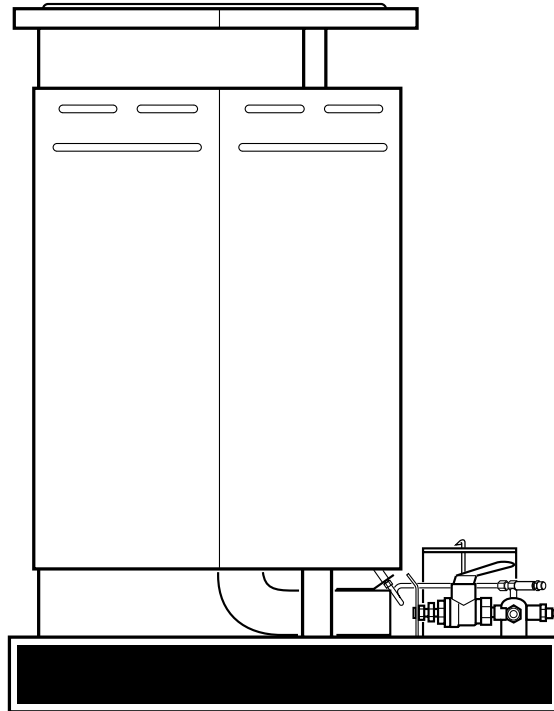


# PROPANE CONSTRUCTION HEATER

## OWNER'S MANUAL



**Models: TC80 and RCP80**

### **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, AND/OR 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 INSTRUCTIONS MANUAL, LABELS, ETC. CONTACT THE MANUFACTURER.**

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# SAFETY INFORMATION

## WARNINGS

 **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.**

## WARNING

**NOT FOR HOME OR RECREATIONAL VEHICLE USE.**

The heater is designed for use as a construction heater in accordance with ANSI Z83.7•CGA2.14. 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

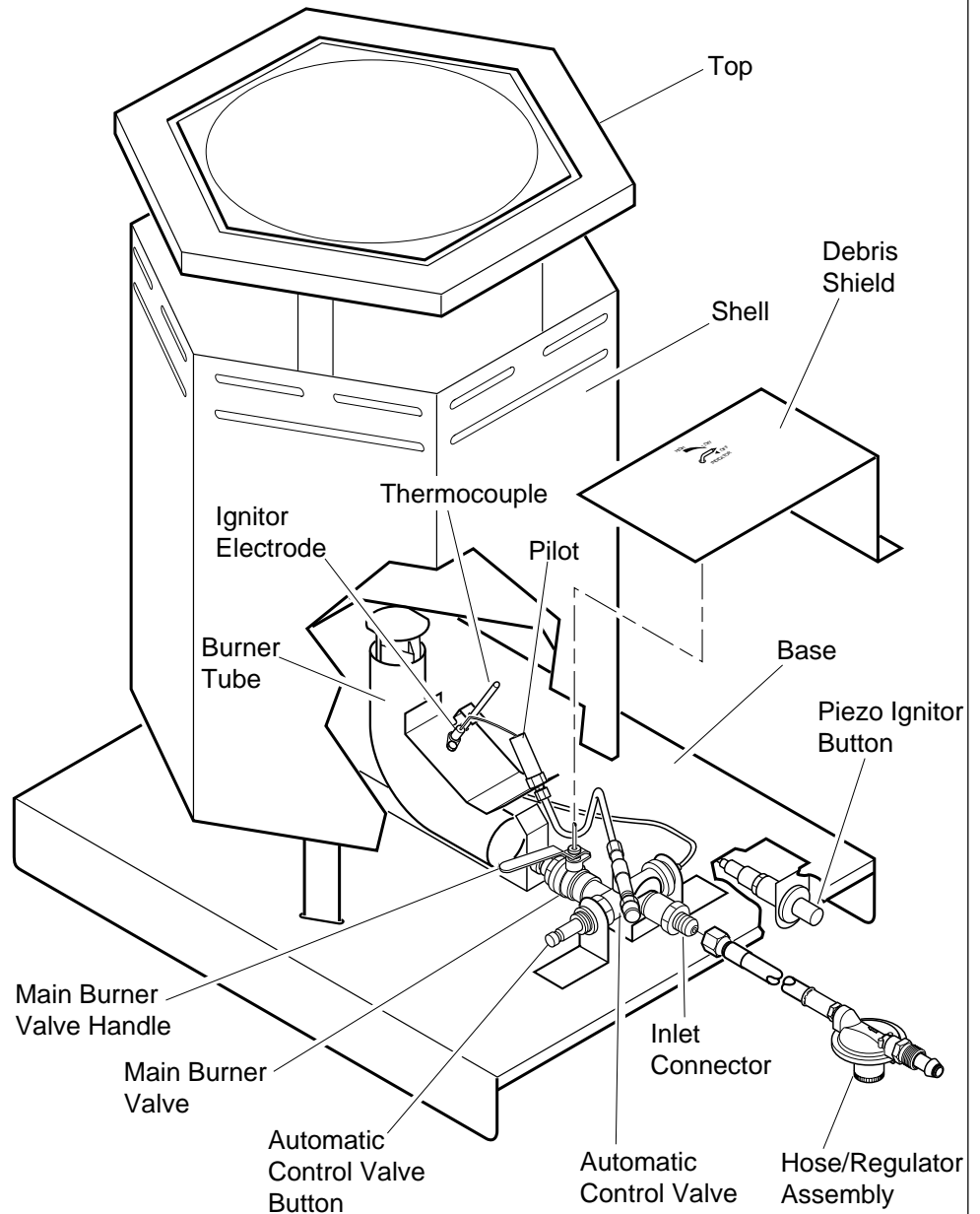
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## WARNINGS

**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 may 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 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 2.5-square-foot 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:  
Sides: 4 Ft. Top: 6 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 (bottom) or air outlet (top) 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. Wait 20 minutes after turning heater off.
- To prevent injury, wear gloves when handling heater.
- Never attach duct work to 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.

# PRODUCT IDENTIFICATION



**Figure 1 - Product Identification**

# SPECIFICATIONS

Rating (BTU/Hr)	
High .....	73,000
Low .....	30,000
Fuel .....	Propane Vapor Only
Fuel Consumption	
Gallons/Hour .....	1.1
Pounds/Hour .....	3.7
Supply Pressure (To Regulator)	
Maximum .....	200 psi
Minimum, for input adjustment .....	10 psi
Manifold Pressure (inches of water column)	
High .....	14
Low .....	15.2
Ignitor Gap .....	0.120"
Weight (Pounds) .....	15
Shipping Weight (Pounds) .....	19
Size - L x W x H (Inches) .....	18 1/2 x 16 x 23 1/8

## 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.

## THEORY OF OPERATION

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

**The Ignition System:** The piezo ignitor lights the pilot fuel supply. The pilot ignites the main burner.

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

## PROPANE SUPPLY

You must provide propane gas and propane tank(s).

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* and/or *CAN/CGA B149.2*. Your local library or fire department will have this booklet.

This heater will operate with a 20-pound propane tank. However, you can only operate it in the LOW position during mildly cool weather. At higher heat settings or during colder weather, you must use larger tanks.

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

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

The chart below shows the minimum number of 100-pound tanks needed to run the heater. Connect tanks together with a manifold.

Average Temperature (°F) At Tank Location	60°	40°	32°	20°	10°	0°
Number Of Tanks	1	1	1	1	2	2

Less gas is vaporized at lower temperatures. Your local propane gas dealer will help you select the proper supply system.

## VENTILATION

### WARNING

**Provide at least a 2.5 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.**

# INSTALLATION

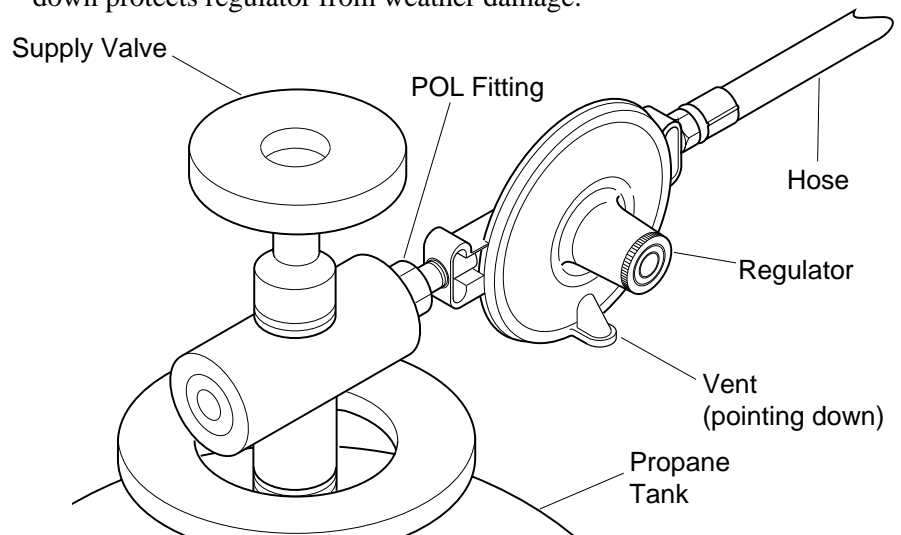
## ⚠ WARNING

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.

## ⚠ WARNING

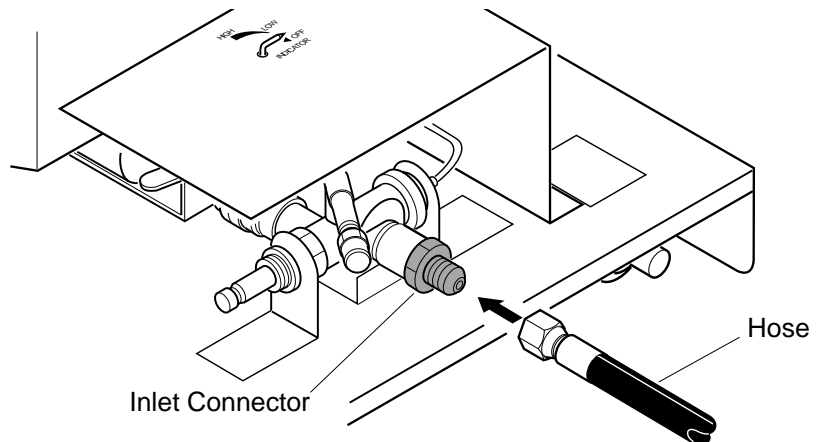
Test all gas piping and connections for leaks after installation or servicing. Correct all leaks at once.

1. Provide propane supply system (see *Propane Supply*, page 5).
2. Connect POL fitting on hose/regulator assembly to propane tank(s). Turn POL fitting counterclockwise into threads on tank. Tighten firmly using a wrench. **IMPORTANT:** Tighten regulator with vent pointing down. Pointing vent down protects regulator from weather damage.



**Figure 2 - Regulator With Vent Pointing Down**

3. Connect hose to the inlet connector. 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 even if propane tank has one.



**Figure 3 - Hose and Inlet Connector**

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.

*Continued*

## OPERATION

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.

### **⚠ WARNING**

**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.

### **⚠ WARNING**

**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

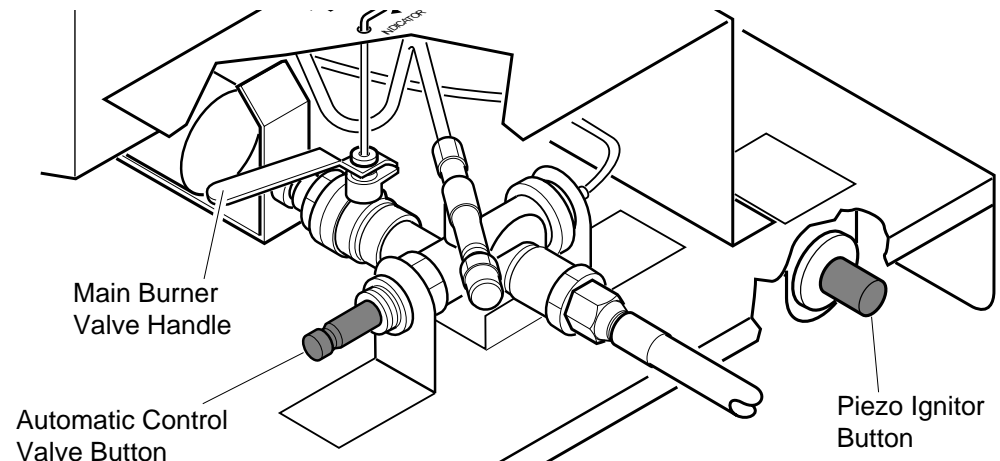
1. Follow all installation, ventilation, and safety information.
2. Locate heater on stable and level surface. Make sure strong drafts do not blow on heater.

### **⚠ WARNING**

**Fully close main burner valve before lighting pilot. If not, severe burns can occur. Do this by turning valve handle towards the OFF position until it stops.**

3. Open propane supply valve on propane tank(s) slowly. *Note:* If not opened slowly, excess-flow check valve on propane tank may stop gas flow. If this happens, close propane supply valve and open again slowly.
4. Push in and hold automatic control valve button (see Figure 4). Push piezo ignitor button (see Figure 4). You may need to push piezo ignitor button 3-8 times until the pilot lights. When pilot lights, keep automatic control valve button pushed in. Release after 30 seconds.

*Note:* If pilot fails to light, hose may have air in it. If so, keep automatic control valve button pressed and wait 20 seconds. Release automatic control valve button and wait 20 seconds for unburned fuel to exit heater. Repeat step 4.



**Figure 4 - Main Burner Valve Handle, Automatic Control Valve Button, and Piezo Ignitor Button Locations**

*Continued*

5. If pilot light goes out, repeat step 4.
6. When pilot remains lit, fully open main burner valve. Do this by turning valve handle to the HIGH position. You can now position the handle to any setting between HIGH and LOW.

### **⚠️ CAUTION**

**Only use the main burner valve handle to adjust the burner flame. Always turn handle pointer to the HIGH position before turning it to a lower position. Never set handle pointer between the LOW and OFF positions.**

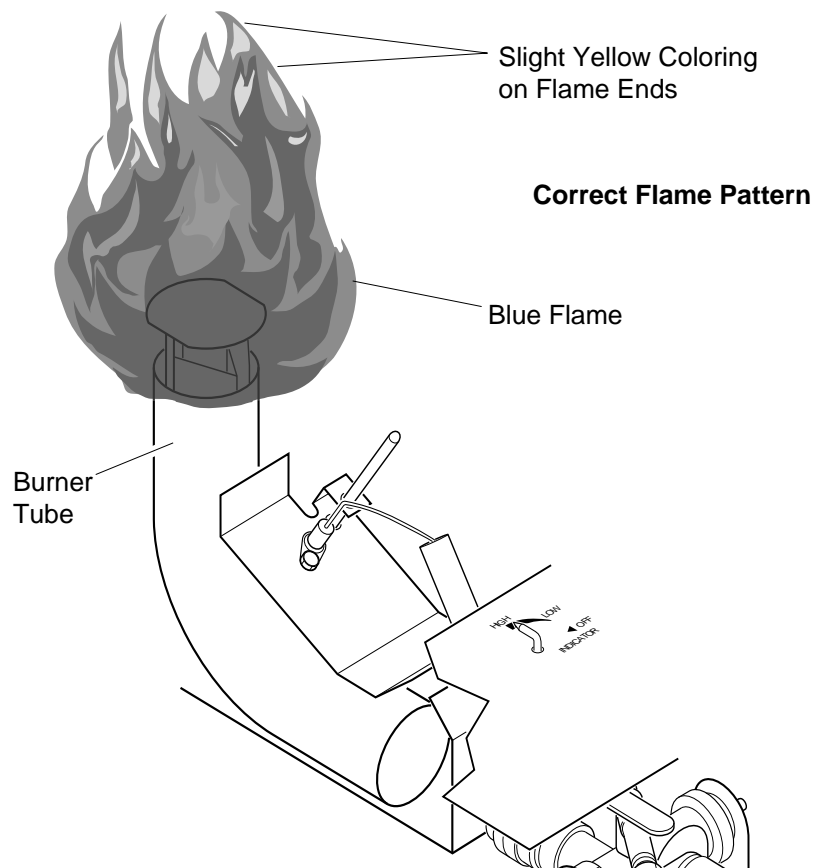
### **Flame Patterns**

Figure 5 shows a correct flame pattern. The burner flame is mostly blue with a slight yellow coloring on the ends.

Figure 6 shows an incorrect flame pattern. The flame is mostly yellow. The incorrect flame pattern results from running heater below the LOW position or from flashback.

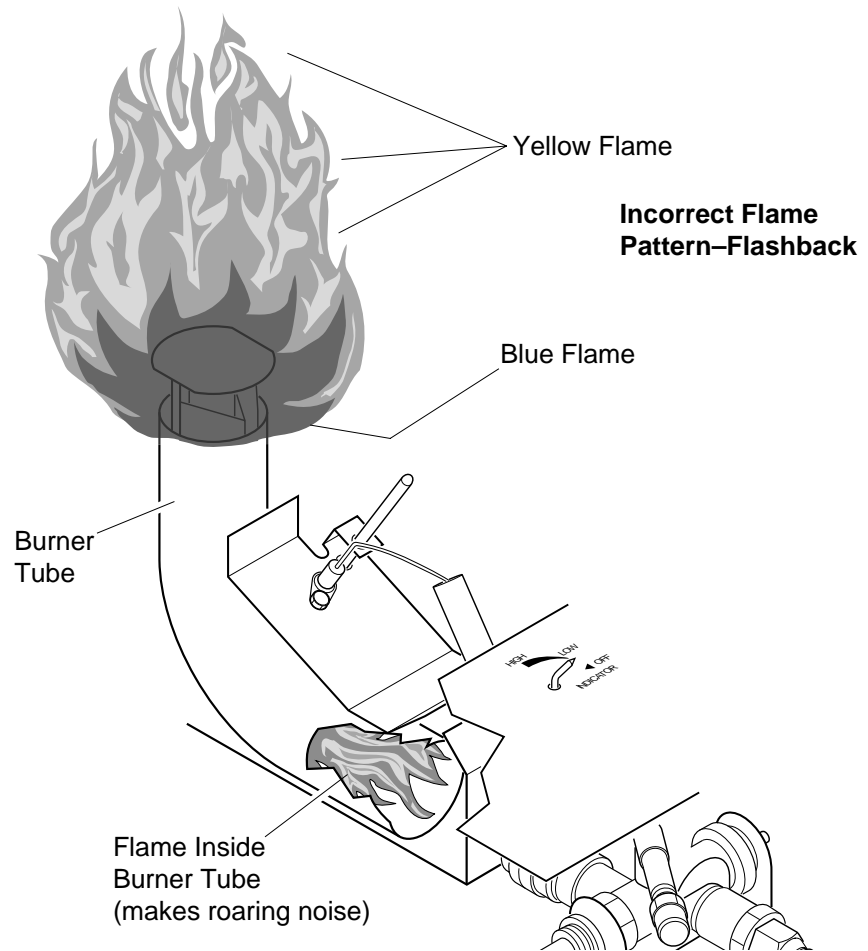
### **⚠️ CAUTION**

**Running heater below specified input rating may cause flashback. During flashback, the burner flame is mostly yellow. The flame will burn inside the burner tube, causing a roaring noise. If flashback occurs, turn heater off. After burner tube cools, restart the heater.**



**Figure 5 - Normal Flame Pattern at High Position**





**Figure 6 - Flame Pattern during Flashback**

### To Stop Heater

1. Tightly close propane supply valve on propane tank(s). Allow heater to burn remaining fuel in hose.
2. Shut off main burner valve. Do this by turning valve handle towards the OFF position until it stops.

### To Restart Heater

1. Wait five minutes after stopping heater.
2. Restart heater by following steps under *To Start Heater*, page 7.

## STORAGE

### **CAUTION**

**Disconnect heater from propane supply tank(s).**

### **CAUTION**

**Do not stack heaters over three high if more than one heater is being stored. Secure heaters with rope or strap after stacking.**

1. Store propane tank(s) in safe manner. Refer to Chapter 5 of *Standard for Storage and Handling of Liquefied Petroleum Gases, ANSI/NFPA 58* and/or *CAN/CGA B149.2*. 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 a dry, clean, and safe place.

# MAINTENANCE

## WARNING

**Never attempt to service heater while it is connected to propane supply, operating, or hot. Severe burns can occur.**

1. Keep heater clean.
2. Inspect heater before each use. Check connections for leaks. Apply mixture of liquid soap and water to connections. Bubbles forming show a leak that must be corrected. Correct all leaks at once.
3. Inspect hose/regulator assembly before each use. If hose is highly worn or cut, replace.
4. Have heater inspected yearly by service person.

# TROUBLE-SHOOTING

## WARNING

**Never attempt to service heater while it is connected to propane supply, operating, or hot. Severe burns can occur.**

<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>REMEDY</u>
Pilot fails to light	<ol style="list-style-type: none"> <li>1. Propane supply valve closed on propane tank(s)</li> <li>2. Excess flow check valve closed</li> <li>3. Air in gas line</li> <li>4. Blockage in pilot orifice</li> <li>5. Piezo ignition system not sparking</li> </ol>	<ol style="list-style-type: none"> <li>1. Open propane supply valve slowly.</li> <li>2. Close propane supply valve on propane tank and reopen slowly.</li> <li>3. Allow several minutes to purge air with automatic control valve button depressed.</li> <li>4. Replace pilot orifice.</li> <li>5. Adjust ignitor electrode gap to .120". Check wire lead for damage. Replace piezo ignitor and/or ignitor electrode as necessary.</li> </ol>
Pilot lights but goes out when automatic control valve button is released	<ol style="list-style-type: none"> <li>1. Not enough warm up time</li> <li>2. Low gas pressure</li> <li>3. Thermocouple loose or needs to be replaced</li> <li>4. Automatic control valve needs to be replaced</li> </ol>	<ol style="list-style-type: none"> <li>1. Relight, hold automatic control valve button in 45 seconds.</li> <li>2. Check propane tank(s) for proper gas supply.</li> <li>3. Tighten connection or replace thermocouple.</li> <li>4. Replace automatic control valve.</li> </ol>
Burn rate is low	<ol style="list-style-type: none"> <li>1. Main burner valve not fully open</li> <li>2. Plugged gas orifice</li> <li>3. Low gas pressure</li> <li>4. Low fuel supply</li> </ol>	<ol style="list-style-type: none"> <li>1. Fully open main burner valve by turning the valve handle towards HIGH position until it stops.</li> <li>2. Replace gas orifice.</li> <li>3. Check gas supply; check regulator output.</li> <li>4. Consult propane gas supplier.</li> </ol>

## ACCESSORIES

Purchase these heater 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 call DESA International's Parts Department at 1-800-972-7879 for referral information. You can also write to the address listed on the back page of this manual.

<b>Part Number</b>	<b>Description</b>
<b>LPA4020</b>	<b>Fuel Gas Connector</b> Connects regulator to all standard propane tanks. U.L. and A.G.A. listed.
<b>LPA1000</b>	<b>10 Foot Hose</b>
<b>LPA2120</b>	<b>Regulator</b>
<b>LPA3095</b>	<b>Hose and Regulator Assembly</b>

## REPLACEMENT PARTS

### **WARNING**

**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**

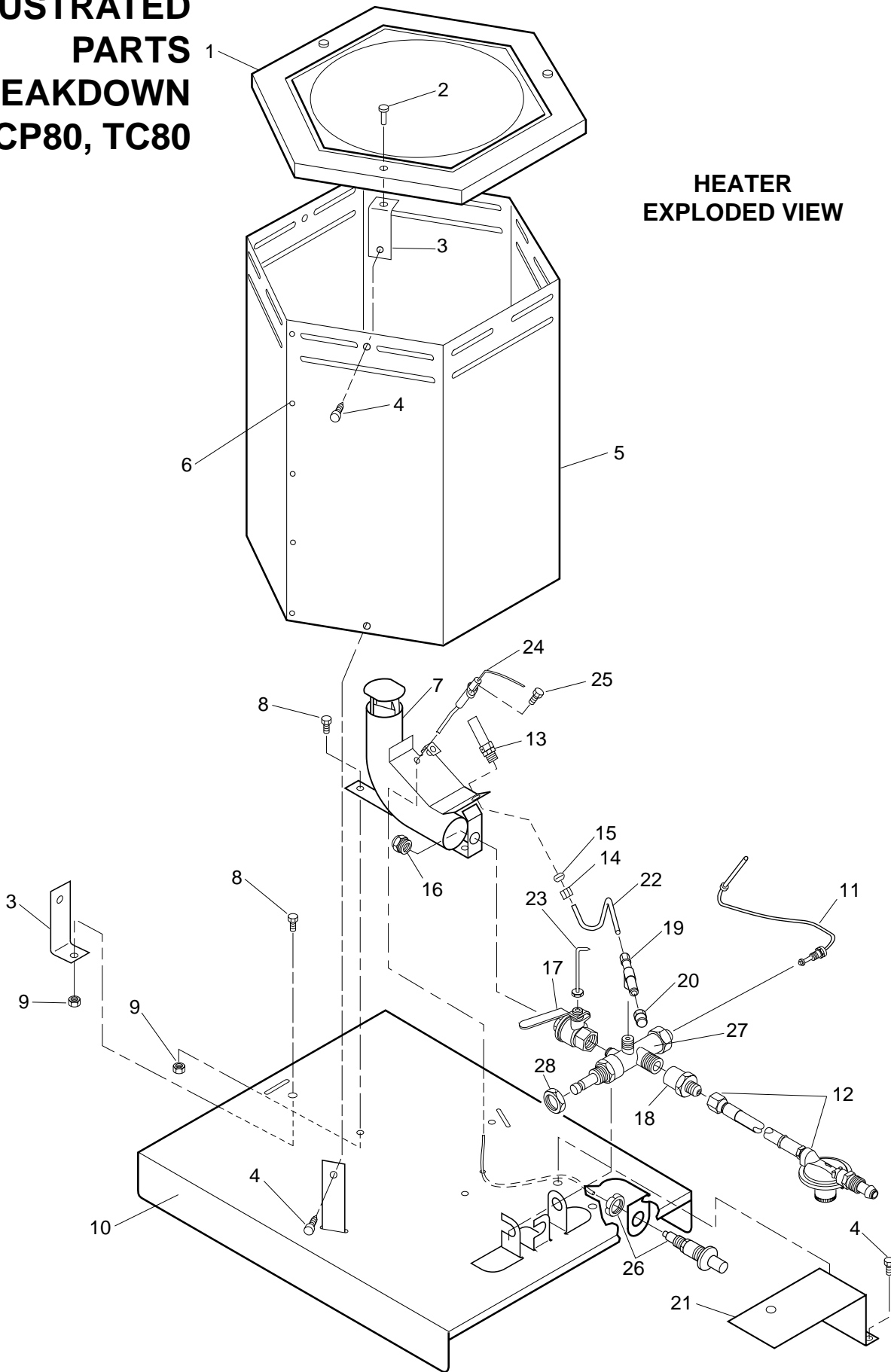
Contact authorized dealers of this product. If they can't supply original replacement part(s), either contact your nearest Parts Central or call DESA International's Parts Department at 1-800-972-7879 for referral information .

When calling DESA International, have ready

- model number of your heater
- the replacement part number

**ILLUSTRATED  
PARTS  
BREAKDOWN  
RCP80, TC80**

**HEATER  
EXPLODED VIEW**



# PARTS LIST

This list contains replaceable parts used in your heater. When ordering parts, follow the instructions under Replacement Parts on page 11 of this manual.

KEY NO.	PART NO.	DESCRIPTION	QTY.
1	098823-02	Deflector Top	1
2	097187-01	Rivet	3
3	097052-01	Standoff Bracket	6
4	M11084-27	Screw, #10-16 x 1/2"	8
5	098822-02	Half Shell	2
6	M50110-03	Rivet	10
7	099851-01	Burner Assembly	1
8	M12461-51	Screw, #10-24 x 1/2"	5
9	097384-01	Nut, #10-24	5
10	098824-02	Base	1
11	099236-01	Thermocouple Kit (Includes Clip)	1
12	LPA3035	Regulator/Hose Assembly	1
13	097163-03	Pilot Burner Assembly	1
14	M5787	Compression Nut	1
15	M5788	Compression Sleeve	1
16	099679-01	Nozzle	1
17	097152-01	Manual Control Valve	1
18	097157-02	Female Connector	1
19	099461-01	Compression Gauge Tee	1
20	099460-01	Brass Hex Cap	1
21	LPA 4010	Debris Shield	1
22	099680-01	Pilot Fuel Tube	1
23	099685-01	Pointer and Nut	1
24	099539-02	Ignitor Electrode	1
25	M11084-38	Screw, #8-18 x 3/8"	1
26	102445-01	Piezo Ignitor (Includes Nut)	1
27	097155-01	Automatic Control Valve	1
28	098835-01	Nut, 1/2"-28	1
<b>PARTS AVAILABLE - NOT SHOWN</b>			
	099681-01	Information Decal	1
	099683-01	Operation Decal	1
	098851-03	Tradename Decal (RCP80)	1
	098853-04	Tradename Decal (TC80)	1
	099684-01	Owner's Manual	1
<b>ACCESSORIES</b>			
	LPA1000	Hose Assembly	
	LPA2130	Regulator	
	LPA4020	Fuel Gas Connector	





# 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 OR 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

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.

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  
Bowling Green, Kentucky 42102-9004 ATTN: Customer Service Department  
When writing, always include model number and serial number.

099684-01  
Rev. E  
4/97