

FUEL / GAS BOILER

▶ **IDEAL 2300**



BAXI

IDEAL 2300, HEATING WITH ITS FLAME

THE IDEAL 2300 IS A CAST IRON BOILER CAPABLE OF BEING FITTED WITH FUEL OR GAS BURNER. THIS RANGE IS SPECIALLY DESIGNED TO MEET THE REQUIREMENTS OF "COMMUNITY AND SERVICE" MARKETS. IT HAS TWO MAJOR ACES: ENERGY SAVINGS AND RESPECT FOR THE ENVIRONMENT. IT IS ALSO VERY EFFICIENT WITH UNDERFLOOR HEATING.



NOTE THE ADVANTAGES



HIGH PERFORMANCE FLAME

Depending on the chosen configuration: the IDEAL 2300 displays high performance from 92.8 to 94.5% on net calorific values.



SAVINGS AND PEACE OF MIND

Thanks to very good insulation, heat losses when shut down are extremely low and generate energy savings. It operates very quietly, being well insulated and of high performance.

RANGE

9 models from 90 to 290 kW. One of two control panels including the new EcoCONTROL panel, can be fitted on each model. It incorporates a choice of regulator and single master-and-slave-control appropriate for the requirements of community plants. With the boilers MS fuel or GS gas burners as options form fully consistent, aesthetic high performance units.

ECONOMIC POWER

Exchange surfaces set in the "water legs" provide outstanding feed for water volumes appropriate to the power of each boiler (112 to 232 l depending on the model): long life guarantee.

The "grid" structure thoroughly distributes the mechanical stresses in each part. High volume pressurized combustion chamber (110 to 260 l), large exchange surfaces (4.2 to 10.25 m²). Moreover the IDEAL 2300 has an exchanger with 3 actual separate combustion gas passes, and its horizontal arrangement makes sweeping easy. The basic version of each IDEAL 2300 model is fitted with 2 economizers arranged in the upper smoke boiler flues. The quality of the exchanger connected to the economizers allows particularly high outputs to be achieved by modulating smoke temperature.

2 economizers, % net calorific value combustion output

Minimum power	Nominal power
93.7 to 94.4 *	93 to 93.5 *

(* depending on model)



Combustion gases pass

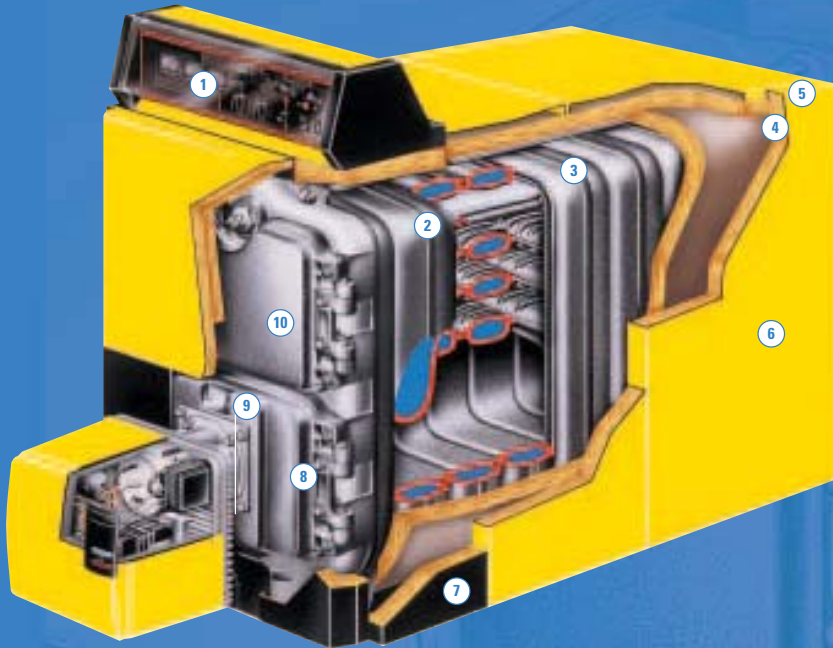
4 economizers, % net calorific value combustion output ** €

Minimum power	Nominal power
93.8 to 94.5 *	93 to 93.6 *

(* depending on model)

▶ IDEAL 2300 CUT AWAY VIEW

★★ CE 90 to 290 models



- 1 Control panel
- 2 Cast iron heating body
- 3 2 economizers
- 4 2 x 50 mm insulation on heating body and jacket
- 5 Easy fitting stove lacquered sheeting jacket
- 6 DN65 output and return flange to be welded with sleeve connector (optional) and sleeve for remote control sensor
- 7 50 x 60 Ø tapping for sludge drain
- 8 Right or left swivelling insulated burner holder drilled to European standard
- 9 Flame peephole
- 10 Insulated access door for horizontal sweeping

REINFORCED INSULATION

Double 2 x 50 mm glass wool insulation reduces energy losses through radiation and maintenance consumption. The doors are insulated with very thick ceramic fibre. The insulation allows very low losses to be achieved when the boiler is shut down: 0.14 to 0.7% nominal power ($\Delta t = 30$ K boiler at $50^\circ\text{C} - 20^\circ$ ambient temperature) in accordance with NFD 30002.

LOW TEMPERATURE OPERATION

The IDEAL 2300 can operate at variable low temperature in total safety, connected to a regulator working according to the outside temperature.

The boiler temperature does not have to be held between two heat instructions from the regulator. Minimum operating conditions are: output temperature: 30° , return: 25° .

The output temperature shall be held at minimum 45° for floors with underfloor heating, and the plant shall include a 3 way valve.

Variable low temperature operation without temperature holding considerably reduces maintenance consumption and ensures high operating output.

PROBLEM FREE MAINTENANCE

The IDEAL 2300 has been designed for problem free installation and maintenance. The combustion chamber door has a burner bracket plate drilled to the European standard, for installing the burners without cutting.

The IDEAL 2300 has 2 right or left swivelling doors on the side:

- the upper door provides access to the exchanger with horizontal pipes for effective sweeping
- the lower door, supporting the burner provides full access to the combustion chamber.

HEATING BODY OPTIONS

- Boiler body delivered assembled
- Sets of extra economizers for more per-

formance so more energy savings.

- Output and return sleeve connectors with sleeves for fitting remote control sensors
- The IDEAL 2300 boiler can take 0 to 16 mm adjustable feet for uneven floors. They are provided for being fitted after the boiler is connected without moving it. Each foot has a large bearing face (60 mm \varnothing) on which the height adjustment screw rotates, thereby preventing the floor being damaged.



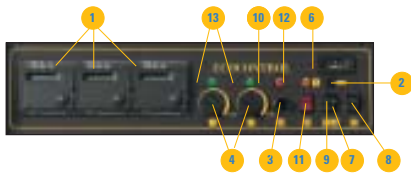
Cast iron part

“PLUS” TECHNOLOGY MAKING THE DIFFERENCE

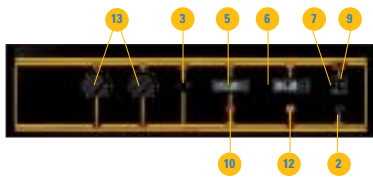
CONTROL PANELS

ECOCONTROL panels meet cascade plant requirements, for simple modular installation.

A combination of regulators fitted on different ECOCONTROL panels allows a bus communication system to be set up covering a large range of applications from the simplest to the most extended: 1 boiler 2 stages, 4 boilers 2 stages with 8 heating circuits and 1 DHW circuit. Panels have two relays (boiler and burner fault) giving them a connection to a remote control loop.



ECOCONTROL panel



S panel

Description	▲ Standard	● Option	S	ECO-CONTROL
1 Regulator according to outside temperature		ECOCONTROL 5		●
Boiler cascade regulation		ECOCONTROL 7, 8		●
• ECOCONTROL 9 area regulator				●
• 1 RAG relay for controlling RAG burner with regulator				●
• Connectors for electric connection of regulators	▲			
• Cables with connectors for electric connection of 1 or 2 stage burners	●			▲
• Translucent screen side protection				▲
2 6.3A protective fuse	▲			▲
3 110° safety thermostat – manual reset	▲			▲
4 1st and 2nd 30° C to 90° C adjustable stage regulator thermostats	▲			▲
5 Water thermometer	▲			
6 Smoke thermometer	●			●
7 Burner on/off switch	▲			▲
8 Heating pump on/off switch				▲
• Auto – manual switch included in the regulator				●
9 Safety thermostat operation test push button	▲			▲
10 Luminous water safety indicator	▲			▲
11 Luminous burner safety indicator				▲
12 Luminous power on indicator	▲			▲
13 Luminous 1st and 2nd stage operation indicators				▲

All information about regulators is detailed in the “regulation” leaflet

COMFORT REGULATORS

ECOCONTROL BOX SELECTION TABLE										
Number of boilers	Number of boxes according to number of systems								Package	
	0*	1*	2*	3*	4*	5*	6*	7*		8*
1	1									1 ECOCONTROL 7
	1	1	1							1 ECOCONTROL 5
				1						1 ECOCONTROL 9
2	1	1	1	1	1					1 ECOCONTROL 7
	1	1	1	1	1					1 ECOCONTROL 8
			1	2	3	4				1 ECOCONTROL 9

ECOCONTROL BOX SELECTION TABLE										
Number of boilers	Number of boxes according to number of systems								Package	
	0*	1*	2*	3*	4*	5*	6*	7*		8*
3	1	1	1	1	1	1	1			1 ECOCONTROL 7
	2	2	2	2	2	2	2			1 ECOCONTROL 8
		1	2	3	4	5	6			1 ECOCONTROL 9
4	1	1	1	1	1	1	1	1	1	1 ECOCONTROL 7
	3	3	3	3	3	3	3	3	3	1 ECOCONTROL 8
		1	2	3	4	5	6	7	8	1 ECOCONTROL 9

BOILER REGULATION: ACTS ON 2 STAGE BURNERS

ECOCONTROL 7:

ECOCONTROL 7 directly controls the operation of the 2 stage burner in boiler 1 and the operation of a DHW heater

ECOCONTROL 8:

ECOCONTROL 8 directly controls the operation of the 2 stage burner in boiler 2, 3 or 4.

1 BOILER

ECOCONTROL 7

FOR 2 TO 4 BOILERS IN CASCADE

base

+

1 to 3 ECOCONTROL 8

ECOCONTROL 7 ECOCONTROL 8



BOILER REGULATION + SYSTEMS: CONTROL OF 2 STAGE BURNERS AND 3 WAY SYSTEM VALVES

ECOCONTROL 5:

Reserved for community plants comprising 1 single boiler, 1 or 2 regulated systems and 1 DHW heater
ECOCONTROL 5 directly controls the operation of one or two 3 way valves and a 2 stage burner.

ECOCONTROL 7:

ECOCONTROL 7 directly controls the operation of the boiler 1 2 stage burner and a DHW heater.

ECOCONTROL 8:

ECOCONTROL 8 directly controls the operation of the 2 stage burner of boilers 2, 3 or 4.

ECOCONTROL 9:

ECOCONTROL 9 directly controls the operation of a 3 way valve in a regulated system.

FOR 1 BOILER AND 1 OR 2 SYSTEMS



ECOCONTROL 5

FOR 1 BOILER AND 3 SYSTEMS



ECOCONTROL 5



ECOCONTROL 9

2 TO 4 BOILERS IN CASCADE + 1 TO 8 SYSTEMS

Base



ECOCONTROL 7



1 to 3 boiler regulators



ECOCONTROL 8



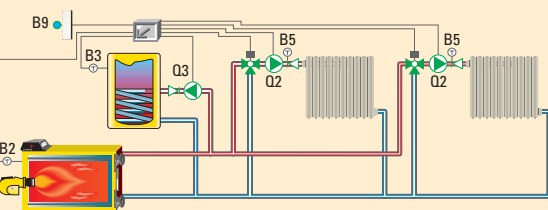
1 to 8 system regulators



ECOCONTROL 9

APPLICATION EXAMPLES

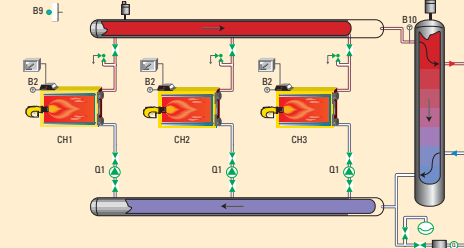
Diagram of a system on a hydraulic manifold



Example 1: application with 1 two stage boiler, 2 heating circuits and 1 cylindrical DHW producer.

Boiler: 1 ECOCONTROL 5

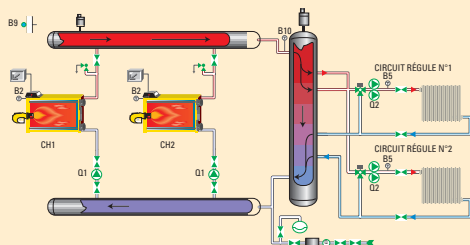
Diagram of a system on a hydraulic separation bottle



Example 2: Application with 3 two stage boilers.

Boiler 1: 1 ECOCONTROL 7,
Boilers 2 and 3: 1 ECOCONTROL 8

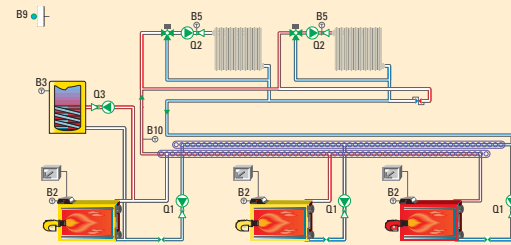
Diagram of a system on a hydraulic separation bottle



Example 3: application with 2 two stage boilers in cascade and 2 heating circuits.

Boiler 1: 1 ECOCONTROL 7, 2 ECOCONTROL 9
Boiler 2: 1 ECOCONTROL 8

Diagram of a system on a hydraulic manifold



Example 4: Application with 3 two stage boilers in cascade, 2 heating circuits and a cylindrical DHW producer.

Boiler 1: 1 ECOCONTROL 7 + 2 ECOCONTROL 9 + 1 option ECS
Boilers 2 and 3: 1 ECOCONTROL 8

B2: boiler sensor
Q2: system pump

B3: DHW sensor
B10: cascade sensor

B5: output sensor

B9: outside sensor

Q3: DHW pump

Q1: boiler pump

TECHNICAL SPECIFICATIONS

BOILER SPECIFICATIONS ACCORDING TO RT 2000



IDEAL 2300 models		2304	2305	2306	2307	2308	2309
Type of heat exchanger		heating					
Type of boiler	Low Temperature	LV					
Venting		Chimney					
Number of elements		4	5	6	7	8	9
Nominal power	kW	90	130	170	210	250	290
Heat output	kW	97	140	183	227	271	315
Gas smoke discharge *	kg/hr	163	235	307	381	454	528
Gas smoke volume *	m³/hr	131	189	247	306	365	424
Fuel smoke discharge *	kg/hr	146	211	276	343	409	475
Fuel smoke volume *	m³/hr	114	165	215	267	319	371
Combustion chamber volume	l	110	140	170	200	230	260
Number of optimizers		4					
Smoke circuit strength	mbar	0,3	0,5	1,0	1,3	2,0	2,5
Smoke temperature	C°	160	163	166	168	171	174
100% and 70°C load output	%	93.0	92.8	92.8	92.3	92.1	91.9
30% and 50°C load output	%	90.6	90.8	91.0	91.2	91.4	91.6
Losses when shut down ΔT = 30 K	W	350	450	650	850	1050	1125
Maintenance consumption (as DN 4702)	%	0.74	0.52	0.40	0.33	0.28	0.25
Electric power	W	0					
Nominal water flow at Pn ΔT = 15K	m³/hr	5.2	7.5	9.7	12.0	14.3	16.6
Boiler ΔP at nominal flow	mbar	5	9	15	21	31	50
Water content	l	112	136	160	184	206	232
Max operating pressure (primary)	bar	6					
Thermostat setting range	C°	30 - 90					
Overheating safety temperature	C°	110					
Test report reference	No.	K 102/96					
Body		TUV					
EC Reference		85 AQ 0754					
SICMA burners recommendation	fuel	12 - 1A	18 - 1A/2A	18 - 1A/2A	28 - 1A/2A	28 - 1A/2A	28 - 2A
	gas	12 - 1A/2A	18 - 1A/2A	18 - 1A/2A	28 - 1A/2A	28 - 1A/2A	28 - 2A

* values for CO₂ = 13% for fuel and CO₂ = 9.5% for gas

INSTALLATION

BOILER ROOM LAYOUT

This plant shall not be installed in a room with an ambient atmosphere containing much dust or corrosive fumes (chlorine, fluorine, solvents etc.).

Description	Dimensions in mm	
	C	L
IDEAL 2300	C	L
2304	750	900
2305	920	1070
2306	1090	1240
2307	1260	1410
2308	1430	1580
2309	1600	1750

BASE

No special base has to be provided for this type of boiler. A single roof is enough (dimensions below).

WORKING SPACE

The dimensions shown are minimum values for proper access for erection and maintenance work. No working space is required in the upper part for sweeping.

VENTILATION

Top and bottom ventilation shall be provided in accordance with current regulations and the Codes of Practice.



CHIMNEY

The flues and chimney shall be constructed in accordance with current regulations and the Codes of Practice, particularly DTU 165 on chimney design.

HYDRAULIC CIRCUITS

Water connections to boilers shall be constructed in accordance with the state of the art and interassociation agreements dated 2 July 1969 and its Appendix 2.

• Circulating water flow

The plant shall be designed to provide water circulation between 1/3 and 3 times nominal flow QN in each boiler.

$$QN = \frac{PN \text{ kW} \times 0.86}{15K}$$

Water flow tolerated in each boiler shall be between:

$$\frac{PN \text{ kW} \times 0.86}{45 K} \text{ and } \frac{PN \text{ kW} \times 0.86}{5K}$$

PN = Nominal Power of the boiler in kW

Water flow shall be provided on a permanent basis whatever the plant operating conditions namely:

- by the main feed pump provided that the plant does not have a mixing valve between each boiler and the pump, and that the latter works permanently.
- by a recycling pump or load pump continuously operating.

Recycling pump discharge shall at least equal:

$$\frac{QN}{3}$$

For cascade regulation, circulating water flow in each boiler shall be permanent while the burner is operating and shall continue for at least 5 minutes after this is switched off.

For a recycling or load pump per boiler and to avoid parasite circulation in other boilers, fit non return valves upstream of the return connection.

The burner shall be controlled by the recycling or load pump. It can only be started if the pump is working. If need be a flow controller in series with the 1st stage

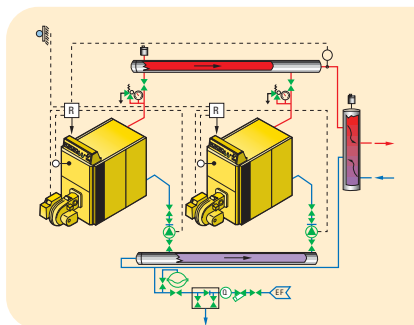
regulating thermostat or burner limiter may be fitted on the boiler return, downstream of the load or recycling pump.

OPERATION

- Fuel or gas two stage burners
 - Boiler at minimum 50° C, 1st stage output ≥ 40% boiler PN
 - Variable low temperature boiler, 1st stage output = 50 to 60% boiler PN.
- Gas modulating boilers
 - Boiler at minimum 50° C, minimum speed output ≥ 30% boiler PN.
 - Variable low temperature boiler, minimum speed output ≥ 50% boiler PN. (PN = nominal power).

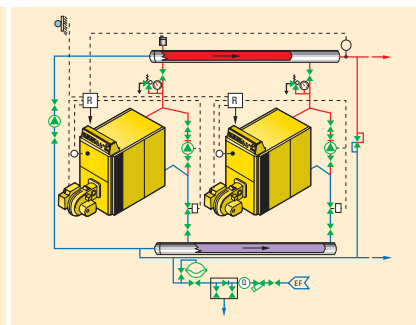
APPLICATION EXAMPLES

We recommend the plant 1 diagram in particular to ensure optimum operation of ECOCONTROL regulators.



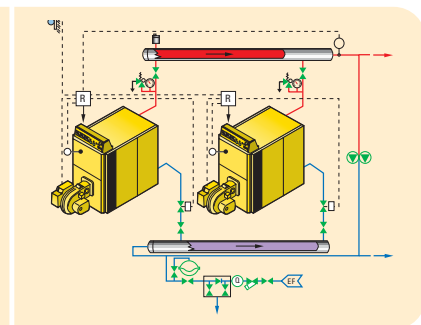
■ **Diagram 1**
Primary circuit on a hydraulic separation bottle

- In this configuration each pump's discharge at least equals the nominal output of each boiler.
- The cascade sensor shall be located on the common manifold of the bottle primary input for permanent cascade temperature control whichever boiler(s) is/are operating.



■ **Diagram 2***
1 recycling pump per boiler

- In this configuration each pump's discharge shall at least equal 1/3 the nominal output of each boiler.
- The boiler sensor shall be located on the boiler output manifold upstream of the recycling pump.
- The cascade sensor shall be located on the boiler output manifold for permanent cascade temperature control whichever boiler(s) is/are operating.



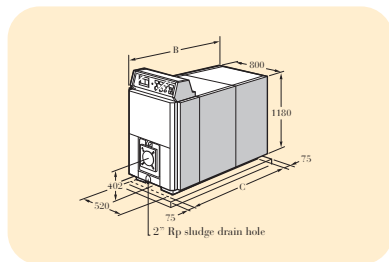
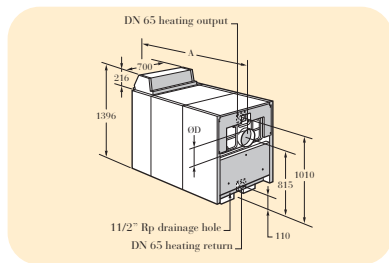
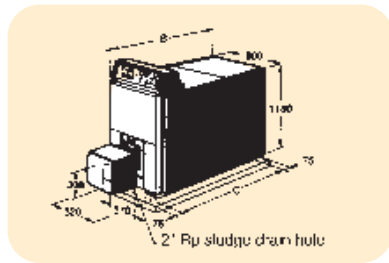
■ **Diagram 3**
1 common recycling pump for maximum 2 boilers

- In this configuration the double pump's discharge shall at least equal 2/3 the nominal output of each boiler.
- The cascade sensor shall be located on the common two boiler output manifold for permanent cascade temperature control whichever boiler(s) is/are operating.

CAUTION*:

For this kind of plant, the cascade sensor cannot be fed by the recycling pump. So it shall permanently feed this sensor by other means: constant flow or 3 way valve delivery circuit, feed pump and differential pressure valve.

IDEAL 2300



Dimensions		2304	2305	2306	2307	2308	2309	
Dimension A	mm	995	1165	1335	1505	1675	1845	
Dimension B	mm	900	1070	1240	1410	1580	1750	
Dimension C	mm	750	920	1090	1260	1430	1600	
Width of body	mm	606	606	606	606	606	606	
D Ø smoke pipe	mm	180	180	180	180	200	200	
Weight	kg	610	721	838	949	1061	1179	
Combustion chamber dimensions	Depth	mm	595	765	935	1105	1275	1445
	Width	mm	450	450	450	450	450	450
	Height	mm	430	430	430	430	430	430

PACKAGING

Description	Type of packaging	BOILERS					
		2304	2305	2306	2307	2308	2309
Cast iron part*	Pallet	452 kg	557 kg	665 kg	770 kg	872 kg	977 kg
Connecting rod*	No packaging	2 kg	2,4 kg	2,8 kg	3,4 kg	3,7 kg	4,3 kg
Dismantled body fittings	Cardboard box 470 mm x 375 mm x 210 mm	8.3 kg	9.3 kg	10.6 kg	12 kg	14 kg	19 kg
Body fittings	Mussy wooden box 645 mm x 490 mm x 390 mm	70 kg	70 kg	70 kg	70 kg	70 kg	70 kg
Delivered economizer	No packaging	10 kg	13 kg	16 kg	16 kg	19 kg	19 kg
Body insulating jacket	Wooden box 1180 mm x 1060 mm x 315 mm (models 2304 to 2306)	90 kg	92 kg	98 kg	106 kg	108 kg	120 kg
	1189mm x 1080 mm x 380 mm (models 2304 to 2306)						
Delivered control panel	Cardboard box 750 mm x 375 mm x 250 mm	9 kg	9 kg	9 kg	9 kg	9 kg	9 kg
Number of packages	Assembled body	5	5	5	5	5	5
	Not assembled body	7	7	7	7	7	7
Shipping weight		641 kg	753 kg	871 kg	986 kg	1096 kg	1214 kg

* Up to 2410: 1 package, 2411: 2 packages. Front 107kg – middle 100kg – rear 112kg

IDEAL 2300	Supplied ▲ Standard ● Option
GENERAL SPECIFICATIONS	
▲	- Heating body comprising cast iron parts not assembled (delivered assembled with supplement)
▲	- 2 economizers
▲	- Right or left swivelling burner door drilled to European standard
▲	- Smoke box
▲	- 50 x 60 mm tapped opening for "sludge" drain
▲	- Output and return mating flanges to be welded
▲	- 50 mm thick insulation lining on fibre glass for heating body
▲	- Output and return mating flanges to be welded
▲	- 50 mm thick insulation jacket
▲	- S or ECOCONTROL control panel
▲	- Maintenance tools brush – scraper
▲	- Box of fittings
▲	- Assembly instructions
▲	- Operating instructions
▲	- Warranty card

OPTIONS	
●	- Boiler body delivered assembled
●	- Adjustable feet
●	- Heating output sleeve connector with sleeve for remote control sensor and 20 Ø x 17 opening (not fitted)
●	- Heating return sleeve connector with sleeve for remote control sensor, drainage hole and 20 Ø x 17 drainage valve (not fitted)
●	- Burner cable for S panel
●	- Regulators for ECOCONTROL panels
●	- Smoke thermometer
●	- 2 extra economizers for Output

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