

Atmospheric & Gasification Log Boilers



Central Heating
NEW ZEALAND

How can I use a log boiler to heat my home?

Log boilers combine the high level of comfort and control with the use of a free renewable fuel. You can heat all of your house or business, your hot water cylinder and even a pool. In order to minimise user input and maximise boiler life we highly recommend careful design of a boiler system consisting of:

- Log boiler
- Buffer tank or accumulator.
- Return temperature thermostatic valve
- Insulated flue or chimney
- Thermal protection cooling circuit

Systems with these boilers are 10% to 30% more fuel efficient with a buffer tank which allows the boiler to run continuously at high output to avoid part load inefficiencies and potentially tar & condensation damage from running at low temperatures. Alternatively boilers can be continually stoked to maintain heat output, but running at part load is not recommended for long periods of time.

What types of boiler are available

There are two choices of boiler, either a natural draught **atmospheric** cast iron boiler, or a fan-flued **gasification** boiler.

Atmospheric FD Series boilers are cheaper, being less complex, but are still very efficient.

Features:

- 5 year guarantee on the heat exchanger due to their extra low temperature corrosion resistance*
- Thermostatic air regulation to regulate heating circuit temperature
- Large fire box for reduced loading frequency
- External overheating protection can be supplied



Attack Atmospheric Boiler

The boiler needs filling with logs on top of some form of kindling or fire lighter. They are then lit manually using a match or blow-torch. Once the boiler is up to temperature it heats the house and can be topped up with fuel or left to burn out.

Ash will need to be removed periodically. Use of clean bark



free wood fuel will reduce the amount of ash formed.

This boiler can be used for thermosyphon systems but will work much better with a pumped system that will require power.

Gasification DP Series boilers with a combustion fan have a high level of control, a large firebox, are clean burning and have integral automatic overheating protection.



Attack Gasification Boiler

Features:

- Large fire box for reduced loading frequency.
- High level of control over combustion to ensure minimum heating system and flue temperatures are maintained for longer boiler life.
- Fan automatically stops when boiler up to working temperature.
- Boiler automatically shuts down when all the fuel is used
- Boiler body made from 6mm steel plate.
- Contains integral heat exchanger cooling coil to protect against overheating.

The boiler needs filling with logs on top of some form of kindling or fire lighter. They are then lit manually using a match or blow-torch. Once the boiler is up to temperature it heats the house and can be topped up with fuel or left to burn out. This boiler can regulate the temperature of the boiler and heating system by control of the fan and an air damper.

The wood fuel in a gasification boiler releases volatile gases that are then mixed with air for complete combustion. Gasification is used as it is cleaner and more efficient than traditional wood burning appliances.

Fuel

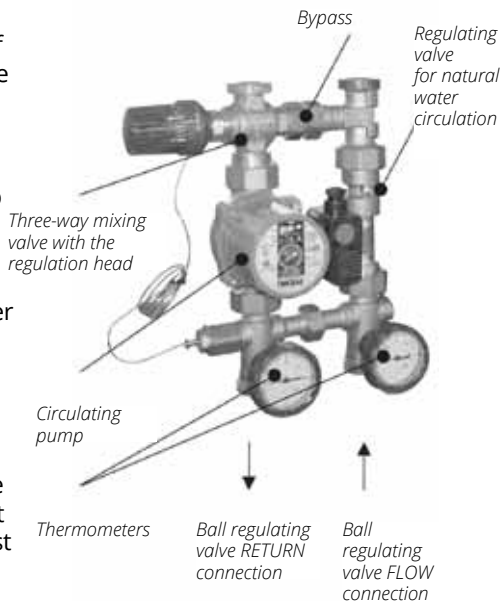
Both types of boiler will burn wood fuel but the gasification boiler is designed to be run only on wood fuel. Preferably this wood should be dried to 20% or less moisture content. Higher moisture content will reduce the heat output from the boiler.

It is better to split the wood and cut it to the maximum length that will fit in the firebox and try to minimise the air spaces when loading the boiler. The natural draught cast iron boiler will also run on coal.

Solid Fuel Boiler Temperature Maintenance

All solid fuel boiler systems are designed to keep the boiler hot, usually between 55°C to 65°C to avoid the formation of tar and corrosive condensation.

We recommend the Regumat Attack-Oventrop pump station specifically designed to re-circulate water back through the boiler until it reaches 60°C. Once the boiler reaches that temperature the heat can be sent to the load whilst still maintaining the boiler temperature at 60°C.



Buffer Tanks

Sometimes known as accumulators, these tanks generally hold large volumes of hot water and are used as heat stores. Having a heat store between the boiler and the heat load allows the boiler to run at optimal settings for efficiency and clean burning, even if the load is small or varying.

The heating system and other loads see the buffer tank as the heat source, allowing a mismatch between boiler output and heat load.

Often the buffer tank is sized to hold enough heat for a days heating so that it only has to be heated up once a day; and if the boiler is big enough that too only needs filling once a day.

Buffer tank size depends on the size of house and how energy efficient it is.

Buffer tanks can be supplied with integral heat exchange coil for a secondary heat source such as solar.

Buffer tanks come with a 100mm insulating jacket.



Insulated Flues

Insulated flues are important for solid fuel boilers to ensure sufficient draught and reduce deposition of soot in the flue. The flues should not be smaller than the flue outlet on the boiler and the final height depends on the flue diameter.

It is recommended that a 200mm circular flue to be fitted to the Attack DP25, DP35, and DP45 boilers due to minimum flue heights for 150mm OD flues being too high for single storey homes. An adapter will need to be ordered to allow the flue to connect with the 150mm outlet on the boiler.

Inner flues should always be made of stainless steel to prevent corrosion. Insulated flues need to be ordered with the boiler.

A range of flues are available, please contact us for further information.

Thermal Safety and Boiler Protection

With all solid fuel boilers there is a danger that if the system gets too hot the boiler will be damaged. With a sealed system, safety valves will dump water but that will not be replaced and there is a danger of running dry.

Gasification boilers employ a cooling coil system with a mechanical thermostatic valve which opens at 97°C to allow cool water to cool down the boiler heat exchanger, whereas the natural draught boiler uses an external tank (available as an optional extra) to achieve the same cooling process.

In rural situations where water supply to the cooling system is provided by pumped water, the system could be at risk if a sudden loss of power prevents water reaching the system. In this case it is essential that both types of systems have an emergency cooling tank to prevent damage to the boiler and pipework. Consult us for further requirements.

	FD32 Atmospheric	DP35 Gasification	DP45 Gasification
Heat Output	13 - 25 kW	14 - 35 kW	18 - 45 kW
Fuel Capacity (L)	42.5	112	128
Weight (kg)	280	390	420
Size (H x W x D)	1100 x 600 x 1250	1100 x 600 x 1350	1001x470x855
Other sizes are available via Indent Order Only			

Central Heating New Zealand, the country's leading hydronic heating specialist. They offer a full range of heat pump and boiler radiant systems, supplying to the trade nationwide. Central Heating New Zealand is certified with the International Ground Sourced Heat Pump Association, and has more than 40 geothermal heating systems installed and operated across New Zealand.

For more details on this or any of our products contact us on the details below.



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