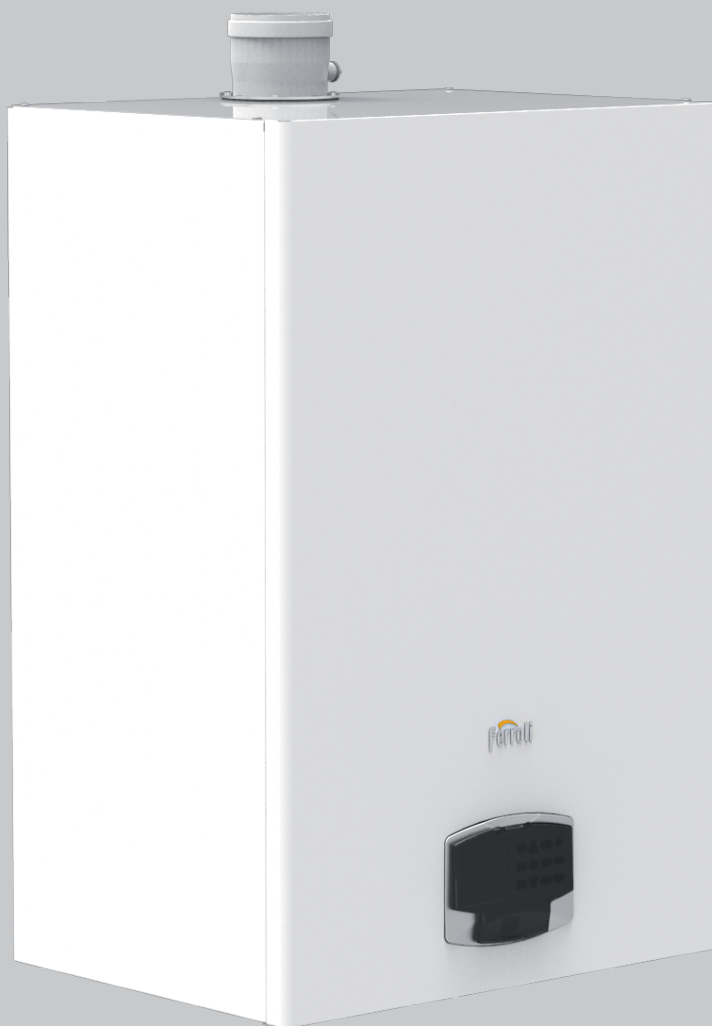


# Data Sheet



Rev. del 16/01/2019

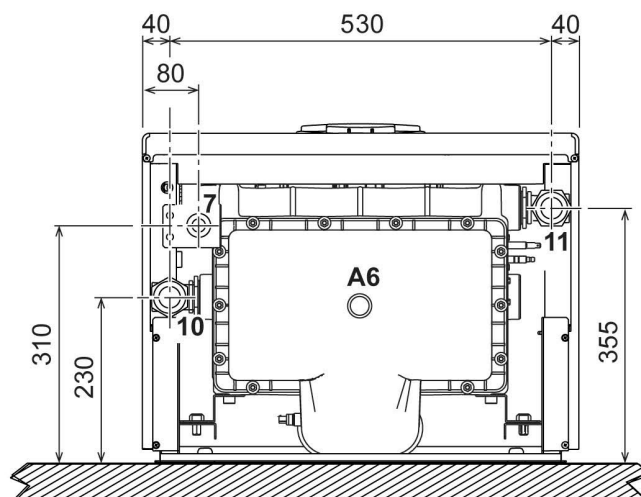
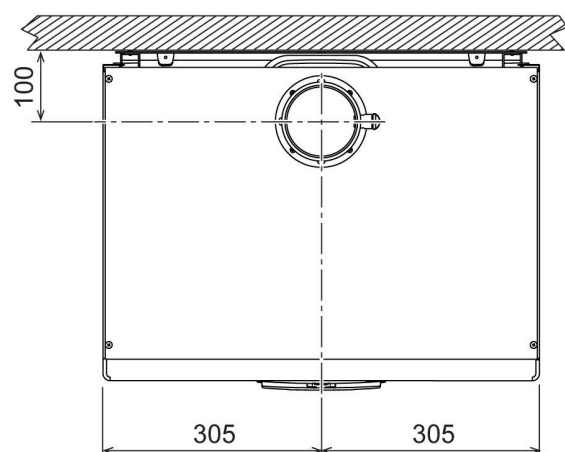
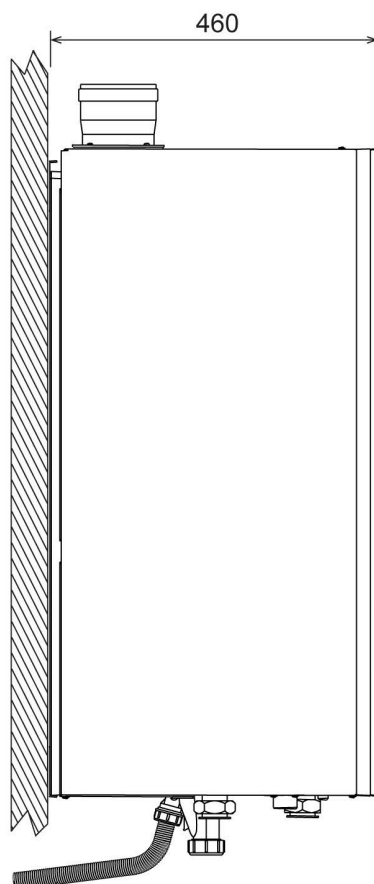
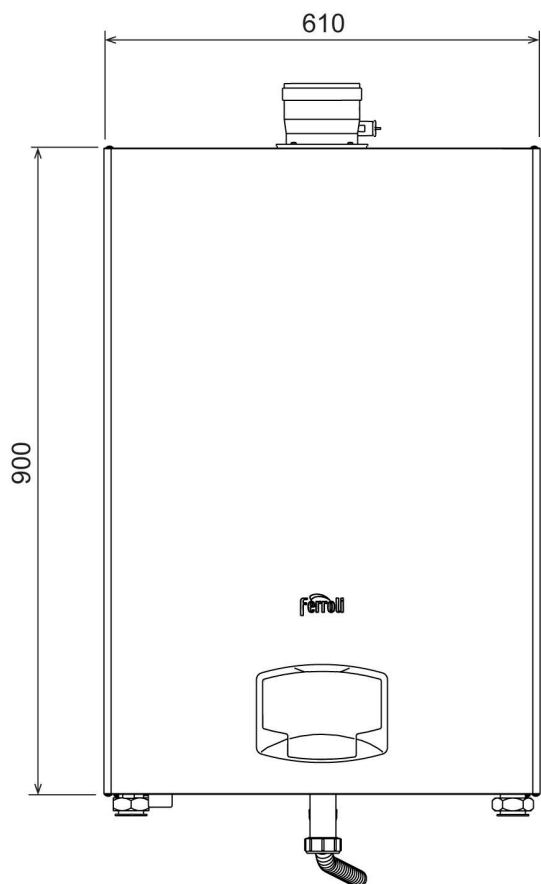
## FORCE W 150

The Ferrolli logo consists of the brand name "ferrolli" in a white, lowercase, sans-serif font. Above the letter "o" is a stylized orange swoosh that curves over the top of the letter.

## General legend of the figures

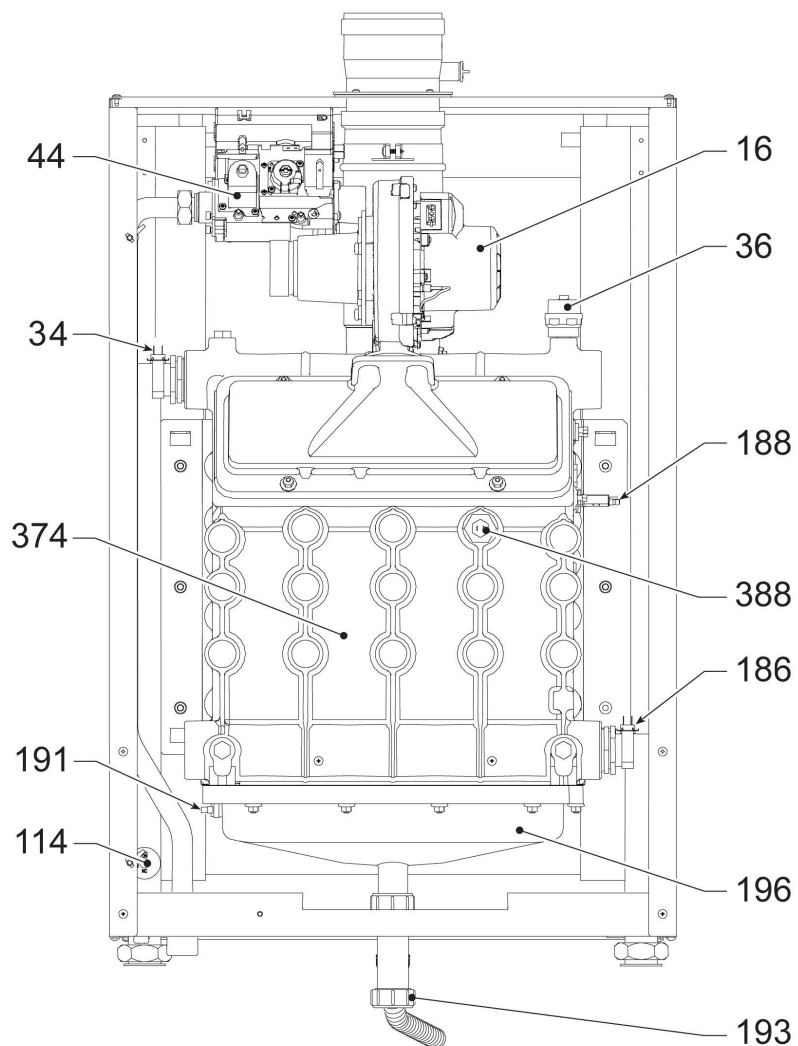
7	Gas inlet - Ø 1"
10	System delivery - Ø 1" 1/2"
11	System return - Ø 1" 1/2"
16	Fan
32	Heating circulating pump (not supplied)
34	C.h. flow temperature sensor
36	Automatic air vent
44	Gas valve
72	Room thermostat (not supplied)
72B	Second room thermostat (not supplied)
95	Diverter valve (not supplied)
98	Switch
114	Water pressure switch
130	DHW circulating pump (not supplied)
138	External probe (not supplied)
139	Remote timer control (not supplied)
155	Hot water tank temperature probe (not supplied)
186	C.h. return temperature sensor
188	Ignition/Ionisation electrode
191	Fume temperature thermostat
193	Trap
196	Condensate tray
256	Modulating heating circulating pump signal (not supplied)
298	Cascade temperature sensor (not supplied)
299	Input 0-10 Vdc (not supplied)
300	Burner lit contact (voltage-free contact) (not supplied)
301	Fault contact (voltage-free contact) (not supplied)
302	Remote reset input (230 Volt) (not supplied)
306	Heating system circulating pump (not supplied)
307	Heating system second circulating pump (not supplied)
348	3-way valve - 3 wires (not supplied)
357	Faulty contact (230 Vac) (not supplied)
361	Cascade connection of next module (not supplied)
362	Cascade connection of previous module (not supplied)
363	MODBUS communication (not supplied)
374	Aluminium exchanger
388	Safety sensor
A6	Condensate discharge connection

## Dimensions and connections



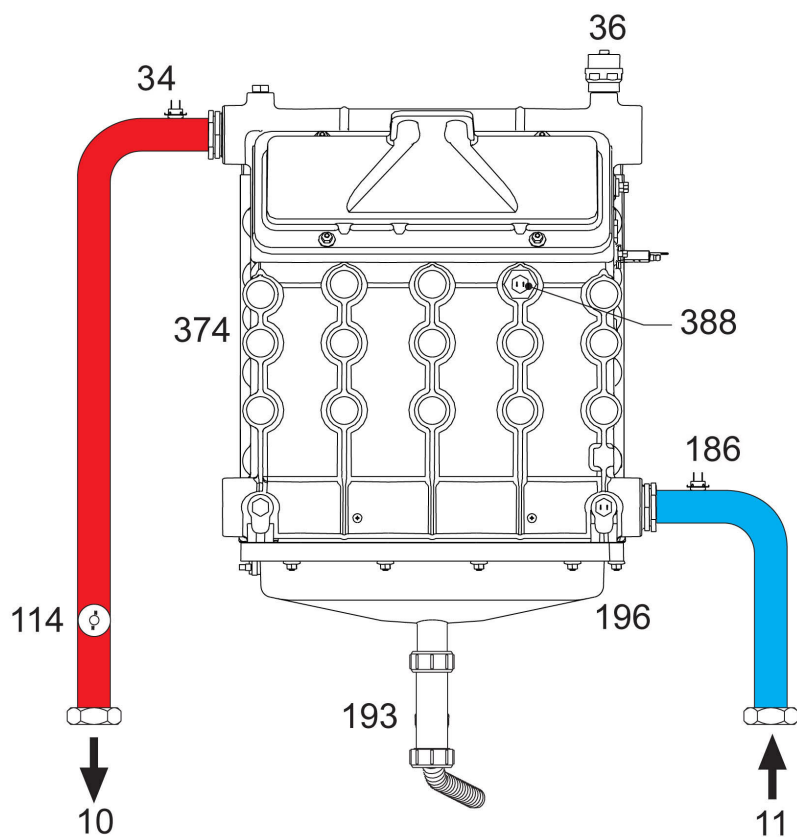
- 7 Gas inlet -  $\varnothing$  1"
- 10 System delivery -  $\varnothing$  1" 1/2"
- 11 System return -  $\varnothing$  1" 1/2"
- A6 Condensate discharge connection

### General view and main components



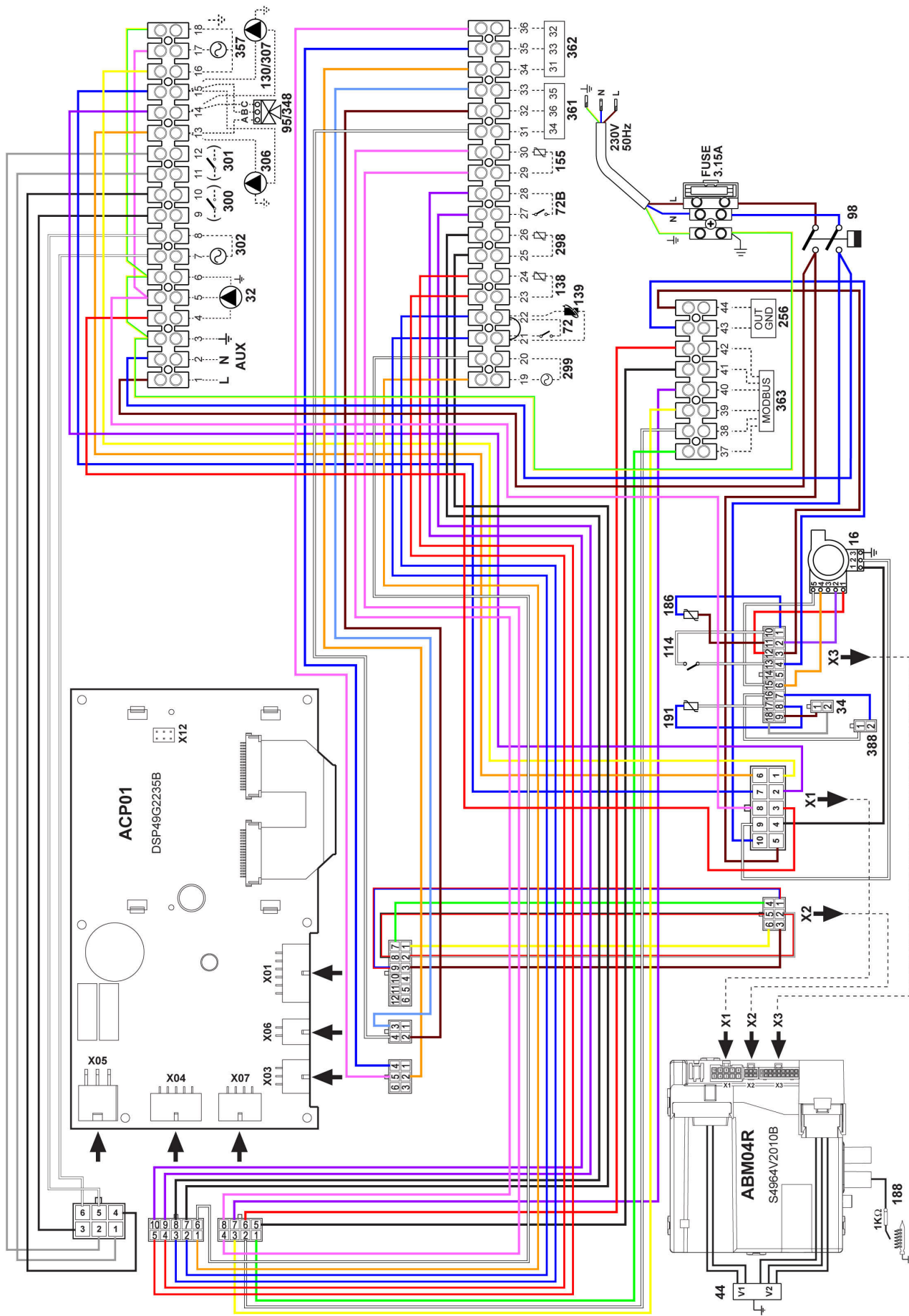
- 16 Fan
- 34 C.h. flow temperature sensor
- 36 Automatic air vent
- 44 Gas valve
- 114 Water pressure switch
- 186 C.h. return temperature sensor
- 188 Ignition/Ionisation electrode
- 191 Fume temperature thermostat
- 193 Trap
- 196 Condensate tray
- 374 Aluminium exchanger
- 388 Safety sensor

## Hydraulic diagram

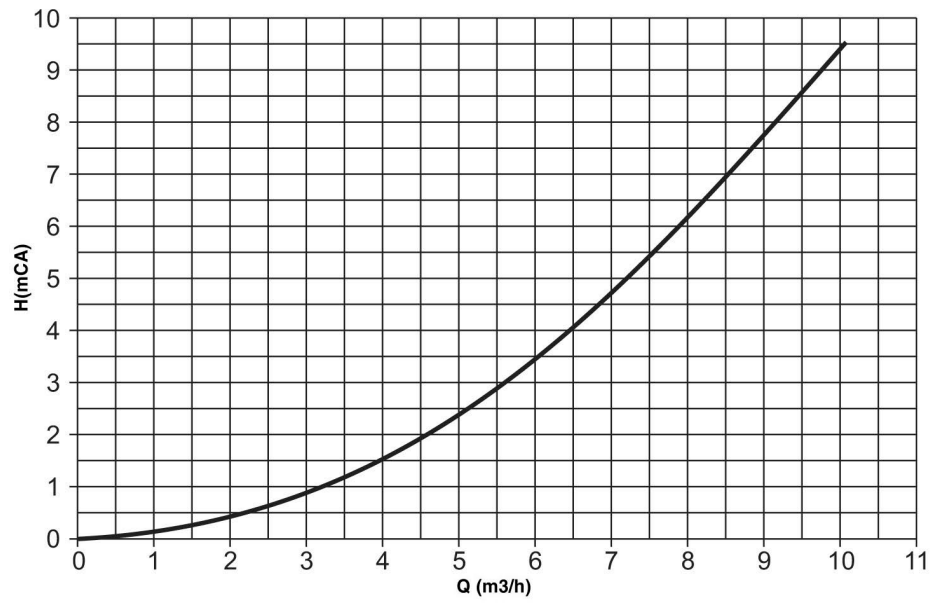


- 10 System delivery -  $\varnothing$  1" 1/2"
- 11 System return -  $\varnothing$  1" 1/2"
- 34 C.h. flow temperature sensor
- 36 Automatic air vent
- 114 Water pressure switch
- 186 C.h. return temperature sensor
- 193 Trap
- 196 Condensate tray
- 374 Aluminium exchanger
- 388 Safety sensor

Electrical connections into the boiler



## Pressure losses



## Technical data table

Nominal CH heat input (Hs)	kW	159,0
Nominal CH heat input (Hi)	kW	143,0
Minimum CH heat input (Hs)	kW	26,7
Minimum CH heat input (Hi)	kW	24,0
Nominal CH output (80/60)	kW	140,0
Minimum CH output (80/60)	kW	23,6
Nominal condensing output (50/30)	kW	148,0
Minimum condensing output (50/30)	kW	25,9
Nominal useful efficiency (80/60) (Hs)	%	88,1
Nominal useful efficiency (80/60) (Hi)	%	97,8
Minimum useful efficiency (80/60) (Hs)	%	88,5
Minimum useful efficiency (80/60) (Hi)	%	98,3
Nominal useful efficiency (50/30) (Hs)	%	93,2
Nominal useful efficiency (50/30) (Hi)	%	103,5
Minimum useful efficiency (50/30) (Hs)	%	97,3
Minimum useful efficiency (50/30) (Hi)	%	108,0
Useful efficiency at part load power (Hs)	%	97,3
Useful efficiency at part load power (Hi)	%	108,1
Combustion efficiency at maximum power	%	98,0
Combustion efficiency at minimum power	%	98,5
Chimney heat losses (80/60)	%	2,0
Jacket heat losses (80/60)	%	0,1
Combustion efficiency at maximum power (50/30)	%	98,6
Combustion efficiency at minimum power (50/30)	%	99,7
Chimney heat losses at nominal power (50/30)	%	1,4
Jacket heat losses at maximum power (50/30)	%	0,0
Flue gas temperature (80/60)	°C	Pmax: 73 Pmin: 60
Flue gas temperature (50/30)	°C	Pmax: 54 Pmin: 30
Flue gas rate	g/s	Pmax: 65 Pmin: 11
Condensate rate	kg/h	Pmax: 9,05 Pmin: 3,38
CO (O <sub>2</sub> =0%)	mg/kWh	Pmax: 135 Pmin: 28
CO (O <sub>2</sub> =0%) weighted	mg/kWh	50
NO <sub>x</sub> (O <sub>2</sub> =0%)	mg/kWh	Pmax: 65 Pmin: 22
NO <sub>x</sub> (O <sub>2</sub> =0%) weighted	mg/kWh	40
Gas inlet pressure	mbar	20
Nominal gas rate	m <sup>3</sup> /h	15,13
Minimum gas rate	m <sup>3</sup> /h	2,54
CO <sub>2</sub> Pn	%	9,3
CO <sub>2</sub> Pmin	%	8,9
Gas inlet pressure (G31)	mbar	37
Nominal gas rate (G31)	kg/h	11,11
Minimum gas rate (G31)	kg/h	1,86
CO <sub>2</sub> Pn (G31)	%	10,5
CO <sub>2</sub> Pmin (G31)	%	10,0
CH water pressure	bar	Pmax: 6,0 Pmin: 0,8
Maximum working temperature	°C	95
CH adjustment range	°C	Pmax: 80 Pmin: 20
CH Water content	litri	6,7
CH Expansion vessel capacity	litri	---
CH Expansion vessel charge pressure	bar	---
Protection rating	IP	IPX4D
Supply voltage	V/Hz	230V~50HZ
Nominal electricity consumption	W	250
Weight	kg	73
Maximum chimney head at nominal power	Pascal	250



## ErP product fiche

<b>Trademark: FERROLI</b>			
Condensing boiler: YES			
Low-temperature boiler (**): YES			
B1 Boiler: NO			
Combination heater: NO			
Cogeneration space heater: NO			
Item	Symbol	Unit	Value
Rated heat output	$P_n$	kW	140
Seasonal space heating energy efficiency	$\eta_s$	%	93
<b>Useful heat out put</b>			
Useful heat output at rated heat output and high-temperature regime (*)	$P_4$	kW	140,0
Useful heat output at 30% of rated heat output and low-temperature regime (**)	$P_1$	kW	27,1
<b>Useful efficiency</b>			
Useful efficiency at rated heat output and high-temperature regime (*)	$\eta_4$	%	88,1
Useful efficiency at 30% of rated heat output and low-temperature regime (**)	$\eta_1$	%	97,3
<b>Auxiliary electricity consumption</b>			
At full load	$el_{max}$	kW	0,250
At part load	$el_{min}$	kW	0,022
In standby mode	$PSB$	kW	0,003
<b>Other items</b>			
Standby heat loss	$P_{stby}$	kW	0,190
Ignition burner power consumption	$P_{ign}$	kW	0,000
Annual energy consumption	$QHE$	GJ	255
Sound power level	$LWA$	dB	68
Emissions of nitrogen oxides	$NO_x$	mg/kWh	40

(\*) High-temperature regime means 60°C return temperature at heater inlet and 80°C feed temperature at heater outlet.

(\*\*) Low temperature means for condensing boilers 30°C, for low-temperature boilers 37°C and for other heaters 50°C return temperature (at heater inlet).