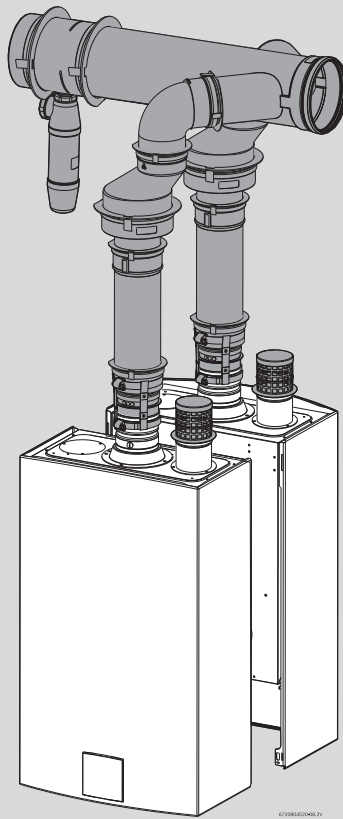


Cascade Venting System for RTG 199HE

Back to back



Basic Set for units 1 and 2 - 7 736 501 253

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1 Key to symbols and safety instructions

1.1 Key to symbols

Warnings



Warnings in this document are identified by a warning triangle printed against a grey background. Keywords at the start of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

The following keywords are defined and can be used in this document:

- **NOTICE** indicates a situation that could result in damage to property or equipment.
- **CAUTION** indicates a situation that could result in minor to medium injury.
- **WARNING** indicates a situation that could result in severe injury or death.
- **DANGER** indicates a situation that will result in severe injury or death.

Important information



This symbol indicates important information where there is no risk to people or property.

Additional symbols

Symbol	Explanation
▶	Step in an action sequence
→	Cross-reference to another part of the document
•	List entry
–	List entry (second level)

Table 1

1.2 Safety instructions

Read all instructions before installing. Perform the steps in the indicated sequence. Have the water heater inspected by a trained service technician at least once every year. Failure to comply with these instructions can result in severe, possibly fatal, personal injury as well as damage to property and equipment.

Installation and servicing

- ▶ Ensure that only a licensed contractor installs or services the water heater.
- ▶ On hot components use only material with adequate temperature stability.

Installation and commissioning

- ▶ In the Commonwealth of Massachusetts, the water heater must be installed by a licensed plumber.

If you smell flue gas

- ▶ Switch off the appliance.
- ▶ Open windows and doors.
- ▶ Inform a trained and certified installer.

Insufficient ventilation may cause toxic flue gas to escape. Risk of poisoning.

- ▶ Never close off or reduce the size of the air intake and outlet openings.
- ▶ The appliance must not be operated until any obstructions have been removed.
- ▶ Inform the system operator in writing of the problem and the associated dangers.

Danger from escaping flue gases

- ▶ Ensure all vent pipes and chimneys are not damaged or blocked.
- ▶ Connect only one appliance to each vent system or chimney liner.
- ▶ The venting system piping must not feed into another air extraction duct.
- ▶ Do not route the flue system piping through or inside another air extraction duct.

Combustion air

- ▶ Keep the combustion air free of corrosive substances (halogenated hydrocarbons that contain chlorine or fluorine compounds).

Maintenance

Customers are advised to:

- ▶ Sign a maintenance and inspection contract with an authorized contractor. Inspect and maintain the water heater as necessary and on a yearly basis. Service as needed.
- ▶ Use only genuine spare parts.

For your safety



DANGER: Fatal accidents!

Carbon monoxide poisoning.

- ▶ Carefully plan where you install the heater. Correct combustion air supply and flue pipe installation are very important. If a gas appliance is not installed correctly, fatal accidents can result such as carbon monoxide poisoning or fire.



DANGER:

Carbon monoxide poisoning.

- ▶ Exhaust gas must be vented to outside using approved vent material. (In Canada use only ULCS636 approved material). Vent and combustion air connector piping must be sealed gas-tight to prevent flue gas spillage, carbon monoxide emissions and risk of fire, resulting in severe personal injury or death. Approved vent terminations must be used when penetrating to the outside.



NOTICE:

- ▶ Do not obstruct the flow of combustion and ventilation air.



NOTICE:

The RTG 199HE and RTG 199ME are approved for the US and Canada with this common venting system as described in this manual.



NOTICE:

The installation must comply with national, state, and local code, and the Water Heater Installation Instructions and this Vent System Installation Manual must be followed exactly.



NOTICE: Combustion air requirements

The cascade system is only approved for combustion air drawn from the room, and the installation site must provide sufficient combustion air for safe and reliable operation of the entire cascade.

Each appliance requires 9.950 cubic feet of available combustion air, or a minimum of 1.243 square feet of space with an 8 foot ceiling to operate. If this amount of air space is not available, provisions must be taken to provide sufficient combustion air from the outside.

Always install the combustion air grill to prevent foreign objects from falling into the unit.

If other appliances that draw in air or exhaust air share the same space, their requirements must be taken into consideration when sizing the air supply.

Always follow local codes and regulations if they are more stringent.

Appliances located in unconfined spaces

- **a)** An unconfined space is one whose volume is greater than 50 cubic feet (1.42 cubic meter) per 1,000 BTU/Hr (292.81 Watts) of the combined rating of all appliances installed in the space. That would be 9.950 cubic feet (281.8 cubic meters) for the water heater alone.
- **b)** In unconfined spaces in buildings of conventional frame, masonry, or metal construction, infiltration air is normally adequate to provide air for combustion.

Appliances located in confined spaces

The confined space must be provided with two permanent openings, one commencing within 12 inches (304.8mm) of the top and one commencing within 12 inches (304.8mm) of the bottom of the enclosure. Each opening must have a minimum free area of one square inch per:

- 1,000 BTU/Hr (292.81 Watts) if all air is taken from inside the building
- 2,000 BTU/Hr (585.62 Watts) if all air is taken from the outside by horizontal ducts
- 4,000 BTU/Hr (1171.24 Watts) if all air is taken from the outside by direct openings or vertical ducts

Or the confined space must be provided with one permanent opening or duct that is within 12 inches (304.8mm) of the ceiling of the enclosure. This opening must have a minimum free area of one square inch per:

- 3,000 BTU/Hr (878.43 Watts) if all air is taken from the outside by a direct opening or vertical duct

Louvers, grills and screens have a blocking effect, when used, increase the sizes of your openings by 300% for wood louvers (as wood type will reduce the free air by 75%) and 43% for metal louvers (as metal will reduce the free air by 30%). Refer to the National Fuel Gas Code for complete information. In buildings of tight construction all air should be taken from outside.

2 Accessory assembling

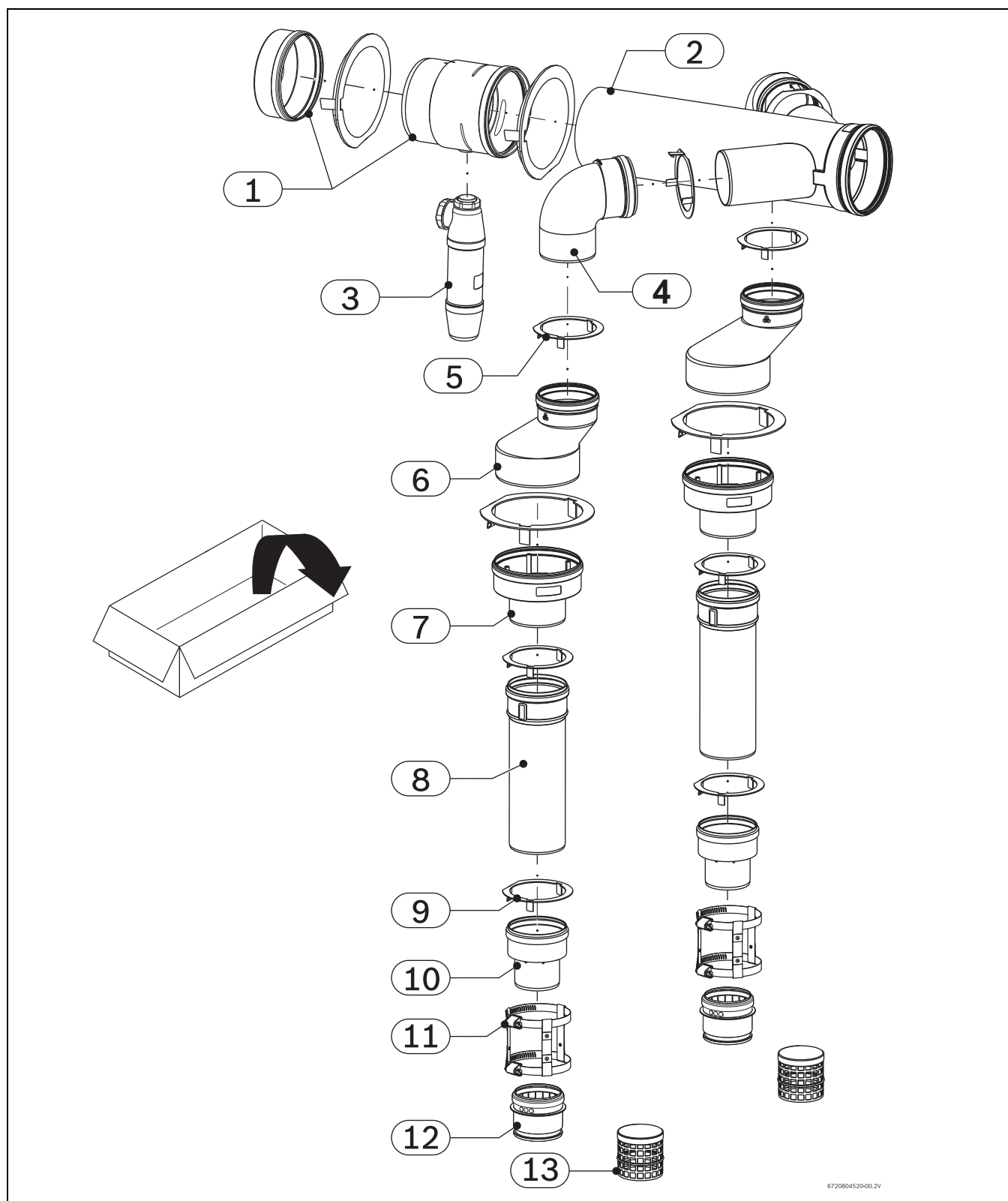


Fig. 1

- [1] 7 736 501 148 (Ø 6") (Ø 150mm) - Condensate trap and cover
- [2] 7 736 501 125 (Ø 6") (Ø 150mm) - Header pipe
- [3] 7 736 501 110 - Condensate siphon
- [4] 7 736 501 141 (Ø 4") (Ø 100mm) - Elbow
- [5] 7 736 501 256 (Ø 4") (Ø 100mm)
- [6] 7 736 501 123 (Ø 4"/6") (Ø 100/150mm) - Reducer
- [7] 7 736 501 121 (Ø 4"/5 ²⁹/₃₂ ") (Ø 100/150mm) - Check valve
- [8] 7 736 501 090 (Ø 4") - 9.8 " length (Ø 100mm) - 250mm length

- 7 736 501 143 (Ø 4") - 19.7 " length (Ø 100mm) - 500mm length
- [9] 7 736 501 256 (Ø 4") (100mm)
- [10] 7 736 501 111 (Ø 3 1/2" / 6") (Ø 80/100mm) - Reducer
- [11] 7 736 501 257 (Ø 3 1/2") (Ø 80mm) - Clamp
- [12] 7 736 501 099 (3" / Ø 3 ⁵/₃₂ ") (76.2/Ø 80mm) - Extension
- [13] 7 736 501 101 (3") (76.2mm) - Combustion air intake grill

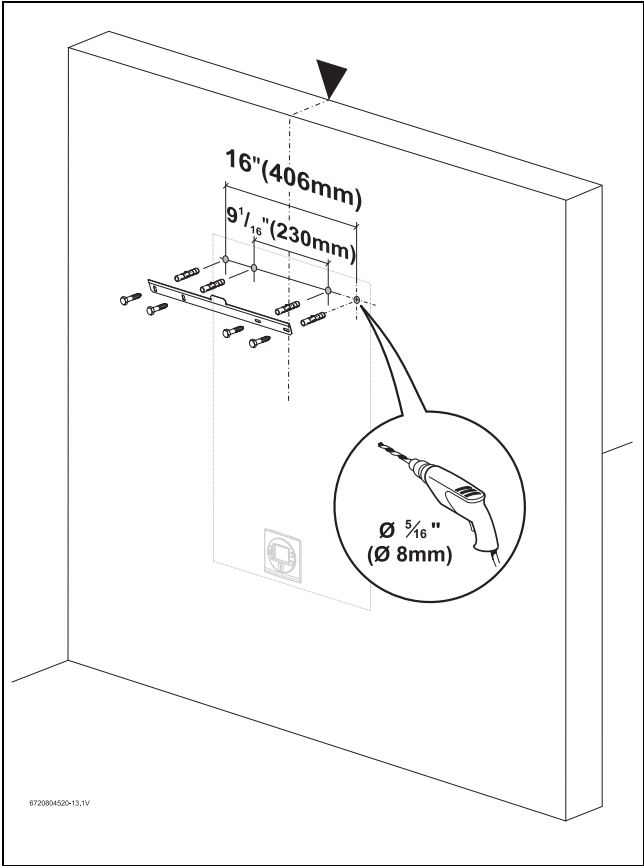


Fig. 2

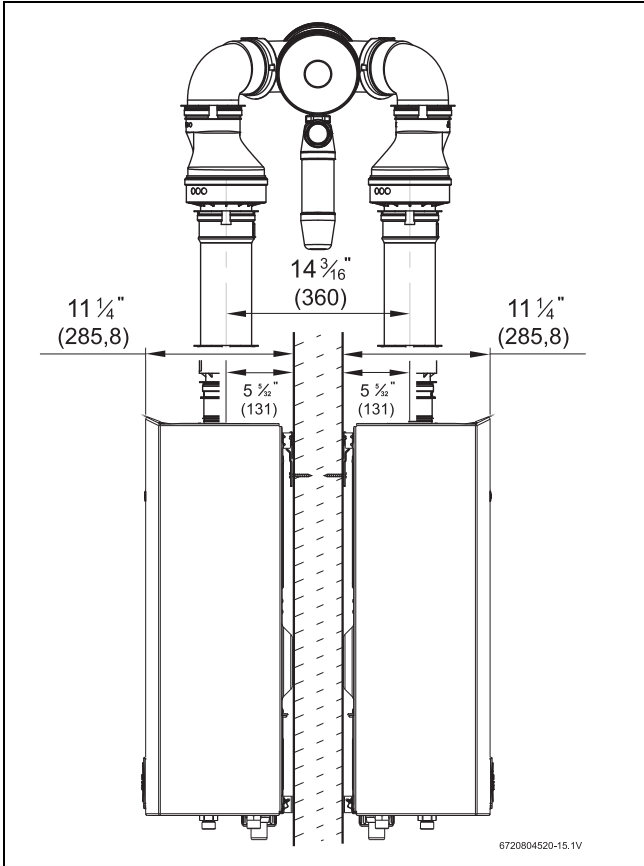


Fig. 4

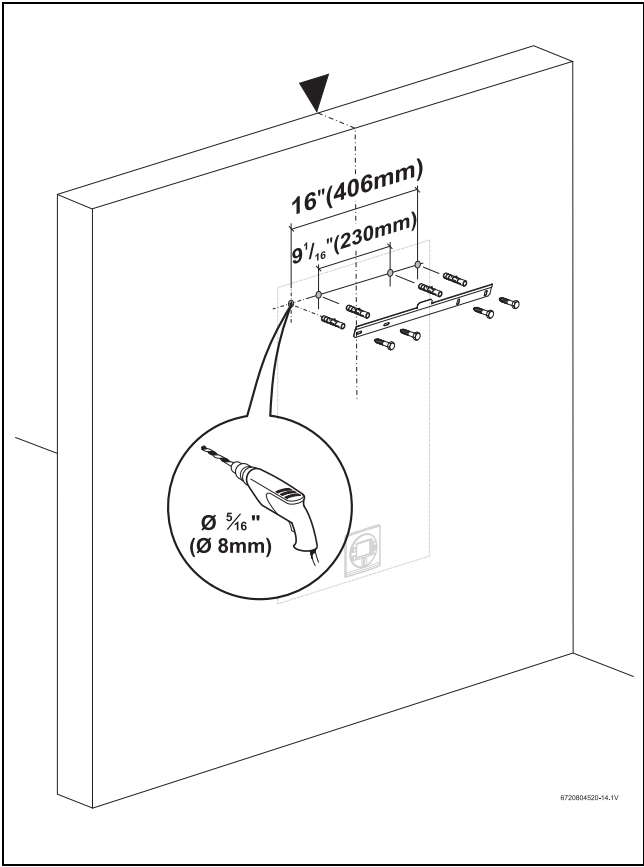


Fig. 3

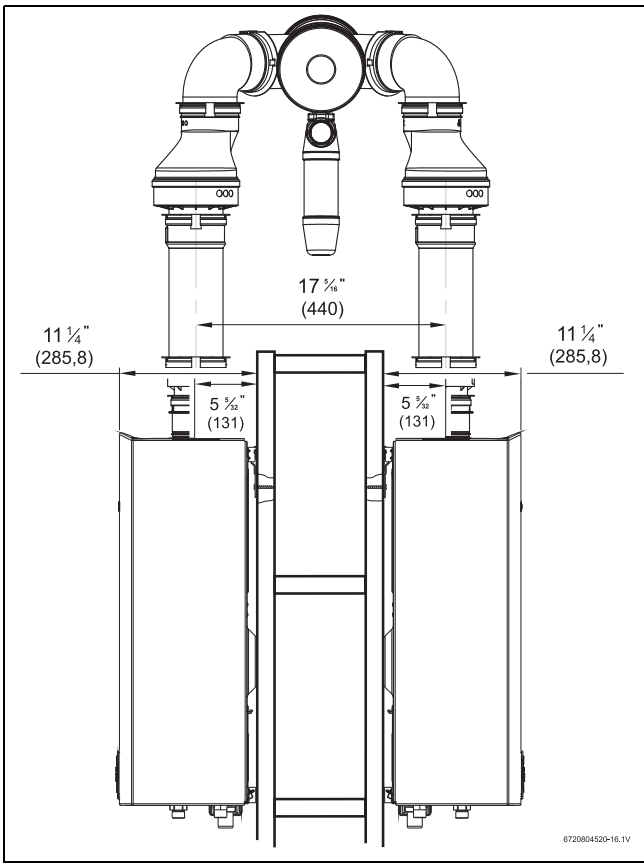


Fig. 5

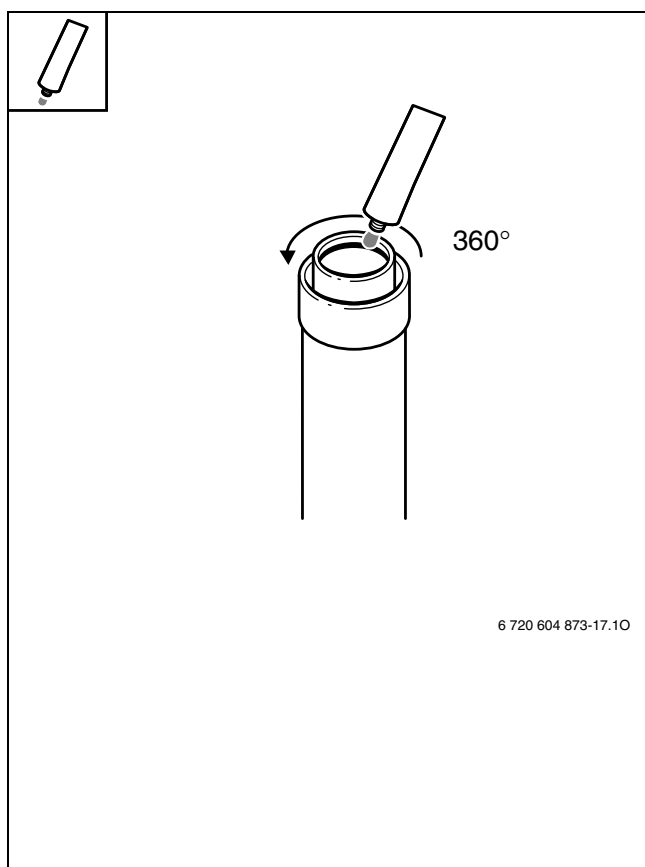


Fig. 6 Apply lubricant evenly all around all gaskets

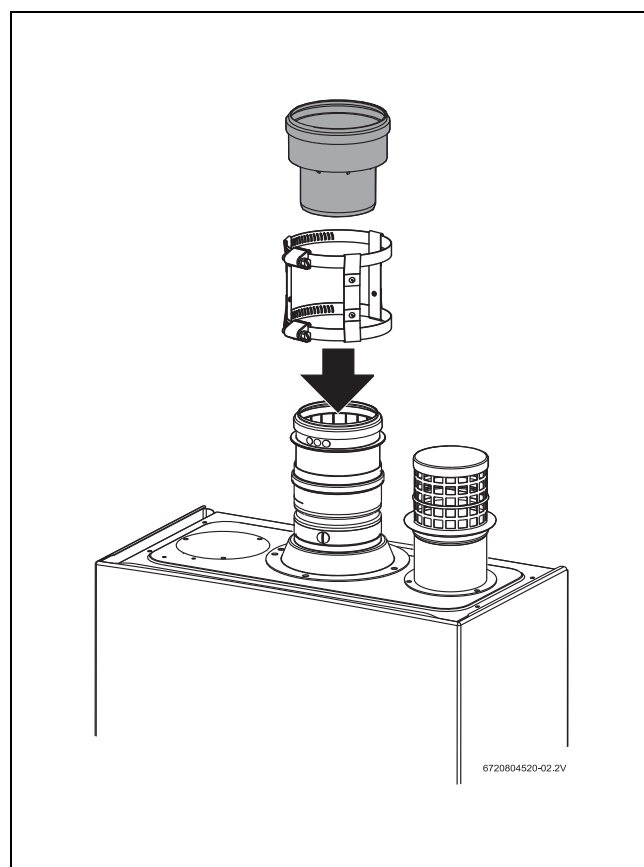


Fig. 8

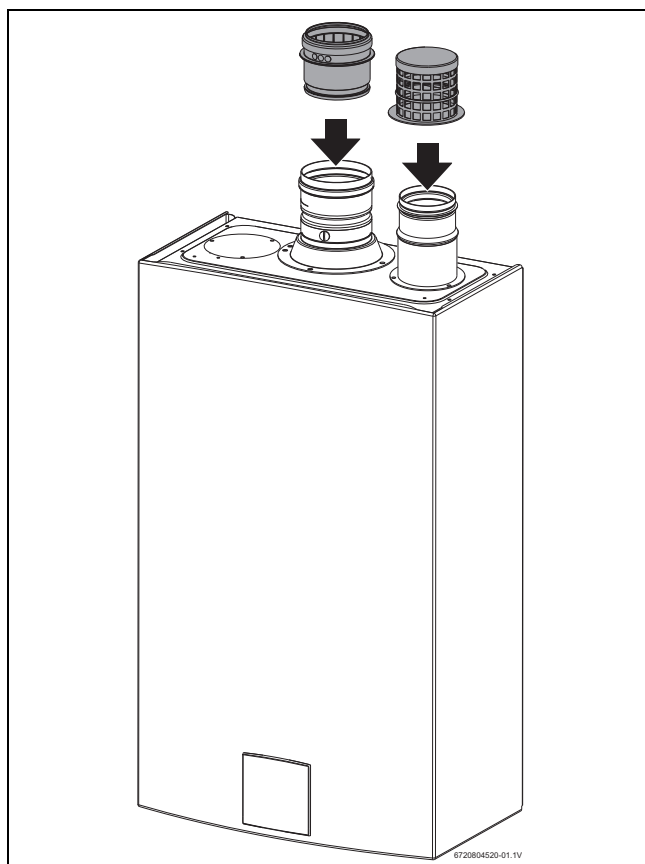


Fig. 7

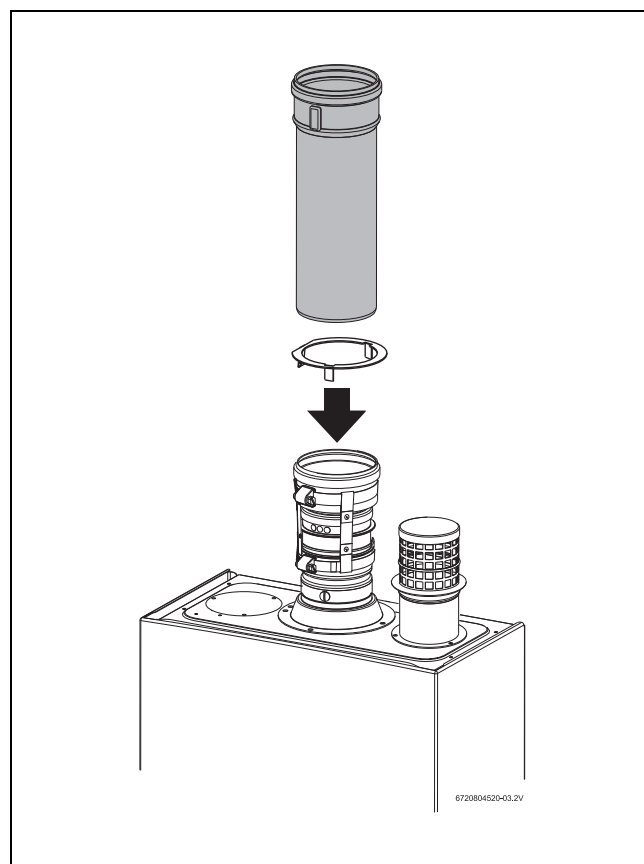


Fig. 9

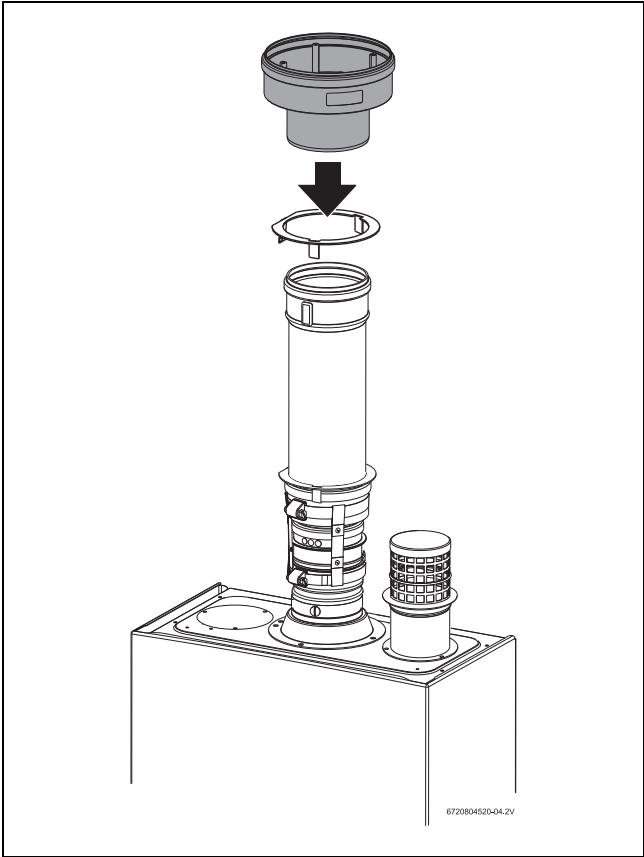


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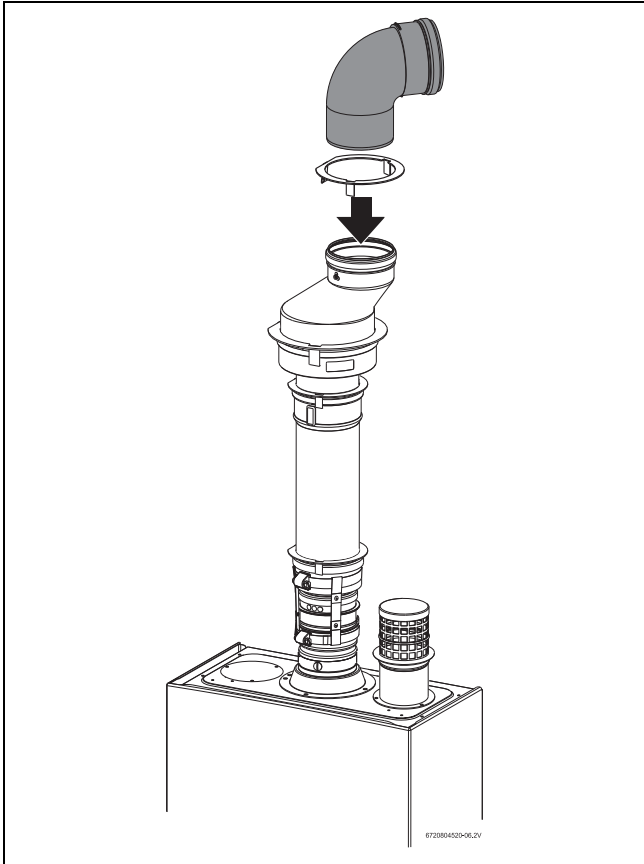


Fig. 12

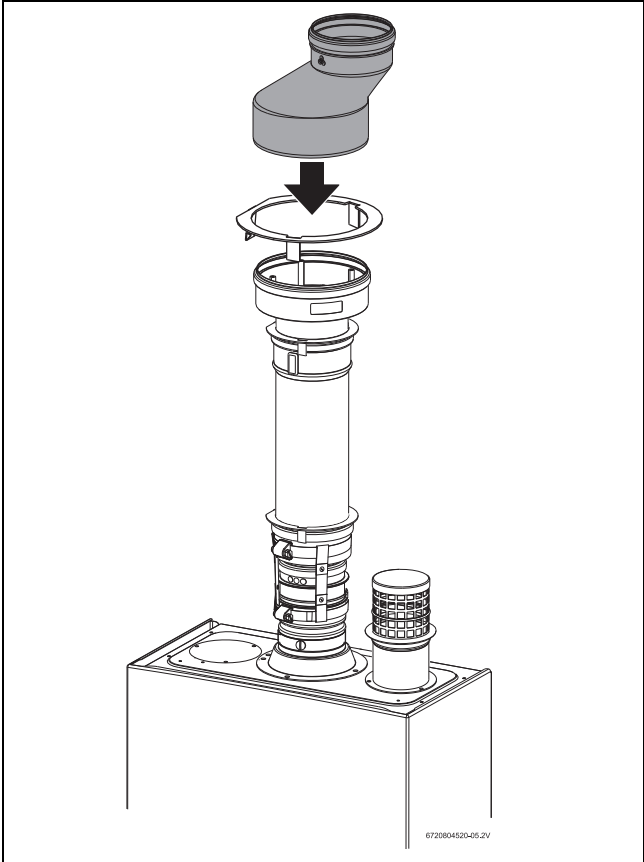


Fig. 11

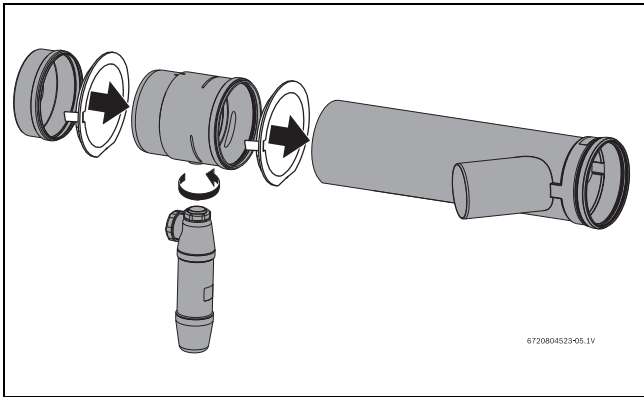


Fig. 13

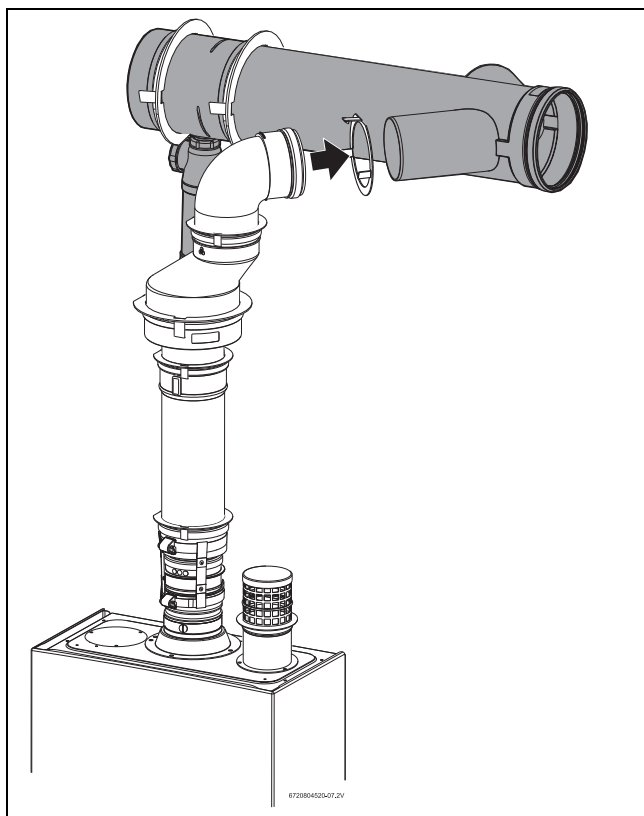


Fig. 14

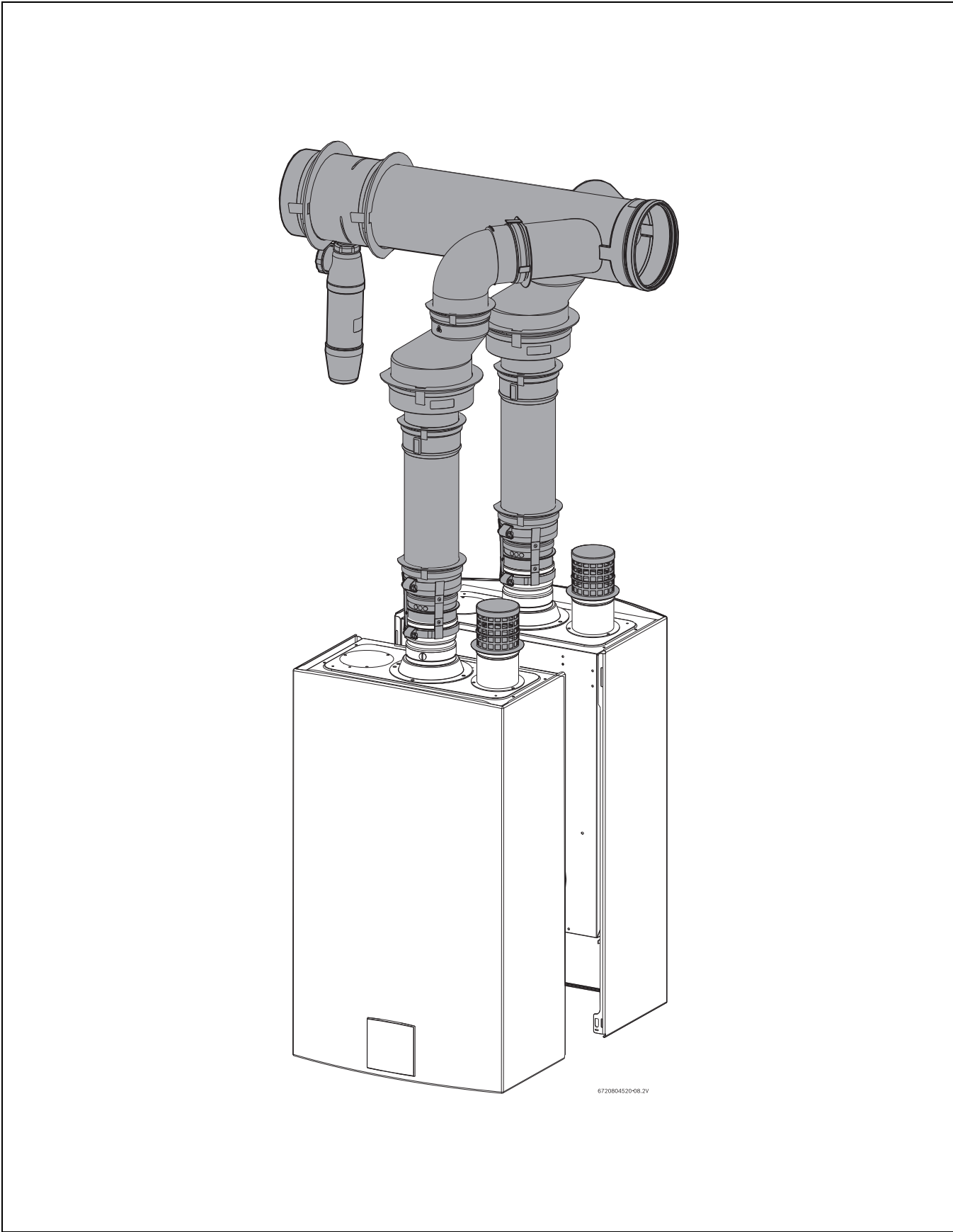


Fig. 15 Complete setup of the 2 unit cascade. For units 3 and 4 follow the installation instructions of the extension kit.

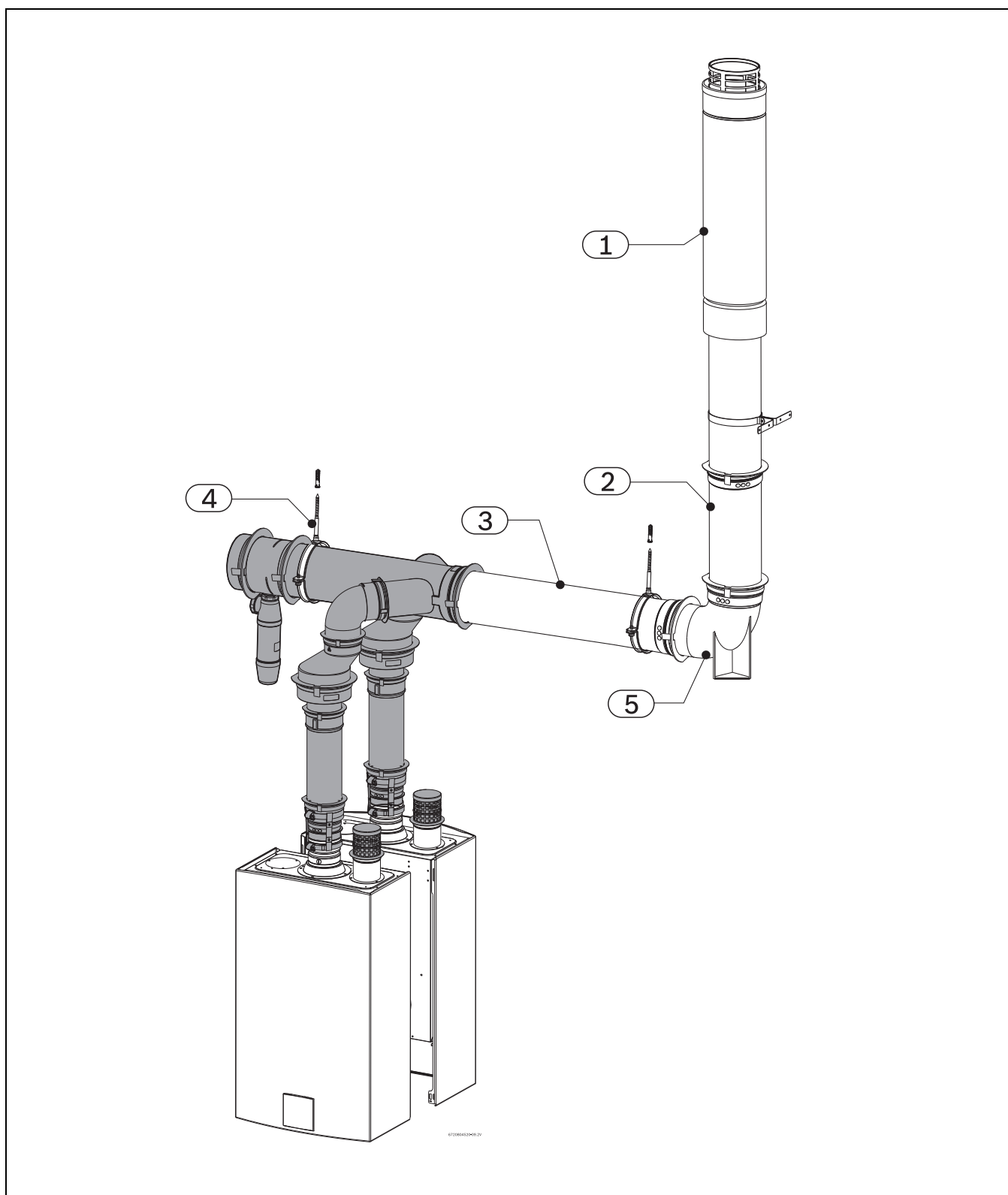


Fig. 16 Vertical setup - for horizontal termination see Fig. 25

- [1] 7 736 501 119 - Vertical termination
- [2] 7 736 501 133 - 80" (2000mm) - Extension
7 736 501 135 - 40" (1000mm) - Extension
7 736 501 137 - 20" (500mm) - Extension
- [3] 7 736 501 133 - 80" (2000mm) - Extension
7 736 501 135 - 40" (1000mm) - Extension
- [4] 7 736 501 113 - Wall/ceiling bracket
- [5] 7 736 501 129 - Support elbow

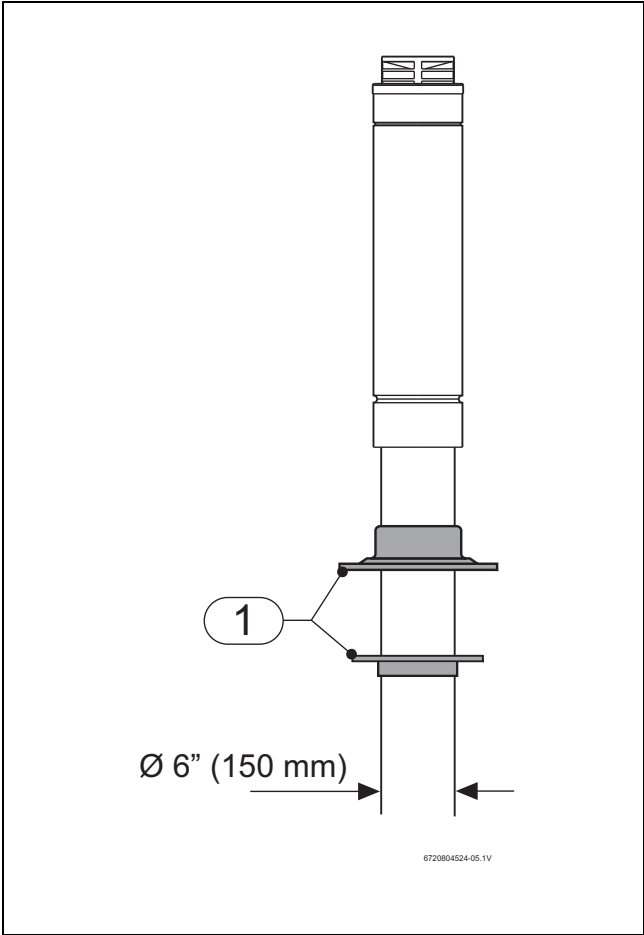


Fig. 17

[1] 7 736 501 095



It is recommended to consult a professional roofer to ensure a long lasting water tight seal is established.

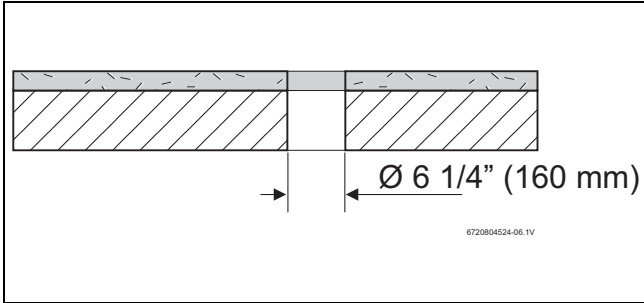


Fig. 18

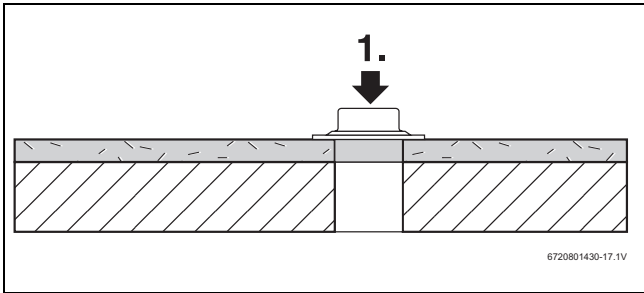


Fig. 19

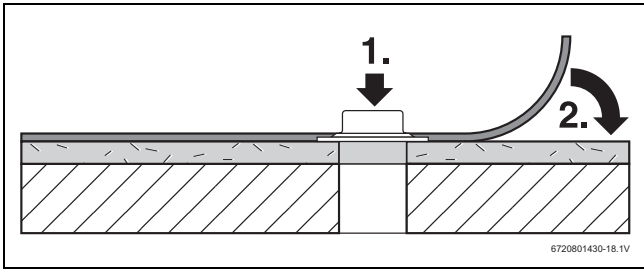


Fig. 20

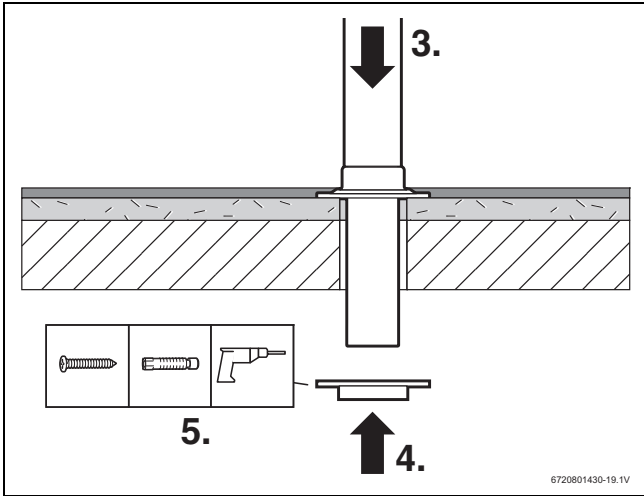


Fig. 21

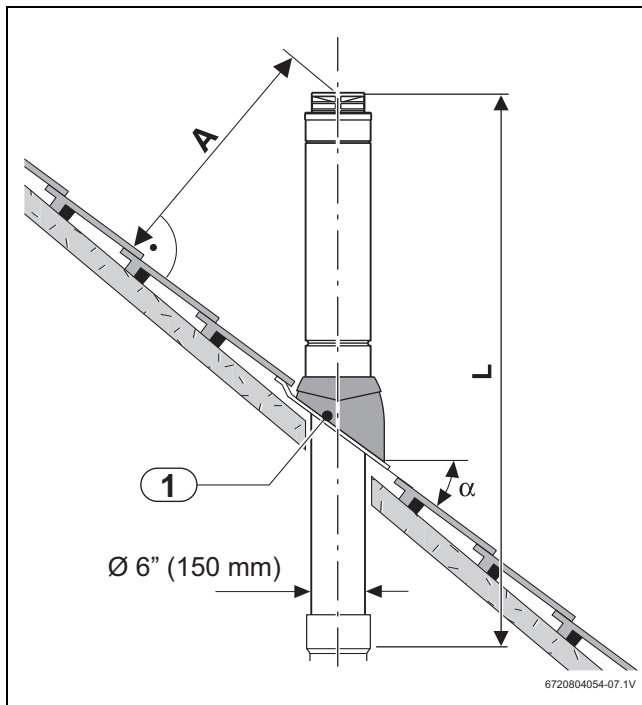


Fig. 22

- [1] 7 736 501 091 Flashing for 12/5 to 12/12 pitch (25° - 45°)
 7 736 501 093 Flashing for flat roof to 12/5 pitch (0 - 25°)

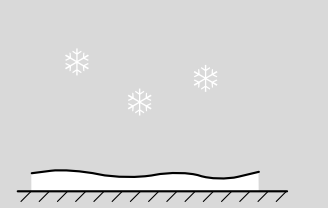
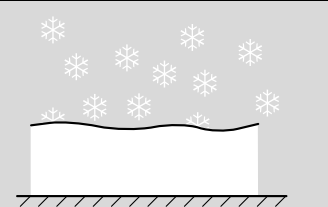
A	
	> 15 3/4" (400 mm)
	> 20" (500 mm)

Table 2 Choose the proper vent pipe height A depending on the typical snow accumulation for the location

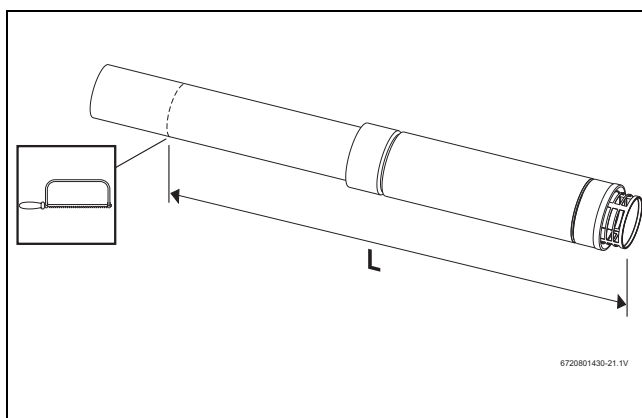


Fig. 23

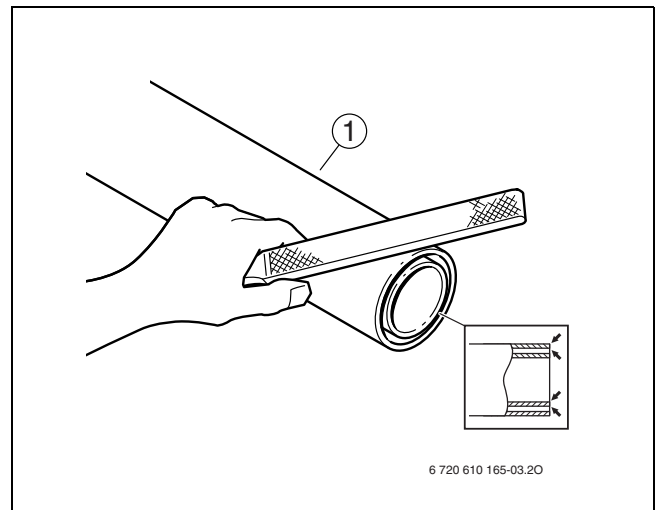


Fig. 24



It is recommended to consult a professional roofer to ensure a long lasting water tight seal is established.

2.1 Maximum and minimum permitted vent lengths

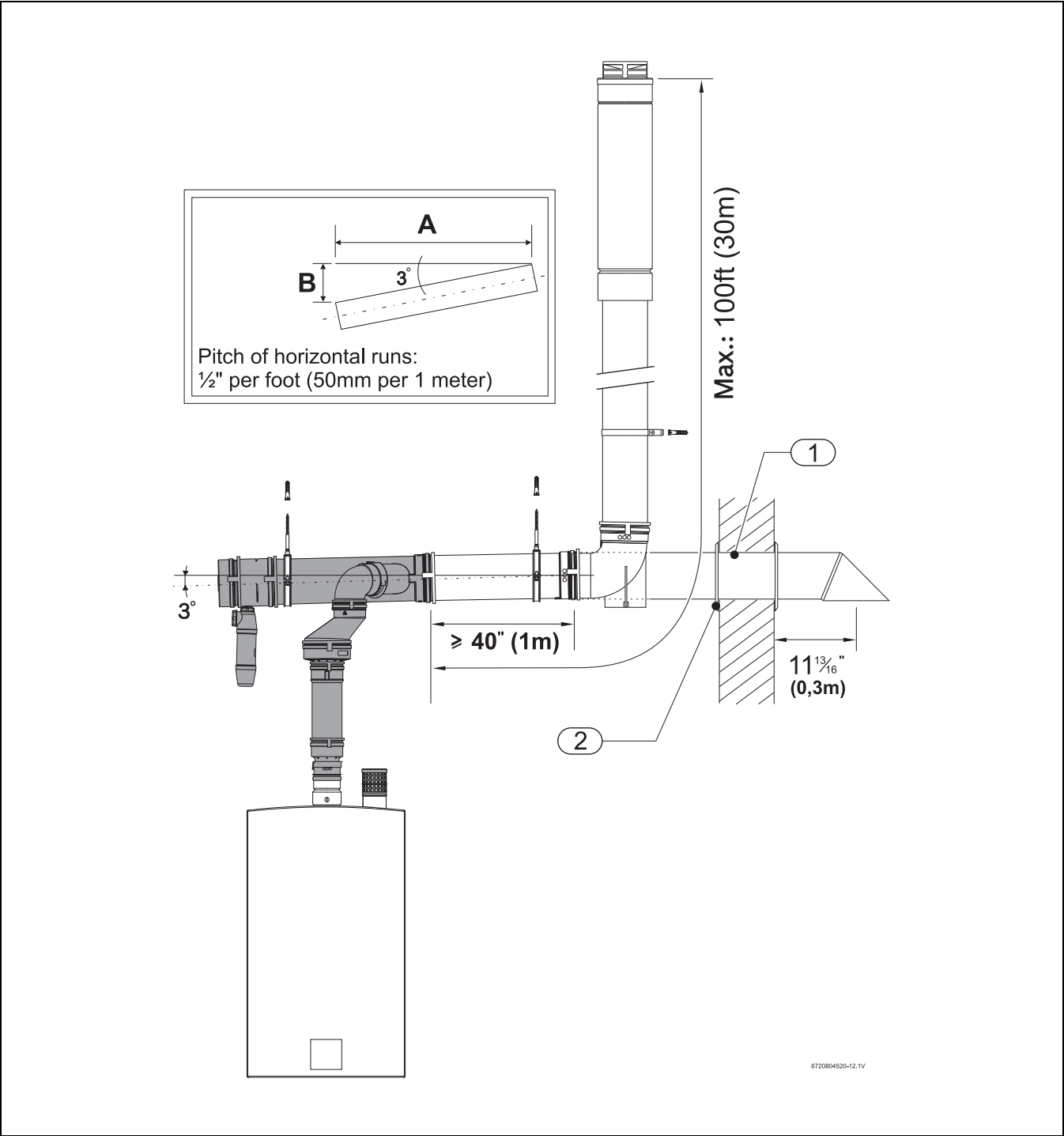


Fig. 25

- [1] 7 736 501 117 - Horizontal wall terminal
- [2] 7 736 501 116 - Wall cover plate

Ø 6" (150mm)	L _{eq}	TTNR
	40" (1m)	7 736 501 132
	80" (2m)	7 736 501 146

Table 3

**NOTICE:** Minimum vent length
Not considering the appliance headers and the termination, a minimum 40" (1m) of horizontal run is required.

**NOTICE:** Maximum vent length
Not considering the appliance headers and up to one 90° elbow, but including the termination, the total combined horizontal and vertical vent length must not exceed 100' (30m). See table 3 for equivalent vent length of 45° and 90° elbows.

Notes



Ambler, PA

For U.S. and Canada field service,
Contact your professional installer or
local Bradford White representative.

Sales/800-523-2931
Fax/215-641-1670
Parts Fax/215-641-2180

Technical Support/800-334-3393
Fax/269-795-1089

Warranty/800-531-2111
Fax/269-795-1089

International:
Telephone/215-641-9400
Telefax/215-641-9750



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