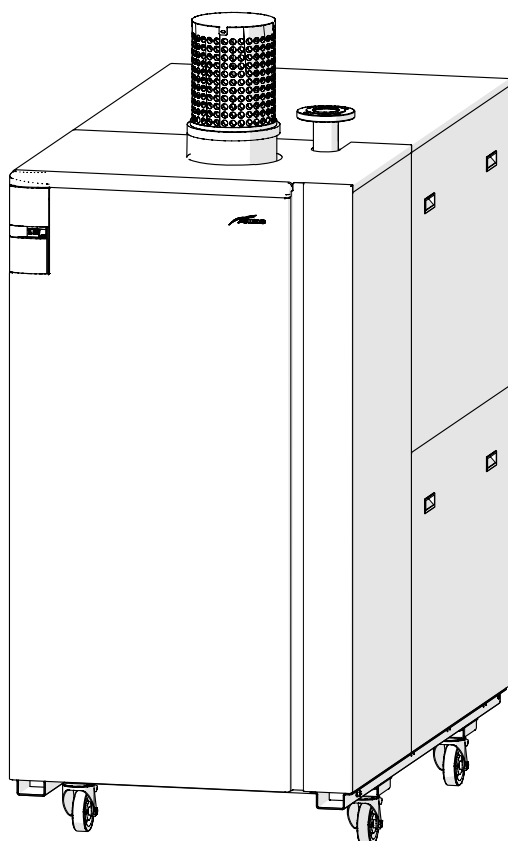


Aluminium condensation boilers

ALU PLUS HE

USER, INSTALLATION AND SERVICING INSTRUCTIONS



ENSURE THAT THESE INSTRUCTIONS ARE LEFT FOR THE USER AFTER COMPLETION OF THE BENCHMARK SECTION

PLEASE READ THE IMPORTANT NOTICE WITHIN THIS GUIDE REGARDING YOUR BOILER WARRANTY



BOILER DETAILS

please position here a sticker from installation pack



IMPORTANT NOTICE

For the first year all of our appliances are protected by our manufacturer's guarantee which covers both parts and labour.

As you would expect from Sime Ltd, it is our aim to provide our valued customers with the best in after sales and service.

To take advantage of any extended warranty offered, all you have to do is to adhere to these 3 simple conditions:

- The installation must be carried out to Manufacturers/Benchmark Standards by a Gas Safe Registered Engineer, and recorded in the installation manual.
- The appliance must be registered with both Sime Ltd and Gas Safe within 30 days of installation.
- The appliance must be serviced every 12 months, within 30 days of the anniversary of the installation date, by either Sime Ltd or a Gas Safe registered engineer- ensuring that the Benchmark service record in the installation manual is completed.

Failure to comply with the above will result in only the 12 month warranty being offered. In the absence of any proof of purchase, the 12 month warranty period will commence from the date of manufacture of the boiler as shown on the appliance data plate.

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.

Code Of Practice

For the installation, commissioning and servicing of domestic heating and hot water products

Benchmark places responsibilities on both manufacturers and installers.* The purpose is to ensure that customers** are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. Installers are required to carry out work in accordance with the following:

Standards of Work

- Be competent and qualified to undertake the work required.
- Install, commission, service and use products in accordance with the manufacturer's instructions provided.
- Ensure that where there is responsibility for design work, the installation is correctly sized and fit for purpose.
- Meet the requirements of the appropriate Building Regulations. Where this involves notifiable work be a member of a Competent Persons Scheme or confirm that the customer has notified Local Authority Building Control (LABC), prior to work commencing.
- Complete all relevant sections of the Benchmark Checklist/Service Record when carrying out commissioning or servicing of a product or system.
- Ensure that the product or system is left in a safe condition and, whenever possible, in good working order.
- Highlight to the customer any remedial or improvement work identified during the course of commissioning or servicing work.
- Refer to the manufacturer's helpline where assistance is needed.
- Report product faults and concerns to the manufacturer in a timely manner.

Customer Service

- Show the customer any identity card that is relevant to the work being carried out prior to commencement or on request.
- Give a full and clear explanation/demonstration of the product or system and its operation to the customer.
- Hand over the manufacturer's instructions, including the Benchmark Checklist, to the customer on completion of an installation.
- Obtain the customer's signature, on the Benchmark Checklist, to confirm satisfactory demonstration and receipt of manufacturer's instructions.
- Advise the customer that regular product servicing is needed, in line with manufacturers' recommendations, to ensure that safety and efficiency is maintained.
- Respond promptly to calls from a customer following completion of work, providing advice and assistance by phone and, if necessary, visiting the customer.
- Rectify any installation problems at no cost to the customer during the installer's guarantee period.



*The use of the word "installer" is not limited to installation itself and covers those carrying out installation, commissioning and/or servicing of heating and hot water products, or the use of supporting products (such as water treatment or test equipment).

**Customer includes householders, landlords and tenants.

The Benchmark Scheme

Sime is a licensed member of the Benchmark Scheme which aims to improve the standards of installation and commissioning of domestic heating and hot water systems in the UK and to encourage regular servicing to optimise safety, efficiency and performance.

Benchmark is managed and promoted by the Heating and Hotwater Industry Council.

For more information visit www.centralheating.co.uk.

Please ensure that the installer has fully completed the Benchmark Checklist in the use and maintenance section of the installation instructions supplied with the product and that you have signed it to say that you have received a full and clear explanation of its operation.

The installer is legally required to complete a commissioning checklist as a means of complying with the appropriate Building Regulations (England and Wales).

All installations must be notified to Local Area Building Control either directly or through a Competent Persons Scheme.

A Building Regulations Compliance Certificate will then be issued to the customer who should, on receipt, write the Notification Number on the Benchmark Checklist.

This product should be serviced regularly to optimise its safety, efficiency and performance.

The service engineer should complete the relevant Service Record on the Benchmark Checklist after each service.

The Benchmark Checklist may be required in the event of any warranty work and as supporting documentation relating to home improvements in the optional documents section of the Home Information Pack.

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

SIME COMBINATION BOILERS Installer checklist

Please remember to carry out the following checks after installation. This will achieve complete customer satisfaction, and avoid unnecessary service calls. A charge will be made for a service visit where the fault is not due to a manufacturing defect.

- Has a correct by-pass been fitted and adjusted?
- Has the system and boiler been flushed?
- Is the system and boiler full of water, and the correct pressure showing on the pressure gauge?
- Is the Auto Air Vent open?
- **Has the pump been rotated manually?**
- Is the gas supply working pressure correct?
- Is the boiler wired correctly? (See installation manual).
- **Has the D.H.W. flow rate been set to the customer requirements?**
- Has the customer been fully advised on the correct use of the boiler, system and controls?
- Has the Benchmark Checklist in the use and maintenance section of this manual, been completed?

SAFETY WARNINGS AND REGULATIONS



WARNINGS

- After having unpacked the boiler ensure that it is undamaged and complete including the valve pack, hanging bracket and template.
- The appliance must be used as intended. **Sime** declines all responsibility for any injury or damage to persons, animals, or property as a result of improper installation, adjustment, maintenance or use.
- In the event of water leaks, disconnect the appliance from the mains power supply, close the water mains and seek help from a qualified engineer.
- Periodically check that the operating pressure of the water heating system when cold be included in the range **0.8-6.0 bar**. If this is not the case, increase the pressure or contact professionally qualified personnel.
- If the appliance is not used for a long period of time, the following operations must be carried out:
 - *set the main isolation switch to "OFF";*
 - *close the gas and water valves for the water heating system.*
- In order to ensure optimal appliance operations **Sime** recommends that maintenance and checks are carried out at least **ONCE A YEAR** or according to the **specific legal provisions**.



WARNINGS

- **It is recommended that all operators** read this manual carefully in order to use the appliance in a safe and rational manner.
- **This manual** is an integral part of the appliance. It must therefore be kept for future reference and must always accompany the appliance in the event of the appliance being transferred to another Owner or System Manager or being installed on another system.
- **Installation and maintenance** of this appliance must be carried out by a qualified company or by a professionally qualified technician in accordance with the instructions contained in the manual. Once the work is complete, the company or technician will issue a declaration of conformity with national and local technical standards and legislation in force in the country where the appliance will be used.

**DO NOT**

- To allow children under the age of 8 to use the appliance. The appliance can be used by children no younger than 8 years old, by people with physical or cognitive disabilities, and by people lacking experience or the necessary knowledge, provided that they are supervised or have been instructed on how to use the appliance safely and that they understand the risks associated with it.
- To allow children to play with the appliance.
- To allow unsupervised children to perform user maintenance and cleaning.
- Do not use electrical devices or appliances such as switches, electrical appliances etc if you can smell gas. If this should happen:
 - *open the doors and windows to ventilate the room;*
 - *turn the gas off at the meter;*
 - *call the emergency service 0800 111999.*
- Do not touch the appliance with bare feet or with any wet part of the body.
- Do not carry out any repair, maintenance or cleaning operation before having disconnected the appliance from the mains power by setting the main switch to "OFF", and closing the gas supply.
- Do not modify the safety or adjustment devices without authorization and instructions from the manufacturer.

**DO NOT**

- Do not block the condensate drain.
- Do not pull, detach or twist the electrical cables coming out of the appliance even if the appliance is disconnected from the mains power supply.
- Do not expose the boiler to atmospheric agents. These boilers can also be installed in partially covered areas, as per EN 15502, with a maximum ambient temperature of 60 °C and a minimum ambient temperature of 0 °C. It is generally advisable to install the boilers below weathered roofs, on the balcony or in a protected niche, to protect them from exposure to weathering agents (rain, hail and snow). All boilers provide a standard antifreeze function.
- Do not block or reduce the size of the ventilation openings of the room where the appliance is installed, if present.
- Remove the mains power and gas supply from the appliance if the external temperature could fall below ZERO (risk of freezing).
- Do not leave containers with flammable substances in the room where the appliance is installed.
- Do not dispose of the packaging material irresponsibly as it could be dangerous. Packaging must be disposed of as specified by the legislation in force in the country where the appliance will be used.

RANGE

MODEL	CODE
ALU PLUS HE 360	8115761
ALU PLUS HE 720	8115771
ALU PLUS HE 1100	8115781

COMPLIANCE

Our company declares that **ALU PLUS HE** boilers comply with the following directives:

- Gas Appliances EU Regulation 2016/426
- Low Voltage Directive 2014/35/UUE
- Electromagnetic Compatibility Directive 2014/30/EU
- Ecodesign Directive 2009/125/EC
- Regulation (EU) No. 813/2013 - 811/2013
- Boiler Efficiency Directive 92/42/EEC

SYMBOLS



WARNING

To indicate actions which, if not carried out correctly, can result in injury of a general nature or may damage or cause the appliance to malfunction; these actions therefore require particular caution and adequate preparation.



ELECTRICAL HAZARD

To indicate actions which, if not carried out correctly, could lead to injury of an electrical nature; these actions therefore require particular caution and adequate preparation.



DO NOT

To indicate actions which **MUST NOT BE** carried out.



CAUTION

To indicate particularly important and useful information.

MANUAL STRUCTURE

This manual is organized as follows.

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USER INSTRUCTIONS

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VERY IMPORTANT!

PLEASE MAKE SURE YOUR COMMISSIONING CHECKLIST AND THE SERVICE INTERVAL RECORDS ENCLOSED ARE FILLED IN CORRECTLY.

ALL GAS SAFE REGISTERED INSTALLERS CARRY A GAS SAFE ID CARD.

BOTH SHOULD BE RECORDED IN YOUR COMMISSIONING CHECKLIST AND A SERVICE INTERVAL RECORDS.

YOU CAN CHECK YOUR INSTALLER IS GAS SAFE REGISTERED

BY CALLING ON 0800 408 5500 OR ALTERNATIVELY WWW.GASSAFEREGISTER.CO.UK

1 USING THE BOILER ALU PLUS HE

1.1 Control panel

The control panel allows all operators to make all adjustments necessary to manage **Sime ALU PLUS HE** boilers and connected systems.

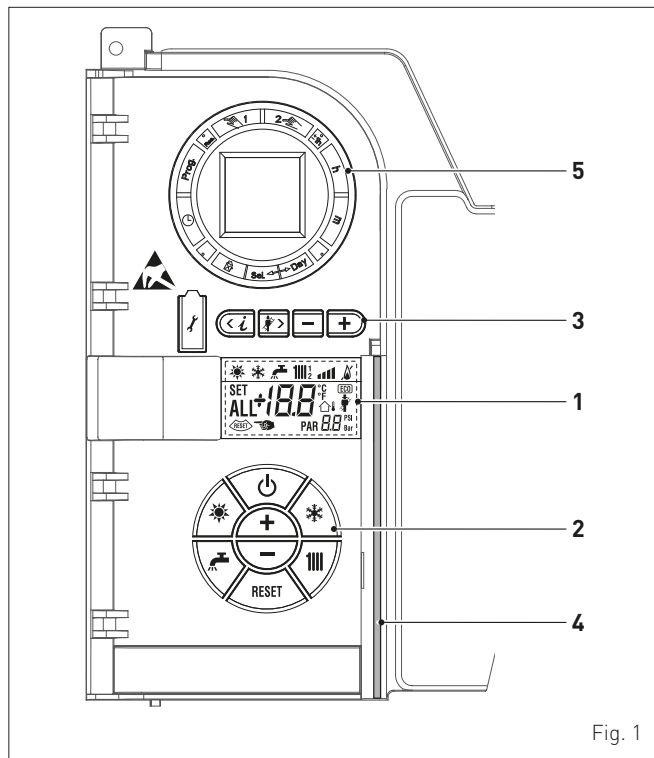


Fig. 1

1 DISPLAY ICONS DESCRIPTION



SUMMER MODE ICON.



WINTER MODE ICON.



DHW MODE ICON.



HEATING MODE ICON.



GRADUATED OUTPUT SCALE. The segments of the bar light up in proportion to the output delivered by the boiler.



BURNER OPERATION AND BLOCKING ICON.



RESET REQUIRED ICON.



CHIMNEY SWEEP FUNCTION ICON.



SECONDARY DIGITS. The boiler displays the system's pressure value.



MAIN DIGITS. The boiler displays the values set, fault status and outdoor temperature.



SUPPLEMENTARY SOURCES PRESENT ICON.

2 DESCRIPTION OF COMMANDS



ON/OFF BUTTON.

ON = Boiler has electric power.

OFF = Boiler has electric power but is not available for operation. The protection functions are on, however.



SUMMER MODE BUTTON. By pressing this button the boiler operates only on demand for domestic hot water **(function not available)**.



WINTER MODE BUTTON. By pressing this button the boiler operates for heating and domestic hot water.



SET DHW BUTTON. By pressing this button the temperature of the domestic hot water is displayed **(function not available)**.



SET HEATING BUTTON. With the first press of this button the temperature of heating circuit 1 is displayed. With the second press of this button the temperature of heating circuit 2 is displayed. With the third press of this button the temperature of heating circuit 3 is displayed.



RESET BUTTON. Lets you reset operation after an operating error.



INCREASE BUTTON. By pressing this button the value set is increased.



REDUCE BUTTON. By pressing this button the value set is reduced.

3 BUTTONS RESERVED FOR INSTALLER (access to INST parameters and CASCADE parameters)



CONNECTION THROUGH PC. To be used only with the **Sime** programming kit and only by authorised personnel. Do not connect other electronic devices (cameras, phones, MP3s etc.). Use a tool to remove the cap and replace it after use.



WARNING: Communication port sensitive to static electricity. Before use, it is advisable to touch an earthed metal surface to get rid of static electricity.



INFORMATION BUTTON. Press the button several times to scroll through the parameters.



CHIMNEY SWEEP FUNCTION BUTTON. Press the button several times to scroll through the parameters.



REDUCE BUTTON. For changing the default values set.



INCREASE BUTTON. For changing the default values set.

4 LIGHT BAR

Blue = Operation.

Red = Operating error.

5 TIMER (optional)

Mechanical timer (code 8092228) or digital timer (code 8092229) for programming heating/dhw.

1.2 Start-up

1.2.1 Preliminary checks



WARNING

Should it be necessary to access the areas in the bottom part of the appliance, make sure that the system components and pipes are not hot (risk of burning).

Commissioning of the **ALU PLUS HE** boiler must be carried out by professionally qualified personnel after which the boiler can operate automatically. It may, however, be necessary for the system manager to start the appliance autonomously after having turned it off, without involving a technician: for example, after a holiday.

In such cases it must first be checked that the fuel and water system isolation valves are open.

1.2.2 Ignition

After having carried out the preliminary checks, proceed as follows:

- set the main system switch to "ON"
- the blue bar (4) comes on and the screen saved by the electronic circuit board before the appliance was turned off is shown on the display.

Example: winter; delivery temperature (40°C); system pressure (1.3 bar).

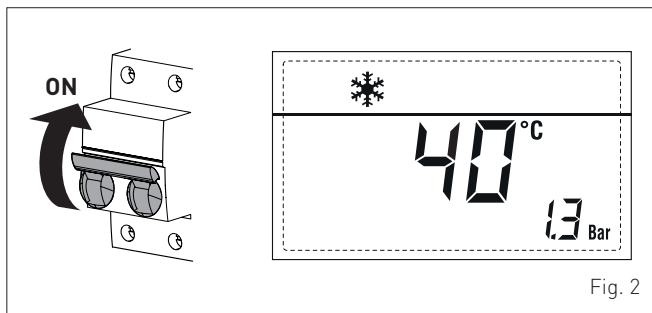


Fig. 2

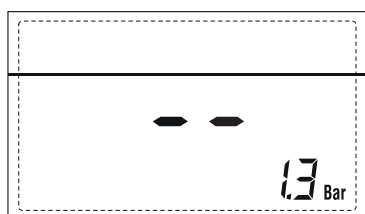
When heat is requested from the systems the boiler automatically carries out:

- the operational checks
- ignition and starts automatic operation.



CAUTION

- When the display is not backlit (off), the first press on each function button serves to backlight it (turn it on).
- To manually stop the boiler press button
- The display will show the following screen.

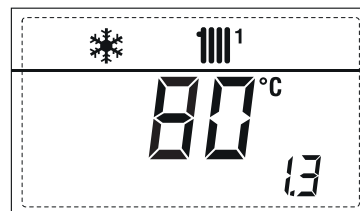


1.3 Adjusting the delivery temperature

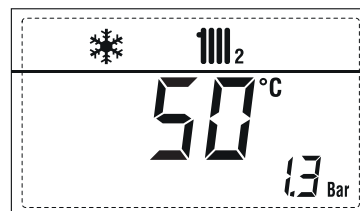
The control panel on **ALU PLUS HE** boilers lets you manually adjust the delivery temperature on two temperature levels by choosing the best ones for the systems managed (e.g. 80°C and 50°C).

To adjust the delivery temperature on the first of the two levels:

- press button (twice if the display isn't backlit). The symbol will be shown on the display
- press buttons or until the desired value is displayed (e.g. 80°C)



- press button again. The symbol will be shown on the display
- press buttons or until the desired value is displayed (e.g. 50°C)



Once the settings are completed, to go back to the starting screen press button or wait for approx. 60 seconds without touching any buttons.

1.4 Malfunctions

In the event of a fault/malfunction the message "ALL" will appear on the display with the alarm number and the light bar (4) will turn red.

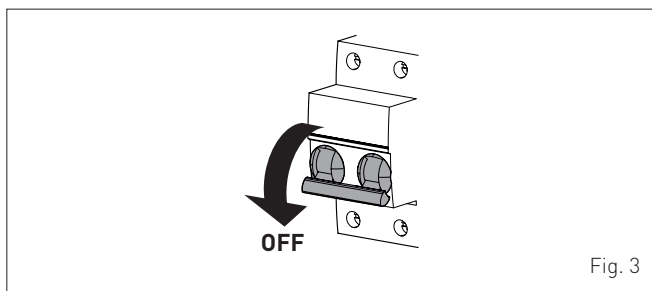
Example: "ALL 02" (Low System Pressure Error: less than 0.8 bar).



NOTE: in the case of "ALL 02", the system can be reintegrated, when cold, without disconnecting the power supply to be able to see when the pressure reaches the correct value (be included in the range 0.8-6.0 bar). The warning disappears when normal conditions are reset and the boiler starts up again automatically.

In the case of all other errors, before repairing the fault, it is recommended, as a precautionary measure, that you:

- disconnect the appliance from the mains power by setting the main switch to "OFF"
- close the fuel isolation valve.



NOTE: When, in addition to the message "ALL ..." the symbol  also appears on the display, after having repaired the fault, button  must be pressed for approx. 3 seconds, and then released. The boiler starts up again normally.



1.5 Fault / malfunction codes

If a fault/malfunction is detected during boiler operation, the message "ALL" will appear on the display followed by the fault code and the light bar (4) will go red.

Possible errors are reported below.

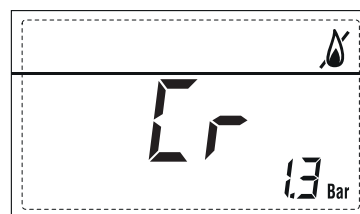
Type	No.	Description
ALL	01	Air pressure switch fault
ALL	02	Low water pressure in system
ALL	03	High water pressure in system
ALL	05	Boiler delivery probe fault
ALL	06	No flame detection
ALL	07	Safety thermostat or siphon pressure switch triggered
ALL	08	Fault in flame detection circuit
ALL	09	No water circulating in primary system
ALL	10	Hot water tank sensor/anti-freeze faulty
ALL	11	Modulator disconnected error
ALL	13	Smoke probe triggered
ALL	14	Smoke probe fault
ALL	15	Fan fault
ALL	18	Boiler delivery probe temperature above 117°C
ALL	19	External sensor fault (flashing warning)
ALL	20	Mix 1 zone safety thermostat triggered
ALL	21	Mix 1 Zone valve delivery probe fault
ALL	22	Mix 2 zone safety thermostat triggered
ALL	23	Mix 2 Zone valve delivery probe fault
ALL	24	S1 solar delivery probe fault
ALL	25	S2 solar exchanger probe fault (tank)
ALL	26	S3 2nd solar system delivery probe fault
ALL	27	Solar application coherence fault – hydraulic configuration
ALL	29	Number of expansion boards connected fault
ALL	30	Return sensor fault

Type	No.	Description
ALL	31	Cascade delivery probe (SMC) fault
ALL	32	Three zone system configuration fault
ALL	35	Communication fault RS485 board
ALL	36	Number of boilers connected in cascade fault
ALL	45	Manual release performed more than 6 consecutive times in the last hour
ALL	70	Cascade stop general fault
ALL	71	General fault with a boiler in the cascade
ALL	72	Delivery probe (SMC) disconnected error
ALL	80	Gas valve control circuit hardware fault
ALL	89	Gas valve control circuit hardware fault
ALL	98	Maximum number of software errors reached
ALL	99	Generic board software error

NOTE: If one of the faults listed above occurs, press button  to pause the boiler and contact Qualified Technical Personnel.

1.6 SIME remote control connection (optional accessory)

The boiler is ready for connection to a **SIME** remote control. When the remote control is connected or, alternatively, when a remote supervision device is connected, the boiler display shows:



For set-up and use of the remote control, follow the instructions supplied with the device.



CAUTION

A **Sime** remote control and a remote supervision device cannot be connected at the same time.

2 MAINTENANCE

2.1 Servicing

For the appliance to operate correctly and efficiently it is recommended that the system manager calls upon the services of a Professionally Qualified Technician to carry out **ANNUAL** maintenance.



CAUTION

Maintenance must **ONLY** be carried out by qualified professionals who follow the indications provided in the **INSTALLATION AND MAINTENANCE INSTRUCTIONS**.

2.2 External cleaning



WARNING

- Should it be necessary to access the areas in the bottom part of the appliance, make sure that the system components and pipes are not hot (risk of burning).
- Before performing any maintenance, put on protective gloves.

2.2.1 Cleaning the case

When cleaning the cladding, use a cloth dampened with soap and water or alcohol for stubborn marks.



DO NOT

Do not use abrasive products.

3 DISPOSAL

3.1 Disposal of the equipment (European Directive 2012/19/EU)



Boilers and electrical and electronic appliances used professionally or classified as professional waste must not be disposed of as unsorted municipal waste at the end of their life. Instead, they must be disposed of as per Directive 2012/19/EU and Italian Legislative Decree 49/2014. Please speak with your local retailer regarding returning or replacing your appliance, should your product be replaced by another identical product. Your product has been designed and manufactured in such a way as to reduce its impact on the environment and human health as much as possible. However, it contains components which may be hazardous if not disposed of correctly. Your role as the product purchaser handling the appliance at the end of its life is very important when it comes to reducing the impact of waste on the environment and human health, and promoting recycling. The crossed-out wheeled bin symbol found on your appliance, and shown here, means that at the end of your product's lifecycle, it must not be disposed of with unsorted municipal waste. Instead, it must be disposed of, in accordance with the law, as electrical and electronic waste. Individual countries may also define specific rules on how to handle electrical and electronic waste. Before disposing of your appliance, please check the rules in force in your country.



DO NOT

dispose of the product with urban waste.

DESCRIPTION OF THE APPLIANCE

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4 DESCRIPTION OF THE APPLIANCE

4.1 Characteristics

ALU PLUS HE aluminium boilers generate heat through condensation and are designed to heat rooms and produce domestic hot water, if the system contains a storage tank. They are composed of:

- an aluminium body, with low water content and high exchange surface, to maximise energy efficiency and heat yields
- a total pre-mix microflame burner in stainless steel that allows high modulation ratios, combustion stability and low emissions of pollutants (Class NO_x = 6), to be achieved
- a variable speed fan required for modulation and air/gas mixing
- a combustion circuit which **MUST** be "type B" (open) with respect to the place where the boiler is installed, depending on the configuration of the combustion air inlet adopted during installation
- a control panel which, if equipped with an external sensor, allows the delivery temperature to be adjusted according to the outdoor temperature (sliding temperature operation). The boiler therefore provides only the heat the User actually needs, avoiding energy being wasted and the associated costs. If there are malfunctions or faults, the specific error codes are displayed, which simplifies the work of Technical Service.

During planning solutions have been adopted to:

- constantly achieve the best air/gas mixture
- reduce heat dispersion
- reduce noise.

Sime ALU PLUS HE boilers can be installed as single units or in a cascade composed of between two and eight appliances with the same heating output.

When boilers are connected in a cascade, they communicate ONLY with the master boiler, treating the cascade as a single heat generator where:

Cascade output = Boiler output x no. of boilers installed

Sime ALU PLUS HE boilers can be connected to 0-10 V DC controls, to an auxiliary sensor and to the **Sime Home** or **Sime Home Plus** remote controls. They can manage direct systems or direct systems and two mixed systems (or two groups of mixed systems connected in parallel), if the optional kits "mix 1 kit-code 8092275" and "mix 2 kit-code 8092276" are installed. A solar system can also be installed using the "solar kit-code 8092277" and the "MODBUS interface code 8092278" to communicate via MODBUS with remote devices. All kits are optional accessories to be ordered separately. After each stoppage, whether automatic or manual, post-ventilation and post-circulation are performed. The system should include an INAIL safety device 8101596 (for **360 ALU PLUS HE**) or 8101597 (for **720-1100 ALU PLUS HE**), which are mandatory for ITALY ONLY, and a plate heat exchanger or hydraulic separator, depending on the system characteristics.

Sime ALU PLUS HE boilers also have the following functions:

- anti-freeze function, which is activated automatically if the temperature of the water inside the boiler falls below the value set under "PAR 35" and if the outdoor temperature falls below the value set under "PAR 36"
- antiblocking function for the pump and any diverter valve, which is activated automatically every 24 hours if there have been no requests for heat
- the chimney sweep function lasts 15 minutes and makes the job of the qualified technician easier when measuring the parameters and combustion efficiency
- anti-legionella function when a storage tank is used
- automatic adjustment of the ignition output and minimum and maximum heating output. The outputs are managed automatically by the electronic circuit board to ensure maximum system usage flexibility
- dispersal function, so that if the delivery probe detects a temperature of 90°C, the fan runs until it falls to 89°C
- screed drying function, to keep the floor at a pre-set temperature profile with the help of the mixer valve
- "External sensor value correction" function.

4.1.1 Operation

When the general switch is activated the boiler is powered with electricity. The blue bar (4) on the control panel lights up. The symbols, "-" message and the system pressure are shown correctly on the screen. To turn the boiler on or off press button  then button  to select "WINTER mode" or button  to select "SUMMER mode". The value of the delivery sensor detected at that moment appears on the display.



CAUTION

When the display is not backlit (off), the first press on each function button serves to backlight it (turn it on); the second press to carry out the command.

When heat is requested from the systems or the storage tank, if there is one, the control panel automatically carries out the functional checks, and electrically powers the gas valve and ignition transformer to turn on the flame. This is how automatic operation of the boiler begins. When the request for heat is fulfilled the flame goes out, but the fan and the circulation pump remain in operation to carry out post-ventilation and post-circulation at the end of which they stop and wait for the next request for heat.

4.1.2 Domestic Hot Water (DHW)

Domestic hot water can be produced if the system has a dhw circuit with a storage tank. The dhw system can be created either upstream or downstream of the water shut-off valve. The installation company is responsible for choosing and paying for all the systems' components and devices.



CAUTION

The installation company is responsible for choosing and paying for all the systems' components and devices.

4.2 Check and safety devices

The **ALU PLUS HE** boilers are equipped with the following check and safety devices:

- thermal safety thermostat 98°C with automatic reset
- system water pressure transducer
- delivery sensor (SM)
- return sensor (SR)
- exhaust sensor (SF)
- air pressure switch
- siphon pressure switch.



DO NOT

Do not commission or operate the appliance with safety devices which do not work or which have been tampered with.



WARNING

Safety device may only be replaced by professional qualified personnel using **Sime** original spare parts.

4.3 Identification

The **ALU PLUS HE** boilers can be identified by means of:

- 1 **Packaging label:** this is located on the outside of the packaging and provides a code, the serial number of the boiler and the bar code
- 2 **Technical Data Plate:** this is located inside the front panel of the boiler and provides the technical data, appliance performance information and any other information required by law in the country where the appliance will be used.

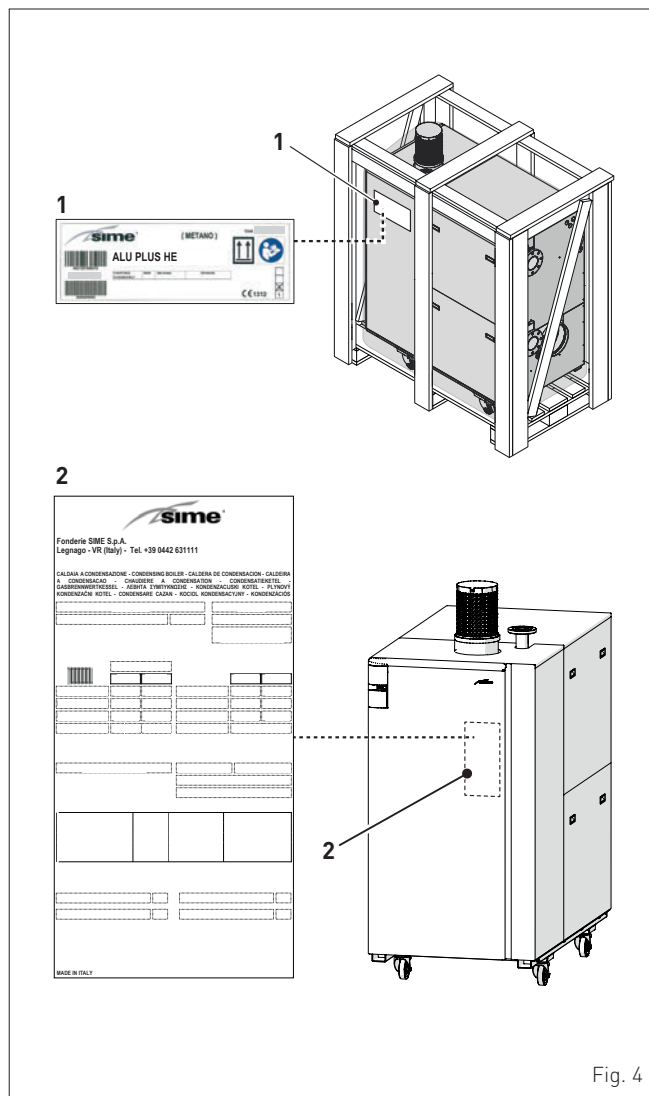
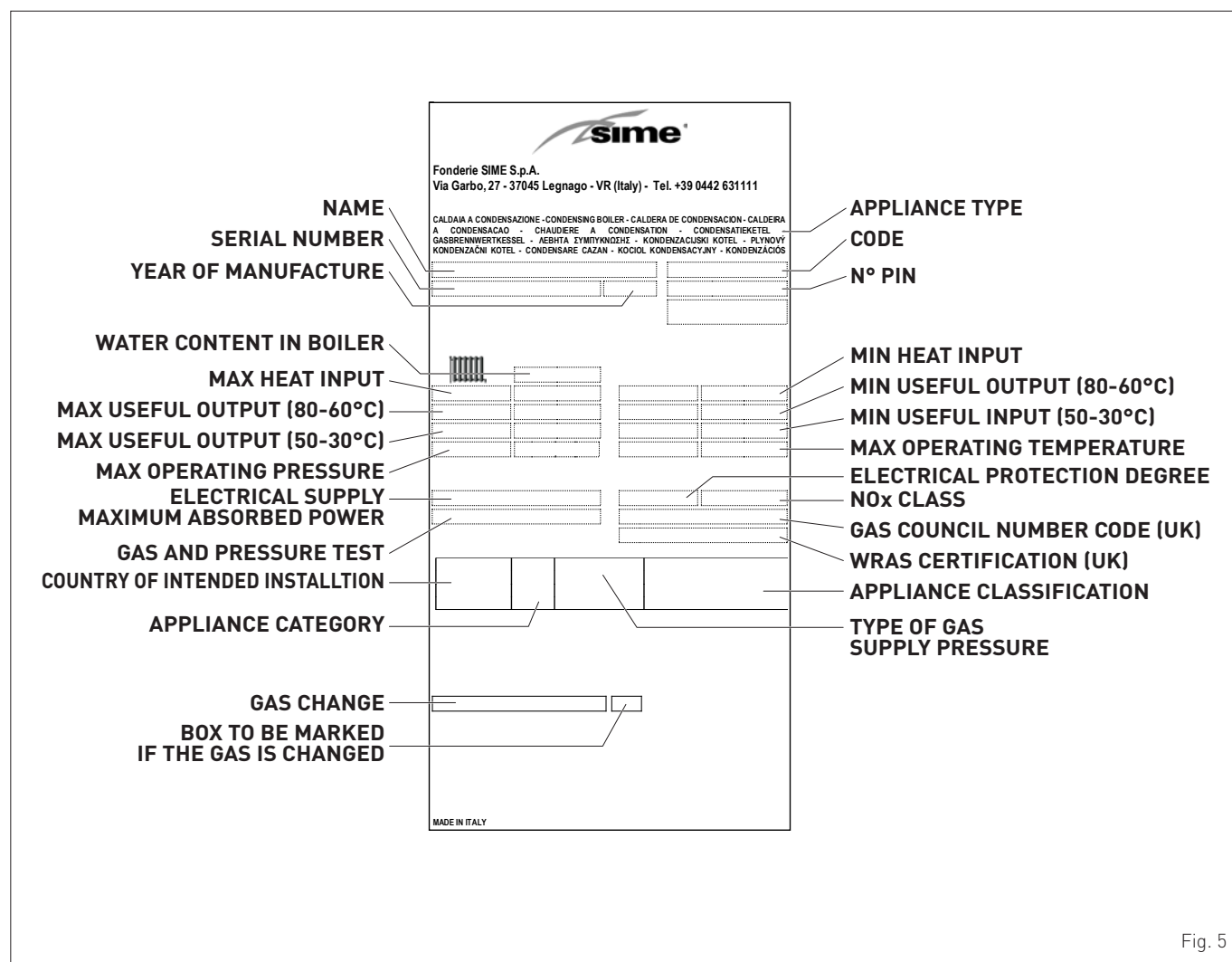


Fig. 4

4.3.1 Technical Data Plate



The diagram shows a technical data plate for a SIME boiler. The plate is rectangular and contains various fields for identification and technical specifications. The fields are organized into two main columns, with labels pointing to specific areas. The top section includes the SIME logo, company name, address, and phone number. Below this is a multi-language description of the boiler type. The middle section contains technical specifications such as water content, heat input/output, operating pressure, electrical supply, and maximum absorbed power. The bottom section includes gas and pressure test information, country of intended installation, appliance category, gas change information, and a box to be marked if the gas is changed. The right side of the plate includes fields for appliance type, code, N° PIN, min heat input, min useful output, min useful input, max operating temperature, electrical protection degree, NOx class, gas council number code (UK), WRAS certification (UK), appliance classification, and type of gas supply pressure.

Labels on the left side:

- NAME
- SERIAL NUMBER
- YEAR OF MANUFACTURE
- WATER CONTENT IN BOILER
- MAX HEAT INPUT
- MAX USEFUL OUTPUT (80-60°C)
- MAX USEFUL OUTPUT (50-30°C)
- MAX OPERATING PRESSURE
- ELECTRICAL SUPPLY
- MAXIMUM ABSORBED POWER
- GAS AND PRESSURE TEST
- COUNTRY OF INTENDED INSTALLTION
- APPLIANCE CATEGORY
- GAS CHANGE
- BOX TO BE MARKED IF THE GAS IS CHANGED

Labels on the right side:

- APPLIANCE TYPE
- CODE
- N° PIN
- MIN HEAT INPUT
- MIN USEFUL OUTPUT (80-60°C)
- MIN USEFUL INPUT (50-30°C)
- MAX OPERATING TEMPERATURE
- ELECTRICAL PROTECTION DEGREE
- NOx CLASS
- GAS COUNCIL NUMBER CODE (UK)
- WRAS CERTIFICATION (UK)
- APPLIANCE CLASSIFICATION
- TYPE OF GAS SUPPLY PRESSURE

Text on the plate:

sime
 Fonderie SIME S.p.A.
 Via Garbo, 27 - 37045 Legnago - VR (Italy) - Tel. +39 0442 631111

CALDAIA A CONDENSAZIONE - CONDENSING BOILER - CALDERA DE CONDENSACION - CALDERA A CONDENSACAO - CHAUDIERE A CONDENSATION - CONDENSATIEKETEL
 GASBRENNWERTKESSEL - JEBHITA ZYMITYKOWIZJE - KONDENZACJUSKI KOTEL - PLYNOVÝ KONDENZAČNÍ KOTEL - CONDENSARE CAZAN - KOCİOL KONDENSACYJNY - KONDENZÁCIÓS

MADE IN ITALY

Fig. 5



CAUTION

Tampering with, removing or failing to display the identification plate or carrying out any other operation which does not allow safe identification of the product or which may hinder installation and maintenance operations.

4.4 Structure

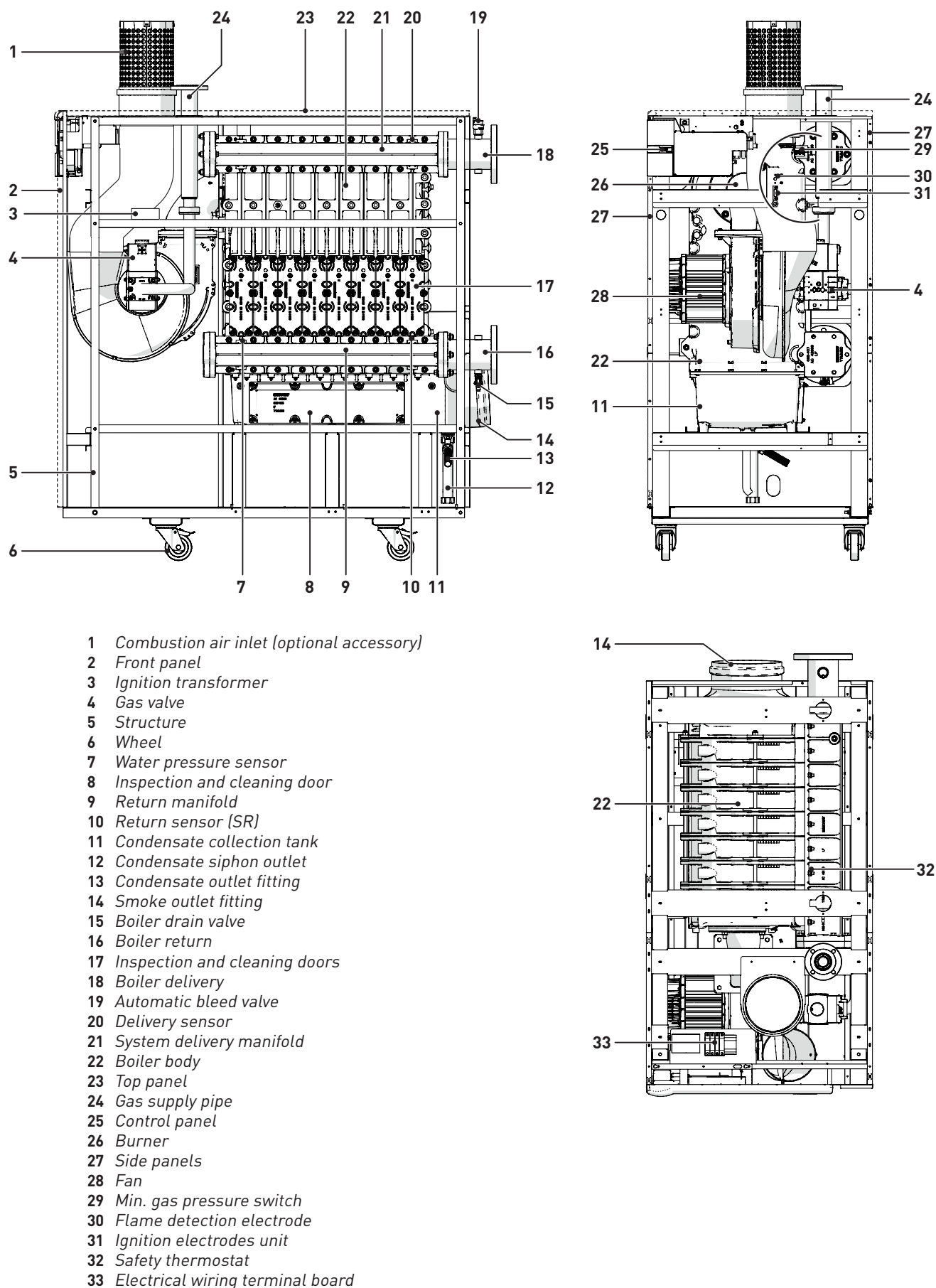


Fig. 6

4.5 Technical features

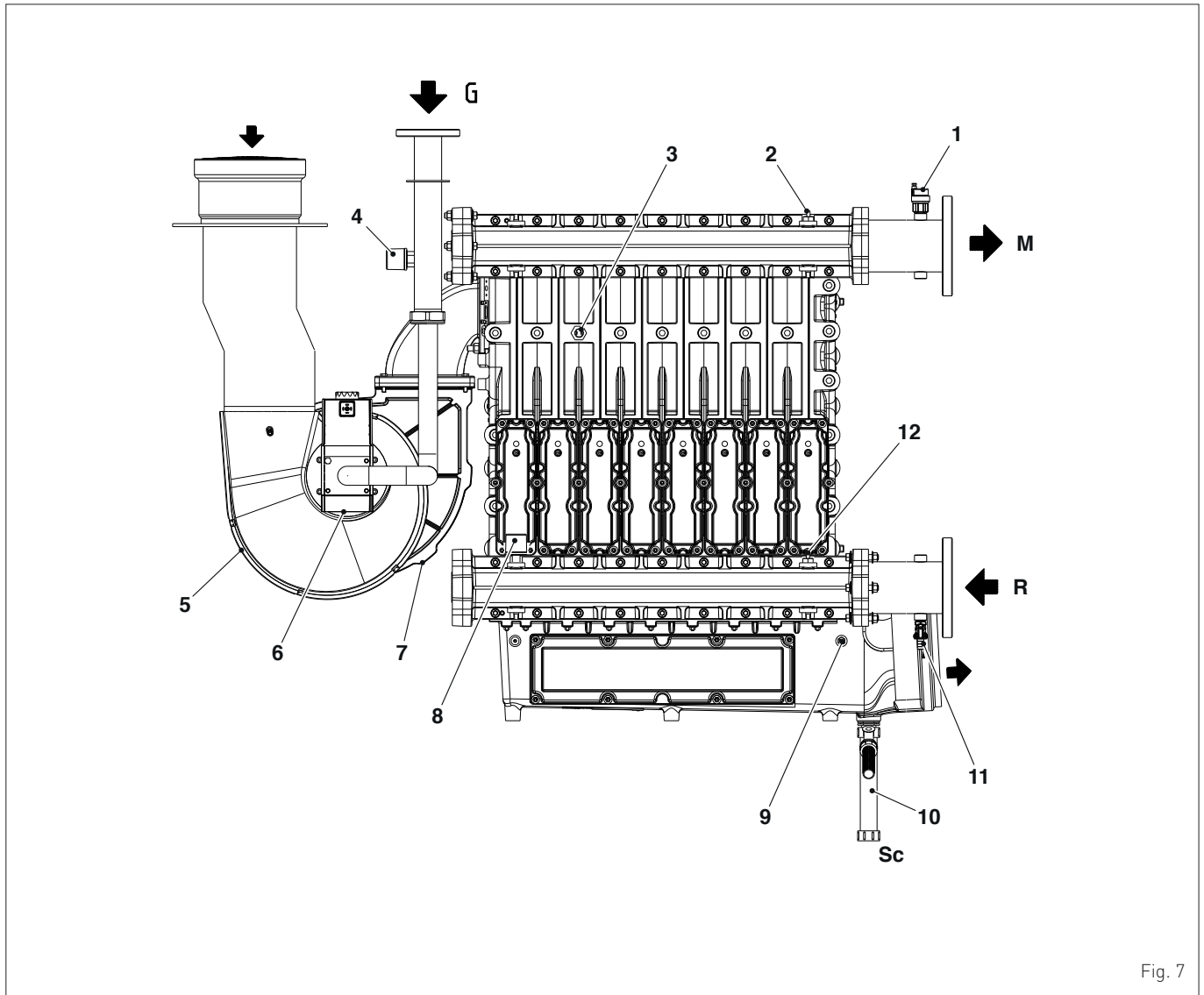
DESCRIPTION		ALU PLUS HE			
		360	720	1100	
CERTIFICATIONS					
Country of intended installation		AT - BE - CH - CY - CZ - DK - EE - ES - FI - FR - GB - GR - HU IE - IT - LT - LV - NL - NO - PT - RO - SE - SI - SK			
Fuel		G20			
PIN number		1312CS6203			
Category	I2H	AT - CH - CY - CZ - DK - EE - ES - FI - FR - GB - GR - HU IE - IT - LT - LV - NL - NO - PT - RO - SE - SI - SK			
	12E(S)	BE			
Appliance classification		B23P			
Class NO _x (*)		6 (< 56 mg/kWh)			
HEATING PERFORMANCE					
HEAT INPUT (**)					
Nominal flow (Q _n max)		kW	360	720	1000
Minimum flow (Q _{nw} min)		kW	80	150	200
HEAT OUTPUT					
Nominal (80-60°C) (P _n max)		kW	353	705	980
Nominal (50-30°C) (P _n max)		kW	378	756	1053
Minimum G20 (80-60°C) (P _n min)		kW	78,4	147,3	196,4
Minimum G20 (50-30°C) (P _n min)		kW	84,5	158	211
EFFICIENCY					
Max useful efficiency (80-60°C)		%	98,1	97,9	98,0
Min useful efficiency (80-60°C)		%	98,0	98,2	98,2
Max useful efficiency (50-30°C)		%	105,0	105,0	105,3
Min useful efficiency (50-30°C)		%	105,6	105,3	105,5
Useful efficiency at 30% of load (40-30°C)		%	108,1	108,3	108,2
Losses after shutdown at 50°C		W	427	791	1054
ELECTRICAL SPECIFICATIONS					
Power supply voltage		V	230	400 ~ 3N	400 ~ 3N
Frequency		Hz	50	50	50
Absorbed electrical power (Q _n max)		W	532	1965	2134
Absorbed electrical power at (Q _n min)		W	177	611	661
Absorbed electrical power in stand-by		W	10	15	15
Electrical protection degree		IP	X0D		
COMBUSTION DATA					
Smoke temperature at Max/Min flow (80-60°C)		°C	68,1 / 55,3	70,1 / 58,0	74,6 / 63,2
Smoke temperature at Max/Min flow (50-30°C)		°C	53,1 / 30,7	50,1 / 29,7	57,6 / 34,5
Smoke flow Max/Min		g/s	166 / 39	332 / 73	457 / 97
CO ₂ at Max/Min flow rate (G20)		%	9,5 / 9,0	9,5 / 9,0	9,6 / 9,0
NO _x measured		mg/kWh	44	43	38
NOZZLES - GAS					
Number of nozzles		No.	-	-	-
Nozzle diameter (G20)		mm	-	-	-
Gas consumption at Max/Min flow rate (G20)		m³/h	38,08 / 8,46	76,16 / 15,87	105,78 / 21,16
Gas supply pressure (G20)	mbar	20	20	20	20
	kPa	2	2	2	2
TEMPERATURE - PRESSURE					
Max operating temperature (T max)		°C	85		
Heating adjustment range		°C	20 - 80		
Domestic hot water adjustment range		°C	-		
Min./max. operating pressure (PMS)	bar	0,8 / 6			
	kPa	80 / 600			
Water content in boiler		l	44	68	91
Loss of load water side ΔT nom (20°C)		mbar	160	160	160
Max. ΔT at min./max. power		°C	25	25	25
Water flow rate ΔT 20°C (nominal)		m³/h	15	31	43
Water flow rate ΔT 10°C		m³/h	30	62	86
Total residual head (outlet + inlet)		Pa	200	300	250

(*) NO_x class according to UNI EN 15502-1:2015

(**) Heat input calculated using the lower heat output (Hi)

G20 Hi. 9,45 kW/m³ (15°C, 1013 mbar)

4.6 Main water circuit



KEY:

M Boiler delivery

R Boiler return

G Gas supply

Sc Condensate outlet

- 1 Automatic bleed
- 2 Delivery sensor
- 3 Safety thermostat
- 4 Min. gas pressure switch
- 5 Mixer and air conveyor
- 6 Gas valve
- 7 Fan
- 8 Water pressure transducer
- 9 Return sensor (SR)
- 10 Condensate siphon outlet
- 11 Boiler drain valve

4.7 Sensors

The sensors installed have the following characteristics:

- boiler delivery, boiler return and flue gas probes NTC R25°C; 10kΩ B25°-85°C: 3435
- domestic hot water sensor NTC R25°C; 10kΩ B25°-85°C: 3435 (optional accessory)
- external sensor NTC R25°C; 10kΩ B25°-85°C: 3435

TR	0°C	1°C	2°C	3°C	4°C	5°C	6°C	7°C	8°C	9°C
0°C	27279	26135	25044	24004	23014	22069	21168	20309	19489	18706
10°C	17959	17245	16563	15912	15289	14694	14126	13582	13062	12565
20°C	12090	11634	11199	10781	10382	9999	9633	9281	8945	8622
30°C	8313	8016	7731	7458	7196	6944	6702	6470	6247	6033
40°C	5828	5630	5440	5258	5082	4913	4751	4595	4444	4300
50°C	4161	4026	3897	3773	3653	3538	3426	3319	3216	3116
60°C	3021	2928	2839	2753	2669	2589	2512	2437	2365	2296
70°C	2229	2164	2101	2040	1982	1925	1870	1817	1766	1717
80°C	1669	1622	1577	1534	1491	1451	1411	1373	1336	1300
90°C	1266	1232	1199	1168	1137	1108	1079	1051	1024	998
100°C	973									

Correspondence of Temperature Detected/Resistance

Examples of reading:

TR=75°C → R=1925Ω

TR=80°C → R=1669Ω.

4.8 Minimum water flow rate

To protect the heat exchanger from overheating, a sufficient water flow rate must be maintained.

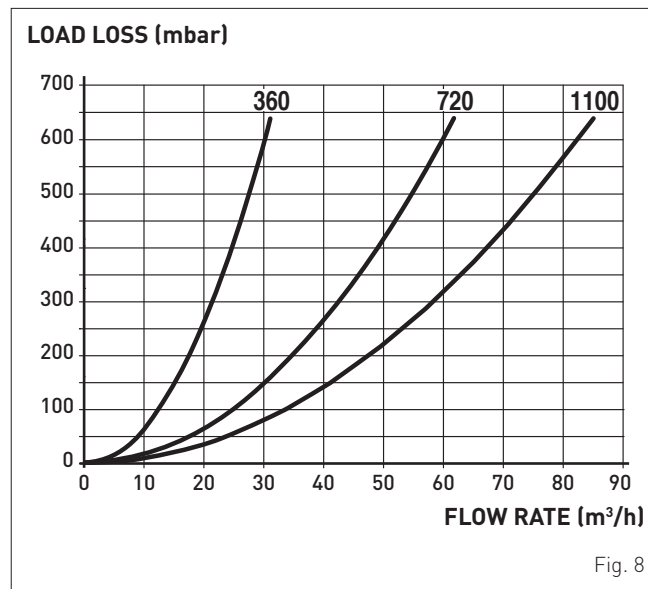
By observing the water flow rates shown in the table below, a maximum ΔT of 35°C is guaranteed at the minimum heat input, and a maximum ΔT of 25°C at maximum heat input.

The table below shows the minimum water flow rate required for each boiler.

DESCRIPTION		ALU PLUS HE		
		360	720	1100
Minimum water flow rate (at Qmin ΔT 35°C)	m³/h	1,8	3,6	5,00
Minimum water flow rate (at Qmax ΔT 25°C)	m³/h	13	25	34
Water flow rate ΔT 20 (at Qmax)	m³/h	15,2	30,3	42,1
Maximum water flow rate	m³/h	26	52	71

4.9 Load losses

The graph shows the curves for the load losses of the boilers, necessary for the correct circulation pump to be chosen.



WARNINGS

- Not respecting the recommended water flow rates could cause the appliance to malfunction.
- At first start-up it is useful to check the rotation of the pumps' shafts.
- DO NOT operate the pumps without any water.
- The pumps chosen must have a consumption suitable for the fuse installed on the electrical panel (4AT).

4.10 Control panel

The control panel allows all operators to make all adjustments necessary to manage **Sime ALU PLUS HE** boilers and connected systems.

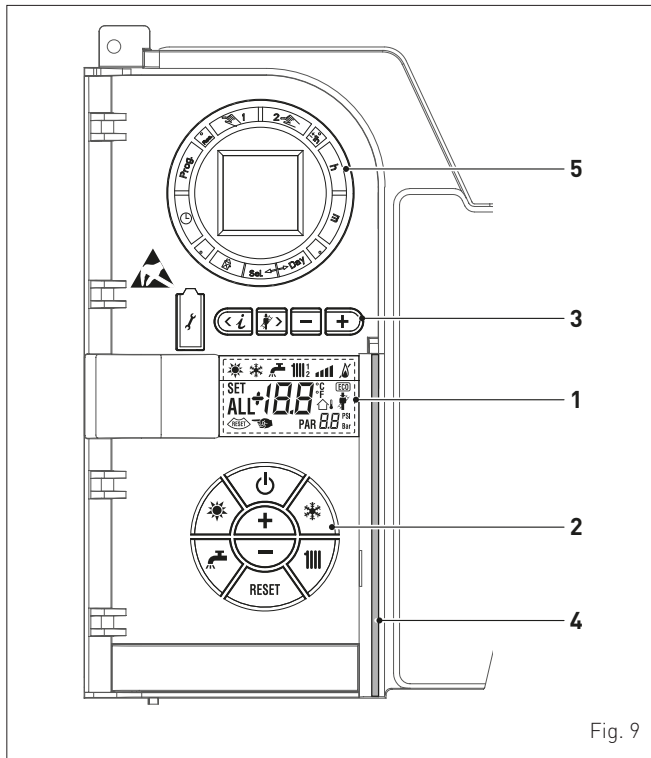


Fig. 9

1 DISPLAY ICONS DESCRIPTION



SUMMER MODE ICON.



WINTER MODE ICON.



DHW MODE ICON.



HEATING MODE ICON.



GRADUATED OUTPUT SCALE. The segments of the bar light up in proportion to the output delivered by the boiler.



BURNER OPERATION AND BLOCKING ICON.



RESET REQUIRED ICON.



CHIMNEY SWEEP FUNCTION ICON.



SECONDARY DIGITS. The boiler displays the system's pressure value.



MAIN DIGITS. The boiler displays the values set, fault status and outdoor temperature.



SUPPLEMENTARY SOURCES PRESENT ICON.

2 DESCRIPTION OF COMMANDS



ON/OFF BUTTON.

ON = Boiler has electric power.

OFF = Boiler has electric power but is not available for operation. The protection functions are on, however.



SUMMER MODE BUTTON. By pressing this button the boiler operates only on demand for domestic hot water **(function not available)**.



WINTER MODE BUTTON. By pressing this button the boiler operates for heating and domestic hot water.



SET DHW BUTTON. By pressing this button the temperature of the domestic hot water is displayed **(function not available)**.



SET HEATING BUTTON. With the first press of this button the temperature of heating circuit 1 is displayed. With the second press of this button the temperature of heating circuit 2 is displayed. With the third press of this button the temperature of heating circuit 3 is displayed.



RESET BUTTON. Lets you reset operation after an operating error.



INCREASE BUTTON. By pressing this button the value set is increased.



REDUCE BUTTON. By pressing this button the value set is reduced.

3 BUTTONS RESERVED FOR INSTALLER (access to INST parameters and CASCADE parameters)



CONNECTION THROUGH PC. To be used only with the **Sime** programming kit and only by authorised personnel. Do not connect other electronic devices (cameras, phones, MP3s etc.). Use a tool to remove the cap and replace it after use.



WARNING: Communication port sensitive to static electricity. Before use, it is advisable to touch an earthed metal surface to get rid of static electricity.



INFORMATION BUTTON. Press the button several times to scroll through the parameters.



CHIMNEY SWEEP FUNCTION BUTTON. Press the button several times to scroll through the parameters.



REDUCE BUTTON. For changing the default values set.



INCREASE BUTTON. For changing the default values set.

4 LIGHT BAR

Blue = Operation.

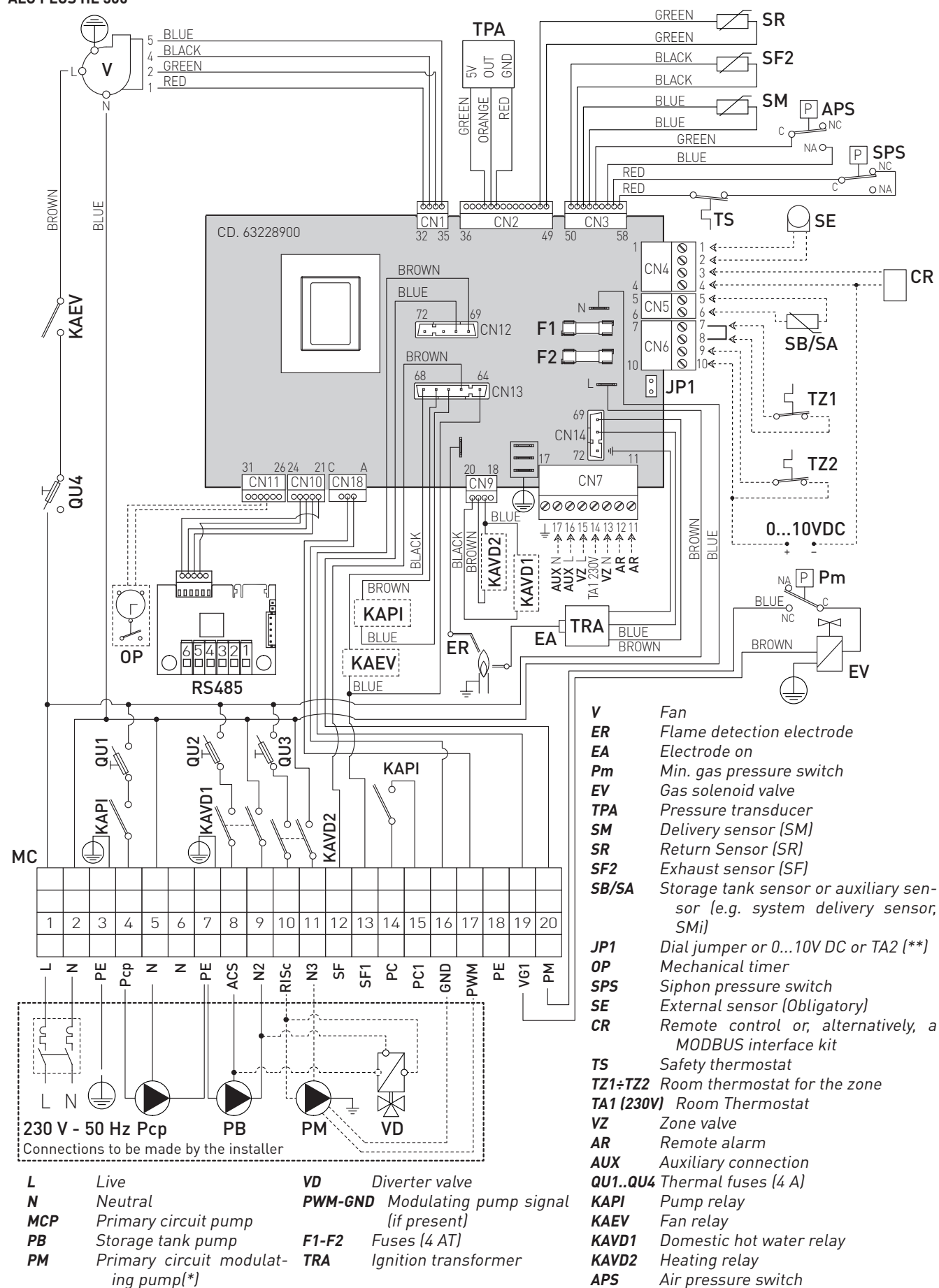
Red = Operating error.

5 TIMER (optional)

Mechanical timer (code 8092228) or digital timer (code 8092229) for programming heating/dhw.

4.11 Wiring diagram

ALU PLUS HE 360



(*) The **PM** pump (modulating) can be installed instead of the **Pcp** pump

(**) JP1 engaged = TZ2 usable; 0 ... 10V DC not usable; JP1 disengaged = TZ2 not usable; 0 ... 10V DC usable

Fig. 10

ALU PLUS HE 720 - ALU PLUS HE 1100

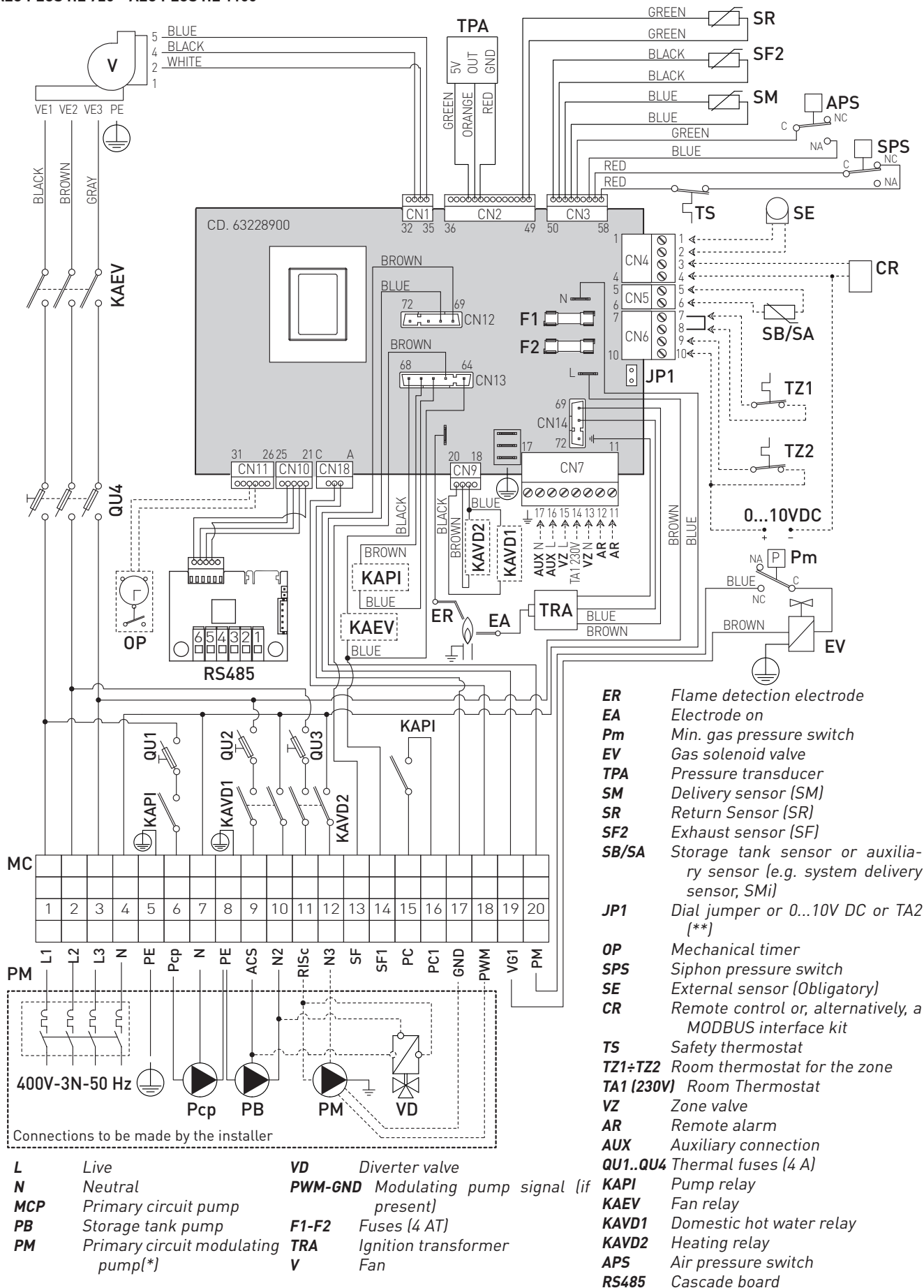
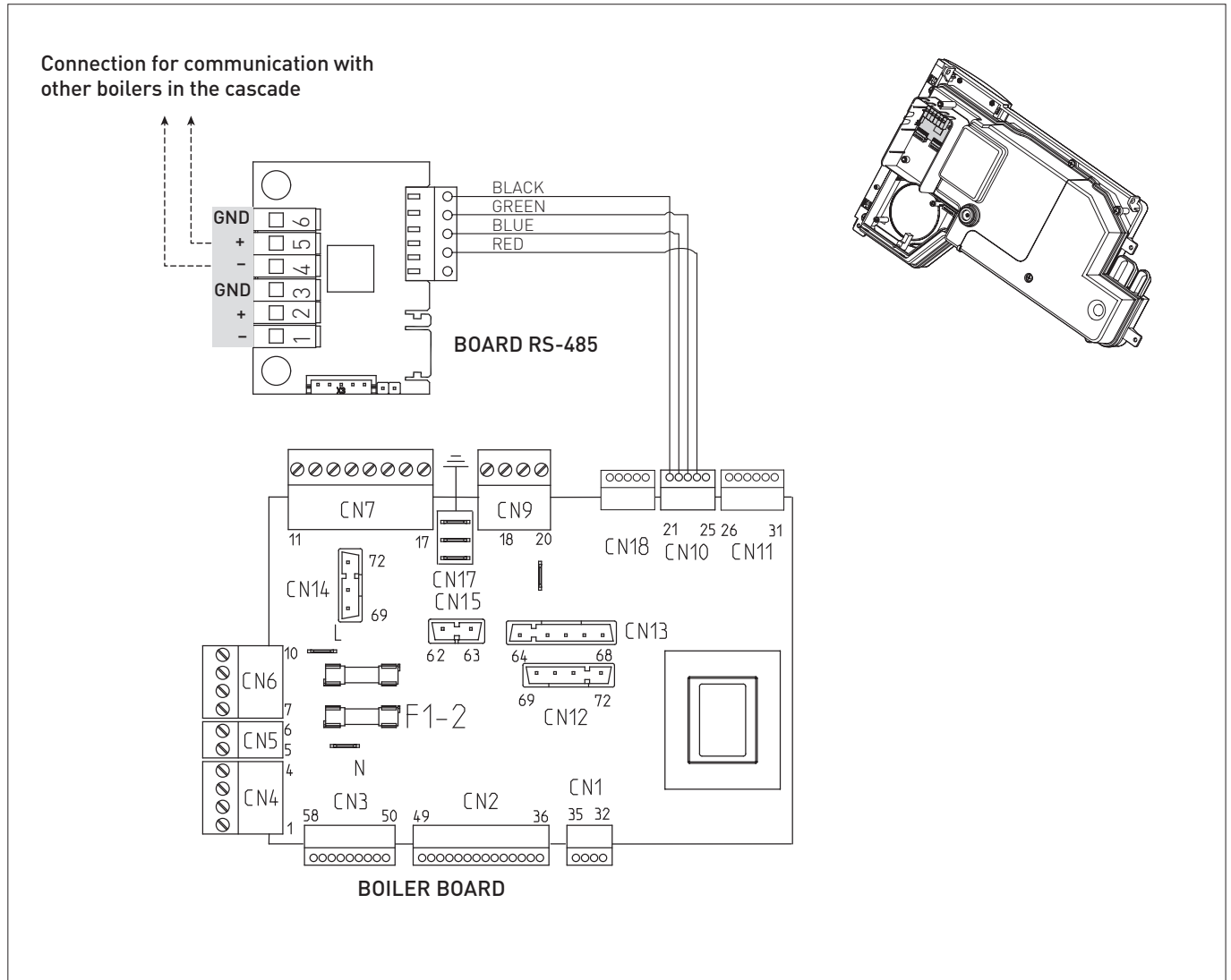


Fig. 11

4.11.1 RS 485 board

The RS485 board is provided as standard and is factory installed on every boiler. It is positioned in the cover of the control panel and fixed in place with two screws.

It is needed for communication between boilers, when they are installed in a cascade (see the specific diagrams under “**Electrical connections for the cascade**”).



CAUTION

Installer must:

- Connect the boiler to a 230v -50Hz single phase power supply through a fused mains switch, with at least 3mm spacing between contacts, fused at 3amps **which ensures complete cut-off in overvoltage category III conditions (i.e. where there is at least 3 mm between the open contacts).**
- Respect the connections L (Live) - N (Neutral).
- Ensure that the special power cable is only replaced with a cable ordered as a spare part and connected by professionally qualified personnel.



CAUTION

Installer must:

- Connect the earth wire to an effective earthing system. **Sime** declines all responsible for any injury or damage to persons, animals, or property as a result of failure to provide adequate earthing of the appliance.



DO NOT

Do not use water pipes for earthing the appliance.

The Benchmark Scheme

Benchmark places responsibilities on both manufacturers and installers.

The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations.

The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme.

INSTALLATION AND SERVICING INSTRUCTIONS

Installer Checklist

Please remember to carry out the following checks after installation. This will achieve complete customer satisfaction, and avoid unnecessary service calls. A charge will be made for a service visit where the fault is not due to a manufacturing defect.

Has a correct by-pass been fitted and adjusted?

Has the system and boiler been flushed?

Is the system and boiler full of water, and the correct pressure showing on the pressure gauge?

Is the Auto Air Vent open?

Has the pump been rotated manually?

Is the gas supply working pressure correct?

Is the boiler wired correctly? (See installation manual).

Has the D.H.W. flow rate been set to the customer requirements?

Has the customer been fully advised on the correct use of the boiler, system and controls?

Has the Benchmark Checklist in the use and maintenance section of this manual, been completed?

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5 INSTALLATION



CAUTION

The appliance must only be installed by the **Sime** Technical Service or by qualified professionals **who MUST wear** suitable protective safety equipment.

5.1 Receiving the product

Appliances **Sime ALU PLUS HE** are supplied in a single package, protected by a nylon cover, placed on wooden pallets.

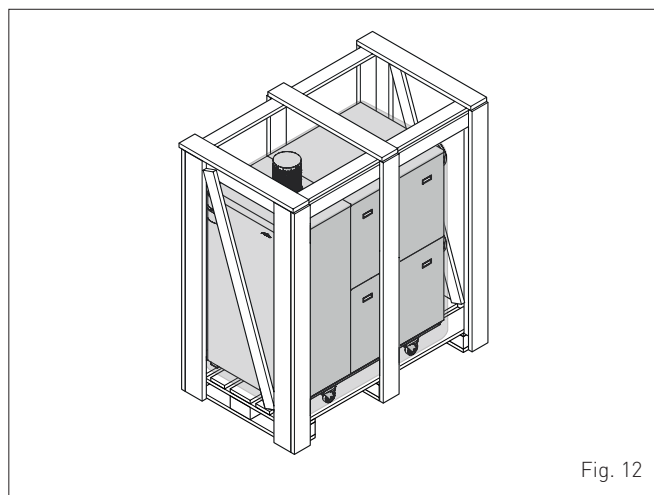


Fig. 12

The plastic bag found inside the packaging contains the following:

- Installation, use and maintenance manual
- Certificate of warranty
- Hydrostatic test certificate
- Control unit manual



DO NOT

Do not leave packaging material around or near children since it could be dangerous. Dispose of it as prescribed by legislation in force.

5.1.1 Optional accessories

Description	Code
NTR 1500 condensate neutralising kit	8105330
NTR 1500 P condensate neutralising kit	8105335
25 kg NTR granule refill	8105350
Sime Home	8092280
Sime Home Plus	8092281
Hot water tank sensor L=2000	6231331
Contact delivery sensor	6277122
MODBUS interface kit	8092278
1 st mixed zone kit	8092275
2 nd mixed zone kit	8092276
Solar kit	8092277
Kit INAIL ALU PLUS HE 360 (solo per Italia)	8101596
Kit INAIL ALU PLUS HE 720-1100 (solo per Italia)	8101597
Digital timer (weekly 24V)	8092229
Mechanical timer (daily 24V)	8092228
Board housing kit	8092236
Boiler body rod	6077930
Combustion air filter kit	8115900
Motorised damper kit Ø250 mm	8093370
Coupling for vertical duct Ø250 mm	8092850

5.2 Dimensions and weight

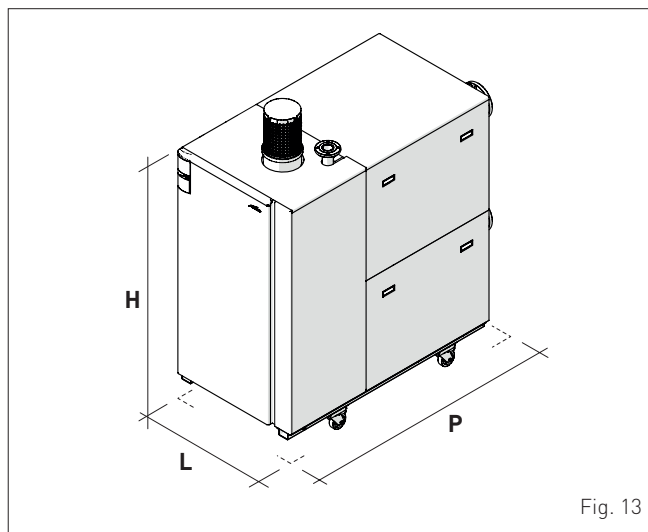


Fig. 13

Description	ALU PLUS HE		
	360	720	1100
W (mm)	750	850	850
D (mm)	1652	1652	1976
H (mm)	1790		
Net weight (kg)	450	580	680

5.3 Handling

Once the packaging is removed, moving the appliance is as follows:

- remove the front panel (1) to make it easier to grip and move
- insert two 1" tubes (2) into the relevant housings or slot the forks of the fork-lift (3) under the structure
- lift the appliance and move it with suitable equipment.

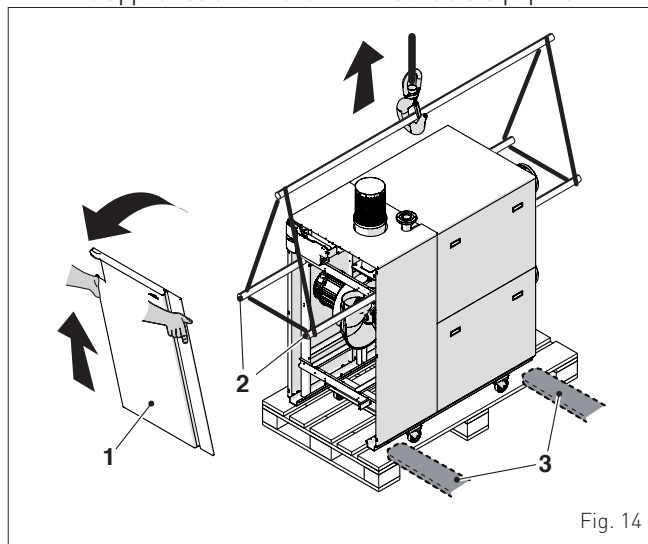


Fig. 14



WARNING

Use suitable tools and personal protection when removing the packaging and when handling the appliance. Observe the maximum weight that can be lifted per person.

5.4 Ventilation requirements

The location where the appliance is to be installed must comply with the Technical Regulations and Legislation in force. It must be equipped with suitably sized air vents for "TYPE B" installations.

APPROXIMATE MINIMUM DISTANCES

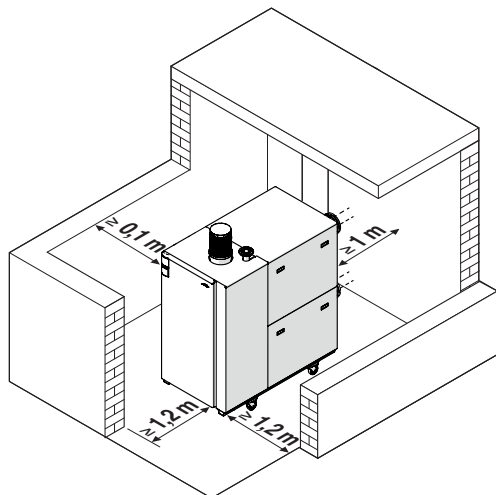


Fig. 15



WARNINGS

- Before assembling the appliance, the installer **MUST** make sure that the floor can support the weight.
- Observe the required clearances.
- The installation room must have an appropriate height for the installed power, according to the local and national legislation in force.
- When the installation is in a cascade, the minimum space between the boilers is 1 m.



DO NOT

- To install **ALU PLUS HE** appliances outside if not suitably protected from the weather.

5.5 New installation or installation of a replacement appliance

The boiler must be installed in a fixed location and only by specialized and qualified person in compliance with all instructions contained in this manual.

The installation of this boiler must be in accordance with the relevant requirements of the current Gas Safety (installation and use), the local building regulations and I.E.E. wiring regulations.

Detailed recommendations for air supply and fluing are given in BS5440.

The following notes are for general guidance: it is not necessary to have a purpose provided air vent in the room or compartment in which the appliance is installed.



CAUTION

It is a condition of the warranty that the boiler is installed in accordance with the instructions in this manual. The boiler must be registered with Gas Safe Register, the Benchmark record must be completed and the boiler is serviced annually and recorded in this manual.



CAUTION

If the domestic water supply is metered or should a water meter be added at a later time, a small expansion vessel should be included in the domestic water pipework.

5.6 Cleaning the system

Before connecting the boiler it is recommended that the system be flushed in accordance to BS 7593, to eliminate any foreign bodies that may be detrimental to the operating efficiency of the appliance.



CAUTION

Failure to flush and add inhibitor to the system may invalidate the warranty.

5.7 Characteristics of feedwater and system treatment

- All recirculatory systems will be subject to corrosion unless an appropriate water treatment is applied. This means that the efficiency of the system will deteriorate as corrosion sludge accumulates within the system, risking damage to pump and valves, boiler noise and circulation problems.
- Before connecting the boiler the associated central heating system must be flushed in accordance with the guidelines given in BS 7593 "Treatment of water in domestic hot water central heating systems".
- **Sime** recommends only the use of FERNOX products for the flushing and final treatment of the system water. This is particularly important in hard water areas. Failure to flush and add inhibitor to the system may invalidate the appliance warranty. Artificially softened water must not be used to fill the heating system. Naturally soft water areas can corrode aluminium heat exchangers. Adding Fernox F1 or Mb-1 will guard against corrosion.
- **Sime** promote the fitting of TF1 System filter with any new boiler installation.
- It is important to check the inhibitor concentration after installation, system modification and annually on a service visit in accordance with the manufacturer's instructions. (Note on benchmark service record this has been complete). Test kits are available from inhibitor stockists; the return of the Fernox test report should be kept with the Benchmark to validate warranty.
- Where Central heating systems are susceptible to freezing a mixture of inhibitor and anti-freeze should be added in accordance with the DWTA code of practice and the Manufacturers instructions.
- The addition of sealing agents to system water is not recommended because deposits can be left in heat exchanger causing circulation issues.

5.8 Plumbing connections

The dimensions of the water fittings of **Sime ALU PLUS HE** boilers are given below.

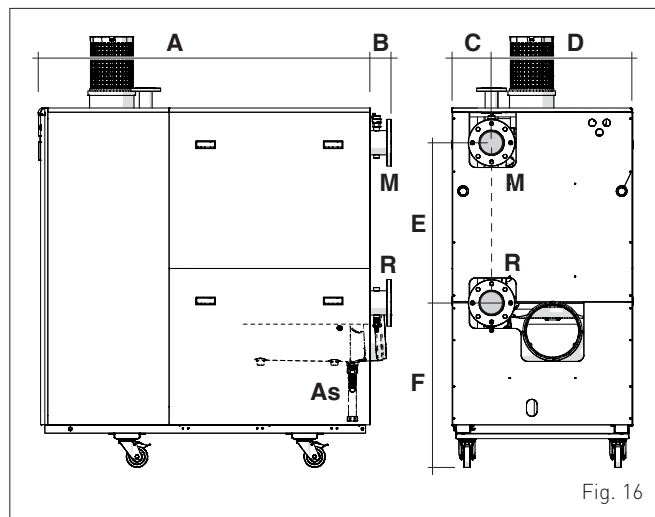


Fig. 16

Description	ALU PLUS HE		
	360	720	1100
A (mm)	1551	1551	1861
B (mm)	101	101	115
C (mm)	157	186	186
D (mm)	593	664	664
E (mm)	754	754	754
F (mm)	774	774	774
M - Boiler delivery	PN16 DN100	PN16 DN100	PN16 DN100
R - Boiler return	PN16 DN100	PN16 DN100	PN16 DN100
As - Siphon fitting	Ø15 mm	Ø15 mm	Ø15 mm

5.9 Condensate outlet/collection

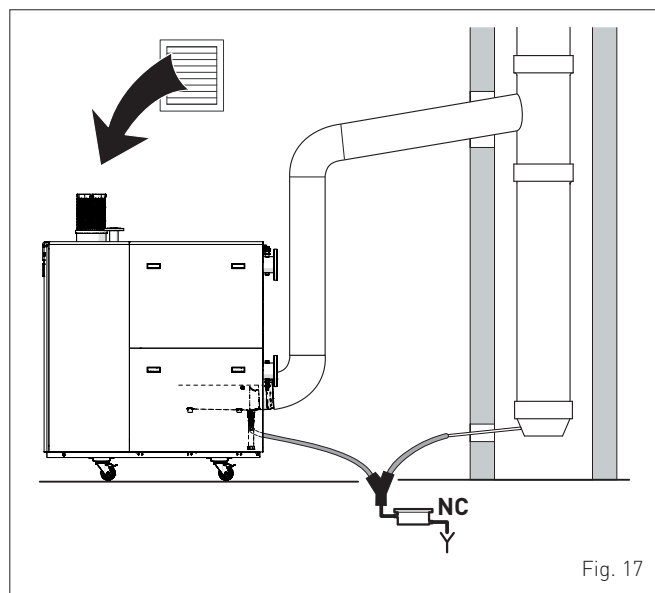


Fig. 17



CAUTION

- The condensate outlet duct must be airtight, suitably sized to that of the siphon and must not be restricted at any point.
- The condensate outlet must be constructed in full compliance of the National or Local regulations in force.



CAUTION

- It is recommended that a condensate neutralising unit be provided and the pipework should have a downward angle of at least 3%.
- Before commissioning the appliance, fill the siphon with water.

5.10 Gas supply

The gas connection must be made using seamless steel or copper tube.

Where the piping has to pass through walls, a suitable insulating sleeve must be provided.

When sizing gas piping, from the meter to the boiler, take into account both the volume flow rates (consumption) in m³/h and the relative density of the gas in question.

The sections of the piping making up the system must be such as to guarantee a supply of gas sufficient to cover the maximum output available from the boiler, limiting pressure loss between the gas meter and any apparatus being used to not greater than 1.0 mbar for family II gases (natural gas).

An adhesive data badge is sited inside the front panel; it contains all the technical data identifying the boiler and the type of gas for which the boiler is arranged.

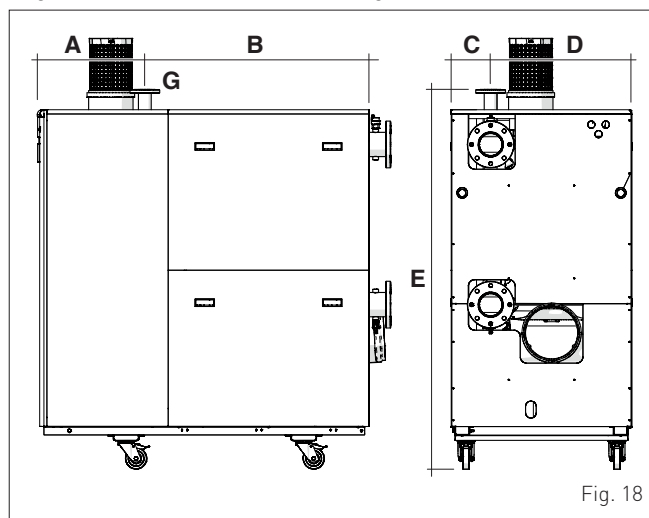


Fig. 18

Description	ALU PLUS HE		
	360	720	1100
A (mm)	495	495	495
B (mm)	1056	1056	1366
C (mm)	152	185,5	185,5
D (mm)	598	664,5	664,5
E (mm)	1785,5	1785,5	1785,5
G - Gas cock connection	PN6 DN50	PN6 DN50	PN6 DN50



WARNING

Once installation has been completed, check that the joints are air tight as indicated in the installation Standards.



CAUTION

It is recommended that the gas line has a suitable filter.

5.11 Smoke outlet and combustion air inlet

Sime ALU PLUS HE boilers are "Type B" (B23P).

The smoke outlet and combustion air inlet systems that can be created for single boilers are shown below. Information regarding cascading boiler systems is provided in the relevant section of this manual.

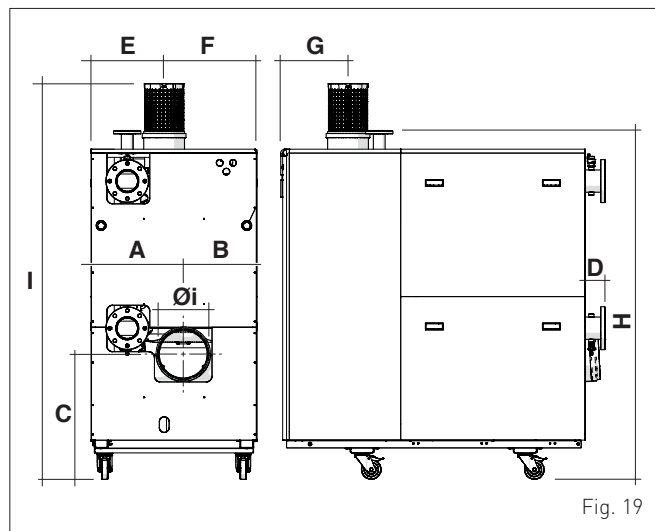


Fig. 19

Description	ALU PLUS HE		
	360	720	1100
A (mm)	444	472,5	472,5
B (mm)	306	377,5	377,5
C (mm)	643,5	643,5	645,5
D (mm)	100	100	117
E (mm)	341	372,5	372,5
F (mm)	409	477,5	477,5
G (mm)	335	335	335
H (mm)	1790	1790	1790
I (mm) (*)	2027,5	2027,5	2027,5
Øi (internal diameter)	250		

(*) "Combustion air filter kit" included (optional).

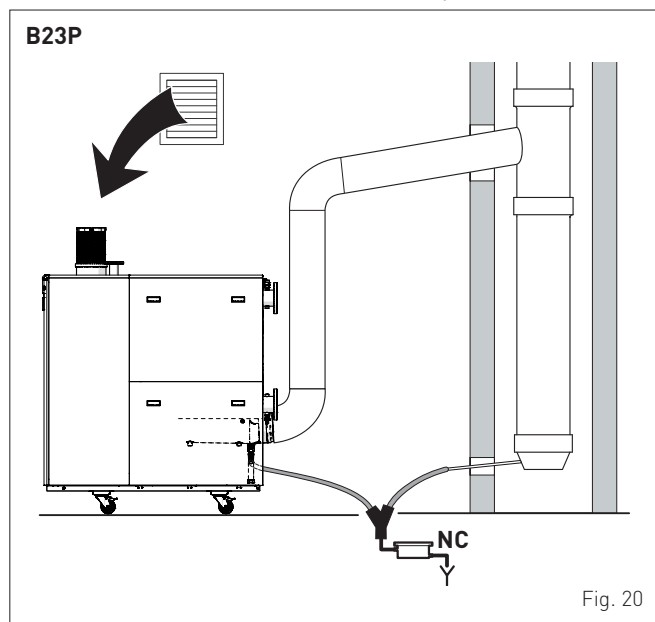


Fig. 20



WARNINGS

- When the Sime ALU PLUS HE boiler takes in combustion air from the place of installation it MUST BE EQUIPPED with air vents created as described by the regulations in force in the destination country.
- Sime ALU PLUS HE boilers use a smoke detector, located upstream from the smoke duct, which safely stops the boilers if the temperature of the smoke becomes too high.
- We recommend using a smoke duct made from aluminium, plastic or stainless steel, provided that it complies with the regulations in form. The material should be suitably resistant to high temperatures and condensation. The condensation liquid from the flue pipe must be drained before it enters the aluminium boiler body so as to avoid corrosion or blockages.
- Outlet ducts which are not isolated are a potential source of danger.
- The flue pipe must be provided with a condensate outlet and must ensure the minimum drop in pressure set by current regulations, considering pressure to be "zero" at the connection with the duct.
- It is recommended that a condensate neutraliser be installed before discharging it into the waste water drain.
- The flue pipe must be of the correct size for condensation thermal units. Flue pipes and smoke ducts that are inadequate or of the wrong size can cause problems with the combustion parameters and generate noise.
- Ensure that the duct and condensate outlet pipes have an angle of at least 3% towards the neutraliser or the drain.
- Install a suitable filter on the combustion air inlet duct to prevent dust or dirt from being aspirated.



DO NOT

- Do not block or reduce the size of the air vents of the place of installation or the appliance.

5.11.1 Maximum duct lengths

The table shows the maximum permitted lengths for the smoke outlet and combustion air inlet ducts, expressed in metres.

ALU PLUS HE	Maximum permitted length (m)	
	Outlet Øi 250	
360	25	
720	22	
1100	20	

Load loss - Equivalent lengths

ALU PLUS HE	Leq (linear metres)	
	Outlet	
	45° Ø 250 mm curve	90° Ø 250 mm curve
360	0,5	1
720	1	2
1100	1,25	2,5

Outlet optional accessories

Description	ALU PLUS HE 360-720-1100
	Diameter Ø 250 mm
Extension Ø 250 mm L. 1000 mm	8102519
90° elbow Ø 250 mm	8102528

5.12 Electrical connections and External controls

Sime ALU PLUS HE boilers require the connections given below which must be carried out by the installer or by professionally qualified personnel. Some of the cabling is to the MC terminal board and some to the electronic circuit board connectors.

To connect the electrics:

- remove the top panel (1) and front panel (2) to access the MC terminal board
- undo the screws (3) that attach the control panel and rotate it forward
- undo the screws on the back of the control panel and take off the cover (4) to access the electronic board.

The cables must go into the back of the boiler and must be locked when the job is completed with the tear-proof cable clip that's already fitted. Once the connections have been made, reassemble what was previously dismantled.

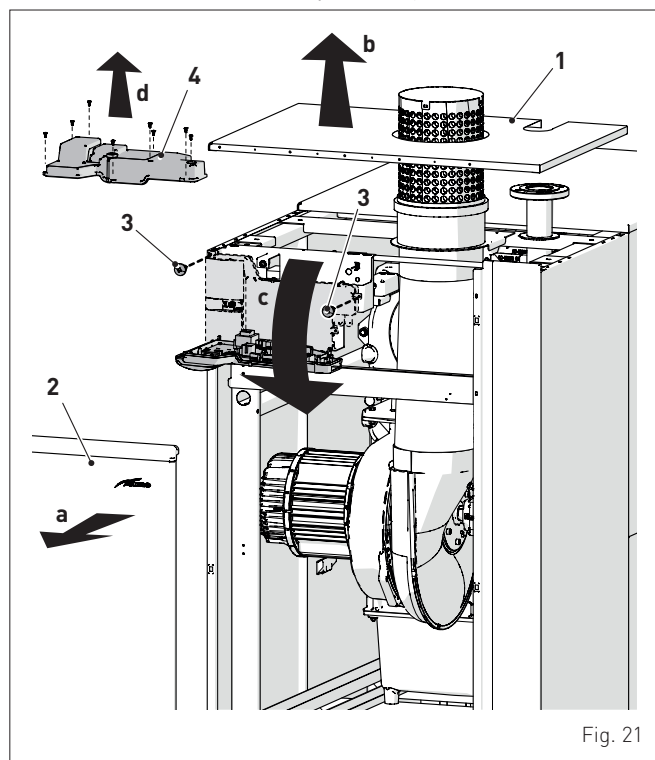


Fig. 21

Connections to be made by the installer

The connections shown below MUST be made for single boilers or for the master boiler in a cascade.

ALU PLUS HE 360

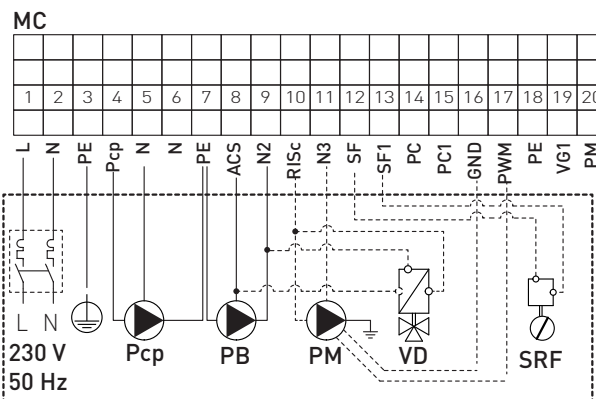


Fig. 22

KEY:

- MCP Primary circuit pump (4A - 230V)
- L Live
- N Neutral
- PB Tank pump (4A - 230V)
- PM Modulating pump (4A - 230V)
- VD Diverter valve
- PWM-GND Modulation for modulating pump (if present)
- SF-SF1 Flue gas damper consent (Max 4A - 230V)
- PC-PC1 Connections for pump operating signal
- SRF Flue gas damper

ALU PLUS HE 720 - ALU PLUS HE 1100

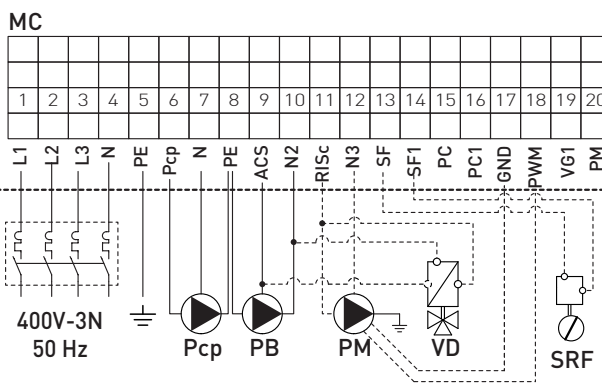


Fig. 23

KEY:

- MCP Primary circuit pump (6A - 230V)
- L Live
- N Neutral
- PB Tank pump (6A - 230V)
- PM Modulating pump (6A - 230V)
- VD Diverter valve
- PWM-GND Modulation for modulating pump (if present)
- SF-SF1 Flue gas damper consent (Max 4A - 230V)
- PC-PC1 Connections for pump operating signal
- SRF Flue gas damper

Connections to electronic circuit board

The connections shown below **MUST** be made for single boilers or for the master boiler in a cascade.

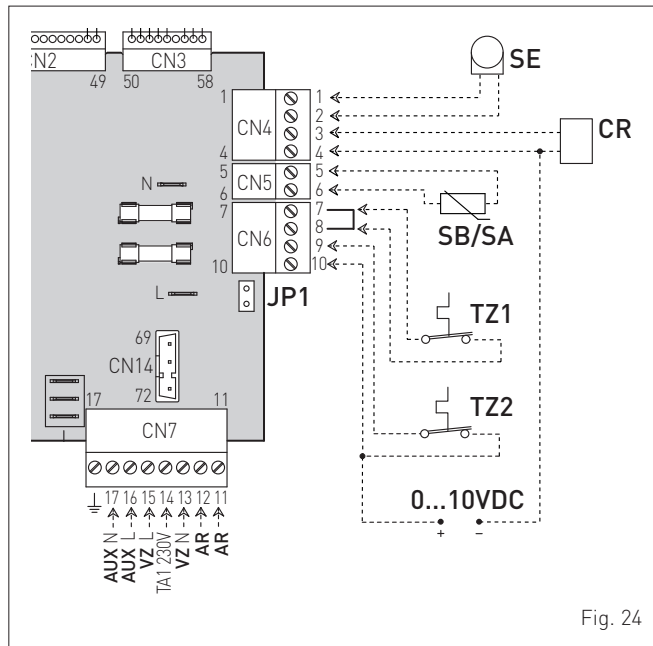


Fig. 24

KEY:

L	Live
N	Neutral
SE	External sensor
CR	Remote control or, alternatively, a MODBUS interface kit
SB/SA	Storage tank sensor or auxiliary sensor (e.g. system delivery sensor, SMi)
TZ1÷TZ2	Room thermostat for the zone
JP1	Dial jumper or 0...10V DC or TA2 (**)
AUX	Auxiliary connection
VZ	Zone valve
TA1 (230V)	Room Thermostat
AR	Remote alarm

(**) JP1 engaged = TA2 usable; 0 ... 10V DC not usable; JP1 disengaged = TA2 not usable; 0 ... 10V DC usable



WARNINGS

It is compulsory:

- to use an omnipolar cut-off switch, disconnect switch, in compliance with EN standards (contact opening of at least 3 mm)
- to respect connection L (Live) - N (Neutral)
- to refer to the electrical diagrams in this manual for any electrical intervention
- to connect the earth wire to an effective earthing system (*).



DO NOT

- to use cables with a cross-section of less than 1 mm²
- to use the water pipes to earth the appliance.

(*) **Sime** declines all responsible for any injury or damage to persons, animals, or property as a result of failure to provide adequate earthing of the appliance.

5.12.1 External sensor

The boiler is designed for connection to an external temperature sensor code 8094101, which will automatically regulate the central heating delivery temperature.

This means that the delivery temperature of the boiler can vary on the basis of the external temperature depending on the climatic curve selected from those shown in the diagram (Fig. 25).

Climatic curve

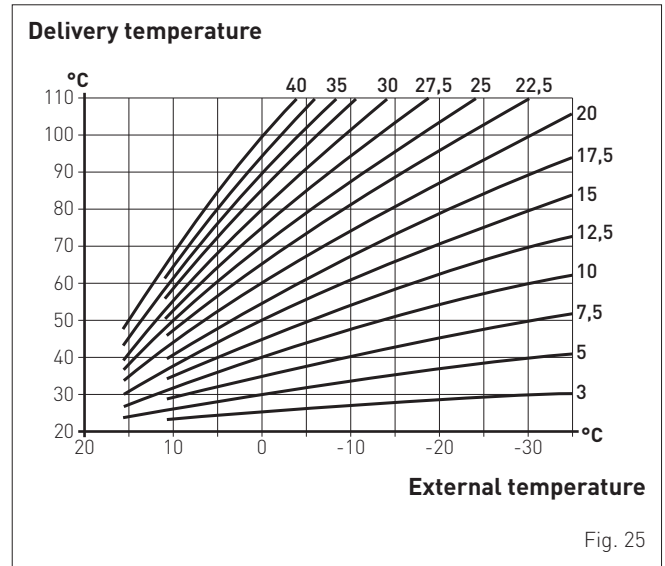


Fig. 25



CAUTION

If there is an external sensor, in order to select the optimal climatic curve for the system and therefore the delivery temperature based on the external temperature:

- select parameter “PAR 22” or “PAR 25” or “PAR 28” (see **List of parameters**) corresponding to zone 1, 2 or 3 as relevant
- press the or button to select the curve suitable for reaching the desired room temperature.

The “20” curve is factory set to reach a room temperature of 20°C.

The external sensor must be installed outside the building, on a flat surface, in a north or north-west position (coldest side) and well away from flue pipes, doors, windows and areas in direct sunlight.

When fitting the sensor on the outside of the building:

- remove the cover
- attach the sensor to the wall using 2 plugs
- make the electrical connections.

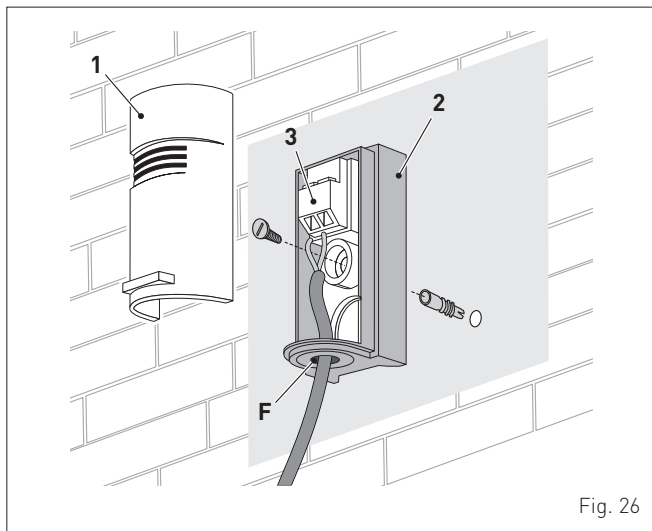


Fig. 26

NOTE: Minimum cross-section of cables 1 mm²; maximum length of connection 50 m; unpolarised connection terminals.

5.13 Systems that can be controlled

Sime ALU PLUS HE boilers can control many types of systems. Here are some system diagrams, by way of example, in which the boiler can be a single appliance or a group of cascading boilers which can be considered as a single appliance in terms of heat output, where **Cascade output = Boiler output x no. of boilers installed**.

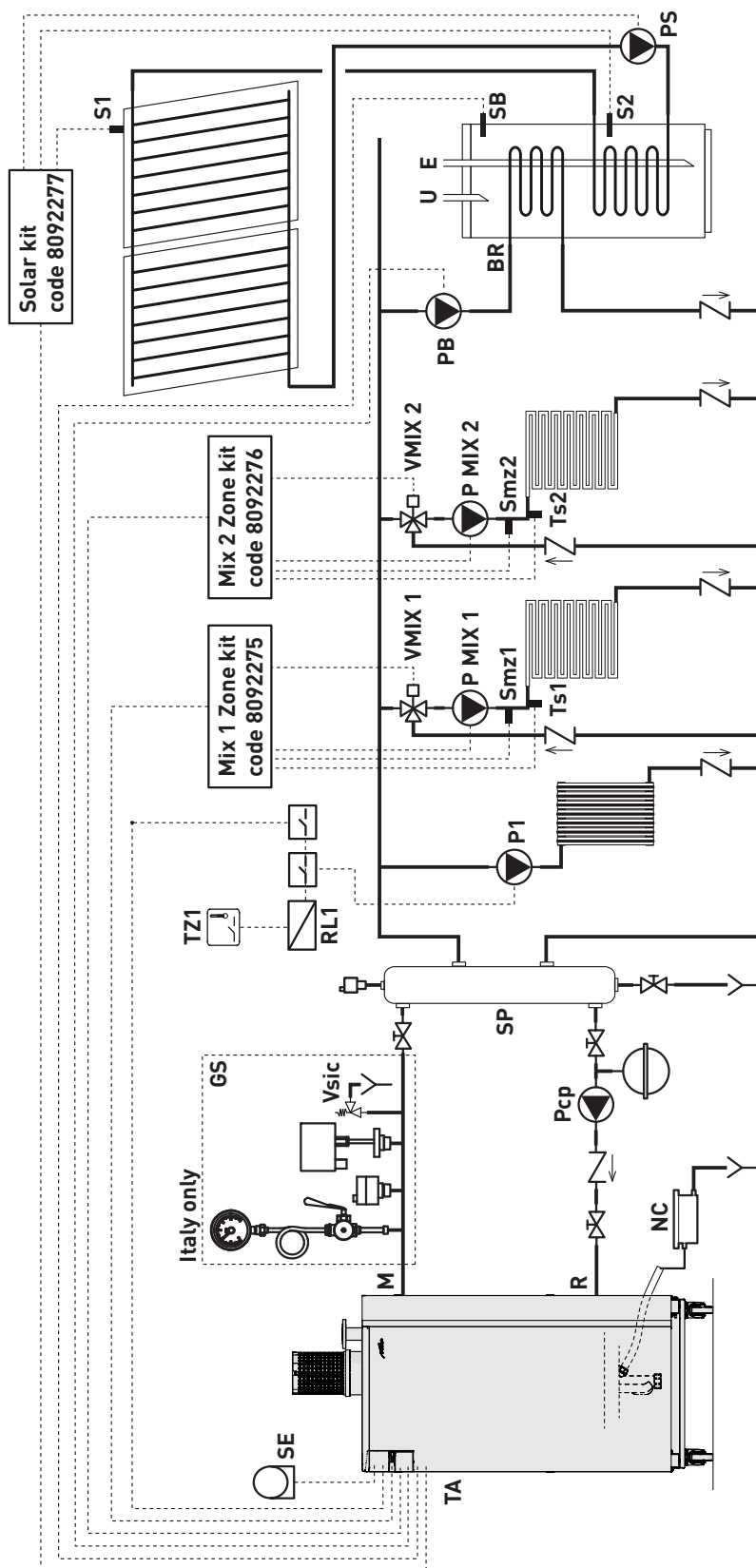


CAUTION

When systems using **ALU PLUS HE** single or cascade boilers are managed by MODBUS systems, **Sime** kits **CANNOT** be used to manage mixed circuits or the solar circuit. You **MUST** use external devices.

5.13.1 Main hydraulic diagrams

Full hydraulic diagram



KEY:

SE	External sensor
TA	Room thermostat for boiler activation
M	Boiler delivery
R	Boiler return
GS	INAIL safety unit (Italy only)
Vsic	Relief valve
SP	Hydraulic separator
MCP	Primary circuit pump
NC	Condensate neutraliser
TZ1	Zone ambient thermostat
RL1	Zone relays
P1	Direct zone pump

Mix 1 Zone pump

(only for installations with a SINGLE boiler)

VMIX 1	MIX 1 system mixer valve
PMIX 1	MIX 1 system pump
Ts1	MIX 1 system safety thermostat
Smz1	Zone 1 delivery probe

Mix 2 Zone pump

(only for installations with a SINGLE boiler)

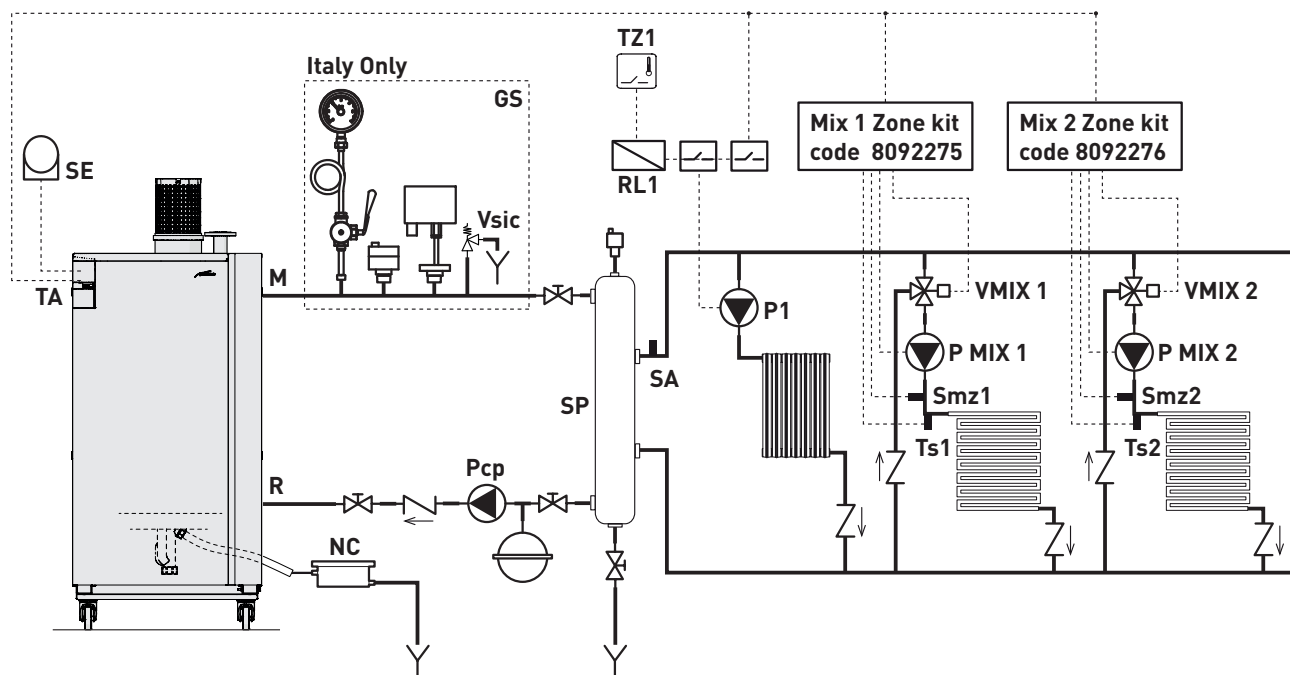
VMIX 2	MIX 2 system mixer valve
PMIX 2	MIX 2 system pump
Ts2	MIX 2 system safety thermostat
Smz2	Zone 2 delivery probe

PB	Storage tank pump
BR	DHW cylinder
SB	Hot water tank sensor (SB)
U	Domestic hot water output
E	Domestic hot water inlet

Solar kit

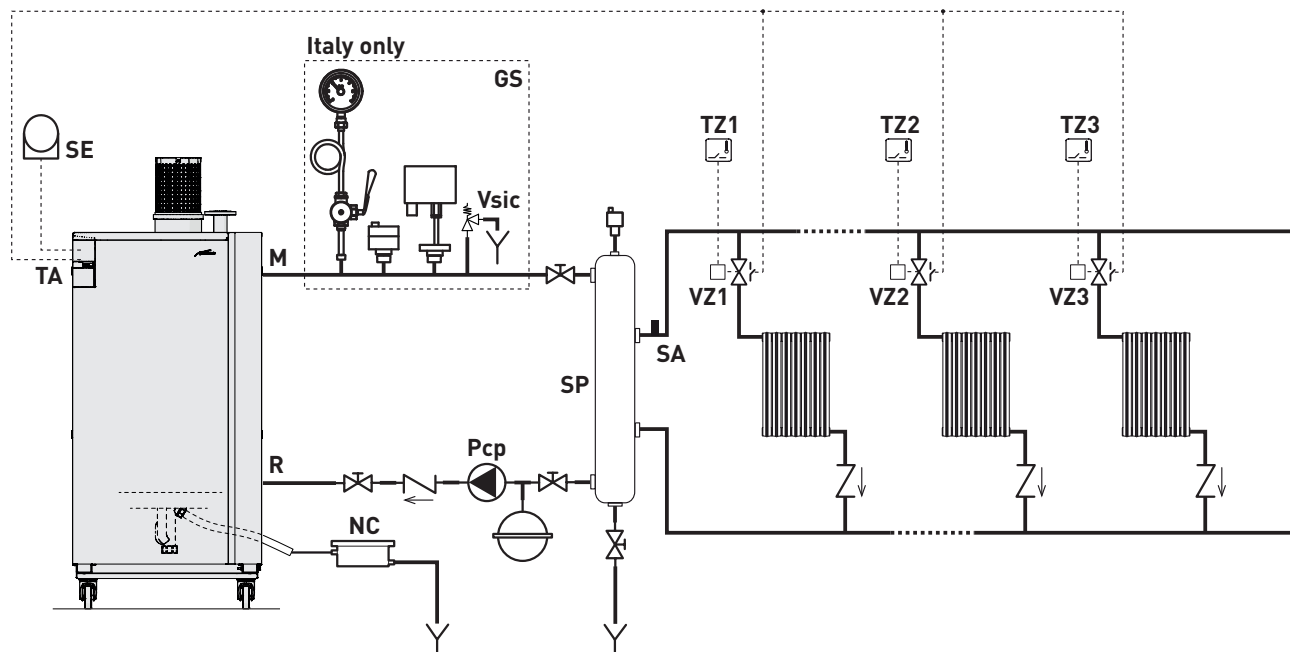
S1	Solar delivery probe
S2	Solar exchanger probe (tank)
PS	Solar pump

Heating hydraulic diagram



NOTE: For installations with a SINGLE BOILER, up to two MIX systems, or two groups of MIX systems, can be managed by installing the optional accessories MIX 1 ZONE KIT (code 8092275) and MIX 2 ZONE KIT (code 8092276). When systems using **ALU PLUS HE** single or cascade boilers are managed by MODBUS systems, **Sime** kits **CANNOT** be used to manage mixed circuits or the solar circuit. You **MUST** use external devices.

Hydraulic diagram with zone valves



KEY:

SE External sensor
TA Room thermostat for boiler activation
M Boiler delivery
R Boiler return
GS INAIL safety unit (Italy only)
Vsic Relief valve
SP Hydraulic separator
MCP Primary circuit pump
NC Condensate neutraliser

SA Auxiliary sensor (system delivery sensor, SMi)
TZ1 Zone ambient thermostat
RL1 Zone relays
P1 Direct zone pump
TZ1÷TZ3 Room thermostat for the zone
VZ1-VZ3 Zone valves

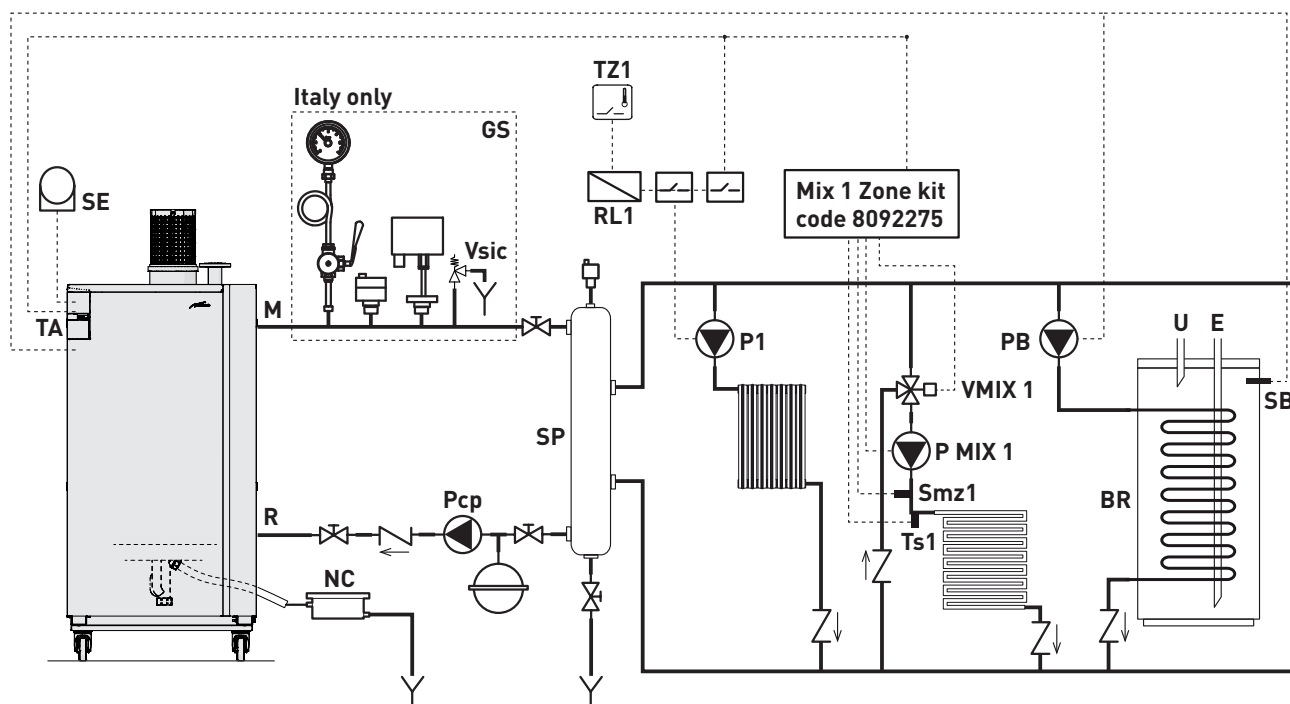
Mix 1 Zone pump
(only for installations with a SINGLE boiler)
VMIX 1 MIX 1 system mixer valve
PMIX 1 MIX 1 system pump

Ts1 MIX 1 system safety thermostat
Smz1 Zone 1 delivery probe

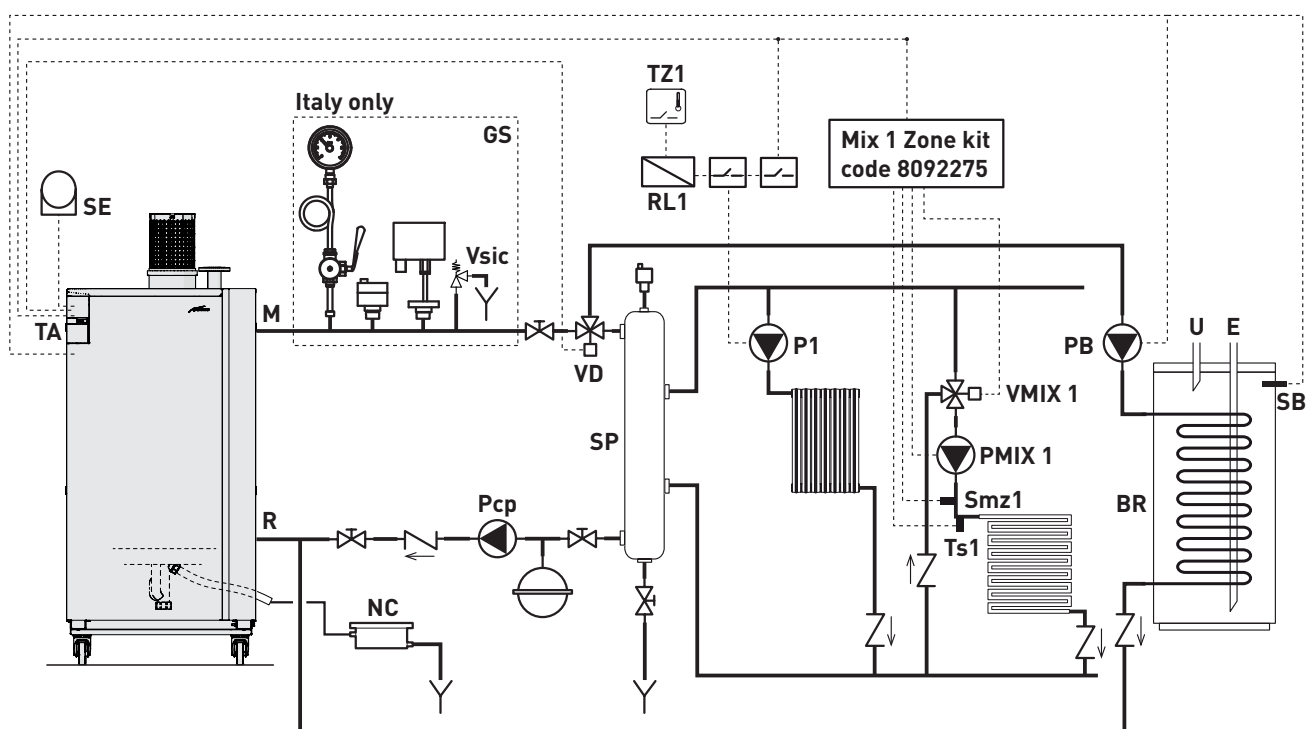
Mix 2 Zone pump
(only for installations with a SINGLE boiler)

VMIX 2 MIX 2 system mixer valve
PMIX 2 MIX 2 system pump
Ts2 MIX 2 system safety thermostat
Smz2 Zone 2 delivery probe

Hydraulic diagram with tank after hydraulic separator



Hydraulic diagram with tank before hydraulic separator



KEY:

SE	External sensor	RL1	Zone relays
TA	Room thermostat for boiler activation	P1	Direct zone pump
M	Boiler delivery	VD	Heating/dhw diverter valve
R	Boiler return	PB	Storage tank pump
GS	INAIL safety unit (Italy only)	BR	DHW cylinder
Vsic	Relief valve	SB	Hot water tank sensor (SB)
SP	Hydraulic separator	U	Domestic hot water output
MCP	Primary circuit pump	E	Domestic hot water inlet
NC	Condensate neutraliser		
TZ1	Zone ambient thermostat		

Mix 1 Zone pump

(only for installations with a SINGLE boiler)

VMIX 1 MIX 1 system mixer valve

PMIX 1 MIX 1 system pump

Ts1 MIX 1 system safety thermostat

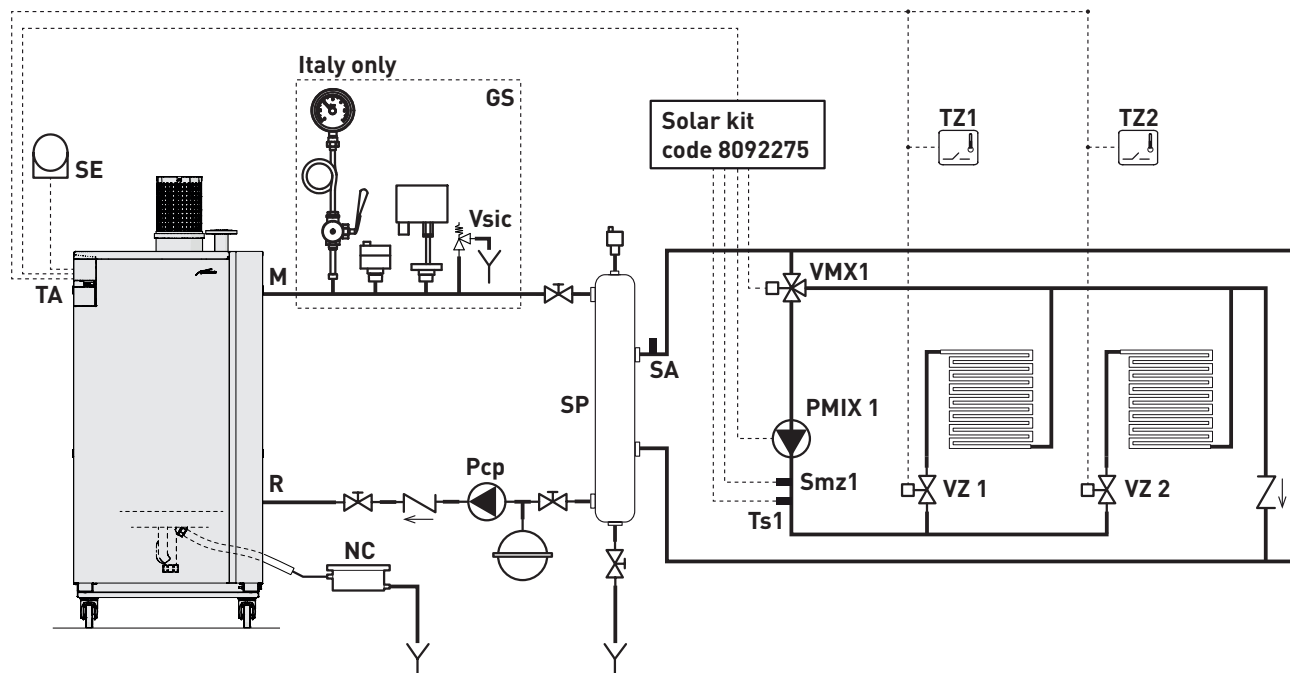
Smz1 Zone 1 delivery probe



CAUTION

When the tank is connected as shown in the diagram, "PAR 02" MUST BE SET TO 3.

Underfloor heating hydraulic diagram



KEY:

SE External sensor
TA Room thermostat for boiler activation
M Boiler delivery
R Boiler return
GS INAIL safety unit (Italy only)
Vsic Relief valve
SP Hydraulic separator
VZ1÷VZ2 Zone valves

MCP Primary circuit pump
NC Condensate neutraliser
SA Auxiliary sensor (system delivery sensor, SMi)
RL1 Zone relays
P1 Direct zone pump
TZ1÷TZ2 Room thermostat for the zone
VZ1÷VZ2 Zone valves

Mix 1 Zone pump

(only for installations with a SINGLE boiler)

VMIX 1 MIX 1 system mixer valve
PMIX 1 MIX 1 system pump
Ts1 MIX 1 system safety thermostat
Smz1 Zone 1 delivery probe



CAUTION

The system designer is responsible for choosing and sizing up the system components and MUST follow the best practice technical guidelines, as well as complying with the local and national legislation in force in the destination country.

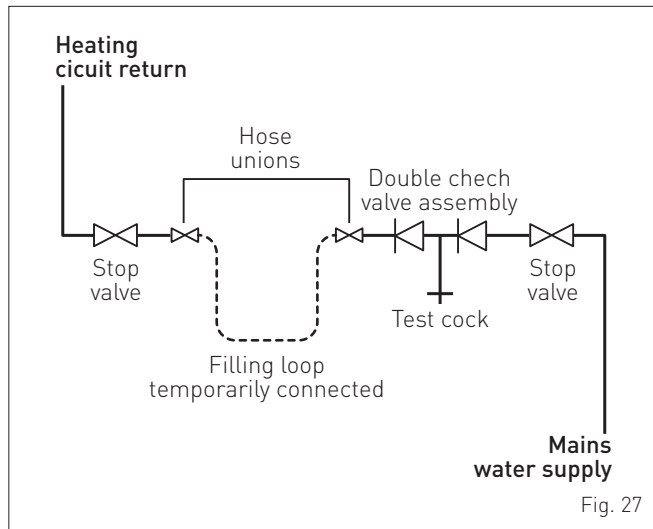
5.14 Refilling or emptying

Before carrying out the operation described below, isolate the boiler power supply.

Ensure that the inhibitor concentration is correct on refilling.

5.14.1 Method of filling a sealed system

A sealed system must only be filled by a competent person using a method similar to that shown in figure below.



5.14.3 EMPTYING operations

- check that the water system isolation devices are closed
- connect a funnelling pipe to the system drain valve and open it.

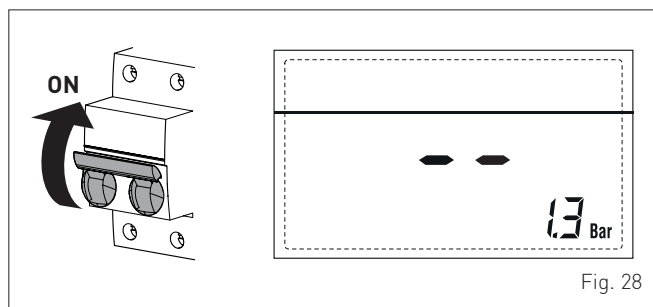
When it has fully emptied, close the valve.

5.14.2 SYSTEM Filling

Sime ALU PLUS HE boilers DO NOT have a device to fill the boiler/system and an emptying tap. Therefore these must be provided, during installation, assembled in the most convenient places for the installer.

Before carrying out the operations described below, make sure that the main system switch is set to "ON" in order for the display to show the pressure level in the system during refilling.

- there are no requests for heat
- the main system switch is set to "ON"
- the display shows the system pressure value
- the outlet valve is closed



- open the isolation and air bleeding valves in the highest points of the system
- open the heating circuit isolation valves
- activate the filling system "**Method of filling a sealed system**", and fill the heating system until a pressure of **0,8-6,0bar** is shown on the display
- stop the filling system
- check that there is no air in the system by bleeding all the radiators and the circuit on the high points of the system
- check the pressure on the display and if necessary top up until the correct pressure reading appears
- it is recommended that the condensate trap is filled prior to fitting the flue, by carefully pouring water into the exhaust connection.

6 COMMISSIONING

6.1 Preliminary operations



WARNING

Should it be necessary to access the areas in the bottom part of the appliance, make sure that the system components and pipes are not hot (risk of burning).

Before commissioning the appliance, check that:

- the type of gas is correct for the appliance
- the gas isolation valves for the heating system and the water system are open
- the pump impeller rotates freely
- the siphon has been filled.

6.2 Before commissioning

After having carried out the preliminary operations, proceed as follows:

- set the main system switch to "ON"

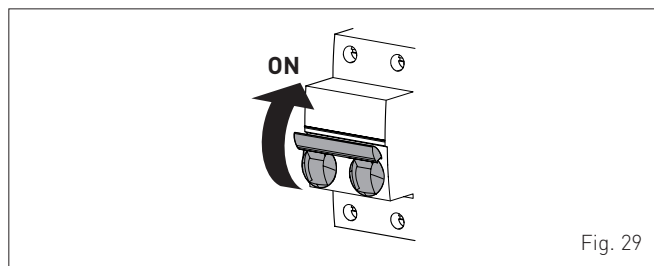
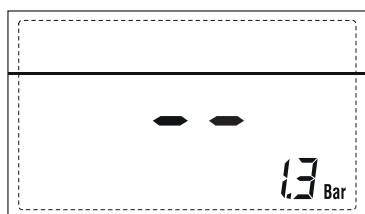


Fig. 29

- The blue bar (4) on the control panel lights up. The symbols, "--" message and the system pressure are shown correctly on the display



- check that the system pressure as shown on the display when the system is cold is as required, between **0.8** and **6.0 bar**
- press button on the single boiler or the master boiler in the case of a cascade. The value of the delivery probe detected at that moment will appear on the display.



PROCEDURE TO BE CARRIED OUT ONLY FOR CASCADE INSTALLATIONS

- Disconnect the power supply by turning the main system switch to "OFF" and then on "ON"
- wait for approximately 3 seconds to allow the electronic board to run the necessary checks.

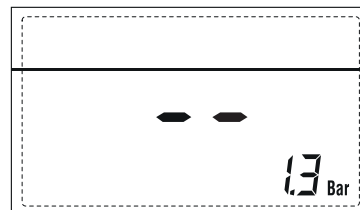
When heat is requested from the systems the boiler or the cascade automatically carries out:

- the operational checks
- ignition and starts automatic operation.



CAUTION

- When the display is not backlit (off), the first press on each function button serves to backlight it (turn it on).
- To manually stop the boiler press button .
- The display will show the following screen.



If there is a fault, the message "ALL", the fault code, the message "RESET" (e.g. "ALL 06" - no flame detected) and the message will appear on the display.



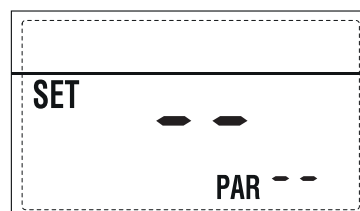
NOTE: To restart the boiler press button , for about 3 seconds, and then release it. The boiler repeats the ignition cycle and works normally until the temperatures requested are reached.

6.3 Parameter setting and display

The **parameters** can be displayed and set with the boiler in stand-by () or in operation.

To go into the parameter menu:

- press buttons and (for approximately 2 seconds) at the same time until "PAR --" (parameter number) and the value set "--" appears on the display



- to scroll through the parameters press buttons and
- to change the value set press buttons and .

To exit the menu and go back to the first screen, press one of the function buttons, excluding , or wait approx. 60 seconds without pressing any button.

6.4 List of parameters

The parameters PAR 01 and PAR 02 are factory set according to table "A" and automatically generate the settings for parameters PAR 04, PAR 08, PAR 18 and PAR 31 as shown in the table.



DO NOT

Use settings other than those shown in the table "A" as this could generate a serious boiler malfunction.

TABLE "A"

Type of gas	G20		
Boiler power (kW)	360	720	1100
PAR 01	7	8	9
PAR 02	5	5	5
PAR 04	5	5	5
PAR 08	28	32	32
PAR 18	72	90	90
PAR 31	100	100	100

TABLE "B"

No.	Description
1	Instant monothermal – 3-way electric – DHW flowmeter
2	Instant monothermal – 3-way electric – DHW flowmeter – solar input
3	Remote storage tank – 3-way electric – storage tank sensor – low inertia
4	On-board storage tank – 3-way electric – DHW sensor – low inertia
5	Storage tank – 3-way electric – storage tank thermostat – low inertia (or heating only)
6	Remote storage tank – dual pump – storage tank sensor – low inertia
7	On-board storage tank – dual pump – DHW sensor – low inertia
8	Remote storage tank – dual pump – storage tank thermostat – low inertia (or heating only)
9	Heating only – anti-freeze sensor – low inertia
10	Storage tank – 3-way electric – storage tank sensor – high inertia
11	Storage tank – dual pump – storage tank sensor – high inertia
12	Storage tank – 3-way electric – storage tank thermostat – high inertia or heating only high inertia
13	Storage tank – dual pump – storage tank thermostat – high inertia
14	Heating only – anti-freeze sensor – high inertia

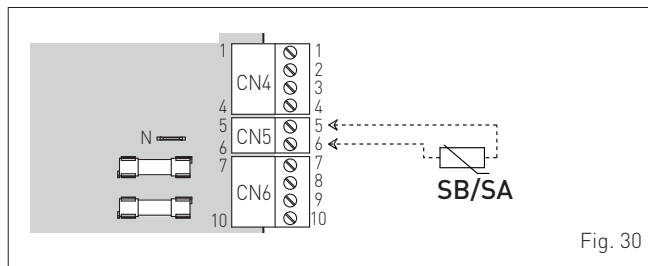
Type	No.	Description	Range	U/M	Step	Default
CONFIGURATION						
PAR	01	Combustion configuration	– = ND 1 .. 53	-	-	See table "A"
PAR	02	Hydraulic configuration	– = ND 1 .. 14 (see table "A")	-	-	See table "B"
PAR	03	Assigning Timed Programmer 2	1 = DHW+Recirculation Pump 2 = DHW 3 = Recirculation Pump	-	-	1
PAR	04	Disabling Pressure Transducer	0 = Disabled 1 = Enabled 0...4 bar 2 = Enabled 0...6 bar 3 = Enabled 0...4 bar NO ALARM 4 = Enabled 0...6 bar NO ALARM 5 = Enabled 0.8...5.8 bar 6 = Enabled 0.3...5.8 bar	-	-	See table "A"
PAR	05	Assigning Auxiliary Relay	1 = Remote alarm 2 = Recirculation Pump 3 = automatic filling 4 = N.C. remote alarm 5 = Heat pump 6 = Zone 2 valve	-	-	1
PAR	06	Disabling Light Bar	0 = Disabled 1 = Enabled	-	-	1
PAR	07	Assigning Channels QAA73	0 = Not assigned 1 = Circuit 1 2 = 3-zone system	-	-	1
PAR	08	No. of Ignition Step Fan Revs	0,0 81	rpmx100	0.1 from 0.1 to 19.9 1 from 20 to 81	See table "A"
PAR	09	Long chimney	0 ... 40	%	1	0
PAR	10	Opentherm device	1 = QAA73 2 = QAA53 3 = RVS43.143 4 = RVS46.530 5 = RVS61.843	-	-	1
PAR	11	External Sensor Value Correction	-5...+5	°C	-	0
PAR	12	Duration of Backlighting	- = always 0 = never 1...199	seconds x 10	1	3
PAR	13	Modulating Pump Speed	- = no modul. AU = AUTO 30...100	%	10	AU

Type	No.	Description	Range	U/M	Step	Default
PAR	15	Boiler address (specific to boilers in a cascade)	-- = not enabled 0 = master 1...7 = slaves	-	1	"- -"
PAR	16	Not used	-- = not enabled 1...31 = slaves	-	1	"- -"
PAR	17	Not used	1...30	-	1	25
PAR	18	Post-ventilation time	1...180	seconds x 10	1	See table "A"
PAR	19	System type	0 = 2 zones 1 = 3 zones	-	-	0
DOMESTIC HOT WATER - HEATING						
PAR	20	Minimum Tset Zone 1 Heating	Par 64 OEM .. Par 21	°C	1	20
PAR	21	Maximum Tset Zone 1 Heating	Par 20 .. Par 65 OEM	°C	1	80
PAR	22	Heating Curve Grade Zone 1	3...40	-	1	20
PAR	23	Minimum Tset Zone 2 Heating	Par 64 OEM .. Par 24	°C	1	20
PAR	24	Maximum Tset Zone 2 Heating	Par 23 .. Par 65 OEM	°C	1	80
PAR	25	Heating Curve Grade Zone 2	3...40	-	1	20
PAR	26	Minimum Tset Zone 3 Heating	Par 64 OEM Par 27	°C	1	20
PAR	27	Maximum Tset Zone 3 Heating	Par 26 .. Par 65 OEM	°C	1	80
PAR	28	Heating Curve Grade Zone 3	3...40	-	1	20
PAR	29	ΔT heating	10...40	°C	1	20
PAR	30	Heating Post-Circulation Time	0 .. 199	Sec	10	30
PAR	31	Heating Maximum Output	30 ..100	%	1	See table "A"
PAR	32	Pump Activation Delay Zone 1	0 .. 199	10 Sec	1	1
PAR	33	Re-ignition Delay	0 ...10	Min	1	3
PAR	34	Supplementary sources activation threshold	--, -10...40	°C	1	-
PAR	35	Boiler Antifreeze Threshold	0...+20	°C	1	3
PAR	36	External Sensor Antifreeze Threshold	-5...+5	°C	1	-2
PAR	37	Flow meter Modulation Saturation Band	-- = Disabled 0....100	%	1	100
PAR	38	DHW Post-Circulation Time	0...199	Sec	1	0
PAR	39	Anti-legionella Function (Only hot water tank)	0 = Disabled 1 = Enabled	-	-	0
EXPANSION BOARD						
PAR	40	No. of expansion boards	0...3	-	1	0
PAR	41	Mix Valve Motion Time	0 .. 199	10 sec	1	12
PAR	42	DHW Priority on Mixed Zone	0 = Parallel 1 = Absolute	-	-	1
PAR	43	Screed Drying	0 = Off 1 = Curve A 2 = Curve B 3 = Curve A+B	-	-	0
PAR	44	Solar thermal system type	1...8	--	1	1
PAR	45	ΔTon Solar Pump Manifold 1	Par74OEM+1 50	°C	1	8
PAR	46	Delay to solar integration	"- -", 0....199	min	1	0
PAR	47	Tmin Solar Manifold	"- -", -30....0	°C	1	-10
PAR	48	Tmax Solar Manifold	"- -", 80....199	°C	1	120
RESET						
PAR	49	Reset default parameters (Par 01 – Par 02 equal to "--")	- , 1	-	-	-

6.5 Configuring the auxiliary sensor

Below is the procedure for configuring the storage tank sensor (SB) or the auxiliary sensor (e.g. system delivery sensor, SMi).

- press buttons and (~ 2s) at the same time until the parameter menu shows
- press buttons and (~ 2s) at the same time again until "--" appears on the display
- to access the OEM parameters, enter the following key combination:
- press the and buttons to select the "OEM 52" parameter
- to change the "OEM 52" parameter settings and set the value to "5", press the and buttons
- to exit the menu and go back to the first screen, press one of the function buttons, excluding RESET, or wait approx. 60 seconds without pressing any buttons.



Type	No.	Description	Range	Default
OEM	52	Assigning AUX sensor	0 = not used 1 = DHW inlet sensor 2 = hot water tank sensor 3 = antifreeze sensor 4 = hot water tank thermost. 5 = System delivery sensor	2

6.6 Fault/error message

In the event of a fault/malfunction the message "ALL" will appear on the display with the alarm number and the light bar (4) will turn red.

Example: "ALL 02" (Low System Pressure Error: less than 0.8 bar).



Before repairing the fault:

- disconnect the appliance from the mains power by setting the main switch to "OFF"

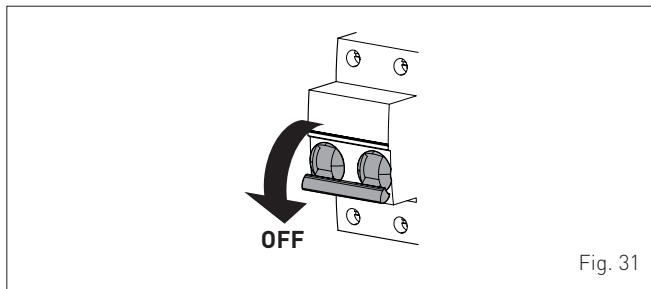


Fig. 31

- as a precautionary measure, close the gas isolation valve.

Resolve the problem and start-up the boiler again.

NOTE: When, in addition to the message "ALL ..." the symbol also appears on the display, after having repaired the fault, button must be pressed for approx. 3 seconds, and then released. The boiler starts up again normally.



6.7 Fault / malfunction codes

Type	No.	Description
ALL	01	Air pressure switch fault
ALL	02	Low water pressure in system
ALL	03	High water pressure in system
ALL	05	Boiler delivery probe fault
ALL	06	No flame detection
ALL	07	Safety thermostat or siphon pressure switch triggered
ALL	08	Fault in flame detection circuit
ALL	09	No water circulating in primary system
ALL	10	Hot water tank sensor/anti-freeze faulty
ALL	11	Modulator disconnected error
ALL	13	Smoke probe triggered
ALL	14	Smoke probe fault
ALL	15	Fan fault
ALL	18	Boiler delivery probe temperature above 117°C
ALL	19	External sensor fault (flashing warning)
ALL	20	Mix 1 zone safety thermostat triggered
ALL	21	Mix 1 Zone valve delivery probe fault
ALL	22	Mix 2 zone safety thermostat triggered
ALL	23	Mix 2 Zone valve delivery probe fault
ALL	24	S1 solar delivery probe fault
ALL	25	S2 solar exchanger probe fault (tank)
ALL	26	S3 2nd solar system delivery probe fault
ALL	27	Solar application coherence fault – hydraulic configuration
ALL	29	Number of expansion boards connected fault
ALL	30	Return sensor fault
ALL	31	Cascade delivery probe (SMC) fault
ALL	32	Three zone system configuration fault
ALL	35	Communication fault RS485 board
ALL	36	Number of boilers connected in cascade fault
ALL	45	Manual release performed more than 6 consecutive times in the last hour
ALL	70	Cascade stop general fault
ALL	71	General fault with a boiler in the cascade
ALL	72	Delivery probe (SMC) disconnected error
ALL	80	Gas valve control circuit hardware fault
ALL	89	Gas valve control circuit hardware fault
ALL	98	Maximum number of software errors reached
ALL	99	Generic board software error

6.8 Gas calibration

After checking that the boiler is operating correctly, you must take combustion readings as well as maximum and minimum power readings, and check the combustion efficiency by activating the **chimney sweeper function**.

6.8.1 Chimney sweep function and calibration

The chimney sweeper function is used by the qualified maintenance technician to check the gas pressure, detect the combustion parameters and measure the combustion efficiency when required by the legislation in force.

This function lasts 15 minutes and is activated by proceeding as follows:

- with the boiler inactive, loosen the screw on the mains tapping point (1) on the gas valve and connect a pressure gauge

GAS VALVE

ALU PLUS HE 360-720-1100

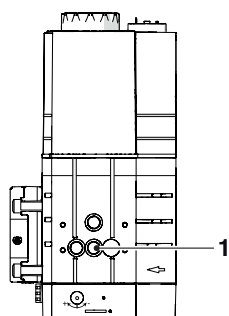


Fig. 32

- activate a heat request
- press button or to activate the boiler.

Leave the appliance to stabilise, then:

- press and hold the button for a few seconds, until you see the figure flashing
- press the button to operate the boiler on maximum power (Qmax) as indicated on the display with
- check that the gas supply pressure is: G20=20 mbar

- measure the CO₂ and check that it corresponds to the value in the table. If it does not correspond, adjust the "maximum power adjustment screw" (2) on the gas valve until you obtain the CO₂ value shown in the table. Take any other necessary readings.

Once any necessary adjustments and readings have been made:

- press the button to operate the boiler on minimum power (Qmin) as indicated on the display with
- measure the CO₂ and check that it corresponds to the value in the table. If it does not correspond, adjust the "minimum power adjustment screw" (3) on the gas valve until you obtain the CO₂ value shown in the table.

GAS VALVE

ALU PLUS HE 360-720-1100

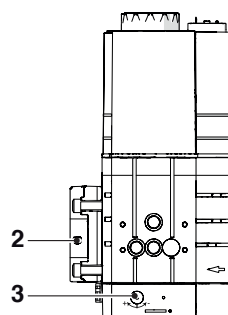


Fig. 33

ALU PLUS HE	CO ₂ (G20)	
	Qmax (% ± 0,2)	Qmin (% ± 0,2)
360	9,5	9,0
720	9,5	9,0
1100	9,6	9,0



CAUTION

This procedure **MUST BE PERFORMED** after replacing the gas valve following a fault.

6.9 Operating data display

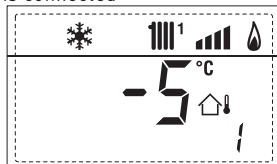
Once the boiler is operating, a qualified technician can view the operating data.

To access the information, press the button. The first piece of information is shown on the display. Each time this button is pressed, the next piece of information is shown.

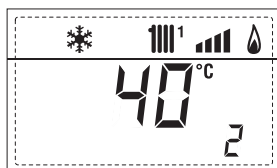
If the button is not pressed, the system exits the function automatically.

If there are expansion boards (Mix 1 or Mix 2 Zone or solar), the relative information cannot be shown.

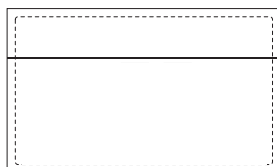
1. External temperature, only when external sensor is connected



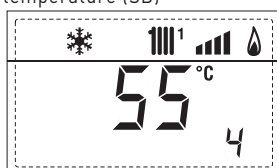
2. Heating delivery sensor temperature (SM)



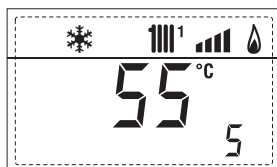
3. Not used



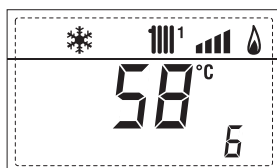
4. Auxiliary sensor or hot water tanksensor temperature (SB)



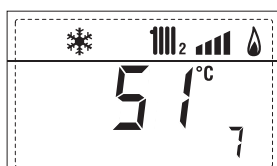
5. Smoke probe temperature (SF)



6. Heating temperature for primary circuit



7. Heating temperature for secondary circuit



8. Ionisation current in μA



9. Fan revs in rpm x 100 (e.g. 4,800 and 1,850 rpm)



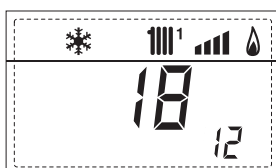
10. Burner operating hours in h x 100 (e.g. 14,000 and 10)



11. No. of times burner switched on x 1,000 (e.g. 97,000 and 500)



12. Total no. of faults



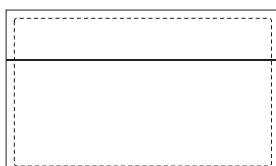
13. No. of times parameters accessed (e.g. accessed 140 times)



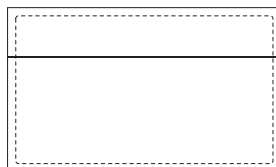
14. No. of times OEM parameters accessed (e.g. accessed 48 times)



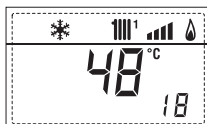
15. Not used



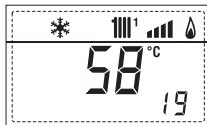
16. Not used



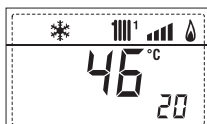
18. Heating return sensor value (SR)



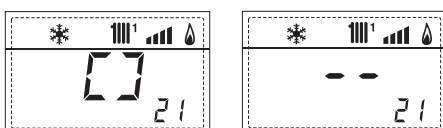
19. Cascade manifold sensor value



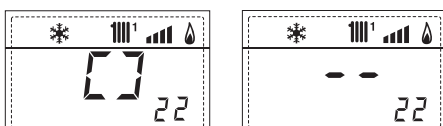
20. Mixed system delivery probe value with MIX 1 ZONE board



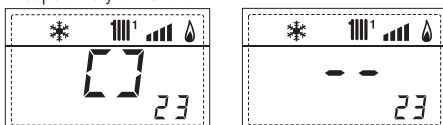
21. MIX ZONE safety thermostat, respectively ON and OFF



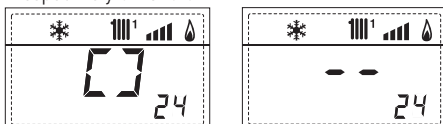
22. Pump with MIX 1 ZONE board, respectively ON and OFF



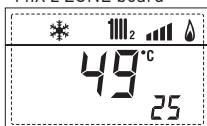
23. Valve open command with MIX 1 ZONE board, respectively ON and OFF



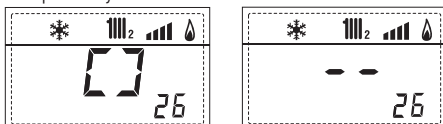
24. Valve close command with MIX 1 ZONE board, respectively ON and OFF



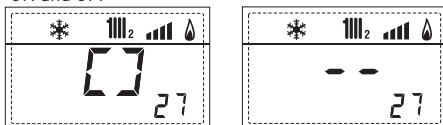
25. Mixed system delivery probe value with MIX 2 ZONE board



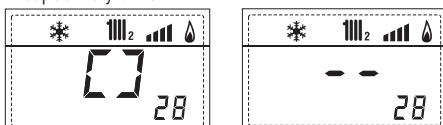
26. Safety thermostat with MIX 2 ZONE board (input S1), respectively ON and OFF



27. Pump with MIX 2 ZONE board, respectively ON and OFF



28. Valve open command with MIX 2 ZONE board, respectively ON and OFF



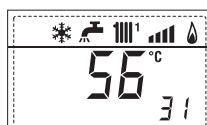
29. Valve close command with MIX 2 ZONE board, respectively ON and OFF



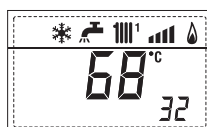
30. Solar sensor temperature with solar board



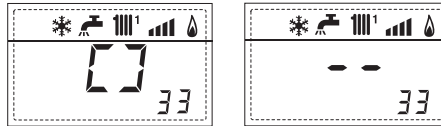
31. Solar sensor temperature with solar board



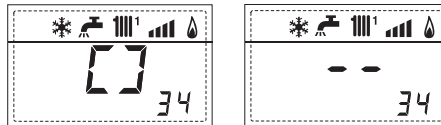
32. Solar sensor temperature with solar board



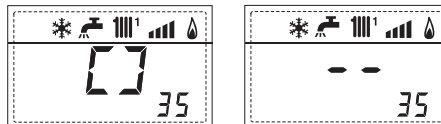
33. R1 solar relay with solar board, respectively ON and OFF



34. R2 solar relay with solar board, respectively ON and OFF



35. R3 solar relay with solar board, respectively ON and OFF



36. Solar flow switch status, respectively ON and OFF



40. Pump command % PWM



60. Last fault error code



90. Software version on RS-485 (e.g. version 01)



45. Heating temperature for third circuit



61. Second-to-last fault error code



91. Software version on EXP board (config. MIX ZONE)



92. Software version on 2nd EXP board (config. MIX ZONE)



7 MAINTENANCE

7.1 Servicing

For the appliance to operate safely, correctly and efficiently, current legislation requires that the system manager call upon the services of a professionally qualified technician to carry out regular maintenance, at least **annually** or according to the **specific legal provisions**.



CAUTION

- Only qualified persons in compliance with the instructions contained in this manual are permitted to install, commission and maintain this boiler. Suitable protective safety equipment **MUST be worn**. The installation of this boiler must be in accordance with the relevant requirements of the current Gas Safety (installation and use), the local building regulations, and I.E.E. wiring regulations.
- Make sure that the system components and pipes are not hot (risk of burning).



CAUTION

Before carrying out the interventions described below:

- set the main system switch to "OFF"
- isolate the gas cock
- avoid contact with any hot surfaces
- if components are replaced, use **ONLY** original spare parts.

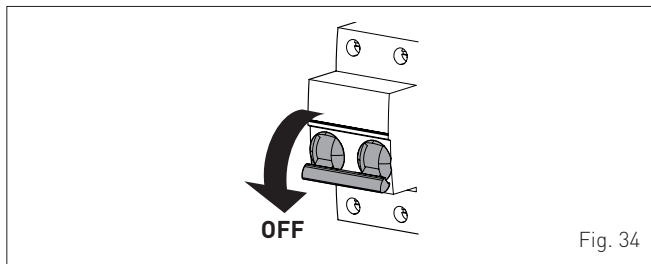


Fig. 34

7.2 External cleaning

7.2.1 Cleaning the case

When cleaning the cladding, use a cloth dampened with soap and water, or water and alcohol for stubborn marks, or with special products.

Once cleaning is completed, dry the appliance.



DO NOT

Do not use abrasive products.

7.3 Burner Inspection

7.3.1 Cleaning the burner

To clean the burner:

- disconnect the connectors for the fan, gas valve, electrodes and flame detection sensor
- carefully remove the electrode unit and the flame detection sensor
- unscrew the joint between the pieces (1) of the gas line
- undo the four fixing screws (2) and remove the fan-gas valve unit (3) from the boiler body, taking care not to damage the gasket (4)
- carefully take out the burner (5) and clean it using compressed air or a soft brush to remove any obstructions

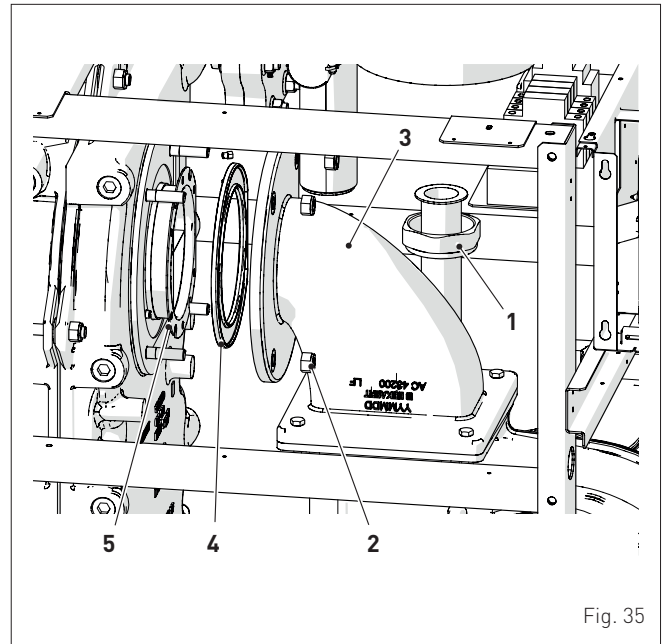


Fig. 35

After cleaning has been completed, reassemble all the components previously removed, putting in new seals where necessary. In the event of possible detached electrical connections, refer to the diagrams in this manual.

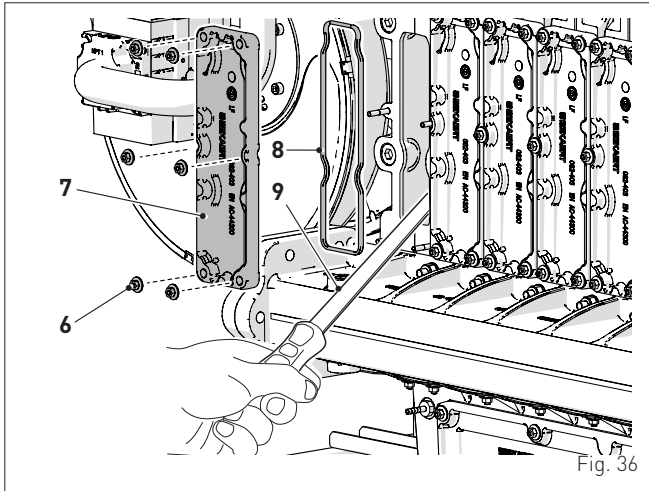


CAUTION

A test must be carried out on the gas line seal, as required by legislation.

7.3.2 Cleaning boiler body

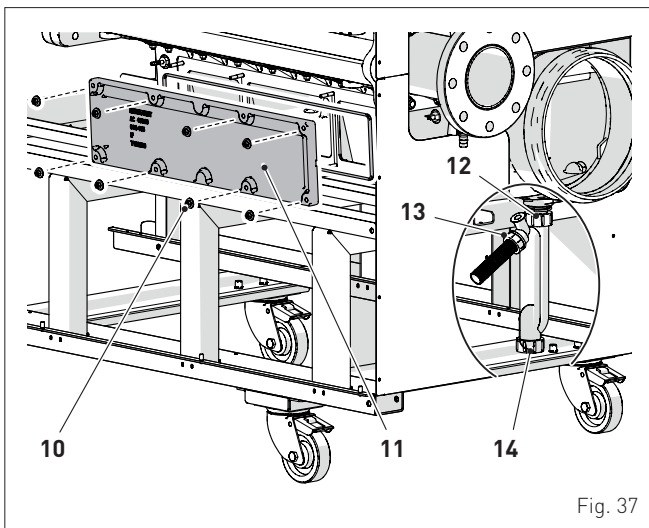
- Unscrew the nuts (6) and remove the inspection doors (7) and seals (8)
- Use a rod suitable for mechanically cleaning the boiler body ducts (e.g. Sime accessory (9) code 6077930). A chemical product can be used provided it is suitable for aluminium bodies working by condensation (e.g. Bekaert TAB 2/2000).



At the end of the cleaning operations, check the state of the seals (8) and if necessary replace them. Refit the (7) doors and retighten the nuts (6) using a 7 Nm tightening torque.

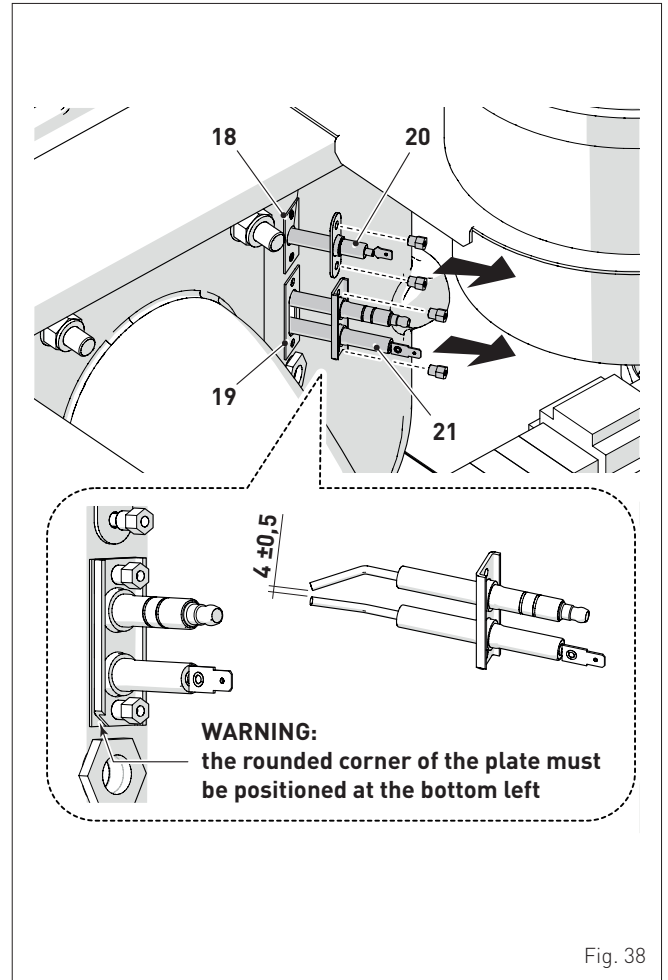
7.3.3 Dismantling and cleaning siphons and condensate collection tank

- Unscrew the nuts (10) and remove the inspection doors (11). Check and clean the condensate collection tank. When cleaning has been completed, reassemble the door, checking the seal and replacing it if necessary
- retighten the nuts (10) using a 7 Nm tightening torque
- undo the ring nuts (12) and (13) and remove the siphon, watching out for any possible leaks of condensate
- undo the ring nut (14) and thoroughly clean the internal parts of the siphon
- retighten the ferrules (12), (13) and (14) carefully.



7.3.4 Check of electrodes and flame detection sensor

It is recommended that the regulation of the ignition electrodes unit (17) and their wear, is always checked, along with that of the flame detection sensor (18). If necessary replace them, taking care that gaskets (15) and (16) are not damaged during their extraction.



NOTE: When you insert the flame detection sensor, for example following maintenance, make sure that the sensor fastener (18) is angled as shown in the figure.

7.3.5 Connecting the air pressure switch and siphon

The silicon tubes on the air pressure switches (1) and siphon (2) MUST be reconnected, where it was necessary to disconnect them, as shown in the figure:

- Outlet P1 on the air pressure switch (1) to the fan (3)
- Outlet P2 on the air pressure switch (1) and outlet P1 on the siphon pressure switch (2) to the boiler body (4).

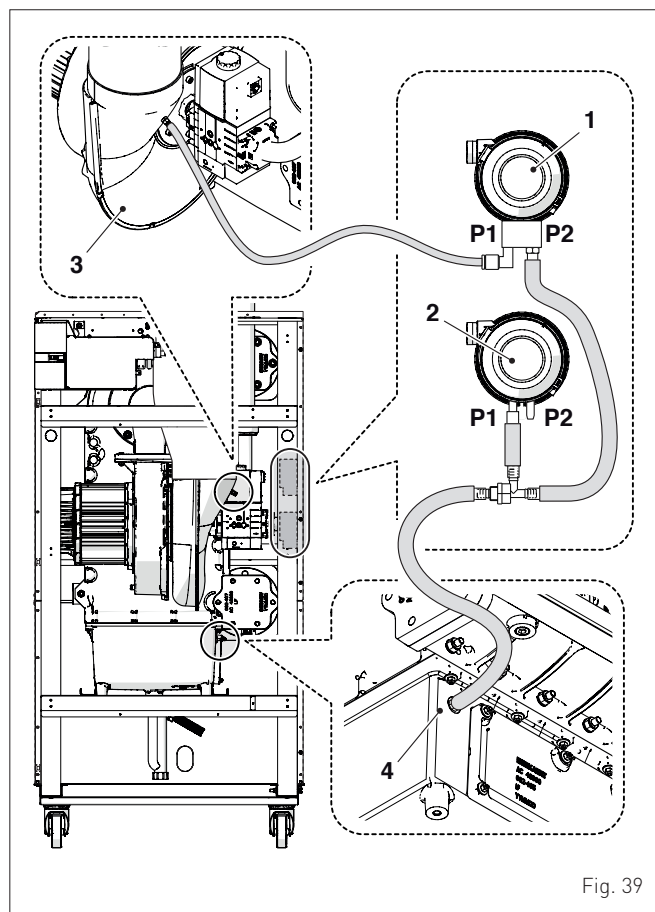


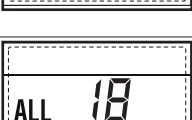
Fig. 39

NOTE: Outlet P2 on the siphon pressure switch (2) remains free.

7.5 Possible faults and solutions

LIST OF MALFUNCTION/FAULT ALARMS

Shown on display	Type of malfunction or fault	Cause	Solution
ALL 01	Air pressure switch fault	Incorrect wiring on air pressure switch Tubes from air pressure switch disconnected or damaged Air duct clogged Smoke duct clogged	- Check correct wiring and air pressure switch tubes - Check that the air duct is free of obstructions - Check that the smoke duct is free of obstructions
ALL 02 0.7 Bar	Low water pressure in system (< 0,8 bar)	System pressure is lower than 0.8 bar (78 kPa) and the boiler has stopped	- Carry out system refilling/filling until the pressure is reset at 0,8 - 5,8 bar (80 - 568 kPa) - If this error happens again, it is advisable to check that the system is sealed
ALL 03 6.0 Bar	High water pressure in system (> 5,8 bar)	System pressure is higher than 5.8 bar (568 kPa) and the boiler has stopped	- Empty the system until the pressure is reset at 0,8 - 5,8 bar (80 - 568 kPa) - Check the pressure transducer
ALL 05	Boiler delivery sensor fault	The delivery sensor (SM) is open or has short-circuited	- Check the sensor and its connections
ALL 06 RESE	No flame detection	The flame is not detected at the end of an ignition sequence	- Check the flame detection sensor and its connections - Check the electronic circuit board - Ensure correct gas supply pressure

Shown on display	Type of malfunction or fault	Cause	Solution
	Safety thermostat or siphon pressure switch triggered	The boiler stops due to activation of the safety thermostat or the siphon pressure switch. The system pump stays on for one minute	- Check whether there is little water in the system - Check the primary circulation pump - Check for possible obstruction of condensate drain - Check the electrical wiring and connections of the siphon pressure switch tubes - Once the fault is repaired, press the (reset) button to start the boiler again
	Fault in flame detection circuit	Detection of a non-real flame signal, normally before ignition phase Faulty components	- Check the detection electrode and its connections - Check the electronic circuit board
	No water circulating in primary system	Poor circulation of water in the primary water circuit is caused by the ΔT between the delivery sensor (SM) and return sensor (SR) and may occur on start-up or during operation	- Check system pressure and whether the water level in the system is low - Check the primary circulation pump - Check the delivery sensor (SM) and return sensor (SR)
	Tank/anti-freeze sensor fault	The sensor connected to the AUX terminals is open or has short-circuited	- Check settings of parameter PAR 02 - Check the sensor and its connections
	Modulator disconnected error	The gas valve is disconnected from the electrics	- Check the electrical connection to the gas valve
	Exhaust sensor (SF) intervention	The smoke detector (SF) has detected a too high temperature	- Check that the smoke duct, the flue pipe and the chimney have no obstructions - Once the fault is repaired, press the (reset) button to start the boiler again
	Smoke probe fault	The smoke detector (SF) is open or has short-circuited	- Check the sensor and its connections
	Fan fault	The fan speed is outside the pre-set range. If the anomaly activation condition continues for two minutes, the boiler carries out a forced stop for thirty minutes. At the end of the forced stop, the boiler will try to ignite again	- Check the fan rpm - Check the electronic circuit board
	Boiler delivery probe temperature above 117°C	Other safety devices were not tripped earlier to limit the temperature of the boiler body	- Check that the delivery probe, safety thermostat and smoke probe are working correctly
	External sensor fault (flashing warning)	The external sensor (SE) has short-circuited. The boiler continues normal operation	- Check the sensor and its connections
	Mix 1 zone safety thermostat triggered	The Mix 1 system's delivery probe is faulty The mixer valve has failed The board has failed	- Check the delivery probe - Check the mixer valve - Check operation of the board - Check the electrical connections of all components
	Mix 1 Zone valve delivery probe fault	The Mix system's delivery probe is open or has short-circuited	- Check the sensor and its board connections - Check operation of the board
	Mix 2 zone safety thermostat triggered	The Mix 2 system's delivery probe is faulty The mixer valve has failed The board has failed	- Check the delivery probe - Check the mixer valve - Check operation of the board - Check the electrical connections of all components
	Mix 2 Zone valve delivery probe fault	The Mix system's delivery probe is open or has short-circuited	- Check the sensor and its board connections - Check operation of the board
	S1 solar delivery probe fault	The solar system's delivery probe is open or has short-circuited	- Check the sensor and its board connections - Check operation of the board

Shown on display	Type of malfunction or fault	Cause	Solution
ALL 25	S2 solar exchanger probe fault (tank)	The probe on the solar exchanger is open or has short-circuited	- Check the sensor and its board connections - Check operation of the board
ALL 26	S3 2nd solar system delivery probe fault	The delivery probe on the 2nd system, where applicable, is open or has short-circuited	- Check the sensor and its board connections - Check operation of the board
ALL 27	Solar application coherence fault – hydraulic configuration	Incorrect wiring on the solar board probes for the type of installation selected	- Check the wiring and the selected configuration
ALL 29	Number of expansion boards connected fault	Parameters not set correctly	- Check PAR 40
ALL 30	Return sensor fault	The return sensor (SR) is open or has short-circuited. The boiler continues normal operation	- Check the sensor and its connections
ALL 31	Cascade delivery probe (SMC) fault (shown on slave no. 1 only)	The cascade delivery probe (SMC) is open or has short-circuited, or is not connected to the slave 1 boiler	- Check the probe and its connections to the slave 1 boiler
ALL 35	Communication fault RS485 board	The RS485 board is faulty Electrical connections incorrect or interrupted	- Check operation of RS485 board - Check the electrical connections
ALL 36	Number of boilers connected in cascade fault	Number of cascading boilers does not correspond to setting for PAR A1 (CASCADE)	- Check the setting for PAR A1 (CASCADE) against the number of boilers in the cascade
ALL 45	Manual release performed more than 6 consecutive times in the last hour	A alarm repeats continuously and has been reset more than 6 consecutive times in the last hour.	- Check what the recurring alarm refers to and find the solution. Then turn the boiler off and on again, then reset the alarm.
ALL 70	Cascade delivery probe (SMC) fault (shown on master only)	The cascade delivery probe (SMC) is open or has short-circuited or is not connected to the slave 1 boiler	- The cascade delivery probe (SMC) is open or has short-circuited, or is not connected to the slave 1 boiler
ALL 71	General fault with a boiler in the cascade (shown on master only)	There is a fault on one of the slave boilers	- Resolve the problem according to the alarm on the display of the slave boiler showing a fault
ALL 72	Delivery probe (SMC) disconnected error	The boiler delivery probe is disconnected and/or damaged	- Check the wiring and replace the probe if necessary
ALL 80	Gas valve control circuit hardware fault	Circuit board components damaged	- Replace the board
ALL 89	Gas valve control circuit hardware fault	Circuit board components damaged	- Replace the board
ALL 98	Maximum number of software errors reached	The software does not work properly	- Replace the board
ALL 99	Generic board software error	The software does not work properly	- Replace the board

CASCADING SYSTEMS

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8 CASCADING SYSTEMS

8.1 Cascade characteristics

Each boiler connected in a cascade must be identified with a specific address that can be set under the relevant parameter (PAR 15), which determines how it behaves.



WARNINGS

For the cascade to function correctly, the external sensor (SE) must be installed.

8.2 Characteristics of cascading boilers

Master boiler

The **master** boiler is the only boiler to which the TAs and the room control units must be connected, as well as all of the system components such as pumps, zone valves and external sensors. It is the only one that communicates with the other slave boilers in the cascade.

The heat requests are then sent to the master boiler and managed according to an algorithm that controls the cascade by turning the slave boilers on and off, and activating the pumps and necessary valves, etc.

As well as controlling the specific boiler parameters, it also controls the main cascade parameters.

Slave boiler no. 1

Slave boiler no. 1 acts as the main slave boiler in the cascade. The cascade delivery probe (SMC) **MUST** be connected to connector CN4 on the electronic board. The temperature value detected by the SMC probe is read cyclically and used by the algorithm to manage the cascade in heating mode.

Slave boiler no.s ... (from no. 2 to no. 7)

All slave boilers contribute to producing the heat needed to serve the connected systems, and each slave boiler receives an on/off command from the master boiler only.

The function (user) buttons on all of the slave boilers are disabled, with the exception of the RESET button which is used **ONLY** in cases where the boiler locks out.. The installer buttons remain enabled to ensure that the appliance is configured correctly.

Producing domestic hot water

Domestic hot water is produced when a storage tank is installed in the system which can be managed as a "direct system" or assigned to any boiler in the cascade, whether master or slave. The necessary parameters must clearly be set for managing the probe, tank pump, anti-legionella and any priority or simultaneous operation (PAR 2).



WARNINGS

When boilers are connected in a cascade, they communicate **ONLY** with the master boiler, treating the cascade as a single heat generator where:

Cascade output = Boiler output x no. of boilers installed

8.3 Approximate clearance measurements

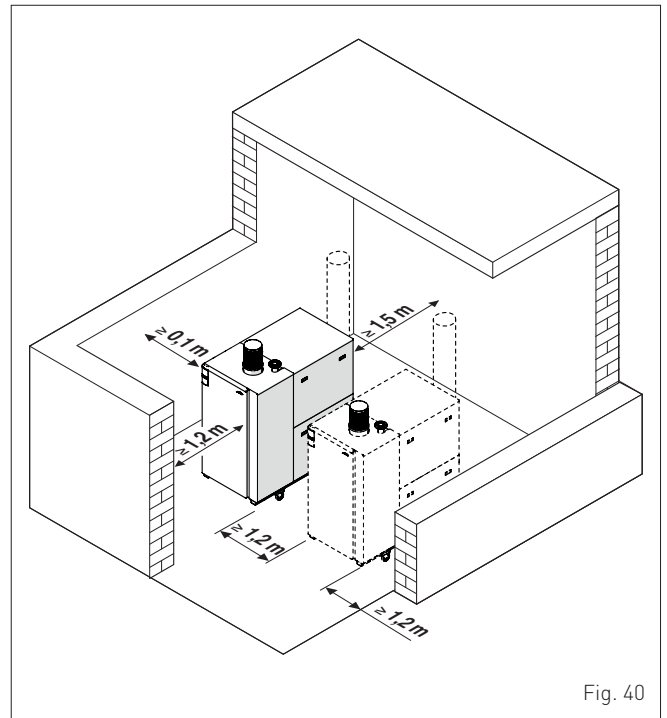


Fig. 40



CAUTION

Observe the required clearances.

8.4 Main primary circuit

Sime ALU PLUS HE boilers can be connected in a cascade without additional components as they are equipped with the specific cascade board as standard. The cascade can be made up of between two and eight boilers of the same model (e.g. three ALU PLUS HE 360).



DO NOT

The cascade CANNOT be composed of different boiler models (e.g. two ALU PLUS HE 360 and one ALU PLUS HE 720).

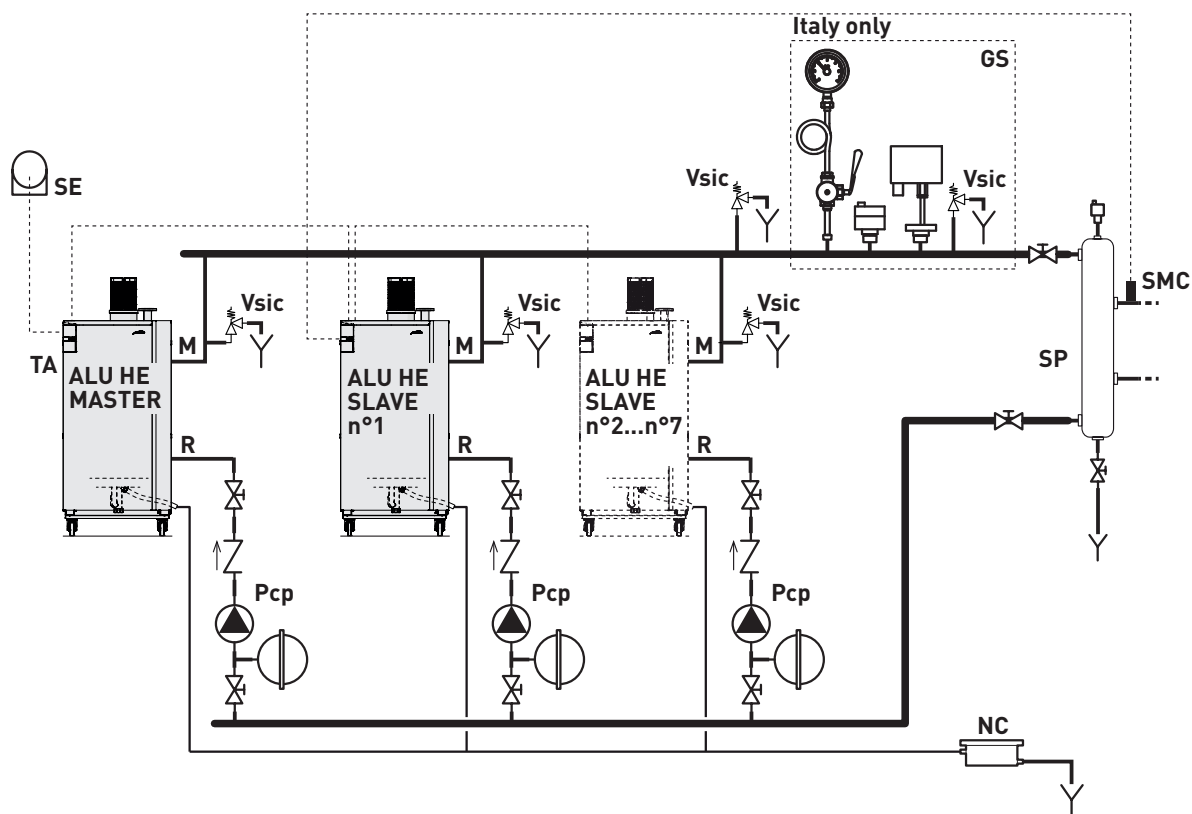


Fig. 41

KEY:

TA Room thermostat for boiler activation
M Boiler delivery
R Boiler return
GS INAIL safety unit (Italy only)
Vsic Relief valve

SP Hydraulic separator
MCP Primary circuit pump
NC Condensate neutraliser
SE External sensor (Obligatory)
SMC Cascade delivery probe



CAUTION

The system designer is responsible for choosing and sizing up the system components and MUST follow the best practice technical guidelines, as well as complying with the local and national legislation in force in the destination country.

8.5 Technical features

DESCRIPTION	ALU PLUS HE			
	360	720	1100	
CERTIFICATIONS				
Country of intended installation	AT - BE - CH - CY - CZ - DK - EE - ES - FI - FR - GB - GR - HU IE - IT - LT - LV - NL - NO - PT - RO - SE - SI - SK			
Fuel	G20			
PIN number	1312CS6203			
Category	I2H	AT - CH - CY - CZ - DK - EE - ES - FI - FR - GB - GR - HU IE - IT - LT - LV - NL - NO - PT - RO - SE - SI - SK		
Category	12E(S)	BE		
Appliance classification	B23P			
Class NO _x (*)	6 (< 56 mg/kWh)			
HEATING PERFORMANCE				
HEAT INPUT (**)				
Nominal flow (Q _n max)	(***) kW	360	720	1000
Minimum flow (Q _{nw} min)	kW	80	150	200
HEAT OUTPUT				
Nominal (80-60°C) (P _n max)	(***) kW	353	705	980
Nominal (50-30°C) (P _n max)	(***) kW	378	756	1053
Minimum G20 (80-60°C) (P _n min)	kW	78,4	147,3	196,4
Minimum G20 (50-30°C) (P _n min)	kW	84,5	158	211
EFFICIENCY				
Max useful efficiency (80-60°C)	%	98,1	97,9	98,0
Min useful efficiency (80-60°C)	%	98,0	98,2	98,2
Max useful efficiency (50-30°C)	%	105,0	105,0	105,3
Min useful efficiency (50-30°C)	%	105,6	105,3	105,5
Useful efficiency at 30% of load (40-30°C)	%	108,1	108,3	108,2
Losses after shutdown at 50°C	W	427	791	1054
ELECTRICAL SPECIFICATIONS				
Power supply voltage	V	230	400 ~ 3N	400 ~ 3N
Frequency	Hz	50	50	50
Absorbed electrical power (Q _n max)	(***) W	532	1965	2134
Absorbed electrical power at (Q _n min)	(***) W	177	611	661
Absorbed electrical power in stand-by	(***) W	10	15	15
Electrical protection degree	IP	X0D		
COMBUSTION DATA				
Smoke temperature at Max/Min flow (80-60°C)	°C	68,1 / 55,3	70,1 / 58,0	74,6 / 63,2
Smoke temperature at Max/Min flow (50-30°C)	°C	53,1 / 30,7	50,1 / 29,7	57,6 / 34,5
Smoke flow Max/Min	(***) g/s	166 / 39	332 / 73	457 / 97
CO ₂ at Max/Min flow rate (G20)	%	9,5 / 9,0	9,5 / 9,0	9,6 / 9,0
NO _x measured	mg/kWh	44	43	38
NOZZLES - GAS				
Number of nozzles	No.	-	-	-
Nozzle diameter (G20)	mm	-	-	-
Gas consumption at Max/Min flow rate (G20)	(***) m³/h	38,08 / 8,46	76,16 / 15,87	105,78 / 21,16
Gas supply pressure (G20)	mbar	20	20	20
	kPa	2	2	2
TEMPERATURE - PRESSURE				
Max operating temperature (T max)	°C	85		
Heating adjustment range	°C	20 - 80		
Domestic hot water adjustment range	°C	-		
Min./max. operating pressure (PMS)	bar	0,8 / 6		
	kPa	80 / 600		
Water content in boiler	(***) l	44	68	91
Loss of load water side ΔT nom (20°C)	mbar	160	160	160
Max. ΔT at min./max. power	°C	25	25	25
Water flow rate ΔT 20°C (nominal)	m³/h	15	31	43
Water flow rate ΔT 10°C	m³/h	30	62	86
Total residual head (outlet + inlet)	Pa	200	300	250

(*) NO_x class according to UNI EN 15502-1:2015

(**) Heat input calculated using the lower heat output (Hi)

(***) Multiply the value by the number of boilers that make up the cascade installation

G20 Hi. 9,45 kW/m³ (15°C, 1013 mbar)

8.6 Smoke outlet and combustion air inlet

The smoke outlet **MUST** be sized by an expert and installed by an installer who **MUST** use approved materials, suited to the type of appliances, and follow the best practice technical guidelines and comply with the national and local legislation in force



CAUTION

- Smoke outlets that are inadequate or the wrong size can have a negative impact on the combustion parameters and amplify the combustion noise.
- The smoke outlet on each boiler in the cascade should be connected to an exhaust flue. When necessary, use motorised valves (SCR), (see "Optional accessories").

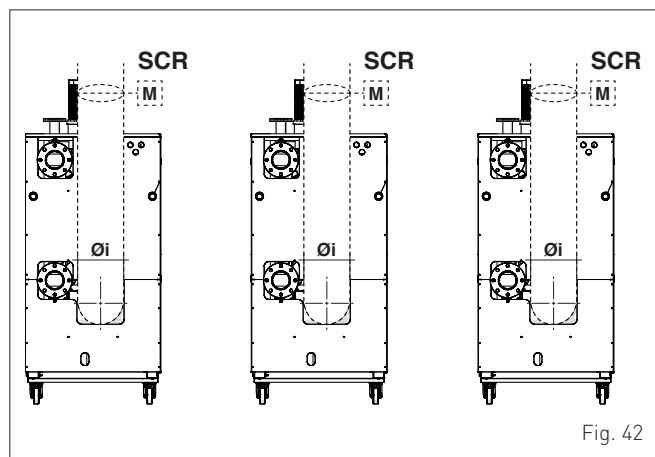


Fig. 42

Smoke outlet connections

DESCRIPTION		ALU PLUS HE		
		360	720	1100
Øi (internal diameter)	mm	250		

8.7 Gas line

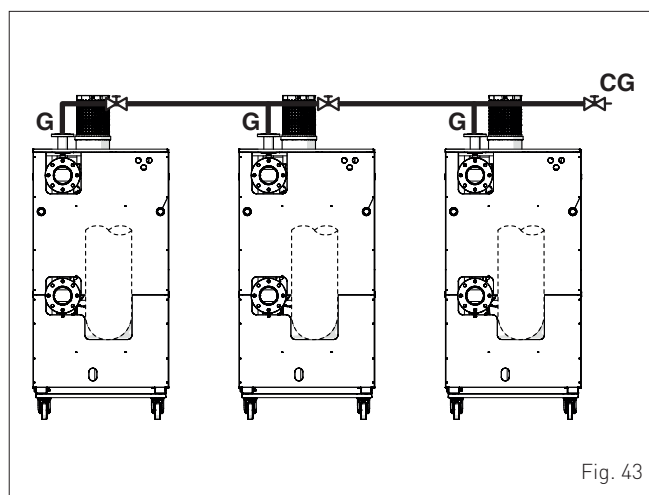


Fig. 43

The gas supply line manifold (CG) must be sized by an expert, and implemented during installation according to the line pressure and the heat input of the appliances that make up the cascade.

8.8 Evacuating condensate

To evacuate the condensate, create a manifold with all of the ducts, appliances and smoke outlet and put a neutralising device in place, such as one of the models that can be supplied separately on request.

8.9 Electrical connections for the cascade

The electrical connections between the **Sime ALU PLUS HE** boilers which make up the cascade are shown in the following diagram, and the wiring diagrams for the individual appliances are shown on the next few pages.



WARNINGS

Sime declines all responsible for any injury or damage to persons, animals, or property as a result of failure to provide adequate earthing of the appliance.



WARNINGS

- The external temperature sensor “SE” is **OBLIGATORY** and **MUST** be connected to the master boiler.
- The cascade delivery probe “SMC” **MUST** be connected to slave boiler no. 1.

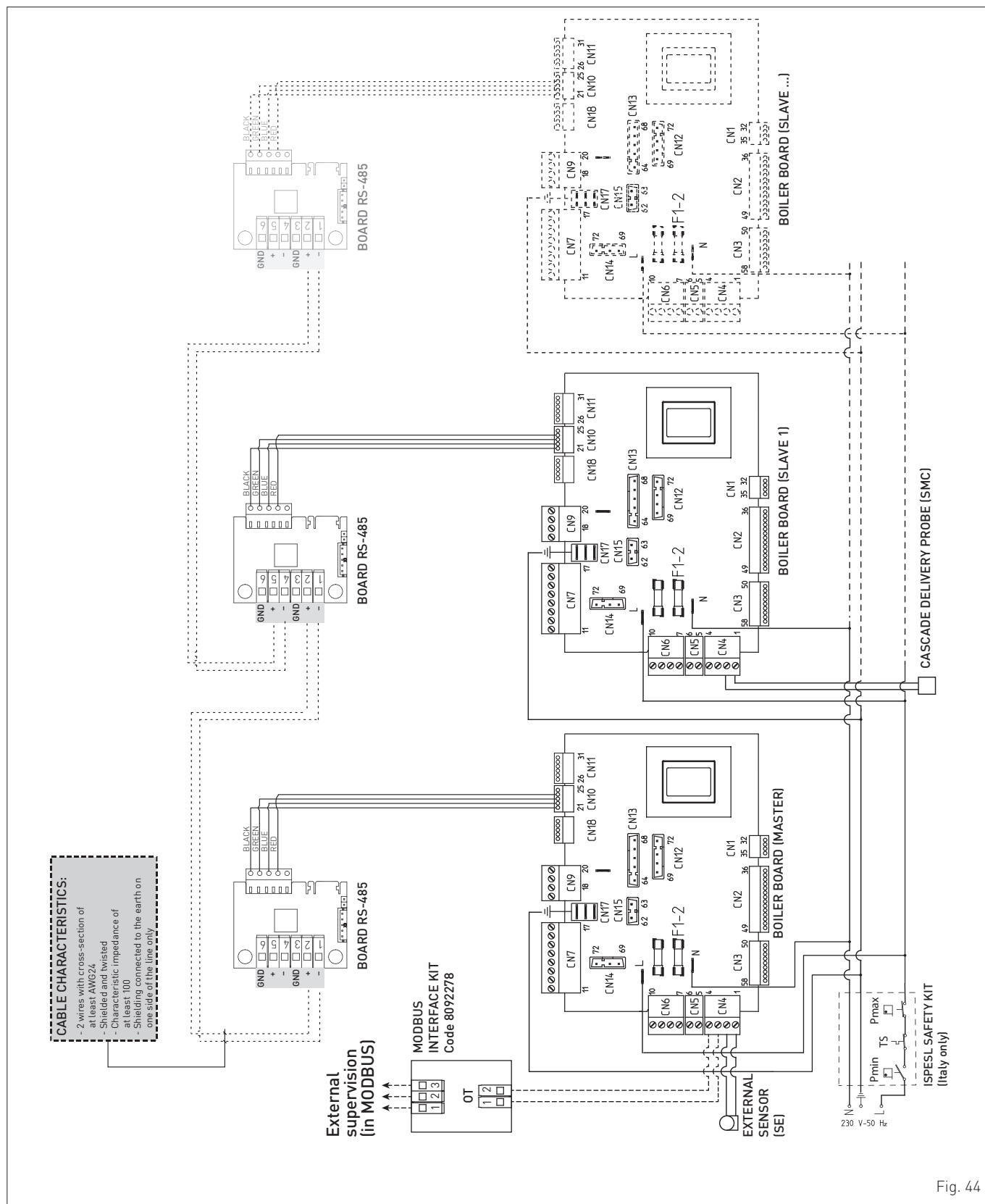
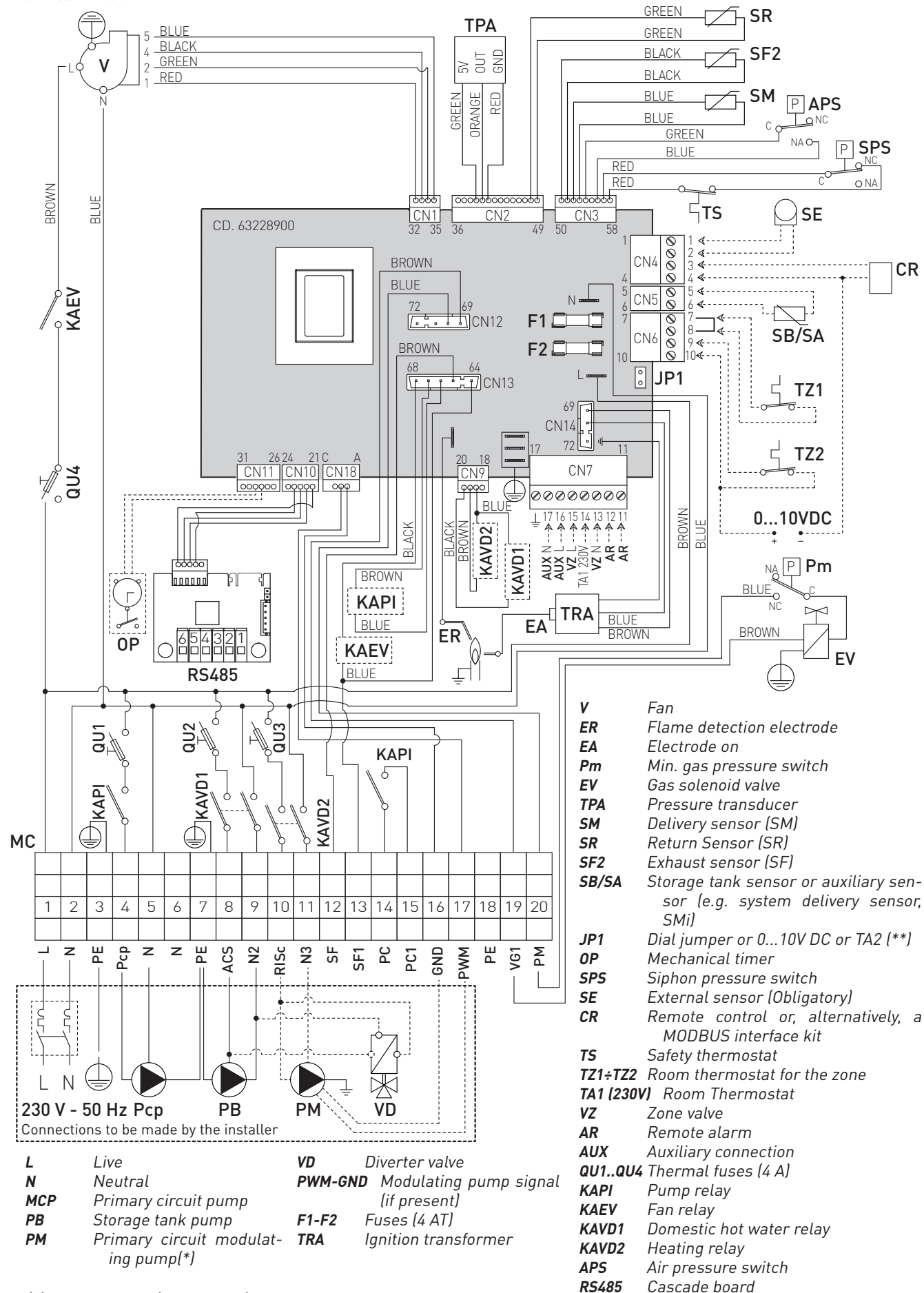


Fig. 44

8.10 Master boiler wiring diagram

ALU PLUS HE 360



(*) The **PM** pump (modulating) can be installed instead of the **Pcp** pump

(**) JP1 engaged = TZ2 usable; 0 ... 10V DC not usable; JP1 disengaged = TZ2 not usable; 0 ... 10V DC usable

Fig. 45

ALU PLUS HE 720 - ALU PLUS HE 1100

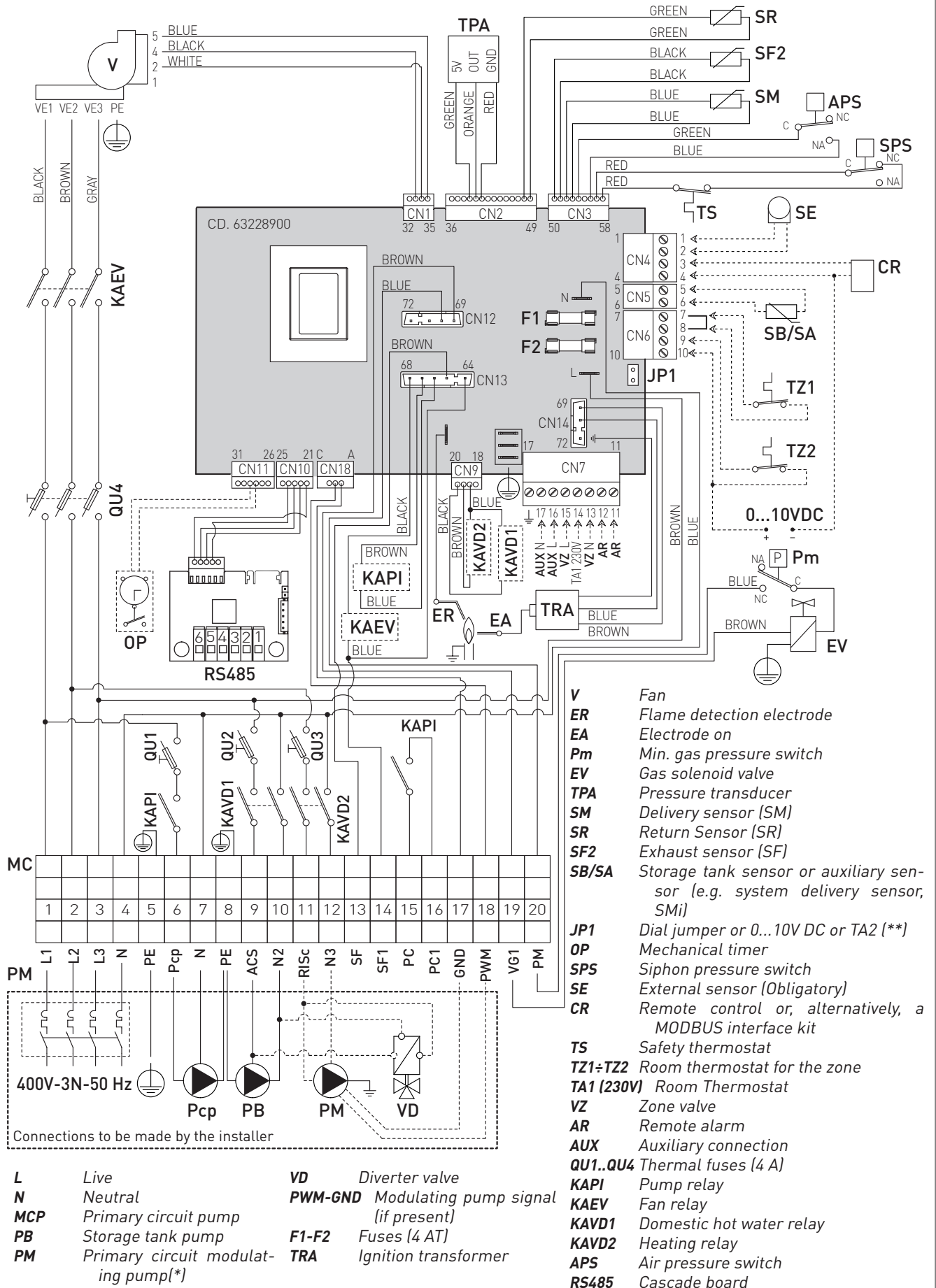
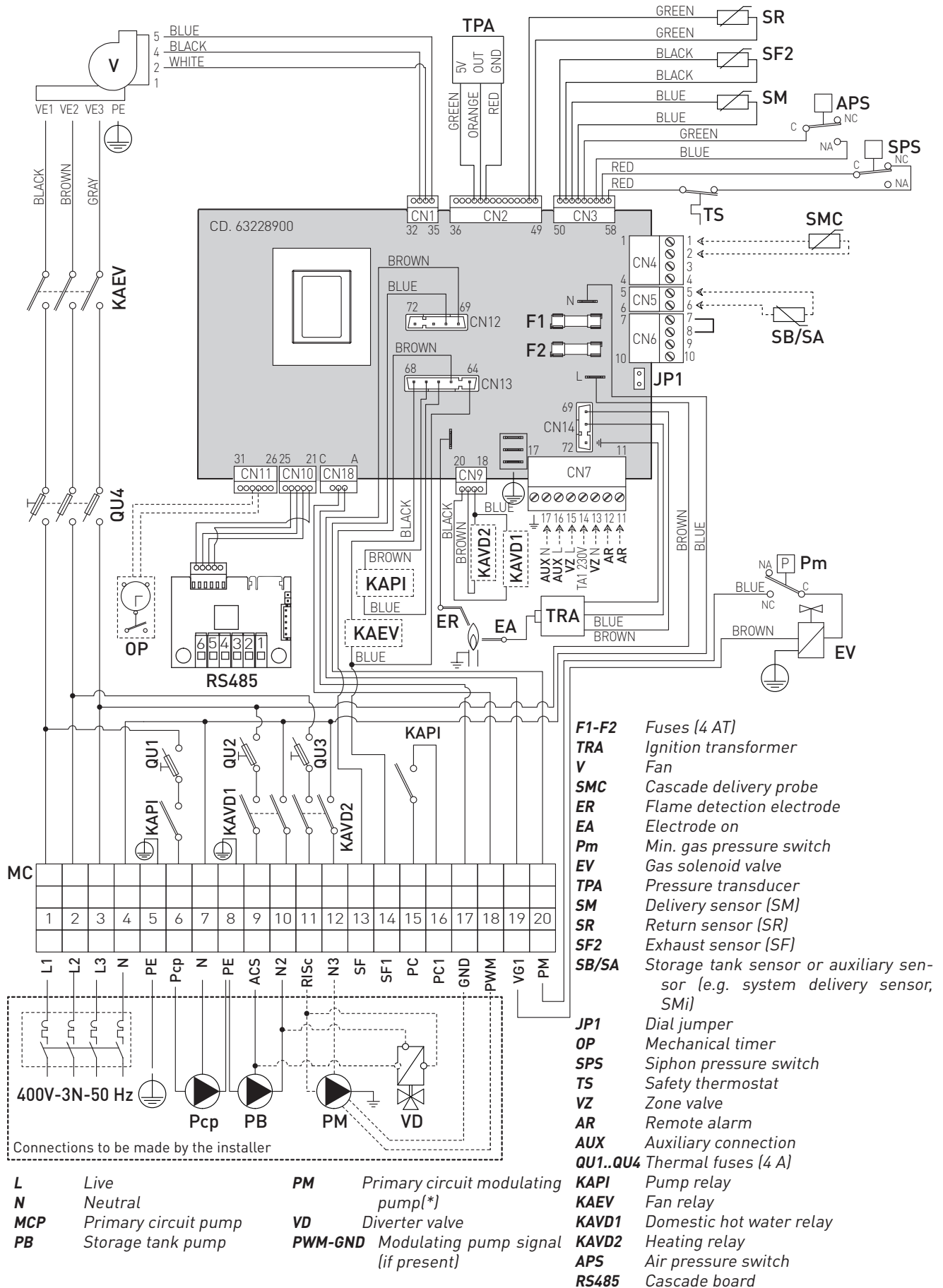


Fig. 46

ALU PLUS HE 720 - ALU PLUS HE 1100

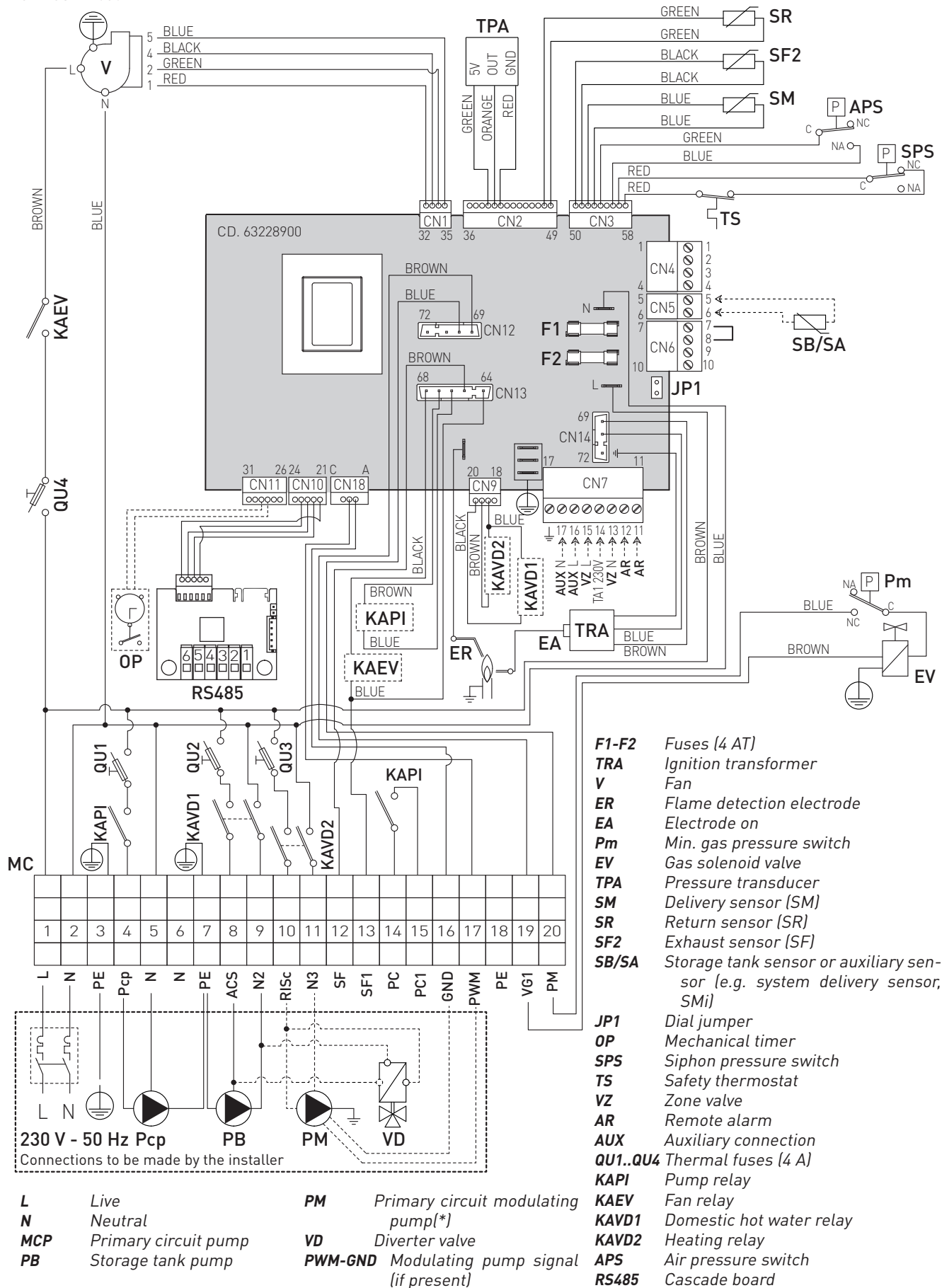


(*) The **PM** pump (modulating) can be installed instead of the **Pcp** pump

Fig. 48

8.12 Wiring diagram for slave 2-7 boilers

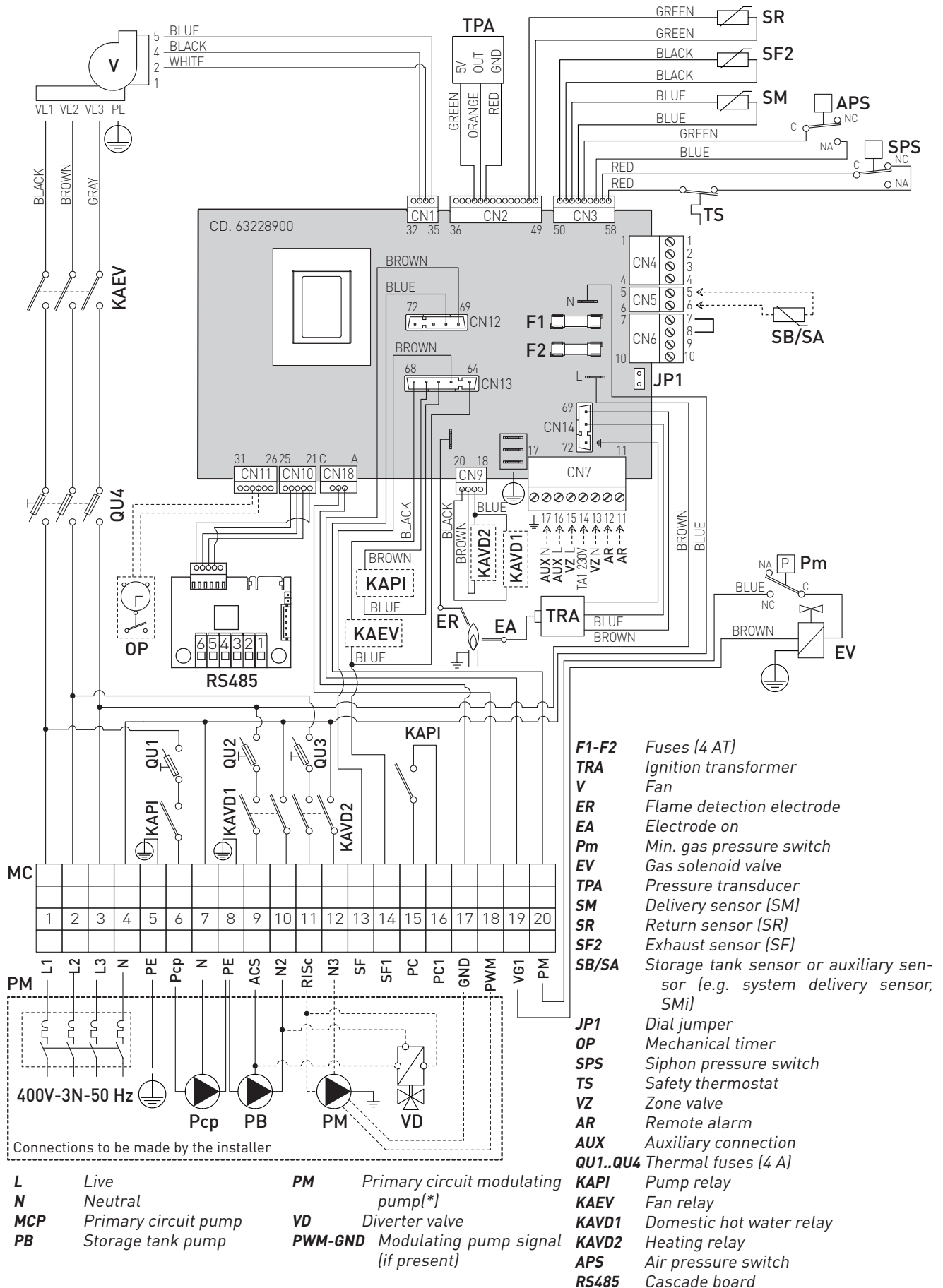
ALU PLUS HE 360



(*) The **PM** pump (modulating) can be installed instead of the **Pcp** pump

Fig. 49

ALU PLUS HE 720 - ALU PLUS HE 1100



(*) The **PM** pump (modulating) can be installed instead of the **Pcp** pump

Fig. 50

8.13 Displaying and setting cascade parameters

The parameters for **Sime ALU PLUS HE** boilers in a cascade can be displayed and set in the same way as with single boilers (see “**Parameter setting and display**” and “**List of parameters**”).



WARNINGS

For the cascade to function correctly, the external sensor (SE) must be installed.

8.13.1 Routing the cascading boilers



CAUTION

Before changing “PAR 15” (routing the cascade), the boilers in the cascade must be set to WINTER mode .

On each boiler in the cascade, “PAR 15” must be set as follows:

- “0” to identify the master boiler
- “1” to identify slave boiler no. 1
- “2” to identify slave boiler no. 2
- “3” to identify slave boiler no. 3
- “4” to identify slave boiler no. 4
- “5” to identify slave boiler no. 5
- “6” to identify slave boiler no. 6
- “7” to identify slave boiler no. 7

NOTE: Avoid labelling the slave boilers with the same number.

8.13.2 CASCADE parameters for the master boiler

After setting PAR 15 on the master boiler, and where there are more than two boilers in the cascade, access the CASCADE parameters on the master boiler (identified by PAR A plus a number as shown in the table) and configure parameter PAR A1.

To access the CASCADE parameters:

- press buttons  and  (~ 2s) at the same time until the parameter menu shows
- press buttons  and  (~ 2s) at the same time again until “--” appears on the display
- to access the CASCADE parameters, enter the following combinations of keys:     .
- to scroll through the parameters press buttons  and .
- to change the parameter settings, press buttons  and .
- to exit the menu and go back to the first screen, press one of the function buttons, excluding RESET, or wait approx. 60 seconds without pressing any buttons.

Type	No.	Description	Range	U/M	Step	Default
PAR	A0	Choosing the cascade strategy	0 = fixed set 1 = dynamic set		-	0
PAR	A1	Number of boilers installed	0.....8		1	2
PAR	A2	Reset operating hours of boiler in cascade	-- / 1		-	--
PAR	A3	Next boiler ignition threshold	45-90	%	1	70
PAR	A4	Last ignited boiler shutdown threshold	10-40	%	1	30
PAR	A5	Timeout for reaching the ignition threshold (time for PAR A3 check)	10-240	Sec	1	120
PAR	A6	Timeout for reaching the shutdown threshold (time for PAR A4 check)	10-240	Sec	1	180
PAR	A7	Offset for setpoint required from boilers for heating request (only for PAR A0 = 0 – fixed set)	0.....10	°C	-	0

8.14 Fault / malfunction codes

Every boiler in the cascade manages its own faults as described in “**Fault / malfunction codes**”.

The faults that generate a lockout in a specific boiler are reset by pressing the RESET button on the relevant boiler.

A lockout in the master boiler is reset either by pressing the RESET button or from a remote device.

For the master and slave no. 1 boilers, specific faults can be checked for as shown in the table:

Type	No.	Description
ALL	31	Cascade delivery probe (SMC) fault
ALL	35	Communication fault with RS485 boards
ALL	36	Number of boilers connected in cascade fault
ALL	70	Cascade stop general fault
ALL	71	General fault with a boiler in the cascade

Benchmark Commissioning & Warranty Validation Service Record

It is a requirement that the boiler is installed and commissioned to the manufacturers' instructions and the data fields on the commissioning checklist completed in full.

To instigate the boiler warranty the boiler needs to be registered with the manufacturer within one month of the installation. The warranty rests with the end-user (consumer), and they should be made aware it is ultimately their responsibility to register with the manufacturer, within the allotted time period.

It is essential that the boiler is serviced in line with the manufacturers' recommendations, at least annually. This must be carried out by a competent Gas Safe registered engineer. The service details should be recorded on the Benchmark Service and Interim Boiler Work Record and left with the householder. Failure to comply with the manufacturers' servicing instructions and requirements will invalidate the warranty.



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This Commissioning Checklist is to be completed in full by the competent person who commissioned the boiler as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission according to the manufacturers' instructions and complete this Benchmark Commissioning Checklist will invalidate the warranty. This does not affect the customer's statutory rights.

* All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

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GAS BOILER SYSTEM COMMISSIONING CHECKLIST & WARRANTY VALIDATION RECORD

Address:															
Boiler make and model:															
Boiler serial number:															
Commissioned by (PRINT NAME):					Gas Safe registration number:										
Company name:					Telephone number:										
Company email:					Company address:										
								Commissioning date:							
Heating and hot water system complies with the appropriate Building Regulations? Yes															
Optional: Building Regulations Notification Number (if applicable):															
Time, temperature control and boiler interlock provided for central heating and hot water Yes															
Boiler Plus requirements (tick the appropriate box(s))															
Boiler Plus option chosen for combination boiler in ENGLAND					Weather compensation		Smart thermostat with automisation and optimisation								
					Load compensation		Flue Gas Heat Recovery								
Time and temperature control to hot water		Cylinder thermostat and programmer/timer					Combination boiler								
Zone valves		pre-existing		Fitted		Not required									
Thermostatic radiator valves		pre-existing		Fitted		Not required									
Automatic bypass to system		pre-existing		Fitted		Not required									
Underfloor heating		pre-existing		Fitted		Not required									
Water quality															
The system has been flushed, cleaned and a suitable inhibitor applied upon final fill, in accordance with BS7593 and boiler manufacturers' instructions								Yes							
What system cleaner was used?					Brand:			Product:							
What inhibitor was used?					Brand:			Product:							
Primary water system filter		pre-existing		Fitted		Not required									
CENTRAL HEATING MODE measure and record (as appropriate)															
Gas rate (for combination boilers complete DHW mode gas rate)				m ³ /hr		or		ft ³ /hr							
Central heating output left at factory settings?				Yes				No							
If no, what is the maximum central heating output selected?				kW											
Dynamic gas inlet pressure				mbar											
Central heating flow temperature				°C											
Central heating return temperature				°C											
System correctly balanced/rebalanced?				Yes											
COMBINATION BOILERS ONLY															
Is the installation in a hard water area (above 200ppm)?				Yes				No							
Water scale reducer/softener		pre-existing		Fitted		Not required									
What type of scale reducer/softener has been fitted?				Brand:			Product:								
Water meter fitted?				Yes				No							
If yes- DHW expansion vessel		pre-existing		Fitted		Not required									
Pressure reducing valve		pre-existing		Fitted		Not required									
DOMESTIC HOT WATER MODE Measure and record															
Gas rate				m ³ /hr		or		ft ³ /hr							
Dynamic gas inlet pressure at maximum rate				mbar											
Cold water inlet temperature				°C											
Hot water has been checked at all outlets				Yes		Temperature		°C							
CONDENSATE DISPOSAL															
The condensate drain has been installed in accordance with the manufacturers' instructions and/or BS5546/BS6798								Yes							
Point of termination				Internal		External (only where internal termination impractical)									
Method of disposal				Gravity		Pumped									
ALL INSTALLATIONS															
Record the following		At max rate:		CO		ppm		CO ₂		%		CO/CO ₂		Ratio	
		At min rate (where possible)		CO		ppm		CO ₂		%		CO/CO ₂		Ratio	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?												Yes			
The operation of the boiler and system controls have been demonstrated to and understood by the customer												Yes			
The manufacturers' literature, including Benchmark Checklist and Service Record, has been explained and left with the customer												Yes			
Commissioning Engineer's signature															
Customer's signature (To confirm satisfactory demonstration and receipt of manufacturers' literature)															

* All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

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SERVICE & INTERIM BOILER WORK RECORD

It is recommended that your boiler and heating system are regularly serviced and maintained, in line with manufacturers' instructions, and that the appropriate service / interim work record is completed.

Service provider

When completing a service record (as below), please ensure you have carried out the service as described in the manufacturers' instructions. Always use the manufacturers' specified spare parts.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

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SERVICE & INTERIM BOILER WORK RECORD

It is recommended that your boiler and heating system are regularly serviced and maintained, in line with manufacturers' instructions, and that the appropriate service / interim work record is completed.

Service provider

When completing a service record (as below), please ensure you have carried out the service as described in the manufacturers' instructions. Always use the manufacturers specified spare parts.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

SERVICE/INTERIM WORK ON BOILER delete as appropriate					Date:	
Engineer name:			Company name:			
Telephone N°:			Gas Safe registration N°:			
Max rate	CO	ppm	CO ₂	%	CO/CO ₂	
Min rate	CO	ppm	CO ₂	%	CO/CO ₂	
Where possible, has a flue integrity check been undertaken in accordance with manufacturers' instructions, and readings are correct?"					yes	
Gas rate:		m ³ /h	OR	ft ³ /h		
Were parts fitted? delete as appropriate			Yes	No		
Parts fitted:						
System inhibitor concentration has been checked and appropriate action taken, in accordance with BS 7593 and boiler manufacturers' instructions. *					yes	n/a
Comments:						
Signature:						

*A System inhibitor efficacy test is required on every annual service in accordance with the manufacturers' instructions and BS 7593. It is only acceptable to not have undertaken this if the service engineers attendance visit was in between annual services to attend a non-water facing component.

* All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer.

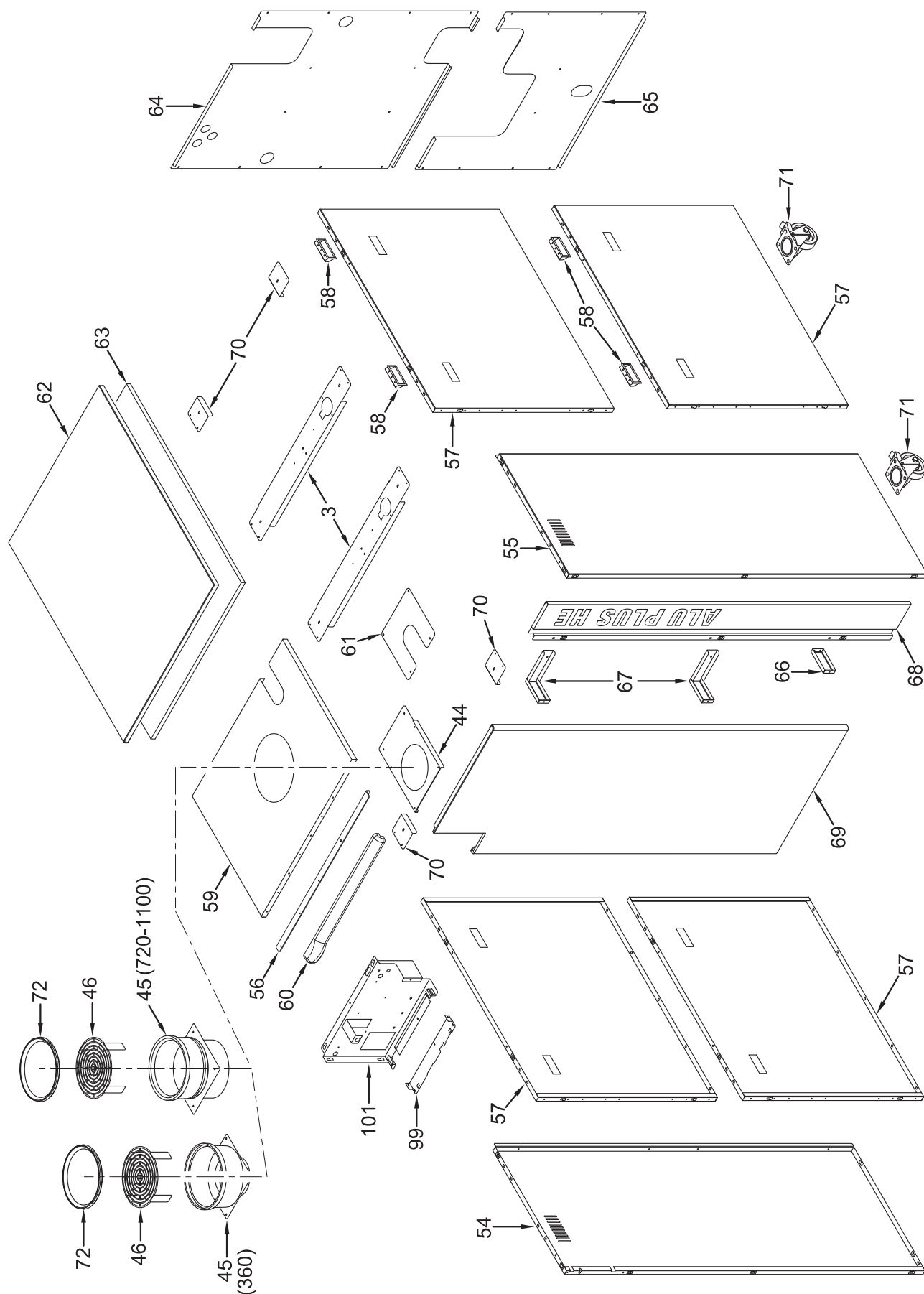
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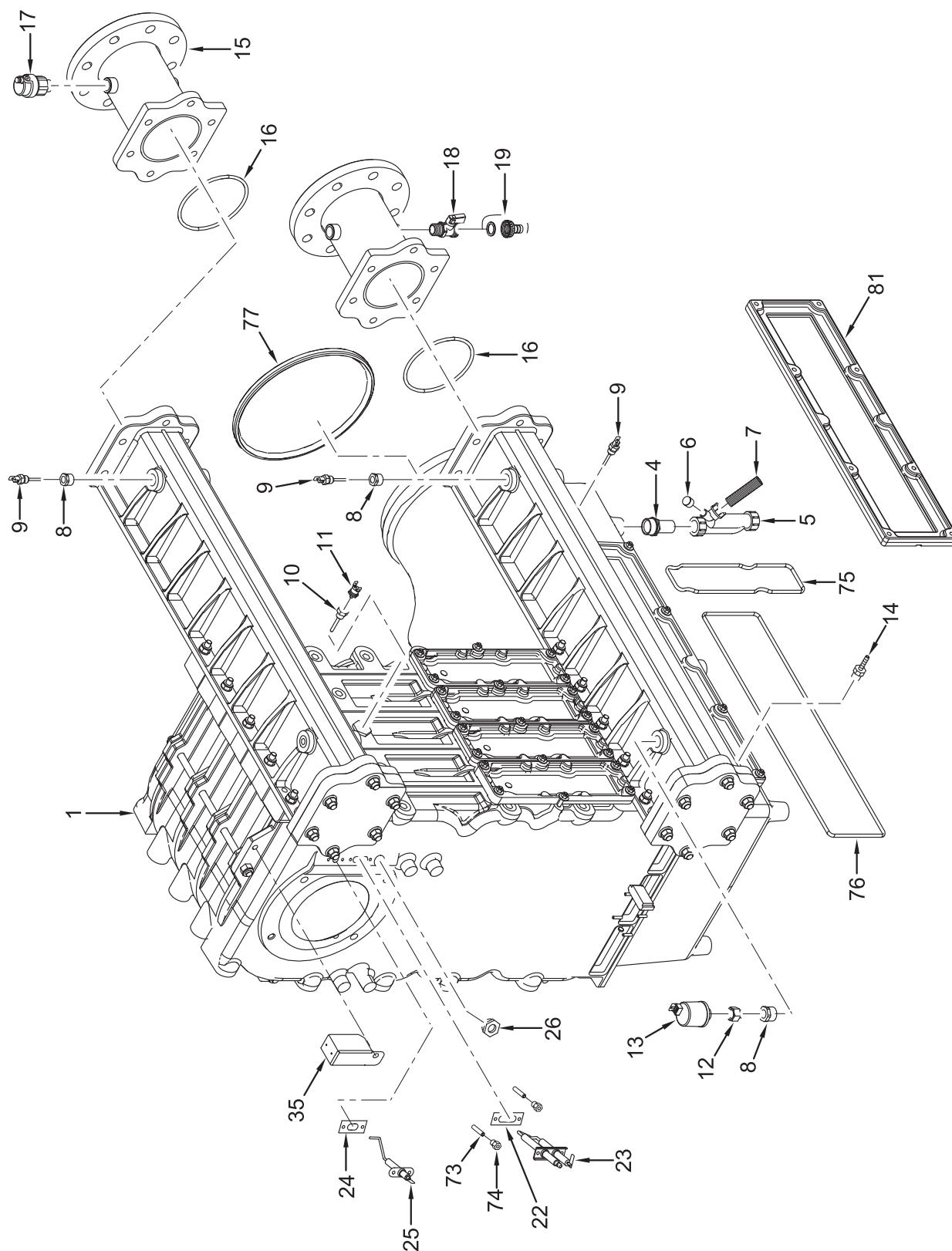
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9 EXPLODED VIEWS

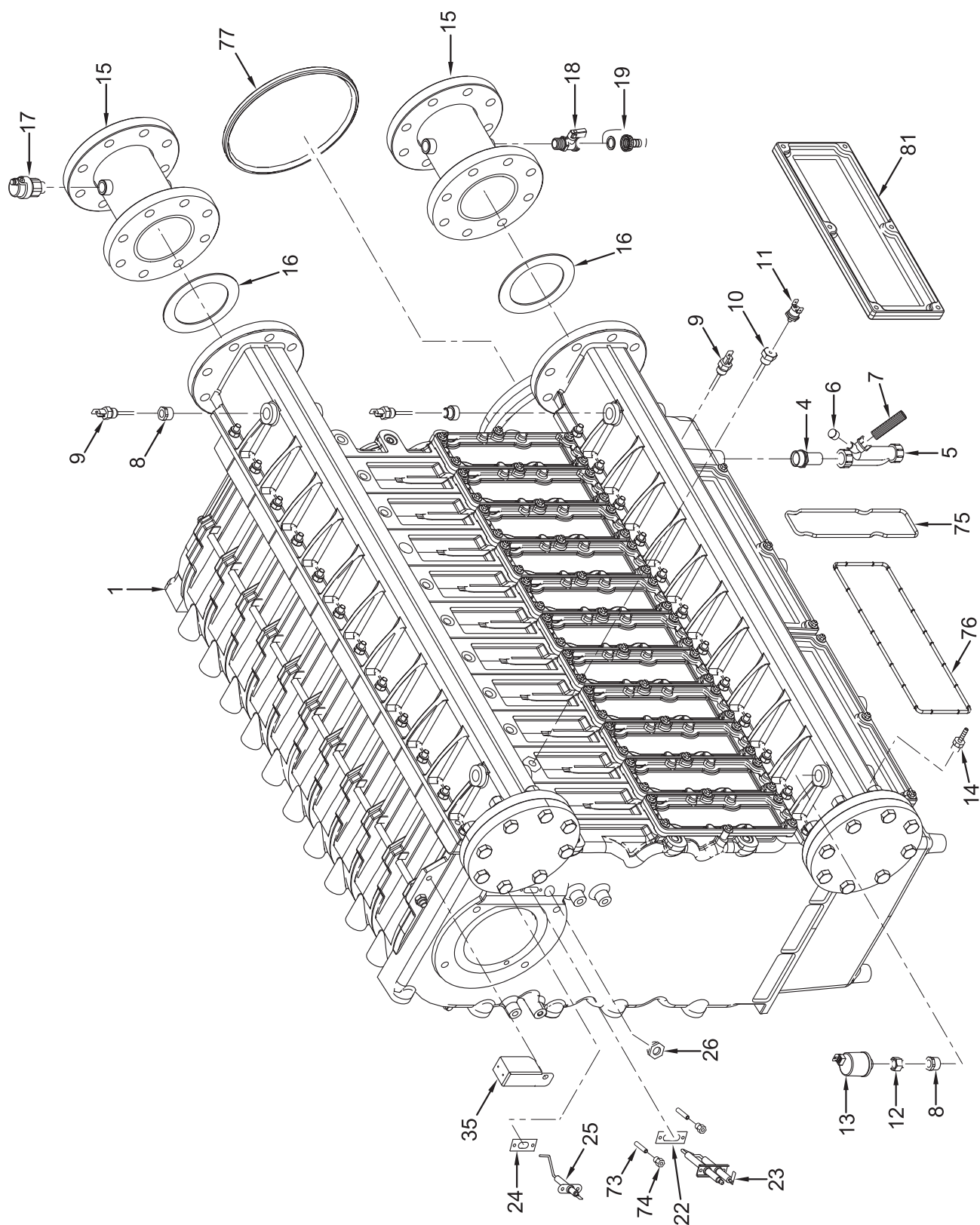
ALU PLUS HE 360 - 720 - 1100



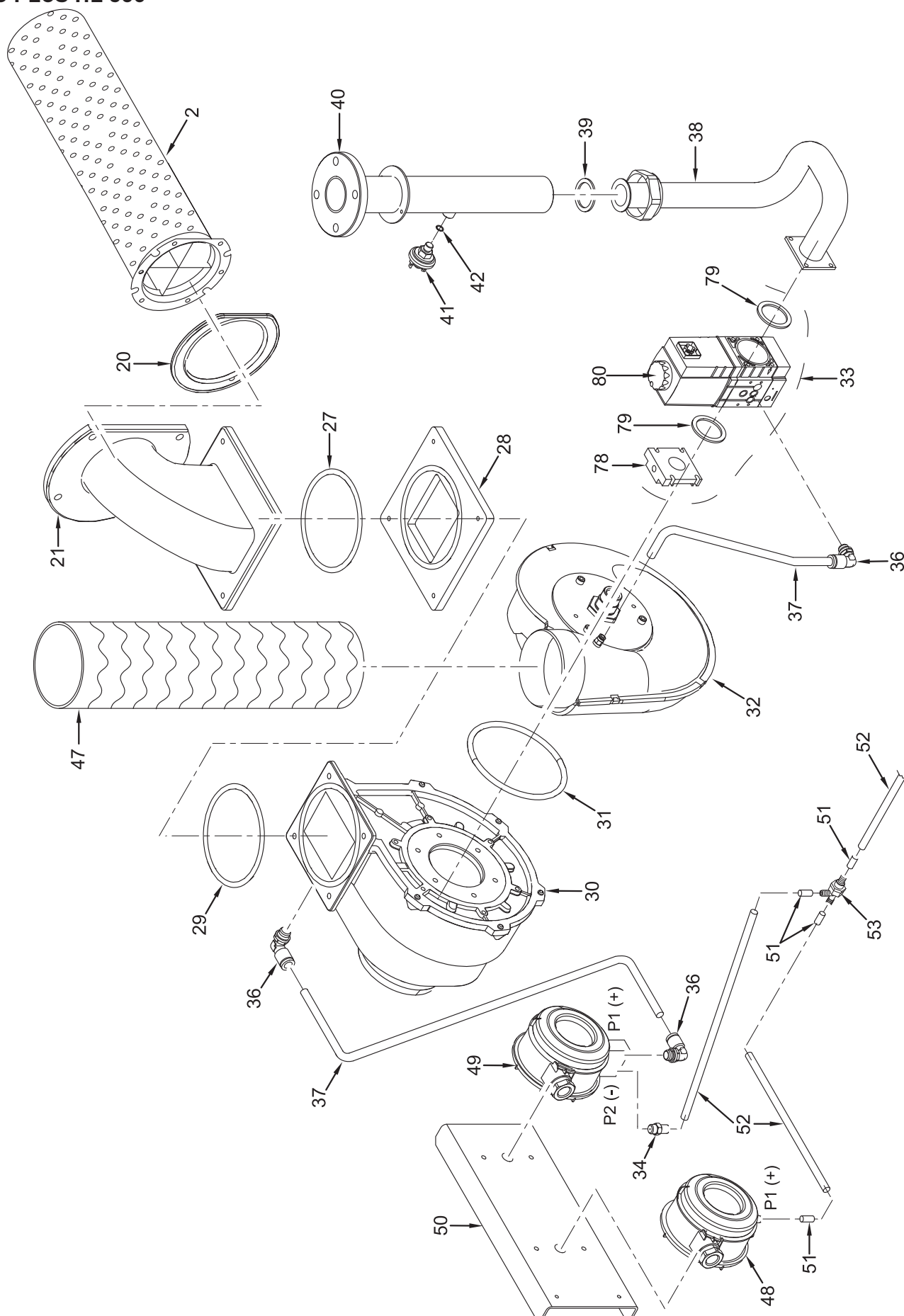
ALU PLUS HE 360 - 720



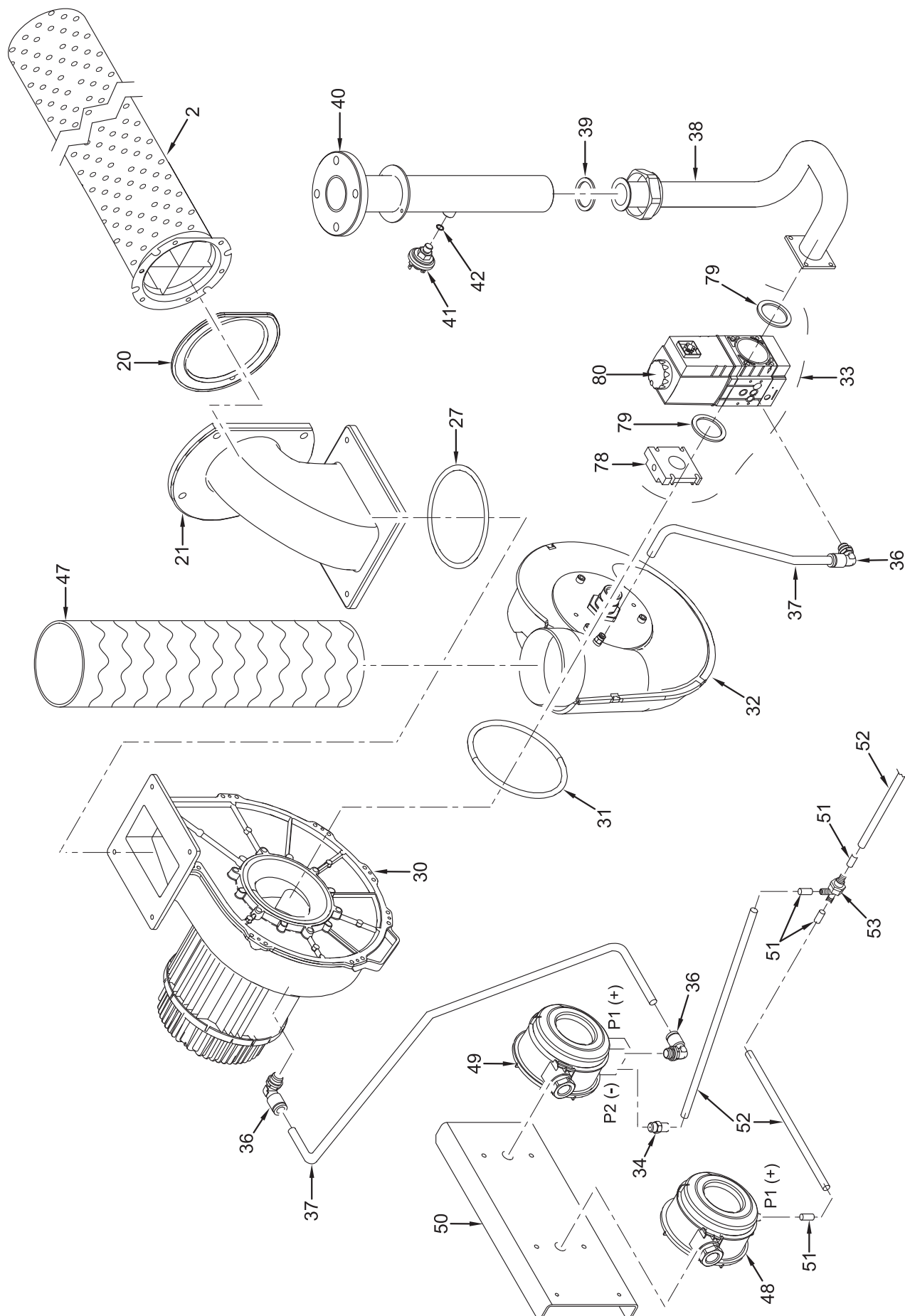
ALU PLUS HE 1100



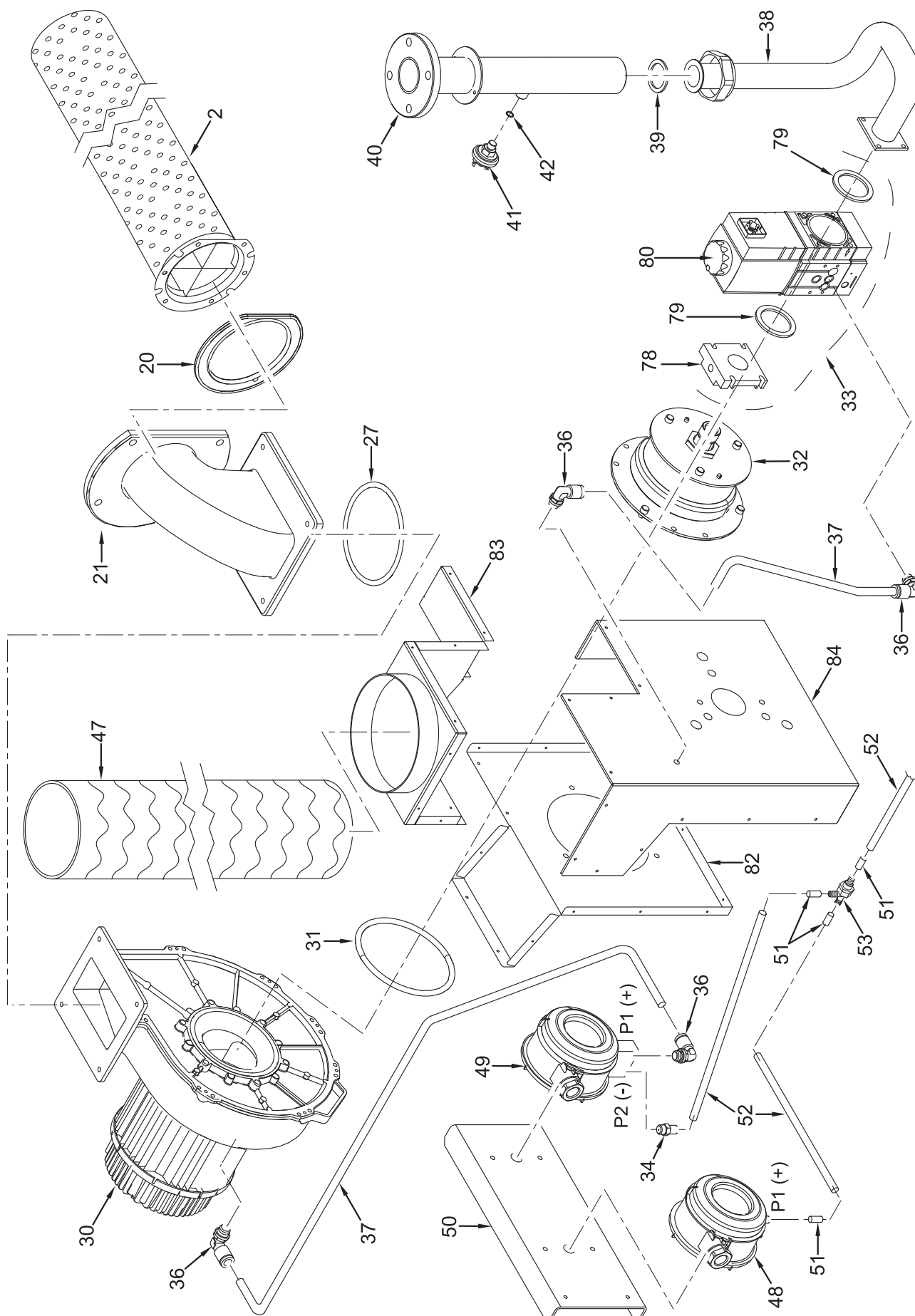
ALU PLUS HE 360



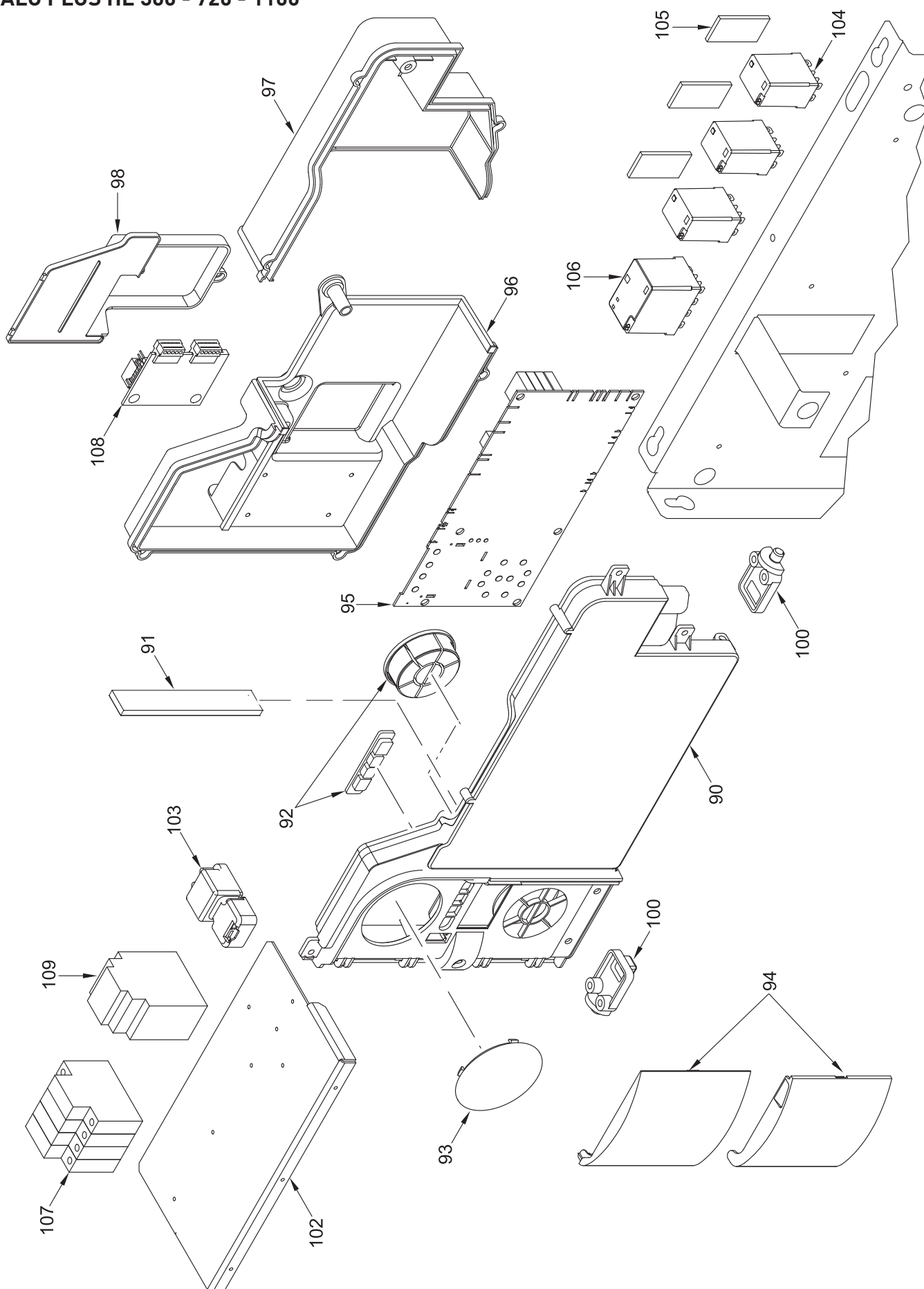
ALU PLUS HE 720



ALU PLUS HE 1100



ALU PLUS HE 360 - 720 - 1100



Pos.	Code	Description	ALU PLUS HE		
			360	720	1100
1	5204260	Complete boiler block	x		
1	5204270	Complete boiler block		x	
1	5204280	Complete boiler block			x
2	6278346	Burner	x		
2	6278347	Burner		x	
2	6278338	Burner			x
3	6256841	Bracket	x		
3	6256824	Bracket for upper chassis		x	x
4	6277215	Connector	x	x	x
5	6277214	Water trap	x	x	x
6	2100039	Blind plug	x	x	x
7	6277217	Condensate drainage pipe	x	x	x
8	6120571	Spigot reducer 1/2" M.x 1/4" F.	x	x	x
9	6277132	Temper. probe NTC	x	x	x
10	6120572	Spigot reducer	x	x	x
11	6146733	H.L. stat 98°C	x	x	x
12	6120523	Spigot reducer 1/4" M x 3/8" F	x	x	x
13	6273610	Water pressure transducer	x	x	x
14	6023103	Pressure test nipple 1/4"	x	x	x
15	6291976	Manifold	x	x	
15	6291975	Fitting manifold			x
16	6226489	ORing 123,2 X 5.33	x	x	
16	2030271	Piracriten gasket Ø 114X160X3			x
17	6013105	Automatic air vent 1/2"	x	x	x
18	6179102	Drain cock 1/2"	x	x	x
19	6179200	Holder complete with locking nu	x	x	x
20	6174836	Gasket for burner	x	x	x
21	6278875	Air-gas full hose	x	x	x
22	6174834	Gasket for ignition electrode	x	x	x
23	6221680	Ignition electrode	x	x	x
24	6174835	Gasket for electrode	x	x	x
25	6221681	Ionisation probe	x	x	x
26	6001220	Peephole	x	x	x
27	6226483	OR gasket 200x4 NBR 70	x	x	x
28	6105163	Flange	x		
29	6226484	OR gasket 160x4 NBR 70	x		
30	6261431	Fan	x		
30	6261432	Fan		x	x
31	6226485	OR gasket 177.36x3.53 NBR	x	x	x
32	6274394	Air/gas mixer	x		
32	6274399	Air/gas mixer		x	
32	6274398	Air/gas mixer			x
33	6089723	Gas valve	x		
33	6089724	Gas valve		x	x
34	6023100	Pressure test nipple Ø 1/8"	x	x	x
35	6256832	Bracket	x	x	x
36	6043220	Connector 1/8" M	x	x	x
37	1010217	Pipe Ø 6x4	x	x	x
38	6251464	Gas inlet pipe	x		
38	6251460	Gas inlet pipe		x	
38	6251462	Gas inlet pipe			x
39	2030231	Gasket Ø 42x55x2	x	x	x
40	6251461	Gas inlet pipe	x	x	x
41	6043101	Gas pressure switch	x	x	x
42	2030225	Gasket Ø 5,5x11x2	x	x	x
44	6256843	Bracket	x		
44	6256838	Bracket for suction air collar		x	x
45	6083071	Air intake adaptor	x		
45	6083070	Air intake adaptor d.200/200		x	x
46	6256847	Air inlet grid Ø 200	x	x	x
47	1010153	Pipe Ø 130 flexible	x		

Pos.	Code	Description	ALU PLUS HE		
			360	720	1100
47	1010152	Pipe Ø 203 flexible		x	x
48	6225750	Air pressure switch	x	x	x
49	6225753	Air pressure switch	x	x	x
50	6256844	Bracket	x	x	x
51	1010202	Silicon pipe Ø 8x1.5	x	x	x
52	1010204	Silicon pipe Ø 12x2	x	x	x
53	6280500	3-ways junct. with press. test	x	x	x
54	6323426	Casing left panel	x	x	x
55	6323526	Casing right hand side panel	x	x	x
56	6256842	Panel spacer	x		
56	6256831	Spacer l=850		x	x
57	6323581	Left/right hand side panel	x	x	
57	6323586	Left/right hand side panel			x
58	6113662	Knob	x	x	x
59	6323726	Casing cover front panel	x		
59	6323781	Casing cover front panel		x	x
60	6282110	Section casing top cover L=599	x		
60	6282111	Section casing top cover L=699		x	x
61	6323799	Cap	x	x	x
62	6323736	Casing rear cover	x		
62	6323786	Casing rear cover		x	
62	6323791	Casing rear cover			x
63	6087568	Insulation	x		
63	6087569	Insulation		x	
63	6087570	Insulation for cover			x
64	6275371	Casing rear upper panel	x		
64	6275370	Casing rear upper panel		x	x
65	6275376	Rear lower panel	x		
65	6275375	Rear lower panel		x	x
66	6256833	Bracket for extension	x	x	x
67	6256837	Bracket for extension	x	x	x
68	6279631	Casing front panel extension	x	x	x
69	6323646	Casing front upper door	x		
69	6323636	Casing front upper door		x	x
70	6256835	Upper fixing bracket	x	x	x
71	6120450	Pivoting wheels	x	x	x
72	6248866	Gasket or Ø200 mm	x	x	x
73	6267042	Stud M4x20	x	x	x
74	6150020	Nut M4	x	x	x
75	6248849	Gasket rectangular for inspecti	x	x	x
76	6248862	Gasket rectangular smoke chambe	x	x	
76	6248863	Gasket rectangular smoke chambe			x
77	6248864	Gasket Ø250 mm	x	x	x
78	6329313	Shutter for gas valve	x		
78	6329314	Shutter for gas valve		x	x
79	6226490	ORing 230443	x		
79	6226491	ORing 230444		x	x
80	6329311	Coil for gas valve	x		
80	6329312	Coil for gas valve		x	x
81	6329315	Cover for smoke chamber	x	x	
81	6329316	Cover for smoke chamber			x
82	6256851	Air conveyor rear wall			x
83	6256852	Air conveyor higher wall			x
84	6256853	Air conveyor front wall			x
90	6304700	Control panel	x	x	x
91	6305160	Guidelight with led	x	x	x
92	6305120	Kit Rubber button	x	x	x
93	6247327	Cap for time programmer	x	x	x
94	6304890	Flap door assembly	x	x	x
95	6328900	Main P.C.B.	x	x	x

Pos.	Code	Description	ALU PLUS HE		
			360	720	1100
96	6305000	Cover	x	x	x
97	6305010	connection cover	x	x	x
98	6305020	Time programmer cover	x	x	x
99	6250021	Rotation control panel bracket	x	x	x
100	6302000	Plastic pin	x	x	x
101	6267138	Rotation control panel bracket	x	x	x
102	6256836	Bracket	x		
102	6256846	Support bracket instrum. panel		x	x
103	6098350	Ignition transformer	x	x	x
104	6190404	Relay	x	x	x
105	6190406	Relay support	x	x	x
106	6190405	Relay	x	x	x
107	6253410	Fuse holder 10x38	x	x	x

Pos.	Code	Description	ALU PLUS HE		
			360	720	1100
108	6301467	Main P.C.B. converter	x	x	x
109	6190407	Contacteur		x	x
700	5200950	Complete control panel	x		
700	5200960	Complete control panel		x	x
701	6221685	Ignition electrode cable	x	x	x
702	6316200	Connector 2 poli	x	x	x
703	6316202	Connector 4 poli	x	x	x
704	6316203	Connector 4 poli CN4	x	x	x
705	6316204	Connector 8 poli CN7	x	x	x
706	6233540	Fuse d.10x38 4A	x	x	x
707	8094101	External sensor	x		
707	6202150	Plug Wieland 3 pole		x	x
708	6202151	Plug Wieland 4 pole		x	x
709	8094101	External sensor		x	x

10 APPENDIX 1 (GUIDANCE HHIC)

Manufacturers Instructions

Manufacturer's instructions must be followed for the correct connection of the condensate discharge pipe from the boiler as this may vary due to the design of the boiler. For example a visible air break and trap is not required if there is a trap with a minimum condensate seal of 75 mm incorporated into the boiler.

Internal Pipe Run In Unheated Spaces

Condensate discharge pipes that are routed in an unheated space such as a loft or garage should be insulated to prevent freezing.

Internal Condensate Pipe Discharge Termination

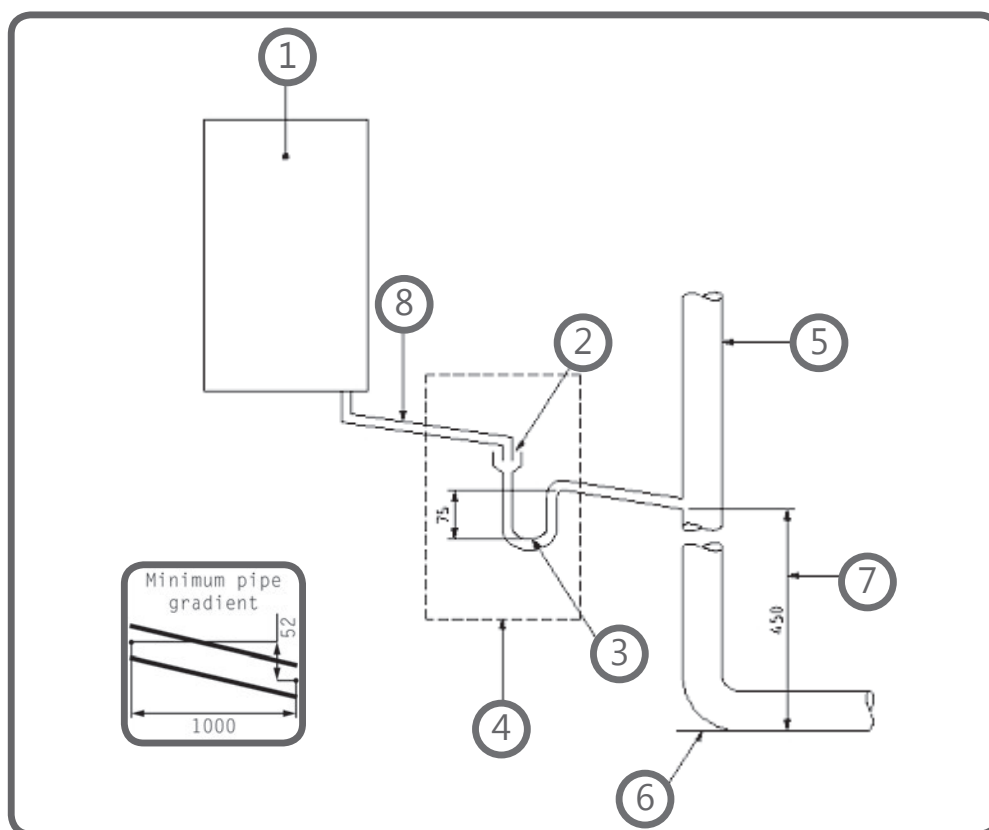
Internal condensate discharge pipework must be a minimum of 19mm ID (typically 22mm OD) plastic pipe or as per manufacturer's instructions and this should "fall" a minimum of 45mm per metre away from the boiler, taking the shortest practicable route to the termination point.

(45mm as per BS6798, 52mm per metre as per industry practice is specified in the following diagrams)

To minimise the risk of freezing during prolonged sub-zero conditions, an internal "gravity discharge point" such as an internal soil stack (preferred method), internal kitchen, utility room or bathroom waste pipe e.g. from a sink, basin, bath or shower should be adopted, where possible.

Note - A suitable permanent connection to the foul waste pipe should be used. Figures 1, 2(a), 2(b) show appropriate connection methods.

Figure 1 – Connection of condensate discharge pipe to internal soil and vent stack.
Note – Check manufacturer's instructions to see if an air break is required.



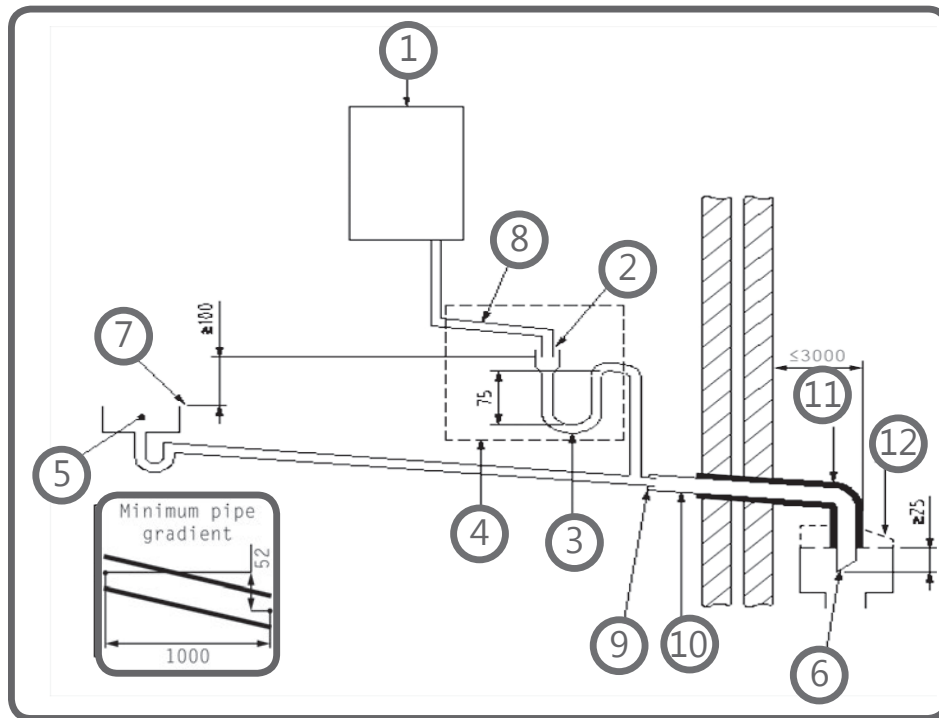
Key

- 1 Boiler
- 2 Visible air break
- 3 75 mm trap
- 4 Visible air break and trap not required if there is a trap with a minimum condensate seal of 75 mm incorporated into the boiler
- 5 Soil and vent stack
- 6 Invert
- 7 450 mm minimum up to three storeys
- 8 Minimum internal diameter 19 mm

Internal Condensate Pipe Discharge Termination

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

Note – Check manufacturer's instructions to see if an air break is required.



Key

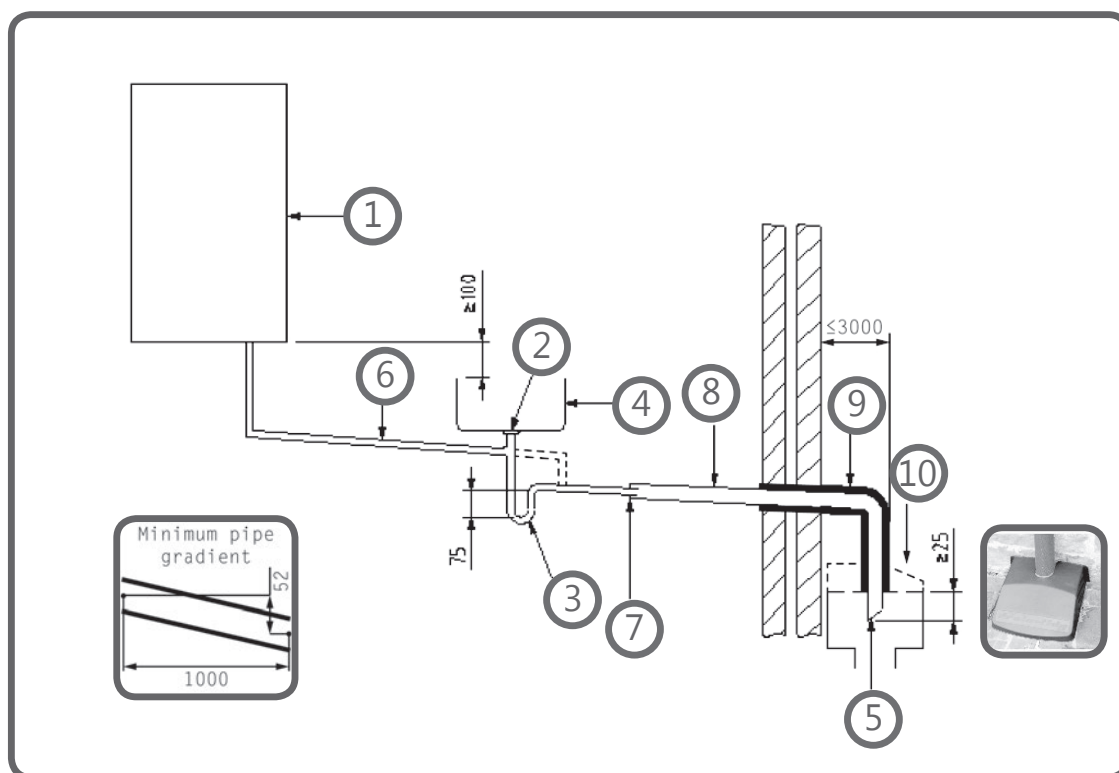
- 1 Boiler
- 2 Visible air break
- 3 75 mm trap
- 4 Visible air break and trap not required if there is a trap with a minimum condensate seal of 75 mm incorporated into the boiler. In this case the 100 mm is measured to the trap in the boiler.
- 5 Sink, basin, bath or shower
- 6 Open end of condensate discharge pipe direct into gully 25 mm min below grating but above water level; end cut at 45 °

Note – the maximum external condensate discharge length is 3 metres

- 7 Sink lip
- 8 Minimum internal diameter 19 mm
- 9 Pipe size transition
- 10 Minimum internal diameter 30 mm
- 11 Water/weather proof insulation
- 12 Drain cover/leaf guard

Internal Condensate Pipe Discharge Termination

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



Key

- 1 Boiler
- 2 Visible air break at plug hole – alternative connection can be below sink trap
- 3 75 mm sink, basin, bath or shower waste trap
- 4 Sink, basin, bath or shower with integral overflow
- 5 Open end of condensate discharge pipe direct into gully 25 mm min below grating but above water level; end cut at 45 °
- Note – the maximum external condensate discharge length is 3 metres
- 6 Minimum internal diameter 19 mm
- 7 Pipe size transition
- 8 Minimum internal diameter 30 mm
- 9 Water/weather proof insulation
- 10 Fit drain cover/leaf guard

Internal Condensate Pipe Discharge Termination

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.

Note - 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, then a condensate pump should be used.

External waste pipes from kitchens, utility rooms or bathrooms such as sink, basin, and bath or shower waste outlets should be insulated with waterproof UV resistant, class 0 material, terminated below the grid but above the water line and a drain/leaf guard fitted. The waste pipe should be cut at 45 degrees where it terminates into the grid. (See insulation section for guidance on suitable materials).

Condensate Pumps

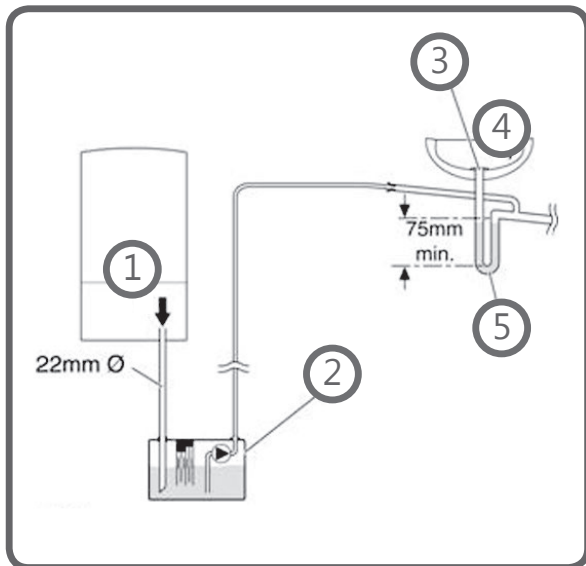
Use of a Condensate Pump to an Internal Termination

Condensate can be removed using a proprietary condensate pump, of a specification recommended by the boiler or pump manufacturer. In order to minimise the risk of freezing during prolonged sub-zero spells, one of the following methods internal to the property for terminating the boiler condensate pump to a foul water discharge point should be adopted such as an internal soil stack (preferred method), internal kitchen, utility room or bathroom waste pipe such as sink, basin, and bath or shower waste. Figure 3 shows a typical connection method.

Internal Condensate Pipe Discharge Termination

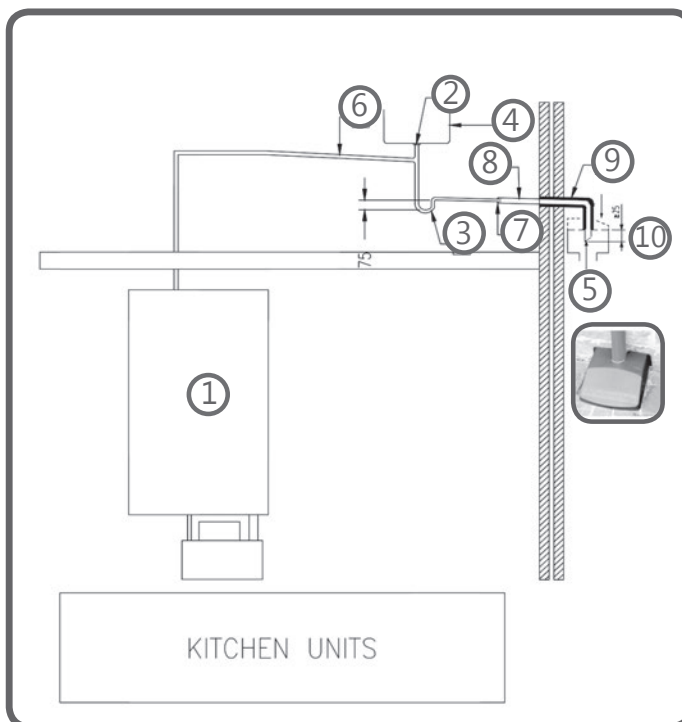
Figure 3 – Connection of a condensate pump - typical method (NB manufacturer's detailed instructions should be followed).

Note – Any external pipe work should be insulated, pipe cut at 45 degrees and a drain/ leaf guard fitted.



Key

- 1 Condensate discharge from boiler
- 2 Condensate pump
- 3 Visible air break at plug hole
- 4 Sink or basin with integrated overflow
- 5 75mm sink waste trap



Key

- 1 Boiler
- 2 Visible air break at plug hole
- 3 75 mm sink, basin, bath or shower waste trap
- 4 Sink, basin, bath or shower with integral overflow
- 5 Open end of condensate discharge pipe direct into gully 25 mm min below grating but above water level; end cut at 45 ° Note – the maximum external condensate discharge length is 3 metres
- 6 Minimum internal diameter 19 mm
- 7 Pipe size transition
- 8 Minimum internal diameter 30 mm
- 9 Water/weather proof insulation
- 10 Fit drain cover/leaf guard

External Connections

External Connections

Only fit an external boiler condensate drain connection if an internal gravity or pumped connection is **impractical** to install.

The pipe work from the boiler should be of a minimum 19mm ID or as per manufacturer's instructions and the condensate discharge pipe shall be run in a standard drainpipe material, e.g. poly (vinyl chloride) (PVC), un-plasticized poly (vinyl chloride) (PVC-U), acrylonitrile butadiene-styrene (ABS), polypropylene (PP) or chlorinated poly (vinyl chloride) (PVC-C).

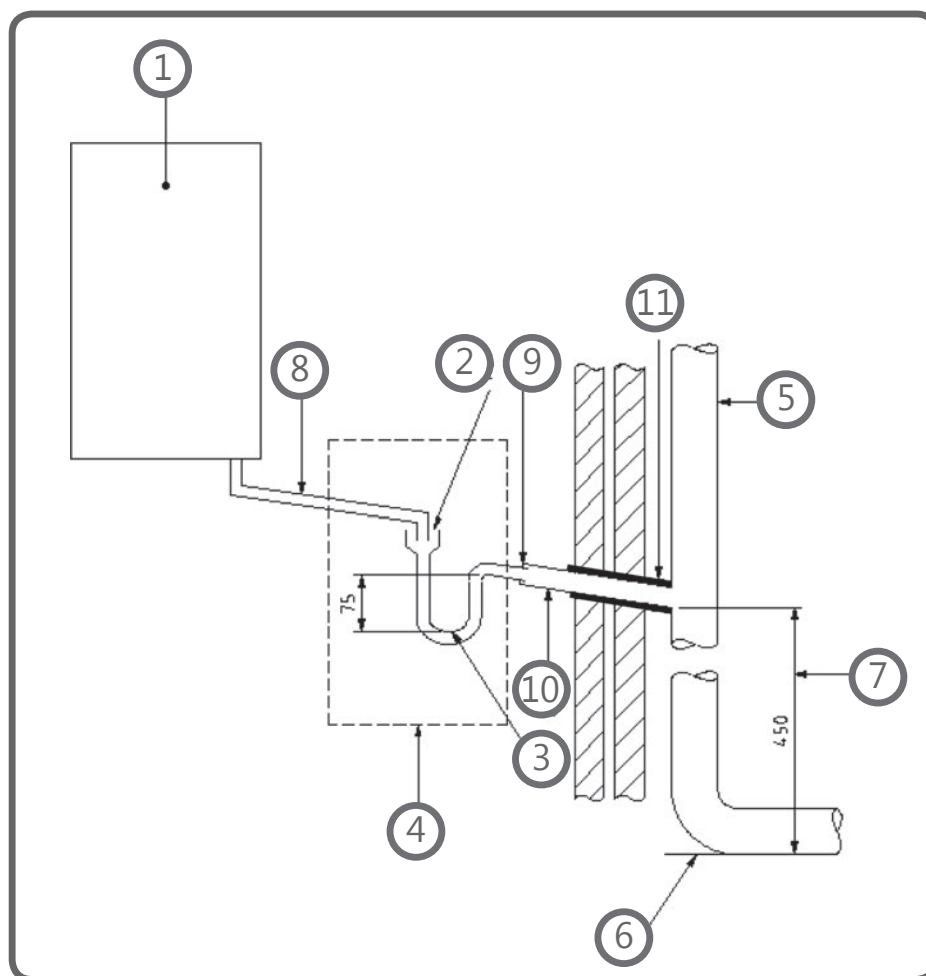
Note - Fixing centres for brackets should be a maximum of 300mm for flexible pipe and 500mm for solid pipe and manufacturer's recommendations should be followed.

The condensate 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 angle of the pipe should slope downwards by at least 3 degrees as it passes through the wall to assist in maintaining a good velocity as the condensate exits the building.

The external pipe run should be kept as short as possible to a maximum of 3 metres, taking the most direct and "most vertical" route to the discharge point, with no horizontal sections in which condensate might collect.

External Connections

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



Key

- 1 Boiler
- 2 Visible air break
- 3 75 mm trap
- 4 Visible air break and trap not required if there is a trap with a minimum condensate seal of 75mm incorporated into the boiler.
- 5 Soil and vent stack
- 6 Invert
- 7 450mm minimum upto three storeys
- 8 Minimum internal diameter 19 mm
- 9 Pipe size transition point
- 10 Minimum internal diameter 30mm
- 11 Water/weather proof insulation

External Connections

Alternative Solutions

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. It is the responsibility of the manufacturer of these products to ensure they have completed the necessary testing or calculations to ensure the product offers suitable protection to prevent the condensate pipe from freezing. The product manufacturer should provide information as to what level of external temperature and for what time period the product can protect against sub-zero temperatures, i.e. -15°C for 48 hours. BS6798 refers to devices that pump the condensate produced by a condensing boiler to a fine misting nozzle in the boiler flue terminal so that the condensate is discharged with the hot flue gas. (BS6798 section 6.3.8 note 4). The boiler manufacturer's instructions will provide advice regarding fitting and siting of the flue terminal to ensure safe disposal of the condensate.

Additional Measures

At least one of the following measures should be fitted in addition to the measures detailed above for external condensate discharge pipes

- *Insulate external pipe with a minimum thickness of insulation to be 19mm "O" class PVC coated material.*
- *Fit trace heating – with insulation as recommended by manufacturer.*
- *Fit internal auxiliary(additional) high volume syphon unit*

Auxiliary Syphon – Fitted Internally

Auxiliary siphons fitted inside the premises assist with the siting of the boiler where an external condensate pipe **must** be fitted. The storage capacity of the auxiliary syphon increases the volume of condensate discharge reducing the risk of freezing. A further reduction in the potential for the pipe to freeze is achieved when combined with the external insulation requirements.

External Connections

Electric Trace Heating

Trace heating with an external thermostat can be fitted to the external condensate pipe to raise the temperature of the condensate pipe in freezing conditions. Trace heating takes the form of an electrical heating element run in physical contact along the length of the condensate pipe. The pipe is usually covered with thermal insulation to retain heat losses from the pipe. Heat generated by the element then maintains the temperature of the pipe. 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 discharge pipe installation should also be followed.

Insulation Materials

Insulation used for external condensate pipes, sink or washing machine waste pipes should be of class 'O' grade with an outer coating that is weather proof, bird/animal proof, and UV resistant finish. A minimum of 19mm thick insulation is recommended for 32mm external pipes.

Use of Air Breaks In Condensate Discharge Pipes

Heating engineers should follow manufacturer's instructions on the use of air breaks in condensate discharge pipes. A visible air break is not required if the boiler condensate trap has a minimum condensate seal of 75mm incorporated into the boiler.

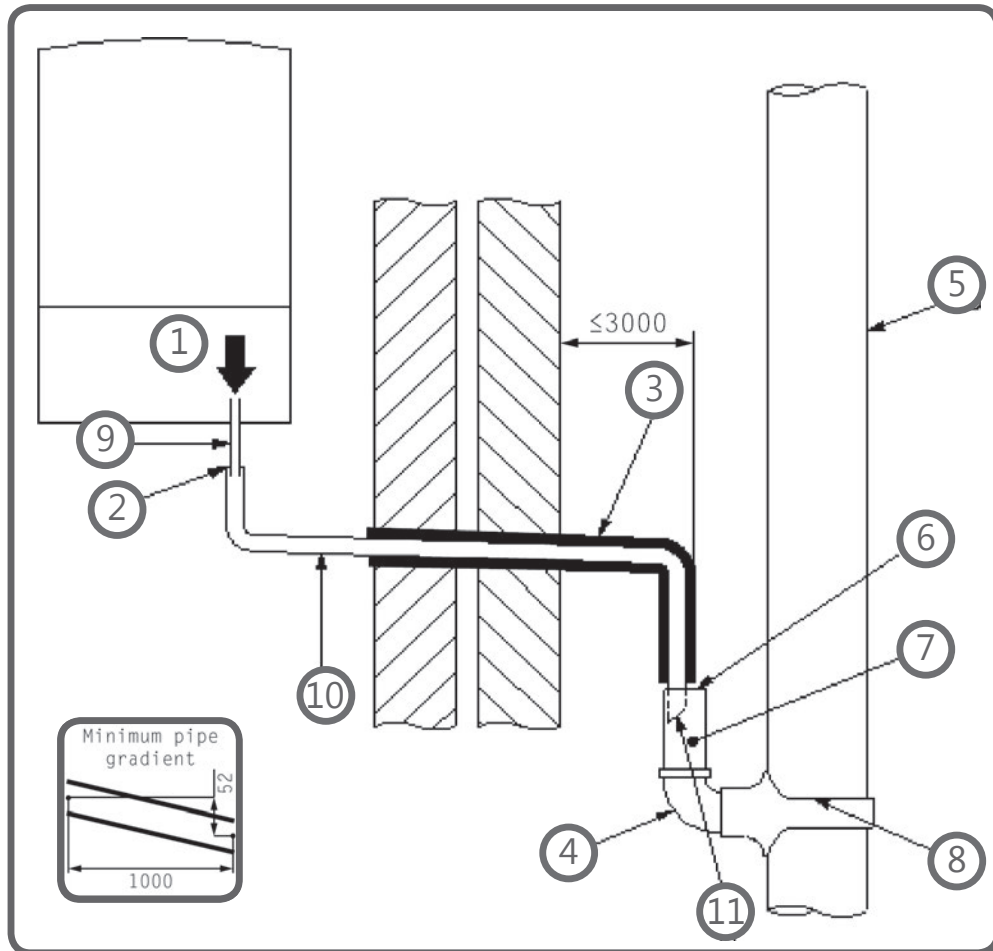
Connecting to a rain water downpipe/External Soil Stack

When an external soil stack or rain water downpipe is used as the termination (NB only permissible if this downpipe passes to a combined foul and rainwater drainage system) an external air break must be installed between the condensate discharge pipe and the downpipe to avoid reverse flow of rainwater/sewage into the boiler should the downpipe itself become flooded or frozen.

Figure 5 shows a suitable connection method. Pipe insulation should be fitted.

External Connections

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



Key

- 1 Condensate discharge pipe from boiler
- 2 Pipe size transition point
- 3 Water/weather proof insulation
- 4 43mm 90° male/female bend
- 5 External rain water pipe into foul water
- 6 External air break
- 7 Air gap
- 8 68mm PVCu strap on fitting
- 9 Minimum internal diameter 19mm
- 10 Minimum internal diameter 30mm
- 11 End cut at 45°

External Connections

External Termination of the Condensate Pipe

Where the condensate discharge 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 and resistance to freezing will be improved if the termination end of the condensate pipe is cut at 45 degrees as opposed to a straight cut.

The use of a drain cover (such as those used to prevent blockage by leaves) **must** be fitted to offer further protection from wind chill. Figure 6 (following page) shows a suitable connection method. Where the condensate drain pipe terminates in a purpose-designed soakaway (see BS 6798:2014 or boiler installation manual for soakaway design requirements) any above-ground section of condensate discharge pipe should be run and insulated as described above. Figure 7 (following page) shows a suitable connection method.

Unheated Areas in Buildings

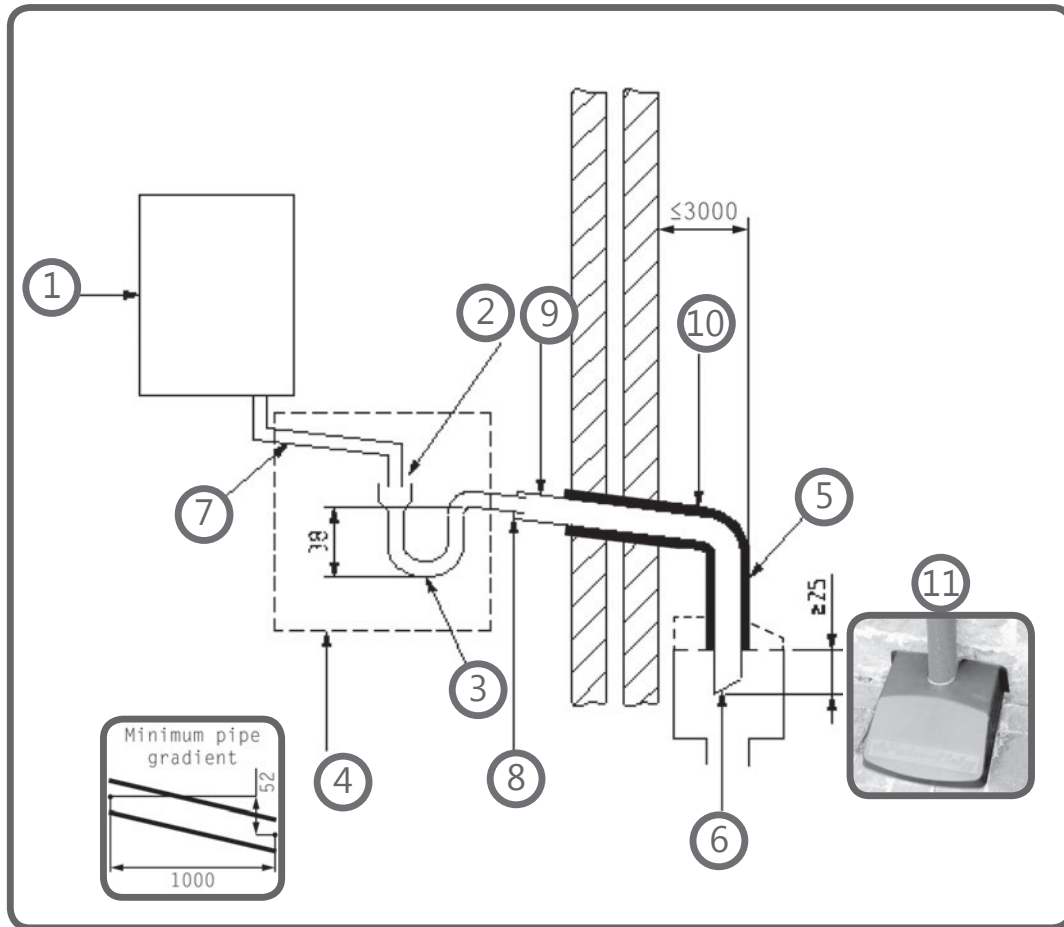
Internal condensate drainage pipes run in unheated areas such as lofts, basements and garages should be treated as external connections and insulated accordingly. Weather proof materials may not be necessary and should be assessed by the heating engineer.

Use of Air Breaks In Condensate Discharge Pipes

Installers should follow the manufacturer’s instructions on the use of air breaks in condensate discharge pipes. A visible air break and trap is not required if the boiler condensate trap has a minimum condensate seal of 75 mm incorporated into the boiler.

External Connections

Figure 6 – External drain, gully or rainwater hopper

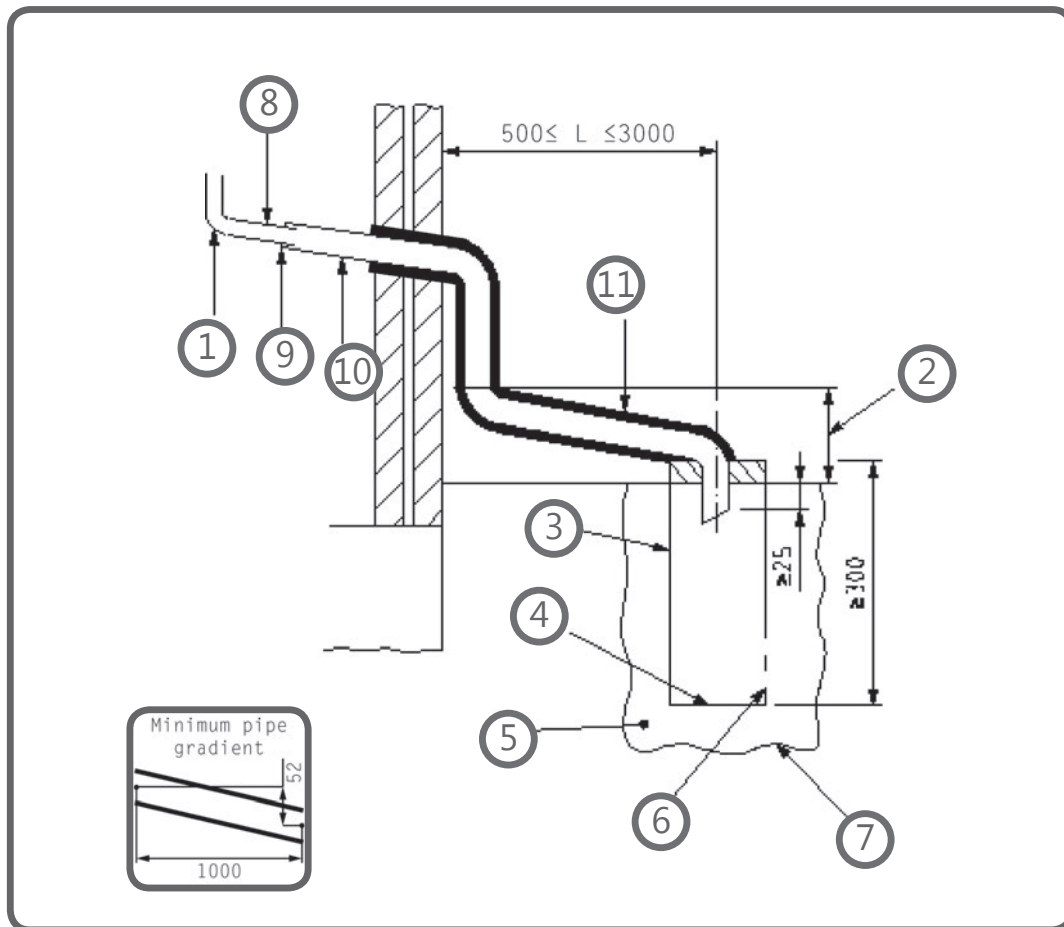


Key

- 1 Boiler
- 2 Visible air break
- 3 38mm minimum trap
- 4 Visible air break and trap not required if there is a trap with a minimum condensate seal of 38 mm incorporated into the boiler – refer to manufacturers instructions
- 5 External length of pipe 3 m maximum
- 6 Open end of condensate discharge pipe direct into gully 25 mm min below grating but above water level; end cut at 45 °
- 7 Minimum internal diameter 19 mm
- 8 Pipe size transition point
- 9 Minimum internal diameter 30 mm
- 10 Water/weather proof insulation
- 11 Fit drain cover/leaf guard

External Connections

Figure 7 – Example of a purpose made soakaway



Key

- 1 Condensate discharge pipe from boiler
- 2 Ground (this section of the condensate discharge pipe may be run either above or below round level); End cut at 45°
- 3 Diameter 100 mm minimum plastic tube
- 4 Bottom of tube sealed
- 5 Limestone chippings
- 6 Two rows of three 12 mm holes at 25 mm centres, 50 mm from bottom of tube and facing away from house
- 7 Hole depth 400 mm minimum by 300 mm diameter
- 8 Minimum internal diameter 19 mm
- 9 Pipe size transition point
- 10 Minimum internal diameter 30 mm
- 11 Water/weather proof insulation

11 APPENDIX 2

FLOWCHART FOR CO AND COMBUSTION RATIO CHECK ON COMMISSIONING A CONDENSING BOILER

PRIOR TO CO AND COMBUSTION RATIO CHECK

The installation instructions should have been followed, gas type verified and gas supply pressure/rate checked as required prior to commissioning.

As part of the installation process, **ESPECIALLY WHERE A FLUE HAS BEEN FITTED BY PERSONS OTHER THAN THE BOILER INSTALLER**, visually check the integrity of the whole flue system to confirm that all components are correctly assembled, fixed and supported. Check that manufacturer's maximum flue lengths have not been exceeded and all guidance has been followed (e.g. Gas Safe Technical Bulletin TBO08).

The flue gas analyser should be of the correct type, as specified by BS 7967

Prior to its use, the flue gas analyser should have been maintained and calibrated as specified by the manufacturer. The installer must have the relevant competence for use of the analyser.

Check and zero the analyser IN FRESH AIR as per analyser manufacturer's instructions.

NOTE

the air gas ratio valve is factory-set and must not be adjusted **DURING COMMISSIONING** unless this action is recommended after discussions with SIME LTD.

If any such adjustment is recommended and further checking of the boiler is required the installer/service engineer must be competent to carry out this work and to use the flue gas analyser accordingly.

If the boiler requires conversion to operate with a different gas family (e.g. conversion from natural gas to LPG) separate guidance will be provided by the boiler manufacturer and must be followed.

VERIFY FLUE INTEGRITY

Analysers readings indicate that combustion products and inlet air must be mixing. Further investigation of the flue is therefore required.

Check that flue components are assembled, fixed and supported as per boiler/flue manufacturer's instructions.

Check that flue and flue terminal are not obstructed.

Is O₂ less than or equal to 20.6% and CO₂ less than 0.2%

YES

NO

Turn off appliance and call SIME LTD Technical Helpline for advice.
the appliance must not be commissioned or used, until problems are identified and resolved.

Check all seals around the appliance burner, internal flue seals, door and case seals. Rectify where necessary.

Is CO less than 350ppm AND CO/CO₂ ratio less than 0.004

NO

Turn off appliance and call SIME LTD Technical Helpline for advice.

the appliance must not be commissioned or used until problems are identified and resolved.

NOTE
Check and record CO and combustion ratio at both maximum AND minimum rate before contacting SIME LTD.

SET BOILER TO MAXIMUM RATE

Set the boiler to operate at maximum rate (full load condition). Allow sufficient time for combustion to stabilise.

NOTE - Do not insert analyser probe during this period to avoid possible "flooding" of sensor.

CARRY OUT FLUE INTEGRITY CHECK USING ANALYSER

Insert analyser probe into the air inlet test point and allow readings to stabilise.

NOTE - The flue must always be installed with flue test point. This will be located within the first piece connected to the boiler.

Is O₂ less than or equal to 20.6% and CO₂ less than 0.2%

NO

YES

CHECK CO AND COMBUSTION RATIO AT MAXIMUM RATE

With boiler still set at maximum rate, insert analyser probe into flue gas sampling point. Allow readings to stabilise before recording.

Is CO less than 350ppm AND CO/CO₂ ratio less than 0.004

NO

YES

SET BOILER TO MINIMUM RATE

In accordance with boiler instructions, set boiler to operate at minimum rate (to minimum load condition). Allow sufficient time for combustion to stabilise.

NOTE: If manufacturer's instructions do not specify how to set boiler to minimum rate contact Technical Helpline for advice.

CHECK CO AND COMBUSTION RATIO AT MINIMUM RATE

With boiler set at minimum rate, insert analyser probe into flue gas sampling point. Allow readings to stabilise before recording.

NOTE - if no flue gas sampling point is present and the correct procedure is not specified in the manual, contact SIME LTD Technical Helpline for advice.

Is CO less than 350ppm AND CO/CO₂ ratio less than 0.004

NO

YES

BOILER IS OPERATING SATISFACTORILY
no further actions required

Ensure test points are capped, boiler case is correctly replaced and all other commissioning procedures are completed.

Complete Benchmark Checklist, recording CO and combustion ratio readings as required.



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