ARCA
caldaie

NRG8

Pixel C

Wall Hung Boiler

CONDENSING

Miniaturized,

Digital Electronic Control

CE

A

SEDBUK
BAND A

Tel: 0844 800 9938 Email: sales@nrg8.co.uk

Pixel C

The new miniaturized (730 x 400 x 300) natural gas condensing boiler by ARCA with digital electronic control technology.

A new tech based project using three different heat exchangers to offer to the customer the highest levels of comfort and fuel economy.

Available power: 25 kw and 31 kw.

Models:

Gas Combination HTG+DHW		System Boiler	
Pixel 25 FC	**Pixel 31 FC**	**Pixel 25 FC R**	**Pixel 31 FC R**
Power 25 kw	Power 31 kw	Power 25 kw	Power 31 kw
cod. met: ECOCD101PUK	cod. met: ECOCD105PUK	cod. met: ECOCD109PUK	cod. met: ECOCD108PUK
cod. lpg: ECOCD151PUK	cod. lpg: ECOCD155PUK	cod. lpg: ECOCD159PUK	cod. lpg: ECOCD158PUK

Only this simple technology allows achievement of operation free from thermal inertia issues. Avoiding the problems created with excessive water temperature when the circulation cycle ends. During this time, which is a typical characteristic of the main part of existing boilers with gas-air premixing technology (before the gas-air mixture enters the burner), the burner and the heat exchanger transfer to the water the residual heat stored in terms of very high temperature levels reached by their metal parts during the previous active burning phase.
The water temperature rises rapidly, quickly taking the water to boiling point & causing boiler safety & security devices to trip.
To address this problem, older generation boilers kept the circulation pump on for several minutes after burner cutting off and, in the summertime, also the ventilation fan must run to assist in dispersal of the excess heat produced; this represents real energy which does not achieve satisfactory long term economy. In consequence of this, these type of boilers which declare high instantaneous yield, on the other hand show quite low long term overall yield (evaluated taking into account the stop periods, the ignition periods, cutting off, post-ventilation which are part of the normal operation cycle of such boilers). This is why last generation technologies use two different heat exchangers.
The use of two heat exchangers (plus a third one for hot sanitary water production) avoids the introduction of thermal inertia issues and, by this and, by this way, both the instantaneous and the long term average yields of the boiler are maximized.

A primary heat exchanger for sensible heat exchange must be:

- **light-weight**, to avoid thermal inertia related issues,
- **made of copper**, high yielding to achieve high performances when in direct contact with the flame,
- **monoflux** to prevent sludge build-ups which could cause overheating cracks.

A secondary heat exchanger for latent heat exchange must be:

- **made of aluminum** alloy to maximize the heat exchanging rate at low temperatures,
- **with paralleled** water passages to ensure low pressure losses and high flow rates,
- with **high wall thickness** to have great resistance to corrosion and high thermal capacity to guarantee the highest condensation rates.


Condensing exchanger

A scientifically based technology that employs quality materials, suitable to fulfil many different functions simultaneously.
Firstly copper, due to its high thermal conductivity, captures the direct heat; then, a special designed aluminum alloy, good heat conductor, captures the latent heat during the condensation process, ensuring a long life thanks to its high resistance to corrosion issues.

Condensing heat exchanger

The boiler, thanks to the many protecting features, does not require oxygen-barrier type pipes for floor heating systems. The boiler can be installed on existing, old type heating systems with cast iron or aluminium heating radiators, the only procedure required is to have the heating circuit cleared from any debris which might be present. Further, the installation of a suitable water filter on such systems is recommended.

Old type natural gas condensation boilers with gas-air premixing technology and paralleled, reduced cross-section water passages, made of aluminium or stainless steel in direct contact with the flame, are exposed to the consequences of sludge build-ups coming from the heating circuit: overheating cracks may appear, due to localized overheating where the sludge builds up.

This new design boiler equipped with high water passages cross-section, monoflux type heat exchanger, does not experience such problems.

In the case of sludge build-ups, the flow rate is reduced and the temperature raises in all the heat exchanger body, causing the boiler security devices to trip, thus preventing other damages.

The second condensating heat exchanger operates at low temperature, without being in contact with the flame, and, is designed with paralleled high cross-section water passages to ensure high flow rates for the rest of the water circuit.

The resulting heating circuit features low pressure losses, and in such condition the use of a high performance circulation pump allows reaching a water flow rate higher than 1000 liters/h.

This is achieved using a monoflux type primary heat exchanger with large diameter (23 mm) waterways and a condensing heat exchanger with paralleled, high cross-section water passages.

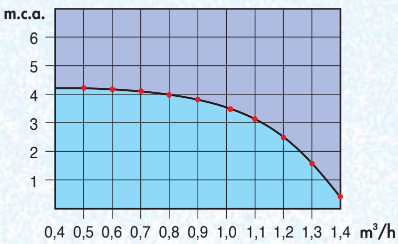


Diagram of capacity and prevalence residual available.

Heating circuit cleaning and water filter

In order to get the best performances from the boiler, we strongly recommend to have the heating circuit flushed through.

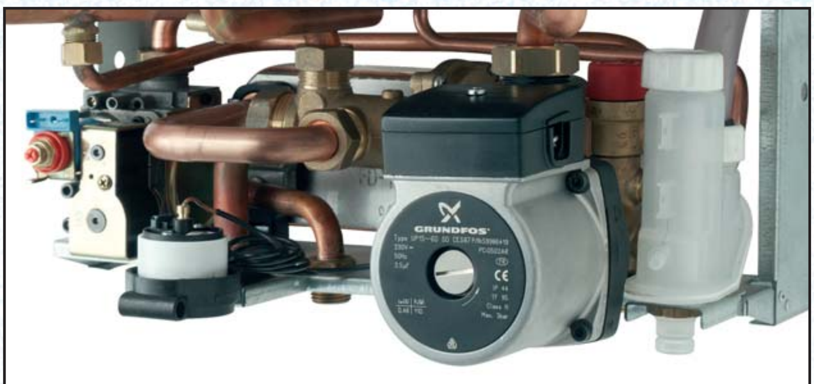
This way, sludge, sand, build-ups and other debris will be removed; this is important with old heating circuits, but will be useful also to remove machining shaves and debris left in new heating circuit.

Installing a water filter is strongly recommended; the filter must be installed on the heating circuit return side and must be checked during the scheduled maintenance controls. If acid fluids are used to clean the heating circuit, in order to prevent irreversible damages to the condensating heat exchanger, any such chemical agent must be removed having the heating circuit thoroughly flushed passing water through it.

If antifreeze fluid is used, its acidity degree must not exceed Ph 6.

Quiet operation

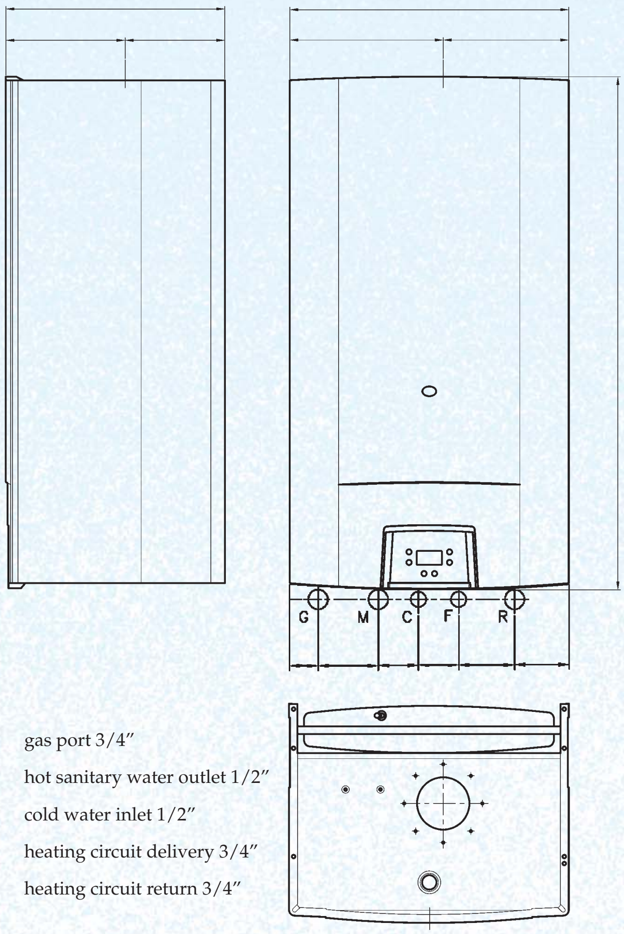
An aluminum alloy die-casting ventilation fan impeller and a high quality, open impeller type circulation pump allow a quiet operation of the boiler at the top of its category.



Hydraulic group with draining condense trap

Reduced overall dimensions

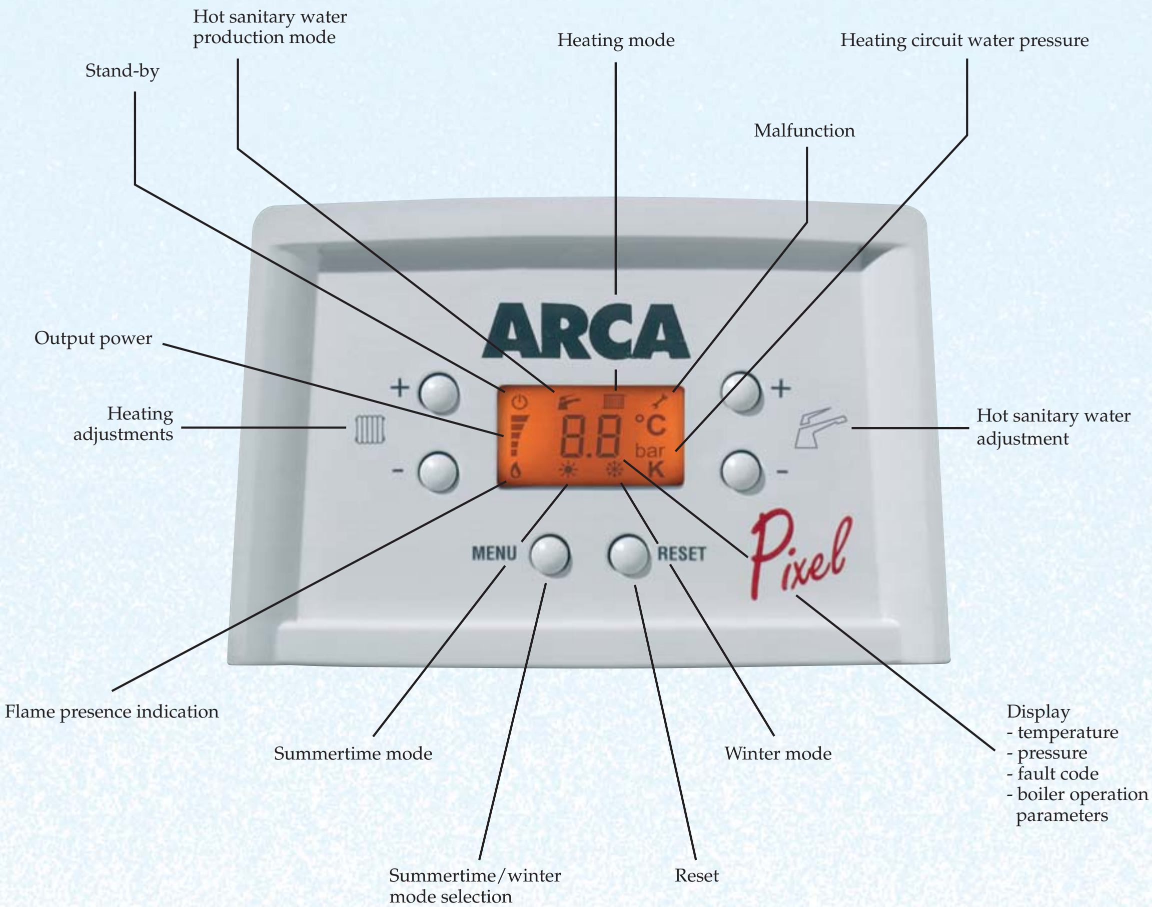
The boiler design is the result of studied functions & space optimization to get the best components layout, taking also into account the ease of maintenance.
The result is the smallest condensation technology boiler ever built, with overall dimensions 730 x 400 x 300 mm.



G gas port 3/4″
C hot sanitary water outlet 1/2″
F cold water inlet 1/2″
M heating circuit delivery 3/4″
R heating circuit return 3/4″

Digital control with self diagnostic and stable memory

The boiler operation, the various controls, adjustments and security functions are all controlled by latest generation digital electronic control, while a backlighted display shows every function of the boiler.



To get top performances and - consequently - a high fuel economy, an intelligent electronic control system is required. An optional outside temperature sensor will be useful to provide the information for the electronic controls to keep the minimum possible operating water temperature, in order to get the best from the condensation capability of the boiler especially in the middle seasons, when the condensation yield reaches its maximum.

Thermal yield

The boiler reaches the best fuel economy with water temperature below 55 °C, without suffering from being frequently stopped & re-started.
The thermal yield reaches 108.66 % in the best operating conditions, starting from a minimum value of 98% in the worst conditions (with a water temperature of 70°C, when the condensation is impossible).

Pixelfast B

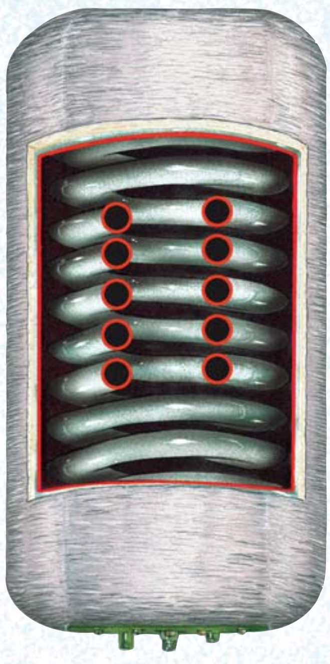
A stainless steel hot water storage cylinder of 60 liters

The domestic hot water storage cylinder of the wall-hung type natural gas condensing boiler PIXELFAST B is equipped with an elliptical shaped heat exchanger, and consists of a stainless steel vertical tank with a capacity of 60 liters which ensures a long life and storing of water in perfectly hygienic conditions. The heat leakages are very reduced, thanks to the polyuretanic foam insulating layer. The tank internal surfaces can be easily accessed removing a cover located in the bottom part of the tank.

Best suited for Hydromassage bath tubs or more than one hot water outlet

The hot sanitary water storing cylinder of the PIXELFAST B boiler brings many advantages: the sanitary water is readily available to the set temperature, and this is especially useful with hydromassage bath tubs and when more than a single tap is open (up to 3 taps open); the temperature is not subject to variations because the stored hot water acts as a thermal flyweel; high hot water flow rates are guaranteed, because the temperature stabilizing effect of the 60 liters of hot water stored in the tank is reinforced by the continuos hot water boiler production at a flow rate of 14,5 lt/min with ΔT 25°C; furthermore, the water temperature is kept stable by the electronic flame modulation feature.

Extremely easy circuit filling and bleeding



The high yielded heat exchanger consists of a single turn coil; by this way, the circuit filling and bleeding is extremely easy.
The anode is located on the top of the tank, so that it can be easily changed without emptying the whole heating circuit.
In the frontal part is located the inspection cover which can be removed without removing other parts or components.

TECHNICAL DATA

Model	Unit	Pixel 25 FC / 25 FCR C12-C32-C42-C52	Pixel 31 FC / 31 FCR C12-C32-C42-C52	PixelFast B 26 FCX C12-C32-C42-C52
Normal thermal power	KW	25	31	26
Normal thermal power	Kcal/h	21.500	26.660	22.360
Minimsl thermal power rif. PCI (80°C/60°C)	KW	10,5	12,4	10,5
Nominal power	KW	24,4	30,2	25,4
Nominal power	Kcal/h	20.964	25.947	21.823
Nominal condensing power rif. PCI (50°C/30°C)	KW	26,9	33,3	28
Minimal condensing thermal power rif. PCI (50°C/30°C)	KW	10,7	12,6	11,4
Useful efficiency	%	97,6	97,5	97,6
Minimum thermal power	KW	10,1	11,9	10,5
Efficiency to reduced load	%	108,7	107,9	109,4
Gas capacity at P methane G20 (2E+)	m^3/h	2,643	3,278	2,749
Methane G25 (2ELL)	m^3/h	3,0745	3,812	3,197
GPL G30 (3+)	Kg/h	1,97	2,443	2,049
GPL G31 (3P)	Kg/h	1,941	2,406	2,018
Gas capacity oh methane network G20 (2E+)	mbar	20/25	20/25	20
Methane G25 (2ELL)	mbar	20	20	20
GPL G30 (3+)	mbar	29	29	29
GPL G31 (3P)	mbar	37	37	37
Smoke temperature	°C	70	74	68
CO_2 (G20)	%	8	8	8
NOx pondered (according to UNI EN 483 par 6.2.2)	mg/kWh	162 (class 2)	186 (class 2)	24 (class 5)
Warmth loss with burner working	%	2,8	3,0	2,7
Warmth loss with burner out	%	0,2	0,1	0,2
Heat loss to the shell (ΔT=50 °C)	%	0,5	0,5	0,5
Steam capacity	Nm^3/h	42,09	53,03	43,8
HEATING				
Minimum heating set point	°C	45	45	35
Maximum heating set point	°C	85	85	90
Water quantity in te boiler	l	1,2	1,2	1,2
Water quantity in the expansion tank	l	7,5	7,5	7,5
Pressure of the expansion tank	bar	0,7	0,7	0,7
Minimum pressure in the primary circuit	bar	0,4	0,4	0,4
Maximum pressure in the primary circuit	bar	3	3	3
Maximum water quantity in the installation	l	150	150	150
Heating installation pump prev.				
power of Q=1000	mbar	230	330	330
SANITARY				
Minimum sanitary set point	°C	30	30	30
Maximum sanitary set point	°C	60	60	60
Continuous hot water production ΔT= 25°C	l/min	14	17,3	14,5
Continuous hot water production ΔT= 35°C	l/min	10	12,4	10,4
Water volume ΔT= 30°C during 10 min.	l	-	-	139,3
Minimum sanitary load	l/min	2,5	2,5	0
Maximum sanitary pressure	bar	8	8	8
Minimum sanitary pressure	bar	0,5	0,5	0,5
Water volume in the expansion tank	l	-	-	5
Tension	V/Hz	230/50	230/50	230/50
Electric power	W	150	150	150
CONNECTIONS				
Heating connection	Inch	3/4"	3/4"	3/4"
Sanitary connection	Inch	1/2"	1/2"	1/2"
Gas connection	Inch	3/4"	3/4"	1/2"
Height	mm	730	730	900
Depth	mm	300	300	460
Width	mm	400	400	580
WAST PIPE LENGHT				
Coaxial Ø 60 / 100 mm	m	4	4	4
Twin flue Ø 80 mm	m	30	30	30
Weight	Kg	47	47	91
Protection level	IP	X4D	X4D	X4D
CE homologation		0068 ★★★★	0068 ★★★★	0068 ★★★★

NRG 8 Ltd   Peartree Business Centre, Cobham Road, Ferndown, BH21 7PT

Tel: 0844 800 9938   Email: sales@nrg8.co.uk