

UK

ENSURE THAT THESE INSTRUCTIONS ARE LEFT
FOR THE USER

MURELLE EQUIPE 100-150 (M)

(PACK OF 2-3 MURELLE HE 50 R)



Installation and servicing instructions



Please read the Important Notice within
this guide regarding your boiler warranty



SAFE HANDLING

This boiler may require 2 or more operatives to move it into its installation site, remove it from its packaging and during movement into its installation location. Manoeuvring the boiler may include the use of a sack truck and involve lifting pushing and pulling.

Caution should be exercised during these operations.

Operatives should be knowledgeable in handling techniques when performing these tasks and the following precautions should be considered:

- Grip the boiler at the base
- Be physically capable
- Use personal protective equipment as appropriate e.g. gloves, safety footwear.

During all manoeuvres and handling actions, every attempt should be made to ensure the following unless unavoidable and/or the weight is light.

- Keep back straight
- Avoid twisting at the waist
- Always grip with the palm of the hand
- Keep load as close to the body as possible
- Always use assistance

WARNING

Caution should be exercised when performing any work on this appliance.

Protective gloves and safety glasses are recommended.

- Avoid direct contact with sharp edges.
- Avoid contact with any hot surfaces.

NOTICE

Please be aware that due to the wet testing of the appliance, there may be some residual water in the hydraulic circuit.

- Protect any surfaces, carpets or floorings.
- Use a suitable container to catch any water that escapes when removing the protective caps from the connections.



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Important Information

IT IS A STATUTORY REQUIREMENT THAT ALL GAS APPLIANCES ARE INSTALLED BY COMPETENT PERSONS, IN ACCORDANCE WITH THE GAS SAFETY (INSTALLATION AND USE) REGULATIONS (CURRENT EDITION). The manufacturer's instructions must not be taken as overriding any statutory requirements, and failure to comply with these regulations may lead to prosecution.

No modifications to the appliance should be made unless they are fully approved by the manufacturer.

GAS LEAKS: DO NOT OPERATE ANY ELECTRICAL SWITCH, OR USE A NAKED FLAME. TURN OFF THE GAS SUPPLY AND VENTILATE THE AREA BY OPENING DOORS AND WINDOWS contact the gas emergency service on 0800111999.

Please refer to commissioning instructions for filling in the checklist at the back of this installation guide.

Note: All Gas Safe registered installers carry a ID Card.

You can check your installer is Gas Safe Registered by calling 0800 408 5577

IMPORTANT

Prior to switching on the boiler for the first time, check the following:

- Make sure that there are no liquids or inflammable materials in the immediate vicinity of the boiler.
- Make sure that the electrical connections have been made correctly and that the earth wire is connected to a good earthing system.
- Ensure that tightness and let by test have been conducted, including the internal gas pipe work.
- Make sure that the boiler is set for operation for the type of gas supplied.
- Check that the flue pipe for the outlet of the products of the combustion is unobstructed and has been properly installed.
- Make sure that any isolation valves are open.
- Make sure that the system is filled with water and is thoroughly vented.
- Check that the circulating pump is not jammed.
- Purge the gas supply pipe work.
- Ensure that the checklist is filled in when the commissioning has been completed.

1 DESCRIPTION

1.1 INTRODUCTION

This manual is for the construction maintenance and operation of a modular unit composed of multiple premixed condensation boilers in the "MURELLE EQUIPE 100 (M)" and "MURELLE EQUIPE 150 (M)" series linked in sequence/cascade independently of one another.

MURELLE EQUIPE 100

- Boilers and Mounting Frames and Headers code 9001100
- Low Loss Header Connection Kit code 8101534

- Low Loss Header code 8101550
- Cascade Flue code 9000100

MURELLE EQUIPE 100 M

- Boilers and Mounting Frames and Headers code 9001101
- Low Loss Header Connection Kit code 8101534
- Low Loss Header code 8101550
- Cascade Flue code 9000100

MURELLE EQUIPE 150

- Boilers and Mounting Frames and Headers code 9001150
- Low Loss Header Connection Kit code

- 8101534
- Low Loss Header code 8101550
- Cascade Flue code 9000150

MURELLE EQUIPE 150 M

- Boilers and Mounting Frames and Headers code 9001151
- Low Loss Header Connection Kit code 8101534
- Low Loss Header code 8101550
- Cascade Flue code 9000150

VENTILATION, for guidance see APPENDIX 2.

1.2 DIMENSIONS (fig. 1)

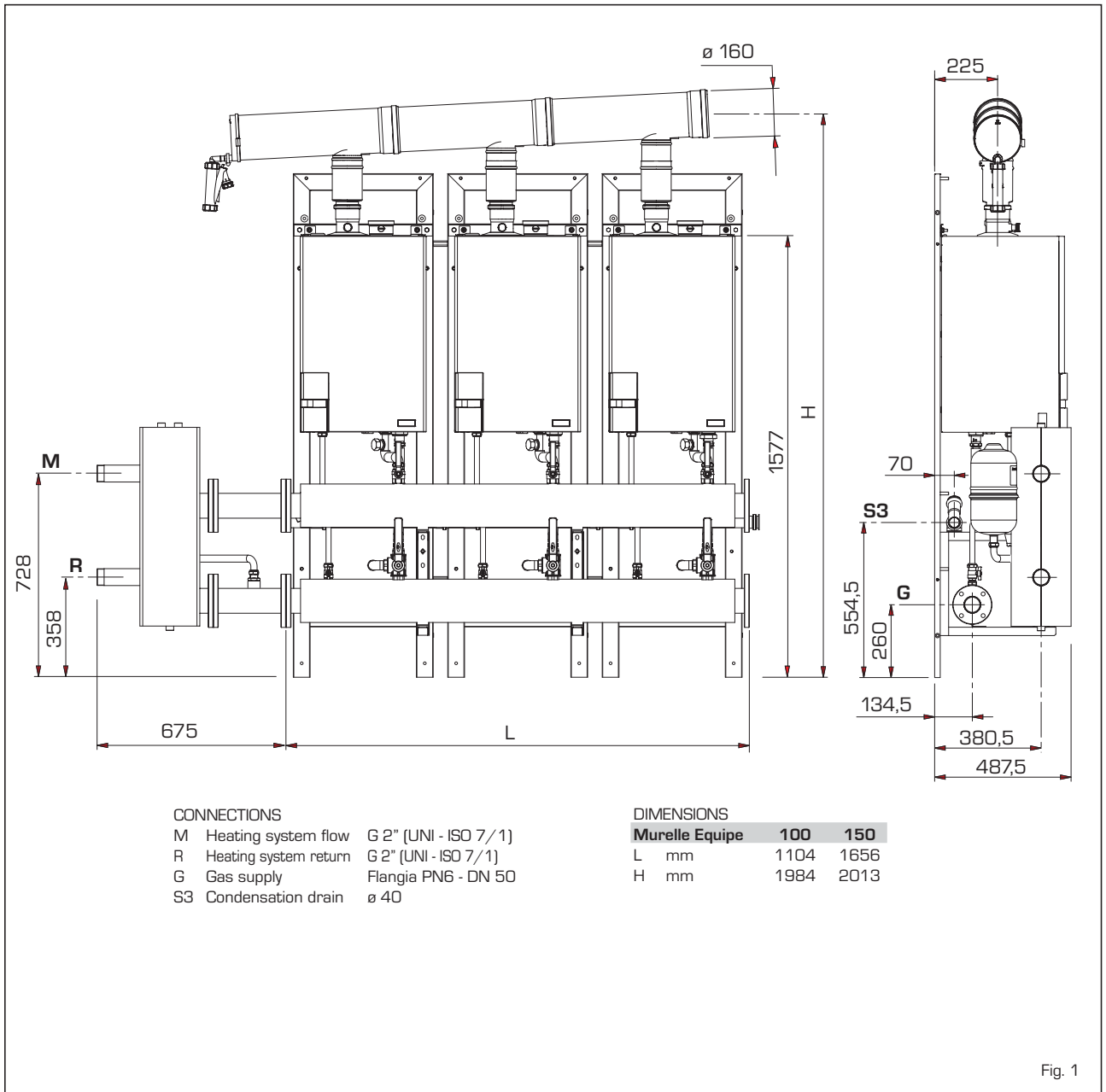
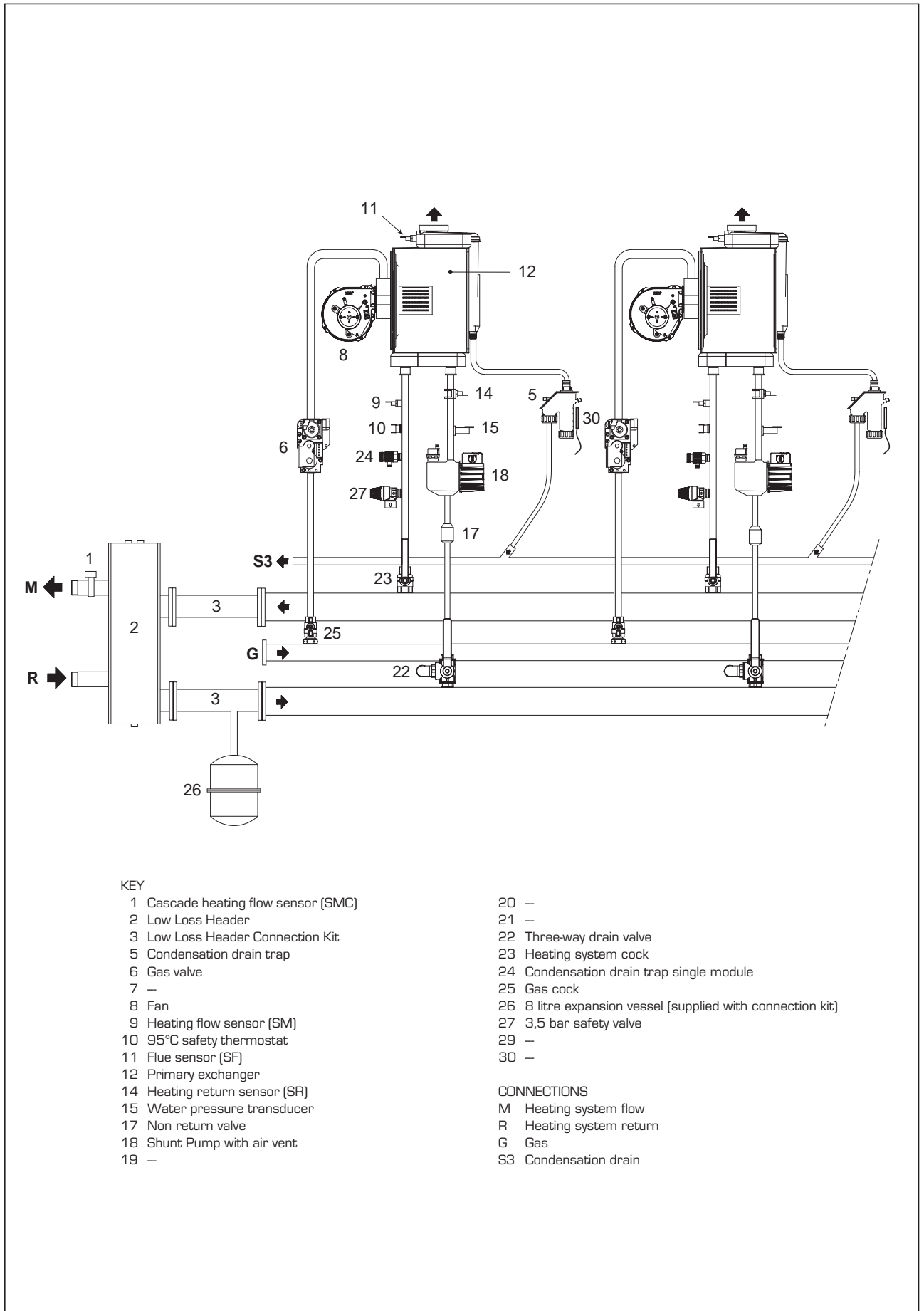


Fig. 1

1.3 TECHNICAL DATA

		MURELLE EQUIPE 100 (M)	MURELLE EQUIPE 150 (M)
Thermal power			
Nominal (80-60°C)	kW	93,6 (2 x 46,8)	140,4 (3 x 46,8)
Nominal (50-30°C)	kW	102,4 (2 x 51,2)	153,6 (3 x 51,2)
Min (80-60°C)	kW	9,3	9,3
Min (50-30°C)	kW	10,5	10,5
Nominal thermal capacity			
Nominal thermal capacity	kW	96,0 (2 x 48,0)	144,0 (3 x 48,0)
Min thermal capacity			
Min thermal capacity	kW	9,6	9,6
Min-max useable yield (80-60°C)			
Min-max useable yield (80-60°C)	%	96,9/97,5	96,9/97,5
Min-max useable yield (50-30°C)			
Min-max useable yield (50-30°C)	%	109,0/106,7	109,0/106,7
Useful yield at 30% (40-30°C)			
Useful yield at 30% (40-30°C)	%	107	107
Energy performance marking (EEC 92/42)			
Energy performance marking (EEC 92/42)		★★★★	★★★★
Losses to arrest to 50°C			
Losses to arrest to 50°C	W	152 (2 x 76)	228 (3 x 76)
Heating units MURELLE HE 50 R (M)			
Heating units MURELLE HE 50 R (M)	n°	2	3
Electrical supply and frequency			
Electrical supply and frequency	V-Hz	230-50	230-50
Power absorbed fixed pump speed			
Power absorbed fixed pump speed	W	360 (2 x 180)	540 (3 x 180)
Power absorbed modulating pump speed (M)			
Power absorbed modulating pump speed (M)	W	260 (2 x 130)	390 (3 x 130)
Degree of electric protection			
Degree of electric protection		IP X4D	IP X4D
Setting range single module			
Setting range single module	°C	20/80	20/80
Water content of modules			
Water content of modules	l	4,6 (2 x 2,3)	6,9 (3 x 2,3)
Max. operating pressure			
Max. operating pressure	bar	3,5	3,5
Max. operating temperature			
Max. operating temperature	°C	85	85
Flue gas temperature at Nominal capacity (80-60°C)			
Flue gas temperature at Nominal capacity (80-60°C)	°C	85	85
Flue gas temperature at Minimum capacity (80-60°C)			
Flue gas temperature at Minimum capacity (80-60°C)	°C	70	70
Flue gas temperature at Nominal capacity (50-30°C)			
Flue gas temperature at Nominal capacity (50-30°C)	°C	52	52
Flue gas temperature at Minimum capacity (50-30°C)			
Flue gas temperature at Minimum capacity (50-30°C)	°C	45	45
Max/min flow rate of flue gases			
Max/min flow rate of flue gases	kg/h	15/160	15/240
CO2 at Nominal/Minimum capacity (G20)			
CO2 at Nominal/Minimum capacity (G20)	%	9,5/9,2	9,5/9,2
CO2 at Nominal/Minimum capacity (G31)			
CO2 at Nominal/Minimum capacity (G31)	%	10,0/10,3	10,0/10,3
Max. pressure at flue gas release manifold			
Max. pressure at flue gas release manifold	Pa	160	160
CE certification			
CE certification	n°	1312CM5613	1312CM5613
Category			
Category		II2H3P	II2H3P
Type			
Type		B23-53/B23P-53P/C13-33-43-53-83	B23-53/B23P-53P/C13-33-43-53-83
NOx class			
NOx class		5 (< 30 mg/kWh)	5 (< 30 mg/kWh)
Main gas nozzles single module			
Number of nozzles			
Number of nozzles	n°	1	1
Nozzle diameter G20			
Nozzle diameter G20	ø mm	7,5	7,5
Nozzle diameter G31			
Nozzle diameter G31	ø mm	5,5	5,5
Consumption at nominal/min. power			
Nominal G20			
Nominal G20	m ³ st/h	10,30 (2 x 5,15)	15,45 (3 x 5,15)
Minimum G20			
Minimum G20	m ³ st/h	1,01	1,01
Nominal G31			
Nominal G31	kg/h	7,46 (2 x 3,73)	11,19 (3 x 3,73)
Minimum G31			
Minimum G31	kg/h	0,75	0,75
Gas supply pressure			
G20			
G20	mbar	20	20
G31 (Propane)			
G31 (Propane)	mbar	37	37

1.4 HYDRAULIC CIRCUIT



1.5 LOAD LOSS IN HYDRAULIC SEPARATOR SUPPLIED UPON REQUEST IN KITS CODE 8101550

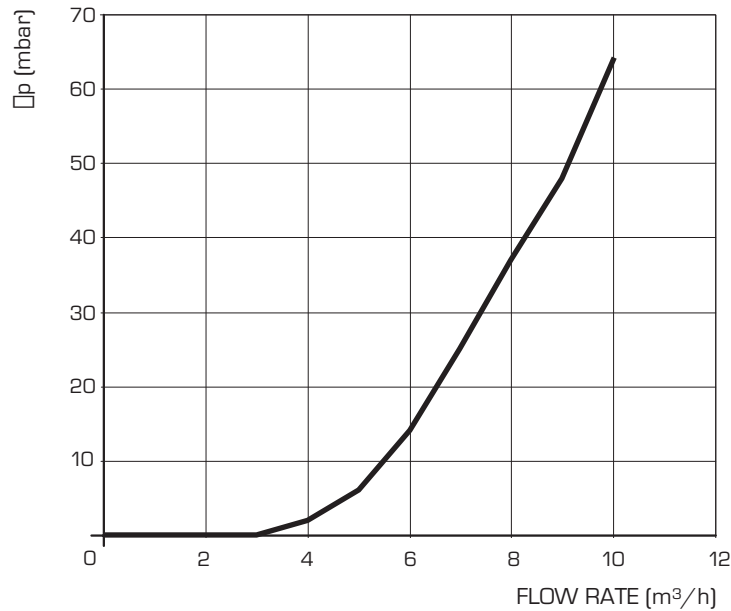


Fig. 3

1.6 INTERFACE WITH OTHER ELECTRONIC DEVICES OPTIONAL

The electronic boiler board is prepared for the application of the following electronic devices to be requested separately:

- climate regulator CR 53 code 8092227
- Remote control CR 73 code 8092226
- thermoregulator RVS code 8092255
- MIXED ZONE kit code 8092252

- INSOL kit code 8092254
- RS-485 kit code 8092244 which allows to MODBUS communication cascade boilers
- Additional casing board code 8092236 when you connect MIXED ZONE or INSOL board.

All devices are supplied with instructions for installation and use. For the configuration of devices CR 53, CR 73 e RVS with electronic boiler board set **PAR 10**.

To access the installer parameters see section **6 (RS-485 board for cascade management)**.

1.7 CONTENTS OF KIT (cod. 5193650 MURELLE EQUIPE 100 (M) - cod. 5193651 MURELLE EQUIPE 150 (M) (fig. 4)

- N° 2 frame kit code 6294800 with screws TE M8 x 75 for "**MURELLE EQUIPE 100 (M)**".
- N° 3 frame kit code 6294800 with screws TE M8 x 75 for "**MURELLE EQUIPE 150 (M)**".

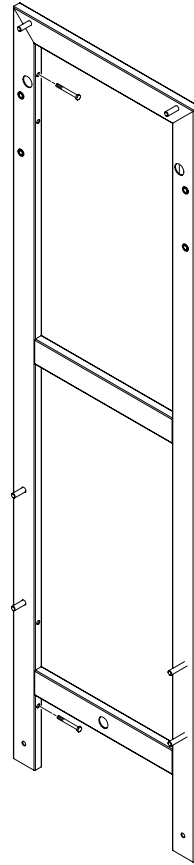


Fig. 4/a

- N° 2 support brackets boiler code 6073324 with screws TE M8 x 16 for "**MURELLE EQUIPE 100 (M)**".
- N° 3 support brackets boiler code 6073324 with screws TE M8 x 16 per "**MURELLE EQUIPE 150 (M)**".

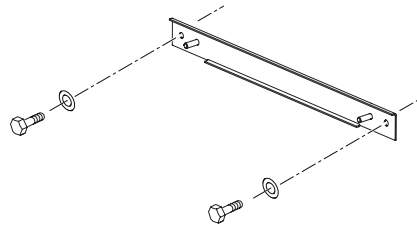


Fig. 4/b

- N° 2 shelf kit code 6294811 with washers and nuts M10.

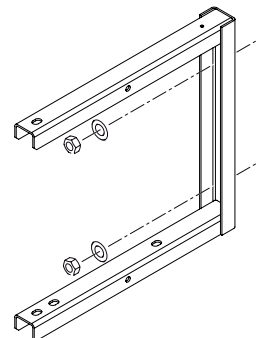


Fig. 4/c

- N° 2 flow/return manifold kit code 6291954 coated in polyurethane with flanges, seal and M16 fixing screws for **"MURELLE EQUIPE 100 (M)"**.
- N° 2 flow/return manifold kit code 6291955 coated in polyurethane with flanges, seal and M16 fixing screws for **"MURELLE EQUIPE 150 (M)"**.

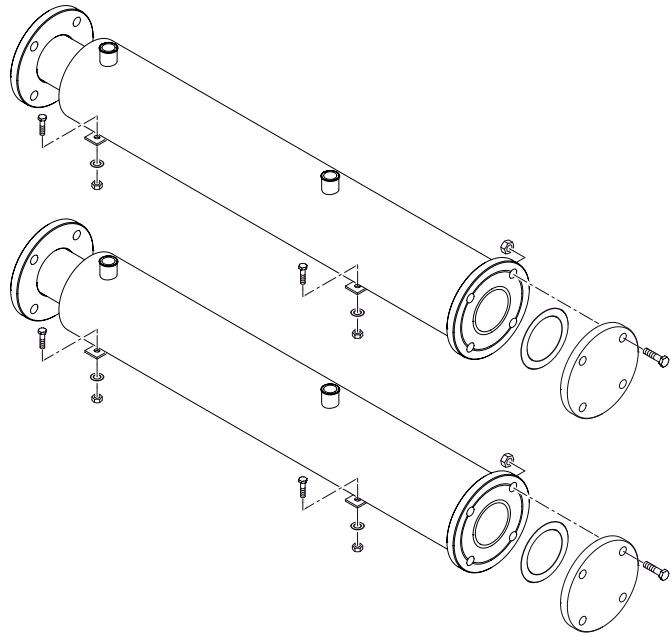


Fig. 4/d

- N° 1 gas collector **"MURELLE EQUIPE 100 (M)"** code 6286330 with nuts, M12 fixing screws and flange.
- N° 1 gas collector **"MURELLE EQUIPE 150 (M)"** code 6286331 with nuts, M12 fixing screws and flange.

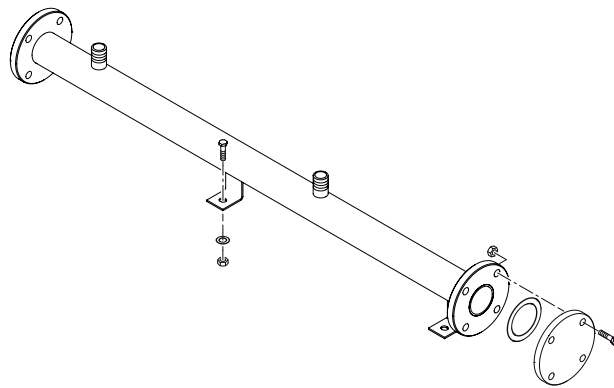


Fig. 4/e

- N° 1 condensation drain manifold kits for **"MURELLE EQUIPE 100 (M)"** consisting of 2 pipe connection, 2 pipe e 1 cap. The manifold is supplied with brackets, nuts and M8 screws.
- N° 1 condensation drain manifold kits for **"MURELLE EQUIPE 150 (M)"** consisting of 3 pipe connection, 3 pipe e 1 cap. The manifold is supplied with brackets, nuts and M8 screws.

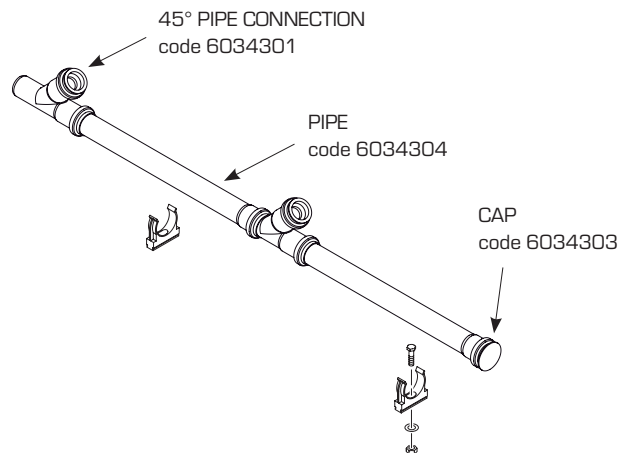
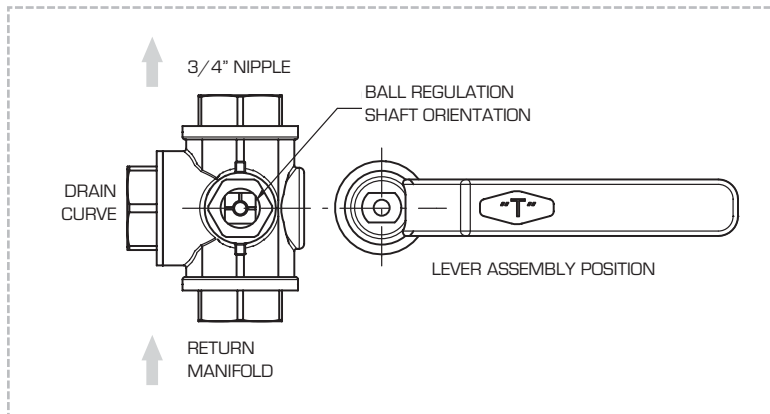


Fig. 4/f

- N° 2 three-way flow/return and gas cock kits, connecting pipes, 3/4" nipple, non-return valve and seals for the connection of two modules "MURELLE EQUIPE 100 (M)".
- N° 3 three-way flow/return and gas cock kits, connecting pipes, 3/4" nipple, non-return valve and seals for the connection of three modules "MURELLE EQUIPE 150 (M)".

CAUTION: Before assembling three-way drain valve, orient the ball regulation lever as shown in the figure.



- M Heating system flow
- R Heating system return
- G Gas supply
- M2 Tank flow

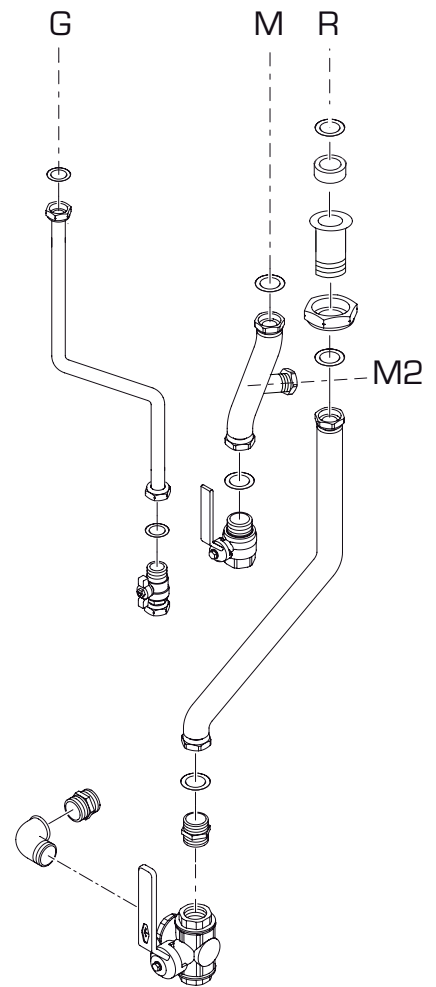


Fig. 4/g

- N° 1 sensor kit code 8092250 with external sensor (SE), cascade heating flow sensor (SMC) and RS-485 board connection cable.

NOTE: Section 5 show the electrical connection for the sensors.

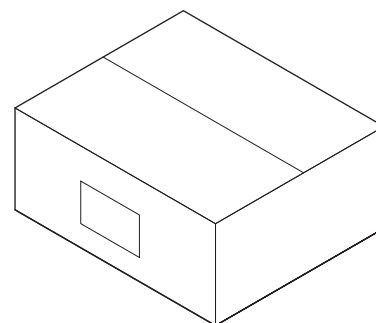
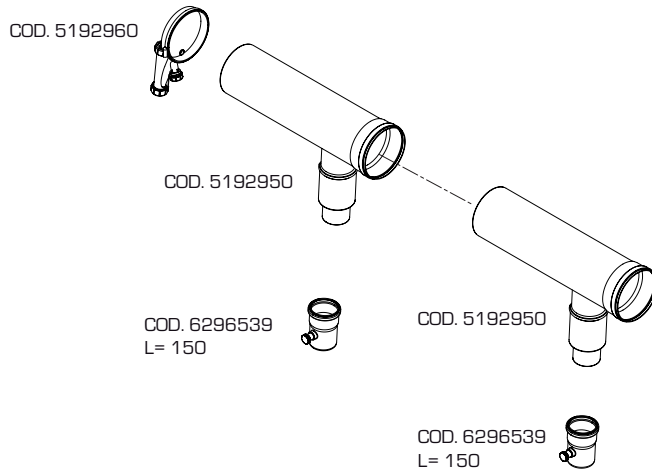


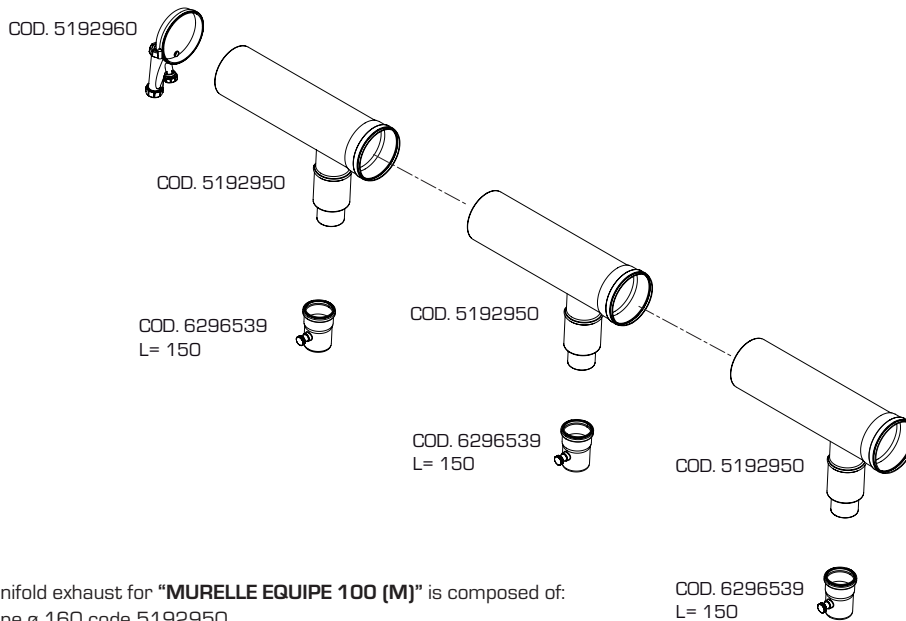
Fig. 4/h

1.8 COMPOSITION KIT MANIFOLD EXHAUST (fig. 5)

MURELLE EQUIPE 100 (M)



MURELLE EQUIPE 150 (M)



- Kit manifold exhaust for "MURELLE EQUIPE 100 (M)" is composed of:
 - N. 2 pipe \varnothing 160 code 5192950
 - N. 2 extension L. 150 \varnothing 80 code 6296539
 - N. 1 manifold tap code 5192960.

- Kit manifold exhaust for "MURELLE EQUIPE 150 (M)" is composed of:
 - N. 3 pipe \varnothing 160 code 5192950
 - N. 3 extension L. 150 \varnothing 80 code 6296539
 - N. 1 manifold tap code 5192960.

CAUTION: Use silicone grease to ease the connection of the flue components.

Fig. 5

1.9 LOW LOSS HEADER CONNECTION KIT (fig. 6)

- N° 2 flanged heating system flow/return stub pipes complete with expansion vessel 8 liters code 6245108, connection pipe code 6227661, gaskets and nipple.

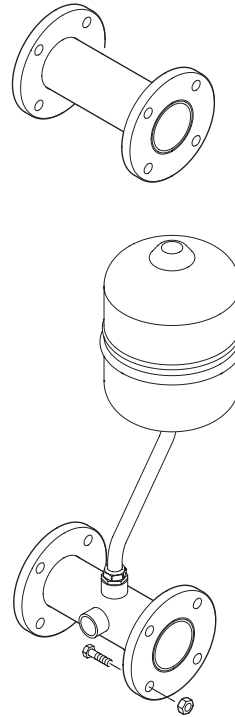


Fig. 6

1.10 LOW LOSS HEADER code 8101550 (order separately) (fig. 7)

- N° 1 Hydraulic separator with seals, nuts and M16 screws.

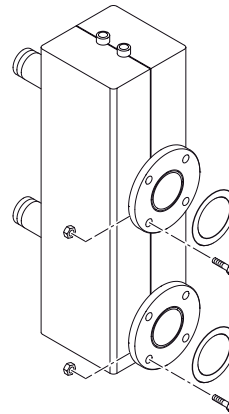
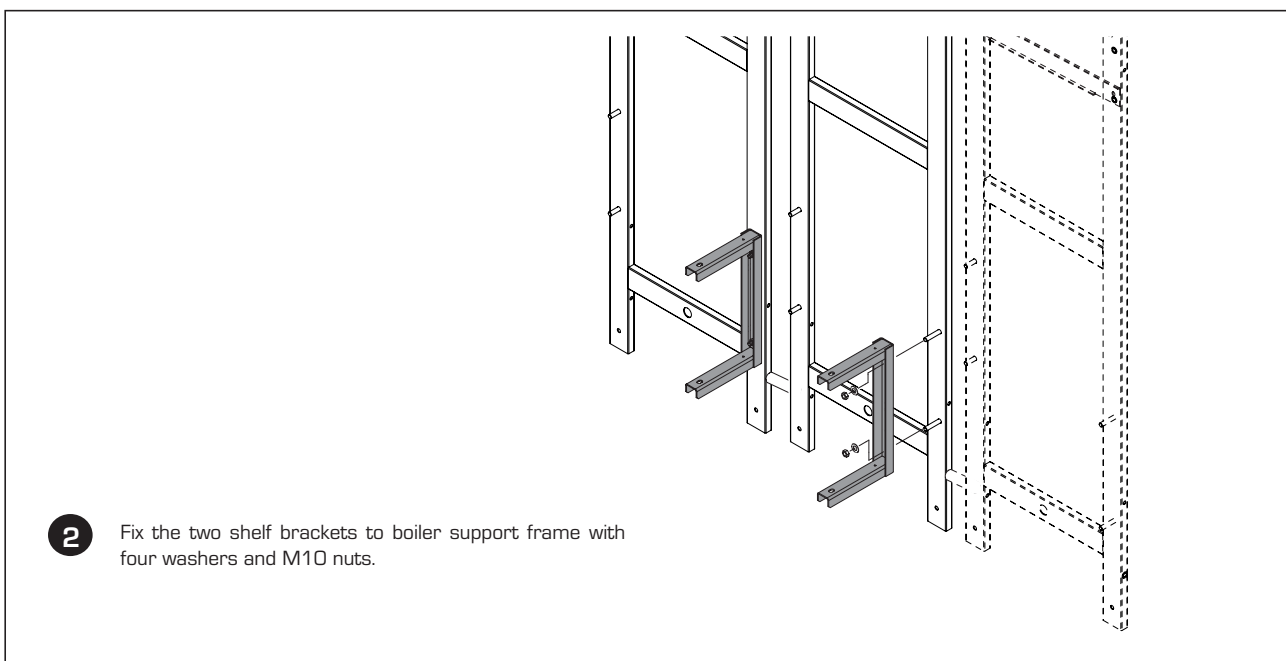
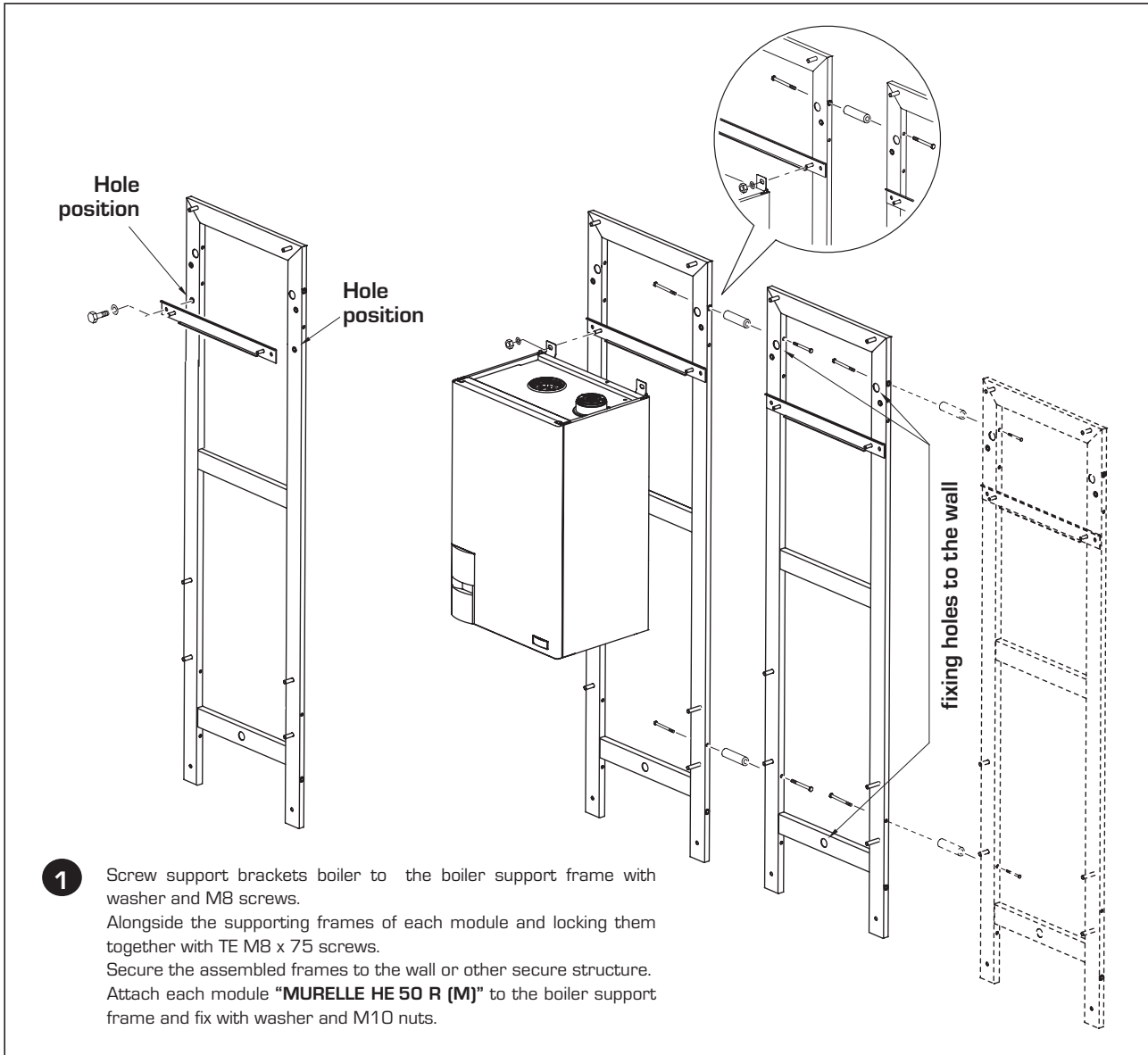


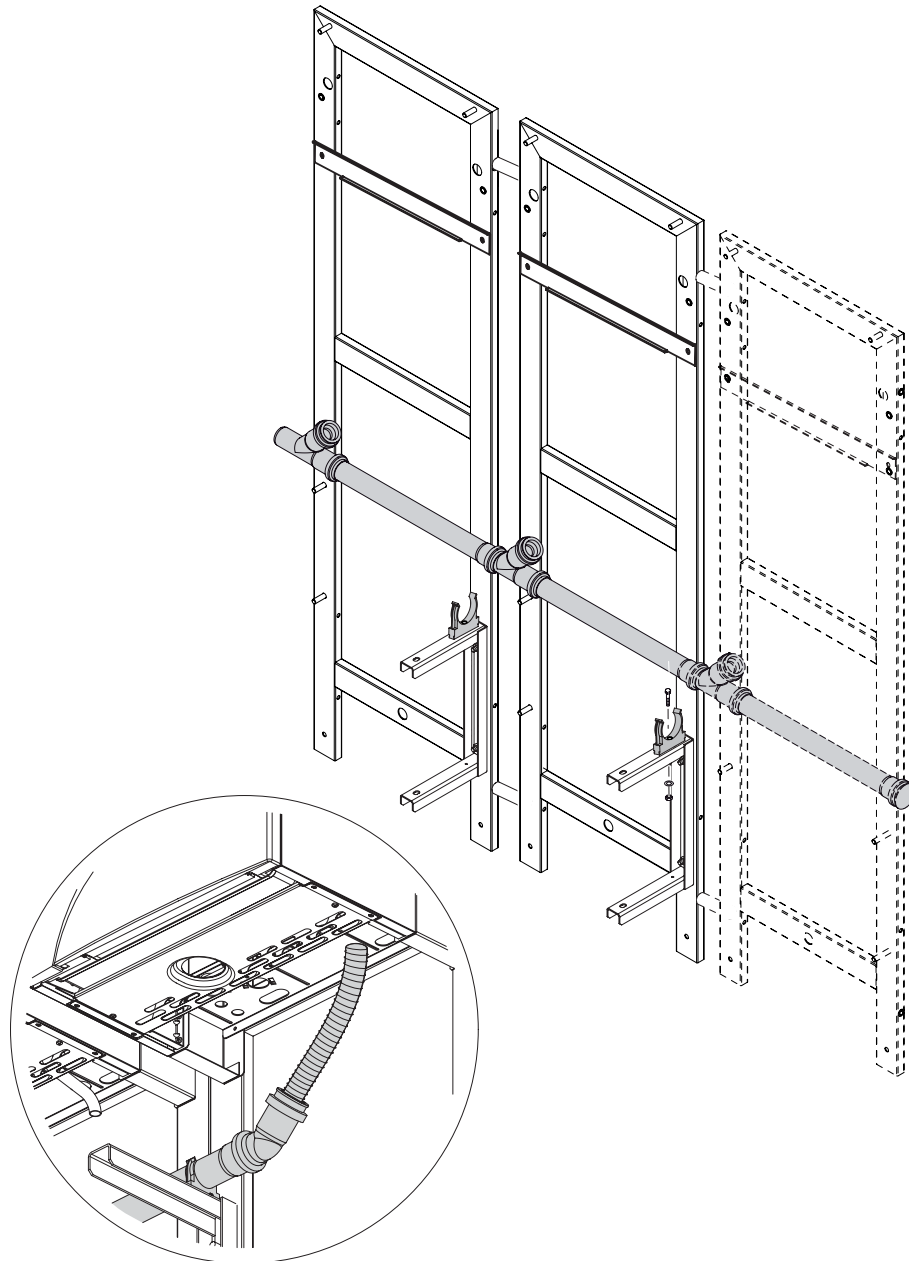
Fig. 7

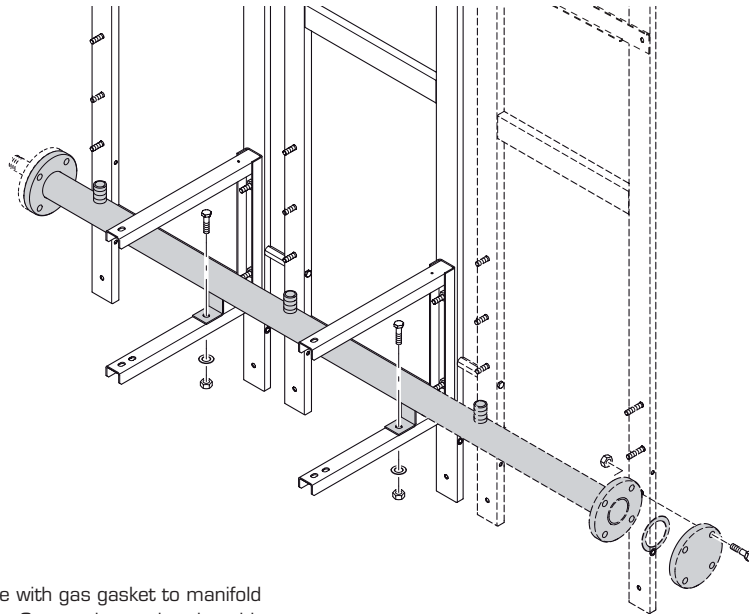
2 ASSEMBLING THE BOILER SUPPORT FRAME



3 FITTING CONNECTIONS AND CONDENSATE DRAIN

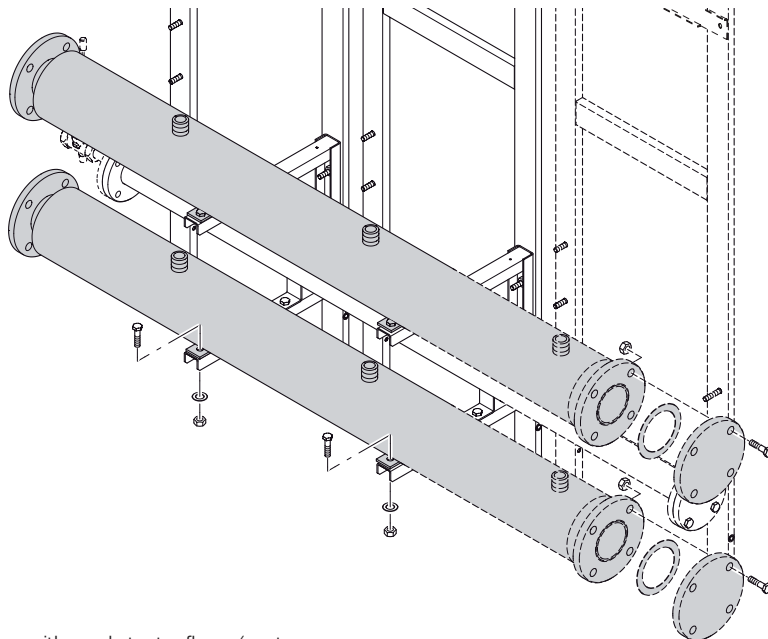
- 1 Mount the condensation drain manifold brackets with screws, washer and M5 nuts. Insert the condensation drain manifold in those brackets. Connect the each condensate boiler drain trap to the condensation drain manifold.





- 2** Assemble the blank flange with gas gasket to manifold with screws and M12 nuts. Secure the gas header with screws, washers and M8 nuts.

CAUTION: The fuel shut-off valve is not provided.



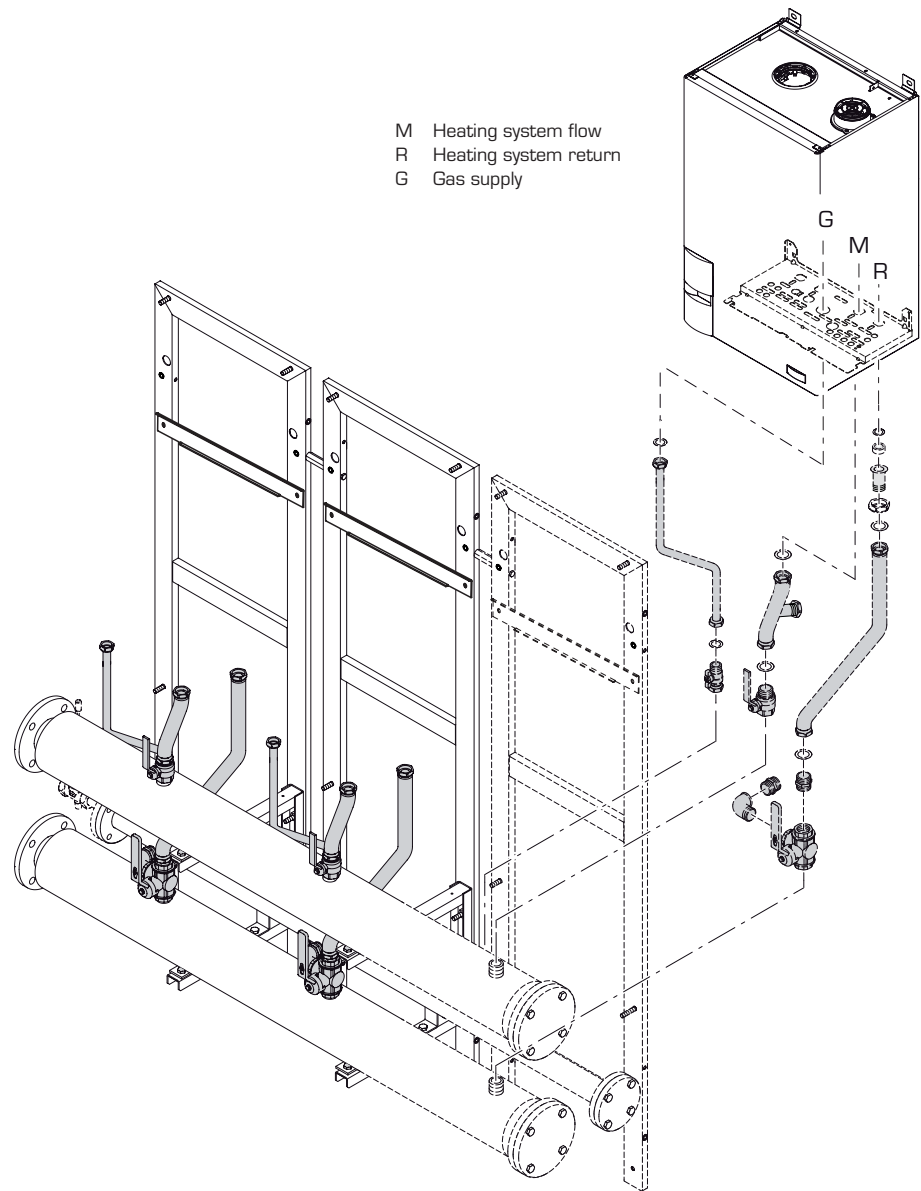
- 3** Install blind flanges with gaskets to flow / return manifold with screws and M12 nuts. Fix the flow / return manifold in its support with screws, washers and M16 nuts.

4

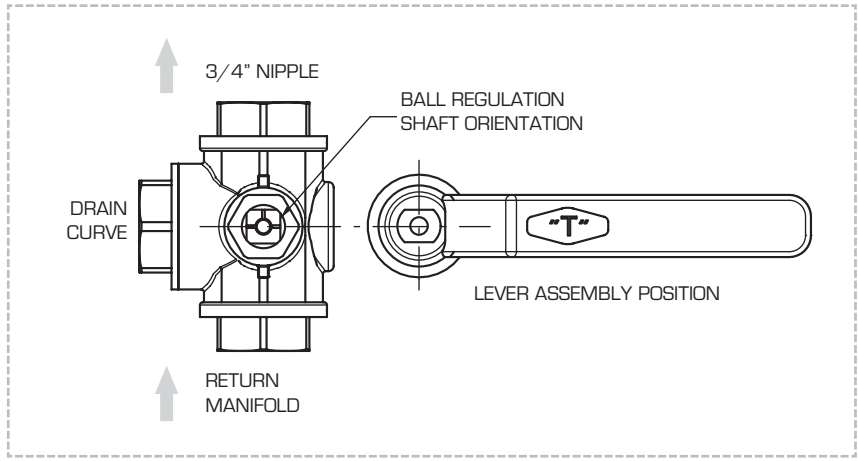
- Install:
- three-way flow/return valve
 - gas cock
 - non-return valve

to the respective manifolds and install the pipes to the connections of the boiler with the respective seals.

CAUTION: Before assembling three-way drain valve, orient the ball regulation lever as shown in the figure.

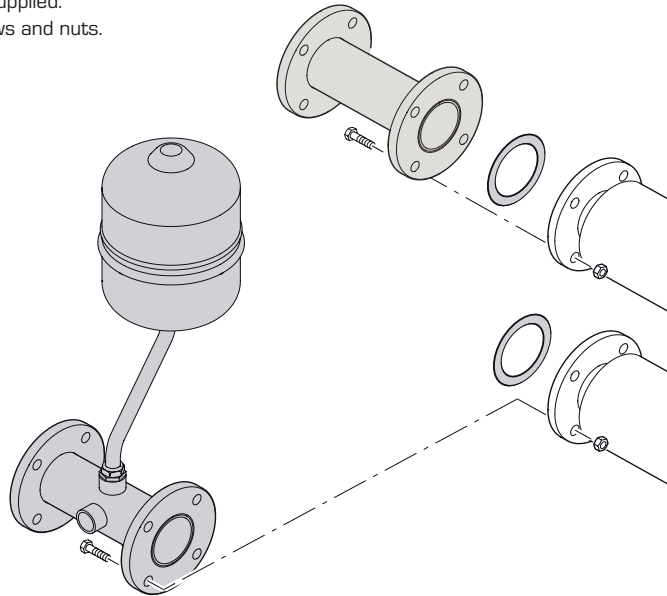


M Heating system flow
 R Heating system return
 G Gas supply



5

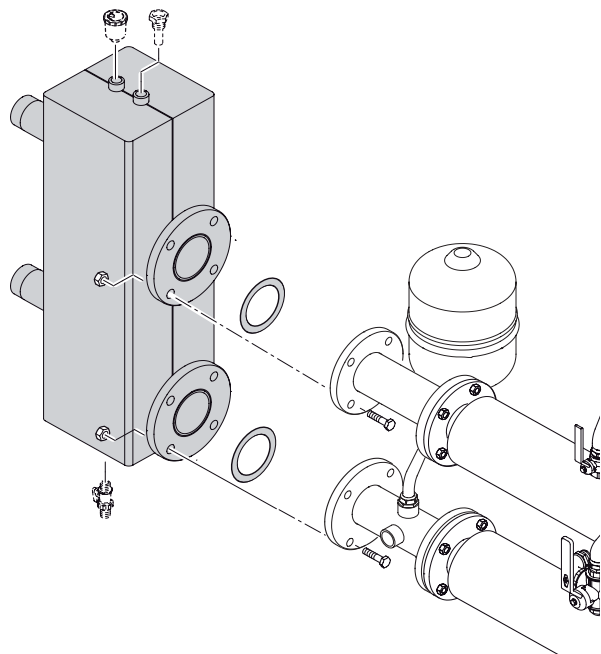
Connection of the hydraulic separator, if supplied.
Assemble with seals and M12 fixing screws and nuts.



6

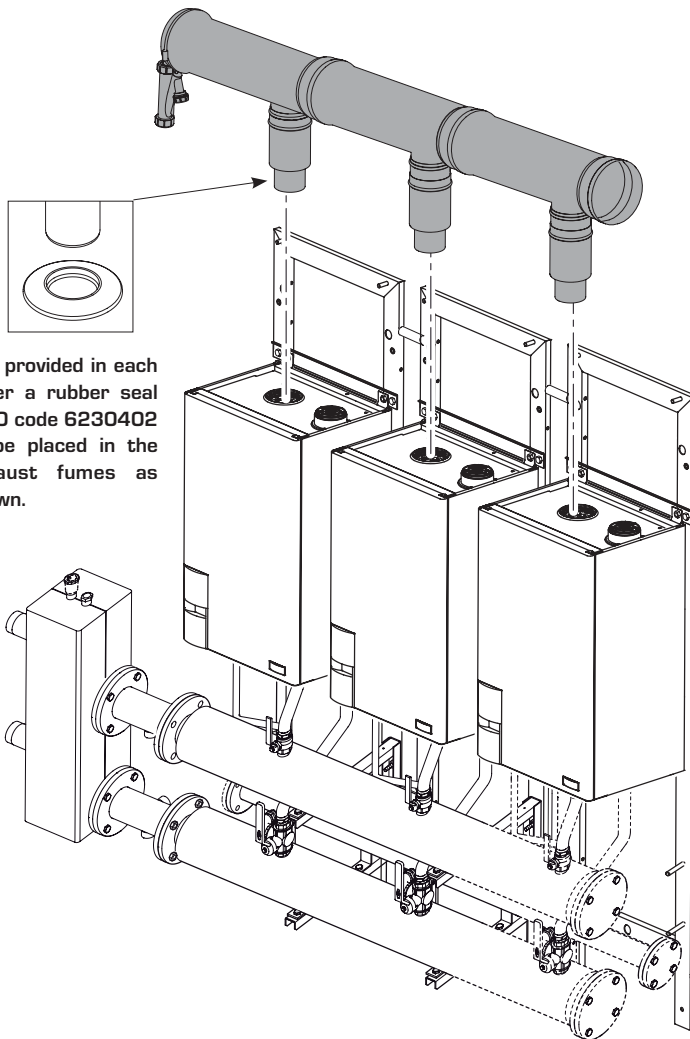
Connection of the hydraulic separator, if supplied.
Assemble with seals and M16 fixing screws and nuts.

CAUTION: Assemble the air vent valve, the drain valve and sleeve 1/2 " (not supplied) in the position as shown in figure.



4 CASCADE FLUE

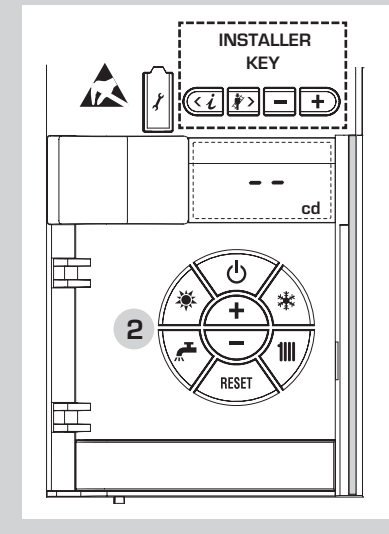
- 1** Assemble the cascade flue as shown. use silicone grease to ease connection of the components
Attention to the assembly sequence of variable stub pipe height (code 6296522).
 The flue can be orientated to the left or the right, but always must fall to the condensate drain.



It is provided in each boiler a rubber seal Ø 80 code 6230402 to be placed in the exhaust fumes as shown.

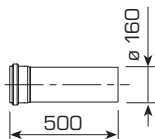
When boilers are used with a cascade flue PAR 1 on each boiler must be reset.
 On natural gas PAR 1 = 6
 On LPG PAR 1 = 14

Parameter 1 will be displayed. Change the value using the and .
 The standard display returns automatically after 60 seconds, or by pressing one of the control keys.

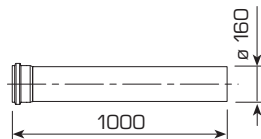


AVAILABLE AS OPTIONAL, THE FOLLOWING Ø 160 POLYPROPYLENE EXHAUST FUMES ACCESSORIES

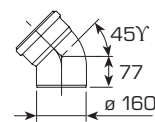
Extension L. 500
code 8102522



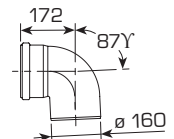
Extension L.1000
code 8102523



Extension 45° MF
code 8102520



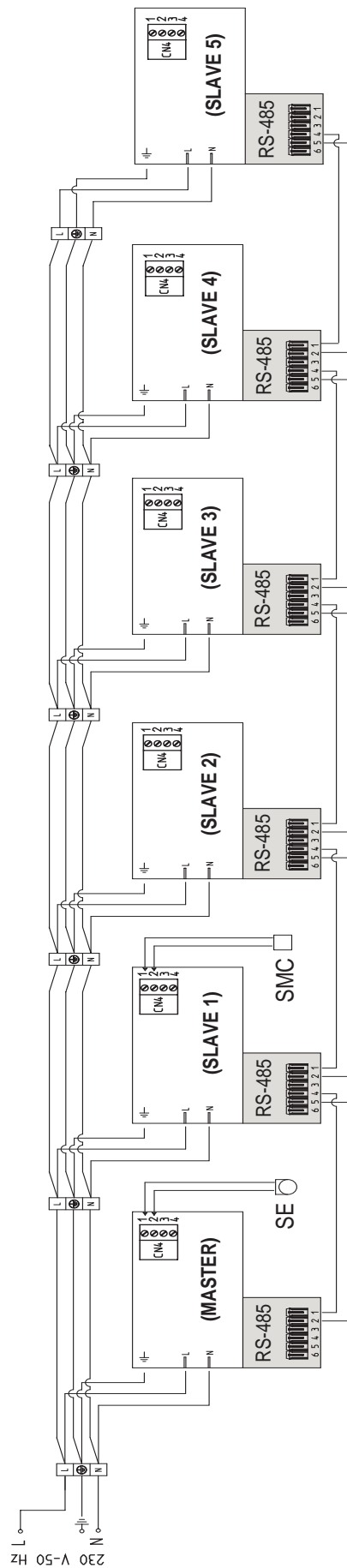
90° Bend MF
code 8102521



5 CASCADE CONNECTION

- 1 Connect the RS 485 boards as shown.

Connect the external temperature sensor (SE) to **MASTER** boiler and heating flow sensor (SMC) to **SLAVE 1**.



6 CASCADE MANAGEMENT

After connecting in cascade the boilers must be configured.
 One boiler must be assigned as the master and others as slaves.
 To do this PAR 15 on each boiler must be reset.

On each boiler press any key to wake up the display. Then press simultaneously the and the buttons for 5 seconds until the display is as shown.



Press the key until PAR 15 is shown in the bottom right hand corner.

Using the and keys reset the value accordingly.

On the MASTER set PAR 15 = 0

On the first SLAVE set PAR 15 =1

*Second SLAVE set PAR 15 =2 ,

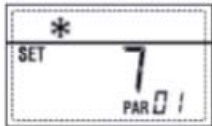
To confirm the setting press

*CASCADE WITH MORE THAN TWO BOILERS

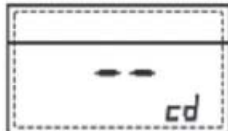
When more than two boilers are connected in cascade, it is essential that the OEM parameter on the "Master" boiler is reset to coincide with the number of boilers in the cascade.

This must be done after setting PAR 15 on the designated Master boiler to "0"

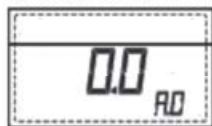
On the "Master" boiler press any key to wake up the display. Then press simultaneously the and the buttons for 5 seconds until the display is as shown.



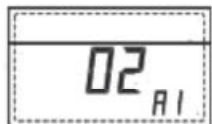
Then press again, simultaneously, the and the buttons for 2 seconds until the display shows.



Next press, in the order shown .
 The display will be as shown.

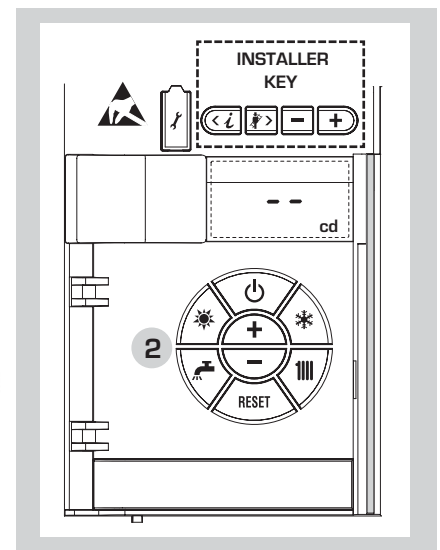


Press the button, and the display will show



Use the and buttons to set the number of boilers in the cascade.

Then press to confirm the settings.



Service Record

It is recommended that your heating system is serviced regularly and that the appropriate Service Interval Record is completed. This is also a condition of any extended warranty offered.

Service Provider

Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

Always use the manufacturer's specified spare part when replacing controls.

Service 1 Date: _____
Engineer Name: _____
Company Name: _____
Telephone No. _____
Gas Safe Register No. _____
Comments CO: _____ CO2: _____ RATIO: _____
Signature: _____

Service 2 Date: _____
Engineer Name: _____
Company Name: _____
Telephone No. _____
Gas Safe Register No. _____
Comments CO: _____ CO2: _____ RATIO: _____
Signature: _____

Service 3 Date: _____
Engineer Name: _____
Company Name: _____
Telephone No. _____
Gas Safe Register No. _____
Comments CO: _____ CO2: _____ RATIO: _____
Signature: _____

Service 4 Date: _____
Engineer Name: _____
Company Name: _____
Telephone No. _____
Gas Safe Register No. _____
Comments CO: _____ CO2: _____ RATIO: _____
Signature: _____

Service 5 Date: _____
Engineer Name: _____
Company Name: _____
Telephone No. _____
Gas Safe Register No. _____
Comments CO: _____ CO2: _____ RATIO: _____
Signature: _____

Service 6 Date: _____
Engineer Name: _____
Company Name: _____
Telephone No. _____
Operative ID No. _____
Comments CO: _____ CO2: _____ RATIO: _____
Signature: _____

Service 7 Date: _____
Engineer Name: _____
Company Name: _____
Telephone No. _____
Gas Safe Register No. _____
Comments CO: _____ CO2: _____ RATIO: _____
Signature: _____

Service 8 Date: _____
Engineer Name: _____
Company Name: _____
Telephone No. _____
Gas Safe Register No. _____
Comments CO: _____ CO2: _____ RATIO: _____
Signature: _____

Service 9 Date: _____
Engineer Name: _____
Company Name: _____
Telephone No. _____
Gas Safe Register No. _____
Comments CO: _____ CO2: _____ RATIO: _____
Signature: _____

Service 10 Date: _____
Engineer Name: _____
Company Name: _____
Telephone No. _____
Gas Safe Register No. _____
Comments CO: _____ CO2: _____ RATIO: _____
Signature: _____

INSTALLATION CHECKLIST

SINGLE BOILER INSTALLATION

PAR 14 (See section 2.6.6) When BMS input used, and input is 10v, the required flow temperature = °C Set value of PAR 14

BOILERS INSTALLED IN CASCADE

ALL BOILERS IN THE CASCADE

PAR 15 (see fig 4/b) The cascade address must be set in each boiler in the cascade, denoting the master and each slave (Master = 0)

	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Boiler 5	Boiler 6
Set value of PAR 15	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

PAR 1 (see section 2.2.2) When installed with a cascade flue, incorporating a clappet(non return) valve, PAR 1 must be set accordingly on each boiler in the cascade

	Boiler 1	Boiler 2	Boiler 3	Boiler 4	Boiler 5	Boiler 6
Set value of PAR 1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

MASTER BOILER

OEM A1 (see section 2.2.2) When the number of boilers in the cascade is greater than two, the OEM A1 on the MASTER boiler (boiler with PAR 15=0), must be set to the same value as the number of boilers in the cascade. This can only be done after PAR 15 has been set.

Number of boilers in cascade
 Set value of OEMA1 on boiler number

PAR 14 (See section 2.6.6) When BMS input used, and input is 10v, the required flow temperature = °C Set value of PAR 14 on the master boiler

Commissioning Checklist for Boilers in Cascade

This checklist is for guidance only, and is not a full installation safety check

Address _____

Engineer _____

	1	2	3	4	5	6	7	8
Satisfactory visual check of flue Y/N								
Flue within allowable length and correctly terminated Y/N								
Confirm Tightness of installation pipework downstream of Isolating valve using leak detection fluid Y/N								
Check tightness of all valves Y/N								
Carryout ignition test of boiler with gas isolated to ensure boiler fails safe Y/N								
Turn on gas supply to boiler and isolate main burner(disconnect gas valve) and ensure boiler goes to lockout Y/N								
Reset boiler lockout and retry, ensuring boiler again locks out Y/N								
Reconnect gas valve, reset boiler lockout, and ensure boiler lights and is stable Y/N								
Test safety devices Y/N								
Safety stat(TS) - Disconnect - the boiler locks out Y/N								

	Boiler 1		Boiler 2		Boiler 3		Boiler 4		Boiler 5		Boiler 6		Boiler 7		Boiler 8	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Flue analysis																
Boiler Output																
CO ppm																
CO2 %																
Ratio																
Boiler size																
Serial Number																
Completed By																
Date																

INDUSTRY GUIDANCE FOR INSTALLERS ON CONDENSATE

DRAINAGE PIPE INSTALLATION

This guidance is endorsed by HHIC members.

1. BACKGROUND

During recent winters the UK has experienced prolonged spells of extremely cold weather - down to minus 20°C and below in many areas. This resulted in a significant increase in the number of calls to boiler manufacturers and heating engineers from householders with condensing (high efficiency) boilers where the condensate drainage pipe had frozen and become blocked with ice, causing the boiler to shut down. In the vast majority of cases such problems occur where the condensate drainage pipe is located externally to the building for some part of its length.

British Standards, Building Regulations etc. currently allow condensate drainage pipes to be run either internally or externally, or a combination of these. These documents give guidance on how to install the pipes in order to reduce the possibility of freezing. However this guidance may not be sufficient to prevent freezing in extreme conditions - with widespread and prolonged very low temperatures.

In view of the possibility that UK weather patterns will show more “extremes” in future due to the effects of global climate change, the following guidance updates previous recommendations on condensate drainage pipe installation. All other technical requirements for condensate drain installation given in British Standard BS 6798:2009, or in boiler manufacturers’ installation instructions should still be followed.

2. REVISED GUIDANCE ON CONDENSATE DRAINAGE PIPE INSTALLATION

Where a new or replacement boiler is being installed, access to an internal “gravity discharge” termination should be one of the main factors considered when determining potential boiler locations, so that the condensate drainage pipe can be terminated as recommended below. On an existing installation, the guidance below should also be followed if work is carried out to “upgrade” the condensate drainage system to reduce the risk of freezing in extreme conditions.

Internal condensate drainage pipework must be a minimum of 19mm ID (typically 22mm OD) plastic pipe and this should “fall” at least 45 mm per metre away from the boiler, taking the shortest practicable route to the termination point.

In order to minimise the risk of freezing during prolonged very cold spells, one of the following methods of terminating condensate drainage pipe should be adopted -

2.1 INTERNAL TERMINATION:

Wherever possible, the condensate drainage pipe should be terminated at a suitable internal foul water discharge point such as (a) an internal soil and vent stack or (b) an internal kitchen or bathroom waste pipe, washing machine waste pipe etc. A suitable permanent connection to the foul waste pipe should be used. Figures 1, 2(a), 2(b) show appropriate connection methods.

The possibility of waste pipes freezing downstream of the connection point should be considered when determining a suitable connection point - e.g. a slightly longer pipe run to an internal soil stack may be preferable to a shorter run connecting into a kitchen waste pipe discharging directly through the wall to an external drain.

Where "gravity discharge" to an internal termination is not physically possible (e.g. the discharge point is above the appliance location, or access is obstructed by a doorway), or where very long internal pipe runs would be required to reach a suitable discharge point, the following measures may be adopted -

2.2 USE OF A CONDENSATE PUMP (TO AN INTERNAL TERMINATION):

Condensate can be removed using a proprietary condensate pump, of a specification recommended by the boiler or pump manufacturer.

The pump outlet should discharge to a suitable internal foul water discharge point, such as (a) an internal soil and vent stack or (b) an internal kitchen or bathroom waste pipe, washing machine waste pipe etc. Figure 3 shows a typical connection method.

A suitable permanent connection to the foul waste pipe should be used and the manufacturer's detailed installation instructions for the pump should be followed.

2.3 EXTERNAL TERMINATION:

The use of an externally-run condensate drainage pipe, terminating at a suitable foul water discharge point or purpose-designed soakaway, may be also be considered; however if this termination method is chosen then the following measures should be adopted -

The pipe should be run internally as far as possible before going externally and the pipe diameter should be increased to a minimum of 30mm ID (typically 32mm OD) before it passes through the wall.

The external run should be kept as short as possible, taking the most direct and "most vertical" route possible to the discharge point, with no horizontal sections in which condensate might collect.

The external pipe should be insulated using suitable waterproof and weatherproof insulation ("Class O" pipe insulation is suitable for this purpose) .

The use of fittings, elbows etc should be kept to a minimum and any internal “burrs” on cut pipework should be removed so that the internal pipe section is as smooth as possible.

The customer/householder should be advised that even with the above measures this type of installation could freeze, and that if this were to occur then boiler shutdown could result, requiring remedial action - possibly involving a chargeable engineer call-out.

Where there are likely to be extremes of temperature or wind-chill, the use of a proprietary trace-heating system for external condensate drainage pipework, incorporating an external frost thermostat, should therefore be considered. If such a system is used then the installation instructions of the trace heating manufacturer and any specific recommendations regarding pipe diameter, insulation, etc. should be followed. All other relevant guidance on condensate drainage pipe installation should also be followed.

Other cold weather protection methods approved or endorsed by boiler manufacturers and/or service organisations may be adopted if these are considered suitable by the parties involved.

If an external soil/vent stack is used as the external termination then the connection method shown in Figure 4 should be used, together with the measures on insulation etc. as described above and shown in the diagram.

When a rain water downpipe is used as the termination (**NB** only permissible if this downpipe passes to a combined foul and rainwater drainage system) an air break must be installed between the condensate drainage pipe and the downpipe to avoid reverse flow of rainwater into the boiler should the downpipe itself become flooded or frozen. Figure 5 shows a suitable connection method.

Where the condensate drainage pipe is terminated over an open foul drain or gully, the pipe should terminate below the grating level, but above water level, in order to minimise “wind chill” at the open end. Pipe drainage will be improved if the end is cut at 45° as opposed to a straight cut. The use of a drain cover (such as those used to prevent blockage by leaves) may offer further protection from wind chill. Figure 6 shows a suitable connection method.

Where the condensate drain pipe terminates in a purpose-designed soakaway (see BS 6798:2009 or boiler installation manual for soakaway design requirements) any above-ground section of condensate drainage pipe should be run and insulated as described above. Figure 7 shows a suitable connection method.

3. UNHEATED INTERNAL AREAS:

Internal condensate drainage pipes run in unheated areas such as lofts, basements and garages should be treated as external pipe.



NOTES

The Benchmark Commissioning Checklist (located at the back of the boiler installation manual) should be completed as required to record details of the condensate drainage pipe installation.

Where an external condensate drainage pipe is installed, the customer should be made aware of the risks and consequences of its freezing and offered the option to fit trace heating (or other measures approved by the boiler manufacturer or service organisation).

Separate guidance has been published for householders on remedial actions which can be taken if a condensate drainage pipe freezes. This may result in requests for alteration to condensate drainage pipework, in which case the guidance above should be followed.

In some instances (e.g. where an elderly person's heating needs to be reinstated as an emergency measure) condensate drainage pipes may have been cut in order to bypass any blockage and allow re-ignition of the boiler, with condensate being collected in a suitable container as a temporary solution.

While not unsafe, this is not recommended practice and if such action has been taken then the condensate drainage pipe must be reinstated as soon as possible, using the above guidance to reduce risk of freezing in future.

Figure 1 – Connection of condensate drainage pipe to internal soil and vent stack

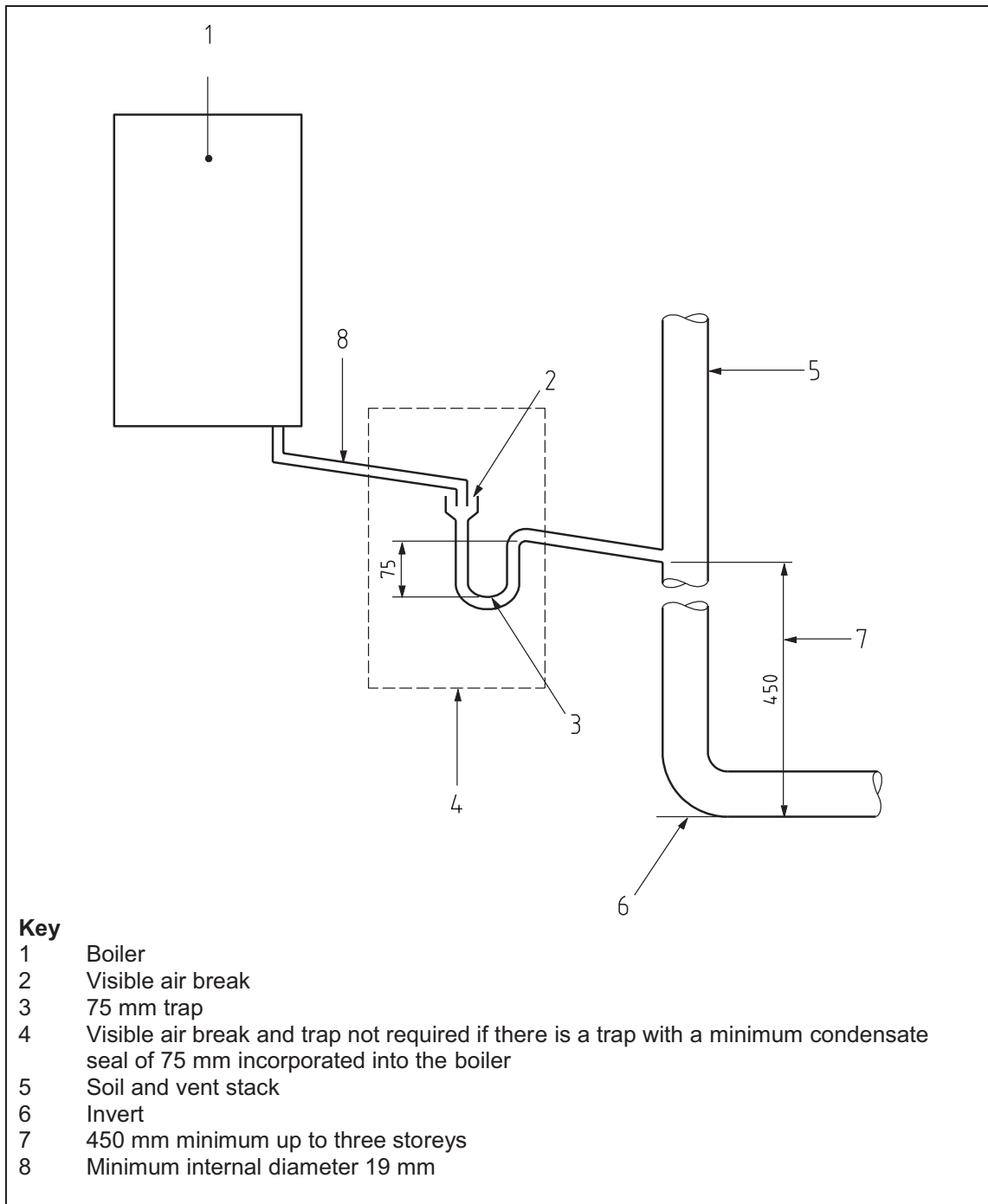


Figure 2(a) – Connection of a condensate drainage pipe downstream of a sink, basin, bath or shower waste trap

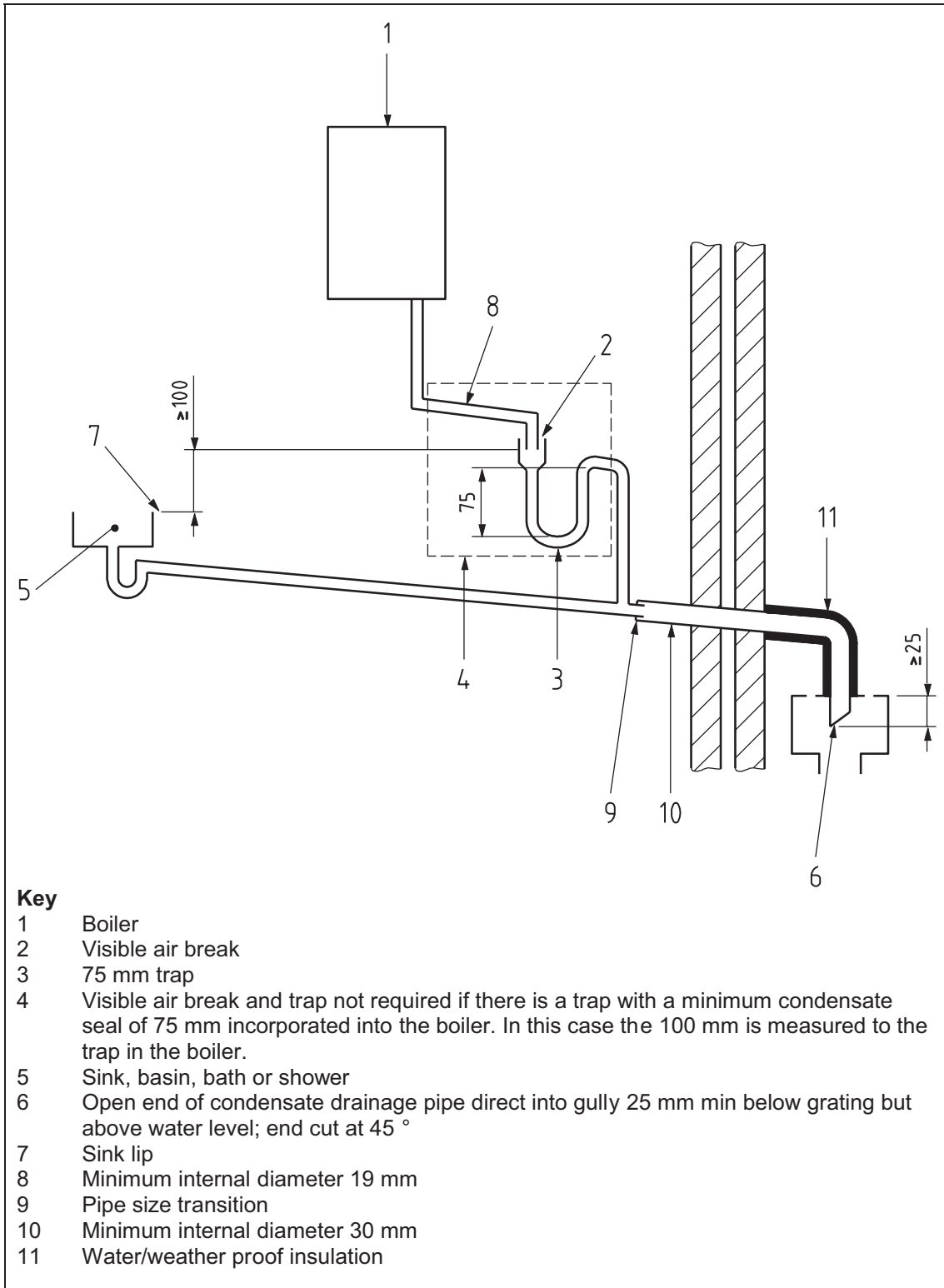


Figure 2(b) – Connection of a condensate drainage pipe upstream of a sink, basin, bath or shower waste trap

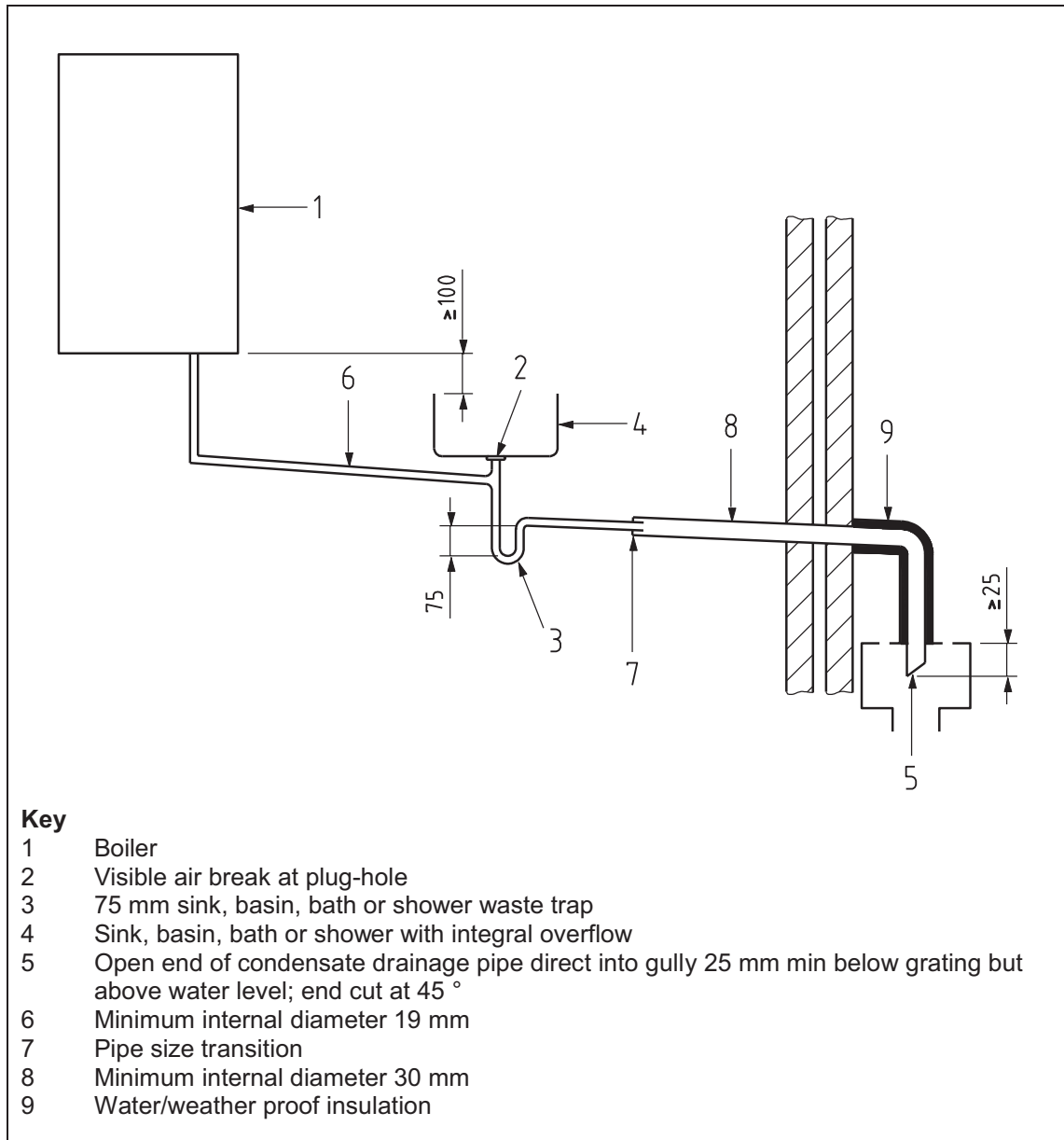


Figure 3 – Connection of a condensate pump - typical method (NB manufacturer’s detailed instructions should be followed).

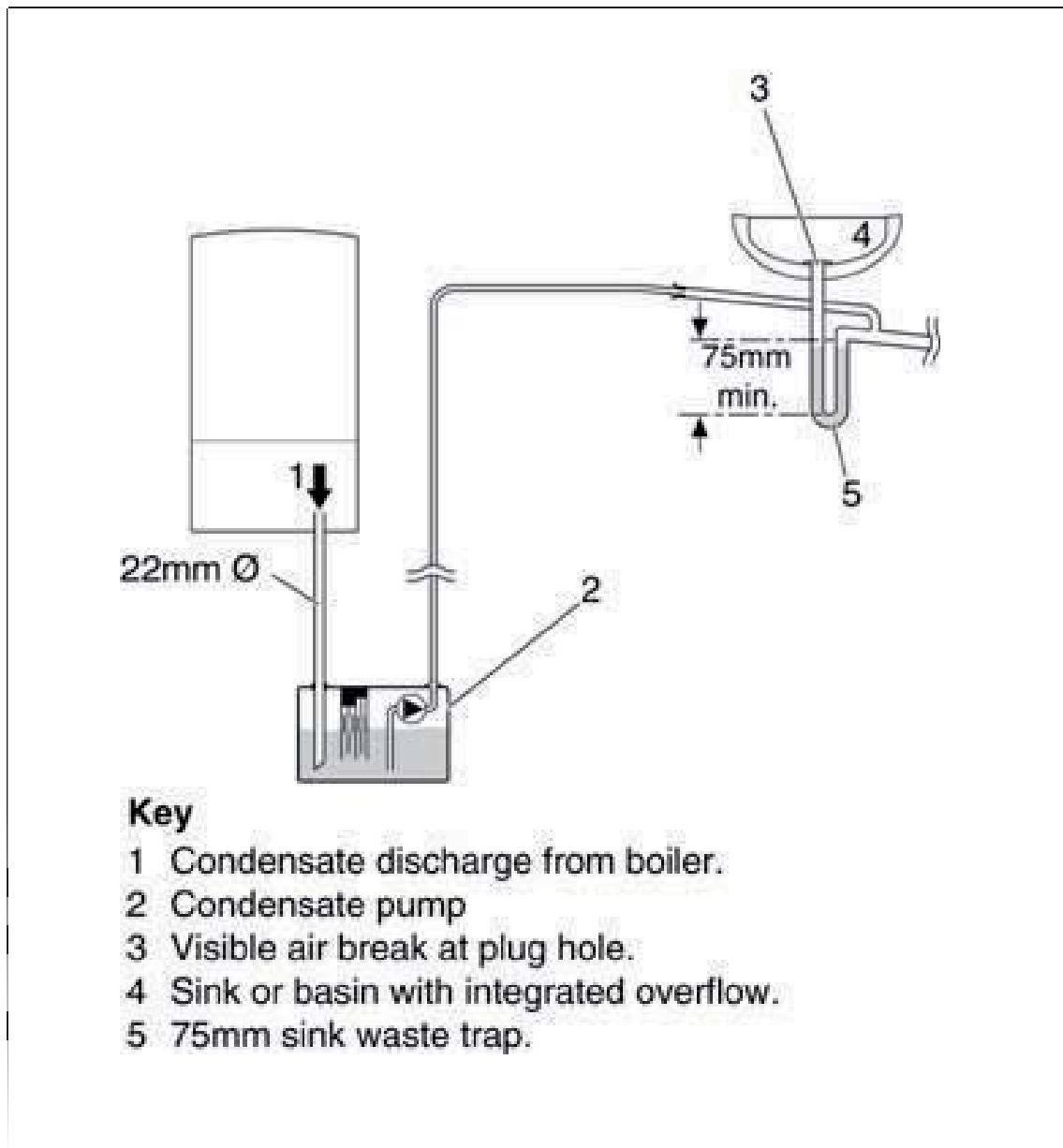


Figure 4 – Connection of condensate drainage pipe to external soil and vent stack

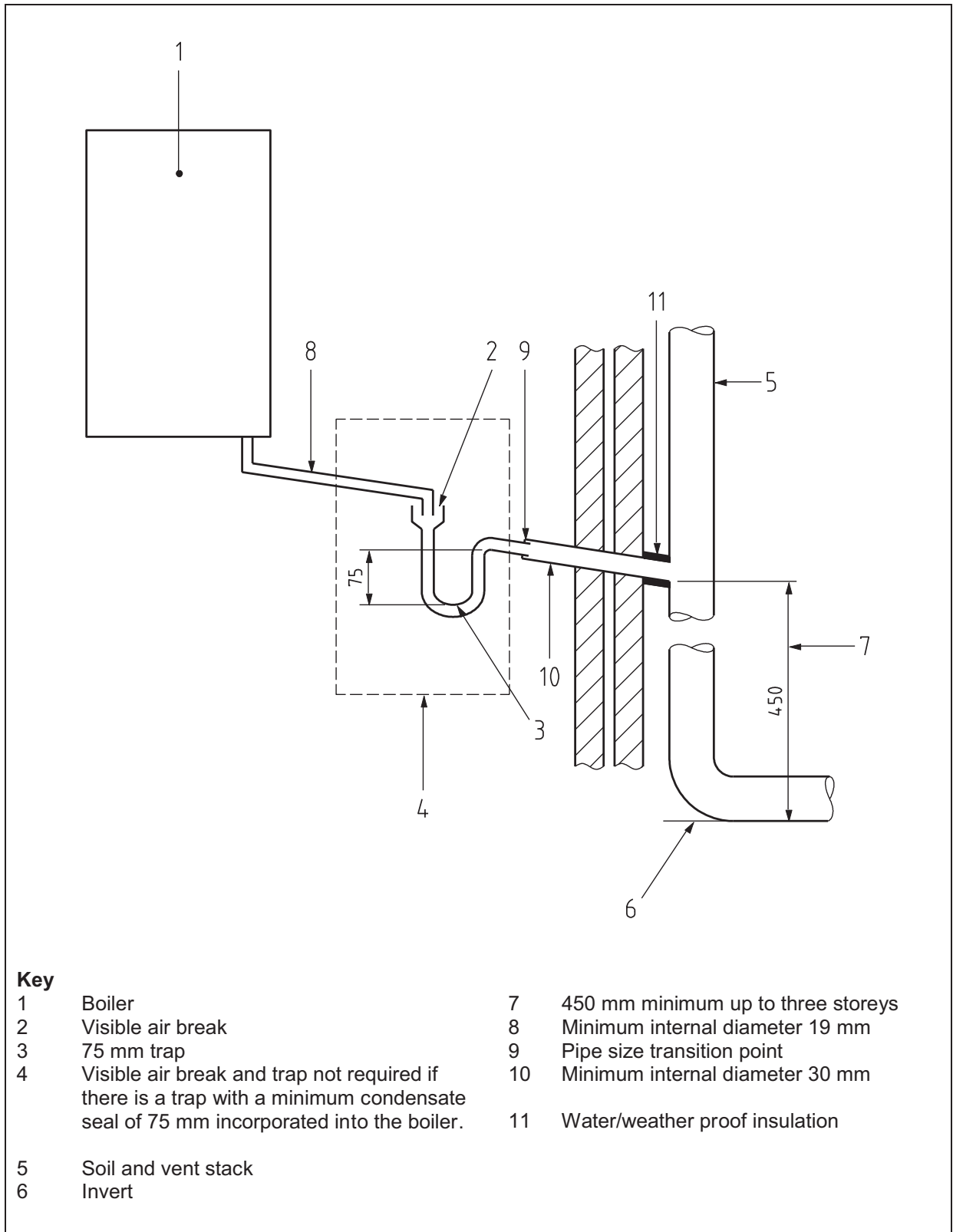


Figure 5 – External termination to rainwater downpipe (NB only combined foul/rainwater drain)

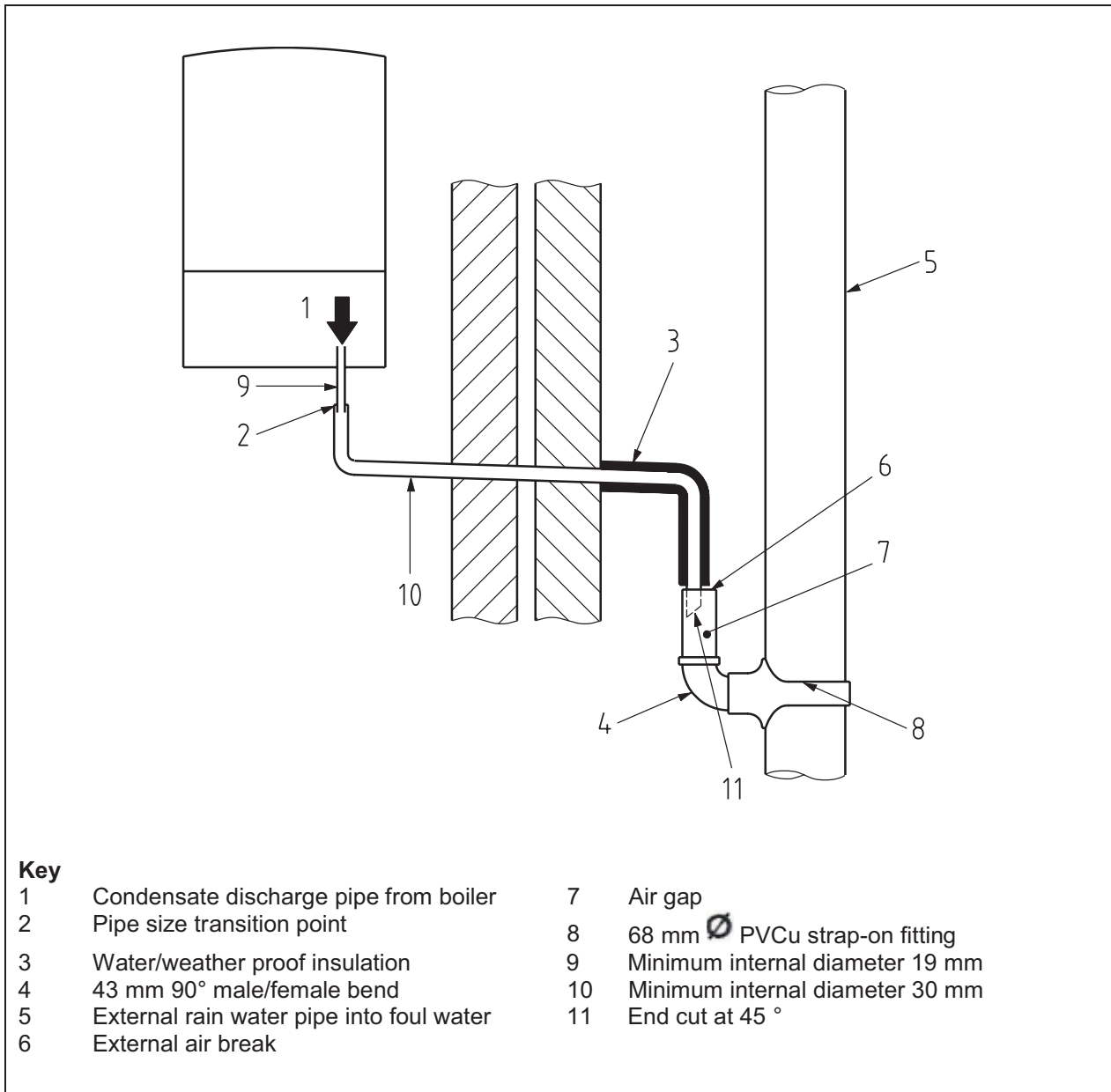


Figure 6 – External drain, gully or rainwater hopper

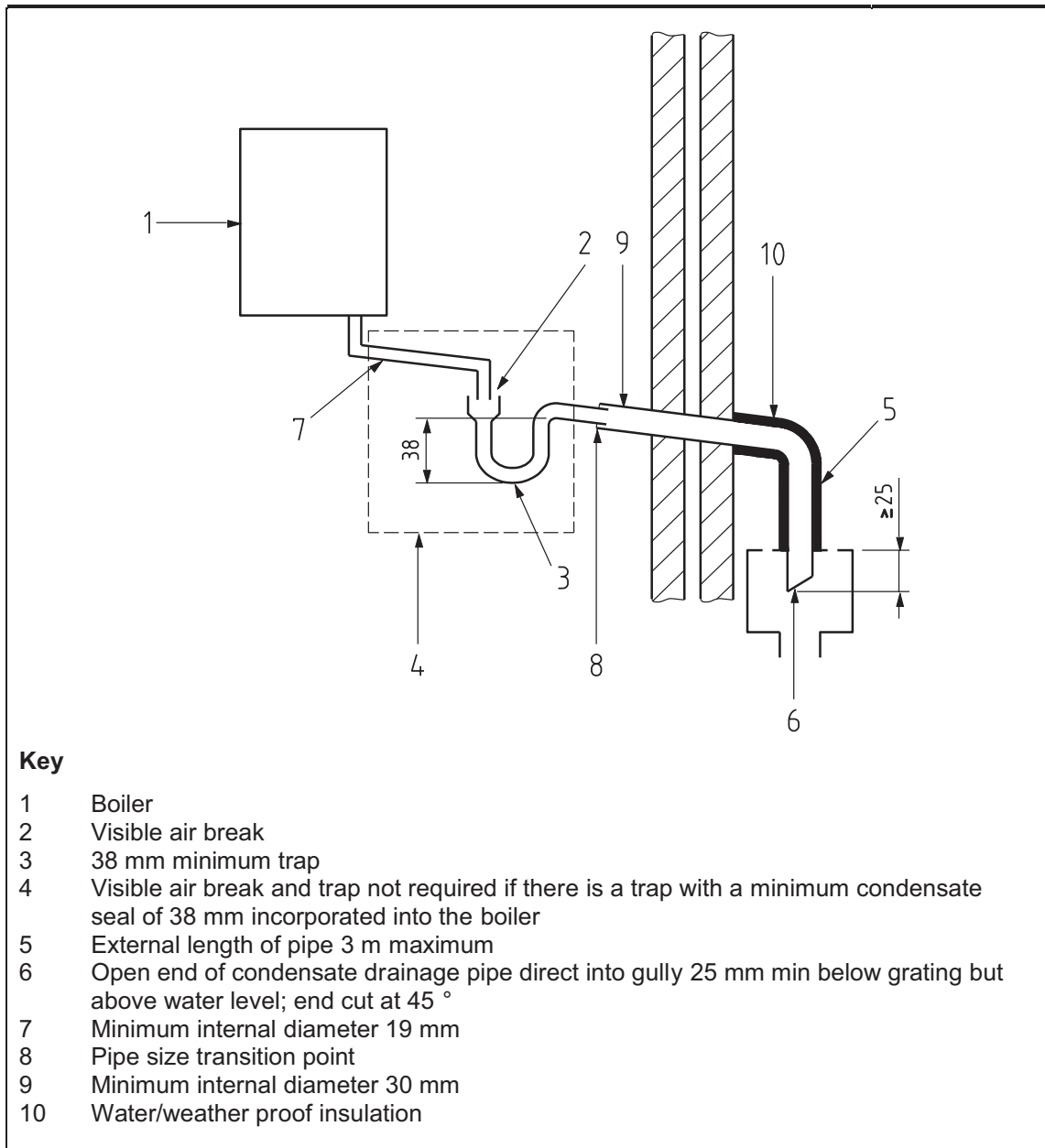
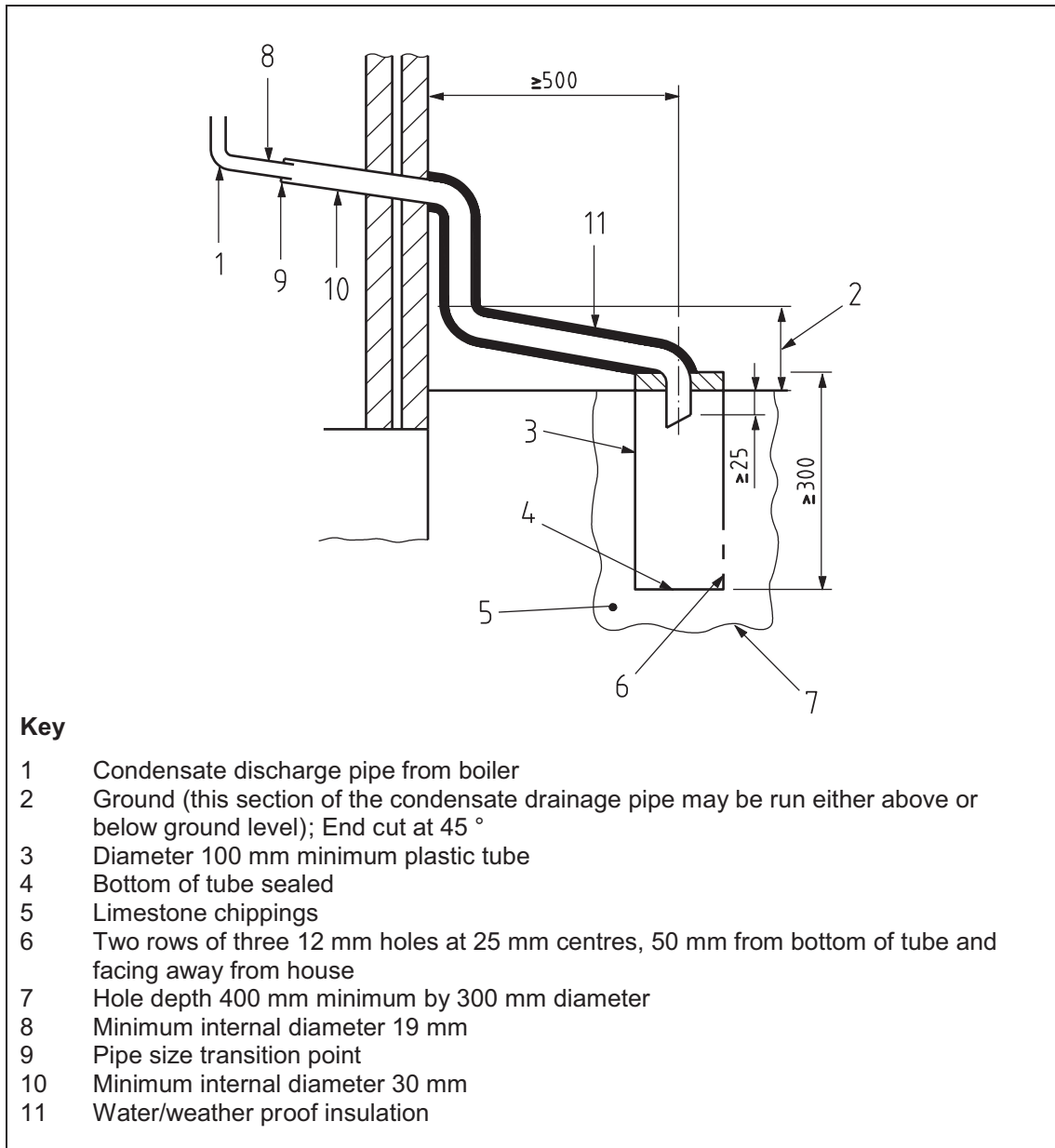


Figure 7 – Example of a purpose-made soakaway



8 APPENDIX 2 (VENTILATION GUIDENCE)

Ventilation Requirements for Murelle Equipe 100 - 150 (M) Cascade

BS6644:2005 requires the temperatures in the room or compartment not to exceed certain levels:

25°C up to 100 mm from floor level

32°C 1500 mm above floor level

40°C 100 mm from ceiling level

The following provided for guidance only, and assumes the ventilation air is taken directly from outside. The size of the vents may need to be increased in respect of other appliances installed in the same area, and seasonal use. Take care that the position of low level vents would not be subject to adverse weather conditions, i.e. flooding.

When installed as a class B appliance (opened flue, not room sealed).

Installed in a room

High level, within 15% of room height from the ceiling = 2 cm² per Kw net heat input (Nominal)

Low Level, low as possible within G20 - 1000 mm G31 - 250 mm = 4 cm² per Kw net heat input (Nominal)

Each model requirement for their net heat input is:

Murelle Equipe Cascade				
100 (M)	High	192 cm ²	Low	384 cm ²
150 (M)	High	288 cm ²	Low	576 cm ²

Installed in a compartment or enclosure

High level, within 15% of room height from the ceiling = 5 cm² per Kw net heat input (Nominal)

Low Level, low as possible within G20 - 1000 mm G31 - 250 mm = 10 cm² per Kw net heat input (Nominal)

Each model requirement for their net heat input is:

Murelle Equipe Cascade				
100 (M)	High	480 cm ²	Low	960 cm ²
150 (M)	High	720 cm ²	Low	1440 cm ²

When installed as a class C appliance (room sealed)

Installed in a room

High level, within 15% of room height from the ceiling = 2 cm² per Kw net heat input (Nominal)

Low Level, low as possible within G20 - 1000 mm G31 - 250 mm = 2 cm² per Kw net heat input (Nominal)

Each model requirement for their net heat input is:

Murelle Equipe Cascade				
100 (M)	High	192 cm ²	Low	192 cm ²
150 (M)	High	288 cm ²	Low	288 cm ²

Installed in a compartment or enclosure

High level, within 15% of room height from the ceiling = 5 cm² per Kw net heat input (Nominal)

Low Level, low as possible within G20 - 1000 mm G31 - 250 mm = 5 cm² per Kw net heat input (Nominal)

Each model requirement for their net heat input is:

Murelle Equipe Cascade				
100 (M)	High	480 cm ²	Low	480 cm ²
150 (M)	High	720 cm ²	Low	720 cm ²



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