



Installation, Use and Maintenance Manual for model

R1K 18

Premix condensing system boiler
only heating

CE 0476

R1K 18 - RAD - ING - Manuale - 1706.1_V3



2.2.8. TECHNICAL DATA

Model		R1K 18
CE certification	no.	0476CQ0134
Gas category	0	II2H3B/P
Discharge type	type	B23p-B33-C13-C33-C43-C53-C63-C83-C93
Energy efficiency 92/42 CEE	no. stars	4
Energy efficiency EN13203-1	no. stars	3
Maximum nominal heat capacity in heating circuit	kW	18
Minimum nominal heat capacity in heating circuit	kW	2.9
Useful thermal power - 60/80°C	kW	17.4
Minimum useful thermal power - 60/80°C	kW	-
Useful thermal power - 30/50°C	kW	18.99
Performance at 100% Pn - 60/80°C	%	96.4
Performance at 30% Pn - return 47°C	%	-
Performance at 30% Pn - return 30°C	%	107.5
Performance at 100% Pn - 30/50°C	%	105.5
Maximum combustion Performance	%	97.4
Fumes temperature at nominal heat capacity	°C	73.65
Fumes temperature at minimum heat capacity	°C	65.7
CO ₂ at nominal heat capacity - G20	%	9,3 - 9,1
CO ₂ at minimum heat capacity - G20	%	9 - 8,8
CO ₂ at nominal heat capacity - G30	%	11,4 - 11,2
CO ₂ at minimum heat capacity - G30	%	10,9 - 10,7
CO ₂ at nominal heat capacity - G31	%	10,5 - 10,3
CO ₂ at minimum heat capacity - G31	%	10,2 - 10
CO at nominal heat capacity	ppm	67
Fumes mass at nominal heat capacity	g/s	7.44
Fumes mass at minimum heat capacity	g/s	1.26
NO _x class	class	6
Weighted Nox (0% O ₂) mg/kWh	mg/kWh	35
Heating circuit		
Adjustable heating temperature	°C	30-80 / 25-45
Maximum operating temperature for heating circuit	°C	80
Maximum operating pressure for heating circuit	bar	3
Minimum operating pressure for heating circuit	bar	0.3
Capacity of the system expansion vessel	litres	8
Dimensional characteristics		
Width	mm	410
Depth	mm	307
Height	mm	642
Gross weight	Kg	35
Water connections		
Flow	Ø	3/4"
Cold water	Ø	1/2"
Gas	Ø	3/4"



Return	Ø	3/4"
Fume exhaust fittings		
Maximum electric fan pressure available	Pa	100
Minimum electric fan pressure available	Pa	21
Max discharge length Ø60/100 - Hor Co-ax	m	10
Max discharge length Ø80/125 - Hor Co-ax	m	12
Max discharge length Ø50/50 - Hor Split	m	10
Max discharge length Ø60/60 - Hor Split	m	32
Max discharge length Ø80/80 - Hor Split	m	60
Max discharge length Ø50 - Hor duct	m	8
Max discharge length Ø60 - Hor duct	m	30
Max discharge length Ø80 - Hor duct	m	35
Max discharge length Ø60/100 - Vert Co-ax	m	10
Max discharge length Ø80/125 - Vert Co-ax	m	12
Max discharge length Ø50/50 - Vert Split	m	10
Max discharge length Ø60/60 - Vert Split	m	32
Max discharge length Ø80/80 - Vert Split	m	60
Max discharge length Ø50 - Vert duct	m	8
Max discharge length Ø60 - Vert duct	m	30
Max discharge length Ø80 - Vert duct	m	35
Electrical specifications		
Voltage-frequency	V/Hz	230/50
Max Absorbed Power	W	78
Insulation rate	IP	X5D
Gas supply		
Nominal supply pressure - G20	mbar	20
Heating Max. fan speed - G20	Hz	156
Heating Min. fan speed - G20	Hz	45
Fuel consumption - G20	m ³ /h	1.90
Nominal Supply pressure - G30	mbar	30
Heating Max. fan speed - G30	Hz	141
Heating Min. fan speed - G30	Hz	45
Fuel consumption - G30	kg/h	1.42
Nominal Supply pressure - G31	mbar	37
Heating Max. fan speed - G31	Hz	150
Heating Min. fan speed - G31	Hz	45
Fuel consumption - G31	kg/h	1.40



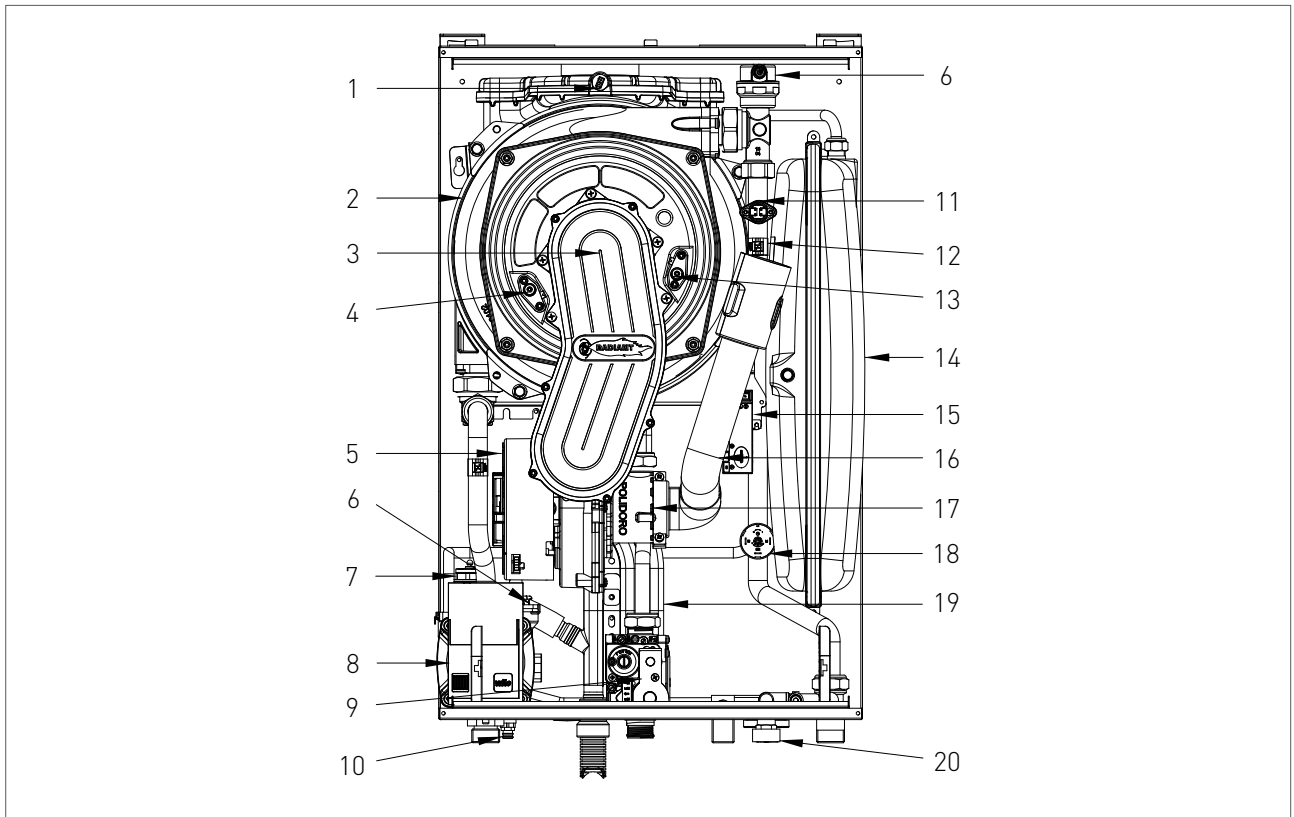
Technical parameters for boiler space heaters, boiler combination heaters and cogeneration space heaters

Model		R1K 18
Condensing boiler	[yes/no]	yes
Low-temperature (**) boiler:	[yes/no]	no
B11 boiler	[yes/no]	no
Cogeneration space heater	[yes/no]	no
If yes, equipped with a supplementary heater	[yes/no]	no
Combination heater	[yes/no]	no
Rated heat output Prated	kW	17.40
For boiler space heaters and boiler combination heaters: Useful heat output		
At rated heat output and high-temperature regime (*) P_4	kW	17.40
At 30 % of rated heat output and low-temperature regime (**) P_1	kW	5.40
For cogeneration space heaters: Useful heat output		
At rated heat output of cogeneration space heater with supplementary heater disabled $P_{CHP100+Sup0}$	kW	-
At rated heat output of cogeneration space heater with supplementary heater enabled $P_{CHP100+Sup100}$	kW	-
For cogeneration space heaters: Electrical efficiency		
At rated heat output of cogeneration space heater with supplementary heater disabled $\eta_{el,CHP100+Sup0}$	%	-
At rated heat output of cogeneration space heater with supplementary heater enabled $\eta_{el,CHP100+Sup100}$	%	-
Auxiliary electricity consumption		
At full load e_{lmax}	kW	0.04
At part load e_{lmin}	kW	0.02
In standby mode PSB	kW	0.004
Seasonal space heating energy efficiency η_s	%	91
Seasonal space heating energy efficiency class		A
For boiler space heaters and boiler combination heaters:		
Useful efficiency		
At rated heat output and high-temperature regime (*) η_4	%	86.9
At 30 % of rated heat output and low-temperature regime (**) η_1	%	96.8
For cogeneration space heaters: Useful efficiency		
At rated heat output of cogeneration space heater with supplementary heater disabled $\eta_{CHP100+Sup0}$	%	-
At rated heat output of cogeneration space heater with supplementary heater enabled $\eta_{CHP100+Sup100}$	%	-
Supplementary heater		
Rated heat output P_{sup}	kW	-
Type of energy input		-
Other items		
Standby heat loss P_{stby}	kW	0.1
Ignition burner power consumption P_{ign}	kW	0.0



Annual energy consumption Q_{HE}	kWh / GJ	15833 / 57
Sound power level, indoors L_{WA}	dB	52
For combination heaters:		
D.H.W. energy efficiency class		-
Declared load profile		
Daily electricity consumption Q_{elec}	kWh	-
Annual electricity consumption AEC	kWh	-
Water heating energy efficiency η_{wh}	%	-
Daily fuel consumption Q_{fuel}	kWh	-
Annual fuel consumption AFC	GJ	-
Contact details	Tel. +39 0721 9079.1 - fax. +39 0721 9079299 - e-mail: info@radiant.it - http://www.radiant.it	
Name and address of the supplier	RADIANT BRUCIATORI S.p.A. Via Pantanelli, 164/166 - 61025 - Montelabbate (PU)	
(*) High-temperature regime means 60 °C return temperature at heater inlet and 80 °C feed temperature at heater outlet.		
(**) Low temperature means for condensing boilers 30 °C, for low-temperature boilers 37 °C and for other heaters 50 °C return temperature (at heater inlet).		

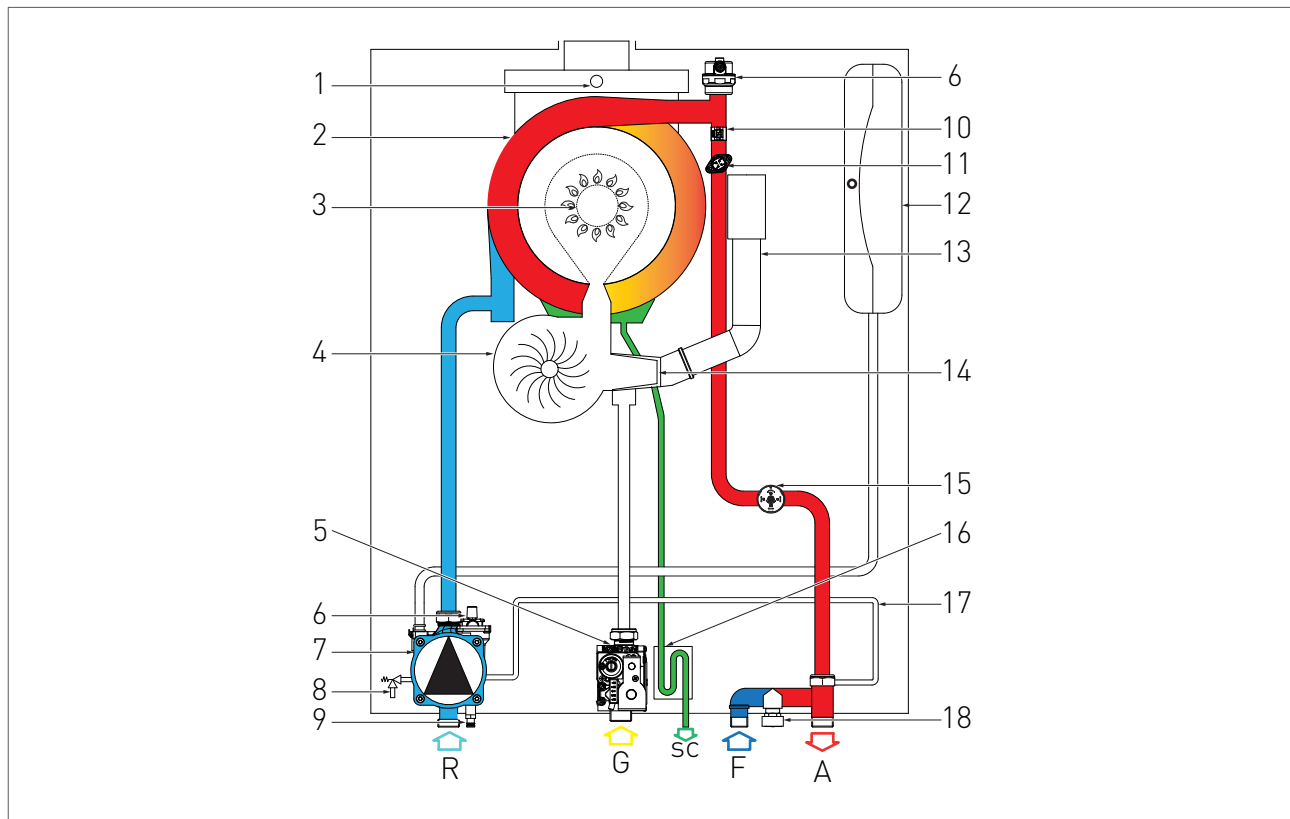
2.2.9. TECHNICAL ASSEMBLY



KEY

1. FUMES SAFETY THERMOFUSE
2. HEAT EXCHANGER
3. BURNER UNIT
4. DETECTION ELECTRODE
5. ELECTRIC FAN
6. AIR RELIEF VALVE
7. SAFETY VALVE 3 bar
8. MODULATING PUMP
9. GAS VALVE
10. SYSTEM DRAINING TAP
11. SAFETY THERMOSTAT
12. HEATING PROBE
13. LIGHT UP ELECTRODE
14. EXPANSION TANK
15. START-UP TRANSFORMER
16. AIR SUCTION TUBE
17. PROPORTIONAL VENTURI
18. WATER PRESSURE SWITCH
19. CONDENSATE COLLECTION SIPHON
20. SYSTEM FILLING TAP

2.2.10. HYDRAULIC BOARD

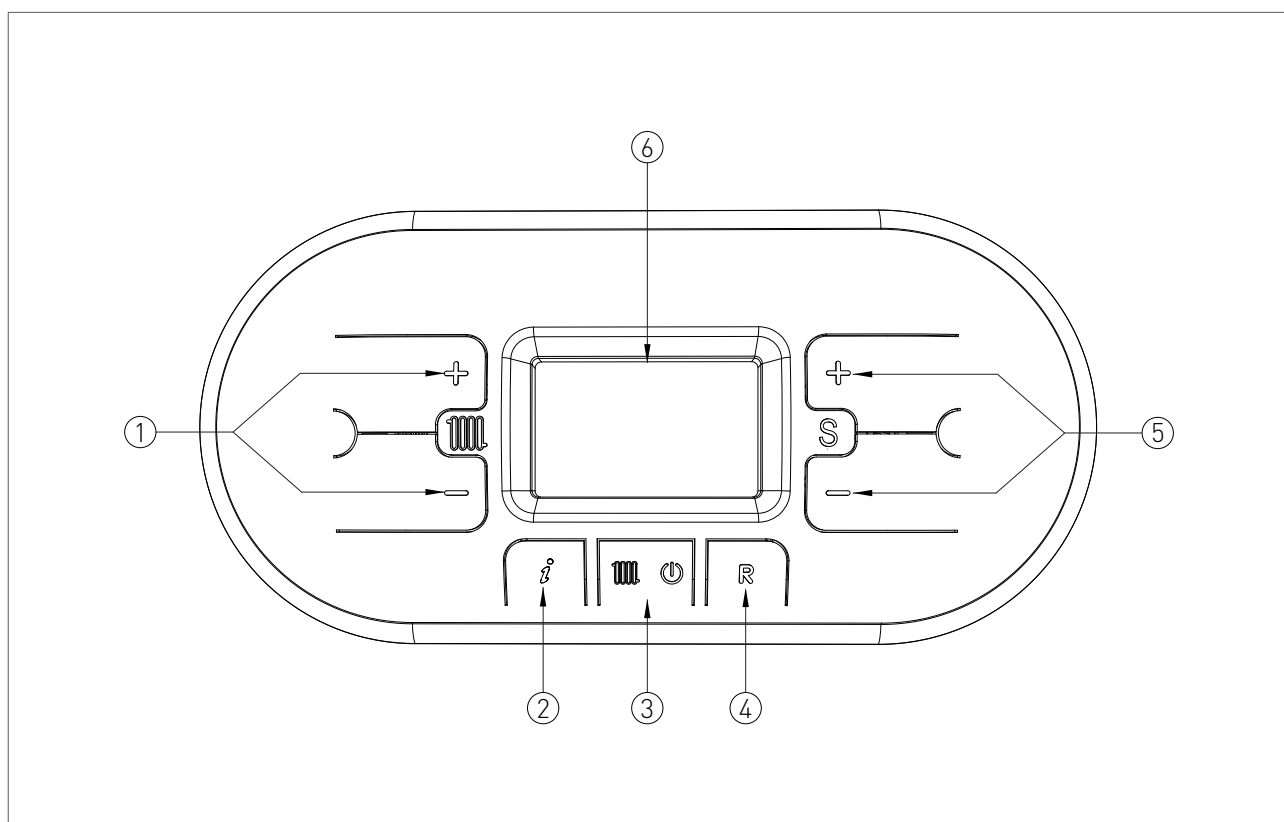
**KEY**

- R. HEATING RETURN
- G. GAS INLET
- SC. CONDENSATE DRAIN
- F. COLD WATER INLET
- A. HEATING FORWARD

- 17. BY-PASS
- 18. SYSTEM FILLING TAP

- 1. FUMES SAFETY THERMOFUSE
- 2. HEAT EXCHANGER
- 3. BURNER UNIT
- 4. ELECTRIC FAN
- 5. GAS VALVE
- 6. AIR RELIEF VALVE
- 7. CIRCULATOR
- 8. SAFETY VALVE 3 bar
- 9. SYSTEM DRAINING TAP
- 10. HEATING PROBE
- 11. SAFETY THERMOSTAT
- 12. EXPANSION TANK
- 13. AIR SUCTION TUBE
- 14. PROPORTIONAL VENTURI
- 15. WATER PRESSURE SWITCH
- 16. CONDENSATE COLLECTION SIPHON

3.1.2. CONTROL PANEL



KEY

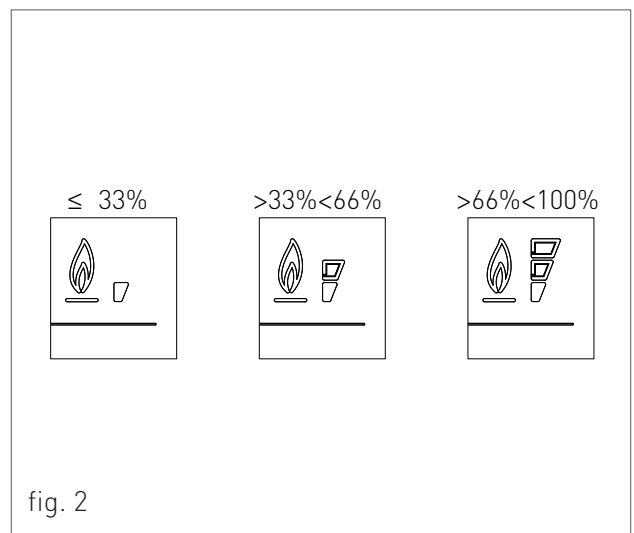
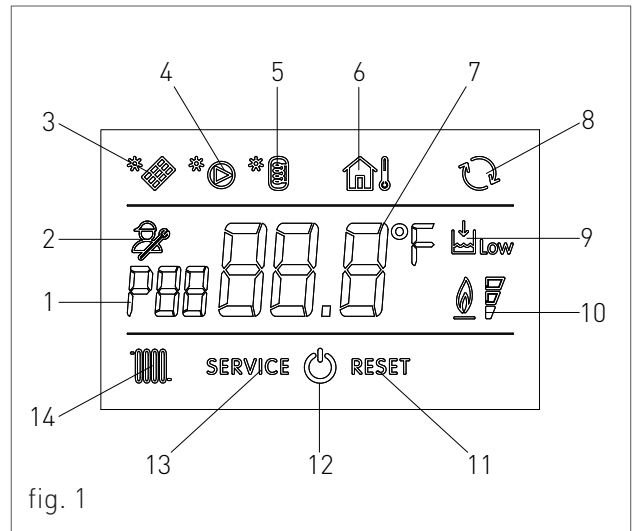
6. DISPLAY

1. HEATING TEMPERATURE ADJUSTMENT KEYS.
2. INFO KEY: PRESS ONCE TO VIEW THE TEMPERATURES AND OTHER INFORMATION (see chapter 'INFO MENU DISPLAY') - HOLD FOR 5 SECONDS, IN OFF OPERATING MODE, TO VIEW THE LAST 5 FAULTS.
3. OPERATING MODE SELECTION KEY: ONLY HEATING / OFF.
4. RESET KEY: FAULTS RESET - CHIMNEY SWEEP FUNCTION ACTIVATION (HOLD FOR 7 SECONDS).
5. VALUE OF THE PARAMETERS ADJUSTMENT KEY / HOLD THE KEYS AT THE SAME TIME FOR 5 SECONDS TO ACTIVATE DISPLAY BACK LIGHT FOR 10 MINUTES.

3.1.3. DISPLAY ICONS






KEY

1. INDICATION OF PARAMETER NUMBER OR DISPLAYED INFO CODE
2. PARAMETERS PROGRAMMING FUNCTION ACTIVE
3. SIGNALLING CONNECTED SOLAR BOARD / SOLAR COLLECTOR TEMPERATURE DISPLAY (d5)
4. SOLAR PUMP ACTIVE
5. BOILER LOWER TEMPERATURE DISPLAY (d6) / BOILER UPPER TEMPERATURE DISPLAY (d7)
6. EXTERNAL PROBE INSTALLED / EXTERNAL PROBE TEMPERATURE (d1)
7. TEMPERATURE DISPLAY / SET POINT / PARAMETER VALUE
8. OPEN THERM COMMUNICATION PRESENT (REMOTE CONTROL / AREA CONTROL UNIT)
9. INSUFFICIENT SYSTEM WATER PRESSURE SIGNALLING
10. FLAME PRESENT SIGNALLING / IT ALSO INDICATES, ON 3 PERCENTAGE LEVELS, THE MODULATING POWER LEVEL OF THE BOILER (fig.2)
11. ERROR DISPLAY THAT CAN BE RESET
12. OFF OPERATING MODE
13. ERROR DISPLAY THAT CAN NOT BE RESET
14. OPERATION IN HEATING MODE ENABLED












3.1.4. INFO MENU DISPLAY DATA

To view the boiler data from info menu you just have to press the INFO  key. The info code will be displayed on the left side of the screen and its relative value will be displayed on the centre of the screen. Use keys  and  of the heating circuit  to scroll through the list of displayed data. To exit display mode press the INFO  key.

LIST OF DISPLAYED DATA

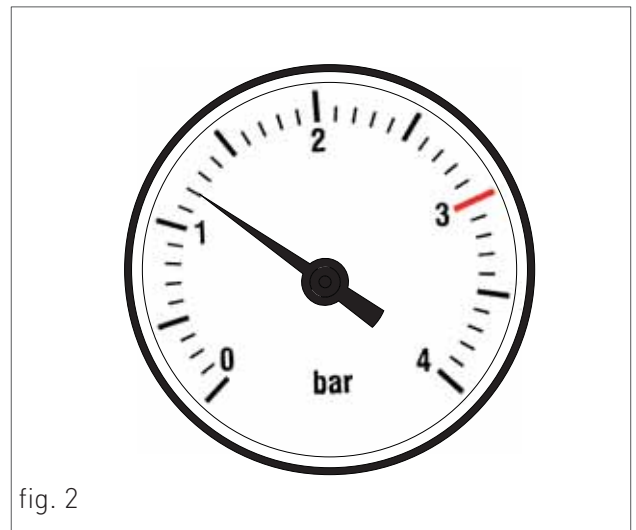
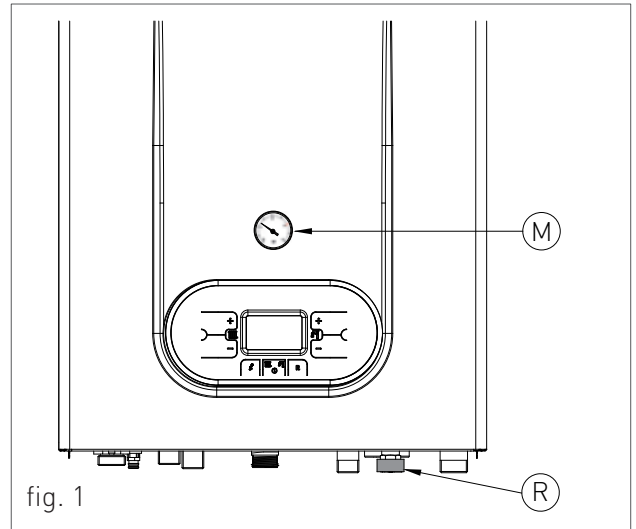
INFO CODE	ICON	DESCRIPTION
d0		DOMESTIC CIRCUIT PROBE TEMPERATURE
d1		EXTERNAL PROBE TEMPERATURE
d2		FAN SPEED
d3		BOTTOM AREA PROBE TEMPERATURE [IF AREA BOARD INSTALLED]
d4		RETURN PROBE TEMPERATURE
d5		SOLAR COLLECTOR TEMPERATURE [IF SOLAR BOARD INSTALLED] (SCS)
d6		SOLAR BOILER TEMPERATURE (BOTTOM) [IF SOLAR BOARD INSTALLED] (SBSI)
d7		SOLAR BOILER TEMPERATURE (TOP) [IF SOLAR BOARD INSTALLED] (SBSS)
d8		SOLAR COLLECTOR PROBE TEMPERATURE 2 [IF SOLAR BOARD INSTALLED] (SCS2)
d9		EXTRA SOLAR BOILER TEMPERATURE [IF SOLAR BOARD INSTALLED] (SBS3)

3.1.8. SYSTEM FILLING

To restore the water pressure inside the system open the loading tap "R" (fig. 1) and make sure using pressure gauge "M" (fig. 1), that the system pressure reaches 1.2 bar (see fig. 2).

After performing this operation, make sure that the loading tap "R" (fig. 1) is properly closed.




After the water pressure reset the boiler will automatically perform a 2 minutes system relief cycle. Throughout this function the display will show the code "F33". The boiler can work normally only after completing the operation.






3.1.9. FAULT SIGNALLING CODES

The boiler might signal some faults by displaying a code. Below you have a list of the codes and of the operations to be performed in order to unlock the boiler.

CODE	ICON	FAULT	INTERVENTION
E01	RESET	FLAME BLOCK	<p>MAKE SURE THAT THE BOILER AND CONTACTOR GAS VALVES ARE OPEN.</p> <hr/> <p>PRESS THE RESET  BUTTON ON THE CONTROL PANEL TO RESET THE FAULT, AS SOON AS THE ERROR CODE DISAPPEARS FROM THE DISPLAY, THE BOILER WILL START AUTOMATICALLY.</p> <hr/> <p>IF THE BLOCK PERSISTS CONTACT THE TECHNICAL SUPPORT CENTRE.</p>
E02	RESET	SAFETY THERMOSTAT (95 °C)	<p>PRESS THE RESET  BUTTON ON THE CONTROL PANEL TO RESET THE FAULT, AS SOON AS THE ERROR CODE DISAPPEARS FROM THE DISPLAY, THE BOILER WILL START AUTOMATICALLY.</p> <hr/> <p>IF THE BLOCK PERSISTS CONTACT THE TECHNICAL SUPPORT CENTRE.</p>
E03	RESET	FUMES SAFETY THERMOFUSE (102 °C)	CONTACT THE TECHNICAL SUPPORT CENTRE.
E04		WATER MISSING IN THE SYSTEM	<p>IF THE SYSTEM PRESSURE IS BELOW 1.2 BAR, FILL THE SYSTEM AS DESCRIBED IN CHAPTER "SYSTEM FILLING".</p> <hr/> <p>IF THE BLOCK PERSISTS CONTACT THE TECHNICAL SUPPORT CENTRE.</p>
E05	SERVICE	HEATING PROBE	CONTACT THE TECHNICAL SUPPORT CENTRE.
E15	SERVICE	RETURN PROBE	CONTACT THE TECHNICAL SUPPORT CENTRE.
E16	SERVICE	ELECTRIC FAN	CONTACT THE TECHNICAL SUPPORT CENTRE.
E18	SERVICE	INSUFFICIENT CIRCULATION	CONTACT THE TECHNICAL SUPPORT CENTRE.
E21	SERVICE	GENERAL INTERNAL BOARD ERROR	<p>CUT OFF THE POWER SUPPLY FROM THE MAIN SWITCH AND THEN RESTORE IT, AS SOON AS THE ERROR CODE DISAPPEARS, THE BOILER WILL RESTART AUTOMATICALLY.</p> <hr/> <p>IF THE BLOCK PERSISTS CONTACT THE TECHNICAL SUPPORT CENTRE.</p>



3. USE

CODE	ICON	FAULT	INTERVENTION
E22	SERVICE	PARAMETERS REQUEST	PROGRAMMING CUT OFF THE POWER SUPPLY FROM THE MAIN SWITCH AND THEN RESTORE IT, AS SOON AS THE ERROR CODE DISAPPEARS, THE BOILER WILL RESTART AUTOMATICALLY. IF THE BLOCK PERSISTS CONTACT THE TECHNICAL SUPPORT CENTRE.
E35	RESET	RESIDUAL FLAME	PRESS THE RESET  BUTTON ON THE CONTROL PANEL TO RESET THE FAULT, AS SOON AS THE ERROR CODE DISAPPEARS FROM THE DISPLAY, THE BOILER WILL START AUTOMATICALLY.
E40	SERVICE	SUPPLY VOLTAGE	CONTACT THE TECHNICAL SUPPORT CENTRE.