

## Section 3. Technical Information

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Please contact the manufacturer for assistance if required. We shall do our utmost to give advice and help. No responsibility will be accepted for maladjustment or for problems caused by failure to comply with manufacturers instructions or advice. Neither will the manufacturer accept responsibility for faults in the design or installation of the central heating system.

Ensure that a fully qualified or OFTEC registered engineer carries out the commissioning.

Grandee appliances, when set up correctly, should give efficiencies around or above 90%. (See detailed commissioning notes in Section 11).

### 3.1 Electrical Wiring Details

All electrical connections and wiring should be performed by a qualified electrician in accordance with the latest BS7671: 1992 regulations and the latest IEE Wiring Regulations.

Disconnect the main supply before attempting any electrical connections.

The electrical supply must be 220/240 volts A/C single phase 50 Hz protected by a 5 amp fuse.

#### Grandee Appliances Must Be Earthed

The appliance must be earthed and connected to the mains supply by a double pole isolating switch.

The appliance must be earthed with an earth cable longer than the mains current cables, that is the line and neutral supplies.

Extended cables must be fastened by strain relief bushes.

#### Voltage Fluctuations

In some areas, particularly remote urban areas, voltage fluctuations can occur. This can effect the spark generation or starting sequence of the appliance and can cause locking out.

### 3.2 Commissioning Data

Grandee oil boilers are designed to comply with OFTEC and European legislative requirements and must be installed and set up correctly to insure satisfactory performance and efficiency.

The table on page 55 indicates typical settings to be achieved when the appliance is commissioned. There could be slight variations from these figures to allow for manufacturing tolerances i.e. nozzle, oil pump, fan and site conditions.

### 3.3 Fuel

The recommended fuel for your Grandee boiler is Kerosene 28°(sec) viscosity (Redwood number 1) which complies with BS 2869 - 7 classes C2 and D. See Code of Practice for oil firing BS 5410 part 1. Grandee boilers are set up and tested at the factory with nozzles and adjustments suitable for Kerosene.

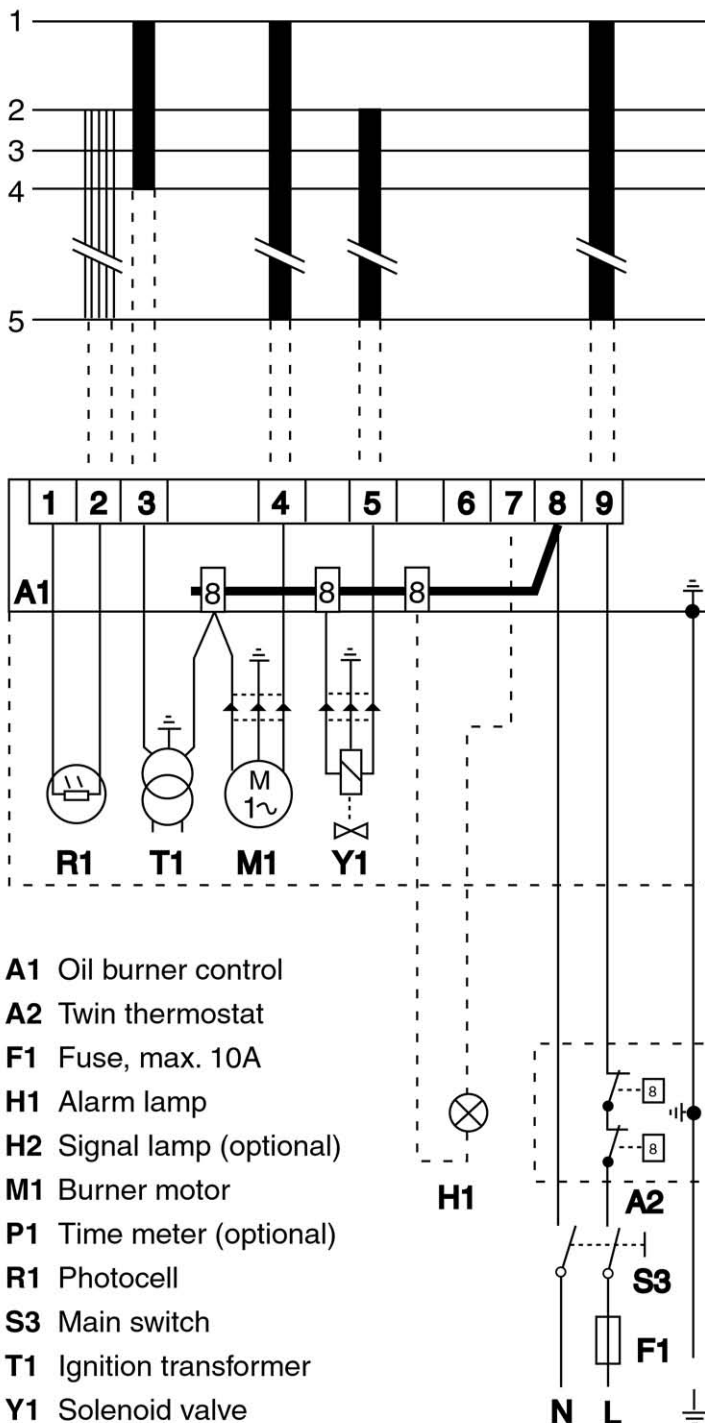
The burner is capable of being adjusted to burn 35°(sec) viscosity class D fuel known as Gas Oil. Contact the manufacturer for details of such modifications. Factory fitted burners suitable for Gas Oil may be ordered though price adjustments will apply.

The manufacturer will accept no responsibility for appliances which have been adjusted to burn gas oil unless specifically arranged, supplied and factory designed.

## 3.4 Wiring Diagrams

Fig: 2

### ELECTRICAL WIRING control box SATRONIC TF 830B/TF 830B.2B



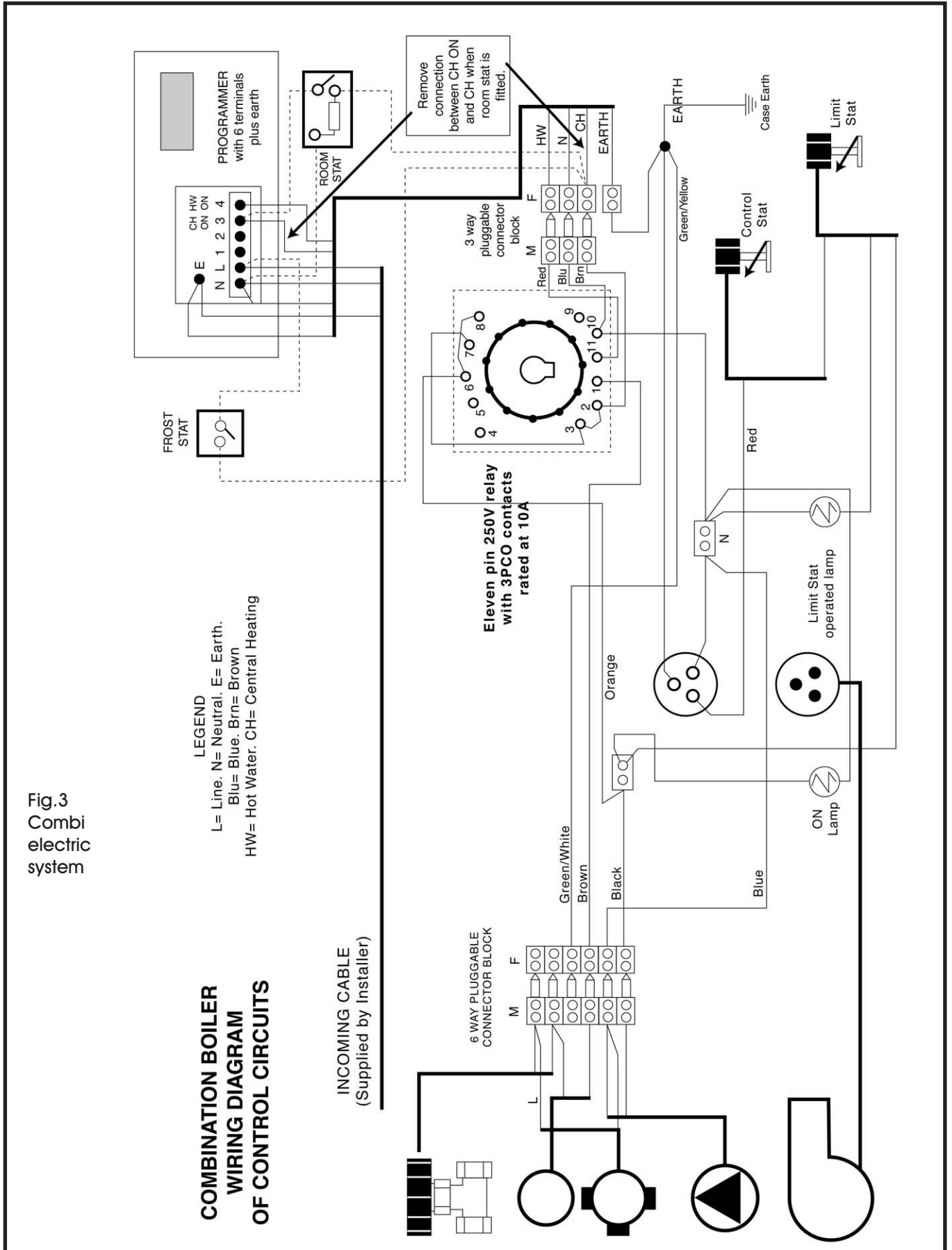
#### FUNCTION

1. **Switch on operating switch and twin thermostat**  
The burner motor starts, an ignition spark is formed, the prepurge goes on till the prepurge period expires and the solenoid valve opens (2).
  2. **Solenoid valve opens**  
Oil mist is formed and ignited. The photocell indicates a flame.
  3. **The safety time expires**
    - a. If no flame is established before this time limit the control cuts out.
    - b. If for some reasons the flame disappears after this time limit, the burner will make an attempt to re-start.
  4. **Ignition spark goes out**  
The ignition spark goes out 20 seconds after flame indication and the burner is in operating position.
  - 4-5. **Operating Position**  
If the burner operation is interrupted by means of the main switch or the thermostat, a new start takes place when the conditions in accordance with point 1 are fulfilled.
- The oil burner control cuts out**  
A red lamp in the control is lit. Press the reset button and the burner re-starts.

#### TECHNICAL DATA

Pre-ignition time	12s
Pre-purge time	12s
Safety lock-out time	10s
Post-ignition time	20s
Reset time after lock-out	min. 60s
Reaction time on flame failure	max 1s
Ambiant temperature	from -0 to +60°C

3.4 Wiring Diagrams - Combination Boiler Control Circuits



3.4 Wiring Diagrams - Standard Models

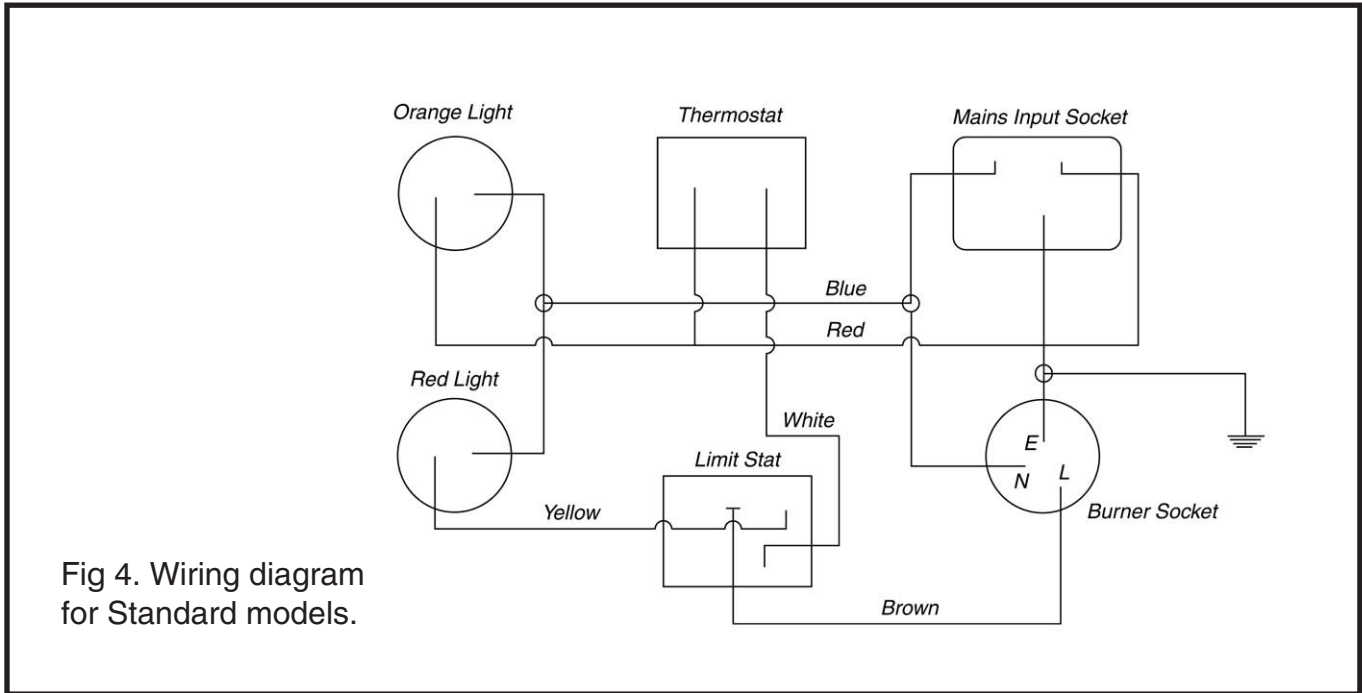


Fig 4. Wiring diagram for Standard models.

3.4 Wiring Diagrams - System Models

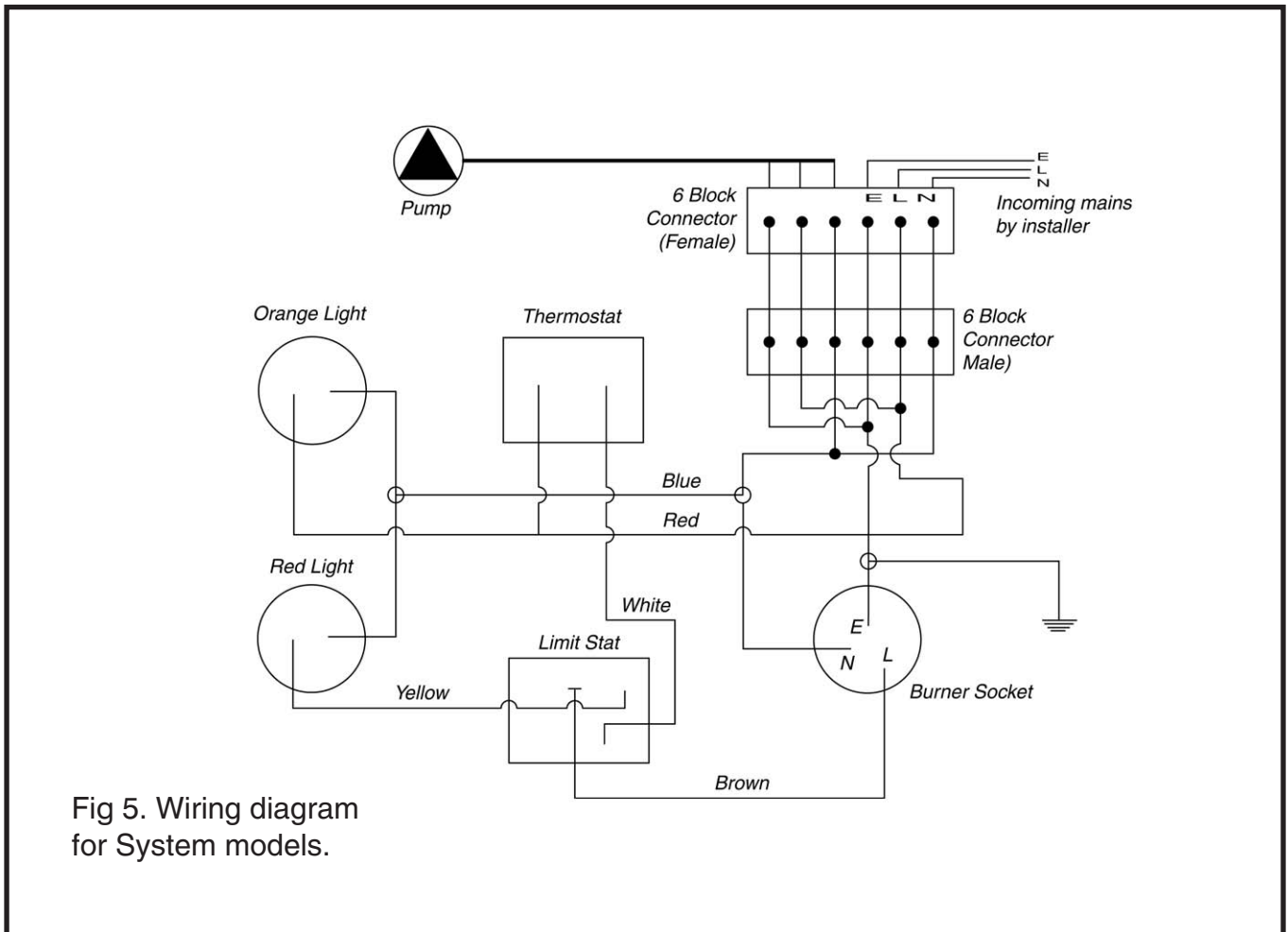


Fig 5. Wiring diagram for System models.



## 3.5 Technical Information - Grandee Combi & System Wall Mounted

Grandee Combi & System Wall		SW 15/20	SW 20/24	SW 24/27
Nominal	kW	19	23.4	29
Heat Output	Btu/h	65,000	80,000	100,000
Nominal	Btu/h	71,650	88,000	111,110
Heat Input	kW	21	26	32.5
Burner		EOGB Sterling H.W.		
Weight Empty	kg	102	116	128
	lbs	224.4	255	282
Weight Full	kg	148	156	153
	lbs	325.6	343	337
Water Content	Litres		45	30
	Gallons		10	6.5
Fuel		Kerosene Class C2	Kerosene Class C2	Kerosene Class C2
Flue Type		Balanced	Balanced	Balanced
Appliance Full Load Efficiency	%	90	91	90
Exit Flue Con. Diameter	mm	50	50	63
	ins	2"	2"	2.5"
Exit Flue Gas Temp at Rated Output	°C	200°C+ Ambient	227°C+ Ambient	235°C+ Ambient
Exit Flue Gas Mass Flow	kg/sec	.0095 kg/sec	.0128 kg/sec	.0151 kg/sec
Fuel Burning Rate	kg/sec	0.48	0.646	0.795
Control Thermostat		Adjustable between 50°C-75°C		
High Limit Thermostat		Factory set 95°C		
Waterside Resistance m/bar		2.5 at 20°C Diff	9.0 at 10°C Diff	23 at 10°C Diff
Flow & Return connections			2 x 22mm	
System Types		Sealed		
Indicator Lights		Mains-Amber	High Limit Stat-Red	
Max Hearth Temp		°C Below 85°C		
Max Side Panel Temp		°C Below 35C plus Ambient		
Max Temp adjusting Control and Safety devices		°C 30°C		
Max Emission Limits or Class		Class 1		
Max Operating Pressure		45p.s.i. (3 Bar)		
Test Pressure		65p.s.i. (4.5 Bar)		
Electricity Supply		220 / 240V Phase 1 50Hz 5 amp fuse		
Acoustic Insulation		Specialised foam material where applicable		



## 3.5 Technical Information - Grande Combi & System Floorstanding

Grande Combi & System Floor		SFS 15/20	SFS 15/20	SFS 20/25	SFS 20/25	SFS 25/29	SFS 25/29	
Nominal	kW	14.6	17.6	20.5	23	26.4	29.3	
Heat Output	Btu/h	50,000	60,000	70,000	80,000	90,000	100,000	
Nominal	Btu/h	55,550	66,660	77,770	88,880	99,990	111,110	
Heat Input	kW	16.3	19.5	22.8	26	29.3	32.5	
Burner	Ecoflam Superspec or EOGB Sterling H.W.							
Weight Empty	kg	128	128	128	128	131	131	
	lbs	281	281	281	281	289	289	
Weight Full	kg	187	187	187	187	175	175	
	lbs	411	411	411	411	385	385	
Water	Litres	60	60	60	60	45	45	
Content	Gallons	13	13	13	13	10	10	
Fuel	Kerosene Class C2							
Flue Type	Balanced or Conventional							
Flue Size	C.F.	4"	4"	5"	5"	5"	5"	
Appliance Full Load								
Efficiency	%	92	93	93	92	93	92	
Exit Flue Con.	mm	63				127	127	
Diameter	ins	2.5"	CF 4"	CF 5"	CF 5"	5"	5"	
Exit Flue Gas	°C	210°C+	215°C+	220°C+	225°C+	220°C+	215°C+	
Temp at Rated Output		Ambient	Ambient	Ambient	Ambient	Ambient	Ambient	
Exit Flue Gas	kg/							
Mass Flow	sec	.0151 kg/sec	.0096kg/sec	.0011kg/sec	.00128kg/sec	.0131kg/sec	.01455kg/sec	
Fuel Burning	kg/							
Rate	sec	0.795	0.482	0.565	0.646	0.72	0.786	
Control Thermostat	Adjustable between 50°C - 80°C							
High Limit Thermostat	Factory set 95°C							
Waterside Resistance m/bar	5.8 at 20°C Diff 23 at 10°C Diff							
Flow & Return		1 x 3/4" BSP	1 x 3/4" BSP	1 x 3/4" BSP	1 x 3/4" BSP	1 x 3/4" BSP	1 x 3/4" BSP	
Sockets	ins	1 x 22mm	1 x 22mm	1 x 22mm	1 x 22mm	1 x 22mm	1 x 22mm	
System Types	Sealed							
Indicator Lights	Mains-Amber High Limit Stat-Red							
Max Hearth Temp	°C	Below 85°C	Below 85°C	Below 85°C	Below 85°C	Below 85°C	Below 85°C	
Max Side Panel Temp	°C	Below 35°C plus Ambient						
Max Temp adjusting								
Control and Safety								
devices	°C	30°C	30°C	30°C	30°C	30°C	30°C	
Max Emission Limits								
or Class		Class 1	Class 1	Class 1	Class 1	Class 1	Class 1	
Max Operating	Pressure	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	
Test Pressure		65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)	
Electricity Supply				220/240V	Phase 1	50Hz	5 amp fuse	
Acoustic Insulation	Specialised Foam Material							



## 3.5 Technical Information - Grandee Standard Wall Mounted

Grandee Standard Wall		1S 12/18	1S 12/18	1S 12/18	2S 18/22	2S 18/22
Nominal kW		11.7	14.6	17.6	20.5	22.6
Heat Output Btu/h		40,000	50,000	60,000	70,000	75,000
Nominal Btu/h		44,440	55,550	66,660	77,770	83,333
Heat Input kW		13	16.3	19.5	22.8	24
Burner	Ecoflam Superspec or EOGB Sterling H.W.					
Weight Empty kg		70	71	72	75	76
	lbs	154	156	158	165	167
Weight Full kg		87	88	89	97	98
	lbs	191	194	196	213	215
Water Litres		16	16	16	22.5	22.5
Content Gallons		3.7	3.7	3.7	5.0	5.0
Fuel		Kerosene Class C2	Kerosene Class C2	Kerosene Class C2	Kerosene Class C2	Kerosene Class C2
Flue Type		Balanced	Balanced	Balanced	Balanced	Balanced
Appliance Full Load Efficiency %		90	90	89	93	91
Exit Flue Con. mm		50	50	50	50	50
Diameter ins		2"	2"	2"	2"	2"
Exit Flue Gas Temp at Rated Output Ambient °C		185°C+ Ambient	192°C+ Ambient	200°C+ Ambient	218°C+ Ambient	227°C+ Ambient
Exit Flue Gas Mass Flow kg/sec		.0067 kg/sec	.0078 kg/sec	.0095 kg/sec	.0011 kg/sec	.0128 kg/sec
Fuel Burning Rate kg/sec		0.32	0.40	0.48	0.56	0.646
Control Thermostat	Adjustable between 50°C - 80°C					
High Limit Thermostat	Factory set 100°C					
Waterside Resistance m/bar		2.5 at 20°C Diff	9.0 at 10°C Diff			
Flow & Return Sockets ins		2 x 3/4" BSP	2 x 3/4" BSP	2 x 3/4" BSP	2 x 1" BSP	2 x 1" BSP
System Types	Sealed or Open Vented					
Indicator Lights	Mains-Amber High Limit Stat-Red					
Max Hearth Temp °C		Below 85°C	Below 85°C	Below 85°C	Below 85°C	Below 85°C
Max Side Panel Temp °C	Below 35C plus Ambient					
Max Temp adjusting Control and Safety devices °C		40°C	40°C	40°C	40°C	40°C
Max Emission Limits or Class		Class 1	Class 1	Class 1	Class 1	Class 1
Max Operating Pressure		45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)
Test Pressure		65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)
Electricity Supply		220/240V	Phase 1	50Hz	5 amp fuse	
Acoustic Insulation	Specialised foam material where applicable					





## 3.5 Technical Information - Grandee Standard Wall & Floor Mounted

Grandee Standard Wall & Floor		Wall 3S 22/27	Wall 3S 22/27	Floor 5S 12/18	Floor 5S 12/18	Floor 5S 12/18
Nominal	kW	22.6	26.4	11.7	14.6	17.6
Heat Output	Btu/h	80,000	90,000	40,000	50,000	60,000
Nominal	Btu/h	88,880	99,990	44,440	55,550	66,660
Heat Input	kW	24	29.3	13	16.3	19.5
Burner	Ecoflam Superspec or EOGB Sterling H.W.					
Weight Empty	kg	76	113	72	73	74
	lbs	167	249	158	161	163
Weight Full	kg	98	139	89	90	91
	lbs	215	306	196	198	200
Water Content	Litres	22.5	26.5	16	16	16
	Gallons	5.0	6.00	3.5	3.5	3.5
Fuel	Kerosene Class C2					
Flue Type	Balanced					
Appliance Full Load Efficiency	%	91	91	90	90	89
Exit Flue Con. Diameter	mm	50	63	50	50	50
	ins	2"	2.5"	2"	2"	2"
Exit Flue Gas Temp at Rated Output	°C	227°C+	205°C+	175°C+	192°C+	200°C+
		Ambient	Ambient	Ambient	Ambient	Ambient
Exit Flue Gas Mass Flow	kg/sec	.0128 kg/sec	.0145 kg/sec	.0067 kg/sec	.0078 kg/sec	.0083 kg/sec
	sec					
Fuel Burning Rate	kg/sec	0.646	0.72	0.32	0.40	0.48
	sec					
Control Thermostat	Adjustable between 50°C - 80°C					
High Limit Thermostat	Factory set 100°C					
Waterside Resistance m/bar	5.8 at 20°C Diff 23 at 10°C Diff		2.5 at 20°C Diff 9.0 at 10°C Diff			
Flow & Return Sockets	ins	2 x 1" BSP	2 x 1" BSP	2 x 3/4" BSP	2 x 3/4" BSP	2 x 3/4" BSP
System Types	Sealed or Open Vented					
Indicator Lights	Mains-Amber High Limit Stat-Red					
Max Hearth Temp	°C	Below 85°C	Below 85°C	Below 85°C	Below 85°C	Below 85°C
Max Side Panel Temp	°C	Below 35°C plus Ambient				
Max Temp adjusting Control and Safety devices	°C	40°C	40°C	40°C	40°C	40°C
Max Emission Limits or Class		Class 1	Class 1	Class 1	Class 1	Class 1
Max Operating Pressure		45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)
Test Pressure		65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)	65p.s.i. (4.5 Bar)
Electricity Supply		220/240V	Phase 1	50Hz	5 amp fuse	
Acoustic Insulation	Specialised Foam Material					





## 3.5 Technical Information - Grande Standard Floor Mounted

Grande Standard Floor		6S 15/23	6S 15/23	6S 15/23	7S 26/32	7S 26/32	7S 26/32
Nominal kW		17.6	20.5	26	26.4	29.3	32.2
Heat Output	Btu/h	60,000	70,000	80,000	90,000	100,000	110,000
Nominal Btu/h		66,660	77,770	88,880	99,990	111,110	122,220
Heat Input	kW	19.5	22.8	26	29.3	32.5	35.8
Burner	Ecoflam Superspec or EOGB Sterling H.W.						
Weight Empty	kg	93	94	95	111	113	115
	lbs	205	207	209	244	249	253
Weight Full	kg	106	107	108	137	139	141
	lbs	233	237	238	301	306	310
Water	Litres	23	23	23	27	27	27
Content	Gallons	5.1	5.1	5.1	5.9	5.9	5.9
Fuel	Kerosene Class C2      Kerosene Class C2      Kerosene Class C2						
Flue Type	Balanced or Conventional						
Appliance Full Load Efficiency	%	93	91	90	92	91	90
Exit Flue Con. Diameter	mm ins	BF 3 x 1 CF 4"	BF 3 x 1 CF 5"	BF 3 x 1 CF 5"	127 CF 4"	127 CF 4"	153 CF 4"
Exit Flue Gas Temp at Rated Output	°C	212°C+ Ambient	215°C+ Ambient	225°C+ Ambient	220°C+ Ambient	215°C+ Ambient	218°C+ Ambient
Exit Flue Gas Mass Flow	kg/sec	.0096 kg/sec	.0011 kg/sec	.00128 kg/sec	.0131 kg/sec	.01455 kg/sec	.0151 kg/sec
Fuel Burning Rate	kg/sec	0.482	0.565	0.646	0.72	0.786	0.864
Control Thermostat	Adjustable between 50°C - 80°C						
High Limit Thermostat	Factory set 100°C						
Waterside Resistance m/bar	14.3 at 10°C Diff		5.4 at 10°C Diff				
Flow & Return Sockets	ins	4 x 1" BSP	4 x 1" BSP	4 x 1" BSP	4 x 1"	4 x 1"	4 x 1"
System Types	Sealed or Open Vented						
Indicator Lights	Mains-Amber High Limit Stat-Red						
Max Hearth Temp	°C	Below 85°C					
Max Side Panel Temp	°C	Below 35°C plus Ambient					
Max Temp adjusting Control and Safety devices	°C	40°C	40°C	40°C	40°C	40°C	40°C
Max Emission Limits or Class		Class 1	Class 1	Class 1	Class 1	Class 1	Class 1
Max Operating Pressure		45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)	45p.s.i. (3 Bar)
Test Pressure		65p.s.i.(4.5 Bar)	65p.s.i.(4.5 Bar)	65p.s.i.(4.5 Bar)	65p.s.i.(4.5 Bar)	65p.s.i.(4.5 Bar)	65p.s.i.(4.5 Bar)
Electricity Supply		220/240V	Phase 150Hz	5 amp fuse			
Acoustic Insulation	Specialised Foam material where applicable						



Note: Technical information for System Boilers will match combi appliances of similar output.

**3.6 Burners Specification Summary**

**E.O.G.B. Sterling Burners**

Blast Tube	PL1052410
Control Box	Satronic TF 832.3
Fuel Pump	Danfoss BFP11 L3
Motor Type	AEG 90 Watt
Thermostat	Sopac Jaeger TSLM 3214 High Limit Thermostat Heating World 331C4AUT Sopac Jaeger TUA 2C501 Frost Thermostat Where Applicable

**3.7 Water - Technical Details**

Pressure Relief Valve	3 bar
Expansion Vessel	10 litres (pre-charged at 1.0 bar)
Maximum Operating Pressure	2.5 bar (Hot)
Minimum Domestic Hot-Water Flow-Rate	2.25 litre (0.5 gal)/min
Domestic Hot Water Temperature	Adjustable 30° - 70°C
Maximum Mains Water Pressure	6 bar
Minimum Mains Water Pressure	1.25 bar
Water Connections	
Central Heating Flow & Return	22mm Copper
Mains Inlet (Cold)	15mm Copper
Domestic Hot	15mm Copper
Pressure Relief Valve	15mm Copper