DR Series

Water Boilers
Forced Draft Gas, Oil, Gas/Oil Fired

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 working pressure of 160 PSIG at 250 deg F temperature.

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

(Also available for higher pressures up to 250 PSIG and temperatures to 300°F per ASME Section I).

The boiler shall have no less than 5 square feet of heating surface per boiler horsepower.

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 drum. 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" 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 an access door(s) with an opening of no less than 31" wide x 48" high maximum to allow for inspection of the interior chamber and the burner head. All panels shall be individually removable. All access panels shall be affixed to the pressure vessel frame and insulated with 2" mineral fiber mono block and 2" 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 interior wall shall be lined with 1" mineral fiber mono block and 1" ceramic blanket insulation. The front and rear walls are insulated with 4" 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 0.25" w.c. at the boiler flue outlet. The boiler will require a "positive pressure" type metal flue. Also supplied will be an over fire pressure tap, located in the front of the boiler to provide for easy access to combustion chamber testing.

JACKET CONSTRUCTION

The boiler shall be complete with a metal jacket, 16 gauge, zinc-coated rust resistant steel casing, finished with a suitable heat resisting paint and shall be constructed on a structural steel frame and properly insulated with no less than 1½" 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 jacket 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

DR Series

Water Boilers
Forced Draft Gas, Oil, Gas/Oil Fired

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. Combination pressure regulating automatic gas valve operator and auxiliary safety shutoff gas valve
3. Gas pilot shutoff and solenoid valves
4. Gas pilot ignition assembly with ignition transformer
5. Pilot and main gas pressure regulators
6. Burner will be furnished with:
   - Air safety switch
   - Honeywell electronic combustion safety control

OIL BURNER AND CONTROL EQUIPMENT

Boiler shall be furnished with a UL listed forced draft, pressure atomizing type oil burner, suitable for operation with No. 2 fuel oil. 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. Oil valves – primary and auxiliary
2. Ignition transformer
3. Oil ignition and nozzle assembly
4. Two stage fuel unit burner mounted
5. Oil nozzle assembly
6. Burner will be furnished with:
   - Honeywell electronic combustion safety control

DUAL FUEL GAS/OIL BURNER AND CONTROL EQUIPMENT

Boiler shall be furnished with a UL listed forced draft, pressure atomizing, dual fuel burner, suitable for operation with No. 2 fuel oil and natural gas (or other gas). 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. Same equipment as gas burner
2. Same equipment as oil burner
3. Gas pilot ignition assembly for both gas & oil ignitions
4. Manual fuel selection switch

OPTIONAL BOILER TRIM AND CONTROLS

1. Manual reset type high limit
2. Manual reset type low water cutoff
3. Auxiliary low water cutoff(s)
4. Low water cutoff feeder (in addition to, or in place of standard low water cutoff)
5. UL, IRI, CSD-1, FM or other insurance requirements
6. Barometric damper
7. Indirect water heating coils for domestic, pool, or process hot water
8. Electric heating in addition to fossil fuel burners
9. Provision for future electric heating element installation
10. Other controls and boiler trim, as specified

OPTIONAL BURNER CONTROLS AND ACCESSORIES

1. Two-stage high-low burner with proven LFS controls (DR650 & DR850)
2. Modulating burner (DR650 & DR850)
3. Auxiliary motorized safety shutoff gas valve
4. Alarm bell(s) or horn(s)
5. Fireye combustion safety control
6. UL, IRI, CSD-1, FM or other insurance requirements
7. Burner mounted control panel
8. Indicator lights – as specified
9. Direct spark ignition of oil (dual fuel burners)
10. Boiler skid mounted burner control panel
11. Boiler skid mounted burner oil pump set
12. Sub 30 PPM Low Nox burners (DR350 to DR850)
13. Other controls, as specified
14. Lead/lag system for two or more boilers