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

METROPOLIS DGT 25 BF

*Installation and
servicing instructions*



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



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 annually, 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 Ltd 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

These appliances comply with the S.E.D.B.U.K. scheme, band "D"

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Important Information

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

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

GAS LEAKS: DO NOT OPERATE ANY ELECTRICAL SWITCH, OR USE A NAKED FLAME. TURN OFF THE GAS SUPPLY AND VENTILATE THE AREA BY OPENING DOORS AND WINDOWS CONTACT THE GAS EMERGENCY SERVICE ON 0800111999.



Please refer to commissioning instructions for filling in the checklist 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 been flushed in accordance with the guidelines given in BS7593 "Treatment of water in domestic hot water central heating systems"?
- 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 ?

1 DESCRIPTION OF THE BOILER

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1.1 INTRODUCTION

The Sime "METROPOLIS DGT 25 BF" are wall mounted, fan assisted balanced flue combination boilers.

The appliance is supplied suitable for use with natural gas, L.P.G. and provide central heating and instantaneous production of D.H.W. Heat output is varied according to

demand by the modulating gas control on both D.H.W. and C.H.

In order to see the several solutions for the inlet/outlet air/smoke to see the sections 2.17 / 2.17.4.

The boiler is designed for use with sealed primary water systems and is supplied fully assembled and equipped with complete valve packs.

The boiler can be used with a 24V room thermostat (class II according to EN 60730.1).

This booklet provides instructions for the boiler "METROPOLIS DGT 25 BF" model with following features:

- electronic ignition,
- fully modulating.

1.2 DIMENSIONAL DETAILS

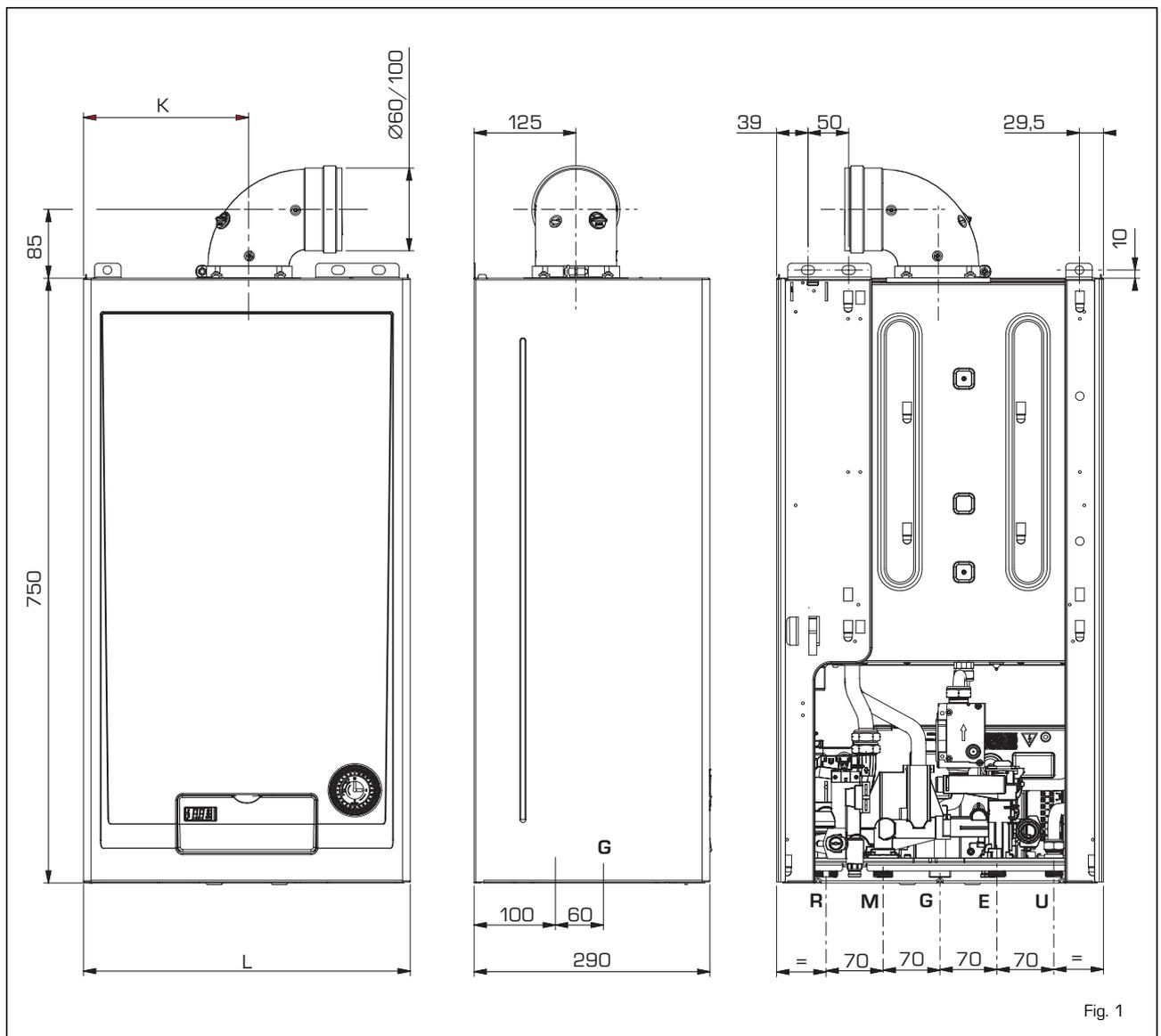


TABLE 1 - Connections

R	C.H. return	22 mm	Compression
M	C.H. flow	22 mm	Compression
G	Gas connection	15 mm	Compression
E	Cold water	15 mm	Compression
U	Hot water	15 mm	Compression

TABLE 2 - Minimum clearances

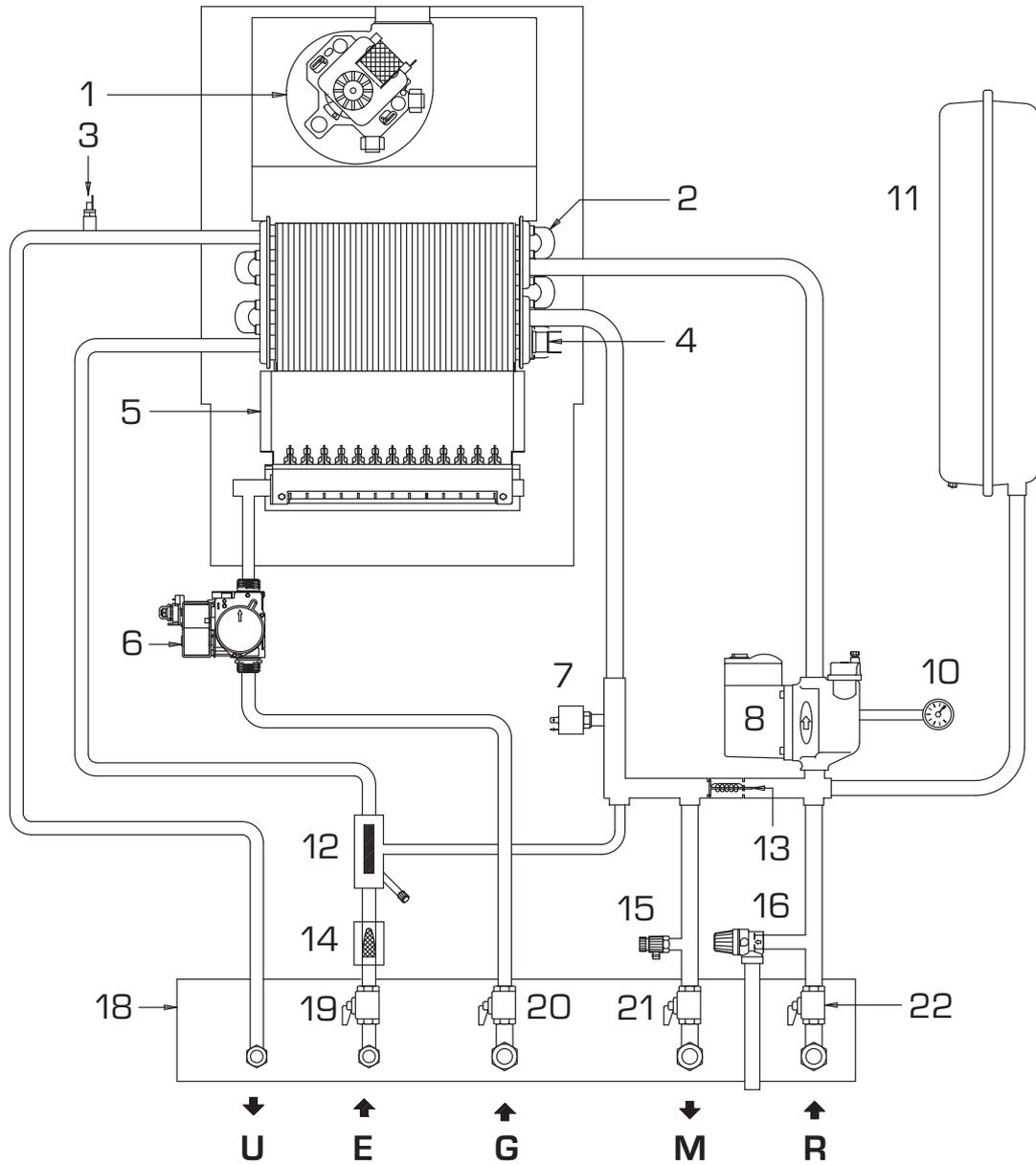
	For ventilation	For servicing
ABOVE THE APPLIANCE CASING		
AT THE R.H.S.	200 mm	300 mm
AT THE L.H.S.	15 mm	15 mm
BELOW THE APPLIANCE CASING		
IN FRONT OF THE APPLIANCE	200 mm	200 mm
	350 mm	500 mm

1.3 GENERAL DATA



METROPOLIS DGT 25 BF		
Heat output		
Nominal	kW	23.7
Minimum	kW	7.5
Heat input		
Nominal	kW	25.5
Minimum	kW	9.2
Thermal efficiency (CEE 92/42 directive)		***
Class NOx		3
Water content	l	3,3
Adsorbed power consumption	W	110
Electrical protection grade		IPX5D
Maximum water head	bar	3
Maximum temperature	°C	85
Expansion vessel		
Water content/Preloading pressure	l/bar	8/1.2
C.H. setting range	°C	40÷80
D.H.W. setting range	°C	30÷60
D.H.W. flow rate (EN 625)	l/min	11.3
Continuous D.H.W. flow rate Δt 30°C	l/min	11.3
Minimum D.H.W. flow rate	l/min	2.0
D.H.W. pressure		
Minimum/Maximum	bar	0.2/7
Smokes temperature	°C	100/125
Smokes flow	gr/s	16/16
Losses after shutdown to 50°C	W	73
Category		II2H3+
Type		B22P-52P/C12-32-42-52-82
Electrical supply		230V - 50 hz, fused at 3 A
Internal fuse		Line: F1.6AT
Weight	kg	30
Main burner nozzle		
Quantity	n°	11
Natural gas (G20)	ø mm	1.30
LPG (G30 - G31)	ø mm	0.80
Gas consumption *		
Natural gas (G20)	m ³ /h	2.70
Butane (G30)	kg/h	2.01
Propane (G31)	kg/h	2.01
Burner gas pressure		
Natural gas (G20)	mbar	1.9÷13.5
Butane (G30)	mbar	3.7÷27.9
Propane (G31)	mbar	3.7÷35.9
Gas supply pressure		
Natural gas (G20)	mbar	20
Butane (G30)	mbar	28 - 30
Propane (G31)	mbar	37

* Gas consumption figures express the lowest calorific power of pure gas under standard conditions at 15°C - 1013 mbar; this figure may differ from the actual figure, which is dependent on gas composition and environmental conditions.



KEY

- | | |
|------------------------------------|-----------------------|
| 1 Fan | 16 3 BAR safety valve |
| 2 Bithermal exchanger | 18 Connection plate |
| 3 D.H.W. sensor (SS) | 19 D.H.W. cock |
| 4 C.H. sensor (SM1/SM2) | 20 Gas cock |
| 5 Combustion chamber | 21 C.H. flow cock |
| 6 Gas valve | 22 C.H. return cock |
| 7 Water pressure valve | |
| 8 Circulator with air release vent | |
| 10 Hydrometer | |
| 11 Expansion vessel | |
| 12 D.H.W. flow meter | |
| 13 By-pass | |
| 14 D.H.W. filter | |
| 15 Boiler discharge | |

CONNECTIONS

- | | |
|---|----------------|
| U | D.H.W. outlet |
| E | D.H.W. inlet |
| G | Gas connection |
| M | C.H. flow |
| R | C.H. return |

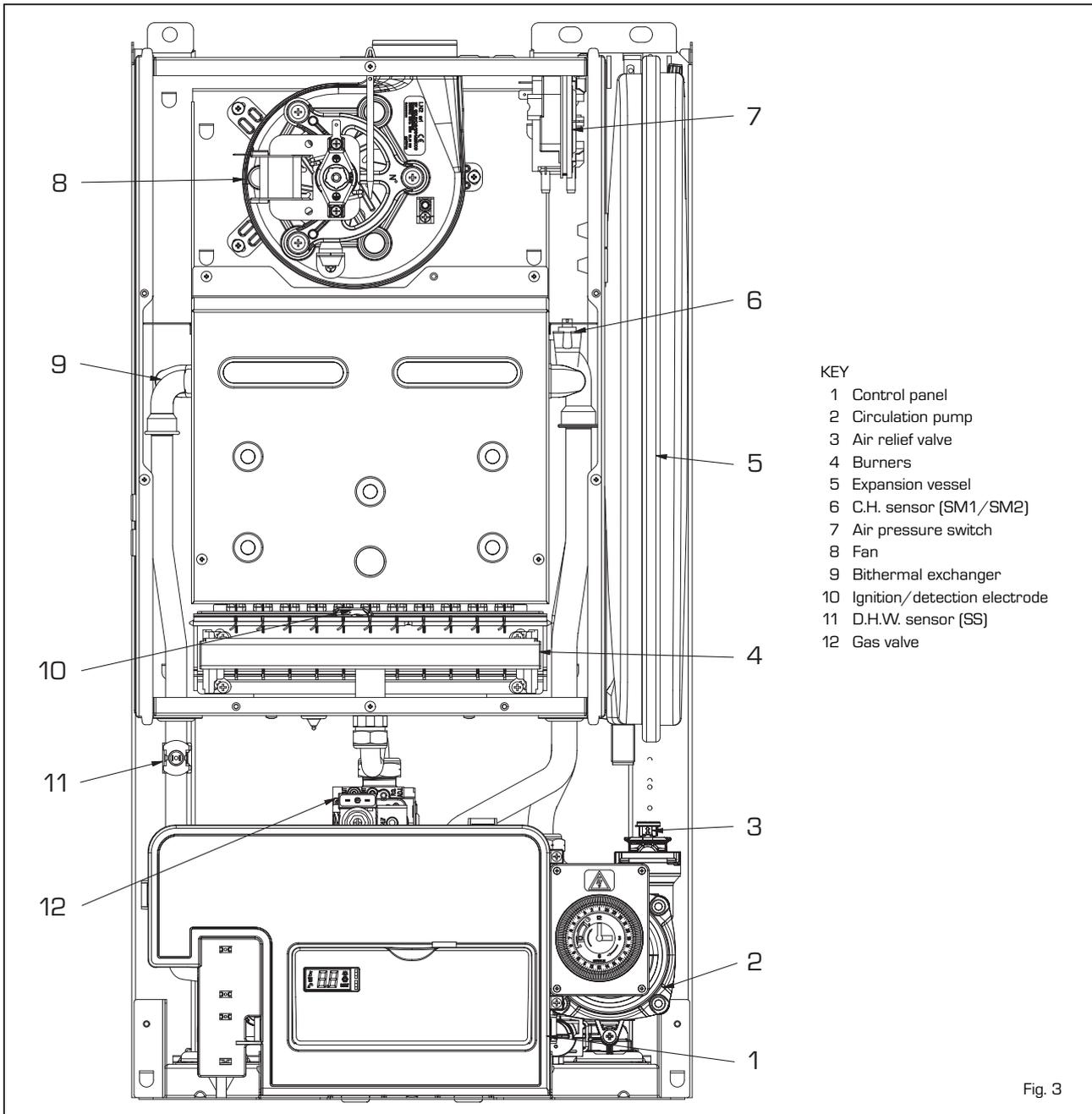
Fig. 2

1.5 INTERNAL VIEW

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1.6 BOILER OPERATION

The boiler operating mode is controlled by the keys on the control panel. When set to winter [❄️] it will operate in the Domestic Hot Water and Central Heating modes.

For Domestic Hot Water only the display should be set to summer [☀️].

Domestic hot water supply always takes priority over central heating. If a demand for hot water is required during a central heating period, the boiler will automatically switch to hot water mode until the demand is satisfied.

1.6.1 Central Heating mode

If there is a call for central heating the pump

will start to circulate the primary heating water and the fan will run at full speed; once the air pressure switch has been proved the burner will light.

The burner output then automatically adjusts to suit the system demand; as the temperature of the heating water in the boiler approaches that set, the burner output is reduced.

When this set temperature is reached, the burner extinguishes and the fan stops.

The pump continues to run for 30 seconds to prevent residual heat build up in the boiler.

The burner will not relight for 3 minutes

unless there is a demand for domestic hot water during this period.

1.6.2 Domestic Hot Water mode

The pump does not operate on a DHW demand, the fan runs and once the air pressure switch has proved the boiler will light. The burner output then automatically adjusts to suit the demand required to raise the temperature set.

When the hot water demand has been satisfied, it passes to the operation in C.H., if the selector is set to winter [❄️] and there is a C.H. demand, otherwise the burner will extinguish.

2 INSTALLATION

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2.1 STATUTORY REQUIREMENTS

GAS SAFETY (INSTALLATION AND USE) REGULATIONS (as amended). It is the law that all gas appliances are installed by a registered person, in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution. It is in your own interest, and that of safety, to ensure that the law is complied with.

In addition to the above regulations, this appliance must be installed in accordance with the current IEE Wiring Regulations (BS 7671), Local Building Regulations, the Building Standards (Scotland) [Consolidation] Regulations, Byelaws of the local water undertaking, and Health and Safety Document No 635 "The Electricity at Work Regulations 1989". It should also be in accordance with the relevant recommendations in the current editions of the following British Standards and Codes of Practice: BS5449, BS5546, BS5440:1, BS5440:2, BS6798, BS6891, and BG.DM2, BS7074, and BS5482 for propane installations.

Manufacturer's instructions must NOT be taken in any way as over-riding statutory obligations.

2.2 BOILER POSITION

In siting the combination boiler, the following limitations MUST be observed:

- The boiler is not suitable for external installation. The position selected for installation should be within the building, unless otherwise protected by a suitable enclosure, and MUST allow adequate space for installation, servicing, and operation of the appliance, and for air circulation around it (section 2.4).
- This position MUST allow for a suitable flue termination to be made. The combination boiler must be installed on a flat vertical wall which is capable of supporting the weight of the appliance, and any ancillary equipment.
- If the combination boiler is to be fitted in a timber framed building it should be fitted in accordance with the Institute of Gas Engineers document for Gas Installations In Timber Frame Housing, Reference 16E/UP/7: 1998. If in doubt, advice must be sought from the gas supplier.
- If the appliance is installed in a room containing a bath or shower, any electrical switch or control utilising mains electricity must be so situated that it cannot be touched by a person using the bath or shower. Attention is drawn to the requirements of the current I.E.E. Wiring Regulations (BS 7671), and in Scotland the electrical provisions of the Building Regulations applicable in Scotland.
- A compartment used to enclose the appliance MUST be designed and constructed specifically for this purpose.

An existing cupboard, or compartment, may be used provided it is modified accordingly.

- Where installation will be in an unusual location, special procedures may be necessary. BS6798 gives detailed guidance on this aspect.

2.3 FLUE TERMINAL POSITION

Detailed recommendations for flue installation are given in BS5440:1. The following notes are for general guidance:

- The boiler MUST be installed so that the terminal is exposed to the external air.
- It is important that the position of the terminal allows free passage of air across it at all times.
- It is ESSENTIAL TO ENSURE, in practice that products of combustion discharging from the terminal cannot re-enter the building, or any other adjacent building, through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation/air conditioning. If this does occur, the appliance MUST be turned OFF IMMEDIATELY and the gas

supplier consulted.

- **The minimum acceptable dimensions from the terminal to obstructions and ventilation openings are specified in fig. 4.**
- If the terminal discharges into a pathway or passageway check that combustion products will not cause nuisance and that the terminal will not obstruct the passageway.
- Where the lowest part of the terminal is fitted less than 2 m (78 in) above ground, above a balcony or above a flat roof to which people have access, the terminal MUST be protected by a purpose designed guard.
- Where the terminal is fitted within 850 mm (34 in) of a plastic or painted gutter, or 450 mm (18 in) of painted eaves, an aluminium shield at least 1,500 mm (59 in) long must be fitted to the underside of the painted surface.
- The air inlet/outlet flue duct MUST NOT be closer than 25 mm (1 in) to combustible material.
- In certain weather conditions the terminal may emit a plume of steam. This is normal but positions where this would cause a nuisance should be avoided.

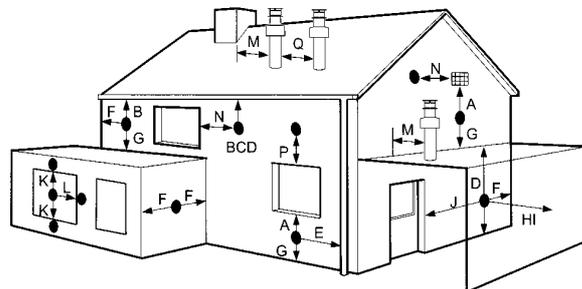


TABLE 3

Terminal position	Minimum spacing in mm
A Directly below an openable window, air vent or any other ventilation opening	300
B Below guttering, drain pipes or soil pipes	25 *
C/D Below eaves, balconies or carport roof	25 *
E From vertical drain pipes or soil pipes	75
F From internal or external corners	25
G Above adjacent ground, roof or balcony level	300
H From a surface facing the terminal	600
I From a terminal facing the terminal	1,200
J From an opening in the carport (e.g. door; window into dwelling)	1,200
K Vertically from a terminal on the same wall	1,500
L Horizontally from a terminal on the same wall	300
M Horizontally from a vertical terminal to a wall	300
N Horizontally from an openable window or other opening	300
P Above an openable window or other opening	300
Q From an adjacent vertical terminal	600

* With "heat shield" installed in accordance to BS 5440 Pt1.

Fig. 4

2.4 VENTILATION REQUIREMENTS

Detailed recommendations for air supply are given in BS5440:2. 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.

2.5 GAS SUPPLY

- The gas installation should be in accordance with BS6891. The gas required for the boiler is specified in section 1.3.
- Ensure that the pipework from the meter to the appliance is of adequate size.
- The governor at the meter must give a constant outlet pressure of 20 mbar (8 inwg) for natural gas and 30 - 37 mbar (12 - 15 inwg) for LPG, when the appliance is running.
- The gas supply line should be purged.
NOTE: Before purging open all doors and windows, also extinguish any cigarettes, pipes, and any other naked flames.
- The complete installation must be tested for gas soundness.

2.6 ELECTRICITY SUPPLY

The appliance **MUST** be earthed. A mains supply of 230 V - 50 Hz single phase is required. All external controls and wiring **MUST** be suitable for mains voltage.

Wiring should be in 3 core PVC insulated cable NOT LESS than 0.75 mm² (24 x 0.2 mm) to BS6500, Table 16. Wiring external to the boiler **MUST** be in accordance with current I.E.E. Wiring Regulations (BS 7671) and local regulations.

The supply connection to the flying lead provided **MUST** be made to a fused double pole switch, having a 3 mm (1/8 in) contact separation in both poles, serving only the boiler and system controls; the fuse rating should be 3 amp.

This connection should be readily accessible and be made adjacent to the boiler (except in the case of bathroom installations for domestic boilers where the point of connection to the mains **MUST** be outside of the bathroom).

2.7 EXTERNAL CONTROLS

(Refer to section 2.8.1)

The boiler is intended for use with a 24 V room thermostat. The connection is made inside the control box as described in section 3.9.

2.8 WATER SYSTEMS - GENERAL

- This appliance is designed for connection

to sealed central heating water systems.

- Check that the mains water pressure is sufficient to produce the required D.H.W. flow rate, but does not exceed the maximum D.H.W. pressure (1.3 point).
Where mains pressure exceed 6 bar a pressure reducing valve must be fitted in the D.H.W. inlet.

2.8.1 Treatment of water circulating systems

- 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.
- For optimum performance after installation this boiler and its 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 Ltd recommend only the use of FERNOX products for flushing and water treatment. This 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.

- It is important to check the inhibitor concentration after installation, system modification and at every service in accordance with the manufacturer's instructions. (Test kits are available from inhibitor stockists).

2.9 REQUIREMENTS FOR SEALED WATER SYSTEMS

The heating system design should be based on the following information:

- The available pump head is given in fig. 5.
- The burner starts when the C.H. flow reaches 400÷450 l/h. This safety condition is ensured by the flow switch.
- The appliance is equipped with an internal by-pass that operates with system heads (H) greater than 3 m. The maximum flow through the by-pass is about 300 l/h. If thermostatic radiator valves are to be installed, at least one radiator should be without a thermostatic valve (usually the bathroom radiator).
- A sealed system must only be filled by a competent person using one of the approved methods shown in fig. 7. The system design should incorporate the connections appropriate to one of these methods.

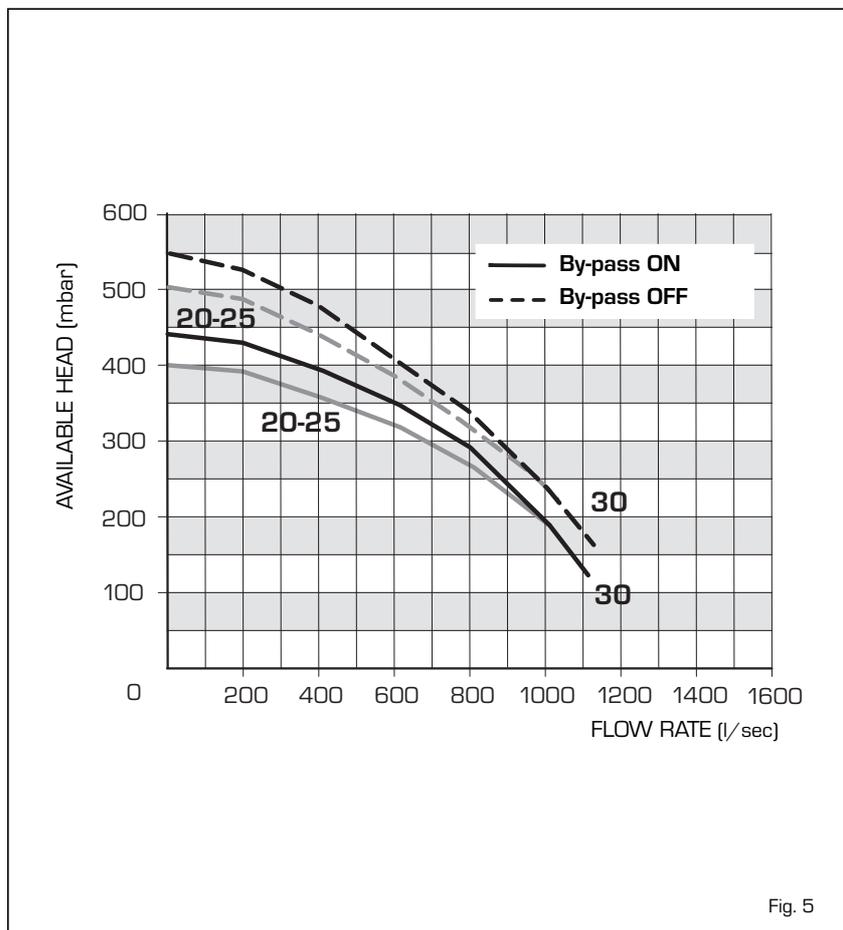
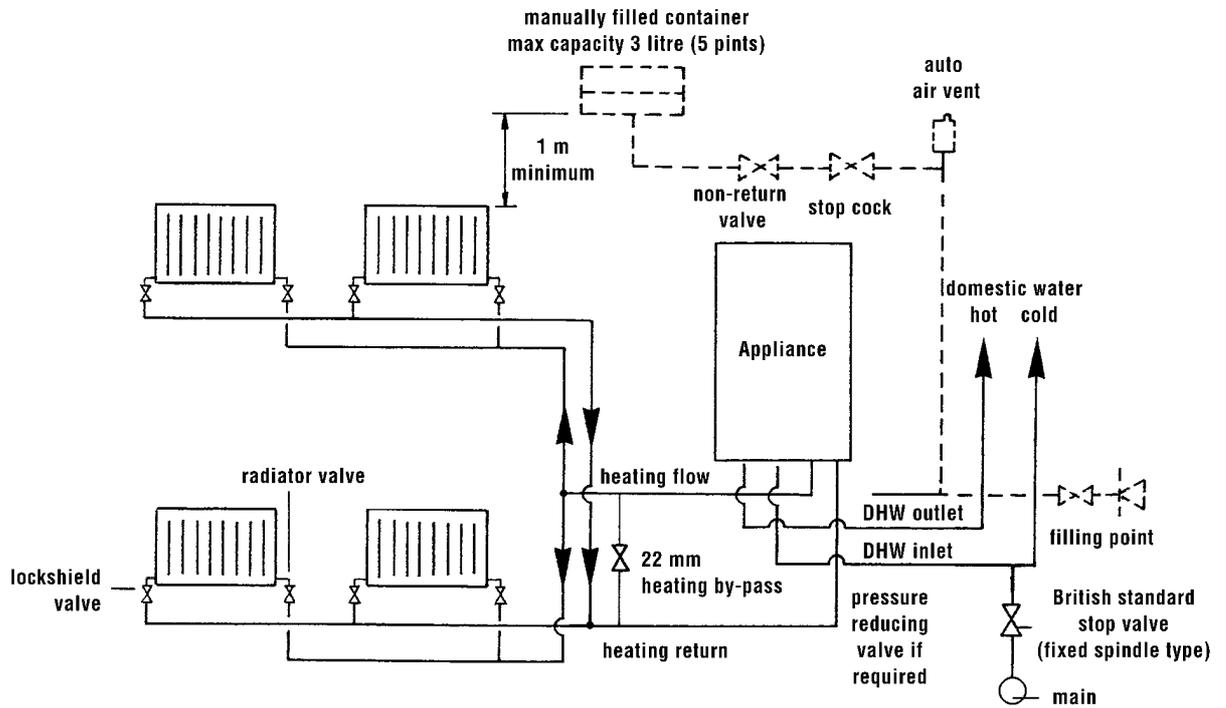


Fig. 5



TYPICAL SYSTEM DESIGN



NOTE: A drain cock should be installed at the lowest point of the heating circuit and beneath the appliance.

Fig. 6

ALTERNATIVE METHODS OF FILLING A SEALED SYSTEM

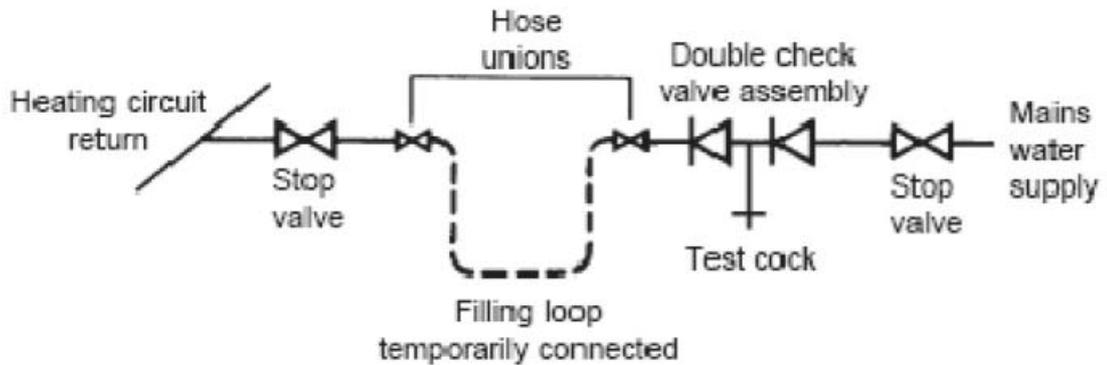


Fig. 7

2.9.1 Pump

The available head shown in fig. 5 is that in excess of the appliance hydraulic resistance, i.e. that available for the system at any given heating load up to the maximum output in C.H. mode. Never reduce the pump speed below maximum as this will reduce D.H.W. output. The pump speed is indicated on the side of the pump speed selector switch (if fitted).

2.9.2 System volume (total water content)

The **Table 4** gives the maximum system volume that the integral expansion vessel can sustain under different charge pressure conditions.

If the system volume exceeds that shown, an additional expansion vessel must be fitted and connected to the heating system primary return pipe as close as possible to the appliance.

If an extra vessel is required, ensure that the total capacity of both vessels is adequate. Further details are available in the current issues of BS5449 and BS6798.

NOTE: If the pressure gauge indicates 2.65 bar or greater when the appliance is at maximum temperature with all radiators in circulation an extra expansion vessel is required.

2.9.3 Pressure gauge

A pressure gauge is mounted in the base of the appliance.

2.9.4 Safety valve

A safety valve set at 3 bar is fitted to the appliance and a discharge pipe is routed to outside of the appliance.

This discharge pipe should be extended to terminate safely away from the appliance and where a discharge would not cause damage to persons or property but would be detected.

The pipe should be able to withstand boiling water; be a minimum of 15 mm in diameter; and installed with a continuous fall.

2.10 D.H.W. SYSTEMS

- Check that the mains supply pressure is within the prescribed limits (1.3 point).
If necessary, a pressure reducing valve should be fitted to the mains supply before the D.H.W. inlet connection.
- A maximum D.H.W. flow rate of 11.4 l/m (3.0 gpm).
Higher flow rates will not damage the appliance but may lower the water temperature below an acceptable level.
- If the appliance is installed in an area

TABLE 4

Vessel charge and initial system pressure	bar psi	0.5 7.3	1.0 14.5	1.5 21.8
Total water content of system using 8 l (1.76 gal) capacity expansion vessel supplied with appliance	l gal	96 21.1	74 16.2	51 11.2
For systems having a larger capacity multiply the total system capacity in litres (gal) by the factor to obtain the total minimum expansion vessel capacity required litres (gal)		.0833	.109	.156

where the temporary hardness of the water supply is high, say over 150 ppm, the fitting of an in line scale inhibitor may be an advantage. Consult the Local Water authority if in doubt.

2.10.1 Domestic hot/cold water supply taps and mixing taps

All equipment designed for use at mains water pressure is suitable.

2.10.2 Showers

Any WRAS approved shower suitable for the mains water pressure available may be used. A loose or flexible shower head type may require the fitting of an anti-siphon device to comply with water by-laws.

2.10.3 Bidets

Providing that the appliance is of the over-rim flushing type, the outlets are shrouded and it is impossible to attach a temporary hand held spray, no anti siphonage device is necessary.

2.11 FILLING THE WATER SYSTEM

- Open the C.H. flow and C.H. return valves (3 - fig. 3).
- Loosen the automatic air vent cap (8 fig. 2).
- Open all radiator valves and system air vents. Fill the system with water using one of the approved methods described in section 2.9 to about 0.5 bar greater than the system design pressure. Close all air vents. Do not close the A.A.V. the one near the pump!
- Check the system for water soundness.
- Completely drain the appliance and heating system, thoroughly flush the system, and refill the system design pressure to BS 7593.
- Open the D.H.W. inlet valve, open any hot tap, clear of air bubbles.
- Close hot tap.

2.11.1 Emptying the system

Use the cock boiler discharge to empty the system (15 fig. 2). Turn off the boiler before draining.

2.12 ANTI-FREEZE FUNCTION

The boilers are equipped with anti-freeze function which activates the pumps and the burner when the temperature of the water contained inside the appliance drops to below value set at PAR 10. The anti-freeze function is ensured, however, only if:

- the boiler is correctly connected to the gas and electricity supply circuits;
- the boiler is constantly fed;
- the boiler ignition is not blocked;
- the essential components of the boiler are all in working order

In these conditions the boiler is protected against frost down to an environmental temperature of -5°C.

ATTENTION:

In the case of installation in a place where the temperature drops below 0°C, the connection pipes must be protected.

2.13 APPLIANCE PACKAGE:

- Combination boiler (assembled);
- Installation and servicing instructions;
- Users instructions;
- Wall mounting templates (paper);
- Fixing screws with wall plugs;
- Plastic bags containing:
 - gas service cock;
 - C.H. F/R isolation valves;
 - D.H.W. isolation valve;
 - D.H.W. outlet fittings;
 - associated gaskets and PRV discharge pipe.

2.14 WATER CONNECTIONS

2.14.1 Central heating connections

- Fit the two C.H. isolation valves using the gaskets supplied to the flow and return connections as shown in fig. 2. The pipe connections are labelled on the lower part of the boiler.
- Connect the C.H. pipework as required.

2.14.2 D.H.W. connections

- Fit the D.H.W. isolation valve to the cold water inlet connection as shown in fig. 2.
- Fit the union connection to the D.H.W.

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outlet.

- Connect the D.H.W. pipework as required.

2.15 GAS CONNECTIONS

- Fit the gas isolation valve.
- Connect the gas supply pipe.

2.16 SAFETY VALVE CONNECTION

- The appliance safety valve is located towards the R.H.S. of the boiler and the discharge pipe is supplied loose. Remove the two selftapping screws and lower the control box to improve access.
- Connect the discharge pipe to the valve outlet, and extend the pipe to ensure that any discharge from the safety valve is safely routed to a drain. The discharge pipe should be a minimum of 15 mm copper, and must avoid sharp corners or upward pipe runs where water may be retained.
- Support the valve whilst tightening the nut and olive to avoid damage to the technil assembly.

2.17 INSTALLATION OF COAXIAL DUCT

2.17.1 Accessories 60/100

The diagrams of fig. 8 illustrate some examples of different types of discharge options allowed and the maximum lengths that can be reached.

2.17.2 Diaphragm for 60/100 coaxial duct

The boiler is supplied with a diaphragm of $\varnothing 79$. Use the diaphragm according to the table in fig. 8/a.

2.17.3 Installation of separate ducts

The following guidelines should be followed when installing separate ducts:

- With air directly from outside, when the duct is longer than 1 metre, it is advisable to insulate the duct in order to avoid the formation of dew on the outside of the pipe when the weather is particularly cold.
- With ducts with discharge positioned outside the building, or in cold environments, insulation is necessary to avoid difficulty in starting the burner. In these cases, a condensation system on the pipes must be provided for.
- If the pipe passes through flammable material, insulate the discharge pipe with rounded glass wool 30 mm thick

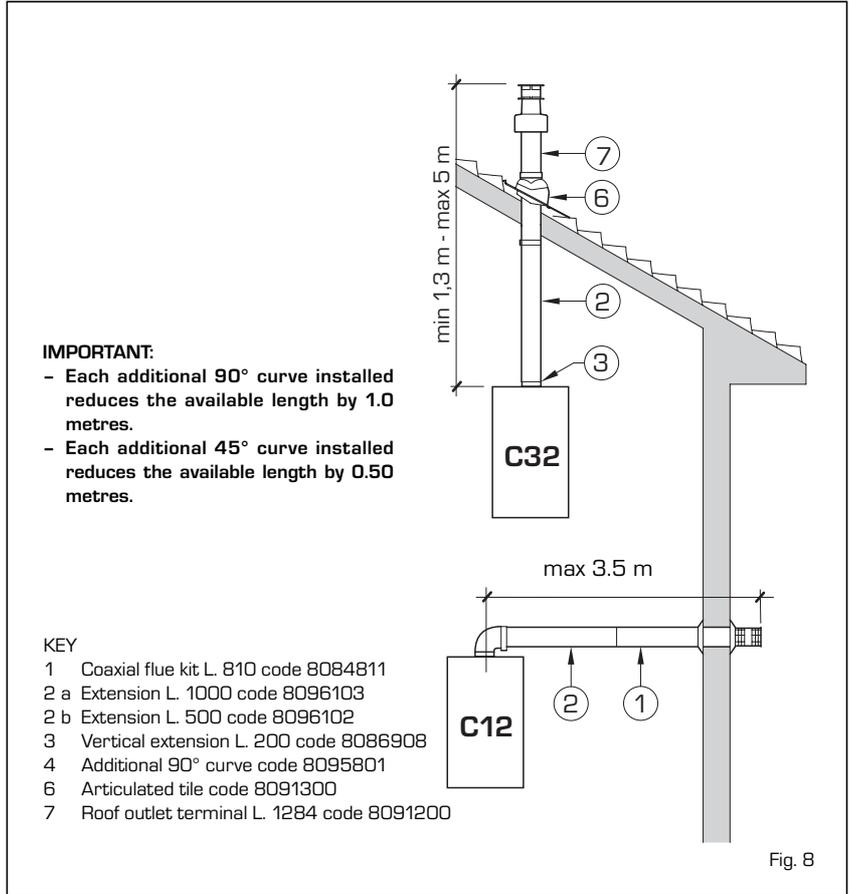


Fig. 8

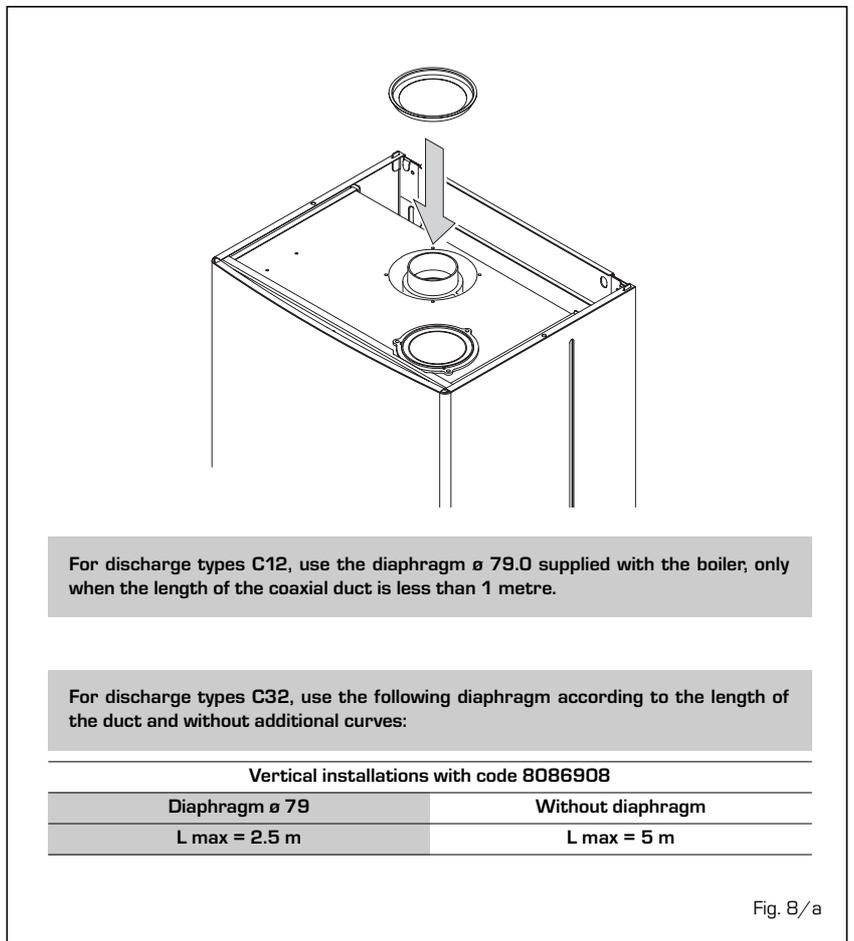


Fig. 8/a

and with a density of 50 kg/m³.

The maximum available length is determined by the sum of the head losses of the individual components of the flue and must not result as more than 9.0 mm H₂O.

For the loss of charge of the accessories, refer to Table 5 and to the example given in fig. 9.

2.17.4 Twin Adaptor

The twin adaptor code 8093020 (fig. 10) is supplied with a diaphragm. Segments must be removed, depending on the maximum head loss total in both ducts, as indicated in fig. 10/a.

2.18 ELECTRICAL WIRING

The boiler is supplied with an electric cable. Should this require replacement, it must be purchased exclusively from Sime Ltd. The power supply must be single-phase 230V - 50 Hz through a main switch pro-

TABLE 5

Accessories ø 80	Load loss (mm H ₂ O)	
	Intake	Outlet
90° elbow MF	0.35	0.40
45° elbow MF	0.30	0.35
Extension L. 1000 (horizontal)	0.20	0.30
Extension L. 1000 (vertical)	0.20	0.10
Wall terminal	0.15	0.50
T-shaped condensation collector	—	0.80
Roof exit terminal*	1.60	0.10

* The loss of the roof exit terminal in aspiration concludes the collector code 8091400

Calculation example of the head loss (installation allowed as the sum of the head losses of the accessories used is less than 9.0 mm H₂O):

	Intake	Outlet
7 meter horizontal pipe ø 80 x 0.20	1.40	-
7 meter horizontal pipe ø 80 x 0.30	-	2.10
No. 2 90° elbows ø 80 x 0.35	0.70	-
No. 2 90° elbows ø 80 x 0.40	-	0.80
No. 1 wall terminal ø 80	0.15	0.50
Total head loss	2.25	3.40
		= 5.65 mm H₂O

With this total head loss, remove the segments from No. 1 to No. 6 from diaphragm in the intake pipe.

Fig. 9

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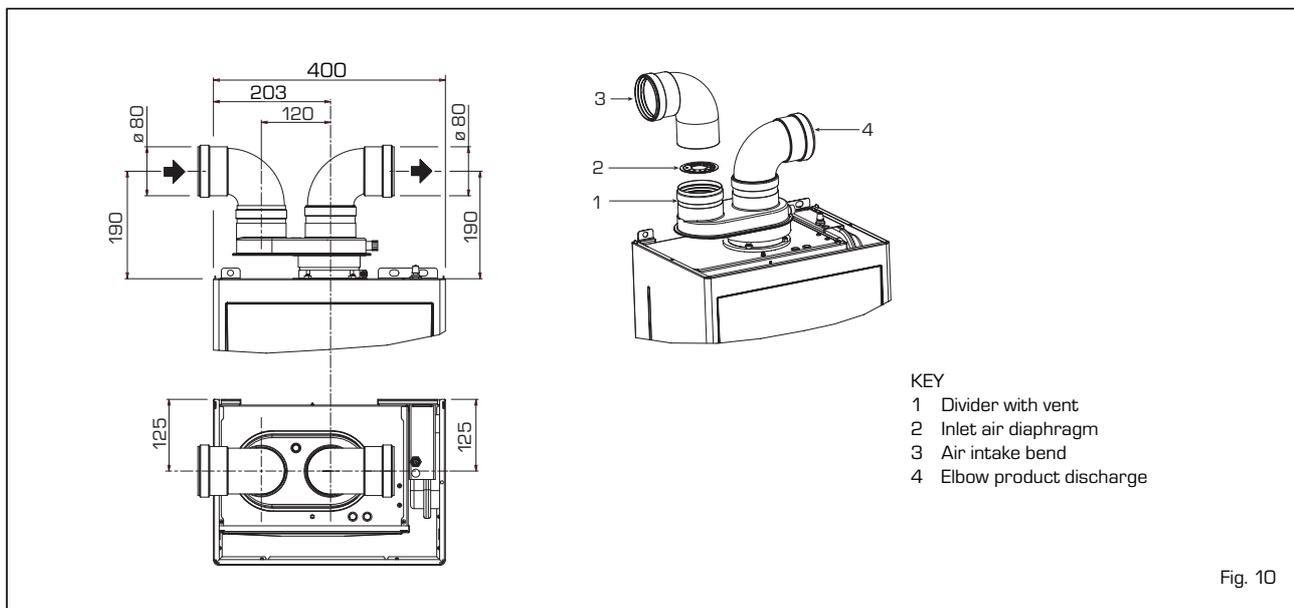


Fig. 10

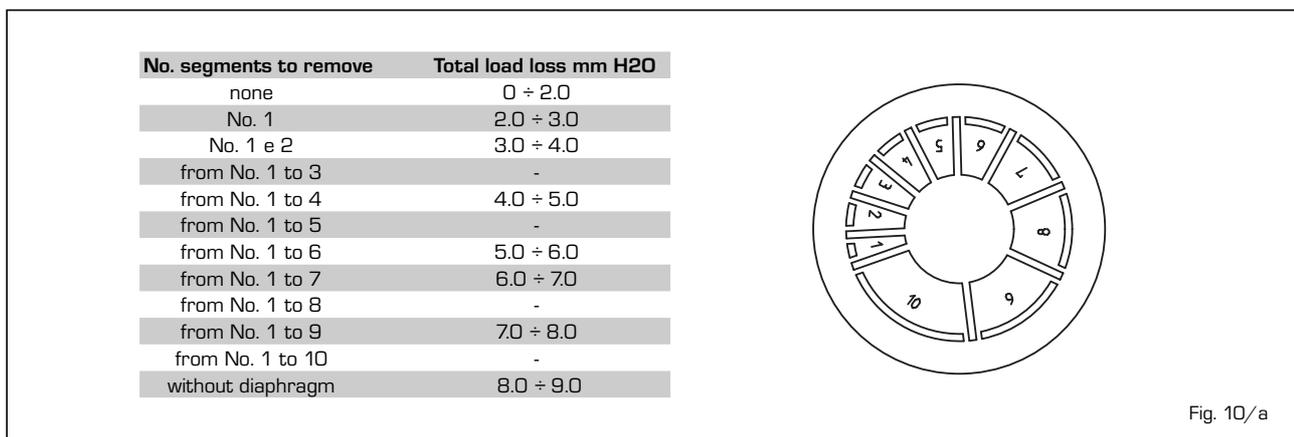


Fig. 10/a

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tected by a 3A fuse with a distance of at least 3 mm between contacts.

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NOTE: The boiler must be connected with an efficient earthing system.

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SIME shall not be held liable for injury or damage resulting from failure to earth the boiler.



Ensure that the boiler is isolated from the power supply before any service or repair work is done.

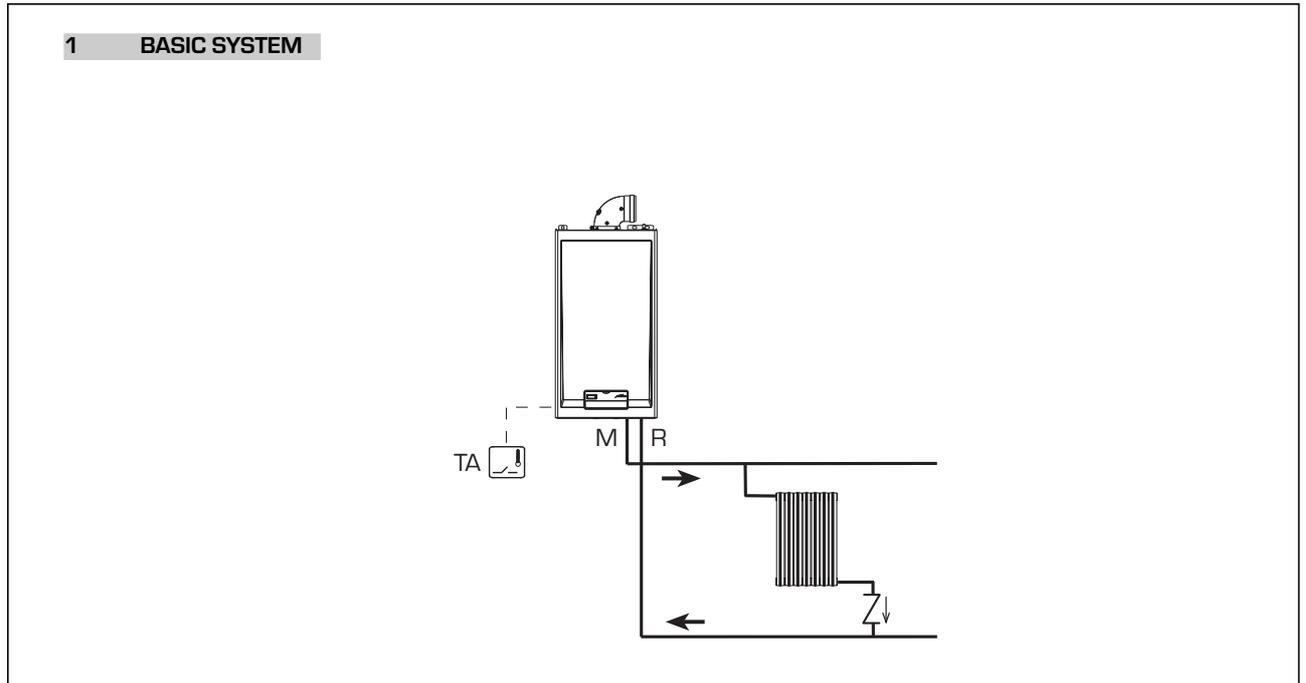
2.18.1 Room Thermostat

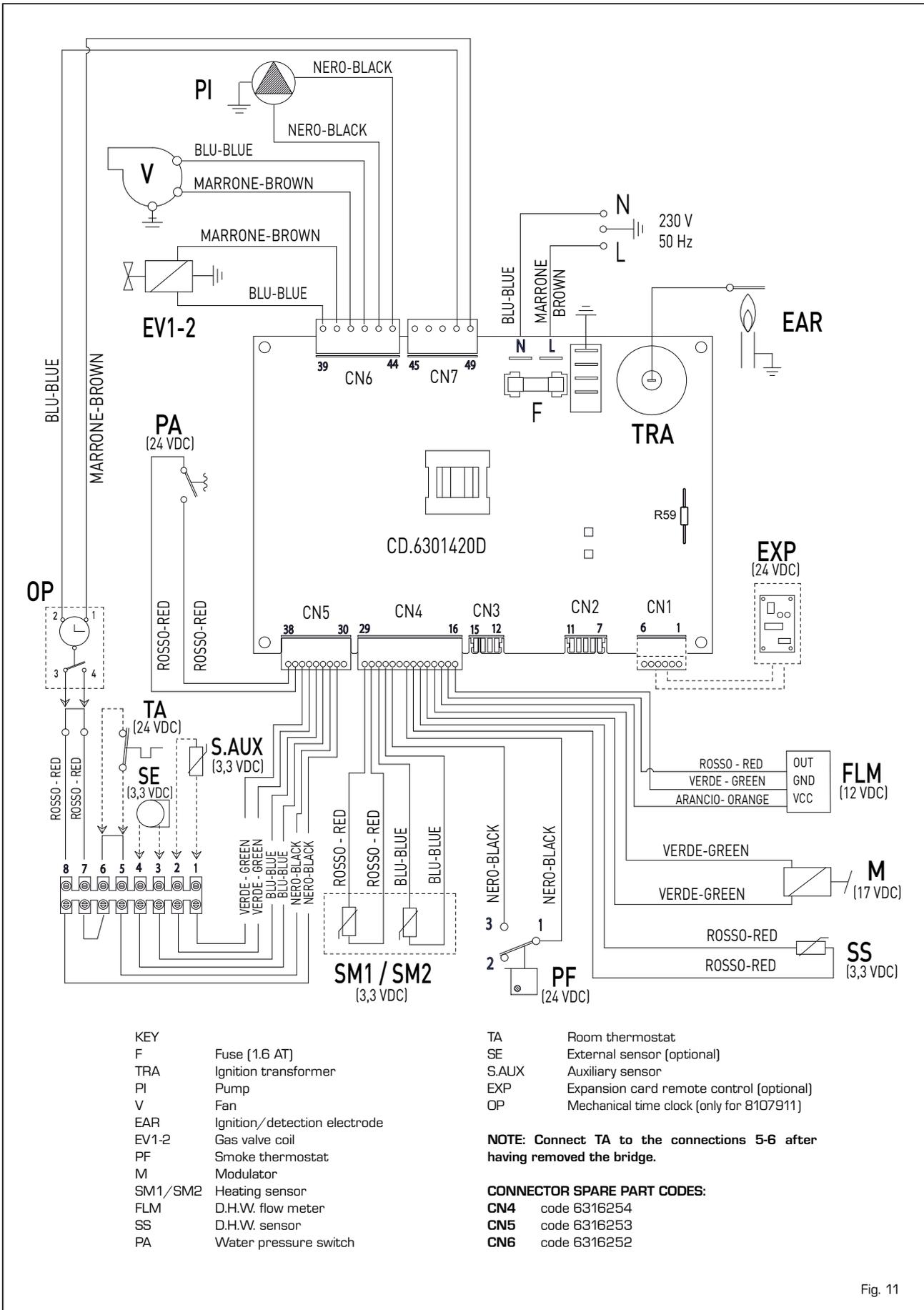
Remove the boiler casing, remove the two securing screws and tilt the control panel. Connect the thermostat to the 6 pole terminal board as indicated in the boiler electrical diagram (see diagram 2.19) after having removed the existing bridge.

The room thermostat to be used must be of a class conforming to the standard EN 60730.1 (clean electrical contact).

Description of the letters indicating the components shown on the system diagrams:

- M System output
- R System return
- TA Zone room thermostat
- EXP Expansion card (code 6301430)





- KEY
- F Fuse [1.6 AT]
 - TRA Ignition transformer
 - PI Pump
 - V Fan
 - EAR Ignition/detection electrode
 - EV1-2 Gas valve coil
 - PF Smoke thermostat
 - M Modulator
 - SM1/SM2 Heating sensor
 - FLM D.H.W. flow meter
 - SS D.H.W. sensor
 - PA Water pressure switch

- TA Room thermostat
- SE External sensor (optional)
- S.AUX Auxiliary sensor
- EXP Expansion card remote control (optional)
- OP Mechanical time clock (only for 8107911)

NOTE: Connect TA to the connections 5-6 after having removed the bridge.

CONNECTOR SPARE PART CODES:

- CN4** code 6316254
- CN5** code 6316253
- CN6** code 6316252

Fig. 11

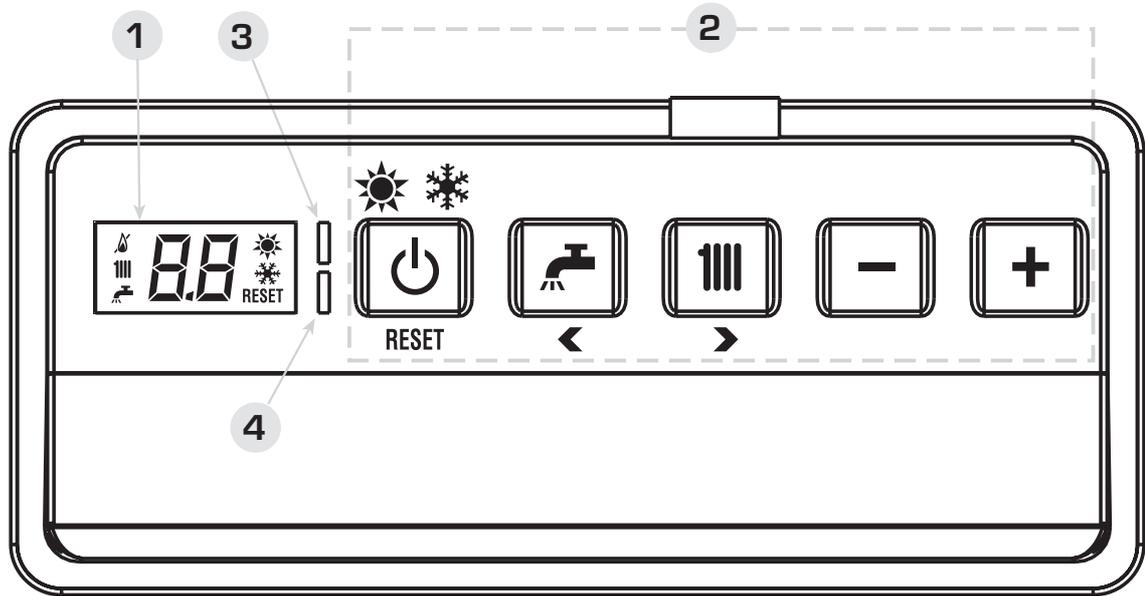
3 CHARACTERISTICS

3.1 CONTROL PANEL

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1 - DESCRIPTION OF DISPLAY ICONS

-  SUMMER MODE ICON
-  WINTER MODE ICON
-  D.H.W. MODE ICON
-  HEATING MODE ICON
-  BURNER LIT ICON
-  LOCKOUT DUE TO NO IGNITION/FLAME DETECTION
-  RESET REQUIRED
-  MAIN DIGITS

2 - DESCRIPTION OF CONTROLS

-  **OPERATING MODE/RESET**
By pressing the key in succession, pass to the summer and winter function (stand-by function if permanent on the key more than two second). RESET is only available if a resettable anomaly is signalled
-  **D.H.W. SET**
Press the key to display the D.H.W. temperature value set
-  **HEATING SET**
Press the key to display the heating temperature value set (value not relative to the remote control)
-  **DECREASE**
Pressing this key decreases the value set
-  **INCREASE**
Pressing this key increases the value set

3 - LED GREEN

ON = Indicates the presence of electrical voltage.
It switches of momentarily every time the keys are pressed.
It can be disabled by setting **PAR 3 = 0**.

4 - LED RED

OFF = Normal functioning.
ON = Boiler error signalled.
Flashing when the control panel buttons are pressed inside the PARAMETERS SECTION.

Fig. 12

3.2 ACCESS TO INSTALLER'S PARAMETERS

For access to the installer's parameters, press simultaneously the keys of boiler panel ( and ) for 5 seconds. The red LED flashes and the display shows:

The parameters can be scrolled with 



or  . To enter the parameter press  or  . The value set **flashes**, the display shows:



Proceed as follows to change the set value:

- set the new value using  or  .
- confirm the set value using  or  .

Press  to exit the parameters section. The display is shown automatically after 5 minutes.

The parameters section contains the alarms log, info and meters (display only).

3.2.1 Replacing the board or RESETTING parameters

If the electronic board is replaced or reset, it is necessary to configure PAR 01 and PAR 02 by associating the following values to each type of boiler to be able to restart the boiler:

BOILER	GAS	PAR 1
METROPOLIS DGT 25 BF	METHANE (G20)	01
	LPG (G30/G31)	03
BOILER		PAR 2
METROPOLIS DGT 25 BF		01

NOTE: the boiler panel has a label with the values that have to be set for PAR 01 and PAR 02 (fig. 19).

PARAMETERS INSTALLER

FAST CONFIGURATION

PAR	DESCRIPTION	RANGE	UNIT OF MEASUREMENT	INC/DEC UNIT	DEFAULT SETTING
01	Combustion configuration	- = ND 1 ... 8	=	=	"_"
02	Hydraulic configuration	- = ND 1 ... 22	=	=	"_"
03	Disabling of voltage presence LED	0 = Disabled 1 = Enabled	=	=	01
04	Correction of external probe values	-5 ... 05	°C	1	00
05	Timer block of the keys	- = Disabled 1 ... 99	Min.	1	15

D.H.W. - HEATING

PAR	DESCRIPTION	RANGE	UNIT OF MEASUREMENT	INC/DEC UNIT	DEFAULT SETTING
10	Boiler antifreeze	0 ... 10	°C	1	03
11	External sensor antifreeze	- = Disabled -9 ... 05	°C	1	-2
12	Climatic curve setting	03 ... 40	=	1	20
13	Minimum temperature heating	40 ... PAR 14	°C	1	40
14	Maximum temperature heating	PAR 13 ... 80	°C	1	80
15	Maximum power heating	30 ... 99	%	1	99
16	Post-circulation time	0 ... 99	10 sec.	1	03
17	Pump heating activation delay	0 ... 99	10 sec.	1	01
18	Re-ignition delay	0 ... 10	Min.	1	03
19	Modulation D.H.W. flowmeter	- = Disabled 1 = Enabled	=	=	01
29	Anti-legionella (only D.H.W. tank)	- = Disabled 50 ... 80	°C	1	"_"

PARAMETERS RE-SET

PAR	DESCRIPTION	RANGE	UNIT OF MEASUREMENT	INC/DEC UNIT	DEFAULT SETTING
49 *	Reset default parameters (PAR 01 - PAR 02 equal "_")	- , 1	=	=	=

* If the current setting is difficult to understand or anomalous behaviour or if it is difficult to understand the boiler, it is advised to restore the initial parameter values by setting PAR 49 = 1 and PAR 1 and PAR 2 as specified in point 3.3.1.

ALARMS (visualization)

PAR	DESCRIPTION	RANGE	UNIT OF MEASUREMENT	INC/DEC UNIT	DEFAULT SETTING
A0	Code of last error	=	=	=	=
A1	Code of last error	-1	=	=	=
A2	Code of last error	-2	=	=	=
A3	Code of last error	-3	=	=	=
A4	Code of last error	-4	=	=	=
A5	Code of last error	-5	=	=	=
A6	Code of last error	-6	=	=	=
A7	Code of last error	-7	=	=	=
A8	Code of last error	-8	=	=	=
A9	Code of last error	-9	=	=	=

INFO (visualization)

PAR	DESCRIPTION	RANGE	UNIT OF MEASUREMENT	INC/DEC UNIT	DEFAULT SETTING
i0	External sensor temperature	-9 ... 99	°C	1	=
i1	C.H. 1 sensor temperature	-9 ... 99	°C	1	=
i2	C.H. 2 sensor temperature	-9 ... 99	°C	1	=
i3	D.H.W. sensor temperature	-9 ... 99	°C	1	=
i4	Auxiliary sensor AUX temperature	-9 ... 99	°C	1	=
i5	Set of effective heating temperature	PAR 13 ... PAR 14	°C	1	=
i6	Level survey flame	00 ... 99	%	1	=
i7	Current to the modulator	00 ... 17	10 mA	1	=
i8	Flow rate D.H.W. flow meter	00 ... 99	l/min	1	=

COUNTERS (visualization)

PAR	DESCRIPTION	RANGE	UNIT OF MEASUREMENT	INC/DEC UNIT	DEFAULT SETTING
c0	Number hours of operation of the burner	00 ... 99	h x 100	0,1 da 0,0 a 9,9 1 da 10 a 99	00
c1	Number of ignitions of the burner	00 ... 99	x 1000	0,1 da 0,0 a 9,9 1 da 10 a 99	00
c2	Number total of the errors	00 ... 99	x 1	1	00
c3	Number approached the parameters installer	00 ... 99	x 1	1	00
c4	Number approached the parameters OEM	00 ... 99	x 1	1	00

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3.3 EXTERNAL SENSOR

If there is an external sensor, the heating settings SET can be taken from the climatic curves according to the external temperature and, in any case, limited to with the range values described in point 3.2 (parameters PAR 13 and PAR 14).

The climatic curve to be set can be selected from a value of 3 and 40 (at step 1). Increasing the steepness of the curves of fig. 13 will increase the output temperature as the external temperature decreases.

3.4 CARD FUNCTIONING

The electronic card has the following functions:

- Antifreeze protection of the heating circuit.
- Ignition and flame detection system.
- Control panel setting for the power and the gas for boiler functioning.
- Anti-block for the pump which is fed for a few seconds after 48 hours of inactivity.
- Chimney sweep function which can be activated from the control panel.
- Temperature which can be shifted with the external sensor connected. It can be set from the control panel.
- Automatic regulation of the ignition power and maximum heating. Adjustments are managed automatically by the electronic card to guarantee maximum flexibility in use of the system.

3.5 THERMISTOR VALUES

Table 6 gives the values of the electrical element (Ω) obtained on the heating and sanitary water sensors according to the variations in temperature.

The C.H. sensor (SM1/SM2) is of type to double sensing element with function safety thermostat.

When the heating sensor (SM1/SM2) is interrupted, the boiler will not function for both services.

With the D.H.W. sensor (SS) interrupted, the boiler functions only in D.H.W. mode.

3.6 ELECTRONIC IGNITION

Ignition and flame detection is controlled by a single electrode on the burner which guarantees

TABLE 6

Temperature (°C)	Resistance (Ω)
20	12.090
30	8.313
40	5.828
50	4.161
60	3.021
70	2.229
80	1.669

reactions in the case of accidental extinction or lack of gas within one second.

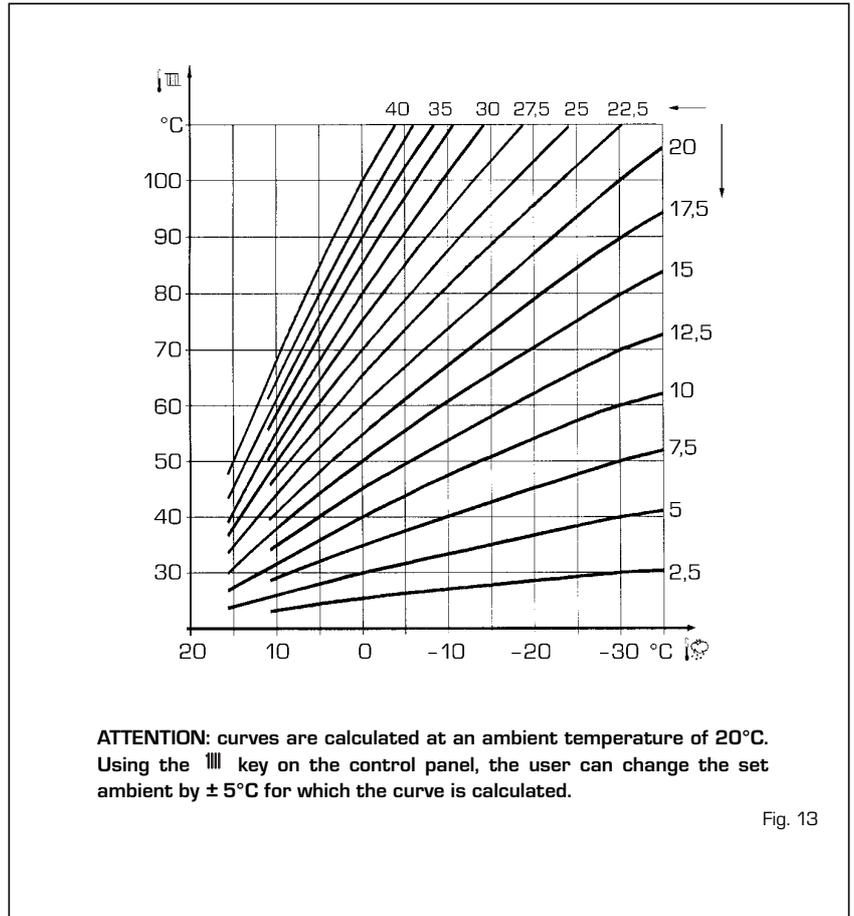


Fig. 13

3.6.1 Functioning cycle

Burner ignition occurs within max. 10 seconds after the opening of the gas valve. Ignition failure with consequent activation of block can be due to:

- **Lack of gas**
The ignition electrode persists in discharging for max. 10 seconds. If the burner does not ignite, the anomaly is signalled. This can happen the first time the boiler is switched on after a long period of inactivity due to the presence of air in the gas pipes. It can be caused by a closed gas cock or by a faulty gas valve.
- **The electrode does not discharge.**
In the boiler, only the opening of the gas to the burner can be detected. After 10 seconds the error is signalled. It can be caused by a break in the electrode wire or if it is incorrectly connected to the connection points. Or the electrode may be earthed or damaged: it must be replaced. Or the electronic card may be defective.

In the case of a sudden lack of voltage, the burner will immediately switch off. When voltage returns, the boiler will automatically start up again.

3.7 AIR PRESSURE SWITCH

The pressure switch is calibrated by the manufacturer at the following values: 0.62 - 0.72 mm H₂O which can guarantee boiler operation also with intake and discharge pipes of the maximum length allowed.

The value of the signal to the pressure switch is measured by a differential pressure gauge connected as indicated in fig. 14.

3.8 WATER PRESSURE SWITCH

The water pressure switch (C fig. 15) intervenes, stopping the boiler, if it detects that there is insufficient pressure in the boiler (< 0,6 bar).

To restore burner functioning, to bring back the pressure of the boiler to between 1 - 1.2 bar.

3.9 HEAD AVAILABLE TO SYSTEM

Residual head for the heating system is shown as a function of rate of flow in the graph in fig. 5.

To obtain the maximum head available to the system, turn off the by-pass by turning the union to the vertical position (fig. 15).

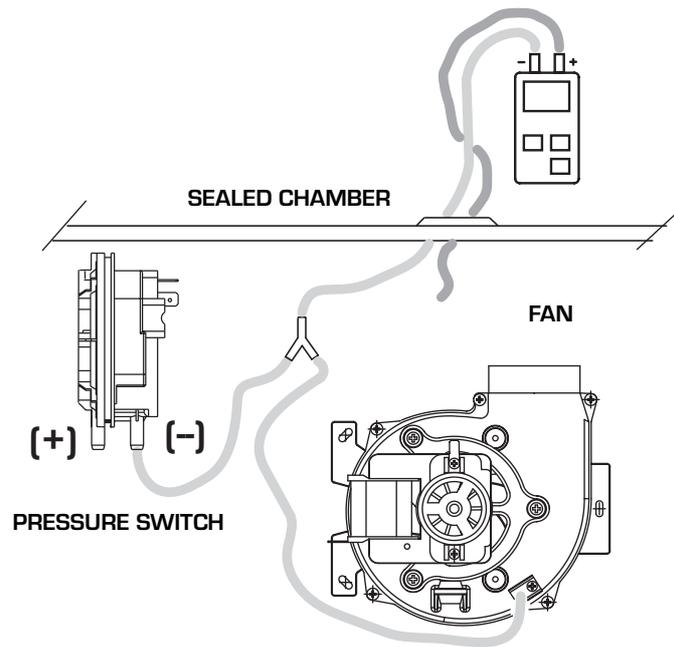


Fig. 14

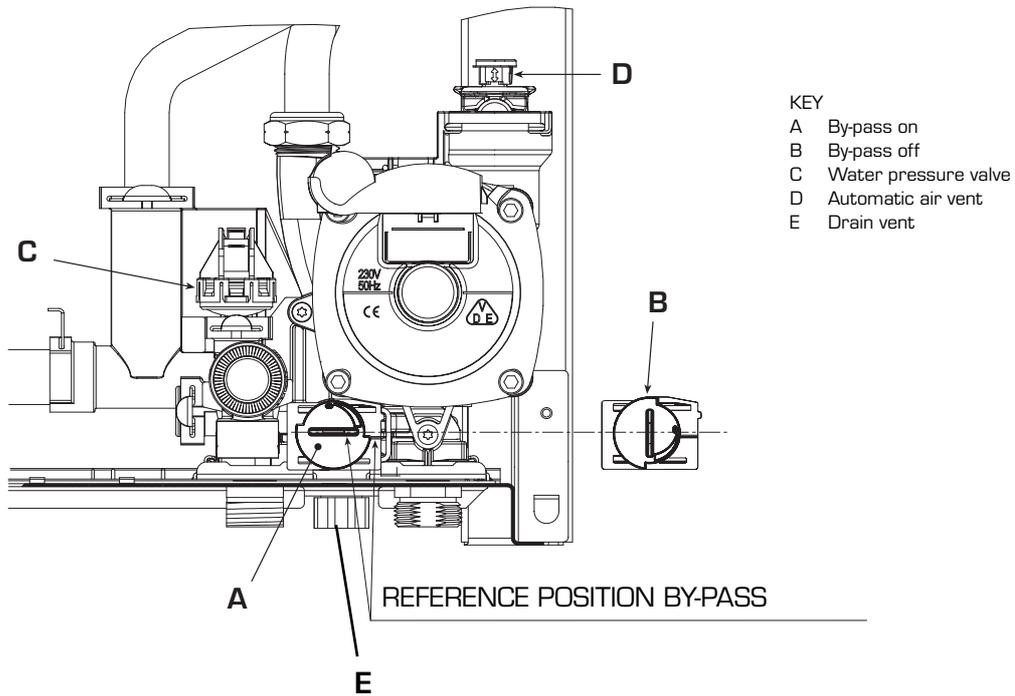


Fig. 15

4 USE AND MAINTENANCE (including BENCHMARK)

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4.1 GAS VALVE

The boilers are equipped standard with the SIT 845 SIGMA gas valve (fig. 16). The gas valve is set at two pressure values: maximum and minimum. According to the type of gas burnt, these correspond to the values given in **Table 7**. The gas pressures at the maximum and minimum values, are factory set. Consequently they must not be altered. Only when you switch the appliance from one type of gas supply (methane) to another (butane or propane), it is permitted to alter the operating pressure.

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4.2 GAS CONVERSION

This operation must be performed by authorised personnel using original Sime components. To convert from natural gas to LPG or vice versa, perform the following operations (fig. 17):

- Close the gas cock.
- Disassemble the burner manifold (3).
- Replace the main nozzles (6) supplied in a kit, inserting the copper washer (4). Use a $\varnothing 7$ spanner to perform this operation.
- Configure the new fuel as indicated in point 4.2.1
- For calibrating the maximum and minimum gas pressure values, see point 4.2.2.
- After have ultimated the conversion of the boiler, please stick onto the casing panel the plate showing the relevant feeding gas which is included into the kit.

NOTE: When reassembling components which you have removed, replace gas seals; test all gas connections after assembly using leak detection fluid. Under no circumstances should a naked flame be used.

4.2.1 New fuel configuration

Access the parameters section by pressing the control panel keys (▲ and ▮) at the same time for 5 seconds. The red LED flashes and the display shows:



Scroll the parameters using ▲ or ▮. To enter the fuel configuration parameter PAR 01, use - or +. The set value **flashes**. Confirm this value using ▲ or ▮. Exit the parameters section by pressing ⏻. The table below gives the values to set when the supply gas is changed:

BOILER	GAS	PAR 1
METROPOLIS DGT 25 BF	METHANE (G20)	01
	LPG (G30/G31)	03

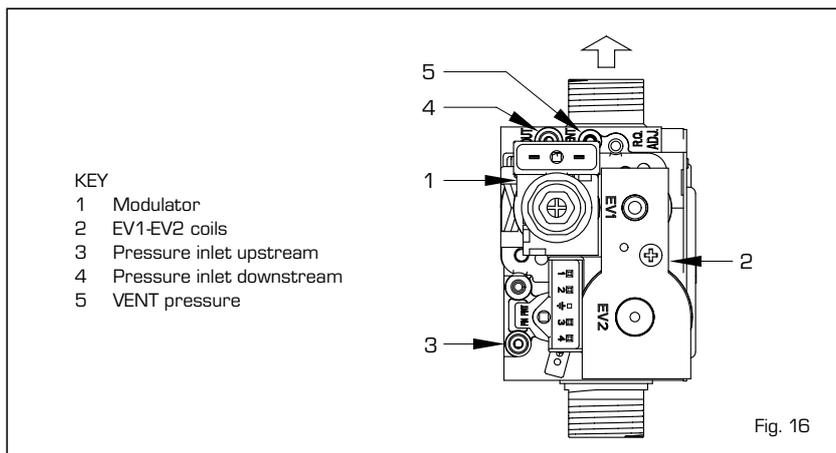
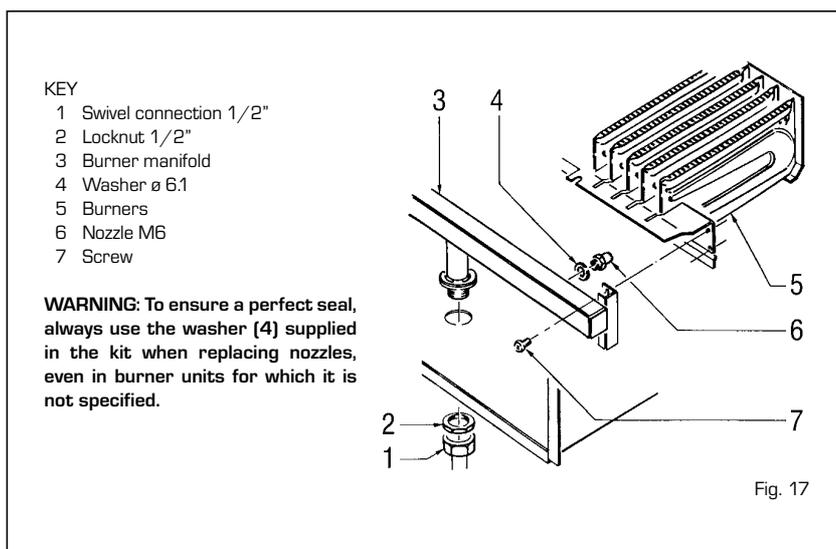


TABLE 7

Burner max pressure mbar			Modulator current mA			Burner min pressure mbar			Modulator current mA		
G20 (*)	G30	G31	G20 (*)	G30	G31	G20 (*)	G30	G31	G20 (*)	G30	G31
13,5	27,9	35,9	130	165	165	1,9	3,7	3,7	0	0	0

(*) Max. burner pressure is guaranteed only when the supply pressure



4.2.2 Adjusting valve pressure

Set maximum and minimum pressure on gas valves as follows (fig. 18):

- Connect the column or a manometer to the intake down stream of the gas valve, and disconnect the valve VENT pressure test point tube (5 fig. 16).
- Remove the cap (1) from the modulator.
- Connect the column or a manometer to the intake down stream of the gas valve, and disconnect the valve VENT pressure test point tube (5 fig. 16).
- Remove the cap (1) from the modulator.
- Press the keys (- and +) at the same time for a few seconds and completely open the hot water tap.
- Press the key + (Hi).
- Remember that rotating clockwise will increase pressure while rotating anti-clockwise will reduce it.
- Adjust maximum pressure using the nut

(3) with a wrench to the maximum pressure value indicated in **Table 7**.

- Adjust the maximum pressure before adjusting the minimum.
- Press the key - (Lo) while the hot water tap is on, with the water running.
- Lock the nut (3) in place, turn the screw/nut (2) to the minimum pressure indicated in **Table 7**.
- Press the keys (- and +) while keeping the tap water running all the time, and check that the maximum and minimum pressures correspond to the set values; if necessary readjust.
- Press the key ⏻ again to quit the function.
- Replace the pipe back on the valve VENT pressure test point.
- Remove the manometer, tighten the test point screw, reignite the boiler and test for tightness.
- Replace the plastic cap (1) back on the modulator.

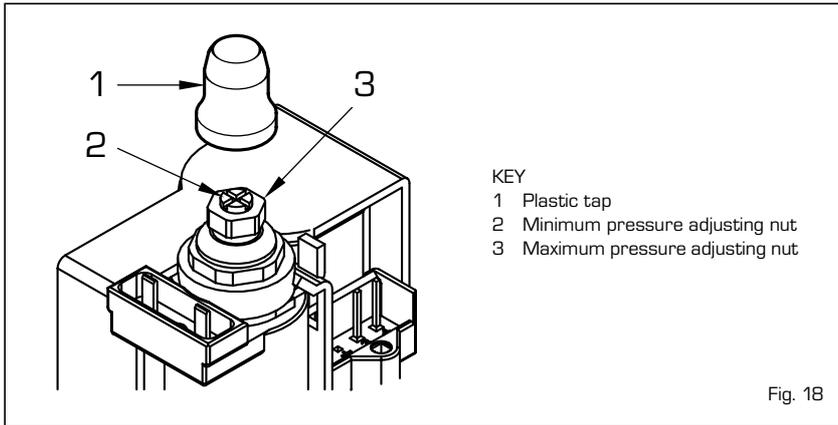


Fig. 18

should be adequate.

It is the law that a competent person such as a Gas Safe Register registered engineer must carry out any service work

- Isolate the power supply and turn off the gas isolation valve.
- Remove the outer casing and the gas burner manifold unit. Ideally use a vacuum cleaner and a soft brush, so as to remove any dust particles that may have accumulated, take care not to damage the insulation.
- Clean the heat exchanger, removing any dust or residue from combustion. When cleaning the heat exchanger or the burners, chemical products or steel brushes **MUST NOT BE USED**. Make sure that the tops of the burners with the holes are free from encrustations.
- Reassemble the items removed from the boiler, making sure to follow the correct sequence.
- Check operation of the main burner:
- After assembly of all the gas connections, these must be tested for tightness using or appropriate products. **DO NOT USE NAKED FLAMES.**

4.3 REMOVING THE OUTER COVER

The casing may be removed completely to facilitate boiler maintenance, as shown in fig. 19.

Turn the panel control forward for access to the internal components of the boiler.

4.4 ROUTINE SERVICE

To ensure continued efficient operation of the appliance, it is recommended that it is checked and serviced at regular intervals. The frequency of service will depend on the particular installation and conditions of usage, but in general once a year

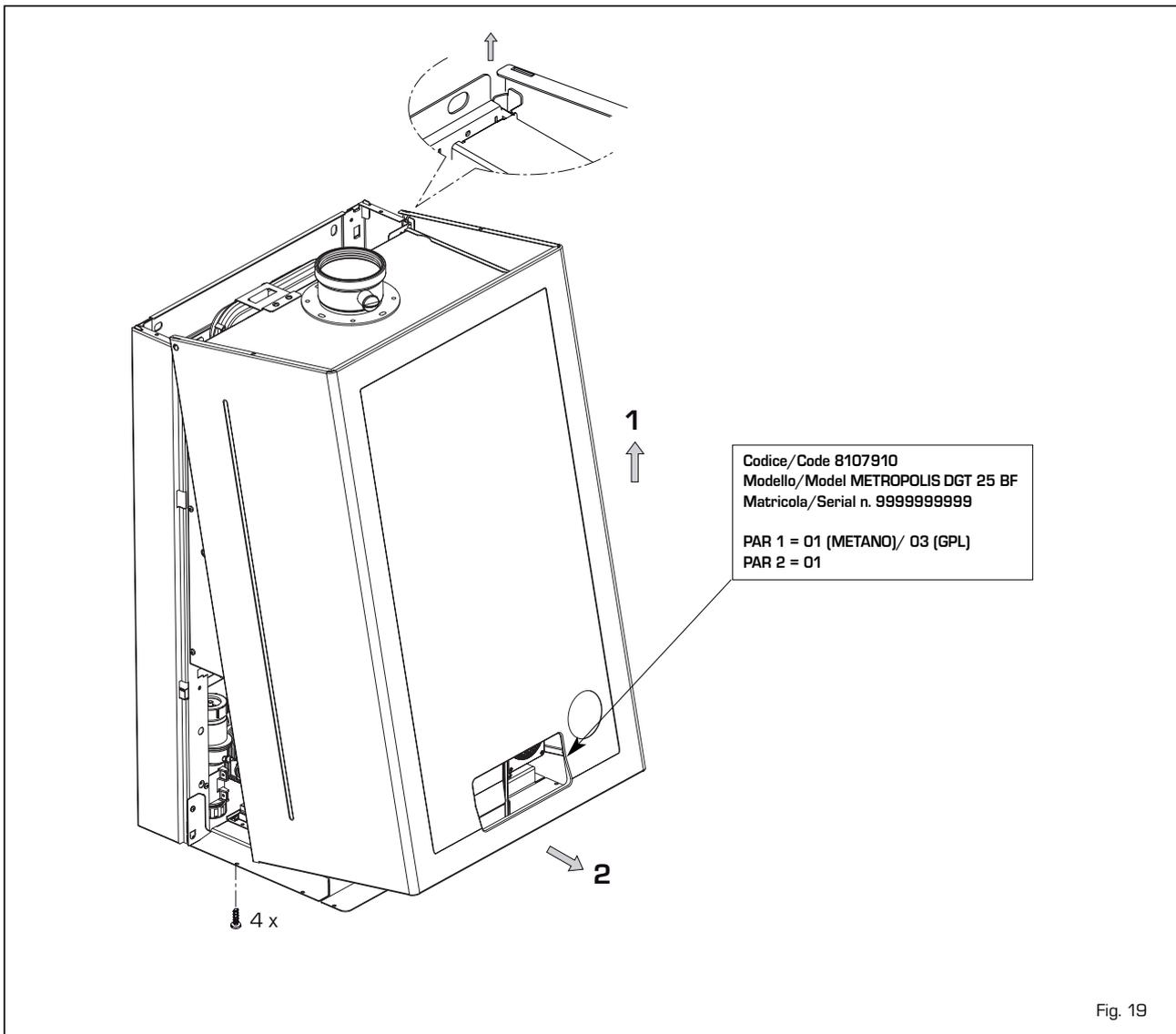


Fig. 19

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4.4.1 Chimney sweep function

To check boiler combustion, press at the same time the installer's key (- & +) for a few seconds. The chimney sweep function will switch on and will continue for 15 minutes. During the 15 minutes functioning of chimney sweep function, pressing the keys (- and +) take the boiler respective at maximum (Hi) and at minimum (Lo) power. From that moment, the boiler will start working in heating mode at maximum power, with cut off at 80°C and re-ignition at 70°C. **Before activating the chimney sweep function make sure that the radiator valves or eventual zone valves are open.** The test can also be carried out with the boiler working in D.H.W. mode. For this, after activating the chimney sweep function, open one or more hot water taps. Under these conditions, the boiler will function at maximum power with the D.H.W. kept at between 60°C and 50°C. During the test, the hot water taps must remain open. To exit to the chimney sweep function press the key  of the control panel. **The chimney sweep function will automatically switch off after 15 minutes from the activation.**

4.5 FUNCTIONING ERRORS

When there is a functioning error, an alarm appears on the display **and switch on the red led.** Descriptions of the errors with relative alarms and solutions are given below:

- **FUMES DISCHARGE ERROR ALARM 01** (fig. 20)
The fumes thermostat has intervened. If the condition causing the problem persists for two minutes, the boiler stops for an enforced period of thirty minutes. At the end of this period, the boiler re-attempts ignition.

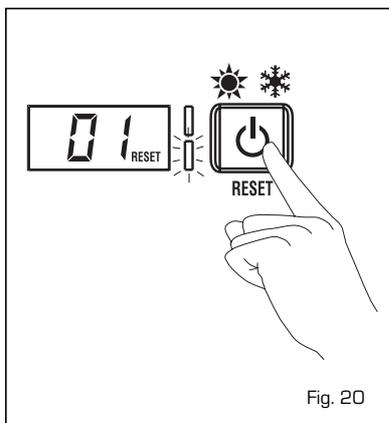


Fig. 20

- **LOW WATER PRESSURE ERROR ALARM 02**
If the pressure detected by the water pressure valve is lower than 0.5 bar, the boiler stops and the display shows the

alarm "AL 02". Bring the pressure back to normal, until the pressure indicated on the hydrometer reaches 1 - 1.2 bar. If the load procedure has to be repeated several times, it is advisable to check that the seal of the heating circuit is intact (check that there are no leaks).

- **D.H.W. SENSOR ERROR ALARM 04**
If the D.H.W. sensor (SS) is open or short circuited, the boiler will function only in heating (C.H.). The display will show the alarm "AL 04".
- **HEATING SENSOR ERROR ALARM 05**
If one or both sensing elements of heating sensor (SM1/SM2) are open or short circuited, the boiler will not function and the display will show the alarm "AL 05".
- **FLAME LOCKOUT ALARM 06** (fig. 20/a)
If the flame control has not detected the presence of the flame after a complete ignition sequence, or for any other reason the card cannot "see" the flame, the boiler will stop and the display will show the alarm "AL 06". Press the key  of the controls to start up the boiler again.

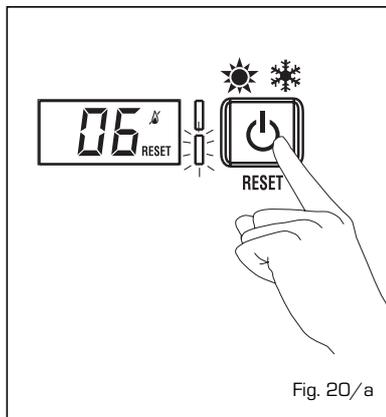


Fig. 20/a

- **SAFETY THERMOSTAT ERROR ALARM 07** (fig. 20/b)
If the C.H. sensor (SM1/SM2) exceeds the 100°C the boiler does not ignite the burner, the display show AL 07 and remains ignited the green led. If this condition restored more one minute, the boiler will stop, the display show always the anomaly AL 07 and switch on the red led. Press the key  of the controls to start up the boiler again.
- **FLAME DETECTION ERROR ALARM 08**
If the flame control section recognises the presence of flames also in phases when they should not be present, it means there is a breakdown in the flame detection circuit; the boiler will stop and the display will show anomaly "AL 08".

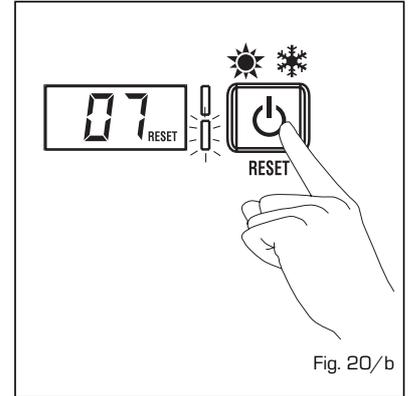


Fig. 20/b

- **AUXILIARY SENSOR ERROR ALARM 10**
Should this error occur, confirm that PAR 2 is set to the correct value.
- **MODULATOR ERROR ALARM 11**
The modulator is not connected. When during functioning the boiler detects zero current to the modulator, the display will show error "AL 11". **The boiler will function at minimum power and the error will be de-activated when the modulator is reconnected or when the burner stops working.**
- **CONFIGURATION ERROR ALARM 12**
Anomaly in the SEALED/OPEN configuration. There may be a conflict between the values set by the installer for PAR 1 and the self-detection carried out by the card causes the activation of the alarm: the boiler will not function and the display will show error "AL 12". Reset PAR 1 to de-activate the alarm or check the pressure switch/combustion product thermostat and relative connection.
- **HEATING SENSOR POSITIONING ERROR SM1/SM2 "AL 16"**
If the probe does not detect a temperature increase after burner ignition, the burner switches off after 10 seconds, the display shows anomaly AL 16 and the 4 green LED stays on. If the anomaly occurs three times within 24h the boiler blocks, the display continues to show anomaly AL 16 and the red LED switches on. Press  on the control panel to re-start the boiler.
- **SENSOR ALIGNMENT ERROR "AL 17"**
When the two sensitive elements of the heating probe (SM1/SM2) differ to each other by more than 16°C the boiler does not function and the display shows error AL 17. Replace the heating probe (SM1/SM2) to restore boiler operation.

4.6 COMMISSIONING AND ROUTINE SERVICE

Commissioning and servicing can only be done by a qualified engineer.

4.6.1 Commissioning

The gas valve is factory set and should require no adjustment.

Refer to section 4.2.2 "Calibrating the gas valve", to conduct a confirmation check.

The following procedure should be done after installation a gas purge and tightness/drop test have been made.

Ensure that the auto air vent (13 fig. 3) is opened, turn the electrical supply on.

With the boiler on standby fill the system and pressurise to 1.5 bar.

Ensure that the pump has been manually rotated.

Open the gas cock, press the "❄️ mode key" (fig. 12).

Ensure that any timers or room thermostats are in the on position.

The boiler will attempt to light.

Press "❄️ mode key" (fig. 12).

The burner will extinguish.

Turn on a DHW tap fully (preferably the bath tap).

Set the controls to the required values as shown in the user guide.

Complete the Benchmark sheet enclosed in this manual.

Explain controls and operation to the user.

Leave all documentation with the user.

4.7 ROUTINE SERVICE

To ensure continued efficient operation of the appliance, it is recommended that it is checked and serviced at regular intervals. The frequency of service will depend on the

particular installation and conditions of usage, but in general once a year should be adequate.

It is the law that a competent person such as a Gas Safe Register registered engineer, must carry out any service work.

4.7.1 Combustion Check

Incorporated into the flue elbow or vertical adaptor is a sampling point.

The grey plastic cap should be unscrewed and the flue gas sampled using a flue gas analyser.

During the test the boiler can be operated in "chimney sweep mode" see 4.4.1.

The correct CO₂ reading can be found in section 1.3.

4.7.2 Burner inspection

- Remove the casing as showed in fig. 19.
- Remove the 8 fixing screws securing the sealed chamber front panel then remove the panel.
- Unscrew the 7 screws securing the combustion chamber front panel and

remove the panel, taking care not to damage the insulation.

- Remove the electrode by unscrewing it from the burner manifold.
- Unscrew the burner manifold union and locking nut. Lift the front of the burner to disengage manifold thread and then lift the burner clear.
- Remove the burner manifold by disconnecting the four screws.
- Inspect and if necessary, clean the injectors, electrodes, and the main burner bars.
- Transfer the ignition electrode onto the burner assembly.
- Re-assemble in reverse order. Check the electrode gaps (fig. 21) and test for gas soundness.

4.7.3 Combustion Chamber

Remove any loose debris from the combustion chamber using a soft brush and a vacuum cleaner.

Take care not to damage the rear insulation panel.

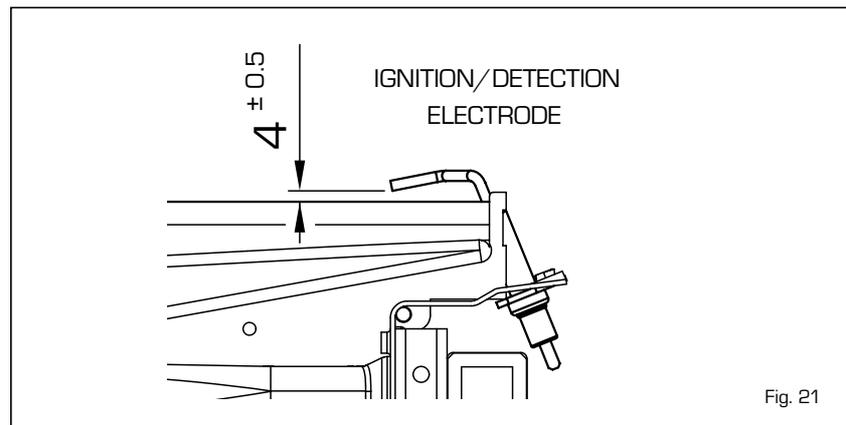


Fig. 21

Service Record

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

Service Provider

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

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

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

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

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

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

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

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

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

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

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

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

5 FAULT FINDING

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If an electrical fault occurs on the appliance the preliminary electrical system checks must be carried out first.

When any service or replacement of electrical components which has required the breaking and re-making of electrical connections has taken place, the following tests must be repeated:

- earth continuity;
- short circuit;
- polarity;
- resistance to earth.

5.1 EARTH CONTINUITY CHECK

Appliances must be electrically disconnected, meter set on Ω (ohm) x 1 scale and adjust zero if necessary. Tests leads from any appliance earth point (e.g. inside control box) see wiring diagrams (section 7) to earth pin on plug. Resistance should be less than 1 Ω (ohm). If the resistance is greater than 1 Ω (ohm) check all earth wires for continuity and all contacts are clean and tight. If the resistance to earth is still greater than 1 Ω (ohm) then this should be investigated further.

5.2 SHORT CIRCUIT CHECK

Switches turned FULL ON - meter set on Ω (ohms) x 1 scale. Test leads from L to N on appliance terminal block, if meter reads 0 then there is a short circuit.

Meter set on Ω (ohm) x 100 scale. Repeat it with leads from L to E. If meter reads less than infinity (∞) there is a fault.

NOTE: Should it be found that the fuse has failed but no fault is indicated, a detailed continuity check (i.e. by disconnecting and checking each component) is required to trace the faulty component.

It is possible that a fault could occur as a result of local burning/arcing but no fault could be found under test. However, a detailed visual inspection should reveal evidence of burning around the fault.

5.3 POLARITY CHECK

Appliance reconnected to mains supply and meter set on 300 V ac scale. Test at appliance terminal block.

- Test leads from L to N meter reads

approx.: 240 V ac.

- Test leads from L to E " * " meter reads approx. 240 V ac.
- Test leads from N to E " * " meter reads from 0 to 15 V ac.

5.4 RESISTANCE TO EARTH CHECK

Appliance must be disconnected from main supply and meter on Ω (ohm) x 100 scale. All switches including thermostat on test leads from L to E - if meter reads other than infinity (∞) there is a fault which should be isolated.

A detailed continuity check is required to trace the faulty component.

IMPORTANT:

These series of checks are the first electrical checks to be carried out during a fault finding procedure. On completion of the service/fault finding task which has required the breaking and remaking of electrical connections then the checks 5.1 Earth continuity, 5.3 Polarity and 5.4 Resistance to earth must be repeated.

6 REPLACEMENT OF PARTS

6.1 EXPANSION VESSEL

- Isolate the boilers power supply.
- Remove the boiler cover, see 4.3.
- Close the flow and return isolation valves.
- Drain the boiler using the fitted drain vent, see fig 15.
- Protect the control board from accidental spillage of water.
- Disconnect the expansion pipe.
- Remove the securing screw at the top of the vessel.
- Lift out the vessel.
- Before fitting the new vessel, check the charge pressure, see TABLE 4.
- Refit in reverse order.

6.2 IGNITION / IONISATION ELECTRODE

- Isolate the boilers power supply.
- Remove the boiler cover, see 4.3.
- Remove the sealed chamber cover.
- Disconnect the electrode.
- Remove the securing screw and remove the electrode.
- Refit in reverse order, checking that the spark gap is as shown in Fig 21.

6.3 BURNER REMOVAL

- Isolate the boilers power supply.

- Remove the boiler cover, see 4.3.
- Isolate the gas supply.
- Remove the sealed chamber cover.
- Remove the burner cover.
- Disconnect the ignition electrode.
- Disconnect the gas connection to the burner.
- Remove the burner securing nut.
- Carefully lift out the burner assembly.
- Replace in reverse order, replacing gaskets as required.

6.4 FAN

- Isolate the boilers power supply.
- Remove the boiler cover, see 4.3.
- Remove the sealed chamber cover.
- Disconnect the electrical connections from the fan.
- Disconnect the venture pipe.
- Remove the three fixing screws.
- Remove the fan.
- Replace in reverse order, ensuring that the fan to flue seal is undamaged and correctly positioned.

6.5 BITHERMAL HEAT EXCHANGER

- Isolate the boilers power supply
- Remove the boiler cover, see 4.3.
- Close the flow and return isolation valves.
- Drain the boiler using the fitted drain

- vent, see fig 15.
- Remove the sealed chamber cover.
- Remove the fan as see 6.4.
- Remove the burner cover.
- Disconnect the heating sensor
- Remove the four pipe securing clips
- Carefully lift out the heat exchanger.
- Transfer the heating sensor to the new heat exchanger
- Refit in reverse order.

6.6 HEATING SENSOR (SM1/SM2)

- Isolate the boilers power supply.
- Remove the boiler cover, see 4.3.
- Remove the sealed chamber cover.
- Disconnect the electrical connections from the heating sensor.
- Unclip the sensor from the heat exchanger.
- Refit in reverse order.

6.7 AIR PRESSURE SWITCH

- Isolate the boilers power supply.
- Remove the boiler cover, see 4.3.
- Remove the sealed chamber cover.
- Note the positions of the electrical connections to the air pressure switch and remove.
- Note the position of the sensing pipe and disconnect.

- Remove the air pressure switch fixing bracket.
- Transfer the bracket to the new air pressure switch.
- Refit in reverse order.

6.8 DHW SENSOR (SB)

- Isolate the boilers power supply
- Remove the boiler cover, see 4.3.
- Disconnect the SB sensor from the pipe.
- Disconnect the electrical connections.
- Refit in reverse order.

6.9 GAS VALVE

- Isolate the boilers power supply
- Remove the boiler cover, see 4.3.
- Isolate the gas supply.
- Disconnect the electrical connection to the gas valve.
- Disconnect the vent pipe.
- Disconnect the upper and lower gas con-

nections.

- Refit in reverse order, using new gaskets.
- Reset the gas valve as described in 4.2.1 and 4.2.2.
- Ensure that the tightness of the gas connections on completion of the work.

6.10 PUMP

- Isolate the boilers power supply.
- Remove the boiler cover, see 4.3.
- Close the flow and return isolation valves.
- Drain the boiler using the fitted drain vent, see fig 15.
- Disconnect the electrical connections to the pump.
- Remove the four fixing screws.
- Refit in reverse order.

6.11 AIR RELIEF VALVE (AAV)

- Isolate the boilers power supply

- Remove the boiler cover, see 4.3.
- Close the flow and return isolation valves.
- Drain the boiler using the fitted drain vent, see fig 15.
- Remove the clip securing the AAV
- Remove the AAV
- Replace in reverse order.

6.12 PRINTED CIRCUIT BOARD

- Isolate the boilers power supply
- Remove the boiler cover, see 4.3.
- Remove the control panel fixing screws.
- Lower the panel and remove the rear cover.
- Disconnect the wiring from the PCB
- Unclip the PCB from the control panel.
- Refit in reverse order, pay particular attention to the connection of the ignition electrode, ensure that it is positioned on the terminal and not down the side of it.
- The new PCB will require configuring as shown in 3.2



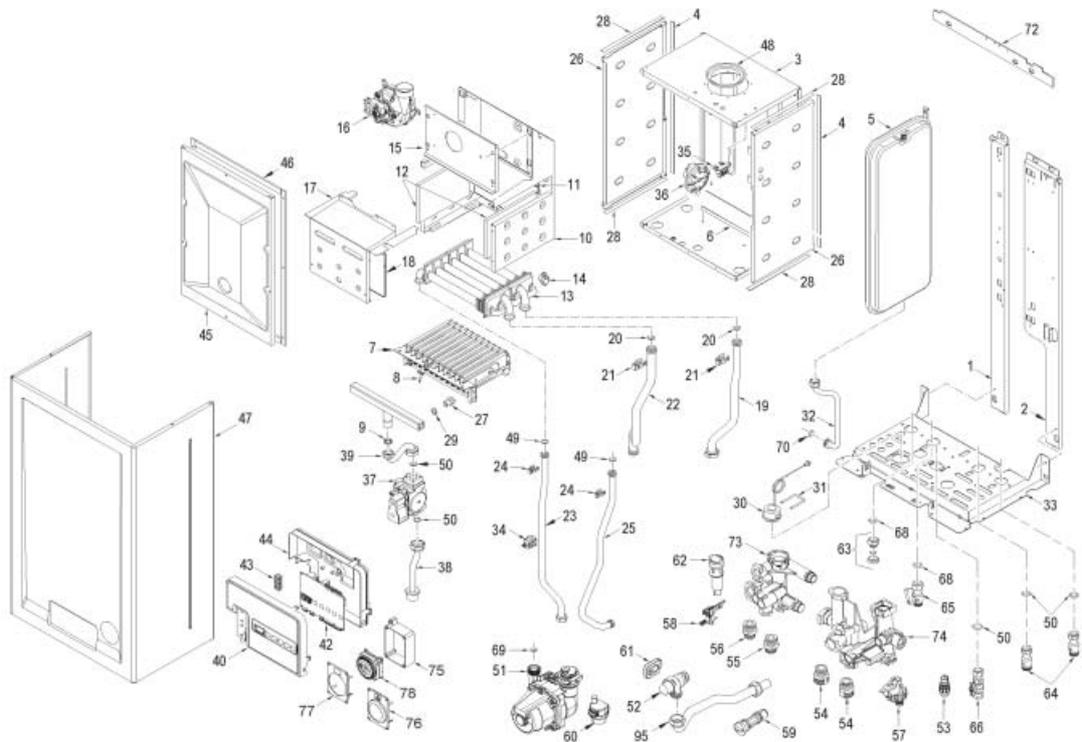
9 EXPLODED VIEWS

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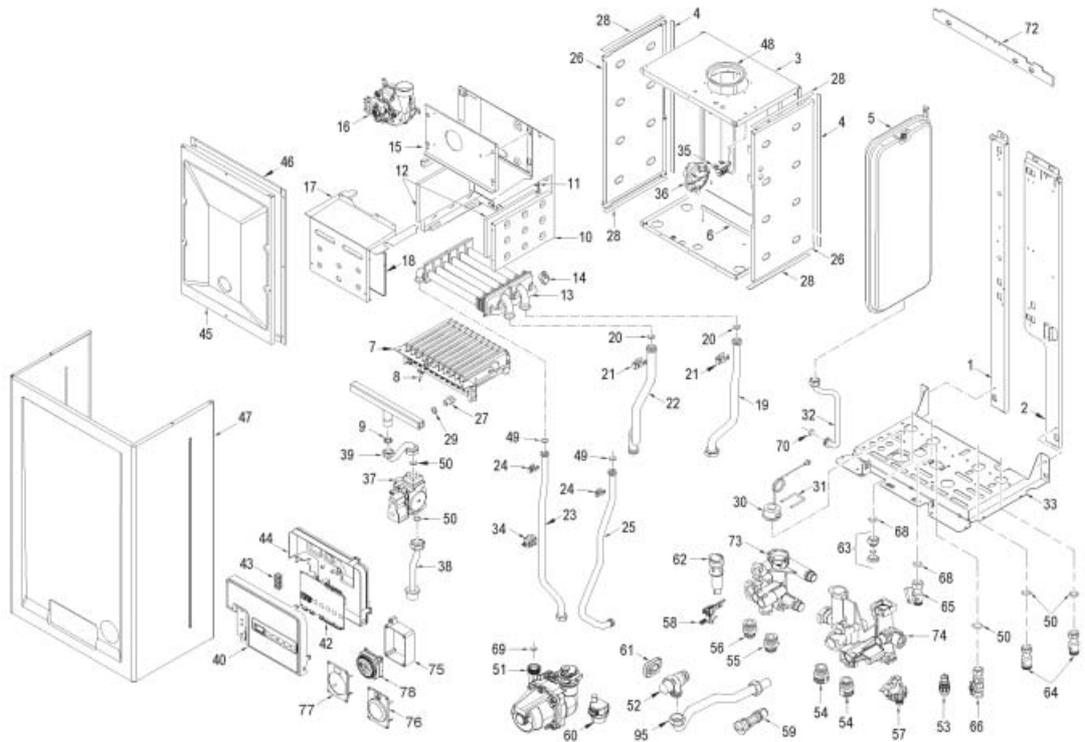
Posiz.	Codice	Descrizione
001	6318350	Left hand side frame part
002	6318300	Right hand side frame part
003	6317600	Sealed chamber rear panel
004	6229838	Gasket for sealed chamber
005	5183726	Rectang. expansion vessel 8 l.
006	6257531	Air deflector
007	5198211	Main burner assembly
008	6235932	Ignition-ionisation electrode
009	6146330	Nut 1/2" for expansion vessel
010	6318500	Smoke chamber assembly
011	6318720	Combustion chamber rear insulat
012	6318710	Combustion chamber side insulat
013	6174258	Gas/Water heat exchanger
014	6231362	NTC sensor
015	6318600	Sealed chamber front panel
016	6225636	Fan
017	6317900	Combustion chamber front panel
018	6318700	Combustion chamber side insulat
019	6264841	C.H. return pipe
020	6226412	O-ring 3068
021	6226601	Spring for heat exchanger conne
022	6264773	C.H. flow pipe
023	6227016	D.H.W. outlet pipe
024	6226617	Spring for heat exchanger conne
025	6227115	D.H.W. inlet pipe
026	6288210	Sealed chamber side panel
027	6154406	Main burner nozzle NP 0,80
028	6229837	Gasket for sealed chamber
029	6022004	Copper washer Ø 6
030	6146111	Hydrometer
031	6226628	Hydrometer Fixing spring
032	6227692	Pipe connecting expans. vessel
033	6318000	Frame assembly lower side
034	6231357	D.H.W. temperature sensor

035	6229110	Smoke pressure switch bracket
036	6225715	Air pressure switch
037	6243820	SIT gas valve type 845 SIGMA
038	6226884	Gas inlet pipe
039	6226958	Pipe conn. gas valve to burner
040	6304794	Panel kit
042	6301420	Main P.C.B.
043	2211010	Terminal strip
044	6305050	Control panel cover
045	6317700	Sealed chamber front panel
046	5192208	Gasket for sealed chamber
047	6317853	Casing
048	6028621	Air diaphragm Ø 79
049	6226444	O-Ring Ø 13,64 x 2,62
050	2030228	Gasket Ø 17x24x2
051	6272309	Circulating pump
052	6040211	Pressure relief valve 3 bar
053	6319603	Discharger cock
054	6120533	C.H Nipple
055	6120532	D.H.W. Nipple
056	6120534	D.H.W. Nipple exit
057	6037504	Water pressure switch
058	6319601	Sensor hall complete
059	6319641	By-pass 2 (new)
060	6013182	Automatic air vent
061	6275910	Pressure relief valve operation
062	6319630	Flowmeter
063	6147231	Straight fitting 1/2" Ø 15
064	6245000	Ball cock 3/4" x22
065	6245001	Ball cock 1/2" x15
066	6063601	Gas cock 1/2"
068	2030227	Gasket Ø 12x18x2
069	6226457	O-ring 12bis diam. 16x1,90
070	6226464	O-ring 115 diam. 11,91x2,62
072	6142211	Boiler supporting bracket Metr.
073	6319697	D.H.W. Technyl manifold group
074	6319696	C.H. Technyl manifold group
075	6155420	Time programmer box
076	6155422	Time programmer cover
095	6157648	Pressure relief valve drain pip
702	6316252	6 pole Stocko connector CN6
703	6316253	9 pole Stocko connector
704	6316254	14 pole Stocko connectorCN4
706	6319699	Split pin kit for hydraulic gro
707	6319698	O-ring kit for hydraulic group
710	6281534	Gaskets kit
713	6127213	3-core cable L=1000
714	6127214	Main cable L=1500
715	5185403	Convers. kit to nat. gas 25-30-
716	6319695	Murelle-Format-.....o-ring kit
717	5198395	Technyl hydraulic group
719	5197980	Complete control panel
720	6319153	5 pole cable connector
722	6211793	Hydr.group Bitron caps kit exp

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Posiz.	Codice	Descrizione
001	6318350	Left hand side frame part
002	6318300	Right hand side frame part
003	6317600	Sealed chamber rear panel
004	6229838	Gasket for sealed chamber
005	5183726	Rectang. expansion vessel 8 l.
006	6257531	Air deflector
007	5198211	Main burner assembly
008	6235932	Ignition-ionisation electrode
009	6146330	Nut 1/2" for expansion vessel
010	6318500	Smoke chamber assembly
011	6318720	Combustion chamber rear insulat
012	6318710	Combustion chamber side insulat
013	6174258	Gas/Water heat exchanger
014	6231362	NTC sensor
015	6318600	Sealed chamber front panel
016	6225636	Fan
017	6317900	Combustion chamber front panel
018	6318700	Combustion chamber side insulat
019	6264841	C.H. return pipe
020	6226412	O-ring 3068
021	6226601	Spring for heat exchanger conne
022	6264773	C.H. flow pipe
023	6227016	D.H.W. outlet pipe
024	6226617	Spring for heat exchanger conne
025	6227115	D.H.W. inlet pipe
026	6288210	Sealed chamber side panel
027	6154406	Main burner nozzle NP 0,80
028	6229837	Gasket for sealed chamber
029	6022004	Copper washer Ø 6
030	6146111	Hydrometer
031	6226628	Hydrometer Fixing spring
032A	6227694	Pipe connecting expans. vessel
033	6318000	Frame assembly lower side
034	6231357	D.H.W. temperature sensor

035	6229110	Smoke pressure switch bracket
036	6225715	Air pressure switch
037	6243820	SIT gas valve type 845 SIGMA
038	6226884	Gas inlet pipe
039	6226958	Pipe conn. gas valve to burner
040	6304794	Panel kit
042	6301420	Main P.C.B.
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044	6305050	Control panel cover
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046	5192208	Gasket for sealed chamber
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049	6226444	O-Ring Ø 13,64 x 2,62
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051	6272309	Circulating pump
052	6040211	Pressure relief valve 3 bar
053	6319603	Discharger cock
054	6120533	C.H Nipple
055	6120532	D.H.W. Nipple
056	6120534	D.H.W. Nipple exit
057	6037504	Water pressure switch
058	6319601	Sensor hall complete
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060	6013182	Automatic air vent
061	6275910	Pressure relief valve operation
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070	6226464	O-ring 115 diam. 11,91x2,62
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073	6319697	D.H.W. Technyl manifold group
074	6319696	C.H. Technyl manifold group
075	6155420	Time programmer box
077	6155421	Time programmer cover
078	6197718	Mechanic time programmer
095	6157648	Pressure relief valve drain pip
702	6316252	6 pole Stocko connector CN6
703	6316253	9 pole Stocko connector
704	6316254	14 pole Stocko connectorCN4
706	6319699	Split pin kit for hydraulic gro
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717	5198395	Technyl hydraulic group
720	6319153	5 pole cable connector
721	5197981	Compl.control panel+time progra
722	6211793	Hydr.group Bitron caps kit exp

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