

# Installation instructions

## Pump Group

For wall hung gas-fired condensing boiler GB162-50/65/80/100



6 720 648 721-000.1TD



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## 1 Key to symbols and safety instructions

### 1.1 Key to symbols

#### Warnings



Warnings in this document are framed and identified by a warning triangle which is printed on a grey background.



Electrical hazards are identified by a lightning symbol surrounded by a warning triangle.

Keywords indicate the seriousness of the hazard in terms of the consequences of not following the safety instructions.

- **NOTICE** indicates that material damage may occur.
- **CAUTION** indicates that minor to medium injury may occur.
- **WARNING** indicates that serious injury may occur.
- **DANGER** indicates possible risk to life.

#### Important information



Important information in cases where there is no risk of personal injury or material losses is identified by the symbol shown on the left. It is bordered by horizontal lines above and below the text.

#### Additional symbols

Symbol	Meaning
▶	a step in an action sequence
→	a reference to a related part in the document or to other related documents
•	a list entry
–	a list entry (second level)

Table 1

### 1.2 Safety instructions

Please observe these instructions for your own safety. You can find a detailed explanation of the format of these instructions in the Installation and Servicing Instructions of the GB162-50/65/80/100.

Observe the following instructions when installing and operating the pump group:

#### Repairs

- ▶ **DANGER OF FATAL ACCIDENT** by unprofessional repair. Do not repair parts with safety functions.
- ▶ **DANGER OF FATAL ACCIDENT** due to electric shock. Before opening the boiler:  
Switch off the power supply to the boiler by pulling the mains plug from the socket.

#### IF YOU SMELL GAS:

- ▶ **CALL** NATIONAL GAS EMERGENCY SERVICE ON 0800 111 999
- ▶ **LPG BOILERS** CALL THE SUPPLIER'S NUMBER ON THE SIDE OF THE LPG TANK
- ▶ **TURN OFF** THE ECV (EMERGENCY CONTROL VALVE) AT THE METER/REGULATOR
- ▶ **DO NOT** TURN ELECTRICAL SWITCHES ON OR OFF
- ▶ **DO NOT** STRIKE MATCHES OR SMOKE
- ▶ PUT OUT NAKED FLAMES
- ▶ OPEN DOORS AND WINDOWS
- ▶ KEEP PEOPLE AWAY FROM THE AFFECTED AREA.

## 2 Regulations



The country-specific standards and guidelines and the technical documents pertaining to the boiler must be observed for the installation and operation of the heating system!

### 2.1 About these instructions

These installation instructions contain important information about the safe and proper installation of the GB162-50/65/80/100 pump group.

These installation instructions are for competent heating engineers (e.g. Gas Safe registered) who, due to their professional training and experience, are experts at dealing with heating systems and gas installations.

### 2.2 Intended use

The pump group must only be installed on the GB162-50/65/80/100 heating boiler.

### 2.3 Regulations

Please ensure that you comply to all regulations at the time of installation.

## 3 Items supplied with pump group

- Check that the packaging is intact upon delivery.
- Check that all items have been supplied with the unit.



Please contact your supplier if anything is damaged or missing.

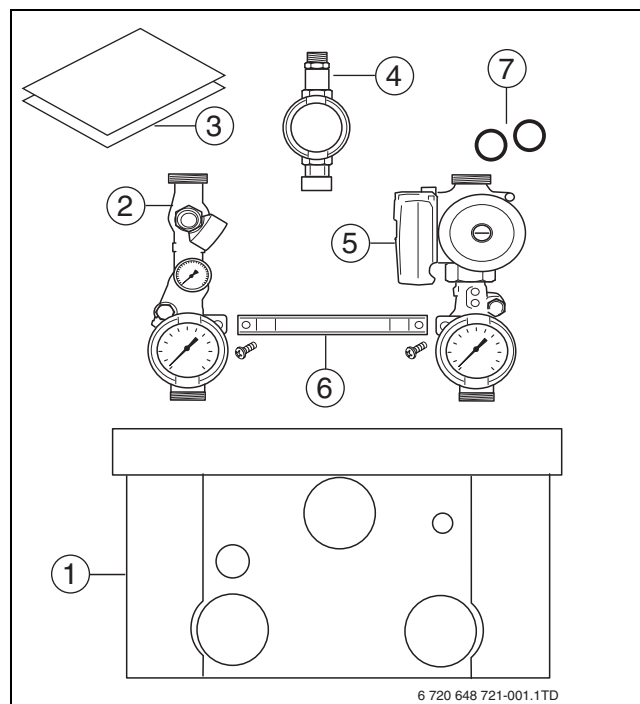


Fig. 1 Items supplied with GB162-50/65/80/100 pump group

- [1] Insulation cover
- [2] Isolating valve, red (CH boiler flow) with drain cock, pressure gauge, thermometer (for pump UPER 25-80) and 4-bar safety valve
- [3] Technical documents
- [4] Gas valve, yellow (GAS)
- [5] Isolating valve, blue (CH boiler return) with pump, drain cock and non-return valve (removable)
- [6] Connecting bracket
- [7] Flat rubber seal 1 1/2" (2x)

Technical drawings of the 6720 648 721-002.1TD unit, showing side and front views with dimensions and labels.

**Side View (Left):**

- Top dimensions: 465 (total width), 152 (width of AIC/FGC assembly), 6 (thickness of side panel).
- Labels: AIC, FGC, CHF/CHR, Gas B.
- Bottom dimensions: 138 (width of PF/PR), 162 (width of CDO), 35 (thickness of base).
- Label: Gas P.

**Front View (Right):**

- Top dimensions: 520 (width of AIC/FGC assembly), 103.5 (height of top section), 135 (height of top section).
- Internal dimensions: 300 (width of internal component).
- Overall dimensions: 1280 (total height), 980 (height to top of main body), 1003 (height to top of main body), 1030 (height to top of main body), 1186 (height to top of main body), 1310 (height to top of main body).
- Labels: AIC, FGC, CHF Gas B CHR.
- Bottom dimensions: 39 (width of CDO), 130 (width of CDO), 130 (width of CDO).
- Labels: PF, Gas P, PR.

**Top View (Bottom):**

- Dimensions: 140 (width of main body), 140 (width of main body).
- Labels: 1), CS.

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2) The pump group is accessory and can be ordered separately. This figure shows a pump group, that isn't ment for DHW supply, but ONLY for central heating hot water supply. There is also a pump group with 3-way valve (accessory) available, which is ment for DHW supply.

[Shortcut]	Description
[CS]	Cap (DO NOT remove; not used in UK)
[CDO]	Condensate drain outlet Ø 24 mm O/D
[CHF]	CH (boiler) flow; G1½" union nut with female thread
[CHR]	CH (boiler) return; G1½" union nut with female thread
[FGC/AIC]	Flue gas/air intake connection: Ø 80/125 for GB162-50/65 and Ø 100/150 for GB162-80/100
[Gas B]	Gas connection to boiler; G1" female thread
[Gas P]	Gas connection to pump group; Rp1" female thread
[PF]	Pump group flow; G1½" male thread, flat seal
[PR]	Pump group return; G1½" male thread, flat seal

## 5 Installation

### 5.1 General installation instructions


- ▶ Connect all pipes without forcing them into place.
- ▶ Make sure that the connections are tight and carry out a gas and water tightness test after completing the connection work (→ boiler installation and servicing instructions).



**DANGER:** Danger of fatal accident from explosive fumes.

- ▶ Only carry out work on gas pipes and fittings if you are properly certified (e.g. Gas Safe registered).

### 5.2 Making the gas connection



**DANGER:** Danger of fatal accident due to gas escaping.

- ▶ Make sure that the factory-fitted flat rubber seal is located in the threaded connection (boiler side) (→ fig. 3, detailed picture).

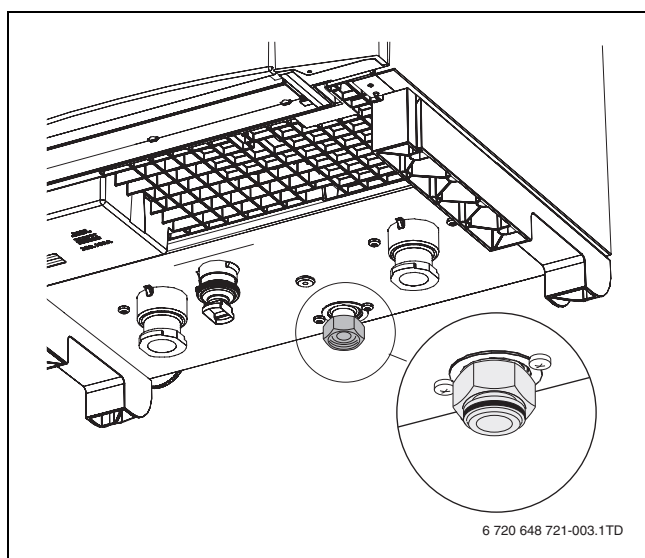


Fig. 3 Rubber seal

- ▶ Install the gas valve [1] onto the gas pipe (GAS) in the boiler.
- ▶ Connect the main gas supply to the gas isolating valve [2] free of strain.

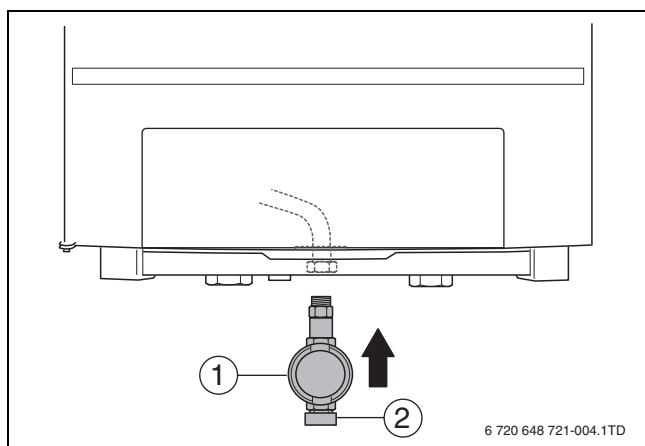


Fig. 4 Making the gas connection

- [1] Gas isolating valve
- [2] Gas connection



We advise you to integrate a gas filter in the gas line.

- ▶ Make the gas connection according to the country-specific standards and regulations.
- ▶ Carry out gas leak test on gas connection using leak detection spray



**WARNING:** Danger of fatal accident from explosive fumes.

Pipes and screw connections may leak after commissioning and maintenance activities have been carried out.

- ▶ Carry out a leakage test.
- ▶ Only use approved detection products to locate leaks.

### 5.3 Removing the non-return valve (if necessary)

If the system pressure is not sufficient according to table 4, page 7, you can remove the integrated non-return valve from single-boiler systems.

#### Selecting the correct pump group

- ▶ Select the correct pump group using table 4.

	GB162-50	GB162-65	GB162-80	GB162-100
Multi-boiler system (cascade system)	UPER 25-80/UPS 25-80 pump group with pump			
Single-boiler system with diverter valve				
Single-boiler system without diverter valve	UPER 25-80/UPS 25-80 pump group with pump	1) UPER 25-80/UPS 25-80 pump group with pump	2)	

Table 2 Selecting the correct pump group

- 1) Only remove the non-return valve from the pump group (beneath the pump) when installing single-boiler systems
- 2) Do not use a pump group or switch, but select a separate pump using the installation and servicing instructions with the boiler.



**WARNING:** Damage to the unit in cascade systems or in single-boiler systems with a switch due to the heating medium flowing back.

- ▶ Only remove the non-return valve from the pump group of a single-boiler system if the residual head (→ table 4, page 7) is not sufficient.

	GB162-50	GB162-65	GB162-80	GB162-100
Multi-boiler system (cascade system)	not allowed			
Single-boiler system with diverter valve				
Single-boiler system without diverter valve	Check the residual head			not effective, use pump

Table 3 Removing the non-return valve

### Removing the non-return valve

Remove the non-return valve before installing the heating flow and return circuits otherwise it cannot be fully removed anymore!

- Remove the pump [1].
- Remove the flat rubber seal [2].

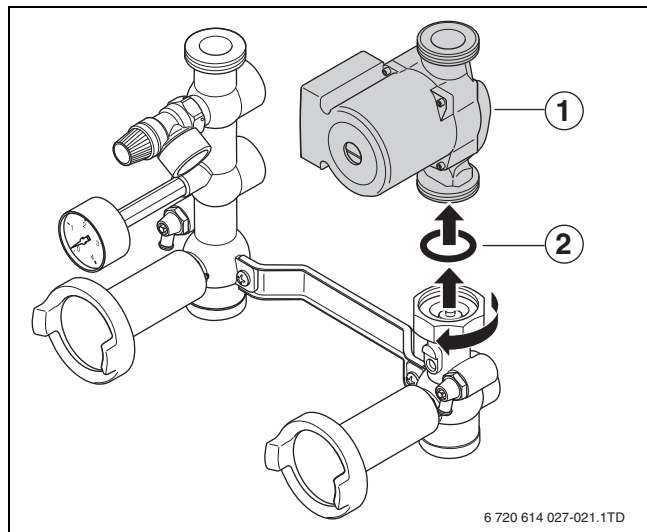


Fig. 5 Removing the pump

- Remove the non-return valve [1]. This will damage the non-return valve beyond repair.

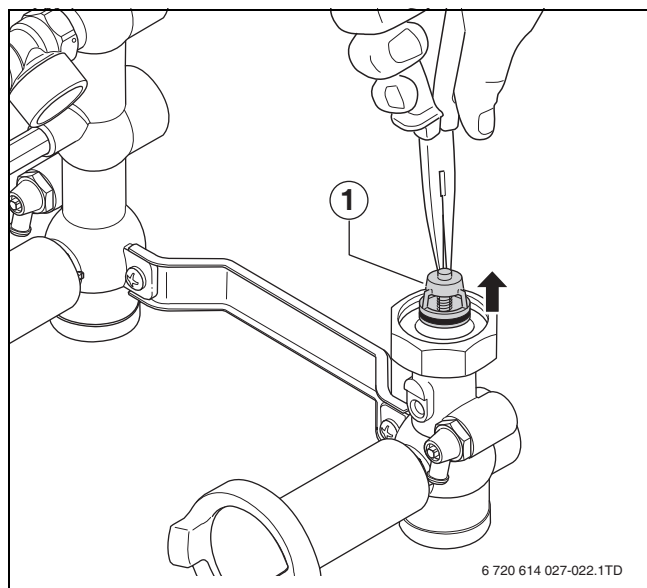


Fig. 6 Removing the non-return valve



**WARNING:** Damage to the unit due to reduced flow or pipes becoming clogged up.

- Make sure that no fragments of the non-return valve stay behind in the pipe.

- Rotate and shake the pump group.

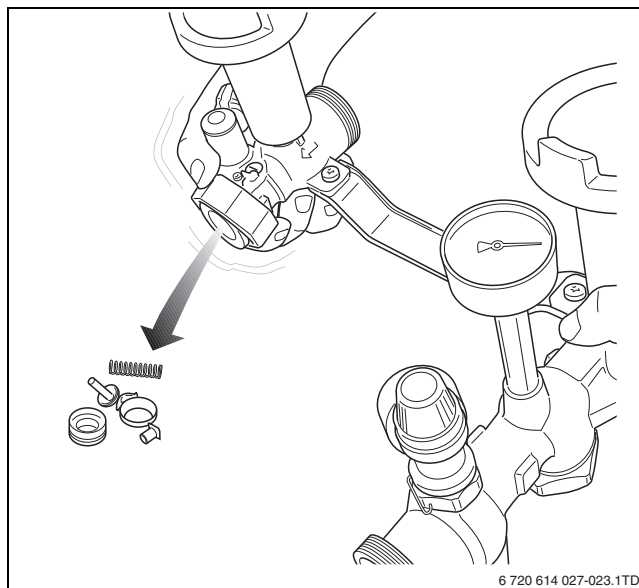


Fig. 7 Removing the rest of the non-return valve

- Then fit back the flat rubber seal [2] and the pump [1].

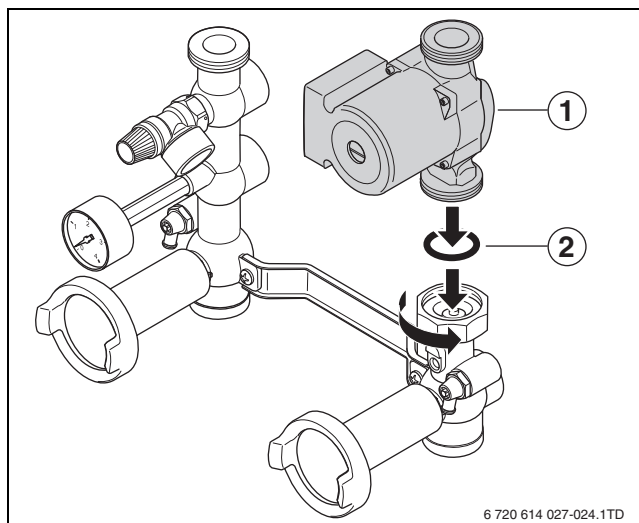


Fig. 8 Fitting the pump

## 5.4 Installing the heating flow and return



To prevent pollution in the heating system we advise you to integrate a dirt filter in the return circuit. When connecting the heating boiler to an existing heating system, this dirt filter must be installed.

- Install the blue and red isolating valve [2 and 6] with the flat rubber seals in place on the CHR and CHF (boiler return and flow) connections.
- Connect the flow pipe to the red isolating valve [3] free of strain. If necessary, use the screw fitting (accessory, [4]).
- Connect the return pipe to the blue isolating valve [7] free of strain. If necessary, use the screw fitting (accessory, [4]).
- Calculate the flow and return pipe diameters taking into consideration the residual head downstream of the pump group with the minimum required volume flow (→ table 4, fig. 24 and fig. 25 on page 11). The minimum diameters of the flow and return pipes are 1½" and Ø 35 mm.

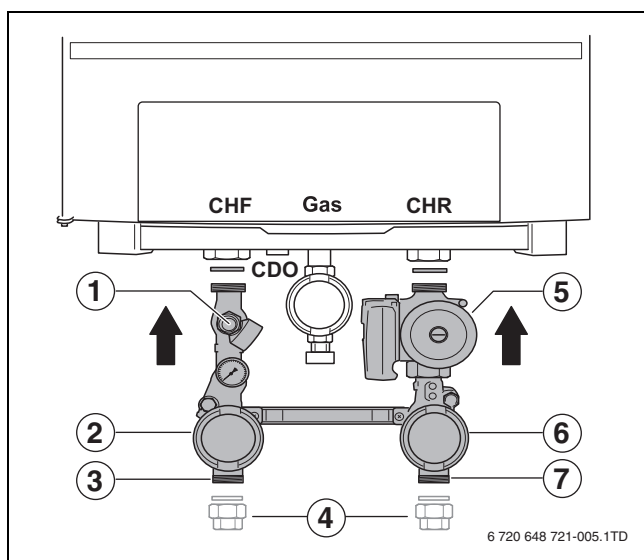


Fig. 9 Installing the isolating valves

- [1] Pressure relief valve
- [2] Isolating valve, red
- [3] Flow connection
- [4] Screw fitting 1" female thread (accessory)
- [5] Pump
- [6] Isolating valve, blue
- [7] Return connection

boiler	pump	non return valve	residual head [mbar]	with minimum required volume flow [l/h]
GB162-50	UPS 25-80	with	1) <sup>1)</sup>	2,200
		without	550	2,200
	UPER 25-80	with	1) <sup>1)</sup>	2,200
		without	550	2,200
GB162-65	UPS 25-80	with	1) <sup>1)</sup>	3,000
		without	375	3,000
	UPER 25-80	with	1) <sup>1)</sup>	3,000
		without	375	3,000
GB162-80	UPS 25-80	with	153	3,600
		without	259	3,600
	UPER 25-80	with	1) <sup>1)</sup>	3,600
		without	219	3,600
GB162-100	UPS 25-80	with	1) <sup>1)</sup>	4,300
		without	1) <sup>1)</sup>	4,300
	UPER 25-80	with	1) <sup>1)</sup>	4,300
		without	1) <sup>1)</sup>	4,300

Table 4 Residual head downstream of pump group with a single-boiler system ( $\Delta T = 20\text{ K}$ )

1) Switch required

- Install a shut-off valve for filter cleaning immediately upstream and downstream of the dirt filter.

**i** When using plastic pipework in the heating system, e.g. for underfloor heating, it has to be oxygen diffusion tight. If this pipework does not comply with the relevant standards, a heat exchanger must be integrated to separate the systems.

### Installing the differential pressure controller

In situations where there is no low loss header, installing a by-pass valve with a differential pressure controller would be required.

If a low loss header is present, it may be required - depending on the situation - to install a differential pressure controller to the secondary side of the open manifold. This serves to protect the secondary pump against overheating as a result of insufficient flow.

### Installing the drain cock

Since the isolating valve for the return circuit already has an integrated filling and drain valve, fitting a drain valve is not necessary.

### Installing the non-return valve

Since the isolating valve for the return circuit (blue) already has an integrated non-return valve, fitting a non-return valve in the return circuit is not necessary.

## 5.5 Rotating the pressure relief valve

**i** To prevent the pressure in the heating system from becoming excessively high, a pressure relief valve is required. A 4-bar pressure relief valve forms part of the pump group [1].

- Remove the retaining pin from the pressure relief valve body (step 1).
- Rotate the valve body (step 2).

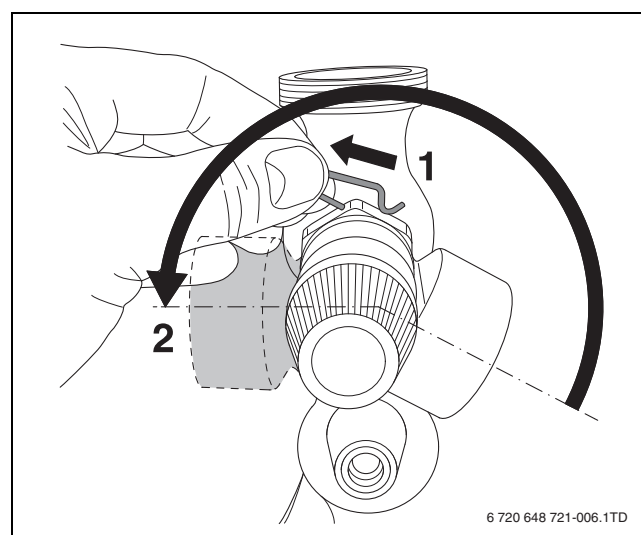


Fig. 10 Removing the retaining pin

- Re-fit the retaining pin through the valve body.

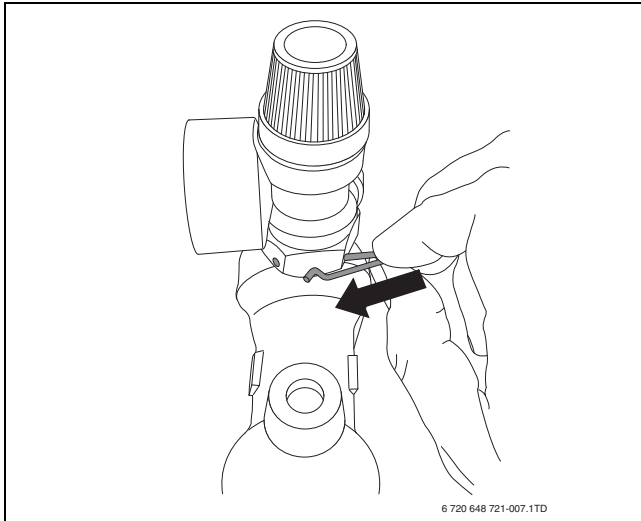


Fig. 11 Re-fitting the retaining pin

- Fit the compression elbow [1] (supplied packed with the boiler) using thread sealant.
- Fit a 22 mm metal discharge pipe [2].

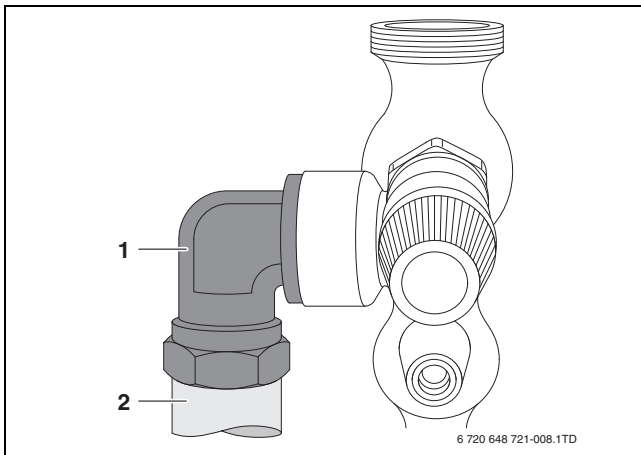


Fig. 12 Fitting the compression elbow with discharge pipe

## 5.6 Installing the syphon

**! DANGER:** Danger of fatal accident due to poisoning.

- If the syphon is not filled with clean water, flue gas can escape and put people's lives at risk.

- Fill the syphon (supplied with the boiler) with clean water.

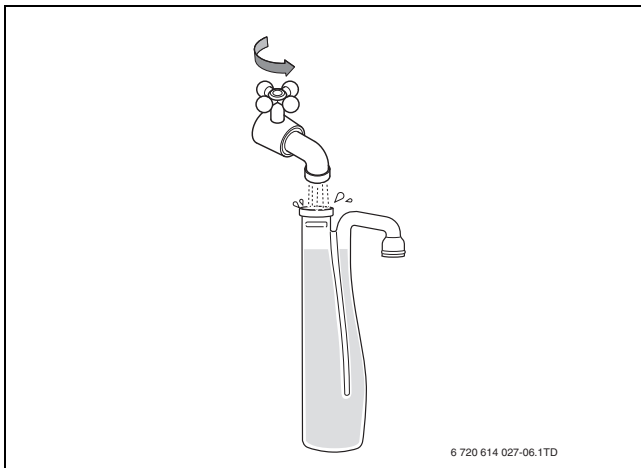


Fig. 13 Filling the syphon with clean water

- Connect the syphon [1] to the condensate drain outlet (CDO).



The trap is fitted with a bayonet connection. After pushing [1.] the trap upwards into place, you have to turn it a ¼ turn anticlockwise [2.] until it locks into position.

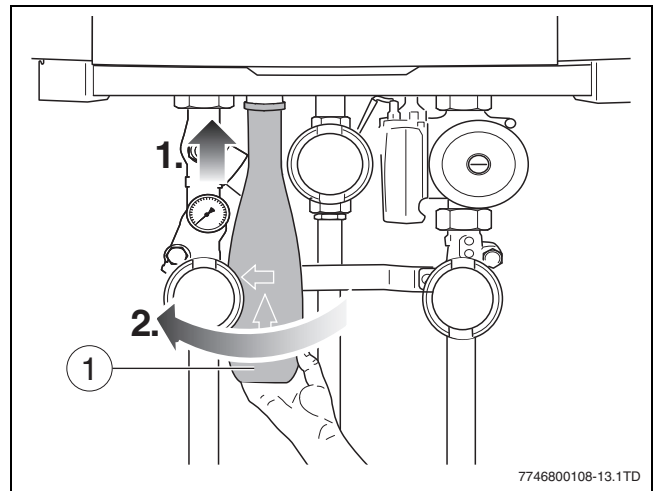


Fig. 14 Installing the syphon

[1] Syphon

- Connect the syphon hose [3] and the rubber sleeve [2] to the syphon [1].

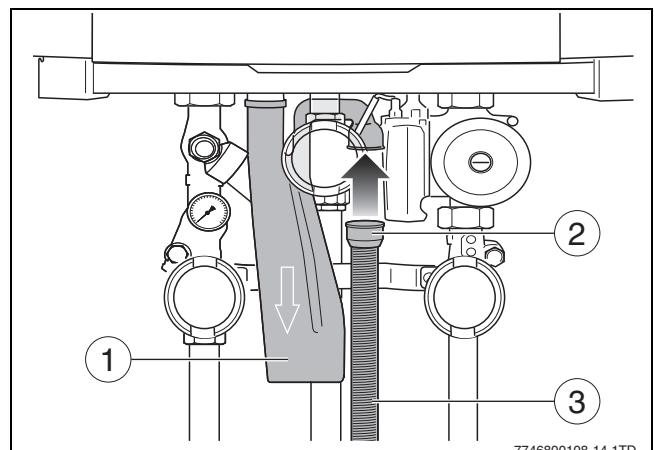


Fig. 15 Installing the syphon hose

[1] Syphon

[2] Rubber sleeve

[3] Syphon hose

## 5.7 Connecting the condensate drain pipe

- Connect the condensate drain pipe to the syphon.

Observe the following regulations:

- The waste water disposal regulations.
- Plastic pipework must be used to drain the condensate, at least until it is delivered to the sewage system.
- The condensate must be able to run into a funnel (or neutralisation tank) without restrictions. This prevents condensate from building up in the boiler. The syphon in the connection kit must not be permanently connected to the condensate drain pipe. The minimum distance between the syphon and the condensate drainage pipe is 2 cm [1].



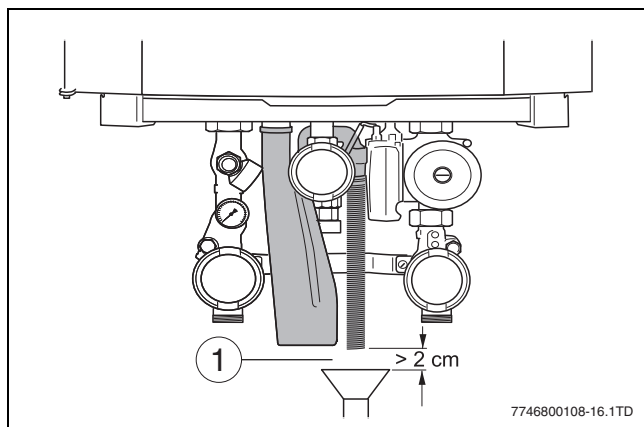


Fig. 16 Condensate drain pipe

[1] Condensate drain pipe

### 5.8 Connecting the expansion vessel (accessory)

**WARNING:** Damage to the unit due to faulty pressure relief valve.

- ▶ The expansion vessel must be of sufficient capacity.

#### Connecting the expansion vessel in a multi-boiler configuration (cascade configuration)

In cascade systems only one expansion vessel is required for the heating system.

- ▶ Connect the expansion vessel to the secondary side of the header in the return circuit, so that every boiler is connected to the expansion vessel.

Refer to the cascade system installation instructions for the installation details.

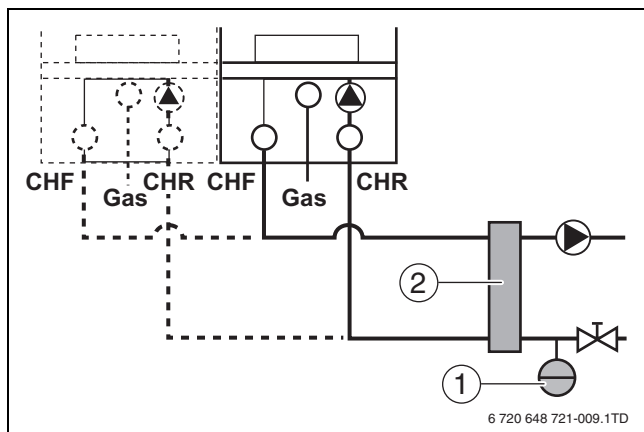


Fig. 17 Connecting the expansion vessel in a multi-boiler configuration (cascade configuration)

[1] Expansion vessel  
[2] Low loss header

### 5.9 Making the electrical connections to the pump

- ▶ Turn the vent key through a quarter rotation to undo the boiler door lock [1].
- ▶ Push the fastener down [2] and open the boiler door [3].
- ▶ Remove the cover shield of the pump group [4].

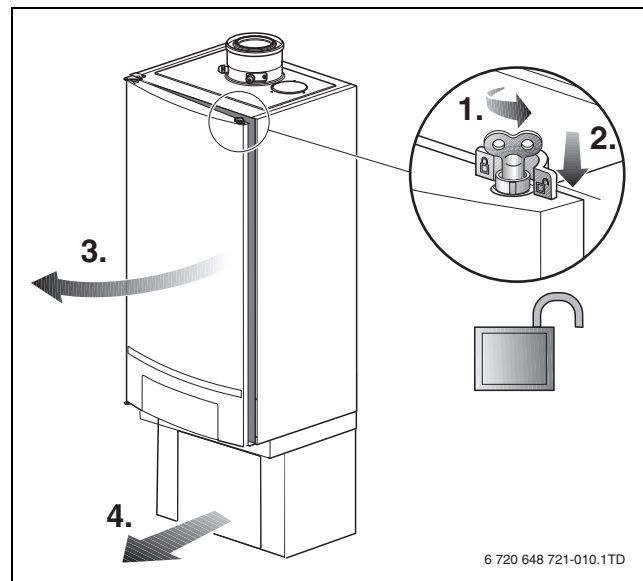


Fig. 18 Opening the boiler door

- ▶ Undo 1 screw to release the cover over the electrical connections and pull the cover up.

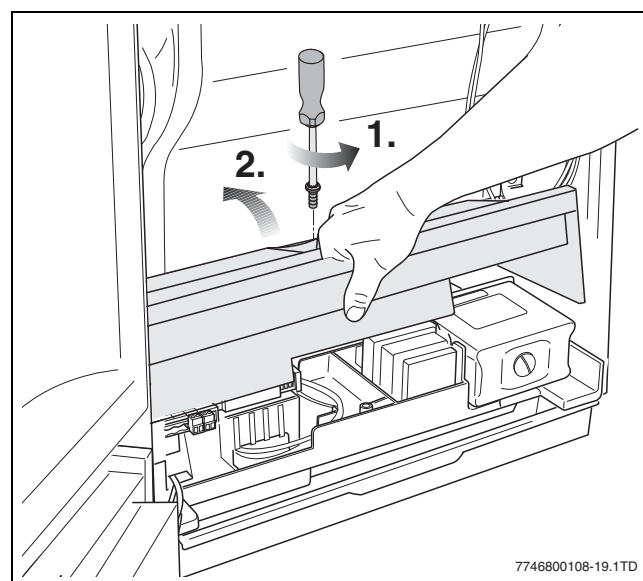


Fig. 19 Pulling the cover over the electrical connections up

- Lay the pump connection cable from the boiler through the hole under the electrical connection box downwards (→ fig. 20, [1] and fig. 21, [1]).

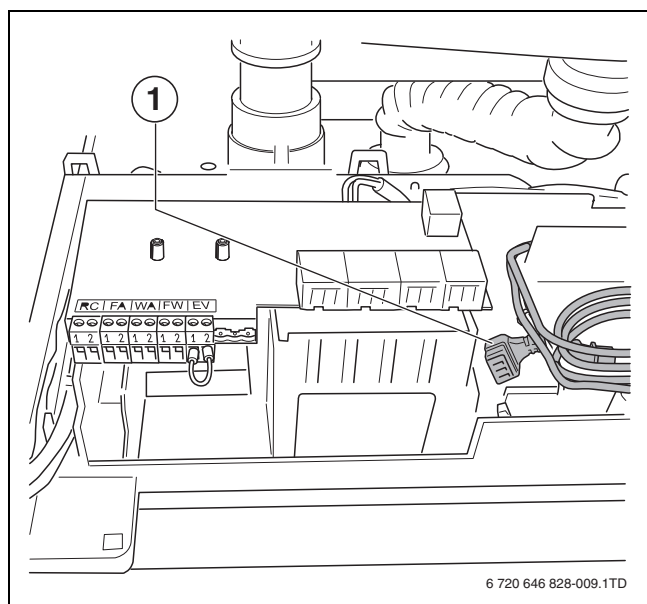


Fig. 20 Laying the pump connection cable

- [1] Pump connection cable

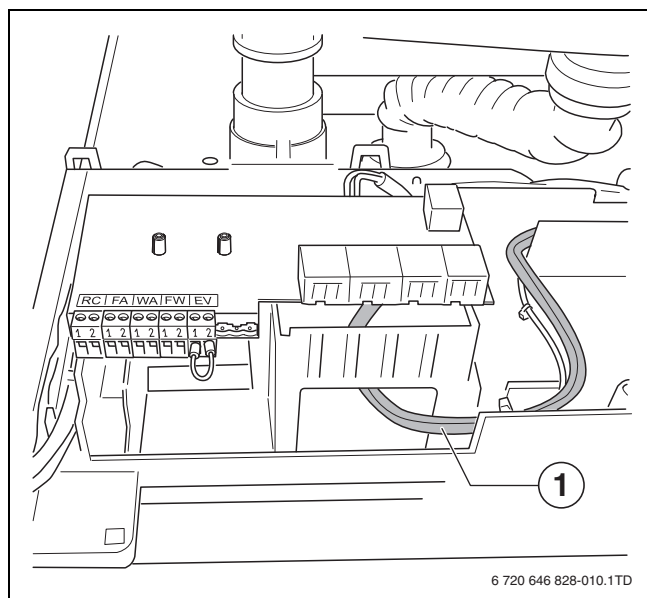


Fig. 21 Laying the pump connection leads

- [1] Pump connection cable

- Connect the tacho cable connector [1] to the pump.

- Connect the mains cable connector [2] to the pump.

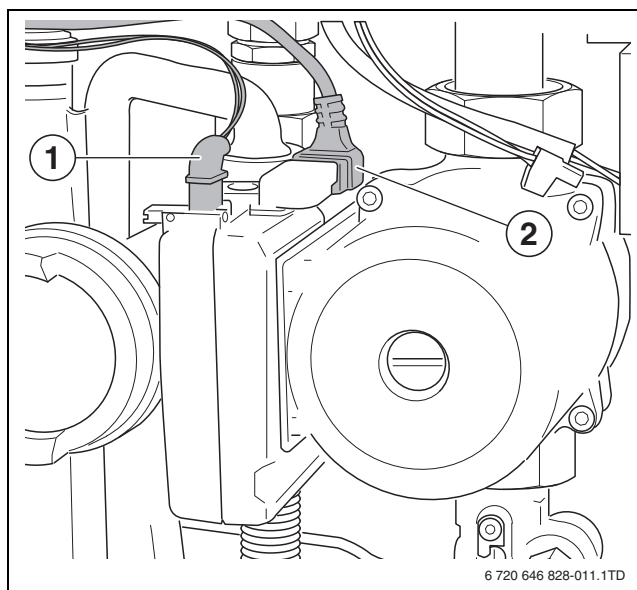


Fig. 22 Connecting the pump

- [1] Tacho cable connector  
[2] Mains cable connector

### 5.10 Installing the insulation cover

- Feed the insulation cover with its upper edge into the groove in the lower support.



The door over the boiler control panel must be closed.

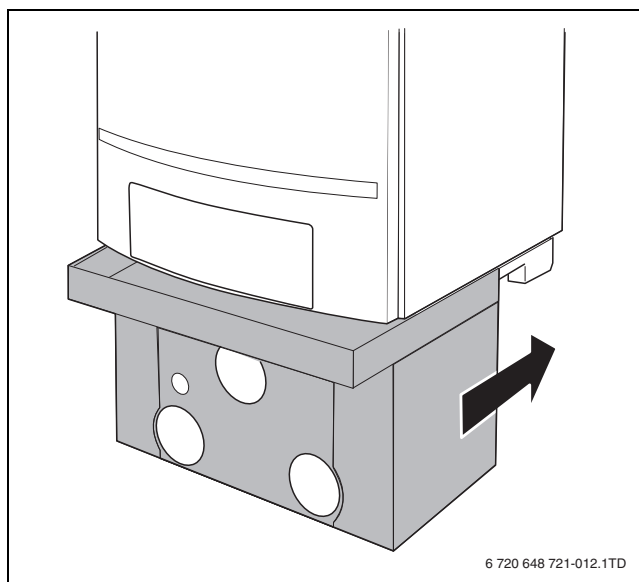


Fig. 23 Installing the insulation cover

## 6 Commissioning



See the Installation and servicing instructions of the boiler assembly for commissioning instructions. Observe the safety instructions and take the relevant measures.

## 7 Technical specifications

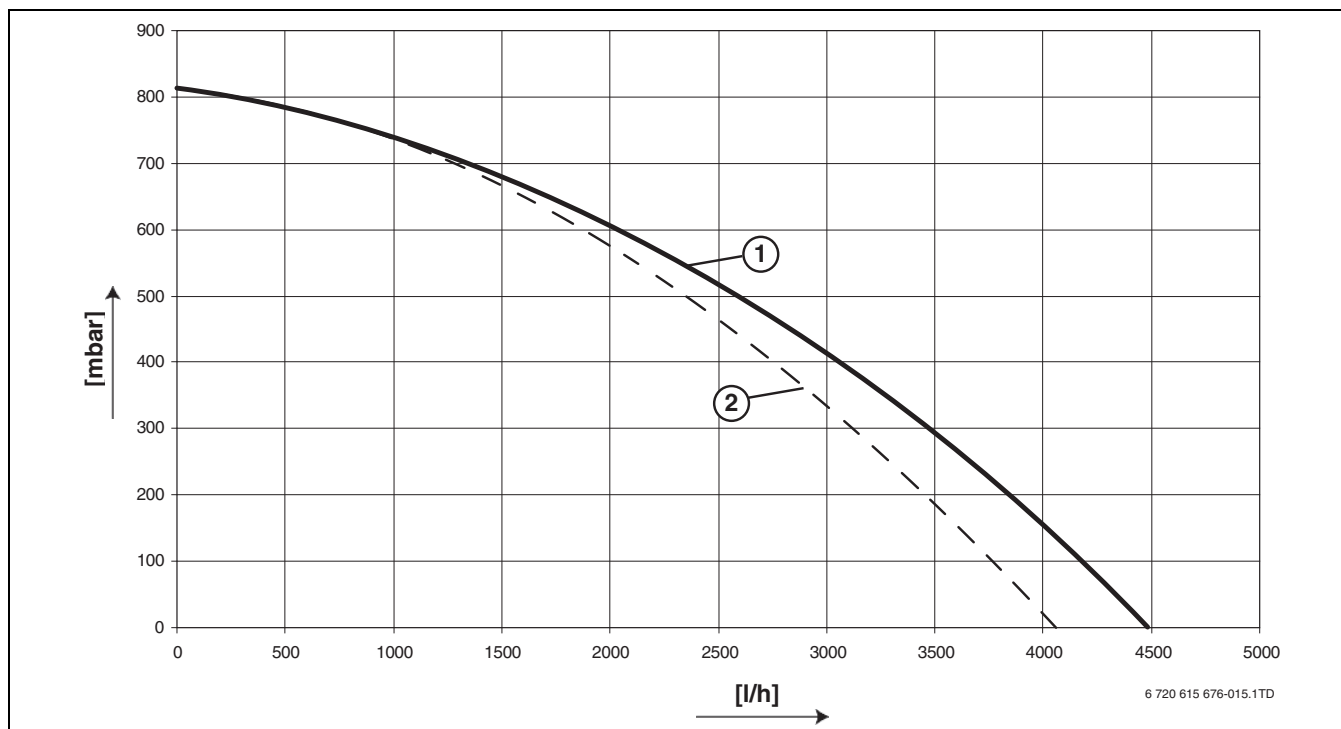


Fig. 24 Residual head downstream of the pump group (UPS 25-80) - with and without a non-return valve

- [l/h] Volume flow  
[mbar] Residual head  
[1] Residual head downstream of the pump group without a non-return valve (UPS 25-80)  
[2] Residual head downstream of the pump group with a non-return valve (UPS 25-80)

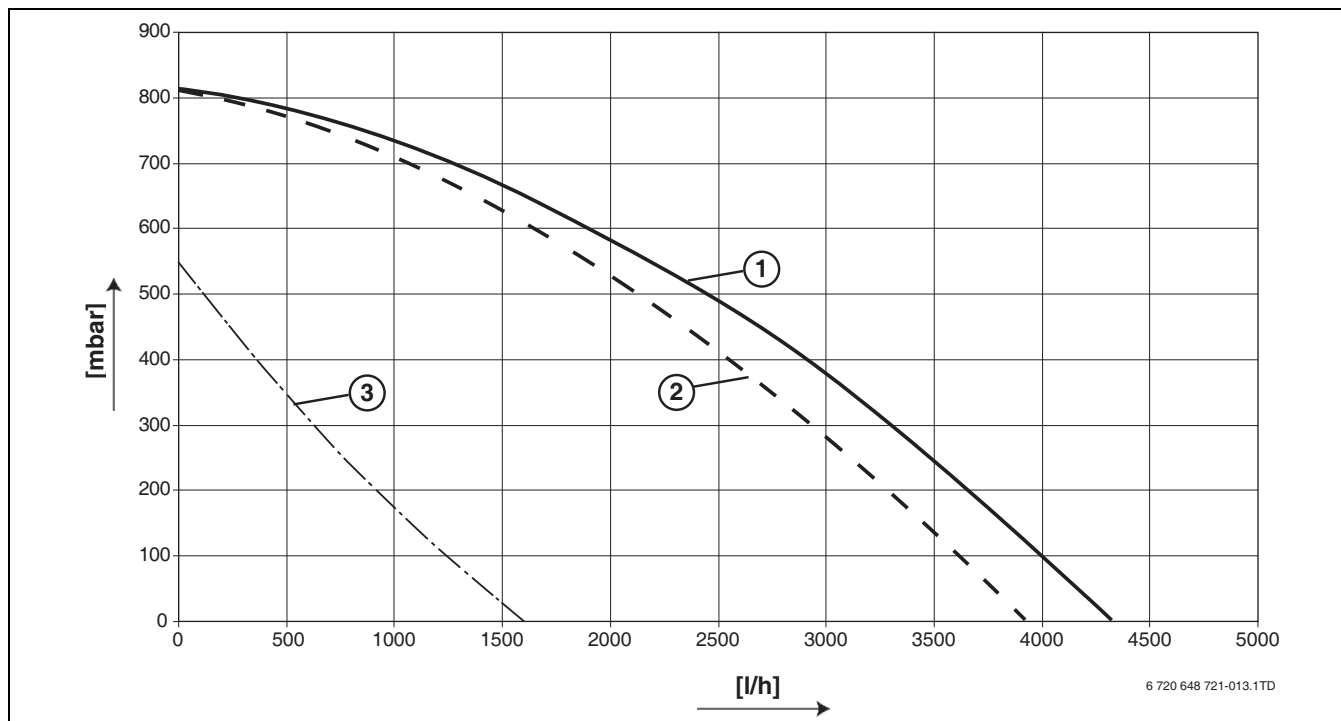


Fig. 25 Residual head downstream of the pump group (UPER 25-80) - with and without a non-return valve

- [l/h] Volume flow  
[mbar] Residual head  
[1] Residual head downstream of the pump group without a non-return valve (UPER 25-80) - full load  
[2] Residual head downstream of the pump group with a non-return valve (UPER 25-80) - full load  
[3] Residual head downstream of the pump group with a non-return valve (UPER 25-80) - partial load

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