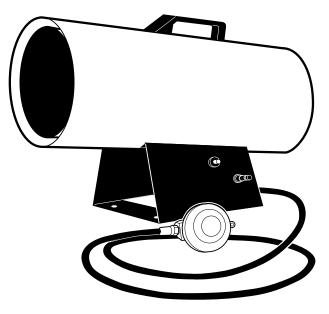
PROPANE CONSTRUCTION HEATER OWNER'S MANUAL



Heater Size: 35,000 BTU/Hr

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 INSTRUC-TIONS 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.

IF YOU NEED ASSISTANCE OR HEATER INFORMATION SUCH AS AN INSTRUCTIONS MANUAL, LABELS, ETC. CONTACT THE MANUFACTURER.



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SAFETY INFORMATION

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, SOL-VENTS, PAINT THINNER, DUST PARTICLES OR UNKNOWN CHEMICALS.

NOT FOR HOME OR RECREATIONAL VEHICLE USE.

The heater is designed for use as a construction heater in accordance with ANSI Z83.7. 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.

We cannot foresee every use which may be made of our heaters. **Check with your local fire safety authority if you have questions about heater use**.

Other standards govern the use of fuel gases and heat producing products for specific uses. Your local authorities can advise you about these.

Carbon Monoxide Poisoning: Some people are more affected by carbon monoxide than others. Early signs of carbon monoxide poisoning resemble the flu, with headaches, dizziness, and/or nausea. If you have these signs, the heater may not be working properly. **Get fresh air at once!** Check for proper ventilation and have heater serviced.

Safety Information continues on next page

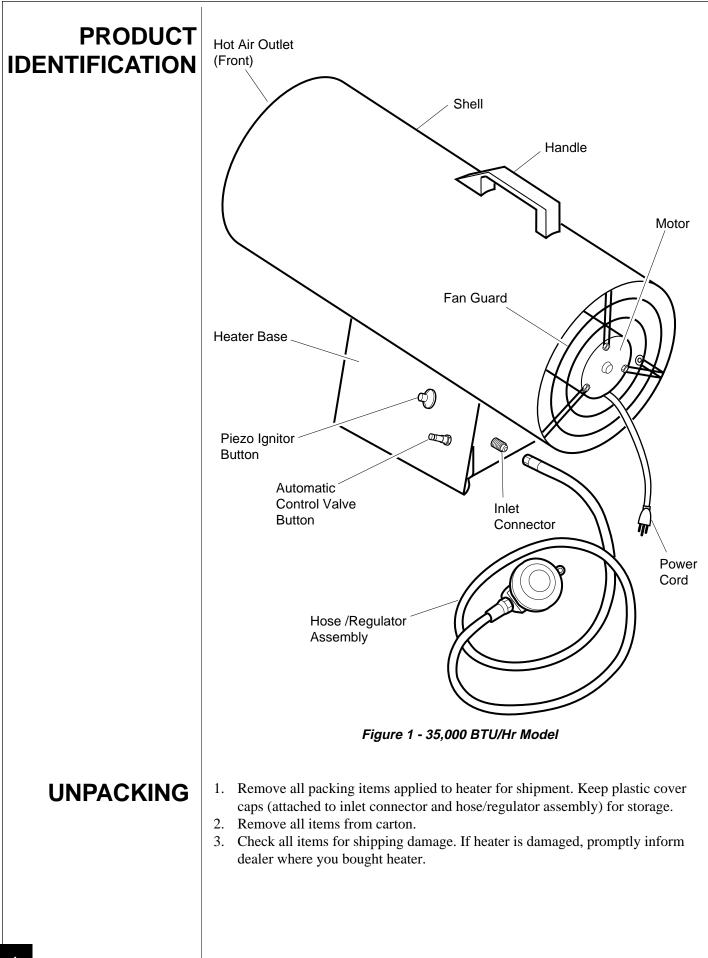
SAFETY INFORMATION Continued

A WARNINGS Continued

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.

Make certain you read and understand all warnings. Keep this manual for reference. It is your guide to safe and proper operation of this heater.

- 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 *Natural Gas Installation Code, CAN/CGA B149.2*. This instructs on the safe storage and handling of propane gases.
- 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.
- Electrical grounding instructions This appliance is equipped with a threeprong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle.
- Use only a three-prong, grounded extension cord.
- Use only the hose and factory preset regulator provided with the heater.
- Use only propane gas set up for vapor withdrawal.
- Provide adequate ventilation. Before using heater, provide at least a one-squarefoot opening of fresh, outside air. This heater produces carbon monoxide, which is listed by the State of California as a reproductive toxin under Proposition 65.
- For indoor use only. Do not use heater outdoors.
- Do not use heater in occupied dwellings or in living or sleeping quarters.
- Do not use heater below ground level. Propane gas is heavier than air. If a leak occurs, propane gas will sink to the lowest possible level.
- Keep appliance area clear and free from combustible materials, gasoline, paint thinner, and other flammable vapors and liquids. Do not use heater in areas with high dust content.
- Minimum heater clearances from combustibles: Outlet: 6 Ft. Sides: 2 Ft. Top: 6 Ft. Rear: 2 Ft.
- Keep heater at least six feet from propane tank(s). Do not point heater at propane tank(s) within 20 feet.
- Keep propane tank(s) below 100° F.
- Check heater for damage before each use. Do not use a damaged heater.
- Check hose before each use of heater. If highly worn or cut, replace before using heater.
- Locate heater on stable and level surface if heater is hot or operating.
- Not intended for use on finished floors.
- Never block air inlet (rear) or air outlet (front) of heater.
- Keep heater away from strong drafts, water spray, rain, or dripping water.
- Do not leave heater unattended.
- Keep children and animals away from heater.
- Never move, handle, or service a hot, operating, or plugged-in heater. Severe burns may result. You must wait 20 minutes after turning heater off.
- To prevent injury, wear gloves when handling heater.
- Never attach duct work to front or rear of heater.
- Do not alter heater. Keep heater in its original state.
- Do not use heater if altered.
- Turn off propane supply and unplug heater when not in use.
- Use only original replacement parts. This heater must use design-specific parts. Do not substitute or use generic parts. Improper replacement parts could cause serious or fatal injuries.



THEORY OF **OPERATION**

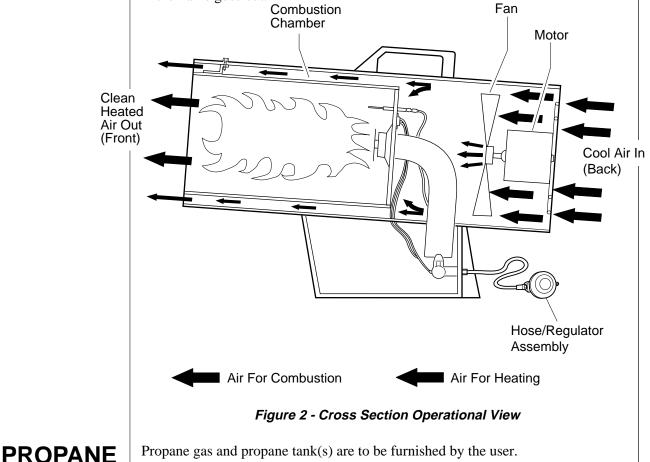
SUPPLY

The Fuel System: The hose/regulator assembly attaches to the propane gas supply. This provides fuel to the heater.

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.



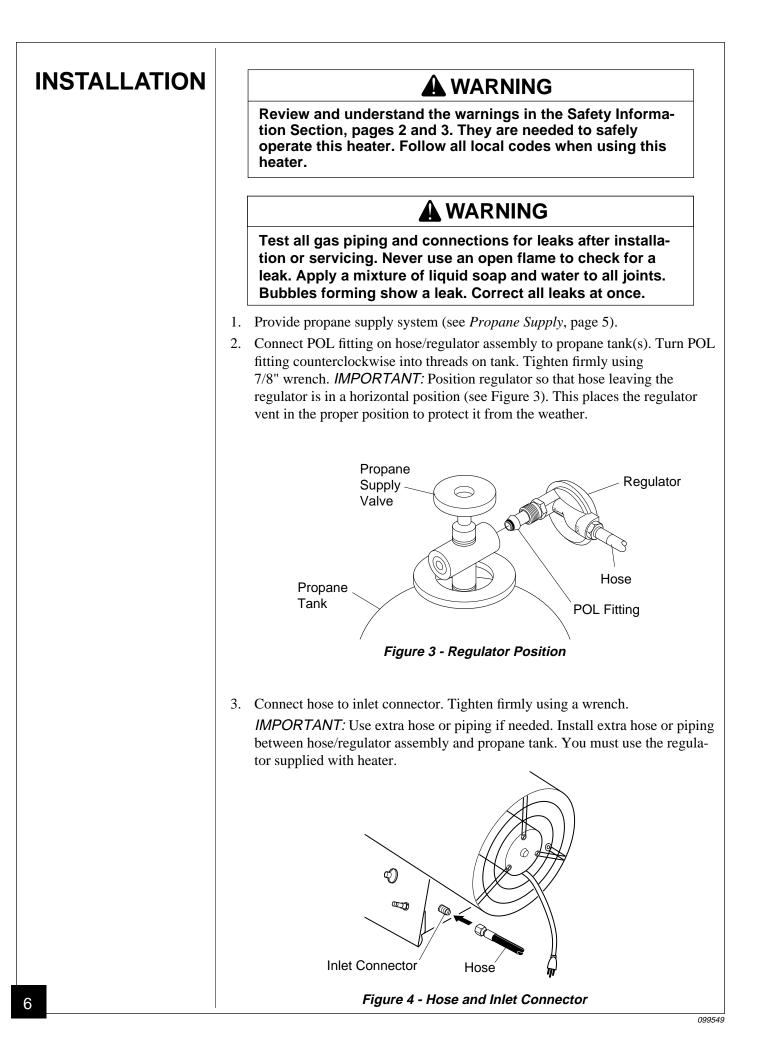
Use this heater only with a propane vapor withdrawal supply system. See Chapter 5 of the Standard for Storage and Handling of Liquefied Petroleum Gas, ANSI/NFPA 58. Your local library or fire department will have this booklet.

The amount of propane gas ready for use from propane tanks varies. Two factors decide this amount:

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

This heater is designed to operate with a minimum 20-pound propane tank. You may need two or more tanks or one larger tank in colder weather. Use a 100-pound tank for longer operation or in very cold weather. 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 -20°F (-29°C).

Average Temperature (°F) At Tank Location	40°	32°	20°	10°	0°	-10°	-20°
Number Of Tanks (100-pound)	1	1	1	1	1	2	2



- 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. If this happens, close propane supply valve and open again slowly.
- 5. Check all connections for leaks. Apply mixture of liquid soap and water to gas joints. Bubbles forming show a leak that must be corrected.

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 that must be corrected. Correct all leaks at once.

6. Close propane supply valve.

VENTILATION

Provide at least a one square foot 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

Review and understand the warnings in the Safety Information section, pages 2 and 3. 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

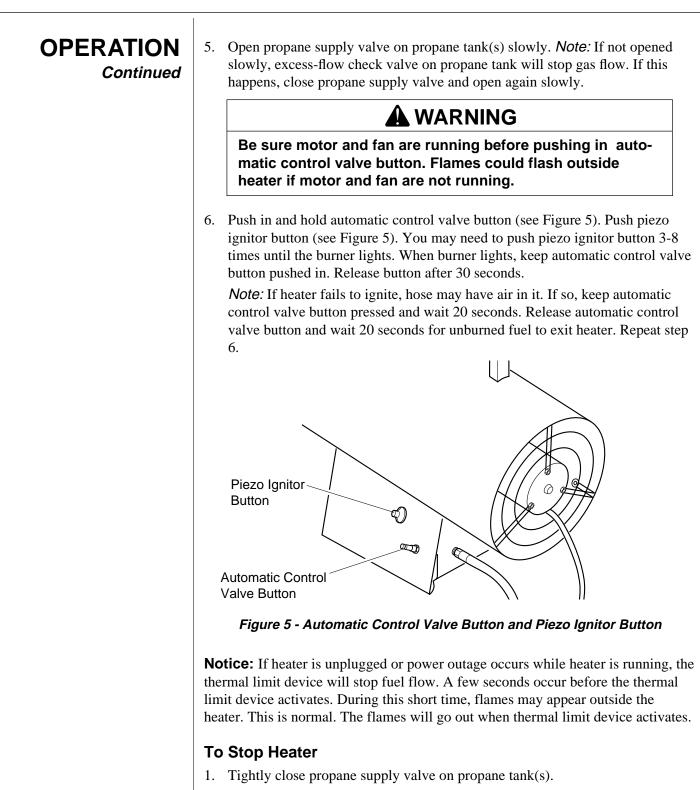
Up to 50 feet long, use 18 AWG rated cord.

51 to 100 feet long, use 16 AWG rated cord.

101 to 200 feet 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.

Continued



- 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 7.

STORAGE	
	Disconnect heater from propane supply tank(s).
	1. Store propane tank(s) in safe manner. See Chapter 5 of <i>Standard for Storage</i> and Handling of Liquefied Petroleum Gases, ANSI/NFPA 58. Follow all loca codes. Always store propane tanks outdoors.
	2. Place plastic cover caps over brass fittings on inlet connector and hose/regul tor assembly.
	3. Store in dry, clean, and safe place. Do not store hose/regulator assembly inst 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 <i>Service Procedures</i> , page 11).
AINTENANCE	
	 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.
	• Do not block the flow of combustion or ventilation air.
	 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 house- hold cleaners on difficult spots.
	2. Inspect heater before each use. Check connections for leaks. Apply mixture liquid soap and water to connections. Bubbles forming show a leak. Correct leaks at once.
	3. Inspect hose/regulator assembly before each use. If hose is highly worn or correplace.
	4. Have heater inspected yearly by a qualified service agency.
	5. Keep inside of heater free from combustible and foreign objects. Remove motor and other internal parts if needed to clean inside of heater (see <i>Service Procedures</i> , page 11).
	6. Clean fan blades each season or as needed (see <i>Fan</i> , page 12).

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.	No electrical power to heater	Check voltage to electrical out let. If voltage is good, chec heater power cord for breaks		
	Fan hitting inside of heater shell	Adjust motor/fan guard to kee fan from hitting inside o heater shell. Bend fan guard i necessary.		
	Fan blades bent	Replace fan. See <i>Fan</i> , page 12		
	Defective motor	Replace motor. See <i>Motor</i> page 11.		
Heater will not ignite.	User did not follow instal- lation or operation in- structions properly	Repeat installation and operation instructions. See <i>Installation</i> , page 6 and <i>Operation</i> page 7.		
	No spark at ignitor. To test for spark, follow step 9 under <i>Ignitor</i> , page 13. If you see spark at ignitor, have heater serviced by qualified service person. If no spark seen: A) Loose or disconnected ignitor wire B) Wrong spark gap C) Piezo ignitor loose D) Bad ignitor electrode	 A) Check ignitor wire. Tighte or reattach loose ignitor wire See Figure 13, page 13 for igni- tor wire location. B) Set gap between ignito electrode and target plate t .17". C) Tighten nut holding piez- ignitor to base of heater. D) Replace ignitor electrode See <i>Ignitor</i>, page 13. 		
Heater shuts down while running.	High surrounding air tem- perature causing thermal limit device to shut down heater.	This can happen when runnin heater in temperatures abov 85°F. Run heater in cooler tem peratures.		
	Restricted air flow	Check heater inlet and outle Remove any obstructions.		
	Damaged fan	Replace fan. See <i>Fan</i> , page 12		
	Excessive dust or debris in surrounding area	Clean heater. See Mainte nance, page 9.		
		Use only in areas free of high dust content.		

SERVICE PROCEDURES

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).
- 3. Use pliers to remove the fan nut from front of motor shaft (see Figure 7).
- 4. Remove fan. Be careful not to damage the fan blade pitch.
- 5. Remove three nuts that attach fan guard to motor using nut-driver. Remove fan guard from motor (see Figure 8).
- 6. Discard old motor.
- Attach fan guard to new motor with three nuts. When attaching fan guard to motor, you must position power cord as shown in Figure 8. Tighten nuts firmly.
- Place fan onto motor shaft of new motor.
 IMPORTANT: When placing fan onto motor shaft, make sure part number stamped on fan is facing motor. Attach fan nut to end of motor shaft. Tighten fan nut firmly.
- Place motor and fan guard into rear of heater shell. Make sure power cord is properly located (see Figure 9).
- 10. Insert three screws through heater shell and into fan guard. Tighten screws firmly.

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

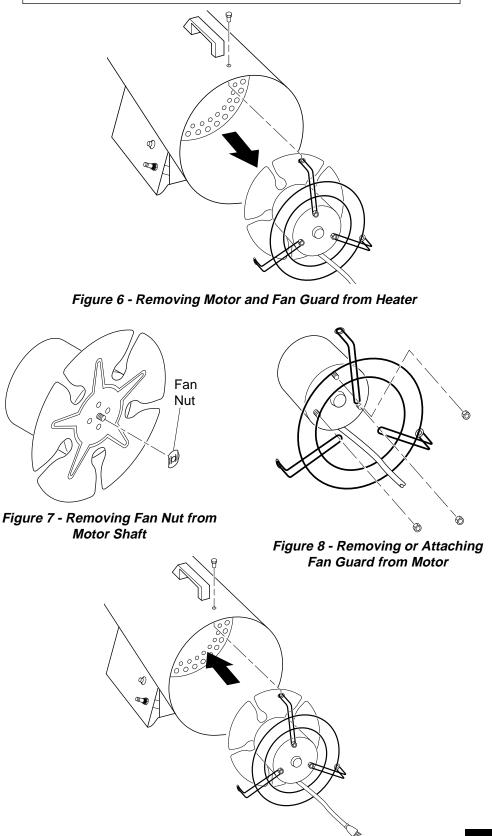
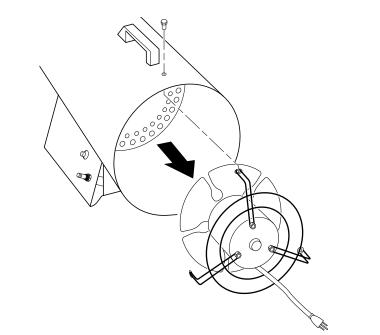
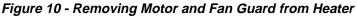


Figure 9 - Replacing Motor and Fan Guard into Heater

Fan

- 1. Remove three screws that attach fan guard to heater shell.
- 2. Remove motor and fan guard from heater shell (see Figure 10).
- 3. Use pliers to remove the fan nut from front of motor shaft (see Figure 11).
- 4a. If replacing fan, remove old fan and discard. Go to step 7 below.
- 4b. If cleaning fan, remove fan. Be careful not to damage the fan blade pitch.
- 5. Clean fan using soft cloth moistened with kerosene or solvent.
- 6. Dry fan thoroughly.
- 7. Place fan onto motor shaft. *IMPORTANT:* When placing fan onto motor shaft, make sure part number stamped on fan is facing motor.
- 8. Attach fan nut to end of motor shaft. Tighten fan nut firmly.
- 9. Place motor and fan guard into rear of heater shell. Make sure power cord is properly located (see Figure 12).
- 10. Insert three screws through heater shell and into fan guard. Tighten screws firmly.





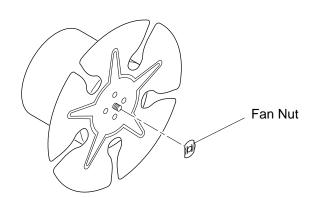
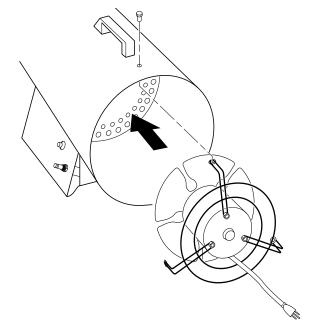
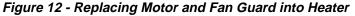


Figure 11 - Removing Fan Nut from Motor Shaft





Ignitor

- Remove motor and fan guard from heater (see *Motor*, page 11, 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 bushing in heater shell.
- Remove ignitor mounting screw from rear head using nut-driver or standard screwdriver (see Figure 14).
- 4. Remove ignitor from rear head.
- 5. Install new ignitor. Attach ignitor to rear head with ignitor mounting screw.
- 6. Run ignitor wire from new ignitor through bushing in heater shell. Attach ignitor wire to piezo ignitor.
- Set gap between ignitor electrode and target plate to .17" (see Figure 15).
- Test for spark.
 WARNING: Make sure heater is disconnected from propane supply.
 Heater could ignite causing severe burns.
 Push piezo ignitor button and watch for spark between ignitor electrode and target plate.
- 9. Place motor and fan guard into rear of heater shell (see *Motor*, page 11, steps 9 and 10).

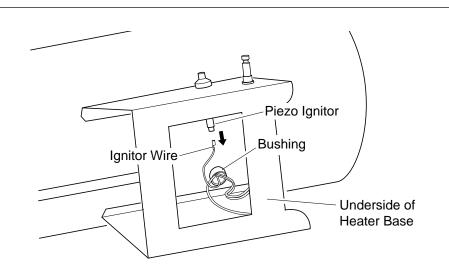


Figure 13 - Removing Ignitor Wire from Piezo Ignitor

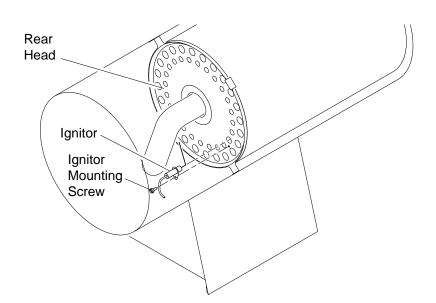


Figure 14 - Removing Ignitor Mounting Screw and Ignitor

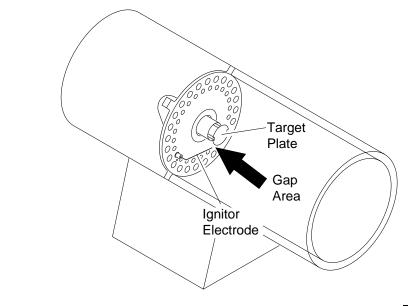


Figure 15 - Clearance between Ignitor Electrode and Target Plate

SPECIFICATIONS

Output Rating (BTU/Hr)	35,000
Fuel	Propane Vapor Only
Fuel Consumption	
Gallons/Hour	.38
Pounds/Hour	1.6
Supply Pressure To Regulator	
Minimum (for purposes	10 psi
of input adjustment)	-
Maximum	Tank Pressure or 200 psi
Regulator Outlet Pressure	11" WC
Manifold Pressure	10.8" WC
Hot Air Output	
(CFM Approx)	175
Motor	2735 RPM
Electric Input	120 volt/60 hertz
Amperage	2
Ignition	Manual, Piezo
Weight (Pounds)	
Heater	14.5
Shipping	16
Size - L x W x H (Inches)	
Heater	18.5 x 7.7 x 12.8
Temperature Range for Heater Operation	-20° F to 85° F*

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

ACCESSORIES

Purchase accessories and parts from your nearest dealer or service center. If they can not supply an accessory or part, either contact your nearest Parts Central (listed in the separate Authorized Service Center booklet) or contact DESA International for referral information.

DESA International P.O. Box 90004 Bowling Green, KY 42102-9004 1-800-972-7879 Parts Department

Part Number	Description
LPA1020	10' Rubber Hose with Brass Fitting U.L. listed.
LPA1030	15' Rubber Hose with Brass Fitting U.L. listed.
LPA2110	Propane Gas Regulator U.L. listed.
LPA3090	Hose/Regulator Assembly U.L. listed.
LPA4020	Fuel Gas Connector Connects regulator to all standard propane tanks. U.L. and A.G.A. listed.

TECHNICAL SERVICE

REPLACEMENT PARTS

You may have further questions about this heater. If so, contact DESA International's Technical Service Department at 1-800-323-5190.

Use only original replacement parts. This heater must use design-specific parts. Do not substitute or use generic parts. Improper replacement parts could cause serious or fatal injuries. This will also protect your warranty coverage for parts replaced under warranty.

Parts Under Warranty

Contact authorized dealers of this product. If they can't supply original replacement part(s), either contact your nearest Parts Central or call DESA International's Technical Service Department at 1-800-323-5190.

When calling DESA International, have ready

- your name
- your address
- model number of your heater
- how heater was malfunctioning
- purchase date

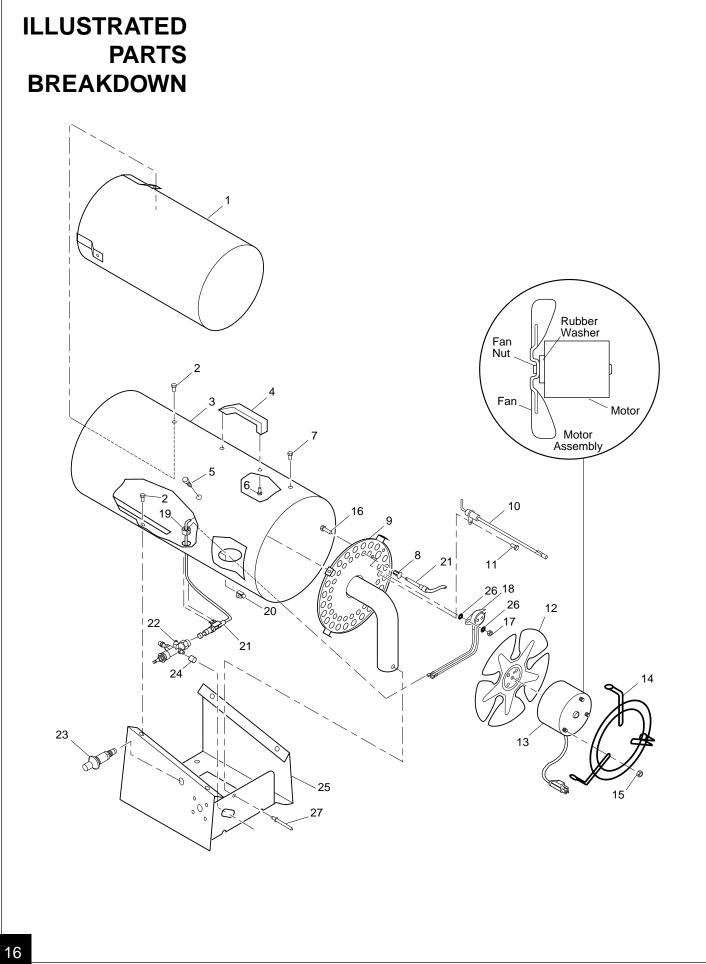
In most cases, we will ask you to return the defective part to the factory.

Parts Not Under Warranty

Contact authorized dealers of this product. If they can't supply original replacement part(s), either contact your nearest Parts Central (listed in Authorized Service Center booklet) or call DESA International's Parts Department at 1-800-972-7879 for referral information.

When calling DESA International, have ready

- model number of your heater
- the replacement part number



PARTS LIST

This list contains replaceable parts used in your heater. When ordering parts, follow the instructions listed under *Replacement Parts* on page 15 of this manual.

KEY NO.	PART NO.	DESCRIPTION	QTY.
1	099568-01	Inner Shell (Combustion Chamber)	1
2	M11084-26	Hex Tap Screw, #10-16 x 3/8"	7
3	099599-01AB	Outer Shell (BLP35)	1
3	099599-01AC	Outer Shell (RLP35)	1
	099599-01AD	Outer Shell (F35LP & VLP35)	1
	099599-01AA	Outer Shell (REM35LP)	1
	099599-01BJ	Outer Shell (C35LP)	1
	099599-01BG	Outer Shell (HM35LP)	1
4	M51104-01	Handle	1
5	099230-01	Hex Tap Shoulder Screw	4
6	M11084-29	Hex Tap Screw, #10-16 x 3/4"	4
7	M11084-29	Hex Tap Sciew, #10-16 x 3/4 Hex Tap Sciew, #12-14 x 1/2"	2
8			3 1
	099237-01	Thermocouple Clip	-
9	099727-01	Burner Assembly	1
10	099539-01	Electrode Ignitor	1
11	M11084-38	Hex Tap Screw, #8-18 x 3/8"	1
12	099537-01	Fan	1
13	099521-01	Motor Assembly (Includes Rubber Washer and Fan Nut)	1
14	099540-01	Fan Guard	1
15	097384-02	Captive Washer Nut	3
16	097968-05	Hex Screw, #4-40 x 1/2"	2
17	NPC-00C	Hex Nut, #4-40	2
18	101732-02	Thermal Switch Kit	1
19	097776-01	Universal Bushing	1
20	099542-01	Wire Clip	1
21	099538-01	Thermocouple	1
22	099728-01	Valve/Orifice Assembly	1
23	102445-01	Piezo Ignitor	1
24	078978-03	Sleeve Cap	1
25	099598-01AA	Base	1
26	100397-01	Lock Washer, #4	4
27	099202-02	Steel Rivet, 1/8"	1
		PARTS AVAILABLE - NOT SHOWN	
	097647-02	Tradename Decal, (BLP35)	2
	097941-05	Tradename Decal, (RLP35)	2
	079718-05	Tradename Decal, (VLP35)	2
	099596-02	Tradename Decal, (REM35LP -left)	1
	099596-01	Tradename Decal, (REM35LP -right)	1
	099616-01	Tradename Decal, (F35LP)	2
	079871-02	Tradename Decal, (C35LP)	2
	078949-05	Tradename Decal, (HM35LP)	2
	099548-01	General Information Decal	1
	099549-01	Owner's Manual	1
	099666-01	Operation Decal	1
	079663-01	LP Warning Decal	1
	099672-01	Notice Decal	1
		ACCESSORIES	
	LPA3090	Regulator & Hose Assembly	1
	LPA1020	10' Hose	1
	LPA2110	Regulator	1
	LPA2110 LPA4020	POL Connector	1
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WARRANTY AND REPAIR SERVICE

KEEP THIS WARRANTY

LIMITED WARRANTY

DESA International warrants this product and any parts thereof, to be free from defects in materials and workmanship for one (1) year from the date of first purchase when operated and maintained in accordance with instructions. This warranty is extended only to the original retail purchaser, when proof of purchase is provided.

This warranty covers only the cost of parts and labor required to restore the product to proper operating condition. Transportation and incidental costs associated with warranty repairs are not reimbursable under this warranty.

Warranty service is available only through authorized dealers and service centers.

This warranty does not cover defects resulting from misuse, abuse, negligence, accidents, lack of proper maintenance, normal wear, alteration, modification, tampering, contaminated fuels, repair using improper parts, or repair by anyone other than an authorized dealer or service center. Routine maintenance is the responsibility of the owner.

THIS EXPRESS WARRANTY IS GIVEN IN LIEU OF ANY OTHER WARRANTY EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

DESA International assumes no responsibility for indirect, incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations or exclusions may not apply to you. This Limited Warranty gives you specific legal rights and you may also have other rights which vary from state to state.

This warranty does not cover discoloration due to operation of heater. We reserve the right to amend these specifications at any time without notice. The only warranty applicable is our standard written warranty. We make no other warranty, expressed or implied.

WARRANTY SERVICE

Should your heater require service, return it to your nearest authorized service center. Proof of purchase must be presented with the heater. The heater will be inspected. A defect may be caused by faulty materials or workmanship. If so, DESA International will repair or replace the heater without charge.

REPAIR SERVICE

Bow

Return your heater to your nearest authorized service center. Repairs not covered by the warranty will be billed at standard prices. Each Service Center is independently owned and operated. We reserve the right to amend these specifications at any time without notice.

Г	Complete the following information for future reference.
	Model
	Serial No
	Date of Purchase
	DESA INTERNATIONAL 2701 Industrial Drive P.O. Box 90004 Bowling Green, KY 42102-9004
	For information, write: DESA International, P.O. Box 90004 g Green, Kentucky 42102-9004 ATTN: Customer Service Department

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