

# TECHNICAL PRODUCT SUBMITTAL

## TTW410



Nominal Input (net)	kW	400
Nominal Input (gross)	kW	444
Gas Flow Rate (natural gas)	m3/hr	42.3
Output @50/30°C	kW	418
Output @80/60°C	kW	386
<b>EFFICIENCY DATA-Part L2</b>		
Heat generator seasonal efficiency	%	95.5
Effective heat generator seasonal efficiency *	%	98
<b>EFFICIENCY DATA-ErP and Energy Label</b>		
Ecodesign Energy Label rating		n/a
Seasonal space heating energy efficiency	%	92.5
<b>GENERAL DATA</b>		
NOx emission @0% O2	mg/kWh	48
Recovery Rate @ 44°C	l/hr	8168
Recovery Rate @ 50°C	l/hr	7188
Recovery Rate @ 56°C	l/hr	6418
Dimensions (height )	mm	1638
Dimensions (width)	mm	736
Dimensions (depth)	mm	1094
Water Content	litres	30
Weight (empty)	kg	400
Weight (full)	kg	430
Flow Connection (inches)	BSP	R2½
Return Connection (inches)	BSP	R2½
Gas Connection (inches)	BSP	R1½
Electrical Requirements		230V /1Ph/ 50hz
Power Consumption	W	960
Sound Power Level	LWA(db)	74
Maximum Flue Gas Temperature	°C	90
Max Outlet Temperature	°C	70
Minimum Working Pressure	bar	1.0
Maximum Working Pressure	bar	8.0

\* The effective heat generator seasonal efficiency is the heat generator seasonal efficiency plus heating efficiency credits gained by adopting additional measures from Table 31 of the non-domestic compliance guide.

1. Fully automatic ignition controls 0.5%
2. Correct sizing of unit confirmed using manufacturers technical helpline and sizing software 2%

**TTW Waterheaters** must be installed and maintained in line with the Installation Commissioning and Maintenance Instructions which are available on the Literature & Downloads section of [www.lochinvar.ltd.uk](http://www.lochinvar.ltd.uk)

Particular attention should be made to:-

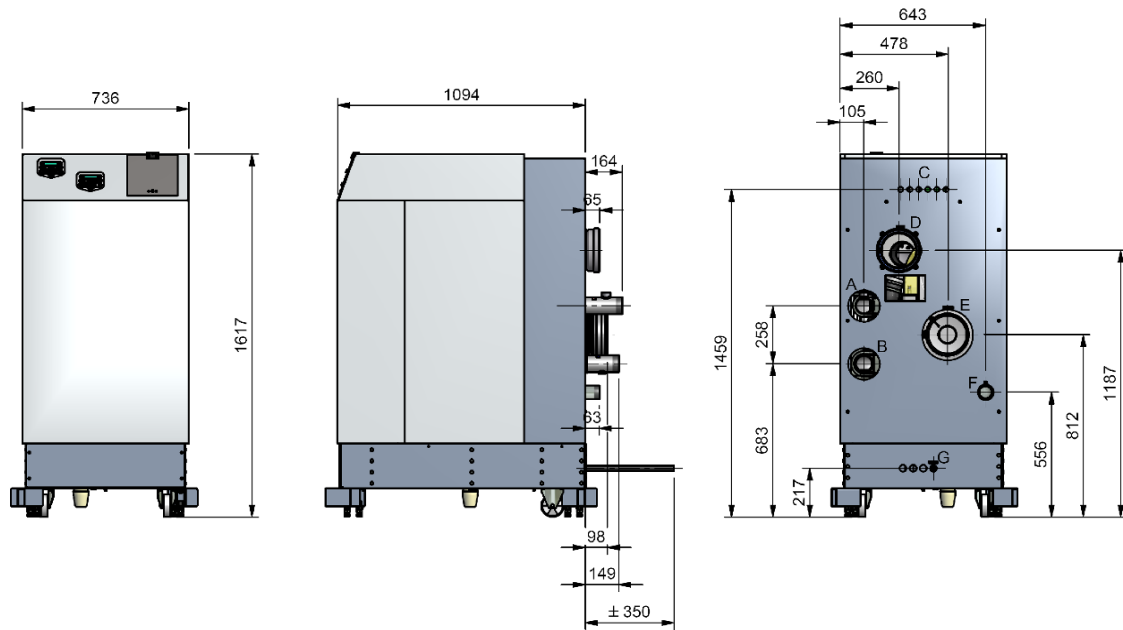
- Dimensions and clearances
- Vented and Unvented installation requirements
- maintenance

#### **ErP and Warranty**

ErP Data including Product Fiche and Energy Labels where applicable and Warranty information are also available at [www.lochinvar.ltd.uk](http://www.lochinvar.ltd.uk)

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Item	Description	Unit	TTW410 Size	TTW580 Size
A	water flow (outlet)	Inch	2½"	2½"
B	water return (inlet)	Inch	2½"	2½"
C	cable input	mm	Ø 22,5	Ø 22,5
D	combustion air inlet	mm	180	180
E	flue terminal	mm	180	180
F	gas connection	Inch	2"	2"
G	condensate discharge hose	mm	Ø 25	Ø 25

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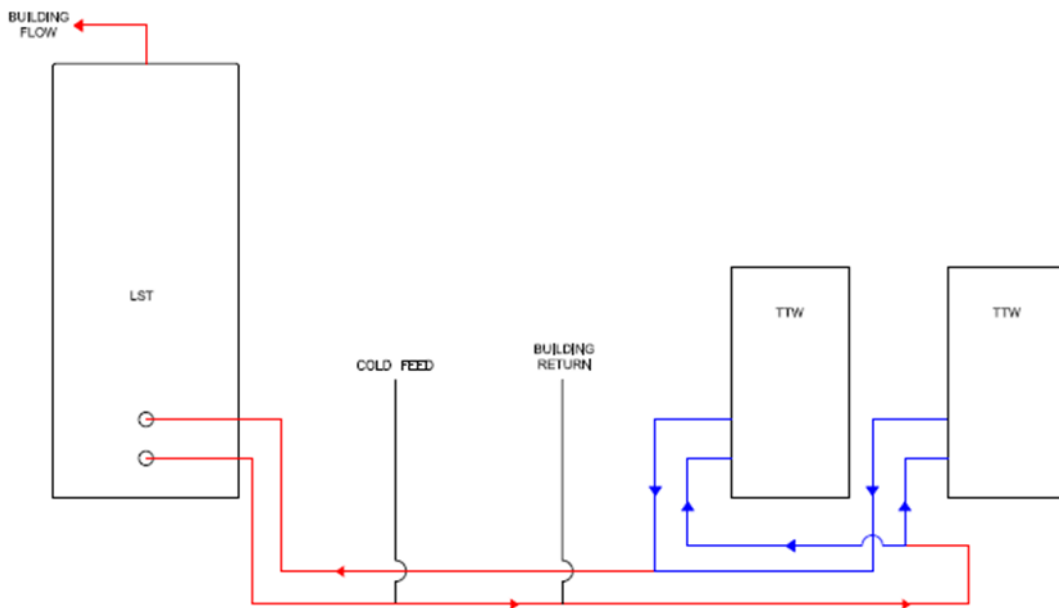
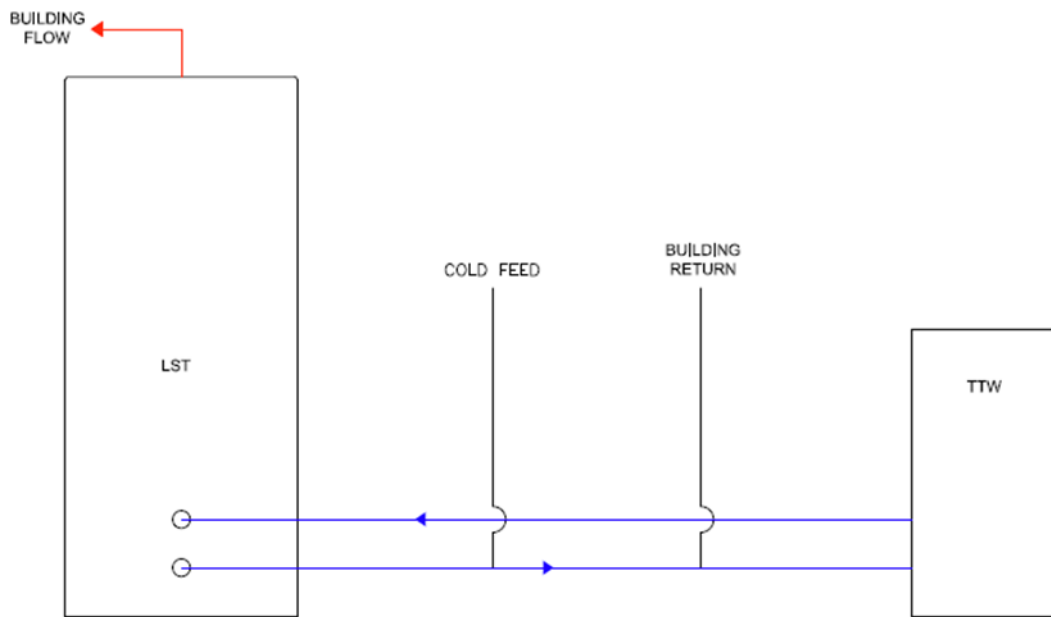
## TTW410

### Primary pipework sizing



Model	Quantity	A-Blue	B-Red
TTW410	1	76mm	76mm
TTW410	2	76mm	108mm
TTW410	3	76mm	108mm
TTW410	4	76mm	*
<b>TTW580</b>			
TTW580	1	76mm	76mm
TTW580	2	76mm	108mm
TTW580	3	76mm	*
TTW580	4	76mm	*

- Contact Lochinvar for assistance



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### Matched circulating pump



In order to ensure the correct flow rates through the water heater, the unit requires a bronze glanded pump sized to overcome the resistance of the TTW water heater and any primary pipework loop. Lochinvar will supply a suitable bronze glanded shunt pump with every TTW water heater sized to overcome the resistance of the TTW water heater plus the following primary pipework loop:

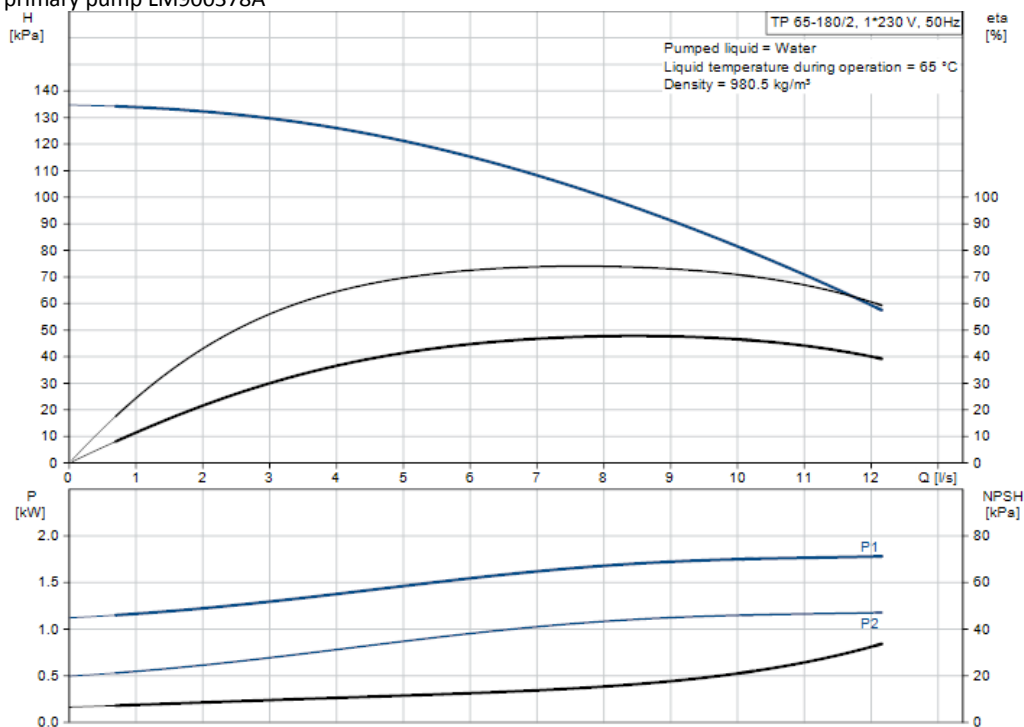
- 14 metres of 76mm pipe
- 4 x 90 elbows
- 2 x Unions
- 2 x Full bore lever ball valves
- 2 x T fittings (cold feed and building return)



For multiple water heaters the above pipework allowance is **not multiplied per water heater** For installations with Longer Primary, pipework loops or a greater number of fittings please contact Lochinvar Technical support before proceeding with any installation.

		TTW410	TTW580
Minimum Water Flow	L/sec	5.61	7.48
Pressure Loss – Heat Exchanger	kPa	52	52
Pressure Loss – Internal Piping	kPa	0.78	0.78
Pressure Loss – Water Flow Switch	kPa	9.8	9.8
<b>Pressure Loss – Total (Appliance)</b>	<b>kPa</b>	<b>63.5</b>	<b>63.5</b>
<b>Pipework pressure loss calculation</b>			
Single water heater and vessel			
Item	Qty	Pd per item	Pd total
Pipe 76mm	14	0.06	0.84
Pipe 42mm	1	0.7	0.7
76mm 90 Bend	4	0.18	0.72
76mm Full bore Valve	2	0.06	0.12
<b>Total PD metres head</b>			<b>2.38</b>
<b>Total PD kPa</b>			<b>23.8</b>
<b>Total Pd including water heater and pipework shown above</b>			<b>87.3kPa</b>

Standard matched primary pump LM900378A



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### Water quality requirements

Water supply quality may adversely affect the efficiency performance and longevity of Water Heaters and Hot Water systems. Hard water may cause the formation of limescale that will reduce operating efficiency and may cause early product failure. Please note the following: -

- Maximum allowed water hardness is 205 PPM or 205 mg/L CaCO<sub>3</sub> (= 11.5°dH)
- TDS (total dissolved solids) may not exceed 350 PPM
- Water hardness and TDS together may not exceed 350 PPM
- The pH value of the water may not be under 6.5 and not above 7.5 (measured cold)
- If TDS alone or the combined value is higher than the abovementioned, the water should be heated by means of an indirect water-heating appliance.
- Minimum water hardness = 80 PPM or 80 mg/L CaCO<sub>3</sub> (= 4.5°dH)
- Minimum TDS = 100 PPM
- Water that is under these minimum values normally has a pH value, which is aggressive and corrosive.



**If these values are exceeded a water treatment specialist should be consulted. Water Softeners and Water Conditioners may be considered, but whichever method is selected, it should be suitable for installation with Direct Gas-fired Water Heaters. A maintenance regime will also be required for such systems**



**The formation of limescale or other solids can cause a blockage within the heat exchanger, which in turn may cause premature failure. Such instances are not regarded as defects in manufacture and will not be covered under the product warranty**