

WESTEN

Condens HPC-W

it

Caldie murali a gas a condensazione
manuale per l'uso destinato all'utente ed all'installatore

en

Wall-mounted condensing boilers
Installer's and User's Instructions

CE 0085

Dear Customer,

We are sure your new boiler will comply with all your requirements.

Purchasing one of the **WESTEN** products satisfies your expectations: good functioning, simplicity and ease of use.

Do not dispose of this booklet without reading it: you can find here some very useful information, which will help you to run your boiler correctly and efficiently.

Do not leave any parts of the packaging (plastic bags, polystyrene, etc.) within children's reach as they are a potential source of danger.

WESTEN boilers bear the CE mark in compliance with the basic requirements as laid down in the following Directives:

- Gas Directive 2009/142/EC
- Performance Directive 92/42/EEC
- Electromagnetic Compatibility Directive 2004/108/EC
- Low Voltage Directive 2006/95/EC



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1. INSTRUCTIONS PRIOR TO INSTALLATION

This boiler is designed to heat water at a lower than boiling temperature at atmospheric pressure. The boiler must be connected to a central heating system and to a domestic hot water supply system in compliance with its performances and output power.

Have the boiler installed by a Qualified Service Engineer and ensure the following operations are accomplished:

- a) careful checking that the boiler is fit for operation with the type of gas available. For more details see the notice on the packaging and the label on the appliance itself.
- b) careful checking that the flue terminal draft is appropriate; that the terminal is not obstructed and that no other appliance exhaust gases are expelled through the same flue duct, unless the flue is especially designed to collect the exhaust gas coming from more than one appliance, in conformity with the laws and regulations in force.
- c) careful checking that, in case the flue has been connected to pre-existing flue ducts, thorough cleaning has been carried out in that residual combustion products may come off during operation of the boiler and obstruct the flue duct.
- d) to ensure correct operation of the appliance and avoid invalidating the guarantee, observe the following precautions:

1. Heating circuit

1.1. new system

Before proceeding with installation of the boiler, the system must be cleaned and flushed out thoroughly to eliminate residual thread-cutting swarf, solder and solvents if any, using suitable proprietary products.

To avoid damaging metal, plastic and rubber parts, use only neutral cleaners, i.e. non-acid and non alkaline. The recommended products for cleaning are:

SENTINEL X300 or X400 and FERNOX heating circuit restore. To use this product proceeding strictly in accordance with the maker's directions.

1.2. existing system

Before proceeding with installation of the boiler, the system must be cleaned and flushed out to remove sludge and contaminants, using suitable proprietary products as described in section 1.1.

To avoid damaging metal, plastic and rubber parts, use only neutral cleaners, i.e. non-acid and non-alkaline such as SENTINEL X100 and FERNOX heating circuit protective. To use this product proceeding strictly in accordance with the maker's directions.

Remember that the presence of foreign matter in the heating system can adversely affect the operation of the boiler (e.g. overheating and noisy operation of the heat exchanger).

Failure to observe the above will render the guarantee null and void.

2. INSTRUCTIONS PRIOR TO COMMISSIONING

Initial lighting of the boiler must be carried out by a licensed technician. Ensure the following operations are carried out:

- a) compliance of boiler parameters with (electricity, water, gas) supply systems settings.
- b) compliance of installation with the laws and regulations in force.
- c) appropriate connection to the power supply and grounding of the appliance.

The names of authorized Service Centres are listed on the accompanying sheet.

Failure to observe the above will render the guarantee null and void.

Prior to commissioning remove the protective plastic coating from the unit. Do not use any tools or abrasive detergents as you may spoil the painted surfaces.

The instructions shall state the substance of the following:

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

3. COMMISSIONING OF THE BOILER

To correctly light the burner proceed as follows:

- 1) provide power supply to the boiler;
- 2) open the gas cock;
- 3) follow the directions given below regarding the adjustments to be made at the boiler control panel.

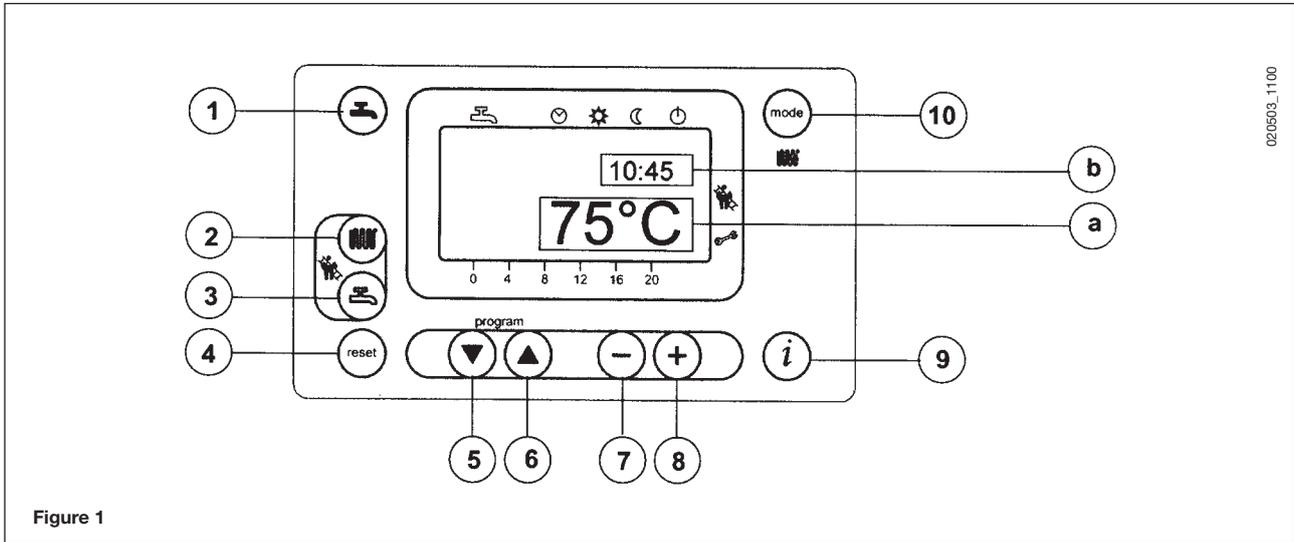


Figure 1

IMPORTANT: The instructions contained in this manual relating to the operation of the hot water circuit are relevant only if the appliance is actually connected to a domestic hot water system.

KEYS

-  Domestic hot water on/off key
-  Central heating water temperature setting key
-  Domestic hot water temperature setting key
-  Reset key
-  Program access and scroll keys
-  Program access and scroll key
-  Parameter setting key (decrease value)
-  Parameter setting key (increase value)
-  Data display reset key
-  Central heating mode setting key

DISPLAY SYMBOLS

-  Operation in domestic hot water mode
-  Operation in central heating mode
-  Operation in automatic mode
-  Operation in manual mode at the maximum temperature set
-  Operation in manual mode at minimum temperature
-  Standby (off)
-  Outdoor temperature
-  Flame present (on)
-  Resettable alarm warning

a) MAIN display

b) SECONDARY display

3.1 DESCRIPTION OF KEYS



(2) This key can be pressed to set the central heating water output temperature as described in point 3-3.



(3) This key can be pressed to set the domestic hot water temperature as described in point 3-4.



(10) Central heating mode operating key

The  key can be pressed to activate four boiler central heating operating modes; these modes are identified by a black cursor line underneath the relative symbol on the display, and are as follows:

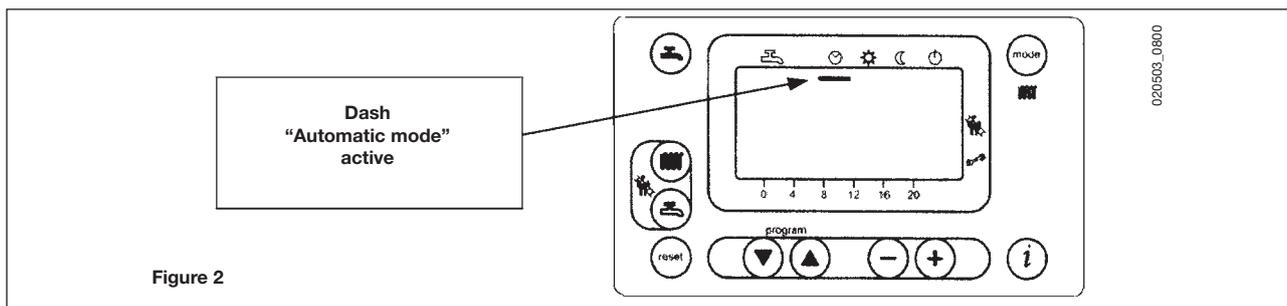


Figure 2

- a)  **Automatic operation.** Operation of the boiler is controlled by the timed program as described in point 3-5.1 “Daily timed program for operation of the central heating system”;
- b)  **Manual operation at the maximum temperature set.** The boiler comes into operation regardless of the timed program set. The operating temperature is that set using the  key (point 3-3: “Setting the maximum central heating temperature”);
- c)  **Manual operation at minimum temperature.** The operating temperature is that set in point 3-6: “setting the minimum central heating temperature”.

The manual transition from positions a) and b) to position c) involves shut-down of the burner and disconnection of the pump after the post-circulation delay interval (the factory setting for this parameter is 3 minutes).

- d)  **standby.** The boiler does not work in central heating mode, although the antifreeze function is still enabled.



(1) **Domestic hot water on/off key:** Press this key to activate or inhibit this function, which is identified by the appearance on the display of two black dashes under the  symbol.



(4) **Reset key.** In case of a fault, referred to in point 3-7 “Faults and resetting the boiler”, the boiler can be restarted by pressing this key for at least two seconds.
If this key is pressed with no fault present, the display will show the message “E153”, and the same key has to be pressed again (for at least two seconds) to restart the boiler.

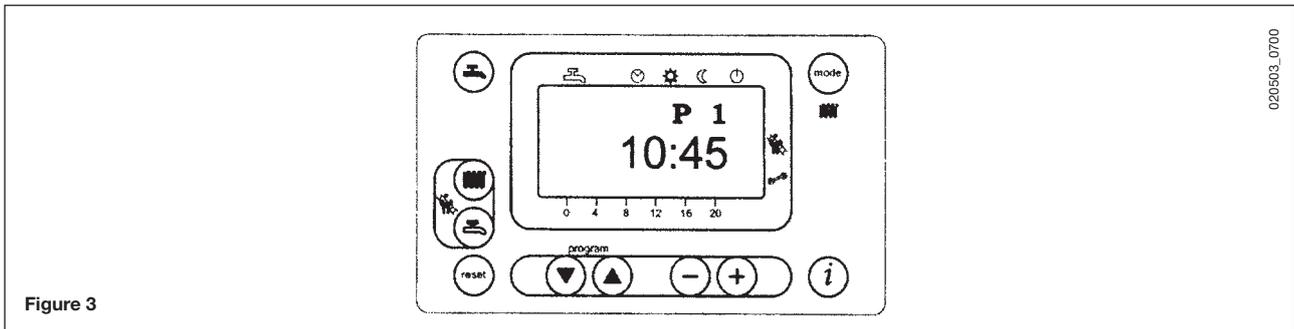


(9) **Data key.** This key can be pressed repeatedly to display the following information:
- Temperature (°C) of the domestic hot water ();
- outdoor temperature (°C) (); only provided with the outdoor temperature sensor probe connected.

Press either of the   keys to return to the main menu.

3.2 SETTING THE TIME

- a) Press either of the \downarrow \uparrow keys to access the programming function; the display will show the letter **P** followed by a number (program line);



- b) press the \downarrow \uparrow keys until the display shows P1, referring to the time to be set;
c) press the $-$ $+$ keys to set the time; on the display, the letter P will start to flash;
d) press the i key to save and exit the programming function;

3.3 SETTING THE MAXIMUM CENTRAL HEATING TEMPERATURE

- Press the H key (2-figure 1) to set the central heating water temperature;
- Press the $-$ $+$ keys to set the temperature required;
- press either of the H mode keys (1 or 10 - figure 1) to save and return to the main menu.

N.b – With the outdoor sensor probe connected, the H key (2 - figure 1) can be used to shift the central heating curve. Press the $-$ $+$ keys to decrease or increase the room temperature in the premises to be heated.

3.4 SETTING THE MAXIMUM DOMESTIC HOT WATER TEMPERATURE

- Press the H key (3-figure 1) to set the maximum domestic hot water temperature;
- Press the $-$ $+$ keys to set the temperature required;
- press either of the H mode keys (1 or 10 - figure 1) to save and return to the main menu.

3.5 SETTING THE DAILY PROGRAM FOR OPERATION IN CENTRAL HEATING AND DOMESTIC HOT WATER MODES

3.5.1 Setting the daily times for central heating mode operation

- Press either of the \downarrow \uparrow keys to access the programming function;
a) press these keys until the display shows **P11**, referring to the program start time;
b) press the $-$ $+$ keys to set the time;
- press the \downarrow key; the display will show **P12**, referring to the program end time;
- repeat the operations described in points a and b until the third and last cycle is reached (program line **P16**);
- press the i key to save and exit from the programming function.

3.5.2 Setting the daily times for domestic hot water mode operation

- As supplied by the factory the appliance is set up with the domestic hot water function always enabled and the domestic hot water programming function disabled.
The instructions for enabling this program are given in chapter 15, which is addressed specifically to installers (parameter H91).
If the program is enabled program lines from 31 to 36 must be set up as described in heading 3-5.1.

3.6 SETTING THE MINIMUM CENTRAL HEATING TEMPERATURE

- press either of the   keys to access the programming function;
- press these keys until the display shows **P5**, referring to the temperature to be set;
- press the   keys to set the temperature required.

This operating mode is enabled when minimum temperature central heating mode “” is activated or when the daily central heating program does not require heat.

N.b – With the outdoor sensor probe connected, parameter P5 can be used to set the minimum room temperature in the premises to be heated.

3.7 TABLE OF USER-SETTABLE PARAMETERS

Parameter N.	Parameter description	Factory setting	Range
P1	Time of day setting	----	0...23:59
P5	Minimum central heating temperature setting (°C)	25	25..80
P11	Start of first daily period of automatic central heating	6:00	00:00...24:00
P12	End of first daily period of automatic central heating	22:00	00:00...24:00
P13	Start of second daily period of automatic central heating	0:00	00:00...24:00
P14	End of second daily period of automatic central heating	0:00	00:00...24:00
P15	Start of third daily period of automatic heating	0:00	00:00...24:00
P16	End of third daily period of automatic central heating	0:00	00:00...24:00
P31	Start of first daily period of domestic hot water production (*)	0:00	00:00...24:00
P32	End of first daily period of domestic hot water production (*)	24:00	00:00...24:00
P33	Start of second daily period of domestic hot water production (*)	0:00	00:00...24:00
P34	End of second daily period of domestic hot water production (*)	0:00	00:00...24:00
P35	Start of third daily period of domestic hot water production (*)	0:00	00:00...24:00
P36	Fine End of third daily period of domestic hot water production (*)	0:00	00:00...24:00
P45	Reset of daily central heating and domestic hot water production programs (factory settings). Press the - + keys together for about 3 seconds; the number 1 appears on the display. Confirm by pressing either of the   keys	0	0...1

Note: Parameters from **P31** to **P36** can be displayed only if the domestic hot water program has been enabled as described in chapter 15 for the attention of the installer (parameter H91).

3.8 FAULT WARNINGS AND RESETTING THE BOILER

If a fault occurs, a flashing warning code appears on the display.

The fault warnings appear on the main display (figure 1 a) together with the  symbol (Figure 4). To reset, press the reset  button for at least two seconds.

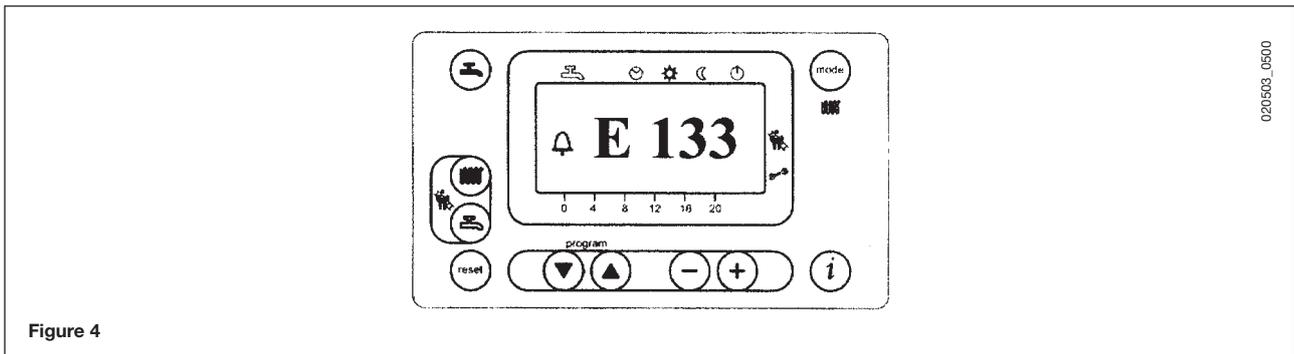


Figure 4

Fault warnings appear on the secondary display (figure 1 b) alternating with the time, both of them flashing (figure 4.1). It is not possible to reset malfunction warnings which appear on the secondary display as the cause of the alarm has first to be removed.

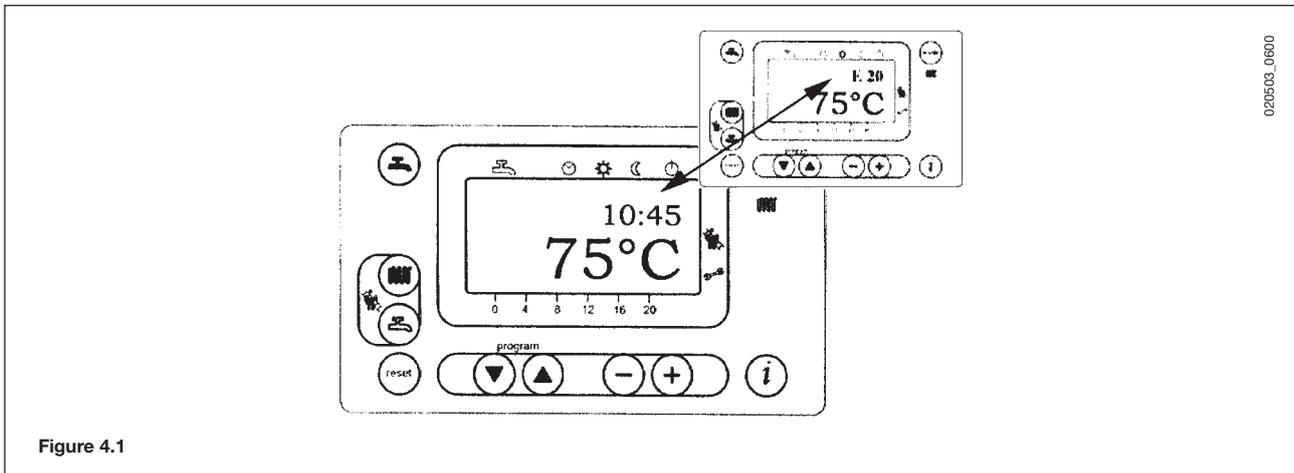


Figure 4.1

3.9 FAULT WARNINGS TABLE

Fault code	Fault description	action required
E10	outdoor temperature probe sensor failure	call the authorised service centre.
E20	ntc output sensor failure	call the authorised service centre
E40	NTC return heating probe faulty	call the authorised service centre
E50	domestic hot water ntc sensor failure	call the authorised service centre
E110	Safety or fumes thermostat or heating return temperature probe tripped	press the reset key (for about 2 seconds: if this device is triggered repeatedly, call the authorised service centre)
E111	Delivery temperature higher than 95°C	If this fault persists, call the authorised service centre
E128	Loss of flame during operation (the ionization current has fallen below the limit)	Call an authorised service centre.
E129	Minimum fan speed limit is hurt	Call an authorised service centre.
E132	floor thermostat tripped	call the authorised service centre
E133	no gas	press the reset key (for about 2 seconds); if the fault persists, call the authorised service centre)
E151	boiler circuit board error	Press the reset button if the display presents the (⚠) symbol, otherwise switch off the boiler at the mains and switch it on again after 10 seconds. If the fault persists, call an authorised service centre. Check the position of the ignition electrodes (chapter 17).
E153	the reset key has been pressed inappropriately	press the key again (about 2 seconds)
E154	No circulation or reverse flow	call the authorised service centre
E160	fan speed threshold not reached	call the authorised service centre.
E164	no hydraulic pressure switch enabling signal	check that the system is at the rated pressure. (refer to the section on filling the system). if the fault persists, call the authorised service centre.

All the faults are displayed in order of importance; if several faults occur simultaneously, the first to be displayed is the one with highest priority. After the cause of the first fault has been removed, the second one will be displayed, and so on. If any given fault occurs frequently, contact the authorised Service Centre.

4. FILLING THE BOILER

Important: Regularly check that the pressure displayed by the pressure gauge is 1 to 1.5 bar, with boiler not operating. In case the pressure is lower open the boiler filling tap.

We recommend you open the tap very slowly in order to let off the air.

WARNING: Take special care when filling the heating system. In particular, open any thermostat valves in the system, ensure the water enters slowly in order to prevent the formation of air inside the primary circuit until operating pressure is reached. Lastly, vent any radiators in the system. WESTEN declines all liability for damage deriving from the presence of air bubbles in the primary exchanger due to the incorrect or imprecise observance of the above.

In case pressure drops occur frequently have the boiler checked by a Qualified Service Engineer.

5. TURNING OFF THE BOILER

To shut down the boiler switch off the electrical supply to the appliance.

6. PROLONGED STANDSTILL OF THE SYSTEM. FROST PROTECTION

We recommend you avoid draining the whole system as water replacements engender purposeless and harmful limestone deposits inside the boiler and on the heating elements.

In case the boiler is not operated during wintertime and is therefore exposed to danger of frost we suggest you add some specific-purpose anti-freeze to the water contained in the system (e.g.: propylene glycole coupled with corrosion and scaling inhibitors).

The electronic management of boilers includes a 'frost protection' function which operates the burner to reach a heating flow temperature of 30° C when the system heating flow temperature drops below 5°C.

The frost protection function is enabled if:

- * electrical supply to the boiler is on;
- * the gas service cock is open;
- * the system pressure is as required;
- * the boiler is not blocked.

7. SERVICING INSTRUCTIONS AND GAS CHANGE

To maintain efficient and safe operation of your boiler have it checked by a Qualified Service Engineer at the end of every operating period. Careful servicing will ensure economical operation of the system.

Do not clean the outer casing of the appliance with abrasive, aggressive and/or easily flammable cleaners (i.e.: gasoline, alcohol, and so on). Always isolate the electrical supply to the appliance before cleaning it (see section 5 Turning off the boiler).

***These boilers produced for natural gas can be converted to work with LPG.
Any gas change be effected by a Qualified Service Engineer.***

8. GENERAL INFORMATION

The following remarks and instructions are addressed to Service Engineers to help them carry out a faultless installation. Instructions regarding lighting and operation of the boiler are contained in the 'Instructions pertaining to the user' section. Note that installation, maintenance and operation of the domestic gas appliances must be performed exclusively by qualified personnel in compliance with current standards.

Please note the following:

- * This boiler can be connected to any type of convector plates, radiators, thermoconvectors. Design the system sections as usual though taking into account the available output / pump head performances.
- * Do not leave any packaging components (plastic bags, polystyrene, etc.) within children's reach as they are a potential source of danger.
- * Initial lighting of the boiler must be effected by a Qualified Service Engineer.

Failure to observe the above will render the guarantee null and void.

9. INSTRUCTIONS PRIOR TO INSTALLATION

This boiler is designed to heat water at a lower than boiling temperature at atmospheric pressure. The boiler must be connected to a central heating system and, on models with this option, to a domestic hot water supply system in compliance with its performances and output power.

IMPORTANT! The gas boiler is supplied without the following components which must be performed exclusively by qualified personnel:

- **Expansion vessel;**
- **Pressure relief valve;**
- **Circulating pump;**
- **Boiler filling tap.**

Before connecting the boiler have the following operations effected:

- a) careful checking that the boiler is fit for operation with the type of gas available. For more details see the notice on the packaging and the label on the appliance itself.
- b) careful checking that the flue terminal draft is appropriate; that the terminal is not obstructed and that no other appliance exhaust gases are expelled through the same flue duct, unless the flue is especially designed to collect the exhaust gas coming from more than one appliance, in conformity with the laws and regulations in force.
- c) careful checking that, in case the flue has been connected to pre-existing flue ducts, thorough cleaning has been carried out in that residual combustion products may come off during operation of the boiler and obstruct the flue duct.

To ensure correct operation of the appliance and avoid invalidating the guarantee, observe the following precautions:

1. Heating circuit

1.1. new system

Before proceeding with installation of the boiler, the system must be cleaned and flushed out thoroughly to eliminate residual thread-cutting swarf, solder and solvents if any, using suitable proprietary products.

To avoid damaging metal, plastic and rubber parts, use only neutral cleaners, i.e. non-acid and non-alkaline. The recommended products for cleaning are:

SENTINEL X300 or X400 and FERNOX heating circuit restore. To use this product proceeding strictly in accordance with the maker's directions.

1.2. existing system

Before proceeding with installation of the boiler, the system must be cleaned and flushed out to remove sludge and contaminants, using suitable proprietary products as described in section 1.1.

To avoid damaging metal, plastic and rubber parts, use only neutral cleaners, i.e. non-acid and non-alkaline such as SENTINEL X100 and FERNOX heating circuit protective. To use this product proceeding strictly in accordance with the maker's directions.

Remember that the presence of foreign matter in the heating system can adversely affect the operation of the boiler (e.g. overheating and noisy operation of the heat exchanger).

Failure to observe the above will render the guarantee null and void.

10. BOILER INSTALLATION

Decide upon the boiler location, then tape the template on the wall.

Connect the pipework to the gas and water inlets prearranged on the template lower bar.

If you are either installing the boiler on a pre-existent system or substituting it, we suggest you also fit settling tanks on the system return pipework and under the boiler to collect the deposits and scaling which may remain and be circulated in the system after the purge.

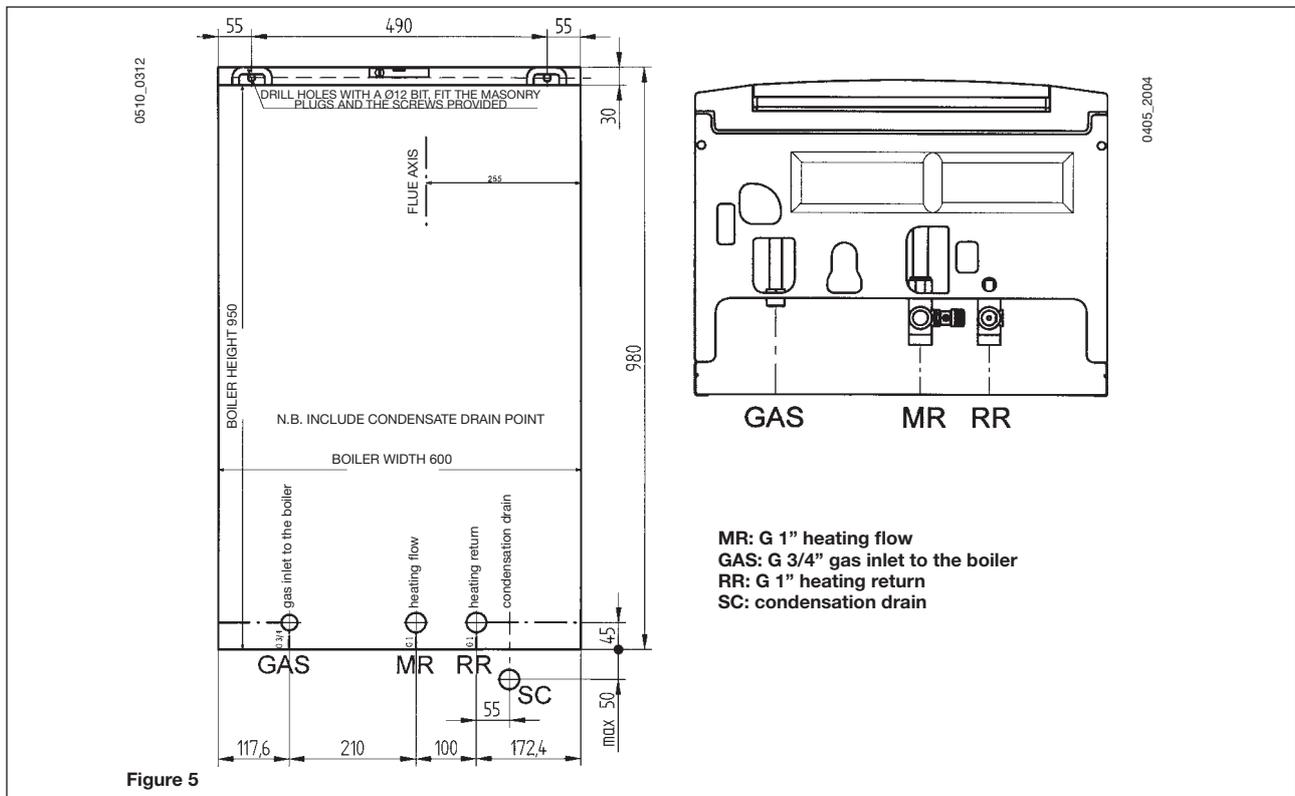
When the boiler is fixed on the template connect the flue and air ducts (fittings supplied by the manufacturer) according to the instructions given in the following sections.

Connect the condensate outlet to the siphon supplied with the boiler. Connect the siphon to a drain, making sure there is a continuous slope. Horizontal sections must be avoided.

The boiler unit is fitted for connection to an external boiler. For this purpose, unscrew the two plugs on the heating system delivery/return fittings if a hydraulic separator is not used (see fig. 12).

WARNING: Take special care when filling the heating system. In particular, open any thermostat valves in the system, ensure the water enters slowly in order to prevent the formation of air inside the primary circuit until operating pressure is reached. Lastly, vent any radiators in the system. WESTEN declines all liability for damage deriving from the presence of air bubbles in the primary exchanger due to the incorrect or imprecise observance of the above.

In case pressure drops occur frequently have the boiler checked by a Qualified Service Engineer.



11. BOILER SIZE

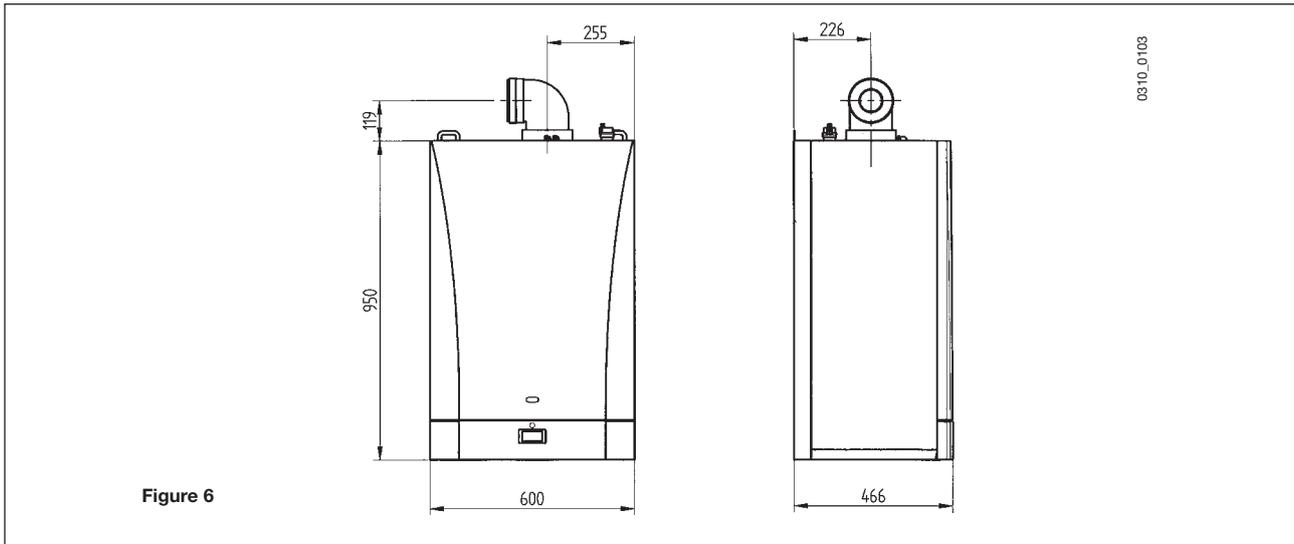


Figure 6

12. INSTALLATION OF FLUE AND AIR DUCTS

We guarantee ease and flexibility of installation for a gas-fired forced draft boiler thanks to the fittings and fixtures supplied (described below).

The boiler is especially designed for connection to an exhaust flue / air ducting, with either coaxial, vertical or horizontal terminal. By means of a splitting kit a two-pipe system may also be installed.

In case exhaust and intake flues not supplied by WESTEN have been installed, these must be certified for the type of use and must have a maximum pressure drop in according to the values reported in the table (par. 12.1).

Warnings for the following types of installation:

- C₁₃, C₃₃** The terminals for the split flue must be provided for within a square with 50 cm sides. Detailed instructions are given together with each accessory.
- C₅₃** The terminals for combustion air intake and for the expulsion of combustion products must not be provided for on opposite walls of the building.
- C₆₃** The ducts must be certified for the specific use and for a temperature of over 100°C. The chimney flue must be certified in accordance with the prEN 1856-1 Regulation.
- C₄₃, C₈₃** The chimney or flue used must be suitable for the use.

WARNING : To guarantee more operating insurance it is necessary to assure the flue pipes to the wall using the apposite clamps.

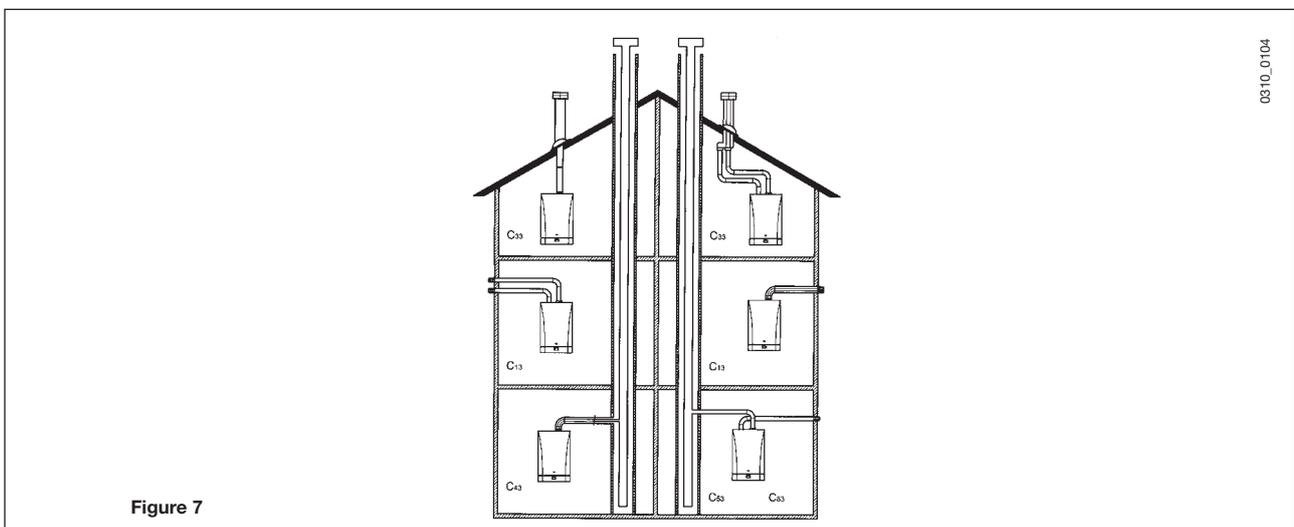


Figure 7

Flue duct terminal	Max. length of flue duct	Each 90° bend reduces the duct max. length by	Each 45° bend reduces the duct max. length by	Flue terminal diameter	Outer terminal diameter
Coaxial Ø 80/125 mm	10 m	1 m	0,5 m	133 mm	125 mm
Vertical two-pipe	15 m	0,5 m	0,25 m	133 mm	80 mm
Horizontal two-pipe	60 m	0,5 m	0,25 m	-	80 mm

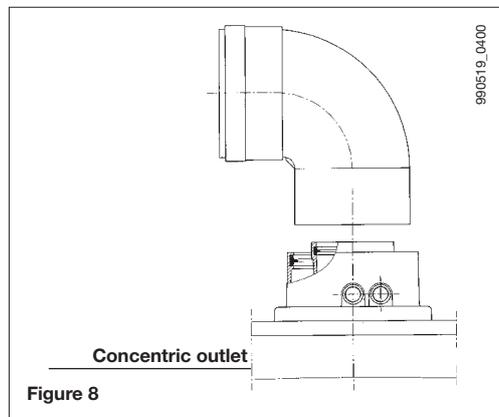
... coaxial flue - air duct (concentric)

This type of duct allows to disengage exhaust gases and to draw combustion air both outside the building and in case a LAS flue is fitted. The 90° coaxial bend allows to connect the boiler to a flue-air duct in any direction as it can rotate by 360°. It can moreover be used as a supplementary bend and be coupled with a coaxial duct or a 45° bend.

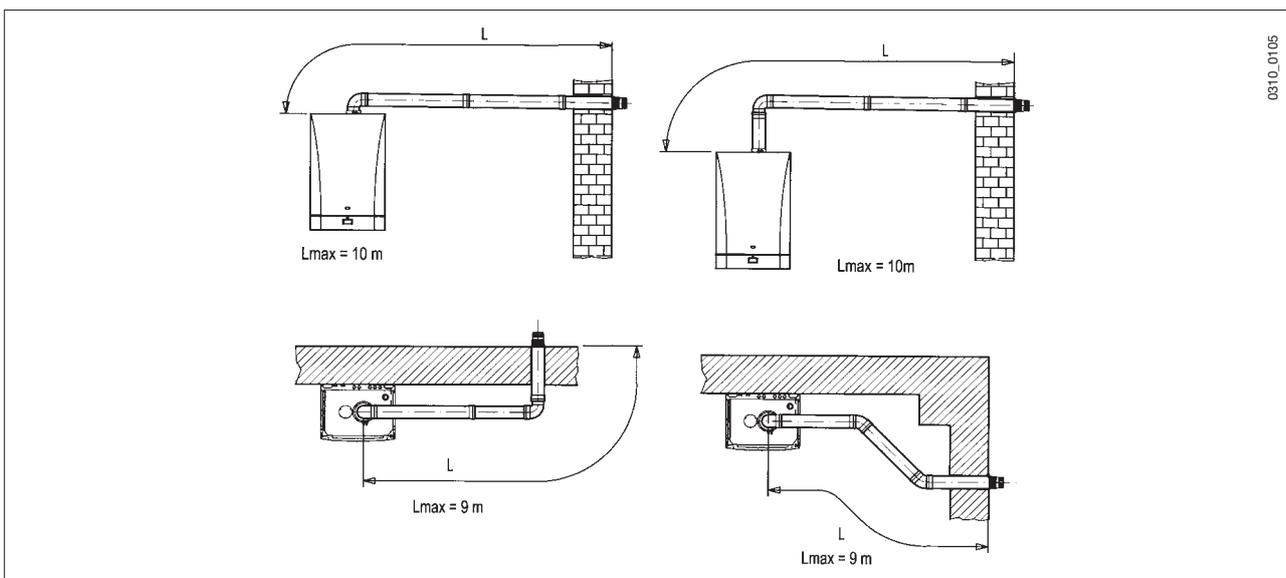
If the flue outlet is placed outside, the flue-air ducting must protrude at least 18mm out of the wall to allow aluminium weathering tile to be fitted and sealed to avoid water leakages.

Make sure there is a minimum downward slope of 1 cm per metre of duct towards the boiler.

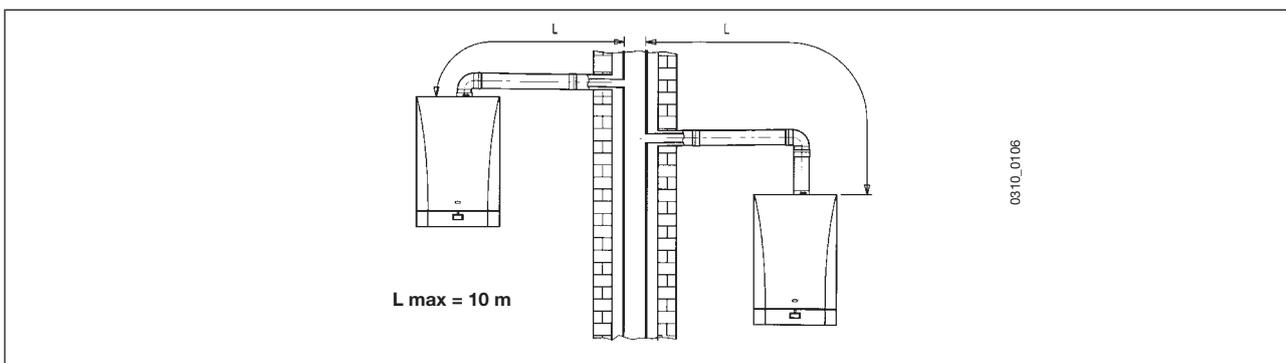
- A 90° bend reduces the total duct length by 1 metre.
- A 45° bend reduces the total duct length by 0.5 metre.



HORIZONTAL FLUE TERMINAL Ø 80/125 MM INSTALLATION OPTIONS

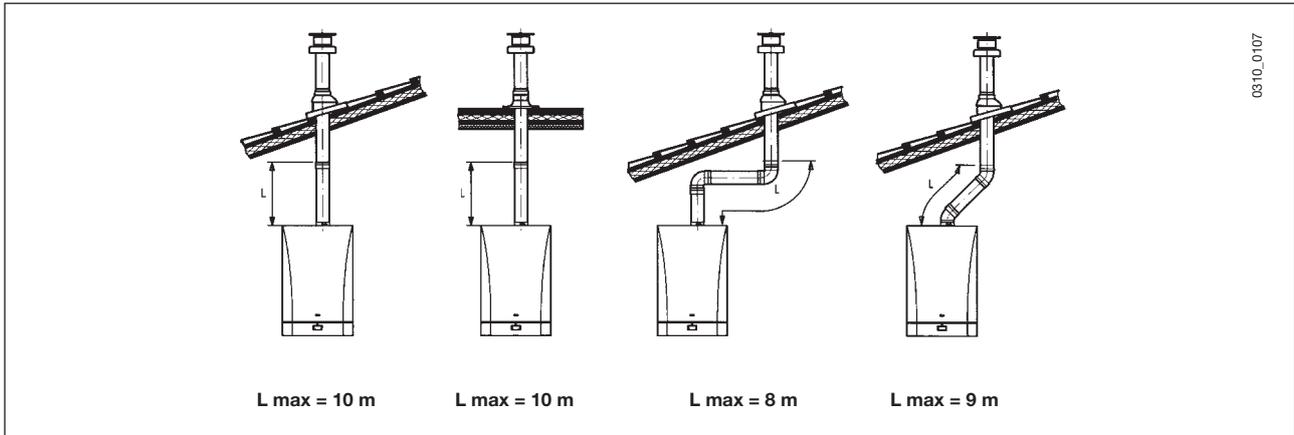


LAS FLUE DUCT Ø 80/125 MM INSTALLATION OPTIONS



VERTICAL FLUE TERMINAL Ø 80/125 MM INSTALLATION OPTIONS

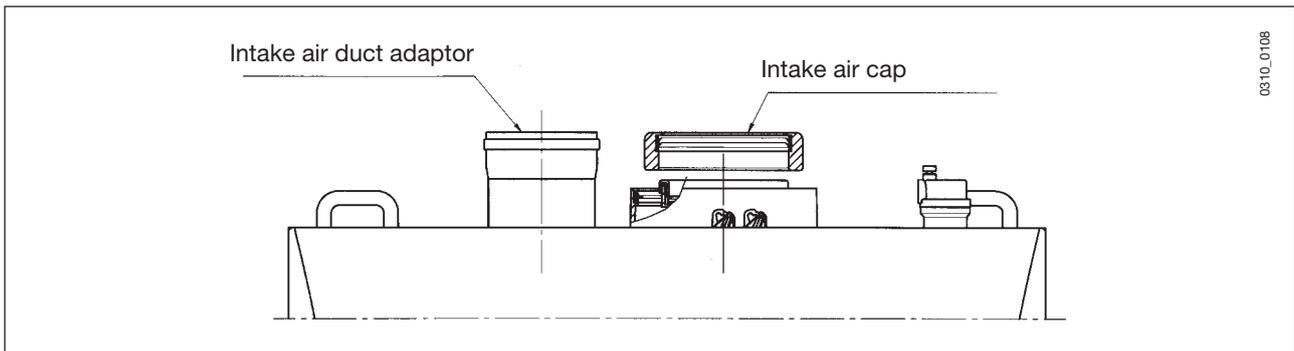
This type of installation can be carried out both on a flat or pitched roof by fitting a terminal, an appropriate weathering tile and sleeve, (supplementary fittings supplied on demand).



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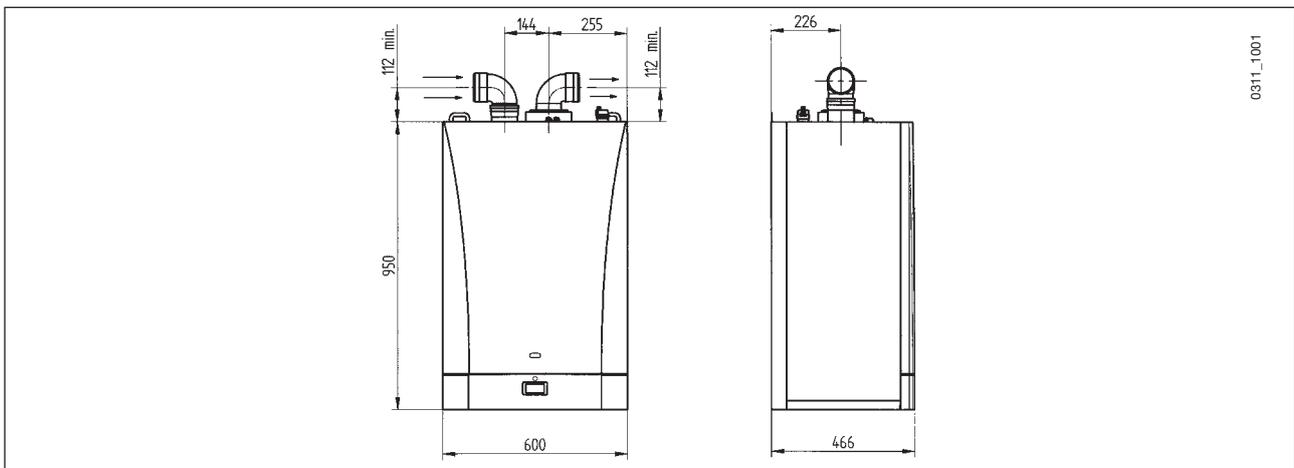
... separated flue-air ducting

This type of ducting allows to disengage exhaust flue gases both outside the building and into single flue ducts. Comburent air may be drawn in at a different site from where the flue terminal is located. The splitting kit consists of a flue duct adaptor (125/80) and of an air duct adaptor. For the air duct adaptor fit the screws and seals previously removed from the cap.



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The 90° bend allows to connect the boiler to flue-air ducting regardless of direction as it can be rotated by 360°. It can moreover be used as a supplementary bend to be coupled with the duct or with a 45° bend.

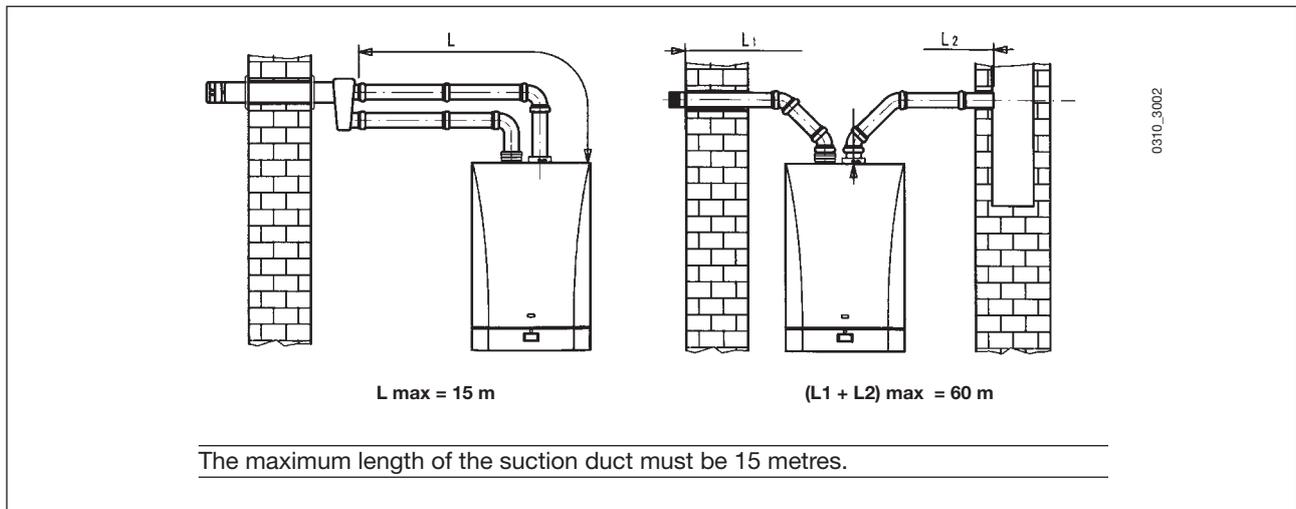


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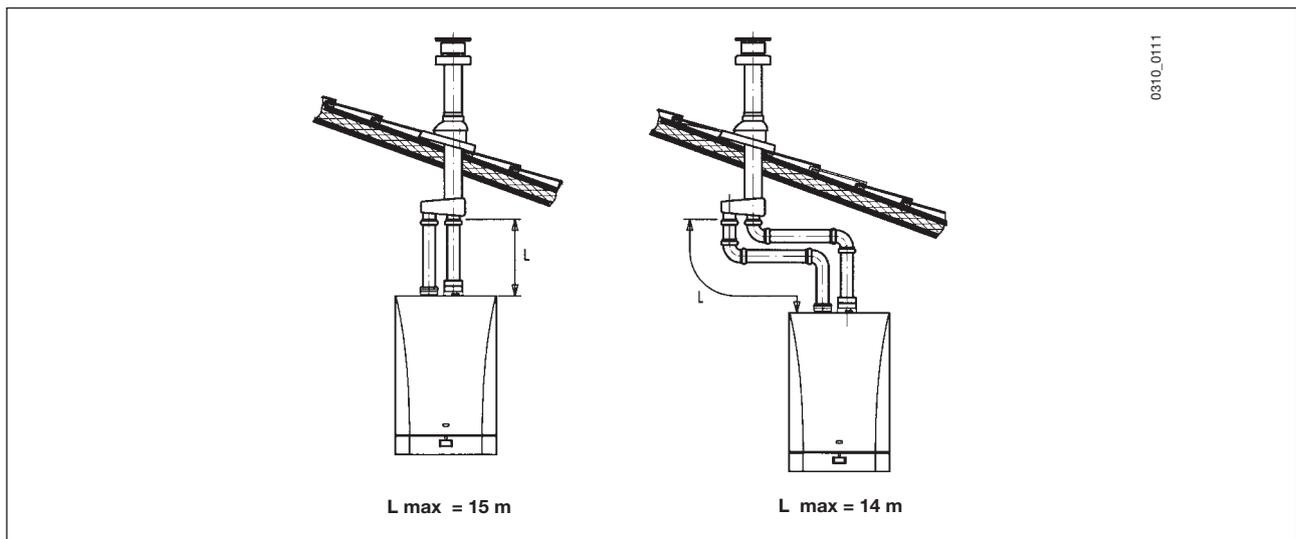
- A 90° bend reduces the total duct length by 0.5 metre.
- A 45° bend reduces the total duct length by 0.25 metre.

SEPARATED HORIZONTAL FLUE TERMINALS INSTALLATION OPTIONS

IMPORTANT - Make sure there is a minimum downward slope of **1 cm per metre** of duct towards the boiler. Make sure the flue and air ducts are firmly fixed to the wall with suitable brackets.



SEPARATED VERTICAL FLUE TERMINALS INSTALLATION OPTIONS



IMPORTANT: if fitting a single exhaust flue duct, ensure it is adequately insulated (e.g.: with glass wool) wherever the duct passes through building walls.

For detailed instructions concerning the installation of fittings refer to the technical data accompanying the fittings.

12.1 FAN RPM UPDATING DEPEND OF PIPES LENGHT

In case exhaust and intake flues not supplied by WESTEN have been installed, these must be certified for the type of use and must have a maximum pressure drop in according to the values reported in the table.

To ensure the correct rated heat input to the maximum and minimum heat input, it is necessary to update the speed (rpm) of the fan, it depends on the lenght of the pipes (par. 12), in accordance with the installation of flue and air pipes as indicated in the tables below. The factory-set value is referred to the minimum length of flue pipe (0÷4 m for concentric, 0÷20 m for twin). To carry such updating, changing the speed of the fan (rpm) at the maximum and minimum heat input, refer to par. 15.

CONDENS HPC-W...	PARAMETERS						
	Concentric pipe Ø 80/125 (0÷4 m) Twin pipe Ø 80 (0÷20 m)						
	H612 (rpm)	H536-H613 (rpm)	H611 (rpm)	H609 (pwm%)	H541-H610 (pwm%)	H608 (pwm%)	ΔP max available (Pa)
GAS G20-G31							
...35	1900	4150	2600	15	45	20	90
...45	1900	5500	2600	15	75	20	140
...55	1650	5600	2600	13	85	20	180
...65	1850	6000	2100	15	85	16	200

CONDENS HPC-W...	PARAMETERS		
	Twin pipe Ø 80 (20÷40 m)		
	H612 (rpm)	H536-H613 (rpm)	ΔP max available (Pa)
GAS G20-G31			
...35	2000	4300	160
...45	2000	5700	240
...55	1800	5800	280
...65	1900	6200	300

CONDENS HPC-W...	PARAMETERS		
	Concentric pipe Ø 80/125 (4÷10 m) Twin pipe Ø 80 (40÷60 m)		
	H612 (rpm)	H536-H613 (rpm)	ΔP max available (Pa)
GAS G20-G31			
...35	2100	4550	230
...45	2100	5900	350
...55	1800	6000	380
...65	2100	6500	400

FLUE PRESSURE TABLE AVAILABLE FOR CASCADE SOLUTION

models CONDENS HPC-W...	ΔP max available with single clapet Ø 80/110 (Pa)
35 P	190
45 P	310
55 P	320
65 P	320

13. CONNECTING THE MAINS SUPPLY

Electrical safety of the appliance is only guaranteed by correct grounding, in compliance with the applicable laws and regulations.

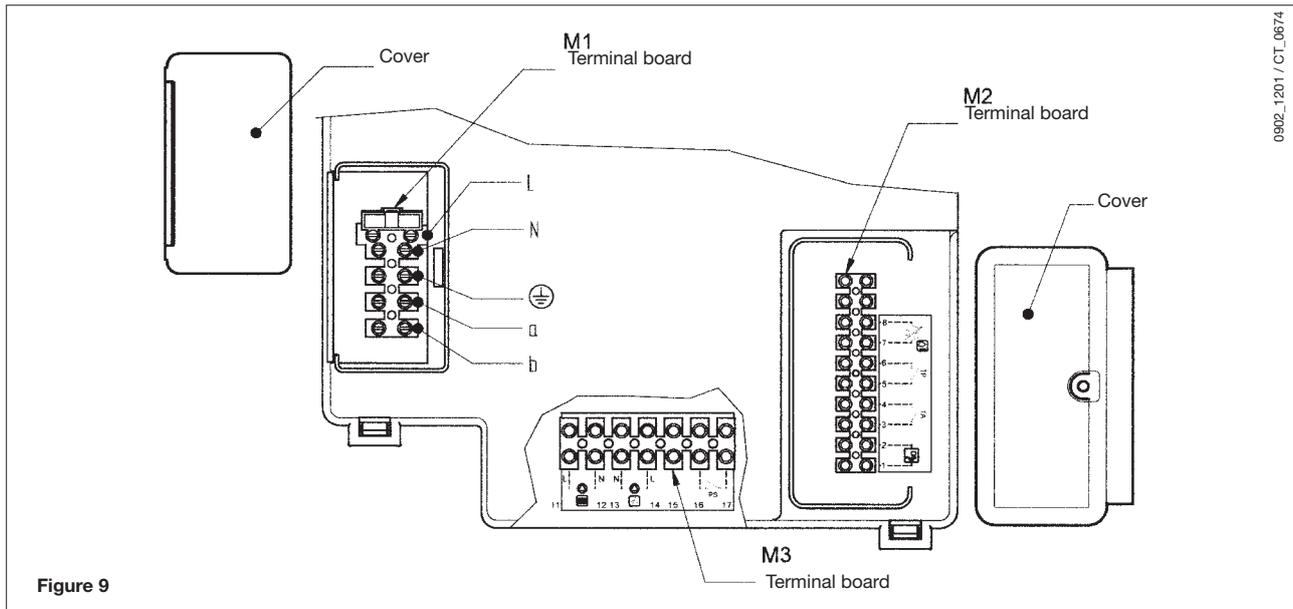
Connect the boiler to a 230V monophase + ground power supply by means of the three-pin cable supplied with it and make sure you connect polarities correctly.

Use a double-pole switch with a contact separation of at least 3mm in both poles.

In case you replace the power supply cable fit a HAR H05 VV-F' 3x0.75mm² cable with an 8mm diameter max.

The fuse, a fast-acting type rated 2A, is incorporated into the power supply terminals (remove the black fuse holder to enable inspection and/or replacement).

IMPORTANT: Check that the overall current drawn by accessories connected to the appliance is less than 2 A. If the value is greater, a relay must be wired between the boiler control circuit board and the accessories drawing the higher current.



13.1 CONNECTING THE PUMP-HEATING SYSTEM

Turn the control box downwards and access the terminal blocks M1 and M3 by taking off the main protective cover.

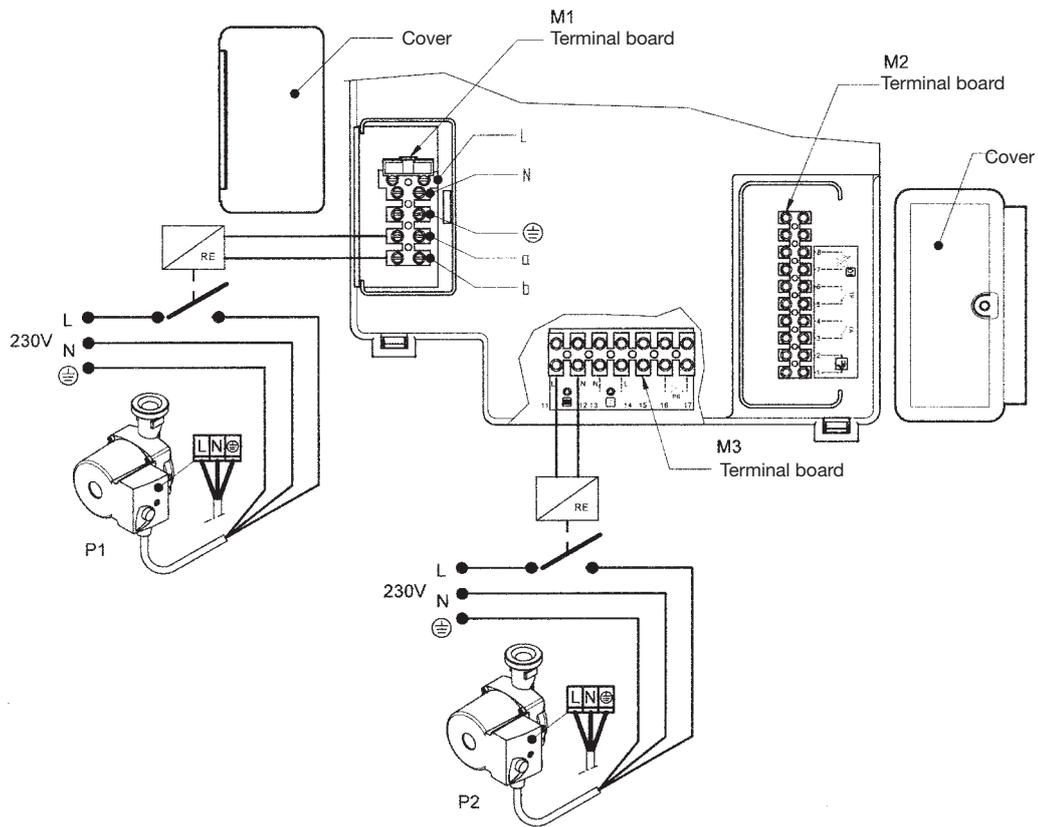
The pumps of the heating system (P1 and P2) have to be connected to boiler terminal block following the wiring of figure 10, a relay must be wired between the boiler control circuit board and the pumps.

If the boiler unit's electronic card is wired up to a single pump with these characteristics

230 V AC; 50 Hz; 1 A max; $\cos \phi > 0.8$.

then it is not necessary to add a relay.

Check the correct size and rating of the pump by referring to graph n° 1, which shows the boiler pressure losses.



- P1 = Low loss header pump**
- P2 = Heating circuit pump**
- SI = Low loss header**
(available optional extra)
- UR = Central heating unit**

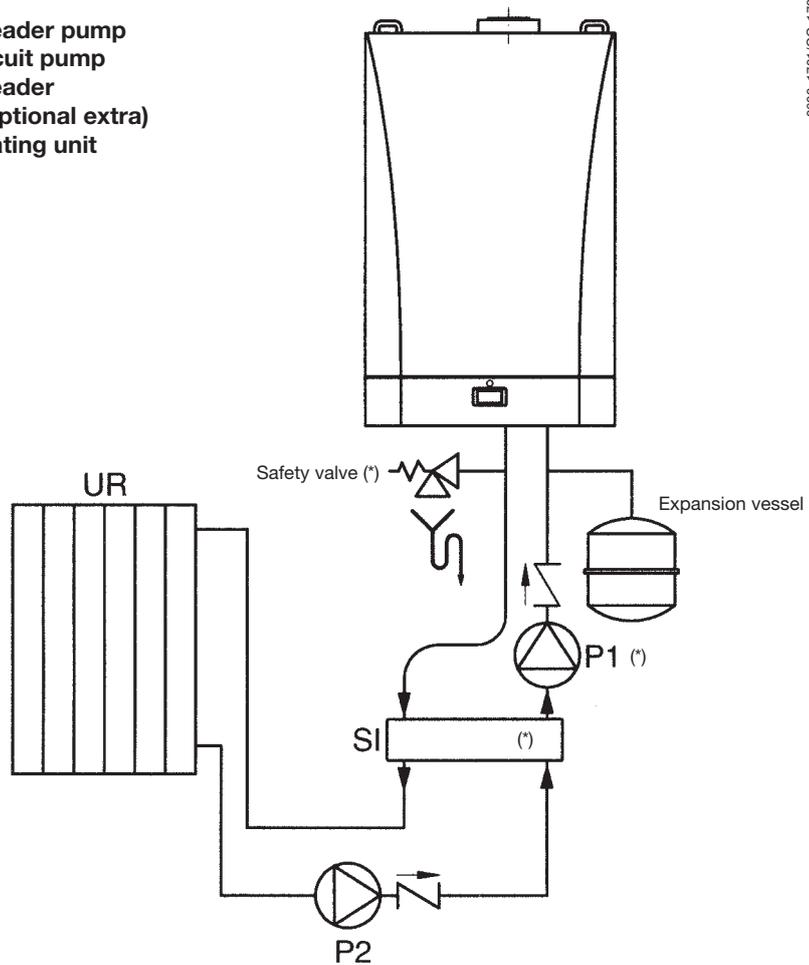
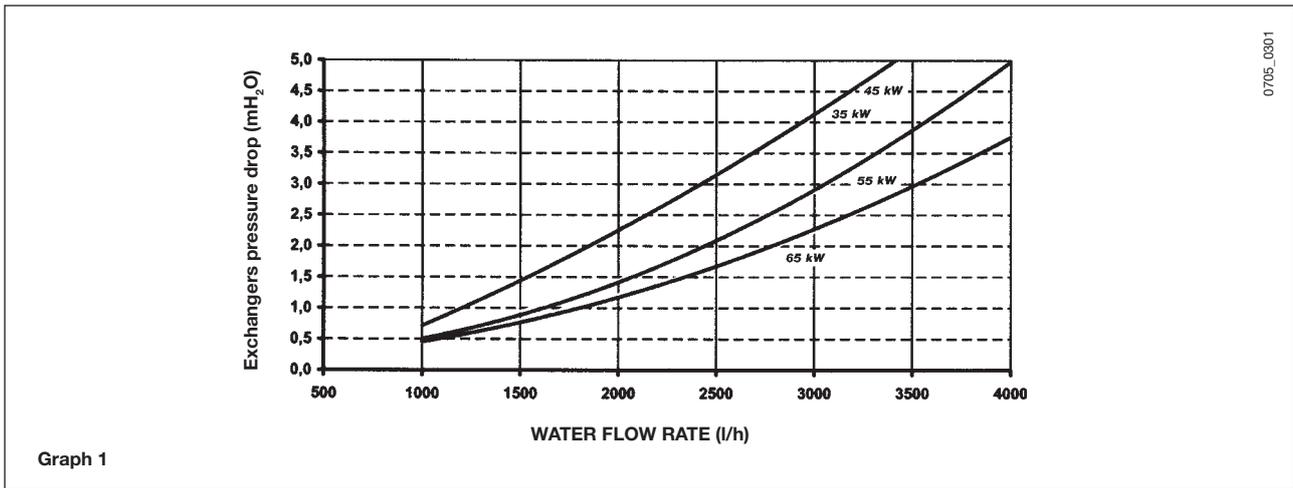


Figure 10

(*) available optional extra

- Exchangers pressure drop



The minimum ga boiler water flow, with at least 1 - 1,5 bar, must be as follow:

	<i>l/h</i>
CONDENS HPC-W 35	1000
CONDENS HPC-W 45	1000
CONDENS HPC-W 55	1000
CONDENS HPC-W 65	1200

13.2 DESCRIPTION OF THE ELECTRICAL CONNECTIONS TO THE BOILER

Turn the control box downward to access terminal board M2 used for the electrical connections by removing the two protective covers (see figure 9).

Terminals 1-2: connection of SIEMENS model QAA73 temperature regulator supplied as accessory. Connection polarity is irrelevant.

The jumper fitted across the "TA" terminals 3-4 must be removed.

Read the instructions supplied with this accessory for correct installation and programming procedures.

Terminals 3-4: "TA" room temperature thermostat connection. Thermostats with integral accelerator resistor must not be used. Check that there is no voltage across the ends of the two thermostat connection wires.

Terminals 5-6: "TP" floor temperature thermostat connection (commercially available device). Check that there is no voltage across the ends of the two thermostat connection wires.

Terminals 7-8: connection of SIEMENS model QAC34 outdoor temperature probe supplied as accessory.

Read the instructions supplied with this accessory for correct installation procedures.

Terminals 9-10: connection of domestic hot water precedence temperature sensor supplied as accessory for connecting heating-only boilers to an external water heater.

13.3 CONNECTING THE QAA73 ROOM TEMPERATURE REGULATOR

The SIEMENS model QAA73 room temperature regulator (optional accessory) must be connected to terminals 1-2 of terminal board M2 in figure 9.

The jumper across terminals 3-4, provided for connection of a room temperature thermostat, must be removed.

The settings of the domestic hot water temperature and domestic hot water production schedule must be made using this device.

The timed program of the central heating circuit must be set on the QAA73 if there is a single zone, or in relation to the zone controlled by the QAA73 device.

The timed program for the central heating circuit of the other zones can be set directly on the boiler control panel.

See the instructions provided with the QAA73 room temperature regulator for the user parameter programming procedure.

QAA73: parameters which can be set by the installation engineer (service)

By pressing the two PROG buttons together for at least three seconds it is possible to access the list of parameters that the installer can display and/or set.

Press either of these buttons to change the parameter to display or change.

Press the [+] or [-] key to change the value displayed.

Press either of the PROG buttons again to save the change.

Press the information button (i) to quit programming.

Here follows a list of the most commonly used parameters:

Line no.	Parameter	Range	Default value
70	HC1 gradient Selection of central heating circuit temperature curve "kt"	2.5...40	15
72	HC1 max. output Central heating system maximum output temperature	25...85	85
74	Type of building	Light, Heavy	Light
75	Room compensation Activation/deactivation of the influence of the room temperature. If it is deactivated, the outdoor temperature sensor must be installed.	on HC1 on HC2 on HC1+HC2 nil	On HC1
77	Automatic adaptation of the temperature curve "kt" in relation to the room temperature.	On - off	On
78	Opt Start Max Maximum time the boiler is switched on ahead of the timed program to optimise the temperature in the premises.	0...360 min	0
79	Opt Stop Max Maximum time the boiler is switched off ahead of the timed program to optimise the temperature in the premises.	0...360 min	0
80	HC2 gradient	2.5...40 -- = not active	--
90	DHW Red Setp Minimum temperature of the domestic domestic hot water	10 or 35...58	10
91	DHW program Selection of the type of timed program for domestic hot water.	24 h/day TSP HC-1h TSP HC TSP DHW	24 h/day
	24 h/day PROG HC-1h PROG HC PROG ACS		

- fault messages

In the event of fault, the display panel on the QAA73 shows the flashing symbol . Press the information key (i) to display the error code and a description of the fault (see Fault warning tables on paragraph 3.9).

13.4 CONNECTING THE OUTDOOR TEMPERATURE SENSOR

The SIEMENS model QAC34 outdoor temperature sensor (optional accessory) must be connected to terminals 7-8 of terminal board M2 in figure 9.

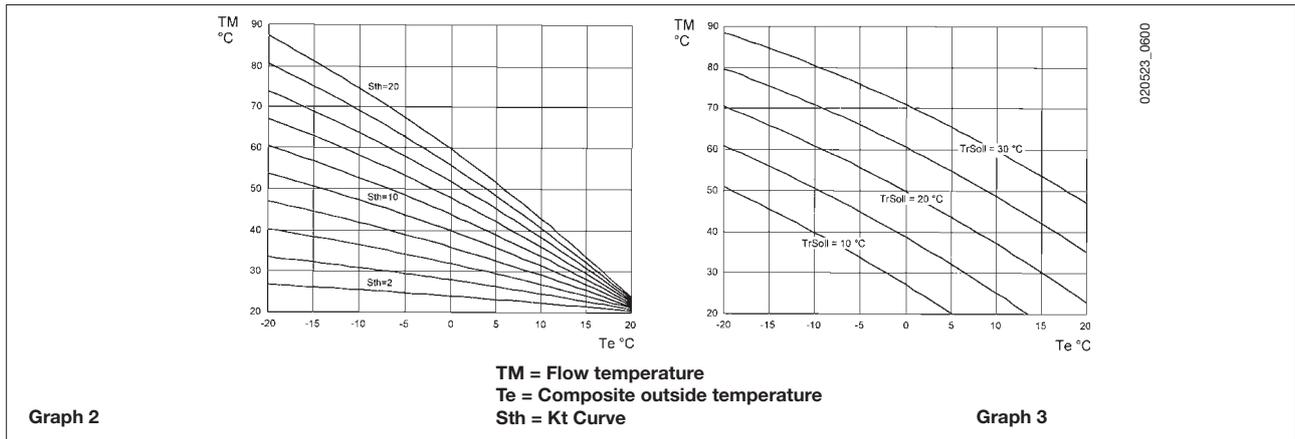
The procedures for setting the gradient of the temperature curve “kt” vary depending on the accessories connected to the boiler.

a) Without QAA73 room temperature control device:

The temperature curve “kt” must be selected by setting parameter H532 as described in section 15 “setting the boiler parameters”.

See graph 2 for selecting the curve referred to a room temperature of 20°C.

The chosen curve can be shifted by pressing the  button (2) on the boiler control panel, and modifying the value displayed by pressing the  and  keys. See graph 3 for curve selection. (The example show in graph 3 refers to the curve Kt=15). Increase the value displayed if the room temperature required is not reached inside the premises for central heating.

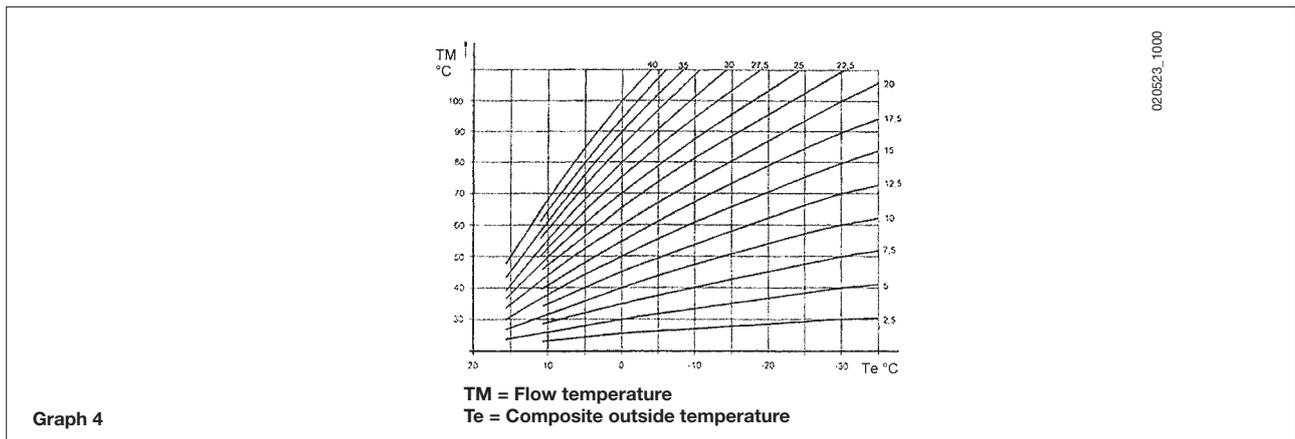


b) with QAA73 room temperature control device:

The temperature curve “kt” must be selected by setting parameter 70 “HC1 gradient” of the QAA73 room temperature control device as described in section 13.3 “QAA73: parameters which can be set by the installation engineer (service)”. See graph 4 for selecting the curve referred to a room temperature of 20°C.

The curve is shifted automatically on the basis of the room temperature set using the QAA73 climate control.

If the system is divided into zones, the temperature curve “kt” relating to the part of the system not controlled by the QAA73 must be selected by setting parameter H532 as described in section 15 “setting the boiler parameters”.



c) with AGU2.500 device for control of a low temperature system:

Refer to the instructions provided with the AGU2.500 accessories for connection and control of a low temperature zone. In this case the set of some electronic parameters have to be modified (see § 15: H552-H553-H632).
H552=50 H553=12 H632=00001111

13.5 CONNECTING A ZONED SYSTEM

The electrical connection and settings needed to control a system divided into zones vary depending on the accessories connected to the boiler.

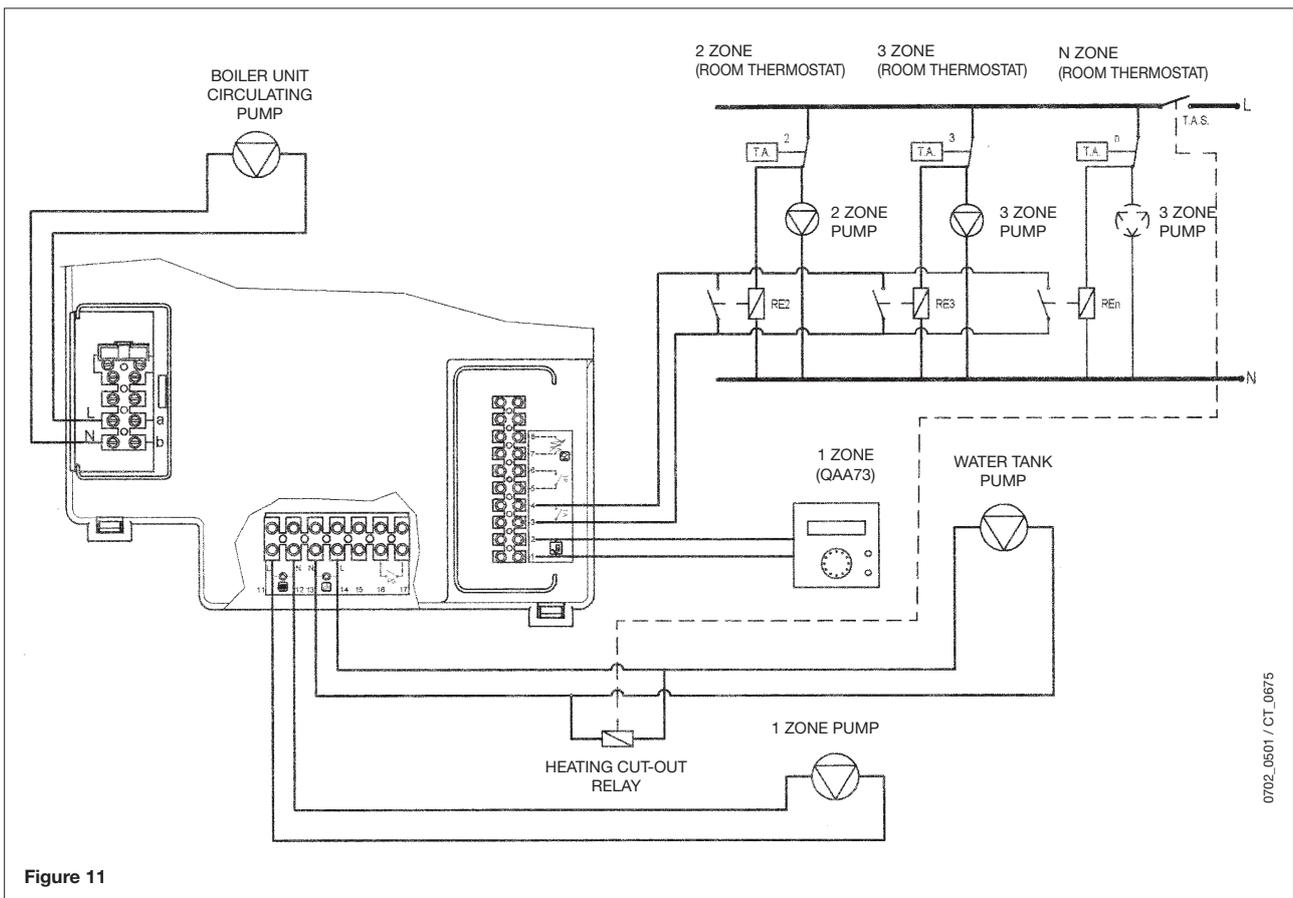
a) Without QAA73 room temperature control device:

The contact relating to the request for operation of the various zones must be parallel-connected and connected to terminal 3-4 "TA" of terminal board M2 in figure 11. The jumper present must be removed. The central heating temperature is selected directly on the boiler control panel in accordance with the instructions provided for the user in this manual.

b) with QAA73 room temperature control device:

The pump relating to the room controlled by the QAA73 room temperature control device must be supplied with electricity by means of terminals 11-12 of terminal board M3 in figure 11. The contact relating to the request for operation of the other zones must be parallel-connected and connected to terminal 3-4 "TA" of terminal board M2 in figure 11. The jumper present must be removed. The central heating temperature of the zone controlled by the QAA73 is set automatically by the QAA73 itself. The central heating temperature of the other zones must be selected directly on the boiler control panel.

In this case the set of some electronic parameters have to be modified (see § 15: H552-H632).
H552=50 H632=00001111



c) with AGU2.500 device for control of a low temperature system:

Refer to the instructions provided with the AGU2.500 accessories for connection and control of a low temperature zone. In this case the set of some electronic parameters have to be modified (see § 15: H552-H553-H632).
H552=50 H553=12 H632=00001111

13.6 CONNECTING THE PUMP - HOT WATER CIRCUIT

The domestic hot water pump (P3), which directs flow into an eternal storage tank, is connected to terminals 13-14 of boiler terminal strip M3 (figure 12).

The electrical specifications of the pump must be as follows:

230 V AC; 50 Hz; 1 A max; $\cos \phi > 0.8$.

If the specifications of the installed pump are different, a relay must be wired between the boiler control circuit board and the pump.

Remove the resistor from terminals 9-10 of terminal strip M2 (figure 12), and connect the hot water priority NTC sensor, which is supplied as an accessory.

The sensing element of the NTC device must be located in the recess provided on the storage tank (figure 12).

The temperature and on-off programming of the domestic hot water supply are selected directly from the boiler control panel, as described in this manual under the user instruction headings.

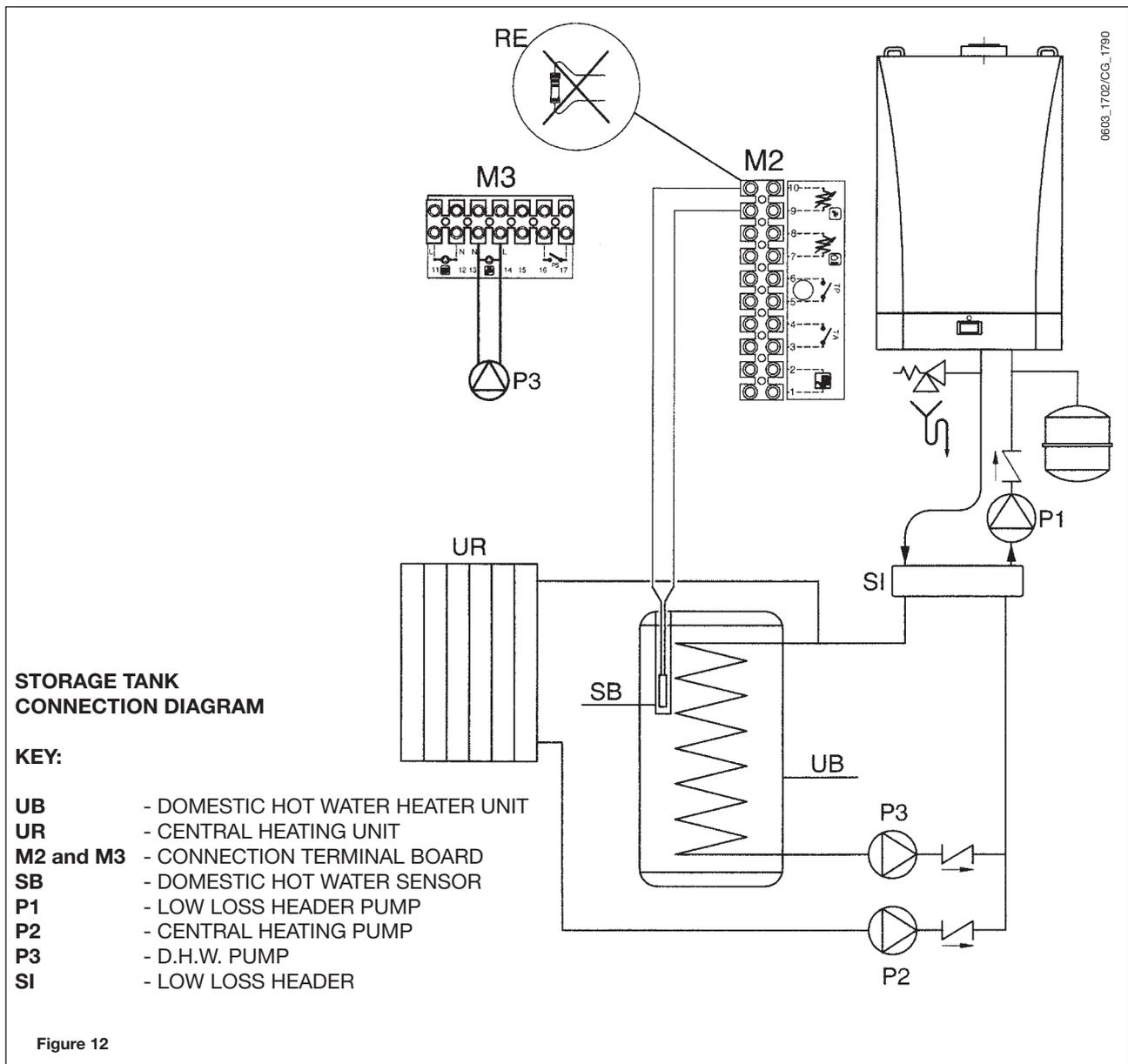


Figure 12

CAUTION:

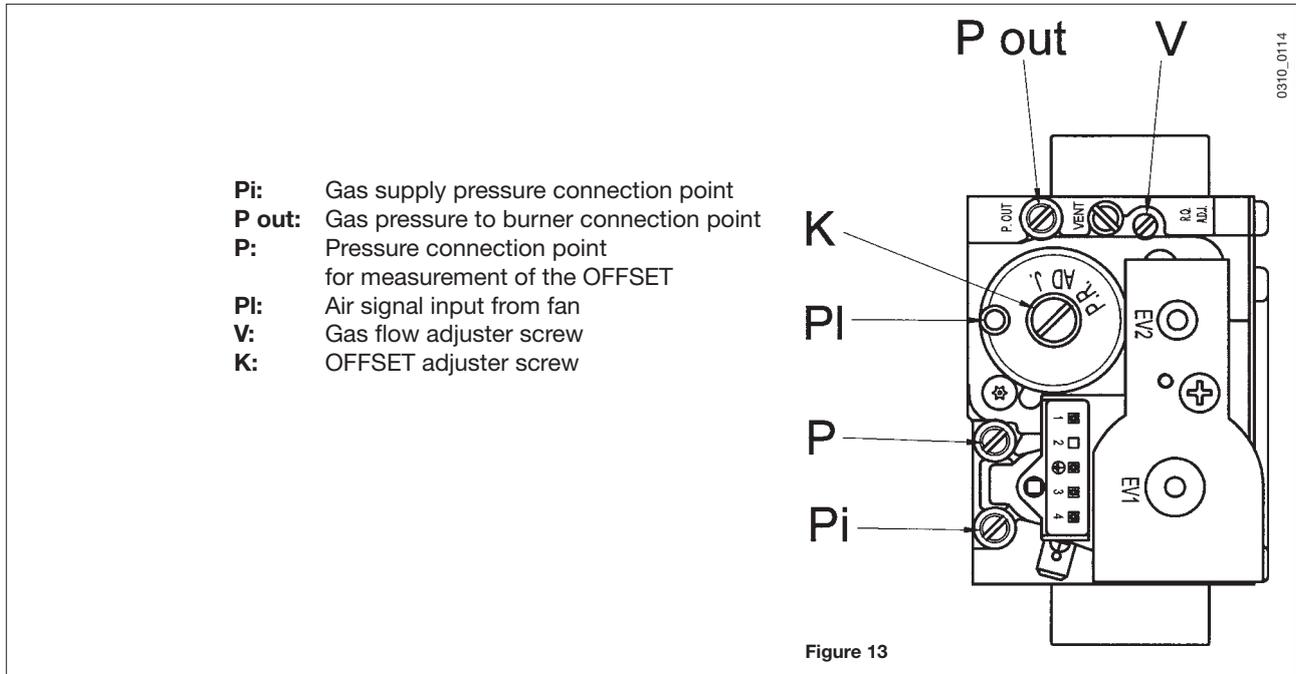
In the case of a direct coupling of the boiler coil fitting on the boiler unit's "T" fitting it is necessary to modify the control of pump P1.

Configuration of parameter for electronic card H632 = 00000100. (See § 15).

14. GAS VALVE ADJUSTMENT

Carry out the following operations in the given sequence:

- 1) Calibration of the maximum heat output. Check that the CO₂ measured on the flue, with the boiler operating at the maximum heat output, is the same as that shown in table 1. Otherwise, turn the regulation screw (V) on the gas valve. Turn the screw clockwise to reduce the concentration of CO₂ and anticlockwise to increase it.
- 2) Calibration of reduced heat output. Check that the CO₂ measured on the flue, with the boiler operating at the minimum heat output, is the same as that shown in table 1. Otherwise, turn the offset regulation screw (K) on the gas valve. Turn the screw clockwise to increase the concentration of CO₂ and anticlockwise to reduce it.



IMPORTANT: If the appliance is being converted from natural gas to propane (LPG), the following operations must be performed before calibrating the gas valve as instructed above.

- Turn adjuster screw (V) on the gas valve clockwise through the number of complete revolutions specified in table 3.

To simplify calibration of the gas valve, the “calibration function” can be set directly on the boiler control panel by proceeding as follows:

- 1) Press the keys (2-3) together until the display shows the pointer “▶” alongside the symbol (about 6 seconds).

- 2) Press the keys to set the fan speed at the minimum and maximum heat output (%PWM);

N.b - to set the **minimum** and **maximum** heat output quickly, press the keys respectively;

- 3) press either of the two keys to exit the function.

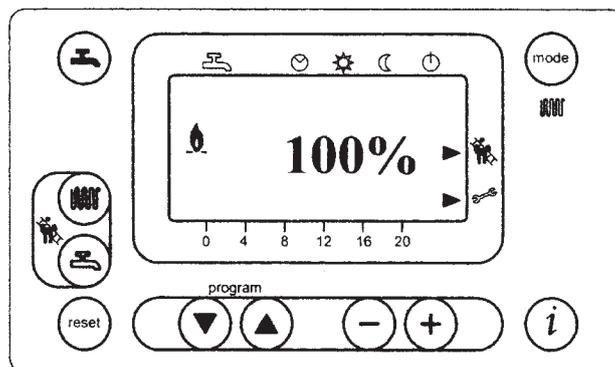


Figure 14

	G20 - 2H - 20 mbar	G31 - 3P - 37 mbar
CO ₂ max. heat output	8.7 %	10 %
CO ₂ min. heat output	8.4 %	9.8 %

Table 1

Gas consumption at 15 °C 1013 mbar gas G20 - 2H - 20 mbar	35	45	55	65
PCI (MJ/m ³)	34.02	34.02	34.02	34.02
Consumption at max. heat output (m ³ /h)	3.68	4.91	6.00	7.08
Consumption at min. heat output (m ³ /h)	1.58	1.58	1.69	2.11
Gas nozzle (mm)	8.5	8.5	15	---

Table 2

(*) In the case of outlet ducts longer than 4/20 m set the values given in the charts of § 12.1.

Gas consumption at 15 °C 1013 mbar G31 - 3P - 37 mbar	35	45	55	65
PCI (MJ/Kg)	46.34	46.34	46.34	46.34
Consumption at max. heat output (kg/h)	2.70	3.60	4.40	5.20
Consumption at min. heat output (kg/h)	1.16	1.16	1.24	1.55
Gas nozzle (mm)	8.5	8.5	15	---

Table 2.1

(*) In the case of outlet ducts longer than 4/20 m set the values given in the charts of § 12.1.

Model	Counter clockwise turns of screw (V)
CONDENS HPC-W 35	3
CONDENS HPC-W 45	3
CONDENS HPC-W 55	3 ³ / ₄
CONDENS HPC-W 65	4 ³ / ₄

Table 3

15. SETTING THE BOILER PARAMETERS

The boiler parameters may only be modified by professionally qualified staff proceeding as follows:

- press the \blacktriangledown \blacktriangle , keys on the boiler's front panel together for about 3 s until the parameter H90 appears on the display;
- press the \blacktriangledown \blacktriangle keys to select the parameter for modification;
- press the \ominus and \oplus keys to modify the parameter;
- press the ⓘ key to exit the programming function.

The following are the parameters generally used:

Parameter N.	Description	Factory setting
H90	Setting for domestic hot water reduced temperature (°C)	10
H91	D.H.W. (Domestic Hot Water) program (0 = enabled; 1 = disabled)	1
H505	Maximum temperature (°C) of the central heating circuit HC1 corresponding to: <ul style="list-style-type: none"> - the main circuit in systems with just one zone; - the circuit of the zone where the QAA73 temperature control device is installed in case of systems with more than one high-temperature zone; - the high temperature zone circuit in mixed systems and if the SIEMENS AGU2.500 accessory is used. 	80
H507	Maximum temperature (°C) of the central heating circuit HC2 of a system with more than one zone, corresponding to the circuit of the low-temperature zone if the SIEMENS AGU2.500 accessory is used.	80
H516	Automatic Summer / Winter switching temperature (°C).	20
H532	Selection of temperature curve of central heating circuit HC1 (see Graph 1)	15
H533	Selection of temperature curve of central heating circuit HC2 (see Graph 1)	15
H536	Maximum speed at maximum output in heating mode (rpm - maximum speed limitation)	Refer to paragraph 12.1
H612	Setting value of required speed (rpm) at low-fire	
H613	Setting value of required speed (rpm) at high-fire	
H544	Pump post-circulation time in central heating mode (min)	10
H545	Burner operating pause time between two start-ups (s)	180
H552	Hydraulic system setting (see instructions provided with the SIEMENS AGU2.500 accessory). H552 = 50 with AGU2.500 and with QAA73 + zones with room thermostat H552 = 80 with RVA 47	2
H553	Configuration of heating circuits H553 = 12 with AGU2.500	21
H615	Programmable function	9
H632	Configuration of system with low loss header P1 H632 = 00001111 with AGU2.500 and with QAA73 + zones with room thermostat H632 = 00000100 with storage tank without low loss header The value of Bit could be 1 or 0. Press the keys 5 and 6 to select the bit to modify (b0 is the bit on the right, b7 is the last bit on the left). To modify the Bit value press on the keys 7 and 8	00001100
H641	Fan post-purge interval (s)	10
H657	Setpoint of autonomous ANTILEGIONELLA function 60...80 °C = setting temperature range 0 = function inactive	0

Table 4

If the electronic circuit board is replaced, make sure that the parameters set are those specific to the boiler model, as indicated in the documentation available from the authorised Service Centre.

16. CONTROL AND OPERATION DEVICES

The boiler has been designed in full compliance with European reference standards and in particular is equipped with the following

- **Overheat thermostat**

Thanks to a sensor placed on the heating flow, this thermostat interrupts the gas flow to the main burner in case the water contained in the circuit has overheated. Under these conditions the boiler locks out and you can only repeat the ignition procedure by pressing the reset button on the boiler after you have remedied the cause of the trip.

It is forbidden to disable this safety device

- **Boiler circuit circulation test**

The boiler electronic management unit is fitted with a “boiler circulation test” function which involves continuously checking the primary circuit delivery and return temperatures. In case of an irregular increase in the delivery and return temperature or a temperature reversal, the boiler stops and signals the error on the display (see error table).

- **Flue thermostat**

This device, positioned on the flue inside the boiler, interrupts the flow of gas to the burner if the temperature exceeds 90 °C. After verifying the cause of the trip, press the reset button positioned on the thermostat itself, then press the release button on the boiler.

It is forbidden to disable this safety device

- **Flame ionization detector**

The flame sensing electrode guarantees safety of operation in case of gas failure or incomplete interlighting of the main burner.

Under such conditions the boiler is blocked.

You must press the reset button on the boiler to restore the normal operating conditions.

- **Supplementary running of the pump**

The electronically-controlled supplementary running of the pump lasts 10 minutes, when the boiler is in the central heating mode, after the burner has switched off due to a room thermostat intervention.

- **Frost protection device**

Boilers electronic management includes a “frost protection” function in the central heating system which operates the burner to reach a heating flow temperature of 30°C when the system heating flow temperature drops below 5 °C.

This function is enabled as long as the boiler is connected to the a.c. power and gas supplies and the pressure in the system is as specified.

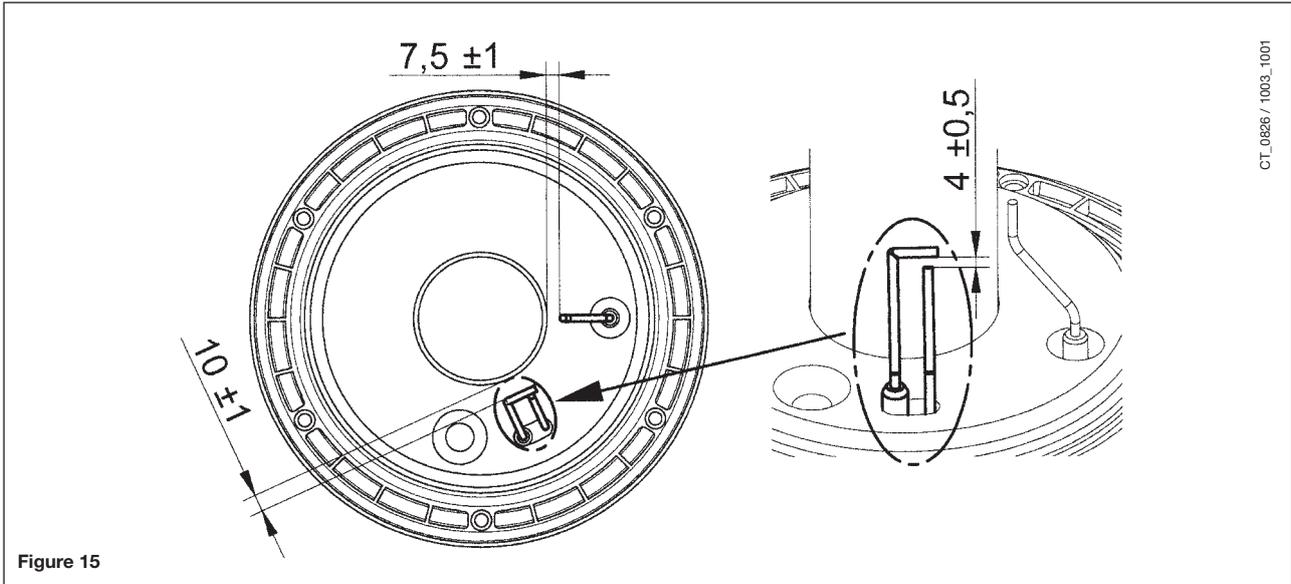
- **Pump-blocking prevention**

In case there is no call for heat either from the central heating system or from the DHW system for 24 hours on end the pump will automatically switch on for 10 seconds.

- **Hydraulic pressure sensor**

This device enables the main burner only to be switched on if the system pressure is over 0.5 bar.

17. POSITIONING OF THE IGNITION AND FLAME SENSING ELECTRODE



18. CHECK OF COMBUSTION PARAMETERS

To measure combustion performance and hygiene levels of combustion products, the forced draught boiler models are equipped with two test points on the tapered coupling specifically designed for this purpose.

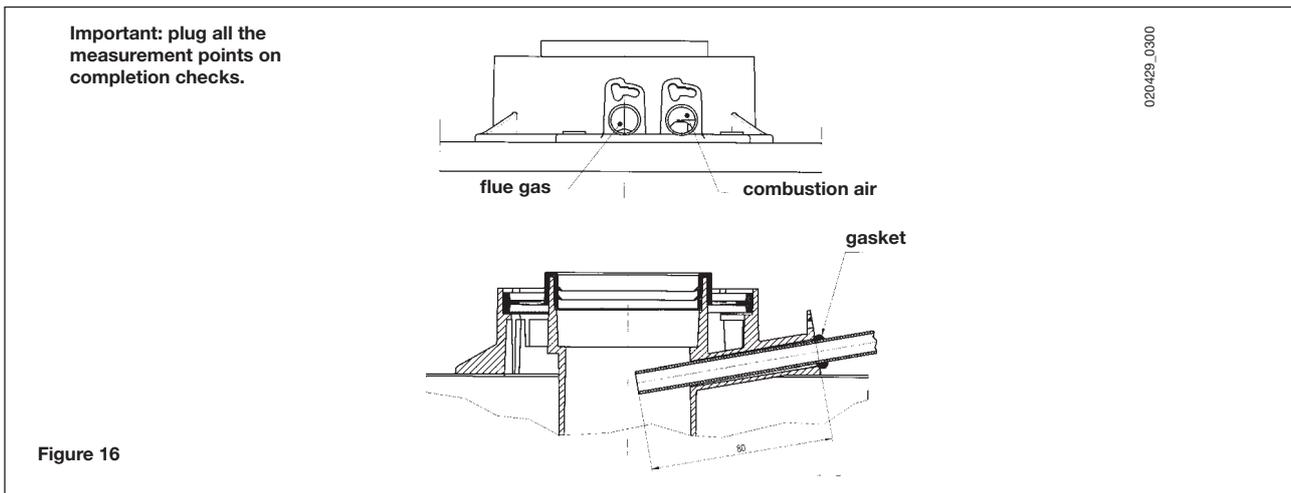
One of the two test points is connected to the exhaust flue duct to allow measurements of the combustion products hygienic standards and combustion efficiency.

The second test point is connected to the comburant air inlet duct to check possible combustion products circulation in case of coaxial ducts.

The exhaust flue duct test point allows measurements of the following:

- combustion products temperature;
- concentration of oxygen (O_2) or, alternatively, of carbon dioxide (CO_2);
- concentration of carbon monoxide (CO).

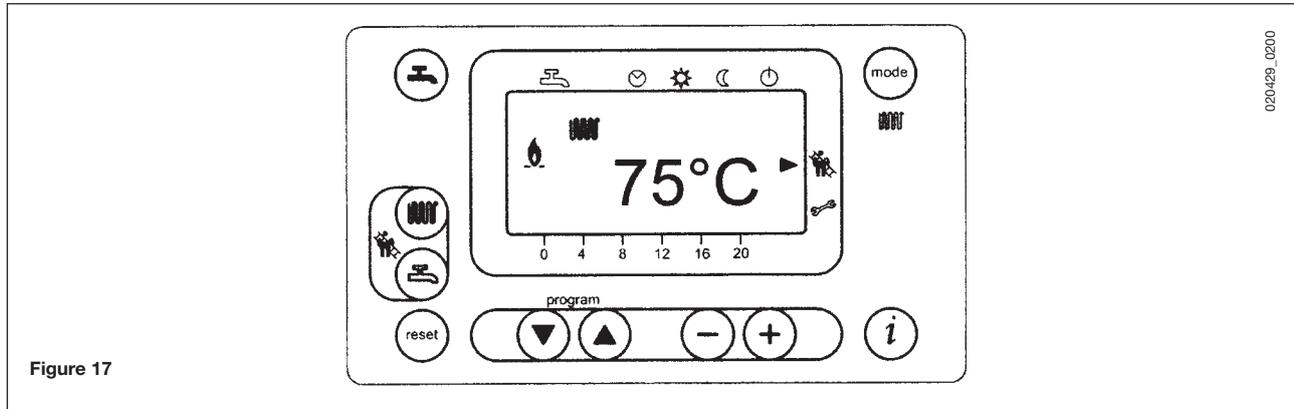
The comburant air temperature must be measured at the test point connected to the air inlet duct.



19. ACTIVATING THE CHIMNEY-SWEEPER FUNCTION

To facilitate measurement of the combustion efficiency and improve the cleanliness of the production products, the flue-sweeper function can be activated by proceeding as described below:

- 1) press the (2-3) together until the pointer "▶" appears on the display alongside the symbol (about 3 seconds but no more than 6 seconds). In these conditions, the boiler operates at the maximum heat output set for central heating.
- 2) press either of the buttons to exit the function



20. ANNUAL SERVICE

To optimise boiler efficiency, carry out the following annual controls:

- check the appearance and airtightness of the gaskets of the gas and combustion circuits;
- check the state and correct position of the ignition and flame-sensing electrodes;
- check the state of the burner and make sure it is firmly fixed;
- check for any impurities inside the combustion chamber.
Use a vacuum cleaner to do this;
- check the gas valve is correctly calibrated;
- check the pressure of the heating system;
- check the pressure of the expansion vessel;
- check the fan works correctly;
- make sure the flue and air ducts are unobstructed;
- check for any impurities inside the siphon fitted on certain boilers;
- check the magnesium anode, where present, for boilers fitted with storage boilers.

WARNINGS

Before commencing any maintenance operations, make sure the boiler is disconnected from the power supply. Afterwards, move the knobs and/or operating parameters of the boiler to their original positions.

21. BOILER SCHEMATIC

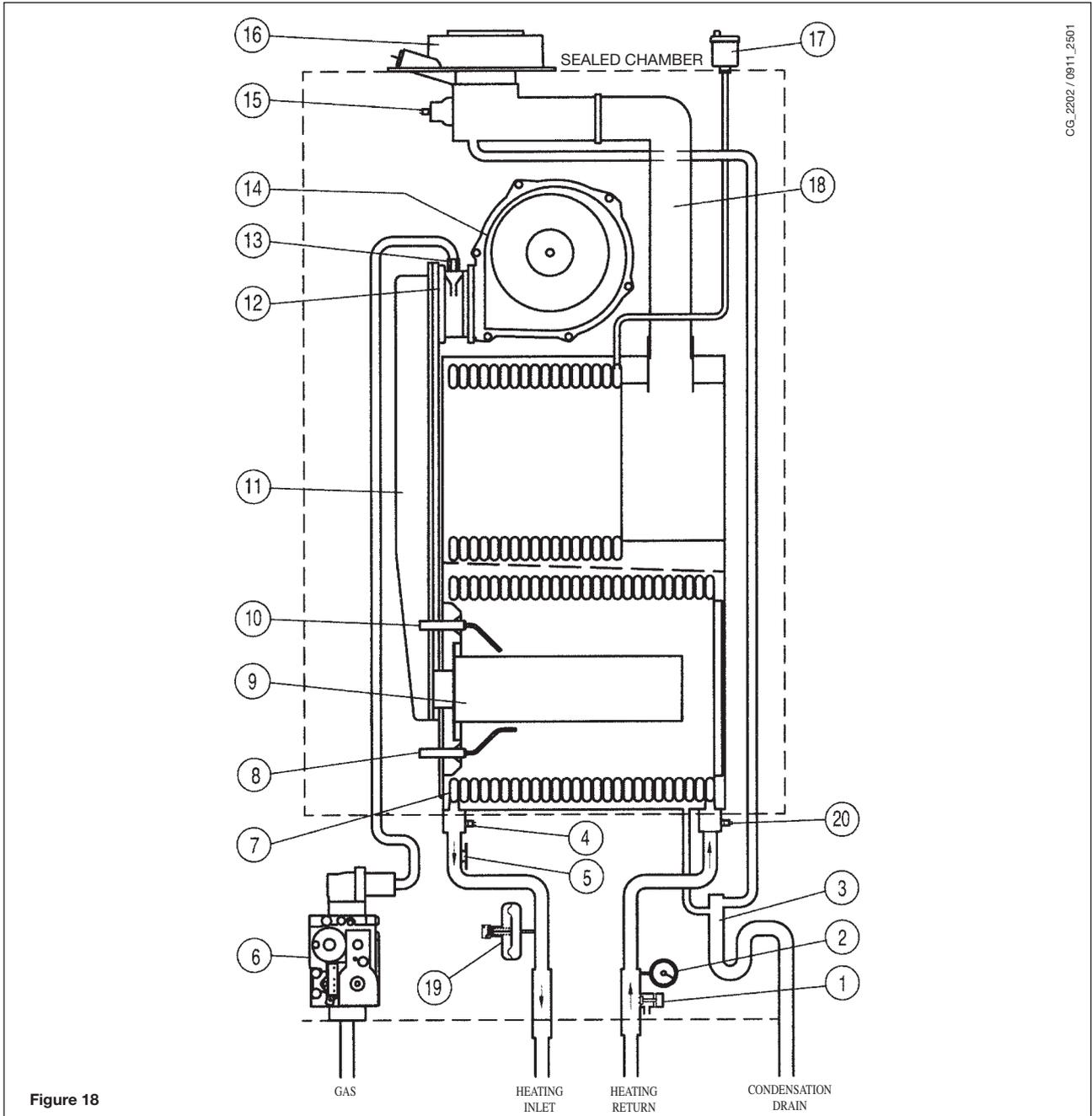
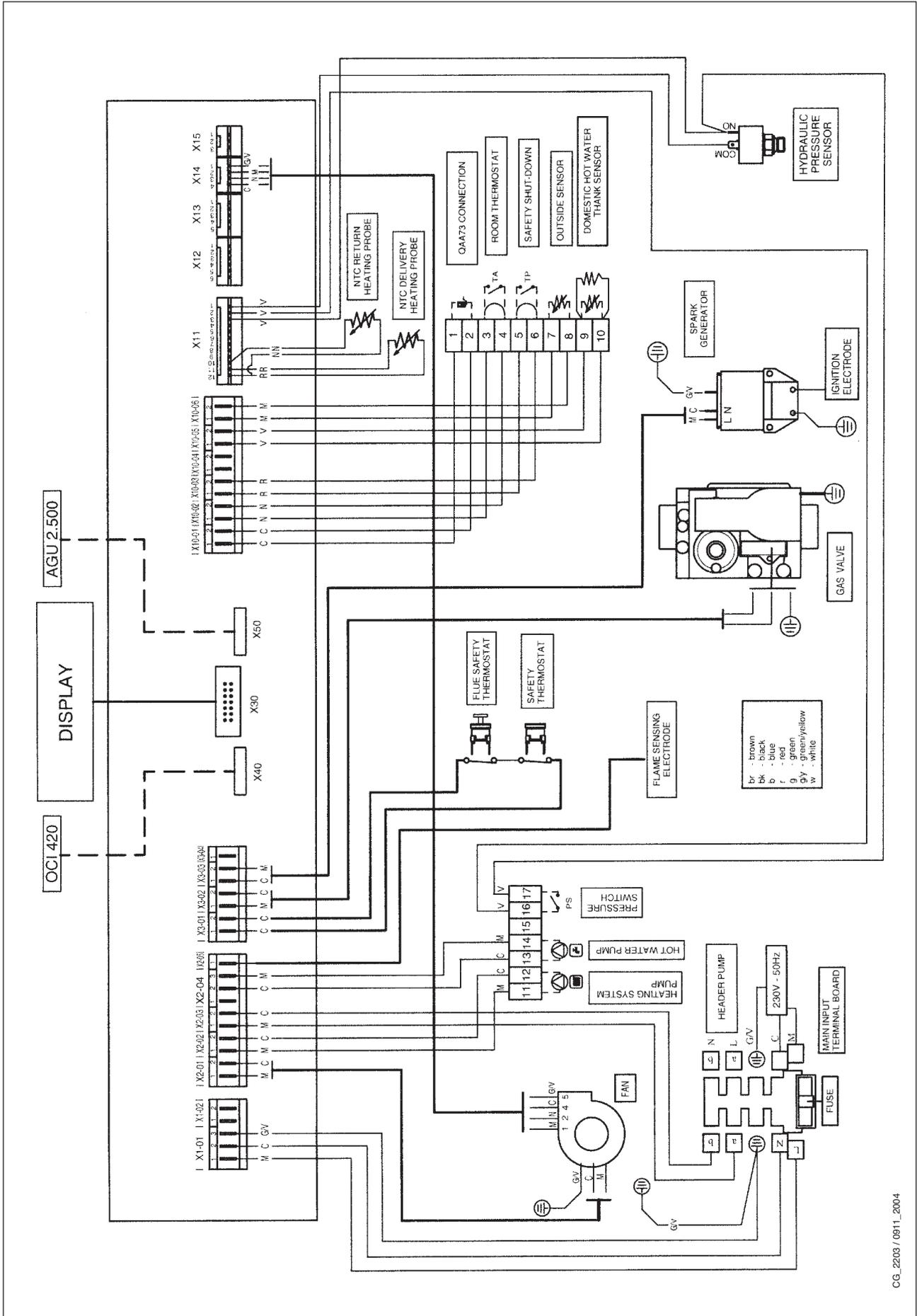


Figure 18

Legend:

- 1 boiler drain point
- 2 manometer
- 3 siphon
- 4 NTC delivery heating probe
- 5 105°C overheat thermostat
- 6 gas valve
- 7 flue-water exchanger
- 8 flame detector electrode
- 9 main burner
- 10 ignition electrode
- 11 air/gas mixture header
- 12 mixer with venturi
- 13 gas diaphragm
- 14 fan
- 15 flue thermostat
- 16 coaxial fitting
- 17 automatic air vent
- 18 flue joint
- 19 hydraulic pressure sensor
- 20 NTC return heating probe

22. ILLUSTRATED WIRING DIAGRAM



23. TECHNICAL DATA

Boiler model CONDENS HPC-W		35	45	55	65
Category		II _{2H3P}	II _{2H3P}	II _{2H3P}	II _{2H3P}
Rated heat input	kW	34,8	46,4	56,7	67,0
Reduced heat input	kW	15	15	16,0	20,0
Rated heat output 75/60°C	kW	33,9	45,0	55,0	65,0
	kcal/h	29.150	38.700	47.300	55.900
Rated heat output 50/30°C	kW	36,5	48,7	59,5	70,3
	kcal/h	31.390	41.880	51.170	60.460
Reduced heat output 75/60°C	kW	14,5	14,5	15,5	19,3
	kcal/h	12.470	12.470	13.330	16.598
Reduced heat output 50/30°C	kW	15,8	15,8	16,8	21,0
	kcal/h	13.588	13.588	14.450	18.060
Useful efficiency according to 92/42/CEE directive	—	★★★★	★★★★	★★★★	★★★★
Central heating system max. pressure	bar	4	4	4	4
Heating circuit temperature range	°C	25÷80	25÷80	25÷80	25÷80
Water content	l	5,1	5,1	5,6	6,5
Type	—	C13 - C33 - C43 - C53 - C63 - C83 - B23			
Concentric flue duct diameter	mm	80	80	80	80
Concentric air duct diameter	mm	125	125	125	125
2-pipe flue duct diameter	mm	80	80	80	80
2-pipe air duct diameter	mm	80	80	80	80
Max. flue mass flow rate	kg/s	0,016	0,022	0,027	0,032
Min. flue mass flow rate	kg/s	0,007	0,007	0,008	0,010
Max. flue temperature	°C	72	74	78	75
NOx class	—	5	5	5	5
Type of gas used	—	G20	G20	G20	G20
	—	G31	G31	G31	G31
Natural gas feeding pressure 2H (G20)	mbar	20	20	20	20
Propane gas feeding pressure 3P (G31)	mbar	37	37	37	37
Power supply voltage	V	230	230	230	230
Power supply frequency	Hz	50	50	50	50
Rated power supply	W	45	75	80	125
Net weight	kg	64	64	68	72
Dimensions	height	mm	950	950	950
	width	mm	600	600	600
	depth	mm	466	466	466
Protection-limit against humidity and water leakages (**)		IPX5D	IPX5D	IPX5D	IPX5D

(**) according to EN 60529

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WESTEN

36061 BASSANO DEL GRAPPA (VI) ITALIA

Via Trozzetti, 20

Servizio clienti: Tel. 0424 - 517800 - Telefax 0424/38089

www.westen.it

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