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[®] Propane **Construction Heater**

Description

Dayton propane construction heater is variable 223,000 to 375,000 BTU/Hr with a built-in thermostat. This heater uses propane gas for combustion and electricity to run the motor. It is primarily intended for temporary heating of buildings under construction, alteration, or repair. This heater should only be used indoors but never in occupied dwellings. Products of combustion are vented into the area being heated.

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.



Figure 1 - Model 4E236C



A 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 or service this heater.

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

▲ WARNING

Fire, burn, inhala-

tion, 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.

Heater is designed and approved for use as a construction heater under ANSI Z83.7 • CGA 2.14. The primary purpose of construction heaters is to provide temporary heating of buildings under construction, alteration or repair, and to provide temporary emergency heat. 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. Local authorities can advise you about these.



Specifications

ELECTRICAL SPECIFICATIONS Electrical Input 120V/60Hz Amperage 4.2 Motor 1/5 HP @ 1725 RPM **GENERAL SPECIFICATIONS** Output Rating BTU/Hr 225,000 to 375,000 Fuel Propane Vapor Only Minimum Fuel Consumption...... 2.5 Gal/Hr 10.4 Lbs/Hr Maximum Fuel Consumption 4.0 Gal/Hr 7.4 Lbs/Hr Ignition Direct Spark Regulator Outlet Pressure 7-20 psiG Hot Air Output Approx. (CFM) 1500 Minimum Supply Pressure to Regulator 25 psiG (for purposes of input adjustment) Maximum Supply Pressure to Regulator Tank Pressure Weight (pounds) 42 (Heater) 49 (Shipping) Temperature Control Built-in Thermostat

Product Identification

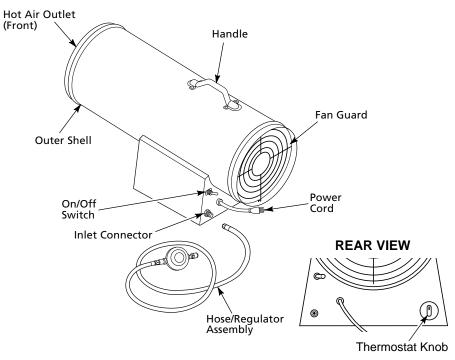


Figure 2 - Product Identification

General Safety Information

IMPORTANT: Make certain you read and understand all warnings. Keep these instructions for reference. They are 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.

A DANGER Under this heading, installation, operat-

ing and maintenance procedures or practices will be found that, if not carefully followed, WILL result in IMME-DIATE 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.

A CAUTION Under this heading, installation, operat-

ing, and maintenance procedures or practices will be found that, if not carefully followed, MAY result in minor personal injury, product, or property damage.

IMPORTANT: Not every possible circumstance that might involve a hazard can 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.

General Safety Information (Continued)

▲ DANGER 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

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 can fade. Propane gas may be present even though no odor exists.

▲WARNING

heater serviced.

· For indoor use only. Provide adequate ventilation.

Carbon monoxide

- Use only in well-vented areas. 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.
- Do not use heater outdoors or in occupied dwellings.
- Do not use heater in living or sleeping quarters.
- 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.
- Keep heater away from strong drafts, water spray, rain, or dripping water.

- Install and use heater with care. Follow all local ordinances and codes. In the absence of local ordinances and codes, refer to ANSI/NFPA 58. This instructs on the safe storage and handling of propane
- This heater is equipped with a thermostat. Heater may start at anytime.
- Check heater for damage before each use. Do not use a damaged heater.
- Use only propane gas set up for vapor withdrawal.
- The electrical connections and grounding of the heater shall follow the National Electric Code. ANSI/NFPA70.
- Keep propane tank(s) below 100° F.
- 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.
- Use only the electrical voltage and frequency specified on model plate.
- Electrical grounding instructions -This appliance is equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle.
- Use only a three-prong, grounded extension cord.
- Use only the hose and factory regulator provided with the heater.
- Inspect hose before each use of heater. If highly worn or cut, replace before using heater. Use the replacement hose assembly specified in this manual.
- · Keep heater at least six feet from propane tank(s). Do not point heater at propane tank(s) within 20 feet.
- Minimum heater clearances from combustibles:

Outlet: 8 Ft. Sides: 2 Ft. Top: 6 Ft. Rear: 2 Ft.

Locate heater on stable and level surface if heater is hot or running.

- Keep children and animals away from heater.
- Turn off propane supply and unplug heater when not in use.
- Never block air inlet (rear) or air outlet (front) of heater.
- Never move, handle, or service a hot, operating, or plugged-in heater. Severe burns may result. You must wait 20 minutes after turning heater
- Do not alter heater. Keep heater in its original state.
- Do not use heater if altered.
- Never attach duct work to front or rear of heater.
- 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.
- Do not adjust regulator below 7 psiG or above 20 psiG.



Theory of Operation

THE FUEL SYSTEM

The hose/regulator assembly attaches to the propane gas supply. The propane gas moves through the solenoid valve and out the nozzle.

THE AIR SYSTEM

The motor turns the fan. The fan pushes air into and around the combustion chamber. This air is heated and provides a stream of clean, hot air.

area temperature. Combustion Chamber Fan Ignitor Motor **Heated Air** Out (Front) Cool Air In (Back) DSI Nozzle Solenoid Power Cord Hose/Regulator Assembly

Figure 3 - Cross Section Operational View

THE IGNITION SYSTEM

The direct spark ignitor (DSI) sends voltage to the ignitor, which ignites the fuel and air mixture.

THE SAFETY CONTROL SYSTEM

This system causes the heater to shut down if the flame goes out. The motor will continue to run, but no heat is produced.

TEMPERATURE CONTROL SYSTEM

Built-in thermostat allows heater to cycle on and off to maintain consistent area temperature.

Propane Supply

Propane gas and propane tank(s) are to be furnished by the user.

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. Your local library or fire department will have this booklet.

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

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

The chart below shows the number of 100-pound tanks needed to run this heater. Do not operate this product with any tank smaller than 100 pounds.

Average Temperature (°F) at Tank Location	Number of 100 lb. Tanks
40°	3
32°	Use larger tank
20°	Use larger tank
10°	Use larger tank
0 °	Use larger tank
-10°	Use larger tank
-20°	Use larger tank

Less gas is vaporized as the temperature goes down. A larger tank may be needed in colder weather. Your local propane gas dealer will help you select the proper supply system. The minimum surrounding air temperature rating for each heater is -20°F (-29°C).

Installation

▲WARNING

Review and understand the warnings

in the Safety Information Section, pages 3 and 4. They are needed to safely operate this heater. Follow all codes when using this heater.



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 4).
- Connect POL fitting on hose/regulator assembly to propane tank(s). Turn POL fitting counterclockwise into threads on tank. Tighten firmly using 7/8" wrench.

IMPORTANT: Tighten regulator with black adjustment knob pointing down. Pointing adjustment knob down protects regulator from weather damage.

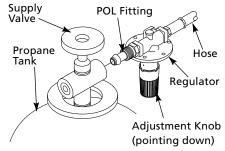


Figure 4 - Regulator with Vent Pointing Down

3. Connect hose to inlet connector.

Tighten firmly using a wrench.

IMPORTANT: Extra hose or piping may be used if needed. Install extra hose or piping between hose/regulator assembly and propane tank. You must use the regulator supplied with heater.

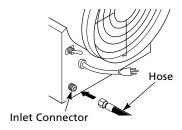


Figure 5 - Hose and Inlet Connector

4. Open propane supply valve on propane tank(s) slowly.

NOTE: If not opened slowly, excessflow check valve on propane tank will stop gas flow. If this happens, close propane supply valve and open again slowly.

5. Adjust regulator between 7 and 20 psiG.

NOTE: Higher regulator setting will allow heater to produce more heat.

▲WARNING

Do not adjust regulator below 7

psiG or above 20 psiG. Heater may not run properly.

6. Check all connections for leaks.

AWARNING

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.

7. Close propane supply valve.

Ventilation

▲WARNING

Follow the minimum fresh, outside

air ventilation requirements. If proper fresh, outside air ventilation is not provided, carbon monoxide poisoning can occur. Provide proper fresh, outside air ventilation before running heater. Provide at least three square feet of fresh, outside air for each 100,000 BTU/Hr of rating. This heater requires a fresh air opening of at least 11.25 square feet. Provide extra fresh air if more heaters are being used.

Operation

WARNING

Review and understand the

warnings in the Safety Information Section, pages 3 and 4. 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 into front or rear of heater.
- 3. Plug power cord of heater into a threeprong, grounded extension cord. Extension cord must be at least six feet long. Extension cord must be UL listed.

EXTENSION CORD SIZE REQUIREMENT

- Up to 50 feet long, use 18 AWG rated cord.
- 51 to 100 feet long, use 16 AWG rated cord.
- 101 to 200 feet long, use 14 AWG rated cord.
- 4. Plug extension cord into a 120 volt/60 hertz, three-hole, grounded outlet.
- 5. Open propane supply valve on propane tank(s) slowly.

NOTE: If not opened slowly, excessflow check valve on propane tank will stop gas flow. If this happens, close propane supply valve and open again slowly.

6. Make sure regulator is set between 7 and 20 psiG.



Operation (Continued)

NOTE: Higher regulator setting will allow heater to produce more heat.

AWARNING Do not adjust regulator below 7 psiG or above 20 psiG. Heater may not run properly.

7. Turn on/off switch to the ON position. Adjust thermostat to desired setting. If heater does not start, thermostat setting may be too low. Turn thermostat knob to higher position to start heater.

NOTE: If heater does not start, turn on/ off switch to the OFF position. Wait ten seconds for safety control to reset, then try again.

TO STOP HEATER

- 1. Tightly close propane supply valve on propane tank(s).
- 2. Wait a few seconds. Heater will burn gas left in supply hoses.
- 3. Turn on/off switch to the OFF position.
- 4. Unplug heater.

TO RESTART HEATER

If safety control stops gas flow to heater, motor will continue to run. To restart heater:

- 1. Turn on/off switch to the OFF position.
- 2. Wait ten (10) seconds, then turn on/ off switch to the ON position.

If heater does not restart

- Check manual valves (if any) and supply valves (on propane tank).
 Make sure they are open.
- Check fuel level in propane tank(s).
 If fuel level is too low, contact local propane gas company.

If heater still does not restart, contact your local service center.

Storage

▲ CAUTION

Disconnect heater from propane

supply tank(s).

- Store propane tank(s) in safe manner. See Chapter 5 of Standard for Storage and Handling of Liquefied Petroleum Gases, ANSI/NFPA 58. Follow all local codes.
- Place plastic cover caps over brass fittings on inlet connector and hose/ regulator assembly.
- Store in dry, clean, and safe place. Do not store hose/regulator assembly inside heater combustion chamber.
- 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 service heater while it is

plugged in, connected to propane supply, operating, or hot. Severe burns and electrical shock can occur.

- 1. Keep heater clean.
- 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. Inspect hose/regulator assembly before each use. If hose is highly worn or cut, replace.
- 4. Have heater inspected yearly by service agency.
- 5. Keep inside of heater free from combustible and foreign objects.

SERVICE PROCEDURE

▲WARNING

Never service heater while it is

plugged in, connected to propane supply, operating, or hot. Severe burns and electrical shock can occur.

CLEANING FAN

Clean fan every 500 hours of operation or as needed.

- Remove screws on side cover using 5/16" nut-driver.
- 2. Remove side cover.
- Detach the five motor wires from parts under heater shell. Be sure to detach only wires coming from motor.

The five motor wires are:

- · white wire—to terminal board
- black wire—to terminal board
- blue wire—to thermal switch wire
- orange wire—to solenoid valve
- green wire—to grounding screw on shell

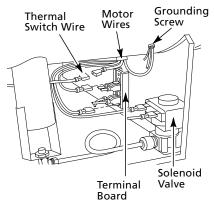


Figure 6 - Location of Motor Wires

- 4. Remove fan guard from rear of heater.
- Reach into rear of heater shell.
 Carefully pull motor wires through hole in bottom of shell (See Figure 7, page 7).

Maintenance (Continued) SERVICE PROCEDURES

NOTE: Pull wires through hole one at a time.

- Remove nuts and mounting bolts holding motor mount to shell (See Figure 7). Use 3/8" nut-driver and 7/16" wrench.
- 7. Carefully pull motor and fan out of shell.

IMPORTANT: Be careful not to damage blade. Do not set motor and blade down with the weight resting on blade. This could damage blade pitch.

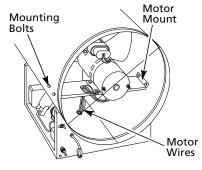


Figure 7 - Location of Fan Blade and Motor

8. Turn motor and blade around and place into shell backwards.

NOTE: Motor will go into shell first (See Figure 8).

9. Line up rear mounting holes in shell with first hole on each side of motor mount (See Figure 8).

NOTE: When holes are lined up, blade should be outside of shell.

10. Holding mounting bolt, carefully reach through fan blades into rear of heater. Be careful not to damage fan pitch. Insert bolt through motor mount and shell. With free hand, attach nut finger tight. Repeat process for other mounting hole.

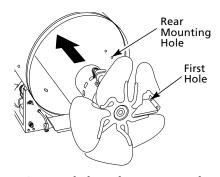


Figure 8 - Fan Blade and Motor Turned Around

- 11. Use 1/8" hex wrench to loosen setscrew which holds blade to motor shaft (See Figure 9).
- 12. Slip blade off motor shaft.

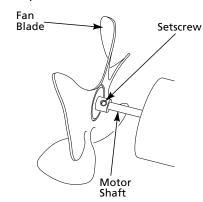


Figure 9 - Fan Blade, Motor Shaft, and Setscrew Location

- Clean blade using soft cloth moistened with kerosene or solvent.
- 14. Dry blade thoroughly.
- 15. Replace blade on motor shaft.

 Make sure setscrew is touching back of flat surface on motor shaft (See Figure 10).
- 16. Place setscrew on flat of shaft. Tighten setscrew firmly (40-50 inch-pounds).

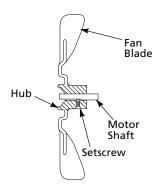


Figure 10 - Fan Blade Cross Section

- 17. Remove two nuts and bolts securing motor mount to shell.
- 18. Pull motor and blade from shell then turn around. Carefully place back in shell.

NOTE: Blade will go into shell first.

- 19. Line up mounting holes in shell with holes on motor mount. Replace four bolts through shell and motor mount. Insert bolts from outside of heater. Tighten nuts firmly.
- 20. Route motor wires through hole in bottom of shell (See Figure 7).
- 21. Connect motor wires as follows (See Figure 6, page 6):
 - white wire—to terminal board.

NOTE: Attach to empty connector on white wire side of terminal board.

• black wire—to terminal board.

NOTE: Attach to empty connector on black wire side of terminal board.

- blue wire—to thermal switch wire
- orange wire—to solenoid valve
- green wire—to grounding screw on shell
- 22. Replace side cover.
- 23. Replace fan guard.



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

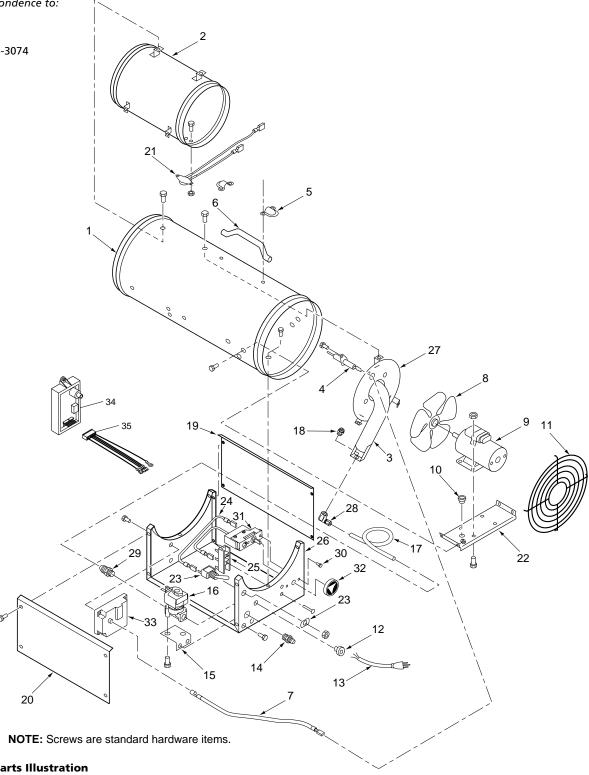


Figure 11 - Repair Parts Illustration

Repair Parts List

WARNING

Use only original repair parts. This heater must use design-specific parts. Do not substitute or use generic parts. Improper repair 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 4E236C	Quantity
1	Outer Shell Assembly	097844-03	1
2	Combustion Chamber Assembly	097847-01	1
3	Burner Assembly	097849-01	1
4	Ignitor	097805-01	1
5	Cleat	097918-01	2
6	Handle	097917-01	1
7	Ignitor Cable	097806-02	1
8	Fan	097811-01	1
9	Motor	097802-01	1
10	Shorty Bushing	M50104-02	1
11	Fan Guard	097838-02	1
12	Strain Relief Bushing	M11143-1	1
13	Cord Assembly	098219-17	1
14	Male Fitting	097809-01	1
15	Solenoid Bracket	097828-01	1
16	Solenoid Valve	098201-01	1
17	Fuel Tube	100145-01	1
18	Nozzle	099679-01	1
19	Side Cover	097833-04	1
20	Side Cover	097833-03	1
21	Thermal Switch Kit	101732-03	1
22	Motor Mount	097829-02	1
23	On/Off Switch Assembly	098226-01	1
24	Wire Assembly	M9900-170	1
25	Terminal Board	099125-01	1
26	Base	100408-03	1
27	Rear Plate Assembly	097848-01	1
28	Elbow Fitting	100146-01	1
29	Compression Fitting	098827-01	1
30	Hex TPG "F" 6.32 x .25 Screw	M10908- 1	2
31	Built-In Thermostat	097657-03	1
32	Thermostat Knob	104905-01	1
33	D.S.I. Control No. 2003-19	M51605-02	1
34	D.S.I. Control No. 2003-45	M51605-05	1
35	DSI Wire Harness (DSI Control 2003-45 only)	110267-01	1



Dayton[®] Propane Construction Heater

Repair Parts List (Continued)

Reference Number	Description	Part No. For Model 4E236C	Quantity
Δ	Wire Assembly (2003-45 only)	079010-36	1
Δ	Wire Assembly (2003-45 only)	M16841-20	1
Δ	Wiring Decal (DSI Control 2003-45 only)	102971-02	1
Δ	Wiring Decal (DSI Control 2003-19 only)	102971-01	1
Δ	Hose/Regulator Assembly (U.L. Listed)	LPA3030	1
Δ	Electrical Decal	102971-01	1
Δ	Information Decal	103019-02	1
Δ	Baffle	097916-01	1
Δ	Tradename Decal	099153-03	2
Δ	Warning Decal	099504-01	1
Δ	Thermostat Decal	103021-01	1

⁽ Δ) Not shown.

Accessories

Description	Part No. For Model 4E236C
*15 ft. Hose (Note: Only use one extra hose per heater)	LPA1030
Propane Gas Regulator (U.L. Listed)	LPA2020
Fuel Gas Connector (A POL adapter with excess-flow check valve)	LPA4020

^(*) Hose length must not exceed 25 feet in length. Use of any other hose voids warranty and may cause unsafe conditions.

Wiring Diagrams

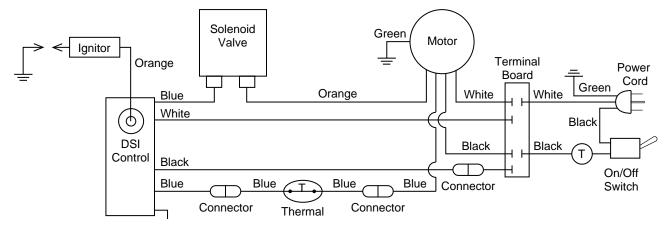


Figure 12 - Wiring Diagram

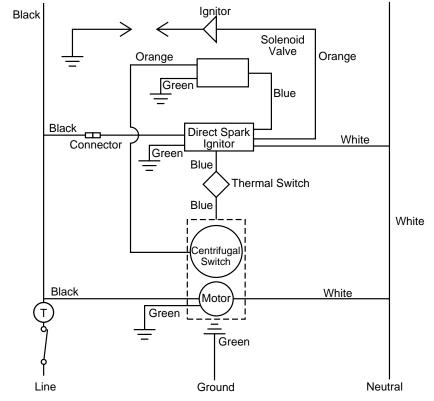


Figure 13 - Electrical Ladder Diagram



11

LIMITED WARRANTY

DAYTON ONE-YEAR LIMITED WARRANTY. Dayton natural gas construction heater, Models covered in this manual are 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.

Manufactured for Dayton Electric Mfg. Co., 5959 W. Howard St., Niles, Illinois 60714 U.S.A.



NOT A UPC

