

ALKON CARGO



ALKON CARGO model			35
Max/min nominal output	condensing	kW	7,4÷35,1
	Non-condensing	kW	6,7÷33,5
Heat input		kW	34,8
η condensation at 30 % part load		%	106,3
Efficiency class (directive 92/42)			★★★★

ALKON CARGO is a floor standing, room sealed, forced draught, pre-mixed, gas fired condensing boiler for central heating and DHW production, equipped with an electronic de-stratification system 150 litre storage cylinder. The ALKON CARGO boiler makes use of the latest technology to give you high performances and exceptional fuel efficiency:

- *Reduced fuel consumption* thanks to the condensation and to the excellent 1:5 modulation ratio which reduces the fuel consumption by 30% compared to a conventional boiler, higher efficiency and reduction of the burner on/off times.
- *Flexible system design*: suitable for all types of heating plants; permits the management of 2 heating zones at different temperatures.
- *Superior DHW flow rate* of up to 17,5 litres per minute with $\Delta t_{c6t} 25$
- *Self-adjustment* of the maximum output in function of the resistances to the flue outlet pipes
- *Mixing header* for an efficient transfer of the heat output to the various heating zones
- *Quieter boiler noise operation* thanks to the new pre-mixing system



In compliance to the requirements specified by the Standard EN 13203/05

ALKON CARGO 35

has obtained the maximum score of 4 taps in the storage system boiler category, thanks to its sophisticated domestic hot water production system, thereby guaranteeing the user:

**A precise and fast delivery rate.
A very high specific flow rate
(20 litres per minute with $\Delta t 25$)**

The features

The identikit

- 4 stars efficiency class condensing boilers (CEE directive 92/42)
- Exclusive compact cast aluminium/silicon/magnesium alloy heat exchanger
- Pre-mix modulating, constant combustion, low NOx (Class 5 according to EN 297 and EN 483) metallic burner
- 150 litre capacity, electronic de-stratification system, rapid storage cylinder
- Primary modulating pump, for favouring condensation at low heating loads
- Flue outlet pipes over 30 metres long (twin pipe 80/80)
- E8 heating controller with an outdoor sensor supplied as standard
- Standard circuits: one direct and one mixed
- Possibility of management of 3 heating zones
- Heating zone control with on/off thermostats, FBR or BMP sensors (optional)
- Sliding temperature boiler operation
- Diverting valve
- Control panel with a retro-illuminated multifunctional display and easy to use buttons
- Boiler frost protection
- No-jam pump
- Overheating pump overrun
- Chimney-sweeper function
- Boiler operation with Natural gas and LPG



Ultra compact aluminium heat exchanger-condenser (AL/Si/Mg)



150 litre capacity, electronic de-stratification system, rapid storage cylinder, enamelled according to the standard DIN 4753, complete with magnesium anode and insulated in high density polyurethane.



Mixing header



E8 heating controller for complex heating systems

Ultra-compact heat exchangers

The dominating element of the ALKON range of boilers is its compact cast aluminium/silicon/magnesium alloy heat exchanger, measuring only 12 cm in depth, and serpentine a 20 spire, distributed on both sides for a 2 litre water capacity. The dense finned/studded structure, increases the surface of heat transfer from 0,40 to over 0,80 m² and favours the recovery of latent heat produced during combustion. At the minimum modulated output it reaches very high efficiencies and guarantees the 4 star classification on all the modulation range and outputs.



3 speed circulating pump

5 years guarantee

Thanks to its particular technical configuration, synonymous of quality and safety, the Alkon boiler's heat exchanger is supplied with a 5 year guarantee.

Extra guarantee

Superior performances...



A 150 litre storage capacity

The ALKON CARGO boiler is equipped with a 150 litre vertical storage cylinder, with an output of 34,8 and a 12,5 metres long stainless steel coil. The storage cylinder and the coil are constructed with an innovative vitrification system.

The advantages

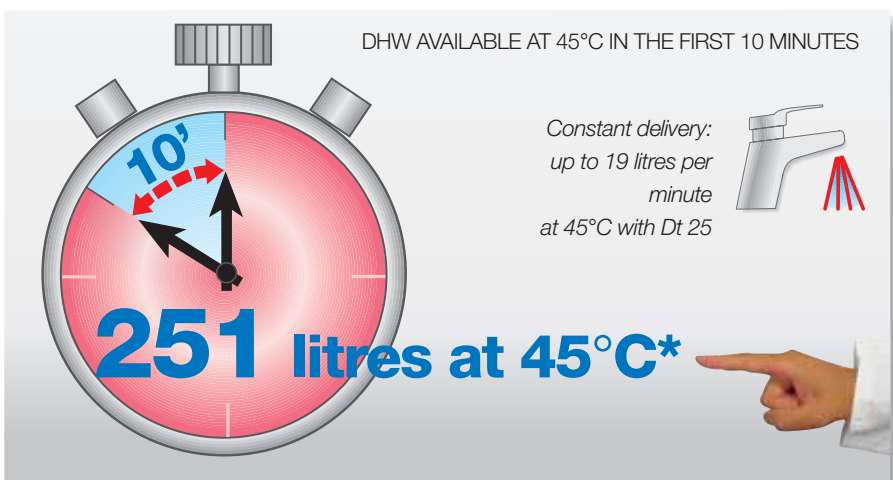
- **An increase in the resistance to corrosion**, thanks to the pneumatic sandblasting pre-treatment, preventing the lime particles depositing themselves.
- **Insulated** in high density polyurethane without CFC. The heat losses are therefore greatly reduced.
- **The enamelled coating**: thanks to its elasticity it is highly resistant to any knocks.

The key feature of the ALKON CARGO boiler is its ability to produce an impressive quantity of DHW: delivering up to 251 litres in 10 minutes with Δt 30 K.

When the storage cylinder is exhausted, the boiler passes to instantaneous delivery and is able to supply nearly a ton of water at 40°C with a flow rate of 19 litres per minute!

Moreover, it offers:

- Flexible system design: permitting the management of 2 heating zones, even at different temperatures.
- 2 circulating pumps supplied as standard: combined with zone thermostats (optional) enables zone control.
- Recirculation connection: to ensure instantaneous hot water delivery in every part of the house.



* with the storage cylinder's inlet temperature at 10°C

...for exacting requirements

Intelligent storage cylinder management

In the first few minutes in which the hot water tap is opened the ALKON CARGO boiler immediately recognizes the type of delivery requested.

Thanks to the *electronic controls*, which reduce the stratification level, the uniformed heating of the water in the storage tank is guaranteed, and simultaneously also:

- the boiler ignitions are limited if the temperature reduction is very slow
- on the contrary, if the temperature reduces itself very quickly ($>2^{\circ}\text{a}1\text{c}/\text{min}$), the boiler fires, immediately, ensuring maximum hot water delivery.

The following components complete the technical features:

- Domestic hot water detection sensor (NTC)
- CH expansion vessel (12 litres)
- Water loading manifold
- Boiler drainage cock
- Storage cylinder's expansion vessel (8 litre)

The ALKON CARGO boiler is a real and proper "all in one" heating plant, in less than a m² the installer has all he needs to install one of the most complete, performant and modern heating generators available in today's market in his heating system.

Management of 3 heating zones with 3 thermostats!

Siting flexibility is extensive for all types of heating systems thanks to the electronic microprocessor control system which, as well as controlling boiler operation and having a fault diagnosis system, permits the management of up to 3 heating zones (2 standard + 1 optional) at different temperatures and controlling them via 3 energy saving, modulating thermostats. The heating control supplied as standard can be backed up by sensors or zone thermostats for a localized temperature control.

Mixing header

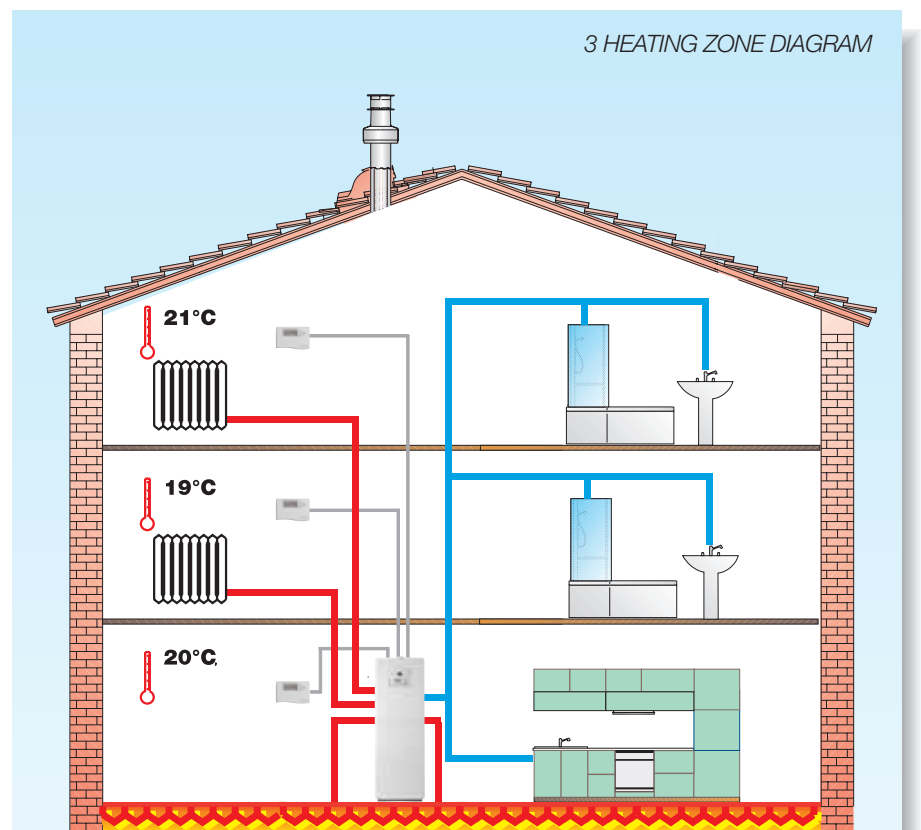
The mixing header carries out more than one function:

- it renders the connected water circuits independent so that any interferences due to different rated outputs are erased.
- It becomes an automatic air vent so as to consent the automatic evacuation of the air contained in the circuits.
- It acts as "separator" so as to permit the separation and collection of the sludge and mineral build-up in the system.

All these features ensure:

- a better high output transfer to the heating system
- quieter boiler operation
- major boiler heat stability during heating load variations

The ALKON CARGO boiler can manage up to 3 heating zones: for example an underfloor heating zone and 2 high temperature zones.

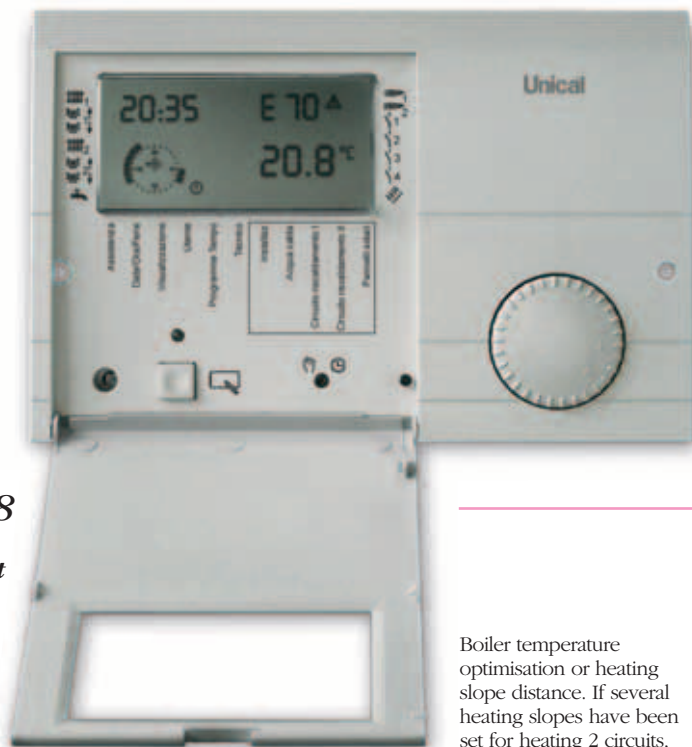


ww - low temperature underfloor heating system ||||| - high temperature radiator heating system

ALKON CARGO's brain

E8: the intelligent heating controller

The application and connection of the dedicated **E8** heating controller, indispensable according to the current standards, permits a **decisive qualitative leap** in boiler management in function of the applied loads. The E8, as well as becoming the window of dialogue with the boiler, thanks to its features, permits the complete management of the heating system, exploiting the maximum modulating output and the maximum obtainable condensation.



Functions which can be activated with the E8



Self-adaption

Through the elaboration of data transmitted by the room sensor, this function adjusts the generator's heat to the building's characteristics, ensuring a constant monitoring of the indoor temperature on the basis of the variation of the outdoor temperature, keeping in consideration the building's thermal inertia and the contribution of "free" heat (solar radiation, internal heat sources etc).



Boiler heating optimization

The heating controller, on the basis of the timer/heating programme set by the user, once the system's characteristics have been evaluated, will activate the function for automatically bringing forward the start of heating so as to ensure that the set temperature is reached at the time requested by the user.



Fast set temperature

This is obtained by calculating the optimum ignition start-up time. This calculation can be carried out taking into consideration the outdoor temperature or the room temperature.



Overheating protection

The heating generator's safety temperature is controlled via the pumps overrun time in order to get rid of any thermal inertia.



Multiple zone control

With the same heating control you can control 2 independent circuits with different characteristics, though having ensured all the described functions, including the deep sliding temperature function.



Programme setting

The heating programmes can be set daily or weekly, with more than one On-Off firing times or temperature reductions during the arch of the day.



Domestic hot water production

There are many programmes which control the domestic hot water production. You can choose from the maximum of comfort to the maximum fuel saving. In order to permit the storage cylinder to supply hot water rapidly, the heating controller brings the boiler's temperature to the maximum set value.



Antilegion

Every 20th time that heating takes place or once a week on Saturday at 01:00 hrs, the storage tank is heated up to 60°a1C. This function will eliminate any eventual pathogens which have formed in the DHW.



Frost protection mode

The frost protection circuit prevents the heating system from freezing by automatically switching heating operation on. In the frost protection mode, the room temperature for all the heating circuits is set to 5°a1C and the storage tank sensor frost protection is activated when the temperature drops below 10°a1C.



DHW relief (charge pump blocking)

The charging pump is switched on only if the boiler temperature exceeds by 5°a1C the storage tank temperature. It is deactivated when the boiler temperature drops below the storage tank temperature or if the storage tank temperature is superior to the nominal temperature.



Slope offset (heating slope distance)

Boiler temperature optimisation or heating slope distance. If several heating slopes have been set for heating 2 circuits, the boiler's nominal

temperature is calculated in function of the temperature of the mixing circuit with the highest flow rate and the 2 set heating slope distances.



Number of burner ignitions



Burner run hours



Valve opening time

Based on the characteristics of the servomotor

And moreover:

- **Integration with renewable energy sources as for example:** solar systems and/or solid fuel boilers.

- **0-10 volt signal:** the great flexibility of the E8 also permits the boiler set point to be controlled by an external control signal.

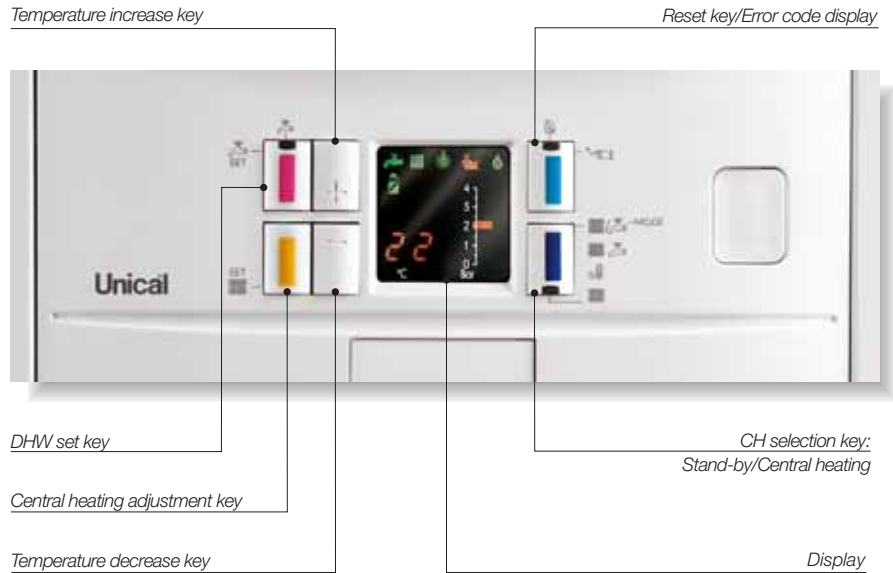
This will enable you, if you have an even more complex heating system, to exploit all the types of heating controls available.

The Control panel

The control panel, which also incorporates the heating controller, has a retro-illuminated display and a programming system with intuitive coloured keys, which facilitates management of the ALKON PLUS boiler. Everything is under control:

- *Boiler operation status*: showing flow and return temperature, signalling over 20 system problems at a glance, from: no water, NTC sensor, modulating fan fault etc.).
- *Maximum temperature setting, power on/off*.
- *Technical parameter settings*.
- *Reading of all the temperatures relative to boiler operation status*.

And finally an automatic control system which suggests the frequency of servicing by sending a simple advice on the display which does not alter boiler performance.



Dimensions and technical data

ALKON CARGO		35
Output		
Nominal/Minimum heat OUTput IN CONDENSING MODE	kW	7,4+35,1
Nominal/Minimum heat OUTput	kW	6,7+33,5
HEAT INPUT kW	kW	34,8
Efficiency		
EFFICIENCY CATEGORY (Directive CEE 92/42)		★★★★
Efficiency at full load (100%) IN CONDENSING MODE	%	100,93
Efficiency at 30% part load IN CONDENSING MODE	%	106,3
efficiency at nominal load (100%)	%	96,30
efficiency at 30% part load	%	103,3
Combustion		
CO ₂ (min/max output)	%	9-9
NO _x (value according to EN 297/A3 and EN 483)	mg/kWh	43,4
max CONDENSATE PRODUCTION	kg/h	5,60
NO _x class		5
Central Heating		
Min/Max operating temp. in CH mode	°C	30 / 85
dhw adjustable temperature range	°C	35-60
dhw production with Δt 25 °C	l/min	19
CH EXPANSION VESSEL CAPACITY	l	12 / 8
Electrical supply		
Electrical supply /power consumption	V/Hz	230/50
Maximum absorbed power	W	310 (2 zone)
Weight And Technical Data		
NETT WEIGHT	kg	182
PROTECTION GRADE	IP	X4D
APPLIANCE'S FAMILY GAS CATEGORY		II 2H3P

