

TIME POWER

02-2021



Green Heating Technology

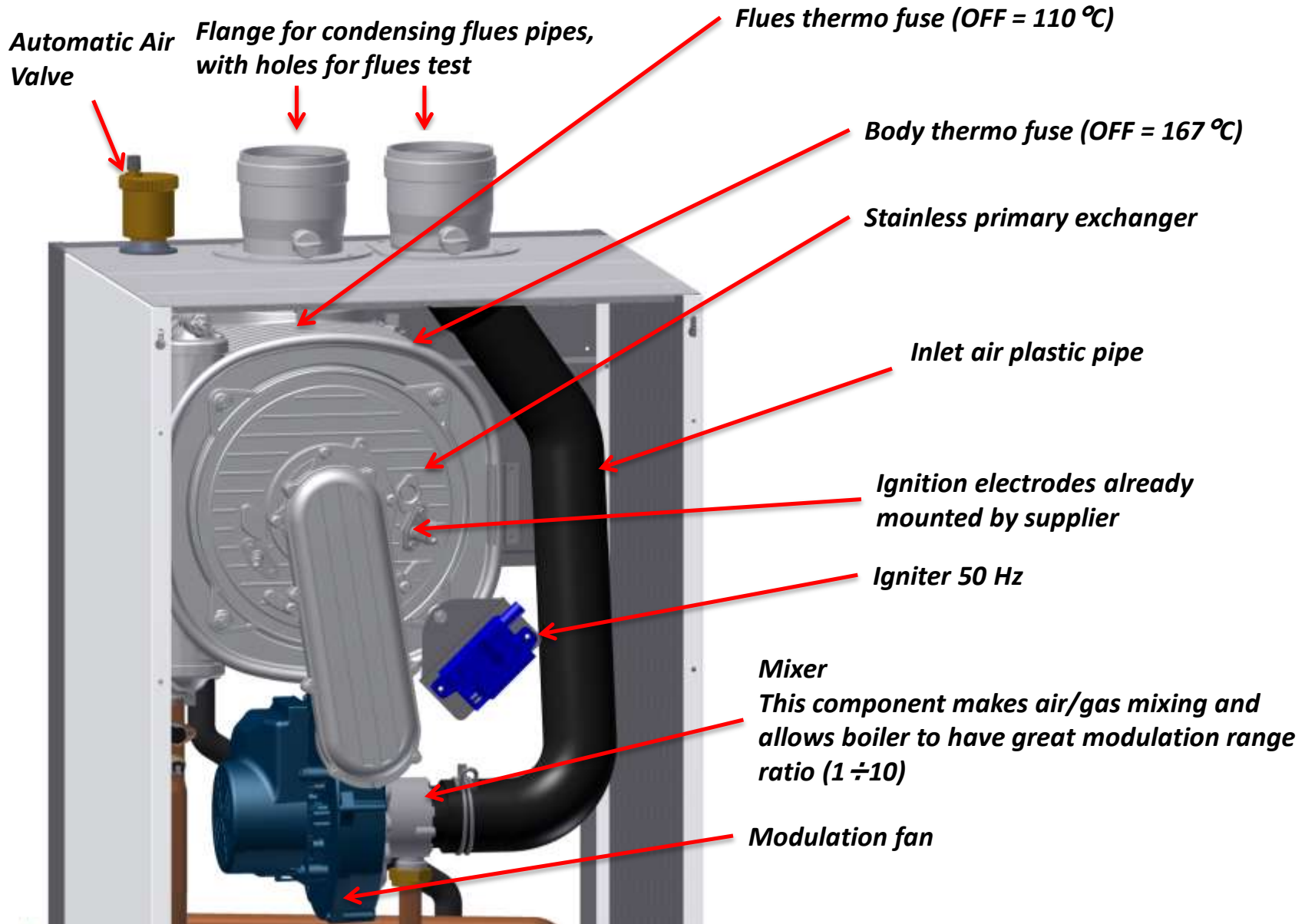
ITALTHERM

MAIN FEATURES

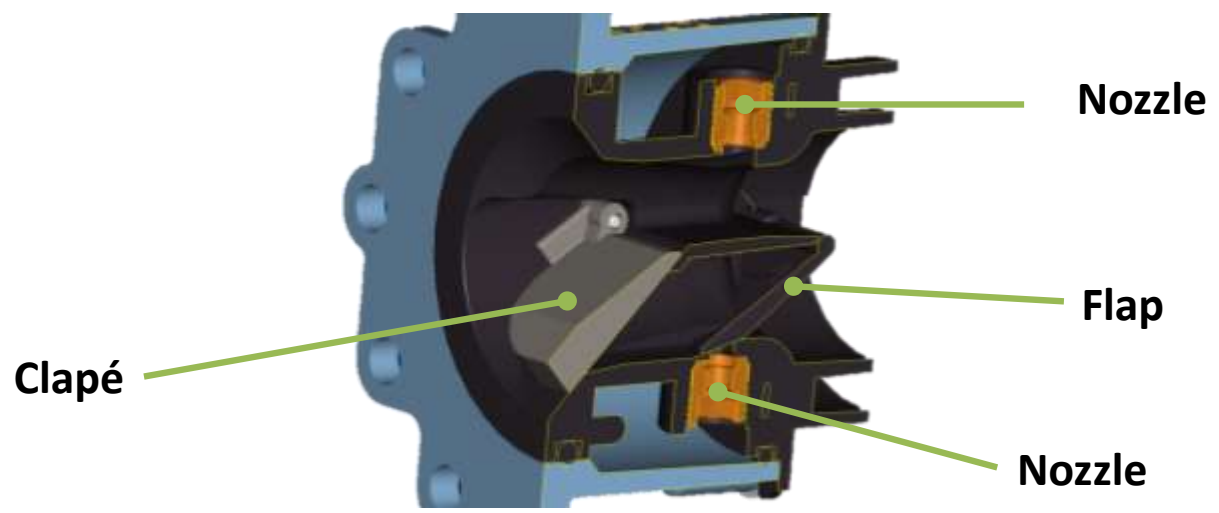
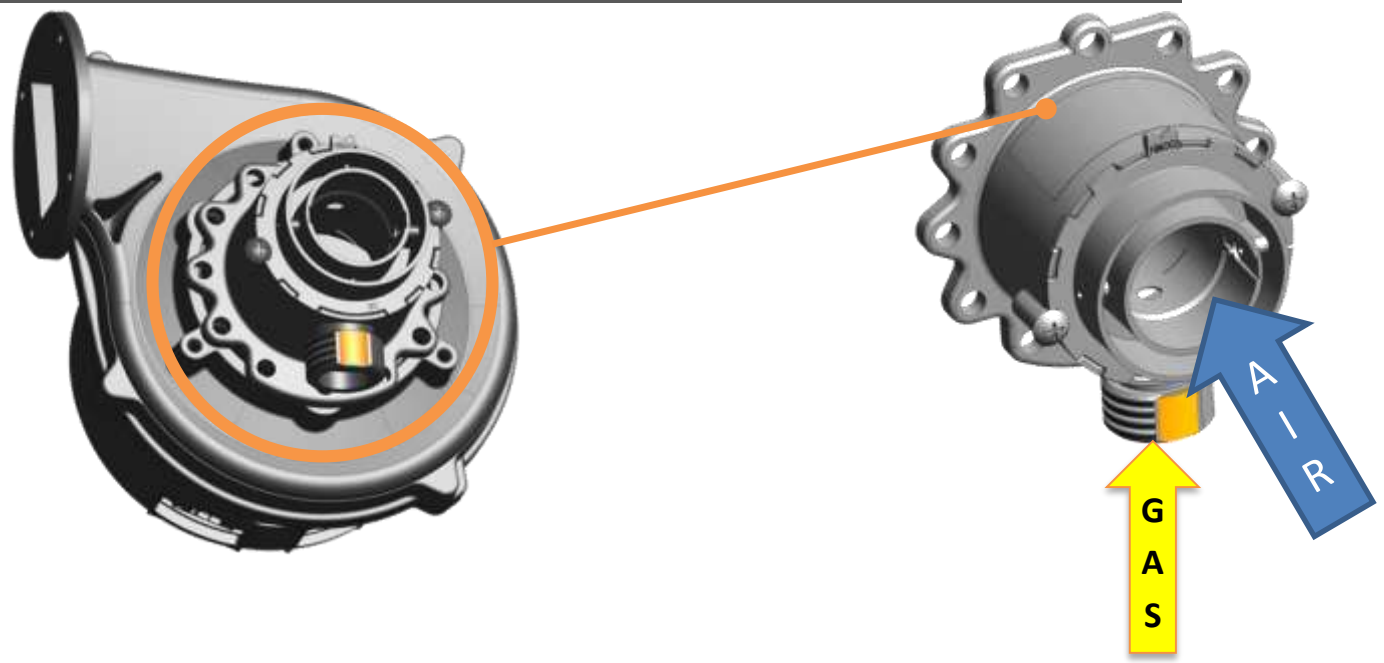
- ✔ Pressure plant showed on Display and on manometer*
- ✔ History of Errors*
- ✔ Opportunity to handle an external 3way valve*
- ✔ Opportunity to handle the external pump*
- ✔ Function Hourly Tank preparation*
- ✔ Function PLUS to speed up the Tank preparation*







CONDENSING COMBUSTION SIDE

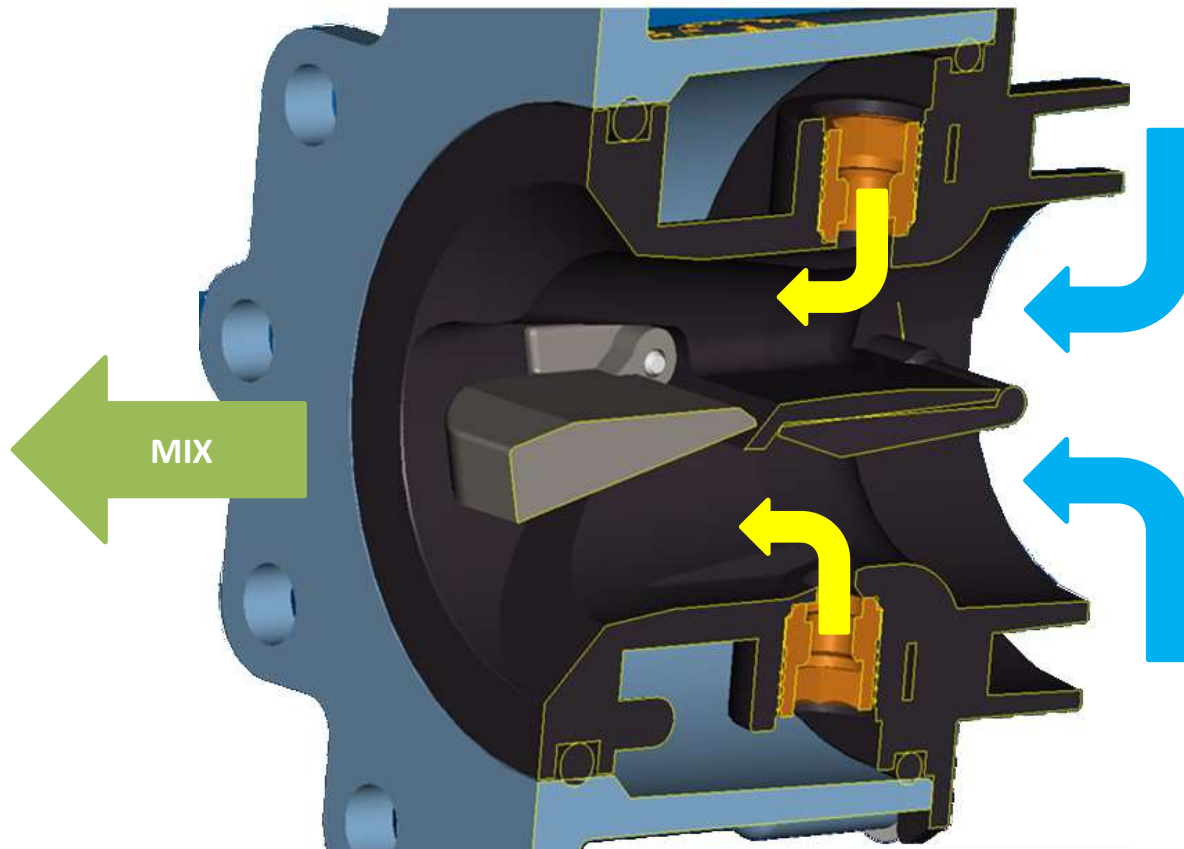


MIXER



1 - OPENING MIXER - *working phase*

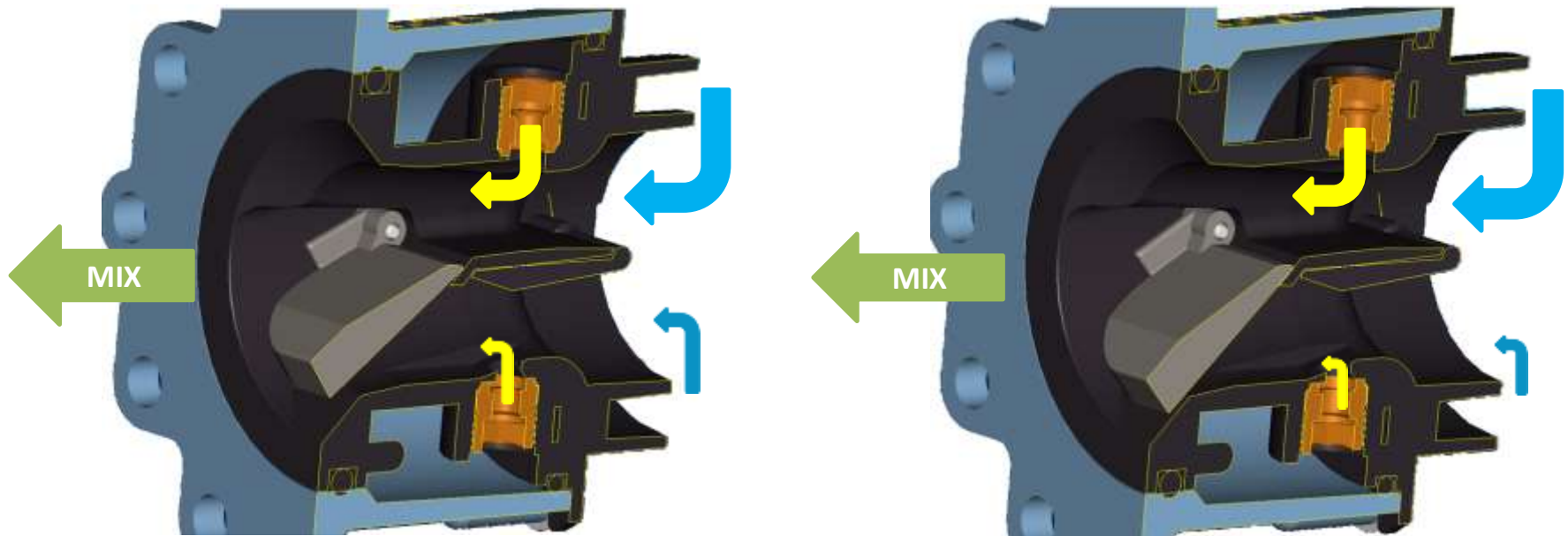
-  In this phase, the position of Clapé and Flap are open as showed.
-  Air and Gas are taken by both sides of mixer, based on fan revolutions applied.
-  The fan revolutions decrease from Max value (100%) to about 38%*, without losing right combustion values .
-  This is the standard functioning of premix boiler.



* This value is approximate because condensing boilers make little regulation by themselves, according to the length of flues pipes and draught of chimney system.

2 - WORKING MIXER - *working phase*

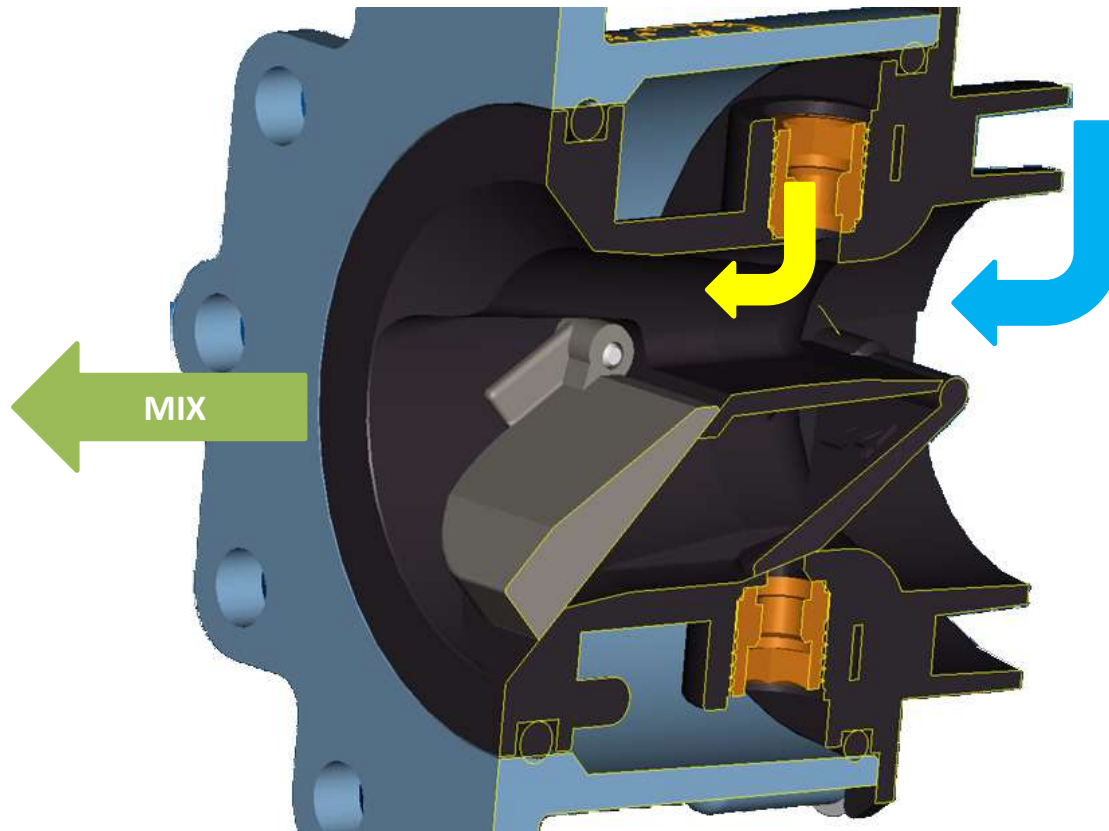
- 🇮🇹 This phase starts approximately around 38 %* of maximum power and ends about 19%* of maximum power.
- 🇮🇹 Basically, because of combination between fan revolutions decreasing and its weight, the clapé begins to move down to its rest position, partially closing 1 way of mixer, without losing right combustion values.
- 🇮🇹 In this phase, Clapé does not close completely the way: it remains open in a intermediate position based on fan revolution ensuring the right air-gas mix for burner.



* This value is approximate because condensing boilers make little regulation by themselves, according to the length of flues pipes and draught of chimney system.

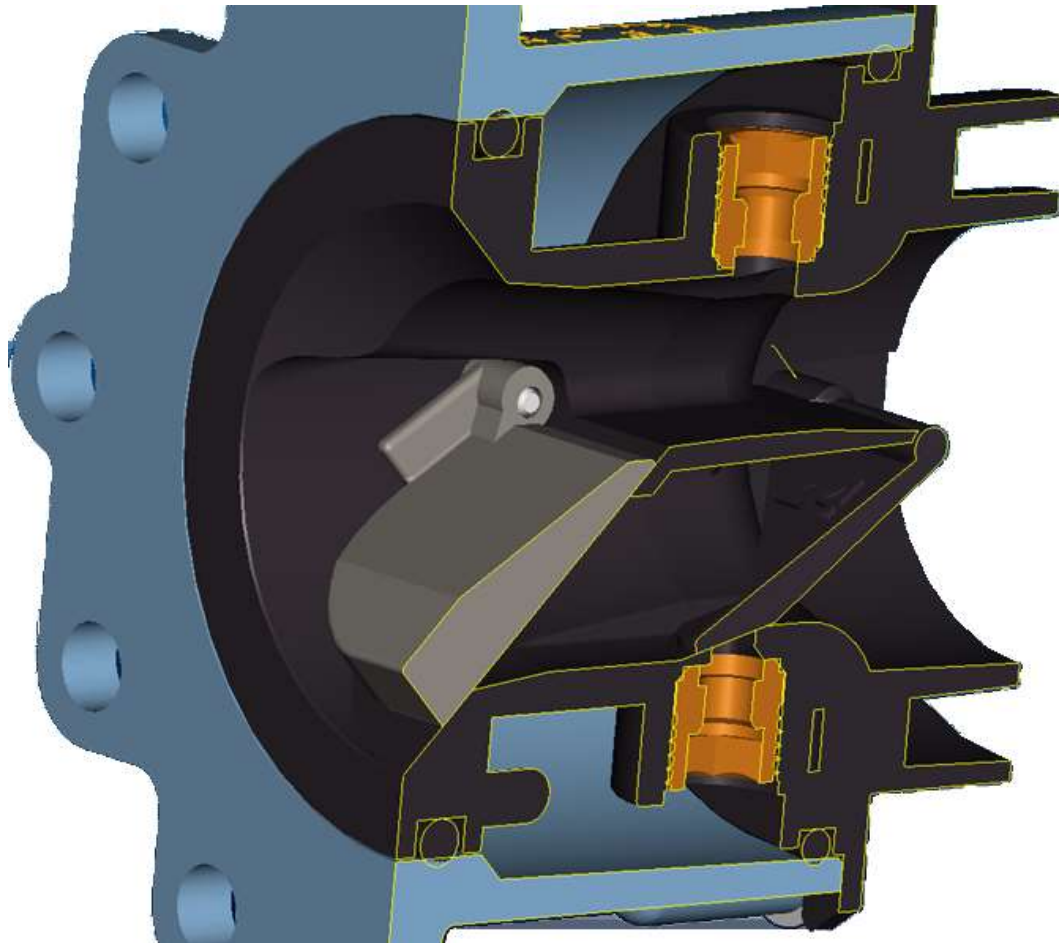
3 - CLOSING MIXER - *working phase*

- 🇮🇹 This phase starts approximately under 19% of maximum power, and it works until 10.5 %* (min value).
- 🇮🇹 Fan revolutions are still decreasing and as result Clapé closes completely; as soon as it happens, Flap closes as well.
- 🇮🇹 At that moment, mixer works just with 1 way, but keeping combustion values good.



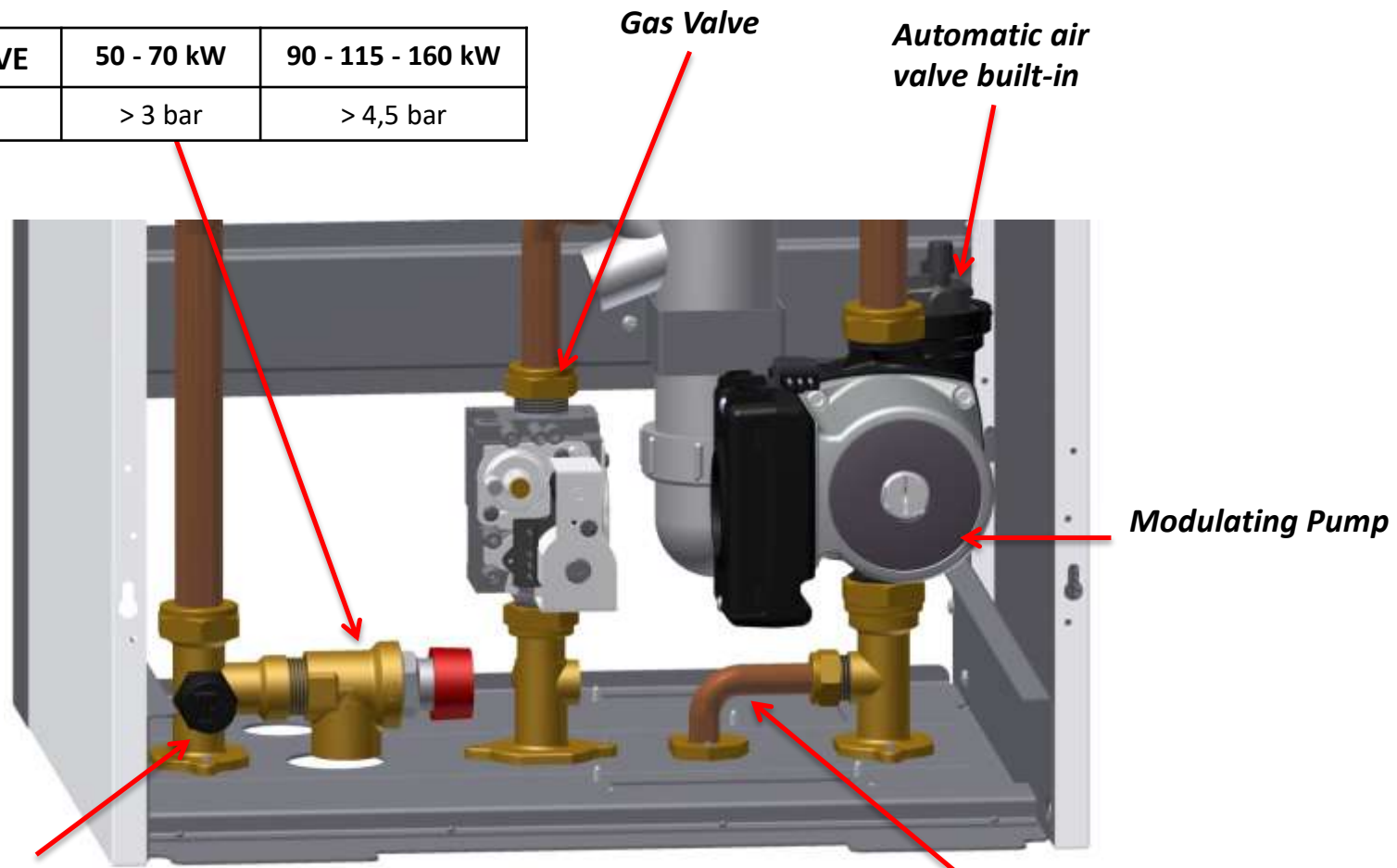
* This value is approximate because condensing boilers make little regulation by themselves, according to the length of flues pipes and draught of chimney system.

- ✔ Every movement of Mixer's parts is handled by fan's speed.
- ✔ NO any electric connection with main PCB
- ✔ According to temperature needed, main PCB changes fan revolution.
- ✔ Even reducing its passing section, the Air/Gas mix is always correct



HYDRAULIC SIDE

SAFETY VALVE	50 - 70 kW	90 - 115 - 160 kW
Pressure ON	> 3 bar	> 4,5 bar

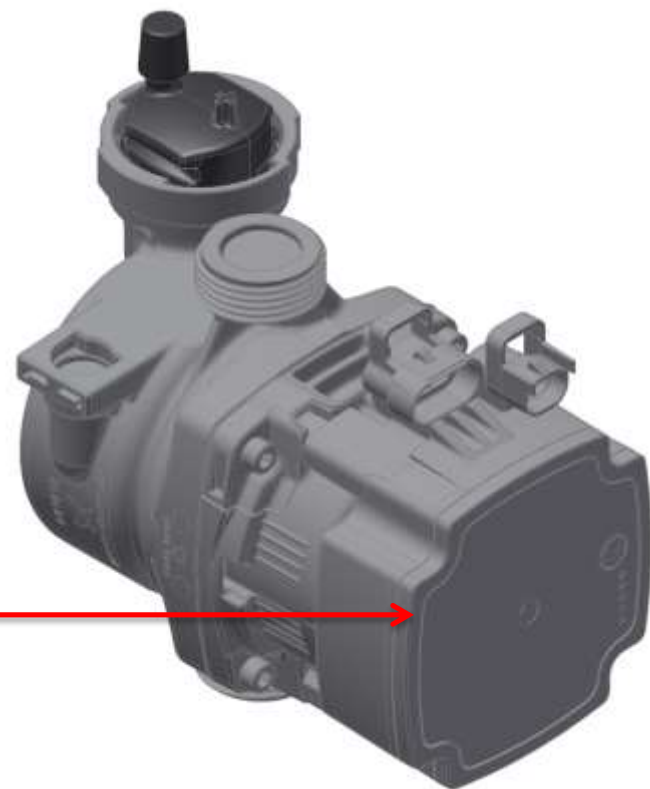


TRANSDUCER	50 - 70 kW	90 - 115 - 160 kW
Pressure ON	> 1,2 bar	> 1,2 bar
Low pressure (E10)	< 0,8 bar	< 0,8 bar
High Pressure (E92)	> 3 bar	> 4,5 bar

Pipe for inlet water

MODULATING PUMP - *general features*

- ✔ High Efficiency pump (Class A)
- ✔ Air vent valve built-in
- ✔ Only on condensing model because modulation pump must be managed by 2 probes (flow and return).
- ✔ Modulation function used only on CH demand

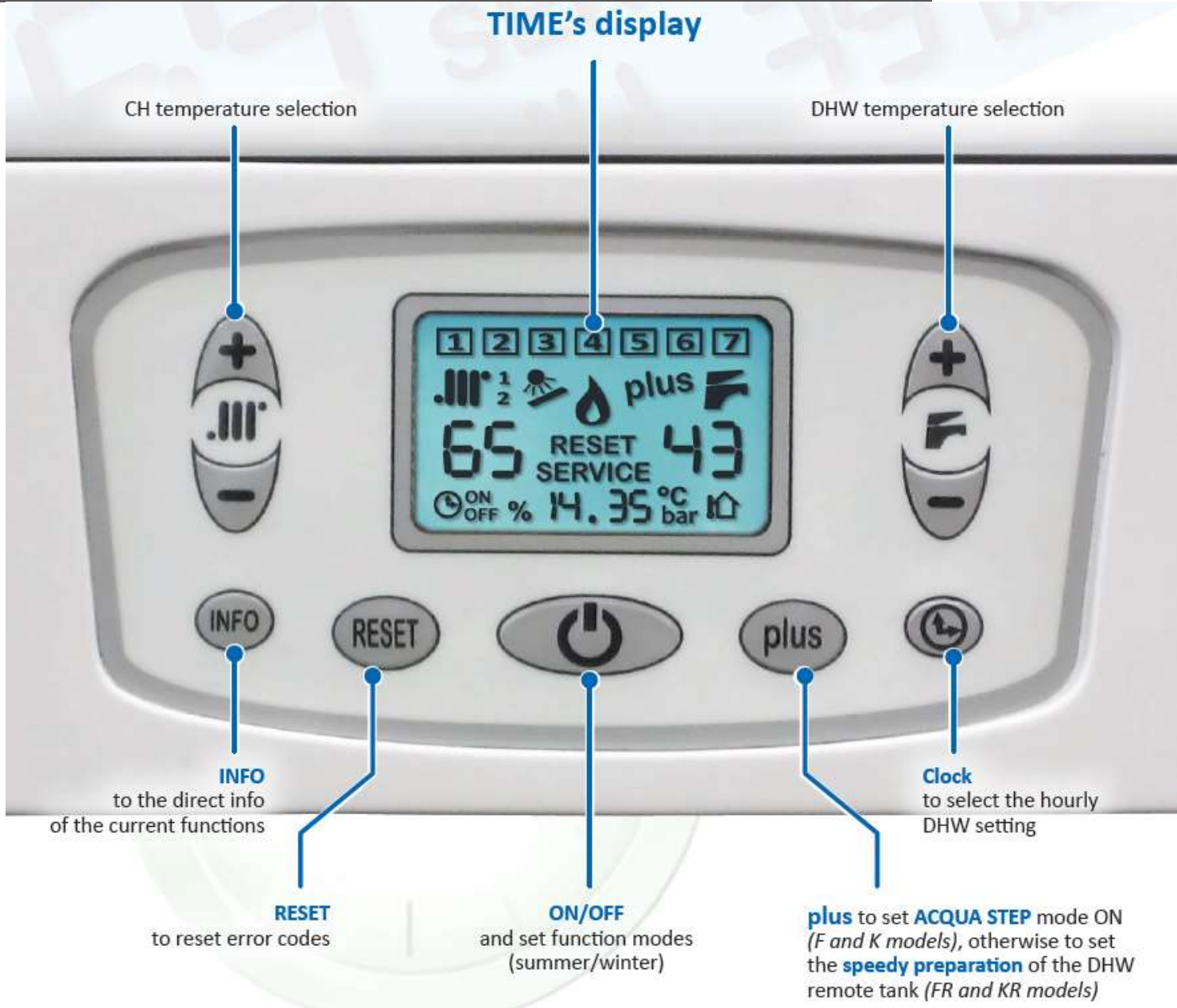


PUMP ELECTRIC WORKING FIELD

Min and Max power is based on boiler's power, but it is not advised to decrease the factory setting of minimum power. This is to ensure the minimum head of pump, needed to avoid possible overheat problems of main exchanger due to water speed on the plant too slow.

	MINIMUM POWER	MAXIMUM POWER
	% min revolution	% max revolution
50-70 KW	65%	99%
90-115-160 KW	65%	99%

CONTROL PANEL



How it works:

- Activating this function, end user can handle the external tank preparation according to the hour where hot water is really needed.
- Without this function, the tank preparation cycle ON-OFF is based on the value detected by the probe.
- With this function, end user can decide 2 time-slot for each day of the week.

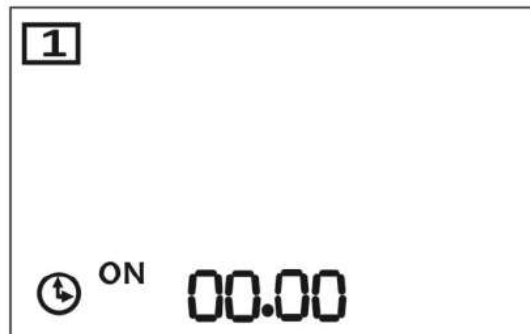
How to activate and set:

1- Starting from “Summer or Winter” mode,

2- Pushing button  for 3 seconds


3- Scroll options pushing buttons + Ris and – Ris

4- Scroll values pushing buttons +San and - San



*clock of boiler must be set before

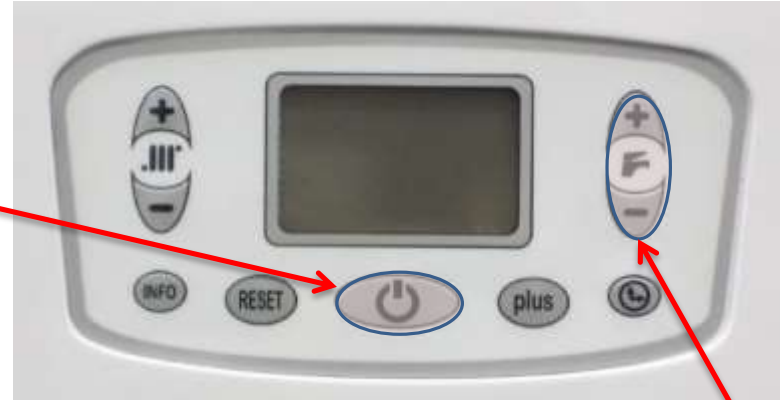
How it works:

- Activating this function, many SET of the boiler are disabled (CH mode and Tank preparation).
- Anti-freeze protection is still granted.
- The boiler comes back to normal functioning after the days selected, or pushing the button OFF 

How to activate:

1- Starting from "OFF" mode,

2- Pushing button OFF  for 5 seconds



3- Set the days of Holiday pushing buttons + San e – San 

4- Display will show the decreasing days.

How it works:

🇮🇹 Tank preparation SET is forced at the max value for 1 hour

🇮🇹 Pushing button + **San** or – **San**  , this function is disabled and the


🇮🇹 boiler come back to normal working

How to activate:

Pushing for 5 sec the button PLUS



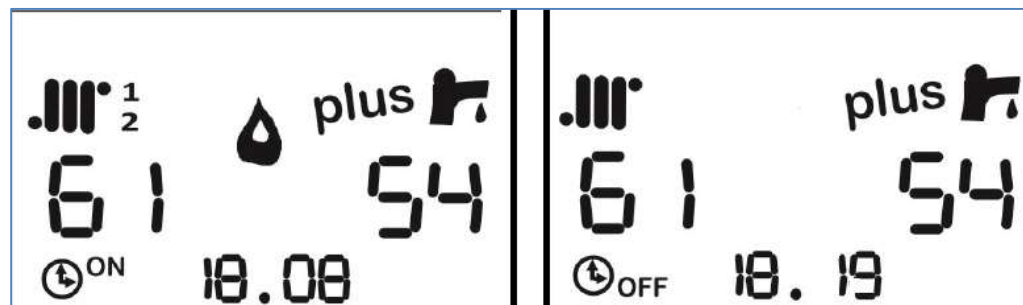
How it works:

-  With remote tank connected, this function sets the flow temperature to the max, in order to speed-up the tank preparation.

How to activate:

Pressing the button  on control panel

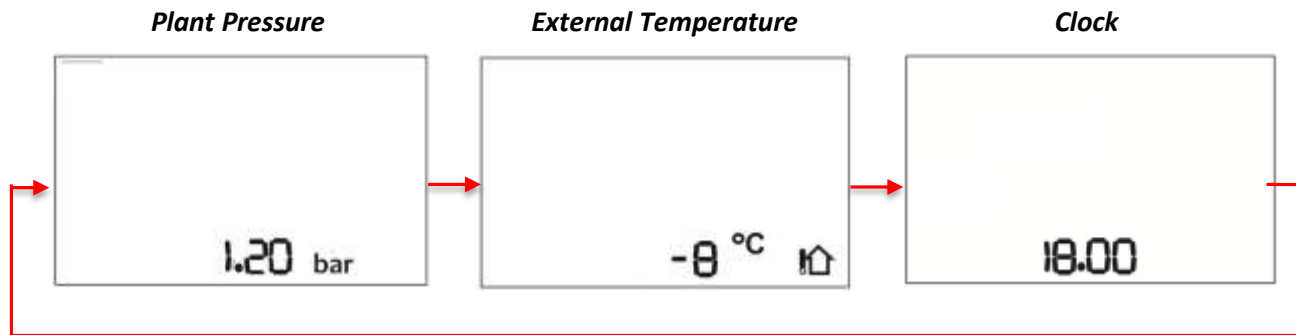
If clock is set, Plus Function can be managed by the Hourly programming; this way user has complete control of function



What it shows:

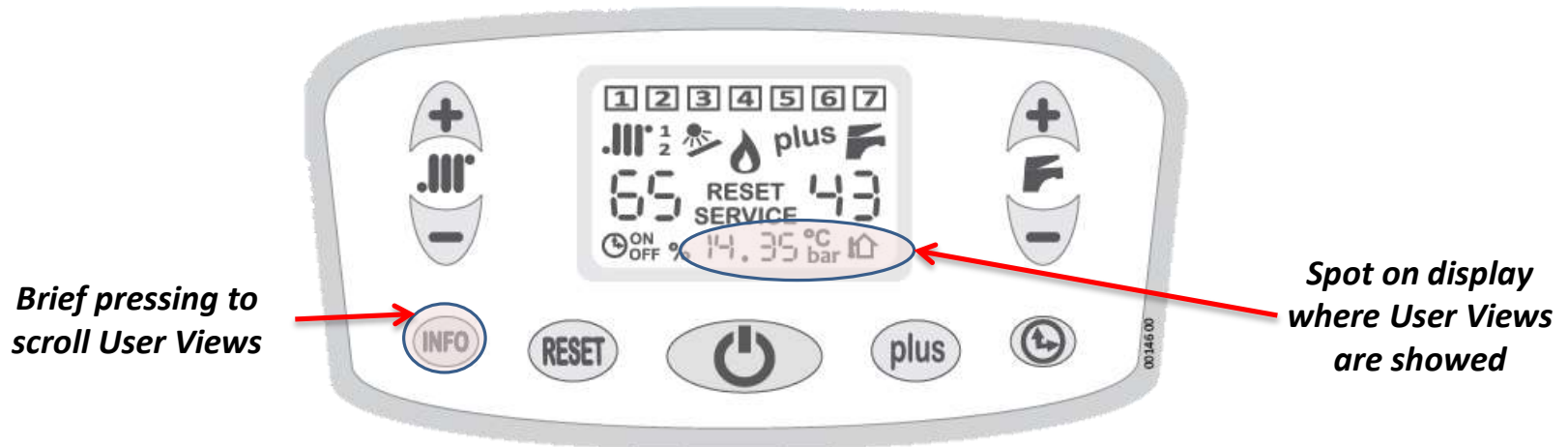
Cyclical views containing some information, such as:

-  **Plant pressure**
-  **External temperature (if external probe is present)**
-  **Current clock (if regulated before)**






How to activate:

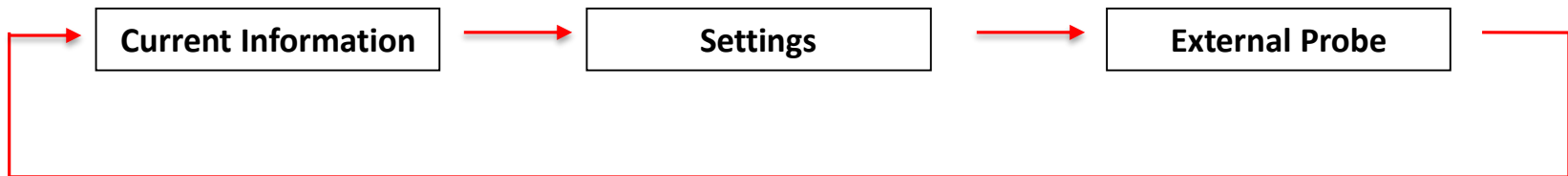
During normal functioning pressing briefly INFO button, User Views are showed:



What it shows:

Cyclical views containing some information, such as:

-  **Current Information**
-  **Settings**
-  **External Probe information (if present)**

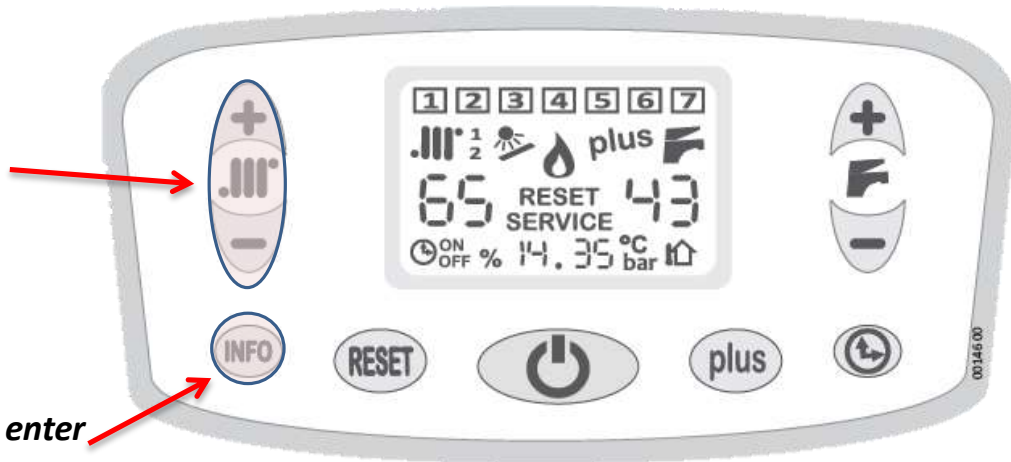


How to activate:

During normal functioning pressing for 5 sec. INFO button, Technical views are showed:

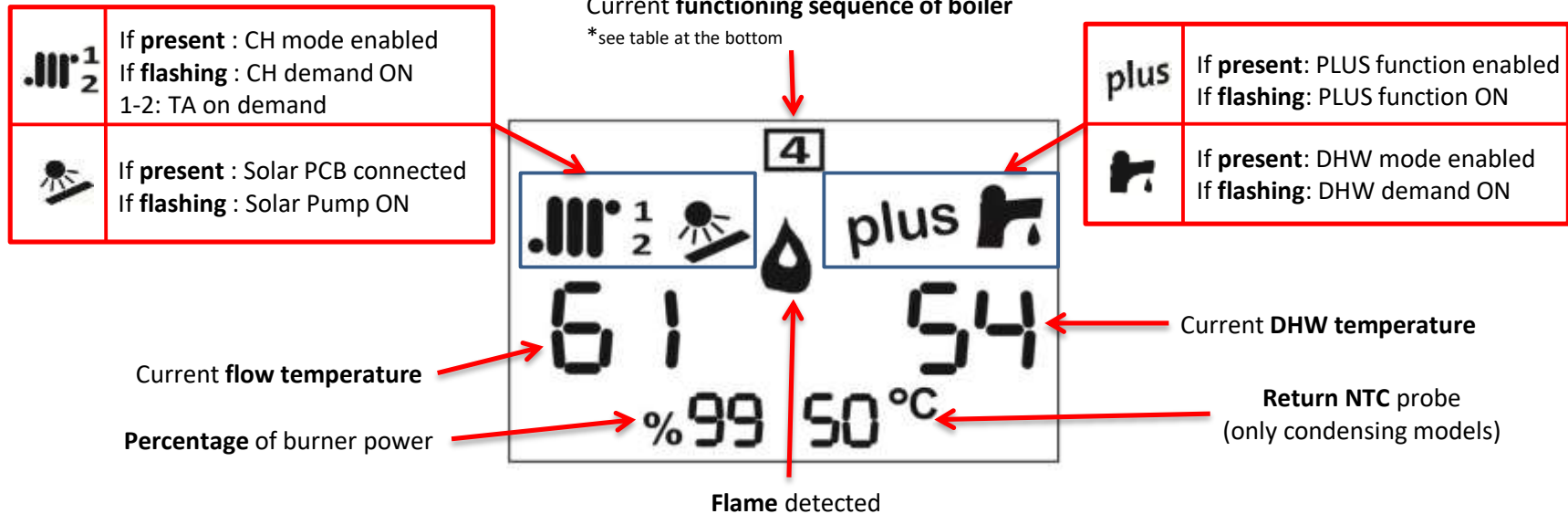
Briefly pressing to scroll information

Pressing for 5 sec. to enter on Technician Views



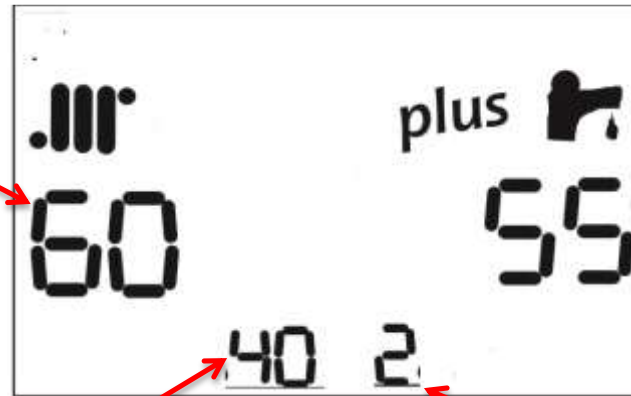
Current functioning sequence of boiler

*see table at the bottom



N°	Ignition Step	Description
	NO DEMAND IN PROGRESS	NO demand in progress
1	STARTING CHECK CYCLE	Fan Minimum Revolutions control
2	START FAN CYCLE	Fan ON, checking fan revolution (NO flame yet)
3	BURNER CYCLE:	Gas valve open and sparking but NO flame yet
4	NO DETECTION FLAME	Timing for detection flame is over: waiting for new ignition attempt
5	DETECTION FLAME DONE	Slow ignition is running
6	MODULATION CYCLE	Calibration of gas quantity burned according to kind of demand
7	ENDING CYCLE	Gas Valve OFF, post circulation and post ventilation

Current **CH SET** point for **TA1** or
gradient curve External probe SET



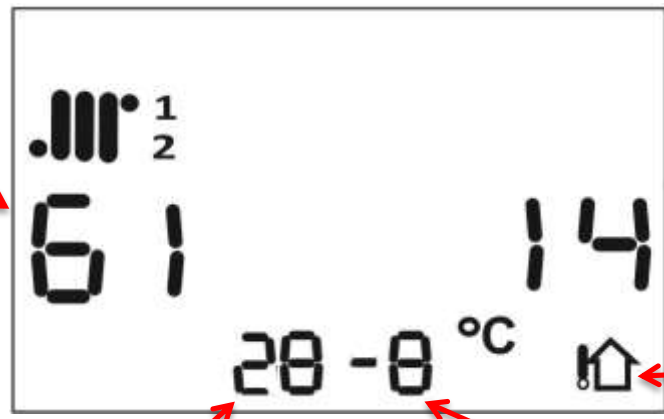
Current **DHW SET**point

Current **CH SET** point for **TA2**

NOT USED in this configuration

TA1 temperature calculate based on gradient external probe setting

Current gradient curve setting



External Probe presence

TA2 temperature calculated according to gradient external probe setting



Current external temperature detected

BOILER'S PARAMETERS *to manage boiler*



How to enter:

1) Boiler status: **OFF**


Push at the same time: + risc  and + san 


Keep on pushing for **10 sec.** until **"SERVICE"** appears.

2) The number on the left shows the **n° of parameter**. Scroll the parameter with + risc or - risc



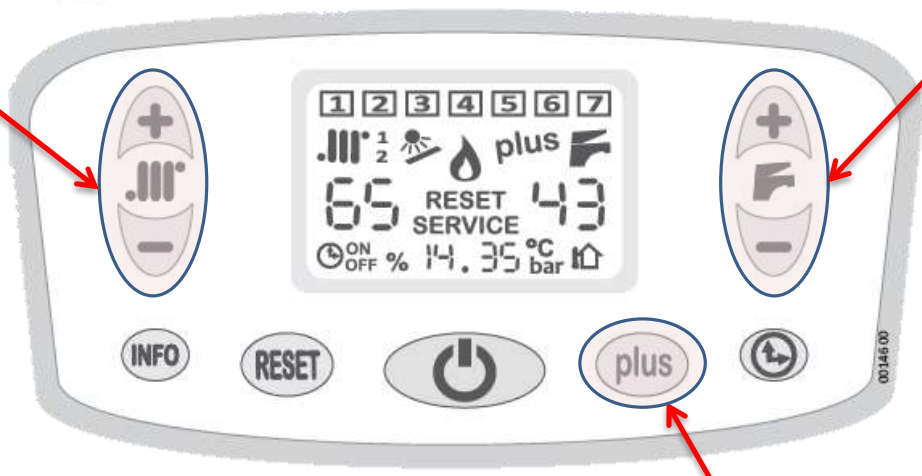
3) The number on the right shows **the value of the parameter**, Set the value with + san or - san

4) To store changes, push **PLUS**  for 3 sec.

5) Exit function with **OFF** 

Scroll parameters

Change Values



Storage Changes

Color Key

Suggested to not modify

Description	N°	Boiler Configuration
General Settings		
Power of boiler	0	SINGULAR or CASCADE
Type of gas	1	SINGULAR or CASCADE
Set pressure values for loss of water switch	36	SINGULAR or CASCADE
External Temperature Correction	39	SINGULAR or CASCADE
CH and DHW Working Temperature		
Temperature Range for CH demand	2	SINGULAR or CASCADE
Temperature SET for TA2	17	SINGULAR or CASCADE
NOT USED	40	SINGULAR
Min Flow Temperature	41	SINGULAR or CASCADE
Tank Working Temperature		
SET temperature of tank	23	ONLY SINGULAR
SET temperature of tank during the hourly tank preparation	24	ONLY SINGULAR
ΔT for re-ignition boiler on tank preparation demand	25	ONLY SINGULAR
ΔT to get the max flow temperature during tank preparation	26	ONLY SINGULAR
ΔT to set the min value of T flow on Tank preparation demand	27	ONLY SINGULAR
Anti-legionella Function	28	ONLY SINGULAR
Activation timing Anti-legionella	29	ONLY SINGULAR
Duration of Anti-legionella function	30	ONLY SINGULAR
Pump management on CH demand		
Functioning of pump on CH demand	5	SINGULAR or CASCADE
Modulating Pump Activation (only Heating demand)	33	SINGULAR or CASCADE
Set the ΔT for modulating pump	34	SINGULAR or CASCADE
Max modulating pump power	35	SINGULAR or CASCADE

PARAMETERS *sort by function managed*

Color Key

Suggested to not modify

Description	N°	Boiler Configuration
Timing		
Delay of re-ignition boiler after SET reached	6	SINGULAR or CASCADE
Timing to reach the maximum power in CH demand	9	SINGULAR or CASCADE
Timing to reach the maximum on CH demand, after switching OFF for high temperature	10	SINGULAR or CASCADE
Delay of switching ON after CH demand	19	SINGULAR or CASCADE
Timing of pump functioning after CH demand	20	SINGULAR or CASCADE
Timing of pump functioning after DHW demand	21	SINGULAR or CASCADE
Delay of operating time for ON error E24 (clacson low temp)	22	SINGULAR
Max timing of DHW demand	45	SINGULAR
Burner		
Slow Ignition	3	SINGULAR or CASCADE
Max power on CH demand	4	SINGULAR or CASCADE
Switching OFF burner Temperature from SET	42	SINGULAR or CASCADE
Switching ON burner Temperature from SET	43	SINGULAR or CASCADE
Condensing Fan		
Minimum fan revolution	13	SINGULAR or CASCADE
Maximum fan revolution	14	SINGULAR or CASCADE
Pre-Ventilation	15	SINGULAR or CASCADE
Post-Ventilation	16	SINGULAR or CASCADE
Fan speed for fan/chimney flues validation test	31	SINGULAR or CASCADE
Fan speed threshold to be reached for fan validation test	32	SINGULAR or CASCADE
Fan revolution during Post Ventilation	38	SINGULAR or CASCADE

PARAMETERS *sort by function managed*

Color Key

Suggested to not modify

Description	N°	Boiler Configuration
For Installation/Service		
Functions for hydraulic plant	7	SINGULAR or CASCADE
Chimney function	12	SINGULAR or CASCADE
Showing fan revolutions	18	SINGULAR or CASCADE
Management of connector 67 on PCB for external heating pump	44	SINGULAR

PARAMETERS *sort by number*

Color Key

Suggested to not modify

PAR	Boiler Config	Description	Values	Factory Setting	Note
00	All	Power of boiler (it is set by technician in production)	0 - 5	Based on type	0/1 - Not Used 2 - 50 kW 3 - 70 kW 4 - 90 kW 5 - 115 kW 6 - 160 kW
01	All	Type of gas	0 - 1	Based on type	0 - NG 1 - LPG
02	All	Temperature Range for CH demand	0 - 1	0	0 - Standard Range 35 ÷ 78 °C 1 - Low Range 20 ÷ 45 °C
03	All	Slow Ignition	---	25	50-70 kW = range 10-60 90-115 kW = range 10-40
04	All	Max power on CH demand	00 - 99	99	The value is a percentage of the maximum of gas valve
05	All	Functioning of pump on CH demand	0 - 2	0	0 - Standard working 1 - Pump always ON 2 - Pump always OFF
06	All	Delay of re-ignition boiler after SET reached	0 - 15	3	Minutes
07	All	Functions for bleeding hydraulic plant	0 - 3	0	0 - Functions OFF 1 - Bleeding plant on the Heating side 2 - Bleeding plant on the Sanitary side 3 - Bleeding plant on both side
09	All	Timing to reach the maximum power in CH demand	20 - 120	25	Seconds
10	All	Timing to reach the maximum on CH demand after switching OFF for high temperature	1 - 10	2	Minutes.
12	All	Chimney function (for service tests)	0 - 1	0	0 - Boiler ON at the min fan revolution 1 - Boiler ON at the max fan revolution
13	All	Min fan revolution <i>*(Not advised changing)</i>	110-300	Based on Gas	r.p.m x 10
14	All	Max fan revolution <i>*(Not advised changing)</i>	380-700	Based on Gas	r.p.m x 10

PARAMETERS *sort by number*

Color Key Suggested to not modify

PAR	Boiler Config	Description	Values	Factory Setting	Note
15	All	Pre-Ventilation	15-60	30	Seconds
16	All	Post-Ventilation	10-60	20	Seconds
17	All	Temperature SET for TA2	0 / 20-80	0	0 – Input for Telephone controller 20 – 80 SET flow temp following demand from TA2
18	All	Showing fan revolutions	0 - 1	0	0 – Function DEACTIVATED 1 – Function ACTIVATED for 15min
19	All	Delay of switching ON, after CH demand	0 - 5	0	Minutes. It is used when there are zone-valves with long open time, on the plant.
20	All	Timing of pump functioning after CH demand	0 - 240	30	Seconds
21	Singular	Timing of pump functioning after DHW demand	0 – 240 tank	180 Tank	Seconds
22	All	Delay of operating time for ON error E24 (clacson low temp)	0 – 120	30	Seconds. Contact «TP» on the electric scheme
23	Singular	SET temperature of tank	0 30 - 60	0	0 – Settable by knob on control panel 30 – 60 temperature set by the technician and not settable anymore by the user
24	Singular	SET temperature of tank during the hourly tank preparation	0 20 - 50	40	0 – Tank not prepared 20 – 50 temperature SET Tank when hourly tank preparation function is OFF
25	Singular	ΔT for re-ignition boiler on tank preparation demand	1 - 10	3	ON burner for Tank demand = SET – (PAR25) $^{\circ}$ C
26	Singular	ΔT to get the max flow temperature during tank preparation	5 - 15	8	ΔT = SET Tank – T current. If $\Delta T > (PAR26)$: then T flow = max value
27	Singular	ΔT to set the min value of T flow on Tank preparation demand	5 - 20	15	T flow min = SET Tank + (PAR27) $^{\circ}$ C

PARAMETERS *sort by number*

Color Key Suggested to not modify

PAR	Boiler Config	Description	Values	Factory setting	Note
28	Singular	Anti-legionella Function (ON/OFF)	0 50 - 70	60	0 – DEACTIVATED 50 – 70 Temperature of water during this function
29	Singular	Activation timing Anti-legionella, after not having reached Temperature at PAR 28	1 - 15	7	Days.
30	Singular	Duration of Anti-legionella function	0 - 30	1	Minutes.
31	All	Fan speed for fan/chimney flues validation test	0 - 99	99	The same for all power
32	All	Fan speed threshold to be reached for fan validation test	0 - 99	Based on boiler power	50 kW = 62 70 kW = 48 90 kW = 75 115 kW = 60 160 kW = 70
33	All	Modulating Pump Activation (only Heating demand)	0 - 2	0	0 – modulating disable 1 – modulating with ΔT fixed 2 – modulating with ΔT dynamic
34	All	Set the ΔT for modulating pump	0 - 3		0 – $\Delta T = 20^{\circ}\text{C}$ 1 – $\Delta T = 15^{\circ}\text{C}$ 2 – $\Delta T = 10^{\circ}\text{C}$ 3 – $\Delta T = 5^{\circ}\text{C}$
35	All	Max modulating pump power	65 - 99	---	Linked to PAR 0, which sets this based on boiler power . It is NOT recommended to change this value
36	All	Set pressure values for loss of water switch	0 – 3	2	0 – Trasdncer not present 1 - OFF = 0,5bar, ON = 1bar 2 - (50-70 kW) OFF = 0,4bar, ON = 0,7bar 2 - (90-115 kW) OFF = 0,9bar, ON = 1,4bar 3 - OFF = 0,8bar, ON = 1,2bar

Color Key

Suggested to not modify

PAR	Boiler Config	Description	Values	Factory setting	Note
37	All	Type of plant filling-in <small>*(not used in these models)</small>	0 30 - 60	0	0 – Automatic From 30 to 60 litre of water inlet
38	All	Fan revolution during Post Ventilation	40-99	70	% of max fan revolution
39	All	External Temperature Correction	-5÷+5	0	Degrees (°C)
40	All	Booster function: Heating SET timing of increasing , until max SET.	0/ 1-60	0	If function activated, it increases Heating SET of +5°C. 0 = disabled 1-60 = Minutes;
41	All	Min Flow Temperature	20-50 20-35	---	If PAR 2 = 0 then range 20÷50; Default 35°C If PAR 2 = 1 then range 20÷35; Default 20°C
42	All	Switching OFF burner Temperature from SET	0-10	5	Degrees(°C)
43	All	Switching ON burner Temperature from SET	0-10	0	Degrees(°C)
44	All	Management of connector 67 on PCB for external heating pump	0-3	0	0 = Standard functioning (linked to heating demand) 1 = Always ON 2 = Only linked to demand from TA (not TA2) 3 = Linked to both Heating and DHW demands
45	All	Max timing of DHW demand	0/ 10-180	0	0 = disabled 10-180 sec = After this time of no-stop DHW demand, boiler gives precedence to heating demand.

How it works:

Activating this function, the boiler starts a cycle of plant bleeding in order to help technician to fill-in water in a better way.

Different bleeding options based on plant requirements:

1. only the CH side of plant
2. only the DHW side of plant
3. both CH and DHW sides

Every cycle takes 2 minutes and it is composed by:

- For 1':30'' Pump ON
- For 30'' Pump OFF.

Entire function (7 bleeding cycle repeated) takes about 15min, unless leaving manually the function before.

How to activate:


Parameter n°7

PAR	Description	Values	Factory setting	Note
07	Functions for bleeding hydraulic plant	0 – 3	0	0 – Functions OFF 1 – Bleeding plant on the Heating side 2 – Bleeding plant on the Sanitary side 3 – Bleeding plant on both side

reset
service

2 kind of ERRORS:

 **RESET** – Pushing RESET button to unlock the Error

 **SERVICE** – Only leaving the cause, Error can be unlocked; generally a Technician is needed to solve this.

Error code	Kind of error	Description
E 01	RESET	No flame detected.
E 02	RESET	High temperature on primary side.
E 03	RESET	Thermofuse contact is open.
E 05	SERVICE	CH flow probe value is out of range.
E 08	RESET	Flame lost 5 times after detection
E 10	SERVICE	Low pressure on the plant
E 12	SERVICE	Tank probe value is out of range.
E 15	RESET	Return probe value is out of range.
E 16	RESET	N° of fan revolutions is not corrected for functioning.

Error code	Kind of error	Description
E 24	RESET	Low temperature plant thermostat is open.
E 29	RESET	Possible obstruction on flues pipes or chimney flues
E 31	SERVICE	Communication between PCB and remote control is not correct.
E 35	RESET	Flame detection with Burner ON.
E 38	SERVICE	External probe value is out of range.
E 39	SERVICE	Anti-freeze function: when boiler is switched ON and 1 probe feels 0°C, than no burner ON.
E 43	SERVICE	Return probe has felt high temp for more than 10 sec.
E 62	SERVICE	No communication between Display and main PCB.
E 91	SERVICE	No communication between pressure transducer and main PCB.
E 92	SERVICE	Overpressure detected by transducer.

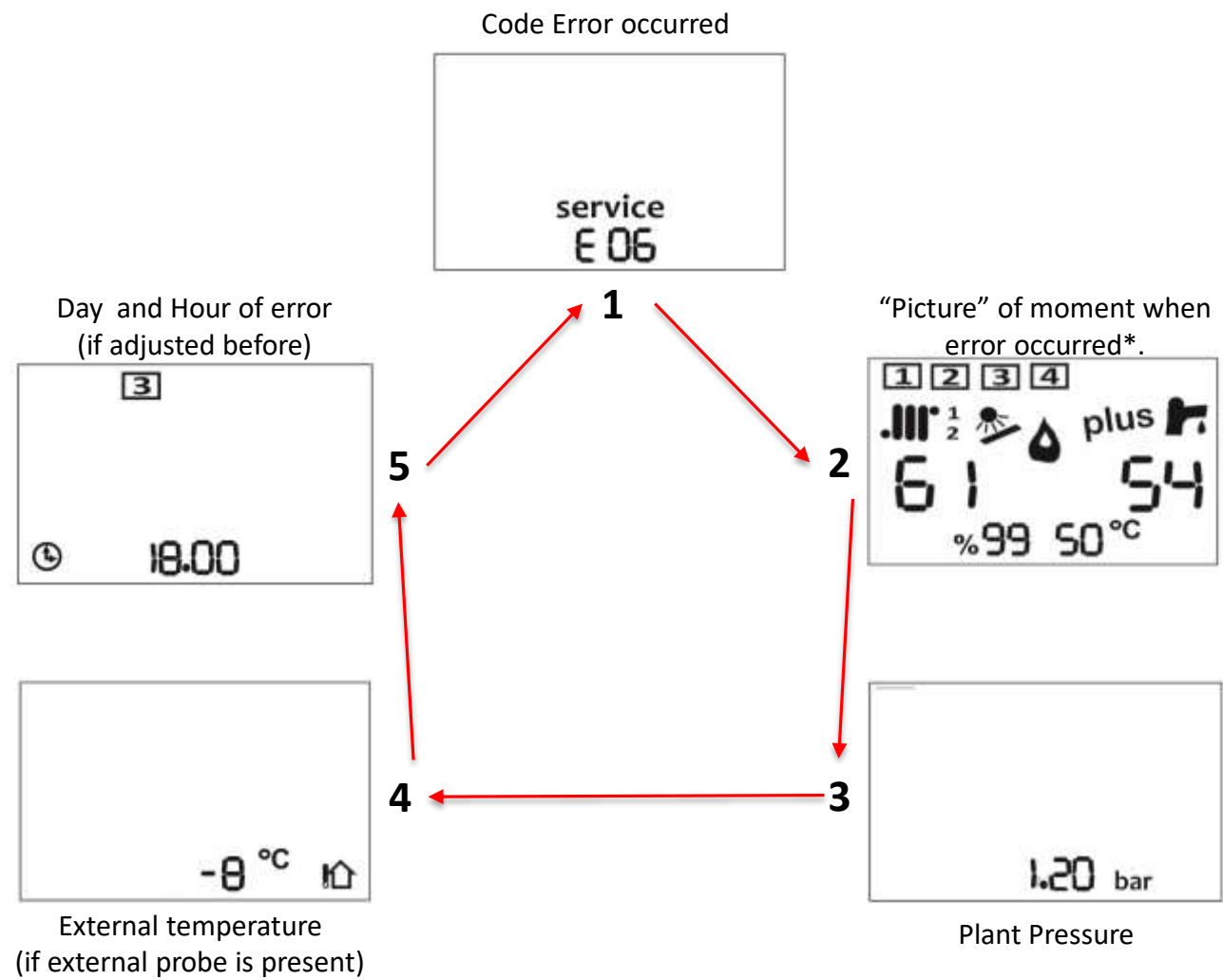
LAST 5 ERRORS *for technician*



This function allows technician to obtain information about errors occurred on boiler.

What it shows:

Cyclical views containing last 5 errors detected:



* The details showed, in this page information, are the same as "Current Information" of Technician views

How to activate this function?

- 1- When boiler is in **OFF** mode, pushing for 6 sec button **INFO**, the “Last 5 errors” function is enabled.
- 2- Pushing buttons **+ risc e – risc** to scroll errors occurred.
- 3- Pushing buttons **+ san e – san** to scroll pages information about single error.



GRAZIE PER LA VOSTRA ATTENZIONE!

THANKS FOR YOUR ATTENTION!

MERCI DE VOTRE ATTENTION!

GRACIAS POR SU ATENCIÓN!

СПАСИБО ЗА ВНИМАНИЕ!

感谢您的关注



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