

TECHNICAL BULLETIN

PRODUCT: GAS AND OIL CONDENSING BOILERS

CONDENSING BOILERS AND FREEZING CONDENSATE DISCHARGE PIPES:

In the recent cold spell the Heating Industry as a whole has experienced an increasing amount of calls from frustrated householders with a condensing boiler that is not working because the condensate discharge pipe has frozen.

When a condensing boiler is in operation it can produce anything up to 2 litres of condensate per hour which needs discharging to waste. The British Standards and Building Regulations allow the condensate pipe to be discharged externally and internally. Running the pipe internally will virtually eliminate freezing potential, routing and terminating the pipe externally however opens up the possibility of the condensate freezing in prolonged sub-zero temperatures.

In the past few weeks we have experienced outside temperatures consistently below freezing, sometimes down to -20°C. The condensate leaves the boiler in discharge quantities of up to 300ml at temperatures between 10°C and 25°C approx. depending on how long the boiler has been on and what temperature the boiler thermostat is set at. With this in mind to reduce the potential for freezing the following is recommended;

- ▶ **The condensate pipe is routed and terminated internally wherever possible**
- ▶ **If a gravity internal installation is not possible, consider the installation of a condensate pump to reach a suitable internal waste pipe termination point**

If there is no alternative and the condensate pipe must be terminated externally then the following must be considered;

1. **The pipe must take the shortest and least exposed route**
2. **The pipe must take the most vertical route possible**
3. **Any horizontal run must be run at a downwards angle away from the boiler towards the termination point at least 2.5 degree (50mm per metre) as a minimum**
4. **The pipe must terminate as close to the drain as possible**
5. **The diameter of the pipe should be increased to 32mm diameter**

6. **The pipe must be insulated with water proof, weather resistant insulation**
7. **When installing the pipework the burr from any cuts must be removed and the internal section of the pipe entering a fitting should be as smooth as possible**
8. **The waste system into which the condensate is terminated must be suitable to withstand the mildly corrosive nature of condensate**
9. **Any horizontal sections running through walls are also insulated and sleeved**

Where the condensate pipe work is already run externally, operating the boiler with a higher flow temperature during very cold conditions will reduce the amount of condensate generated by the boiler and therefore help prevent freezing. Turn up the thermostat on the boiler fascia to **maximum** during freezing conditions and back to its original setting when the outside temperature increases.

Operating the heating programme in continuous (24hr) mode (with the thermostat on the boiler fascia set to maximum) will further help keep the condensate temperature higher (typically 20-30°C) during freezing conditions. At night time reduce the room thermostat to 15°C before going to bed.

Finally, if the condensate pipe is frozen the boiler will be making a "gurgling" noise and if your boiler is fitted with a digital display the code **EA / D5** (or **6A** for Buderus) or a flashing light will be showing, this indicates that the condensate pipe is frozen and needs defrosting.

It is likely the pipe is frozen at its most exposed point or at a bend or elbow. We recommend this is defrosted or thawed with a hot water bottle or a heat wrap.

It is possible, that after resetting a Greenstar, that an **F7** fault will be displayed. This could be caused by dampness on the electrodes. Resetting the boiler a few times will dry the electrodes and clear the fault.