

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. Installation by qualified professional technician only. Not for residential use.

Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

Description

Tubular gas fired unit heaters are factory assembled, power vented, low static pressure type propeller fan unit heaters designed to be suspended within the space to be heated. THESE HEATERS ARE NOT TO BE CONNECTED TO DUCTWORK. The designs are certified by ETL as providing a minimum of 83% thermal efficiency, and approved for use in California. **Do not alter these units in any way.** If you have any questions after reading this manual, contact the manufacturer.

Installer's Responsibility

Installer Please Note: This equipment has been test fired and inspected. It has been shipped free from defects from our factory. However, during shipment and installation, problems such as loose wires, leaks, or loose fasteners may occur. **It is the installer's responsibility to inspect and correct any problem that may be found.**

ENGLISH

FOR YOUR SAFETY

The use and storage of gasoline or other flammable vapors and liquids in open containers in the vicinity of this appliance is hazardous.

FOR YOUR SAFETY

If you smell gas:

1. Open windows.
2. Don't touch electrical switches.
3. Extinguish any open flame.
4. Immediately contact your gas supplier.

⚠ WARNING Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

APPROVED FOR USE IN CALIFORNIA

⚠ WARNING Install, operate and maintain unit in accordance with manufacturer's instructions to avoid exposure to fuel substances or substances from incomplete combustion which can cause death or serious illness. The state of California has determined that these substances may cause cancer, birth defects, or other reproductive harm.



Figure 1 – Tubular Propeller Uni Heater Unpacking

Inspect shipment immediately when received to determine if any damage has occurred to the unit during shipment. After the unit has been uncrated, check for any visible damage to the unit. If any damage is found, the consignee should sign the bill of lading indicating such damage and immediately file claim for damage with the transportation company.



ENERGY PERFORMANCE VERIFIED

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Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

Specifications

Table 1 – Tubular Propeller Unit Heater (Refer to Figure 2)

| Unit Size | 150 | 175 | 200 | 250 | 300 | 350 | 400 |
|---|--------------|--------------|--------------|--------------|---------------|---------------|---------------|
| Model Numbers | L.P. 4LX55 | 4LX57 | 4LX59 | 4LX61 | 4LX63 | 4LX65 | 4LX67 |
| Type of Gas | Nat. 4LX56 | 4LX58 | 4LX60 | 4LX62 | 4LX64 | 4LX66 | 4LX68 |
| PERFORMANCE DATA† | | | | | | | |
| Input – BTU/Hr. | 150,000 | 175,000 | 200,000 | 250,000 | 300,000 | 350,000 | 400,000 |
| (kW) | (43.9) | (51.2) | (58.6) | (73.2) | (87.8) | (102.5) | (117.1) |
| Output – BTU/Hr. | 124,500 | 145,250 | 166,000 | 207,500 | 249,000 | 290,500 | 322,000 |
| (kW) | (36.4) | (42.5) | (48.6) | (60.7) | (72.9) | (85.1) | (97.2) |
| Thermal Efficiency (%) | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| Free Air Delivery – CFM | 2,400 | 2,850 | 3,200 | 3,450 | 5,000 | 5,600 | 5,800 |
| (cu. m/s) | (1.133) | (1.346) | (1.511) | (1.629) | (2.361) | (2.644) | (2.738) |
| Air Temperature Rise – °F | 47 | 46 | 47 | 54 | 45 | 47 | 51 |
| (°C) | (26) | (26) | (26) | (30) | (24) | (26) | (28) |
| Full Load Amps at 120V | 6.4 | 6.9 | 6.9 | 8.0 | 11.3 | 13.5 | 13.5 |
| MOTOR DATA: | | | | | | | |
| Motor HP (Qty.) | 1/4 | 1/3 | 1/3 | 1/3 | 1/4 (2) | 1/3 (2) | 1/3 (2) |
| Motor kW | (0.19) | (0.25) | (0.25) | (0.25) | (0.19) | (0.25) | (0.25) |
| Motor Type | PSC | PSC | PSC | PSC | PSC | PSC | PSC |
| RPM | 1,140 | 1,140 | 1,140 | 1,140 | 1,140 | 1,140 | 1,140 |
| Amps @ 115V | 4.7 | 5.8 | 5.8 | 5.8 | 9.4 | 11.6 | 11.6 |
| DIMENSIONAL DATA – inches (mm) | | | | | | | |
| "A" Overall Height to Top of Flue | 33¾ (857) | 33¾ (857) | 33¾ (857) | 33¾ (857) | 34 (864) | 34 (864) | 34 (864) |
| "B" Jacket Width of Unit 20¾ | 32¾ (527) | 32¾ (831) | 32¾ (831) | 50¾ (831) | 50¾ (1289) | 50¾ (1289) | 50¾ (1289) |
| "C" Width to CL Flue | 13¾ (340) | 19¾ (492) | 19¾ (492) | 19¾ (492) | 28¾ (721) | 28¾ (721) | 28¾ (721) |
| "D" Depth to Rear of Housing | 11 (279) | 11 (279) | 11 (279) | 11 (279) | 12¼ (311) | 12¼ (311) | 12¼ (311) |
| "E" Hanging Distance Width | 18¾ (473) | 30¾ (778) | 30¾ (778) | 30¾ (778) | 48¾ (1235) | 48¾ (1235) | 48¾ (1235) |
| "F" Discharge Opening Width | 18¾ (476) | 30¾ (781) | 30¾ (781) | 30¾ (781) | 48¾ (1238) | 48¾ (1238) | 48¾ (1238) |
| "G" Depth to CL Flue | 4¾ (121) | 4¾ (121) | 4¾ (121) | 4¾ (121) | 5½ (130) | 5½ (130) | 5½ (130) |
| "L" Overall Unit Width | 25¼ (641) | 37¼ (946) | 37¼ (946) | 37¼ (946) | 55¼ (1403) | 55¼ (1403) | 55¼ (1403) |
| "M" Flue Size Diameter – *inch (Dia.–mm) | 5 (127) | 5 (127) | 5 (127) | 5 (127) | 6 (152) | 6 (152) | 6 (152) |
| Fan Diameter – inch (Qty.) | 16 | 18 | 18 | 18 | 16 (2) | 18 (2) | 18 (2) |
| Gas Inlet – Natural Gas (inch) | 1/2 | 1/2 | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 |
| Gas Inlet – LP Gas (inch) | 1/2 | 1/2 | 1/2 | 1/2 | 3/4 | 3/4 | 3/4 |
| Approximate Unit Weight – lbs. (kg) | 155 (70) | 191 (87) | 201 (91) | 211 (96) | 307 (139) | 321 (145) | 335 (152) |
| Approximate Ship Weight – lbs. (kg) | 195 (88) | 241 (109) | 251 (114) | 261 (118) | 367 (166) | 381 (173) | 395 (179) |

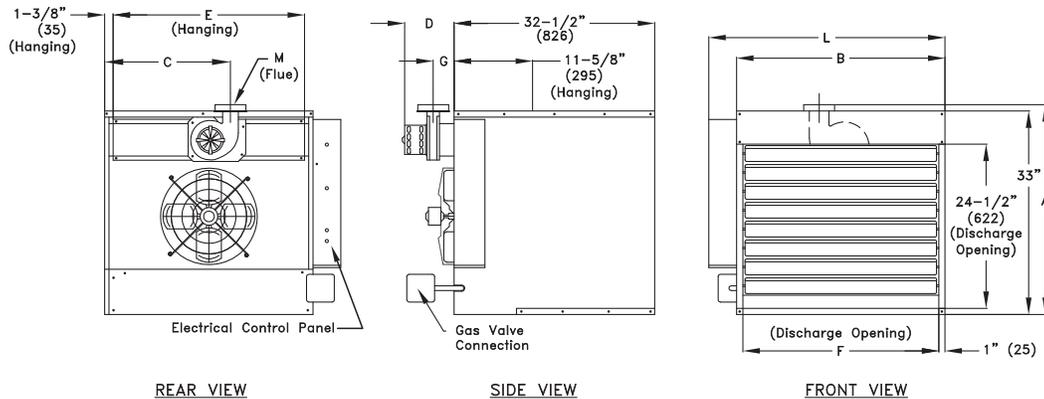
NOTE: All metric units of measure are shown in parentheses.

(*) For all installations, the flue collar is included with the unit and should be field installed per the instructions included – see Figure 3A.

(†) Ratings shown are for unit installations at elevations between 0 and 2,000 feet (0 to 610 m). For unit installations in U.S.A. above 2,000 feet (610 m), the unit input must be field derated 4% for each 1,000 feet (305 m) above sea level; refer to local codes, or in absence of local codes, refer to the latest edition of the National Fuel Gas Code, ANSI Standard Z223.1 (NFPA No. 54). For installations in Canada, any reference to deration at altitudes in excess of 2,000 feet (610 m) are to be ignored. At altitudes of 2,000 feet to 4,500 feet (610 to 1372 m), the unit must be field derated and be so marked in accordance with the ETL certification. See table 7 for U.S.A. and Canadian field deration information.

Models 4LX55 thru 4LX68

Specifications (Continued)



Dimensions shown in inches standard units
Dimensions in parenthesis in millimeters

Figure 2 – Dimensional Drawing – Tubular Propeller Unit Heater

General Safety Information INSTALLATION CODES

The following terms are used throughout this manual, in addition to the ETL requirements, to bring attention to the presence of potential hazards or to important information concerning the product:

⚠ DANGER *Indicates an imminently hazardous situation which, if not avoided, will result in death, serious injury or substantial property damage.*

⚠ WARNING *Indicates an imminently hazardous situation which, if not avoided, could result in death, serious injury or substantial property damage.*

⚠ CAUTION *Indicates an imminently hazardous situation which, if not avoided, may result in minor injury or property damage.*

NOTE: Used to notify of special instructions on installation, operation or maintenance which are important to equipment but not related to personal injury.

SPECIAL PRECAUTIONS

NOTE: It is the equipment owner's responsibility to provide any scaffolding or other apparatus required to perform emergency service or annual/periodic maintenance to this equipment.

⚠ WARNING *Failure to comply with the General Safety Information may result in extensive property damage, severe personal injury, or death.*

⚠ WARNING *This product must be installed by a licensed plumber or gas fitter when installed within the Commonwealth of Massachusetts.*

Installation must be made in accordance with local codes, or in absence of local codes, with the latest edition of ANSI Standard Z223.1 (NFPA No. 54) National Fuel Gas Code.

All of the ANSI and NFPA Standards referred to in these installation instructions are those that were applicable at the time the design of this appliance was certified. The ANSI Standards are available from the American National Standards Institute, Inc., 11 West 42nd Street, New York, NY, 10036 or www.ansi.org. The NFPA Standards are available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. These unit heaters are designed for use in airplane hangars when installed in accordance with ANSI/NFPA No. 409, and in public garages when installed in accordance with NFPA No. 88A and NFPA No. 88B. If installed in Canada, the installation must conform with local building codes, or in the absence of local building codes, with CSA-B149.1 "Installation Codes for Natural Gas Burning Appliances and Equipment" or CSA-B149.2

ENGLISH

Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

General Safety Information (Continued)

"Installation Codes for Propane Gas Burning Appliances and Equipment". These unit heaters have been designed and certified to comply with CSA 2.6. Also see sections on installation in "Air-craft Hangars" and "Public Garages".

▲ WARNING *Do not alter the unit heater in any way or damage to the unit and/or severe personal injury or death may occur!*

▲ WARNING *Disconnect all power and gas supplies before installing or servicing the heater. If the power disconnect is out of sight, lock it in the open position and tag it to prevent unexpected application of power. Failure to do so could result in fatal electric shock, or severe personal injury.*

▲ CAUTION *Ensure that all power sources conform to the requirements of the unit heater, or damage to the unit will result!*

Follow installation instructions CAREFULLY to avoid creating unsafe conditions. All external wiring must conform to applicable current local codes, and to the latest edition of National Electrical Code ANSI/NFPA No. 70; in Canada, to the Canadian Electrical Code, Part 1 CSA Standard C22.1. All wiring should be done and checked by a qualified electrician, using copper wire only. All gas connections should be made and leak-tested by a suitably qualified individual, per instructions in this manual. Also follow procedures listed on "Gas Equipment Start-Up Sheet" located in this manual.

Use only the fuel for which the heater is designed (see rating plate). Using LP gas in a heater that requires natural gas, or vice versa, will create risk of

gas leaks, carbon monoxide poisoning, and explosion.

▲ WARNING *Do not attempt to convert the heater for use with a fuel other than the one intended. Such conversion is dangerous, as it will create the risks previously listed.*

Make certain that the power source conforms to the electrical requirements of the heater.

▲ WARNING *Do not depend upon a thermostat or other switch as sole means of disconnecting power when installing or servicing heater. Always disconnect power at main circuit breaker as described above. Failure to do so could result in fatal electric shock.*

Special attention must be given to any grounding information pertaining to this heater. To prevent the risk of electrocution, the heater must be securely and adequately grounded. This should be accomplished by connecting a ground conductor between the service panel and the heater. To ensure a proper ground, the grounding means must be tested by a qualified electrician.

Do not insert fingers or foreign objects into heater or its air moving device. Do not block or tamper with the heater in any manner while in operation, or just after it has been turned off, as some parts may be hot enough to cause injury.

This heater is intended for general heating applications ONLY. It must NOT be used in potentially dangerous locations such as flammable, explosive, chemical-laden, or wet atmospheres.

Do not attach ductwork to this product or use it as a makeup air heater. Such usage voids the warranty and will create unsafe operation.

In cases in which property damage may result from malfunction of the heater, a back-up system or temperature sensitive alarm should be used.

▲ CAUTION *The open end of piping systems being purged shall not discharge into areas where there are sources of ignition or into confined spaces UNLESS precautions are taken as follows: (1) by ventilation of the space, (2) control of the purging rate, (3) elimination of all hazardous conditions. All precautions must be taken to perform this operation in a safe manner!*

Unless otherwise specified, the following conversions may be used for calculating SI unit measurements:

- 1 foot = 0.305 m
- 1 inch = 25.4 mm
- 1 gallon = 3.785 L
- 1 pound = 0.453 kg
- 1 psiG = 6.894 kPa
- 1 cubic foot = 0.028 m³
- 1000 BTU/cu. ft. = 37.5 MJ/m³
- 1000 BTU per hour = 0.293 kW
- 1 inch water column = 0.249 kPa
- litre/second = CFM x 0.472
- meter/second = FPM ÷ 196.8

Installation

▲ WARNING *Do not install unit heaters in corrosive or flammable atmospheres! Premature failure of, or severe damage to the unit will result!*

▲ WARNING *Avoid locations where extreme drafts can affect burner operation. Unit heaters must not be installed in locations where air for combustion would contain chlorinated, halogenated or acidic vapors. If located in such an environment, premature failure of the unit will occur! Such failure is not covered under warranty.*

Since the unit is equipped with an automatic gas ignition system, the unit heater must be installed such that the gas ignition control system is not directly exposed to water spray, rain or dripping water.

Models 4LX55 thru 4LX68

Installation (Continued)

NOTE: Location of unit heaters is related directly to the selection of sizes. Basic rules are as follows:

MOUNTING HEIGHT

Unit heaters equipped with a standard fan guard must be installed at a minimum of 8 feet (2.4 m) above the floor, measured to the bottom of the unit. At heights above 8 feet (2.4 m), less efficient air distribution will result. **If a unit is to be mounted below 8 feet (2.4 m) an OSHA approved fan guard must be used.**

AIRCRAFT HANGARS

Unit heaters must be installed in aircraft hangars as follows: In aircraft hangars, unit heaters must be at least 10 feet (3.05 m) above the upper surface of wings or engine enclosures of the highest aircraft to be stored in the hangar, and 8 feet (2.44 m) above the floor in shops, offices and other sections of the hangar where aircraft are not stored or housed. Refer to current ANSI/NFPA No. 409, Aircraft Hangars. In Canada, installation is suitable in aircraft hangars when acceptable to the enforcing authorities.

PUBLIC GARAGES

In repair garages, unit heaters must be at least 8 feet (2.44 m) above the floor.

In parking structures, unit heaters must be installed so that the burner flames are located 18 inches (457 mm) minimum above the floor, or protected by a partition not less than 18 inches (457 mm) high. However, any unit heater mounted less than eight feet (2.4 m) above the floor in a parking structure must be equipped with an OSHA approved fan guard.

Refer to current NFPA No. 88A, Parking Structures and NFPA No. 88B, Repair Garages. In Canada, installation must

be in accordance with current CGA B149 "Installation Codes for Gas Burning Appliances and Equipment."

AIR DISTRIBUTION

Direct air towards areas of maximum heat loss. When multiple heaters are involved, circulation of air around the perimeter is recommended where heated air flows along exposed walls. Satisfactory results can also be obtained where multiple heaters are located toward the center of the area with heated air directed toward the outside walls. Be careful to avoid all obstacles and obstructions which could impede the warm air distribution patterns.

Unit heaters should not be installed to maintain low temperatures and/or freeze protection of buildings. A minimum of 50°F (10°C) thermostat setting must be maintained. If unit heaters are operated to maintain lower than 50°F (10°C), hot flue gases are cooled inside the heat exchanger to a point where water vapor (a flue gas by-product) condenses onto the heat exchanger walls. The result is a mildly corrosive acid that prematurely corrodes the aluminized heat exchanger and can actually drip water down from the unit heater onto floor surface. Additional unit heaters should be installed if a minimum 50°F (10°C) thermostat setting cannot be maintained.

AIR FOR COMBUSTION

Unit heater shall be installed in a location in which the facilities for ventilation permit satisfactory combustion of gas, proper venting, and the maintenance of ambient air at safe limits under normal conditions of use. The unit heater shall be located in such a manner as not to

interfere with proper circulation of air within the confined space. When buildings are so tight that normal infiltration does not meet air requirements, outside air shall be introduced per Sections 1.3.4.2 and 1.3.4.3 of ANSI Z223.1 for combustion requirements. A permanent opening or openings having a total free area of not less than one square inch per 5,000 BTU/Hr. (1.5 kW) of total input rating of all appliances within the space shall be provided.

NOTE: Unit heater sizing should be based on heat loss calculations where the unit heater output equals or exceeds heat loss.

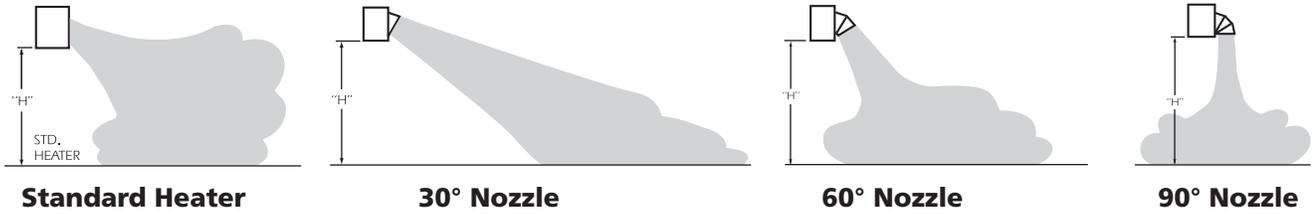
NOTE: Unit should be installed in an area where the entering air does not exceed 104°F. Temperatures above 104°F will cause the propeller motor to trip on its thermal overload protection, requiring a cool down period before the motor can reset.

CLEARANCES

Each gas unit heater shall be located with respect to building construction and other equipment so as to permit access to the unit heater. Clearance between vertical walls and the vertical sides of the unit heater shall be no less than 6 inches (152 mm). However, to ensure access to the control box, a minimum of 18 inches (457 mm) is required for the control box side. A minimum clearance of 6 inches (152 mm) must be maintained between the top of the Unit Heater and the ceiling. The bottom of the Unit Heater must be no less than 12 inches (305 mm) from any combustible. The distance between the flue collector and any combustible must be no less than 6 inches (152 mm). Also see "Air for Combustion" and "Venting" sections.

NOTE: Increasing the clearance distances may be necessary if there is a possibility of distortion or discoloration of adjacent materials.

Table 2 - Heat Throw Data



ENGLISH

| Degree of Nozzle | Distance From Floor to Bottom of Unit "H" - Feet (m) | UNIT SIZE BTU/Hr | | | | | | | | |
|------------------|--|--|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|
| | | 100,000 | 125,000 | 150,000 | 175,000 | 200,000 | 250,000 | 300,000 | 350,000 | 400,000 |
| | | Approximate Distance of Heat Throw - Feet (Meters) | | | | | | | | |
| None | 8 (2.4) | 60 (18.3) | 65 (19.8) | 70 (21.3) | 75 (22.9) | 80 (24.4) | 90 (27.4) | 105 (32.0) | 110 (33.5) | 120 (36.6) |
| | 10 (3.0) | 54 (16.5) | 56 (17.1) | 60 (18.3) | 64 (19.5) | 68 (20.7) | 78 (23.8) | 90 (27.4) | 95 (29.0) | 100 (30.5) |
| | 12 (3.7) | 44 (13.4) | 46 (14.0) | 49 (14.9) | 57 (17.4) | 61 (18.6) | 68 (20.7) | 80 (24.4) | 84 (25.6) | 90 (27.4) |
| | 15 (4.6) | NR | NR | 45 (13.7) | 49 (14.9) | 52 (15.8) | 60 (18.3) | 70 (21.3) | 74 (22.6) | 80 (24.4) |
| | 20 (6.1) | NR | NR | NR | NR | 46 (14.0) | 54 (16.5) | 63 (19.2) | 66 (20.1) | 70 (21.3) |
| 30° | 8 (2.4) | 65 (19.8) | 70 (21.3) | 75 (22.9) | 80 (24.4) | 85 (25.9) | 95 (29.0) | 115 (35.1) | 120 (36.6) | 125 (38.1) |
| | 10 (3.0) | 57 (17.4) | 60 (18.3) | 64 (19.5) | 68 (20.7) | 72 (21.9) | 86 (26.2) | 99 (30.2) | 105 (32.0) | 110 (33.5) |
| | 12 (3.7) | 50 (15.2) | 54 (16.5) | 57 (17.4) | 60 (18.3) | 64 (19.5) | 77 (23.5) | 88 (26.8) | 94 (28.7) | 100 (30.5) |
| | 15 (4.6) | NR | 45 (13.7) | 48 (14.6) | 50 (15.2) | 53 (16.2) | 64 (19.5) | 74 (22.6) | 79 (24.1) | 84 (25.6) |
| | 20 (6.1) | NR | NR | NR | 44 (13.4) | 47 (14.3) | 58 (17.7) | 66 (20.1) | 71 (21.6) | 75 (22.9) |
| 60° | 8 (2.4) | 75 (22.9) | 80 (24.4) | 85 (25.9) | 90 (27.4) | 95 (29.0) | 110 (33.5) | 125 (38.1) | 130 (39.6) | 138 (42.1) |
| | 10 (3.0) | 65 (19.8) | 70 (21.3) | 75 (22.9) | 79 (24.1) | 83 (25.3) | 95 (29.0) | 109 (33.2) | 115 (35.1) | 120 (36.6) |
| | 12 (3.7) | 60 (18.3) | 64 (19.5) | 68 (20.7) | 72 (21.9) | 76 (23.2) | 84 (25.6) | 100 (30.5) | 103 (31.4) | 108 (32.9) |
| | 15 (4.6) | 50 (15.2) | 54 (16.5) | 56 (17.1) | 61 (18.6) | 65 (19.8) | 71 (21.6) | 85 (25.9) | 88 (26.8) | 94 (28.7) |
| | 20 (6.1) | NR | 49 (14.9) | 52 (15.8) | 55 (16.8) | 59 (18.0) | 65 (19.8) | 77 (23.5) | 81 (24.7) | 85 (25.9) |
| 90°* | 15 (4.6) | 30 x 25 (9.1) | 35 x 30 (10.7) | 40 x 35 (12.2) | 45 x 40 (13.7) | 50 x 40 (15.2) | 60 x 45 (18.3) | 70 x 45 (21.3) | 80 x 50 (24.4) | 100 x 50 (30.5) |
| | 20 (6.1) | NR | NR | NR | NR | 40 x 35 (12.2) | 56 x 40 (17.1) | 65 x 40 (19.8) | 70 x 45 (21.3) | 80 x 45 (24.4) |
| | 25 (7.6) | NR | NR | NR | NR | NR | 50 x 35 (15.2) | 60 x 35 (18.3) | 65 x 40 (19.8) | 75 x 40 (22.9) |
| | 30 (9.1) | NR | NR | NR | NR | NR | NR | 55 x 35 (16.8) | 60 x 35 (18.3) | 65 x 40 (19.8) |

* It is not recommended to mount a unit with a 90° nozzle under 10 feet.

- Notes:**
1. All throw data figures are approximations. Allowances should be made for optimum performance, altitude, etc.
 2. NR - Units not recommended at these mounting heights.
 3. 30 degree, 60 degree and 90 degree nozzles are shipped unassembled.

Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

Installation (Continued)

HEATER MOUNTING

Refer to Figures 3A, 3B, and 3C for suspension of units.

⚠ WARNING *Make certain that the lifting methods used to lift the heater and the method of suspension used in the field installation of the heater are capable of uniformly supporting the weight of the heater at all times. Failure to heed this warning may result in property damage or personal injury!*

⚠ WARNING *Make sure that the structure to which the unit heater is to be mounted is capable of safely supporting its weight. Under no circumstances must the gas lines, the venting system or the electrical conduit be used to support the heater; nor should any other objects (i.e. ladder, person) lean against the heater gas lines, venting system or the electrical conduit for support. Failure to heed these warnings may result in property damage, personal injury, or death.*

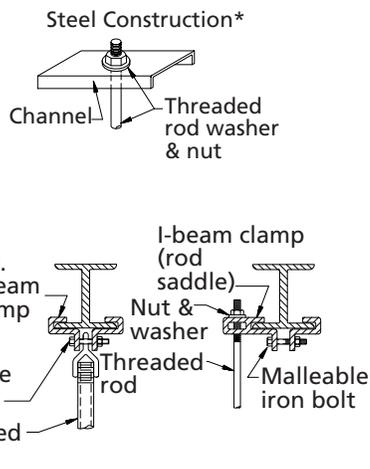


Figure 3B

⚠ CAUTION *Unit heaters must be hung level from side to side and from front to back, see Figures 3A, 3B, and 3C. Failure to do so will result in poor performance and/or premature failure of the unit.*

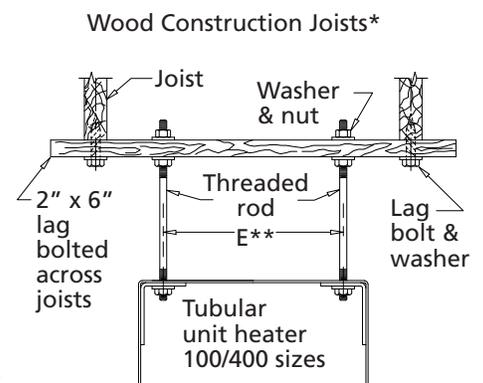
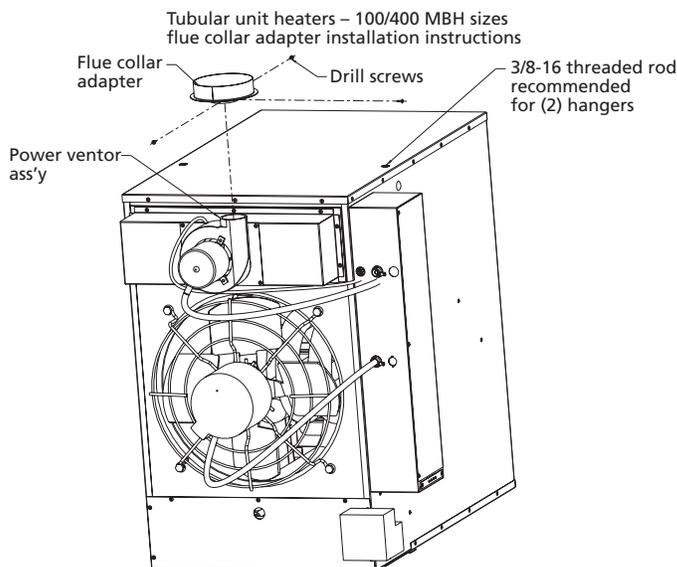


Figure 3C

(*) All hanging hardware and wood is not included with the unit (To be field supplied).

(**) See Table 1 for Dimension E.

⚠ WARNING *Ensure that all hardware used in the suspension of each unit heater is more than adequate for the job. Failure to do so may result in extensive property damage, severe personal injury, or death!*



Install the flue collar adapter to the power ventor ass'y as shown. Secure in place using drill screws as shown. Refer to installation instructions included with the unit for all other installation requirements.

Figure 3A

Gas Piping

⚠ WARNING *To avoid damage or possible personal injury, do not connect gas piping to this unit until a supply line pressure/leak test has been completed. Connecting the unit before completing the pressure/leak test may damage the unit gas valve and result in a fire hazard.*

Do not rely on a shut-off valve to isolate the unit while conducting gas pressure/leak tests. These valves may not be completely shut off, exposing the gas valve to excessive pressure and damage.

Models 4LX55 thru 4LX68

ENGLISH

Gas Piping (Continued) PIPE SIZING

To provide adequate gas pressure to the gas unit heater, size the gas piping as follows:

1. Find the cu. ft./hr. by using the following formula:

$$\text{Cu. ft./hr.} = \frac{\text{Input BTU/Hr.}}{1000}$$

2. Refer to Table 3. Match "Length of Pipe in Feet" with appropriate "Gas Input – Cu. Ft./Hr." figure. This figure can then be matched to the pipe size at the left of the column.

Example:

It is determined that a 67 foot (20.4 m) run of gas pipe is required to connect a 200 MBTU gas unit heater to a 1,000 BTU/cu. ft. (0.29 kW) natural gas supply.

$$\frac{200,000 \text{ BTU/Hr.}}{1,000 \text{ BTU/cu. ft.}} = 200 \text{ Cu. ft./hr.}$$

Using Table 3, a 1 inch pipe is needed.

NOTE: See "General Safety Information" section for English/Metric unit conversion factors.

NOTE: If more than one unit heater is to be served by the same piping arrangement, the total cu. ft./hr. input and length of pipe must be considered.

NOTE: HEATER INSTALLATION FOR USE WITH PROPANE (BOTTLED) GAS MUST BE MADE BY A QUALIFIED L.P. GAS DEALER OR INSTALLER. HE/SHE WILL INSURE THAT PROPER JOINT COMPOUNDS ARE USED FOR MAKING PIPE CONNECTIONS; THAT AIR IS PURGED FROM LINES; THAT A THOROUGH TEST IS MADE FOR LEAKS BEFORE OPERATING THE HEATER; AND THAT IT IS PROPERLY CONNECTED TO THE PROPANE GAS SUPPLY SYSTEM.

Before any connection is made to the existing line supplying other gas appliances, contact the local gas company to make sure that the existing line is of adequate size to handle the combined load.

Table 3 – Gas Pipe Size

Maximum Capacity of Pipe in Cubic Feet of Gas per Hour (Cubic Meters per Hour) for Gas Pressures of 0.5 psiG (3.5 kPa) or Less, and a Pressure Drop of 0.5 Inch Water Column (124.4 kPa) (Based on a 0.60 Specific Gravity Gas)

| Nominal iron pipe size, inches | Internal Dia. inches | Length of Pipe in feet (meters) | | | | | | | | | | | | | |
|--------------------------------|----------------------|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | | 10 (3.0) | 20 (6.1) | 30 (9.1) | 40 (12.2) | 50 (15.2) | 60 (18.3) | 70 (21.3) | 80 (24.4) | 90 (27.4) | 100 (30.5) | 125 (38.1) | 150 (45.7) | 175 (53.3) | 200 (61.0) |
| 1/2 | 0.622 | 175 (4.96) | 120 (3.40) | 97 (2.75) | 82 (2.32) | 73 (2.07) | 66 (1.87) | 61 (1.73) | 57 (1.61) | 53 (1.50) | 50 (1.42) | 44 (1.25) | 40 (1.13) | 37 (1.05) | 35 (0.99) |
| 3/4 | 0.824 | 360 (10.2) | 250 (7.08) | 200 (5.66) | 170 (4.81) | 151 (4.28) | 138 (3.91) | 125 (3.54) | 118 (3.34) | 110 (3.11) | 103 (2.92) | 93 (2.63) | 84 (2.38) | 77 (2.18) | 72 (2.04) |
| 1 | 1.049 | 680 (19.3) | 465 (13.2) | 375 (10.6) | 320 (9.06) | 285 (8.07) | 240 (7.36) | 220 (6.80) | 205 (6.23) | 195 (5.80) | 195 (5.52) | 175 (4.96) | 160 (4.53) | 145 (4.11) | 135 (3.82) |
| 1 1/4 | 1.380 | 1400 (39.6) | 950 (26.9) | 770 (21.8) | 660 (18.7) | 580 (16.4) | 530 (15.0) | 490 (13.9) | 460 (13.0) | 430 (12.2) | 400 (11.3) | 360 (10.2) | 325 (9.20) | 300 (8.50) | 280 (7.93) |
| 1 1/2 | 1.610 | 2100 (59.5) | 1460 (41.3) | 1180 (33.4) | 990 (28.0) | 900 (25.5) | 810 (22.9) | 750 (21.2) | 690 (19.5) | 650 (18.4) | 620 (17.6) | 550 (15.6) | 500 (14.2) | 460 (13.0) | 430 (12.2) |
| 2 | 2.067 | 3950 (112) | 2750 (77.9) | 2200 (62.3) | 1900 (53.8) | 1680 (47.6) | 1520 (43.0) | 1400 (39.6) | 1300 (36.8) | 1220 (34.5) | 1150 (32.6) | 1020 (28.9) | 950 (26.9) | 850 (24.1) | 800 (22.7) |
| 2 1/2 | 2.469 | 6300 (178) | 4350 (123) | 3520 (99.7) | 3000 (85.0) | 2650 (75.0) | 2400 (68.0) | 2250 (63.7) | 2050 (58.0) | 1950 (55.2) | 1850 (52.4) | 1650 (46.7) | 1500 (42.5) | 1370 (38.8) | 1280 (36.2) |
| 3 | 3.068 | 11000 (311) | 7700 (218) | 6250 (177) | 5300 (150) | 4750 (135) | 4300 (122) | 3900 (110) | 3700 (105) | 3450 (97.7) | 3250 (92.0) | 2950 (83.5) | 2650 (75.0) | 2450 (69.4) | 2280 (64.6) |
| 4 | 4.026 | 23000 (651) | 15800 (447) | 12800 (362) | 10900 (309) | 9700 (275) | 8800 (249) | 8100 (229) | 7500 (212) | 7200 (204) | 6700 (190) | 6000 (170) | 5500 (156) | 5000 (142) | 4600 (130) |

- NOTE:**
1. Determine the required Cu. Ft./Hr. by dividing the Btu./Hr. input by 1000. For SI/Metric measurements: Convert unit Btu./Hr. to kilowatts. Multiply the unit input (kW) by 0.0965 to determine Cubic Meters/Hour.
 2. For Natural Gas: Select the pipe size directly from the table.
 3. For Propane Gas: Multiply the Cu. Ft./Hr. (Cubic Meters per Hour) value by 0.633; then use the table.
 4. Refer to the metric conversion factors listed in "General Safety Information" section for more SI unit measurements/conversions.

Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

Pipe Installation

1. Install the gas piping in accordance with applicable local codes.
2. Check gas supply pressure. Each unit heater must be connected to a manifold pressure and a gas supply capable of supplying its full rated capacity as specified in Table 4. A field LP tank regulator must be used to limit the supply pressure to a maximum of 14 inch WC (3.5 kPa). All piping should be sized in accordance with the latest edition of ANSI Standard Z223.1, National Fuel Gas Code; in Canada, according to CSA-B149. See Tables 1 & 3 for correct gas piping size. If gas pressure is excessive on natural gas applications, install a pressure regulating valve in the line upstream from the main shutoff valve.

**Table 4 – Gas Piping Requirements
Single Stage Gas Piping Requirements***

| Gas Type | Natural Gas | Propane (LP) Gas |
|-----------------------|----------------------------|----------------------------|
| Manifold Pressure | 3.5 inch WC (0.9 kPa) | 10.0 inch WC (2.5 kPa) |
| Supply Inlet Pressure | 14.0 inch WC Max (3.5 kPa) | 14.0 inch WC Max (3.5 kPa) |
| | 5.0 inch WC Min (1.2 kPa) | 11.0 inch WC Min (2.7 kPa) |

(*) For single stage application only at normal altitudes 0-2000 feet (see p. 20 for higher altitudes).

3. Adequately support the piping to prevent strain on the gas manifold and controls.
4. To prevent the mixing of moisture with gas, run the take-off piping from the top, or side, of the main.
5. Standard unit heaters are supplied with a combination valve which includes:
 - a. Manual "A" valve
 - b. Manual "B" valve
 - c. Solenoid valve
 - d. Pressure regulator

Pipe directly into the combination valve (See Figure 4).

6. Gas valve has a pressure test post requiring a 3/32 inch hex head wrench to read gas supply and manifold pressures. Open 1/4 turn counterclockwise to read, turn clockwise to close and reseal. A 5/16 inch ID hose fits the pressure post.
7. Provide a drip leg in the gas piping near the gas unit heater. A ground joint union and a manual gas shutoff valve should be installed ahead of the unit heater controls to permit servicing. The manual shutoff valve must be located external to the jacket (See Figure 4).
8. Make certain that all connections have been adequately doped and tightened.

CAUTION Do not over tighten the inlet gas piping into the valve. This may cause stresses that will crack the valve!

NOTE: Use pipe joint sealant resistant to the action of liquefied petroleum gases regardless of gas conducted.

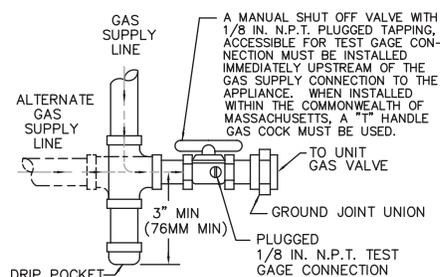


Figure 4 – Pipe Installation, Standard Controls

WARNING Check all pipe joints for leakage using a soap solution or other approved method. Never use an open flame or severe personal injury or death may occur!

WARNING Never use an open flame to detect gas leaks. Explosive conditions may exist which may result in personal injury or death!

The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system in excess of 1/2 psiG (3.5 kPa).

The appliance must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psiG (3.5 kPa).

Electrical Connections

WARNING HAZARDOUS VOLTAGE! DISCONNECT ALL ELECTRIC POWER INCLUDING REMOTE DISCONNECTS BEFORE SERVICING. Failure to disconnect power before servicing can cause severe personal injury or death.

Standard units are shipped for use on 115 volt, 60 hertz, single phase electric power. The motor name-plate and electrical rating of the transformer should be checked before energizing the unit heater electrical system. All external wiring must conform to the latest edition of ANSI/NFPA No. 70, National Electrical Code, and applicable local codes; in Canada, to the Canadian Electrical Code, Part 1, CSA Standard C22.1

Models 4LX55 thru 4LX68

Electrical Connections (Continued)

⚠ CAUTION *Do not use any tools (i.e. screwdriver, pliers, etc.) across terminals to check for power. Use a voltmeter.*

It is recommended that the electrical power supply to each unit heater be provided by a separate, fused, and permanently live electrical circuit. A disconnect switch of suitable electrical rating should be located as close to the gas valve and controls as possible. Each unit heater must be electrically grounded in accordance with the latest edition of the United States National Electrical Code, ANSI/NFPA No. 70, or CSA Standard C22.1. Refer to Figures 5A, 5B and 5C.

THERMOSTAT WIRING AND LOCATION

NOTE: The thermostat must be mounted on a vertical, vibration-free surface, free from air currents, and in accordance with the furnished instructions.

Mount the thermostat approximately 5 feet (1.5 m) above the floor, in an area where it will be exposed to a free circulation of average temperature air. Always refer to the thermostat instructions, as well as our unit wiring diagram, and wire accordingly. Figure 5A shows wiring for a two-wire thermostat. Figure 5B shows wiring for a three-wire thermostat, which allows for manual selection of fan operation at

the thermostat. In AUTO position, the fan is controlled by the heater circuitry. In ON position, the fan runs continuously, allowing it to be used as an air circulator in warm weather. Avoid mounting the thermostat in the following locations:

1. Cold Areas – Outside walls or areas where drafts may affect the operation of the control.
2. Hot Areas – Areas where the sun's rays, radiation, or warm air currents may affect the operation of the control.
3. Dead Areas – Areas where the air cannot circulate freely, such as behind doors or in corners.

NOTE: The start-up fan delay should not exceed 30 seconds from a cold start.

IMPORTANT: For all wiring connections, refer to the wiring diagram shipped with your unit (either affixed to the side jacket or enclosed in the installation instructions envelope). Should any original wire supplied with the heater have to be replaced, it must be replaced with wiring material having a temperature rating of at least 105°C.

Should any high limit wires have to be replaced, they must be replaced with wiring material having a temperature rating of 200°C minimum.

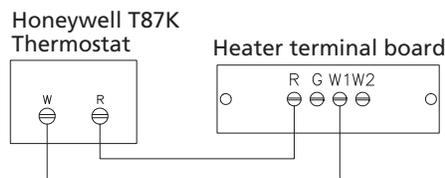


Figure 5A – Two-wire Thermostat

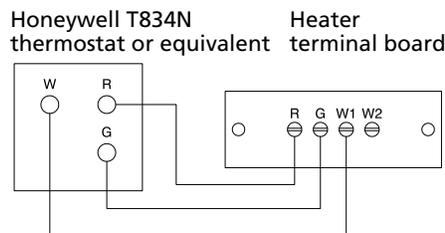


Figure 5B – Three-wire Thermostat

Models 4LX55 thru 4LX68

Venting

All unit heaters must be vented! All Venting installations shall be in accordance with the latest edition of Part 7, Venting of Equipment of the National Fuel Gas Code, ANSI Z223.1 (NFPA54), or applicable provisions of local building codes. Refer to page 14 for Canadian installations. Refer to Figures 6, 7, 8, 9A, 9B, 10A and 10B.

⚠ WARNING CARBON MONOXIDE! *Venting system must not be blocked by any snow, snow drifts, or any foreign matter. Inspect venting system to ensure adequate ventilation exists at all times! Failure to heed these warnings could result in Carbon Monoxide Poisoning (symptoms include grogginess, lethargy, inappropriate tiredness, or flu-like symptoms).*

⚠ WARNING *Never use vent pipe (flue size) of a diameter other than that specified in Table 1! Never use PVC, ABS or other non-metallic pipe for venting! To do so may result in serious damage to the unit and or severe personal injury or death!*

VENTING CATEGORIES

ANSI now organizes vented appliances into four categories.

| | Non-Condensing | Condensing |
|------------------------|----------------|------------|
| Negative Vent Pressure | I | II |
| Positive Vent Pressure | III | IV |

Category I

Includes non-condensing appliances with negative vent pressure, like the traditional atmospheric unit heater.

Category II

Groups condensing appliances with negative vent pressure.

Category III

Appliances are non-condensing and operate with a positive vent pressure.

Category IV

Covers condensing appliances with positive vent pressure.

NOTE: Category II and IV do not apply to equipment specified within this manual.

Table 5

| Structure/Object | Vent Systems Termination Clearance Requirements | |
|--|--|--|
| | Minimum Clearance for Termination Locations | |
| | USA | CANADA |
| Door, window, or gravity vent inlet; combustion air inlet for other appliances | 9 inch for 10,000 to 50,000 BTU/Hr input; 12 inch for input exceeding 50,000 BTU/Hr. | 9 inch (230mm) for 10,000 to 50,000 BTU/Hr input; 12 inch (305mm) for input exceeding 50,000 BTU/Hr. |
| Forced air inlet within 10 feet | 3 feet above | 6 feet (1.8m) |
| Adjoining Building or parapet | 10 feet | 10 feet (3.04m) |
| Adjacent public walkways | 7 feet above grade | 7 feet (2.1m) above grade |
| Electric, gas meters & regulators | 4 feet horizontal | 3 feet (0.9m) horizontally from meter/regulator assembly. 6 feet (1.8m), any direction, from a gas service regulator vent outlet |
| Above grade level* | 1 foot | 1 foot (0.3m) |

*Minimum above maximum snow depth, or per local code, whichever is greater.

VERTICALLY VENTED UNIT HEATERS (CATEGORY I)

Observe the following precautions when venting the unit:

1. Use flue pipe of the same size as the flue connections on the gas unit heater (See Table 1). All heaters should be vented with single or double wall vent, a factory built chimney, or a lined brick and mortar chimney that has been constructed in accordance with the National Building Code. Type B vent should only be used for vertical rise portions of a Category I vent pipe system. Type B vent should not be used for horizontal runs of vent pipe.
2. Provide as long a vertical run of flue pipe at the gas unit heater as possible. A minimum of 5 feet (1.5m) of vertical flue is required. The top of the vent pipe should extend at least 2 feet (0.61m) above the highest point on the roof. Install a weather cap over the vent opening. Consideration should be made for anticipated snow depth.
3. Slope horizontal runs upward from the gas unit heater at least 1/4 inch per foot (21mm/m) minimum. Horizontal runs should not exceed 75% of the vertical height of the vent pipe, or chimney, above the flue pipe connection, up to a maximum length of 10 feet (3m). Horizontal portions of the venting system shall be supported at minimum

intervals of 4 feet (1.2m). (See Figure 6) In Canada, support at minimum intervals of 3 feet (1m).

4. Use as few elbows as possible.
5. Seal all vent pipe joints and seams to prevent leakage. Use General Electric RTV-108, DowCorning RTV-732, or equivalent silicone sealant with a temperature rating of 500°F or 3M #425 aluminum foil tape (or equivalent).
6. Avoid running vent pipe through unheated spaces.
7. When this cannot be avoided, insulate the pipe to prevent condensation of moisture on the walls of the pipe.
8. Do not damper the flue piping. Failure to open such a damper prior to operating the gas unit heater will result in the spillage of flue gas into the occupied space.
9. Avoid installing units in areas under negative pressure due to large exhaust fans or air conditioning. When required, a flue vent fan should be installed in accordance with the instructions included with the fan.
10. Vent connectors serving Category I and Category II heaters shall not be connected into any portion of mechanical draft systems operating under positive pressure.

Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

Venting (Continued) HORIZONTALLY VENTED UNIT HEATERS (CATEGORY I)

NOTICE: Horizontal Venting is only considered Category I for commercial applications if the unit is non-condensing and there is negative vent pressure in the flue pipe. If flue pipe is under positive pressure, see Horizontally Vented Unit Heaters (Category III) section.

Observe the following precautions when venting the unit:

1. Use flue pipe of the same size as the flue connections on the gas unit heater (See Table 1). All heaters should be vented with appropriately sealed double wall or single wall vent. Venting systems using Type B vent must comply with National Fuel Gas Code, ANSI Z223.1 (NFPA54)
2. **Each unit must have an individual vent pipe and vent terminal.** Unit must not be connected to other vent systems or to a chimney.
3. The system must have a minimum vertical rise to ensure that the vent pipe is under negative pressure. Install a weather cap over the vent opening. A Breidert Type L, Fields Starkap or equivalent vent cap must be supplied by the customer for each power vented unit. Consideration should be made for anticipated snow depth.
4. Through the wall venting for these appliances shall not terminate over public walkways, or over an area where the condensate or vapor could create a nuisance, hazard, or could be detrimental to the operation of regulators, relief valves, or other equipment.
5. The vent terminal must be at least 12 inches (305mm) from the exterior of the wall that it passes through to prevent degradation of the building material by flue gases.
6. Seal all vent pipe joints and seams to prevent leakage. Use General Electric RTV-108, Dow-Corning RTV-732, or equivalent silicone sealant with a temperature rating of 500 deg. F, or 3M # 425 aluminum foil tape (or equivalent). The vent system must be installed to prevent collection of condensate. Pitch horizontal pipes downward ¼ inch per foot (21mm per meter) toward the outlet for condensate drainage. Install a tee with a condensate drain at the low point of the pipe (see Figure 7). As an alternate, a 3/8 inch diameter hole may be drilled at the low point of the pipe for condensate drainage.
7. Horizontal portions of the venting system shall be supported at minimum intervals of 4 feet (1.2m) to prevent sagging (in Canada, support at 3 foot (1m) minimum intervals).
8. Avoid running vent pipe through unheated spaces. When this cannot be avoided, insulate the pipe to prevent condensation of moisture on the walls of the pipe.

HORIZONTALLY VENTED UNIT HEATERS (CATEGORY III)

Horizontal venting arrangements are designed to be used with single wall vent pipe. These arrangements must terminate external to the building using UL 1738 Listed vent. For installations in Canada, use corrosion resistant and gas-tight, listed vent pipe conforming with local building codes, or in the absence of local building codes, with current CSA-B149.1, Installation Codes for Natural Gas Burning Appliances and Equipment or CSA-B149.2, Installation Codes for Propane Gas Burning Appliances and Equipment. See Figures 8, 9A, and 10A for special installation requirements regarding these venting conditions.

⚠ WARNING *Do not use Type B (double wall) vent internally within the building on horizontally vented units! This can result in death, serious injury, or substantial property damage.*

If double wall venting is used, components which are UL Listed and approved for Category III positive pressure venting systems MUST be used.

A Breidert Type L, Fields Starkap, or equivalent vent cap must be supplied by the customer for each power vented unit. The vent pipe diameter MUST be as specified in Table 1 ("D" Dia. Flue Opening). All unit sizes are factory equipped with the required flue size collar; attach in place (if not mounted to outlet); refer to included vent collar instruction sheet for additional requirements. The vent terminal must be at least 12 inches (305 mm) from the exterior of the wall that it passes through to prevent degradation of the building material by flue gases. Through the wall vent for these appliances shall NOT terminate over public walkways, or over an area where the condensate or vapor could create a nuisance or hazard or could be detrimental to the operation of regulators, relief valves, or other equipment.

The vent pipe equivalent length must not exceed 50 feet (15.2 m). Equivalent length is the total length of straight sections PLUS 10 feet (3.05 m) for each 90° elbow and 4 feet (1.22 m) for each 45° elbow.

Maintain clearance between the vent pipe and combustible materials according to vent pipe manufacturer's instructions.

The vent air system must be installed to prevent collection of condensate. Pitch horizontal pipes downward 1/4 inch per foot (21 mm per meter) toward the outlet for condensate drainage.

Horizontal portions of the venting systems shall be supported at maximum intervals of 4 feet (1.2 m) to prevent sagging [in Canada, support at 3 feet (1 m) minimum intervals].

Insulate single wall vent pipe exposed to cold air or running through unheated areas.

Each unit must have an individual vent pipe and vent terminal! Each unit MUST NOT be connected to other vent systems or to a chimney.

Models 4LX55 thru 4LX68

ENGLISH

Venting (Continued)

ADDITIONAL REQUIREMENTS FOR CANADIAN INSTALLATIONS

REFER TO SPECIFICATION TABLE AND INSTALLATION MANUAL FOR PROPER USAGE.

NOTE: The following instructions apply to Canadian installations in addition to installation and operating instructions:

1. Installation must conform with local building codes, or in the absence of local codes, with current CSA-B149.1, Installation Codes for Natural Gas Burning Appliances and Equipment, or CSA-B149.2, Installation Codes for Propane Gas Burning Appliances and Equipment.
2. Any reference to U. S. standards or codes in these instructions are to be ignored, and the applicable Canadian standards or codes applied.

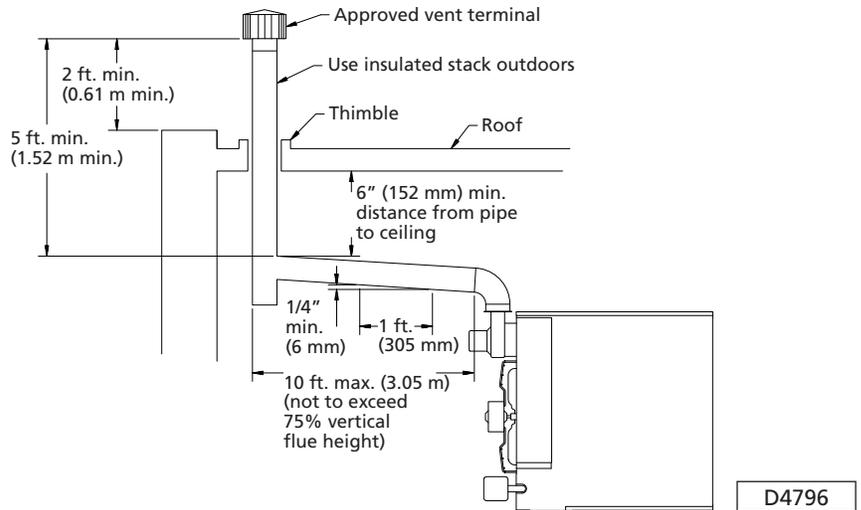


Figure 6 – Vertically Vented Tubular Unit Heater – Category I

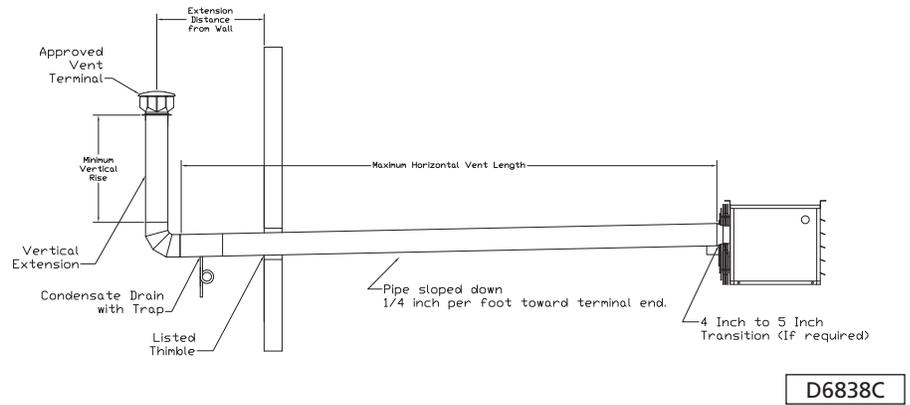


Figure 7 – Horizontally Vented Unit Heater – Category I

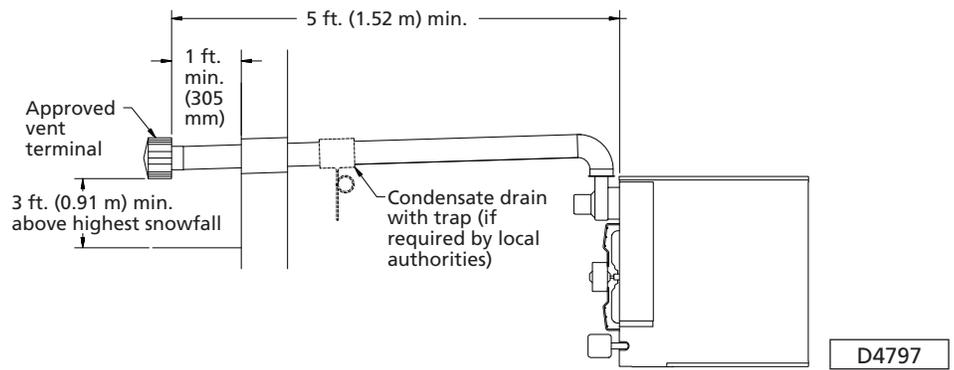
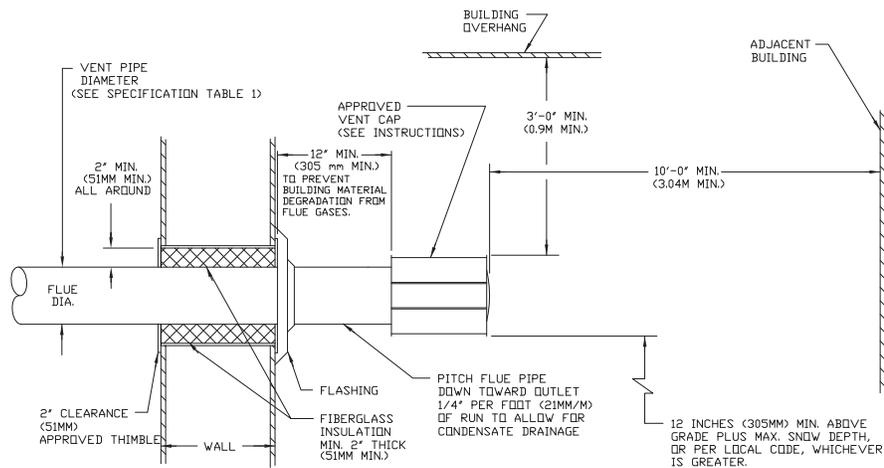


Figure 8 – Horizontally Vented Tubular Unit Heater – Category III

Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

Venting (Continued)

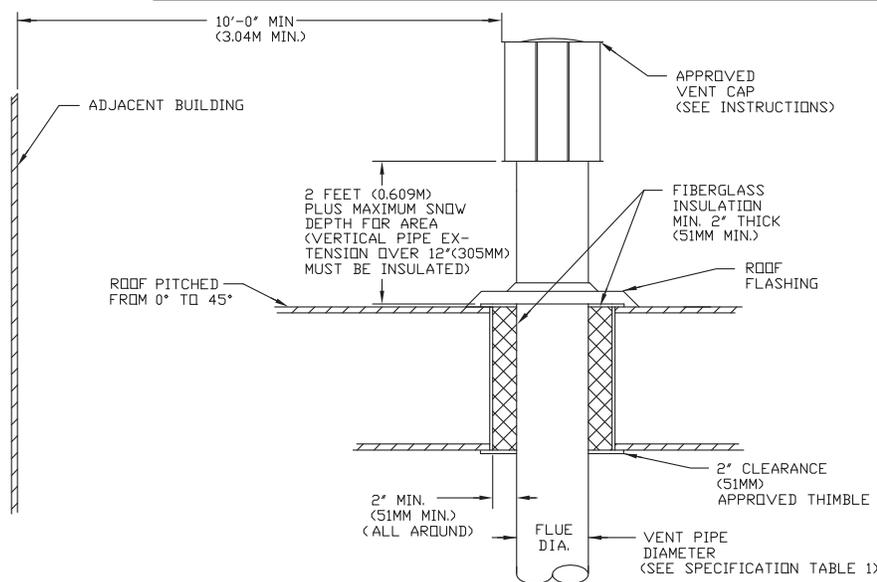
HORIZONTAL ARRANGEMENT SINGLE WALL VENT SYSTEM TO SINGLE WALL TERMINATION



D3620F

Figure 9A – Horizontal Arrangement – Single Wall Vent System to Double Wall Termination

VERTICAL ARRANGEMENT SINGLE WALL VENT SYSTEM TO SINGLE WALL TERMINATION



D3619C

Figure 9B – Vertical Arrangement – Single Wall Vent System to Single Wall Termination

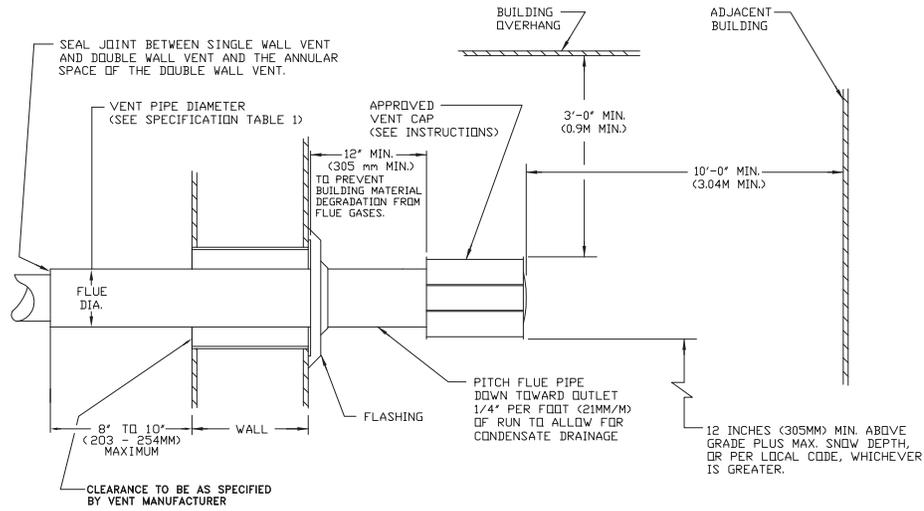
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Models 4LX55 thru 4LX68

ENGLISH

Venting (Continued)

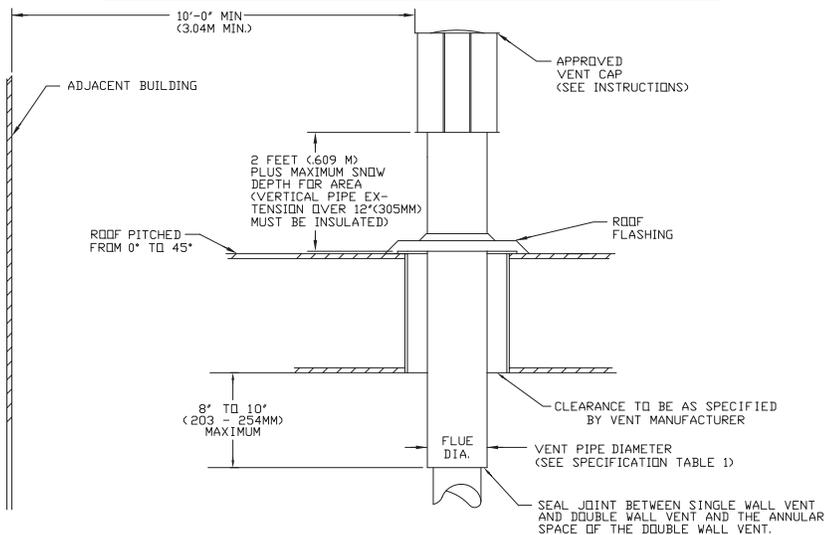
HORIZONTAL ARRANGEMENT SINGLE WALL VENT SYSTEM TO DOUBLE WALL TERMINATION



D3661F

Figure 10A – Horizontal Arrangement – Single Wall Vent System to Single Wall Termination

VERTICAL ARRANGEMENT SINGLE WALL VENT SYSTEM TO DOUBLE WALL TERMINATION



D3662D

Figure 10B – Vertical Arrangement – Single Wall Vent System to Double Wall Termination

Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

Operation

POWER VENTED PROPELLER UNITS DIRECT SPARK IGNITION

EXPLANATION OF CONTROLS (See Figure 11)

1. The unit heater is equipped with a power ventor system consisting of a power ventor motor and blower, pressure switch, and sealed flue collector in place of the conventional draft diverter.
2. The power ventor motor is energized by the room thermostat through the integrated control board when a demand for heat is sensed. The pressure switch measures the flow through the vent system and energizes the direct spark ignition system beginning the pre-purge timing when the flow is correct.

▲ WARNING *The pressure switch MUST NOT be bypassed. The unit MUST NOT be fired unless the power ventor is operating. An unsafe condition could result.*

3. The direct ignition system consists of an ignition control module and a gas valve. When the pre-purge period ends, the spark ignition system is energized, and the gas valve opens to supply gas to the burners. When the thermostat is satisfied, the vent system is deenergized and the valve closes to stop all flow of gas to the unit.
4. The limit switch interrupts the flow of electric current to the control board, interrupting the flow of gas to the gas valve in case the heater becomes overheated.

5. Once the thermostat is satisfied, or the limit switch interrupts the flow of electric current to the control board, the unit will begin a post-purge period. When the post-purge period ends, the power ventor motor is de-energized.
6. The fan operation is delayed 30 seconds once the thermostat is closed, and continues operation for 30 seconds after the thermostat opens. **The startup fan delay must not exceed 30 seconds from a cold start.**
7. The wall thermostat (supplied optionally) is a temperature sensitive switch which operates the vent system and the ignition system to control the temperature of the space being heated. It must be mounted on a vibration free, vertical surface away from air currents, in accordance with the instructions furnished with the thermostat (also refer to "Electrical Connections" section).

START-UP (Also refer to lighting instruction plate equipped on the unit)

1. Open the manual valve supplying gas to the unit heater, and with the union connection loose, purge air from the gas line. Tighten the union and check for gas leaks.

▲ WARNING *Never use an open flame to detect gas leaks. Explosive conditions may exist which could result in personal injury or death.*

2. Open the manual valve on the unit heater.
3. Turn ON electrical power.

4. The unit should be under the control of the thermostat. Turn the thermostat to the highest point and determine that the power ventor motor starts, and the burners ignite. Turn the thermostat to the lowest point and determine that the power ventor motor shuts off and the burners are extinguished.
5. Turn the thermostat to the desired position.
6. See "Gas Input Rate" and "Adjustments" sections.

SHUT DOWN

1. Turn the valve selector lever to the OFF position.
2. Turn off the electricity.
3. To relight, follow the "start-up" instructions.

See Figure 11-19 for parts/identification.

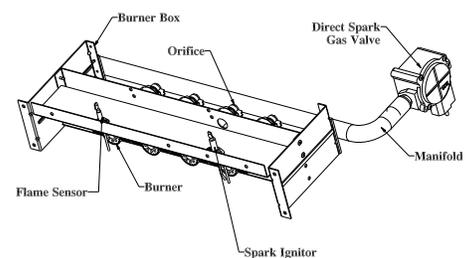


Figure 11 – Manifold Assembly

Models 4LX55 thru 4LX68

ENGLISH

Operation (Continued)

PRIMARY AIR SHUTTER ADJUSTMENT

Primary air adjustment is made at the factory. No field adjustments are necessary.

GAS INPUT RATE

Check the gas input rate as follows (Refer to "General Safety Information" section for metric conversions).

⚠ CAUTION *Never overfire the unit heater, as this may cause unsatisfactory operation, or shorten the life of the heater.*

1. Turn off all gas appliances that use gas through the same meter as the unit heater.
2. Turn the gas on to the unit heater.
3. Clock the time in seconds required to burn 1 cubic foot of gas by checking the gas meter.
4. Insert the time required to burn one cubic foot of gas into the following formula and compute the input rate.

$$\frac{3600 \text{ (Sec. per Hr.)} \times \text{BTU/Cu. Ft.}}{\text{Time (Sec.)}} = \text{Input Rate}$$

For example:

Assume the BTU content of one cubic foot of gas is 1000, and that it takes 18 seconds to burn one cubic foot of gas.

$$\frac{3600 \times 1000}{18} = 200,000$$

NOTE: If the computation exceeds, or is less than 95% of the gas BTU/hr. input rating (see Table 6), adjust the gas pressure.

Adjust the gas pressure as follows:

NATURAL GAS

Best results are obtained when the unit heater is operating at its full rated input with the manifold pressure of

3.5 inches WC (0.9 kPa). Adjustment of the pressure regulator is not normally necessary since it is preset at the factory. However, field adjustment may be made as follows:

1. Attach manometer at the pressure tap plug below the control outlet.
2. Remove the regulator adjustment screw cap, located on the combination gas valve.
3. With a small screwdriver, rotate the adjustment screw counterclockwise to decrease pressure, or clockwise to increase pressure.
4. Replace regulator adjustment screw cap.

PROPANE GAS

An exact manifold pressure of 10.0 inches WC (2.5 kPa) must be maintained for proper operation of the unit heater. If the unit is equipped with a pressure regulator on the combination gas valve, follow steps 1 through 4 above. If the unit is not so equipped, the propane gas supply system pressure must be regulated to attain this manifold operating pressure.

The adjusted manifold pressure should not vary more than 10% from pressure specified in Table 6.

Table 6 – Burner Orifice Schedule*

| Input in 1000 BTU | Type of Gas Heating Value Manifold Pressure | Natural 1050 BTU/Ft ³ (39.1 MJ/m ³) 3.5" WC (0.87 kPa) | Propane 2500 BTU/Ft ³ (93.1 MJ/m ³) 10" WC (2.49 kPa) | Number of Burner Orifices |
|-------------------|---|---|--|---------------------------|
| 150 | Cu. Ft./Hr. | 140 | 60 | 6 |
| | Orifice Drill | 42 | 53 | |
| 175 | Cu. Ft./Hr. | 163 | 70 | 7 |
| | Orifice Drill | 42 | 53 | |
| 200 | Cu. Ft./Hr. | 186 | 80 | 8 |
| | Orifice Drill | 42 | 53 | |
| 250 | Cu. Ft./Hr. | 233 | 100 | 10 |
| | Orifice Drill | 42 | 53 | |
| 300 | Cu. Ft./Hr. | 280 | 120 | 12 |
| | Orifice Drill | 42 | 53 | |
| 350 | Cu. Ft./Hr. | 326 | 140 | 14 |
| | Orifice Drill | 42 | 53 | |
| 400 | Cu. Ft./Hr. | 372 | 160 | 16 |
| | Orifice Drill | 42 | 53 | |

(*) This schedule is for units operating at normal altitudes of 2000 feet (610 m) or less (for installations at higher altitudes, see p. 19).

When installed in Canada, any references to deration at altitudes in excess of 2000 feet (610 m) are to be ignored. At altitudes of 2000 to 4500 feet (610 to 1372 m), the unit heaters must be field derated, and be so marked in accordance with ETL certification. See Table 7 for field deration info.

Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

Tubular Unit Heater High Altitude Deration

This Tubular Unit Heater has been manufactured utilizing standard burner orifices and a normal manifold pressure setting as per the specification shown on your unit data plate.

All unit deration must be done though field adjustments by a qualified technician. Once the proper adjust-

ments are made in the field, attach label #J17-06459 to the unit, and record adjusted manifold pressure, altitude of the unit installation and the technician's name and date on the label using a permanent marker.

Refer to Installation Instruction section on Adjustments-Gas Input Rate for adjusting the manifold pressure.

Table 7 High Altitude Deration - United States

| Altitude | | Manifold Pressure | | | | BTU Output ¹ |
|--------------|-------------|--------------------------|-----|-----------------------------|-------|-------------------------|
| | | Natural Gas ² | | Liquid Propane ³ | | |
| Feet | Meters | Inches WC | Pa | Inches WC | Pa | Percentage |
| 0-2,000 | 0-610 | 3.5 | 872 | 10 | 2,491 | 100% |
| 2,001-3,000 | 611-915 | 3.2 | 797 | 9.2 | 2,292 | 96% |
| 3,001-4,000 | 916-1,220 | 2.9 | 722 | 8.4 | 2,092 | 92% |
| 4,001-5,000 | 1,221-1,525 | 2.7 | 673 | 7.7 | 1,918 | 88% |
| 5,001-6,000 | 1,526-1,830 | 2.4 | 598 | 7 | 1,744 | 84% |
| 6,001-7,000 | 1,831-2,135 | 2.2 | 548 | 6.4 | 1,594 | 80% |
| 7,001-8,000 | 2,136-2,440 | 2 | 498 | 5.7 | 1,420 | 76% |
| 8,001-9,000 | 2,441-2,745 | 1.8 | 448 | 5.1 | 1,270 | 72% |
| 9,001-10,000 | 2,746-3,045 | 1.6 | 399 | 4.6 | 1,145 | 68% |

- Notes:
1. Deration based on ANSI Z223.1 (NFPA 54).
 2. Table based on heating value of 1,050 BTU/Cu. ft. at sea level.
 3. Table based on heating value of 2,500 BTU/Cu. ft. at sea level.
 4. Consult local utility for actual heating value.

High Altitude Deration - Canada

| Altitude | | Manifold Pressure | | | | BTU Output ¹ |
|-------------|-------------|--------------------------|-----|-----------------------------|-------|-------------------------|
| | | Natural Gas ² | | Liquid Propane ³ | | |
| Feet | Meters | Inches WC | Pa | Inches WC | Pa | Percentage |
| 0-2,000 | 0-610 | 3.5 | 872 | 10 | 2,491 | 100% |
| 2,001-3,000 | 611-915 | 3.2 | 797 | 9.2 | 2,292 | 96% |
| 3,001-4,000 | 916-1,220 | 2.9 | 722 | 8.4 | 2,092 | 92% |
| 4,001-4,500 | 1,221-1,371 | 2.8 | 697 | 7.9 | 1,968 | 90% |

- Notes:
1. Deration based on CGA 2.17-M91
 2. Table based on heating value of 1,050 BTU/Cu. ft. at sea level.
 3. Table based on heating value of 2,500 BTU/Cu. ft. at sea level.
 4. Consult local utility for actual heating value.

Models 4LX55 thru 4LX68

Troubleshooting Chart

| Symptom | Possible Cause(s) | Corrective Action |
|---|---|--|
| A. Flame pops back. | Burner orifice too small. | Check with local gas supplier for proper orifice size and replace. Refer to "Operation". |
| B. Noisy Flame. | 1. Irregular orifice causing whistle or resonance. 2. Excessive gas input. | 1. Replace orifice. 2. Test and reset manifold pressure. |
| C. Yellow tip flame (some yellow tipping on LP gas is permissible). | 1. Clogged main burners. 2. Misaligned orifices. 3. Insufficient combustion air. 4. Possibly over fired. | 1. Clean main burner ports. 2. Replace manifold assembly. 3. Insufficient combustion air. 4. Check gas input and manifold pressures. |
| D. Floating flame. | 1. Blocked venting. 2. In sufficient combustion air. 3. Blocked heat exchanger. 4. Air leak into combustion chamber or draft hood. | 1. Clean Flue. Refer to "Installation". 2. Clean combustion air inlet openings. 3. Clean heat exchanger. Refer to "Installation". 4. Determine cause and repair accordingly. |
| E. Gas odor. | 1. Shut off gas supply immediately! 2. Leaking gas test port on valve. 3. Blocked heat exchanger. 4. Blocked draft hood. 5. Negative pressure in the building. | 1. Inspect all gas piping and repair. 2. Check to ensure gas test ports are seated. 3. Clean heat exchanger/flue. 4. Clean flue collector. 5. See "Installation". |
| F. Delayed ignition. | 1. Improper ground. 2. Bad or broken spark cable. 3. Faulty control. 4. Pressure regulator set too low. 5. Main burner orifices dirty. 6. Improper venting. | 1. Check grounding wires and spark bracket connections. 2. Inspect spark cable connections and cuts. 3. Check to ensure spark is energized after pre purge period. 4. Test and reset manifold pressure refer to "Operations". 5. Clean or replace orifices. 6. Refer to "Installation". |

Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

Troubleshooting Chart (Continued)

| Symptom | Possible Cause(s) | Corrective Action |
|-------------------------------|--|---|
| G. Failure to ignite. | <ol style="list-style-type: none"> 1. Gas supply is off. 2. No power supply to unit. 3. Thermostat not calling. 4. Defective high limit. 5. Defective drafter prove switch. 6. Loose wiring. 7. Improper ground. 8. Improper thermostat or transformer wiring. | <ol style="list-style-type: none"> 1. Open all manual valves "check for leaks". 2. Turn on power supply, check fuses and replace if bad. 3. Turn up thermostat, Check for 24v on terminals R and W1 on terminal strip. 4. Check switch for continuity if open with no heat present, replace. 5. Check switch operation to ensure switch closes after drafter purge period. If it does not make/ check tubing connections/ blockage. 6. Check all wiring per diagram. 7. Check all ground wires and connections. 8. Check both, for wiring according to diagram; check for 24V at gas valve terminals during trial for ignition period if present and valve does not open. Replace valve. |
| H. Condensation. | <ol style="list-style-type: none"> 1. Improper venting. 2. Unit under fired. 3. Building too cold. | <ol style="list-style-type: none"> 1. Refer to "Installation, Venting". 2. Check gas supply pressures to unit. Refer to "Installation". 3. Refer to "Installation". |
| J. Burners will not shut off. | <ol style="list-style-type: none"> 1. Thermostat located incorrectly. 2. Improper thermostat wiring. 3. Shorted circuit. 4. Defective sticking gas valve. 5. Excessive gas supply pressure. | <ol style="list-style-type: none"> 1. Relocate thermostat away from outside wall or drafts. 2. Check thermostat circuit for open and close on terminal strip on heater "R" and "W". 3. Check thermostat circuit for shorts "staples piercing wires". 4. Check for 24v on gas valve terminals when thermostat is not calling. 5. Refer to "Installation". |
| K. Rapid burner cycling. | <ol style="list-style-type: none"> 1. Loose electrical connections at thermostat or gas valve. 2. Excessive thermostat heat anticipator setting. 3. Unit cycling on high limit. 4. Poor thermostat location. | <ol style="list-style-type: none"> 1. Tighten all electrical connections. 2. Adjust heat anticipator setting for longer cycles. Refer to "Electrical Connections". 3. Check for proper air supply across heat exchanger and proper gas supply. 4. Relocate thermostat . |
| L. Noisy power ventor. | <ol style="list-style-type: none"> 1. Power ventor wheel loose. 2. Power ventor wheel is dirty. 3. Power ventor wheel is rubbing on the housing. | <ol style="list-style-type: none"> 1. Replace or tighten. 2. Clean power ventor wheel. 3. Realign power ventor wheel. |

Models 4LX55 thru 4LX68

Troubleshooting Chart (Continued)

| Symptom | Possible Cause(s) | Corrective Action |
|--|--|--|
| M. Fan will not run. | <ol style="list-style-type: none"> 1. Loose electrical connections. 2. Defective motor or overload. 3. Defective control board. | <ol style="list-style-type: none"> 1. Check and tighten wires on fan circuit. 2. Test for 115v on terminal ACB Heat and "L2" if voltage is present replace motor. 3. Test for 115v on terminal ACB Heat a "L2" on the control board, if voltage is not present 45 seconds after trial for ignition replace board. |
| N. Fan motor turns on and off while burner is operating. | <ol style="list-style-type: none"> 1. Motor overload protection is tripping. 2. Loose wiring or connection. 3. Control board is defective. | <ol style="list-style-type: none"> 1. Check motor amps against motor name plate, check voltage, replace if found defective. 2. Check for 115v between motor leads. 3. Check terminal ACB Heat for voltage if voltage not constant, replace board. |
| O. Fan will not stop. | <ol style="list-style-type: none"> 1. Control Board is in flame failure mode. 2. Fan improperly wired. 3. Defective board. | <ol style="list-style-type: none"> 1. Turn 115v power off to the unit, wait 10 seconds and reapply voltage to the unit. 2. Check wiring of fan circuit to wiring diagram. 3. If unit is not calling for heat and board is not in a flash code mode, replace board. |
| P. Not enough heat. | <ol style="list-style-type: none"> 1. Incorrect gas input. 2. Heater undersized. 3. Thermostat malfunction. 4. Heater cycling on limit. 5. Incorrect orifice sizes. | <ol style="list-style-type: none"> 1. Refer to "Operation". 2. Is the heater output sized correctly for heat loss of the space. Has the space been enlarged. 3. Check thermostat circuit, 24v on terminals "R" and "W" on terminal strip. 4. Check air movement across heat exchanger. Check voltage and amps at the fan motor. Check gas input to ensure unit is not over fired. Check heat exchanger to ensure unit is not dirty. 5. Check orifice size, replace if undersized. |
| Q. Too much heat. | <ol style="list-style-type: none"> 1. Unit is over fired. 2. Thermostat malfunction. 3. Heater runs continuously. | <ol style="list-style-type: none"> 1. Refer to "Operation". Check orifice size. If too big replace. 2. Check thermostat for operation, to ensure circuit open and closes. 3. Check wiring per diagram; check operation at the gas valve, look for a short in thermostat circuit. |
| R. Cold air is delivered during heater operation. | <ol style="list-style-type: none"> 1. Incorrect manifold pressure or input. 2. Air throughput too high. | <ol style="list-style-type: none"> 1. Refer to "Operation". 2. Refer to "Operation". |

Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

Troubleshooting Chart (Continued)

| Symptom | Possible Cause(s) | Corrective Action |
|--|--|---|
| S. High limit tripping. | <ol style="list-style-type: none"> 1. Unit is over fired. 2. Air flow is low. 3. Defective switch. 4. Defective control board. | <ol style="list-style-type: none"> 1. Burner orifices may be too large, verify and replace. 2. Check for proper voltage, ensure fan blade is correct. 3. Check operation of switch, did the switch open when unit is running or is the switch open during start-up. 4. Check for 24v on line side of the high limit. Constant voltage should be recorded if not control board is suspect. Check flash code. |
| T. Power ventor will not run. | <ol style="list-style-type: none"> 1. Loose wiring or connections. 2. Motor overload is tripped or bad motor. 3. Bad control board. | <ol style="list-style-type: none"> 1. Check all wiring in the power vent circuit to ensure good connection, including "Neutral". 2. Check for 115v between motor leads and check amp draw of motor. Replace if needed. 3. Check for continuous 115v on terminal "CBM Blower" and neutral during call for heat. If not present and all checks are normal, replace. |
| U. Power ventor turns on and off during operation. | <ol style="list-style-type: none"> 1. Power ventor improperly wired. 2. Motor overload cycling or defective motor. 3. Defective control board. | <ol style="list-style-type: none"> 1. Check power ventor circuit per wiring diagram. 2. Check motor voltage and amp draw to motor name plate, replace if motor found defective. 3. Check for continuous 115v on terminal "CMB Blower" during call for heat, replace board if found defective. |
| V. Power ventor will not stop. | <ol style="list-style-type: none"> 1. Power ventor improperly wired. 2. Main burner did not light on call for heat. 3. Defective control board. | <ol style="list-style-type: none"> 1. Check power ventor circuit per wiring diagram. 2. Heater is in lockout mode check flash code table for problem. 3. No flash codes present along with no call for heat, replace control board. |

Models 4LX55 thru 4LX68

Troubleshooting with LED Indicator Assistance

No Cycling or appliance power or thermostat call for heat since appliance failure has occurred.

⚠ WARNING *Line voltage power can cause product damage, severe injury or death. Only a trained experienced service technician should perform this trouble-shooting.*

1. Check the system thermostat to make sure it is calling for heat. (Do not cycle the thermostat on and off at this time.)
2. Remove the appliance burner compartment door. Do not interrupt power to the control board by opening any electrically interlocked panels.
3. Observe the LED indicator on the control board (a green LED labeled "ok" indicates system faults); check and repair system as noted in the chart to the right.

| LED Status | Indicates | Check/Repair |
|------------|--|---|
| Slow Flash | Control OK, no call for heat. | Not Applicable |
| Fast Flash | Control OK, call for heat present. | Not Applicable |
| Steady Off | Internal control fault, or no power. | <ol style="list-style-type: none"> 1. Line voltage on terminals 120 and C on transformer. 2. Low voltage (24V) on terminals 24 and C on transformer. 3. 5 Amp fuse on circuit board. |
| Steady On | Control internal failure or bad ground. | <ol style="list-style-type: none"> 1. Common side of transformer grounded to chassis. 2. Loose spark ignitor. |
| 2 Flashes | In lockout from failed ignitions or flame losses. | <ol style="list-style-type: none"> 1. Gas supply off or gas supply pressure too low. 2. Flame sense rod contaminated or loose wire. 3. Gas valve switch is off or wires are not connected. 4. Broken or cracked porcelain on flame probe or spark ignitor. |
| 3 Flashes | Pressure Switch open with inducer on or closed with inducer off. | <ol style="list-style-type: none"> 1. Obstructions or restrictions in appliance air intake or flue outlet are preventing proper combustion airflow. 2. Moisture or debris in tubing that connects pressure switch and draft inducer. 3. Airflow switch jumpered or miswired. |
| 4 Flashes | Limit or rollout switch is open. | <ol style="list-style-type: none"> 1. Open manual reset rollout switch. 2. Gas pressure too high, over fire condition. 3. Incorrect airflow due to blockage or motor not operating. |
| 5 Flashes | Flame sensed while gas valve is off. | Flame probe miswired or shortened. |
| 6 Flashes | On-board microprocessors disagree. | Thermostat is interfering with control board. |

NOTE:

Air flow proving switch and power ventor hose barbs must be free of any dust or debris at all times. Periodically check these openings and/or if any problems occur.

For Repair Parts, call 1-800-GRAINGER

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

IDENTIFICATION OF PARTS PROPELLER UNIT HEATERS

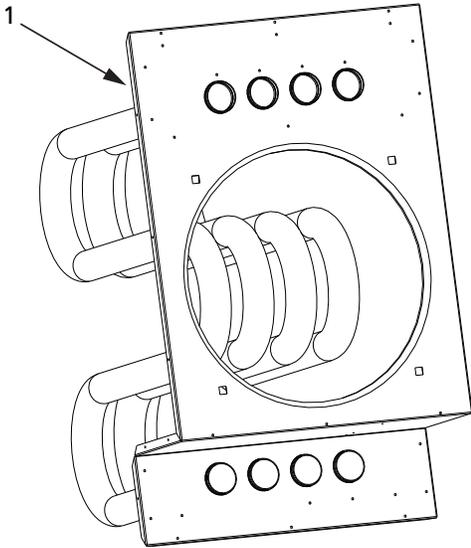


Figure 12 – Heat Exchanger Assembly

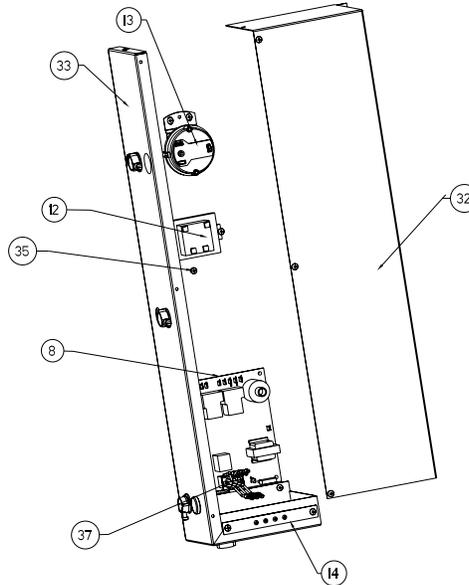


Figure 13 – Electrical Control Panel

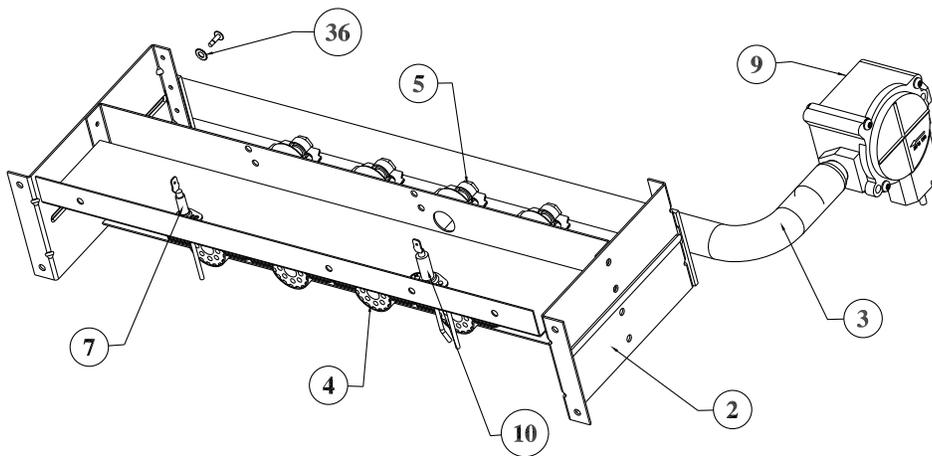


Figure 14 – Manifold Burner Assembly

Refer to parts list on pages 28 and 29.

E
N
G
L
I
S
H

For Repair Parts, call 1-800-GRAINGER

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

IDENTIFICATION OF PARTS PROPELLER UNIT HEATERS

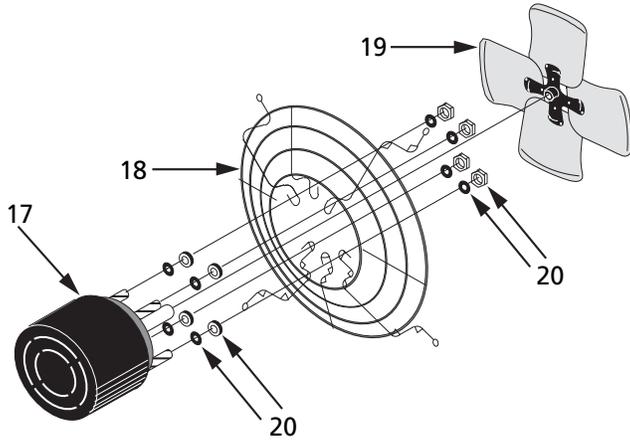


Figure 15 – Propeller Parts

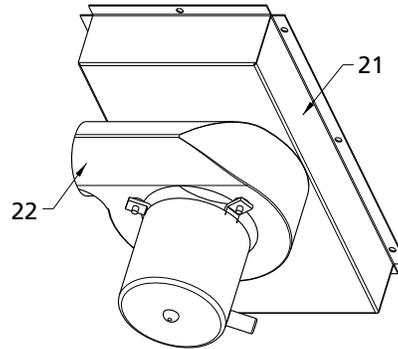


Figure 16 – Power Ventor Assembly
(100/250 Unit Sizes Shown)

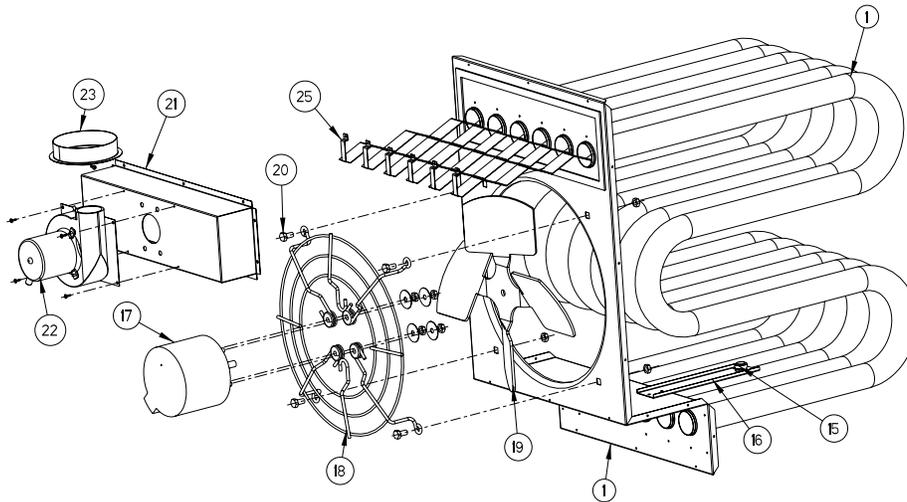


Figure 17 – Turbulator/High Limit Location

Refer to parts list on pages 28 and 29.

ENGLISH

For Repair Parts, call 1-800-GRAINGER

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

IDENTIFICATION OF PARTS PROPELLER UNIT HEATERS

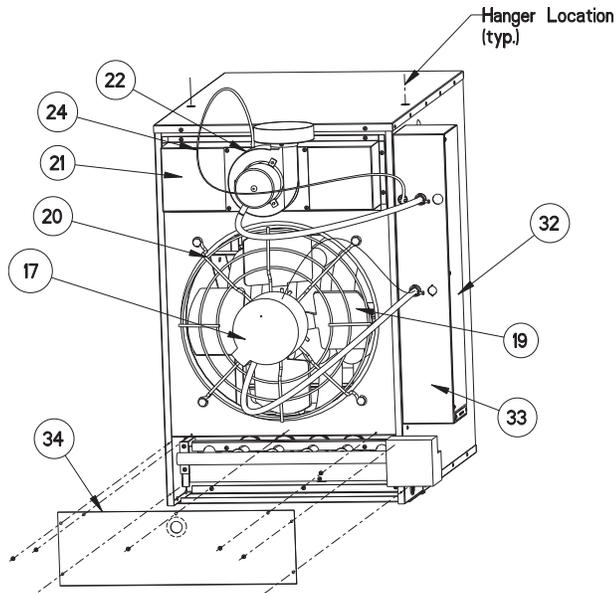


Figure 18 – Component Parts

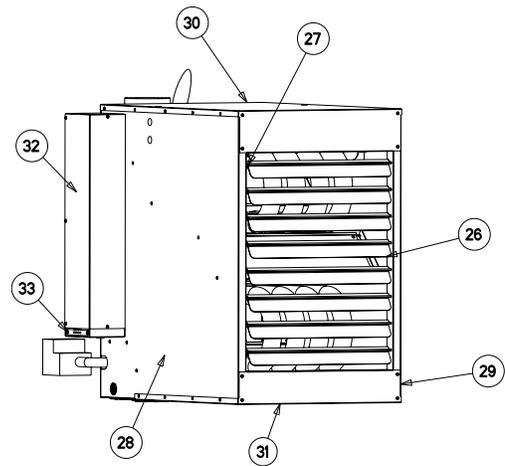


Figure 19 – Cabinet/Louver Parts

E
N
G
L
I
S
H

Refer to parts list on pages 28 and 29.

Repair Parts List (Refer to Figures 12-19)

| Ref. No. | Description | Part Numbers for Model | | | | | | |
|----------|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | | 4LX55 4LX56 | 4LX57 4LX58 | 4LX59 4LX60 | 4LX61 4LX62 | 4LX63 4LX64 | 4LX65 4LX66 | 4LX67 4LX68 |
| 17 | Fan motor (qty. req'd per model) | 11J31R04093-002 (1) | 11J31R04094-002 (1) | 11J31R04094-002 (1) | 11J31R04094-002 (1) | 11J31R04093-002 (2) | 11J31R04094-002 (2) | 11J31R04094-002 (2) |
| 18 | Standard fan guard (qty. req'd per model) | 11J253R01873-001 (1) | 11J253R01874-001 (1) | 11J253R01874-001 (1) | 11J253R01874-001 (1) | 11J253R01873-001 (2) | 11J253R01874-001 (2) | 11J253R01874-001 (2) |
| 18 | OSHA fan guard (qty. req'd per model) | 11J32R04840 (1) | 11J32R04843 (1) | 11J32R04843 (1) | 11J32R04843 (1) | 11J32R04840 (2) | 11J32R04843 (2) | 11J32R04843 (2) |
| 19 | Standard fan (qty. req'd per model) | 11J34R06999-104 (1) | 11J34R06999-112 (1) | 11J34R06999-112 (1) | 11J34R06999-112 (1) | 11J34R06999-104 (2) | 11J34R06999-105 (2) | 11J34R06999-112 (2) |
| 20 | Fan guard/motor mount hardware kit (qty. req'd per model) | 11J261R04963-002 (1) | 11J261R04963-002 (1) | 11J261R04963-002 (1) | 11J261R04963-002 (1) | 11J261R04963-002 (2) | 11J261R04963-002 (2) | 11J261R04963-002 (2) |
| 21 | *** Flue collector | 11507R03918-006 | 11507R03920-007 | 11507R03920-008 | 11507R03920-010 | 11507R03922-012 | 11507R03922-014 | 11507R03922-016 |
| 22 | Power ventor (draft) ass'y | 11J35R04700 | 11J35R04581 | 11J35R04581 | 11J35R04581 | 11507R04595 | 11507R04595 | 11507R04595 |
| 23 | Flue collar assembly | 11J257R05062 | 11507R04532 | 11507R04532 | 11507R04532 | 11507R04600 | 11507R04600 | 11507R04600 |
| 24 | Vinyl tubing (pressure switch) | 11J261R04964-002 | 11J261R04964-003 | 11J261R04964-003 | 11J261R04964-003 | 11J261R04964-004 | 11J261R04964-004 | 11J261R04964-004 |
| 25 | Turbulator | 11501R03893 |
| 26 | Louver (8 req'd per model) | 11J257R04587-008 | 11J257R04587-009 | 11J257R04587-009 | 11J257R04587-009 | 11J257R04587-010 | 11J257R04587-010 | 11J257R04587-010 |
| 27 | Louver spring (8 req'd per model) | 11J26R01960 |
| 28 | Right side jacket panel with insulation | 11J261R04966 |
| 29 | Left side jacket panel with insulation | 11J261R04967 |
| 30 | Top jacket panel with insulation | 11J261R04968-004 | 11J261R04968-007 | 11J261R04968-007 | 11J261R04968-007 | 11J261R04968-012 | 11J261R04968-012 | 11J261R04968-012 |
| 31 | Bottom jacket panel with insulation | 11J261R04969-004 | 11J261R04969-007 | 11J261R04969-007 | 11J261R04969-007 | 11J261R04969-012 | 11J261R04969-012 | 11J261R04969-012 |
| 32 | Electrical control box cover | 11J257R03888 |
| 33 | Electrical control box base (wrapper) | 11J257R03889 |
| 34 | Peep hole burner cover ass'y | 11J261R05411-004 | 11J261R05411-007 | 11J261R05411-007 | 11J261R05411-007 | 11J261R05411-012 | 11J261R05411-012 | 11J261R05411-012 |
| 35 | Ground screw | 11J21R01287 |
| 36 | Washer | 11J24R00326-005 |
| 37 | Molex Connector Ass'y | 11J11R06887-001 |
| N/S | Ignition Cable (36") | 11J28R06971-002 |

(* The orifices shown are for units operating at normal altitudes of 0 to 2000 ft. (610 m). See Orifice Schedule, Table 6 on page 18 for proper usages/hi-altitudes usages, Table 7, p.19.
(***) When replacing a flue collector, make sure that the flue collector box is sealed completely to the vestibule panel using RTV Sealant.
(N/S) Part not shown.

Models 4LX55 thru 4LX68

Maintenance

PERIODIC SERVICE

NOTE: The heater and vent system should be checked once a year by a qualified technician.

All Maintenance/Service information should be recorded accordingly on the Inspection Sheet provided in this manual.

⚠ WARNING *Open all disconnect switches and disconnect all electrical and gas supplies and secure in that position before servicing unit. Failure to do so may result in personal injury or death from electrical shock.*

⚠ WARNING *Gas tightness of the safety shut-off valves must be checked on at least an annual basis. Failure to do so may result in death, serious injury, or substantial property damage.*

To check gas tightness of the safety shut-off valves, turn off the manual valve upstream of the appliance combination control. Remove the 1/8 inch pipe plug on the inlet side of the combination control and connect a manometer to that tapping. Turn the manual valve on to apply pressure to the combination control. Note the pressure reading on the manometer, then turn the valve off. A loss of pressure indicates a leak. If a leak is detected, use a soap solution to check all threaded connections. If no leak is found, combination control is faulty and must be replaced before putting appliance back in service.

Should maintenance be required, perform the following inspection and service routine:

1. Inspect the area near the unit to be sure that there is no combustible material located within the minimum clearance requirements listed in this manual.

⚠ WARNING *Under no circumstances should combustible material be located within the clearances specified in this manual. Failure to provide proper clearance could result in personal injury or equipment damage from fire.*

2. Turn off the manual gas valve and electrical power to the unit heater.
3. To clean or replace the main burners, remove burner cover. Remove top strip from above main burners. Lift burners up and pull away from manifold to remove.
4. With the burners removed, wire brush the inside surfaces of the heat exchanger.
5. Remove any dirt, dust, or other foreign matter from the burners using a wire brush and/or compressed air. Ensure that all parts are unobstructed. Inspect and clean the pilot burner if necessary.
6. Reassemble the unit heater by replacing all parts in reverse order.
7. Relight the pilot (see lighting instruction on the unit nameplate). Complete the appropriate unit startup procedure as given in the "Operation" section of this manual.

8. Check the burner adjustment.
9. Check all gas control valves and pipe connections for leaks.
10. Check the operation of the automatic gas valve by lowering the setting of the thermostat, stopping the operation of the gas duct furnace. The gas valve should close tightly, completely extinguishing the flame on the main burners.
11. Inspect and service motor/fan assembly. To maintain efficient air flow, inspect and clean the fan blades and guard to prevent buildup of foreign matter.
12. Check motor lubrication. If oiling is required, add 1 or 2 drops of electric motor oil as follows:
 - a. Light Duty – After 3 years or 25,000 hours of operation.
 - b. Average Duty – Annually after 3 years or 8,000 hours of operation.
 - c. Heavy Duty – Annually after 1 year or at least 1500 hours of operation.

⚠ CAUTION *Never over oil the motor or premature failure may occur! Over oiling the motor may result in minor injury or property damage.*

13. Check and test the operational functions of all safety devices supplied with your unit.

Dayton® Tubular Gas Fired Direct Spark Propeller Unit Heaters

DAYTON ONE-YEAR LIMITED WARRANTY

DAYTON ONE-YEAR LIMITED WARRANTY. All Dayton® product 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. If the Dayton product is part of a set, only the portion that is defective is subject to this warranty. Any product or part which is determined to be defective in material or workmanship and returned to an authorized service location, as Dayton or Dayton's designee designates, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced with a new or reconditioned product or part of equal utility or a full refund given, at Dayton's or Dayton's designee's option, at no charge. For limited warranty claim procedures, see "Warranty Service" below. This warranty is void if there is evidence of misuse, mis-repair, mis-installation, abuse or alteration. This warranty does not cover normal wear and tear of Dayton products or portions of them, or products or portions of them which are consumable in normal use. This limited warranty gives purchasers specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction.

WARRANTY DISCLAIMERS AND LIMITATIONS OF LIABILITY RELATING TO ALL CUSTOMERS FOR ALL PRODUCTS

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. A DILIGENT EFFORT HAS BEEN MADE TO PROVIDE PRODUCT INFORMATION AND ILLUSTRATE THE PRODUCTS 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 THE "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 ATTEMPTS ARE MADE TO ASSURE THAT DAYTON PRODUCTS COMPLY WITH SUCH CODES, DAYTON CANNOT GUARANTEE COMPLIANCE, AND CANNOT BE RESPONSIBLE FOR HOW THE PRODUCT IS INSTALLED OR USED. BEFORE PURCHASE AND USE OF A PRODUCT, REVIEW THE SAFETY/SPECIFICATIONS, AND ALL APPLICABLE NATIONAL AND LOCAL CODES AND REGULATIONS, AND BE SURE THAT THE PRODUCT, INSTALLATION, AND USE WILL COMPLY WITH THEM.

CONSUMERS ONLY. CERTAIN ASPECTS OF DISCLAIMERS ARE NOT APPLICABLE TO CONSUMER PRODUCTS SOLD TO CONSUMERS; (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 A LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU; AND (C) BY LAW, DURING THE PERIOD OF THIS LIMITED WARRANTY, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO CONSUMER PRODUCTS PURCHASED BY CONSUMERS, MAY NOT BE EXCLUDED OR OTHERWISE DISCLAIMED.

THIS LIMITED WARRANTY ONLY APPLIES TO UNITED STATES PURCHASERS FOR DELIVERY IN THE UNITED STATES.

WARRANTY SERVICE

To obtain warranty service if you purchased the covered product directly from W.W. Grainger, Inc. ("Grainger"), (i) write or call or visit the local Grainger branch from which the product was purchased or another Grainger branch near you (see www.grainger.com for a listing of Grainger branches); or (ii) contact Grainger by going to www.grainger.com and clicking on the "Contact Us" link at the top of the page, then clicking on the "Email us" link; or (iii) call Customer Care (toll free) at 1-888-361-8649. To obtain warranty service if you purchased the covered product from another distributor or retailer, (i) go to www.grainger.com for Warranty Service; (ii) write or call or visit a Grainger branch near you; or (iii) call Customer Care (toll free) at 1-888-361-8649. In any case, you will need to provide, to the extent available, the purchase date, the original invoice number, the stock number, a description of the defect, and anything else specified in this Dayton One-Year Limited Warranty. You may be required to send the product in for inspection at your cost. You can follow up on the progress of inspections and corrections in the same ways. Title and risk of loss pass to buyer on delivery to common carrier, so if product was damaged in transit to you, file claim with carrier, not retailer, Grainger or Dayton. For warranty information for purchasers and/or delivery outside the United States, please use the following applicable contact information:

Dayton Electric Mfg. Co.,
100 Grainger Parkway, Lake Forest, IL 60045 U.S.A.
or call +1-888-361-8649

GAS EQUIPMENT START-UP

Customer _____ Job Name & Number _____

PRE-INSPECTION INFORMATION With power and gas off.

Type of Equipment: Unit Heater

Serial Number _____ Model Number _____

Name Plate Voltage: _____ Name Plate Amperage: _____

Type of Gas: Natural LP Tank Capacity _____ lbs. Rating: _____ BTU @ _____ °F
_____ kg _____ kw @ _____ °C

- Are all panels, doors, vent caps in place?
- Has the unit suffered any external damage? Damage _____
- Does the gas piping and electric wiring appear to be installed in a professional manner?
- Has the gas and electric been inspected by the local authority having jurisdiction?
- Is the gas supply properly sized for the equipment?
- Were the installation instructions followed when the equipment was installed?
- Have all field installed controls been installed?
- Do you understand all the controls on this equipment? ***If not, contact your wholesaler or rep. (DO NOT START this equipment unless you fully understand the controls.)***

GENERAL

With power and gas off.

- Make certain all packing has been removed.
- Tighten all electrical terminals and connections.
- Check all fans & blowers for free movement.
- Check all controls for proper settings.

FAN

With power on and gas off.

- Check voltage L1 _____ L2 _____ L3 _____
- Check rotation of main propeller(s).
- Check motor amps L1 _____ L2 _____ L3 _____

GAS HEATING

With power and gas on.

- Inlet gas pressure. _____ inch WC or _____ kPa
- Burner ignition.
- Manifold gas pressure. _____ inch WC or _____ kPa
- Cycle firestat and/or freezestat.
- Check electronic modulation. Set at: _____
- Cycle and check all other controls not listed.
- Check operation of remote panel.
- Entering air temp. _____ °F or _____ °C
- Discharge air temp. (high fire) _____ °F or _____ °C
- External static pressure _____ inch WC
- Cycle by thermostat or operating control.
- Combustion Reading:
 - Carbon Monoxide: _____ PPM.
 - Carbon Dioxide: _____ %

Remarks: _____

ENGLISH