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FCX 22 C

FCX 30 C

GEMINOX

C H A U D I E R E S

High fidelity heat



T30.38491.02

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I - PRESENTATION

1 - DESCRIPTION

Standardised description: type C sealed circuit combustion boiler, heating only, 22.3 kW or 30,5 kW, with an oil spray burner in accordance with EN 267 and a flue for B₂₃ / B_{23p} / C₁₃ / C₃₃ type combustion products.

The FCX boiler conforms to the French standard XP D 35-430 relating to type C oil boilers.

The FCX boiler is delivered pre-assembled (cover, boiler shell and control panel). It includes the following equipment:

- an enamelled steel cover,
- a thick steel boiler shell comprising:
 - a combustion chamber and a heat exchanger with a system of removable baffles,
- a stainless steel condenser (904 L),
- a control panel comprising:
 - an On/Off switch,
 - a Summer/Winter switch,
 - a thermostat controlling boiler temperature,
 - a heating flow temperature thermometer (circuit 1),
 - a water overheating safety thermostat,
 - a combustion product overheating safety thermostat,
 - a boiler shut-down light,
 - pre-wiring for electronic regulation.
- an oil burner with pre-heater,
- an air inlet duct to the burner,
- a circulating pump,

- a manual mixing valve (can be motorised),
- a 3 bar safety valve,
- an expansion vessel,
- a manometer,
- a drain cock,
- welds for the connection of two independent heating circuits,
- an automatic bleed,
- a reduced bend used to assemble the 3/8" air bleed,
- 4 1" - Ø 22 bends used for easier outlet/return connection to the system,
- thick insulation,
- a socket.

OPTIONS:

- Conventional flue connection kit (B₂₃ / B_{23p}).
- Accessories for the conventional flue connection (B₂₃ / B_{23p}).
- Horizontal flue kits (C₁₃) for connecting the boiler with a straight horizontal or angled horizontal balanced flue
- Accessories for the vertical flue boiler connection (C₃₃).
- Settings in accordance with room temperature.
- Analogue or digital settings taking account of climatic conditions.
- Domestic hot water production tank. (MODULE FCX / BS / EBS).
- Independent domestic hot water production system (BS/EBS type).

2 - RANGE

Models	Function	Combustion product connection
FCX 22 C FCX 30 C	Heating only	Flue with tubing (B ₂₃ /B _{23p}) Horizontal balanced flue (C ₁₃) Vertical balanced flue (C ₃₃)

II - TECHNICAL SPECIFICATIONS

1 - CHARACTERISTICS

Model			FCX 22 C	FCX 30 C
Certification following efficiency directive 92/42/CEE			CE1312AS036R	
Connection			B ₂₃ /B _{23p} /C ₁₃ /C ₃₃	
Power output	maxi	kW	22,3	30,5
Heat flow	maxi	kW	23,8	31,5
Efficiency (in B ₂₃)*	60/80 °C	%	96,3	96,7
Part load efficiency (30 %) (B ₂₃)*		%	99,0	99,8
Combustion product temperature (B ₂₃)	maxi	°C	90,0	95,5
Flow rate of combustion products (0 °C, 1013 mbar)		g/s	11	15
Permitted back pressure	maxi	Pa	30	30
Air flow required for combustion (0°C, 1013 mbar)		m ³ /h	29,1	39,4
Combustion chamber length		mm	228	239
Ø Combustion chamber		mm	294	350
Combustion chamber volume		dm ³	15	23
Volume of combustion products circuit		dm ³	50	52,5
ΔP flue		Pa	25	
Heating service pressure	maxi	bar	3	
Heating circuit water temperature	mini/maxi	°C	10/80	
Boiler temperature	maxi	°C	80	
Water overheating safety thermostat		°C	110	
Flue overheating safety thermostat		°C	120	
Boiler water capacity		litre	16	25
Primary water flow	60/80 °C	m ³ /h	0,96	1,3
ΔP water (at nominal flow)		mCE	1,0	1,8
Heatlosses ΔT 30 K		W	137	144
ΔT 50 K		W	260	273
Service consumption coefficient (ΔT 50 K)		%	1,3	
Total capacity of expansion vessel		litre	8	12
Useful capacity (for static height of 5m)		litre	5	7,5
Power consumption (Continuous working with heating circulating pump at maximum speed)		W	277	297
Power consumption with heating circulating pump				
Speed 1		W	40	
Speed 2		W	60	
Speed 3		W	88	
Power absorbed (with burner, without circulator)		W	189	209
Power supply / Protection index			230 V - 50 Hz / IP x 0D	
Class of electrical insulation			1	
Absorbed intensity	maxi	A	1,2	1,3
Weight without packaging		kg	134	158
Weight with packaging		kg	148	168

* A 3m horizontal or vertical concentric flue connection increases in efficiency by about 2 %.

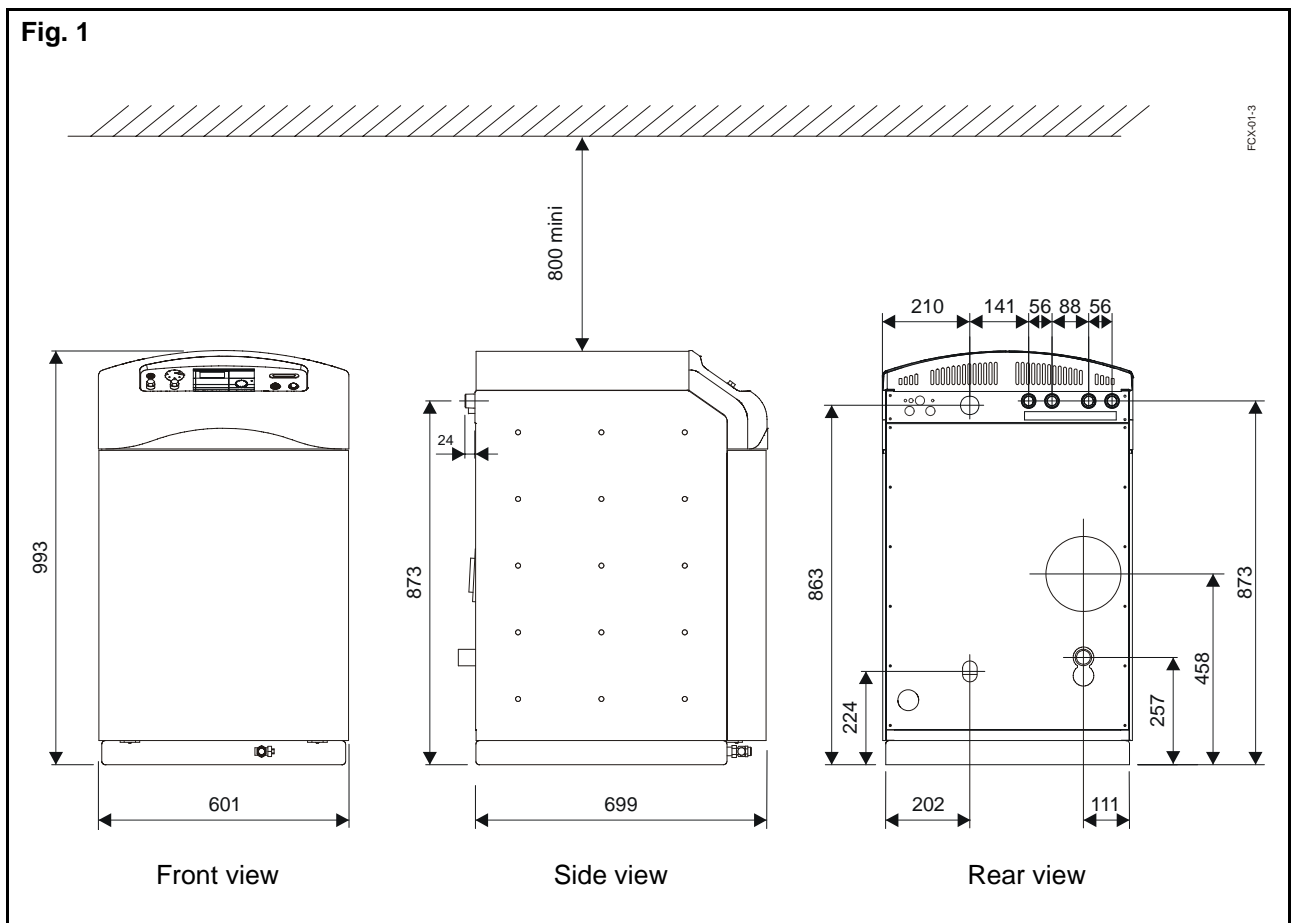
2 - DIAMETERS OF PIPE CONNECTIONS

Model		FCX
Ø Combustion products	mm	80/125
Ø Heating flow/return	inch	1
Ø Domestic hot water production system or 2 nd heating circuit connection	inch	1
Ø Condensate drain	inch	40
Ø Heating water drain	inch	1/2
Ø Air bleed	inch	3/4

* Note:

- The F3/4"-F3/8" reduced bend supplied with the boiler makes it possible to assemble the 3/8" bleed supplied (refer to section 5 - page 25).

3 - DIMENSIONS

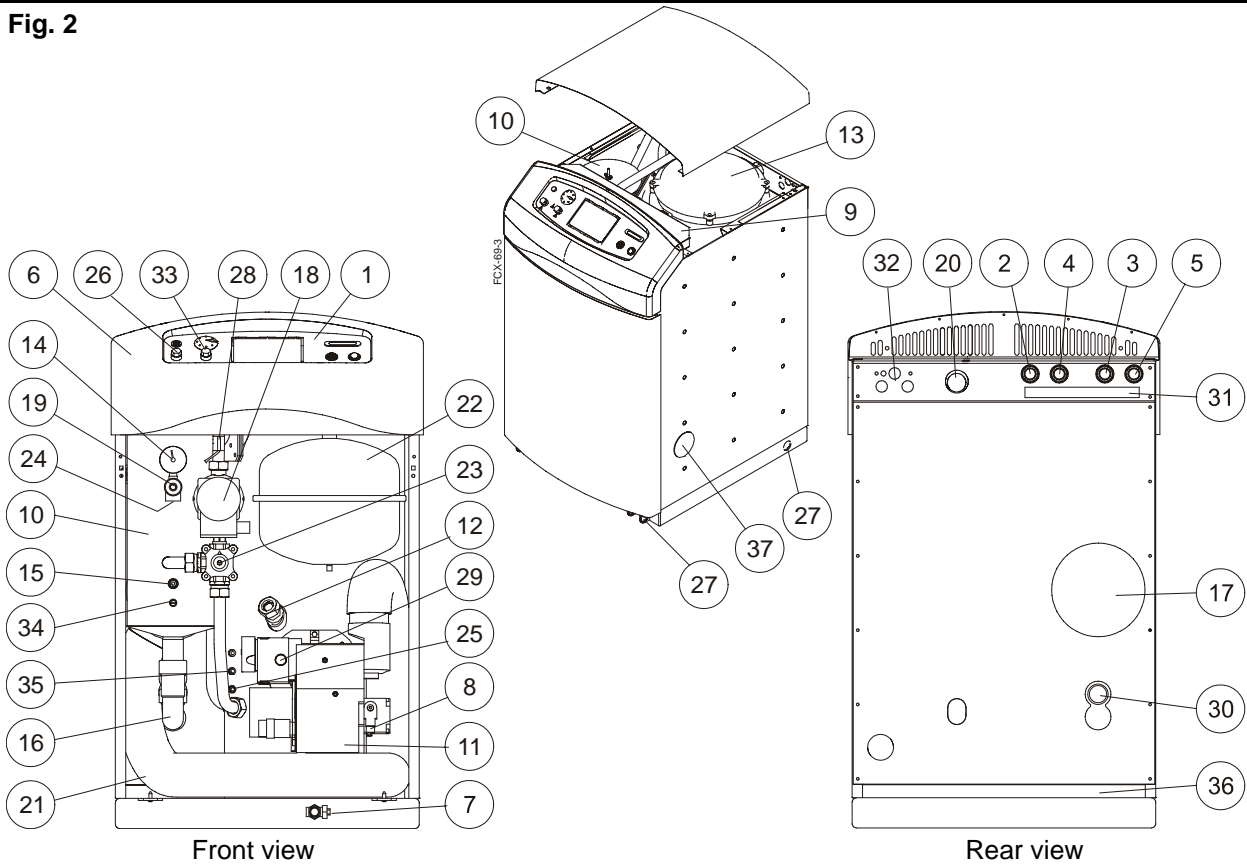


Note:

- Be sure to leave a sufficient gap behind the boiler for access to the combustion product evacuation trap.

4 - DESIGNATION OF COMPONENTS

Fig. 2

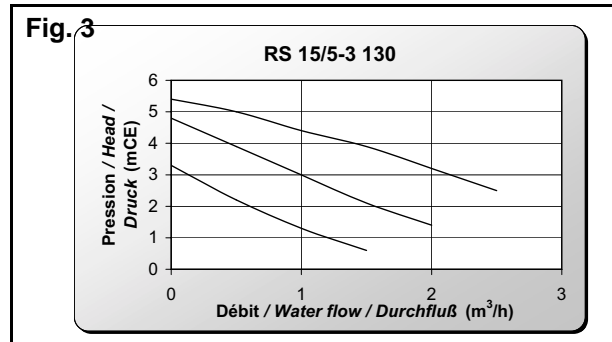


- | | |
|--|---|
| <ul style="list-style-type: none"> 1) Control panel 2) 1st circuit heating flow 3) 1st circuit heating return 4) 2nd circuit heating flow / Primary flow - (outlet of the boiler to the domestic hot water preparation) (optional) 5) 2nd circuit heating return / Primary return - (return from domestic hot water preparation to the boiler) (optional) 6) Plastic cover 7) Drain cock 8) Oil supply 9) Terminal box protection plate 10) Condenser 11) Oil burner 12) Sight glass 13) Boiler shell 14) Pressure gauge 15) Combustion test point 16) Siphon 17) Evacuation des produits de combustion 18) Heating circulating pump 19) Safety valve 20) Weld for air bleed connection (bend + air bleed delivered with the boiler) | <ul style="list-style-type: none"> 21) Air inlet duct to the burner 22) Expansion vessel 23) Manual mixing valve 24) Safety valve outlet 25) Pocket for boiler temperature control thermostat bulb 26) Water overheating safety thermostat 27) Opening for passage of handling bars 28) Temperature thermometer bulb, heating outlet 1st circuit 29) Burner safety reset button 30) Condensate drain 31) Conduit for passage of 230 V cables 32) Conduit for passage of sensor cables 33) Combustion product overheating safety thermostat 34) Pocket for combustion product overheating safety thermostat bulb 35) Pocket for water overheating safety thermostat bulb 36) Hole for oil hose raceway and outlet of the safety valve 37) Hole for check or adjustment of the burner oil pump pressure |
|--|---|

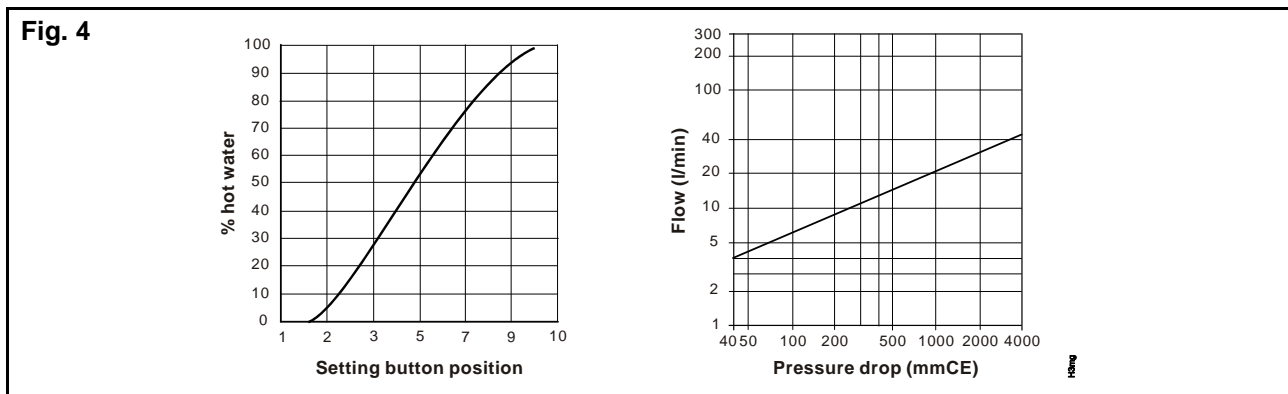
5 - CIRCULATING PUMP CHARACTERISTICS

The circulating pump is equipped with a 3-speed motor with a 88 W maximum power input.

The heating pump's power consumption can be significantly optimised by adapting its speed to the requirements of the installation and by using the control devices that are offered as options



6 - MIXING VALVE CHARACTERISTICS



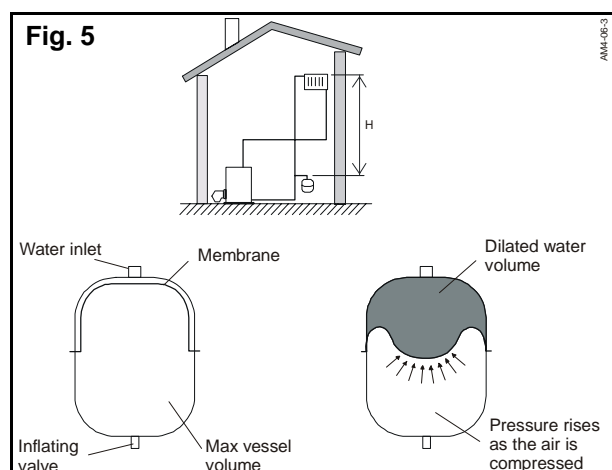
7 - CHARACTERISTICS OF THE EXPANSION VESSEL

FCX boilers are pre-equipped with an expansion vessel for an installation water capacity of approximately 62 liters (section 9.2 - page 31 - chapter IV - INSTALLATION).

The expansion vessel absorbs the increase in the water volume in the installation produced by the increase in temperature. The pre-inflation of the vessel sends the internal membrane to the side of the connection and the water dilation pushes on this membrane. Optimum efficiency is obtained when the inflation pressure is equal to the water pressure.

Note:

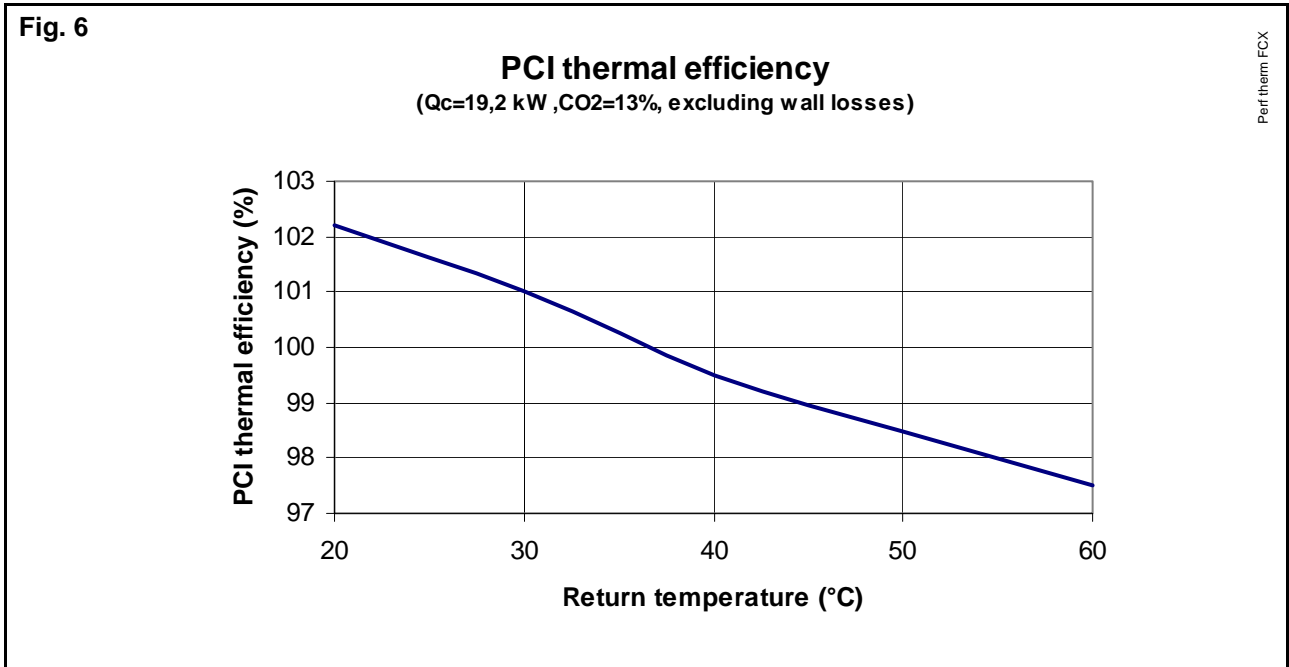
- The minimum water pressure necessary for the correct working of the installation is defined by the difference in levels between the boiler and the highest point in the installation (e.g. 8 m = 0.8 bar).



8 - BURNER TYPE

Models	FCX 22 C	FCX 30 C
GEMINOX oil burners (with pre-heater)	ST 108 FUV	ST 120 RV

9 - HEAT PERFORMANCE



III - OPERATION

1 - DESCRIPTION

The FCX boiler is a sealed exhaust circuit condensation boiler.

It is equipped with an oil-burner with pre-heater.

Air is sucked in by the burner's fan from outside the appliance through the hose connected to the air inlet and combustion product evacuation concentric tube.

The boiler shell equipped with a system of removable baffles, is linked to a stainless steel condenser located directly on the heating return.

This unit is extremely efficient (thanks to condensation) and produces a very low level of sound.

Two independent heating circuits can be connected to the appliance:

- the 1st circuit (radiators): passes through a three channel mixing valve incorporated into the boiler. This valve can either be driven by a regulator (option) or driven manually (factory setting),
- the 2nd circuit can supply an under floor heating circuit (VM2 mixing valve to be used in this case), a hot water production system or both § section chapter chapter IV - INSTALLATION).

IV - INSTALLATION

1 - GENERAL

LOCATION OF BOILER

The boiler can be installed on the inner face of an external wall - and some internal walls - providing they are flat, vertical and capable of adequately supporting the weight of the boiler and any ancillary equipment.

The boiler may be installed in any room or internal space, although particular attention is drawn to the requirements of the current I.E.E. Wiring Regulations and, in Scotland, the electrical provisions of the Building Regulations applicable in Scotland with respect to the installation of the boiler in a room or internal space containing a bath or shower. Where installation is in a room containing a bath or shower, any electrical switch or boiler control utilising mains electricity should be situated so that it cannot be touched by a person using the bath or shower.

Where installation will be in an unusual location, special procedures may be necessary and BS.6798 gives detailed guidance on this subject.

A compartment used to enclose the boiler **MUST** be designed and constructed specially for this purpose. An existing cupboard or compartment may be used provided it is modified for the purpose. Details of essential features of cupboard/compartment design, including airing cupboard installations, are given in BS.6798.

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

- 1) *The position selected for installation **MUST** allow adequate space for servicing in front of the boiler and for air circulation around the boiler.*
- 2) *This position **MUST** also permit the provision of a satisfactory balanced flue termination.*

When siting the boiler, provision must be made for the disposal of the condensate, see Section 4 -Condensate drain.

The pressure relief valve connection should be routed to an external, visible point where the discharge of steam or water cannot create a hazard to persons or property. BS.5449: 1 refers.

FLUEING

Detailed recommendations for flueing are given in BS.5440.1. The following notes are intended for general guidance.

AIR SUPPLY

a) - For room-sealed systems

Detailed recommendations for air supply are given in BS.5440.2. The following notes are intended for general guidance.

Where the boiler is to be installed in a room or internal space, the boiler does not require the room or internal space containing it to have a permanent air vent.

Where the boiler is to be installed in a cupboard or compartment, permanent high and low level air vents are required for cooling purposes in the cupboard or compartment. Both vents must communicate with the same wall to outside air.

The minimum effective area of the permanent air vents required in the cupboard or compartment are given in Table 3.

Table 3 AIR VENT AREAS

Position of air vents	Air from room or internal space	Air direct from outside
High level	186 cm ²	93 cm ²
	29 in ²	15 in ²
Low level	186 cm ²	93 cm ²
	29 in ²	15 in ²

b) - For natural draught system :

Detailed requirements are given in BS 5440.2

WATER CIRCULATION SYSTEM

The expansion vessel is suitable for systems up to **80 litres** water content. For systems in excess of this capacity an additional pressurised expansion vessel will be required. BS7074 and "British Gas Specifications for Domestic Wet Central Heating Systems' Part 3 gives guidance in this subject.

The central heating system should be in accordance with the relevant recommendations given in BS.6798 and, in addition, for small bore and micro-

bore systems - BS.5449.1. The domestic hot water system, if applicable, should be in accordance with the relevant recommendations of BS.5546.

Copper tubing, to BS. 287 1. 1, is recommended for water carrying pipework.

ELECTRICAL SUPPLY

Wiring external to the boiler must be in accordance with the I.E.E. Wiring Regulations and any local regulations.

2 - VENTILATION

2.1 - B23 type conventional flue outlet

- All combustion appliances consume a quantity of air proportional to their power.
 - A ventilation space of at least 100 cm² must be provided at least 1.8 m above the ground, as well as an air input, below, of 100 cm².
- To avoid corrosion, the combustion air must not contain any harmful agents. Halogenated hydrocarbons, containing combinations of chlorine or fluorine that are found in solvents, paints, glues, propellants, household cleaning products, etc. are considered to greatly encourage corrosion.

2.2 - C₁₃/C₃₃ type balanced flue outlet

When the FCX boiler is installed with the horizontal or vertical balanced flue kits provided as an option, the combustion circuit is sealed tight in relation to the local installation.

The boiler does not require any special ventilation, but when the room is very small, you must take every measure to ensure that the ambient temperature of the installation premises does not exceed 45°C (ventilation).



The installation premises may require ventilation to be fitted according to its features or use.

3 - COMBUSTION PRODUCT FLUEING



The combustion product outlet systems described in this manual are systems normally used on the European market. However, some of them cannot be used in all the countries of the EEC. The installer or client must ensure that the flue system chosen complies with local installation regulations.

For the installation of the combustion product evacuation system, C13/C33 accessories supplied as an option or an authorized B₂₃/B_{23p}/C₃₃ type combustion product system must be used.

The optional polypropylene combustion product evacuation tubes are exclusively reserved for assembly with a condensation boiler, maximum temperature 120 °C. The combustion products of the unit are evacuated at low temperature (50 to 100°C) and saturated in humidity.



The material for the lining must be chosen specifically for "the condensation burner boiler" and be corrosion proof.

The suitable materials certified as combustion product systems are:

- 904 L stainless steel,
- PPTI polypropylene,
- PVDF,

Refer imperatively to the CSTB technical notice or in the technical application documentation (DTA) for fitting flues.



Irrespective of the connection type B₂₃/B_{23p}/C₁₃/C₃₃ :

To prevent any accidental leakage:

- Check that the air inlet and combustion product extraction outlet tube and bend joints are properly sealed after mounting.
- ensure that tight sealing joints are used.
- use the fastening collars.(optional) or flanged components to attach the piping securely to the wall with a least 1 collar per female adapter of each section of piping.
- exclude imperatively any use of oil or grease.

To make assembly easier, apply liquid soap over 5 cm of the section of the tube to be fitted.

The tubing connections are arranged so that no condensate is retained and to ensure that they are transferred up to evacuation (descending slop of 3% between the base of the flue and the boiler).

A support with adjustable legs can be installed on the horizontal part at the boiler outlet to support the conduit.

3.1 - Boiler placement according to the combustion products outlet system and to the hydraulic connection

When the boiler must be placed as close as possible to the rear wall, several configurations can be envisaged depending on the hydraulic connection - refer to some examples below.

3.1.1 - Installation example



3.2 - Evacuation by chimney flue (B₂₃/B_{23p}/C₃₃)

 **An existing chimney flue can be used provided that it is cleaned before the lining is fitted.**

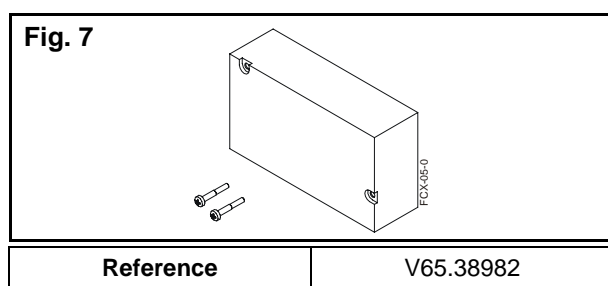
3.2.1 - Accessories

- order separately -

3.2.1.1 - Air trap kit B₂₃/B_{23p}

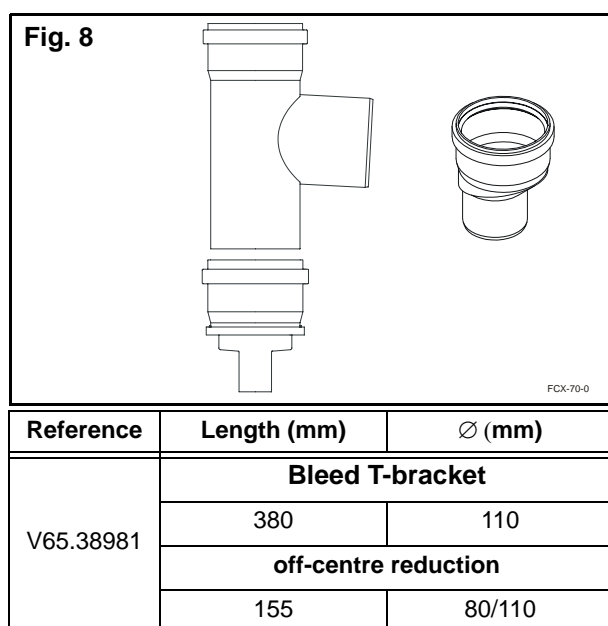
The air trap kit enables transformation of the boiler to a version with a chimney.

See kit assembly guide

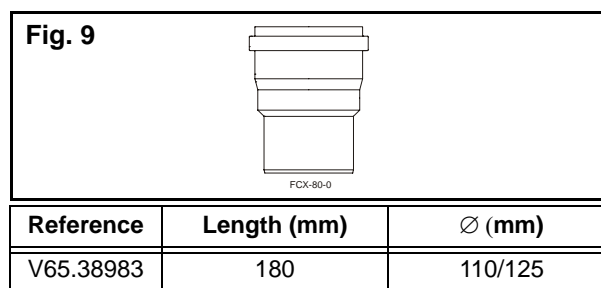


3.2.1.2 - Bleed T-bracket and off-centre adaptor Ø 80/110.

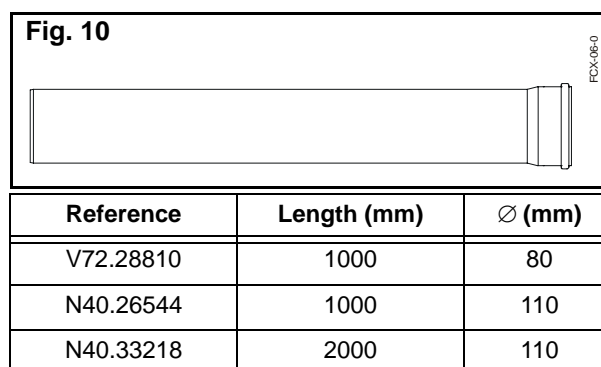
Using the bleed T-bracket is mandatory in the B₂₃ configuration and is recommended in the B_{23p}/C₃₃ configuration, especially with a long conduit (avoids the return of a large volume of condensates via the boiler).



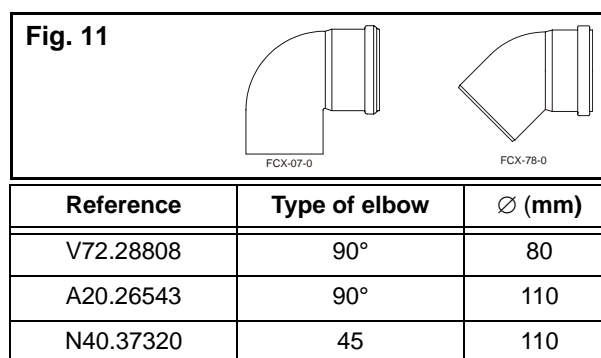
3.2.1.3 - adaptor Ø 110./125



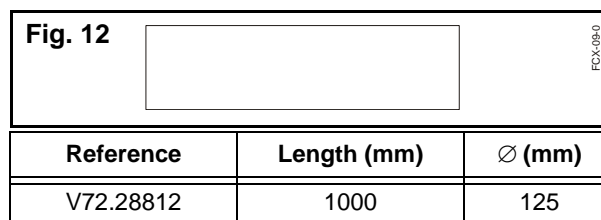
3.2.1.4 - PPTl tubes certification DE Z.7.-2-1051



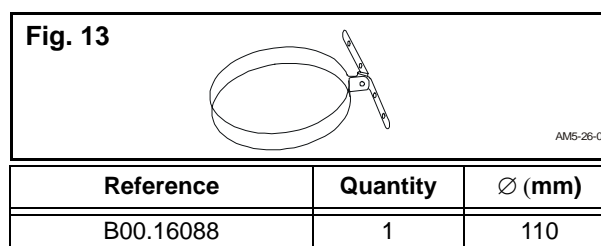
3.2.1.5 - Polypropylene elbow certification DE Z.7.-2-1051



3.2.1.6 - PVC air inlet pipe



3.2.1.7 - Fastening collar (optional)

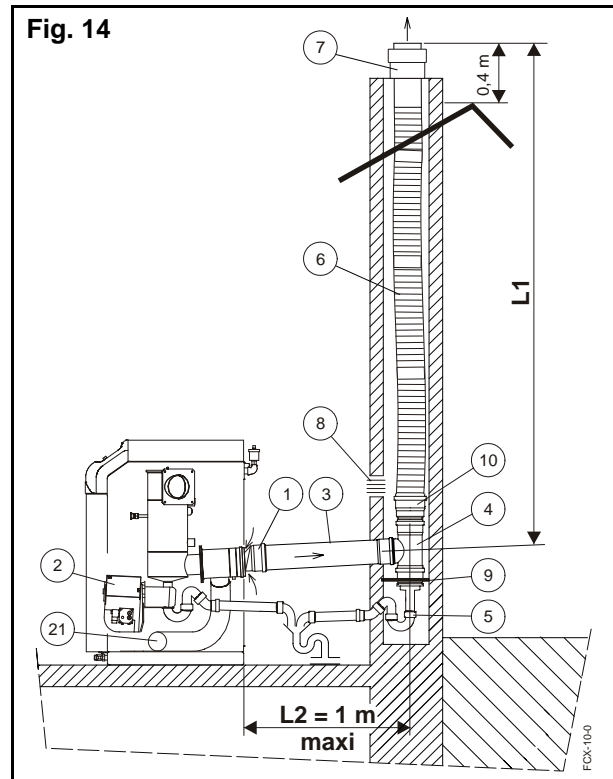


3.2.2 - Standard natural draft configuration (B₂₃) (flue operating at negative pressure)

Definition: Lining of an existing chimney flue by a sealed **STAINLESS STEEL** corrugated flue of Ø 125.

- The termination is specific to this configuration and the outlet must be **above** the roof (comply with the specification of the decree of 22 October 1969),
- **Do not use the hose for a horizontal assembly: condensate may be retained.**
- Use the optional PP accessories (mandatory bleed T-bracket, etc.) for the stainless steel conduit connection to the boiler,
- Fit a siphon (5) with a minimum 80 mm seal between the bleed T-bracket and the waste water pipe,
- **Ventilation for the flue (rep. 8) and the heating system (section 2 - chapter IV - INSTALLATION) must be provided.**
- If the boiler is installed in premises that have mechanical air extraction, ensure that this does not cause negative pressure.
- The premises must never be fitted with other appliances using natural draft to operate.
- The air is sucked in by the burner directly from the room in which the boiler is fitted.
- The burner must be equipped with the air damper (item no. 2) in order to prevent heat losses due to draft.

3.2.2.1 - Installation example (B₂₃)



Accessories :

- 1) PPTl off-centre reduction Ø 80/110 (supplied with the bleed T-bracket),
- 2) Air choke (supplied with the air damper kit),
- 3) PPTl tube Ø 110 L = 1 m (cut to the length required),
- 4) Bleed T-bracket Ø 110 (supplied with the off-centre reduction),
- 5) Siphon,
- 6) STAINLESS STEEL corrugated flue of grade 904 L Ø 125,
- 7) Termination (above the roof) ,
- 8) Lining ventilation
- 9) Bleed T-bracket support
- 10) Adaptor Ø 110/125,

L1max ≤ 20 m

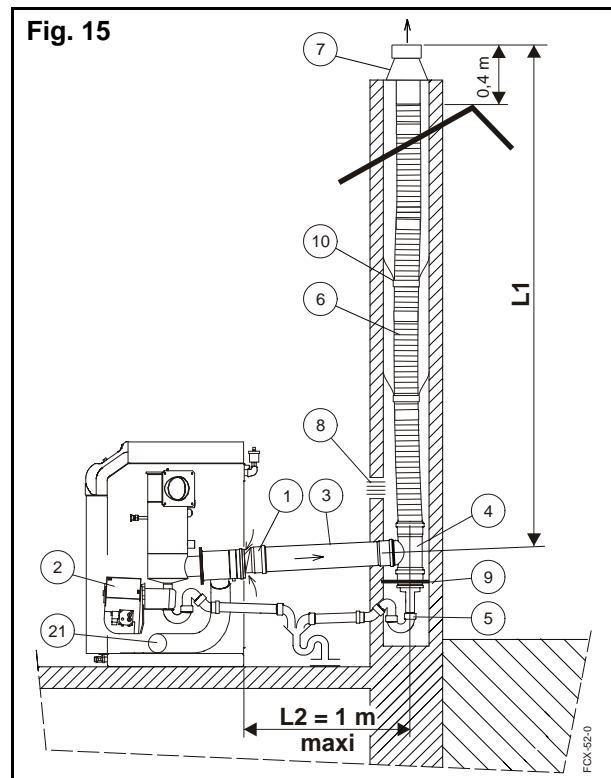
- Each 45° elbow added reduces the total length allowed by 0.5 m.

3.2.3 - Configuration with pressurized lining (B_{23p})

Definition : Lining of an existing chimney flue by a corrugated PP flue conduit of $\varnothing 110$ according to the height.

- The termination, specific to this configuration and specified in the DTA, must have its outlet **above** the roof (comply with the specification of the decree of 22 October 1969),
- **Do not use the hose for a horizontal assembly: condensate may be retained.**
- Fit a siphon (5) with a minimum 80 mm seal between the bleed T-bracket and the waste water pipe,
- The bleed T-bracket at the foot of the flue is optional when the vertical flue is short ($L1 < 5$ m),
- **Ventilation for the flue (rep. 8) and the heating system (section 2 - chapter IV - INSTALLATION) must be provided.**
- If the boiler is installed in premises that have mechanical air extraction, ensure that this does not cause negative pressure.
- The premises must never be fitted with other appliances using natural draft to operate.
- The air is sucked in by the burner directly from the room in which the boiler is fitted.
- The burner must be equipped with the air damper (item no. 2) in order to prevent heat losses due to draft.

3.2.3.1 - Installation example



Accessories :

- 1) PPtl off-centre reduction $\varnothing 80/110$ (supplied with the bleed T-bracket),
- 2) Air choke (supplied with the air damper kit),
- 3) PPtl tube $\varnothing 110$ L = 1 m (cut to the length required),
- 4) Bleed T-bracket $\varnothing 110$ (supplied with the off-centre reduction)
- 5) Siphon,
- 6) PP corrugated flue $\varnothing 110$,
- 7) Termination (above the roof)
- 8) Lining ventilation
- 9) Bleed T-bracket support
- 10) Chimney spacers

Models	Maximum permitted length L1 with bleed T-bracket with horizontal connection 1 m at conduit diameter
	Conduit $\varnothing 110$
FCX 22 C	20 m
FCX 30 C	15 m

Note:

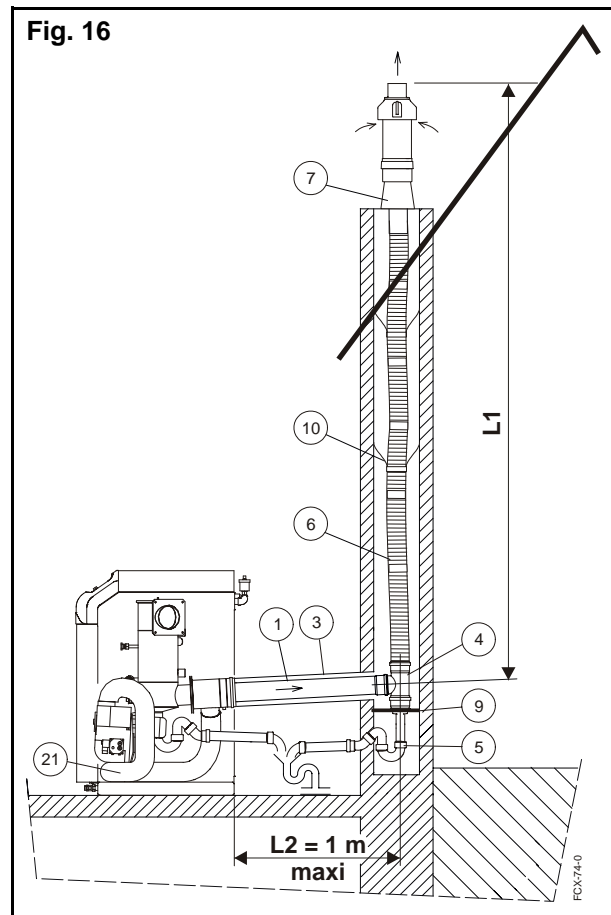
- Calculation of the diameters for the conduits to be made according to EC standard EN 13 384-1.
- Each 45° elbow added reduces the total length allowed by 0.5 m.

3.2.4 - Configuration étanche (C₃₃)

Definition: Lining of an existing chimney flue, sealed with respect to the installation room by a PP corrugated flue of Ø 80 or Ø 110 (in this case the air inlet is obtained by the chimney flue around the combustion product outlet) - (no ventilation constraints for the boiler).

- The roof termination specific to this configuration can have an outlet **below** the roof,
- **Do not use the hose for a horizontal assembly: condensate may be retained.**
- Fit a siphon (5) with a minimum 80 mm seal between the bleed T-bracket and the waste water pipe,
- The bleed T-bracket at the foot of the flue is optional when the vertical flue is short,
- The air is sucked in by the burner from outside the room through the concentric terminal (The air inlet sheath (21) is connected to the burner).
- **Refer to the CSTB technical notice for installing flues.**

3.2.4.1 - Installation example



Accessories :

- 3) PPtl tube Ø 80 L = 1 m (cut to the length required),
- 3) PVC tube Ø 125 L = 1 m (cut to the length required),
or 1+3 = concentric extension Ø 80/125
- 4) Bleed T-bracket (PPtl Ø 80 for FCX 22) -
(PPtl Ø 110 for FCX 30) (preferably to be used) or
Ø 80 with 90° elbow,
- 5) Siphon,
- 6) PP corrugated flue (Ø 80 for FCX 22) -
(Ø 110 for FCX 30)
- 7) Termination (outlet possible below the roof)
- 9) Bleed T-bracket support
- 10) Chimney spacers

Maximum length allowed: :

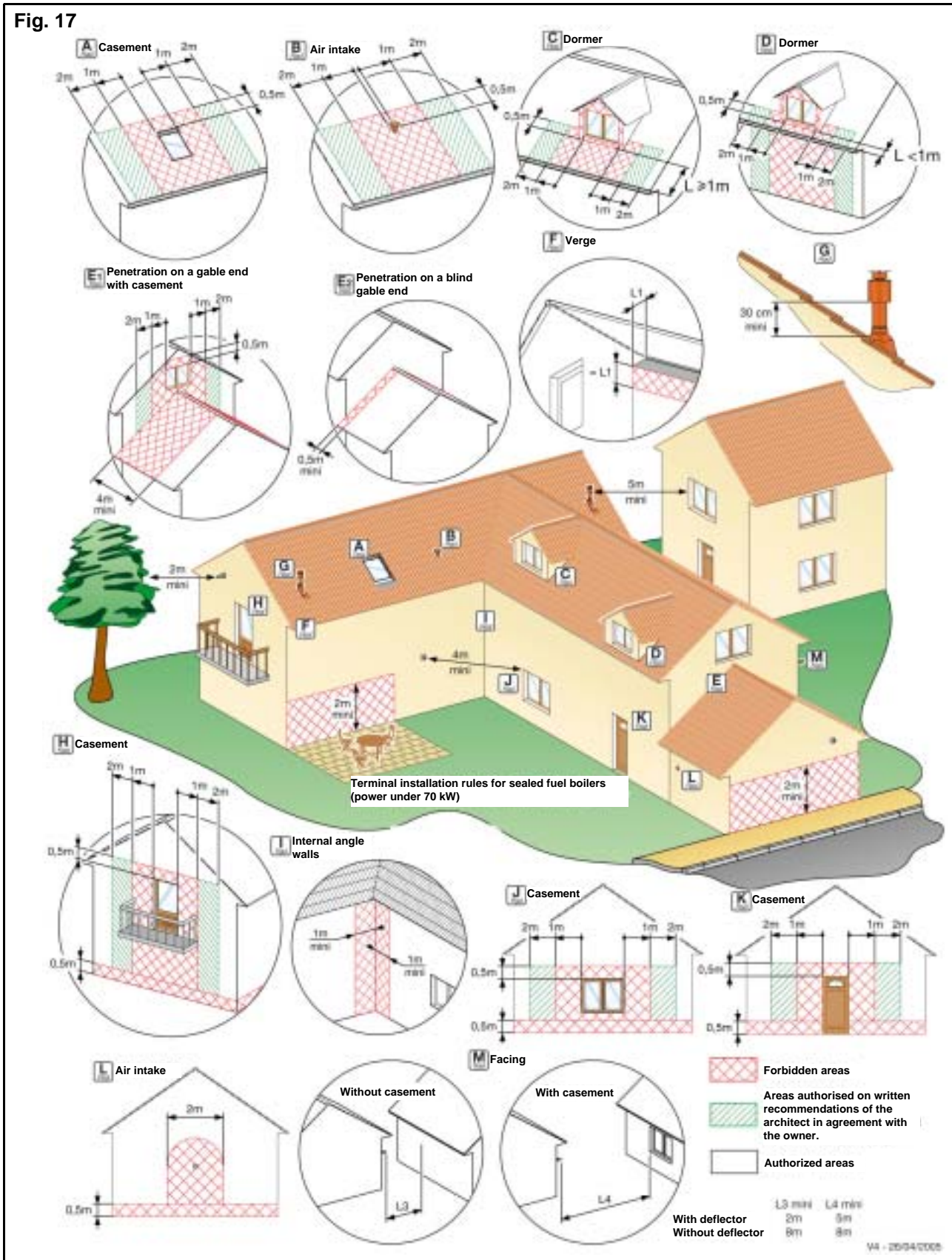
$$L_{\max} \leq L_1 + L_2 + 1 \text{ m} \leq 9 \text{ m}$$

- T-bracket added reduces the total length allowed by 1 m.

3.3 - Balanced flue outlet C₁₃/C₃₃

3.3.1 - Installation regulations for balanced flues - Comply with the CSTB technical opinion 14/02-761

Fig. 17



Drainage by balanced flue offers the advantage of making the boiler airtight in relation to the ventilation conditions in the premises on which it is installed. Drainage is possible through the wall next to the boiler or through the roof.

3.3.2 - horizontal balanced flue (C₁₃)

GEMINOX recommendations



It is possible to install the boiler with a balanced flue outlet when the wall next to the boiler is an outside wall opening on to a well-ventilated area.

Ensure that the level of sound produced by the boiler, around the balanced flue terminal, will not be a nuisance.

Do not place the flue terminal:

- at less than 2 m from a ventilation hole or an opening,
- in front of the building or in a passageway (risk of obstruction, smell of combustion products, varying amounts of steam depending on the weather conditions).
- at less than 2 m from the ground or in an area that can be accessed by a young child (risk of obstruction - not supplied).

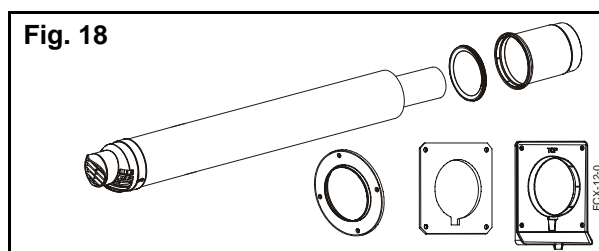
Maximum linear length of the horizontal flue :
L_{max} = 5 m

Note:

- It is possible to raise the terminal using the flue with elbow option.
- Each 45° elbow added reduces the total authorized length by 0.5 m.
- Each 90° angle added reduces the total authorized length by 1 m.

3.3.2.1 - 0,95 m straight horizontal balanced flue kit (option)

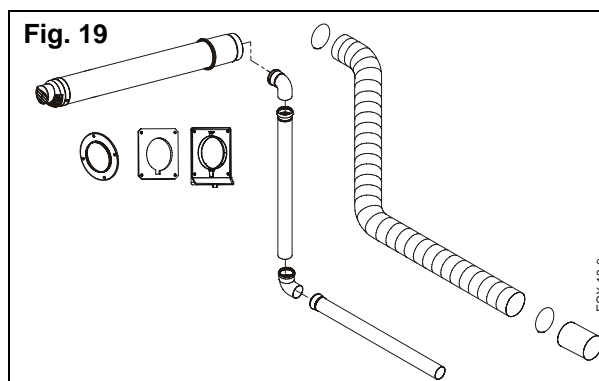
See kit assembly guide



Reference	Length (mm)
N40.28399	950

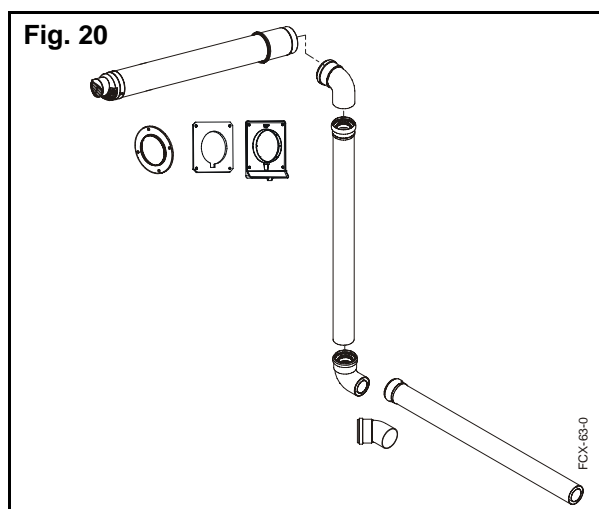
- Useful length after assembly - l = 0.77 m

3.3.2.2 - 3 m angled horizontal balanced flue (option)



Reference	V72.28414
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3.3.2.3 - 3 m angled horizontal balanced flue - straight (option)

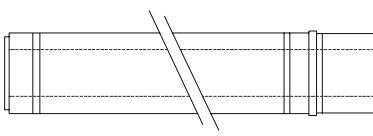


Reference	V72.31135
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**3.3.2.4 - PPt/PVC
Concentric extension (option)**

Joint fitting.

Fig. 21



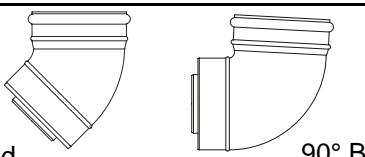
Reference	Length mm	∅ int. mm	∅ ext. mm
N40.28397	500	80	125
N40.28398	1000	80	125

(*) Useful length after assembly - L = 0,45 m or 0,95 m

**3.3.2.5 - PPt/PVC
concentric elbow (option)**

Joint fitting.

Fig. 22

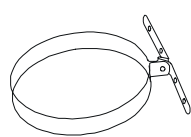


45° Bend 90° Bend

Reference	Bend type	∅ int. mm	∅ ext. mm
N40.28395	45°	80	125
N40.28396	90°	80	125

3.3.2.6 - Fastening collar (optional)

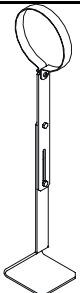
Fig. 23



Reference	Number	∅ (mm)
B00.29727	3	125

3.3.2.7 - Adjustable support

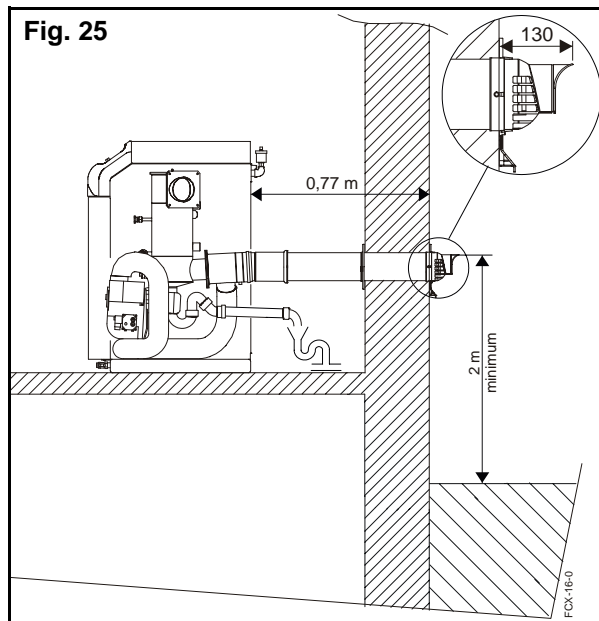
Fig. 24



Reference	V72.29939

3.3.2.8 - Installation examples

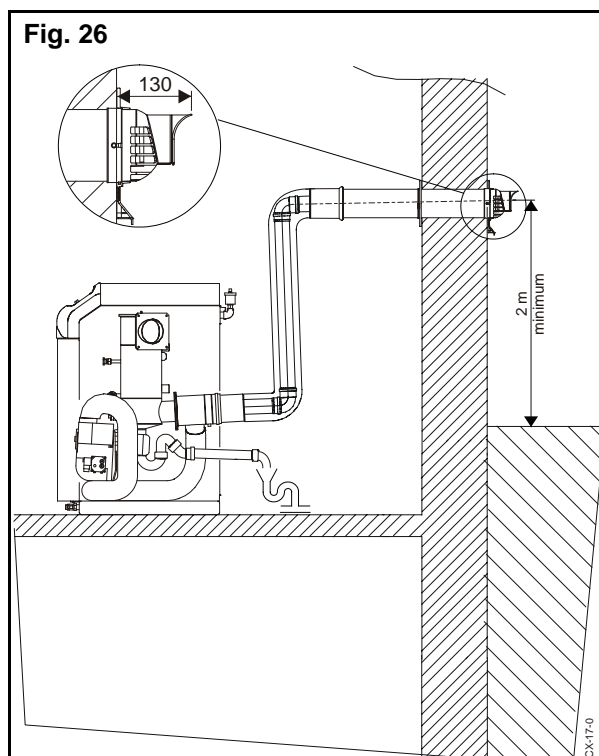
3.3.2.8.1 - Straight balanced flue



Accessory:

- 1 straight horizontal balanced flue kit - l = 0,95 m

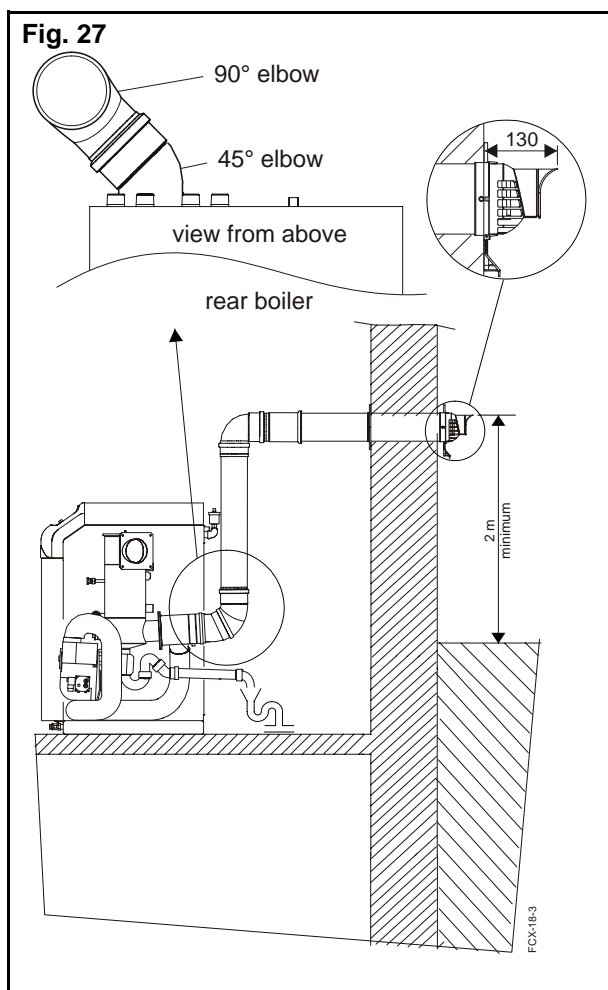
3.3.2.8.2 - Angled balanced flue with hose



Accessory:

- 1 angled horizontal balanced flue kit - l = 3 m

3.3.2.8.3 - Rigid flue with elbow



Accessory:

- 1 angled horizontal balanced flue kit - l = 3 m.

Note :

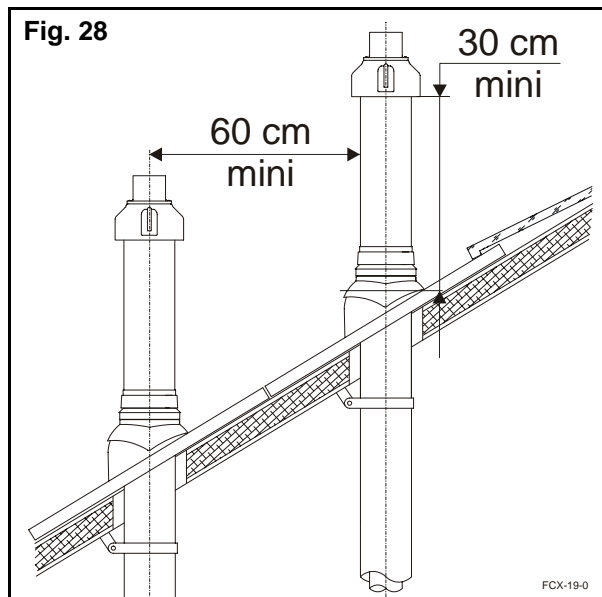
- Use either the 45° bend or the 1 m extension at boiler outlet according to the system design.

3.3.3 - Drainage by vertical balanced flue (C₃₃)

In addition to the flue installation guide-lines mentioned above, the vertical flue terminal must leave a minimal 30 cm gap between the roof level (sloping or flat) and the air intake zone.

The distance between two terminals is also regulated: it is advised to position two adjacent terminals in the same horizontal plane. If this is not applicable, the axis of the lower terminal must be at least 0.60 m clear of the closest point of the air inlet of the higher terminal

Maximum length of the vertical conduit = 9 m



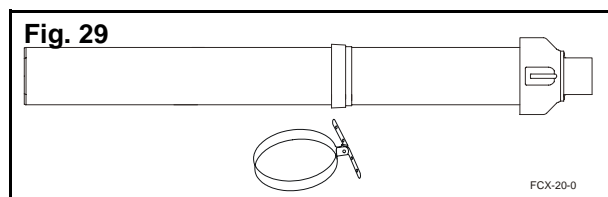
GEMINOX recommendations



It is advised to use 45° elbows rather than 90° elbows.

3.3.3.1 - Polypropylene/PE Concentric vertical terminal (option)

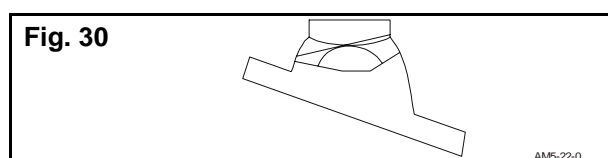
For any type of sloping roof.



Reference	Colour	Length mm	int. Ø mm	ext. Ø mm
N40.28393	Tile	1320	80	125
N40.28394	Black	1320	80	125

Useful length under sleeve tile - l = 0,75 m

3.3.3.2 - Sleeve tile with adaptable coupling (option)



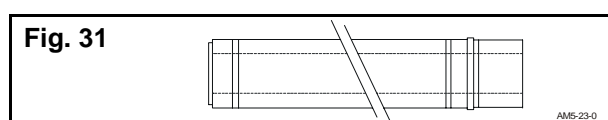
Reference	Slope	Covering type	Colour
N40.12165	25 ° - 45 °	Tile*	Tile
N40.12166	35 ° - 55 °	Tile*	Tile
N40.12167	35 ° - 55 °	Slate - Shingle	Black

*Suits any type of tile, for flat tiles < 8 mm use Slate model.

Any use of another manufacturer's accessories will automatically cancel our watertightness guarantee.

3.3.3.3 - PPTl/PVC Concentric extension (option)

Joint fitting.

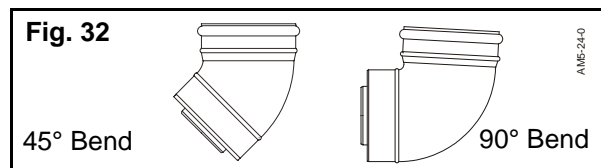


Reference	Length mm	int. Ø mm	ext. Ø mm
N40.28397	500	80	125
N40.28398	1000	80	125

Useful length after assembly - l = 0,45 m or 0,95 m

3.3.3.4 - PPTl/PVC concentric elbow (option)

Joint fitting.

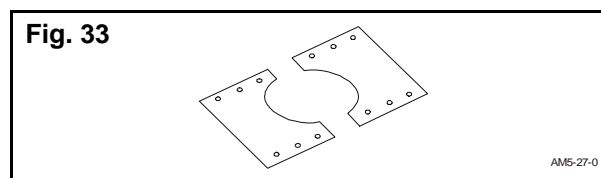


Reference	Bend type	int. Ø mm	ext. Ø mm
N40.28395	45°	80	125
N40.28396	90°	80	125

Each 45° elbow added reduces the total authorized length by 0.5 m.

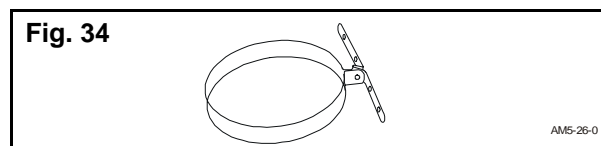
Each 90° elbow added reduces the total authorized length by 1 m.

3.3.3.5 - Polypropylene roof plate (option)



Reference	Colour
A90.12172	black

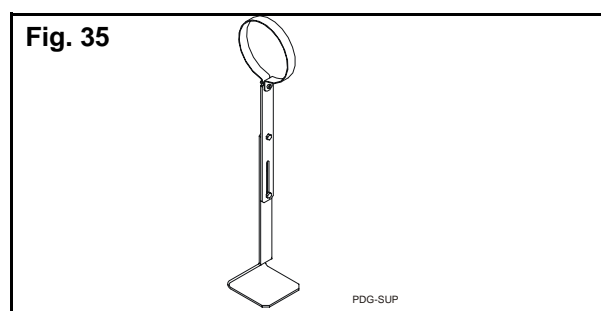
3.3.3.6 - Fastening collar (optional)



Reference	Number	Ø mm
B00.29727	3	125

These collars are essential to fix the vertically positioned extensions so that the boiler outlet does not bear the weight of the conduits.

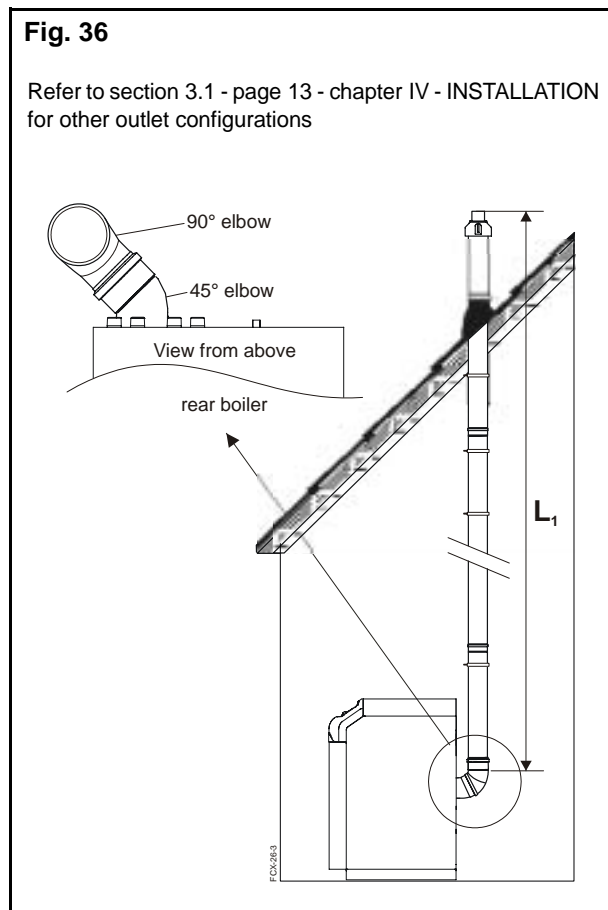
3.3.3.7 - Adjustable support



Reference	V72.29939

3.3.3.8 - Examples of installations with a 45° bend and a 90° bend at the boiler outlet

3.3.3.8.1 - Straight configuration



Accessories :

- 1 45° concentric elbow Ø 80/125
- 1 90° concentric elbow Ø 80/125,
- concentric extensions Ø 80/125,
- 1 concentric vertical terminal Ø 80/125,
- 1 vertical terminal fastening collar (supplied with the vertical terminal),
- 1 sleeve tile adaptable according to the type of roof covering and the roof slope,
- 1 roof plate,
- 3 Ø 125 fastening collars,

$$L_{max} = L1 + 1 \text{ m} + 0,5 \leq 9 \text{ m}$$

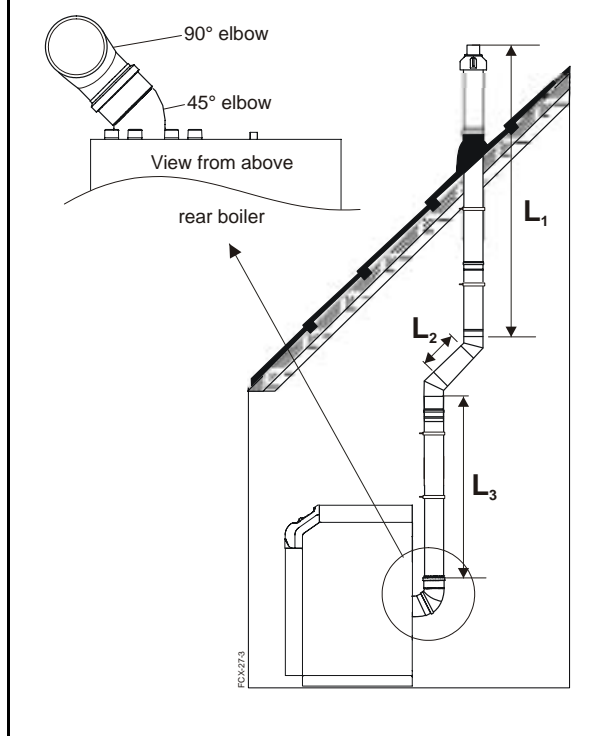
Note:

- Each 45° elbow added reduces the maximum authorised length by 0.5 m.
- Each 90° elbow added reduces the maximum authorised length by 1m.

3.3.3.8.2 - Straight configuration

Fig. 37

Refer to section 3.1 - page 13 - chapter IV - INSTALLATION for other outlet configurations



Accessoires :

- 1 45° concentric elbow Ø 80/125
- 1 90° concentric elbow Ø 80/125,
- 3 concentric extensions Ø 80/125,
- 2 45° concentric elbow Ø 80/125,
- 1 concentric vertical terminal Ø 80/125,
- 1 vertical terminal fastening collar (supplied with the vertical terminal),
- 1 sleeve tile adaptable according to the type of roof covering and the roof slope,
- 1 roof plate,
- 3 Ø 125 fastening collars

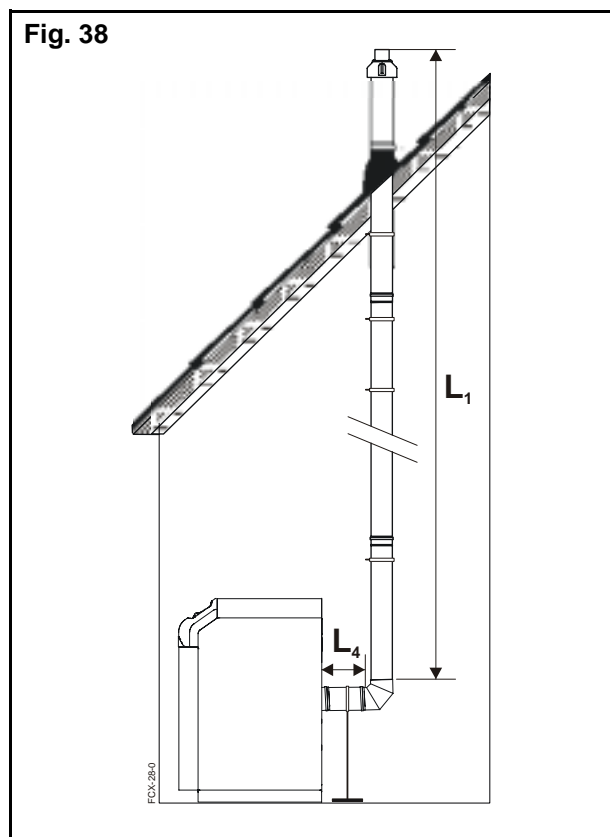
$$L_{max} = L1 + 0,5 \text{ m} + L2 + 0,5 \text{ m} + L3 + 1 \text{ m} + 0,5 \leq 9 \text{ m}$$

Note:

- Each 45° elbow added reduces the maximum authorised length by 0.5 m.
- Each 90° elbow added reduces the maximum authorised length by 1m.

3.3.3.9 - Examples of installation with a boiler outlet extension

3.3.3.9.1 - Straight configuration



Accessories:

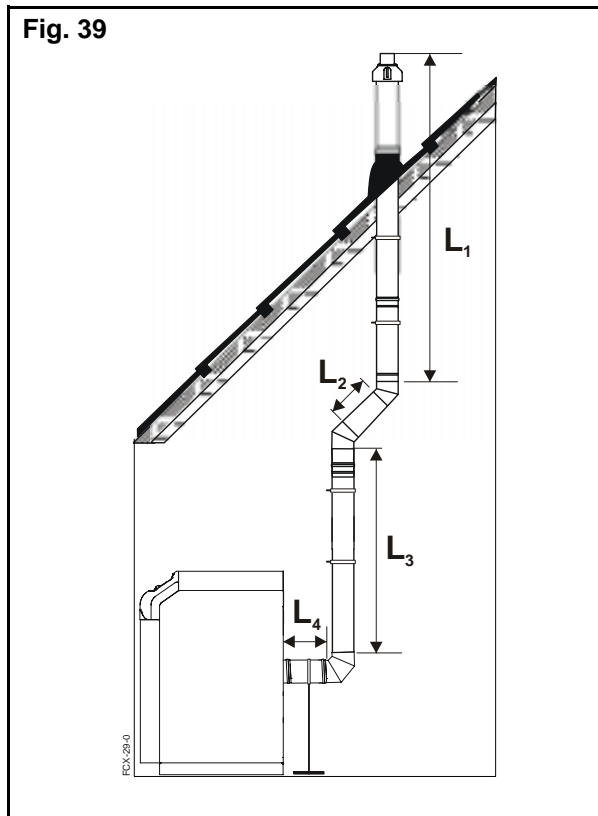
- 1 90° concentric elbow Ø 80/125
- concentric extensions Ø 80/125,
- 1 concentric vertical terminal Ø 80/125,
- 1 vertical terminal fastening collar (supplied with the vertical terminal),
- 1 sleeve tile adaptable according to the type of roof covering and the roof slope,
- 1 roof plate,
- 3 Ø 125 fastening collars,
- 1 adjustable support,

$$L_{max} = L_1 + 1 \text{ m} + L_4 \leq 9 \text{ m}$$

Note:

- Each 45° elbow added reduces the maximum authorised length by 0.5 m.
- Each 90° elbow added reduces the maximum authorised length by 1m.

3.3.3.9.2 - Configuration with elbows



Accessories:

- 1 90° concentric elbow Ø 80/125,
- 3 concentric extensions Ø 80/125,
- 2 45° concentric elbows Ø 80/125,
- 1 concentric vertical terminal Ø 80/125,
- 1 vertical terminal fastening collar (supplied with the vertical terminal),
- 1 sleeve tile adaptable according to roof covering type and slope,
- 1 roof plate.
- 3 Ø 125 fastening collars,
- 1 adjustable support

$$L_{max} = L_1 + 0,5 \text{ m} + L_2 + 0,5 \text{ m} + L_3 + 1 \text{ m} + L_4 \leq 9 \text{ m}$$

Note:

- Each 45° elbow added reduces the maximum authorised length by 0.5 m.
- Each 90° elbow added reduces the maximum authorised length by 1m.

4 - CONDENSATE DRAINAGE

When connecting the condensate drain to the waste water drain, it is essential:

- to maintain a downwards slope towards the drain,



The condensate drainage tubes must either be buried or pass through a heated area to avoid any obstructions caused by freezing.

The condensate drainage siphon should be checked regularly.

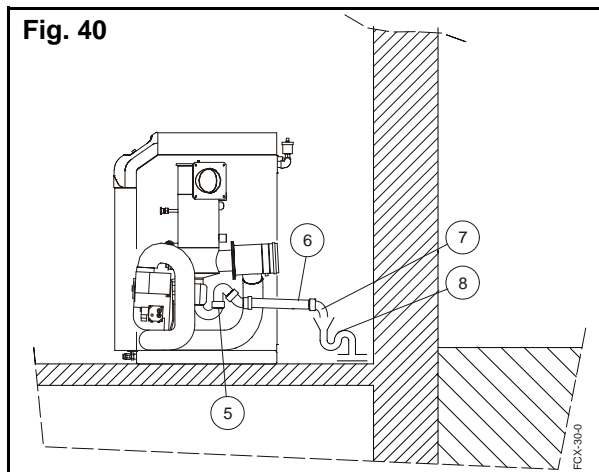


Before activating the boiler for the first time, remove the condenser cover and fill the siphon (rep 10) (fig. 2 - page 7 - chapter II - TECHNICAL SPECIFICATIONS).

Note:

- The maximum production of condensates is 1.5 l/h (with underfloor heating low temperature load 100 % load) which amounts to an average daily production of 10 litres of condensates for a 15 kW installation - This low flow rate does not require any specific treatment (extensive dilution in the waste water). Nevertheless, if local regulations require waste to have a neutral pH, a con-

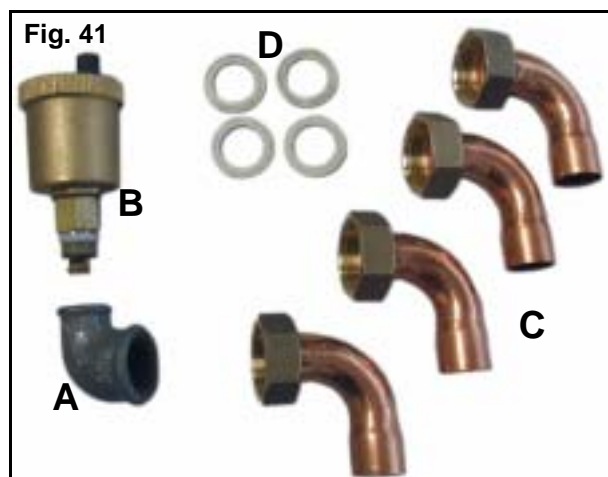
densate treatment tank must be installed between the siphon and the waste water drain.



Accessories:

- Siphon (item no. 5)
- Tube \varnothing 40 (item no. 6)
- Elbow \varnothing 40 (item no. 7)
- Waste water drain (item no. 8)

5 - ASSEMBLY OF ACCESSORIES DELIVERED WITH THE BOILER

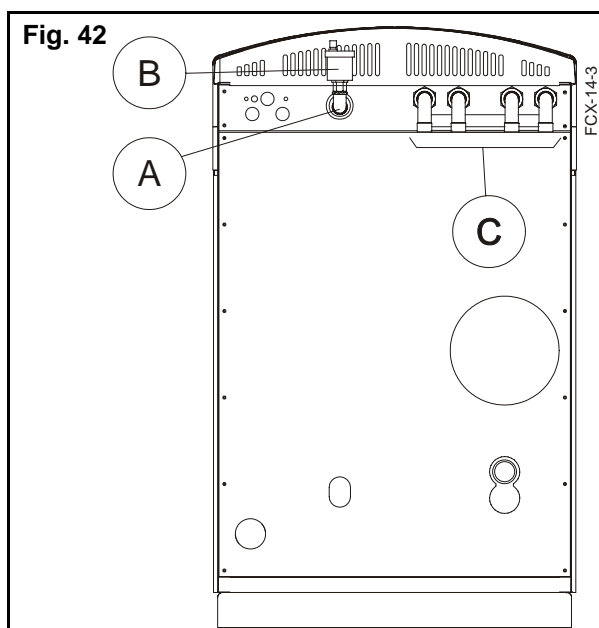


5.1 - Bleed + bend

- Install the bend (A) on the weld for bleed connection - 3/4" section, boiler side,
- Install the bleed (B) on the 3/8" section of the bend (A).

5.2 - 1" - \varnothing 22 bends + seal

- Fit the 4 bends (C) and the related seals (D) on the boiler outlet/return tubes.



6 - FCX/BS HYDRAULIC CONNECTION KIT (OPTION)

The FCX/BS hydraulic connection kit is used for the hydraulic connection of the boiler to the domestic hot water production system of the BS type) (section 7.4 - page 28 et section 7.6 - page 30 - chapter IV - INSTALLATION).

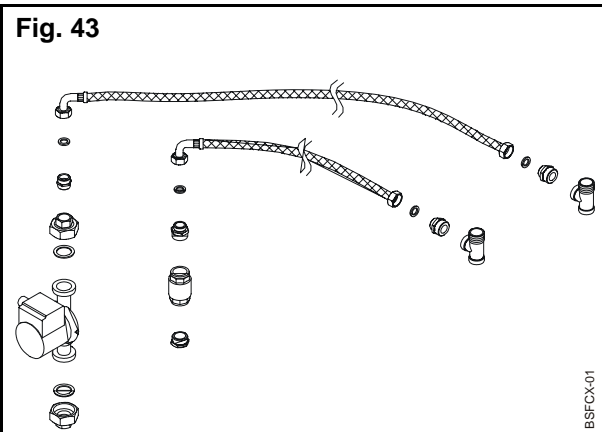
Note:

- Installing this kit is mandatory when connecting to a BS.

Refer to the kit assembly instructions.



If the chosen domestic hot water production system is the FCX/ MODULE, - refer to its technical data sheet.



7 - HYDRAULIC CONNECTION

7.1 - GEMINOX recommendations



When the boiler is assembled on an old installation, make sure that the installation is rinsed with fresh water, so as to clear any sediment stagnating in areas where the flow is slow.

To prevent circulation noises in an installation featuring temperature controls, the following is recommended:

- Do not fit all the radiators with temperature controls,
- Fit a differential valve,

In accordance with the installation standards, a filling system must be fitted on the installation.

Never place an isolation valve between the safety control box and the hot water tank (FCX + domestic hot water production system) and never between the boiler shell and the expansion vessel.

The boiler should be positioned so that the connection of the combustion products outlet system is possible with respect to the heating outlet/return pipes (section 3.1 - page 13 - chapter IV - INSTALLATION).

7.2 - Accessories to connect, install or adjust

- Isolation valves :

It is advisable to place isolation valves on the installation outlet and return so that maintenance can be performed on the boiler without draining the installation.

- For the FCX boiler + domestic hot water production system - See the tank technical instructions.

- Circulating pump :

Set the circulating pump to the speed that is appropriate to the installation's flow rate and pressure drop (circulation noise reduction, power consumption optimisation).

- Safety valve:

This must be connected to the used water drain via a siphon funnel.

- Expansion vessel

If the installation capacity is over 62 litres, an extra expansion vessel to the boiler expansion vessel will be added.

The correct operation of the boiler requires an installation pressure of at least 1 bar.

If the installation is a renovation and uses an open vessel, this must be removed and replaced with a closed vessel (the boiler is equipped with one originally) to seal the circuit.

The vessel should be able to support an expansion of 6% of the total water capacity of the heating circuits. But it is important to note, in order to guarantee this expansion, that the useful capacity of a vessel does not equal its actual capacity.

Example:

- Installation: 100 litres
- Domestic hot water tank: 5 litres
- Boiler: 16 litres
- Total water capacity: 121 litres

Conditions: Using a vessel pre-loaded to 1 bar (under floor boiler = ground floor heating + 1 floor), heating safety valve calibrated at 3 bars, installation filled cold at 1 bar.

- Vessel efficiency calculation (R):

$$R = \frac{(\text{Safety Pressure} - \text{Filling pressure})}{\text{Safety Pressure}}$$

$$R = \frac{(3 + 1) - (1 + 1)}{(3 + 1)} = 0,5$$

+ 1) = the transformation of relative pressures into absolute pressures

- Calculation of the useful capacity of the vessel (Cu):

$$Cu = \text{total volume} \times \text{expansion}$$

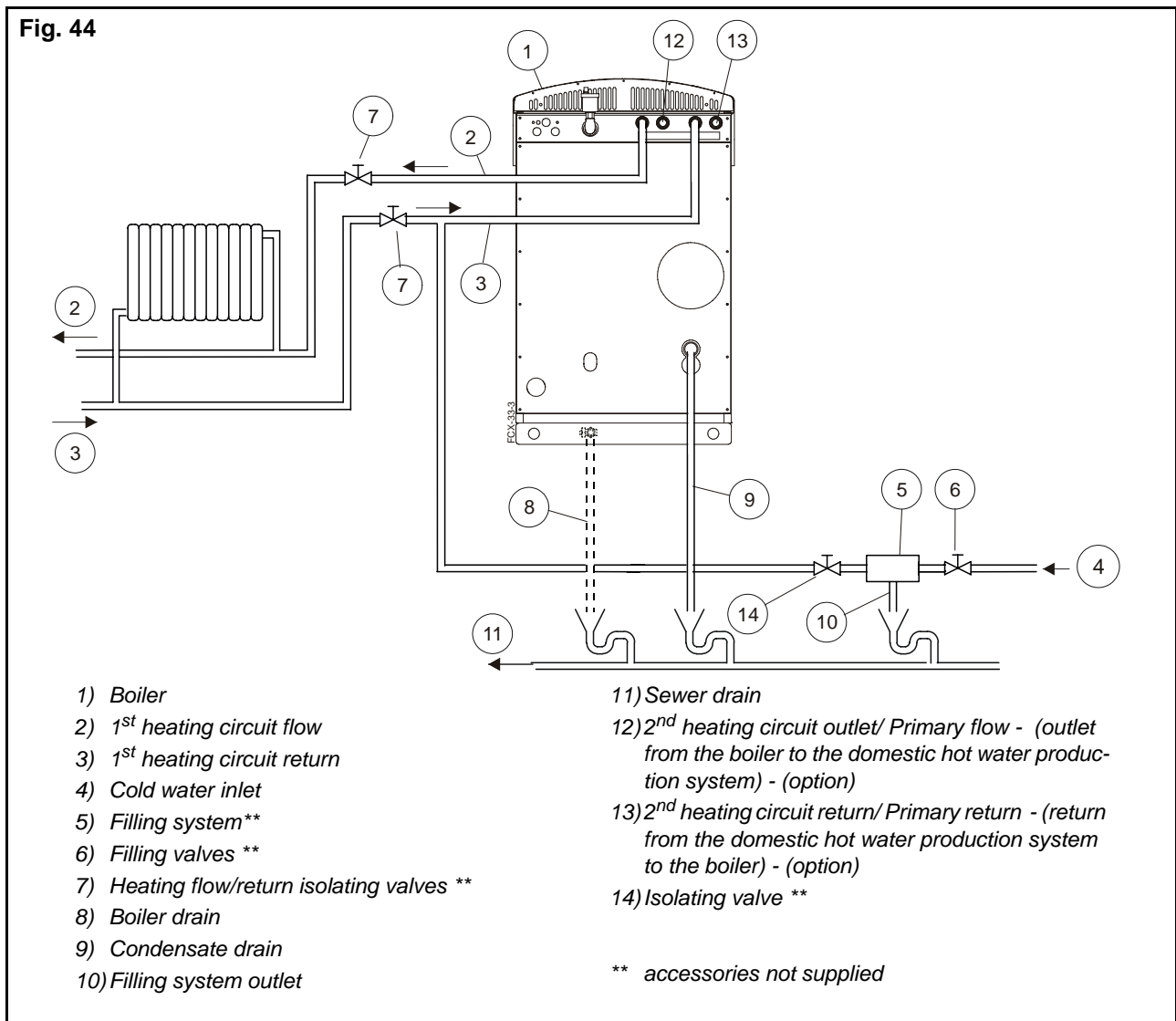
$$Cu = 121 \times 0,06 = 7,26\text{dm}^3$$

- Calculation of the real capacity of the vessel (Cr):

$$Cr = \frac{Cu}{R}$$

$$Cr = \frac{7,26}{0,5} = 14,5\text{litres}$$

7.3 - Hydraulic connection for models FCX to a single heating circuit

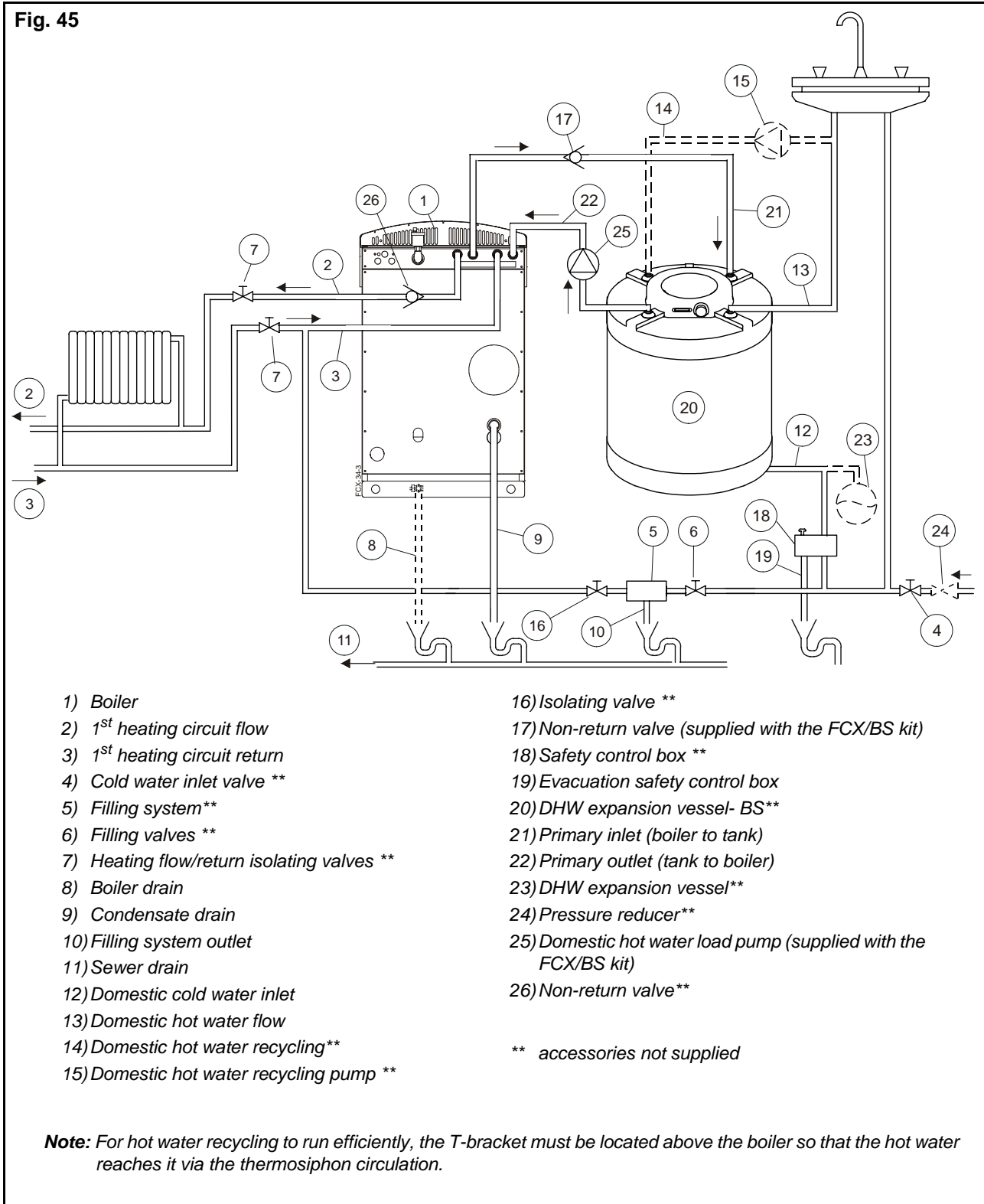


7.4 - Hydraulic connection for models FCX+ DHW production system of type BS to a single heating circuit

The domestic hot water production system used may be:

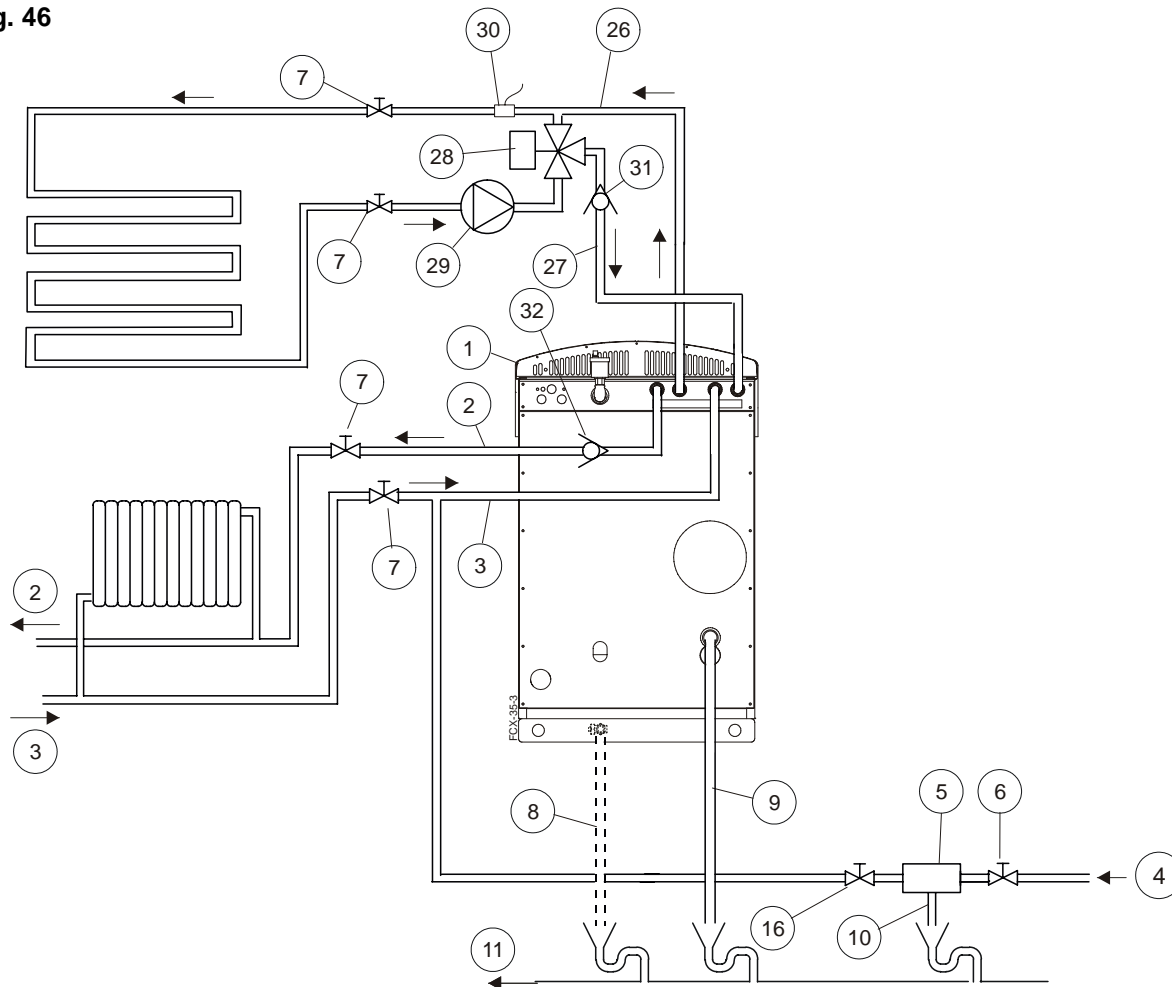
- of the FCX MODULE type; in this case, refer to the MODULE instructions.

- of the BS type; in this case, the BS/FCX connection kit supplied as an option must be used (section 6 - page 26 - chapter IV - INSTALLATION).



7.5 - Hydraulic connection for models FCX to a double heating circuit

Fig. 46



- | | |
|--|---|
| 1) Boiler | 27) 2 nd heating circuit return |
| 2) 1 st heating circuit flow | 28) Mixing valve motorised** |
| 3) 1 st heating circuit return | 29) 2 nd heating circulating pump** |
| 4) Cold water inlet valve ** | 30) Heating flow sensor for 2 nd heating** |
| 5) Filling system** | 31) Non-return valve of the valve/pump unit ** |
| 6) Filling valves ** | 32) Non-return valve** |
| 7) Heating flow/return isolating valves ** | |
| 8) Boiler drain | |
| 9) Condensate drain | |
| 10) Filling system outlet | |
| 11) Sewer drain | |
| 16) Isolating valve ** | |
| 26) 2 nd heating circuit outlet | |

** accessories not supplied

7.6 - Hydraulic connection for models FCX+ DHW production system of type BS to a double heating circuit

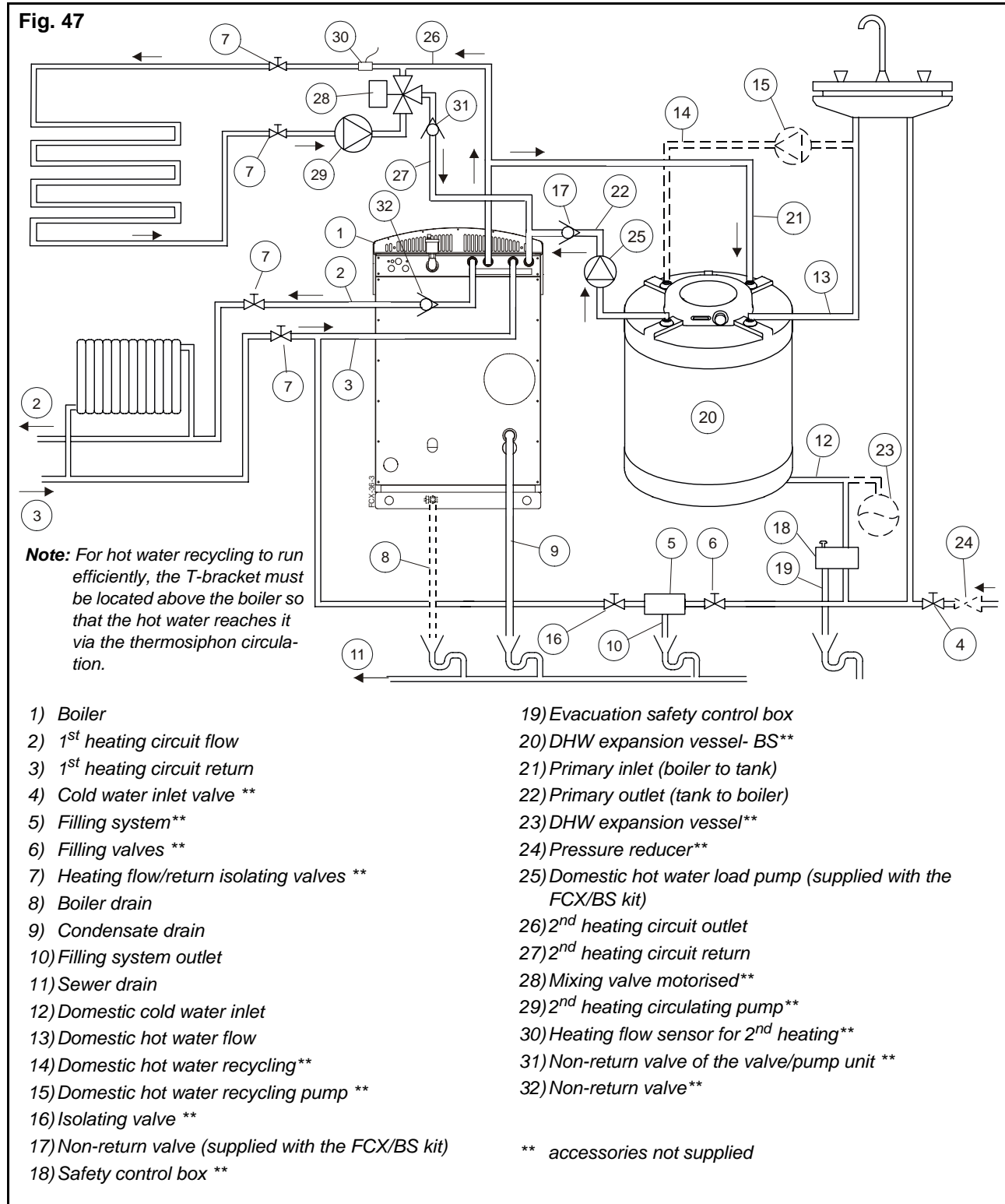
This type of system makes it necessary to use:

- a BS/FCX connection kit (section 6 - page 26 - chapter IV - INSTALLATION) delivered as an option.

Refer to the kit assembly instructions.

Note :

- To create this type of system with an FCX MODULE refer to the MODULE instructions.



8 - OIL CONNECTION

A double tube is used for the fuel connection to the burner. It is possible to make a monotube connection. - *Please refer to the technical instructions supplied with the burner.*

Note :

- Fitting an oil filter to the burner oil inlet is recommended.

9 - ELECTRICAL CONNECTION

- The electrical connection and all the equipment used to make this connection must be in conformity with the codes of practice in force, particularly with French standard NF C 15-100,
- the premises must be suitable in terms of boiler protection (IPX0D),

9.1 - Connection to the mains

The boiler is connected to the network at the connection terminal block (4) located behind the control panel (1) (fig. 48 - page 31).

- power supply: 230 V - 50 Hz (single phase),
- earth connection obligatory,
- the electrical supply must contain a cut-out switch (preferably bipolar), with a circuit-breaker or 6A fuse.
- respect the Live-Neutral polarities.

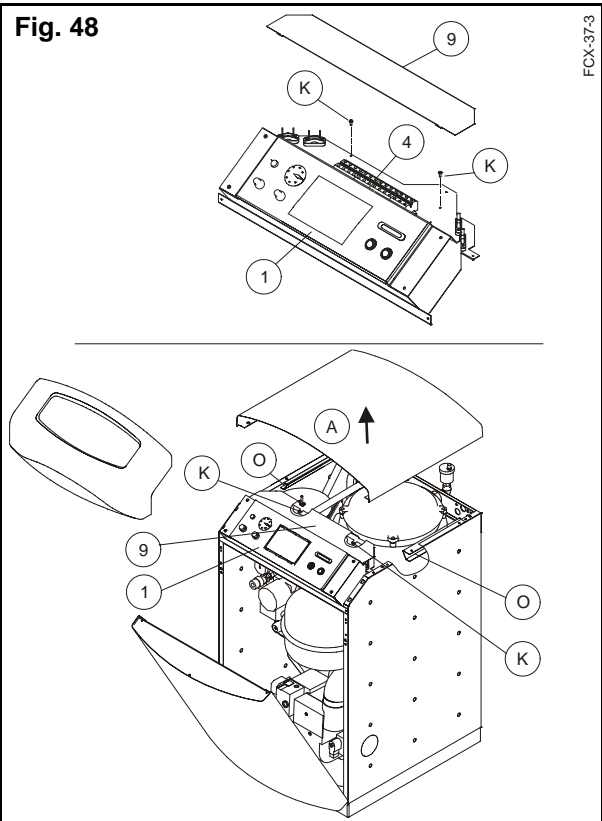
9.2 - Connection to the terminal box

The electric connection of the boiler is carried out in the connection terminal box (item no. 4) located behind the control panel.

- remove the top of the casing (item no. A),
- unscrew the 2 screws (item no. K) of the protection plate (item no. 9),
- remove the terminal box protection plate (item no. 9),
- make the electrical connection to the terminal box (item no. 4),
- be sure to pass the electrical cables and sensor cables through the channels provided for this purpose (item no. O).



The sensor cables must not pass through the same duct as the 230V cables.

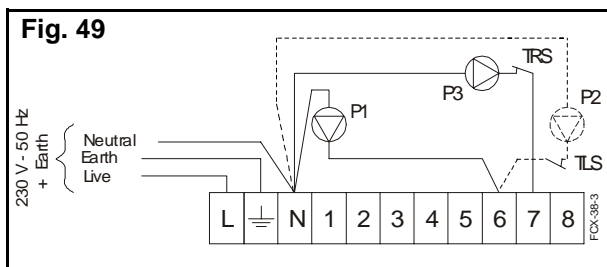


! The different electrical connections vary depending on whether the installation contains a regulator or not.

Remarks:

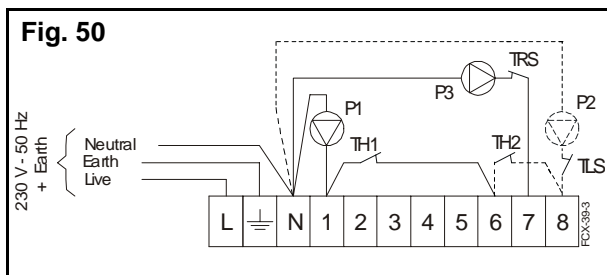
- Digital regulation is the best method of regulation.
- A 2nd heating circuit can be connected in all the cases below (see dotted lines).
- With underfloor heating, a safety thermostat (TLS) is to be installed in the flow of the 2nd circuit output.
- All the thermostats are represented on heat request. The various components external to the appliance (valves, circulating pumps, etc.) will be connected to the earth on the boiler terminal box.

9.2.1 - No regulator



- P1 1st circuit heating pump
- P2 2nd circuit heating pump
- TRS Domestic hot water temperature control thermostat
- P3 Domestic hot water pump
- TLS Safety thermostat if the 2nd circuit is for underfloor heating

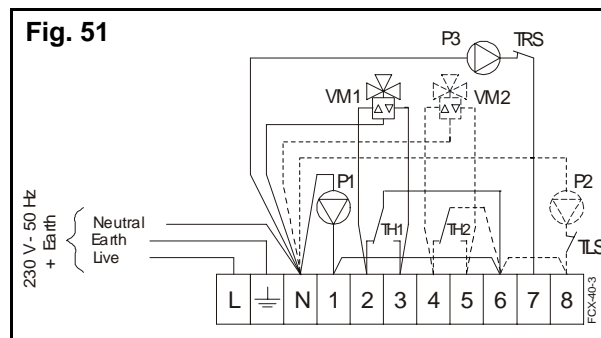
9.2.2 - Room thermostat (acting on the heating pump)



- P1 1st circuit heating pump
- P2 2nd circuit heating pump
- TH1 1st circuit room thermostat
- TH2 2nd circuit room thermostat
- TRS Domestic hot water temperature control thermostat
- P3 Domestic hot water pump
- TLS Safety thermostat if 2nd circuit is for underfloor heating

The room thermostat, installed in the domestic area, automatically controls the start-up or shutdown of the heating circulator in the installation.

9.2.3 - Room thermostat (acting on the mixer valve)

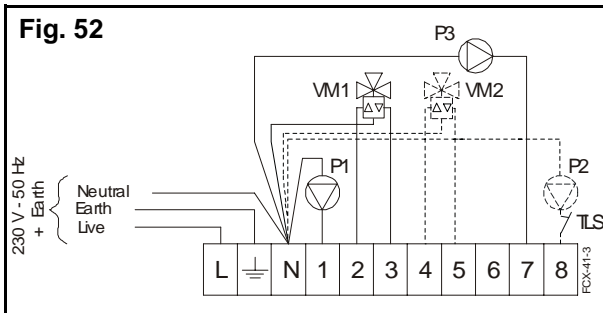


- P1 1st circuit heating pump
- P2 2nd circuit heating pump
- TH1 1st circuit room thermostat
- TH2 2nd circuit room thermostat
- VM1 1st circuit motorised mixer valve
- VM2 2nd circuit motorised mixer valve
- TRS Domestic hot water control thermostat
- P3 Domestic hot water pump
- TLS Safety thermostat if the 2nd circuit is for underfloor heating

The room thermostat, installed in the domestic area, controls the room temperature of the room in which it is located in accordance with the chosen program. It automatically pilots the electrical motor (20 min/90°) of the mixer valve in the installation.

It is possible to accumulate the action on the mixing valve, VM1, and the action on the pump, P2 (or vice versa).

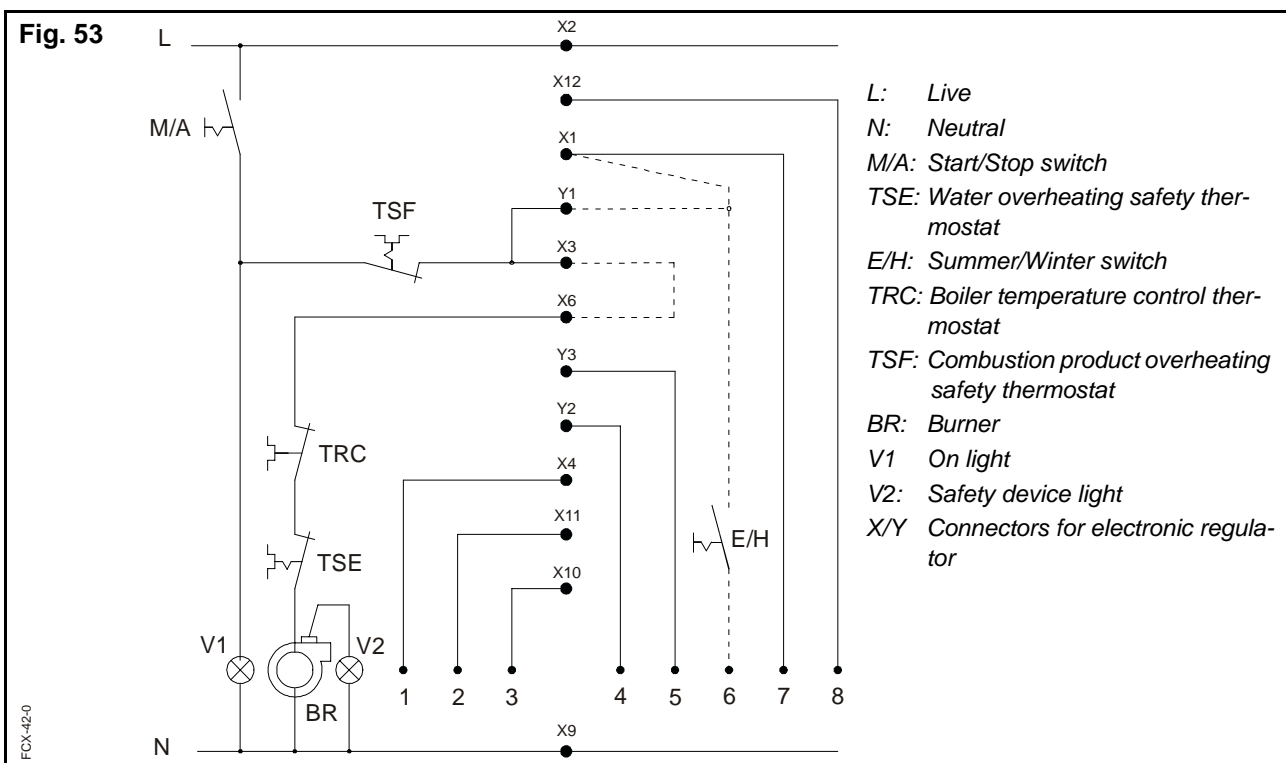
9.2.4 - Analogue and digital controls (depending on the climatic conditions)



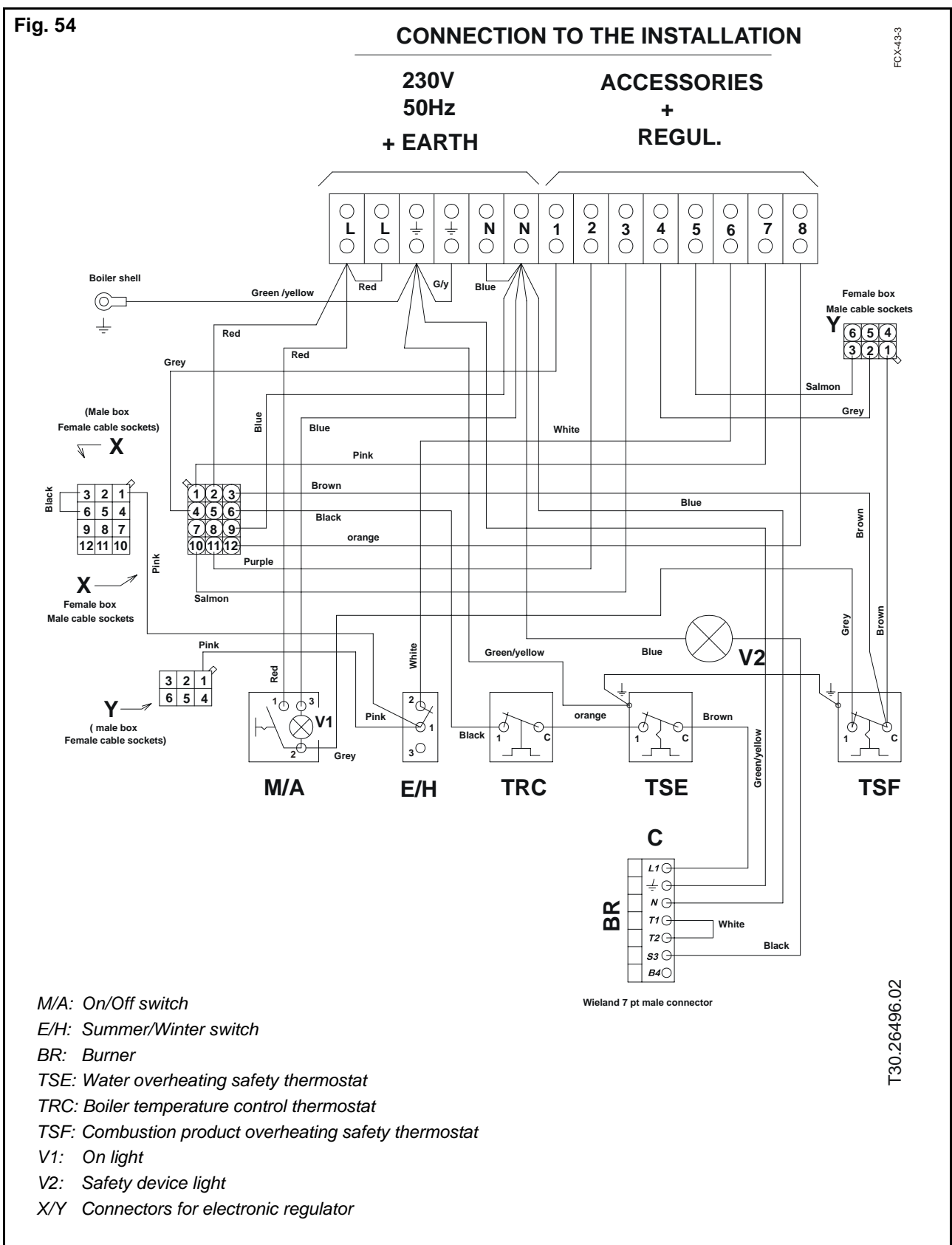
- P1* 1st circuit heating pump
- P2* 2nd circuit heating pump
- VM1* 1st circuit motorised mixer valve (motor 4min/90°)
- VM2* 2nd circuit mixer valve (motor 4 min/90°)
- P3* Domestic hot water pump (domestic hot water sensor obligatory)
- TLS* Safety thermostat if the 2nd circuit is for underfloor heating

The analogue and digital controls allow all heating installations to be controlled in relation to climatic conditions, through automatic action on the installation's mixer valve - See the control instructions.

9.3 - Principle schematic



9.4 - Wiring schematic



V - COMMISSIONING

1 - PROTECTION OF THE INSTALLATION



Geminox insists the use of the following heating system water conditioning products:

- BIONIBAL corrosion inhibitor (or equivalent products),
- BIONIBAGEL antifreeze and corrosion inhibitor (or equivalent products).

1.1 - Bionibal

BIONIBAL is a biocide, traceable corrosion inhibitor specially designed to protect multi-metal heating circuits.

Through its efficient means of acting against all types of corrosion and all types of bacteria, BIONIBAL:

- Prevents the formation of rust and metallic sludge,
- Prevents the formation of algae and bacteria sludge,
- Also suitable for under-floor heating systems,
- Prevents hydrogen build up,
- Contains an internal marker so that doses can be easily controlled.

BIONIBAL DOSAGE:

- Without under-floor heating: or connection using reinforced polyethylene type pipes:
1% (0.5 l of BIONIBAL for 50 l of water).
- With under-floor heating or radiators connected in reinforced polyethylene type pipes:
2% (1 l of BIONIBAL for 50 l of water).

1.2 - Bionibagel

BIONIBAGEL is the antifreeze version of BIONIBAL.

Antifreeze, with glycol monopropylene base, corrosion inhibitor, biocide, traceable.

In addition to the characteristics of BIONIBAL, it protects the installation from frost for residences that are not inhabited all the year round or that are in the coldest regions.

BIONIBAGEL DOSAGE:

The number of litres of BIONIBAGEL to put in the circuit depends on the volume of your installation and the extreme temperature of your region.

Protection limit temperature	Installation capacity (litres)			
	50	100	150	200
- 5°C	7	15	22	30
- 10°C	12	25	37	50
- 15°C	17	35	50	70
- 20°C	20	40	60	80
- 30°C	22	45	67	90

1.3 - Products equivalent to Bionibal or Bionibagel

Scrupulously refer to the recommended use and implementation of the manufacturer's products.

Important warning



Bionibal or Bionibagel must only be put in a clean installation that has been checked. It is therefore imperative to fill the entire system one or more times with clean water as required. In some cases, the system may need washing by a suitable product:

Example:

- In a new installation: To detect any leaks and eliminate any traces of welding, weld solder or other residues.
- On an old installation: To eliminate any trace of sludge and other products in the radiators, under-floor heating system and the boiler.



Only add antifreeze when the boiler is empty.

If the heating circuit is treated with antifreeze, the hot water circuit must be drained during periods when there is a risk of freezing (FCX + MODULE FCX).

2 - FILLING THE SYSTEM WITH WATER

- Filling the system:
 - Open the heating output/return valves if necessary,
 - Open the cold water inlet valve,
 - Fill the installation slowly (to aid degassing) using the disconnecter filling valves.
 - Close the filling valves again,
 - Check that it is watertight,
 - Drain the entire installation, including the radiators. Continue to fill until a pressure of 1,5 bar is obtained.
- To FCX with DHW hot water tank:
 - When the boiler is under pressure and the hot water circulating pump is supplied, the water tank coil will be purged when the circulating pump is started.
 - Filling the tank:
 - Fill the tank with water using the safety control box (rep. 18, fig. 45 - page 28 et fig. 47 - page 30 - chapter IV - INSTALLATION) of the system, and making sure a hot water tap is open,
 - When the tank is filled, check that the tank access door is tightened,

3 - OIL INLET



The burner must be off when filling the tank with oil. Only start it up after a minimum time of one hour to prevent any

of the various filters from clogging owing to the suction of deposits disturbed in the tank when it is filled.

4 - PRE-COMMISSIONING CHECK

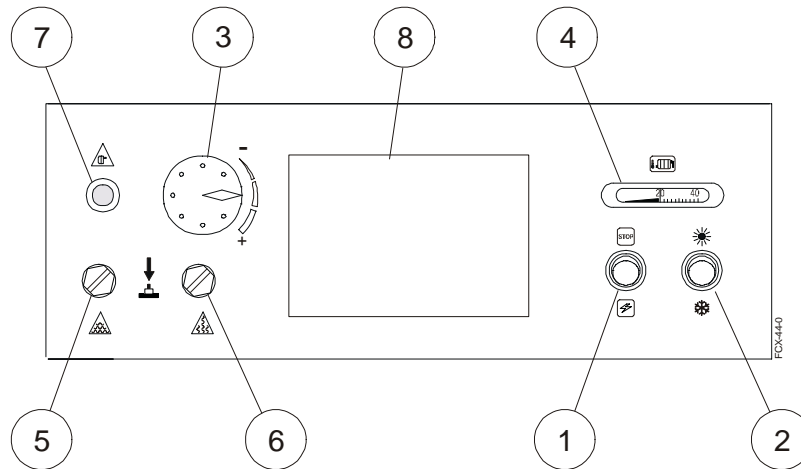
- Check that the boiler is filled with water and under pressure (1,5 bar) and that there are no leaks,
- Check that the electrical connection of the boiler is correct: 230 V, 50 Hz, connection to earth in conformity, polarities respected,
- Check that the combustion product drainage flue is correctly assembled, airtight and free of obstructions.
- Check that the ventilation units in the heating system are free from any obstructions and that they conform to the necessary regulations.
- Check that the condensate siphon of the flues is filled with water (filled via the condenser cover) (fig. 63, section 2 - page 41 - chapter VI - MAINTENANCE),
- Check that the condensate outlet is connected properly and that there are no leaks.

5 - USER INFORMATION

It is up to the installer to inform the user as to how to use the appliance. In particular, the user must be informed about the safety devices and their use and about the need for regular maintenance by a qualified professional.

6 - COMMISSIONING

Fig. 55



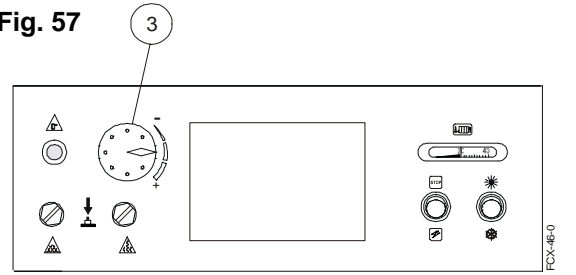
- | | |
|--|---|
| <p>1) Start/Stop Switch</p> <p>2) Summer/Winter Switch
 <i>pump control outside (or inside if integrated accessories kit) the boiler</i></p> <p>3) Boiler temperature control thermostat:
 <i>Boiler temperature adjusted between 60 °C and 80 °C</i></p> <p>4) Heating flow temperature thermometer (circuit 1)</p> | <p>5) Water overheating safety thermostat:
 <i>Burner cut-out</i></p> <p>6) Combustion product overheating safety thermostat
 <i>Boiler shutdown</i></p> <p>7) Burner safety device light</p> <p>8) Slot for additional control</p> |
|--|---|

6.1 - Commissioning procedure - without regulator

- Open the heating output/return valves and the fuel inlet,
- Activate the electrical circuit-breaker outside the boiler,
- Turn the On/Off switch to On (item no. 1) -
 - Nota : When burner commissioned the delay can be 1 to 2 minutes because burner with pre-heater),

- Set the boiler temperature thermostat (item no. 3)
- To minimum mid-season and maximum in the winter (adjust in accordance with the installation).

Fig. 57



- For commissioning with the winter setting:
 - Press the Summer/Winter switch (item no. 2) - Winter position - heating pump started up.
 - adjust the mixing valve (rep.5 , fig. 2) so that the desired radiator output temperature is obtained (indication on the thermometer - item no. 4).

Fig. 56

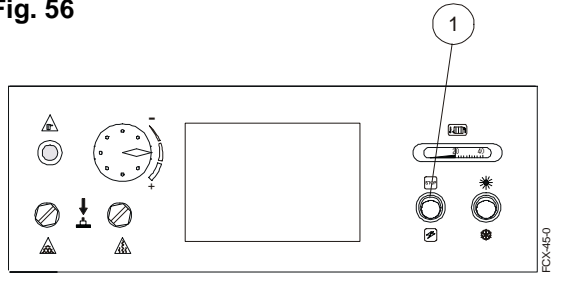
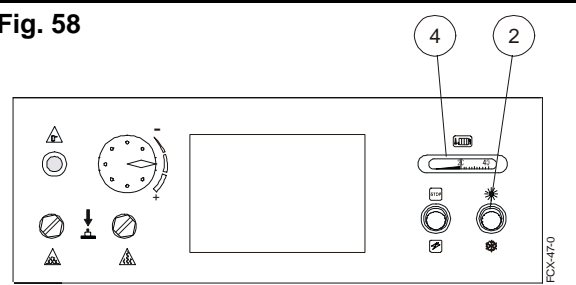
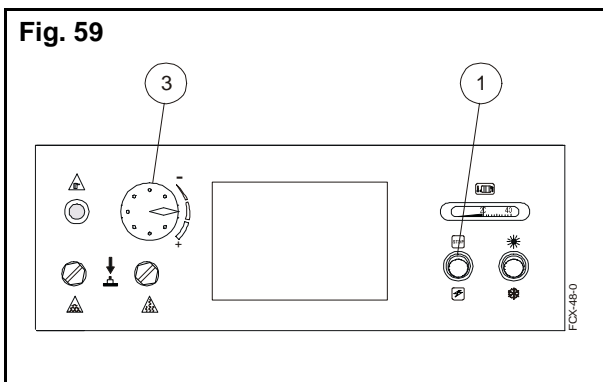


Fig. 58



- For commissioning with the summer setting:
 - For the FCX models:
 - . Stop the boiler using the Stop/Start switch (item no. 1),
 - For the FCX + domestic hot water production tank models or other type:
 - . press the Summer/Winter switch (item no. 2) - Summer position,
 - . set the tank domestic hot water thermostat to the required temperature,
 - . position the boiler temperature thermostat (item no. 3) to the minimum,
 - . set the mixer valve (fig. 2, item no. 5) to position "0".



! In the summer it is advisable to operate the heating pump for several minutes to avoid any risks of fouling (see § section 4 - page 41).

(When the boiler is equipped with an electronic regulator, this function is performed automatically).

6.2 - Commissioning procedure - with regulator

See the regulator technical instructions for temperature control.

! Set the boiler temperature thermostat (item no. 3) to maximum.

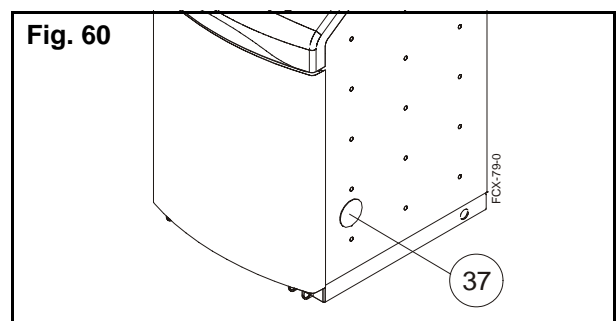
6.3 - Commissioning the oil burner

- When commissioning the oil burner for the first time:
 - check that the smoke spot number does not exceed 0.5 (BACHARACH control),
 - check the CO₂ rate - 11.5 to 12.5 %, CO < 100 ppm (watch out for secondary air inlets),
 - check the temperature of the combustion products (under 120 °C).

Models		FCX 22 C	FCX 30 C	
GEMINOX oil burner		ST 108 FUV	ST 120 RV	
		Preset	Max power	Presetting at the maximum power
Heat flow	kW	21,7	23,8	31,5
Pump pressure	bar	12	14	14
Spray nozzle		0,50 80°H		0,65 60°S
Oil inlet setting		2,5		7
Air setting (FCX balanced flue outlet)		6,5	9,5	16

Remark:

- The burners are preset in the factory for the balanced flue model FCX. Nevertheless the air and oil inlet settings must be checked systematically on commissioning and after all maintenance operations on the burner by testing the opaqueness of the flue gasses and of the % CO₂ - See the burner technical instructions.
- For the installed flue model FCX boilers the air setting must be readjusted to obtain the recommended CO₂/CO rate.
- The pressure of the burner oil pump shall be checked or adjusted via the hole (37) after removing the plug.



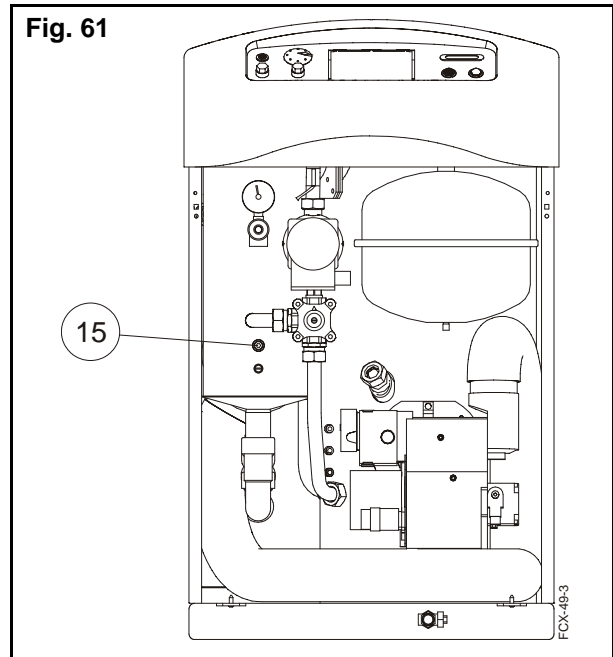


Ensure that the maximum heat flow is respected.

Combustion inspection must be carried out when the boiler is heated up. The temperature of the air allowed to pass to the burner increases notably when the boiler is installed with a concentric flue.

Combustion control is carried out on the boiler through the opening (15) provided for this purpose after the cap is removed. This opening must be closed again after checking.

Fig. 61



7 - CHECKING THE SAFETY DEVICES

At the time of commissioning, check the safety and control devices.

- Thermostats :

- Check that the thermostat bulbs are correctly positioned in their housing. Burner shut-off through a temperature increase,

- Flame monitoring :

- Burner shut-down through the deactivation of the flame monitoring device or the interruption of the fuel inlet,
- 3 bar safety valve (heating circuit),
- Domestic hot water safety control box (FCX model + domestic hot water production system).

VI - MAINTENANCE

Boiler and combustion product drain outlet maintenance must be carried out annually by qualified staff.

Spare parts must be ordered using the references given in chapter IX - NOMENCLATURE, specifying

the type and serial number of the device.



Before any operation, cut off the power supply. Close the system oil inlet and the water stopcocks if necessary.

1 - CLEANING THE BOILER SHELL

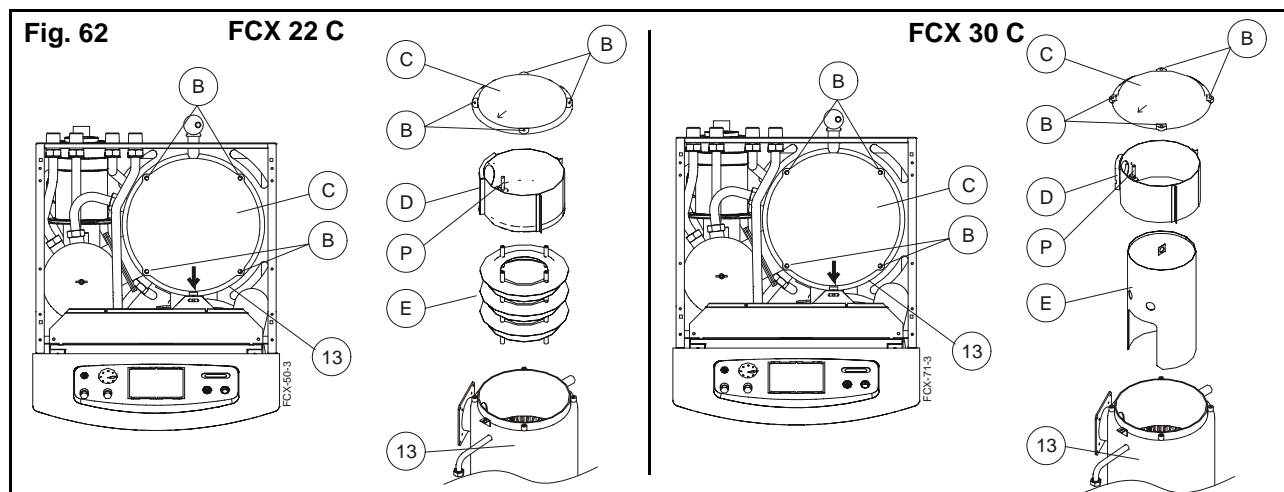


For FCX 30 C models only:

- remove the burner before removing the baffling (item no. E).

- Unclip the top of the boiler casing by pulling it upwards,
- unscrew the 4 fixing screws (item no. B) from the cast-iron plate (item no. E)
- remove the flue outlet (item no. D),
- remove the baffles (rep. E),

- clean the walls of the boiler shell (item no. 13),
- reassemble all the parts and be sure
 - not to reverse them,
 - to position the combustion chamber pipe (item no. D) with its centering screw (item no. P) towards the front of the boiler,
 - to position the cast-iron plate arrow marker (item no. C) opposite the centering screw (item no. P).



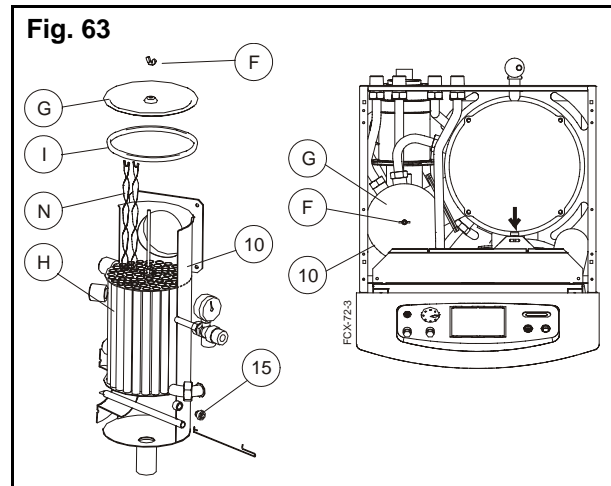
2 - CLEANING THE CONDENSOR

- Unclip the top of the boiler casing by pulling it upwards (rep. A, fig. 64 - page 43 - chapter VI - MAINTENANCE),
- Unscrew the fixing screw (item no. F) from the condenser cover (item no. G),
- **For FCX 30 C models only:**
 - remove the swirlers (item no. N) of the tubes (H) of the condenser (item no. 10),
- Clean the condenser tubes (item no. H) using a bottle brush,
- Check that the combustion products can flow freely :
 - unscrew the plug to check the combustion products (item no. 15),
- Check that the sealing joint is properly positioned (item no. I) when replacing the cover:

Remarks:

- If after cleaning the temperature of the flue gases remains excessive ($> 120^{\circ}\text{C}$), perform a boiler check.

- Make sure that the sealing joint on the cover (item no. I) are maintained in good condition and replace it if necessary.



3 - BURNER MAINTENANCE

Annual burner maintenance is sufficient if it is properly adjusted.

- cleaning: *See boiler instructions,*

- check that the spray nozzles are in good condition (chapter V - COMMISSIONING, s. section 6.3 -).
- check that there is no fuel leak.

4 - CHECKING ACCESSORIES

- Check annually that the safety and regulation devices (3 bar safety valve, air bleed, safety control box, etc.) are operating properly.
- Check that the condensate drain siphon is clean (remove it, clean it, replace it and then fill it with water).
- Also check that neither the installation nor the boiler present any water or fuel leaks (leaks may produce a risk for safety and shorten the lifespan).
- When it is frequently necessary to add water to maintain pressure in the installation, even though no leaks have been discovered, perform an expansion vessel check (chapter VI - MAINTENANCE, s. 5).
- Check the condition of the various seals (burner flange, burner door, flue outlet, etc.).
- To avoid any sludging risk, it is recommended to switch-on the circulator heater and to operate the

mixing control valve at least twice during the summer (see the operating instructions).

5 - EXPANSION VESSEL PRE-INFLATION PRESSURE CHECK

- Drop the pressure in the heating installation by opening the drain cock or the safety valve (pressure gauge reading under 0.5 bar).
- Check the pressure in the expansion vessel and if necessary bring it back up to pressure, or replace it if the membrane is punctured (water present in the inflating valve).
- To optimise the efficiency of the vessel:
 - adjust its pre-inflation pressure in line with the installation. It must correspond to the static height of the installation (H) expressed in bars (height between the highest point of the installation and the expansion vessel, with 10 metres = 1 bar),
 - adjust the filling pressure of the installation to a value of over 0.2 bar above the pre-inflation pressure of the vessel (after totally bleeding the air from the installation).

6 - COMBUSTION PRODUCT FLUES

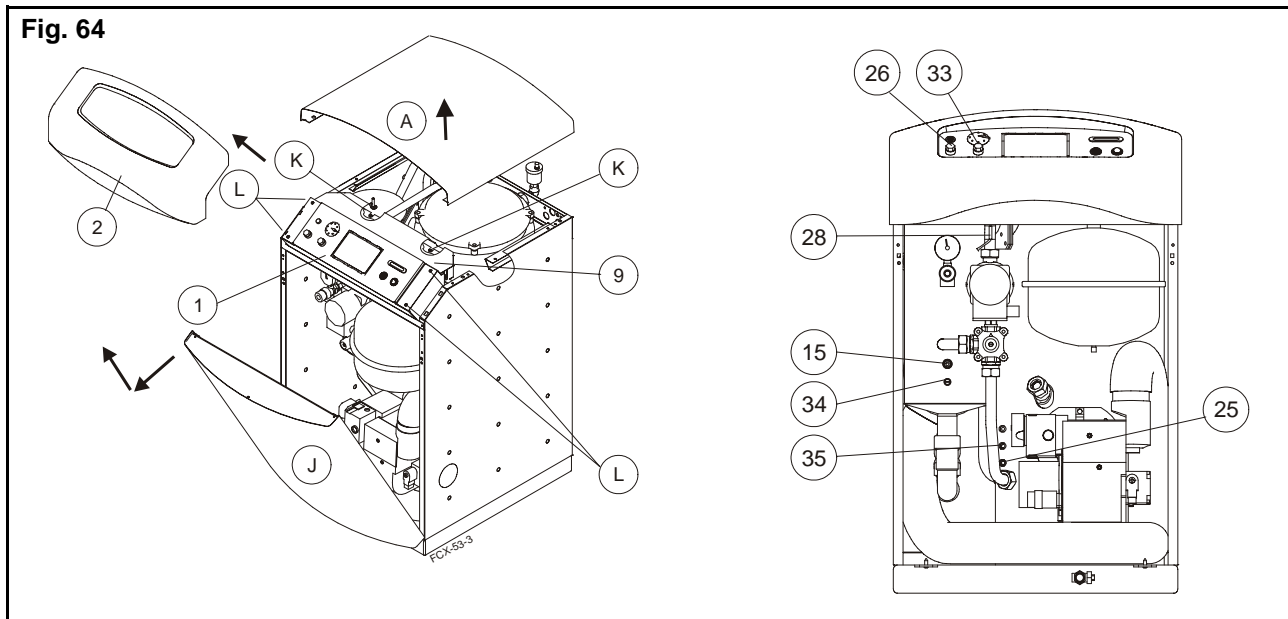
- Have the combustion product outlet checked and cleaned at least once a year (by qualified personnel). (non blocked conduit).
The outlet can be cleaned with running water. The water flow must not be too great so that it can be evacuated through the condensate outlet (Ø 40).
 - Be sure to maintain proper watertightness and the unobstructed flow of the combustion products. Replace any damaged tightness seals if necessary.
- Leaks can be detected through the appearance of condensate runoff traces on the outside of the tubes.
- Check:
- the inside of the outlet with an electric torch,
 - the entrance of the outlet through the combustion test point (fig. 63, item no. 34),
 - the end of the outlet through the horizontal or vertical terminal.
 - Clean the air suction inlet sheath at the burner.

7 - OIL FILTER

Clean the oil filter yearly or in the event of premature fouling (e.g. when filling the tank).

- Turn off the oil inlet cock,
 - o unscrew the cap.

8 - CHANGING A THERMOSTAT OR A THERMOMETER



8.1 - Bulbs positioned in the boiler shell pocket

- Boiler temperature control thermostat.
- Water overheating safety thermostat.

8.2 - Bulb positioned on the heating output tube

- Boiler temperature thermometer.

8.3 - Bulb positioned in the pocket of the condensor

- Combustion product overheating safety thermostat

8.4 - Changing thermostats or thermometers



Safety: After each change, the capillary must be properly secured on the pocket opening so that the thermostat bulb cannot accidentally fall out.

- Remove the boiler front panel (item no. J). Place your hands on the right and left of the upper part and pull towards you and then upwards,

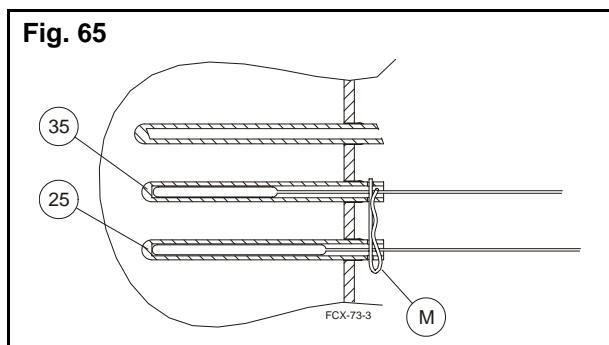
8.4.1 - Bulbs in the boiler shell

- Extract the bulbs from the pockets (item no. 25 and 35) after removing the retaining clip (item no M, fig. 65),
- remove the top of the casing (item no. A),

- remove the plastic cover (item no. 2),
- unscrew the 2 fixing screws (item no. K) from the protection plate (item no. 9),
- remove the protection plate (item no. 9),
- unscrew the 4 fixing screws (item no. L) from the control panel (item no. 1),
- remove the control panel (item no. 1) to gain access to the thermostat,
- remove the faulty appliance and replace it,
- position the bulbs in the pockets (item no. 25) and (item no. 35). To ensure satisfactory heat contact, insert them as far as possible inside the pocket.



Be sure to reposition the clips at the inlet of each pocket (fig. 66, item no. M) carefully to prevent the bulb from accidentally falling out.



8.4.2 - Bulb on the heating output tube

- Extract the bulb positioned in the pocket (item no. 28, fig. 64) on the heating output tube,
- remove the top of the casing (item no. A, fig. 64),

- remove the plastic cover (item no. 2, fig. 64),
- unscrew the 2 fixing screws (item no. K, fig. 64) from the protection plate (item no. 9, fig. 64),
- remove the protection plate (item no. 9, fig. 64),
- unscrew the 4 fixing screws (item no. L, fig. 64) from the control panel (item no. 1, fig. 64),
- remove the control panel (item no. 1, fig. 64) to gain access to the thermometer,
- remove the faulty appliance and replace it,
- insert the bulb in the pocket and clip it on again onto the heating outlet tube.

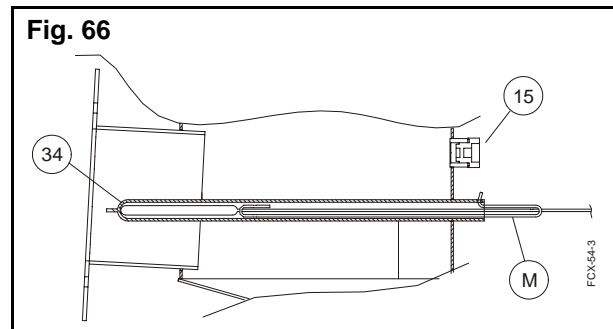
8.4.3 - Bulb in the condensor

- Extract the bulb from the pocket (item no. 34) from the condensor after removing the retaining clip (item no. M, fig. 66),
- remove the top of the casing (item no. A, fig. 64),
- remove the plastic cover (item no. 2, fig. 64),
- unscrew the 2 fixing screws (item no. K, fig. 64) from the protection plate (item no. 9, fig. 64),
- remove the protection plate (item no. 9, fig. 64),
- unscrew the 4 fixing screws (item no. L, fig. 64) from the control panel (item no. 1, fig. 64),

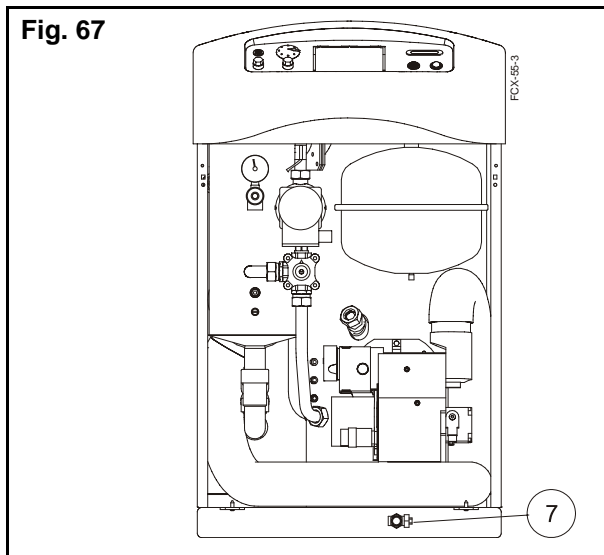
- remove the control panel (item no. 1, fig. 64) to gain access to the thermostat,
- remove the faulty appliance and replace it,
- position the bulb in the pocket (item no. 34, fig. 64). To ensure satisfactory heat contact, insert them as far as possible inside the pocket (item no. 34, fig. 64).



Be sure to reposition the clips at the inlet of each pocket (fig. 66, item no. M) carefully to prevent the bulb from accidentally falling out.



9 - DRAINING



- Cut off the power supply,
- Close the fuel inlet valve,
- Close the heating output/return valves (if they exist),
- Connect a hose pipe to the drain cock (item no. 7) after removing the plug,
- Open the drain cock with the plug tip provided for this purpose.



Make sure that the bleed is open as soon as the pressure gauge indicates zero pressure to allow air to enter the boiler shell.

When bleeding the installation, provide an air inlet at a high point (radiator bleed).

VII - OPERATING FAULTS

1 - BURNER SHUTDOWN

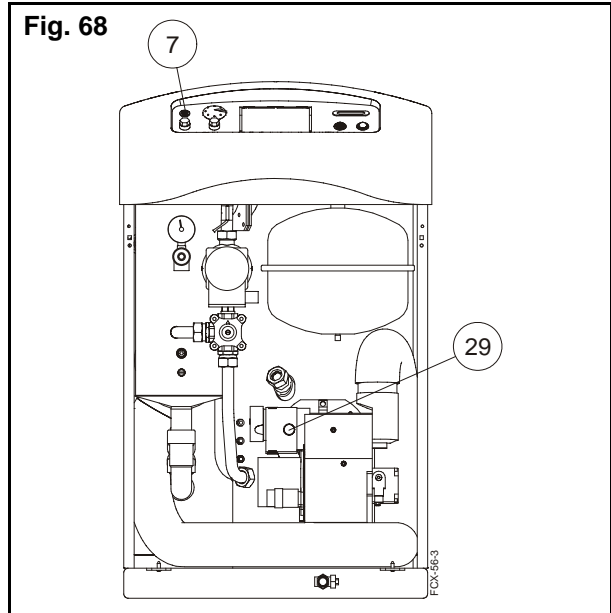
The burner shuts down (red light on burner (item no. 29) and safety device light on (item no. 7) :

- there is no fuel (valve closed or fouled oil filter),
- the burner is fouled,
- the spray nozzle is faulty,
- the flame monitoring unit is fouled or faulty.

To restart the bruler, manually reset the safety button (item no. 29) located on the front of the burner.

If the fault persists, call in a qualified professional and see the technical instructions supplied with the burner.

Fig. 68



2 - SHUTDOWN BY OVERHEATING THERMOSTAT CUT-OUT

2.1 - Water overheating safety thermostat

The activation of the safety device for the overheating thermostat leads to the heating and domestic hot water production system (FCX + domestic hot water production system) being stopped by burner shutdown.

The thermostat (item no. 5) can be accessed through the boiler control panel.

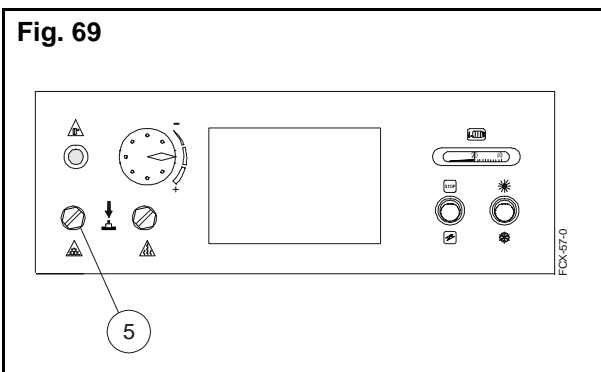
It is triggered if:

- the temperature of the boiler shell water exceeds 110 °C, in which case check the control thermostat (chapter VI - MAINTENANCE, s. section 8 -).

The thermostat is reset manually (item no. 5) after removing its cap.

If the fault persists, call in a qualified professional.

Fig. 69



2.2 - Combustion product overheating safety thermostat

Activation of the safety device for the overheating thermostat leads to the boiler shutting down.

The thermostat (item no. 6) can be accessed through the boiler control panel.

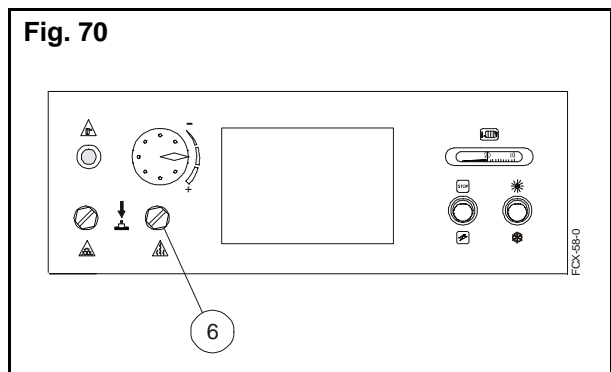
It is triggered if:

- the temperature of the combustion products exceeds 120 °C, in which case the boiler setting (spray nozzle and heat flow) should be checked and the boiler shell and condenser cleaned (chapter VI - MAINTENANCE, s. section 8 -).

The thermostat is reset manually (item no. 6) after removing its cap.

If the fault persists, call in a qualified professional.

Fig. 70



VIII - REGULATIONS

1 - DECLARATION OF CONFORMITY

Appendix IV module D of directive 92/42/CEE

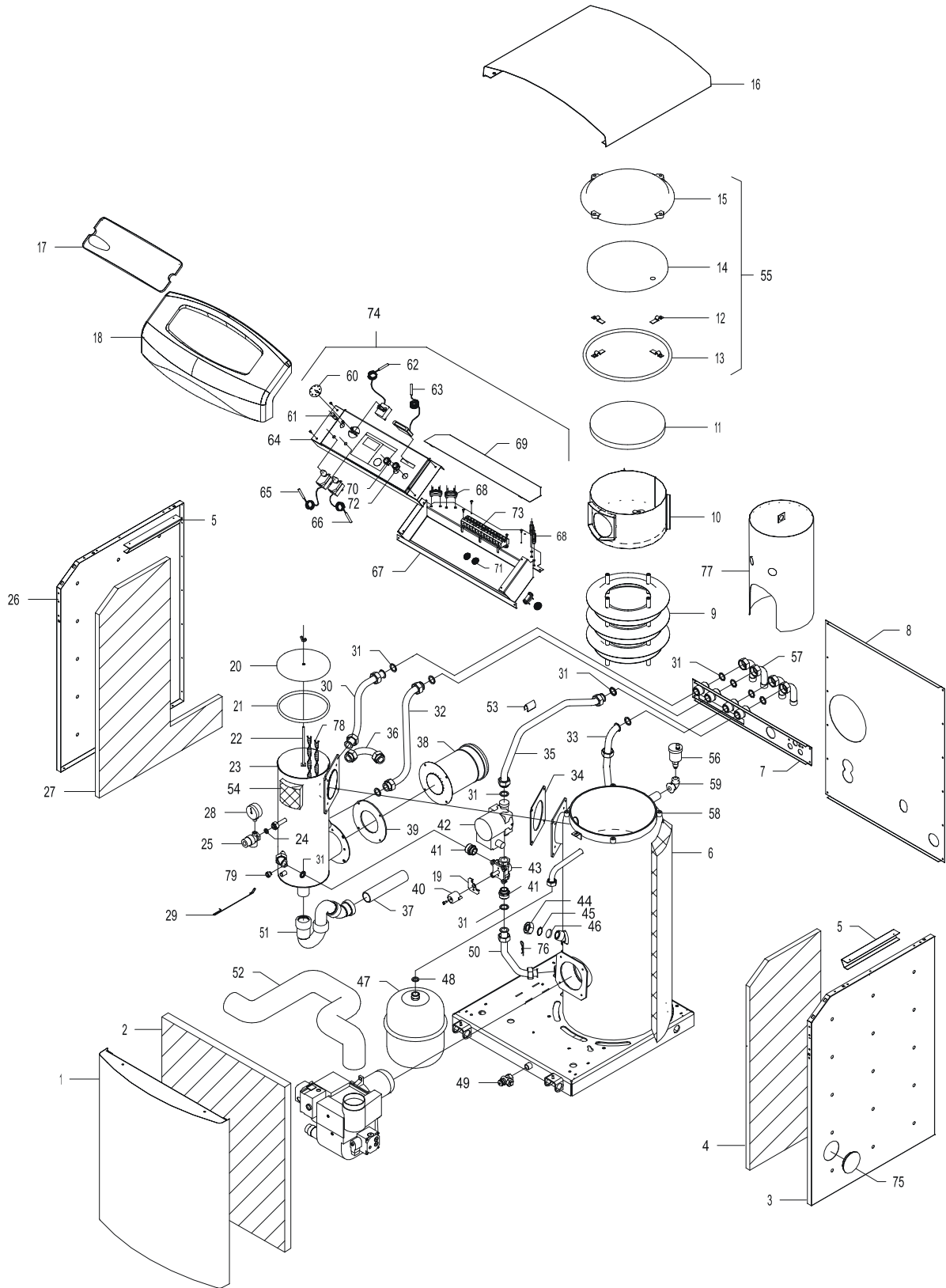
SERIES:	FCX RANGE
MANUFACTURER:	GEMINOX SAS 16 rue des Ecoles 29410 SAINT THEGONNEC
PRODUCT CATEGORY:	FLOOR condensing OIL BOILER heating only
NOTIFIED BODY:	CERTIgaz (1312) 62 rue de Courcelles 75008 PARIS
TYPE/NO. EXAMINATION:	FCX 22 C / FCX 30 C CE1312AS036R
TEST LABORATORY:	CETIAT BP 2042 25 avenue des arts 69603 VILLEURBANNE
EC DIRECTIVES:	92/42CEE, 73/23CEE, 89/336CEE 97/23 CEE article 3.3
BASIS OF EXAMINATION:	EN 303.2, EN 304, PRA1 EN 304 (06/97), XP D 35-430 EN 60335.1, EN 55014, EN 55104
SURVEILLANCE PROCEDURE:	Manufacturing quality assurance
DECLARATION:	The products identified in this document conform to the directives quoted and to the certified type. Manufacturing is submitted to the surveillance procedure mentioned above.

Saint-Thégonnec: 07/2007



IX - NOMENCLATURE

FCX 22/30 C



PLCFC01022

Rep.	Reference	Designation
1	Y72.26518	FRONT COVER EQUIPPED
2	V72.26643	ISOLATION FRONT COVER
3	Y72.26664	RIGHT HAND SIDE COVER EQUIPPED
4	V72.26624	ISOLATION RIGHT HAND SIDE
5	Y72.26512	FOLDED NECK
6	V72.38386	BOILER SHELL INSULATION STRATON 21
7	V72.26679	PAINTED CONNECTING FLANGE
8	Y72.26677	PAINTED BACK COVER
9	V72.08493	SWIRLERS
10	V72.08531	COMBUSTION CHAMBER
11	F30.11048	MINERAL WOOL 90 KG DISK DIAMETER 262X20
12	V72.28378	FASTENING ANGLE
13	V70.09239	GLASS FIBER ISOLATION LG 950- CAST PLATE
14	F20.28379	FIBER ISOLATION D.280X20 (300°C)
15	H00.28364	BOILER SHELL COVER- CAST IRON
16	Y72.26519	TOP COVER EQUIPPED
17	H20.26493	PROTECTING COVER
18	H20.26489	ABS PROTECTION
19	V72.28409	VALVE STOP
20	V72.36340	CONDENSER TOP
21	E20.36342	TIGHTNESS O'RING CONDENSER TOP
22	V72.26826	FASTENING FLANGE FOR CONDENSER COVER
23	V72.38461	CONDENSOR FCX
24	E20.06892	SEAL AFM34 D. 18,6 X 12 2 MM THICKNESS
25	L90.10142	3 BAR SAFETY RELIEF VALVE
26	Y72.26665	LEFT HAND SIDE COVER EQUIPPED
27	V72.26638	ISOLATION LEFT HAND SIDE
28	L90.00172	CIRCULAR MANOMETER 0/4 BARS
29	T40.38317	KLIXON FIXATION WIRE
30	U72.26516	HEATING RETURN 2. CIRCUIT
31	E20.03889	SEALING AFM34D 30X21X3
32	U72.26515	HEATING RETURN 1. CIRCUIT
33	U72.26517	HEATING FLOW 2. CIRCUIT
34	E20.26827	SEALING ON CONDENSER FLANGE
35	U72.26514	HEATING FLOW DOWN 1. CIRCUIT
36	U72.26786	BOILER SHELL RETURN
37	U72.36680	FLUE OUTLET PIPE FCX Ø 40 LG 185 (PVC)
38	V90.37055	CONNECTING SET VENTOUSE
39	E20.28092	SILICONE SEALING D.162X85X4
40	A10.17552	BLACK HANDLE (FOR H3MG VALVE)
41	K20.03021	REDUCED MESSING NIPPLE M1-M3/4
42	W72.29083	CIRCULATING PUMP UPS 50-130 6H WIRED
43	L85.12296	BRASS VALVE
44	K20.03004	NUT FOR FLANGE 1" (FOR PIPE D.22,5)
45	B59.00692	STAINLESS STEEL WASHER 30,4X25,5X0,3
46	T20.00582	SIGHTGLASS PYREX D.30X5
47	L90.03520	EXPANSION CYLIND, VESSEL 8L MALE 3/4 (FCX 20)
47	L90.03639	EXPANSION VESSEL 12L 3/4 CYL (FCX 30)
48	E20.03890	SEALING AFM34 D 24X17X3
49	K50.00584	DRAIN COCK WITHOUT THE CAP F1/2-M1/2
50	U72.26513	HEATING FLOW BEFORE 1. CIRCUIT
51	V72.38386	BOILER SHELL INSULATION STRATON 21
52	U65.29493	AIR FLANGE D.80 LG1500
53	T40.21819	FASTENING FOR THE SENSOR OF THE THERMOMETER
54	V72.38351	CONDENSOR INSULATION STRATON

Rep.	Reference	Designation
55	V72.28389	BOILER SHELL COVER EQUIPPED FOR FCX
56	L90.19347	AUTOMATIC DRAIN 3/8 WITH ISOLATING VALVE
57	K20.37049	ELBOW CUPPER NUT 1" - Ø22
58	V72.38465	EQUIPPED BOILER SHELL FCX 22
58	V72.38486	EQUIPED BOILER SHELL FCX 30
59	K10.13600	BEND 90° F3/4-F3/8
60	H20.18800	AQUASTAT KNOB
61	C20.24903	UNIPOLAR REVERSIBLE SWITCH D. 23 BLACK
62	L71.31613	THERMOSTAT 60-80 °C CAP. 1,5M
63	L60.01135	THERMOSTAT RECT HORIZ 69X14 LG CAPIL.1500 MM
64	W72.26691	CONTROL PANEL + STICKER
65	L71.11583	SAFETY THERMOSTAT 110 CAP 1,5M TG400
66	L71.11584	SAFETY THERMOSTAT 120 CAP 1,5M TG400
67	Y72.26694	PAINTED CONTROL BOX
68	C91.12561	WIRE ROPE CLAMP PA 6,6
69	Y72.26696	PAINTED CASING / CONTROL BOX
70	C20.24904	UNIPOLAR SWITCH D. 23 / GREEN LIGHT
71	C91.12561	WIRE ROPE CLAMP PA 6,6
72	C20.24903	UNIPOLAR REVERSIBLE SWITCH D. 23 BLACK
73	C19.24474	SETTING STICK 1014H SP 2311
74	W72.38564	ELECTRIC BOX + WIRING FCX AQUATECH
75	A00.19467	GREY PLASTIC CAP MALE 75
76	B60.34727	SIMPLE SPRING'S PIN D.2 DIN 915
77	V72.38350	POT FOR COMBUSTION CHAMBER LOW STRATON 30
78	V72.12096	CONDENSER CHICANE (FCX 30 KW)
79	A00.28827	PLASTIC CAP MALE 1/4
*	E20.30012	SEAL VITON D.80
*	E20.31384	SEAL FOR FRESH AIR INLET PIPE D125
*	T10.08829	NYLON BRUSH D. 13 X 60 X 600
*	T25.07874	FIXING PIECE FOR THE COVER (MALE)
*	T25.26940	BOLT (PVC)
*	T40.36749	HOOK GLASS WOOL
*	V70.05733	BAFFLE PLATE F400-F E/FEA-FCX (250X200X1,5)
*	W72.26495	WIRING S/T FCX





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C H A U D I E R E S

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