

3 DESIGN

3.1 Boiler Version

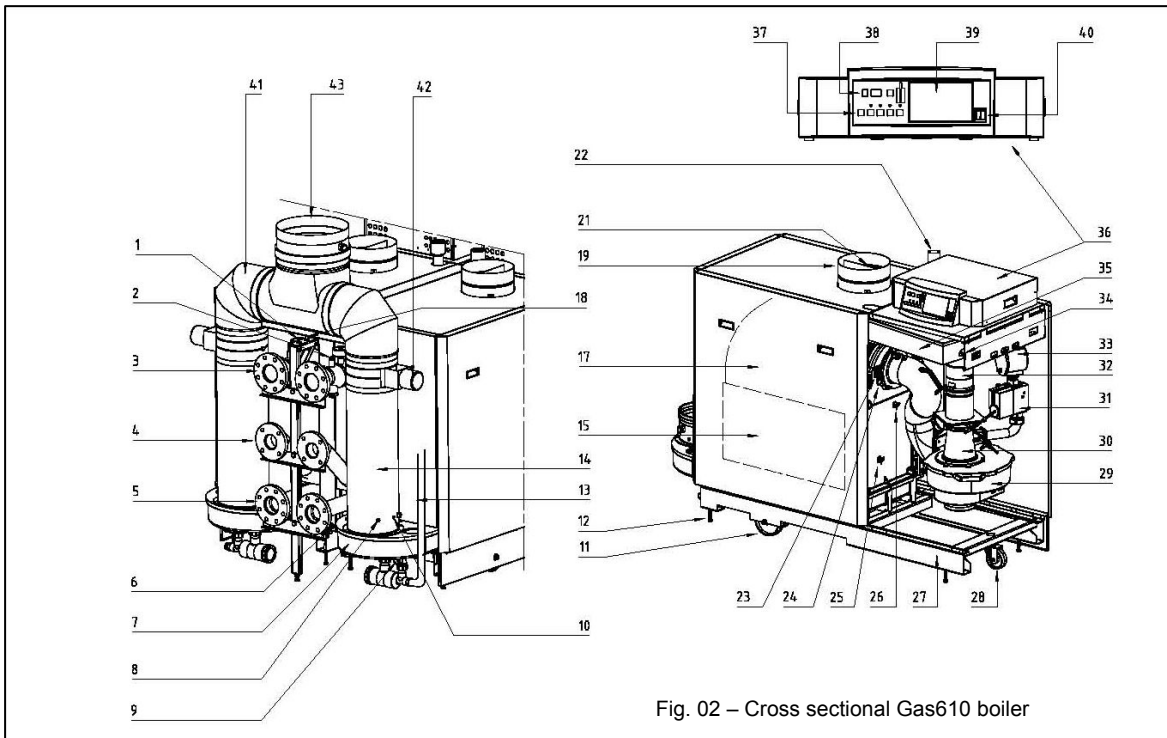


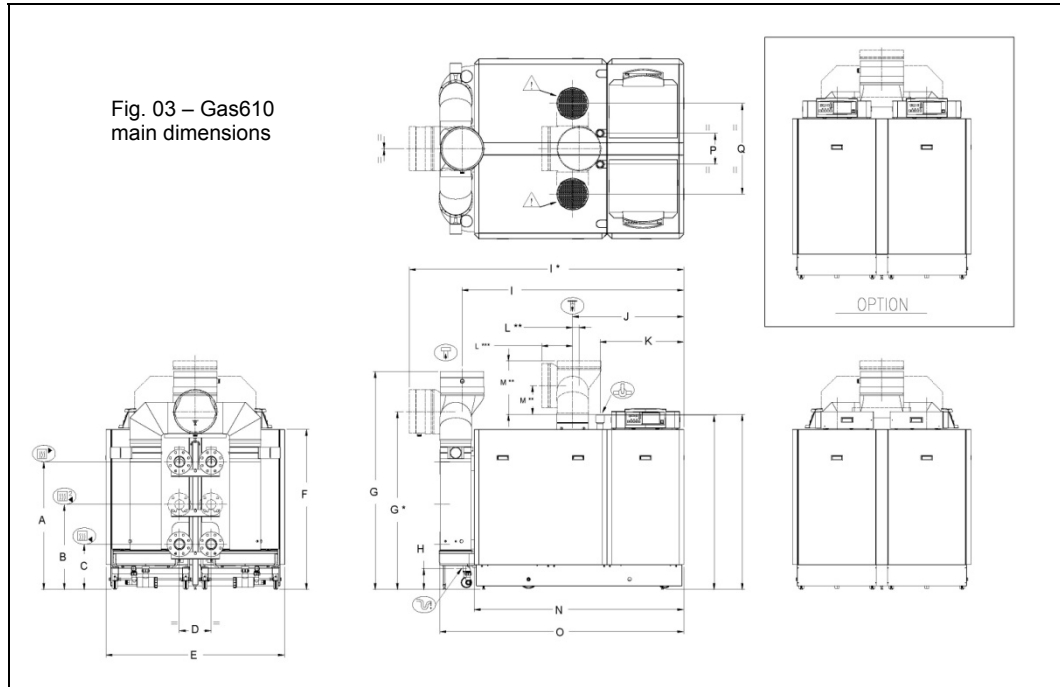
Fig. 02 – Cross sectional Gas610 boiler

Parts listed below apply to each boiler module.

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>1. Pressure gauge</li> <li>2. Well external temperature sensor 1/4"</li> <li>3. Flow-connection</li> <li>4. Not available</li> <li>5. Return-connection</li> <li>6. Filling/drain cock</li> <li>7. Condensate collector</li> <li>8. Flue gas temperature sensor</li> <li>9. Condensate drain</li> <li>10. Measuring point (O<sub>2</sub>, CO<sub>2</sub>, CO)</li> <li>11. Positioning wheels</li> <li>12. Jacking bolts</li> <li>13. Condensate drain hose</li> <li>14. Flue gas discharge</li> <li>15. Inspection hatch</li> <li>16. Not available</li> <li>17. Heat exchanger</li> <li>18. Flow temperature sensor</li> <li>19. Air supply</li> <li>20. Not available</li> <li>21. Air supply grille</li> <li>22. Gas connection</li> <li>23. Inspection glass</li> <li>24. Ignition/Ionization electrode</li> <li>25. Return temperature sensor</li> <li>26. Boiler block temperature sensor</li> </ul> | <ul style="list-style-type: none"> <li>27. Frame</li> <li>28. Steering castor</li> <li>29. Fan</li> <li>30. Venturi</li> <li>31. Gas valve multiblock</li> <li>32. Non return valve</li> <li>33. Gas filter</li> <li>34. Air pressure differential sensor (LDS)</li> <li>35. Air box</li> <li>36. Instrument panel</li> <li>37. Control Keys</li> <li>38. Read-out window</li> <li>39. Weather compensator (optional)</li> <li>40. On/Off switch</li> <li>41. Common flue gas collector</li> <li>42. Flue gas damper</li> <li>43. Common flue gas discharge connection with integrated condensate collector connected to one of the siphons.</li> </ul> |
|--|---|
- Other items see parts view section 15.5:
- a. Gas cock – manual valve (3026)
  - b. Vent safety switch (3046)
  - c. Inlet gas adapter 2" NPT (3045)
  - d. Safety relief valve, see chapter 7.4.4.

4 TECHNICAL DATA

4.1 Dimensions – Each boiler module



- Flow connection 3 inch [x2]
- Return connection 2.5 inch [x2]
- Gas connection 2 [F] inch NPT adapter [x2]
- Condensate drain 1 ¼ inch [x2]
- Flue gas discharge 14 inch common [x1]
- Combustion air supply 10 inch [x2] or 14 inch common [x1]

Gas 610 Eco Series Model	A		B		C		D		E		F		G		H	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
610-6	1029	40.51	685	26.97	365	14.37	258	10.16	1450	57.09	1290	50.79	1756	69.13	170	6.693
610-7																
610-8																
610-9																

I		J		K		L**		M**		N		O		P		Q	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
1463	57.5984	901	35.47	680	26.77	53	2.087	430	16.93	1312	51.65	1590	62.6	250	9.843	730	28.74
1853	72.9528	1110	43.7							1980	77.95						
		1007	39.65							1980							
		904	35.59	1980													

\* Alternate Gas610 boiler vent orientation for sidewall applications [optional]  
 \*\* Vertical combined combustion air inlet common vent [Optional]  
 \*\*\* Horizontal combined combustion air inlet common vent [Optional]

G*		I*		L***		M***	
mm	inch	mm	inch	mm	inch	mm	inch
1433	56.42	1600	63.0	250	9.84	233	9.17
		1990	78.3				

4.2 TECHNICAL DATA

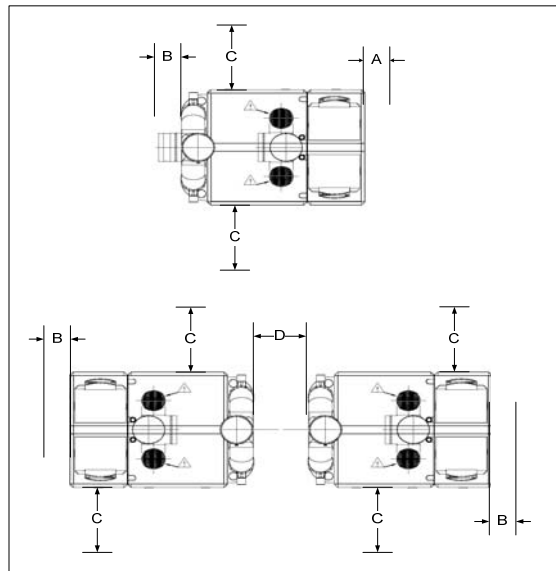
Boiler Model	Unit				
		610-6 [2 x 6 Section]	610-7 [2 x 7 Section]	610-8 [2 x 8 Section]	610-9 [2 x 9 Section]
<b>General</b>					
Firing Sequence Operation		2 or 4 Stage or Fully Modulating			
Minimum Fuel Input	MBH [kW]	345 [101]	485 [142]	481 [141]	580 [170]
Maximum Fuel Input	MBH [kW]	2,539 [744]	3,058 [896]	3,569 [1046]	4,081 [1196]
Minimum Heat Output	MBH [kW]	321 [94]	447 [131]	444 [130]	532 [156]
Maximum Heat Output	MBH [kW]	2,409 [706]	2,914 [854]	3,406 [998]	3,911 [1146]
<b>Efficiency</b>					
Combustion [Gross]	%	CSA Certified Avg. 95.3 - [Potential up to ≈ 99.0]			
Thermal Efficiency [Net]	%	Certified to BTS-2000 standard Avg. 97.2 [Potential up to ≈ 98.5]			
Standby Losses [Average]	%	< 0.3			
<b>Gas &amp; Venting</b>					
Gas Type	Type	Natural Gas Only - LNG consult factory			
Gas Inlet Connection Size	BSP Inch	2 inch BSP - Adapter required 2" M-BSP x 2" M-NPT			
Gas Inlet Pressure Range	In. w.c. [mbar]	7 - 14 [17 - 35]			
NO <sub>x</sub> emissions [O <sub>2</sub> = 0%]	ppm	< 35			
Residual Fan Duty	In. w.c. [mbar]	0.52 [1.30]			
<i>Available In: Room air vertical or horizontal venting - Sealed combustion horizontal or vertical venting arrangements</i>					
Common Flue-Gas Vent Diameter	Inch	14			
Combustion Air Vent Diameter*	Inch	2x 10 or 14 common			
Flue-Gas Mass Range	lb/h [kg/h]	337-2,491 [153-1130]	474-2,998 [215-1360]	472-3496 [214-1586]	567-3,999 [257-1814]
Maximum Flue Gas Temperature*	°F [°C]	149 [65]			
Condensate Drain Connection*	inch	1.25			
<b>Water</b>					
Heating Return*	inch	2.5			
Heating Supply*	inch	3.0			
Maximum Water Temp. Safety Limit*	°F [°C]	230 [110]			
Water Temperature Operating Range*	°F [°C]	68 - 194 [20 - 90]			
Water Pressure Range*	psig [barg]	11.6 - 100 [0.8 - 6.89] ASME MAWP = 100			
Boiler Water Content	US Gal [L]	31.8 [120]	37.6 [142]	43.4 [164]	49.2 [186]
Water Resistance @ 20°F ΔT [11°C ΔT mbar]*	Ft. H <sub>2</sub> O [mbar]	12.2 [364]	13.3 [397]	12.2 [364]	13.8 [413]
Water Resistance @ 36°F ΔT [20°C ΔT mbar]*	Ft. H <sub>2</sub> O [mbar]	3.68 [110]	4.01 [120]	3.68 [110]	4.18 [125]
<b>Electrical</b>					
Main Supply*	V/P/H	120/60/1 - 15A maximum - must be earth grounded			
Power Consumption*	watt	24 - 380	24 - 470	24 - 610	24 - 840
IP-IEC-NEMA Protection*	Rating	IP 20 [NEMA Type 1]			
<b>Other</b>					
Gas Vent Category	Types	ANSI Z21/CSA 4.9 Gas Vent Category II or IV - Special Venting Type 'BH'			
Combustion Air Temperature*	°F [°C]	-4 to 104 [-20 to 40]			
Installation Altitude	Ft. [m]	0 - 4,500 [0 - 1370] asl			
Dry Boiler Weight	lb [kg]	1,808 [820]	2,028 [920]	2,248 [1020]	2469 [1120]
Floor Area	Ft <sup>2</sup> [m <sup>2</sup> ]	25.8 [2.4]		30.1 [2.8]	
Noise Level @ 1m [Average]*	dB(A)	60			
* Applies to each boiler module					

Table 2, Technical data

It is advisable (preferable) to install the Gas 610 ECO as follows:

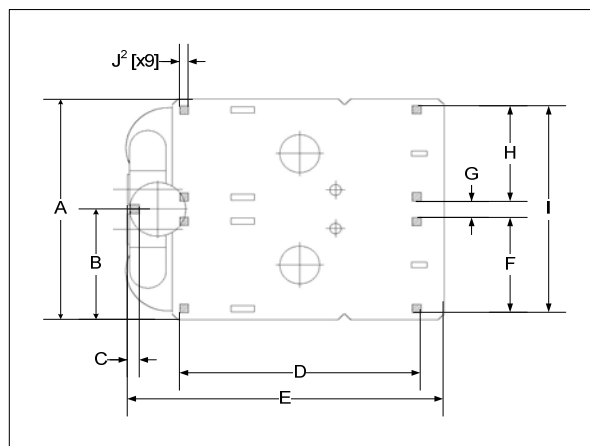
A		B		C		D	
Inch	mm	Inch	mm	Inch	mm	Inch	mm
12	300	300	12	31.5	800	24	600

- Place the crate c/w the boiler in the boiler room. Make sure there is enough room at one end of the crate for the boiler and ramp and clearance for the crate to be removed (at least 10ft [3M]).
- Place the 4 support pads under the adjustment bolts.
- Use the adjusting bolts to jack up the boiler – lifting it clear of the wheels and with the top of the condensate collector level.
- Fit the siphon assembly.
- Use the plastic packaging to protect the boiler until required for use.
- Service side dimension 'B', for servicing it is recommended that an additional 8 inches [200mm] be added, but is not absolutely required.
  - If the control is orientated to the short end, dimension A will need to be increased by 19.5 inches [495mm].



Gas610 Model	A		B		C		D		E	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
610-6	55.4	1450	28.5	725	2.83	72	44	1118	62.6	1590
610-7							59.4	1508	77.9	1980
610-8										
610-9										

Gas610 Model	F		G		H		I		J <sup>2</sup>	
	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	MM
610-6	24.8	630	4.1	104	24.8	630	53.5	1360	2.2	55
610-7										
610-8										
610-9										



**⚠ IMPORTANT!**

Always transport the boiler in the protective packaging whenever possible. Remove fixing strips, packaging lid and all other packaging, leaving the boiler on the pallet. Place the packaging lid on the end of the pallet, creating a ramp – secure with screws. Roll the boiler, on its wheels, off the pallet and down the ramp to the boiler room floor.

**⚠ WARNING!**

Use retaining straps to control the rate of travel – Do Not stand in front of the boiler! Maneuver the boiler to required final position.



The pallet lid can be used as a rocking ramp to convey the boiler over obstacles, such as thresholds, etc.



**IMPORTANT!!** The wheels are designed for transport purposes only and **MUST NOT** be used when the boiler is in its final position!



**IMPORTANT!!** Additional protection may be required if site conditions warrant it – overhead builders working, etc.



**IMPORTANT!!** Do not install boiler on carpet or other combustible materials. Never stand on the boiler the boiler casing is not designed for excessive force.