

SPECIFICATIONS AND PERFORMANCE



**81.6% AFUE
Efficiency**

AVAILABLE HEATING INPUTS OF:
37.5 MBH (12.5 KW) through 280 MBH (82.0 KW)

PRODUCT DESCRIPTION

▲ **Application** – Boilers are available in eight sizes with inputs of 37.5 to 280 MBH (12.5 to 82.0 KW) and an AFUE of 81.6%. Units are available with choice of electronic or standing pilot ignition systems for natural or propane gas. Boilers are used for a wide variety of applications including radiant floor heating, baseboard heating, standing cast iron radiators, and with or without zones. All units are completely factory assembled with controls and wiring, and tested to endure dependable performance.

Benefit: Compact size allows for easy installation in basement or alcove enclosure.

▲ **Approvals** – The cast iron boiler assembly is manufactured and tested in accordance with American Society of Mechanical Engineers (ASME) standards, and certified by International approval Services (IAS) in the US and Canada. The Annual Fuel Utilization Efficiencies (AFUE) and heating capacity are based on US DOE test procedures and FTC labeling regulations. AFUE and I=B=R ratings are certified in accordance with standards set by The Hydronics Institute Division of the Gas Appliance Manufacturers Association (GAMA). The Material and Equipment Acceptance number for the City of New York is MEA 39-86E Vol. IV.



▲ **Warranty** – The cast iron boiler heat exchanger has a non-prorated warranty for a full twenty years from date of installation. All other components have a limited warranty for one year unless the component manufacturer extends their warranty beyond one year.

STANDARD FEATURES

▲ **Cabinet:**

- Constructed of heavy gauge steel with enamel paint finish
- Fully insulated with fiberglass insulation, keeping surface temperatures low
- Water supply and return connections furnished on both sides of cabinet
- Burner access panel removes easily for servicing
- Integral draft diverter is part of the cabinet, reducing the height

▲ **Cast Iron Boilers Assembly** –Boiler sections and push nipples are constructed of long life cast iron. When the boiler is heated sections and push nipples expand and contract in the same proportion because they are constructed of like material, providing a positive watertight seal. A Combination of burner modules are set to meet specific capacity requirements.

Benefit: Boiler flueways are easily accessible for cleaning and servicing.

▲ **Electronic Ignition** – Solid-state electronic spark igniter provides positive ignition of pilot burner on each operating cycle. Pilot gas is ignited and burns during each running cycle of the boiler. Main burners and pilot gas are extinguished during the off cycle. Ignition permits main gas valve to open only when the pilot burner is proven to be lit. Pilot operation is fully automatic on demand for heat. Should a loss of flame occur, the main valve closes, shutting down the unit.

▲ **Automatic Gas Control** – Compact 24 Volt redundant combination gas control valve combines:

- Automatic safety pilot
- Manual shut off (On-Off)
- Pilot filtration
- Automatic electric valve
- Gas pressure regulation
- Dual valve design provides 100% shut off to the pilot and main burners.

PLYMOUTH WATER SERIES 2 CAST IRON GAS FIRED HOT WATER BOILERS

▲▼ **Standing Pilot Ignition** – Manually lighted standing pilot provides dependable and safe burner ignition.

▲▼ **Aquastat Relay** – Immersion-type controllers that combine high limit protection with switching relay control of burner and circulator motors.

▲▼ **Titanium Composite Burners** – Each burner uses a slotted port design which results in quiet, clean combustion.

▲▼ **Flame Rollout Safety Shutoff** – A temperature sensitive fusible-link device is furnished as standard and factory installed on the boiler base just outside of the burner assembly. This device prevents unit operation in the event that the passage of combustion products through the flueway is blocked.

▲▼ **Blocked Vent Safety Shutoff** – A temperature sensitive thermostat device prevents unit operation in case of vent or chimney blockage. This device is factory installed at the relief opening on the draft diverter located in the cabinet opening. The switch has a manual reset button to set the boiler back in operation if the switch contacts open because of downdraft.

▲▼ **Vent Damper** – Motorized vent damper electrically interlocks with gas ignition system to increase efficiency of heating system by reducing the loss of heated air up the chimney after the burner shut off, reducing infiltration during boiler off cycles. The vent damper is standard equipment.

▲▼ **Circulating Pump** – Supplied with the boiler to circulate hot water throughout the system and provide quick, even heat (field installed to supply-side of unit).

▲▼ **Relief Valve** – Furnished as standard for field installation on top of the boiler. Valve provides for pressure relief of heating system in case of abnormal operating conditions. Valve opens at 30 psig (210 kPa) and is ASME stamped.

▲▼ **Drain Valve (Brass)** – 3/4 in. (19mm) drain valve furnished for field installation on side of boiler. See dimensional drawing for location.

HIGH ALTITUDE DE-RATE

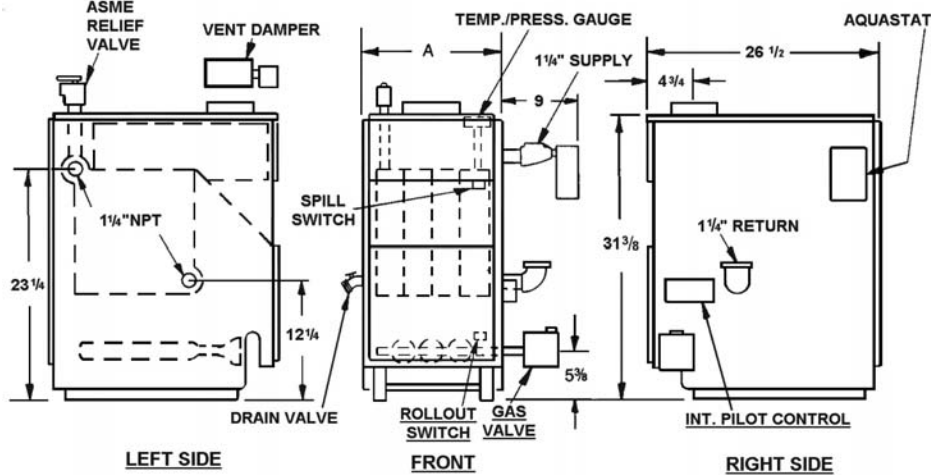
AGA certified units must be de-rated when installed at an elevation of more than 2,000 feet (610m) above sea level. If the unit is installed at an altitude higher than 2,000 feet (610m), the unit must be de-rated 4% for every 1,000 feet (305m) above sea level.

CGA certified units must be de-rated when installed at an elevation of more than 2,000 feet (610m) above sea level. If the unit is installed at an altitude higher than 2,000 feet (610m), the unit must be de-rated 10% for elevations between 2,000 feet and 4,500 feet (610m and 1,370m) above sea level.

NOTE – This is the only permissible de-rate for these boilers.

PLYMOUTH WATER SERIES 2 STANDARD EQUIPMENT		OPTIONAL EQUIPMENT
Assembled boiler with insulated jacket	Service switch	Electronic low water cut-off now available to meet the latest codes requirements
Integral draft diverter – built into jacket	Vent damper (24 V)	
Combination high limit control and circulator relay	Completely installed and wired gas control system with burners and manifold, consisting of: ▲▼ Titanium composite burners ▲▼ Automatic redundant combination gas valve, 24 Volt, with pilot filter	Propane gas-fired boilers
Flame rollout safety shut-off (fuse link) and manual, reset blocked vent safety shut-off, with spare fuse link included		Propane-fired conversion kit
Combination pressure/temperature gauge		Combustible floor plate: 14614031 for 2-6 sections 14614032 for 6 & 7 sections
1-1/4" Taco circulator pump with isolation (ball) valves (<i>Note: pump ships loose for field mounting</i>)	Electronic Ignition Only ▲▼ Intermittent Pilot Control, 100% shut-off continuous re-try ▲▼ Combination pilot/burner/electrode/flame sensor	Fill-Trol #110 for 2-5 sections Fill-Trol #111 for 6-9 sections
3/4" boiler drain valve		
30 lb. ASME relief valve	Standing Pilot Only ▲▼ Pilot burner and thermocouple	Grundfos circulator pump
24 Volt transformer		

PLYMOUTH WATER SERIES 2 CAST IRON GAS FIRED HOT WATER BOILERS DIMENSIONS AND SPECIFICATIONS



RATINGS NATURAL AND PROPANE GASES							
Basic Boiler Model No.		Number of Sections	AGA/CGA Input 1) MBH	Heating Capacity 2) MGB	Net I=B=R Rating 1) MBH	Dimensions (Inches)	
Electric Ignition With Vent Damper	Continuous Pilot With Vent Damper					"A" Width	Flue Diameter
PWB-2D	PVWB-2D	2	37.5	30	26	8	3) 4
PWB-3D	PVWB-3D	3	70	57	50	11-1/4	5
PWB-4D	PVWB-4D	4	105	85	74	14-1/2	6
PWB-5D	PVWB-5D	5	140	113	98	17-3/4	6
PWB-6D	PVWB-6D	6	175	142	123	21	7
PWB-7D	PVWB-7D	7	210	170	148	24-1/4	7
PWB-8D	PVWB-8D	8	245	198	172	27-1/2	7
PWB-9D	PVWB-9D	9	280	226	197	30-3/4	7

- 1) MBH = 1,000 Btuh = British Thermal Unit Per Hour. Boilers are equipped for altitudes up to 2,000 feet only. **U.S.A. Only** – For altitudes above 2,000 feet, ratings should be reduced at the rate of 4% for each 1,000 feet above sea level. **Canada Only** – Boilers may be used at high altitude by using a certified field conversion kit, resulting in a 10% derate.
- 2) Heating capacity based on D.O.E. (Department of Energy) test procedure. Add 5 1/2" to height when vent damper is used.
- 3) 2 Section boilers are equipped with a 3" diameter flue collar on the draft diverter, and use a furnished 3" x 4" increaser fitting to install the furnished 4" vent damper.

PLYMOUTH WATER SERIES 2 BOILER SPECIFICATIONS

Model No.	Type of Ignition	Input Btuh (KW)	Heating Capacity Btuh (KW)	1) Net I=B=R Btuh (KW)	2) AFUE %	Number of Sections	Heating Surface Sq. ft. (m ²)	Capacity – Us Gal-ions (L)	Flue Size Outlet Diameter – in. (mm) round	Shipping Weight – Lbs. (kg) Package	Gas Piping Size IPS – in. (mm)		Supply & Return Connection NPT – in. (mm)	Drain Connection NPT – in. (mm)
											Natural	Propane		
PWB-2	Electronic	37,500	30,000	26,000	81.4	2	4.69 (0.44)	1.75 (6.60)	3 (76)	232 (105)	1/2 (12.7)	3/4 (19.0)	1-1/4 (31.8)	3/4 (19.0)
PVWB-2	Standing Pilot	(11.0)	(8.8)	(7.6)	80.0									
WPX-3E	Electronic	70,000	57,000	50,000	81.6	3	9.38 (0.87)	3.00 (11.4)	290 (132)					
WPX-3V	Standing Pilot	(20.0)	(16.7)	(14.7)	80.4									
WPX-4E	Electronic	105,000	85,000	74,000	81.5	4	14.07 (13.1)	4.25 (16.1)	355 (161)					
WPX-4V	Standing Pilot	(30.8)	(24.9)	(21.7)	80.4									
WPX-5E	Electronic	140,000	113,000	98,000	81.3	5	18.76 (1.74)	5.50 (20.8)	426 (193)					
WPX-5V	Standing Pilot	(41.0)	(33.1)	(28.7)	80.3									
WPX-6E	Electronic	175,000	142,000	123,000	81.1	6	23.45 (2.18)	6.75 (25.6)	493 (224)					
WPX-6V	Standing Pilot	(51.3)	(41.6)	(36.0)	80.2									
WPX-7E	Electronic	210,000	170,000	148,000	81.0	7	28.14 (2.16)	8.00 (30.3)	569 (258)					
WPX-7V	Standing Pilot	(61.5)	(49.8)	(43.4)	80.4									
WPX-8E	Electronic	245,000	198,000	172,000	80.8	8	32.83 (3.05)	9.25 (35.0)	631 (286)					
WPX-8V	Standing Pilot	(71.8)	(58.0)	(50.4)	80.4									
WPX-9E	Electronic	280,000	226,000	197,000	80.7	9	37.52 (3.49)	10.50 (39.7)	694 (315)					
WPX-9V	Standing Pilot	(82.0)	(66.2)	(57.8)	80.3									

- 1) Net I=B=R ratings indicate the amount of remaining heat the boiler can provide to heat the radiation or terminal units under normal condition and thermostatic control. Ratings are based on an allowance of 1.15 in accordance with the piping and pickup factors shown in the I=B=R Standard as published by the Hydronics Institute. Section of boiler size should be based on. Net I=B=R" being equal to or greater than the calculated heat loss of the building.
- 2) Annual Flue Utilization Efficiency based on U.S. DOE test procedures and FTC labeling regulations.

PLYMOUTH WATER SERIES 2 CAST IRON GAS FIRED HOT WATER BOILERS

BOILER CLEARANCES			
Unit	Alcove*, or Room Not Large in Comparison With Boiler		Room Large In Comparison With Boiler
No. of Sections	2-5	6-9	2-9
Top	6"	6"	6"
Rear	6"	6"	6"
Control Side	8"	24"	6"
Opposite Side	6"	24"	6"
Front	18"	18"	18"
Flue/Vent Connector	6"	6"	6"
Near Boiler Piping	1"	1"	1"

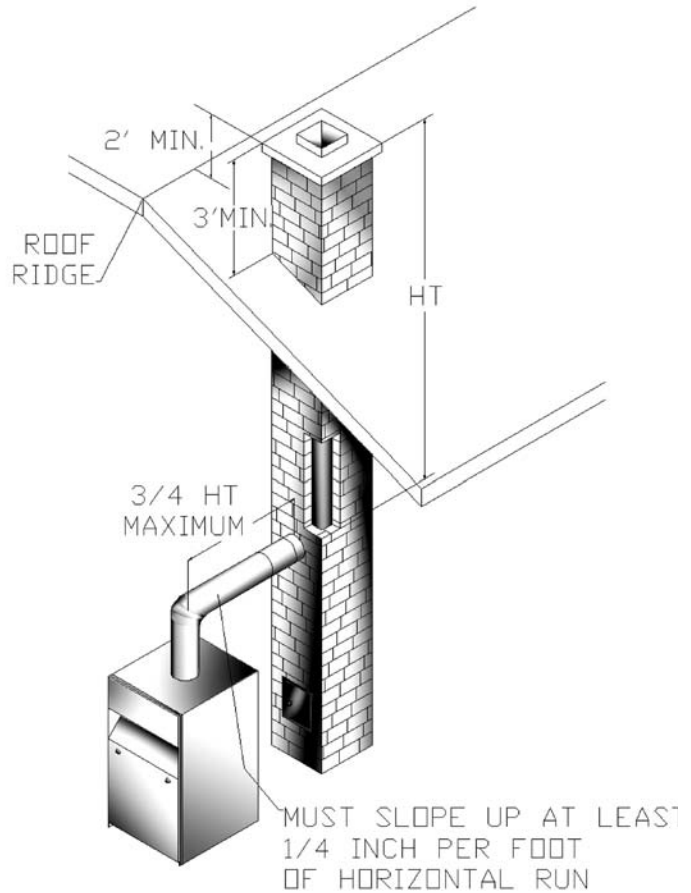
This unit must be set on a concrete or other noncombustible material base or floor. **IT MUST NOT BE INSTALLED ON CARPETING.**

* Alcove - boiler may be installed in an area inclosed on 3 sides (U shaped) with the front open.

Boiler Volume Specifications		
Boiler Size	Boiler Volume (Cu. Ft.)	Minimum Room Volume Required To Be Large Room (Cu. Ft.)*
2 sect.	3.8	61.6
3 sect.	5.4	86.6
4 sect.	7.0	111.6
5 sect.	8.5	136.6
6 sect.	10.1	161.7
7 sect.	11.7	186.7
8 sect.	13.2	211.7
9 sect.	14.8	236.7

Accessibility clearances must take precedence over fire protection clearances. 18" clearance should be maintained at a side where passage is required to access another side for cleaning or servicing, inspection, or replacement of any parts that normally may require such attention. 18" clearance is recommended on the control side for servicing.

Rooms that are large in comparison with the size of the boiler are defined as rooms having a volume equal to or greater than 16 times the volume of the boiler. Where the actual ceiling height of a room is greater than 8', the volume of a room shall be figured on the basis of a ceiling height of 8'. Determination of room size should be based on the total volume of all gas fired equipment installed in the room. Consult section 6.3.1 of the National Fuel Gas Code for further information, including approved methods for reducing clearances in large rooms.



Boilers for connection to gas vents or chimneys, vent installations shall be in accordance with Part 7, Venting of Equipment, of the National Fuel Gas Code, ANSI Z223.1-latest revision and applicable provisions of the local building codes.

Vent connectors serving appliances vented by natural draft shall not be connected into any portion of mechanical draft systems operating under positive pressure.

Maintain a minimum vent pipe clearance of 18" from the surface of the vent to wood and other combustible materials.



85 Middle Rd.
Dunkirk, NY 14048
<http://www.dunkirk.com>