TTB
Gas-fired
Condensing Boilers

- Outputs from 418 to 576kW at 50/30°C system design
- High Efficiency Condensing Technology
- Stainless Steel Heat Exchanger
- Twin burner with 8:1 turndown
- Low NOx emissions (class 6) <44mg/kWh
**Lochinvar**

**TTB Gas-fired Condensing Boilers**

TTB gas-fired boilers are available in outputs of 418 and 576kW, based upon a system design of 50/30°C. The stainless steel-coiled heat exchanger is designed to provide a larger surface area than traditional boilers, although still relatively low in water content.

The result is a product which absorbs more heat than a traditional design, and when return water temperature is 54°C or below, the flue gases condense and release otherwise wasted latent heat back into the boiler/combustion chamber.

This overall design enables high outputs and high efficiencies to be achieved from a compact unit.

**Fully Modulating / Built-in redundancy**

Equipped with twin, pre-mix fully modulating burners, TTB Boilers mirror system demand and match output accordingly. Each of the burners operates from 25% to 100%, depending upon system demand, and therefore the ‘twin burner’ arrangement provides a turndown ratio of 8:1.

A further benefit of the twin burner design is that it provides a level of stand-by in the event of component failure; a feature which is of particular benefit on single Boiler installations.

**Twin Burner / Triple Heat Exchanger design**

Each burner is fitted with a non-return valve, which prevents the recirculation of flue gases into the non-firing burner when the TTB boiler is operating in low demand conditions.

**Stainless Steel Heat Exchanger**

At the heart of the TTB Boiler is a low water content heat exchanger, which is constructed from stainless steel; a material renowned for being robust and more tolerant than other materials in installations where water quality is poor. TTB Boilers can operate with flow temperatures of up to 85°C; providing a very useful feature when replacing boilers on systems with flow design temperatures of 82°C.

**Installation flexibility**

TTB Boilers are equipped with wheels for ease of handling and positioning without the need for specific lifting equipment.

**Legend:**

1. Primary heat exchangers
2. Condensate deflector
3. Secondary heat exchanger
4. Condensate drain
5. Water flow
6. Water return
Integral Controls
TTB Boilers are equipped with the following integral controls:
- Display showing status in text, not code
- External cascade control
- Direct weather compensation
- BMS 0-10 volt
- BMS Fault signal
- BMS Run signal
- Boiler system pump control
- Direct control from room thermostat
- Direct DHW cylinder control

Cascade Management
This is a standard feature of the TTB boiler and is suitable for a multiple installation of up to 6 x TTB boilers and would provide a turndown ratio of 48:1. This feature accurately matches boiler output to system demand and provides optimum operating efficiency.

Cascade management can be controlled externally via the built-in 0-10v DC input connection, and will provide ‘back up’ should an individual boiler be out of operation for maintenance.

Note: a system temperature sensor is required to operate the cascade management; this is available as an ancillary option.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>TTB410</th>
<th>TTB580</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Height</td>
<td>mm</td>
<td>1638</td>
<td>1638</td>
</tr>
<tr>
<td>B</td>
<td>Width</td>
<td>mm</td>
<td>736</td>
<td>736</td>
</tr>
<tr>
<td>C</td>
<td>Depth</td>
<td>mm</td>
<td>1095</td>
<td>1095</td>
</tr>
</tbody>
</table>

Flue options

<table>
<thead>
<tr>
<th>Model</th>
<th>Conventional flue (mm)</th>
<th>Twin pipe flue (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TTB410</td>
<td>180</td>
<td>180-180</td>
</tr>
<tr>
<td>TTB410</td>
<td>180</td>
<td>180-180</td>
</tr>
</tbody>
</table>

The ability to use either conventional or twin pipe flue systems with long flue runs provides further benefits to the specifier, installer and end userps.
## Technical Specification

<table>
<thead>
<tr>
<th>Boiler model</th>
<th>TTB410</th>
<th>TTB580</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Input (Gross) min-max</td>
<td>kW</td>
<td>55.4 - 444</td>
</tr>
<tr>
<td>Nominal Input (Nett) min-max</td>
<td>kW</td>
<td>50 - 400</td>
</tr>
<tr>
<td>Gas Flow Rate (G20)</td>
<td>m³/hr</td>
<td>5.3 - 42.3</td>
</tr>
<tr>
<td>Output @50/30°C min-max</td>
<td>kW</td>
<td>52.2 - 418</td>
</tr>
<tr>
<td>Output @80/60°C min-max</td>
<td>kW</td>
<td>48.3 - 386</td>
</tr>
</tbody>
</table>

### Efficiency Data - Building regulations
- Seasonal Efficiency (Gross CV) % | 96.0 | 96.0 |
- Seasonal Efficiency (Nett CV) %

### Efficiency Data - ErP and Energy Label
- Ecodesign Energy Label rating n/a n/a
- Seasonal space heating energy efficiency % | 92.5 | 92.9 |
- NOx Emissions | mg/kWh | 44 | 41 |
- NOx class according to EN15502 | 6 |

### General Data
- Dimensions (Height) mm | 1638 | 1638 |
- Dimensions (Width) mm | 736 | 736 |
- Dimensions (Depth) mm | 1225 | 1225 |
- Water Content litres | 30 | 43 |
- Weight (Empty) kg | 400 | 450 |
- Weight (Full) kg | 430 | 493 |
- Flow Connection (Inches) BSP | 2 ½ | 2 ½ |
- Return Connection (Inches) BSP | 2 ½ | 2 ½ |
- Gas Connection (Inches) BSP | 2 | 2 |
- Flue connection (Concentric) mm | 180 | 180 |
- Flue connection (Twin-pipe) mm | 180 | 180 |
- Electrical Requirements | 230V/1Ph/50Hz |
- Maximum Power Consumption W | 960 | 960 |
- Sound Power Level LWA(db) | 74 | 78 |
- Maximum Flue Gas Temperature °C | 90 | 90 |
- Max Flow Temperature °C | 85 | 85 |
- Working Pressure Minimum bar | 1.0 | 1.0 |
- Working Pressure Maximum bar | 4.0 | 4.0 |

Energy Label, Product Fiche and ErP Data Table are available at www.lochinvar.ltd.uk

* Using standard internal pressure switch, the working pressure can be extended to 6 bar if an optional 6 bar external pressure switch is used.

### Ancillary Items – optional
- External weather sensor
- Flow sensor
- Calorifier sensor
- Matched primary pump
- Low velocity headers
- Pressurisation sets

For further information on the TTB Boilers, including ICM & User Instructions and our full Warranty Terms and Conditions, please visit our website: www.lochinvar.ltd.uk

Lochinvar Ltd reserves the right to change specifications without prior notice