



DRU PV-I 100/60

PowerVent® - 02



Installation manual



Store this document in a safe place



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Foreword

As a manufacturer of gas-fired heating appliances, DRU is developing and producing products in accordance with the highest possible quality, performance and safety requirements.

This guarantees that the user will be able to enjoy using his product for many years to come.

The DRU PV-I 100/60 system, henceforth referred to as the PowerVent® system, has a CE hallmark.

Installation and maintenance of the appliance should be performed by a professional certified expert with a proven knowledge and demonstrable competence in this field. A professional expert takes all technical aspects such as heat output, gas connection and electricity into account, as well as the flue gas discharge requirements.

The installation manual will provide you with the information you need to install the PowerVent® system in such a way that the appliance to be placed will operate properly and safely in combination with this system.

This installation manual will replace the section 'flue gas discharge / combustion air supply system' in the installation manual for the appliance. Where the installation instructions do not provide, national/local legislation should be observed.

This manual will discuss the installation of the PowerVent® system and the accompanying regulations. In addition, you will find information on maintenance, as well as possible malfunctions and their possible causes. Appendix 2 contains the technical specifications that are needed for connecting the PowerVent® system.

Carefully read this installation manual and use it in combination with the installation manual of the appliance to be placed.

The following symbols are used in the manual to indicate important information:



Work to be performed



Suggestions and recommendations



You will need these instructions to prevent problems that might occur during installation and/or use.



You need these instructions to prevent fire, personal injury or other serious damages.

After delivery, you should give this installation manual to the user.

1. Introduction

The PowerVent® system is a combined, concentric flue gas discharge / combustion air supply system with a forced discharge of the flue gases. It is an additional, independent system that can be connected to various DRU atmospheric gas-fired heating appliances.

The forced discharge of flue gases is realized by means of a fan connected to the outlet of the flue gas discharge.

By using a ventilator, the flue gases can be discharged over a longer distance than was previously possible for DRU appliances. In order to prevent the fan from malfunctioning, a minimum length is required for the PowerVent® system. The maximum length depends on the number of bends in the system. In Appendix 2 "Technical specifications" you will find the requirements for minimum and maximum length.

The passage to the outside can be made by means of a fan unit for wall or fan unit for roof. The fan unit for roof can be positioned on a sloping or a flat roof. When using a fan unit for roof, the ventilator unit can be optionally installed on the inside or outside of the roof. The advantage of a fan unit on the inside of the roof, is that it will be easier to reach. If it is placed on the outside of the roof, you will need an addition to the fan unit, the rooftop unit. DRU has a number of rooftop units in its range.

You will select whether the fan unit is placed on the inside or outside of the roof, when you purchase the PowerVent® system.

The diameter of the concentric PowerVent® system is Ø100/60 mm. This system is connected by means of a reducer to the flue spigot of the appliance. DRU has a number of concentric reducers in its range.

When installing the concentric system in rooms prone to moisture, you must use a coated air supply pipe.

It can be supplied through your dealer

2. CE declaration

Internal precautions at the company will guarantee that appliances produced by DRU comply with the essential requirements and directives of the regulation concerning gas combustion appliances and the standards applied for that purpose. This declaration will lose its validity if adjustments are made to the appliance, without prior written permission by DRU. A copy of the CE test certificate can be downloaded via www.druservice.com.

Product:	<i>flue gas discharge / combustion air supply system</i>
Type:	<i>DRU PV-I 100/60</i>
Legal name:	<i>PowerVent®-02</i>
Conformity assessment agency:	<i>Kiwa 0063</i>
EC regulations:	<i>2016/426/EU</i>
EC-directives:	<i>2014/35/EU' 2014/30/EU</i>
Standards:	<i>EN 613:2000, EN 613:2000/A1:2003, EN 613:2000/PrA2:2002 EN 60335-1:2012, EN 60335-2-102:2016, EN 55014-1:2007 EN 55014-2:2015, EN 61000-3-2:2014, EN 61000-3-3:2013, prEN:613:2018</i>

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3. SAFETY



Caution

3.1 General

- Carefully read this chapter on safety, before you start performing installation or maintenance work;
- Please observe the general regulations and the precautions/safety instructions in this manual.

3.2 Regulations

Please install the PowerVent® system, including the electrical installation, in accordance with the applicable national, local and constructional (installation) regulations.

In the Netherlands, the Buildings Decree (Bouwbesluit) applies.

3.3 Precautions / safety instructions during installation

Carefully observe the following precautions/safety regulations:

- ▬ You should only install and maintain the PowerVent® system if you are a competent installer in the field of gas-fired heating and electricity.
- ▬ The control hatch is obligatory when installing PowerVent® and is available via the manufacturer. Check that the control hatch is supplied along with the appliance concerned. If not supplied, the control hatch is available from the dealer.
- ▬ Take into account a larger chimney breast due to the control hatch with PowerVent® control. Maintain a distance of 50mm between the bracket with the electronic components and cables to the appliance.
- ▬ Do not make any changes to the system.
- ▬ Take the minimum length of the PowerVent® system into account (see appendix 2, table 3).
- ▬ Place the reducer directly on the appliance's flue spigot.
- ▬ Place the measuring unit (venturi) preferably vertical, within 1 metre of the flue spigot.
- ▬ Connect the pressure gauge pipes leak-tight, before the chimney breast is placed.
- ▬ Make sure the pressure gauge pipes are free from parts that will become hot.
- ▬ Avoid dirt, including metal particles in pipes and connections.
- ▬ Avoid kinks in the pipes.
- ▬ Place electric wiring in such a way that it is free from the appliance.
- ▬ For connecting the ventilator, you must use an earthed 230V supply cable that complies with the applicable standard.
- ▬ When performing work, disconnect the installation from voltage by removing the 230V plug from the outlet or by switching off the two-pole switch of both the RCH control with Powervent and the ventilator that has been placed by a recognised installer in accordance with current regulations.
- ▬ Replace damaged mains sockets in order to avoid dangerous situations.
- ▬ Use a coated air supply pipe when installing in rooms prone to moisture.

4. Instructions

This PowerVent® system is only suitable for the RCH control system.

- ➡ Take into account a larger chimney breast due to the control hatch with PowerVent® control. Maintain a distance of 50mm between the bracket with the electronic components and cables to the appliance.
- ➡ Place a 230V connection with earth near the appliance, as close as possible to the control hatch.
- ➡ Test the complete system for a correct operation, before closing the chimney breast.

5. Principle of the ignition cycle

Below you will find a brief description of how an appliance, that is connected to the PowerVent® system, is ignited; see fig. 1).

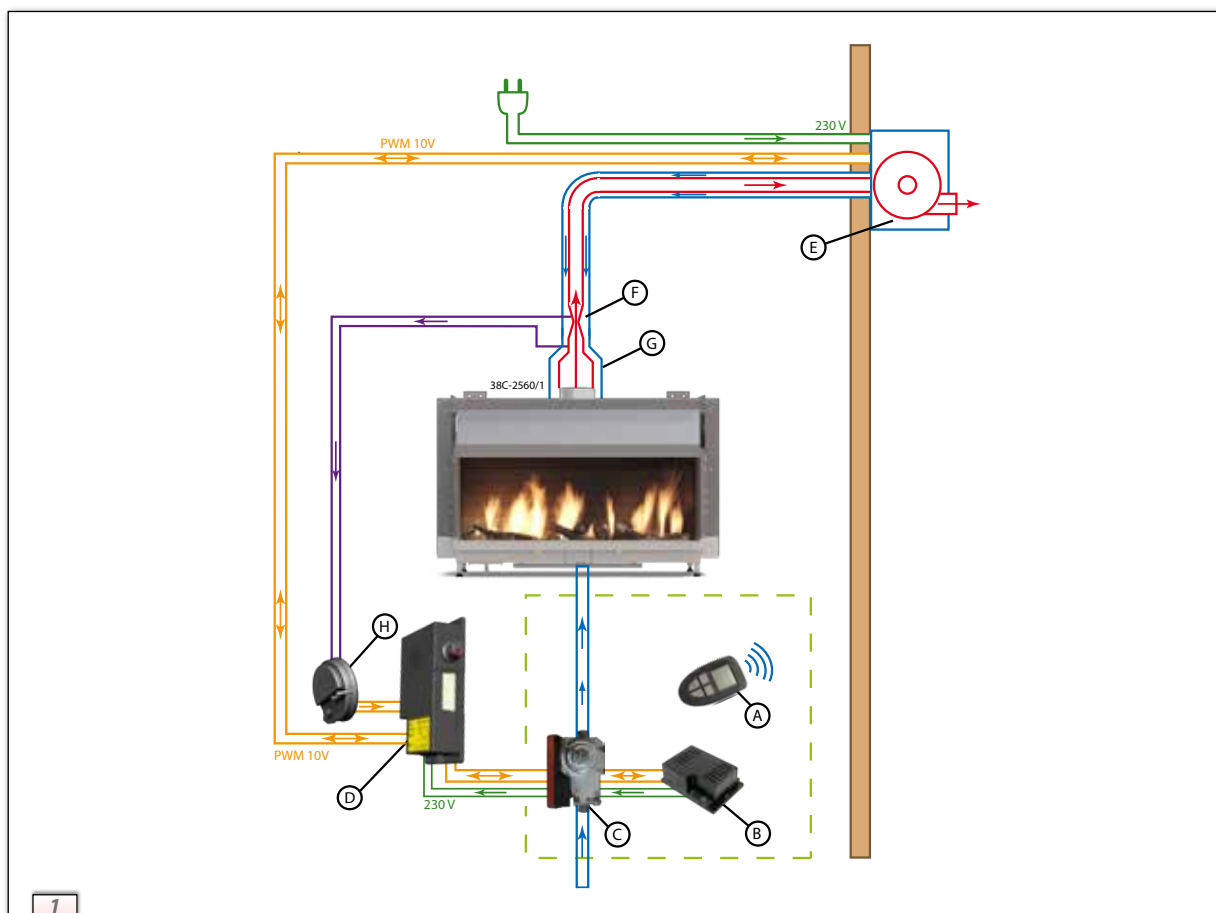
The following corresponding letters can be found in the figure:

- | | |
|---------------------------|------------------------------------|
| A. Remote control | E. Fan |
| B. Receiver | F. Measuring unit (Venturi) |
| C. Gas control | G. Reducer to $\varnothing 100/60$ |
| D. PowerVent control unit | H. Pressure sensor |

The appliance is switched on by means of a remote control (A). Via the remote control, the receiver (B) will get the signal to start the ignition process. At the same time, the control unit (D) of the PowerVent system will get a start signal from the receiver. The fan switches on and after the set pressure difference has been achieved, the ignition will start directly on the burner. It is established whether there is sufficient flow in the discharge system.

For this, the pressure sensor (H) is used to measure the differential pressure over the measuring unit (venturi, (F)). If the differential pressure is greater than the set value on the control unit (D), the valve in the gas control (C) is opened and the gas to the main burner of the appliance is released.

If the differential pressure is below the set value, the main burner of the appliance will not ignite. In the malfunction table in Chapter 10 you will find possible causes and solutions.



6. Removing the packaging

Note the following items when removing the packaging of the PowerVent® system:

- ▣ Check the system for damages during transport.
 - ▣ If necessary, contact DRU Service.
 - ▣ Check whether all parts have been supplied.
- In Appendix 1 / Table 2 you can see which parts you should have after removing the packaging.
- ▣ Contact DRU Service if you do not have all the parts after you finished removing the packaging.
 - ▣ Dispose of packaging in accordance with local regulations.

7. Installation

Read this manual carefully to ensure a proper and safe operation of the appliance connected to the PowerVent® system.

!Caution Install the PowerVent® system in the order described in this chapter.

7.1 Regulations

- Observe the applicable national, local and constructional (installation) regulations for the PowerVent® system as well as the electric installation.
- Observe the regulations/instructions stated in this manual.

7.2 Electric connection

The ventilator of this Powervent® system has a PWM controlled ventilator. This PWM signal (maximum 10V) is transported across a 2-core cable with cores of MAXIMUM 0.75mm² and with a heat resistance of minimum 180°C. The cores are intended for the PWM signal and GND (see fig. 3d and fig.4b and 7b(s)). The 2-core cable is hereafter referred to as: "control cable". The earthed 230V power supply of the ventilator must be transported via a 3-core cable with cores of MINIMUM 0.75mm² and with a heat resistance of at least 180°C .

Furthermore, two 230V earth connections must be made:

- The connection for the appliance should be as close to the control hatch as possible
- and the 230V connection for the ventilator must be installed close to both the appliance and the ventilator.



!Caution

- Make sure that it is easy to disconnect the appliance and ventilator from the power supply after installation;
- by disconnecting the 230V plug;
- or by means of a 2-core switch installed by a recognised installer in accordance with current regulations.



!Caution

- Replace damaged mains sockets in order to avoid dangerous situations.

7.3 Placing the PowerVent® system

The PowerVent® system allows many different configurations; see fig. 2a to 2c. The system will be installed after the appliance has been built on its final location. The bracket with the PowerVent® control components (control unit and pressure sensor) must be connected to the controller of the appliance (such as the gas control) ex factory, so that the whole unit can be placed in the control hatch as described in this manual. The pressure gauge pipes are out of reach after placing the chimney breast. A leak will affect the gauge signal to the pressure sensor and therefore the combustion process. That is why these pipes must be connected free from leaks before fully finishing the chimney breast.



!Caution

- Make sure the PowerVent® control system is properly connected to the control system of the appliance and fits in the control hatch;
- Connect the pressure gauge pipes to the measuring unit, before the chimney breast is completed;
- Check whether the pressure gauge pipes are connected leak-tight before finishing the chimney breast.
- The aluminium pipes must be protected against possible corrosive effects, e.g. as a result of moisture, fallen down mortar, dirt fallen down from the chimney, etc. The pilot flame pipe must be kept permanently free from the ground and the walls of the area in which the appliance is built. When installing in an existing fireplace, or if it is not possible to keep the pipes free, the pipe should be protected against corrosion by means of a jacket".
- Take into account a larger chimney breast due to the of the control hatch with PowerVent® control. Maintain a distance of 50mm between the bracket with the electronic components and cables to the appliance.

!Tip

When connecting the assembled PowerVent® control components and RCH control components, we recommend making a gas connection with an approved, flexible SS gas pipe. This will significantly simplify adjustments and troubleshooting, as the whole assembly can be removed from the hatch.

For the benefit of the installation, the PowerVent® system has been subdivided in a number of parts:

- flue gas / combustion air system; see section 7.3.1.
- pressure gauge pipes; see section 7.3.2.
- control system; see section 7.3.3.

7.3.1 Flue gas / combustion air system

The passage to the outside can be installed through the wall or through the roof. The fan unit for wall can only be used outside the building. The fan unit for roof can be placed both inside and outside the building. Placement inside the building has the benefit that the fan unit for roof is more easily accessible for maintenance.

Through the wall;


- Outside the building. Make a passage and place the fan unit for wall on the outside wall (see fig. 2d and section 7.3.1.1).
- Inside the building. If, for aesthetic reasons, a fan unit for wall is not wanted on the outside wall, it is possible to use a fan unit for roof that is placed inside the building. Mount it in combination with a mounting bracket, a bend and a wall terminal (see fig. 2e).

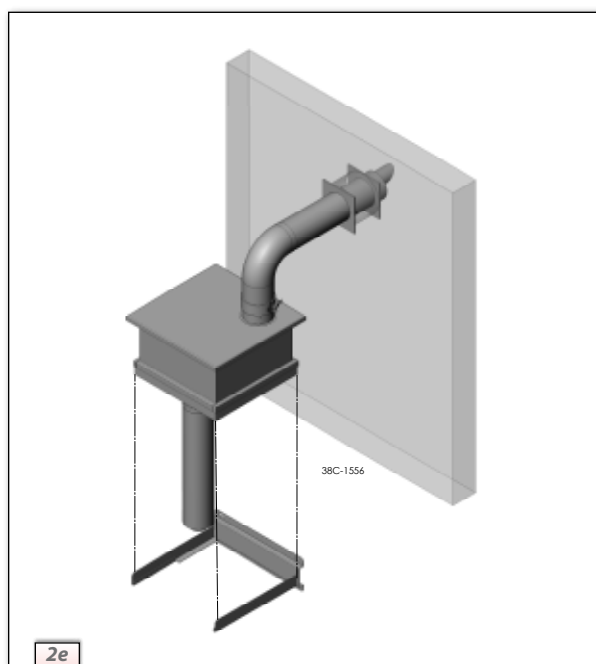
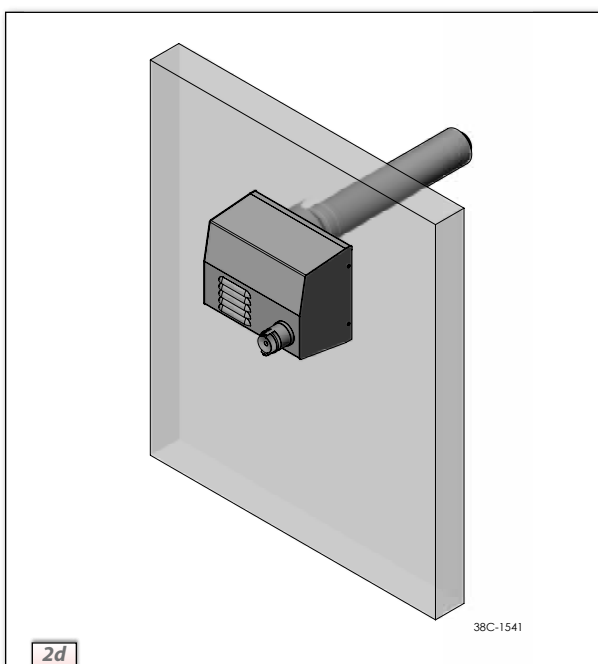
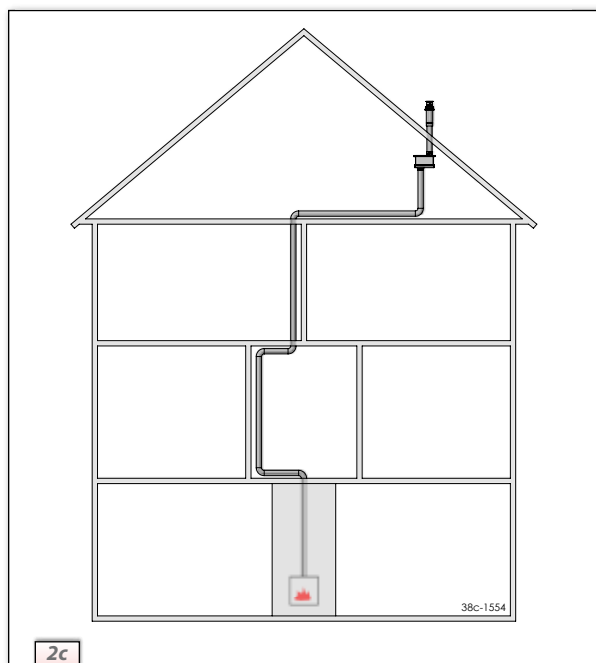
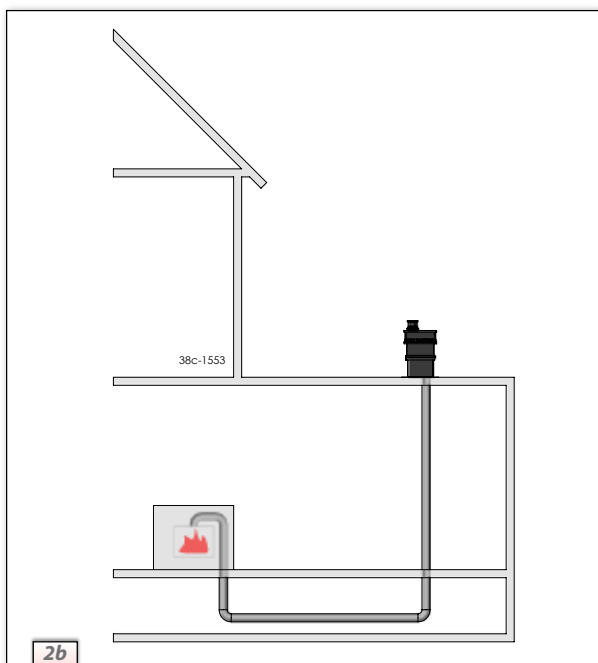
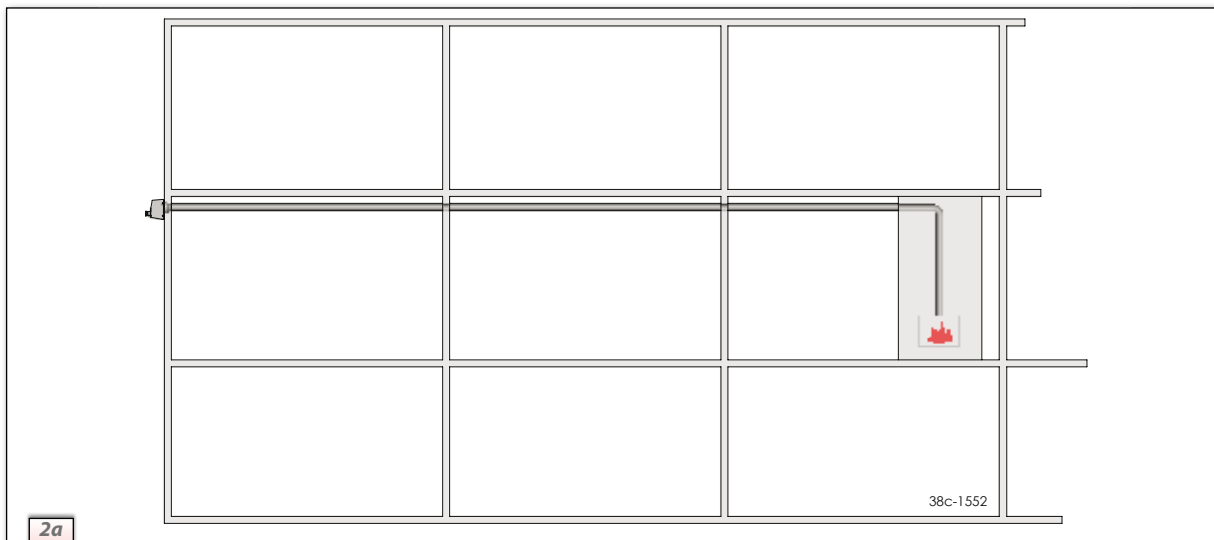
Through the roof;

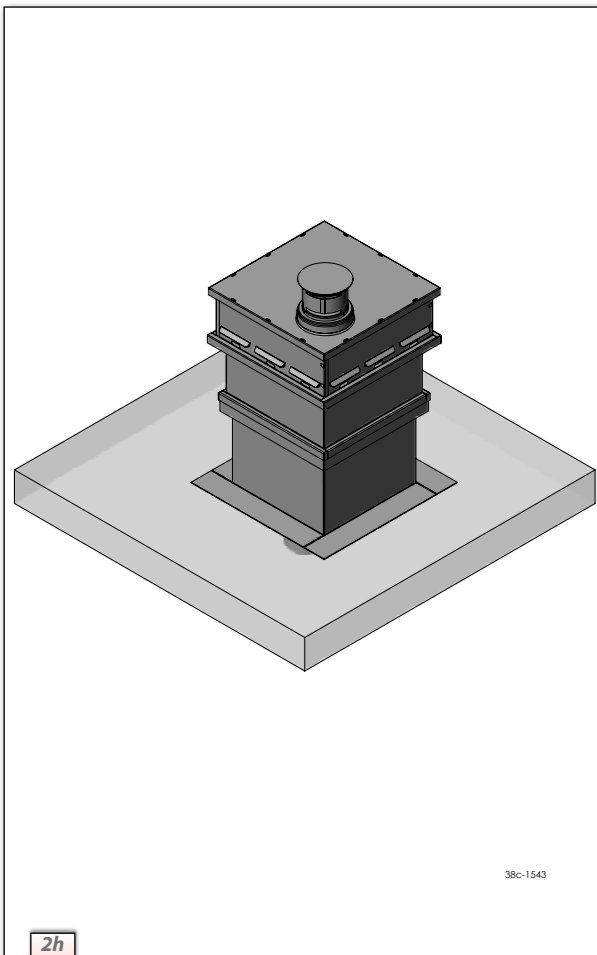
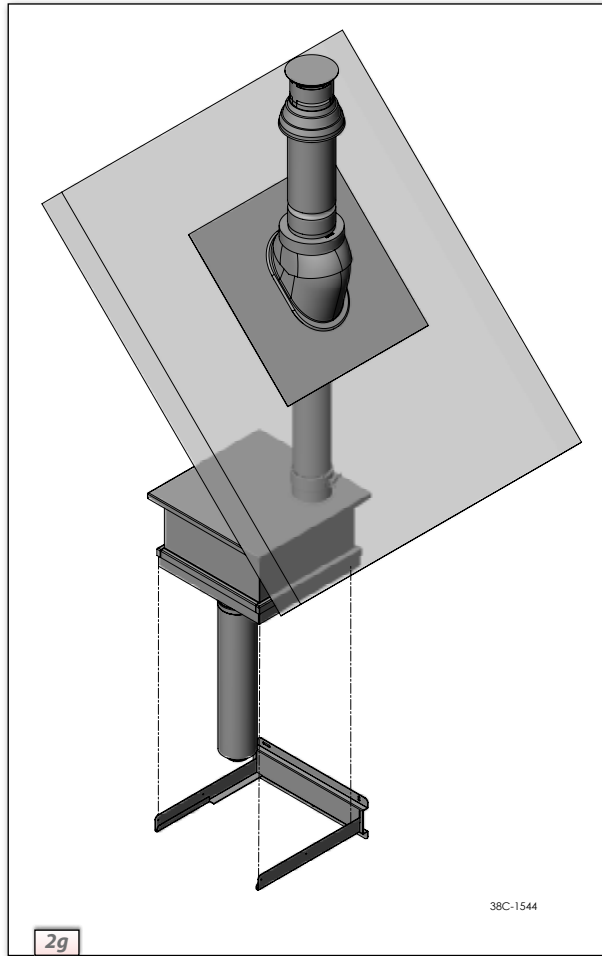
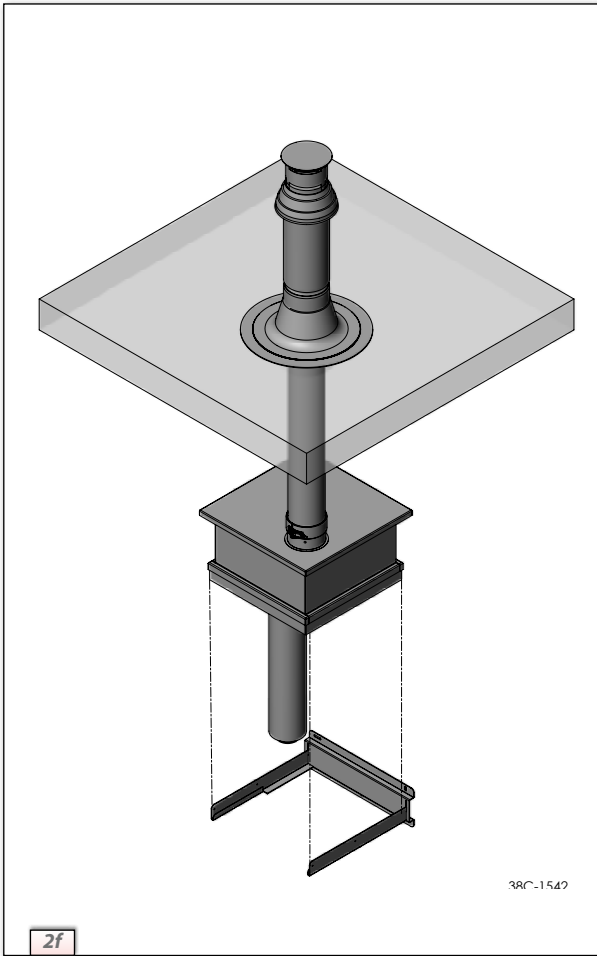
- Assembly inside the building (below the roof). The fan unit for roof is mounted under the roof using the accompanying mounting bracket (see section 7.3.1.2.1). The roof terminal can be made through both a flat roof (see fig. 2f) and a sloping roof (fig. 2g).
Flat roof: Use the "flat roof tile" and a roof terminal.
Sloping roof: Use a "universal lead tile" in combination with a roof terminal.
- Assembly outside the building (above the roof). Place the fan unit for roof in combination with a rooftop structure (see section 7.3.1.2.2).
Flat roof: In the case of a flat roof, the rooftop structure consists of a "flat roof tile" and an "in- and outlet piece for PowerVent for roof terminal" (fig. 2h).

The appliance must be adjusted in such a way that it will function properly in combination with the PowerVent® system; see chapter 8 of this manual, Adjusting the appliance.

The diameter of the concentric PowerVent® system is Ø100/60 mm. This system is connected by means of a reducer to the flue spigot of the appliance.

-  **Caution**
- For the PowerVent® system you should only use the concentric flue gas discharge material supplied by DRU. This system has been tested together with the appliance. DRU cannot guarantee a proper and safe operation of other systems and does not accept any liability for this;
 - Take the minimum length of the PowerVent® system into account; see section 8.2.3 and appendix 2 with the technical specifications;
 - Take the maximum length of the PowerVent® system into account; see sections 8.2.4 and 8.2.5 and appendix 2 with technical specifications;
 - Place the reducer directly on the appliance's flue spigot; see fig. 1, G;
 - Place the measuring unit (venturi) preferably vertical, within 1 metre of the flue spigot; see fig. 1, F;
 - Place the fan unit correctly;
 - Use 2 individual cables for the control signal and for the earthed 230V power supply to the ventilator.
 - Place the ventilator's control cable in a cable protection sleeve.
 - Place the ventilator's earthed 230V power supply cable in a cable protection sleeve.
 - For connecting the ventilator, use an earthed 230V power supply cable that complies with the applicable standard.
 - Make sure that it is easy to disconnect the ventilator unit free from the power supply after installation.
 - Make sure the pressure gauge pipes are free from parts that will become hot;
 - Maintain a distance of at least 50 mm between the outside of the PowerVent® system and the walls and/or the ceiling. If the system is built in (for instance) a cove, it should be made with non combustible and heat-resistant material all around it;
 - Use a coated air supply pipe when installing in rooms prone to moisture;
 - Use non combustible and heat-resistant insulation material when passing through combustible material;
 - The first 5 metres of the air supply / flue gas discharge pipe must be safely separated from combustible material by means of a non combustible plate, if the distance between the pipe and the combustible material is less than 100 mm. If the pipe is surrounded by combustible material, it should be sleeved with non combustible material and the sleeve must be ventilated.
 - Heat bridges, e.g. by means of mounting brackets, should be avoided.
 - For larger distances than 5 metres, a 50 mm safety distance from combustible materials should be observed.
 - The manufacturer is unable to accept liability for discharge pipes poured in concrete or buried discharge pipes, as





the pipes will be out of reach. If you want this after all, we recommend the following: If the discharge pipe is poured in concrete, it should be surrounded by a heat resistant 200°C pipe sleeve. If the discharge pipe runs through the ground, it will have to be surrounded by a durable 200°C and water-tight pipe sleeve. It should be placed with a slope (1cm/m) towards the inside and a condensation discharge should be placed, even if this is not prescribed according to table 3. There should be no locations where possible condensation water cannot be discharged. If necessary, take measures to prevent rainwater or sprinkler water from entering the system.

- !Caution**
- Make sure the ventilator unit can be reached for maintenance;
 - Make sure the control cable and earthed 230V power supply cable is sufficiently long;
 - Some heat-resistant insulation materials contain volatile components that will spread an unpleasant smell for a prolonged time; these are not suitable.

7.3.1.1 Application with fan unit for wall



Caution The temperature of (the outside of) the concentric system can reach 200 °C at the wall.

Placing the PowerVent® system is done as follows:

- ▢ Check whether the concentric system to be applied complies with the minimum and maximum allowed length; see section 8.2.3 and 8.2.4 and appendix 2 with the technical specifications.
- ▢ Build the system up from the flue spigot of the appliance.
- ▢ Place the reducer directly on the appliance's flue spigot.
- ▢ Place the measuring unit (venturi) preferably on the reducer.
- ▢ Connect the concentric pipe pieces and the bends.



Caution Make sure that the clip binding with silicone sealing ring is mounted correctly, in order to prevent leakage at the connections.

- ▢ On each connection, apply a clip binding with silicone sealing ring.
- ▢ Fasten the clip binding to the pipe using a self-tapping screw.
- ▢ Fasten the concentric system with sufficient mounting brackets, so that the weight does not rest on the appliance. Observe the following:
 - Place the first mounting bracket maximum 0.5 metres away from the appliance.
 - Place a mounting bracket maximum 0.1 metres away from each bend, if the bends are placed more than 0.25 metres apart from each other. If two bends are placed closer to one another than 0.25 metres, 1 mounting bracket will be sufficient between these two bends.
 - Place a mounting bracket at least every 1 metre, in case of sloping or horizontal sections.
 - Place a mounting bracket at least every 2 metres, in case of vertical sections.
- ▢ Remove the cover of the fan unit.
- ▢ Make a hole in the wall for the concentric system (see fig. 3a for the dimensions and fig. 3b).
- ▢ Make a hole in the façade for the protection sleeve of the 230V power supply cable and for the protection sleeve of the control cable to the ventilator (see fig. 3a for the dimensions and fig. 3b).
- ▢ Fix the fan unit to the wall (see fig. 3a for the dimensions and fig. 3c).
- ▢ Cut the pipe piece that is used for connecting to the fan unit to size.

!Caution Make sure that the right insertion length is maintained.

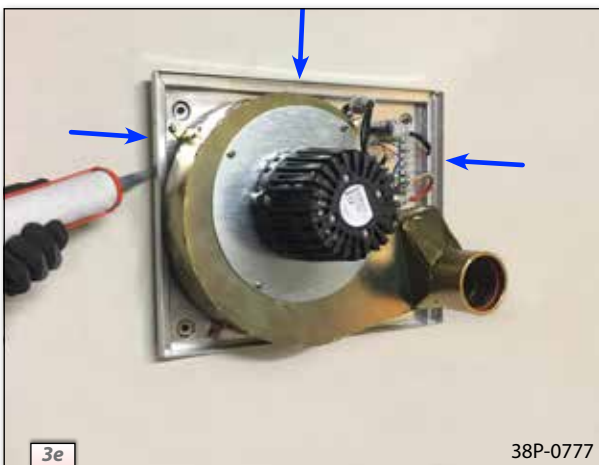
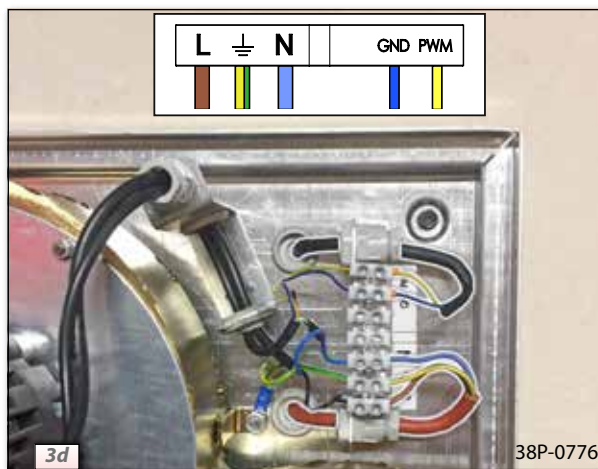
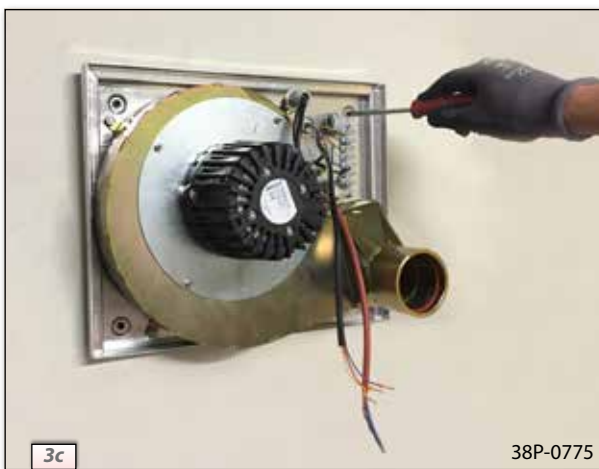
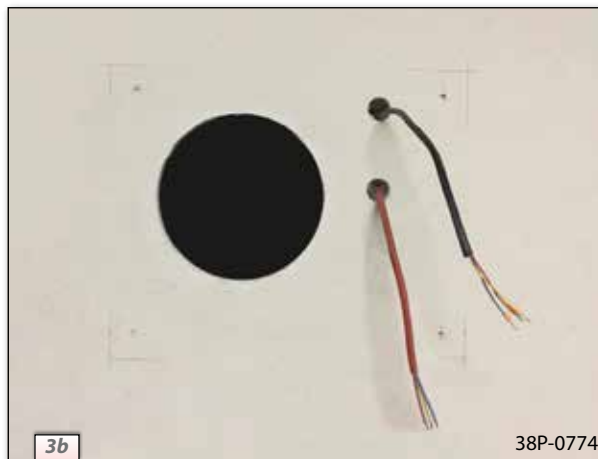
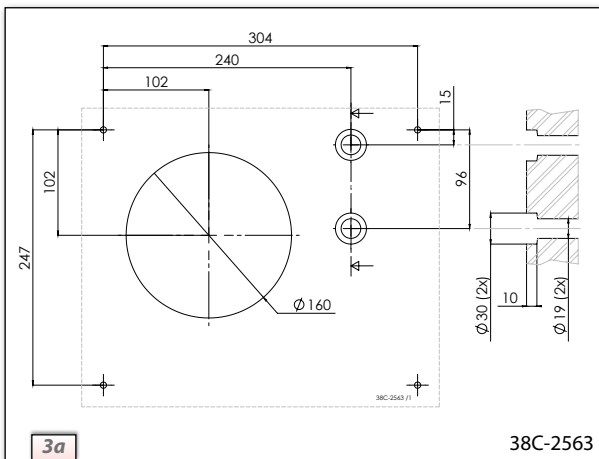
- ▢ Connect the pipe piece to the fan unit.



Caution

- Make sure the inlet of the fan unit properly connects to the concentric system;
- Make sure that the control cable and the 230V power supply cable are connected exactly as shown in fig. 3d in order to avoid contact between the cables and the hot ventilator.

- ▢ Connect the control cable and earthed 230V power supply cable to the connector (see fig. 3d).
- ▢ Lay the control cable - provided with cable protection sleeve - towards the appliance.
- ▢ Lay the earthed 230V power supply cable - provided with cable protection sleeve - towards the earthed 230V connection.
- ▢ Seal the back plate of the ventilator unit at the top and bottom with a suitable sealant (see fig. 3e).
- ▢ Place the cover back on the fan unit (see fig. 3f).
- ▢ Place the flue gas discharge pipe (see fig. 3h).
- ▢ Fix the cover with the self-tapping screws supplied (see fig. 3g).



7.3.1.2 Application with fan unit for roof

The fan unit for roof can be positioned on a sloping or a flat roof. When using a fan unit for roof, the ventilator unit can be optionally installed on the inside or outside of the roof. If it is placed on the outside of the roof, you will need an addition to the fan unit, the rooftop unit (see the schematic display in fig. 2h).

7.3.1.2.1 Placing the fan unit on the inside of the roof

Placing the PowerVent® system is done as follows:

- ▬ Check whether the concentric system to be applied complies with the minimum and maximum allowed length (see section 8.2.3 and 8.2.4 and appendix 2 with the technical specifications).
- ▬ Build the system up from the flue spigot of the appliance.
- ▬ Place the reducer directly on the appliance's flue spigot.
- ▬ Place the measuring unit (venturi) preferably on the reducer.
- ▬ Connect the concentric pipe pieces and the bends.



Caution Make sure that the clip binding with silicone sealing ring is mounted correctly, in order to prevent leakage at the connections.

- ▬ On each connection, apply a clip binding with silicone sealing ring.
- ▬ Use a self-tapping screw to fix the clip binding to the pipe on locations that cannot be reached after installation.
- ▬ Fasten the concentric system with sufficient mounting brackets, so that the weight does not rest on the appliance. Observe the following:
 - Place the first mounting bracket maximum 0.5 metres away from the appliance.
 - Place a mounting bracket maximum 0.1 metres away from each bend, if the bends are placed more than 0.25 metres apart from each other. If two bends are placed closer to one another than 0.25 metres, 1 mounting bracket will be sufficient between these two bends.
 - Place a mounting bracket at least every 1 metre, in case of sloping or horizontal sections.
 - Place a mounting bracket at least every 2 metres, in case of vertical sections.
- ▬ Place the strip that is used for connecting the fan unit's clamps (see fig. 4a, 1).
- ▬ Attach the fan unit's clamps to the strip (see fig. 4a, 2).
- ▬ Remove the cover of the fan unit.
- ▬ Place the fan unit on the clamps.

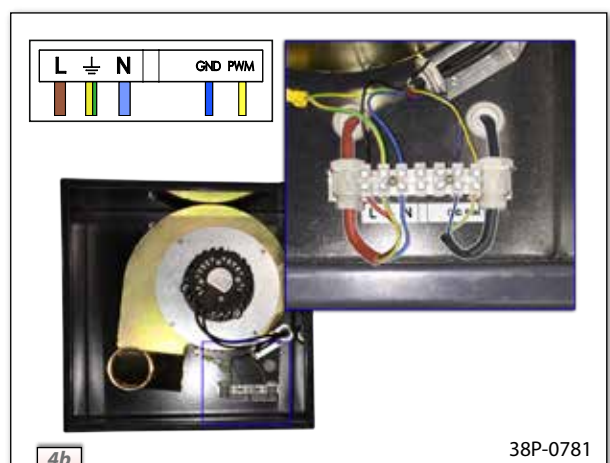
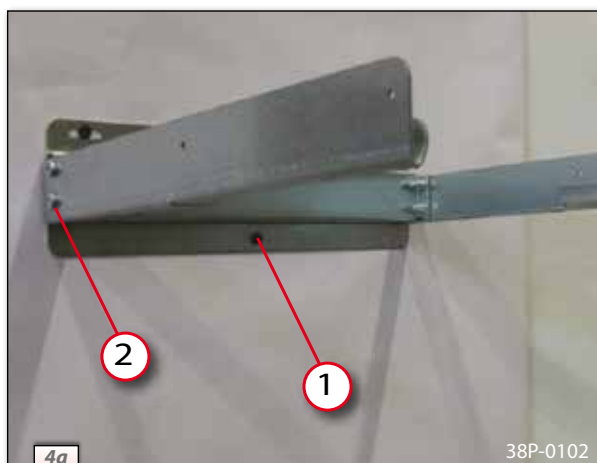
Tip The fan unit can be turned and can therefore be placed on the clamps in four ways. Choose the way that is most practical for you.

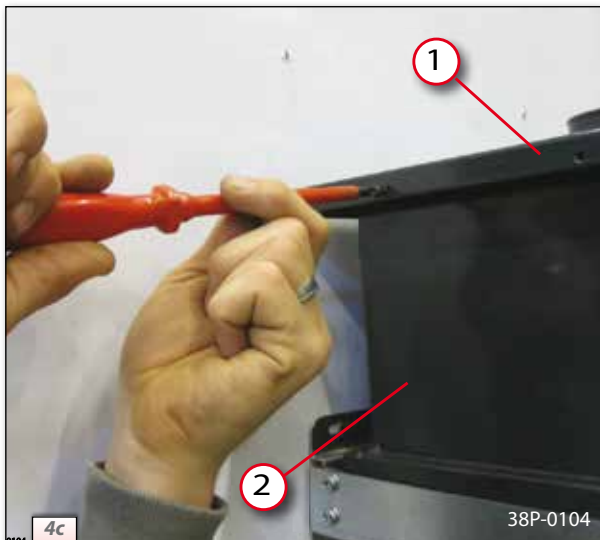
- ▬ Secure the fan unit with the self-tapping screws supplied.
- ▬ Connect the control cable and earthed 230V power supply cable to the connector (see fig. 4b).

Caution Make sure the control cable and earthed 230V power supply cable are sufficiently long, because of maintenance work.



- **Caution** Make sure that the control cable and the 230V power supply cable are connected exactly as shown in fig. 4b in order to avoid contact between the cables and the hot ventilator;
- Make sure the cover is placed correctly on the fan unit, so that the outlet of the fan connects to the outlet of the cover.





- Lay the control cable - provided with cable protection sleeve - towards the appliance.
- Lay the earthed 230V power supply cable - provided with cable protection sleeve - towards the earthed 230V connection.
- Place the cover back on the fan unit (see fig. 4c).
- Secure the cover with the self-tapping screws supplied.
- Connect the concentric system to the fan unit.

!Caution Use a telescopic pipe piece for connecting the concentric system. As a result, it will be easier to perform maintenance work.

- Place the roof terminal (see fig. 2f and 2g) or place the wall terminal (see fig. 2e) on the ventilator unit.

!Caution - Make sure that the universal tile fits well with the surrounding tiles;
- Make sure that the adhesive plate fits well onto the flat roof.

7.3.1.2.2 Placing the fan unit on the outside of the roof

Placing the PowerVent® system is done as follows:

- Check whether the concentric system to be applied complies with the minimum and maximum allowed length (see section 8.2.3 and 8.2.4 and appendix 2 with the technical specifications).
- Build the system up from the flue spigot of the appliance.
- Place the reducer directly on the appliance's flue spigot.
- Place the measuring unit (venturi) preferably on the reducer.
- Connect the concentric pipe pieces and the bends.

!Caution Make sure that the clip binding with silicone sealing ring is mounted correctly, in order to prevent leakage at the connections.

- On each connection, apply a clip binding with silicone sealing ring.
- Use a self-tapping screw to fix the clip binding to the pipe on locations that cannot be reached after installation.
- Fasten the concentric system with sufficient mounting brackets, so that the weight does not rest on the appliance. Observe the following:
 - Place the first mounting bracket maximum 0.5 metres away from the appliance.
 - Place a mounting bracket maximum 0.1 metres away from each bend, if the bends are placed more than 0.25 metres apart from each other. If two bends are placed closer to one another than 0.25 metres, 1 mounting bracket will be sufficient between these two bends.
 - Place a mounting bracket at least every 1 metre, in case of sloping or horizontal sections.
 - Place a mounting bracket at least every 2 metres, in case of vertical sections.
- Make a hole in the roof for the concentric system.
- Make a hole in the roof for the protection sleeve of the 230V power supply cable and for the protection sleeve of the control cable to the ventilator.
- Place the rooftop unit on the roof (see fig. 5a for application with a flat roof).
- Remove the cover of the fan unit.
- Place the fan unit on the rooftop unit.
- Cut the pipe piece that is used for connection to the rooftop unit to size.



!Caution Make sure that the right insertion length is maintained.

➡ Connect the pipe piece to the rooftop unit.



- !Caution**
- Make sure the inlet of the fan unit properly connects to the concentric system;
 - Make sure that the control cable and the 230V power supply cable are connected exactly as shown in fig. 4b in order to avoid contact between the cables and the hot ventilator;
 - Make sure the cover is placed correctly on the fan unit, so that the outlet of the fan connects to the outlet of the cover;
 - When placing the upper part and the cover, make sure the outlets connect onto each other.

- ➡ Attach the rooftop unit and the fan unit to each other, using the self-tapping screws supplied.
- ➡ Connect the control cable and earthed 230V power supply cable to the connector (see fig. 4b).
- ➡ Lay the control cable - provided with cable protection sleeve - towards the appliance.
- ➡ Lay the earthed 230V power supply cable - provided with cable protection sleeve - towards the earthed 230V connection.
- ➡ Place the cover back on the fan unit (see fig. 4c).
- ➡ Place the upper part and the cover of the version that is placed on the outside of the roof (see fig. 5b).
- ➡ Attach the upper part and the cover to the fan unit, using the self-tapping screws supplied.

- !Caution**
- Make sure that the universal tile of the rooftop unit fits well with the surrounding tiles;
 - Make sure that the adhesive plate fits well onto the flat roof.

7.3.2 Pressure gauge pipes

The pressure gauge pipes are attached between the measuring unit (fig. 1, F) and the pressure sensor (fig. 1, H) in order to measure the differential pressure over the measuring unit. The first part of the pressure gauge pipes is made of aluminium. The aluminium pipes must be mounted in such a way that they do not touch the parts that become hot. Moreover, the gauge pipes must be attached without strain. The aluminium gauge pipes run until below the appliance.

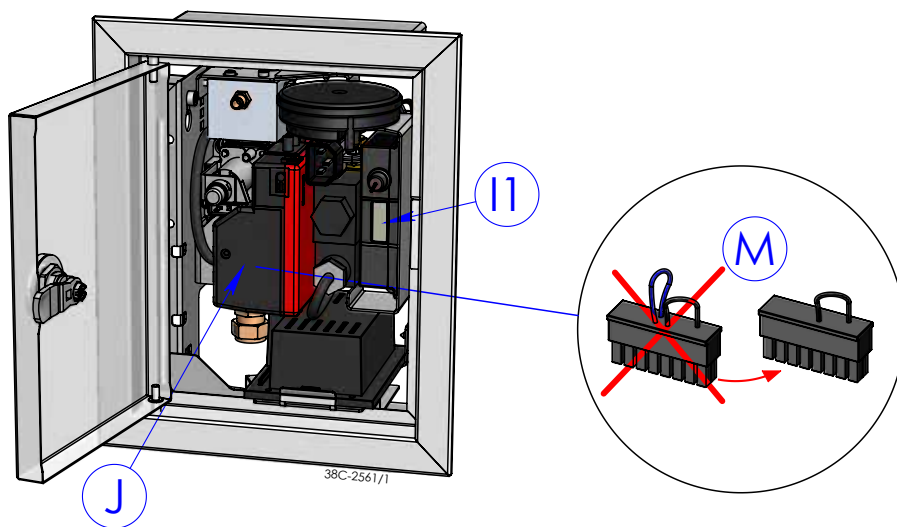
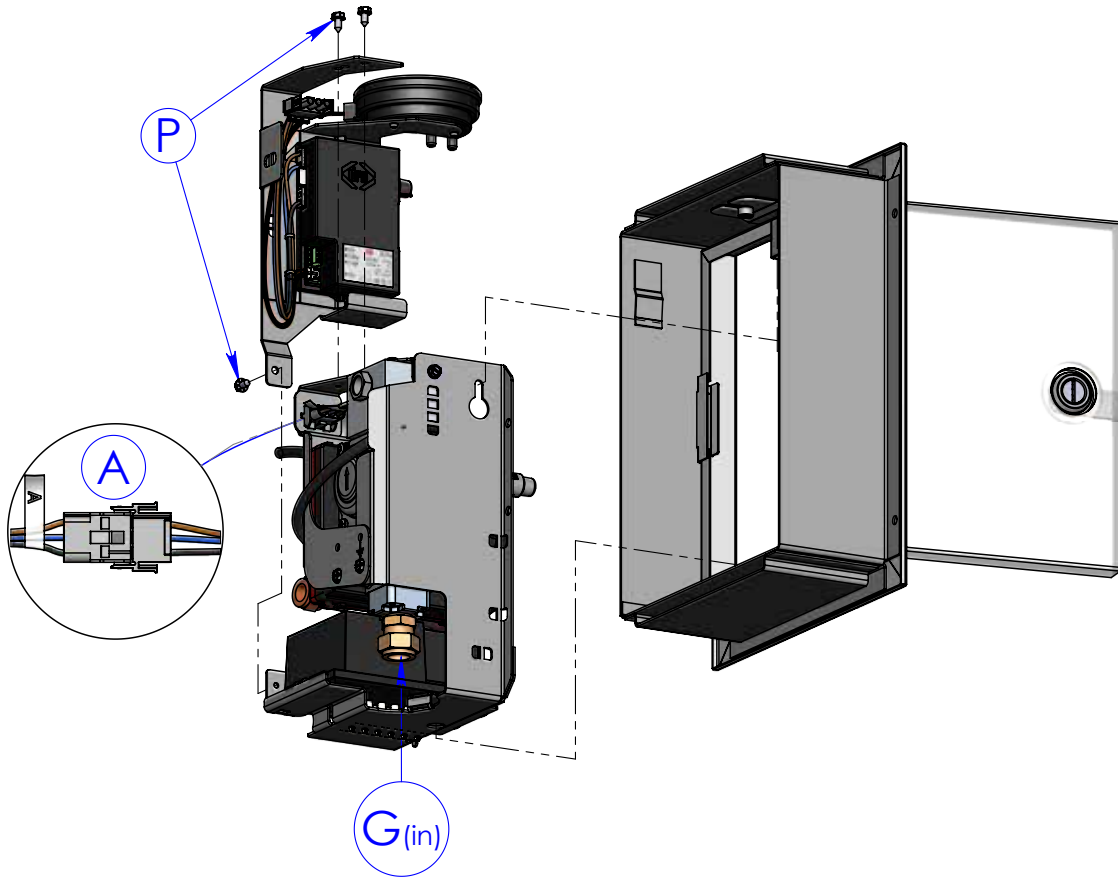
After that they will change into silicone hoses. Finally, the silicone hoses are connected to the pressure sensor. The pipes must be cut to size on site.

Follow the next steps:

- ➡ Connect the brass elbow joints (2 items) to the measuring unit; see fig. 6.



- !Caution**
- Tighten the joints until they are leak-tight; after installation you will no longer be able to reach them;
 - Make sure the pressure gauge pipes are free from parts that will become hot;
 - Remove any burrs after shortening the pipes;
 - Avoid dirt, including metal particles in pipes and connections;
 - Avoid kinks in the pipes;
 - Make sure that the transition from aluminium pipe to silicone hose can always be reached.



- ▢▢▢▢ Roll out the aluminium pipes towards the appliance.
- ▢▢▢▢ Connect the aluminium pipes to the brass joints; see fig. 6.
- ▢▢▢▢ Attach the aluminium pipes in such a way that there is no strain.
- ▢▢▢▢ Determine the length of the aluminium pipes.
- ▢▢▢▢ Saw the pipes to size.
- ▢▢▢▢ Connect the silicone hoses to the aluminium pipes.

!Caution The silicone hoses can only be connected to the pressure sensor, after the bracket with the control system has been placed. The pressure sensor is on the bracket with the control system.

7.3.3 Control system

The control system consists of the elements that are needed to allow the appliance to work safely in combination with the PowerVent® system. These components (control unit and pressure sensor) are mounted on a bracket that can be connected to the bracket with the control components, in order to then mount them in the obligatory control hatch. This control hatch is available via the manufacturer.

Ex factory, the bracket with the PowerVent® control components is already mounted on the bracket with the RCH control components and the appliance has already been fully adjusted for Powervent®. If this is the case, step 1 can be skipped.

If the appliance and the bracket with the PowerVent® control components is supplied separately, all points from point 1 must be observed.



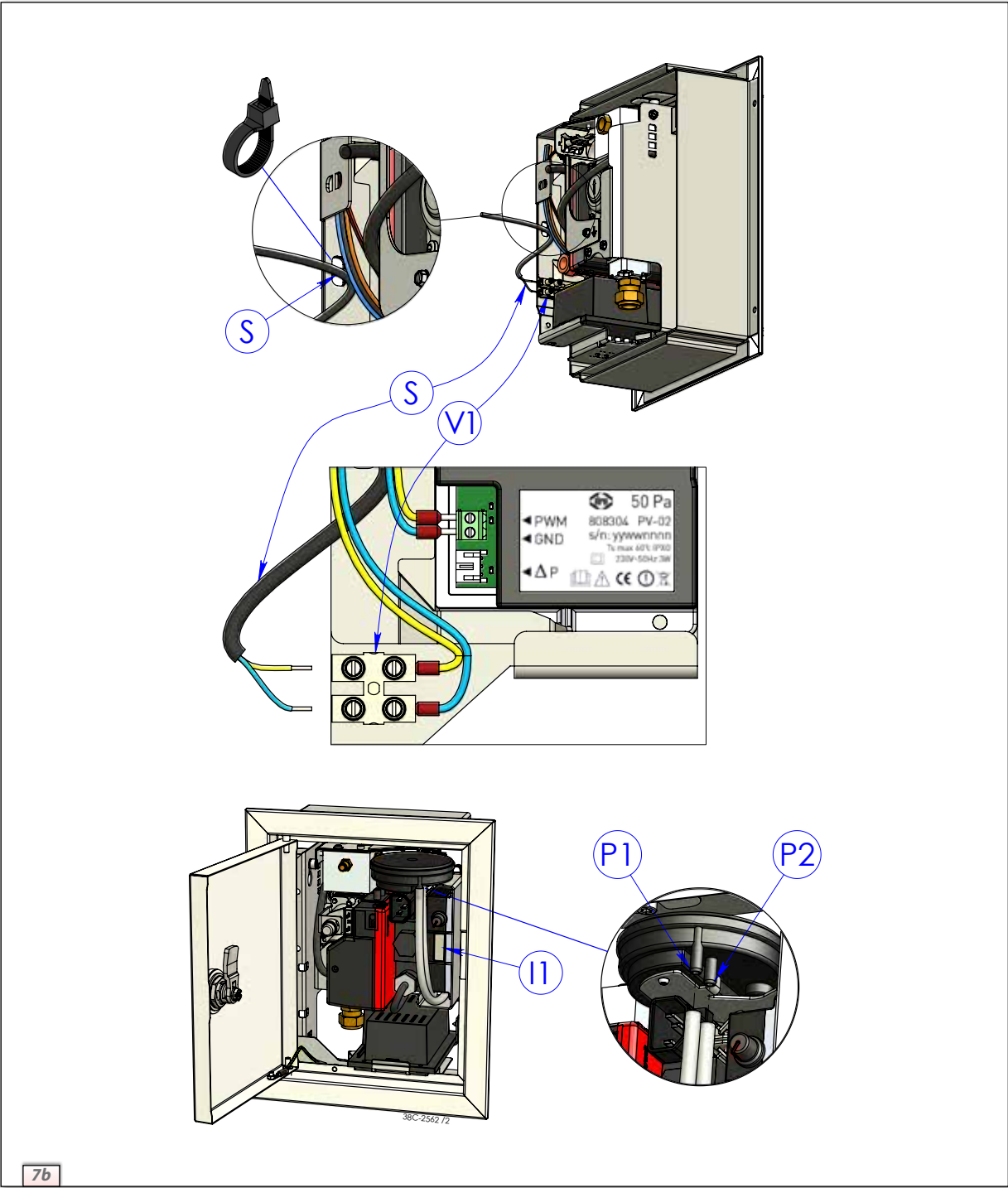
- !Caution**
- The PowerVent® system is only permitted in combination with an accompanying, lockable control hatch that comes with the appliance, in order to be able to meet the safety requirements. If not supplied, the control hatch is available from the dealer;
 - Take the safety requirements into account when placing the control hatch, as described in the installation manual for the appliance concerned;
 - Connect the correct silicone hose to the correct connection point on the pressure sensor; see fig 6, P1 and P2.

If applicable. - proceed as follows when placing the control system. Or else, go to step 2:

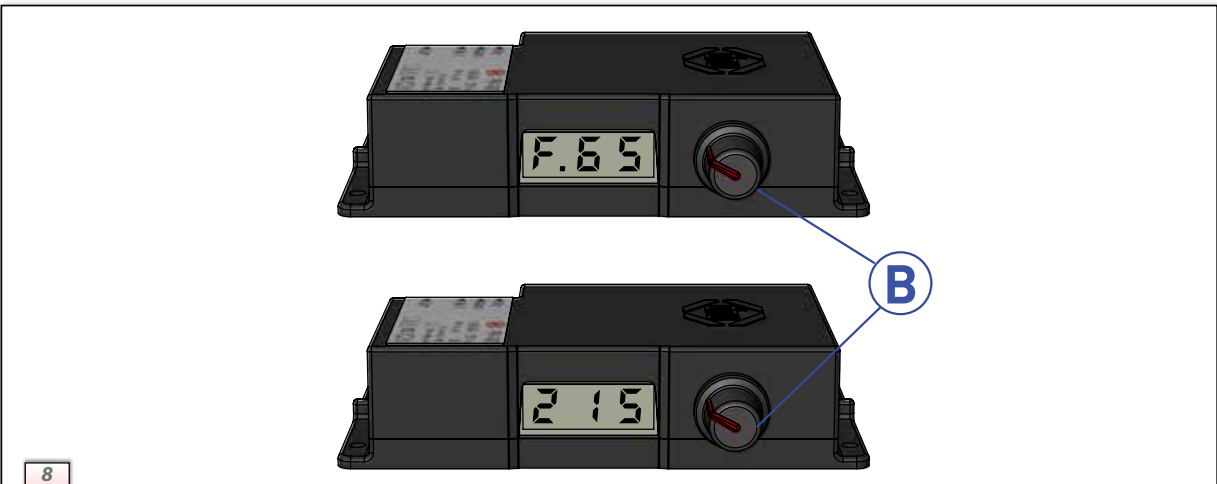
- ▢▢▢▢ 1. The bracket with the PowerVent® control components will fit on the bracket with the RCH control components in only one way (see fig. 7a):
 - Place the bracket with the PowerVent® control components on the bracket with the RCH control components, in such a way that the display (I1) at the front can be operated and read. Make sure that connector A of the PowerVent® control components is connected to connector A of the RCH control components.
 - Device without Eco Glow: Replace bridge plug (M) with the supplied bridge plug without blue cable in the RCH unit. For this, unscrew the cover (J) from the RCH control unit, replace the bridge plug and place the cover back on the control unit;
Device with Eco Glow: The blue bridge cable must be removed from the existing bridge plug (M). The supplied bridge plug is not used.
 - Attach the 2 brackets with the 3 self-tapping screws (P).
- ▢▢▢▢ 2. Pull the pressure gauge pipes and the ventilator's control cable to the outside through the control hatch.
 - Make sure the control cable (S) is fastened with a cable tie and allow it to protrude approx. 250mm (see fig. 7b).
 - If necessary, remove the receiver from the control hatch at the front.
- ▢▢▢▢ 3. Remove the front Powervent® control unit from the bracket and connect the fan control cable (S) to the control unit's terminal block (V1).
- ▢▢▢▢ 4. Connect the pressure gauge pipes to the pressure sensor, so that (see fig. 6 and fig. 7b):
 - the pipe comes as close as possible to the appliance's flue spigot at P1;
 - the other pipe ends at P2.
- ▢▢▢▢ 5. Make sure the appliance is prepared for first ignition as described in the installation manual of the appliance concerned.
- ▢▢▢▢ 6. Finally, make sure the earthed 230V power supply cable of the ventilator is connected to an earthed 230V connection.;

The PowerVent® system is now ready for testing.

!Tip Testing should be performed prior to finishing the chimney breast and before mounting the assembly of PowerVent® control components and RCH control components in the control hatch.



7b





8

 **Caution** Check all connections for gastightness, before igniting the appliance.

➡ Test the PowerVent® system for proper operation.

Check the setting of the differential pressure on the adjusting unit and set correctly, if necessary.

 **Caution** If the appliance does not ignite, the differential pressure must be set within 50 seconds.

 **Caution** - The differential pressure that has to be set depends on the appliance;
The differential pressure is adjusted as follows (for the values, see appendix 2 with the technical specifications):

- ➡ Briefly press button (B) 1x, and the percentage of the ventilator's capacity is visible (F.00 to F.99 is possible) (see fig. 8).
- ➡ Turn the button clockwise 1x and the current pressure difference is visible in Pascal (050 to 350 is possible)
- ➡ Now press down the button for 10 seconds and the pressure difference set-point appears.
The currently set pressure difference now flashes.
- ➡ Check that this is the correct value. If not, increase or lower the button per 5, until the correct pressure difference value is achieved.
- ➡ Now press down the button for 2 seconds to confirm. Then, the current pressure difference is shown.
After 60 seconds the display will switch off automatically.

If the system operates to your satisfaction, proceed as described above:

➡ Isolate the system from its supply voltage.

➡ Place the complete assembly of appliance controller and PowerVent® controller in the control hatch (see fig. 7a).

!Caution Make sure that hereafter the control hatch is locked in accordance with the regulations.

➡ Reconnect the voltage supply to the system.

!Tip It is sensible to measure whether the required pressure difference is achieved and only then close the chimney breast or cove around the discharge system.

8. Adjusting the appliance

This chapter provides the technical specifications that are required for the PowerVent® system to operate properly in combination with the appliance. Appendix 2, table 3 contains the conditions; the conditions depend on the type of appliance.

The appliance must be installed without air inlet guide(s) and without the restrictor slide that is supplied with the appliance. The appliance is supplied with the Powervent® system installed and the above-mentioned components have therefore already been removed. If the appliance is not supplied with the Powervent installed, these components will have to be removed after all.

!Caution Consult the most recent installation manual of the appliance for possible additional settings. The most recent installation manual can be found on www.druservice.com.

8.1 Points of departure

Application of the PowerVent system is allowed up to a certain maximum length.

!Caution Each bend is calculated as 2 metres. No distinction is made between 45° and 90° bends.

Example: According to table 3 in appendix 2, the maximum allowed length in case of the 'Lugo 70' is 43 metres. If three bends are used, a maximum of 37 metres of concentric pipe may be connected.

8.2 Explanation of the table

Below, the layout of table 3 in appendix 2 is explained.

8.2.1 Type of appliance

This column lists the appliances that are suitable for connection to PowerVent®.

8.2.2 Differential pressure

This column shows the differential pressure, in Pascal, which has to be set on the adjusting unit.

8.2.3 Minimum length

This column indicates the minimum length of the PowerVent® system, in metres, that is necessary in order to prevent the fan from becoming defective.

!Caution The minimum length is the real length in metres of concentric pipe. Here, the bends may NOT be included in the calculation (2 metres are 1 bend).

If a fan unit for roof is used in combination with a roof terminal (see fig. 2f and 2g) or a wall terminal (see fig. 2e), a concentric pipe of maximum 3 metres in length may be used between the fan unit for roof and the roof or wall terminal. Do NOT include this length in the calculation when determining the minimum length of the concentric pipe.

8.2.4 Maximum length

This column states the maximum length of the PowerVent® system. The maximum length is the real length in metres of pipe.

If a fan unit for roof is used in combination with a roof terminal (see fig. 2f and 2g) or a wall terminal (see fig. 2e), a concentric pipe of maximum 3 metres in length may be used between the fan unit for roof and the roof or wall terminal. DO include this length in the calculation when determining the maximum length of the concentric pipe. The bend at the wall terminal (counts for 2 metres) is also included in the calculation.

The wall terminal, on the other hand, is NOT included.

8.2.5 Length of condensation trap

If flue gases have to be transported over a long distance, they may cool down to below dew point, and condensation may occur. The condensation generated must be discharged via a condensation trap.

From a certain length, a condensation trap will have to be installed. It concerns the real length in metres of pipe.

►►► Use a condensate receptacle with a waterless waste valve.

An example of this is the Hepworth HepvO, Hygienic self sealing waste valve. This module is available at DRU.

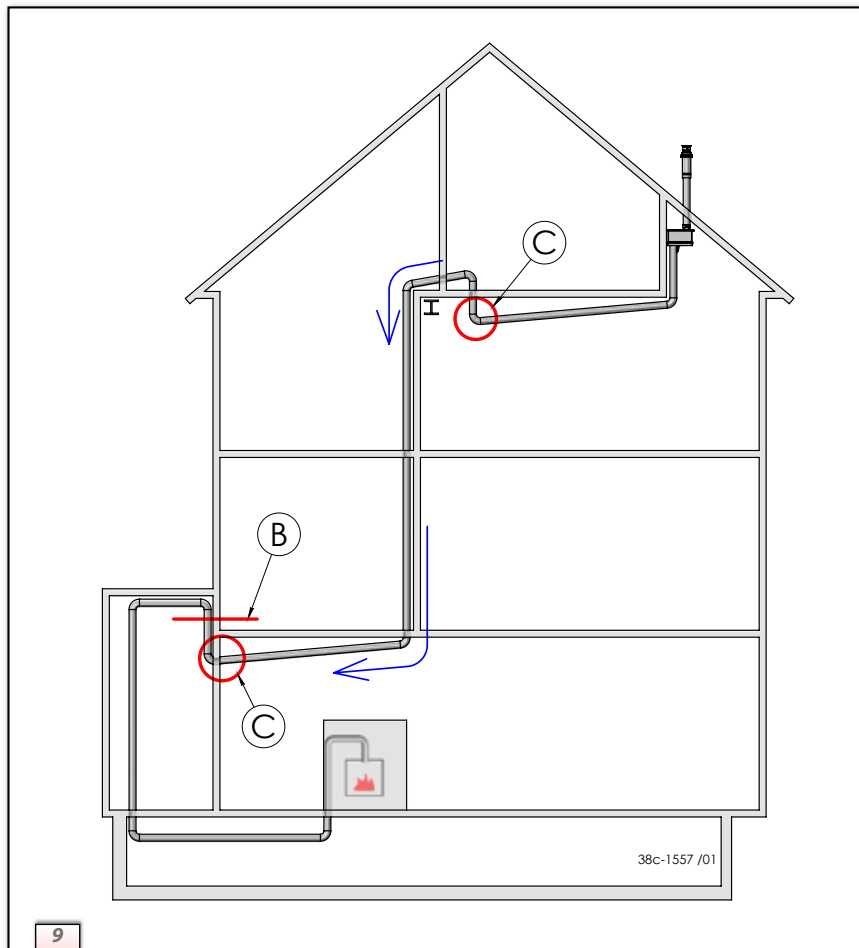
!Caution An exhaust gas temperature that is too high may damage the condensation trap. Therefore, the condensation trap should be placed a minimum distance from the concentric system.

- ➡ Consult table 3. Add 4 metres to the stated minimum length of the concentric system. The result is the ideal distance at which to install the condensation trap.
- ➡ Place the condensation trap in a horizontal section of the concentric pipe.
- ➡ Ensure a minimum slope of 1 cm per metre from the concentric pipe to the condensation trap.

!Caution - In some situations, more than one condensation trap (see fig. 9, C) should be installed. This is the case if the concentric pipe follows a downward and then an upward course AFTER the indicated minimum length (see fig. 9, B) and this pattern is repeated.


- The slope must be made in such a way that the condensed water flows against the direction of the exhaust gas. In this way, the condensed water enters at the correct side of the condensate drain section and is discharged in the correct manner (see fig. 9).

The condensation trap is available from your dealer and can be supplied by DRU.



9. Maintenance

Once a year the system should be checked, cleaned and, if necessary, repaired by a competent installer in the field of atmospheric gas-fired heating and electricity.

-  **Caution** During the performance of work, disconnect both the appliance and ventilator from the power supply as follows:
- remove the 230V plug from the connection of the appliance and/or ventilator;
 - or switch off the 2-core switch of the appliance and/or ventilator placed by a recognised installer in accordance with current regulations.

9.1 Parts

Parts that must be replaced, can be obtained from your supplier.

10. Malfunctions

In the following table you will find an overview of malfunctions that might occur, the possible causes and the remedies

Table 1: diagnosis of malfunctions		
Problem	Possible cause	Remedy
A. fan is activated, but appliance does not ignite.	<ol style="list-style-type: none"> 1. The (new) communication code between receiver and remote control must still be confirmed. 2. Control cable not connected correctly. 3. Ventilator's power cable not connected correctly. 	<ol style="list-style-type: none"> 1. Confirm the code, as described in the Installation Manual of the appliance, chapter Malfunctions, in the table under solution A1. 2. Check that the control cable is properly connected to the green terminal block. 3. Check that the 230V power cable is correctly connected to the ventilator.
B. Does spark, but does not ignite.	<ol style="list-style-type: none"> 1. Fan not connected or blocked. 2. Silicone hoses are not connected leak-tight. 3. Maximum length / max. number of bends of the PowerVent® exceeded. 4. Flue gas discharge is not connected leak-tight. 5. Pressure gauge hoses have been connected the wrong way around. 	<ol style="list-style-type: none"> 1. Check whether the fan rotates after the appliance has been ignited. - If necessary, connect the ventilator; - If necessary, repair blockage 2. Check the connections. If necessary, connect the silicone hoses leak-tight. 3. Check length and number of bends. If necessary, correct to max. length / max. number of bends. 4. Check connections and silicone rings for leak-tightness. If necessary, connect them leak-tight. 5. Properly connect the hoses.

Appendix 1 Parts included with the delivery

In the following table you can find the parts that are supplied with the appliance.

Table 2: Parts included with the delivery	
Part	Number
Installation manual	1x
Bracket with RCH control system:	Mounted
- Control unit	
- Pressure sensor	
Aluminium pressure gauge pipe	2x
Silicone pressure gauge pipe (hose)	2x
Joints	nx
Self-tapping screws	nx
Ventilator unit + Measuring unit (Venturi)	Separately available

Appendix 2 Technical specifications

Table 3A: Technical specifications					
Type of appliance	Differential pressure	Minimum length	Maximum length	Length condense trap	Control unit with lower limit
	(Pa)	(metre)	(metre)	(metre)	(Pa)
Cosmo (Tunnel) RCH	285	8	16	n.v.t.	100
Excellence 50XT	80	8	36	> 17	50
Lugo 70	70	8	43	> 16	50
Lugo 80	70	8	43	> 16	50
Maestro 60 (Tall) RCH	85	9	92	> 19	50
Maestro 60/2 (Tall) RCH	85	9	92	> 19	50
Maestro 60/3 (Tall) RCH	85	9	92	> 19	50
Maestro 75 RCH	120	8	30	> 16	50
Maestro 75 Tall RCH	80	5	51	> 21	50
Maestro 75 Tunnel RCH	190	8	44	> 19	100
Maestro 75 Tall Tunnel RCH	140	5	49	> 19	100
Maestro 75XTU RCH	175	8	53	> 19	100
Maestro 80/2 RCH	110	8	43	> 19	50
Maestro 80/3 RCH	110	8	43	> 19	50
Maestro 100 RCH	175	8	34	> 13	100
Maestro 105/2 RCH	195	8	35	> 15	100
Maestro 105/3 RCH	195	8	35	> 15	100
Metro 80XT (Tunnel) RCH	90	8	100	> 15	50
Metro 100XT-41 (Tunnel) RCH	105	8	37	> 13	50
Metro 100XT/2-41 RCH	105	8	37	> 13	50
Metro 100XT/3-41 RCH	105	8	37	> 13	50
Metro 100XTL-41 RCH	105	8	37	> 13	50
Metro 100XTU-41 RCH	105	8	37	> 13	50
Metro 130XT/2 RCH	175	8	58	> 14	100
Metro 130XT/3 RCH	175	8	58	> 14	100
Metro 130XTL RCH	175	8	58	> 14	100
Metro 130XT-41 (Tunnel) RCH	175	8	58	> 14	100
Metro 150XT-41 (Tunnel) RCH	190	8	41	> 14	100
Metro 200XT (Tunnel) RCH	240	10	30	> 14	100
Paco RCH	90	8	99	> 18	50
Prestige (Tunnel) RCH	80	8	114	> 18	50

- Bends (45° or 90°) are calculated as 2 metres, when determining the maximum length.
- The resistance of one condensation trap is included in the specified maximum length. If extra condensation traps are installed, 4 metres must be deducted from the maximum length per extra trap.

Table 3B: Technical specifications (discontinued appliances)

Type of appliance	Differential pressure (Pa)	Minimum length (metre)	Maximum length (metre)	Length condense trap (metre)
Centro 100	90	8	26	> 12
Excellence 60	80	8	36	> 17
Excellence 70	80	8	36	> 17
Metro 100XT (Tunnel) RCH	75	8	56	> 18
Metro 100XT/2 RCH	90	8	36	> 17
Metro 100XT/3 RCH	90	8	36	> 17
Metro 100XTL RCH	80	8	36	> 18
Metro 130XT (Tunnel) RCH	105	8	36	> 20
Metro 150XT (Tunnel) RCH	125	8	22	> 14

Bends (45° or 90°) are calculated as 2 metres, when determining the maximum length.

Table 4: Technical specifications PowerVent®

	PowerVent Fan Fan unit for wall/roof	PowerVent control
V (AC)	220-240	220-240
Hz	50-60	50-60
W	60	20
dB	max. 60	-



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