SECTION 13 24 26

STEAM GENERATORS

\*\* NOTE TO SPECIFIER \*\* Steam Sauna; residential and commercial steam generators for steam rooms.

This section is based on products made by Steam Sauna, which is located at:

210 South 8th Street
Lewiston, NY 14092
Toll Free Tel (U.S.): (800) 354-8462
 Tel (U.S.): (716) 838-8003
Fax: (716)838-6600

 153 Bridgeland Ave. Unit 13
 North York, Ontario M6A 2Y6
 Toll Free Tel (Canada): (800)387-0309
 Tel (Canada): (416) 787-1711.
Fax (Canada): (416) 785-9388.
E-mail: sales@steam-sauna.com
 Web: www.steam-sauna.com

Steam rooms and sauna rooms are becoming increasingly popular and a commonly used spot in clubs and recreation centers. STEAM SAUNA INC has been a manufacturer and supplier of steam generators, sauna rooms and sauna heaters for the past 35 years and has build a substantial amount of experience in different commercial and residential applications. STEAM SAUNA INC is an ISO 9001-2000 certified organization that guaranties the highest level of quality control and its main focus is defined as customer satisfaction. STEAM SAUNA INC has developed the most advanced technology for its products through consistent improvements, accomplished by its R & D team of engineers.

 Steam Sauna's steam generators are designed with innovative features to eliminate down time by keeping the units clean of calcium and mineral build up, they save energy by taking less space and consuming less power and operate at atmospheric pressure. The self-cleaning system automatically flushes the tank repeatedly, every time the unit is turned off. The optional two-stage operation improves the use of steam rooms by keeping them full of steam all the time. The "Standby Binary" function makes steam rooms with light usage more economical. The drain cooling function cools down the draining water without using an additional cool-down tank. .

1. GENERAL
	1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Steam generator for steam rooms.
		2. Piping, valves, and fittings required for connection of steam generator to steam heads, water inlets, and drain and safety pressure relief outlets.
		3. Electrical connection to building power supply, including wiring, disconnect switch and circuit breaker.
	1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete sections below not relevant to this project; add others as required.

* + 1. Section 22 40 00 - Plumbing Fixtures.
		2. Section 22 31 00 - Domestic Water Softeners.
		3. Section 26 05 00 - Common Work Results for Electrical.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00.
		2. Manufacturer's data sheets on each product to be used, including:
			1. Preparation instructions and recommendations.
			2. Storage and handling requirements and recommendations.
			3. Installation methods.

\*\* NOTE TO SPECIFIER \*\* Typically, shop drawings are required it can be found at [www.arcat.com/details/steamsau/prod0612.html.](http://www.arcat.com/details/steamsau/prod0612.html.)

* + 1. Shop Drawings: Layouts showing equipment location, piping runs, and electrical connections.
		2. Operating and Maintenance Data: Complete instructions for Owner's staff on operation, preventive maintenance, and troubleshooting.
	1. DELIVERY, STORAGE, AND HANDLING
		1. Verify the equipment and enclosed parts against packing list, then re-seal and store products in manufacturer's packaging until ready for installation.
	2. WARRANTY

\*\* NOTE TO SPECIFIER \*\* Delete one of the following warranty durations. 5 year warranty is available only for residential applications.

* + 1. Provide manufacturer's standard three (3) year limited warranty on commercial steam generators.
		2. Provide manufacturer's standard five (5) year limited warranty on residential steam generators.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: Steam Sauna Inc., which is located at: 210 S. 8th St. P. O. Box 670 - 50; Lewiston, NY 14092; Toll Free Tel: 800-354-8462; Tel: 716-838-8003; Fax: 716-838-6600; Email: [request info (sales@steam-sauna.com)](http://admin.arcat.com/users.pl?action=UserEmail&company=Steam+Sauna+Inc.&coid=38672&rep=&fax=716-838-6600&message=RE:%20Spec%20Question%20(13035sts):%20%20&mf=); Web: [www.steam-sauna.com](http://www.steam-sauna.com)

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

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* 1. ES SERIES STEAM GENERATORS
		1. General: Executive series are heavy duty compact commercial steam generators 9 inches W x 24 inches L x 16 inches H (229 mm x 610 mm x 406 mm) for models up to ES30, and 14 inches W x 27 inches L x 24 inches H (355 mm x 686 mm x 609 mm) for models up to ES60, with self-cleaning system, automatic power flush, with drain cooling system, 24 hour/ 7day timer, electronic digital thermostat/ sensor, 2-in-1 (constant steam) or standby binary system, low-watt density heating elements, and Type 316 stainless steel tank with sloped bottom, operating at atmospheric pressure and capable of operating in line with scent dispenser.

\*\* NOTE TO SPECIFIER \*\* Select Model based on required capacity, which is determined by room volume. Delete 12 of the next 13 paragraphs. - To calculate the steam room volume if one unit for one room selected, V (cuft) = Length (ft) x Width (ft) x Height (ft). For example if the room volume is 950 cubic feet, then specify ES15. - If one unit for 2 rooms selected, and having met these two conditions a) similar room volumes b) equal distance from steam generator to each room; first add the volumes of 2 rooms, then select the next range in the table, e.g. if the total volume of both rooms is 950 cuft, then select Model ES18. - For room size over the standard range, contact Steam Sauna for design assistance.

* + - 1. Model: ES7.5:
				1. Maximum Power Rating: 7.5 KW.
				2. Cubic Foot Capacity: Up to 375 Cubic Feet (10.6 cu m).
			2. Model: ES9:
				1. Maximum Power Rating: 9 KW.
				2. Cubic Foot Capacity: Up to 500 Cubic Feet (14.2 cu m).
			3. Model: ES12:
				1. Maximum Power Rating: 12KW.
				2. Cubic Foot Capacity: Up to 750 Cubic Feet (21.2 cu m).
			4. Model: ES15:
				1. Maximum Power Rating: 15 KW.
				2. Cubic Foot Capacity: Up to 1000 Cubic Feet (28.3 cu m).
			5. Model: ES18:
				1. Maximum Power Rating: 18 KW.
				2. Cubic Foot Capacity: Up to 1250 Cubic Feet (35.4 cu m).
			6. Model: ES21:
				1. Maximum Power Rating: 21 KW.
				2. Cubic Foot Capacity: Up to 1500 Cubic Feet (42.5 cu m).
			7. Model: ES24:
				1. Maximum Power Rating: 24 KW.
				2. Cubic Foot Capacity: Up to 1750 Cubic Feet (49.6 cu m).
			8. Model: ES27:
				1. Maximum Power Rating: 27 KW.
				2. Cubic Foot Capacity: Up to 1875 Cubic Feet (53.1 cu m).
			9. Model: ES30:
				1. Maximum Power Rating: 30 KW.
				2. Cubic Foot Capacity: Up to 2000 Cubic Feet (56.6 cu m).
			10. Model: ES36:
				1. Maximum Power Rating: 36 KW.
				2. Cubic Foot Capacity: Up to 2250 Cubic Feet (63.7 cu m).
			11. Model: ES42:
				1. Maximum Power Rating: 42 KW.
				2. Cubic Foot Capacity: Up to 2400 Cubic Feet (66.6 cu m).
			12. Model: ES48:
				1. Maximum Power Rating: 48 KW.
				2. Cubic Foot Capacity: Up to 2685 Cubic Feet (74.6 cu m).
			13. Model: ES60:
				1. Maximum Power Rating: 60 KW.
				2. Cubic Foot Capacity: Up to 3285 Cubic Feet (91.2 cu m).
		1. Operation:

\*\* NOTE TO SPECIFIER \*\* Select the next paragraph if the 2 in 1 system is specified, which suits applications with continuous use of steam room without user interface.

* + - 1. 2 in 1 System:
				1. Multiple heating stages, which are controlled by electronic thermostat. When the room is cold, all the stages work together to bring the room to the setpoint, then only the first stage (low KW), which is set at a higher setpoint keeps steaming, the room will always remain steamy and at setpoint.

\*\* NOTE TO SPECIFIER \*\* Select the next two paragraphs if the standby system is specified, for applications, where steam room is used intermittently..

* + - 1. Standby Binary System:
				1. Steam is kept on demand. The unit produces steam whenever user activates a timer switch, and it goes into standby mode, when there is no demand or the time is elapsed. This system saves energy by staying in standby mode, when it is not being used.
				2. Binary Setting: Allows operating the room at two temperature setpoints. When activated, the room temperature jumps to primary setpoint, but when there is no demand for extra steam, the room temperature is maintained at secondary (lower) setpoint. Both setpoints are adjustable by operator through an electronic thermostat, enabling operator to maintain the room temperature.

\*\* NOTE TO SPECIFIER \*\* Delete all but one of the following electrical characteristics. Verify project power characteristics.

* + - 1. Electrical Characteristics: 220 V AC, single phase.
			2. Electrical Characteristics: 220 V AC, three phase.
			3. Electrical Characteristics: 240 V AC, single phase.
			4. Electrical Characteristics: 240 V AC, three phase.
			5. Electrical Characteristics: 208 V AC, single phase.
			6. Electrical Characteristics: 208 V AC, three phase
			7. Electrical Characteristics: 380 V AC, single phase.
			8. Electrical Characteristics: 380 V AC, three phase
			9. Electrical Characteristics: 480 V AC, single phase.
			10. Electrical Characteristics: 480 V AC, three phase.
			11. Electrical Characteristics: 600 V AC, single phase.
			12. Electrical Characteristics: 600 V AC, three phase.

\*\* NOTE TO SPECIFIER \*\* The following manual controls are suitable for applications where the user controls operation. Delete one of the following two paragraphs of controls as necessary for project.

* + 1. Steam Controls:

\*\* NOTE TO SPECIFIER \*\* Delete all but one of the following two paragraphs.

* + - 1. 30-minute mechanical timer, located outside steam room.
			2. 30-minute electronic touch timer with indicator light, instant on/off, located inside/ outside steam room.

\*\* NOTE TO SPECIFIER \*\* The following digital controls are mounted on the steam unit, where the facility management controls operation, not the users.

* + - 1. Digital Programmable 24-hour, 7-day daily schedule timer.
			2. Programmable digital thermostat for controlling steam room's temperature.

\*\* NOTE TO SPECIFIER \*\* Select the next paragraph if a water softener system is required. Using a water softener prevents the deposit of sediment in the steam room, reduces the maintenance of steam room, also increases the efficiency and life of boiler.

* + 1. Water Softener Characteristics:
			1. Efficiency: 5030 at 2.0 Grains/lb of salt.
			2. Service Flow Rate: 12 gpm.
			3. Total Recharge Minutes: 18 minutes.
			4. Recharge Water Used: 13.3 gal (50.4 ltr).
			5. Maximum Salt Storage Capacity: 30 lbs (13.6 Kg).
			6. Maximum Drain Flow Rate: 2.4 gpm.
			7. Operating Voltage: 120 V AC,60Hz / 220 V AC, 50Hz.
			8. Dimensions: 18.5 inches L x 11.25 inches W x 22 inches H (470 mm x 286 mm x 559 mm).

\*\* NOTE TO SPECIFIER \*\* The following scent dispenser is used to inject fragrance into the steam room.

* + 1. Scent Dispenser: Peristaltic pump with integral drive motor that continuously injects fragrance directly into steam line.
			1. Control: Remote relay to activate when steam generator is activated.
			2. Operating flow rate: 25-100 micro liter/minute.
			3. Operating Temperature: 32 to 105 F (0 to 40 C).
			4. Electrical Characteristics: 120 V AC to 240 V AC nominal.
			5. Dimensions: 5.3 inches L x 5.5 inches W x 7.5 inches H (135 mm x 139 mm x 190 mm).
			6. Weight: 4.1 lbs.
		2. Steam Heads: With reservoir for fragrance, designed to pump the soft steam quietly.

\*\* NOTE TO SPECIFIER \*\* Select Finish. Delete three of the next four paragraphs.

* + - 1. Finish: Chrome plated brass.
			2. Finish: Polished brushed-nickel brass.
			3. Finish: Gold-plated brass.
			4. Finish: Silver-plated brass
		1. Piping, Fittings, and Valves:
			1. Water Input: 1/4 inch (6 mm) diameter copper pipe, branches of the 1/2 inch (13mm) line; provide shutoff valve and 10-micron sediment filter.
			2. Automatic Pressure Flush: 1/2 inch (12 mm) diameter copper pipe from city water supply; compression connector; provide shutoff valve and pressure reducer to reduce to 30 to 40 psi (207 to 276 kPa) and sediment filter.
			3. Drain: 1 inch (25 mm) diameter; copper pipe slopped to floor drain.
			4. Steam Piping: 3/4 inch (19 mm) diameter outlets with compression connector; run 1 inch (25 mm) diameter copper pipe with copper or brass fittings to steam room.
			5. Safety Pressure Relief Valve (10 psi or less): 3/4 inch (19 mm) copper pipe run to a safe location such as a floor drain.
			6. Steam Heads: 2 steam heads (3/4 inch FPT provided with the unit).
		2. Steam Line Pipe Insulation: Rigid molded fiberglass or flexible blanket fiberglass intended for high temperature piping.
	1. SIGNATURE (SS) SERIES STEAM GENERATORS
		1. General: Used in light duty commercial applications, where the customer traffic is less than regular commercial applications. It produces steam on demand. By activating a timer switch, the unit starts steaming for a specified duration, during which the temperature is also controlled. Upon timer cycle completion, the unit rests in standby mode.

\*\* NOTE TO SPECIFIER \*\* Select Model based on required capacity, which is determined by room volume and finishes. Delete four of the next five paragraphs. - To calculate the steam room volume, V (cuft) = Length (ft) x Width (ft) x Height (ft). - The values are given based on the ceramic tile finish in steam room. If natural stone, marble, slate or granite is used to finish the steam room, double the cubic footage requirements. For room size over the standard range, contact Steam Sauna for design assistance.

* + - 1. Model: SS7.5:
				1. Maximum Power Rating: 7.5 KW.
				2. Cubic Foot Capacity: Up to 250 Cubic Feet (7.1 cu m).
			2. Model: SS9:
				1. Maximum Power Rating: 9 KW.
				2. Cubic Foot Capacity: Up to 300 Cubic Feet (8.5 cu m).
			3. Model: SS12:
				1. Maximum Power Rating: 12KW.
				2. Cubic Foot Capacity: Up to 400 Cubic Feet (11.3 cu m).
			4. Model: SS15:
				1. Maximum Power Rating: 15 KW.
				2. Cubic Foot Capacity: Up to 500 Cubic Feet (14.2 cu m).
			5. Model: SS18:
				1. Maximum Power Rating: 18 KW.
				2. Cubic Foot Capacity: Up to 600 Cubic Feet (17.0 cu m).

\*\* NOTE TO SPECIFIER \*\* Select power source. Delete one of the next two paragraphs.

* + - 1. Power Source: 240 V AC / Single Phase.
			2. Power Source: 240 V AC / 3 Phase.
		1. Automatic Flush: Flushes sediment and calcium out at the end of daily schedule. Keeps the boiler tank and heating elements clean, increasing efficiency and saving energy. The water is cooled down before hitting the drain (Drain cooling feature).
		2. Digital time and temperature control: Adjusts the steam room temperature through a digital thermostat. Also can program the daily schedule to start the unit in the morning and auto flush at the end of daily schedule automatically.
	1. RESIDENTIAL SERIES STEAM GENERATORS
		1. General: Residential series steam units are designed for steam rooms in houses, cottages, etc. They have a compact design and provide steam quickly and efficiently.

\*\* NOTE TO SPECIFIER \*\* Select Model based on required capacity, which is determined by room volume and finishes. Delete four of the next five paragraphs. - To calculate the steam room volume, V (cuft) = Length (ft) x Width (ft) x Height (ft). - The values are given based on the ceramic tile finish in steam room. If natural stone, marble, slate or granite is used to finish the steam room, double the cubic footage requirements. For room size over the standard range, contact Steam Sauna for design assistance.

* + - 1. Model: 100:
				1. Maximum Power Rating: 4.5 KW.
				2. Cubic Foot Capacity: Up to 100 Cubic Feet (2.8 cu m).
			2. Model: 150:
				1. Maximum Power Rating: 6.5 KW.
				2. Cubic Foot Capacity: Up to 175 Cubic Feet (5.0 cu m).
			3. Model: 250:
				1. Maximum Power Rating: 9 KW.
				2. Cubic Foot Capacity: Up to 275 Cubic Feet (7.8 cu m).
			4. Model: 300:
				1. Maximum Power Rating: 11 KW.
				2. Cubic Foot Capacity: Up to 350 Cubic Feet (9.9 cu m).
			5. Model: 400:
				1. Maximum Power Rating: 13 KW.
				2. Cubic Foot Capacity: Up to 425 Cubic Feet (12.0 cu m).

\*\* NOTE TO SPECIFIER \*\* Select power source. Delete one of the next two paragraphs.

* + - 1. Power Source: 240 V AC / Single Phase.
		1. Operation:

\*\* NOTE TO SPECIFIER \*\* Select Operation method. Delete two of the next three paragraphs.

* + - 1. Regular (R): Designed for the places that there is no access to the floor drain to implement the Auto Flush function.
			2. Manual Flush (MF): Equipped to a manual shut-off valve, so the user can flush the unit into a pale or to the floor drain manually.
			3. Auto Flush (AF): Equipped with an automatic flush valve, which flushes the unit automatically after each bath. The water is cooled-down before hitting the drain (drain cooling feature).
		1. Controls:

\*\* NOTE TO SPECIFIER \*\* Select control device. Delete five of the next six paragraphs.

* + - 1. Mechanical 30 Min Timer: Can run the unit by activating a timer switch for desired period of time up to 30 Min. It shuts off the unit after the time runs out.
			2. Electronic 30 Min Timer with Button: Can run the unit by pushing a button that activates an electronic timer. It shuts off the unit after the time elapsed.
			3. Air Switch: It is a switch, which can be activated by press of a button that is connected to the switch through air tubing. It can start or stop the steam per demand.
			4. Electronic 4-in-1 controller: It can set the temperature in the steam room, set the duration of steaming, automatically turn on/off the steam unit and has a clock with digital display. It may be installed outside steam room at a location where user can have access to it.
			5. Blue-Designer Digital Controller: It sets temperature and time in the steam room. It's digital LED display makes it easy to operate, and can be installed inside/outside steam room.
			6. Electronic 30 minute timer with button and power adjusting volume; can adjust the power of steam up to 9 kW, also run it for 30 minutes.
1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until substrates have been properly prepared.
		2. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
	2. PREPARATION
		1. Install the steam unit in a dry and ventilated location (e.g. mechanical room on a shelf 36 inches high). Keep a minimum clearance of 4 inches from each side, and make the front panel accessible (for setting the controls and maintenance).
		2. A proper source of power, a 1/2 inch (13mm) water supply line and a floor drain should be available at the location designated to install the steam unit.
	3. INSTALLATION
		1. Install in accordance with manufacturer's instructions.

\*\* NOTE TO SPECIFIER \*\* Retain the next paragraph only if ES Series Steam Generators are specified.

* + 1. Plumbing:
			1. Install a sediment filter and pressure reducing valve (set at 30-40 PSI) on 1/2 inch (13mm) copper pipe that connects water supply to the power flush valve. A 1/4 inch (6mm) pipe branching off the 1/2 inch (13mm) line feeds the water inlet valve.
			2. Slope the pipe carrying the flushed water from the bottom of the unit to the floor drain.
			3. The steam unit has 2 steam outlets on top, which will carry the steam to the steam room through 1 inch copper pipes. Avoid creating steam trap while running the steam line.
			4. Install a safety relief valve (10 PSI or less) branching from one of the steam outlets, with a 3/4 inch (19mm) copper pipe directing the blow-off steam to the floor drain.
			5. Install 2 steam heads in the steam room 6 to 12 inches (152 to 305mm) above the floor and minimum 6 inches apart.
		2. Electrical:
			1. Install a disconnect switch in the vicinity of the steam unit to switch the power to the unit from the circuit breaker in the main distribution panel. Circuit breaker, disconnect switch and cable sizes and ratings should be selected according to local electrical codes.
			2. Install a temperature probe in the steam room 5 inches (127mm) above the door's top and below the ceiling and in opposite corner of the room from where the steam heads are installed. The probe must be connected to the digital thermostat on the steam unit.
			3. Install the timer outside/ inside each steam room to activate steam on demand.
		3. Follow the Start up procedure and ensure proper operation (refer to installation manual). Provide training to personnel if needed.
		4. Insulate steam piping after completion of startup procedures.
	1. PROTECTION
		1. Protect installed products until completion of project.
		2. Ensure the installed product is in good condition before Substantial Completion.

END OF SECTION