



ENERGY TOP

Condensing boiler solutions



THE ENERGY TOP SYSTEM

The increasing need for families to be able to manage their central heating system freely and independently has in recent years led to the expansion of independent systems, gaining ground over the traditional centralised approach to heating.

Independent systems have been and continue to be preferred by users, mainly due to:

- independent management
- costs relating to own consumption only;
- less possibility of controversies between residents.

Nonetheless, **centralised systems**, albeit less appreciated by users, are making somewhat of a comeback:- less overall capacity installed; less environmental impact due to the use of just one flue or stack, and installation of the boiler in a boiler room.

The development of centralised systems with **independent billing**, using so-called **submeters**, allows all the advantages mentioned above, in complete compliance with the safety and efficiency standards required by recent legislation.

For this reason, the new series of **ENERGY TOP** modular heat generators, installed in the boiler room, represent a modern and complete solution to the latest needs, which require a balance between centralised production of heat and independent and individual management of consumption. The wide range of models and possible cascading configurations means systems can be developed with outstanding flexibility and modularity, and extremely compact dimensions, fully in line with the latest heating technology design criteria.



ENERGY TOP B 160
ENERGY TOP B 250



ENERGY TOP B 80
ENERGY TOP B 125



ENERGY TOP W 80
ENERGY TOP W 125



ENERGY TOP B
"in line"



ENERGY TOP B
opposing



DADO
submeter modules for centralised heating and domestic hot water



ENERGY TOP W
"in line"

FURNACE

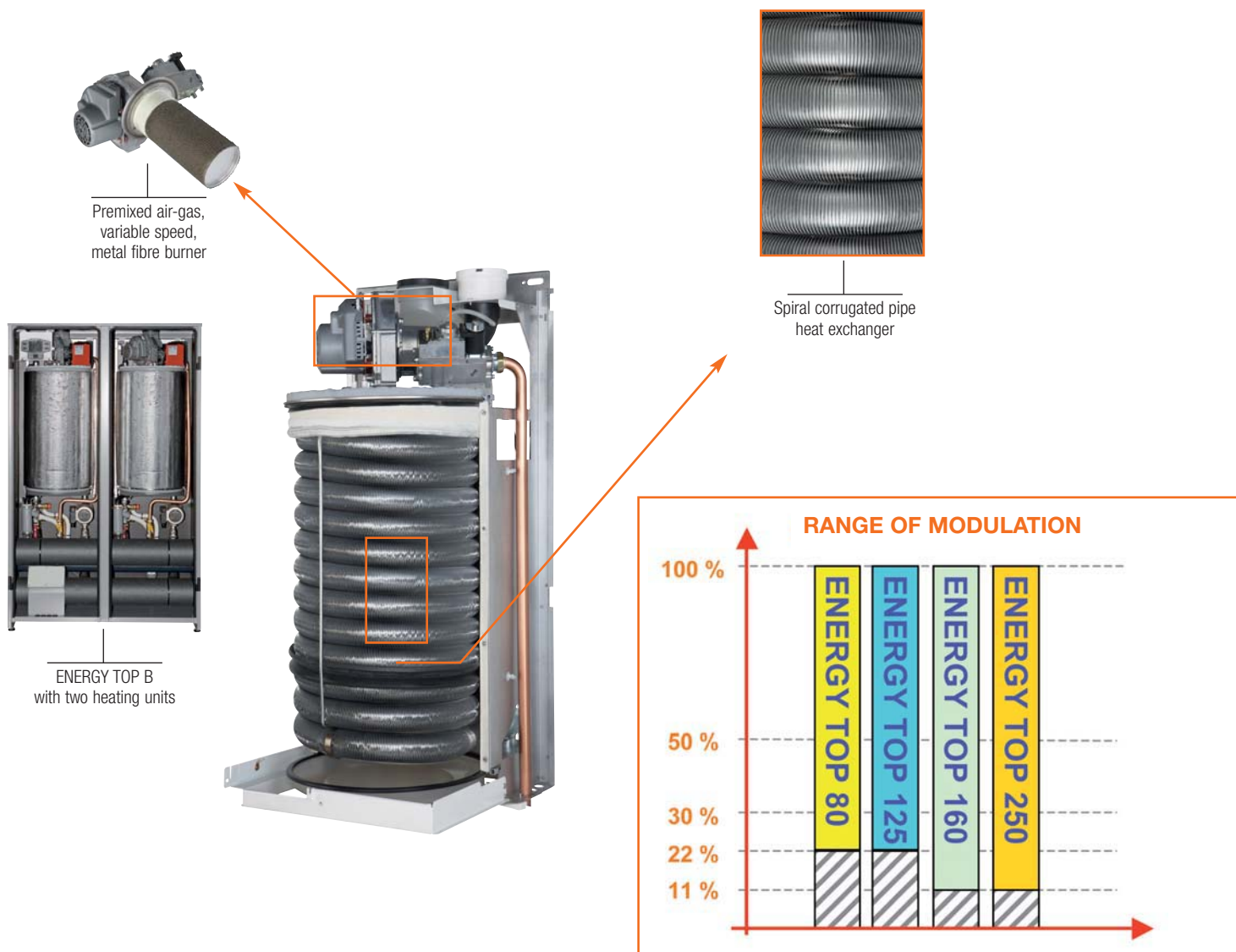
The **HEART** of **ENERGY TOP** is an innovative heating unit that ensures the product excellent characteristics in terms of efficiency and flexible modulation. The new total premixed air-gas combustion unit with variable speed fan, pneumatic gas valve and cylindrical metal fibre burner allows a range of modulation that, depending on the model, can extend as far as from 11 to 100% of rated output, with efficiency exceeding 107%.

Heat exchange takes place in the spiral corrugated pipe heat exchanger, featuring **low pressure drop** that, despite the high heat exchange surface, is sturdy and compact.

The quality of the materials used ensures the exchanger a high level of resistance to corrosion and thermal dilations, supporting a **max ΔT of 40°C**.

The very low polluting emissions - NOX and CO - as well as minimising the environmental impact of these heat generators (class 5 according to EN 297/A5), also ensure the heat exchanger remains clean over time, reducing maintenance work to a minimum.

Ignition is electronic, with flame control by ionisation.



The heating units have been designed with two different heat input ratings:

75 and 116 kW, and based on the total output, the various models of **ENERGY TOP** can house one or two units, always within the same structure.

The models with two heating units are also managed by the same electronic controller.

ELECTRONIC CONTROL

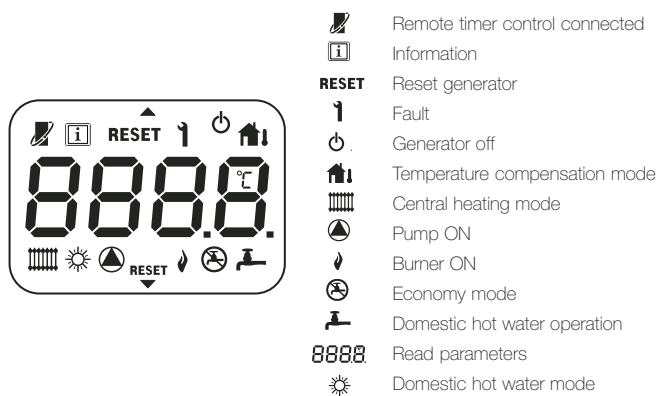
The **ENERGY TOP** series generators feature evolved electronics that can control the heating units making up the module in complete safety and autonomy.

A large backlit LCD is fitted to make it easier to read the boiler data and set the configuration parameters.

The electronics on each module can manage multiple types of system, including in combination with storage cylinders for the production of domestic hot water.

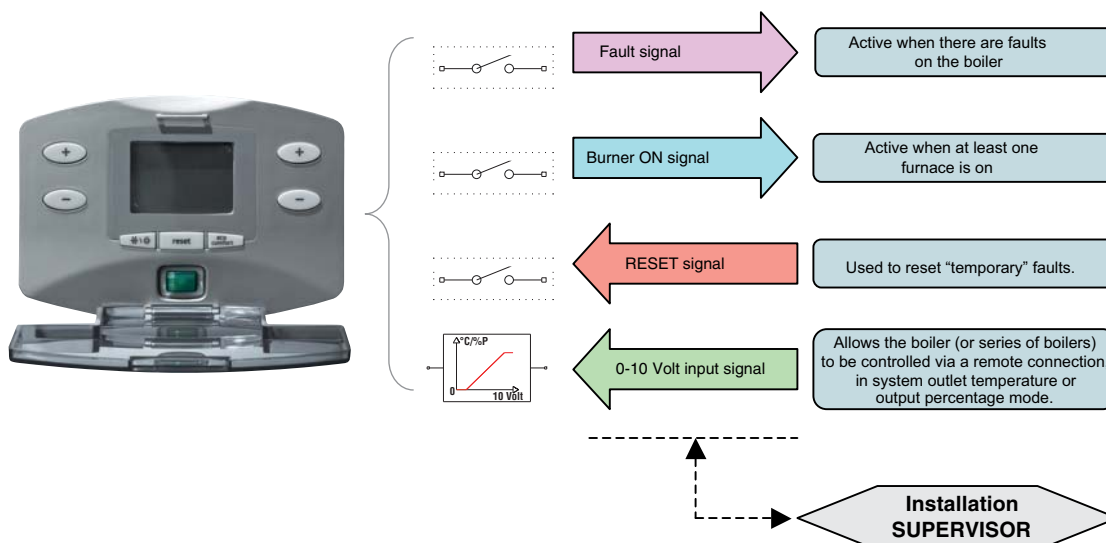
Key

- 1 Display
- 2 Central heating temperature setting
- 3 Domestic hot water temperature setting (with optional storage cylinder)
- 4 Summer/Winter mode
- 5 On/Off
- 6 Reset parameters
- 7 Economy/Comfort mode



The evolved electronics on **ENERGY TOP** can perfectly manage situations in which multiple heat generators are used in cascading, minimising the configuration and commissioning operations.

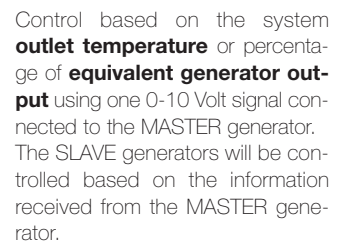
The **MASTER/SLAVE** function allows operation of a series of cascaded boilers, without requiring an additional control unit; with just a simple connection (two wires) between the electronics on the various heat generators, the entire system acts as a single unit. The safety circuit reduces boiler lockout and system shutdown, automatically attempting to ignite the module three times in the event of temporary shutdown (natural gas versions). If the shutdown occurs repeatedly, the system goes into permanent lockout mode, guaranteeing safety. In addition, a series of input and output signals, both analogue and digital (on/off), are available for controlling or setting the operation of the heat generator or the entire cascaded system via a remote connection. Below are some examples:



Combined management of the signals allows the operating status of the heat generator to be checked and set via a remote connection.

In particular, the 0-10 Volt input signal on the electronics for each furnace means the heat generators can interface to any generic external control unit featuring a 0-10 Volt output. In this way, the **ENERGY TOP** series generators can be very easily installed in existing systems with electronic control.

0-10 Volt EQUIVALENT GENERATOR CONTROL



Control based on the system outlet temperature or percentage of equivalent generator output using individual 0-10 Volt signals.

The **ENERGY TOP W** series boilers are wall-hung heat generators for inside or outside installation, central heating only, featuring a premix burner, condensing operation with very high efficiency and very low polluting emissions.

They consequently ensure high energy savings and are environmentally-friendly (**4 star energy rating according to Directive 92/42 EEC**, pollution **Class 5 as per EN 297/A5**).

Wall-hung structure with removable casing made from three parts for easy access to the inside components. They can also be installed as standard outside in partially protected places, with temperatures down to -5°C, without using the additional frost protection kit.

The cascaded connection of multiple generators can be performed using special flue gas and water circuit accessories. The models are factory configured for operation on natural gas and can be converted to LPG using a special conversion kit.



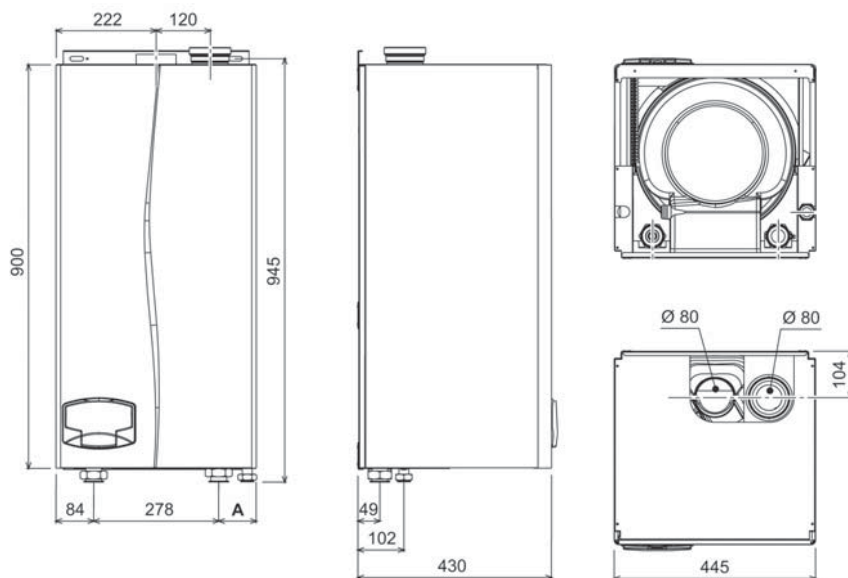
The wall-hung range features two sizes:

ENERGY TOP W 80

Wall-hung model, single furnace, with heat input from 17 to 75 kW (NHV)

ENERGY TOP W 125

Wall-hung model mono-furnace with heat input from 25 to 116 kW (NHV)

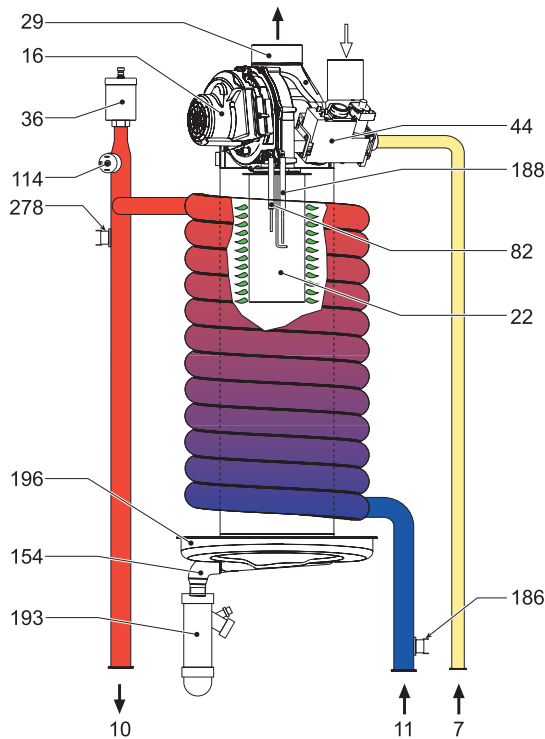


Key

- 1 cent. heating flow outlet 1" 1/2
- 2 cent. heating return inlet 1" 1/2
- 3 gas inlet 3/4"

ENERGY TOP			W 80	W 125
Output and Efficiency				
Heat input, central heating	max	kW	75,0	116,0
	min	kW	17,0	25,0
Heat output, central heating	max (80-60°C)	kW	73,5	113,7
	min (80-60°C)	kW	16,7	24,6
	max (50-30°C)	kW	79,5	123,0
	min (50-30°C)	kW	18,3	26,9
Efficiency	Pmax (80-60°C)	%	98,0	98,0
	Pmin (80-60°C)	%	98,5	98,5
	Pmax (50-30°C)	%	106,0	106,0
	Pmin (50-30°C)	%	107,5	107,5
	30% (30°C)	%	109,0	109,0
Efficiency class Directive 92/42 EEC			★★★★	★★★★
NOx class			5	5
Central heating operating pressure	max-min	bar	6-0,8	6-0,8
Central heating temperature	max	°C	95	95
Max exchanger Δt		°C	40	40
Water content		litres	5	7
Electrical specifications				
Index of protection		IP	X5D	X5D
Power supply voltage		V/Hz	230/50	230/50
Power input (not including the pump)	max	W	95	200
Structural characteristics				
Weight		kg	46	51
Height		mm	900	900
Width		mm	445	445
Depth		mm	430	430
Water circuit				
Outlet/return fittings		inches	1" 1/2	1" 1/2
Gas fitting		inches	3/4"	1"
Combustion data				
Losses through the stack with burner ON at Pmax-Pmin		%	2,2-1,3	1,8-1,3
Losses through the casing with burner ON at Pmax-Pmin		%	0,2-0,2	0,2-0,2
Losses through the stack with burner OFF		%	0,03	0,02
Losses through the casing with burner OFF		%	0,4	0,4
Flue gas temperature at Pmax-Pmin	(80/60)	°C	65-60	67-60
	(50/30)	°C	43-33	45-34
Flue gas flow-rate at Pmax-Pmin		kg/h	126,2-30,1	195,2-44,3
Condensate flow-rate at Pmax-Pmin		kg/h	8,7-2,0	13,5-3,2
CO ₂ at Pmax-Pmin (G20)		%	9,0-8,5	9,0-8,5
CO ₂ at Pmax-Pmin (G31)		%	10-9,2	10-9,2
CO weighted		mg/kWh	35,0	35,0
NOx weighted		mg/kWh	29,0	29,0

The water circuit is simple, rational and allows easy access to the inside components.



Key

- | | |
|---------------------------------|---------------------------|
| 7 Gas inlet | 82 Detection electrode |
| 10 Central heating flow outlet | 114 Water pressure switch |
| 11 Central heating return inlet | 154 Condensate drain hose |
| 16 Fan | 186 Return sensor |
| 22 Main burner | 188 Ignition electrode |
| 29 Flue gas outlet manifold | 193 Drain trap |
| 36 Automatic air vent | 196 Condensate basin |
| 44 Gas valve | 278 Outlet sensor |

The central heating pump is available in a special optional kit complete with on-off valves, non-return valves and safety valve.

The low water pressure drop in the exchanger coil and the use of a central heating pump with 8 m head means high net head in the system.

WATER CONNECTION KIT FOR INDIVIDUAL BOILERS

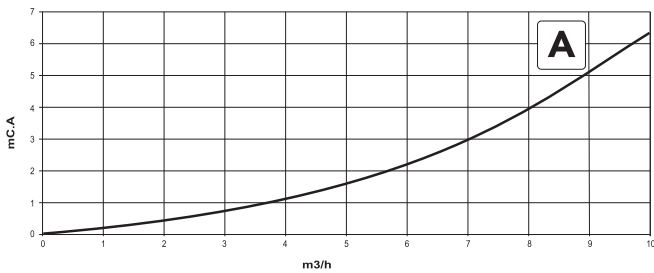


Water connection kit complete with central heating pump, central heating outlet and return on-off valves, non-return valve, 6 bar safety valve.

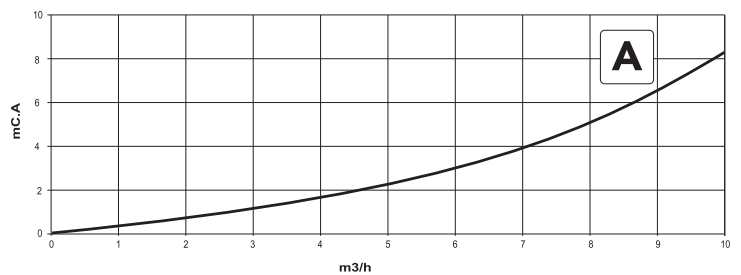
042021X0

BOILER PRESSURE DROP DIAGRAMS

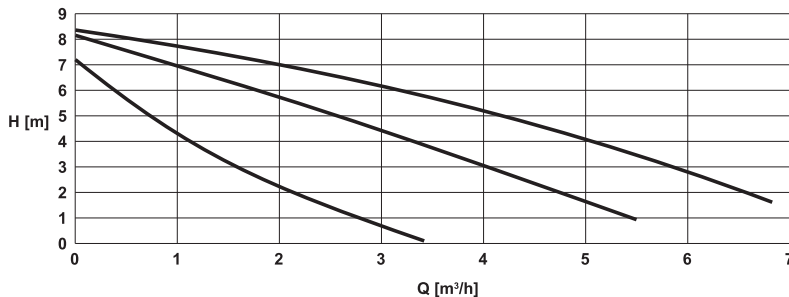
ENERGY TOP W 80



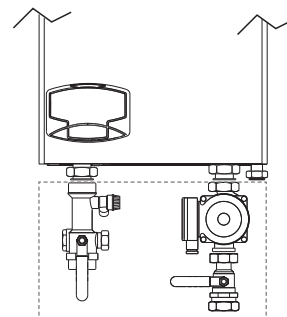
ENERGY TOP W 125



WATER PUMP KIT FLOW-RATE-HEAD DIAGRAM



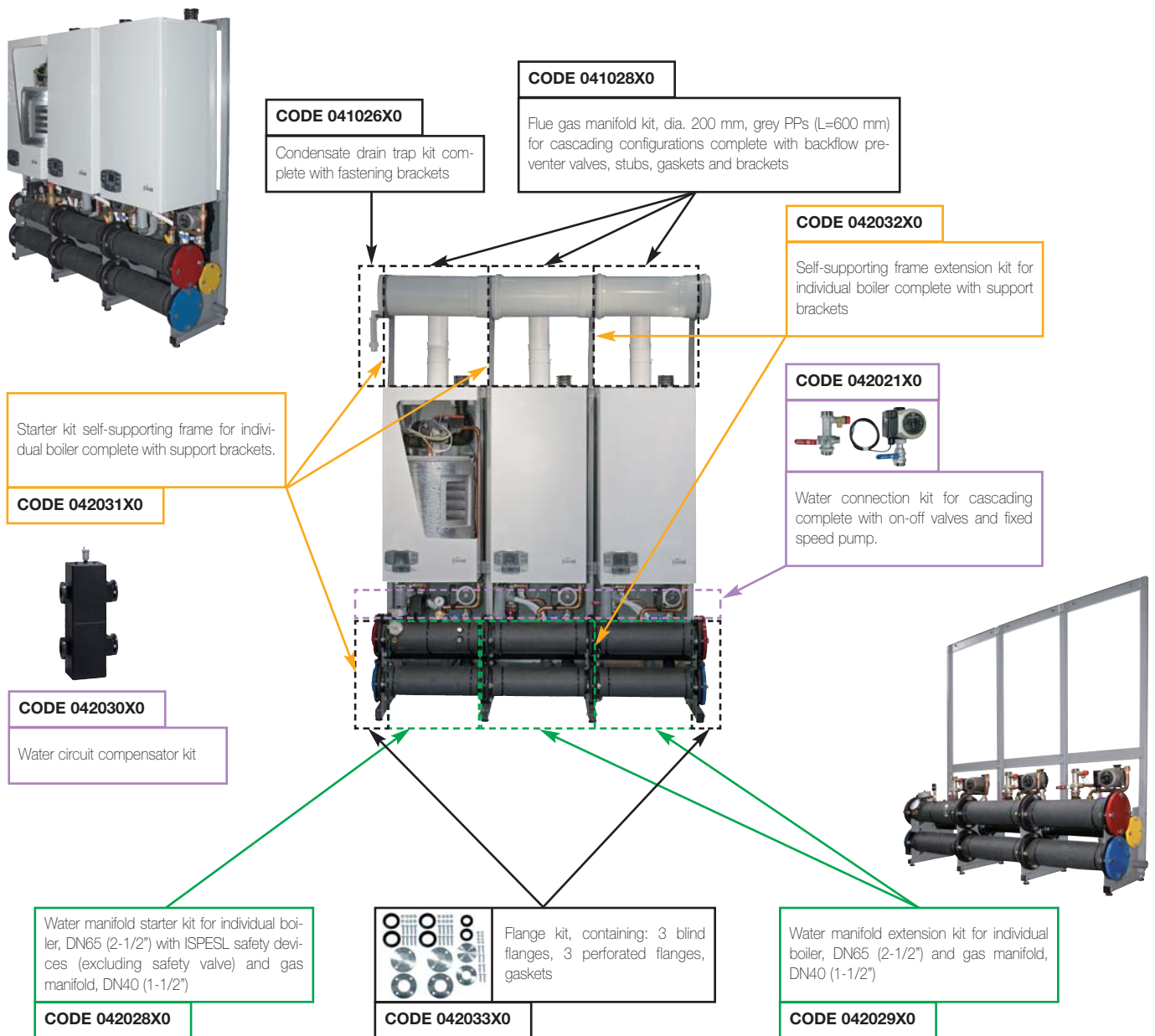
code 042021X0 High head PUMP KIT



A series of water circuit accessories and self-supporting frames is available for the **ENERGY TOP W** wall-hung modules, used to create different cascading configurations.

The structure is self-supporting and does not need to be anchored to the walls.

This means the boilers do not necessarily need to be installed on the walls, but also in the centre of the boiler room.






Various solutions are available for the air intake and flue gas outlet on the **ENERGY TOP W** wall-hung modules, for both installation on individual and multiple modules.

The low flue gas temperature means special polypropylene accessories can be used.

As regards the single discharge system, both 80 mm separate and 80/125 mm coaxial flue gas outlet configurations are available, with combustion intake either from the room or the outside.

All the starter accessories are fitted with test fittings for combustion analysis.

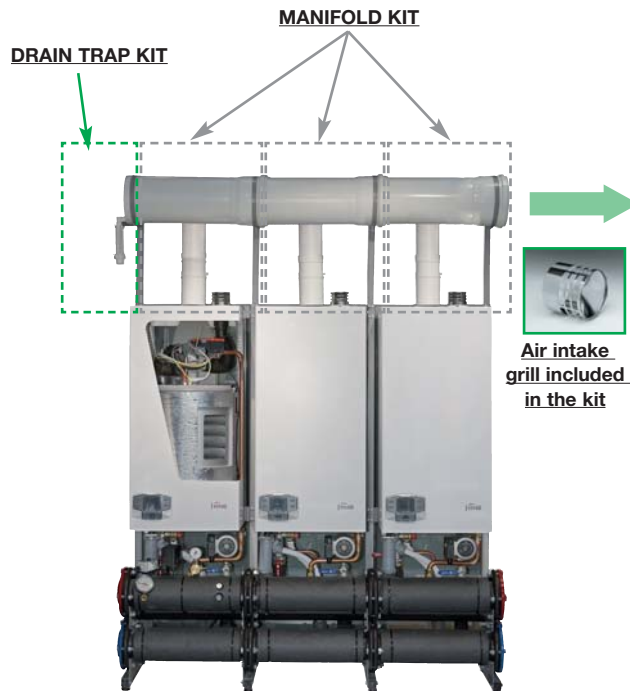
SINGLE DISCHARGE SYSTEM

	PPs stub, dia. 80 mm, with test fittings for analysis	1KWMA70W
	PPs 90° bend, dia. 80 mm, with test fittings for analysis	041000X0
	Attachment kit for vertical coaxial discharge, 80/125, with test fittings for combustion analysis	041007X0



TECHNICAL SPECIFICATIONS

ENERGY TOP		W 80	W 125
Stack			
Maximum stack pressure head at Pmax	pascal	200	250
Maximum length 80/125	m	4	2
Maximum separate length	meq	20	10

As regards the cascading systems, flue gas manifolds are available for total output of around 500 kW. If these manifolds are used, the combustion air intake is directly from the boiler room, through the intake grills included in the manifold kit.



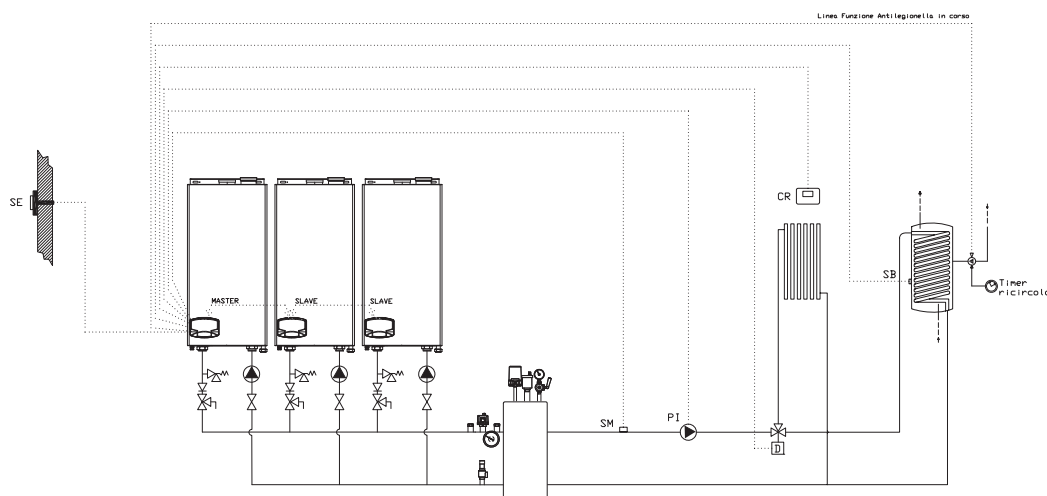
MANIFOLD DISCHARGE SYSTEM

	Condensate drain trap kit for flue gas manifolds complete with fastening brackets Ø 200 mm N.B. Use one between each cascaded unit	041026X0
	Grey PPs flue gas manifold kit (L=600mm) for "in line" cascading configurations complete with backflow preventer valves, stubs, gaskets and brackets Ø 200 mm N.B. Use on each flue gas outlet	041028X0

Heat input kW	Total output 80/60°C kW	no. modules	ENERGY TOP models				Flue gas manifold diameters mm
			1	2	3	4	
150	147,0	2	80	80	—	—	200
191	187,2	2	125	80	—	—	200
225	220,5	3	80	80	80	—	200
232	227,4	2	125	125	—	—	200
266	260,7	3	125	80	80	—	200
300	294,0	4	80	80	80	80	200
307	300,9	3	125	125	80	—	200
341	334,2	4	125	80	80	80	200
348	341,1	3	125	125	125	—	200
382	374,4	4	125	125	80	80	200
423	414,6	4	125	125	125	80	200
464	454,8	4	125	125	125	125	200

The **ENERGY TOP W** series modules are fitted with evolved electronics that as standard can manage up to two system zones (direct outlet) or an optional storage cylinder with one direct zone, without requiring further control boards.

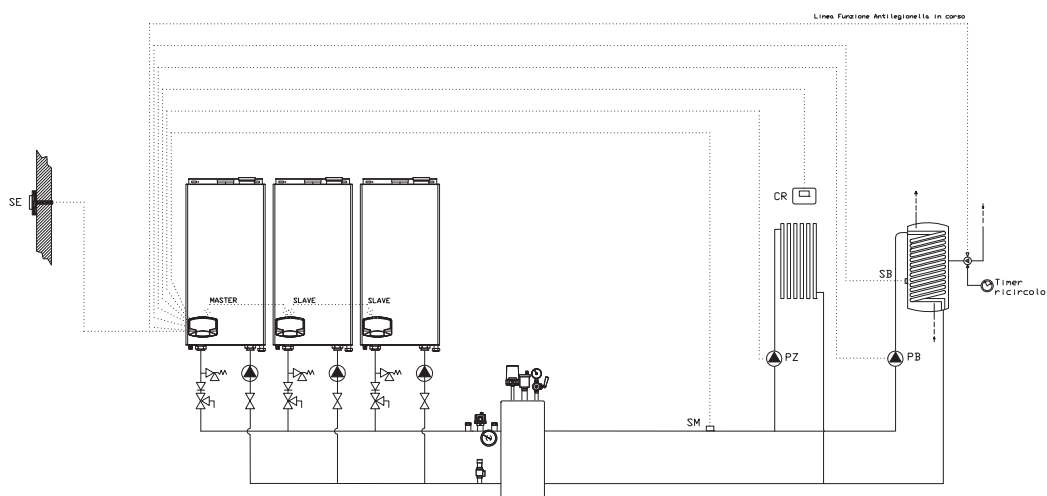
MIXED DIAGRAM WITH PRIORITY TO THE STORAGE CYLINDER



Each module or series of modules can be connected to an outside temperature probe for temperature compensation operation.

Master-Slave interconnection between the modules means multiple unit configurations can be created **without requiring additional control units**.

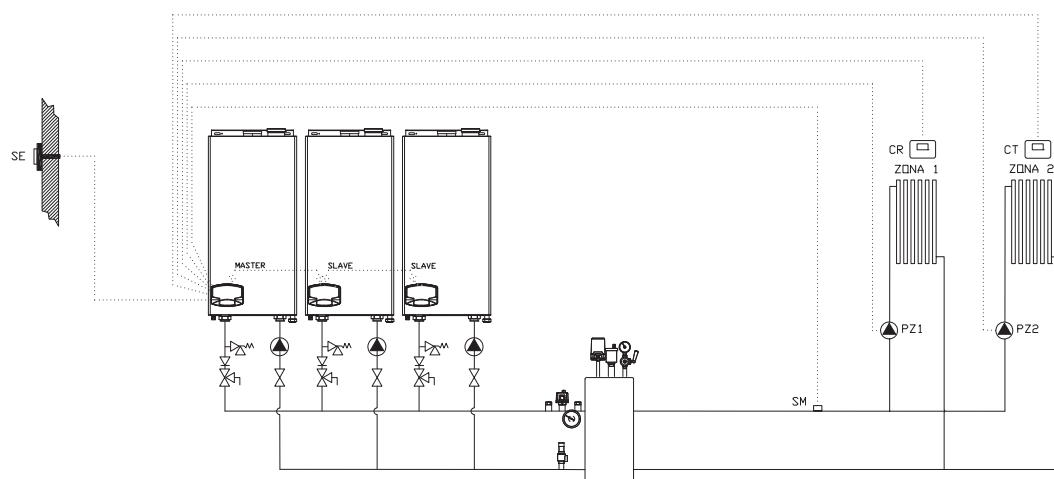
MIXED DIAGRAM WITH PRIORITY OR SIMULTANEOUS OPERATION OF THE STORAGE CYLINDER



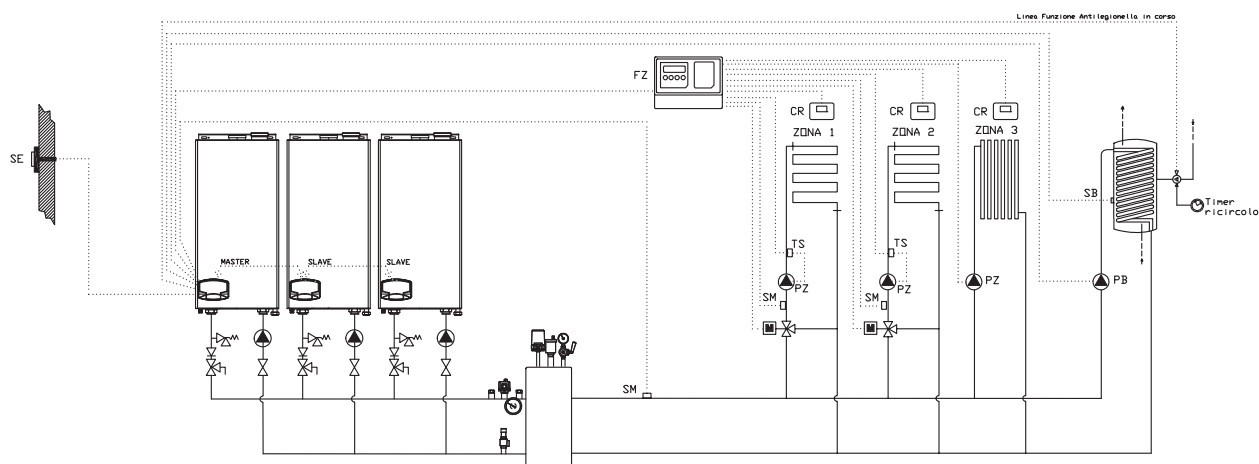
The **Legionella protection** function, after a programmable time interval, ensures the temperature inside the storage cylinder remains at 65°C for 15 minutes.

When Legionella protection is active, the boiler's electronics send an output signal (voltage-free contact) that can be used to control a recirculating pump. This ensures the entire water content in the **circuit is protected**.

In the case of combined systems (without selector valve) the operation of the domestic hot water storage cylinder can be managed at the same time as the central heating circuit or with priority, depending on the characteristics of the system.

CENTRAL HEATING ONLY DIAGRAM WITH DIRECT OUTLET

Control units can be added to directly manage up to two circuits, with direct outlet.

MIXED DIAGRAM WITH STORAGE CYLINDER AND DIRECT OR MIXED CENTRAL HEATING CIRCUITS

More complex system diagrams, on the other hand, can be managed by using zone control units that can “dialogue” directly with the boiler’s electronics and thus achieve maximum efficiency by adapting the operation of the boilers based on actual system load requirements.

In this case too the operation of the domestic hot water circuit can be managed with priority or together with the central heating circuits.

LIST OF COMPONENTS FOR CREATING CASCADING SYSTEMS

										BASIC COMPONENTS										OPTIONAL ADDITIONAL COMPONENTS																			
Heat input kW	Total output 80/60°C kW	no	ENERGY TOP W models				Flange kit, containing: 3 blind flanges, 3 perforated flanges, gaskets	Water connection kit complete with central heating pump, central heating outlet and return on-off valves, non-return valve and connection pipes, 6 bar safety valve	Additional central heating flow outlet sensor for cascading configurations with or without water flow separation device (5 m cable)	Condensate drain trap kit for flue gas manifolds, dia. 200 mm complete with fastening brackets	NB. - Use one between each cascaded unit	Flue gas manifold kit, dia. 200 mm, grey (L=600 mm) for "in line" cascading configurations, complete with backflow preventer valves, stubs, gaskets and brackets. NB. - Use for each flue gas outlet	Water manifold starter kit for individual boiler, DN 65 (2-1/2") with ISPEL safety devices (excluding safety valve) and gas manifold, DN 40 (1-1/2")	Self-supporting frame starter kit for individual boilers complete with support brackets	Water manifold extension kit for individual boiler, DN 65 (2-1/2") and gas manifold, DN 40 (1-1/2")	Self-supporting frame extension kit for individual boilers complete with support brackets	Water circuit compensator kit	Multizone installation diagram (2 mixed and 1 direct)	Outside temperature probe	Additional sensor for the management of an optional domestic hot water storage cylinder (5 m cable)	1 m MF manifold extension kit, PPS, dia. 200 mm	MF 90° bend kit, PPS, dia. 200 mm																	
			1	2	3	4																																	
150	147,0	2	80	80	—	—	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	041016X0	041019X0	043005X0	1KMM462U	013013X0	042030X0	042032X0	042029X0	042031X0	042028X0	041028X0	041026X0	043005X0	042021X0	042021X0	043005X0	041016X0
191	187,2	2	125	80	—	—	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	041016X0	041019X0	043005X0	1KMM462U	013013X0	042030X0	042032X0	042029X0	042031X0	042028X0	041028X0	041026X0	043005X0	042021X0	042021X0	043005X0	041016X0
225	220,5	3	80	80	80	—	1	3	1	1	3	1	1	1	1	2	2	1	1	1	1	1	041016X0	041019X0	043005X0	1KMM462U	013013X0	042030X0	042032X0	042029X0	042031X0	042028X0	041028X0	041026X0	043005X0	042021X0	042021X0	043005X0	041016X0
266	260,7	3	125	125	—	—	1	2	1	1	2	1	1	1	1	1	2	2	1	1	1	1	041016X0	041019X0	043005X0	1KMM462U	013013X0	042030X0	042032X0	042029X0	042031X0	042028X0	041028X0	041026X0	043005X0	042021X0	042021X0	043005X0	041016X0
300	294,0	4	80	80	80	80	1	3	1	1	3	1	1	1	1	2	3	1	1	1	1	1	041016X0	041019X0	043005X0	1KMM462U	013013X0	042030X0	042032X0	042029X0	042031X0	042028X0	041028X0	041026X0	043005X0	042021X0	042021X0	043005X0	041016X0
341	334,2	4	125	80	80	80	1	3	1	1	3	1	1	1	1	2	3	1	1	1	1	1	041016X0	041019X0	043005X0	1KMM462U	013013X0	042030X0	042032X0	042029X0	042031X0	042028X0	041028X0	041026X0	043005X0	042021X0	042021X0	043005X0	041016X0
348	341,1	3	125	125	125	—	1	3	1	1	3	1	1	1	2	3	3	—	1	1	1	1	041016X0	041019X0	043005X0	1KMM462U	013013X0	042030X0	042032X0	042029X0	042031X0	042028X0	041028X0	041026X0	043005X0	042021X0	042021X0	043005X0	041016X0
423	414,6	4	125	125	80	80	1	4	1	1	4	1	1	1	3	3	3	—	1	1	1	1	041016X0	041019X0	043005X0	1KMM462U	013013X0	042030X0	042032X0	042029X0	042031X0	042028X0	041028X0	041026X0	043005X0	042021X0	042021X0	043005X0	041016X0
464	454,8	4	125	125	125	125	1	4	1	1	4	1	1	1	3	3	3	—	1	1	1	1	041016X0	041019X0	043005X0	1KMM462U	013013X0	042030X0	042032X0	042029X0	042031X0	042028X0	041028X0	041026X0	043005X0	042021X0	042021X0	043005X0	041016X0

The tables list the components that can be used to create cascading configurations.

They are sub-divided into "basic" components, required to create the basic structure, as well as water circuit and flue gas components, and "additional" components that may be used to configure the type of system (e.g.: water flow separation device, evolved control unit for zone management, etc.).

The **ENERGY TOP B** cabinet modules are floor-standing heat generators for inside or outside installation, central heating only, featuring a premix burner, condensing operation with very high efficiency and very low polluting emissions. They consequently ensure high energy savings and are environmentally-friendly (**4 star energy rating according to Directive 92/42 EEC**, pollution **Class 5 as per EN 297/A5**). The painted steel insulated cabinet, with reversible door (left-right), be installed as standard outside in completely open places **with temperatures of down to -10°C**, without using the additional frost protection kit. Each module comes complete with insulated central heating outlet and return manifolds, DN 100, and gas manifold, DN 65.

The **cascaded connection** of multiple generators can be performed using special flue gas and water circuit accessories.

The models are factory configured for operation on natural gas and can be converted to LPG using a special conversion kit.

The range features four sizes, two with single furnace and two with double furnace.



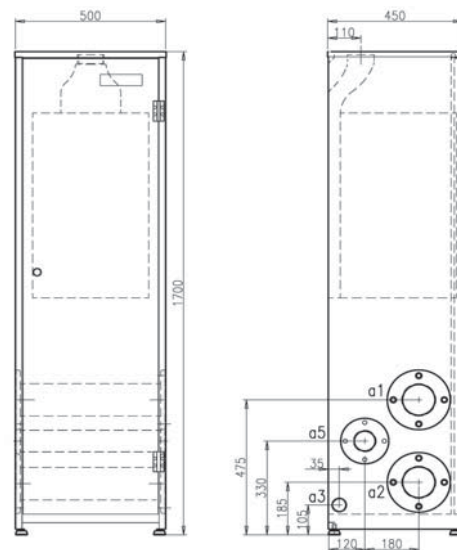
Single furnace

ENERGY TOP B 80

Cabinet model,
single furnace with
heat input from
17 to 75 kW (NHV)

ENERGY TOP B 125

Cabinet model,
single furnace with
heat input from
25 to 116 kW (NHV)



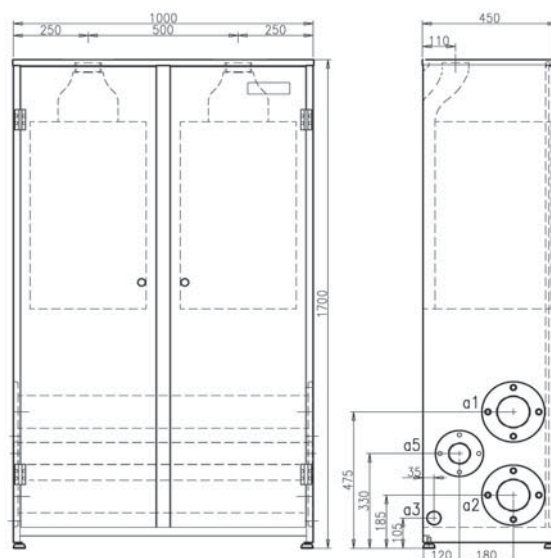
Double furnace

ENERGY TOP B 160

Cabinet model,
double furnace with
heat input from
17 to 150 kW (NHV)

ENERGY TOP B 250

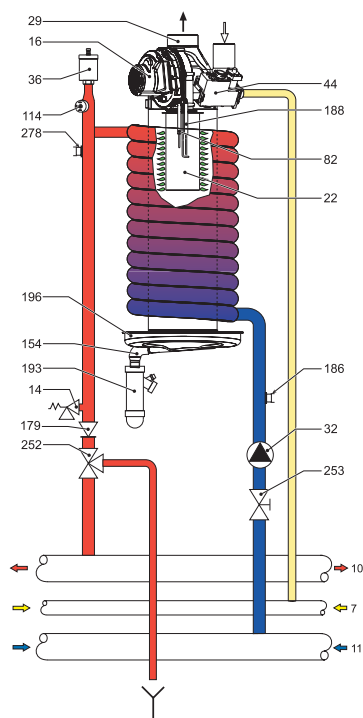
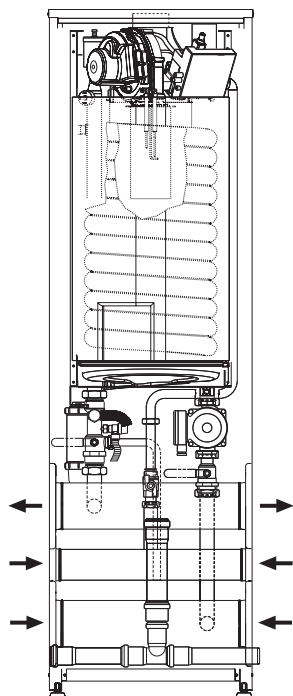
Cabinet model,
double furnace with
heat input from
25 to 232 kW (NHV)



ENERGY TOP			B 80	B 125	B 160	B 250
Output and Efficiency						
Heat input, central heating	max	kW	75,0	116,0	150,0	232,0
	min	kW	17,0	25,0	17,0	25,0
Heat output, central heating	max (80-60°C)	kW	73,5	113,7	147,0	227,4
	min (80-60°C)	kW	16,7	24,6	16,7	24,6
	max (50-30°C)	kW	79,5	123,0	159,0	246,0
	min (50-30°C)	kW	18,3	26,9	18,3	26,9
Efficiency	Pmax (80-60°C)	%	98,0	98,0	98,0	98,0
	Pmin (80-60°C)	%	98,5	98,5	98,5	98,5
	Pmax (50-30°C)	%	106,0	106,0	106,0	106,0
	Pmin (50-30°C)	%	107,5	107,5	107,5	107,5
	30% (30°C)	%	109,0	109,0	109,0	109,0
Efficiency class Directive 92/42 EEC			★★★★	★★★★	★★★★	★★★★
NOx class			5	5	5	5
Central heating operating pressure max-min		bar	6-0,8	6-0,8	6-0,8	6-0,8
Max central heating temperature		°C	95	95	95	95
Max exchanger Δt		°C	40	40	40	40
Water content		litres	13	15	26	30
Electrical specifications						
Index of protection		IP	X5D	X5D	X5D	X5D
Power supply voltage		V/Hz	230/50	230/50	230/50	230/50
Max power input (not including the pump)		W	285	390	570	780
Structural characteristics						
Weight		kg	110	115	190	210
Height		mm	1700	1700	1700	1700
Width		mm	500	500	1000	1000
Depth		mm	450	450	450	450
Water circuit						
Outlet/return fittings		inches	DN100	DN100	DN100	DN100
Gas fitting		inches	DN65	DN65	DN65	DN65
Combustion data, single furnace						
Type of appliance			B23	B23	B23	B23
Losses through the stack with burner ON at Pmax-Pmin		%	2,2-1,3	1,8-1,3	2,2-1,3	1,8-1,3
Losses through the casing with burner ON at Pmax-Pmin		%	0,2-0,2	0,2-0,2	0,2-0,2	0,2-0,2
Losses through the stack with burner OFF		%	0,03	0,02	0,03	0,02
Losses through the casing with burner OFF		%	0,4	0,4	0,4	0,4
Flue gas temperature at Pmax-Pmin (80/60)		°C	65-60	67-60	65-60	67-60
Flue gas temperature at Pmax-Pmin (50/30)		°C	43-33	45-34	43-33	45-34
Flue gas flow-rate at Pmax-Pmin		kg/h	126,2-30,1	195,2-44,3	126,2-30,1	195,2-44,3
Condensate flow-rate at Pmax-Pmin		kg/h	8,7-2,0	13,5-3,2	8,7-2,0	13,5-3,2
CO ₂ at Pmax-Pmin (G20)		%	9,0-8,5	9,0-8,5	9,0-8,5	9,0-8,5
CO ₂ at Pmax-Pmin (G31)		%	10-9,2	10-9,2	10-9,2	10-9,2
CO weighted		mg/kWh	35,0	35,0	35,0	35,0
NOx weighted		mg/kWh	29,0	29,0	29,0	29,0

The water circuit in cabinet modules, compared to the wall-hung versions, is already included as standard with all the components required for complete and correct installation in the boiler room. Each furnace is connected to the central heating outlet and return water manifolds via 3-way on-off valves with atmospheric discharge and fixed speed pump.

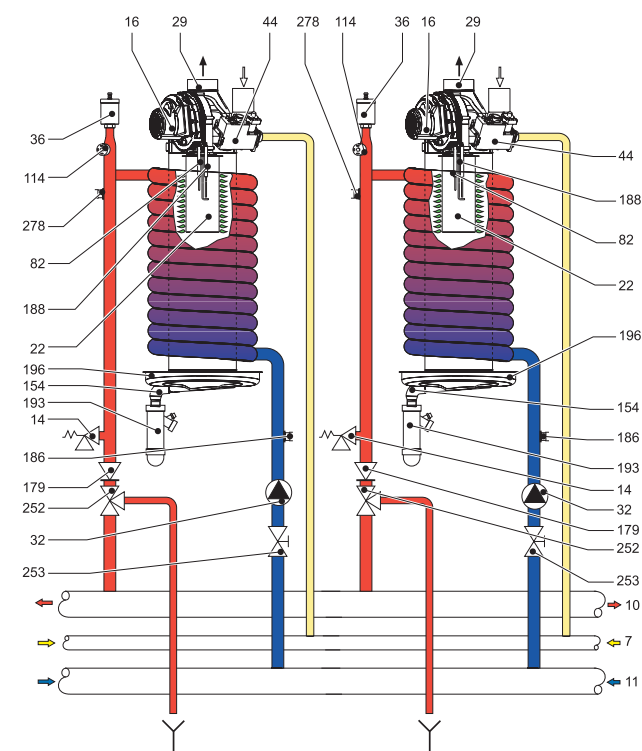
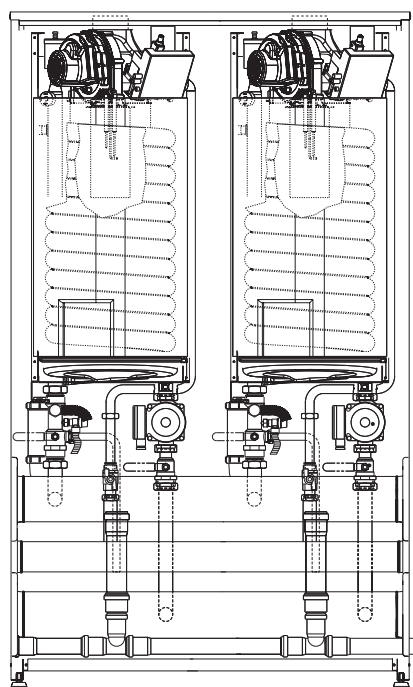
ENERGY TOP B 80-125



Key

- 7 Gas inlet
- 10 Central heating flow outlet
- 11 Central heating return inlet
- 16 Fan
- 22 Main burner
- 29 Flue gas outlet manifold
- 36 Automatic air vent
- 44 Gas valve
- 82 Detection electrode
- 114 Water pressure switch
- 154 Condensate drain hose
- 186 Return sensor
- 188 Ignition electrode
- 193 Drain trap
- 196 Condensate basin
- 278 Outlet sensor

ENERGY TOP B 160-250

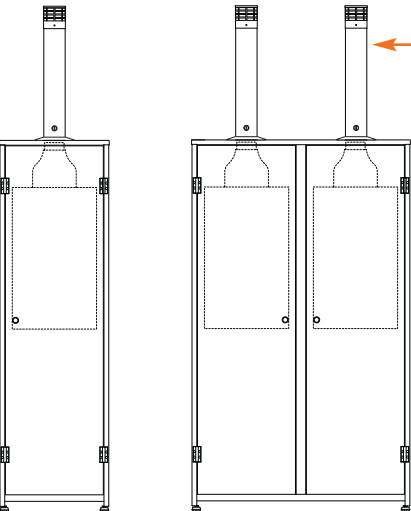


Various solutions are available for the air intake and flue gas outlet on the **ENERGY TOP B** cabinet modules, for both installation on individual and multiple modules.

The low flue gas temperature means special polypropylene accessories can be used.

As regards the single discharge system, 80 mm separate flue gas outlet configurations are available using special kits, with combustion intake from the boiler room (type B23).

80 mm TERMINALS FOR DIRECT CONNECTION



	Separate flue gas outlet terminal kit with gasket and nut dia. 80 mm	041013X0
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Each individual module, even when connected in series, can be connected directly to the 80 mm diameter flue gas outlet using a special terminal kit complete with pipe, wind-protection grill and gasket. One kit must be used for each flue gas outlet.

TECHNICAL SPECIFICATIONS

ENERGY TOP		B 80	B 125	B 160	B 250
For individual flue gas outlet					
Maximum stack pressure head at Pmax	pascal	200	250	200	250
Maximum separate length	meq	20	10	20	10

CONNECTION WITH FLUE GAS MANIFOLD

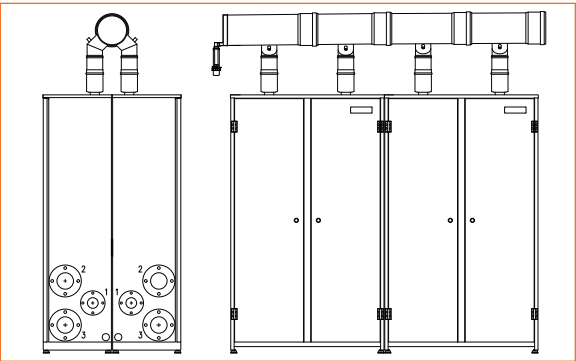
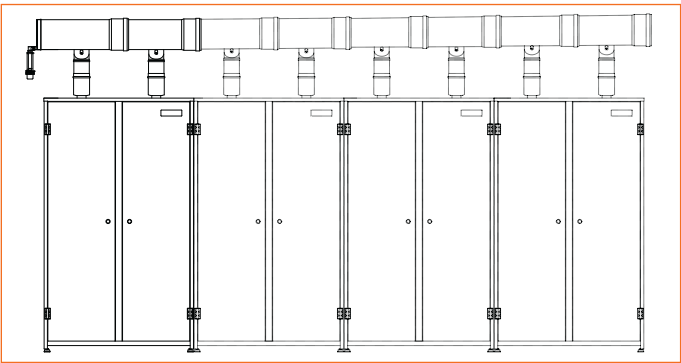


IN LINE



OPPOSING

Different types of flue gas manifolds are available, depending on the type of cascading configuration chosen: in “line” or “opposing”. The diameters of the manifolds depend on the total output of the series of modules.



EXAMPLE OF "IN LINE" CONFIGURATION

The table shows some "in line" cascading combinations and the corresponding maximum overall dimensions.

The corresponding diameter of the flue gas outlet manifold is also shown for each combination.

Heat input	Heat output 80/60°C	no.	Layout of in line modules					Dimensions of in line		Flue gas manifold diameter
kW	kW	Modules						Width	Depth	mm
150	147,0	1	160	-	-	-	-	1000	450	200
191	187,2	2	80	125	-	-	-	1000	450	200
232	227,4	1	250	-	-	-	-	1000	450	200
266	260,7	2	125	160	-	-	-	1500	450	200
307	300,9	2	80	250	-	-	-	1500	450	200
348	341,1	2	125	250	-	-	-	1500	450	200
382	374,4	2	160	250	-	-	-	2000	450	200
416	407,7	3	125	160	160	-	-	2500	450	200
464	454,8	2	250	250	-	-	-	2000	450	200
498	488,1	3	125	160	250	-	-	2500	450	300
539	528,3	3	80	250	250	-	-	2500	450	300
580	568,5	3	125	250	250	-	-	2500	450	300
614	601,8	3	160	250	250	-	-	3000	450	300
696	682,2	3	250	250	250	-	-	3000	450	300
730	715,5	4	125	160	250	250	-	3500	450	300
771	755,7	4	80	250	250	250	-	3500	450	300
812	795,9	4	125	250	250	250	-	3500	450	300
846	829,2	4	160	250	250	250	-	4000	450	300
928	909,6	4	250	250	250	250	-	4000	450	300



In addition, a wide range of accessories is available to complete the configuration.

DRAIN TRAP

	Condensate drain trap kit for flue gas manifolds complete with fastening brackets	Ø 200 mm	041026X0
	N.B. Use one between each cascaded unit	Ø 300 mm	041027X0

MANIFOLDS

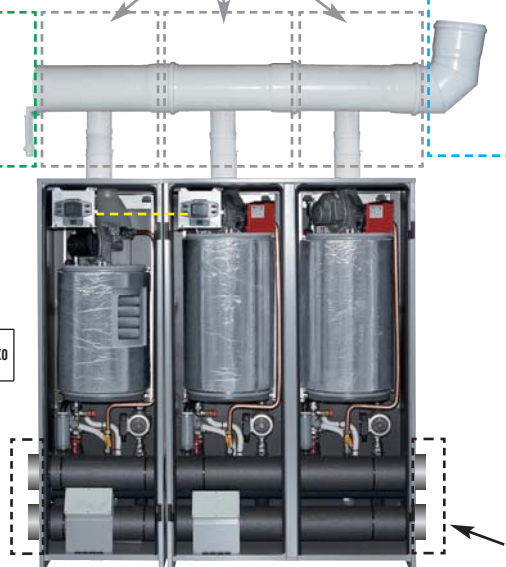
	Flue gas manifold kit, grey PPs (L=600mm) for "in line" cascading configurations complete with curve, backflow preventer valves, static gaskets and brackets	Ø 200 mm	041028X0
		Ø 300 mm	041029X0

ACCESSORIES

	MF 90° bend kit, PPs	Ø 200 mm	041016X0
		Ø 300 mm	041035X0
	1m MF manifold extension kit, PPs	Ø 200 mm	041019X0
		Ø 300 mm	041036X0

**ISPEL APPROVED CABINET**

	Cabinet complete with water flow separation device and ISPEL safety devices (excluding safety valve) for total output up to 1000 kW	0M600MX0
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**FLANGES**

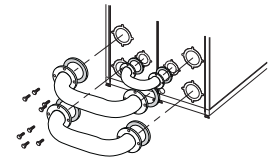
	Flange kit, containing: 3 blind flanges, 3 perforated flanges, gaskets	042027X0
	N.B.: To be used on individual modules or one for each module in cascading configurations	

EXAMPLE OF "OPPOSING" CONFIGURATION

The table shows some "opposing" cascading combinations and the corresponding maximum overall dimensions.

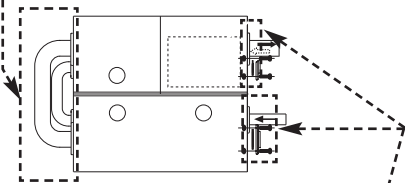
The corresponding diameter of the flue gas outlet manifold is also shown for each combination.

Heat input kW	Heat output 80/60°C kW	no. Modules	Dimensions of the Opposing modules		Dimensions max Opposing		Flue gas manifold diameter mm
			Width	Depth	Width	Depth	
191	187,2	2	80	125	500	900	200
266	260,7	2	125	160	1000	900	200
307	300,9	2	80	250	1000	900	200
348	341,1	2	125	250	1000	900	200
382	374,4	2	160	250	1000	900	200
416	407,7	3	160	125	1500	900	200
464	454,8	2	160	250	1000	900	200
498	488,1	3	160	125	1500	900	300
539	528,3	3	250	80	1500	900	300
580	568,5	3	250	125	1500	900	300
614	601,8	3	250	250	2000	900	300
696	682,2	3	250	250	2000	900	300
730	715,5	4	160	125	2000	900	300
771	755,7	4	250	80	2000	900	300
812	795,9	4	250	125	2000	900	300
846	829,2	4	250	250	2000	900	900
928	909,6	4	250	250	2000	900	300



FLANGE KIT FOR OPPOSING MODULES

	Flange kit for cascading configuration with "opposing" boilers	042026X0
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START AND END FLANGE KIT

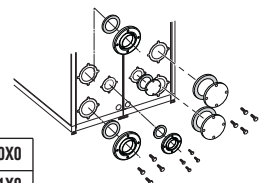
	Flange kit, containing: 3 blind flanges, 3 perforated flanges, gaskets	042027X0
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ACCESSORIES

	MF 90° bend kit, PPs	Ø 200 mm	041016X0
		Ø 300 mm	041035X0
	1m MF manifold extension kit, PPs	Ø 200 mm	041019X0
		Ø 300 mm	041036X0

MANIFOLDS

	Flue gas manifold kit, grey PPs (L=600mm) for "opposing" cascading configurations compl. with curve, backflow preventer valves, studs, gaskets and brackets N.B. To be used per each flue gas outlet	Ø 200 mm	041030X0
		Ø 300 mm	041031X0



ISPESL APPROVED CABINET

	Cabinet complete with water flow separation device and ISPESL safety devices (excluding safety valve) for total output up to 1000 kW	0M600MX0
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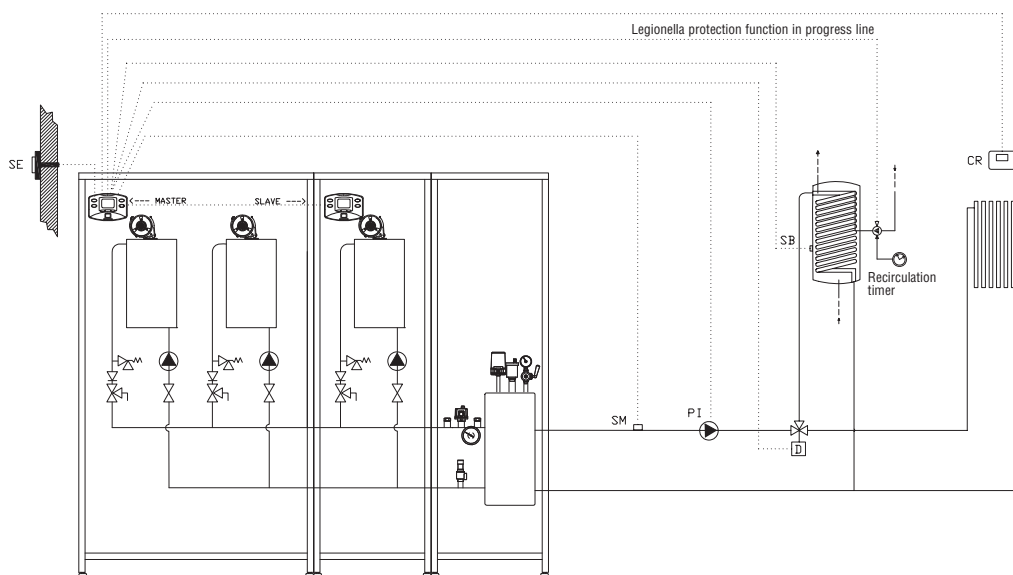
DRAIN TRAP

	Condensate drain trap kit for flue gas manifolds complete with fastening brackets N.B. Use one between each cascaded unit	Ø 200 mm	041026X0
		Ø 300 mm	041027X0



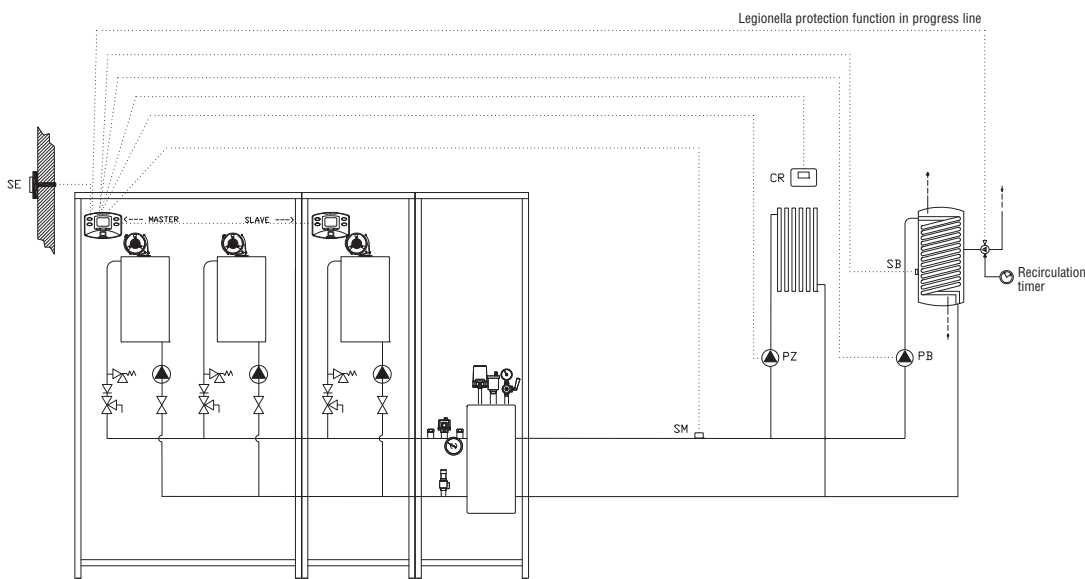
The **ENERGY TOP B** series modules, both in individual and multiple configurations, can as standard manage up to two system zones with direct outlet, or one direct zone with an optional storage cylinder, without requiring further control boards.

MIXED DIAGRAM WITH PRIORITY TO THE STORAGE CYLINDER



Master-Slave interconnection between the modules means multiple unit configurations can be created without requiring additional control units. The central heating and domestic hot water circuits can be managed simultaneously or with priority to the domestic hot water.

MIXED DIAGRAM WITH PRIORITY OR SIMULTANEOUS OPERATION OF THE STORAGE CYLINDER

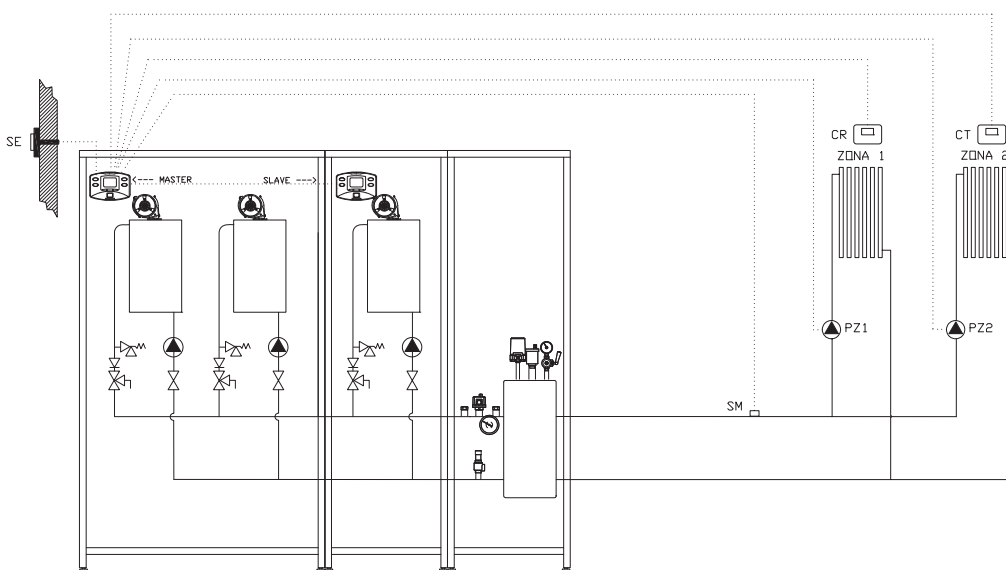


The **Legionella protection** function, after a programmable time interval, ensures the temperature inside the storage cylinder remains at 65°C for 15 minutes.

When Legionella protection is active, the boiler's electronics send an output signal (voltage-free contact) that can be used to control a recirculating pump.

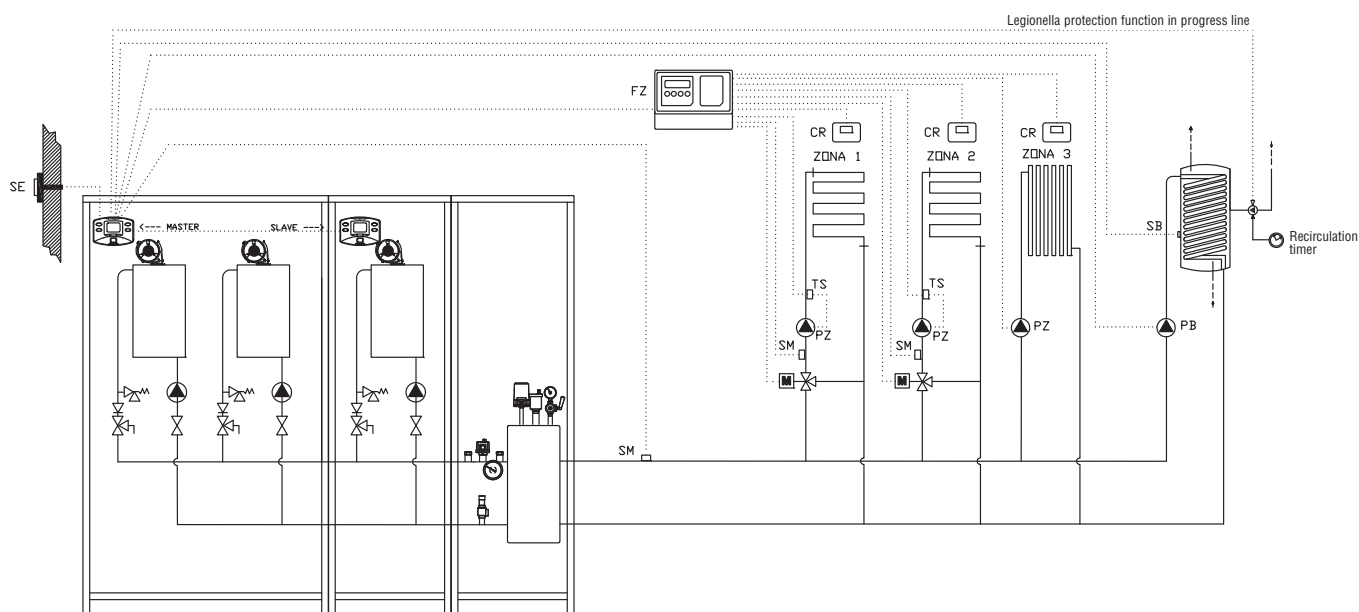
This ensures the entire water content in the **circuit is protected**.

CENTRAL HEATING ONLY DIAGRAM WITH DIRECT OUTLET




Control units can be added to directly manage up to two circuits, with direct outlet.

MIXED DIAGRAM WITH STORAGE CYLINDER AND DIRECT OR MIXED CENTRAL HEATING CIRCUITS



More complex system diagrams, on the other hand, can be managed by using zone control units that can “dialogue” directly with the boiler’s electronics and thus achieve maximum efficiency by adapting the operation of the boilers based on actual system load requirements. In this case too the operation of the domestic hot water circuit can be managed with priority or together with the central heating circuits.

LIST OF COMPONENTS FOR CREATING "IN LINE" CASCADING SYSTEMS



Heat input kW	Total output 80/60°C kW	no. Modules	Layout of in line modules			Dimensions of in line modules		Range kit, containing: 3 blind flanges, 3 perforated flanges, gaskets	Condensate drain trap kit for flue gas manifolds, da. 200 mm complete N.B. - Use one between each cascaded unit	Condensate drain trap kit for flue gas manifolds, da. 300 mm complete with bearing brackets N.B. - Use one between each cascaded unit	Flue gas manifold kit, da. 200 mm, grey, PPS for "in line" cascading configurations, complete with bends, backflow preventer valves, stubs, N.B. - Use for each flue gas outlet	Flue gas manifold kit, grey, PPS, da. 300 mm for "in line" cascading configurations, complete with bends, backflow preventer valves, stubs, N.B. - Use for each flue gas outlet	Additional central heating flow outlet sensor for cascading configurations with or without water flow separation device (5 m cable)	Cabinet complete with water flow separation device and SFPSL safety devices (excluding safety valve) for total output up to 1000 kW	Multizone installation diagram (2 mixed and 1 direct)	Outside temperature probe 1KWM482U	Additional sensor for the management of an optional domestic hot water storage cylinder (5 m cable)	1 m MF manifold extension kit, PPS, da. 200 mm	1 m MF manifold extension kit, PPS, da. 300 mm	MF 90° bend kit, PPS, da. 200 mm	MF 90° bend kit, PPS, da. 300 mm
			160	80	125	Width	Depth														
150	147.0	1	160			1000	450	042327X0	041026X0	041027X0	041028X0	041029X0	043005X0	0M500MMX0	013013X0	1KWM482U	043005X0	041019X0	041036X0	041016X0	041035X0
191	187.2	2	80	125		1000	450	1	1	—	2	—	1	1	1	1	1	1	—	X	—
232	227.4	1	250			1000	450	1	1	—	2	—	1	1	1	1	1	X	—	X	—
266	260.7	2	125	160		1500	450	1	1	—	3	—	1	1	1	1	1	X	—	X	—
307	300.9	2	80	250		1500	450	1	1	—	3	—	1	1	1	1	1	X	—	X	—
348	341.1	2	125	250		1500	450	1	1	—	4	—	1	1	1	1	1	X	—	X	—
382	374.4	2	160	250		2000	450	1	1	—	5	—	1	1	1	1	1	X	—	X	—
416	407.7	3	125	160	160	2500	450	1	1	—	4	—	1	1	1	1	1	X	—	X	—
464	454.8	2	250	250		2500	450	1	1	—	5	—	1	1	1	1	1	X	—	X	—
498	488.1	3	125	160	250	2500	450	1	—	1	—	5	1	1	1	1	1	—	—	—	X
539	528.3	3	80	250	250	2500	450	1	—	1	—	—	1	1	1	1	1	—	—	—	X
580	568.5	3	125	250	250	2500	450	1	—	1	—	—	1	1	1	1	1	—	—	—	X
614	601.8	3	160	250	250	3000	450	1	—	1	—	—	1	1	1	1	1	—	—	—	X
696	682.2	3	250	250	250	3000	450	1	—	1	—	—	1	1	1	1	1	—	—	—	X
730	715.5	4	125	160	250	3500	450	1	—	1	—	6	1	1	1	1	1	—	—	—	X
771	755.7	4	80	250	250	3500	450	1	—	1	—	7	1	1	1	1	1	—	—	—	X
812	795.9	4	125	250	250	3500	450	1	—	1	—	7	1	1	1	1	1	—	—	—	X
846	829.2	4	160	250	250	4000	450	1	—	1	—	8	1	1	1	1	1	—	—	—	X
928	909.6	4	250	250	250	4000	450	1	—	1	—	8	1	1	1	1	1	—	—	—	X
									BASIC COMPONENTS			OPTIONAL ADDITIONAL COMPONENTS									

The tables list the components that can be used to create cascading configurations, as well as the corresponding quantities. They are sub-divided into "basic" components, required to create the basic structure, as well as water circuit and flue gas components, and "additional" components that may be used to configure the type of system (e.g.: water flow separation device, evolved control unit for zone management, etc.).

LIST OF COMPONENTS FOR CREATING “OPPOSING” CASCADING SYSTEMS

Heat input kW	Heat output 80/60°C kW	no. Modules	Layout of the opposing modules	Dimensions (max) opposing		Range kit for cascading configuration with 3 perforated hangers, 3 blind hangers, “topping” boilers	Condensate drain trap kit for flue gas manifolds, 200 mm complete with fastening brackets. NB: - Use one between each cascaded unit.	Flue gas manifold kit, grey PPS, dia. 200 mm with double attachment for “opposing” configurations complete with backflow preventer valves. NB: - Use for each pair of opposing flue gas outlets	Flue gas manifold kit, grey PPS, dia. 300 mm with double attachment for “opposing” configurations complete with backflow preventer valves. NB: - Use for each pair of opposing flue gas outlets	Additional central heating flow outlet sensor for cascading configurations with or without water flow separation device (5 m cable)	Cabinets complete with water flow separation device and SPFSL safety devices (excluding safety valve) for total output up to 1000 kW	Multisone installation diagram (2 mixed and 1 direct)	Outside temperature probe TKMM42U	Additional hot water storage cylinder (5 m cable)	1m Mf manifold extension kit, PPS, dia. 200 mm	1m Mf manifold extension kit, PPS, dia. 300 mm	MF 90° bend kit, PPS, dia. 200 mm	MF 90° bend kit, PPS, dia. 300 mm
				Width	Depth													
191	187.2	2	80 125	500	900	042027X0 qt	041028X0 qt	041030X0 qt	041031X0 qt	043005X0 qt	0M020M00 qt	013013X0 qt	TKMM42U qt	043005X0 qt	041019X0 qt	041036X0 qt	041018X0 qt	041035X0 qt
266	260.7	2	125 160	1000	900	1	1	—	—	1	1	1	1	1	X	—	—	—
307	300.9	2	80 250	1000	900	1	1	—	2	1	1	1	1	1	X	—	—	—
348	341.1	2	125 250	1000	900	1	1	—	2	1	1	1	1	1	X	—	—	—
382	374.4	2	160 250	1000	900	1	1	—	2	1	1	1	1	1	X	—	—	—
416	407.7	3	160 125	1500	900	1	1	—	3	1	1	1	1	1	X	—	—	—
464	454.8	2	250 250	1000	900	1	1	—	2	1	1	1	1	1	X	—	—	—
498	488.1	3	160 125	1500	900	1	1	—	—	3	1	1	1	1	—	X	—	X
539	528.3	3	250 80	1500	900	1	1	—	—	3	1	1	1	1	—	X	—	X
580	568.5	3	250 125	1500	900	1	1	—	—	3	1	1	1	1	—	X	—	X
614	601.8	3	160 250	2000	900	1	1	—	—	4	1	1	1	1	—	X	—	X
696	682.2	3	250 250	2000	900	1	1	—	—	4	1	1	1	1	—	X	—	X
730	715.5	4	160 125	2000	900	1	1	—	—	4	1	1	1	1	—	X	—	X
771	755.7	4	250 80	2000	900	1	1	—	—	4	1	1	1	1	—	X	—	X
812	795.9	4	250 125	2000	900	1	1	—	—	4	1	1	1	1	—	X	—	X
846	829.2	4	160 250	2000	900	1	1	—	—	4	1	1	1	1	—	X	—	X
928	909.6	4	250 250	2000	900	1	1	—	—	4	1	1	1	1	—	X	—	X

OPTIONAL ADDITIONAL COMPONENTS

BASIC COMPONENTS



FERROLI *around the World*

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SPAIN www.ferroli.es

FRANCE www.ferroli.fr

UNITED KINGDOM www.ferroli.co.uk

NETHERLANDS www.agpo.nl

GERMANY www.ferroli.de

TURKEY www.ferroli.com.tr

ROMANIA www.ferroli.ro

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BELARUS www.ferroli.by

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