

OWNERS MANUAL

The
WOOD MASTER[®]
Plus

AFS 1100



Installation, Operation, & Maintenance Manual

NORTHWEST MANUFACTURING, INC.
600 POLK AVENUE S.W. * RED LAKE FALLS, MN 56750
218 253 4328

RETAIN THIS MANUAL





Northwest Manufacturing, Inc.
600 Polk Ave. SW
RedLake Falls, MN 56750
Phone (218) 253-4328 Or (800) 932-3629 Fax (218) 253-4409
www.woodmaster.com

Dear Customer,

We at Northwest Mfg., Inc. would like to thank you for purchasing the WoodMaster Plus heating system.

It is our goal to build the highest quality product at a competitive price, and maintain total customer satisfaction.

This manual is a guide for installing, operating, and maintaining your new WoodMaster Plus.

Follow and observe all safety and warning instructions.

The Staff,

WoodMaster Furnaces

Contents



TABLE OF CONTENTS

Contents	3
Safety	4
Features	5
Installation	6
The Furnace	6
Chimney Specifications	6
Block or Pad Supports	6
Trench	6
Mounting the Pump.	7
Hooking Up Water Lines	7
Wiring the Pump	7
The Home	8
Domestic Hot Water	8
Existing Forced Air	8
Existing Hot Water Heat	9
Inline Filter and Fill Valve	9
Operation	10
Filling with Water	10
Bleeding the System	10
AFS 1100 Startup Procedure	10
Timer Dial Identification.	10
BTU Per Hour -- Timer Settings	11
WoodMaster Plus Digital Aqua Stat Settings	11
Boiler Treatment	11
Maintenance Schedule	11
Reference	12
Trouble Shooting	12
AFS 1100 Electronic Temperature Control (ETC)	13
ETC System Specifications	14
Wiring Diagrams	16
Warranty & Owner's Registration Cards (tearouts)	19



Safety

IMPORTANT SAFETY INSTRUCTIONS READ ALL INSTRUCTIONS BEFORE INSTALLATION

Pre-Installation Precautions

CAUTION All installation and operations must follow STATE and LOCAL CODES for wiring, plumbing, and firing of this unit. These CODES may differ from this manual. Installation must be performed by a Qualified Installer.

CAUTION Read and follow these directions carefully. Retain this manual for as long as you own your WoodMaster Plus.

CAUTION All WoodMaster Plus models operate at atmospheric pressure. DO NOT obstruct, block, or plug in any way the overflow vent pipe which is located directly behind the chimney on top of the furnace.

CAUTION The WoodMaster Plus is designed for outdoor use. We do not recommend installing in a building.

CAUTION Manufacturer recommends a minimum 25 foot clearance from buildings or fire hazards. If placed near a fire hazard area an approved spark arrester should be used.

CAUTION Only responsible adults should operate your furnace. If furnace is not fired properly damage could result and the warranty be voided.

CAUTION Never allow small children to play near or tamper with furnace. Always keep the area around, and in front of fuel door clean and free from combustible materials.

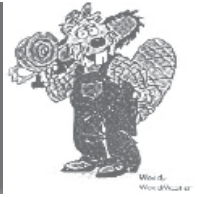
CAUTION Do not connect this unit to a chimney flue serving another appliance.

CAUTION Pump must run continuously whenever the WoodMaster Plus is being used.

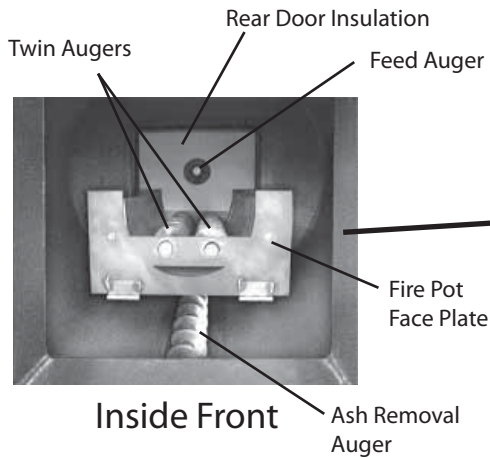
In case of a runaway or chimney fire, shut fan switch off, make sure doors are closed, allow

CAUTION to burn out.

Features

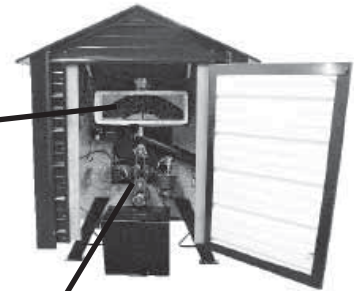
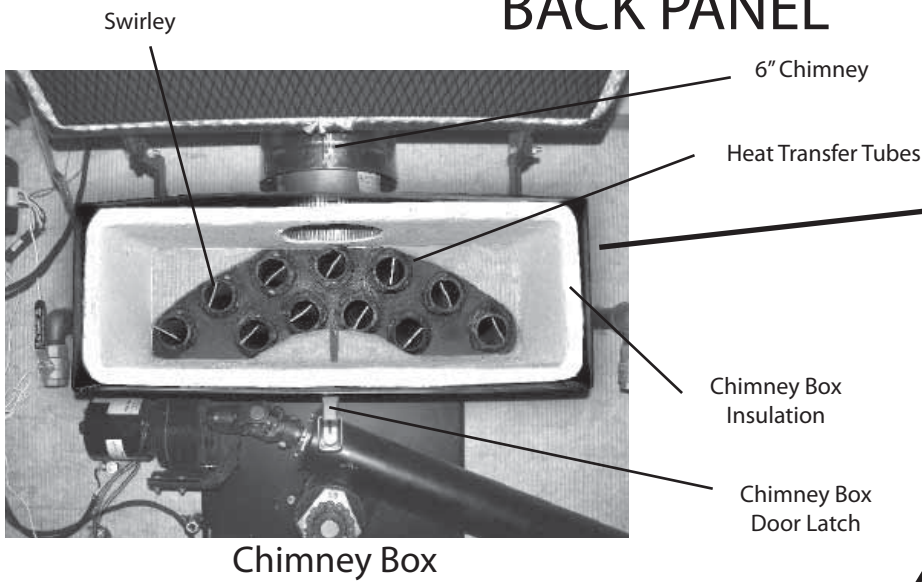


FRONT VIEW

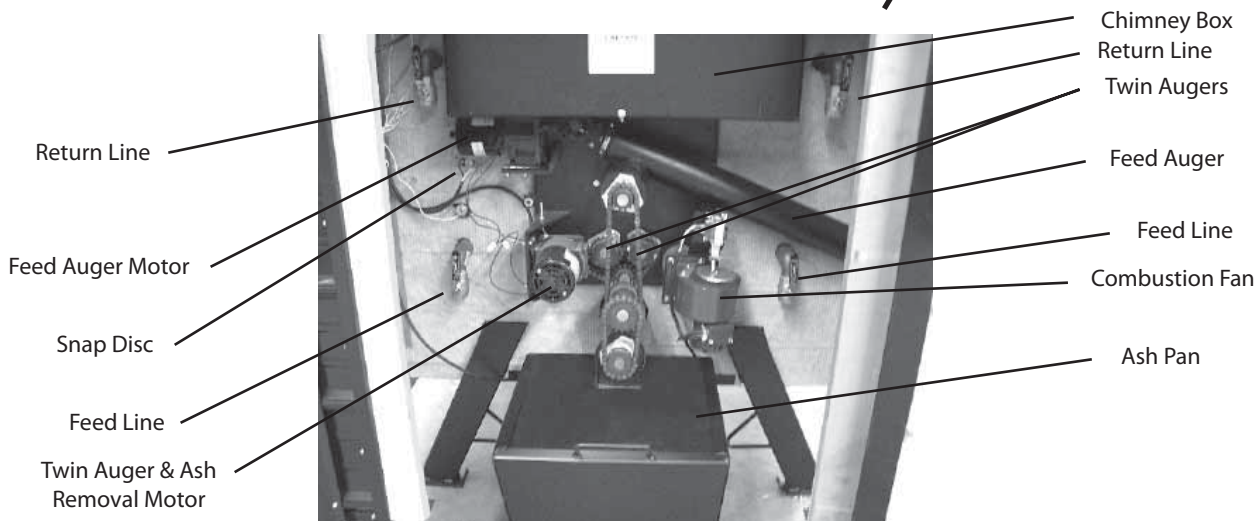


ETC Control
(on right side)

BACK PANEL



Chimney Box





Installation

THE FURNACE

Chimney Specifications

To insure proper insulation, use only Chimney and Chimney Adapter from your local WoodMaster Plus Dealer or Northwest Mfg., Inc. (Chimney type Class A Insulated).

Block or Pad Supports

Under normal conditions four cement blocks are all that is required to support the furnace. Blocks should be at least 6 inches wide, 10 inches long, and 3 inches thick. Under very soft conditions a concrete pad may be needed. For Model AFS 1100 the pad should be no less than 5 feet wide, 6 feet long, and 4 to 6 inches thick. Always use a non-combustible base.

CAUTION: Call before you dig.

Trench

The trench must be 24 inches deep and 6 to 12 inches wide. It can be dug with a shovel or a backhoe. Place all the dirt to one side of the trench to allow room for working on the other side.

Wiring

Place electrical supply in bottom of trench and cover with 6 inches of dirt. Electrical wire rated for underground use (12-2 +ground) can be buried in the same trench as the water lines but must maintain a minimum 24 inch depth. Always follow state and local codes.

Water Lines

The remaining 18 inches of open trench is where the water lines are placed. Use a one inch water line with a minimum rating of 100 PSI at 180 degrees and insure that your water line insulation has a minimum R-value of eight in order to maintain adequate heating efficiency.

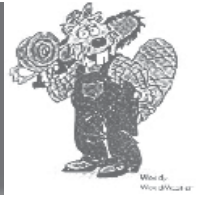
NOTE: If lines travel under a driveway or where heavy equipment travels, the line should be buried two to three feet deep. If lines travel through a low or wet area, they should be insulated and installed in a water tight piping, (PVC).

NOTE: Leave a minimum of three feet of water line exposed above ground at the furnace to insure adequate length for connection.

NOTE: Before insulating and burying the water lines, label the hot water supply line at both ends. Once the lines are covered you will be able to easily determine which line is connected to the pump.

NOTE: Use only approved water line insulation sold through your WoodMaster Plus Dealer. Poor insulation will cause major heat loss.

Installation



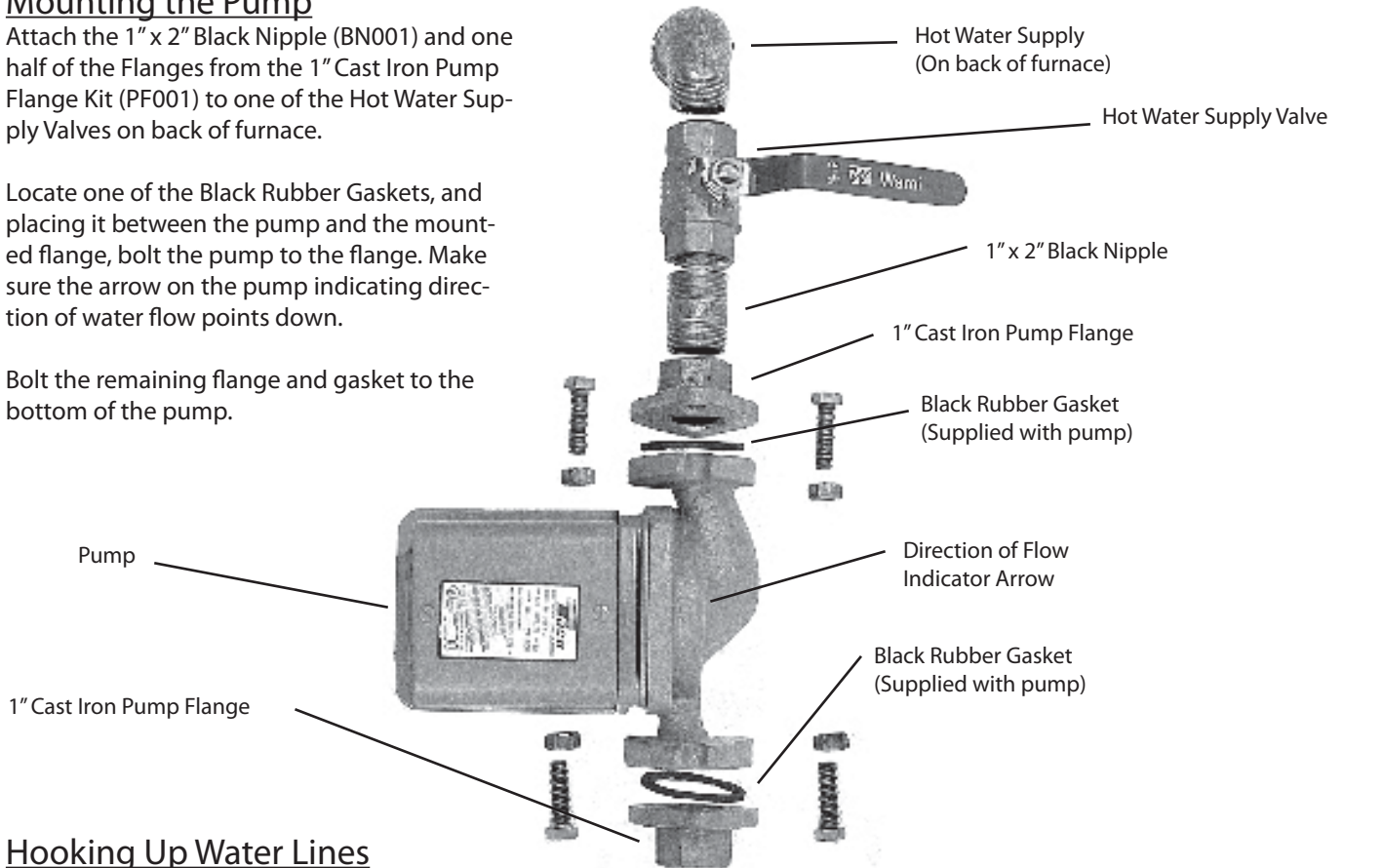
THE FURNACE

Mounting the Pump

Attach the 1" x 2" Black Nipple (BN001) and one half of the Flanges from the 1" Cast Iron Pump Flange Kit (PF001) to one of the Hot Water Supply Valves on back of furnace.

Locate one of the Black Rubber Gaskets, and placing it between the pump and the mounted flange, bolt the pump to the flange. Make sure the arrow on the pump indicating direction of water flow points down.

Bolt the remaining flange and gasket to the bottom of the pump.



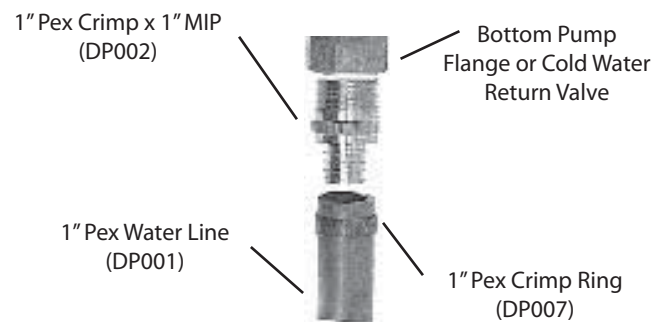
Hooking Up Water Lines

Hot Water Supply

Attach the 1" Pex x 1" MIP (DP002) fitting to flange on bottom of pump. Then attach the hot water supply 1" Pex Water Line (DP001) to the fitting using 1" Pex Crimp Ring (DP007).

Cold Water Return

Attach the 1" Pex x 1" MIP (DP002) fitting to the Cold Water Return Valve on the same side of the stove on which the pump was attached. Then attach the cold water return 1" Pex Water Line (DP001) to the fitting using 1" Pex Crimp Ring (DP007).



Wiring The Pump

Remove the cover on the pump. Then using an approved wire, connect the ground wire to the green ground screw on the pump. Connect the black wire to the yellow wire on the pump. Finally, connect the remaining two white wires together and replace the pump cover.

Locate junction box on back of stove and remove the cover. Connect the running end of the approved wire coming from the pump to the junction.

NOTE: The wires from the pump will have to connect with the main power wires in the junction box along with the power wires from the ETC System.

CAUTION: Pump must run continuously whenever the WoodMaster Plus is in use, cannot be wired to thermostats that only runs pump when building calls for heat.

CAUTION: Disconnect power before servicing any electrical components.



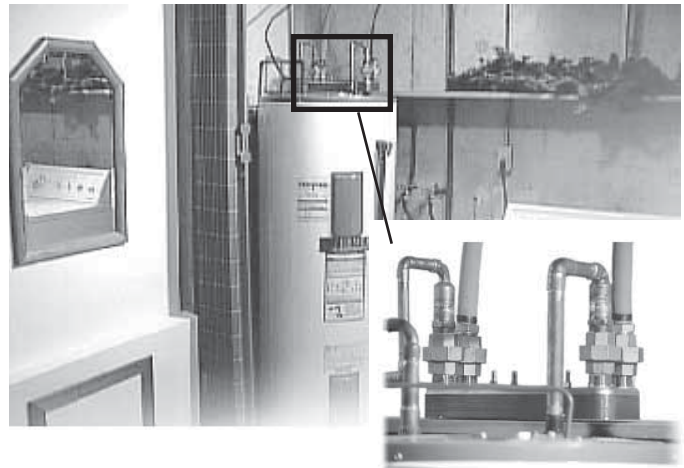
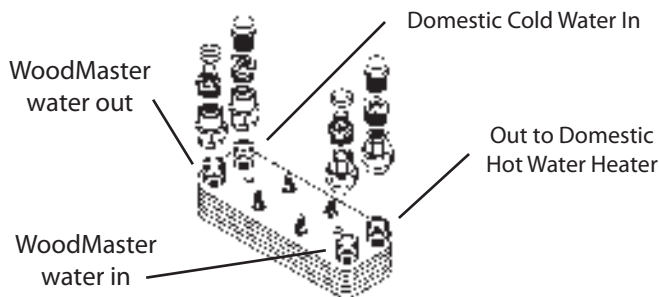
Installation

THE HOME

Entering the building with water lines can be done underground or over the sill plate. Once inside the building the typical hookup would run first to the Domestic Hot Water Supply and next to an existing heating system such as a forced air furnace or a hot water heating system. Finally before leaving the building a fill valve must be installed near enough to a water supply for filling and flushing the boiler in the WoodMaster Plus Furnace.

Domestic Hot Water

The Domestic Hot Water/Flatplate Kit consists of a Water to Water Heat Transfer unit and the fittings needed to hook it up. The unit goes on top of the domestic hot water heater and is connected as shown below.



Existing Forced Air

A water to air heat exchanger is inserted in the existing plenum. In most cases the heat exchanger is placed in a horizontal position, keeping all four sides level. The air must be forced through the finned area of the heat exchanger evenly. The hot water line coming from the hot-water tube enters the bottom fitting of the heat exchanger and exits the top fitting, which returns to the furnace. If the plenum is too large or too small, it must be altered to fit the heat exchanger properly.

NOTE: The WoodMaster Plus Water to Air Heat Exchanger must be installed below any existing Off-Peak electric coils already in the plenum.

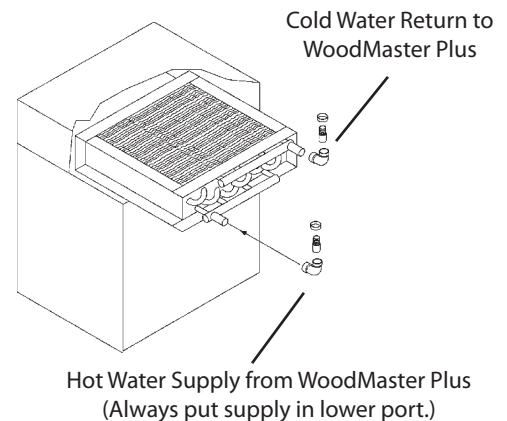
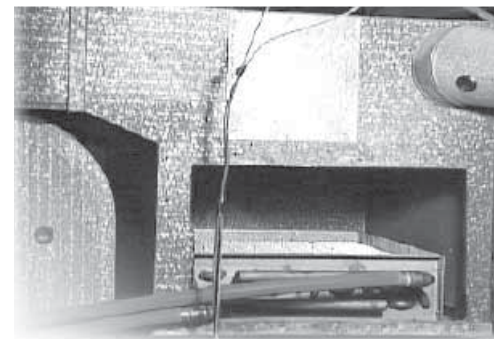
After installation of the WoodMaster Plus add-on water to air exchanger, the air flow must be increased to fuel furnaces, electric furnaces, and electric/gas furnaces. Methods of doing this are:

Belt Drive System

Blower pulleys and motor pulleys may be changed but the electric current flowing through the motor shall not exceed the nameplate rating. (A blower motor or larger power may be used.)

Direct Drive System

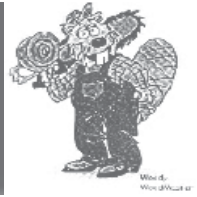
The motor shall not be changed, however the speed of the motor may be increased.



CAUTION: When installing heat exchangers DO NOT tamper with existing controls. Wiring to existing blower can be done with a line voltage or low voltage thermostat. NOTE: All wiring must follow state and local codes and should be done by a qualified electrician. Wire thermostats according to directions provided by the manufacturer.

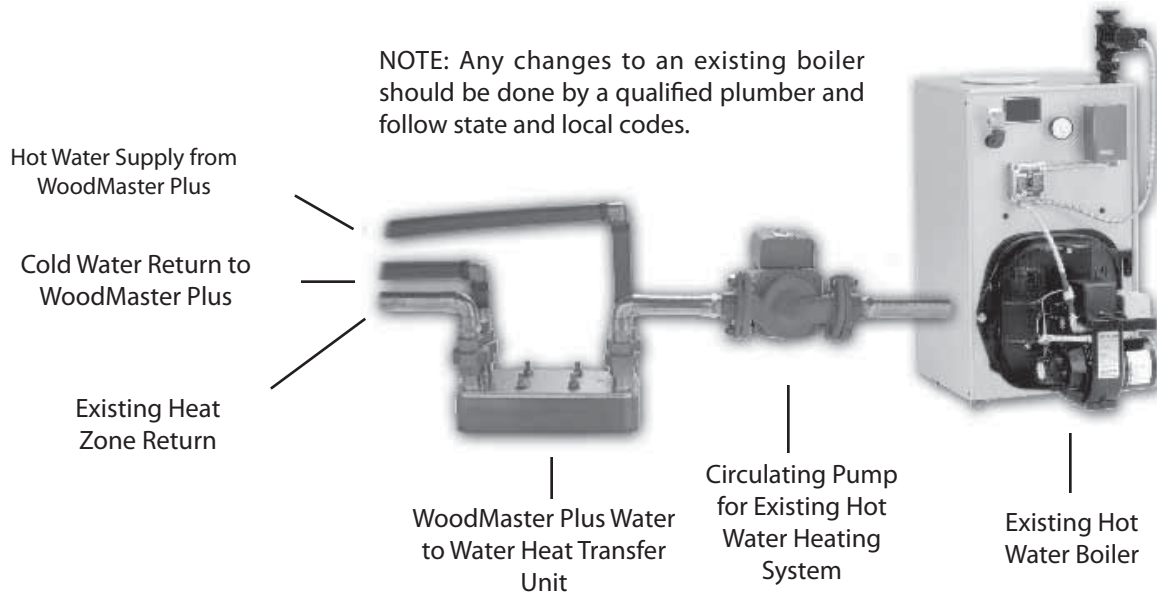
The heat exchanger works on the same principal as your car heater. Air blows through the heat exchanger taking the heat from the water and blowing it into your existing ductwork.

Installation



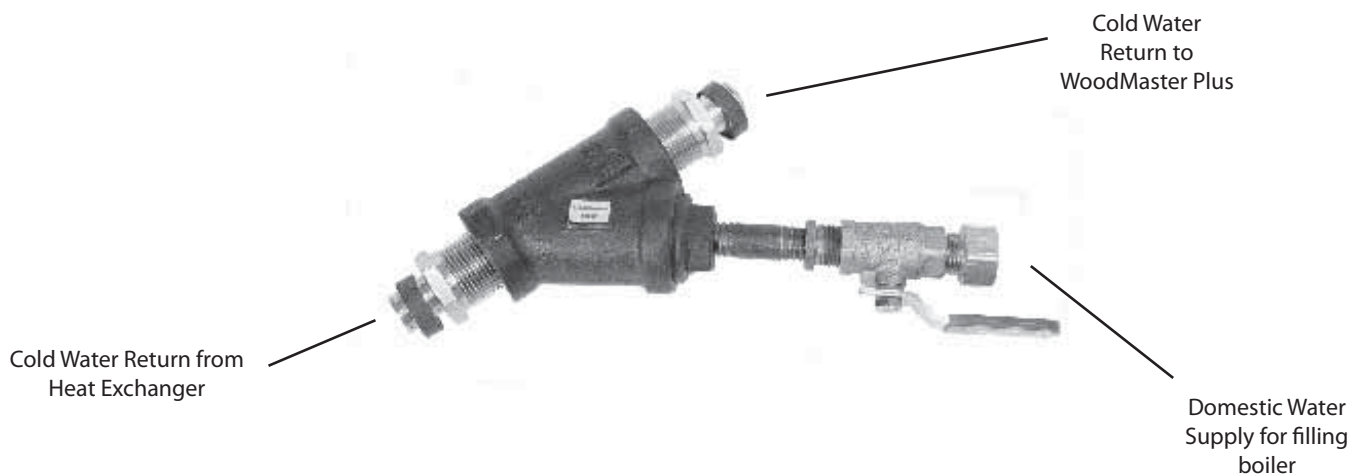
Existing Hot Water Heat

A Water to Water Heat Transfer Unit (FP520) is used to connect to an existing hot water boiler system.



Inline Filter and Fill Valve Assembly

The Inline Filter and Fill Valve Assembly (FK001) must be installed in the Cold Water Return Line before the line exits the building. It should be placed so that a washing machine hose can be connected between a domestic water supply and the Fill Valve.





Operation

Filling With Water

Connect washing machine hose between a domestic water supply and the furnace fill valve (FK001) which was installed in the cold water return line at a point just prior to its exiting the building. Make sure that valves not being used on the furnace are closed and the valves that are being used are open. Begin filling and inspect for leaks on all fittings. Repair any leaks that are found.

CAUTION: Feed and return valves that are not being used must be insulated or removed to prevent freezing and breaking.

While filling the boiler, close the cold water return valve on the furnace for two or three minutes, and then open the valve. This will force trapped air out of the hot water supply line. Repeat this process with the hot water supply valve on the furnace to force air out of the cold water return line. Once both lines have been "bled" continue filling until the system is full and water comes out of the vent pipe.

CAUTION: Air in the water lines can cause damage to the pump.

Bleeding The System

Routinely pay attention to the water level light. If light is not lit, this indicates water level is low and furnace may need to have water added. Add water until it over flows the vent pipe. Occasionally (monthly) manually inspect the water level in the over flow pipe to be sure that the water level light is working properly.

AFS 1100 Startup Procedure

- Step 1: Fill hopper with corn.
- Step 2: Turn T1 knob to 10 sec.
- Step 3: Turn T2 knob to 0 sec.
- Step 4: Turn T3 to 30 sec.
- Step 5: Turn T4 to 35 min.
- Step 6: Turn fan switch on.
- Step 7: Press Set button on Wood Master digital aqua stat.
- Step 8: Let stove run for about 6 minutes or until a small pile of corn accumulates in fire pot.
- Step 9: Turn T2 to 45 sec.
- Step 10: Light corn in firepot with Matchlight charcoal or large propane torch.

IMPORTANT NOTE: In case of extended power outage it is possible to operate your furnace with a generator.

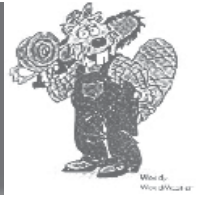
After the corn is burning well, the stove should provide 20,000 BTUH with these settings. For different BTUH output setting, see below.

Timer Dial Identification

- T1 — Heating mode on time setting in seconds.
- T2 — Heating mode off time setting in seconds.
- T3 — Idle mode on time setting in seconds.
- T4 — Idle mode off time setting in minutes.



Operation



BTU Per Hour — Timer Settings

Corn Stove Output BTUH	Timer — Heat Mode			Timer — Idle Mode	
	T1 Seconds	T2 Seconds	T3 Seconds	T4 Minutes	
20,000	10	45	30	35	
60,000	15	45	30	35	
100,000	20	45	30	35	
150,000	20	30	30	35	

WoodMaster Plus Digital Aqua Stat Settings

Set Point (SP)	170° F
Spread (HY)	5° F
Low Alarm (ALL)	120° F

Boiler Treatment

Allow system to burn for 2 hours and then add boiler treatment as follows. Before adding boiler treatment, be sure that the water temperature is at least 100 degrees or higher. Add the boiler treatment that came with your stove to the vent pipe located directly behind the chimney. Treatment should be added on an annual basis. If you are interested in testing your boiler water, contact your local dealer for details.

Maintenance Schedule for the WoodMaster Plus

CLEANING THE FURNACE:

1. Every furnace comes with an ash pan. This should be dumped daily or as needed. It is important to not let it overflow, because it could plug the ash auger and cause problems.
2. On a weekly basis you should scrape down the fire drum and clean out the chimney box in the back of the furnace. To do this turn fan switch off, open the chimney box door and remove the swirly's from the heat transfer tubes. Caution: These will be hot. Run the steel brush in and out of each tube several times. When this is done, clean out all ash that is left in the chimney box, put swirly's back in the heat transfer tubes, and close the door. Be sure the door is latched properly. Try to keep fan and motors as clean as possible. Refer to page 5 for part locations and names.
3. Annual maintenance should be done in the spring when you shut down the furnace. It is very important to drain and flush your furnace each spring. Refer to Boiler Treatment Procedure section below. You will also need to clean all ash from the chimney box, heat transfer tubes, fire box, and fire pot. A Shop Vac works well for this. To clean the fire pot, remove 4 bolts in the front face plate, use your Shop Vac to clean the fly ash out of the air chamber. Dump your ash box and blow any visible dust off of the motors, pumps, fans, etc. Apply a light film of oil to all chains. Make sure to cover the chimney to prevent water from getting into your furnace during the summer.

CAUTION: Warranty does not cover ash corrosion. Neglect to clean your furnace or cover the chimney when not in use, could void the warranty.

BOILER TREATMENT PROCEDURE: To drain furnace -- open drain valve and let stove empty completely. To flush -- leave drain valve open and close pump valve. Add water to furnace through the return lines. Let flush for several minutes. Close drain valve and open pump valve. Refill stove and treat water right away.

Leaving your stove empty exposes the water jacket to oxygen which will shorten the life of your stove. If your system has anti-freeze, you do not need to drain it. However you should then test your water annually. For water sampling contact your dealer or the factory. If you have any questions -- please call 1-800-932-3629.



Reference

TROUBLESHOOTING

If furnace is not heating

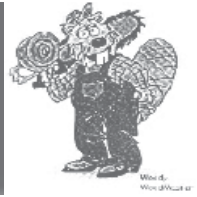
1. Make sure back door is closed. When open, the safety switch will not allow the system to run.
2. Check pump. If pump is not running, shut off power supply to pump and inspect.
3. Check water level. If water is low, inspect for leaks in the system.
4. Check chimney for fly ash build-up. If opening is reduced fire cannot burn properly.
5. Check Fan Draft and Draft Flapper. Make sure they are operating properly.
6. Check Fan Switch on ETC to be sure it is ON. Fan Switch should only be off while cleaning or making repairs.
7. If water temperature is reading 119° or lower, push Reset Switch on ETC System to restart Heating Mode.
8. If the fire goes out and there is a lot of unburned corn in the Fire Pot, you are running the furnace to hard for the weather conditions.
9. If the fire goes out and the Fire Pot is empty, either the Feed Auger is plugged or the Feed System is empty (out of fuel).
10. Feed System plugged.

Possible Causes:

1. Ash pan too full (plugged).
2. Chain Drive System failure.
3. Feed Intake plugged or blocked.
4. Faulty motor in system.

If none of these suggestions appear to solve your problem, contact your dealer.

Reference



AFS 1100 Electronic Temperature Control (ETC)

Function: (Factory Settings below)

- The ETC monitors and controls the AFS 1100 water temperature by controlling the draft, draft fan, and corn supplied.
- During normal operation (adequate corn supply) the controller will go into idle mode when the water reaches 170° F (Set) and will go into heating mode when the water falls to 165° F (Set - Hy).
- During shut down (no corn supply) or when the water falls to 120° F (ALL) the controller will go into shut down mode. At this time the AFS 1100 hopper will need to be filled with corn and the ETC will need to be reset (see Startup).

Heating Mode: During heating mode the controller will open the draft and run the draft fan continuously. The controller will also turn on the heating mode timer that controls the amount of corn added to the fire pot. Heating mode timer setting T1 will control the amount of time corn is added to the fire pot. Heating mode timer setting T2 will determine the amount of time until corn is added again.

Idle Mode: During idle mode, the controller will turn on the idle mode timer. Idle mode timer will momentarily open the draft, turn on the draft fan, and add corn all at the same time. Idle mode timer setting T3 will control the time these will be on and T4 will determine the amount of time until they are turned on again.

Startup / Reset: (See also AFS 1100 Startup Procedure).

- The first time the AFS 1100 is powered up or when it has shut down, the controller display will flash "LA" (Low Alarm) two times and then display the water temperature for two seconds and then start over. This is normal and indicates the system has shut down because the water is at or below 120° F.
- To start up (or reset) your AFS 1100, press the set button one time. The display will indicate "rSt" (reset) and after 1 to 2 seconds the AFS 1100 will go into heating mode. The display will continue to flash "LA" and the water temperature until the water temperature reaches 140° F (ALL + 20). After water temperature reaches 140° F, only the water temperature will be displayed until the water temperature falls to 120° F.
- Note: The fan switch must be in the on position.
- Note: Fan Switch can be shut off when loading or servicing the AFS 1100.

Parameter Description and Factory Settings:

- Set (Set Point) — 170° F
- Hy (Differential) — 5° F
- ALL (Low Alarm) — 120° F

How To:

- View Set Point — Push and immediately release the set key, display will indicate set point and will return to water temperature after 5 seconds.
- Change the Set Point — Push and hold the set key until the set point is displayed, change the value using the up and down arrows, and press the set key. The set point value will flash a few times and then the display will return to water temperature.
- Change Hy or ALL — Push and hold the set and down arrow keys at the same time until HY is displayed. Using the up and down arrows, select the parameter to be changed (Hy or ALL), push the set key once (value of parameter should be displayed), use arrows to change value, and push the set key (value should flash a few times). After 10-15 seconds the display will change back to water temperature.

Note: When changing parameters, make sure Set-Hy is at least 20° F above ALL.



Green Float Light:

Green light on: Water level O.K.

Green light off: Water level low, add water through vent pipe.

Light Switch:

Operates light.

Fan Switch:

The fan switch must be on during normal operation, but may be turned off for maintenance.



Reference

ETC SYSTEM SPECIFICATIONS

Digital custom controller XR30C FOR WOODMASTER	
CONTENTS	
1. GENERAL WARNING	1
2. GENERAL DESCRIPTION	1
3. CONTROLLING LOADS	1
4. FRONT PANEL COMMANDS	1
5. TEMPERATURE ALARM AND ITS DURATION RECORDING (HACCPT)	1
6. MAIN FUNCTIONS	2
7. PARAMETERS	2
8. ALARM SIGNALS	2
9. DEFAULT SETTING VALUES	2

1. GENERAL WARNING

1.1 PLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different than those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.
- Some parameters, such as CH are not applicable to Woodmaster see default settings: gold fig. 15 on next page.

1.2 SAFETY PRECAUTIONS

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation.
- Warning: disconnect all electrical connections before any kind of maintenance.
- Fit the probe where it is not accessible by the End User. The instrument must not be opened.
- In case of failure or faulty operation send the instrument back to the distributor or to "Direct s.r.l." (see address) with a detailed description of the fault.
- Consider the maximum current, which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or interfering.
- In case of applications in industrial environments, the use of mains filters (our model FT1) in parallel with inductive loads could be useful.

2. GENERAL DESCRIPTION

Model XR30C, format 32 x 74 mm, is a digital thermostat. It provides two relay outputs, one for the fan, the other one for alarm signalling. The probe input can be selected between PTC or NTC. The instrument has a digital input, for alarm signalling, or for switching the auxiliary output.

3. CONTROLLING LOADS

3.1 THE REGULATION OUTPUT

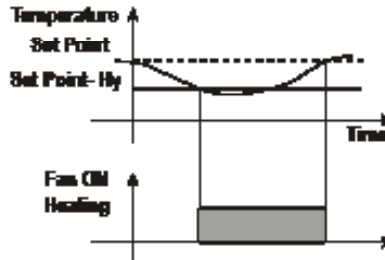
The regulation is performed according to the temperature measured by the probe.

The instruments are provided with the CH programmable parameter, which enables the user to set the regulation both for heating or cooling applications:

CH = H: heating applications, which is the application here.

3.2 CH = HT: HEATING APPLICATION.

The H_y value is automatically set under the Set Point. If the temperature decreases and reaches set point minus differential the regulation output is activated and then turned off when the temperature reaches the set point value again.



4. FRONT PANEL COMMANDS



SET: Displays the target set point, selects and confirms a parameter in the programming mode. Also used in conjunction with \uparrow (UP) and \downarrow (DOWN) to view the Min and Max recorded temperatures and to reset the stored temperatures.

- \uparrow (UP): To see the last temperature alarm that occurred in programming mode it browses the parameter codes or increases the displayed value.
- \downarrow (DOWN): To see the last temperature alarm that occurred in programming mode it browses the parameter codes or decreases the displayed value.

KEY COMBINATIONS:

- \uparrow \downarrow \rightarrow To lock & unlock the keyboard.
- SET \uparrow \downarrow To enter in programming mode.
- SET \rightarrow \leftarrow To return to the temperature display.

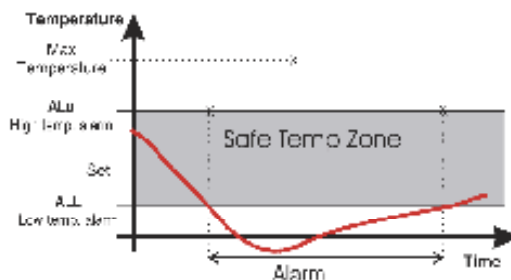
4.1 USE OF LEDES

Each LED function is described in the following table.

LED	MODE	FUNCTION
LED1	ON	- Output enabled
LED1	Flashing	- Programming Phase (flashing with LED1) - Anti-short cycle delay enabled
LED1	Flashing	- Programming Phase (flashing with LED1)
LED2	ON	- Temperature Alarm has happened, LED2 stays on until reset.

5. TEMPERATURE ALARM AND ITS DURATION

Example of Low temperature alarm



Reference



5.1 HOW TO SEE THE ALARM DURATION AND MAX (MIN) TEMPERATURE

If the LED2, the alarm LED is on, an alarm has taken place

To see the kind of alarm, the max (min) reached temperature and alarm duration do as follows:

1. Push the Up or Down key.
2. On the display the following message is shown: "HAL" for high temperature alarm ("LAL" for the minimum alarm), followed by the Maximum (minimum) temperature. Then the "dur" (time) message is displayed, followed by the "Duration" in turn.
3. Then the instrument displays the temperature once again.

NOTE1: If an alarm is still occurring the "dur" shows the partial duration.

NOTE2: the alarm is recorded when the temperature comes back to normal values

5.2 HOW TO RESET A RECORDED ALARM OR ONE THAT IS STILL OCCURRING

1. Hold the SET key pressed for more than 3s, while the recorded alarm is displayed. (The rSt message will be displayed)
2. To confirm the operation, the "rSt" message starts blinking and the normal temperature will be displayed.

6. MAIN FUNCTIONS

6.1 HOW TO SEE THE SETPOINT



Push and immediately release the SET key: the display will show the Set point value;

Push and immediately release the SET key or wait for 5 seconds to display the probe value again.

6.2 HOW TO CHANGE THE SETPOINT

1. Push the SET key for more than 2 seconds to change the Set point value;
2. The value of the set point will be displayed and the LED1 starts blinking;
3. To change the Set value push the \uparrow or \downarrow arrows within 10s.
4. To normalize the new set point value push the SET key again or wait 10s.

6.3 HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value operate as follows:



Enter the Programming mode by pressing the Set and DOWN key for 3s \Rightarrow and LED1 starts blinking.



1. Select the required parameter.
2. Press the "SET" key to display its value (only \Rightarrow LED is blinking).
3. Use "UP" or "DOWN" to change its value.

4. Press "SET" to store the new value and move to the following parameter.

To exit: Press SET + UP or wait 15s without pressing a key.

NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

6.4 HOW TO LOCK THE KEYBOARD



1. Keep pressed for more than 3s the \uparrow and \downarrow keys.
2. The "PKP" message will be displayed and the keyboard will be locked. At this point it will be possible only to see the set point or the MAX o Min temperature stored
3. If a key is pressed more than 3s the "PKP" message will be displayed.

6.5 TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the \uparrow and \downarrow keys, in the "PKP" message will be displayed.

7. PARAMETERS

RESOLUTION

Hy Differential: (0.1 \rightarrow 25.5°C / 1-256 °F) Intervention differential for set point. Fan Out IN is Set Point Minus Differential (#Hy). Fan Out OUT is when the temperature reaches the set point.

DISPLAY

CF Temperature measurement unit:

$^{\circ}$ C-Celsius; $^{\circ}$ F-Fahrenheit. **WARNING:** When the measurement unit is changed the SET point and the values of the parameters Hy, LS, US, CX, AUJ and ALL have to be checked and modified if necessary).

REResolution (for $^{\circ}$ C): (0.1 \rightarrow 1°C; 0.1 \rightarrow 0.1 °C) allows decimal point display.

ALARM

ALL Minimum temperature alarm (-60.0 \rightarrow SET°C; 50-230°F) when this temperature is reached the alarm is enabled and fan will shut off.

AFH Differential for alarm recovery: ((1-45 °F) it sets the value above the alarm value for alarm recovery.

8. ALARM SIGNALS

Message	Cause	Outputs
"LAL"	Minimum temperature alarm	Outputs unchanged.

8.1 ALARM RECOVERY

Probe alarm "PT" starts some seconds after the fault in the related probe; it automatically stops some seconds after the probe reaches normal operation. Check connections before replacing the probe.

Temperature alarms "HAL" and "LAL" automatically stop as soon as the measured temperature returns to normal values.

Alarm "EAF" and "CAF" (with HF=HAL) recover as soon as the digital input is disabled.

Alarm "CA" (with HF=PAL) recovers only by switching off unit on the instrument.

9. DEFAULT SETTING VALUES

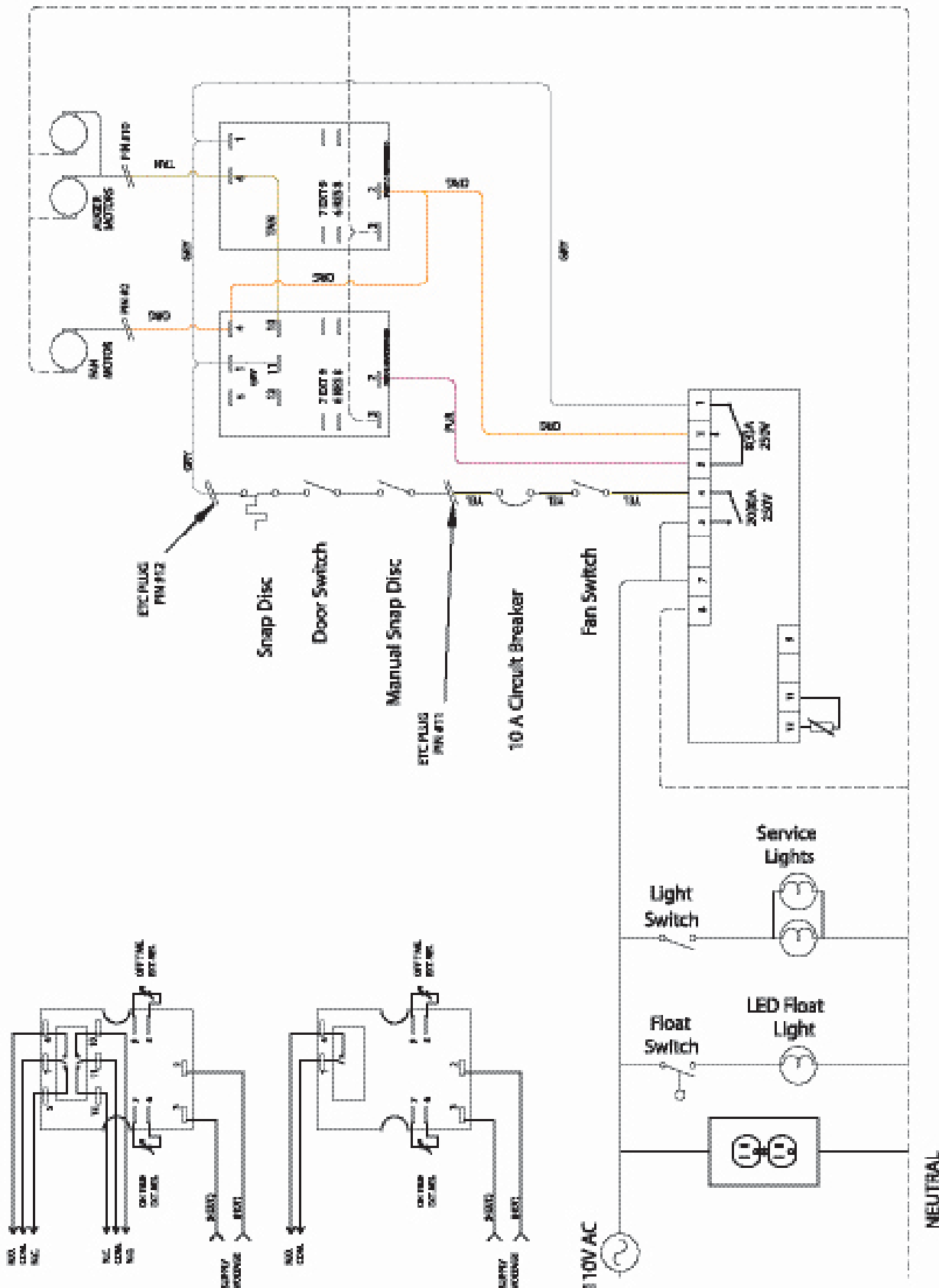
Label	Name	Range	$^{\circ}$ F	Level
Set	Set point	LS-US	170	Pr1
Hy	Differential	0.1-25.5°C / 1-256°F	10	Pr1
ALL	Minimum temperature alarm	50.0°C; Set-50°F; Set	120	Pr1



e-211298



Reference



WoodMaster Warranty
NORTHWEST MANUFACTURING, INC.
600 Polk Ave. - Red Lake Falls, MN 56750
Toll free (800) 932-3629 or (218) 253-4328

Five Year Warranty on Fire Drum and Water Jacket

Northwest Manufacturing, Inc. of Red Lake Falls, MN warrants material and labor on any defects in workmanship on the Firedrum and Water Jacket for a period of 5 years from the purchase date to the original owner only. If there is a leak in your properly delivered and installed WoodMaster Plus furnace in the first year, WoodMaster will replace the furnace at no cost to the original owner. (Leak means; a leak in the fire box or water jacket.) Northwest Manufacturing, Inc. will not be responsible for environmental conditions we cannot control.

This warranty is limited to defective parts - repair and/or replacement only, and excludes any incidental and consequential damages connected therewith. Northwest Manufacturing, Inc. is not responsible for replacement of water, water treatment, antifreeze, costs of transportation, or shipping charges. On sight service work will be offered to you. Please call Northwest Manufacturing, Inc. for current non-warranty rates.

Original Manufacturer's Warranty on Electrical Components - Parts Only

Any electrical components in the stove that are defective during normal usage will be warranted to the original owner only by Northwest Manufacturing, Inc., in compliance with the original manufacturer's warranty. Parts will be replaced on an even exchange, excluding labor & freight.

These warranties apply only if the device is installed and operated as defined in the Owner's Manual.

Outdoor wood furnaces are not intended to be the only source of heat, therefore a backup system should be in place to prevent any damage caused by lack of heat.

Additional Components Warranty Guidelines

Northwest Manufacturing, Inc. will warranty for a period of one (1) year, any factory defects or breakage of the twin high temp augers, located in the fire pot of the furnace itself. These items are a consumable item and in the case of normal wear are the responsibility of the owner to replace as is necessary.

Northwest Manufacturing, Inc. will warranty all bearings, chains, and sprockets on the WoodMaster Plus for a period of one (1) year. Parts will be exchanged on an even exchange, excluding labor & freight.

Northwest Manufacturing, Inc. will warranty the fire pot of the WoodMaster Plus for a period of two (2) years.

WARNING: Northwest Manufacturing will not warranty the inside of fire drum due to ash corrosion. Rotation of ashes must be taken care of as displayed on the maintenance list, located on the side of the furnace. The fire drum must be completely cleaned of all ashes and creosote a minimum of two (2) times per year, preferably half way through the heating season and immediately after the heating season. The chimney must be covered when stove is not in use. If antifreeze is not being used, the water jacket must be drained and flushed yearly after each heating season. After the furnace has been drained, immediately refill completely and treat with new boiler treatment.

Damage caused by abuse, accidents, improper installation, overheating, corrosion, freezing or negligence will not be covered under warranty. Damage caused by burning flammable materials (such as petroleum products) will not be covered under warranty.

Antifreeze - Only a nontoxic antifreeze is acceptable. Antifreeze will break down over a period of time and therefore should be tested annually. Always dispose of antifreeze by state and local codes. Loss of antifreeze under any condition will not be covered.

How to file a claim - ANY CLAIM UNDER THIS WARRANTY SHOULD BE MADE TO YOUR DEALER.

Customer's Name _____ Dealer's Name _____

Customer's Signature _____ Dealer's Signature _____

OWNER'S REGISTRATION CARD

Name _____

Installed by:

Dealer

Customer

Address _____

If customer, was installation explained to you?

Yes

No

Phone _____

Type of Installation:

House/Garage

Greenhouse

Other _____

Shop/Shed

Kiln

Date of Purchase _____

Model No. _____

Serial No. _____

(Model and serial numbers are located on the decal on front of stove.)

Purchased:

With Auger

Without Auger

Dealer's Name _____

Northwest Manufacturing Inc.
600 Polk Ave. SW
Red Lake Falls, MN 56750

PLACE
POSTAGE
HERE

Northwest Manufacturing Inc.
600 Polk Ave. SW
Red Lake Falls, MN 56750

WoodMaster Warranty
NORTHWEST MANUFACTURING, INC.
600 Polk Ave. - Red Lake Falls, MN 56750
Toll free (800) 932-3629 or (218) 253-4328

Five Year Warranty on Fire Drum and Water Jacket

Northwest Manufacturing, Inc. of Red Lake Falls, MN warrants material and labor on any defects in workmanship on the Firedrum and Water Jacket for a period of 5 years from the purchase date to the original owner only. If there is a leak in your properly delivered and installed WoodMaster Plus furnace in the first year, WoodMaster will replace the furnace at no cost to the original owner. (Leak means; a leak in the fire box or water jacket.) Northwest Manufacturing, Inc. will not be responsible for environmental conditions we cannot control.

This warranty is limited to defective parts - repair and/or replacement only, and excludes any incidental and consequential damages connected therewith. Northwest Manufacturing, Inc. is not responsible for replacement of water, water treatment, antifreeze, costs of transportation, or shipping charges. On sight service work will be offered to you. Please call Northwest Manufacturing, Inc. for current non-warranty rates.

Original Manufacturer's Warranty on Electrical Components - Parts Only

Any electrical components in the stove that are defective during normal usage will be warranted to the original owner only by Northwest Manufacturing, Inc., in compliance with the original manufacturer's warranty. Parts will be replaced on an even exchange, excluding labor & freight.

These warranties apply only if the device is installed and operated as defined in the Owner's Manual.

Outdoor wood furnaces are not intended to be the only source of heat, therefore a backup system should be in place to prevent any damage caused by lack of heat.

Additional Components Warranty Guidelines

Northwest Manufacturing, Inc. will warranty for a period of one (1) year, any factory defects or breakage of the twin high temp augers, located in the fire pot of the furnace itself. These items are a consumable item and in the case of normal wear are the responsibility of the owner to replace as is necessary.

Northwest Manufacturing, Inc. will warranty all bearings, chains, and sprockets on the WoodMaster Plus for a period of one (1) year. Parts will be exchanged on an even exchange, excluding labor & freight.

Northwest Manufacturing, Inc. will warranty the fire pot of the WoodMaster Plus for a period of two (2) years.

WARNING: Northwest Manufacturing will not warranty the inside of fire drum due to ash corrosion. Rotation of ashes must be taken care of as displayed on the maintenance list, located on the side of the furnace. The fire drum must be completely cleaned of all ashes and creosote a minimum of two (2) times per year, preferably half way through the heating season and immediately after the heating season. The chimney must be covered when stove is not in use. If antifreeze is not being used, the water jacket must be drained and flushed yearly after each heating season. After the furnace has been drained, immediately refill completely and treat with new boiler treatment.

Damage caused by abuse, accidents, improper installation, overheating, corrosion, freezing or negligence will not be covered under warranty. Damage caused by burning flammable materials (such as petroleum products) will not be covered under warranty.

Antifreeze - Only a nontoxic antifreeze is acceptable. Antifreeze will break down over a period of time and therefore should be tested annually. Always dispose of antifreeze by state and local codes. Loss of antifreeze under any condition will not be covered.

How to file a claim - ANY CLAIM UNDER THIS WARRANTY SHOULD BE MADE TO YOUR DEALER.

Customer's Name _____ Dealer's Name _____

Customer's Signature _____ Dealer's Signature _____

OWNER'S REGISTRATION CARD

Name _____

Installed by: Dealer Customer

Address _____

If customer, was installation explained to you?

Yes No

Phone _____

Type of Installation:

Date of Purchase _____

House/Garage Shop/Shed
 Greenhouse Kiln

Model No. _____

Other _____

Serial No. _____

Purchased:

(Model and serial numbers are located on the decal on front of stove.)

With Auger Without Auger

Dealer's Name _____

Northwest Manufacturing Inc.
600 Polk Ave. SW
Red Lake Falls, MN 56750

PLACE
POSTAGE
HERE

Northwest Manufacturing Inc.
600 Polk Ave. SW
Red Lake Falls, MN 56750

Warranty



WoodMaster Warranty
NORTHWEST MANUFACTURING, INC.
600 Polk Ave. - Red Lake Falls, MN 56750
Toll free (800) 932-3629 or (218) 253-4328

Five Year Warranty on Fire Drum and Water Jacket

Northwest Manufacturing, Inc. of Red Lake Falls, MN warrants material and labor on any defects in workmanship on the Firedrum and Water Jacket for a period of 5 years from the purchase date to the original owner only. If there is a leak in your properly delivered and installed WoodMaster Plus furnace in the first year, WoodMaster will replace the furnace at no cost to the original owner. (Leak means; a leak in the fire box or water jacket.) Northwest Manufacturing, Inc. will not be responsible for environmental conditions we cannot control.

This warranty is limited to defective parts - repair and/or replacement only, and excludes any incidental and consequential damages connected therewith. Northwest Manufacturing, Inc. is not responsible for replacement of water, water treatment, antifreeze, costs of transportation, or shipping charges. On sight service work will be offered to you. Please call Northwest Manufacturing, Inc. for current non-warranty rates.

Original Manufacturer's Warranty on Electrical Components - Parts Only

Any electrical components in the stove that are defective during normal usage will be warranted to the original owner only by Northwest Manufacturing, Inc., in compliance with the original manufacturer's warranty. Parts will be replaced on an even exchange, excluding labor & freight.

These warranties apply only if the device is installed and operated as defined in the Owner's Manual.

Outdoor wood furnaces are not intended to be the only source of heat, therefore a backup system should be in place to prevent any damage caused by lack of heat.

Additional Components Warranty Guidelines

Northwest Manufacturing, Inc. will warranty for a period of one (1) year, any factory defects or breakage of the twin high temp augers, located in the fire pot of the furnace itself. These items are a consumable item and in the case of normal wear are the responsibility of the owner to replace as is necessary.

Northwest Manufacturing, Inc. will warranty all bearings, chains, and sprockets on the WoodMaster Plus for a period of one (1) year. Parts will be exchanged on an even exchange, excluding labor & freight.

Northwest Manufacturing, Inc. will warranty the fire pot of the WoodMaster Plus for a period of two (2) years.

WARNING: Northwest Manufacturing will not warranty the inside of fire drum due to ash corrosion. Rotation of ashes must be taken care of as displayed on the maintenance list, located on the side of the furnace. The fire drum must be completely cleaned of all ashes and creosote a minimum of two (2) times per year, preferably half way through the heating season and immediately after the heating season. The chimney must be covered when stove is not in use. If antifreeze is not being used, the water jacket must be drained and flushed yearly after each heating season. After the furnace has been drained, immediately refill completely and treat with new boiler treatment.

Damage caused by abuse, accidents, improper installation, overheating, corrosion, freezing or negligence will not be covered under warranty. Damage caused by burning flammable materials (such as petroleum products) will not be covered under warranty.

Antifreeze - Only a nontoxic antifreeze is acceptable. Antifreeze will break down over a period of time and therefore should be tested annually. Always dispose of antifreeze by state and local codes. Loss of antifreeze under any condition will not be covered.

How to file a claim - ANY CLAIM UNDER THIS WARRANTY SHOULD BE MADE TO YOUR DEALER.

Customer's Name _____ Dealer's Name _____

Customer's Signature _____ Dealer's Signature _____

