HIGH POWER

TECHNICAL sheet

IMMERGAS

ARES PRO

Floor standing boilers
with high condensation
water storage

MAIN INDEX

ARES PRO

ARES PRO is a line of generators with a high condensation water content, with single full pre-mixing and low NO_x burner set-up for both independent and cascade operation (up to 8 appliances), with the advantage of guaranteeing higher overall output and reduced running costs.
These are generators made of stainless steel, with smoke pipes, with inverted flame vertical burner.
The high potentiality of ARES PRO makes the generator ideal for heating large residential heating systems (condominiums) and for commercial and industrial applications. In general, ARES PRO is a boiler particularly suitable combined with new systems, but above all, it is ideal for replacing old floor standing generators operating on large systems (e.g. condominiums, hospitals, schools, etc.): in these applications it is possible to resort to cascade installation of up to 8 generators, thus reaching powers of 4,800 kW (8 ARES PRO 600 in set).
The particularly compact dimensions (especially in width), facilitate the crossing of doors of old thermal plants.
This range of high water content generators shows a very low risk of blockage on existing plants, in addition the boiler has no limit on the return temperature from the system: it allows high thermal jumps and connection directly to the system, thus avoiding the installation of an hydraulic separator or plate heat exchanger that would increase installation clearance and the necessary components.
With ARES PRO it is also possible to control an external booster pump to be combined to a separate storage tank unit for the production of domestic hot water and a flow pump to the central heating system; thanks to the low pressure drops, it is generally possible to use existing pumps (in case of replacement).
The special ecological burner guarantees particularly reduced polluting emissions (the boiler belongs to the most environment-friendly class envisioned by European Standards - class 6).
The generator electronics are equipped with an emergency operation function, with a backup control unit that takes control of the generator in case of failure of the main board.

1 ARES PRO 150-600 FEATURES

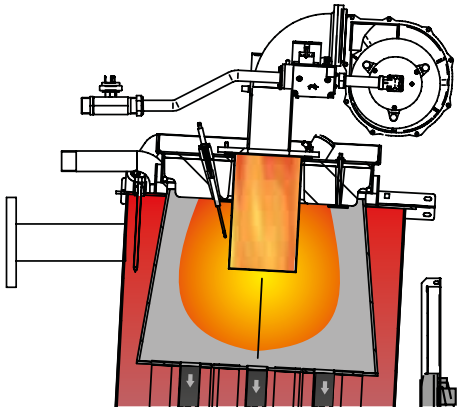
Wide range formed by 7 condensation models for open room base central heating and high performance fan assisted (type B_{23P}), with power from 150 to 600 kW, which may be installed individually or in set (up to 8 appliances).

The boiler is made up from:
- high water content thermal element with vertical development in stainless steel, with extremely low water side pressure drops;
- complete premixing, modulating vertical, irradiation, metallic fibre burner, fitted with double ionisation ignition and control electrode;
- power modulation range indicatively up to 1:4;
- high efficiency thanks to the special patented vertical tube bundle stainless steel smoke pipes with a 3° inclination, equipped with special multilayer aluminium, silicon and magnesium inserts;
- telescopic pneumatic shock absorbers to ensure the opening of the combustion chamber inspection door;
- Retractable platform (standard on 348-400-500-600 kW models);
- compact size especially in width;
- IPX4D electrical degree of protection, only for indoor installation;
- high water content with consequent reduction of the number of burner on/off cycles, allows to obtain benefits on seasonal efficiency;
- light grey (RAL7035) removal integral panelling with rear grid for combustion air intake;
- single flue exhaust positioned on the rear;
- 50 mm thick mineral wool insulation placed on the thermal element;
- stainless steel condensate collection tank with level sensor which interrupts the generator in case of issue with condensate disposal;
- flow and return flanged connections;
- pneumatic, dual shutter modulating gas valve;
- air/gas total mixing fan with electronically variable speed and integrated anti-backflow swing check valve;
- retractable front control panel [HSCP] able to weekly program the operating times of the system circuits (up to a maximum of 12 independent system circuits);
- burner control board for combustion control [BMM];
- boiler control board [BCM] performs the backup control unit function, ensuring an emergency operation (preset fixed flow temperature) in case of control panel failure [HSCP].
  Management of:
  - 1 direct central heating / C.H. circuit;
  - 1 Domestic hot water circuit / DHW production with priority probe (standard), for control via storage tank load pump;
  - 1 primary central heating / C.H. circuit in presence of hydraulic separation, controllable via activation relay for controlling a set speed circulator (contacts 1/2 terminal board Y4 - maximum absorption 4A), or via 0-10V analogue outlet for controlling a modulating circulator (contacts 4/5 terminal board Y2 - maximum absorption 4A);
- Multifunction module kit [SHC], set-up to combine up to a maximum of 4 modules [SHC] to the HSCP control panel (1 supplied as standard - 3 to be provided as optional), each module controls up to 3 user circuits. The multifunction module takes control of the user circuits in addition to the circuits managed by the boiler control board [BCM] (the multifunction module is usually installed in an electrical panel in DIN template).
  By connecting 4 SHC board, it is possible to manage up to 12 different user circuits, for example:
  - Direct or mixed central heating / C.H. circuits;
  - Circuits for the production of DHW with DHW (Domestic hot water) storage;
  - Circuits for the production of DHW with plate heat exchanger;
  - Circuits for the production of DHW with plate heat exchanger and mixing valve;
  - Thermal solar circuit (via optional PT1000 probe);
- Standard supplied probes:
  External probe;
  Storage tank probe (for the storage tank load pump command);
  3 NTC probes (for controlling the user circuits - to be connected exclusively to the multifunction module [SHC])
- Other standard devices present:
  - Flue pressure switch;
  - Minimum gas pressure switch;
  - Maximum gas pressure switch (only on 348-400-500-600 kW models);
  - System flow probe;
  - Limit thermostat;
  - 1 metre condensate drain pipe, one connection T and 5 90° curves (for creating the condensate drain);
- Adjustable central heating flow temperature with factory setting from 20 to 85°C;
- Emergency operation: avoids system shutdown as a consequence of an HSCP board failure, in this case the BCM board takes control with operation at fixed flow temperature;
- Possibility of full remote management via Modbus or control via 0-10 V input;
- Alarm management;
- Set-up for installing the INAIL safeties kit with filter (optional);
- Set-up for cascade operation (up to 8 generators), each with its own INAIL safeties kit, thanks to the cascade and zone regulator kit (optional).

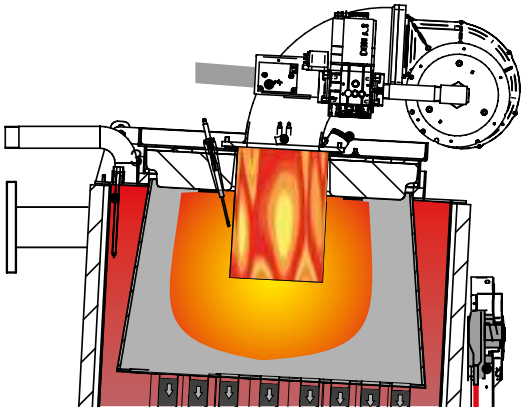
Category II appliance$_{2H3P}$, operates with natural gas and L.P.G..
CE Marking.
It is available in the model:

• **ARES PRO 150**	**code 3.028309**
• **ARES PRO 230**	**code 3.028310**
• **ARES PRO 300**	**code 3.028311**
• **ARES PRO 348**	**code 3.028312**
• **ARES PRO 400**	**code 3.028313**
• **ARES PRO 500**	**code 3.028314**
• **ARES PRO 600**	**code 3.028315**

2 COMPONENTS AND CONSTRUCTIVE TECHNOLOGY



ARES PRO 150 Combustion chamber



ARES PRO 230 ÷ 600 Combustion chamber

Tube bundle heat exchanger

Smoke pipes

ARES PRO is a high water content thermal element with stainless steel tube bundle heat exchanger.
The irradiation cylindrical burner is vertical with standard inserted smoke anti-backflow check valve, which allows to also dimension pressure flue exhaust systems, with contained sections, as well as smoke manifolds for cascade applications.
The "null flow rate" generator is designed with geometries intended to allow a natural circulation inside the boiler.
There is no temperature limit on the return and it is not necessary to activate a pump for cooling when the burner is switched off.
The smoke pipes are placed in a 3° inclined vertical tube bundle for:
- a functional flow of condensate and absence of acid deposits;
- a cleaning by gravity of the exchange surfaces;
- a better air vent.

Maximum ignition safety with double opposed electrode, to obtain:
- minor electrode oxidation;
- reduced ageing of the electrode insulation;
- high precision in combustion control.

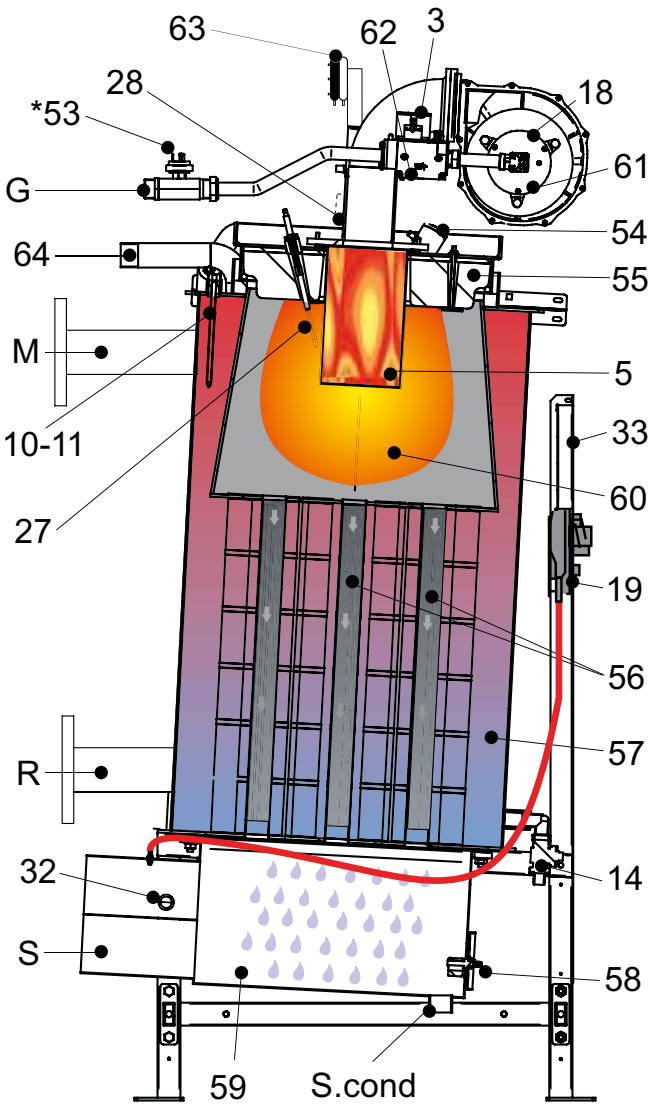
The metallic fibre burner improves ignition, increases its silence and improves flames distribution.
The opening of the upper inspection door is with telescopic pneumatic shock absorbers.
The special stainless steel smoke pipes with special Al/Si/Mg fins inside, increase the heat exchange from flue to water: the benefits offered by this system are a longer duration and a high heat exchange for excellent yield.

3 MAIN BENEFITS OF GENERATORS WITH HIGH WATER CONTENT

The main ARES PRO benefits deriving from the high water content are:

- It is not necessary to create a primary circuit, thus reducing the installation space and saving the components to be used (elimination of a pump and of the hydraulic manifold/plate heat exchanger). If the hydraulic manifold is already installed, it is absolutely possible to maintain it. In general, the engineer can choose to include it or keep it (in case of boiler replacements) to maintain a constant flow-rate in the primary circuit even when the number of active zones varies;
- direct connection to the system and, therefore, simplification of the installation with lower labour costs. No limit on return temperature and, therefore, possibility to operate with wide thermal jumps;
- solution particularly suitable for replacing the old generators;
- reduced clogging risk in the presence of impurities on existing systems (provided that the water treatment is always recommended);
- possibility to use the pump already present on the system, in case of replacement of a generator, due to low head losses;
- reduced number of ignition/switch-off cycles of the burner, thanks to the presence of a large primary storage tank, with benefits on the seasonal efficiency.

4 ARES PRO 150 MAIN COMPONENTS

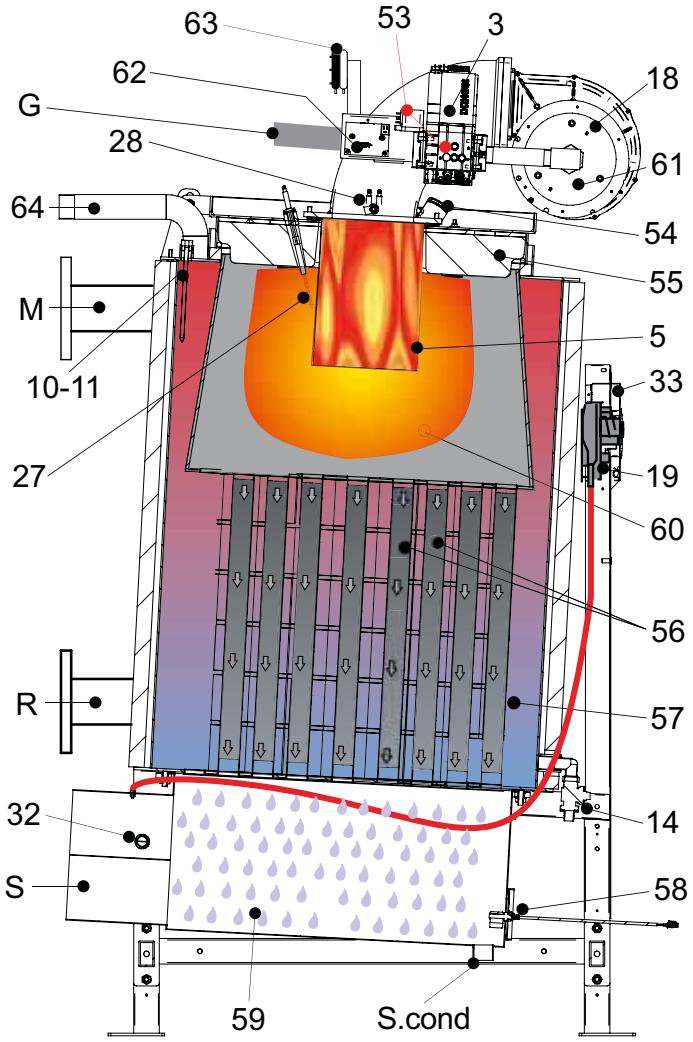


KEY:

3	Gas valve
5	Burner
10	Probe Limit Thermostat
11	Central heating sensor
14	Boiler draining valve
18	Fan
19	Flue pressure switch
27	Detection electrode
28	Ignition electrode
32	Flue inspection point
33	Control Panel
53	Minimum gas pressure switch
54	Glass inspection hole
55	Door insulation

56	Stainless steel vertical smoke pipe with aluminium interior
57	Technical water tank
58	Level sensor
59	Condensate collection pan
60	Combustion chamber
61	Mixer Aria/gas
62	Igniters with relative transformer
63	Min. flue pressure switch
64	Attachment for air vent/expansion vessel
G	Gas inlet
M	Central heating system flow
R	Central heating system return
Scond	Condensate drain
S	Flue exhaust

5 ARES PRO 230-300-348-400-500-600 MAIN COMPONENTS

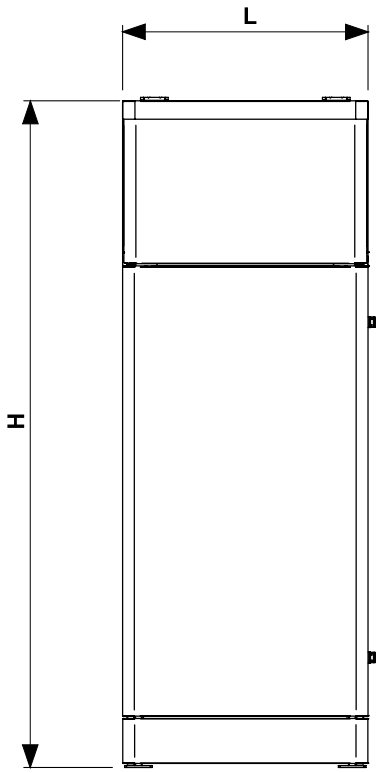


KEY:

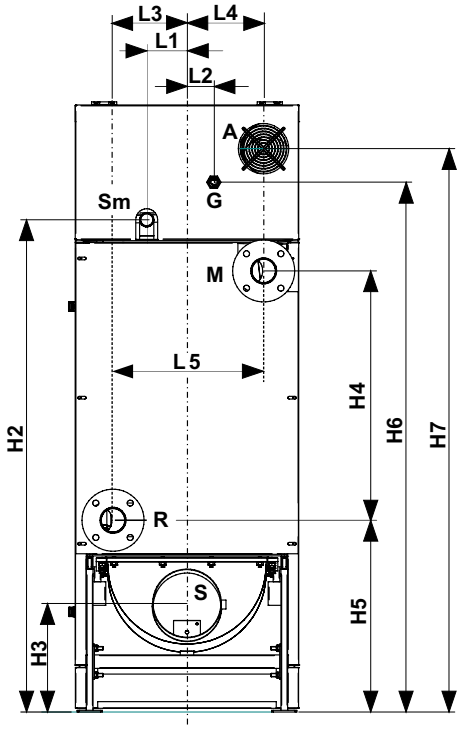
3	Gas valve
5	Burner
10	Probe Limit Thermostat
11	Central heating sensor
14	Boiler draining valve
18	Fan
19	Flue pressure switch
27	Detection electrode
28	Ignition electrode
32	Flue inspection point
33	Control Panel
53	Gas pressure switch (min. ARES PRO 230 - 300) (min. / max ARES PRO 348 ÷ 600)
54	Glass inspection hole

55	Door insulation
56	Stainless steel vertical smoke pipe with aluminium interior
57	Technical water tank
58	Level sensor
59	Condensate collection pan
60	Combustion chamber
61	Mixer Aria/gas
62	Igniters with relative transformer
63	Min. flue pressure switch
64	Attachment for air vent/expansion vessel
G	Gas inlet
M	Central heating system flow
R	Central heating system return
Scond	Condensate drain
S	Flue Exhaust

6 ARES PRO MAIN DIMENSIONS WITH CASING



FRONT VIEW



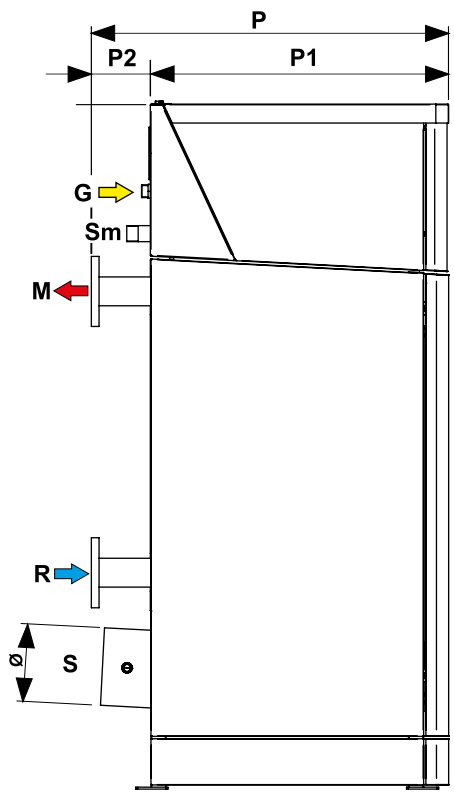
REAR VIEW

KEY:

M - Flow
R - Return
G - Gas Inlet
A - Air intake grid
S - Flue exhaust
Sm - Air vent attachment/expansion vessel attachment

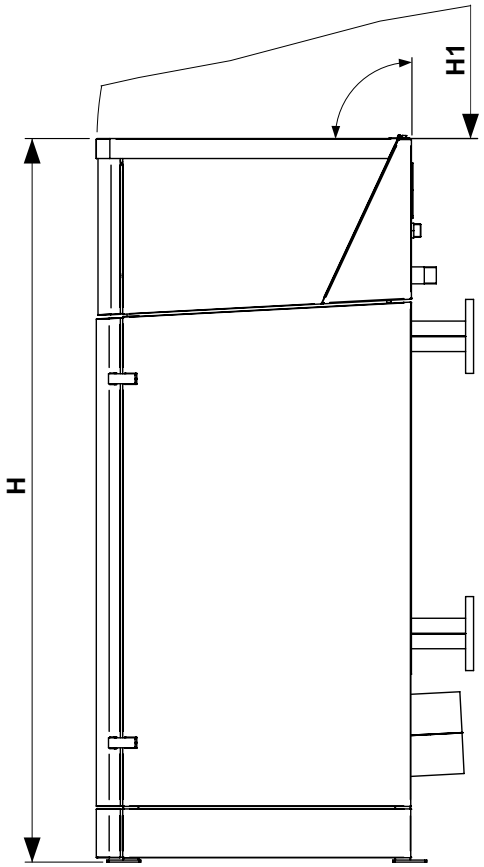
ARES PRO	150	230	300	348	400	500	600
Dimensions with casing (mm)							
Height [H]	1809	1917	1946	2130	2130	2130	2206
Height [H2]	1467	1557	1618	1712	1712	1712	1753
Height [H3]	323,5	356	353	390	390	390	390
Height [H4]	770	800	825	853	853	853	900
Height [H5]	545,5	604,5	600	664	664	664	673
Height [H6]	1579	1697	1741	1794	1794	1794	1863
Height [H7]	1679	1768	1796	1974	1974	1974	2052
Width [L]	666	846	910	996	996	996	1096
Width [L1]	120	120	100	100	100	100	200
Width [L2]	81	43	200	200	200	200	200
Width [L3]	228,5	277	297	338	338	388	386
Width [L4]	228,5	277	297	338	338	388	386
Width [L5]	457	554	594	676	676	676	772

ARES PRO



LEFT SIDE VIEW

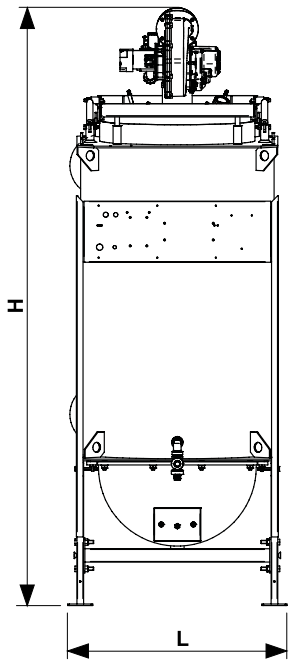
KEY:
M - Flow
R - Return
G - Gas Inlet
A - Air intake grid
S - Flue exhaust
Sm - Air vent attachment/expansion vessel attachment



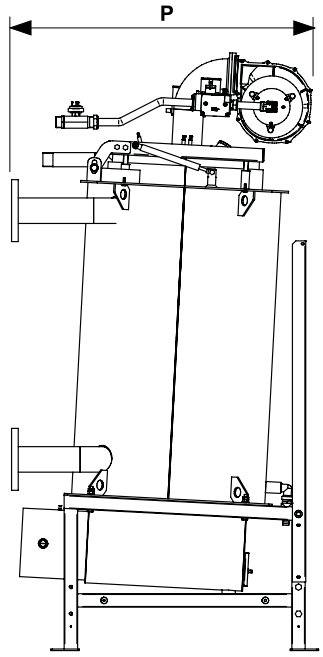
RIGHT SIDE VIEW

ARES PRO	150	230	300	348	400	500	600
Dimensions with casing (mm)							
Height [H]	1809	1917	1946	2130	2130	2130	2206
Height [H1]	65,5	65,5	65,5	65,5	65,5	65,5	65,5
Depth [P]	933	1082	1170	1273	1273	1273	1397
Depth [P1]	777	939	1026	1149	1149	1149	1256
Depth [P2]	156	143	144	124	124	124	141

6.1 ARES PRO MAIN DIMENSIONS WITHOUT CASING



FRONT VIEW



LEFT SIDE VIEW

ARES PRO	150	230	300	348	400	500	600
Dimensions without casing (mm)							
Height [H]	1785	1895	1910	2075	2075	2075	2186
Width [L]	655	795	845	965	965	965	1065
Depth [P]	917	1027	1134	1258	1258	1258	1313

7 ARES PRO DIMENSIONS FOR INTRODUCTION IN HEATING CONTROL UNIT

The ARES PRO series boilers are highly compact, for example the 150 kW models have a width without casing of only 65.5 cm. This construction feature facilitates the crossing of corridors and REI doors of thermal plants.

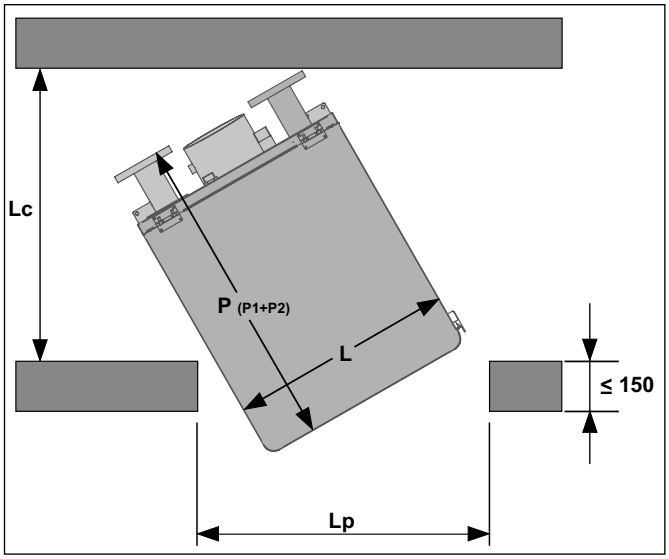
Example of corridor width (Lc) required to handle the boiler ARES PRO 150:

$$Lc = \frac{666}{900} \times 944 = > 698 \text{ mm}$$

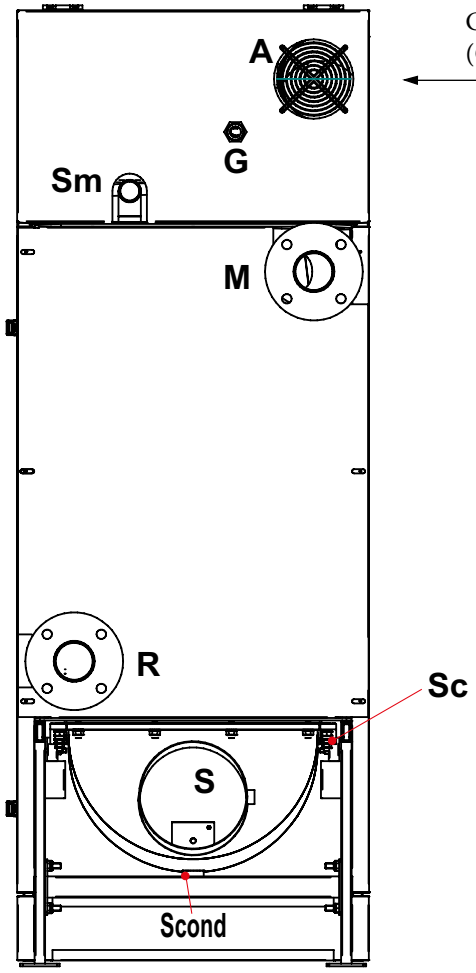
$$Lc = \frac{L}{Lp} \times (P)$$

$$Lp = \frac{L}{Lc} \times (P)$$

L = Boiler width
P = Boiler depth
Lc = Corridor Width
Lp = Door Width



8 HYDRAULIC AND FLUE CONNECTIONS



Combustion air intake grid Ø 250 mm
(Ø 150 mm for 150 kW models)

KEY:

A	-	Air intake grid
G	-	Gas supply
M	-	System flow
R	-	System return
Sc	-	Boiler draining valve (do not use to drain the system)
Scond	-	Condensate drain Ø 40 mm
Sm	-	Air vent attachment/expansion vessel attachment
S	-	Flue exhaust

Model	Flow system M (mm)	Return system R (mm)	Power supply Gas G (inches)	Air vent/expansion vessel attachment Sm (inches)	Flue exhaust S (mm)
ARES PRO 150	DN 65	DN 65	1"	1"	Ø 200
ARES PRO 230	DN 65	DN 65	1 1/4"	1 1/4"	Ø 250
ARES PRO 300	DN 80	DN 80	1 1/4"	1 1/2 "	Ø 250
ARES PRO 348	DN 80	DN 80	1 1/2 "	1 1/2 "	Ø 300
ARES PRO 400	DN 80	DN 80	1 1/2 "	1 1/2 "	Ø 300
ARES PRO 500	DN 80	DN 80	1 1/2 "	1 1/2 "	Ø 300
ARES PRO 600	DN 100	DN 100	1 1/2 "	1 1/2 "	Ø 300

9 CONNECTION TO THE FLUE

The ARES PRO boilers are only approved for installation inside the building (in thermal plant), they leave the factory in "B_{23P}" configuration (open chamber and fan assisted).

The air intake occurs directly from the room in which the boiler is installed and the smoke is discharged into the flue, the Residual manometric head of the flue gas leaving the boiler [ΔP] is 100 Pa.

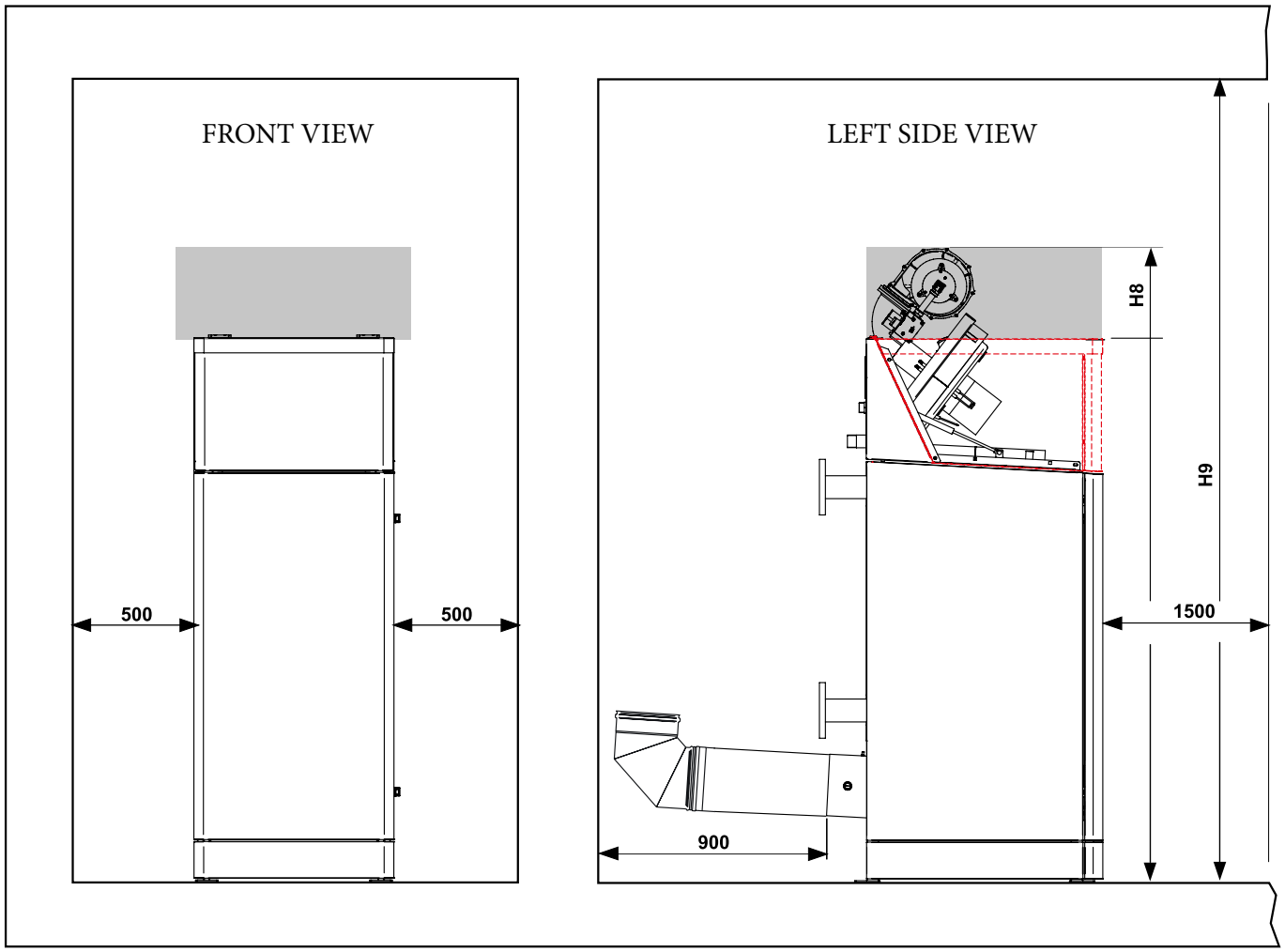
Model	Flue exhaust S (mm)
ARES PRO 150	Ø 200
ARES PRO 230	Ø 250
ARES PRO 300	Ø 250
ARES PRO 348	Ø 300
ARES PRO 400	Ø 300
ARES PRO 500	Ø 300
ARES PRO 600	Ø 300

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).

ARES PRO

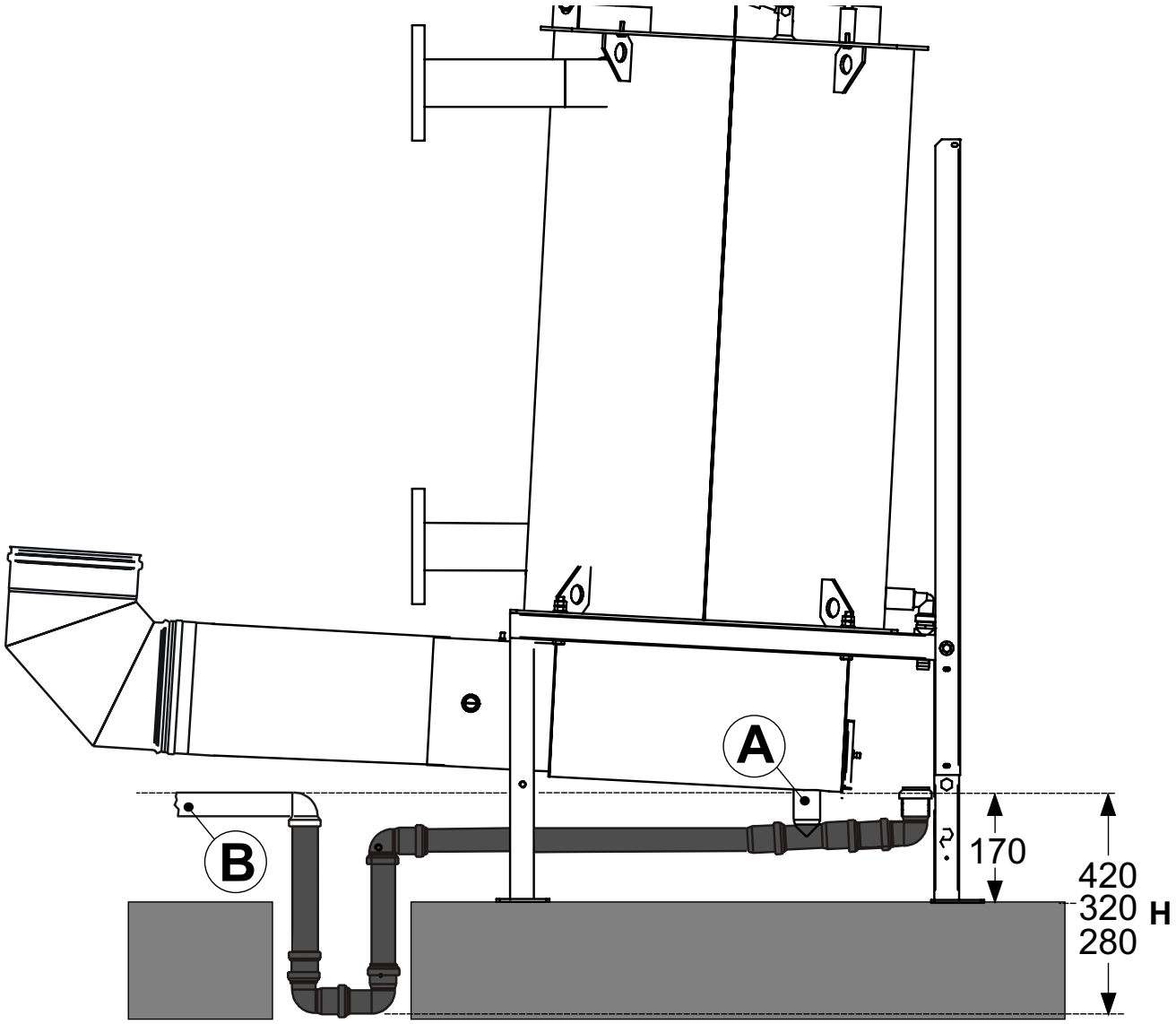
10 HEATING CONTROL UNIT POSITIONING VALUES



ARES PRO	150	230	300	348	400	500	600
Height [H9] (mm)	2300	2500	2500	3000	3000	3000	3000
Height [H8] (mm)	2109	2147	2366	2690	2690	2690	2770

Important: Observe the minimum clearance distances shown in the picture and table to perform normal maintenance and cleaning operations (values in mm).

11 CONDENSATE DRAIN



ARES PRO	150	230	300	348	400	500	600
Siphon / Drain trap head height [H] (mm)	420	420	320	280	280	280	280

NOTE: The top generator of the condensate drain pipe must not be higher than the bottom of the pan.
The boiler must be placed on a flat platform that is sufficiently sturdy in size, in plan, no smaller than the boiler measurements and having a sufficient height so that the trap for condensate drainage can be installed.

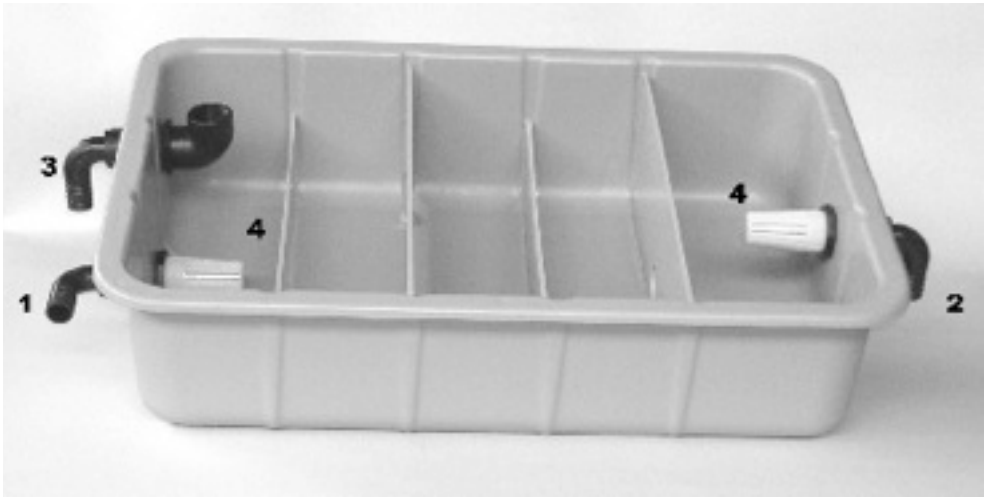
If you do not want to or are able to create a platform, it is possible to install the boiler on the floor and set up a sample point next to the boiler of depth of 250 mm to place the drain trap.

11.1 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 bulkheads 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

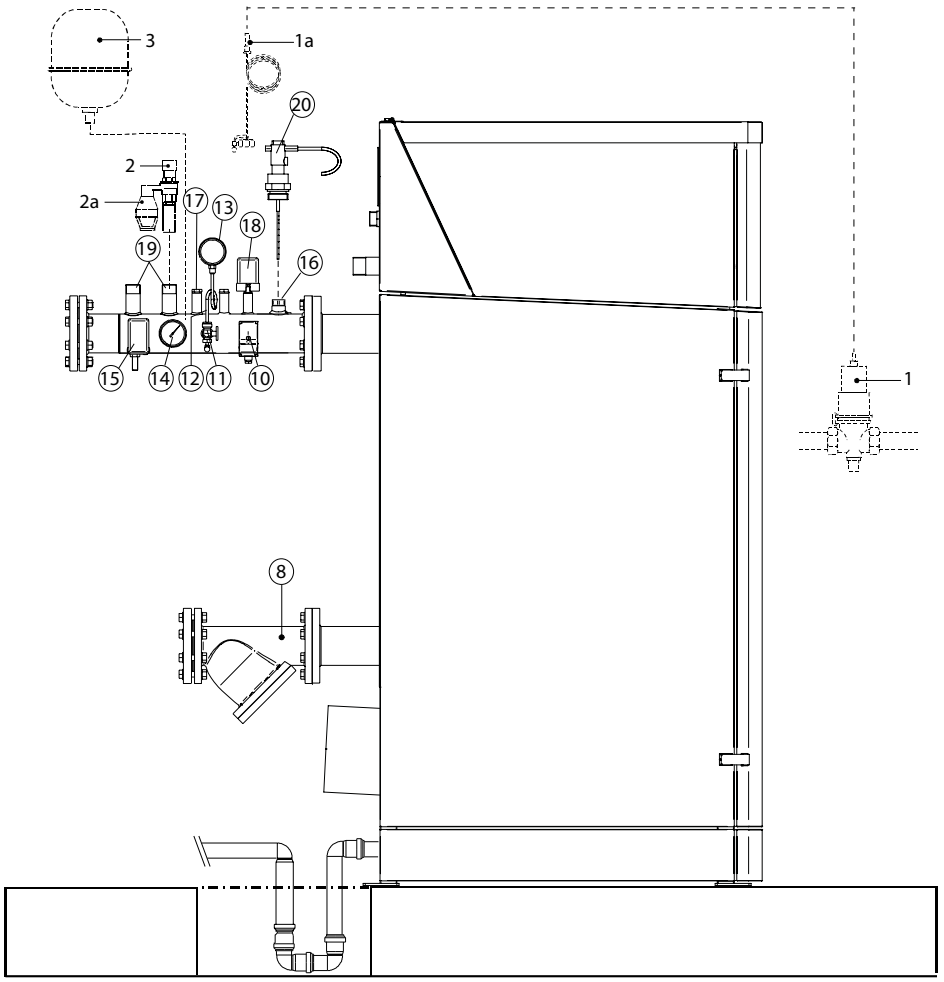


Technical data:

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

12 INAIL SAFETY KIT WITH FILTER

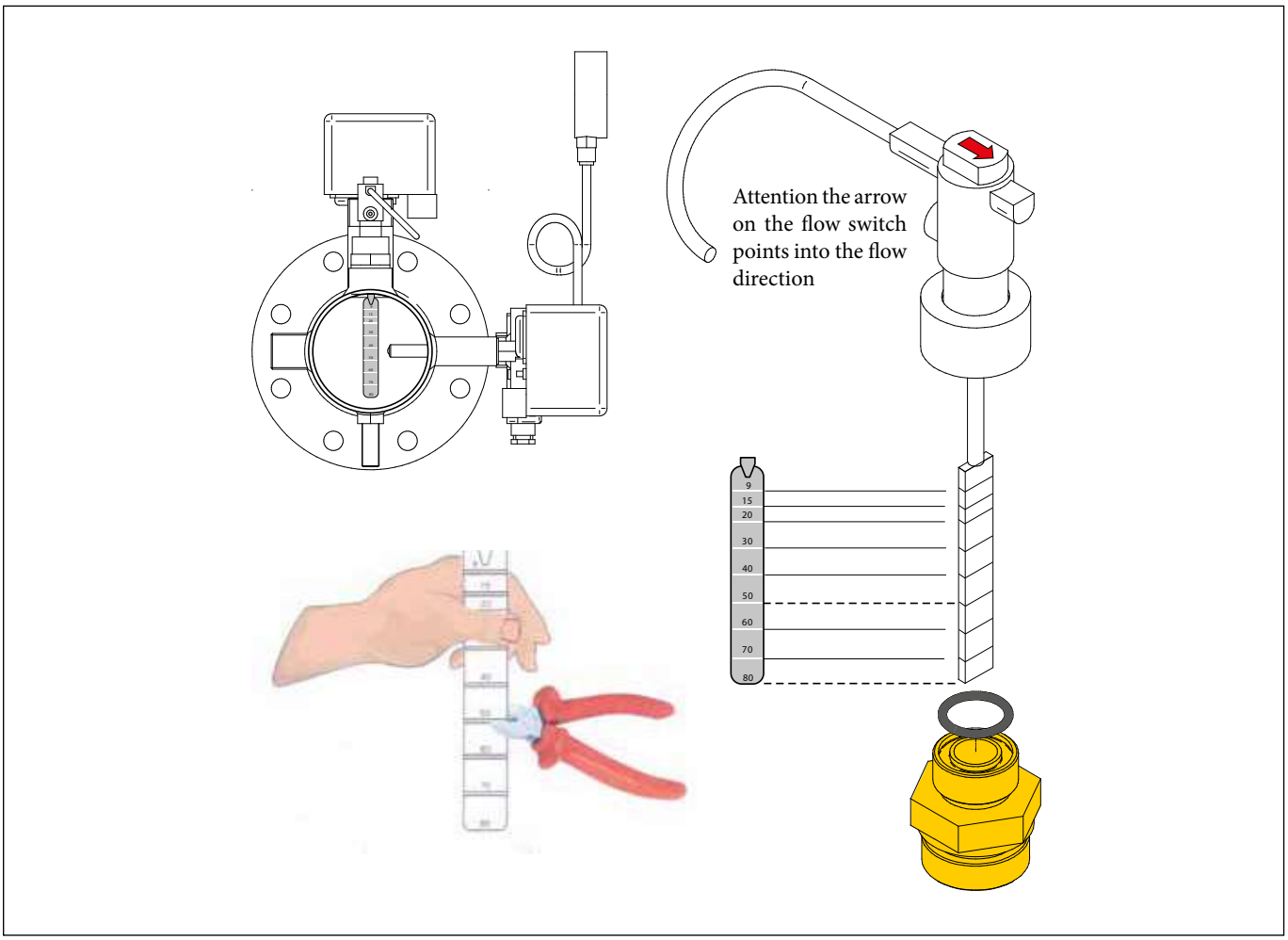


Attention: The boiler is **not** equipped with an expansion vessel on the system. It is mandatory to install a closed or open expansion vessel with minimum head height of 5 metres, to assure correct boiler operation.
The expansion vessel must be compliant with standards in force. The dimensions of the 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 suitably sized safety valve, on the flow pipe, within 0.5 m of the boiler, 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 flanged connections
The appropriately sized safety valve, pressure gauge and expansion tank must be added separately.

12.1 MINIMUM BOILER FLOW AND FLOW SWITCH FEATURES

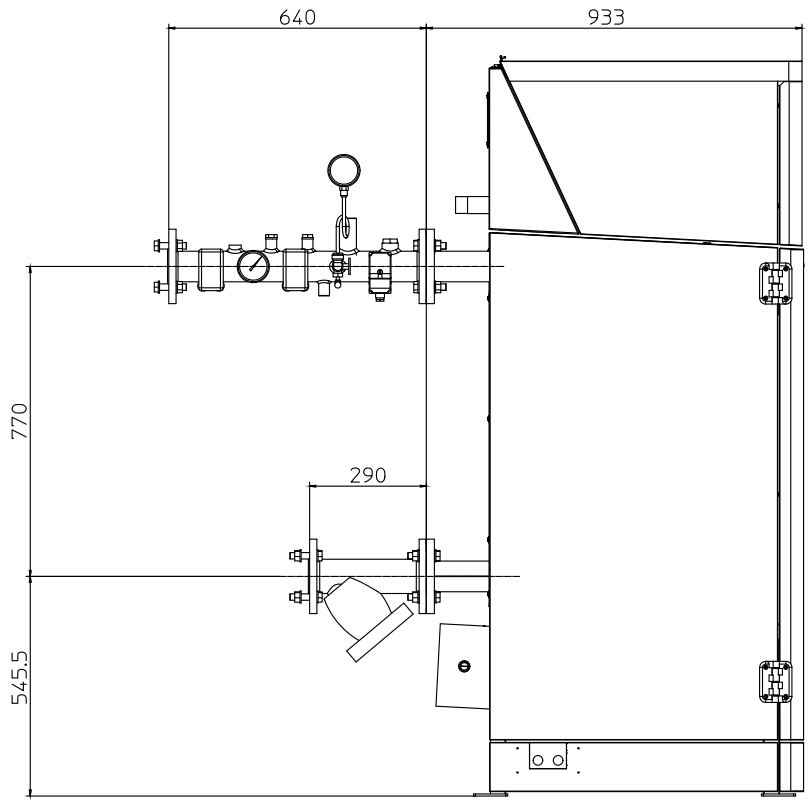


Inside the INAIL safety kit there is a flow switch in order to detect the minimum circulation that must always be guaranteed for the boiler correct functioning, with the values shown in the table below.

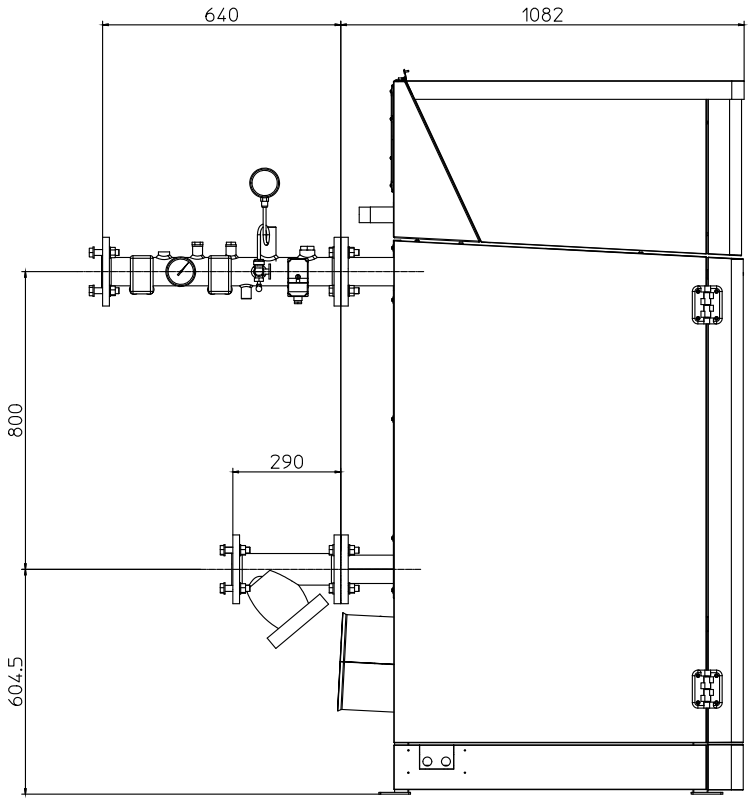
The flow switch has a plastic paddle, trimmable according to pipe size (changing consequently the ON/OFF flow rates).

Nominal Diameter / Paddle Lenght		Setpoint ON/OFF (m³/h) - Max. flow rate (m³/h)								
		DN 65			DN 80			DN 100		
Marking	L1 (mm)	ON	OFF	Max.	ON	OFF	Max.	ON	OFF	Max.
15	46	8,8	8,5	50	13,8	11,3	80	-/-		
20	51	7,4	7,0	45	11,7	9,6	65	18,8	16,3	110
30	61	5,6	5,2	34	9,2	7,7	50	14,6	12,0	80
40	71	4,5	4,2	27	7,5	6,3	40	12,3	10,0	65
50	81	3,8	3,4	22	6,5	5,3	33	10,2	8,0	55
60	91	3,2	3,0	18	5,1	4,7	28	8,0	7,1	50
70	101	-/-			-/-			6,9	6,3	40
80	111	-/-			-/-			6,2	5,9	36

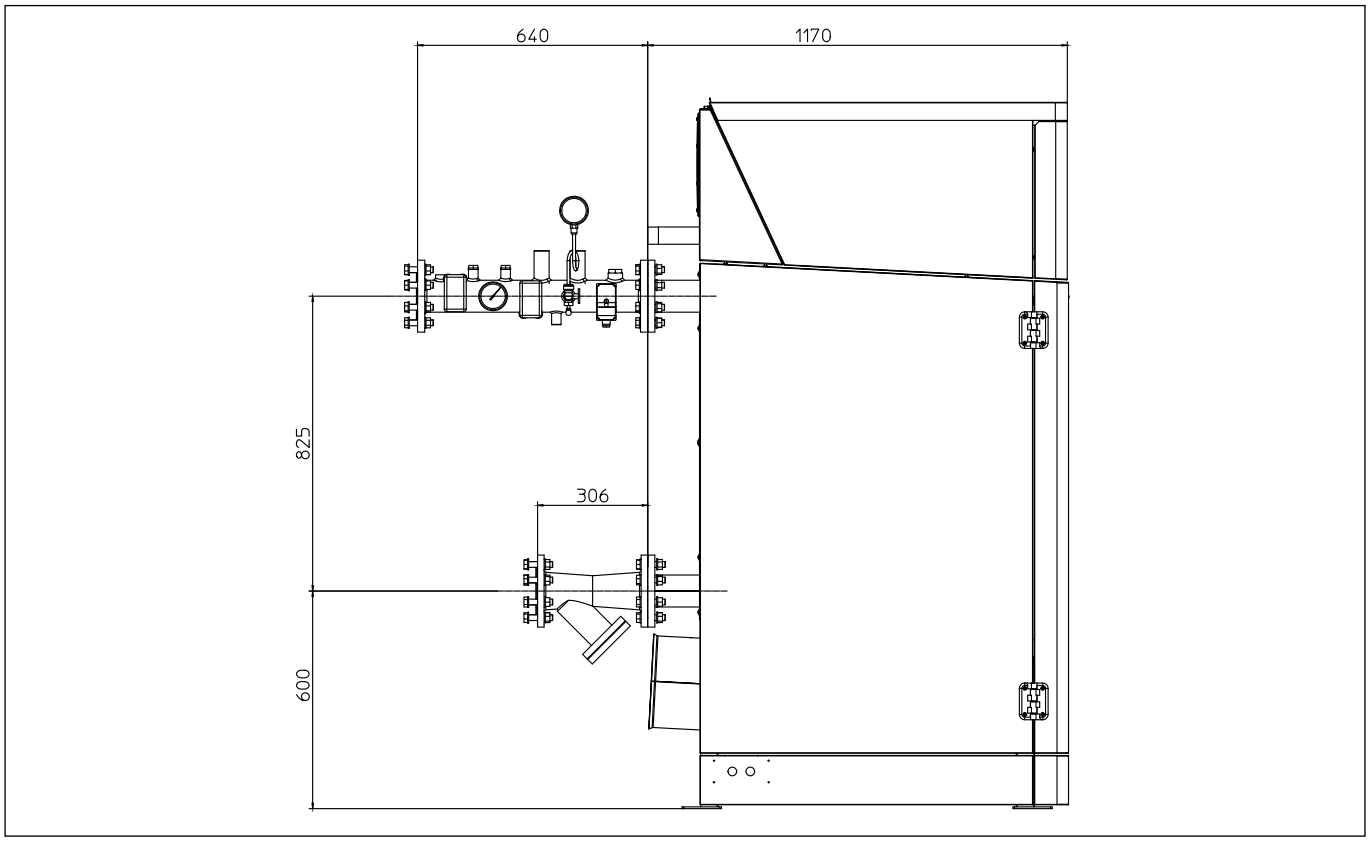
13 DIMENSIONS INAIL SAFETY KIT WITH FILTER FOR ARES PRO 150 CODE 3.028336



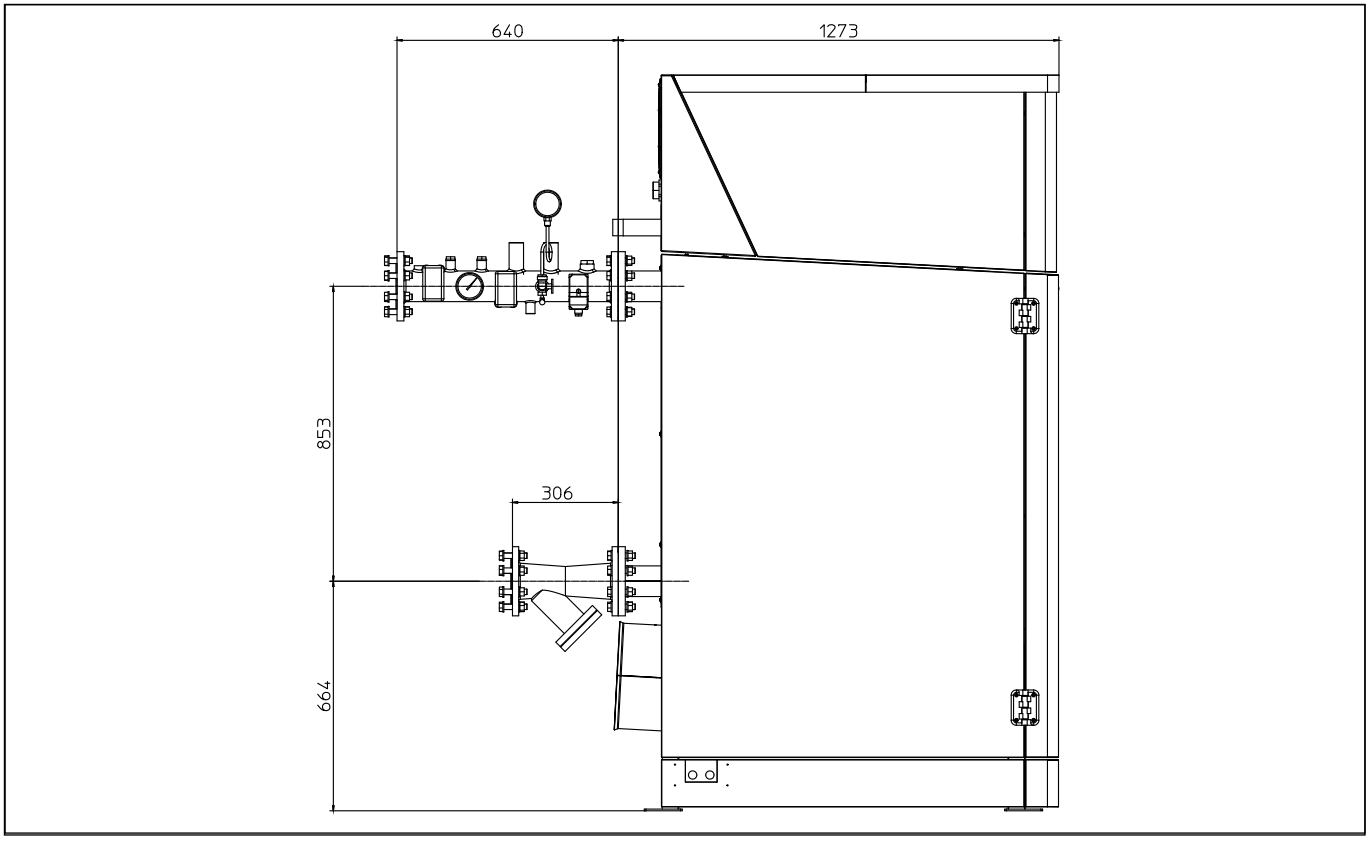
13.1 DIMENSIONS INAIL SAFETY KIT WITH FILTER FOR ARES PRO 230 CODE 3.028336



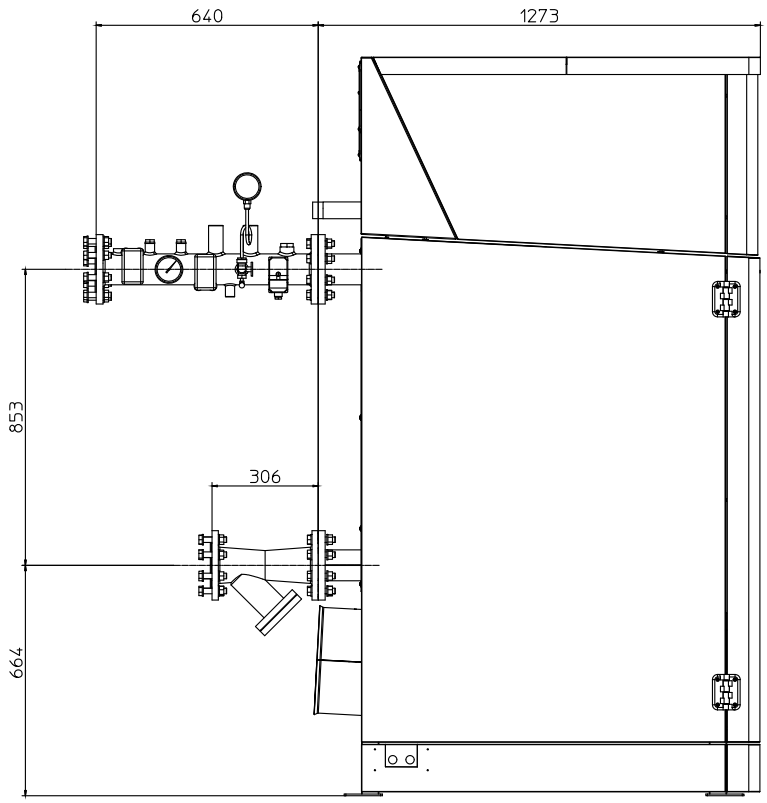
13.2 DIMENSIONS INAIL SAFETY KIT WITH FILTER FOR ARES PRO 300 CODE 3.028337



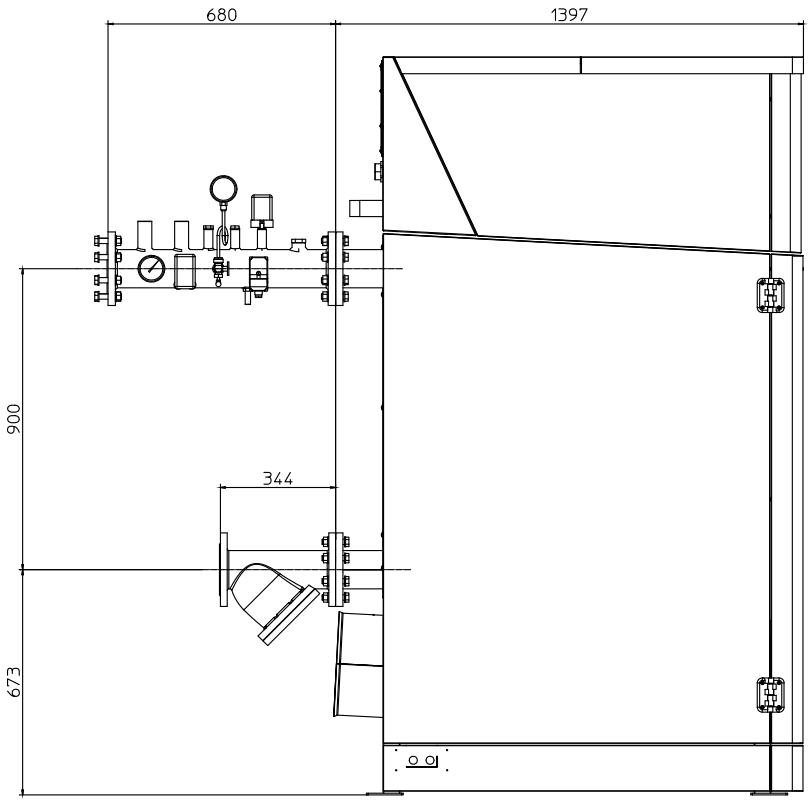
13.3 DIMENSIONS INAIL SAFETY KIT WITH FILTER FOR ARES PRO 348-400 CODE 3.028337



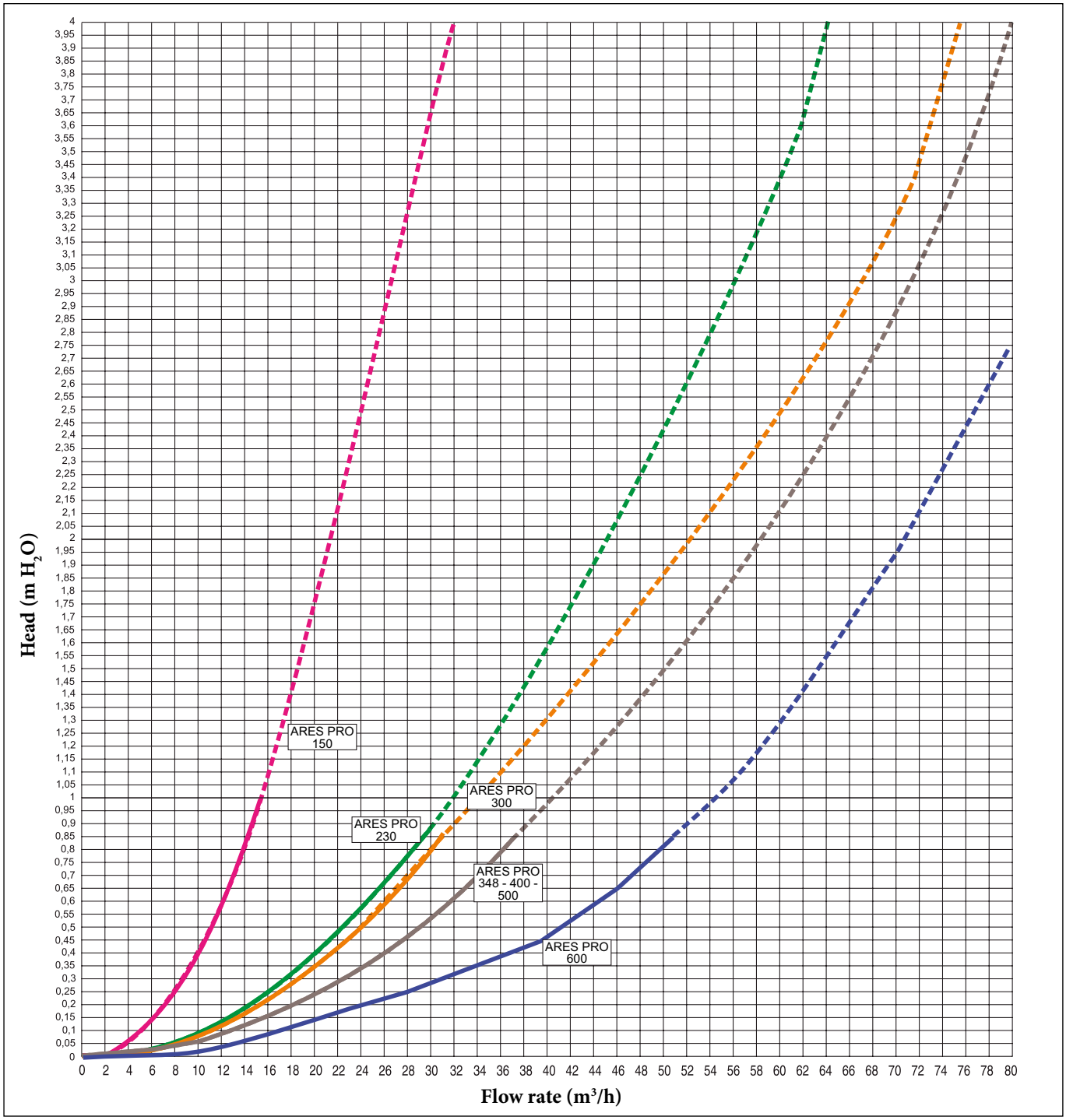
13.4 DIMENSIONS INAIL SAFETY KIT WITH FILTER FOR ARES PRO 500 CODE 3.028337



13.5 DIMENSIONS INAIL SAFETY KIT WITH FILTER FOR ARES PRO 600 CODE 3.023658



14 DIAGRAM OF WATER SIDE HEAD LOSSES



ARES PRO	150	230	300	348	400	500	600
Maximum flow rate in l/h (Δt=15K)	7,818	11,999	15,740	19,575	21,386	25,338	30,978
Nominal requested flow rate in l/h (Δt = 20K)	5,863	9,000	11,805	14,681	16,039	19,004	23,234

The pump must have head that can ensure flow rates according to the circuit's Δ.

The pumps must be determined 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 advisable to choose a pump with the required flow rate and head of approximately 2/3 of its typical curve.

15 FEED WATER TREATMENT

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

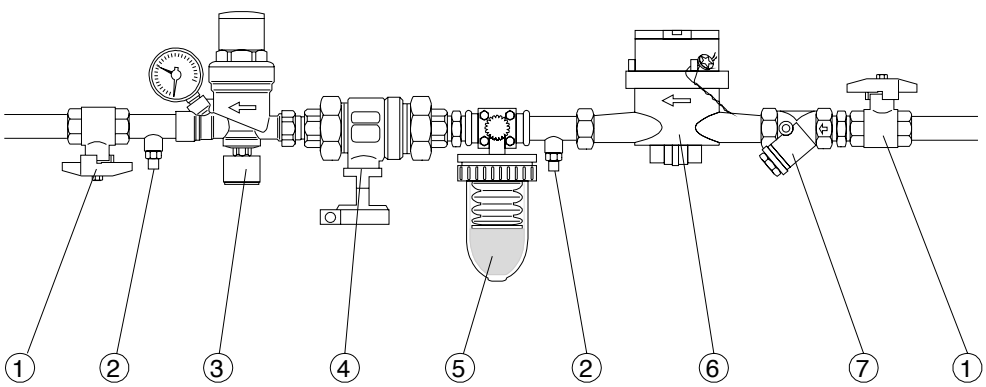
Reference Standards:
- UNI 8065/1989 “Water treatment in heating systems for civil use”;
- UNI 8364/2007 on central heating systems parts 1-2-3.

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 is between 6.5 and 8, with a hardness of 15°F.
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 a 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.

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

16 TECHNICAL DATA

			ARES PRO 150	ARES PRO 230
Maximum nominal heat input		kW (kcal/h)	140 (120,400)	214 (184,040)
Maximum useful heat output (80/60 °C)		kW (kcal/h)	136.36 (117,270)	209.29 (179,989)
Maximum useful heat output (50/30 °C)		kW (kcal/h)	145.88 (125,457)	226.84 (195,082)
Minimum nominal heat input		kW (kcal/h)	35 (30,100)	50 (43,000)
Minimum nominal heat output (80/60 °C)		kW (kcal/h)	32.52 (27,967)	48.25 (41,495)
Minimum nominal heat output (50/30 °C)		kW (kcal/h)	36.54 (31,424)	54.60 (46,956)
Efficiency at 100% Pn (80/60 °C)		%	97.4	97.8
Efficiency at 30% of the load (80/60 °C)		%	92.92	96.50
Efficiency at 100% Pn (50/30 °C)		%	104.2	106.0
Efficiency at 30% of the load (T. r. 30 °C)		%	107.7	107.2
Central heating circuit				
System adjustable central heating temperature		°C	20-85	20-85
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
Required nominal water flow rate (ΔT 20 °C)		l/h	5,863	9,000
Gas supply				
METHANE fan speed (G20)	MIN - MAX	%	31-99	32-86
LPG fan speed (G31)	MIN - MAX	%	31-94	32-82
Gas flow rate at METHANE burner (G20)	MIN - MAX	m^3/h	3.70 - 14.80	5.29 - 22.63
Gas flow rate at LPG burner (G31)	MIN - MAX	kg/h	2.72 - 10.87	3.88 - 16.61
Electric power supply		V/Hz	230-50	230 - 50
Maximum absorbed electric power		W	190	195
Fuse on power supply		A (F)	6	6
Electric insulation rating	IP		X4D	X4D
Boiler water content		litres	153	210
Net boiler weight (casing)		kg	347 (60)	399 (80)
Useful efficiency at 100% output (Italian Lgs. D. 192/05 as amended)			>93+2·log Pn (Pn = 136.36 kW)	>93+2·log Pn (Pn = 209.29 kW)

16.1 TECHNICAL DATA

			ARES PRO 300	ARES PRO 348
Maximum nominal heat input		kW (kcal/h)	280 (240,800)	348 (299,280)
Maximum useful heat output (80/60 °C)		kW (kcal/h)	274.54 (236,104)	341.42 (293,621)
Maximum useful heat output (50/30 °C)		kW (kcal/h)	292.88 (251,877)	363.31 (312,447)
Minimum nominal heat input		kW (kcal/h)	65 (55,900)	90 (77,400)
Minimum nominal heat output (80/60 °C)		kW (kcal/h)	63.57 (54,670)	87.67 (75,396)
Minimum nominal heat output (50/30 °C)		kW (kcal/h)	70.01 (60,209)	99.09 (85,217)
Efficiency at 100% Pn (80/60 °C)		%	98.05	98.11
Efficiency at 30% of the load (80/60 °C)		%	97.8	97.41
Efficiency at 100% Pn (50/30 °C)		%	104.6	104.4
Efficiency at 30% of the load (T. r. 30 °C)		%	108.9	108.4
Central heating circuit				
System adjustable central heating temperature		°C	20-85	20-85
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
Required nominal water flow rate (ΔT 20 °C)		l/h	11,805	14,861
Gas supply				
METHANE fan speed (G20)	MIN - MAX	%	32-83	34-67
LPG fan speed (G31)	MIN - MAX	%	32-81	34-64
Gas flow rate at METHANE burner (G20)	MIN - MAX	m^3/h	6.87-29.61	9.52-36.80
Gas flow rate at LPG burner (G31)	MIN - MAX	kg/h	5.05-21.73	9.70-27.01
Electric power supply		V/Hz	230 - 50	230 - 50
Maximum absorbed electric power		W	210	270
Fuse on power supply		A (F)	6	6
Electric insulation rating	IP		X4D	X4D
Boiler water content		litres	270	340
Net boiler weight (casing)		kg	459 (90)	610 (106)
Useful efficiency at 100% output (Italian Lgs. D. 192/05 as amended)			>93+2·log Pn (Pn = 280.0 kW)	>93+2·log Pn (Pn = 348.0 kW)

16.2 TECHNICAL DATA

			ARES PRO 400	ARES PRO 500
Maximum nominal heat input		kW (kcal/h)	380 (326,800)	450 (387,000)
Maximum useful heat output (80/60 °C)		kW (kcal/h)	373.01 (320,789)	441.95 (380,077)
Maximum useful heat output (50/30 °C)		kW (kcal/h)	399.00 (343,140)	472.20 (406,092)
Minimum nominal heat input		kW (kcal/h)	90 (77,400)	115 (98,900)
Minimum nominal heat output (80/60 °C)		kW (kcal/h)	87.80 (75,508)	111.09 (95,537)
Minimum nominal heat output (50/30 °C)		kW (kcal/h)	97.20 (83,592)	124.09 (106,717)
Efficiency at 100% Pn (80/60 °C)		%	98.16	98.21
Efficiency at 30% of the load (80/60 °C)		%	97.55	96.6
Efficiency at 100% Pn (50/30 °C)		%	105.0	104.9
Efficiency at 30% of the load (T. r. 30 °C)		%	108.8	108.9
Central heating circuit				
System adjustable central heating temperature		°C	20-85	20-85
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
Required nominal water flow rate (ΔT 20 °C)		l/h	16,039	19,004
Gas supply				
METHANE fan speed (G20)	MIN - MAX	%	32-76	32-88
LPG fan speed (G31)	MIN - MAX	%	36-69	33-83
Gas flow rate at METHANE burner (G20)	MIN - MAX	m^3/h	9.52-40.18	12.16-47.58
Gas flow rate at LPG burner (G31)	MIN - MAX	kg/h	6.99-29.50	8.93-34.93
Electric power supply		V/Hz	230 - 50	230 - 50
Maximum absorbed electric power		W	425	555
Fuse on power supply		A (F)	6	6
Electric insulation rating	IP		X4D	X4D
Boiler water content		litres	340	340
Net boiler weight (casing)		kg	610 (106)	610 (106)
Useful efficiency at 100% output (Italian Lgs. D. 192/05 as amended)			>93+2·log Pn (Pn = 373.01 kW)	>93+2·log Pn (Pn = 441.95 kW)

16.3 TECHNICAL DATA

			ARES PRO 600	
Maximum nominal heat input		kW (kcal/h)	550 (473,000)	
Maximum useful heat output (80/60 °C)		kW (kcal/h)	540.32 (464,675)	
Maximum useful heat output (50/30 °C)		kW (kcal/h)	581.19 (499,823)	
Minimum nominal heat input		kW (kcal/h)	125 (107,500)	
Minimum nominal heat output (80/60 °C)		kW (kcal/h)	118.53 (101,936)	
Minimum nominal heat output (50/30 °C)		kW (kcal/h)	135.88 (116,857)	
Efficiency at 100% Pn (80/60 °C)		%	98.24	
Efficiency at 30% of the load (80/60 °C)		%	94.82	
Efficiency at 100% Pn (50/30 °C)		%	105.67	
Efficiency at 30% of the load (T. r. 30 °C)		%	106.5	
Central heating circuit				
System adjustable central heating temperature		°C	20-85	
System max. working temperature		°C	90	
System max. working pressure		bar	6.0	
System min. working pressure		bar	0.5	
Required nominal water flow rate (ΔT 20 °C)		l/h	23,234	
Gas supply				
METHANE fan speed (G20)	MIN - MAX	%	29-88	
LPG fan speed (G31)	MIN - MAX	%	30-92	
Gas flow rate at METHANE burner (G20)	MIN - MAX	m^3/h	13.22-58.15	
Gas flow rate at LPG burner (G31)	MIN - MAX	kg/h	8.70-42.69	
Electric power supply		V/Hz	230 - 50	
Maximum absorbed electric power		W	590	
Fuse on power supply		A (F)	6	
Electric insulation rating	IP		X4D	
Boiler water content		litres	425	
Net boiler weight (casing)		kg	755 (120)	
Useful efficiency at 100% output (Italian Lgs. D. 192/05 as amended)			>93+2·log Pn (Pn = 540.32 kW)	

17 ARES PRO 150 COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60 °C)	%	97.8	97.8
Combustion efficiency P min (80/60 °C)	%	98.38	98.38
Effective efficiency at 100% Pn (80/60 °C)	%	97.4	97.4
Effective efficiency P min (80/60 °C)	%	92.92	92.92
Effective efficiency at 100% Pn (50/30 °C)	%	104.2	104.2
Effective efficiency P min (50/30 °C)	%	104.4	104.4
Chimney losses with burner on (100% Pn) (80/60 °C)	%	2.21	2.21
Chimney losses with burner on (P min) (80/60 °C)	%	1.62	1.62
Chimney losses with burner off	%	0.22	0.22
Casing losses with burner on (100% Pn) (80/60 °C)	%	0.4	0.4
Casing losses with burner on (P min) (80/60 °C)	%	5.46	5.46
Casing losses with burner off	%	0.22	0.22
Maximum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	44.2	-
Minimum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	32.3	-
Flue gas flow rate at Maximum Heat Input	kg/h	229	-
Flue gas flow rate at Minimum Heat Input	kg/h	57	-
CO_2 at the Maximum Heat Input	%	9.1	10.5
CO_2 at Minimum Heat Input	%	9.1	10.5
CO at Maximum Heat Input	mg/kWh	13.73	-
NO_x at the Maximum Heat Input	mg/kWh	54	-
NO_x class	-	6	6
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	11.5	

- Gas flow rates refer to the NHV at the temperature of 20 °C and pressure of 1013 mbar.
- Flue temperature values refer to an air inlet temperature of 20 °C and flow/return temperature of 80/60 °C.

17.1 ARES PRO 230 COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60 °C)	%	97.9	97.9
Combustion efficiency P min (80/60 °C)	%	98.32	98.32
Effective efficiency at 100% Pn (80/60 °C)	%	97.8	97.8
Effective efficiency P min (80/60 °C)	%	96.5	96.5
Effective efficiency at 100% Pn (50/30 °C)	%	106	106
Effective efficiency P min (50/30 °C)	%	109.2	109.2
Chimney losses with burner on (100% Pn) (80/60 °C)	%	2.14	2.14
Chimney losses with burner on (P min) (80/60 °C)	%	1.68	1.68
Chimney losses with burner off	%	0.18	0.18
Casing losses with burner on (100% Pn) (80/60 °C)	%	0.1	0.1
Casing losses with burner on (P min) (80/60 °C)	%	1.82	1.82
Casing losses with burner off	%	0.18	0.18
Maximum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	42.7	-
Minimum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	33.6	-
Flue gas flow rate at Maximum Heat Input	kg/h	350	-
Flue gas flow rate at Minimum Heat Input	kg/h	82	-
CO_2 at the Maximum Heat Input	%	9.1	10.5
CO_2 at Minimum Heat Input	%	9.1	10.5
CO at Maximum Heat Input	mg/kWh	18.05	-
NO_x at the Maximum Heat Input	mg/kWh	43	-
NO_x class	-	6	6
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	13.7	

- Gas flow rates refer to the NHV at the temperature of 20 °C and pressure of 1013 mbar.
- Flue temperature values refer to an air inlet temperature of 20 °C and flow/return temperature of 80/60 °C.

17.2 ARES PRO 300 COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60 °C)	%	98.2	98.2
Combustion efficiency P min (80/60 °C)	%	98.4	98.4
Effective efficiency at 100% Pn (80/60 °C)	%	98.05	98.05
Effective efficiency P min (80/60 °C)	%	97.8	97.8
Effective efficiency at 100% Pn (50/30 °C)	%	104.6	104.6
Effective efficiency P min (50/30 °C)	%	107.7	107.7
Chimney losses with burner on (100% Pn) (80/60 °C)	%	1.84	1.84
Chimney losses with burner on (P min) (80/60 °C)	%	1.6	1.6
Chimney losses with burner off	%	0.12	0.12
Casing losses with burner on (100% Pn) (80/60 °C)	%	0.1	0.1
Casing losses with burner on (P min) (80/60 °C)	%	0.60	0.60
Casing losses with burner off	%	0.12	0.12
Maximum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	36.7	-
Minimum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	32	-
Flue gas flow rate at Maximum Heat Input	kg/h	458	-
Flue gas flow rate at Minimum Heat Input	kg/h	106	-
CO_2 at the Maximum Heat Input	%	9.1	10.5
CO_2 at Minimum Heat Input	%	9.1	10.5
CO at Maximum Heat Input	mg/kWh	28.08	-
NO_x at the Maximum Heat Input	mg/kWh	53	-
NO_x class	-	6	6
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	15.8	

- Gas flow rates refer to the NHV at the temperature of 20 °C and pressure of 1013 mbar.
- Flue temperature values refer to an air inlet temperature of 20 °C and flow/return temperature of 80/60 °C.

17.3 ARES PRO 348 COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60 °C)	%	98.2	98.2
Combustion efficiency P min (80/60 °C)	%	98.34	98.34
Effective efficiency at 100% Pn (80/60 °C)	%	98.11	98.11
Effective efficiency P min (80/60 °C)	%	97.41	97.41
Effective efficiency at 100% Pn (50/30 °C)	%	104.4	104.1
Effective efficiency P min (50/30 °C)	%	110.1	110.1
Chimney losses with burner on (100% Pn) (80/60 °C)	%	1.78	1.78
Chimney losses with burner on (P min) (80/60 °C)	%	1.66	1.66
Chimney losses with burner off	%	0.27	0.27
Casing losses with burner on (100% Pn) (80/60 °C)	%	0.1	0.1
Casing losses with burner on (P min) (80/60 °C)	%	0.93	0.93
Casing losses with burner off	%	0.27	0.27
Maximum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	35.6	-
Minimum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	33.2	-
Flue gas flow rate at Maximum Heat Input	kg/h	569	-
Flue gas flow rate at Minimum Heat Input	kg/h	147	-
CO_2 at the Maximum Heat Input	%	9.1	10.8
CO_2 at Minimum Heat Input	%	9.1	10.7
CO at Maximum Heat Input	mg/kWh	25.27	-
NO_x at the Maximum Heat Input	mg/kWh	49	-
NO_x class	-	6	6
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	29.1	

- Gas flow rates refer to the NHV at the temperature of 20 °C and pressure of 1013 mbar.
- Flue temperature values refer to an air inlet temperature of 20 °C and flow/return temperature of 80/60 °C.

17.4 ARES PRO 400 COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60 °C)	%	98.2	98.2
Combustion efficiency P min (80/60 °C)	%	98.31	98.31
Effective efficiency at 100% Pn (80/60 °C)	%	98.16	98.16
Effective efficiency P min (80/60 °C)	%	97.55	97.55
Effective efficiency at 100% Pn (50/30 °C)	%	105.0	105.0
Effective efficiency P min (50/30 °C)	%	108.0	108.0
Chimney losses with burner on (100% Pn) (80/60 °C)	%	1.77	1.77
Chimney losses with burner on (P min) (80/60 °C)	%	1.69	1.69
Chimney losses with burner off	%	0.27	0.27
Casing losses with burner on (100% Pn) (80/60 °C)	%	0.1	0.1
Casing losses with burner on (P min) (80/60 °C)	%	0.76	0.76
Casing losses with burner off	%	0.27	0.27
Maximum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	35.4	-
Minimum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	33.7	-
Flue gas flow rate at Maximum Heat Input	kg/h	621	-
Flue gas flow rate at Minimum Heat Input	kg/h	147	-
CO_2 at the Maximum Heat Input	%	9.1	10.8
CO_2 at Minimum Heat Input	%	9.1	10.8
CO at Maximum Heat Input	mg/kWh	18.25	-
NO_x at the Maximum Heat Input	mg/kWh	50	-
NO_x class	-	6	6
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	28.5	

- Gas flow rates refer to the NHV at the temperature of 20 °C and pressure of 1013 mbar.
- Flue temperature values refer to an air inlet temperature of 20 °C and flow/return temperature of 80/60 °C.

17.5 ARES PRO 500 COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60 °C)	%	98.2	98.2
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)	%	96.6	96.6
Effective efficiency at 100% Pn (50/30 °C)	%	104.9	104.9
Effective efficiency P min (50/30 °C)	%	107.9	107.9
Chimney losses with burner on (100% Pn) (80/60 °C)	%	1.78	1.78
Chimney losses with burner on (P min) (80/60 °C)	%	1.57	1.57
Chimney losses with burner off	%	0.27	0.27
Casing losses with burner on (100% Pn) (80/60 °C)	%	0.03	0.03
Casing losses with burner on (P min) (80/60 °C)	%	1.83	1.83
Casing losses with burner off	%	0.27	0.27
Maximum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	35.5	-
Minimum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	31.3	-
Flue gas flow rate at Maximum Heat Input	kg/h	735	-
Flue gas flow rate at Minimum Heat Input	kg/h	188	-
CO_2 at the Maximum Heat Input	%	9.1	10.8
CO_2 at Minimum Heat Input	%	9.1	10.8
CO at Maximum Heat Input	mg/kWh	22.46	-
NO_x at the Maximum Heat Input	mg/kWh	48	-
NO_x class	-	6	6
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	28.8	

- Gas flow rates refer to the NHV at the temperature of 20 °C and pressure of 1013 mbar.
- Flue temperature values refer to an air inlet temperature of 20 °C and flow/return temperature of 80/60 °C.

17.6 ARES PRO 600 COMBUSTION FEATURES

		Methane (G20)	LPG (G31)
Combustion efficiency 100% Pn (80/60 °C)	%	98.3	98.3
Combustion efficiency P min (80/60 °C)	%	98.42	98.42
Effective efficiency at 100% Pn (80/60 °C)	%	98.24	98.24
Effective efficiency P min (80/60 °C)	%	94.82	94.82
Effective efficiency at 100% Pn (50/30 °C)	%	105.67	105.67
Effective efficiency P min (50/30 °C)	%	108.7	108.7
Chimney losses with burner on (100% Pn) (80/60 °C)	%	1.72	1.72
Chimney losses with burner on (P min) (80/60 °C)	%	1.58	1.58
Chimney losses with burner off	%	0.24	0.24
Casing losses with burner on (100% Pn) (80/60 °C)	%	0.04	0.04
Casing losses with burner on (P min) (80/60 °C)	%	3.60	3.60
Casing losses with burner off	%	0.24	0.24
Maximum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	34.3	-
Minimum flue temperature (value net of a room temperature 20 °C and functioning temperature 80/60 °C)	°C	31.5	-
Flue gas flow rate at Maximum Heat Input	kg/h	899	-
Flue gas flow rate at Minimum Heat Input	kg/h	204	-
CO_2 at the Maximum Heat Input	%	9.1	10.7
CO_2 at Minimum Heat Input	%	9.1	10.7
CO at Maximum Heat Input	mg/kWh	22.10	-
NO_x at the Maximum Heat Input	mg/kWh	50	-
NO_x class	-	6	6
Maximum pressure available at flue base	Pa	100	
Max. condensate production	kg/h	31.0	

- Gas flow rates refer to the NHV at the temperature of 20 °C and pressure of 1013 mbar.
- Flue temperature values refer to an air inlet temperature of 20 °C and flow/return temperature of 80/60 °C.

18 TECHNICAL PARAMETERS (REGULATION 813/2013)

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

Model/s:			ARES PRO 150				
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	136	kW	Seasonal energy efficiency of central heating	η_s	92	%
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	136.3	kW	At nominal heat output in high temperature mode (*)	η_4	87.8	%
At 30% of nominal heat output in a low temperature mode (**)	P_1	45.2	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	97.0	%
Auxiliary electricity consumption				Other items			
At full load	el_{max}	0.190	kW	Heat loss in standby	P_{stby}	0.32	kW
At partial load	el_{min}	0.042	kW	Annual electrical consumption	Q_{HE}	424	GJ
In standby mode	P_{SB}	0.005	kW	Emissions of nitrogen oxides ref. PCI (PCS)	NO_X	59 (53)	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 PRO

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

Model/s:			ARES PRO 230				
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	209	kW	Seasonal energy efficiency of central heating	η_s	92	%
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	209.3	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	68.8	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	96.6	%
Auxiliary electricity consumption				Other items			
At full load	el_{max}	0.195	kW	Heat loss in standby	P_{stby}	0.39	kW
At partial load	el_{min}	0.040	kW	Annual electrical consumption	Q_{HE}	653	GJ
In standby mode	P_{SB}	0.005	kW	Emissions of nitrogen oxides ref. PCI (PCS)	NO_X	56 (51)	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 PRO 300				
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	274	kW	Seasonal energy efficiency of central heating	η_s	92	%
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	274.5	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	91.5	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	98.1	%
Auxiliary electricity consumption				Other items			
At full load	el_{max}	0.210	kW	Heat loss in standby	P_{stby}	0.34	kW
At partial load	el_{min}	0.032	kW	Annual electrical consumption	Q_{HE}	844	GJ
In standby mode	P_{SB}	0.005	kW	Emissions of nitrogen oxides ref. PCI (PCS)	NO_X	59 (53)	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 PRO 348				
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	341	kW	Seasonal energy efficiency of central heating	η_s	93	%
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	341.4	kW	At nominal heat output in high temperature mode (*)	η_4	88.4	%
At 30% of nominal heat output in a low temperature mode (**)	P_1	113.2	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	97.7	%
Auxiliary electricity consumption				Other items			
At full load	el_{max}	0.270	kW	Heat loss in standby	P_{stby}	0.95	kW
At partial load	el_{min}	0.036	kW	Annual electrical consumption	Q_{HE}	1054	GJ
In standby mode	P_{SB}	0.005	kW	Emissions of nitrogen oxides ref. PCI (PCS)	NO_X	54 (49)	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 PRO 400				
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	371	kW	Seasonal energy efficiency of central heating	η_s	94	%
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	373.0	kW	At nominal heat output in high temperature mode (*)	η_4	88.4	%
At 30% of nominal heat output in a low temperature mode (**)	P_1	124.0	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	98.0	%
Auxiliary electricity consumption				Other items			
At full load	el_{max}	0.425	kW	Heat loss in standby	P_{stby}	0.95	kW
At partial load	el_{min}	0.051	kW	Annual electrical consumption	Q_{HE}	1148	GJ
In standby mode	P_{SB}	0.005	kW	Emissions of nitrogen oxides ref. PCI (PCS)	NO_X	55 (50)	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 PRO

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

Model/s:			ARES PRO 500				
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	442	kW	Seasonal energy efficiency of central heating	η_s	94	%
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	441.9	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	147.1	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	98.2	%
Auxiliary electricity consumption				Other items			
At full load	el_{max}	0.555	kW	Heat loss in standby	P_{stby}	0.95	kW
At partial load	el_{min}	0.053	kW	Annual electrical consumption	Q_{HE}	1358	GJ
In standby mode	P_{SB}	0.004	kW	Emissions of nitrogen oxides ref. PCI (PCS)	NO_X	53 (48)	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						

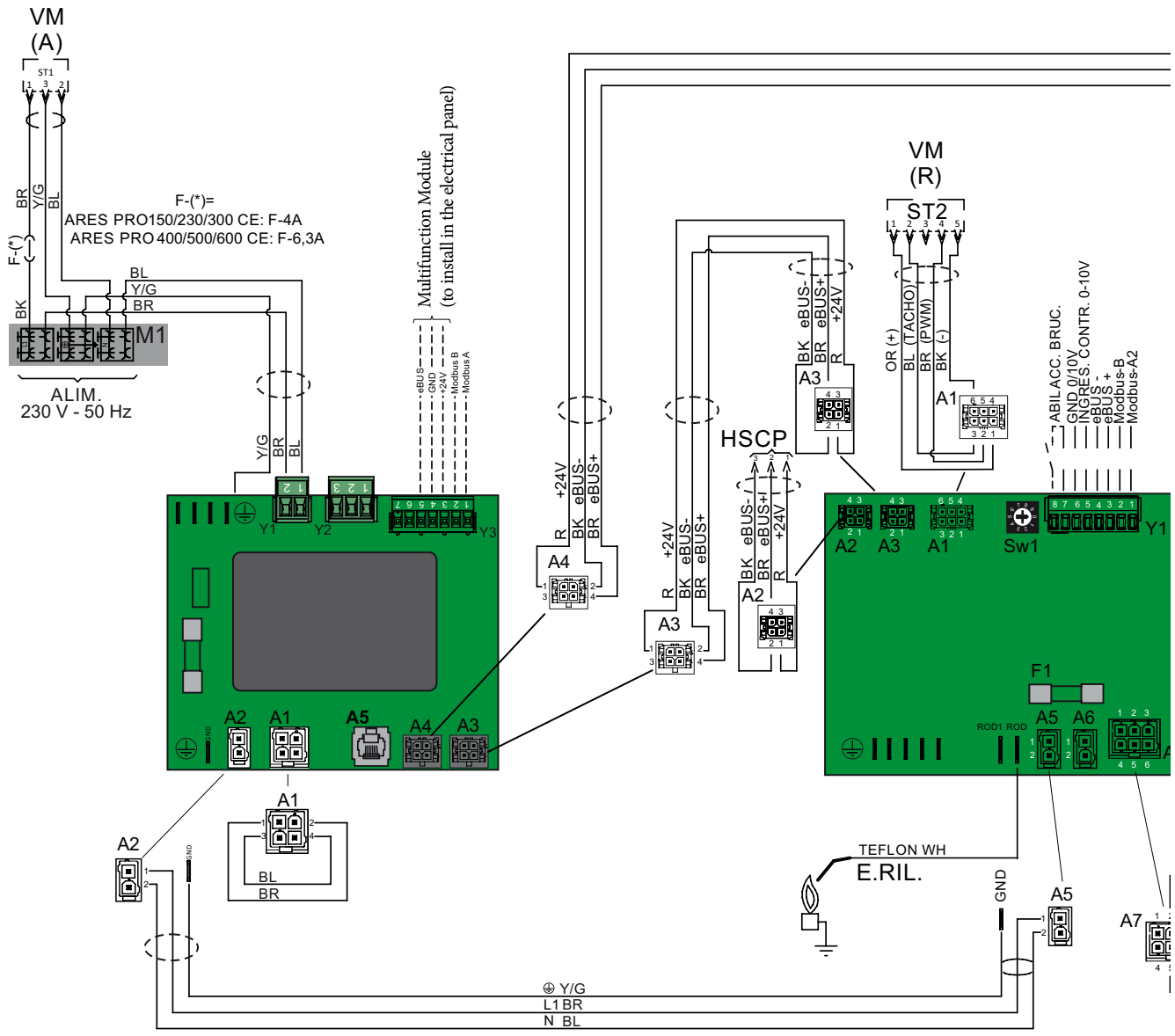
(*) High temperature mode means 60°C on return and 80°C on flow.
(**) Low temperature mode for condensation Boilers means 30°C , for low temperature boilers 37°C and for other appliances 50°C of return temperature.

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

Model/s:			ARES PRO 600				
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	540	kW	Seasonal energy efficiency of central heating	η_s	92	%
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	540.3	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	175.7	kW	At 30% of nominal heat output in a low temperature mode (**)	η_1	96.0	%
Auxiliary electricity consumption				Other items			
At full load	el_{max}	0.590	kW	Heat loss in standby	P_{stby}	1.34	kW
At partial load	el_{min}	0.088	kW	Annual electrical consumption	Q_{HE}	1694	GJ
In standby mode	P_{SB}	0.007	kW	Emissions of nitrogen oxides ref. PCI (PCS)	NO_X	56 (50)	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.

19 ARES PRO PRACTICAL WIRING DIAGRAM

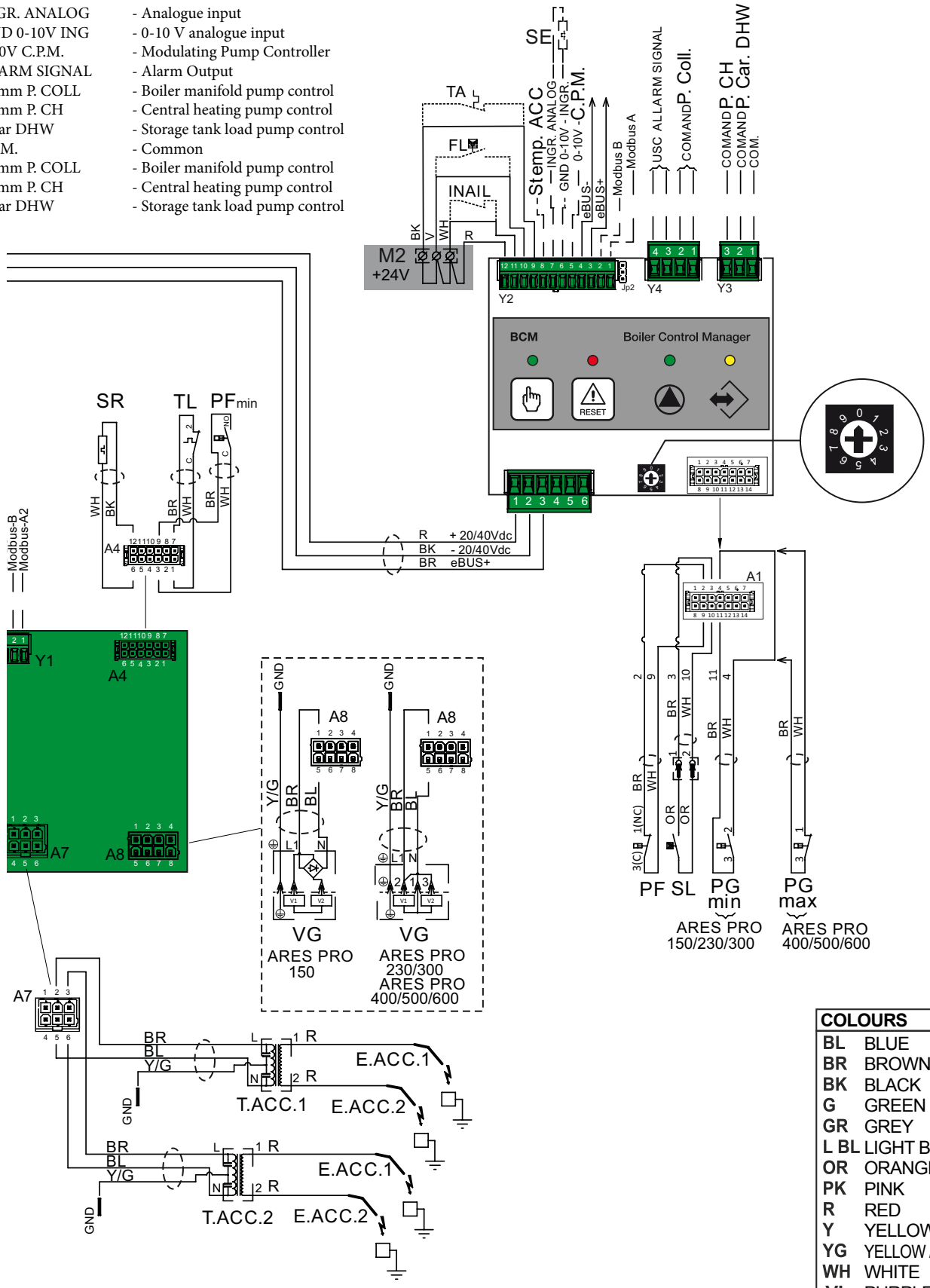


KEY:

A1.....A9	- Services connectors
ACC. E. 1-2	- Ignition electrode 1-2
DET. E.	- Detection electrode
HSCP	-Temperature control
M1	- Boiler Power Supply Terminal Board
SR	- Central heating temperature sensor
M2	- Safety Terminal Board
PF	- Flue pressure switch
PF min	- Minimum flue pressure switch
PG min	- Minimum gas pressure switch
PG max	- Maximum gas pressure switch
SL	- Condensate level sensor
T. ACC 1-2	- Ignition Transformation 1-2
TL	- Limit thermostat
VG	- Gas valve
VM (A)	- Modulating fan power supply
VM (R)	- Modulating fan adjustment/Det.
SE	- External probe connection clamps
FL	- Flow switch
INAIL	- Safety devices
TA	- Room thermostat
S.temp ACC	- Storage tank temperature sensor

ARES PRO

INGR. ANALOG	- Analogue input
GND 0-10V ING	- 0-10 V analogue input
0-10V C.P.M.	- Modulating Pump Controller
ALARM SIGNAL	- Alarm Output
Comm P. COLL	- Boiler manifold pump control
Comm P. CH	- Central heating pump control
P. car DHW	- Storage tank load pump control
COM.	- Common
Comm P. COLL	- Boiler manifold pump control
Comm P. CH	- Central heating pump control
P. car DHW	- Storage tank load pump control



COLOURS	
BL	BLUE
BR	BROWN
BK	BLACK
G	GREEN
GR	GREY
L BL	LIGHT BLUE
OR	ORANGE
PK	PINK
R	RED
Y	YELLOW
YG	YELLOW / GREEN
WH	WHITE
VI	PURPLE

Board/module selector positioning	Module 1 (Pos 0)	Module 2 (Pos 1)	Module 3 (Pos 2)	Module 4 (Pos 3)	Module 5 (Pos 4)	Module 6 (Pos 5)	Module 7 (Pos 6)

20 OPTIONAL

Hydraulic kits	Code
INAIL safety kit with filter for ARES PRO 150-230	3.028336
INAIL safety kit with filter for ARES PRO 300-348-400-500	3.028337
INAIL safety kit with filter for ARES PRO 600	3.023658
Condensate drain management kit	Code
Condensate passivator kit up to 1500 kW (includes a complete granulate charge)	3.023662
Granulate kit for condensate passivator (25 kg)	3.023663
Kit for temperature control	Code
CHRONO 7	3.021622
CRONO 7 WIRELESS	3.021624
SHC multifunction module kit (including 3 NTC probes) allows to integrate 3 additional user circuits for each module, up to a maximum of 4 modules (maximum 12 integration circuits) N.B. One multifunction module (not connected) is standard supplied with the generator	3.028338
24 V multifunction module feeder kit to be inserted in the electrical panel	3.028339
Temperature kit for solar collector	1.028812
Cascade regulator kit for ARES PRO enables up to 8 generators in battery to be managed **Made up from:** - **HSCP programmer/displayer;** - **BCM Board;** - **24 V Feeder;** - **External probe.**	3.028340

Règlement (UE) 2016/426 « Appareils à gaz »
Regulation (EU) 2016/426 « Gas appliances »

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

ATTESTATION NUMERO 344M

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 *Trade mark and models*	**Sont couverts par les certificats d'examen CE de type suivants** *Are within the scope of subsequent EC type examination certificates*	**Pays de destination** *Destination countries*
IMMERGAS – ALPHA	**1312CP6010 (rév.7)**	**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**
➢ ARES PRO 150 ➢ ARES PRO 230 ➢ ARES PRO 300 ➢ ARES PRO 348 ➢ ARES PRO 400 ➢ ARES PRO 500 ➢ ARES PRO 600		

est conforme aux exigences essentielles du Règlement (UE) 2016/426 « Appareils à gaz ».
is in conformity with essential requirements of Regulation (EU) 2016/426 « Gas appliances » .

Neuilly, le 6 avril 2018

Le Directeur Général

Vincent DELARUE

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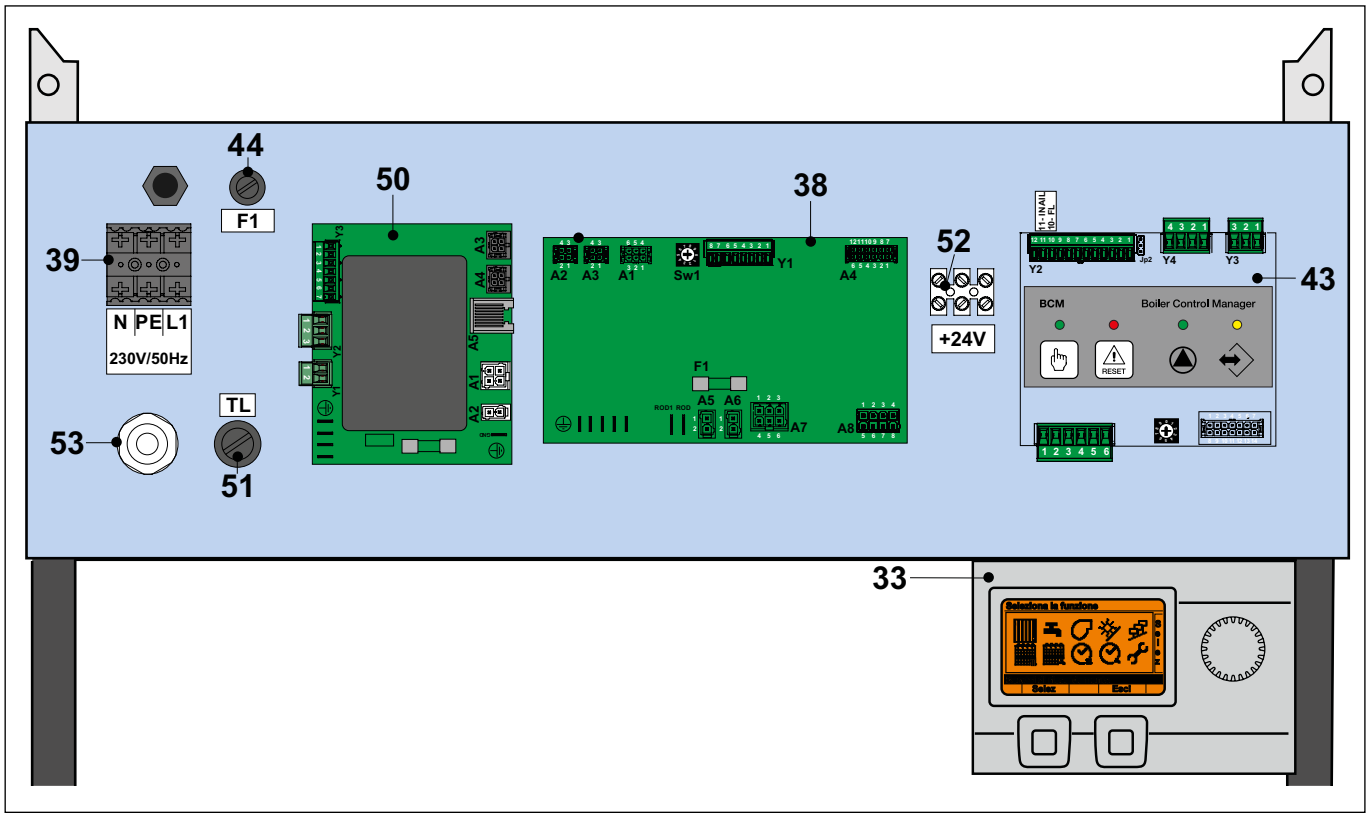
HEAT ADJUSTMENT APPENDIX

21 CONTROL PANEL



KEY		
N°		Description
33		Heat adjuster HSCP
38	BMM	Burner management board
39	M1	230 V power supply clamps
43	BCM	Boiler controller

44	F1	Fuse power supply of 4 ÷ 6.3 A
50		Power supply board
51	TL	Manual reset limit thermostat
52	M2	Additional terminal board +24V BCM
53		Fairlead for power supply cable

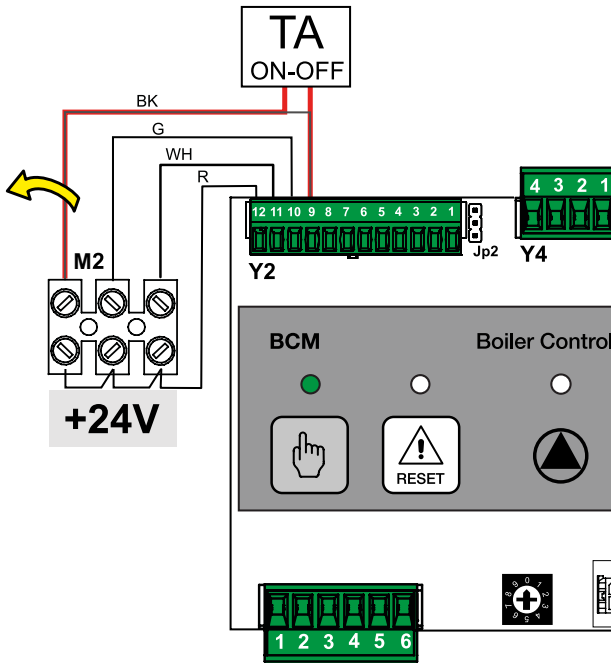
ARES PRO is standard supplied with external probe and probe for DHW (Domestic hot water) storage tank. The HSCP control panel [Heating System Control Panel] in the boiler is equipped with backlit LCD display on which it is possible to program:
- time slots,
- daily and weekly programs,
- climatic curves,
- anti-legionella and other settings.

The basic electronics of the boiler called BCM [Boiler Control Manager] has been designed to control:
• a circulator for direct flow to the system;
• a circulator for controlling a DHW (Domestic hot water) storage tank;
• a circulator for a possible primary ring.

Furthermore, the BCM board performs the backup control unit function, taking control of the generator and ensuring an emergency operation in case of HSCP control panel failure.
An SHC [Slave Heating Controller] multifunction module is also standard supplied with ARES PRO. This is an integration P.C.B. able to manage up to three user circuits, such as:
solar circuits, mixed zones, direct zones, additional DHW storage tanks, etc...
For cascade applications, it is possible to use the cascade and zone regulator kit (optional) able to manage up to 8 generators in set.

ARES PRO

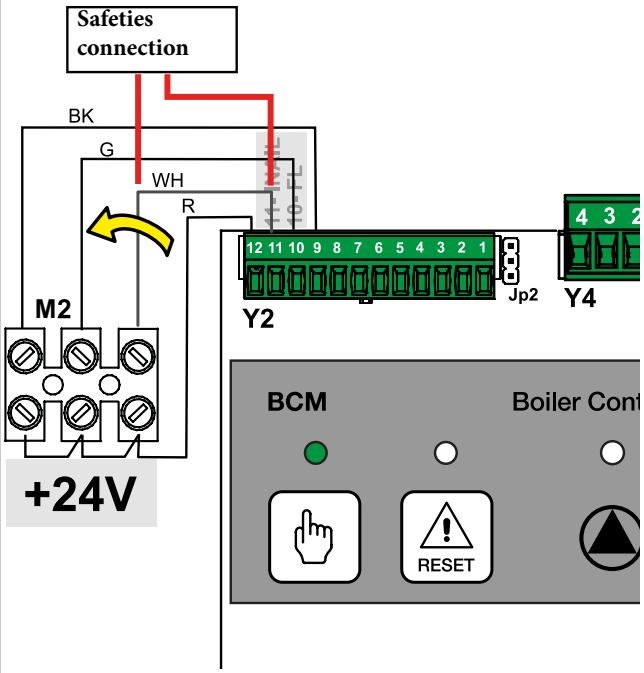
Connection TA (*)



- **(Y2 - 9 and terminal board M2) after removing the jumper**

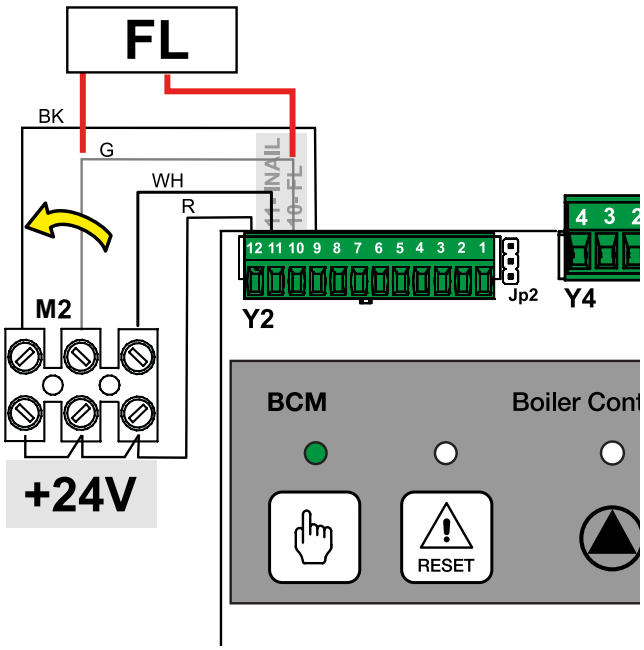
(*) **Optional**

INAIL safeties connection



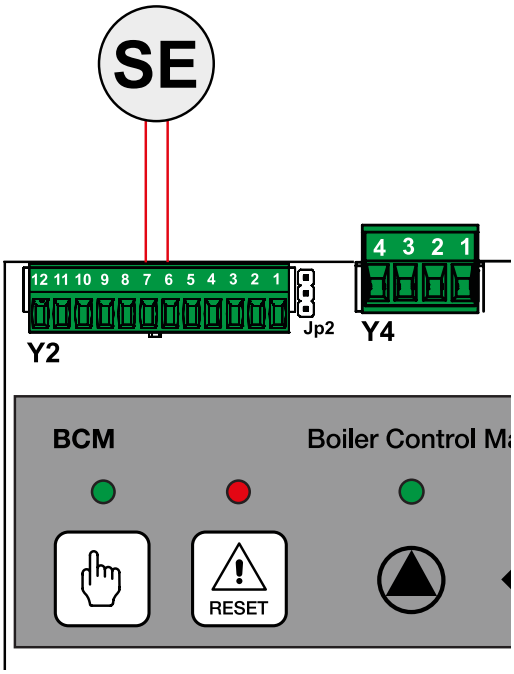
- Remove the jumper and connect the cables, as indicated **(Y2 11 and terminal board M2)**

FL Flow switch connection



- Remove the jumper and connect the cables, as indicated **(Y2 10 and terminal board M2)**

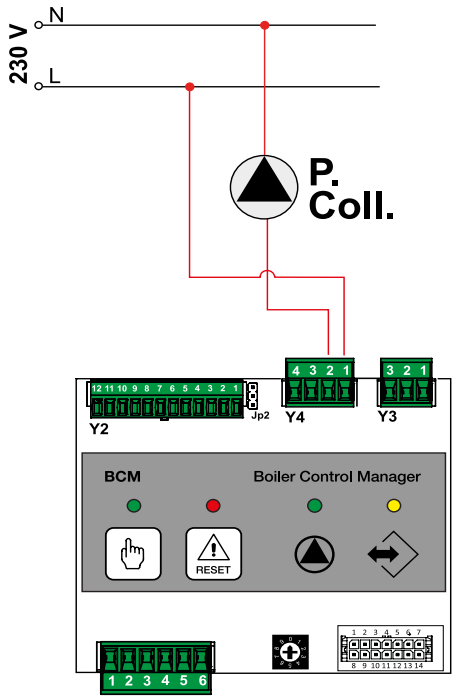
External probe connection



- Set up on the terminal board **(Y2 6-7)**

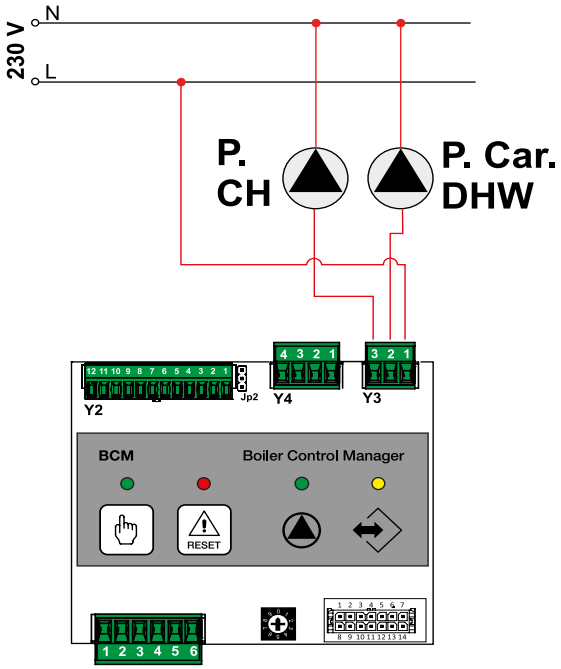
NOTE: The BCM relay contacts can power pumps with a maximum electrical absorption of 4 A.

P. Coll - Pump Manifold (Primary ring)



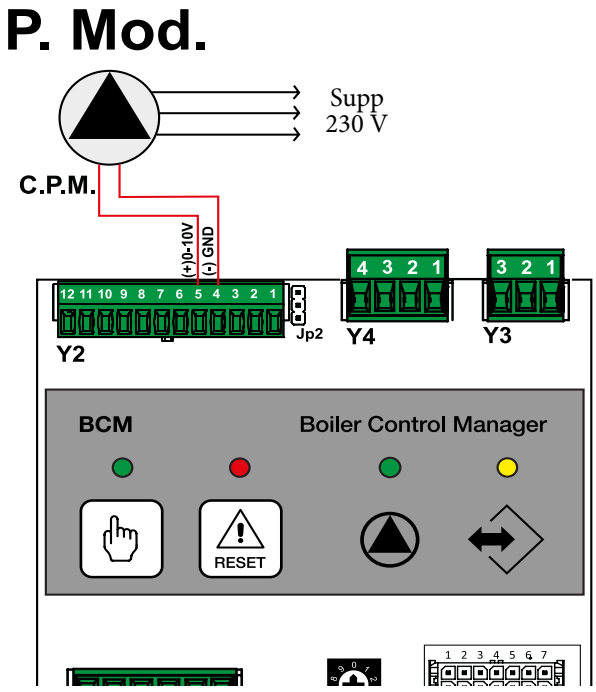
- Connect the cables as indicated (**Y4 1-2**).

P. CH - Heating circuit pump (central heating circuit)
P. Car DHW - Storage tank load pump



- Connect the cables as indicated (**Y3 1-2-3**).

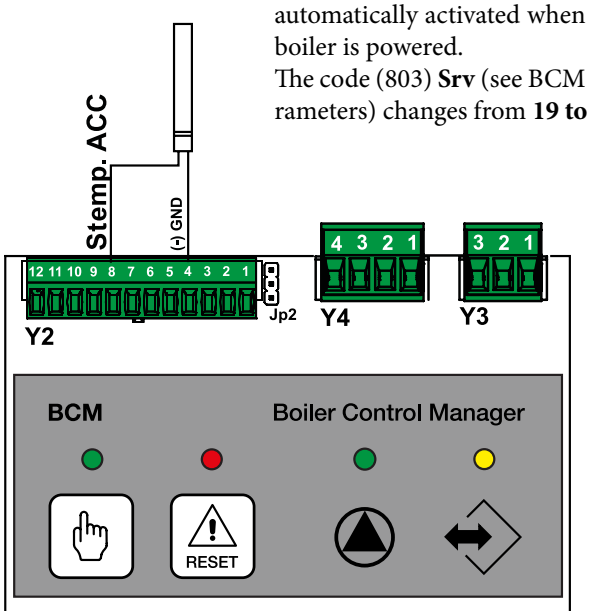
P. Mod. - Central Heating Modulating Pump



- Connect the modulation control cables as indicated (**Y2 4-5**).
  The external power supply is 230 V-50 Hz.

Stemp. ACC. Storage Tank Temperature Sensor

If the storage tank temperature sensor is connected, the DHW is automatically activated when the boiler is powered.
The code (803) **Srv** (see BCM parameters) changes from **19 to 27**.

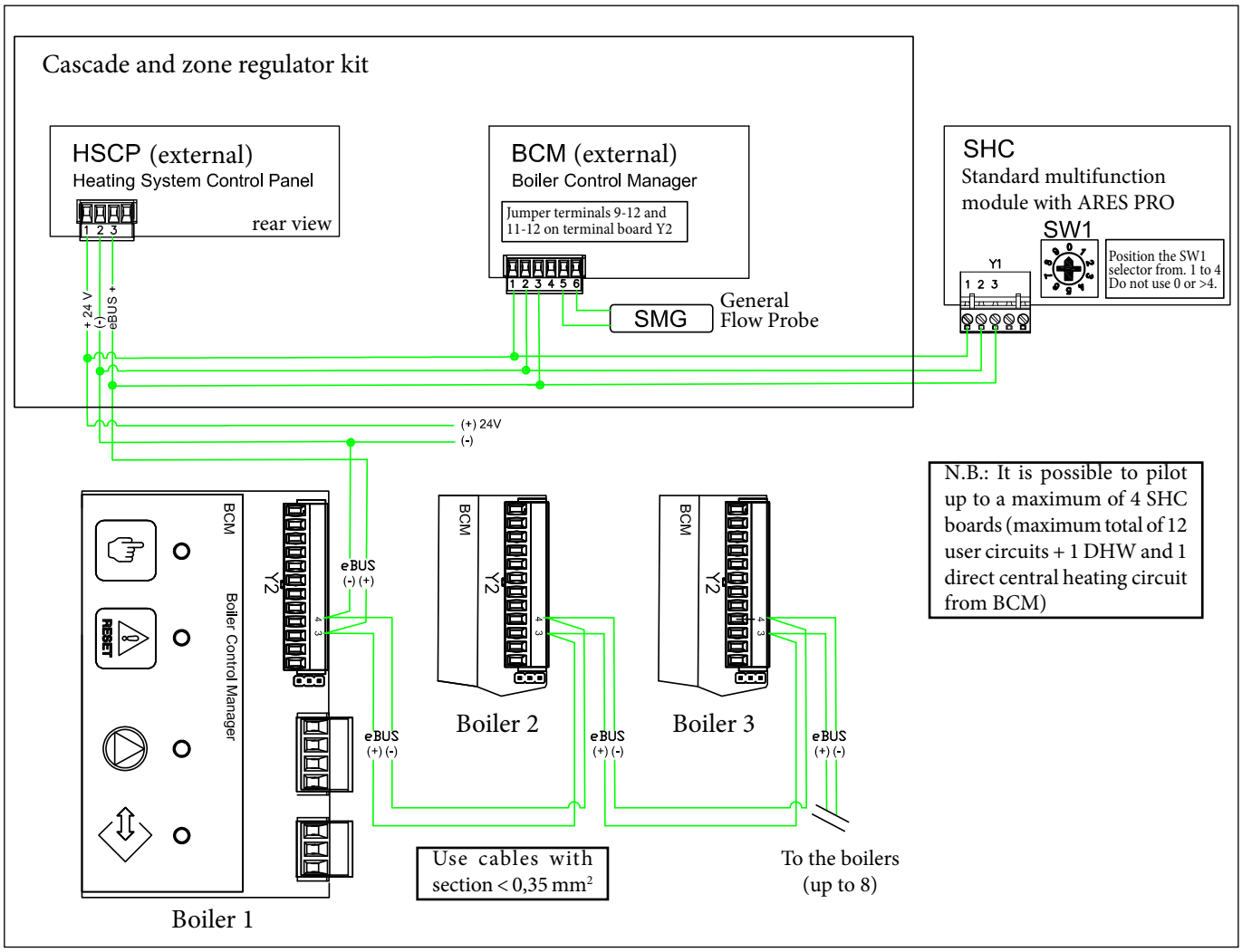


- Connect the temperature sensor cables as indicated (**Y2 4-8**).

22 CASCADE REGULATOR KIT (CODE 3.028340)

By adding the Cascade regulator kit, from 2 to 8 ARES PRO can be managed via simple connections.
Connection is made by BUS cables, according to the simplified diagram shown below.
The cascade and zone regulator manages the generators so that they work giving best performance, as the power varies.
The Cascade and zone regulator kit includes the external cascade control BCM board, HSCP display/programmer, 24 V feeder and external probe.

As optional kits, it is necessary to provide an INAIL safeties kit for each generator.
The external HSCP acts as manager on the standard BCM on each boiler; when the external BCM is connected, it is then necessary to manage the system circuits with the same external BCM (1 direct circuit + 1 DHW storage tank) and possibly with the SHC (max 4 connectable SHC boards).



NOTE: Position the SW1 selectors of each BCM of each boiler as indicated:
Boiler 1 - Position 0
Boiler 2 - Position 1
Boiler 3 - Position 2
etc...
On the HSCP panel of the individual boilers, select the HCM device (BCM) from the menu and edit parameter 803 (Srv "Services Enabled") by setting the new value of "16".
The INAIL safeties of each generator must be connected on the BCM of the generator itself, not on the external BCM, according to the diagram on page 45.

23 REMOTE MANAGEMENT

Communication via MODBUS RTU can be used to transmit data to the outside: in this sense, Immergas can providethe list of addresses to be used.

- file with HSCP addresses;
- file with BCM addresses;
- file with SHC addresses.

In this way it is possible to carry out the complete remote management of the generator, displaying all information:

- acquisition of operational info of all connected devices;
- setting/edit of parameters of each module;
- diagnostics management – alarm acquisition and reset.

ARES PRO

Foreword:
The following pages provide examples (not exhaustive) of some of the most common configurations that can be set up with ARES PRO.
The diagrams provided here are not working drawings and only serve the purpose of describing in a simplified manner 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 are shown and reported.
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) Diagram of system with 2 mixed zones
2) Diagram of system with 3 direct zones
3) Diagram of system with 2 direct zones and 1 mixed zone
4) Diagram of system with 1 mixed zone, 1 direct zone and 1 DHW tank
5) Diagram of system with 1 direct zone and 1 mixed DHW tank
6) Diagram of system with 2 direct zones and 1 DHW tank
7) Diagram of system with 2 direct zones, 1 DHW tank and 1 alarm
8) Diagram of system with solar field with storage tank, 1 direct zone and 1 DHW tank
9) Diagram of system with 2 solar fields with storage tank, 1 direct zone and 1 DHW tank
10) Diagram of system with 2 solar fields with storage tank and 1 mixed DHW tank
11) Diagram of system with 3 DHW tanks
12) Diagram of system with 1 direct zone, 1 mixed zone, 1 DHW tank and 1 alarm

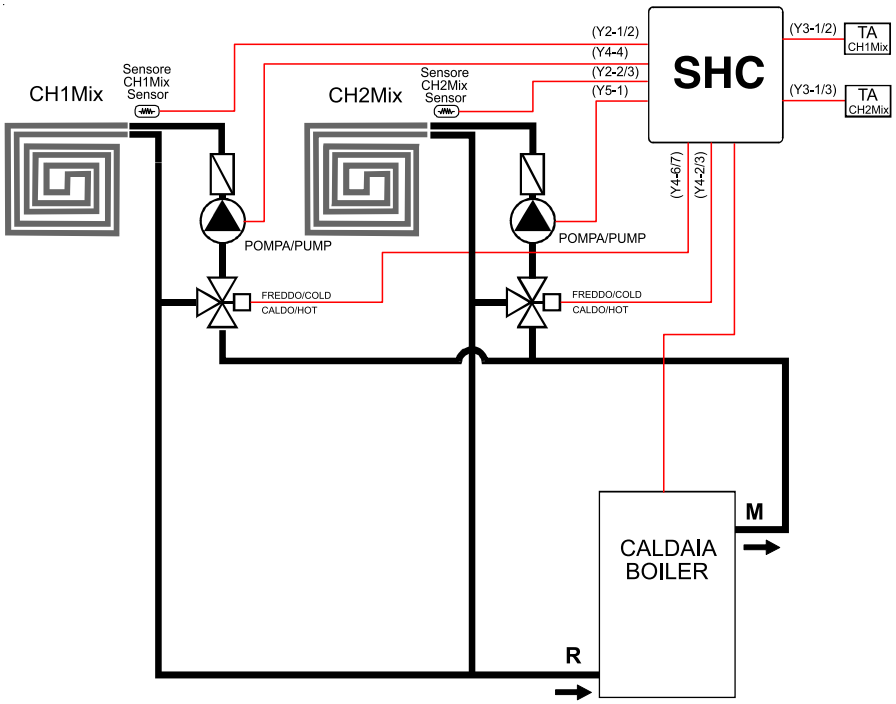
The boiler is standard supplied with the set-up for the management of a direct flow and a storage tank through the BCM (it also performs the backup control unit function, ie in case of HSCP failure, it takes control of the generator, ensuring an emergency operation at fixed flow temperature, which is preconfigured from the beginning on the HSCP, then the setting resides in the BCM; but all power remains available).
If other services (storage tanks, mixed zones, solar, etc.) are requested, it is possible to use SHC multifunction modules (one is standard with ARES PRO, to be installed/connected if necessary) to connect to the local bus for total management via HSCP.
Each SHC board controls up to 3 user circuits.
When the SHCs are connected, they take control over the user circuits (in addition to the circuits already managed by the BCM).
It is possible to pilot up to a maximum of 4 SHC boards, 3 optional + 1 standard supplied with ARES PRO (max total of 12 user circuits + 1 DHW and one direct central heating circuit managed by the BCM).

NOTE FOR ALL DIAGRAMS:
The St parameter selects the services provided by the multifunction module to adapt it to the user circuit needs. If there are 4 SHC, each can be configured differently from the others with the St parameter.
It is possible to use the complete diagram or only part of it; there is an additional parameter (Srv) that allows to only enable the services actually used (e.g. only one zone instead of two).
For further information on the set-up and settings of the systems, please contact the Immergas Customer Service.

24 EXAMPLES OF HYDRAULIC APPLICATION DIAGRAMS

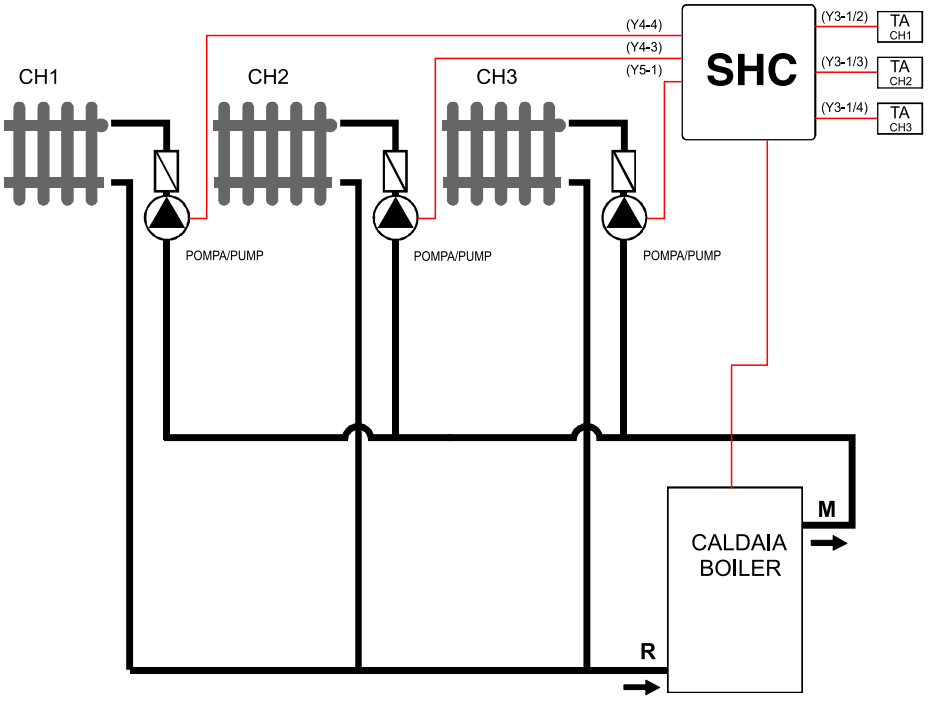
1) Diagram of system with 2 mixed zones

parameter **St 0**



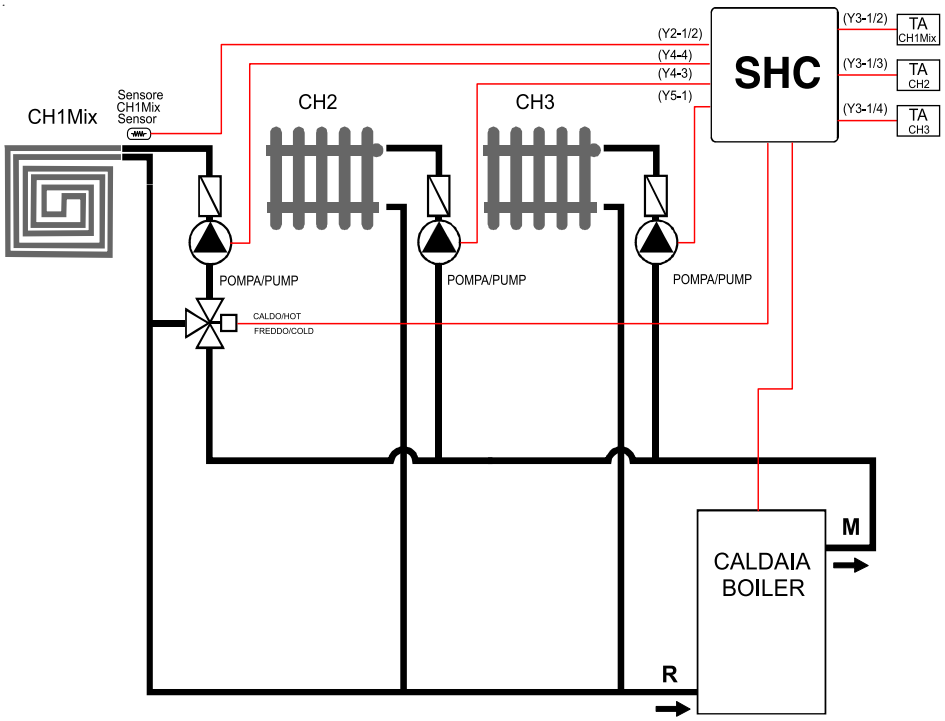
2) Diagram of system with 3 direct zones

parameter **St 4**



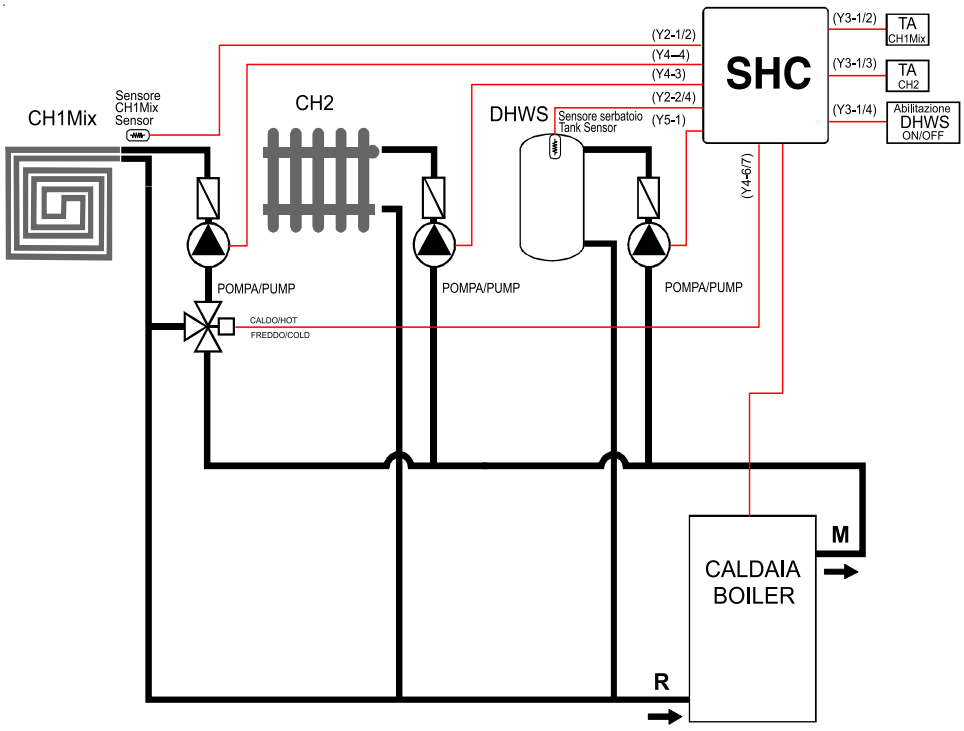
3) Diagram of system with 2 direct zones and 1 mixed zone

parameter **St 5**



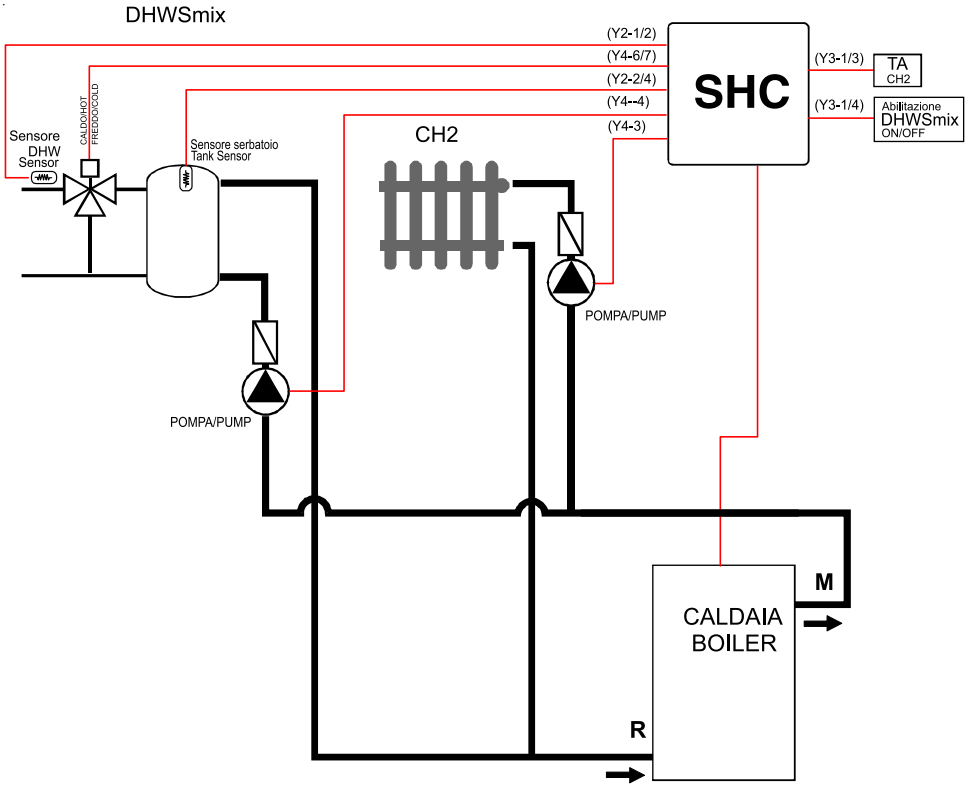
4) Diagram of system with 1 mixed zone, 1 direct zone and 1 DHW tank

parameter **St 6**



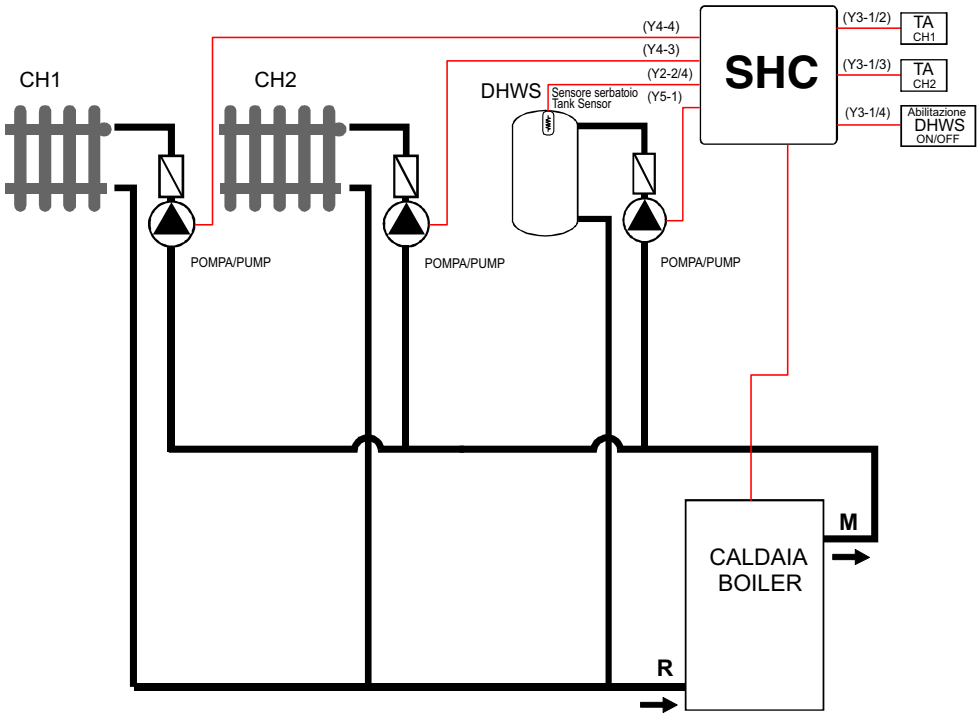
5) Diagram of system with 1 direct zone and 1 mixed DHW tank

parameter **St 7**



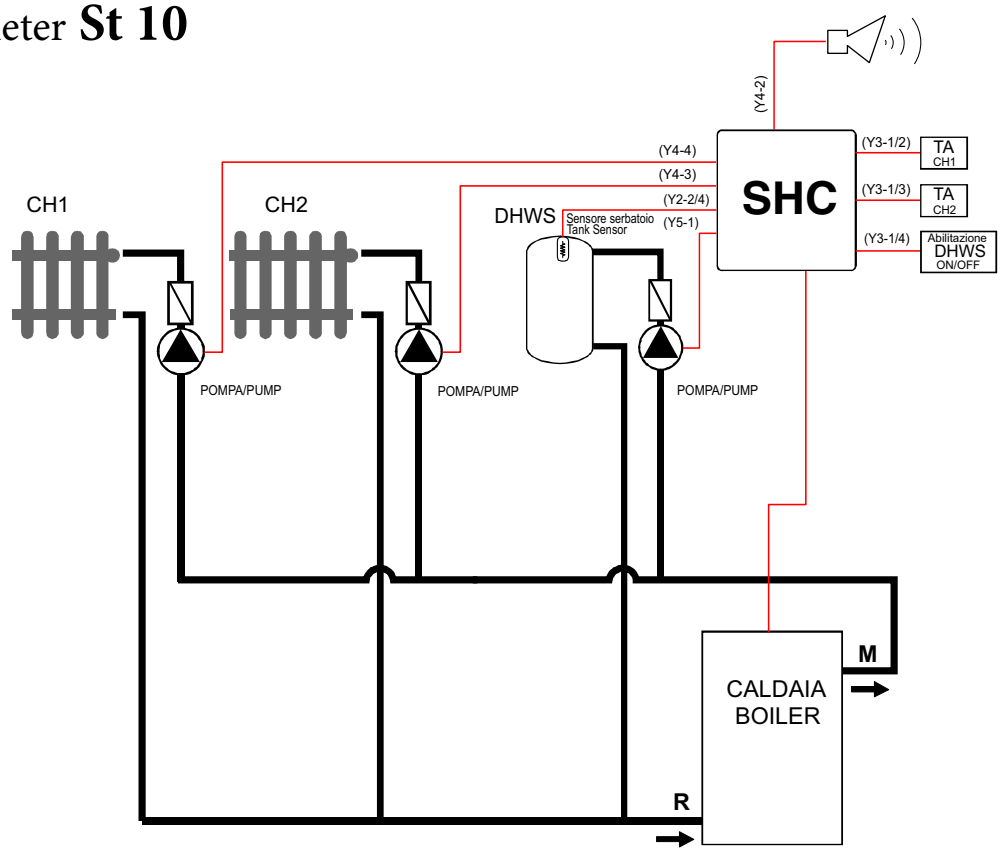
6) Diagram of system with 2 direct zones and 1 DHW tank

parameter **St 9**



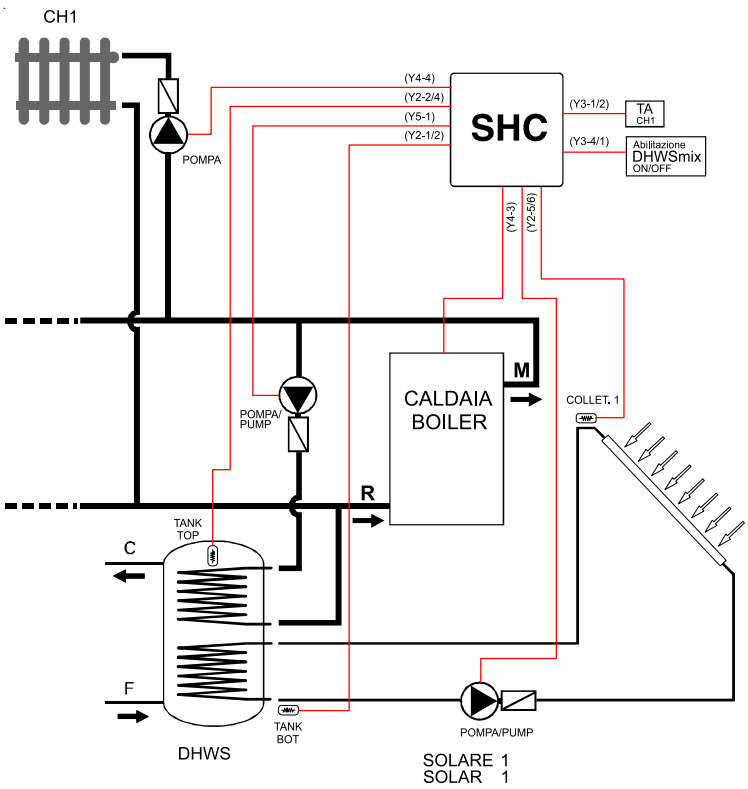
7) Diagram of system with 2 direct zones, 1 DHW tank and 1 alarm

parameter **St 10**



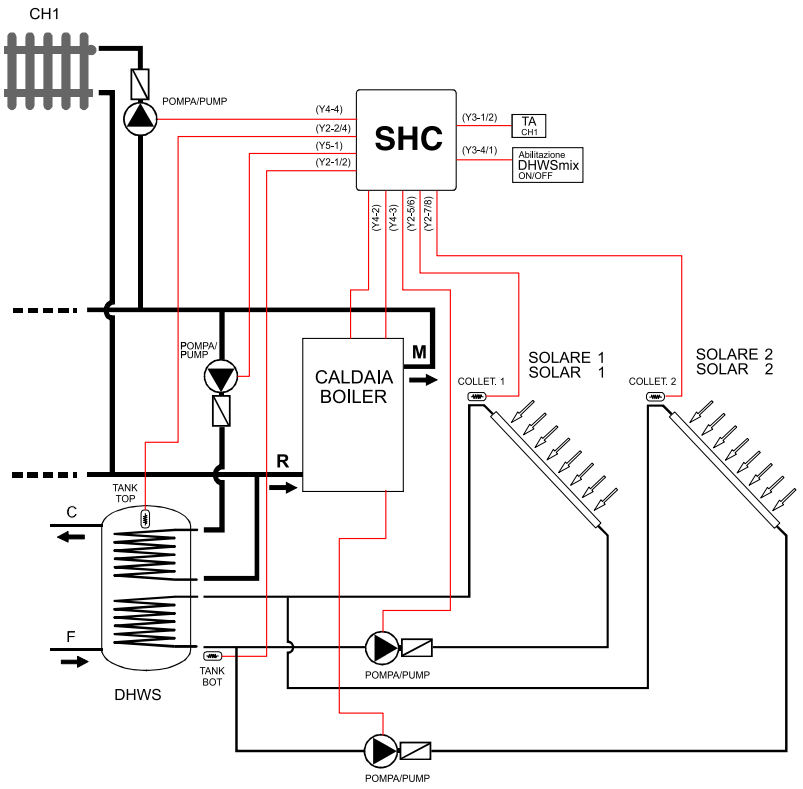
8) Diagram of system with solar field with storage tank, 1 direct zone and 1 DHW tank

parameter **St 13**



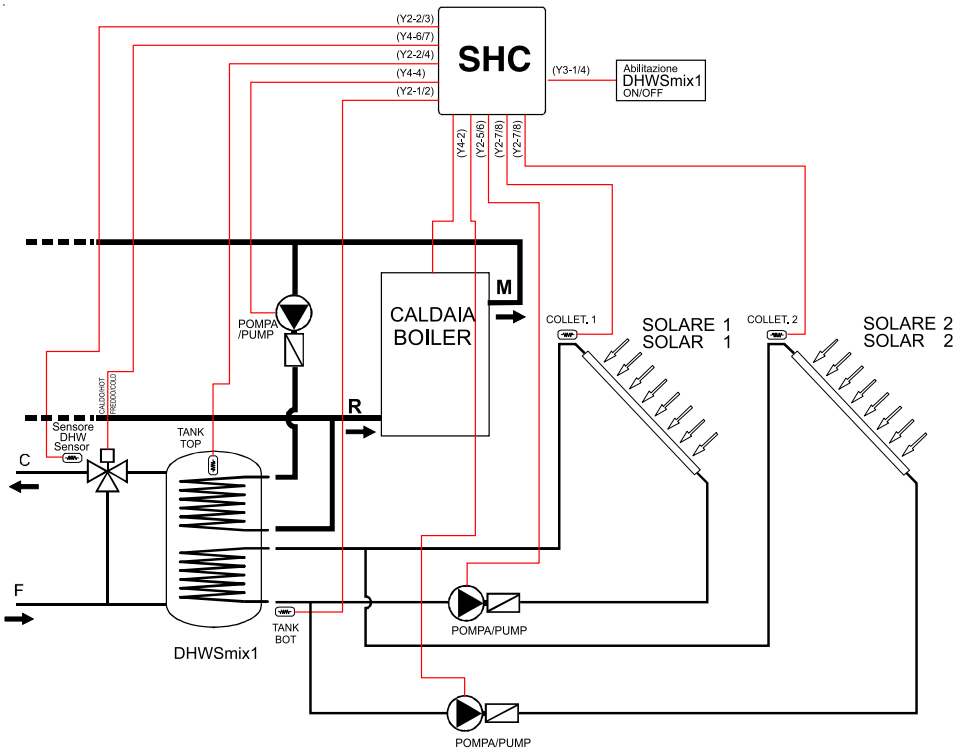
9) Diagram of system with 2 solar fields with storage tank, 1 direct zone and 1 DHW tank

parameter **St 14**



10) Diagram of system with 2 solar fields with storage tank and 1 mixed DHW tank

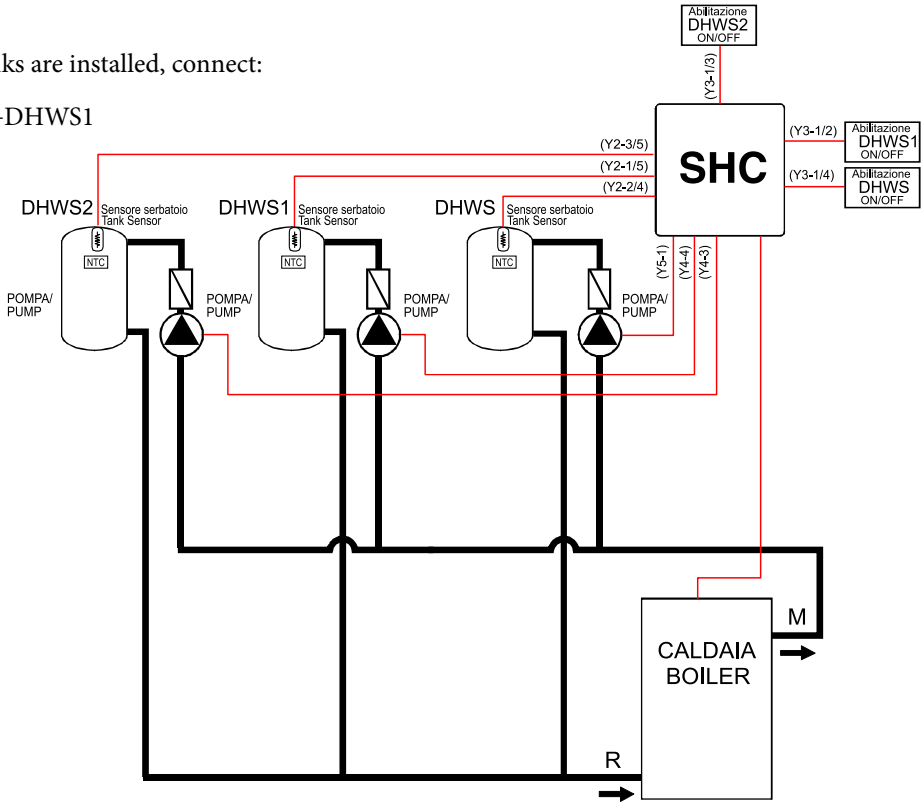
parameter **St 16**



11) Diagram of system with 3 DHW tanks

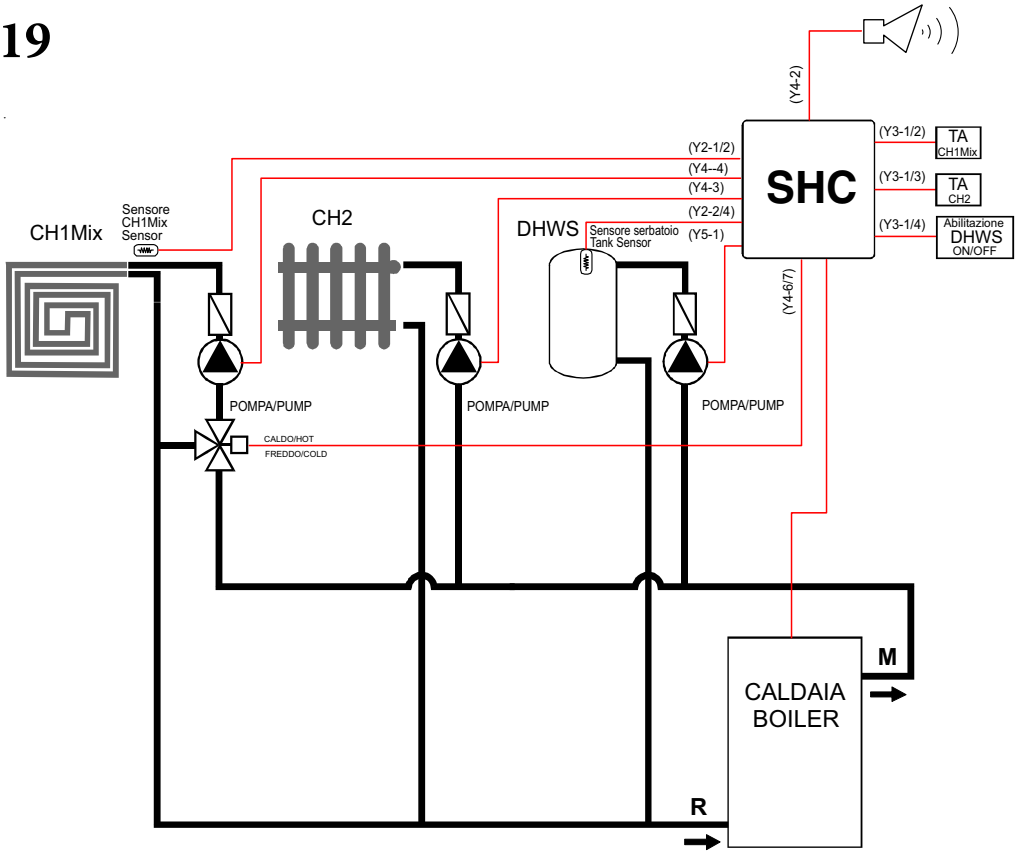
parameter **St 18**

Note:
If less than 3 D.H.W. storage tanks are installed, connect:
in case of one tank => DHWS
in case of two tanks => DHWS+DHWS1



12) Diagram of system with 1 direct zone, 1 mixed zone, 1 DHW tank and 1 alarm

parameter **St 19**



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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immergas.com

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IMMERGAS
UNI EN ISO 9001:2008 CERTIFIED QUALITY SYSTEM

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