



# Passo RCH

## G20/G25/G25.3 (Natural gas)



English



Store this document in a safe place



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## 1. Step-by-step installation plan

The major steps of the installation are described below,  
 Perform these steps and tick them once they have been performed correctly.

 Carefully read the installation manual before installing the appliance.

- Check that the correct type of appliance has been delivered (see table 4-1).
- Check that the gas type and gas pressure is correct on the location where the appliance is placed.
- Check that the supplied parts are present (see table 6-1).
- Check the appliance for damages.
- Make sure that the total installation complies with the applicable national, local and architectural regulations.
- Make sure that there is a gas tap present that is always accessible and meets the legal regulations.
- Ensure that the placement meets the applicable requirements concerning fire safety.
- Make sure that the configuration of the concentric system with roof or wall duct corresponds with the imposed requirements (see section 7.3).
- Make sure the appliance control is connected correctly (see section 7.4).
- Make sure that the restrictor slide and air inlet guides are correctly adjusted (see section 8.2).
- Ensure a correctly placed wood, pebble set or broken glass set with accessories (see section 8.3).
- Make sure the remote control is made ready for use (see section 9.4).
- Check all gas connections for gas tightness (see section 10.1).
- Make sure the appliance is safely ignited the first time (see section 10.3.1).
- Ensure a cleaned glass pane in accordance with the instruction, before the atmospheric fire is ignited with the glass pane for the first time (see chapter 12).
- Check the appliance with installed glass pane for a correct ignition and a correct flame transfer of the main burner(s) when igniting for the first time (see section 10/3/2).
- Familiarise the user with the appliance (see chapter 11).

The appliance is now (after the above-mentioned steps) ready for use and the consumer is familiar with the possibilities for using the appliance.

## 2. Introduction

DRU, a manufacturer of gas-fired heating appliances, develops and produces products that comply with the highest possible quality, performance and safety requirements. This appliance has a CE label, which means that it complies with the essential requirements of the European Gas Appliance Directive. The appliance is supplied with an installation manual and a user manual. 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 information in this installation manual will ensure the appliance is installed in such a way that it will function properly and safely. If the installation instruction is not clear, national/local regulations must be observed.

This manual discusses the installation of the appliance and the regulations that apply to the installation. In addition, the appliance's technical data are shown and information is provided about maintenance, possible malfunctions that might occur and their possible causes.

Fully and carefully read and use this installation manual, before installing the appliance. When using the DRU Powervent system\* or DRU CM system\*, the accompanying installation manual should also be read completely and carefully, before installation work begins.

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 final delivery, the manuals should be handed over to the user.

## 3. CE declaration

DRU declares that company internal measures guarantee that appliances produced by DRU meet the essential requirements and guidelines of the regulation concerning gas-fired appliances and the accompanying standards. This declaration loses its validity if changes are made to the appliance without written permission from DRU. The instructions in the manuals must also be observed at all times. A copy of the CE test certificate can be downloaded via [www.druservice.com](http://www.druservice.com).

Product:	Atmospheric gas-fired heating appliance
Type:	Passo RCH
Product identification number:	0063CT3681
Conformity assessment body:	Kiwa Netherlands B.V. (0063) Wilmersdorf 50 P.O. Box 137 7300 AC, Apeldoorn
EC regulation:	2016/426/EU
Applicable EEC directives:	2014/35/EU, 2014/30/EU
Applied harmonized standards:	NEN-EN-613, NEN-EN-613/A1, EN60335-1:2012, EN60335-2-102:2016, EN55014-1:2007, EN55014-2:2015, EN61000-3-2:2014, EN61000-3-3:2013

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Duiven, 13-02-2019



R.P. Zantinge, Managing director

## 4. Technical data

Check the technical data based on the table below.

Table 4-1: Technical data					
Model identifier	Passo RCH				
Type of appliance	Free-standing				
Combustion	Closed combustion				
Type	C11, C31, C91				
Categorie	I <sub>2EK</sub> , I <sub>2ELL</sub> , I <sub>2H</sub> , I <sub>2E+</sub> , I <sub>2H</sub>				
Applicable concentric systems	150/100				
Flame protection version	DRU LAS ES-E 200/150/100,				
Pressure equalisation	DRU LAS ES-I 150/100, DRU LAS AG-I 150/100				
Max. temp. outer tube concentric system	Separated ignition / ionization plugs				
Radiation range safe distance (front/side)	160°C				
	800 mm				
Gastype:	Symbol	G25/G25.3*	G20		Unit
Indirect heating functionality		No	No		
Direct heat output		6,1	6,4		kW
Indirect heat output		-	-		kW
Space heating emissions NO <sub>x</sub>		80,0	110,0		mg/kWh <sub>input</sub> (GCV)
Heat output					
Nominal heat output	P <sub>nom</sub>	6,1	6,4		kW
Minimum heat output (indicative)	P <sub>min</sub>	0,9	1,2		kW
Technical data					
Nominal heat input (Hs)		8,3	8,6		kW
Nominal heat input (Hi)		7,5	7,7		kW
Consumption max		883	819		L/h
Consumption min		200	220		L/h
Burner pressure max		17,9	14,1		mbar
Burner pressure min		7,0	7,4		mbar
Main burner injector		1x Ø1,30 1x Ø1,45 1x Ø1,40	1x Ø1,30 1x Ø1,45 1x Ø1,40		mm
Low setting injector		A****	A****		mm
Efficiency class (EN613)		1	1		
Useful efficiency (NCV)**					
Useful efficiency at nominal heat output	η <sub>th, nom</sub>	91,9	93,0		%
Useful efficiency at minimum heat output (indicative)	η <sub>th, min</sub>	79,2	78,0		%
Auxiliary electricity consumption					
At nominal heat output	e <sub>l, max</sub>	0,0236	0,0236		kW
At minimum heat output	e <sub>l, min</sub>	0,0125	0,0125		kW
In standby mode	e <sub>l, SB</sub>	0,0026	0,0026		kW
Permanent pilot flame power requirement					
Pilot flame power requirement (if applicable)	P <sub>pilot</sub>	-	-		kW
Energy efficiency					
Energy efficiency index	EEl	91,2	92,3		
Energy efficiency class		A	A		
Type of heat output / room temperature control					
Single stage heat output, no room temperature control					No
Two or more manual stages, no room temperature control					No
With mechanic thermostat room temperature control					No
With electronic room temperature control					Yes
With electronic room temperature control plus day timer					Yes
With electronic room temperature control plus week timer					Yes
Other control options					
Room temperature control, with presence detection					Yes***
Room temperature control, with open window detection					Yes***
With distance controle option					Yes

\* This appliance is suitable for G25.3 with the composition according NTA 8837.

\*\* System efficiency.

\*\*\* To be used by means of home automation.

\*\*\*\* Adjusting screw.

## 5. SAFETY

### 5.1 General

- ⚠ - Observe the generally applicable regulations and precautions/safety instructions in this manual.
- First check that the technical execution of the appliance to be installed is correct (see table 4-1).
- Read this manual carefully to ensure the proper and safe installation of the appliance.
- Observe the regulations/instructions in this manual.

### 5.2 Regulations

Please install the appliance in accordance with the applicable national, local and constructional (installation) regulations.

### 5.3 Safety instructions

Carefully observe the following precautions/safety instructions:

- ⚠ The appliance may only be installed and maintained by recognised installers who are skilled in the field of gas heating and electricity.
- ⚠ Do not make any changes to the appliance.
- ⚠ When installing a built-in appliance:
  - Use non combustible and heat-resistant materials for the chimney breast, including the top of the chimney breast, the material in the chimney breast and the back wall against which the appliance will be placed. For this you can use both sheet material and stone-like materials.
  - Take sufficient measures to prevent temperatures of a wall behind the chimney breast becoming too high, including the materials and/or objects behind the wall.
  - Comply with the minimum required internal dimensions of the chimney breast.
  - Ventilate the chimney breast by means of ventilation holes (see table 4-1).
  - Use heat resistant electrical connectors.
  - Place heat-resistant electrical wiring away from the appliance and as low as possible in the chimney breast. This has to do with the temperature development in the chimney breast.
  - Only use the flue gas discharge / combustion air supply system (concentric system) supplied by DRU.
- ⚠ When installing a free-standing appliance: place the appliance at the indicated minimum distance from the back wall, as indicated further down in the text.
- ⚠ Do not cover the appliance and/or do not wrap it in an insulation blanket or any other material.
- ⚠ Keep combustible objects and/or materials outside the appliance's radiation range (see table 4-1).
- ⚠ Only use the accompanying set, such as the wood or pebble set, and place it exactly as described.
- ⚠ Leave space around the ionisation pin and spark electrode and never place glow material around these pins.
- ⚠ Make sure there is no dirt in gas pipes and connections.
- ⚠ Place a gas tap in accordance with applicable regulations.
- ⚠ Check the complete installation for gas tightness prior to commissioning.
- ⚠ Prevent the explosion hatch(es) on the top of the appliance (if present) from getting clogged and check that they properly fit on the sealing surface, before the appliance is built in.
- ⚠ Do not ignite the appliance until it is fully installed when it comes to the gas connections, discharge system and electrical components.
- ⚠ Do not use the appliance when a pane is broken and/or cracked, until it has been replaced.
- ⚠ The appliance was designed for atmospheric and heating purposes. This means that all visible surfaces, including the glass pane, can become hotter than 100°C. It is recommended to always place a protective grating in front of the appliance when there are children, elderly people or handicapped persons in the same room as the appliance. If it is possible that vulnerable people are regularly present in the room with no supervision, a fixed guard should be mounted around the appliance.

## 6. Preparation

### 6.1 Unpacking

Note the following items when removing the packaging:

- Remove all packaging materials.
- Remove all supplied components in, on and/or at the appliance.
- Check the appliance and accessories for damages (during transport).
- If necessary, contact your supplier.
- Never install an appliance that is damaged!
- Remove any screws that are used to fix the appliance to a platform or pallet.
- ⚠ The glass pane(s) is/are made of a ceramic material. Very small irregularities in the glass panes cannot be avoided, but are within the required quality standards.
- ⚠ Keep plastic bags away from children.

Table 6-1 indicates which components should be available after removing the packaging.

- Contact the supplier if you find that not all components have been supplied.
- Packaging must be disposed of in accordance with the regulations.

**Table 6-1: Parts included with the delivery**

Part	Anzahl
Installation manual	1x
User manual	1x
Wood set (including: chips, vermiculite and ash)	1x
Glow material	1x
Restrictor slide	1x
Remote control	1x
Mains cable	1x
Spare self-tapping screws	1x
Compression fitting 15 mm x G3/8"	1x
Socket spanner 8 mm	1x

### 6.2 Type of gas

The data plate indicates for which type of gas, gas pressure and for which country this appliance is intended.

The data plate can be found on the appliance or can be attached to a chain to which it should remain attached.

- ⚠ Check whether the appliance is suitable for the type of gas and the gas pressure used at the location.

#### 6.2.1 Gas type conversion

In order to convert this appliance to a different type of gas, please contact DRU's service department and ask for the possibilities. The conversion should be performed by a recognised gas installer.

### 6.3 Gas connection

Place a gas tap in the gas pipe in accordance with the applicable regulations. The gas connection on the gas control is located next to the receiver (fig. 6-1 (G<sub>in</sub>)).

- ⚠ - Make sure there is no dirt in the gas pipes and connections.
- No soldering may take place at the flexible gas hose(s), as this could cause leaks.

The following requirements apply to the gas connection:

- Use a gas pipe with the correct dimensions, so that no pressure loss can occur.
- The gas tap must be approved (in the EU this will be the CE mark).
- You should always be able to reach the gas tap.

### 6.3.1 Gas hose for gas connection

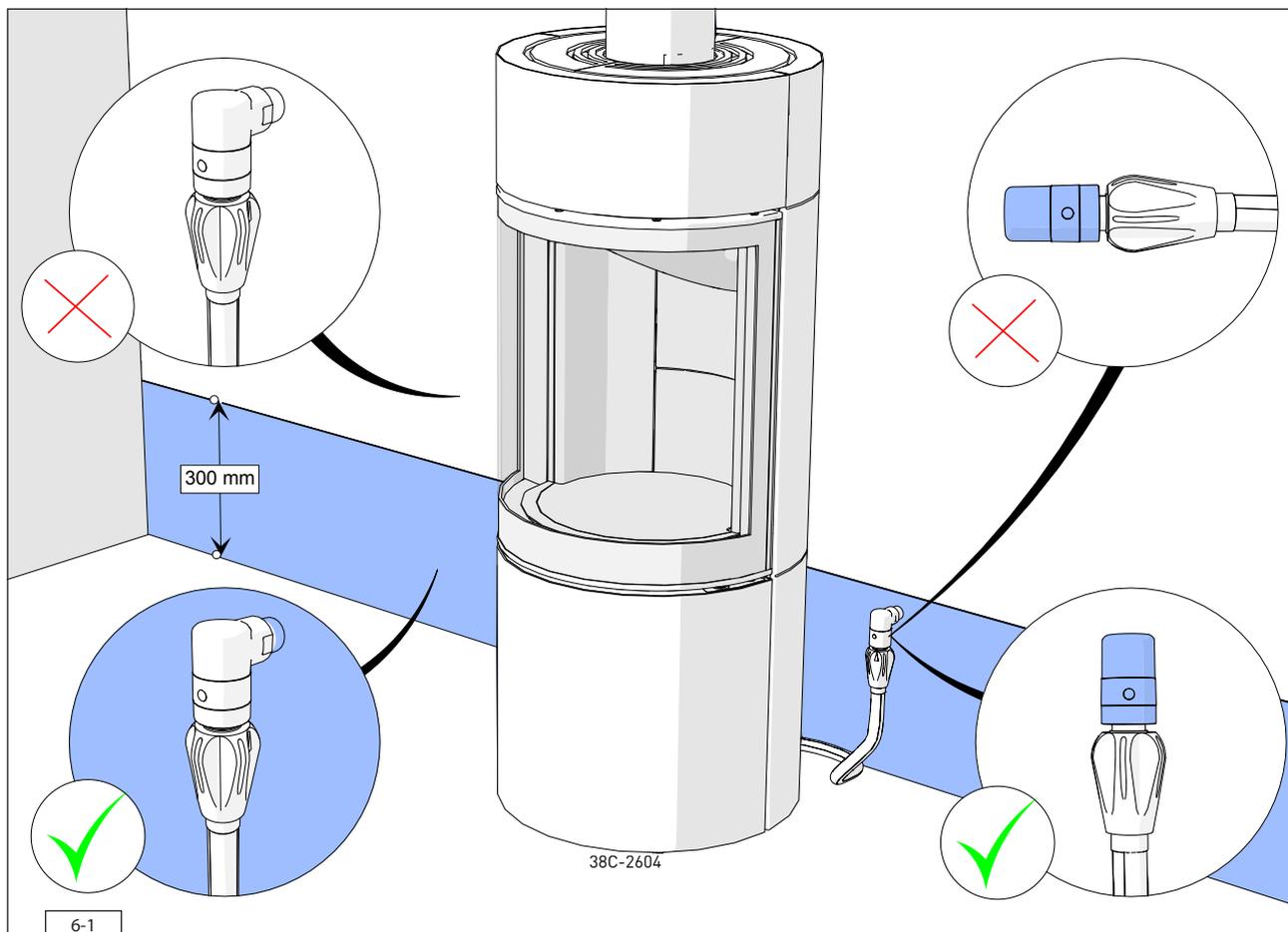
In many cases, a gas hose for a gas connection according to EN14800 can be ordered together with the appliance. The gas hose is mounted to the appliance and has been checked for leak-tightness. This gas hose is available in different lengths.

- ⚠ Take the following into account when installing the gas connection and the appliance:
  - The gas connection must always be accessible to be able to shut off the gas supply.
  - The gas connection may only be mounted vertically, so that the gas hose can be connected vertically at the bottom.
  - Do not place the gas connection more than 30 cm higher than the bottom side of the appliance.
  - The minimum bending radius of the hose is 40 mm.
  - Do not allow the gas hose to make contact with the appliance, except in the passage intended for that purpose.
  - Do not place the gas connection within the radiation range of the glass pane.

### 6.4 Electric connection

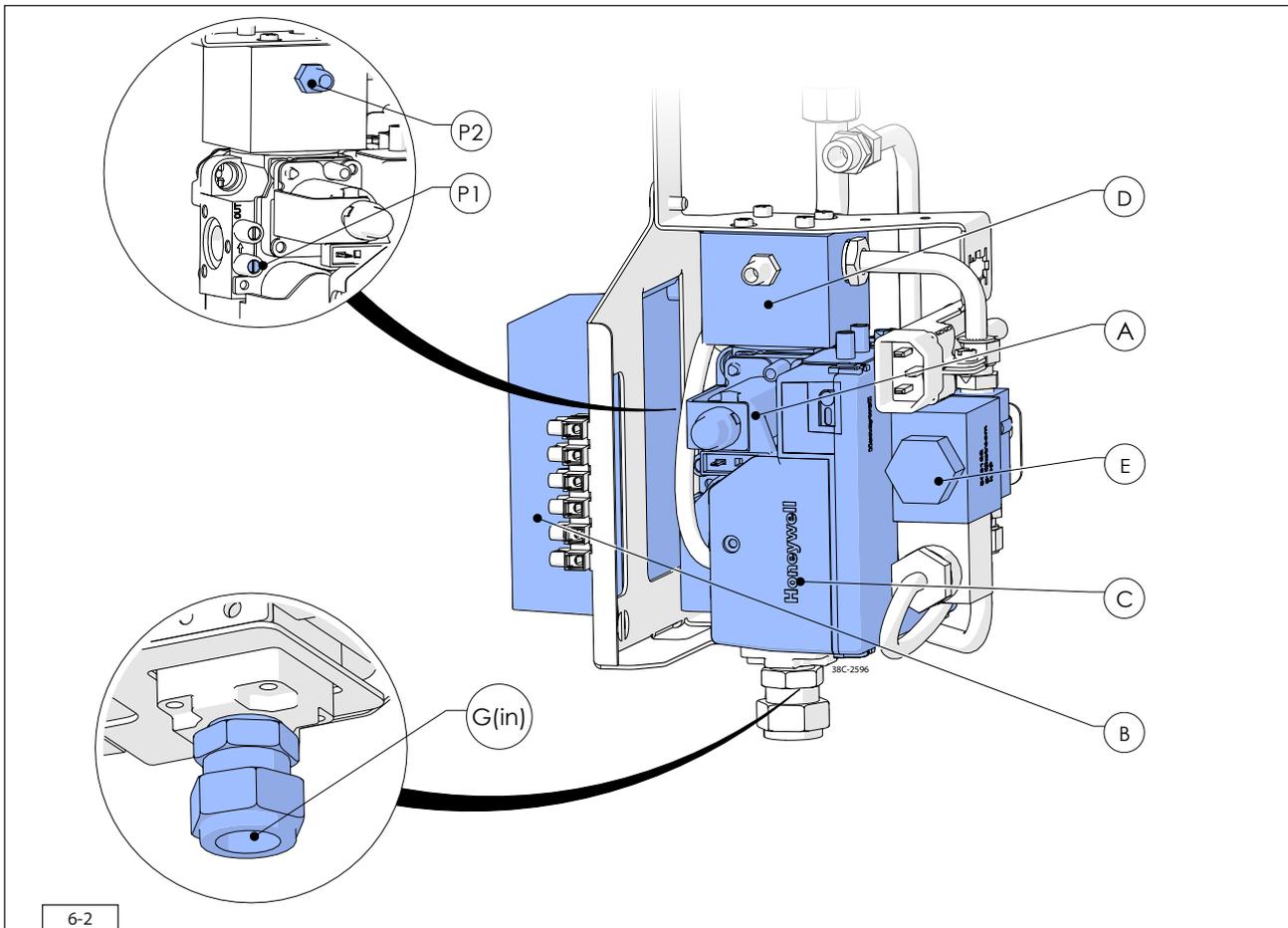
In case of an electrical connection of 230 Volts, always provide sufficient earthing. Place this electrical connection away from the appliance, as low as possible in the chimney breast. Make sure the electrical connection is within reach. This has to do with the temperature development in the chimney breast.

- ⚠ Make sure that it is easy to disconnect the appliance from the power supply after installation;
  - by disconnecting the plug;
  - or by means of a 2-core switch installed by a recognised installer in accordance with current regulations.
- ⚠ - Protect the gas control and electric components, hereafter referred to as the gas control, against building dust and moisture!
  - In the case of appliances made with the CM system\*, observe the instructions in the supplied manual for connecting the receiver and control panel.



### 6.5 Components appliance control

This section states the components that are used to control the appliance (see fig. 6-2).



6-2

**Legend:**

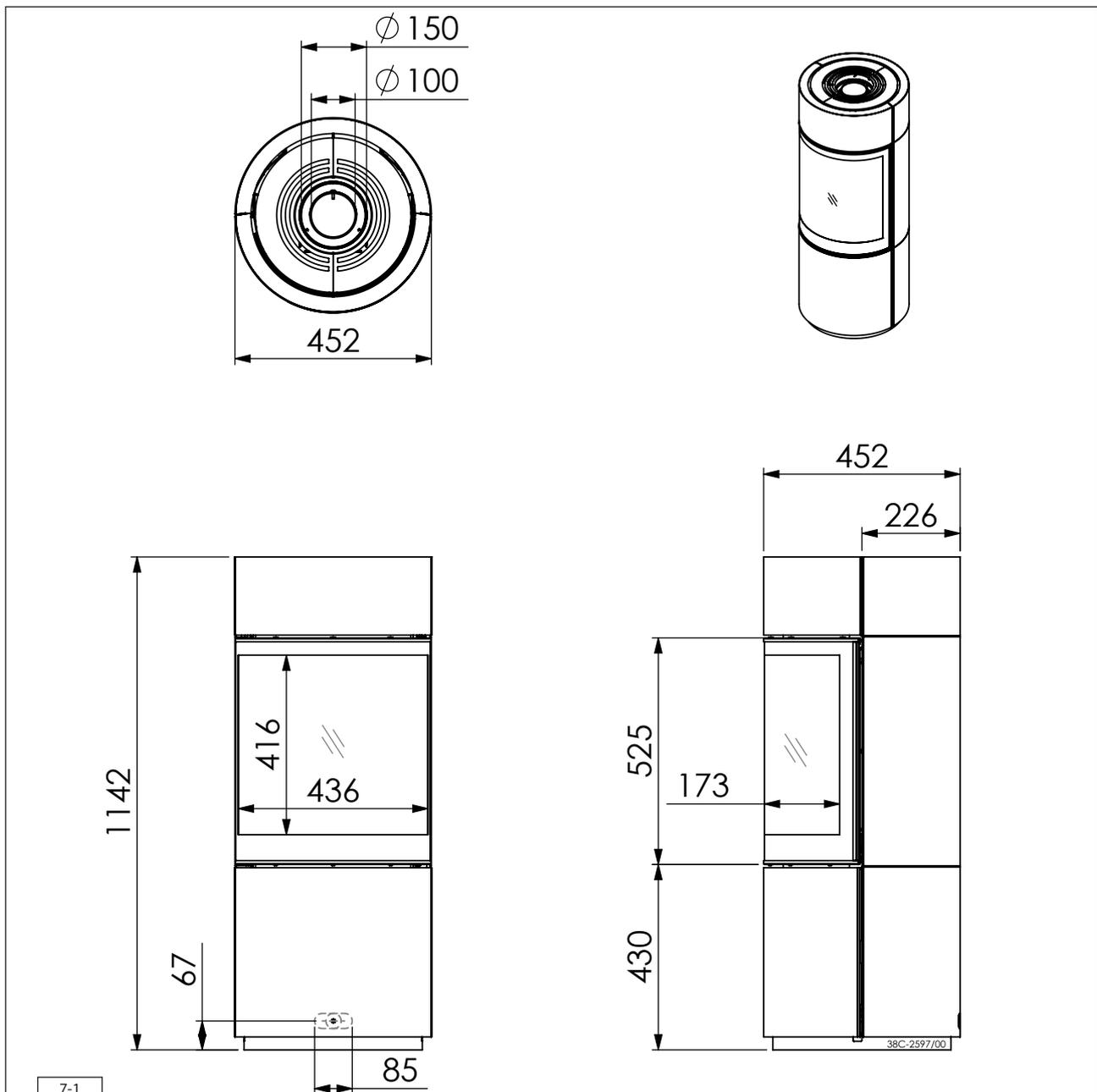
- A = Gas control; controls the gas to the burners
- B = Receiver; communicates with the transmitter
- C = Processor (ESYS); controls the gas control
- D = Distribution block; connection of the burners
- E = Valve 2nd burner; opens and closes the gas supply to the 2nd burner (if applicable)
- P1 = Pressure gauge nipple 1; line-pressure
- P2 = Pressure gauge nipple 2; burner pressure
- G (IN) = Gas connection; connection from the gas control to the gas network

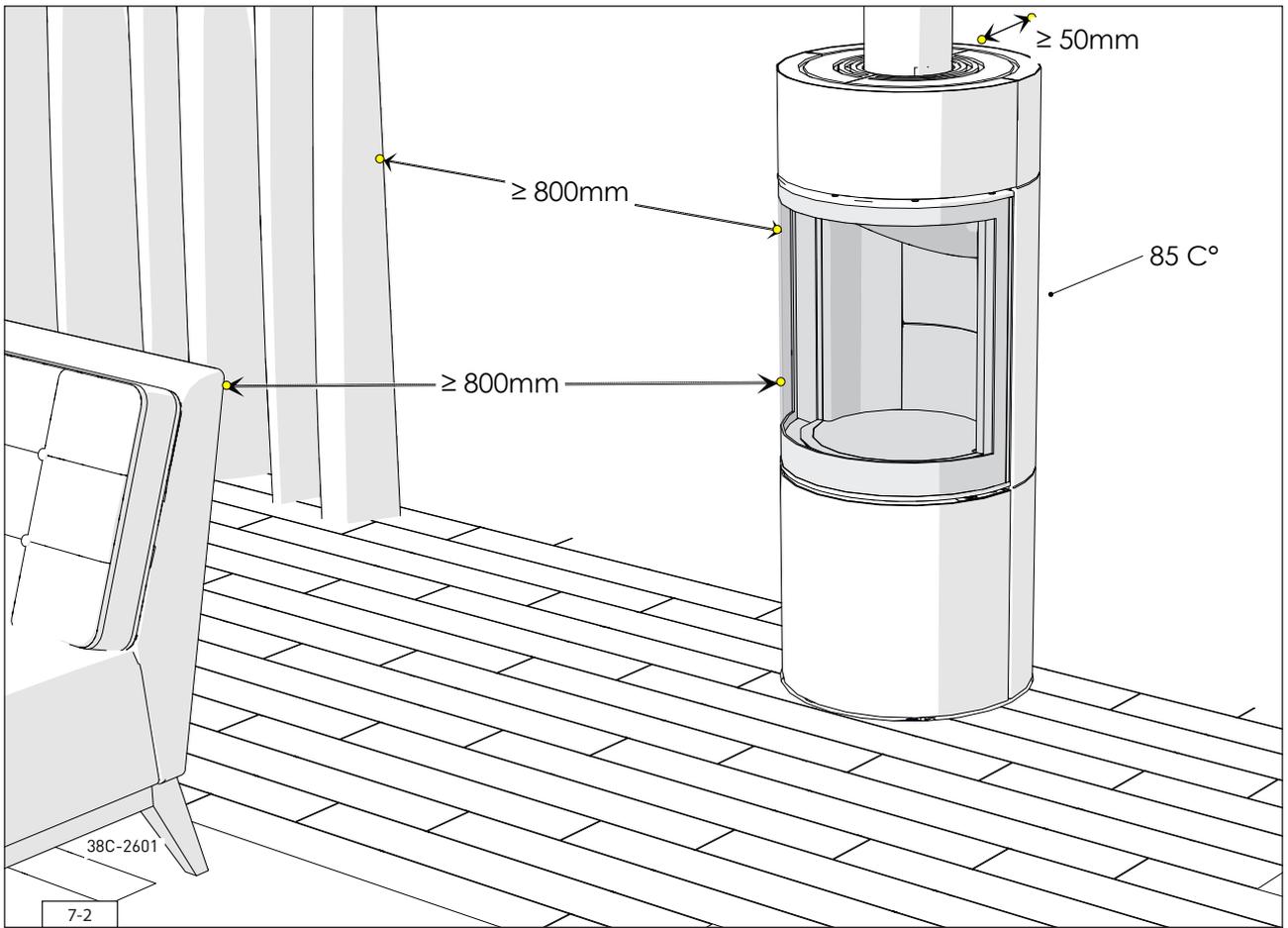
## 7 Installation

### 7.1 Placing the appliance

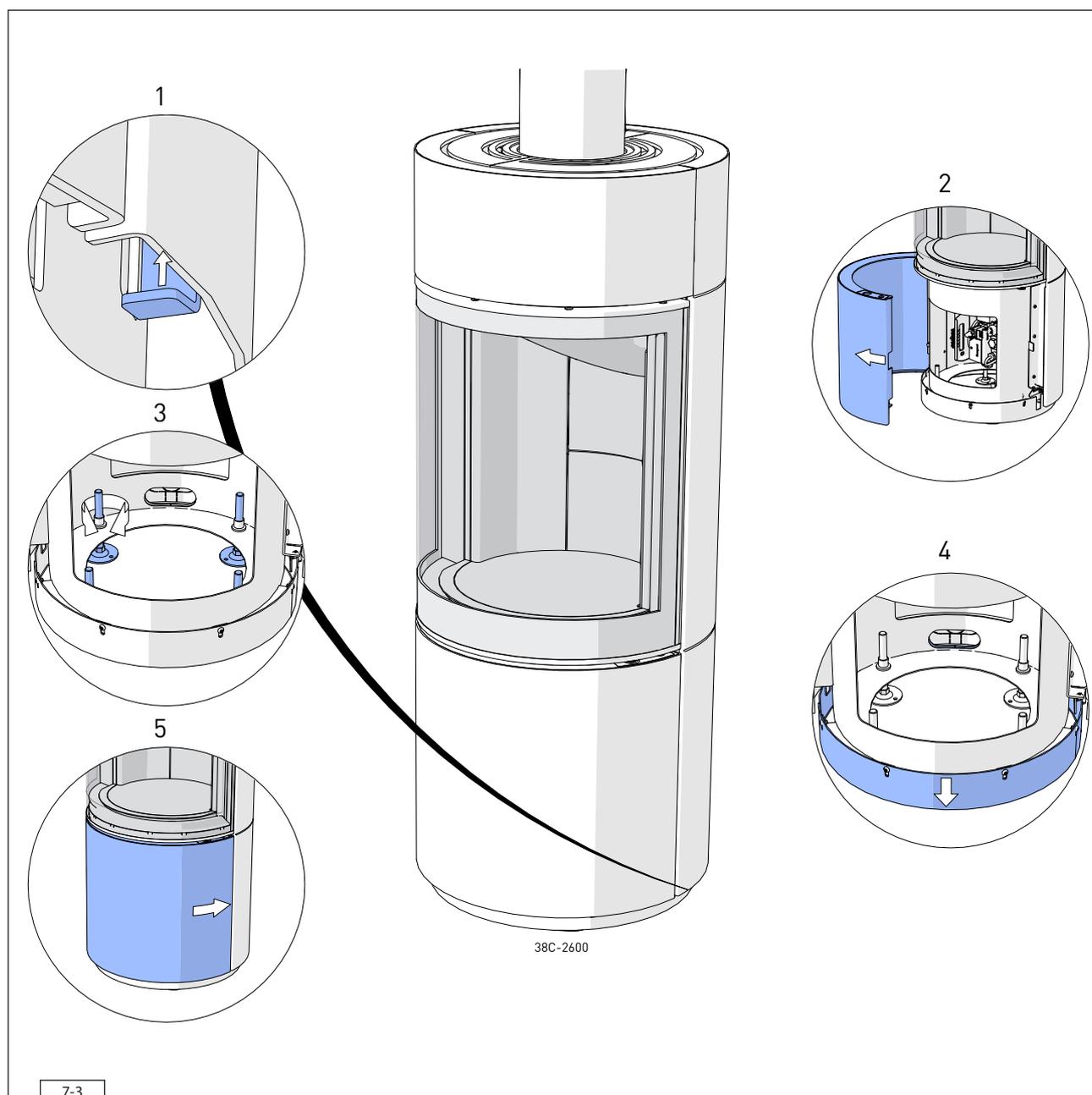
Gehen Sie beim Aufstellen des Geräts wie folgt vor.

- Place the appliance on the location where it will be installed and take the following into account:
  - Indoors on a dry location.
  - The dimensions of the appliance (see fig. 7-1).
  - The length of cables and pipes.
  - Place the appliance in front of a wall that is resistant to a temperature of at least 85°C.
  - Take sufficient measures to prevent a possible wall behind the chimney breast from reaching a temperature that is too high. This also applies to the materials and/or objects located behind the wall.
  - Within the radiation range (see table 4-1 and fig. 7-2) of the fire, make sure there are no combustible objects or materials located there.
  - Place the concentric system in such a way, that it is impossible for a fire hazard to occur (see section 7.3).
  - Do not cover the appliance and/or do not wrap it in an insulation blanket or any other material.





- Ensure a stable arrangement of the appliance to be installed.
- Level the appliance and allow the decorative ring to connect to the floor (see figure 7-3):
  - Press the bottom right lip upwards to unlock the door panel and keep the lip pressed upwards (1).
  - Open the door panel (2).
  - Adjust the appliance to the right height and level it with the 4 adjustable feet. The distance between the floor and the bottom side of the door panel must be approximately 30mm (3).
  - Lower the decorative ring on the floor by loosening the bolts by a few turns, lowering the ring and re-tightening the bolts (4).
  - Close the door panel, it is locked automatically (5).





## 7.3 Concentric system

### 7.3.1 General

The appliance is connected to a flue gas discharge / combustion air supply system delivered by DRU, hereafter referred to as the concentric system. DRU has different concentric systems in its range.

In the case of a concentric system, the inner tube is used as flue gas discharge. The combustion air is supplied by the outer tube. As a result, the latter always has a relatively low temperature. For the maximum temperature of the outer tube, see the technical data in table 4-1. The concentric system has been tested in combination with the appliance. Other concentric systems are not permitted.

See the table below for the different concentric systems of DRU and their application:

Table 7-1: Concentric systems and their application		
System	Permitted for this appliance?	Remarks
LAS AG-I 150/100	No	Alu-galva tubes for use inside the building*. Diameter Ø150/100 mm. Cannot be combined with the SS systems.
LAS ES-I 150/100	Yes	SS tubes for use inside the building*. Diameter Ø150/100 mm. Using an adapter, it is possible to construct further with the insulated LAS ES-E 200/150/100 system.
LAS ES-I 200/130	Yes	SS tubes for use inside the building*. Diameter Ø 200/130. Using an adapter, if permitted (see section 7.2.2 to 7.2.4), it is possible to construct further with LAS-ES-I 150/100.
LAS ES-E 200/150/100	Yes	Insulated SS tubes. Discharge diameter Ø150/100. External diameter Ø 200 mm. Intended for use inside or outside building for placement in, for example, timber frame construction, execute with 0 mm distance along combustible material etc. It is not possible to continue building with an adapter with LAS ES-I 150/100.
AS PV-I 100/60	Yes	Optional discharge system with fan for discharge up to approx. 60 metres long.

\* With the exception of the components intended for that purpose, such as roof and wall terminals.

The diameter of the concentric system appliance connection can be found in table 4-1. By means of natural draft, the flue gases are discharged to the outside, this can be achieved by means of a wall terminal (C11) or a roof terminal (C31). If necessary, an existing chimney can be used (C91, see section 7.3.5).

In addition, if combined with PowerVent®, it is possible in many cases to discharge the flue gases with a smaller diameter (AS PV-I 100/60).

- Only use the concentric system supplied by DRU This system has been tested in combination with the appliance. DRU cannot guarantee a proper and safe operation of other systems and does not accept any responsibility or liability for this.
- Use a chimney kit for making a connection to the chimney; this can be supplied by DRU.
- For terminals, observe the information in table 7-2.

Table 7-2: Terminals				
System	Hole diameter and execution			
	Combustible material		Non combustible material	
	Ø (mm)	Notes	Ø (mm)	Note
LAS AG-1 150/100 LAS ES-I 150/100	≥250	The terminal hole may be covered with a rosette made of non-combustible material. This terminal hole must be ventilated. A 2 mm wide ventilation opening around the tube is sufficient. The space between the tube and the combustible material may not be filled with insulation material.	≥154	Make terminal hole all around 2mm larger than the diameter of the concentric system to prevent "ticking" and such like. The terminal hole does not require ventilation.
LAS ES-I 200/130	≥300		≥204	
LAS PV-I 100/60 (also see: installation manuel PowerVent®)	≥200		≥104	
LAS ES-E 200/150/100	≥204	The distance from combustible material may be 0 mm. The terminal hole does not require ventilation. If a clip binding is placed in a terminal hole, a hole diameter of Ø230 mm must be maintained.	≥204	Make terminal hole all around 2mm larger than the diameter of the concentric system to prevent "ticking" and such like. The terminal hole does not require ventilation. If a clip binding is placed in a terminal hole, a hole diameter of Ø230 mm must be maintained.

- ⚠ - Maintain a distance of at least 50 mm between the outside of the concentric system and the walls and/or ceiling. If the system is built in (for instance) a cove, it should be made with non combustible, heat-resistant material all around it. This does not apply to the insulated concentric system (LAS ES-E 200/150/100).
- Some heat-resistant insulation materials contain volatile components that will spread an unpleasant smell for a prolonged time; these are not suitable.

The concentric system is constructed from (the flue spigot of) the appliance.

If, due to constructional circumstances, the concentric system is placed first, it is possible to connect the appliance by means of a telescopic pipe piece.

Place the concentric system as follows:

- Build the system up from (the flue spigot of) the appliance.
- Connect the concentric pipe pieces and, if necessary, the bend(s).
- Apply a clip binding with silicon sealing ring on each connection (does not apply to LAS ES-E 200/150/100, here the sealing ring is inside the tube).
- Use a sheet metal screw to fix the clip binding to the pipe on locations that cannot be reached after installation.
- Attach the concentric system with sufficient fastening brackets, so that the weight is not resting on the appliance. Observe the following;
  - Place the first fastening bracket 0.5 metre from the appliance, at the most.
  - Place a fastening bracket maximum 0.1 metre from each bend, if the bends are more than 0.25 metre away from each other. If two bends are closer to one another than 0.25 metre, 1 fastening bracket between these bends will be sufficient.
  - At least every 1 metre, place a fastening bracket at slanted and horizontal sections.
  - At least every 2 metres, place a fastening bracket at vertical sections.
- Fasten a roof terminal with anchor cables, if it protrudes more than 1,5 metres above the terminal.
- Determine the remaining length for the wall or roof terminal and cut it to size, make sure the correct insertion length is maintained.
- Place the wall terminal with the (groove/folded) seam at the top. Attach the wall terminal from the outside by means of four screws.

### 7.3.2 Roof terminal (C31)

The roof terminal can end in a sloping and a flat roof.

The roof terminal can be supplied with an adhesive plate for a flat roof or with a universally adjustable tile for a sloping roof.

When using a roof terminal (C31), the following applies:

The construction of the chosen system has to be allowed. The working method below indicates how the permissibility is determined of a concentric system when using a roof terminal.

- Count the number of 45° and 90° bends required (15° and 30° bends are also allowed; these are not counted).
- Count the total number of whole metres of horizontal pipe length.
- Count the total number of metres of vertical and/or sloping pipe length (roof terminal excluded).
- Find the number of required bends and the total horizontal pipe length (see table 7-3, columns 1 and 2).
- Find the required total vertical and/or sloping pipe length (see table 7-3, row 1).
- A box with a letter means that the chosen concentric system is permitted.
- Determine the adjustment of the appliance (see table 7-4).
- Adjust the appliance correctly with, for instance, a restrictor slide and an air inlet guide (see section 8.2).

Table 7-3: Determination of the permissibility of a concentric system with roof terminal													
G20/G25/G25..3	Total number of metres horizontal pipe length	Total number of metres vertical and/or sloping pipe length											
		1	2	3	4	5	6	7	8	9	10	11	12
<b>No bends</b>	<b>0</b>	B	B	B	C	C	C	C	C	D	D	D	D
<b>2 bends</b>	<b>0</b>	A	A	B	B	B	C	C	C	C	C	D	D
	<b>1</b>		A	A	B	B	B	C	C	C	C	C	
	<b>2</b>			A	A	B	B	B	C	C	C		
	<b>3</b>				A	A	B	B	B	C			
	<b>4</b>					A	A	B	B				
	<b>5</b>												
<b>3 bends</b>	<b>0</b>	A	A	A	B	B	B	C	C	C	C	C	D
	<b>1</b>		A	A	A	B	B	B	C	C	C	C	
	<b>2</b>			A	A	A	B	B	B	C	C		
	<b>3</b>				A	A	A	B	B	B			
	<b>4</b>					A	A	A	B				
	<b>5</b>												
<b>4 bends</b>	<b>0</b>	A	A	A	A	B	B	B	C	C	C	C	C
	<b>1</b>		A	A	A	A	B	B	B	C	C	C	
	<b>2</b>			A	A	A	A	B	B	B	C		
	<b>3</b>				A	A	A	A	B	B			
	<b>4</b>					A	A	A	A				
	<b>5</b>												
<b>5 bends</b>	<b>-</b>												

 Situation is not permissible

Table 7-4: Conditions for setting the appliance when using a roof terminal			
G20/G25/G25.3			
Situation	Restrictor slide	Restrictor slide (Distance in mm)	Air inlet guide
A	NO	-	-
B	YES	42	-
C	YES	32	-
D	YES	27	-



**7.3.3 Wall terminal (C11)**

When using a wall terminal (C11), the following applies:  
The construction of the chosen system has to be allowed.

- Check that the vertical pipe length falls within the minimum length (see table 7-5).
- Check that the horizontal pipe length (wall terminal excluded) falls within the minimum and maximum length (see table 7-5).
- 💡 In the horizontal section, 1 bend of 90° may be included. This bend counts for 2 metres. This means that the maximum allowed length is reduced by 2 metres. A 45° bend counts for 1 metre.
- Determine the correct adjustment of the appliance (see table 7-5).
- Adjust the appliance correctly with, for instance, a restrictor slide and an air inlet guide (see section 8.2).

The rosette of the wall terminal is too small to seal the opening in case of passage through combustible material. That is why a heat-resistant intermediate plate of sufficient size should first be mounted to the wall. Then, the rosette is mounted on the intermediate sheet.

- ⚠ When using a wall terminal, place the terminal with a downward slope of 1 cm / metre towards the outside, in order to prevent rain water from raining in.

Table 7-5A	
<b>Setting</b>	<b>Apply</b>
Restrictor slide	X
<ul style="list-style-type: none"> <li>- Only use a 150/100 mm concentric system, including wall terminal.</li> <li>- Factory setting: restrictor slide is supplied separately and must not be placed.</li> </ul>	

Table 7-5B	
<b>Setting</b>	<b>Apply</b>
Restrictor slide	X
<ul style="list-style-type: none"> <li>- Use a concentric system of 150/100mm for the vertical length including bend.</li> <li>- Directly after the bend or up to maximum 0.5 m after the bend, enlarge the concentric system to 200/130 mm including wall terminal.</li> <li>- Factory setting: restrictor slide is supplied separately and must not be placed</li> </ul>	





#### 7.3.4 Connection to an existing chimney

The appliance can be connected to an existing chimney (C91). A 100 mm diameter flexible SS pipe is placed in the chimney for discharging flue gases. The surrounding space is used as combustion air supply. Use the DRU spacer here. Place this spacer every three metres.

In case of an appliance connection of  $\varnothing 200/130$  mm, 0.8 metres of concentric system must first be connected vertically. Reduce the concentric system after the first 0.8 metres to a diameter of 150/100 mm. The concentric system of 150/100 can be connected to an existing chimney.

The following requirements apply when connecting to an existing chimney:

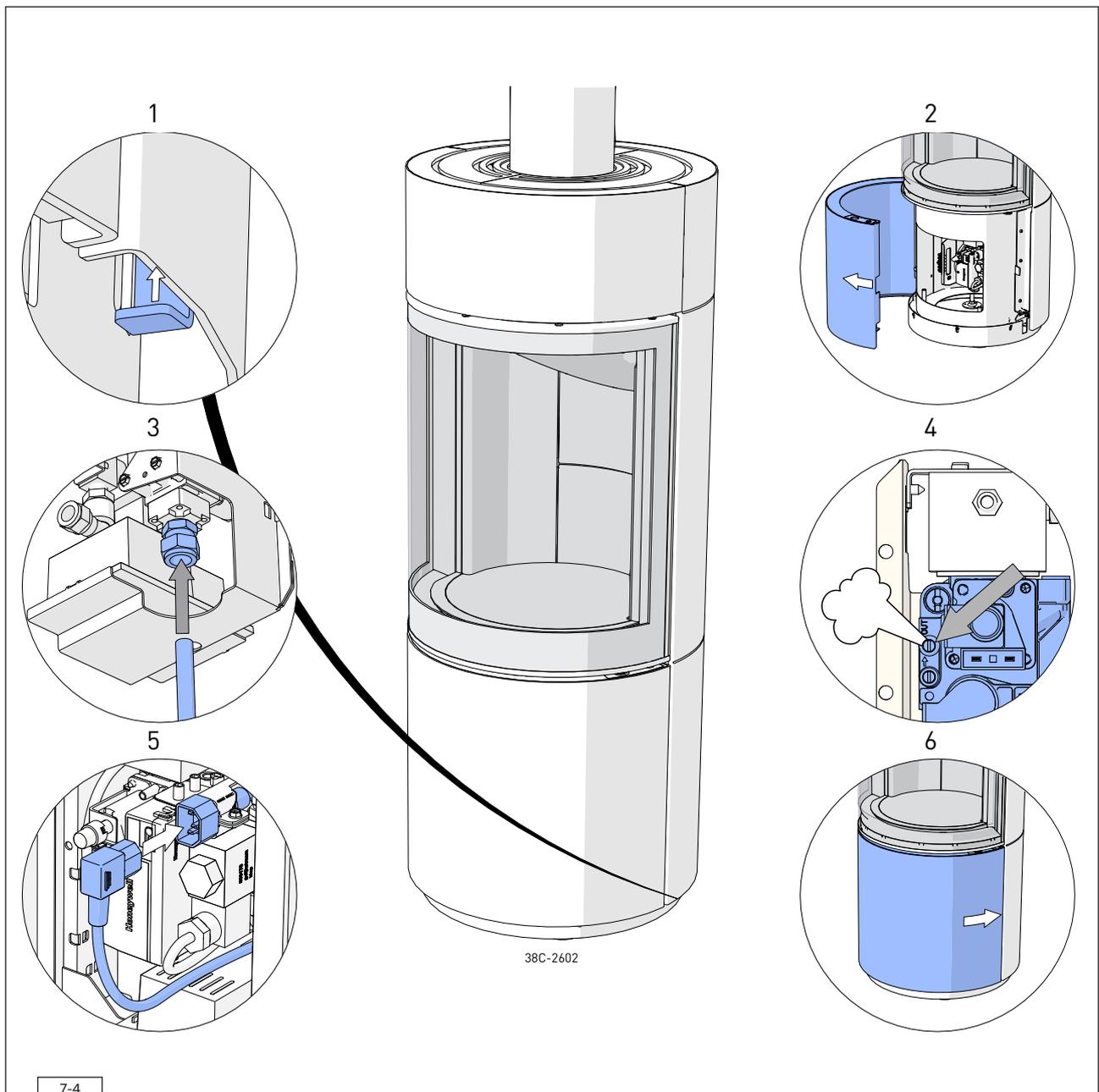
- Only allowed when used in combination with the special DRU chimney kit.
- The internal dimensions should be at least 150 x 150 mm.
- The vertical length has a maximum of 12 metres.
- The total horizontal pipe length may have a maximum length (see table 7-3).
- The existing chimney has to be clean.
- The existing chimney has to be tight.

For adjusting the appliance, the same conditions/instructions apply as for the concentric system described above.

### 7.4 Connecting the appliance control

The appliance control is placed in such a way that all components and all adjustment, measurement and control facilities are within reach and the components are working optimally (see fig. 7-4).

- Press the bottom right lip upwards to unlock the door panel and keep the lip pressed upwards (1).
- Open the door panel (2).
- Connect the gas pipe with gas tap (3) (also see section 6.3). The gas pipe can enter the appliance from the back, remove the press-out elements for this purpose. The gas pipe can also enter the appliance from the bottom side, from the space under the floor with a terminal.
- De-aerate the gas pipe on the gas control (4).
- Connect the 230V mains voltage with protective earth using the correct type of plug. The other side of the power cord can be simply connected with the universal 230V plug behind the door panel at the appliance control. Use this universal 230V plug to disconnect the appliance from voltage, if necessary.
- ⚠ If a 230V power cord is damaged, it should be replaced by a similar power cord or a power cord that is available from your dealer.
- Close the door panel, it is locked automatically (6).
- ⚠ Always close the door panel, because of the electricity connection behind the hatch (230V).





## 8 Appliance

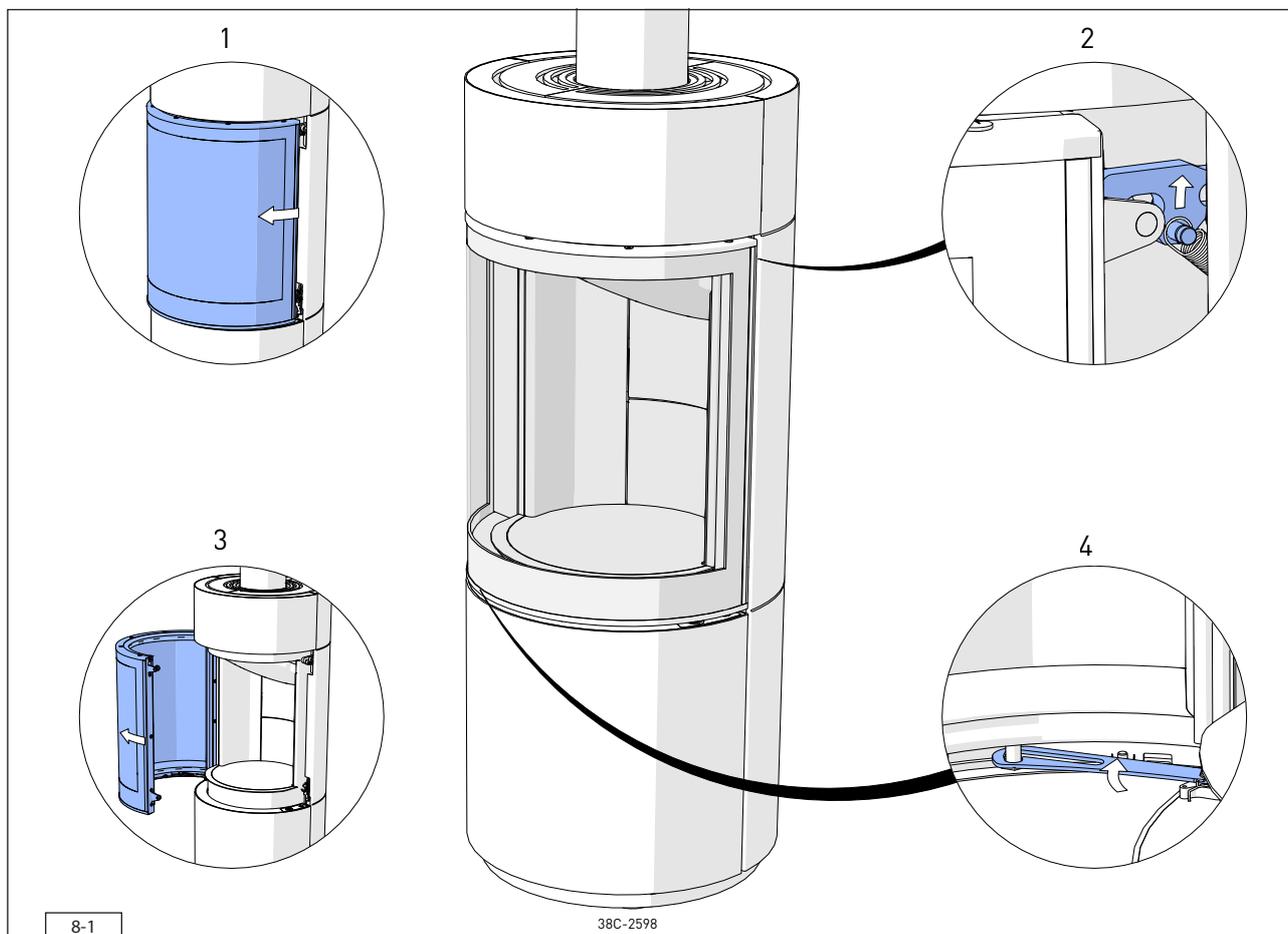
### 8.1 Glass pane

The glass pane is mounted in a frame that can be opened for placing the wood set, adjusting the appliance, performing maintenance or cleaning the inside of the glass pane.

#### 8.1.1 Opening the glass pane

Proceed as follows to open the glass pane (see fig. 8-1).

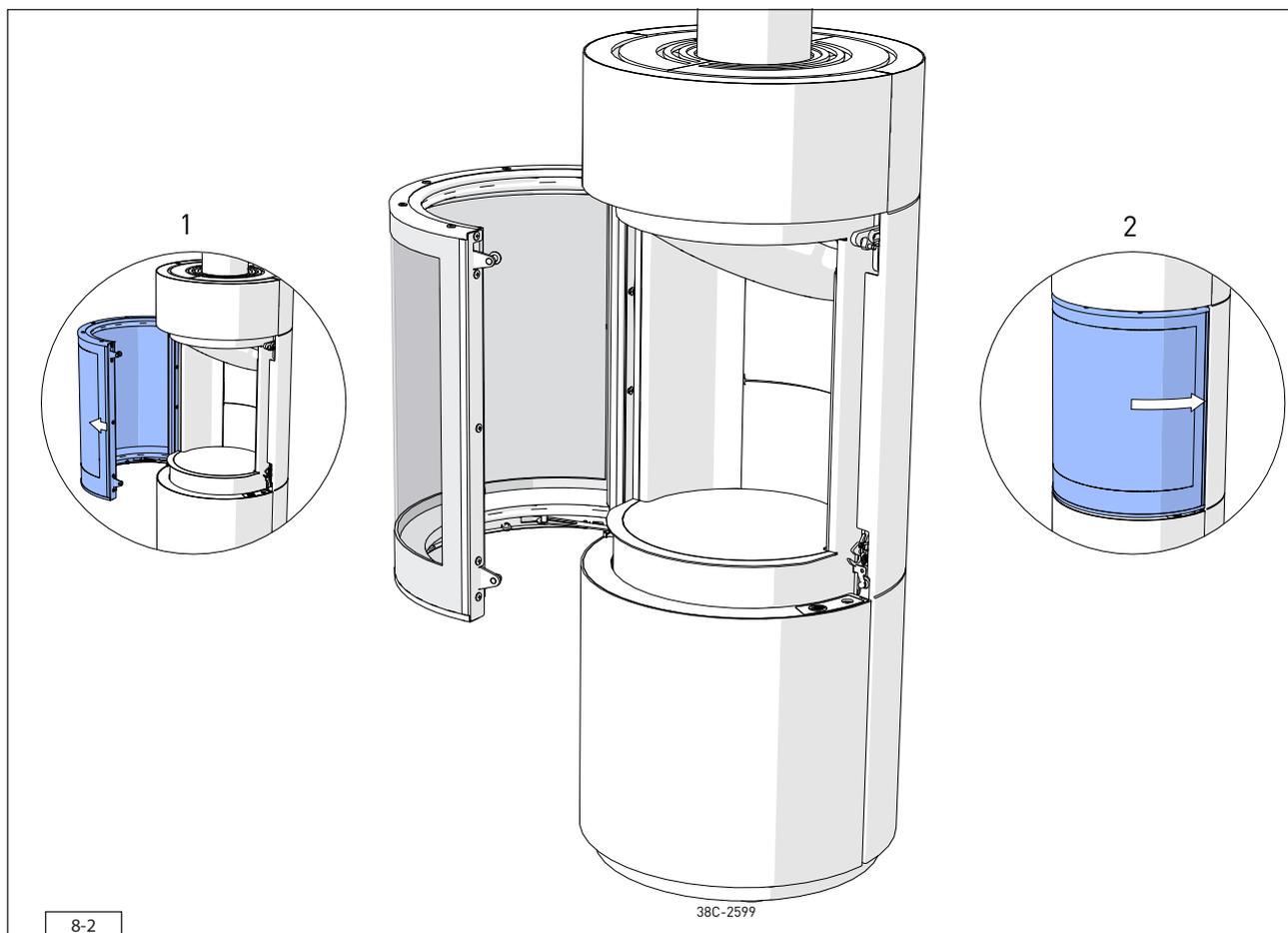
- Partly pull open the glass pane on the right side, there will be some resistance because the glass pane is self-closing (1).
- Lift the hook that is now accessible in the space created on the right top side of the glass pane (2).
- Fully turn open the glass pane (3).
- The glass pane can be locked in the open position, so that the glass pane does not close automatically. Lock the open position by pushing the left bottom lip to the back into the lock (4).



### 8.1.2 Closing the glass pane

Close the glass pane after placing the wood set, adjusting the appliance, cleaning the glass pane or performing maintenance. Proceed as follows to close the glass pane (see fig. 8-2).

- Pull the glass pane further open, so that the open position is automatically unlocked (1).
- Now let go of the glass pane, so it will close automatically (2).
- ⚠ Prevent/remove fingerprints on the glass pane, as they will burn into the glass.

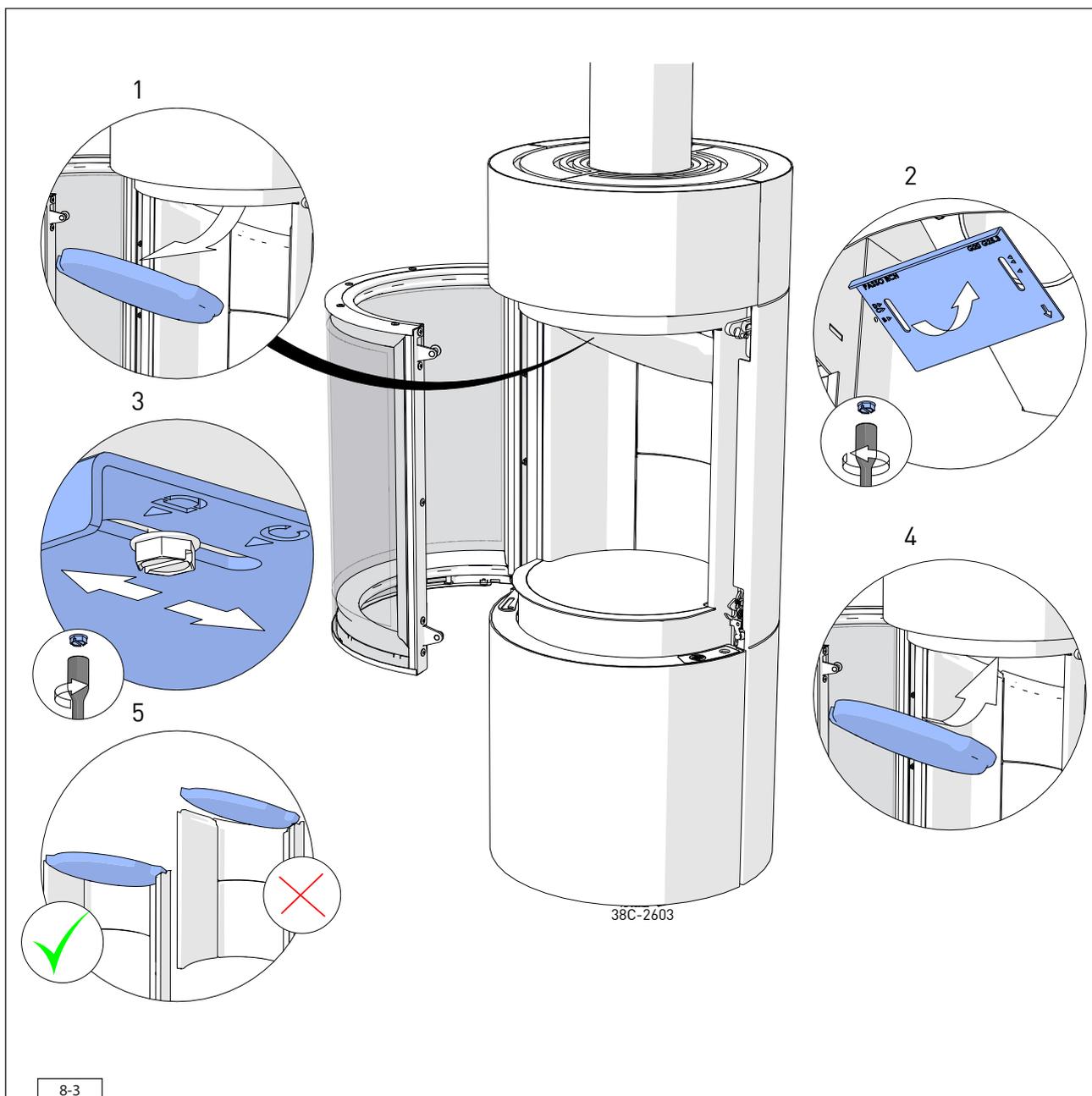


### 8.2 Adjusting the appliance

The appliance has to be set in such a way that it works correctly in combination with the discharge system. For this purpose, it is possible to place a restrictor slide. The conditions for application with wall and roof terminal are indicated in tables 7-3 to 7-5.

The restrictor slide is supplied separately. It is mounted as follows (see fig. 8-3):

- Open the glass pane (see section 8.1.1)
- Remove the upper decor panel (1).
- Unscrew the 2 pre-mounted self-tapping screws from the combustion chamber and place the restrictor slide. The restrictor slide partly falls over the hole of the exhaust pipe, do not yet tighten the self-tapping screws (2).
- ⚠ When being connected, the arrow on the restrictor slide should point downwards.
- Adjust the position of the restrictor slide on the basis of situations B, C and D (see table 7-4). The letter for the position on the restrictor slide corresponds with the letter of the situation (see table 7-3 or 7-5).
- Make sure that the point of the triangle that belongs to the position required is exactly aligned with the centre of the self-tapping screw and tighten the 2 self-tapping screws (3).
- Place back the upper decor plate (4).
- ⚠ Make sure the decor plates connect properly. Gaps between the decor plates result in an incorrect air flow and have a negative effect on the flame picture. (5).



8-3

### 8.3 Wood set

The appliance is supplied with a wood set.

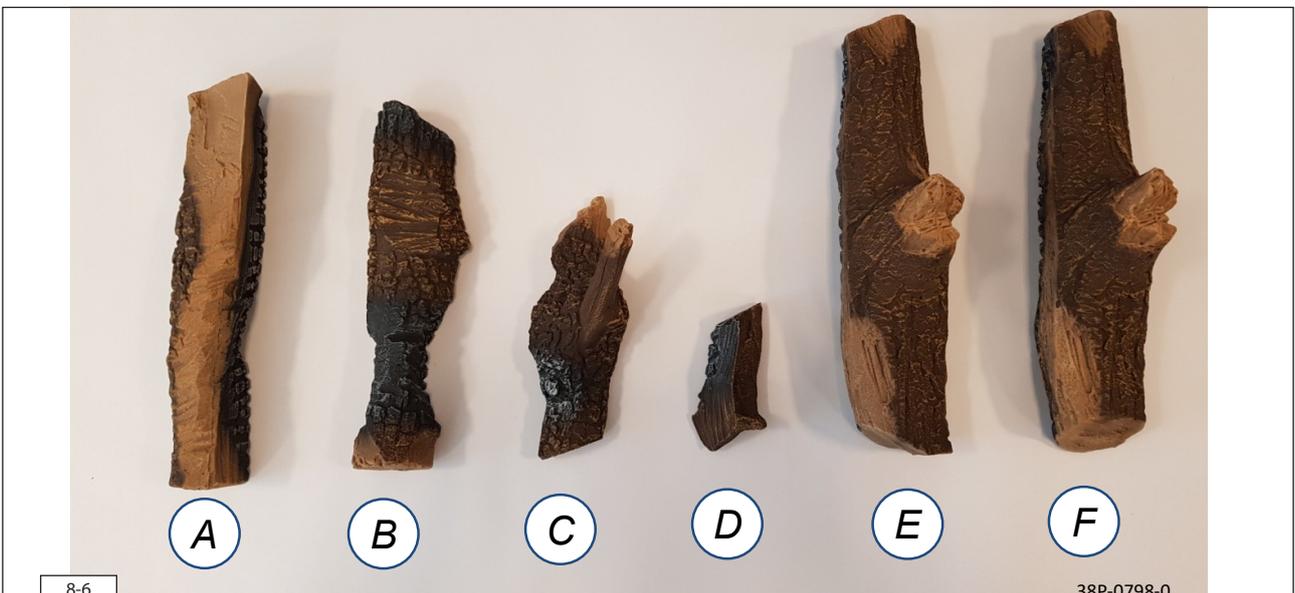
- ⚠ In the figures, the colour is not always shown correctly.
- ⚠ Observe the following instructions to prevent unsafe situations:
  - Only use the supplied wood set.
  - Place the wood set exactly according to the description.
  - Keep the ionization and spark plug and the surrounding space free (see fig. 8-4 and 8-5).
  - Make sure there is no vermiculite dust on the burner.
- ⚠ Place logs exactly as described, because otherwise:
  - The main burner will not ignite properly; which could result in unsafe situations.
  - Contamination will occur much faster due to soot.
  - The flame picture is disrupted.

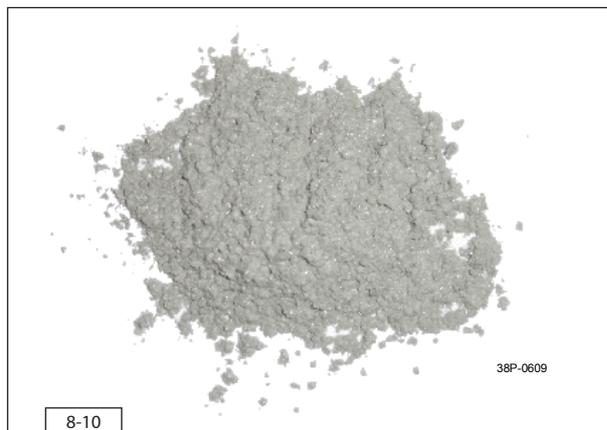
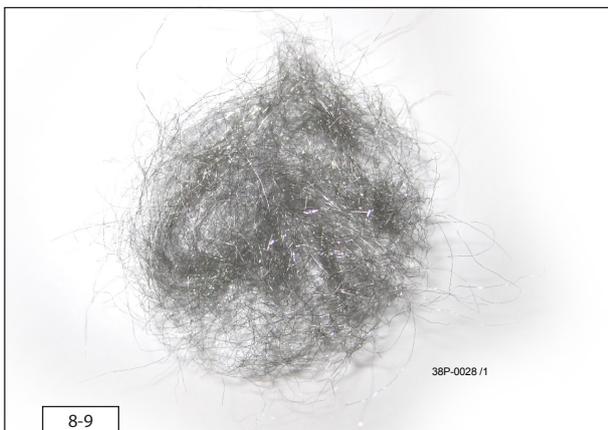
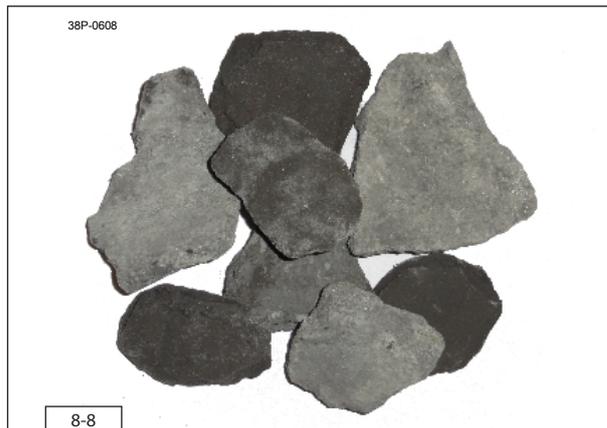


#### 8.3.1 Placing the wood set

The wood set consists of a number of logs (see fig. 8-6), vermiculite (see fig. 8-7), chips (see fig. 8-8), glow material (see fig. 8-9) and ash (see fig. 8-10).

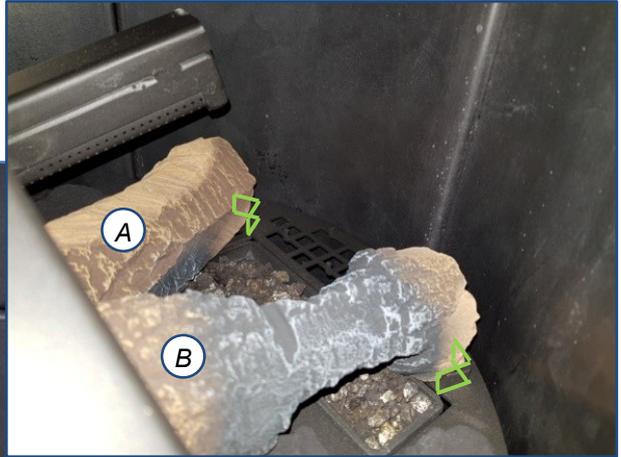
- Fill the V-shaped burner with vermiculite; evenly spread the vermiculite (see fig. 8-11). The vermiculite should not get higher than the edge of the burner.





- The flame picture can be affected by moving the vermiculite.

  - ⚠ - The vermiculite should not get higher than the edge of the burner.
  - The burner deck does have to remain covered with vermiculite, so that the life span of the burner is not reduced.
- Identify logs A to F (see fig. 8-6).
- 💡 - Use the burn stains on the logs for identification.
- Logs E and F are not the same.
- Place log A over the lying burner in the positioning cams, the log should not cover the burner cartridge (see fig. 8-11).
- Place log B in the right rear positioning cam and place the front on the positioning cam of log A.
- ⚠ Log B should not make contact with the standing burner, leave a space of 1 cm.
- Place log C at the back of the appliance, with the left side on the bottom and the right side on log B (see fig. 8-12).
- Place log D in the right front of the appliance next to the lying burner, the rear of log D against the tube of the right standing burner.
- Fill the vermiculite plates with chips, spread the chips evenly. Keep the front side free from chips, so that no chips can get under the glass pane when the glass pane is closed.
- ⚠ The vermiculite plates are provided with square holes, these holes ensure air supply. Do not place more than one layer of chips over these holes.
- Place log E over the left standing burner.
- Place log F over the right standing burner.
- Spread the glow material, if required, over the v-shaped burner and fix the glow material under the chips and/or the wood set.
- ⚠ Keep the space around the ionisation and ignition free from glow material.
- Spread the ash, if required, over the chips, prevent it from getting on the burners.



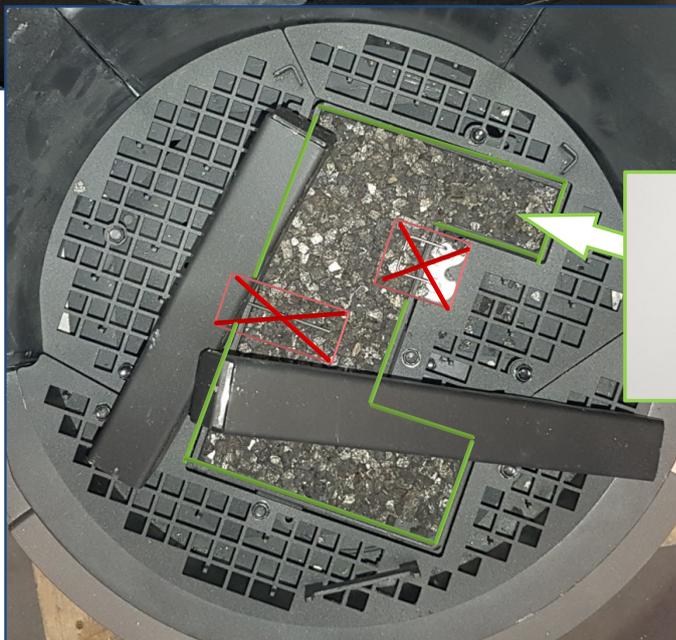
38P-0799-0



38P-0800-0



38P-0801-0

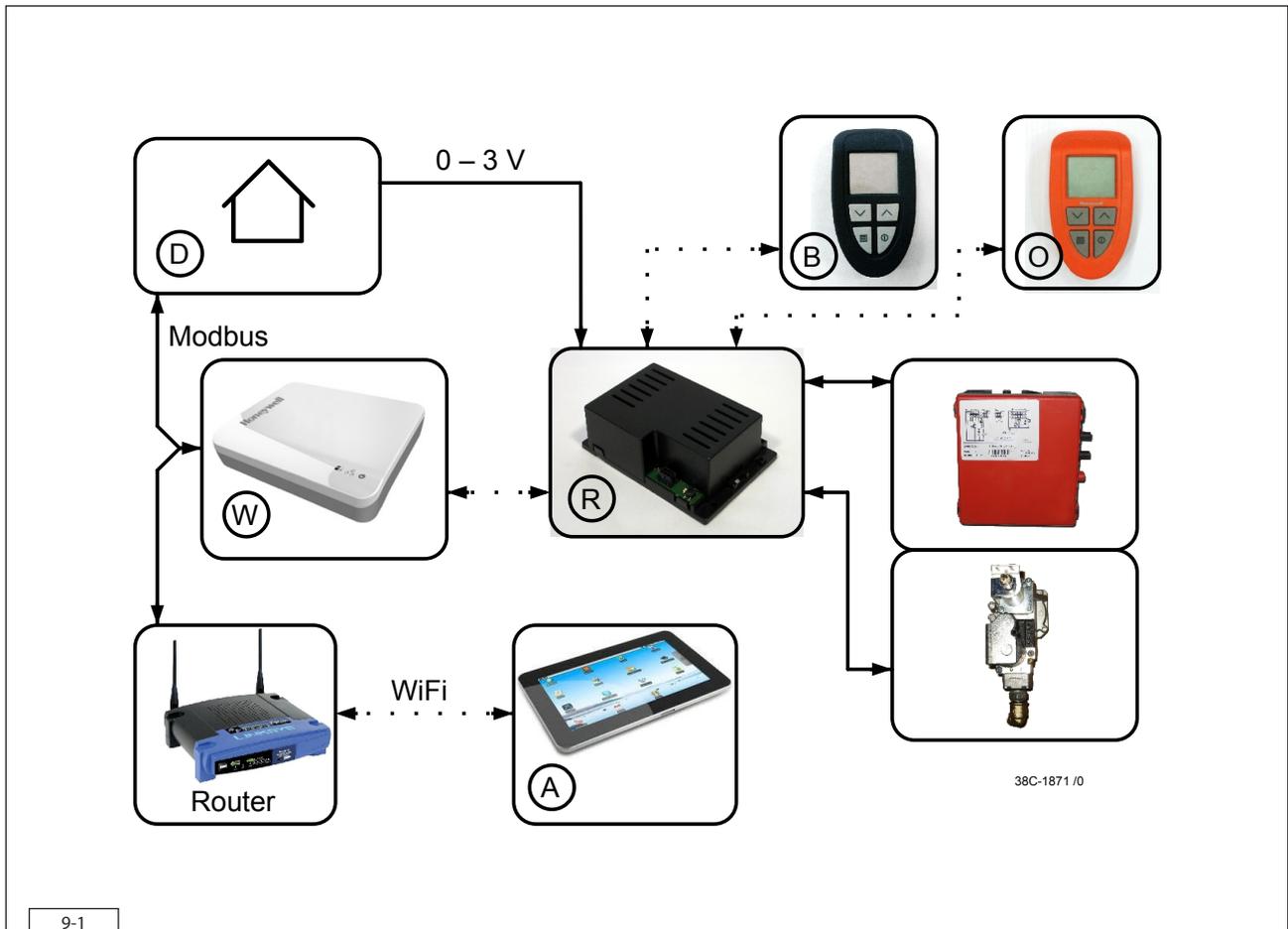




## 9. Control/operation

The appliance is supplied with a wireless black remote control for the user (see fig. 9-1 (B)). As an option, an orange remote control can be supplied for the installer (see fig. 9-1 (O)). Flame height, ignition and switching off are controlled by the black remote control controlling the receiver. Some appliances can also be controlled in an alternative way. These options are described further down in this chapter. The user manual describes the operation of the appliance, including the operation of the remote control and alternative methods of operation.

- ⚠ - Do not ignite the appliance until it is fully installed when it comes to the gas connections, discharge system and electrical components.
- Chapter 6 of the manual supplied applies to an appliance equipped with the CM system.



9-1

### 9.1 Principle of ignition cycle

Below you will find a brief description of how this appliance is ignited. The appliance is off and will be switched on by means of the remote control. The receiver in the appliance will get a signal from the remote control to start the ignition process. This signal is passed on to the burner device, after which, if applicable, the relay for the Powervent System<sup>®</sup> is switched. After an 8 second interval, the ignition on the spark electrodes will start. If no Powervent System<sup>®</sup> is connected, only the relay will switch and the appliance will ignite immediately. The main burner will be ignited at about 50% of its capacity. This will prevent a larger amount of gas in the combustion chamber, if no ignition takes place. When the gas ignites, ionization will have to be detected. In order to make sure the flame has passed over, this will take place at the other side of the burner. When ionization is detected, the gas control will modulate to 100%. In the case of a switchable second burner, the second valve is switched after this (you will be able to hear a 'click') in order to ignite the second burner. After ignition of the second burner, the appliance will always go to full output (full capacity). This will guarantee that the second burner will actually ignite. The second burner can be switched on and off manually, by means of the remote control. In case of switching on manually, the appliance will first return to full load.

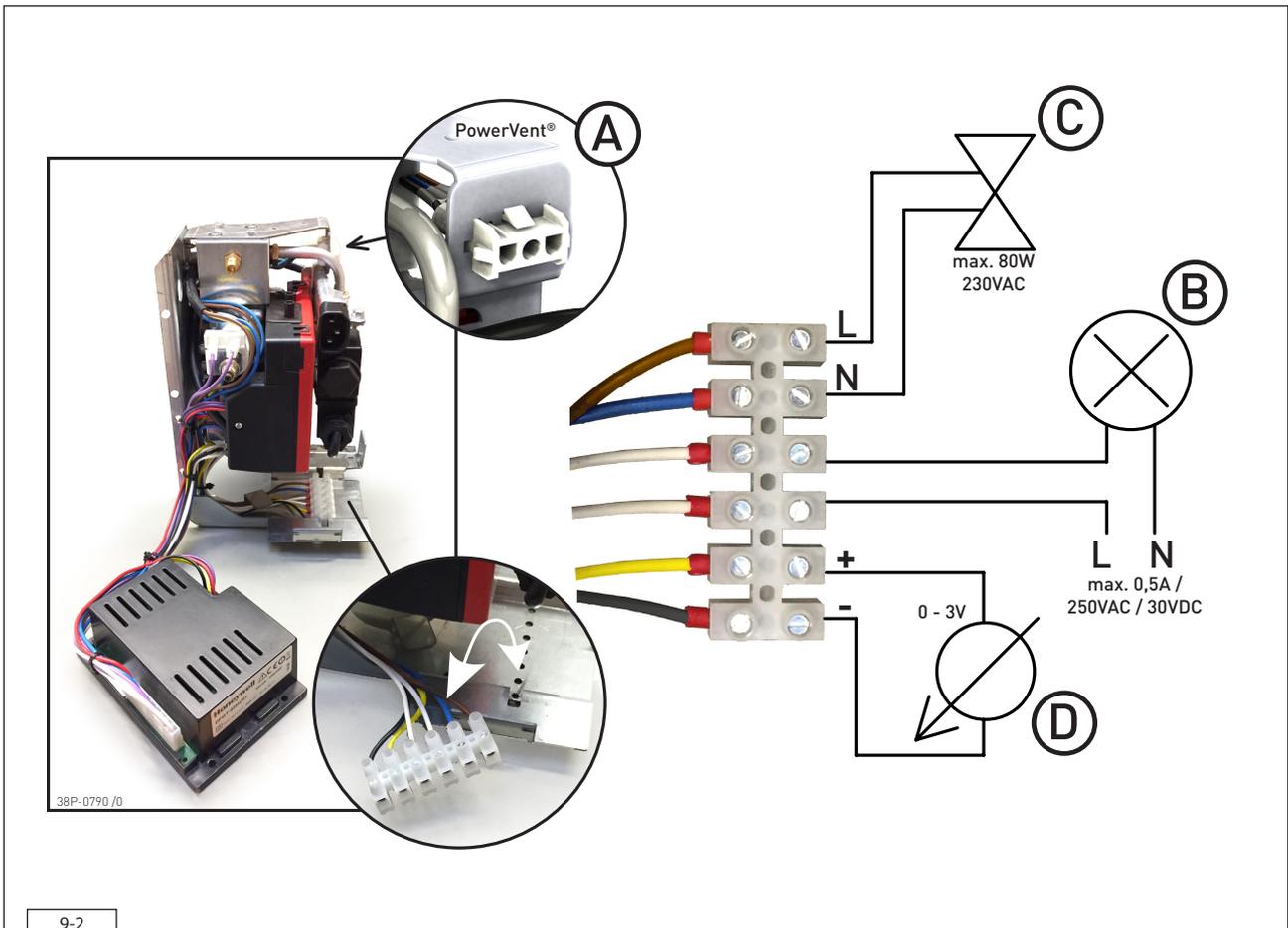


The control unit of the appliance meets strict safety demands. It is possible that the burning appliance switches off automatically and then switches back on again. This is not a failure, but a check. The moment the appliance's control unit is connected to mains voltage, the control unit will perform this check every 24 hours. If the appliance is burning at that time, the appliance will extinguish and then start again immediately. This can be prevented by removing the plug from the socket and immediately inserting it again at a time when the appliance is never or hardly ever burning.

### 9.2 Connecting the switch contact

(if applicable)

It is possible to operate one or more lamps (in case of several lamps, a maximum of 0,5A/250VAC/30VDC) via the remote control of the appliance. You could think of the lamps of Dru's lux elements. For this, you can use switch contact B on the receiver (see fig. 9-2). The switch contact is not polar sensitive.



### 9.3 Connection extra power supply (max. 80W, 230VAC)

(if applicable)

This connection is ideal for possible lighting or a ventilation system in the chimney breast and can be operated by means of the remote control (see Fig. 9-2 (C)). The power supply of this connection is identical to the mains voltage and it can be subjected to a maximum load of 80 Watts.

### 9.4 Remote controls

#### 9.4.1 Black remote control for the user

Proceed as follows to make the black remote control ready for use:

- Place the two penlite batteries (AA) in the battery holder of the remote control.
- Make sure the voltage of the appliance is not switched off for longer than 5 minutes.
- If the remote control is not on 'BND', you must proceed as follows:
- Press the 'menu' button (button with square symbol) on the remote control for at least 10 seconds and then press a few times until 'BND' appears on the screen with the receiving symbol.
- Press the 'arrow up' and 'arrow down' buttons briefly and simultaneously, so that a (flashing) warning triangle and an hourglass appear in the screen as well.
- As soon as logging on is finished, the start screen will appear

💡 All functions are extensively explained in the supplied user manual.

#### 9.4.2 Orange remote control for the installer

By means of the optionally available orange remote control, it is possible to read all information stored in the receiver. In this way, the last 20 error messages can be retrieved, and it will also be possible to read how many times an error occurred. Moreover, this remote control can also be used to adjust the basic settings and to read the magnitude of the ionization current. This remote control is also necessary for a wired home automation control.

### 9.5 Alternative operation

(if applicable)

In addition to the remote control, it is also possible to operate the appliance via an external source. For this purpose, a home automation system can be connected to the receiver. This can be both wired and wireless (see sections 9.5.1. and 9.5.2).

### 9.5.1 Wired

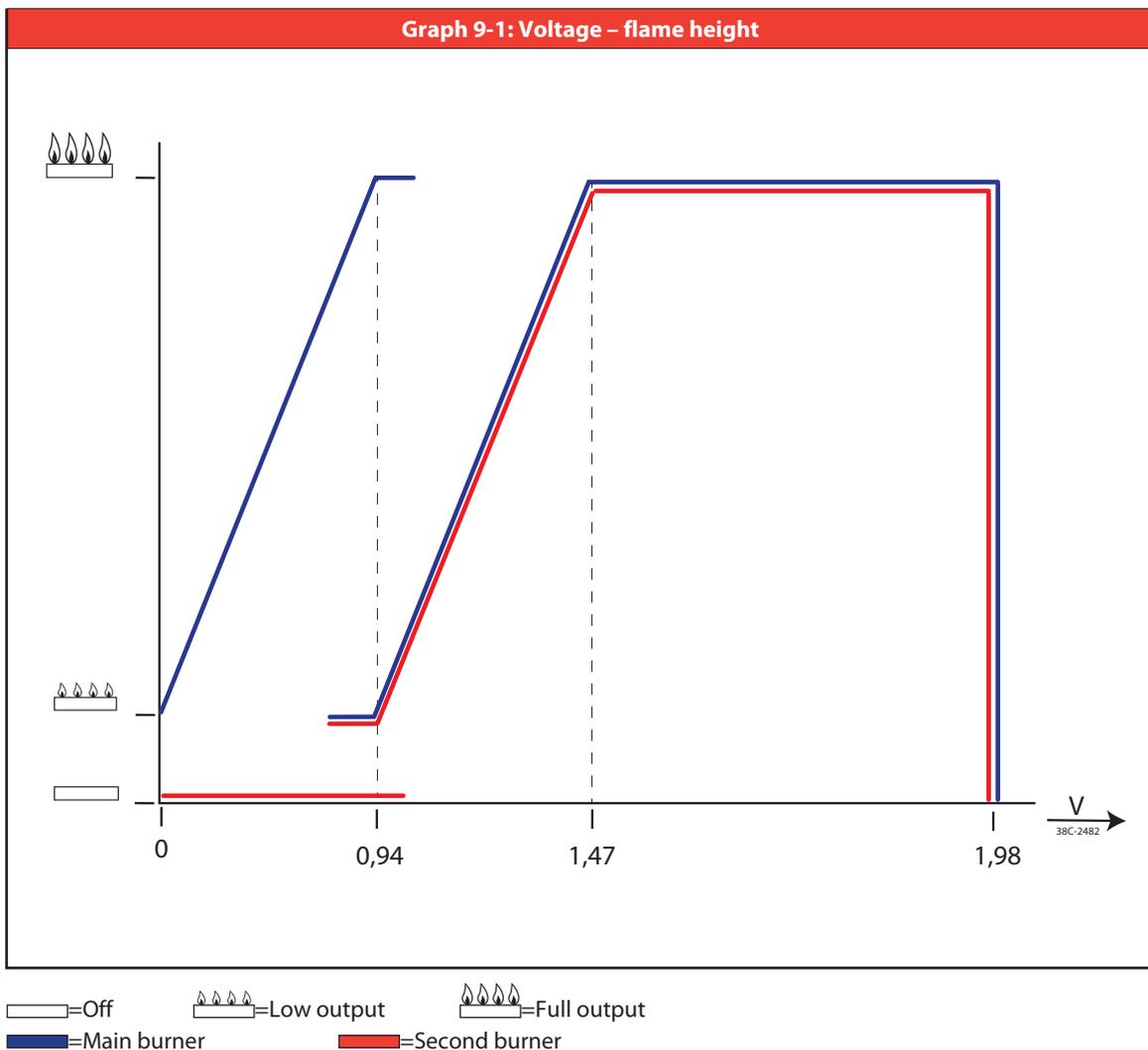
Wired connection of the home automation system to the receiver takes place via a 0-3VDC direct current (see fig. 9-2 (D)).

- ⚠ A higher voltage than 3V will damage the receiver and is therefore not permitted.
- 💡 In case of home automation systems with an output voltage of 0-10V, you should switch the voltage back to 0-3VDC. Use a voltage distributor made of resistors. For example, 2200 ohms and 680 ohms. The voltage above 680 ohms resistance can be used on the input of the 0-3VDC. Low ohmic resistors must be used.

By controlling the height of the voltage, the receiver will be able to calculate the position of the appliance. Graph 9.1 shows the relationship between the voltage, the height of the flame and the number of burners (1 or 2).

Proceed as follows when connecting the home automation system to the receiver:

- Connect the 0-3VDC signal to the connector, to which a black and yellow wire are connected (see fig. 9-2 (D)).
  - Use the orange remote control to set the option for wired connection: go to position 8 in the first menu and select option 2 for an appliance with one burner and option 3 for an appliance with two burners. For this, read the manual for the orange remote control.
- ⚠ The yellow wire is the + pole, the black wire is the - pole. Always connect '-' to '-' and '+' to '+'.



### 9.5.2 Wireless

The wireless connection is divided into 2 types:

- Connection via a 'modbus' protocol.
- Control via an application.

⚠ Only 1 type of wireless connection is possible on the communication module.

#### 9.5.2.1 Connection via 'modbus' protocol

Wireless connection of a home automation system to the receiver is possible via a connection according to the 'modbus' protocol. Such a connection can only be established with a communication module (see fig. 9-1 (W)). This module can be ordered from DRU. This communication module translates the 'modbus' protocol from the home automation system into a wireless signal to the receiver.

When connecting a home automation system via the communication module to the receiver, proceed as follows:

- Use the remote control to test whether the location where the communication module will be placed is within the reach of the receiver.
- Place the remote control on this location and test the reception sensitivity (RSSI).
- Press the 'on/off' button and 'down arrow' at the same time. The value that is now visible, must be between -20 and -70 (see User Manual, "Reception Sensitivity"). If needed, hold the remote control closer to the appliance in order to improve the reception.
- Connect the communication module by means of an RJ45 plug, according to the instructions in the manual that is supplied with this module.
- Now follow the steps described in the 'modbus' protocol manual. It is available from the supplier of the home automation system.

#### 9.5.2.2 Control via application

Also when operating the appliance via a tablet provided with the DRU Control App (iOS or Android), you will need a communication module. This module can be ordered from DRU.

In order to control the application via the DRU Control App, proceed as follows:

- Use the remote control to test whether the location where the communication module will be placed is within the reach of the receiver.
- Place the remote control on this location and test the reception sensitivity (RSSI).
- Press the 'on/off' button and 'down arrow' at the same time. The value that is now visible, must be between -20 and -70 (see User Manual, "Reception Sensitivity"). If needed, hold the remote control closer to the appliance in order to improve the reception.
- Connect the communication module by means of an RJ45 plug, according to the instructions in the manual that is supplied with the communication module.
- Use the instructions for the application in order to install it.

- ⚠ - The DRU Control app functions in accordance with the multicast and communication protocol. Ensure the router is equipped with this. For this, consult the router's installation manual.
- If the DRU Control app is used, the thermostat function no longer applies. The 'DRU Control' application is available from the Appstore, via GooglePlay or the DRU website: [www.drufire.com](http://www.drufire.com)

## 10. Final check

For a good and safe operation of the appliance, the following checks must be performed prior to commissioning.

### 10.1 Gas tightness

- ⚠ All connections must be gas tight. Check the connections for gas tightness. The gas control can be subjected to a maximum pressure of 50 mbar.

### 10.2 Gas pressure/line-pressure

The burner pressure is set at the factory; see data plate.

- ⚠ The line-pressure in domestic systems must be checked, because it can be incorrect.
- Check the line-pressure. See fig. 6-1 (P1) for the measuring nipple on the gas control.
  - Contact the gas company if the line-pressure is too high.
  - If the line-pressure is too low, check this at the gas meter. Contact the gas company if the line-pressure is also too low at the gas meter.

### 10.3 Ignition main burner

For igniting the main burner, see the user manual.

#### 10.3.1 First ignition of the appliance after installation or adjustments

- ⚠ After installation or after work has been performed, keep a safe distance when igniting the appliance for the first time. If gas accumulation has occurred and the gas is ignited, it should be possible for the overpressure to leave the combustion chamber. The pressure will partly open the door so that the pressure can escape.
- ⚠ Make sure the glass pane is clean, because dirt will burn into the glass.

Proceed as follows:

- 1. Always keep a safe distance.
- 2. Start the ignition procedure as described in the User Manual.

The appliance ignites on the main burner with 50% of the full output. Once the main burner has been fully ignited (full flame transfer), the ionization detects flame and the appliance will modulate to 100%. This detection should take place within 15 seconds, otherwise the appliance will enter the malfunction mode. If the appliance has a second separately switchable burner and the main burner continues to burn, the second valve will switch to ignite the second burner. In this case you can hear a clear 'click' sound.

If the main burner DOES ignite:

- 3. Check the flame transfer on the main burner and check that the main burner continues to burn (go to step 8 if the burner continues to burn and to step 6 if the appliance does NOT continue to burn).

If the main burner does NOT ignite:

- 4. Reset the system by pressing the buttons 'arrow up' and 'arrow down' simultaneously.

- ⚠ The system can be reset and re-ignited maximum twice in a row. After that the system enters a hard lock-out and you must wait half an hour before a new attempt can be made. Never make more than 3 attempts to ignite, as this could lead to a dangerous accumulation of gas in the appliance. Make sure there is no more gas in the appliance, before 3 new ignition attempts are made.

- 5. Repeat the ignition procedure until the main burner ignites. If ignition is not successful after a few attempts, this indicates a malfunction (see appendix 1: Malfunctions). Go to step 1 after the malfunction has been resolved.

If the main burner does NOT continue to burn:

- 6. Switch off the appliance.
- 7. Consult the diagram with error messages (see appendix 1: Malfunctions). Go to step 1 after the malfunction has been resolved.

If the main burner DOES continue to burn:

- 8. Switch off the appliance and clean the glass pane prior to commissioning, as described in the user manual.
- 9. Repeat the ignition procedure a few times and perform checks as described in section 10.3.2.
- 10. From now on the main burner should ignite smoothly and continue to burn.
- 11. Clean the glass pane after burning for the first time, as described in the user manual.

⚠ Wait 5 minutes before you re-ignite the appliance.

### 10.3.2 Procedure for igniting the main burner

- ⚠ - The spark plug should ignite the main burner(s) within a few seconds and without popping.
- The main burner(s) must smoothly transfer the flame to the entire burner without popping and continue to burn.
- If the appliance does not ignite after 2 restarts and enters hard lock-out, it may never be reset by disconnecting the appliance from the power supply. If a restart is necessary after all: remove or open the glass pane and make sure the gas is able to escape from the appliance. After this, make the appliance free from voltage for 10 sec. After these 10 sec, the power supply may be reconnected.  
Ignite the appliance in the same way as the first ignition, as indicated in section 10.3.1.

- Check the function of the main burner starting from a cold condition.
- If sparks are observed between the spark plugs, the main burner should burn within a few seconds.

⚠ If NO sparks are determined, it is NOT permitted to continue the procedure.

Consult the diagram with error messages (appendix 1: Malfunctions) if the ignition of the main burner does not meet the above-mentioned requirements.

💡 The flame picture and a good flame transfer can only be properly judged if the glass pane is installed or closed.

### 10.4 Flame picture

The flame picture can only really be assessed once the appliance has been burning several hours. Volatile components from paint, materials, etc. that are vaporised during the first hours affect the flame picture.

- Check that the flame picture is in order.
- Consult the diagram with error messages (appendix 1: Malfunctions) if the flame picture is not correct.

## 11. Delivery

Familiarise the user with the appliance. Provide the user with instructions on putting it into operation, the safety measures, the operation of the remote control and annual maintenance (see the User Manual).

- ⚠ - Tell the user to close the gas tap immediately and contact the installer in case of malfunctions/poor operation. This to prevent unsafe situations.
- Chapter 9 of the manual supplied applies to an appliance equipped with the CM system.
- Indicate the location of the gas tap.
- Point out the precautions in the User Manual against unintended ignition by other wireless remote controls such as car keys and garage door openers.
- Point out the 230 Volt connection.
  
- Instruct the user about the appliance and the remote control.
- When taking the appliance into operation, point out the following:
  - In order to prevent cracks, a chimney breast made of stone-like materials or finished with plaster, must dry at least 6 weeks prior to taking the appliance into operation.
  - Chapters 10 and 11 of the manual supplied apply to an appliance equipped with the CM system.
  - Volatile components from paint, materials, etc., evaporate when burning the appliance for the first time (read chapter 3 of the User Manual!).
  - During evaporation, preferably set the appliance to the highest position.
  - Make sure the room is properly ventilated.
  - Cleaning the glass pane(s).
  
- Give the manuals to the user (all manuals should be stored near the appliance).

## 12. Maintenance

Once per year, the appliance must be checked, cleaned and, if necessary, repaired by a competent installer in the field of gas heating and electricity. At least check that the appliance is working properly and safely.

- ⚠ - Always close the gas tap during maintenance work.
- Check the gas tightness after repair.
- Make sure there is no voltage on the appliance.
- **SS-absolutely do not clean the concentric system (internally) with a steel brush or metal sponge, for example.**  
This will damage the oxide skin and could lead to leaks in the system as a result of pitting corrosion.
  
- Clean the glass pane(s), if necessary.
  
- ⚠ Only clean a glass pane once it has reached room temperature.
  
- ⚠ - Avoid damage to the glass pane(s).
- Avoid/remove fingerprints on the glass pane(s), since otherwise they will burn into the surface.
- Clean the pane(s) as described in the user manual.
- Regularly remove accumulated dirt, as it can burn into the glass.
- Do not use the appliance when a glass pane is broken and/or cracked, until it has been replaced as described from section 8.1.
  
- Inspect the flue gas discharge system.
  
- ⚠ You must always perform a final inspection.
  
- Perform the inspection as described in chapter 10.

### 12.1 Parts

Components that have to be replaced are available at the supplier.

Appendix 1: Malfunctions

Malfunctions			
Error code	Problem	Possible cause	Remedy
F01	Communication loss between receiver and burner device	Communication cable does not make contact	Make sure the connectors of the communication cable make proper contact
		Communication cable defective	Replace communication cable
F02	Receiver overheated (60° above room temperature)	Poor ventilation at receiver	Improve ventilation at receiver
		Receiver makes contact with hot parts	Move receiver in such a way that there is no more contact with hot parts
F03	Internal (receiver) NTC sensor does not work correctly	Receiver defective	Replace the receiver
F04	External NTC sensor, does not work correctly.	External NTC sensor or cabling defective.	Replace NTC sensor or replace cabling.
F05	Internal safety error	Receiver defective	Replace the receiver
F06	Communication loss between transmitter and receiver	Transmitter is out of the receiver's range	Make sure the transmitter is near the receiver
		Obstacles between transmitter and receiver that could interfere with the signal	Remove possible obstacles between transmitter and receiver
		Transmission strength is too weak	Check transmission strength (see User Manual chapter 10)
F08	No ionization	No sparks	Make sure the distance between the electrodes is 3-4 mm
			Replace the spark electrodes
		No gas	Check whether there is gas
			When using PowerVent, check that the gas valve opens
		Poor flame transfer main burner	Check position of blocks/chips
			If necessary, remove dust from burner openings
		No good flame under ionization pin (suffocating flame)	Glass pane strips not placed correctly
			Check restriction and air inlet guide setting
			When using PowerVent, check pressure setting
		Ionization pin placed incorrectly	Place it on the right location.

Malfunctions			
Error code	Problem	Possible cause	Remedy
F08 (Continued)		Ionization pin blocked (measure ionization current when $> 0$ and $< 1.8 \mu\text{A}$ )	Remove any vermiculite or chips from the burner.
		Ionization pin defective (measure ionization current when 0)	Replace the ionization pin
	Door switch does not connect through	Door is not fully closed	Close the door
		Switch is not correctly adjusted	Adjust the spring that presses down the switch
		Switch defective	Replace the switch
F12	ESYS is not released	ESYS is in hard-lock	Wait half hour until ESYS resets itself
F13/F14	ionisation Flame Loss when only the main burner (F13) is on or both burners (F14) are on	Ionisation pin short-circuited	Remove chips, vermiculite or glow material lying against the ionisation pin
		Ionisation current too critical ( $0.8 \leq \text{ionisation} < 1.8 \mu\text{A}$ )	Increase ionisation current to $\geq 1.8 \mu\text{A}$ by rearranging vermiculite and removing chips and dust from the burner openings
		Suffocation due to poor flue gas channel	Check the concentric system
			Check the setting of the appliance
		Suffocation when using PowerVent	Check the pressure setting of the PowerVent system
		24 hour check control (only in case of F13)	Reset with remote control (consult Powervent manual)
		Gas has fallen away	Check gas supply
		Gas control defective (see "A" in appendix 3, fig. 38)	Replace the gas control
F15	No burner device (see "C" in appendix 3, fig. 38)	Burner device came loose	Attach the burner device
		Burner device incorrectly mounted	Mount the burner device correctly
		Pins on the connector on the gas control are bent	Bend them straight
	High limit error	High limit bridge defective	Check High limit bridge ESYS
F16	Hardware Error ESYS	ESYS defective (burner device)	Replace ESYS (burner device)
F17	Disable contact is closed	Window is open (if this contact is present)	Close window
		A bridge has been created over the Disable contact	Remove bridge on ESYS (burner device)





