

TECHNICAL sheet

HIGH POWER

 **IMMERGAS**

ARES TEC ErP

Floor standing modular
condensation boiler
for thermal power station



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ARES TEC ErP is the new multi-burner, modular, condensation floor standing boiler offered by IMMERGAS for high power systems, ideal for new or replacing obsolete generators beneficial to large volume buildings such as apartment blocks, industrial sheds, shopping malls, school complexes, hospitals etc....

ARES TEC ErP isn't just a condensing boiler, but a block which unites various heating elements/independant combustion units but managed by a single electronic control logic.

Each generator is composed of several elements (3 to 7), with modulated power from 12 to 50 kW for each element and specifically: No. 3 elements per mod. 150, No. 4 elements for mod. 200, No. 5 elements for mod. 250, No. 6 elements for mod. 300, No. 7 elements for mod. 350.

This unique constructional feature enables a wide range modulation field which reaches up to about 1:30; this enables a very high efficiency ($\eta > 93 + 2 \cdot \log P_n$).

The small dimensions combined with high power make the ARES TEC ErP the ideal boiler to solve situations where the central space is reduced or difficult to reach, thanks to its excellent weight-to-power ratio.

The generator is equipped with an emergency operation function, which prevents the system from being stopped.

The management logic requires simultaneous operation of the maximum number of available heating elements, to always achieve maximum possible performance (maximum exchange surface is in fact assured).

Despite the high power generated, thanks to the innovative combustion circuit technology and the aluminium, silicon and magnesium block, operation is extremely silent (sound emission below 49 dBA).

Also approved for outdoor installation, it has standard IPX5D electrical protection and an antifreeze protection up to -15°C .

The hydraulic and gas connections are reversible right and left, while the flue exhaust can be placed on 3 sides, this enables unprecedented installation flexibility.

The "ecological" soul of ARES TEC ErP is assured by special constant CO_2 irradiation modulating total premixing boilers that allow low NO_x emissions (the boiler belongs to the most ecological class required by European Standards - Class 5) and low smoke-sensitive losses.

Electronic management and heat adjustment are fully automatic and already set for generator operation.

It is also possible to electronically manage up to 8 boilers in cascade by using optional kits and set up the system for remote management and control.

For modern design, a number of dedicated accessories are available for completing the unit such as:

Hydraulic kits with INAIL safeties (formerly ISPEL) including hydraulic separator; or INAIL safeties (formerly ISPEL) hydraulic kits including plate heat exchanger, both designed to optimize management of the system downstream of the boiler.

Flue exhaust kit.

Acid condensate drain management kit.

Additional system areas heat adjustment kit.

ARES 150 - 350 TEC ErP

1

ARES 150-350 TEC ErP FEATURES

ARES Tec is a gas-fired, Low-NOx, condensing boilers range, composed by 5 different models, with power output sizes starting from 150 kW up to 350 kW.

All the boilers in the range are floor-standing, open chamber, forced-draught appliances for-heating-only, suitable both for stand alone operation and for installation in cascade (up to 8 heat generators can be joined together in a cascade).

ARES Tec boilers are made up of three or more pre-assembled cast aluminium/silicon/magnesium alloy heating elements (up to 7), which allow wide power-output modulation range (up to 1:30, which means from 12 to 50 kW / heating element).

IPX5D protection degree allows full outdoor boiler installation; standard freeze protection up to -15 °C.

Noise in maximum power output condition lower than 49 dBA.

Main ARES TEC features:

- Very high seasonal efficiency rate;
- Compact dimensions;
- Low water content and consequent fast response to thermal load variations;
- Flue terminal positionable on 3 sides;
- Fully removable side panels complete with air inlet openings;
- 50 mm thick, hypoallergenic mineral wool thermal insulating panels;
- Stainless steel condensate drainage box complete with safety level switch (which stops the boiler operation in case of condensate drainage system clogging);
- Balanced, reversible hydraulic delivery and return manifolds, with standard thread connections;
- Totally-premixed radiation combustion system carried out by modulating Fe/Cr-Alloy-fibre burners on each heating element, complete with ignition anode and flame ionization detector;
- Two-stages pneumatic gas valve on every single heating element;
- Modulating fans with built-in non-return valve and rpm control system managed by the electronics of the thermal element itself;
- Combustion air inlet manifold complete with built-in cleaner;
- Waterproof-cover protected control panel, including ON/OFF switch, boiler general TGC Thermo-controller, GCI boiler cascade manager, and SDE single heating unit controller;
- Prearranged as standard for the management of:
 - 1 direct heating circuit;
 - 1 mixed heating circuit;
 - 1 DHW production circuit;
 - 1 (possible) DHW recirculation pump;
- By providing additional temperature probes (supplied as optional kits), it is possible the management of a thermal solar installation (or, as an alternative, of DHW recirculation system) and of a second heating circuit of the mixed type (instead of a direct heating circuit);
- TGC-controlled DHW production via NTC sensor supplied as standard, in order to activate the storage tank loading pump or (as an alternative) 220-V, 3-way diverting valve;
- Relay for actuating fixed speed primary ring pump;
- 0 - 10 V analogue output for a primary ring modulating pump management;
- Following sensors are provided as standard:
 - Outdoor air temperature probe;
 - Heating circuit flow temperature probe (e.g. in order to manage 2nd mixed zone);
 - Storage tank unit temperature probe (for DHW tank loading pump or 3-way diverting valve);
- Further devices provided as standard:
 - A local NTC temperature sensors on each thermal element;
 - Local maximum temperature switch on each thermal element;
 - Global NTC delivery water temperature sensor;
 - Global NTC return water temperature sensor;
 - Back-up global NTC water delivery sensor, to be used in case of protection function start;
 - Air pressure switch on each modulating fan;
 - Fuel pressure switch;
 - Exhaust pressure switch;
 - Manually reactivated maximum flow temperature switch (only on ARES Tec 350);
- Adjustable flow temperature parameter (default settings starting from 25 °C up to 85 °C);
- Back-up operation mode: fail-safety procedure which, in case of communication interruption affecting the TGC thermo-controller or any remote control unit, activates auxiliary electronic control system (on GCI managing card);
- Adjustable temperature value in emergency conditions thanks to emergency resistors provided as standard for operating with 70 °C as constant setpoint and 50% of the maximum capacity conditions;
- Alarm management system;
- Prearranged for the coupling with hydraulic safety kits, complete with hydraulic separator or, as an alternative, plate heat exchanger, for the ideal management of the secondary circuits of both central heating and DHW production systems;
- Prearranged for the coupling with dedicated Zone Expansion Kits provided as optional kits;
- Prearranged both the single boiler and the boilers cascade installation.

Category II appliance_{2H3P} operates with natural gas and L.P.G. CE Marking.

Is available in the model:

- **ARES 150 TEC ErP** code 3.025682
- **ARES 200 TEC ErP** code 3.025683
- **ARES 250 TEC ErP** code 3.025684
- **ARES 300 TEC ErP** code 3.025685
- **ARES 350 TEC ErP** code 3.025686



ARES TEC ErP is the new multi-burner, modular, condensation floor standing boiler offered by IMMERGAS for high power systems, ideal for new or replacing obsolete generators beneficial to large volume buildings such as apartment blocks, industrial sheds, shopping malls, school complexes, hospitals etc....

ARES TEC ErP isn't just a condensing boiler, but a block which unites various heating elements/independant combustion units but managed by a single electronic control logic.

Each generator is composed of several elements (4 to 8), with modulated power from 22 to 108 kW for each element and specifically: No. 4 elements for mod. 440, No. 5 elements for mod. 550, No. 6 elements for mod. 660, No. 7 elements for mod. 770, No. 8 elements for mod. 900

This unique constructional feature enables a wide range modulation field which reaches up to about 1:40; this enables a very high efficiency ($\eta > 93 + 2 \cdot \log P_n$).

The small dimensions combined with high power make the ARES TEC ErP the ideal boiler to solve situations where the central space is reduced or difficult to reach, thanks to its excellent weight-to-power ratio.

The generator is equipped with an emergency operation function, which prevents the system from being stopped.

The management logic requires simultaneous operation of the maximum number of available heating elements, to always achieve maximum possible performance (maximum exchange surface is in fact assured).

Despite the high power generated, thanks to the innovative combustion circuit technology and the aluminium, silicon and magnesium block, operation is extremely silent (sound emission below 49 dBA).

Also approved for outdoor installation, it has standard IPX5D electrical protection and an antifreeze protection up to -15°C .

The hydraulic and gas connections are NOT reversible, while the flue exhaust can be placed on 3 sides, this enables unprecedented installation flexibility.

The "ecological" soul of ARES TEC ErP is assured by special constant CO_2 irradiation modulating total premixing boilers that allow low NO_x emissions (the boiler belongs to the most ecological class required by European Standards - Class 5) and low smoke-sensitive losses.

Electronic management and heat adjustment are fully automatic and already set for generator operation.

It is also possible to electronically manage up to 8 boilers in cascade by using optional kits and set up the system for remote management and control.

For modern design, a number of dedicated accessories are available for completing the unit such as:

Hydraulic kits with INAIL safeties (formerly ISPESEL) including hydraulic separator; or INAIL safeties (formerly ISPESEL) hydraulic kits including plate heat exchanger, both designed to optimize management of the system downstream of the boiler.

Flue exhaust kit.

Acid condensate drain management kit.

Additional system areas heat adjustment kit.

ARES 440 - 900 TEC ErP

2

ARES 440-900TEC ErP FEATURES

ARES Tec is a gas-fired, Low-NOx, condensing boilers range, composed by 5 different models, with power output sizes starting from 440 kW up to 900 kW.

All the boilers in the range are floor-standing, open chamber, forced-draught appliances for-heating-only, suitable both for stand alone operation and for installation in cascade (up to 8 heat generators can be joined together in a cascade).

ARES Tec boilers are made up of four or more pre-assembled cast aluminium/silicon/magnesium alloy heating elements (up to 8), which allow wide power-output modulation range (up to 1:40, which means from 22 to 108 kW / heating element).

IPX5D protection degree allows full outdoor boiler installation; standard freeze protection up to -15 °C.

Noise in maximum power output condition lower than 49 dBA.

Main ARES TEC features:

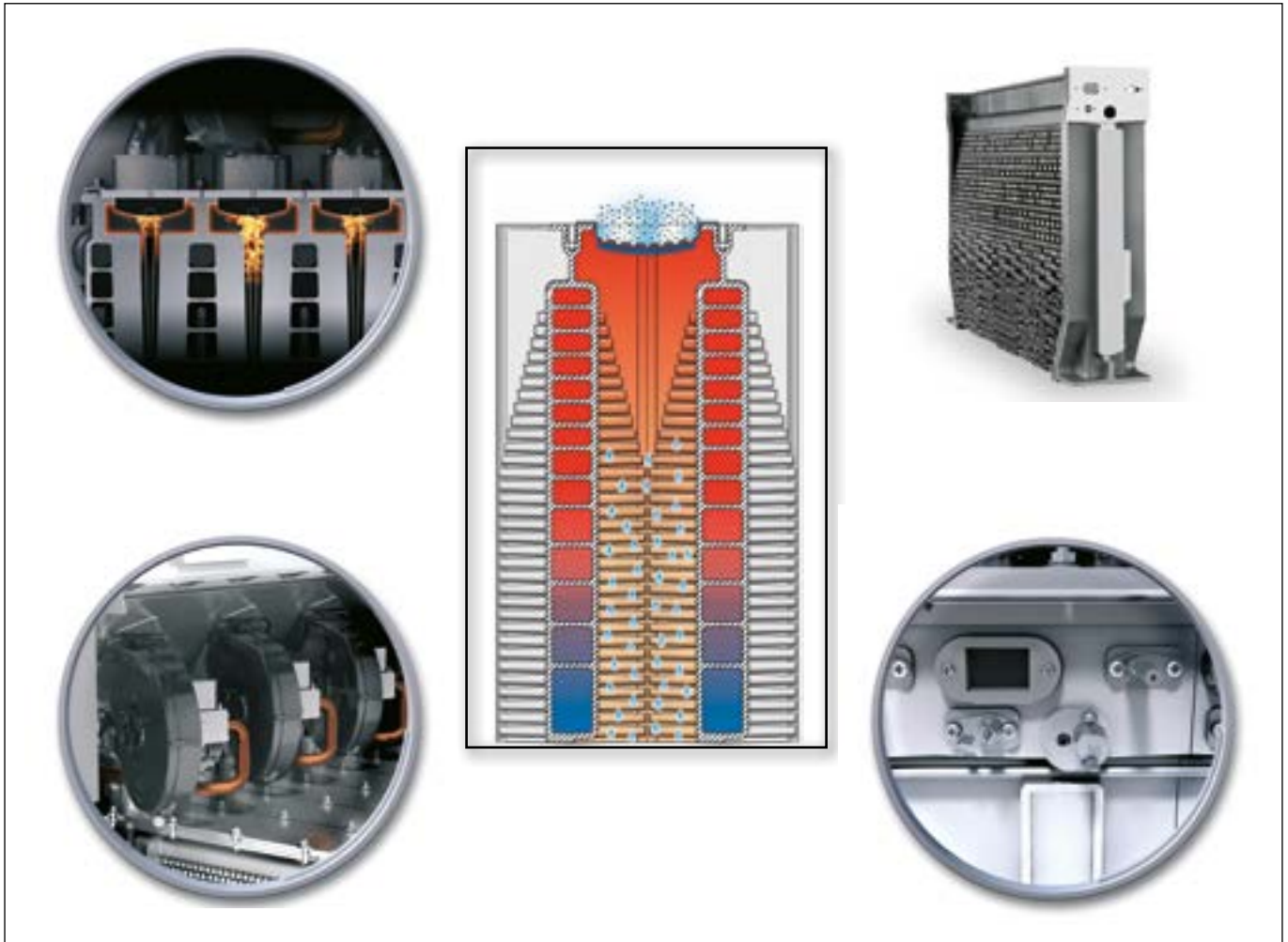
- Very high seasonal efficiency rate;
- Compact dimensions;
- Low water content and consequent fast response to thermal load variations;
- Flue terminal positionable on 3 sides;
- Fully removable side panels complete with air inlet openings;
- 50 mm thick, hypoallergenic mineral wool thermal insulating panels;
- Stainless steel condensate drainage box complete with safety level switch (which stops the boiler operation in case of condensate drainage system clogging);
- Balanced, reversible hydraulic delivery and return manifolds, with standard thread connections;
- Totally-premixed radiation combustion system carried out by modulating Fe/Cr-Alloy-fibre burners on each heating element, complete with ignition anode and flame ionization detector;
- Two-stages pneumatic gas valve on every single heating element;
- Modulating fans with built-in non-return valve and rpm control system managed by the electronics of the thermal element itself;
- Combustion air inlet manifold complete with built-in cleaner;
- Waterproof-cover protected control panel, including ON/OFF switch, boiler general TGC Thermo-controller, GCI boiler cascade manager, and SDE single heating unit controller;
- Prearranged as standard for the management of:
 - 1 direct heating circuit;
 - 1 mixed heating circuit;
 - 1 DHW production circuit;
 - 1 (possible) DHW recirculation pump;
- By providing additional temperature probes (supplied as optional kits), it is possible the management of a thermal solar installation (or, as an alternative, of DHW recirculation system) and of a second heating circuit of the mixed type (instead of a direct heating circuit);

- TGC-controlled DHW production via NTC sensor supplied as standard, in order to activate the storage tank loading pump or (as an alternative) 220-V, 3-way diverting valve;
- Relay for actuating fixed speed primary ring pump;
- 0 - 10 V analogue output for a primary ring modulating pump management;
- Following sensors are provided as standard:
 - Outdoor air temperature probe;
 - Heating circuit flow temperature probe (e.g. in order to manage 2nd mixed zone);
 - Storage tank unit temperature probe (for DHW tank loading pump or 3-way diverting valve);
- Further devices provided as standard:
 - A local NTC temperature sensors on each thermal element;
 - Local maximum temperature switch on each thermal element;
 - Global NTC delivery water temperature sensor;
 - Global NTC return water temperature sensor;
 - Back-up global NTC water delivery sensor, to be used in case of protection function start;
 - Air pressure switch on each modulating fan;
 - Fuel pressure switch;
 - Exhaust pressure switch;
- Adjustable flow temperature parameter (default settings starting from 25 °C up to 85 °C);
- Back-up operation mode: fail-safety procedure which, in case of communication interruption affecting the TGC thermo-controller or any remote control unit, activates auxiliary electronic control system (on GCI managing card);
- Adjustable temperature value in emergency conditions thanks to emergency resistors provided as standard for operating with 70 °C as constant setpoint and 50% of the maximum capacity conditions;
- Alarm management system;
- Prearranged for the coupling with hydraulic safety kits, complete with hydraulic separator or, as an alternative, plate heat exchanger, for the ideal management of the secondary circuits of both central heating and DHW production systems;
- Prearranged for the coupling with dedicated Zone Expansion Kits provided as optional kits;
- Prearranged both the single boiler and the boilers cascade installation.

Category II appliance_{2H3P} operates with natural gas and L.P.G. CE Marking.

Is available in the model:

- | | |
|--------------------|---------------|
| • ARES 440 TEC ErP | code 3.025687 |
| • ARES 550 TEC ErP | code 3.025688 |
| • ARES 660 TEC ErP | code 3.025689 |
| • ARES 770 TEC ErP | code 3.025690 |
| • ARES 900 TEC ErP | code 3.025691 |



ARES TEC ErP is a thermal module achieved by the assembly of complete combustion units.

Each unit consists of pre-assembled Al/Si /Mg alloy elements (Aluminium, Silicon and Magnesium), combustion chamber kit with burner, fan, gas valve and element board (SDE) is termed "heating element".

Each thermal element continuously and progressively emits power between 12 and 50 kW (models from 150 to 350 kW) and between 22 and 108 kW (models from 440 to 900 kW).

The base element is made up of two half shells which, on the flue side, it has dense conical pins with increasing height towards the drain at the bottom of the element to increase its exchange surface.

Between the 2 half-shells the primary fluid exchange circuit is obtained, which, progressively runs zig/zag, with gradually reduced section, through the entire element, thus assuring exceptional water efficiency.

Each heating element is fitted with:

- premix-modulating irradiation burner
- dual stage modulating gas valve
- ionisation electronic ignition

- NTC temperature control probes
- safety thermostats
- signalling glass.

The drains of the heating elements (flue gasses and acid condensates) flow into a special drainage manifold, made in stainless steel.

Each "heating element" is fitted with a modulating fan which is a decisive component for perfect combustion and therefore made optimal, in fact the fan sucks and mixes the correct amount of air and gas and pushes it through the flue gasses swing check anti-backflow valve , inside the combustion chamber.

The fan rotation number, along with the gas valve opening and the flame control, are directly programmed and controlled by the electronics of each burner and are handled by the "TGC" heat adjuster-manager boiler.

The power modulation depends on fan speed and is based on the difference between the temperature required by the system, maximum set and the one actually measured.

ARES TEC ErP

3.1

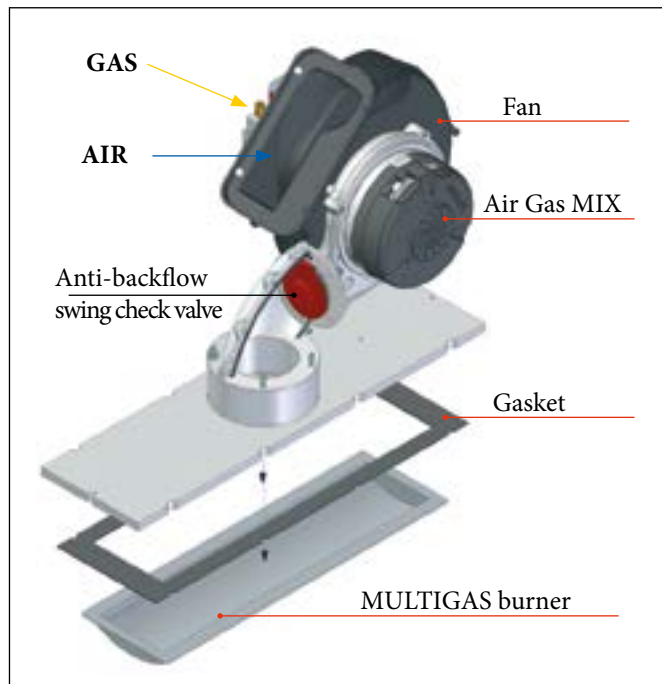
COMPONENTS AND CONSTRUCTIVE TECHNOLOGY

Combustion

The gas valve is opened via "Venturi effect" in the fan auger and the mixture of air and gas takes place inside it before being introduced into the combustion chamber (Premix).

This perfect mix combines air and gas in always proportioned parts to achieve the "irradiation combustion" through the multigas burner.

This is the most efficient system for thermal energy transmission.



The wide surface on which the combustion takes place assures:

- low combustion temperature;
- reduced turbulence with the following advantages: long life thanks to the low thermal and mechanical stress and the physical FeCrAlloy fibre fabric of the burner which, thanks to its physical chemical structure, is a perfect irradiation device;
- low combustion silence due to low pressures and the anti-resonance structure of the fan capable of developing a soft flame;
- simple maintenance thanks to the reduced use of components and easy accessibility;
- greater energy transmitted compared to a conventional burner at the same flame temperature;
- assured operation safety for turbulence absence;
- limited production of pollutants for the complete oxidation of methane molecules;
- optimal combustion efficiency;
- efficiency optimisation thanks to minimum flue gasses temperature and limited "air excess";
- minimum NOX emissions (class 5, the most ecological required by European standards).

Option of calibration based on system's Thermal Demand

This function enables to drastically reduce the number of times generators are switched on and off: this leads to greater efficiency and less flue leaks (due to burner shutdown) and longer life span of moving parts and ignition systems.

Low water content and high modulation speed with maximum ratio up to 1:40

For the majority of the heating period, the generator operates under reduced load, operating well below 30%.

ARES TEC ErP adapts its power to these requirements in real time thanks to its low water volume and, being equipped with a modulating pump, minimizes electrical consumption.

Class A electronic pumps at variable speeds (optional) for the generator maximum condensate production

Use of electronic pumps at variable speeds enhances condensate production and therefore fast economic investment recovery.

All this to offer the user the opportunity to save, both with thermal and the sanitary comfort, at a lower noise level than traditional boilers.

Heat adjustment

ARES TEC ErP heat adjustment has been designed on two levels represented by as many devices installed on the boiler: "TGC" and "GCI".

The boiler heat adjuster manager (TGC), manages ARES TEC ErP operation both in terms of modulation and of flowing temperature operation.

It is also able to manage:

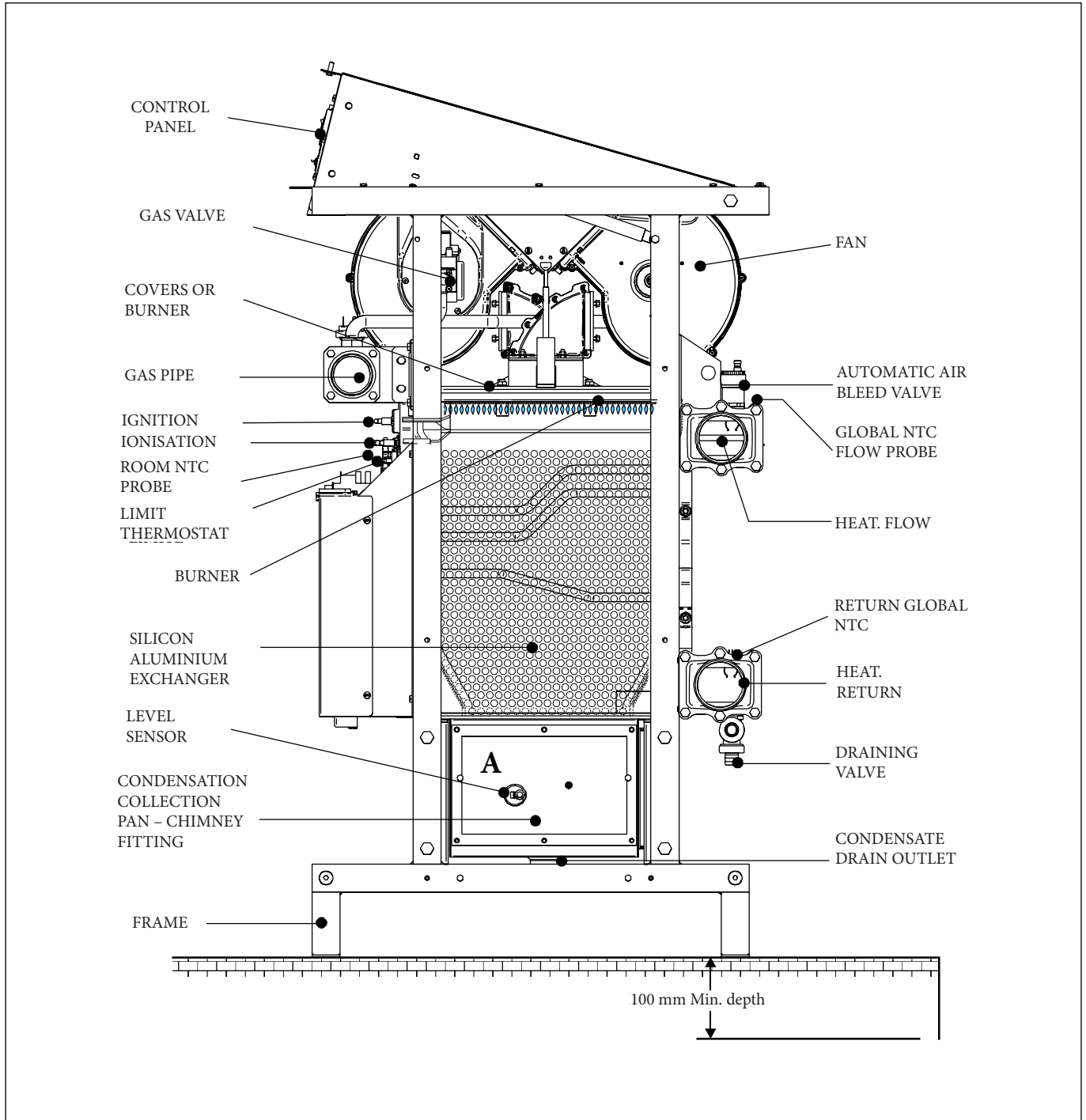
- 1 direct heating circuit
- 1 mixed heating circuit
- 1 DHW circuit with potential recirculation pump

ARES TEC ErP is also supplied as standard with external probe, 1 system area flow probe (e.g. for mixed zone 2 control) and 1 storage tank probe.

The back-up management unit (GCI) has two key functions that make it vital inside ARES TEC ErP:

- during normal operation it can command a modulating circulator pump (0-10 V analogue output), send remote alarm signals via relay;
- in case of anomalies that can not be reset to "TGC" or for operation emergencies, it enables ARES TEC ErP to be activated in emergency mode by bypassing the "TGC" heat adjustment and activating the boiler at a maximum power of 50% and at a temperature of selectable flow, using specific electrical resistances supplied with the generator.

This makes the ARES TEC ErP a dually safe boiler with the advantage that it is possible to avoid requiring a back-up generator in large power plants.



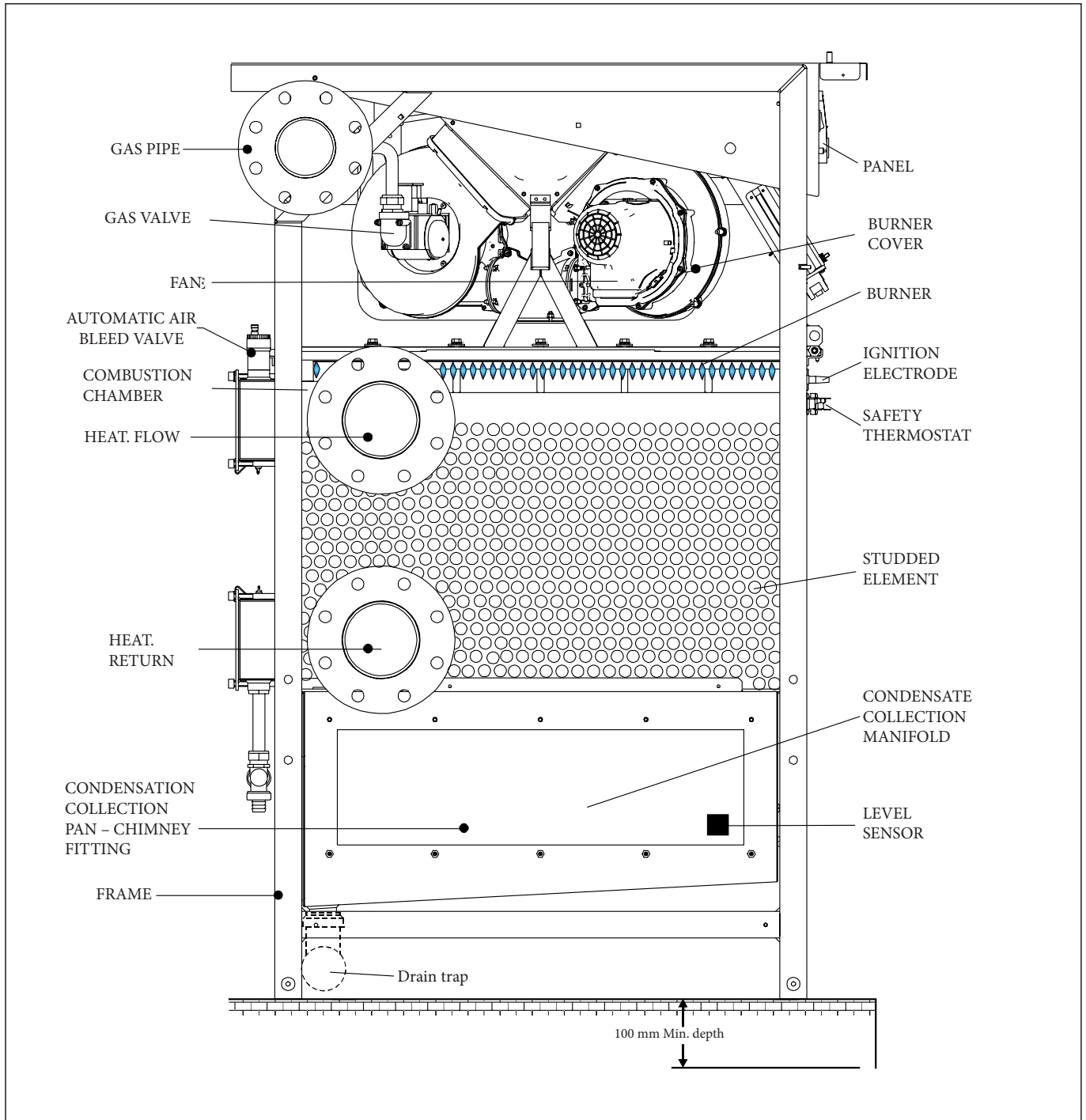
Flue outlet: RIGHT side (supply condition) - LEFT side and REAR side (2 optional separate rear flue exhaust kits).
Flow: RIGHT side (supply condition) - LEFT side
Return: RIGHT side (supply condition) - LEFT side
Gas intake: RIGHT side (supply condition) - LEFT side

If it is necessary to position the flue exhaust, on the **left** side of the boiler, it is necessary to move cover "A" with relative wiring, level sensor and pressure switch pipe, on the rear side of the boiler. The rear cover (previously removed) must be put back on the right side of the boiler.

ARES 440 - 900 TEC ErP

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ARES 440-900 TEC ErP MAIN COMPONENTS

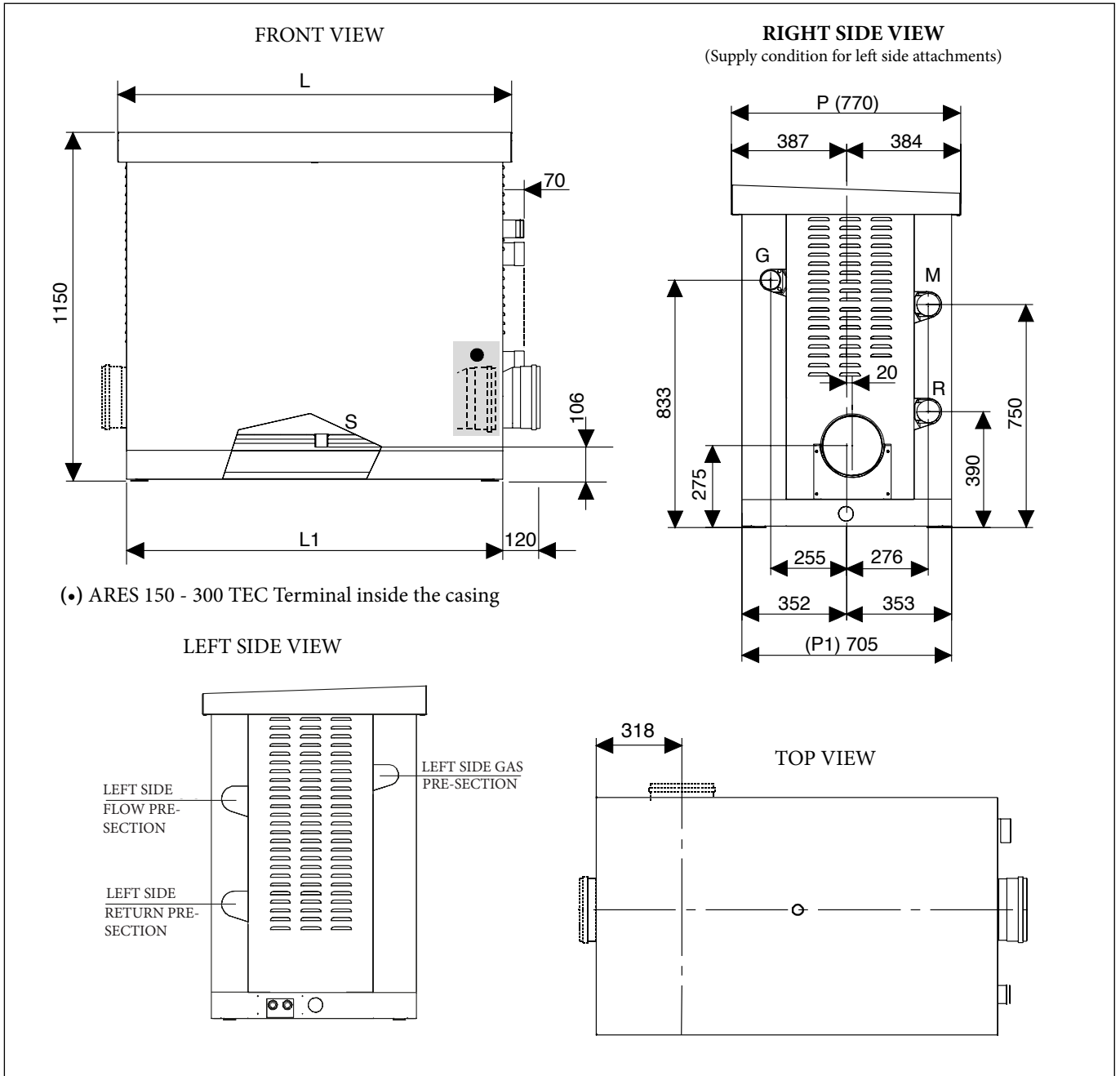


Flue outlet: LEFT side (supply condition), or RIGHT side, REAR
(no accessory required to move flue exhaust position).

Flow: LEFT side

Return: LEFT side

Gas inlet: LEFT side

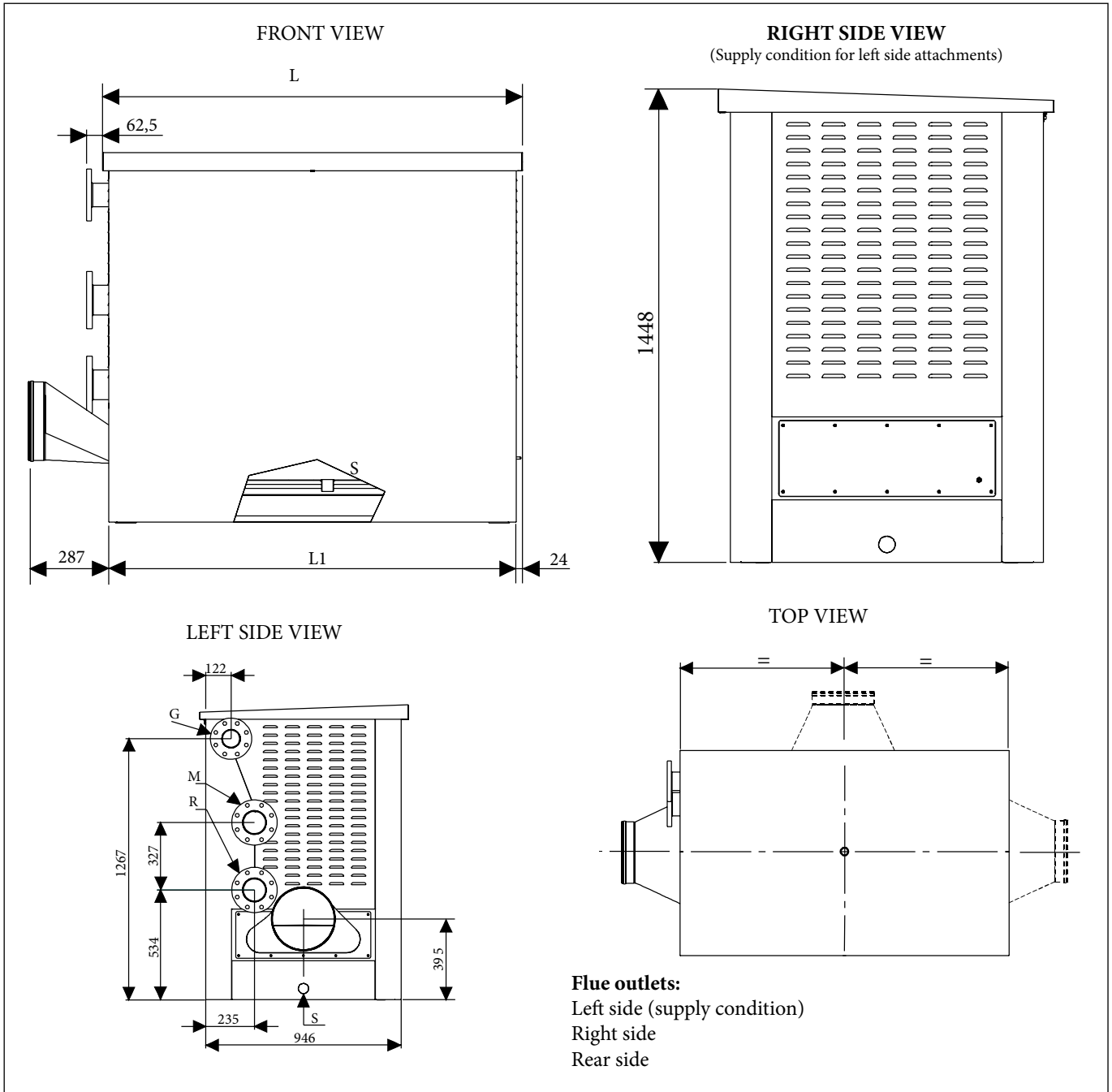


ARES TEC ErP		150	200	250	300	350
Dimensions	Unit					
Heating elements	n°	3	4	5	6	7
Height	mm	1150	1150	1150	1150	1150
Width "L"	mm	764	1032	1032	1300	1300
Width "L1"	mm	706	974	974	1242	1242
Depth "P"	mm	770	770	770	770	770
Depth "P1"	mm	705	705	705	705	705
Attachment sizes						
"G" Gas fitting (threaded)	mm (inch)	50 (2)	50 (2)	50 (2)	50 (2)	50 (2)
M System flow (threaded)	mm (inch)	64 (2½)	64 (2½)	64 (2½)	64 (2½)	64 (2½)
R System return (threaded)	mm (inch)	64 (2½)	64 (2½)	64 (2½)	64 (2½)	64 (2½)
Flue fitting	mm	150	150	200	200	200
"S" condensate drain	mm	40	40	40	40	40

ARES 440 - 900 TEC ErP

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ARES 440-900 TEC ErP MAIN DIMENSIONS



ARES TEC ErP		440	550	660	770	900
Dimensions	Unit					
Heating elements	n°	4	5	6	7	8
Height	mm	1448	1448	1448	1448	1448
Width "L"	mm	1087	1355	1355	1623	1623
Width "L1"	mm	1039	1307	1307	1575	1575
Depth	mm	946	946	946	946	946
Attachment sizes						
"G" Gas fitting (flanged)	mm (inch)	80 (3)	80 (3)	80 (3)	80 (3)	80 (3)
"M" System flow (flanged)	mm (inch)	100 (4)	100 (4)	100 (4)	100 (4)	100 (4)
"R" System return (flanged)	mm (inch)	100 (4)	100 (4)	100 (4)	100 (4)	100 (4)
Flue fitting	mm	250	250	300	300	300
"S" condensate drain	mm	40	40	40	40	40

The ARES 150-350 TEC ErP boiler leaves the factory with hydraulic (flow and return), gas and flue outlet connections located on the right side of the boiler. To invert the connections from the right side (standard supply) to the left side it is necessary to carry out the operations below, depending on the connection that needs to be moved.

Reversing flue exhausts.

To move the flue exhaust from Rt to Lt simply switch the two sides on the casing around.

To move the exhaust located on the rear side, proceed as described below, depending on the boiler model.

- only for models 250 - 300 - 350 (Fig. A) it is required to request the rear flue exhaust kit Ø 200 made of the "T" and a closing

metal-sheet plate over the hole on the Rh side of the casing.
 - only for models 150 - 200 (Fig. B) it is required to request the rear flue exhaust kit Ø150 made of a closing metal-sheet plate over the hole on the Rh side of the casing.

Reversing Gas (Fig. C).

Switch the blind flange around with the flanged stub pipe.

Reversing system flow and return (Fig. D).

Switch the blind flange around with the flanged stub pipe.

N.B: When the position of the connections is reversed, the relative flow probes (KF and SMG), return probe (SRR) and manual reset Safety Thermostat (TLG - the latter only for model 350) must also be moved.

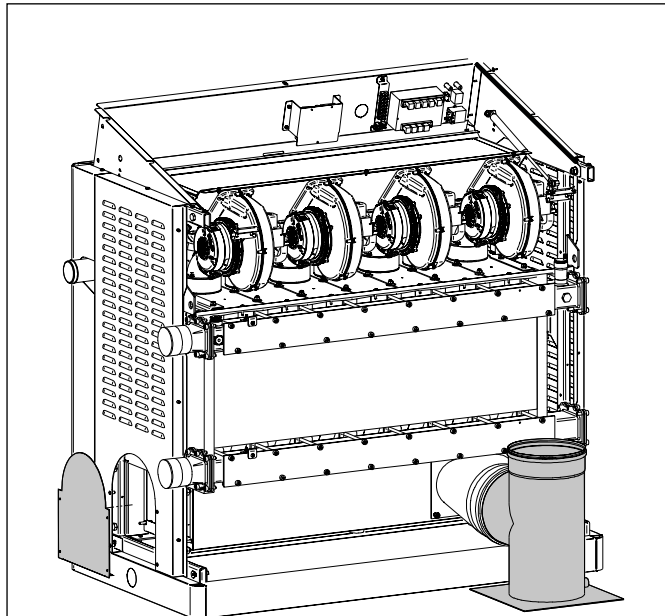


Fig. A

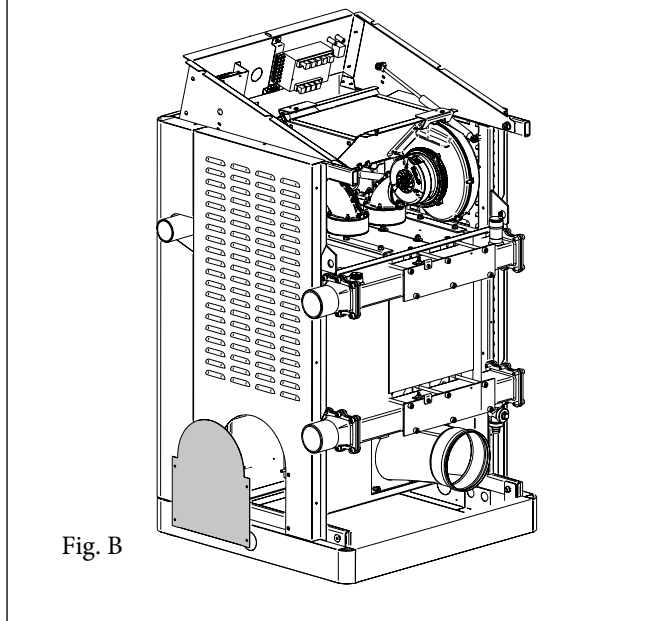


Fig. B

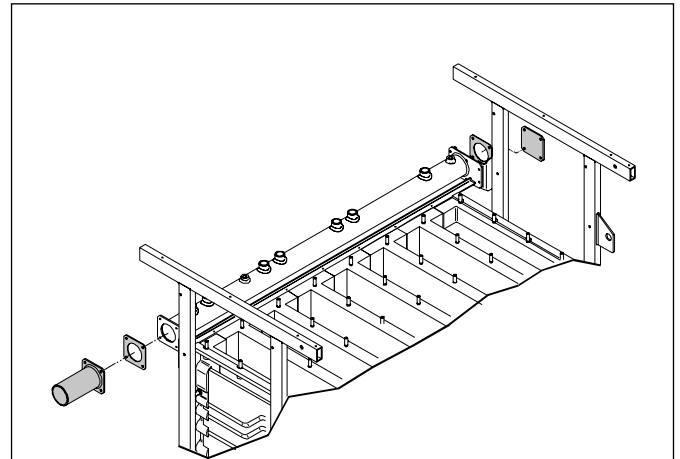


Fig. C

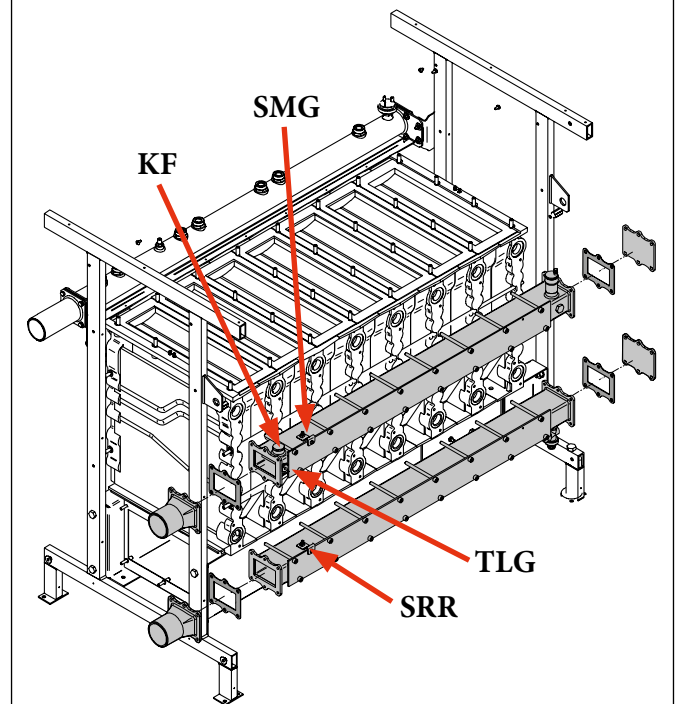
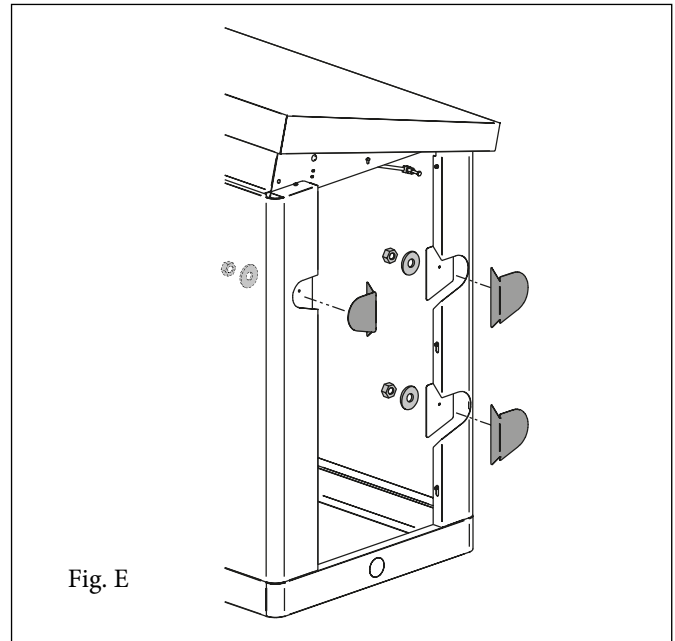


Fig. D

ARES 440 - 900 TEC ErP

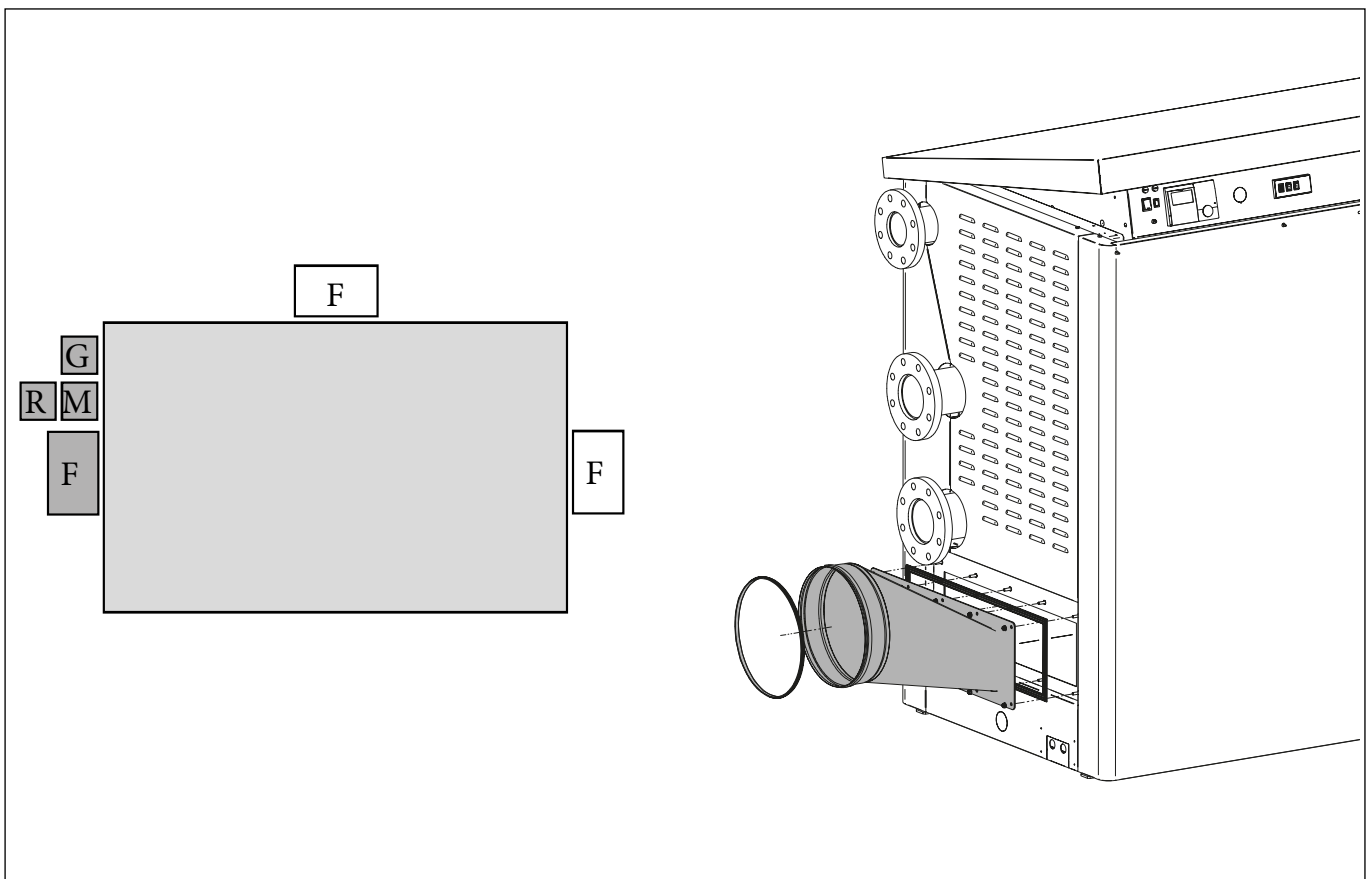
Reversing ARES 150-350 TEC ErP hydraulic attachments (Fig. E).

Remove the pre-sectioned part on the attachments that you intend to move to the opposite side (only one or both) and close the Rt side of the casing with the caps supplied with the boiler.



9

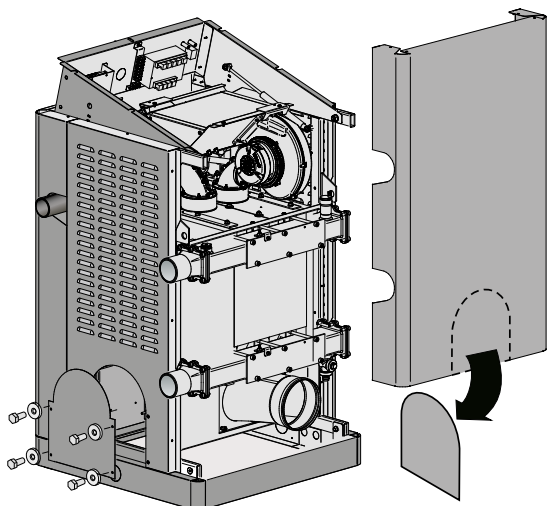
ARES 440-900 TEC ErP HYDRAULIC AND FLUE CONNECTIONS



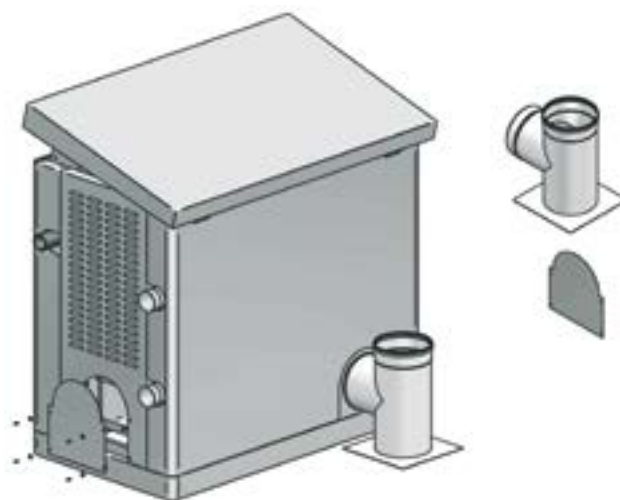
The ARES 440-900 TEC ErP boiler leaves the factory with the hydraulic (flow and return) and gas connections on the left side of the boiler and NO movement is possible.

The standard flue manifold is set on the left side, it is also possible to set up the outlet on the right and rear side.

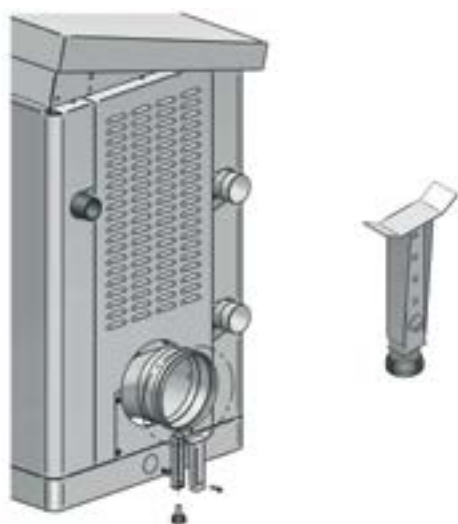
Code 3.023701 only for ARES 150-200 TEC ErP



Code 3.023674 only for ARES 250-300-350 TEC ErP



Code 3.023675 for all ARES TEC ErP models



Flue Kit	
Rear flue exhaust kit Ø 150 for ARES 150-200 TEC ErP code 3.023701	Rear flue exhaust kit Ø 200 for ARES 250-300-350 TEC ErP code 3.023674
Side flue outlet support kit (for all models) code 3.023675	

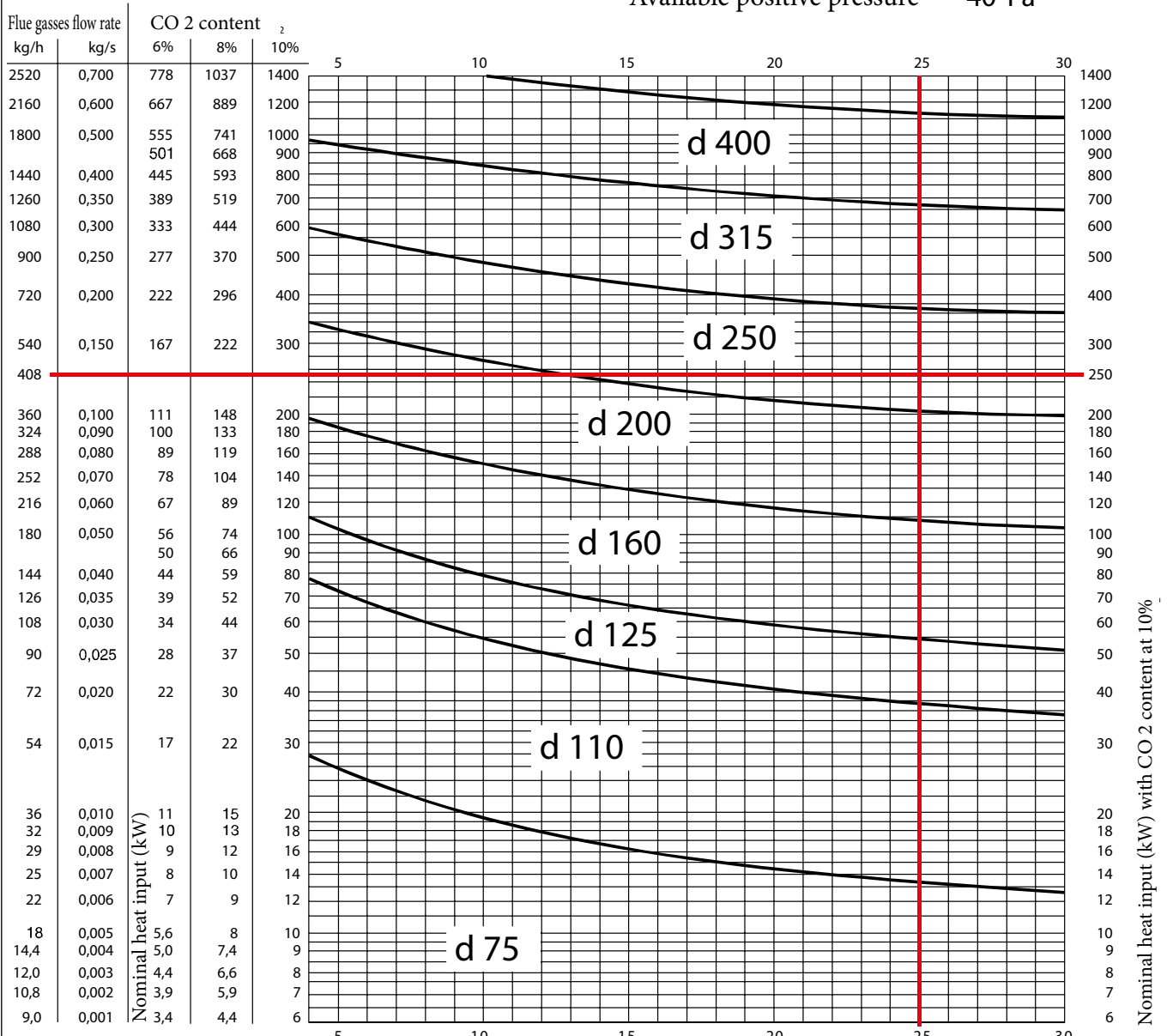
ARES TEC ErP

11

BROAD CHIMNEY SIZING

Flue sizing according to DIN 4705

Flue gasses temperature 40°C
Available positive pressure 40 Pa



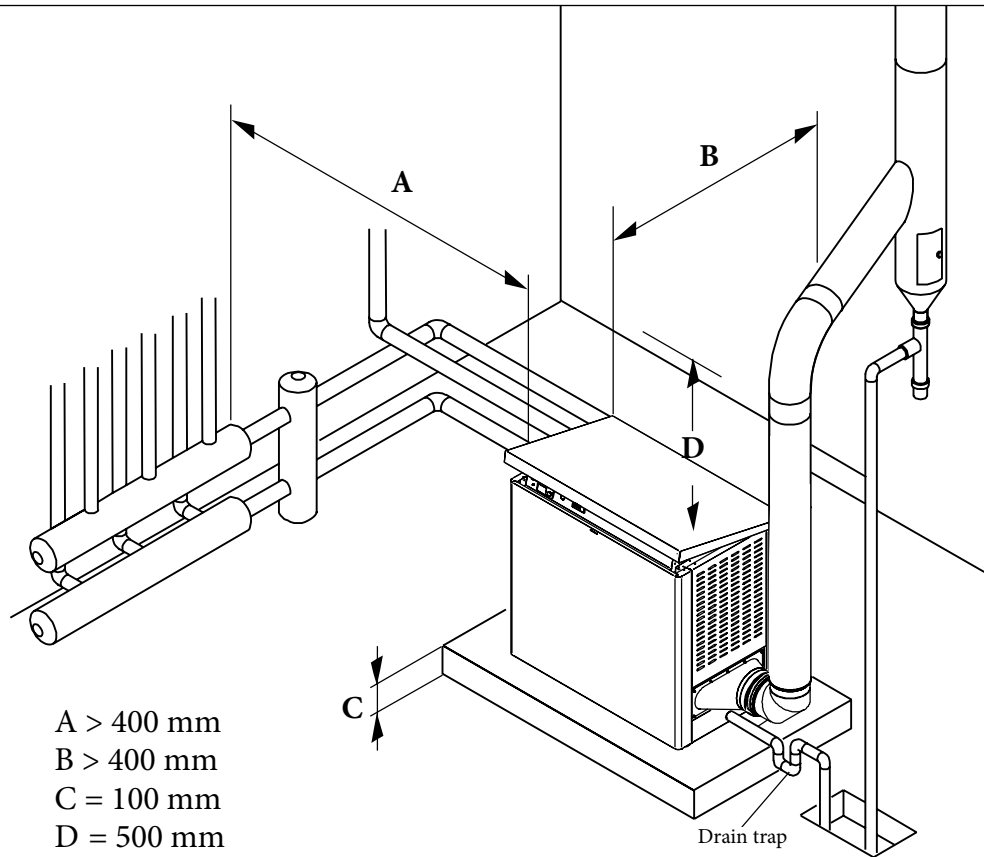
Example:

ARES 250 TEC ErP
Maximum flue flow rate = 408.6 Kg/h
Height of flue = 25 m
Diameter = 250 mm

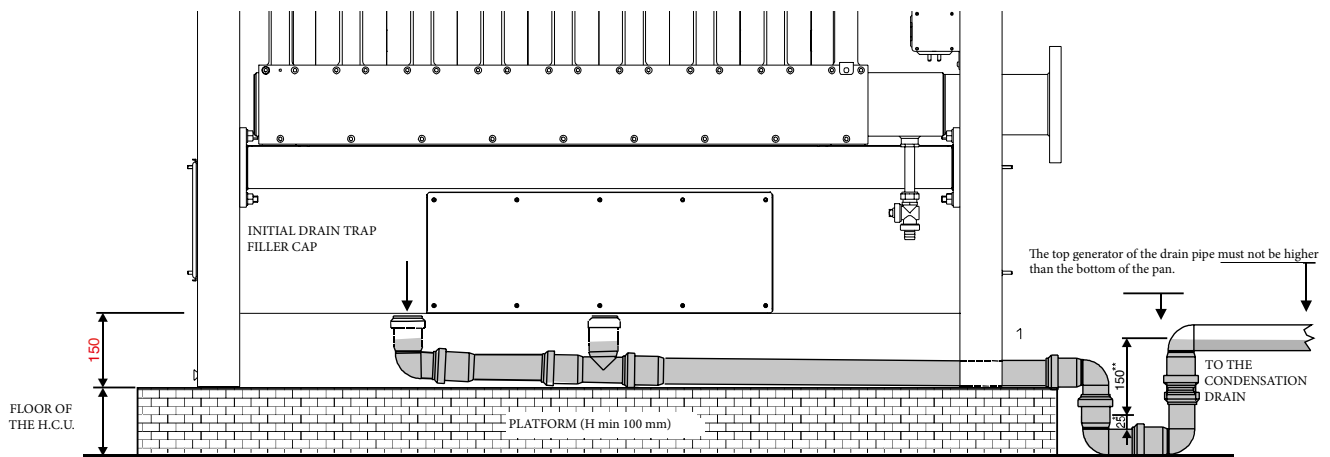
N.B.: The diagram provides rough values: in any case, the flue must be designed by a qualified professional in compliance with legislation and technical standard in force.

In a condensing boiler, flues are dispersed at low temperature, it is therefore necessary for the flue to be perfectly impermeable to combustion product condensate and built with suitable corrosion-resistant materials.

N.B. : For the dimensioning of the exhaust system for combustion products, refer to appropriate regulations in force (e.g. UNI EN 13384). In the construction of the evacuation pipe, materials that are resistant to combustion products must be used.



Important: Observe the minimum clearance distances shown in the picture to perform normal maintenance and cleaning operations



* 25 mm = Minimum safety drain trap enforced by regulation
 ** 150 = Minimum head with boiler operating at maximum power.

Important: The boiler must be placed on a flat platform that is sufficiently sturdy in size, in plan, no smaller than the boiler measurements and with a minimum height of at least 100 mm so that the trap for condensate drainage can be installed.

If you do not want to or are able to create a platform, it is possible to install the boiler on the floor and set up a sample point next to the boiler of depth of 100 mm to place the drain trap.

ARES TEC ErP

13

CONDENSATE TREATMENT

Condensate neutralisers are specifically designed to neutralise acidic waters produced by condensing boilers.

Condensation water has a acid pH, crossing the neutralizer mineral it slowly dissolves the mineral, bringing the pH to an average value of 6.5. Value at which the condensate can be drained.

Condensate neutralisers are made with special patented bulk-heads that convey the condensate into a series of forced passages in which it comes into contact with the mineral for an above average time.

The condensate is flushed through an area filled with a granular neutralising material, which also has an integrated filtering layer. The kit includes a complete granulate charge.

N.B. For battery installations inside higher capacity boilers, several neutralisers can be installed in parallel.

The kit does not support installation outside the building.

Key:

- 1 - Hose union Inlet
- 2 - Hose union Outlet
- 3 - Hose union overflow
- 4 - Filters



Technical data:

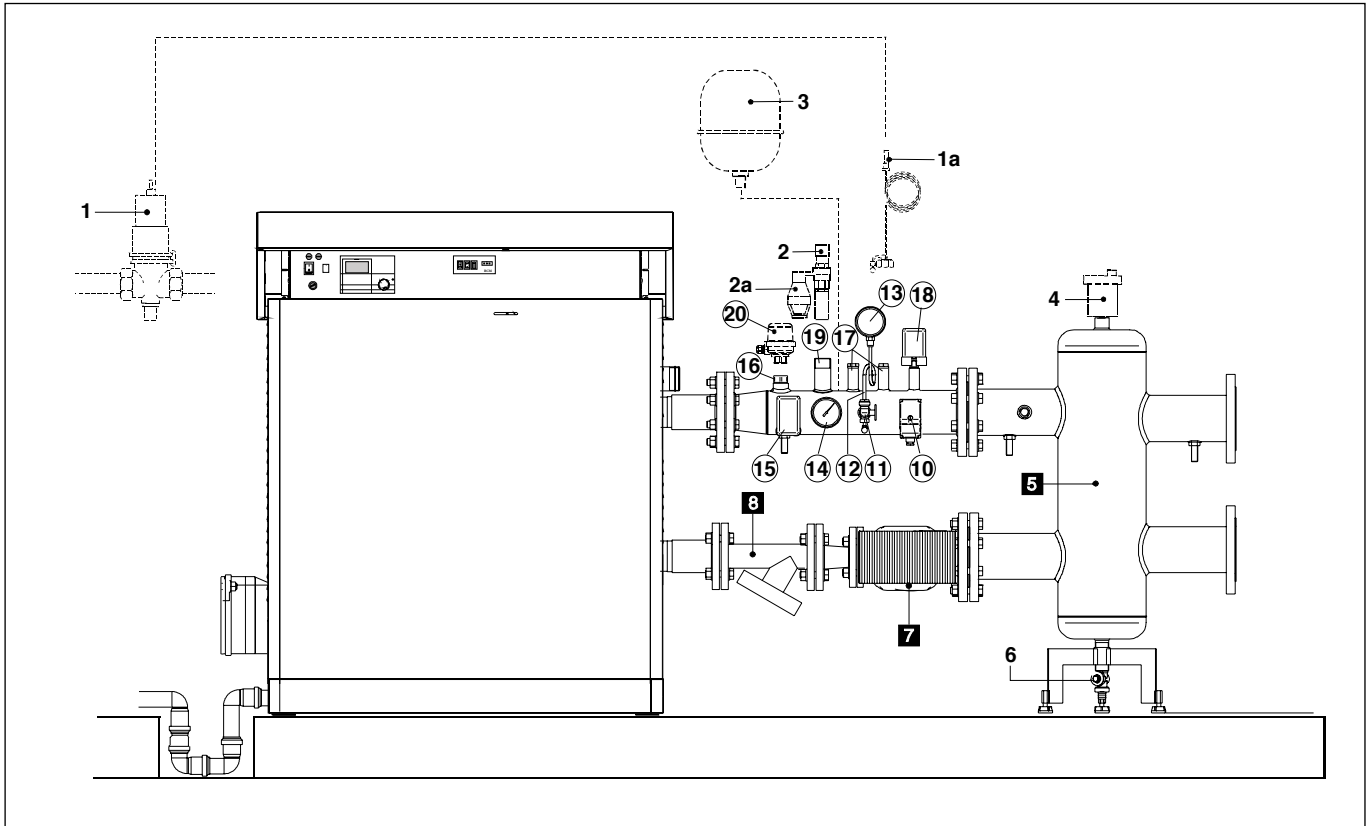
Max Flow rate	l/h	300
Condensing Boiler Max Flow rate	kW	1500
Total length	mm	670
Maximum width	mm	470
Maximum height	mm	170
Inlet Height	mm	30
Exhaust Height	mm	100
Mineral	kg	25
Hose union Inlet/Outlet/Overflow	mm	25
Overall mass at shipment	kg	33

Condensate drain management kit

Condensate passivator kit up to 1500 kW (includes a complete granulate charge) code 3.023662	Granulate kit for condensate passivator (25 kg) code 3.023663
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14

INAIL SAFETY KITS INCLUDING CIRCULATOR PUMP AND HYDRAULIC SEPARATOR (MODELS UP TO 350 kW)



This kit enables the primary seal to be completed by integrating:

- INAIL safety kit complete and up-to-date to the R 2009 set.
- Y filter.
- Modulating pump with low electrical consumption (class A).
- Hydraulic separator.

Attention: The boiler is **not** equipped with an expansion vessel on the system. It is mandatory to install a closed expansion vessel to assure correct boiler operation.

The expansion vessel must be compliant with standards in force. The dimensions of the expansion vessel depend on the data relative to the central heating system. Install a vessel whose capacity responds to the requisites of the Standards in force ("R" collection).

Safety devices:

- 1) Fuel shut-off valve - NOT INCLUDED
- 2) Safety valve, outside generator - NOT INCLUDED
- 2a) Visible draining funnel - NOT INCLUDED

Set up a safety valve, on the flow pipe, sized for boiler capacity, within 0.5 m of the boiler, and in compliance with regulations in force.

Attention: remember it is forbidden to set up any type of cut-off device between the boiler and the safety valve, and it is also advisable to use valves for operation that does not exceed the maximum allowed operating pressure.

Protection devices:

- 10) Safety thermostat (<100°C immovable calibration)
- 15) Minimum pressure switch (can be calibrated at 0,5÷1,7 bar)
- 16) G1 Sleeve
- 18) Safety pressure switch (can be calibrated at 1÷5 bar)

Control devices:

- 13) Pressure gauge (NOT INCLUDED) with (12) damper pipe and (11) G½" pressure gauge-holder tap
- 14) G½" Thermometer (max 120°C bottom scale)
- 17) G½" connection sample points for potential (V.I.C.)
- 19) G1 ¼" Stub pipes: for connecting the safety valve
- 20) Flow switch in case water flow is interrupted
- 3) Expansion tank - NOT INCLUDED

Other components:

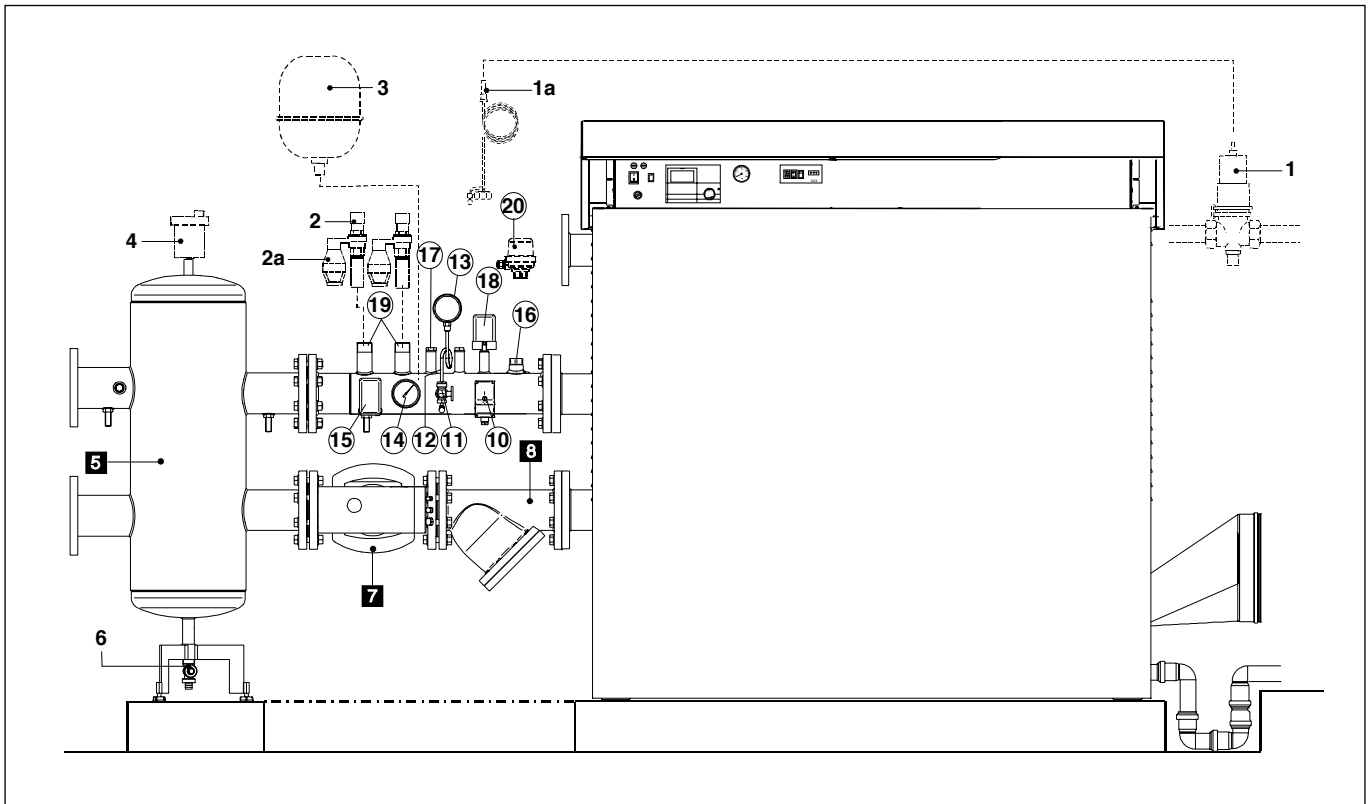
- 8) Y filter with DN 50 flanged connections
- 7) Modulating pump with low electrical consumption (class A) type: Wilo STRATOS 40/1-4 (mod. 150) / Wilo STRATOS 40/1-8 (mod. from 200 to 250) / Wilo STRATOS 40/1-12 (mod. from 300 to 350)
- 5) Hydraulic separator with DN 100 flanged connections fitted with supports
- 4) Vent valve - NOT INCLUDED
- 6) Draining valve - NOT INCLUDED

The appropriately sized safety valve, pressure gauge and expansion tank must be added separately.

ARES 440 - 900 TEC ErP

15

INAIL SAFETY KITS INCLUDING CIRCULATOR PUMP AND HYDRAULIC SEPARATOR (MODELS FROM 440 UP TO 900 kW)



This kit enables the primary seal to be completed by integrating:

- INAIL safety kit complete and up-to-date to the R 2009 set.
- Y filter.
- Modulating pump with low electrical consumption (class A).
- Hydraulic separator.

Attention: The boiler is **not** equipped with an expansion vessel on the system. It is mandatory to install a closed expansion vessel to assure correct boiler operation.

The expansion vessel must comply with the European Standards in force.

The dimensions of the expansion vessel depend on the data relative to the central heating system. Install a vessel whose capacity responds to the requisites of the Standards in force ("R" collection).

Safety devices:

- 1) Fuel shut-off valve - NOT INCLUDED
- 2) Safety valve, outside the generator - NOT INCLUDED
(There are 2 safety valves for the models 660-770-900)
- 2a) Visible draining funnel - NOT INCLUDED

On the flow pipe, set up a safety valve (or 2 for models 660-770-900) sized for boiler capacity, within 0.5 m of the boiler, and in compliance with regulations in force.

Attention: remember it is forbidden to set up any type of cut-off device between the boiler and the safety valve, and it is also advisable to use valves for operation that does not exceed the maximum allowed operating pressure.

Protection devices:

- 10) Safety thermostat (<100°C immovable calibration)
- 15) Minimum pressure switch (can be calibrated at 0,5÷1,7 bar)
- 16) G1 Sleeve
- 18) Safety pressure switch (can be calibrated at 1÷5 bar)

Control devices:

- 13) Pressure gauge (NOT INCLUDED) with (12) damper pipe and (11) G $\frac{1}{2}$ " pressure gauge-holder tap
- 14) G $\frac{1}{2}$ " Thermometer (max 120°C bottom scale)
- 17) G $\frac{1}{2}$ " connection sample points for potential (V.I.C.)
- 19) G1 $\frac{1}{4}$ " Stub pipes: for connecting the safety valves
- 20) Flow switch in case water flow is interrupted
- 3) Expansion tank - NOT INCLUDED

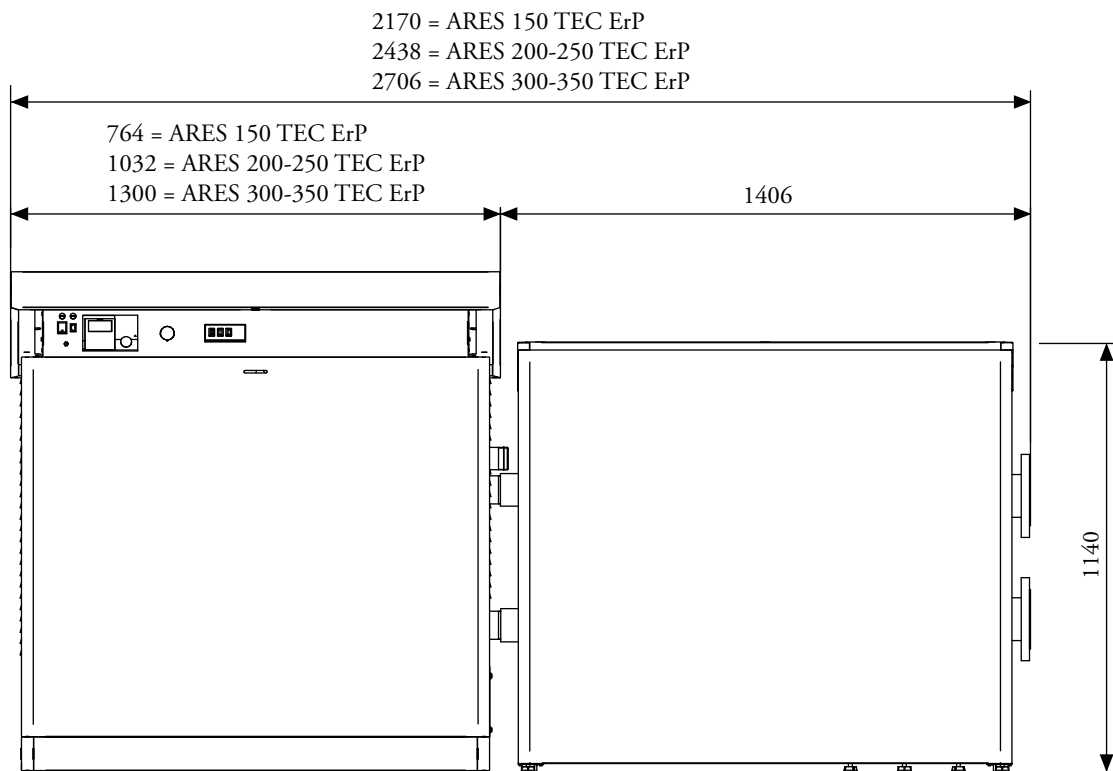
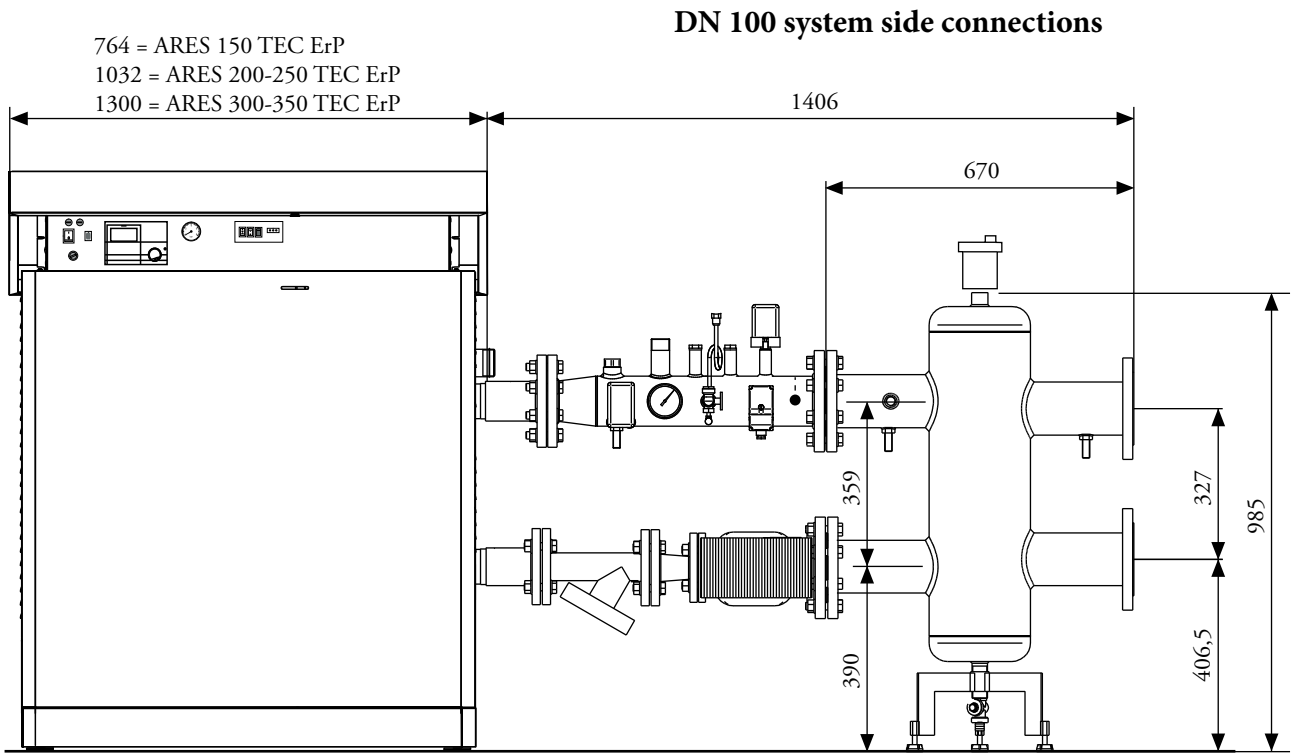
Other components:

- 8) Y filter with DN 65 flanged connections (mod. from 440 to 770) and DN 100 (mod. 900)
- 7) Modulating pump with low electrical consumption (class A) type: Wilo STRATOS 65/1-12 (mod. from 440 to 770) / Wilo STRATOS 100/1-12 (mod. 900)
- 5) Hydraulic separator with DN 100 flanged connections fitted with supports
- 4) Vent valve - NOT INCLUDED
- 6) Draining valve - NOT INCLUDED

The appropriately sized safety valve/valves, pressure gauge and expansion tank must be added separately.

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**PRIMARY RING DIMENSIONS WITH HYDRAULIC SEPARATOR
(MODELS UP TO 350 kW)**

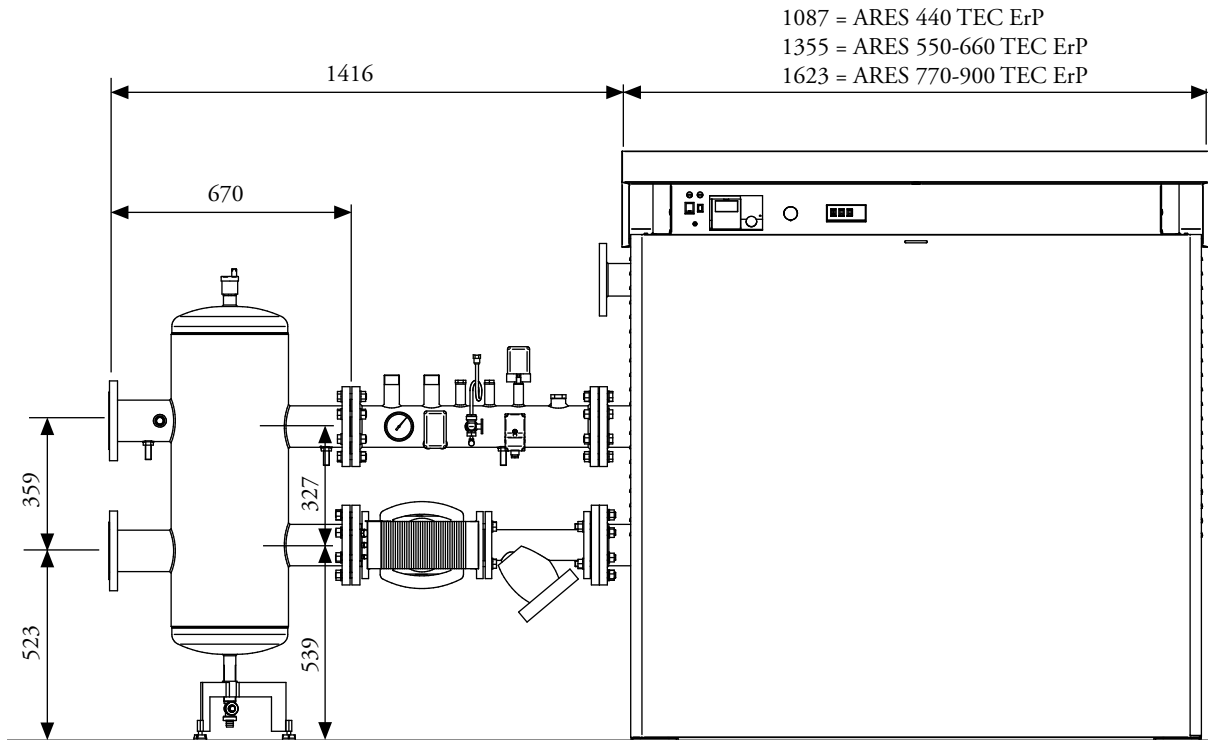


ARES 440 - 900 TEC ErP

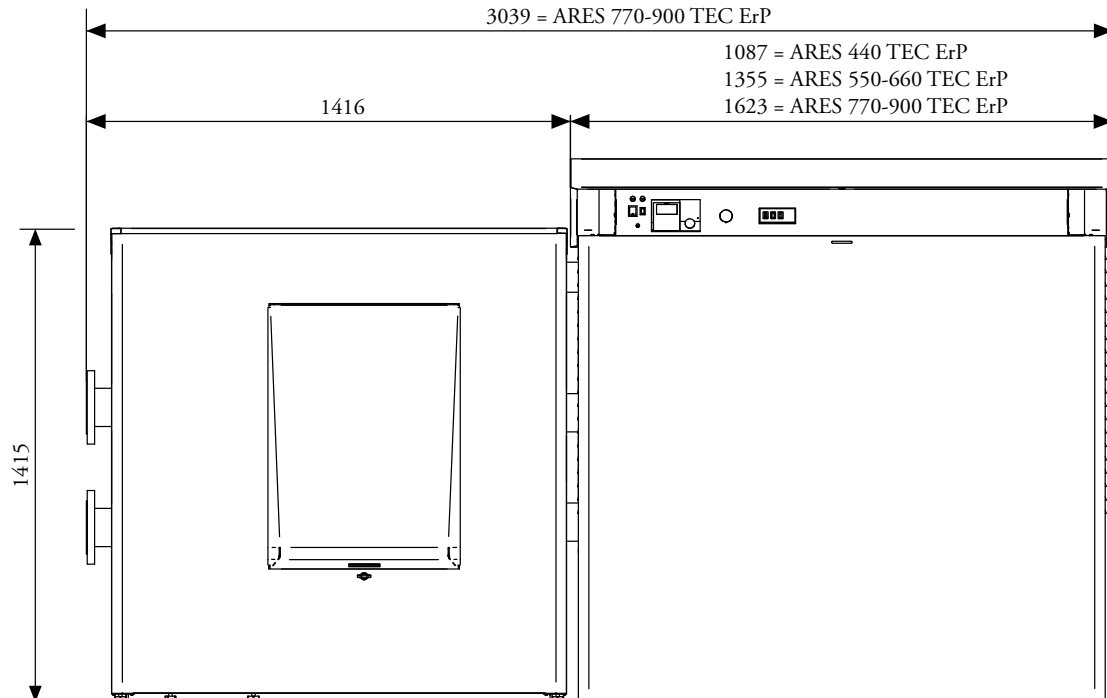
17

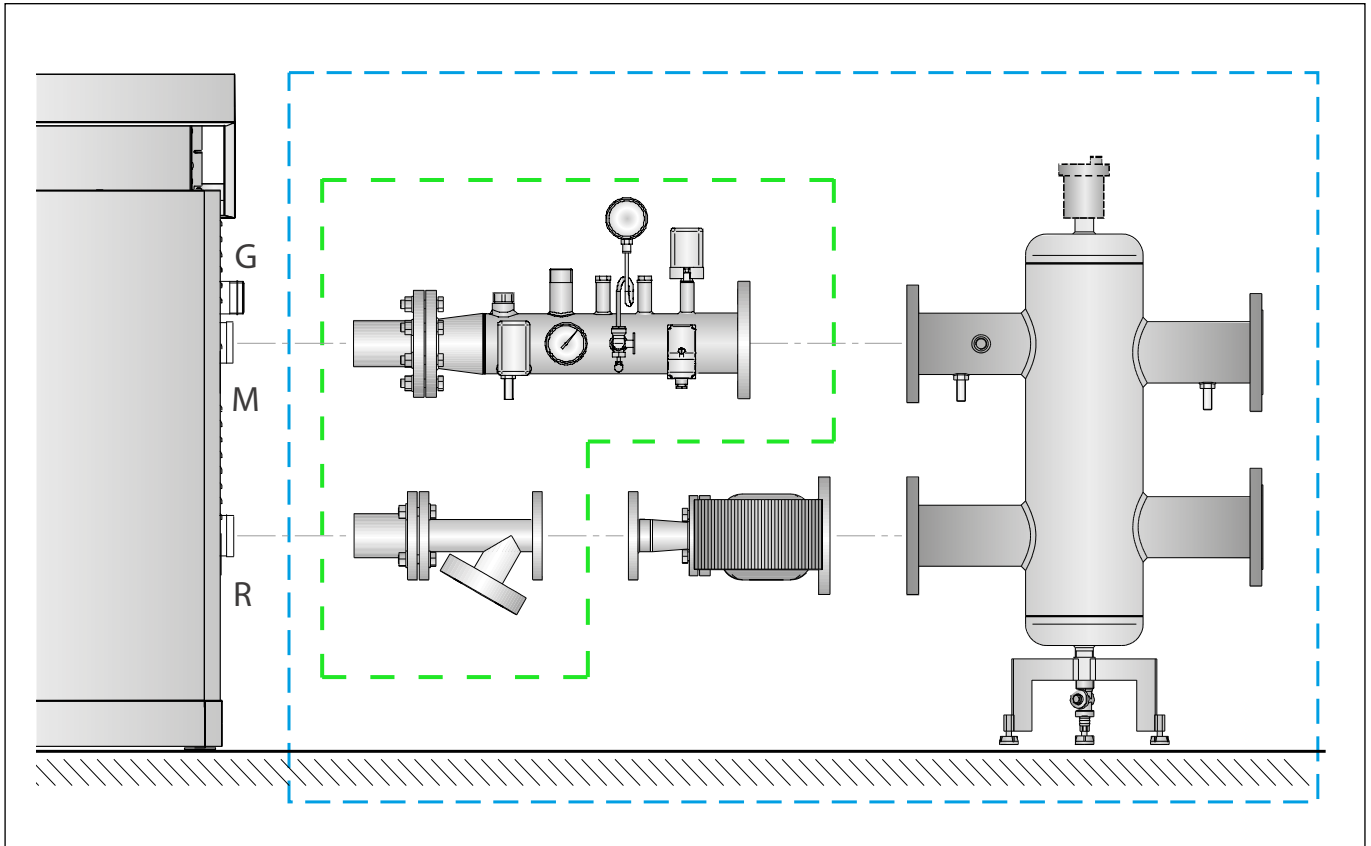
PRIMARY RING DIMENSIONS WITH HYDRAULIC SEPARATOR (MODELS FROM 440 UP TO 900 kW)

DN 100 system side connections



2503 = ARES 440 TEC ErP
2771 = ARES 550-660 TEC ErP
3039 = ARES 770-900 TEC ErP





In addition to the INAIL safety kit complete with circulator pump and hydraulic separator including:

- INAIL safety kit complete and up-to-date to the R 2009 set.
- Y filter with DN 50 flanged connections (up to mod. 350), DN 65 (mod. from 440 to 770) and DN 100 (mod. 900);
- Modulating pump with low electrical consumption (class A).
- Hydraulic separator with DN 100 flanged connections.

Available in 5 different versions depending on the power of the generator, Immergas offers, if in the project, the professional wishes to size the circulator pump independently or install a circulator pump other than the modulating one provided in the complete kit:

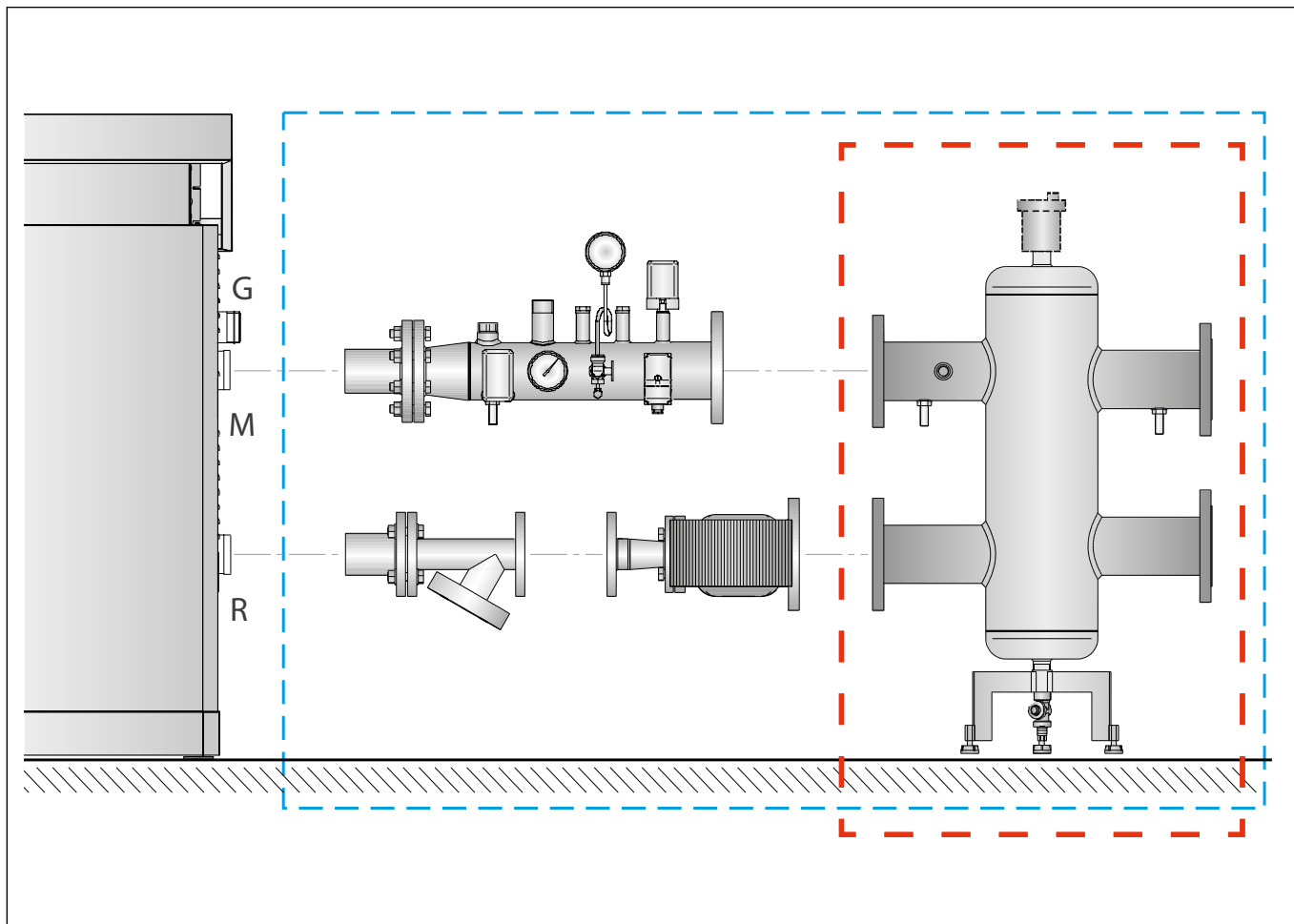
- The single INAIL safety kit including return filter (available in three versions).
- the single hydraulic separator available in two versions based on the installed power.

INAIL safety kit including circulator pump and hydraulic separator	
INAIL safety kit including circulator pump and hydraulic separator for 150 kW code 3.023645	
INAIL safety kit including circulator pump and hydraulic separator for 200-250 kW code 3.023646	INAIL safety kit including circulator pump and hydraulic separator for 300-350 kW code 3.023647
INAIL safety kit including circulator pump and hydraulic separator for 440-770 kW code 3.023648	INAIL safety kit including circulator pump and hydraulic separator for 900 kW code 3.023649
INAIL safety kit with filter	
INAIL safety kit with filter for 150-350 kW code 3.023656	INAIL safety kit with filter for 440-770 kW code 3.023657
INAIL safety kit with filter for 900 kW code 3.023658	

ARES TEC ErP

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HYDRAULIC SEPARATOR KIT



ARES TEC ErP is a low water content generator and therefore at low inertia. The large variations that follow on the system can be suitably balanced by the hydraulic separator which has 3 vital functions:

- 1) make the connected circuits independent (primary and secondary).
- 2) “sludge remover”, enabling circuit foreign matter to be collected.
- 3) “de-aerator”, to enable automatic air evacuation.

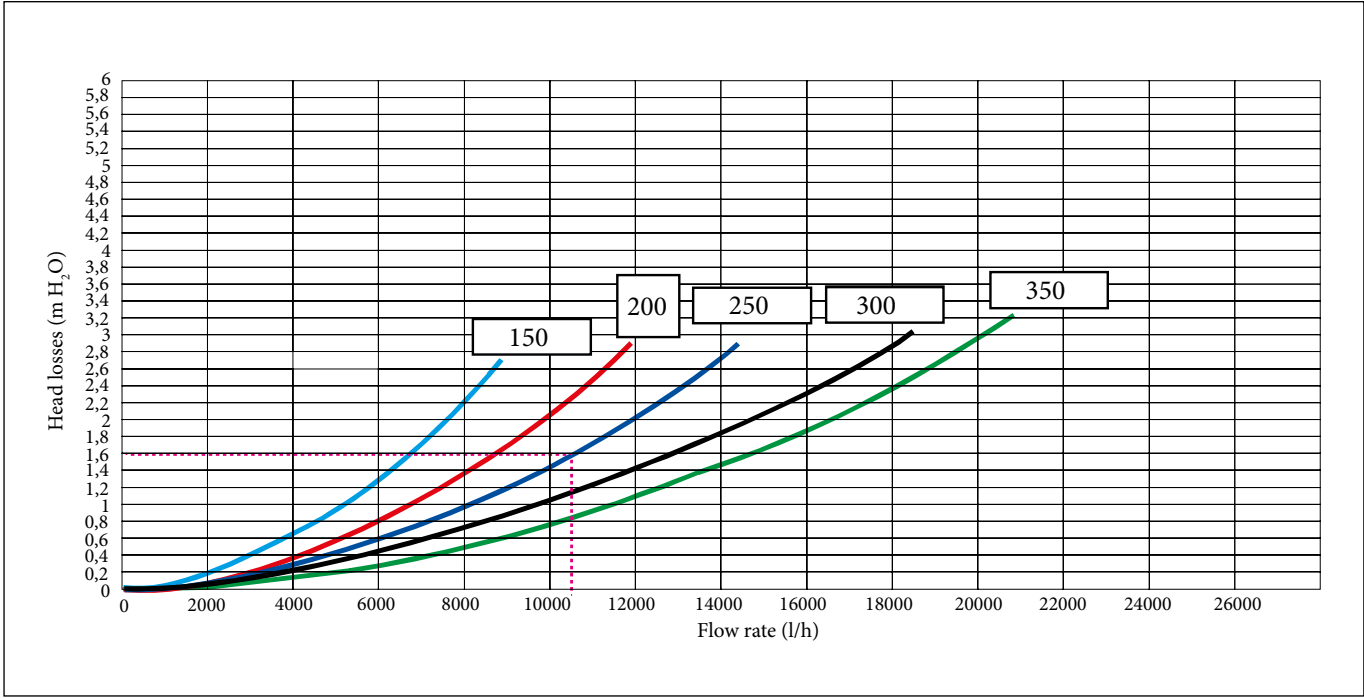
It is an open manifold which places system flow and return in communication, creating 2 circuits: a primary circuit (boiler - manifold) and a secondary circuit (manifold-system) with DN 100 flanged connections.

The former circulates by the boiler pump, while the latter runs on the correct thermal gradient (and therefore the correct water flow rate), as defined by the system's design.

It is advisable to include a hydraulic compensator every time the overall flow rate required by the system is greater than what the boiler is able to supply (through the optional modulating circulator pump).

Hydraulic separator kit	
<p>Hydraulic separator kit for 150-350 kW code 3.023659</p>	<p>Hydraulic separator kit for 440-900 kW code 3.023660</p>

20 DIAGRAM FOR SELECTING THE CIRCULATION PUMP UP TO 350 kW



Power in kW	150	200	250	300	350
l/h (Δt = 15 K) Flow rate	8376	11192	14018	16856	19712
l/h (Δt = 20 K) Flow rate	6282	8394	10514	12642	14784

Immergas provides a series of primary rings complete with an accurately sized pump, if alternative solutions are being used, the boiler pump must have a head that is capable of ensuring the flow rates represented in the "Water side head losses" graph. The table above approximately provides the flow rates of the circulator pump based on the Δt of the primary circuit if the installation is equipped with a hydraulic separator.

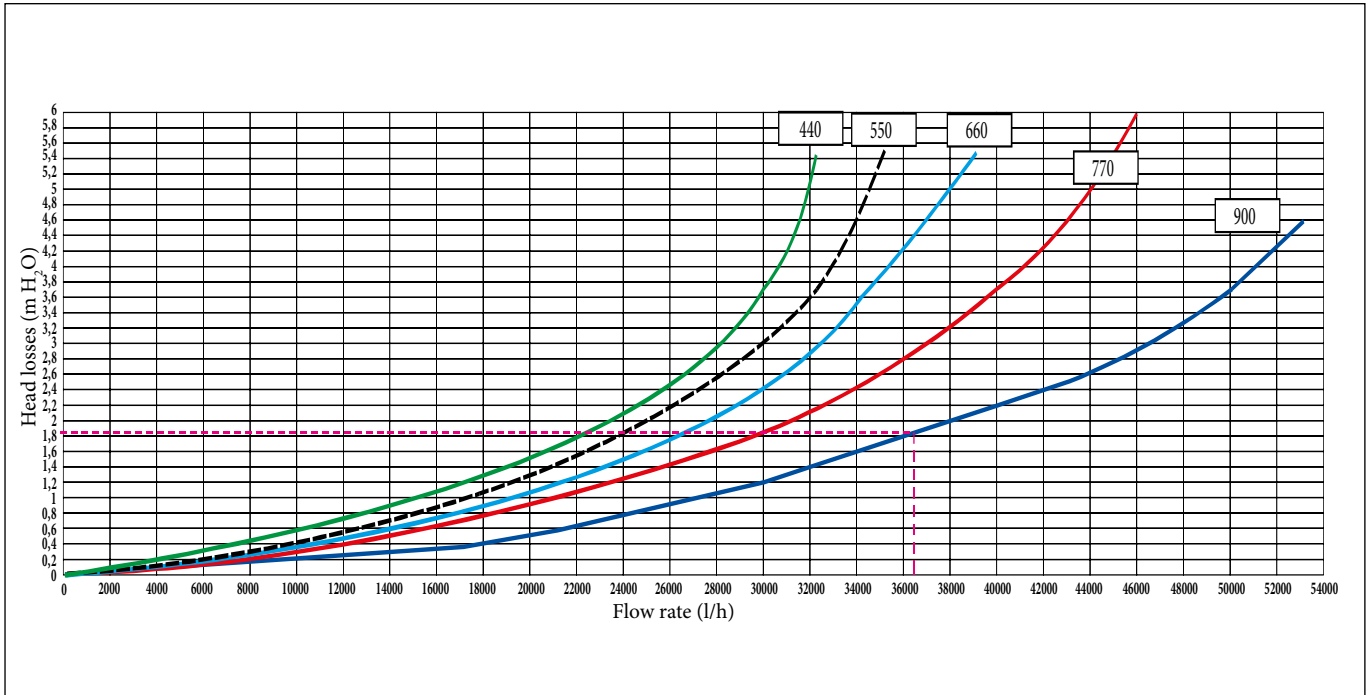
The pumps must be selected by the installer or designer based on the data for the boiler and system.
The pump is not an integral part of the boiler.
It is advised to choose a circulator pump with able to supply selected flow rate and head of approximately 2/3 of its typical curve.

EXAMPLE:
For a ΔT 20K, of an ARES 250 TEC ErP the maximum required flow rate is 10514 l/h.
From the boiler head loss graph it is possible to deduce that the circulator pump must ensure a head of at least 1.6 m/WC.

NOTE: The hydraulic manifold inserted between the boiler and system circuits is always recommended.

ARES 440 - 900 TEC ErP

20.1 DIAGRAM FOR SELECTING THE CIRCULATION PUMP FROM 440 UP TO 900 kW



Power in kW	440	550	660	770	900
l/h ($\Delta t = 15$ K) Flow rate	24326	30404	36487	42570	48647
l/h ($\Delta t = 20$ K) Flow rate	18243	22804	27365	31926	36487

Immergas provides a series of primary rings complete with an accurately sized pump, if alternative solutions are being used, the boiler pump must have a head that is capable of ensuring the flow rates represented in the "Water side head leaks" graph.

The table above approximately provides the flow rates of the circulator pump based on the Δt of the primary circuit if the installation is equipped with a hydraulic separator.

The pumps must be selected by the installer or designer based on the data for the boiler and system.

The pump is not an integral part of the boiler.

It is advised to choose a circulator pump with a flow rate and head of approximately 2/3 of its typical curve.

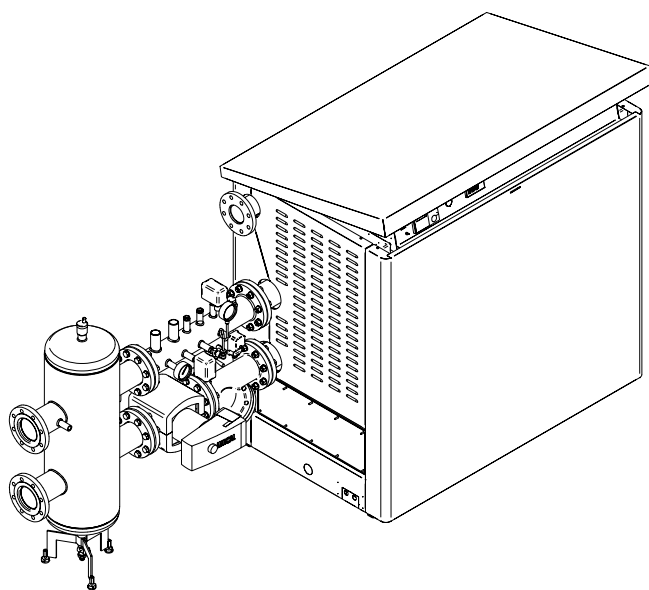
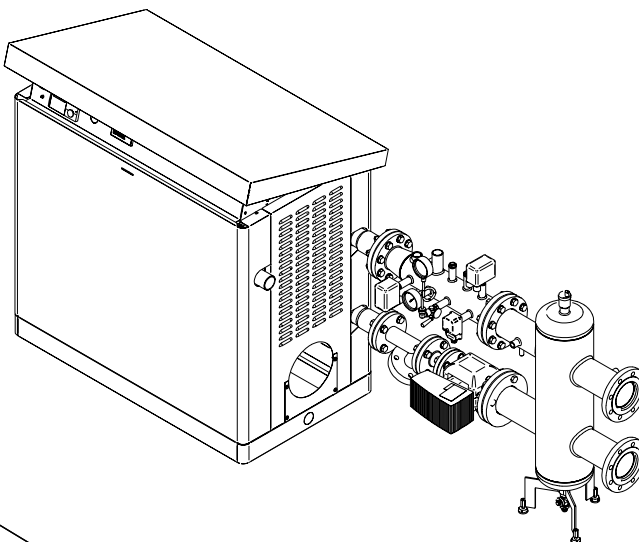
EXAMPLE:

For a ΔT 20K, of an ARES 900 TEC ErP the maximum required flow rate is 36487 l/h.

From the boiler head loss graph it is possible to deduce that the circulator pump must ensure a head of at least 1.8 m/WC.

NOTE: The hydraulic manifold inserted between the boiler and system circuits is always recommended.

**INAIL safety kits and complete hydraulic separator for 150-350 kW
(No. 3 codes available)**



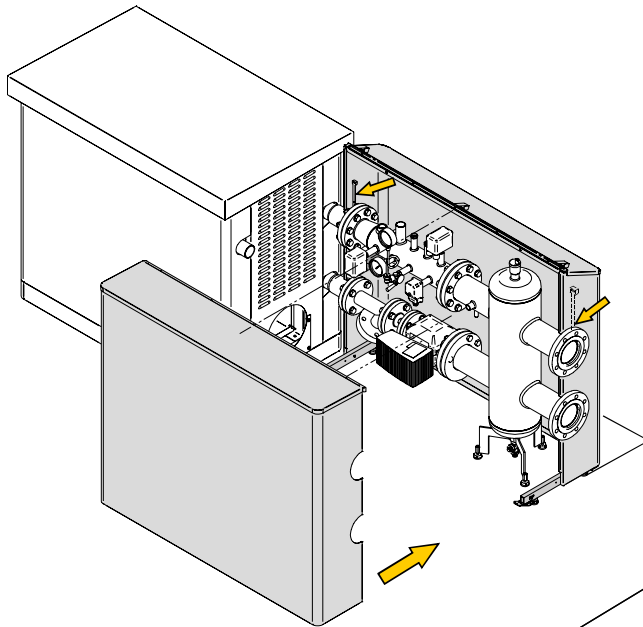
**INAIL safety kits and complete hydraulic separator for 440-900 kW
(No. 2 codes available)**

Hydraulic Kits	
INAIL safety kit including circulator pump and hydraulic separator for 150 kW code 3.023645	
INAIL safety kit including circulator pump and hydraulic separator for 200-250 kW code 3.023646	INAIL safety kit including circulator pump and hydraulic separator for 300-350 kW code 3.023647
INAIL safety kit including circulator pump and hydraulic separator for 440-770 kW code 3.023648	INAIL safety kit including circulator pump and hydraulic separator for 900 kW code 3.023649

ARES TEC ErP

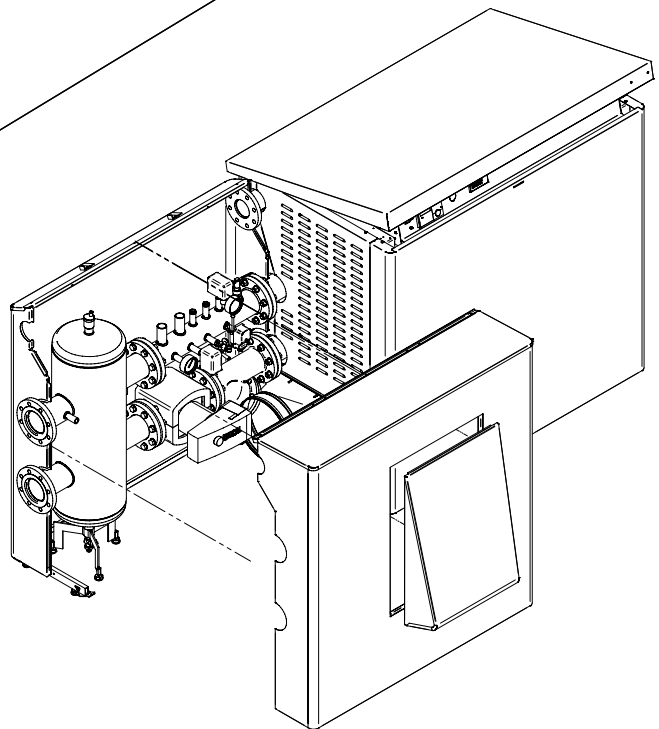
22

EXTERNAL COVERING KIT FOR HYDRAULIC SAFETIES AND COMPLETE HYDRAULIC SEPARATOR



External covering kit for INAIL safety kits and complete hydraulic separator for 150-350 kW

External covering kit for INAIL safety kits and complete hydraulic separator for 440-900 kW

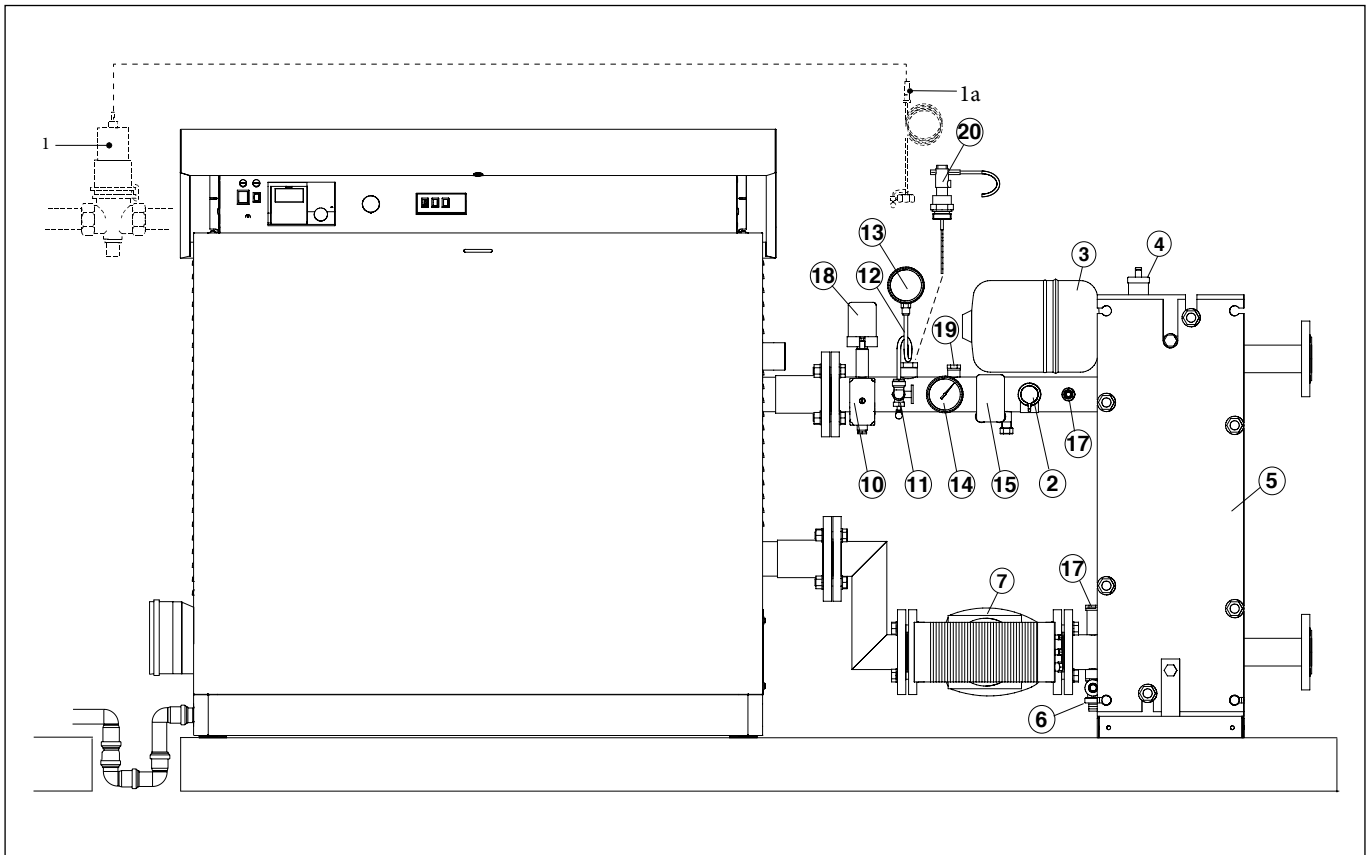


External covering kit

External covering kit for INAIL kit and hydraulic separator of 150-350 kW
code 3.023670

External covering kit for INAIL kit and hydraulic separator of 440-900 kW
code 3.023671

23 INAIL SAFETY KITS INCLUDING CIRCULATOR PUMP AND PLATE HEAT EXCHANGER (MODELS UP TO 350 kW)



As an alternative to the primary rings with hydraulic separator, Immergas also offers a choice of primary rings with plate heat exchanger with the following advantages:

- physical circuit separation, there is no hydraulic circulation between primary boiler circuit and system/load secondary circuit;
- option to have different pressures between primary and secondary (e.g. boiler tank closed, system tank open);
- installing boiler on obsolete systems with potential dirt or system leaks risks, with consequent top ups;
- in case of external installation, option of limiting the quantity of antifreeze glycol to introduce.

Safety devices:

- 1) Fuel shut-off valve - NOT INCLUDED
 - 2) Safety valve set at 5 Bar
- Visible draining funnel - NOT INCLUDED

Attention: it is forbidden to interpose any type of interception between the boiler and the safety valve.

Protection devices:

- 10) Safety thermostat (<100°C immovable calibration)
- 15) Minimum pressure switch (can be calibrated at 0,5÷1,7 bar)
- 18) Safety pressure switch (can be calibrated at 1÷5 bar)

Control devices:

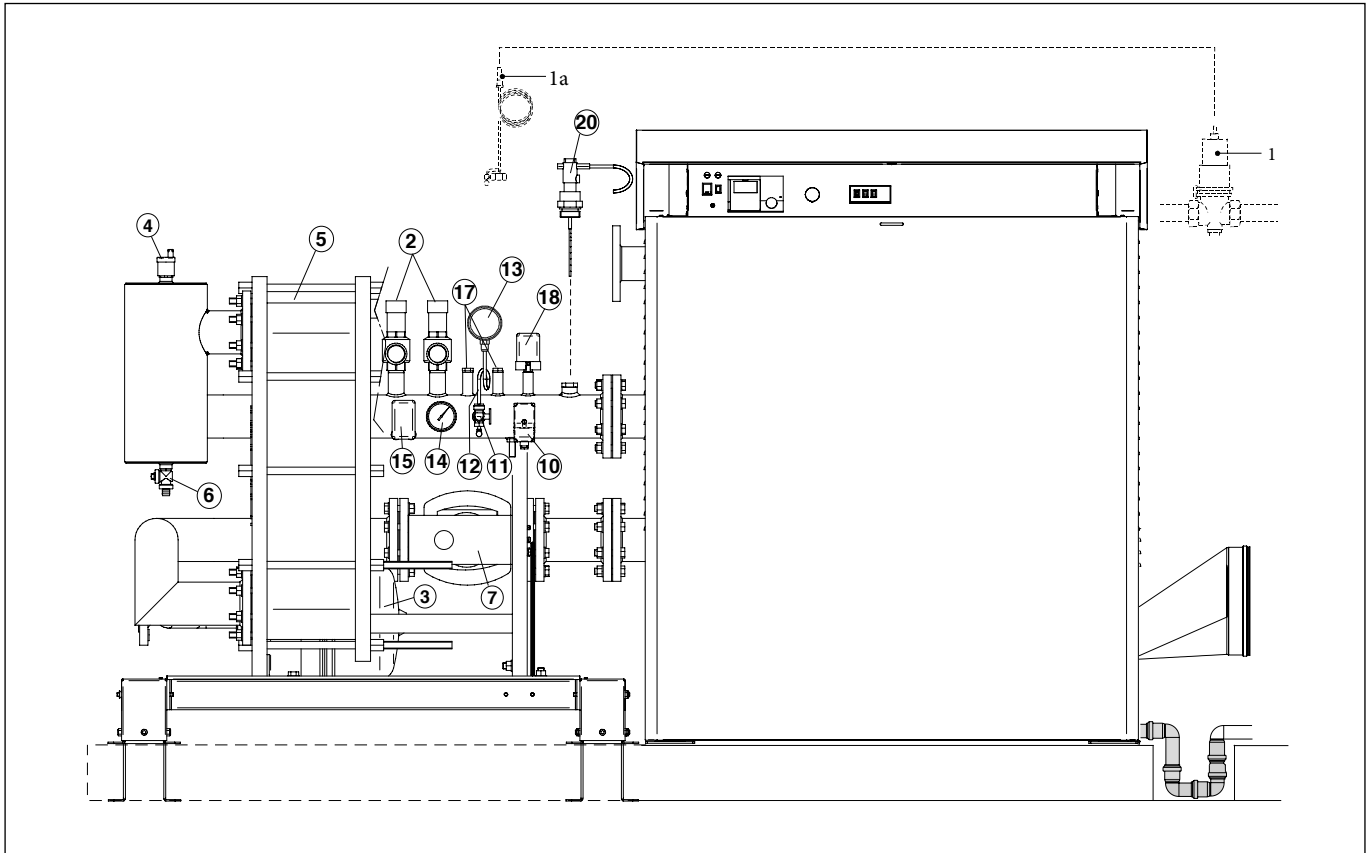
- 13) Pressure gauge with (12) damper pipe and (11) G $\frac{1}{2}$ " pressure gauge-holder tap
- 14) G $\frac{1}{2}$ " Thermometer (max 120°C bottom scale)
- 17) G $\frac{1}{2}$ " inspection sample point
- 19) G $\frac{1}{2}$ " connection supplementary stub pipe for potential (V.I.C.)
- 20) Flow switch in case water flow is interrupted
- 3) 8 litre expansion tank (150-350 kW)

Other components:

- 7) Modulating pump with low electrical consumption (class A) type: Wilo STRATOS 40/1-4 (mod. from 150 to 200) / Wilo STRATOS 65/1-12 (mod. from 250 to 350)
 - 5) Stainless steel plate heat exchanger
 - 4) Automatic air vent valve
 - 6) G $\frac{3}{4}$ " draining valve
- Flanges/adaptors and various fittings
Support base
Flow/return pipes with DN 50 flanged connections

ARES 440 - 900 TEC ErP

24 INAIL SAFETY KITS INCLUDING CIRCULATOR PUMP AND PLATE HEAT EXCHANGER (MODELS FROM 440 UP TO 900 kW)



As an alternative to the primary rings with hydraulic separator, Immergas also offers a choice of primary rings with plate heat exchanger with the following advantages.

- physical circuit separation, there is no hydraulic circulation between primary boiler circuit and system/load secondary circuit.
- option to have different pressures between primary and secondary (e.g. boiler tank closed, system tank open).
- installing boiler on obsolete systems with potential dirt or system leaks risks, with consequent top ups.
- in case of external installation, option of limiting the quantity of antifreeze glycol to introduce.

Safety devices:

- 1) Fuel shut-off valve - NOT INCLUDED
- 2) Safety valve set at 5 bar (there are 2 safety valves for the models 660-770-900)

Visible draining funnel - NOT INCLUDED

Attention: it is forbidden to interpose any type of interception between the boiler and the safety valve (or 2 for models 660-770-900).

Protection devices:

- 10) Safety thermostat (<100°C immovable calibration)
- 15) Minimum pressure switch (can be calibrated at 0,5÷1,7 bar)
- 18) Safety pressure switch (can be calibrated at 1÷5 bar)

Control devices:

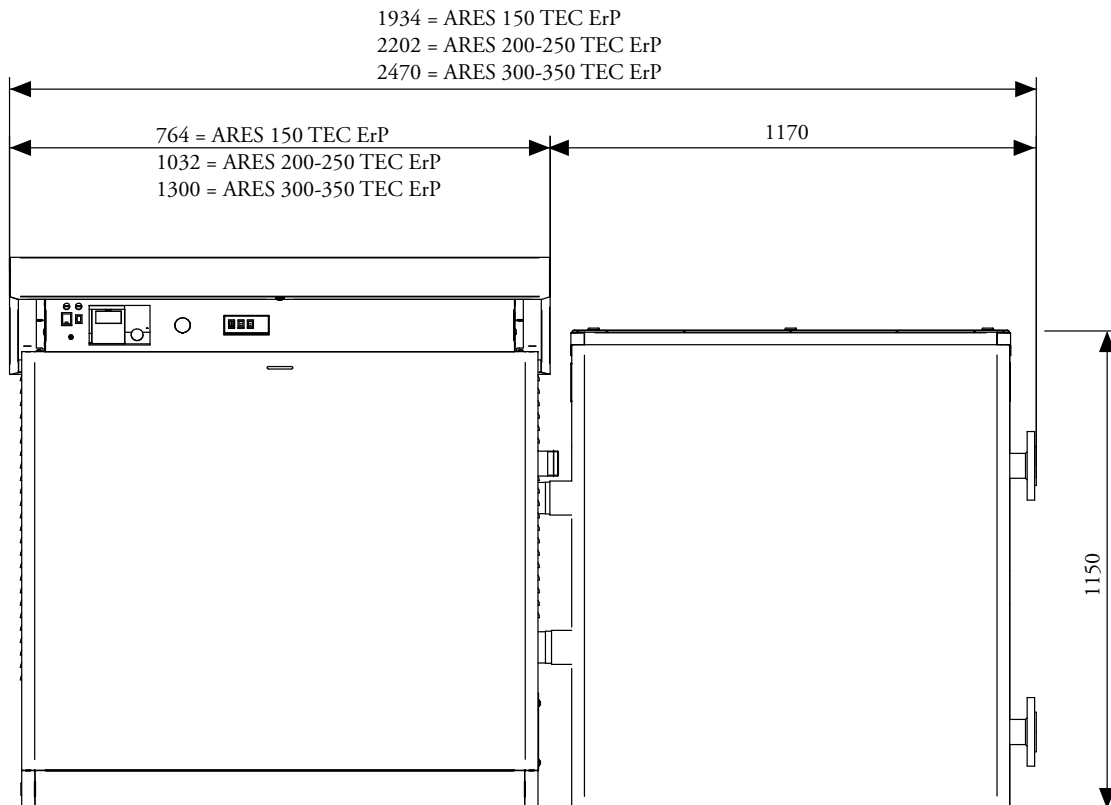
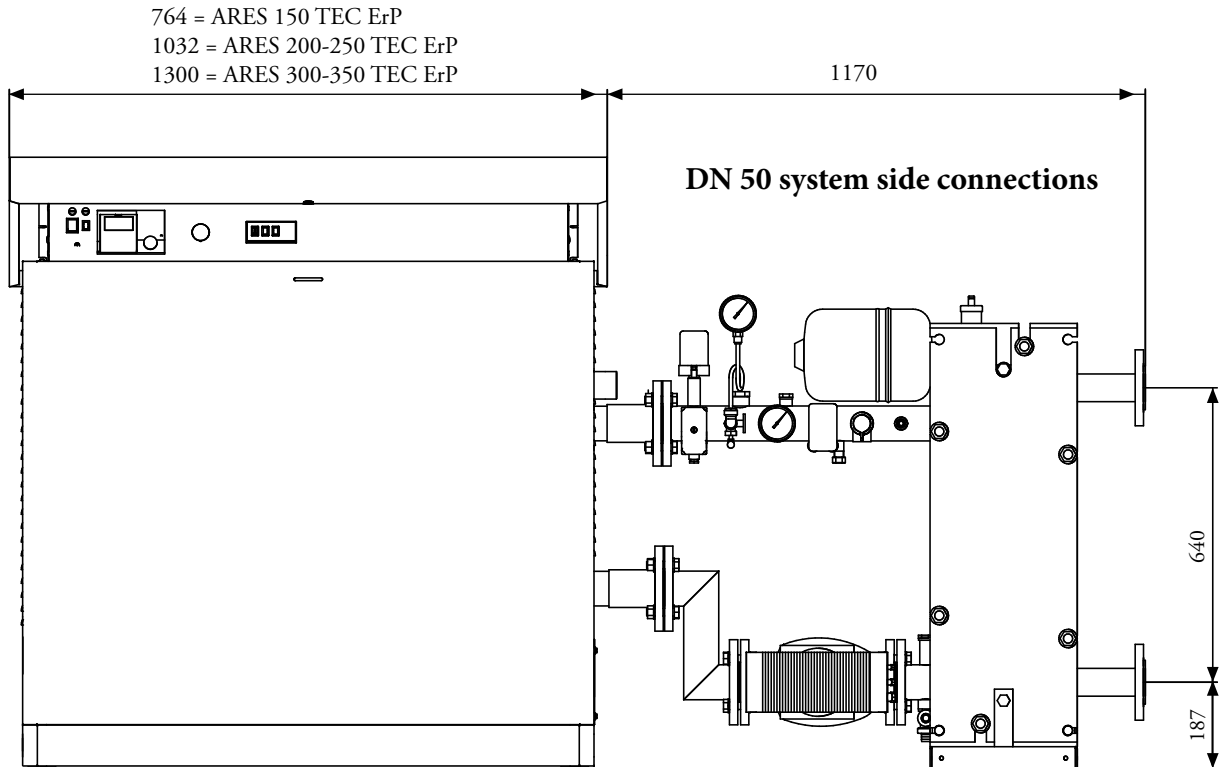
- 13) Pressure gauge with (12) damper pipe and (11) G $\frac{1}{2}$ " pressure gauge-holder tap
- 14) G $\frac{1}{2}$ " Thermometer (max 120°C bottom scale)
- 17) G $\frac{1}{2}$ " connection sample points for potential (V.I.C.)
- 20) Flow switch in case water flow is interrupted
- 3) 24 litre expansion tank (440-900 kW)

Other components:

- 7) Modulating pump with low electrical consumption (class A) type: Wilo STRATOS 65/1-12 (mod. from 440 to 550) / Wilo STRATOS 100/1-12 (mod. from 660 to 900)
 - 5) Stainless steel plate heat exchanger
 - 4) Automatic air vent valve
 - 6) G $\frac{3}{4}$ " draining valve
- Flanges/adaptors and various fittings
Support base
Flow/return pipes with DN 100 flanged connections

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**PRIMARY RING WITH PLATE HEAT EXCHANGER
(MODELS UP TO 350 KW)**

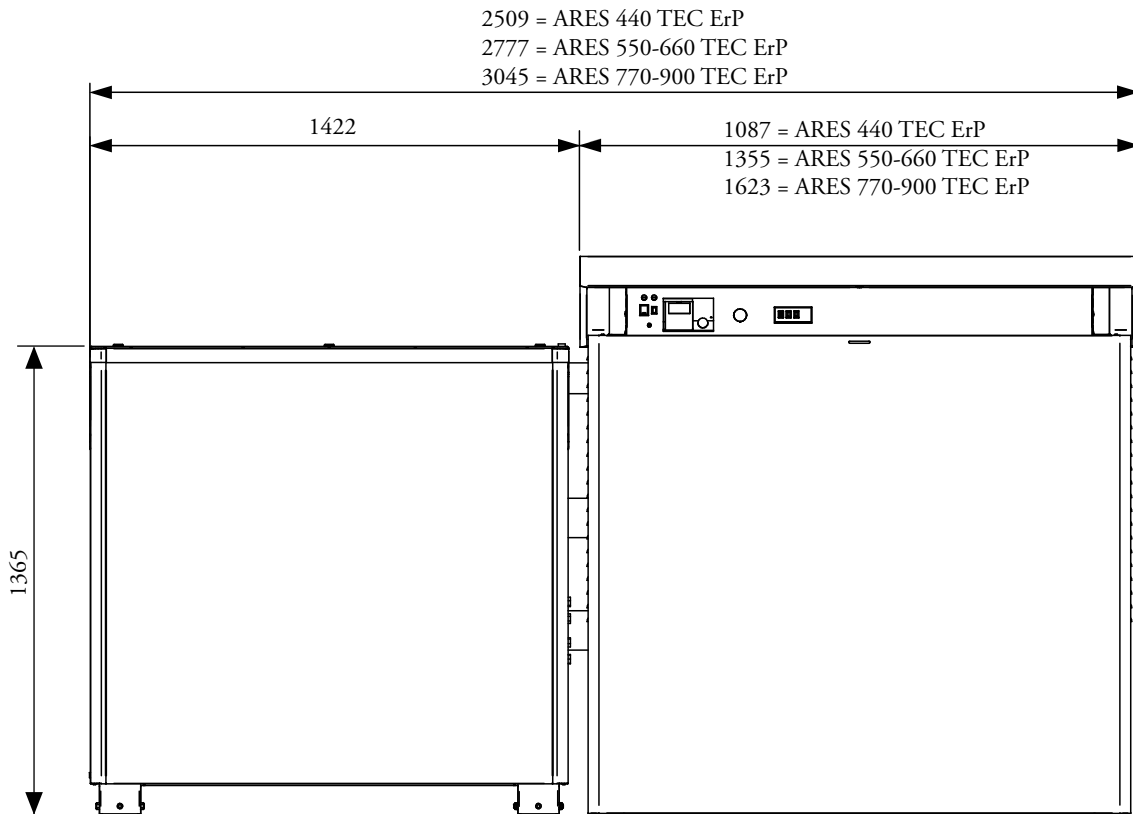
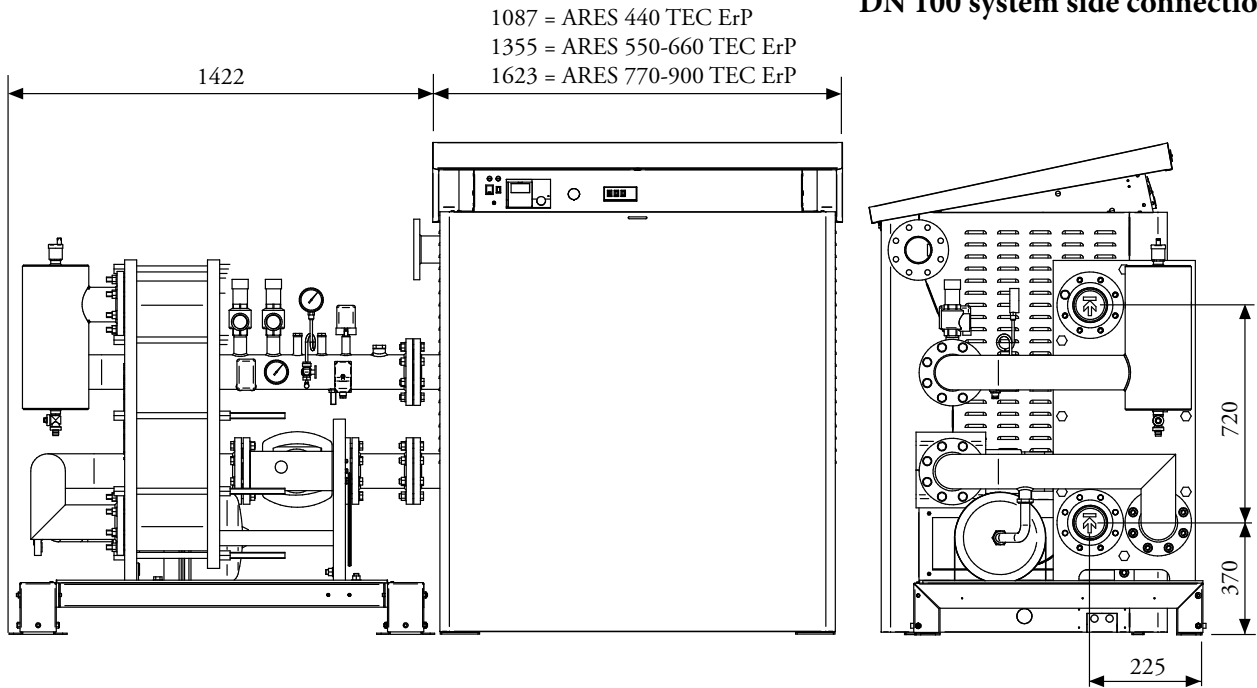


ARES 440 - 900 TEC ErP

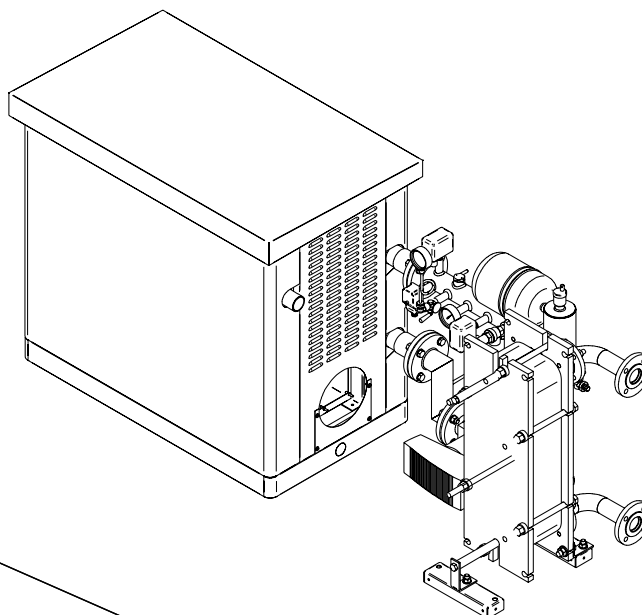
26

PRIMARY RING WITH PLATE HEAT EXCHANGER (MODELS FROM 440 UP TO 900 KW)

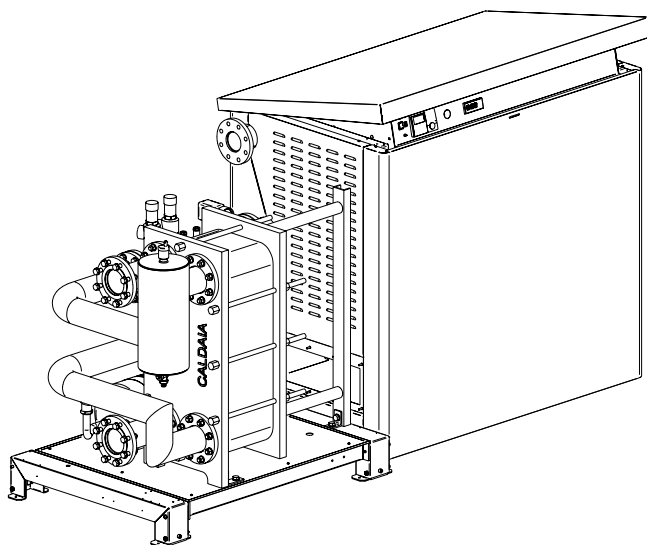
DN 100 system side connections



INAIL safety kits and complete plate heat exchanger for 150-350 kW (No. 2 codes available)



INAIL safety kits and complete plate heat exchanger for 440-900 kW (No. 4 codes available)

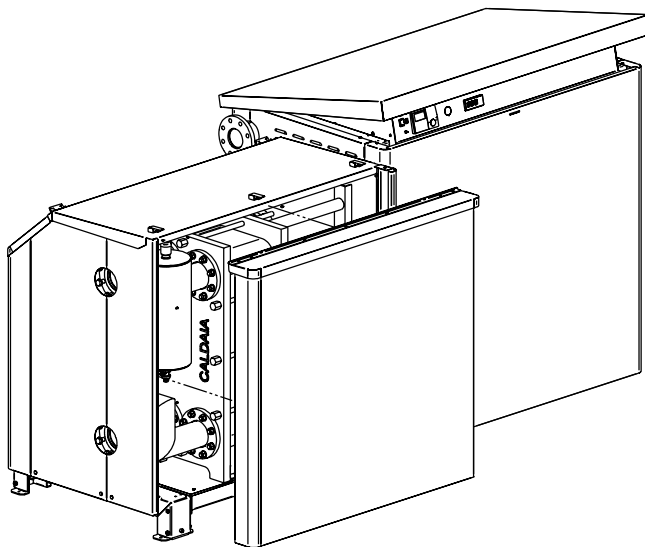
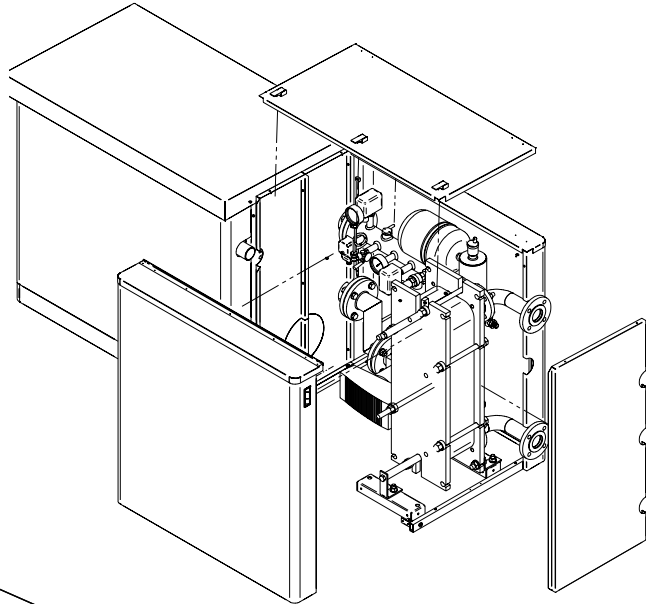


Hydraulic Kits	
<p>INAIL safety kit including circulator pump and plate heat exchanger for 150-200 kW code 3.023650</p>	<p>INAIL safety kit including circulator pump and plate heat exchanger for 250-350 kW code 3.023651</p>
<p>INAIL safety kit including circulator pump and plate heat exchanger for 440-550 kW code 3.023652</p>	<p>INAIL safety kit including circulator pump and plate heat exchanger for 660 kW code 3.023653</p>
<p>INAIL safety kit including circulator pump and plate heat exchanger for 770 kW code 3.023654</p>	<p>INAIL safety kit including circulator pump and plate heat exchanger for 900 kW code 3.023655</p>

ARES 440 - 900 TEC ErP

28 EXTERNAL COVERING KIT FOR HYDRAULIC SAFETIES AND COMPLETE PLATE HEAT EXCHANGER

External covering kit for INAIL safety kits and complete plate heat exchanger for 150-350 kW



External covering kit for INAIL safety kits and complete plate heat exchanger for 440-900 kW

External covering kit

External covering kit for INAIL kit and plate heat exchanger of 150-350 kW
code 3.023672

External covering kit for INAIL kit and plate heat exchanger of 440-900 kW
code 3.023673

Plate heat exchanger coupled with ARES TEC ErP	Plate number	Maximum managed power (kW)	Primary Flow rate (m ³ /h) M/R 80°/65°	Secondary Flow rate (m ³ /h) M/R 70°/60°	Δp (m c.a.)		Weight (kg) single heat exchanger
					Primary circuit Δt 15°C	Secondary circuit Δt 10°C	
150	32	200	8.62	12.93	1.0	2.0	149.22
200	32	200	11.49	17.24	1.7	3.4	149.22
250	50	350	14.37	21.55	1.4	2.9	167.75
300	50	350	17.24	25.86	2.0	4.1	167.75
350	50	350	20.11	30.17	2.6	5.5	167.75
440	77	550	25.29	37.93	0.5	1.0	405.8
550	77	550	31.61	47.41	0.8	1.6	405.8
660	77	660	37.93	56.90	1.1	2.5	405.8
770	104	770	44.25	66.38	0.9	1.9	451.98
900	104	900	51.72	77.59	1.3	2.4	451.98

ARES TEC ErP

30

FEED WATER TREATMENT

Treating the feed water allows you to prevent problems and maintain the functionality and efficiency of the generator over time.

Reference Standards:

- UNI 8065/1989 Water treatment for heating plant.
- UNI 8364/2007 on central heating systems parts 1-2-3.

The purpose of this treatment is to eliminate or significantly reduce problems that can be outlined as: deposits, corrosion, biological growths (mould, mushrooms, algae, bacteria, etc.).

The chemical analysis of the water provides a lot of information on the state and "health" of the system.

The pH level is a numerical indication of the acidity or alkalinity of a solution:

The pH scale goes from 0 to 14, where 7 corresponds to neutral. Values below 7 indicate acidity, values above 7 indicate alkalinity.

The ideal pH value in central heating systems with aluminium boilers is between 6.5 and 8, with a hardness of 15°F.

Water in a system with a pH value outside of this range considerably accelerates the destruction of the protective oxide layer which forms naturally inside the aluminium bodies, and would not occur naturally: if the pH level is lower than 6 it contains acid, if it is above 8 the water is alkaline, either due to an alkaline treatment (for example phosphates or glycols operating as antifreeze) or in some cases the natural generation of alkalis in the system.

Vice versa, if the pH value is between 6.5 and 8, the aluminium surfaces in the body are passivated and protected from further corrosive attacks.

N.B.: To minimise corrosion, it is essential to use a corrosion inhibitor. In order for it to work efficiently, however, the metal surfaces must be clean.

The best inhibitors on the market also contain an aluminium protection system that stabilises the pH levels of the filling water, preventing sudden changes (buffer effect).

It is advisable to systematically check the pH value of the water in the system. In order to do so a chemical laboratory analysis is not required, but a simple check using a analysis "kit" contained in a carry cases, easily available on the market.

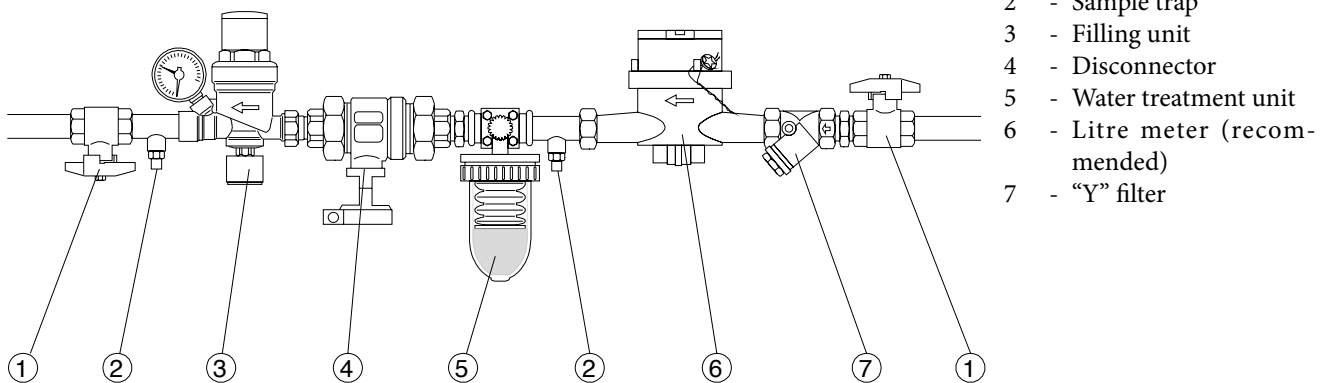
It is recommended to set up the devices shown in the picture on the feed circuit before placing it in the central heating system.

NOTE: The coupling must be set up on the return pipe to the primary circuit downstream of the circulator pump .

All of the precautions required to avoid the formation and localisation of oxygen in the water of the system. **For this reason the plastic pipes used in the under-floor central heating systems must not be permeable to oxygen.**

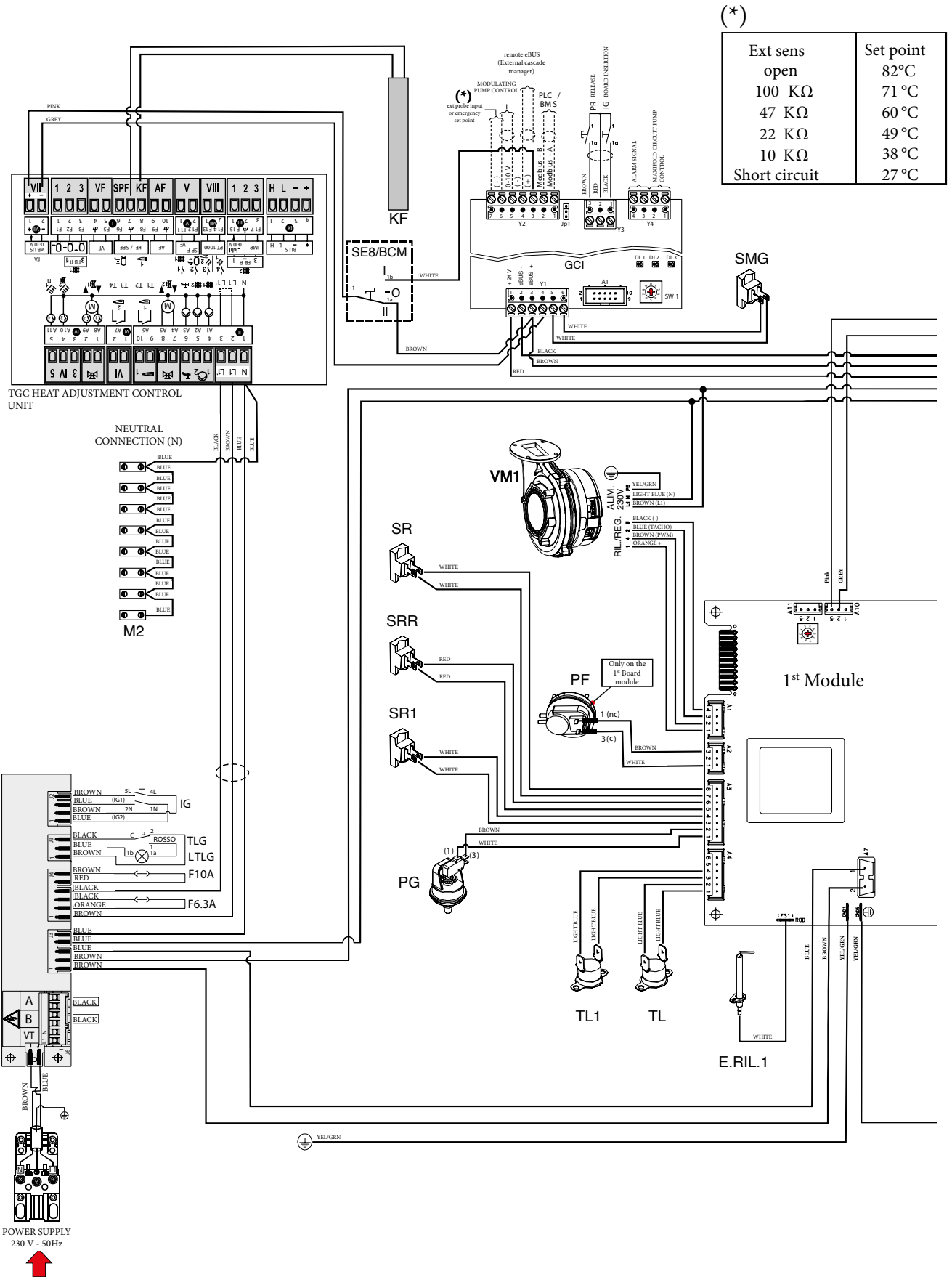
Make sure that any anti-freeze products are compatible with aluminium and any other parts and materials in the system.

Example of water treatment unit



Key:

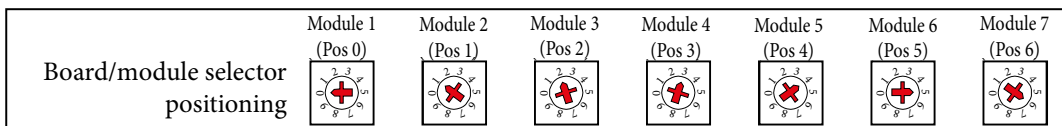
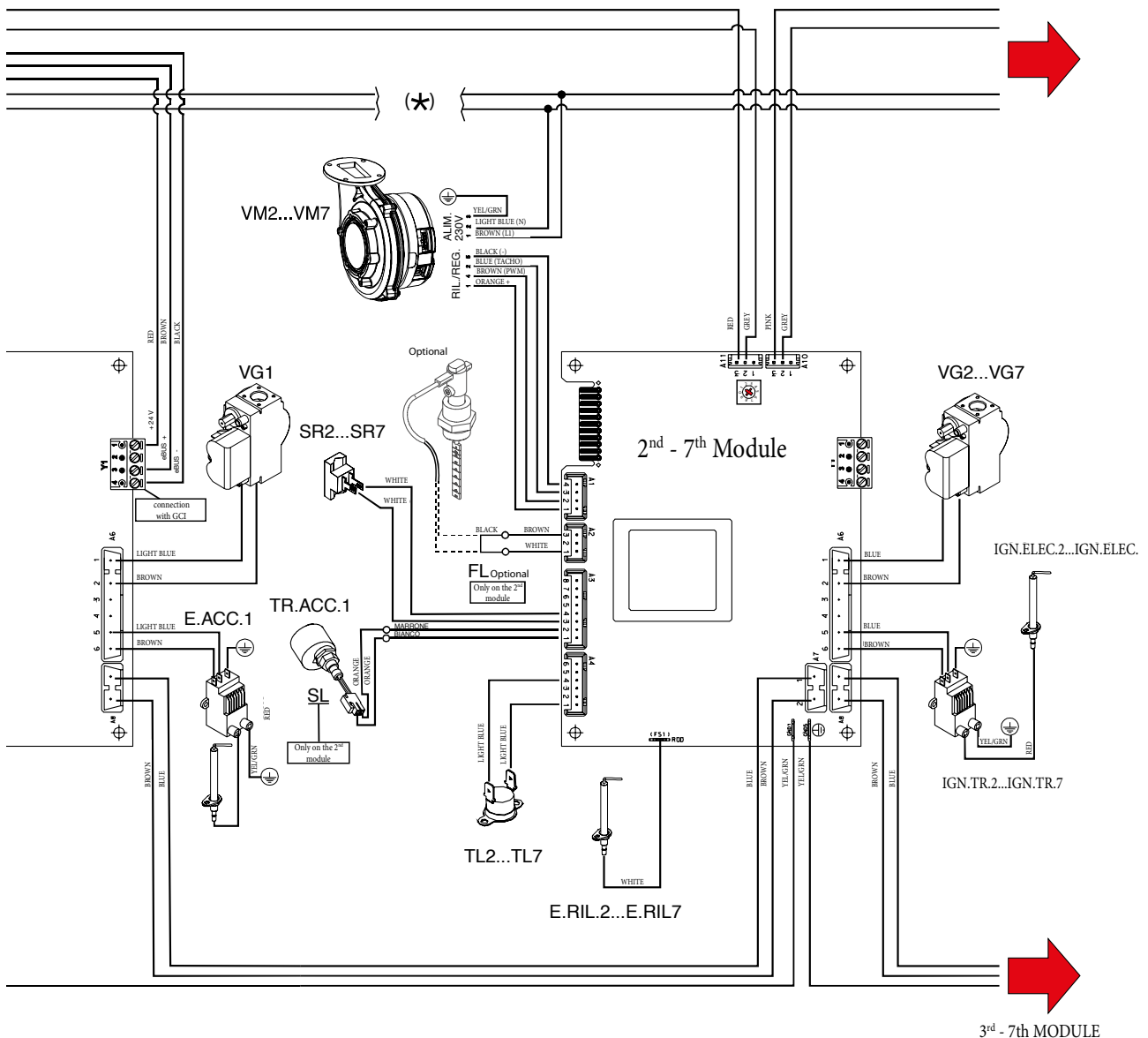
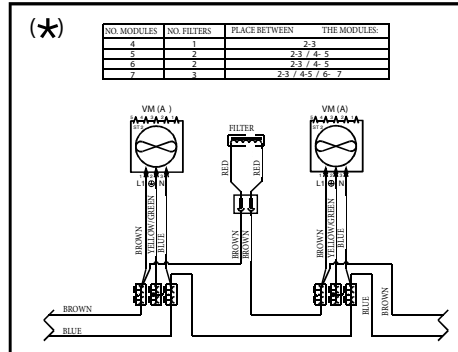
- 1 - Ball valve
- 2 - Sample trap
- 3 - Filling unit
- 4 - Disconnector
- 5 - Water treatment unit
- 6 - Litre meter (recommended)
- 7 - "Y" filter

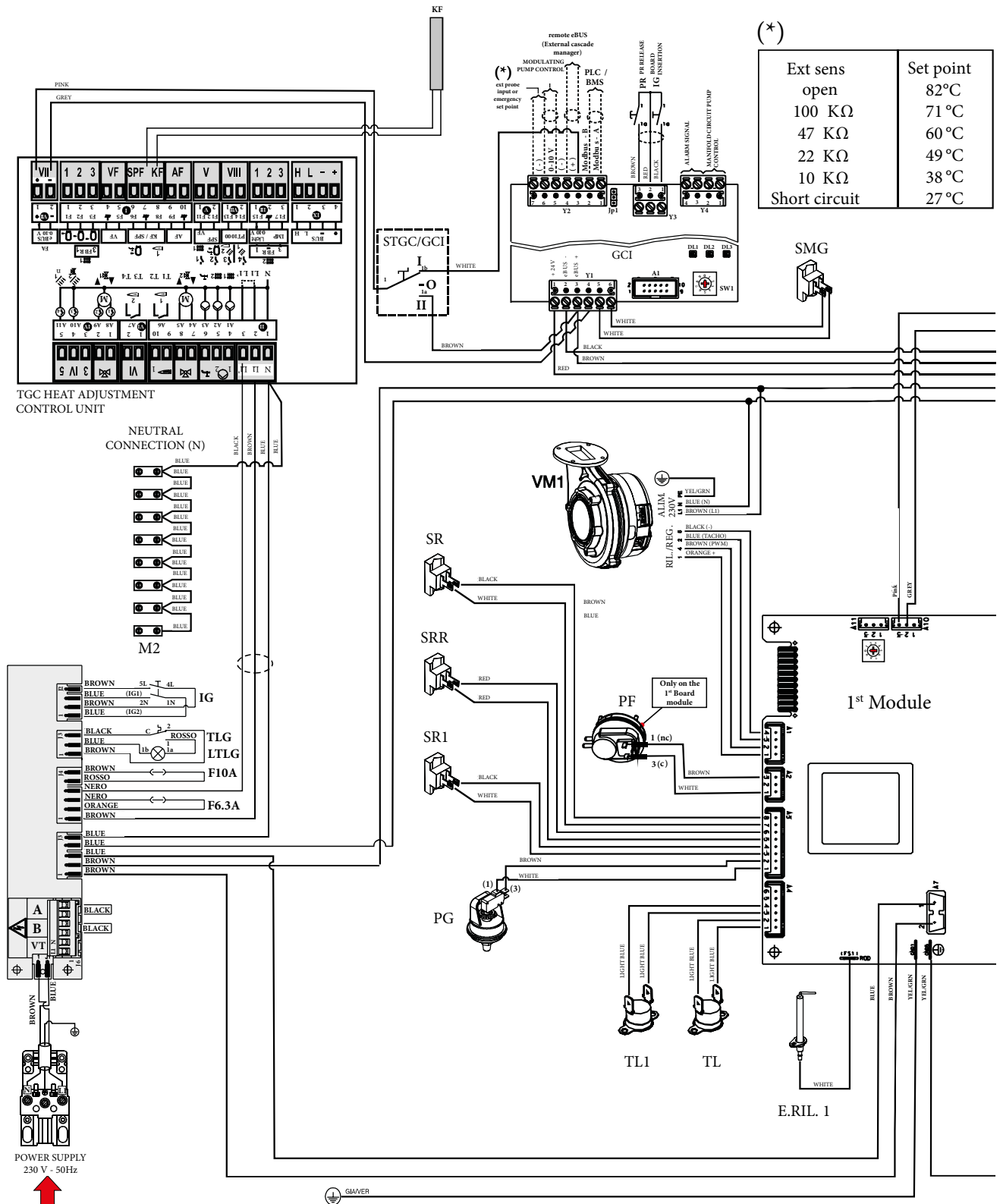


ARES 150 - 350 TEC ErP

Key:

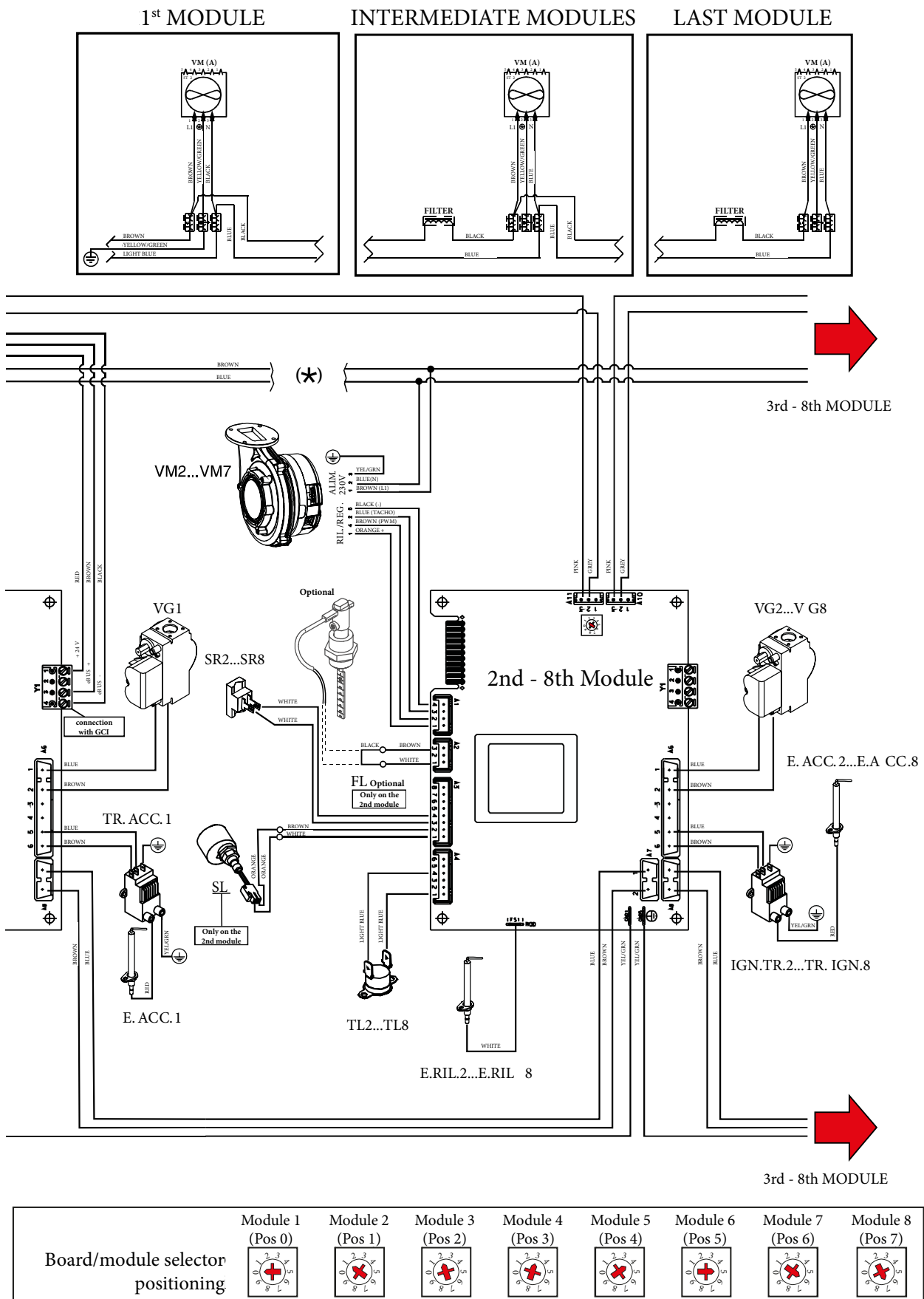
- E.ACC 1...7 - Ignition electrode
- E.RIL 1...7 - Detection electrode
- FL - Blade flow switch (optional)
- IG - Main switch
- KF - TGC global flow probe
- LTGL - Limit thermostat lamp
- PF - Flue pressure switch
- PG - Gas pressure switch
- PV1...7 - Fan pressure switch
- SL - Condensate level sensor
- SMG - GCI global flow probe
- SR - Flow sensor
- SR 1...7 - Local flow sensor
- SRR - Central heating return sensor
- TL - Safety thermostat
- TL 1...7 - Local safety thermostat
- TLG - General limit thermostat (only for Mod. 350)
- VG 1...7 - Gas valve
- TRA.ACC 1...7 - Ignition transformer
- VM 1...7 - Modulating fan





- Key:**
- E.ACC 1...8 - Ignition electrode
 - E.RIL 1...8 - Detection electrode
 - FL - Blade flow switch (optional)
 - IG - Main switch
 - KF - TGC global flow probe
 - LTGL - Limit thermostat lamp
 - PF - Flue pressure switch
 - PG - Gas pressure switch
 - PV1...8 - Fan pressure switch
 - SL - Condensate level sensor
 - SMG - GCI global flow probe
 - SR - Flow sensor
 - SR 1...8 - Local flow sensor
 - SRR - Central heating return sensor
 - TL - Safety thermostat
 - TL 1...8 - Local safety thermostat
 - TLG - General limit thermostat
 - VG 1...8 - Gas valve
 - TRA.ACC 1...8 - Ignition transformer
 - VM 1...8 - Modulating fan

ARES 440 - 900 TEC ErP



			ARES 150 TEC ErP	ARES 200 TEC ErP
Maximum nominal heat input		kW (kcal/h)	150 (129.000)	200 (172.000)
Maximum useful heat output (80/60°C)		kW (kcal/h)	146.1 (125.646)	195.2 (167.872)
Maximum useful heat output (50/30°C)		kW (kcal/h)	150 (129.000)	200.4 (172.344)
Minimum nominal heat input		kW (kcal/h)	12 (10.356)	12 (10.356)
Minimum nominal heat output (80/60°C)		kW (kcal/h)	11.7 (10.062)	11.7 (10.062)
Minimum nominal heat output (50/30°C)		kW (kcal/h)	12.8 (11.008)	12.8 (11.008)
Efficiency at 100% Pn (80/60°C)		%	97.4	97.6
Efficiency at 30% of the load (80/60°C)		%	95.5	95.9
Efficiency at 100% Pn (50/30°C)		%	100.0	100.2
Efficiency at 30% of the load (T. r. 30°C)		%	107.2	107.2
Central heating circuit				
System adjustable central heating temperature		°C	25-85	25-85
System max. working temperature		°C	90	90
System max. working pressure		bar	6.0	6.0
System min. working pressure		bar	0.5	0.5
Water flow rate at Nom. power (ΔT 20° C)		l/h	6.282	8.394
Gas supply				
METHANE fan speed (G20)	MIN - MAX	N° revs	1860 - 5880	1860 - 5880
LPG fan speed (G31)	MIN - MAX	N° revs	1800 - 5460	1800 - 5460
Gas flow rate at METHANE burner (G20)	MIN - MAX	m ³ /h	1.27 - 15.86	1.27 - 21.15
Gas flow rate at LPG burner (G31)	MIN - MAX	kg/h	0.93 - 11.64	0.93 - 15.52
Electric power supply		V/Hz	230 - 50	230 - 50
Maximum absorbed electric power		W	218	290
Minimum absorbed electric power		W	26	26
Fuse on power supply		A (F)	4	4
Electric insulation rating	IP		X5D	X5D
Boiler water content		litres	14.2	18.3
Net boiler weight		kg	170	225
Useful efficiency at 100% output (Italian Lgs. D. 192/05 as amended)			>93+2·log Pn (Pn = 146.1 kW)	>93+2·log Pn (Pn = 195.2 kW)

ARES 150 - 350 TEC ErP

33.1

TECHNICAL DATA

			ARES 250 TEC ErP	ARES 300 TEC ErP
Maximum nominal heat input		kW (kcal/h)	250 (215.000)	300 (258.000)
Maximum useful heat output (80/60°C)		kW (kcal/h)	244.5 (210.270)	294.0 (252.840)
Maximum useful heat output (50/30°C)		kW (kcal/h)	251.2 (216.075)	302.7 (260.322)
Minimum nominal heat input		kW (kcal/h)	12 (10.356)	12 (10.356)
Minimum nominal heat output (80/60°C)		kW (kcal/h)	11.7 (10.062)	11.7 (10.062)
Minimum nominal heat output (50/30°C)		kW (kcal/h)	12.8 (11.008)	12.8 (11.008)
Efficiency at 100% Pn (80/60°C)		%	97.8	98.0
Efficiency at 30% of the load (80/60°C)		%	96.2	96.4
Efficiency at 100% Pn (50/30°C)		%	100.5	100.9
Efficiency at 30% of the load (T. r. 30°C)		%	107.2	107.2
Central heating circuit				
System adjustable central heating temperature		°C	25-85	25-85
System max. working temperature		°C	90	90
System max. working pressure		bar	6.0	6.0
System min. working pressure		bar	0.5	0.5
Water flow rate at Nom. power (ΔT 20° C)		l/h	10.514	12.642
Gas supply				
METHANE fan speed (G20)	MIN - MAX	N° revs	1860 - 5880	1860 - 5880
LPG fan speed (G31)	MIN - MAX	N° revs	1800 - 5460	1800 - 5460
Gas flow rate at METHANE burner (G20)	MIN - MAX	m ³ /h	1.27 - 26.43	1.27 - 31.72
Gas flow rate at LPG burner (G31)	MIN - MAX	kg/h	0.93 - 19.41	0.93 - 23.29
Electric power supply		V/Hz	230 - 50	230 - 50
Maximum absorbed electric power		W	362	435
Minimum absorbed electric power		W	26	26
Fuse on power supply		A (F)	4	4
Electric insulation rating	IP		X5D	X5D
Boiler water content		litres	22.4	26.5
Net boiler weight		kg	260	305
Useful efficiency at 100% output (Italian Lgs. D. 192/05 as amended)			>93+2·log Pn (Pn = 244.5 kW)	>93+2·log Pn (Pn = 294.0 kW)

33.2
TECHNICAL DATA

			ARES 350 TEC ErP	ARES 440 TEC ErP
Maximum nominal heat input		kW (kcal/h)	348 (299.280)	432 (371.520)
Maximum useful heat output (80/60°C)		kW (kcal/h)	341.8 (293.948)	424.3 (364.872)
Maximum useful heat output (50/30°C)		kW (kcal/h)	354.6 (304.964)	445.4 (383.035)
Minimum nominal heat input		kW (kcal/h)	12 (10.356)	22 (18.920)
Minimum nominal heat output (80/60°C)		kW (kcal/h)	11.7 (10.062)	20.57 (17.690)
Minimum nominal heat output (50/30°C)		kW (kcal/h)	12.8 (11.008)	23.94 (20.588)
Efficiency at 100% Pn (80/60°C)		%	98.2	98.21
Efficiency at 30% of the load (80/60°C)		%	96.6	96.6
Efficiency at 100% Pn (50/30°C)		%	101.9	103.1
Efficiency at 30% of the load (T. r. 30°C)		%	107.2	107.3
Central heating circuit				
System adjustable central heating temperature		°C	25-85	25-85
System max. working temperature		°C	90	90
System max. working pressure		bar	6.0	6.0
System min. working pressure		bar	0.5	0.5
Water flow rate at Nom. power (ΔT 20° C)		l/h	14.699	18.243
Gas supply				
METHANE fan speed (G20)	MIN - MAX	N° revs	1860 - 5880	1700 - 5540
LPG fan speed (G31)	MIN - MAX	N° revs	1800 - 5460	1700 - 5290
Gas flow rate at METHANE burner (G20)	MIN - MAX	m ³ /h	1.27 - 36.80	2.33 - 45.68
Gas flow rate at LPG burner (G31)	MIN - MAX	kg/h	0.93 - 27.01	1.71 - 33.53
Electric power supply		V/Hz	230 - 50	230 - 50
Maximum absorbed electric power		W	507	626
Minimum absorbed electric power		W	26	54
Fuse on power supply		A (F)	4	4
Electric insulation rating	IP		X5D	X5D
Boiler water content		litres	30.6	73
Net boiler weight		kg	345	361
Useful efficiency at 100% output (Italian Lgs. D. 192/05 as amended)			>93+2·log Pn (Pn = 341.8 kW)	>93+2·log Pn (Pn = 424.3 kW)

ARES 440 - 900 TEC ErP

33.3

TECHNICAL DATA

			ARES 550 TEC ErP	ARES 660 TEC ErP
Maximum nominal heat input		kW (kcal/h)	540 (464.400)	648 (557.280)
Maximum useful heat output (80/60°C)		kW (kcal/h)	530.3 (456.083)	636.4 (547.304)
Maximum useful heat output (50/30°C)		kW (kcal/h)	557.8 (479.725)	670.0 (576.225)
Minimum nominal heat input		kW (kcal/h)	22 (18.920)	22 (18.920)
Minimum nominal heat output (80/60°C)		kW (kcal/h)	20.57 (17.690)	20.57 (17.690)
Minimum nominal heat output (50/30°C)		kW (kcal/h)	23.94 (20.588)	23.94 (20.588)
Efficiency at 100% Pn (80/60°C)		%	98.21	98.21
Efficiency at 30% of the load (80/60°C)		%	96.6	96.6
Efficiency at 100% Pn (50/30°C)		%	103.3	103.4
Efficiency at 30% of the load (T. r. 30°C)		%	107.5	108.3
Central heating circuit				
System adjustable central heating temperature		°C	25-85	25-85
System max. working temperature		°C	90	90
System max. working pressure		bar	6.0	6.0
System min. working pressure		bar	0.5	0.5
Water flow rate at Nom. power (ΔT 20° C)		l/h	22.804	27.365
Gas supply				
METHANE fan speed (G20)	MIN - MAX	N° revs	1700 - 5540	1700 - 5540
LPG fan speed (G31)	MIN - MAX	N° revs	1700 - 5290	1700 - 5290
Gas flow rate at METHANE burner (G20)	MIN - MAX	m ³ /h	2.33 - 57.10	2.33 - 68.52
Gas flow rate at LPG burner (G31)	MIN - MAX	kg/h	1.71 - 41.92	1.71 - 50.30
Electric power supply		V/Hz	230 - 50	230 - 50
Maximum absorbed electric power		W	783	940
Minimum absorbed electric power		W	54	54
Fuse on power supply		A (F)	4	4
Electric insulation rating	IP		X5D	X5D
Boiler water content		litres	88	103
Net boiler weight		kg	449	519
Useful efficiency at 100% output (Italian Lgs. D. 192/05 as amended)			>93+2·log Pn (Pn = 530.3 kW)	>93+2·log Pn (Pn = 636.4 kW)

33.4
TECHNICAL DATA

			ARES 770 TEC ErP	ARES 900 TEC ErP
Maximum nominal heat input		kW (kcal/h)	756 (650.160)	864.0 (743.040)
Maximum useful heat output (80/60°C)		kW (kcal/h)	742.5 (638.550)	848.5 (729.710)
Maximum useful heat output (50/30°C)		kW (kcal/h)	783.2 (673.569)	900.3 (774.249)
Minimum nominal heat input		kW (kcal/h)	22 (18.920)	22 (18.920)
Minimum nominal heat output (80/60°C)		kW (kcal/h)	20.57 (17.690)	20.57 (17.690)
Minimum nominal heat output (50/30°C)		kW (kcal/h)	23.94 (20.588)	23.94 (20.588)
Efficiency at 100% Pn (80/60°C)		%	98.21	98.21
Efficiency at 30% of the load (80/60°C)		%	96.6	96.6
Efficiency at 100% Pn (50/30°C)		%	103.6	104.2
Efficiency at 30% of the load (T. r. 30°C)		%	107.8	107.6
Central heating circuit				
System adjustable central heating temperature		°C	25-85	25-85
System max. working temperature		°C	90	90
System max. working pressure		bar	6.0	6.0
System min. working pressure		bar	0.5	0.5
Water flow rate at Nom. power (ΔT 20° C)		l/h	31.926	36.487
Gas supply				
METHANE fan speed (G20)	MIN - MAX	N° revs	1700 - 5540	1700 - 5540
LPG fan speed (G31)	MIN - MAX	N° revs	1700 - 5290	1700 - 5290
Gas flow rate at METHANE burner (G20)	MIN - MAX	m ³ /h	2.33 - 79.94	2.33 - 91.36
Gas flow rate at LPG burner (G31)	MIN - MAX	kg/h	1.71 - 58.68	1.71 - 67.07
Electric power supply		V/Hz	230 - 50	230 - 50
Maximum absorbed electric power		W	1096	1252
Minimum absorbed electric power		W	54	54
Fuse on power supply		A (F)	4	4
Electric insulation rating	IP		X5D	X5D
Boiler water content		litres	118	133
Net boiler weight		kg	610	739
Useful efficiency at 100% output (Italian Lgs. D. 192/05 as amended)			>93+2·log Pn (Pn = 742.5 kW)	>93+2·log Pn (Pn = 848.5 kW)

ARES 150 - 350 TEC ErP

34

ARES 150 TEC ErP COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60°C)	%	97.8	97.8
Combustion efficiency P min (80/60°C)	%	98.3	98.3
Effective efficiency at 100% Pn (80/60°C)	%	97.4	97.4
Effective efficiency P min (80/60°C)	%	97.16	97.16
Effective efficiency at 100% Pn (50/30°C)	%	100.0	100.0
Effective efficiency P min (50/30°C)	%	106.5	106.5
Chimney losses with burner on (100% Pn) (80/60°C)	%	2.2	2.2
Chimney losses with burner on (P min) (80/60°C)	%	1.7	1.7
Chimney losses with burner off	%	0.3	0.3
Casing losses with burner on (100% Pn) (80/60°C)	%	0.4	0.4
Casing losses with burner on (P min) (80/60°C)	%	1.23	1.23
Casing losses with burner off	%	0.1	0.1
Flue gasses temperature Maximum Heat Input	°C	45.1	-
Flue gasses temperature Minimum Heat Input	°C	33.4	-
Flue gasses flow rate at Maximum Heat Input	kg/h	245.2	-
Flue gasses flow rate at Minimum Heat Input	kg/h	19.6	-
CO ₂ at the Maximum Heat Input	%	9.1	10.8
CO ₂ at the Minimum Heat Input	%	9.1	10.8
CO at Maximum Heat Input	mg/kWh	93.7	-
CO at Minimum Heat Input	mg/kWh	2.5	-
NO _x at the Maximum Heat Input	mg/kWh	85.7	-
NO _x at the Minimum Heat Input	mg/kWh	48.9	-
Weighted CO	mg/kWh	32.4	-
Weighted NO _x	mg/kWh	53.8	-
NO _x class	-	5	5
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	24.2	

- Gas flow rates refer to the NHV at the temperature of 15° C and pressure of 1013 mbar.
- Flue gasses temperature values refer to an air inlet temperature of 15°C and flow temperature of 80°C.
- The maximum sound level emitted during boiler operation is < 49dBA. The sound level value is referred to semianechoic chamber tests with boiler operating at max. heat input, with extension of flue gas exhaust system according to product standards.

34.1 ARES 200 TEC ErP COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60°C)	%	97.8	97.8
Combustion efficiency P min (80/60°C)	%	98.3	98.3
Effective efficiency at 100% Pn (80/60°C)	%	97.6	97.6
Effective efficiency P min (80/60°C)	%	97.16	97.16
Effective efficiency at 100% Pn (50/30°C)	%	100.2	100.2
Effective efficiency P min (50/30°C)	%	106.5	106.5
Chimney losses with burner on (100% Pn) (80/60°C)	%	2.2	2.2
Chimney losses with burner on (P min) (80/60°C)	%	1.7	1.7
Chimney losses with burner off	%	0.3	0.3
Casing losses with burner on (100% Pn) (80/60°C)	%	0.2	0.2
Casing losses with burner on (P min) (80/60°C)	%	1.23	1.23
Casing losses with burner off	%	0.1	0.1
Flue gasses temperature Maximum Heat Input	°C	46.5	-
Flue gasses temperature Minimum Heat Input	°C	33.4	-
Flue gasses flow rate at Maximum Heat Input	kg/h	326.9	-
Flue gasses flow rate at Minimum Heat Input	kg/h	19.6	-
CO ₂ at the Maximum Heat Input	%	9.1	10.8
CO ₂ at the Minimum Heat Input	%	9.1	10.8
CO at Maximum Heat Input	mg/kWh	93.7	-
CO at Minimum Heat Input	mg/kWh	2.5	-
NO _x at the Maximum Heat Input	mg/kWh	85.7	-
NO _x at the Minimum Heat Input	mg/kWh	48.9	-
Weighted CO	mg/kWh	32.4	-
Weighted NO _x	mg/kWh	53.8	-
NO _x class	-	5	5
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	32.2	

- Gas flow rates refer to the NHV at the temperature of 15° C and pressure of 1013 mbar.
- Flue gasses temperature values refer to an air inlet temperature of 15°C and flow temperature of 80°C.
- The maximum sound level emitted during boiler operation is < 49dBA. The sound level value is referred to semianechoic chamber tests with boiler operating at max. heat input, with extension of flue gas exhaust system according to product standards.

ARES 150 - 350 TEC ErP

34.2 ARES 250 TEC ErP COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60°C)	%	98.0	98.0
Combustion efficiency P min (80/60°C)	%	98.3	98.3
Effective efficiency at 100% Pn (80/60°C)	%	97.8	97.8
Effective efficiency P min (80/60°C)	%	97.16	97.16
Effective efficiency at 100% Pn (50/30°C)	%	100.5	100.5
Effective efficiency P min (50/30°C)	%	106.5	106.5
Chimney losses with burner on (100% Pn) (80/60°C)	%	2.0	2.0
Chimney losses with burner on (P min) (80/60°C)	%	1.7	1.7
Chimney losses with burner off	%	0.3	0.3
Casing losses with burner on (100% Pn) (80/60°C)	%	0.2	0.2
Casing losses with burner on (P min) (80/60°C)	%	1.23	1.23
Casing losses with burner off	%	0.1	0.1
Flue gasses temperature Maximum Heat Input	°C	47.3	-
Flue gasses temperature Minimum Heat Input	°C	33.4	-
Flue gasses flow rate at Maximum Heat Input	kg/h	408.6	-
Flue gasses flow rate at Minimum Heat Input	kg/h	19.6	-
CO ₂ at the Maximum Heat Input	%	9.1	10.8
CO ₂ at the Minimum Heat Input	%	9.1	10.8
CO at Maximum Heat Input	mg/kWh	93.7	-
CO at Minimum Heat Input	mg/kWh	2.5	-
NO _x at the Maximum Heat Input	mg/kWh	85.7	-
NO _x at the Minimum Heat Input	mg/kWh	48.9	-
Weighted CO	mg/kWh	32.4	-
Weighted NO _x	mg/kWh	53.8	-
NO _x class	-	5	5
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	40.3	

- Gas flow rates refer to the NHV at the temperature of 15° C and pressure of 1013 mbar.
- Flue gasses temperature values refer to an air inlet temperature of 15°C and flow temperature of 80°C.
- The maximum sound level emitted during boiler operation is < 49dBA. The sound level value is referred to semianechoic chamber tests with boiler operating at max. heat input, with extension of flue gas exhaust system according to product standards.

34.3
ARES 300 TEC ErP COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60°C)	%	98.1	98.1
Combustion efficiency P min (80/60°C)	%	98.3	98.3
Effective efficiency at 100% Pn (80/60°C)	%	98.0	98.0
Effective efficiency P min (80/60°C)	%	97.16	97.16
Effective efficiency at 100% Pn (50/30°C)	%	100.9	100.9
Effective efficiency P min (50/30°C)	%	106.5	106.5
Chimney losses with burner on (100% Pn) (80/60°C)	%	1.9	1.9
Chimney losses with burner on (P min) (80/60°C)	%	1.7	1.7
Chimney losses with burner off	%	0.3	0.3
Casing losses with burner on (100% Pn) (80/60°C)	%	0.1	0.1
Casing losses with burner on (P min) (80/60°C)	%	1.23	1.23
Casing losses with burner off	%	0.1	0.1
Flue gasses temperature Maximum Heat Input	°C	48.2	-
Flue gasses temperature Minimum Heat Input	°C	33.4	-
Flue gasses flow rate at Maximum Heat Input	kg/h	490.3	-
Flue gasses flow rate at Minimum Heat Input	kg/h	19.6	-
CO ₂ at the Maximum Heat Input	%	9.1	10.8
CO ₂ at the Minimum Heat Input	%	9.1	10.8
CO at Maximum Heat Input	mg/kWh	93.7	-
CO at Minimum Heat Input	mg/kWh	2.5	-
NO _x at the Maximum Heat Input	mg/kWh	85.7	-
NO _x at the Minimum Heat Input	mg/kWh	48.9	-
Weighted CO	mg/kWh	32.4	-
Weighted NO _x	mg/kWh	53.8	-
NO _x class	-	5	5
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	48.3	

- Gas flow rates refer to the NHV at the temperature of 15° C and pressure of 1013 mbar.
- Flue gasses temperature values refer to an air inlet temperature of 15°C and flow temperature of 80°C.
- The maximum sound level emitted during boiler operation is < 49dBA. The sound level value is referred to semianechoic chamber tests with boiler operating at max. heat input, with extension of flue gas exhaust system according to product standards.

ARES 150 - 350 TEC ErP

34.4 ARES 350 TEC ErP COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60°C)	%	98.3	98.3
Combustion efficiency P min (80/60°C)	%	98.3	98.3
Effective efficiency at 100% Pn (80/60°C)	%	98.2	98.2
Effective efficiency P min (80/60°C)	%	97.16	97.16
Effective efficiency at 100% Pn (50/30°C)	%	101.9	101.9
Effective efficiency P min (50/30°C)	%	106.5	106.5
Chimney losses with burner on (100% Pn) (80/60°C)	%	1.7	1.7
Chimney losses with burner on (P min) (80/60°C)	%	1.7	1.7
Chimney losses with burner off	%	0.3	0.3
Casing losses with burner on (100% Pn) (80/60°C)	%	0.1	0.1
Casing losses with burner on (P min) (80/60°C)	%	1.23	1.23
Casing losses with burner off	%	0.1	0.1
Flue gasses temperature Maximum Heat Input	°C	49.1	-
Flue gasses temperature Minimum Heat Input	°C	33.4	-
Flue gasses flow rate at Maximum Heat Input	kg/h	568.8	-
Flue gasses flow rate at Minimum Heat Input	kg/h	19.6	-
CO ₂ at the Maximum Heat Input	%	9.1	10.8
CO ₂ at the Minimum Heat Input	%	9.1	10.8
CO at Maximum Heat Input	mg/kWh	93.7	-
CO at Minimum Heat Input	mg/kWh	2.5	-
NO _x at the Maximum Heat Input	mg/kWh	85.7	-
NO _x at the Minimum Heat Input	mg/kWh	48.9	-
Weighted CO	mg/kWh	32.4	-
Weighted NO _x	mg/kWh	53.8	-
NO _x class	-	5	5
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	56.0	

- Gas flow rates refer to the NHV at the temperature of 15° C and pressure of 1013 mbar.
- Flue gasses temperature values refer to an air inlet temperature of 15°C and flow temperature of 80°C.
- The maximum sound level emitted during boiler operation is < 49dBA. The sound level value is referred to semianechoic chamber tests with boiler operating at max. heat input, with extension of flue gas exhaust system according to product standards.

34.5 ARES 440 TEC ErP COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60°C)	%	98.28	98.28
Combustion efficiency P min (80/60°C)	%	98.43	98.43
Effective efficiency at 100% Pn (80/60°C)	%	98.21	98.21
Effective efficiency P min (80/60°C)	%	93.5	93.5
Effective efficiency at 100% Pn (50/30°C)	%	103.1	103.1
Effective efficiency P min (50/30°C)	%	108.8	108.8
Chimney losses with burner on (100% Pn) (80/60°C)	%	1.72	1.72
Chimney losses with burner on (P min) (80/60°C)	%	1.57	1.57
Chimney losses with burner off	%	0.1	0.1
Casing losses with burner on (100% Pn) (80/60°C)	%	0.1	0.1
Casing losses with burner on (P min) (80/60°C)	%	4.93	4.93
Casing losses with burner off	%	0.1	0.1
Flue gasses temperature Maximum Heat Input	°C	45.4	-
Flue gasses temperature Minimum Heat Input	°C	31.0	-
Flue gasses flow rate at Maximum Heat Input	kg/h	704	-
Flue gasses flow rate at Minimum Heat Input	kg/h	36.3	-
CO ₂ at the Maximum Heat Input	%	9.1	10.6
CO ₂ at the Minimum Heat Input	%	9.1	10.2
CO at Maximum Heat Input	mg/kWh	93.1	-
CO at Minimum Heat Input	mg/kWh	1.4	-
NO _x at the Maximum Heat Input	mg/kWh	68	-
NO _x at the Minimum Heat Input	mg/kWh	46	-
Weighted CO	mg/kWh	26.3	-
Weighted NO _x	mg/kWh	47	-
NO _x class	-	5	5
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	73.4	

- Gas flow rates refer to the NHV at the temperature of 15° C and pressure of 1013 mbar.
- Flue gasses temperature values refer to an air inlet temperature of 15°C and flow temperature of 80°C.
- The maximum sound level emitted during boiler operation is < 49dBA. The sound level value is referred to semianechoic chamber tests with boiler operating at max. heat input, with extension of flue gas exhaust system according to product standards.

ARES 440 - 900 TEC ErP

34.6 ARES 550 TEC ErP COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60°C)	%	98.28	98.28
Combustion efficiency P min (80/60°C)	%	98.43	98.43
Effective efficiency at 100% Pn (80/60°C)	%	98.21	98.21
Effective efficiency P min (80/60°C)	%	93.5	93.5
Effective efficiency at 100% Pn (50/30°C)	%	103.3	103.3
Effective efficiency P min (50/30°C)	%	108.8	108.8
Chimney losses with burner on (100% Pn) (80/60°C)	%	1.72	1.72
Chimney losses with burner on (P min) (80/60°C)	%	1.57	1.57
Chimney losses with burner off	%	0.1	0.1
Casing losses with burner on (100% Pn) (80/60°C)	%	0.1	0.1
Casing losses with burner on (P min) (80/60°C)	%	4.93	4.93
Casing losses with burner off	%	0.1	0.1
Flue gasses temperature Maximum Heat Input	°C	45.5	-
Flue gasses temperature Minimum Heat Input	°C	31.0	-
Flue gasses flow rate at Maximum Heat Input	kg/h	880	-
Flue gasses flow rate at Minimum Heat Input	kg/h	36.3	-
CO ₂ at the Maximum Heat Input	%	9.1	10.6
CO ₂ at the Minimum Heat Input	%	9.1	10.2
CO at Maximum Heat Input	mg/kWh	93.1	-
CO at Minimum Heat Input	mg/kWh	1.4	-
NO _x at the Maximum Heat Input	mg/kWh	68	-
NO _x at the Minimum Heat Input	mg/kWh	46	-
Weighted CO	mg/kWh	26.3	-
Weighted NO _x	mg/kWh	47	-
NO _x class	-	5	5
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	91.7	

- Gas flow rates refer to the NHV at the temperature of 15° C and pressure of 1013 mbar.
- Flue gasses temperature values refer to an air inlet temperature of 15°C and flow temperature of 80°C.
- The maximum sound level emitted during boiler operation is < 49dBA. The sound level value is referred to semianechoic chamber tests with boiler operating at max. heat input, with extension of flue gas exhaust system according to product standards.

34.7
ARES 660 TEC ErP COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60°C)	%	98.28	98.28
Combustion efficiency P min (80/60°C)	%	98.43	98.43
Effective efficiency at 100% Pn (80/60°C)	%	98.21	98.21
Effective efficiency P min (80/60°C)	%	93.5	93.5
Effective efficiency at 100% Pn (50/30°C)	%	103.4	103.4
Effective efficiency P min (50/30°C)	%	108.8	108.8
Chimney losses with burner on (100% Pn) (80/60°C)	%	1.72	1.72
Chimney losses with burner on (P min) (80/60°C)	%	1.57	1.57
Chimney losses with burner off	%	0.1	0.1
Casing losses with burner on (100% Pn) (80/60°C)	%	0.1	0.1
Casing losses with burner on (P min) (80/60°C)	%	4.93	4.93
Casing losses with burner off	%	0.1	0.1
Flue gasses temperature Maximum Heat Input	°C	45.5	-
Flue gasses temperature Minimum Heat Input	°C	31.0	-
Flue gasses flow rate at Maximum Heat Input	kg/h	1057	-
Flue gasses flow rate at Minimum Heat Input	kg/h	36.3	-
CO ₂ at the Maximum Heat Input	%	9.1	10.6
CO ₂ at the Minimum Heat Input	%	9.1	10.2
CO at Maximum Heat Input	mg/kWh	93.1	-
CO at Minimum Heat Input	mg/kWh	1.4	-
NO _x at the Maximum Heat Input	mg/kWh	68	-
NO _x at the Minimum Heat Input	mg/kWh	46	-
Weighted CO	mg/kWh	26.3	-
Weighted NO _x	mg/kWh	47	-
NO _x class	-	5	5
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	110	

- Gas flow rates refer to the NHV at the temperature of 15° C and pressure of 1013 mbar.
- Flue gasses temperature values refer to an air inlet temperature of 15°C and flow temperature of 80°C.
- The maximum sound level emitted during boiler operation is < 49dBA. The sound level value is referred to semianechoic chamber tests with boiler operating at max. heat input, with extension of flue gas exhaust system according to product standards.

ARES 440 - 900 TEC ErP

34.8 ARES 770 TEC ErP COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60°C)	%	98.28	98.28
Combustion efficiency P min (80/60°C)	%	98.43	98.43
Effective efficiency at 100% Pn (80/60°C)	%	98.21	98.21
Effective efficiency P min (80/60°C)	%	93.5	93.5
Effective efficiency at 100% Pn (50/30°C)	%	103.6	103.6
Effective efficiency P min (50/30°C)	%	108.8	108.8
Chimney losses with burner on (100% Pn) (80/60°C)	%	1.72	1.72
Chimney losses with burner on (P min) (80/60°C)	%	1.57	1.57
Chimney losses with burner off	%	0.1	0.1
Casing losses with burner on (100% Pn) (80/60°C)	%	0.1	0.1
Casing losses with burner on (P min) (80/60°C)	%	4.93	4.93
Casing losses with burner off	%	0.1	0.1
Flue gasses temperature Maximum Heat Input	°C	45.5	-
Flue gasses temperature Minimum Heat Input	°C	31.0	-
Flue gasses flow rate at Maximum Heat Input	kg/h	1233	-
Flue gasses flow rate at Minimum Heat Input	kg/h	36.3	-
CO ₂ at the Maximum Heat Input	%	9.1	10.6
CO ₂ at the Minimum Heat Input	%	9.1	10.2
CO at Maximum Heat Input	mg/kWh	93.1	-
CO at Minimum Heat Input	mg/kWh	1.4	-
NO _x at the Maximum Heat Input	mg/kWh	68	-
NO _x at the Minimum Heat Input	mg/kWh	46	-
Weighted CO	mg/kWh	26.3	-
Weighted NO _x	mg/kWh	47	-
NO _x class	-	5	5
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	128.4	

- Gas flow rates refer to the NHV at the temperature of 15° C and pressure of 1013 mbar.
- Flue gasses temperature values refer to an air inlet temperature of 15°C and flow temperature of 80°C.
- The maximum sound level emitted during boiler operation is < 49dBA. The sound level value is referred to semianechoic chamber tests with boiler operating at max. heat input, with extension of flue gas exhaust system according to product standards.

34.9
ARES 900 TEC ErP COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60°C)	%	98.30	98.30
Combustion efficiency P min (80/60°C)	%	98.43	98.43
Effective efficiency at 100% Pn (80/60°C)	%	98.21	98.21
Effective efficiency P min (80/60°C)	%	93.5	93.5
Effective efficiency at 100% Pn (50/30°C)	%	104.2	104.2
Effective efficiency P min (50/30°C)	%	108.8	108.8
Chimney losses with burner on (100% Pn) (80/60°C)	%	1.70	1.70
Chimney losses with burner on (P min) (80/60°C)	%	1.57	1.57
Chimney losses with burner off	%	0.1	0.1
Casing losses with burner on (100% Pn) (80/60°C)	%	0.1	0.1
Casing losses with burner on (P min) (80/60°C)	%	4.93	4.93
Casing losses with burner off	%	0.1	0.1
Flue gasses temperature Maximum Heat Input	°C	45.3	-
Flue gasses temperature Minimum Heat Input	°C	31.0	-
Flue gasses flow rate at Maximum Heat Input	kg/h	1409	-
Flue gasses flow rate at Minimum Heat Input	kg/h	36.3	-
CO ₂ at the Maximum Heat Input	%	9.1	10.6
CO ₂ at the Minimum Heat Input	%	9.1	10.2
CO at Maximum Heat Input	mg/kWh	93.1	-
CO at Minimum Heat Input	mg/kWh	1.4	-
NO _x at the Maximum Heat Input	mg/kWh	68	-
NO _x at the Minimum Heat Input	mg/kWh	46	-
Weighted CO	mg/kWh	26.3	-
Weighted NO _x	mg/kWh	47	-
NO _x class	-	5	5
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	146.7	

- Gas flow rates refer to the NHV at the temperature of 15° C and pressure of 1013 mbar.
- Flue gasses temperature values refer to an air inlet temperature of 15°C and flow temperature of 80°C.
- The maximum sound level emitted during boiler operation is < 49dBA. The sound level value is referred to semianechoic chamber tests with boiler operating at max. heat input, with extension of flue gas exhaust system according to product standards.

ARES TEC ErP

35 TECHNICAL PARAMETERS FOR COMBINATION BOILERS (REGULATION 813/2013)

Efficiencies in the following tables refer to the gross calorific value.

Model/s:				ARES 150 TEC ErP					
Condensing Boilers:				YES					
Low temperature boiler:				NO					
Boiler type B1:				NO					
Co-generation appliance for central heating:				NO		Fitted with supplementary heating system:		NO	
Mixed heating appliance:				NO					
Element	Symbol	Value	Unit	Element	Symbol	Value	Unit		
Nominal heat output	P_n	146	kW						
For central heating only and combination boilers: useful heat output				For central heating only and combination boilers: useful efficiency					
At nominal heat output in high temperature mode (*)	P_4	146.1	kW	At nominal heat output in high temperature mode (*)	η_4	87.7	%		
At 30% of nominal heat output in a low temperature mode (**)	P_1	49.3	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	96.7	%		
Auxiliary electricity consumption				Other items					
At full load	el_{max}	0.210	kW	Heat loss in standby	P_{stby}	0.94	kW		
At partial load	el_{min}	0.040	kW	Ignition burner energy consumption	P_{ign}	0.000	kW		
In standby mode	P_{SB}	0.000	kW	Emissions of nitrogen oxides	NO_x	54	mg / kWh		
For mixed central heating appliances									
Stated load profile				Domestic hot water production efficiency		η_{WH}	%		
Daily electrical power consumption				Q_{elec}	kWh	Daily gas consumption		Q_{fuel}	kWh
Contact information				IMMERGAS S.p.A. VIA CISA LIGURE, 95 - 42041 BRESCELLO (RE) ITALY					
(*) High temperature mode means 60°C on return and 80°C on flow.									
(**) Low temperature mode for condensation Boilers means 30°C , for low temperature boilers 37°C and for other appliances 50°C of return temperature.									

Efficiencies in the following tables refer to the gross calorific value.

Model/s:				ARES 200 TEC ErP					
Condensing Boilers:				YES					
Low temperature boiler:				NO					
Boiler type B1:				NO					
Co-generation appliance for central heating:				NO		Fitted with supplementary heating system:		NO	
Mixed heating appliance:				NO					
Element	Symbol	Value	Unit	Element	Symbol	Value	Unit		
Nominal heat output	P_n	195	kW						
For central heating only and combination boilers: useful heat output				For central heating only and combination boilers: useful efficiency					
At nominal heat output in high temperature mode (*)	P_4	195.2	kW	At nominal heat output in high temperature mode (*)	η_4	87.5	%		
At 30% of nominal heat output in a low temperature mode (**)	P_1	64.4	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	96.7	%		
Auxiliary electricity consumption				Other items					
At full load	el_{max}	0.290	kW	Heat loss in standby	P_{stby}	0.98	kW		
At partial load	el_{min}	0.040	kW	Ignition burner energy consumption	P_{ign}	0.000	kW		
In standby mode	P_{SB}	0.010	kW	Emissions of nitrogen oxides	NO_x	54	mg / kWh		
For mixed central heating appliances									
Stated load profile				Domestic hot water production efficiency		η_{WH}	%		
Daily electrical power consumption				Q_{elec}	kWh	Daily gas consumption		Q_{fuel}	kWh
Contact information				IMMERGAS S.p.A. VIA CISA LIGURE, 95 - 42041 BRESCELLO (RE) ITALY					
(*) High temperature mode means 60°C on return and 80°C on flow.									
(**) Low temperature mode for condensation Boilers means 30°C , for low temperature boilers 37°C and for other appliances 50°C of return temperature.									

Efficiencies in the following tables refer to the gross calorific value.

Model/s:				ARES 250 TEC ErP					
Condensing Boilers:				YES					
Low temperature boiler:				NO					
Boiler type B1:				NO					
Co-generation appliance for central heating:				NO		Fitted with supplementary heating system:		NO	
Mixed heating appliance:				NO					
Element	Symbol	Value	Unit	Element	Symbol	Value	Unit		
Nominal heat output	P_n	240	kW						
For central heating only and combination boilers: useful heat output				For central heating only and combination boilers: useful efficiency					
At nominal heat output in high temperature mode (*)	P_4	244.5	kW	At nominal heat output in high temperature mode (*)	η_4	88.1	%		
At 30% of nominal heat output in a low temperature mode (**)	P_1	80.5	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	96.7	%		
Auxiliary electricity consumption				Other items					
At full load	el_{max}	0.362	kW	Heat loss in standby	P_{stby}	1.1	kW		
At partial load	el_{min}	0.040	kW	Ignition burner energy consumption	P_{ign}	0.000	kW		
In standby mode	P_{SB}	0.010	kW	Emissions of nitrogen oxides	NO_x	54	mg / kWh		
For mixed central heating appliances									
Stated load profile				Domestic hot water production efficiency		η_{WH}	%		
Daily electrical power consumption				Q_{elec}	kWh	Daily gas consumption		Q_{fuel}	kWh
Contact information				IMMERGAS S.p.A. VIA CISA LIGURE, 95 - 42041 BRESCELLO (RE) ITALY					
(*) High temperature mode means 60°C on return and 80°C on flow.									
(**) Low temperature mode for condensation Boilers means 30°C , for low temperature boilers 37°C and for other appliances 50°C of return temperature.									

ARES TEC ErP

Efficiencies in the following tables refer to the gross calorific value.

Model/s:				ARES 300 TEC ErP				
Condensing Boilers:				YES				
Low temperature boiler:				NO				
Boiler type B1:				NO				
Co-generation appliance for central heating:				NO		Fitted with supplementary heating system:		NO
Mixed heating appliance:				NO				
Element	Symbol	Value	Unit	Element	Symbol	Value	Unit	
Nominal heat output	P_n	294	kW					
For central heating only and combination boilers: useful heat output				For central heating only and combination boilers: useful efficiency				
At nominal heat output in high temperature mode (*)	P_4	294.0	kW	At nominal heat output in high temperature mode (*)	η_4	88.3	%	
At 30% of nominal heat output in a low temperature mode (**)	P_1	96.6	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	96.7	%	
Auxiliary electricity consumption				Other items				
At full load	el_{max}	0.435	kW	Heat loss in standby	P_{stby}	1.15	kW	
At partial load	el_{min}	0.040	kW	Ignition burner energy consumption	P_{ign}	0.000	kW	
In standby mode	P_{SB}	0.010	kW	Emissions of nitrogen oxides	NO_x	54	mg / kWh	
For mixed central heating appliances								
Stated load profile				Domestic hot water production efficiency		η_{WH}	%	
Daily electrical power consumption				Q_{elec}	Daily gas consumption		Q_{fuel}	
Contact information				IMMERGAS S.p.A. VIA CISA LIGURE, 95 - 42041 BRESCELLO (RE) ITALY				
(*) High temperature mode means 60°C on return and 80°C on flow.								
(**) Low temperature mode for condensation Boilers means 30°C, for low temperature boilers 37°C and for other appliances 50°C of return temperature.								

Efficiencies in the following tables refer to the gross calorific value.

Model/s:				ARES 350 TEC ErP				
Condensing Boilers:				YES				
Low temperature boiler:				NO				
Boiler type B1:				NO				
Co-generation appliance for central heating:				NO		Fitted with supplementary heating system:		NO
Mixed heating appliance:				NO				
Element	Symbol	Value	Unit	Element	Symbol	Value	Unit	
Nominal heat output	P_n	342	kW					
For central heating only and combination boilers: useful heat output				For central heating only and combination boilers: useful efficiency				
At nominal heat output in high temperature mode (*)	P_4	341.7	kW	At nominal heat output in high temperature mode (*)	η_4	88.5	%	
At 30% of nominal heat output in a low temperature mode (**)	P_1	112.0	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	96.7	%	
Auxiliary electricity consumption				Other items				
At full load	el_{max}	0.507	kW	Heat loss in standby	P_{stby}	1.39	kW	
At partial load	el_{min}	0.040	kW	Ignition burner energy consumption	P_{ign}	0.000	kW	
In standby mode	P_{SB}	0.010	kW	Emissions of nitrogen oxides	NO_x	54	mg / kWh	
For mixed central heating appliances								
Stated load profile				Domestic hot water production efficiency		η_{WH}	%	
Daily electrical power consumption				Q_{elec}	Daily gas consumption		Q_{fuel}	
Contact information				IMMERGAS S.p.A. VIA CISA LIGURE, 95 - 42041 BRESCELLO (RE) ITALY				
(*) High temperature mode means 60°C on return and 80°C on flow.								
(**) Low temperature mode for condensation Boilers means 30°C, for low temperature boilers 37°C and for other appliances 50°C of return temperature.								

Hydraulic Kits for hydraulic separator	
INAIL safety kit including circulator pump and hydraulic separator for 150 kW code 3.023645	INAIL safety kit including circulator pump and hydraulic separator for 200-250 kW code 3.023646
INAIL safety kit including circulator pump and hydraulic separator for 300-350 kW code 3.023647	INAIL safety kit including circulator pump and hydraulic separator for 440-770 kW code 3.023648
INAIL safety kit including circulator pump and hydraulic separator for 900 kW code 3.023649	INAIL safety kit with filter for 150-350 kW code 3.023656
INAIL safety kit with filter for 440-770 kW code 3.023657	INAIL safety kit with filter for 900 kW code 3.023658
Hydraulic separator kit for 150-350 kW code 3.023659	Hydraulic separator kit for 440-900 kW code 3.023660
External covering kit for INAIL kit and hydraulic separator of 150-350 kW code 3.023670	External covering kit for INAIL kit and hydraulic separator of 440-900 kW code 3.023671
Hydraulic Kits for plate heat exchanger	
INAIL safety kit including circulator pump and plate heat exchanger for 150-200 kW code 3.023650	INAIL safety kit including circulator pump and plate heat exchanger for 250-350 kW code 3.023651
INAIL safety kit including circulator pump and plate heat exchanger for 440-550 kW code 3.023652	INAIL safety kit including circulator pump and plate heat exchanger for 660 kW code 3.023653
INAIL safety kit including circulator pump and plate heat exchanger for 770 kW code 3.023654	INAIL safety kit including circulator pump and plate heat exchanger for 900 kW code 3.023655
External covering kit for INAIL kits and plate heat exchanger of 150-350 kW code 3.023672	External covering kit for INAIL kits and plate heat exchanger of 440-90 kW code 3.023673

ARES TEC ErP

Flue exhaust kit	
Rear flue exhaust kit Ø 150 for ARES 150-200 TEC ErP code 3.023701	Rear flue exhaust kit Ø 200 for ARES 250-300-350 TEC ErP code 3.023674
Side flue outlet support kit (for all models) code 3.023675	
Condensate drain management kit	
Condensate passivator kit up to 1500 kW (includes a complete granulate charge) code 3.023662	Granulate kit for condensate passivator (25 kg) code 3.023663
Kit for heat adjustment	
Cascade regulator kit (enables up to 8 generators in battery to be managed) code 3.023667	Expansion kit for zone management (it enables to manage 2 more direct/mixed zones up to a maximum of 7 expansions that can be connected by bifilar connection) code 3.023664
Modulating zone manager kit (enables to manage and display parameters of the single zone excluding the relative menu from the TGC) code 3.023665	Modulating room thermostat kit (enables to partially adjust the room temperature from the installation room without excluding the relative menu from the TGC) code 3.023666
System flow probe kit (also enables management of zone 1 of the TGC as a mixed zone or to control the temperature of the D.H.W. water in a solar thermal integrator storage tank) code 3.023700	Probe kit for solar manifold temperature code 1.028812
Wall mounted support kit for cascade regulator code 3.023668	Modem connection interface and remote management kit (does not include connection modem)* code 3.023669

*A free software is available for download online. For further information contact our customer service.

(Directives 2009/142/CE « Appareils à gaz » et 92/42/CE « Rendement des chaudières »)
 (« Gas appliances » 2009/142/EC and 92/42/EC « Boilers efficiency » Directives)

CERTIGAZ, atteste que les appareils mis sur le marché par la Société :
 CERTIGAZ, attests that appliances marketed by :

IMMERGAS
Via Cisa Ligure, 95
I-42041 BRESCELLO (RE)

- Genre de l'appareil : CHAUDIERE A CONDENSATION
 Kind of the appliance : (Types : B23P, C63)
 CONDENSING BOILER
 (Types : B23P, C63)

Marque commerciale et modèles <i>Trade mark and models</i>	Sont couverts par les certificats d'examen CE de type suivants <i>Are within the scope of subsequent EC type examination certificates</i>	Pays de destination <i>Destination countries</i>	Label Label
IMMERGAS - ALPHA > ARES 150 Tec ErP > ARES 200 Tec ErP > ARES 250 Tec ErP > ARES 300 Tec ErP > ARES 350 Tec ErP	1312BT6287 (rév.9)	FR-ES-GB-IE IT-PT-GR-SE-NO SI-DE-HU-AT-CH TR-HR-CZ-SK-LV EE-LT-BE-NL-BG RO-PL-LU-BA	4★

sont conformes aux exigences essentielles des directives « Appareils à gaz »
 2009/142/CE et « Rendement des chaudières » 92/42/CE.

are in conformity with the essential requirements directives of the « Gas appliances »
 2009/142/EC and « Boiler efficiency » 92/42/EC.

Toute reproduction de cette attestation doit être dans son intégralité.

1/1

Reproduction of this attestation must be in full.

Le Directeur Général

Neuilly, le 12 octobre 2016



Vincent DELARUE

Attestation

(Directives 2009/142/CE « Appareils à gaz » et 92/42/CE « Rendement des chaudières »)
 (« Gas appliances » 2009/142/EC and 92/42/EC « Boilers efficiency » Directives)

CERTIGAZ, atteste que les appareils mis sur le marché par la Société :
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IMMERGAS - ALPHA > ARES 440 Tec ErP > ARES 550 Tec ErP > ARES 660 Tec ErP > ARES 770 Tec ErP > ARES 900 Tec ErP	1312BS4959	FR-ES-GB-IE IT-PT-GR-SE-NO SI-DE-HU-AT-CH TR-HR-CZ-SK-LV EE-LT-BE-NL-BG RO-PL-LU-BA	4*

sont conformes aux exigences essentielles des directives « Appareils à gaz » 2009/142/CE et « Rendement des chaudières » 92/42/CE.
 are in conformity with the essential requirements directives of the « Gas appliances » 2009/142/EC and « Boiler efficiency » 92/42/EC.

Toute reproduction de ce certificat doit être dans son intégralité. Reproduction of this certificate must be in full. 1/1

Le Directeur Général

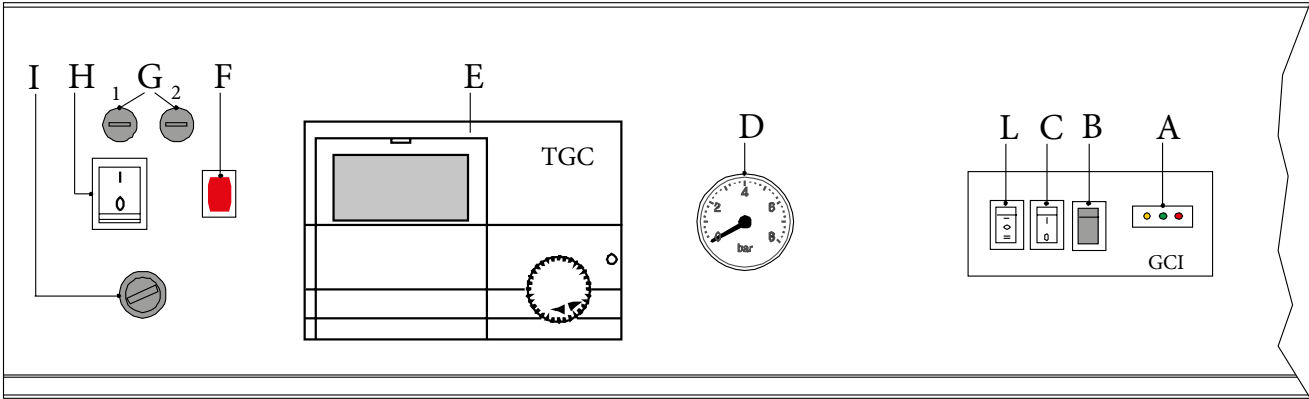

 Vincent DELARUE



Neuilly, le 14 septembre 2015

HEAT ADJUSTMENT APPENDIX

37 CONTROL PANEL



A	YELLOW LED = flashing (communication between SDE and GCI) ok GREEN LED = on (Pump On) RED LED = on (Error Code detected)
B	This allows you to re-arm the burners anytime they do not respond to controls, is an emergency RESET in addition to the one present on the "TGC" board
C	In "I" position the control unit operates on request at "CONSTANT SETPOINT": 70°C. maximum power 50%, the emergency function is therefore enabled (it is normally left on "0" to notice any "TGC" anomalies)
D	Water pressure gauge (optional)
E	"TGC" boiler heat adjuster manager control panel
F	TLG General Limit Thermostat trigger light (not present on models 150-200-250-300)
G	Fuses: 1 = 6.3 A / 2 = 10 A
H	Main Switch
I	When TLG General Limit Thermostat comes on it cuts off power to the boiler and light F comes on. To re-arm it, take off the cap and press (this thermostat is not present on models 150-200-250-300)
L	Parallel series selector: 0 = Emergency active, the "TGC" is deactivated and the option for emergency operation (with "GCI") is enabled I = Do not use (in this position the "GCI" board manages module cascade) II = Parallel (correct supply position), this position is recommended during normal operation, in this way the "TGC" board manages the generator alongside the "GCI"

Access to the generator controls is extremely simple, by pushing the top cover, a perfect pneumatic system with gas shock absorbers lifts the waterproof generator cover, making the control panel accessible as shown in the picture above, additionally a safety lock screw prevents unwanted tampering. The ARES TEC ErP heat adjustment has been designed on two levels, represented by as many standard boiler devices: the "TGC"

boiler heat adjuster manager and the "GCI" management board, the main features of which are described below. To these the management boards of the single elements are added (SDE).

ARES TEC ErP

TGC boiler heat-adjuster/manager

Standard set-up for managing:

- 1 direct heating circuit.
- 1 mixed heating circuit 1.
- 1 DHW circuit.
- 1 potential DHW recirculation pump.

To assure complete operation of the ARES TEC ErP heat adjustment system and of the zones, the generator is provided with:

- 1 external probe.
- 1 system zone flow probe (e.g. for mixed zone 2).
- 1 storage tank probe (for the storage tank load pump or 3 way diverter valve command).

In addition to communicating with the boiler, thanks to its features, the boiler operator (TGC) enables complete management of the thermal system, utilising the maximum condensation and power modulation achievable.

By using temperature probes (optional), a solar circuit can also be managed (only as an alternative to recirculation) and the second heating circuit as mixed instead of direct (the maximum is always 2 zones).

For more complex systems, the expansion kit for zone management can be added (optional).

Therefore it manages the system's request (requests from active zones and operation and flowing temperature).

Programming:

Program settings

Timetables can be set daily or weekly with multiple turns on and off or reductions throughout the day.

Multiple zones control

With the same heat adjustment 2 independent circuits with different characteristics can be controlled, having assured all of the functions described, including deep flowing temperature operation.

Managing up to 17 circuits

Through expansion kits (up to 7 expansions) a max. of 15 heating circuits + 1 D.H.W. circuit + 1 solar circuit can be managed.

0÷10 volt door

It also enables the power of the generator to be piloted via a special "0-10 Volt" input door. This will enable, if having an even more complex system (e.g. home automation systems) to take advantage of all adjustment capabilities.

System optimisation functions:

Optimisation

The heat adjustment, based on the user set times and having evaluated the system's characteristics, will proceed with or without early warning to ignition or changes in the flame speed to assure comfort temperature at the time required by the user.

Quickly reaching temperature

Is achieved via calculating the optimal early ignition. The pre-ignition calculation can be performed based on the outdoor temperature or on room temperature.

Overheating

Control of the generator safety temperature is assured via the post-operation of the pumps in order to dispose of any thermal inertia.

Auto-adapting

Through the processing of data sent by the environment probe, the function adapts the power of the generator to the characteristics of the building to assure constant temperature monitoring upon external temperature variation, taking into account the thermal inertia of the building and of the "free" heat inputs (solar irradiation, internal heat sources).

Boiler timers optimisation

Boiler temperature optimisation or central heating bends gradient.

Valve opening time

Offers the option of adjusting opening or closing times of a mixing valve.

Number of burner ignitions

Balances the number of ignitions for each single element's burner.

Burner operation time

Balances operation hours of each burner.

Antifreeze protection

Prevents, via automatic heating cycle, the system from freezing. In antifreeze mode, the room temperature for all heating circuits is 5°C and the alarm temperature for the preparation of the D.H.W. water is 10°C.

Second storage tank

This provides the possibility of using one of the heating zones for the preparation of a second storage tank.

Parallel pump operation

Provides the possibility of keeping the heating pumps running, even during DHW production.

Pool heating set-up

Provides the option of using one of the heating zones to manage a pool.

Domestic Hot Water Management:

D.H.W. water production

Various programs manage D.H.W. water production. You can opt from maximum comfort to maximum economy. For rapid storage tank set-up, the heat adjustment brings the boiler temperature to the maximum set value.

Antilegionella

60°C heating of storage tank temperature every 20 heating cycles or at least once per week on Saturday at 1pm. This procedure eliminates any pathogen elements that formed in the A.C.S. storage tank

Storage tank load pump optimisation

The load pump is installed only of storage tank temperature passes 5°C above storage tank temperature. It is deactivated with boiler temperature lower than storage tank temperature or with storage tank temperature higher than nominal temperature.

Renewable energy management:

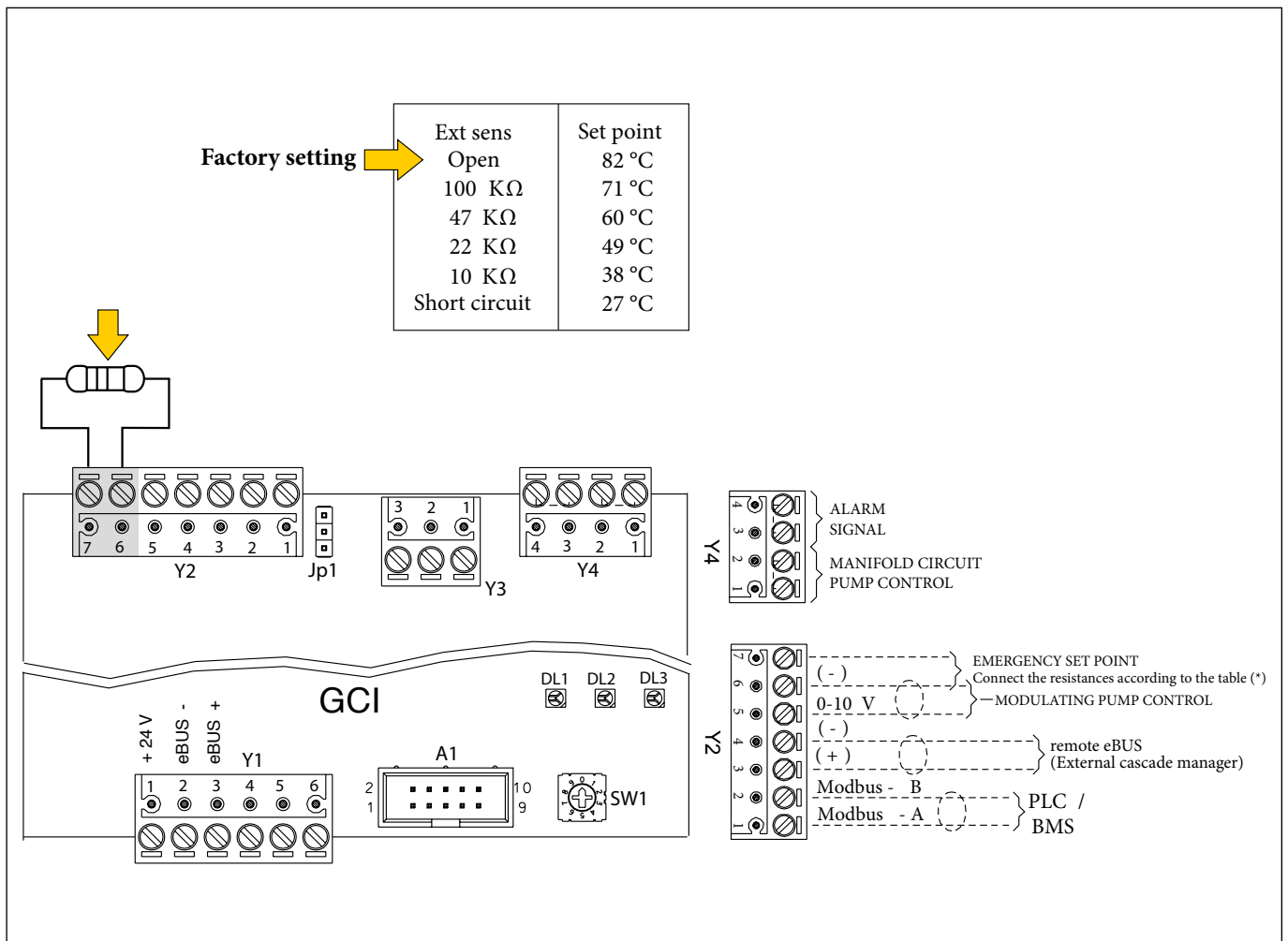
The manager has a specific parameter setting section for integration with renewable energy systems such as solar systems.

“GCI” management board.

The “GCI” management board is used to:

- have a back-up control unit available in case of anomalies on the main TGC” control unit, thus preventing the system from shutting down;
- provide double safety of operation (emergency activation in the event of “TGC” boiler heat adjuster-manager failure with request command at selectable temperature via resistances, with maximum power at 50%);
- manage the modulating pump (0-10 V analogue output) with significant increase in performance at low loads;
- switching on a pump at a fixed speed via control relay;
- manage and reset alarms (usable in addition to the Reset present on the “TGC”);
- remotely send alarms via relay;
- monitor operation status of the system via remote management system (via Modbus).

“GCI” terminal board connection diagrams.



ARES TEC ErP

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EXPANSION KIT FOR ZONE MANAGEMENT (CODE 3.023664)



It enables to manage 2 direct/mixed zones up to a maximum of 7 expansions, that can be connected via 4 cables via CANBUS (L/H/+/-) connection with a maximum length of 250 meters.

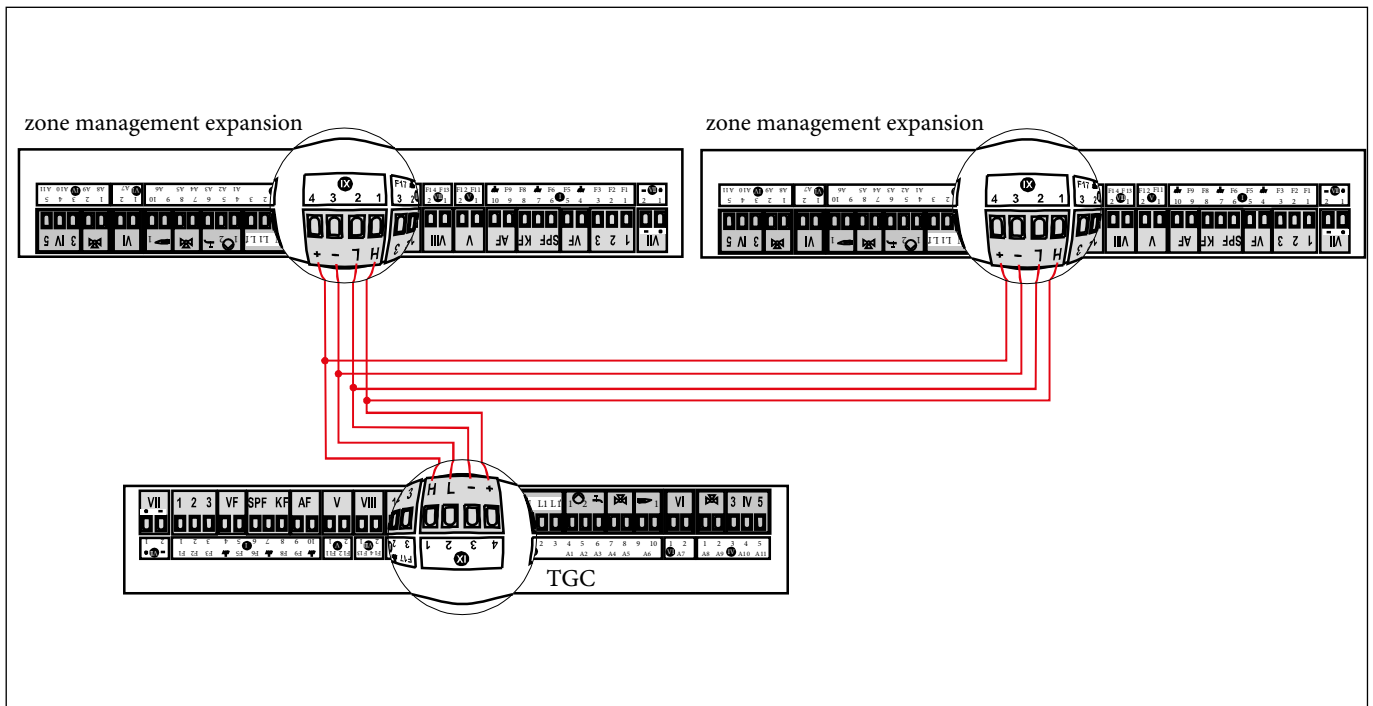
In total, also considering the circuits controlled with the boiler heat adjuster manager, up to 15 heating circuits + 1 D.H.W. circuit + 1 solar circuit (total 17 circuits) can be managed.

The expansion kit is externally similar to the boiler heat adjuster manager, it changes the connection terminal board and the management software functions (more limited than the boiler manager which is still in command of the internal element cascade).

It already includes 2 standard system flow probes.

As with the boiler heat adjuster manager, control of the heating zones can take place via TA On-Off, TA Modulators or via modulating zone Manager.

Zone management expansion kit electrical connection.



39 MODULATING ROOM THERMOSTAT KIT (CODE 3.023666)



The modulating room thermostats (not traditional On/Off) functions when coupled with the ARES TEC ErP heat adjustment systems and enables regulation of the room temperature of one of the zones into which the plant is divided.

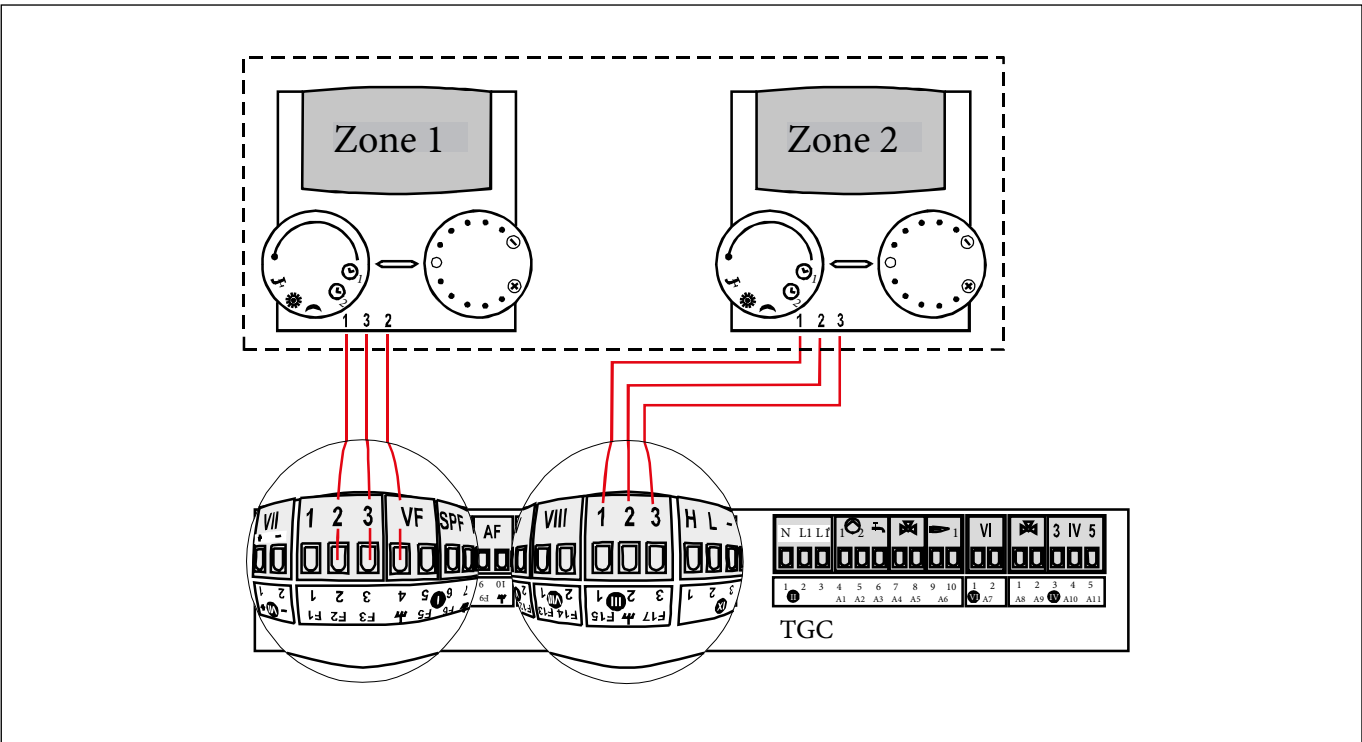
The zone room temperature regulation curve can be regulated by operating directly on the “TGC” boiler heat adjuster manager. The modulating room thermostat is powered directly by the boiler heat adjuster manager or by the cascade regulator via 3 wires.

39.1 FEATURES

The connection to the boiler is achieved with 3 wires with maximum length of 250 metres and enables to:

- manage a zone to maximum;
- vary the room temperature of the zone;
- select the operation mode for heating the zone:

- 2 types of automatic operations managed by the “TGC” boiler manager,
- fixed comfort temperature operation,
- fixed reduced temperature operation,
- summer operation (central heating OFF, only for D.H.W.).



ARES TEC ErP

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MODULATING ZONE MANAGER KIT (CODE 3.023665)



The modulating zone manager operates in conjunction with ARES TEC ErP heat adjustment systems.

Thanks to the modulating zone manager, various control functions as well as control of the thermal system values can be transferred to the room, thus achieving maximum comfort. The climate chrono-thermostat incorporated into the remote panel enables the system flow temperature to be adjusted to the actual needs of the room being heated, in order to obtain the desired room temperature with extreme precision and therefore with evident saving in running costs. It also enables the display and setting of the parameters of the single zone, excluding the relevant menu from the "TGC".

40.1

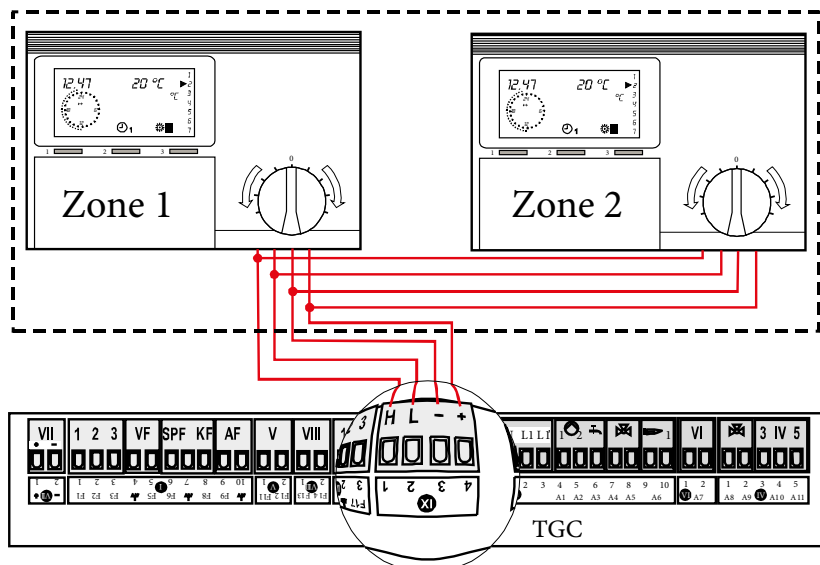
FEATURES

Connection is achieved via 4 cables and CANBUS connection (L/H/+/-) with maximum length of 250 metres and enables to:

- manage a zone to maximum;
- vary the room temperature of the zone.
- select the ECO operating mode (heating time cut-off).
- select the PARTY operating mode (heating time increase).
- select the operation mode for heating the zone:
 - 2 types of automatic operation,
 - fixed comfort temperature operation,
 - fixed reduced temperature operation,
 - summer operation (central heating OFF, only for D.H.W.).
- manage the D.H.W. temperature (with a storage tank unit managed as zone);
- manage the boiler flow temperature depending on the external temperature and the room temperature with setting of the

- climatic curve;
- obtain various information regarding the system.
- show on the display, via self-diagnosis system, any operational anomalies with error codes;
- show the date, time, day of the week and the room temperature on the display.
- set the operation parameters.

Different system settings can still be selected and system customisation such as for the "TGC" boiler heat adjuster-manager by excluding its menu in the generator.



By adding the cascade regulator kit, from 2 to 8 ARES TEC ErP can be managed via simple connection.

Connection is achieved via 4 cables and CANBUS connection (L/H/+/-) with maximum length of 250 metres.

With more generators installed in the battery, the cascade control kit keeps most ARES TEC ErP on at as little power as possible. Thanks to this peculiarity, the system will always provide maximum performance, when power changes.

The standard "TGC" supplied with the ARES TEC ErP operates with the same principle: when the load will gradually decrease, the power of each boiler will also be adjusted and reduced proportionally. Since the minimum power of each element is 12 kW (mod. up to 350 kW), if the required power is less than the total minimum power of the individual elements (elements no. x 12 kW), only a few of them will be kept operational. Additionally, to assure a fair daily rotation, every 24 hours the ignition of the elements will alternate so that each one operates the same number of hours.

Ultimately, power is divided by the maximum number of available burners, in order to operate at maximum efficiency.

The number of operating hours is also shared on the individual modules (even during the modulation stage when the burners are turned off, actual hours of operation are taken into account, with possible changes - from time to time - in the shutdown sequence).

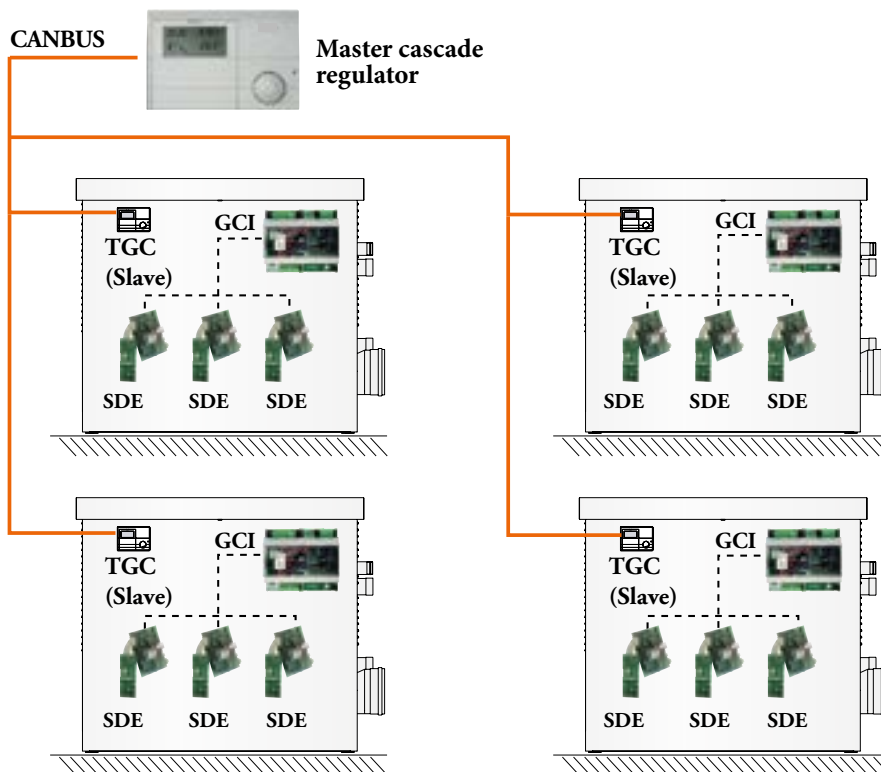
The cascade regulator kit includes temperature probes (common cascade boiler flow probe, external probe, mixed zone probe, storage tank probe): some probes are already present in the boiler, but for complete supply they are also supplied with this device. For a boiler set, the common flow probe to be positioned downstream of the battery near the compensator or plate heat exchanger is supplied with the cascade regulator kit (it is a marker probe).

Having more ARES TEC ErP installed in a set, if the boilers are interconnected and managed by the cascade regulator kit (up to 8 modules), a single external probe (which will be connected to the cascade regulator) will be sufficient. If the cascade regulator kit is not available, each boiler must have its own external probe.

Attention: in cascade installations, the heat adjuster-manager of each "TGC" (Slave) boiler only controls the single generator. All circuit-related connections (system flow probes, mixers, storage tank probe, solar probe) are performed on the Master cascade Regulator, which fully manages all programming for system circuit management such as: Central heating, D.H.W., Solar, User menu, Time program, etc...

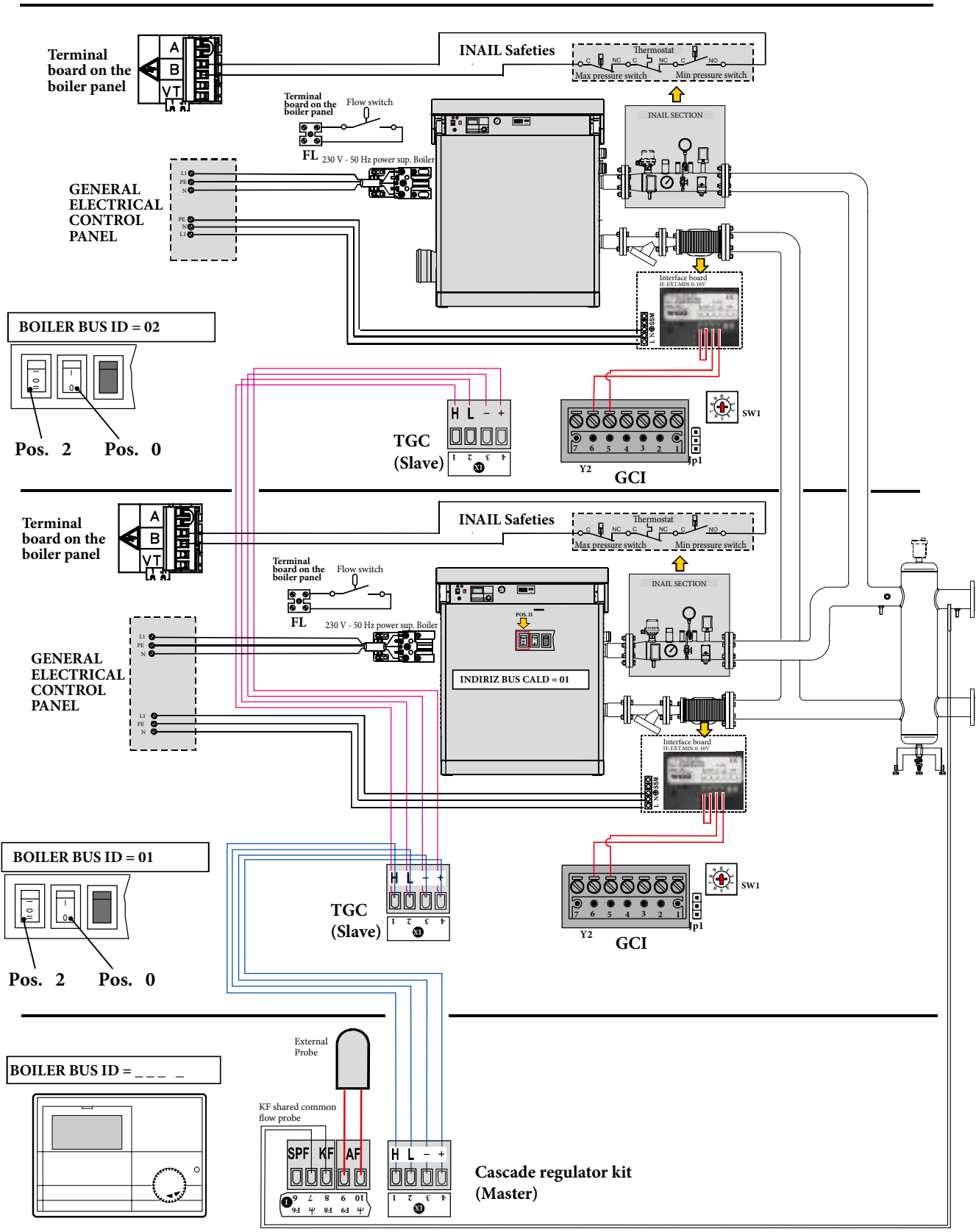
In case of additional heating circuits, individual circuit programs are performed on the individual expansions.

Boiler set managed by cascade regulator kit



ARES TEC ErP

Electrical connection in battery of 2 ARES TEC ErP managed by the cascade regulator kit.



**42 MODEM CONNECTION AND REMOTE MANAGEMENT INTERFACE KIT
(CODE 3.023669)**

With the interface kit for modem connection and remote control the single generator or cascade (downloadable software online for free) can be remotely managed.

The interface serves to establish direct or remote communication, via personal computer, with the boiler heat management control units.

COMFORTSOFT software is a user interface that simplifies system management via PC and can be downloaded free from the website:

www.comfort-controls.de

Remote management:

This offers the possibility of managing central heating systems by downloading, modifying and sending data, all from a station independent from the system.

The interface, connected to the control unit and appropriately set, enables the translation of the data, which will be later sent to a GSM modem or routed through a transmission cable, and then ready for transfer.

By connecting to the PC a GSM modem or routing with the same characteristics as that used for data transmission, after having properly installed the attached software (COMFORTSOFT software), communication can be initiated.

System error alerts via SMS:

It offers the possibility of being warned, with an SMS coming from the system, of a possible failure.

To receive the message on a mobile phone, enter the reference number (up to 10 mobile phones) and the corresponding



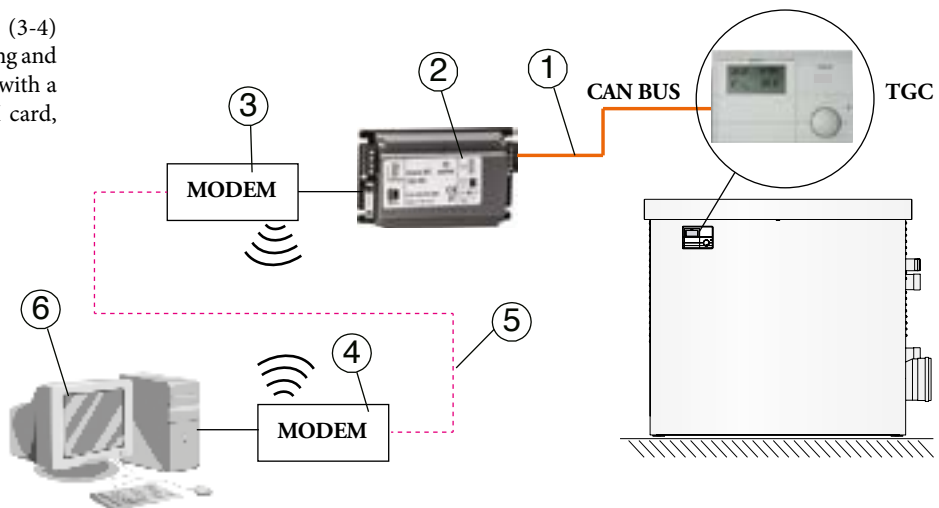
number of providers among those in a list at completion of the transmitting program.

The text that will be sent later in the event of an error can also be entered, for immediate acknowledgement of the error itself. Communication between the interface and the control unit is achieved via CANBUS (4-wire connection protocol).

The interface has an RS 232 port that is used to connect a GSM modem.

The interface can also manage multiple devices (e.g. "TGC" boiler heat adjuster-manager + expansion kit for additional zone management) and a single interface kit will always need to be used.

Note: two GSM or wired modems (3-4) (not supplied) are required for sending and receiving data, each of which fitted with a "DATA ONLY" (not supplied) SIM card, active and operational.

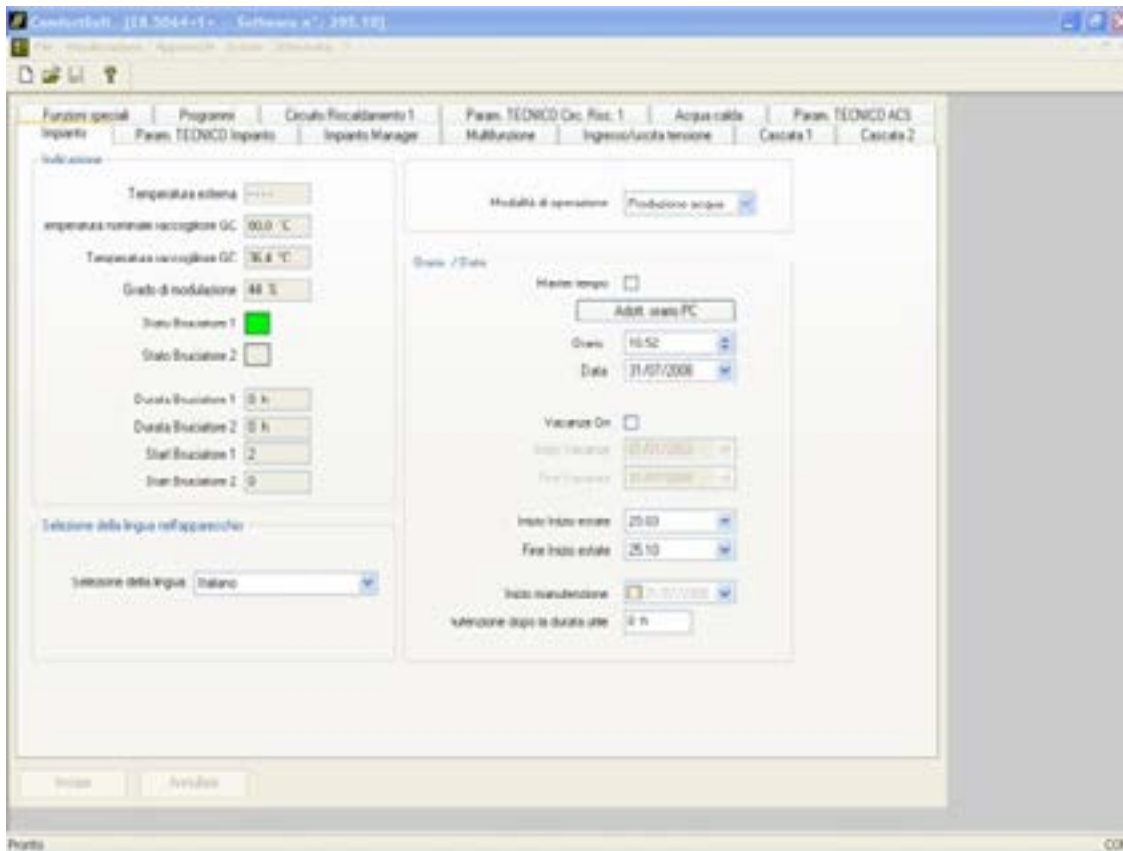


Key:

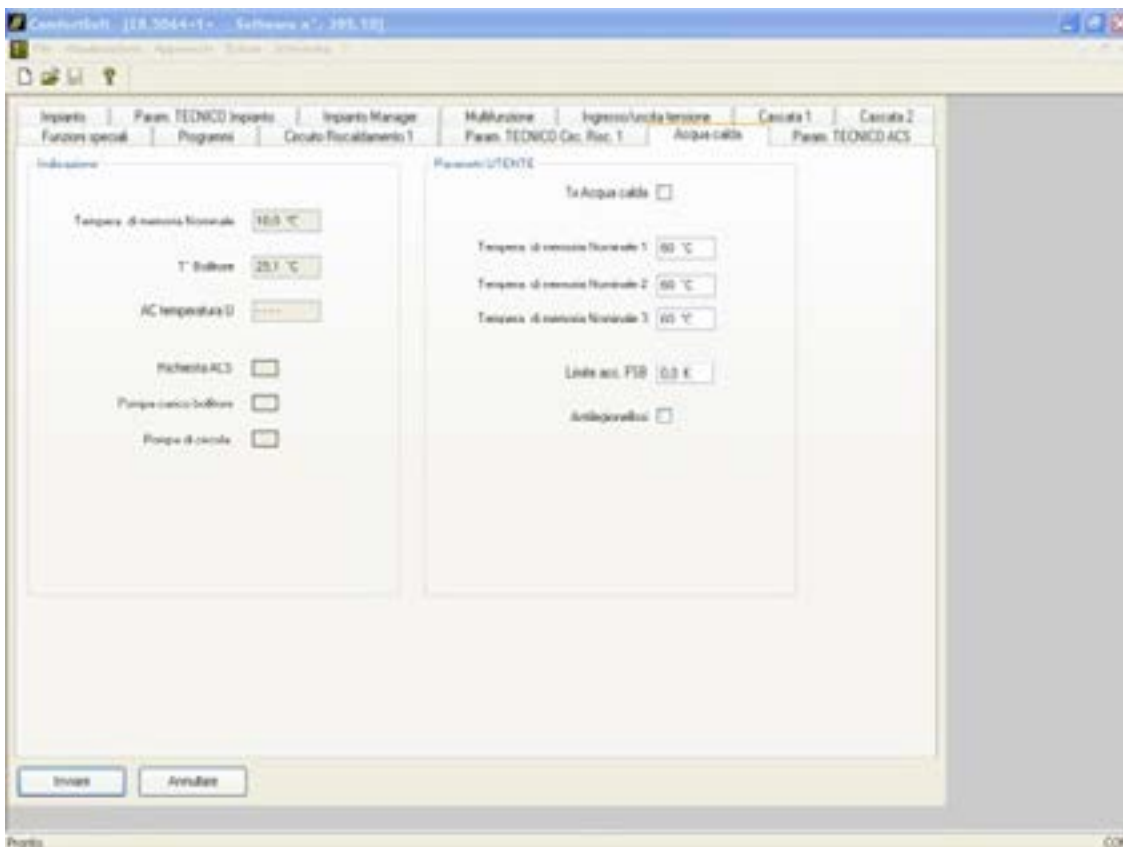
- 1 - CANBUS line to transmit data from boiler control unit to the interface
- 2 - Interface kit for translation and communication of data coming from the system
- 3 - GSM (or wired) modem connected to the interface to send data (not supplied by IMMERGAS)
- 4 - GSM (or wired) modem connected to the interface to receive data (not supplied by IMMERGAS)
- 5 - GSM or wired line
- 6 - Computer dedicated to receiving data and setting system parameters (not supplied by IMMERGAS)

ARES TEC ErP

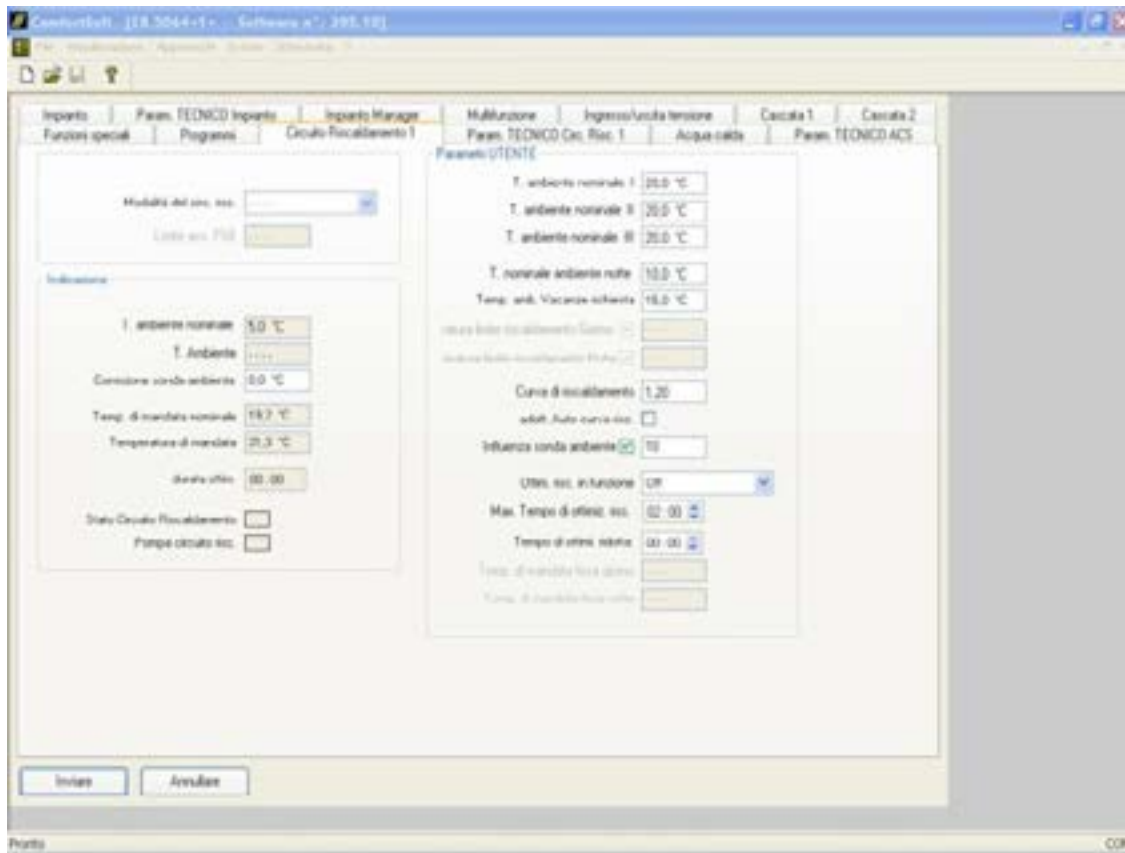
System data screen.



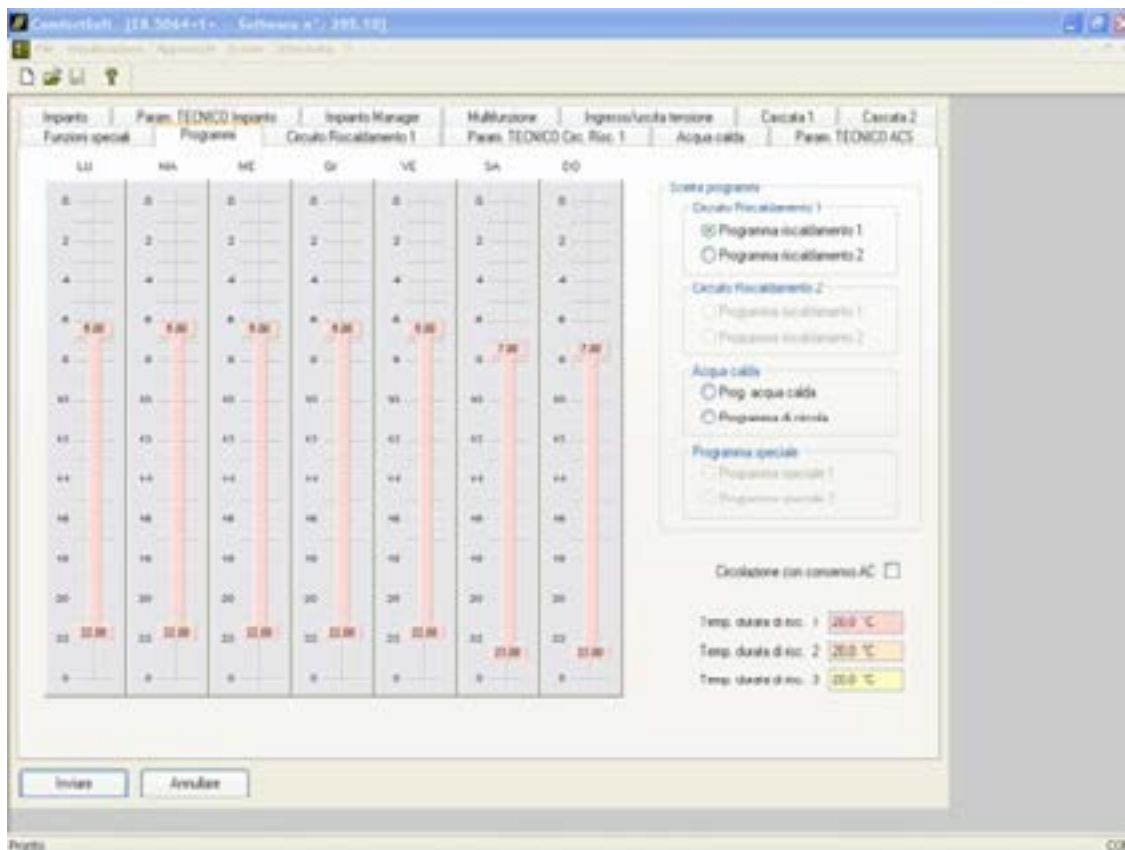
D.H.W. parameter screen.



Parameter screen for the central heating circuit.



Hours of operation screen.



ARES TEC ErP

Foreword:

The following pages provide examples (not exhaustive) of some of the most common configurations that can be set up with ARES TEC ErP.

The diagrams provided here are not working drawings and only serve the purpose of describing the hydraulic and/or electric operation of the system and its connections; this overview of system engineering applications does not provide a solution for all of the practical case studies that can be implemented, nor does it assume that the illustrated examples cannot be modified; it serves as a valid guideline.

Each system needs to be accurately sized by a professional;

Immergas will not be held liable for the failure to have a certified engineer inspect the project, who is also required to practice with good technique and in accordance with regulations in force.

Depending on the specific design and installation conditions, the diagrams and drawings provided in this documentation can require further integration or modifications, according to that envisioned by the Standards and technical regulations in force and applicable (as an example, Collection R - edition 2009 is stated).

It is the professional's responsibility to identify the provisions applicable, to evaluate the compatibility with these case by case and the necessity of any changes to drawings and elaborations.

To support reading, the main hydraulic diagrams of the possible configurations and later the wiring diagrams of the various zones and of the room heat adjustment devices are shown and reported.

The designer and the professional will still have to define the components required to develop the project, depending on the specific installation desired.

Specifically, the following pages show the following diagrams:

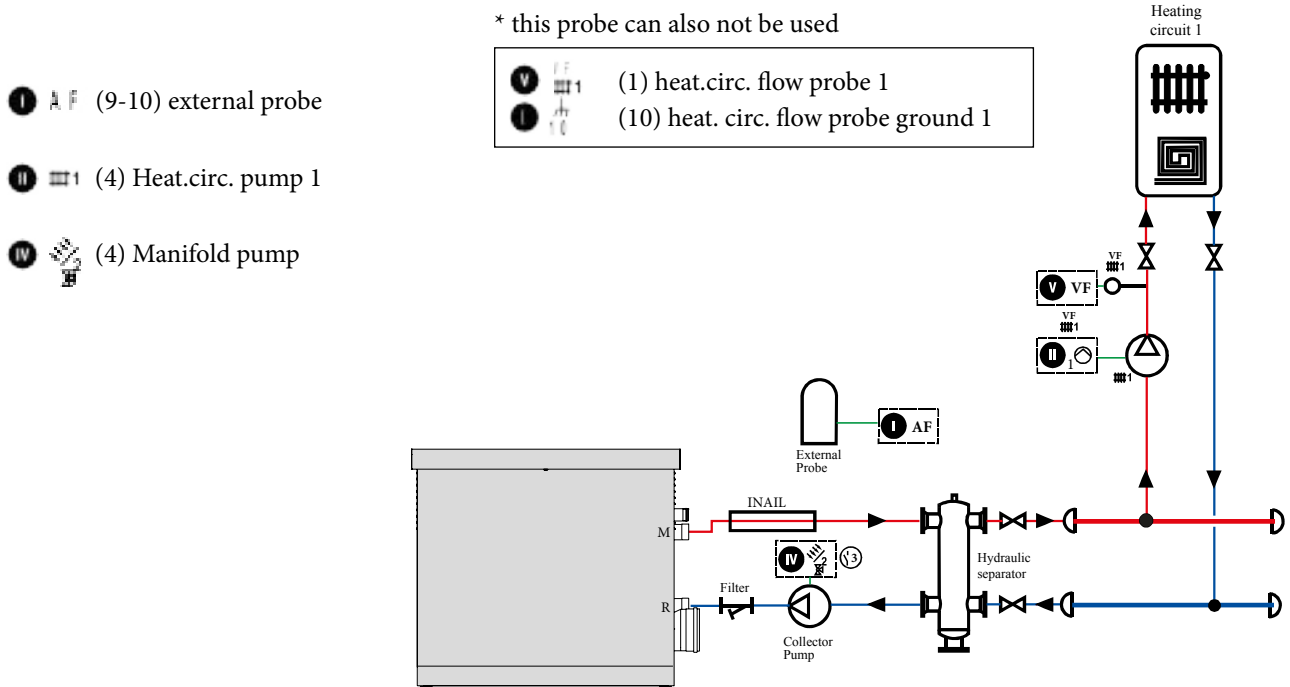
- 1) Assembly of a boiler with connection to a direct zone.
- 2) Assembly of a boiler with connection to two direct zones + D.H.W. production.
- 3) Assembly of a boiler with connection to one mixed zone and one direct zone + D.H.W. production.
- 4) Assembly of a boiler with connection to two mixed zones + D.H.W. production.
- 5) Assembly of a boiler with connection to two mixed zones + D.H.W. production with solar panels.
- 6) Assembly of two boilers with connection to two mixed zones + D.H.W. production.

The following wiring diagrams are detailed:

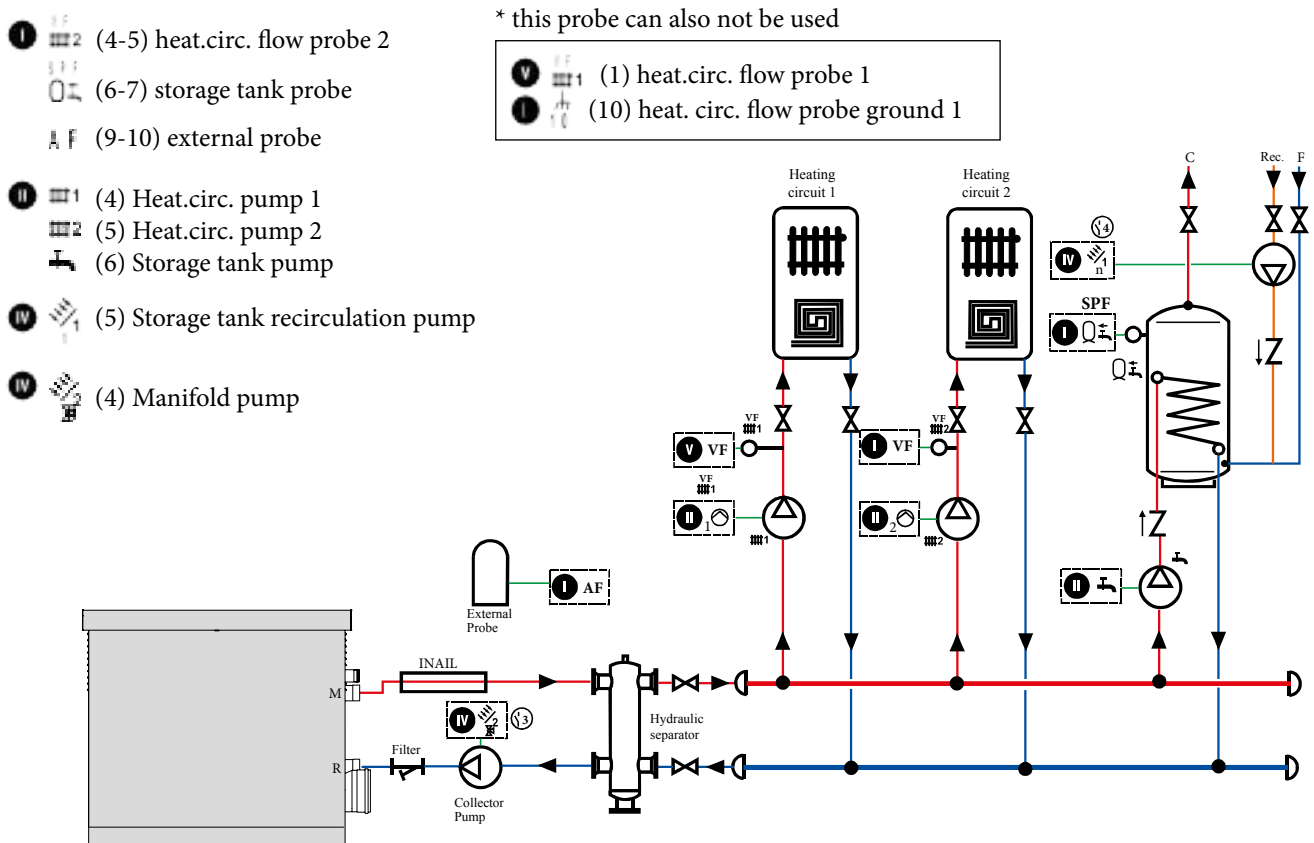
- Secondary circuit wiring diagrams.
- Primary circuit devices wiring diagrams.
- Environment heat adjustment devices wiring diagrams.
- Connections and "TGC" terminal board diagram.

43 EXAMPLES OF HYDRAULIC APPLICATION DIAGRAMS

1) Assembly of a boiler with connection to a direct zone.



2) Assembly of a boiler with connection to two direct zones + D.H.W. production.



ARES TEC ErP

3) Assembly of a boiler with connection to one mixed zone and one direct zone + D.H.W. production.

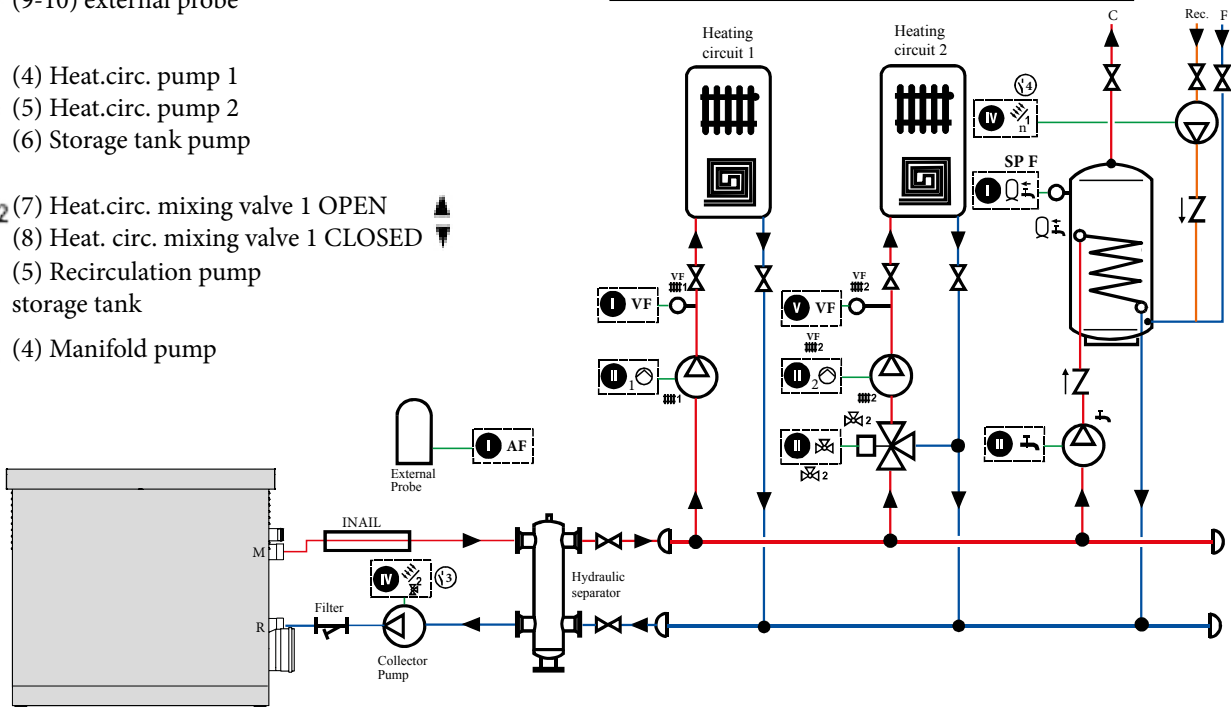
- (4-5) heat.circ. flow probe 2
- (6-7) storage tank probe
- (9-10) external probe

- (4) Heat.circ. pump 1
- (5) Heat.circ. pump 2
- (6) Storage tank pump

- (7) Heat.circ. mixing valve 1 OPEN
- (8) Heat.circ. mixing valve 1 CLOSED
- (5) Recirculation pump storage tank
- (4) Manifold pump

* this probe can also not be used

- (1) heat.circ. flow probe 1
- (10) heat.circ. flow probe ground 1



4) Assembly of a boiler with connection to two mixed zones + D.H.W. production.

- (4-5) heat.circ. flow probe 2
- (6-7) storage tank probe
- (9-10) external probe

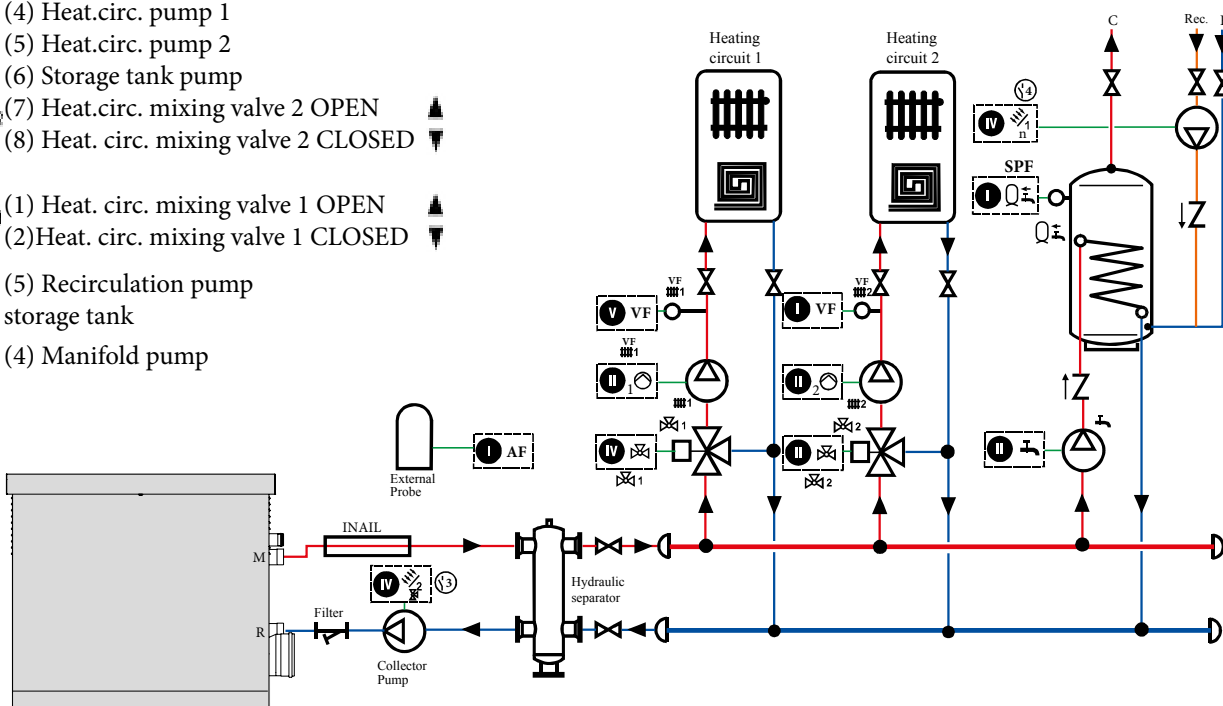
- (4) Heat.circ. pump 1
- (5) Heat.circ. pump 2
- (6) Storage tank pump

- (7) Heat.circ. mixing valve 2 OPEN
- (8) Heat.circ. mixing valve 2 CLOSED
- (1) Heat.circ. mixing valve 1 OPEN
- (2) Heat.circ. mixing valve 1 CLOSED

- (5) Recirculation pump storage tank
- (4) Manifold pump

* this probe is required to command the mixer

- (1) heat.circ. flow probe 1
- (10) heat.circ. flow probe ground 1



5) Assembly of a boiler with connection to two mixed zones + D.H.W. production with solar panels.

I (4-5) heat.circ. flow probe 2 (optional)

Q (6-7) storage tank probe

A F (9-10) external probe

II (4) Heat.circ. pump 1

II (5) Heat.circ. pump 2

II (6) Storage tank pump

III (7) Heat.circ. mixing valve 2 OPEN ▲

(8) Heat.circ. mixing valve 2 CLOSED ▼

IV (1) Heat.circ. mixing valve 1 OPEN ▲

(2) Heat.circ. mixing valve 1 CLOSED ▼

V (5) Storage tank recirculation pump

V (4) Manifold pump

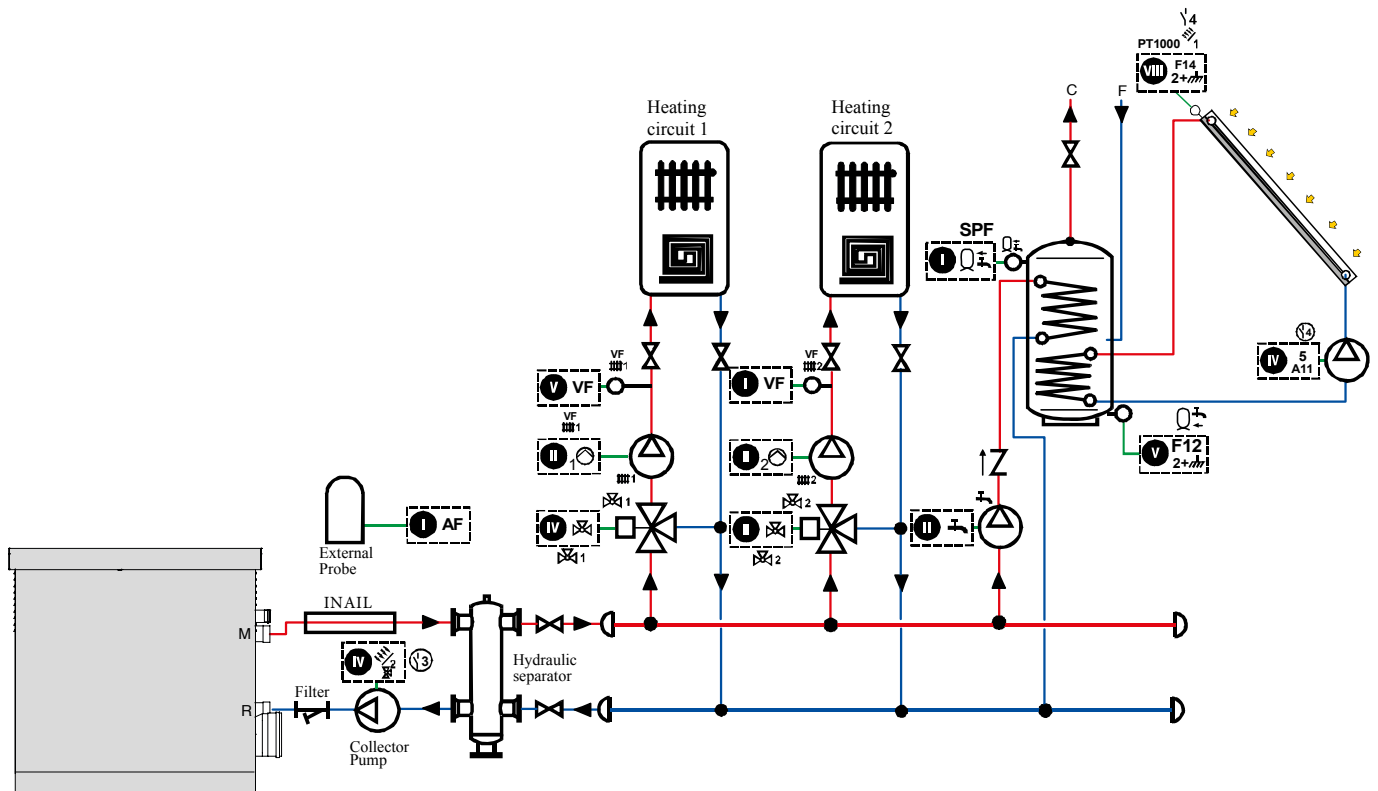
VI (2) Multifunction sensor 2 (optional)

VII (2) Solar sensor 1 (PT1000) / multifunction relay sensor 4 (optional)

* this probe is required to command the mixer

VI (1) heat.circ. flow probe 1

VI (10) heat.circ. flow probe ground 1

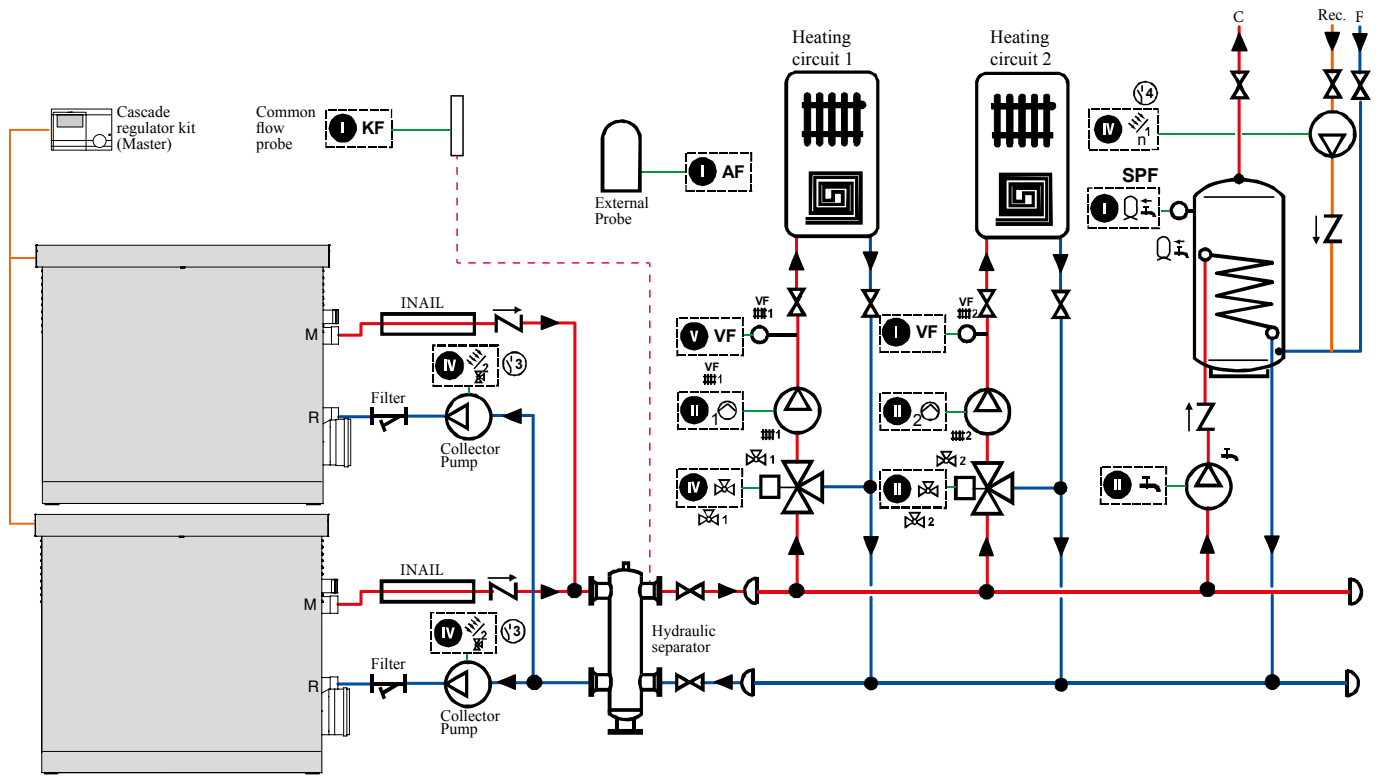


Attention: Connections to solar systems require changing a number of setting parameters see "TGC" instruction manual:

Expert field → MF Level SOLAR → Relay 4 FUNCTION = "23"

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6) Assembly of two boilers with connection to two mixed zones + D.H.W. production.



Important: In this connection in the “TGC” boiler heat adjuster-manager, the **BOILER BUS ADDRESS** must be set.

The cascade regulator (MASTER) must be set at: ----, the TGC boiler regulators (SLAVE) must be set from: **01 to 08 (based on generator number)**.

Cascade regulator (MASTER) connections

Primary loop connections must be performed on the MASTER control unit

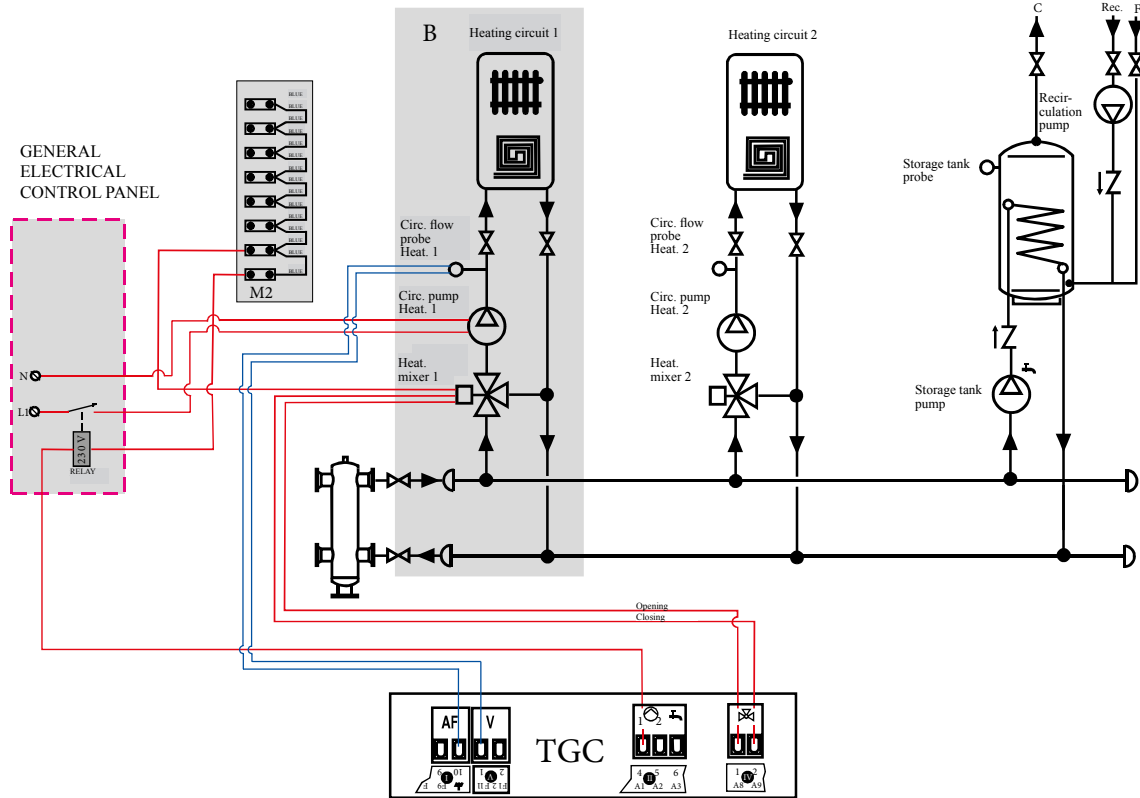
- (4-5) heat.circ. flow probe 2 (optional)
- (6-7) storage tank probe
- (9-10) external probe
- (4) Heat.circ. pump 1
- (5) Heat.circ. pump 2
- (6) Storage tank pump
- (7) Heat.circ. mixing valve 2 OPEN
- (8) Heat.circ. mixing valve 2 CLOSED
- (1) Heat.circ. mixing valve 1 OPEN
- (2) Heat.circ. mixing valve 1 CLOSED
- (5) Storage tank recirculation pump
- (4) Manifold pump

- | | |
|--|-------------------------------------|
| | (1) heat.circ. flow probe 1 |
| | (10) heat.circ. flow probe ground 1 |

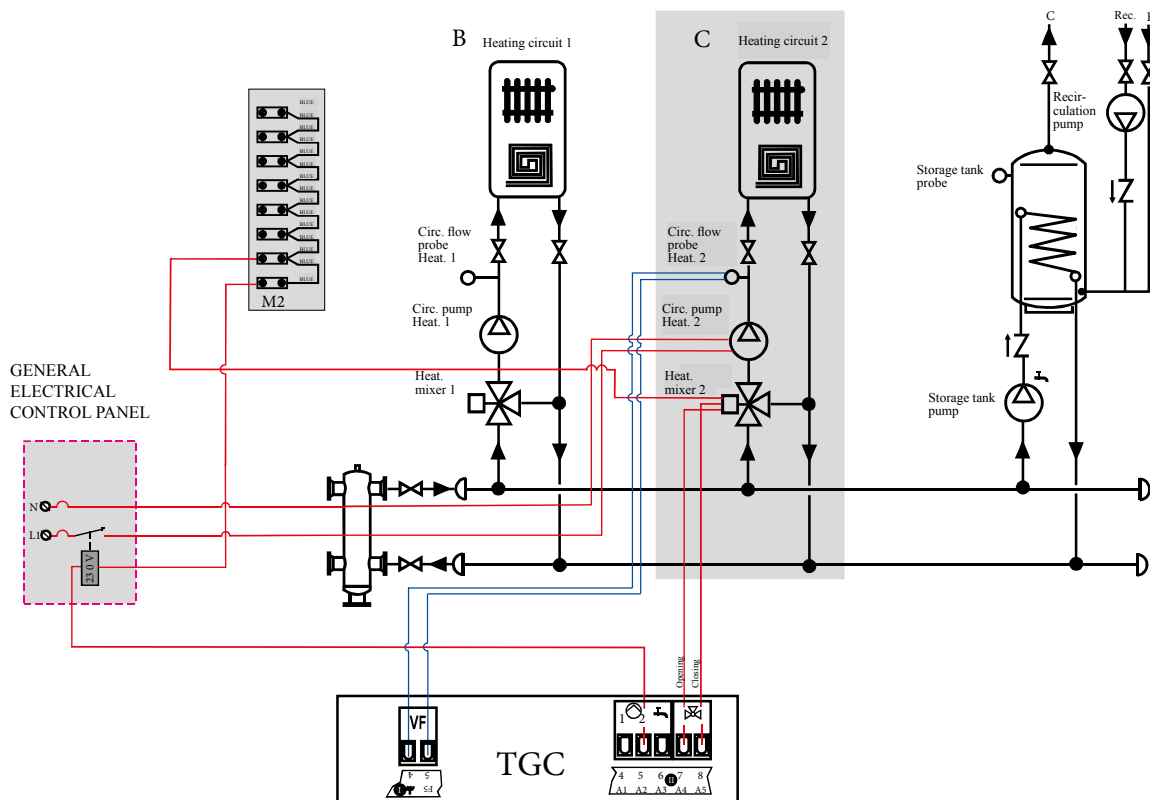
* this probe is required to command the mixer

44 SECONDARY CIRCUIT WIRING DIAGRAMS

Central heating circuit 1 connection.

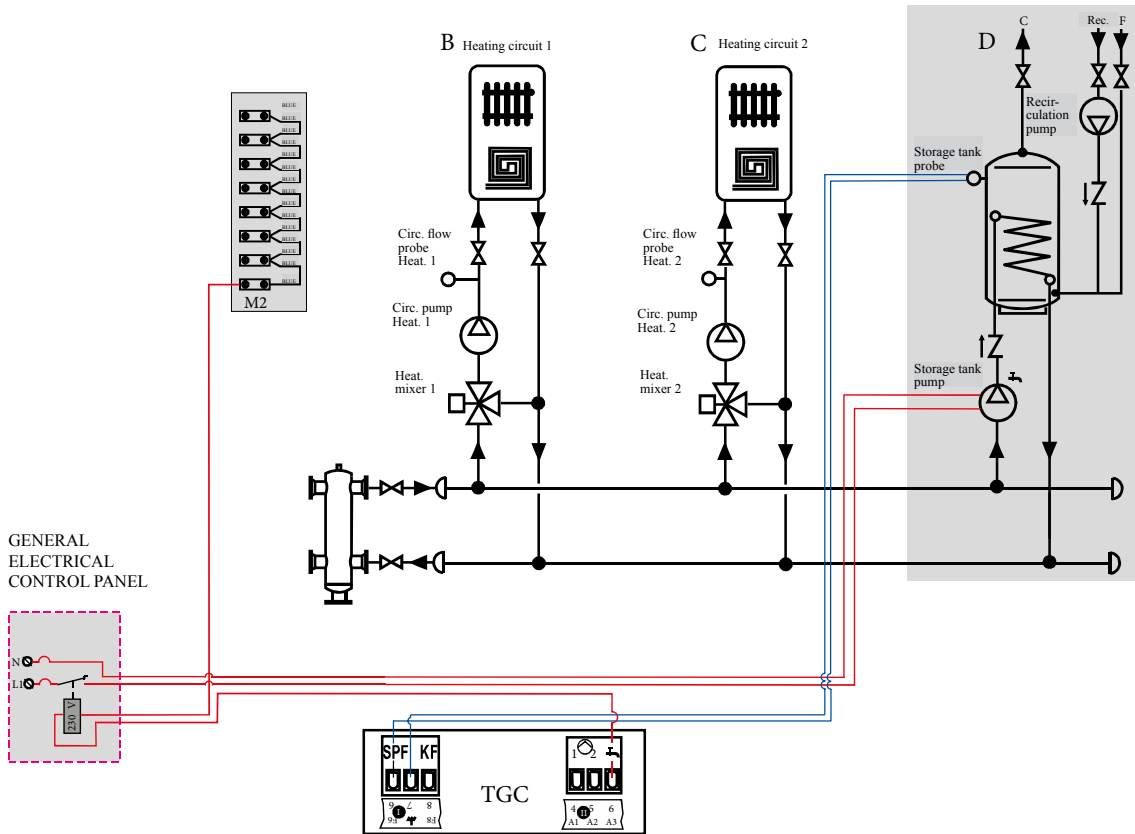


Central heating circuit 2 connection.

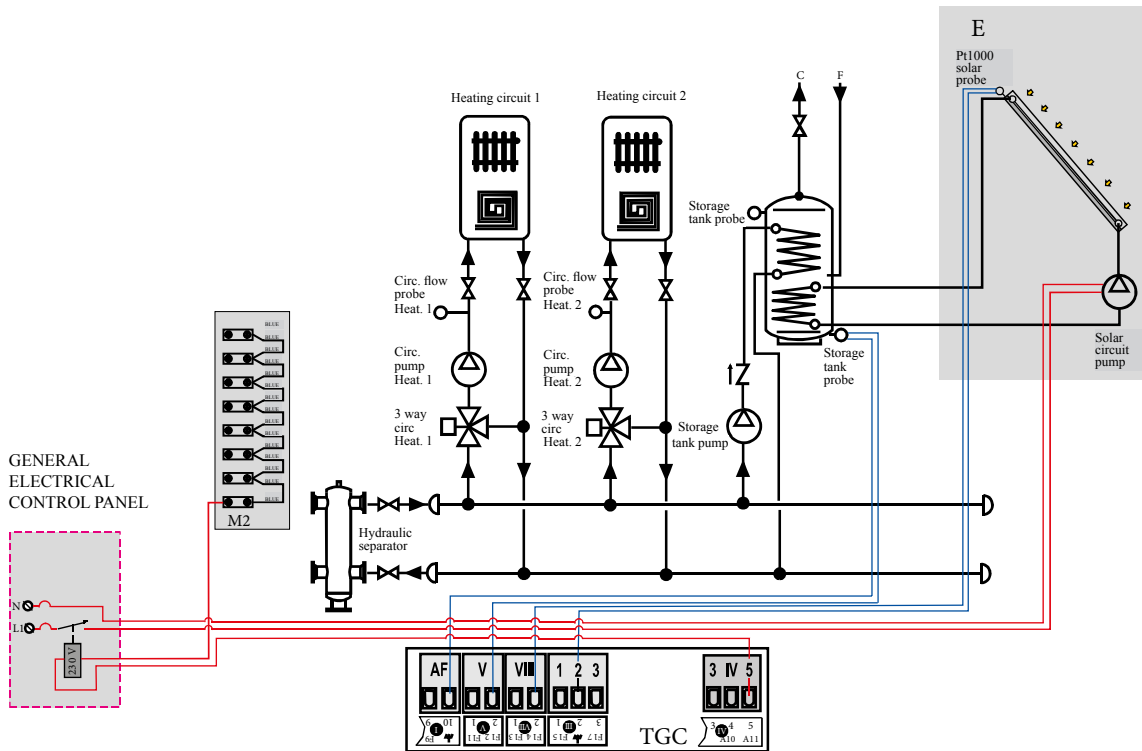


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D.H.W. circuit connection.



Solar panels circuit connection.

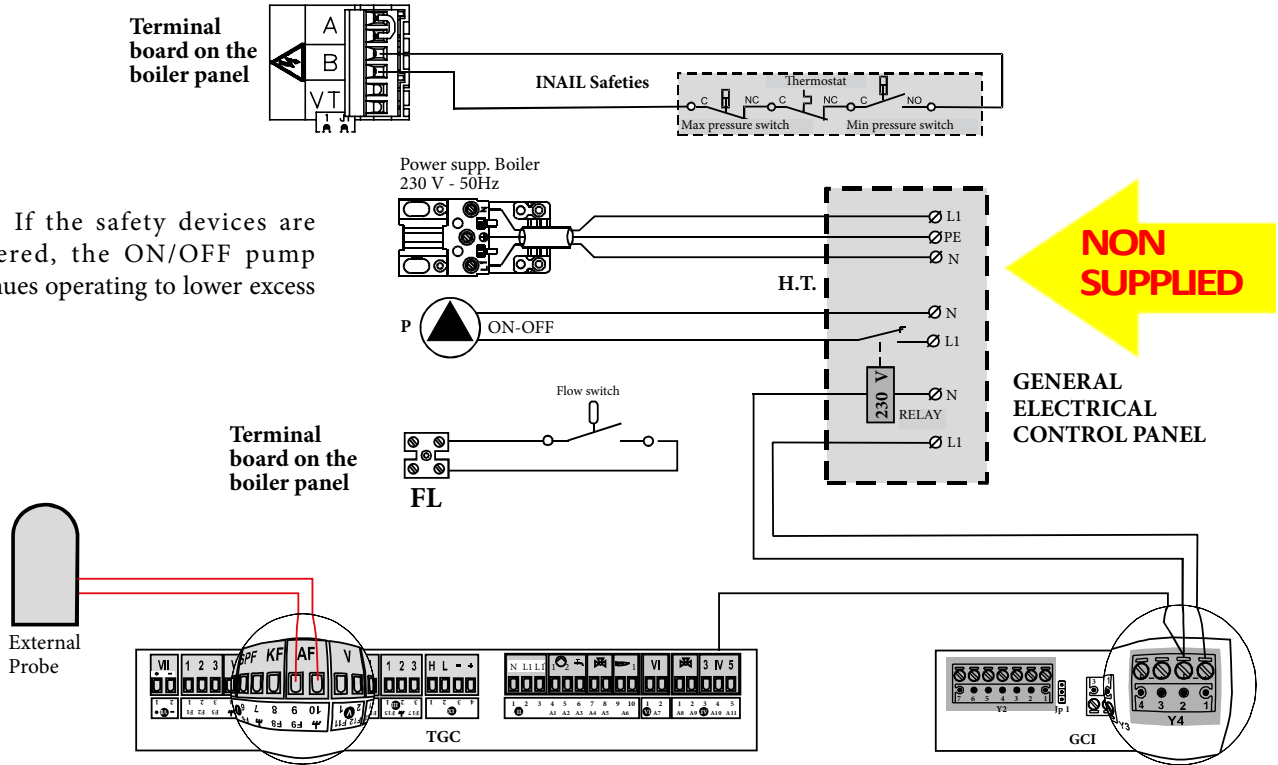


Connections to solar systems require changing a number of setting parameters see "TGC" manual:
 Expert field → MF SOLAR Level → relay 4 FUNCTION = "23"

45 PRIMARY CIRCUIT DEVICES WIRING DIAGRAMS

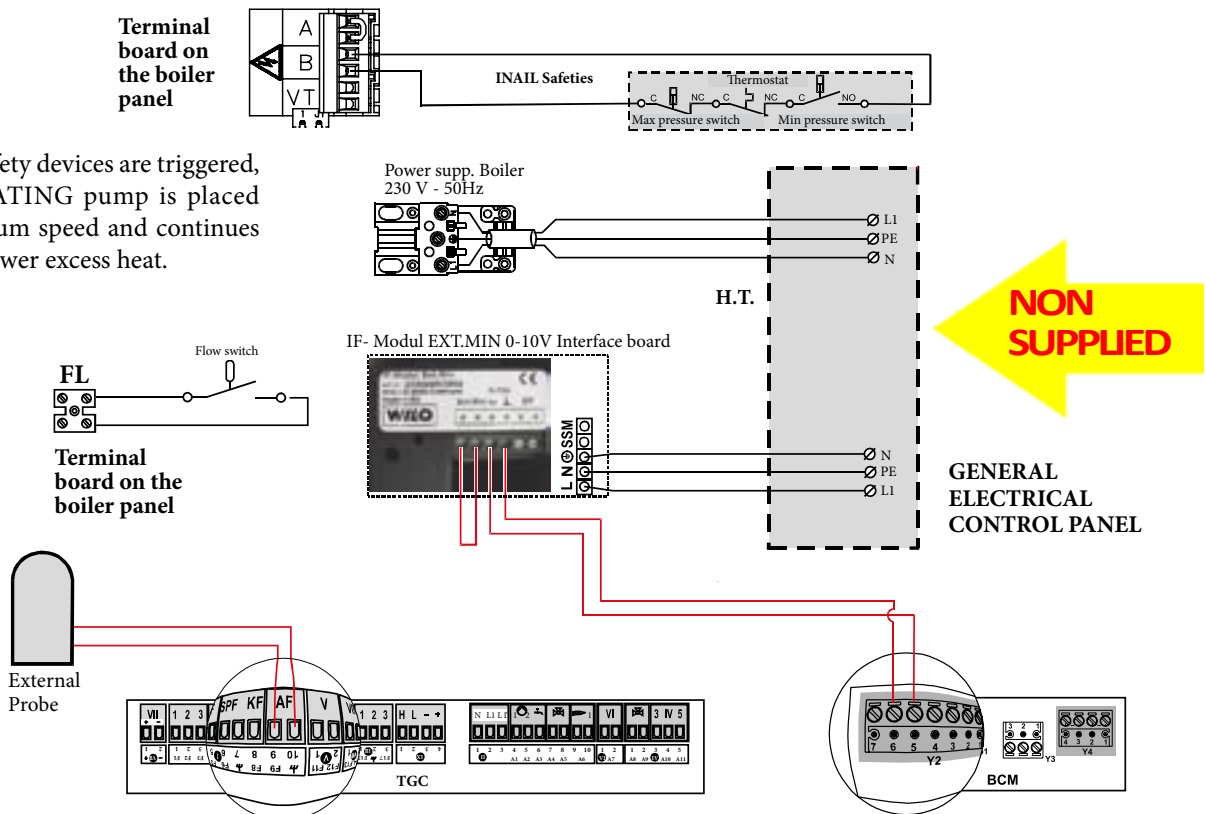
Power supply, gas solenoid valve, INAIL, ON/OFF pump, external probe, flow switch.

Note: If the safety devices are triggered, the ON/OFF pump continues operating to lower excess heat.



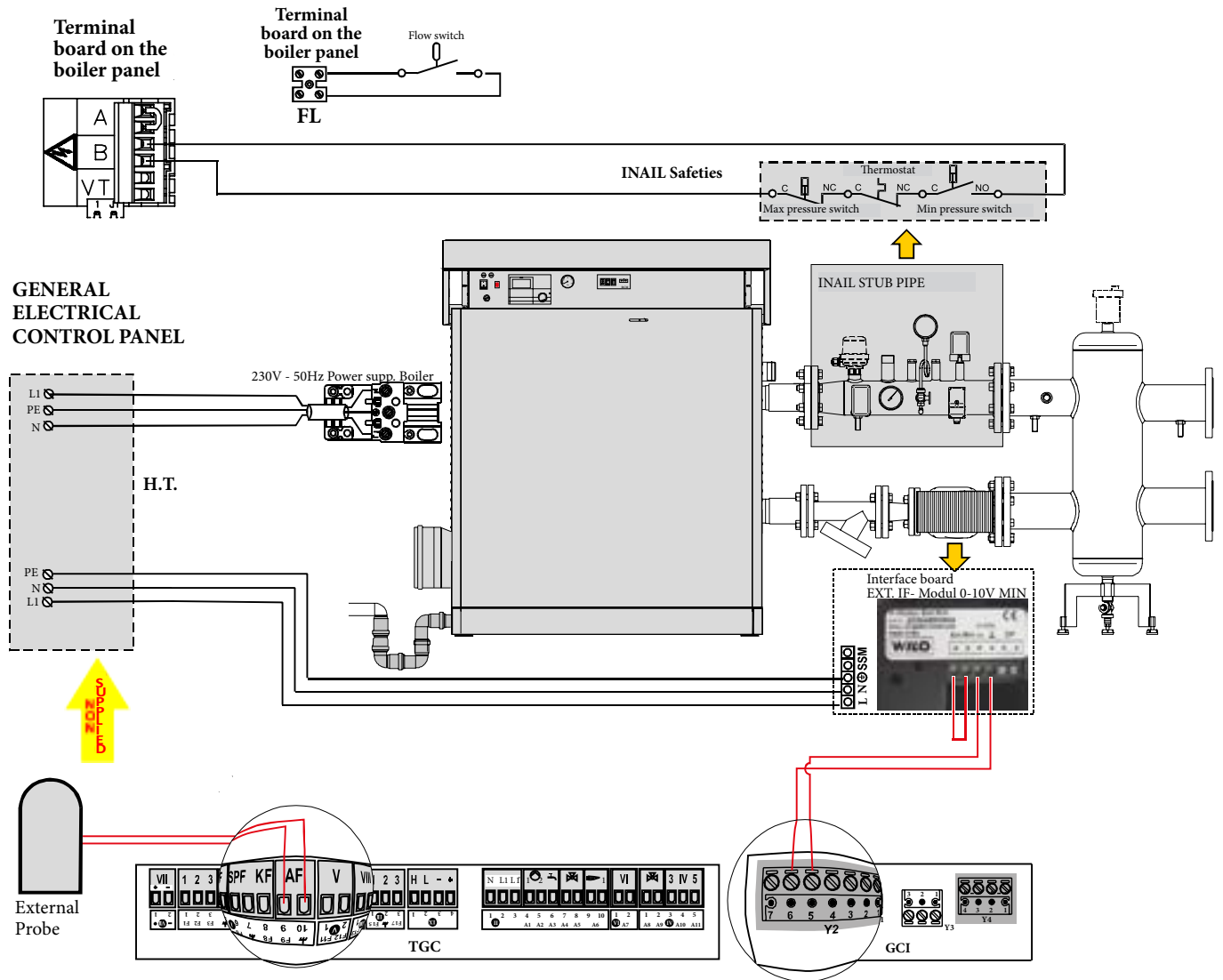
Power supply, gas electrovalve, INAIL, modulating pump, external probe, flow switch.

Note: If the safety devices are triggered, the MODULATING pump is placed on the minimum speed and continues operating to lower excess heat.



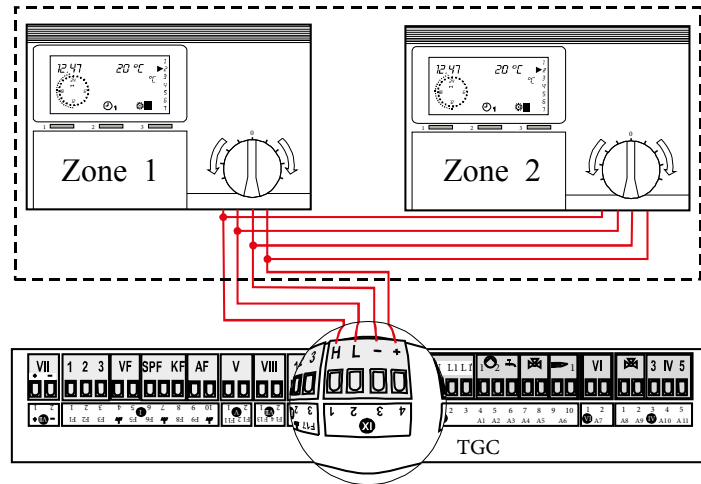
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INAIL safeties and modulating pump connection.

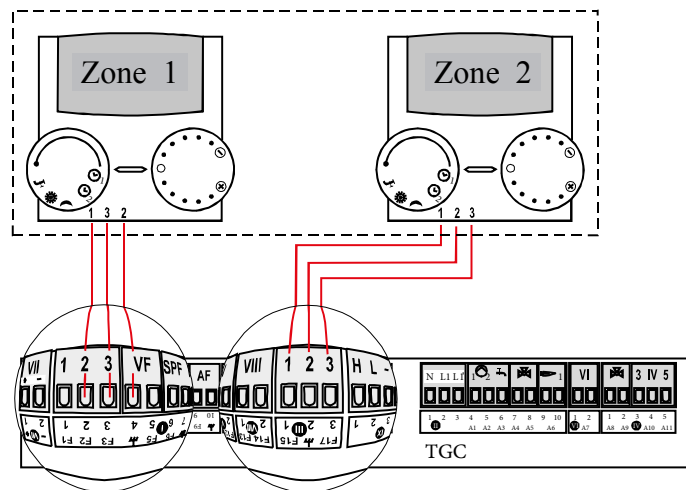


46 ENVIRONMENT HEAT ADJUSTMENT DEVICES WIRING DIAGRAMS

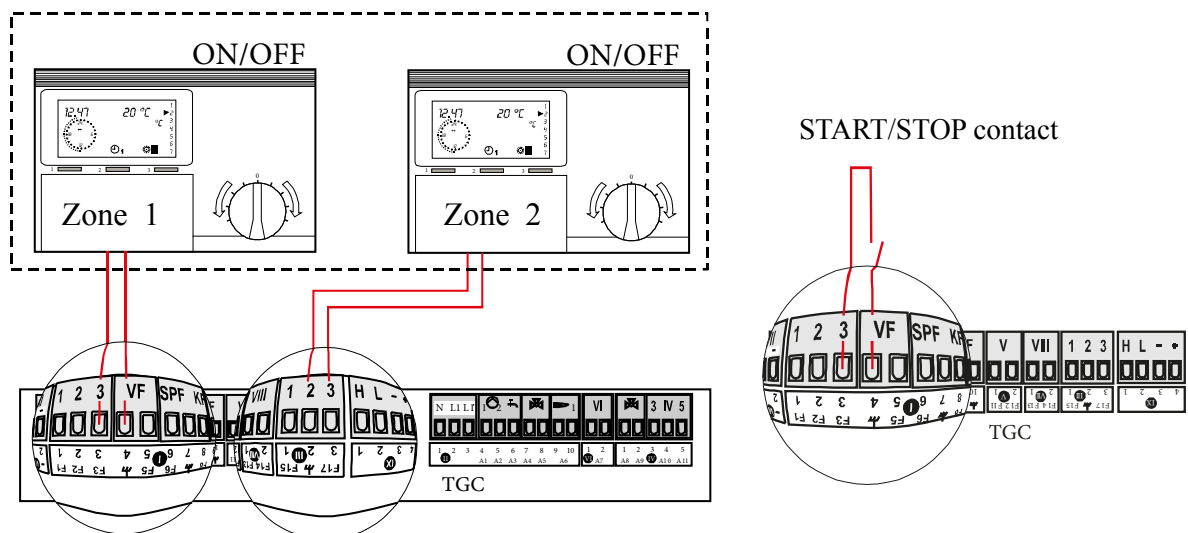
Modulating zone manager kit connection (available as optional).



Modulating room thermostat kit connection (available as optional).



Thermostat ON/OFF connection (e.g. Crono 7 available as optional).

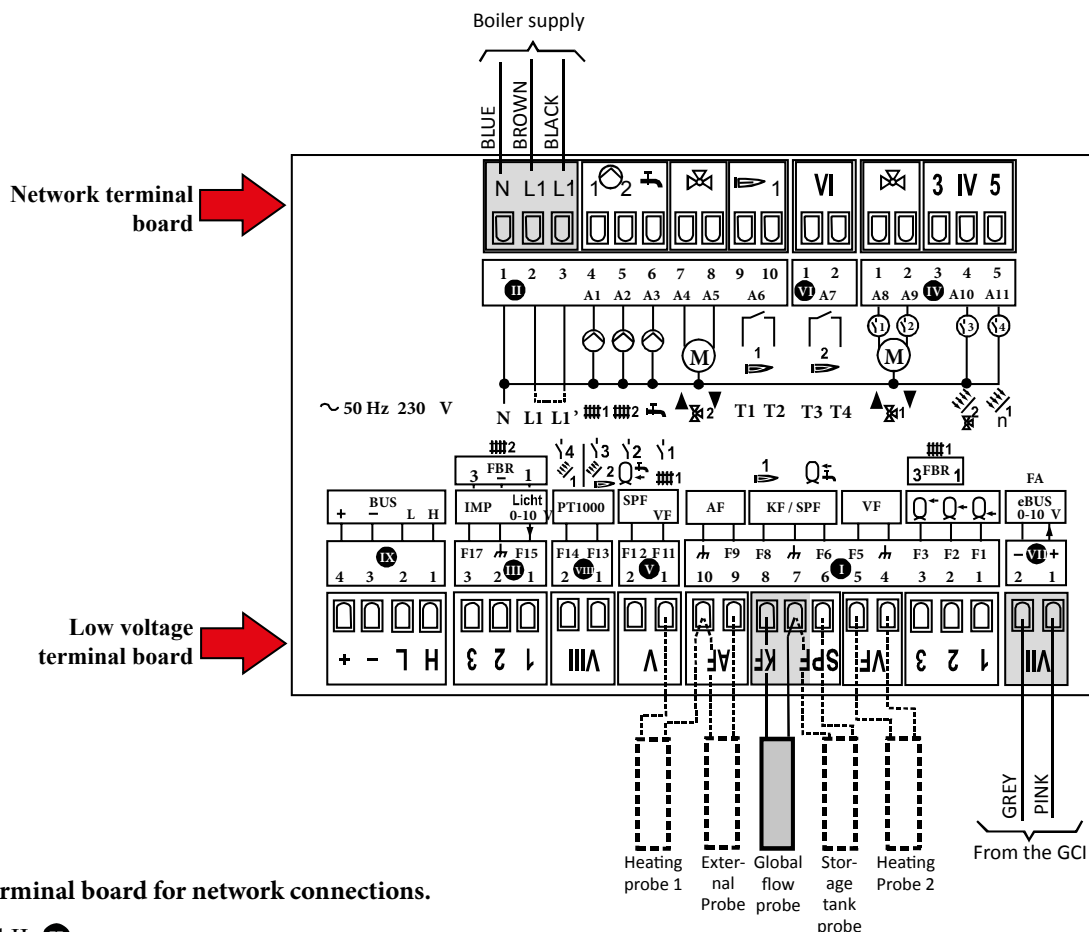


ARES TEC ErP

47 "TGC" TERMINAL BOARD AND CONNECTION DIAGRAMS

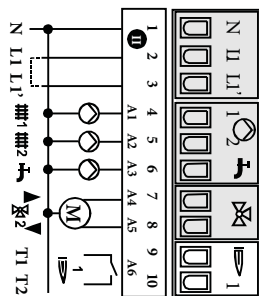
On the rear of the "TGC", there are two terminal boards: one dedicated to the network connections, the other dedicated to the low voltage connections.

Some parts belonging to the heating control unit must be connected to the respective terminal blocks.



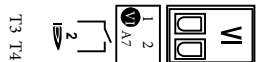
Description of terminal board for network connections.

Terminal II

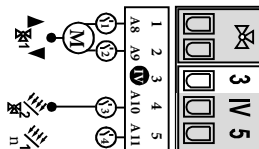


- N: Neutral network cable
- L1 : Appliance network supply
- L1': Relay network supply
- ##1: Heating circuit pump Heat. circ. 1
- ##2: Heating circuit pump Heat. circ. 2
- ⚙️: Storage tank load pump
- ⚡▲: Heat. circ. mixing valve 2 OPEN
- ⚡▼: Heat. circ. mixing valve 2 CLOSED

Terminal IV



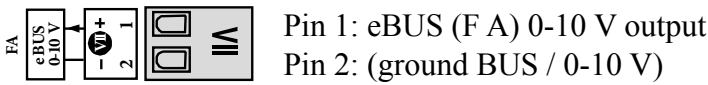
Terminal IV



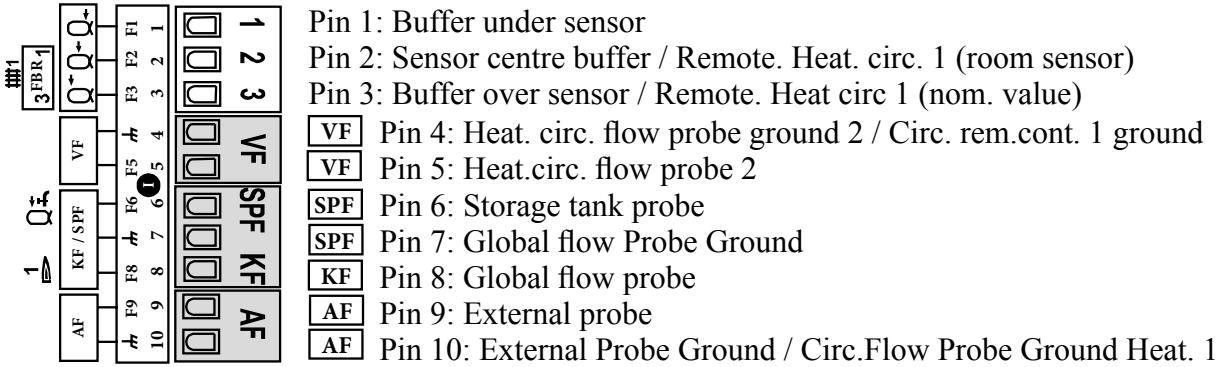
- ⚡▲ : Mix. Valve Heat. Circ. 1 OPEN / multifunction relay ⚡3
- ⚡▼ : Mix. Valve Heat. Circ. 1 CLOSED / multifunction relay ⚡4
- multifunction relay ⚡3
- multifunction relay ⚡4

Description of terminal board for low voltage connections.

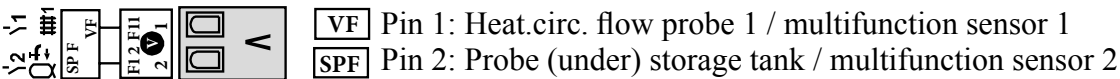
Terminal VII To be connected to the “GCI”



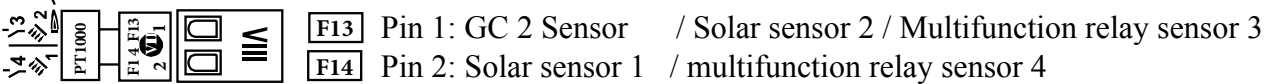
Terminal I



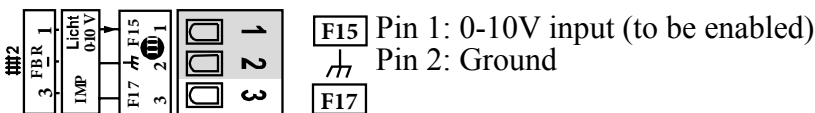
Terminal V



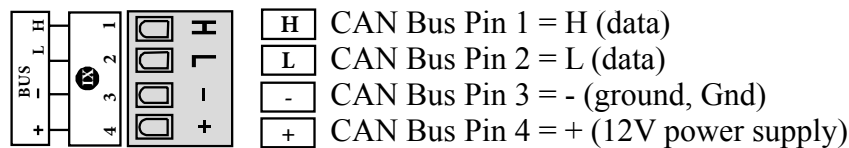
Terminal VIII PT 1000 sensor



Terminal III



Terminal IX To be connected to remote control devices



Attention: The CANBUS signal cables (used for connection of the cascade control kit, the zone expansion Kit and the modulating zone manager kit) can have a maximum length of 250 meters, this maximum distance also applies to the connection of the Modulating Room Thermostat (which has no CANBUS connection).

The cables for connecting temperature probes (e.g. external probe, system flow probe, storage tank probe, etc. ...) can have a maximum length of 50 meters.

During the useful life of the products, performance is affected by external factors, such as the hardness of the D.H.W., atmospheric agents, deposits in the system and so on.

The declared data refers to new products that are correctly installed and used in accordance with applicable regulations.

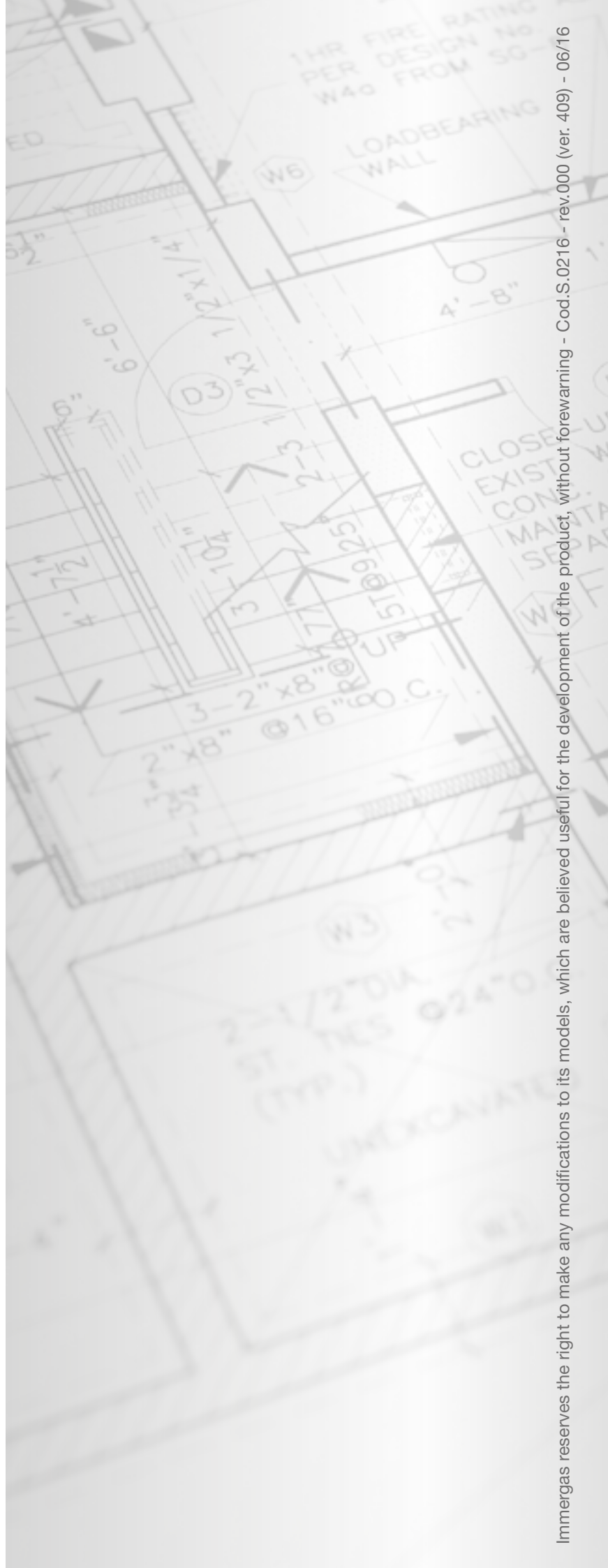
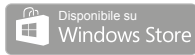
N.B.: correct periodic maintenance is highly recommended.

NOTE: Depending on the specific design and installation conditions, the diagrams and drawings provided in this documentation can require further integration or modifications, according to that envisioned by the Standards and technical regulations in force and applicable (as an example, Collection R - edition 2009 is stated). It is the professional's responsibility to identify the provisions applicable, to evaluate the compatibility with these case by case and the necessity of any changes to drawings and elaborations.



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SYSTEM

Design, manufacture and after-sales assistance of gas boilers, gas water heaters and relative accessories