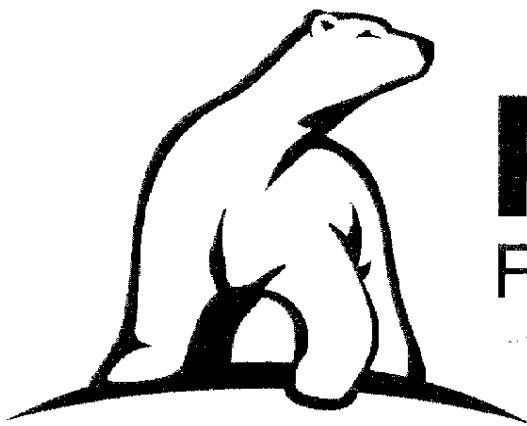


# Owner's Manual

for Polar Furnace® Down Draft Heater



**POLAR**  
FURNACE

www.polarfurnace.com

## **POLAR FURNACE DOWN DRAFT HEATER 25 YEAR LIMITED REPLACEMENT WARRANTY**

Polar Furnace Mfg. Inc. (The Company) warrants the water jacket and fire chamber of the heater identified herein to be free from defects in material and workmanship during normal use for a period of two years from the date of original purchase to the original purchaser of this heater. In year one and two The Company will cover the cost of replacing or repairing the fire chamber and water jacket onsite or at our factories including materials, parts, travel and labor. Electric and electronic components as well as high temperature refractory and the heater housing are limited to a 12 month 100% replacement warranty. In years 3 and 4 this warranty is limited to 80% of cost of repair of the fire chamber and water jacket at The Company's then current rates and is limited to the cost of material and parts required for repair only. Only the manufacturer at address on this certificate will determine in its sole and absolute discretion all warranty issues, and work claimed under warranty must be approved in writing by The Company prior to any repairs being started.

If repair is not feasible for any reason as judged by The Company our obligations under this warranty are limited to providing a replacement heater per the following schedule. For the 25 year warranty period the following pro-rated replacement charge will apply.

### **Schedule of charges for replacement of the complete heater.**

From 1 through 2 years	Company's then current list price less 100%
From 3 through 4 years	Company's then current list price less 70%
From 5 through 6 years	Company's then current list price less 40%
From 7 through 10 years	Company's then current list price less 25%
From 11 through to 25 years	Company's then current list price less 15%

All replacement heaters are FOB our factory unless otherwise specified in this warranty. The warranty period on any replacement heater is from the date of the sale of the original heater.

### **General Conditions of this warranty.**

The warranty contained herein shall be voided if the heater is not installed and operated as instructed in the owner manual. The warranty registration form, delivery checklist, and customer acceptance must be completely filled in and signed by the customer and dealer and submitted to The Company for this warranty to be valid. Heater must never be pressurized and pressurizing the heater voids this warranty. A properly qualified tradesperson/s should perform all installations. If chimney needs be extended an appropriately certified and approved insulated chimney must be used. Your dealer may charge you for a service call to do warranty work. Parts will be replaced on an even exchange basis.

## POLAR FURNACE MFG. INC. WARRANTY ACTIVATION FORM—DOWN DRAFT HEATER

### WARRANTY REGISTRATION FORM

Customer's Name: \_\_\_\_\_

Dealership Name: \_\_\_\_\_

Address: \_\_\_\_\_

Address: \_\_\_\_\_

City, State/Prov. Code: \_\_\_\_\_

City, State/Prov. Code: \_\_\_\_\_

Phone: (\_\_\_\_) \_\_\_\_\_

Serial No. \_\_\_\_\_

Date of Purchase: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

### DELIVERY CHECKLIST

\_\_\_\_\_ Review owner's manual.

\_\_\_\_\_ Explain required maintenance schedule.

\_\_\_\_\_ Describe installation methods and recommendations.

\_\_\_\_\_ Describe possible problems from using different types of wood.

\_\_\_\_\_ Review warranty and service requirements.

\_\_\_\_\_ No warranties are validated unless this form and registration are completed and returned.

\_\_\_\_\_ Identify safety hazards and demonstrate proper operation.

### CUSTOMER ACCEPTANCE

I have inspected the Polar Furnace heater with the customer and reviewed all items on the delivery checklist. I have thoroughly instructed the customer on the equipment identified herein and thoroughly reviewed the operator's manual. The customer has accepted responsibility for the operation and maintenance of the product identified herein.

Date: \_\_\_\_\_

Dealer's Rep. Signature: \_\_\_\_\_

The dealer rep. and I have inspected my new Polar Furnace heater and reviewed all items on the delivery checklist. The dealer rep. has reviewed the operator's manual with me and has thoroughly instructed me on the equipment herein. I assume full responsibility for the operation and maintenance of the product identified herein.

Date: \_\_\_\_\_

Owner's Signature: \_\_\_\_\_

A nominal fee may be charged for service calls. All sales are final. Heater approved for use with well-seasoned wood only. Suitability of use is the customer's decision. The customer is responsible for insuring conformance to local bylaws and regulations. A backup heating system is strongly recommended.

White—Polar Furnace copy	Yellow—Dealer copy	Pink—Customer copy
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## INTRODUCTION

The Polar Furnace G-Series Heaters are wood-fired, downdraft, hydronic heaters. The downdraft burning design allows for controlled combustion of wood which results in far lower smoke and particulate emissions and higher efficiency when compared to other designs.

### **!! NOTICE !!**

The Warranty Activation form is located on page 5. This form must be thoroughly completed and the white copy returned to Polar Furnace Mfg. Inc. to ensure product support and warranty activation.

G-Series heaters are tested and approved by CSA INTERNATIONAL to  
CSA/CSA-366.1-M91 and UL2523

G-Series heaters are tested to EPA test Method 28 WHH and are EPA Phase II qualified.

## **SAVE THESE INSTRUCTIONS**

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Keep this manual for as long as you own the Polar Furnace heater. Read and understand these instructions before installing or operating this heater.

## WARNINGS & CAUTIONS

**!!WARNING!!** All installations and operations must follow the applicable federal, provincial, state, and local codes for wiring, plumbing, chimney installation, chimney extension(if required) and firing of this unit. When the relevant local codes differ from this manual, the local codes take precedence.

**!!WARNING!!** Strictly maintain the following clearances around the heater to any combustibles including fuel storage. Front - 24", Right - 6", Left - 1", Rear - 6", Top - 2", Flue - 6".

**!!WARNING!! DO NOT** burn garbage, gasoline, engine oil, coal, tires, railroad ties or anything other than wood in the heater. Do not use chemicals or fluids to start the fire.

**!!WARNING!!** Burn wood only! Dry seasoned wood is preferable. The manufacturer does not recommend burning treated or contaminated wood. (i.e. railroad ties or pressure treated lumber)

**!!WARNING!!** All Polar Furnace heaters operate at atmospheric pressure. DO NOT, in any way, obstruct, block or plug the overflow/fill pipe located on top of the heater. DO NOT install a pressure relief valve. Open rear access cover before filling with water. This boiler should not be connected to an existing heating system unless a water to water or water to air heat exchanger is used.

**!!WARNING!!** Use of a raincap with an approved spark arrestor is required.

**!!WARNING!!** Most Polar Furnace heaters are installed outdoors. All clearances on door panel should be observed. Always keep area around and in front of fire door cleared from combustible materials. DO NOT store fuel within clearances listed on label.

**!!WARNING!!** Polar Furnace heaters are CSA certified for outdoors and indoors. When used indoors special care must be taken to insure the installation conforms to local installation requirements. Plan for make up air, ventilation of smoke when opening door, chimney clearances and heights, and clearances from combustibles. Consult local professionals. Field installations must satisfy CSA CAN/CSA-B365 installation code for solid fuel burning appliances as well as any other applicable standards or regulations. If extended chimney height is needed, use an insulated chimney system.

**!!WARNING!!** Installation should be completed by appropriately qualified individuals.

**!!WARNING!!** Never let small children play near or tamper with the heater. Only responsible adults should operate the heater. Outer surfaces may be hot during operation. Ensure children do not touch heater.

**RESPONSIBLE  
OWNERSHIP****Minimize Smoke Emissions. Burn Wisely.**

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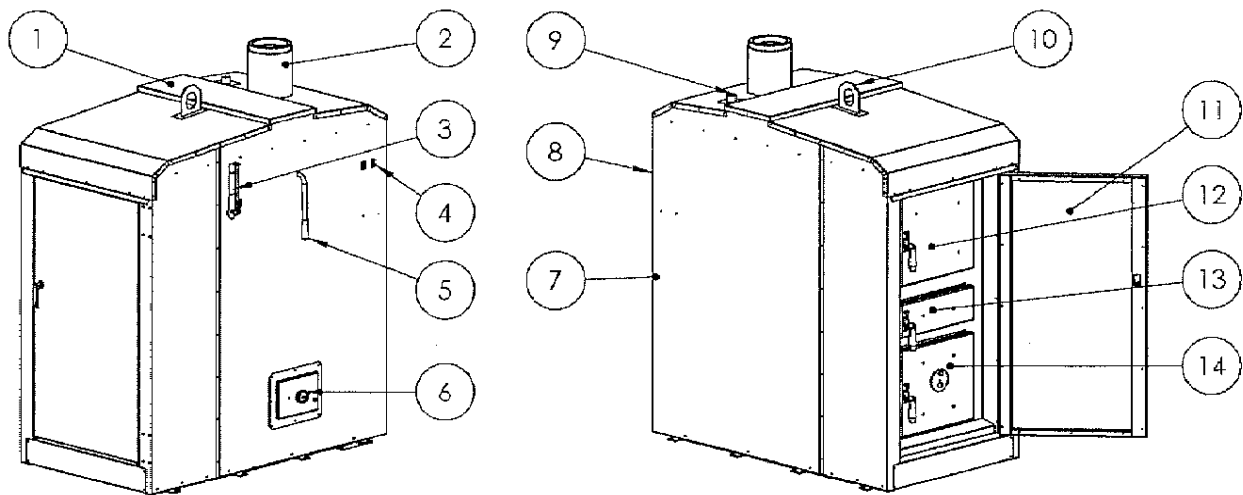
- Be concerned about smoke emissions and smoke odour from the heater.
- Consider prevailing wind direction when choosing a site location for the heater.
- Water can be piped a long distance with minimal heat loss. This is a good option to avoid smoke related problems.
- Don't burn garbage. Burn only well-seasoned firewood.

**Safety First!**

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- Be safety conscious.
- Clear ground around heater.
- Use non-combustible cement blocks, patio blocks or cement base under heater.
- Install the rain cap on the chimney. Use an approved spark arrestor.
- Use a good quality pipe for hot water distribution.
- **ALWAYS HIRE APPROPRIATELY QUALIFIED INSTALLERS.**

## HEATER COMPONENTS



Item #	Description
1	Heat Exchanger Access Cover
2	Chimney Hookup
3	Water Level Sight Gauge
4	Combustion Cycle ON/OFF Switch, Auxiliary Switch
5	Flue Cleaning Actuator Lever
6	Heat Exchanger Bottom Cleanout
7	Rear Bottom Access Panel—Plumbing Hookup, Damper Setting
8	Rear Top Access Panel—Fan Access, Electrical Access
9	Overflow/Fill Pipe
10	Lifting Hook
11	Main Outer Door
12	Loading Door
13	Ignition Door
14	Front Bottom Cleanout Door



## HEATER SETUP

All installation work must be completed by appropriately qualified personnel and must conform to all applicable standards, regulations and local codes (e.g. CAN/CSA-B365 Installation Code for Solid Fuel Burning Appliances).

### Heater Fire Clearances

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All G-Series Heaters are CSA approved to the following fire clearances. No combustibles should be stored within these measurements.

Front	24"
Back	6"
Left Side	1"
Right Side	6"
Top	2"
Chimney	6"

Consult with your insurance company to ensure that the boiler to building clearances are acceptable. Failure to do so may void insurance. The manufacturer assumes no liability in the event of damages to personnel or buildings.

### Indoor Installation

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Polar Furnaces are CSA certified for both indoor and outdoor installation. However, care must be taken whenever a heater is near or inside a building. When installed indoors, proper air supply is required for combustion and ventilation. Continuous air supply is mandatory. Installation must conform to all applicable codes and standards. Consult a heating professional.

### Chimney

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Chimney installations must conform to all applicable regulations and standards. All chimney extensions must be completed with approved prefabricated chimney pipe. The rain cap with spark arrestor must be installed at all times. Chimney extensions may require periodic cleaning.













## **Keep the Primary Air Holes Clear From Obstruction.**

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The primary air holes are located towards the bottom and along both sides of the fire chamber. Before loading the heater open the middle ignition door and use the scraper tool to clear coals and ash that may be covering the primary air holes. This will make the heater burn cleaner and more efficiently.

## **Disposal of Ashes**

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Ashes should be placed in a metal container with a tight fitting lid. The closed container of ashes should be placed on a non-combustible floor or on the ground well away from all combustible materials.

## **Shutting Down the Heater**

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The heater combustion cycle can be turned off manually by switching the combustion switch to the OFF position. This will not stop the combustion cycle from turning on when the loading door is opened. To completely shut down the heater, the main disconnect switch powering the heater must be turned off.

## **Fractional Load/Summer Use**

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A fractional (or partial) load is a very small heat load that may be placed on the heater during the spring, summer and fall months. An example of a fractional load would be when the heater is used to heat domestic water only during this period. In a fractional load-type situation, fill the chamber only with as much wood as needed to provide heat for the next several hours. For example, if a half chamber load of wood is needed to provide heat for the next several hours, fill the chamber only half way. This will help make the heater last longer. If possible, do not use the heater during summer months to provide heating for domestic hot water only. Use an alternate supply of heat for this purpose. The heater will last the longest if it is working hard. A tiny partial load like domestic hot water heating during summer is harder on the heater and can shorten its life. If using the heater in the summer for domestic hot water only add as little wood as possible when filling the heater. If you notice the ash at the bottom of the heater is wet or moist, stop using the heater for only a partial load.



## General Air Gate Adjustment Guidelines

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### Wood Moisture Content

Wetter wood generally will need more primary air and less secondary air

Drier wood generally will need less primary air and the same or more secondary air.

### Wood Size

Larger diameter logs will reduce the output rate of the heater. Smaller diameter or pieces that have been split smaller will increase the output rate of the heater. Larger logs will generally require less secondary air while smaller logs will generally require more secondary air.

### Soft Wood vs Hard Wood

Softer woods generally will burn faster and need more secondary. Harder woods will generally burn slower and require less secondary air.

## Is My Heater Burning Wood Properly?

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### Chimney Smoke

Good combustion is characterized by no visible smoke coming from the chimney. If the heater is smoking when the air gates are set to the factory settings it is highly likely that wet wood is being burned.

### Secondary Flame Characteristics

How well the heater is burning can be gauged by viewing the secondary flame through the peep hole in the front bottom door. During optimal combustion this flame will have at least some blue flame in it. If you see blue the heater is well set. Depending on which part of the combustion cycle the heater is in, there will be more or less blue flame. When there is a heavy bed of coals in the fire chamber the flame should have more blue than orange and yellow. When the heater has just started burning on a fresh load of wood there will be very little blue flame and mostly orange and yellow flame.

### Ceramics Glow

If the combustions cycle is long enough the ceramics will begin to glow bright orange from the high temperatures in the secondary chamber. The glow from the bricks may make the blue flame hard to see during the day time and it may seem that there is no flame at all in the secondary chamber.

## MAINTAINING THE HEATER

### General Maintenance

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Proper maintenance of the heater is important for reliable, efficient and safe operation. Proper maintenance will also result in a longer service life of the heater. There are daily, monthly, and end of season guidelines that should be understood and followed.

### Tools Needed for Operation and Maintenance

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To operate and maintain the heater the following tools are needed.

- A steel poker or rod.
- Heat exchanger brush (included with heater).
- Scraper/ash puller (included with heater).
- Ash shovel (included with heater).

### Daily Maintenance

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Every day when loading the heater with wood

- Stir the ashes in the corners of the fire chamber with the poker or scraper/ash puller every time you load the heater. If left unstirred, the ash in the corners of the fire chamber can become damp and corrosive.
- Use the scraper tool and/or ash shovel to pull aside or remove the ashes that may be covering the combustion holes along the bottom side edges of the fire chamber.

### Weekly Maintenance

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At least once a week, check the water level in the sight glass. Keep the heater as full of water as possible. If you are constantly adding water you may have a leak in the system. It is important to locate and repair this leak. Regularly adding water to the heater can reduce the life of the heater. At least once a week, work the flue cleaning lever on the side of the heater back and forth several times. This will maintain the heater's efficiency.

## Maintaining Tight Door Seals

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Maintaining tight door seals will help keep the heater performing properly. The fiberglass rope used to seal the fire chamber doors should be inspected regularly. If a glass rope becomes too flattened and/or worn it should be replaced.

A leaky poor door seal results in slow but steady combustion of wood during the off cycle. This results in more wood being used which reduces the overall efficiency of the heater.

## Anode Rod

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The heater is protected by a sacrificial anode rod. A sacrificial anode rod works by “sacrificing” itself and corroding first before the heater steel corrodes. Over time corrosion will wear the anode rod down until it is completely sacrificed (or used up). In order to keep protecting the heater from corrosion the anode rod need to be replaced from time to time. The length of time the anode rod will help protect the heater will vary depending on the chemistry of the water. It is recommended that the anode rod is checked once a year and replaced if it has worn down to less than 3/8 inch diameter. The anode rod can be accessed by removing the top heat exchanger cover. The rod can be loosened and removed with a wrench or socket ratchet set.

## Creosote

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If creosote builds up inside the front bottom cleanout door, on the heat exchanger tubes, on the fan or in the chimney, the heater is likely not working properly. Consult with the local dealer to get the heater working properly.

## WATER TESTING & TREATMENT

### Overview

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Properly testing and treating the water in the heater water jacket is important to control waterside corrosion. Untreated or improperly treated water can reduce the life of the heater. The water in the heater should be tested and if necessary treated to maintain proper Nitrite and pH levels. A Startup Water Treatment Kit is included with each heater. Further treatment supplies can be purchased through the Topline Distributing online store. To find the online store go to [www.polarfurnace.com](http://www.polarfurnace.com) and click on the TOPLINE STORE link.

### Drawing Water for Testing

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#### **!!CAUTION!!:**

Water in water jacket could be very hot. Draw water with Caution!!

#### **IMPORTANT!!**

All water samples drawn for testing should be allowed to cool to room temperature before testing with test strips.

#### **Collecting Water**

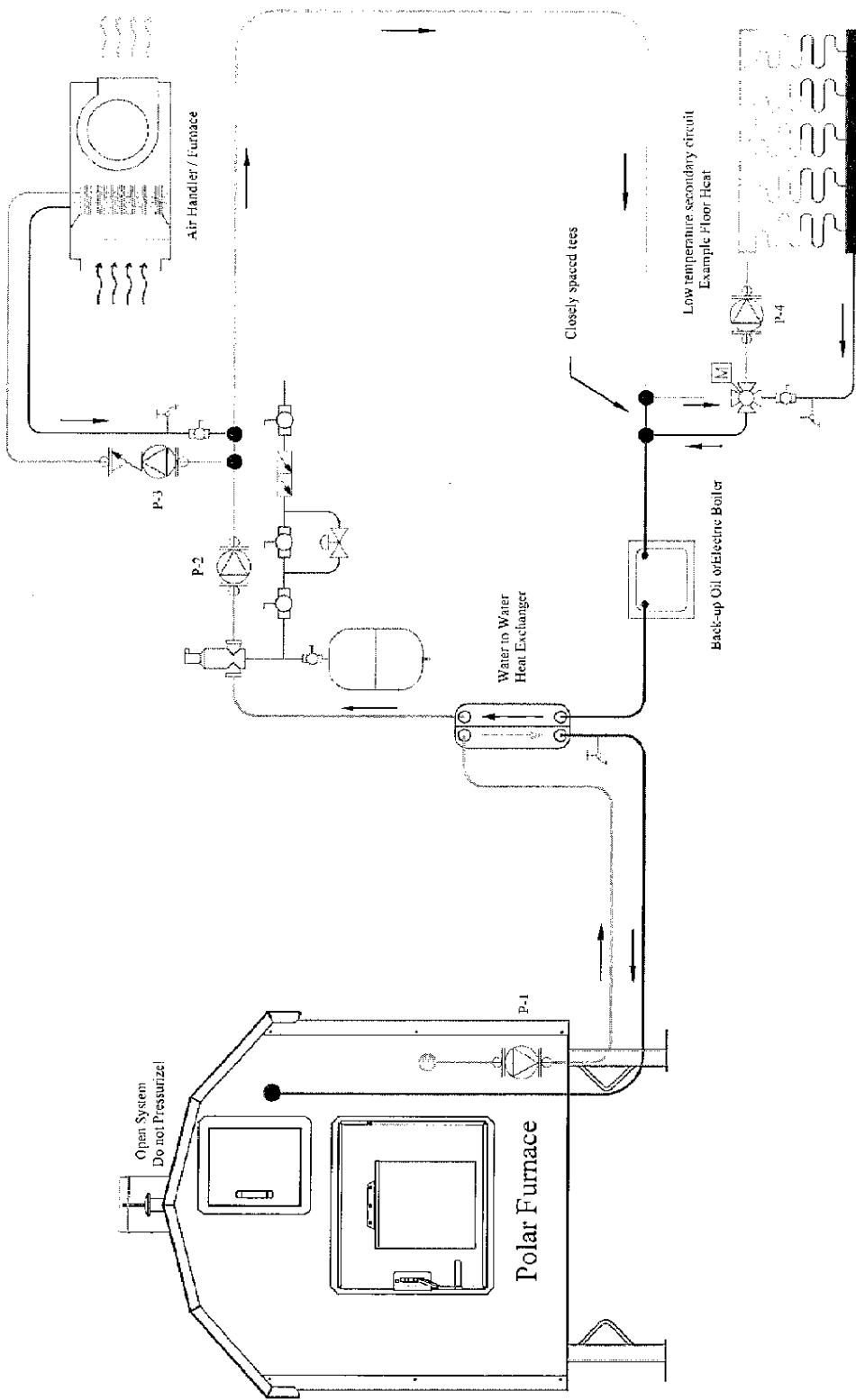
Water can be drawn from the water jacket at the water level sight gauge. Open the valve and unclip the clear plastic tube from the holder and bend the clear tube downwards. Let water run from the tube for 10 seconds. Don't collect the first water draining from the tube; after 10 seconds direct the water into a clean container. Collect about 10 ounces of water.







# INSTALLATION EXAMPLES



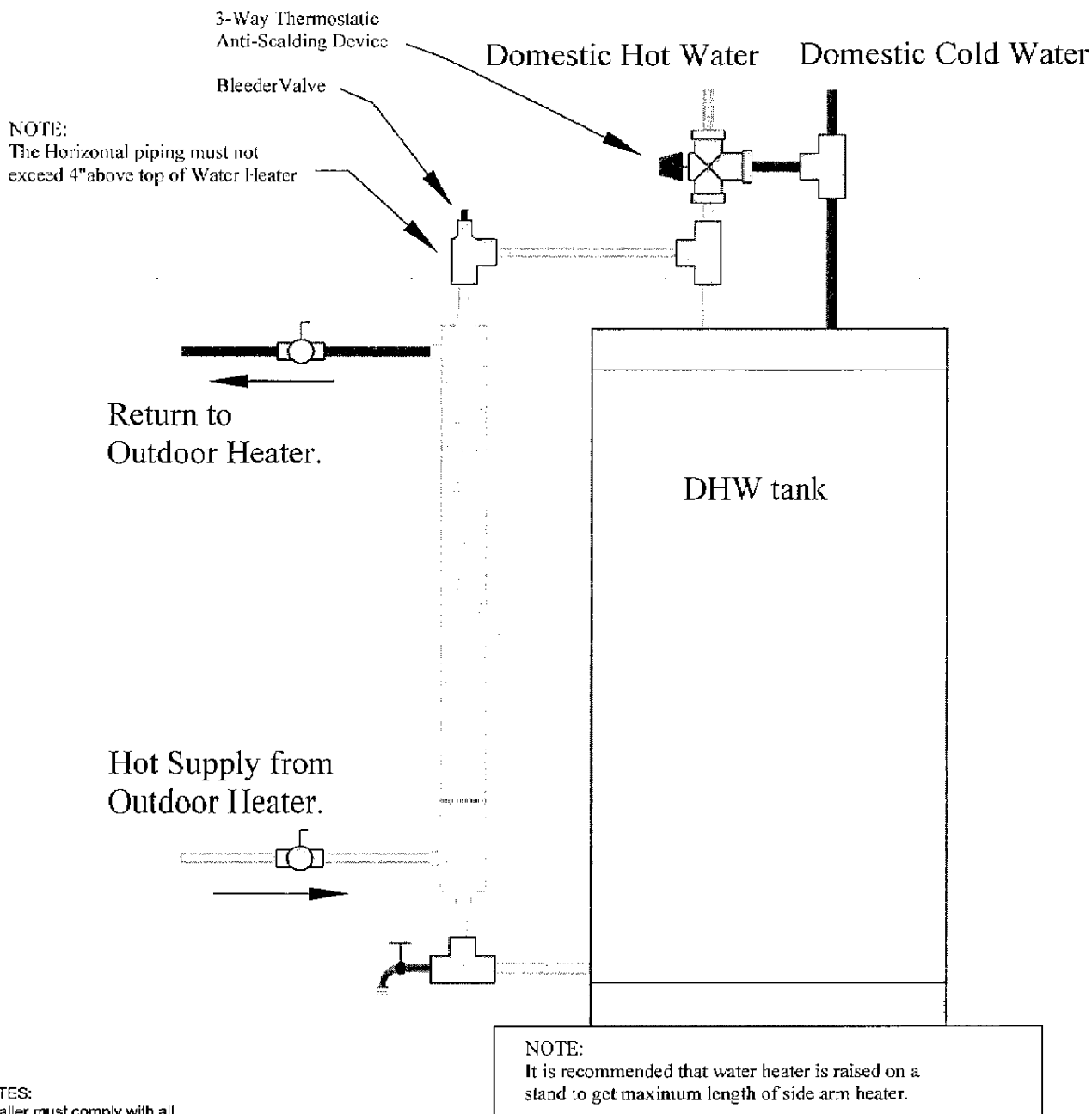
- P-1 Circulates constantly
- P-2 Circulates constantly
- P-3 Circulates on thermostat call
- P-4 Circulates on thermostat call

NOTES:  
 Installer must comply with all applicable codes and regulations.  
 For illustration purposes only.

For service and support on your Polar Furnace contact your local dealer



# Electric Hot Water Tank: Sidearm Installation Example



NOTES:  
Installer must comply with all applicable codes and regulations.  
For illustration purposes only.

# Notes:

## Monthly Maintenance

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Approximately once a month (depending on firing rate and wood type) most of the ash and coals that have accumulated throughout the heater should be removed. These can be removed through the front ignition door and through the side cleanout door.

**NOTE:** Leave 1 or 2 inches of ash and coals at the bottom of the fire chamber to protect the ceramics from getting damaged by falling logs during loading.

## Annual/End of Season Maintenance

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Remove the fire chamber skirting/liner by lifting the pieces up and off the retaining pins/hangers. Remove any heavy creosote buildup behind the skirting. It is not necessary to clean the creosote off down to the bare metal. Hard baked creosote will actually protect the steel against corrosion. Remove any creosote which may be plugging the primary air supply ports located towards the lower part of the fire chamber. There are 3 ports/side. Replace any skirting that is heavily warped or which is worn thin.

Check and replace the anode rod if necessary. (See “Anode Rod” section below)

Check water to insure proper nitrite and pH levels. Adjust levels if necessary. See “Water Testing and Treatment” section for water testing and treating information. Water test and treatment kits can be purchased from the Topline online store.

## End of Season Preparation

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Creosote and/or ash mixed with water produces a corrosive acid. This acid can form inside the fire chamber during the off season. It is important that the heater be properly prepared for the off season period when the heater is idle to avoid formation of this acid. All the ash and coals should be removed from all the chambers and heat exchanger. (If possible the chimney should be sealed off with a plastic cap or wrap to insure no water gets into the heater. Insure all doors are tightly closed.

### **!!REMEMBER!!**

**ASH + MOISTURE = CORROSIVE ACID.**

**CORROSIVE ACID WILL CORRODE AND DAMAGE THE HEATER. REMOVE ALL THE ASH AND COALS AND CREOSOTE FROM THE FIRE CHAMBER WHENEVER THE HEATER IS SHUT DOWN FOR MORE THAN 3 WEEKS.**



## Operating Temperature

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The water temperature in the water jacket should always be above 150°F. Maintaining proper water temperature in the heater is important for two reasons:

1. Proper combustion—cool water cools the combustion process which reduces the combustion efficiency.
2. Heater longevity—cool water causes condensation to form on the fire-side surfaces. This condensation results in creosote buildup throughout the heater. Moisture or water mixed with ashes is corrosive and will shorten the life of the heater.

## Setting the Primary and Secondary Air Gates

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The air gates regulate how much primary and secondary air gets delivered to the fire. The primary air gate regulates the amount of air delivered to the primary fire chamber. The secondary air gate regulates the amount of air delivered to the secondary chamber. (See page 25 for air gate diagram) By changing the air gate settings the heater BTU output rate can be increased or reduced, also different amounts of primary and secondary air may be needed depending on the type and moisture content of the wood being burned. The G-Series has a very stable combustion system by design. As long as the moisture content of the wood being burned doesn't change dramatically, the air gates will rarely need adjusting.

### Air Gates Location

The primary and secondary air gates are located inside the rear bottom access panel (item number 7 on page 15).

### Factory Settings

At the factory, the primary gate is set to 50% open and the secondary gate is set to 20% open. These settings will work well in most situations provided properly prepared and well-seasoned wood is used. See the "Wood Fuel Consideration" section on page 27 for information on which wood is suitable as fuel for the heater.

## Starting and Operating the Heater the First Time

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Before starting the heater for the first time, the installation should be inspected and approved by an individual with appropriate qualifications (electrician, plumbing and/or heating contractor etc.) The heater and all heating system piping must be properly filled with water.

When starting the heater for the first time after purchasing or when starting for the first time at the beginning of a heating season, follow the following steps:

1. Switch the fan switch to the **ON** position.
2. Place a layer of small pieces of wood kindling and newspaper onto the fire chamber floor. Do not plug the slot at the bottom of the fire chamber.
3. Add at least 12 inches of smaller firewood no larger than 2" across on top of the kindling.
4. Fill the fire chamber as full as desired with regular pieces of firewood.
5. Close the top loading door and open the front middle ignition door.
6. Light the newspaper/kindling on the fire chamber floor.
7. Leave the middle door open a crack until the kindling has caught well.
8. After kindling has caught well close the front middle ignition door.
9. Insure all 3 front doors are closed tightly and close outer door.

## Stoking the Heater

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When filling the fire chamber, place the wood lengthwise inside the fire chamber. Stack the wood inside the chamber as neatly as possible. Lay the first few piece into the fire chamber carefully since dropping them can damage the ceramics. Never place wood into the secondary fire chamber (front bottom door). See the "Wood Fuel Consideration" section on page 27 for information on which wood is suitable as fuel for the heater.

## Managing the Ash/Coal Bed

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After using the heater for several days you will notice a buildup of ash and coals at the bottom of the fire chamber. When left undisturbed for several more days, this layer can become a hard insulating layer which will negatively impact the performance of the heater. This layer must be stirred on a regular basis. **The ash building up in the corners at the bottom of the fire chamber must be stirred daily or at every loading.** If the ash buildup becomes excessive part of it can be removed. Always leave an inch or two of stirred ash and coals in place to protect the bricks from logs dropping onto them during loading.

## The Combustion Fans Have Just Shut Off

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Once the heater reaches the point where the water temperature is high enough, the controller shuts off the combustion fans. When the fans stop blowing, actuators also close off the air supply openings. This stops any new air and oxygen from getting into the fire chamber. At this point the fire chamber is still extremely hot. The heat in the fire chamber continues to bake the wood and it continues to break down into combustible smoke and gases. Without oxygen these combustible hot gases do not burn off and accumulate in the fire chamber. When a door is opened, fresh air and oxygen mix with the hot combustible gases which then ignite and explode. **Always keep face and body well away from door when opening the load door, ignition door, bottom and side cleanout doors.**

## Hot Surfaces

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There are surfaces on the boiler that get hot. Always wear protective leather gloves when working on or around the heater, when loading the heater and when performing maintenance on the heater.

## Smoke Inhalation / Eye Irritation

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Burning wood produces smoke. Avoid inhaling smoke. Whenever there is smoke, wait until smoke has cleared before proceeding to load the heater or perform maintenance work.

## !! DANGER !!

**NEVER PRESSURIZE THIS HEATER!** NEVER block or obstruct the overflow/vent pipe located on the roof of the heater (item #9 on page 15). Pressurizing this heater could result in very serious injury and damage to the heater and property!!





## Controls Functionality

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### Combustion Switch

This ON/OFF switch switches the combustion cycle on or off. When the switch is in the “OFF” position the combustion cycle will not start even when the controller is signaling for the combustion cycle to start. When the combustion switch is at the “ON” position the combustion cycle will start but only if the temperature control aquastat is also signaling the combustion cycle to begin.

#### **!! WARNING!!**

**Switching the Combustion Switch to OFF does not cut off all power to the fan and actuators. Disconnect the main power supply before servicing the fan and/or actuators.**

### Auxiliary Switch

Used to switch an auxiliary or optional item ON or OFF. (e.g. outdoor light)

### Control Aquastat

The control aquastat is used to set the water temperature at which the heater switches the combustion fan off and at which water temperature the combustion fan switches on during normal operation. The control aquastat is set to 185°F with a 15 degree differential at the factory. In most installations this setting will work well. The control aquastat should never be set higher than 185 or lower than 175.

### High Temperature Aquastat

The high temperature aquastat is used to protect the heater against over heating if the control aquastat should fail. If the high temperature set point is reached the fans are switched off. The high temperature shutdown aquastat is factory set to 195. It should never be set higher than 195 and should be at least 8 degrees higher than the control aquastat set point.

### Temperature Gauge

Provides a reading of the water temperature inside the water jacket.













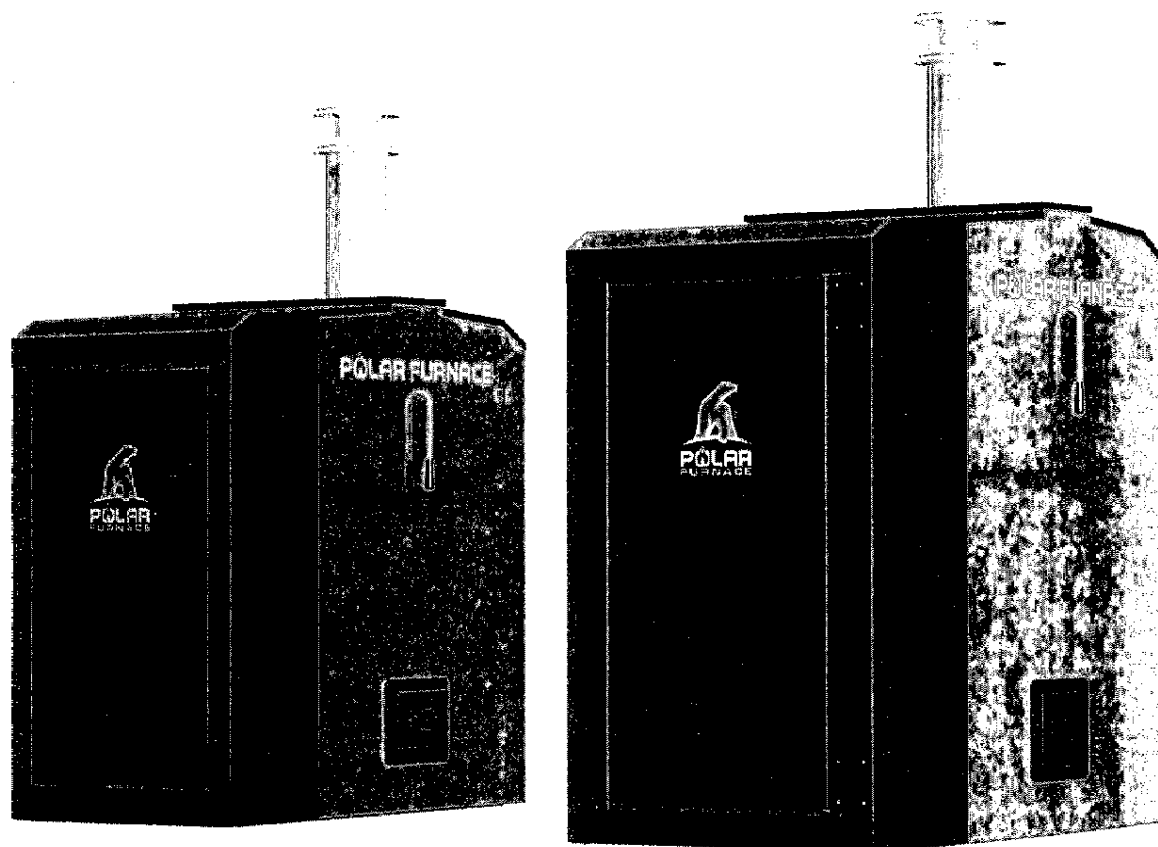






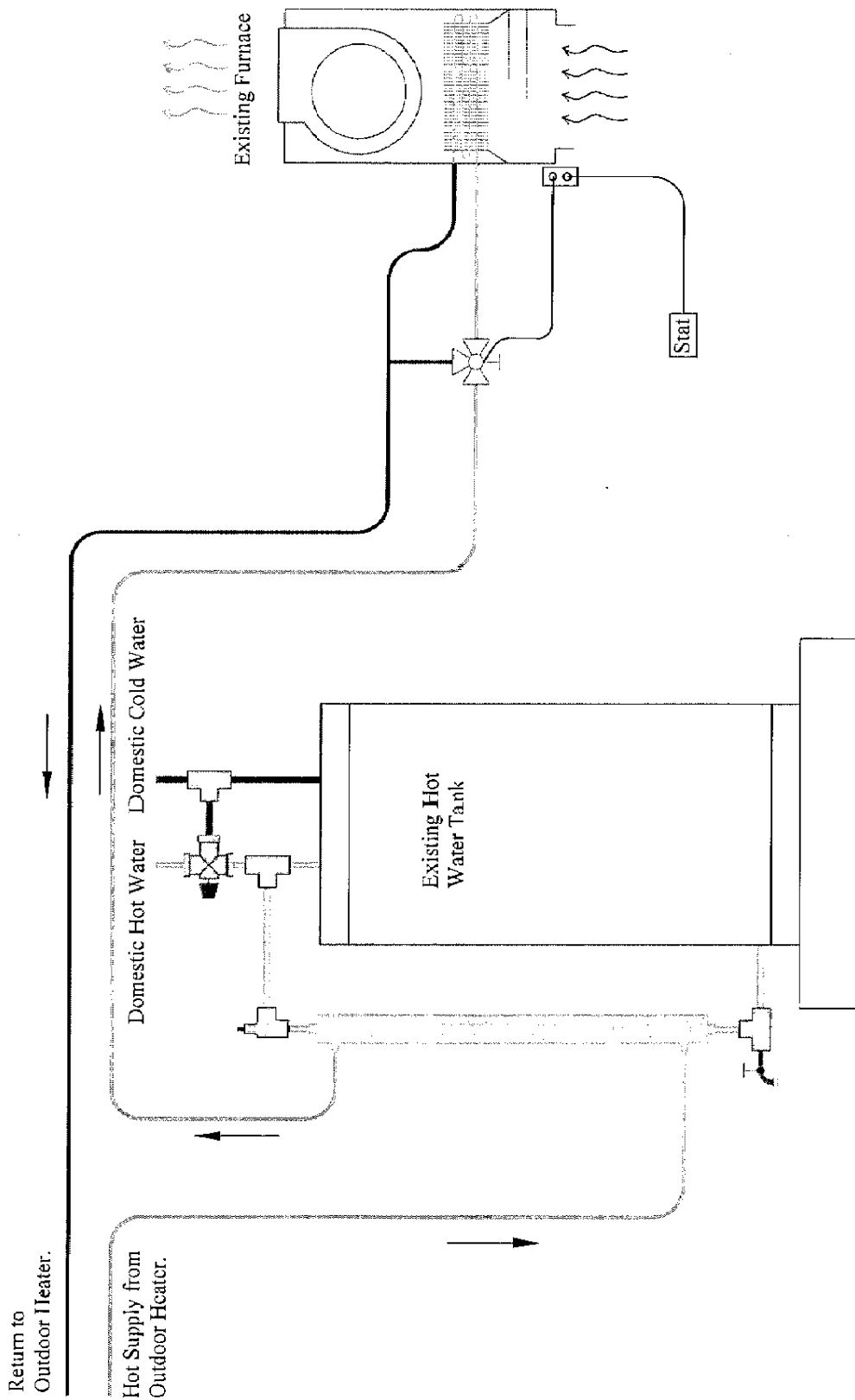






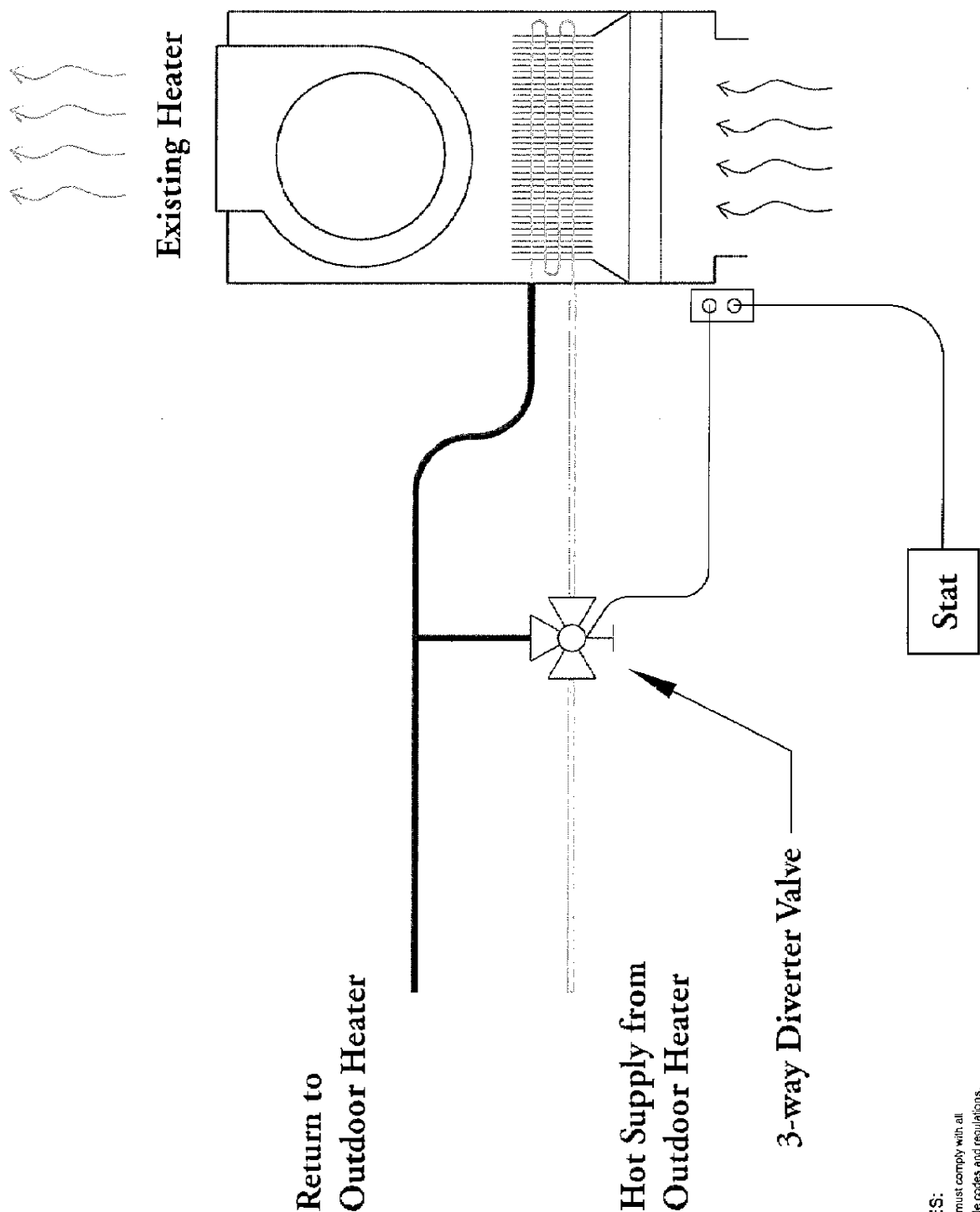
**IMPORTANT:** Read and fully understand this manual prior to installing and/or operating a Polar Furnace heater.

# Hot Water Tank Side Arm and Existing Heater Installation Example



NOTES:  
 Installer must comply with all applicable codes and regulations.  
 For illustration purposes only.

# In-House Piping Example for Forced Air



**NOTES:**  
 Installer must comply with all applicable codes and regulations. For illustrative purposes only.









## Nitrite Treatment

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### **Initial Nitrite Treatment** (after filling the water jacket for the first time)

The Polar Furnace Startup Water Treatment Kit includes several white “pucks”. These pucks are Sodium Nitrite. Each puck will treat approximately 60 gallons of water. Dissolve each puck individually in a 1 gallon container or pail. When the pucks have fully dissolved pour the water into the overflow/vent pipe on top of the heater.

### **Determining the Nitrite level in the water**

Note: When testing for the nitrite level for the first time (after completing the initial treatment) let the water circulate for 24 hours before completing this test.

After the water sample has cooled to room temperature dip the Nitrite test strip into the water sample drawn from the heater for 2 seconds. Then remove and shake. Hold the strip level and after 1 minute match against the nitrite level color chart. The nitrite level must be between 600 and 1200 ppm.

### **Adjusting the Nitrite Level Up**

If the nitrite level is lower than 600 ppm dissolve another half puck of nitrite treatment in a 1 gallon container or pail and pour into the overflow/vent pipe. Circulate the water for at least 24 hours before testing for the new nitrite level.

### **Adjusting the Nitrite level Down**

If the nitrite level is too high drain 20 gallons of water from the water jacket and refill with fresh untreated water. Circulate the water for at least 24 hours before testing for the new nitrite level.

## Water pH Levels

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### **Determining the pH level of the water**

NOTE: Before filling the water jacket check the pH of the water to be used to fill the water jacket to insure it is within the allowable range. Use only water that has a pH level within the allowable range.

After the water sample has cooled to room temperature dip the pH test strip into the water sample drawn from the heater for 2 seconds. Then remove and shake. Hold the strip level and after 1 minute match against the pH level color chart. The pH must be between 7 and 9.9.

### **Adjusting the pH level Up or Down**

If the pH level is not within the allowable range after filling the water jacket, treatments kits for adjusting the pH level up or Down can be purchased from the Topline online store.

