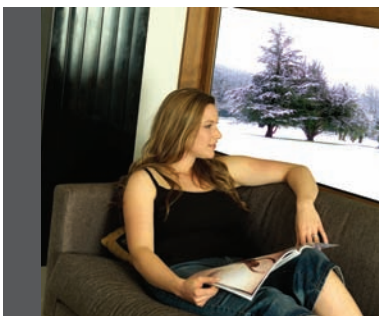




Log Boilers



Attack DP Gasification Log Boiler



- Natural draught cast iron or fan-flued gasification boilers
- Highly efficient
- Large firebox capacity
- Over-heating protection



Central Heating
NEW ZEALAND

LIVE LIKE IT'S
SUMMER
ALL YEAR ROUND

Solid Fuel Boilers

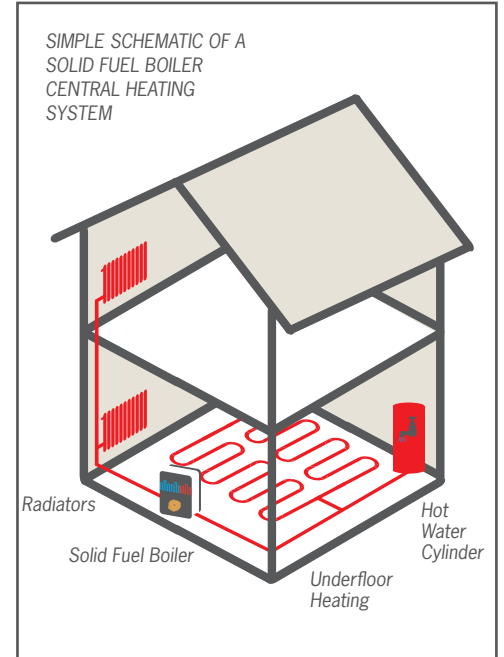


Log Boilers for Central Heating Systems

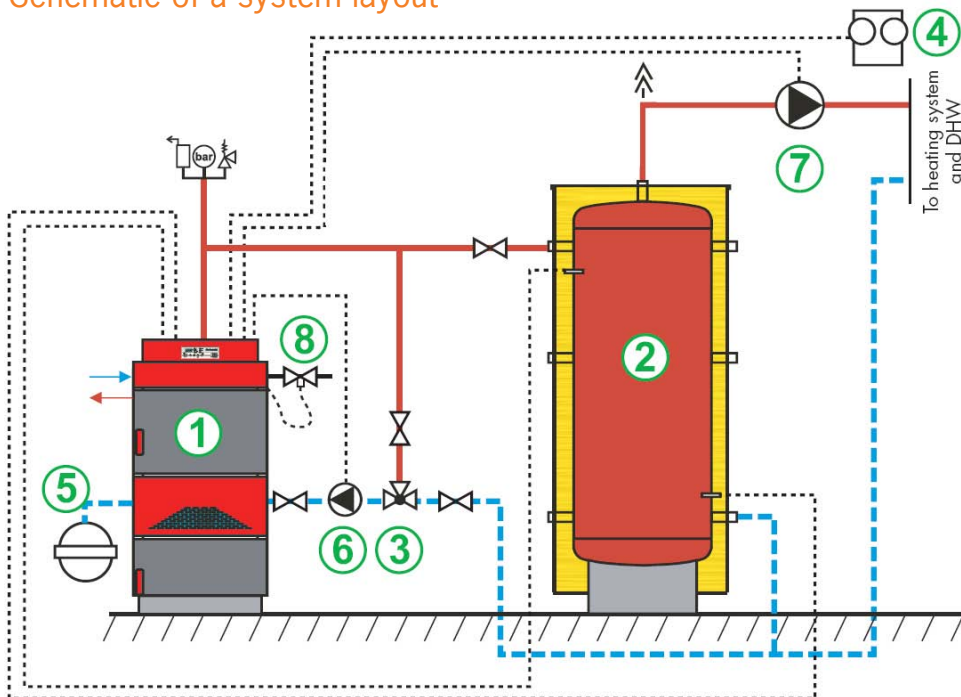
These boilers combine the high level of comfort and control with the use of a free renewable fuel. You can heat all of your house or business, your hot water cylinder and even a pool. In order to minimise user input and maximise boiler life we highly recommend careful design of a boiler system consisting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

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

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.



Schematic of a system layout

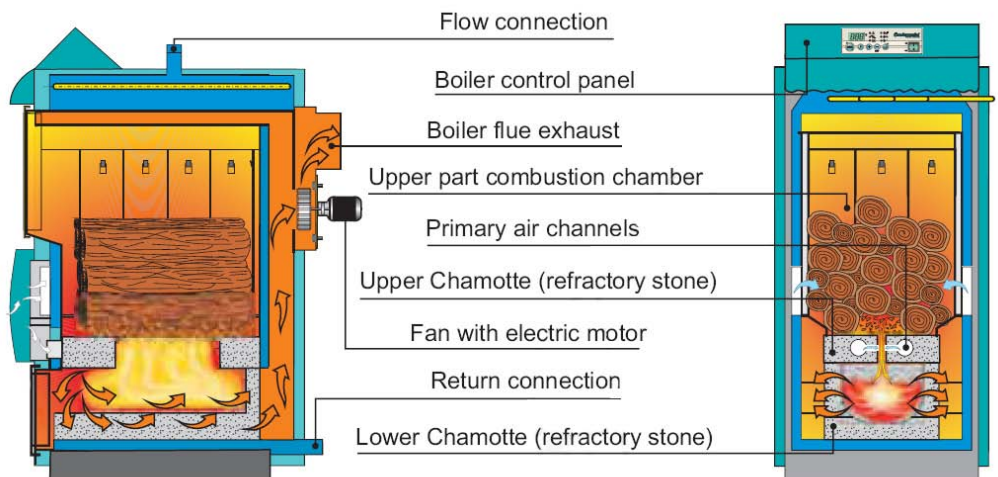


To the left is a suggested schematic diagram for a solid fuel boiler. For an unvented (pressurised) system a thermal safety valve must be installed.

1. Log boiler
2. Accumulation tank
3. Three way thermostatic valve
4. Room Thermostat
5. Expansion Vessel
6. Boiler Pump
7. Circulation Pump
8. Thermal Safety Valve

How Gasification works

The primary combustion of the wood fuel is only partial due to a limited oxygen supply to the primary combustion zone, this produces heat to drive off volatile gases and also produces partly combusted gases. The partly combusted gases and volatiles from the wood are drawn down through a grate and then fully combusted with a fresh air supply in the secondary combustion zone, below the grate. The charcoal left above the grate eventually burns out to ash and falls down through the grate.

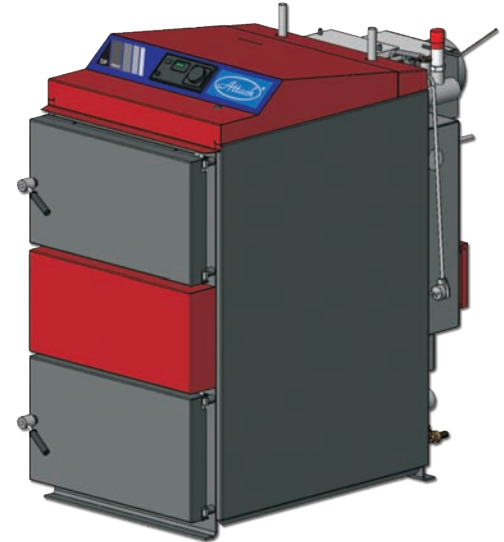


Solid Fuel Boilers



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 the fuel is used instead of burning out at low temperatures.
- Boiler body made from 6mm steel plate.
- Contains integral heat exchanger cooling coil to protect against overheating.



Attack Log Boilers

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

Cast iron 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

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 Boilers

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

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.

Atmospheric Cast Iron Solid Fuel Boilers - Efficiency 78 - 82% ATTACK FD

| | FD26 | FD32 | FD36 | FD42 |
|------------------------|------------------|------------------|------------------|------------------|
| Heat Output * | 10 - 20 kW | 13 - 25 kW | 15 - 30 kW | 17 - 34 kW |
| Fuel Capacity (litres) | 34 | 42.5 | 51 | 60 |
| Weight (kg) | 245 | 280 | 315 | 350 |
| Flue Diameter (mm) | 150 | 150 | 150 | 150 |
| Size (H x W x D) | 1001 x 470 x 555 | 1001 x 470 x 655 | 1001 x 470 x 755 | 1001 x 470 x 855 |

Fan Flued Gasification Log Boilers - Efficiency 86% ATTACK DP

| | DP25-P | DP35-P | DP45-P | DP75-P |
|------------------------|-------------------|-------------------|-------------------|-------------------|
| Heat Output * | 10 - 25 kW | 14 - 35 kW | 18 - 45 kW | 30 - 75 kW |
| Fuel Capacity (litres) | 105 | 145 | 185 | 350 |
| Weight (kg) | 350 | 390 | 420 | 650 |
| Flue Diameter (mm) | 152 | 152 | 152 | 219 |
| Size (H x W x D) | 1100 x 600 x 1150 | 1100 x 600 x 1250 | 1100 x 600 x 1350 | 1350 x 750 x 1600 |

*Heat output will be less than stated if the moisture content is above 20%.

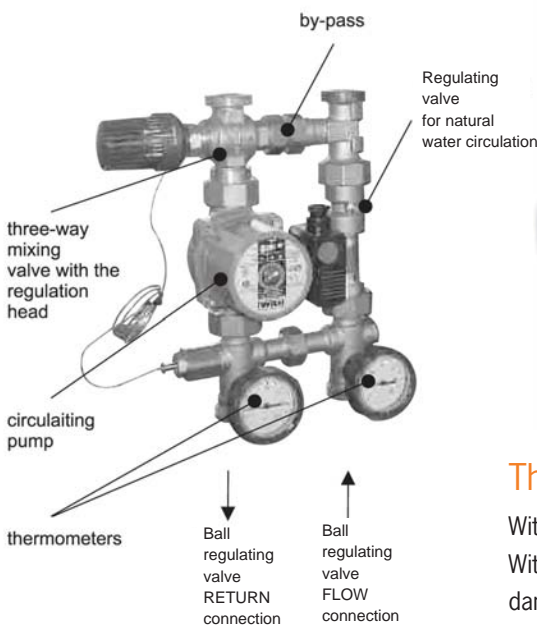
Solid Fuel Boilers



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 60C. 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, typically between 1000 to 2000 litres.

Buffer tanks can be supplied with integral heat exchange coil for a secondary heat source such as solar or a back-up diesel boiler for example.

Buffer tanks come with a 100mm insulating jacket.

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.

The Attack 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.

In the gasification boiler the cool water, which could be mains water, is run through a heat exchange coil inside the boiler's heat exchanger. This cools down the boiler to prevent possible heat damage.

The natural draught boiler uses an external tank to achieve the same cooling process. This tank needs to be ordered with the boiler.

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 diameter of the flue.

General guidelines for flue height

| Section, square or circular | Minimum Height |
|-----------------------------|----------------|
| 200 x 200 mm | 7m |
| 200 mm diameter | 8m |
| 150 x 150 mm | 11m |
| 160 mm diameter | 12m |

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

Systems supplied by:

The company named above is an approved supplier and/or installer of Central Heating New Zealand products.



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