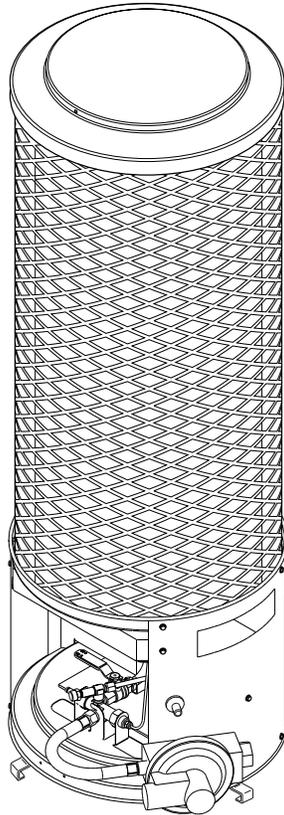


NATURAL GAS CONSTRUCTION HEATER

OWNER'S MANUAL



Model: TC250RNG

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.

MODEL TC250RNG

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. Certain 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.**

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.

Note: A gas hose is 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 3/8 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 (if used) and through the control valve, then out the nozzle.

The Ignition System: The piezo ignitor lights the burner fuel supply.

The Automatic Control System: The automatic control valve shuts off the heater if the flame goes out.

OWNER'S MANUAL

PRODUCT IDENTIFICATION

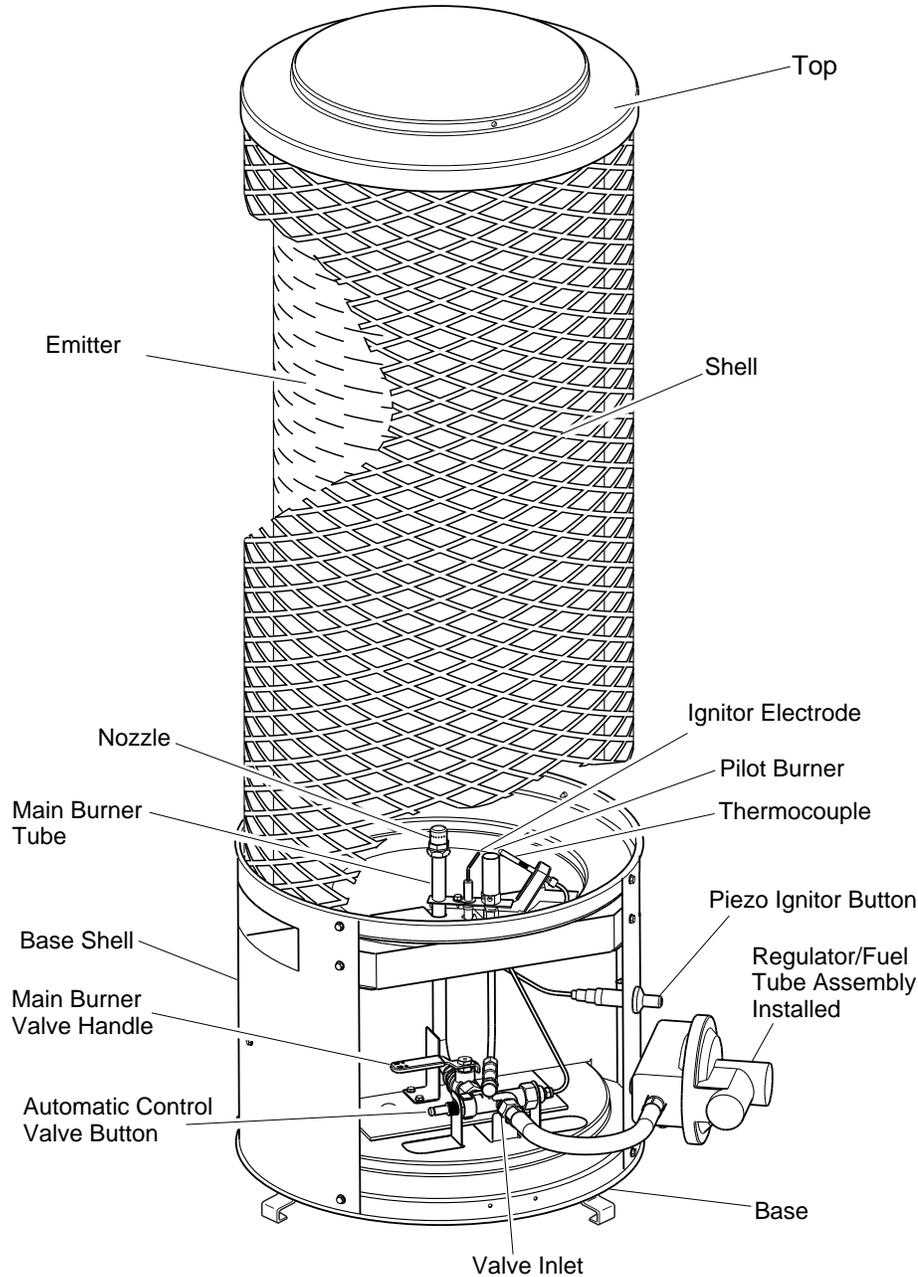


Figure 1 - Product Identification

NATURAL GAS SUPPLY

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

Regulate the natural gas supply down to 4 psi. If over 4 psi is supplied, then use the supplied regulator on the heater. The natural gas supply capacity should be able to supply a minimum of 250 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 **7.5 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.**

Fresh Outside Air Opening Requirements
 Heater Size - 250,000 BTU/Hr
 Square Feet Opening - 7.5

SPECIFICATIONS

Rating(BTU/Hr)	250,000
Fuel	Natural Gas Only
Fuel Consumption	243 cubic ft/hr
Supply Pressure	
Maximum (To regulator)	200 psi
Minimum (To heater)	4 psi
Maximum To Heater	
Without Regulator	4 psi
Manifold Pressure	3.5 psi
Weight (Pounds)	33
Shipping Weight (Pounds)	40
Size -	46L x 16W x 16H (Inches)

MODEL TC250RNG

NATURAL GAS CONSTRUCTION HEATER

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 from natural gas supply system to heater. Provide 4 psi gas pressure to heater. If gas supply pressure is over 4 psi, use high pressure regulator (provided).
3. Connect gas supply to heater using minimum 3/8" i.d. hose. Maximum hose length is 10 feet.
4. Connect hose or plumbing to 1/2" SAE flare fitting at the valve inlet. Tighten all fittings with a wrench.
5. Open natural gas supply valve slowly. Check all connections for leaks. Never use an open flame to check for a leak. Apply mixture of liquid soap and water to gas joints. Bubbles forming show a leak that must be corrected. Correct all leaks at once.
6. Close natural gas supply valve.

Installing High Pressure Regulator

If the inlet supply pressure is above 4 psi, you must use the high pressure regulator (supplied). Follow the instructions below to install regulator.

1. Install pipe or flexible connector (not supplied) from gas supply to high pressure regulator. Pipe or flexible connector must be a minimum of 3/8" i.d. with a maximum length of 10 feet. Attach pipe or flexible connector to inlet of regulator. The female threads of the regulator are 1/2 npt. **Note:** The natural gas supply must deliver 250 CFH of natural

gas at 4 psi pressure for each heater connected to the system.

2. Mount regulator to heater base below piezo ignitor button (see Figure 2). Use 1/4-20 screws from hardware bag to attach regulator to heater. Mount regulator so the outlet with male connector points toward the heater inlet.
3. Attach the 1/2" copper fuel tube (supplied) to male connector on regulator. Attach other end of fuel tube to heater inlet. Firmly tighten fuel tube flare nuts onto each fitting.
4. Open natural gas supply valve slowly. Check all connections for leaks. Never use an open flame to check for a leak. Apply mixture of liquid soap and water to gas joints. Bubbles forming show a leak that must be corrected. Correct all leaks at once.
5. Close natural gas supply valve.
6. Follow steps under *To Start Heater* in the *OPERATION* section (page 5) of this manual.

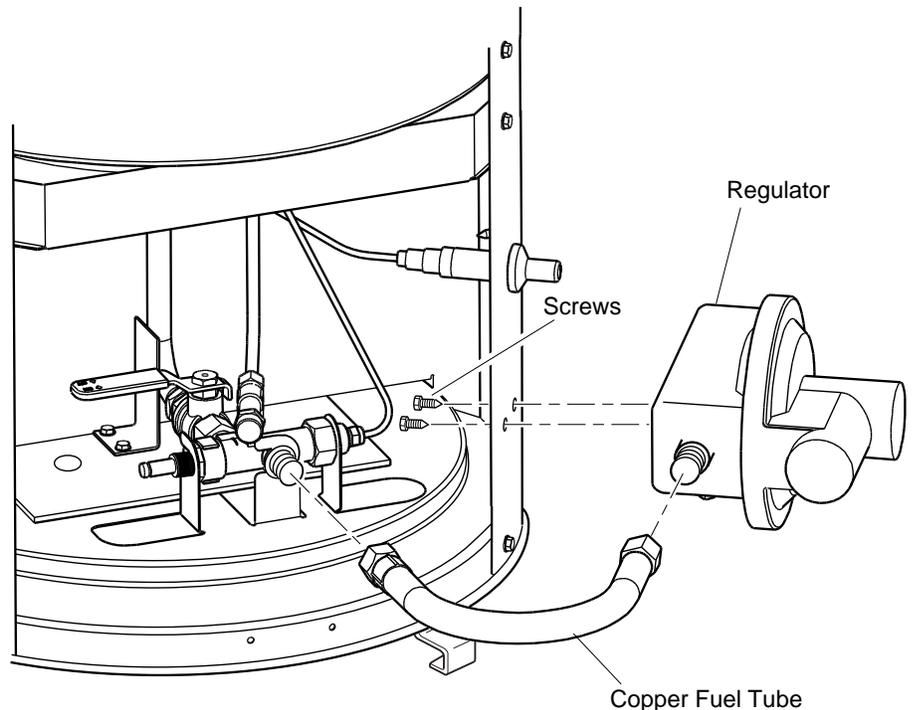


Figure 2 - Installing Regulator

OPERATION

⚠ 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.

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 natural gas supply valve slowly.
4. Push in and hold automatic control valve button (see Figure 3). Push piezo ignitor button (see Figure 3). 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 gas 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.

To Stop Heater

1. Tightly close natural gas supply valve.
2. Using a gloved hand, 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*.

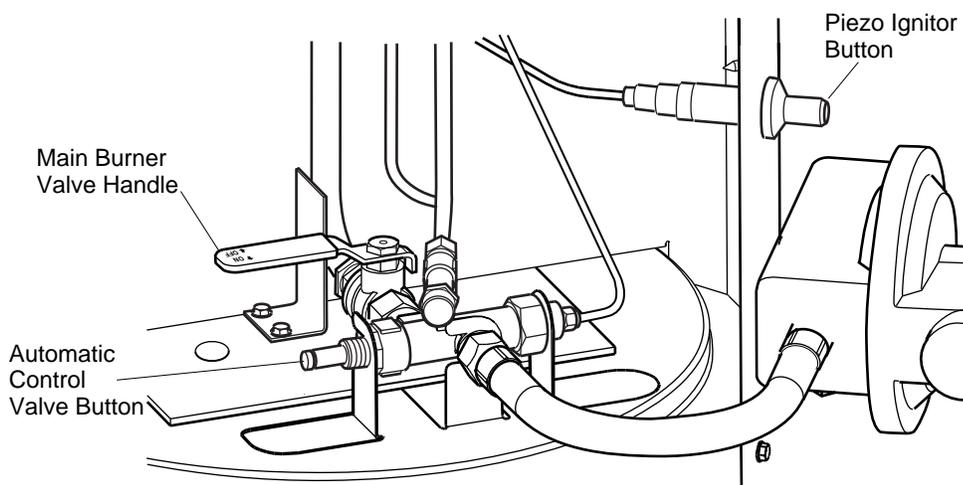


Figure 3 - Main Burner Valve Handle, Automatic Control Valve Button, and Piezo Ignitor Button Locations, With Regulator Installed

MODEL TC250RNG

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 attempt to service heater while it is connected to natural 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.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 automatic control valve button 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. Automatic control valve needs to be replaced.	<ol style="list-style-type: none">1. Relight, hold automatic control valve button in 45 seconds.2. Check for proper gas supply.3. Tighten connection or replace thermocouple.4. Replace automatic control valve.
Maximum burn rate is low.	<ol style="list-style-type: none">1. Main burner valve not fully open. 2. Plugged gas orifices.3. Low gas pressure. 4. Low fuel supply.	<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. Check gas supply; check regulator output.4. Consult natural gas supplier.
Soot forming inside heater, flame 100% yellow.	<ol style="list-style-type: none">1. Main burner valve not open enough. 2. Low fuel supply	<ol style="list-style-type: none">1. Adjust main burner valve slowly toward ON position until flame has more blue color.2. Consult natural gas supplier.
Burn rate too high. Flames coming out of emitter.	<ol style="list-style-type: none">1. Pressure too high. 2. Unit connected to LP.	<ol style="list-style-type: none">1. Check inlet pressure. If over 4 psi adjust or install regulator.2. Verify gas source. If connected to LP gas, disconnect. Connect to natural gas.

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

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

Parts Not Under Warranty

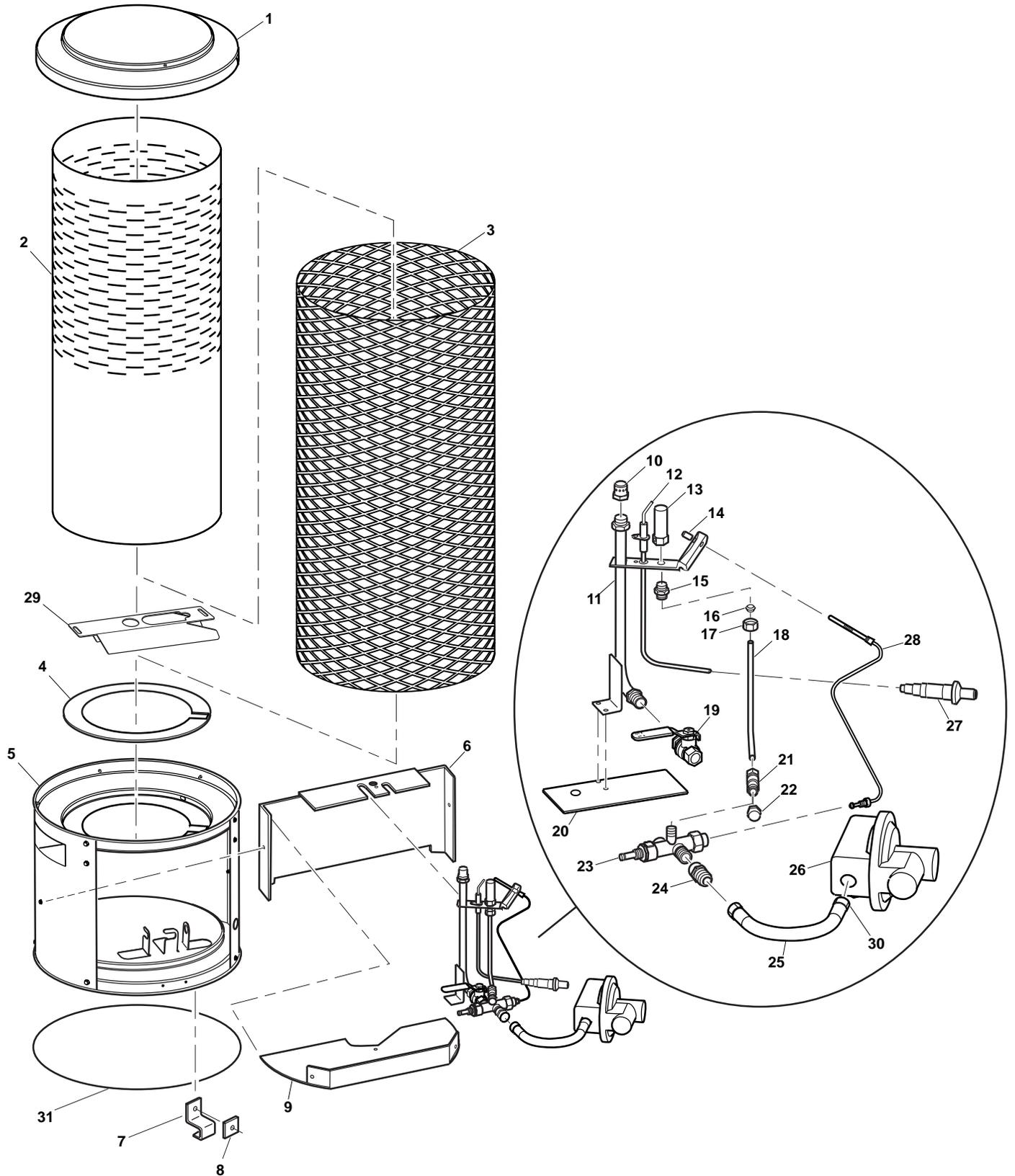
Contact authorized dealers of this product. If they can't supply original replacement part(s), either contact your nearest Parts Central or call DESA International's Parts Department at 1-800-972-7879 for referral information.

When calling DESA International, have ready

- model number of your heater
- the replacement part number

MODEL TC250RNG NATURAL GAS CONSTRUCTION HEATER

ILLUSTRATED PARTS



OWNER'S MANUAL

PARTS LIST

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

KEY NO.	PART NO.	DESCRIPTION	QTY.
1	104145-02	Top Disk	1
2	103897-02	Emitter	1
3	103898-02	Shell	1
4	104116-01	Insulation Ring	1
5	104137-01	Outer Base Assembly	1
6	103935-01	Rear Burner Shield	1
7	103902-01	Leg	3
8	103903-01	Spacer	6
9	103900-02	Burner Shield	1
10	099138-05	Nozzle	1
11	104114-01	Burner Tube Assembly	1
12	104118-01	Ignitor Electrode	1
13	097163-07	Pilot Burner Assembly	1
14	099237-01	Thermocouple Clip	1
15	097161-01	Pilot Burner Orifice	1
16	M5788	Sleeve	1
17	M5787	Hex Nut	1
18	103028-02	Pilot Tube	1
19	097152-01	Manual Control Valve	1
20	103901-01	Burner Support	1
21	099461-01	Tee Compression Gauge	1
22	099460-01	Brass Hex Cap	1
23	097155-01	Automatic Control Valve	1
24	097157-03	Female Connector	1
25	104142-01	Fuel Tube	1
26	104141-01	Regulator	
27	102445-01	Piezo Ignitor	1
28	097151-01	Thermocouple	1
29	104143-02	Pilot Shield	1
30	103401-01	1/2 NPT to 1/2 45° Male Connector	1
31	103899-01	Base Shield	1
PARTS AVAILABLE - NOT SHOWN			
	104120-01	Hose Fitting Regulator Assembly	1
	098853-10	Tradename Decal	1
	104128-01	Operation Decal	1

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 _____



104133 01

NOT A UPC

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.

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