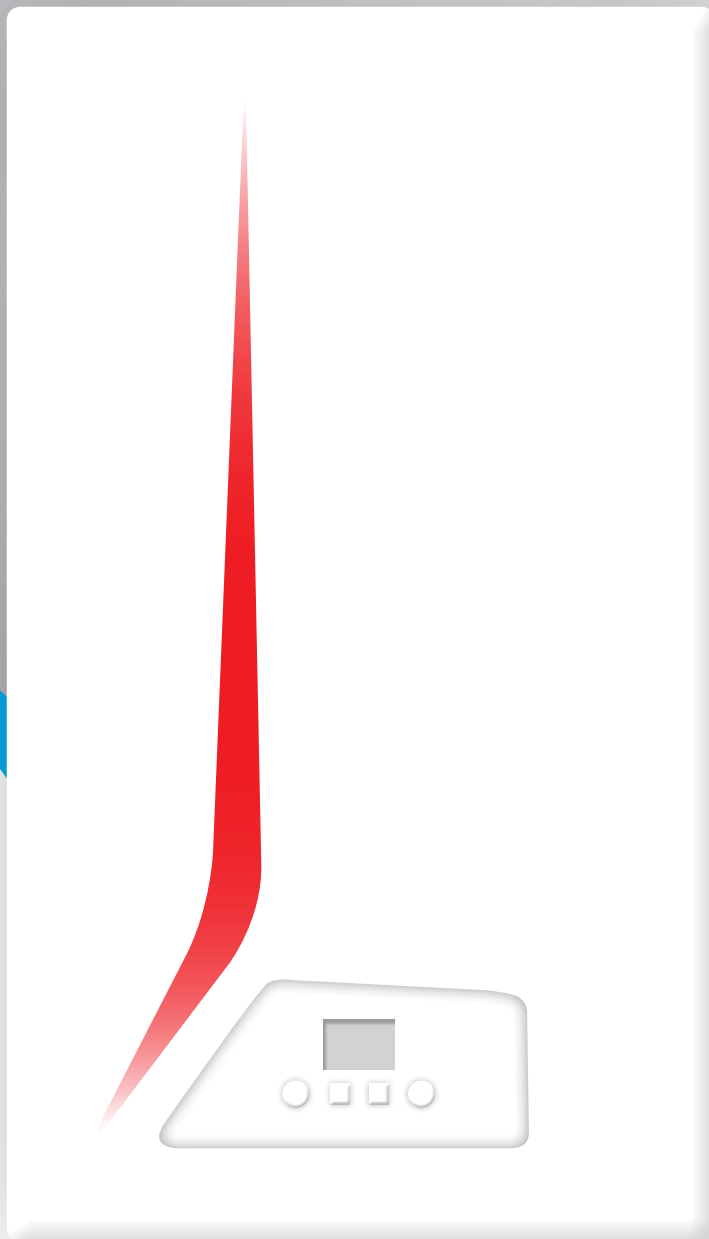


SERVICE

Manual
ENG



CITY CLASS

20 F - 25 F - 30 F - 35 F
20 FR - 25 FR - 30 FR - 35 FR

Green Heating Technology
 **ITALTHERM**

ITALIAN TECHNOLOGY • ITALIAN DESIGN • ITALIAN QUALITY

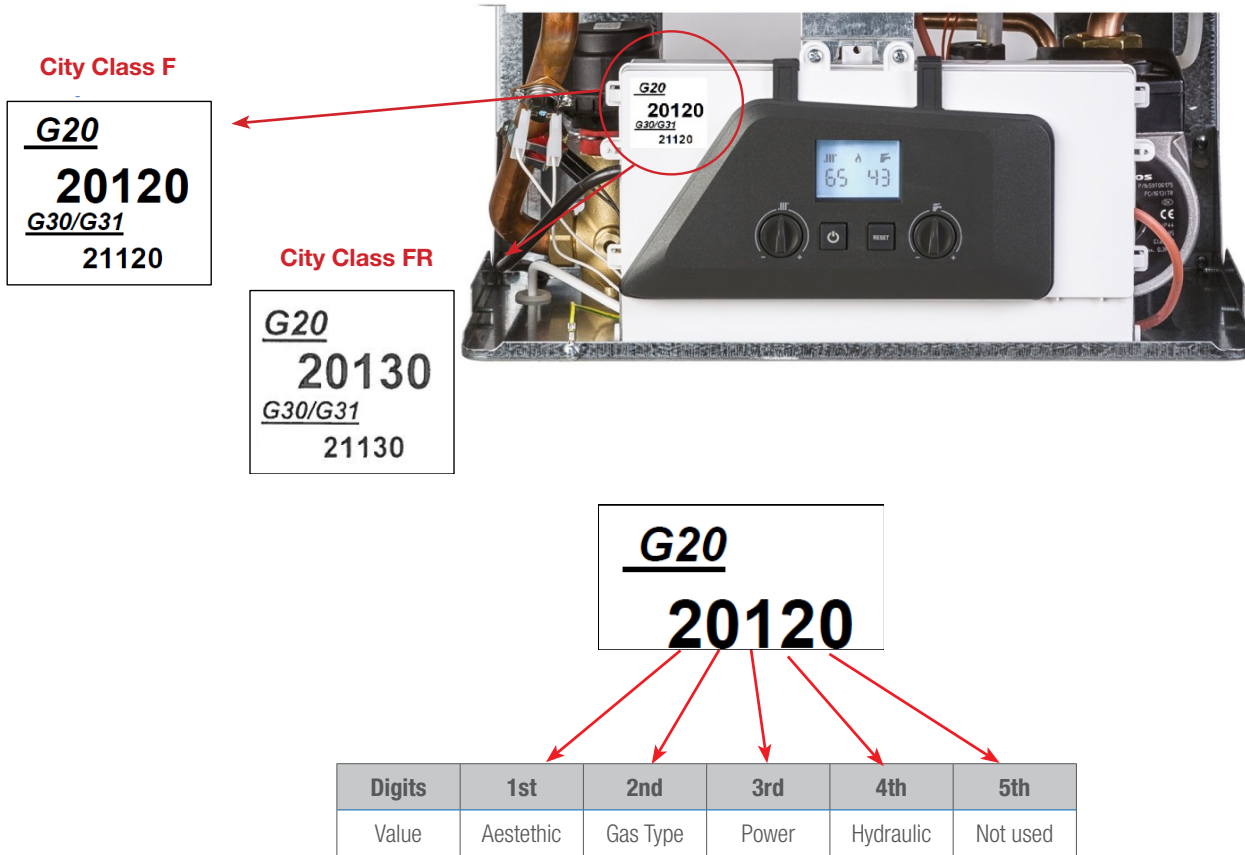
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Available models

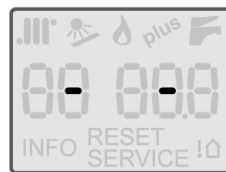
Model			GAS type*	PCB configuration code
City Class 20 F	F	Max heat input 20 kW	G20 (G30/G31)	20120 (21120)
City Class 25 F	F	Max heat input 25 kW	G20 (G30/G31)	20120 (21120)
City Class 30 F	F	Max heat input 30 kW	G20 (G30/G31)	20120 (21120)
City Class 35 F	F	Max heat input 35 kW	G20 (G30/G31)	20120 (21120)
City Class 20 FR	FR	Max heat input 20 kW	G20 (G30/G31)	20130 (21130)
City Class 25 FR	FR	Max heat input 25 kW	G20 (G30/G31)	20130 (21130)
City Class 30 FR	FR	Max heat input 30 kW	G20 (G30/G31)	20130 (21130)
City Class 35 FR	FR	Max heat input 35 kW	G20 (G30/G31)	20130 (21130)

PCB Code is placed close to the control panel and it is visible leaving metal cover



PCB boiler combustion automatic check

- On every boiler electrical switching ON,



PCB starts

- An automatic procedure for setting Boiler Combustion, which is equal to 3rd digit of PCB Code, on left corner of Control Panel (i.e. 1 on picture for F model).

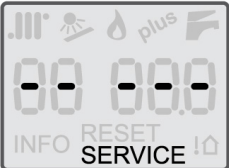
- If boiler feels air pressure switch changing its status, it sets 3rd digit to **1**
- If boiler feels Flues Thermostat contact closed, it sets 3rd digit to **0**
- If boiler does not receive any feedback in a one minute, it shows **E72** (Combustion Boiler error).

PCB RESET = 2 parameters to factory setting a PCB code reset

It can be done only in first 3 min after switching ON (in case switch OFF and ON again the boiler).

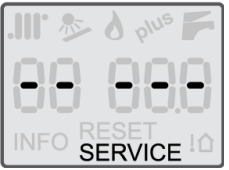

It is advised for solving some puzzling problem on the field.

- Boiler Mode OFF
- Keep pressing for 15 sec buttons  and **RESET**


- When display shows , the PCB RESET has done.

PCB code Configuration

Once replaced PCB or after «PCB RESET» procedure, boiler has to be configured for model where it is mounted.

- Display shows 
- Turn knob  at least for 3/4 of its total range. This way is set Boiler Aesthetic, which is equal to 1st digit of Configuration Code, on left corner of Control Panel (i.e. 2 on picture)

- Display shows 

- Turn knob  or choosing value = 2 and press **RESET** button for storing information. This way is set Boiler Hydraulic, which is equal to 4th digit of Configuration Code, on left corner of Control Panel

- Ending, PCB shows Configuration done.

On display and on the sticker there must be the same Configuration Code

Installation done under country regulation in force		done
Flues and air system	Verify the length of exhaust flue system, and verify the installation of reducer for short system if needed (supplied with boiler's documentation)	
	No leakage between part of the system (extension, bends and flanges)	
	Avoiding flues recirculation, respecting the minimum distances between the flues and air pipes with split configuration and between air/flues pipe and walls with the concentric configuration	
Hydraulic plant	Correct plant pressure with cold system temperature	
	Ensuring air bleeding	
	Checking tank connection (only FR). If tanF is not present, be sure to connect the flow and return together with a pipe for ensuring the needed circulation	
Gas plant	Checking inlet pressure Static Dynamic	
	Avoiding gas leakage from the gas connection on the boiler	
Electric connection	Checking correct electric supply (220-240V -15%...+10% 50Hz)	
	Checking the correct tank probe connection (only FR), after having removed the factory-installed resistor	
Condense syphon	Checking syphon cleanness (no obstructions on it)	
	Connecting to a waste water or treating its acidity with relevant products before discharging on the environment.	
Flue check	Checking CO2 value	
	CO2 Qr	
	CO2 Qn	
	If CO2 values are not correct, do the procedure "Manual Calibration".	

The front control panel: **PUSHBUTTONS AND KNOBS**



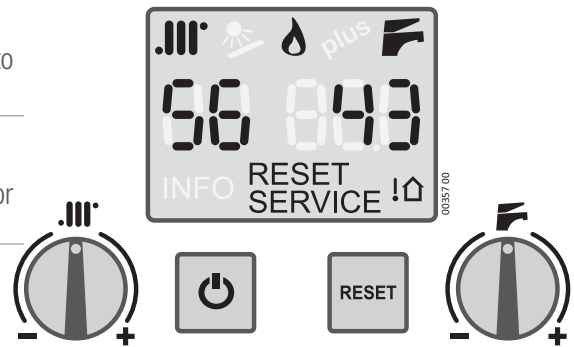
Stand-by / Functioning mode
At every press, the boiler switches its mode from OFF to summer or winter mode.



CH setting knob
To set the CH system temperature. If the Outdoor Sensor Kit was installed, see also "Outdoor Sensor Kit"



DHW setting knob
To set the DHW temperature.



RESET Press to reset the boiler in case of breakdown.

See further details in "Alarms - boiler block"

DISPLAY - symbols enabled in this model and their description



CH – winter mode indication
If flashing, it means that the boiler is functioning in CH mode. See also the remark in the description of symbol .



Burner ON
It indicates the presence of the flame in the burner.



DHW mode indication
If flashing, it means that the boiler is functioning to produce domestic hot water.

If both and symbols flash at the same time, a Technician-reserved function has been activated. In this case, turn immediately the boiler off - and then turn it on again - by means of the button .



Two digit display under the symbol
Normally, it displays the CH flow temperature, i.e the temperature of the liquid on boiler's outlet that is sent to the CH system.



During the CH temperature setting (by rotating the knob) , it shows the temperature value changing; in case of alarm it displays "E"; during the setting (reserved to the Technician) it displays the chosen parameter ID number (see "PCB parameters settings (technician menu)")



Three digit display under the symbol
Normally, it displays the temperature of the hot water on boiler's outlet. When the boiler is in stand-by mode, it displays OFF .



During the DHW temperature setting (by rotating the knob) , it shows the temperature value changing; in case of alarm it displays the ID number of the alarm (see "Alarms - boiler block" on page <?>); during the setting (reserved to the Technician) it displays the value of the chosen parameter.

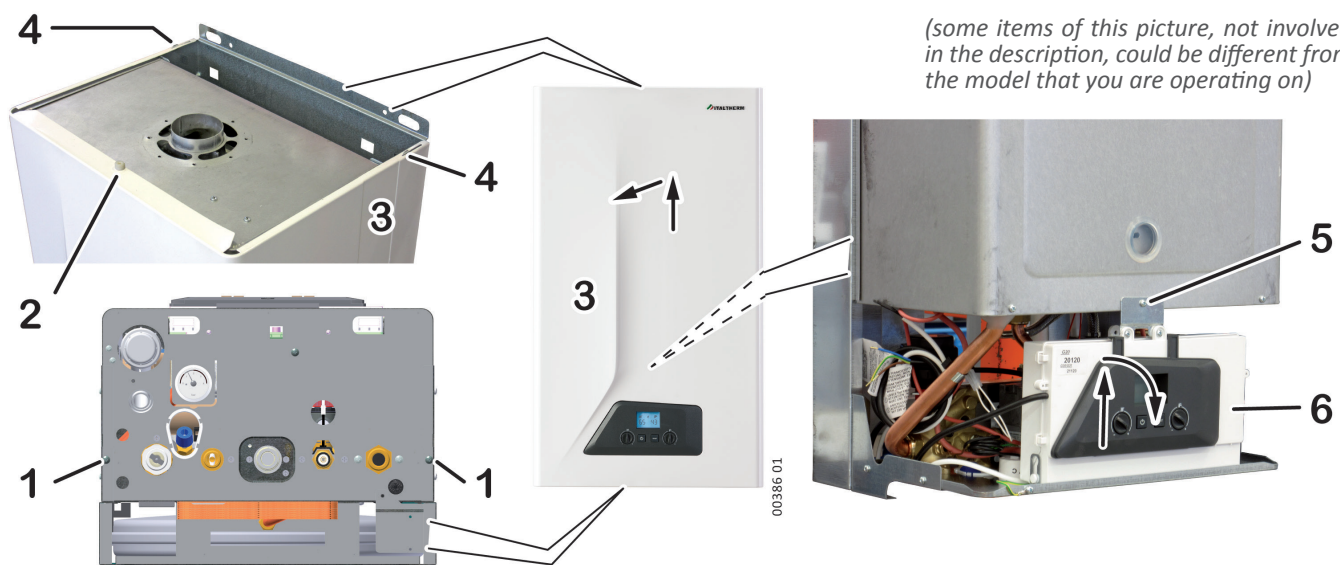
RESET It appears when the boiler is locked or anyway is present an error that the user could manage. See "Alarms - boiler block" to identify the problem and the relevant actions to be carried out.

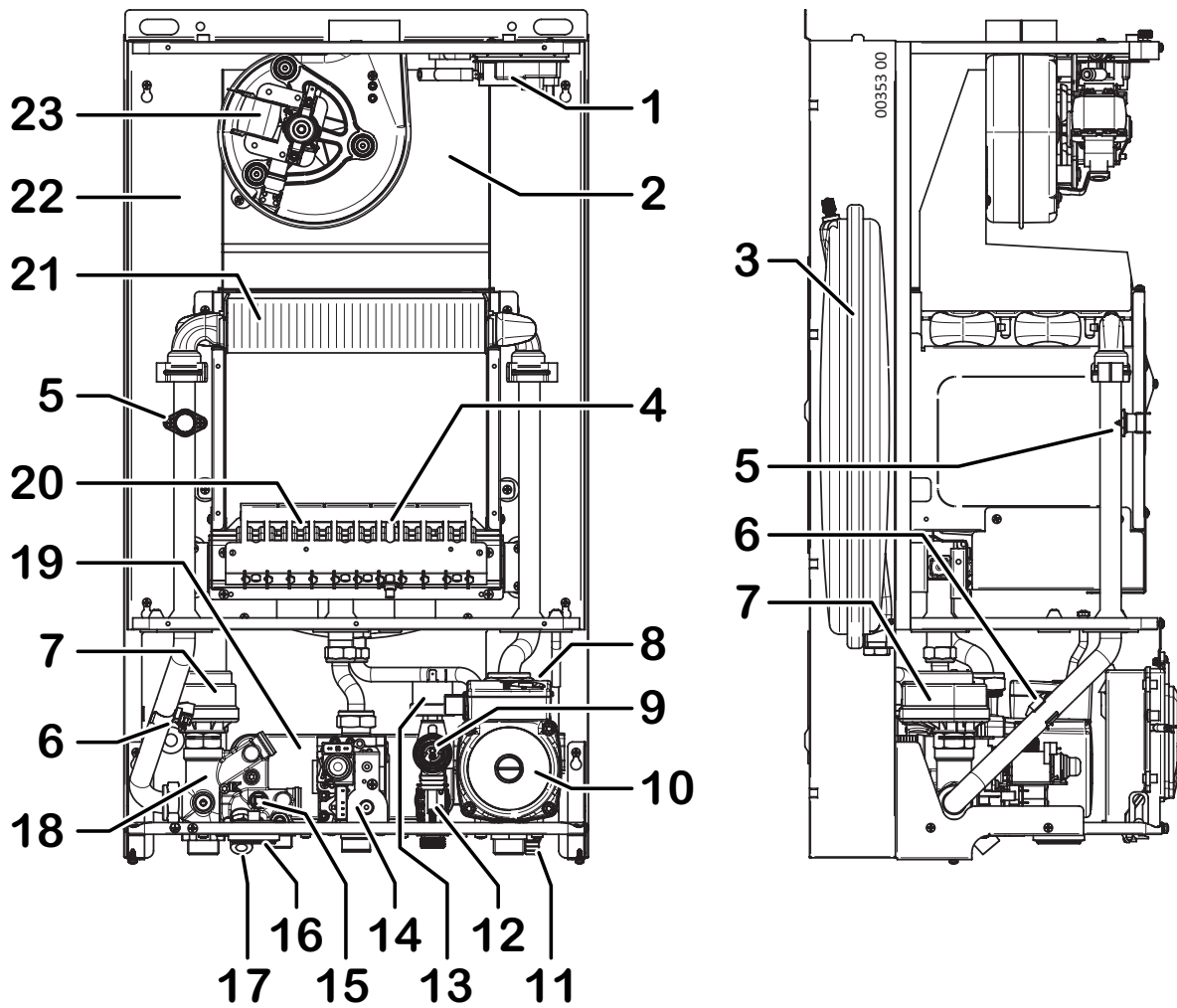
SERVICE It appears when the boiler has detected an error (mainly a fault) that has to be managed by the Technician. The User can anyway see "Alarms - boiler block" to get information about and the eventual actions to be carried out.



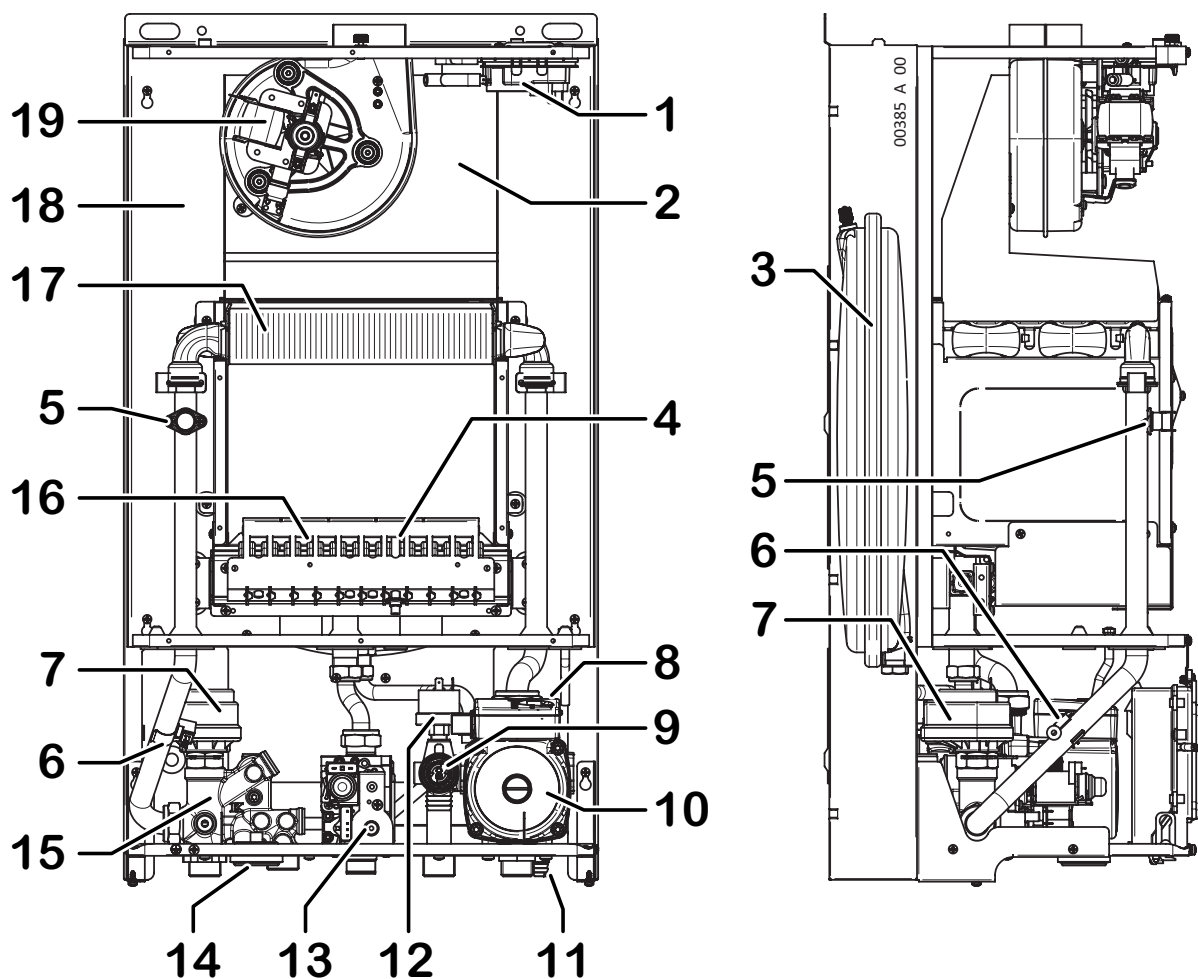
It informs that the outdoor probe (accessories) is installed.
Note: In this case the CH system temperature is automatically set and so the use of the knob is different from the standard way: for deeper details rely on kit instruction and see "Outdoor Sensor Kit"

- ▶ Unscrew the casing fixing screws 1 and 2;
- ▶ pull the casing 3 outwards, then push it upwards (to unhooF it from the tongues 4) and remove it;
- ▶ unscrew the screw 5, then slide the control panel 6 upwards and overturn it downwards;
- ▶ after the regulations, close the boiler repeating everything in the other sense, carefully hooking the casing 3 to the tongues 4.

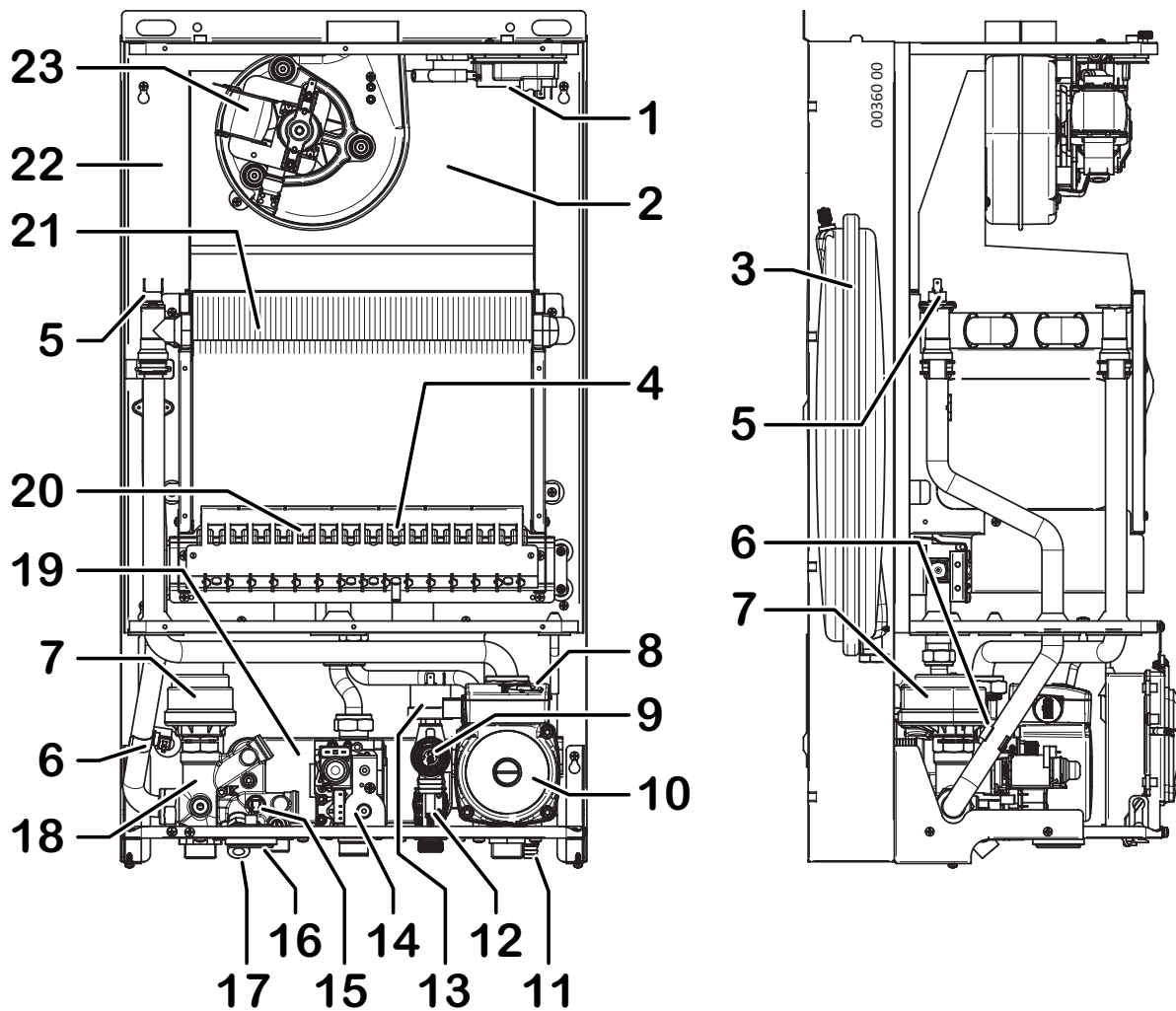




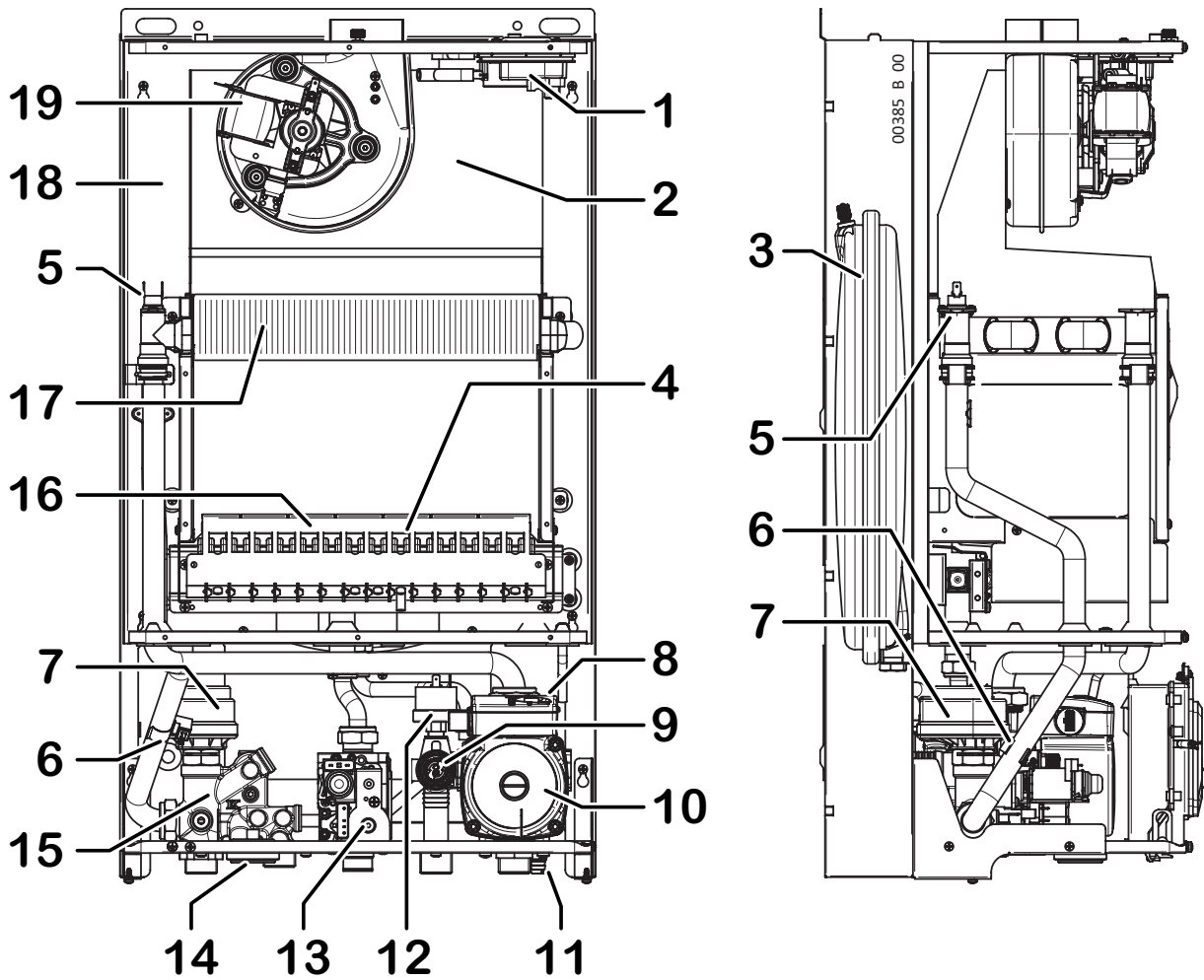
- | | | | |
|----|--|----|--|
| 1 | Flue pressure switch | 17 | Filling valve |
| 2 | Flue hood | 18 | By-pass (in-built in the 3-way valve hydraulic assembly) |
| 3 | Expansion vessel | 19 | DHW exchanger (thermally insulated) |
| 4 | Flame ignition/detection electrode | 20 | Burner |
| 5 | Safety thermostat on system flow | 21 | Primary exchanger |
| 6 | Temperature Sensor, system flow | 22 | Sealed chamber |
| 7 | Motorized 3-way valve | 23 | Fan |
| 8 | Automatic Venting Device (heating circuit, incorporated in the pump) | | |
| 9 | Safety valve 3 bar | | |
| 10 | Pump | | |
| 11 | Drain valve | | |
| 12 | Priority flow switch (with filter) | | |
| 13 | Loss of water pressure switch | | |
| 14 | Gas valve | | |
| 15 | DHW temperature sensor | | |
| 16 | System pressure gauge | | |



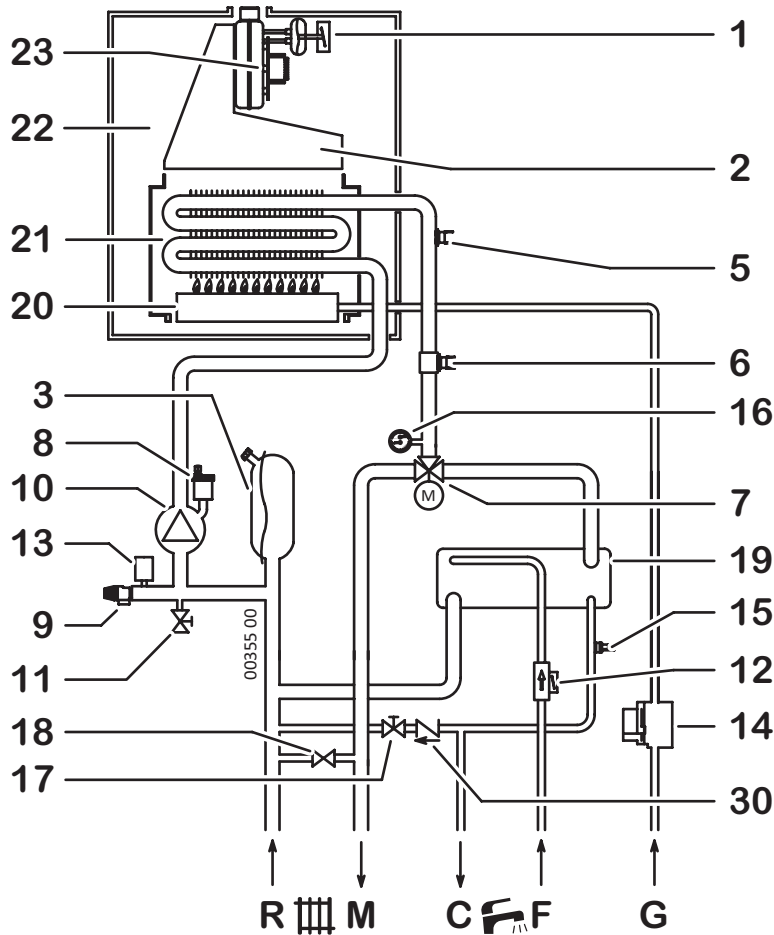
- | | | | |
|----|---|----|-------------------|
| 1 | Flue pressure switch | 16 | Burner |
| 2 | Flue hood | 17 | Primary exchanger |
| 3 | Expansion vessel | 18 | Sealed chamber |
| 4 | Flame ignition/detection electrode | 19 | Fan |
| 5 | Safety thermostat on system flow | | |
| 6 | Temperature Sensor, system flow | | |
| 7 | Motorized 3-way valve | | |
| 8 | Automatic Venting Device
(heating circuit, incorporated in the pump) | | |
| 9 | Safety valve 3 bar | | |
| 10 | Pump | | |
| 11 | Drain valve | | |
| 12 | Loss of water pressure switch | | |
| 13 | Gas valve | | |
| 14 | System pressure gauge | | |
| 15 | By-pass (in-built in the 3-way valve hydraulic
assembly) | | |



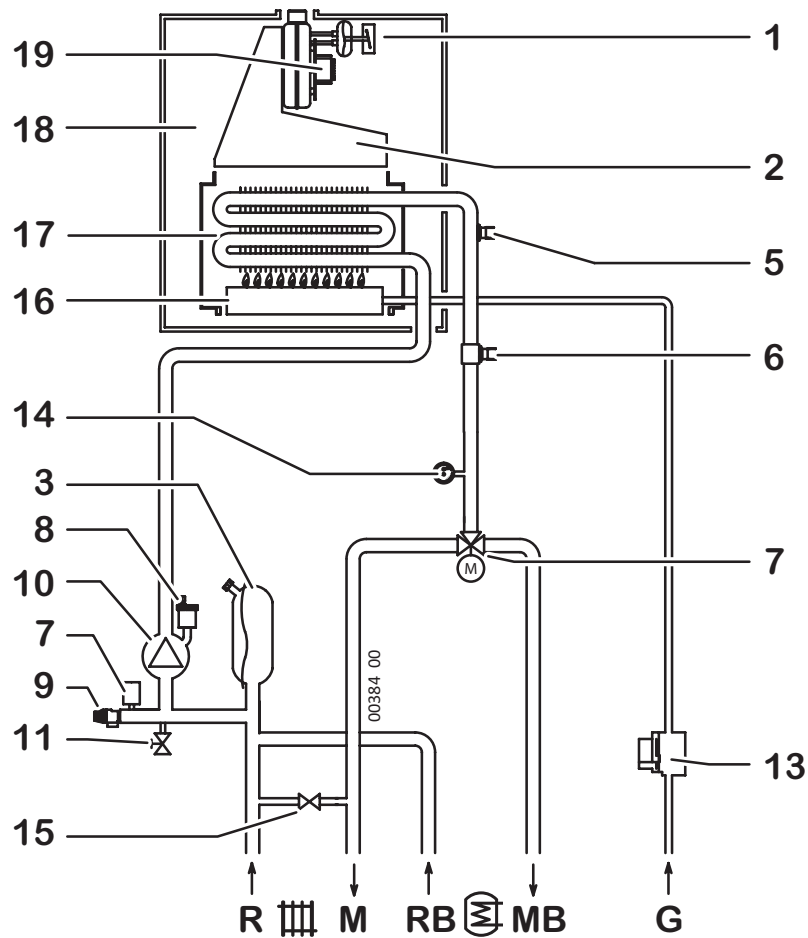
- | | | | |
|----|--|----|--|
| 1 | Flue pressure switch | 17 | Filling valve |
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| 11 | Drain valve | | |
| 12 | Priority flow switch (with filter) | | |
| 13 | Loss of water pressure switch | | |
| 14 | Gas valve | | |
| 15 | DHW temperature sensor | | |
| 16 | System pressure gauge | | |



- | | | | |
|----|---|----|-------------------|
| 1 | Flue pressure switch | 16 | Burner |
| 2 | Flue hood | 17 | Primary exchanger |
| 3 | Expansion vessel | 18 | Sealed chamber |
| 4 | Flame ignition/detection electrode | 19 | Fan |
| 5 | Safety thermostat on system flow | | |
| 6 | Temperature Sensor, system flow | | |
| 7 | Motorized 3-way valve | | |
| 8 | Automatic Venting Device
(heating circuit, incorporated in the pump) | | |
| 9 | Safety valve 3 bar | | |
| 10 | Pump | | |
| 11 | Drain valve | | |
| 12 | Loss of water pressure switch | | |
| 13 | Gas valve | | |
| 14 | System pressure gauge | | |
| 15 | By-pass (in-built in the 3-way valve hydraulic
assembly) | | |

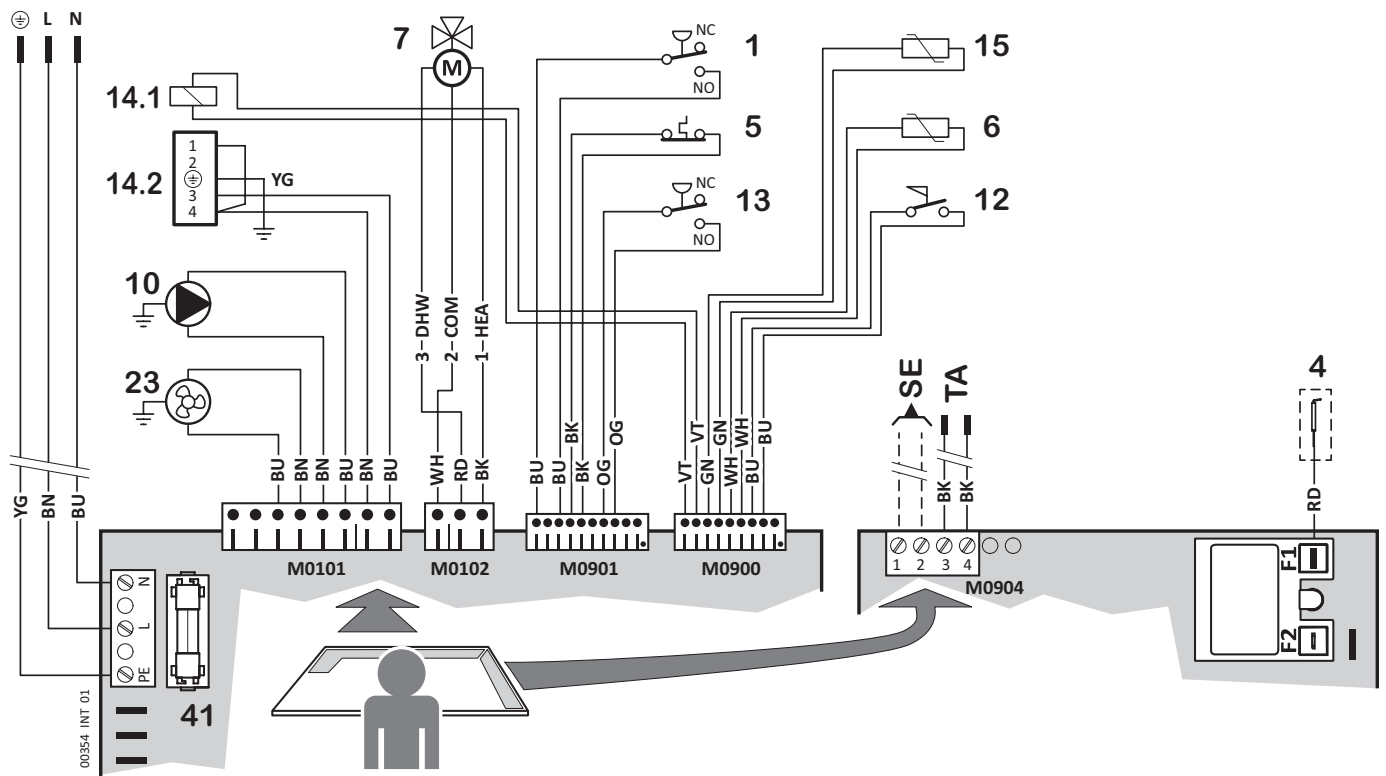


- | | |
|---|--------------------|
| 1 Flue pressure switch | 22 Sealed chamber |
| 2 Flue hood | 23 Fan |
| 3 Expansion vessel | 30 Check valve |
| 5 Safety thermostat on system flow | |
| 6 Temperature Sensor, system flow | R Heating return |
| 7 Motorized 3-way valve | M Heating flow |
| 8 Automatic Venting Device
(heating circuit, incorporated in the pump) | C Hot water outlet |
| 9 Safety valve 3 bar | F Cold water inlet |
| 10 Pump | G Gas inlet |
| 11 Drain valve | |
| 12 Priority flow switch (with filter) | |
| 13 Loss of water pressure switch | |
| 14 Gas valve | |
| 15 DHW temperature sensor | |
| 16 System pressure gauge | |
| 17 Filling valve | |
| 18 By-pass (in-built in the 3-way valve hydraulic
assembly) | |
| 19 DHW exchanger (thermally insulated) | |
| 20 Burner | |
| 21 Primary exchanger | |



- 1 Flue pressure switch
- 2 Flue hood
- 3 Expansion vessel
- 5 Safety thermostat on system flow
- 6 Temperature Sensor, system flow
- 7 Motorized 3-way valve
- 8 Automatic Venting Device (heating circuit, incorporated in the pump)
- 9 Safety valve 3 bar
- 10 Pump
- 11 Drain valve
- 12 Loss of water pressure switch
- 13 Gas valve
- 14 System pressure gauge
- 15 By-pass (in-built in the 3-way valve hydraulic assembly)
- 16 Burner
- 17 Primary exchanger
- 18 Sealed chamber
- 19 Fan

- R Heating return
- M Heating flow
- RB Return from storage coil
- MB Flow to storage coil
- G Gas inlet



- 1 Flue pressure switch (*)
- 4 Flame ignition/detection electrode
- 5 Safety thermostat on system flow (*)
- 6 Temperature Sensor, system flow
- 7 Motorized 3-way valve
- 10 Pump
- 12 Priority flow switch (with filter) (*)
- 13 Loss of water pressure switch (*)
- 14.1 Gas valve - modulation control
- 14.2 Gas valve - opening control
- 15 DHW temperature sensor
- 23 Fan
- 41 Fuse F2A (2A fast)

(*) the contacts of these components are shown in rest conditions (cold condition, no system pressure, no flow)

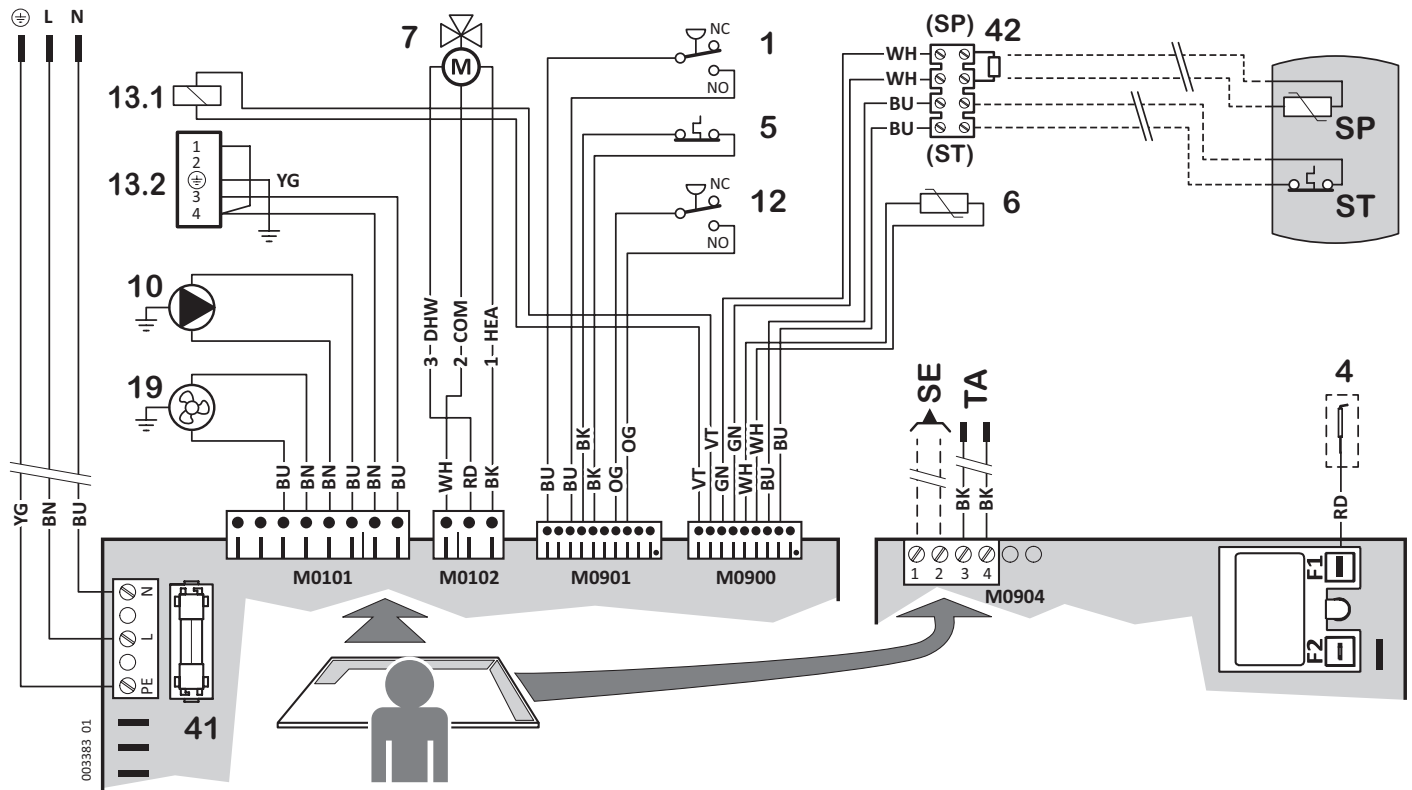
Optional external devices:

TA Room thermostat: (or Chronothermostat) SELV simple contact. Closed contact = heating request. or Remote control (original accessory only)

SE To optional outdoor temperature sensor

Abbreviations: COM Common • NC Normally closed (contact) • NO Normally open (contact)
 • HEA Heating (diverting command) • DHW Hot water (diverting command)

Colours: BF BlacF • BN Brown • BU Blue • GN Green
 • RD Red • OG Orange • VT Violet • WH White
 • YE Yellow • YG Yellow-Green



- 1 Flue pressure switch (*)
- 4 Flame ignition/detection electrode
- 5 Safety thermostat on system flow (*)
- 6 Temperature Sensor, system flow
- 7 Motorized 3-way valve
- 10 Pump
- 12 Loss of water pressure switch (*)
- 13.1 Gas valve - modulation control
- 13.2 Gas valve - opening control
- 19 Fan
- 41 Fuse F2A (2A fast)
- 42 Resistor, 2.2 FOhm - 1/2W (**)

Optional external devices:

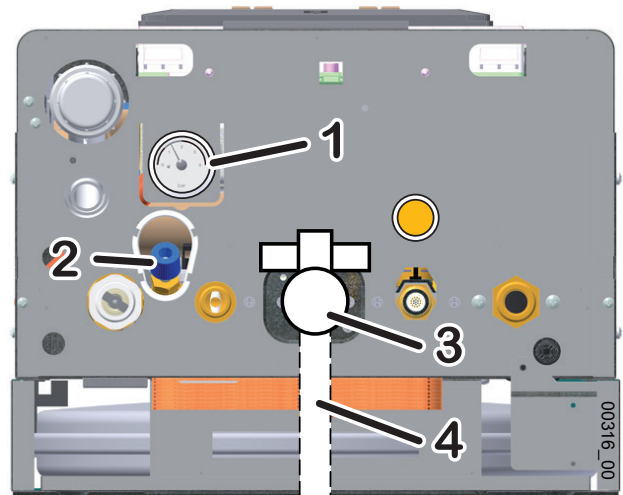
- SP DHW Storage temperature Probe (**)
 - ST DHW Storage Thermostat (*) (**)
 - TA Room thermostat: (or Chronothermostat) SELV simple contact. Closed contact = heating request. or Remote control (original accessory only)
 - SE To optional outdoor temperature sensor
- Abbreviations: COM Common • NC Normally closed (contact) • NO Normally open (contact)
 • HEA Heating (diverting command) • DHW Hot water (diverting command)
- Colours: BF BlacF • BN Brown • BU Blue
 • GN Green • RD Red • OG Orange
 • VT Violet • WH White • YE Yellow
 • YG Yellow-Green

(*) the contacts of these components are shown in "standard" conditions (i.e. temperature below threshold, cold system, no system pressure, no flow)

(**)see "Electrical connection between the boiler and the storage unit"for details.

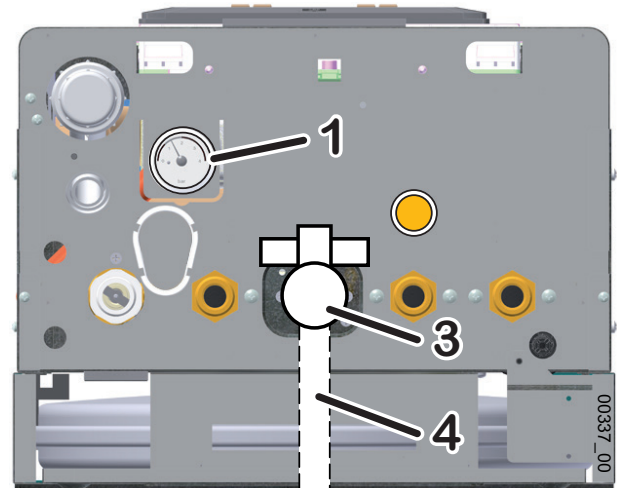
Once all system connections have been carried out, proceed with system filling. This operation should be made with care, respecting the following steps:

- ▶ Open the radiators venting devices;
- ▶ Check that the plug of the automatic air vent, incorporated in the boiler circulator, is unscrewed: if not, unscrew it and leave it unscrewed, even afterwards, for normal operation;
- ▶ If it's required to fill the system with anti-freeze solution, do this operation, then hermetically close the connection or the valve used to put the solution in, to allow the pressurization.
- ▶ Gradually open the filling cock 2 ;
- ▶ Check the correct functioning of automatic venting devices, eventually installed;
- ▶ Close the radiators venting devices as soon as water flows out of them;
- ▶ Make sure, by reading the pressure gauge 1, that the pressure reaches the optimal value of 1.0 bar (max 1.5 bar);
- ▶ Close the water filling cock 2 and bleed each radiator again;
- ▶ Repeat the venting and pressurization operations until the air is completely purged from the system.



Once all system connections have been carried out, proceed with system filling. This operation should be made with care, respecting the following steps:

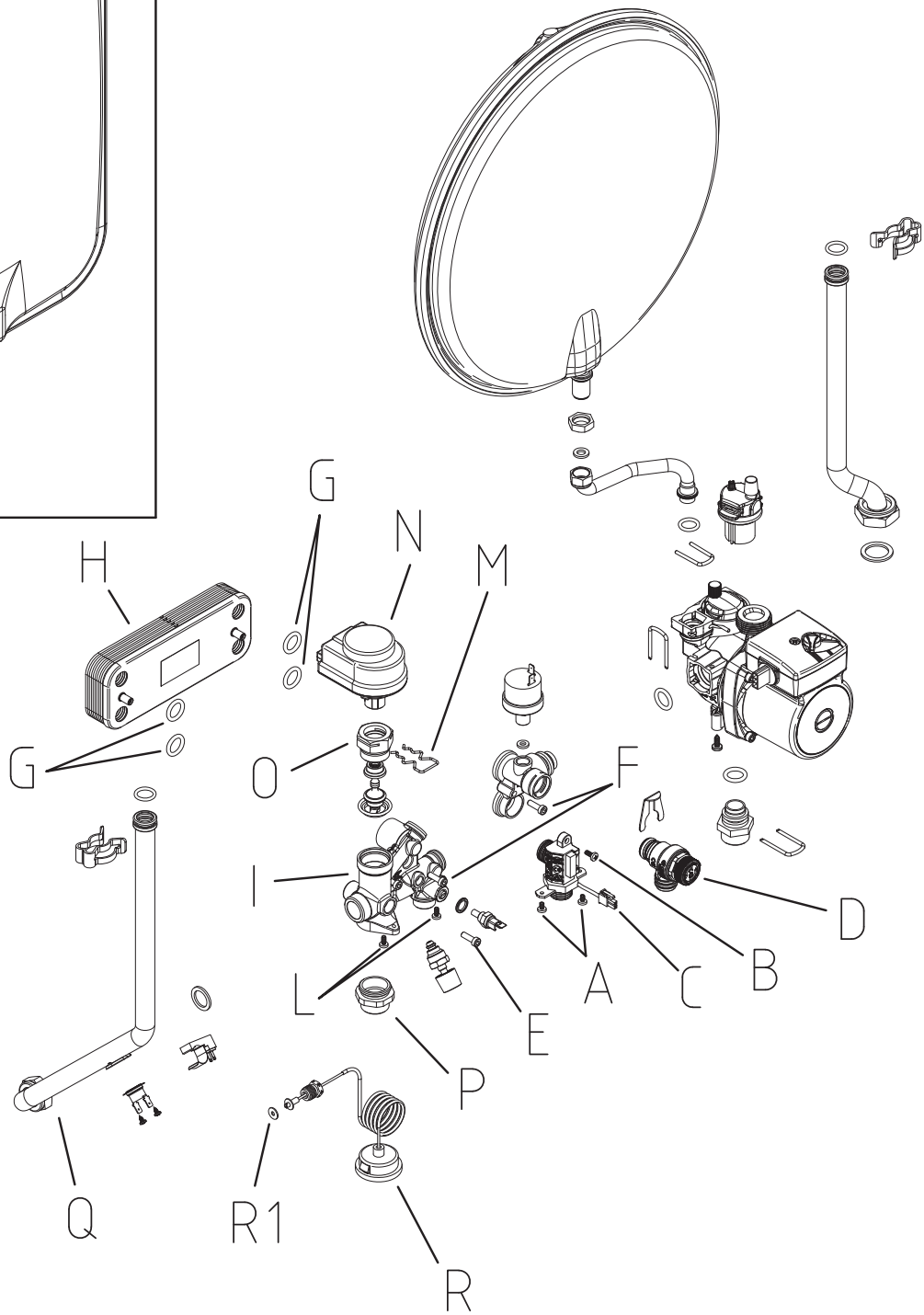
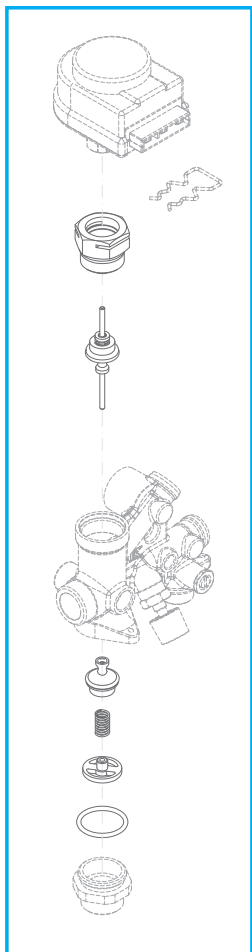
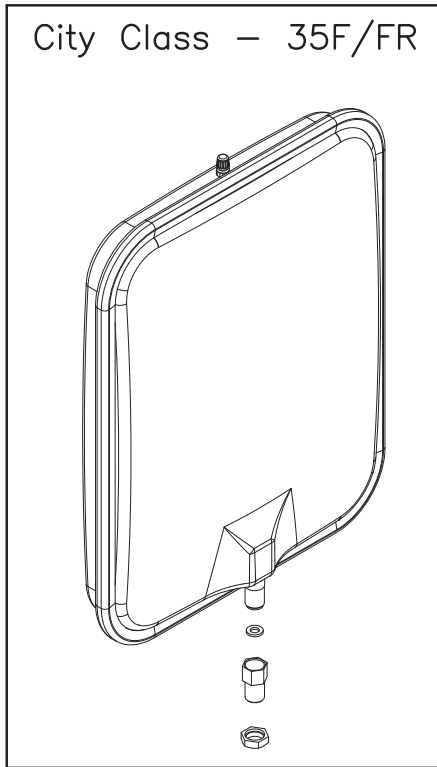
- ▶ Open the radiators venting devices;
- ▶ Check that the plug of the automatic air vent, incorporated in the boiler circulator, is unscrewed: if not, unscrew it and leave it unscrewed, even afterwards, for normal operation;
- ▶ Locate the system filling device, foreseen externally to the boiler, and proceed depending on its type:
 - filling from aqueduct: open it and let water flow in the system
 - filling with anti-freeze solution: pump in the solution and pressurize the system.
- ▶ Check the correct functioning of automatic venting devices, eventually installed on the heating system and/or on the storage coil circuit;
- ▶ Close the radiators venting devices as soon as water or anti-freeze solution flows out of them;
- ▶ If the storage coil or the relevant circuit were equipped with manual venting valves, use them to purge the residual air from them;
- ▶ Make sure, by reading the pressure gauge 1, that the pressure reaches the optimal value of 1.0 bar (max 1.5 bar);
- ▶ Close the filling device and bleed each radiator again;
- ▶ Repeat the venting and pressurization operations until the air is completely purged from the system.



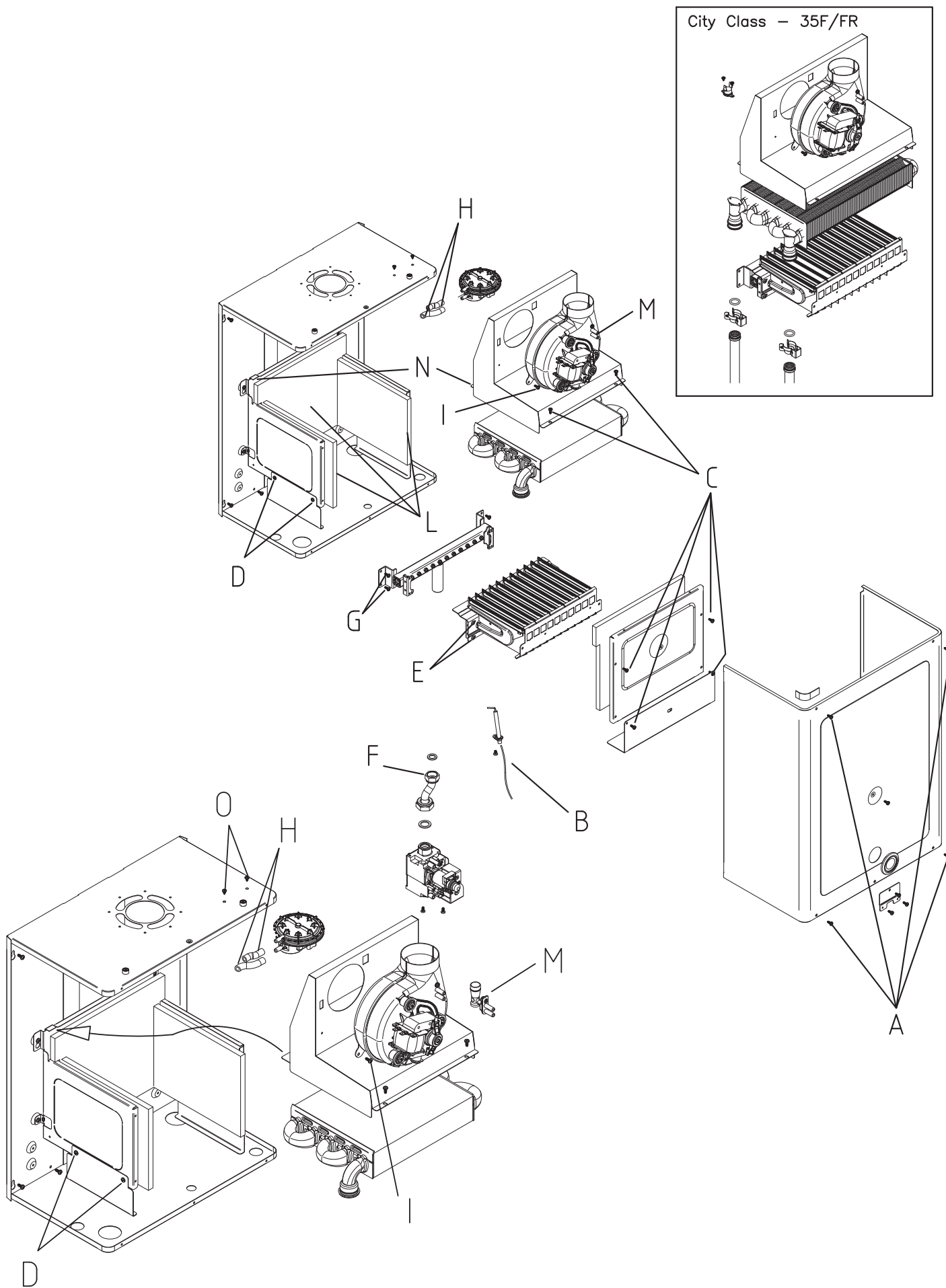
DHW storage tank filling

Fill the DHW storage tank (on storage unit):

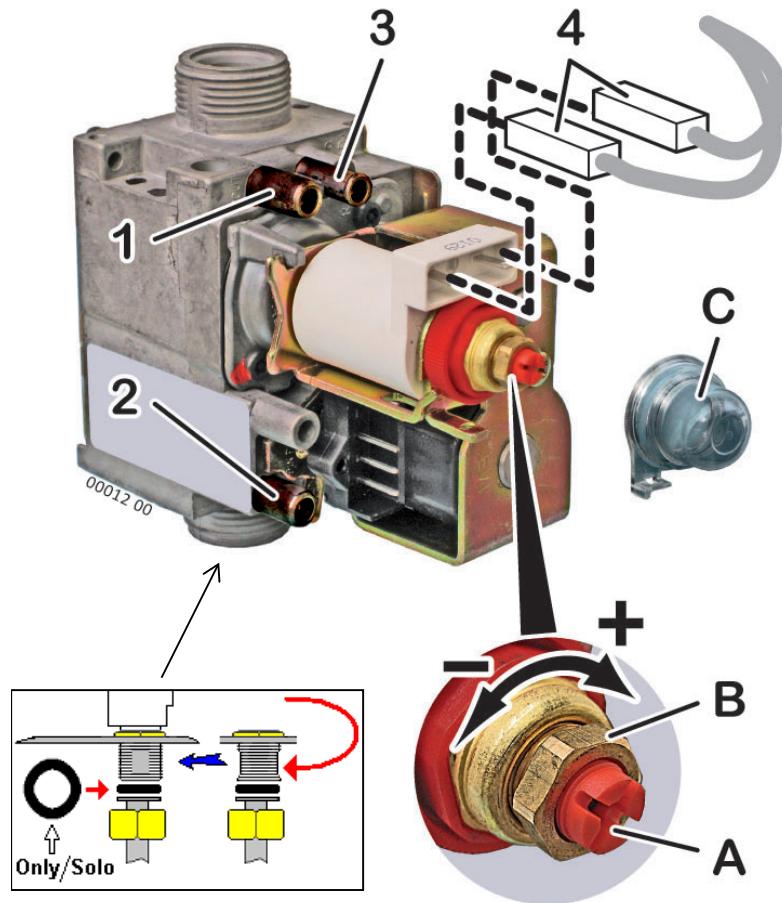
- ▶ open one of the hot water taps in the DHW system;
- ▶ gradually open the hand valve installed on the cold water inlet of the storage unit;
- ▶ when only water flows out of the tap, close it.



FLOW STAT		TOOLS
tools suggested: allen Fey 4 mm - antiscaling liquid for cleaning		
DISMOUNTING		
• discharge boiler water from both side (DHW and CH)		see procedure
• rotate safety 3 bar (D) 90° clockwise to show the right fixing screw		by hands
• unscrew 2 fixing screws (F)		allen key 4 mm
• take out the DHW exchanger (H)		by hand
• clean chemically or to replace it		by hand
HOW TO CLEAN		
• chemical cleaning with antiscaling liquid on both sides of DHW exchanger		
• rinse thoroughly with water		
MOUNTING		
• check effectiveness of 4 O-rings (G)		by hands
• place DHW exchanger on its spot		by hands
• screw 2 fixing screw (F)		allen key 4 mm
• rotate safety 3 bar (D) 90° anticlockwise and connect its discharging pipe if it is the case		by hands
• fill-in boiler water		see procedure
FLOW STAT		
tools suggested: allen key 4 mm - cross screwdriver		
DISMOUNTING		
• place flow stat to its spot on brass group		by hands
• screw 2 fixing screws (A) to hydraulic metal bracket		cross screwdriver
• screw 1 fixing screw (B) to brass group		cross screwdriver
• rotate safety 3 bar (D) 90° anticlockwise and connect its discharging pipe if it is the case		by hands
• plug flow stat electrically (C)		by hands
• fill-in boiler with water		see procedure
MOUNTING		
• discharge water from DHW side		see procedure
• unplug flow stat electrically (C)		by hands
• rotate safety 3 bar (D) 90° clockwise to show the flow stat behind		by hands
• unscrew 2 fixing screws (A) from hydraulic metal bracket		cross screwdriver
• unscrew 1 fixing screw (B) from brass group		cross screwdriver
• unscrew 1 screw (E) and to screw it where screw (B) has been left; this way flow stat will leave easily its spot from brass group		allen key 4 mm
• screw 1 screw (E) on the previous spot for future servicing		allen key 4 mm
3 WAY VALVE		
tools suggested: wrench 14 mm or 3/8" - wrench 30 mm or 3/4" - allen key 4 mm - cross screwdriver -socket wrench 34 mm		
DISMOUNTING		
• discharge boiler water from both side (DHW and CH)		see procedure
• dismount pipe (Q)		wrench 30 mm
• dismount manometer (I)		wrench 14 mm
• dismount DHW exchanger (H) (see procedure)		allen Fey 4 mm
• unscrew 2 fixing screws (L) and take out the brass group (I)		cross screwdriver
• unscrew plastic nut (O) and take out first half of 3 way valve		wrench 30 mm
• unscrew brass nut (P) and take out second half of 3 way valve		socket wrench 34 mm
• clean or to replace 3 way valve		by hands
MOUNTING		
• mount of 3 way valve, tightening plastic nut (O) and brass nut (P)		wrench 30 mm - socket wrench 34 mm
• place brass group on the brackFet and fix it with 2 screws (L) but not tighten them completely		by hands
• mount DHW exchanger (H) (see procedure)		allen key 4 mm
• mount pipe (Q)		wrench 30 mm
• fix completely 2 screws (L)		cross screwdriver
• mount manometer (R)		wrench 14 mm
• fill-in boiler with water		see procedure



BURNER AND FAN		TOOLS
tools suggested: wrench 24 mm - cross screwdriver - plastic brush - straight plier		
DISMOUNTING		
• leave electric supply and close the gas inlet		<i>by hand</i>
• remove the sealed chamber, unscrew the 5 screws (A)		<i>Cross screwdriver</i>
• disconnect the electrode wire		<i>by hand</i>
• remove the insulating plate, unscrew the 6 screws (C)		<i>cross screwdriver</i>
• remove the burner, unscrew 4 screws (E)		<i>Cross screwdriver</i>
• unscrew gas pipe		<i>wrench 24 mm</i>
• remove the gas collector, unscrew the 4 screws (G)		<i>Cross screwdriver</i>
• remove the silicon pipe H, check and clean		<i>by hand</i>
• disconnect the power wires, unscrew the fixing screw and remove the fan		<i>cross screwdriver</i>
• remove the flues hood		<i>by hand</i>
• clean burner		<i>plastic brush</i>
• check electrode position 4-5 mm from burner		<i>straight plier</i>
• check integrity of insulation parts		
• check and clean the nozzles		<i>plastic brush</i>
• check and clean the fan		
• check and clean the fan probe (M)		
• clean the main heat exchanger bottom and top part		<i>plastic brush</i>
MOUNTING		
• refit the flues hood, being careful to position the lip (N) correctly under the profile (O)		<i>by hand</i>
• mount the nozzle ramp with the 4 screws (G), replace the gasket, mount the gas pipe, tighten the hexagonal ring nut (F)		<i>Cross screwdriver-wrench 24 mm</i>
• mount the burner, screw the 4 screw (E)		<i>Cross screwdriver</i>
• reconnect the electrode wire (B)		<i>by hand</i>
• refit the insulating plates, screw the 6 screws (C)		<i>Cross screwdriver</i>
• refit the deflectors, screw the screws (D) 2 on each side		<i>Cross screwdriver</i>
• mount the fan paying attention to the gasket at the flue system and fix it with the screw (I)		<i>By hand/Cross screwdriver</i>
• reconnect the silicon pipe (H) paying attention respect + and – signals		<i>by hand</i>
• mount the sealed chamber, screw the 5 screws (A)		<i>Cross screwdriver</i>

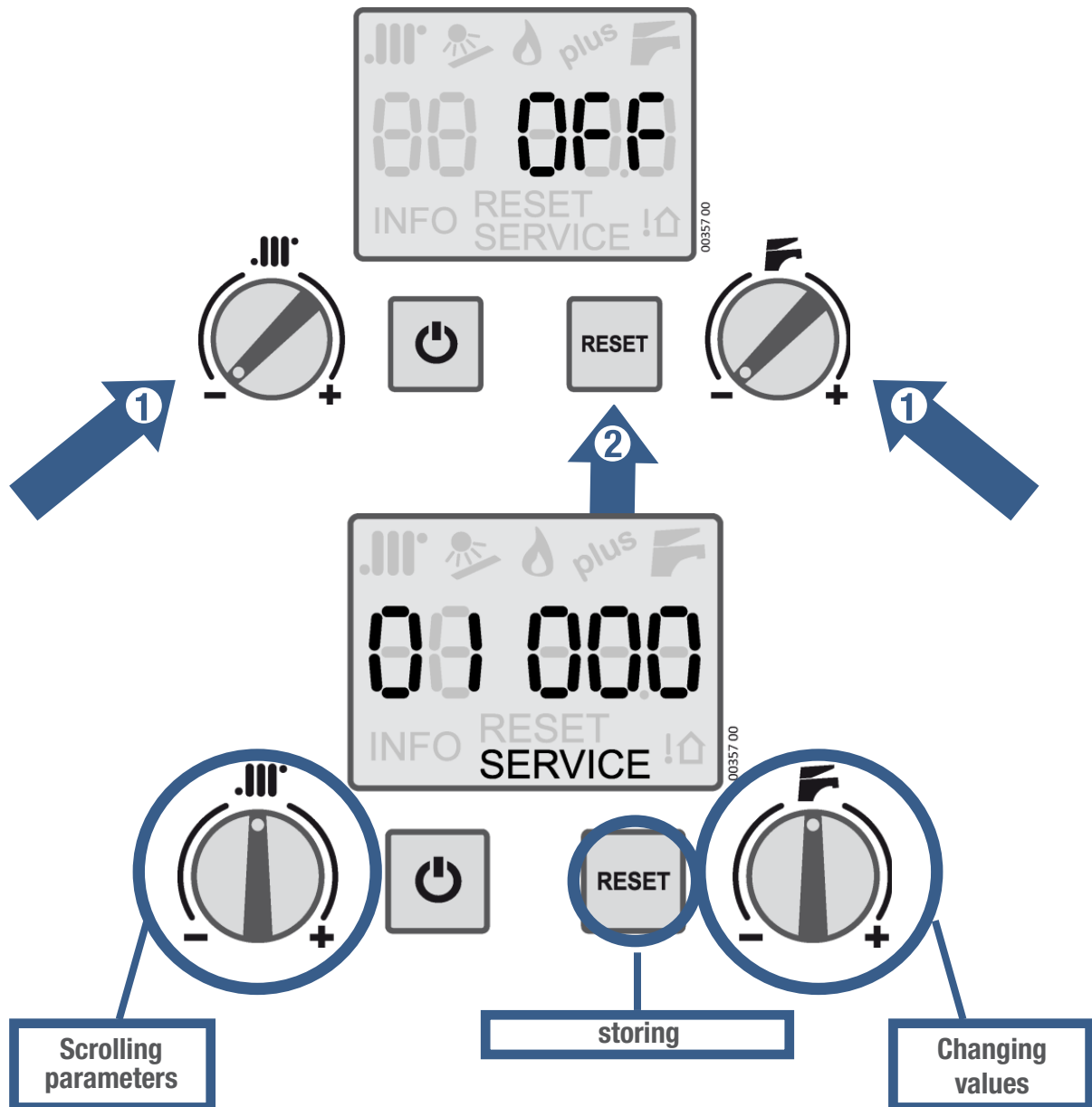






GAS VALVE **TOOLS**

tools suggested: screw - nut	
CALIBRATION	
• Outlet pressure: Values written on User manual (1)	
• Inlet pressure: Net pressure must be: 20 mbar – MTN / 29- 37 mbar - LPG (2)	
• Vent Connection: Pressure compensation on sealed chamber (3)	
• Coil modulator wires: MTN = 20 – 120 mA / LPG = 30 – 165 mA	
• Disconnect one to force boiler on minimum value set (4)	
• Minimum adjustment: Use the screw to set the minimum value (respecting the data on User manual) (A)	
• Maximum adjustment: Use the nut (10 mm) to set the maximum value (respecting the data on User manual) (B)	
• Protection cup: After any adjustments, mount the protection cup (C)	

Gas supply pressure

Nominal pressure	mbar	20	37	20	37	20	37	20	37
Inlet pressure (min÷max)	mbar	17 ÷ 25	35÷40	17 ÷ 25	35÷40	17 ÷ 25	35÷40	17 ÷ 25	35÷40
Injectors number		9		11		13		15	
Injectors diameter	mm/100	130	78	130	78	130	77	130	78
Gas pressure to injectors at Qn (MAX)	mbar	12.4	27.8 / 35.7	13.0	27.5 / 35.6	12.8	27.7 / 35.8	12.6	27.4 / 35.4
Gas pressure to injectors at Qr (MIN)	mbar	2.4	6.5 / 6.5	1.9	4.9 / 4.9	1.9	6.5 / 6.5	1.7	6.5 / 3.9



1. Boiler Mode OFF
2. Put both knobs   at minimum value; then press **RESET** for 6 sec. until display is showing on the left «00» (n°of Parameter) and on the right «000» (Value of Parameter chosen).
3. Acting on left knob  for scrolling Parameters.
4. Acting on right knob  for changing Parameter values
5. Storing values changed pressing button **RESET** for 3 sec.
6. Parameter Access still be active for 15 min; exit function pressing

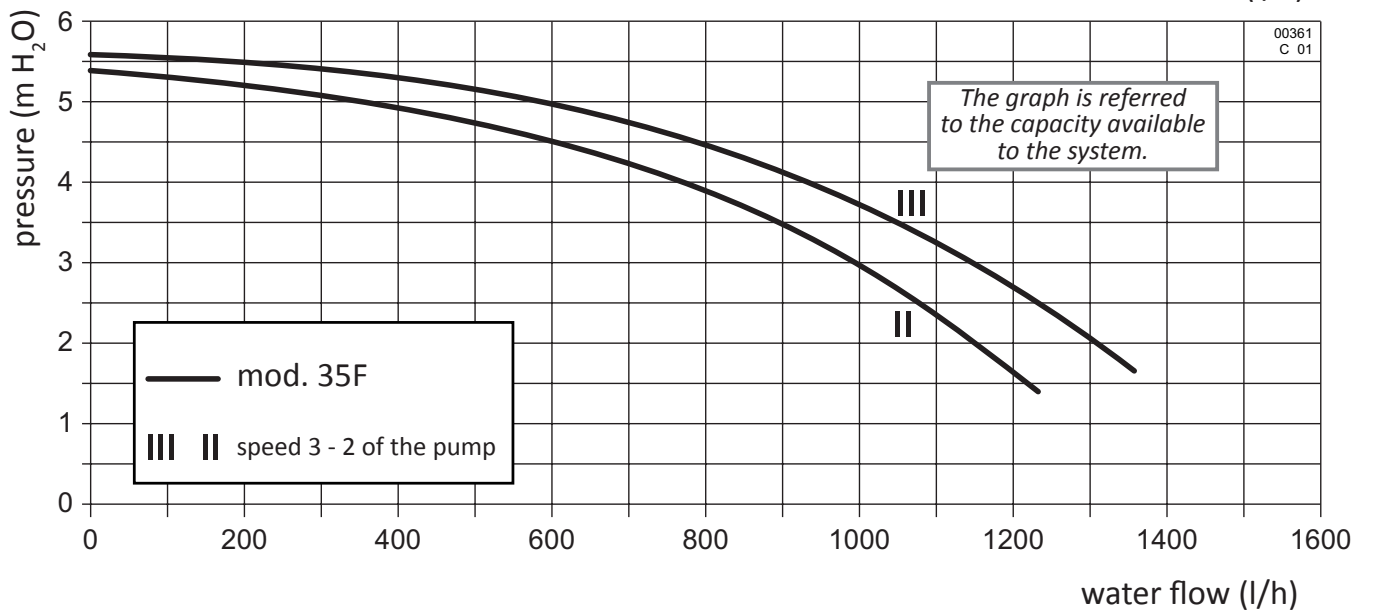
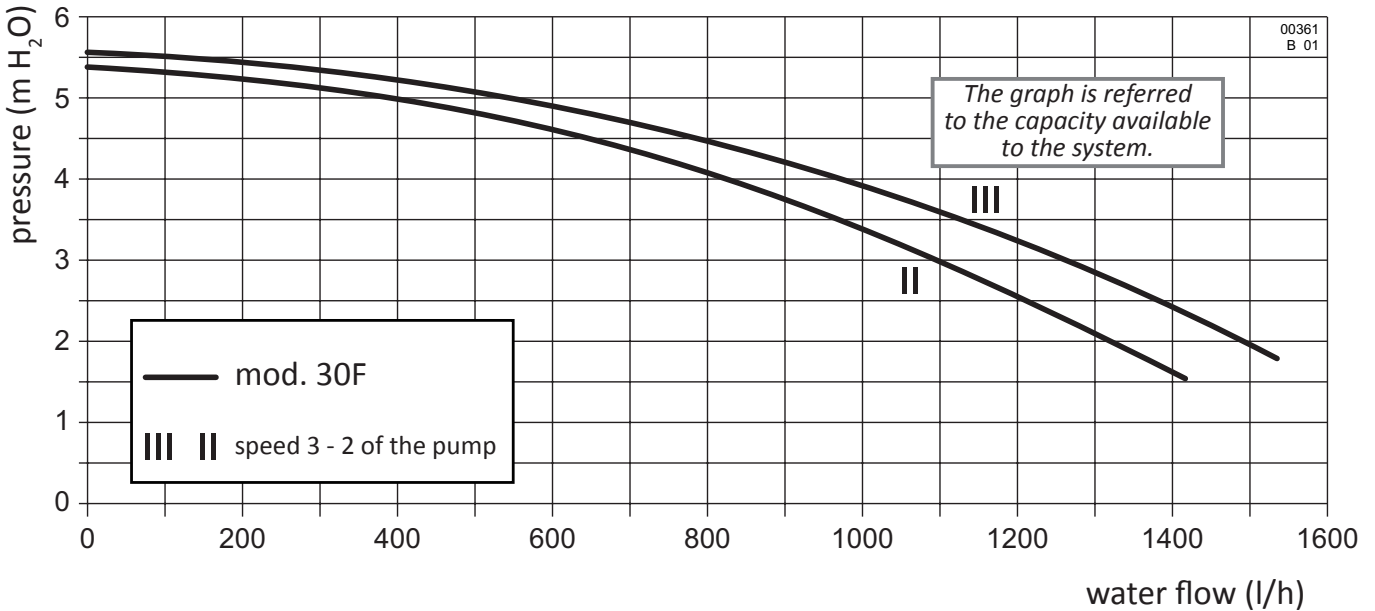
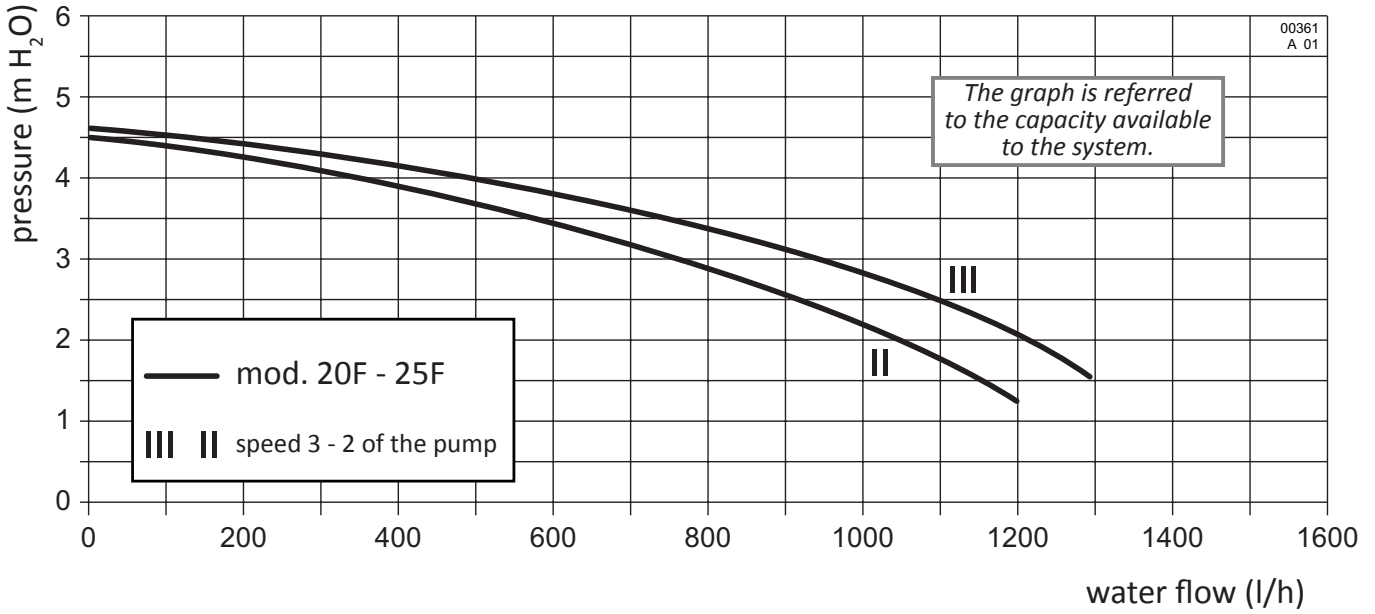
Parameters

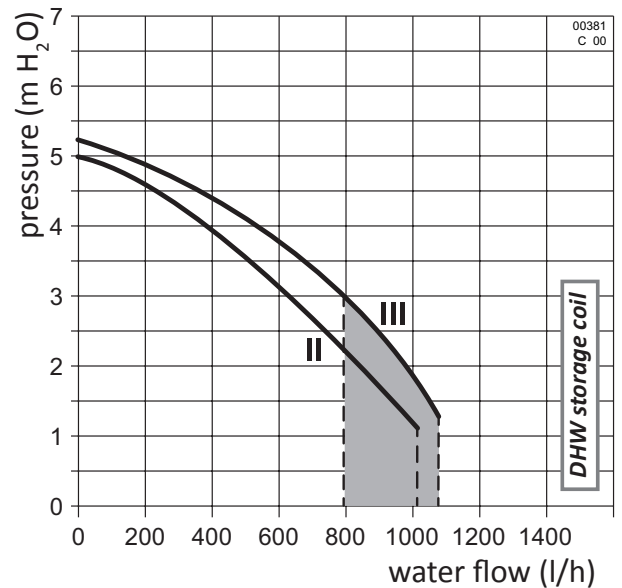
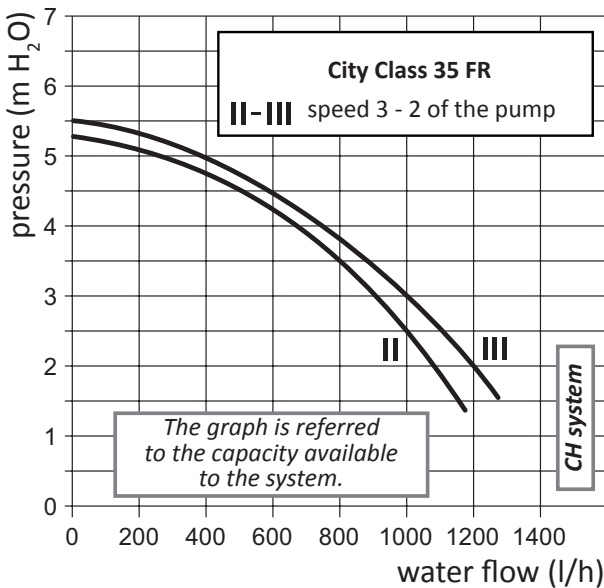
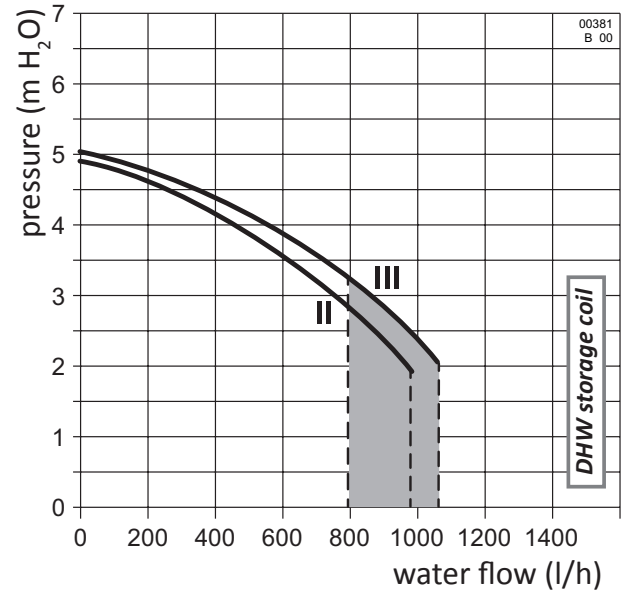
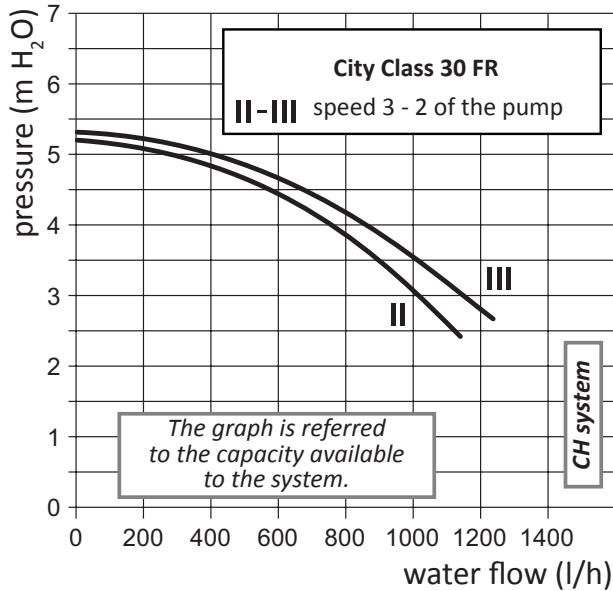
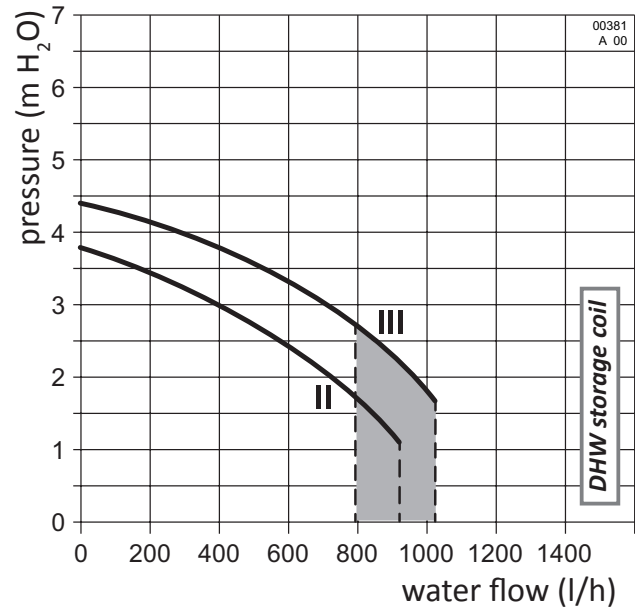
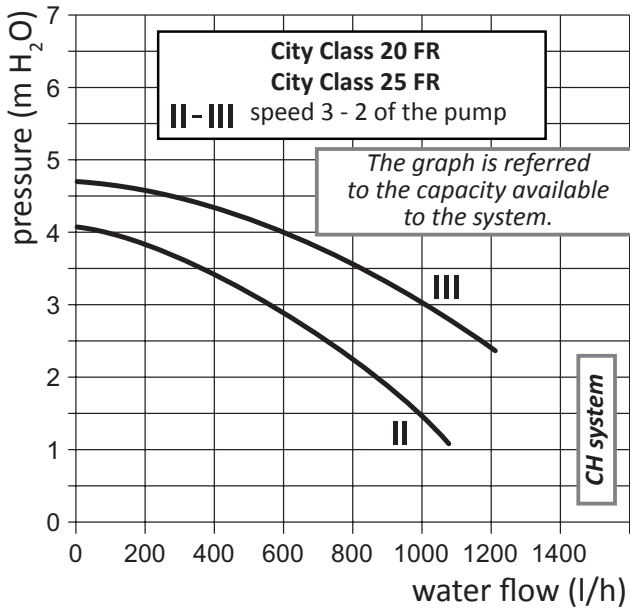
Standard Parameter for general uses
 Suggested to not modify



Param.	Description	Range	Fact. settings	Note
F FR 01	Type Gas	0 ÷ 1	0	0 : G20 1 : G31
F FR 02	CH Temperature Range	0 ÷ 1	0	0 : Standard Range 35 ÷ 80 °C 1 : Reduced Range 20 ÷ 45 °C
F FR 03	Slow Ignition Fan Revolution	0 ÷ 80	kind of boiler	80% of Max
F FR 04	Max CH power inlet	00 ÷ 100	100	Percentage of Max CH Power inlet available
F FR 05	Pump mode on CH demand	0 ÷ 2	0	0 : Standard functioning (post circulation) 1 : Pump always ON 2 : Pump always OFF
F FR 06	Delay of re-ignition in CH demand	0 ÷ 15	3	Value in minutes
F FR 07	Bleeding Plant function	0 ÷ 3	0	0 : Disabled 1 : Bleeding plant CH side 2 : Bleeding plant DHW side 3 : Bleeding plant both CH and sides
F 08	ON/OFF Temperature on DHW demand	1 ÷ 2	1	1 : (Fixed) OFF= 75°C , ON = 65°C 2 : (SET point) OFF = DHWSet + 3° ; ON = DHW-Set + 2°
F FR 09	Timing to reach the max power in CH demand	20 ÷ 120	25	Time in Seconds
F FR 10	Timing to reach the maximum power on CH demand after OFF for high temperature	0 ÷ 1	0	0 : Disabled Function (normal working) 1 : Boiler forced to max power
F FR 12	Chimney Sweeper function	0 ÷ 1	0	0 : Disabled Function 1 : Boiler forced to max power
F FR 19	Delay of switching ON after CH demand	0 ÷ 5	0	Minutes. Timing for boiler CH activation after receiving CH demand
F FR 20	Timing of pump functioning after CH demand	0 ÷ 240	30	Seconds. Post circulation after CH demand
F FR 21	Timing of pump functioning after DHW demand	F 0÷3 FR 0÷240	3 180	Seconds. Post circulation after DHW demand
FR 23	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
F FR 24	DHW max Power inlet	0 ÷ 100	100	% of max DHW power inlet available
FR 25	ΔT for boiler ignition while tank demand	1 ÷ 10	3	ON burner for tank demand =SET – (PAR25)°C
FR 26	ΔT to get max Flow Temperature while tank demand	5 ÷ 15	8	ΔT = SET Tank – T current If ΔT > (PAR26); then T flow = max value
FR 27	ΔT to set the min value of the T flow on tank preparation demand	5 ÷ 20	15	T flow min = SET Tank + (PAR27)°C
FR 28	Anti-legionella Function ON /OFF	0 50 ÷ 70	60	0 : Disabled Function 50 ÷ 70 : temperature of water during this function
FR 29	Activation timing Anti Legionella, if not reached temperature at PAR 28 before	1 ÷ 15	7	Days.
FR 30	Anti Legionella function timing at T= PAR 28	0 ÷ 30	1	Minutes.
F FR 39	Offset External Probe	-5° ÷ +5°	0	0 : - 5°C 5 : 0°C 10 : + 5°C
F FR 41	Min set CH temperature on TA1	20 ÷ 50 20 ÷ 35	0	Degrees Standard Range: DEFAULT 35°C Reduced Range : DEFAULT 20°C
F FR 42	OFF burner while CH demand	0 ÷ 10	5	Seconds OFF burner=CHset+ (PAR42)°C
F FR 43	ON burner while CH demand	0 ÷ 10	0	Seconds ON burner=CHset+ (PAR43)°C
FR 45	Timing for DHW demand priority	0/10 ÷ 180	0	Seconds. time after which DHW demand is forced OFF

Code	Error Find	Description	Suggestion
F FR	E01	RESET No flame ignition (after 3 attempts)	<ul style="list-style-type: none"> Gas pressure inlet lower than required Electrode position not correct PCB is not managing ignition
F FR	E02	RESET High Water Temperature on Primary (Safety Thermostat)	<ul style="list-style-type: none"> Safety Thermostat open; check water circulation and pressure Low Water circulation on the plant; check pump
F FR	E03	RESET Air pressure Switch is not working after Fan = ON	<ul style="list-style-type: none"> Check air pressure switch and fan probe Check flues pipes and chimney flues for eventual obstructions
F FR	E05	SERVICE CH NTC probe out of order	<ul style="list-style-type: none"> CH Probe out of order; checF resistance values with standard ones Low Water circulation on the plant; check pump
F	E06	SERVICE DHW NTC probe out of order	<ul style="list-style-type: none"> DHW Probe out of order; checF resistance values with standard ones
F FR	E08	SERVICE Flame lost 6 time after its detection	<ul style="list-style-type: none"> Flues mixed with air inlet and combustion is not good anymore; checF flues configuration Electrode position not correct
F FR	E10	RESET Low Plant Pressure	<ul style="list-style-type: none"> Fill-in water plant
F FR	E11	RESET Air pressure switch in working position while FAN=OFF	<ul style="list-style-type: none"> Check air pressure switch, its silicon pipes and fan probe
FR	E12	SERVICE Tank probe out of order	<ul style="list-style-type: none"> Tank Probe out of order; check resistance values with standard ones
F FR	E13	SERVICE Gas Valve modulator coil not electrically supplied	<ul style="list-style-type: none"> Check gas valve wire connection PCB is not correctly managing gas valve; replace PCB
F FR	E17	SERVICE Buttons Anomaly (<i>if a button remains wrongly pressed</i>)	<ul style="list-style-type: none"> Check keyboard buttons
F FR	E22	SERVICE Uncorrect microprocessor programming	<ul style="list-style-type: none"> Power Off and Power ON for reset
F FR	E23	SERVICE Electric supply frequency not correct (correct 50 Hz +-1)	<ul style="list-style-type: none"> Inlet electric supply not under specifications
F FR	E31	SERVICE Wrong communication between Boiler and Remote Control	<ul style="list-style-type: none"> Procedure to connect Remote control Connection wire shielded
F FR	E35	RESET Spurious Flame (Detection while no flame on the burner)	<ul style="list-style-type: none"> Electrode position not correct
F FR	E38	SERVICE External probe out of order	<ul style="list-style-type: none"> Check external probe resistance values with standard ones
F FR	E39	SERVICE Antifreeze function activate	<ul style="list-style-type: none"> Check boiler and ice on the plant
F FR	E42	RESET System error (microprocessor internal error)	<ul style="list-style-type: none"> Turn OFF electricity and then ON; if error remains, replace PCB
F FR	E44	SERVICE Flow temperature increased sharply	<ul style="list-style-type: none"> Low Water circulation on the plant; checF pump and water prevalence on the plant
F FR	E50	SERVICE Electric supply Voltage not correct (under 175 V)	<ul style="list-style-type: none"> Inlet electric supply not under specifications
F FR	E72	SERVICE Combustion configuration wrong	<ul style="list-style-type: none"> The actual combustion control (flue gas thermostat or air pressure switch) is incorrect compared to what is the configuration code of PCB





Gas type	U.M.	City Class 20 F		City Class 25 F		City Class 30 F		City Class 35 F	
		G20	G30/G31	G20	G30/G31	G20	G30/G31	G20	G30/G31
Class		II _{2H3+}		II _{2H3+}		II _{2H3+}		II _{2H3+}	
Type		B22 - C12 - C32 - C42 - C52 - C62 - C82							
Working temperature range (min÷max)	°C	0 ÷ +60		0 ÷ +60		0 ÷ +60		0 ÷ +60	
Max heat input (Qn)	kW	21.0	20.5	25.7	25.5	30.0	29.0	30.0	29.0
Min heat input (Qr)	kW	9.5	10.0	10.0	10.2	12.0	13.0	12.0	13.0
Max heat output (Pn)	kW	19.5	19.0	24.0	23.8	28.2	27.3	28.2	27.3
Min heat output (Pr)	kW	8.1	8.5	8.5	8.6	10.2	11.1	10.2	11.1
NO_x Class		3	3 / 3	3	3 / 3	3	3 / 3	3	3 / 3
CO at 0% O₂ (at Qn)	ppm	69.7	87.5 / 60.9	91.1	119.7 / 79.4	84.8	103.7 / 61.3	84.8	103.7 / 61.3
CO₂ at nominal input	%	5.5	6.4 / 6.3	7.2	8.1 / 7.9	7.5	8.4 / 8.0	7.5	8.4 / 8.0
Flue temperature (at Qn)	°C	118	110 / 112	119	111 / 113	122	121 / 120	122	121 / 120
Flue mass flow rate (at Qn)	kg/h	53.74	53.62 / 54.22	51.93	53.21 / 53.82	58.58	57.11 / 59.11	58.58	57.11 / 59.11
Efficiency									
Nominal efficiency (at Qn)	%	92.7		93.3		94.0		94.0	
Efficiency at 30% Qn	%	90.5		91.0		91.5		91.5	
Heating									
Temperature selection range (min÷max)	°C	35÷80				35÷80		35÷80	
Expansion vessel	l	8		8		8		8	
Exp.vessel pre-loading pressure	bar	1		1		1		1	
Loss of water pressure switch off / on pressure	bar	0.4 / 0.9 (±0.2)		0.4 / 0.9 (±0.2)		0.4 / 0.9 (±0.2)		0.4 / 0.9 (±0.2)	
		To allow the correct system filling, the pressure of the domestic water should be higher than the ON value of the pressure switch.							
Max working pressure	bar	3		3		3		3	
Max system temperature	°C	85		85		85		85	
Anti-freezing function temperature on / off	°C	5 / 30		5 / 30		5 / 30		5 / 30	
Hot water									
Flow rate at 25°C temp. rise	l/min	11.2	10.9	13.7	13.6	16.2	15.6	18.6	18.6
Flow rate at 30°C temp. rise	l/min	9.3	9.1	11.5	11.4	13.5	13.0	15.5	15.5
Min water flow (for the DHW function activation)	l/min	2.8		2.8		2.8		2.8	
Min supply pressure (for the DHW function activation)	bar	0.2		0.2		0.2		0.2	
Max supply pressure	bar	6		6		6		6	
Temperature selection range (min÷max)	°C	35÷55		35÷55		35÷55		35÷55	

(follows)

Gas type	U.M.	City Class 20 F		City Class 25 F		City Class 30 F		City Class 35 F	
		G20	G30/G31	G20	G30/G31	G20	G30/G31	G20	G30/G31
Electrical data									
Voltage / frequency (nominal voltage)		220÷240 / 50 (230V)		220÷240 / 50 (230V)		220÷240 / 50 (230V)		220÷240 / 50 (230V)	
Power consumption		103		103		132		145	
Level of protection		IP X5D		IP X5D		IP X5D		IP X5D	
Dimensions									
Width - Height - Depth	V / Hz	see "Dimensions and connections"							
Weight: net / gross	W	30.4 / 32.8		30.6 / 33.0		31.6 / 34.0		35.8 / 38.2	
Connections									
Hydraulic and gas connections	mm	see "Dimensions and connections"							
Flue: types, lengths and diameters	kg	see "Flue systems"							
Gas supply pressure									
Nominal pressure	mbar	20	37	20	37	20	37	20	37
Inlet pressure (min÷max)	mbar	17 ÷ 25	35÷40	17 ÷ 25	35÷40	17 ÷ 25	35÷40	17 ÷ 25	35÷40
Injectors number		9		11		13		15	
Injectors diameter	mm/100	130	78	130	78	130	77	130	78
Gas pressure to injectors at Qn (MAX)	mbar	12.4	27.8 / 35.7	13.0	27.5 / 35.6	12.8	27.7 / 35.8	12.6	27.4 / 35.4
Gas pressure to injectors at Qr (MIN)	mbar	2.4	6.5 / 6.5	1.9	4.9 / 4.9	1.9	6.5 / 6.5	1.7	6.5 / 3.9
Gas consumption									
at Qn	m³/h	2.22		2.72		3.17		3.65	
	kg/h		1.61 / 1.59		2.01 / 1.98		2.28 / 2.25		2.72 / 2.67
at Qr	m³/h	1.00		1.06		1.27		1.44	
	kg/h		0.79 / 0.78		0.80 / 0.79		1.02 / 1.01		1.07 / 1.05

Note: data have been measured with minimum length coaxial flue.

Gas type	U.M.	City Class 20 F		City Class 25 F		City Class 30 F		City Class 35 F	
		G20	G30/G31	G20	G30/G31	G20	G30/G31	G20	G30/G31
Class		II _{2H3+}		II _{2H3+}		II _{2H3+}		II _{2H3+}	
Type		B22 - C12 - C32 - C42 - C52 - C62 - C82							
Working temperature range (min÷max)	°C	0 ÷ +60		0 ÷ +60		0 ÷ +60		0 ÷ +60	
Max heat input (Qn)	kW	21.0	20.5	25.7	25.5	30.0	29.0	34.5	34.5
Min heat input (Qr)	kW	9.5	10.0	10.0	10.2	12.0	13.0	13.6	13.6
Max heat output (Pn)	kW	19.5	19.0	24.0	23.8	28.2	27.3	32.4	32.4
Min heat output (Pr)	kW	8.1	8.5	8.5	8.6	10.2	11.1	11.7	11.7
NO_x Class		3	3 / 3	3	3 / 3	3	3 / 3	3	3 / 3
CO at 0% O₂ (at Qn)	ppm	69.7	87.5 / 60.9	91.1	119.7 / 79.4	84.8	103.7 / 61.3	85.2	102.5 / 76.9
CO₂ at nominal input	%	5.5	6.4 / 6.3	7.2	8.1 / 7.9	7.5	8.4 / 8.0	6.9	7.9 / 7.7
Flue temperature (at Qn)	°C	118	110 / 112	119	111 / 113	122	121 / 120	118	123 / 122
Flue mass flow rate (at Qn)	kg/h	53.74	53.62 / 54.22	51.93	53.21 / 53.82	58.58	57.11 / 59.11	72.37	72.11 / 74.16
Efficiency									
Nominal efficiency (at Qn)	%	92.7		93.3		94.0		94.0	
Efficiency at 30% Qn	%	90.5		91.0		91.5		92.0	
Heating									
Temperature selection range (min÷max)	°C	35÷80				35÷80			
Expansion vessel	l	8		8		8		10	
Exp.vessel pre-loading pressure	bar	1		1		1		1	
Loss of water pressure switch off / on pressure	bar	0.4 / 0.9 (±0.2)				0.4 / 0.9 (±0.2)		0.4 / 0.9 (±0.2)	
Max working pressure	°C	3		3		3		3	
Max system temperature	°C	85		85		85		85	
Anti-freezing function temperature on / off	°C	5 / 30		5 / 30		5 / 30		5 / 30	
Hot water									
Temperature selection range (min÷max)	°C	30÷60		30÷60		30÷60		30÷60	
Electrical data									
Voltage / frequency (nominal voltage)	V / Hz	220÷240 / 50 (230V)		220÷240 / 50 (230V)		220÷240 / 50 (230V)		220÷240 / 50 (230V)	
Power consumption	W	103		103		132		145	
Level of protection		IP X5D		IP X5D		IP X5D		IP X5D	

(follows)

Gas type	U.M.	City Class 20 F		City Class 25 F		City Class 30 F		City Class 35 F	
		G20	G30/G31	G20	G30/G31	G20	G30/G31	G20	G30/G31
Dimensions									
Width - Height - Depth	mm	see "Dimensions and connections"							
Weight: net / gross	kg	27.5 / 29.7		30.2 / 32.6		30.8 / 33.2		34.6 / 37.0	
Connections									
Hydraulic and gas connections		see "Dimensions and connections"							
Flue: types, lengths and diameters		see "Flues system"							
Gas supply pressure									
Nominal pressure	mbar	20	37	20	37	20	37	20	37
Inlet pressure (min÷max)	mbar	17 ÷ 25	35÷40	17 ÷ 25	35÷40	17 ÷ 25	35÷40	17 ÷ 25	35÷40
Injectors number		9		11		13		15	
Injectors diameter	mm/100	130	78	130	78	130	77	130	78
Gas pressure to injectors at Qn (MAX)	mbar	12.4	27.8 / 35.7	13.0	27.5 / 35.6	12.8	27.7 / 35.8	12.6	27.4 / 35.4
Gas pressure to injectors at Qr (MIN)	mbar	2.4	6.5 / 6.5	1.9	4.9 / 4.9	1.9	6.5 / 6.5	1.7	6.5 / 3.9
Gas consumption									
at Qn	m³/h	2.22		2.72		3.17		3.65	
	kg/h		1.61 / 1.59		2.01 / 1.98		2.28 / 2.25		2.72 / 2.67
at Qr	m³/h	1.00		1.06		1.27		1.44	
	kg/h		0.79 / 0.78		0.80 / 0.79		1.02 / 1.01		1.07 / 1.05

Note: data have been measured with minimum length coaxial flue.

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