



RENEWABLE ENERGY FURNACES

# OWNERS MANUAL

FURNACE MODELS HE-1100, HE-2100



MADE IN THE USA

**CONGRATULATIONS.** You now own a Hawken.  
A furnace designed with **your needs** in mind.

Use this manual for safety, installation and maintenance of your new Hawken.



**20 YEAR LIMITED WARRANTY**

All Hawken furnaces are covered by the industry-leading Hawken Energy warranty. This warranty covers the furnace against defects in workmanship for a period of 20 years (*view entire warranty on page 25*).

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## SAFETY

### DANGER

- › Risk of fire, burns and explosion. Do NOT burn garbage, tires, plastic or rubber products, treated wood, naphtha, gasoline, drain oil, lighter fluids, or other flammable liquids.

### WARNING

- › Do not pressurize this furnace. Do not cover vent pipe with anything that seals the pipe.  
A water level indicator is available for purchase that fits in this pipe, but it will not seal the pipe if unaltered.
- › Never operate furnace when water level is not completely full.
- › Do not operate furnace with door open, except for brief periods when loading wood and removing ash. Do not leave furnace unattended with door open.
- › This furnace has a safety feature installed to prevent overheating. If water temp reaches 190 degrees, this safety feature will disable blower fan and light. If no power to fan and light, press red reset button in rear of furnace near aquastat.
- › Never operate furnace without a grounding rod properly installed at furnace.
- › Do not store fuel or other combustible material within a minimum installation clearance of ten feet from furnace.
- › **DO NOT** install or operate, nor allow others to install or operate furnace without first reading, understanding and following the Owner's Manual.

### CAUTION

- › Hot surfaces. Do not touch during operation. Keep face away from door area.
- › Always keep children away.
- › Load fuel carefully or damage to furnace may result. Always take care to not allow hot coals or sparks from spilling out. Load wood carefully to avoid injury to hands and fingers that may come in contact with furnace opening.
- › Do not overfill furnace. Do not allow burning wood or coals to touch door or door frame.
- › Always remove ashes into a covered, non-combustible container. Do not allow ash level to build up above bottom door frame.
- › Always comply with all applicable codes and regulations.
- › Install on non-combustible flooring with adequate support.
- › Installation clearances – 10 feet from combustibles.
- › Do not store wood or combustible material within installation clearances.
- › Auxiliary power generator may be used in the event of a power failure to prevent freezing.

## DO NOT VOID YOUR WARRANTY

To keep your warranty valid, you must do the following:

- › Read, understand and follow your Owner's Manual.
- › Do not burn garbage or any other unspecified fuels. Burning such fuels causes damage to outdoor wood furnaces and will void your warranty.
- › Properly install a grounding rod at the furnace.
- › Follow proper water treatment and testing procedures.
- › Only operate furnace when water level is completely full.
- › Pump must run continuously whenever furnace is being used.
- › Never operate furnace without an approved chimney cap.
- › Install Hawken water filter kit on water loop (indoors) and clean regularly.
- › Submit Warranty Registration to Hawken Energy within 15 days of purchase.
- › Install furnace according to Owner's Manual and use only Authorized Hawken parts and accessories.

*Note: Check the Hawken website for periodic product updates and service bulletins. Visit [www.HawkenEnergy.com/servicebulletins/](http://www.HawkenEnergy.com/servicebulletins/) at least semi-annually and follow any and all instructions listed. This web address will not contain any information until November 2008 at the earliest.*

## FINDING THE BEST LOCATION FOR YOUR HAWKEN

When identifying the ideal location for your Hawken, please consider the following:

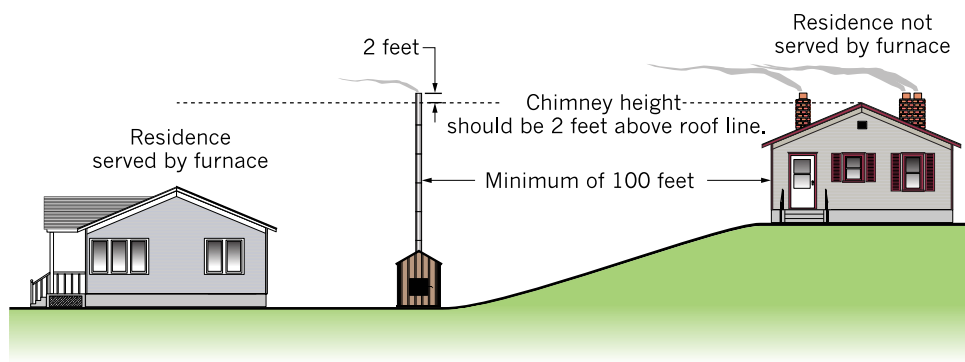
- › Review the HPBA Best Burn Practices (see diagram on page 4).
- › When possible, have the furnace door open towards prevailing winds. This helps disperse the smoke while loading furnace.
- › When possible locate furnace 30 to 50 feet from any structure. Consult with your insurance company for minimum distances.
- › Always install furnace with a Hawken authorized chimney cap to reduce heat loss, keep rain out, to serve as a spark arrestor, and to disperse smoke.
- › Locate furnace so that prevailing winds will not cause a nuisance for neighbors. Protect your right to burn wood!
- › When possible, locate furnace downwind from nearby buildings.
- › Install on non-combustible flooring with adequate support. Hawken furnaces do not require a cement slab. Furnace feet may be set on 4-inch thick header blocks that are level, centered, and properly supported.
- › Installation clearances – 10 feet from combustibles.

- > Do not store wood or combustible material within installation clearances.
- > Although outdoor prevailing wind and smoke considerations should be given first priority, your outdoor furnace location selection may also minimize the amount of purchased pipe required. Authorized Hawken underground pipe loses very little heat, so longer distances will not cause significant heat loss, but reducing distance will reduce cost of purchased pipe.
- > Finally, keep in mind that the underground pipe must enter the home or building to be heated, and plan for this accordingly.

## OUTDOOR WOOD FURNACE BEST BURN PRACTICES

1. Read and follow all operating instructions supplied by the manufacturer.
2. **FUEL USED:** Only those listed fuels recommended by the manufacturer of your unit. Never use the following: trash, plastics, gasoline, rubber, naphtha, household garbage, material treated with petroleum products (particle board, railroad ties and pressure treated wood), leaves, paper products, and cardboard.
3. **LOADING FUEL:** For a more efficient burn, pay careful attention to loading times and amounts. Follow the manufacturer's written instructions for recommended loading times and amounts.
4. **STARTERS:** Do not use lighter fluids, gasoline, or chemicals.
5. **LOCATION:** It is recommended that the unit be located with due consideration to the prevailing wind direction.
  - Furnace should be located no less than 100 feet from any residence not served by the furnace.
  - If located within 100 feet to 300 feet to any residence not served by the furnace, it is recommended that the stack be at least 2 feet higher than the peak of that residence.
6. **Always remember to comply with all applicable state and local codes.**

### Chimney Height Installation Scenario



## PREPARING THE LOCATION FOR YOUR HAWKEN

**When preparing the location for your furnace, please consider the following:**

- When possible, install underground pipe before delivery and placement of furnace. This simplifies the placement process.
- If installing furnace on 4" thick header blocks, see foot dimensions (page 7) for proper placement of blocks.
- If installing furnace on a cement pad, it is recommended to install underground pipe before pouring cement pad. Make sure to leave a hole in cement pad (minimum 12" square) between rear legs for underground pipe to connect to rear of furnace.
- Use only Hawken authorized underground insulated pipe.

## HAWKEN INSTALLATION TIPS

Outdoor furnace installation requires mechanical expertise. Be sure your installer is properly authorized and trained to perform your installation. Always comply with all applicable codes and registration. Observe all safety precautions.

The installation process involves the use of heavy machinery, tools and other risk factors that may cause injury or death. Be sure that proper safety measures are taken so as to prevent any such injury or death. The following installation information only contains helpful installation tips, and is not a complete step-by-step installation guide inclusive with every conceivable safety warning and caution. Proper and safe installation procedures must be followed by the customer and installer. Hawken Energy, Inc. is not responsible for, nor liable for any injury resulting from the installation or improper operation of any outdoor furnace.

**Outdoor furnace installation involves the following TEN basic steps:**

1. Underground pipe installation
2. Furnace placement
3. Back of furnace electrical wiring
4. Back of furnace primary line hookup
5. Back of furnace second line hookup (optional)
6. Indoor filter system
7. Indoor fill kit
8. Hot water system interface (optional)
9. Indoor heating system interface
10. Additional line heating system interface (optional)

Please consider the following installation tips corresponding to the following steps:

## 1. Underground pipe installation

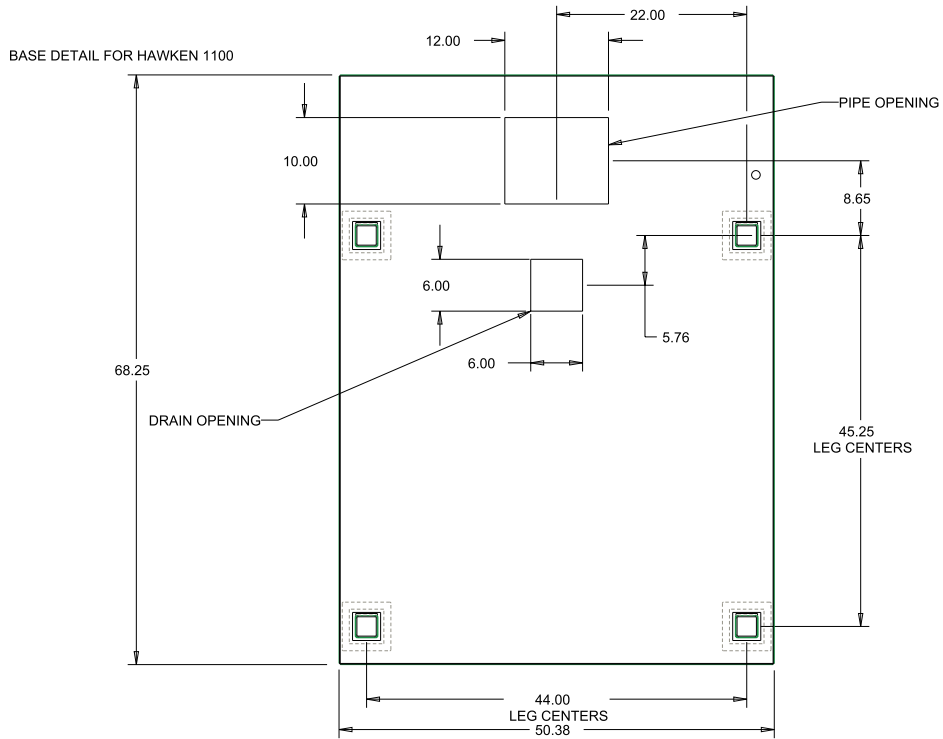
- > Have all underground wires, pipes, cables, etc. marked prior to digging trench.
- > Dig a trench between the furnace location and the building to be heated.
- > A Ditch Witch or similar equipment may be used to dig this trench. Make sure the trench is at least 4.5 inches wide, and two feet deep.
- > Place the electrical wire in the trench before placing underground pipe in trench.
- > Use underground wire that meets the following specifications: 2/C #14 w/GND Type UF Cable.  
Note: Direct burial cable must be buried a minimum 18" below grade per 2005 NEC.
- > Identify where underground pipe will enter the building(s) to be heated and drill hole large enough for 4.5" (outside dimension) underground pipe to pass through foundation or wall.
- > DO NOT REMOVE BLACK PLASTIC COVER of underground pipe outside building where pipe enters building. The underground pipe should pass through the wall intact (complete with black outer cover). This enables spray foam to seal between the building wall and the black underground pipe cover, AND this prevents water from entering underground pipe.
- > Seal gap between hole and underground pipe black cover to prevent moisture from entering building.
- > Where underground pipe emerges from underground at the location of the furnace, be sure to leave at least five feet of pipe exposed above the ground to ensure a proper connection.
- > After pipe is placed in trench and all other steps have been taken, backfill.
- > Remember that heat escapes from the earth through the path of least resistance. Snow may melt over this trench for one or two winters after digging the trench – this does not mean that heat is escaping from the underground pipe. Rather, heat is escaping the dirt through the path of least resistance – where the earth was disturbed when the trench was dug.

## 2. Furnace placement

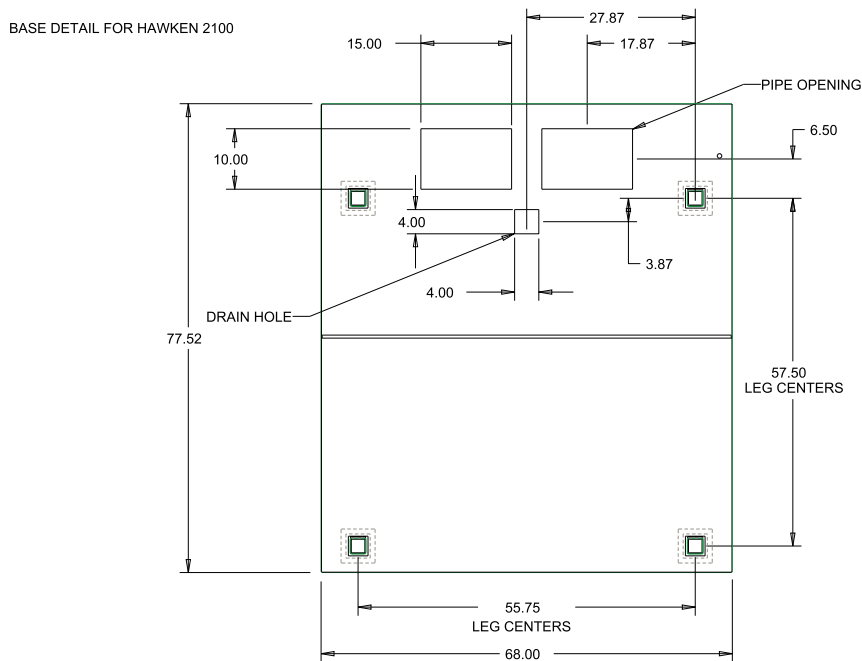
- > When placing furnace, make sure to have underground pipes in place while lowering furnace. Pipes must be fed through hole in belly pan of furnace while furnace is lowered into place.
- > Make sure furnace is level, and door is facing prevailing winds.
- > Keep combustible material outside of installation clearances.



### 3. Foot Dimensions for Hawken 1100



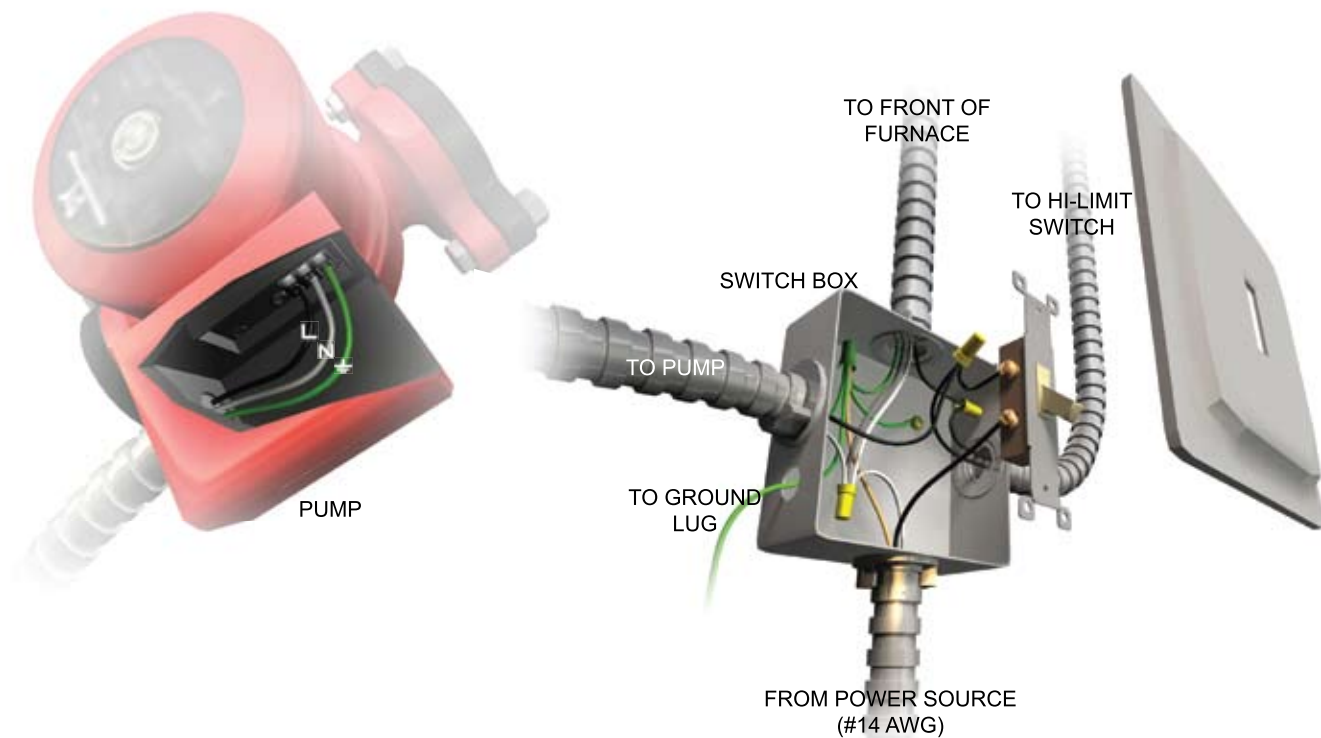
### 4. Foot Dimensions for Hawken 2100



## 5. Back of Furnace Electrical Wiring

- > See "Back of Furnace Electrical Wiring" diagram below.

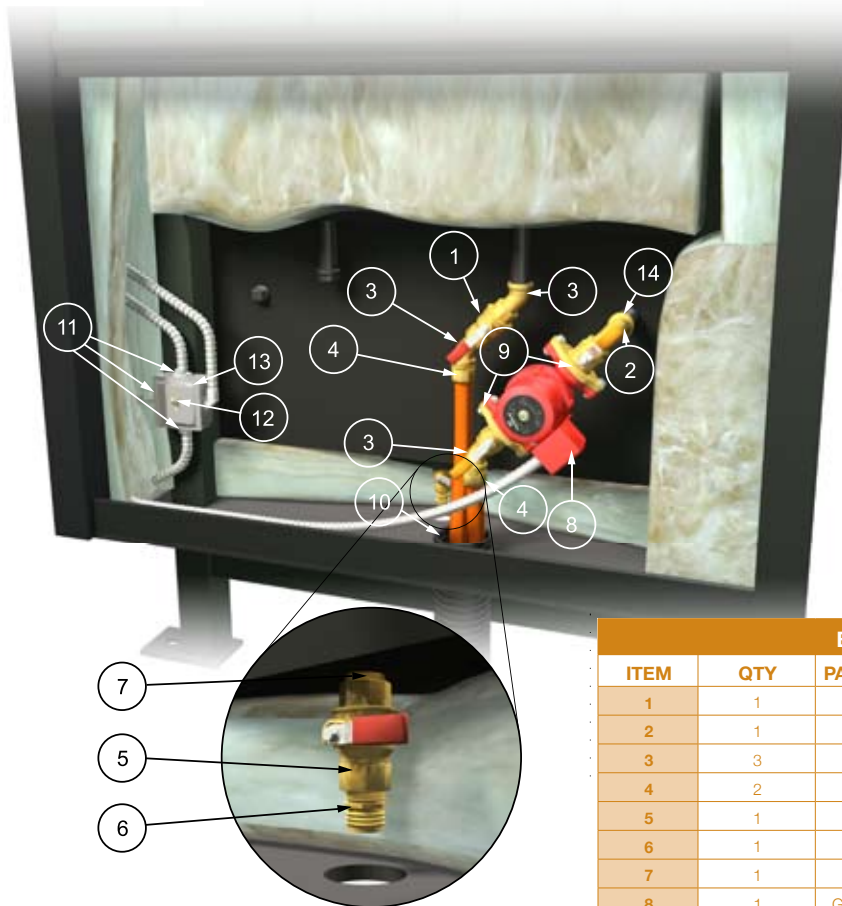
### SECOND LINE KIT ASSEMBLY



## 6. Back of furnace primary line hookup

- > Place water level indicator in vent tube located at the peak of the roof towards the front of the furnace. Have water level indicator face towards the front for easy, daily inspection.
- > See “Back of Furnace Kit Assembly” diagram below.
- > Make sure pump is properly installed to prevent cavitation – pump shaft must be horizontal. (See Assembly diagram below for more information.)

### BACK OF FURNACE KIT ASSEMBLY



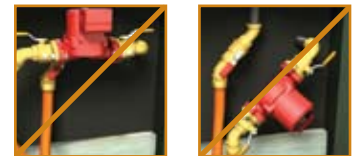
#### IMPORTANT

Pump should be mounted so that the pump shaft is parallel to the ground.

#### CORRECT



#### WRONG



#### BILL OF MATERIALS

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	101-025	1" BALL VALVE
2	1	310-045	1" BRASS 90° STREET ELBOW
3	3	310-065	1" BRASS 45° STREET ELBOW
4	2	988120	K1-1" X 1" MPT
5	1	101-024	3/4" BALL VALVE
6	1	BHU221212	3/4" MPT x 3/4" MALE HOSE ADAPTER
7	1	311-080	3/4" BRASS CLOSE NIPPLE
8	1	GRUP26-99F001	BRUTE HIGH FLOW 1/6 HP PUMP
9	2	101-075	1" BRASS ISOLATION VALVE - FLANGED
10	1	UPSF	SPRAY FOAM
11	6	46650	ROMEX CLAMPS
12	1	6X280	SWITCH
13	1	5AA23	SINGLE SWITCH BOX COVER
14	1	311-104	3" PIPE NIPPLE
15	2	988098	K1-90 DEGREE ELBOW (IN HOME USE)

## 7. Back of Furnace Second Line Hookup (optional)

- > If a second line will ever be needed, purchase a "Second Line Kit", install the components and leave the ball valves closed until the second line is needed. Otherwise, the furnace must be drained in order to add the second line. See "Second Line Kit Assembly" instructions below.

### SECOND LINE KIT ASSEMBLY



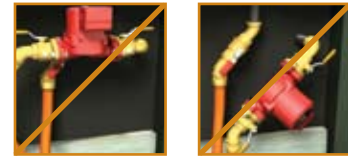
#### IMPORTANT

Pump should be mounted so that the pump shaft is parallel to the ground.

#### CORRECT



#### WRONG

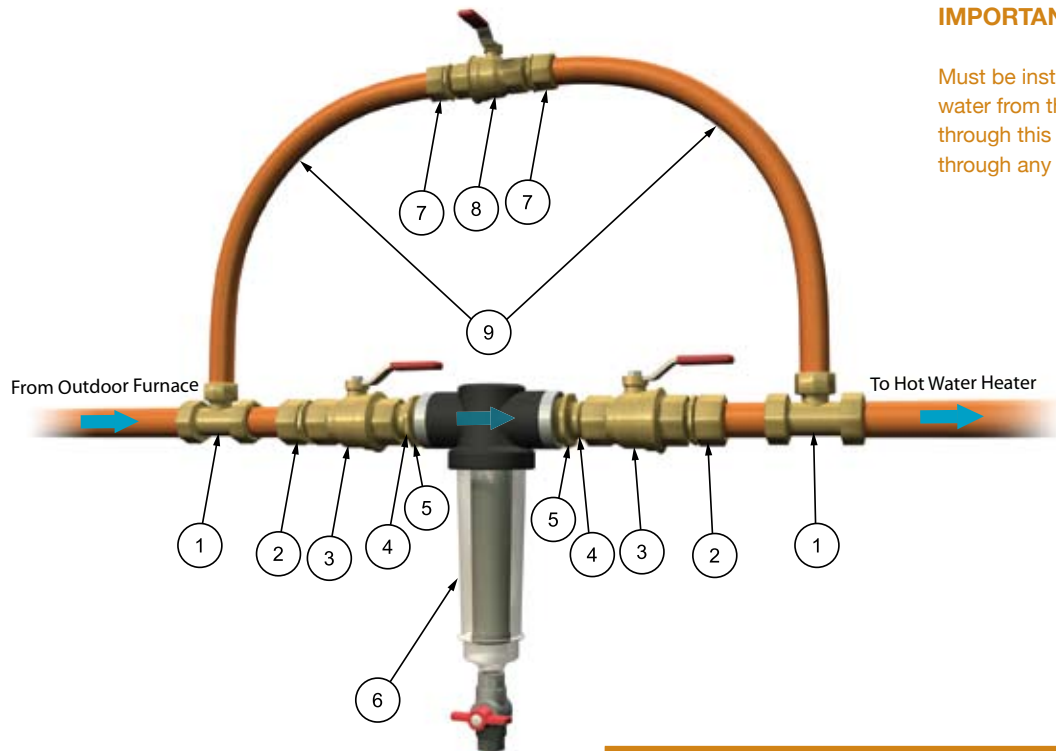


BILL OF MATERIALS			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	101-025	1" BALL VALVE
2	1	310-045	1" BRASS 90° STREET ELBOW
3	3	310-065	1" BRASS 45° STREET ELBOW
4	2	988120	K1-1" X 1" MPT
5	1	GRUP26-99F001	BRUTE HIGH FLOW 1/6 HP PUMP
6	2	101-075	1" BRASS ISOLATION VALVE - FLANGED
7	1	311-104	3" PIPE NIPPLE
8	2	988098	K1-90 DEGREE ELBOW (IN HOME USE)

### 8. Indoor Filter System

> See "Filter Kit Assembly" diagram below.

FILTER KIT ASSEMBLY



**IMPORTANT**

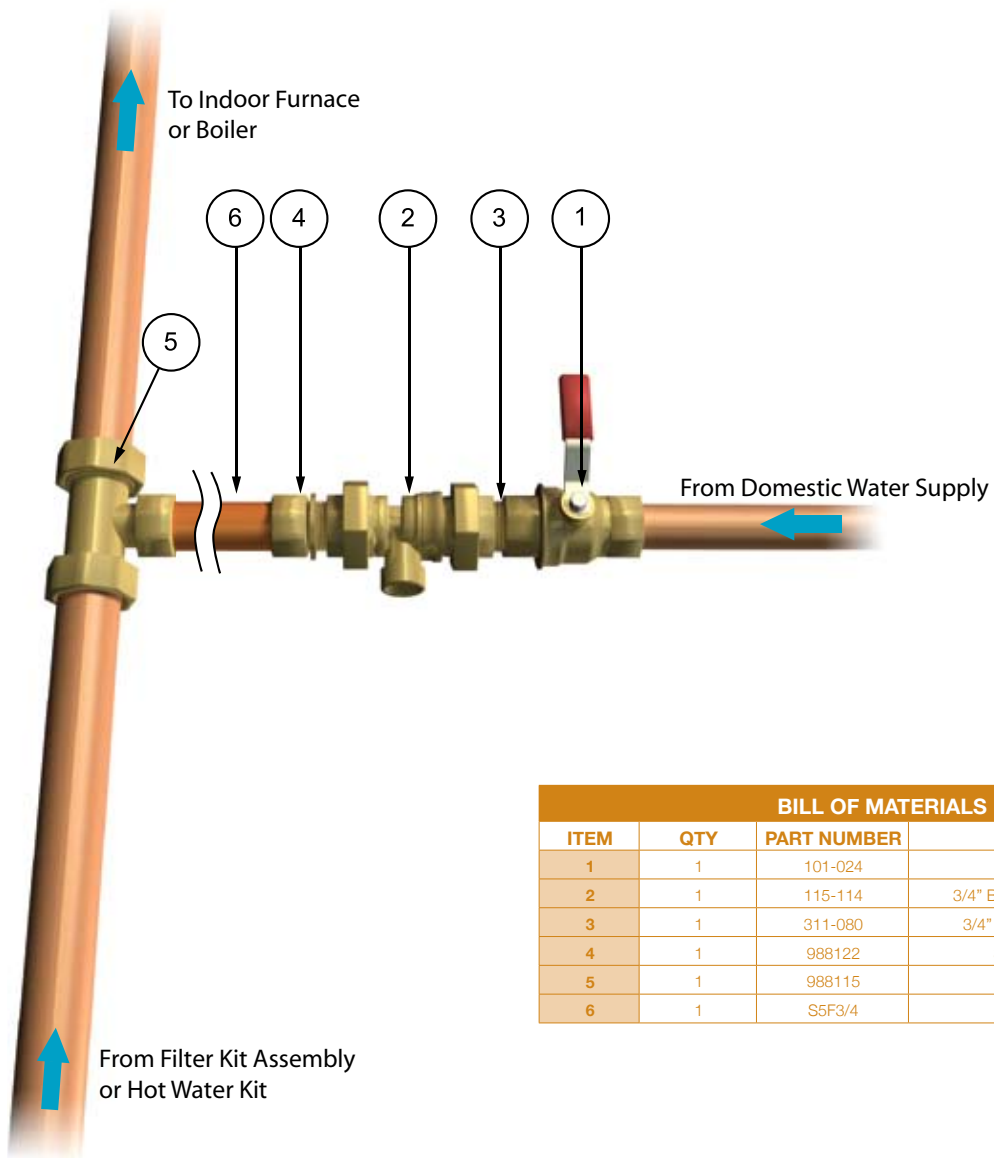
Must be installed indoors so that water from the Hawken passes through this filter BEFORE it passes through any heat exchangers

BILL OF MATERIALS			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	988115	1" K1 x 1" x 3/4" TEE
2	2	988120	1" K1 x 1" MPT
3	2	101-025	1" BALL VALVE
4	2	311-100	CLOSE NIPPLE 1" BRASS
5	2	310-487	HEX BUSHING 1-1/4" x 1"
6	1	1-11/4-200HTF	SEDIMENT TRAP FILTER
7	2	988122	3/4" K1 x 3/4" MPT
8	1	101-024	3/4" BALL VALVE
9	5 FT	S5F 3/4	3/4" KITEC HOSE

## 9. Indoor Fill Kit

- > An indoor fill kit is required to fill the furnace with water as needed.
- > See "Fill Kit Assembly" diagram below.

### FILL KIT ASSEMBLY

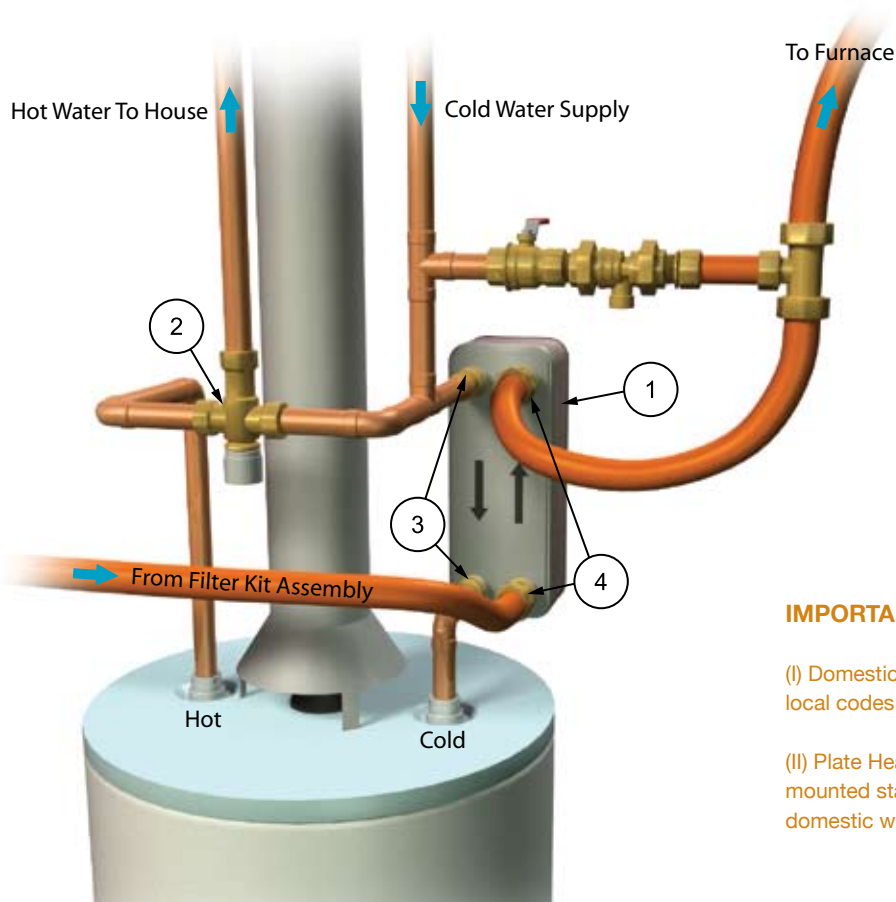


BILL OF MATERIALS			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	101-024	3/4" BALL VALVE
2	1	115-114	3/4" BACK FLOW PREVENTER
3	1	311-080	3/4" BRASS CLOSE NIPPLE
4	1	988122	3/4" K1 X 3/4" MPT
5	1	988115	1" X 1" X 3/4" TEE
6	1	S5F3/4	5' - 3/4" KITEC

### 10. Domestic Hot Water System Interface (optional)

> See “Domestic Hot Water Kit Assembly” diagram below.

#### DOMESTIC HOT WATER KIT ASSEMBLY



#### IMPORTANT

(I) Domestic water pipe should follow local codes

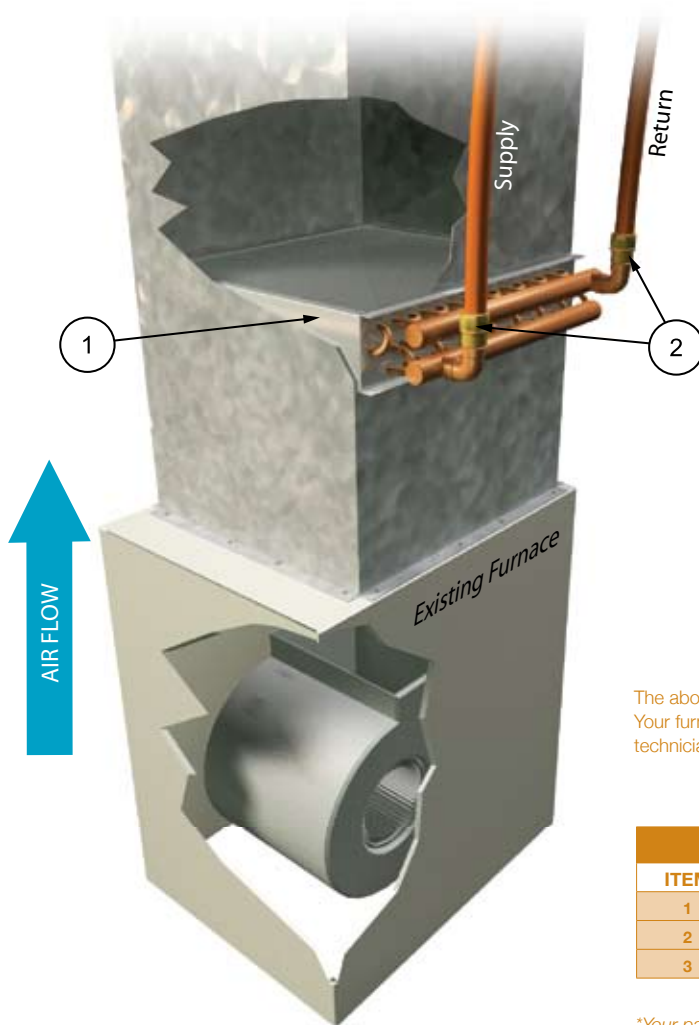
(II) Plate Heat exchanger should be mounted standing on end with the domestic water side flowing down

BILL OF MATERIALS			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LB31-30	Water to Water Plate Exchanger
2	1	115-154	Mixing Valve
3	2	310-372	1"x3/4" Reducing Coupler Brass
4	2	988127	K1- 1" X 1" FPT

## 11. Indoor heating system interface

- For forced air heating systems, see “Forced Air Furnace Installation” diagram below.

### FORCED AIR FURNACE INSTALLATION

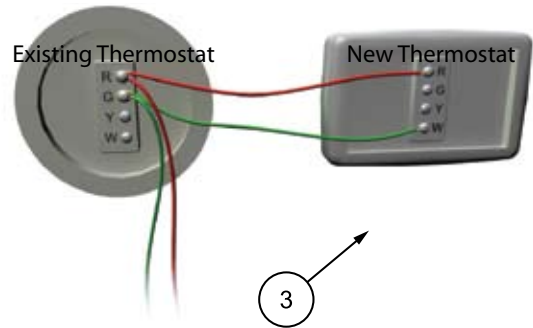


#### IMPORTANT

Always feed supply to the bottom of heat exchanger.

Whenever possible place heat exchanger below air conditioning coil.

For heat pumps, place heat exchanger above A-Coil.



The above thermostat wiring works well for most furnace systems, but not all. Your furnace system may require custom wiring. Consult a professional HVAC technician for more information. Close breaker to air conditioning system.

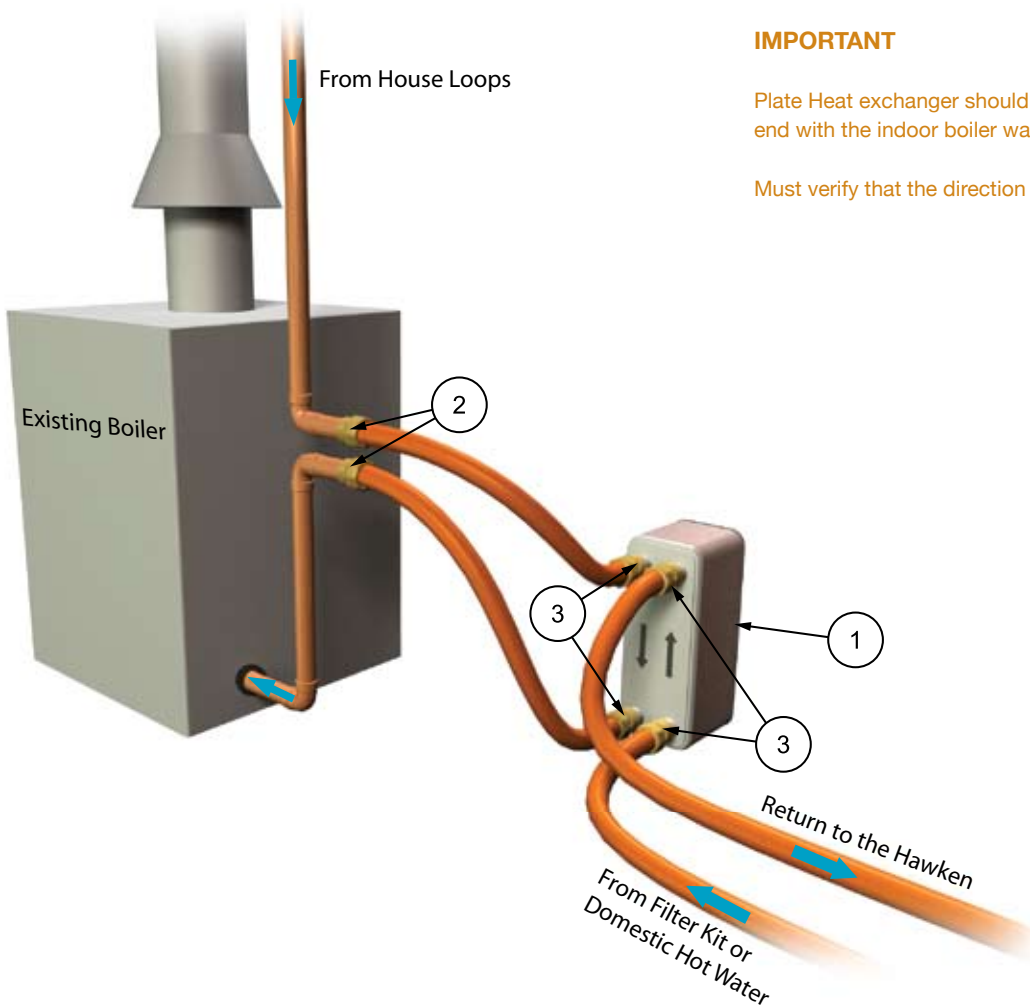
BILL OF MATERIALS			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	18 x 18 B92659	WATER TO AIR EXCHANGER 18X18
2	2	988245	KITEC TO SWEAT COPPER 1" (2 PER)
3	1	L40-837	ELECTRONIC THERMOSTAT

\*Your part number may be different depending upon the size of your furnace plenum. Other available sizes include 16x18 and 20x20.



- For hydronic radiant heating systems (baseboard or in-floor radiant systems), see “Indoor Boiler Interface Kit Assembly” diagram below.

## INDOOR BOILER INTERFACE KIT ASSEMBLY



### IMPORTANT

Plate Heat exchanger should be mounted standing on end with the indoor boiler water flowing downward.

Must verify that the direction of flow is accurate.

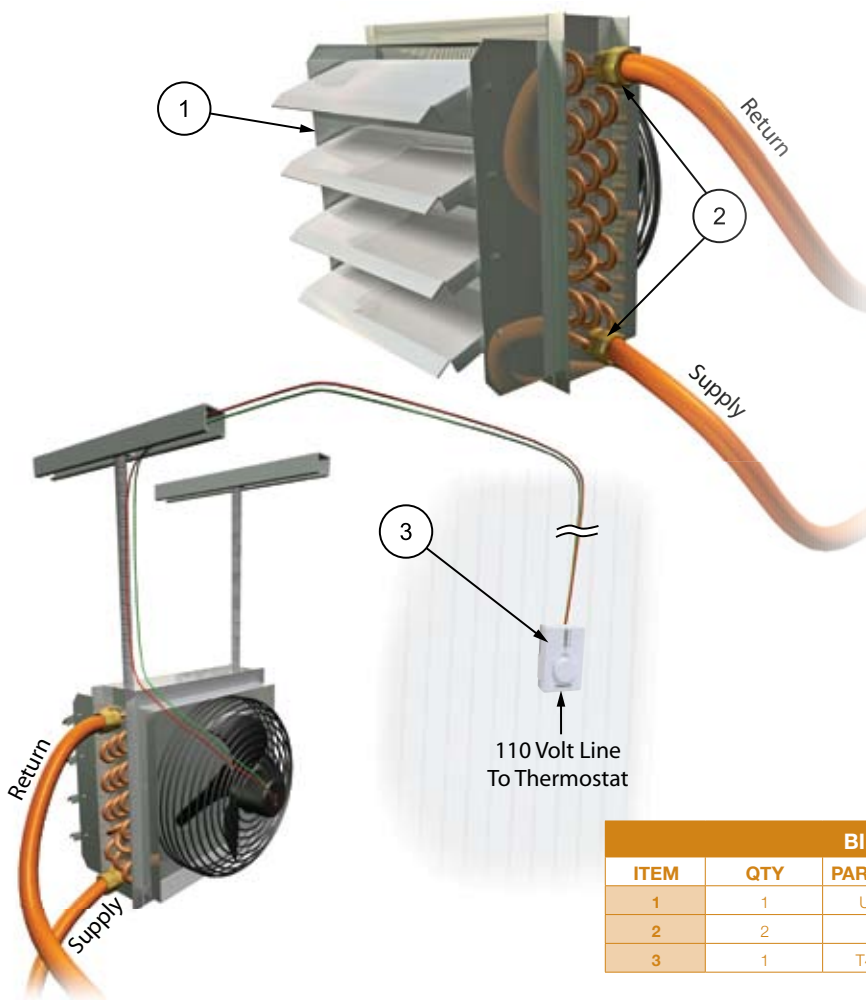
### BILL OF MATERIALS

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LB31-50	WATER TO WATER PLATE EXCHANGER
2	2	988120	1" K1 X 1" MPT
3	4	988127	1" K1 X 1" FPT

## 12. Additional line heating system interface (optional)

- > To heat additional buildings with existing heating systems that can interface with your Hawken furnace, see Step 9 above.
- > To heat additional buildings with one or more unit heaters, see "Unit Heater Installation" diagram below.

### UNIT HEATER INSTALLATION



#### IMPORTANT

Always feed supply to the bottom of heat exchanger.

Unit heaters are designed to be installed using threaded rod (3/8-16) attached to unistrut fastened to ceiling.

Threaded rod and unistrut are not typically provided by Hawken since they are easily available at hardware stores and are highly customized based on specific installation requirements.

#### BILL OF MATERIALS

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	UH-Series *	UNIT HEATER
2	2	988245	KITEC TO SWEAT COPPER 1"
3	1	T410B-1004	UNIT HEATER THERMOSTAT

\*Part Numbers for Unit Heaters will vary by size. Use the following table for reference.

Part #	Description
UH 40	Unit Heater 42,000 BTU
UH 80	Unit Heater 86,000 BTU
UH 100	Unit Heater 109,000 BTU
UH 140	Unit Heater 153,000 BTU
UH 200	Unit Heater 216,000 BTU

## PROPER WATER TREATMENT

Your warranty requires the use of Hawken authorized water treatment. You **MUST** take the steps listed below to ensure the proper operation of your Hawken. Further, your Hawken and its components will receive better protection against corrosion, your filter will require cleaning less frequently and your system will last longer.

### First Time Fill - Water Testing

1. Before you fill your furnace the first time, purchase from your Hawken Rep the appropriate amount of Hawken authorized water treatment. Follow the directions on the bottle for how much to add to your system. Your dealer will also provide you with sample test bottles and labels so that you can submit a water sample annually for laboratory testing (follow instructions included with test bottles.)
2. Once your installation is complete, fill your new furnace so that it is approximately half full of water. Make sure all valves are closed. Do not fill furnace with water until your installation is complete, and the drain valve is properly installed.
3. Add the appropriate amount of Hawken authorized water treatment. Again, follow the directions on the bottle.
4. Fill your furnace until it is completely full of water. You will know it is full when water spills out of the vent tube onto the roof of the furnace.
5. Once full of water, do not start a fire in your furnace yet.
6. Open all necessary valves, wait 5 minutes, then turn on your pump. Allow the pump to circulate the water for 24 hours.
7. After the pump circulates the water for 24 hours, follow the instructions included with your Hawken authorized water treatment to drain a small sample of water **FROM THE DRAIN VALVE LOCATED AT THE BOTTOM OF THE FURNACE ONLY**. Follow the enclosed directions to send this water sample for testing. You may now startup your furnace (see page 19 for start instructions).
8. Once your water sample is received by the laboratory and tested, you will receive a lab report containing the results from your water sample test. If your water is found to contain anything harmful to your Hawken, further action on your part will be specified in this lab report. If any further action is required on your part, you must comply with the instructions provided in the lab report. Once you do so, you will then be required to submit another water sample to the lab for testing. Please take this sample according to instructions below under "Periodic Testing". A "satisfactory" water sample report must be on file at Hawken to maintain your warranty.
9. Follow instructions below for Periodic Testing. Your Hawken authorized water treatment will indicate how often such testing is necessary (currently once per year). Any changes to this testing procedure will also be specified in service bulletins posted at [www.HawkenEnergy.com/servicebulletins/](http://www.HawkenEnergy.com/servicebulletins/) which you should check semiannually.

## Periodic Water Testing

Hawken furnaces require periodic water testing. The frequency of such testing is currently once per year after the first test, but this is subject to change. Follow instructions for periodic water testing included with the water treatment, and also do the following:

1. First, a sample of water must be taken from the furnace. To do so, please observe the following steps:
  - a. Spring is the best time to do an annual water test. The furnace must be turned off and cooled in order to take the water sample. If the furnace is going to sit idle during the summer months, it is best that testing and proper amounts of water treatment chemical are added to the furnace prior to the idle summer months.
  - b. NEVER DRAIN YOUR FURNACE AND LEAVE IT EMPTY OF PROPERLY TREATED WATER. Always have your furnace full of properly treated water.
  - c. Let the fire burn out. Allow the furnace to cool until the water temperature is below 80 degrees F.
  - d. Remove the ash. Lightly scrape the inside of the firebox to remove the ash.
  - e. Shut off the power to the furnace to stop the pump(s).
  - f. Make sure the ball valves to the pumps are in the open position to avoid any air lock upon restart. Never attempt to operate the pump(s) with the ball valves (to pumps) in the closed position.
  - g. If you have a forced air furnace with a second Hawken thermostat, turn the thermostat off.
  - h. Attach a hose to the water jacket drain at the bottom of the furnace (located on bottom of furnace water jacket barrel in rear).
  - i. Open the water jacket drain until the water runs clear. Close the drain. This is an important annual maintenance item that flushes any sediment buildup from the furnace.
  - j. Add certified chemical as needed. If a significant volume of water was required to be drained from the furnace to get the water to run clear, refill the furnace using your in-house fill valve.
  - k. Turn on the power to the pump and circulate the furnace water for 8-24 hours. Turn pump and power off again.
  - l. With a water sample bottle ready to fill, open the water jacket drain again and fill the water sample bottle.
  - m. Turn power and pump back on, and return furnace to service when ready.
2. Send water sample to laboratory for lab testing. Follow mailing instructions included with the water sample test bottles.
3. A water sample report will be returned to you via email (be sure to include your email on the label and also the word "Hawken"). You will only receive an email back from the lab indicating your test results. This is why it is imperative that your print your email address on the sample bottle label.
4. If the water sample lab report indicates that the "Treatment level is satisfactory", then no further action is required. If the report indicates that the "Treatment level is Low", then the lab report will specify what you need to do. Often the report will simply specify that more water treatment be added (The Hawken staff does mail copies to every customer upon receipt of results).
5. Carefully follow the instructions specified in the water sample lab report (if any), and **then send another water sample to the lab for another test (see Step 1 above).**

## HAWKEN STARTUP/SHUT DOWN

### Hawken Startup Procedures

Please observe the following steps when starting the furnace:

1. Observe all safety precautions (see page 2).
2. Ensure that the installation has been completed properly.
3. Make sure the furnace is full of water. Verify this with the water level indicator AND by filling the furnace until water flows out of the vent tube on the roof peak.
4. Make sure the furnace water has been properly treated with authorized water treatment.
5. Open all valves. Allow 5 minutes for water to fill pump and system.
6. Turn on power and make sure pump is running. Never operate furnace without the pump fully circulating water.
7. Make sure fan switch is operational. Fan switch is located on the front of the furnace under a flip cover. Turning the fan switch to the ON position (up) will turn off the loading light, and turn on the blower fan in the door. Turning the fan switch to the OFF position (down) will turn off the blower fan, and turn on the loading light.
8. Set the aquastat located in the rear of the furnace (towards the top) to 180 degrees F. Remove the grey cover to the aquastat and verify that the temperature differential dial (on right side) is set to 20. This will cause the furnace to automatically shut off the blower fan when it senses furnace water temperature of 180 degrees, and turn on the blower fan when the water temperature drops to 160 degrees.
9. Build a small fire in the firebox, and allow furnace temperature to rise SLOWLY.
10. When the temperature reaches 170 degrees, the furnace is ready to be filled to capacity for full operation.

### Hawken Shut Down Procedures

Please observe the following steps when shutting down the furnace:

1. Observe all safety precautions (see page 2).
2. Allow time for the fire and coals to completely burn out.
3. Empty all the ashes and lightly scrape out the firebox to remove all ashes.
4. Fill the system with water until it is completely full.
5. Flush and clean the filter.
6. Make sure the proper water treatment procedure is followed (see "Periodic Water Testing" on page 18).
7. Make sure the chimney cap is in place to prevent rainwater from entering firebox.
8. If you have a forced air furnace with a second thermostat controlling your indoor furnace blower fan, be sure to turn off the power to this thermostat.

## HAWKEN MAINTENANCE

The following maintenance items must be followed. Remember to observe all safety precautions.

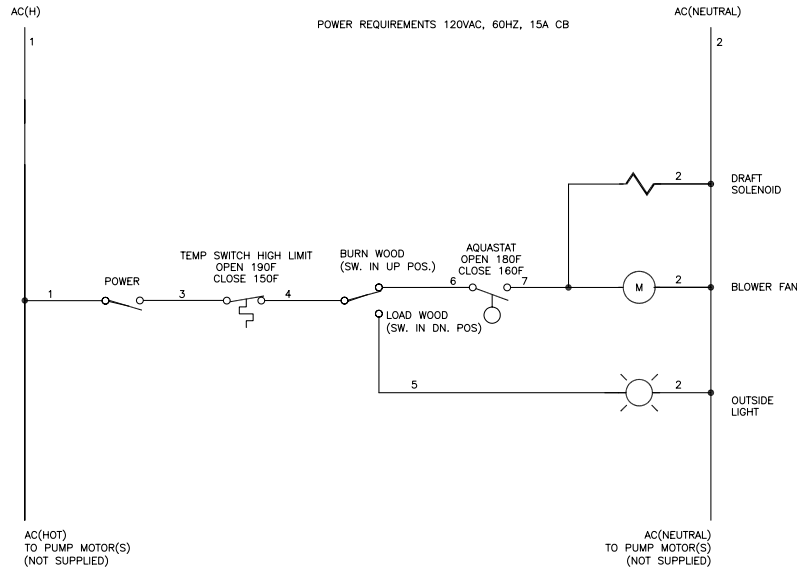
1. **Check Water Level/Fill** – Always keep the furnace full of water. On a daily basis, check the water level indicator located in the vent tube at the peak of the roof towards the front of the furnace. If not full, open in house fill valve until full. Normally, this step should be taken once a month by opening the in-house fill valve for a few seconds until water spills out on the roof of the furnace. Add water SLOWLY to furnace.
2. **Rake Ash Level/Remove As Needed** – Before each loading of the furnace with wood, rake ash level in the firebox. Do not allow level of ash to rise above the bottom level of the door frame. Remove ash with a shovel as needed to keep ash below this level. Remove ash once per month and scrape firebox clean. Never operate the furnace with a fire in it with the door open, except for brief periods while loading wood or removing ash. Always remove ash into a covered, non-combustible container.
3. **Inspect/Clean Filter** – Inspect filter for any sediment. When necessary, flush filter by opening the Filter By-Pass valve and close the valves on both sides of the visible flow filter. This allows the system to continue to circulate while you discharge the filter of all collected materials. Open the ball valve on the clean water side of the filter. Then, while holding a bucket under the filter, open the valve at the bottom of the filter to flush out the stainless steel filter, close that valve again once clear. This method generally cleans the filter without disassembly. Open both filter valves and close the by-pass valve. This should be done once a month.

Occasionally, the stainless steel filter will appear dirty even after the above flush. In such cases, open the Filter By-Pass valve and close the valves on both sides of the visible flow filter. Filter and housing can be very hot. Allow to cool before handling. The filter can then be removed and cleaned by hand.

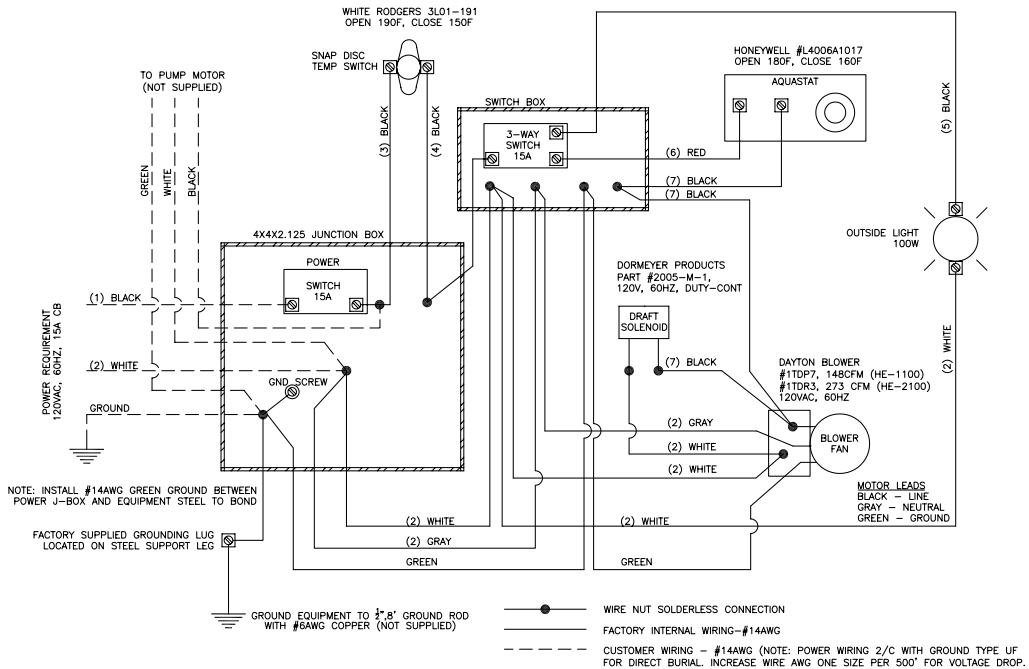
4. **Door Rope/Seal** – Inspect door seal fire rope monthly or as needed. Make sure door seals properly to prevent air from entering furnace; this will cause the furnace to overheat and can cause serious damage to the furnace. If necessary, replace fire rope. If necessary, adjust door for proper fit. Never operate the furnace with a fire in it with the door open, except for brief periods while loading wood or removing ash. When replacing fire rope or adjusting door for proper seal, be sure to remove any fuel from furnace to prevent overheating, since door may be open for more than a few minutes.
5. **Chimney/Flue Inspection** – Inspect chimney and flue monthly. Clean chimney and flue annually. The chimney is cleaned by removing chimney cap and scraping the inside walls of the chimney. Then, clean the flue. The flue is also known as the deflector plate, or “D-plate”. The flue is cleaned from the rear of the furnace as follows:
  1. Remove rear doors.
  2. Cleanout extension rod is stored in rear of furnace – remove rod from holding bracket.
  3. Remove cap covering cleanout chute. This cap is attached to a threaded pipe that has a cotter pin/wire in it.
  4. Before removing cotter pin/wire, attach cleanout extension rod to threaded pipe inside cleanout chute by screwing clockwise. This pipe is attached to a cleaning plate, or plow, that scrapes and pushes any creosote and ash off the flue. Any such creosote or ash will simply drop into the front of the firebox.
  5. Remove cotter pin/wire.
  6. Push the cleanout extension rod towards the front of the furnace several times to clean off flue. Apply slight downward pressure to the rod when pushing forward, and slight upward pressure to the rod when pulling rod back towards you.
  7. Once flue area is clear, pull cleanout extension rod towards you to line up the cotter pin hole in the rod with the holes in the cleanout chute.
  8. Replace the cotter pin/wire.
  9. Remove cleanout extension rod from threaded pipe by unscrewing in a counter-clockwise direction.
  10. Replace cap covering cleanout chute.
6. **Water Treatment** – Ensure proper water treatment. See Section “5. Proper Water Treatment” and “Periodic Water Testing” above.

# WIRING SCHEMATIC

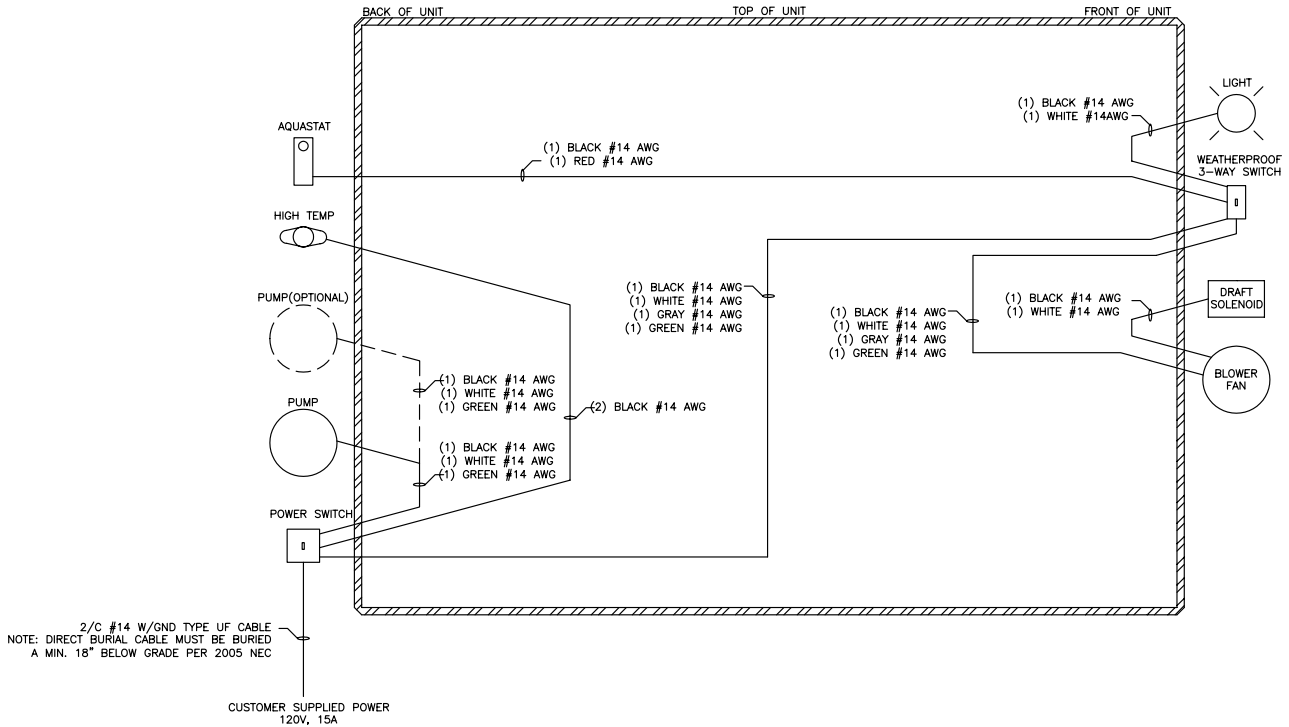
HAWKEN ENERGY MODEL(S) HE-1100, HE-2100 SCHEMATIC



HAWKEN ENERGY MODEL(S) HE-1100, HE-2100 WIRING DIAGRAM



## WIRING LAYOUT



## WARRANTY AND REGISTRATION

See "Hawken 20 Year Limited Warranty" on page 25.

To keep your warranty valid, you must do the following:

- > Read, understand and follow this Owner's Manual, and the "Hawken 20 Year Limited Warranty".
- > Do not burn garbage or any other unspecified fuels. Burning such fuels causes damage to outdoor wood furnaces and will void your warranty.
- > Properly install a grounding rod at the furnace.
- > Follow proper water treatment and testing procedures.
- > Install Hawken water filter kit on water loop (indoors) and clean regularly.
- > Submit Warranty Registration to Hawken Energy within 15 days of purchase.
- > Install furnace according to Owner's Manual and use only Authorized Hawken parts and accessories.







## 20 YEAR LIMITED WARRANTY



**Hawken Energy, Inc.** ("Hawken Energy") warrants to the first retail purchaser that the parts manufactured by Hawken Energy and included as part of the furnace known as HE-1100 or HE-2100 shall be free from defects in workmanship. This warranty is effective for a period of twenty years from the date of purchase; provided that the first retail purchaser timely complied with the warranty registration requirements described below. Upon notice of a warranty claim, Hawken Energy shall have the option of repairing or replacing the defective part or refunding the purchase price of the furnace.

Hawken Energy further warrants to the first retail purchaser that the firebox assembly of the HE-1100 and HE-2100 furnaces shall be free from corrosion. This warranty is effective for a period of twenty (20) years from the date of purchase; provided that the first retail purchaser timely complied with the warranty registration requirements described below. More specifically, Hawken Energy will provide warranty coverage due to corrosion for the cost of the parts only, based on the following pro-rated scale: for years one through five at 100% of Factory Retail Prices; for years six and seven at 75% of Factory Retail Prices; for years eight through ten at 40% of Factory Retail Prices; and in the years eleven through twenty at 25% of Factory Retail Prices. Upon notice of such a warranty claim, Hawken Energy shall have the right to replace or repair the parts at its option.

Hawken Energy further warrants to the first retail purchaser that the electrical components in the HE-1100 and HE-2100 furnaces shall be free from defects during normal usage for a period of one year from the purchase date; provided that the first retail purchaser timely complied with the warranty registration requirements described below. Upon notice of such a warranty claim, Hawken Energy shall have the option to replace or repair the defective components.

Hawken Energy reserves the right to modify the design of any furnace at any time and for any reason.

The liability of Hawken Energy shall not exceed the repair or replacement value of the defective parts and does not include any costs for labor to remove and reinstall the alleged defective part, transportation to and from the factory, the costs of plumbing, the costs of replacement water or water additives, and any other materials required to make the repair. The warranties described above do not cover defects, corrosion or malfunctions resulting from: (i) failure to properly install, operate or maintain the furnace in accordance with Hawken Energy's published Owner's Manual; (ii) the workmanship of any installer or repairman of the furnace; (iii) abuse, misuse, alteration, accident, fire, flood, negligence or acts of God; (iv) freezing or overheating; (v) any unauthorized work or alterations to the furnace; (vi) improper water treatment or ash removal procedures, or (vii) normal wear items including without limitation door gaskets, paint, and chimney components.

These are the only warranties given by Hawken Energy as regarding HE-1100 and HE-2100 furnaces. No one is authorized to make any other warranties on Hawken Energy's behalf. **THESE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY. HAWKEN ENERGY EXPRESSLY DISCLAIMS AND EXCLUDES ANY LIABILITY FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT OR PUNITIVE DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY.** Defects in components incorporated into the furnace (including, the aquastats, pumps and fans) but not manufactured by Hawken Energy, shall be governed by the terms and conditions of the relevant component manufacturer's warranties, if any. Other furnace models, including HE-750, HE-1000, HE-2000, HE-3000, HE-4000, and HE-5000 are covered under a separate warranty.

In order for the warranties described above to be effective, the first retail purchaser must deliver a signed warranty registration in the form below to Hawken Energy within fifteen (15) days of purchasing the furnace along with a copy of the original invoice from the dealer or representative conducting the sale.



RENEWABLE ENERGY FURNACES