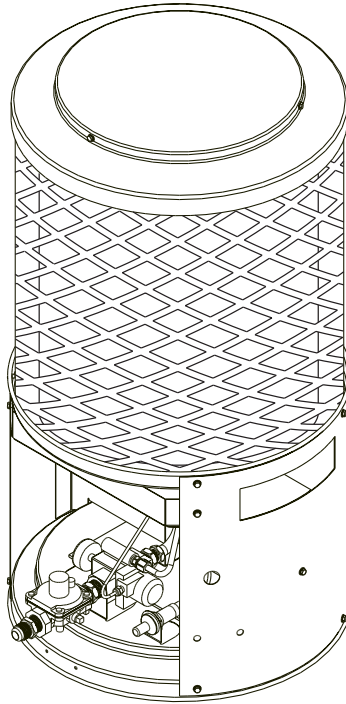


NATURAL GAS CONSTRUCTION HEATER

OWNER'S MANUAL



Model: TC100RNG

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.

TC100RNG

NATURAL GAS 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.

Natural Gas: Natural gas has a distinctive odor. This odor helps you detect a natural gas leak. However, the odor may fade. Natural 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 *National Fuel Gas Code Handbook, NFPA54/ANSI Z223.1* and the *Natural Gas Installation Code, CAN/CGA B149.2*. This instructs on the safe storage and handling of flammable gases.
- Use only with natural gas. Do not attempt to use with LP gas.
- Provide adequate ventilation. Before using heater, provide at least a three-square-foot opening of fresh, outside air for each 100,000 Btu/Hr of rating. 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.
- 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 combustible materials:
Sides: 6 Ft. Top: 5 Ft.
- Check heater for damage before each use. Do not use a damaged heater.
- Check hose (if used) 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 (top of shell) of heater.
- Keep heater away from strong drafts,

water spray, rain, or dripping water.

- Keep children and animals away from heater.
- Do not leave heater unattended.
- Never move, handle, or service a hot or operating 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 heater.
- Do not alter heater. Keep heater in its original state.
- Do not use heater if altered.
- Turn off natural gas 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.

UNPACKING

1. Remove all packing items applied to heater for shipment. Keep plastic cover caps (attached to valve inlet) 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.
4. Hose not included. User must supply hose or flexible connector.

THEORY OF OPERATION

The Fuel System: The gas supply attaches to the heater by a minimum 3/4 inch i.d. hose or flexible connector. User must supply hose or flexible connector. The length should be no more than 10 feet long. The natural gas moves through the regulator and out the nozzle.

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.

OWNER'S MANUAL

PRODUCT IDENTIFICATION

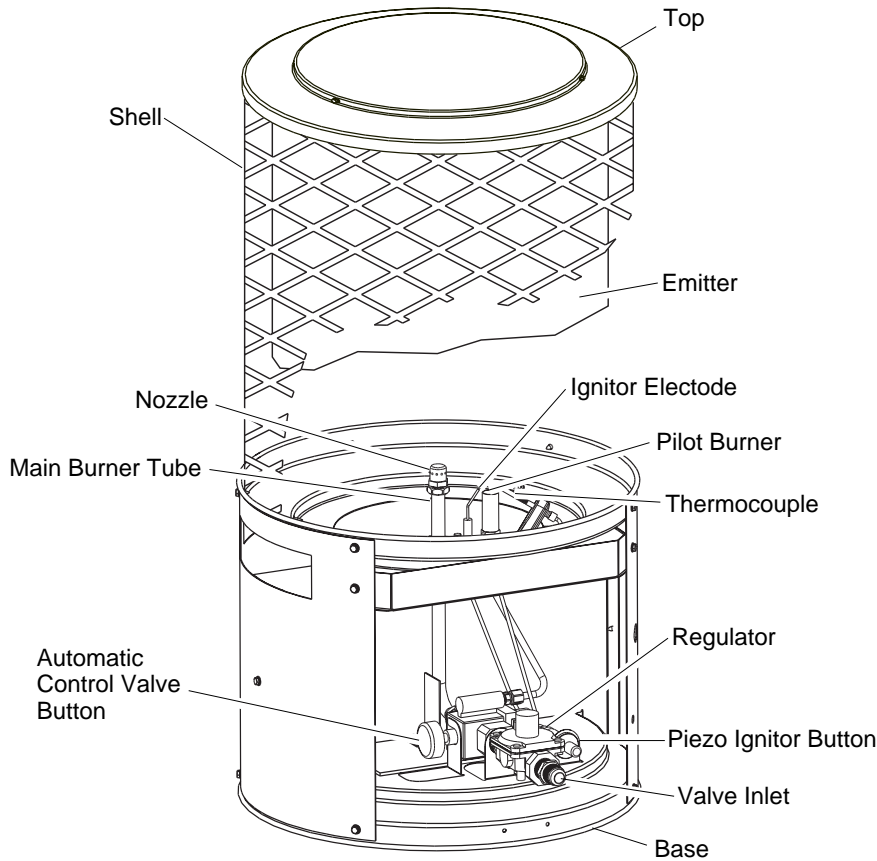


Figure 1 - Product Identification

NATURAL GAS SUPPLY

The user must furnish the natural gas supply and the connections to the heater.

Regulate the natural gas supply down from a minimum 6 inches water column to a maximum of 1/2 psi. The natural gas supply capacity should be able to supply a minimum of 100 cubic feet of gas at pressure for each heater connected to the system.

Consult your natural gas supplier for proper sizing of the natural gas supply lines.

Follow all local ordinances and codes. In the absence of local ordinances and codes, refer to the *National Fuel Gas Code Handbook, NFPA54/ANSI Z223.1* and the *Natural gas Installation Code, CAN/CGA B149.2*.

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	Natural Gas Only
Fuel Consumption	
Cubic Feet/Hour	97
Supply Pressure (To Regulator)	
Maximum	1/2 psi
Minimum	6" w.c.
Manifold Pressure	4" w.c.
Weight (Pounds)	23
Shipping Weight (Pounds)	27
Size - L x W x H (Inches)	16 x 16 x 29.5

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 natural gas supply system.
2. Install plumbing to a low pressure natural gas source. The source must be regulated to 1/2 psi maximum. The plumbing must be a minimum 3/4 inch i.d. hose or flexible connector not over 10 feet long.

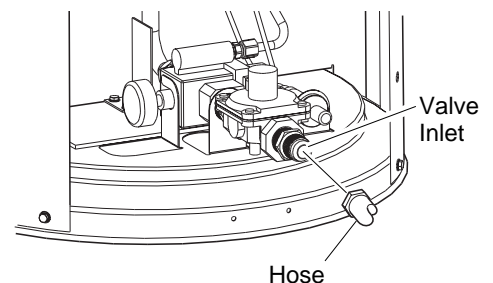


Figure 2 - Hose and Valve Inlet

Continued

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NATURAL GAS CONSTRUCTION HEATER

INSTALLATION

Continued

3. Connect the hose to the heater at the 1/2 inch SAE flare fitting at the valve inlet.

⚠ 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.

Tighten all fittings with a wrench

4. Open natural gas supply valve slowly.
5. Check all connections for leaks.
6. Close natural gas 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.
3. Open gas supply slowly.
4. Turn control valve knob 1/4 turn to left to PILOT position (see Figure 3).

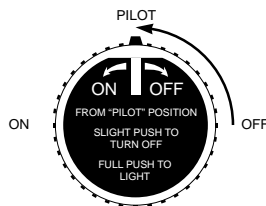


Figure 3 - PILOT Position

5. Push in and hold control valve knob while pushing red piezo ignitor button. Ignitor button may have to be pushed again (3 to 8 times) until pilot lights. **Note:** Hose may be filled with air. If so, allow 20 seconds for gas to reach pilot before pushing ignitor button.
6. After pilot lights, keep control valve knob depressed for at least 30 seconds, then release.
7. If pilot light goes out, repeat steps 4 through 6.
8. When pilot remains lit, start heater by slowly turning control valve knob 1/4 turn to left to ON position (see Figure 4).

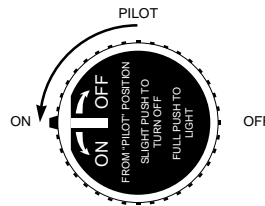


Figure 4 - ON Position

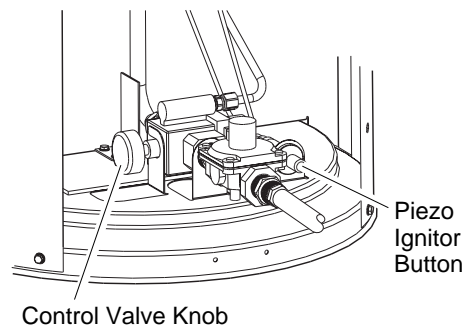


Figure 5 - Control Valve Knob and Piezo Ignitor Button Locations

TO STOP HEATER

1. Close valve on gas supply.
2. Turn control valve knob 1/4 turn to right to PILOT position. Slightly push in knob and turn 1/4 turn to right to OFF position (see Figure 6).

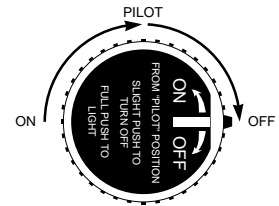


Figure 6 - OFF Position

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 natural gas supply.

1. Place plastic cover cap over brass fitting on inlet connector.
2. Store in dry, clean, and safe place.
3. 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 service heater while it is connected to gas supply, operating, or hot. Severe burns can occur.

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.
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. Have heater inspected yearly by a qualified service agency.
4. Keep inside of heater free from combustible and foreign objects.

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

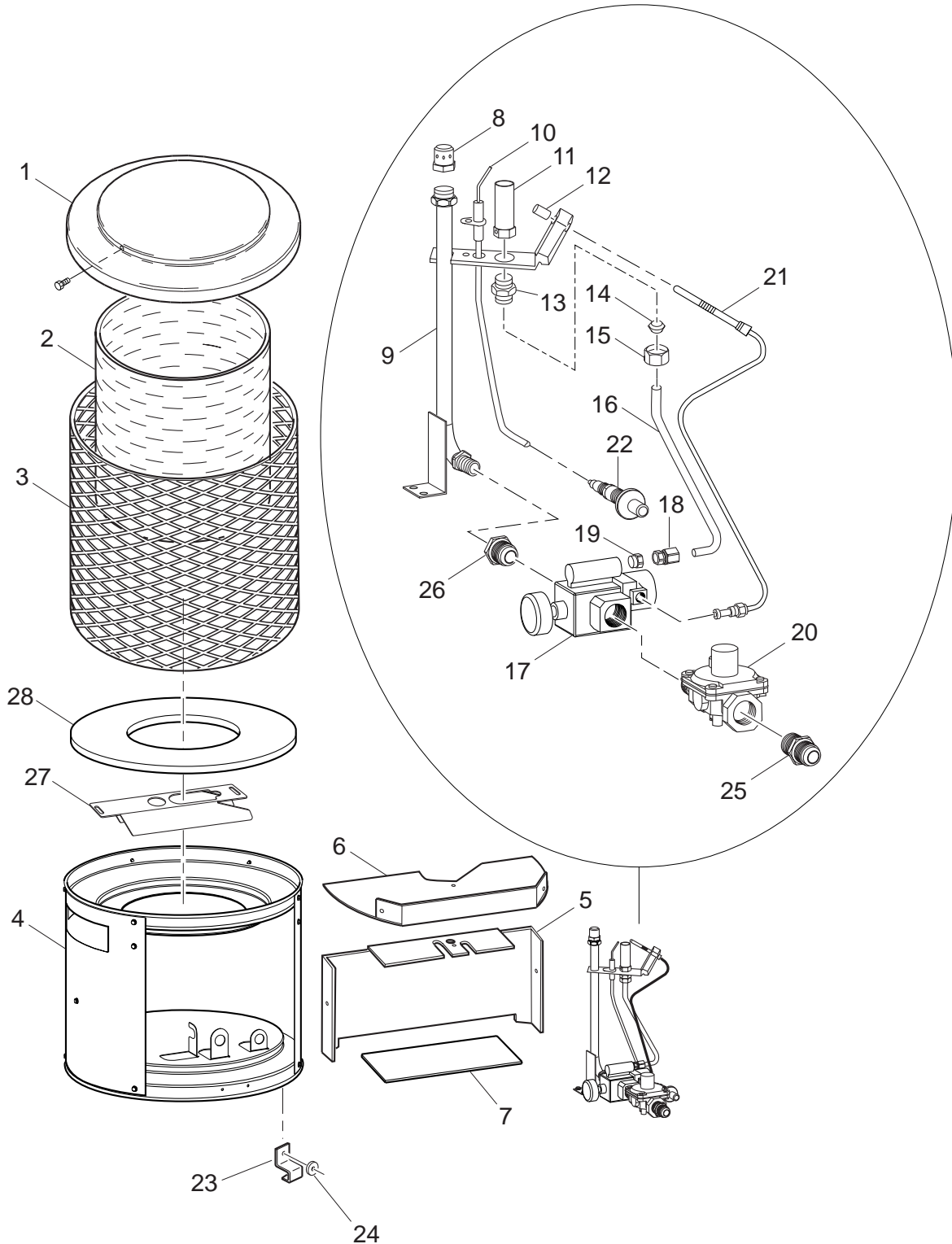
Contact authorized dealers of this product. If they can't supply original replacement part(s), either contact your nearest Parts Central or call DESA International's Parts Department at 1-800-972-7879 for referral information.

When calling DESA International, have ready

- model number of your heater
- the replacement part number

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NATURAL GAS CONSTRUCTION HEATER



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 5 of this manual.


KEY NO.	TC100RNG PART NO.	DESCRIPTION	QTY.
1	104145-01	Upper Disk	1
2	103897-01	Emitter	1
3	103898-01	Shell	1
4	104136-01	Base Assembly	1
5	103935-01	Rear Burner Shield	1
6	103900-01	Burner Shield	1
7	103901-01	Burner Support	1
8	099138-04	Nozzle	1
9	104114-01	Burner Tube Assembly	1
10	104118-01	Ignitor Electrode	1
11	097163-06	Pilot Burner Assembly	1
12	099237-01	Thermocouple Clip	1
13	097161-04	Pilot Burner Orifice	1
14	M5788	Compression Sleeve	4
15	M5787	Compression Nut	4
16	104121-01	Pilot Fuel Tube	1
17	104119-01	Control Valve	1
18	099461-01	Compression Gauge Tee	1
19	099460-01	Brass Hex Cap	1
20	103936-01	Regulator	1
21	099236-01	Thermocouple Kit	1
22	102445-01	Piezo Ignitor	1
23	103902-01	Leg	2
24	103903-01	Spacer	3
25	103401-01	1/2 NPT to 1/2 45° Male Flare Connector	1
26	104115-01	1/2 NPT to 1/4 NPT Reducer Bushing	1
27	104143-01	Pilot Shield	1
28	104116-01	Insulation Ring	1
PARTS AVAILABLE – NOT SHOWN			
	104127-01	Information Decal	1
	098853-09	Tradename Decal	1

TC100RNG

NATURAL GAS 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 service heater while it is connected to gas supply, operating, or hot. Severe burns can occur.**

SYMPTOM	POSSIBLE CAUSE	REMEDY
Pilot fails to light.	<ol style="list-style-type: none">1. Natural gas supply valve closed on gas supply.2. Air in gas line.3. Blockage in pilot orifice.4. Piezo ignition system not sparking.	<ol style="list-style-type: none">1. Open natural gas supply valve slowly.2. Allow several minutes to purge air with automatic control valve button depressed.3. Replace pilot orifice.4. 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 control valve knob is released.	<ol style="list-style-type: none">1. Not enough warm-up time.2. Low gas pressure.3. Thermocouple loose or needs to be replaced.4. Control valve needs to be replaced.	<ol style="list-style-type: none">1. Relight, hold automatic control valve button in 45 seconds.2. Check natural gas for proper gas supply.3. Tighten connection or replace thermocouple.4. Replace control valve.
Maximum burn rate is low; emitter not glowing.	<ol style="list-style-type: none">1. Main burner valve not fully open.2. Plugged gas orifices.3. Low gas pressure.	<ol style="list-style-type: none">1. Fully open main burner valve by turning the valve handle towards ON position until it stops.2. Replace gas orifice.3. Consult natural gas supplier; check regulator output.
Soot forming inside heater, flame 100% yellow.	<ol style="list-style-type: none">1. Main burner valve not fully open.2. Low gas pressure.	<ol style="list-style-type: none">1. Adjust main burner valve slowly towards ON position.2. Consult natural gas supplier.
Flames are extremely high. Coming out of louvers	<ol style="list-style-type: none">1. Unit was connected to LP gas instead of natural gas.	<ol style="list-style-type: none">1. Check gas source, replace with natural gas supply.

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



104131 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.

104131-01
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