

PLANNERS  
DESIGNERS  
INSTALLERS  
OPERATORS



User Installation AU  
Instruction Manual

# INTEC 12-30 SYSTEM INTERNAL

Wall mounted  
heating only boiler



**Dear Client,**

Our compliments for having chosen a top-quality Hunt Heating/Immergas product, able to assure well-being and safety for a long period of time, you can also count on a qualified after-sales service, prepared and updated to guarantee constant efficiency of your boiler. Read the following pages carefully; you will be able to draw useful suggestions regarding the correct use of the appliance, the respect of which, will confirm your satisfaction for our product. For any interventions or routine maintenance contact Hunt Heating for Authorised Service Personal.

**General recommendations**

All Immergas products are protected with packaging suitable for transport.

The material must be stored in dry environments and protected from bad weather.

The instruction book is an integral and essential part of the product and must be consigned to the new user also in the case of transfer or succession of ownership.

It must be stored with care and consulted carefully, as all of the warnings provide important safety indications for installation, use and maintenance stages.

This instruction booklet contains technical information on how installing Immergas boilers. For other issues related to installation of boilers (i.e.: safety in work sites, environment protection, injury prevention), comply with the laws in force and technical standards.

In compliance with legislation, the systems must be designed by qualified professionals, within the dimensional limits established by the Law. Installation and maintenance must be performed in compliance with the regulations in force, according to the manufacturer's instructions and by qualified professionals.

Improper installation or assembly of Immergas appliance and/or components, accessories, kit and devices can cause unexpected problems to persons, animals and objects. Read the provided product instructions carefully in order to install the product correctly.

Maintenance must be carried out by Authorised Service Personal.

The appliance must only be destined for the use for which it has been expressly declared. Any other use will be considered improper and therefore potentially dangerous.

If errors occur during installation, operation and maintenance, due to non compliance with technical laws in force, standards or instructions contained in this book (or however supplied by the manufacturer), the manufacturer is excluded from any contractual and extra-contractual liability for any damages and the appliance warranty is invalidated.

**Introduction**

The Immergas range of high efficiency boilers are wall mounted, fan assisted, room-sealed boilers. The burner is lit electronically and the heat output is controlled by a modulating gas valve.

The INTEC 12-30 SYSTEM INTERNAL is a heating only boilers used for hydronic heating. Domestic hot water is an available option (Hunt Heating only) used in conjunction with a stainless steel hot water storage tank, diverter valve and probe.

The boilers are supplied with a pump, pressure relief valve, expansion vessel and pressure gauge fully assembled and tested. They are designed for use with a fully sealed and pressurised central heating system using only Natural Gas and Universal LPG.

**IMPORTANT**

It is the law that all gas appliances are authorised persons and registered technician in accordance with local laws and AS/NZS 5601 and AS/NZS 3500 A.

This appliance meets the requirements of IPX5D.

Failure to install this appliance correctly could lead to prosecution. It is in your own interest and that of safety to ensure that the law is complied with.

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

**WARNINGS**

- Do not spray aerosols in the vicinity of this appliance while it is in operation;
- do not use or store flammable materials in or near this appliance;
- do not place articles on or against this appliance;
- do not modify this appliance.

**NOTE**

The Boilers MUST only be used with Immergas Condensing flue components.

THIS BOILER IS NOT SUITABLE FOR POOL OR SPA HEATER UNLESS CONNECTED TO A SUITABLE APPROVED HEAT EXCHANGER.

Hydronic System (Australia) Pty Ltd PO Box 294 Braeside VIC 3195.

**On conformity to AS/NZS 5263.1.2 and AS 3498.**

The manufacturer declines all liability due to printing or transcription errors, reserving the right to make any modifications to its technical and commercial documents without forewarning.

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# 1 BOILER INSTALLATION

## 1.1 INSTALLATION RECOMMENDATIONS.

The INTEC 12-30 SYSTEM INTERNAL boiler has been designed uniquely for wall-installation, for the heating of rooms for domestic use.

- installation (according to the legislation and technical standards in force);
- maintenance operations (including those scheduled, periodical, ordinary and special);
- removal (to the outdoors in a place suitable for loading and transporting appliances and components) as well as any replacement with equivalent appliances and/or components.

The wall surface must be smooth, without any protrusions or recesses enabling access to the rear part. They are not designed to be installed on plinths or floors (Fig. 1-1).

By varying the type of installation the classification of the boiler also varies, precisely:

- **Type C boiler** Uses concentric or Coaxial pipes systems Hunt Heating supplies the correct flue for this application.

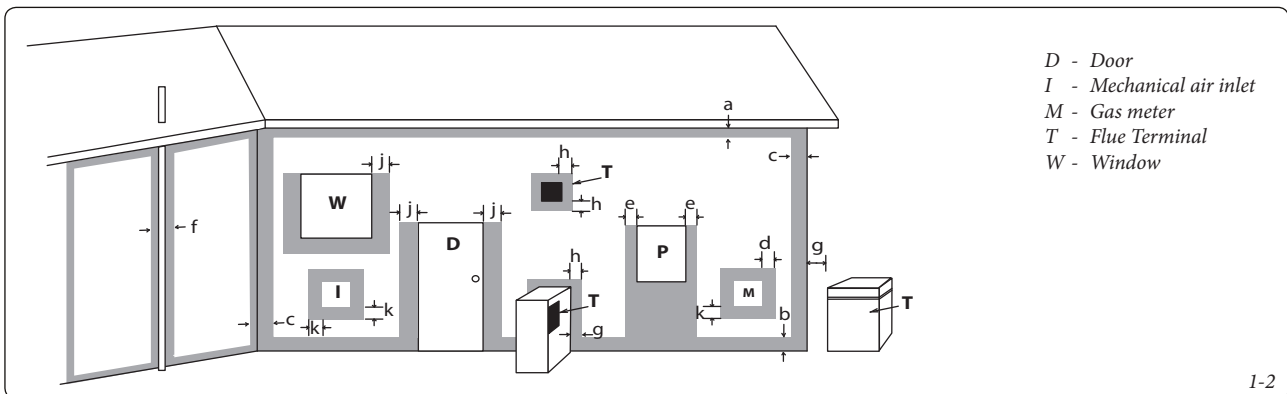
Only professionally heating/plumbing technicians are authorised to install Immergas gas appliances.

**Installation must be carried out according to regulation standards AS/NZS 5601 or Local Authority laws.**

Installation of the INTEC 12-30 SYSTEM INTERNAL boiler when powered by Universal LPG must also comply with the rules regarding gases with a greater density and be installed to meet all local and **AS/NZS 5601 LAWS**. Before installing the appliance, ensure that it is delivered in perfect condition; if in doubt,

### Flue terminal positions

Use as a guide only. Refer to AS/NZS 5601 or gas fitting rules for specific location.



Flue terminal positions. Shaded area indicates prohibited area

Ref.	Item	Min. Clearance mm
a	Below eaves, balconies and other projections (Appliances over 50MJ/h)	300
b	From the ground, above a balcony or other surface	300
c	From a return wall or external wall	300
d	From a gas meter	1000
e	From an electricity meter or fusebox/breaker panel	500
f	From a drain pipe or soil pipe	75
g	Horizontally from any building structure or obstruction facing a flue terminal	500
h	From any other flue terminal, cowl or combustion air intake	300
j	Horizontally from any opening window, door, non-mechanical air inlet or other opening into a building with the exception of sub-floor ventilation	300
k	From a mechanical air inlet including a spa blower	1000
n	Vertically below an opening window, non-mechanical air inlet or any other opening into a building with the exception of sub-floor ventilation	500

• The location of the flue terminal must comply with the clearances shown on this page.

contact the supplier immediately. Packing materials (staples, nails, plastic bags, polystyrene foam, etc.) constitute a hazard and must be kept out of the reach of children. Leave adequate space above the boiler for possible water and flue removal connections. Keep all flammable objects away from the appliance (paper, rags, plastic, polystyrene, etc.). Do not place household appliances underneath the boiler as they could be damaged if the safety valve intervenes (if not conveyed away by a draining funnel), or if there are leaks from the connections; on the contrary, the manufacturer cannot be held responsible for any damage caused to the household appliances. In the event of malfunctions, faults or incorrect operation, turn the appliance off immediately and contact a qualified technician (e.g. Hunt Heating Service Dept which has specifically trained staff and original spare parts). Do not attempt to modify or repair the appliance alone. Failure to comply with the above implies personal responsibility and invalidates the warranty.

### Installation Standards:

- **Installations MUST comply with AS/NZS 5601 and Local laws. Use AS/NZS 5601 as a guide for specific locations see below.**
- Installation is prohibited on the vertical projection of the cooking surface.
- Installation is also prohibited in places/ environments that constitute common parts of office condominiums such as stairs, cellars, entrance halls, attics, lofts, escape routes, etc. if they are not located inside technical compartments under the responsibility of each individual building and only accessible to the user (for the features of the technical compartments, see the technical standards in force).

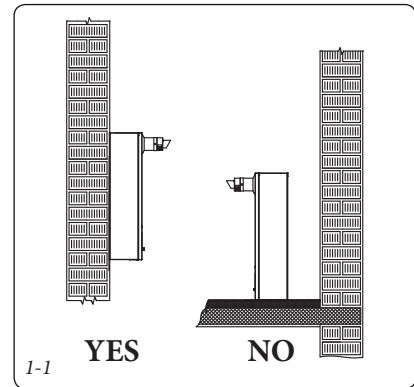
**Attention:** wall mounting of the boiler must guarantee stable and efficient support for the boiler.

Use the bracket supplied as standard, fixing it with proper plugs according to the wall type. The installer is responsible for the choice of the correct plugs, according to the technical standard. Place the supplied bracket, following the indications reported on drawing 1-3 preferring the holes indicated in the before mentioned draw.

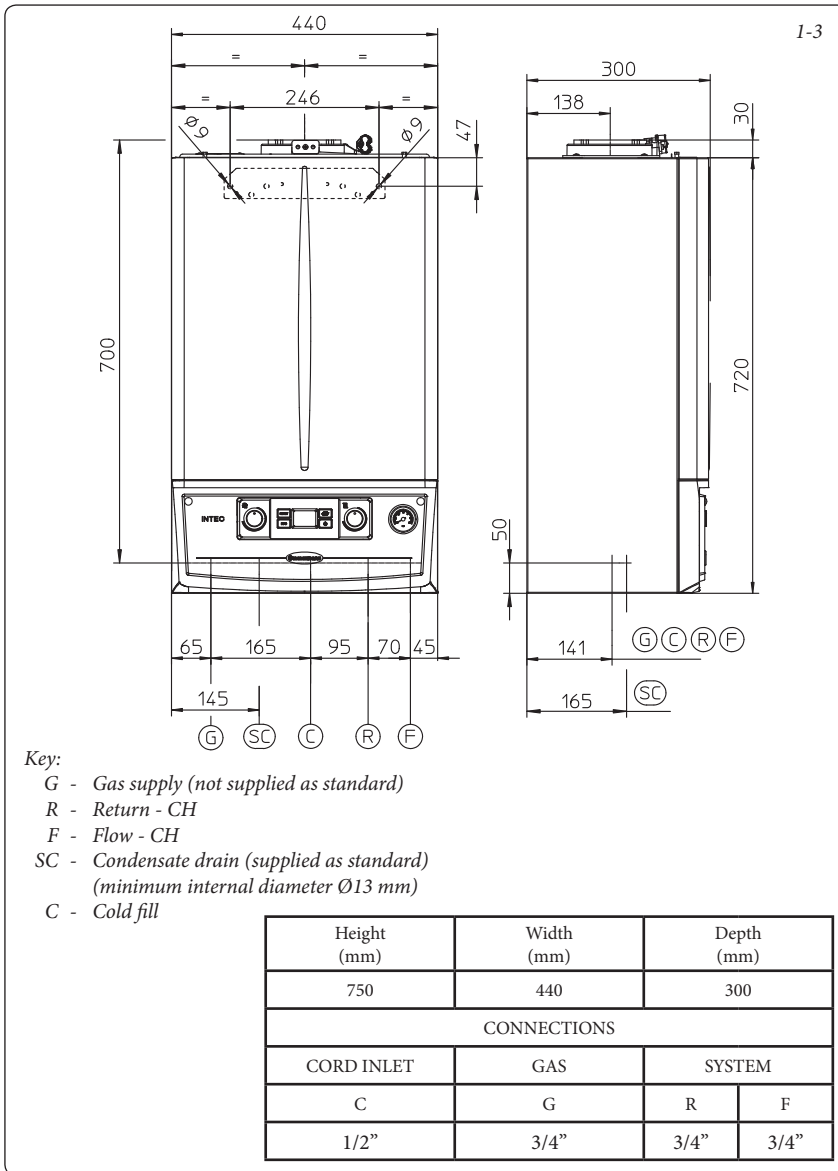
**N.B.: to fix the bracket we suggest to use hexagon screw or countersunk screw for plug.**

These boilers are used to heat water to below boiling temperature in atmospheric pressure. They must be attached to a heating system suitable for their capacity and voltage.

**N.B.: it is recommended to use a suitable 'Safe Tray', if boiler is installed in a loft, above a ceiling, or any area where damage can be caused by water.**



## 1.2 MAIN DIMENSIONS.



## 1.3 ANTI-FREEZE PROTECTION.

**Minimum temperature -5°C.** The boiler comes standard with an anti-freeze function that activates the pump and burner when the system water temperature in the boiler falls below 4°C. The anti-freeze function is only guaranteed if:

- the boiler is correctly connected to gas and electricity power supply circuits;
- the boiler is powered constantly;
- the boiler is not in no ignition block (Par. 2.5);
- the boiler essential components are not faulty.

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

**Minimum temperature -15°C.** If the boiler is installed in a place where the temperature falls below -5°C and in the event there is no gas, or the boiler goes into ignition block, the appliance may freeze.

*To prevent the risk of freezing follow the instructions below:*

- Protect the central heating circuit from freezing by introducing a good quality anti-freeze liquid (specifically for central heating systems), (Fernox), carefully following the manufacturer's instructions regarding the percentage necessary with respect to the

minimum temperature required for preserving the system.

*The boilers is made from materials that are resistant to ethylene and propylene glycol-based anti-freeze liquids.*

For life and possible disposal, follow the supplier's instructions.

- Protect the condensate drain trap and circuit board against freezing by using an accessory that is supplied on request (anti-freeze kit) comprising two electric heating elements, the relevant cables and a control thermostat (carefully read the installation instructions contained in the accessory kit pack).

*Boiler anti-freeze protection is thus ensured only if:*

- the boiler is correctly connected to gas and electricity power supply circuits and powered;
- the anti-freezing kit components are efficient.

*In these conditions the boiler is protected against freezing to temperature of -15°C.*

The warranty does not cover damage due to interruption of the electrical power supply and failure to comply with that stated on the previous page.

**N.B.:** if the boiler is installed in places where the temperature falls below 0°C the domestic water and heating attachment pipes must be insulated.

## 1.4 CONNECTIONS.

### Gas connection.

Our boilers are designed to operate with NG and Universal LPG. Supply pipes must be sized correctly to relevant gas codes.

Before connecting the gas line, carefully clean inside all the supply pipes to remove any residue that could impair boiler efficiency. Also make sure the gas corresponds to that for which the boiler is prepared (see boiler data-plate). If different, the appliance must be converted for operation with the other type of gas (see converting appliance for other gas types). The dynamic gas supply (NG or Universal LPG) pressure must also be checked according to the type used in the boiler, which must be in compliance, as insufficient levels can reduce boiler output and cause malfunctions.

Ensure correct gas isolation valves connection. The gas supply pipe must be suitably dimensioned according to current regulations in order to guarantee correct gas flow to the burner in conditions of maximum boiler.

**N.B.:** there is a special adhesive label inside the built-in frame displaying the layout of the boiler connections.

**Fuel gas quality.** The appliance has been designed to operate with gas free of impurities; otherwise it is advisable to fit special filters upstream from the appliance to restore the purity of the gas.

### Cold Water connection.

**Attention: Filling the system,** Hunt Heating recommends the use of Auto fill valves sold as an optional extra. Once satisfactory system pressure is achieved, Auto fill valve **MUST BE TURNED OFF.**

**Attention:** in order not to void the warranty before making the boiler connections, carefully clean the heating system on the primary heat exchanger (pipes, radiators, etc.) with special cleaning products (Fernox) to remove any deposits that could compromise correct boiler operation.

**Chemical treatment** of the heating system water is required, in compliance with the technical standards in force, in order to protect the system and the appliance from deposits (e.g., lime scale), slurry or other hazardous deposits. Products like Fernox are suitable for this application. Use of backflow devices are mandatory when using chemicals/water treatments or alternatively, ensure physical air break.

**Heating Water connections** must be made using approved valves this helps with maintenance and servicing. Hunt Heating can provide valves as optional extras.

**The boiler safety valve** outlet must be connected to a Tun Dish or Directly to a suitable overflow outlet.

**Condensate drain.** To drain the condensate produced by the appliance, it is necessary to connect to the sewer system by means of acid condensate resistant pipes i.e. p.v.c. having an internal diameter of at least 13 mm. The system connecting the appliance to the drainage system must be carried out in such a way as to prevent freezing of the liquid contained. Connections must comply with national and local regulations on discharging to waste waters, condensate must not discharge to storm water. Pipes must be on gradient to drain.

**N.B.:** fill the trap with water before operating the boiler.

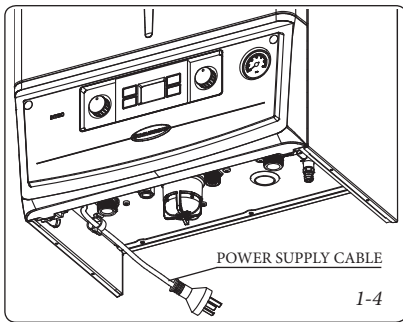
**Electrical connection:** The "INTEC 12-30 SYSTEM INTERNAL" boiler has an IPX5D protection rating for the entire appliance. Electrical safety of the appliance is reached only when it is correctly connected to an efficient earthing system as specified by current safety standards.

**Attention:** Immergas/Hunt Heating declines any responsibility for damage or physical injury caused by failure to connect the boiler to an efficient earth system or failure to comply with the reference standards.

Also ensure that the electrical installation corresponds to maximum absorbed power specifications as shown on the boiler data-plate. The boilers come complete with a 1.5 metre power cable that includes an Australian electrowelded plug. The plug is of type I, compliant with standard AS 3112. The power cable must be connected to a 240V ±10% / 50Hz mains respecting L-N polarity and the earth connection  $\oplus$ . When replacing the power supply cable, contact a qualified technician (e.g. Hunt Heating Service Dept) (Fig. 1-4).

In the event of mains fuses replacement on the connection board, use 3.15A fast fuses. For the main power supply to the appliance, never use adapters, multiple sockets or extension leads.

**Note:** If the condensate cannot be on a gradient and terminate to drain, then a suitable condensate neutraliser must be used (available for purchase from Hunt Heating).



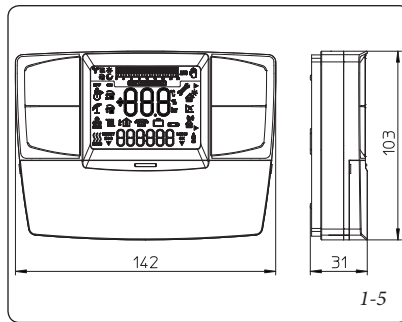
### 1.5 REMOTE CONTROL (CAR<sup>V2</sup>) (OPTIONAL).

The boiler is prepared for the application remote control CAR<sup>V2</sup>, which is available as optional kit (Fig. 1-5).

Immergas remote control CAR<sup>V2</sup> is connected with 2 wires only. Carefully read the user and assembly instructions contained in the accessory kit.

- In addition to the functions described in the previous point, the CAR panel <sup>V2</sup> enables the user to control all the important information regarding operation of the appliance and the heating system with the opportunity of easily intervening on the previously set parameters without having to go to the place where the appliance is installed. The CAR<sup>V2</sup> panel is equipped with self-diagnosis to display any boiler functioning abnormalities. The climate chrono-thermostat incorporated into the remote panel enables the system flow temperature to be adjusted to the actual needs of the room being heated, in order to obtain the desired room temperature with extreme precision and therefore with evident saving in running costs. The chrono-thermostat is fed directly by the boiler by means of the same 2 wires used for the transmission of data between boiler and chrono-thermostat.

**CAR<sup>V2</sup> (Optional).** The operations described below must be performed after having removed the voltage from the appliance. Any CAR<sup>V2</sup> must be connected by means of terminals IN+ and IN- (on the CAR<sup>V2</sup> terminal plate), respecting polarity at boiler PCB, where + connects to terminal 44 and - connects to terminal 41 (see Fig. 1-6).



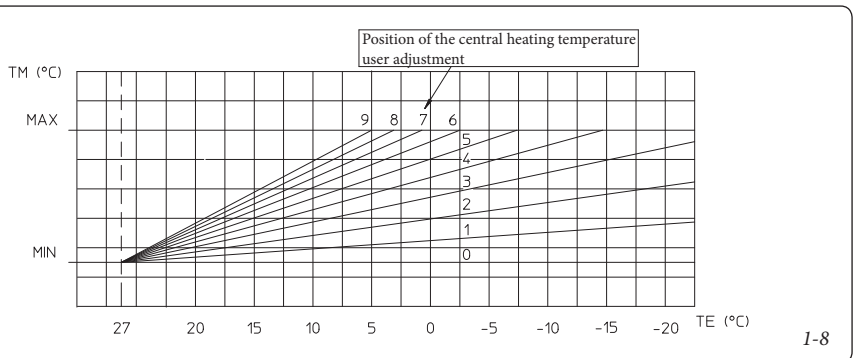
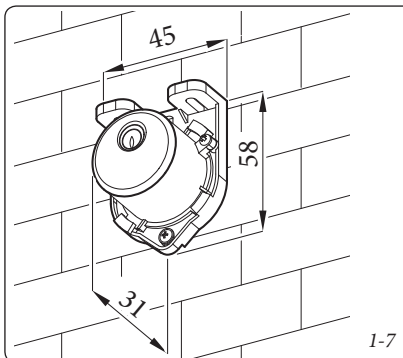
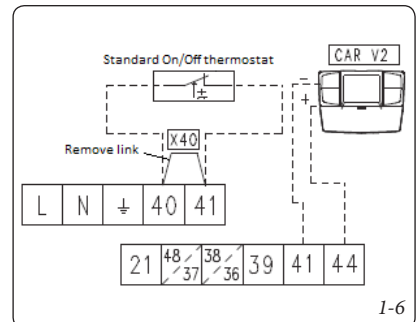
**Attention:** if the Comando Amico Remoto<sup>V2</sup> (CAR<sup>V2</sup>) remote control is used, arrange two separate lines in compliance with current regulations regarding electrical systems. No boiler pipes must ever be used to earth the electric system or telephone lines. Ensure elimination of this risk before making the boiler electrical connections (**ALL ELECTRICAL CONNECTION MUST MEET ALL LOCAL REGULATIONS**).

### 1.6 EXTERNAL PROBE (OPTIONAL).

The boiler is prepared for the application of the external probe (Fig. 1-7), which is available as an optional kit. Refer to the relative instruction sheet for positioning of the external probe.

The probe can be connected directly to the boiler electrical system and allows the max. system flow temperature to be automatically decreased when the external temperature increases, in order to adjust the heat supplied to the system according to the change in external temperature. The external probe always operates when connected, regardless of the presence or type of room chrono-thermostat used and can work in combination with Immergas chrono-thermostats. The correlation between system flow temperature and external temperature is determined by the position of the selector switch on the boiler control panel according to the curves shown in the diagram (Fig. 1-8). The electric connection of the external probe must be made on clamps 38 and 39 on the boiler P.C.B. (Fig. 3-2).

**NB: Thermostat connections** if using own after market thermostat, after removing manufacturers link, connect to terminals **40** and **41** (Fig. 3-2).



### 1.7 IMMERGAS FLUE SYSTEMS.

Immergas supplies various solutions separately from the boilers regarding the installation of air intake terminals and flue extraction, which are fundamental for boiler operation.

**Attention: the boiler must be installed exclusively with an original Immergas “Green Range” air intake and fume extraction system in plastic, as envisioned by Standard in force.**

**The plastic pipes cannot be installed outdoors, for tracts longer than 40 cm, without suitable protection from UV rays and other atmospheric agents.**

**This system can be identified by an identification mark and special distinctive marking bearing the note: “only for condensing boilers”.**

- Resistance factors and equivalent lengths. Each flue component has a *Resistance Factor* based on experimental tests and specified in the table below. The Resistance Factor for individual components is independent from the type of boiler on which it is installed and has a dimensionless size. It is however, conditioned by the temperature of the fluids that pass through the pipe and therefore, varies according to applications for air intake or flue exhaust. Each single component has a resistance corresponding to a certain length in metres of pipe of the same diameter; the so-called *equivalent length*, obtained from the ratio between the relative Resistance Factors. *All boilers have an experimentally obtainable maximum Resistance Factor equal to 100.* The maximum Resistance Factor allowed corresponds to the resistance encountered with the maximum allowed pipe length for each type of Terminal Kit. This information allows calculations to be made to verify the possibility of setting up various flue configurations.

- **Positioning of the gaskets (black) for “green range” flue extraction systems.** Position the gasket correctly (for bends and extensions) (Fig. 1-9):

- gasket (A) with notches, to use for bends;
- gasket (B) without notches, to use for extensions.

**N.B.:** if necessary, in order to facilitate the coupling, sprinkle the items with ordinary talcum powder.

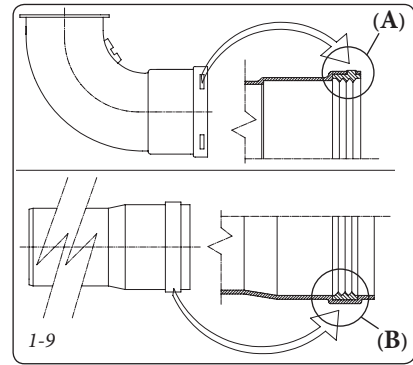
**N.B.:** considerations need to be made when sighting/terminating flue extraction system as an element of plumage will occur when boiler is in operation.

- Coupling extension pipes and concentric elbows. To install push-fitting extensions with other elements of the flue, proceed as follows: Install the concentric pipe or elbow with the male side (smooth) on the female section (with lip seal) to the end stop on the previously installed element in order to ensure sealing efficiency of the coupling.

**Attention:** if the exhaust terminal and/or extension concentric pipe needs shortening, consider that the internal duct must always protrude by 5 mm with respect to the external duct.

- **N.B.:** for safety purposes, do not obstruct the boiler intake-exhaust terminal, even temporarily.

- **N.B.:** when installing horizontal pipes, a minimum inclination of 3% must be maintained and a section clamp with pin must be installed every 3 metres.

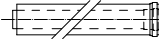


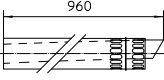

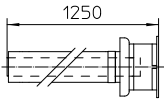

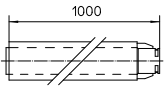
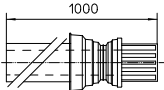


INSTALLER

USER

MAINTENANCE TECHNICIAN

1.8 TABLES EQUIVALENT LENGTHS.

TYPE OF DUCT		Equivalent length in m of concentric pipe Ø 60/100	Equivalent length in m of concentric pipe Ø 80/125
Concentric pipe m 1		m 1	m 1
Concentric bend 90°		m 1.3	m 1.4
Concentric bend 45°		m 1	m 1
Terminal complete with concentric horizontal intake-exhaust Ø 60/100		m 2.3	---
Concentric horizontal intake- exhaust terminal Ø 60/100		m 1.5	---
Terminal complete with concentric vertical intake-exhaust Ø 60/100		m 2.5	---
Concentric vertical intake-exhaust terminal Ø 60/100		m 1.4	---
Terminal complete with concentric horizontal intake-exhaust Ø 80/125		---	m 1.3
Terminal complete with concentric vertical intake-exhaust Ø 80/125		---	m 1.7



**1.9 HORIZONTAL CONCENTRIC KIT INSTALLATION.**

**Type C configuration, sealed chamber and fan assisted.**

The position of the terminal (in terms of distances from openings, overlooking buildings, floor, etc.) must be in compliance with the regulations in force.

This terminal can be employed in the following cases, and, moreover, in default of chimneys / flues / functional and appropriate, or adaptable systems for combustion products scavenging, and using low polluting emission boilers (class 5a, according to the in force technical standard):

- "single renovations of independent systems in buildings made of several real estate units";
- "new installations of single independent heat systems in buildings subjected to conservative works".

This terminal is connected directly to the outside of the building for air intake and flue exhaust. The horizontal kit can be installed with the rear, right side, left side or front outlet. For installation with frontal outlet, one must use the fixing plate and a concentric bend coupling in order to ensure sufficient space to carry out the tests required by law upon commissioning.

- External grid. Both the Ø 60/100 and Ø 80/125 intake/exhaust terminal, if properly installed, is pleasant to look at on the outside of the building. Make sure that the external silicone wall sealing plate is properly inserted in the wall.

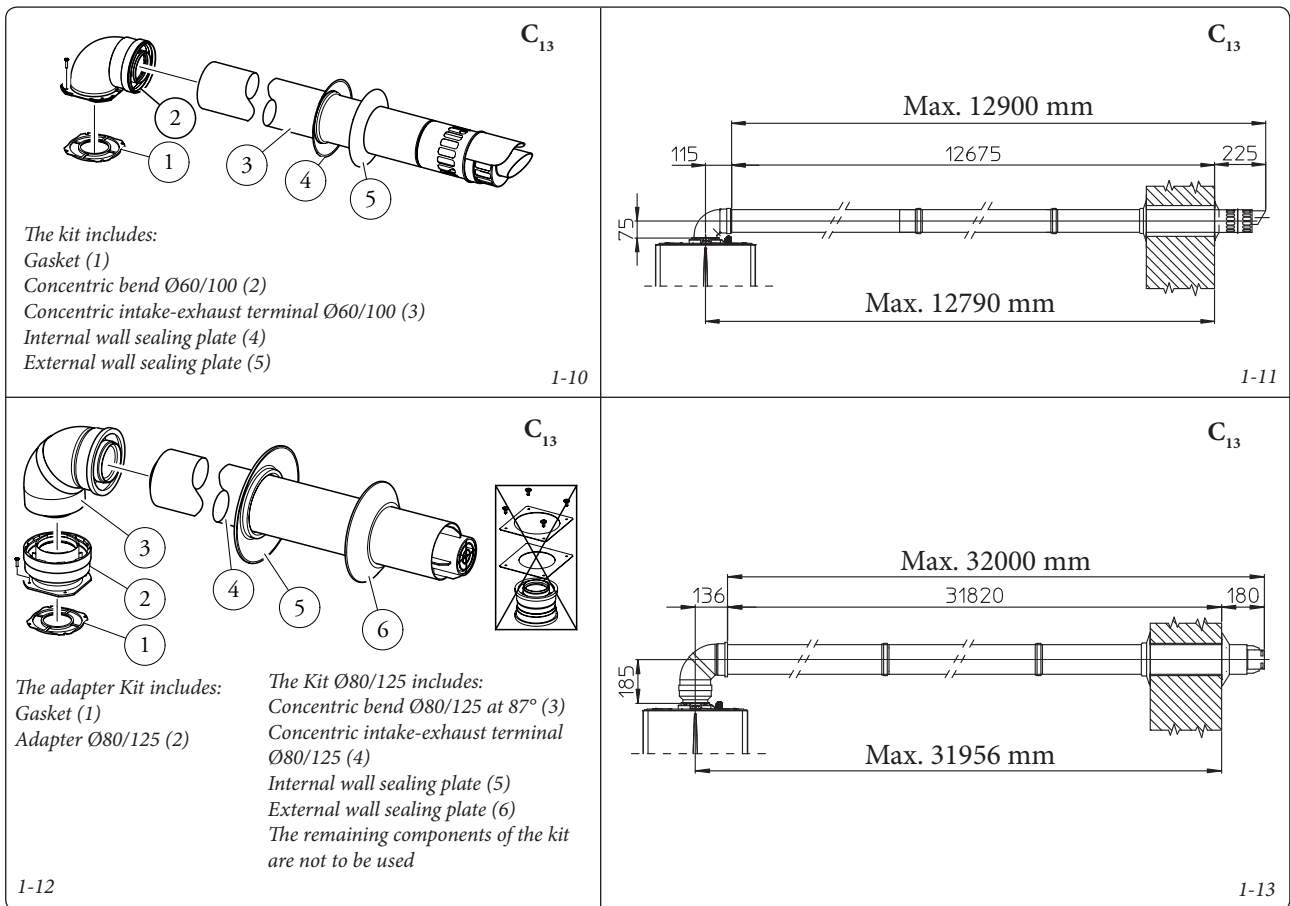
**N.B.:** for proper system operation the terminal with grid must be installed correctly ensuring that, the "high" indication on the terminal is observed during installation.

**Horizontal intake - exhaust kit Ø60/100.** Kit assembly (Fig. 1-10): install the bend with flange (2) on the central hole of the boiler, positioning the gasket (1) positioning it with the circular projections downwards in contact with the boiler flange and tighten using the screws present in the kit. Fit the Ø60/100 (3) concentric terminal pipe with the male end (smooth) to the female end of the bend (2) up to the stop; making sure that the internal and external wall sealing plate have been fitted, this will ensure sealing and joining of the elements making up the kit.

- Extensions for horizontal kit Ø60/100 (Fig. 1-11). The kit with this configuration can be extended up to a *max. horizontal distance of 12.9 m* including the terminal with grid and excluding the concentric bend leaving the boiler. This configuration corresponds to a resistance factor of 100. In these cases the special extensions must be requested.

**Horizontal intake - exhaust kit Ø80/125.** Kit assembly (Fig. 1-12): for the installation of kit Ø80/125 the flanged adapter kit must be used to be able to install the flue system Ø80/125. Install the flanged adapter (2) on the central hole of the boiler, positioning the gasket (1) with the circular projections downwards in contact with the boiler flange and tighten using the screws present in the kit. Engage the bend (3) with the male side (smooth) until it is fully home on the adapter (1). Fit the Ø80/125 (5) concentric terminal pipe with the male end (smooth) to the female end of the bend (4) (with lip seal) up to the stop; making sure that the internal (6) and external wall sealing plates (7) have been fitted, this will ensure sealing and joining of the elements making up the kit.

- Extensions for horizontal kit Ø80/125 (Fig. 1-13). The kit with this configuration can be extended up to a *max. distance of 32 m* including the terminal with grid and excluding the concentric bend leaving the boiler. If additional components are assembled, the length equivalent to the maximum allowed must be subtracted. In this case the special extensions must be requested.



**1.10 VERTICAL CONCENTRIC KIT INSTALLATION.**

**Type C configuration, sealed chamber and fan assisted.**

Vertical concentric of intake and exhaust kit. This terminal enables the air intake and the flue exhausts to be directly emitted outside the house in a vertical direction.

**N.B.:** the vertical kit with aluminium tile enables installation on terraces and roofs with a maximum slope of 45% (approximately 25°) and the height between the terminal cap and half-shell (374 mm for Ø60/100 and 260 mm for Ø80/125) must always be respected.

**Vertical kit with aluminium tile Ø60/100.**

Kit assembly (Fig. 1-14): install the concentric flange (2) on the central hole of the boiler, positioning the gasket (1) with the circular projections downwards in contact with the boiler flange and tighten using the screws present in the kit.

Imitation aluminium tile installation: replace the tile with the aluminium sheet (4), shaping it to ensure that rainwater runs off. Position the fixed

half-shell (6) and insert the intake-exhaust pipe (5). Fit the Ø60/100 (3) concentric terminal pipe with the male end (5) (smooth) into the flange (2) up to the stop; making sure that the wall sealing plate has been fitted (3), this will ensure sealing and joining of the elements making up the kit.

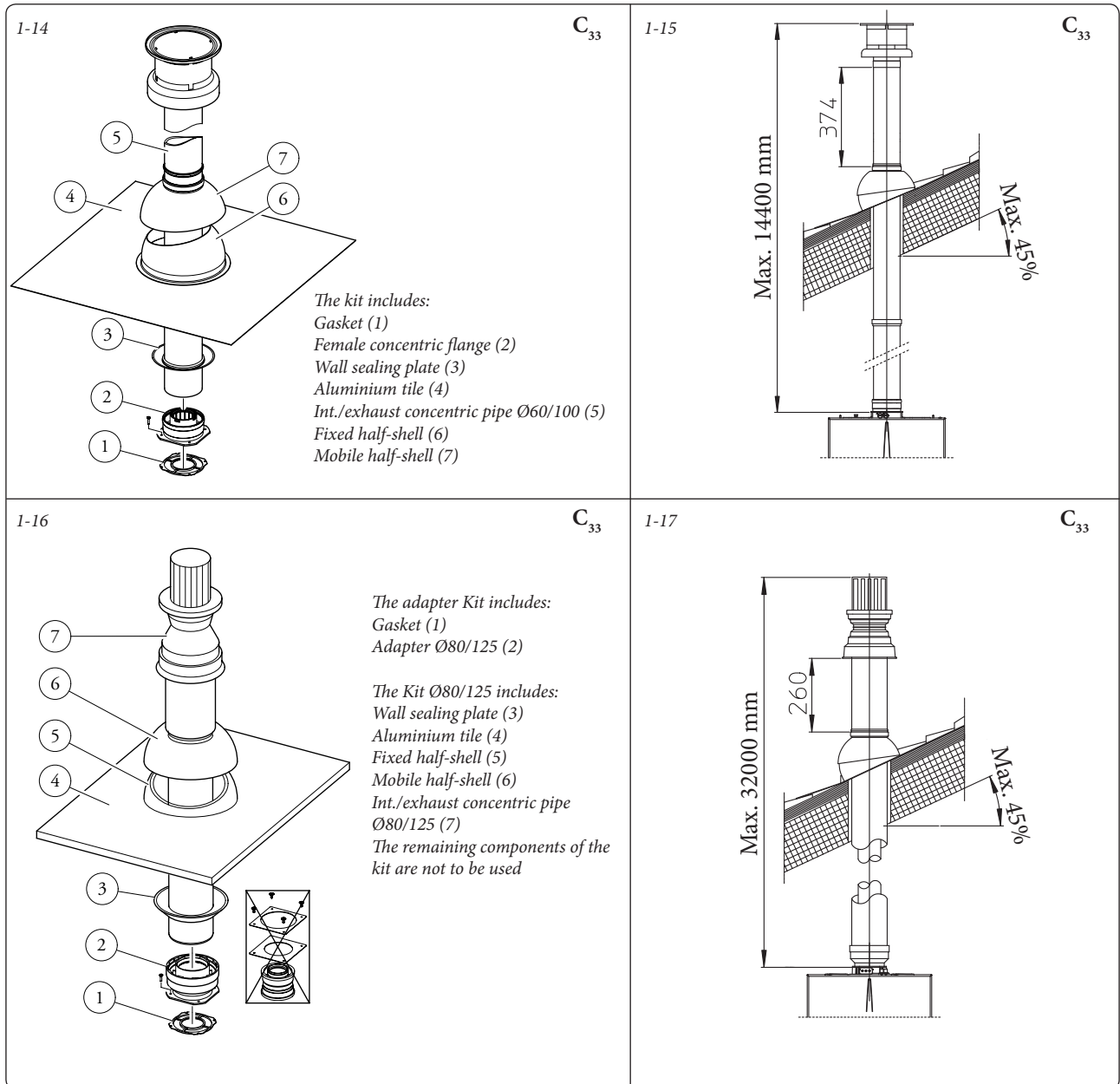
- Extensions for vertical kit Ø60/100 (Fig. 1-15). The vertical kit with this configuration can be extended to a *max. straight vertical length of 14.4 m* including the terminal. This configuration corresponds to a resistance factor of 100. In this case the special extensions must be requested.

**Vertical kit with aluminium tile Ø80/125.**

Kit assembly (Fig. 1-16): for the installation of kit Ø80/125 the flanged adapter kit must be used to be able to install the flue system Ø80/125. Install the flanged adapter (2) on the central hole of the boiler, positioning the gasket (1) with the circular projections downwards in contact with the boiler flange and tighten using the screws present in the kit. Imitation aluminium tile installation: replace the tile with the aluminium sheet (4), shaping it to ensure that rainwater runs off. Position

the fixed half-shell (5) on the aluminium tile and insert the intake-exhaust pipe (7). Fit the Ø80/125 concentric terminal pipe with the male end (smooth) to the female end of the adapter (1) (with lip gasket) up to the stop; making sure that the wall sealing plate has been fitted (3), this will ensure sealing and joining of the elements making up the kit.

- Extensions for vertical kit Ø80/125 (Fig. 1-17). The vertical kit with this configuration can be extended to a *max. length of 32 m* including the terminal. If additional components are assembled, the length equivalent to the maximum allowed must be subtracted. In this case specific extensions must be requested.



**1.11 SYSTEM FILLING.**

Once the boiler is connected, proceed with system filling through the arranged filling valve, which can be connected to the return pipe system and as close as possible to the boiler (Fig. 1-19), or ideally via connection 'C'.

Filling is performed at low speed to ensure release of air bubbles in the water via the boiler and heating system vents.

The boiler has a built-in automatic venting valve on the circulator. *Check if the cap is loose.* Open the radiator air vent valves.

Close radiator vent valves when only water escapes from them.

Close the filling valve when the boiler manometer indicates approx. 1.2 bar.

N.B.: during these operations, turn on the circulating pump at intervals by means of the main selector switch on the control panel. *Vent the circulation pump by loosening the front cap and keeping the motor running. Only open for a few seconds at a time.*

In presence of the automatic filling, the auto fill valve must necessarily be isolated after system is pressurized.

**1.12 GAS SYSTEM START-UP.**

To start up the system, make reference to the Standard: This divides the systems and therefore the start-up operations into three categories: new systems, modified systems, re-activated systems.

In particular, for new gas systems:

- open windows and doors;
- avoid presence of sparks or naked flames;
- bleed all air from pipelines;
- check that the internal system is properly sealed according to specifications.

**1.13 BOILER START UP (IGNITION).**

For first ignition, the following must be performed:

- check that the internal system is properly sealed according to specifications;
- ensure that the type of gas used corresponds to boiler settings;
- switch the boiler on and ensure correct ignition;
- make sure that the gas flow rate and relevant pressure values comply with those given in the manual;
- ensure that the safety device is engaged in the event of gas supply failure and check activation time;

- check activation of the master switch located upstream from the boiler and in the boiler;
- check that the intake/exhaust concentric terminal (if fitted) is not blocked.

The boiler must not be started up even if only one of the checks should be negative.

*N.B.: the boiler preliminary check must be carried out by a qualified technician. The conventional boiler warranty is valid as of the date of testing if not commissioned by a qualified technician.*

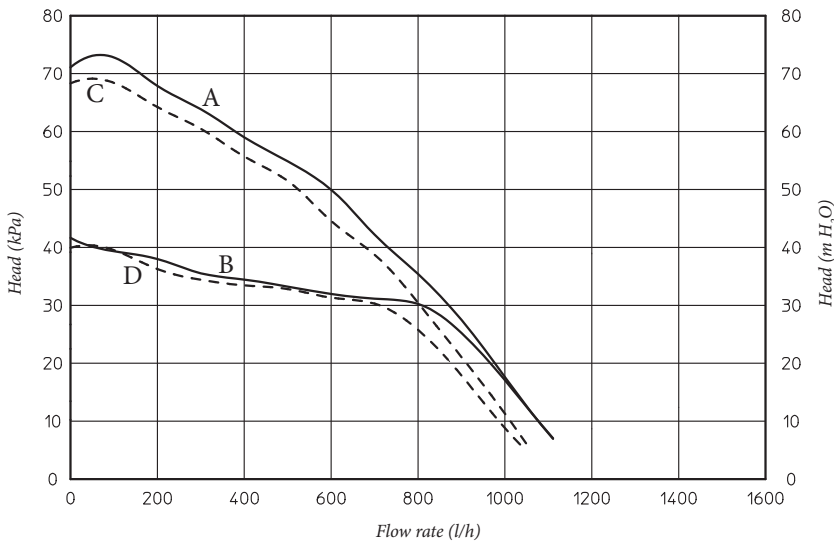
**1.14 CIRCULATION PUMP.**

The "INTEC 12-30 SYSTEM INTERNAL" series boilers are supplied with a built-in circulation pump with 3-position electric speed control. The boiler does not operate correctly with the circulation pump on speed one. To ensure optimal boiler operation, in the case of new system it is recommended to use the pump at maximum speed, position 3.

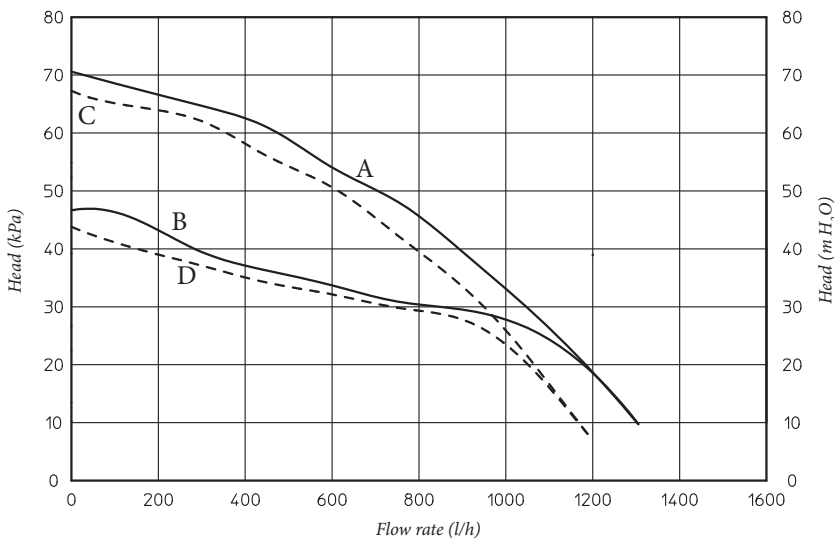
**Pump release.** If, after a prolonged period of inactivity, the circulation pump is blocked, unscrew the front cap and turn the motor shaft using a screwdriver. Take great care during this operation to avoid damage to the motor.

Head available to the system (INTEC 12).

I-18



Head available to the system (INTEC 30).



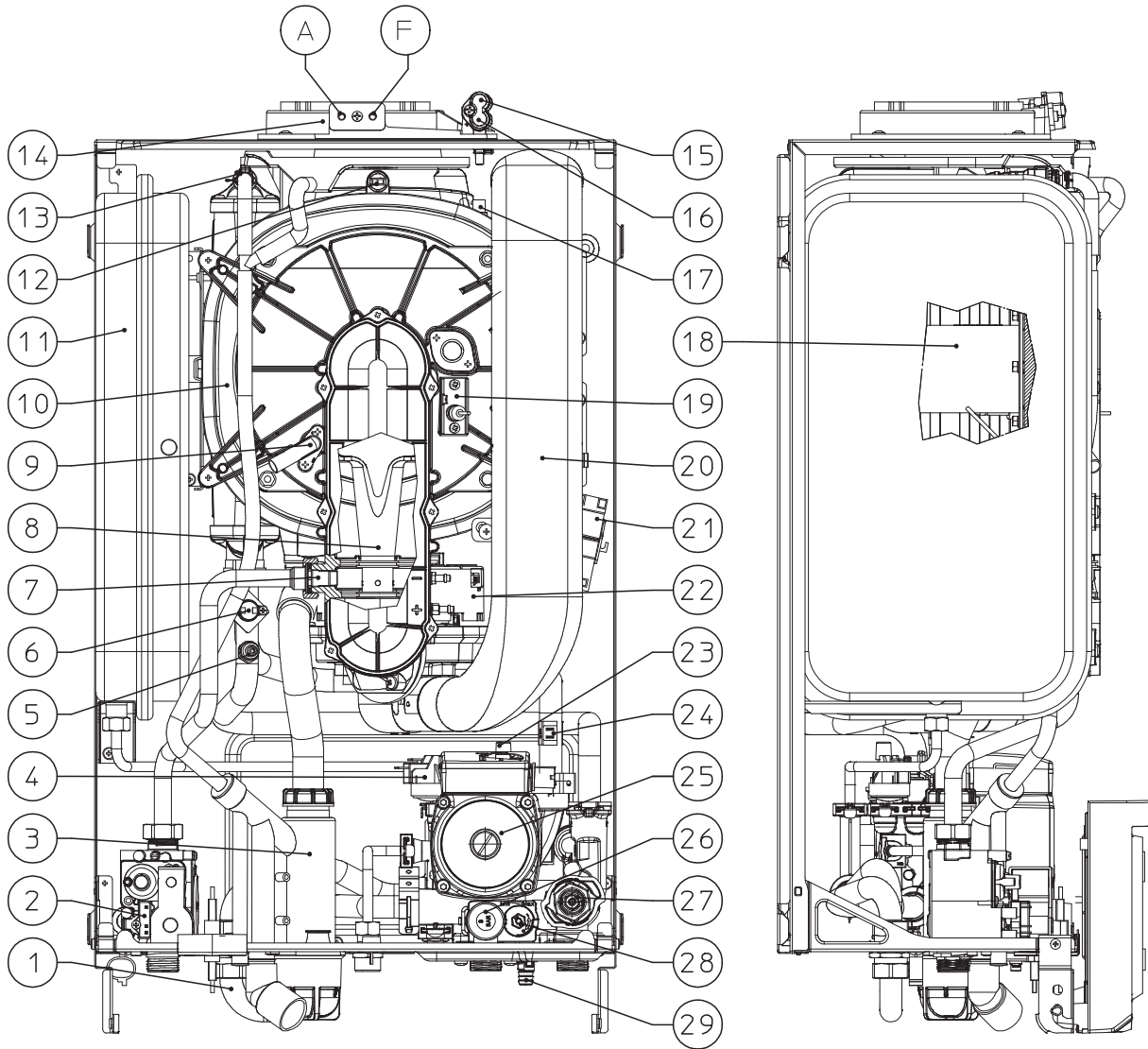
- A = Head available to the system at maximum speed with by-pass closed.
- B = Head available to the system at maximum speed with by-pass open.
- C = Head available to the system at second speed with by-pass closed.
- D = Head available to the system at second speed with by-pass open.

1.15 BOILER COMPONENTS.

INSTALLER

USER

MAINTENANCE TECHNICIAN



G - Gas  
R - Return  
F - Flow  
C - Cold fill

Key:

- 1 - Storage tank unit delivery return by-pass
- 2 - Gas valve
- 3 - Condensate drain trap
- 4 - System pressure switch
- 5 - Flow probe
- 6 - Safety thermostat
- 7 - Gas nozzle
- 8 - Venturi
- 9 - Detection electrode
- 10 - Condensation module
- 11 - System expansion vessel
- 12 - Flue probe
- 13 - Manual air vent valve
- 14 - Sample points (air A) - (flue gases F)

- 15 - Negative signal pressure point
- 16 - Positive signal pressure point
- 17 - Heat exchanger safety thermofuse
- 18 - Burner
- 19 - Ignition electrode
- 20 - Air intake pipe
- 21 - Igniter
- 22 - Fan
- 23 - Air vent valve
- 24 - Return probe
- 25 - Boiler pump
- 26 - 3 bar safety valve
- 27 - 3-way valve (motorised)
- 28 - By-pass
- 29 - System draining valve

## 2 INSTRUCTIONS FOR USE AND MAINTENANCE.

### 2.1 CLEANING AND MAINTENANCE.

**Attention:** the boiler and heating systems must undergo periodical maintenance, combustion and energy efficiency checks in compliance with AS/NZS 5601, by a qualified licensed operative. This insures that optimal safety performance and operation of the boiler remains unchanged over time.

We recommend your appliance is serviced every 24 months (see Par 3.16).

### 2.2 GENERAL WARNINGS.

Use of the boiler by unskilled persons or children is strictly prohibited.

If temporary shutdown of the boiler is required, proceed as follows:

- drain the heating system if anti-freeze is not used;
- shut-off all electrical, water and gas supplies.

In the case of work or maintenance to structures located in the vicinity of ducting or devices for flue extraction and relative accessories, switch off the appliance and on completion of operations ensure that a qualified licensed operative checks efficiency of the ducting or other devices.

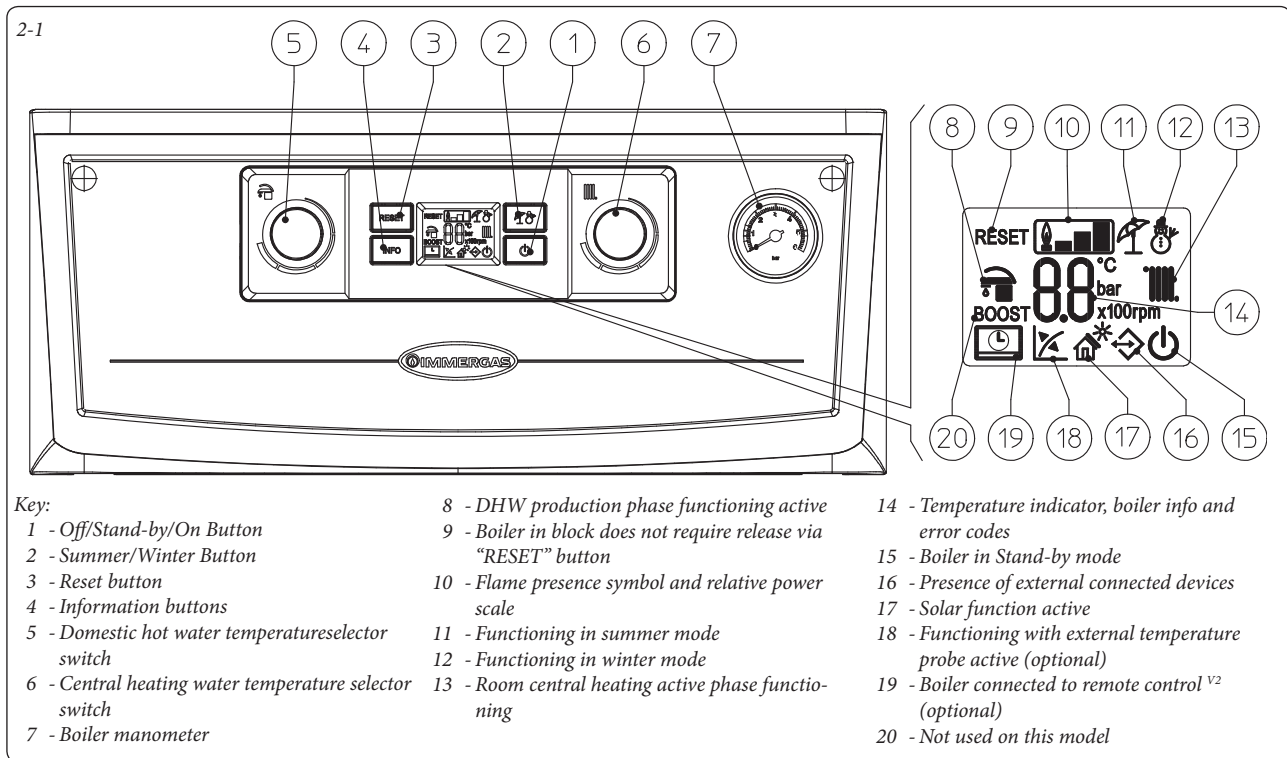
Never clean the appliance or connected parts with easily flammable substances.

Never leave containers or flammable substances in the same environment as the appliance.

- Attention:** the use of components involving use of electrical power requires some fundamental rules to be observed:

- do not touch the appliance with wet or moist parts of the body; do not touch it when barefoot;
- the appliance power cable must not be replaced by the user;
- in the event of damage to the cable, switch off the appliance and contact a qualified technician;
- if the appliance is not to be used for a certain period, disconnect the main power switch.

### 2.3 CONTROL PANEL.



### 2.4 USING THE BOILER.

Before ignition make sure the heating system is filled with water and that the manometer (7) indicates a pressure of 1 ÷ 1.2 bar (Fig. 2-1).

- Open the gas cock upstream from the boiler.
- Press the button (1) until the display switches on. At this point, the boiler goes to the state previous to switch-off.
- If the boiler is in stand-by, press the button (1) again to activate it. If this is not the case, go to the next point.
- Press button (2) in sequence and take the boiler to summer (☀️) or winter (❄️) position.

- **Summer (☀️):** in this mode the boiler functions only to produce the DHW, the temperature is set via the selector (5) and the

relative temperature is shown on the display via the indicator (14).

- **Winter (❄️):** in this mode the boiler functions both for producing domestic hot water and heating the environment. The temperature of the DHW is always regulated via the selector (5), the heating temperature is regulated via selector (6) and the relative temperature is shown on the display via the indicator (14).



From this moment the boiler functions automatically. With no demand for heat (heating or domestic hot water production) the boiler goes to "standby" function, equivalent to the boiler being powered without presence of flame. Each time the burner ignites, the relative flame present symbol is displayed (10) with relative power scale.

- **Operation with Comando Amico Remoto remote control <sup>v2</sup> (CAR<sup>v2</sup>) (Optional).** If the CAR<sup>v2</sup> is connected, the (🏠) symbol will appear on the display. The boiler regulation parameters can be set via the CAR<sup>v2</sup> control panel and the reset button (3) remains active on the boiler control panel, along with the switch-off button (1) ("off" mode only) and the display where the functioning state is shown

**Important:** if the boiler is put into "off" mode, the "ERR>CM" connection error symbol will appear on the CAR<sup>v2</sup>. The CAR<sup>v2</sup> is however powered constantly so as not to lose memorised programs.


- **Solar functioning mode (🏠\*).** This function is activated automatically if the boiler detects a probe on the DHW inlet (optional) or if the

“Solar ignition delay” parameter is more than 0 seconds.


During a withdrawal, if the outlet water is hot enough, the boiler does not switch on, the DHW withdrawal symbol (  ) appears on the display along with the flashing solar function symbol (  ).

When the water supplied by the solar system is at a temperature lower than that at which the boiler is set, the boiler switches on. At this point, the solar function symbol will stay on without flashing.

**• Functioning with optional external probe**

(  ). In the case of a system with optional external probe, the boiler flow temperature for room central heating is managed by the external probe depending on the external temperature measured (Par. 1.6). The flow temperature can be modified by selecting the functioning curve via the selector switch (6) (or on the CAR<sup>v2</sup> control panel, if connected to the boiler) selecting a value from “0 to 9”.

With external probe present, the relative symbol (18) will appear on the display. In the central heating phase, if the temperature of the water contained in the system is sufficient to heat the radiators, the boiler can only function with the activation of the pump.

- **“Stand-by” mode.** Press button (1) in succession until the (  ) symbol appears. The boiler remains inactive from this moment

and the anti-freeze function, pump anti-block function and 3-way and signalling of any anomalies is guaranteed.

**N.B.:** in these conditions the boiler is considered still powered.

- **“Off” mode.** By holding the button (1) down for 8 seconds, the display switches-off and the boiler is off completely. The safety functions are not guaranteed in this mode.

**N.B.:** in these conditions the boiler is considered still live even if there are no functions active.

- **“Automatic vent” mode.** Every time power is supplied to the boiler. the system automatic vent function is activated (duration 8 minutes). This function is displayed via countdown signalled by the indicator (14). During this period the DHW and CH functions are not active.

The “automatic vent” can be annulled by pressing the “reset” button (3).

- **Display functioning.** The display lights up during the use of the control panel, after 15 seconds inactivity, the brightness drops until just the active symbols are displayed. The lighting mode can be varied via parameter t3 in the circuit board customisation menu.

**2.5 FAULT AND ANOMALY SIGNALS.**

The INTEC 12-30 SYSTEM INTERNAL boiler signals any anomalies using a code shown on the boiler display (14) according to the following table.

On the CAR<sup>v2</sup>, the error code will be displayed by means of the same numeric code represented according to the following example (e.g. CAR<sup>v2</sup> = Exx).

Error Code	Anomaly signalled	Cause	Boiler status / Solution
01	No ignition block	In the event of request of room central heating or domestic hot water production, the boiler does not switch on within the preset time. Upon appliance commissioning or after extended downtime, it may be necessary to eliminate the block.	Press the Reset button (1).
02	Safety thermostat block (overheating)	During normal operation, if a fault causes excessive overheating internally, the boiler goes into overheating block.	Press the Reset button (1).
03	Flue safety thermostat block	During normal operation, if a fault causes excessive flue gas overheating, the boiler blocks	Press the Reset button (1).
04	Contacts resistance block	The P.C.B. detects an anomaly on the gas valve supply. Check the connection. (the anomaly is detected and displayed only in the event of a request).	The boiler does not start (1).
05	Flow probe anomaly	The board detects an anomaly on the flow NTC probe.	The boiler does not start (1).
06	Domestic hot water probe anomaly	The board detects an anomaly on the domestic hot water NTC probe.	In this case the boiler continues to produce domestic hot water but not with optimal performance. Moreover, the antifreeze function (1) is restrained.
08	Maximum N° of reset	Number of allowed resets that have already performed.	<b>Attention:</b> the anomaly can be reset 5 times consecutively, after which the function is inhibited for at least one hour. One attempt is gained every hour for a maximum of 5 attempts. By switching the appliance on and off the 5 attempts are re-acquired.
10	Insufficient system pressure	Water pressure inside the central heating circuit that is sufficient to guarantee the correct operation of the boiler is not detected.	Check on the boiler pressure gauge (1) that the system pressure is between 1÷1.2 bar and restore the correct pressure if necessary.
15	Configuration error	If the board detects an anomaly or incongruity on the electric wiring, the boiler will not start.	If normal conditions are restored the boiler restarts without having to be reset. Check that the boiler is configured correctly (1).
16	Fan anomaly	This occurs if the fan has a mechanical or electrical fault.	Press the Reset button (1).
20	Parasite flame block	This occurs in the event of a leak on the detection circuit or anomaly in the flame control unit.	Press the Reset button (1).
23	Return probe anomaly	The board detects an anomaly on the return NTC probe	The boiler does not start (1).

(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Technical After-Sales Service).

Error Code	Anomaly signalled	Cause	Boiler status / Solution
24	<b>Push button control panel anomaly</b>	The board detects an anomaly on the pushbutton panel	If normal conditions are restored the boiler restarts without having to be reset (1).
25	<b>Block due to flue gas temperature gradient intervention</b>	If the board detects a rapid increase in flue gas temperature probably due to a blocked circulating pump or lack of water in the heat exchanger, the boiler shuts down due to the flue gas temperature gradient trip.	Press the Reset button (1).
27	<b>Insufficient circulation</b>	This occurs if there is overheating in the boiler due to insufficient water circulating in the primary circuit; the causes can be: - low system circulation; check that no shut-off devices are closed on the heating circuit and that the system is free of air (deaerated); - pump blocked; free the pump.	Press the Reset button (1).
29	<b>Flue probe anomaly</b>	If the board detects an anomaly on the flue gas probe the boiler will not start	The boiler does not start (1).
31	<b>Loss of remote control communication</b>	This occurs 1 minute after communication is lost between the boiler and the remote control.	Power cycle the boiler. If the Remote Control is still not detected on re-starting the boiler will switch to local operating mode, i.e. using the controls on the control panel (1).
36	<b>IMG Bus communication loss</b>	Communication between the various components is interrupted due to an anomaly on the boiler control unit, on the zone control unit or on the IMG Bus.	The boiler does not satisfy the room heating requests (1).
37	<b>Low power supply voltage</b>	This occurs when the power supply voltage is lower than the allowed limits for the correct boiler operation.	If normal conditions are restored the boiler restarts without having to be reset (1).
38	<b>Loss of flame signal</b>	This occurs when the boiler is ignited correctly and the burner flame switches off unexpectedly; a new ignition attempt is performed and if normal conditions are restored, the boiler does not need to be reset (this fault can be checked in the list of errors in the "Information" menu only).	If normal conditions are restored the boiler restarts without having to be reset (1).
43	<b>Block due to loss of continue flame signal</b>	This occurs if the "Flame signal loss" error occurs many times in a row within a preset period (38).	Press the Reset button, before restarting, the boiler will run a post-ventilation cycle (1).
44	<b>Block for exceeding the maximum accumulated time, close gas valve opening</b>	This occurs if the gas valve remains open for longer than required for normal operation, without the boiler switching on.	Press the Reset button (1).
45	<b>High <math>\Delta T</math></b>	If the board detects a sudden and unexpected rise in $\Delta T$ between the system flow probe and return probe, the boiler limits the burner output to prevent damaging the condensing module; when the correct $\Delta T$ has been restored, the boiler returns to normal operation.	Make sure there is water circulating in the boiler, that the pump is configured according to system requirements and that the return probe works properly (1).
46	<b>Low temperature safety thermostat (optional)</b>	During normal operation, if an anomaly causes excessive overheating of the flow temperature in low temperature conditions, the boiler blocks.	In this case, after suitable cooling, it is possible to reset the thermostat (see relative instructions sheet) (1).
47	<b>Burner power limitation</b>	Should flue high temperature be detected, the boiler reduces power supplied so as not to damage it.	(1).
49	<b>High temperature block on return probe</b>	This occurs when the heat exchanger return circuit reaches too high of a temperature.	Make sure that water circulates properly in the boiler and that the three-way valve works properly. To eliminate it, the Reset button (C) must be pressed (1).

(1) If the shutdown or fault persists, contact an authorised company (e.g. Authorised Technical After-Sales Service).

**2.6 INFORMATION MENU.**

By pressing the “Info” button (4), the “Information menu” is activated, which lists boiler functioning information.

Press the “Info” button (4) to scroll the various information.


To exit the menu, press the “Info” button (4) up to the end of the list, or by pressing the “Reset” button (3) or by waiting for 15 minutes.

With the menu active, the indicator (14) will alternately show the indication of the parameter via the letter “d” plus the number of the parameter that is being displayed and the value

of the parameter itself.

Id Parameter	Description
d1	Displays the flame signal (uA x 10 approximate)
d2	Displays the primary exchanger output instant heating flow temperature
d3	Displays the instant output temperature from the DHW exchanger
d4	Displays the values set for central heating set
d5	Displays the values set for DHW set
d6	Displays the external temperature (if external probe present) If the temperature is below zero, the value is displayed flashing.
d7	Display the temperature of the inlet DHW (with DHW inlet probe present)
d8	Display the temperature of the return probe.
d9	Displays the list of the last five anomalies. (to scroll the list, turn the CH temperature selector (6))

**2.7 BOILER SHUTDOWN**

Switch the boiler off by pressing the “” button, disconnect the power supply outside of the boiler and close the gas cock upstream of the appliance. Never leave the boiler switched on if left unused for prolonged periods.

**2.8 RESTORING CENTRAL HEATING SYSTEM PRESSURE.**

Periodically check the system water pressure. The boiler pressure gauge should read a pressure between 1 and 1.2 bar.

*If the pressure falls below 1 bar (with the circuit cold) restore normal pressure via the fill valve.*

**N.B.:** close the cock after the operation.

If pressure values reach around 3 bar the safety valve may be activated.

In the event of frequent pressure drops, contact original installer or qualified licensed operative for assistance to eliminate possible system leakage.

**2.9 DRAINING THE SYSTEM.**

To drain the boiler, use the special system draining valve (Fig. 1-19, Part. 29)

Before draining, ensure that the system filling valve is closed.

**2.10 ANTI-FREEZE PROTECTION.**

The boiler has an anti-freeze function that switches on automatically when the temperature falls below 4°C (standard protection to minimum temperature of -5°C). All information relative to the anti-freeze protection is stated in Par. 1.3. In order to guarantee the integrity of the appliance and the domestic hot water heating system in zones where the temperature falls below zero, we recommend the central heating system is protected using anti-freeze liquid and installation of the Immergas Anti-freeze Kit in the boiler. In the case of prolonged inactivity (second case), we also recommend that:

- the electric power supply is disconnected;

- the heating circuit and boiler domestic water circuit must be drained. In systems that are drained frequently, filling must be carried out with suitably treated water to eliminate hardness that can cause lime-scale.

**2.11 CASE CLEANING.**

Use damp cloths and neutral detergent to clean the boiler casing. Never use abrasive or powder detergents.

**2.12 DECOMMISSIONING.**

In the event of permanent shutdown of the boiler, contact an authorised company for the procedures and ensure that the electrical, water and gas supply lines are shut off and disconnected.



### 3 BOILER COMMISSIONING (INITIAL CHECK).

When commissioning the boiler, ensure the appliance checklist, located at the rear of this instruction booklet is completed.

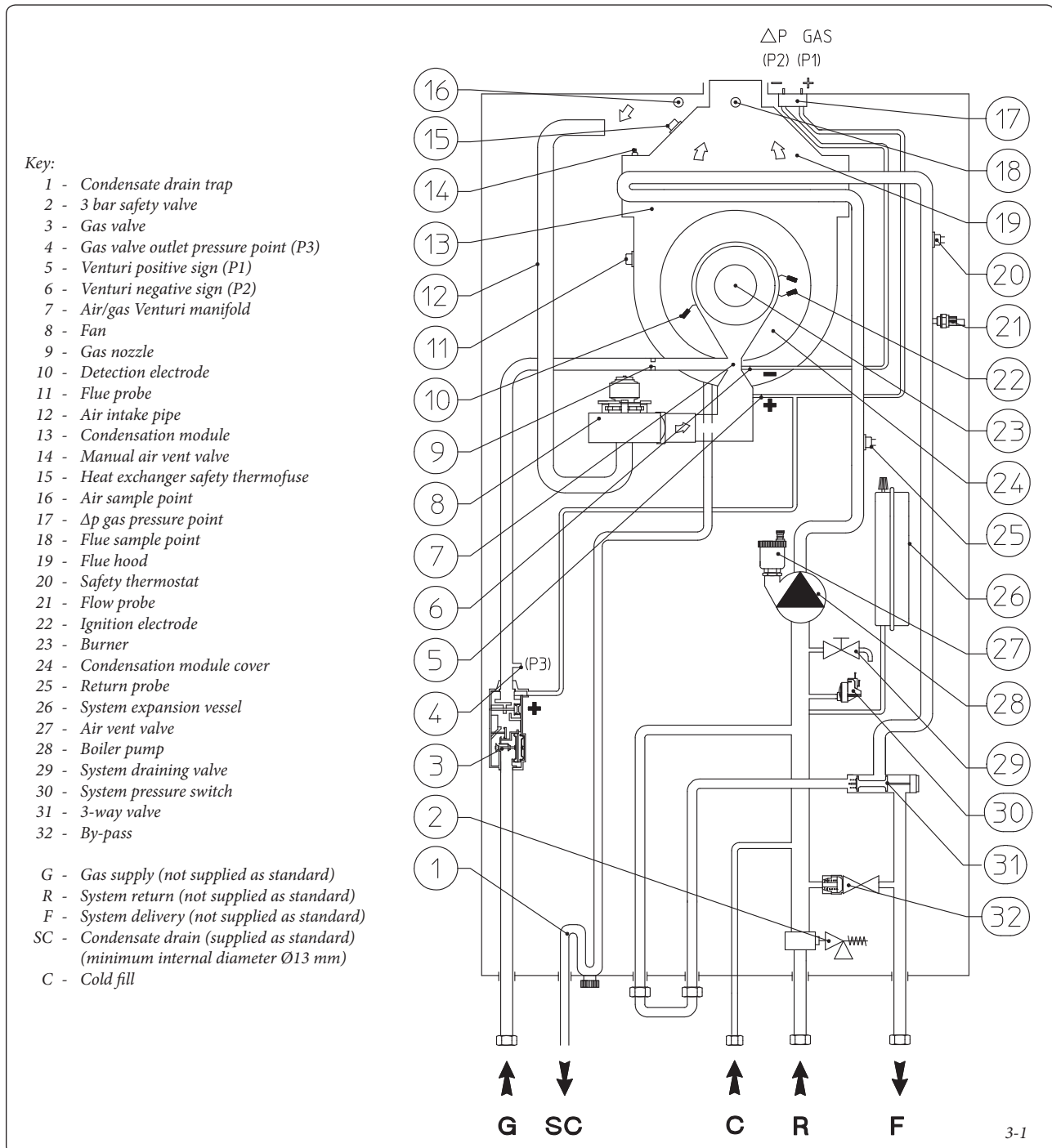
To commission the boiler:

- ensure that the type of gas used corresponds to boiler settings recorded on the appliance data plate;
- check connection to a 230V-50Hz power mains, correct L-N polarity and the earthing connection;

- switch the boiler on and ensure correct ignition;
- ensure the gas inlet working pressure is correct, 1.1 Kpa (Natural Gas), 2.75 Kpa (LPG);
- check that the gas maximum and minimum relative pressure values correspond to those given in the handbook, Par. 3.15;
- check activation of the safety device in the event of no gas, as well as the relative activation time;
- check activation of the main switch located upstream from the boiler and in the boiler;
- check that the intake and/or exhaust terminals are not blocked;

- ensure activation of all adjustment devices;
- ensure sealing efficiency of hydronic circuits;
- check ventilation and/or aeration of the installation room where provided;
- check and set expansion vessel air pressure to 1 bar;
- pre fill condensate trap with clean water;
- fill and set system pressure to 1.2 bar;
- vent air from boiler and system, also allow automatic vent function to run (3.13).

#### 3.1 HYDRAULIC DIAGRAM.



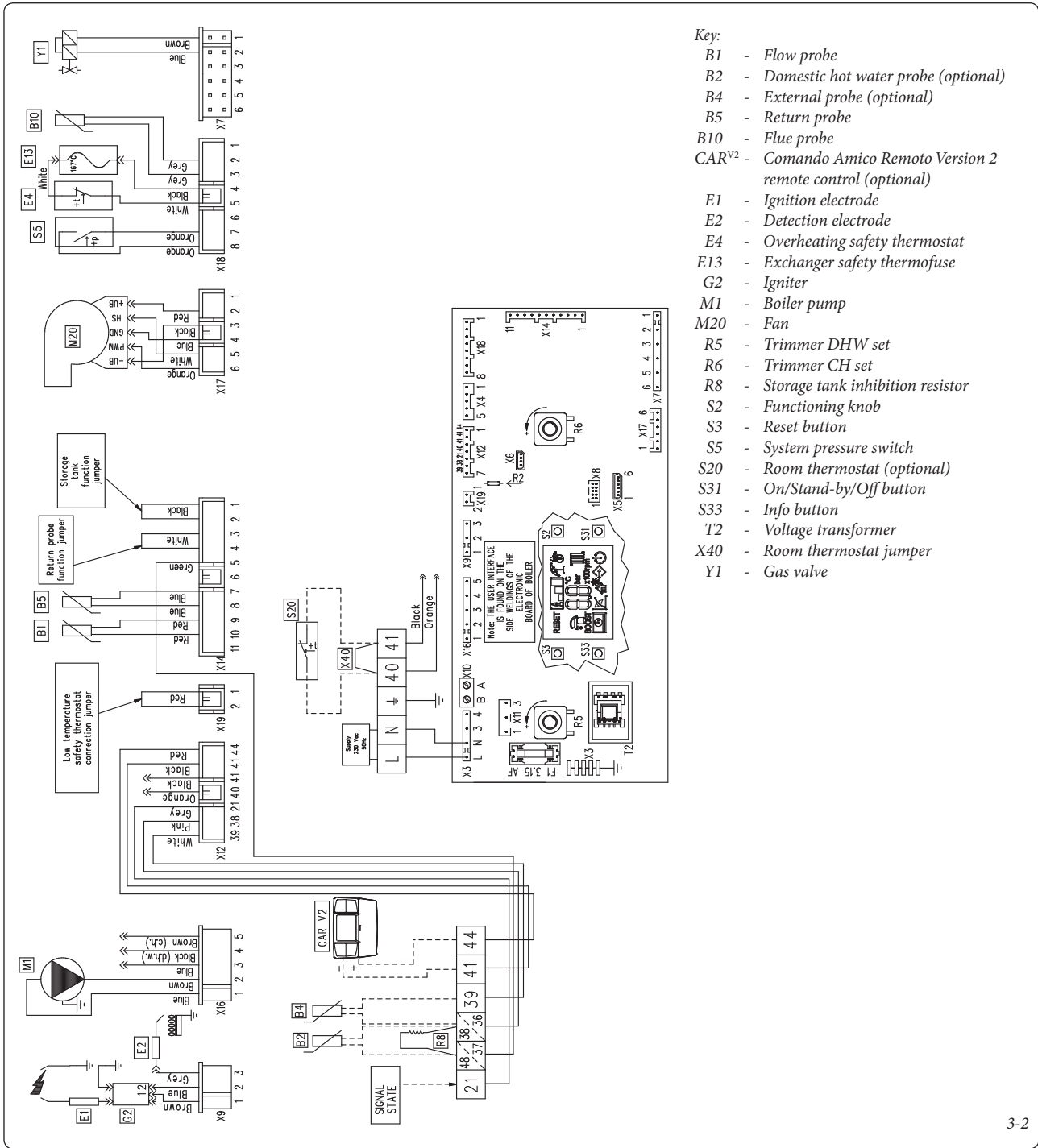
INSTALLER

USER

MAINTENANCE TECHNICIAN

3-1

3.2 WIRING DIAGRAM.



Storage tank unit: the boiler is prepared for the connection to a storage tank unit, which must be connected to clamps 36 - 37 of the terminal board, eliminating resistance R8.

CAR<sup>V2</sup>: the boiler is prepared for the application of the (CAR<sup>V2</sup>), which must be connected to clamps 41 and 44 of the terminal board respecting the polarity and eliminating jumper X40.

Room thermostat: the boiler is prepared for the application of the room thermostat (S20), which must be connected to clamps 40 and 41 of the terminal board eliminating jumper X40.

The connector X5 is used for the connection to the relay P.C.B..

The connector X6 is used for the connection to the personal computer.

The connector X8 is used for software updating operations.

**3.3 TROUBLESHOOTING.**

**N.B.:** maintenance interventions must be carried out by a qualified licensed operative.

Smell of gas. Caused by leakage from gas circuit pipelines. Check sealing efficiency of gas intake circuit.

- Repeated ignition blocks. This may be caused by: incorrect electric power supply, check respect of L and N polarity. No gas, check the presence of pressure in the network and that the gas intake pipe is open. Incorrect adjustment of the gas valve, check the correct calibration of the gas valve. Also check that the heat exchanger or trap are not clogged.
- Irregular combustion or noisiness. This may be caused by: a dirty burner, incorrect combustion parameters, intake-exhaust terminal not correctly installed. Clean the above components and ensure correct installation of the terminal, check correct setting of the gas valve (Off-Set setting) and correct percentage of CO<sub>2</sub> in flue gases.
- Frequent activation of the temperature overload thermostat. It can depend on the lack of water in the boiler, little water circulation in the system or blocked pump. Check on the manometer that the system pressure is within established limits. Check that the radiator valves are not closed and also the functionality of the pump.
- Siphon blocked. This may be caused by dirt or combustion products deposited inside. Check, by means of the condensate drain cap, that there are no residues of material blocking the flow of condensate.
- Heat exchanger blocked. This may be caused by the trap being blocked. Check, by means of the condensate drain cap, that there are no residues of material blocking the flow of condensate.
- Noise due to air in the system. Check opening of the hood of the special air vent valve (Fig. 1-19). Make sure the system pressure and expansion vessel pre-charge values are within the set limits; The factory-set pressure values of the expansion vessel must be 1.0 bar, the value of system pressure must be between 1 and 1.2 bar.

**3.4 CONVERTING THE BOILER TO OTHER TYPES OF GAS.**

If the boiler has to be converted to a different gas type to that specified on the data plate, request the relative conversion kit for quick and easy conversion.

Boiler conversion must be carried out by a qualified licensed operative.

To convert to another type of gas the following operations are required:

- remove the voltage from the appliance;
- replace the nozzle located between the gas pipe and gas/air mixing sleeve (Part. 7 Fig. 1-19), taking care to remove the voltage from the appliance during this operation;
- apply voltage to the appliance;
- calibrate the number of fan revs. (Par. 3.5);
- adjust the correct air/gas ratio (Par. 3.6);
- seal the gas flow rate devices (if adjusted);
- after completing conversion, apply the sticker, present in the conversion kit, near the data-plate. Using an indelible marker pen, cancel the data relative to the old type of gas.

These adjustments must be made with reference to the type of gas used, following that given in the table (Par. 3.15).

**3.5 CALIBRATION OF NUMBER OF FAN REVS.**

**Important:** verification and calibration is necessary, in the case of transformation to other types of gas, in the extraordinary maintenance phase with replacement of the circuit board, air/gas circuit components or in the case of installations with flue gas extraction systems, with horizontal concentric pipe measuring more than 1 metre.

The boiler heat output is correlated to the length of the air intake and flue exhaust pipes. This decreases with the increase of pipe length. The boiler leaves the factory adjusted for minimum pipe length (1m). It is therefore necessary, especially in the case of maximum pipe extension, to check the Δp gas values after at least 5 minutes of burner functioning at nominal heat output, when the temperatures of the intake air and exhaust flue gases have stabilised. Adjust the nominal and minimum heat output in the domestic hot water and central heating modes according to the values in the table (Par. 3.15) using the differential manometers connected to the Δp gas pressure point (15 and 16 Fig. 1-19).

Enter the configurations menu and regulate the following parameters (Par. 3.8):

- DHW minimum power output;
- DHW maximum power output;
- minimum heating output;
- maximum central heating output;
- ignition power.

**3.6 ADJUSTMENT OF THE AIR-GAS RATIO.**

**Important:** the verification operations of the CO<sub>2</sub> must be carried out with the casing mounted, while the gas valve calibration operations must be carried out with the casing open and removing the voltage from the boiler.

Calibration of the minimum CO<sub>2</sub> (minimum heating power).

Enter the chimney sweep phase without withdrawing domestic hot water and take the selector switches to minimum (turn them in an anti-clockwise direction until "0" is seen on the display). To have an exact value of CO<sub>2</sub> in the flue gases the technician must insert the sampling probe to the bottom of the sample point, then check that the CO<sub>2</sub> value is that specified in the table, otherwise adjust the screw (3 Fig. 3-3) (Off-Set adjuster). To increase the CO<sub>2</sub> value, turn the adjustment screw (3) in a clockwise direction and vice versa to decrease it.

Calibration of the maximum CO<sub>2</sub> (nominal central heating power).

On completion of the adjustment of the minimum CO<sub>2</sub> keeping the chimney sweep function active, take the heating selector switch to maximum (turn it in a clockwise direction until "99" is seen on the display). To have an exact value of CO<sub>2</sub> in the flue gases the technician must insert the sampling probe to the bottom of the sample point, then check that the CO<sub>2</sub> value is that specified in the table, otherwise adjust the screw (12 Fig. 3-3) (Gas flow adjuster).

To increase the CO<sub>2</sub> value, turn the adjustment screw (12) in a anticlockwise and vice versa to decrease it.

At every adjustment variation on the screw 12 it is necessary to wait for the boiler to stabilise itself at the value set (about 30 sec.).

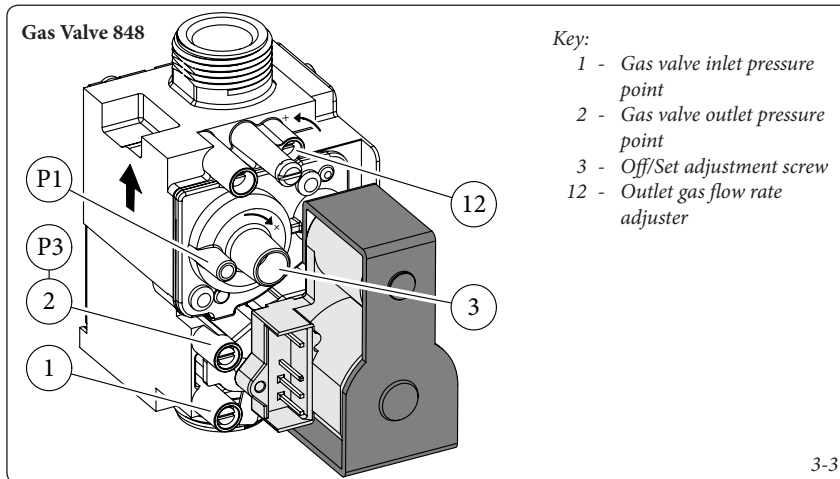
INTEC 12 SYSTEM INTERNAL		
	CO <sub>2</sub> at nominal output (central heating)	CO <sub>2</sub> at minimum output (central heating)
NG (G20)	9,60% ± 0,2	8,90% ± 0,2
LPG (G31)	11,00% ± 0,2	10,30% ± 0,2

INTEC 30 SYSTEM INTERNAL		
	CO <sub>2</sub> at nominal output (central heating)	CO <sub>2</sub> at minimum output (central heating)
NG (G20)	9,45% ± 0,2	8,90% ± 0,2
LPG (G31)	10,60% ± 0,2	9,70% ± 0,2

**3.7 CHECKS FOLLOWING CONVERSION TO ANOTHER TYPE OF GAS.**

After making sure that conversion was carried out with a nozzle of suitable diameter for the type of gas used and the settings are made at the correct pressure, check that the burner flame is not too high or low and is stable (does not detach from burner);

**N.B.:**All boiler adjustment operations must be carried out by a qualified licensed operative.



3-3

### 3.8 PROGRAMMING THE P.C.B.

The boiler is prepared for possible programming of several operation parameters. By modifying these parameters as described below, the boiler can be adapted according to specific needs.

To access the programming phase, position the DHW selector (5) (Fig. 2-1) on position "6", the CH selector (6) on position "9" and press the "Reset" (3) and "Summer/Winter" buttons for about 8 seconds (2).

Once the menu has been accessed, it is possible to scroll through the three sub-menus present (s, p, t) by pressing the "Summer/Winter" (2) button for 1 second.

Use the "DHW regulator" selector (5), to select the parameter (inside the same sub-menu) and rotate the "CH regulator" selector (6) to modify the value according to the range available.

Press the "Reset" button (3) for 1 second to memorise the variation of the parameters. Memorisation is represented via "88" on the indicator (14) for 2 seconds.

Exit the programming mode by waiting for 15 minutes or by pressing the, "Reset" (3) and "Summer/Winter" (2) buttons simultaneously.

Id Parameter	Parameter	Description	Range	Default
S0	Minimum DHW output	The boiler also has electronic modulation that adapts the boiler potentiality to the effective heating demand of the house. Therefore the boiler works normally in a variable gas pressure field between minimum and maximum power depending on the system heat load, setting fan speed (in rpm, hundreds of revs are represented on the display).	900 ÷ 1500	12 =1300 (NG/LPG) 30 =1300 (NG/LPG)
S1	Maximum DHW output		3500 ÷ 6100	12 =4750 (NG/LPG) 30 =5100 (NG/LPG)
S2	Minimum CH output	N.B.:the boiler is produced and calibrated in the central heating phase at nominal output. Approximately 10 minutes are needed to reach the nominal heat output, which can be changed using the parameter (S3).	S0 ÷ S3	12 =1300 (NG/LPG) 30 =1300 (NG/LPG)
S3	Maximum CH output		S2 ÷ S1	12 =4750 (NG/LPG) 30 =5100 (NG/LPG)
S4	Power block	N.B.: selection of parameters in the presence of requests, allows boiler functioning with current equal to the respective value.	1500 ÷ 3500	12 =2900 (NG/LPG) 30 =2900 (NG/LPG)
S5	Central heating set point minimum temperature	Defines the minimum flow temperature.	20 ÷ 50 °C	25
S6	Central heating set point maximum temperature	Defines the maximum flow temperature.	(S5+5) ÷ 85 °C	85
S7	External probe correction	If the reading of the external probe is not correct it is possible to correct it in order to compensate any environmental factors. (Over the value of +9 the display shows "CE", which enables an external control function of the boiler for coupling of the same with a system supervisor)	-9 ÷ 9 K	0
S8	Boiler power	Identifies the power of the boiler on which the P.C.B. is installed	0 = 12 kW 1 = 26 kW 2 = 28 kW 3 = 32 kW	1

Id Parameter	Parameter	Description	Range	Default
P0	DHW thermostat	Establishes the boiler ignition and switch-off mode in DHW mode. 0 - Ignition occurs when the water contained in the storage tank drops by 7°C with respect to the temperature set and switches off when the temperature is at -4°C with respect to the value set (solar deactivated) 1 - Ignition occurs when the water contained in the storage tank drops by 2°C with respect to the temperature set and switches off when the temperature is at +1°C with respect to the value set (solar deactivated) 2 - Ignition occurs when the water contained in the storage tank drops by 10°C with respect to the temperature set and switches off when the temperature is at the value set (solar deactivated)	0 On = -7°C Off = -4°C  1 On = -2°C Off = +1°C  2 On = -10°C Off = +0°C	2
P1	Solar delay timing	The boiler is set to switch-on immediately after a request for DHW. In the case of coupling with a solar storage tank positioned upstream from the boiler, it is possible to compensate the distance between the storage tank and the boiler in order to allow the water to reach the boiler. Set the time necessary to verify that the water is hot enough (see par. Solar panels coupling)	0 - 30 seconds	0
P2	Pump functioning	The pump can function in two ways. 0 intermittent: In winter "mode" the pump is managed by the room thermostat or by the remote control 1 continuous: In "winter" mode the pump is always powered and so functions continuously	0 - 1	0
P3	Relay 1 (optional)	The boiler is set-up for functioning with the relay board (optional), which can be configured 0 = Off 1 = Main zone control 2 = General alarm 3 = CH phase active 4 = External gas valve power supply 5 = (Do not use on this boiler model)	0 - 5	1
P4	Relay 2 (optional)	The boiler is set-up for functioning with the relay board (optional), which can be configured 0 = Off 1 = General alarm 2 = CH phase active 3 = External gas valve power supply 4 = Secondary zone control (from TA on relay board contact 5 = Heat pump	0 - 5	0
P5	Relay 3 (optional)	The boiler is set-up for functioning with the relay board (optional), which can be configured 0 = Off 1 = Chiller remote activation 2 = General alarm 3 = CH phase active 4 = External gas valve power supply 5 = heat pump 6 = activation of storage tank pump	0 - 6	0
Id Parameter	Parameter	Description	Range	Default
t0	Central heating ignitions timer	The boiler has electronic timing, which prevents the burner from igniting too often in central heating mode (with step of 10)	0 - 600 seconds	18
t1	Central heating ramp timer	In the ignition phase, the boiler performs an ignition ramp in order to arrive at the maximum power set (with step of 10)	0 - 840 seconds	18
t2	CH ignition delay from TA and CR request	The boiler is set to switch-on immediately after a request. In the case of particular systems (e.g. area systems with motorised thermostatic valves etc.) it could be necessary to delay switch-on (with 10 step)	0 - 600 seconds	0
t3	Display lighting	Establishes the display lighting mode. 0 <b>Automatic:</b> the display lights up during use and lowers after 15 seconds of inactivity. In the case of anomaly the display flashes. 1 <b>Low:</b> the display is always lit with low intensity 2 <b>High:</b> the display is always lit with high intensity.	0 - 2	0
t4	Display	Establishes what the indicator displays 14 (Fig. 2-1). "Summer" mode: 0: the indicator is always off 1: pump active displays the flow temperature, pump off the indicator is off  "Winter" mode: 0: always displays the value set on the CH selector 1: pump active displays the flow temperature, pump off always displays the value set on the CH selector	0 - 1	1

### 3.9 "CHIMNEY SWEEP" FUNCTION.



When activated, this function forces the boiler to variable output for 15 minutes.

In this state all adjustments are excluded and only the safety thermostat and the limit thermostat remain active. To activate the chimney sweep function, press the "Reset" button (3) until activation of the function in the absence of DHW requests.

Its activation is signalled by simultaneous flashing of the indicators (11 and 12 Fig. 2-1).

This function allows the technician to check the combustion parameters.

Once the function is activated, it is possible to select whether to make the check in CH status or DHW status by opening any hot water cock and regulating the power by turning the "CH regulation" selector (6).

Functioning in CH or DHW mode is visualised by the relative symbols  or .

After the checks, deactivate the function switching the boiler off and then on again.

### 3.10 PUMP ANTI-BLOCK FUNCTION.

The boiler has a function that starts the pump at least once every 24 hours for the duration of 30 seconds in order to reduce the risk of the pump becoming blocked due to prolonged inactivity.

### 3.11 RADIATORS ANTI-FREEZE FUNCTION.

If the system return water is below 4°C, the boiler starts up until reaching 42°C.

### 3.12 P.C.B. PERIODICAL SELF-CHECK.

During functioning in heating mode or with boiler in standby, the function activates every 18 hours after the last boiler check/power supply. In case of functioning in domestic hot water mode the self-check starts within 10 minutes after the end of the withdrawing in progress, for duration of approx. 10 seconds.

**N.B.:** during self-check, the boiler remains off.

### 3.13 AUTOMATIC VENT FUNCTION.

In the case of new heating systems and in particular mode for floor systems, it is very important that deaeration is performed correctly. The function consists in the cyclic activation of the pump (100 s ON, 20 s OFF) and the 3-way valve (120 s domestic hot water, 120 s central heating).

The function is activated in two different ways:

- at every new power supply of the boiler;
- by pressing buttons at the same time (2 and 4 Fig. 2-1) for 5 seconds with boiler in stand-by.

**N.B.:** if the boiler is connected to the CAR<sup>V2</sup>, the "stand-by" function is only obtained via the remote control panel.

In the first case, the function has duration of 8 minutes and it can be interrupted by pressing the "reset" button (4). In the second case it has duration of 18 hours and it can be interrupted by simply switching the boiler on.

Activation of the function is signalled by the countdown shown on the indicator (14).

### 3.14 CASING REMOVAL.

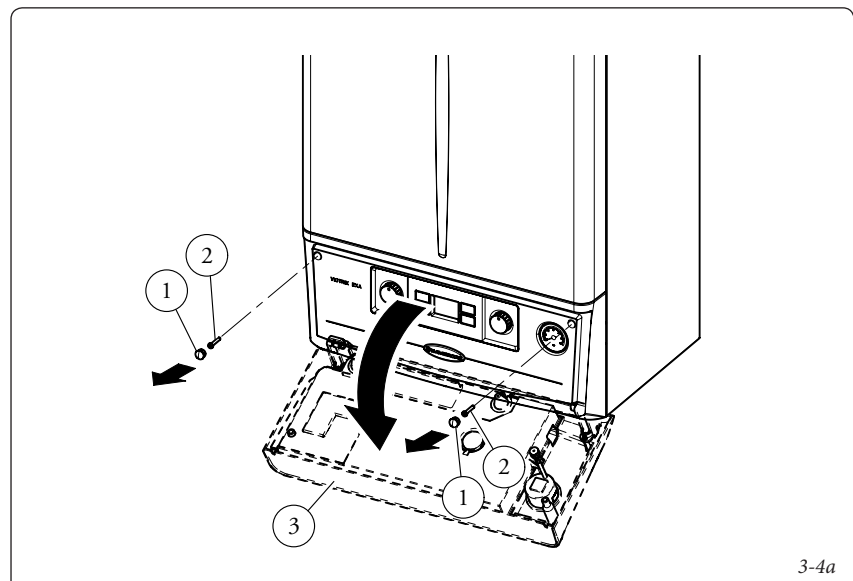
To facilitate boiler maintenance the casing can be completely removed as follows:

#### • Front panel (Fig. 3-4a).

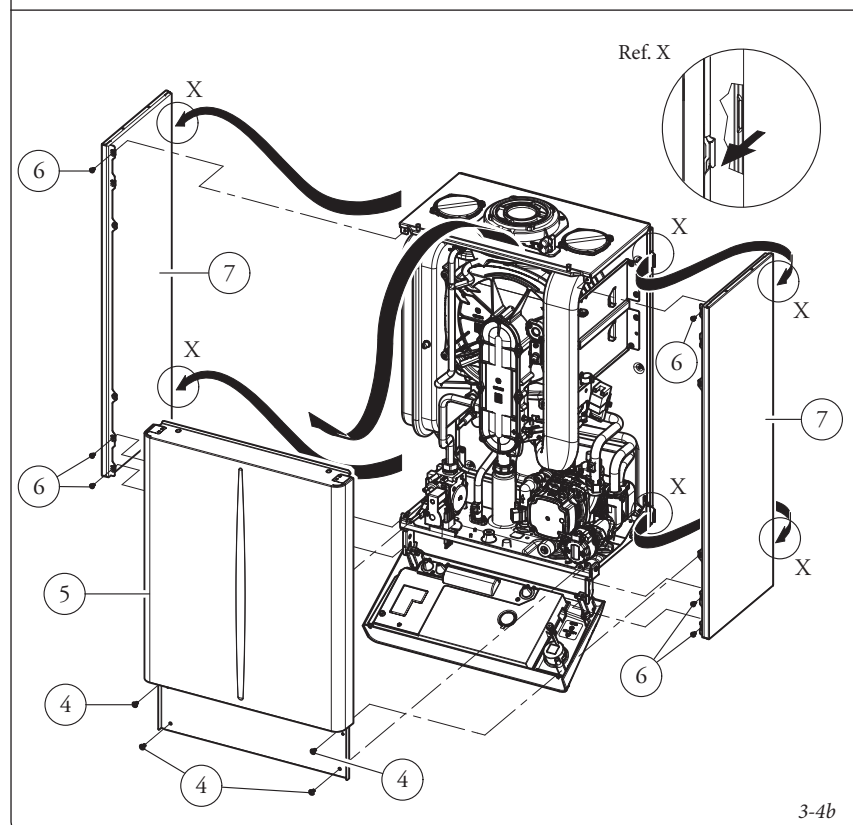
- 1) Remove the cover caps (1) and loosen screws (2).
- 2) Make the control panel (3) turn over towards you.

#### • Casing (Fig. 3-4b).

- 3) Unscrew the screws (4) fixing the casing front (5) and the two sides (7).
- 4) Slightly pull the casing front (5) in the lower part towards you, and at the same time push upwards.
- 5) Unscrew the screws (6) on the sides (7).
- 6) Remove the sides, by pulling them towards you, in order to extract them from the two rear seats (Ref. X).



3-4a



3-4b

### 3.15 VARIABLE HEAT POWER.

**N.B.:** the pressures indicated in the table represent the differences of pressures at the ends of the Venturi mixer and can be measured from the pressure point in the upper part of the sealed chamber (see pressure test 15 and 16 Fig. 1-19).

The adjustments must be performed using a digital differential manometer with a scale in tenths of mm or Pascal. The power data in the table has been obtained with intake-exhaust pipe measuring 0.5 m in length. Gas flow rates refer

to heating values below a temperature of 15°C and at a pressure of 1013 mbar. Burner pressure values refer to use of gas at 15°C.

#### INTEC 12 SYSTEM INTERNAL.

HEAT OUTPUT	GAS CONS.	NG (G20)		Universal LPG (G31)	
		BURNER GAS FLOW RATE	BURNER NOZZLES PRESSURE	BURNER GAS FLOW RATE	BURNER NOZZLES PRESSURE
(kW)	(MJ/h)	(m³/h)	(kPa)	(kg/h)	(kPa)
12,0	49,2	1,30	0,52	0,96	0,57
11,0	45,0	1,19	0,44	0,87	0,48
10,0	40,8	1,08	0,37	0,79	0,41
9,0	36,8	0,97	0,30	0,71	0,34
8,0	32,7	0,87	0,24	0,64	0,28
7,0	28,7	0,76	0,19	0,56	0,22
6,0	24,8	0,66	0,15	0,48	0,17
5,0	20,8	0,55	0,11	0,40	0,12
4,0	16,8	0,44	0,07	0,33	0,08
3,0	12,7	0,34	0,05	0,25	0,05
2,3	9,8	0,26	0,03	0,19	0,03

#### INTEC 30 SYSTEM INTERNAL.

HEAT OUTPUT	GAS CONS.	NG (G20)		Universal LPG (G31)	
		BURNER GAS FLOW RATE	BURNER NOZZLES PRESSURE	BURNER GAS FLOW RATE	BURNER NOZZLES PRESSURE
(kW)	(MJ/h)	(m³/h)	(kPa)	(kg/h)	(kPa)
30,0	121,6	3,22	0,41	2,36	0,49
29,0	117,5	3,11	0,39	2,28	0,46
28,0	113,4	3,00	0,36	2,20	0,43
27,0	109,3	2,89	0,34	2,12	0,40
26,0	105,2	2,79	0,32	2,05	0,37
25,0	101,1	2,68	0,30	1,97	0,35
24,0	97,1	2,57	0,28	1,89	0,32
23,0	93,1	2,46	0,26	1,81	0,30
22,0	89,0	2,36	0,24	1,73	0,28
21,0	85,0	2,25	0,22	1,65	0,25
20,0	81,0	2,15	0,20	1,58	0,23
19,0	77,0	2,04	0,19	1,50	0,21
18,0	73,0	1,93	0,17	1,42	0,19
17,0	69,0	1,83	0,16	1,34	0,17
16,0	65,0	1,72	0,14	1,26	0,16
15,0	61,0	1,62	0,13	1,19	0,14
14,0	57,0	1,51	0,11	1,11	0,12
13,0	53,0	1,40	0,10	1,03	0,11
12,0	49,0	1,30	0,09	0,95	0,09
11,0	45,0	1,19	0,08	0,87	0,08
10,0	41,0	1,09	0,06	0,80	0,07
9,0	36,9	0,98	0,05	0,72	0,06
8,0	32,9	0,87	0,04	0,64	0,05
7,0	28,8	0,76	0,03	0,56	0,04
6,0	24,8	0,66	0,03	0,48	0,03
5,7	23,6	0,62	0,02	0,46	0,03

INSTALLER

USER

MAINTENANCE TECHNICIAN

### 3.16 APPLIANCE CHECK AND MAINTENANCE.

The following checks and maintenance should be performed every 24 months.

- Clean the flue side of the heat exchanger.
  - Clean the main burner.
  - If deposits are detected in the combustion chamber one must remove them and clean the heat exchanger coils using nylon or sorghum brushes; it is forbidden to use brushes made of metal or other materials that may damage the combustion chamber itself.
  - Check the integrity of the insulating panels inside the combustion chamber and if damaged replace them.
  - Visually check for water leaks or oxidation from/on fittings and traces of condensate residues inside the sealed chamber.
  - Check contents of the condensate drain trap.
  - Via the condensate drain cap check that there are no residues of material that clog condensate passage; also check that the entire condensate drain circuit is clear and efficient.
- In the event of obstructions (dirt, sediment, etc.) with consequent leakage of condensate in the combustion chamber, one must replace the insulating panels.
- Check that the burner seal gaskets and the lid are intact and perfectly efficient, otherwise replace them. In any case the gaskets must be replaced at least every two years, regardless of

their state of wear.

- Check that the burner is intact, that it has no deformations or cuts and that it is properly fixed to the combustion chamber lid; otherwise it must be replaced.
- Visually check that the water safety drain valve is not clogged.
- Check that, after discharging system pressure and bringing it to zero (read on boiler pressure gauge), the expansion vessel pressure is at 1.0 bar.
- Check that the system static pressure (with system cold and after refilling the system by means of the filling valve) is between 1 and 1.2 bar.
- Visually check that the safety and control devices have not been tampered with and/or shorted, in particular:
  - temperature safety thermostat;
- Check the condition and integrity of the electrical system and in particular:
  - supply voltage cables must be inside the fairleads;
  - there must be no traces of blackening or burning.
- Check ignition and operation.
- Check correct calibration of the burner in domestic hot water and central heating phases.

- Check the operation of the appliance control and adjustment devices and in particular:
  - system regulation probes intervention;
  - domestic hot water control thermostat intervention.
- Check sealing efficiency of the gas circuit and the internal system.
- Check the intervention of the device against no gas ionisation flame control. The relative intervention time must be less than 10 seconds.

**N.B.:** in addition to maintenance, one must also check the thermal system, with frequency and procedures that comply with the indications of the technical regulations in force.

### 3.17 COMBUSTION PARAMETERS.

INTEC 12 SYSTEM INTERNAL		NG (G20)	Universal LPG (G31)
Gas nozzle diameter	mm	3,80	2,80
Supply pressure	kPa	1,13	2,75
Flue flow rate at nominal heat output	kg/h	19	19
Flue flow rate at min heat output	kg/h	4	4
CO <sub>2</sub> at Nom Q /Min.	%	9,60 / 8,90	11,00 / 10,30
CO with 0% O <sub>2</sub> at Nom Q /Min.	-	0,00125 / 0,00003	0,00173 / 0,00003
NO <sub>x</sub> with 0% O <sub>2</sub> at Nom Q /Min.	mg/kWh	30 / 13	35 / 17
Flue temperature at nominal output	°C	63	64
Flue temperature at minimum output	°C	60	62

INTEC 30 SYSTEM INTERNAL		NG (G20)	Universal LPG (G31)
Gas nozzle diameter	mm	6,90	4,80
Supply pressure	kPa	1,13	2,75
Flue flow rate at nominal heat output	kg/h	48	49
Flue flow rate at min heat output	kg/h	10	10
CO <sub>2</sub> at Nom Q /Min.	%	9,45 / 8,90	10,60 / 9,70
CO with 0% O <sub>2</sub> at Nom Q /Min.	-	0,00153 / 0,00001	0,00160 / 0,00003
NO <sub>x</sub> with 0% O <sub>2</sub> at Nom Q /Min.	mg/kWh	51 / 17	61 / 25
Flue temperature at nominal output	°C	40	40
Flue temperature at minimum output	°C	64	63



### 3.18 TECHNICAL DATA.

		Intec 12 System Internal	Intec 30 System Internal
Nominal heat input (NG / Universal LPG)	MJ/h (kW)	49,2 (12,3)	121,6 (30,4)
Minimum heat input (NG / Universal LPG)	MJ/h (kW)	9,8 (2,5)	23,6 (5,9)
Nominal heat output (useful) (NG / Universal LPG)	kW	12,0	30,0
Minimum heat output (useful) (NG / Universal LPG)	kW	2,3	5,7
* Efficiency 80/60 Nom./Min.	%	97,4 / 93,5	98,6 / 96,7
* Efficiency 50/30 Nom./Min.	%	107,0 / 102,7	108,0 / 105,9
* Efficiency 40/30 Nom./Min.	%	107,1 / 107,1	109,0 / 106,0
Heat loss at casing with burner On/Off	%	0,3 / 0,88	0,2 / 0,48
Heat loss at flue with burner On/Off	%	2,3 / 0,02	1,2 / 0,01
Central heating circuit max. operating pressure	kPa	300	300
Central heating circuit max. operating temperature	°C	90	90
Adjustable central heating temperature	°C	20 - 85	20 - 85
System expansion vessel volume	l	8,0	8,0
Expansion vessel factory-set pressure	bar	1	1
Water content in generator	l	2,65	2,30
Head available with 1000 l/h flow rate	kPa (m H <sub>2</sub> O)	17,1 (1,7)	26,4 (2,7)
Weight of full boiler	kg	35,65	41,1
Weight of empty boiler	kg	33,0	38,8
Electrical connection	V/Hz	230/50	230/50
Power input	A	0,54	0,66
Installed electric power	W	120	140
Pump consumption	W	89	92
Fan power consumption	W	17	27
Equipment electrical system protection	-	IPX5D	IPX5D
NO <sub>x</sub> class	-	5	5
Weighted NO <sub>x</sub>	mg/kWh	29,0	36,0
Weighted CO	mg/kWh	20,4	27,0
Type of appliance	C13 /C33 / C43 / C53 / C63		

- Flue temperature values refer to an air inlet temperature of 15°C and flow temperature of 50°C.

- \* Yields refer to the lower heating value.

- The data relevant to domestic hot water performance refer to a dynamic inlet pressure of 2 bar and an inlet temperature of 15°C; the values are measured directly at the boiler outlet considering that to obtain the data declared mixing with cold water is necessary.

INSTALLER

USER

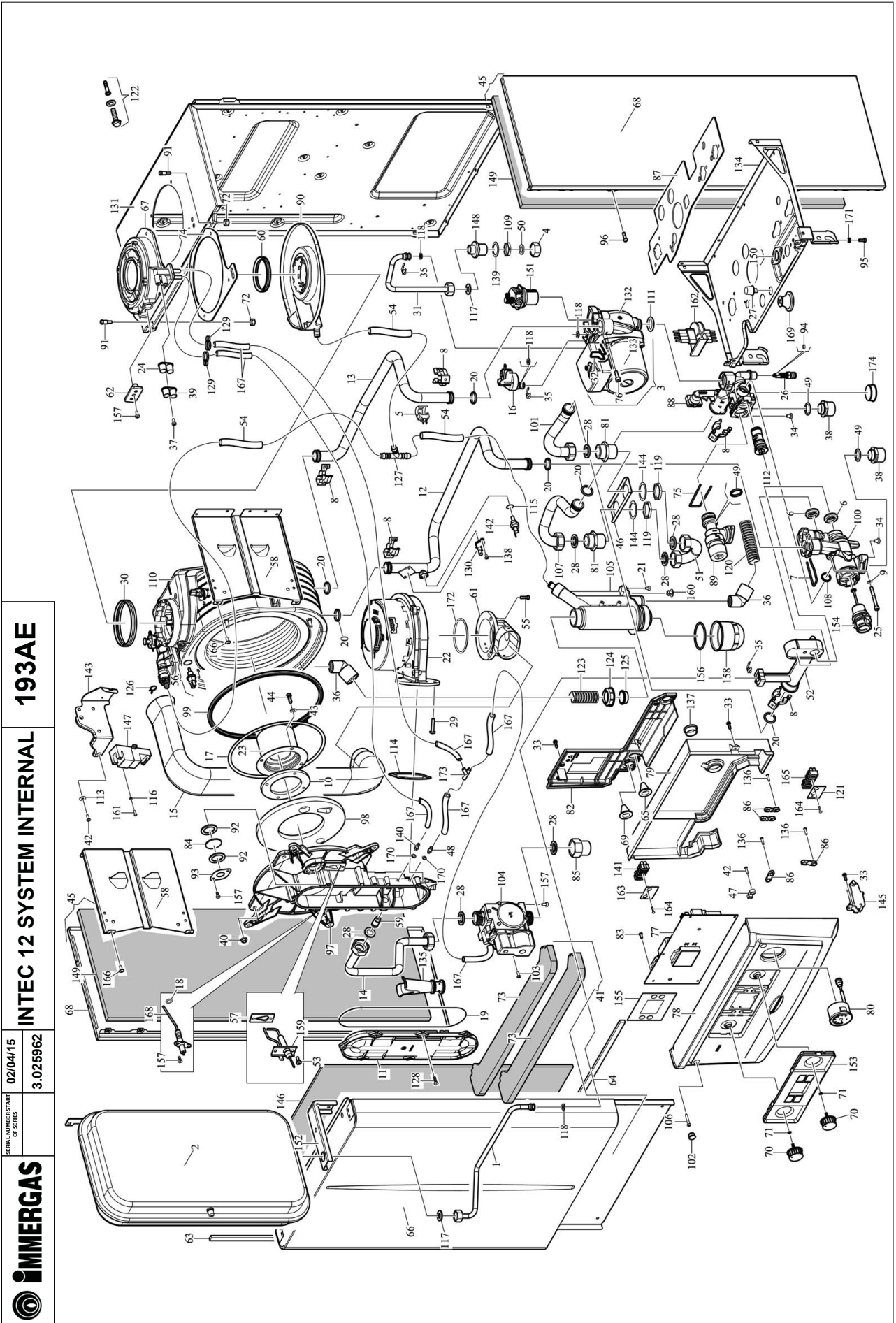
MAINTENANCE TECHNICIAN

INSTALLER

USER

MAINTENANCE TECHNICIAN

3.19 EXPLODED BOILER DIAGRAM INTEC 12 SYSTEM INTERNAL.



INTEC 12 SYSTEM INTERNAL 193AE

02/04/15  
3.025962



3.20 SPARE PART LIST INTEC 12 SYSTEM INTERNAL.

N.	CODE	DESCRIPTION	UNIT
3	3.025937	Hydraulic group	
1	3.026049	Control panel - complete	
1	3.03189	D.8 pipe, hydraulic assembly - expansion tank	
2	3.030996	Expansion vessel (6 litres)	
3	3.025560	Pump group	
4	3.023394	NTC plug	
5	nfs	Heat exchanger gasket	
6	3.021695	Kit of O-rings multi-functions	
7	nfs	Outlet manifold clip	
7	3.021696	Clip kit	
8	nfs	Pipe clip (d.18)	
8	3.021696	Clip kit	
9	1.030176	Stainless steel washer (M5.3x10)	
10	1.033442	Graphite gasket for burner	
11	1.023442	Gas valve	
12	1.023156	D.16 pipe, water gas module - hydraulic group	
13	1.029157	Condensation module - pump pipe (d.18)	
14	1.038529	Gas valve - manifold pipe (d.14)	
15	1.033901	Air intake pipe	
16	1.027277	Absolute pressure switch	
17	1.020211	Cord packing	
18	1.026455	Red silicone O-ring (9.19x2.62)	
19	1.025357	Gas manifold cover gasket	
20	1.033634	Epdm O-Ring (16.00x2.8, 83sh)	
21	1.021178	Flange for crossheaded screw (M4x6)	
22	1.024483	Burner	
23	1.025690	Pressure point cap	
24	1.038304	Hex socket screw (M5x65)	
25	1.027108	Drain fitting	
26	1.031531	D.14.2 plug	
28	1.023992	Gasket (24x16x2)	
29	1.023578	Crossheaded screw (M5x25)	
30	1.032851	Flange for O-ring (d.8)	
31	1.032851	Flange for O-ring (d.8)	
32	nfs	Pressure switch locking clip	
32	3.021696	Clip kit	
33	1.035250	Crossheaded self-tapping screw (3x16)	
34	1.1176	Crossheaded screw (M5x8)	
35	nfs	Metal-sheet clip (d.9)	
35	3.021696	Clip kit	
36	1.023581	Rubber adapter	
37	1.034459	Crossheaded screw (M4x20)	
38	3.021694	Two pump coupler fittings with o-ring kit	
39	1.034173	Cap	
40	1.025911	Nut (M6)	
41	3.026423	Front casing, assembly	
42	1.4139	Crossheaded self-tapping screw (3.9x13)	
43	1.012468	Stainless steel elastic washer (M5)	
44	1.033429	M5x10 hex screw	
45	3.026424	Casing group	
46	1.014725	Pipes clamping plate	
47	1.024296	Clip with clamp screw hole	
48	1.038304	Hex socket screw (M4x20)	
49	nfs	Peroxide epdm O-Ring (17.86x2.62)	
49	3.021694	Two pump coupler fittings with o-ring kit	
49	3.021695	Kit of O-rings multi-functions	
50	1.034405	Gasket (16.5x11.5x2)	
51	1.036539	D.18 pipe bypass	
52	1.037089	Outlet cylinder manifold	
53	1.7349	Crossheaded screw (M4x10)	
54	1.016187	Silicone tube (6x12)	
55	1.024296	Clip with clamp screw (M6x12)	
56	1.030251	Flange for O-ring (d.18)	
57	1.030251	Ignition electrode gasket	
58	2.014523	Module mount bracket	
59	1.022050	Gas nozzle (d.3.80)	
60	1.021483	Silicone hood gasket	
61	1.033902	Fan flange for pipe fixing	
62	1.025278	Plug for flange with sample points	
63	nfs	Adhesive foam strip (d.10x3)	
63	3.026423	Front casing, assembly	
64	3.026423	Front casing, assembly (15x3)	
65	1.027009	Silicone fairlead (d.2)	
66	nfs	Front casing	
66	3.026423	Front casing, assembly	
67	1.037804	Flange with sample points	

68	nfs	Lx-Rx wall, casing	
68	3.026424	Casing group	
69	1.019751	Silicone fairlead (d.6.5)	
70	1.031289	Knob	
71	1.2288	3.68x1.78 O-ring, nitrile, 70 sh	
72	1.036490	Stud (M4)	
73	3.026423	Front casing, assembly	
74	1.030666	Gasket for flange with sample points	
75	nfs	Clip	
75	3.021696	Clip kit	
76	1.010289	Tropicalized hex socket screw (M5x16)	
77	1.038389	PCB	
78	3.026268	Bezel/control panel with nameplate assembly	
79	1.030300	Control panel back cover	
80	1.027682	Wormgear; M nipples	
81	1.030301	Connection group cover	
82	1.030301	Connection group cover	
83	1.035249	Crossheaded self-tapping screw (3x10)	
84	1.034608	Ceramic glass (d.20)	
85	1.029694	Energy metering coupler fitting 3/4"	
86	1.7908	Black cable clamp	
87	1.038185	Sealed chamber gasket	
88	1.028650	Return manifold	
89	1.028643	Safety valve (3 bar)	
90	1.030671	Condensate drain system	
91	1.024888	Stud M for module inspection hole	
92	1.024888	Stud M for module inspection hole	
93	2.013322	Flange for module cover inspection hole	
94	nfs	Epdm O-Ring (2.57x1.78, 70 sh)	
94	3.021695	Kit of O-rings multi-functions	
95	1.016246	Crossheaded self-forming screw (M4x8)	
96	1.030219	Cone pointed crossheaded self-tapping screw (4.2x6.5)	
97	1.023334	Gas manifold	
98	1.024543	Front ceramic fibre panel	
99	1.025688	Gas manifold gasket	
100	1.028648	Housing, outlet manifold	
101	1.024296	Storage tank flow pipe (d.18)	
102	1.032851	Flange for O-ring (d.8)	
103	1.6011	Crossheaded flat pointed self-tapping screw (3.5x9.5)	
104	1.031823	SJT 848 gas valve	
105	3.020367	Plastic siphon	
106	1.2337	Crossheaded self-tapping screw (3.9x25)	
107	1.038188	Boiler return pipe (d.18)	
108	nfs	Epdm O-Ring (13.94x2.62, 70 sh)	
108	3.021695	Kit of O-rings multi-functions	
109	1.038336	Lowered brass nut (1/2" F)	
110	1.037446	Condensation module	
111	3.021696	Kit of O-rings multi-functions	
112	3.021689	By-pass complete cartridge	
113	1.8599	Washer (4.3x12)	
114	1.024680	Bumer gasket	
115	1.022362	Peroxide epdm O-Ring (9.25x1.78)	
116	1.011163	Tropicalized washer (3.2x7x0.5)	
117	1.023993	Gasket (14.8x8x2)	
118	nfs	Epdm O-Ring (7.6x2.62, 70 sh)	
118	3.021695	Kit of O-rings multi-functions	
119	1.038337	Washer (3.9x7)	
120	1.019654	Flexible hose for siphon	
121	1.038018	Screen-printed plate 6 way	
122	1.5899	Wall plug package (d.10x50)	
123	1.025898	Flexible hose (l.200)	
124	1.028444	Nut for flexible hose	
125	1.021452	Gasket for flexible hose	
126	1.016967	Spring pipe clamp for silicone pipe (d.22)	
127	1.024887	4" nose union	
128	1.025688	Crossheaded screw (M5x14)	
129	1.010500	Spring pipe clamp for silicone pipe (d.22)	
130	1.025707	Kit; thermostat 100°C	
131	2.014456	Frame	
132	1.028554	Pump body	
133	1.032431	Pump motor	
134	2.015642	Valve supporting plate	
135	1.027710	Venturi	

136	1.7967	Crossheaded self-tapping screw (3.5x19)	
137	1.031572	Adjustment-hole plug	
138	1.1656	Nickel-plated crosshead self-tapping screw (3.5x6.4)	
139	1.038393	Gasket (28x21x1)	
140	1.024996	Brass pressure point	
141	1.031009	5-way terminal block with fuse housing	
142	1.021762	NTC fast immersion probe	
143	1.021762	NTC fast immersion probe	
144	1.038394	Door hinge bracket	
145	1.023554	Door hinge mount	
146	nfs	Front casing, insulating panel	
146	3.026423	Front casing, assembly	
147	1.025360	Spark generator	
148	1.038395	1/2" M - 3/8" M nipple	
149	nfs	Casing insulating panel	
149	3.026424	Casing group	
150	1.021710	Steel, sealed safety valve	
152	2.014014	Bracket for expansion vessel	
153	1.031288	Control panel push-button	
154	3.020380	Complete cartridge	
155	1.034442	Adhesive for display	
155	1.026460	Peroxide epdm O-Ring (44.12x2.62)	
156	1.029697	Siphon tank	
159	3.021695	Kit of O-rings multi-functions	
161	1.021692	Crossheaded flat pointed self-tapping screw (2.9x9.5)	
161	1.6984	Crossheaded flat pointed self-tapping screw (2.9x9.5)	
162	1.030916	Grommet	
163	1.038023	Screen-printed plate	
164	1.031293	Screw fixing terminal block	
165	1.6804	6-way terminal block	
166	1.8532	Crossheaded self-tapping screw (3.9x16)	
167	1.025986	Silicone pipe (4x8)	
168	1.032007	Detection electrode	
169	1.017131	Fairlead (d.8)	
171	1.0246	Alumined copper washer (10x5.2x1)	
171	1.0246	Alumined copper washer (10x5.2x1)	
172	1.026530	Nitrile O-Ring (63x3.3 sh)	
173	1.6221	Hose union for silicone pipe	
174	1.038478	Plug	

3.21 EXPLODED BOILER DIAGRAM INTEC 30 SYSTEM INTERNAL.

INSTALLER

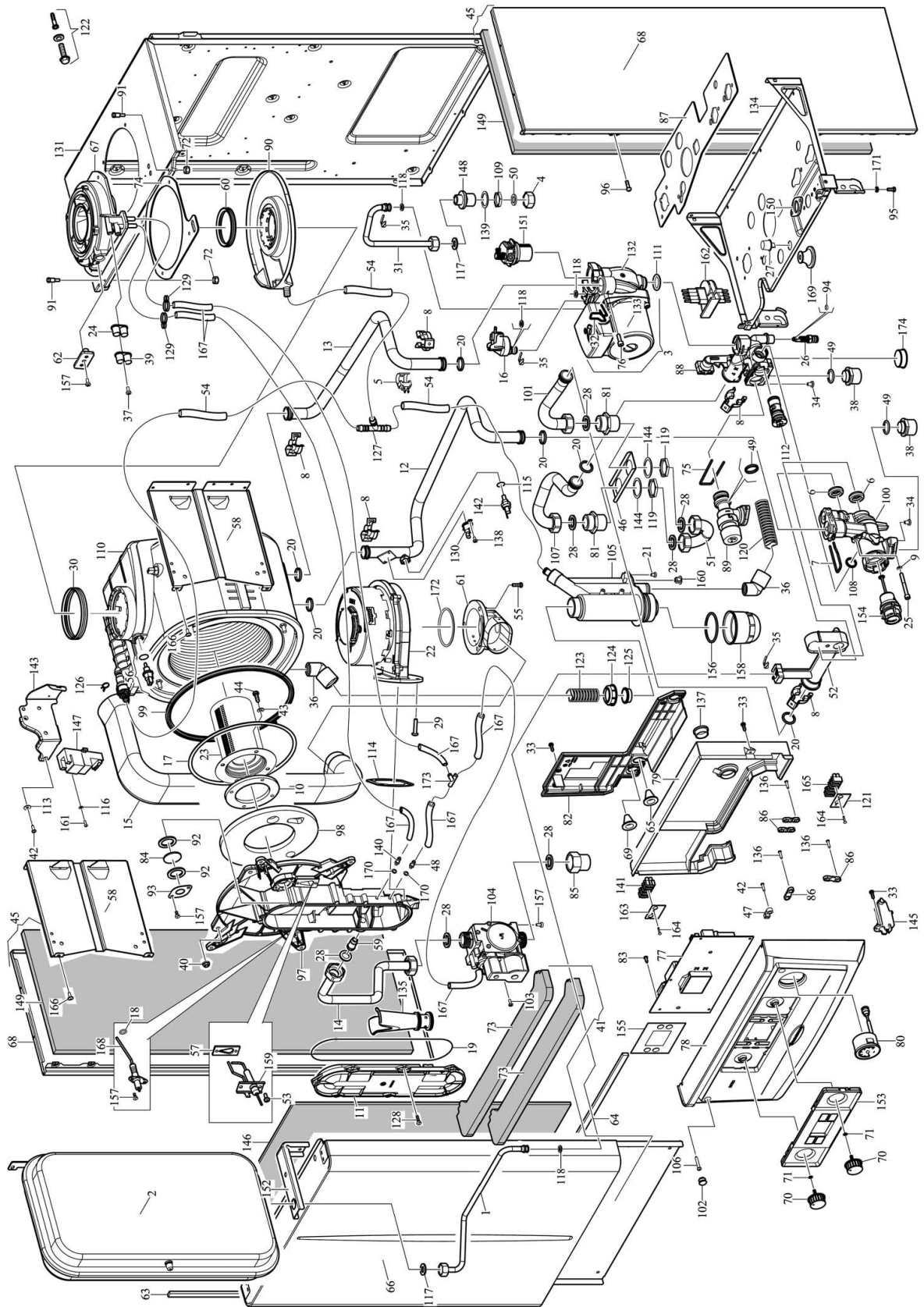
USER

MAINTENANCE TECHNICIAN

**INTEC 30 SYSTEM INTERNAL 197AE**

27/05/15  
3.025960

SERIAL NUMBER STATE OF SERIES  
**IMMERGAS**



3.22 SPARE PART LIST INTEC 30 SYSTEM INTERNAL.

N	CODE	DESCRIPTION
1	3.025937	Hydraulic group
2	3.026049	Control panel - complete
3	1.038189	D.8 pipe, hydraulic assembly - expansion tank
4	3.025996	Expansion tank (8 litres)
5	3.025550	Pump group
6	1.035384	1/2" F plug
7	1.028394	NTC probe
8	3.021695	Kit of O-rings multi-functions
9	n/s	Washer (4.3x12)
10	3.021696	Clip kit
11	n/s	Pipe clip (d.18)
12	3.021696	Pipe clip (d.18)
13	1.030178	Stainless steel washer (M5, 3x10)
14	1.025910	Graphite gasket for burner
15	1.023146	Gas manifold cover
16	1.023156	D.16 pipe, water gas module - hydraulic group
17	1.029159	Hydraulic module - pump pipe (d.18)
18	1.038529	Gas valve - manifold pipe (d.14)
19	1.033901	Air intake pipe
20	1.027277	Absolute pressure switch
21	1.020211	Cord packing
22	1.026455	Red silicone O-ring (9.19x2.62)
23	1.025357	Gas manifold cover gasket
24	1.033854	Epdm O-Ring (18.00x2.5, 83sh)
25	1.01753	Crossheaded screw (M4x6)
26	1.026181	Blower
27	1.025690	Pressure point cap
28	1.038304	Hex socket screw (M5x6.5)
29	1.027108	Drain fitting
30	2.031531	D.14, 2 plug
31	1.023992	Gasket (24x16x2)
32	1.023578	Crossheaded screw (M5x2.5)
33	1.023676	Gasket (d.80)
34	1.023651	Rolling pipe (d.8)
35	3.021696	Clip kit
36	1.035250	Crossheaded self-tapping screw (3x16)
37	1.1176	Crossheaded screw (M5x8)
38	n/s	Metal-sheet clip (d.9)
39	3.021696	Clip kit
40	1.034459	Rubber adapter
41	n/s	Pump coupler fitting (M4x20)
42	3.021694	Two pump coupler fittings with o-ring kit
43	1.026423	Front casing, assembly
44	1.4139	Crossheaded self-tapping screw (3.9x13)
45	1.012468	Stainless steel elastic washer (M5)
46	3.026424	Casing group
47	2.014725	Pipes clamping plate
48	1.4072	Clip with clamp screw hole
49	1.038380	Brass pressure point
50	3.021694	Two pump coupler fittings with o-ring kit
51	3.021695	Kit of O-rings multi-functions
52	1.034405	Gasket (18.5x11.5x2)
53	1.036539	D.18 pipe bypass
54	1.037089	Outlet cylinder manifold
55	1.7349	Crossheaded screw (M4x10)
56	1.016187	Silicone tube (8x12)
57	1.0017	Crossheaded screw (M6x12)
58	1.025296	Flue probe with O-ring
59	2.014454	Module electronic gasket
60	1.038378	Gas nozzle (d.6.90)
61	1.021483	Silicone hood gasket
62	1.033902	Fan flange for pipe fixing
63	1.025278	Plug for flange with sample points
64	3.026423	Front casing, assembly
65	n/s	Adhesive foam strip (d.1.5x3)
66	1.027009	Support casing, assembly
67	n/s	Support casing, assembly (d.2)
68	3.026423	Front casing, assembly
69	1.037994	Flange with sample points

68	n/s	Lx-Rx wall, casing
69	3.026424	Casing group
70	1.019751	Silicone faillead (d.6.5)
71	1.2288	Knob
72	1.036440	Nut (M4)
73	n/s	Front casing, seal
74	3.020668	Front casing, assembly
75	n/s	Gasket for flange with sample points
76	3.021696	Clip kit
77	1.010289	Tropicalized hex socket screw (M5x16)
78	1.038389	Bezel control panel with nameplate assembly
79	1.030300	Control panel back cover
80	1.026482	Manometer
81	1.037094	3/4" M - 3/4" M nipple
82	1.035300	Connection group cover
83	1.035446	Crossheaded self-tapping screw (3x10)
84	1.034606	Ceramic glass (d.20)
85	1.029694	Energy metering coupler fitting 3/4" M-F
86	1.7908	Black cable clamp
87	1.038185	Sealed chamber gasket
88	1.028650	Return manifold
89	1.028643	Safety valve (3 bar)
90	1.030667	Condensate drain system
91	1.025801	Stud M4
92	1.024956	Gasket for module inspection hole
93	2.013522	Flange for module cover inspection plug
94	n/s	O-Ring (2.57x1.78, 70 sh)
95	3.021695	Kit of O-rings multi-functions
96	1.016246	Crossheaded self-forming screw (M4x8)
97	1.023334	Gas manifold
98	1.024543	Front ceramic fibre panel
99	1.025689	Gas manifold gasket
100	1.028548	Housing, outlet manifold
101	1.039187	Storage tank flow pipe (d.18)
102	1.024204	Rubber aulifer
103	1.6011	Crossheaded flat pointed self-tapping screw (3.9x9.5)
104	1.031823	Strut (3.9x9.5)
105	1.020367	Plastic siphon
106	1.2337	Crossheaded self-tapping screw (3.9x25)
107	1.038188	Boiler return pipe (d.18)
108	n/s	Epdm O-Ring (13.94x2.62, 70 sh)
109	3.021695	Kit of O-rings multi-functions
110	1.031448	Condensation module
111	n/s	Kit of O-rings multi-functions
112	3.021695	Kit of O-rings multi-functions
113	1.6599	Washer (4.3x12)
114	1.024680	Burner gasket
115	1.022362	Peroxide epdm O-Ring (9.25x1.78)
116	1.011163	Tropicalized washer (3.2x7x0.5)
117	1.023993	Gasket (14.8x8x2)
118	n/s	Epdm O-Ring (7.6x2.62, 70 sh)
119	3.021695	Kit of O-rings multi-functions
120	1.038337	Lowered brass nut (3/4 F)
121	1.038018	Stainless steel pipe
122	1.5899	Wall plug package (d.10x50)
123	1.025898	Flexible hose (l.300)
124	1.028444	Nut for flexible hose
125	1.021452	Gasket for flexible hose
126	1.016967	Spring pipe clamp for silicone pipe (d.22)
127	1.024387	Y-hose union
128	1.024094	Crossheaded screw (M5x14)
129	1.010500	Spring pipe clamp for silicone pipe (d.22)
130	1.035793	Klixon thermostat 100°C
131	2.014456	Pump body
132	1.028554	Pump motor
133	1.032431	Pump motor
134	2.015642	Valve supporting plate
135	1.038378	Venturi

136	1.7967	Crossheaded self-tapping screw (3.5x19)
137	1.031572	Adjustment-hole plug
138	1.1656	Nickel-plated crosshead self-tapping screw (3.5x6.4)
139	1.038393	Gasket (28x21x1)
140	1.024996	Brass pressure point
141	1.031009	5-way terminal block with fuse housing
142	1.021782	NTC fast immersion probe
143	2.014708	Spark generator bracket
144	1.033841	Front casing, assembly
145	1.033841	Front casing, assembly
146	n/s	Front casing insulating panel
147	3.026423	Front casing, assembly
148	1.025360	Spark generator
149	n/s	Casing/insulating panel
150	1.027016	Seal, sealed safety valve
151	1.027019	Automatic vent valve
152	1.027019	Front panel on vessel
153	1.031288	Complete cartridge
154	3.020380	Complete cartridge
155	1.034443	Adhesive for display
156	1.026460	Peroxide epdm O-Ring (44.12x2.62)
157	1.2170	Crossheaded screw (M4x8)
158	1.025997	Siphon tank
159	3.017477	Ignition electrode group
160	1.021892	Siphon plug
161	1.6984	Crossheaded flat pointed self-tapping screw (2.9x9.5)
162	1.030916	Cross-printed plate
163	3.038023	Cross-printed plate
164	1.031293	Screw fixing terminal block
165	1.6804	6-way terminal block
166	1.8532	Crossheaded self-tapping screw (3.9x16)
167	1.025986	Silicone pipe (4x8)
168	1.032007	Detection electrode
169	1.011131	Faillead (d.8)
170	1.034610	Annealed copper washer (10x5.2x1)
171	1.026580	Lock washer (M4)
172	1.026580	Lock washer (M4.5)
173	1.6221	Hose union for silicone pipe
174	1.038478	Plug

**3.23 BOILER REGISTRATION.**

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.

Failure to install and commission according to the manufacturer's instructions and complete this Commissioning Checklist may invalidate the warranty.

Customer name:										Telephone number:									
Address:																			
Boiler make and model:																			
Boiler serial number:																			
Commissioned by (PRINT NAME):										Plumbing license number:									
Company name:										Telephone number:									
Company address:																			
Commissioning date:										Commissioning date:									
Certificate of compliance number:																			

CONTROLS (tick the appropriate boxes)			
Time and temperature control to heating	Room thermostat and programmer/timer	<input type="checkbox"/>	Programmable room thermostat
	Weather compensation	<input type="checkbox"/>	Optimum start control
Time and temperature control to hot water	Cylinder thermostat and programmer/timer	<input type="checkbox"/>	Combination boiler
Heating zone valves	Fitted	<input type="checkbox"/>	Not required
Hot water zone valves	Fitted	<input type="checkbox"/>	Not required
Thermostatic radiator	Fitted	<input type="checkbox"/>	Not required
Automatic bypass to system	Fitted	<input type="checkbox"/>	Not required
Boiler interlock		<input type="checkbox"/>	Provided

ALL SYSTEMS			
The system has been adequately flushed and cleaned?			Yes <input type="checkbox"/>
What system cleaner was used?			
What inhibitor was used?		Quantity	Litres
Has a system filter been installed?		Yes <input type="checkbox"/>	No <input type="checkbox"/>

HEATING MODE measure and record:			
Burner inlet gas working pressure (at maximum rate)	Kpa	OR gas inlet pressure	Kpa
Central heating flow temperature			°C
Central heating return temperature			°C

COMBINATION BOILER - DOMESTIC HOT WATER MODE measure and record:			
Burner inlet gas working pressure (at maximum rate)	Kpa	OR gas inlet pressure at maximum rate	Kpa
Cold water inlet temperature			°C
Hot water has been checked at all outlets	Yes <input type="checkbox"/>	Temperature	°C
Has a DHW tempering valve been fitted to sanitary fittings?	Yes <input type="checkbox"/>	Temperature	°C
Water flow rate			l/min

CONDENSING BOILERS ONLY	
The condensate drain has been installed in accordance local laws in force? <input type="checkbox"/>	

ALL INSTALLATIONS							
Record the following:	At max. Rate:	Co	Ppm	Co, %	Ratio	CO/CO	Ratio
	At min. Rate: (where possible)	Co	Ppm	Co, %	Ratio	CO/CO	Ratio
The heating and hot water system complies with the appropriate Building Regulations							Yes <input type="checkbox"/>
The boiler and associated products have been installed and commissioned in accordance with the manufacturer's instructions							Yes <input type="checkbox"/>
The operation of the boiler and system controls have been demonstrated to and understood by the customer							Yes <input type="checkbox"/>
The manufacturer's literature, including Commissioning Checklist and Service Record, has been explained and left with the customer							Yes <input type="checkbox"/>

Commissioning Engineer's Signature	
Customer's Signature	
(To confirm satisfactory demonstration and receipt of manufacturer's literature)	

### 3.24 COMMISSIONING BOILER CHECK LIST.

A suggested method of commissioning the boiler, actual method can vary according to the boiler make type and the installation. The boiler must always be installed, and commissioned by an qualified gas technician. The installer certifies that this Boiler has been installed to the manufacturer's instructions, has been filled, commissioned and is ready for use.

No.	Description	✓ when done
1	Read carefully the instruction manuals supplied with this boiler.	
2	BEFORE INSTALLING THIS BOILER FLUSH OUT THE PIPES UNTIL CLEAN WATER IS ACHIEVED. IF REPLACING AN OLD BOILER, HUNT HEATING RECOMMENDS A POWER FLUSH	
3	Turn off all service to this boiler - water, gas and power. Install the boiler as shown in the instructions following and connect all services.	
4	Turn on water to fill system, check for leaks regularly and bleed air from all points. Bleed the air from all the pumps in the system, and rotate the impeller shaft.	
5	Check that all radiators valves are open, all lock shields remove the thermostatic valve heads, fully open.	
6	Turn ON gas, bleed air out at the isolation valve union. Reseal and check for gas leaks.	
7	Turn electricity on at the power point. At the boiler front panel set the temperature setting to the lowest setting, switch boiler to ON position. The "Power on" Indicator should light. Turn the boiler off at the front panel.	
8	Turn the room thermostat to the manual ON position set the temperature to a high level so that it does not switch off during the commissioning phase. The thermostat will unusually click and shows an Indicator in the window.	
9	Boiler should start fan, pump and ignite gas. If it fails first few times this may be just residual air in the gas line. A noisy water pump indicates there is air in the water pipes.	
10	Boiler lights and heats the water. Check gas flame is the correct colour and for gas and water leaks as the system heats up.	
11	Check that heat is circulating to all radiators through the manual or thermostatic radiator valve located on the flow pipe (unless reverse flow thermostatic valves).	
12	Allow the boiler to heat up to the set temperature and switch off. Re-adjust the boiler temperature to a mid temperature point. CAUTION, if this is connected to a floor heating system. The boiler should re light and increase the water temperature to the new setting.	
13	Check that all radiators are hot all the way up. If the radiator is cold at the top, then there is usually air in the radiator Bleed the radiator. Balance the system so that all radiators are hot as according to the radiator installation manual. Adjust the boiler water temperature.	
14	Set the room thermostat to the correct times and temperatures according to the manufacturer's instructions.	
15	On completion of the commissioning phase, complete the information sheet at the front of this manual. Hand over the installation to the owner and demonstrate how the system works plus basic fault resolution and safety procedures. Make sure that this important document is kept in a safe accessible place.	

IF IN DOUBT ASK

Handover Instructions		
No.	Description	✓ when done
1	Fill in all the details on this Boiler manual.	
2	Instruct the owner/users on the correct operation of this heating system, this includes how to turn the system on and off, adjust the time and temperature settings.	
3	How to turn the heating system off in summer and on for winter.	
4	Where all the major items are, their functions and how to check and turn them on or off. Simple fault resolution i.e. power on.	
5	How to check and remove air in the radiators. Give them a bleed key.	
6	The importance of this SERVICE RECORDS, keeping safe & accessible when required.	
7	Recommend that the boiler should be serviced annually and that the service is recorded withing the allocated area of the boiler installation manual.	

INSTALLER

USER

MAINTENANCE TECHNICIAN

3.25 SERVICE RECORDS.

INSTALLER

<b>SERVICE 01</b>							Date:
Engineer name:							
Company name:							
Telephone No:							
Plumbing Licence No:							
Record:	At max. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
	At mim. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
Comments:							
Signature							

<b>SERVICE 02</b>							Date:
Engineer name:							
Company name:							
Telephone No:							
Plumbing Licence No:							
Record:	At max. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
	At mim. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
Comments:							
Signature							

USER

<b>SERVICE 03</b>							Date:
Engineer name:							
Company name:							
Telephone No:							
Plumbing Licence No:							
Record:	At max. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
	At mim. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
Comments:							
Signature							

<b>SERVICE 04</b>							Date:
Engineer name:							
Company name:							
Telephone No:							
Plumbing Licence No:							
Record:	At max. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
	At mim. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
Comments:							
Signature							

MAINTENANCE TECHNICIAN

<b>SERVICE 05</b>							Date:
Engineer name:							
Company name:							
Telephone No:							
Plumbing Licence No:							
Record:	At max. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
	At mim. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
Comments:							
Signature							

<b>SERVICE 06</b>							Date:
Engineer name:							
Company name:							
Telephone No:							
Plumbing Licence No:							
Record:	At max. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
	At mim. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
Comments:							
Signature							

<b>SERVICE 07</b>							Date:
Engineer name:							
Company name:							
Telephone No:							
Plumbing Licence No:							
Record:	At max. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
	At mim. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
Comments:							
Signature							

<b>SERVICE 08</b>							Date:
Engineer name:							
Company name:							
Telephone No:							
Plumbing Licence No:							
Record:	At max. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
	At mim. rate:	CO	ppm	CO <sub>2</sub> %	CO/CO <sub>2</sub>	Ratio	
Comments:							
Signature							



<b>SERVICE 09</b>							Date:
Engineer name:							
Company name:							
Telephone No:							
Plumbing Licence No:							
Record:	At max. rate:	CO	ppm	CO, %	CO/CO <sub>2</sub>	Ratio	
	At mim. rate:	CO	ppm	CO, %	CO/CO <sub>2</sub>	Ratio	
Comments:							
Signature							

<b>SERVICE 10</b>							Date:
Engineer name:							
Company name:							
Telephone No:							
Plumbing Licence No:							
Record:	At max. rate:	CO	ppm	CO, %	CO/CO <sub>2</sub>	Ratio	
	At mim. rate:	CO	ppm	CO, %	CO/CO <sub>2</sub>	Ratio	
Comments:							
Signature							

**INSTALLER**

**USER**

**MAINTENANCE TECHNICIAN**







# Gas Safety Certified

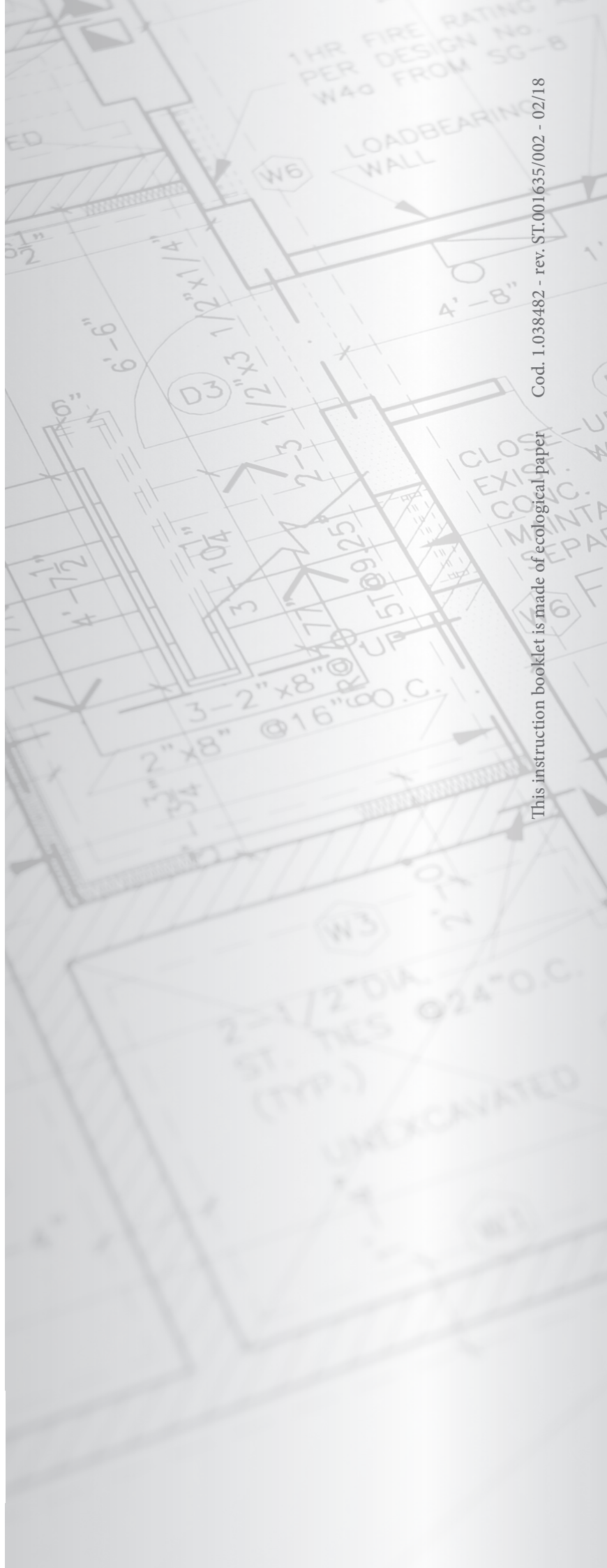
AS/NZS 5263.1.2

Cert. SAI-400175

SAI Global



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