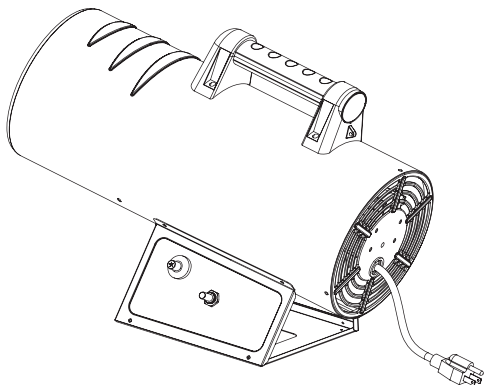




# OWNER'S MANUAL

## LP SHOP HEATER MODEL # HIL-SHOP LP40



### ⚠ 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.

-Service must be performed by a qualified service agency.



ANSI Z83.7-2011 / CSA 2.14-2011



This is an unvented portable heater. It uses air (oxygen) from the area in which it is used. Adequate combustion and ventilation air must be provided. Refer to page 2.

**ANS Z83.26-2014 • CSA 2.37-2014 Gas-Fired Outdoor Infrared Patio Heaters**

**ATTACH YOUR RECEIPT HERE**

**Serial Number \_\_\_\_\_ Purchase Date \_\_\_\_\_**

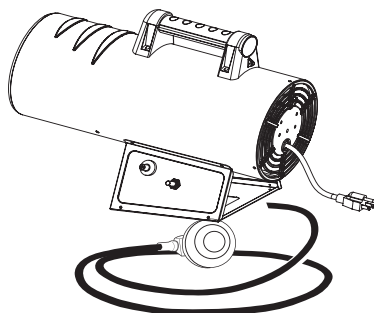


**Questions, problems, missing parts?** Before returning to your retailer, call our customer service department at **1-888-775-1330**, 7 a.m. - 4 p.m., PST, Monday - Friday. Or Email our warranty department at [warranty@azpatioheaters.com](mailto:warranty@azpatioheaters.com).

# HEATING PRODUCTS

## PROPANE CONSTRUCTION FORCED AIR HEATER

### OWNER'S MANUAL



**HIL-SHOP-LP30, HIL-SHOP-LP35, HIL-SHOP-LP40**

**IMPORTANT:** Read and understand this manual before assembling, starting or servicing heater. Improper use of 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 hazards of fire, explosion, burn, asphyxiation, carbon monoxide poisoning and/or electrical shock.


**Only persons who can understand and follow the instructions should use or service this heater.**

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## SAFETY

 **WARNING:** This product contains and/or generates chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

 **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 the instructions. Never use the heater in spaces which do or may contain volatile or airborne combustibles or products such as gasoline, solvents, paint thinner, dust particles or unknown chemicals.

The heater is designed for use as a construction heater in accordance with ANSI Z83.7•CGA2.14. (Check with your local fire safety authority if you have questions about heater use.) Other standards govern the use of fuel gases and heating products for specific uses. Your local authority can advise you about these. The primary purpose of construction heaters is to provide temporary heating of buildings under construction, alteration or repair. Properly used, the heater provides safe economical heating. Products of combustion are vented into the area being heated.

### Get fresh air at once!

Check for proper ventilation and have heater serviced.

**Propane Gas:** Propane gas is odorless. An odor-making agent is added to propane gas. The odor helps you detect a propane gas leak. However, the odor added to propane gas can fade. Propane gas may be present even though no odor exists.

1. Install and use heater with care. Follow all local ordinances and codes. In the absence of local ordinances and codes, refer to the *Standard for Storage and Handling of Liquefied Petroleum Gas, ANSI/NFPA 58* and the *Propane Gas Installation Code, CAN/CGA B149.2*. This instructs on the safe storage and handling of propane gases.
2. Use only the electrical voltage and frequency specified on model plate. The electrical connections and grounding of the heater shall follow the *National Electric Code, ANSI/NFPA 70* or the **CSA C 22.1 Canadian Electrical Code, Part 1**
3. Electrical grounding instructions - This appliance is equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle or extension cord.
4. This product has been approved for use in the Commonwealth of Massachusetts.
5. Use only a three-prong, grounded extension cord.
6. Use only the hose and factory preset regulator provided with the heater.
7. Use only propane gas set up for vapor withdrawal.
8. Provide adequate ventilation. Before using heater, provide at least a 1.5 ft<sup>2</sup> (1400 cm<sup>2</sup>) opening of fresh, outside air.

## SAFETY

### Continued

9. Do not use heater in basement or below ground level. Propane gas is heavier than air. If a leak occurs, propane gas will sink to the lowest possible level.
10. Keep appliance area clear and free from combustible materials, gasoline, paint thinner and other flammable vapors and liquids.
11. Do not use heater in areas with high dust content. Dust is combustible.
12. Minimum heater clearances from combustibles: Outlet: 6 Ft. (1.83 m), Sides: 2 Ft. (0.61 m), Top: 6 Ft. (1.83 m), Rear: 2 Ft. (0.61 m)
13. The heater must be located at least 6 Ft. (1.83m) in the U.S. or 10 Ft.(3m) in Canada from any propane gas container. And the heater shall not be directed towards propane gas containers within 20 Ft.(6m)
14. Not intended for use on finished floors.
15. Never block air inlet (rear) or air outlet (front) of heater.
16. Keep heater away from strong drafts, water spray, rain or dripping water.
17. Do not leave heater unattended.
18. Keep children and animals away from heater.
19. Never move, handle, or service a hot, operating, or plugged-in heater. Severe burns may result. You must wait 15 minutes after turning heater off.

## UNPACKING

1. Remove all packing items applied to heater for shipment. Keep plastic cover caps (attached to inlet connector and hose/regulator assembly) for storage.
2. Remove all items from carton.
3. Check all items for shipping damage. If heater is damaged, promptly inform dealer where you bought heater.

## PRODUCT IDENTIFICATION

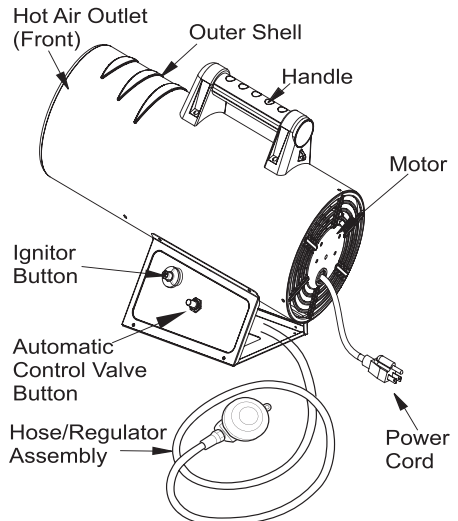


Figure 1 - 35,000 Btu/Hr Model Shown

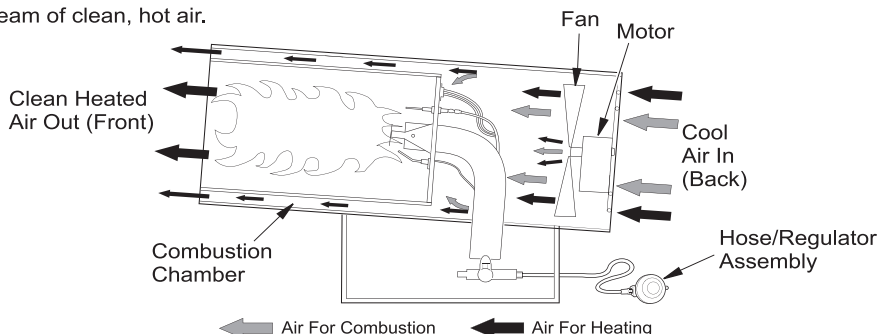
## THEORY OF OPERATION

**The Fuel System:** The hose/regulator assembly attaches to the propane gas supply.

**The Air System:** The motor turns the fan. The fan pushes air into and around the combustion chamber. This air is heated and provides a stream of clean, hot air.

**The Ignition System:** The piezo ignitor lights the burner.

**The Automatic Control System:** This system causes the heater to shut down if the flame goes out.



**Figure 2 - Cross Section Operational View**

## PROPANE SUPPLY

Propane gas and propane tank(s) are to be furnished by the user.

Use this heater only with a propane vapor withdrawal supply system. The installer must confirm with local codes, or into absence of local code, with the standard for....ANSI/NFPA58.....

1. The amount of propane gas in tank(s)
2. The temperature of tank(s)

This heater is designed to operate with a minimum 20 lb (9 kg) propane tank. You may need two or more tanks or one larger tank in colder weather. It is recommended you use a 100 lb (45 kg) tank for longer operation. See chart below. Less gas is vaporized at lower temperatures. Your local propane gas dealer will help you select the proper supply system. The minimum surrounding air temperature rating for each heater is 0° F (-18° C).

Average Temp At Tank Location	No. Of Tanks 100 lb (45 kg)
Above 0° F (-18° C)	1
Below 0° F (-18° C)	2

## INSTALLATION

**⚠ WARNING:** Review and understand the warnings in the Safety section, page 2. They are needed to safely operate this heater. Follow all local and national codes when using this heater.

**⚠ WARNING:** Test all gas piping and connections for leaks after installation or servicing. Never use an open flame to check for a leak. Apply a mixture of liquid soap and water to all joints. Bubbles forming show a leak. Correct all leaks at once.

1. Provide propane supply system (see Propane Supply).

# INSTALLATION

## Continued

2. Connect QCC fitting on hose/regulator assembly to propane tank(s). Turn QCC fitting counterclockwise into threads on tank. Tighten firmly using wrench. **IMPORTANT:** Position regulator so that hose leaving the regulator is in a horizontal position (see Figure 3, page 5).
3. Connect hose to valve inlet (see Figure 4). Tighten firmly using a wrench.  
**IMPORTANT:** Use extra hose or piping if needed. Install extra hose or piping between hose/regulator assembly and propane tank. You must use the regulator supplied with heater.
4. Open propane supply valve on propane tank(s) slowly. *Note: If not opened slowly, excess-flow check valve on propane tank will stop gas flow. You may hear a click from the excess-flow check valve closing. If this happens, reset the excess-flow check valve by closing propane supply valve and open again slowly.*

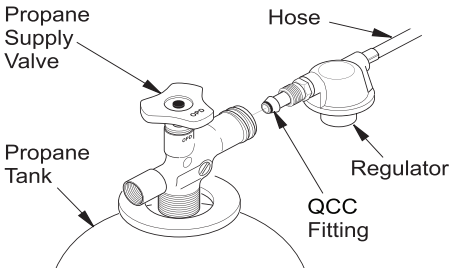


Figure 3 - Regulator Position

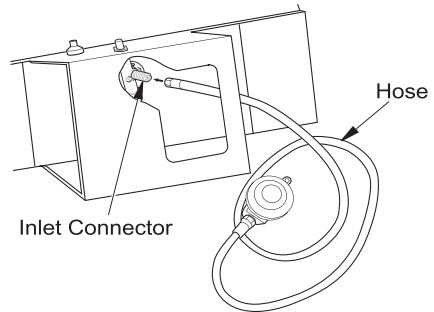


Figure 4 - Hose and Inlet Connector

# VENTILATION

**⚠ WARNING:** Provide at least a 1.5 ft<sup>2</sup> (1400 cm<sup>2</sup>) opening of fresh, outside air while running heater. If proper fresh, outside air ventilation is not provided, carbon monoxide poisoning can occur. Provide proper fresh, outside air ventilation before running heater.

# OPERATION

**⚠ WARNING:** Review and understand the warnings in the Safety section, page 2. They are needed to safely operate this heater. Follow all local codes when using this heater.

## TO START HEATER

1. Follow all installation, ventilation and safety information.
2. Locate heater on stable and level surface. Make sure strong drafts do not blow into front or rear of heater.
3. Plug power cord of heater into a three-prong, grounded extension cord. Extension cord must be at least six feet long. Extension cord must be UL listed.  
**Extension Cord Wire Size Requirements**  
Up to 50 ft (15.24 m) long, use 18 AWG rated cord.  
51 to 100 ft (15.54 to 30.48 m) long, use 16 AWG rated cord.  
101 to 200 ft (30.78 to 60.96 m) long, use 14 AWG rated cord.
4. Plug extension cord into a 120 volt/60 hertz, 3-hole, grounded outlet. Motor will start. Fan will turn, forcing air out front of heater.

## OPERATION

### Continued

5. Open propane supply valve on propane tank(s) slowly. *Note: If not opened slowly, excess-flow check valve on propane tank will stop gas flow. You may hear a click from the excess-flow check valve closing.*

**⚠ WARNING:** Be sure motor and fan are running before pushing in automatic control valve button. Flames could flash outside heater if motor and fan are not running.

6. Push in and hold automatic control valve button (see Figure 5). Push piezo ignitor button (see Figure 5). Keep pushing ignitor button until the burner lights. When burner lights, keep automatic control valve button pushed in. Release button after 30 seconds. This activates the automatic control system.

**NOTICE:** If heater is unplugged or power outage occurs while heater is running, the thermal limit device will stop fuel flow. A few seconds occur before the thermal limit device activates. During this short time, flames may appear outside the heater. This is normal.

### TO STOP HEATER

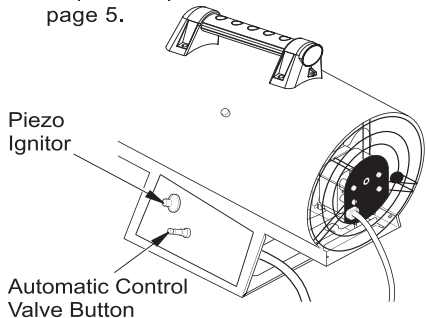
1. Tightly close propane supply valve on propane tank(s).
2. Wait a few seconds. Heater will burn gas left in supply hose.
3. Unplug heater.

### TO RESTART HEATER

1. Wait five minutes after stopping heater.
2. Repeat steps under To Start Heater, page 5.

## STORAGE

**⚠ CAUTION:** Disconnect heater from propane supply tank(s).



**Figure 5 - Automatic Control Valve Button and Piezo Ignitor**

1. Store propane tank(s) in safe manner. (When the heater is to be stored indoors, the connection between the propane supply cylinder and the heater must be disconnected and the cylinder removed from the heater and stored in accordance with standard for storage and.....ANSI/NFPA58, and National Gas and propane installation code, CSA b149.1) Follow all local codes. Always store propane tanks outdoors.
2. Place plastic cover caps over brass fittings on inlet connector and hose/regulator assembly.
3. Store in dry, clean and safe place. Do not store hose/regulator assembly inside heater combustion chamber.
4. When taking heater out of storage, always check inside of heater. Insects and small animals may place foreign objects in heater. Remove motor and other internal parts if needed to remove foreign objects (see Service Procedures, page 7).

## MAINTENANCE



### WARNINGS

- **Never service heater while it is plugged in, connected to propane supply, operating or hot. Severe burns and electrical shock can occur.**
  - **Keep heater clear and free from combustible materials, gasoline and other flammable vapors and liquids.**
1. Keep heater clean. Clean heater annually or as needed to remove dust and debris. If heater is dirty or dusty, clean heater with a damp cloth. Use household cleaners on difficult spots.

## SERVICE PROCEDURES



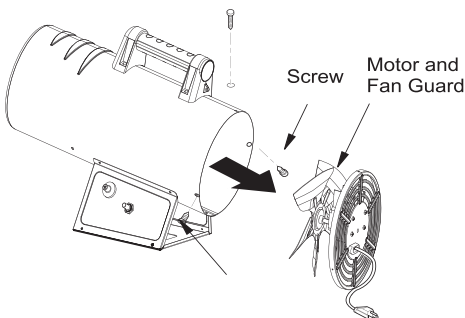
**WARNING: Never service heater while it is plugged in, connected to propane supply, operating or hot. Severe burns and electrical shock can occur.**

### ELECTRICAL SYSTEM

The entire electrical system for this heater is contained within the motor. If any part of the electrical system is damaged, you must replace motor.

### MOTOR

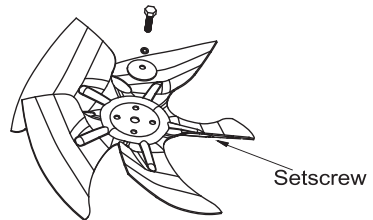
1. Remove three screws that attach fan guard to heater shell.
2. Remove motor and fan guard from heater shell (see Figure 6).



**Figure 6 - Removing Motor and Fan Guard from Heater**

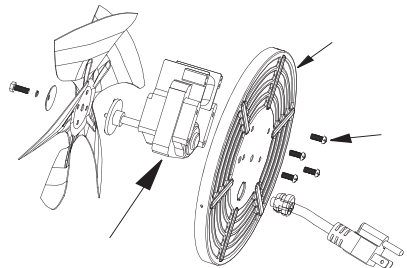
2. Inspect heater before each use. Check connections for leaks. Apply mixture of liquid soap and water to connections. Bubbles forming show a leak. Correct all leaks at once.
3. Keep inside of heater free from combustible and foreign objects. Remove motor and other internal parts if needed to clean inside of heater (see Service Procedures).
4. Clean fan blades each season or as needed (see Fan, page 8).

3. Use hex wrench to loosen set screw which holds fan to motor shaft (see Figure 7). Remove fan. Be careful not to damage the fan blade pitch.



**Figure 7 - Setscrew Location**

4. Remove two nuts and two screws that attach fan guard to motor using nut-driver. Remove fan guard from motor (see Figure 8).

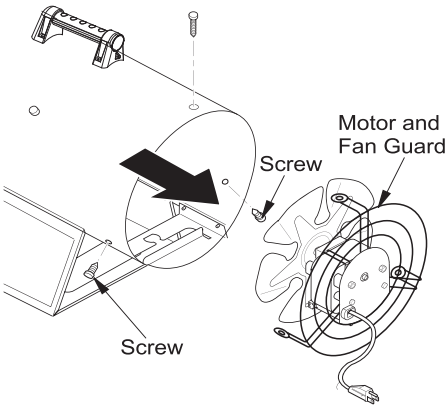


**Figure 8 - Removing or Attaching Fan Guard from Motor**

# SERVICE PROCEDURES

## Continued

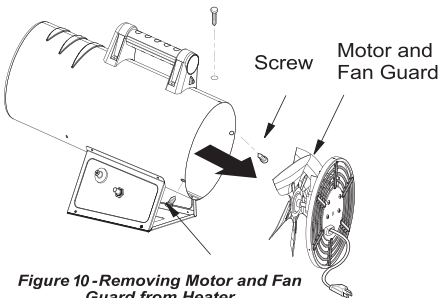
5. Disconnect the green power cord wire from motor and remove black and white wire terminals.
6. Replace black and white terminals.
7. Place fan onto motor shaft of new motor. Make sure set screw contacts flat surface on motor shaft. Tighten set screw firmly (40-50 inch-pounds [46.08-57.60 kilogram-centimeters]).
8. Place motor and fan guard into rear of heater shell. Make sure power cord is properly located (see Figure 9).
9. Insert three screws through heater shell and into fan guard (see Figure 9). Tighten screws firmly.



**Figure 9 - Replacing Motor and Fan Guard Into Heater**

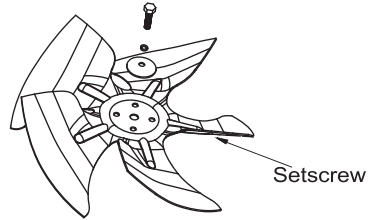
## FAN

1. Remove three screws that attach fan guard to heater shell.
2. Remove motor and fan guard from heater shell (see Figure 10).



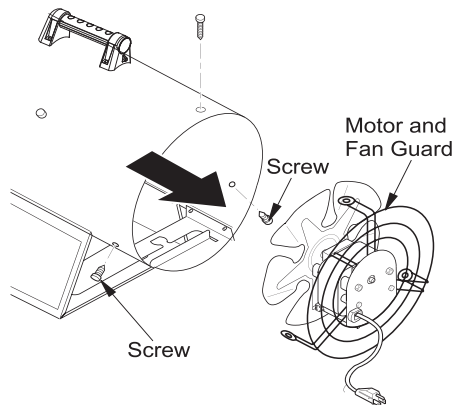
**Figure 10-Removing Motor and Fan Guard from Heater**

3. Use hex wrench to loosen set screw that holds fan to motor shaft (see Figure 11).



**Figure 11- Setscrew Location**

4. Remove fan. Be careful not to damage the fan blade pitch.
- 5a. If replacing fan, remove old fan and discard. Go to step 7, column 2.
- 5b. If cleaning fan, use soft cloth moistened with kerosene or solvent.
6. Place fan onto motor shaft. Make sure set screw contacts flat surface on motor shaft. Tighten set screw firmly (40-50 inch-pounds [46.08-57.60 kilogram-centimeters]).
7. Place motor and fan guard into rear of heater shell. Make sure power cord is properly located (see Figure 12).



**Figure 12- Replacing Motor and Fan Guard Into Heater**

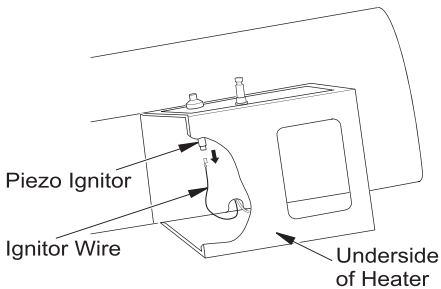
8. Insert three screws through heater shell and into fan guard. Tighten screws firmly.

## SERVICE PROCEDURES

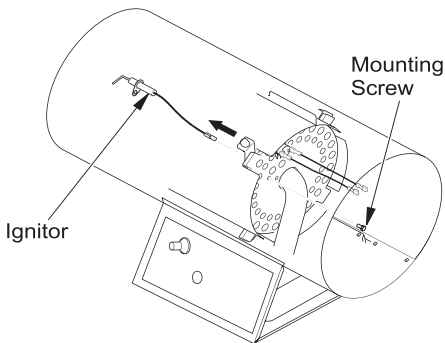
### Continued

#### IGNITOR

1. Remove motor and fan guard from heater (see *Motor*, page 7, steps 1 and 2).
2. Remove black ignitor wire from piezo ignitor. Access ignitor wire through underside of heater base (see Figure 13). Push wire up through notch in filler panel.
3. Remove ignitor mounting screw from rear head using nut-driver or standard screwdriver (see Figure 14).



**Figure 13 - Removing Ignitor Wire from Piezo Ignitor**

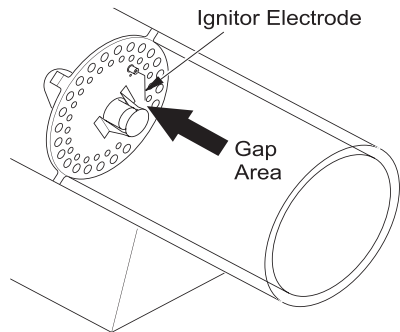


**Figure 14 - Removing Ignitor Mounting Screw and Ignitor**

5. Install new ignitor. Attach ignitor to rear head with ignitor mounting screw.
6. Run ignitor wire from new ignitor through notch in filler panel. Attach ignitor wire to piezo ignitor.
7. Set gap between ignitor electrode and target plate to 0.17" (43.18 cm) (see Figure 15).

**⚠ WARNING: Make sure heater is disconnected from propane supply. Heater could ignite causing severe burns.**

8. Place motor and fan guard into rear of heater shell (see *Motor*, page 8, steps 9 and 10).



**Figure 15 - Clearance Between Ignitor Electrode and Target Plate**

## SPECIFICATIONS

### 30,000 BTU MODELS

- 30,000 BTU/Hr Output Rating
- Fuel: Propane Vapor
- Fuel Consumption/Hour:  
0.33 gal (1.25 liter), 1.4 lb (0.63 kg)
- Supply Pressure To Regulator:  
Minimum\* 20 psi, Maximum Tank Pressure  
or 200 psi
- Regulator Outlet Pressure: 10 PSI
- Manifold Pressure: 10. PSI
- Motor: 2800 RPM, 30W
- Electric Input: 120 volt/60 hertz
- Amperage: 0.60
- Ignition: Manual, Piezo
- Temperature Range for Heater Operation:  
0° F to 85° F\*\* (-17° C to 29.4° C\*\*)

### 35,000 BTU MODELS

- 35,000 BTU/Hr Output Rating
- Fuel: Propane Vapor
- Fuel Consumption/Hour:  
0.38 gal (1.44 liter), 1.62 lb (0.74 kg)
- Supply Pressure To Regulator:  
Minimum\* 20 psi, Maximum Tank Pressure  
or 200 psi
- Regulator Outlet Pressure: 10 PSI
- Manifold Pressure: 10 PSI

### 35,000 BTU MODELS (Cont.)

- Motor: 2800 RPM, 30W
- Electric Input: 120 volt/60 hertz
- Amperage: 0.60
- Ignition: Manual, Piezo
- Temperature Range for Heater Operation:  
0° F to 85° F\*\* (-17° C to 29.4° C\*\*)

### 40,000 BTU MODELS

- 40,000 BTU/Hr Output Rating
  - Fuel: Propane Vapor
  - Fuel Consumption/Hour:  
0.44 gal (1.65 liter), 1.86 lb (0.84 kg)
  - Supply Pressure To Regulator:  
Minimum\* 20 psi, Maximum Tank Pressure  
or 200 psi
  - Regulator Outlet Pressure: 10 PSI
  - Manifold Pressure: 10 PSI
  - Motor: 2800 RPM, 30W
  - Electric Input: 120 volt/60 hertz
  - Amperage: 0.60
  - Ignition: Manual, Piezo
  - Temperature Range for Heater Operation:  
0° F to 85° F\*\* (-17° C to 29.4° C)\*\*
- \* For purposes of input adjustment

\*\* When running heater in temperatures above 85° F (29.44° C), high internal temperatures may cause thermal limit device to shut down heater.

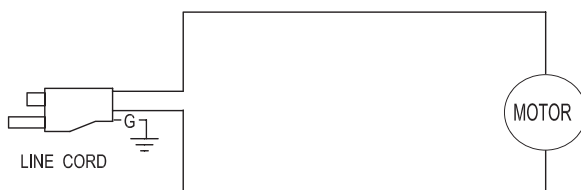
## TROUBLESHOOTING

**⚠ WARNING: Never service heater while it is plugged in, connected to propane supply, operating or hot. Severe burns and electrical shock can occur.**

OBSERVED FAULT	POSSIBLE CAUSE	REMEDY
Fan does not turn when heater is plugged in	<ol style="list-style-type: none"> <li>1. No electrical power to heater</li> <li>2. Fan blades bent</li> </ol>	<ol style="list-style-type: none"> <li>1. Check voltage to electrical outlet. If voltage is good, check heater power cord for breaks</li> <li>2. Replace fan. See <i>Fan</i>, page 8</li> </ol>
Heater will not ignite	<ol style="list-style-type: none"> <li>1. User did not follow installation or operation instructions properly</li> <li>2. No spark at ignitor. To test for spark, follow step 8 under <i>Ignitor</i>, page 9. If you see spark at ignitor, have heater serviced by qualified service person. If no spark seen:               <ol style="list-style-type: none"> <li>A) Loose or disconnected ignitor wire</li> <li>B) Wrong spark gap</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>1. Repeat installation and operation instructions. See <i>Installation</i> and <i>Operation</i>, page 5</li> <li>2. A) Check ignitor wire. Tighten or reattach loose ignitor wire. See Figure 11, page 8 for ignitor wire location B) Set gap between ignitor electrode and target plate to 0.17" (0.43 cm)</li> </ol>
Heater shuts down while running	<ol style="list-style-type: none"> <li>1. High surrounding air temperature causing thermal limit device to shut down heater</li> </ol>	<ol style="list-style-type: none"> <li>1. This can happen when running heater in temperatures above 85° F (29.44° C). Run heater in cooler temperatures</li> </ol>

**⚠ WARNING: Use only in areas free of high dust content.**

## WIRING DIAGRAM



## ONE-YEAR LIMITED WARRANTY

### CUSTOMERS IN USA

Do not return this product to the store where you purchased it. Please call **1-888-775-1330** for assistance.

### CUSTOMERS IN CANADA

Only return this product to the store if it was purchased within 90 days. If you have problems after 90 days of purchase, please CALL **1-888-775-1330**. Or EMAIL our warranty department at [warranty@azpatioheaters.com](mailto:warranty@azpatioheaters.com) **DATED PROOF OF PURCHASE REQUIRED FOR WARRANTY SERVICE.**

This product is inspected, tested and carefully packaged to minimize the chance of damage during shipment. If a part (excluding light bulbs and fuses\*) within one year from the date of purchase proves to be defective in material or fabrication under normal use, the part will be repaired or replaced. The Company's obligation under the warranty is to replace or repair defective parts at our discretion. Any expenses or damage resulting from the installation, removal or transportation of the product will be the responsibility of the owner and are not covered by this warranty. The owner assumes all other risks arising out from the use or misuse of the product. The warranty will be void if the product damage or failure is deemed by the Company to be caused by accident, alteration, misuse, abuse, incorrect installation or removal, or connection to an incorrect power source by the owner. The Company neither assumes, nor authorizes any person or entity to assume for it any obligation or liability associated with its products.

\* Light bulbs and fuses are not covered under this warranty.

If you have any questions regarding the warranty or service, please call our toll free number: **1-888-775-1330**.

### **Distributed by:**

AZ Patio Heaters, LLC

Toll Free Number **1-888-775-1330**

Sales Service and Repair

[www.azpatioheaters.com](http://www.azpatioheaters.com)

# PARTS

## MODELS HIL-SHOP-LP30, HIL-SHOP-LP35 AND HIL-SHOP-LP40

This list contains replaceable parts used in your heater. When ordering parts, follow the instructions listed under *Replacement Parts* of this manual.

