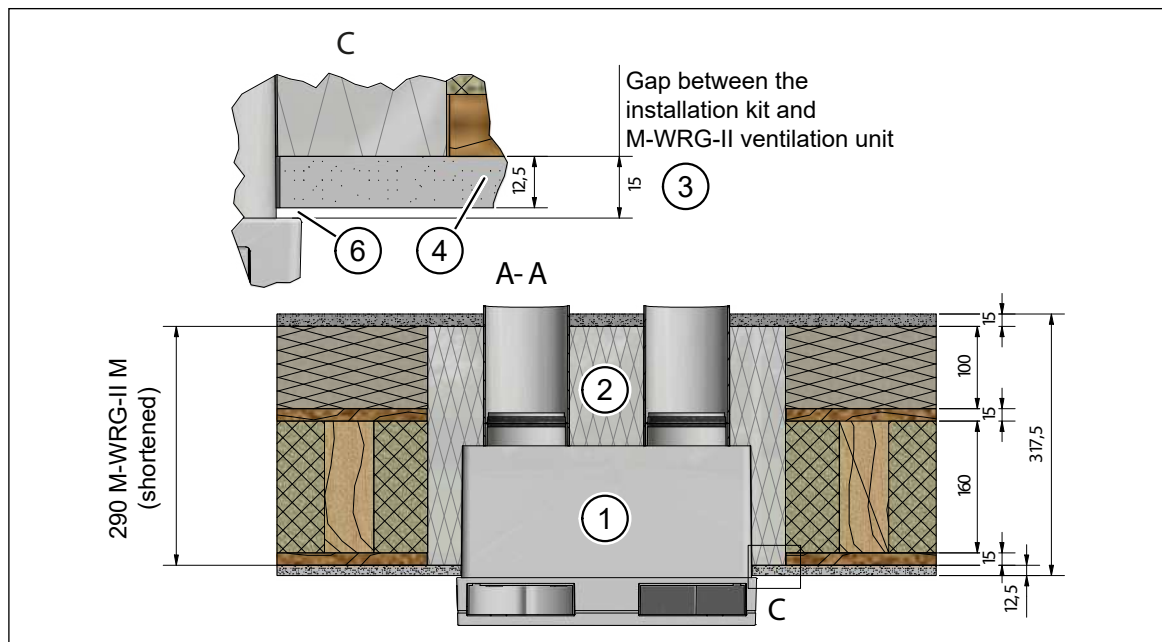


Fig. 22: Positioning the installation kit in the external wall, dimensions in millimetres

## 9.5 Inserting the cardboard insert and plaster cover

- ▶ Insert the cardboard insert (item 1 in Fig. 23) into the wall box (item 3 in Fig. 23) as far as it will go.
- ▶ Insert the plaster cover (item 2 in Fig. 23) into the wall box (item 3 in Fig. 23) as far as it will go.

### NOTICE

There is a risk that the wall box will be deformed during the remainder of the installation process if the plaster cover is not inserted. If this happens, it will not be possible to insert the ventilation unit into the wall box.

- ▶ Check that the red signal cover (item 4 in Fig. 23) is seated in the plaster cover.

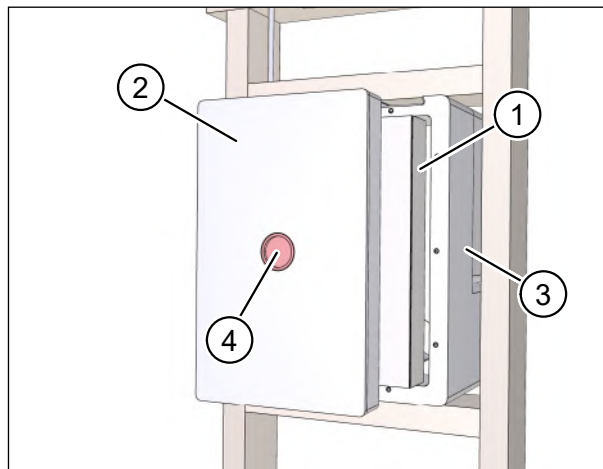


Fig. 23: Inserting the cardboard insert and plaster cover

## 9.6 Filling gaps around the wall box with insulating material

- Fill all gaps between the wall box and frame construction fully with insulating material (item 1 in Fig. 17) or using another suitable filling material.

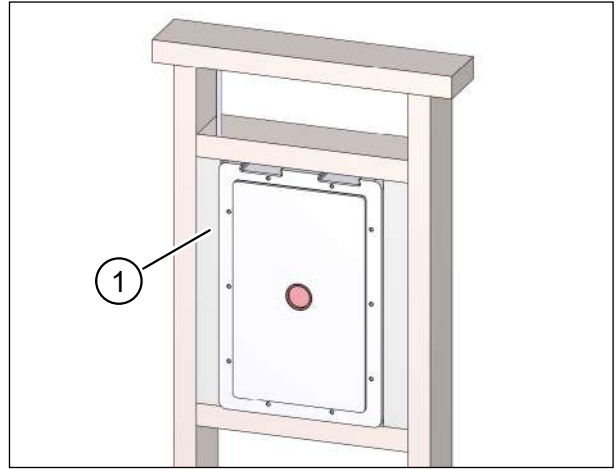


Fig. 24: Filling gaps around the wall box with insulating material

## 9.7 Connecting the wall box to the vapour barrier

The inner OSB board (item 1 in Fig. 25) is the vapour barrier and airtight layer. The OSB board must be connected to the wall box (item 2 in Fig. 25) using a suitable and approved adhesive tape, e.g. Rissan® from SIGA.

Other wall structures may require different procedures.

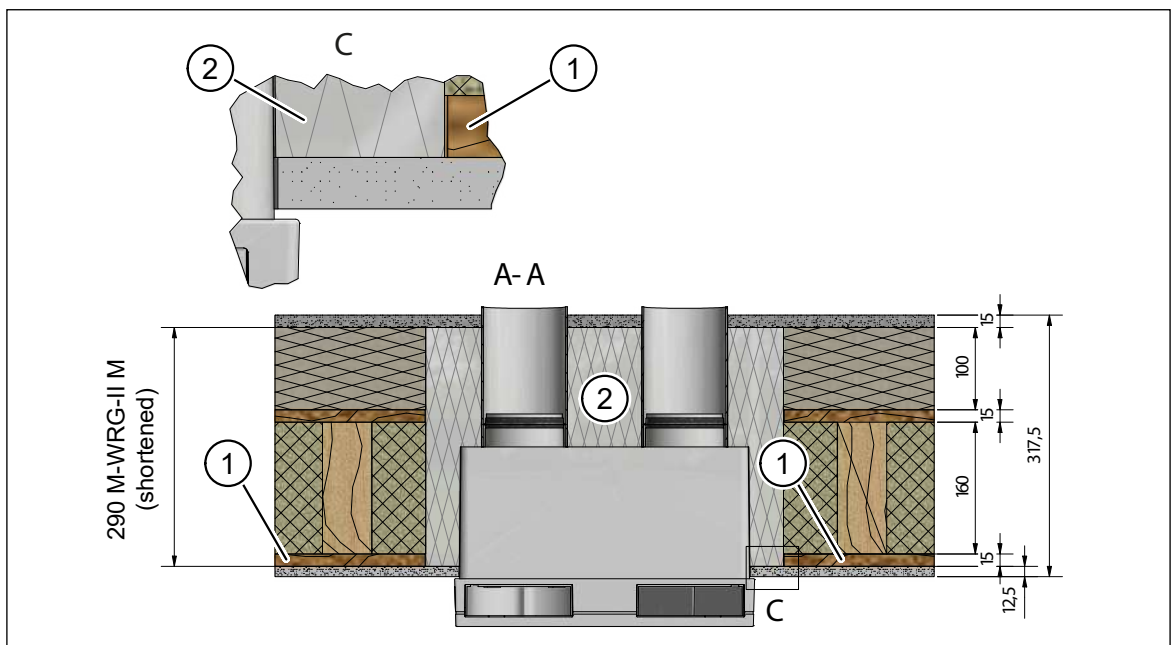


Fig. 25: Inner OSB board as the vapour barrier and airtight layer

## 9.8 Inserting M-WRG-II AD-UP ductwork connection adapter and filling gaps with foam (only when connecting a flat ductwork or flexible pipe system)

- ▶ Insert the ductwork connection adapter (item 1 in Fig. 26) into the guide (item 2 in Fig. 26) on the top of the wall box (on the extract air side, supply air side or on both sides as shown in the plans).
- ▶ Push the ductwork connection adapter in until the flat ductwork elbow (item 3 in Fig. 26, item 1 in Fig. 27) ends flush with the subsequent internal wall cladding (item 2 in Fig. 27). The flat ductwork elbow may be shortened if necessary.
- ▶ Fill the gaps between the ductwork connection adapter and channel all around and continuously with expanding foam or using another suitable filling material.

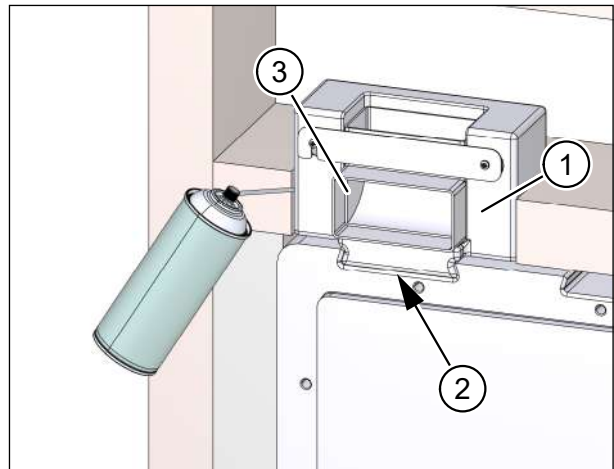


Fig. 26: Inserting ductwork connection adapter and filling gaps with foam

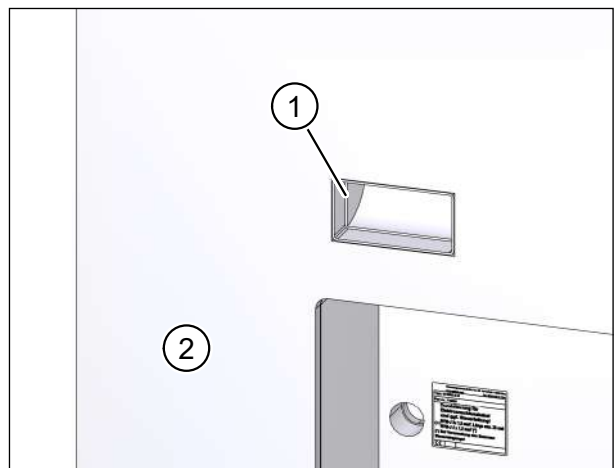


Fig. 27: Flat ductwork elbow and internal wall cladding ending flush



## 9.9 Inserting flat ductwork into ductwork connection adapter (only when connecting a flat ductwork system)

### NOTICE

If you are using flexible pipes, continue from section “9.10 Joining flexible pipe connectors and cutting flexible pipes to length (only when connecting a flexible pipe system)” on page 34.

- ▶ Loosen the two cross-head screws (item 1 in Fig. 28) and lift up the bar catch (item 2 in Fig. 28).
- ▶ Remove the flat ductwork bend (item 3 in Fig. 28) from the ductwork connection adapter (item 4 in Fig. 28).
- ▶ Insert a flat duct M-WRG-FK-F (item 5 in Fig. 28), part no. 5590, or the fitting adapter M-WRG-FSA lang, part no. 5375-00, into the flat ductwork bend.
- ▶ Seal the join with a layer of sealing tape 30 mm wide (item 6 in Fig. 28).
- ▶ Push the flat ductwork bend (item 3 in Fig. 28) together with the attached flat ductwork element (item 5 in Fig. 28) back into the ductwork connection adapter (item 4 in Fig. 28).
- ▶ Push the bar catch (item 2 in Fig. 28) down and carefully tighten the cross-head screws (item 1 in Fig. 28).
- ▶ Join individual elements of the flat ductwork to create partial sections and seal every join with a layer of sealing tape 30 mm wide.
- ▶ Insert the sections of flat ductwork one after another and seal every join with a layer of sealing tape 30 mm wide.
- ▶ Fix the flat ductwork in place with expanding foam or perforated tape.

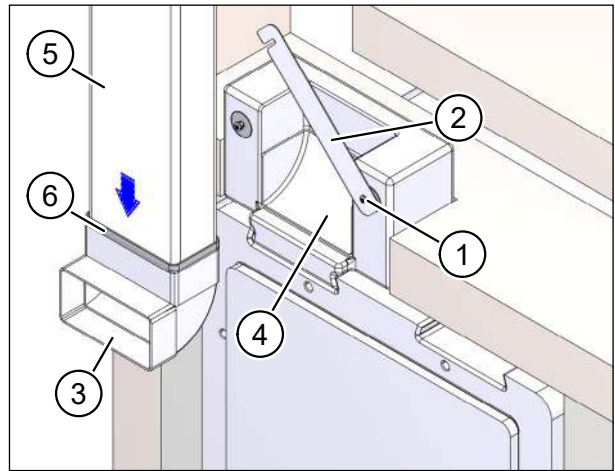


Fig. 28: Inserting flat ductwork into ductwork connection adapter

## 9.10 Joining flexible pipe connectors and cutting flexible pipes to length (only when connecting a flexible pipe system)

- ▶ Loosen the two cross-head screws (item 1 in Fig. 29) and lift up the bar catch (item 2 in Fig. 29).
- ▶ Remove the flat ductwork bend (item 3 in Fig. 29) from the ductwork connection adapter (item 4 in Fig. 29).
- ▶ Remove the red protective cover (item 5 in Fig. 29) from the flexible pipe adapter (item 6 in Fig. 29) M-WRG-FRA75 (part no. 5056-00/75).
- ▶ Insert the fitting adapter M-WRG-FSA lang, part no. 5375-00 (item 7 in Fig. 29) into the flat ductwork bend (item 3 in Fig. 29).

### NOTICE

Make sure that you insert the fitting adapter so that the short side points up (see item 7 in Fig. 29).

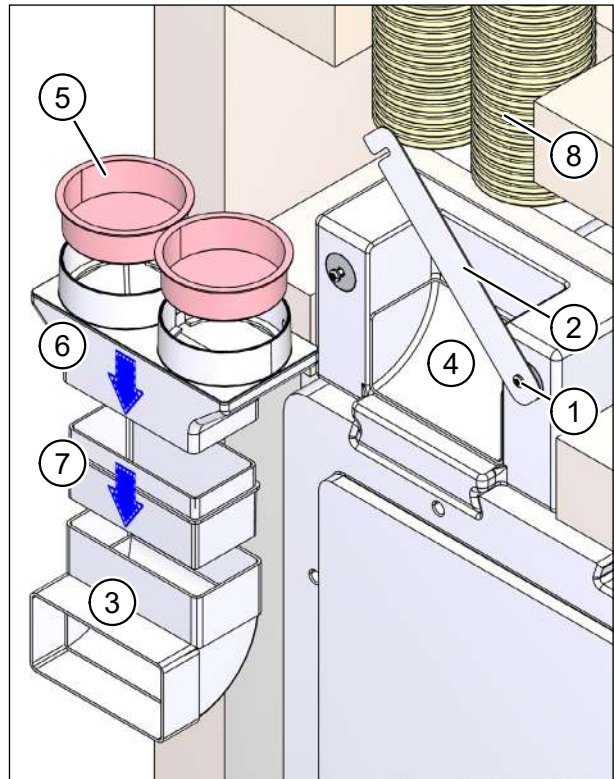


Fig. 29: Joining flexible pipe connectors and cutting flexible pipes to length

- ▶ Attach the flexible pipe adapter (item 6 in Fig. 29) to the fitting adapter (item 7 in Fig. 29) and seal the join with a layer of sealing tape 30 mm wide.
- ▶ Insert the assembled flexible pipe connectors (items 3, 6 and 7 in Fig. 29) into the ductwork connection adapter (item 4 in Fig. 29) to test the fit.
- ▶ Shorten the flexible pipes (item 8 in Fig. 29) so that they can be inserted into the flexible pipe adapter (item 6 in Fig. 29).

### 9.11 Inserting flexible pipes into flexible pipe adapter (only when connecting a flexible pipe system)

- ▶ Insert the sealing rings (item 1 in Fig. 30) into the second groove on the flexible pipe. These are available as accessories M-WRG-FR-DR75 (part no. 5056-41/75).
- ▶ Insert the flexible pipes into the openings in the flexible pipe adapter (item 5 in Fig. 30). Make sure that the first groove on the flexible pipe (item 2 in Fig. 30) engages with the locking ring (item 3 in Fig. 30) on the flexible pipe adapter.
- ▶ Recommendation: Seal the join with a layer of sealing tape 30 mm wide (item 4 in Fig. 30).
- ▶ Insert the assembled flexible pipe connectors (item 1 in Fig. 31) into the ductwork connection adapter (item 2 in Fig. 31).
- ▶ Push the bar catch (item 3 in Fig. 31) down and carefully tighten the cross-head screws (item 4 in Fig. 31).

#### NOTICE

- ▶ Run the flexible pipes without forcing or stresses.
- ▶ Fix the flexible pipes in place with expanding foam or perforated tape.

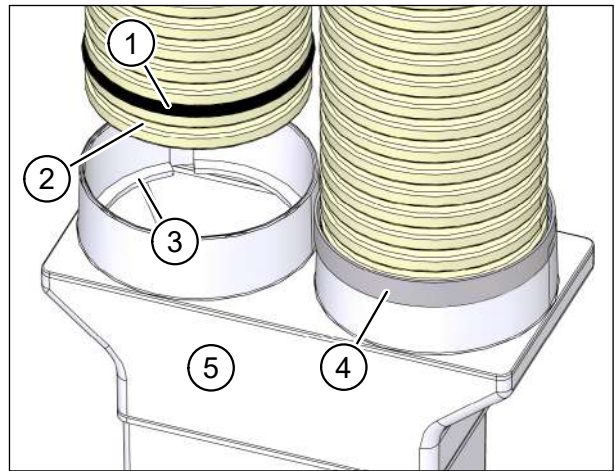


Fig. 30: Fixing a flexible pipe connection with sealing tape

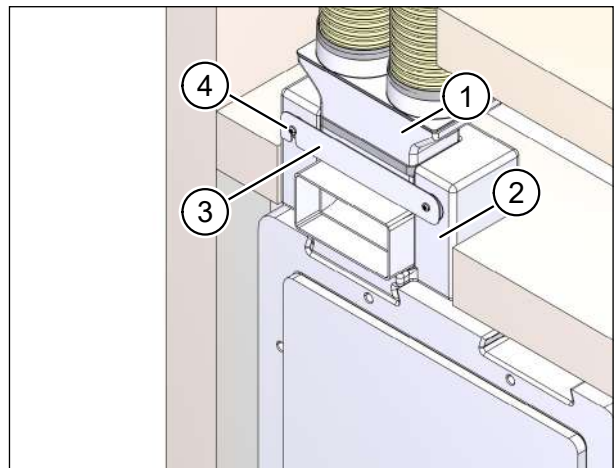


Fig. 31: Inserting flexible pipe connectors

## 9.12 Condensate drain on the exhaust air pipe

If M-WRG-II P ventilation units are used, a condensate drain should be provided. The M-WRG-II LR 50-KA set, part no. 735200, with the following components may be used for this purpose:

- Outdoor air pipe, DN 100, 0.5 m (item 1 in Fig. 32)
- Exhaust air pipe, DN 100, 0.5 m (item 2 in Fig. 32), with 1/2" male thread connection (item 3 in Fig. 32) and barrier (item 4 in Fig. 32) for retaining the condensate

The condensate drain is not needed for M-WRG-II E units under the following conditions:

- The ventilation unit is operated as described in "Intended use" (see section 2.5 on page 9) and the "Rules for correct usage" chapter of the operating instructions.
- There is no exceptional loading due to very high atmospheric humidity.

### NOTICE

Note the following points when creating the condensate connection:

- The condensate drain is to be created by the customer.
- Prevent odour transfer by installing an odour trap.
- If possible, connect the condensate drain to a grey water or rainwater discharge.
- In cold regions, protect the condensate drain pipe (item 5 in Fig. 32) against frost, e.g. by running it behind the facade insulation.
- Maintain a minimum gap of 100 mm between condensate drain pipe (item 5 in Fig. 32) and exhaust air connector (item 6 in Fig. 32).

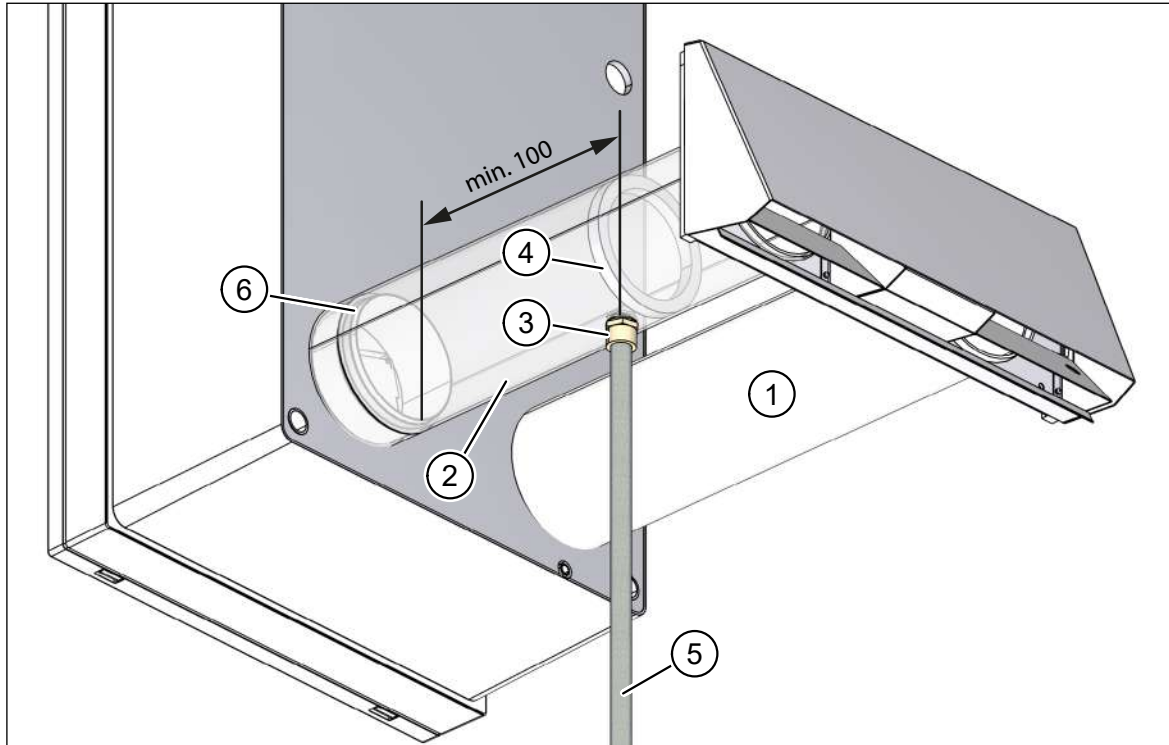


Fig. 32: Condensate drain on the exhaust air pipe, dimension in millimetres

### 9.13 Cladding the installation kit and flat ductwork / flexible pipes on the inside

In this installation example, the inside is cladded with OSB board and plasterboard.

- ▶ Make sure that the plaster cover (item 1 in Fig. 33) is seated in the wall box (item 2 in Fig. 33).
- ▶ Make a cutout in the OSB board (item 3 in Fig. 33) with the same dimensions as the wall box (item 2 in Fig. 33).
- ▶ If necessary, make a cutout in the OSB board (item 3 in Fig. 33) with the same dimensions as the flat ductwork elbow (item 4 in Fig. 33, only when connecting a flat ductwork or flexible pipe system).
- ▶ Make a cutout in the plasterboard (item 5 in Fig. 33) with the same dimensions as the plaster cover (item 1 in Fig. 33).
- ▶ If necessary, make a cutout in the plasterboard (item 5 in Fig. 33) with the same dimensions as the flat ductwork elbow (item 4 in Fig. 33, only when connecting a flat ductwork or flexible pipe system).
- ▶ Place the OSB board (item 3 in Fig. 33) on the wall box (item 2 in Fig. 33) and fix it to the frame construction.
- ▶ Align the cutout in the plasterboard (item 5 in Fig. 33) on the plaster cover (item 1 in Fig. 33) and fix the plasterboard in position.

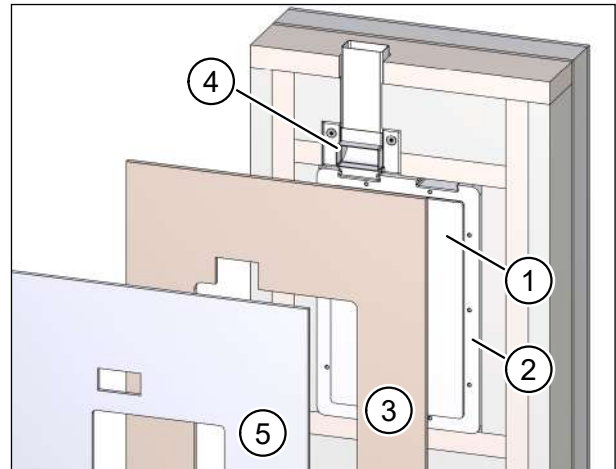


Fig. 33: Cladding the installation kit and flat ductwork / flexible pipes on the inside

## 9.14 Aligning the wall box on the outside before plastering

- ▶ Fill the gaps between the wall box and frame construction all around and continuously with insulating material or other suitable filling materials.

### 9.14.1 If the wall is less than 36.5 cm thick

- ▶ Use a Styrofoam saw to cut off the excess wall box (item 1 in Fig. 34 and Fig. 35) and filler piece, if necessary (item 2 in Fig. 35), so that they are flush with the external wall side or any attached insulation.

#### NOTICE

The wall box fixes the ventilation pipes with a 2° fall to the external wall.

- ▶ Allow the wall box to protrude into the external thermal insulation composite system (ETICS) as this is the only way to allow the ventilation pipes to pass far enough through and so be fixed in place.
- ▶ When fitting the ETICS, make sure that the ventilation pipes maintain their 2° fall.

### 9.14.2 If the wall is more than 36.5 cm thick

- ▶ Compensate for thicker walls with continuous pipes. For walls that are 63 cm thick or more, you will need 100 cm long outdoor and exhaust air pipes (M-WRG-LR 100, part no. 5580).

#### NOTICE

The pipes must be continuous. Pipes that have been joined must not be used as there is a risk of allowing condensation to penetrate into the frame construction.

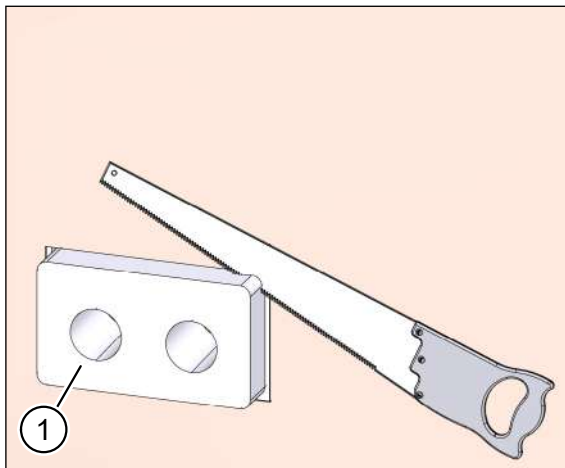


Fig. 34: Aligning the wall box **without** filler piece

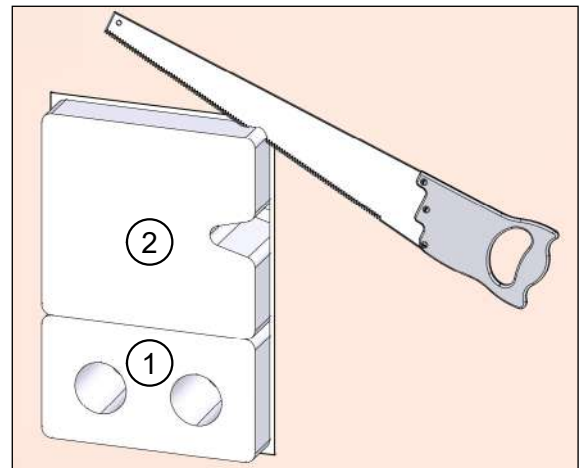


Fig. 35: Aligning the wall box **with** filler piece

## 9.15 Plastering the installation kit on the outside

- ▶ Insert the protective sleeves (item 1 in Fig. 36 and Fig. 37). They should extend beyond the external wall so that they will end flush with the subsequent plaster coat. The protective sleeves provide the bonding surface for the external plaster.

### NOTICE

- ▶ Prepare the substrate suitably before plastering.
- ▶ Apply the plaster scrim (item 2 in Fig. 36 and Fig. 37) to the outside of the wall box, external wall and/or facade insulation.

### NOTICE

Applying plaster scrim will minimise subsequent cracking of the plaster.

- ▶ Plaster the external wall. The plaster forms the windtight layer on the external wall.

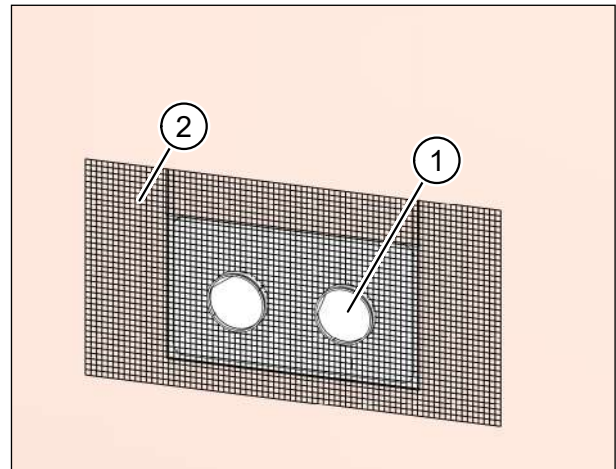


Fig. 36: Plastering the installation kit **without** filler piece

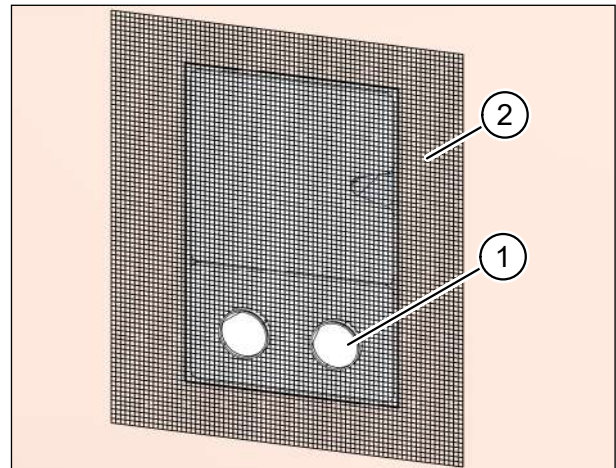


Fig. 37: Plastering the installation kit **with** filler piece

## 9.16 Preparing the installation kit for connecting the ventilation pipes

- Work on the internal wall:
  - ▶ Remove the signal cover (item 1 in Fig. 38).
  - ▶ Use a blade to score the plaster on the inside of the plastering trim (item 2 in Fig. 38).
  - ▶ Carefully remove the plaster cover (item 3 in Fig. 38) and the cardboard insert behind it.
- Work on the external wall:
  - ▶ Remove the two protective sleeves (item 1 in Fig. 39).

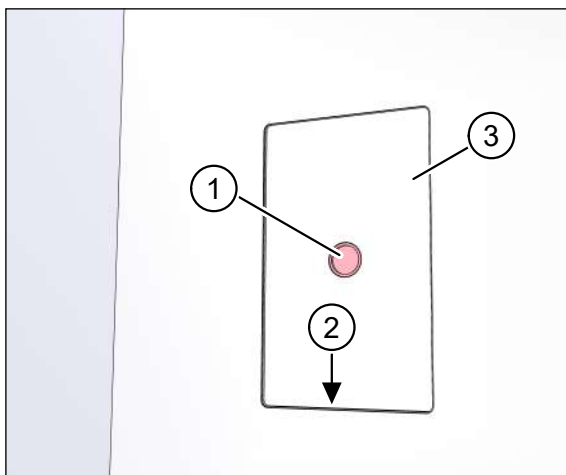


Fig. 38: Installation kit plastered on the inside

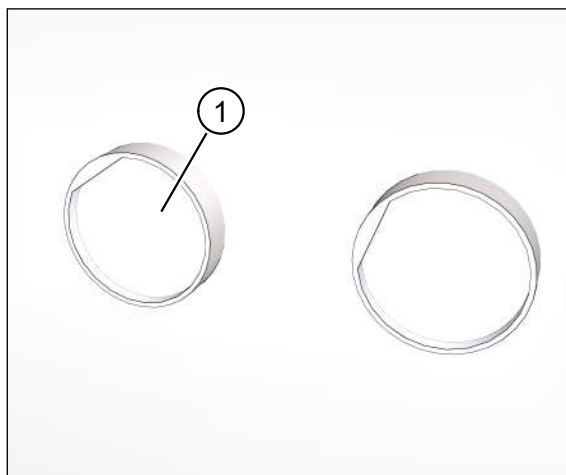


Fig. 39: Installation kit plastered on the outside



## 9.17 Cutting ventilation pipes to length

- ▶ Push the two ventilation pipes (item 1 in Fig. 40) into the openings in the installation kit until they end flush with the inside of the installation kit (item 2 in Fig. 40).
- ▶ On the outer wall, mark the required excess length of the ventilation pipes to suit the outer wall terminal, see Table 4.
- ▶ Remove the ventilation pipes from the openings in the installation kit.
- ▶ Shorten the ventilation pipes to the marked length.
- ▶ Deburr the inner and outer ends of the ventilation pipes.

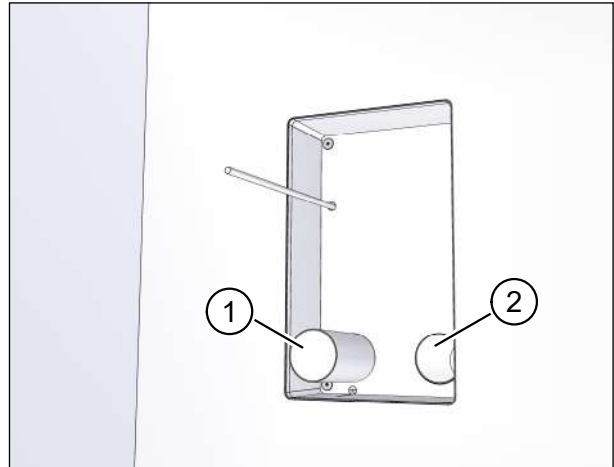


Fig. 40: Cutting ventilation pipes to length

### NOTICE

If you do not deburr the ventilation pipes there is a risk of damaging the seals at the ventilation unit and outer wall terminal.

Outer wall terminal	Excess length
Stainless steel pod, M-WRG-II ES	5 - 10 mm from the plastered external wall
Plastic pipe set, M-WRG-II KSR	20 - 27 mm from the plastered external wall

Table 4: Excess length of ventilation pipes protruding from the external wall

### 9.18 Inserting and fixing the ventilation pipes

- ▶ Apply permanently elastic sealant to the outer skin of the ventilation pipes (item 1 in Fig. 41).
- ▶ Push the ventilation pipes back into the openings in the installation kit.
- ▶ Using a twisting motion, push the two ventilation pipes into the openings in the installation kit until they end flush with the inside of the installation kit (item 2 in Fig. 41).
- ▶ Remove any excess sealant.

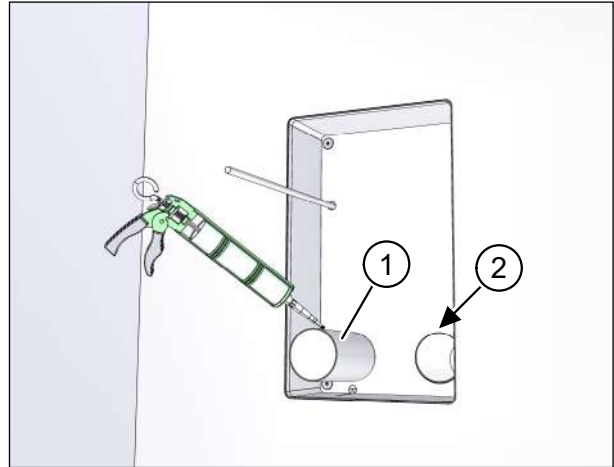


Fig. 41: Inserting and fixing the ventilation pipes

### 9.19 Sealing ventilation pipes on external wall

#### NOTICE

If the external plaster encloses the ventilation pipes all round and without gaps, you can skip the steps described in this section.

- ▶ Chamfer both pipe breakthrough edges (item 1 in Fig. 42) to roughly  $5 \times 45^\circ$  to create enough space for the sealing joints with permanently elastic sealant.
- ▶ Fill the chamfers of the pipe breakthrough edges all-round with permanently elastic sealant on the outside.

#### NOTICE

Only use a solvent-free sealant if the sealant is applied to polystyrene.

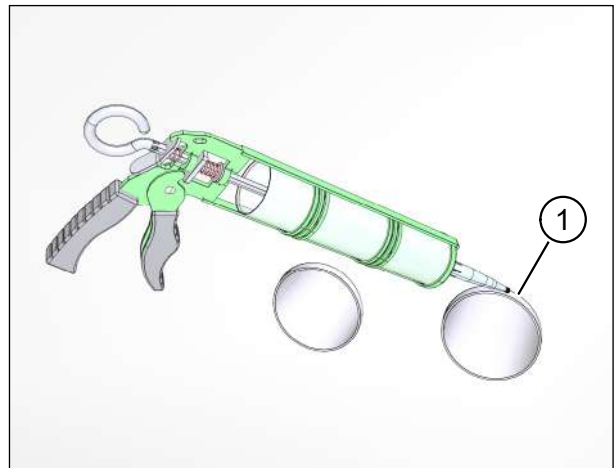


Fig. 42: Sealing ventilation pipes on external wall

## 9.20 Attaching the outer wall terminal

### **⚠ WARNING**

**Do not run without the outer wall terminal.**

- ▶ Please note that the ventilation unit must not be used without the outer wall terminal for safety reasons.
- ▶ Attach the outer wall terminal to the external wall.

Installation of the outer wall terminal is described in a separate installation manual (see “1.8 Supplementary documents” on page 6).

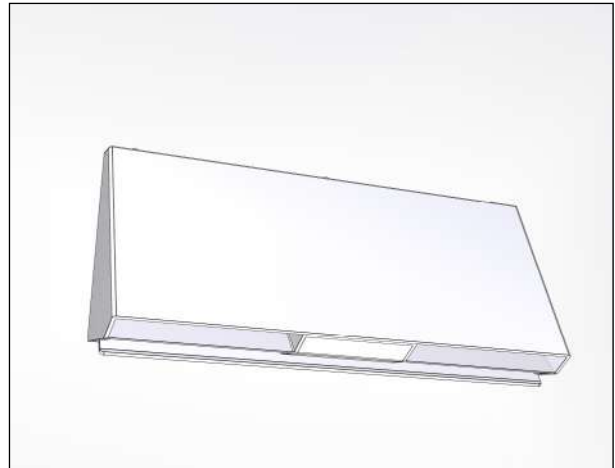


Fig. 43: Attaching the outer wall terminal

## 10 Installing the ventilation unit

### **NOTICE**

Installation of the ventilation unit in the installation kit is described in the “M-WRG-II ventilation unit installation manual”, part no. 744004EN.

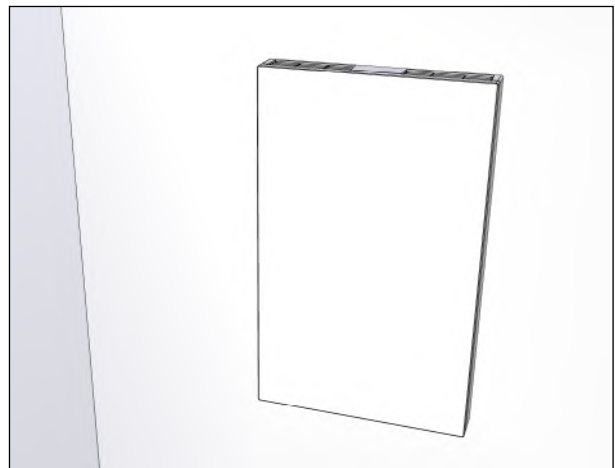


Fig. 44: Ventilation unit installed

We have checked the content of this publication for conformity with the product described in it. There may nevertheless still be differences, so we cannot guarantee complete accuracy.

The information in this publication is regularly checked and any necessary corrections are made in subsequent editions.

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