Form No. 5400-3
(Rev. 2/98)

## Bryan “Flexible Water Tube”

# RV Series Water Boilers

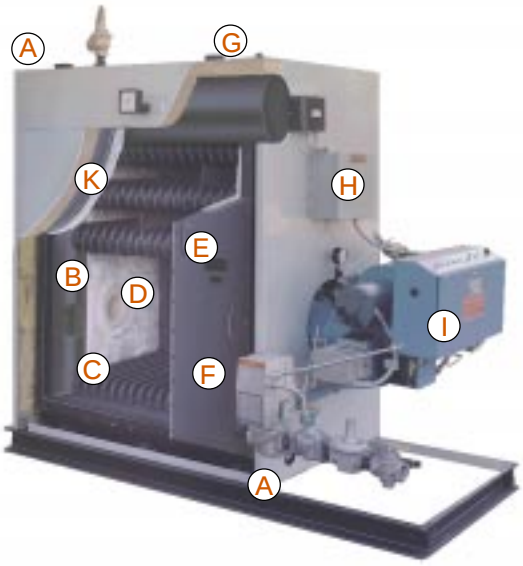
**2,500,000 to 8,000,000 BTUH**
**Forced draft gas, oil or dual fuel fired**


**BRYAN BOILERS**

*Originators of the “Flexible Water Tube” design*

# Low initial cost, high operating efficiency deliver substantial return on investment

**A.** Water side interior accessible for cleanout and inspection, front and rear openings, upper and lower drums.




**B.** Large volume water leg downcomers promote rapid internal circulation and temperature equalization.

**C.** Boiler tube and furnace area access panels: heavy gauge steel-lined with high temperature ceramic fiber and insulation, bolted and tightly sealed to boiler frame.

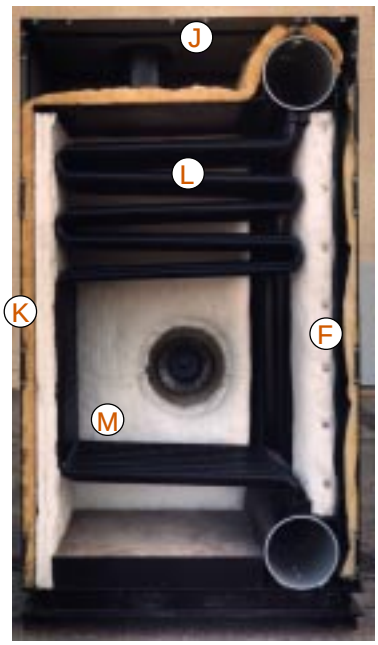
**D.** Flame observation port in access door at rear of boiler.

**E.** Access panel: Front panels provide easy access for inspection, cleaning and access to burner head.

**F.** Single side access; combustion chamber, tubes and burner head are completely accessible from one side simplifying maintenance and minimizing floor space.

**G.** Minimum sized flue vent.

## *All Bryan RV Series boilers feature these quality construction details*




**H.** Control panel: all controls installed with connections to terminal strip.

**I.** Forced draft, flame retention head type burner. Efficient combustion of oil or gas, quiet operation.

**J.** Heavy steel boiler frame, built and stamped in accordance with the appropriate ASME Boiler Code.

**K.** Heavy gauge steel boiler jacket with rust-resistant zinc coating and enamel finish, insulated with fiberglass to insure exceptionally cool outer surface.

**L.** Bryan bent water tubes are flexible, individually replaceable without welding or rolling. Never more than two tube configurations.

**M.** Internal water-cooled furnace with low heat release rate.

## *Bryan RV Series Boiler Specifications*

| BOILER MODEL | INPUT MBH (KW) | NOMINAL OUTPUT | | HTG. SURFACE SQ. FT. ($M^2$) | APPROX. SHIP WT. LBS. (KG) |
|---|---|---|---|---|---|
| | | MBH (KW)* | BHP * | | |
| RV250-W | 2,500 (732.4) | 2,000 (585.9) | 60 | 299 (27.7) | 5,580 (2,531) |
| RV300-W | 3,000 (878.9) | 2,400 (703.1) | 72 | 365 (33.9) | 6,370 (2,890) |
| RV350-W | 3,500 (1,025.9) | 2,800 (820.3) | 84 | 419 (38.9) | 7,000 (3,175) |
| RV400-W | 4,000 (1,171.9) | 3,200 (937.5) | 96 | 490 (45.5) | 7,690 (3,488) |
| RV450-W | 4,500 (1,318.4) | 3,600 (1,054.7) | 108 | 544 (50.5) | 8,320 (3,774) |
| RV500-W | 5,000 (1,464.9) | 4,000 (1,171.9) | 120 | 597 (55.4) | 9,080 (4,119) |
| RV550-W | 5,500 (1,611.4) | 4,400 (1,289.1) | 131 | 668 (62.0) | 9,820 (4,454) |
| RV600-W | 6,000 (1,757.9) | 4,800 (1,406.3) | 143 | 722 (67.1) | 10,530 (4,776) |
| RV700-W | 7,000 (2,050.9) | 5,600 (1,640.7) | 167 | 847 (78.7) | 11,960 (5,425) |
| RV800-W | 8,000 (2,343.9) | 6,400 (1,875.1) | 191 | 972 (90.3) | 13,450 (6,101) |

NOTES: * Nominal output based on boiler industry standard of 80% of input. Actual combustion efficiencies will be higher and fuel dependent.

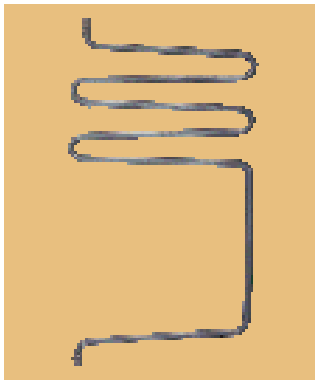
# Guaranteed high efficiency performance and easy maintenance insure low cost operation

## *All Bryan RV Series boilers offer these operating and performance features*

**Guaranteed efficiency**
The breakthrough in water tube boiler design that produced the RV Series provides operating efficiency so reliable, we guarantee it to be 83% or better.

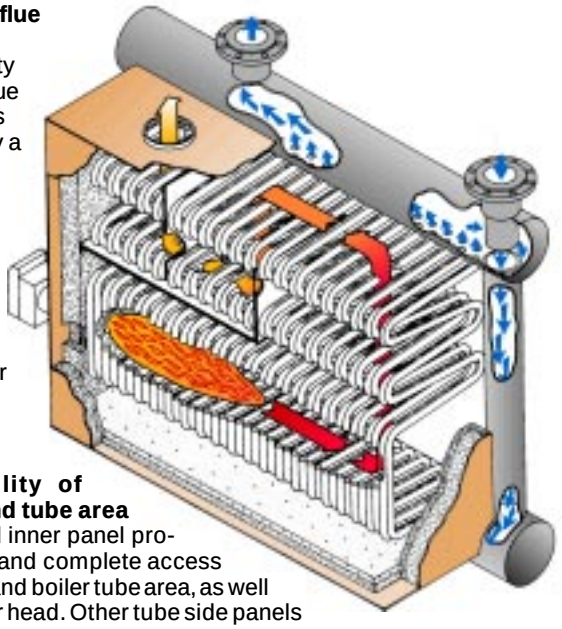
**The Bryan Flexible Tube**
Bryan's exclusive "Flexible Tube" design eliminates the possibility of damage from so-called "thermal shock." Tubes are easily removable and replaceable, without welding or rolling, eliminating long, expensive downtime should repairs ever be required.

**Compact design, minimum floorspace**
With our compact water tube design, the overall size of the unit is less than most other types of boilers, yet maintains a full five square feet of heating surface area per HP. Needing only 32" for tube removal, and on only one side of the boiler, the RV Series boiler occupies very little space in the boiler room. This can result in considerable savings in building costs. Pressurized firing permits minimum sized breaching and vent.



**Positive internal circulation**
Each pass of the Bryan water tube slopes upward. This configuration, along with the large volume downcomer water legs, provides the extremely rapid natural thermal internal circulation, promoting both high efficiency of heat transfer and uniform temperature throughout the boiler. Eliminating stress damage caused by unequal temperature distribution is especially important for heating systems, particularly where intermittent or continuous low temperature water returns may be encountered.

**Multi-pass flue gas travel**
High velocity four-pass flue gas travel is obtained by a unique baffling system. This contributes to maximum fire side heat transfer and overall high boiler efficiencies.



**Accessibility of furnace and tube area**
One hinged inner panel provides easy and complete access to furnace and boiler tube area, as well as to burner head. Other tube side panels are also removable, and all panels are heavily insulated and sealed to boiler frame. All access is from only one side.

**Thermal blend water return**
Bryan's unique "thermal blend" return blends cold or cooler return water with warmer boiler water abridging it to design operating temperatures. An injector tube directs the "mixed" water flow through the downcomer to the lower header and heating surfaces at a temperature above possible condensing conditions. This reduces the possibility of "cold spots" and damage from corrosive condensation.

**Water cooled furnace**
The configuration of the water tubes provides a water cooled combustion chamber. A high percentage of the heating surface is exposed to direct radiant heat, increasing water velocities and heat transfer.

## *Bryan RV Series Boilers Standard and Optional Equipment*

### *STANDARD EQUIPMENT FURNISHED*

**Gas fired, forced draft**
Combination thermometer and altitude gauge, ASME Code rated boiler relief valve, water temperature control (240°F Max. Std.), high limit control, probe LWCO, electronic combustion safety control, automatic operating gas valve, safety gas valve, pilot solenoid valve, pilot ignition assembly, main manual gas shut-off valve, pilot cock, pilot and main gas pressure regulators, air safety switch, control panel, all controls installed and wired.

**Oil fired, forced draft**
Combination thermometer and altitude gauge, ASME Code rated boiler relief valve, water temperature control (240°F Max. Std.), high limit control, probe LWCO, electronic combustion safety control, oil valve, oil ignition transformer, two-stage fuel unit, gas pilot, oil nozzle assembly, control panel, all controls installed and wired.

**Combination gas-oil forced draft**
Combination thermometer and altitude gauge, ASME Code rated boiler relief valve, water temperature control (240°F Max. Std.), high limit control, probe LWCO, automatic motorized gas valve, safety gas valve, pilot solenoid valve, pilot ignition assembly, main manual gas shut-off valve, pilot cock, pilot and main gas pressure regulators, air safety switch, manual fuel selector switch, electronic combustion safety control, oil valve, oil ignition transformer, two-stage fuel unit, oil ignition and nozzle assembly, control panel, all controls installed and wired.

### *OPTIONAL EQUIPMENT, EXTRA COST*

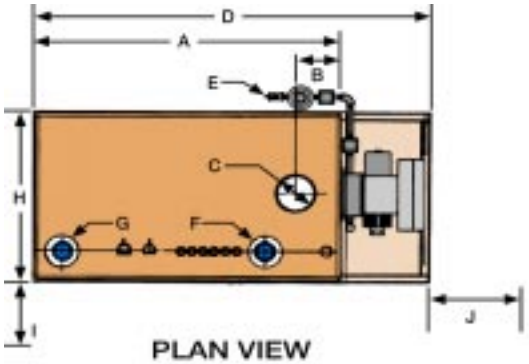
[1] Manual reset high limit control, installed
[2] Manual reset low water cutoff
[3] Auxiliary low water cutoff
[4] Combination low water cutoff and feeder
[5] Alarm bells or horns
[6] FM, IRI or other insurance approved control systems.
[7] Indicating lights, as desired
[8] Air atomizing oil burner
[9] Lead-lag systems for two or more boilers with or without outdoor reset control
[10] Draft control system
[11] Oxygen trim system

**Optional construction, high temperature hot water**
Optional construction to ASME Power Boiler Code requirements for temperatures exceeding 250°F and/or pressure exceeding 160 psi to maximum of 350°F and 300 psi, high temperature gauge and operating controls included.

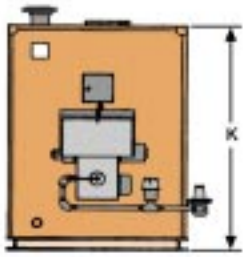
**When ordering, please specify:**

[1] Boiler size
[2] Supply and return temperatures required
[3] Boiler relief valve setting
[4] Type of fuel: natural, LP or other gas and/or No. 2 oil
[5] If gas, type, BTU content, specific gravity and pressure available
[6] Electric power voltage, phase and frequency
[7] Optional extra equipment or construction
[8] Special approvals required (FM, IRI or other)

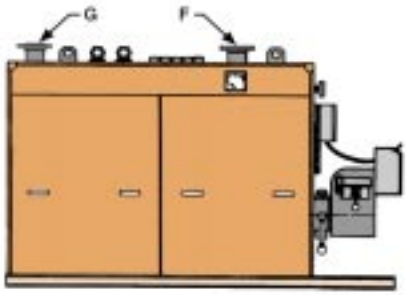
# Bryan RV Series Hot Water Heating Boilers



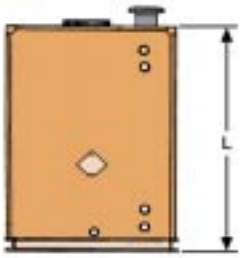

PLAN VIEW




FRONT VIEW




LEFT SIDE VIEW




REAR VIEW

**DIMENSIONS in inches (cm)**

| Boiler Model Number | A Length of Jacket | B Flue Location | C Flue Size | D Overall Length | E Gas Train Connection | F Supply Nozzle | G Return Nozzle | H Width Outside Jacket | I Min. Tube Removal Clearance | J Clearance for Servicing Burner | K Height Over Jacket | L Floor to Flow Nozzle |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RV250-W | 75 1/2 (191.77) | 13 1/4 (33.66) | 12 (30.48) | 108 1/4 (274.96) | 2 (5.08) | 4 (10.16) | 4 (10.16) | 50 (127.00) | 32 (81.28) | 48 (121.92) | 87 1/2 (222.25) | 90 (228.60) |
| RV300-W | 88 1/2 (224.79) | 16 1/4 (41.28) | 12 (30.48) | 121 (307.34) | 2 (5.08) | 4 (10.16) | 4 (10.16) | 50 (127.00) | 32 (81.28) | 48 (121.92) | 87 1/2 (222.25) | 90 (228.60) |
| RV350-W | 98 (248.92) | 16 (40.64) | 16 (40.64) | 130 1/2 (331.47) | 2 1/2 (6.35) | 4 (10.16) | 4 (10.16) | 50 (127.00) | 32 (81.28) | 48 (121.92) | 87 1/2 (222.25) | 90 (228.60) |
| RV400-W | 111 (281.94) | 18 3/4 (47.63) | 16 (40.64) | 143 1/2 (364.49) | 2 1/2 (6.35) | 4 (10.16) | 4 (10.16) | 50 (127.00) | 32 (81.28) | 48 (121.92) | 87 1/2 (222.25) | 90 (228.60) |
| RV450-W | 120 1/2 (306.07) | 18 3/4 (47.63) | 16 (40.64) | 153 1/4 (389.26) | 2 (5.08) | 6 (15.24) | 6 (15.24) | 50 (127.00) | 32 (81.28) | 48 (121.92) | 87 1/2 (222.25) | 90 (228.60) |
| RV500-W | 130 1/4 (330.84) | 18 3/4 (47.63) | 16 (40.64) | 163 (414.02) | 2 (5.08) | 6 (15.24) | 6 (15.24) | 50 (127.00) | 32 (81.28) | 48 (121.92) | 87 1/2 (222.25) | 90 (228.60) |
| RV550-W | 143 1/2 (364.49) | 18 3/4 (47.63) | 16 (40.64) | 175 3/4 (446.41) | 2 1/2 (6.35) | 6 (15.24) | 6 (15.24) | 50 (127.00) | 32 (81.28) | 48 (121.92) | 87 1/2 (222.25) | 90 (228.60) |
| RV600-W | 152 3/4 (387.99) | 18 3/4 (47.63) | 16 (40.64) | 185 1/4 (470.54) | 2 1/2 (6.35) | 6 (15.24) | 6 (15.24) | 50 (127.00) | 32 (81.28) | 48 (121.92) | 87 1/2 (222.25) | 90 (228.60) |
| RV700-W | 175 3/4 (446.41) | 20 3/4 (52.71) | 20 (50.80) | 214 1/2 (544.83) | 2 1/2 (6.35) | 6 (15.24) | 6 (15.24) | 50 (127.00) | 32 (81.28) | 48 (121.92) | 87 1/2 (222.25) | 90 (228.60) |
| RV800-W | 197 3/4 (502.29) | 20 3/4 (52.71) | 20 (50.80) | 237 1/4 (602.62) | 2 1/2 (6.35) | 6 (15.24) | 6 (15.24) | 50 (127.00) | 32 (81.28) | 48 (121.92) | 87 1/2 (222.25) | 90 (228.60) |

*Specifications subject to change without notice. Consult factory to consult on other boiler options.*

BRYAN BOILERS

***Bryan Steam Corporation — Since 1916***
P.O.Box 27, Peru, Indiana 46970-0027 U.S.A.
Phone: 765-473-6651 • Internet: www.bryanboilers.com
Fax: 765-473-3074 • E-mail: bryanboilers@iquest.net



Printed in USA
28-4717