

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

# Dayton® Natural Gas Construction Heater

## Description

Dayton Model 3VH19 heater is 100,000 Btu/Hr construction heater. This heater uses natural gas for combustion. It is primarily intended for the temporary heating of buildings under construction, alteration, or repair. This heater should never be used in occupied dwellings.

## 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.



Figure 1 – Model 3VH19



### ▲ 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 instructions should use this heater.

If you need assistance or heater information such as an instructions manual, labels, etc. contact the manufacturer.

▲ WARNING Not for home or recreational vehicle use.

▲ 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.

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.

# Dayton® Natural Gas Construction Heater

## General Safety Information

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

Safety information appears throughout these instructions. Pay close attention to them. Below are definitions for the safety information listed throughout this manual.

**▲ DANGER** Under this heading, installation, operating and maintenance procedures or practices will be found that, if not carefully followed, WILL result in IMMEDIATE serious personal injury or death.

**▲ WARNING** Under this heading, installation, operating, and maintenance procedures or practices will be found that, if not carefully followed, COULD result in severe personal injury or death.

**▲ CAUTION** Under this heading, installation, operating, and maintenance procedures or practices will be found that, if not carefully followed, MAY result in minor personal injury, product or property damage.

**IMPORTANT:** Every possible circumstance that might involve a hazard cannot be anticipated. The warnings in this manual and on tags or decals affixed to the unit are therefore not all-inclusive. If a procedure, work method, or operating technique not specifically recommended by Dayton is used, you must make sure it is safe for you and others. You should also ensure that equipment will not be damaged or made unsafe by the operating or maintenance method you choose.

**▲ DANGER** *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 operating properly. Get fresh air at once! 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.*

**▲ WARNING** • *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.*

# Model 3VH19

## 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.

## Product Identification

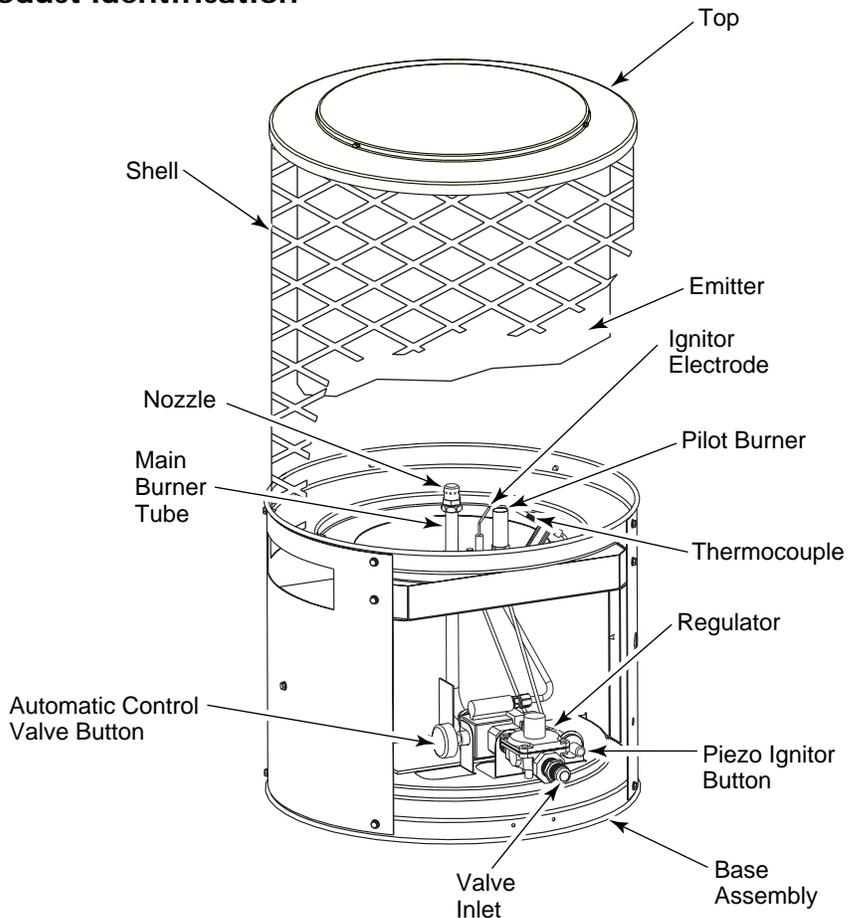


Figure 2 - Product Identification

## Specifications

Model	Output Rating Btu/Hr	Fuel	Fuel Consumption	Size LxWxH(Inches)	Weight (pounds)	Manifold Pressure
3VH19	100,000	Natural Gas Only	100 Cubic Feet/Hour	16 x 16 x 29.5	23 (Heater) 27 (Shipping)	4" w.c.

Maximum Supply Pressure to Regulator	Minimum Supply Pressure to Regulator
1/2 PSI	6" w.c.

# Dayton® Natural Gas Construction Heater

## 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 feet opening
100,000 Btu/Hr	3.0

## 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.
3. Connect the hose to the heater at the 1/2 inch SAE flare fitting at the valve inlet. Tighten all fittings with a wrench.

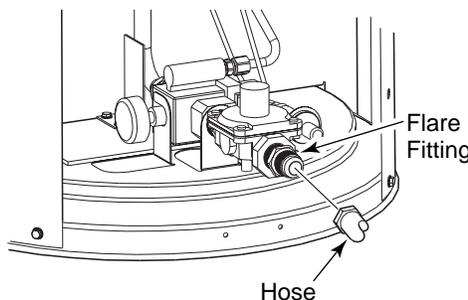


Figure 3 - Hose and Valve Inlet

4. Open natural gas supply valve slowly.
5. Check all connections for leaks.

**▲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 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 4).

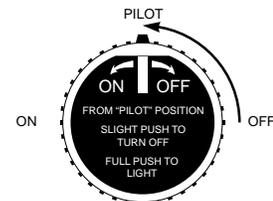


Figure 4 - PILOT Position

5. Push and hold in control valve knob while pushing red piezo ignitor button. Ignitor may have to be pushed again (3 to 8 times) until pilot lights.

**NOTE:** If hose is filled with air, 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.

# Model 3VH19

## Operation (Continued)

- When pilot remains lit, start heater by slowly turning control valve knob 1/4 turn to left to ON position (see Figure 5).

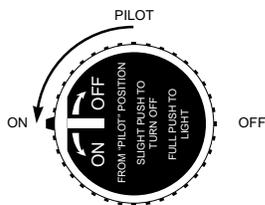


Figure 5 - ON Position

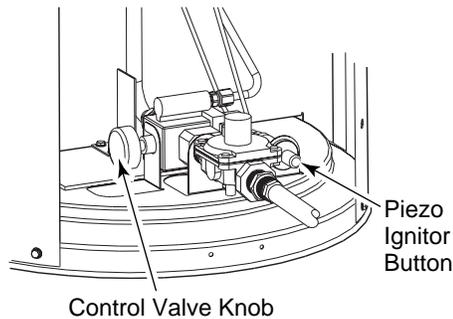


Figure 6 - Control Valve Knob and Piezo Ignitor Button Locations

## TO STOP HEATER

- Close valve on gas supply.
- 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 7).

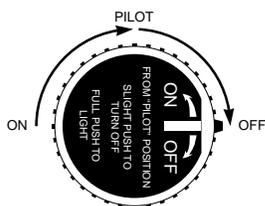


Figure 7 - OFF Position

## TO RESTART HEATER

- Wait five minutes after stopping heater.
- Restart heater by following steps under *To Start Heater*.

## STORAGE

**CAUTION** *Disconnect heater from natural gas supply.*

- Place plastic cover cap over brass fitting on inlet connector.
- Store in dry, clean, and safe place.
- 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.*

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

# Replacement Parts For Model 3VH19 Natural Gas Construction Heater, call 1-800-323-0620

24 hours a day — 365 days a year

Please provide following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list

Address parts correspondence to:

Grainger Parts Operations  
P.O. Box 3074  
1657 Shermer Road  
Northbrook, IL 60065-3074 U.S.A.

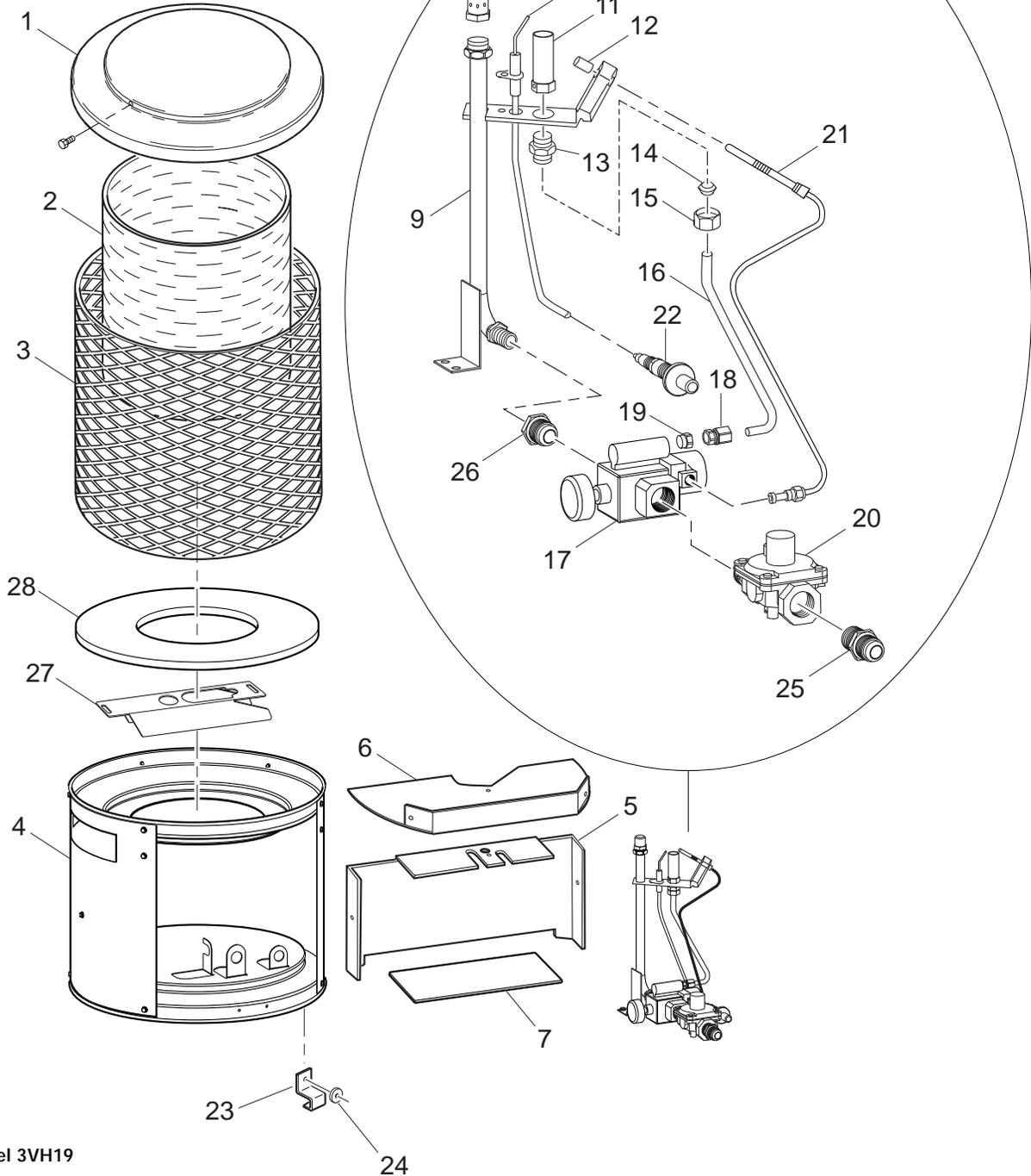


Figure 8 - Model 3VH19

## Replacement Parts List

### Model 3VH19 Natural Gas Construction Heater

**▲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.

Reference Number	Description	Part No. For Model 3VH19	Quantity
1	Upper Disk	104145-01	1
2	Emitter	103897-01	1
3	Shell	103898-01	1
4	Base Assembly	104136-01	1
5	Rear Burner Shield	103935-01	1
6	Burner Shield	103900-01	1
7	Burner Support	103901-01	1
8	Nozzle	099138-04	1
9	Burner Tube Assembly	104114-01	1
10	Ignitor Electrode	104118-01	1
11	Pilot Burner Assembly	097163-06	1
12	Thermocouple Clip	099237-01	1
13	Pilot Burner Orifice	097161-04	1
14	Compression Sleeve	M5788	1
15	Compression Nut	M5787	1
16	Pilot Fuel Tube	104121-01	1
17	Control Valve	104119-01	1
18	Compression Gauge Tee	099461-01	1
19	Brass Hex Cap	099460-01	1
20	Regulator	103936-01	1
21	Thermocouple Kit	099236-01	1
22	Piezo Ignitor	102445-01	1
23	Leg	103902-01	2
24	Spacer	103903-01	5
25	1/2 NPT to 1/2 45° Male Flare Connector	103401-01	1
26	1/2 NPT to 1/4 NPT Reducer Bushing	104115-01	1
27	Pilot Shield	104143-01	1
28	Insulation Ring	104116-01	1
Δ	Information Decal	104127-01	1
Δ	Tradename Decal	098853-09	1
Δ	Owner's Manual	104132-01	1

(Δ) Not shown.

# Dayton® Natural Gas Construction Heater

## Troubleshooting Chart

### **▲ WARNING**

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

Symptom	Possible Cause(s)	Corrective Action
Pilot fails to light	<ol style="list-style-type: none"> <li>1. Natural gas supply valve closed on gas supply</li> <li>2. Air in gas line</li> <li>3. Blockage in pilot orifice</li> <li>4. Piezo ignition system not sparking</li> </ol>	<ol style="list-style-type: none"> <li>1. Open natural gas supply valve slowly</li> <li>2. Allow several minutes to purge air with automatic control valve button depressed</li> <li>3. Replace pilot orifice</li> <li>4. 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 control valve knob 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. 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 natural gas for proper gas supply</li> <li>3. Tighten connection or replace thermocouple</li> <li>4. Replace control valve</li> </ol>
Maximum Burn rate is low; Emitter not glowing	<ol style="list-style-type: none"> <li>1. Main burner valve not fully open</li> <li>2. Plugged gas orifices</li> <li>3. Low gas pressure</li> </ol>	<ol style="list-style-type: none"> <li>1. Fully open main burner valve by turning the valve handle towards ON position until it stops</li> <li>2. Replace gas orifice</li> <li>3. Consult natural gas supplier; check regulator output</li> </ol>
Soot forming inside heater, flame 100% yellow	<ol style="list-style-type: none"> <li>1. Main burner valve not fully open</li> <li>2. Low gas pressure</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust main burner valve slowly towards ON position</li> <li>2. Consult natural gas supplier</li> </ol>
Flames are extremely high. Coming out of louvers	<ol style="list-style-type: none"> <li>1. Unit was connected to LP gas instead of natural gas</li> </ol>	<ol style="list-style-type: none"> <li>1. Check gas source, replace with natural gas supply</li> </ol>







# Dayton® Natural Gas Construction Heater

## Limited Warranty

**Dayton One-Year Limited Warranty.** Natural gas construction gas heater model is warranted by Dayton Electric Mfg. Co. (Dayton) to the original user against defects in workmanship or materials under normal use for one year after date of purchase. Any part which is determined to be defective in material or workmanship and returned to an authorized service location, as Dayton designates, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced at Dayton's option. For limited warranty claim procedures, see PROMPT DISPOSITION below. This limited warranty gives purchasers specific legal rights which vary from jurisdiction to jurisdiction.

**Limitation of Liability.** To the extent allowable under applicable law, Dayton's liability for consequential and incidental damages is expressly disclaimed. Dayton's liability in all events is limited to, and shall not exceed, the purchase price paid.

**Warranty Disclaimer.** Dayton has made a diligent effort to provide product information and illustrate the product in this literature accurately; however, such information and illustrations are for the sole purpose of identification, and do not express or imply a warranty that the products are merchantable, or fit for a particular purpose, or that the products will necessarily conform to the illustrations or descriptions.

Except as provided below, no warranty or affirmation of fact, expressed or implied, other than as stated in "LIMITED WARRANTY" above is made or authorized by Dayton.

**Product Suitability.** Many jurisdictions have codes and regulations governing sales, construction, installation, and/or use of products for certain purposes, which may vary from those in neighboring areas. While Dayton attempts to assure that its products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used. Before purchase and use of a product, review the product applications, and all applicable national and local codes and regulations, and be sure that the product, installation, and use will comply with them.

Certain aspects of disclaimers are not applicable to consumer products; e.g., (a) some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you; (b) also, some jurisdictions do not allow limitations on how long an implied warranty lasts, consequently the above limitation may not apply to you; and (c) by law, during the period of this Limited Warranty, any implied warranties of implied merchantability or fitness for a particular purpose applicable to consumer products purchased by consumers, may not be excluded or otherwise disclaimed.

**Prompt Disposition.** Dayton will make a good faith effort for prompt correction or other adjustment with respect to any product which proves to be defective within limited warranty. For any product believed to be defective within limited warranty, first write or call dealer from whom product was purchased. Dealer will give additional directions. If unable to resolve satisfactorily, write to Dayton at address below, giving dealer's name, address, date and number of dealer's invoice, and describing the nature of the defect. Title and risk of loss pass to buyer on delivery to common carrier. If product was damaged in transit to you, file claim with carrier.



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NOT A UPC