



Specifications, Installation, Operation Service and Spare Parts Manual **PH-Series PATIO HEATER**



Gas Fired Outdoor Infrared Patio Heater/*Gas-Fired Infrared Patio Heater*
Vented Radiant Tube Heater/ *L'Appareil de chauffage de Tube Rayonnant donné vent*
Gravity Vented Wall Furnace/ *La gravité A Donné vent Fournaise de Mur*

MODELS PH40, 50 & 75 ONLY: For either indoor or outdoor installation/Installer à l'intérieur ou à l'extérieur
For Industrial, Commercial, and Residential Patio and Restaurant Applications.

**⚠ WARNING: MODELS PH-40HO & PH-75HO
For Outdoor Use Only**

⚠ WARNING: Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read (refer to) the installation operating and maintenance instructions thoroughly before installing or servicing this equipment. For assistance or additional information consult a qualified installer, service agency or the gas supplier.

⚠ WARNING: If the information in these instructions are not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

-Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

⚠ DANGER: WHAT TO DO IF YOU SMELL GAS:

- 1) Extinguish any open flame
- 2) DO NOT try to light any appliance.
- 3) DO NOT use or touch any electrical switches.
- 4) DO NOT use any phone in your building
- 5) Turn off gas.
- 6) Open Windows
- 7) Leave the building
- 8) Immediately call your gas supplier from a neighbour's phone or after you have left the building. Follow the gas supplier's instructions.
- 9) If you cannot reach your gas supplier, call the fire department.

- Installation and service must be performed by a qualified installer, service agency or the gas supplier

⚠ ADVERTISSEMENT. L'installation déplacée, l'ajustement, le changement, le service ou l'entretien peuvent causer les dommages de propriété, la blessure ou la mort. Lire (se référer à) l'installation qui fonctionne et les instructions d'entretien à fond avant d'installer ou entretenir cet équipement. Pour obtenir de l'aide ou les informations supplémentaires consultez un programme d'installation, une agence de service ou le fournisseur de gaz qualifié.

⚠ ADVERTISSEMENT: Assurez-vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risqué d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

- Ne pas entreposer ni utiliser d'essence ni d'autres vapeurs ou liquids inflammables a proximité de cet appateil ou de tout autre appareil.

⚠ DANGER: QUE FAIRE SI VOUV SENTEZ UNE ODEUR DE GAZ:

- 1) Eteindre la flamme ouverte
- 2) Ne pas tenter d'allumer d'appareils
- 3) Ne touchez á aucun interrupteur.
- 4) Ne pas vous server des telephones dans le bâtiment où vous vous trouvez.
- 5) le Virage du gaz.
- 6) Ouvrir Windows
- 7) Part le bâtiment
- 8) Appelez immédiatement votre fournisseur de gaz depuis un voisin ou après que vous êtes parti le bâtiment. Suivez les instructions du fournisseur.
- 9) Si vous ne pouvez rejoindre le service des incendies.

- L'installation et l'entretien doivent être assures par un installateur ou un service d'entretien qualifié ou par fournisseur de gaz.

⚠ WARNING: Heat exchanger surface is hot. Do not touch surface or burn may result. Combustible material or articles should not be placed on or near heater. Observe clearance to combustibles as noted on heater and in this manual.

INSTALLER: Leave this manual with the appliance.

CONSUMER: Retain this manual for future reference.

INSATLLATEUR: Laissez cette notice avec l'appareil.

CONSOMMATEUR: Conservez cette notice our consultation ultérieure.

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Thank you for purchasing our product. We have designed this unit to provide you with years of trouble free heating enjoyment.

READ THIS MANUAL IN ITS ENTIRETY! If you do not understand any of the safety or hazardous warnings contained in this manual, or have questions or concerns about the installation, operation, maintenance or service of this heater, or any other questions or concerns relating to this heater, you **MUST CALL THE FACTORY** at the telephone number noted on the front cover of this manual or as detailed on the rating plate on the heater before operating this heater. Store this manual in a location near the heater, for future reference. Make sure installation is performed by well-qualified, licensed contractors in the required field of work. If in doubt, DO NOT allow unit to be installed. DO NOT park vehicles or place combustible objects close to the heater other than specified on the Clearance to Combustible chart located in this manual and on the heater. Failure to observe the clearance to combustibles can result in property damage, injury or death.

IMPORTANT NOTICE: The installation portion of these instructions are for the use of qualified individuals specially trained, licensed and experienced in the installation of this type of equipment and related system components.

NOTE: - The words "shall" or "must", indicate a requirement, which is essential to satisfactory and safe performance.

⚠ GENERAL HAZARD WARNING: The heater and related gas piping, fitting & wiring must be installed by individuals or firms qualified, licensed and specially trained and experienced in installation of this type of equipment and related system components. Only persons who can understand and follow the instructions shall install or service this heater. Persons not qualified shall not install this equipment nor interpret these instructions. 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 or electrical shock.

⚠ WARNING: Installation and repair should be done by a qualified service person. The heater should be inspected before use and at least annually by a qualified service person and prior to heating season. Heaters used in dusty locations such as brooder barns, sawmills, woodworking shops, etc. will require more maintenance on a more regular basis and more frequent cleaning may be required as necessary. It is imperative that the control compartments, burner(s) and circulating air passageways of the appliance be kept clean. Periodic examination of the venting system is to be performed. No one should work on a heater unless they are a licensed/qualified gas fitter or contractor. For all repairs, parts **MUST** originate from the manufacturer of this heater in order not to void CGA/AGA certification. Safety devices are not allowed to be rendered inoperative and left unattended as this action can cause property damage, injury or death. Failure to do so will void your warranty.

**WARNING:**

Improper installation, adjustment, alteration, servicing or maintenance can cause property damage, injury or death.

**WARNING:**

Children and adults should be alerted to the hazards of high surface temperatures and should stay away to avoid burns or clothing ignition.

Young children should be carefully supervised when they are in the same place as the heater.

Clothing or other flammable materials should not be hung from the heater, or places on or near the heater.

Any guard or other protective device removed for servicing a heater must be replaced prior to operating the heater.

**WARNING:**

MODELS PH-40HO and PH-75HO ONLY: These appliance shall be used only outdoors in a well-ventilated space and shall not be used in a building, garage or any other enclosed area.

**WARNING****California Proposition 65**

If not installed, operated and maintained in accordance with manufacturer's instructions. This product could expose you to substances in the fuel or from combustion which can cause death or series illness and which are known to the State of California to cause cancer, birth defects or reproductive harm.

Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

Ne pas se servir de cet appareil s'il a été plonge dans l'eau, complètement ou en partie. Faire inspecter l'appareil par un technicien qualifié et remplacer toute partie du système de control et toute commande qui ont été plongée dans l'eau.

⚠ WARNING: SEE PAGE 15A FOR VENTILATION REQUIREMENTS FOR THIS HEATER. MAKE SURE YOU HAVE THE CORRECT MODEL FOR THE INTENDED APPLICATION. IF IN DOUBT CONTACT THE FACTORY FOR DETAILS PRIOR TO INSTALLATION OR OPERATION.

**WARNING:****FIRE OR EXPLOSION HAZARD**

The heater and related gas piping and wiring must be installed only by individuals or firms well qualified and licensed in the required field of work.

Read and understand this manual in its entirety BEFORE you install this heater. If you have any questions call your local representative. Verify that the fuel on the installation site is the same as what is required for this heater. Check heater for damage or missing parts. If damage has occurred, notify carrier or point of purchase at once for reconciliation of damaged goods. We are not responsible for transit damage. Do not install if heater is damaged.

If you do not understand any of the safety or hazardous warnings contained in this manual, or have questions or concerns about the installation, operation, maintenance or service of this heater, or any other questions or concerns relating to this heater, you MUST CALL THE MANUFACTURER at the telephone number noted on the front cover of this manual or as detailed on the rating plate on the heater before operating this heater.

Verify that model, input & length is what was ordered and is appropriate for installation. This appliance shall be use only outdoors in a well ventilated space and shall not be used in a building, garage, or any other enclosed area.

Installation shall be in accordance with local codes. (see code compliance).

If installation requires tilting, DO NOT over tilt the unit. Units are certified for installations up to 25°.

Install unit according to the Clearance to Combustibles for that particular heater and type of installation. Make sure that clearances are maintained from vehicles parked or combustibles below or in front of heater. Failure to do so could result in property damage, injury or death.

Make sure unit is adequately suspended from ceiling or roof. Select hanging location that has adequate strength to support heater.

Adequate clearance around air openings into the combustion chamber, clearance from combustible material, provisions for accessibility and for combustion and ventilation air supply.

Do not render safety devices inoperable. Make sure gas line and/or service have adequate capacity for the increased load of heater.

Check line and manifold pressure with a manometer to confirm unit is set according to the specification on the rating plate and altitude. Perform check with all gas-fired appliances operating. (see pages 24, 25, 26 & 27 for further details).

Provide adequate accessibility clearances for servicing.

Leave copy of this manual with owner (or a copy) for future reference.

This heater needs fresh air for safe operation and must be installed so there are provisions for adequate combustion and ventilation air. If in a confined space make sure model of heater can be installed and attached to either a sidewall or roof vent. Models PH-40, 50 & 75 can be installed in this fashion.

The PH-40, 50 & 75 heaters must not be connected to a chimney flue serving a separate solid-fuel burning appliance. These models, in a space heating application, must only be installed with the venting that they are certified for. Refer to the installation instructions for installation details. If you are installing a PH-40, 50 or 75 unit indoors it will need to be vented either with a sidewall vent kit, (use pin #800208 sidewall vent kit) or via a certified "B" vent system through the roof. For side wall applications, make sure vent cap is past eave. (see pages titled 'Venting'). **PH-40HO & PH-75HO units are for outdoor applications only.**

Continued on page 4



WARNING

FIRE OR EXPLOSION HAZARD

Make sure units are operating as quiet and efficient as possible before leaving the job site and instruct owner/s on the safe operation of the heater as well as safety and hazardous issues as they relate to the heater, its installation, operation and this manual.

Leave this manual with the consumer and instruct them to retain the manual for future reference.



WARNING

California Proposition 65

If not installed, operated and maintained in accordance with manufacturer's instructions. This product could expose you to substances in the fuel or from combustion which can cause death or serious illness and which are known to the State of California to cause cancer, birth defects or reproductive harm.

HEATER OPERATION NOTE: PH-40, 50 & 75 Patio Heaters will have a higher heat output at the burner end as compared to the exhaust end.

SPACE HEATING: As a general rule, it is suggested to locate the burner end toward the highest heat-loss area (doors) of the space being heated. If you have any concerns or questions concerning orientation or layout of the heater in your application, contact factory for assistance.

SPOT or OUTDOOR HEATING: On PH-40, 50 & 75 heaters with a straight line configuration, there will be a noticeable and more pronounced perception of greater heat output from the burner end of the heater as compared to the exhaust end. **As a general rule, it is suggested for spot heating applications, to use the PH-40HO or PH-75HO models or a u-tube configuration to provide a more even source of heat; or two units, side by side with the burner heads at opposite ends to promote even heating.** If you have any concerns or questions concerning orientation or layout of the heater in your application, contact factory for assistance.

NOTE: A small amount of condensation may occur from the heater when it starts the heating cycle. The condensation will stop once the heater warms up. On models PH-40, 50 & 75, and if using a venting system, make sure venting is sealed according section titled "Venting".

CODE COMPLIANCE

Installation shall be in accordance with local building codes, or in the absence of local codes, in accordance with:

A) FUEL SUPPLY:

CANADA: *Natural Gas and Propane Installation Code, CSA B149.1* or latest edition.

USA: *National Fuel Gas Code, ANSI Z223.1/NFPA 54*, or latest edition.

B) ELECTRICAL GROUNDING:

CANADA: *Canadian Electrical Code, CSA C22.1* or latest edition.

USA: *National Electrical Code, ANSI/NFPA 70* or latest edition

In Canada: Electrical equipment and wiring shall comply with the applicable provisions of the current *Canadian Electrical Code, CAN/CSA C22.1, Part I and Part II, and CAN/CSA C22.2 No. 3, Electrical features of Fuel Burning Equipment.*

⚠ WARNING: SEE PAGE 15A FOR VENTILATION REQUIREMENTS FOR THIS HEATER. MAKE SURE YOU HAVE THE CORRECT MODEL FOR THE INTENDED APPLICATION. IF IN DOUBT CONTACT THE FACTORY FOR DETAILS PRIOR TO INSTALLATION OR OPERATION.

Rating (Input: Natural and L.P. Gas)

In Canada: 0 – 4500 ft (1372 m) In USA: 2 – 2000' (610m) –De-Rate Above 2000 (See Page 26)

Model	Burner Input		Length
	Min.	Max.	
PH - 40	20,000	40,000	137" (341 cm)
PH – 40 HO	20,000	50,000	64" (163 cm)
PH – 50	25,000	50,000	197" (501 cm)
PH - 75	37,500	75,000	257" (653)
PH – 75 HO	37,500	75,000	124" (315 cm)

Gas Pressure at Manifold:

Natural Gas.....Lo: 1.5 " (3.8 cm) Hi: 3.5" (8.89 cm) W.C.
 L.P. Gas.....Lo: 5.5" (13.97 cm) Hi: 10.5" (26.67 cm) W.C.
 Gas Connection Size.....0.5" (1.27 cm) N.P.T.

Gas Inlet Pressure:

<i>GAS</i>	<i>MINIMUM</i>	<i>MAXIMUM</i>
Natural	4.5" (11.43 cm) W.C.	14.0" (35.56 cm) W.C.
L.P.	11.5" (29.21 cm) W.C.	14.0" (35.56 cm) W.C.

FOR MODELS PH-40, 50, & 75 ONLY: Vent Connection is 3" (7.62 cm)

Electrical Rating:

DSI Ignition
 120v. 60hz, 1 Amps
 24 volt low voltage control

Standard Equipment:

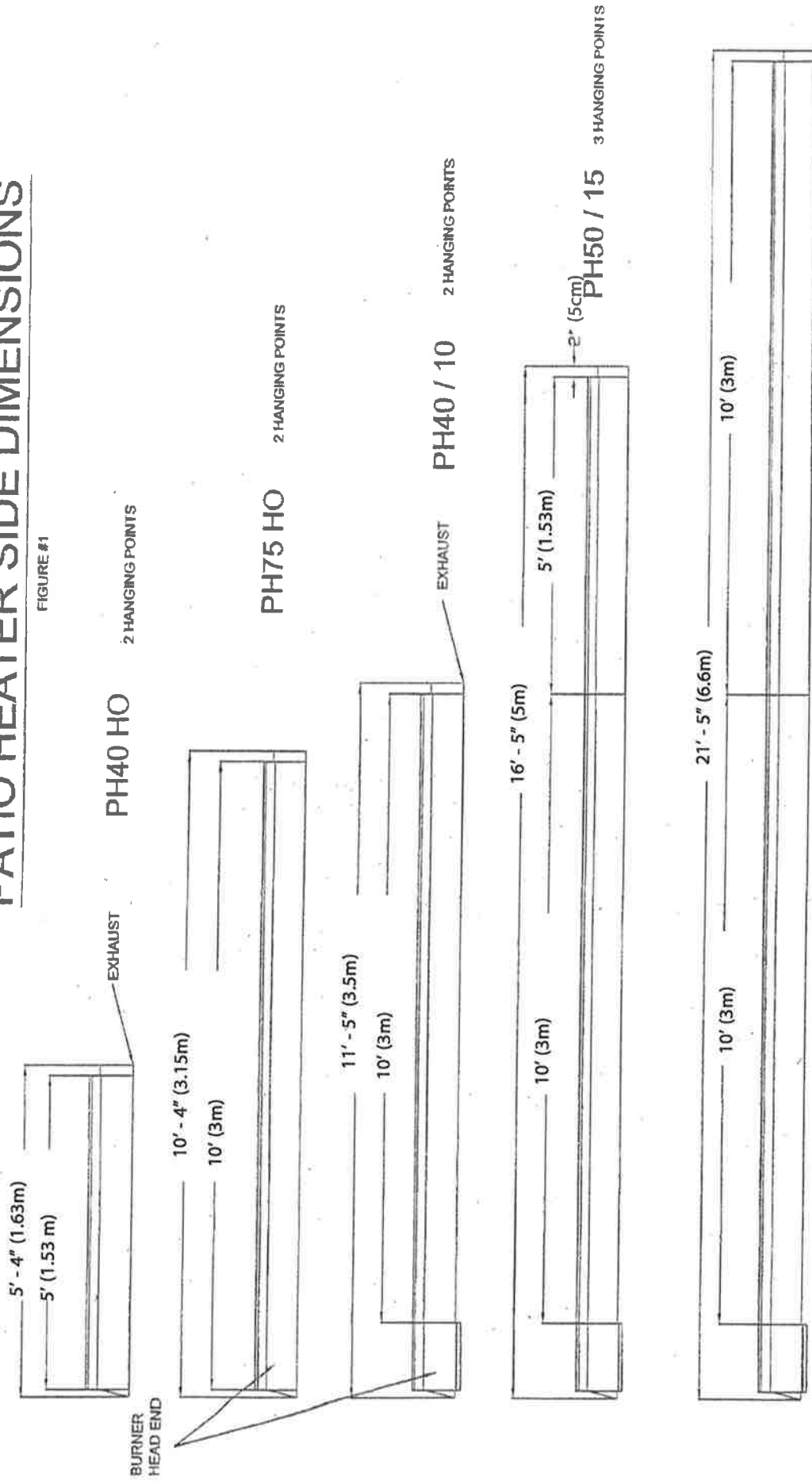
Burner control housing is preassembled and prewired, unit comes complete with the following: industry standard gas and electrical connections, balanced air rotor, thermal overload protected motor, visual burner inspection sight glass, combustion and air proving safety switches, 3-try spark ignition control, low voltage control connection, aluminized heat-treated steel combustion tube, polished aluminum standard reflector, aluminized steel radiant heat exchanger, tube couplers, joint/hanger pieces, heat economizer baffle, wave concentrator, grille, variable input control and remote control panel.

Optional Equipment:

- 90° Elbow Kit (PH-50, 75 Only)
- 180° U-Bend Kit (PH-50, 75 Only)
- Stainless Steel Construction
- 24 Volt Input
- Hanging Brackets

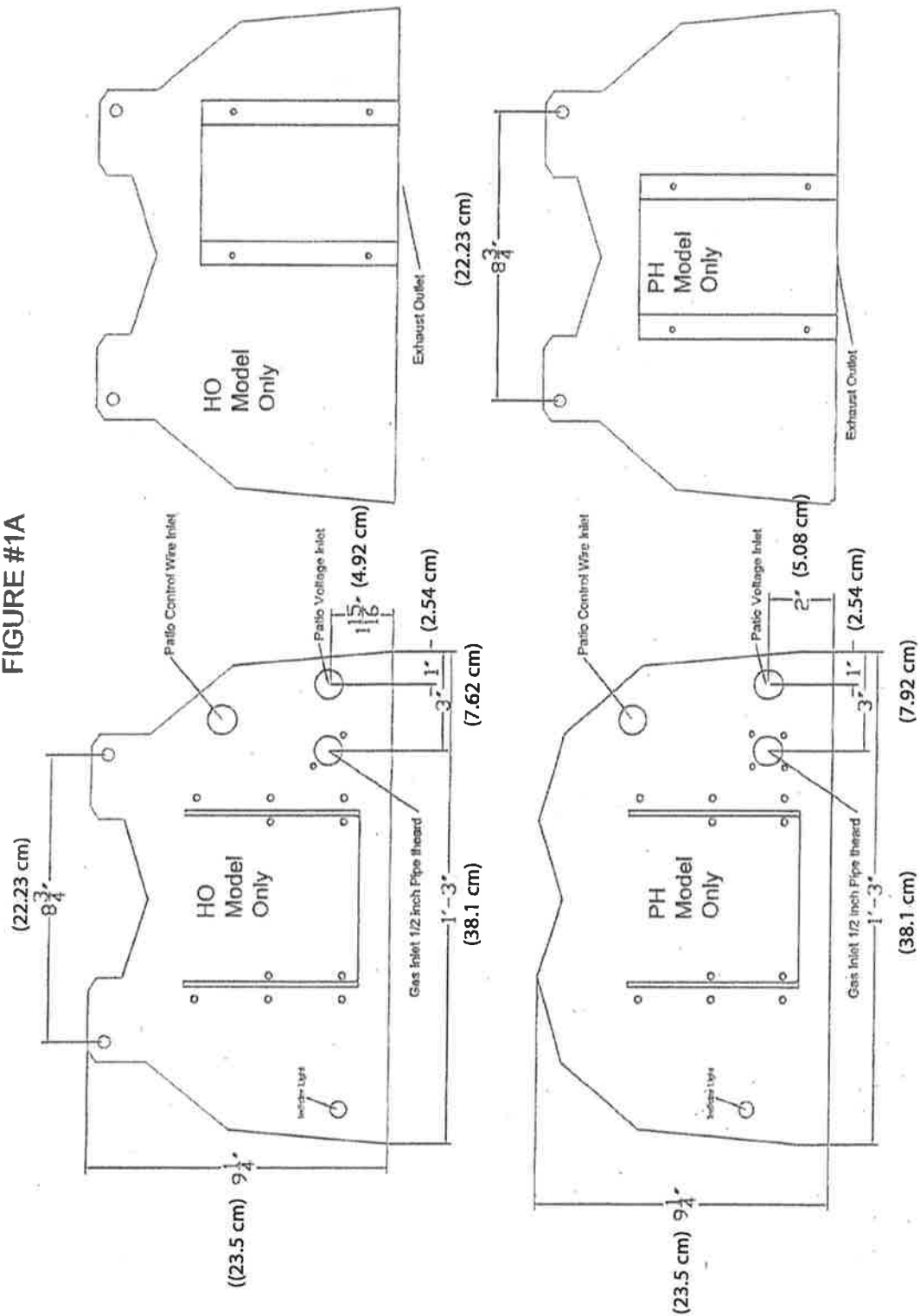
PATIO HEATER SIDE DIMENSIONS

FIGURE #1



PATIO HEATER END PROFILES

FIGURE #1A



INSTALLATION CLEARANCES AND CLEARANCE TO COMBUSTIBLES

Installation of overhead heaters in garages or hangars MUST meet the requirements for bottom (below) clearances detailed in CANADA: *Natural Gas and Propane Installation Code, CSA B149.1* or latest edition or USA: *National Fuel Gas Code, ANSI Z223.1/NFPA 54*, or latest edition.

Minimum mounting height from ground or floor to bottom portion of tube is 78" (199 cm)

⚠ WARNING: In all situations, clearance to combustibles must be maintained. Minimum clearance from heater must be maintained from vehicles parked below heater. The posting of signs may be required in storage areas referring to clearance to combustibles to the heater and/or limiting the stacking height of stored items near the heater specifying a maximum height. Clearances are not for use in four (4) sided enclosures. Certain materials or items, when stored under the heater, will be subjected to radiant heat and could be seriously damaged.

For Models PH-40, 50 & 75, when used indoors and vented accordingly, the stated clearance to combustibles represents a surface temperature of 90°F (32°C) above room temperature. Building material with low heat tolerance (such as plastics, vinyl siding, canvas, tri-ply, etc) may be subject to degradation at lower temperatures. It is the installer's responsibility to assure that adjacent materials are protected from degradation.

END CLEARANCES (Burner Head End)

Minimum clearances from air intake end of burner head to object is 5" (12.7 cm).

Provide adequate accessibility clearances for servicing and proper operation.

Do not install unit in such a manner that the combustion air entering the heater is reduced in any manner.

(EXHAUST END)
ALL MODELS
OUTDOOR APPLICATIONS ONLY

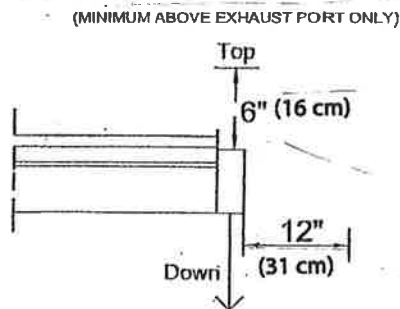
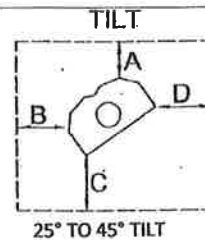
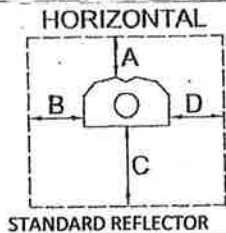
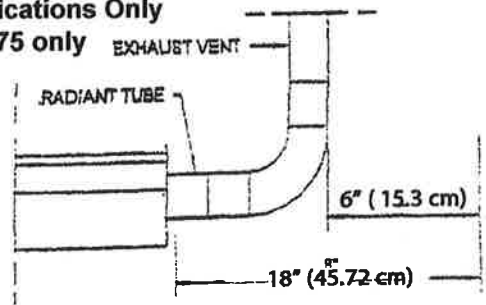


FIGURE #4
END CLEARANCE

EXHAUST END:
Vented Applications Only
PH-40, 50 & 75 only



INSTALLATION TYPE 1				
INPUT	A	B	C	D
40	4" (10.2 cm)	12" (31 cm)	34" (87 cm)	12" (31 cm)
50	4" (10.2 cm)	12" (31 cm)	41" (105 cm)	12" (31 cm)
75	4" (10.2 cm)	15" (32 cm)	46" (117 cm)	15" (32 cm)
40HO	8" (21 cm)	17" (44 cm)	41" (105 cm)	17" (44 cm)
75HO	6" (15.3cm)	12" (31 cm)	42" (107 cm)	12" (31 cm)

INSTALLATION TYPE 1				
INPUT	A	B	C	D
40	4" (10.2 cm)	4" (10.2 cm)	31" (79 cm)	28" (72 cm)
50	4" (10.2 cm)	4" (10.2 cm)	35" (89 cm)	28" (72 cm)
75	4" (10.2 cm)	4" (10.2 cm)	40" (102 cm)	31" (79 cm)
40HO	8" (21 cm)	4" (10.2 cm)	28" (72 cm)	25" (64 cm)
75HO	6" (15.3cm)	4" (10.2 cm)	31" (79 cm)	22" (56 cm)

PRE-INSTALLATION INSPECTION:

Inspect the shipping container and heater for any evidence of shipping damage. If heater damage is found, notify freight carrier and file a claim.



WARNING

If heater is damaged, DO NOT install.

Check that all parts and pieces are present and accounted for. Report any missing items to carrier or point of purchase at once.

Check that overall general appearance, source of fuel required and model numbers match unit requested. Report any discrepancy to carrier or point of purchase at once.

THOROUGHLY INSPECT THE EQUIPMENT IMMEDIATELY UPON ARRIVAL

OUR RESPONSIBILITY FOR THIS SHIPMENT CEASED WHEN THE CARRIER SIGNED THE WAYBILL.

If goods are received short or in damage condition, it is important that you notify the carrier and insist on a notation of the loss or damage across the face of the freight bill, otherwise no claim can be enforced against the transportation company.

If concealed loss or damage is discovered, notify your carrier at once and request an inspection. This is absolutely necessary. A concealed damage report must be made within 15-days of delivery of shipment. Unless you do this the carrier will not entertain any claim for loss or damage. The Agent will make an inspection and grant a concealed damage notation. If you give the Transportation Company a clear receipt for goods that have been damaged or lost in transit, you do so at your own risk and expense.

WE ARE WILLING TO ASSIST YOU IN EVERY POSSIBLE MANNER TO COLLECT CLAIMS FOR LOSS OR DAMAGE, BUT THIS WILLINGNESS ON OUR PART DOES NOT MAKE US RESPONSIBLE FOR COLLECTION OF CLAIMS OR REPLACEMENT OF MATERIAL. THE ACTUAL FILING AND PROCESSING OF THE CLAIM IS YOUR RESPONSIBILITY.

WE ARE NOT RESPONSIBLE FOR FREIGHT DAMAGED IN TRANSIT!

**IF CONTENTS ARE DAMAGED,
EVEN THOUGH CARTON DOES NOT LOOK DAMAGED:**

- A. MAKE CLAIM TO DELIVERY CARRIER AT ONCE**
- B. SAVE CARTONS FOR INSPECTION BY CARRIER**

INSTALLATION:

Provide for adequate clearance around air openings into the combustion chamber, clearances from combustible material, provisions for accessibility and for combustion and ventilating air supply.

PLANNING:

- Familiarize yourself with the equipment and any accessories that you may require.
- Locate the area where unit is to be installed
- Locate area where any holes might have to be cut for:
 - a) Electrical and control wire.
 - b) Any gas piping requirements
 - c) Venting (PH-40, 50 or 75 only)
- Make sure that there is no obstruction such as hidden electrical wiring, water lines etc... in the areas of concern.
- Locate the control (All Models) and thermostat (PH-40, 50 or 75 models indoors only) location.



WARNING

Observe minimum clearance to combustibles. REFER TO PAGE 7.

FOR 120 VOLT SYSTEM INSTALLATION

- Locate a grounded, adequate electrical source.
- Measure required amount of various materials required to do the installation, and have these materials on site in an organized manner prior to commencement.

WARNING NOTES FOR INSTALLATION AND SUSPENSION OF THE OVERHEAD HEATER

⚠ WARNING: If the installer is to install the heater via hanging chains, it is the responsibility of the installer to use hanging chain that has a minimum support capacity of no less than 100 lbs. Also make sure all suspension points are adequate to support weight of heater and any accessories. Also make sure all S-Hooks are affixed properly and the open ends squeezed closed. If the suspension system fails, it is the responsibility of the installer.

If utilizing installation brackets or another means of suspension is used, make sure all brackets and fasteners have sufficient load bearing capacity to satisfy the local codes as well as the extra load that may be placed upon the heater and suspension methods encountered during windy conditions.

A FAILED SUSPENSION SYSTEM CAN CAUSE PROPERTY DAMAGE, SEVERE INJURY AND/OR DEATH. THE INSTALLER TAKES FULL RESPONSIBILITY AND LIABILITY FOR THE CORRECT AND ADEQUATE METHOD OF INSTALLATION AND SUSPENSION OF THE HEATER FOR THE CONDITIONS AND/OR LOCATION THAT IT IS TO BE INSTALLED AT. THE SUSPENSION DETAILS IN THIS MANUAL ARE SUGGESTIONS ONLY. IF IN DOUBT AS TO THE CORRECT METHODS TO INSTALL THIS HEATER FOR YOUR LOCAL CODES AND CONDITIONS, DO NOT INSTALL THE HEATER. CONTACT LOCAL BUILDING OFFICIALS FOR FURTHER INFORMATION.

⚠ WARNING: SEE PAGE 15A FOR VENTILATION REQUIREMENTS FOR THIS HEATER. MAKE SURE YOU HAVE THE CORRECT MODEL FOR THE INTENDED APPLICATION. IF IN DOUBT CONTACT THE FACTORY FOR DETAILS PRIOR TO INSTALLATION OR OPERATION.

Refer to figures on page 11 to 15.

Note if unit is to be installed on a 25 degree tilt refer to page 11 for this type of installation.

1. Measure and locate holes to be drilled for mounting brackets into overhead beams or support. The PH-40, PH-40 HO and PH-75 HO have two (2) mounting locations, one at each end. The PH-50 & 75 have a third located in the center of the unit.
2. **FOR RIDGID INSTALLATION: READ WARNING ON PAGE 9 FIRST.**
When installing fasteners such as bolts, inserts, threaded rod, etc, it is suggested that the fastener(s) are no less than 3/8 inch (.9525 cm) in diameter (two (2) per hanging point) and must penetrate and be secured in the overhead material in such a way that the unit will not be dislodged from the mounting location during normal use and operation, including wind load. This is the responsibility of the installing contractor and if in doubt, they shall contact the manufacturer of the fastener chosen to verify its use.
(See WARNING on page 9)
3. Lift and support preassembled unit in a safe manner, and locate where heater is to be installed. Install fasteners through hanging brackets (optional) into the mounting material (beam, support etc.). Then attach heater to the brackets. PH-40, 40 HO & 75 HO are now mounted. In the case of the PH-50 & 75, the last section will have to be installed to the mounted, preassembled, first 10'. (see item #5)
4. **CHAIN INSTALLATION: DO NOT USE IN WINDY CONDITIONS - READ WARNING ON PAGE 9 FIRST.**
Adequately secure hanging chains as mentioned in the above item #2. Drop chains to desired elevation and attach heater to them utilizing two lengths per hanging point.
5. PH-50 & 75: Unassembled parts. Secure end cap to one end of the reflector by overlapping reflector onto end cap 3/4 inch, (1.905 cm) (see page 13) and secure via self tapping screws.
6. Attach the reflector assembly to the 10' (3m) section already mounted by overlapping the opposite reflector end onto the hanger assembly by 3/4 inch. (1.905 cm). Secure hanger on end cap end via fasteners into the previously drilled holes located in the beam, support etc. Secure opposite end of reflector to hanger via self tapping screws.
7. Install radiant tube by positioning three (3) inch (7.62 cm) end into end cap from below, and butting the other end to the previously installed section. Secure clamp with self tapping screws (see figure 9 page 13). For PH-50 tube slides over the first 10' (3m) section tube. Secure with screws.
8. Install decorative grille (2 – 5' (1.53m) pieces) onto lip of reflector in a similar fashion used to install 2 x 4 ceiling panels. If need be, remove some of the screws securing the reflector to the hanger and/or end cap, spread reflector to facilitate installation, being careful not to damage reflector, install grille and re-secure the reflector.
9. Install retaining clips (6 per section of screen)
10. If installing models PH-40, 50 or 75 indoors, attach venting as per pages 15B, 15C, 15D and 15E. NOTE: PH40HO and PH75HO models cannot be vented. See page 15A for Ventilation requirements to make sure you have the correct heater for your application.
11. Connect gas, electricity, and mount controls in a convenient location.
12. Follow guidelines for startup on page 24.

SUSPENSION DETAILS

CHAIN MOUNTING

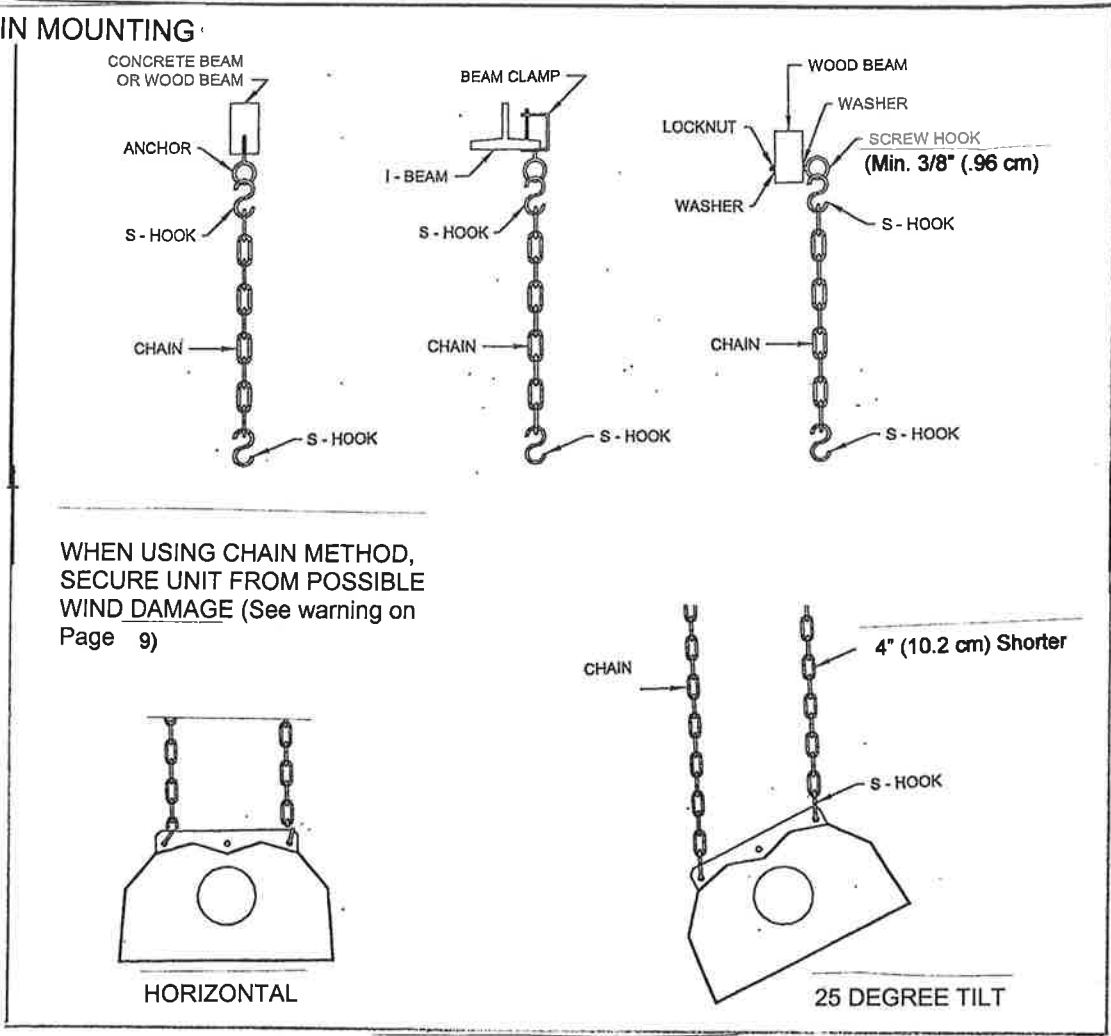


FIGURE #5 CHAIN MOUNTING

RIDGID MOUNTING

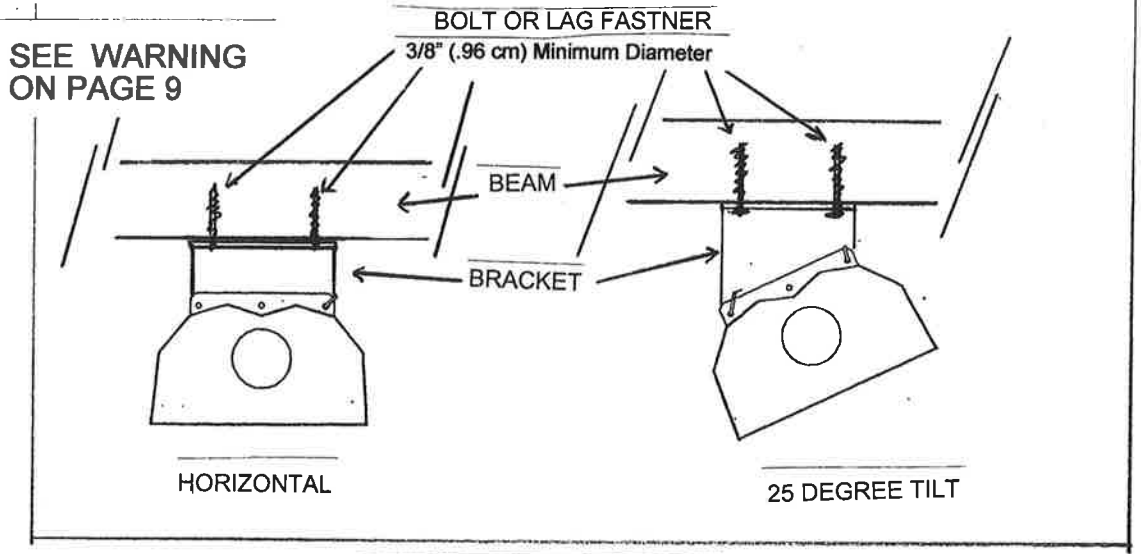


FIGURE #6 RIDGID MOUNTING