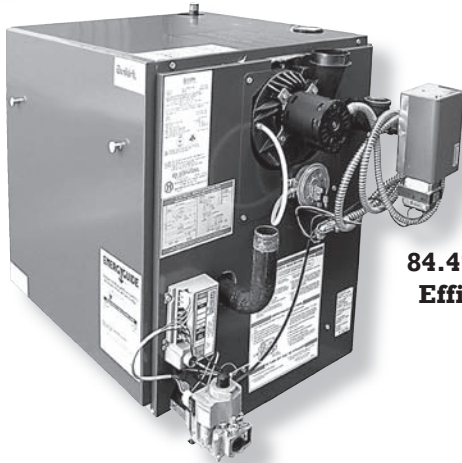




## XEB Series Cast Iron Gas Fired Hot Water Boiler

P/N# 240005690, Rev. 1.0 [10/05]

**SPECIFICATIONS AND PERFORMANCE**



**84.4% AFUE  
Efficiency**

### Available Heating Inputs of:

36 MBH (42.5) through 186 MBH (225.0)

▲ **Application** – Boilers are available in six sizes with inputs to 42.5 to 225.0 MBH (12.5 to 65.9 KW) and an AFUE of 84.4% (Category I). Units are available with electronic 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 ensure dependable performance. Compact size allows for easy installation in a basement or alcove enclosure.

#### Benefits:

- High efficiency, performance and low operating cost.
- Easy installation and venting
- "Isolation valves" for easy maintenance.

▲ **Approvals** – The case iron boiler assembly is manufactured and tested in accordance with ASME (American Society of Mechanical Engineers) standards, and certified by Canadian Standards Association (CSA) in the US and Canada. The Annual Fuel Utilization Efficiencies (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 48484E 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.

### FEATURES AND BENEFITS

▲ **Cast Iron Boiler 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.

**Benefit:** Cast iron provides efficient heat transfer, reliability and strength, the cast iron push nipples insure a watertight seal.

#### ▲ Cabinet :

- Constructed from heavy gauge steel with a baked-on finish
- Front door removable for easy access to boiler components
- Furnished with right side exhaust for, gas, fresh air in and fuel in
- Top access for water supply and return
- Alternate openings also available for, exhaust fuel in, water supply or return

**Benefit:** Boiler flue-ways are easily accessible for cleaning and servicing.

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

▲ **Induced Draft Blower** – Heavy duty blower safely vents flue products. The motor has permanently lubricated ball bearings. A pressure switch prevents unit operation in case of blockage of flue outlet.

## XEB SERIES CAST IRON GAS FIRED HOT WATER BOILERS

### FEATURES AND BENEFITS *Continued*

▲▼ **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 system 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.

**Benefit:** Pilot is lit automatically and stays lit only when needed, eliminating fuel waste.

▲▼ **Automatic Gas Control** – Silent operating control provides 100% safety shut off. A 24 Volt redundant combination gas control valve combines automatic safety pilot, manual shut off (On-Off), pilot filtration, automatic electric valve (dual) and gas pressure regulation into a compact combination control. Dual valve design provides redundancy for 100% shut off to the pilot and main burners.

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

**Benefit:** High-tech titanium composition burners resist corrosion and oxidation providing superior strength and longevity and are backed by a 3-year warranty.

▲▼ **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. The device prevents unit operation in the event that the combustion products passage through the flue-way is blocked.

▲▼ **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. (19 mm) drain valve furnished for field installation on side of boiler. See dimensional drawing for location.

### HIGH ALTITUDE DE-RATE

▲▼ **CSA Certified Units** must be de-rated when installed at an elevation of more than 2,000 feet (610 m) above sea level. If the unit is installed at an altitude higher than 2,000 feet (610 m), the unit must be de-rated 4% for every 1,000 feet (305 m) above sea level (**USA**) or 10% for elevations between 2,000 feet and 4,500 feet (610 m and 1,370 m) above sea level (**Canada**).

XEB SERIES STANDARD EQUIPMENT		OPTIONAL EQUIPMENT
Assembled boiler with insulated jacket	<p><b>Completely installed and wired gas control system with burners and manifold, consisting of:</b></p> <ul style="list-style-type: none"> <li>▲▼ Titanium composite burners</li> <li>▲▼ Automatic redundant combination gas valve, 24 Volt, with pilot filter</li> <li>▲▼ Intermittent pilot control, continuous re-try, 100% shut-off for natural &amp; propane gas</li> <li>▲▼ Combination pilot/burner/electrode/flame sensor</li> <li>▲▼ Complete installation instructions</li> </ul>	Electronic low water cut-off now available to meet the latest codes requirements
Combination high limit control and circulator relay		Combustible floor plate: 14614031 for 2-5 section 14614032 for 6 & 7 section
24 Volt transformer to power gas control system		Grundfos circulator pump
Flame rollout safety shut-off fuse link (rollout switch) with spare fuse link included		Tjernlund VH-1-3" side wall vent hood
Pressure switch for proving air flow		Tjernlund VH-1-4" side wall vent hood
Combination pressure / temperature gauge		Propane gas to natural gas conversion kits
1-1/4" Taco circulator pump with isolation (ball) valves (shipped separately for field mounting)		Natural gas to propane gas conversion kits
3/4" boiler drain valve		
30 lb. ASME relief valve		

## BOILER RATINGS & CAPACITIES

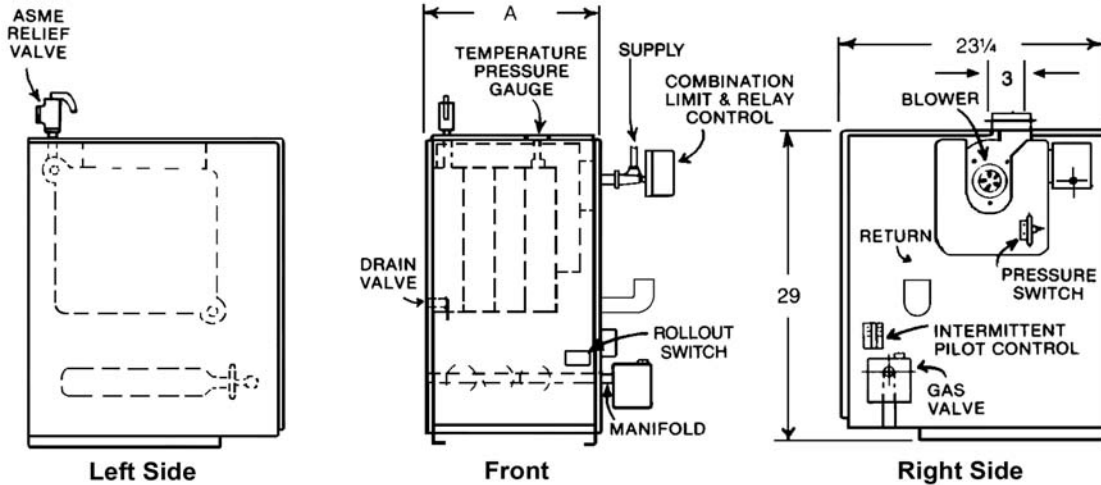
Ratings shown are for sea level applications. The boiler automatically derates input as altitude increases.  
No alterations to boiler are required for altitudes above sea level.

### XEB BOILER SPECIFICATIONS

Model No.	Input Btuh (KW)	Heating Capacity Btuh (KW)	1) Net I=B=R Btuh (KW)	2) AFUE %	Number of Sections	Capacity – Us Gallons (L)	Flue Size Outlet Diameter – in. (mm) Round		Slipping Weight – Lbs. (kg) Package	Gas Piping Size in. (mm)		Supply & Return Connection NPT – in. (mm)	Drain Connection NPT – in. (mm)
							Conventional	Horizontal		Natural	Propane		
XEB-2	42,500 (12.5)	36,000 (10.5)	31,000 (9.1)	84.4	2	1.75 (6.6)	4 (102)	3 (76)	232 (105)	1/2 (12.7)	3/4 (19.0)	1-1/4 (31.8)	3/4 (19.0)
XEB-3	75,000 (22.0)	63,000 (18.5)	55,000 (16.1)	83.4	3	3.00 (11.4)							
XEB-4	112,500 (33.0)	94,000 (27.5)	82,000 (24.0)	83.0	4	4.25 (16.1)							
XEB-5	150,000 (44.0)	150,000 (44.0)	109,000 (31.9)	82.7	5	5.50 (20.8)							
XEB-6	187,500 (54.9)	155,000 (45.4)	135,000 (39.6)	82.3	6	6.75 (25.6)	4 (102)		493 (224)	3/4 (19.0)			
XEB-7	225,000 (65.9)	186,000 (54.5)	162,000 (47.5)	82.0	7	8.00 (30.3)							

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.



RATINGS NATURAL AND PROPANE GASES							
Model	Number of Sections	AGA/CGA Input *MBH	Heating Capacity +MGB	Net IBR Rating *MBH	Width A	Vent Diameter (Inches)	
						To Chimney (Category I)	Horizontal Vent (Category III)
XEB-2	2	42.5	36	31	11	4	3
XEB-3	3	75.0	63	55	14-1/4	4	3
XEB-4	4	112.5	94	82	17-1/2	4	3
XEB-5	5	150.0	125	109	20-3/4	4	3
XEB-6	6	187.5	155	135	24	4	3
XEB-7	7	225.0	186	162	27-1/4	4	3

\* 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.  
+ Heating Capacity based on D.O.E. (Department of Energy) test procedure.

## XEB SERIES CAST IRON GAS FIRED HOT WATER BOILERS

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.

### CHIMNEY AND VENT PIPE CONNECTION

**CHECK Your Chimney** – Use local codes for installation or National Fuel Gas code Z223.1 latest issue. In Canada, follow CAN/CGA B149.1 and .2 installation codes. It is very important to properly size the venting system for induced draft appliances.

The boiler's induced draft blower has a 3" outlet. A 3" x 4" increaser fitting is included in the parts bag. The increaser fitting is required on this boiler for Category 1 venting, and 4" is the minimum permissible vent diameter. The vent connector may need to be larger than 4" diameter. Chimney and venting system shall be sized according to the appropriate venting tables in the National Fuel Gas Code or Canadian Installation Codes.

The boiler installation for chimney venting is not complete unless the 3" x 4" increaser fitting is located and secured.

If venting into a masonry chimney without a liner, line the chimney from top to bottom with either of the following:

- Listed Type B vent pipe, or
- Listed flexible vent liner, or
- Poured ceramic liner

Outside chimneys should not be used unless they are:

- Enclosed in a chase, or
- Lined with Type B vent pipe listed flexible vent liner, or other certified chimney lining system.

### HORIZONTAL VENTING INSTRUCTIONS

#### Induced Draft High Efficiency Boilers

Maximum horizontal vent length for stainless steel vent pipe – 30' plus one 90 elbow plus vent termination. Minimum horizontal vent length – 2' plus one 90 elbow plus vent termination.

Additional elbows are equivalent to:

- 6' of straight pipe for 4" diameter 90 elbow, or
- 3' of straight vent pipe for 3" diameter 90 elbow
- 2, 3, 4 section boilers use 3" vent pipe
- 6,7 section boilers use 4" vent pipe

Choice of Vent Pipe Material:

- U.L. Listed Z-Flex Z-Vent stainless vent pipe
- U.L. Listed Heat-Fab Saf-T-Vent stainless steel
- U.L. Listed Heat-Fab Saf-T-Vent stainless steel
- U.L. Listed Flex-L StaR-34 stainless steel vent pipe
- U.L. Listed Pro Tech FasNSeal stainless steel vent pipe

### BOILER CLEARANCES

Unit	Alcove, or Room Not Large in Comparison With Boiler	Room Larger in Comparison With Boiler
Top	6"	6"
Rear	6"	6"
Control Side	8"	8"
Opposite side	6"	6"
Front	18"	18"
Flue/Vent Connector	6"	6"
Near Boiler Piping	1"	1"

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

### BOILER VOLUME SPECIFICATIONS

Boiler Size (Number of Sections)	Boiler Volume (Cu. Ft.)	Minimum Room Volume Required To Be Large Room (Cu. Ft.)
2	4.3	68.7
3	5.6	89
4	6.8	109.3
5	8.1	129.5
6	9.4	149.8
7	10.6	170.1

#### OPTIONAL TERMINATION FITTING

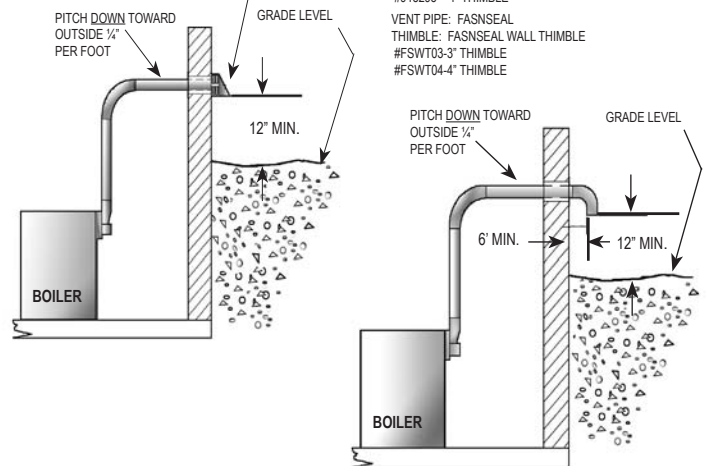
TJERNLUND SIDE WALL VENT HOOD  
VH-1-3" FOR 2, 3, 4, 5 SECTION BOILERS  
VH-1-4" FOR 6, 7 SECTION BOILERS

90° ELBOW, POINTING DOWN, SAME MATERIAL, AND PIPE SIZE AS VENTING SYSTEM, EQUIP WITH SCREEN (MIN. 1/2" MESH) TO KEEP OUT BIRDS AND RODENTS.

FOR A COMBUSTIBLE WALL, USE A THIMBLE. SELECT AS FOLLOWS:

VENT PIPE: Z-VENT, SAF-T-VENT, STAR-34  
THIMBLE: SIMPSON DURAVENT THIMBLE  
#905295 - 3" THIMBLE  
#915295 - 4" THIMBLE

VENT PIPE: FASNSEAL  
THIMBLE: FASNSEAL WALL THIMBLE  
#FSWT03-3" THIMBLE  
#FSWT04-4" THIMBLE



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