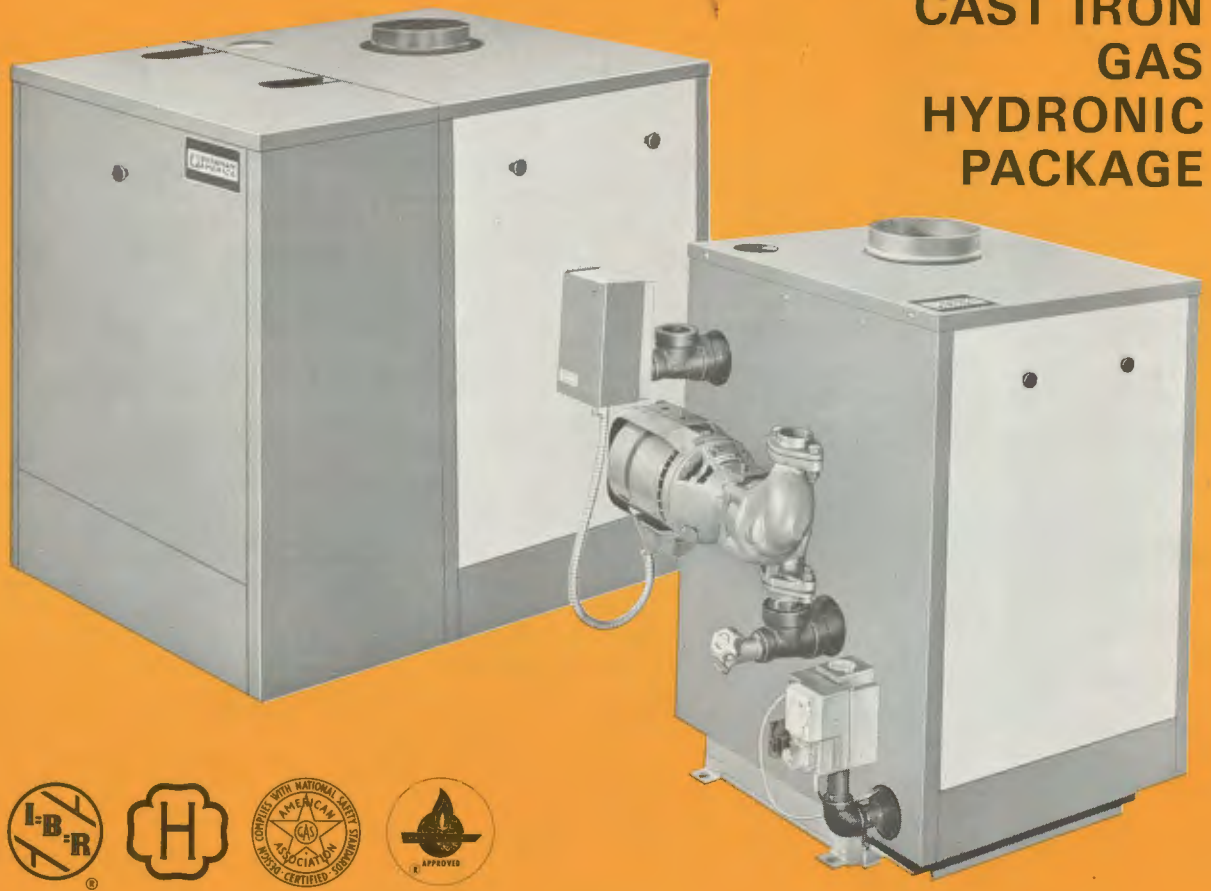
Series 22A

CAST IRON GAS HYDRONIC PACKAGE

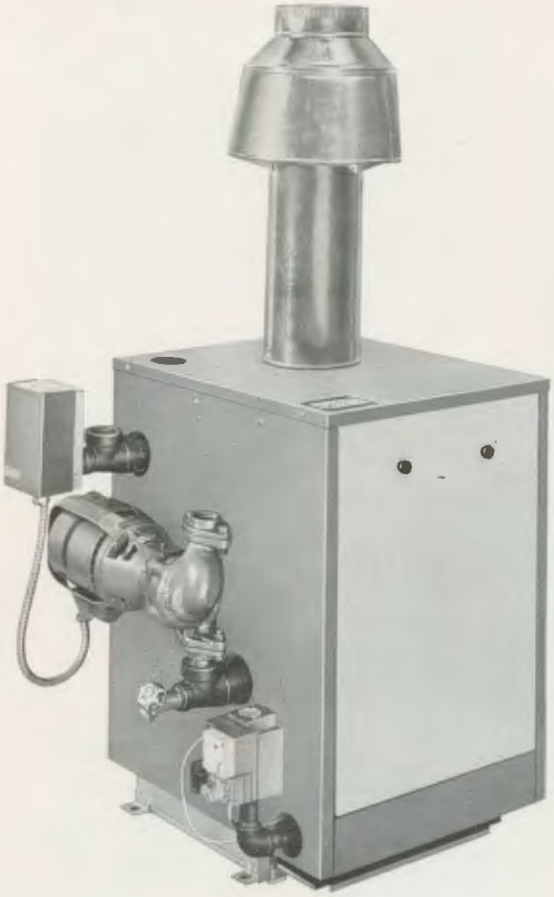


NATURAL OR PROPANE GAS HOT WATER

NINE SIZES: GROSS OUTPUTS—48,000 to 240,000 BTU/HR

BURNHAM AMERICA

BURNHAM AMERICA / Series 22A



The compact SERIES 22A is designed for modern tuck-away heating. Only 28⅝" high, it can be unobtrusively installed under stairs, in closets or remote corners. Because of its special base design, it can be safely installed on combustible floors.

The SERIES 22A is cast iron constructed for long life and highest heating performance. It is shipped completely packaged in a skid-bottom crate to make handling and installation easy and quick.

Completely factory assembled, this unit requires only system piping connection, gas and electric hook-up to put it into operation.

The SERIES 22A features a two tone jacket. An optional jacket extension conceals circulator and all controls for an appliance look that does not detract from any modern decor.

STANDARD EQUIPMENT

Factory assembled and shipped in skid-bottom crate.
Boiler
Flush Jacket
Circulator with Piping to Boiler:
- 1¼" on 3 thru 6 sections
- 1½" on 7 thru 11 sections

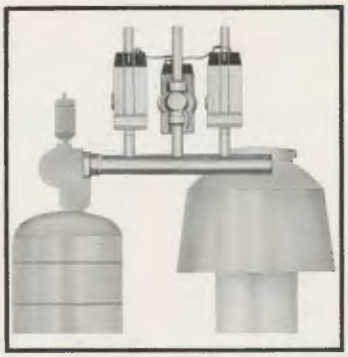
ASME Safety Relief Valve
Altitude Gauge and Thermometer
Boiler Drain Cock
100% Shut-off Combination Gas Controls
High Limit
Wiring (Internal)
Main Gas Burners
Supply Piping
24V. Gas Valve Transformer and Junction Box — when required (Millivolt controls optional)

ADDITIONAL EQUIPMENT SHIPPED IN SEPARATE CARTON

Pilot Gas Filter (furnished only when required by Gas Co.)
Pilot Igniter, Stick Type (furnished only when required by Gas Co.)
Drafthood
Room Thermostat, 24 volt, 2 wire

OPTIONAL EQUIPMENT

ZONE CONTROL PACK
SERIES 22A boilers can be supplied with zone pack assemblies for two or three zone systems. Zone packs include all necessary zone valves, manifolds and wiring to circulator. Thermostats, and necessary transformers are shipped in separate carton.



Zoned hydronic heating with this unit can provide the ultimate in heating comfort and economy.

EXPANSION AND AIR REMOVAL PACKAGE
As an option, SERIES 22A boilers may be furnished with a pre-pressurized, diaphragm-type expansion tank, air eliminator and air vent.

The package provides dependable expansion control and constant elimination of excess air in system. Since the air cushion is sealed from system water in the pre-pressurized expansion tank, waterlogging will never occur.

DE LUXE JACKET EXTENSION
Optional jacket extension covers all controls and circulator. Shipped in separate carton and easily applied after piping is completed. (See illustration on front cover.)

For other optional equipment and controls, refer to price sheet.

GAS HYDRONIC PACKAGE

RATINGS—Natural and Propane Gases - 0 To 2000 Ft. Elevation (1)

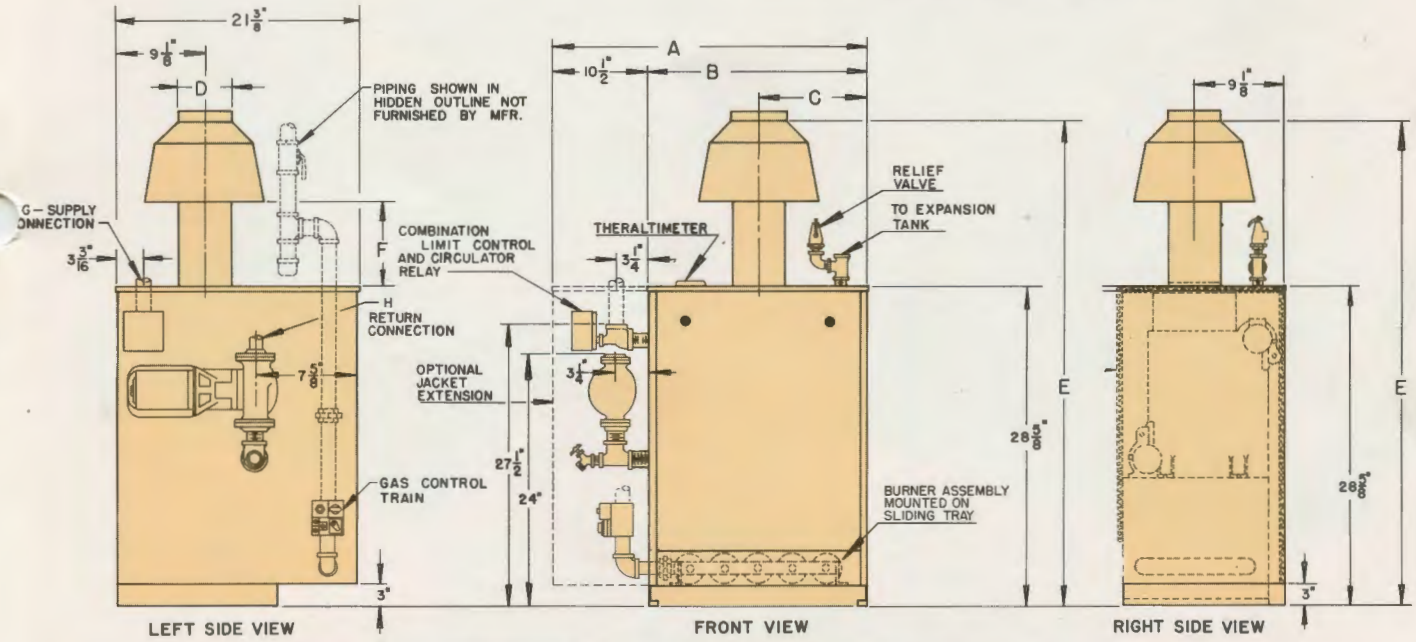
BOILER SIZE		A.G.A. & C.G.A. RATINGS		NET (2) IBR RATING WATER	(3) NET RATING WATER	FLUE OUTLET	BREECHING	RECOMMENDED CHIMNEY	
NATURAL GAS	PROPANE	INPUT BTU/HR.	GROSS OUTPUT BTU/HR.	BTU/HR.	Sq. Ft.	Dia.	Dia.	ROUND Dia. In. x Ft.	RECTANGULAR In. x In. x Ft.
3-22AN	3-22A	60,000	48,000	41,700	280	4	4	4 x 15	8 x 8 x 15
4-22AN	4-22A	90,000	72,000	62,600	420	5	5	5 x 15	8 x 8 x 15
5-22AN	5-22A	120,000	96,000	83,500	555	6	6	6 x 15	8 x 8 x 15
6-22AN	6-22A	150,000	120,000	104,300	695	6	6	6 x 15	8 x 8 x 15
7-22AN	7-22A	180,000	144,000	125,200	835	7	7	7 x 15	8 x 8 x 15
8-22AN	8-22A	210,000	168,000	146,100	975	7	7	7 x 15	8 x 8 x 15
9-22AN	9-22A	240,000	192,000	167,000	1115	8	8	8 x 15	8 x 8 x 15
10-22AN	10-22A	270,000	216,000	187,800	1250	8	8	8 x 15	8 x 8 x 15
11-22AN	11-22A	300,000	240,000	208,700	1390	9	9	9 x 15	8 x 12 x 15

NOTE: (1) For elevations above 2,000 Ft., A.G.A. ratings should be reduced at the rate of four percent (4%) for each 1,000 Ft. above sea level. C.G.A. ratings should be reduced 10% for elevations 2,000 Ft. to 4,500 Ft. elevations above sea level.

(2) Net IBR ratings shown are based on normal IBR piping and pick-up allowance of 1.15.

Consult the manufacturer for installations having unusual piping and pick-up requirements such as intermittent system of operation, extensive piping systems, etc.

(3) Based on 170°F average water temperature in radiators (heat emission rate of 150 BTU/HR./Sq. Ft.). For higher water temperatures, select boiler on basis of net ratings in BTU/HR.



DIMENSIONAL DATA (in inches)

Boiler Model	Burner Drill Port Natural "AN"	Burner Drill Port Propane "A"	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E* Natural	Dim. E* Propane	Dim F* Natural	Dim F* Propane	Conn. G	Conn. H	Gas Conn. for Automatic Gas Valve
3-W-22	#30	#35	21¾	11¼	5⅝	4	46⅝	58⅝	12	24	1¼	1¼	½
4-W-22	#30	#35	25	14½	7¼	5	48½	59½	13	24	1¼	1¼	½
5-W-22	#30	#35	28¼	17¾	8⅞	6	49⅛	60⅛	13	24	1¼	1¼	½
6-W-22	#30	#35	31½	21	10½	6	49⅛	60⅛	13	24	1¼	1¼	½
7-W-22	#30	#35	34¾	24¼	12⅛	7	51⅜	61⅜	14	24	1½	1½	½
8-W-22	#30	#35	38	27½	13¾	7	51⅜	61⅜	14	24	1½	1½	½
9-W-22	#30	#35	41¼	30¾	15⅜	8	52½	62½	14	24	1½	1½	¾
10-W-22	#30	#35	44½	34	17	8	52½	62½	14	24	1½	1½	¾
11-W-22	#30	#35	47¾	37¼	18⅝	9	53½	63½	14	24	1½	1½	¾

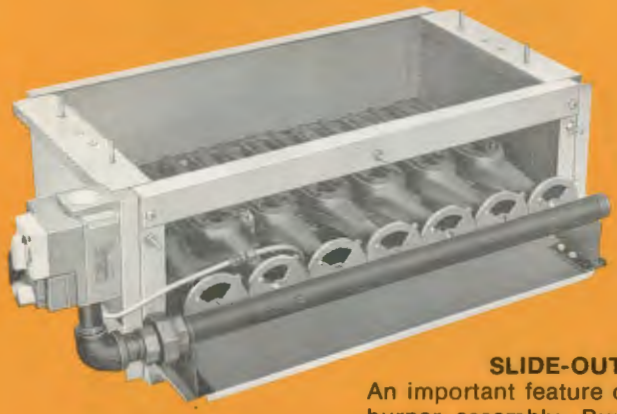
*For Natural Gas Boilers ordered special with #35 Burner Drill Ports use Propane dimensions E & F.

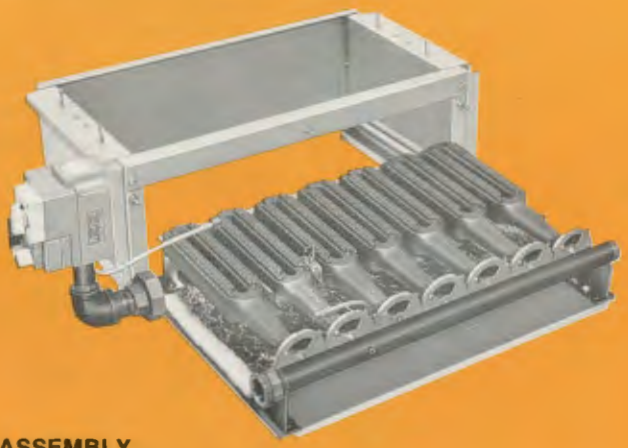
Series 22A

VERTICAL FLUE DESIGN CAST IRON CONSTRUCTION

RIBBED CROWN SHEET
Directs travel of flue gases causing turbulation and maximum scrubbing of high temperature gases. Ribbings also act as prime water-backed heating surfaces.

- ☐ All sections are of vertical section design.
- ☐ Positive circulation—top and bottom nipples.
- ☐ Cast iron boiler sections resist rust and corrosion, giving the unit durability for long-lasting performance.
- ☐ Section design means greater operation economy.
- ☐ As the heated gases pass over the surface of each boiler section, hundreds of heat-grabbing pins absorb the heat.
- ☐ Optimum water circulation carries this extra heat through the system for increased heating output.
- ☐ Cast iron burners—high quality drilled port type assures high operating efficiency. Separate burner for each flueway.
- ☐ Latest and finest in automatic controls, safe, dependable and fully automatic.





SLIDE-OUT BURNER ASSEMBLY
An important feature of the SERIES 22A is the unitized burner assembly. Burners are factory assembled and aligned and securely mounted on burner tray. The entire burner assembly slides out by releasing two catches and disconnecting main gas line connection.

This slide-out feature allows easy access to burners and pilots for inspection and maintenance.

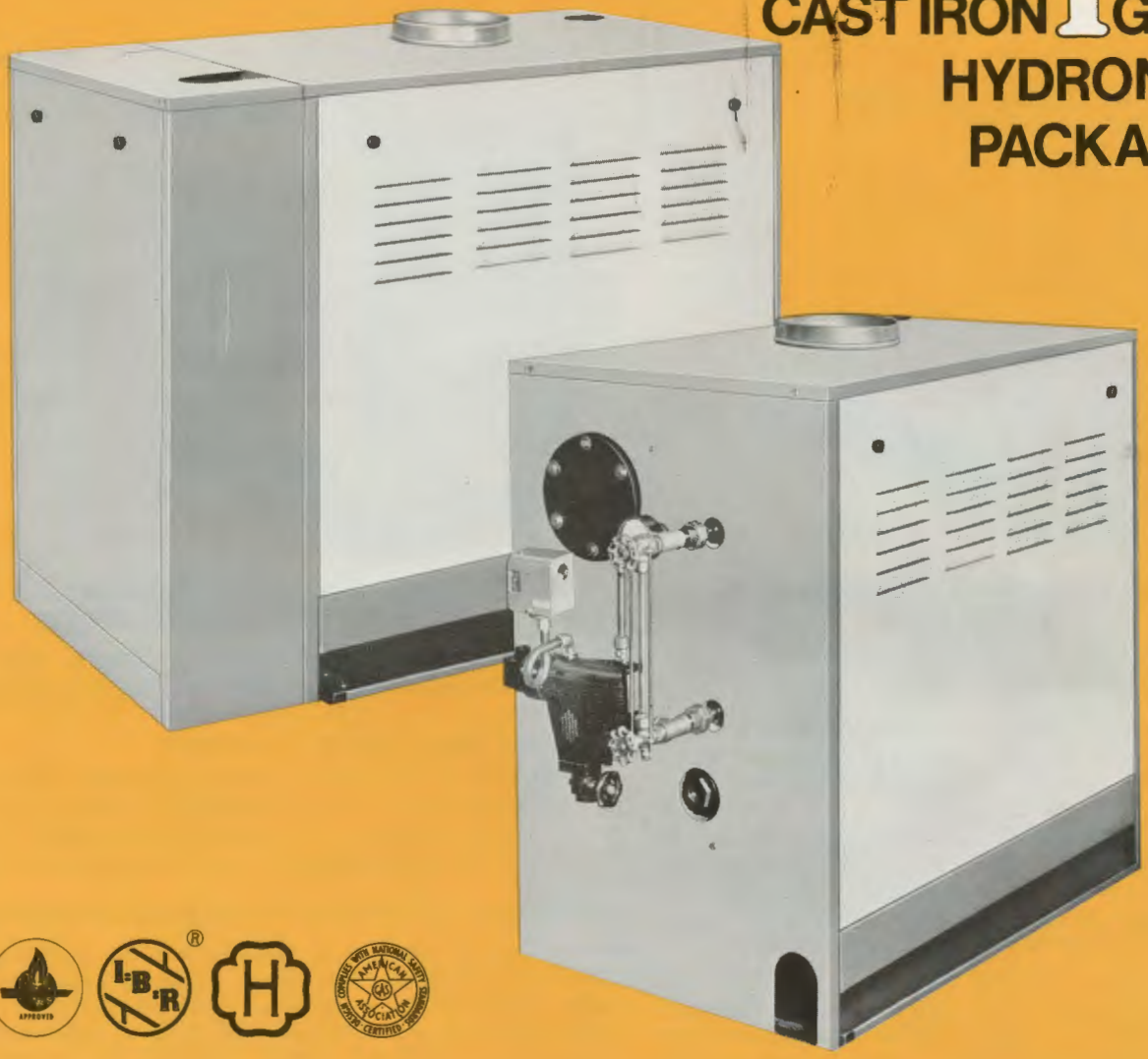
BURNHAM CORPORATION
HYDRONICS DIVISION
Lancaster, Pa. 17604

high efficiency hydronics

Form No. 4122C-2-79 30Ms

Series 4

CAST IRON GAS HYDRONIC PACKAGE



NATURAL GAS (all sizes) OR PROPANE GAS (404-408 only)

HOT WATER OR STEAM

NINE SIZES:

GROSS OUTPUTS 84,000 to 308,000 BTU/HR

BURNHAM AMERICA

BURNHAM AMERICA *Series 4*

STEAM

WATER

FACTORY ASSEMBLED AND PACKAGED IN THREE STYLES

Series 4 units are available in three package variations to meet all installation needs.

COMPLETE-PAK . . . Completely assembled boiler, burners, and all controls for quick and easy hook-up on the job-site. Just hook up piping, wiring, and gas line.

UTILITY-PAK . . . Semi-packaged unit with boiler, burners, and jacket pre-assembled. Choice of steam or water trim and controls as a separate packaged element allows use of basic package for either steam or water installations. Utility-Pak allows great flexibility in stocking.

SUB-PAK . . . A sub-assembled version of the Series 4, shipped with all sections assembled and a separate base-burner-manifold assembly. Jacket, controls, and trim are shipped in separate cartons for complete assembly in the field.

NINE SIZES TO MEET ALL RESIDENTIAL AND INTERMEDIATE APPLICATIONS

The Series 4 is available for steam or water in nine sizes: 263 to 963 net square feet steam; 487 to 1785 net square feet water.

MODERN TWO-TONE BLUE JACKET

The smartly styled jacket gives an appliance look to hydronic installations. The standard flush jacket (provided on all units) conceals the burners and manifold. The optional deluxe jacket extension conceals all controls and trim.

CERTIFIED: CONSTRUCTION-RATINGS-PERFORMANCE

The Series 4 meets all requirements of the American Society of Mechanical Engineers (A.S.M.E.) and the Institute of Boiler and Radiator Manufacturers (I=B=R). American Gas Association (A.G.A.) and Canadian Gas Association (C.G.A.) design certified for natural gas (all sizes) and propane gas (404 to 408 only).

The Series 4 is A.G.A. and C.G.A. approved for alcove (three sided enclosure) installations.

RATINGS Natural and Propane Gas

Not for installation on combustible floors unless equipped with special floor shield.

BOILER SIZE	A.G.A. and C.G.A. RATINGS		I=B=R RATINGS			NET RATING
	INPUT BTU/HR	GROSS OUTPUT BTU/HR	STEAM BTU/HR	STEAM SQ.FT.	WATER BTU/HR	WATER SQ.FT.
404	105,000	84,000	63,000	263	73,000	487
405	140,000	112,000	84,000	350	97,400	649
406	175,000	140,000	105,000	438	121,700	811
407	210,000	168,000	126,000	525	146,100	974
408	245,000	196,000	147,000	613	170,400	1136
409*	280,000	224,000	168,000	700	194,800	1299
410*	315,000	252,000	189,000	788	219,100	1461
411*	350,000	280,000	210,100	875	243,500	1623
412*	385,000	308,000	231,100	963	267,800	1785

* Not available for propane gas.

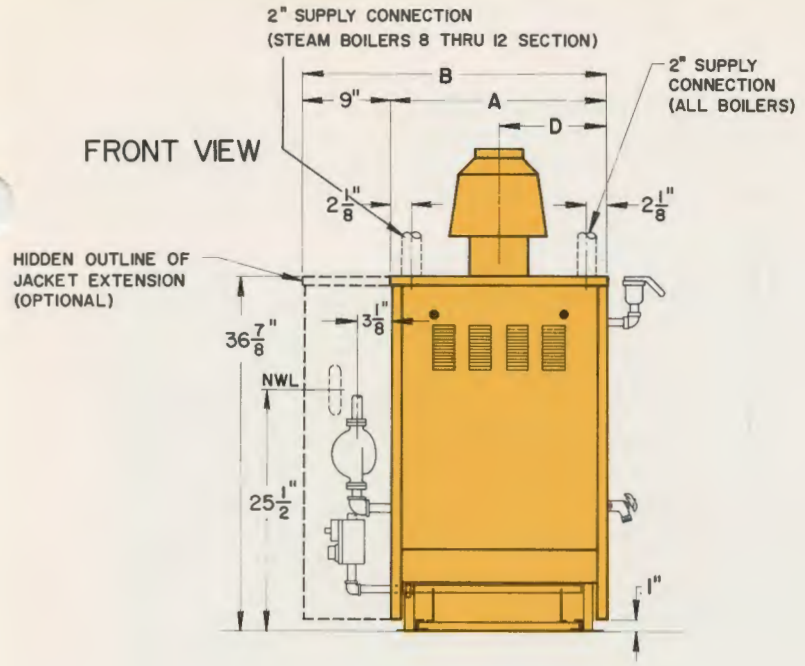
A.G.A. ratings shown are for installations at sea level and elevations up to 2,000 ft. For elevations above 2,000 ft. ratings should be reduced at the rate of four percent (4%) for each 1,000 ft. above sea level.

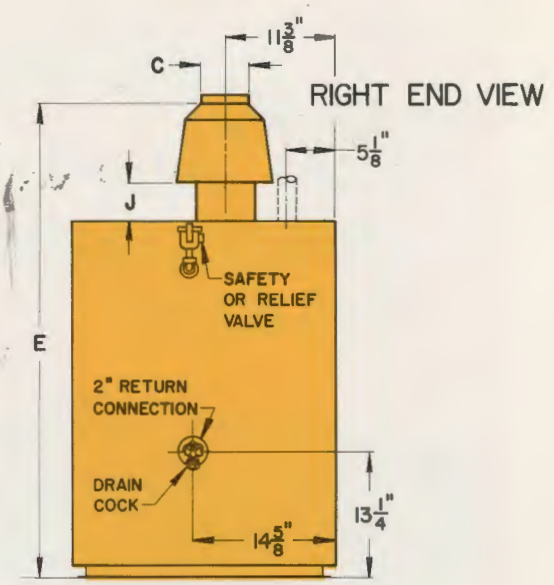
C.G.A. ratings shown are for installations at sea level and elevations up to 2,000 ft. Ratings at altitudes of from 2,000 to 4,500 ft. are 90% of those shown.

Net I=B=R Ratings shown are based on a piping and pickup allowance of 1.33 for steam and 1.15 for water.

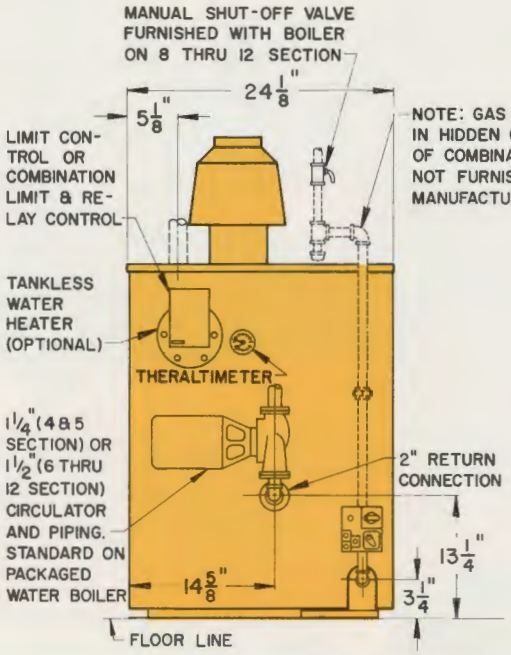
Consult the manufacturer for installation having unusual piping and pickup requirements, such as intermittent system of operation, extensive piping systems, etc.

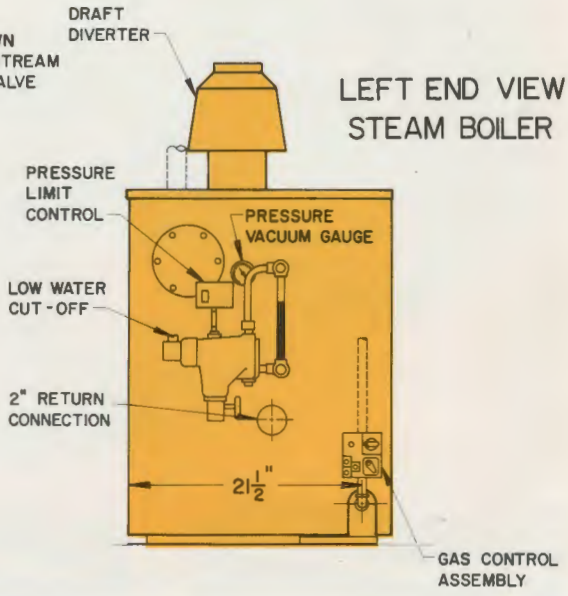
Net Ratings for Water, Square Feet are based on 170° average water temperature in radiators with a heat emission rate of 150 BTU/HR/SQ. FT. For higher water temperature select boiler on basis of net ratings in BTU/HR.





LEFT END VIEW
WATER BOILER

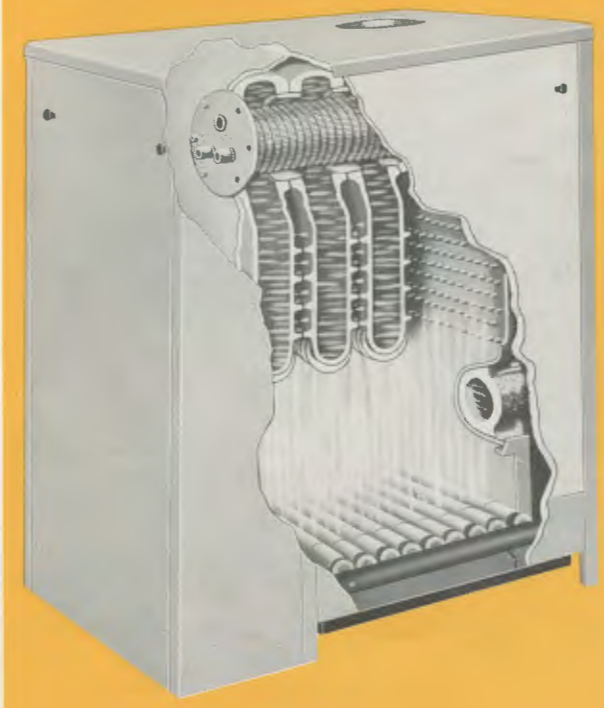




DIMENSIONS (in inches)

BOILER SIZE	JACKET LENGTH "A"	EXTENDED LENGTH "B"	DIM. "C"	DIM. "D"	DIVERTER HEIGHT "E"		DIVERTER SKIRT HEIGHT "J"		RECOMMENDED CHIMNEY		BREECHING DIAMETER	GAS CONNECTION
					NAT.	PROP.	NAT.	PROP.	ROUND DIA".x HT'.	SQUARE IN.x IN.x HT'.		
404	15 3/4	24 3/4	5	7 7/8	49 11/16	49 11/16	6	6	5 x 15	8 x 8 x 15	5	1/2
405	19 3/8	28 3/8	6	9 11/16	51 5/8	54 5/8	7 1/4	10 1/4	6 x 15	8 x 8 x 15	6	1/2
406	22 7/8	31 7/8	6	11 7/16	52 7/8	55 7/8	8 1/2	11 1/2	6 x 15	8 x 8 x 15	6	1/2
407	26 1/2	35 1/2	7	13 1/4	55 3/8	58 5/16	9 3/4	12 3/4	7 x 15	8 x 8 x 15	7	1/2
408	30	39	7	15	56 5/8	60 1/16	11	14 1/2	7 x 15	8 x 8 x 15	7	3/4
409	33 5/8	42 5/8	8	16 13/16	59 7/16	—	12 3/4	—	8 x 15	8 x 8 x 15	8	3/4
410	37 1/8	46 1/8	8	18 9/16	61 3/16	—	14 1/2	—	8 x 15	8 x 12 x 15	8	3/4
411	40 3/4	49 3/4	8	20 3/8	62 15/16	—	16 1/4	—	8 x 15	8 x 12 x 15	8	3/4
412	44 1/4	53 1/4	8	22 1/8	64 11/16	—	18	—	8 x 15	8 x 12 x 15	8	3/4

Series 4 QUALITY FEATURES



CAST-IRON CONSTRUCTION
Rugged cast iron gives the Series 4 lifetime durability and trouble-free performance. Cast Iron is well known for its resistance to corrosion and rust.

VERTICAL FLUE TRAVEL
This scientific feature assures economical operation. Heated gases pass over special heat-absorbing surfaces studded with hundreds of heat-grabbing pins.

YEAR 'ROUND HOT WATER
Specially designed, all copper built-in tankless heaters provide a maximum amount of domestic hot water with a minimum of gas consumption. (Water boilers only).

TOP TAPPINGS
Ideal for steam applications. Provides more flexibility in piping.

LARGE NIPPLE PORTS
Wide and open sections coupled with large nipple ports provide good internal water circulation. The large upper nipple port becomes an excellent internal header for steam applications.

CONTROLS
Safe, dependable and fully automatic, the Series 4 controls are the finest obtainable. Controls are available in 24 volt or millivolt (self-energizing) and are easily accessible from the front of boiler.

Series 4 water boilers offer an optional built-in all copper coil with XL Trufin tubing. Located at the top of the boiler to assure fast heat transfer.

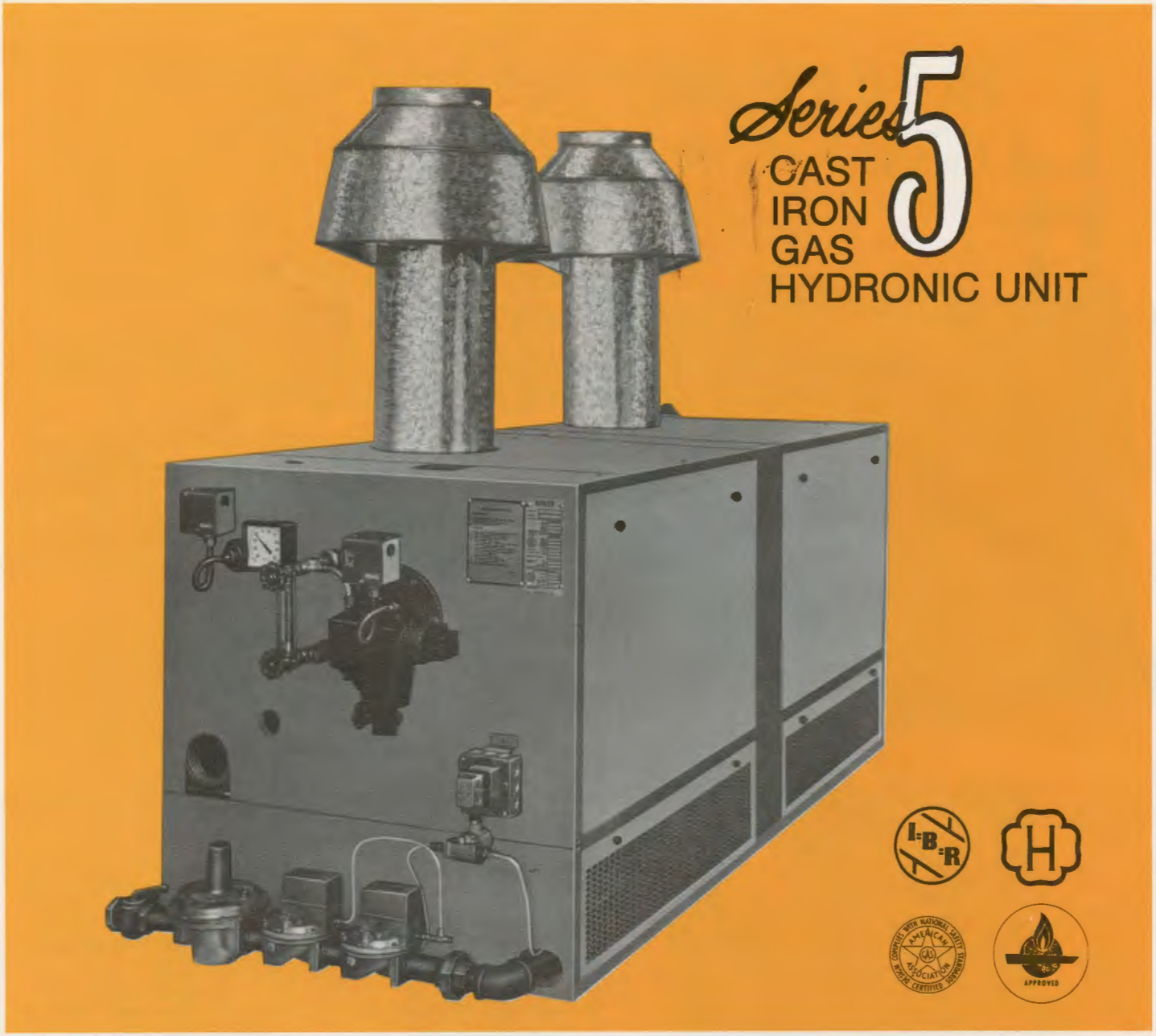
BURNER-BASE-MANIFOLD ASSEMBLY
Steel burners are factory assembled and aligned, then securely mounted on burner tray. The entire burner drawer assembly slides out as illustrated.

This unitized slide-out feature allows easy access to burners and pilot for inspection and maintenance. Newly designed steel burners in the Series 4 provide the optimum in performance.

BURNHAM CORPORATION
HYDRONICS DIVISION
Lancaster, Pa. 17604

high efficiency hydronics

Form No. 4140B-9-79-20Mf



Series 5

CAST IRON GAS HYDRONIC UNIT

NATURAL or PROPANE GAS

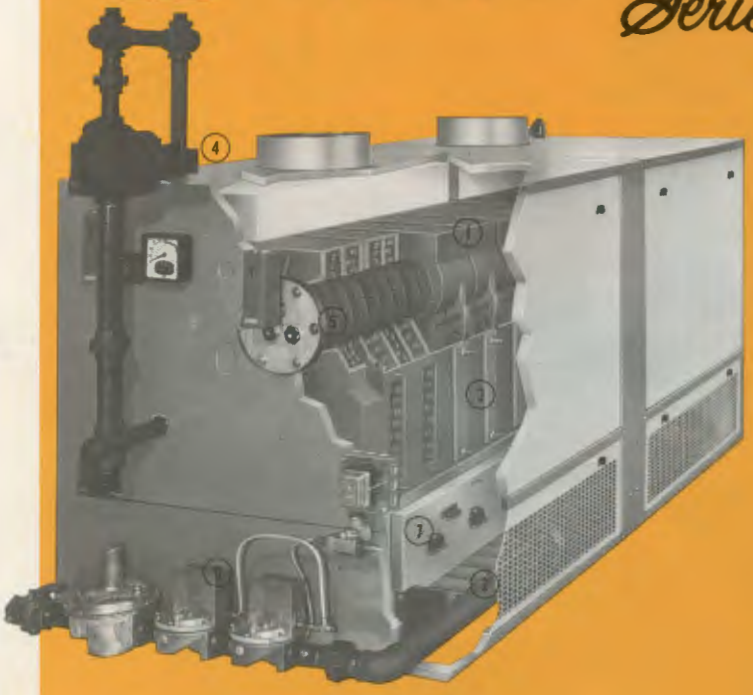
HOT WATER or STEAM

Nineteen Sizes

Gross Outputs 312,000 to 1,560,000 BTU/HR

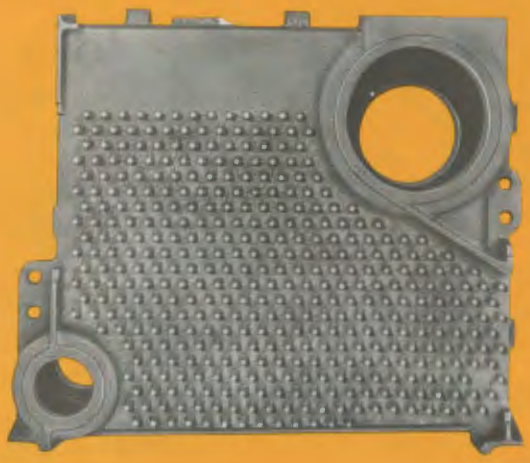
BURNHAM AMERICA

BURNHAM AMERICA *Series* 5



A CAST IRON GAS FIRED BOILER DESIGNED FOR ENGINEERED HEATING SYSTEMS

The Series 5 offers the capacities and features that make it ideal for commercial, institutional and high rise residential heating applications. The Series 5 is designed for efficent, trouble-free operation. Nineteen sizes in gross outputs from 312,000 to 1,560,000 BTU/HR. (Not certified for installation on combustible flooring.)



1. Cast Iron Sections. Series 5 sections are made of rugged cast iron which provides durability, high heat transfer and resistance to corrosion and rust. Compact design makes sections easier to handle and assemble—even fitting through narrow doorways. Vertical flue travel through pinned flue surface insures maximum heat transfer.

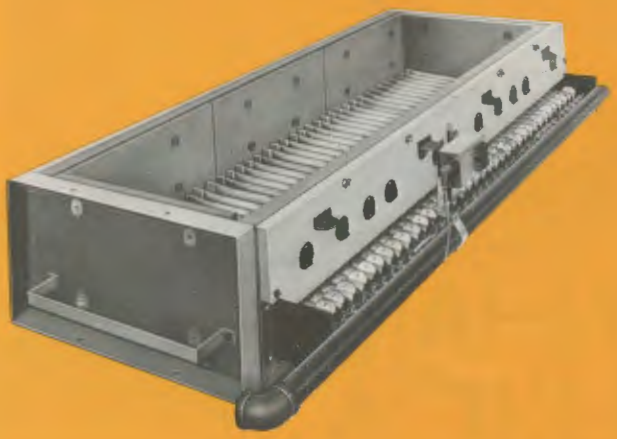
Standard A.S.M.E. construction rated for 50 lb. (water) or 15 lb. (steam) working pressure.

2. Stainless Steel Burners. Stainless burners and air shutters provide long life, optimum primary air flow and high combustion efficiency.

The multi-slotted burners feature quiet ignition and positive flame extinction.

3. Flue Plates. Flue plates on both front and rear are easily removed for inspection and maintenance of entire flueway.

4. Supply Tappings. At top for ease of system connection, lower piping costs and assurance of dry steam or air-free hot water.



5. Tankless Heater. Provision is made for high performance tankless water heating in hot water units.

6. Gas Controls. Automatic gas controls meet full A.G.A. and CGA requirements. Intermittent electric ignition and redundant gas valves are standard equipment on USA boilers.

7. Base-Burner—Manifold Assembly. Factory assembled components reduce on-the-job installation costs. Proper alignment and positive securing of burners minimize service calls.

Maximum of two-bolt-together assemblies.

RATINGS—For Natural and Propane Gas 50 LB. W. P. (water)—15 LB. W. P. (steam)

Boiler Number(1)	AGA/CGA Ratings(2) MBH		NET RATINGS(3)				Boiler H.P.	No. & Size of Flue Outlets	Breeching Dia. Inches	Recommended Chimney Sizes(5)	
			WATER		STEAM						
	INPUT	GROSS OUTPUT	SQ. FT.(4)	I=B=R MBH	I=B=R SQ. FT.	I=B=R MBH				Round	Rectangular In. x In. x Ht.
K-5006(1)	390	312.0	1810	271.3	975	234.1	9.30	1-9"	9	10 x 15	12 x 12 x 15
K-5007	468	374.4	2170	325.2	1169	280.6	11.20	1-10"	10	10 x 15	12 x 12 x 15
K-5008	546	436.8	2530	379.1	1363	327.1	13.05	1-12"	12	12 x 15	12 x 16 x 15
K-5009	624	499.2	2900	434.8	1563	375.1	14.90	1-12"	12	12 x 15	12 x 16 x 15
K-5010	702	561.6	3260	488.7	1757	421.6	16.80	1-12"	12	12 x 15	12 x 16 x 15
K-5011	780	624.0	3615	542.6	1950	468.1	18.65	2-9"	14	15 x 15	16 x 16 x 15
K-5012	858	686.4	3975	596.5	2144	514.6	20.50	1-9", 1-10"	14	15 x 15	16 x 16 x 15
K-5013	936	748.8	4335	650.4	2338	561.1	22.35	2-10"	14	15 x 15	16 x 16 x 15
K-5014	1014	811.2	4710	706.4	2538	609.2	24.25	1-10", 1-12"	14	15 x 20	16 x 16 x 20
K-5015	1092	873.6	5065	760.0	2732	655.7	26.10	2-12"	14	15 x 20	16 x 16 x 20
K-5016	1170	936.0	5425	813.9	2926	702.2	27.95	2-12"	14	15 x 20	16 x 16 x 20
K-5017	1248	998.4	5785	867.8	3120	748.7	29.85	2-12"	14	15 x 20	16 x 16 x 20
K-5018	1326	1060.8	6145	921.7	3313	795.2	31.70	2-12"	16	15 x 20	16 x 16 x 20
K-5019	1404	1123.2	6516	977.4	3513	843.2	33.55	2-12"	16	18 x 20	16 x 20 x 20
K-5020	1482	1185.6	6875	1031.3	3707	889.7	35.40	2-9", 1-10"	16	18 x 20	16 x 20 x 20
K-5021	1560	1248.0	7235	1085.2	3901	936.2	37.30	1-9", 1-10" 1-12"	16	18 x 20	16 x 20 x 20
K-5022	1638	1310.4	7595	1139.1	4113	987.2	39.15	2-10", 1-12"	16	18 x 20	16 x 20 x 20
K-5024	1794	1435.2	8325	1248.7	4547	1091.2	42.90	1-9", 3-10"	18	18 x 20	20 x 20 x 20
K-5026	1950	1560.0	9045	1356.5	4977	1194.5	46.60	3-10", 1-12"	18	18 x 20	20 x 20 x 20

(1) Boiler Number—use following suffixes: USA—WIN—water natural gas; WIP—water propane gas; SIN—steam natural gas; SIP—steam propane gas. Canada—WN—water natural gas; WP—water propane gas; SN—steam natural gas; SP—steam propane gas.

(2) For installations from sea level to 2000 FT. For altitudes above 2000 FT: USA—Reduce ratings 4% for each 1000 FT. above sea level. Canada—Certified for use at altitudes to 4500 FT. above sea level. Each installation, however, must be authorized by local authorities.

(3) Net I=B=R ratings shown are based on normal I=B=R piping and pick-up factor. Water: 1.15 (all sizes) Steam: 1.333 (5006 thru 5021) 1.327 (5022) 1.316 (5024) 1.306 (5026).

(4) Based on 170°F average water temperature in radiators (heat emission rate of 150 BTUH/SQ. FT.) For high water temperatures select boiler on basis of net ratings in BTUH.

(5) Recommended Chimneys—Based on year-round use with 6 FT. breechings and no more than one elbow. Chimney height measured from installation floor line to chimney top. Flue size based on nominal size of unlined chimney. Flue lined with largest flue liner which will fit within these dimensions is construed to have the same effective flue area. Individual Vents—If boiler is equipped with individual vertical vent riser(s) of same size as flue outlet(s) on draft diverter(s), these vent(s) should not be less than 5 ft. in height as measured from top of draft diverter. For other chimney and breeching combinations consult manufacturer.

Series 5

STANDARD EQUIPMENT (all boilers)

Sections unassembled including left and right heater ends • Heater opening cover plates • Baseburner-manifold assembly (5006 thru 5014) shipped as two sub-assemblies (5015 thru 5026) • Gas Control Assembly; one assembly (5006 thru 5014); two assemblies (5015 thru 5026) • Flush Jacket • Canopy • Drafthood • Boiler drain cock

Water Trim

A.S.M.E. safety relief valve • Pressure, altitude, temperature gauge • L 4006A high limit control • #64 LWCO (except 5006)

Steam Trim

A.S.M.E. safety valve • Pressure vacuum gauge • Gauge glass set • PA 404A high limit control • #67 BC2 LWCO

U.S.A. BOILERS

EI Electronic Control Set; one set (5006 thru 5014); two sets (5015 thru 5026); provides electric ignition; 100% safety shut-off; electronic supervision of pilot and intermittent pilot operation • Set includes: G60PML-1 ignition control; J996DYW pilot with Y755A-2 sensing probe; 25A11-227 pilot gas valve; AT88A valve transformer; and RV-10 pilot line regulator.

CANADIAN BOILERS

Lubricated plug cock; EV-10 pilot line regulator. Natural Gas: Thermocouple pilot assembly; 100% shut-off; one set (5006 thru 5013); two sets (5015 thru 5026) • EO electronic control set on 5014 (one set) and 5026 (two sets) only • Propane Gas: Thermocouple pilot assembly • 100% shut-off on 5006 only • EO electronic control set on 5007 thru 5014 (one set) and 5015 thru 5026 (two sets).

OPTIONAL EQUIPMENT

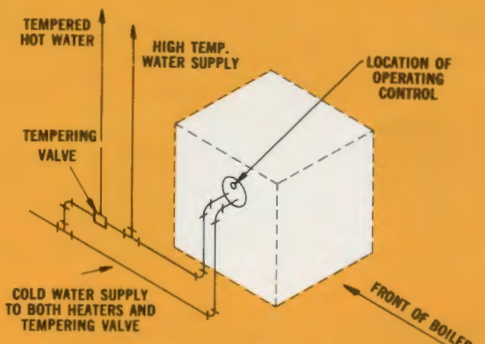
Electronic Control Sets EO, EOP, EEP, EOP-FM, EOP-IRI (FIA) • LWCO and feeder combination in lieu of standard • On-Off automatic gas valve—motorized • Hi-Lo off automatic gas valve—motorized • On-Off fluid power automatic gas valve • Modulating type automatic gas valve.

Series 5 TANKLESS HEATER DATA
WATER BOILERS ONLY

Piping to heater(s) should be run at side(s) or rear of boiler.

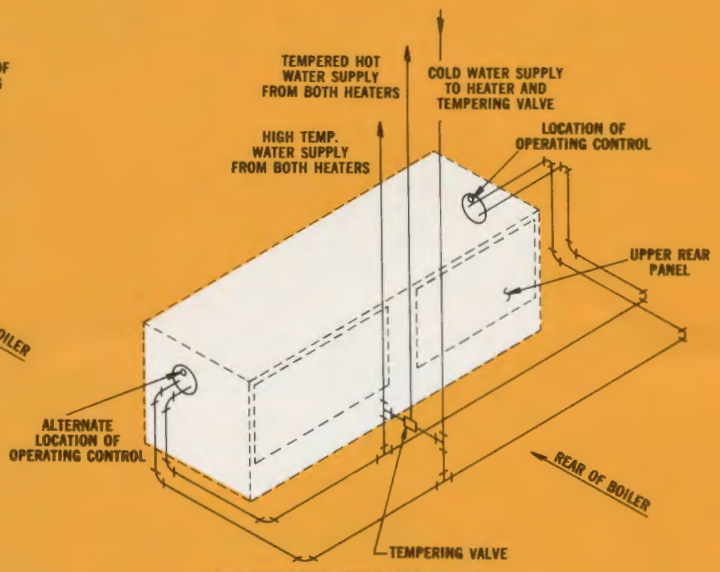
Piping at rear of boiler should not interfere with removal of upper rear panel(s) for access to flueways for cleaning.

Piping to accommodate two heaters must be proportionally sized in both cold and hot water supply headers to match heater ratings —necessary for maximum hot water delivery at minimum pressure drop.



SCHEMATIC TANKLESS HEATER PIPING
ONE HEATER

(LEFT END HOOK-UP ILLUSTRATED—RIGHT END HOOK-UP SIMILAR)



SCHEMATIC TANKLESS HEATER PIPING
TWO HEATERS

Heater Number	For use in Boilers:	Continuous Draw Heater Ratings 40°—140° Rise w/200°F Boiler Temp.	Pressure Drop through Heater	Clearance requirement for Heater removal
AT-2	all sizes	4½ GPM	8.8 PSI	27"
AT-3	all sizes	5 GPM	18.0 PSI	32"
AT-4	5008 and larger	6 GPM	1.2 PSI	42"

All Series 5 boilers are furnished with left and right heater end sections. It is possible to install a heater in both ends provided the number of sections in the boiler is not less than the sum of the number of sections required for each heater as indicated below:

AT-2 Heater—5 section
AT-3 Heater—6 section
AT-4 Heater—8 section

example: AT-3 + AT-4 Heater = 6 + 8 = 14 section or larger boiler required.

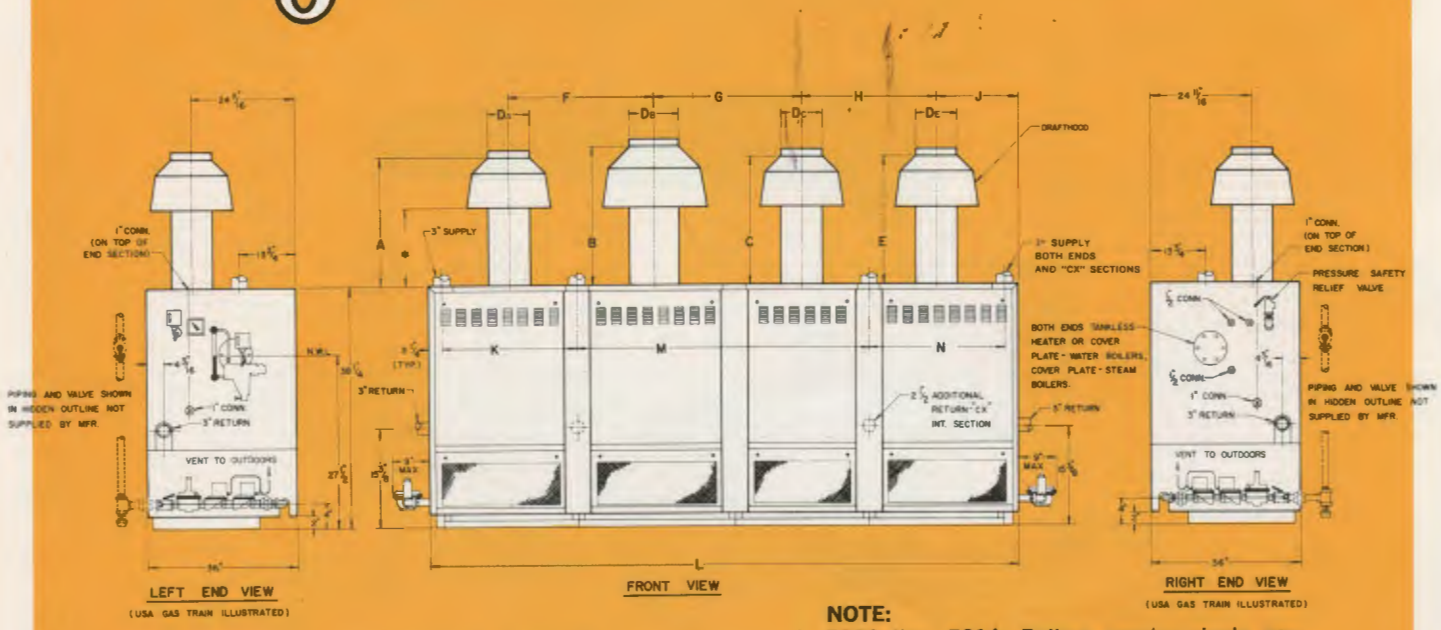
HOT WATER SUPPLY BOILER CAPACITY

Hot Water Supply Boiler Capacities*—Gallons per hour—water boilers only

Boiler No.	5006	5007	5008	5009	5010	5011	5012	5013	5014	5015	5016	5017	5018	5019	5020	5021	5022	5024	5026
60°F rise	625	750	875	1000	1125	1250	1375	1500	1620	1750	1870	1995	2120	2245	2370	2495	2620	2870	3120
80°F rise	470	560	655	750	845	940	1030	1125	1220	1310	1405	1500	1590	1685	1780	1870	1965	2155	2340
100°F rise	375	450	525	600	675	750	825	900	975	1050	1125	1200	1275	1350	1425	1500	1575	1725	1875

* Recommended only for use in indirect hot water supply systems (with tankless heater installed in boiler on water boilers only; external heat exchanger; steam to water or water to steam submerged in storage tank). Ratings for hot watr supply are based on the gross output of boiler.

Series 5 CAST IRON GAS HYDRONIC UNIT



* 17½"—9" and 10" dia. drafthoods.
20¾"—12" dia. drafthoods.

NOTE:

1. 5006 thru 5014: Boilers require single gas train. Location on left end of boiler standard. Gas train may be relocated to right end of boiler except 5012 and 5014 boilers.
2. 5015 thru 5026: Boilers require dual gas trains.

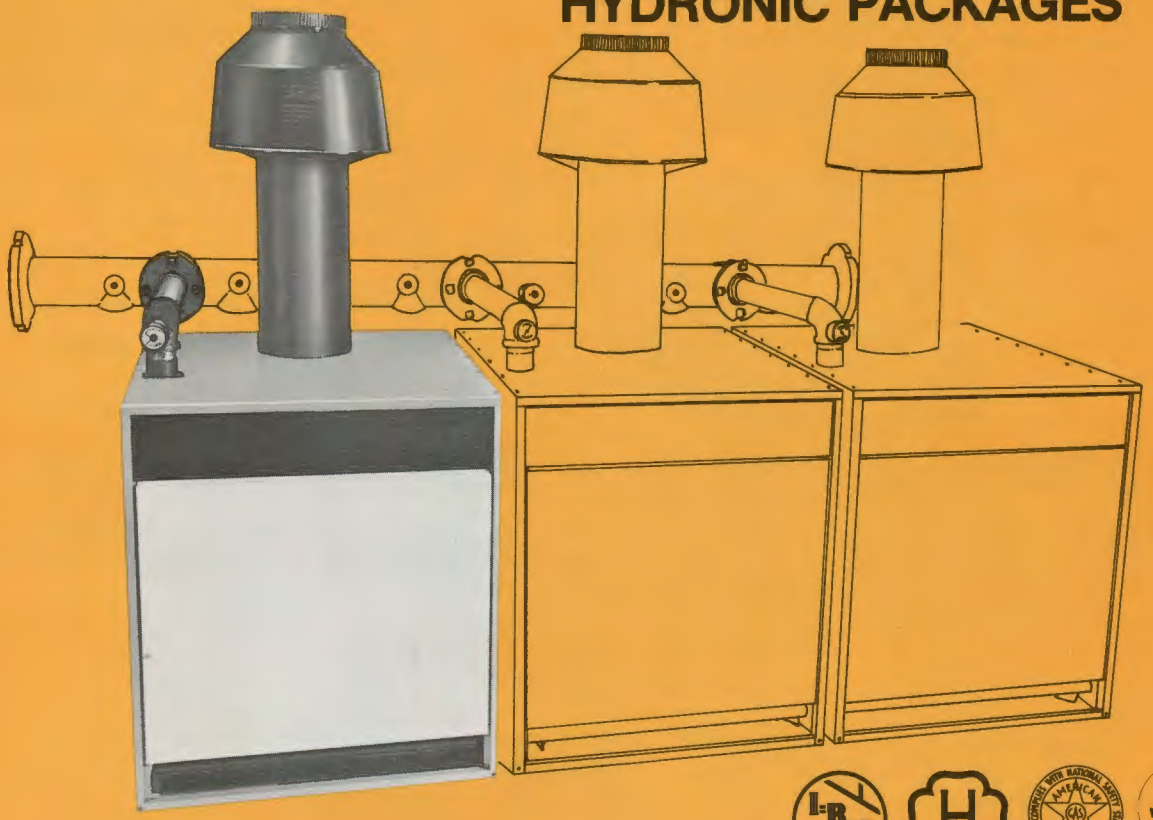
Series 5 DIMENSIONS (In Inches)

Boiler Size	Jacket Overall Length L	Drafthood Height, Size and Location												Top Supply and Rear Return Location			Supply Conn. Qty. & Size (Inches)	Return Conn. Qty. & Size (Inches)	Gas Conn. Size Nat. & Propane
		A Ht.	D_A Diam	F	B Ht.	D_B Diam	G	C Ht.	D_C Diam	H	E Ht.	D_E Diam	J	K	M	N			
5006	33 15/16	28 5/8	9	—	—	—	—	—	—	—	—	—	17	27 1/2	—	—	2-3	2-3	1
5007	39 3/8	29 5/8	10	—	—	—	—	—	—	—	—	—	19 11/16	32 5/16	—	—	2-3	2-3	1
5008	44 13/16	35 3/8	12	—	—	—	—	—	—	—	—	—	22 3/8	38 3/8	—	—	2-3	2-3	1
5009	50 1/4	35 3/8	12	—	—	—	—	—	—	—	—	—	25 1/8	43 13/16	—	—	2-3	2-3	1 1/4
5010	55 11/16	35 3/8	12	—	—	—	—	—	—	—	—	—	27 7/8	49 1/4	—	—	2-3	2-3	1 1/4
5011	61 1/8	28 5/8	9	27 3/16	28 5/8	9	—	—	—	—	—	—	17	54 11/16	—	—	2-3	2-3	1 1/4
5012	66 9/16	28 5/8	9	29 7/8	29 5/8	10	—	—	—	—	—	—	19 11/16	60 1/8	—	—	2-3	2-3	1 1/4
5013	72	29 5/8	10	32 5/8	29 5/8	10	—	—	—	—	—	—	19 11/16	65 9/16	—	—	2-3	2-3	1 1/4
5014	77 1/16	29 5/8	10	35 3/8	32 1/8	12	—	—	—	—	—	—	22 3/8	71	—	—	2-3	2-3	1 1/4
5015	82 7/8	35 3/8	12	38 1/16	35 3/8	12	—	—	—	—	—	—	22 3/8	38 1/4	38 1/4	—	3-3	2-3, 1-2 1/2	2-1*
5016	88 5/16	35 3/8	12	40 3/4	35 3/8	12	—	—	—	—	—	—	25 1/8	38 1/4	43 5/8	—	3-3	2-3, 1-2 1/2	1-1, 1-1 1/4*
5017	93 3/4	35 3/8	12	43 1/2	35 3/8	12	—	—	—	—	—	—	25 1/8	43 5/8	43 5/8	—	3-3	2-3, 1-2 1/2	2-1 1/4*
5018	99 5/16	35 3/8	12	46 1/4	35 3/8	12	—	—	—	—	—	—	27 7/8	43 5/8	49 1/8	—	3-3	2-3, 1-2 1/2	2-1 1/4*
5019	104 5/8	35 3/8	12	48 15/16	35 3/8	12	—	—	—	—	—	—	27 7/8	49 1/8	49 1/8	—	3-3	2-3, 1-2 1/2	2-1 1/4*
5020	110 1/16	28 5/8	9	27 3/16	28 5/8	9	38 1/16	35 3/8	12	—	—	—	27 7/8	54 1/2	49 1/8	—	3-3	2-3, 1-2 1/2	2-1 1/4*
5021	115 1/2	28 5/8	9	29 7/8	29 5/8	10	40 3/4	35 3/8	12	—	—	—	27 7/8	27 3/8	32 5/8	49 1/8	4-3	2-3, 2-2 1/2	2-1 1/4*
5022	120 15/16	29 5/8	10	32 5/8	29 5/8	10	40 3/4	35 3/8	12	—	—	—	27 7/8	32 3/4	32 5/8	49 1/8	4-3	2-3, 2-2 1/2	2-1 1/4*
5024	131 13/16	28 5/8	9	29 7/8	29 5/8	10	32 5/8	29 5/8	10	32 5/8	29 5/8	10	19 11/16	27 3/8	65 1/4	32 3/4	4-3	2-3, 2-2 1/2	2-1 1/4*
5026	142 11/16	29 5/8	10	35 3/8	35 3/8	12	35 3/8	29 5/8	10	32 5/8	29 5/8	10	19 11/16	32 3/4	70 11/16	32 3/4	4-3	2-3, 2-2 1/2	2-1 1/4*

* Dual manifolds—5015 thru 5026

Series **8-B**

SINGLE AND MODULAR CAST IRON GAS HYDRONIC PACKAGES



NATURAL or PROPANE GAS HOT WATER

SIX BASIC PACKAGES

Gross Outputs starting at 211,000 BTU/HR and increasing in increments of 53,000 BTU/HR

BURNHAM AMERICA

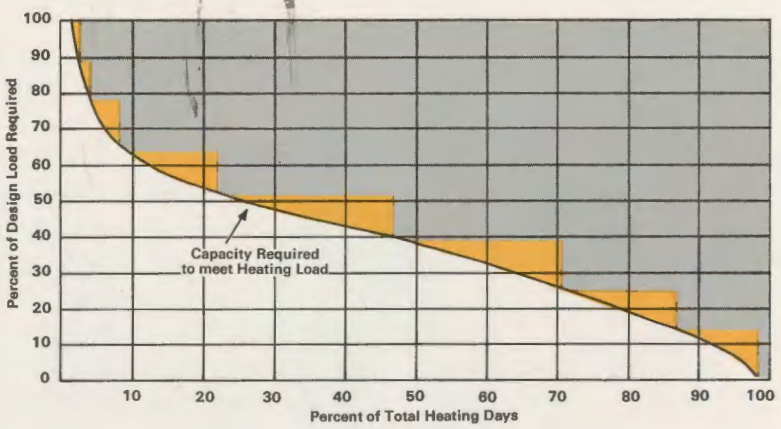
MODULAR MODULAR MODULAR SYSTEM FEATURES

Fuel Savings

A heating system must be sized for extreme climatic conditions although these conditions may exist only a few days each year.

The chart to the right graphically illustrates the difference between total boiler capacity and the variable heating demand. The color steps illustrate the controlled operation of multiple boilers to match this variable heating demand.

The use of modular boilers each operating at its design capacity and sequenced to operate as a single heating plant results in significant fuel savings.



Excess Capacity — Single Boiler

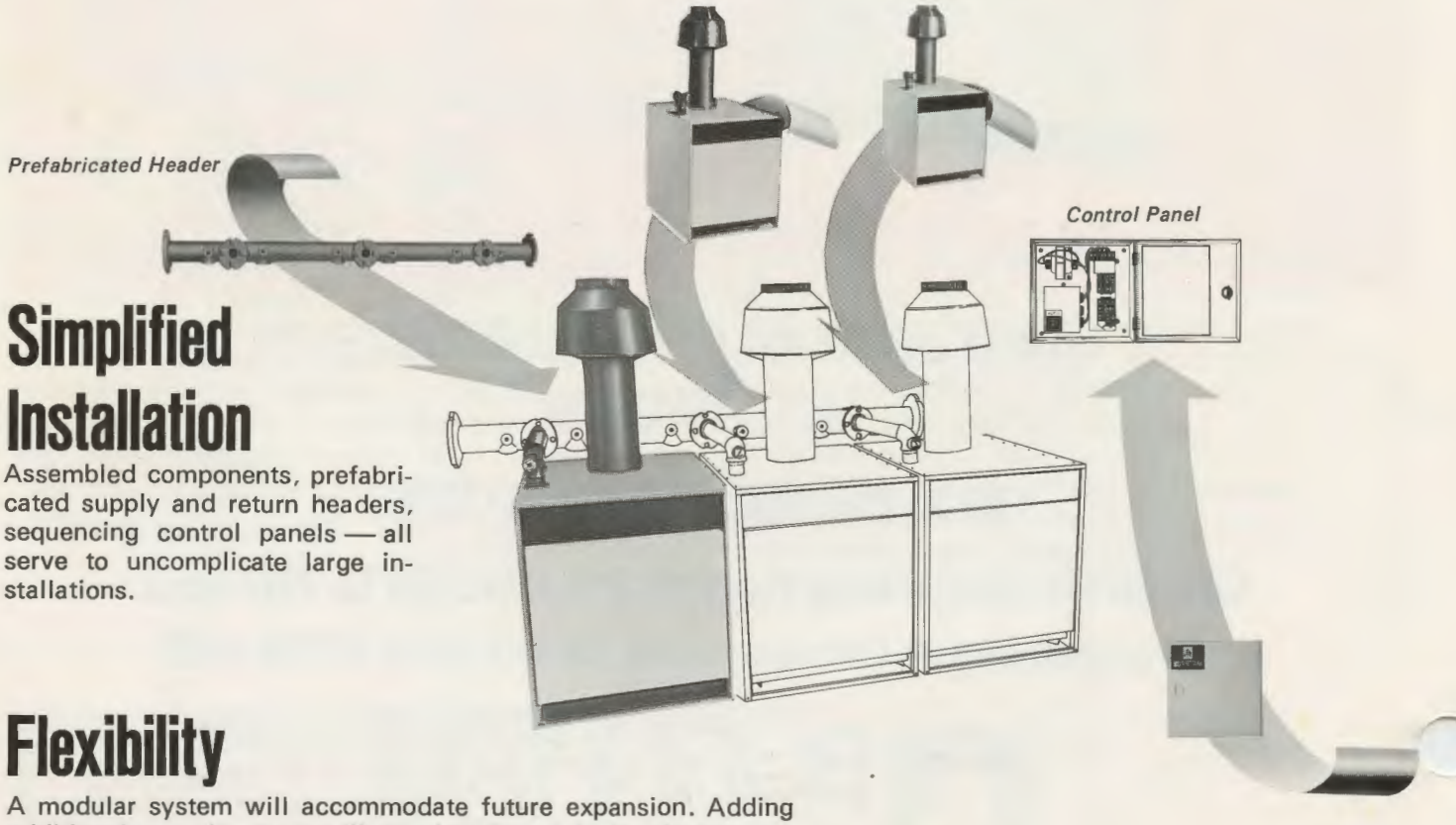
Excess Capacity — Modular Boilers

Additional Fuel Savings

Stand-by heat loss is minimized by utilizing primary-secondary circulation. This is accomplished by circulating system water only thru the operating boilers.

Stand-by Security

Component boilers in a modular installation may be individually serviced or repaired without affecting the operation of the heating system.



Simplified Installation

Assembled components, prefabricated supply and return headers, sequencing control panels — all serve to uncomplicate large installations.

Flexibility

A modular system will accommodate future expansion. Adding additional capacity, as the illustration demonstrates, becomes a simple extension of the basic system.

BURNHAM AMERICA / Series 8-B

SINGLE BOILER RATINGS — Natural and Propane Gas

Boiler No.	A.G.A. Rating Input MBH	A.G.A. Rating *Gross Output MBH	Net Rating **Square Feet	Net Rating *I=B=R MBH	Chimney Dia (In) x Ht (Ft)	Water Content Gallons	Approx. Shipping Weight
805B	264	211.2	1225	183.5	7 x 15	11.9	613
806B	330	264.0	1530	229.6	8 x 15	13.9	716
807B	396	316.8	1840	275.7	8 x 15	15.9	823
808B	462	369.6	2145	321.7	9 x 15	17.9	920
809B	528	422.4	2445	367.0	10 x 15	19.9	1030
810B	594	475.2	2760	413.9	10 x 15	21.9	1150

NOTE: *Ratings shown are for installations at sea level and elevations up to 2,000 ft. For elevations above 2,000 ft., ratings should be reduced at the rate of four percent (4%) for each 1,000 ft. above sea level.*

* *Net IBR ratings shown are based on normal IBR piping and pick-up allowance of 1.15. Consult the manufacturer for installations having unusual piping and pick-up requirements such as intermittent system of operation, extensive piping systems, etc.*

** *Based on 170°F average water temperature in radiators (heat emission rate of 150 BTU/HR/Sq. Ft.). For higher water temperatures, select boiler on basis of net ratings in BTU/HR.*

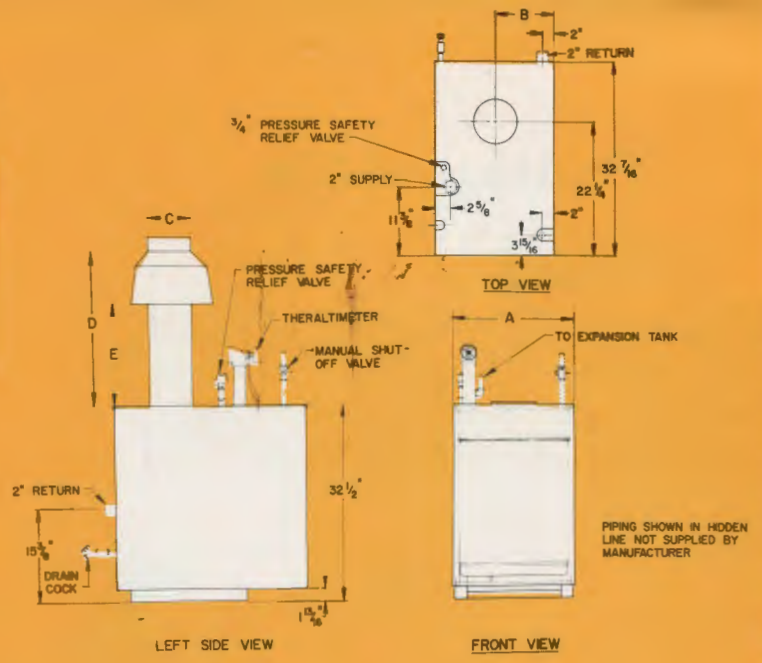
Modular Boiler Selection Guide

Input (MBH)	Gross Output (MBH)	Modules Used 805B	806B	807B
528	422.4	2	–	–
594	475.2	1	1	–
660	528.0	–	2	–
726	580.8	–	1	1
792	633.6	–	–	2
858	686.4	2	1	–
924	739.2	1	2	–
990	792.0	–	3	–
1056	844.8	–	2	1
1122	897.6	–	1	2
1188	950.4	–	–	3
1254	1003.2	1	3	–
1320	1056.0	–	4	–
1386	1108.8	–	3	1
1452	1161.6	–	2	2
1518	1214.4	–	1	3
1584	1267.2	–	–	4
1650	1320.0	–	5	–
1716	1372.8	–	4	1
1782	1425.6	–	3	2
1848	1478.4	–	2	3

Input (MBH)	Gross Output (MBH)	Modules Used 805B	806B	807B
1914	1531.2	–	1	4
1980	1584.0	–	–	5
2046	1636.8	–	5	1
2112	1689.6	–	4	2
2178	1742.4	–	3	3
2244	1795.2	–	2	4
2310	1848.0	–	1	5
2376	1900.8	–	–	6
2442	1953.6	–	5	2
2508	2006.4	–	4	3
2574	2059.2	–	3	4
2640	2112.0	–	2	5
2706	2164.8	–	1	6
2772	2217.6	–	–	7
2838	2270.4	–	5	3
2904	2323.2	–	4	4
2970	2376.0	–	3	5
3036	2428.8	–	2	6
3102	2481.6	–	1	7
3168	2534.4	–	–	8

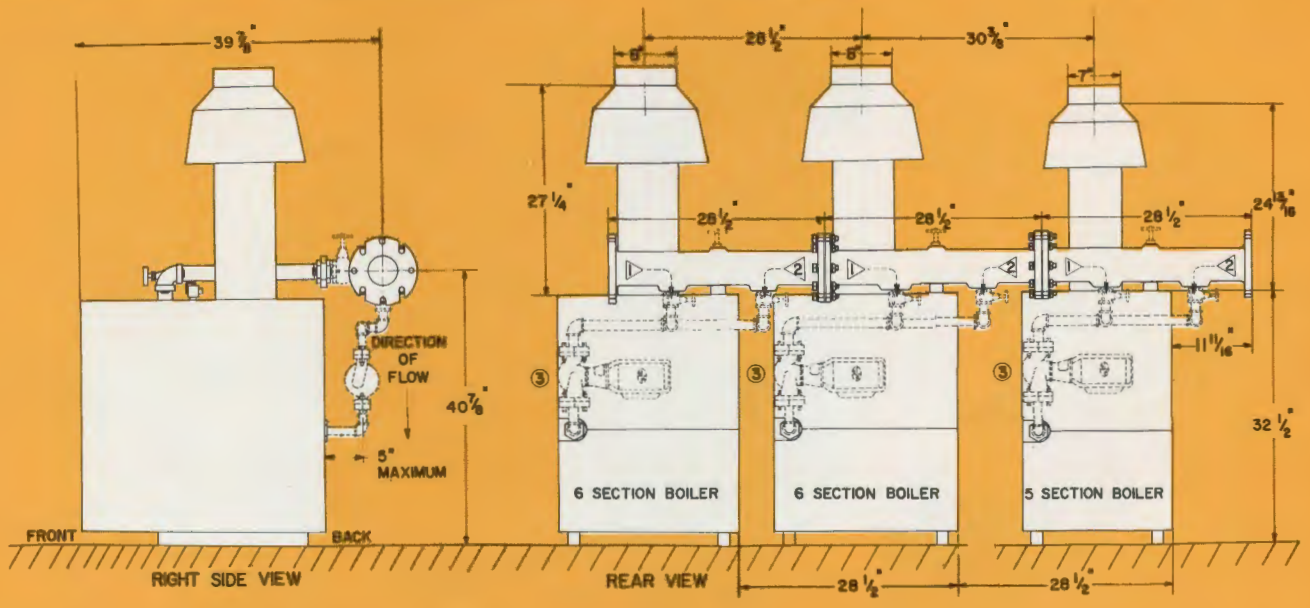
Single Boiler Installation

Boiler No.	Dimensions							Gas Connection	
	A	B	C	D		E		Natural	Propane
				USA	Canada	USA	Canada		
805B	20	10	7	24-13/16	24-13/16	16-1/8	16-1/8	3/4	3/4
806B	23-3/4	11-7/8	8	27-3/4	25-3/4	18	16	3/4	3/4
807B	27-1/2	13-3/4	9	27-3/4	25-3/4	18	16	3/4	3/4
808B	31-1/4	15-5/8	9	30-11/16	26-11/16	20	16	3/4	3/4
809B	35	17-1/2	10	33-7/16	26-7/16	22	15	1	1
810B	38-3/4	19-3/8	10	33-7/16	26-7/16	22	15	1	1



Modular Boiler Installation

Primary-Secondary Circulation



NOTE: *Up to 8 boilers (805B, 806B, 807B or any combination thereof) may be placed in a row using the water manifold supplied on special order. If more than 8 boilers are used, they should be split into two rows (9 thru 16 boilers) or into three rows (17 thru 21 boilers). The rows should be piped in parallel.*

Piping shown in hidden line not supplied by manufacturer.

1 Circulator piping for left to right flow in water manifold (viewing from back).

2 Circulator piping for right to left flow in water manifold (viewing from back).

3 Circulator (Taco 110 or B & G 125).

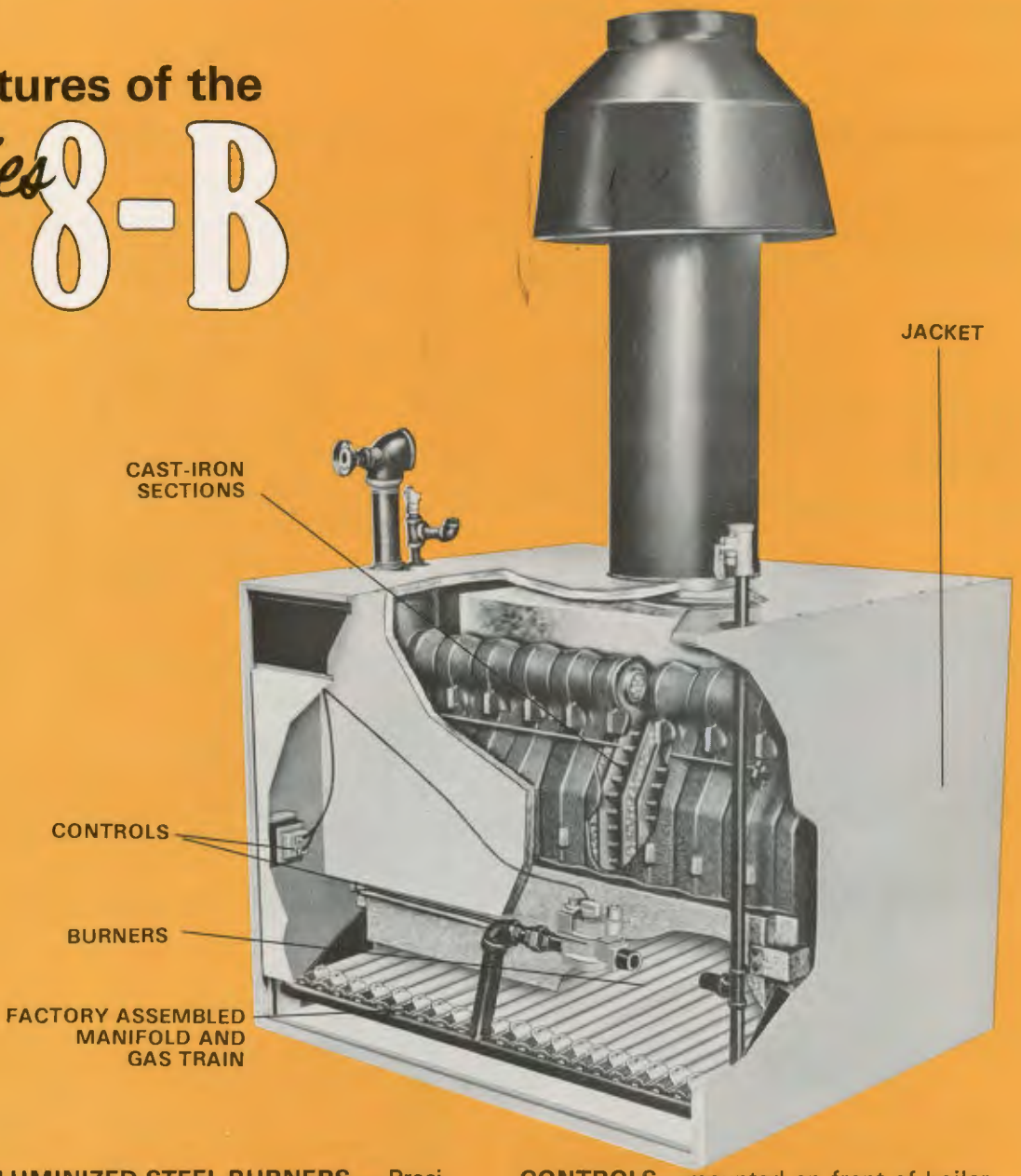
STANDARD EQUIPMENT

Section Assembly • Insulated Deluxe Jacket • 100% Shut-Off Gas Controls furnished as combination unit which includes: *Manual Shut-Off Valve — Automatic Gas Valve — Regulator — Manual Pilot Shut-Off Valve — Pilot Safety Switch — Thermocouple Control System (805B thru 807B) — Electronic Control System (808B thru 810B)* • ASME Safety Relief Valve • Altitude Temperature and Pressure Gauge • Boiler Drain Cock • 24V Gas Valve Transformer and Junction Box • Aluminized Steel Burners • Draft Hood • L-4080 Immersion Limit Control • #64 LWCO (808B-809B-810B only)

OPTIONAL EQUIPMENT

Self Energizing Controls in lieu of Standard 24 Volt (805B thru 807B only) • Electronic Control Systems • Four Stage Immersion Type Operating Control • Immersion Type Operating Control w/Individual Outdoor Resets • Eight Stage Boiler Sequencing Control Package w/Outdoor Reset • Factory Fabricated Water Manifold for Primary-Secondary Circulation Includes interconnecting supply piping (805B-806B & 807B only) • Factory Fabricated Water Manifold for Parallel Boiler Hookup. *Includes interconnecting supply and return piping.*

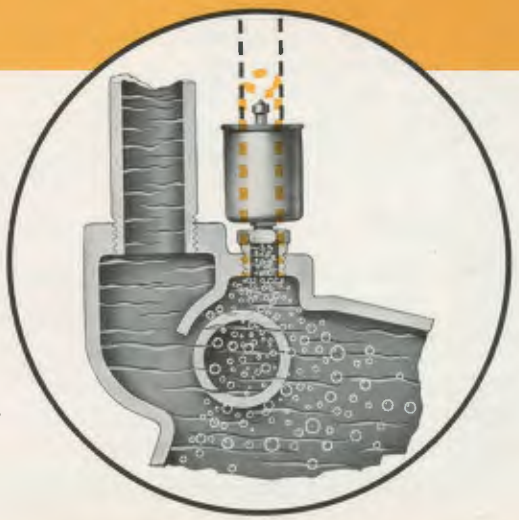
Features of the *Series* 8-B



ALUMINIZED STEL BURNERS — Precision slotted burners and air shutters provide long life, optimum primary air flow and high combustion efficiency. Quiet ignition and positive flame extinction achieved.

CONTROLS—mounted on front of boiler for easy adjustment and modular installation.

CAST IRON SECTIONS — Knocked-down boiler features assembled section block, base and manifold assembly with burners installed and securely fastened in position for correct alignment and on-the-job labor saving.



ELIMINAIRE® — a patented, cost-saving feature. This unique built-in air eliminator is integrally cast into the left-hand end section. Furnished with all boilers, the ELIMINAIRE baffle diverts rising air bubbles into a tapping for connection to the expansion tank. No external device is required to separate air and water, thus reducing both cost and installation time.

GENERAL SPECIFICATION

Contractor shall furnish and install, where indicated on the drawings, ... Series 8B ..... (water) gas fired modular boilers having a net I=B=R approved rating of ..... Mbh with A.G.A. certified total input of ..... Mbh when fired with .... (natural/propane) gas. Each module boiler shall be constructed of cast iron sections manufactured in accordance with ASME requirements for low pressure boilers and each section shall be permanently marked with the ASME symbol and certified test pressures.

MODULAR BOILER EQUIPMENT SPECIFICATION

2.1 Each module boiler shall have vertical pinned surface flue ways.

2.2 Module boiler shall be equipped with aluminized steel burners.

2.3 Each module boiler shall have a built-in air elimination device.

2.4 Each module boiler flue canopy shall be constructed of heavy aluminized steel concealed under the jacket.

2.5 A drafthood shall be furnished for each module.

2.6 Jackets shall be deluxe extended type and insulated with fiberglass insulation and shall be capable of being installed before or after system piping has been connected to boiler section assembly.

2.7 All modular water boiler sections shall be hydrostatically tested for 50 working pressure in accordance with ASME Code section IV.

2.8 Water trim shall include a 2½" round pressure-temperature gauge with separate scales for pressure and water temperature. In addition, ASME approved water relief valves shall be furnished, as required, sized to exceed the boiler output capacity and shall be factory set to relieve pressure at 50 psi.

2.9 Factory fabricated water manifolds shall be provided that are designed for (select option (a) or (b) below).

Option (a)

Primary/secondary circulation which will be base bid arrangement. Boiler manufacturer will supply the interconnecting boiler to manifold supply piping. The contractor shall furnish the required number of circulators to match the number of modules. The manifolds shall be provided with necessary tappings for operating controls and plugs to complete manifold installation.

Option (b)

Parallel supply and return circulation which will be accepted as an alternate arrangement. One set of supply and return manifolds shall be purchased by contractor. Boiler manufacturer will include with the manifolds the inter-connecting boiler to manifold supply or return piping. The manifolds shall be furnished with the necessary tappings for operating controls and plugs to complete the manifold installation.

BURNHAM CORPORATION
HYDRONICS DIVISION
Lancaster, Pa. 17604

high efficiency hydronics

Form No. 4109-6-79-20M f

NEW!

Series 2

CAST IRON
GAS
HYDRONIC
PACKAGE

NATURAL OR PROPANE GAS
HOT WATER

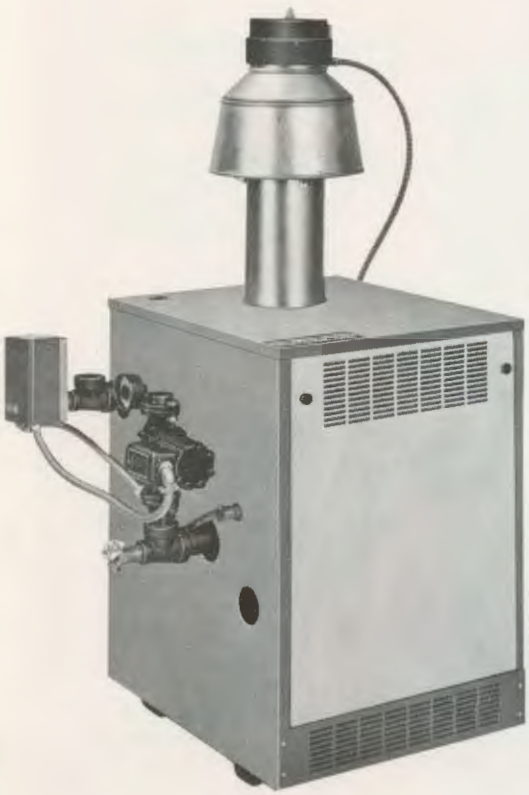
Eight Sizes
DOE Heating Capacity: 51,000 to 245,000 BTU/HR

Burnham
AMERICA'S BOILER COMPANY

Burnham
AMERICA'S BOILER COMPANY

Series 2

THE GAS BOILER OF THE 80's



With Department of Energy efficiency ratings of up to 80%, the Series 2 exceeds the proposed D.O.E. 1986 efficiency requirements (when equipped with available electric ignition and vent damper, published by D.O.E. June 30, 1980).

But the Series 2 is more than a high efficiency heating unit. Rugged cast iron construction, stainless steel burners, and a proven design enable the Series 2 to deliver clean, quiet and dependable home comfort year after year.

In addition, the Series 2 is safe enough to trust your home to. Gas valves are safely hidden inside the jacket away from children and safe from accidental bumps and tampering.

Completely factory assembled and fire tested, this unit requires only system piping connections, gas and electric hook-up to put it into operation.

Efficiency, dependability, and safety . . . The Series 2 is everything the most particular contractor could ask for.

STANDARD EQUIPMENT

(Factory assembled and shipped in skid-bottom crate)

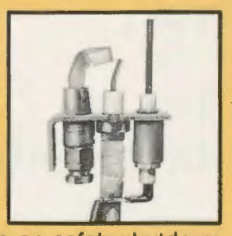
- Deluxe two-tone blue jacket
- 1¼" Circulator with Piping to Boiler
- ASME Safety Relief Valve
- Theraltimeter
- Boiler Drain Cock
- Built-in Air Elimination
- 100% Shut-off-Combination Step-opening Gas Valve
- High Limit
- Wiring (Internal)
- Universal Stainless Steel Burners
- Transformer and Junction Box — when required

ADDITIONAL EQUIPMENT SHIPPED IN SEPARATE CARTON

Pilot Gas Filter (furnished only when required by Gas Co.)
Drafthood
Room Thermostat, 24 volt, 2 wire

OPTIONAL EQUIPMENT

ELECTRIC IGNITION



Optional spark ignited pilot (EI) is available on all sizes for natural gas only. Coupled with a redundant gas valve the system shuts down on loss of pilot flame within .8 sec. The control arrangement provides for a 30 second try for pilot relight following shutdown. If after the length of time the pilot is not re-established the entire system goes on safety shutdown.

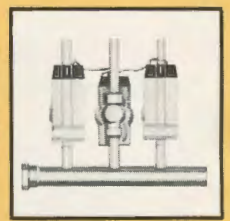
FUEL SAVING VENT DAMPER —

Increases annual efficiency and saves fuel dollars. Automatically closes the flue after the burner shuts off and reopens it again before the burner comes on. Available as optional equipment — mounts & wires easily.

DE LUXE JACKET EXTENSION

Optional jacket extension covers all controls and circulator. Shipped in separate carton and easily applied after piping is completed.

ZONE CONTROL PACK



SERIES 2 boilers can be supplied with zone pack assemblies for two or three zone systems. Zone packs include all necessary zone valves, manifolds and wiring to circulator. Thermostats, and necessary transformers are shipped in separate carton.

Zoned hydronic heating with this unit can provide the ultimate in heating comfort and economy.

Millivolt, other optional control and equipment, refer to price sheet.

GAS HYDRONIC PACKAGE

RATINGS — Natural and Propane Gas(1) — 0 to 2000 Ft. Elevation(2)

Boiler Number	AGA Input MBH	DOE Heating Capacity MBH	I=B=R Net Rating MBH(3)	Net Rating Water Sq. Ft.(4)	Flue Outlet & Breeching Diameter	Recommended Chimney Size Round Dia. In. × Ft. (5)	DOE Annual Efficiency, %		
							Standing Pilot	EI	EI and Vent Damper
203	62	51	44.3	295	4	4 × 15	69.1	72.1	79.6
204	96	79	68.7	458	5	5 × 15	69.4	72.1	79.8
205	130	107	93.0	620	6	6 × 15	69.6	72.1	79.9
206	164	135	118.3	789	6	6 × 15	69.9	72.1	80.0
207	198	162	140.9	939	7	7 × 15	70.2	72.1	80.2
208	232	190	165.2	1101	7	7 × 15	70.4	72.1	80.3
209	266	218	189.6	1264	8	8 × 15	70.7	72.1	80.5
210	299	245	213.0	1420	8	8 × 15	70.9	72.1	80.6

DOE heating capacity and annual efficiency are based on U.S. Government standard tests.

DIMENSIONAL DATA

Boiler Model	Dim A	Dim B	Dim C	Dim D	Dim E	Dim F	Gas Connection for Gas Valve — Natural & Propane
203	27½	14½	8	4	44⅞	8½	½
204	30¾	17¾	9⅝	5	45 13/16	9⅛	½
205	34	21	11¼	6	46¾	9¾	½
206	37¼	24¼	12⅞	6	46¾	9¾	½
207	40½	27½	14½	7	48 3/16	10⅜	½
208	43¾	30¾	16⅛	7	48 3/16	10⅜	½(1)
209	47	34	17¾	8	49½	11	¾
210	50½	37¼	19⅜	8	49½	11	¾

(1) — Gas Connection for 208 with EI Controls is ¾".

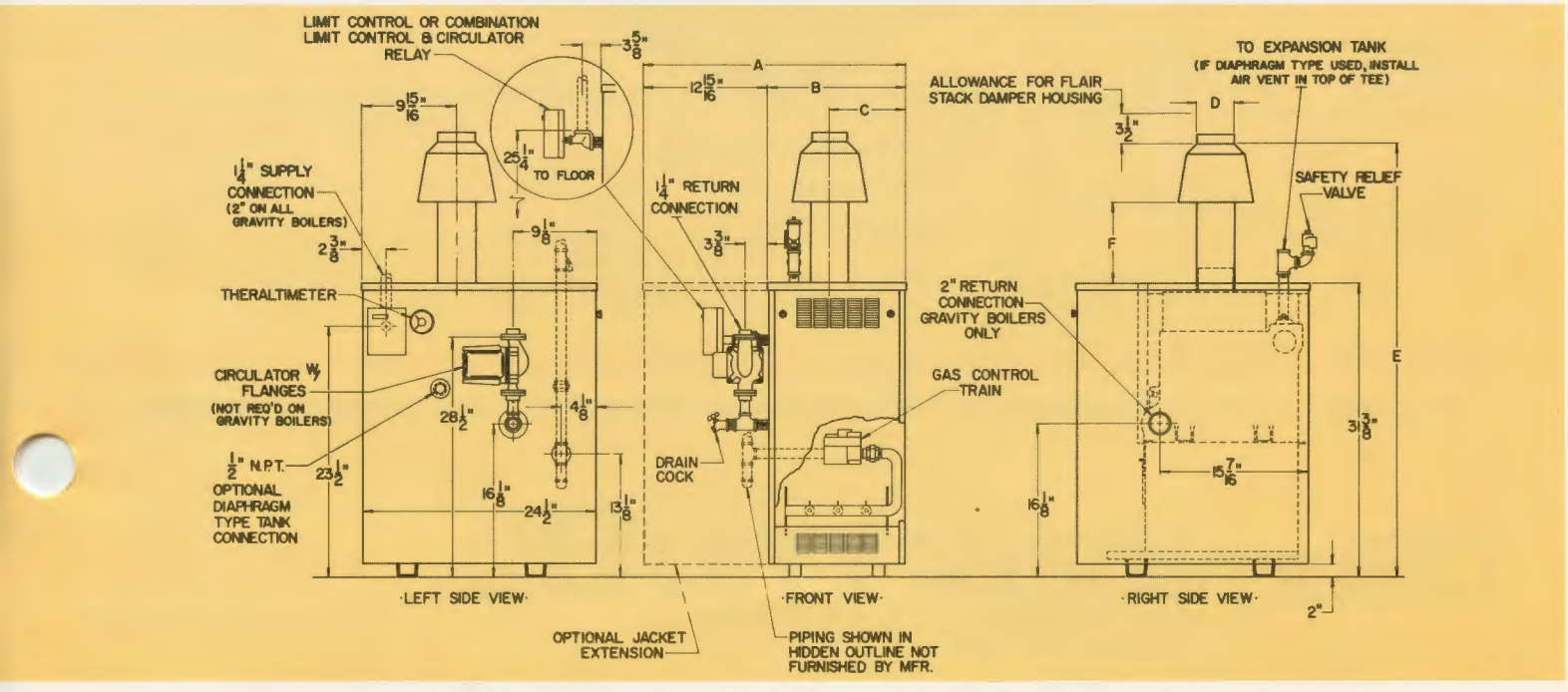
(1) Propane available for standing pilot only.

(2) For elevations above 2,000 ft. A.G.A. ratings should be reduced at the rate of four percent (4%) for each 1,000 ft. above sea level.

(3) Net I=B=R ratings shown are based on normal I=B=R piping and pick-up allowance of 1.15. Consult the manufacturer for installations having unusual piping and pick-up requirements such as intermittent system of operation, extensive piping systems, etc.

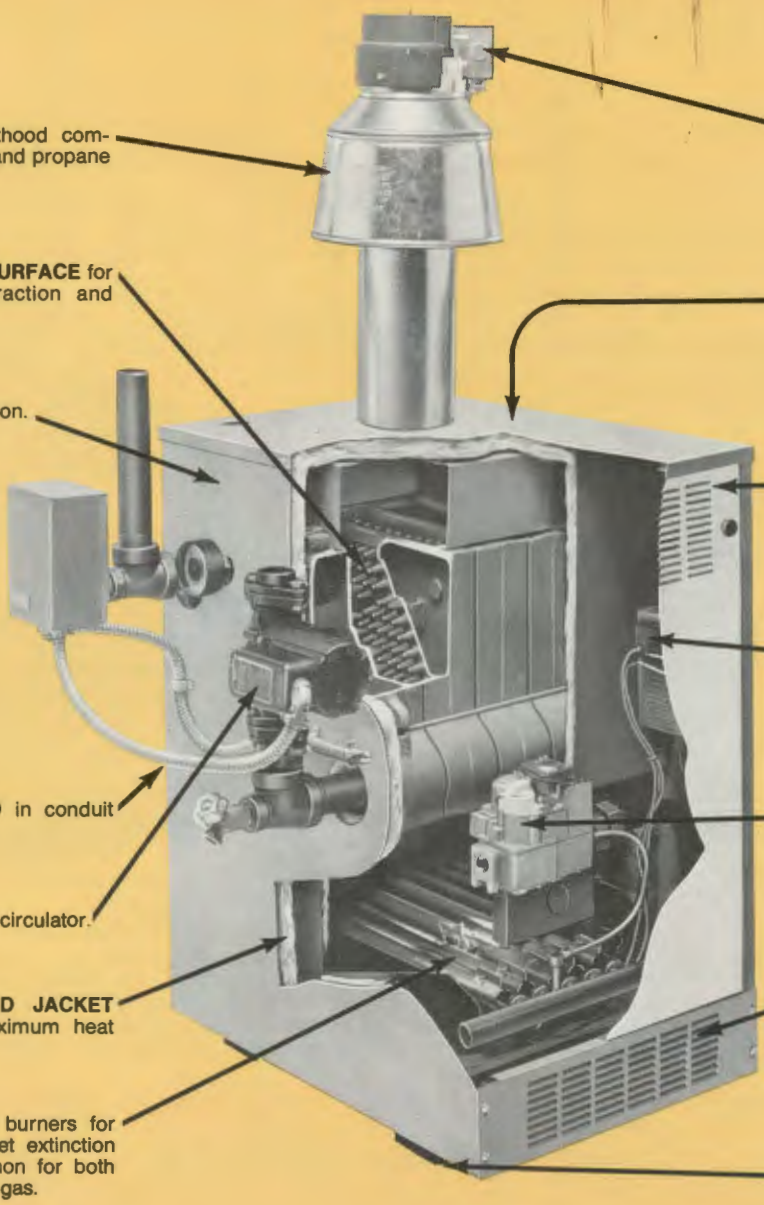
(4) Based on 170°F average water temperature in radiators (heat emission rate of 150 BTU/HR/Sq. Ft.). For higher water temperatures, select boiler on basis of net ratings in BTU/HR.

(5) Recommended chimney for rectangular application is 8 in. × 8 in. × 15 ft. for sizes 203 through 209, and 8 in. × 12 in. × 15 ft. for size 210.



Series 2 / THE GAS BOILER OF THE 80's

EXCEEDS 1986 DEPARTMENT OF ENERGY EFFICIENCY REQUIREMENTS*



LOW PROFILE Drafthood common for both natural and propane gas.

PINNED HEATING SURFACE for maximum heat extraction and efficiency.

BUILT-IN air elimination.

WIRING ENCLOSED in conduit for safety.

ENERGY EFFICIENT circulator.

DELUXE INSULATED JACKET AND BASE for maximum heat retention.

STAINLESS STEEL burners for smooth light-off, quiet extinction and long life. Common for both natural and propane gas.

DUAL CONTROL Fail-safe cast iron vent damper (optional).

PUSH NIPPLES assure permanent water tight seal between boiler sections.

CONVENIENT ACCESS door with insulating handles.

PLUG-IN damper wiring for ease of installation.

CONCEALED STEP OPENING GAS VALVE guards against tampering and improves appearance.

SAFETY LOUVERS Provide adequate combustion air. Shields children and pets from flames.

STURDY STEEL legs with nylon insulating feet.

FIRE TESTED at factory.

Approved for close closet and combustible floor installation.

*When equipped with available electric ignition and vent damper.
Proposed Efficiency Standards Published by D.O.E. June 30, 1980

BEFORE PURCHASING THIS APPLIANCE READ IMPORTANT ENERGY COST AND EFFICIENCY INFORMATION AVAILABLE FROM YOUR CONTRACTOR.

Burnham
HYDRONICS DIVISION
Lancaster, PA 17604

Form No. 4125-12-80-30Mf

Series 4

CAST IRON GAS HYDRONIC PACKAGE

NATURAL GAS (all sizes) OR PROPANE GAS (404-408 only)

HOT WATER OR STEAM

NINE SIZES:

GROSS OUTPUTS 84,000 to 308,000 BTU/HR

BURNHAM AMERICA

BURNHAM AMERICA Series 4

STEAM

WATER

FACTORY ASSEMBLED AND PACKAGED IN THREE STYLES

Series 4 units are available in three package variations to meet all installation needs.

COMPLETE-PAK . . . Completely assembled boiler, burners, and all controls for quick and easy hook-up on the job-site. Just hook up piping, wiring, and gas line.

UTILITY-PAK . . . Semi-packaged unit with boiler, burners, and jacket pre-assembled. Choice of steam or water trim and controls as a separate packaged element allows use of basic package for either steam or water installations. Utility-Pak allows great flexibility in stocking.

SUB-PAK . . . A sub-assembled version of the Series 4, shipped with all sections assembled and a separate base-burner-manifold assembly. Jacket, controls, and trim are shipped in separate cartons for complete assembly in the field.

NINE SIZES TO MEET ALL RESIDENTIAL AND INTERMEDIATE APPLICATIONS

The Series 4 is available for steam or water in nine sizes: 263 to 963 net square feet steam; 487 to 1785 net square feet water.

MODERN TWO-TONE BLUE JACKET

The smartly styled jacket gives an appliance look to hydronic installations. The standard flush jacket (provided on all units) conceals the burners and manifold. The optional deluxe jacket extension conceals all controls and trim.

CERTIFIED: CONSTRUCTION-RATINGS-PERFORMANCE

The Series 4 meets all requirements of the American Society of Mechanical Engineers (A.S.M.E.) and the Institute of Boiler and Radiator Manufacturers (I=B=R). American Gas Association (A.G.A.) design certified for natural gas (all sizes) and propane gas (404 to 408 only).

The Series 4 is A.G.A. approved for alcove (three sided enclosure) installations.

Not for installation on combustible floors unless equipped with special floor shield.

RATINGS Natural and Propane Gas

BOILER SIZE	A.G.A. RATINGS		I=B=R NET RATINGS			NET RATING
	INPUT BTU/HR	GROSS OUTPUT BTU/HR	STEAM BTU/HR	STEAM SQ.FT.	WATER BTU/HR	WATER SQ.FT.
404	105,000	84,000	63,000	263	73,000	487
405	140,000	112,000	84,000	350	97,400	649
406	175,000	140,000	105,000	438	121,700	811
407	210,000	168,000	126,000	525	146,100	974
408	245,000	196,000	147,000	613	170,400	1136
409*	280,000	224,000	168,000	700	194,800	1299
410*	315,000	252,000	189,000	788	219,100	1461
411*	350,000	280,000	210,100	875	243,500	1623
412*	385,000	308,000	231,100	963	267,800	1785

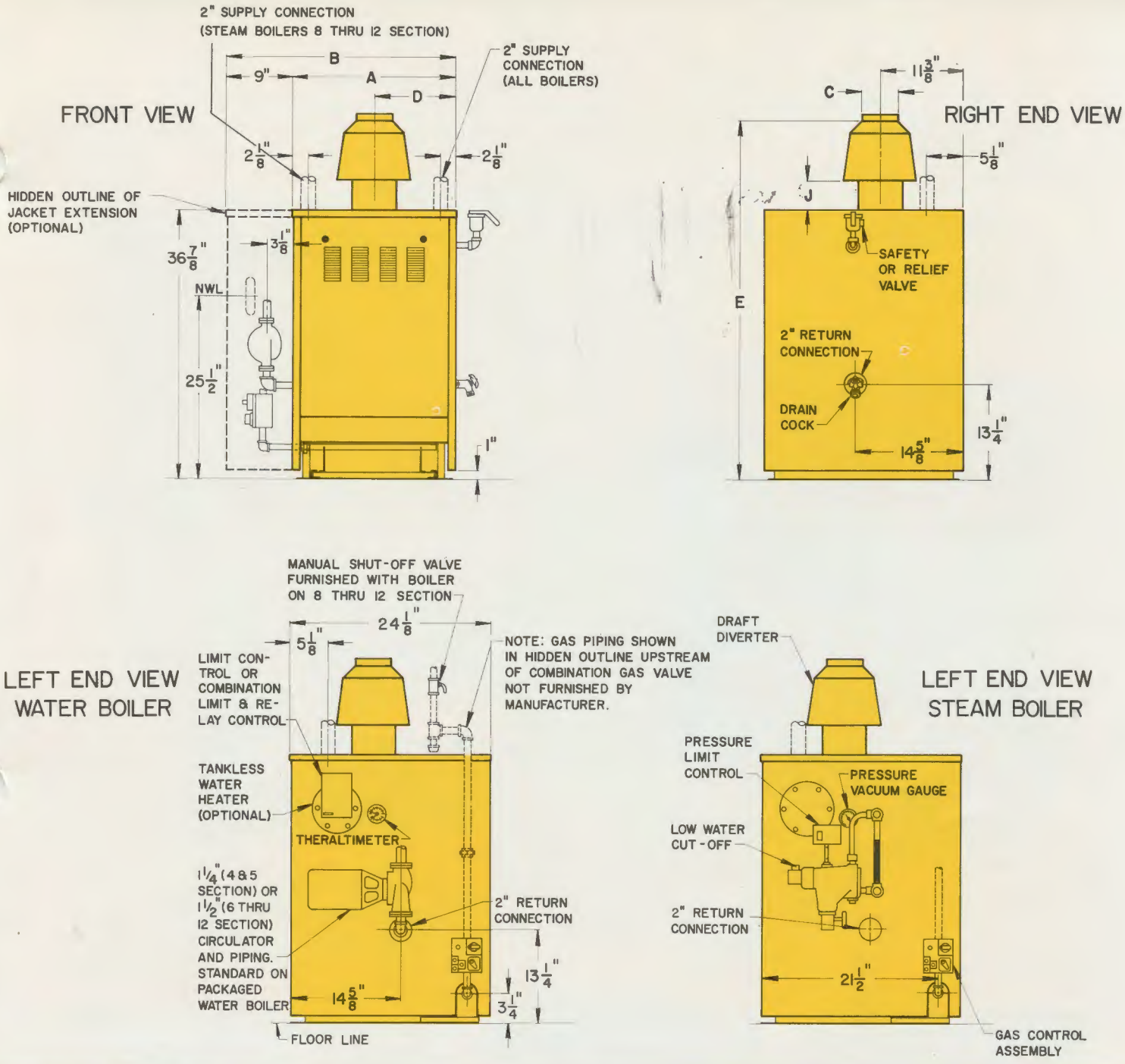
* Not available for propane gas.

Ratings shown are for installations at sea level and elevations up to 2,000 ft. For elevations above 2,000 ft. ratings should be reduced at the rate of four percent (4%) for each 1,000 ft. above sea level.

Net I=B=R Ratings shown are based on a piping and pickup allowance of 1.33 for steam and 1.15 for water.

Consult the manufacturer for installation having unusual piping and pickup requirements, such as intermittent system of operation, extensive piping systems, etc.

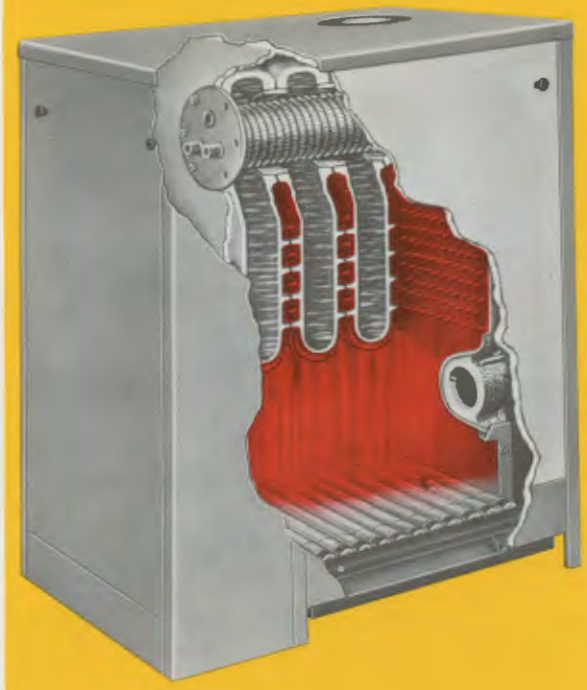
Net Ratings for Water, Square Feet are based on 170° average water temperature in radiators with a heat emission rate of 150 BTU/HR/SQ.FT. For higher water temperature select boiler on basis of net ratings in BTU/HR.



DIMENSIONS (in inches)

BOILER SIZE	JACKET LENGTH "A"	EXTENDED LENGTH "B"	DIM. "C"	DIM. "D"	DIVERTER HEIGHT "E"		DIVERTER SKIRT HEIGHT "J"		RECOMMENDED CHIMNEY		BREECHING DIAMETER	GAS CONNECTION
					NAT.	PROP.	NAT.	PROP.	ROUND DIA".x HT'.	SQUARE IN.x IN.x HT'.		
404	15 3/4	24 3/4	5	7 7/8	49 1/16	49 1/16	6	6	5 x 15	8 x 8 x 15	5	1/2
405	19 3/8	28 3/8	6	9 1/16	51 5/8	54 5/8	7 1/4	10 1/4	6 x 15	8 x 8 x 15	6	1/2
406	22 7/8	31 7/8	6	11 7/16	52 7/8	55 7/8	8 1/2	11 1/2	6 x 15	8 x 8 x 15	6	1/2
407	26 1/2	35 1/2	7	13 1/4	55 3/8	58 5/16	9 3/4	12 3/4	7 x 15	8 x 8 x 15	7	1/2
408	30	39	7	15	56 5/8	60 1/16	11	14 1/2	7 x 15	8 x 8 x 15	7	3/4
409	33 5/8	42 5/8	8	16 13/16	59 7/16	—	12 3/4	—	8 x 15	8 x 8 x 15	8	3/4
410	37 1/8	46 1/8	8	18 9/16	61 3/16	—	14 1/2	—	8 x 15	8 x 12 x 15	8	3/4
411	40 3/4	49 3/4	8	20 3/8	62 15/16	—	16 1/4	—	8 x 15	8 x 12 x 15	8	3/4
412	44 1/4	53 1/4	8	22 1/8	64 1 1/16	—	18	—	8 x 15	8 x 12 x 15	8	3/4

Series 4 QUALITY FEATURES



CAST-IRON CONSTRUCTION
Rugged cast iron gives the Series 4 lifetime durability and trouble-free performance. Cast Iron is well known for its resistance to corrosion and rust.

VERTICAL FLUE TRAVEL
This scientific feature assures economical operation. Heated gases pass over special heat-absorbing surfaces studded with hundreds of heat-grabbing pins.

YEAR 'ROUND HOT WATER
Specially designed, all copper built-in tankless heaters provide a maximum amount of domestic hot water with a minimum of gas consumption. (Water boilers only).

TOP TAPPINGS
Ideal for steam applications. Provides more flexibility in piping.

LARGE NIPPLE PORTS
Wide and open sections coupled with large nipple ports provide good internal water circulation. The large upper nipple port becomes an excellent internal header for steam applications.

CONTROLS
Safe, dependable and fully automatic, the Series 4 controls are the finest obtainable. Controls are available in 24 volt or millivolt (self-energizing) and are easily accessible from the front of boiler.

Series 4 water boilers offer an optional built-in all copper coil with XL Trufin tubing. Located at the top of the boiler to assure fast heat transfer.

BURNER-BASE-MANIFOLD ASSEMBLY
Steel burners are factory assembled and aligned, then securely mounted on burner tray. The entire burner drawer assembly slides out as illustrated.

This unitized slide-out feature allows easy access to burners and pilot for inspection and maintenance. Newly designed steel burners in the Series 4 provide the optimum in performance.

BURNHAM AMERICA
BURNHAM CORPORATION
HYDRONICS DIVISION
LANCASTER, PA. 17604

Form No. 4140A-677-40M i

Printed in U.S.A.

FREEDOM 62

CAST IRON GAS HYDRONIC PACKAGE

HOT WATER OR STEAM

SEVEN SIZES:
GROSS OUTPUTS 84,000 to 252,000 BTU/HR

BURNHAM AMERICA

BURNHAM AMERICA / FREEDOM 62

FACTORY ASSEMBLED AND PACKAGED IN THREE STYLES

FREEDOM 62 units are available in three package variations to meet all installation needs.

COMPLETE-PAK . . . Completely assembled boiler, burners, and all controls for quick easy hook-up on the job-site. Just hook up piping, wiring, and gas line.

UTILITY-PAK . . . Semi-packaged unit with boiler, burners, and jacket pre-assembled. Choice of steam or water trim and controls as a separate packaged element allows use of basic package for either steam or water installations. Utility-Pak allows great flexibility in stocking.

SUB-PAK . . . A sub-assembled version of the FREEDOM 62, shipped with all sections assembled and a separate base-burner-manifold assembly. Jacket, controls, and trim are shipped in separate cartons for complete assembly in the field.

SEVEN SIZES TO MEET ALL RESIDENTIAL AND INTERMEDIATE APPLICATIONS

The FREEDOM 62 is available for water or steam in seven full range sizes: 265 Net Sq. Ft. to 790 Net Sq. Ft. steam; 485 Net Sq. Ft. to 1460 Net Sq. Ft. water.

FASHION STYLED JACKET DESIGN

Modern jacket design gives appliance look to hydronic installations. Standard flush jacket shipped on all package units conceals burners and manifold. Optional deluxe jacket extension conceals all controls and trim.

A.G.A. DESIGN CERTIFIED

For Natural gas. Meets all requirements of Eastern Utilities (S.U.R.), Institute of Boiler and Radiator Manufacturers (I = B = R) and of the American Society of Mechanical Engineers (A.S.M.E.)

Not for installation on combustible floors unless equipped with special floor shield.

BOILER RATINGS AND DATA (Natural Gas)

	A.G.A. RATINGS		I-B-R NET RATINGS			NET RATING WATER Sq. Ft.
BOILER SIZE	INPUT BTU/Hr.	GROSS OUTPUT BTU/Hr.	STEAM BTU/Hr.	STEAM Sq. Ft.	WATER BTU/Hr.	
4-62	105,000	84,000	63,000	265	73,000	485
5-62	140,000	112,000	84,000	350	97,400	650
6-62	175,000	140,000	105,000	440	121,700	810
7-62	210,000	168,000	120,000	525	146,100	975
8-62	245,000	196,000	147,000	615	170,400	1135
9-62	280,000	224,000	168,000	700	194,800	1300
10-62	315,000	252,000	189,000	790	219,100	1460

NOTE:

Ratings shown are for installations at sea level and elevations up to 2,000 Ft. For elevations above 2,000 Ft. ratings should be reduced at the rate of four percent (4%) for each 1,000 Ft. above sea level.

Net I-B-R Ratings shown are based on a piping and pickup allowance of 1.33 for steam and 1.15 for water.

Consult the manufacturer for installation having unusual piping and pickup requirements, such as intermittent system of operation, extensive piping systems, etc.

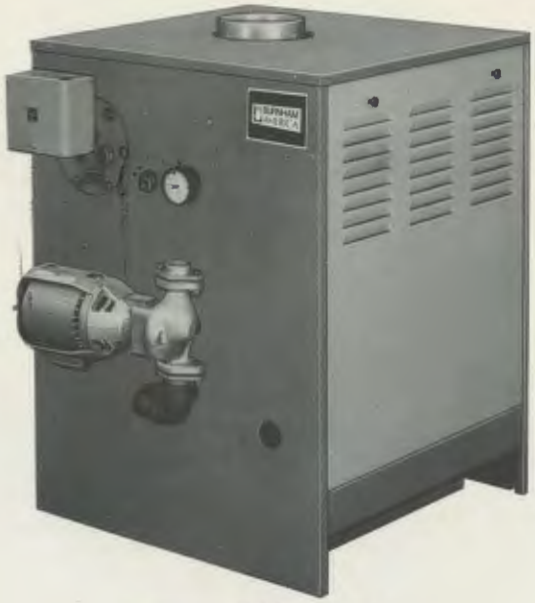
Net Ratings for Water, Square Feet are based on 170° average water temperature in radiators with a heat emission rate of 150 BTU/Hr./Sq. Ft.

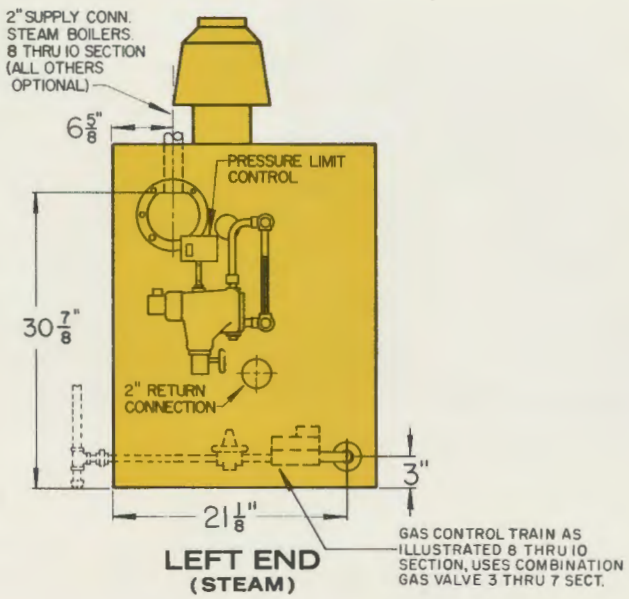
DIMENSIONS (Inches) Series 62 — Flush Jacket and Extension

BOILER SIZE	FLUSH JACKET LENGTH A	EXTENDED JACKET LENGTH B	DIM. C	DIM. D	DIVERTER HEIGHT E	GAS CONN.	BREECH. DIA.	FLUE OUTLET DIA.	RECOMMENDED CHIMNEY	
									ROUND Dia. In. x Ft.	SQUARE In. x In. x Ft.
4-62	15¾	24¾	5	7⅞	47⅝	½	5	5	5 x 15	8 x 8 x 15
5-62	19⅜	28⅜	6	9⅝	49⅞	½	6	6	6 x 15	8 x 8 x 15
6-62	22⅞	31⅞	6	11⅜	51⅜	½	6	6	6 x 15	8 x 8 x 15
7-62	26½	35½	7	13¼	54	½	7	7	7 x 15	8 x 8 x 15
8-62	30	39	7	15	55⅝	¾	7	7	7 x 15	8 x 8 x 15
9-62	33⅝	42⅝	8	16¾	58⅛	¾	8	8	8 x 15	8 x 8 x 15
10-62	37⅛	46⅛	8	18⅝	59⅝	¾	8	8	8 x 15	8 x 12 x 15

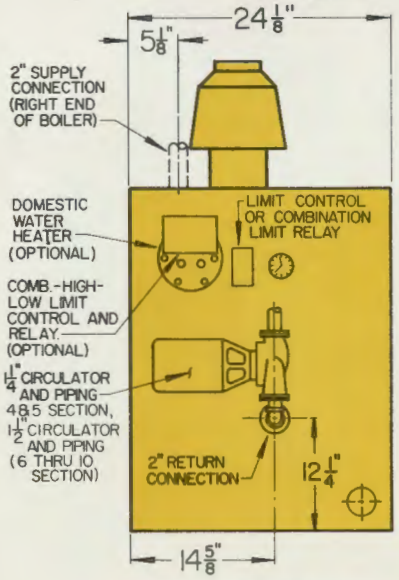
STEAM

WATER

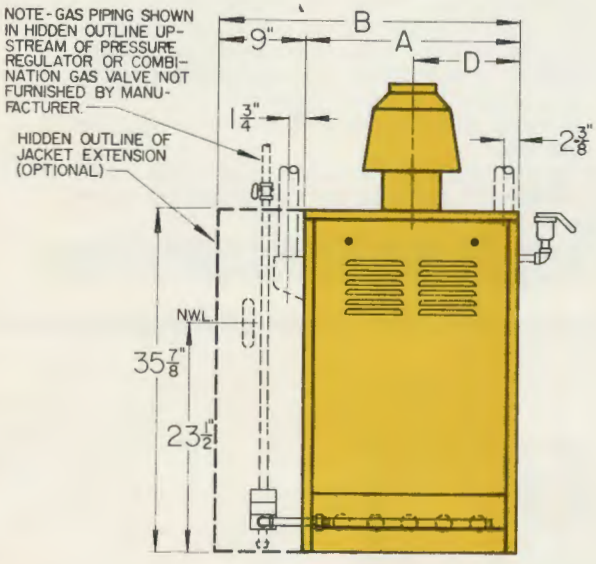




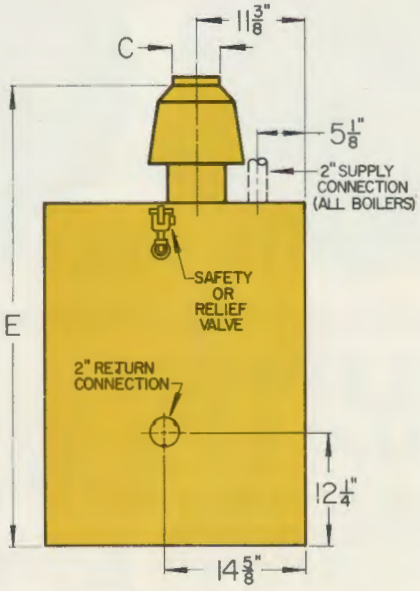
LEFT END
(STEAM)



LEFT END
(WATER)

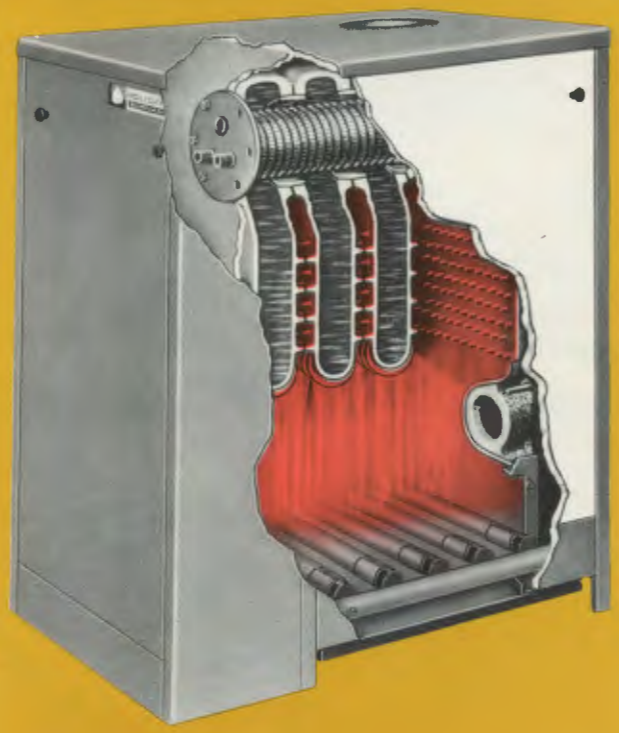


FRONT
(STEAM OR WATER)



RIGHT END
(STEAM OR WATER)

FREEDOM 62 QUALITY FEATURES



CAST-IRON CONSTRUCTION

Rugged cast iron gives FREEDOM 62 lifetime durability and trouble-free performance. There is no other metal more resistant to corrosion and rust.

VERTICAL FLUE TRAVEL

This scientific feature assures economical operation. Heated gases pass over special heat-absorbing surfaces studded with hundreds of heat-grabbing pins.

YEAR 'ROUND HOT WATER

Specially designed, all copper built-in tankless heaters provide a maximum amount of domestic hot water with a minimum of gas consumption. (Water boilers only).

SUPERIOR INSULATION

Thick glass-wool insulation increases economy of operation by reducing heat loss.

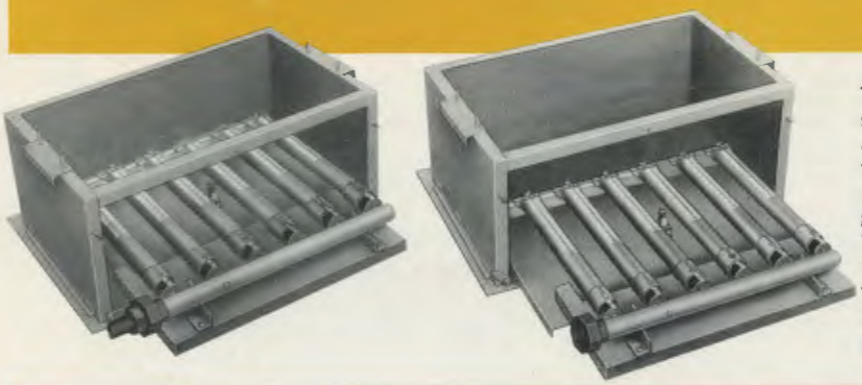
TOP TAPPINGS

Easy piping connections are provided to allow maximum flexibility in installation.

CONTROLS

Safe, dependable and fully automatic, FREEDOM 62's controls are the finest obtainable. Easily accessible from front of boiler.

FREEDOM 62 packages include built-in all copper coils and Trufin tubing. Located at top of boiler to assure fastest heat transfer.



The FREEDOM 62 features a unitized burner assembly. Steel burners are factory assembled and aligned, then securely mounted on the burner tray. The entire burner assembly slides out by releasing two catches and disconnecting main gas line.

This unitized slide-out feature allows easy access to burners and pilot for inspection and maintenance.

Newly designed steel burners in the FREEDOM 62 provide the optimum in performance.

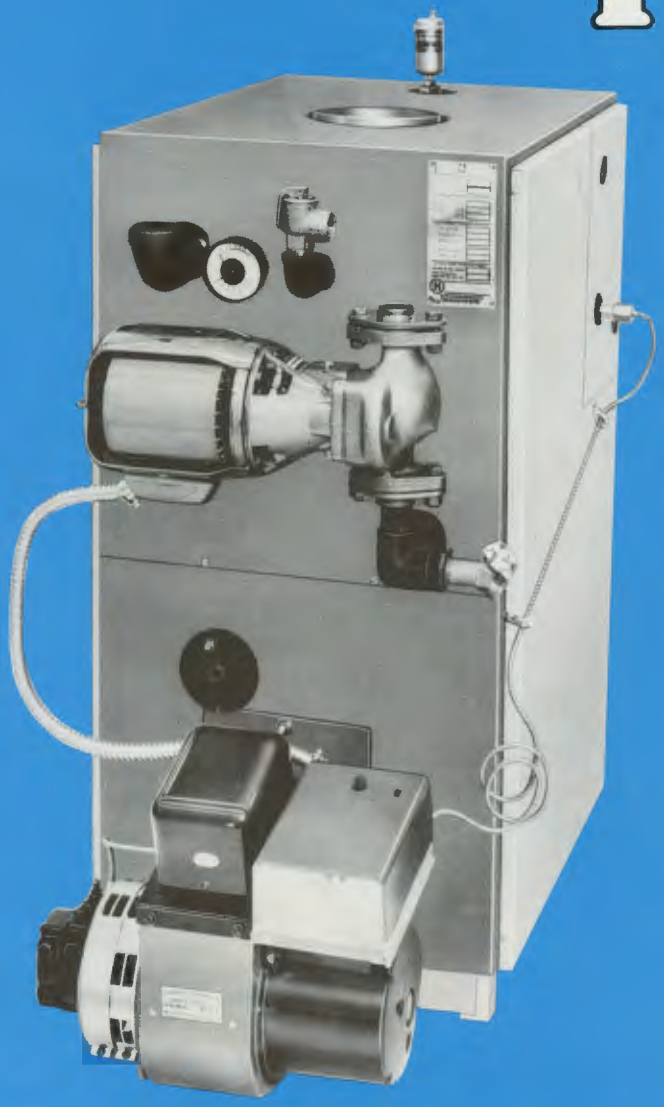
BURNHAM AMERICA
BURNHAM CORPORATION
HYDRONICS DIVISION
LANCASTER, PA. 17604

Printed in U.S.A.

Form No. 4162-5-75-20M-i

Fiesta II

CAST IRON OIL HYDRONIC PACKAGE



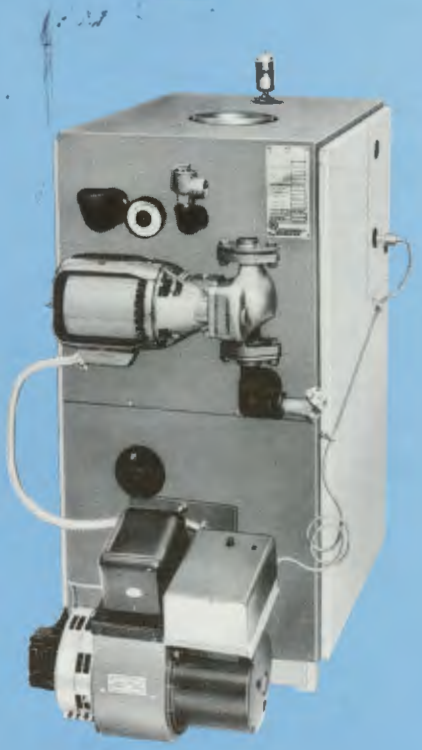
HOT WATER

FOUR SIZES

GROSS OUTPUTS–97,000 to 193,000 BTU/HR

BURNHAM AMERICA

BURNHAM AMERICA / Fiesta II



STANDARD EQUIPMENT

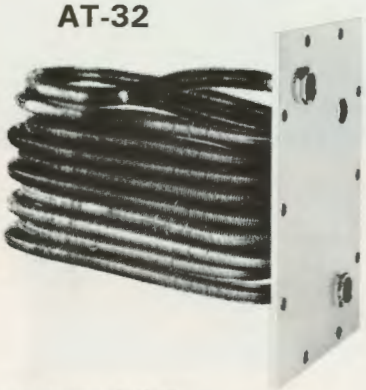
Fiesta II Boiler • Flush Jacket (two tone blue) • Oil Burner with cad cell • Combustion Chamber • 1 ½" Circulator with piping to boiler • 1 ½" Supply Piping • AT-32 Tankless Heater (PH models only) • Pressure and Temperature Gauge • Boiler Drain Cock • A.S.M.E. Safety Relief Valve • Combination Protectorelay and Hydronic Heating Control mounted on oil burner • Wiring Harness • Flue Brush. Draft Regulator and 24 volt, T-822D Thermostat (In separate carton).

Fiesta II shipped factory assembled.

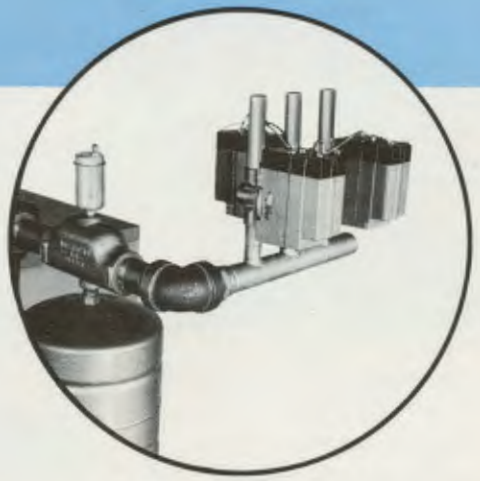
OPTIONAL EQUIPMENT

AT-34 Tankless Heater • Two and Three Zone Valve packages • #1500 Extrol Pak • #3000 Extrol Pak • Combustible Floor Base • T87-F Thermostat and Two Stage Fuel Pump. (Consult price sheet for additional cost.

AT-32



AT-34



TANKLESS HEATER RATINGS

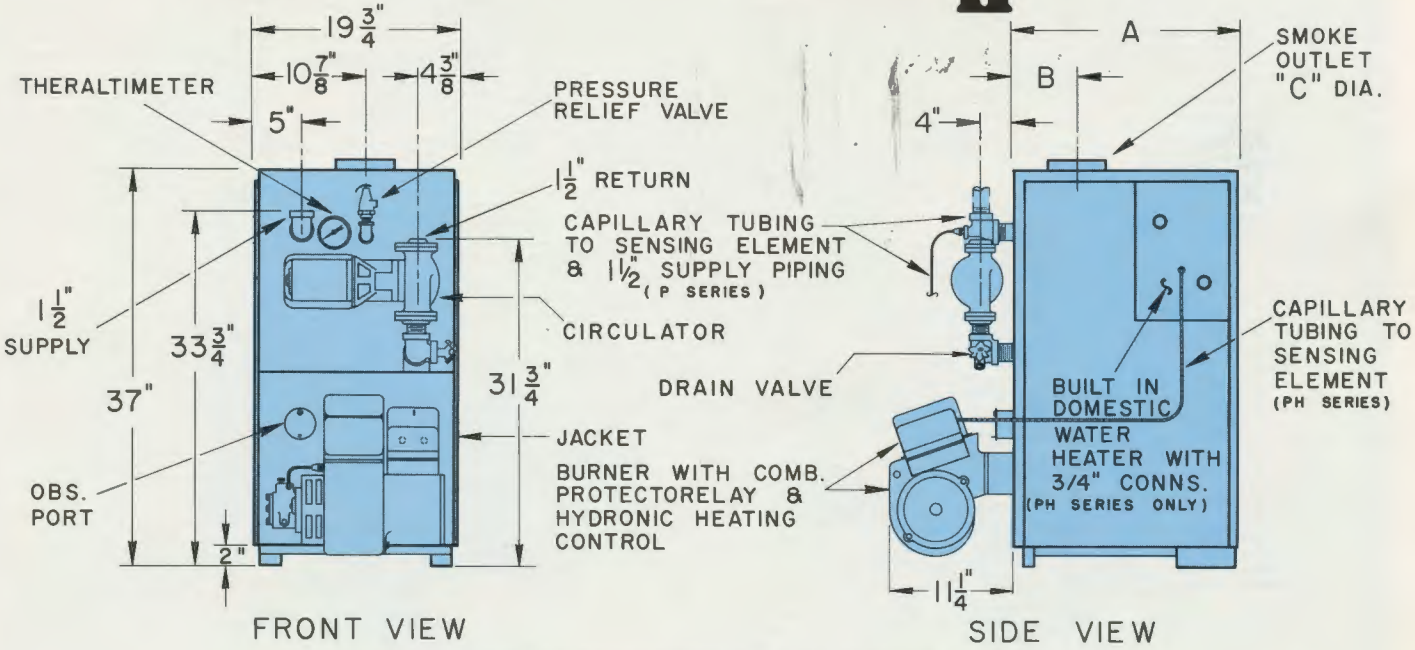
BOILER NO.	RATING W/STD. AT-32 HEATER GPM	RATING W/OPTL. AT-34 HEATER GPH
PH-45-W	3½	4
PH-55-W	3½	4½
PH-65-W	4	4½
PH-75-W	4	5

Tankless heater ratings are based on 40°-140° rise with boiler temperature at 200°.

Fiesta II ZONE VALVE PACKAGES

Pre-piped manifold and zone valve package includes, manifold, two or three zone valves, one or two thermostats and 24V transformer. Package is easily installed on any unit.

BURNHAM AMERICA / Fiesta II



SPECIAL BASE REQUIRED IF BOILER IS TO BE INSTALLED ON COMBUSTIBLE FLOOR.

DIMENSIONS (In Inches)

BOILER NO.	A	B	C
P or PH-45-W	22⅜	7½	6
P or PH-55-W	25⅝	9⅛	7
P or PH-65-W	29	10¾	7
P or PH-75-W	32¼	12⅜	8

These hydronic units comply with The Hydronics Institute's Testing and Rating Standard for Cast Iron and Steel Heating Boilers and with the Heating Boilers Section of the ASME Boiler & Pressure Vessel Code. All wiring and controls are listed by Underwriters' Laboratories.

RATING DATA

*BOILER NO.	†NET RATING WATER Sq. Ft.	I=B=R RATINGS NET BTU/HR	I=B=R RATINGS GROSS OUTPUT BTU/HR	** NOZZLE GPH— ANGLE-TYPE	‡I=B=R BURNER CAPACITY GPH	CHIMNEY SIZE In. x In. x Ft.
P or PH-45-W	560	84,300	97,000	0.90-80-B	0.95	8 x 8 x 15
P or PH-55-W	750	112,200	129,000	1.20-60-B	1.25	8 x 8 x 15
P or PH-65-W	935	140,000	161,000	1.50-60-B	1.50	8 x 8 x 15
P or PH-75-W	1120	167,800	193,000	1.75-60-B	1.80	8 x 12 x 15

*P—designates boiler with small back section, and without a tankless heater.

PH—designates boiler with large back section, and with a tankless heater.

†Net ratings for water square feet are based on 170°F average temperature in radiators. For higher water temperatures, select boiler on basis of I-B-R net rating, BTU/hr. Net I-B-R ratings shown are based on a piping and pick-up allowance of 1.15. Consult manufacturer for installations having unusual piping and pick-up requirements, such as intermittent system of operation, extensive piping systems, etc.

‡ The I=B=R Burner Capacity is based on oil having a heat value of 140,000 BTU/Gal.

** All nozzles are solid spray.

Fiesta II

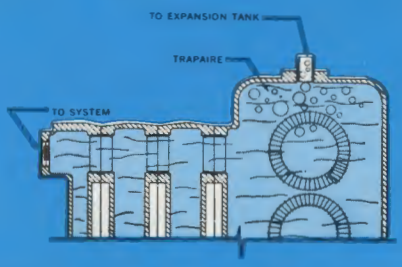
QUALITY FEATURES

THE NEW LOOK—The newest look in hydronic heating. Compact, sturdy cast-iron construction with matched oil burner, circulator, and controls all factory assembled and wired. It has the modern look that can be merchandised by heating contractors, fuel oil dealers and home builders.

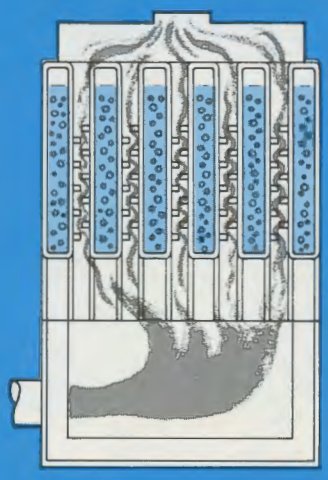
CAST IRON CONSTRUCTION
Provides durability and long life.

SIDE CLEANOUT

The maximum cleaning of all flueways can be accomplished through convenient side cleanout panel.

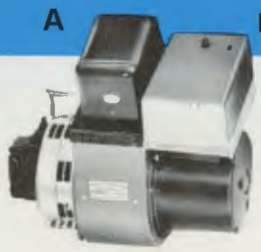


AUTOMATIC AIR ELIMINATION—A specially designed air eliminator releases air to the expansion tank. This is accomplished through the special tapping in the elevated large volume dome section. (Available on PH models only.)



VERTICAL CAST-IRON FLUE TRAVEL—An efficient proven design using hundreds of heat absorbing, integrally cast pins to extract maximum heat from flue gases.

ONE PIECE LIGHTWEIGHT COMBUSTION CHAMBER
Constructed and contoured from refractory fibres for instant heat-up and combustion efficiency. Easily replaced through removable front base panel.



(A) MATCHED OIL BURNER
The oil burner is specifically designed for use with the Fiesta II and is fully equipped with all controls for safe, automatic firing.

(B) SINGLE BURNER CONTROL—Combines control function and relay for Cad cell flame detector.

BURNHAM CORPORATION
HYDRONICS DIVISION
Lancaster, Pa. 17604

high efficiency hydronics

Form No. 4211A 11-78 35Ms

V1 Series

CAST IRON OIL HYDRONIC PACKAGE

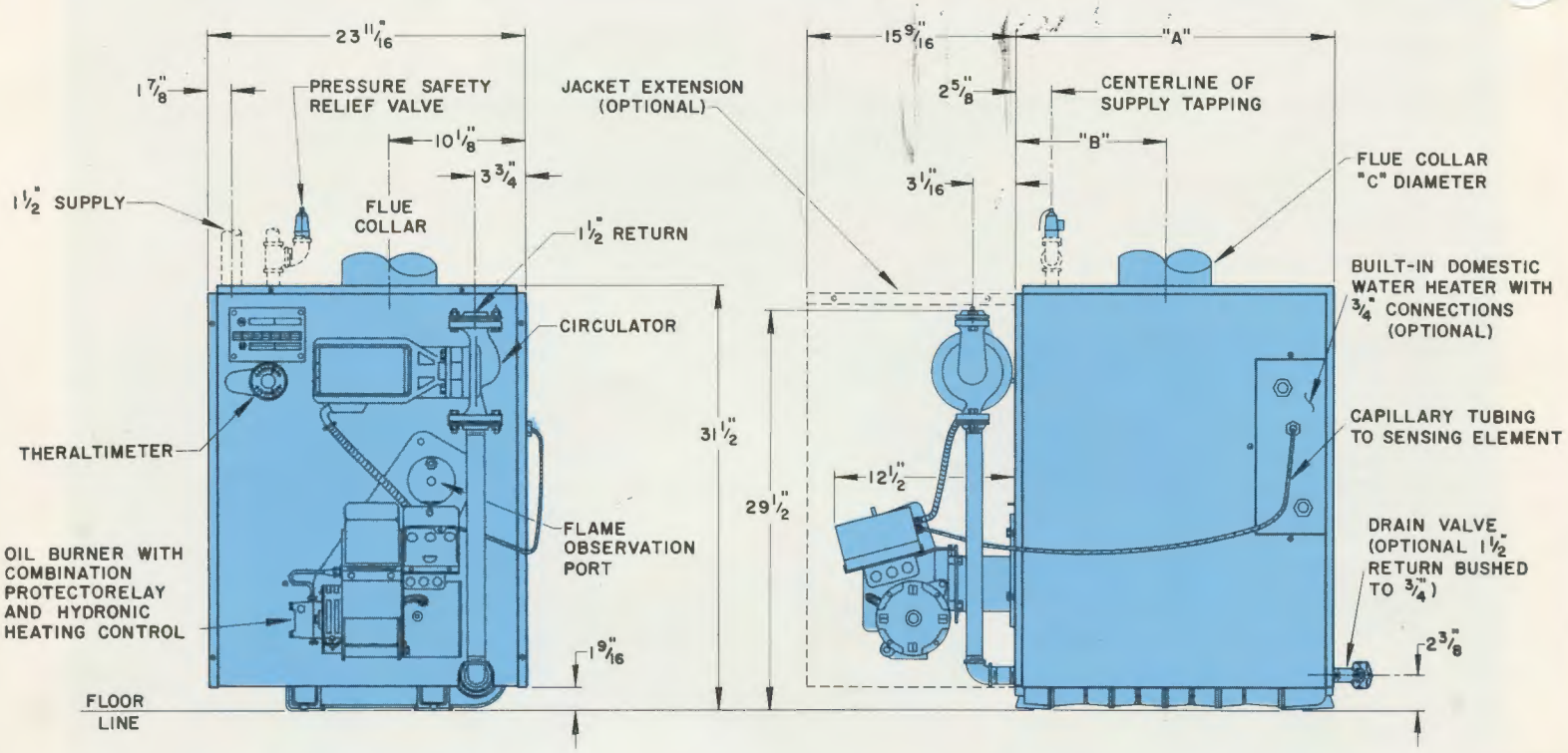
HOT WATER—FLAME RETENTION

Six Models

Gross Outputs 87,000 to 254,000 BTU/HR

BURNHAM AMERICA

BURNHAM AMERICA V1 Series



FRONT VIEW

RIGHT SIDE VIEW

Model No.	Firing Rate (GPH)	Dimensions—Inches			Chimney Size In. x In. x Ft.
		"A"	"B"	"C"	
V-13	0.75	15 7/8	7 1/4	6	8 x 8 x 15
V-14	1.05	19 7/8	9 1/4		
V-15	1.35	23 7/8	11 1/4	7	
V-16	1.65	27 7/8	13 1/4		
V-17	1.95	31 7/8	15 1/4	8	
V-18	2.25	35 7/8	17 1/4		8 x 12 x 15

BURNHAM AMERICA V1 Series

RATING DATA

Boiler No.(1)	Gross I=B=R Output (MBH)	I=B=R Burner Capacity(2) (GPH)	No. of Sections	Tankless Heater Capacity V_1-1 heater(3)	Net I=B=R Rating(4) (MBH)	Net Rating Sq. Ft. Water(4)	Burner Wayne M-SR (Spec. No.)	Nozzle Make GPH-Angle Type(5)	I=B=R Nominal Chimney Size(6) In. x In. x Ft.
V-13	87	0.75	3	3¼+	75.7	505	122-123	Monarch 0.85-80°-AR	8 x 8 x 15
V-14	119	1.05	4	3½	103.5	690	122-125	Monarch 1.10-80°-AR	8 x 8 x 15
V-15	153	1.35	5	4	133.0	885	122-127	Delavan 1.35-80°-B	8 x 8 x 15
V-16	186	1.65	6	4	161.7	1080	122-129	Delavan 1.65-80°-B	8 x 8 x 15
V-17	220	1.95	7	4	191.3	1275	122-131	Delavan 2.00-80°-B	8 x 8 x 15
V-18	254	2.25	8	4	220.9	1475	122-133	Delavan 2.25-80°-B	8 x 12 x 15

(1)—Add suffix "T" to denote boiler with tankless heater back section and with tankless heater shown. No suffix denotes boiler with back section having no provision for installation of tankless heater.

(2)—The I=B=R Burner Capacity is based on oil having a heat value of 140,000 BTU/GAL.

(3)—Tankless Heater Ratings are based on 40°-140°F rise with boiler temperature at 200°F—intermittent draw.

(4)—V_1 Series Boiler Ratings are based on 12¼% CO_2. Net ratings for water square feet are based on 170°F average temperature in radiators. For higher water temperatures, select boiler on basis of I=B=R net rating, BTU/HR. Net I=B=R ratings shown are based on a piping and pick-up allowance of 1.15. Consult manufacturer for installations having unusual piping and pick-up requirements, such as intermittent system of operation, extensive piping systems, etc.

+V-13 boiler uses tankless heater V_1-2

(5)—All nozzles are solid spray. Nozzles are for Wayne Burners only.

(6)—Chimney sizes and heights shown are selected in accordance with the Hydronics Institute Testing and Rating Standard for cast iron and steel heating boilers. Such chimneys will produce sufficient draft under normal conditions and are based on using short, direct breeching into chimney. When necessary to use more than one elbow in breeching, five (5) feet of chimney should be added to the catalogued chimney height for each additional 90° elbow used.

(7)—Sun Ray "FC" Series Burner may be substituted at Burnham Corporation's discretion.

STANDARD EQUIPMENT:

V_1 Series Boiler

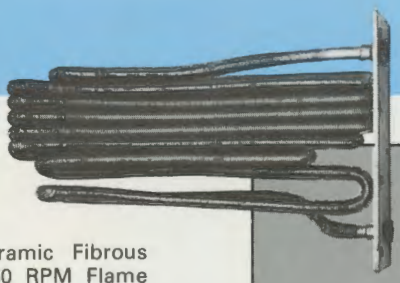
Preformed Combustion Target Wall—Lightweight Ceramic Fibrous Type • Insulated Flush Jacket (Two Tone Blue) • 3450 RPM Flame Retention Oil Burner with Cad Cell • Combination Protectorelay and Hydronic Heating Control Mounted on Burner • Tankless Heater (Boilers with T Suffix Only) • 1½" Circulator With Piping to Boiler • Pressure and Temperature Gauge • Wiring Harness • 30 p.s.i. Working Pressure (Water)

IN SEPARATE CARTON

ASME Safety Relief Valve With Piping To Boiler • Boiler Drain Cock • Draft Regulator • T822D Thermostat

OPTIONAL EQUIPMENT:

V_1-2 Tankless Heater For V-14T and Larger Boilers • Two Stage Fuel Unit For Oil Burner • Jacket Extension • T87F Thermostat • Two and Three Zone Valve Packages



OPTIONAL TANKLESS HEATERS

Boiler No.	Tankless Heater No.	Tankless Heater Capacity (GPM)
V-14T	V_1-2	4
V-15T	V_1-2	4½
V-16T	V_1-2	4½
V-17T	V_1-2	5
V-18T	V_1-2	5

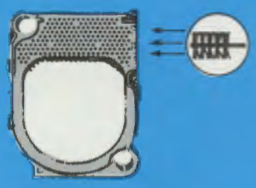
OUTSTANDING FEATURES

V1 Series

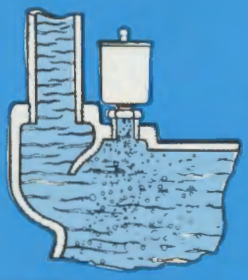
The most efficient cast iron wet base, residential boiler on the market!

Designed for efficient, trouble-free operation, the V1 Series features conservative firing rates, low draft losses, large combustion volumes, and reliable controls.

PACKAGED—completely packaged in a sturdy, insulated, two-tone blue, steel jacket. Skid mounted in protective carton for easy handling.



SIDE CLEANOUT—permits access to all flue surfaces from right side without disturbing burner, controls, or accessories.



ELIMINAIRE®—A patented cost-saving feature. This built-in air eliminator is cast into the front section of all V1 Series boilers to divert rising air bubbles into a tapping for connection to the expansion tank. No external device is required to separate air and water, reducing cost and installation time.

OPTIONAL RETURN TAPPING (not shown)—located on rear section for zoning with circulators.

1 BOILER SECTIONS—of durable cast iron, with vertical flue design and pinned surface area to extract maximum combustion heat with low draft losses. Overall boiler efficiency exceeds 80%. Sections are pressure tested twice—individual sections at twice maximum working pressure and as an assembled boiler at 1½ times maximum working pressure.

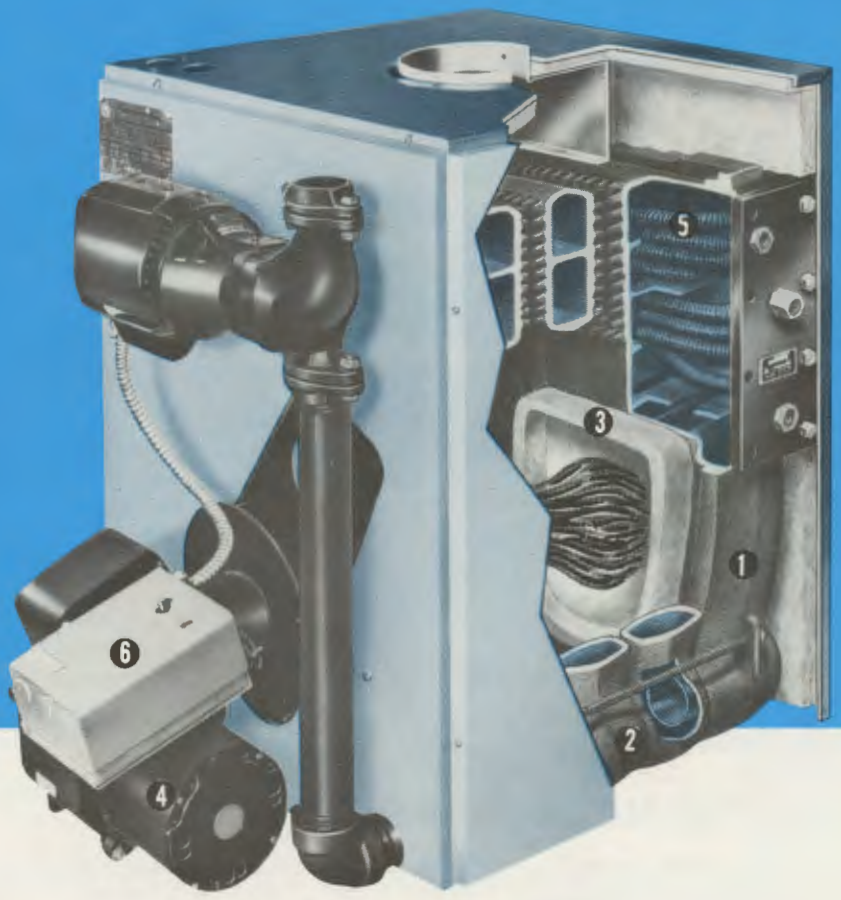
2 WET BASE CONSTRUCTION—Waterways completely surround combustion area making the V1 ideal for installation on combustible floors.

3 COMBUSTION TARGET WALL—factory installed. Provides instant heat-up and combustion efficiency and is contoured for even flue gas distribution.

4 OIL BURNER—Flange mounted, 3450 RPM flame-retention burner engineered to operate at 12¼% CO_2 with combustion efficiency equal to or exceeding 81.7%. Provides clean, efficient, economical firing.

5 TANKLESS HEATER—sized to meet domestic hot water demands—with a low pressure drop thru coils. Coil is inserted into right side of rear section, surrounded by water. Control is located in heater for quick response and recovery as water is drawn.

6 SINGLE BURNER CONTROL—combination cad cell relay and Hydronic Heating Control mounted on burner for easy service and adjustment.



BURNHAM CORPORATION
HYDRONICS DIVISION
Lancaster, Pa. 17604

high efficiency hydronics

Printed in U.S.A.

Form No. 4221B — 6-78—50Ms

V3 Series

CAST IRON OIL HYDRONIC UNIT

HOT WATER OR STEAM

Four Sizes

Gross Outputs–116,000 to 302,000 BTU/HR

BURNHAM AMERICA

BURNHAM AMERICA / V3 ALL PURPOSE BOILER-BURNER

RATINGS (Steam and Water)

No. of Sections	Model Number■	Burner Model and Rating No.	I=B=R Burner Capacity (GPH)	Nozzle GPH ANGLE TYPE	I=B=R RATINGS Gross Output (MBH)	▲ Net Steam (MBH)	▲ Net Steam (Sq. Ft.)	▲ Net Water (MBH)	Net Water Rating (Sq. Ft.)	I=B=R Nominal Chimney Size● In. x In. x Ft.
3	V-33	FC-134	1.05 1.15	1.00—80°—B* 1.10—80°—B	116 128	87.0 96.0	363 400	100.9 111.3	675 740	8 x 8 x 15
4	V-34	FC-234	1.55 1.70	1.50—60°—ES* 1.65—60°—ES	172 186	129.0 139.5	538 581	149.6 161.7	995 1080	8 x 8 x 15
5	V-35	FC-234	2.10 2.25	2.00—45°—P* 2.25—45°—P	228 244	171.0 183.0	713 763	198.3 212.2	1320 1415	8 x 8 x 15 8 x 12 x 15
6	V-36	FC-234	2.60 2.80	2.50—30°—P* 2.75—45°—P	284 302	213.1 226.6	888 944	247.0 262.6	1645 1750	8 x 12 x 15

■ "W" suffix denotes Forced Circulation Water Boiler wo/Tankless Heater
"WT" suffix denotes Forced Circulation Water Boiler w/Tankless Heater
"S" suffix denotes Steam Boiler wo/Tankless Heater
"ST" suffix denotes Steam Boiler w/Tankess Heater

* Denotes Nozzle installed in Burner
B Designates Delavan Solid Type Nozzle
ES Designates Hago Extra Solid Type Nozzle
P Designates Hago Extra Solid Type Nozzle

BURNHAM AMERICA / V3-M ALL PURPOSE BOILER ONLY

RATINGS (Steam and Water)

No. of Sections	Model Number■	Suggested Burner Model and Rating No.	I=B=R Burner Capacity (GPH)	Nozzle for Suggested Burner GPH ANGLE TYPE	I=B=R Ratings Gross Output (MBH)	Net Steam (MBH)	Net Steam (Sq. Ft.)	Net Water (MBH)	Net Water Rating (Sq. Ft.)	I=B=R Nominal Chimney Size● In. x In. x Ft.
3	V-33M	40-N "B-2"	.85 1.00	.85—80°—A* 1.00—80°—A	92 110	69.0 82.5	288 344	80.0 95.7	535 640	8 x 8 x 15
4	V-34M	40-N "C-5"	1.30 1.45	1.25—70°—B* 1.35—70°—B	138 156	103.5 117.0	431 488	120.0 135.7	800 905	8 x 8 x 15
5	V-35M	40-N "C-5"	1.70 1.90	1.65—60°—B* 1.75—70°—B	184 202	138.0 151.5	575 631	160.0 175.7	1065 1170	8 x 8 x 15
6	V-36M	40-N "H-4"	2.15 2.35	2.00—60°—B* 2.25—60°—B	230 248	172.5 186.0	719 775	200.0 215.7	1335 1440	8 x 12 x 15

■ "W" suffix denotes Forced Circulation Water Boiler wo/Tankless Heater
"WT" suffix denotes Forced Circulation Water Boiler w/Tankless Heater
"S" suffix denotes Steam Boiler wo/Tankless Heater
"ST" suffix denotes Steam Boiler w/Tankess Heater

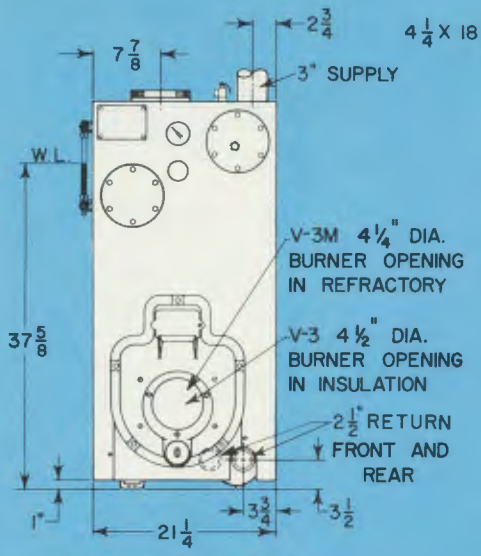
* Denotes Nozzle installed in Burner if Burner ordered w/Boiler
A Designates Delavan Hollow Type Nozzle
B Designates Delavan Solid Type Nozzle

▲ I=B=R Net Ratings shown are based on a piping and pickup allowance of 1.333 for steam, and 1.15 for water.
Consult manufacturer for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc.
Net Ratings for water, square feet, are based on 170°F average water temperature in radiators.
For higher water temperatures, select boiler on basis of I=B=R Net Rating MBH.
The I=B=R Burner Capacity in GPH is based on oil having a heat value of 140,000 BTU per gallon.

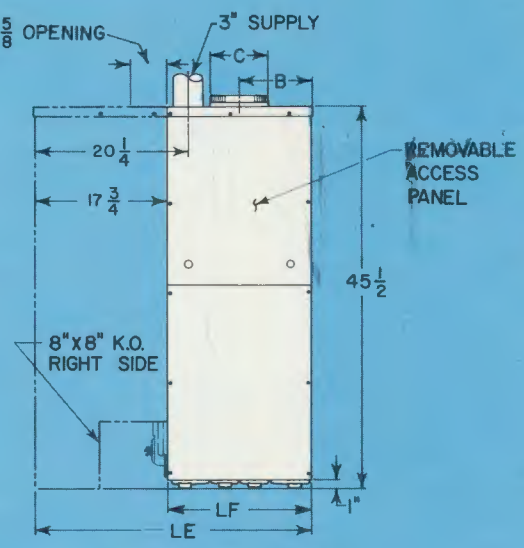
V-3 Boiler Ratings are based on 12¼% CO_2. V-3M Boiler Ratings are based on 10% CO_2.

● Chimney sizes and heights shown are selected in accordance with the Hydronics Institute Testing and Rating Standard for cast iron and steel heating boilers. Such chimneys will produce sufficient draft under normal conditions and are based on using short, direct breeching into chimney. When necessary to use more than one elbow in breeching, five (5) feet of chimney should be added to the catalogued chimney height for each additional 90° elbow used.

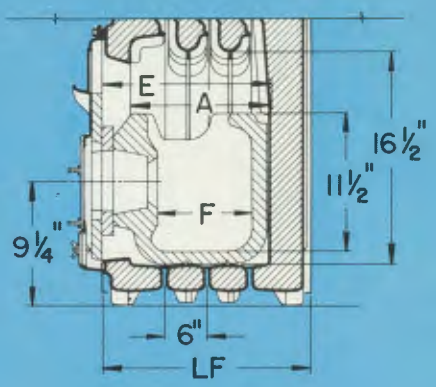
V3 Dimensions and Tappings



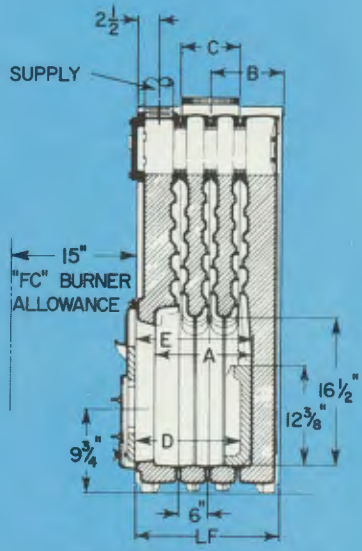
FRONT VIEW FLUSH JACKET



SIDE VIEW EXTENDED JACKET



PARTIAL SECTION THRU V-3M BOILER



SECTION THRU V-3 BOILER

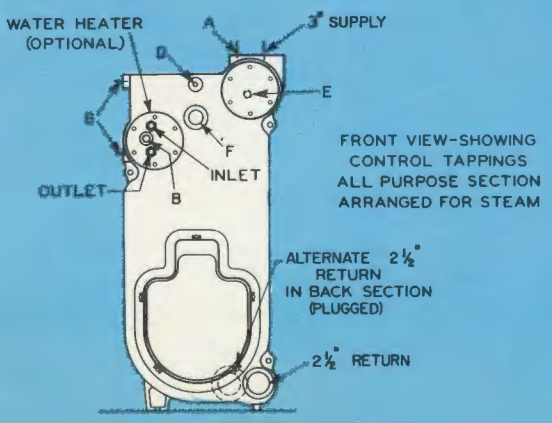
Dimensional Data (in inches)

No. of Sections	A	B	C	D*	E	F†	LF	LE
3	10⅜	8½	6	11⅜	12⅝	7¼	16½	34¼
4	16⅜	11½	7	17⅜	18⅝	13¼	22½	40¼
5	22⅜	14½	8	23⅜	24⅝	19¼	28½	46¼
6	28⅜	17½	9	29⅜	30⅝	25¼	34½	52¼

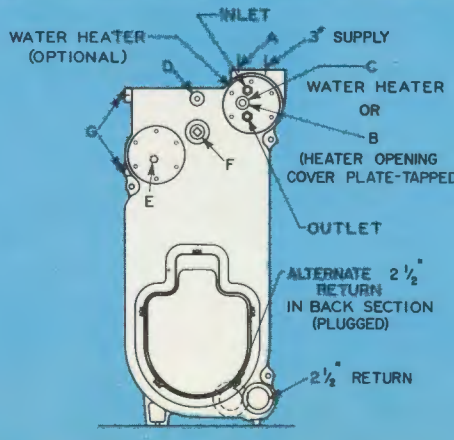
* Boiler-Burner Units only (V-3 Series)
† Boiler only (V-3M Series)

CONTROL TAPPING—All Purpose Boiler

Location on Boiler	Size (Inches)	Water Control Used	Steam Control Used
A	¾	Safety Relief Valve	Safety Valve
B	¾	Limit Control or Combination High Limit, Circulator Control and Cad Cell Relay (for installations without tankless water heater)	Operating Control (for installations with tankless heater)—or Optional Controls (requires additional tapped heater opening cover plate for installations without tankless heater)
C	¾	Combination High Limit, Low Limit, Circulator Control and Cad Cell Relay (for installations with tankless water heater)	———
D	¼	Combination Pressure Gauge and Thermometer	Steam Pressure Gauge
E	¾	Auxiliary Limit Control (when needed—requires additional tapped heater opening cover plater for installations without tankless heater)	Bush to ¼"—Pressuretrol—or Optional Controls
F	1½	Not Used	Blowoff
G	½	Not Used	Gauge Glass and Low Water Cut-off



FRONT VIEW-SHOWING CONTROL TAPPINGS ALL PURPOSE SECTION ARRANGED FOR STEAM



FRONT VIEW-SHOWING CONTROL TAPPINGS ALL PURPOSE SECTION ARRANGED FOR WATER

Standard Equipment — V3 Boiler-Burner Units

Description	Boiler Size	Water Boilers			Steam Boilers	
		Forced Circulation				
		w/tankless Heater	less Heater	Gravity	w/tankless Heater	less Heater
		Model No. Suffix				
		WBT	WB	WBG	SBT	SB
Section Ass'y w/Front Heater Section	All	X	X	X	X	X
Refractory Target Wall	All	X	X	X	X	X
Tankless Heater #222	V-33	X			X	
Tankless Heater #226	V-34	X			X	
Tankless Heater #232	V-35	X			X	
Tankless Heater #445	V-36	X			X	
Heater Opening Cover Plate—Tapped ¾" NPT	All	X	X	X	X	X
Heater Opening Cover Plate—Not Tapped	All		X	X		X
Flush Jacket	All	X	X	X	X	X
Flange Mounted FC Flame Retention Oil Burner—3450 RPM Motor C554A Cad Cell and "J" Box Mounted	All	X	X	X	X	X
R8182D Protectorelay and Hydronic Control	All	X				
R8182E Protectorelay and Hydronic Control	All		X			
L4080B Temperature Limit Control	All			X		
R8184G Cad Cell Relay	All			X	X	X
PA404A Pressure Limit Control	All				X	X
L4006A Operating Control	All				X	
T822D Thermostat	All	X	X	X	X	X
Draft Regulator	All	X	X	X	X	X
Boiler Drain Cock	All	X	X	X	X	X
A.S.M.E. Safety Relief Valve	All	X	X	X		
Altitude, Temperature and Pressure Gauge	All	X	X	X		
A.S.M.E. Safety Valve	All				X	X
Pressure and Vacuum Gauge	All				X	X
Gauge Glass and Fittings	All				X	X

Standard Equipment — V3-M Bare Boilers

Description	Boiler Size	Water Boilers Forced Circulation		Steam Boilers	
		w/tankless Heater	less Heater	with tankless Heater	less Heater
		Model No. Suffix			
		WT	W	ST	S
Section Ass'y w/front Heater Section	All	X	X	X	X
Pre-cast Refractory Combustion Chamber	All	X	X	X	X
Tankless Heater #222	V-33M	X		X	
Tankless Heater #226	V-34M	X		X	
Tankless Heater #232	V-35M	X		X	
Tankless Heater #445	V-36M	X		X	
Heater Opening Cover Plate—Tapped ¾" NPT	All	X	X	X	X
Heater Opening Cover Plate—Not Tapped	All		X		X
Flush Jacket	All	X	X	X	X
Boiler Drain Cock	All	X	X	X	X
A.S.M.E. Safety Relief Valve	All	X	X		
Altitude, Temperature and Pressure Gauge	All	X	X		
A.S.M.E. Safety Valve	All			X	X
Pressure and Vacuum Gauge	All			X	X
Gauge Glass and Fittings	All			X	X

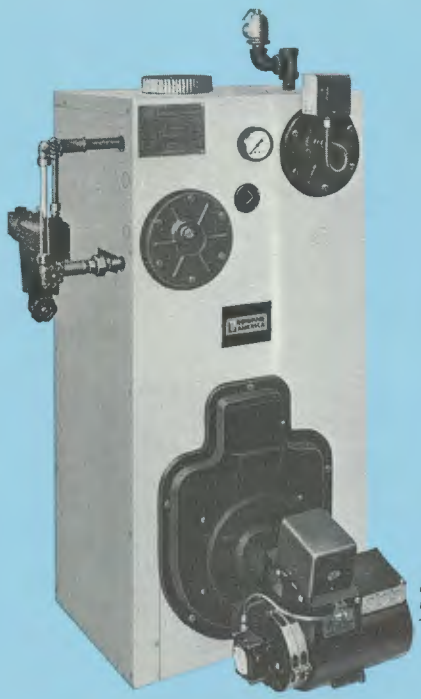
OPTIONAL EQUIPMENT

Jacket Extension
T-822-D Honeywell Thermostat (Standard on V3)
T-87-F Honeywell Thermostat
Oil Burner (for V-3M Boiler)
Two Stage Fuel Unit
#67AR McDonnell-Miller Low Water Cut Off
#63 McDonnell-Miller Low Water Cut Off
Heater Opening Cover Plate—Tapped ¾" NPT

V3

Flame Retention Boiler Burner Unit

The ideal non-packaged unit for steam, forced hot water or gravity. With sections factory assembled and tested, job assembly time is lessened. Available in 4 section arrangements with 8 firing rates. Each unit comes with a high firing rate nozzle and a low firing rate nozzle. Install boiler now to operate at maximum efficiency (over 81%) without excess cycling and when additional room(s) is added just change to high firing rate nozzle. High capacity tankless heaters are available on steam or forced hot water units.

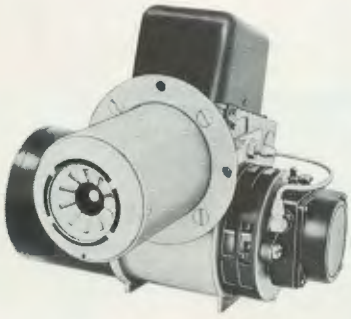


V-3 all-purpose boiler-burner unit —steam illustrated

V3-M

All-purpose Unit, Boiler Only

Similar to the V-3 except designed to accommodate a non-flame retention burner. This boiler differs from the V-3 in that it is provided with a full combustion chamber. V-3M ratings are based on use with non-flame retention burners capable of developing 10% CO_2.



Flame Retention Burner

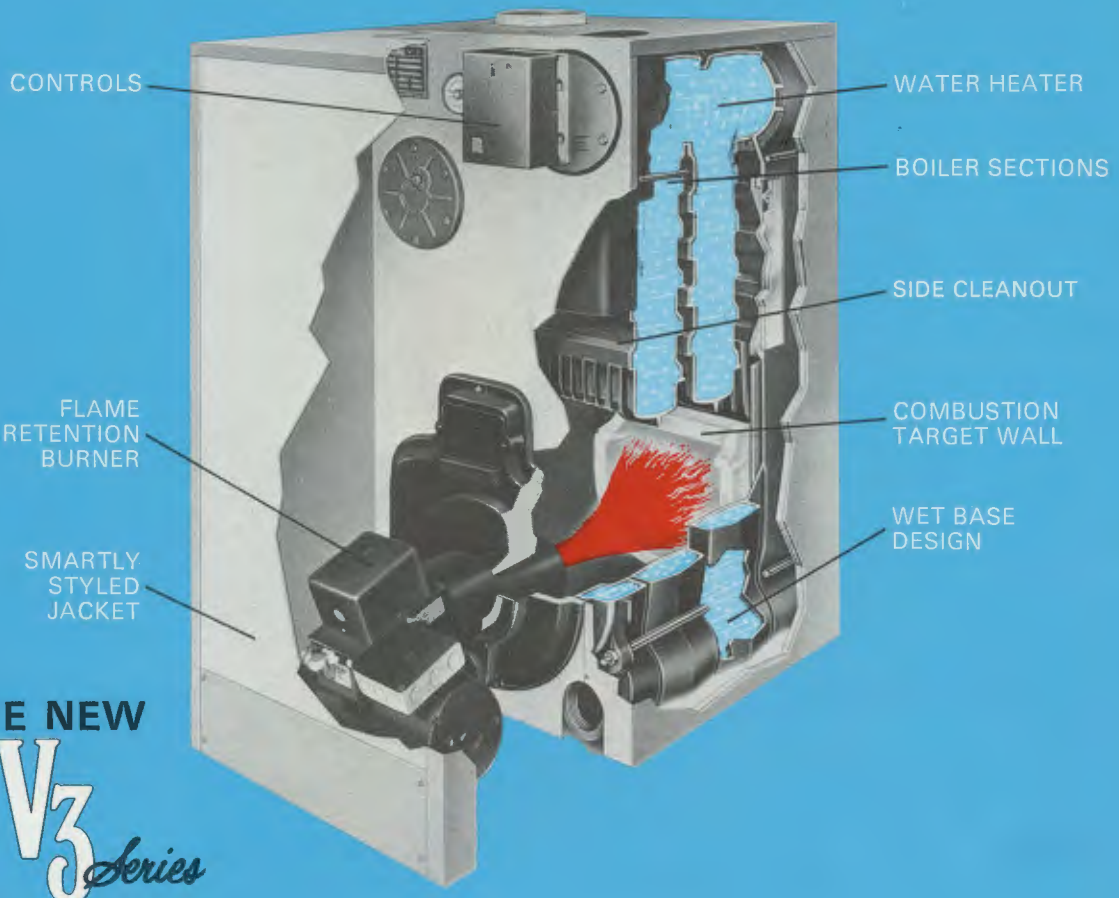
For V-3 boiler burner units—provides efficient firing with an exceptionally clean flame. Twin air bands and an index scale for precise air adjustment and setting. Rugged steel housing maintains alignment of fan, motor and fuel unit.

* Tankless Heater Recommendations

Heater No.	Boiler No. FR 12¼% CO_2	Boiler No. Non FR 10% CO_2	Firing Rate (GPH)	Heater Rating 200°F Boiler Temperature 40°-140°F Rise Steam	Heater Rating 200°F Boiler Temperature 40°-140°F Rise Water
222		V-33M	.85 1.00	4	4½
	V-33		1.05 1.15	4¼	4¾
226		V-34M	1.30 1.45	5	5½
	V-34		1.55 1.70	5¼	5¾
232		V-35M	1.70 1.90	6	6¾
	V-35		2.10 2.25	6¼	7
445		V-36M	2.15 2.35	7	7¾
	V-36		2.60 2.80	7¼	8¼

Domestic Hot Water Connection Size:
½" NPT—Heaters #222, #226 & #232 ¾" NPT—Heater #445

** Due to the unique design of the V-3 and the V-3M water boilers, a second tankless heater can be installed improving the intermittent domestic hot water draw.*



THE NEW V3 Series BOILER-BURNER FEATURES

DUAL FIRING RATES—each boiler comes with two nozzles. Install the one that meets immediate needs. Change capacity later when and if required just by switching to other nozzle. Maximum combustion efficiency is achieved when nozzle is sized to meet the immediate heat loss of the installation.

WET BASE DESIGN—for durability, heat transfer, and combustion efficiency. These sections are pressure tested twice —individual sections at 2 times maximum working pressure of boiler; and as an assembled boiler at 1½ times maximum working pressure.

ALL-PURPOSE—steam or water, non-packaged for complete versatility.

EFFICIENT—flame retention burner designed to operate at 12¼% CO_2 with combustion efficiency of over 81.3%.

CONTROLS—all controls are front mounted for ease of service and adjustment. Primary control features light-sensing detector for fast response to ignition and shutdown.

OIL BURNER—flange mounted, 3450 RPM flame retention burner engineered to provide clean and complete combustion.

WATER HEATER—large capacity, copper coil tankless type. Inserts into upper nipple port (and lower if desired) on water boiler, lower nipple port on steam boiler.

ONE-PIECE CLEANOUT PANEL—permits cleaning of all flue surfaces from right side without disturbing burner, controls or accessories.

COMBUSTION TARGET WALL—improves combustion and contoured to provide even distribution of the flue gasses.

SMARTLY STYLED—sturdy, insulated, two-tone blue, steel jacket.

BURNHAM AMERICA
BURNHAM CORPORATION
HYDRONICS DIVISION
LANCASTER, PA. 17604

Printed in U.S.A.

Form No. 4230B-8-77-40Mi

PF-3 Series

CAST IRON
OIL
HYDRONIC UNIT

Forced Draft

HOT WATER OR STEAM

FOUR SIZES

Gross Outputs: 300,000 to 526,000 BTU/HR

BURNHAM AMERICA

BURNHAM AMERICA

PF-3. . . is an excellent heating unit for application in smaller apartment or commercial buildings. Designed specifically for light oil, forced draft firing this cast iron sectional unit is available either as a steam or hot water boiler and attains superior combustion effiency.

Forced draft boilers, in addition to increased operating efficiencies, require much less space than conventional boilers of comparable rating and eliminate the need for external draft devices such as a high chimney or mechanical draft equipment—the PF-3 features: compact wet base design; no separate base or combustion chamber; and the provision for tankless heater in both steam and water boilers. The boiler also features a high efficiency burner and the use of an elastic sealant compound for sealing.

STANDARD EQUIPMENT—PF-3 Forced Draft Boiler-Burner Unit

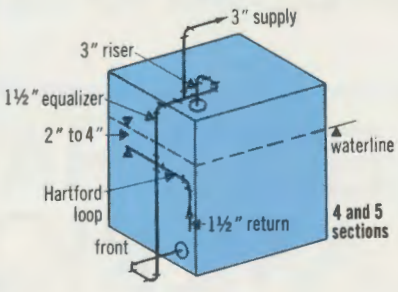
Description	Boiler Size	Water Boilers		Steam Boilers	
		Forced Circulation		with	less
		w/tankless heater	Less heater	tankless heater	heater
		Model No. Suffix			
		WT	W	ST	S
Sealed Section Ass'y w/Front Heater Section	All	X	X	X	X
Tankless Heater #226	All	X		X	
Heater Opening Cover Plate—Tapped	All	X	X	X	X
Heater Opening Cover Plate—Untapped	All		X		X
Flush Jacket	All	X	X	X	X
Oil Burner Model RL-4; Flange Mounted; 3450 RPM, 1/3 H.P., 115 V, 60 Hz Motor; 300 PSI Fuel Unit with following components mounted and wired: C554A CAD Cell; R8184G 15 Sec. Primary; 5 Sec. Prepurge Timer; 20 Sec. Low Fire Timer; Nozzle Valve; Bypass Oil Valve,		X	X	X	X
			X		X
		X	X	X	X
PF-34—Model RL-4.21-0-03/77 w/Hago 1.75, 45°ES Nozzle	PF-34	X	X	X	X
PF-35—Model RL-4.21-0-03/77 w/Hago 2.25, 30°P Nozzle	PF-35	X	X	X	X
PF-36—Model RL-4.2-0-03/77 w/Hago 2.75, 30°P Nozzle	PF-36	X	X	X	X
PF-37—Model RL-4.2-0-03/77 w/Hago 3.25, 30°P Nozzle	PF-37	X	X	X	X
R8124C High Limit, Low Limit and Circulator Control	All	X			
L4081B Temperature Limit and Circulator Control	All		X		
PA404A Pressure Limit Control	All			X	X
L4006A Operating Control	All			X	
T822D Thermostat	All	X	X	X	X
Boiler Drain Cock	All	X	X	X	X
A.S.M.E. Safety Relief Valve	All	X	X		
Altitude, Temperature and Pressure Gauge	All	X	X		
A.S.M.E. Safety Valve	All			X	X
Pressure and Vacuum Gauge	All			X	X
Gauge Glass and Fittings	All			X	X

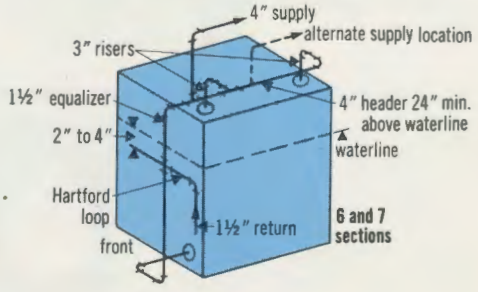
Tankless Heater Ratings and Data

Heater No.	For use in Boilers:	† Rating (GPM)	Pressure Drop (PSI)	Heat Connection Size (NPT)
226	all	6	23	½
232	PF-35, PF-36, PF-37	7.5	36	½
445	PF-36, PF-37	9	37	¾

† Continuous Draw—water heated 40°F to 140°F with 200°F boiler water temperature.

minimum piping recommendations - steam boilers





RATINGS (Water 50 lb. W.P. and Steam 15 lb. W.P.)

PF-3 Series

No. of Secs.	Model No. ■	Forced Draft Burner Mod. and Spec. No.	I=B=R Burner Capacity Light Oil (GPH)	Nozzle* GPH Angle Type	Boiler HP	I=B=R Ratings Gross Output (MBH)	▲ Net Steam (MBH)	▲ Net Steam (Sq. Ft.)	▲ Net Water (MBH)	Net Water Rating (Sq. Ft.)	I=B=R Vent Diam.● (in.w.c.)	Heating Surface (Ft.²)	Net Firebox Volume (Ft.³)	▼ Pressure in Firebox (in.w.c.)	Assembled Section Wt. (lbs.)	Water Content Full (lbs.)
4	PF-34	RL-4.21-0-03/77	2.65	1.75 45°-ES	9.0	300	225.1	938	260.9	1740	8	35.35	2.40	+0.37	800	276
5	PF-35	RL-4.21-0-03/77	3.30	2.25 30°-P	11.2	375	281.3	1172	326.1	2175	8	46.24	3.23	+0.37	1000	335
6	PF-36	RL-4.2-0-03/77	3.95	2.75 30°-P	13.4	450	337.6	1407	391.3	2610	8	57.13	4.05	+0.37	1200	402
7	PF-37	RL-4.2-0-03/77	4.60	3.25 30°-P	15.7	526	394.6	1644	457.4	3050	8	68.02	4.87	+0.35	1400	465

▲ I=B=R Net Ratings shown are based on a piping and pickup allowance of 1.333 for steam, and 1.15 for water.
Consult manufacturer for installations having unusual piping and pickup requirements, such as intermittent system operation, extensive piping systems, etc.
Net Ratings for water, square feet, are based on 170°F average water temperatures in radiators.
For higher water temperatures, select boiler on basis of I=B=R Net Ratings, MBH.
The I=B=R burner capacity in GPH is based on oil having a heat value of 140,000 BTU per gallon.

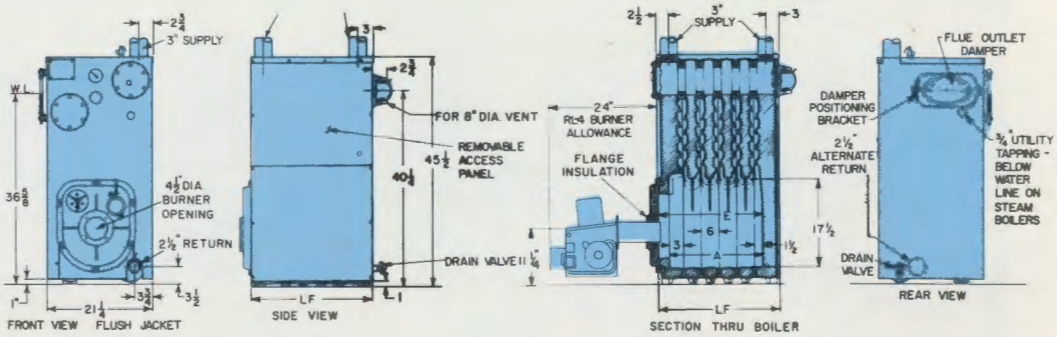
Note:
Special Equipment Required For N.Y.C.

▼ PF-3 boiler ratings are based on 12¼% CO_2, + .10" water column pressure at boiler flue outlet.
● Vent sizes are selected in accordance with the Hydronics Institute Testing and Rating Standard for cast iron and steel heating boilers.

■ "W" suffix denotes forced circulation water unit wo/tankless heater
"WT" suffix denotes forced circulation water unit w/tankless heater
"S" suffix denotes steam unit wo/tankless heater
"ST" suffix denotes steam unit w/tankless heater
• Indicates nozzle installed in burner
P designates Hago solid type nozzle
ES designates Hago extra solid type nozzle

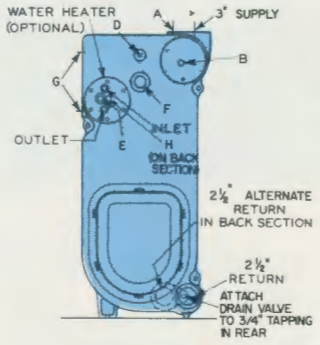
Table of Dimensions

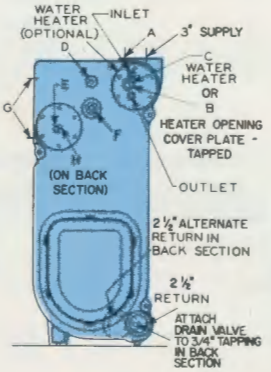
Model No.	No. of Sections	A	E	LF
PF-34	4	16½	18⅝	22½
PF-35	5	22½	24⅝	28½
PF-36	6	28½	30⅝	34½
PF-37	7	34½	36⅝	40½



Control Tappings— All Purpose Boiler

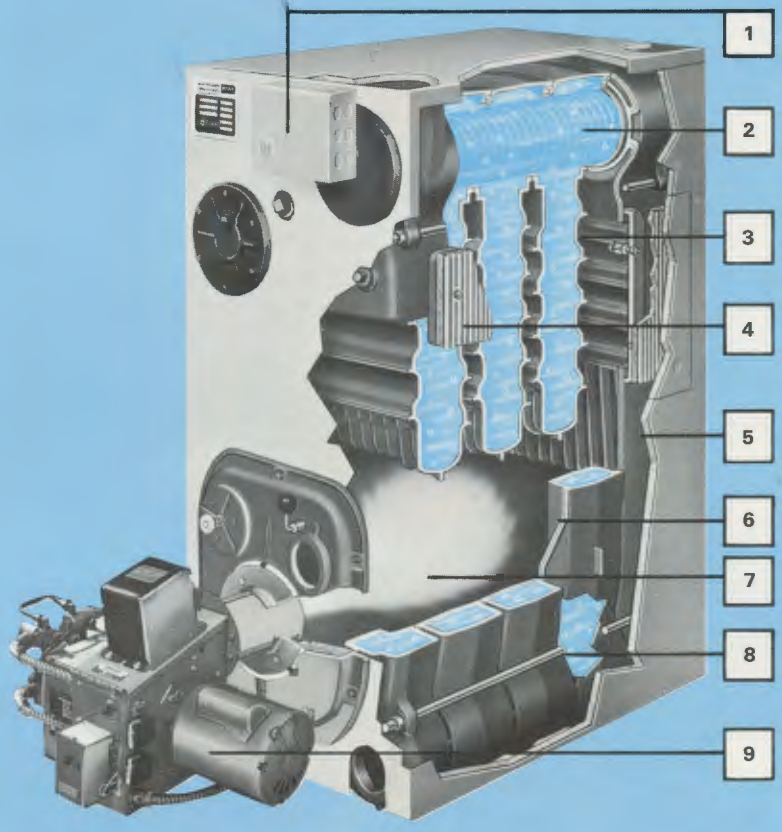
Location On Boiler	Size (Inches)	Water Control Used	Steam Control Used
A	1	Safety Relief Valve	Safety Valve
B	¾	Limit Control or Combination High Limit and Circulator Control (for installations without tankless water heater)	Bush to ¼" Pressuretrol —or Optional Controls
C	¾	Combination High Limit, Low Limit and Circulator Control (for installations with tankless heater)	———
D	¼	Combination Pressure and Temperature Gauge	Steam Pressure Gauge
E	¾	Auxiliary Limit Control (when needed — *requires additional tapped heater opening cover plate for installations without tankless heater)*	Operating Control *(for installations with tankless heater)*—or optional controls *(requires additional tapped heater opening cover plate for installations without tankless heater)*
F	1½	Not used	Blowoff
G	½	Not used	Gauge Glass and Low Water Cut-Off
H	¾	Auxiliary Tapping	Auxiliary Tapping—Below Normal Water Line





TEN OUTSTANDING FEATURES / PF-3 Series

1. **Controls**—mounted on front of boiler for ease of service and adjustment.
2. **Water Heater** — large, copper coil tankless type. Two locations—both 5" nipple ports can be utilized on water boilers to improve the domestic hot water draw; steam boilers utilize lower nipple port only.
3. **Cast Iron Sections**—factory assembled sealed and water pressure tested.
4. **Side Cleanout Openings**———permits cleaning of all flue surfaces from right side without dismantling jacket or disturbing burner, controls or accessories.
5. **Insulated Jacket**—heavy glass fiber insulation prevents wasteful heat loss, keeps jacket cool.
6. **Elastic Sealant**—effectively seals sections for pressure firing.
7. **No Combustion Chamber**—more primary heating surface is exposed to the radiant heat from the flame for increased combustion efficiency.
8. **Wet Base Construction** — besides providing extra primary heating surface, water backed combustion area eliminates base burnouts.
9. **Oil Burner**—flange mounted, 3450 RPM burner engineered to provide clean and efficient combustion.



Elastic Sealant . . . It is imperative that forced draft boilers be absolutely gastight. This quality is attained with the PF-3 by sealing all section joints and canopy connections with elastic compound. (Covered by Patent No. 3,533,379.) The elastic sealant requires less installation time than other gasketing methods and provides a superior gastight seal which will maintain its integrity over the years.

BURNHAM CORPORATION
HYDRONICS DIVISION
Lancaster, Pa. 17604

high efficiency hydronics

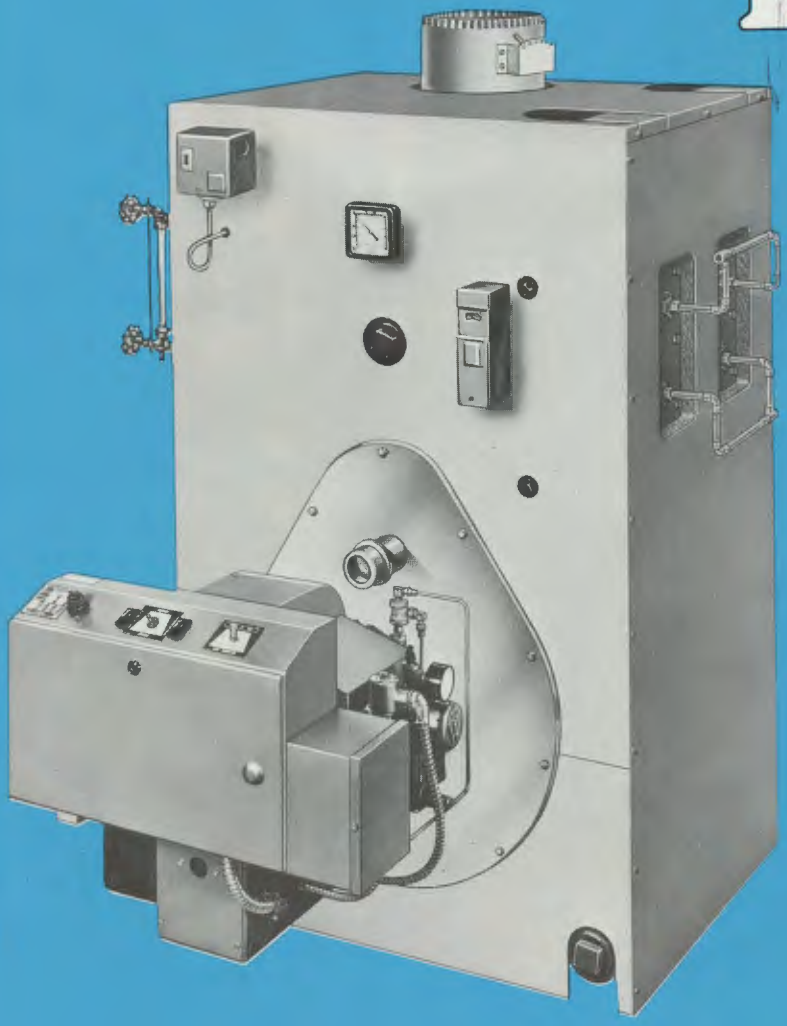
Printed in U.S.A.

Form No. 4240C-4-79-15Ms

PF-5 Series

CAST IRON HYDRONIC UNIT

Forced Draft



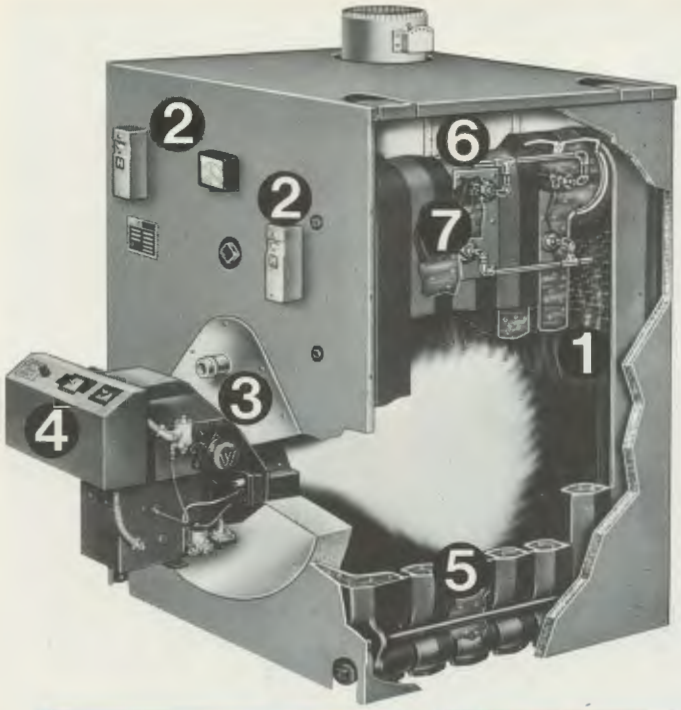
GAS, OIL OR GAS/OIL COMBINATION

HOT WATER OR STEAM

Eighteen Sizes

Gross Outputs 620,000 to 3,430,000 BTU/HR

BURNHAM AMERICA



BURNHAM AMERICA

PF-5 Series

FORCED DRAFT HYDRONIC UNIT

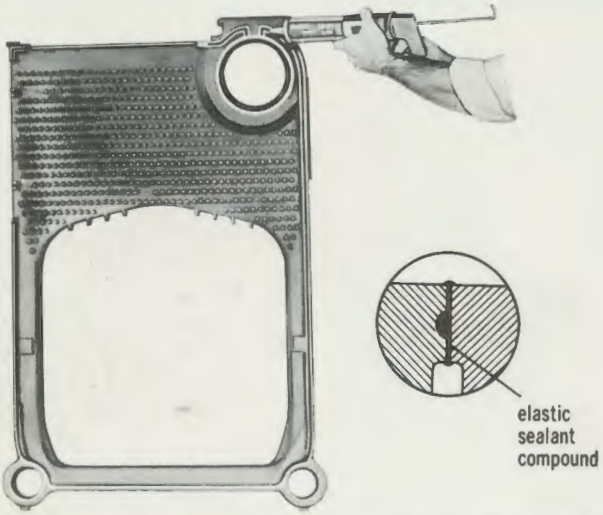
The **PF-5 Series** represents a new approach in large cast iron boiler design.

COMPACT SIZE . . . LESS WEIGHT

Utilizing a completely sealed, forced draft wet base design, the **PF-5 Series** requires no separate base or combustion chamber. The **PF-5 Series** is smaller and weighs less than conventional boilers with comparable ratings, yet provides a continuous performance efficiency of over 80%.

NO HIGH CHIMNEY REQUIRED

Since the sealed, forced draft design provides optimum draft, naturally, there is no need for high chimneys or mechanical equipment to artificially induce proper draft.



1 CAST IRON VERTICAL FLUE DESIGN

Ruggedly cast sections provide vertical flue ways with large 7 inch top nipple port. The off-center positioning of the nipple port speeds water circulation. Projecting heat absorbing studs extract maximum heat from flue gases. Sections are individually water tested at 2½ times W.P. (water) and are accessible from the left side for cleaning.

Elastic Sealant Boiler sections are sealed gas-tight with our unique elastic sealing compound. This sealant is used on all section joints and canopy connections to guarantee the completely sealed and gas tight assembly required for forced draft operation. The sealant is easily applied, takes less time than applying conventional gasketing materials, and lasts many times longer.

2 CONTROLS

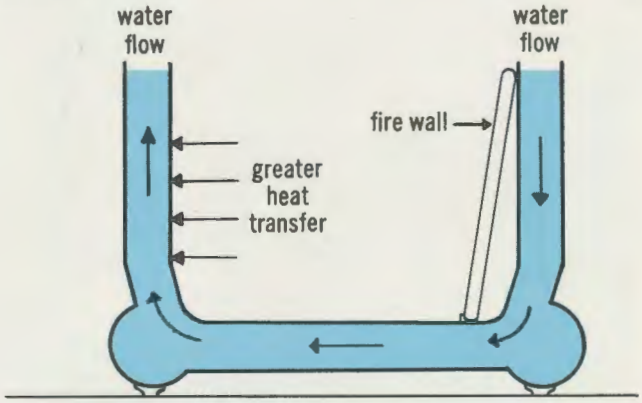
Mounted on the front of the boiler for ease in adjustment and maintenance.

3 BURNER PLATE

Incorporates a compressed insulation seal between burner mounting plate and front section. Flame observation is provided through a round shutter-type sight glass located just above burner.

4 THREE OPTIONAL BURNERS

Three burners are available for light oil, gas/light oil or gas firing. Burners are all laboratory tested for matched performance in **PF-5 Series** boiler-burner units.



5 WET BASE THERMAL PUMP CONSTRUCTION

Incorporated into the wet base design is a "thermal pump" action that greatly improves circulation in both water and steam versions of the **PF-5 Series.** This thermal pump insures good steam quality as well as maximum tankless heater capacity. The thermal pumping action is created by causing greater heat transfer on one side of the boiler than on the other. An upward flow of water occurs on the side where heat transfer is greatest, and a downward water flow results on the side where heat transfer is lowest. Continuous water circulation is assured.

6 FLUE CANOPY

Constructed of aluminized steel for long life with reinforcing channels and welded seams.

7 TANKLESS HEATER

Precise positioning of the internal tankless heater in hottest area of boiler water permits supplying domestic hot water requirements ranging from 8 to 64 GPM.

RATINGS—50 lb. W.P. (water), 15 lb. W.P. (steam)

* Boiler Number	Boiler H.P.	Gross I=B=R Output (Btuh)	Net I=B=R Rating			I=B=R Burner Capacity		** Gas Pressure Required (inches water column)	Heating Surface ($ft.^2$)	Net Firebox Volume ($ft.^3$)	† Pressure in Firebox (inches water column)	Water Content Full (lbs.)	I=B=R Vent Diameter (inches)
			Steam (sq. ft.)	Steam (Btuh)	Water (Btuh)	Light Oil (gph)	Gas (mbh)						
PF-504	18.5	620,000	1,938	465,100	539,100	5.45	763	5.2	66	8.5	.244	581	10
PF-505	23.4	786,000	2,457	589,600	683,500	6.90	966	6.4	85	11.1	.244	700	10
PF-506	28.4	950,000	2,969	712,700	826,100	8.35	1,169	6.6	104	13.7	.245	818	10
PF-507	33.3	1,116,000	3,488	837,200	970,400	9.80	1,372	6.9	123	16.3	.245	937	10
PF-508	38.2	1,282,000	4,016	963,900	1,114,800	11.20	1,568	6.5	142	18.9	.246	1056	10
PF-509	43.2	1,446,000	4,582	1,099,600	1,257,400	12.65	1,771	6.5	161	21.5	.246	1174	14
PF-510	48.2	1,612,000	5,159	1,238,100	1,401,700	14.10	1,974	5.9	179	24.1	247	1293	14
PF-511	53.1	1,776,000	5,728	1,374,600	1,544,300	15.55	2,177	5.7	198	26.8	.247	1412	14
PF-512	58.1	1,944,000	6,289	1,509,300	1,690,400	16.95	2,373	6.8	217	29.4	.248	1530	14
PF-513	63.0	2,108,000	6,819	1,636,600	1,833,000	18.40	2,576	6.3	236	32.0	.248	1649	14
PF-514	67.9	2,272,000	7,350	1,764,000	1,975,700	19.85	2,779	6.1	255	34.6	.249	1768	14
PF-515	72.9	2,440,000	7,893	1,894,400	2,121,700	21.25	2,975	6.2	274	37.2	.249	1886	14
PF-516	77.8	2,604,000	8,424	2,021,700	2,264,300	22.70	3,178	6.0	293	39.8	.250	2005	18
PF-517	82.7	2,768,000	8,954	2,149,100	2,407,000	24.15	3,381	5.5	312	42.4	.250	2123	18
PF-518	87.7	2,936,000	9,498	2,279,500	2,553,000	25.60	3,584	6.2	330	45.0	.251	2242	18
PF-519	92.6	3,100,000	10,028	2,406,800	2,695,700	27.00	3,780	6.2	349	47.6	.251	2361	18
PF-520	97.4	3,260,000	10,546	2,531,100	2,834,800	28.45	3,983	6.7	368	50.2	252	2479	18
PF-521	102.5	3,430,000	11,096	2,663,000	2,982,600	29.90	4,186	7.4	387	52.8	.252	2598	18

*Suffix "S" indicates steam boiler, "W" indicates water boiler. Suffix "G" indicates gas-fired, "O" indicates oil-fired, "GO" indicates combination gas-oil fired.

**Minimum gas pressure required at std. gas train inlet for maximum burner input based on 1000 Btu/cu. ft. 0.60 specific gravity gas.
†With positive pressure of 0.10 inches water column in boiler flue outlet.

ASSEMBLAGE OF SECTIONS *

Boiler Number	Arrangement of Sections from Front to Back of Boiler																				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
PF-504	FX	CT	C	BX	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
PF-505	FX	CT	C	CT	BX	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
PF-506	FX	CT	C	CT	C	BX	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
PF-507	FX	CT	C	CT	C	CT	BX	—	—	—	—	—	—	—	—	—	—	—	—	—	—
PF-508	FX	CT	C	CT	C	CT	C	BX	—	—	—	—	—	—	—	—	—	—	—	—	—
PF-509	FX	CT	C	CT	C	CT	C	CT	BX	—	—	—	—	—	—	—	—	—	—	—	—
PF-510	FX	CT	C	CT	CX	CT	C	CT	C	BX	—	—	—	—	—	—	—	—	—	—	—
PF-511	FX	CT	C	CT	C	CT	CX	CT	C	C	BX	—	—	—	—	—	—	—	—	—	—
PF-512	FX	CT	C	CT	C	CT	CX	CT	C	CT	C	BX	—	—	—	—	—	—	—	—	—
PF-513	FX	CT	C	CT	C	CT	CX	CT	C	CT	C	C	BX	—	—	—	—	—	—	—	—
PF-514	FX	C	C	CT	CX	CT	C	CT	CX	CT	C	CT	C	BX	—	—	—	—	—	—	—
PF-515	FX	C	C	CT	CX	CT	C	CT	CX	CT	C	CT	C	CT	BX	—	—	—	—	—	—
PF-516	FX	C	C	CT	CX	CT	C	CT	C	CT	CX	CT	C	CT	C	BX	—	—	—	—	—
PF-517	FX	C	C	CT	CX	CT	C	CT	C	CT	CX	CT	C	CT	C	C	BX	—	—	—	—
PF-518	FX	C	C	CT	CX	CT	C	CT	C	CT	CX	CT	C	CT	CX	CT	C	BX	—	—	—
PF-519	FX	C	C	CT	CX	CT	C	CT	C	CT	CX	CT	C	CT	CX	CT	C	C	BX	—	—
PF-520	FX	C	C	CT	C	CT	CX	CT	C	CT	CX	CT	C	CT	C	CT	CX	CT	C	BX	—
PF-521	FX	C	C	CT	C	CT	CX	CT	C	CT	CX	CT	C	CT	C	CT	CX	CT	C	C	BX

Legend:

FX—front section with 4" top tapping

C—center section

CX—center section with 4" top tapping

CT—center section with T.W.H. opening

BX—back section with 4" top tapping

Note:
For boilers less tankless water heaters replace the "CT" sections with "C" sections.

* CT sections furnished only on special request or to accommodate number of tankless heaters ordered.

STANDARD EQUIPMENT

ALL BOILERS
Sections Unassembled • Flush Jacket • Burner Mounting Plate • Pressure Relief Door Fire Wall Plates • Flue Damper Assembly • Trim and Controls.

STEAM: PA-404A Pressuretrol, ASME Safety Valve, Gauge Glass Assembly, Drain Valve, Pressure-vacuum Gauge.

WATER: L-4006A High Limit, ASME Safety Relief Valve, Pressure and Temperature Gauge, Drain Valve.

OIL BOILERS
Flange Mounted Oil Burner—97A-T-A, 97A-T-2, 97A Hi-Lo and 98A Hi-Lo Burners furnished with Flange and Pedestal; 2-Stage Fuel Unit. On 95A-1, 96A-1, 96A-B, 96A-T-A and 97A-T-A Burners, factory installed Cad Cell, Bracket and Leads, R8185E Light Sensing Primary Control; V4046B Instantaneous Oil Valve, Electronic Time Delay. On 97A-T-2, 97A Hi-Lo-2 and 98A Hi-Lo-2 Burners, R4140M Control—provides pre-purge and post-purge, Q520A Base, factory installed C7013A Photo Cell; Delayed and Instantaneous Oil Valves, Nozzles.

Standard motor voltages for listed oil burners—115-60-1 on all except 97A-T-A, 97A-T-2, 97A Hi-Lo and 98A Hi-Lo—230-60-1.

GAS/OIL BOILERS
Flange Mounted Gas Burner, Standard burner controls meet latest UL requirements. Dual Automatic Gas Valves for added reliability. Gas-Electric Ignition. Electric Programming Controls and Components are factory wired in a control cabinet on the burner. Includes R4795 Relay on 4-12 section; GP100U Control on 13-21 section; proven pilot. Standard burners equipped to operate with 1,000 BTU, 0.6 specific gravity natural gas.

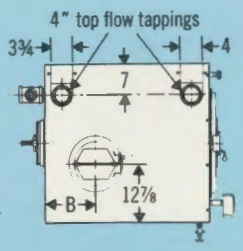
GAS BOILERS
Flange Mounted Combination Gas-Oil Burner. Standard burner controls meet latest UL requirements. Manually Operated Fuel Switch for dual fuel change-over. Dual Automatic Gas Valves for added reliability. Gas-Electric Ignition. Electric Programming Controls and Components are factory wired in a control cabinet on the burner. R4795 Relay on 4-12 section; GP100U Control on 13-21 section; proven pilot. Standard burner equipped to operate on No. 1 or No. 2 fuel oil and 1,000 BTU, 0.6 specific gravity natural gas.

OPTIONAL EQUIPMENT

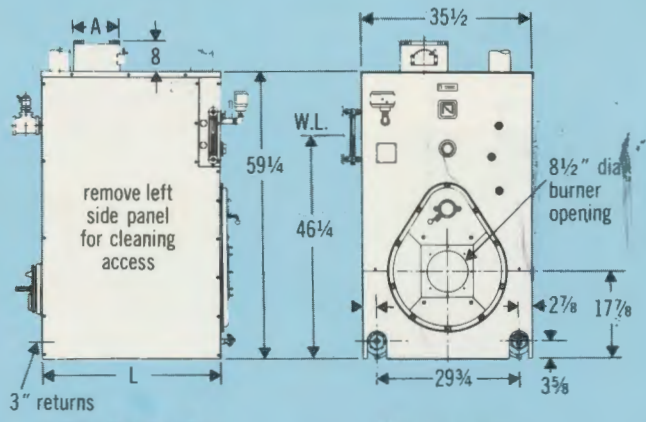
ALL BOILERS
Sections Assembled • Sections Stamped and Tested for 70# W.W.P. • Tankless Heaters.

SPECIAL APPLICATIONS
Combustion and hydronic controls to meet special applications such as F.M., I.R.I. (F.I.A.) and local codes are available on request.

FLUSH JACKET

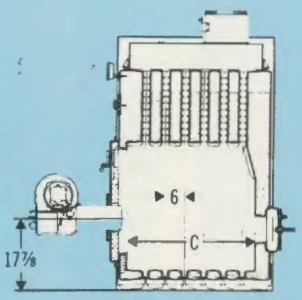


TOP VIEW



LEFT SIDE VIEW

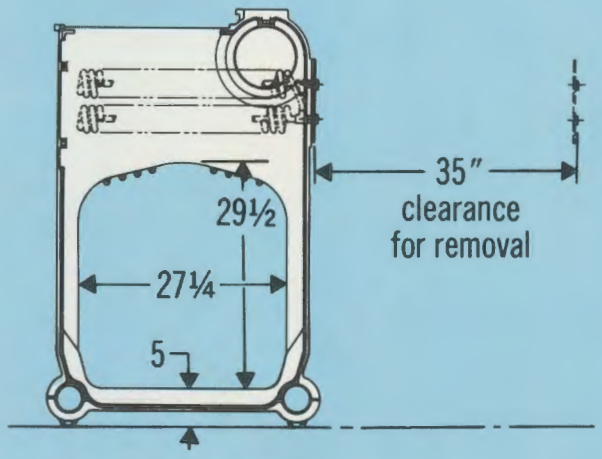
FRONT VIEW



SECTION THRU BOILER

DIMENSIONS (Inches)

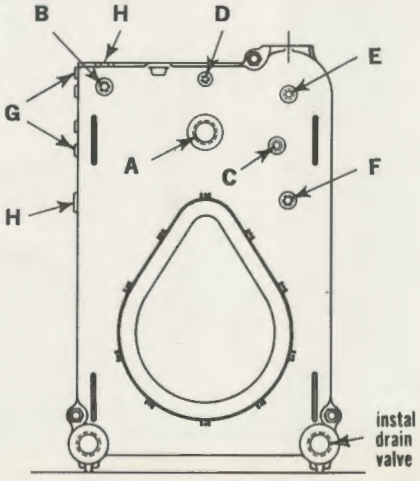
Boiler Number	No. of Sections	A	B	C	L Flush Jacket	Assembled Section Weight (lbs)
PF-504	4	10	12	19½	25¾	1650
PF-505	5	10	12	25½	31¾	2000
PF-506	6	10	12	31½	37¾	2300
PF-507	7	10	12	37½	43¾	2650
PF-508	8	10	12	43½	49¾	2950
PF-509	9	14	12	49½	55¾	3300
PF-510	10	14	12	55½	61¾	3650
PF-511	11	14	12	61½	67¾	3950
PF-512	12	14	27	67½	73¾	4300
PF-513	13	14	33	73½	79¾	4600
PF-514	14	14	39	79½	85¾	4950
PF-515	15	14	45	85½	91¾	5300
PF-516	16	18	51	91½	97¾	5600
PF-517	17	18	57	97½	103¾	5950
PF-518	18	18	63	103½	109¾	6300
PF-519	19	18	69	109½	115¾	6600
PF-520	20	18	75	115½	121¾	6950
PF-521	21	18	81	121½	127¾	7300



center section showing tankless water heater

CONTROL TAPPINGS

Location	Size of Tappings	Steam	Water
A	2½	Low water cut-off	Not used
B	¾	Pressure limit control	Temperature limit control
C	¾	Operating cont. Tankless heater	Operating cont. Tankless heater
D	½	Pressure gauge	Comb. altitude Gauge and thermometer
E	¾	Not used	Not used
F	¾	Not used	Reverse acting control
G	½	Gauge glass	Not used
H	1	Water Feeder, LWCO, Water Column	Not used

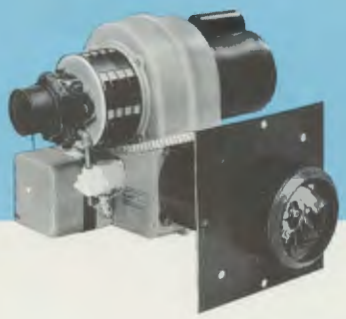


NOTE—2½" blow-off on back section safety or relief valve piped in connection with blow-off.

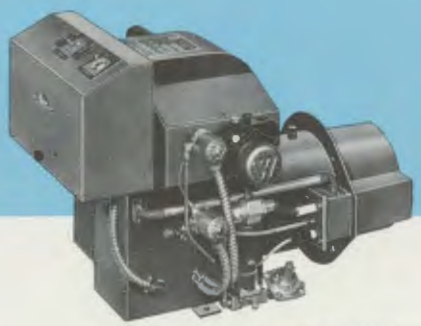
BURNER SCHEDULE

Boiler Number	I=B=R Burner Capacity		Burner Number		
	GPH Oil	MBH Gas	Light Oil	Gas/Light Oil	Gas
PF-504	5.45	763	95A-1	R6.2-GO-03	R6.2-G-03
PF-505	6.90	966	96A-1	R6.2-GO-03	R6.2-G-03
PF-506	8 35	1169	96A-1	R6.2-GO-03	R6.2-G-03
PF-507	9.80	1372	96A-B	R8-GO-05	R8-G-05
PF-508	11.20	1568	96A-B	R8-GO-05	R8-G-05
PF-509	12.65	1771	96A-B	R8-GO-05	R8-G-05
PF-510	14.10	1960	96A-T-A	R8.1-GO-05	R8.1-G-05
PF-511	15.55	2177	97A-T-A	R8.2-GO-07	R8.2-G-07
PF-512	16.95	2373	97A-T-A	R8.3-GO-10	R8.3-G-10
PF-513	18.40	2576	97A-T-A	R10.9-GO-10	R10.9-G-10
PF-514	19.85	2779	97A-T-A	R10.9-GO-10	R10.9-G-10
PF-515	21.25	2975	97A-T-2	R10.9-GO-10	R10.9-G-10
PF-516	22.70	3178	97A-Hi Lo-2	R10-GO-15	R10-G-15
PF-517	24.15	3381	97A-Hi Lo-2	R10-GO-15	R10-G-15
PF-518	25.60	3584	98A-Hi Lo-2	R10.1-GO-20	R10.1-G-20
PF-519	27.00	3780	98A-Hi Lo-2	R10.1-GO-20	R10.1-G-20
PF-520	28.45	3983	98A-Hi Lo-2	R10.1-GO-30	R10.1-G-30
PF-521	29.90	4186	98A-Hi Lo-2	R10.1-GO-30	R10.1-G-30

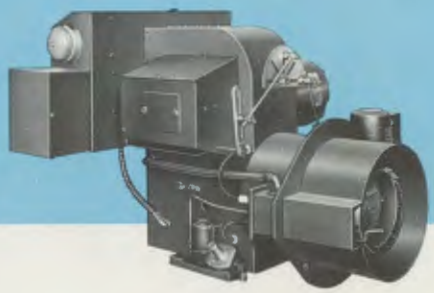
APPROVAL: Burnham America flame retention gas, gas/oil and oil burners (115 and 230 volt/60 cycle) are listed with Underwriters' Laboratories, Inc. for all gases and No. 1 and No. 2 grades of fuel oil, whether obtained by distillation or catalytic cracking process. They are approved by the New York City Board of Standards and Appeals, the State Fire Marshal of the Commonwealth of Massachusetts and the Department of State Police, State of Connecticut.



Light Oil Burner



Gas/Light Oil Burner

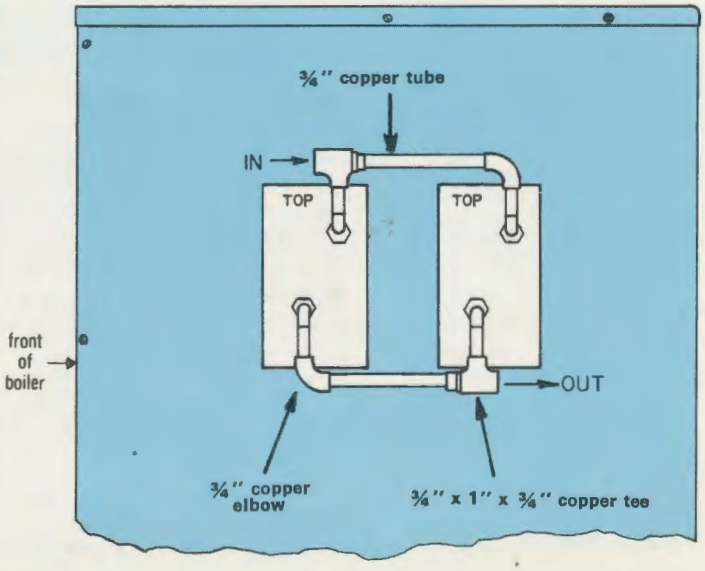


Gas Burner

TANKLESS HEATER RATINGS (Water and Steam)

Boiler Number	Number of #548 Heaters Installed*							
	1	2	3	4	5	6	7	8
PF-504	8.0	—	—	—	—	—	—	—
PF-505	8.0	16.0	—	—	—	—	—	—
PF-506	8.0	16.0	—	—	—	—	—	—
PF-507	8.0	16.0	24.0	—	—	—	—	—
PF-508	8.0	16.0	24.0	—	—	—	—	—
PF-509	8.0	16.0	24.0	32.0	—	—	—	—
PF-510	8.0	16.0	24.0	32.0	—	—	—	—
PF-511	8.0	16.0	24.0	32.0	—	—	—	—
PF-512	8.0	16.0	24.0	32.0	40.0	—	—	—
PF-513	8.0	16.0	24.0	32.0	40.0	—	—	—
PF-514	8.0	16.0	24.0	32.0	40.0	—	—	—
PF-515	8.0	16.0	24.0	32.0	40.0	48.0	—	—
PF-516	8.0	16.0	24.0	32.0	40.0	48.0	—	—
PF-517	8.0	16.0	24.0	32.0	40.0	48.0	—	—
PF-518	8.0	16.0	24.0	32.0	40.0	48.0	56.0	—
PF-519	8.0	16.0	24.0	32.0	40.0	48.0	56.0	—
PF-520	8.0	16.0	24.0	32.0	40.0	48.0	56.0	64.0
PF-521	8.0	16.0	24.0	32.0	40.0	48.0	56.0	64.0

*Ratings are given in gallons per minute continuous draw of water heated from 40°F to 140°F with 200°F boiler water.



MINIMUM PIPING RECOMMENDATIONS

Note:
These schematic drawings are intended solely to show recommended tapping locations and general piping arrangements. Actual piping details shoud be designed in accordance with standard engineering practice.

Water Boiler

Boiler Number	Supply and Return (inches)
PF-504	2½
PF-505	2½
PF-506	3
PF-507	3
PF-508	4
PF-509	4
PF-510	4
PF-511	4
PF-512	4
PF-513	4
PF-514	5
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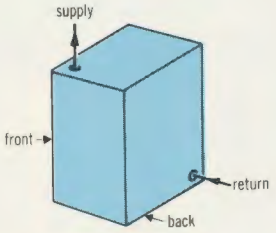
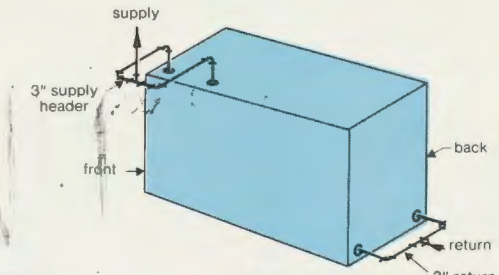
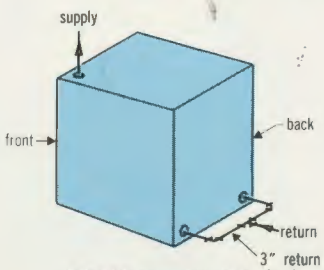
PF-519	5
PF-520	5
PF-521	5



PF-504 thru PF-507



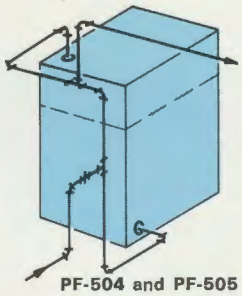
PF-514 thru PF-521

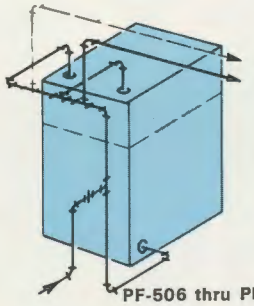


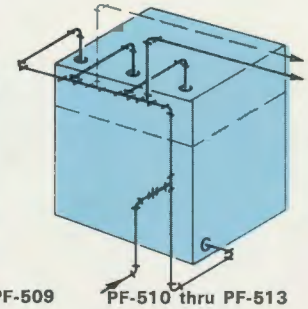
PF-508 thru PF-513

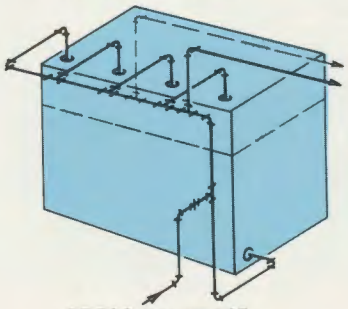
Steam Boiler

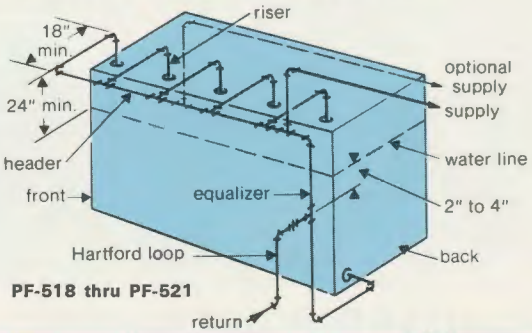
Boiler Number	Pipe Size (inches)			
	Riser	Return	Header	Equalizer
PF-504	(1) 4	2	4	2½
PF-505	(1) 4	2	4	2½
PF-506	(2) 4	2½	6	2½
PF-507	(2) 4	2½	6	2½
PF-508	(2) 4	2½	6	2½
PF-509	(2) 4	2½	6	2½
PF-510	(3) 4	2½	8	2½
PF-511	(3) 4	3	8	4
PF-512	(3) 4	3	8	4
PF-513	(3) 4	3	8	4
PF-514	(4) 4	3	8	4
PF-515	(4) 4	3	8	4
PF-516	(4) 4	3	8	4
PF-517	(4) 4	3	8	4
PF-518	(5) 4	3	8	4
PF-519	(5) 4	3	8	4
PF-520	(5) 4	3	8	4
PF-521	(5) 4	3	10	4


PF-504 and PF-505


PF-506 thru PF-509


PF-510 thru PF-513


PF-514 thru PF-517



PF-518 thru PF-521

SAMPLE SPECIFICATIONS

Contractor shall furnish and install, as indicated on plans (light oil, gas-light oil or gas)-fired, forced draft boilers having an input of . . . . . (GPH OR BTUH) and an I=B=R rating of . . . . . BTUH. Boiler(s) shall be constructed of cast iron in accordance with A.S.M.E. requirements for low pressure heating boilers and bear the A.S.M.E. symbol. Each section shall be factory tested at 2½ times maximum working pressure of . . . . . (*) . . . . . for water. Boiler(s) shall have I=B=R ratings. Boiler sections shall be constructed so that the water line for steam boilers shall be above the bottom of top nipple ports to insure proper water circulation between sections. Boiler flue passages shall be vertical with pinned surfaces. To insure gas tight integrity all boiler sections shall be sealed with elastic sealant compound. Boiler shall be constructed so as not to require a combustion chamber

Boiler shall be equipped with tankless heater(s) having a rating of . . . . . GPM.

Burners shall include controls as herein described. (Note: include description of controls as required and other burner features as desired.)

(*) 50 lbs. working pressure standard, 70 lbs. available on special order.

BURNHAM CORPORATION
HYDRONICS DIVISION
Lancaster, Pa. 17604

high efficiency hydronics

Printed in U.S.A.

Form No. 4250B-1-78-35Ms

CARE-FREE *Electric Boiler*

CAST IRON
HYDRONIC
PACKAGE

100% EFFICIENT — NO FLUE LOSSES

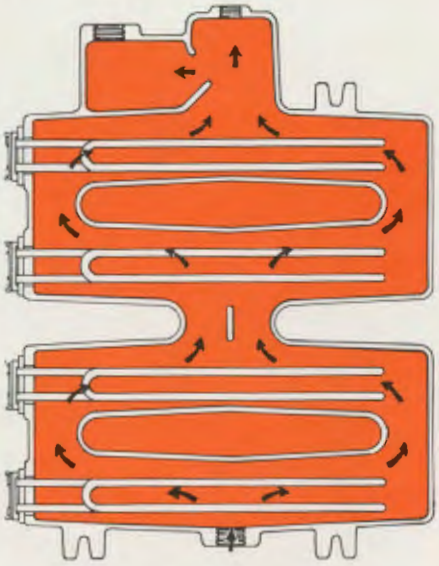
FIVE SIZES
40,956 TO 68,260 BTU/HR

Burnham
AMERICA'S BOILER COMPANY

Burnham
AMERICA'S BOILER COMPANY

CARE-FREE *Electric Boiler*

HOMES • APARTMENTS — NEW or CONVERSION INSTALLATIONS



THE BURNHAM CARE-FREE Electric Boiler Provides THE CONSUMER WITH —

- Comfort
- Economy
- Versatility
- Deluxe Styling
- Lifetime Construction
- UL Listed
- 100% Efficient—No flue losses

THE CONTRACTOR WITH —

- Complete Packaging
- 3 sizes ranging from 41,000 BTU/HR through 68,000 BTU/HR
- Reliable controls
- Quick-Connect circulator pak
- Zone valve packages
- Installation ease

No floor space required

No chimney is necessary

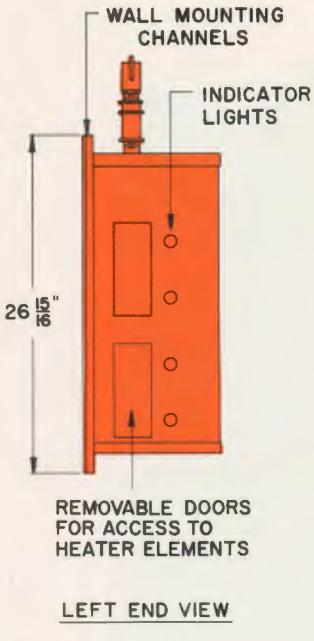
BOILER SECTION

1. One piece cast iron A. S. M. E. construction.
2. Large water capacity—3.5 gals.
3. Parallel water flow over heating elements for higher system design temperature—to 210°F.
4. Air pockets and dead water spots cannot exist—steaming, which causes noise and reduces element life, is eliminated.
5. Built-in air separator at top of section—assures quiet operation and eliminates need for external air separator.
6. All heating elements inserted from one side—reduces space requirements for installation.

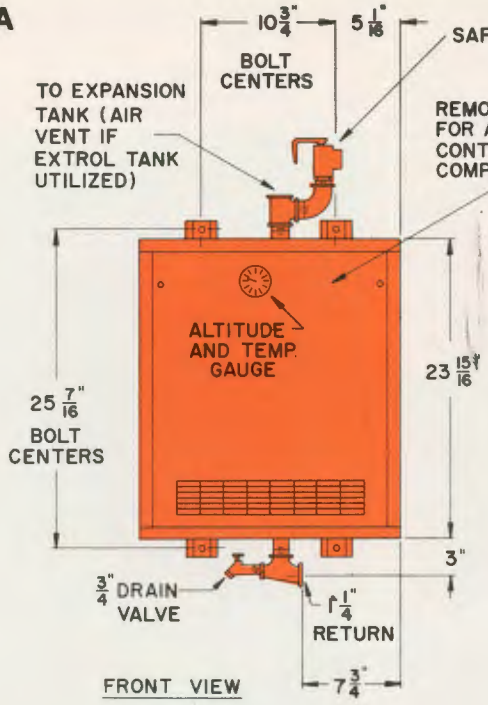
HEATING ELEMENTS

1. Low density type for long life, and quiet trouble free operation.
2. Sheathed in tin and brazed to mounting flanges for long life.

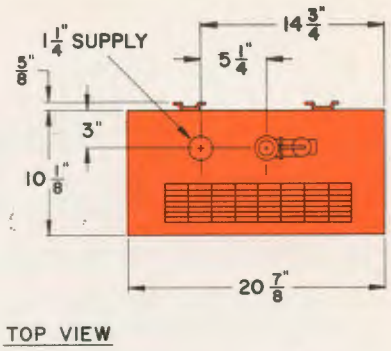
SPECIFICATION DATA



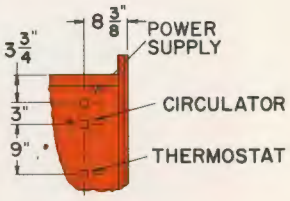
LEFT END VIEW



FRONT VIEW



TOP VIEW



PARTIAL RIGHT END VIEW

CLEARANCE REQUIREMENTS

	FOR SERVICE ACCESSIBILITY	APPROVED FOR CLOSET & ALCOVE INSTALLATION WITH MINIMUM CLEARANCE TO COMBUSTIBLE MATERIAL*
LEFT SIDE	18"	18"
RIGHT SIDE	6"	0"
TOP	9"	9"
BOTTOM	9"	15"
REAR	0"	0"
FRONT	FOR DOOR REMOVAL	2" CLOSET 18" ALCOVE

* *Closet Installation Requires Two Ventilation Openings, one located at top and one at bottom, each opening to have 25 sq. in. net free area.*

RECOMMENDED POWER SUPPLY TO BOILER

BOILER MODEL	KW	AMPS	VOLTS PHASE	NO. AND SIZE OF ELEMENTS	MIN.* WIRE SIZE	MAX. FUSE SIZE AMPS	APPX. WT. FULL LBS.	WATER CONTENTS GALS.
E-412	12	50	240/1	4-3KW	6	60	155	3½
E-416	16	70	240/1	2-3KW 2-5KW	4	80	155	3½
E-420	20	85	240/1	4-5KW	2	90	155	3½

* *For runs in excess of 50 ft. consult local and national electrical code.*

BOILER RATINGS

BOILER MODEL	DOE HEATING CAPACITY BTUH 240V.	220V.	208V.	DOE ANNUAL EFFICIENCY	AMPS (240V)	WATER FLOW RATE—GPM BASED ON 20°F TEMP. RISE AND BOILER CAPACITY AT 240V.	220V.	208V.	APPROX. SHIPPING WEIGHT (LBS.)
E-412	41,000	35,000	31,000	100%	50	4.1	3.5	3.1	133
E-416	55,000	46,000	41,000	100%	70	5.5	4.6	4.2	133
E-420	68,000	58,000	52,000	100%	85	6.8	5.8	5.2	133

* *Gross Output ratings are shown. Where the boiler and piping are in the heated space, the boiler may be selected on the basis of the Gross Output. Where a piping loss and/or a pickup loss will exist, add this loss to the building loss to determine the total heating requirement. Where a piping loss only will exist but cannot be calculated, multiply the calculated building loss by a 1.15 factor to determine the total heating requirement.*

STANDARD EQUIPMENT

Insulated two-tone blue jacket
Wall mounting brackets
Heating element sequencers
Neon indicator lights
Circulator delay control
Circulator switch
Control circuit fuse
Transformer-120/24V-40VA
Field wiring terminal block
Thermostat terminal block
Dual high limit control
Altimeter
A.S.M.E. Safety Relief valve
Drain Cock
Internal wiring
Thermostat-24V-2-wire
Heating Element Relays

OPTIONAL EQUIPMENT

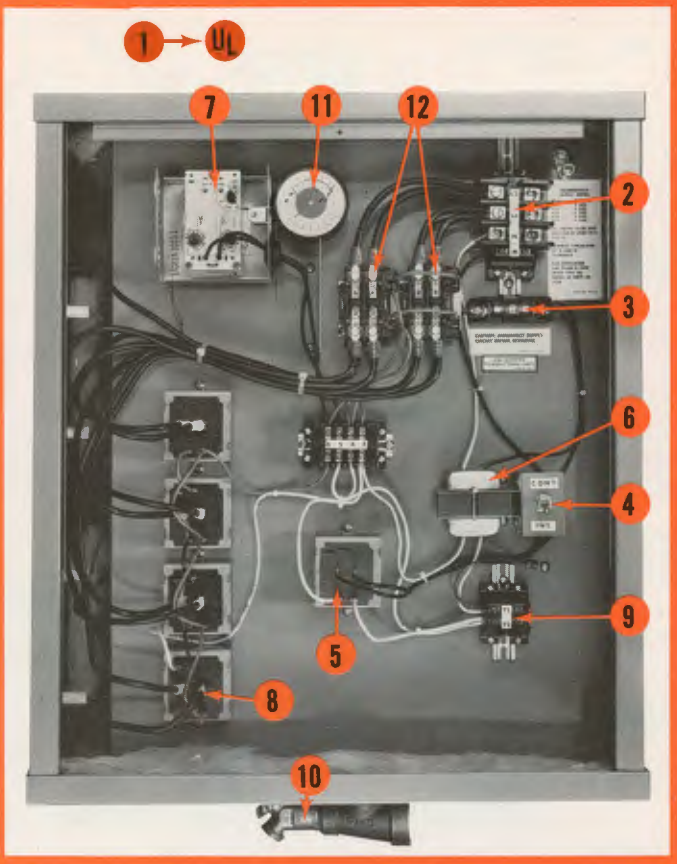
Quick-Connect Circulator Pak
(In separate carton)
Circulator-1¼" w/wiring harness
Fill-trol #108 (Compression tank and fill valve)
Completely assembled piping with circulator and fill-trol installed
Float type air vent
CIRCULATOR RELAYS—For zoning with multiple circulators
Honeywell R845A-1022 (No barrier)
DPST—One required per circulator
ZONE VALVE PACKAGES
(In separate carton)
3 Zone package (24V) includes—3 Zone valves w/¾" solder connections; 1¼" manifold; 40VA transformer; 2 thermostats-24V-2 wire and wiring harness
2 Zone package (24V) includes—2 Zone valves w/¾" solder connections; 1¼" manifold; 20VA transformer; 1 thermostat-24V-2 wire and wiring harness

CARE-FREE *Electric Boiler*

FEATURES

ELECTRICAL COMPONENTS

1. All Electrical Components are U.L. LISTED.
2. FIELD WIRING TERMINAL BLOCK — designed for use on 240-volt a-c (nominal) three-wire, single-phase, 60-cycle service. Internal wiring provides 120 volts from this source to operate transformer and circulators. Extra terminal on block simplifies field wiring of Circulator. Oversized connectors assure positive connections — barrier block construction prevents short circuiting.
3. CIRCULATOR FUSE — protects Circulator and Heating Element Sequencers — if fuse is blown and Circulator is inoperative, Heating Elements cannot be energized. Eliminates need for separate Circulator Fuse Box.
4. CIRCULATOR SWITCH — manually operated — provides for selection of CONTINUOUS OR INTERMITTENT CIRCULATOR OPERATION. Aids in purging air during initial start-up.
5. CIRCULATOR DELAY CONTROL — with Circulator Switch in the "INT" position (Intermittent Circulator Operation), this control will activate circulator on "call for heat" from thermostat. Circulator will continue to operate until thermostat is satisfied even if Heating Elements are de-energized by the High Limit Control. Control prevents energizing of Heating Elements until Circulator is operating. Time delay feature keeps Circulator running 90 seconds after Heating Element is de-energized. When zoning with circulators and relays (i.e. with circulator switch in continuous position) time delay feature is not utilized.
6. 24 VOLT 40 VA TRANSFORMER — provides power for LOW VOLTAGE CONTROL CIRCUIT — oversized to carry full load without overheating.
7. DUAL HIGH LIMIT CONTROL — consists of two independently adjustable temperature limits. The left hand adjustment is the safety limit — maximum setting 220°F. The lower right hand adjustment is for the operating limit and should be set at least 10°F below safety limit. These adjustments may be varied to suit the individual installation. If the operating or safety limit is reached, only the heating elements will be de-energized; the circulator will continue to run. The Dual High Limit utilizes an immersion type well permitting replacement without draining the boiler.
8. HEATING ELEMENT SEQUENCERS — one per Heating Element, thus elements are individually energized 45 seconds apart preventing any power surge on the electric service line. When the thermostat is satisfied or the setting of High Limit is reached, the Heating Elements are de-energized within a short time span of each other.



9. THERMOSTAT TERMINAL BLOCK — provides connections for leads from 2-wire low voltage thermostat, end switch on zone valve, or low voltage side of circulator relay (for systems zoned with Circulators).
* RED NEON INDICATOR LIGHTS — visual indication of Heating Element being energized.

HYDRONIC COMPONENTS

* A.S.M.E. SAFETY RELIEF VALVE — installed outside of Jacket in leg of Tee piped to top of Boiler, thus isolated from all electrical connection.
10. DRAIN COCK — installed outside of Jacket in leg of Tee piped to bottom of Boiler, thus remote from all electrical wiring and components. Readily accessible for hose connection.
11. ALTITUDE AND TEMPERATURE GAUGE — easily visible thru opening in Jacket Front Door yet recessed for added protection from breakage.
12. HEATING ELEMENT RELAYS — an additional safety feature, operating through the Dual High Limit, to disconnect all high voltage heating element circuits instantly upon boiler reaching the high limit setting or if the thermostat is satisfied.

** Not illustrated above.*

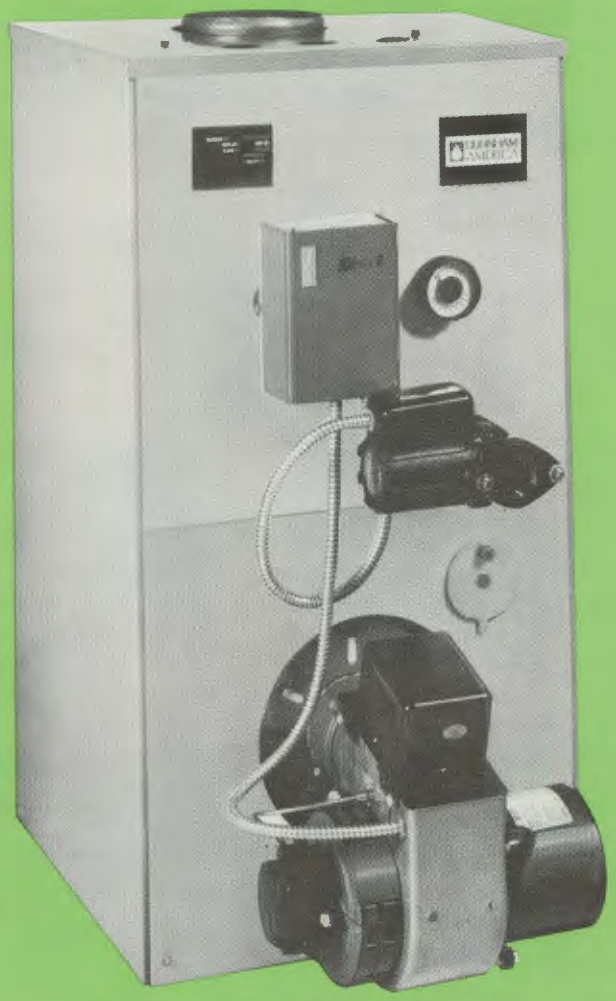
BEFORE PURCHASING THIS APPLIANCE READ IMPORTANT ENERGY COST AND EFFICIENCY INFORMATION AVAILABLE FROM YOUR CONTRACTOR.

Burnham
HYDRONICS DIVISION
Lancaster, PA 17604

Form No. 4310A-12-79-30Mf

BBCA *Series*

RESIDENTIAL STEEL OIL FIRED HYDRONIC PACKAGES



SBI®

*sizes 109 thru 115

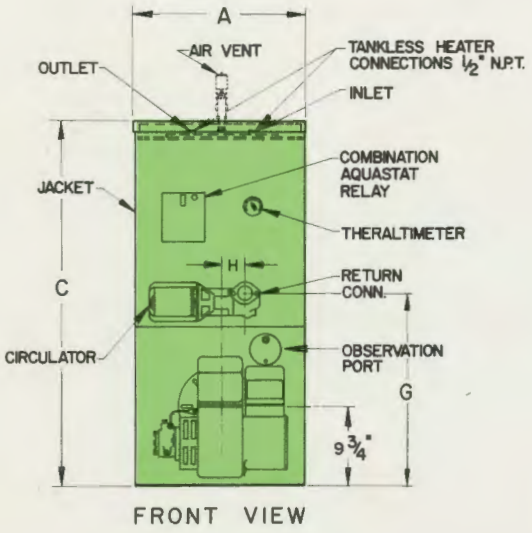
WITH OR WITHOUT FLAME RETENTION

EIGHTEEN MODELS
DOE HEATING CAPACITIES: 94,000 to 207,000 BTU/HR
GROSS OUTPUTS: 227,000 to 340,000 BTU/HR

Burnham
AMERICA'S BOILER COMPANY

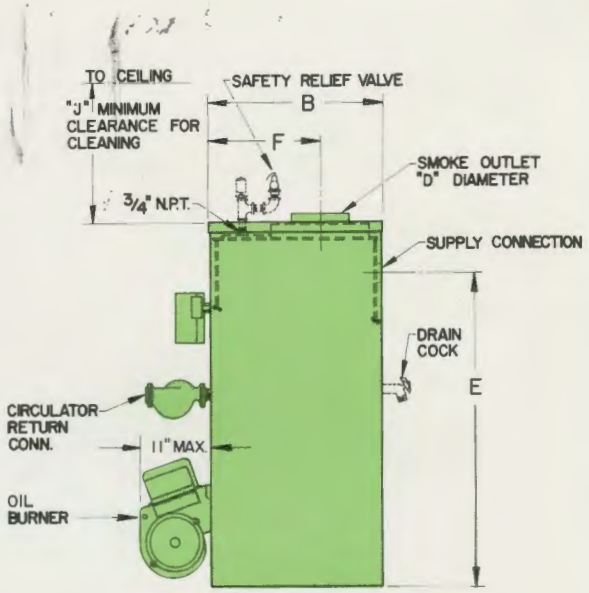
Burnham
AMERICA'S BOILER COMPANY

BBCA Series



FRONT VIEW

PIPING AND FITTINGS SHOWN IN HIDDEN OUTLINE NOT FURNISHED BY MANUFACTURER.



SIDE VIEW

DIMENSIONS (In Inches)

BBCA

BOILER NUMBER	A	B	C	D	E	F	G	H	J	HEATING BOILERS ONLY		
										SUPPLY CONN.	RETURN	
											CIR.	BLR.
BBCA-109	21	21¼	39	7	34⅛	13½	22⅛	4½	24	1½	1	1
BBCA-110	21	21¼	39	7	34⅛	13½	22⅛	4½	24	1½	1	1
BBCA-111	21	21¼	39	7	34⅛	13½	22⅛	4½	24	1½	1	1
BBCA-112	21	21¼	39	7	34⅛	13½	22⅛	4½	24	1½	1	1
BBCA-113	20¾	21¼	44	7	39½	13¾	20¾	3½	24	1½	1	1½
BBCA-114	20¾	21¼	44	7	39½	13¾	20¾	3½	24	1½	1	1½
BBCA-115	20¾	21¼	50	7	45½	13¾	20¾	3½	30	1½	1	1½

BBCA-FR

BOILER NUMBER	A	B	C	D	E	F	G	H	J	HEATING BOILERS ONLY		
										SUPPLY CONN.	RETURN	
											CIR.	BLR.
BBCA-109-FR	21	21¼	39	7	34⅛	13½	22⅛	4½	24	1½	1	1
BBCA-110-FR	21	21¼	39	7	34⅛	13½	22⅛	4½	24	1½	1	1
BBCA-111-FR	21	21¼	39	7	34⅛	13½	22⅛	4½	24	1½	1	1
BBCA-112-FR	21	21¼	39	7	34⅛	13½	22⅛	4½	24	1½	1	1
BBCA-113-FR	20¾	21¼	44	7	39½	13¾	20¾	3½	24	1½	1	1½
BBCA-114-FR	20¾	21¼	44	7	39½	13¾	20¾	3½	24	1½	1	1½
BBCA-115-FR	20¾	21¼	50	7	45½	13¾	20¾	3½	30	1½	1	1½
BBCA-116-FR	22	22	51	7	44¾	13⅞	21⅜	3½	30	2	1½	1½
BBCA-117-FR	26	26	55	9	48¾	16	25⅜	0	30	3	1½	1½
BBCA-118-FR	26	26	55	9	48¾	16	25⅜	0	30	3	1½	1½
BBCA-119-FR	26	26	55	9	48¾	16	25⅜	0	30	3	1½	1½

Burnham
AMERICA'S BOILER COMPANY

BBCA Series

RATING DATA

BBCA

BOILER NUMBER	BURNER CAPACITY GPH 3	DOE HEATING CAPACITY BTUH	SBI NET RATING WATER BTUH 1	NET RATING WATER Sq. Ft. 2	TANKLESS HEATER GPM 4	CHIMNEY SIZE In. x In. x Ft.	SHIPPING WEIGHT Lbs.	DOE ANNUAL EFFICIENCY %	
								LESS VENT DAMPER	WITH VENT DAMPER
BBCA-109	0.85	94,000	81,700	545	3.0	8 x 8 x 20	346	74.00	78.65
BBCA-110	0.90	100,000	87,000	580	3.0	8 x 8 x 20	350	73.94	78.67
BBCA-111	1.00	113,000	98,300	655	3.0	8 x 8 x 20	358	73.80	78.70
BBCA-112	1.20	132,000	114,800	765	3.0	8 x 8 x 20	370	73.60	78.74
BBCA-113	1.40	157,000	136,500	910	4.0	8 x 8 x 20	430	72.56	77.49
BBCA-114	1.70	183,000	159,100	1061	5.0	8 x 8 x 20	440	71.93	76.67
BBCA-115	1.80	194,000	168,700	1125	5.0	8 x 8 x 20	518	72.46	77.16

BBCA-FR

BOILER NUMBER	BURNER CAPACITY GPH 3	DOE HEATING CAPACITY BTUH	SBI NET RATING WATER BTUH 1	NET RATING WATER Sq. Ft. 2	TANKLESS HEATER GPM 4	CHIMNEY SIZE In. x In. x Ft.	SHIPPING WEIGHT Lbs.	DOE ANNUAL EFFICIENCY %	
								LESS VENT DAMPER	WITH VENT DAMPER
BBCA-109-FR	0.85	97,000	84,300	562	3.0	8 x 8 x 20	346	78.08	81.70
BBCA-110-FR	0.90	104,000	90,400	603	3.0	8 x 8 x 20	350	77.74	81.53
BBCA-111-FR	1.05	119,000	103,500	690	3.0	8 x 8 x 20	358	77.07	81.19
BBCA-112-FR	1.25	141,000	122,600	817	3.0	8 x 8 x 20	370	76.07	80.68
BBCA-113-FR	1.45	160,000	139,100	927	4.0	8 x 8 x 20	430	75.21	79.80
BBCA-114-FR	1.70	189,000	164,300	1095	5.0	8 x 8 x 20	440	75.03	79.49
BBCA-115-FR	1.85	207,000	180,000	1200	5.0	8 x 8 x 20	518	75.27	79.87

BOILER NUMBER	BURNER CAPACITY GPH 3	CERTIFIED GROSS OUTPUT BTU/HR	NET RATING WATER BTUH 1	NET RATING WATER Sq. Ft. 2	TANKLESS HEATER GPM 4	CHIMNEY SIZE In. x In. x Ft.	SHIPPING WEIGHT Lbs.
BBCA-116-FR	2.15	227,000	197,400	1316	5.0	8 x 12 x 20	525
BBCA-117-FR	2.25	240,000	208,000	1391	5.0	8 x 12 x 20	630
BBCA-118-FR	2.70	290,000	252,000	1681	5.0	8 x 12 x 20	660
BBCA-119-FR	3.15	340,000	295,000	1971	5.0	8 x 12 x 20	690

BBCA Ratings are based on 10½% CO_2 and −.02" WC draft in the combustion chamber.
BBCA-FR Ratings are based on 12½% CO_2 and −.02" WC draft in the combustion chamber.

NOTES:

1 Net ratings shown are based on a piping and pick-up allowance of 1.15.

2 Net ratings in sq. ft. based on 170°F average water temperature in radiators. For higher water temperatures, select boiler on basis of net ratings in BTU/HR. Consult the manufacturer for installations having unusual piping and pick-up requirements, such as intermittent system operation, extensive piping systems, etc.

3 Firing rate in GPH based on oil having a heat value of 140,000 BTU/GAL.

4 Tankless heater ratings based on GAL/MIN. of 100°F rise and with 200°F boiler water temperature and 40°F heater inlet temperature. (Intermittent draw).

BOILER NOT FOR INSTALLATION ON COMBUSTIBLE FLOORS.

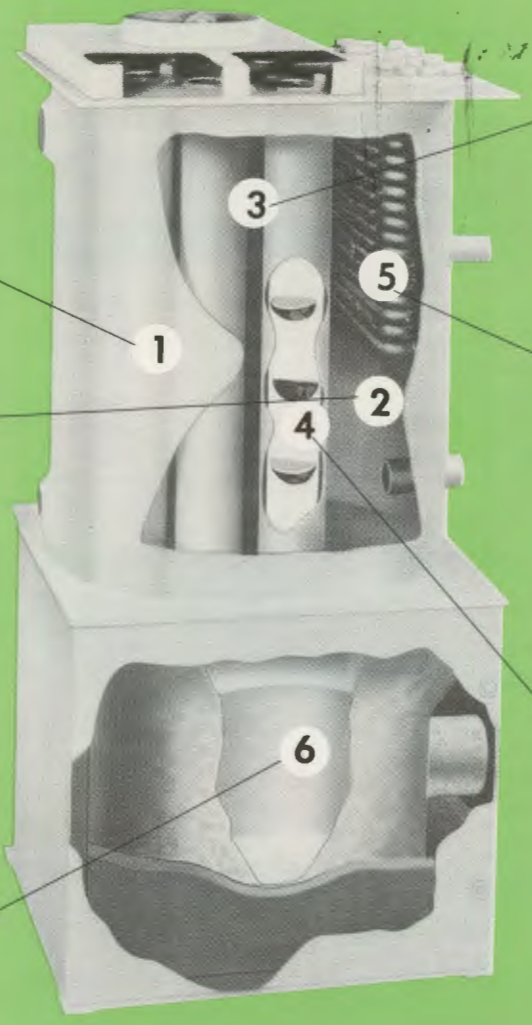
STANDARD EQUIPMENT

Oil boiler complete with enclosing two-tone blue flush jacket • Oil burner with cad cell • Combustion chamber • Triple-acting hydronic control and Protectorelay • Theraltimeter • Taco Circulator • Thermostat • A.S.M.E. Safety relief valve • Built-in tankless heater • Designed, constructed and stamped in accordance with Section IV of the A.S.M.E. Code.

OPTIONAL EQUIPMENT

Draft Regulator • Flow-valve • #A-34A Tankless heaters (See Trade Price Sheet for details)

OUTSTANDING FEATURES



A.S.M.E. Constructed and stamped for long life.

3" Commercial standard boiler tubes contribute to low draft loss and efficient operation under the most adverse conditions.

High water volume eliminates piping changes on replacement jobs.

Built-in tankless heater for domestic hot water requirements.

Flanged turbulators designed to reduce stack temperatures and provide maximum heat transfer.

Large combustion area promotes heating efficiency while maintaining low base temperatures.

BBCA

QUIET OPERATION — A combination of the specially designed combustion chamber and standard burner provides for quiet operation at 10½% CO_2.
QUALITY CONTROLS — Equipped with controls and accessories by manufacturers you know and trust.
EASY TO INSTALL — Completely packaged, wired and assembled for quick connection to water, fuel and electrical service.
PROVEN — Over twenty years of outstanding performance in the field.

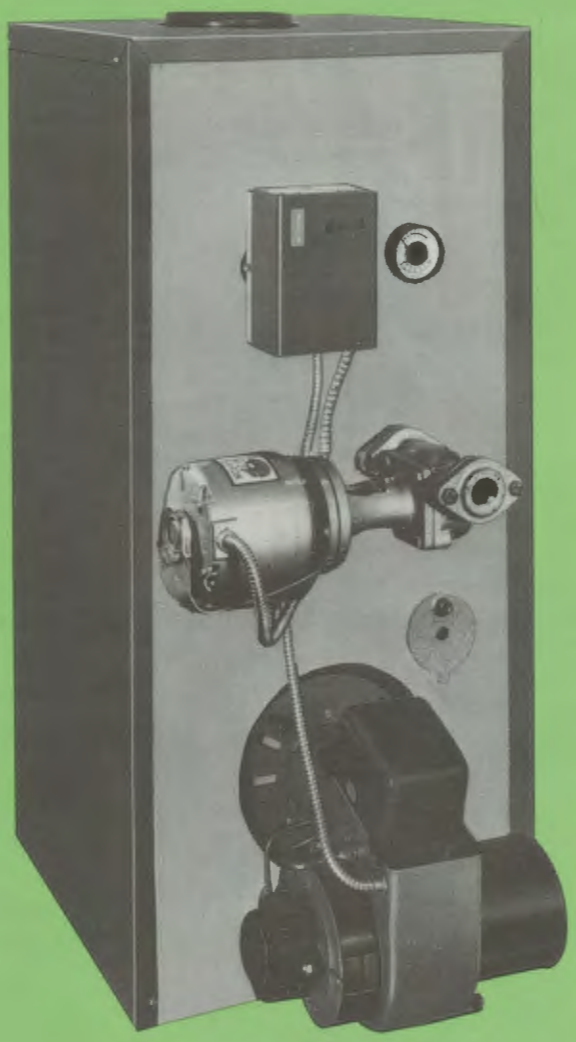
BBCA-FR

EFFICIENT — Use of most advanced burner design commercially available.
STABLE — Steady burner flame pattern offsets marginal operating conditions.
FUEL ECONOMY — 12½% CO_2 combustion adjustment yields more intense, concentrated flame temperatures and optimum efficiency for fuel economy.
RELIABILITY — Designed by Burnham Corp. — Over 100 years of hydronic experience.

BEFORE PURCHASING THIS APPLIANCE READ IMPORTANT ENERGY COST AND EFFICIENCY INFORMATION AVAILABLE FROM YOUR CONTRACTOR.

Burnham
HYDRONICS DIVISION
Lancaster, PA 17604

Form No. 4415-12-79-40Ma



HE-FR Series

RESIDENTIAL STEEL OIL FIRED HYDRONIC PACKAGES

FLAME RETENTION

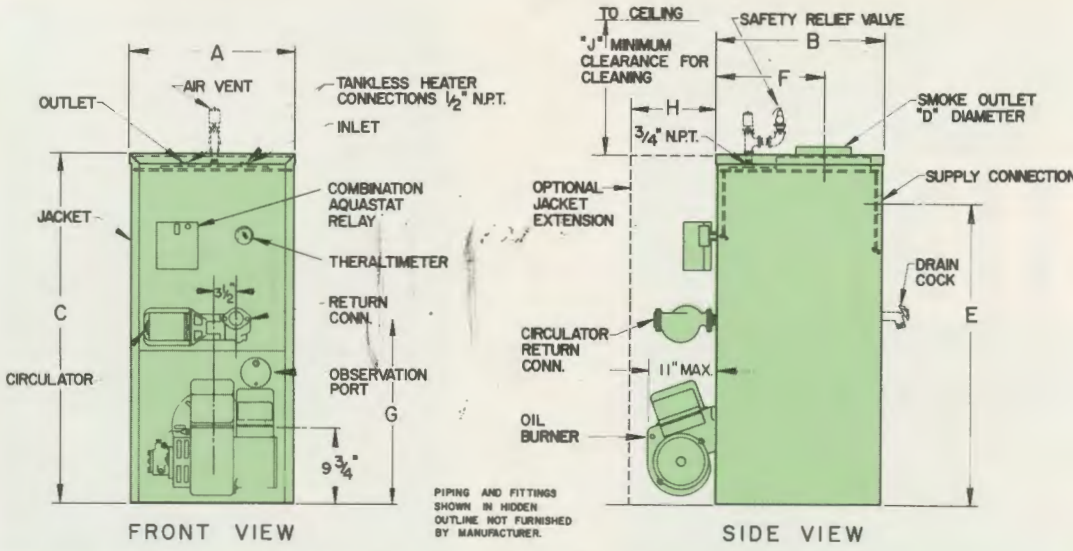
SEVEN MODELS
GROSS OUTPUTS:
100,000 to 318,000 BTU/HR

BURNHAM AMERICA

RETENTION

N MODELS
S OUTPUTS:
318,000 BTU/HR

URNHAM
MERICA



Not For Installation on Combustible Flooring Unless Equipped with Special Floor Shield

BOILER NO.	DIMENSIONS (In inches)									SUPPLY CONN.	RETURN	
	A	B	C	D	E	F	G	H	J		CIR.	BLR.
HE-22-FR	20¾	21¼	44	7	39½	13¾	20¾	12	24	1½	1	1½
HE-24-FR	20¾	21¼	44	7	39½	13¾	20¾	12	24	1½	1	1½
HE-26-FR	20¾	21¼	44	7	39½	13¾	20¾	12	24	1½	1	1½
HE-27-FR	20¾	21¼	50	7	45½	13¾	20¾	12	30	1½	1	1½
HE-28-FR	26	26	55	9	48¾	16	25⅜	12	30	3	1½	1½
HE-29-FR	26	26	55	9	48¾	16	25⅜	12	30	3	1½	1½
HE-30-FR	26	26	55	9	48¾	16	25⅜	12	30	3	1½	1½

RATING DATA — 30 lb. W.P. (water)

BOILER NO.	GROSS SBI OUTPUT (MBH)	(1) NET SBI RATING (MBH)	(1) NET RATING SQ. FT. WATER	(2) SBI BURNER CAPACITY (GPH)	BURNER WAYNE MODEL	BURNER WAYNE SPEC. NO.	(3) NOZZLE DELAVAN GPH-ANGLE-TYPE	(4) SBI NOMINAL CHIMNEY SIZE IN. X IN. X FT.	(5) TANKLESS HEATER NO.	(5) TANKLESS HEATER CAPACITY	SHIPPING WEIGHT LBS.
HE-22-FR	100	87.0	580	0.90	MH	132-23	1.00-80°-A	8 x 8 x 20	A—24	3.5	400
HE-24-FR	130	113.0	753	1.15	MH	132-23	1.10-80°-A	8 x 8 x 20	A—24	3.5	420
HE-26-FR	156	135.7	904	1.40	MH	132-25	1.35-80°-A	8 x 8 x 20	A—24	4.0	440
HE-27-FR	168	146.1	974	1.50	MH	132-25	1.50-80°-A	8 x 8 x 20	A—32	5.0	518
HE-28-FR	219	190.4	1269	1.95	EHA	132-35	2.00-80°-B	8 x 12 x 20	A—32	5.0	630
HE-29-FR	268	233.0	1553	2.40	EHA	132-37	2.50-80°-B	8 x 12 x 20	A—32	5.0	660
HE-30-FR	318	276.5	1843	2.85	EHA	132-37	3.00-80°-B	8 x 12 x 20	A—32	5.0	690

(1)— HE Series Boiler Ratings are based on 12¼% CO2. Net ratings for water square feet are based on 170° F average temperature in radiators. For higher water temperatures, select boiler on basis of I=B=R net rating, BTU/HR. Net I=B=R ratings shown are based on a piping and pick-up allowance of 1.15. Consult manufacturer for installations having unusual piping and pick-up requirements, such as intermittent system of operation, extensive piping systems, etc.

(2)— The I=B=R Burner Capacity is based on oil having a heat value of 140,000 BTU/GAL.

(3)— "A" Nozzles are hollow spray. "B" Nozzles are solid spray.

(4)— Chimney sizes and heights shown are selected in accordance with the Hydronic Institute Testing and Rating Standard for cast iron and steel heating boilers. Such chimneys will produce sufficient draft under normal conditions and are based on using short, direct breeching into chimney. When necessary to use more than one elbow in breeching, five (5) feet of chimney should be added to the catalogued chimney height for each additional 90° elbow used.

(5)— Tankless Heater Ratings are based on 40°-140° F rise with boiler temperature at 200° F—intermittent draw.

STANDARD EQUIPMENT

Oil boiler complete with enclosing flush jacket • Oil burner with cad cell • Combustion chamber • Triple-acting hydronic control and Protectorelay • Thermal altitude gauge • Circulator • Thermostat • A.S.M.E. Safety relief valve • Built-in tankless heater • Designed, constructed and stamped in accordance with Section IV of the A.S.M.E. Code.

OPTIONAL EQUIPMENT

Draft Regulator • Flow Valve • Jacket extension to conceal controls and burner • A-34 Tankless heaters (See Trade Price Sheet for details) • Combustible Floor Base (HE-22-FR thru HE-27-FR only).

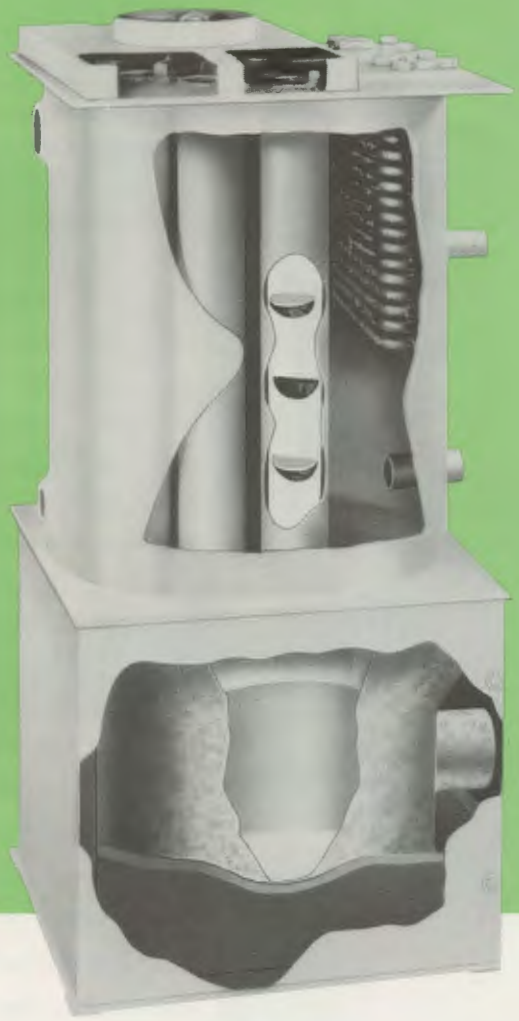
QUALITY FEATURES

SBI RATINGS

Based on tests conducted in accordance with the Hydronic Institute's Testing and Rating Standard for Cast Iron and Steel Heating Boilers.

3" COMMERCIAL GRADE TUBING

Contributes to low draft loss and efficient operation even under adverse conditions.



¼" STEEL PLATE

A.S.M.E. constructed and stamped. Heavy duty construction provides for long life.

EXCLUSIVE FLANGED TURBULATORS

They direct flue travel, reduce stack temperature and provide maximum efficiency.

LIGHTWEIGHT COMBUSTION CHAMBER

Provides an expanded combustion area which promotes heating efficiency while maintaining low base temperatures.

OUTSTANDING EFFICIENCY

Improved design with increased heating surface and lower draft loss resulting in thermal efficiency of over 79% and combustion efficiency of over 83%.

HE-FR

STABLE — steady burner flame pattern offsets marginal operating conditions.

RELIABLE — Certified by over 100 years of hydronic experience.

EASY TO INSTALL — Completely packaged, wired and assembled for quick connection to water, fuel, and electrical service.

BURNHAM AMERICA

BURNHAM CORPORATION
HYDRONICS DIVISION
LANCASTER, PA. 17604

FORM No. 4451-1-78-40Ma

HWS Series

INDIRECT FIRED PACKAGED HOT WATER SUPPLY BOILER

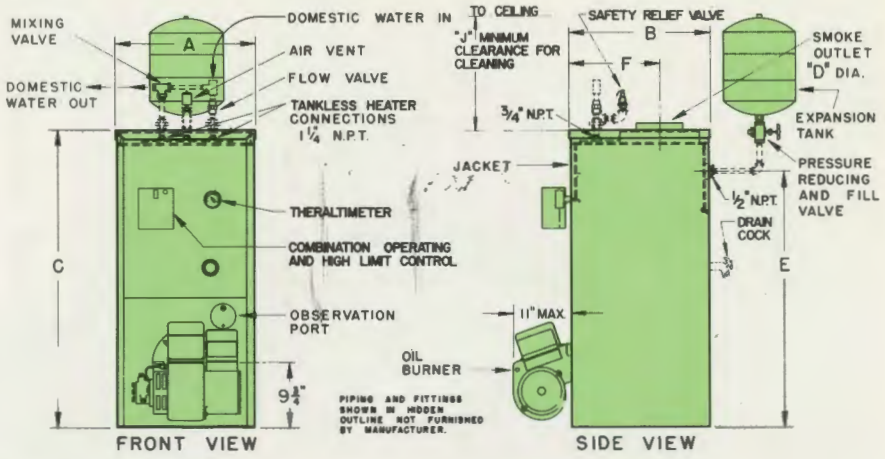
- A.S.M.E. CONSTRUCTED AND STAMPED
- PACKAGED UNITS
- OIL FIRED

BURNHAM AMERICA

BURNHAM AMERICA

HWS Series

PACKAGED HOT WATER SUPPLY BOILER



DIMENSIONS (In Inches)

BOILER NO.	A	B	C	D	E	F	J
HWS-2-FR	20¾	21¼	44	7	39½	13¾	24
HWS-4-FR	20¾	21¼	44	7	39½	13¾	24
HWS-8A-FR	26	26	55	9	48¾	16	30
HWS-9A-FR	26	26	55	9	48¾	16	30

RATING DATA — 30 lb. W.P.

BOILER NO.	CERTIFIED GROSS OUTPUT BTU/HR	TANKLESS HEATER CAPACITY Gal/Hr. 100°F Rise	FIRING RATE OIL GPH	CHIMNEY SIZE In. x In. x Ft.	SHIPPING WEIGHT Lbs.	TANKLESS HEATER CAPACITY Gal/Hr.		
						75°F Rise	100°F Rise	125°F Rise
HWS-2-FR	127,000	125	1.20	8 x 8 x 20	400	165	125	100
HWS-4-FR	158,000	150	1.50	8 x 8 x 20	420	200	150	120
HWS-8A-FR	240,000	235	2.25	8 x 12 x 20	630	310	235	190
HWS-9A-FR	290,000	300	2.70	8 x 12 x 20	660	400	300	250

** Tankless heater ratings are based on Gal. per hour with 40°F inlet water and 200°F boiler water temperature. (Continuous draw)*

BOILER NOT FOR INSTALLATION ON COMBUSTIBLE FLOOR.

STANDARD EQUIPMENT

A.S.M.E. Code Boiler; Flush Jacket; Insulation; Combustion Chamber; Flow Valve; Draft Regulator; Flame Retention Oil Burner with R-8184-G Primary Control; Combination Operating and High Limit Aquastat; Model 110 Filtrol Expansion Tank; Theraltimeter Gauge; A.S.M.E. Safety Relief Valve; Adjustable Water Mixing Valve; heavy duty two pass Tankless Heater with float type Air Vent.

FEATURES

• Heavy duty two-pass copper tankless heater • Constructed in accordance with A.S.M.E. Code • Abundant-clean hot water . . . instantly, economically . . . for homes, motels, schools, laundries, restaurants and other light commercial applications • 4 Models with capacities to heat from 125 to 300 gallons of water per hour at a temperature rise of 100 degrees • Heavy boiler plate construction with all surfaces in water. Water contained in boiler shell provides fast, efficient heat transfer to large tankless heater • Boiler heat transfer surfaces remain clean for long, trouble free service. Tankless heater may be cleaned or replaced, should it ever be required, at much lower cost than replacing a direct fired water heater • Package units, ready to operate. Complete with flame retention burner, controls and combustion chamber • Attractive baked enamel steel jacket, completely insulated.

BURNHAM CORPORATION
HYDRONICS DIVISION
Lancaster, Pa. 17604

high efficiency hydronics

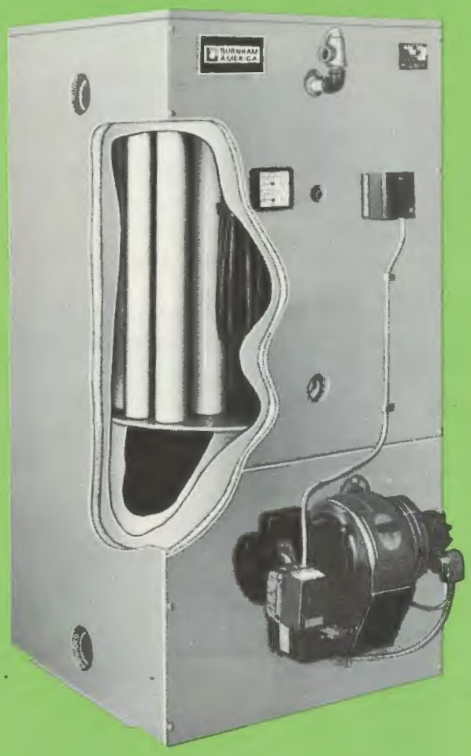
Printed in U.S.A.

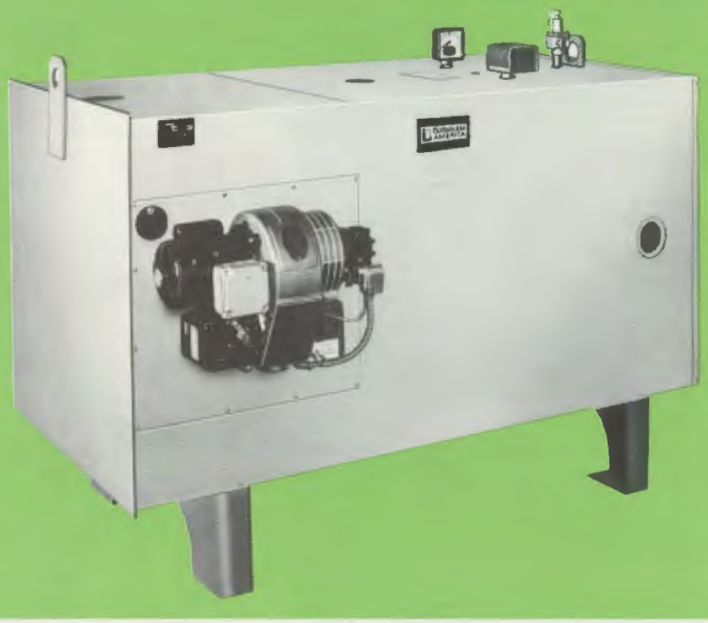
Form No. 4441 A-2-78-30 Ma

FD Series

STEEL HYDRONIC PACKAGE

OIL, GAS OR COMBINATION GAS-OIL FIRING





VERTICAL APPLICATIONS

ELEVEN SIZES

GROSS OUTPUTS 250,000 to 1,512,000 BTU/HR

HORIZONTAL APPLICATIONS

EIGHT SIZES

GROSS OUTPUTS 396,000 to 1,512,000 BTU/HR

FEATURES

- Forced Draft • A.S.M.E. constructed and stamped
- Pressure sealed—wet leg refractory base • Domestic water coils available
- No chimney required (vent only) • Ideal for use as hot water supply boiler

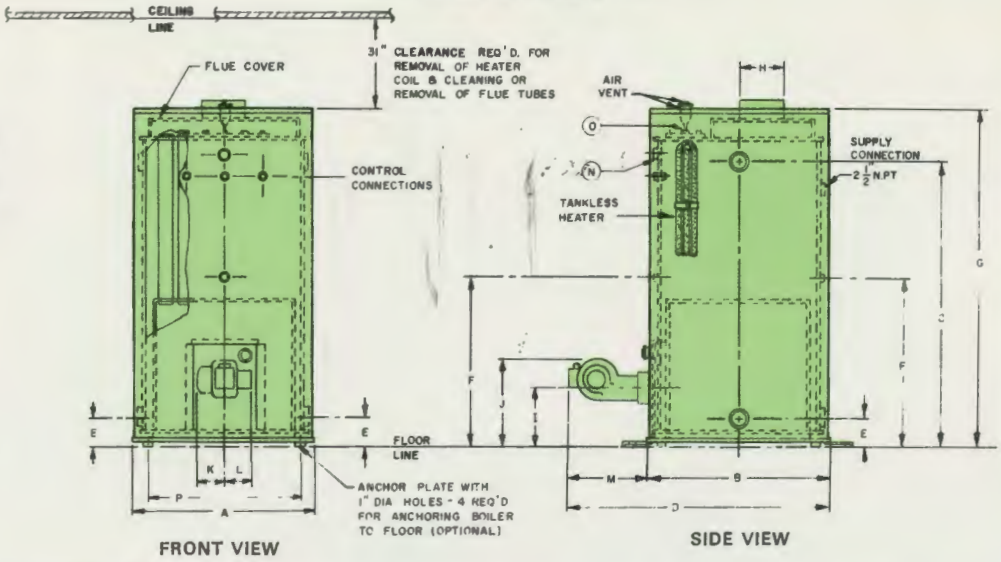
BURNHAM AMERICA

VERTICAL

BURNHAM AMERICA

FD Series

STEEL BOILERS



DIMENSIONS (In Inches) CAUTION: THIS BOILER IS NOT FOR INSTALLATION ON COMBUSTIBLE FLOORS.

	BOILER MODEL NO.		FD 7	9	10	12	14	15	19	24	30	38	45
A	Boiler Width		28	28	28	32	32	32	35	38	44½	48	48
B	Boiler Depth		28	28	28	32	32	32	35	38	44½	48	48
C	Supply Connection Height (2)*		50	50	56	56	56	56	61¼	61¼	65¼	71⅜	71⅜
D	Overall Boiler-Burner Length	Oil	40	40	40	44¾	44¾	44¾	47	51¼	57¾	69¼	69¼
		Gas	N/A	N/A	N/A	50½	50½	50½	53½	56½	63	66½	66½
		Gas/Oil	N/A	N/A	N/A	54	54	54	57	60	66½	70	70
E	Return Connection Height (3)*		5¼	5¼	5¼	5¼	5¼	5¼	5¼	5¼	5¼	5⅜	5⅜
F	1½" N.P.T. Inspection (2)		31½	31½	31½	28½	28½	28½	34¾	33¾	38	44	44
G	Boiler Height		57¼	57¼	63¼	64	64	64	69	70	74	80	80
H	Flue Vent Diameter		8	8	8	8	8	8	8	9	10	10	12
I	Boiler Tube Height		12¼	12¼	12¼	12	12	12	12	12	12	16¾	16¾
J	Overall Burner Height	Oil	18½	18½	18½	21	21	21	21	23	23	27½	27½
		Gas	N/A	N/A	N/A	22½	22½	22½	22½	22½	24	28¾	28¾
		Gas/Oil	N/A	N/A	N/A	24	24	24	24	24	24	28¾	28¾
K	Burner Width—Left Side		8⅝	8⅝	8⅝	12	12	12	12	12	12	13	13
L	Burner Width—Right Side		8	8	8	12	12	12	12	13	13	13	13
M	Overall Burner Length	Oil	12	12	12	12¾	12¾	12¾	12¾	13¼	13¼	21¼	21¼
		Gas	N/A	N/A	N/A	18½	18½	18½	18½	18½	18½	18½	18½
		Gas/Oil	N/A	N/A	N/A	22	22	22	22	22	22	22	22
N	Safety Relief Valve Connections (FPT)		¾	¾	¾	¾	¾	¾	¾	¾	1	1	1¼
O	Tankless Heater Connections—Pipe Size (MPT)		¾	¾	¾	1¼	1¼	1¼	2	2	2	2	2

RATING DATA

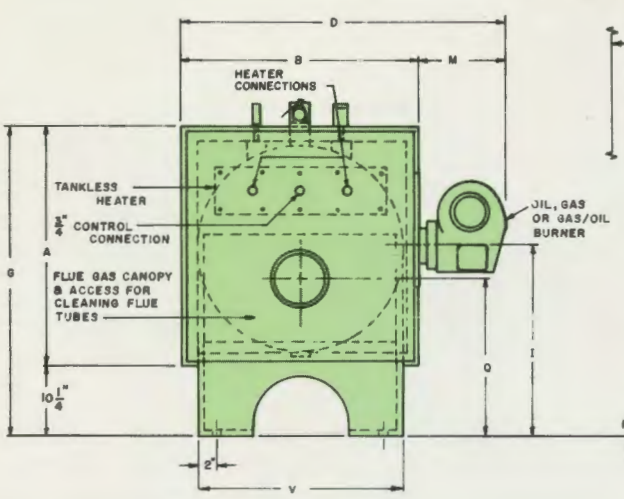
Gross Output—M.B.H.	250	300	350	396	453	504	648	792	1,008	1,260	1,512
Gross Output—B.H.P.	7	9	10	12	14	15	19	24	30	38	45
Gross Output—Water Sq. Ft.	1,667	2,000	2,333	2,640	3,020	3,360	4,320	5,280	6,720	8,400	10,080
Net Rating—Water M.B.H.**	217	260	304	344	394	438	563	689	877	1,096	1,315
Net Rating—Water Sq. Ft.	1,447	1,733	2,027	2,295	2,626	2,906	3,753	4,593	5,846	7,306	8,766
Firing Rate—No. 2 Oil G.P.H. (140,000 Btu/Gal.)	2.30	2.75	3.10	4.0	4.5	5.0	6.0	7.5	9.5	12.0	14.0
Firing Rate—Gas M.B.H.	N/A	N/A	N/A	528	604	672	864	1,056	1,344	1,680	2,015
Max. Tankless Heater Capacity G.P.M. (Based on 40°F to 140°F rise with boiler water at 200°F continuous draw).	5	6	7	8	9	10	12	16	20	24	28
Water Content of Boiler—Gal.	47	44	52	83	80	77	93	112	155	194.5	183.2
O.D. of Tubes—12 Ga. (Equipped with Turbulators)	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"
Maximum Allowable Working Pressure (P.S.I. Water)	30	30	30	30	30	30	30	30	30	30	30

*2½" N.P.T. for models FD-12 through FD-19. 3" N.P.T. for models FD-24 through FD-45.

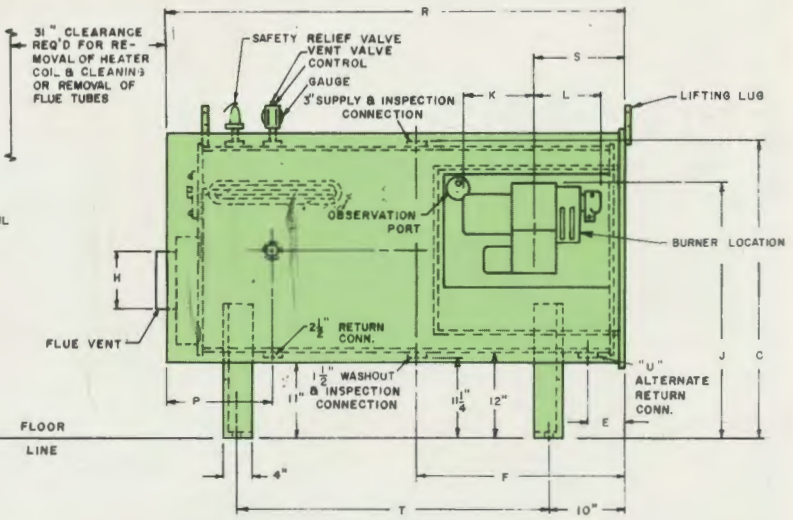
** Net ratings shown are based on a piping and pickup allowance of 1.15

For forced hot water heating systems where the boiler and all the piping are within the area to be heated, the boiler may be selected on the basis of its gross output.

HORIZONTAL



END VIEW



SIDE VIEW

DIMENSIONS (In Inches)

NOTE: STANDARD BURNER LOCATION "LEFT" (SHOWN), OPTIONAL BURNER LOCATION "RIGHT."

	BOILER MODEL NO.	FD	12-H	14-H	15-H	19-H	24-H	30-H	38-H	45-H
A	Boiler Shell Height (Jacketed)		32	32	32	35	38	44½	48	48
B	Boiler Shell Width (Jacketed)		32	32	32	35	38	44½	48	48
C	Supply Connection Height		40¾	40¾	40¾	43¾	46¾	52¾	57	57
D	Overall Boiler-Burner Width	Oil	44¾	44¾	44¾	47	51¼	57¾	69¼	69¼
		Gas	50½	50½	50½	53½	56½	63	66½	66½
		Gas/Oil	54	54	54	57	60	66½	70	70
E	Center of Alternate Return Conn. from End of Boiler		4¼	4¼	4¼	4¼	4¼	4¼	4⅜	4⅜
F	Center of Supply and Washout Conn. from End of Boiler		27½	27½	27½	33¾	32¾	36¾	42⅞	42⅞
G	Overall Boiler Height		42¼	42¼	42¼	45¼	48¼	54¾	58¼	58¼
H	Flue Vent Diameter		8	8	8	8	9	10	10	12
I	Burner Tube Height		26	26	26	27½	29	32	34⅛	34⅛
J	Overall Burner Height	Oil	35	35	35	36½	40	43	44⅞	44⅞
		Gas	36½	36½	36½	38	39½	44	46⅛	46⅛
		Gas/Oil	38	38	38	39½	41	44	46⅛	46⅛
K	Burner Width—Left Side		12	12	12	12	12	12	13	13
L	Burner Width—Right Side		12	12	12	12	13	13	13	13
M	Overall Burner Length	Oil	12¾	12¾	12¾	12¾	13¼	13¼	21¼	21¼
		Gas	18½	18½	18½	18½	18½	18½	18½	18½
		Gas/Oil	22	22	22	22	22	22	22	22
N	Safety Relief Valve Connection Sizes		¾" FPT	¾" FPT	¾" FPT	¾" FPT	¾" FPT	1" FPT	1" FPT	1¼" FPT
O	Tankless Heater Connections—Pipe Size		1¼" MPT	1¼" MPT	1¼" MPT	2" MPT	2" MPT	2" MPT	2" MPT	2" MPT
P	Center of Return & Inspection Conn. from End of Boiler		15	15	15	15	15¾	15¾	18⅝	18⅝
Q	Flue Outlet Height		22⅛	22⅛	22⅛	24⅜	24¾	27½	30⅞	30⅞
R	Overall Length of Boiler		63	63	63	68	69	73	79	79
S	Burner Tube Opening From End of Boiler		11¼	11¼	11¼	11¼	11¼	11¼	16	16
T	Distance Between Legs (Center to Center)		44	44	44	49	49¼	53¼	59⅜	59⅜
U	Alternate Return Connection		2½	2½	2½	2½	3	3	3	3
V	Width of Support Legs		28	28	28	31	34	40	44¼	44¼

RATING DATA

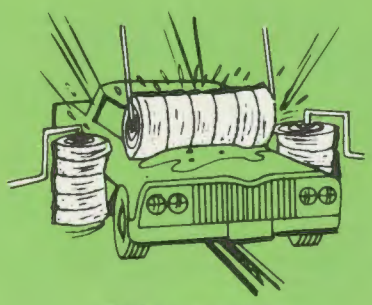
Gross Output—M.B.H.	396	453	504	648	792	1,008	1,260	1,512
Gross Output—B.H.P.	12	14	15	19	24	30	38	45
Gross Output—Water Sq. Ft.	2,640	3,020	3,360	4,320	5,280	6,720	8,400	10,080
Net Rating—Water M.B.H.*	344	394	438	563	689	877	1,096	1,315
Net Rating—Water Sq. Ft.	2,295	2,626	2,906	3,753	4,593	5,846	7,306	8,766
Firing Rate—No. 2 Oil G.P.H. (140,000 Btu/Gal.)	4.0	4.5	5.0	6.0	7.5	9.5	12.0	14.0
Firing Rate—Gas M.B.H.	528	604	672	864	1,056	1,344	1,680	2,015
Max. Tankless Heater Capacity G.P.M. (Based on 40°F to 140°F rise with boiler water at 200°F (continuous draw).	8	9	10	12	16	20	24	28
Water Content of Boiler—Gal.	83	80	77	93	112	155	194.5	183.2
O.D. of Tubes—12 Ga. (Equipped with Turbulators)	3"	3"	3"	3"	3"	3"	3"	3"
Maximum Allowable Working Pressure (P.S.I. Water)	30	30	30	30	30	30	30	30

*Net ratings shown are based on a piping and pickup allowance of 1.15.

For forced hot water heating systems where the boiler and all the piping are within the area to be heated, the boiler may be selected on the basis of its gross output.

ADDED FEATURE

USE OUR FD Series STEEL BOILER AS AN INDIRECT HOT WATER SUPPLY BOILER



FOR CAR WASHES

You can get from 300 to 1,680 gallons of hot water per hour for any of the applications illustrated or for other unique operations such as cement mixing operations and dry cleaning establishments. This boiler can also supply the domestic hot water requirements of motels, hotels or apartment houses, along with their heating needs.

For continuous hot water supply just install the boiler as it is or if control of both flow and temperature is required simply add a mixing valve or temperature regulator along with a flow regulator.

FOR LAUNDRIES

FOR COMMERCIAL SWIMMING POOLS

FOR RESTAURANTS

STANDARD EQUIPMENT

FORCED DRAFT VERTICAL OR HORIZONTAL TUBE TYPE STEEL BOILER—A.S.M.E. constructed and stamped; heavy gauge insulated steel flush jacket; theraltimeter; A.S.M.E. safety relief valve; L-4081-A high limit and operating aquastat with or without tankless heater. M & M #764 low water cut off 10 h.p. and up.

OIL FIRING— Flange mounted forced draft oil burner for #2 fuel oil; burner mounted two-stage fuel pump; ignition transformer; oil valve; cad cell and Protectorelay.

GAS FIRING—Flange mounted inshot type forced draft burner for all gases; ignition transformer; flame rod sensor; air flow safety switch; flame safeguard control; gas valve & gas pressure regulator.

OIL/GAS COMBINED FIRING—Gordon & Piatt Gas/Oil forced draft burner; ignition transformer; ultra violet flame sensor; air flow safety switch; R-4795-A relay; dual gas valves; gas pressure regulator and manually operated fuel switch for fuel change-over.

HOT WATER SUPPLY RATINGS

BOILER MODEL NUMBER	*GALLONS PER HOUR BASED ON 100°F RISE	PRESSURE DROP P.S.I. AT FLOW RATE FOR 100°F RISE
FD-7	300	10.5
FD-9	360	15.3
FD-10	420	20.8
FD-12	480	19.2
FD-14	540	27.0
FD-15	600	11.0
FD-19	720	18.8
FD-24	960	8.5
FD-30	1200	2.9
FD-38	1440	2.9
FD-45	1680	6.3

** Based on continuous draw with 40°F inlet water*

Contact "Application Engineering" for inlet temperatures in excess of 70°F, or if a temperature rise other than 100°F is desired. If pressure drops are found to be excessive, heaters can be oversized.

BURNHAM CORPORATION
HYDRONICS DIVISION
Lancaster, Pa. 17604

high efficiency hydronics

Printed in U.S.A.

Form No. 4450A-6-78—30Ma

GA Series

STEEL GAS-FIRED HYDRONIC PACKAGE

NATURAL OR LP GAS

- Large Water Capacity
- High Heater Rating
- Slide out Burner Tray
- Easily Converted — Natural to LP gas or vice versa

Four Sizes

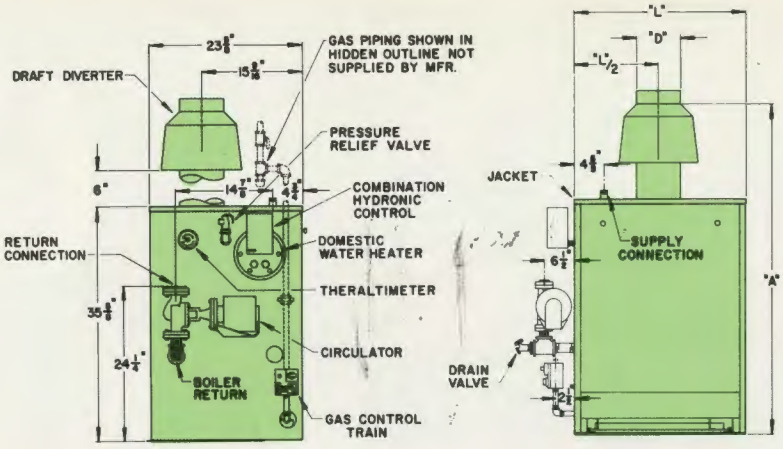
Gross Outputs — 84,000 to 168,000 BTU/HR

BURNHAM AMERICA

BURNHAM AMERICA

GA Series

STEEL GAS-FIRED HYDRONIC PACKAGE



FULLY APPROVED FOR ALCOVE (3 SIDES ENCLOSURE) INSTALLATION

DIMENSIONS (In Inches)

Boiler Model	Dim. "A"	Dim. "D"	Dim. "L"	Dim. "L"/2	Return Conn. Cir.	Return Conn. Blr.	Supply Conn.	Gas Conn. for Combination Gas Valve
105-GA	48 3/8	5	16 1/8	8 1/16	1	1 1/2	1 1/2	1/2
140-GA	49 1/8	6	19 5/8	9 13/16	1	1 1/2	1 1/2	1/2
175-GA	50 3/8	7	23 1/8	11 9/16	1	1 1/2	1 1/2	1/2
210-GA	50 3/8	7	26 5/8	13 5/16	1	1 1/2	1 1/2	1/2

RATING DATA — 30 lbs. W.P. (water)

	Boiler No. ▲	*** A. G. A. Ratings Input BTU/Hr.	*** A. G. A. Ratings Gross Output BTU/Hr.	* S. B. I. Net Water Rating BTU/Hr.	** Net Rating Water Sq. Ft.	† Recommended Chimney Size Round In. Dia. x Ht. Ft.	† Recommended Chimney Size Square In. x In. x Ft.	†† Tankless Water Heater Rating Intermittent GPM
NATURAL OR PROPANE GAS	105-GA	105,000	84,000	73,000	485	5x15	8x8x15	2.75
	140-GA	140,000	112,000	97,400	650	6x15	8x8x15	3.50
	175-GA	175,000	140,000	121,700	810	7x15	8x8x15	4.00
	210-GA	210,000	168,000	146,100	975	7x15	8x8x15	4.50

* Net SBI ratings shown are based on normal SBI piping and pick-up allowance of 1.15. Consult the manufacturer for installations having unusual piping and pick-up requirements such as intermittent system of operation, extensive piping systems, and so forth.

** Net rating water sq. ft. based on 170°F average water temperature in radiators (heat emission rate of 150 BTU/Hr. per sq. ft.). For higher water temperatures select boiler or basis of net rating in BTU/Hr.

*** AGA ratings shown are for installations at sea level and elevations up to 2,000 ft. For elevations above 2,000 ft. ratings should be reduced at the rate of 4% for each 1,000 ft. above sea level.

▲ Use prefix "PH" for boiler with heater.
Use prefix "P" for boiler less heater.

† Recommended chimneys based on year-around use with breeching of 6 ft. length and with not more than one elbow. Chimney height is measured from installation floor level to the top of chimney. Flue size is based on nominal size of unlined chimney. Flues lined with largest flue liner which will fit within these dimensions are construed to have the same equivalent effective flue area. Boilers equipped with an individual vertical vent riser of the same size as flue outlet on draft diverter should not be less than 5 ft. height as measured from the top of draft diverter. For other chimney and breeching recommendations consult the manufacturer.

†† Intermittent water heater rating based on GPM of 40 to 140°F rise with 200°F boiler water temperature.

STANDARD EQUIPMENT

All units for natural and propane gas are factory assembled and wired — shipped in a skid bottom crate necessitating only hookup to water system piping, fuel, chimney and electrical service. All units are equipped with flush jacket in two-tone Blue.

Steel gas burners installed on a base slide burner tray • Combination Gas Valve • Combination Water Temperature Control with Transformer and Circulator Relay • Theraltimeter • Circulator • Drain Cock • ASME Safety Relief Valve • Safety Pilot — 100% Shutoff • Vertical Draft Diverter • Room Thermostat

OPTIONAL EQUIPMENT

Tankless Water Heater • Sub-base for Combustible Floor Installations

CONTROL SETS

Standard—Intermittent circulator operation with and without tankless coil

Optional—Constant circulator operation without tankless coil

GAS TRAIN

Standard— 24V **Optional**— Millivolt

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HYDRONICS DIVISION
Lancaster, Pa. 17604

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Form No. 4460A-2-78-30 Ma