

SERIES 4S FORCED DRAFT PACKAGED SCOTCH TYPE BOILERS SUGGESTED SPECIFICATION

Note: To use as a project specification:

- A. Insert in the blank spaces provided, the applicable model number, capacity, fuel, and electrical data.
- B. Delete the items in parentheses, or the items marked *, which are not applicable to the project requirements.
- C. Insert, where applicable, optional non-standard features desired.

SPECIFICATION

Boilers:

Furnish and install _____ forced draft four-pass firetube type full wet back Scotch type factory packaged boilers for (No. _____ oil) (_____ gas) (combination _____ gas and No. _____ oil) complete with fuel burning equipment, safety and operating controls, and appurtenances as hereinafter specified. The boiler unit(s) shall be fully assembled and wired at the manufacturer's factory, requiring only connection to power, fuel supply and system piping to be ready for operation.

1. Boiler unit(s) shall be Burnham model number _____ as manufactured by Burnham Corporation designed for (15 psi steam) (150 psi steam with safety valve(s) set to relieve at _____ psi) (_____ psi water with relief valve(s) set to relieve at _____ psi), and shall have a gross output of _____ MBH or _____ boiler horsepower. Boiler heating surface measured on the fireside shall be not less than five square feet per boiler horsepower.
2. Boiler(s) shall be of the four-pass full wet-back firetube design, with three passes of fire tubes. Use of cast refractory baffling to provide the second or third pass shall not be permitted. All tubes shall be set with roller expander at each end, and shall be flared. Pressure vessel(s) shall be constructed, tested and marked in accordance with Section IV, Low Pressure Heating Boilers, or Section I, High Pressure Boilers of the ASME Code, as applicable for the working pressure herein before specified, and shall be registered with the National Board of Boiler and Pressure Vessel Inspectors.
3. Boiler(s) shall be mounted on a heavy structural steel base with extension beyond boiler front for protection of burner. The burner shall be mounted at the front of the boiler, with all mechanical equipment mounted on the boiler base, except those items necessarily remote mounted due to size or operational function.
4. Boiler(s) shall be provided with top vent connection with locking quadrant damper at the front of the boiler. Hinged flue doors shall provide full access opening to the rear tube sheets, hinged gas tight front flue cleanout doors with refractory lining keyed in place and providing access to front tube sheet without disconnecting any fuel lines or electrical wiring, sixteen inch diameter rear furnace access door with Pyrex observation port, factory installed enameled steel jacket with two inch fiberglass insulation, lifting lugs, and connections for controls, supply and return piping, and bottom blowdown.

*5a. Trim and controls for steam boiler(s) shall consist of steam pressure gauge, ASME side outlet safety valve(s) set to relieve at _____ psi, combination pump controller and low water cut-off with integral water column and three try-cocks, auxiliary probe type manual reset low water cutoff, operating steam pressure control, manual reset high limit pressure control, [and firing rate controller with (lo-hi-lo) or (modulation) firing sequence.]

*5b. Trim and controls for water boiler(s) shall consist of pressure/altitude gauge (sizes to 100HP) or thermometer and pressure gauges (125HP and larger), ASME relief valve(s) set to relieve at _____ psi, float type low water cut-off with manual reset and test and check valves, operating water temperature control, manual reset high limit temperature control, and firing rate controller with (lo-hi-lo) or (modulation) firing sequence.

6. **Fuel Burning Equipment** - The burner(s) shall be factory installed and wired, shall incorporate all necessary devices and controls to make a complete fuel burning system for the type of fuel herein before specified, and shall bear the listing of Underwriters Laboratories, Inc. evidencing compliance with requirements of UL-296 for oil burners and UL-795 for gas burners.

*Oil burners for No. 2 oil shall be of the forced draft pressure atomizing type, complete with integral motor driven blower, oil pump, oil nozzle(s), oil solenoid valve(s), ignition assembly, combustion safeguard, motor starters, and all necessary controls for safe and efficient operation in accordance with UL requirements and (FM requirements) (and IRI requirements).

Note: Insert additional details such as desired combustion safeguard, firing sequence, and/or other features to meet project requirements.

*Oil burners for (No. 2 oil) (No. 4 oil) (No. 5 oil) (No. 6 oil) shall be of the forced draft low pressure air atomizing type complete with integral motor driven blower, air compressor, oil supply pump, atomizing assembly, ignition assembly, combustion safeguard, motor starters, and all necessary controls for safe and efficient operation in accordance with UL requirements (and FM requirements) (and IRI requirements).

Note: Insert additional details such as desired combustion safeguard, firing sequence, oil heating equipment for heavy oil, and/or other features to meet project requirements.

*Gas burners shall be of the forced draft multi-jet type suitable for burning _____ gas with heat content of _____ BTU per cubic foot and specific gravity of _____ delivered to the gas train inlet at a pressure of (_____ inches w.c.) (_____ psig). Burner shall be complete with integral motor driven blower, ignition assembly, combustion safeguard, motor starter, complete gas train included gas pressure regulator and dual gas valves, and all necessary controls for safe and efficient operation in accordance with UL requirements (and FM requirements) (and IRI requirements).

Note: Insert additional details such as desired combustion safeguard, firing sequence, and/or other features to meet project requirements.

*Combination gas/oil burner shall consist of an integral assembly of a forced draft pressure atomizing oil burner suitable for burning No. 2 oil and a forced draft multi-jet type gas burner suitable for burning _____ gas with a heat content of _____ BTU per cubic foot and specific gravity of _____ delivered to the gas train inlet at a pressure of (_____ inches w.c.) (_____ psig). Burner shall be complete with integral motor driven blower, oil pump, oil nozzle(s), oil solenoid valve(s), ignition assembly, combustion safeguard, motor starters, complete gas train including gas pressure regulator and dual gas valves, and all necessary controls for safe and efficient operation in accordance with UL requirements (and FM requirements) (and IRI requirements). Changeover to either fuel shall be by means of a manual selector switch, which shall energize only those circuits necessary to provide the appropriate timing and sequence of events for the fuel selected, except that the oil pump may

continue to operate when firing gas. No burner adjustments or re-positioning of control linkage shall be required when changing from one fuel to the alternate fuel.

Note: Insert additional details such as desired combustion safeguard, firing sequence, and/or other features to meet project requirements.

*Combination gas/oil burners shall consist of an integral assembly of a forced draft low pressure air atomizing oil burner suitable for burning (No. 2 oil) (No. 4 oil) (No. 5 oil) (No. 6 oil) and a forced draft multi-jet type gas burner suitable for burning _____ gas with a heat content of _____ BTU per cubic foot and specific gravity of _____ delivered to the gas train inlet at a pressure of (_____ inches w.c.) (_____ psig). Burner shall be complete with integral motor driven blower, air compressor, oil supply pump, atomizing assembly, ignition assembly, combustion safeguard, motor starters, complete gas train including gas pressure regulator and dual gas valves, and all necessary controls for safe and efficient operation in accordance with UL requirements (and FM requirements) (and IRI requirements). Changeover to either fuel shall be by means of a manual selector switch which shall energize only those circuits necessary to provide the appropriate timing and sequence of events for the fuel selected , except that the oil pump may continue to operate when firing gas. No burner adjustments or repositioning of control linkage shall be required when changing from one fuel to the alternate fuel.

Note: Insert additional details such as desired combustion safeguard, firing sequence, and/or other features to meet project requirements.

7. Electrical supply to the boiler(s) will be _____ volts _____ hz _____ phase.
All control circuits shall be 120 volts, 60 hz, 1 phase, with all switches in the ungrounded leg. Fuse protection for the control circuit shall be provided.