

# HE-RV Series

## Water Boilers Forced Draft Gas

The boiler shall be a Bryan Model \_\_\_\_\_ flexible water tube boiler, with a capacity of \_\_\_\_\_ BTUH input and \_\_\_\_\_ BTUH output. (\_\_\_\_\_ HP)

The boiler shall be constructed and assembled as a completely packaged unit ready for field connections to the water supply, return connection, electrical power supply, fuel supply(s), relief valve discharge, building management controls and flue-gas vent.

The water boiler shall be manufactured in strict accordance with the ASME Heating Boiler Code, Section IV, and shall bear the ASME "H" stamp for a maximum design of 160 PSIG pressure / 250°F temperature.

The boiler shall also be built to withstand 150 degree delta "T".

The boiler shall have no less than 7 sq. feet of heating surface per boiler horsepower and shall be built with an integrated extended surface heat extractor and be guaranteed for 85% combustion efficiency.

### VESSEL AND TUBE CONSTRUCTION

The boiler shall be constructed on a heavy steel frame. The boiler pressure vessel shall be provided with adequately sized upper and lower drums. A minimum of two downcomers shall be provided and shall be located inside the furnace chamber to maximize proper thermal internal water circulation. No external water circulation source shall be required. Steel water tubes are to be 1 1/2" O.D., .095 wall thickness, six-pass, flexible serpentine bend design, not subject to thermal shock damage. Individual water tubes shall be easily removable and replaceable without either welding or rolling. The boiler shall have no more than two tube configurations. The boiler shall be furnished with an adequate number of tappings and inspection openings to facilitate internal boiler inspection and cleaning.

### FURNACE/COMBUSTION CHAMBER CONSTRUCTION

Access to the furnace/combustion chamber is gained by a hinged access door(s) with an opening of no less than 26" wide x 62" high maximum to allow for inspection of the interior

chamber and the burner head. All panels shall be individually removable. All 11 gauge access panels shall be affixed to the pressure vessel frame and insulated with 2" mineral fiber mono block and 3" high temperature ceramic blanket insulation and be fully gasketed for pressurized firing.

The furnace/combustion chamber shall be primarily of water-wall design with one side of removable panels. The stationary 11 gauge interior wall shall be lined with 2" ceramic blanket insulation. The front and rear walls are insulated with 5" mineral fiber mono block and 2" ceramic blanket. The floor beneath the tubes shall be lined with 2" mineral fiber mono block insulation and 2" ceramic blanket. The boiler furnace/combustion chamber and flueways shall be designed to operate at a positive 0.50" w.c. at the boiler flue outlet. The boiler will require a "positive pressure" type metal flue.

### JACKET CONSTRUCTION

The boiler shall be complete with a metal jacket, 18 gauge, zinc-coated rust resistant steel casing, finished with a durable heat resisting paint and shall be constructed on a structural steel frame and properly insulated with no less than 1 1/2" fiberglass insulation. Complete jacket and insulation shall be easily removable and reinstalled. The boiler shall incorporate individually removable jacket doors, with handles providing easy access to combustion chamber and access panels. The entire tube area shall be easily accessible for fireside cleaning.

All appropriate controls where possible, shall be mounted on boiler front.

A tube removal and replacement shall be demonstrated at time of start-up. Demonstration time not to exceed 40 minutes.

The boiler vessel shall be warranted for 25 years against thermal shock on a non-pro-rated basis.

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Bryan Flexible-Tube Boilers  
Sample Specification

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### BOILER TRIM AND CONTROL EQUIPMENT

1. Combination thermometer and pressure gauge
2. Water temperature control operator
3. High limit safety control
4. Low water cutoff
5. ASME safety relief valve(s)

### GAS BURNER AND CONTROL EQUIPMENT

Boiler shall be furnished with a UL listed forced draft flame retention gas burner. Burner shall be complete with integral motor and blower for supplying sufficient combustion air with normal vent conditions.

The following controls shall be furnished:

1. Main manual gas shutoff valves
2. Motorized gas valve operator and auxiliary safety shutoff gas valve (RV350 to RV500)
3. Motorized gas valve with proof of closure operator and auxiliary safety shutoff gas valve (RV550 to RV800)
4. High and low gas pressure switches
5. Gas pilot shutoff and solenoid valves
6. Gas pilot ignition assembly with ignition transformer
7. Pilot and main gas pressure regulators
8. Two-stage high-low burner with proven LFS (RV350 to RV450)
9. Modulating burner (RV500 to RV800)
10. Adjustable cam gas metering valve (RV500 to RV800)
11. Burner mounted control panel furnished with:
  - Five signal indicators – power on, call for heat, ignition on, fuel on and alarm
  - Air safety switch
  - Fused on / off switch
  - Honeywell electronic combustion safety control
  - Firing rate potentiometer with manual / auto switch (RV500 to RV800)
  - Motor starter(s) – where applicable

### OPTIONAL BOILER TRIM & CONTROLS

1. Manual reset type high limit
2. Manual reset type low water cutoff
3. Auxiliary low water cutoff(s)
4. UL, GE-GAP, CSD-1, FM or other insurance requirements

5. Barometric damper
6. Other controls and boiler trim, as specified

### OPTIONAL BURNER CONTROLS AND ACCESSORIES

1. Modulating burner (RV350 to RV450)
2. Auxiliary motorized safety shut off gas valve
3. Alarm bell(s) or horn(s)
4. Fireye combustion safety control
5. UL, GE-GAP, CSD-1, FM or other insurance requirements
6. Indicator lights – as specified
7. Adjustable cam gas metering valve (RV350 to RV450)
8. Boiler skid mounted burner control panel
9. Lead lag systems for two or more boilers
10. Sub 30 PPM Lo Nox burner
11. Other controls, as specified