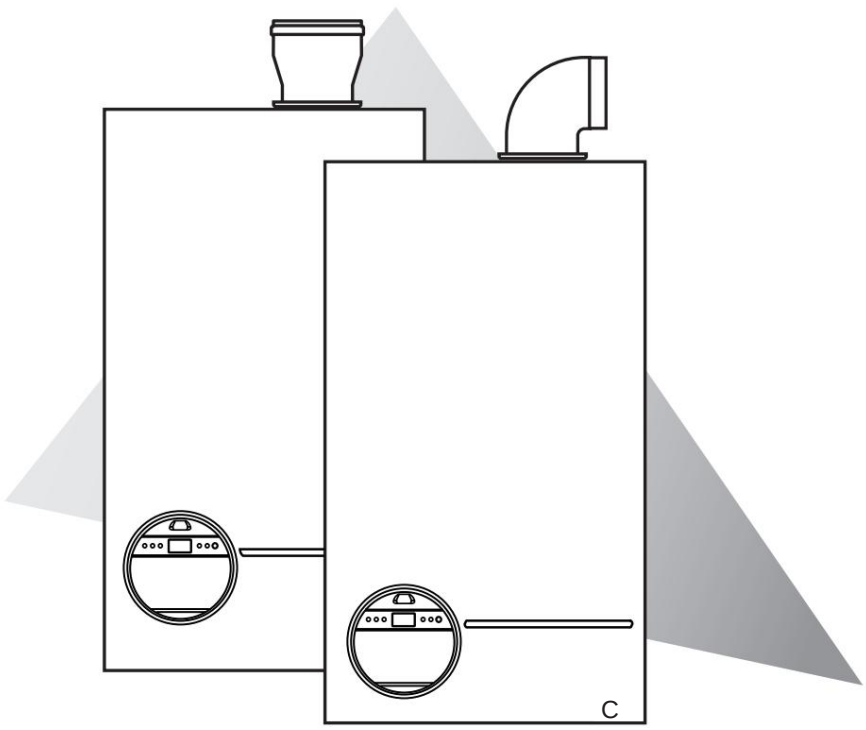
NIAGARA DELTA

WALL-MOUNTED GAS BOILER
DOUBLE SERVICE
built-in accumulation

Forced flow sealed model

Instructions for installation and use



NIAGARA DELTA 24 FF
NIAGARA DELTA 28 FF
NIAGARA DELTA 30 FF

C

FR

Name of the boiler:

NIAGARA DELTA 24 FF
NIAGARA DELTA 28 FF
NIAGARA DELTA 30 FF

This installation and user manual is intended for appliances installed in France

Summary

Instructions for the installer

Instructions for the user

Instructions for the installer

1 Description

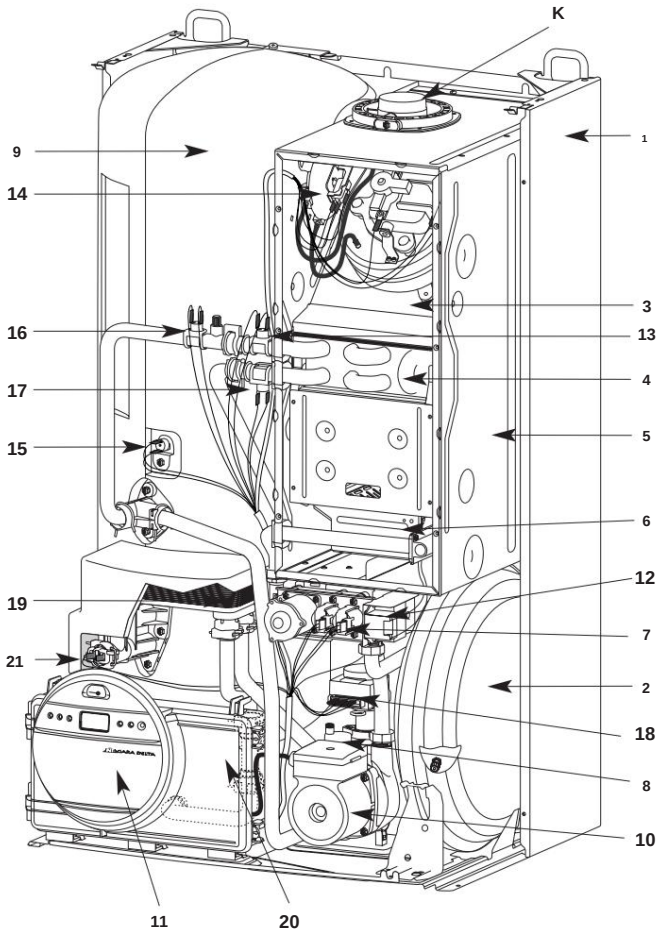


Fig.1

1. - sheet steel frame
2. - pressure expansion vessel
3. - extraction hood
4. - main copper exchanger
5. - waterproof case
6. - stainless steel multigas burner comprising:
   - a removable manifold equipped with injectors • two ignition electrodes
   - a flame detection electrode
7. - gas block comprising:
   - two safety solenoid valves
   - a regulation solenoid valve 8. - automatic degasser
9. - stainless steel domestic hot water tank
10. - circulator
11. - electronic unit (fig. 2)
12. - igniter
13. - overheating safety
14. - combustion product control pressure switch **15.** - tank thermistor
16. - flow heating thermistor **17.** - return heating thermistor **18.** - distributing valve
19. - sanitary heat exchanger with stainless steel plates **20.** - sanitary flow switch
21. - sanitary thermistor

K. - fixing the evacuation kit (see kit instructions)

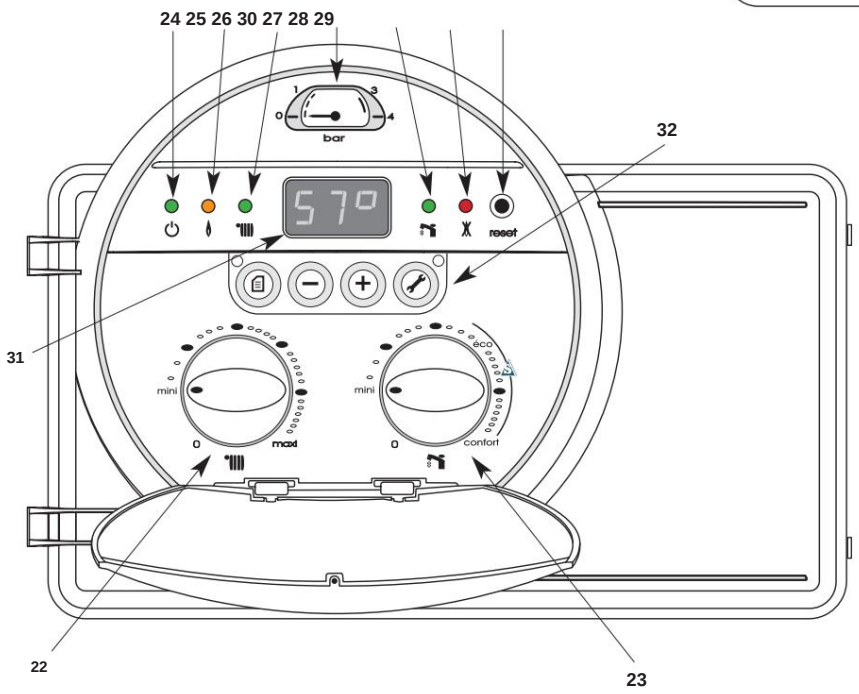


Fig.2

22. - heating switch: Off / min / max

23. - DHW switch: Off / mini / eco / comfort

24. - green power-on light **25.** - orange burner operation light

26. - green heating mode light **27.** - green DHW mode light **28.** - red safety light **29.** - reset push button **30.** - heating circuit pressure gauge **31.** - display

32. - installer mode setting pushbuttons

2 Dimensional characteristics

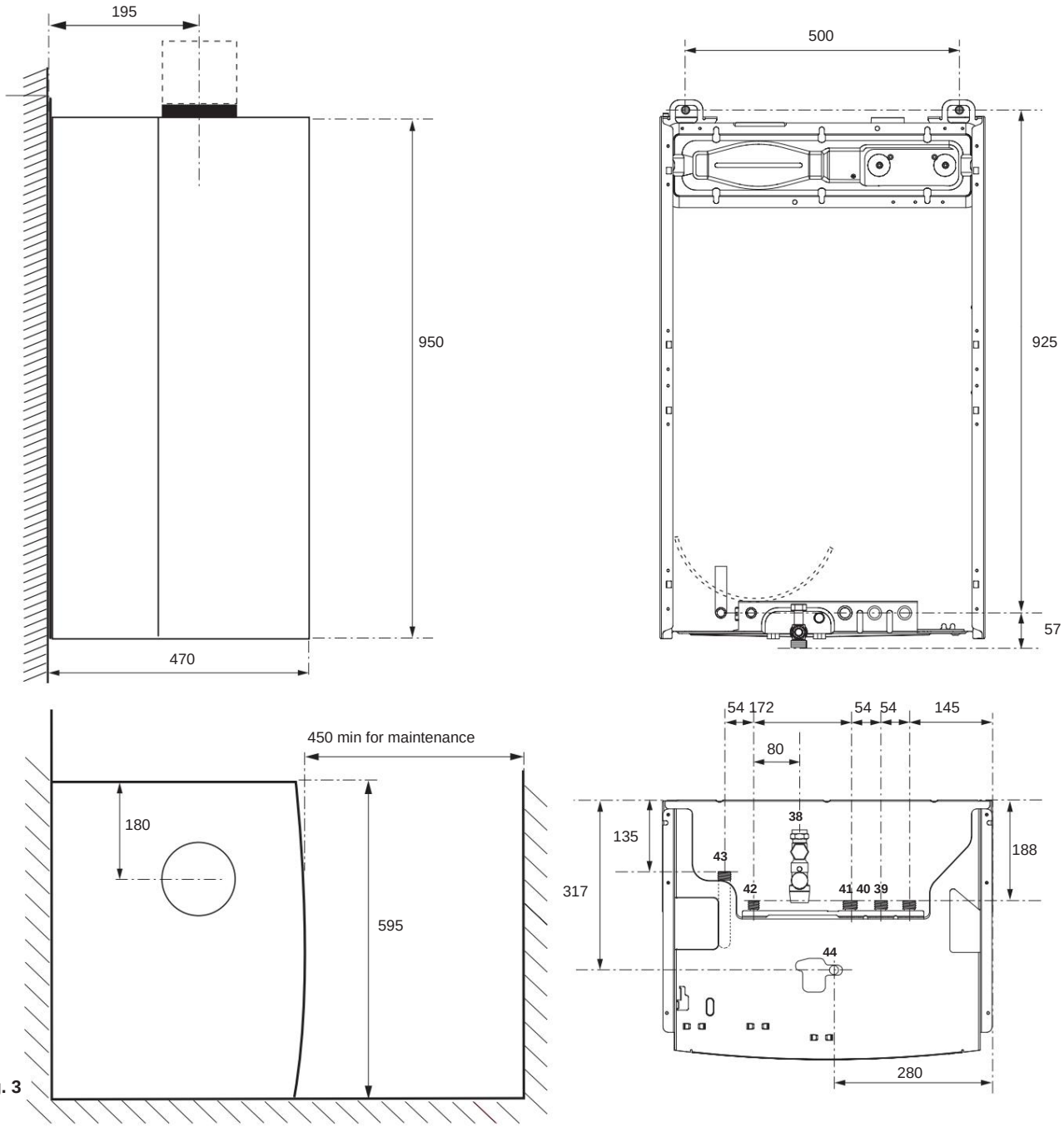
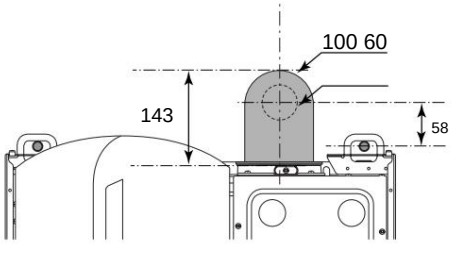


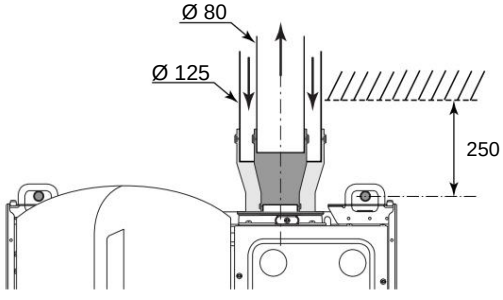
Fig. 3

3 connection solutions to choose from:

- type C 12 ou C 42 •
  type C 32 xx



Type C 12



Type C 32 xx

39 Gas inlet

40 Heating return

41 Heating flow

42 Cold water inlet

43 Cylinder hot water flow

38 Balloon valve

44 Heating valve

Poids à vide

- 24 kW : 59 kg
- 28 kW : 60 kg
- 30 kW : 60 kg

3 Hydraulic characteristics

The boiler is supplied as standard with an automatic by-pass and a 2-speed ciculator.
The diagram (fig. 4) shows the curve of the pressure available as a function of the flow (at the boiler outlet).
The minimum flow rate of the installation to ensure proper operation must be 300 l/h. (Thermostatic taps closed).

Water capacity of the installation.
The boiler is fitted with a pressurized expansion vessel.
Maximum volume of the expansion tank: 7.1 litres.
Inflation pressure: 0.7 bar.

The expansion capacity of the vessel of a pressurized installation varies with (fig. 5): -
the average operating temperature in °C, - the static height which corresponds to the
difference in level in meters, between the highest point top of the installation and the axis of the expansion tank

The filling pressure should always be higher than the static height (expressed in meters) divided by 10 (recommended between 1 and 1.5 bars)

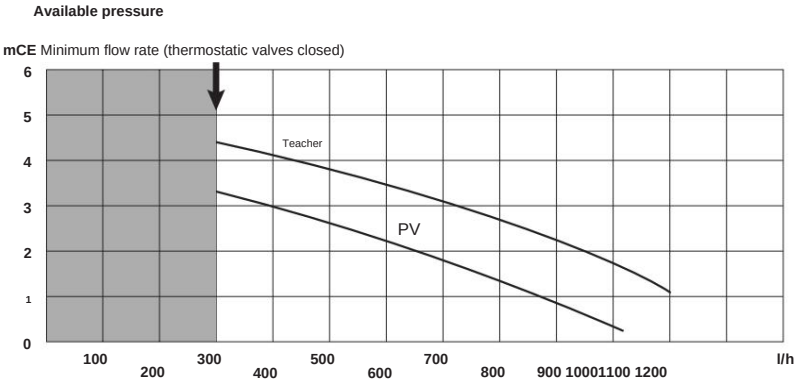
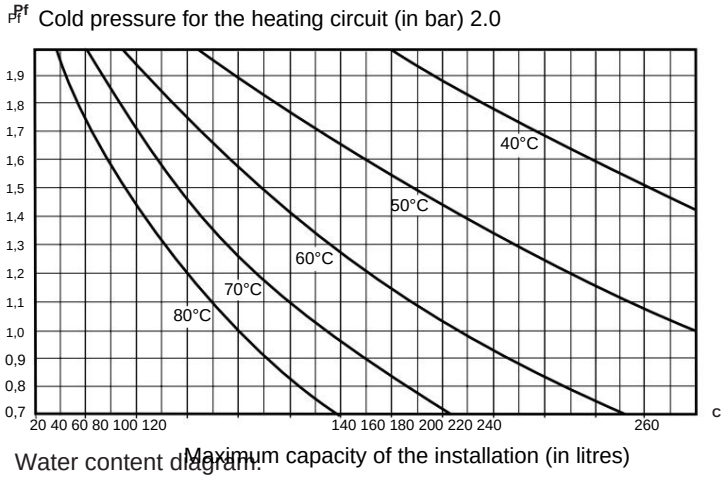


Fig. 4



Water content diagram.

Fig. 5

- Pf = Pressure of the expansion vessel, in
bar - C = Capacity of the installation, in litres.

4 Conditions d'installation

4.1 REMINDER OF THE REGULATIONS

RESIDENTIAL BUILDINGS

REGULATORY CONDITIONS FOR INSTALLATION AND EN THIRD

The installation and maintenance of the device must be carried out by a qualified professional in accordance with the regulatory texts and rules of the art in force, in particular: **- order of August 2, 1977**

Technical and Safety Rules applicable to combustible gas and liquefied hydrocarbon installations located inside buildings and their outbuildings. **- order of February 5, 1999 amending the order of August 2, 1977**

After replacing an identical boiler (axis and footprint of the previous appliance), the installer is required to draw up a "model 4" certificate of conformity.

- **standard DTU P 45-204** - Gas installations (formerly DTU n°61-1 - Gas installations - April 1982 + addendum n°1 of July 1984). - **Departmental Health Regulations.**

Protection of the drinking water network

- the presence on the installation of a CB type disconnection function with uncontrollable different pressure zones meeting the functional requirements of **standard NF P 43-011,** intended to prevent heating water returning to the network drinking water is required by articles 16-7 and 16-8 of the Departmental Health Regulations.

- an NF backflow preventer is placed on the tap bar of the boiler.

- **standard NF C 15-100** - Low voltage electrical installations - Rules.

ESTABLISHMENTS OPEN TO THE PUBLIC

REGULATORY INSTALLATION CONDITIONS

Installation and maintenance of the device must be carried out by a qualified professional in accordance with the regulatory texts and rules of the art in force, in particular: **- safety regulations against fire and panic in establishments receiving public: a) General requirements** for all appliances:

- articles **GZ**

  Fuel gas and liquefied hydrocarbon installations. • **CH** articles

  Heating, ventilation, refrigeration, air conditioning and production of steam and domestic hot water. **b) Specific requirements for each type of establishment open to the public (hospitals, shops, etc.).**

Recommendation :

If the region is exposed to the risk of lightning (insulated installation at the end of the EDF line, etc.), provide a lightning arrester.

Our warranty is subject to this condition.

4.2 PRECONISATION D'INSTALLATION

Installation of the boiler

- the axis of the external flue must be placed at a distance of at least 0.40 m from any opening window and at a minimum distance of 0.60 m from any ventilation orifice (depending on the type of outlet chosen, refer to the instructions for the evacuation kit). - when installing a boiler in a bathroom, comply with the special safety rules of **standard NF C 15-100** (chapter 7).

- do not install the boiler above the hotplates, the oven, and in general above any equipment producing oily vapors which could, through clogging, affect its operation.

- provide a wall and fixings to support the weight of the boiler (weight: approximately 130 kg). - take precautions to limit noise pollution.

Domestic hot water circuit

In the case of water hardness greater than TH 25, provide water treatment.

See sanitary **DTU standard .**

Central heating circuit

Flow rate: when sizing, make sure that the minimum flow rate is complied with: 300 l/h, thermostatic valves closed.

Corrosion Precautions

Operating incidents due to corrosion are likely to occur when the installation is made with dissimilar elements.

To avoid these problems it is desirable to use a corrosion inhibitor.

Take every precaution to prevent the treated water from becoming aggressive.

Old installation: place a settling pot on the return and at the low point, and provide for appropriate treatment of the circuit.

Recommendation: provide air vents on all the radiators and at the high points of the installation; as well as drain cocks at low points.

5 Installation of the boiler

LAYING TEMPLATE -

present the paper template provided for the prefabrication to the selected location and follow its recommendations. - take into account the installation conditions § 4.

CONNECTING THE PIPING The connection

sockets are supplied in a package separate from the device.
Various fitting sets are available from wholesalers.

- 1st installation -

replacement of Chaffoteaux & Maury boilers - replacement of boilers of other brands - wall spacer kit (in the case of passage of the tubes from the rear)

- put in place (fig. 6):
  - the various taps, 3/4 gas taps (yellow lever tap, minimum tightening torque 10 mN), heating flow and return, 1/2 taps on domestic cold water, and hot water tank outlet hose **46**
  - seals and connection sockets, 3/4 sockets on gas, heating flow and return, 1/2 socket on cold water and water domestic hot water
  - an **F1** filter gasket is placed on the gas tap, an **F2** water filter on the domestic cold water supply and a heating filter **F3** on the heating block
  - The drain pipe of the safety valve **44** (translucent tube), the balloon valve **38** and that of the backflow preventer **45** must be connected to a waste water pipe.

EXHAUST KIT - finish

by mounting the exhaust device, at location **K** (fig. 1), depending on the type of connection chosen, taking referring to the assembly instructions supplied with the kit.

CLEANING AND TREATMENT OF THE INSTALLATION Once

the hydraulic connections have been completed, it is essential to clean the installation with an appropriate product (dispersant) in order to remove filings, welds, machining oils and various greases. Prohibit any solvent or aromatic hydrocarbon (gasoline, oil, etc.).

Complete treatment of the installation is recommended from commissioning in order to maintain a pH between 9 and 9.5.

To fit the boiler, it is not necessary to remove the casing.

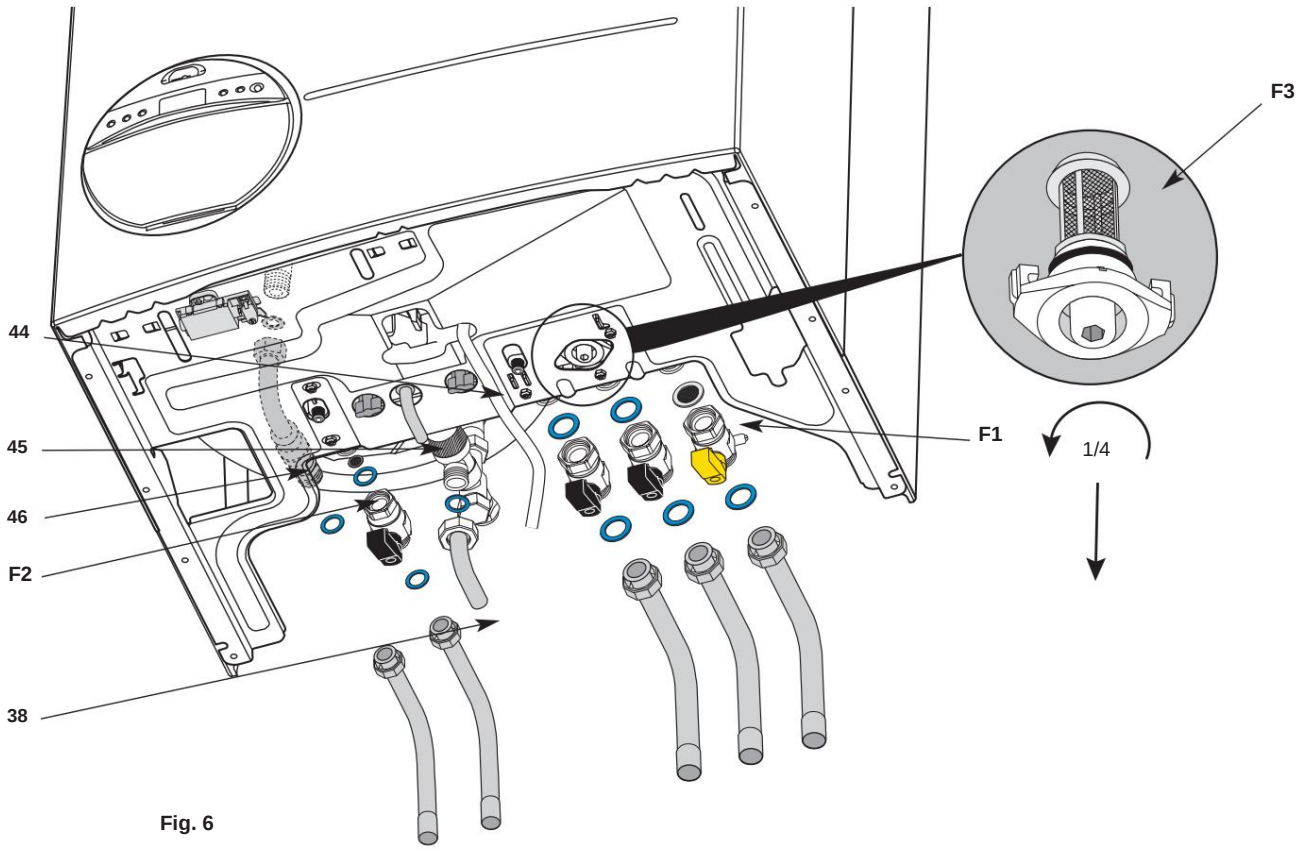


Fig. 6

6 Disassembly and assembly of the casing - maintenance

Removing the trim - unscrew
the 4 fixing screws **A** of the trim (fig. 7) - release the clips - remove the trim

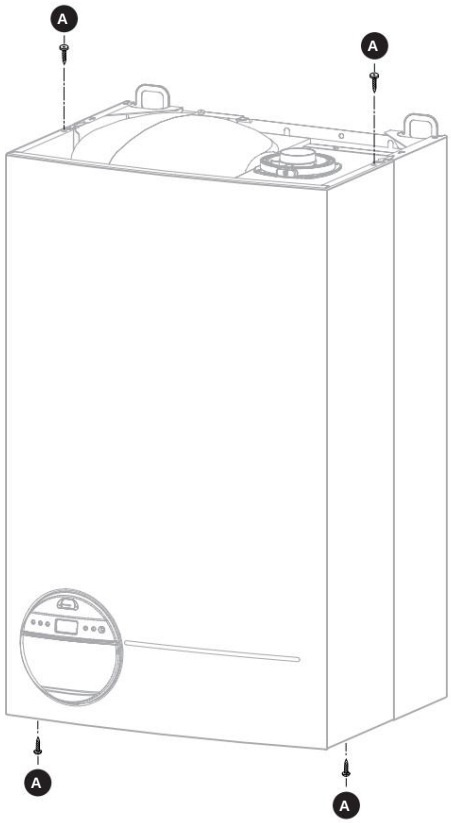


Fig. 7

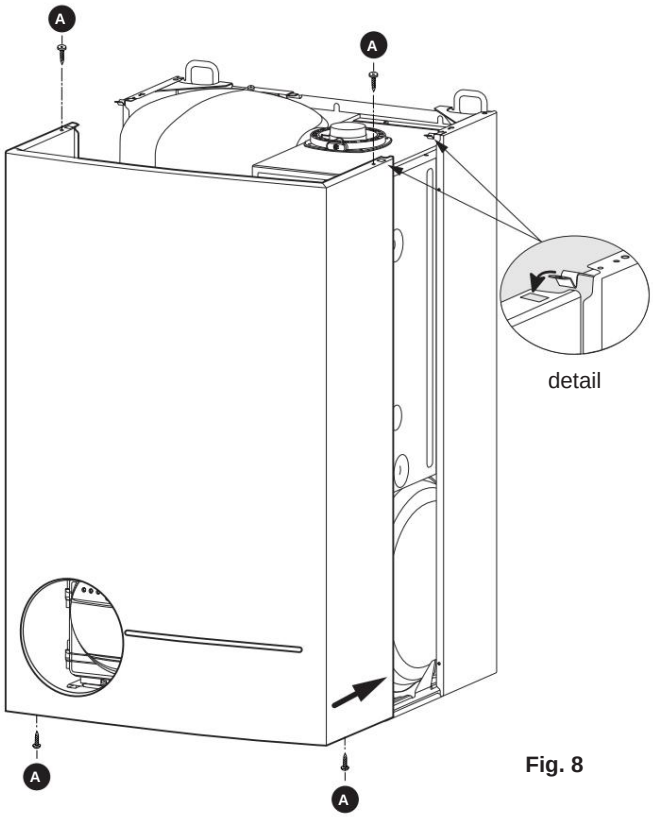


Fig. 8

Fitting the casing
Remove the protective
film - present the casing
(fig. 8) - engage the 2 clips in the casing (see detail)
- tighten the 4 fixing screws **A** of the front

Maintenance

For maintenance of the device, it is possible to move the electrical box without having to disconnect it. Electrical box clipped onto the heating outlet pipe or lower back of the frame - (fig. 9).

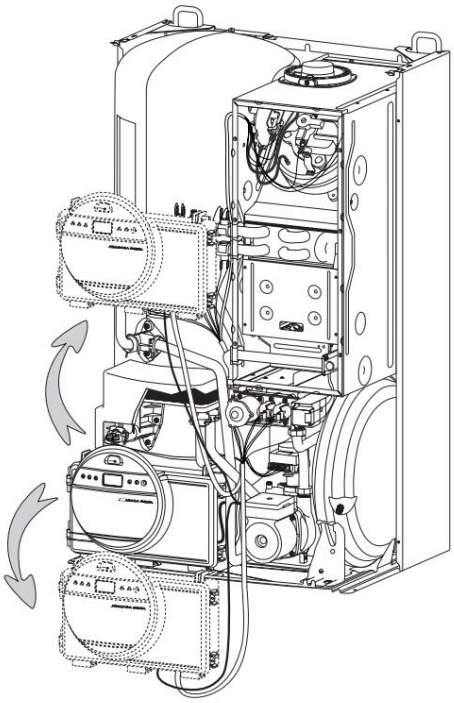


Fig. 9

7 Electrical connections

Location of the connections: - the
electrical connection of the TA is made under the boiler, on the bottom plate. -
the arrivals of the mains supply cables and the room thermostat must be provided on the wall at the height defined by the installation template - the mains supply to the boiler is carried out with a 2 P + E cable supplied with the 'device.
The TA cable is not supplied.

Note: the 2 cables, mains and TA, must be 2 separate cables

Important:
- in accordance with the regulations, a bipolar separation device, with a contact opening distance of at least 3 mm, must be provided in the fixed boiler supply installation

Mains connection

The 3-conductor cable **C** is pre-wired in the electrical box of the device. Connect this cable to the protected 230 V distribution network. (fig. 10)

Connecting a room thermostat

Open terminal block **B** using a screwdriver (fig. 11)
A room thermostat is connected to this connector **B.** (fig. 12) - remove shunt S.
- connect the thermostat in place of shunt **S**

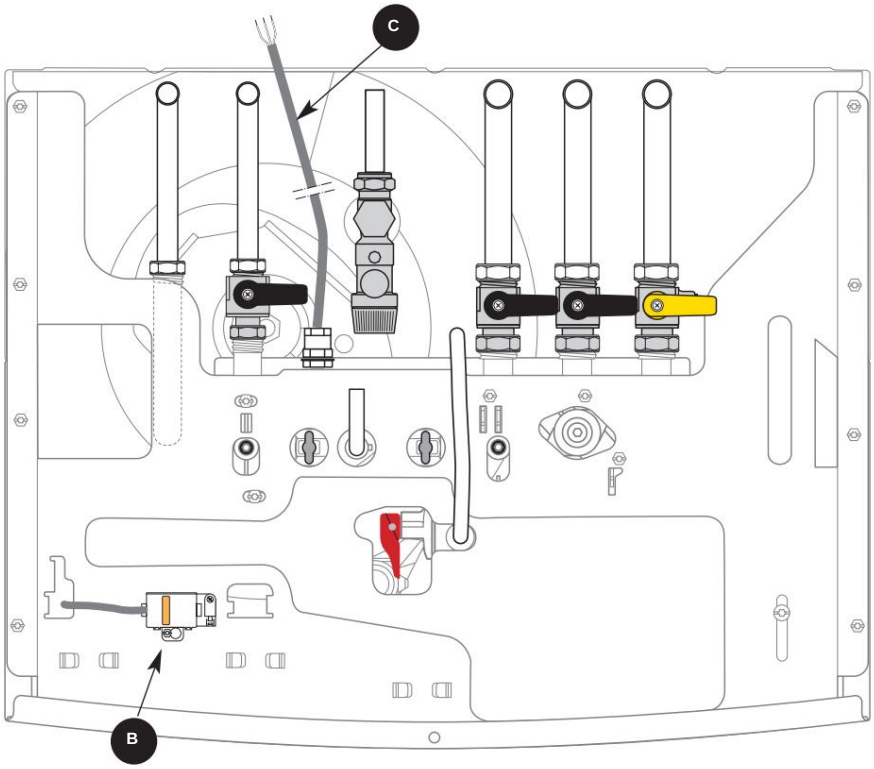


Fig. 10

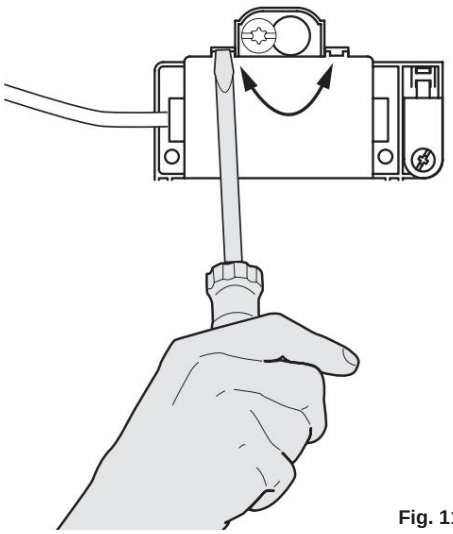


Fig. 11

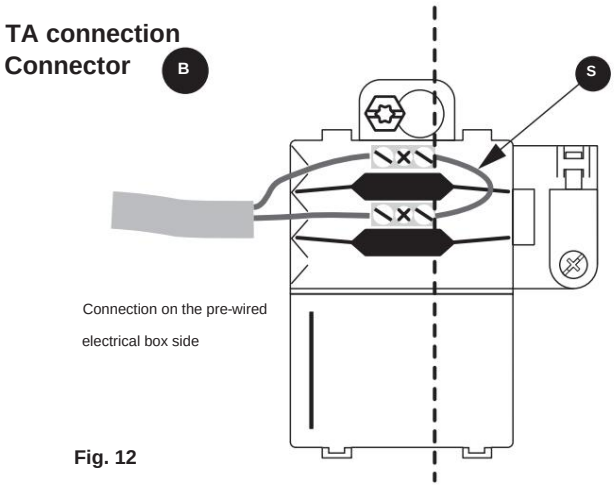


Fig. 12

8 Commissioning

Pressurization (fig. 13)

Sanitary circuit

- open the cold water tap **42** - drain the tank and the installation by drawing from the various hot water taps

Heating circuit

- check that the heating flow **41** and heating return **40** valves are open - open the filling valves **37** - close these valves when the needle of the pressure gauge **30** is at the pressure determined in § 3 - bleed the installation and restore the pressure

Gas circuit -

open the gas tap **39** - bleed the gas circuit - check the seals on the entire gas line

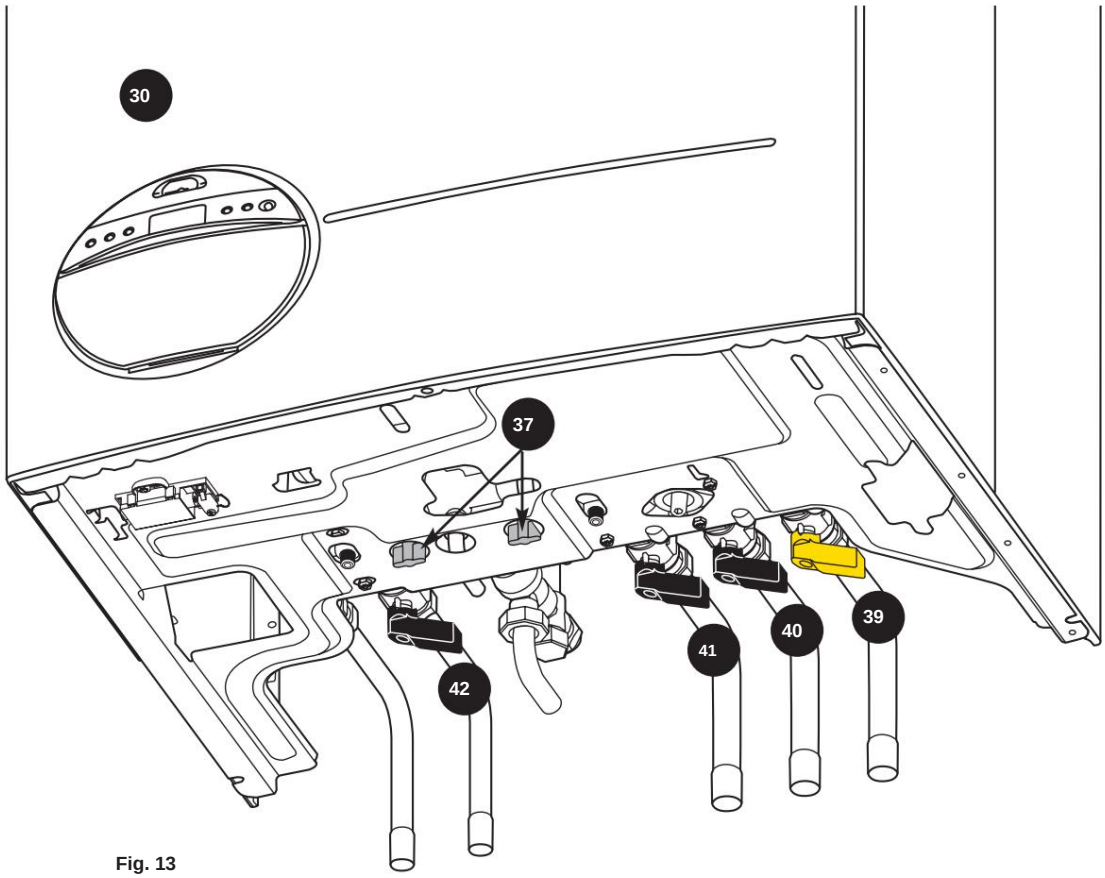


Fig. 13

9 Settings

The device when it leaves the factory is preset. The value of these settings is specified in menus **3** and **4**
All settings can be changed by the installer or a qualified professional. The settings and information on the boiler can be accessed by tilting door **P** of the electrical box and removing cover **D** (fig. 14).

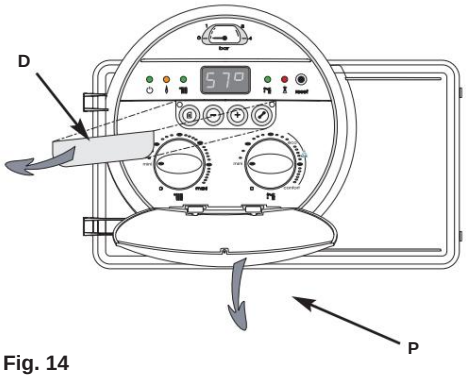


Fig. 14

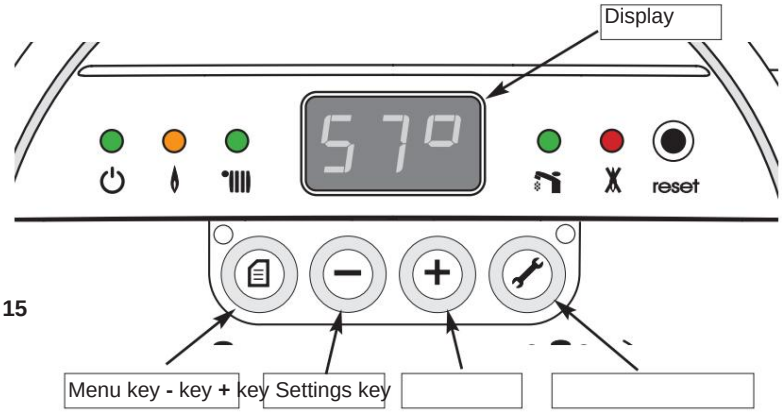


Fig. 15

DISPLAY

To access the menus, press the keys (−) and (+) simultaneously for about 5 seconds (fig.15). Menu 1 is displayed.

Menu change:

Press the **Menu** key (fig.15). The menu number is displayed for 3 seconds -2- . To access the next menu, press the **Menu** button again

Changing items within a menu:

Push the button (+) or the key (−) to move up or down headings.

Note: when you are on the last item, you loop back to the 1st if you execute a +, and when you are on the first, you loop back to the last if you execute a **-**

Modifying the parameters of a section (only concerns menus 3 and 4) :

Press the **Setup** button to change to switch to adjustment mode, elements 2 and 3 flash, then press to validate the (+) or (−) the setup parameters. Press the **Setup** button modifications and exit **Setting mode,** items 2 and 3 stop flashing .

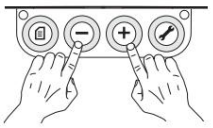
Return to factory configuration:

Position yourself in menus **3** or **4** and press the key (+) and **Setting** for 10 seconds. The display indicates **CM** flashing for a few moments when this is done.

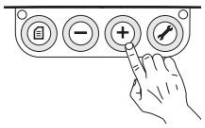
Fault history reset:

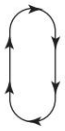
Go to menu **1** and press the key (+) and **Setting** for 10 seconds. The display shows **CM** flashing for a few moments when this is done.

Note: To exit installer mode, the display switches back to user mode approximately 1 minute after the last pressing the keys.

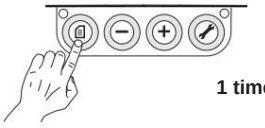
ACTION	STATE	DISPLAY
 5 "	**Menu - 1 - Fault history** indicates the last 10 faults	- 1 -

rubric	Element 1	Element 2 and 3	DISPLAY
Last fault appeared	0•	code from **01** to **99**	0. - -
Penultimate fault that appeared	1•	code from **01** to **99**	1. _ _
...	...	code from **01** to **99**	
Last fault that appeared before the previous one	9•	code from **01** to **99**	9. _ _


x times

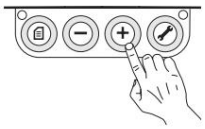


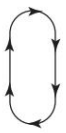
Note: The display shows -- if there was no fault code recorded


1 time

Menu - 2 - Boiler status indicates the status or configuration of the boiler

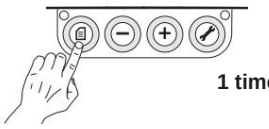
- 2 -


x times



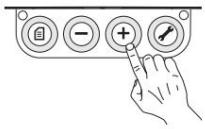
rubric	Element 1	Element 2 and 3	DISPLAY
Display board software version	0•	**10** to **99**	
Main board software version	1•	**10** to **99**	
Type of smoke evacuation	2•	**0 :** CF	2. 0
	2•	**1 :** FF variable speed	2. 1
	2•	**2 :** VMC	2. 2
	2•	**3 :** FF Fixed speed	2. 3
	2•	**4 :** condensation	2. 4
TA request present	3•	**0 :** non	3. 0
	3•	**1 :** yes	3. 1
Theoretical position of the distributing valve	4•	**0 :** sanitary	4. 0
	4•	**1 :** heating	4. 1
Sanitary outlet temperature (in °C)	5•	from **0** to **99**	5. x x
Tank temperature (in ° C)	6•	from **0** to **99**	6. x x
Heating flow temperature (in ° C)	7•	from **0** to **99**	7. x x
Heating return temperature (in ° C)	8•	from **0** to **99**	8. x x
Outside temperature Flashing when negative temperature	9•	from **0** to **99**	9. x x

ACTION	STATE	DISPLAY

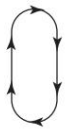


1 time

Menu - 3 - Boiler settings

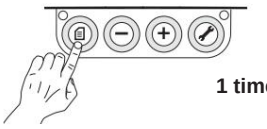


x times



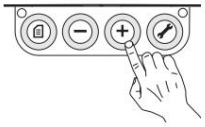
rubric	Element 1	Element 2 and 3	DISPLAY	
			-3-	
Gentle heat module	0	**0 :** non	0 0	✓
	0	**1 :** yes	0 1	
Sanitary safety temperature DHW setpoint fixed at 60° no setpoint display	1	**0 :** non	1 0	✓
	1	**1 :** yes	1 1	
Programmer action	2	**0 :** out of the 2	2 0	
	2	**1 :** on cylinder heating	2 1	
	2	**2 :** on heating	2 2	
	2	**3 :** on none	2 3	✓
Max. boiler gas power level from 70% of P nominal to P nominal	3	Value from **0** to **10**	3 5	✓

ACTION | STATE | DISPLAY

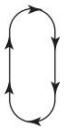


1 time

Menu - 4 - Settings for heating



x times



rubric		Element 1	Element 2 and 3	
Pump shut-off operation		0	**0 :** non	0 0
		0	**1 :** yes	0 1 ✓
Pump speed		1	**0 :** big	1 0 ✓
		1	**1 :** Small	1 1
Pump post-circulation time 0 to 5 minutes in 1/2 minute steps		2	**0** mn	2 0.0
		2	**0,5** mn	2 0.5
		2	**1,0 mn**	2 1.0 ✓
		2	**5** mn	2 5.0
Heating setpoint in	Manuel	3	**0 :** manuel	
	Automatique	3	**1 :** auto	
Maximum heating setpoint from 50 to 90°C in steps of 1°C		4	**85°C**	4 8 5 ✓
Minimum heating setpoint from 25 to 50°C in steps of 1°C		5	**35°C**	5 3 5 ✓
Setting the time threshold for the closed state 0 to 60 minutes in 1 minute steps		6 6	from **5** to **60** minutes	x x
Functioning	Normal	7	**0 :** non	7 0 ✓
	All or nothing	7	**1 :** yes	7 1
TAC From 0 to 7 minutes in steps of 1/2 minute		8	**0** mn	8 0.0
		8	**0,5** mn	8 0.5
		8	**2,5** mn	8 2.5 ✓
		8	**7** mn	8 7.0
Gas power level max. in heating from P min to P max general NOTE: P max. see menu 3 section 3		9	Value from **0** to **10**	9 5 ✓

9 Example of settings (continued)

Setting the TAC:

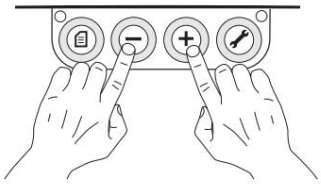
If you want to modify the setting of the TAC (Heating Anti Cycle Timer) to 3 minutes.

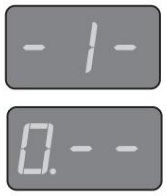
(reminder: factory setting at 2 min 30 s / see installer table menu **4** section 8).

Proceed as follows:

Display

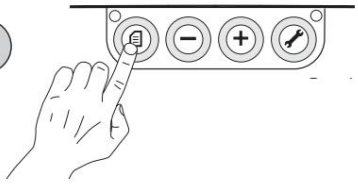
1 - switch to installer mode, touches + and − pressed for 5 seconds, the display indicates: **-1-** then **0•--** if there is no fault or a code corresponding to the last default





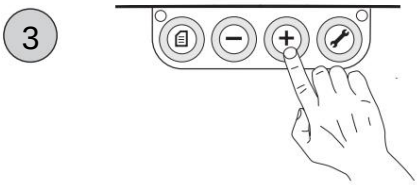
2 - press the **menu** key three times to get to menu -4-, the display shows: **-4-** then the setting of item 0

either **0 0** or **0** 1

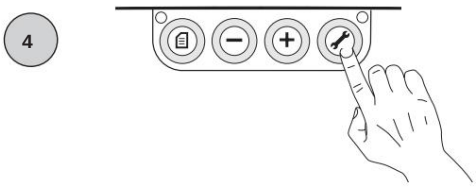


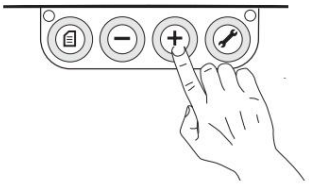
or

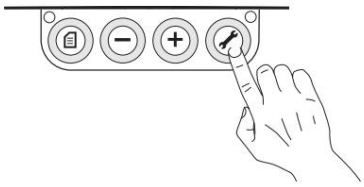
3 - go to section 8 (adjustment of the TAC) by pressing the key 8 times + the display indicates: **82.5** (which corresponds to the factory setting 2 min 30 s) **8** = item 8 **2.5** = 2.5 min - i.e. 2 min 30 seconds



4 - press the **setting** key once, elements 2 and 3 flash, then press the key until 3.0 appears on elements 2 and 3, the + display indicates: **83.0** validate by pressing the **setting** key once. Elements 2 and 3 no longer flash.







The setting is complete.
The display switches back to mode user after about 1 minute.

Once the various settings have been completed, replace the cover **D** and close the door **P** (fig.14).

10 Operating incidents

In the event of an operating or information anomaly, the display flashes a 2-digit code. Refer to the table below to diagnose the problem.

For faults 01 and 03 the device locks, red LED 28 lit (fig.16).

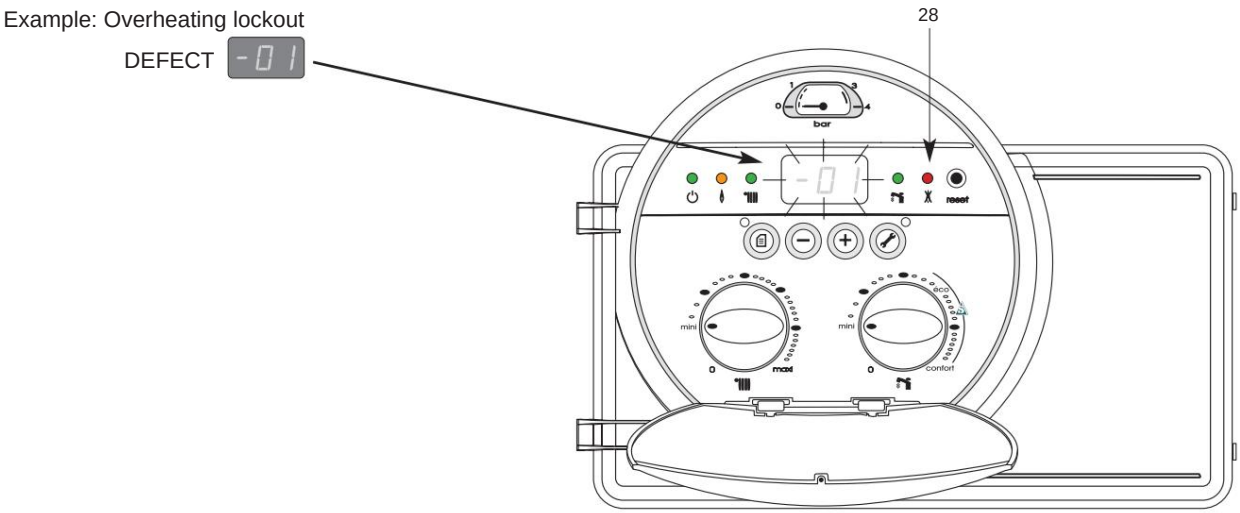


Fig. 16

Display coding	Fault title	Information
01	Overheating lockout	
03	Lockout by ignition fault	
05		Pump frost protection
06		Frost protection burner
07	No water circulation	
08	Primary water circulation fault	
09	Sanitary thermistor open	
10	Sanitary thermistor shorted	
11	Heating flow thermistor open	
12	Heating flow thermistor short-circuited	
13	Heating return thermistor open	
14	Heating return thermistor short-circuited	
17	Flue gas overflow fault shutdown (Spott) **(CF)** or 1.25 A fuse	
18		Restart attempt
19	Safety by smoke overflow **(VMC)**	
20	Wiring problem **(FF)** or 1.25A fuse	
21	No extraction flow **(FF)**	
22	Extraction detection device **(FF)** failure	
23	Low Extractor Speed **(FF)**	
24	Extractor operating control fault **(FF)**	
25	Balloon thermistor open	
26	Tank thermistor short circuited	
27		Tank temperature out of limit
31	Communication problem with the display card	
32	Communication fault with the main board	

Burner gas power adjustment The values given in the tables below are given as an indication for a nominal gas distribution pressure, to make a possible adjustment of the heating power of the boiler according to the needs of the installation.

They cannot be used to calculate the exact boiler output set.

Niagara Delta 24 FF

Gas:	G20	G25	PROPANE	BUTANE
P. utile (kW)	Feed pressure (mm WC)	Feed pressure (mm WC)	Feed pressure (mm WC)	Feed pressure (mm WC)
8	7	8	71	56
10	11	13	100	78
12	16	19	153	115
14	22	26	182	140
16	28	34	217	152
18	36	43	269	168
20	44	53	295	213
22	53	64	299	231
24	63	76	302	235

Niagara Delta 28 FF

Gas:	G20	G25	PROPANE	BUTANE
P. utile (kW)	Feed pressure (mm WC)	Feed pressure (mm WC)	Feed pressure (mm WC)	Feed pressure (mm WC)
8	7	8	71	56
10	11	13	100	78
12	16	19	153	115
14	22	26	182	140
16	28	34	217	152
18	36	43	269	168
20	44	53	295	213
22	53	64	299	231
24	63	76	302	235
26	74	89		
28	86	103		

Niagara Delta 30 FF

Gas:	G20	G25	PROPANE	BUTANE
P. utile (kW)	Feed pressure (mm WC)	Feed pressure (mm WC)	Feed pressure (mm WC)	Feed pressure (mm WC)
8	10	16	22	20
10	13	20	40	30
12	20	27	58	40
14	25	35	70	52
16	33	46	88	70
18	42	60	120	90
20	50	73	150	114
22	61	87	180	135
24	72	105	210	158
26	84	120	250	184
28	95	136	280	210
30	110	160	320	242

11 Gas transformation

In the event of adaptation to a gas other than that for which the boiler is equipped, the parts supplied with the conversion kit will be replaced.

Instructions for the user

12 Orders

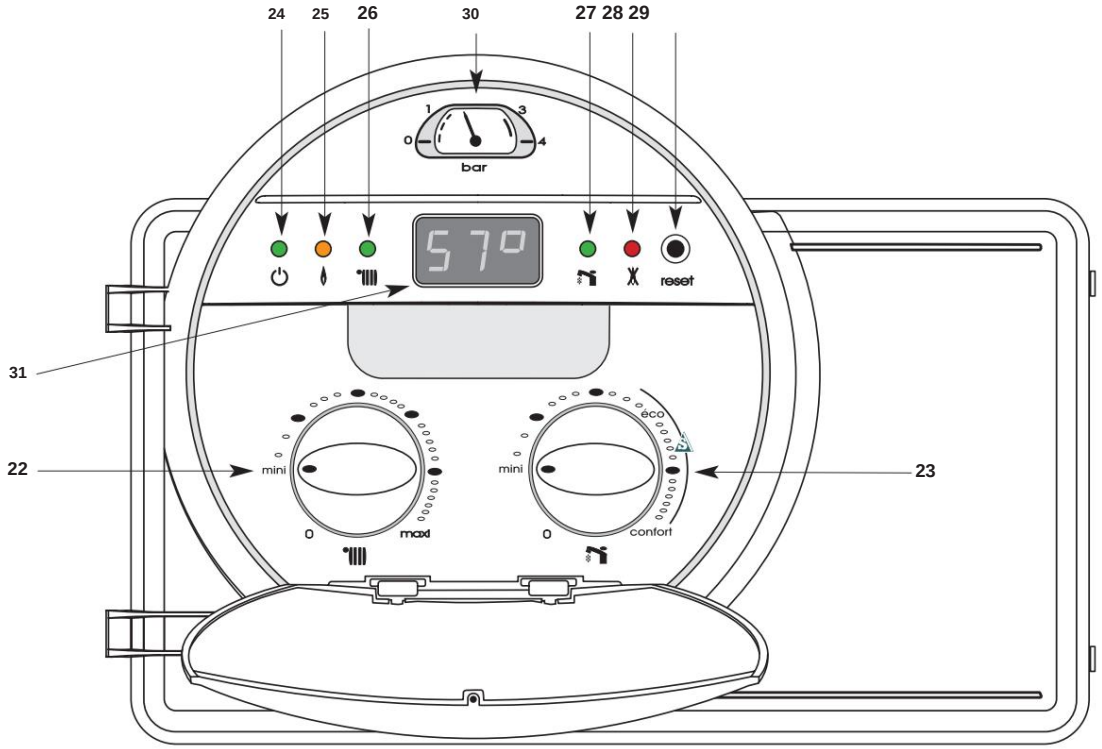


Fig. 17

Dashboard

22. - heating switch: 0 / min / max

23. - sanitary switch: 0 / mini / eco / comfort

24. - green power on light

25. - orange burner operating light

26. - green heating mode light

27. - sanitary mode green light

28. - red warning light

29. - reset push button

30. - heating circuit pressure gauge

31. - display

13 Conduct

Getting started (fig. 17)

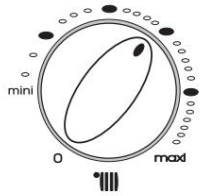
1. Check that the pressure in the heating circuit is sufficient: the needle of the manometer at least 1 bar with 1.5 bar cold max. Otherwise see § 3.
2. Make sure that the general gas shut-off valve of the installation is open and that the boiler is energized, the green light **24** ⏻ lights up.
3. Open the gas valve **39** (fig.13).

Your boiler is ready to operate.

Warning: when starting up after a prolonged shutdown, the presence of air in the gas pipe may interfere with the first ignitions. See § 20 “Operating incidents”.

Heating mode authorized only

Indicator **26** is on and the display indicates the heating flow temperature, ex. 



Switch **22** is used to adjust the temperature of the water in the heating flow circuit according to seasonal needs:

- towards maximum in cold weather
- towards minimum in mild weather

The **TA** request is displayed by a dot at the bottom right of the display 

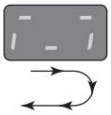
Sanitary mode authorized only

Indicator **27** is on and:

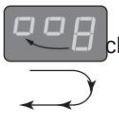
1st case: no drawing off and no tank heating

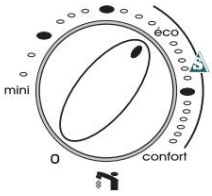
the display indicates  fixed

2nd case: tank heating

the display indicates  clockwise segment scrolling

3rd case: drawing

the display indicates  clockwise segment scrolling



Switch **23** is used to adjust the domestic water temperature between the minimum and comfort positions. During this adjustment, the display flashes and indicates the average domestic hot water storage set point temperature.

When the switch is located in the area **Delta Safe** (tank at 60°C minimum), the risk of development of bacteria of the Legionella type is avoided.

13 Driving (continued)

Sanitary and heating mode authorized

LEDs **26** and **27** are on and:

1st case: no drawing off and no tank heating

the display shows the heating flow temperature, ex. 

2nd case: tank heating

the display indicates  clockwise segment scrolling

3rd case: drawing

the display indicates  clockwise segment scrolling

Standby  Middle segment fixed + power LED **24** on

Boiler standby and frost protection function

Place the heating **22** and hot water **23** switches in position **O**
The green lights **26** and **27** go out

During this mode, the circulator operates for 1 minute and the distributor valve switches over every 23 hours.

Caution: in this mode, the TA frost protection function is inoperative.

Boiler frost protection function: at 7°C triggering of the pump
at 4°C burner triggering

To ensure the frost protection function of the TA leave the boiler in the heating position

Complete shutdown of the boiler

- place switches **22** and **23** in position **O** extinguishing green lights **26** and **27** - cut off the power supply to the appliance - close the gas valve **39** (fig. 13)

Note: in this position, **frost protection** is not guaranteed

14 Maintenance

The annual maintenance of your boiler is compulsory under the terms of the legislation in force.
Have it checked once a year by a qualified professional.
For all maintenance operations on your boiler, annual maintenance contract formulas may be offered to you by service providers. Consult your installer or our sales department.
The manufacturer's warranty, which covers manufacturing defects, should not be confused with maintenance operations.

15 Combustion product evacuation safety

This boiler is fitted with a burnt gas extraction flow detection system which authorizes burner operation. In the event of a prolonged lack of flow, the boiler is put into safety shutdown; fault code display **21** 

Warning: this device for controlling the evacuation of combustion products must not be put out of service; nor be the object of inopportune interventions. In case of replacement, only original parts can be used.

16 Guarantee

Your boiler is guaranteed for a period specified on the guarantee certificate which specifies the terms and conditions: make sure that the detachable part of this certificate has been returned to Chaffoteaux & Maury.

To benefit from the guarantee, a qualified professional must have installed, adjusted and commissioned your installation. This gives you the assurance that he has complied with the installation instructions and that the regulatory and safety conditions have been complied with.

The first technical inspection of your boiler can be carried out free of charge at your request by a qualified professional from the “Chaffoteaux & Maury technical station”.

17 Practical advice

Frost Precautions

We advise you to consult your installer or your after-sales service who will tell you which measures are best suited to your situation. • **Sanitary circuit**

The boiler's sanitary circuit is drained after having closed the installation's cold water tap at the water meter, then: - open a hot water tap, - activate the drain valve of the balloon valve **38** (fig. 18). Water flows out of the drain hole. • **Heating circuit** Take one of the following measures: - 1) Drain the circuit of the heating installation - 2) Protect the heating installation with an antifreeze product.

Periodic verification of the level of protection provided by this antifreeze is an additional guarantee.

- 3) Let your installation run at idle speed by setting the room thermostat to the “frost protection” position (between 5 and 10°C).
Caution: leave the boiler in the heating position

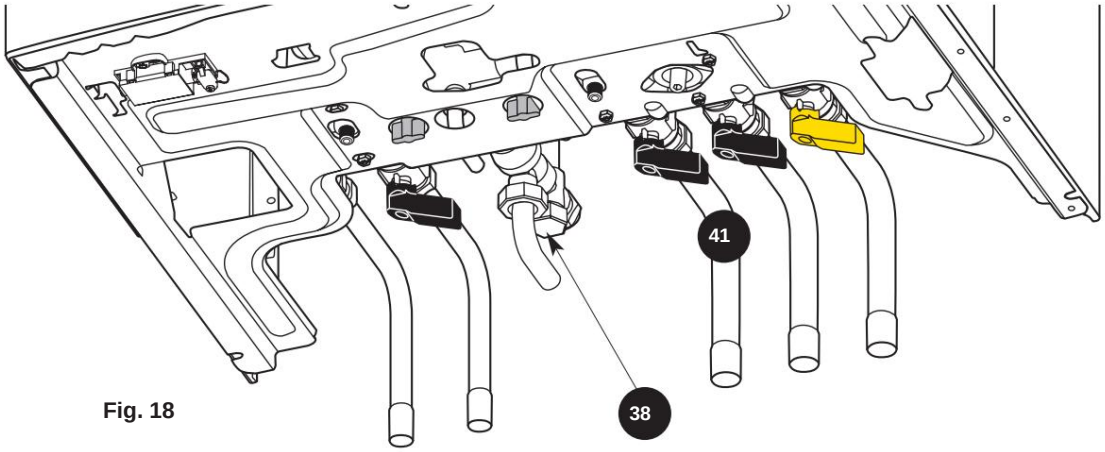


Fig. 18

18 Gas change

These devices are designed to operate either with natural gas or with butane-propane gas.
The gas change must be carried out by a qualified professional.

19 Technical characteristics

Model.....	Niagara delta 24 FF		Niagara delta 28 FF	
Heating power .....Pn Power variable domestic	8.2 to 24 kW		8.2 to 28 kW	
hot water .....Pn max	24 kW		28 kW	
Performance category according to RT 2000	Low temperature		Low temperature	
Category	II 2E+3+		II 2E+3+	
Forced flow sealed type.				
- C12 concentric horizontal outlet Ø 100/60 mm				
- C32 «xx» in concentric vertical outlet Ø 125/80 mm - C42 3CE for				
evacuation ducts of the type: ....• SPIRAL GAS 3CE				
.....• ROLUX 3CE				
Fresh air flow required for air supply to combustion.....V	46 m3 /h		56 m3 /h	
Specific domestic hot water flow (ÿT: 30 K) .....D Domestic hot water	18.7 l/min.		21.0 l/min.	
ignition flow	1.9 l/min.		1.9 l/min.	
Minimum flow rate of the central heating circuit	300 l/h		300 l/h	
Minimum DHW cut-in pressure Pw min	0,5bar		0,5bar	
Maximum DHW circuit pressure .....Pw max	7 bar		7 bar	
Maximum heating circuit pressure .....Pw max Adjustable heating	3 bar		3 bar	
flow temperature	from 40 to 85°C		from 40 to 85°C	
Average DHW storage temperature	from 45 to 70°C		from 45 to 70°C	
Sanitary circuit capacity	60 litres		60 litres	
Electric tension.....	230 volt mono - 50 Hz		230 volt mono - 50 Hz	
Absorbed electrical power	150W		150W	
Electrical protection	IP 44		IP 44	
Nominal gas flow (15°C-1013 mbar)	Max flow.	Minimum flow.	Max flow.	Minimum flow.
Qn 26.7 kW 2.83 m3 /	9.5 kW		31.1 kW	9.5 kW
G 20 (GN H - Lacq).....34.02 MJ/m3 under 20 mbar Vr G 25 (GN L -	h 3.01 m3 /	1.00 m3 /h	3.29 m3 /h	1.00 m3 /h
Groningen) 29.25 MJ/m3 under 25 mbar Vr G 30 (butane) . .....45.6 MJ/	h 2.11 kg/h	1.06 m3 /h	3.50 m3 /h	1.06 m3 /h
kg at 28-30 mbar Vr G 31 (propane) .....46.4 MJ/kg at 37 mbar Vr	2.07 kg/h	0.74 kg/h	2.46 kg/h	0.74 kg/h
		0.72 kg/h	2.41 kg/h	0.72 kg/h
	Nat	**Prop**	**Nat**	**Prop**
Nanny location G20-G25		G30-G31	G20-G25	G30-G31
Marking .... 1305249 NAT 1305248 PRO 1303601 NAT 1305247 PRO Injectors in 1/100 mm..... 123				
No. of injectors.....		68	123	72
	18	18	18	18
Diaphragm				
Diameter/marking	4,8	4	6,2	7,0
Solenoid valve assembly				
Tracking..... ..... NAT GAS Color of valve seat.....	noir	GOAL/PROP yellow	NAT GAS black	GOAL/PROP yellow

Technical characteristics (continued)

Model.....		Niagara delta 30 FF	
Heating power .....Pn Hot water capacity variable		10.1 to 30 kW	
sanitary ....Pnmax		30 kW	
Solution Technique RT 2000.....		Low temperature	
Category.....		II 2E+3+	
Forced flow sealed type.			
- C12 concentric horizontal outlet Ø 100/60 mm.....			
- C32 «xx» in concentric vertical outlet Ø 125/80 mm - C42 3CE for			
evacuation ducts:..... • SPIRAL GAS 3CE			
• ROLUX 3CE			
Fresh air flow required for air supply to combustion V		59 m3 /h	
Specific domestic hot water flow rate (ÿT: 30 K) .....D Domestic hot water ignition		22.3 l/min.	
flow		1.9 l/min.	
Minimum flow rate of the central heating circuit		300 l/h	
Minimum sanitary cut-in pressure .....Pw min		0,5bar	
Maximum DHW circuit pressure .....Pw max		7 bar	
Maximum heating circuit pressure .....Pw max Adjustable boiler flow		3 bar	
temperature		from 40 to 85°C	
Average DHW storage temperature		from 45 to 70°C	
Sanitary circuit capacity		60 litres	
Electric tension.....		230 volt mono - 50 Hz	
Absorbed electrical power		150W	
Electrical protection		IP 44	
Nominal gas flow (15°C-1013 mbar)		Max flow.	Minimum flow.
.....Qn		33.3 kW	11.3 kW
G 20 (GN H - Lacq)..... .....34.02 MJ/m3 under 20 mbar G 25 (GN L -	Vr	3.52 m3 /h	1.2 m3 /h
Groningen) ....29.25 MJ/m3 at 25 mbar G 30	Vr	3.74 m3 /h	1.27 m3 /h
(butane) ....45.6 MJ /kg under 28-30 mbar G 31	Vr	2.62kg/h	0.89 kg/h
(propane) ....46.4 MJ/kg at 37 mbar	Vr	2.58 kg/h	0.88 kg/h
.....		**Nat**	**Prop**
Nanny location		G20-G25	G30-G31
Marking		1306949 NAT	1306960 PRO
Injectors in 1/100 of mm.....		123	74
No. of injectors.....		18	18
Diaphragm			
Diameter/marking		9	9
Solenoid valve assembly			
Marking		NAT GAS	GOAL/PROP
Color of valve seat		black	yellow

20 Operating incidents

Incidents	Causes	Solutions
The boiler does not start	Absence of gas, Absence of water No electricity	Make the necessary checks (gas supply, presence of water, circuit breakers, fuses, etc.)
	Presence of air in the gas circuit	May occur after prolonged downtime. Repeat the commissioning operations, see § 8
	Shutdown by the room thermostat	Adjust the room thermostat.
Red light on; secured		Wait a few minutes. Press the reset button **29** (fig. 17): the red light goes out, the ignition cycle starts again. If the “safety” setting persists, have a qualified professional intervene.
Noises in the heating system	Presence of air or insufficient pressure	Purge the heating installation or restore the pressure, see § 8
Heating radiators in SUMMER operation	Thermosiphon phenomenon at the start of the heating circuit	In summer, close the heating outlet tap **41** (fig. 18), do not the start of the season.

However, if these solutions remain unsuccessful, call a qualified professional.

C

47 rue Aristide Briand
92532 LEVALLOIS PERRET Cedex
Tel. Consumer reception: 01 47 59 80 60 Tel.
Professional Technical Assistance: 01 47 59 80 20 Commercial Services Fax: 01 47 59 80 01
Fax Services Techniques : 01 47 59 80 02
www.chaffoteaux-maury.fr