

## Boiler Model

**EX-150SGO-07**

### General Specifications

Description	-	Standard Pressure
Boiler Type	-	Once-through watertube boiler with no fixed water line
Boiler Capacity	BHP	150
Design Pressure	PSIG	170
Operating Pressure Range <sup>1,2</sup>	PSIG	70-150
Boiler Heating Surface Area	ft <sup>2</sup>	323
Recommended Min. Feedwater Temperature	°F	180
Minimum Design Feedwater Temperature	°F	140
Flow Regulating Valve (FRV) Flow Rate <sup>15</sup>	GPM	18 (FRV not available for Canada)

### Combustion Specifications

Fuel	-	Natural Gas	Propane	#2 Oil
Fuel Supply Pressure	PSIG	3-5	3-5	0-3
Maximum Heat Input	BTU/hr	5,907,353	5,907,353	5,771,552
Maximum Heat Output	BTU/hr	5,021,250	5,021,250	5,021,250
Maximum Fuel-to-Steam Efficiency <sup>3</sup>	%	85.0%	85.0%	87.0%
Equivalent Output <sup>4</sup>	lb/hr	5,180	5,180	5,180
Turn-Down	-	1.6:1	1.5:1	1.6:1
Flue Gas Excess Oxygen	%	5.0%	5.0%	7.0%
Flue Gas Temperature <sup>3</sup>	°F	270	270	320
Fuel Consumption <sup>5</sup>	SCFH/GPH	5792	65	41
Combustion Air Volume	SCFH	73,080	73,080	83,620
Flue Gas Volume - Wet	SCFH	78,870	75,430	86,790
Flue Gas Volume - Dry <sup>6</sup>	SCFH	67,630	67,630	79,750
Flue Gas Velocity	ft/s	14.4	13.8	17.0

### Emissions<sup>7</sup>

Fuel	-	Natural Gas	Propane	#2 Oil
NOx	ppm	100.0	130.0	120.0
NOx	lbs/MMBTU	0.1214	0.1578	0.1536
CO	ppm	100.0	100.0	200.0
CO	lbs/MMBTU	0.0739	0.0739	0.1559
CO2	lbs/MMBTU	117.6	136.6	159.3
VOC	lbs/MMBTU	0.0054	N/A	N/A
TOC	lbs/MMBTU	0.0108	0.0109	0.0018
SO <sub>2</sub> <sup>8</sup>	lbs/MMBTU	0.0006	0.0005	0.0015
PMt	lbs/MMBTU	0.0075	0.0077	0.0236
PMf	lbs/MMBTU	0.0019	0.0022	0.0143
PMc	lbs/MMBTU	0.0056	0.0055	0.0093

### Weights and Capacities

Shipping Weight	lbs	8,800
Operational Weight	lbs	9,600
Operational Water Content <sup>9</sup>	Gal (Imp. Gal)	89 (74.4)
Fully Flooded Water Content <sup>10</sup>	Gallons	192

Connections		
Main Steam Outlet	-	3", Class 150 Flange
Safety Valve Outlet <sup>11</sup>	in NPT	2-1/2
Drip Pan Elbow Vent <sup>11</sup>	in NPT	4
Drip Pan Elbow Drain <sup>11</sup>	in NPT	3/4
Feedwater Inlet	in NPT	1
Fuel Gas Inlet	in NPT	2
#2 Oil Inlet	in NPT	3/4
Automatic "Surface" Blowdown	in NPT	3/8
Bottom Blow-Off	in NPT	1
LVC Blow-Off	in NPT	1
Economizer Drain (If Equipped)	in NPT	2
Chimney Diameter	in OD	20

Electrical Ratings at 575V <sup>12</sup>				
Feedwater Configuration <sup>13</sup>	-	Std. Check Valve	MI Check Valve	No Pump
Electrical Rating	A	29.9	29.9	23.8
Min. Circuit Ampacity	A	35.2	35.2	29.2

Electrical Components and Controls		
Power Supply	-	575, 460, 380, 230 or 208 Volts, 3 Phase, 60 Hz
Blower Motor	HP	20
Water Pump Motor <sup>14</sup>	HP	5
Water Booster Pump Motor	HP	0
Oil Pump Motor	HP	0.75
Control Amperage	A	1.1
Combustion Control	-	3-Position Step Burner (High - Low - Off)
Combustion System	-	Forced Draft Burner
Ignition System	-	Electric Spark Ignited, Interrupted Gas Pilot
Flame Safeguard	-	Miura BL Microcontroller with Miura ZUV Flame Sensor
Low Water Protection	-	Primary and Secondary Low Water Cutoff Electrodes
Remote Monitoring	-	Optional

Notes
1) Operating within this range ensures proper steam quality and limited relief valve leakage.
2) Setpoint must be below the listed maximum operating pressure to accommodate overshoot. Contact your Miura representative to confirm operating pressure range for your specific application.
3) Based on 68°F feedwater, 80°F combustion air, and minimum steam pressure. Feedwater temperature during normal operation must be higher. Efficiency decreases and flue gas temperature increases with increasing feedwater temperature and steam pressure. Contact your Miura representative to confirm values for your specific application.
4) Equivalent output is calculated based on conversion of 212°F feedwater to 212°F steam.
5) Fuel consumption assumes 1,020 BTU/SCF for natural gas, 91,500 BTU/US gal for LPG, and 140,000 BTU/US gal for #2 oil.
6) Dry flue gas volume is corrected for the operating O <sub>2</sub> percentage and assumes F-factor of 8,710 SCF/MMBTU for natural gas/LPG and 9,190 SCF/MMBTU for #2 oil.
7) NO <sub>x</sub> and CO emissions are based on empirical test data corrected to 3% excess oxygen, all others are calculated using EPA factors.
8) SO <sub>2</sub> factor assumes 0.002 grains/SCF for natural gas, 0.005 grains/SCF for LPG, 15ppm for #2 oil.
9) Operational water content is the average water content during normal operation for the entire boiler assembly including economizer.
10) The fully flooded water content is the total water and steam capacity for the entire boiler assembly including economizer.
11) Boiler safety valve and drip pan elbow connection sizes subject to change based on specific operating pressure.
12) Convert to amps at a different voltage by multiplying value by the ratio of 575V/new voltage.
13) Multiple installation (MI) check valve is required with higher feedwater pressures (i.e. when using DA tank) and may require a larger pump.
14) Water pump size may vary depending on feedwater piping options.
15) FRV Flow Rate is the instantaneous flow rate required by the feedwater pumps for normal water level control. The average flow rate will be lower.