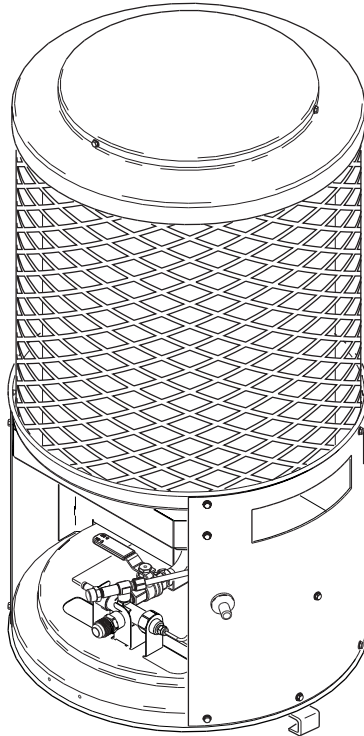


PROPANE CONSTRUCTION HEATER

OWNER'S MANUAL



Model: TC100R

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.

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

TC100R

PROPANE CONSTRUCTION HEATER

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/CGA 2.14. 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.

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 three-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 may 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: 6 feet, Top: 5 feet.
- Keep heater at least six feet from propane tank(s).
- 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 of shell) or air outlet (around top of shell) 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 or operating 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 to 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.

OWNER'S MANUAL

PRODUCT IDENTIFICATION

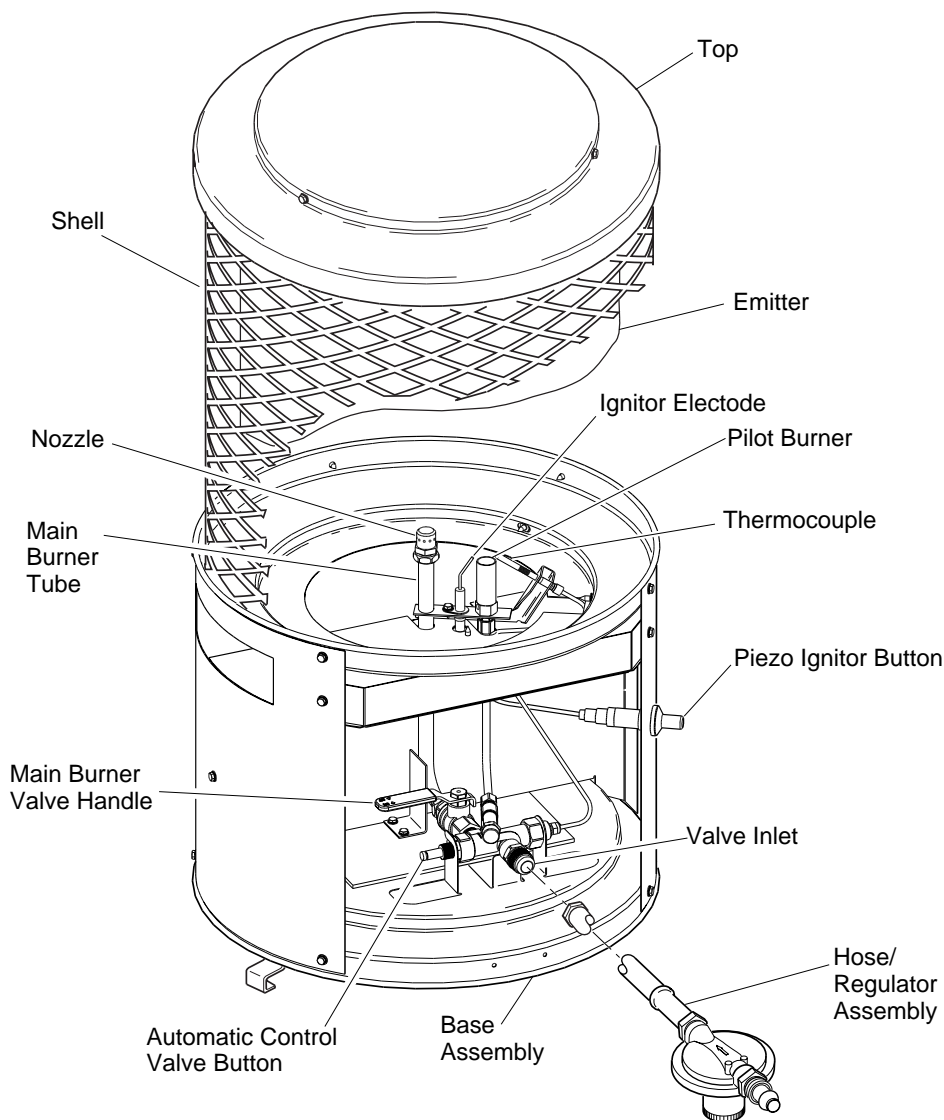


Figure 1 - Product Identification

UNPACKING

1. Remove all packing items applied to heater for shipment. Keep plastic cover caps (attached to valve inlet 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 Automatic Control System: The automatic control valve shuts off the heater 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.

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

1. The amount of liquid 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. Do not operate this product with any tank smaller than 100 pounds.

Average Temp. (°F) At Tank location	Number of Tanks
60°	2
40°	2
32°	2
20°	2
10°	3
0°	3

Less gas is vaporized at lower temperatures. Two or more 100-pound tanks or one larger tank may be needed in colder weather. Your local propane gas dealer will help you select the proper supply system.

TC100R

PROPANE CONSTRUCTION HEATER

VENTILATION

⚠ WARNING: Provide at least a 3 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.

FRESH OUTSIDE AIR OPENING REQUIREMENTS

HEATER SIZE	SQUARE FOOT OPENING
100,000 BTU/Hr	3.0

SPECIFICATIONS

Rating(BTU/Hr)	100,000
Fuel	Propane Vapor Only
Fuel Consumption	
Gallons/Hour	1.1
Pounds/Hour	4.6
Supply Pressure (To Regulator)	
Maximum	200 psi
Minimum, for input adjustment	10 psi
Manifold Pressure	10.3" w.c.
Weight (Pounds)	23
Shipping Weight (Pounds)	30
Size - H x Dia. (Inches)	29.5 x 16

INSTALLATION

⚠ WARNING: Review and understand the warnings in the Safety Information Section, page 2. 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. 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*, page 3).
2. Connect fuel gas fitting on hose/regulator assembly to propane tank(s). Turn fuel gas 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.

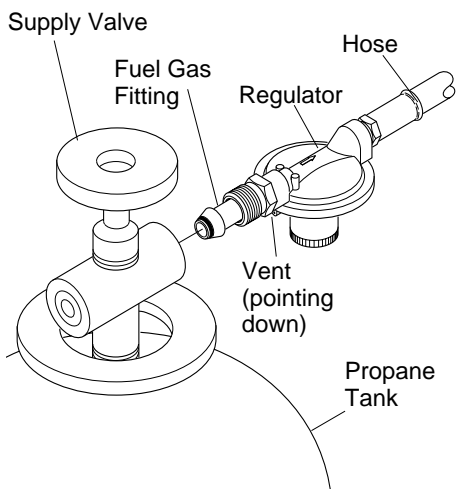


Figure 2 - Regulator With Vent Pointing Down

3. Connect hose to the valve inlet. Tighten firmly using 9/16" wrench. You must use the regulator supplied with heater even if propane tank has one.

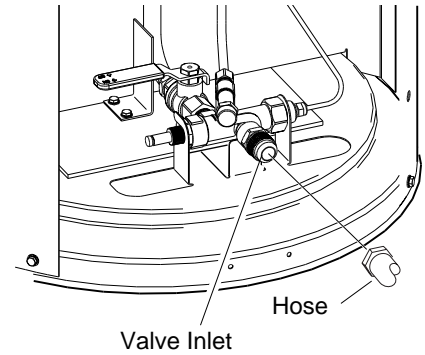


Figure 3 - Hose and Valve Inlet

4. 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.
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.

OPERATION

⚠ WARNING: Review and understand the warnings in the Safety Information Section. 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 will 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 the piezo ignitor button 3-8 times until the pilot lights. *Note:* Hose may be filled with air. If so, keep automatic control valve button pressed and wait 20 seconds for propane to clear before pressing ignitor button again. When pilot lights, keep automatic control valve button pushed in. Release button after 30 seconds.
5. If pilot light goes out, repeat step 4.
6. When pilot remains lit, fully open main burner valve. Do this by turning main burner valve handle towards the ON position until it stops. *Note:* Arrows on main burner valve handle show directions for ON and OFF.

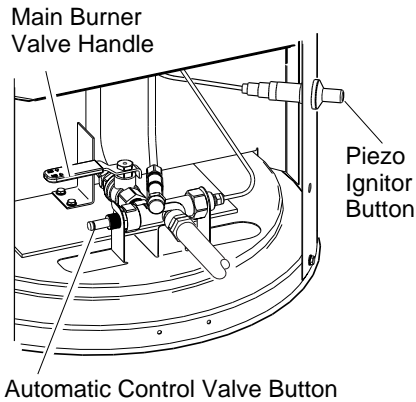


Figure 4 - Main Burner Valve Handle, Automatic Control Valve Button, and Piezo Ignitor Button Locations

TO STOP HEATER

1. Tightly close propane supply valve on propane tank(s).
2. Shut off main burner valve. Do this by turning main burner valve handle towards the OFF position until it stops. *Note:* Arrows on main burner valve handle show direction for ON and OFF.

TO RESTART HEATER

1. Wait five minutes after stopping heater.
2. Restart heater by following steps under "To Start Heater."

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*. 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.
4. When taking heater out of storage, always check inside of heater. Insects and small animals may place foreign objects in heater. Keep inside of heater free from combustible and foreign objects.

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 a qualified service person.

TC100R

PROPANE CONSTRUCTION HEATER

TROUBLESHOOTING

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

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

SYMPTOM	POSSIBLE CAUSE	REMEDY
Pilot fails to light.	1. Propane supply valve closed on propane tank(s).	1. Open propane supply valve slowly.
	2. Excess-flow check valve closed.	2. Close propane supply valve on propane tank and reopen slowly.
	3. Air in gas line.	3. Allow several minutes to purge air with automatic control valve button depressed.
	4. Blockage in pilot orifice.	4. Replace pilot orifice.
	5. Piezo ignition system not sparking.	5. Adjust ignitor electrode gap to .120". Check wire lead for damage. Replace piezo ignitor and/or ignitor electrode as necessary.
Pilot lights but goes out when automatic control valve button is released.	1. Not enough warm-up time.	1. Relight, hold automatic control valve button in 45 seconds.
	2. Low gas pressure.	2. Check propane tank(s) for proper gas supply.
	3. Thermocouple loose or needs to be replaced.	3. Tighten connection or replace thermocouple.
	4. Automatic control valve needs to be replaced.	4. Replace automatic control valve.
Burn rate is low; emitter not glowing.	1. Main burner valve not fully open.	1. Fully open main burner valve by turning the valve handle towards ON position until it stops.
	2. Plugged gas orifices.	2. Replace gas orifice.
	3. Low gas pressure.	3. Check gas supply; check regulator output.
	4. Low fuel supply.	4. Consult propane gas supplier.
Soot forming inside heater, flame 100% yellow.	1. Main burner valve not fully open.	1. Adjust main burner valve slowly towards ON position.
	2. Low fuel supply.	2. Consult propane gas supplier.

OWNER'S MANUAL

ACCESSORIES

Purchase these accessories and parts from your local dealer or service center. If your dealer or service center can not supply an accessory or part, 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.

Part Number	Description
LPA1000	10' Rubber Hose with Brass Fitting U.L. listed.
LPA2150	Propane Gas Regulator U.L. listed.
LPA3100	Hose/Regulator Assembly U.L. listed.
LPA4020	Fuel Gas Connector Connects regulator to all standard propane tanks. U.L. and A.G.A. listed.

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.

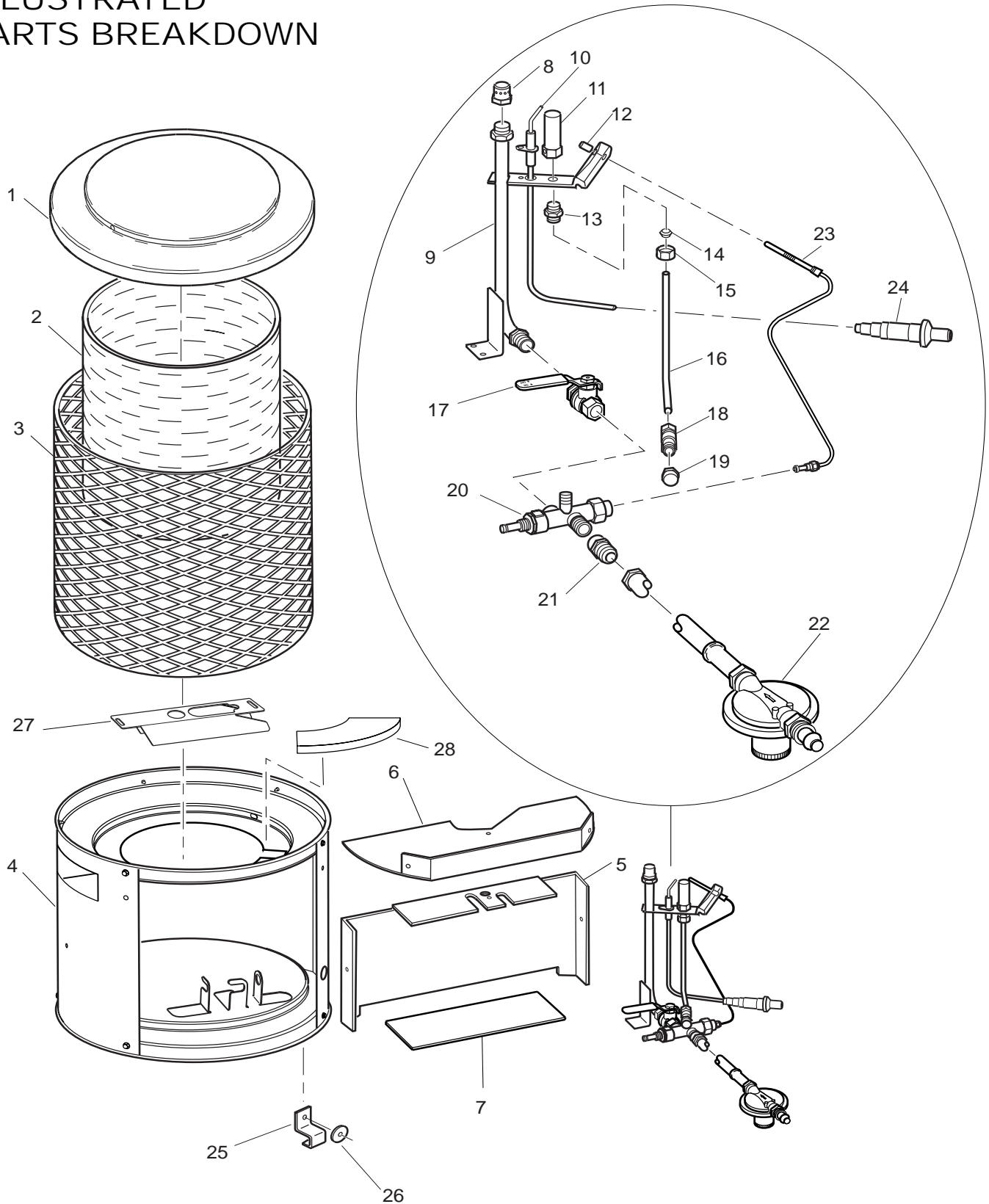
When calling DESA International, have ready

- model number of your heater
- the replacement part number

TC100R

PROPANE CONSTRUCTION HEATER

ILLUSTRATED PARTS BREAKDOWN



OWNER'S MANUAL

PARTS LIST

This list contains replaceable parts used in your heater. When ordering parts, follow the instructions listed under *Replacement Parts* on page 7 of this manual.

KEY NO.	TC100R PART NO.	DESCRIPTION	QTY.
1	104145-01	Upper Disk	1
2	103897-03	Emitter	1
3	103898-01	Shell	1
4	104135-01	Base Assembly	1
5	103935-01	Rear Burner Shield	1
6	103900-02	Burner Shield	1
7	103901-01	Burner Support	1
8	099138-03	Nozzle	1
9	104114-01	Burner Tube Assembly	1
10	104118-01	Ignitor Electrode	1
11	097163-05	Pilot Burner Assembly	1
12	099237-01	Thermocouple Clip	1
13	097161-03	Pilot Burner Orifice	1
14	M5788	Sleeve	1
15	M5787	Hex Nut	1
16	103028-02	Pilot Fuel Tube	1
17	097152-01	Manual Control Valve	1
18	099461-01	Compression Gauge Tee	1
19	099460-01	Brass Hex Cap	1
20	097155-01	Automatic Control Valve	1
21	097157-02	Female Connector	1
22	LPA3100	Regulator/Hose Assembly	1
23	099236-01	Thermocouple Kit	1
24	102445-01	Piezo Ignitor	1
25	103902-01	Leg	3
26	103903-01	Spacer	3
27	104143-01	Pilot Shield	1
28	104116-02	Insulation	1
PARTS AVAILABLE -- NOT SHOWN			
	098853-08	Tradename Decal	1
	104126-01	Information Decal	1
ACCESSORIES			
	LPA1000	10' Hose Assembly	
	LPA2150	Regulator	
	LPA4020	Fuel Gas Connector	
	LPA3100	Hose/Regulator Assembly	

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



104129 01

NOT A UPC

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.

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Rev. C
10/97