

# PORTAGE & MAIN

Est. 1973

## ENVIRO-CHIP BURNERS

CHIP HEATING WITH AN AUTOMATED SYSTEM



### Enviro Chip Burner 500 Bin offers:

- Heavy duty industrial quality gear box.
- Agitator to prevent fuel bridging.
- 1/2 HP inverter rated motor.
- Large 6 foot diameter bin, with easy to open and close lid, is easily loaded with skid steer, tractor bucket or loader.
- Heavy duty industrial controls for both the furnace and the bin.

- Viewing ports on the ends of the storage bin facilitate checking chip levels from the ground.
- Automated feed means less manual labour.

*Portage & Main  
chip burning Hydronic heaters  
give long burn times between fills, use  
less wood than conventional wood boilers  
as the wood burning rate is controlled  
by metering in the amount  
of bio-mass chips.*

- Self contained furnace and bins are powder coated finish-complete stand alone outside units. Also approved to be located in a shed, garage, etc.

*Bio-mass chips include wood , corn stover, switch grass, miscanthus grass, etc.*

**Watch bio-mass chip videos @ [www.portageandmainboilers.com](http://www.portageandmainboilers.com)**



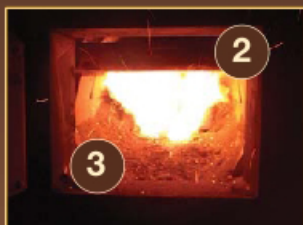
**LIFETIME LIMITED WARRANTY**  
**Electrical Components - 1 Year**  
**CALL US FOR FULL DETAILS!**

# EFFICIENT & ECONOMICAL! REDUCE WOOD WASTE

## SUPPORT LOCAL ECONOMY - NOT FOREIGN IMPORTS



Heat exchanger with reverse return 2" diameter fire tubes.



Illustrates rounded burn chamber, fire in the burn pot and the water tubes of the heat exchanger.



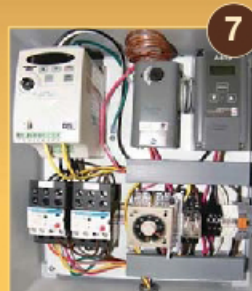
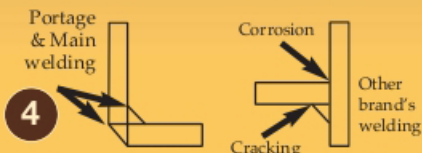
Fire head is surrounded by molded, refractory cement.



We can burn a variety of wood chips including some overage, knots and smaller branch pieces, which eliminates the need for screening to get totally perfect chip sizes as required by some designs. The ideal chip is 1.5 to 2 inches, chip fed through a 3" auger with 3/8" flighting. This unique heavy duty drive enables us to feed chips, sawdust and even dry pine shavings in such a way that burn back will not happen.

1. The highly efficient outdoor hydronic heater has the ultimate in heat exchanger design (Reverse return 2" diameter fire tubes).
2. Water tubes above the fire to extract maximum heat before flue gases travel under a water baffle. The water baffle at the back of the firepot traps additional heat and fly ash. Flue gases then travel through the twenty fire tubes.
3. Round burn chamber and jacket. Round firepot is completely surrounded by water jacket.
  - Round provides the best circulation of water and has the least welds.
  - Round firepot eliminates side wall warping
  - Round has less expansion/contraction therefore less weld stress
  - Round is self circulating. Therefore no cold or hot spots
  - Round gives the fire better flame contact with the metal.
  - Round has no corners for ash to sit in
  - Round is the strongest design for outdoor water furnaces.
  - Round is stronger to last longer, just as the steam engines were round for a reason.
4. Welds are double (boiler style) for total penetration.
5. Combustion blower introduces air through specially designed slots in the feed head. Forced air feed at the firepot and in the exhaust ensure a clean complete burn of the bio-mass fuel.
6. Stoker has controllable "Fire Keep Mode".
7. Johnson A419 Aquastat controls water temp to within 1°. Also has a high limit safety aquastat.
8. VFD speed controlled feed rate. Auger feeds chips into the burn head.
9. High quality fan comes with overload protected, ball-bearing motor, motor capacitor started for long life.
10. Fire head is surrounded by molded refractory cement.
11. VFD converted, allows normal 110 power to run a 3 phase 220 industrial motor.
12. Non pressurized boiler has low water cut off - no fuel cut off and low temperature cut off. The non pressurized system is safe to operate and no special operator license is required to operate. Standard rated pre-insulated pipe can be used to deliver the heat into the building.
13. Uses off-the-shelf parts that are readily available.
14. Warnock Hersey - UL approved.

VISIT US AT  
[www.portageandmainboilers.com](http://www.portageandmainboilers.com)  
 FOR TESTIMONIALS!



Johnson A419 Aquastat

# STE & YOUR HEATING COSTS AT THE SAME TIME!

## S • REDUCE YOUR DEPENDENCE ON FOSSIL FUELS!

### Enviro Chip Burner 850 Bin offers:

- Large 30 yard feed bin (6ft high, 8ft wide and 16ft long) has hydraulic controlled opening lid to keep out the rain and snow.
- The bin cover is hydraulically actuated, making refilling the supply bin as simple as pushing a button. Viewing ports on the ends of the storage bin facilitate checking chip levels from the ground.
- The complete chip feed system is operated with one electrically driven hydraulic pump which enables the use of PLC controlled hydraulic motors. This lends itself to automatic modulating feed rates and results in a smooth operating feed into the boiler.
- Hydraulic rams for trouble free chip feed into the feed screw auger which feeds directly into the boiler. Two hydraulic pistons take turns supplying the fuel auger driven by a hydraulic motor the feed auger is regulated by the control panel.
- An electric eye monitors the feed rate.
- Easily adjustable hydraulic feed makes it easy to control the fuel feed and ash removal rate. Auto ash removal by an auger into an external ash bin.
- Coupled with the feed auger and controlled by the same panel is the automatic dual forced air draft system.
- Simple controls that can call your phone if anything is going wrong. The entire furnace and fuel system is controlled through one panel which includes an alarm system designed for immediate notification of emergency situations using any regular phone line.
- System can be either controlled by maintaining the furnace water temperature; or by sensors controlling the furnace water temperature according to variations in the outdoor temperatures. Control panel is conveniently located right over the feed auger.

### Enviro-Chip Burner Facts:

- One ton (2,000 lbs) cord wood can yield 4.2 million BTUs
- One ton (2,000 lbs) wood chips can yield 6 million BTUs

Wood chipped for fuel is the productive use of a low-grade waste product. Wood fuel chips come primarily from either sawmill or timber harvesting residues. When wood chips are from sawmills, they are usually a waste that must be disposed of or sold. When the wood chips come from harvesting operations in the woods, the lower grade trees are being removed in a sustainable means, thus, it will improve the overall health of the forest. There are vast amounts of surplus wood residue from communities, sawmills, and logging operations that could be used for biomass energy without any direct impact on forests.

The cost of biomass fuel is generally less than half the cost of fuel oil on a btu basis. While environmental and societal benefits are important, often the most undeniable reason for deciding on biomass chip heating are the economical benefits. The money spent on biomass keeps energy dollars circulating in your local economy and supports jobs in your local forest products industry.

- Because biomass fuel is locally produced, harvested, and processed, its use creates and sustains jobs in the region's economy.
- Biomass energy keeps dollars spent on fuel in the local economy – compared with fossil fuel systems, which generally export fuel dollars.
- By making use of bio-mass chips for fuel, biomass energy strengthens the whole regional forest-products industry, giving it new local markets and improving the forest resource, along with creating jobs.
- All the jobs and economic activity created by biomass projects also generate important local, state, and federal tax revenues.

## Chip heating with our automated system means less manual labour:

Portage & Main Enviro-Chip Furnaces are automated systems that are less labor intensive and very efficient. Important benefits for using biomass chips, in place of fossil fuels like oil and gas to provide heat for large residential heat requirements/small business or larger requirements such as schools, municipal buildings, apartments or other institutional buildings include:

**Sustainably produced bio-mass is a local renewable energy source.** Biomass has historically remained at a stable price. It is not affected by global economics.

**Enviro-Chips systems burn cleanly.** Portage & Main Water Furnaces are known for their efficiency.

Customers, who have had other models, previous, to owning a P&M furnace burns 1/3 to 1/2 less wood and provides more usable BTU's of heat.

- The mess associated with cordwood storage and use inside a building, along with the ash removal from an inside stove, is absent. Bio-mass chips are confined to a storage bin with no dirt or dust entering the rest of the building.
- Unlike indoor wood stoves, there are virtually no visible emissions and odors.
- Portage & Main Chip burning Hydronic heaters give long burn times between fills, use less wood than conventional wood boilers as the wood burning rate is controlled by metering in the amount of bio-mass chips.

**Burning wood for energy has a neutral effect on the environment.** When wood is burnt, it recycles the carbon that has already been in the atmosphere.



# Benefits of owning a Portage & Main Outdoor Enviro-Chip Burner

Gives you peace of mind, safety and convenience...

- No fire hazard inside your home.
- No messy fuel, ashes or smoke in your home.
- No increase in fire insurance premiums unlike indoor stoves.
- No risk of carbon monoxide poisoning.
- The water temperature is electronically controlled with an aquastat, that has water temperature display features.
- Surfaces are insulated or water cooled for safe operation.
- Automatic feeding from the chip supply bin.

Efficient and dependable...

- Portage & Main Outdoor Water Furnaces have proven to be very efficient and reliable, built with time tested and proven design features.
- It uses 1/3 to 1/2 less fuel than most conventional boilers.
- The built-in multi-pass tube heat exchanger maximizes heat extraction from the flue gases.

Provides societal and environmental benefits...

- It minimizes the use of expensive fossil fuels such as natural gas, oil or electricity.

## PORTAGE & MAIN OUTDOOR WATER FURNACE:

	Enviro-Chip Burner 500	Enviro-Chip Burner 850
Furnace Output	Up to 278,884 BTUs/hr	800,000 BTUs/hr
Shipping Weight (lbs)	2,600	4,500
Water Capacity (US gallons)	120	200
Chimney Size	6"	8"
Fire Tube Heat Exchanger	20 tubes - 2" diameter	24 tubes - 2" diameter
Furnace Height	72"	98"
Furnace Width	48"	59"
Furnace Length	57"	57"
Ash Removal	Ashpan	4.5' Ash Auger

*Heat load should be calculated. Many factors influence the heating area - such as the insulation value of the structure, and the climate in which the furnaces operate. It is always best to calculate the number of BTUs required per hour for your heating needs.*

Manufacturers reserve the right to make changes or modifications to products. Brochures are updated regularly, however for the most current information please see the website:

[www.portageandmainboilers.com](http://www.portageandmainboilers.com)

CALL DEALER FOR DETAILS: MAX. OUTPUT BTU'S LISTING BASED ON EPA REQUIRED TESTING

Portage & Main Outdoor Water Furnaces have a long history of great performance thus earning them the name of

*The Original Efficient Green One Since 1973*

Round firepot/water jackets and 1/4" cold rolled steels means less risk of warping related problems. W44 cold rolled steel has the same corrosion properties as boiler plate. It is known for being a very "uniform" steel, ideally suited to forming without fatiguing. It is easy to shear, break and is "welder friendly." All parts are laser cut for precision fitting which also allows for the bevel to be accurately filled when welding. The weld strength is increased by boiler/pipeline style double welds which take more time but is well worth it as it results in total penetration which helps prevent weld corrosion, cracking and pin holes leaks.

*Chip heating system is built in North American for the tough North American conditions.*

North American Portage & Main Outdoor Water Furnace Distributor



**HEAT SMART PLUS**  
 R.R. #5, Site #16, Comp #114  
 PRINCE ALBERT, SK S6V 5R3  
 1-800-561-0700  
[www.portageandmainboilers.com](http://www.portageandmainboilers.com)

Authorized Portage & Main Outdoor Water Furnace Dealer