

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 Model 3VH20 heater is a 15,000 to 25,000 Btu/Hr construction heater. This heater uses propane gas for combustion. It is primarily intended for outdoor use and the temporary heating of well-ventilated 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 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 3VH20

### ▲ 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 instruction manual, labels, etc. contact the manufacturer.

**▲ 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.

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.

# Dayton® Propane Construction Heater

## General Safety Information

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.

**▲ 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:** 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.

**▲ DANGER** *Carbon monoxide poisoning may lead to death! 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, or the areas may not be sufficiently ventilated. Get fresh air at once! 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 can fade. Propane 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 Standard for Storage and Handling 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. Before connecting heater to propane tank, make sure the heater regulator knob is in the OFF position. Always connect and operate heater in areas free of open flames.*
- *For indoor and outdoor use. When used indoors, use only in well-vented areas. Provide at least 120-square-inches of fresh, outside air before using heater. This heater produces carbon monoxide, which is listed by the State of California as a reproductive toxin under Proposition 65.*
- *Do not use heater in occupied dwellings, sleeping quarters, campers, tents, or any type of unvented or enclosed area.*
- *Do not use heater as a cooking device. Do not place objects on top of heater.*
- *Do not use heater in basement or below ground level. Propane gas is heavier than air. If a leak occurs, propane gas will sink to the lowest possible level and may accumulate to explosive concentrations.*
- *Keep appliance area clear and free from combustible materials, gasoline, paint thinner, and other flammable vapors and liquids. Dust is combustible. Do not use heater in areas with high dust content.*
- *Minimum heater clearances from combustibles: Sides: 3 feet; Top: 6 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 with hose specified by manufacturer.*
- *Operate heater on stable and level surfaces only.*
- *Never block air inlet (top of base) or air outlet (around top of shell) of heater.*
- *Keep heater away from strong drafts, wind, water spray, rain, or dripping water.*
- *Never operate heater while unattended. Never run heater while asleep.*
- *Keep children and animals away from heater.*
- *Never move, handle, or service a hot or operating heater. Severe burns may result. You must wait 15 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.*

# Model 3VH20

## General Safety Information (Continued)

- **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.**
- **Keep all connections and fittings clean. Make sure propane tank valve outlet is clean. Check the rubber O ring on the heater inlet fuel connector for damage before each use. Replace if worn or damaged.**

**NOTE:** Because of the metal lubricant used in this product, you may notice some smoking upon initial start-up and shut down. This condition is normal and should not occur beyond the first several (5-10) minutes of operation.

## Product Identification

## 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 main burner.

### THE AUTOMATIC CONTROL SYSTEM

This system causes the heater to shut down if the flame goes out.

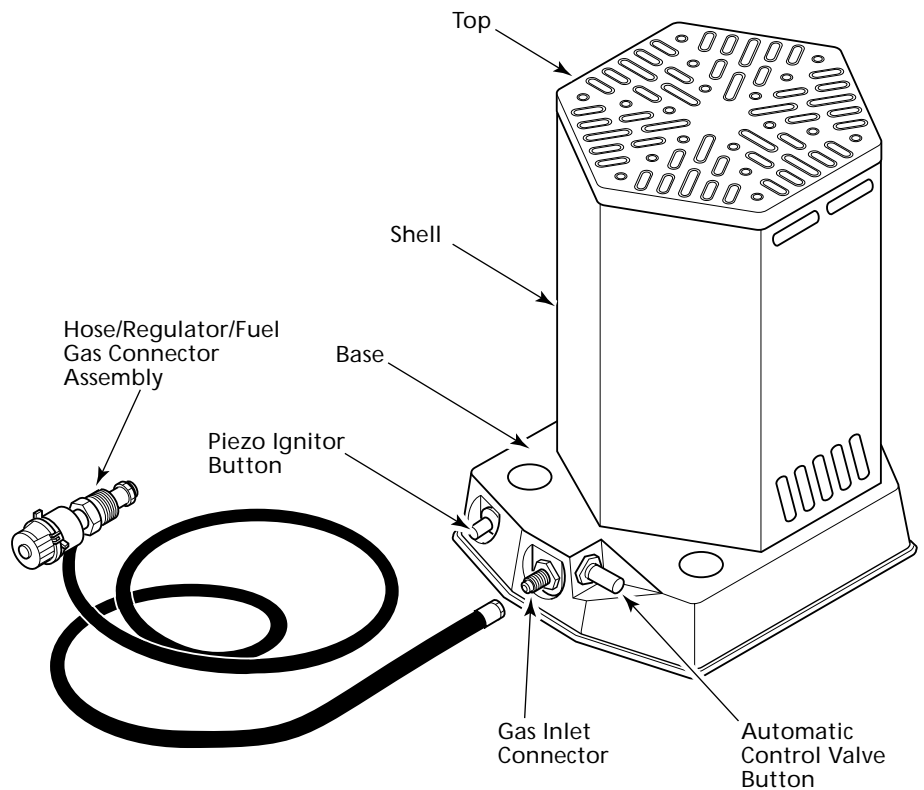


Figure 2 - Product Identification

## Specifications

Output Rating Btu/Hr	Fuel	Minimum Fuel Consumption	Maximum Fuel Consumption	Size L x W x H (Inches)
15,000 to 25,000	Propane Vapor Only	0.17 Gallons/Hour 0.70 Pounds/Hour	0.27 Gallons/Hour 1.16 Pounds/Hour	11.9 x 13.8 x 13
Regulator Outlet Pressure	Maximum Supply Pressure to Regulator	Minimum Supply Pressure to Regulator	Weight (pounds)	
15 psi	Tank Pressure	40 psi (for purposes of input adjustment)	4.7 (Heater) 6.1 (Shipping)	



# Dayton® Propane Construction Heater

## Propane Supply

Propane gas and propane tank(s) must be provided by the customer.

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 decide this amount.

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

This heater is designed to operate with a minimum 20-pound propane tank. You may need two or more tanks or one larger tank in colder weather. Use a 100-pound tank for longer operation or in very cold weather. Less gas is vaporized at lower temperatures. Your local propane gas dealer will help you select the proper supply system.

Average Temperature (°F) at Tank Location	Number of Tanks (100-lbs)
40°	1
32°	1
20°	1
10°	1
0°	1
-10°	2
-20°	2

## Ventilation

**▲WARNING** Provide at least an 120-square-inch 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.

## Installation

**▲WARNING** Review and understand the warnings in the General Safety Information section. 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. Make sure heater regulator knob is in the OFF position.
2. Wrench tighten the fuel connector nut into the propane tank valve (See Figure 3). Turn fuel connector nut counter-clockwise to tighten. Threads are left-handed.

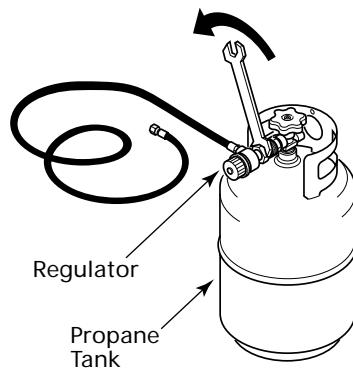


Figure 3 - Connecting Heater to Propane Tank

3. Connect hose to the inlet connector (See Figure 4). Tighten firmly using wrench.

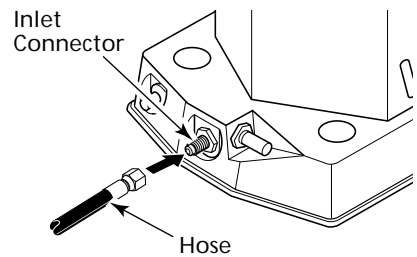


Figure 4 - Hose and Inlet Connector

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, you may hear a click inside the regulator assembly. This is the check valve closing. To reset the excess flow check valve, close propane supply valve and open it again 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 propane supply valve.

# Model 3VH20

## Operation

**▲WARNING** *Review and understand the warnings in the General 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. Make sure regulator is set to OFF by turning control knob clockwise.
4. Open propane supply valve on propane tank(s) slowly.
5. Turn regulator knob counterclockwise to "HI".
6. Push in and hold automatic control valve button (See Figure 5). Press and release piezo ignitor button (See Figure 5). Keep pressing piezo ignitor button until the burner lights. Hold control knob down for a maximum of 10 seconds while attempting ignition. If heater does not ignite, release control knob and wait 3 minutes before attempting reignition.

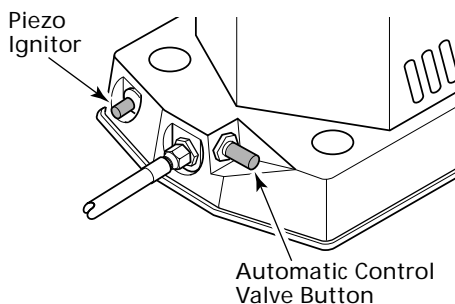


Figure 5 - Automatic Control Valve Button and Piezo Ignitor Button Locations

**NOTE:** Keep hands and face away from outlet (around top of shell) of heater while attempting to start heater.

7. After ignition, hold automatic control valve button down for approximately 30 seconds. This activates the automatic control system.
8. When burner remains lit, set heater at the desired heat level by turning the regulator knob counterclockwise. If burner goes out, turn off gas. Turn regulator knob fully clockwise to OFF. Check fuel supply. If adequate fuel is available, restart heater beginning at Step #1.

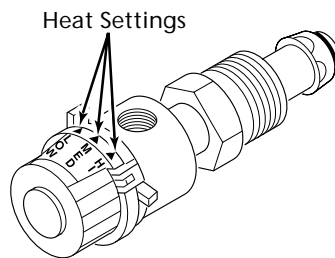


Figure 6 - Heater Regulator

### TO STOP HEATER

1. Tightly close propane supply valve by turning clockwise. Allow heater to burn remaining fuel in the hose.
2. Turn regulator knob to the OFF position. Wait 20 minutes for the heater to cool before handling heater.
3. Always remove the gas supply hose from the heater and the propane tank after each use.

### 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).*

1. Do not store heater while attached to propane tank. Remove the gas supply hose from the propane tank by turning the fuel gas connector nut clockwise.
2. Store propane tank(s) in safe manner. Refer to Chapter 5 of *Standard for Storage and Handling of Liquified Petroleum Gases, ANSI/NFPA 58*. Follow all local codes. Always store propane tanks outdoors. Never store propane tank in an enclosed area.
3. Place plastic cover caps over brass fittings on inlet connector and hose/regulator assembly.
4. Store in a dry, clean, and safe place.

## 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.

# For Replacement 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.

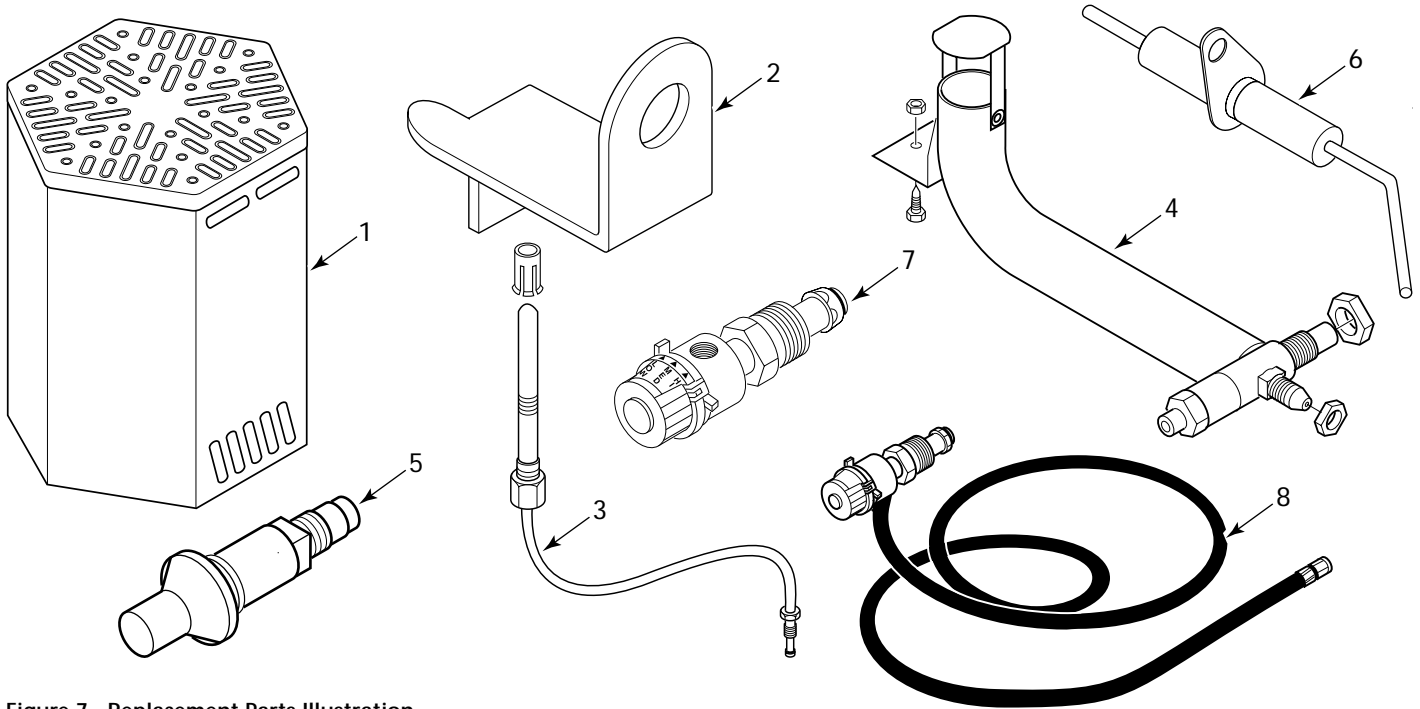


Figure 7 - Replacement Parts Illustration

## Replacement Parts List

**▲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.	Quantity
1	Shell Assembly	101880-01	1
2	*Thermocouple Bracket	103933-01	1
3	Thermocouple Kit	099236-01	1
4	Burner Assembly Kit (Includes Automatic Control Valve, Hardware, and Instruction Sheet)	101864-01	1
5	Piezo Ignitor (Includes Nut)	102445-01	1
6	Ignitor	101878-01	1
7	Regulator (Complete With Regulator And Fuel Gas Connector)	LPA2025	1
8	Regulator/Fuel Gas Connector/Hose Assembly	LPA3025	1
Δ	Operation Tag	101860-07	1
Δ	Tradename Decal	099153-07	1
Δ	**10' Hose With Brass Fitting	LPA1025	1

(Δ) Not shown. (\*) **NOTE:** Attach Thermocouple Bracket with #4-40 Bolt/Nut (Standard Hardware Available Locally).

(\*\*) Total length of hose should not exceed 20 feet from tank/cylinder.

# Model 3VH20

## Troubleshooting Chart

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

Symptom	Possible Cause(s)	Corrective Action
Burner fails to light	<ol style="list-style-type: none"> <li>1. Propane supply valve closed on propane tank(s)</li> <li>2. Excess flow check valve closed</li> <li>3. Blockage in burner/valve assembly</li> <li>4. Piezo ignition system not sparking</li> </ol>	<ol style="list-style-type: none"> <li>1. Open propane supply valve slowly</li> <li>2. Close propane supply valve on propane tank and reopen slowly</li> <li>3. Replace burner/valve assembly</li> <li>4. Assure the ignitor electrode gap is .120". Check wire lead for damage. Replace piezo ignitor and/or ignitor electrode as necessary</li> </ol>
Burner lights but goes out when automatic control valve button 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 bad</li> <li>4. Bad automatic control valve</li> </ol>	<ol style="list-style-type: none"> <li>1. Relight, hold automatic control valve button in 45 seconds</li> <li>2. Check propane tank(s) for proper gas supply</li> <li>3. Tighten connection or replace thermocouple</li> <li>4. Replace automatic control valve</li> </ol>
Maximum burn rate is low	<ol style="list-style-type: none"> <li>1. Low gas pressure</li> <li>2. Low fuel supply</li> <li>3. Plugged gas orifices</li> </ol>	<ol style="list-style-type: none"> <li>1. Check gas supply; check regulator output</li> <li>2. Consult propane gas supplier</li> <li>3. Replace burner assembly</li> </ol>

## Checking for Correct Burner Flame

**⚠ WARNING** *Heater shell, top, and heated air from heater is very hot during operation. Gradually move in closer to heater to observe flame color. Do not touch heater shell or top. Do not get too close to heated air from heater. Severe burns could occur.*

Look through the ventilation holes in the top of the heater to see the burner flame. The burner flame should be mostly blue with slight yellow coloring on the ends. If the burner flame is mostly yellow, the primary air openings on the burner tube under the heater base may be blocked (See Figure 7).

1. Stop heater (See *To Stop Heater* on page 6) and let cool.
2. Turn heater over to locate the primary air openings on the burner tube (See Figure 7). Remove any debris blocking the primary air openings.

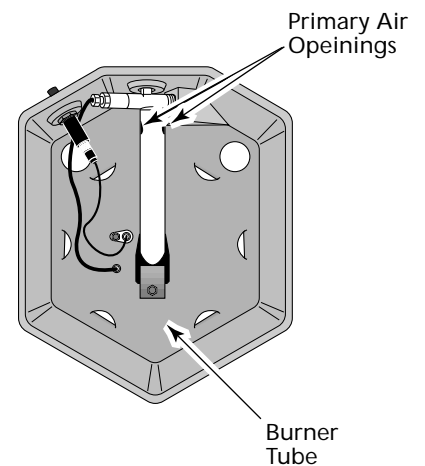


Figure 7 - Bottom View of Heater

# Dayton® Propane Construction Heater

## LIMITED WARRANTY

**DAYTON ONE-YEAR LIMITED WARRANTY.** Propane 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.

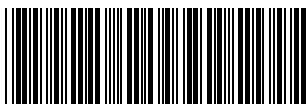
**WARRANTY DISCLAIMER.** Dayton has made a diligent effort to provide product information and illustrate the product in this literature accurately; however, such information and illustrations are for the sole purpose of identification, and do not express or imply a warranty that the products are MERCHANTABLE, 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.**



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