

CE
EXAMINATION
CERTIFICATES

n° CE 51BR3234

Mod. ETF 28A
ETF 28A MA
ETFL 28A
ETFW 28A

EFFICIENCY RULES

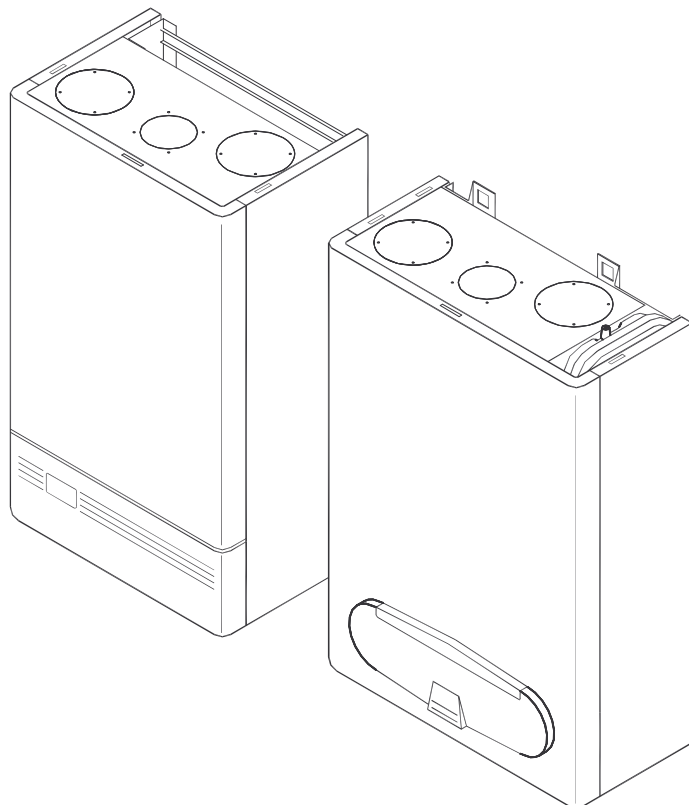
n° CE 51BR3235DR

Mod. ETF 28A ★★★★★
ETF 28A MA ★★★★★
ETFL 28A ★★★★★
ETFW 28A ★★★★★

WALL-MOUNTED COMBINATION BOILERS HIGH EFFICIENCY

SED BUK Certified

Energy Efficiency Band B



SARIGas

SERIES *EcoTop*

Mod. ETF 28A – ETF 28A MA – ETFL 28A – ETFW 28A

INSTRUCTIONS FOR:

- USE AND MAINTENANCE.
- INSTALLATION.

TO OBTAIN THE BEST PERFORMANCE FROM THE BOILER, PLEASE READ THESE INSTRUCTIONS CAREFULLY.
THIS BOOKLET MUST BE KEPT WITH THE COMBINATION BOILER SO THAT IT CAN BE CONSULTED BY THE USER AND QUALIFIED PERSONNEL.

USER INSTRUCTIONS

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USER INSTRUCTIONS

You have placed your trust in a firm specialised in heating and producing hot water for domestic use. This boiler has been designed to meet to European requirements. It has been manufactured with utmost care, in compliance with current safety regulations.

Each appliance has been tested when working, and the warranty certificate enclosed with the appliance documents has been personally signed by the qualified technician who carried out the inspection.

Should any problem occur, please return the warranty card (the original or a copy) to help us look into the matter.

- The replacement of electric, hydraulic parts and of the circuit gas have been in original SARlgas.
- The replacement of defective parts must be done at qualified staff and authorised by SARlgas
- SARlgas declines each responsibility to damages occuring because of the improper use of the apparatus, errors of installation, using the not original materials of replacement.

IMPORTANT:

- **The boiler and document packaging material (foamed polystyrene, plastic bags) must be kept out of the reach of children, as they are a potential source of danger.**
- **Children and disabled persons should not use the appliance without supervision.**
- **Yearly maintenance must be carried out on the boiler together with a two-yearly check of the heating system, controlling the safety components.**
- **The sealed components must not be interfered with or removed.**
- **Do not store chemicals and/or inflammable substances in the room where the boiler is installed.**

USE:

- **Incorrect use of the boiler can cause breakdown or poor working of the appliance.**
- **If there is a smell of gas, do not touch the switches or any other electric appliances (telephone – intercoms – electric fans - etc.).**

Immediately open all the doors, windows and any other opening to grant rapid ventilation of the room.

Turn off the central gas outlet valve on the meter or the bottle valve. Immediately call a Authorised Boiler Service Engineers (A.B.S.E.) to carry out the servicing.

BEFORE USING THE BOILER

- **The first start up of the boiler must be carried out by an Authorised Boiler Service Engineers (A.B.S.E.) and the warranty certificate must be filled in thoroughly.**
- **Please read these instructions carefully.** By doing so, you will obtain the maximum boiler performance thus saving on energy.

Control panel *EcoTop* ETF 28A / ETF 28A MA / ETFL 28A / ETFW 28A

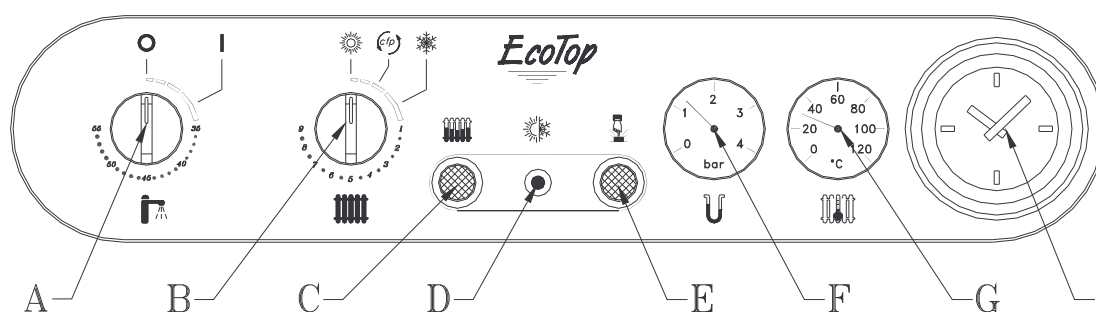
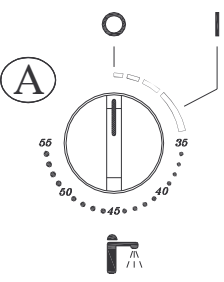
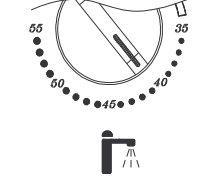
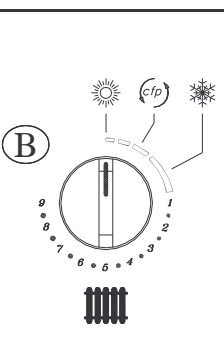
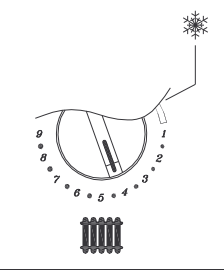
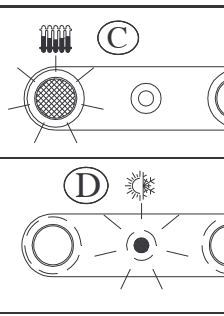
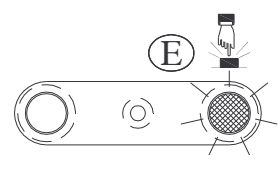


Fig.1

- A - On/Off Sanitary hot water selector switch
- B - Summer / (c/o) / Winter heating setting selector switch
- C - Heating system lacking water indicator lamp
- D - Ready for working indicator lamp

- E – Burner lighting failure indicator lamp/reset button
- F – Pressure gauge
- G – Boiler thermometer
- H – Programming clock (optional)

CONTROL PANEL GUIDE

	➤ 0 / I selector switch OFF/ON
	➤ Fault reset (turn knob "A" to "0" position) wait at least 5 seconds then turn knob "A" to position "Reset"
	➤ Adjusting hot water temperature from 35 °C to 55 °C Note: It is recommended to adjust hot water temperature from 38 °C to 45 °C. Higher temperatures demand higher gas consumption and are responsible for lime scale deposits on main exchanger. Continuous mixing of hot water at high temperature with cold water causes distribution temperature instability.
	➤ ☀ Summer programme position: domestic hot water only (cfp) Position : during the summer period, when there is no call for hot water for long periods of time. This function, if active, reducing waiting time when hot water is needed. The (cfp) function remains active for an hour from the last hot water call; subsequently the "cfp" function is de-activated automatically up to the new following hot water call.
	Select heating circuit water temperature value, from 1 to 9 according to: ➤ with traditional panel heating systems water temperature in heating circuit may be set between 30 °C min. (position 1) and 80 °C max. (position 9). ➤ with low temperature systems set water temperature in heating circuit between 30 °C min. (position 1) and 45 °C max. (position 9). ➤ with low temperature systems on which an (optional) external probe has been fitted turn knob to a position between 1 and 9 (so that internal temperature is set in function of external temperature).
	➤ "LOW PRESSURE IN BOILER" indicator "C" ➤ If lit consult pg. 5. Note: in some cases dim illumination is possible due to a negligible electrically induced effect.
	Ready for working indicator lamp "D" permanently lit; this indicator has other tasks, such as signalling permanent faults or temporary appliance signals by flashing a number of times which corresponds to type of fault. See fault description table pg.8
	➤ "BURNER LIGHTING FAILURE" indicator/reset button "E" When button is lit it means the burner has failed to light when expected to due to provisional causes (gas shortage) or permanent ones (ignition sequence failure or flame sense circuit faulty). Important: if indicator "E" illuminates, turn knob "A" on position "0", press button "E" and wait at least 1 minute before turning knob "A" to position > "I". Wait at least 10 minutes before carrying out another reset sequence, following the instructions above stated.

STARTING UP THE BOILER

IGNITION OF THE MAIN BURNER (Fig. 1)

- Check that the water pressure to the system is 1 bar (pressure gauge F, Fig. 1). If the pressure is below 0.7 bar, fill the boiler again through the filling valve Fig.23/B.
- If the gas tap is installed, check it is open.
- Turn off the electric bipolar supply switch to the boiler, which is fitted on the outside of the appliance.
- Turn knob **A** to position **I**.
- The boiler is now ready to work normally. Main burner ignition is controlled by the boiler thermostat and/or the room thermostat in the WINTER programme, or by the drawing off hot water.

WORKING

Maximum water supply temperature is strictly connected to demanded water load and water temperature at intake.

Fig.2 represents maximum water supply temperature given a water intake temperature of 15°C.

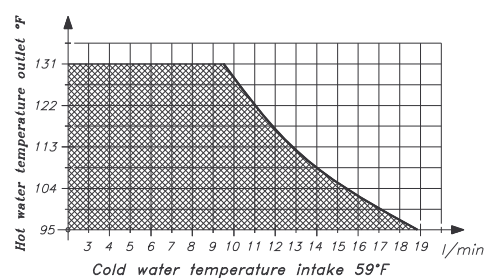


Fig.2

Summer position ☀ DOMESTIC HOT WATER ONLY PROGRAMME

- Turn knob **"B"** to SUMMER ☀ programme
- Turn on any hot water taps.
- When hot water demand exceed 2.8 l./min., the boiler automatically gets ready to produce hot water.
- Turn the temperature setting knob **A** to the desired temperature.
- Mixing hot water with cold is **not** recommended, it is preferable to adjust desired supply temperature directly on appliance.

"Comfort Programme" Position ^(cfp) THIS PROGRAMME IS DESIGNED TO MAINTAIN BOILER DOMESTIC HOT WATER CIRCUIT UP TO TEMPERATURE.

- Turn knob **"B"** to ^(cfp) programme; verify that the indicator "D" Fig.1 is flashing with intermittence for about 40 seconds; automatically also in absence of drawing of water, the boiler with short cycles of turning the power on and off will maintain the sanitary water temperature contained in boiler; the function of maintenance of the internal temperature at the boiler will remain active for the following 60 minutes after the last drawing. To each new following drawing the function will be restored automatically.

Winter position ❄ HEATING PROGRAMME

- Turn knob **"B"** to WINTER ❄ position, if room thermostat is not fitted turn knob **"B"** to desired temperature
- If the system has a room thermostat fitted, it must be adjusted to the maximum temperature setting. The burner fires automatically and the heating cycle starts up. Set the room thermostat to the desired temperature.
- If external probe (optional) is fitted, turn knob **"B"** to a value between 1 and 9. Once maximum room temperature has been reached, turn knob **"B"** until desired temperature has been reached. From this moment on the heating system temperature will vary according to external temperature. A room thermostat is nevertheless recommended in order to reduce gas consumption and improve comfort.

SHUTTING OFF

For short winter periods (12 – 24 hours) Turn the selector switch **"A"** to the position **"O"**.

For long winter periods

Boilers *EcoTop* ETF / ETFL / ETFW are equipped with a **"automatic 2 level alarm antifreeze protection system"** both on the heating circuit and on the internal domestic hot water circuit, the one on the heating circuit turns on at temperatures below 5°C and the one on the D.H.W. circuit turns on at below 3°C.

These functions are activated at the low temperature recorded on the water internal circuits of the boiler, the circulation pump alone

or the circulation pump together with the gas burner, **provided** the boiler is electrically powered and knob **"A"** Fig.1 is turned to **"1"** position. Once 7°C and 35°C temperatures have been reached in the heating circuit, antifreeze system **shuts off automatically**. It is good practice, however, to protect the heating circuit with a suitable, specific chemical additive (antifreeze).

If the system is not protected with antifreeze, and the gas valves must be turned off upstream and the electrical supply to the boiler turned off, empty the heating and the domestic hot water circuits to avoid damage to the various components, the heating system (pipes, radiators, etc.) and the hot and cold water supply pipes.

USEFUL SUGGESTIONS FOR USING THE BOILER

Water pressure in the system (see "F" Fig.1)

- Pressure, when cold, must not go below 0,5 bar.
- Pressure, when hot, must not exceed 2,5 bar.
- Too frequent fillings, can be caused by boiler leaks. In this case, call out the installing firm.

N.B. If the system is subject to frequent emptying and, therefore, frequent filling, the water must be duly treated and the "hardness" of the water, cause of lime scaling that damages the boiler, must be reduced to a minimum.

Central heating

If a room thermostat has not been installed

- Set the boiler temperature on the basis of the room temperature.

If a room thermostat has been installed

- Set the boiler temperature (knob B, Fig. 1) between ref. 6 – 9.
- Turn the room thermostat to the desired temperature

Producing domestic hot water (see "A" Fig.1)

- **If the main temperatures are kept at satisfactory levels, gas is saved and the life span of the specific exchanger is extended, as the formation of lime is considerably reduced.**
- Set the outlet hot water temperature directly on the boiler it isn't advisable to reduce the water taking to low levels (2,5 L/min.) because the burner could switch off or the temperature couldn't keep the fixed valve.
- If the system has a "single command" type valve, the valve must be completely turned to the "hot" position, this way the temperature of the outlet water is stabilised.

If the boiler locks-out repeatedly: (indicator/reset button "E" is lit Fig.1)

- After having turned knob "A" (Fig.1 pg.3) to position "0" press indicator/reset button "E", wait about 1 minute then turn knob "A" to previous position (from 35 °C to 55 °C).
- If after a few attempts at unblocking the ignition device E Fig.1, the burner does not fire, it could be due to a fault or due to a failure in the gas supply, call out the installing firm.

WARNING Do not insist in attempts at **unblocking, unless at least 10 minutes have passed between one attempt and another.** The continuous outlet of gas during ignition can cause an elevated build up of gas in the combustion chamber and therefore, when it lights up, an explosion.

MAINTENANCE

Bleeding the system

Fill with the water the circuit of heating when the boiler is turned off and open the breathes presenting in the warmed bodies up to the coming out first water. To each following cleaning of the system, to restore the water pressure as indicated Pag. 5.

External cleaning

- To clean the outside of the boiler, we advise using non-abrasive detergents.
- Do not use solvents or inflammable products.
- Use protective gloves for cleaning, against sharp or cutting edges.
- We advise cleaning only once the boiler has been turned off for at least 30 minutes, to avoid exposure to overheated parts.

Boiler maintenance

- The minimum compulsory maintenance involves a yearly visit by a Authorised Boiler Service Engineers (A.B.S.E.) who ascertains the correct working of all the safety devices, and cleans the internal working parts, checks and sets if necessary.
- Yearly maintenance of the boiler is advised. The maintenance gives guarantee of the correct functioning of the apparatus and guarantees the perfect working of the appliance and constant high performance.

Fumes exhaust pipe/ condenses exhaust pipe

- The fumes exhaust pipe must be controlled (by a Authorised Boiler Service Engineers technician) who checks the efficiency of the pipe both for air-tightness and draft. The condenses exhaust pipe must not be modified or obstructed; the maintenance and the cleaning must be carried out **yearly**.

GAS CHANGE

If the supply gas to the boiler is changed, specific changes must be made to internal parts of the boiler, after which gas settings must be carried out again. **Only Authorised Boiler Service Engineers (A.B.S.E.) can carry out these changes.**

VENTILATION OF THE ROOMS

VENTILATION OF THE ROOM IS COMPULSORY AND INDISPENSABLE FOR THE FOR SERIES “EcoTop” ETF 28A / ETF 28A MA / ETFL 28A / ETFW 28A in configuration B22 B32 (pag.15,16.).

These boilers must be installed in suitable surroundings, which guarantee the correct level of air intake for combustion; they must be connected to a flue gas evacuation circuit (flue pipe).

Adhere to local legislation regarding the ventilation required for the room.

Air vents on the outside walls of the where the boiler is installed:

- Must have a free net air passage that conforms to current legislation in size;
- Must be made in such a way that the inside and outside vents cannot be covered or blocked.
- Must be protected with grids or wire net, etc., but the protection must not reduce the size of the passage as indicated above.
- Correct aeration can be obtained from several vents, as long as the total net air passage corresponds to current legislation.
- If the vents cannot be made near to the floor, the section of the vent opening must be increased, as indicated in the specific standards.
- If there are other elements in the boiler room that draw in air to work, the section of the vent opening must be adequately increased.
- If the boiler is installed in a room that contains a cooking hob without safety device, as it does not use an open flame, the ventilation vents must be increased.
- The suction hood is always to be considered as an electric fan.
- An open fireplace must have its own air draft, otherwise gas appliances of the **B22 or B32** type cannot be installed in the room.

If an external opening cannot be made, air flow from an adjacent room is allowed as long as the room is not in negative pressure due to the presence of another draft (fireplace or stove) or another suction appliance, and it is not used as a bedroom.

IMPORTANT:

It's necessary to not obstruct even partially the court of ventilation to guarantee the hygiene and security of the environment; if the room where the boiler EcoTop (in configuration B22 B32) installed it is not aired well there can be verified by frequency the arrest of the principal burner by the activation of the system of certainty of the apparatus. The boilers model EcoTop (ETF 28A / ETF 28A MA / ETFL 28A / ETFW 28A) in configuration type "B22" and "B32" needs the comburent air intake directly from the room where they are installed. So, for the correct functioning, it's necessary that the grill of air intake rif.4-5 fig. 11 pag. 13 is ever obstructed and the section of passage of the air is adequate.

- Don't insert the boiler in hanging not aired sufficiently and don't use it like plan of support for other objects.

WORKING PROBLEMS

(For tests to be carried out inside the boiler contact the Authorised Boiler Service Engineers "A.B.S.E.").

THE BOILER DOES NOT WORK AND THE INDICATOR LAMP "D" FIG. 2, IS TURNED OFF

- No electrical supply.
- Safety fuse belonging to internal electronic circuit is likely to have blown; contact **A.B.S.E.**

INDICATOR "D" ON P.C.B. FLASHES (REPETITIVE SEQUENCES)

- The appliance is equipped with an electronic circuit which automatically checks that specific internal components are working properly as well as signalling by means of indicator "D" **high and low temperature** alarms within the heating and domestic hot water circuits. Each sequence of flashes coming from indicator "D" will terminate with a 4 second pause, after which the sequence will start again and go on until the alarm is over (if **temporary**). Alarm memory may be reset by turning knob "A" to position "0" for at least 3 seconds. If after reset procedure the alarm condition is still present, indicator "D" will restart flash sequence. In the event that the boiler operates correctly but the indicator keeps flashing, contact **A.B.S.E.** for assistance

APPLIANCE DOES NOT PRODUCE HEAT ON BOTH PROGRAMMES

- Knobs **A** and **B** Fig. 1, of the boiler are set too low.
- The room thermostat (if fitted) is set too low.
- The safety limit thermostat has triggered (indicator lamp **E** comes on, Fig. 1).
- Water capacity too low (less than 2.5 l./min.).
- Gas supply blocked, for all models (indicator lamp **E** comes on, Fig. 1).
- Accensione della spia luminosa "C" (mancanza di pressione idrica in caldaia)
- Indicator lamp **C** comes on (low water pressure in boiler)
- The ignition and flame control device is faulty (contact the **A.B.S.E.**).

THE MAIN BURNER DOES NOT REMAIN ALIGHT

- Poor gas supply in the pipes to the meter/boiler or low gas pressure to the burner.
- The electric PHASE /NEUTRAL line is not correctly connected to the boiler (inverted) or the earth connection is missing.
- Flue is not properly connected or length is not correct (see the tables pg.16).

THE BOILER IS NOISY WHEN THE MAIN BURNER IS ALIGHT (indicator lamp D flashing Fig.1)

- Ball valves are closed (no water circulation to the heating system).
- Water circulation to the heating system is **too low** (contact the **A.B.S.E.**).
- Presence of air in the heating system (Bleeding the system).
- Heat exchanger is scaled with lime or with other deposits within the heating system (contact the **A.B.S.E.**).
- Boiler valves (if fitted) are closed (verify the opening)
- Electricity supply could be less than 195 V (contact the **A.B.S.E.**).

SMELL OF GAS

- Turn off the main gas valve. Open the doors and windows to aerate the room.
- Do not turn on any switches or any other electrical appliance (telephone – intercom – electric fans – etc.).
- Immediately call the Authorised Boiler Service Engineers to carry out the necessary checks to the system.

Number of flashes	INDICATES	ETF 28A ETF 28A MA	ETFL 28A ETFW 28A
1	HIGH TEMPERATURE IN DOMESTIC HOT WATER CIRCUIT	O	O
2	HIGH TEMPERATURE IN HEATING CIRCUIT	O	O
3	ANTIFREEZE IN D.H.W./HEATING CIRCUIT WARNING THRESHOLD	O	O
4	ANTIFREEZE IN D.H.W./HEATING CIRCUIT ALARM THRESHOLD	O	O
5	D.H.W. CIRCUIT TEMP. PROBE FAULTY - SHORT CIRCUIT	O	O
6	D.H.W. CIRCUIT TEMP. PROBE FAULTY - INTERRUPTION	O	O
7	HEATING CIRCUIT TEMP. PROBE FAULTY - SHORT CIRCUIT	O	O
8	HEATING CIRCUIT TEMP. PROBE FAULTY - INTERRUPTION	O	O
9	• WHEN STARTING MIN. PRESSURE SWITCH IS "ON" (close)	O	O
10	• WHEN STARTING MAX. PRESSURE SWITCH IS "ON" (close)	O	O
11	• WHEN RUNNING MIN. PRESSURE SWITCH IS "OFF" (open)	O	O
12	• WHEN RUNNING MAX. PRESSURE SWITCH IS "OFF" (open)	O	O
13	• WHEN RUNNING MIN. PRESSURE SWITCH GOES FROM "ON" TO "OFF"	O	O
14	• WHEN RUNNING MAX. PRESSURE SWITCH GOES FROM "ON" TO "OFF"	O	O
15	FAN SPEED PROBE FAULTY	O	O
16	BURNER DOES NOT IGNITE AFTER 5 ATTEMPS	O	O
17	BOILER PUMP ANTI-BLOCKING SYSTEM AUTOMATICALLY ACTIVATED	O	O
18	EXTERNAL PROBE FAULTY (IF INSTALLED)	O	O

• Referred to the contact C-NO

INSTALLATION INSTRUCTION

IMPORTANT: The packing elements (foamed polystyrene, plastic bags) must be kept out of the reach of children, as they are a potential source of danger.

This boiler has been designed to meet European standards. It has been manufactured with greatest care, in compliance with safety regulations. Each appliance has been tested when working, and the inspector who carried out the tests has signed the warranty certificate enclosed with the appliance documents.

Check that the boiler supplied corresponds perfectly with its intended use.

Indications of the type of boiler and gas to be used are given on the plate fitted behind the control panel, outside the boiler and on the boiler packaging.

The products described in this manual have been correctly manufactured in conformity with current legislation.

The boilers are manufactured in accordance with EN specific safety Standards for fuel gas, as per Directive 90/396/CEE regarding gas appliances and Directive 92/42/CEE regarding performance levels of new hot water boilers, that are driven by liquid or gas fuels.

This appliance must be installed in accordance with the following Statutory Regulations and British Standards Codes of Practice:

Building Regulations (England and Wales). The Buildings Standards (Scotland) Regulations. Gas Safety (Installation and Use) Regulations 1984. Current I.E.E. Wiring Regulations and Local Water Authority By-Laws.

Codes of practice:

- BS.6891 –Installation of low pressure gas pipework;
- BS.6798 –Installation of gas fired hot water boilers of a rated input not exceeding 60 kW.
- BS.5449:1 –Forced circulation hot water system (domestic central heating system smallbore and microbore).
- BS.5546 –Installation of gas hot water supplies for domestic purposes (2nd family gases).
- BS.5440:1 –Flues (for gas appliances of rated input not exceeding 60 kW).
- BS.5440:2 –Air supply (for gas appliances of rated input not exceeding 60kW).

TECHNICAL DATA	Mod. <i>EcoTop</i>	ETF 28A – ETF 28A MA - ETFL 28A - ETFW 28A
Configuration		C ₁₂ C ₃₂ C ₄₂ B ₂₂ B ₃₂
Category		II 2H3+
Input max	Btu / h - kW	95,540 - 28
Input min.	Btu / h - kW	51,190 - 15
Output max. adjustable (60-80 °C)	Btu / h - kW	91,790 – 26.9
Output max. adjustable (30-50 °C)	Btu / h - kW	96,910 – 28.4
Output min. adjustable (60-80 °C)	Btu / h - kW	49,140 – 14.4
Output min. adjustable (30-50 °C)	Btu / h - kW	52,210 – 15.3
Max. net efficiency (60-80 °C)	%	96.2
Max. net efficiency (30-50 °C)	%	101.4
Energy efficiency Directive CE 92/42		★ ★ ★ ★
Min.net efficiency at 30% part-load (47 °C)	%	96.1
Min.net efficiency at 30% part-load (30 °C)	%	101.2
Loss of heat from casing (Δt 50 °C)	%	0.4
Loss of heat through the chimney with the burner alight	%	3.2
Loss of heat through the chimney with the burner turned off	%	0.2
Max. working pressure of the heating circuit	P.S.I. - bar	42.67 – 3
Adjustable temperature in heating mode	°F - °C	86 / 176 – 30 / 80
Adjustable temperature in heating at low temp. mode	°F - °C	86 / 113 – 30 / 45
Max. water temperature	°F - °C	194 – 90
Expansion vessel capacity	gals - litres	1.76 / 1.53 - 8 / 7
Input Max. in D.H.W. mode	Btu / h - kW	95,540 - 28
Input Min. in D.H.W. mode.	Btu / h - kW	44,360 - 13
Max. output in D.H.W. mode.	Btu / h - kW	91,790 – 26.9
Min. output (working) in D.H.W. mode.	Btu / h - kW	42,660 – 12.5
Adjustable temperature in D.H.W. mode	°F - °C	95 / 131 – 35 / 55
Max. flow rate raised (Δt 25 °C)	gals - litres / min	3.39 / 15.4
Specific flow rate (EN 625)	gals - litres / min	2.81 / 12.8
Min. flow rate	gals - litres / min	0.55 / 2.5
Min. / Max. D.H.W. sanitary water pressure	P.S.I. - bar	1.42 / 99.57 – 0.1 / 7
Electric connections	V~ / Hz	230 / 50
Rated absorption	A	0.58
Electric appliance protection	IP	X5 D
Max. electricity consumption	W	130
NOx (0% O ₂ methane) in accordance with EN 483	Classe	5°
CO ₂ content (methane) "C" type boilers	% Max. – Min	7.8 – 6.2
CO ₂ content (LPG G30) "C" type boilers	% Max. – Min	8.7 – 7.3
Flue flow rate in weight (methane: G20)	g/s Max. – Min.	14.5 – 9.5
Flue flow rate in weight (LPG: G30)	g/s Max. – Min.	37.3 – 23.3
Fume temperature (methane: G20) coaxial 0,5m	°C Max. – Min.	78 – 68
Fume temperature (LPG: G30) coaxial 0,5m	°C Max. – Min.	71 – 65
SAP Seasonal Efficiency		86.8
Energy Efficiency Band		B

INSTALLATION REGULATIONS

installation must be carried out by a Authorised Boiler Service Engineers in accordance with current legislation, local standards and with the greatest care.

The boiler must not be installed in rooms used for storing inflammable substances (paper, rags, solvents, polystyrene, plastic, etc.).

Do not install the boiler in spaces where it is exposed to direct contact with cooking steam, in damp spaces, in rooms subject to chemical vapours, such as laundries, hairdressers, etc.

POSITIONING THE BOILER

This depends on the position of the fume exhaust duct fitting (fig. 4, 5 and 7) and **it must be installed in a covered and protected area**, in accordance with local legislation.

FUME EXHAUST

- The flue pipe must be sized conforming to current legislation, and made of suitable materials.
- The flue pipe must be connected (where necessities) with a picker of condensate and this joined with the water-supply of downflow.
- The connector pipe, from the boiler attachment to the flue pipe stack, must be of an adequate section, equal to that of the boiler connector. It must be adequately waterproofed
- Installation must allow free expansion and dismantling of the materials.
- The slope between the connector pipe and the flue pipe must be towards the boiler.

FUME EXHAUST FOR BOILERS WITH OPEN CHAMBER FORCED EXPULSION, TYPE "B₂₂" "B₃₂"

"B₂₂" and "B₃₂" boilers work by drawing the air to be burnt directly from the room where the boiler is installed, and connected in accordance with the specifications on page 13, fig. 11.

FUME EXHAUST FOR BOILERS WITH SEALED CHAMBER FORCED EXPULSION, TYPE "C"

The "C" type boiler works by drawing the air to be burnt directly from the outside.

Wall boilers with forced draft can be fitted with either the modular outlet system "COAXIAL FLUE" or with "SEPARATE FLUES", see figs. 9-10 on page 13, and in accordance with the distances given in the tables on page 16.

IMPORTANT:

It is **ESSENTIAL** to make sure that the products of combustion coming from the flue pipe cannot return into the building or in any other room nearby, through the ventilators, windows, doors, natural air infiltration or through forced ventilation air conditioning systems. In both cases, the flue gases can be expelled and the air drawn in either horizontally or vertically from the wall or the roof, or through a **double chamber flue pipe (only for versions with separate flues, configuration "C₄₂")**.

POSITIONING THE FUME EXHAUST TERMINALS FORCED FLOW SEALED CHAMBER APPLIANCES WITH CONFIGURATION TYPE C12 B22 B32

Terminal position

A	Below a window	600 mm
B	Below an air vent	600 mm
C	Below the gutter	300 mm
D	Below a balcony (1)	300 mm
E	From an adjacent window	400 mm
F	From an adjacent air vent	600 mm
G	From vertical or horizontal pipes or outlets (2)	300 mm
H	From a corner of a building	300 mm
I	From a recess in the building	300 mm
L	From the ground or another walkway	2500 mm
M	Between two terminals arranged vertically	1500 mm
N	Between two terminals arranged horizontally	1000 mm
O	From a front surface facing outwards without apertures or terminals within a radius of 3 metres from the fume outlet	2000 mm
P	From a front surface facing outwards with apertures or terminals within a radius of 3 metres from the fume outlet	3000 mm

NOTE

- 1) Terminals below a balcony must be positioned so that the total path of the fumes, from the point at which they are emitted to the outlet on the external perimeter of the balcony, is no less than 2000 mm.
- 2) The terminal must be positioned no less than 500 mm from materials sensitive to the action of the combustion products (for example, plastic gutters or downspouts, wooden jetties etc.) unless these materials are adequately screened.

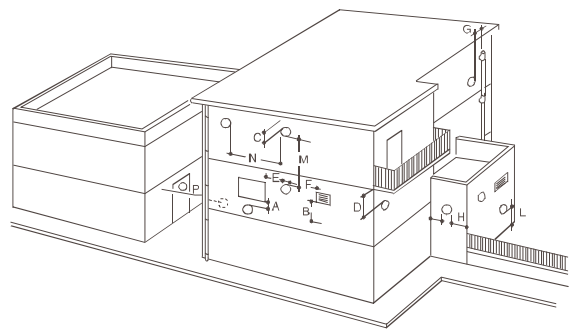


Fig.4

DIMENSIONS

<i>Mod. EcoTop</i>		<i>ETF 28A</i> <i>ETF 28A MA</i>	<i>ETFL 28A</i>	<i>ETFW 28A</i>
A Width	in - mm	17.71 - 450	20.66 - 525	22.72 - 577
B Height fittings centre distance	in - mm	26.22 - 666	26.96 - 685	44.49 - 1110
C Depth	in - mm	13.38 - 340	10.43 - 265	10.43 - 265
D Stack Ø	in - mm	3.93 - 100	3.93 - 100	3.93 - 100
E Distance between stack axis-wall	in - mm	8.66 - 220	5.70 - 145	4.68 - 119
F Connection centre distance	in - mm	15.74 - 400	12.04 - 306	12.04 - 306
G Distance between gas/water fittings wall centre line	in - mm	5.98 - 152	3.03 - 77	7.36 - 187

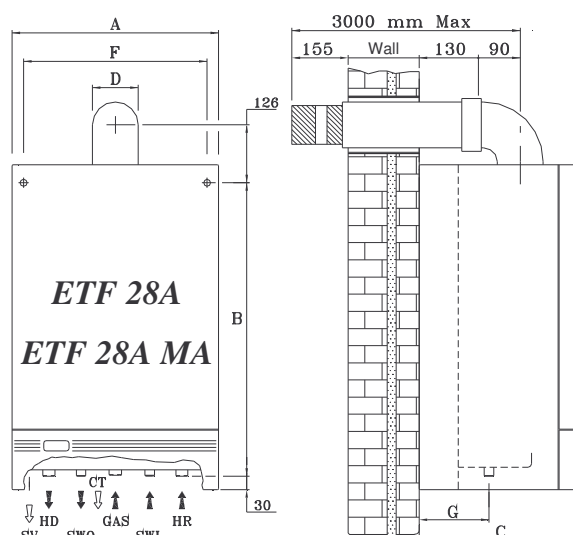
FORCED DRAUGHT BOILERS (Mod. *EcoTop* ETF 28A - ETFL 28A – ETF 28A MA)

Boilers for C12 – C32 – C42 type configuration taking the air directly from the outside.

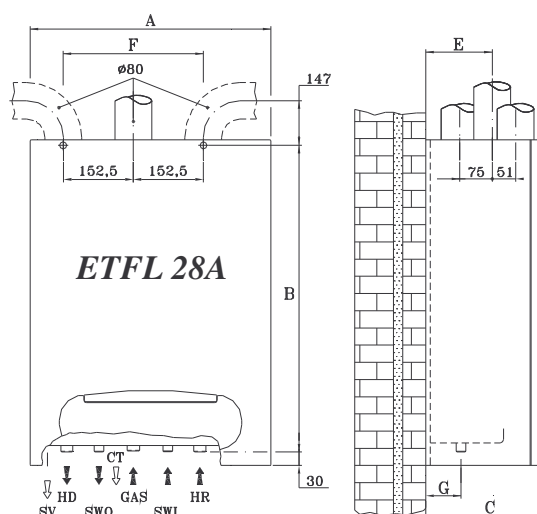
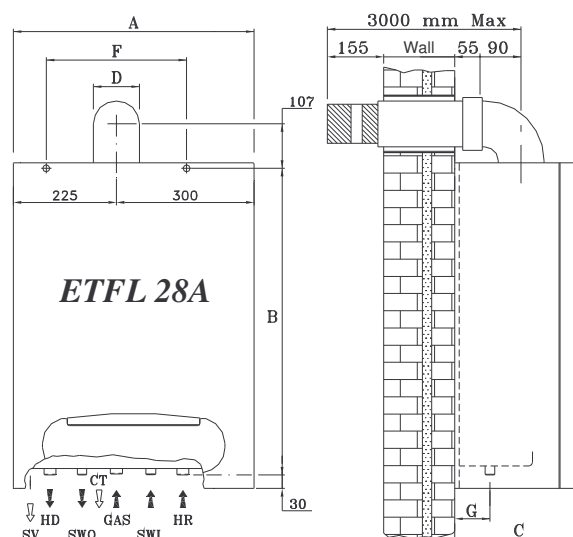
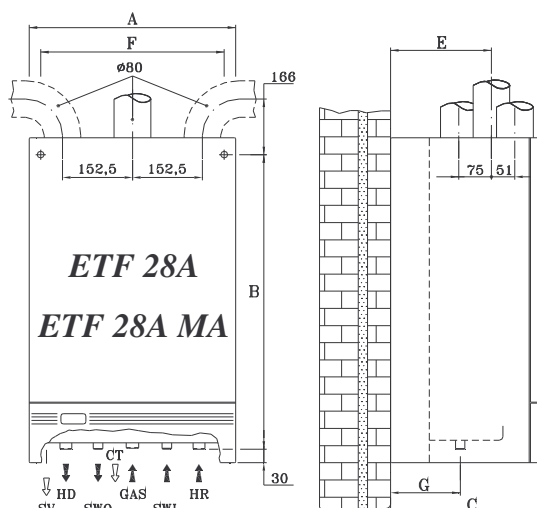
For C₄₂ configuration, refer to EN 483 standards, Chapter 8.2.1.4. paragraph "I".

ATTENTION: The ventilation of the boiler room is not asked

Boiler with coaxial flue pipe



Boiler with separate flue pipe



FORCED DRAUGHT BOILERS wall mounted (Mod. *EcoTop* ETFW 28A)

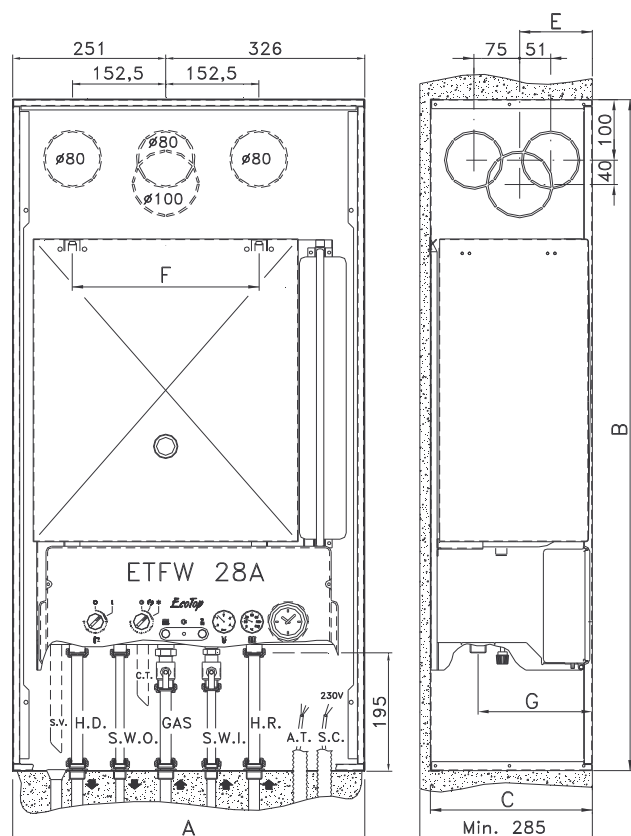


Fig.7

Examples of separate air intake/flue exhaust connection with pipes Ø 80mm

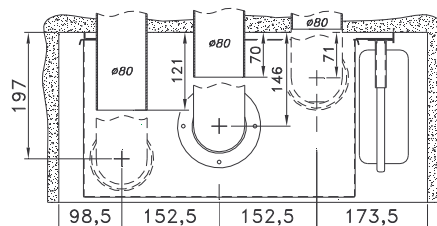


Fig.7/1

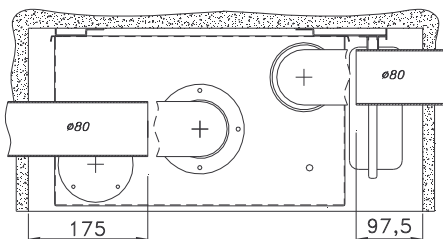


Fig.7/2

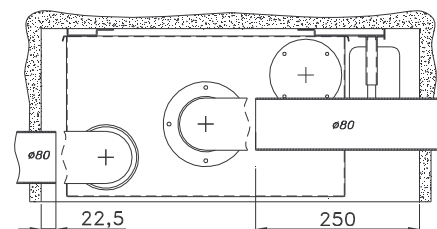


Fig.7/3

Examples of coaxial connection with pipes Ø 60/100mm

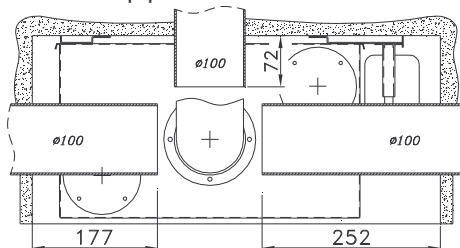


Fig.7/4

PREASSEMBLY TEMPLATE FITTINGS LAYOUT (optional)

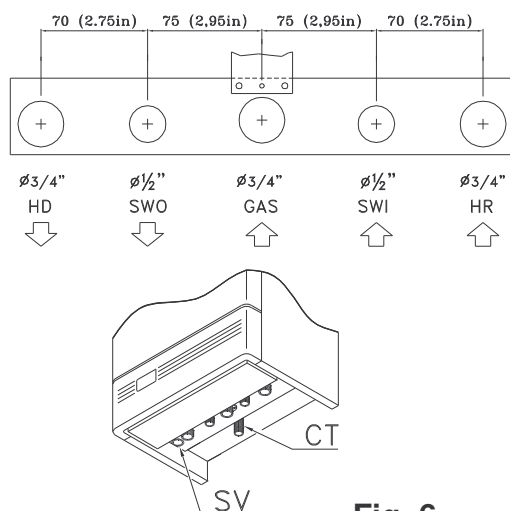


Fig. 6

KEY

- HD** - Heating delivery Ø 3/4"
- SWO** - Sanitary hot water outlet Ø 1/2"
- HR** - Heating return Ø 3/4"
- SW I** - Sanitary cold water inlet Ø 1/2"
- GAS** - GAS Inlet Ø 3/4"
- CT** - Condensing Trap
- SV** - Safety valve 3 bars (42.67 P.C.I.)

AIR INTAKE / FLUE EXHAUST CONNECTION SYSTEM

IMPORTANT:

High output performance of Eco Top boilers requires great carefulness in choosing flue and condensate-gathering systems. The exhaust pipe of the condensate must not have drawn horizontal but a least slope of 5 % towards the water-supply of downflow. The setting in work of the " flue pipe " it asks for the least slope of 3 % in the direction of the boiler or towards the point of " harvesting condensates " of the water-supply (if foreseen).

INTAKE / EXHAUST WITH COAXIAL SYSTEM

With this kind of configuration, combustion air and exhaust gases are channelled through a concentric pipe system.

If **horizontal** coaxial pipes are chosen, the boiler must be fitted with a curved coaxial connector (1) Fig. 9, with **vertical** coaxial pipes, straight coaxial connector (2). Fig.9 must be fitted.

INTAKE /EXHAUST WITH SEPARATE FLUE SYSTEMS configuration C₁₂ C₃₂ C₄₂

With this kind of configuration, combustion air and exhaust gases are channelled through two separate pipes. In this case appropriate suction/exhaust connectors must be fitted (3).

For this version too, a vertical or horizontal wall/roof terminal can be fitted by using appropriate connectors, Fig.10 – Fig.11/A.

SYSTEM WITH EXHAUST PIPE ONLY configuration B₂₂ - B₃₂.

With this system, combustion air is drawn directly from the room in which the boiler has been installed, while flue system may be chosen according to Fig. 17 pg.15.

The suction connector (3) must be fitted with a protection (4) net as given in Fig. 11/A (B₂₂).

Warning: the intake / exhaust connection systems must not exceed the maximum lengths allowed and specified in the instructions (tables A.B.C. page 16).

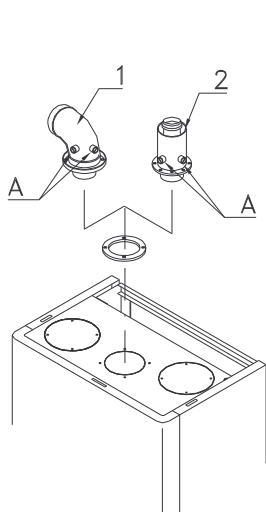


Fig.9

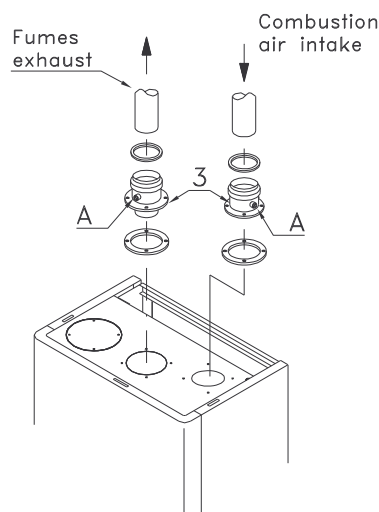


Fig.10

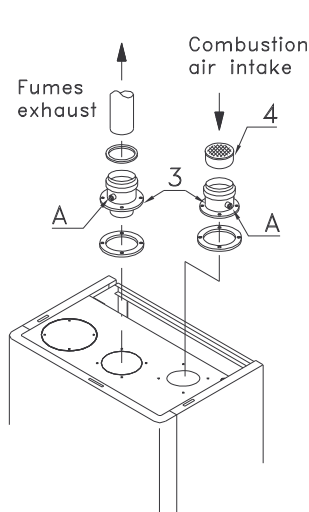


Fig.11/A

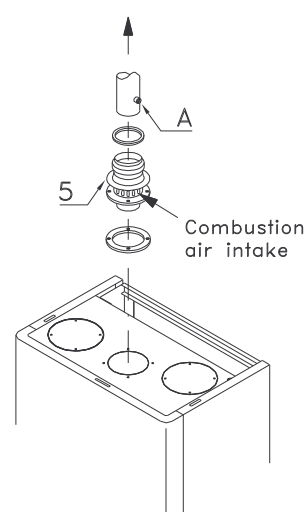


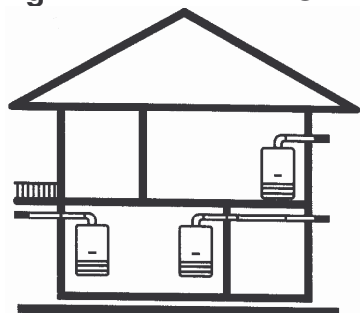
Fig.11/B

Coaxial pipe	Separate pipes	Fumes exhaust pipe only
1) Elbow coaxial connector Ø60/100 (Art.01654). 2) Straight coaxial connector Ø60/100 (Art.01686). A. Drawing off point for combustion products and combustible air.	3) Intake/exhaust manifold kit Ø80 mm for separate pipes, complete with gaskets (Art.01658) Or: Intake/exhaust adapter kit Ø80/100 mm for separate pipes, complete with gaskets (Art.01184). A. Drawing off point for combustion products and combustible air.	3) Intake/exhaust manifold kit Ø80 mm. for separate pipes complete with gaskets (Art.01658) B ₂₂ . 4) Protection grille (Art.00239). 5) Vertical coaxial adapter from Ø60/100 to Ø80 (Art.01685) B ₃₂ . 6) Drawing off point for combustion products and combustible air.

EXAMPLE OF COAXIAL PIPES CONNECTION BOILERS (Ø60/100mm)

This solution allows a max. length of the flue pipes of **3 metres** for the horizontal pipe and **4 metres** for the vertical pipe. Each extra 90° connector that is fitted reduces by **1 metre** the max. extension of the piping.

Fig.12 **C 12**



Horizontal outlet with intake/exhaust manifold bend and extension pipe

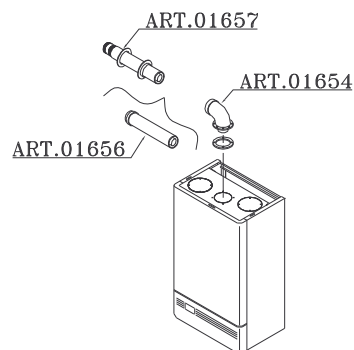
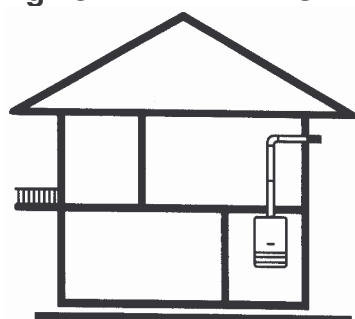


Fig.13 **C 12**



Horizontal outlet with straight manifold and extension pipe

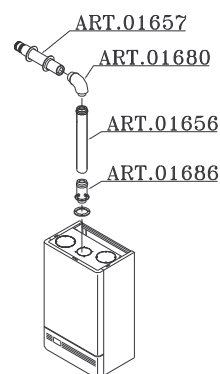
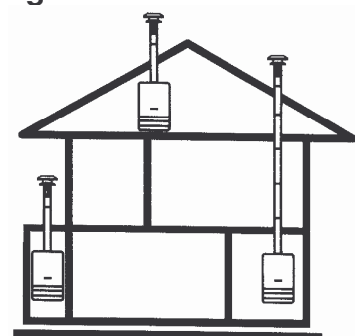


Fig.14 **C 32**



Vertical outlet with extension pipes

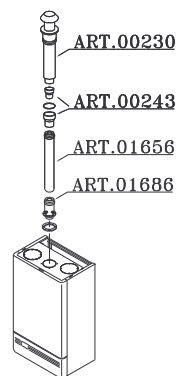
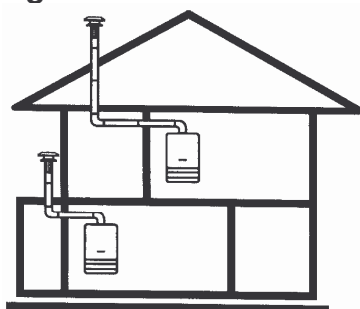
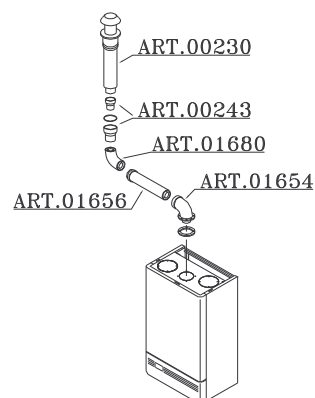


Fig.15 **C 32**



Vertical outlet with bends and extension pipes



EXAMPLES OF SEPARATE PIPES CONNECTION BOILERS (Ø80 mm)

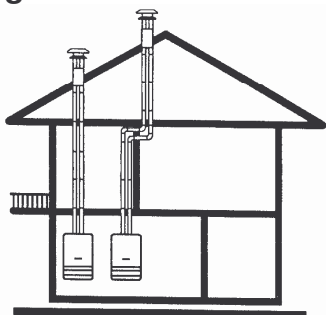
This solution allows a max. length of the flue exhaust pipes plus air suction of **20 metres**.

- The maximum length of the pipe is given by the sum of the flue exhaust pipe more the length of the air suction pipe.
- Each change of direction reduces the disposable length of the pipes to the next proportion:

For curves to 45° the reduction will belong 0,3 metres per unity (for pipe Ø 80 mm and Ø 100 mm).

For curves to 90° the reduction will belong 0,8 metres per unity (for pipe Ø 80 mm) and 0,5 metres per unity (for pipe Ø 100 mm)

Fig.16 **C 32**



Vertical outlet with elbow manifold and extension pipes

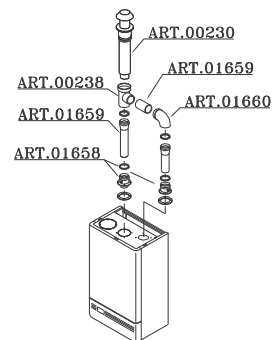
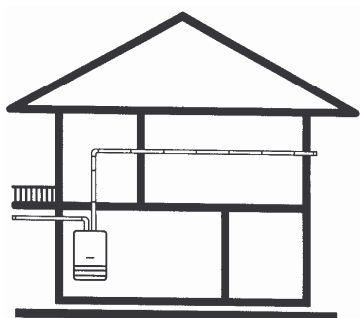
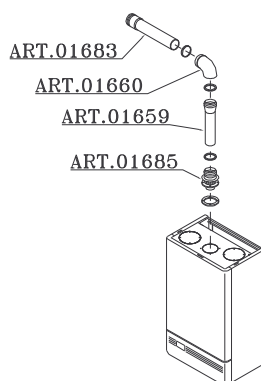


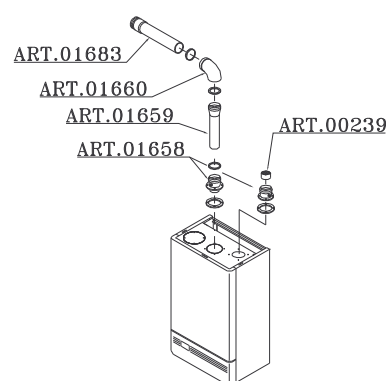
Fig.17



If the **B₂₂** configuration boiler is installed, part Art.00239 must be fitted to the air suction pipe (Art.01156).

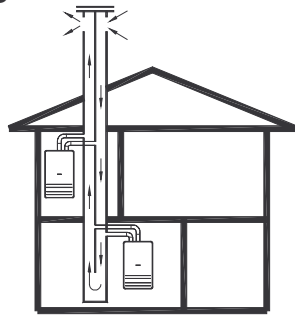


B₃₂



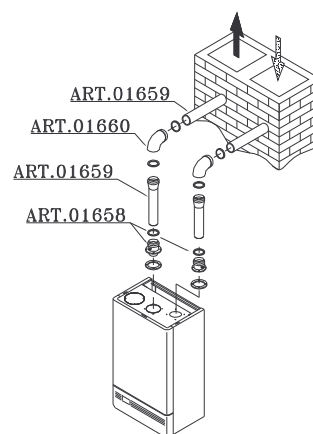
B₂₂

Fig.19 **C 42**



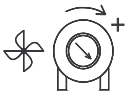
Horizontal/Vertical flue outlet with bends and extension pipes

For the **C₄₂** configuration refer to EN 483 Standard, Chapter 8.2.1.4 paragraph "I".



MAXIMUM LENGTHS ALLOWED FOR "COAXIAL" AIR INTAKE/EXHAUST PIPE SYSTEMS

The maximum length of the piping for the straight coaxial pipe is (see table A) for the horizontal pipe and 4 metres for the vertical version.

TABLE "A" Coaxial exhaust flue pipes configuration type C ₁₂ C ₃₂	
	fan speed
Coaxial horizontal from 0,5 to 2m with terminal Cod.01657 With exit: front / back / right / left	Max.
Coaxial horizontal from 0,5 to 3m with terminal Cod.01657 With exit: front / back / right	Max. 
Vertical pipe from 0.5 to 4m with terminal Cod.00230	Max.

MAXIMUM LENGTHS ALLOWED FOR SEPARATE AIR INTAKE/EXHAUST PIPE SYSTEMS ø80 / ø100

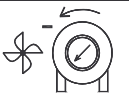
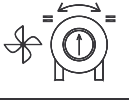
TABLE "B" Separate exhaust flue pipes in configuration C ₁₂ C ₃₂ C ₄₂	
	fan speed
Separate Ø80 max 4m+4m with terminal Cod.00240	Min. 
Separate Ø100 max 10m+10m without terminal	
Separate Ø80 max 8m+8m with terminal Cod.00240	Medium 
Separate Ø100 max 12m+12m without terminal	
Separate Ø80 max 12m+12m with terminal Cod.00240	Max. 
Separate Ø100 max 20m+20m without terminal	

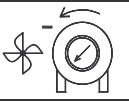
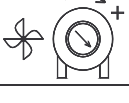
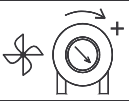
TABLE "C" Exhaust flue pipe Ø 80 mm in configuration B ₂₂ B ₃₂	
	fan speed
Lenght max. exhaust flue pipe 6m with terminal Cod.00240	Min. 
Lenght exhaust flue pipe from 6 to 16m with terminal Cod.00240	Medium 
Lenght max. exhaust flue pipe from 16 to 23m with terminal Cod.00240	Max. 

TABLE "D" Exhaust flue pipe Ø 60 mm (air inlet pipe max 1 m) (C ₁₂ C ₃₂ C ₄₂)	
	fan speed
Lenght max. exhaust flue pipe 4m with terminal Cod.01536	Max. 

Notes: - The maximum lengths for the flue pipes refer to material **supplied by us**.

- SARIGas shall not be held responsible for poor functioning of the boiler, damage to people or things caused by the use of material **not** supplied by us.

IMPORTANT: if necessary, insulate the flue outlet pipe to avoid temperature drop of the fumes along the pipes. Max. drop allowed per metre of pipe must be less than 34°F.

ROOM VENTILATION

THE VENTILATION OF THE PREMISES IS OBLIGATORY AND INDISPENSABLE FOR THE BOILERS MOD.

“Eco Top” ETF 28A / ETF 28A MA / ETFL 28A / ETFW 28A in configurazione B22 B32 (vedi pag.15,16.).

These boilers must be installed in suitable environments, which guarantee the right level of combustible air intake; they must be connected to an exhaust flue outlet pipe. For ventilation, refer to local legislation.

Air vents on the outside walls of the boiler room:

- Must have a free net air passage that conforms to current legislation in size;
- Must be made in such a way that the inside and outside vents cannot be covered or blocked.
- Must be protected with grids or wire net, etc., but the protection must not reduce the size of the passage as indicated above.
- Correct aeration can be obtained from several vents, as long as the total net air passage corresponds to current legislation.
- If the vents cannot be made near to the floor, the section of the vent opening must be increased, as indicated in the specific standards.
- If there are other elements in the boiler room that draw in air to work, the section of the vent opening must be adequately increased.
- If the boiler is installed in a room that contains a cooking hob without safety device, as it does not use an open flame, the ventilation vents must be increased.
- The suction hood is always to be considered as an electric fan.
- An open fireplace must have its own air draft, otherwise gas appliances of the **B11BS** type cannot be installed in the room.

If an external opening cannot be made, air flow from an adjacent room is allowed as long as the room is not in negative pressure due to the presence of another draft (fireplace or stove) or another suction appliance, and it is not used as a bedroom.

IMPORTANT:

It's necessary to not obstruct even partially the court of ventilation to guarantee the hygiene and security of the environment; if the room where the boiler EcoTop (in configuration B22 B32) installed it is not aired well there can be verified by frequency the arrest of the principal burner by the activation of the system of certainty of the apparatus.

The boilers model EcoTop (ETF 28A / ETF 28A / ETFL 28A / ETFW 28A) in configuration type "B22" and "B32" needs the comburent air intake directly from the room where they are installed. So, for the correct functioning, it's necessary that the grill of air intake rif.4-5 fig. 11 page 13 is ever obstructed and the section of passage of the air is adequate.

- Don't insert the boiler in hanging not aired sufficiently and don't use it like plan of support for other objects.

PIPING

- The section of the piping depends on the methods currently used, using the curve given in the diagram (Figs. 21-22).
- We recommend using a capacity that keeps the temperature difference between delivery and return from the heating system between 5° and 10°C.

Available head and capacities for heating systems at the boiler fittings

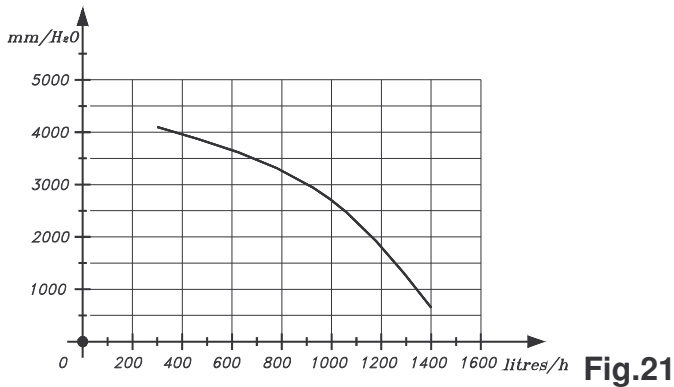


Fig.21

Diagram of pressure drops of the sanitary water circuit to the boiler fittings

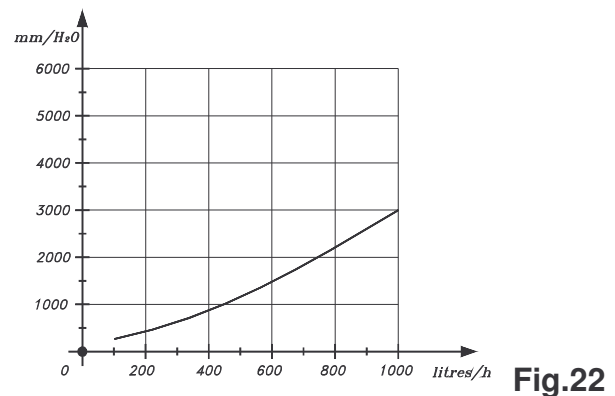


Fig.22

HEATING ELEMENTS

- **Radiators, convectors or fancoil heaters** may all be used.
- As boiler temperature is variable, exchange areas may be calculated for a temperature range of 30°C min. and 80°C max.
- However we recommend calculating the exchange area by taking a lower temperature as reference value, thus allowing to improve comfort and reduce energy consumption.
- The **radiators** must be fitted with adjustable input connectors, which allow balancing the system, and manual bleeders on the top points.

BLEEDING THE BOILER

Before filling the boiler and the system with water, weaken the outlets presenting in the system to allow the blowing off the contained air in the same time.

To carry out the water refilling of the heating circuit with the switch off boiler and open the outlets presenting in the warming bodies up to the first outlet of the water. To each following cleaning of the system, restore the asked water pressure as indicated Pag. 5.

CONNECTING THE GAS PIPES

The **section of the pipes**, between the metre and the boiler, must be of a size to reach the supply pressure given on the label. It must be possible to close the piping if the boiler is dismantled, by fixing an interception valve between the boiler and the gas pipe. For installation and the materials to be used, refer to local legislation. Ensure that the boiler is compatible with the gas supplied.

ELECTRICITY SUPPLY

Boiler is supplied for 230 V 50 Hz Single phase "L", neutral "N". The method of connection to the mains electricity supply must facilitate complete electrical isolation of the boiler preferably by the use of a **fused double pole switch** having a 3mm (1/8 in.) contact separation in both poles.

Consult wiring diagram on page 20, Fig. 24.

- The earth wire must be connected to the earth terminal marked by the symbol

A multiple PVC wire type H05 VV-F or H05 VVH2-F, must be used for the electricity supply wire, with a section of 3 x 0,75 mm², and the earth wire to the boiler must be longer than the supply wires.

N.B. If the correct polarity is not respected, the boiler will halt and the block alarm will come on (lighted button E, Fig.1). If there is minimum electric voltage (5 -10 V), between Neutral and Earth the boiler will not work correctly.

START UP

Important:

- Before filling the system, check that the pump is not blocked.
- If the pump is blocked, remove the protective cap and use a screwdriver to rotate the pump rotor pin to the right and left (Fig. 23/A).

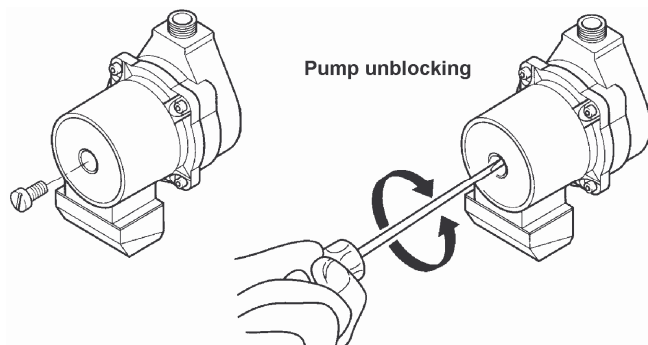


Fig. 23/A

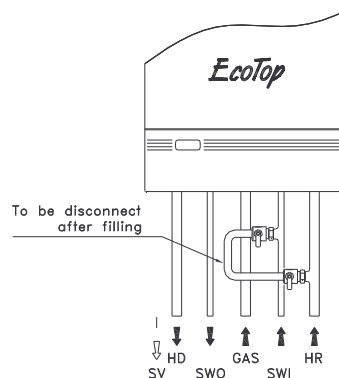


Fig. 23/B

- With the gas valve closed, check that the metre does not record the passage of gas for at least 10 minutes.
 - Check that all the bleed valves on the system are open.
 - Open the filling valve (Fig. 23/B) until the pressure given on the pressure gauge F, Fig. 1, indicates at least 1 bar (14.22 P.S.I.).
 - Close all the bleed valves in the system as soon as water starts to come out.
 - At the end, close the filling valve when the pressure given on the pressure gauge is above 1.2 bar (max.1.5 bar) 17P.S.I. (max..21.33 P.S.I.): knob **A** Fig. 1, must be in position "**O**" to carry out this operation.
- Any future bleeding should be done with knob **A** in position "**O**".

BEFORE STARTING UP THE BOILER

- 1) Carry out the wiring connections to the boiler to 230~ Volt - 50 Hz, according to the wiring diagrams on page 20, Fig. 24. Wiring should be in 3 core PVC cable not less than 0,75 mm² to BS 6500 table 16, wiring external to the boiler must be in accordance with the current I.E.E. wiring regulations and any local regulations which apply. In the areas where the electrical power is 230V "phase / phase" it is necessary to install an auto-transformer. (Cod.00847).
- 2) **Before opening the gas valve tap, the pump must be turned for a few minutes, by turning knob A to "I" and knob B to WINTER ❄️**, after about ten minutes return knob B to SUMMER, open and close the cold water tap few times with the interval of one minute. Then open the gas valve tap, press button **E** Fig. 1 and wait one minute before using the boiler.

BLEEDING THE SYSTEM

If the air has not been completely bled from the system, the boiler will be noisy and will not work correctly. Take out of the special points of bleeding possible "bags of air" accumulate during the first period of functioning. The operation is carried out with switch off boiler; restore the system with initial water pressure.

PRECAUTIONS AGAINST FREEZING

Absence of functioning for short periods (12 – 24 hours)

- Turn the selector switch **A** to 'O'

Absence of functioning for long winter periods

Boilers *EcoTop* ETF / ETFL / ETFW are equipped with a "automatic 2 level alarm antifreeze protection system" both on the heating circuit and on the internal domestic hot water circuit, the one on the heating circuit turns on at temperatures below 5°C and the one on the D.H.W. circuit turns on at below 3°C.

These functions are activated by the low temperature recorded on the water internal circuits of the boiler, the pump of circulation or the pump and the gas burner, **as long as** the boiler is electrically powered and knob **A**, Fig. 1, is turned to "I".. When a temperature of around 35°C is reached in the heating circuit, the "antifreeze system" is automatically deactivated. It is good practice, however, to protect the heating circuit, in the very cold places with a suitable, specific chemical additive (antifreeze). If the system is not protected with antifreeze, and the gas valves must be turned off upstream and the electrical supply to the boiler turned off, empty the heating and the hot water circuits to avoid breaking on components of the boiler, on the thermic system (water-supplies, radiators and so on).

REGULATION WITH EXTERNAL CONTROL (optional)

The combination boiler can be controlled by an external regulation consisting of:

- **Remote Control**; (code – set remote control 20588)
The remote control permits the control and the regulation of the combination boiler and the faults signalling (led). The maximum distance between the combination boiler and the remote control must be 300 metres (Fig.26). The remote control must be linked to the combination boiler using an independent electric pipe without cables under voltage.
The remote control is easy to install and to use and it gives the user the possibility to check the operating faults through the luminous leds.
There are also other leds that permits to check the consumption of the boiler in real time. It's also possible to link a room thermostat to the remote control (see instructions below Fig.27 and 28).
- **Ambient thermostat**; It's advisable to choose an high quality thermostat (with low differential). This ambient thermostat must be linked to the connectors **C** and **D** on the P.C.B. (Fig.25). The electrical connection must be cut off using a cable composed by two wires (in accordance with local regulations).
- **Time clock**; (00301) The time clock can be installed directly in the combination boiler using the set of components supplied by SARlgas in order to make the installation easier. The time clock must be linked to the wires **C** and **D** after having removed the existing electrical connection (Fig.29).
- **External temperature probe (E.T.P.)**; kit Cod.20589; installation of this kit is compatible with all fittings Fig.24 to Fig.29.

WARNING: Before making any connections power supply must be disconnected!!!

WIRING DIAGRAM TO THE POWER SUPPLY

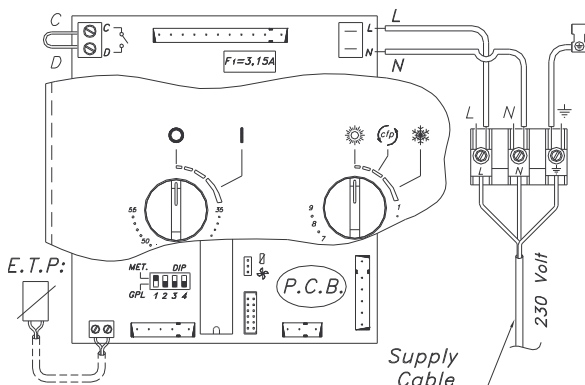


Fig.24

WIRING DIAGRAM TO THE ROOM THERMOSTAT

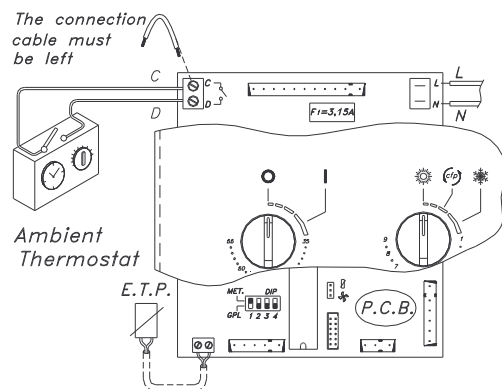


Fig.25

ATTENTION :

Rif. Fig.25 In this kind of connection, the existing connection wire must be cut off from the connector C-D of the circuit "P.C.B."

Supply cable is included and connected to appliance.
The connecting wire to the C-D terminal must not be powered, and must be connected to a "clean" On-Off contact.

Faulty connection of the C-D terminal: if the electric wire is powered at **230 volt** the adjustment card will burn out and consequently cancel the guarantee terms. The replacement of the power supply Fig. 24 must respect the prescription to pag. 18.

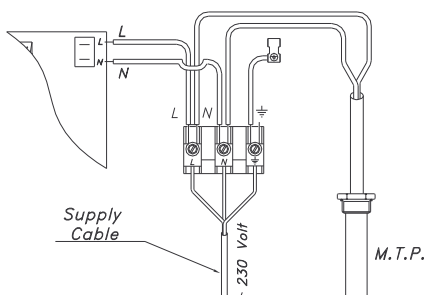


Fig.24/A

Wiring diagram to Miniaccumulate Termistore "M.T.P."

Warning: The wrong connection of the circuit "R1" with the circuit "P.C.B." electrically connected, can cause permanent damages on both circuits. Before connecting the electrical connection it is advisable to verify visually the right position of both connectors (Fig.26).

WARNING: Before insert and to disconnect the card "R1" power supply must be disconnected!!!

CONNECTION TO THE "P.C.B." WITH REMOTE CONTROL

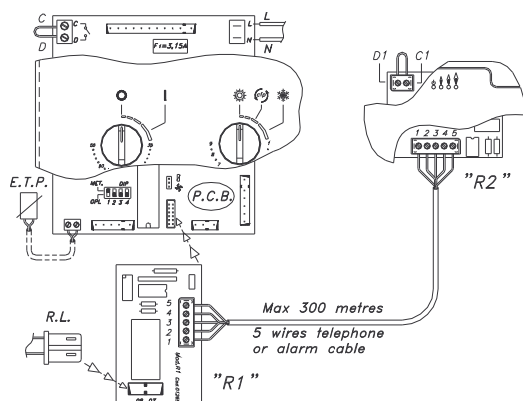


Fig.26

WARNING: In this type of connection, the connectors C-D must be linked to the "P.C.B." and the connector C1-D1 of the regulation circuit **R2**.

CONNECTION TO THE "P.C.B." WITH REMOTE CONTROL AND AMBIENT THERMOSTAT (linked to the connector C-D of the "P.C.B.")

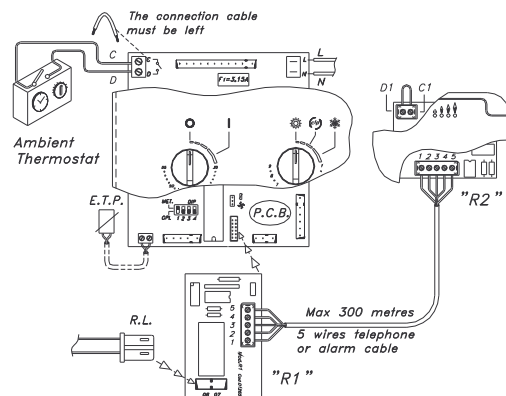


Fig.27

WARNING: In this type of connection, the connector C1-D1 of the regulation circuit **R2** must be linked.

CONNECTION TO THE "P.C.B." WITH REMOTE CONTROL AND AMBIENT THERMOSTAT (linked to the connector C1-D1 of the regulation circuit "R2")

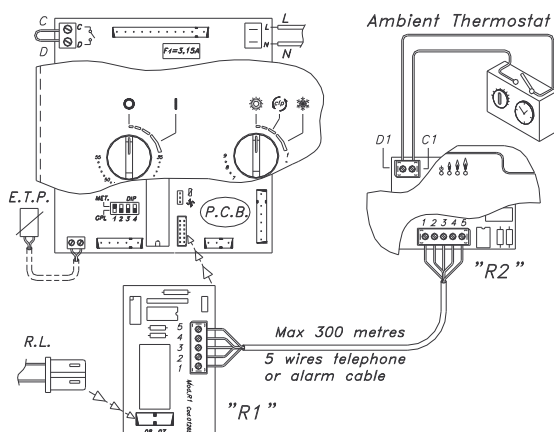


Fig.28

WARNING: In this type of connection, the connector C-D of the "P.C.B." must be linked.

CONNECTION TO THE "P.C.B." WITH DAILY TIME CLOCK Cod.00301

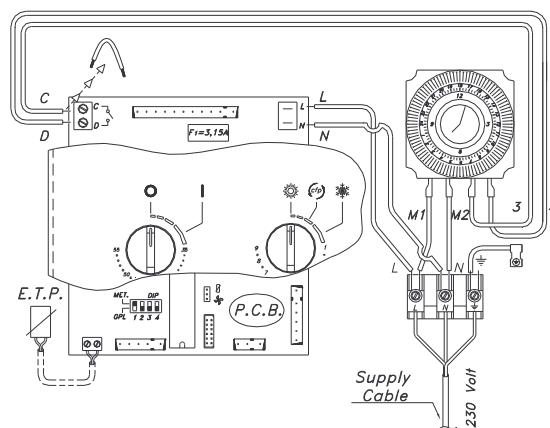
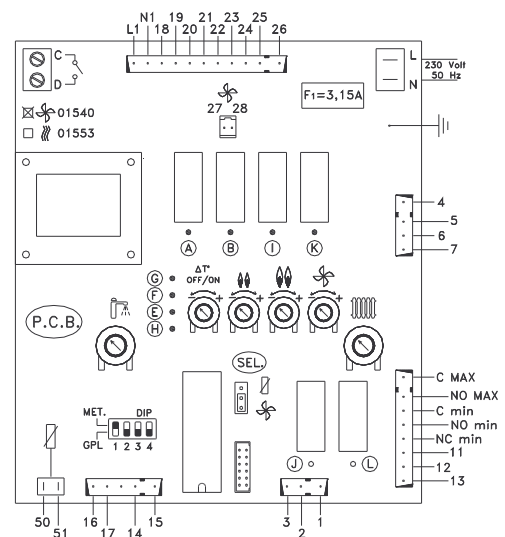
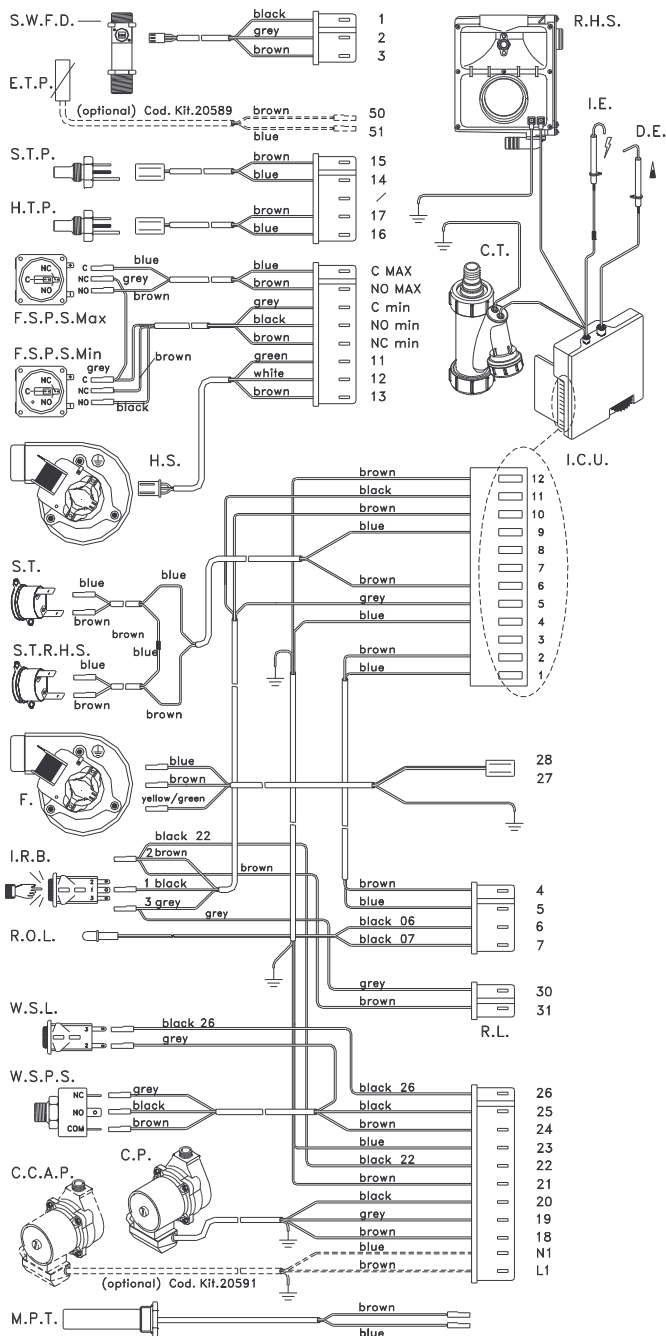


Fig.29

WARNING: In this kind of connection the cables of the time clock (M1-M2) must be linked to the power supply of the circuit "P.C.B." (L-N), as indicated in the drawing.

INTERNAL WIRING DIAGRAM SERIES *EcoTop* ETF 28A – ETFL 28A - ETF 28A MA – ETFW 28A



Signals on the "P.C.B." card

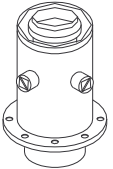
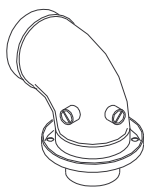
- A. Heating pump activation relay
- B. Domestic hot water pump activation relay
- E. Led permanently "ON":
exchanger temperature >90 °C.
 - Led flashing:
antifreeze pump activation warning threshold
- F. Led permanently "ON":
domestic hot water programme active.
 - Led flashing:
antifreeze pump and gas valve activation alarm threshold.
- G. Led permanently "ON":
Heating programme active.
 - Led flashing:
heating system probe failure.
- H. Fan safety pressure switch alarm/fan ON alarm
- I. Gas valve activation relay
- K. Fan activation relay
- J. "Led "OFF" verifies fan safety pressure of maximum
- L. Led "ON" verifies fan safety pressure of minimal
- SEL. Fan revolutions selector switch/external temperature detection through external probe
- P.C.B. Printing circuit board

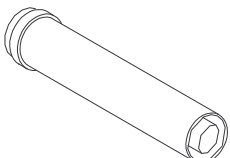
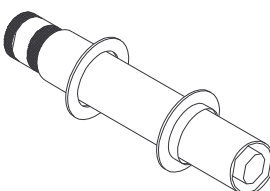
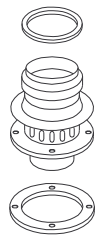
KEY:

- S.W.F.D. – Sanitary hot water flow detector
- S.T.P. – Sanitary hot water temperature probe
- H.T.P. – Heating temperature probe
- S.T. – Safety thermostat
- S.T.R.H.S. – Safety thermostat Regeneration smokes heat
- F. – Fan
- I.R.B. – Luminous reset button
- R.O.L. – Ready for operation light
- C.P. – Circulating pump
- F.S.P.S. Max. – Fan safety pressure switch Max.
- F.S.P.S. Min. – Fan safety pressure switch Min.
- R.S.H. – Regenerator smokes heat
- M.T.P. – Miniaccumulate Termistore PTC (only versions MA)

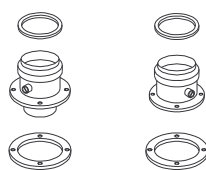
- C.T. – Condensing Trap
- W.S.L. – No water signalling light
- W.S.P.S. – Water safety pressure switch
- I.E. – Ignition electrode
- D.E. – Detector electrode
- I.C.U. – Ignition control unit
- R.L. – Remote light no ignition (max 3 mA)
- H.S. – Hall sensor fan
- E.T.P. – External temperature Probe (optional)
- C.C.A.P. – Circulating pump optional cable L.=3m (max 100W) (optional)

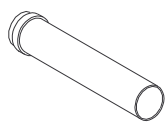
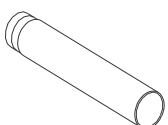
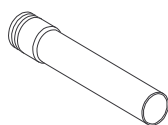
FITTINGS AND OTHER SPARE PARTS FOR COAXIAL PIPE 60/100 DIA.

Vertical intake/exhaust manifold 60/100 with taps for fume analysis  Cod. 01686	90° intake/exhaust manifold bend with taps for fume analysis  Cod. 01654	90° M/F die-cast bend 60-100 dia.  Cod. 01680	45° M/F bend 60/100dia.  Cod. 01681
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Vertical/horizontal M/F extension 60/100 dia. 1000 mm  Cod. 01656	Horizontal intake/exhaust 60/100 dia. 1000mm  Cod. 01657	Vertical coaxial adapter from 60/100 to 80 dia. (B₃₂ configuration)  Cod. 01685
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FITTINGS AND OTHER SPARE PARTS FOR THE SEPARATE PIPES 80 DIA.

Intake/exhaust manifold 80 dia. with taps for fume analysis  Cod.01658	90° M/F die-cast bend 80 dia  Cod.01660	45° M/F bend 80dia.  Cod.01682
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M/F intake/exhaust extension 80 dia. 1000 mm  Cod.01659	intake/exhaust terminal 80 dia. 1000mm complete of protection grille inox  Cod.01684	Wind-proof exhaust terminal 80 dia. 1000mm  Cod.01683	Intake terminal protection grille inox 80 dia. (only B₂₂ configuration) Fig.17 Page 15  Cod.00239
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Authorized Servicing Centre

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Via Olanda, 1 – 37069 Villafranca di Verona (VR)– Italia – Tel – 045/8520650 – Fax – 045/8520761
www.sarigas.it E-Mail: sarigas@sarigas.it

09-06 Cod.01713