



**Model #s: HH-40-GFA, HH-50V-GFA,
HH-100V-GFA, HH-150V-GFA**



ANSI Z83.7-2000



IMPORTANT: Read and understand all of the directions in this manual before assembling, starting or servicing the heater. Improper use of this heater can cause serious injury. Keep this manual for future reference.

⚠ GENERAL HAZARD WARNING:

Failure to comply with the precautions and instructions provided with this heater, can result in death, serious bodily injury and property loss, or damage from the hazards of fire, explosion, burn, asphyxiation, and carbon monoxide poisoning.

Only persons who can understand and follow the instructions should use or service this heater. If you need assistance or heater information such as an instruction manual, labels, etcetera, contact the manufacturer.

CONSUMER: Retain this manual for future reference.

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Phone: 215-891-8460 Fax: 215-891-8461 Web: www.pinnacleint.com Email: info@pinnacleint.com

NEVER LEAVE HEATER UNATTENDED WHILE BURNING, CONNECTED TO A POWER SOURCE, OR WHILE CONNECTED TO A FUEL SOURCE



Propane Forced Air Heaters

⚠ WARNING:

Fire, burn, inhalation, and explosion hazard. Keep solid combustibles, such as building materials, paper or cardboard, a safe distance away from the heater as recommended by these instructions. Never use the heater in spaces which do or may contain volatile or airborne combustibles, or products such as gasoline, solvents, paint thinners, dust particles or unknown chemicals.

⚠ CAUTION: This is an unvented portable heater. It uses air (oxygen) from the area which it is used. Ample combustion and ventilation air must be provided. See VENTILATION page 6.

⚠ WARNING:

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

- An LP cylinder not connected for use shall not be stored in the vicinity of this or any other appliance.

- **WHAT TO DO IF THE SMELL OF GAS IS PRESENT:**

- **DO NOT attempt to light heater**
- **Extinguish any open flame**
- **Shut off gas to heater**
- **If odor continues, contact your local gas supplier or fire department.**
- **Do not touch any electric switch, do not use any phone in your building**
- **Immediately call your gas supplier from a neighbors phone. Follow the gas suppliers instructions**
- **If you can not reach your gas supplier, call the fire department**
- **Service must be done by a qualified service agency or the gas supplier**

⚠ WARNING:

The state of California requires the following warning:

Combustion by-products produced when using this product contain carbon monoxide, a chemical known to the state of California to cause cancer and birth defects (or other reproductive harm).

⚠ WARNING:

Do not operate this heater until you have read, and thoroughly understand these safety and operating instruction. Failure to comply with the precautions and instructions provided with this heater can result in death, serious bodily injury, property loss or damage from the hazards of fire, explosion, burns, asphyxiation or carbon monoxide poisoning. Only persons who can read and understand these instructions should use or service this heater.

⚠ WARNING: Not for use in homes or recreational vehicles.

⚠ WARNING: Not for use with ductwork

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Propane Forced Air Heaters

Features

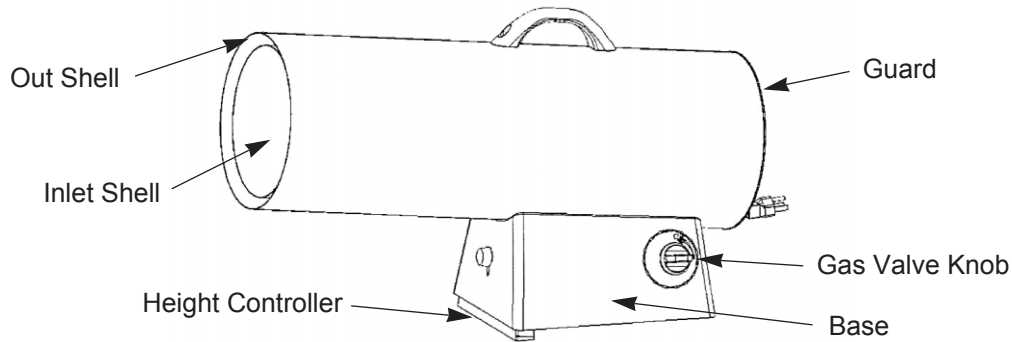


Figure 1. Product Features

Specifications

Model #	Rating BTU/Hr	Fuel Consumption	Electrical Input	Manifold Pressure	Amps	Weight (Lbs)	Size (L x W x H)
HH-40-GFA	40,000	1.9 Lbs/Hr	120V, 60 Hz	11" W.C.	0.6	15.2	18.2" x 7.8" x 13.6"
HH-50V-GFA	50,000 30,000	2.3 Lbs/Hr 1.4 Lbs/Hr	120V, 60 Hz	10.5" W.C.	0.6	15.2	18.2" x 7.8" x 13.6"
HH-100V-GFA	100,000 70,000	4.6 Lbs/Hr 3.3 Lbs/Hr	120V, 60 Hz	10" W.C.	0.8	22.7	25.1" x 8.9" x 15.9"
HH-150V-GFA	150,000 120,000	7 Lbs/Hr 5.6 Lbs/Hr	120V, 60 Hz	8" W.C.	0.8	22.7	25.1" x 8.9" x 15.9"

Specifications subject to change without notice

Safety Information

This heater is designed for use as a construction heater in accordance with ANSI Z83.7/CGA 2.14. Other standards determining the use of fuel gasses and heating appliances for specific uses. It's intended use is primarily for the temporary heating of buildings under construction, alteration or repair.

Direct-fired means that all of the combustion products enter the heated space. This heater is rated at 98% combustion efficiency, but still produces small amounts of carbon monoxide. Carbon monoxide is toxic. Humans can tolerate small amounts of carbon monoxide, and caution should be taken to provide adequate ventilation. Failure to provide adequate ventilation in accordance with this manual could result in death. Early signs of carbon monoxide poisoning resemble the flu. The symptoms of inadequate ventilation are:

- * headache * dizziness * burning of the nose and eyes
- * nausea * dry mouth or * sore throat

- If the heater is being used in the presence of others, be sure to inform them of the proper safety precautions, operating procedures and the hazards involved. Some people are more affected by carbon monoxide than others. These

are pregnant women, people with heart or lung disease or anemia, those under the influence of alcohol or at high altitudes.

- Check the heater thoroughly for damage before each use. DO NOT operate a damaged heater.
- DO NOT modify this heater or operate a heater that has been modified from it's original state. Modifying this heater will void your warranty.
- Keep children and animals away from heater.
- Always set heater on clear, level surface.
- This heater is not for use on finished floors.
- For outdoor use, and indoor use only in well ventilated areas. Provide at least 3 square feet of opening per 100,000 Btu of rated operation for proper ventilation
- NEVER use heater in occupied dwellings.
- Operate in a manner that heater will not be exposed directly to rain or dripping water
- Keep heater area free from combustible materials such

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Propane Forced Air Heaters

Safety Information (continued)

as gasoline, paint thinners and other flammable vapors and liquids. Dust is combustible. Do not use heater in areas of high dust concentration.

- ALWAYS maintain proper distance from combustibles

Minimum clearance from Combustibles:

TOP	SIDES	FRONT
36"	24"	72"

- Operate only on level and stable surfaces.
- Do not restrict inlet or outlet of heater. Heater is never to be used with ductwork.
- NEVER leave heater unattended.
- To prevent injury, always wear gloves when handling heater. Never handle an operating or hot heater, as severe burns may result.
- Use heater in accordance with all local codes. In the absence of local codes, refer to The National Fuel Code, ANSI Z223.1
- Use only the electrical/power cord specified. Electrical and grounding connection must comply with National Electrical Code - ANSI/NFPA 70 (USA) and CSA C22.1 Canadian Electrical Code, Part 1 (Canada).

and Handling of Liquefied Petroleum Gas , ANSI/NFPA 58. Your local library or fire department will have this booklet.

- The cylinder must be equipped with a collar to protect the gas valve, an arrangement of vapor withdrawal, a shut-off valve terminating the cylinder valve outlet as specified in the American National Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections, and a safety relief valve in direct contact with the vapor space of the tank.
- Always keep the cylinder in an upright position. Avoid knocking the cylinder over on its side with the hose/regulator connected, as this can cause damage to the regulator diaphragm.
- Never store a propane cylinder indoors or in the vicinity of any gas burning appliances.
- Protect the cylinder valve, and handle it with care.
- Be sure that the shut-off valve is closed tightly after each use.
- Be sure to protect the POL fitting from damage when disconnected. Damage to this fitting can lead to leaks.
- Never connect an unregulated cylinder to the heater. Always use the hose and regulator supplied.
- Never use any other hose and regulator.
- Do not subject the cylinder to excessive heat.

Average Temp. (°F)	HH-40 20 or 100lb. cylinder	HH-50V 20 or 100lb. cylinder	HH-100V 100lb. cylinder	HH-150V 100lb. cylinder
32°	1	1	2	2
20°	1	1	2	2
10°	1	1	3	3
0°	1	1	3	3
-10°	2	2	Use larger tank	Use larger tank
-20°	2	2	Use larger tank	Use larger tank

LP Characteristics:

- Flammable, explosive under pressure, heavier than air and pools in low areas.
- In its natural state, propane has no odor, but for safety an odorant that smells like rotten cabbage is added.
- Contact of LP gas with the skin can cause freeze burns.
- Heater is manufactured for use with LP gas only. DO NOT attempt to convert to any other gas. Such modifications are dangerous and will void your warranty.
- When heater is not in use, LP supply must be shut OFF.

Propane Supply/Information

The chart above, shows the minimum number of **100 lb. cylinders** required in cold weather. Your local LP dealer will help you select the proper supply system.

You must provide the propane gas and cylinder(s). Use this heater only with a propane vapor withdrawal supply system. Refer to Chapter 5 of the Standard for Storage

The amount of LP gas used by this heater varies. The two factors that will determine this are as follows:

- The amount of gas in each tank.
- The temperature of the cylinder and surrounding area.

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Propane Forced Air Heaters

Theory of Operation

Fuel System: The heater is attached to the Propane Cylinder, which is under pressure. The pressure between the cylinder and the heater is controlled by the regulator. The pressure in the cylinder pushes fuel to the nozzle in the Combustion Chamber. The fuel is sprayed into the combustion chamber in a fine mist.

Quick-Fire Ignition: A Spark Module sends high voltage to a spark plug (HH-50V/100V/150V only). Model HH-40-GFA uses a manual Piezo ignitor to send the spark when you turn the control knob to "High/Ign". The spark ignites the fuel as it is sprayed into the combustion chamber.

Air System: A fan is turned by the heavy duty motor, which forces air around and into the combustion chamber, where it is super-heated and forced out the front of the chamber.

Electrical System Protection: The heaters' electrical system is protected by a circuit breaker that protects the system components from damage. If the heater fails, check the fuse first, and replace if necessary.

Flame Sensor: The heater uses a photocell to "see" the flame in the combustion chamber. Should the flame extinguish, the thermocouple will stop electrical current and the heater will shut off.

Unpacking and Assembly

- Remove heater from Carton
- Remove all protective packaging protecting heater during shipping
- Save carton and packing materials for later storage
- Inspect heater closely for any damage that may have occurred during shipping. If there is any damage, return the heater to the place of purchase.

⚠ Caution: The Propane (LP) gas pressure regulator and hose assembly supplied with the heater must be used without alteration.

⚠ Caution: Be sure to inspect the regulator hose before each use. If the hose is cut or frayed, replace it with the manufacturer suggested assembly.

Checking for Leaks

To check for leaks, make up a 50/50 solution of dishsoap and water. Apply this solution to all gas connections. If bubbles appear, there is a leak. If a leak is found, turn off the gas supply, re-make the leaking connection. If the leak persists after several tries, contact Pinnacle Customer Service at 215-891-8460.

The installation of this heater must meet all local codes and/or gas utility requirements. In the absence of local codes, the National Fuel Code ANSI Z223.1 should be followed.

The minimum clearances to any combustible construction materials must be maintained at all times.

Ventilation

Always provide a fresh air opening in the heated space of at least three square feet (2,800 sq. cm) for each 100,000 BTU/Hr. of heater output. Provide a larger opening if more heaters are being used. As an example, an HH-150V-GFA heater will require:

- a two-car garage door open 6 inches, or
- a single car garage open 9 inches, or
- two thirty two inch wide windows open fifteen inches.

Connecting to Gas Supply

IMPORTANT! Always use a propane cylinder that has a connection device that is compatible with the hose and regulator assembly supplied.

- To connect hose and regulator assembly, rotate fitting on hose/regulator counterclockwise into threads on tank valve (see Figure 2). Be sure to tighten firmly. Important: Be sure to position the regulator so that the regulator is horizontal, also as shown in Figure 2.

-To connect to heater inlet, rotate clockwise and tighten firmly with a wrench (see Figure 3, Page 7).

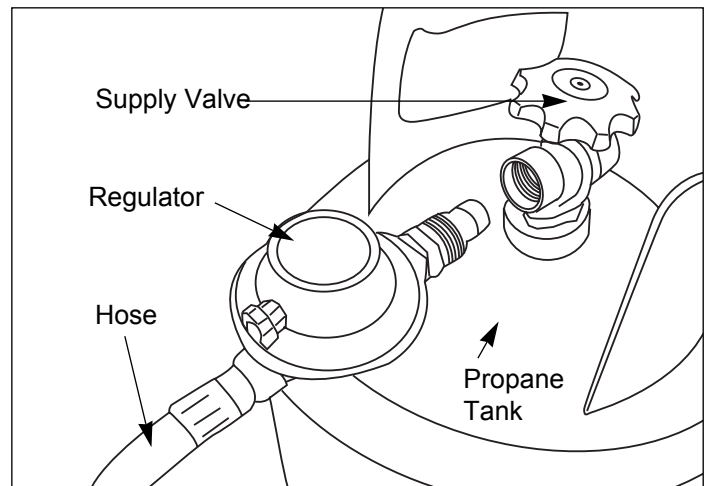


Figure 2. Connecting Hose/Regulator to Tank Valve

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Propane Forced Air Heaters

Connecting to Gas Supply (continued)

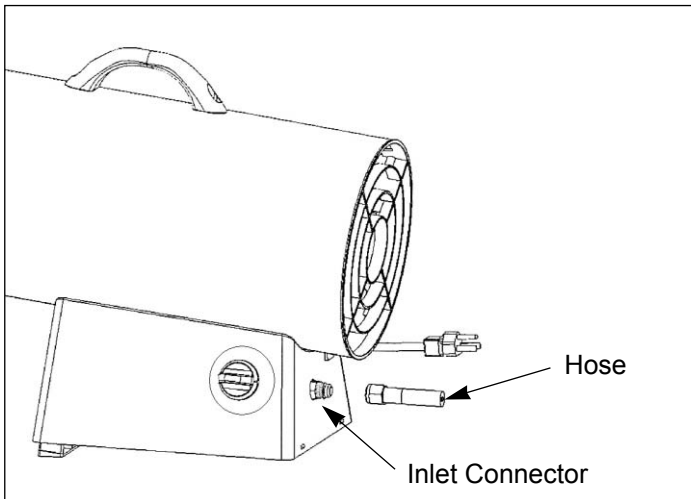


Figure 3. Connecting Hose to Heater Inlet

- Open valve on propane cylinder slowly. If the valve is not opened slowly, the excess flow check valve in the regulator will stop the flow of gas. If this should happen, close the valve, wait one minute (or until you hear the valve click), and re-open, slowly.

- Be sure to inspect all connections for leaks, by using a 50/50 mixture of dishsoap and water on all connection. Any bubbles forming indicate a leak.

Lighting Instructions

1. Connect the Power Cord to a properly grounded three (3) prong 120 Volt, 60 Hz single phase outlet.
2. Turn the Gas Valve Knob on the heater to the OFF position.
3. Wait five (5) minutes for any gas to clear. Smell for gas. If none is evident, proceed to the next step.
4. Turn the knob at the LP Gas supply cylinder counter-clockwise to the ON position.
5. Push in the Gas Valve Knob on the heater and hold it for at least five (5) seconds. Then turn the knob counter-clockwise to the "LOW/IGN" position. This will light the burner. It may be necessary to repeat this process a few times to ignite the heater. NOTE: on Model HH-40-GFA, turn knob to "HIGH/IGN" position.
6. Keep the Valve Knob depressed for at least 30 seconds after the burner is lit. This will heat the thermocouple. After 30 seconds, release the Control Knob.

7. If heater does not stay lit, repeat Steps 5 and 6.

8. When burner stays lit, turn knob to desired setting (except Model HH-40-GFA).

Test Firing Heater

To test fire this heater, follow the instructions applicable to your specific gas control system. It is always a good idea to test fire your heater in a safe and controlled environment, away from any combustibles to be sure that all functions of the heater and gas supply system are operating properly.

Leak test all gas connections with a 50/50 solution of dish soap and water. DO NOT use a flame to test for leaks!

Shutdown Instructions

1. Turn the Gas Valve Knob on the heater to the OFF position.
2. Turn the knob at the supply cylinder clockwise to the OFF position.
3. Disconnect heater from power supply.

Storage

Always disconnect the heater from the LP cylinder before putting the heater into storage. If for any reason the heater is to be stored indoors, the tank MUST be disconnected from the LP cylinder, and the cylinder stored outdoors in a well-ventilated area, out of the reach of children, and in accordance with the Standard for Storage and Handling of Liquefied Gases, ANSI/NFPA 59 - latest edition. The plastic valve plug or valve cover supplied with the cylinder must be re-installed on the valve to protect the fitting from damage.

WARNING: Never store an LP cylinder inside of a building, or near any other gas or oil burning appliances.

NOTE: Installation and repair of this heater should be done by a qualified service person.

CAUTION: Always be sure that the heater has been allowed to cool for at least 30 minutes before attempting service or maintenance.

It is recommended that you save all of the packaging materials that came with your heater, and re-package the heater using these materials for safe storage.

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**Propane
Forced Air Heaters**

Troubleshooting Guide

Problem	Possible Cause	Solution
Fan does not turn when electricity is connected	<ol style="list-style-type: none"> 1. No electric power to heater 2. Blades of fan in contact with heater housing 3. Fan blades bent 4. Fan motor defective 	<ol style="list-style-type: none"> 1 Check current at outlet. If voltage is correct, inspect extension and power cords for cuts, frays or breaks 2. Check housing for damage. Be sure there are no dents in the housing obstructing the fan 3. Straighten all fan blades 4. Replace fan motor
Heater will not fire (ignite)	<ol style="list-style-type: none"> 1 No spark at igniter 2. Incorrect spark gap 3. Corroded electrode 	<ol style="list-style-type: none"> 1. Inspect igniter wire. Re-attach, or tighten if loose. Inspect Spark module, and replace if necessary. Inspect all other electrical components 2. Set plug gap to 0.16" (4mm) 3. Replace spark plug
Heater stops running by itself	<ol style="list-style-type: none"> 1. Temperature inside heater is too high, causing sensor to shut down operation 2. Damaged control valve 3. Dust or debris accumulated in heater 	<ol style="list-style-type: none"> 1. If heater input or output is restricted, the inside temperature can become too hot. Keep the areas in front and behind heater clear of obstructions 2. Replace control valve 3. Clean inside of heater

Always be sure to follow proper maintenance procedures. This should include cleaning the inside the heater once a month, and checking the spark gap at least once a heating season.

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Propane Forced Air Heaters

Wiring Diagrams

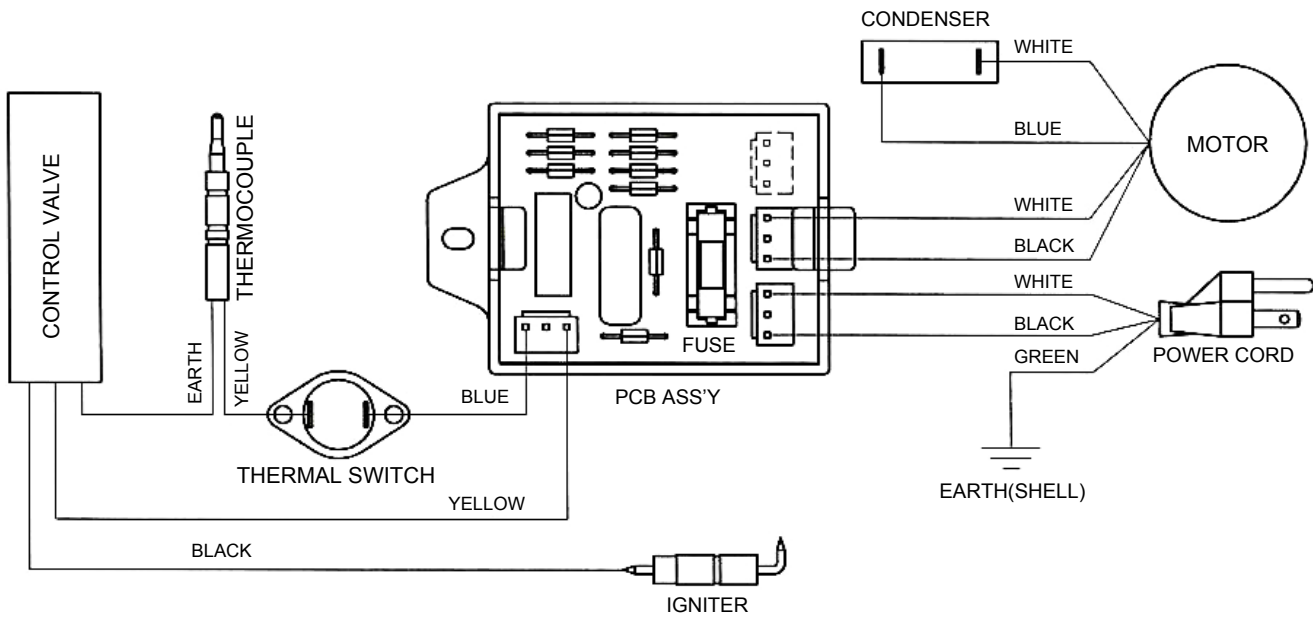


Figure 4. Wiring Diagram for Piezo/Manual Spark Models.

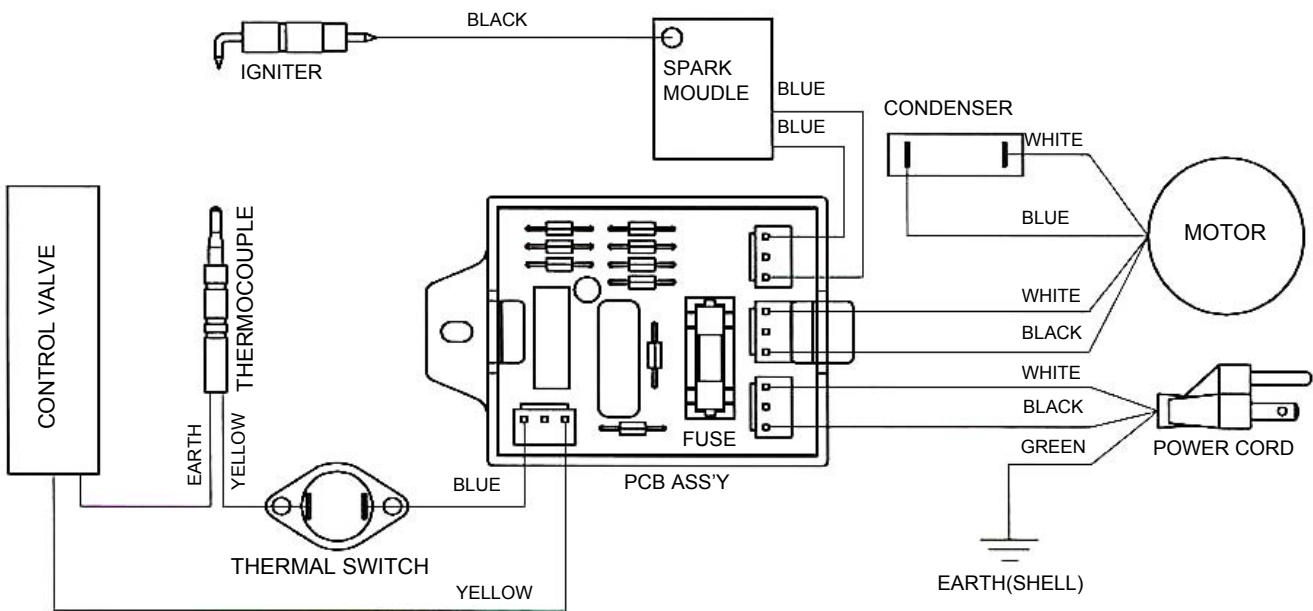


Figure 5. Wiring Diagram for Continuous Spark Models.

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Propane
Forced Air Heaters

Exploded Drawing/Part Breakdown

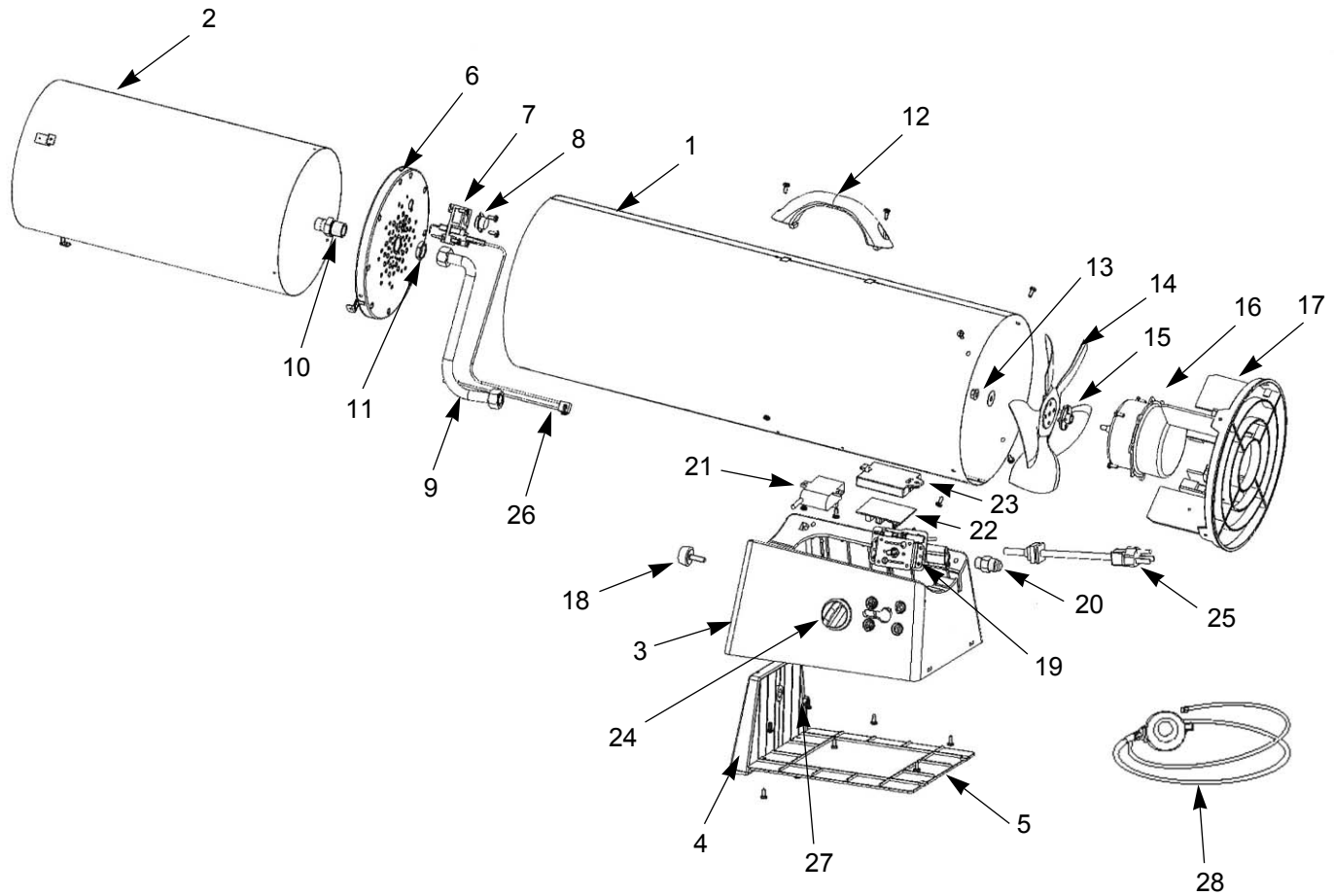


Figure 6. Exploded View - All Models

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**Propane
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Bills of Materials

Item #	Description	Part List			
		HH-40-GFA	HH-50V-GFA	HH-100V-GFA	HH-150V-GFA
1	Out Shell	22-524-0001	22-524-0002	22-524-0003	22-524-0003
2	Inner shell Ass'y	22-524-0004	22-524-0004	22-524-0005	22-524-0005
3	Base	22-501-0001	22-501-0001	22-501-0002	22-501-0002
4	Height Controller	22-512-0001	22-512-0001	22-512-0002	22-512-0002
5	Base Cover	22-508-0001	22-508-0001	22-508-0002	22-508-0002
6	Inner Shell Cap	22-505-0001	22-505-0001	22-505-0002	22-505-0002
7	MULTI BKT Ass'y	22-504-0002	22-504-0002	22-504-0003	22-504-0003
8	Thermal Swich	22-603-0001	22-603-0002	22-603-0001	22-603-0001
9	Tubing Ass'y	22-605-0001	22-605-0001	22-605-0002	22-605-0003
10	Nozzle	22-081-0001	22-081-0002	22-081-0003	22-081-0004
11	Nozzle Nut	22-518-0001	22-518-0001	22-518-0001	22-518-0002
12	Handle	22-511-0001	22-511-0001	22-511-0001	22-511-0001
13	Flange Hexa Nut	22-518-0003	22-518-0003	22-518-0003	22-518-0003
14	Fan	22-514-0001	22-514-0001	22-514-0002	22-514-0002
15	Cushion Pad	22-509-0001	22-509-0001	22-509-0001	22-509-0001
16	Motor Ass'y	22-061-0001	22-061-0001	22-061-0002	22-061-0002
17	Guard	22-101-0003	22-101-0003	22-101-0004	22-101-0004
18	Round Bolt	22-503-0002	22-503-0002	22-503-0002	22-503-0002
19	Valve Ass'y	22-011-0001	22-011-0002	22-011-0003	22-011-0004
20	Inlet Connector	22-507-0001	22-507-0001	22-507-0001	22-507-0001
21	Spark Moudle		22-604-0001	22-604-0001	22-604-0001
22	PCB	22-521-0001	22-521-0002	22-521-0002	22-521-0002
23	PCB Case	22-506-0001	22-506-0001	22-506-0001	22-506-0001
24	Valve Knob	22-516-0001	22-516-0001	22-516-0001	22-516-0001
25	Power Cord Ass'y	22-131-0001	22-131-0001	22-131-0001	22-131-0001
26	Thermal Switch Cable	22-601-0001	22-601-0001	22-601-0001	22-601-0001
27	Hexa Nut	22-518-0004	22-518-0004	22-518-0004	22-518-0004
28	Regulator Ass'y	22-041-0001	22-041-0001	22-041-0002	22-041-0002

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Propane
Forced Air Heaters

LIMITED WARRANTY

Pinnacle Products International, Inc. warrants this heater to the original retail purchaser only, to be free from defects in material and workmanship for a period of one (1) year from the date of initial purchase. This product must be properly installed, maintained and operated in accordance with the instructions provided.

Pinnacle Products International, Inc. requires reasonable proof of your date of purchase from an authorized retailer or distributor. Therefore, you should keep your sales slip, invoice, or cancelled check from the original purchase. This Limited Warranty shall be limited to the repair or replacement of parts, which prove defective under normal use and service within the warranty period, and which **Pinnacle Products International, Inc.** shall determine at its reasonable discretion.

This warranty does not apply to products purchased for rental use.

This Limited Warranty does not cover any failures or operating difficulties due to normal wear and tear, accident, abuse, misuse, alteration, misapplication, improper installation or improper maintenance and service by you or any third party. Failure to perform normal and routine maintenance on the heater, shipping damage, damage related to insects, birds, or animals of any kind, and damage due to weather conditions are also not covered. In addition, the Limited Warranty does not cover damage to the finish, such as scratches, dents, discoloration, rust or other weather damage, after purchase.

All transportation costs for the return of the damaged product or parts will be the responsibility of the purchaser. Upon receipt of damaged item, **Pinnacle Products International, Inc.** will examine the item and determine if defective. **Pinnacle Products International, Inc.** will repair or replace and return the item, freight pre-paid. If **Pinnacle Products International, Inc.** finds the item to be in normal operating condition, or not defective, the item will be returned freight collect. This Limited Warranty is in lieu of all other express war-

ranties. **Pinnacle Products International, Inc.** disclaims all warranties for products that are purchased from sellers other than authorized retailers or distributors.

AFTER THE PERIOD OF THE ONE (1) YEAR EXPRESS WARRANTY EXPIRES, **Pinnacle Products International, Inc.** DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR APPLICATION. FURTHER, **Pinnacle Products International, Inc.** SHALL HAVE NO LIABILITY WHATSOEVER TO PURCHASER OR ANY THIRD PARTY FOR ANY SPECIAL, INDIRECT, PUNITIVE, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

Pinnacle Products International, Inc. assumes no responsibility for any defects caused by third parties. This Limited Warranty gives the purchaser specific legal rights; a purchaser may have other rights depending upon where he or she lives. Some states do not allow the exclusion or limitation of special, incidental or consequential damages, or limitations on how long a warranty lasts, so the above exclusion and limitations may not apply to you.

Pinnacle Products International, Inc. does not authorize any person or company to assume for it any other obligation or liability in connection with the sale, installation, use, removal, return, or replacement of its equipment, and no such representations are binding on **Pinnacle Products International, Inc.**

Always be sure to specify model number and serial number when making any claim with **Pinnacle Products International, Inc.** For your convenience use the space provided below to list this information:

Model #: _____

Serial #: _____

Date of Purchase: _____