

ULTIMATE OUTDOOR BOILER Guide Book

OutdoorBoiler.com

“KEEP YOUR FAMILY TOASTY WARM”



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(231) 861-8200

www.OutdoorBoiler.com

Support@OutdoorBoiler.com



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Water Treatment & FREE Water Testing



Do I Really Need To Use Water Treatment In My Outdoor Boiler?

Would You Drive Your Car Without Oil?

Of course not! Equally so you should never operate your outdoor boiler without water treatment. You will NOT discover how badly you are damaging your boiler without water treatment **UNTIL IT IS TOO LATE!**



And you won't know whether your water is properly treated without sending a water sample to our Lab for your FREE Water Testing and Analysis.

The "[Free Water Testing Info](#)" section of [OutdoorBoiler.com](#) answers these important questions:

Why Should I Use Water Treatment?

Simple - because without it, your investment is wasted. You wouldn't buy groceries and then leave them at the store, would you? You made a big investment in your outdoor boiler - but unless you use water treatment, the life of that investment will go from 40+ years, to maybe less than 5 years! You are too smart to make that mistake.



Why Should I Submit a Water Sample?

Why? So you can be sure your boiler is properly protected. (And to keep your warranty valid!) Our Laboratory has expensive testing equipment that provides **sophisticated analysis** of your boiler water. Those test results are then run through a computer algorithm that provides you a customized report so that you can have the peace of mind knowing that **your investment is properly protected**. If your water test results are not satisfactory, you will get specific instructions on what needs to be done. In some cases, more water treatment is needed, and in other cases, some sediment may need to be flushed from your system. We won't rest until you are properly protected!

What happens if I don't use Water Treatment?

The Bad News: Untreated boiler water will eat holes in steel immediately upon contact (rust, corrosion), then your boiler steel will become paper-thin and start to leak.





The Worst Part: At that time, your investment will be lost. It would be like buying a new car, and driving it without oil in the engine...it is only a matter of time and the investment will be worthless.

The Good News: It is never too late to start protecting your investment!! Liquid Armor Certified Water Treatment is the only way to treat your boiler – Liquid Armor has been formulated to protect the exact grade of steel in your boiler. Just start now and stop the rapid destruction of your steel. If you do this, you can *Keep Your Family Toasty Warm and Comfortable for Decades.*



How Much Water Treatment Should I Add?

For the first-time treatment, one gallon of Liquid Armor will treat 200 gallons of water. This is a generalization because water quality is widely different around the country – this is why the FREE water testing is so very important.

For a boiler that has been properly treated previously, just add one-half gallon every 12 months before sending your annual water sample.

How Do I Get Water Sample Bottles?

Each gallon of Liquid Armor is shipped with two FREE water sample bottles, shipping labels and shipping boxes. **Just order a gallon of Liquid Armor at OutdoorBoiler.com, and your water sample bottles will be included at no charge!**

Alternatively, you can order water sample bottles in kits of 2 for a small charge plus shipping. Existing customers may order one package of water bottles per year at no charge using the discount code “FREEKIT” at checkout. Shipping charges apply.

Where Do I Send My Water Sample For The FREE Water Analysis Testing?

Just follow our simple instructions on page 5 below. Please send water samples via US MAIL ONLY.

Please mail water samples to the following address:

OutdoorBoiler.com Labs
PO Box 158, Shelby, MI 49455
(231) 861-8200





Fall Start-Up Checklist

**Don't Miss Any Critical Steps...
Use This Checklist!**

Tools you will need:

- Stepladder
- [Cleaning Brushes](#) (only if chimney wasn't cleaned in Spring)

Supplies you will need:

- [Liquid Armor Water Treatment](#) (visit [OutdoorBoiler.com](#))
- [Door seal fire rope/caulk](#) (if due for replacement every 2-4 years)
- **Water sample kit** (included with every gallon of water treatment)
- **Firewood/match**

Fall Startup Procedure:

- 1.) Observe all safety precautions.
- 2.) Ensure that the installation has been completed properly.
- 3.) Ensure that all fittings are properly tightened.
- 4.) If the boiler was not properly cleaned in the Spring, do so now (and please remember to do this in the SPRING next year!). Remove all ash and creosote. Brush out chimney and deflector plate. Brush out heat exchange tubes (Gasification models only).
- 5.) Make sure the boiler is completely full of water. Verify this with your water level indicator, and by filling the boiler until water flows out of the vent tube on the roof.
- 6.) Treat the boiler water with [Liquid Armor water treatment](#). Follow directions on Liquid Armor bottle. For previously treated water, add 1/2 gallon of Liquid Armor before sending water sample to the lab.
- 7.) To VERIFY that your investment is protected, send a water sample to our lab for a FREE water analysis EVERY 12 MONTHS!
- 8.) Open all valves. Allow 5 minutes for water to fill pump and system.
- 9.) Turn on power and make sure pump is running. Never operate a boiler without the pump circulating water 24/7.
- 10.) Make sure fan switch is operational. Turn the fan switch to the ON position.
- 11.) Your outdoor boiler water temperature is controlled to the pre-set factory standards. Adjustment is not normally needed. The temperature controller will automatically control the blower to maintain the water temperature between the preset range. We recommend the range of 160F to 180F for traditional boilers, and 172F to 182F for gasification models.
- 12.) Build a small fire in the primary firebox chamber, and allow the temperature to slowly rise. If possible, use only charcoal from previously burned wood, otherwise you should expect to see considerable moisture condensation inside the boiler. This is the moisture from your wood that is condensing on the boiler walls and tubes while the water jacket water is below 140F. Do not worry, this condensation is normal - your boiler is not leaking.
- 13.) When the boiler reaches 170F, the boiler is ready to be filled to capacity for normal operation.

For more information, please call our office from Monday thru Friday from 9AM to 8PM ET at (231) 861-8200.





Water Sample Instructions

So how do you know if your boiler is properly protected? It is SIMPLE! Get a FREE water test of your outdoor boiler water!

Your warranty requires that you add water treatment every year, and get a water test performed **EVERY 12 MONTHS** that shows your boiler is properly protected. Follow these simple steps:

1.) Follow all necessary safety precautions.

2.) It is important to remember that an outdoor boiler must always be full of properly treated water. Any time water touches steel, it will rust holes in the steel, unless the water is properly treated.

3.) Before adding water treatment, it is important to remove sediment buildup in the bottom of the water jacket. This is an **important annual maintenance** item that flushes any sediment buildup. NOTE: Sediment that accumulates at the bottom of the water tank can prevent even properly treated water from protecting the boiler steel. This step can be done as often as necessary to get rid of dangerous sediment buildup.

4.) To do this, open the drain valve in the bottom rear of the water jacket and drain approximately 5-10 gallons of water from the boiler, or until the water runs clear, whichever occurs last. If the water does not run clear, you may have excessive sediment in your system and all the water will need to be **completely flushed out**. If this is the case, be sure to remove the unburnt wood, coals and ash from the boiler so that there is not a fire burning while the water jacket is empty (*the water jacket must be full of water when there is a fire in the firebox to protect the steel from warping*).

5.) Optional: While flushing sediment, you can attach a hose to the water jacket drain at the bottom of the boiler to drain the water away from the rear of the boiler.

6.) Once the water runs clear, close the drain valve.

7.) Repeat steps 3-5 from other drain valves, if any.

8. In the unlikely event that you had to flush ALL the water out because of excessive sediment or cloudiness in the water, now refill the boiler with fresh water. Please note that if you have a water softener, please **bypass the water softener** to fill the outdoor boiler with unsoftened water.

9. Add the required amount of Liquid Armor Certified Water Treatment. See page 3 for instructions on how much water treatment to add initially, and then every 12 months thereafter.

10. Allow the water to circulate for a minimum of 24 hours.

11. Collect a water sample in a clean bottle so as to not contaminate the sample.

12. Please be sure to include your email address on the BOTTLE label (*not on the shipping box*) so your results can be reported in a timely manner.

13. Also write the following information on the bottle label: **Serial number, boiler model, date sample collected**, and your **full contact information**. If you know it, please also write on the label how many gallons of water your boiler holds.

14. Please mail water samples VIA US POSTAL SERVICE ONLY to the following address: **OutdoorBoiler.com Labs, PO Box 158, Shelby, MI 49455, (231) 861-8200**.

15. In 3-5 weeks, you will receive your test results via email. **FOLLOW THE INSTRUCTIONS GIVEN** by the Lab, if any, to protect your investment in your outdoor boiler.

If you follow these simple steps, you can protect your investment so that your outdoor boiler will help you **Keep Your Family Toasty Warm and Save You Money For Decades!**





Easy Operations & Maintenance

Normal Operations – Best Practices:

4 Biggest Operational Equipment Mistakes that are COMMON:

1. You should NEVER operate your boiler without a filter. Sediment is the secret killer of outdoor boilers and will kill your pumps, heat exchangers, and destroy your boiler steel.
2. If you use a chimney extension, ONLY use an approved insulated extension. An uninsulated extension will destroy most boilers in 18 months. Call us so we can give a detailed explanation.
3. Always use a chimney cap. This will keep the rain out, knock down sparks, and prevent wind from sucking all your heat out.
4. A grounding rod must always be installed AT THE BOILER. Electrolysis damage has killed many boilers that were not properly grounded.

Maintenance Checklist

Daily:

- Check water level, fill as needed
- Rake ash level, remove ash as needed (max 2-3" deep only)
- Keep wood, coals, ash at least 6-8" back from inside of front door chute

Weekly/Other:

- Remove ALL ash and completely scrape firebox - weekly
- Clean heat exchange tubes (Gasification models only) – bi-weekly
- Inspect filter cartridge and clean as needed – monthly
- Check door fit and rope, inspect chimney and firebox – monthly
- Confirm that your underground pipe is NOT losing heat – monthly (call for procedure to check this)

How To ELIMINATE Creosote!

Creosote is that nasty black tar that builds up in your boiler and is very hard to clean out. Creosote wastes wood, is harmful to your steel surfaces, and can reduce airflow which will completely shut down your boiler!

Here are the Top 4 Ways to Eliminate Creosote:

1. Toss a Creosote Remover Stick into your boiler fire once per week
2. Follow the Dry Burn Procedure (see next page)
3. Never operate your boiler at water jacket temps below 140 F
4. Use properly seasoned wood

**Reminder: Protect your
freedom to burn wood...
Only burn firewood!**





How Quickly Will FREEZE Damage Destroy Your Boiler?

Answer: Very Quickly! Freeze damage will occur much faster than you can obtain replacement parts.

Remember – All outdoor boilers outlast all of their electronic components. When you have a part failure, will you be ready? Or will this become a catastrophic event because you are unprepared?

Be prepared with the [Emergency Prep Kit](#) – [Pump, Fan, Solenoid](#), and [High Limit Switch](#). For details, call or visit our website.



Boiler Overheated? How to Avoid Permanent Damage:

1. First, identify WHY boiler is overheating. ([Call Tech Support Line for help](#))
2. Never leave door open except for brief periods to load wood or remove ash
3. Always have a spare pump available
4. Do not change factory settings on aquastat – call for help resetting if needed
5. Evaluate blower fan, solenoid, and high limit safety switch and replace if needed

Why Do I Need the “Dry Burn” Method?

- Reduce Creosote
- DOUBLE the Life Expectancy of Your Boiler
- Saves Your Valuable Time – Reduces Maintenance
- Burn Less Wood = Saves YOUR Money

To Achieve “Dry Burn”, You Must:

- Load your boiler twice daily
- Burn each load down to coals
- Never overload firebox with wood

Boilers like to be dry. When it is dry, the steel does not corrode, ash is harmless, and creosote does not form. But even properly seasoned wood contains **20% moisture!** That water is burning out of the wood creating a steamy moisture bath in your boiler for the entire burn cycle.

It is ONLY at the end of the burn cycle (*when only coals remain*) that your boiler can dry itself out. So, burn each load down to coals for the last several hours of each burn cycle, and you will achieve the “**Dry Burn**” state, and **Keep Your Family Toasty Warm and Comfortable for Decades!**






Spring Shutdown Checklist

This is the most important checklist of the year! It is CRITICAL to properly shut down your outdoor boiler for Summer. Ignoring any of these steps may cause very expensive damage to your boiler.

Items you will need:

- 2 [Creosote Sticks](#)
- [Cleaning tools](#), including a wire brush for chimney
- Stepladder
- Shop Vac
- [Water treatment](#)
- Water Sample Bottle
- [New Filter Cartridge Replacement](#) (every 2-3 years)
- [New Filter O-Rings](#) (every 1-2 years)
- [Door Seal Fire Rope and Caulk](#) (every 1-2 years)


Checklist:

1. Assemble all necessary items needed to complete the checklist.
2. Follow all safety warnings
3. Put 2 creosote sticks in the firebox THREE DAYS before shutting down the boiler. 
4. Allow the fire to burn completely down.
5. Remove all the ashes and scrape the firebox completely.

Why Is Ash Harmful? Dry powdery ash is harmless in small quantities. However, when ash layers get deep, the ash absorbs the steam moisture from the burning wood and this turns the ash into a caustic paste that eats holes in steel!

Remove the Ash
– Keep Your Steel
Safe!



6. Clean the water filter. Replace the stainless steel filter cartridge every 2-3 years. Replace the filter cartridge o-rings every 1-2 years. If filter leaks, DO NOT over-tighten! You will crack the plastic housing if you over-tighten. Just replace the o-rings for a tight seal. 
7. Once or twice per year, open the boiler drain valve (bottom rear) for five seconds, or until the water runs clear. This flushes out dangerous sediment – the “**Secret Killer**” of outdoor boilers. Every FOUR YEARS, you must completely flush all the water from your boiler – twice – and refill with properly treated water.
8. Add the required amount of [Liquid Armor Outdoor Boiler Water Treatment](#). For the first-time treatment, one gallon of Liquid Armor will treat 200 gallons of well-balanced water. For a boiler that has already been treated previously, just add one-half gallon every 12 months before sending your annual water sample.
9. Allow your pump to run with cold water circulating for two days, then take your water sample from the bottom drain and send it to the lab for water testing. Please do this EVERY 12 MONTHS.
10. Remove the chimney cap and wire brush the inside of the chimney. Then use a shop vac to remove all ash.
11. Replace the door seal as needed every 1-3 years.

- Turn off power at the breaker/ power source. If you keep your pump running, turn off the power switch to the fan and unscrew the light bulb to save energy.

Why Replace Filter

Cartridge? “My [filter cartridge](#) looks fine – why should I replace it?”

This is a common question. Filter cartridges do wear out, but you cannot tell. The steel micron mesh loses its effectiveness, and the seals on the sides begin to leak. This enables sediment to circulate through your system as if you didn’t have the benefit of a filter. Sediment will destroy your pump and your heat exchangers and those items are very expensive to replace!



When Should I Flush My Outdoor Boiler? A COMPLETE flush of your outdoor boiler is required in the following cases:

- When the water gets cloudy and your filter will not get the water clear
- If you have used a cheap imitation “water treatment”, it is critical that you completely flush the boiler immediately. Some imitation treatment products have been discovered to etch the steel of an outdoor boiler, causing much more harm than good.
- When directed by the Lab because of a failed lab test result. This is RARE.
- Every four years.

Flush Procedure Checklist:

- Allow fire to completely burn out. Allow water jacket temp to drop below 80 degrees F.
- Remove all firewood, coals, and ash. Scrape firebox clean.
- Connect a hose to the bottom drain valve of the boiler.
- Turn off the pump.
- Clean the filter cartridge.
- Open the drain valve. Allow all water to completely drain out of the boiler.
- Once completely drained, close the drain valve(s).
- Refill the boiler completely with fresh water. Bypass any water softener. Do NOT add water treatment to this water.
- Turn pump back on.
- Open any bypasses around heat exchangers and the filter.
- Allow pump to circulate water for a minimum of 24 hours. Make sure all ball valves are open so that this fresh water flushes out all the pipes.
- Turn pump off, and close bypass at filter.
- Drain boiler again by opening drain valve(s).
- Refill the boiler completely with fresh water. Bypass any water softener.
- Add the appropriate amount of only Liquid Armor Water Treatment.
- Turn pump back on and allow this to circulate the water for a minimum of 24 hours.
- Send a water sample to the Lab for your FREE water testing and analysis. Follow any instructions given by the lab.
- Give yourself an A+ for Awesomeness, and Enjoy Keeping Your Family Toasty Warm and Comfortable for Decades!



 **PRODUCTS & SUPPLIES**



Outdoor Boiler Water Treatment Liquid Armor



Outdoor Boiler Water Treatment Liquid Armor Dealer 4-Pack



Water Sample Kit



Outdoor Boiler Door Seal Caulk High Temp Black



Outdoor Boiler Door Seal Fire Rope 10 ft. – HE/GX Series



Outdoor Boiler Chimney Cap 8" HE Series



Outdoor Boiler Chimney Cap 6" GX Series



Outdoor Boiler Chimney Adapter 8" Chimney to 8" Extension



Chimney Extension Insulated 8" x 48"



Chimney Extension Insulated 8" x 24"



Chimney Extension Insulated 6" x 48"



Creosote Remover 5-Pack



Grundfos Circulator Pump – Outdoor Boiler Standard 1/6 hp



Grundfos Circulator Pump – Outdoor Boiler Standard 1/25 hp



Outdoor Boiler Brand Premium Circulator Pump 1/6 hp

PRODUCTS & SUPPLIES



Outdoor Boiler
Blower Fan GH750



Outdoor Boiler
Blower Fan
GX Series



Outdoor Boiler
Blower Fan 1100
Series



Outdoor Boiler
Blower Fan 2100
Series



Outdoor Boiler
Aquastat
HE Series



Outdoor Boiler
Aquastat Controller
GX Series



Outdoor Boiler
White Dial
Thermometer
HE Series



Insulated PEX
End Cap 4"



HEAT MIZER
1" Non-O2 Barrier



HEAT MIZER
1 1/4" Non-O2
Barrier



HEAT MIZER
1" O2 Barrier



HEAT MIZER
1 1/4" O2 Barrier



HEAT MIZER ULTRA
1" Non-O2 Barrier



HEAT MIZER ULTRA
1 1/4" Non-O2
Barrier



HEAT MIZER ULTRA
1" O2 Barrier



HEAT MIZER ULTRA
1 1/4" O2 Barrier

How To Get The Best Value On Insulated Pex? ...HEAT MIZER BRAND

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- Lowest Heat Loss Ever – Less than one degree of heat loss over 200 feet!
- Industry Leading Warranty - Full Replacement Coverage, including LABOR!
- Perfect Performance Record - Over 1 Million Sold and ZERO Failures
- Experts Agree! Our proprietary design has been PERFECTED over 30 years!
- Best QUALITY, Best PRICE, Best VALUE!
- All Insulated PEX customers get **FREE Design Service** (\$695 value)

 **PRODUCTS & SUPPLIES**



Outdoor Boiler Wire Cleaning Brush – 8” x 84”



Outdoor Boiler Cleaning Tool 4' Flexible Nylon Rod w/Drill Adapter End (Head Sold Separately)



Outdoor Boiler Cleaning Tool 6” Wire Whip Head (Nylon Rod Sold Separately)



Cleaning Brush, GX10 1.5”



Cleaning Brush GX15/30 1.75”



Outdoor Boiler Filter



Outdoor Boiler Filter Cartridge Replacement



Outdoor Boiler Filter O-Rings



Outdoor Boiler Filter Top Hub



Outdoor Boiler Filter Clear Cover



Outdoor Boiler High Limit Switch



Outdoor Boiler Solenoid



Outdoor Boiler Water Level Indicator HEGX Series



Outdoor Boiler Water Level Indicator Float Bobber



Thermostatic Load Valve 1” VTC



TLV - VTC Thermostat 140F (Required component of Thermostatic Load Valve 1”)



Unit Heater Thermostat



Outdoor Boiler Water to Air Heat Exchanger Dura Max Brand
14x18 ■ 16x18 ■ 18x18
19x20 ■ 20x20 ■ 24x24



Outdoor Boiler Water-to-Water Plate Heat Exchanger
20 Plate ■ 30 Plate
40 Plate ■ 50 Plate
60 Plate ■ 80 Plate
100 Plate



Outdoor Boiler Unit Heater
Available BTUs:
50,000 ■ 100,000
150,000 ■ 200,000

PRODUCTS & SUPPLIES



PEX 1" Crimp x 1" NPT Brass Male



PEX 1" Crimp Brass Tee



Street Elbow 45 1" Brass



PEX 1" Crimp Brass Coupling



PEX 1" Crimp Brass 90 Elbow



PEX 1" Crimp Copper Ring



PEX 1" Crimp x 1" NPT Brass Female



PEX 1" Crimp x 1" Female Sweat



PAP 1" Brass Coupling



PAP 1" Comp x 1" Brass Sweat



PAP 1" Comp x 1" NPT Brass Female



PAP 1" Comp x 1" NPT Brass Male



PAP 1" Compression Fitting O-Rings 10-Pack



PAP 1" Comp Brass Tee



PAP 1" Comp Brass 90 Elbow



Mixing Valve 1" Threaded



Ball Valve 3/4" Full Port Threaded



Ball Valve 1" Full Port Threaded x Swivel Pump Flange



Ball Valve 1" Full Port Threaded



Mixing Valve 3/4" Sweat



Backflow Preventer 3/4" Brass Dual Check Valve



3-Way Control Valve Body 1"

 **PRODUCTS & SUPPLIES**



Hex Bushing
1-1/4" x 1" Brass



Male Hose
Adapter 3/4"



Street Elbow 90
1" Brass



Close Nipple 1"
Brass



PEX Tubing 1" Red
100 ft Roll



Outdoor Boiler
Door Wire Conduit
- HE Series

 **KITS FOR INSTALLATION**



Outdoor Boiler Back
of Boiler Fittings Kit



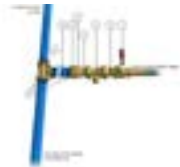
Outdoor Boiler
Filter Kit



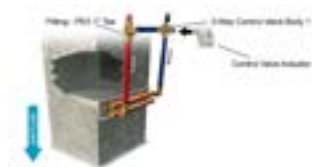
Outdoor Boiler Domestic
Hot Water Kit



Outdoor Boiler Under
Temp Bypass TLV Kit



Outdoor Boiler Fill Kit



Outdoor Boiler Bypass for
Downdraft Furnace Kit



Outdoor Boiler PAP to PEX
Adapter Kit

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And **GET**



Coupon Code: WT15-OFF



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