

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK



CITY OF PORTLAND

BUILDING PERMIT

This is to certify that JOHN D LICHTMAN

Located At 92 CLARK ST

Job ID: 2012-02-3244-HVAC

CBL: 057- C-035-001

has permission to Install a Rinnai m/nES-22

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of the buildings and structures, and of the application on file in the department.

Notification of inspection and written permission procured before this building or part thereof is lathed or otherwise closed-in. 48 HOUR NOTICE IS REQUIRED.

A final inspection must be completed by owner before this building or part thereof is occupied. If a certificate of occupancy is required, it must be

Fire Prevention Officer

Code Enforcement Officer / Plan Reviewer

THIS CARD MUST BE POSTED ON THE STREET SIDE OF THE PROPERTY
PENALTY FOR REMOVING THIS CARD

BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

or email: buildinginspections@portlandmaine.gov

With the issuance of this permit, the owner, builder or their designee is required to provide adequate notice to the city of Portland Inspections Services for the following inspections. Appointments must be requested 48 to 72 hours in advance of the required inspection. The inspection date will need to be confirmed by this office.

- **Please read the conditions of approval that is attached to this permit!! Contact this office if you have any questions.**
- **Permits expire in 6 months. If the project is not started or ceases for 6 months.**
- **If the inspection requirements are not followed as stated below additional fees may be incurred due to the issuance of a "Stop Work Order" and subsequent release to continue.**

The project cannot move to the next phase prior to the required inspection and approval to continue, REGARDLESS OF THE NOTICE OF CIRCUMSTANCES.

IF THE PERMIT REQUIRES A CERTIFICATE OF OCCUPANCY, IT MUST BE PAID FOR AND ISSUED TO THE OWNER OR DESIGNEE BEFORE THE SPACE MAY BE OCCUPIED.



PORTLAND MAINE

Strengthening a Remarkable City, Building a Community for Life • www.portlandmaine.gov

Director of Planning and Urban Development
Penny St. Louis

Job ID: 2012-02-3244-HVAC

Located At: 92 CLARK ST

CBL: 057- C-035-001

Conditions of Approval:

Fire

Installation shall comply with City Code Chapter 10.

Fuel-fired boilers shall be protected in accordance with NFPA 101, *Life Safety Code*.

Installation shall comply with NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances*;

NFPA 54, *National Fuel Gas Code*;

NFPA 70, *National Electrical Code*; and the manufacturer's published instructions.

All outstanding code violations shall be corrected prior to final inspection.

All smoke detectors and smoke alarms shall be photoelectric.

Carbon Monoxide is detection required in accordance with NFPA 720, *Standard for Installation of Carbon Monoxide (CO) Detection and Warning Equipment*, 2009 edition.

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, FAX: (207) 8716

Job No: 2012-02-3244-HVAC	Date Applied: 11/1/2011	CBL: 057- C-035-001	
Location of Construction: 92 CLARK ST (#3)	Owner Name: JOHN D LICHTMAN	Owner Address: 92 CLARK ST PORTLAND, ME 04102	Phone:
Business Name:	Contractor Name: William W Gelinis	Contractor Address: 2 Washington AVE SCARBOROUGH ME 04074	Phone: (207) 885-0771
Lessee/Buyer's Name:	Phone:	Permit Type: HVAC - HVAC	Zone: R-6
Past Use: Four family	Proposed Use: Same - Four Family - install Rinnai gas heater in Unit #3	Cost of Work: 4000.00	CEO District:
		Fire Dept: <input checked="" type="checkbox"/> Approved w/conditions <input type="checkbox"/> Denied <input type="checkbox"/> N/A	Inspection: 2-2 Use Group: Type: HVAC
		Signature: <i>Capt. Pitone 2/14/12</i>	Signature: <i>[Signature]</i>
Proposed Project Description: Install a Rinnai m/nES-22		Pedestrian Activities District (P.A.D.)	
Permit Taken By:		Zoning Approval	

<p>1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.</p> <p>2. Building Permits do not include plumbing, septic or electrical work.</p> <p>3. Building permits are void if work is not started within six (6) months of the date of issuance. False informatin may invalidate a building permit and stop all work.</p>	<p>Special Zone or Reviews</p> <p><input type="checkbox"/> Shoreland</p> <p><input type="checkbox"/> Wetlands</p> <p><input type="checkbox"/> Flood Zone</p> <p><input type="checkbox"/> Subdivision</p> <p><input type="checkbox"/> Site Plan</p> <p><input type="checkbox"/> Maj <input type="checkbox"/> Min <input type="checkbox"/> MM</p> <p>Date: <i>OK 2/14/12</i> <i>ABU</i></p>	<p>Zoning Appeal</p> <p><input type="checkbox"/> Variance</p> <p><input type="checkbox"/> Miscellaneous</p> <p><input type="checkbox"/> Conditional Use</p> <p><input type="checkbox"/> Interpretation</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Denied</p> <p>Date:</p>	<p>Historic Preservation</p> <p><input type="checkbox"/> Not in Dist or Landmark</p> <p><input type="checkbox"/> Does not Require Review</p> <p><input type="checkbox"/> Requires Review</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Approved w/Conditions</p> <p><input type="checkbox"/> Denied</p> <p>Date:</p>
	CERTIFICATION		

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the appication is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT	ADDRESS	DATE	PHONE
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE		DATE	PHONE

R-6



FILL IN AND SIGN WITH INK

APPLICATION FOR PERMIT HEATING OR POWER EQUIPMENT



To the INSPECTOR OF BUILDINGS, PORTLAND, ME.

The undersigned hereby applies for a permit to install the following heating, cooking or power equipment in accordance with the Laws of Maine, the Building Code of the City of Portland, and the following specifications:

Location / CBL 92 CLARK STREET Use of Building Apt's Date 11.1.11

Name and address of owner of appliance J D Litchman, 92 Clark St Portland, ME 04102
APRS DU

Installer's name and address GELINAS HVAC SERVICES INC
2 WASHINGTON AVE SCARBOROUGH, ME 04074 Telephone (207) 885-0771

Location of appliance:

- Basement
- Floor
- Attic
- Roof

Type of Fuel:

- Gas
- Oil
- Solid

Appliance Name: Rinnai

U.L. Approved Yes No

Will appliance be installed in accordance with the manufacture's installation instructions? Yes No

IF NO Explain: _____

The Type of License of Installer:

- Master Plumber # _____
- Solid Fuel # _____
- Oil # _____
- Gas # PN ± 1078
- Other _____

Type of Chimney:

Masonry Lined
Factory built N/A

Metal
Factory Built U.L. Listing # N/A

Direct Vent Rinnai direct vent
Type RECEIVED

Type of Fuel Tank

Oil
 Gas
NOV
Dept. of Building Inspections
City of Portland Maine

Size of Tank N/A

Number of Tanks N/A

Distance from Tank to Center of Flame N/A feet.

Cost of Work: \$3,955.00

Permit Fee: \$ 60.00

Approved

Fire: _____
Ele.: _____
Bldg.: _____

Approved with Conditions

See attached letter or requirement

Inspector's Signature

Date Approved

Signature of Installer William W. Del

Gelinas HVAC Services Inc.
2 Washington Ave.
Scarborough, Me. 04074
(207)885-0771

Date: May 17, 2011

To: J.D. Lichman
92 Clark Street
Portland, Me 04102

Re: Replacement of one (1) gas space heaters

Gelinas HVAC Services, Inc. is pleased to have this opportunity to offer our services to you. We propose to: Remove and properly dispose of existing Empire heater and Install one (1) Rinnai space heater.

Furnish and Install the following:

- 1) One (1) Rinnai m/n ES-22 Natural gas space heater.
- 2) One (1) Rinnai vent kit.
- 3) All needed Black iron and CSST gas piping, fittings and hangers needed.
- 4) Proper pressure test of new gas lines.
- 5) Start, test and adjust newly installed heaters
- 6) Proper clean up of work areas
- 7) Warranty; Gelinas HVAC Services Inc., shall support all manufacture parts/labor warranties. *See manufacture warranty

Please note:

- 1) Proposal does not include any power wiring upgrades of receptacle if needed.
- 2) Proposal reflects utilizing existing vent penetration. Sheet metal plate installed with new opening.

The above referenced installation shall be completed for \$1,555.00 One thousand five hundred fifty five and no cents

Payment terms:

30% upfront with signed proposal \$ 466.50
Remaining balance to be billed at completion.

Note:

Installation to begin within three (3) weeks of receipt of the signed contract and deposit given materials are available.

Work to be performed Monday through Friday, 8:30 A.M – 4:30 P.M.

Should installation be stopped for any reason, Gelinas HVAC Services, Inc. shall be paid in full for all labor and materials provided up to point of interruption.

There shall be a one (1) year warranty on labor once installation has been completed.

Materials are covered by manufacturers' warranties.

Should a dispute arise concerning the provisions of this contract or the performance by the parties, the parties agree to settle this dispute by jointly paying for mediation with the attempt to resolve differences.

Any alteration or deviation from the above contractual specifications that results in a revision of the contract price will be executed only upon the parties entering into a written change order.

Prices good, only for fifteen (15) days from said date.

The undersigned has authority as owner or owner's agent to authorize the work described in this contract.

PROPOSED BY: _____ DATE: _____

ACCEPTED BY: _____ DATE: _____

PROPOSAL MUST BE SIGNED AND RETURNED ALONG WITH THE FIRST PAYMENT BEFORE WORK CAN BEGIN. PRICES GOOD, ONLY FOR 15 DAYS FROM THE ABOVE SAID DATE.

Gelinas HVAC Services Inc.
2 Washington Ave.
Scarborough, Me. 04074
(207)885-0771

Date: October 9, 2011

To: J.D. Lichman
92 Clark Street
Portland, Me 04102

Re: Replacement of one (1) gas space heaters (J.D's apartment) REV#2

Gelinas HVAC Services, Inc. is pleased to have this opportunity to offer our services to you. We propose to: Install one (1) Rinnai space heater. (Relocating it to the living room)

Furnish and Install the following:

- 1) One (1) Rinnai m/n ES-22 Natural gas space heater.
- 2) One (1) Rinnai vent kit. *Vent to terminate left side of living room window.
- 3) One (1) Rinnai extension kit. 7ft extension pipe.
- 4) All needed Black iron and CSST gas piping, fittings and hangers needed.
- 5) Proper pressure test of new gas lines.
- 6) Start, test and adjust newly installed heater.
- 7) Proper clean up of work areas.
- 8) Warranty; Gelinas HVAC Services Inc., shall support all manufacture parts/labor warranties. *See manufacture warranty

Please note:

- 1) Proposal does not include any power wiring upgrades of receptacle if needed.
- 2) Proposal reflects utilizing existing gas piping and extending it to new location.
- 3) Proposal excludes concealing of new vent piping.
- 4) Proposal excludes filling in of old vent penetration.
- 5) Proposal excludes removal of existing heater and vent.
- 6) Proposal excludes removal of electric strip heat and adding 120v receptacle.

The above referenced installation shall be completed for \$2,400.00 Two thousand four hundred dollars and no cents

Payment terms:

30% upfront with signed proposal

Remaining balance to be billed at completion.

720.00

1,680.00

Note:

Installation to begin within three (3) weeks of receipt of the signed contract and deposit given materials are available.

Work to be performed Monday through Friday, 8:30 A.M – 4:30 P.M.

Should installation be stopped for any reason, Gelinas HVAC Services, Inc. shall be paid in full for all labor and materials provided up to point of interruption.

There shall be a one (1) year warranty on labor once installation has been completed.

Materials are covered by manufacturers' warranties.

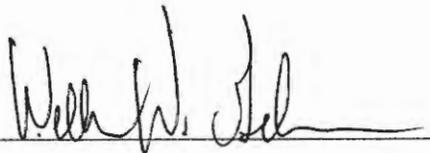
Should a dispute arise concerning the provisions of this contract or the performance by the parties, the parties agree to settle this dispute by jointly paying for mediation with the attempt to resolve differences.

Any alteration or deviation from the above contractual specifications that results in a revision of the contract price will be executed only upon the parties entering into a written change order.

Prices good, only for fifteen (15) days from said date.

The undersigned has authority as owner or owner's agent to authorize the work described in this contract.

PROPOSED BY:



DATE:

11-1-11

ACCEPTED BY:



DATE:

10-19-11

PROPOSAL MUST BE SIGNED AND RETURNED ALONG WITH THE FIRST PAYMENT BEFORE WORK CAN BEGIN.
PRICES GOOD, ONLY FOR 15 DAYS FROM THE ABOVE SAID DATE.

e-mailed to 92clarkstreet@gmail.com on 5/25/10

All spaces:

All fire door assemblies shall be labeled 60-minute fire assemblies (remove paint from labels). All fire doors shall be self-closing.

Each unit door shall be labeled (ie: 1F, 1R, 2, 3).

Address number shall be visible on front of building and contrasting with background.

Basement:

Boiler protection required (sprinkler head(s)).

Certify electrical system (letter of compliance required from licensed electrician and electrical permit may be required).

Kraft paper on insulation shall not be exposed.

Unit 1F:

Pass

Unit 1R:

CO alarm required.

Remove door between kitchen and living room (shall not be bedroom unless smoke alarm is installed).

Unit 2:

Co alarm required

Unit 3:

Smoke and CO alarms required.

Storage shall not be allowed in the egress stairs or room adjoining the egress stairs unless those rooms have a 60-minute fire door assembly. Owner plans to move unit 3 fire door assemblies to the landings on the second floor to remedy this.

Owner's Operation and Installation Manual for the

ES17 (RHFE-433RFA)

ES22 (RHFE-558RFA)

Energysaver®

Gas Direct Vent Wall Furnace

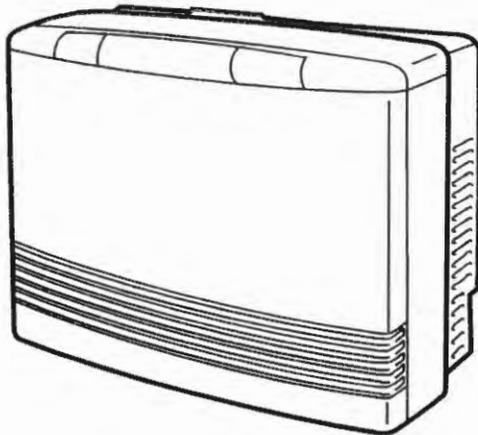


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Register your product at www.rinnairregistration.com or call 1-866-RINNAI1 (746-6241)

WARNING: If the information in these instructions is 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.
- **WHAT TO DO IF YOU SMELL GAS**
 - Do not try to light any appliance.
 - Do not touch any electrical switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - 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.

INSTALLER: Leave this manual with the appliance.
CONSUMER: Retain this manual for future reference.

Rinnai®

This appliance may be installed as an OEM installation in a manufactured home (USA only) or mobile home and must be installed in accordance with the manufacturer's instructions and the *Manufactured Home construction and Safety Standard, Title 24 CFR, Part 3280*, in the United States, or the *Mobile Home Standard, CAN/CSA Z240 MH Series*, in Canada. This appliance is only for use with types of gas indicated on the rating plate. A conversion kit is supplied with the appliance.

This appliance may be installed in an aftermarket, permanently located, manufactured home (USA only) or mobile home, where not prohibited by local codes.

This appliance is only for use with the type of gas indicated on the rating plate. This appliance is not convertible for use with other gases, unless a certified kit is used.

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Consumer Safety Information

Safety Definitions



This is the safety alert symbol: This symbol alerts you to potential hazards that can kill or hurt you and others.

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

Safety Behaviors and Practices

WARNING

- Keep the area around the appliance clear and free from combustible materials, gasoline, and other flammable vapors and liquids.
- Never store liquid propane containers indoors.
- 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.
- This appliance is equipped with a three-prong plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the ground prong from this plug.
- Any alteration to the appliance or its controls can be dangerous.
- Do not operate appliance with the panels removed, cracked or broken. Replacement of the panels should be done by a licensed or qualified service person.

CAUTION

- Do not block the warm air discharge. Do not allow anyone to sleep directly in front of the appliance.
- Due to high temperatures, the appliance should be located out of traffic and away from furniture and draperies.
- Children and adults should be alerted to the hazards of high surface temperature and should stay away to avoid burns or clothing ignition.
- Young children should be carefully supervised when they are in the same room as the appliance.
- Clothing or other flammable material should not be placed on or near the appliance.
- Any safety screen or guard removed for servicing must be replaced prior to operating the appliance.
- Do not insert items into the louvers.
- Do not spray aerosols near the appliance while it is operating. Most aerosols contain butane gas which is flammable.
- Do not unplug the appliance while it is operating or while the fans are on.
- Do not use bare hands to touch the front louvers due to high temperatures which may cause burns.
- Wear hand protection when touching the side back covers, front louver, and rear intake for the convection fan.

Gas Connection

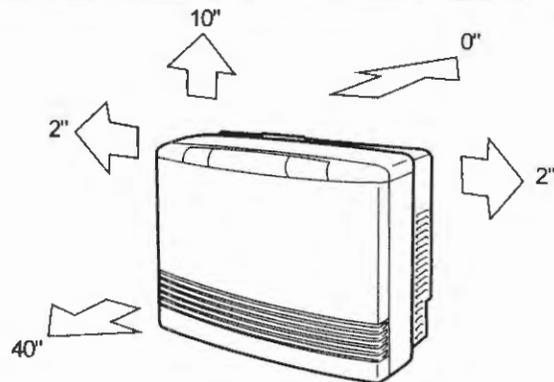
⚠ WARNING

When connecting the gas valve or other gas components in the gas line, use a backup wrench to ensure the connection is gas tight.

- The gas supply line shall be gas tight, sized and so installed as to provide a supply of a gas sufficient to meet the maximum demand of the heater without loss of pressure.
- A shut off valve and appliance connector valve should be installed in the upstream of the gas line to permit servicing.
- Flexible pipe and any appliance connector valve used for gas piping shall be types approved by nationally recognized agencies.
- Any compound used on the threaded joint of the gas piping shall be a type which resists the action of liquefied petroleum gas (propane / LPG).
- After completion of gas pipe connections all joints including the heater must be checked for gas tightness by means of leak detector solution, soap and water, or an equivalent nonflammable solution, as applicable. (Since some leak test solutions, including soap and water, may cause corrosion or stress cracking, the piping shall be rinsed with water after testing, unless it has been determined that the leak test solution is non-corrosive.)
- Check the gas supply pressure immediately upstream at a location provided by the gas company. Supplied gas pressure must be within the limits shown in the Specifications section.
- Refer to an approved pipe sizing chart if in doubt about the size of the gas line.
- Install manual gas cut-off valve so that it can be accessed for easy operation. Do not conceal manual cut-off valve behind back spacer.

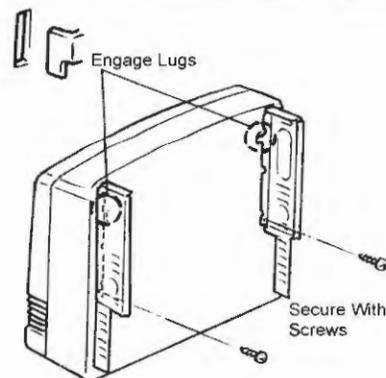
Clearances to Combustibles

When determining where to install the appliance the clearances to combustibles shown in the figure must be followed. Also refer to the Safety Behaviors and Practices section. The clearance to combustibles from the top is zero.



Attach Back Covers (Sides Only)

Attach back covers as shown.



Installation Instructions

General Instructions

WARNING

Do not use substitute materials.

Use only parts certified with the appliance.

- A qualified service technician should install the appliance and inspect it before use.
- If you move, check the gas type in your new area. The local gas authority will be able to advise on local regulations.
- The installation must conform with local codes or, in the absence of local codes, with the *National Fuel Gas Code, ANSI Z223.1/NFPA 54*, or the *Natural Gas and Propane Installation Code, CSA B149.1*.
- A manufactured home (USA only) or mobile home OEM installation must conform with the *Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280*, or, when such a standard is not applicable, the standard for *Manufactured Home Installations, ANSI/NCSCS A225.1*, or the standard for *Gas Equipped Recreational Vehicles and Mobile Housing, CSA Z240.4*.
- The appliance, when installed, must be electrically grounded in accordance with local codes or, in the absence of local codes, with the *National Electrical Code, ANSI/NFPA 70*, or the *Canadian Electrical Code, CSA C22.1*.
- Appliance input ratings are based on sea level operation and need not be changed for operation up to 2000 ft (609.9 m) elevation. For operation at elevations above 2000 ft (609.9 m), refer to the Conversion Manual.
- The appliance and its appliance main gas valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.5 kPa).
- The appliance must be isolated from the gas supply piping system by closing its equipment shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.5 kPa).
- If the flooring is carpet, tile, or other combustible material other than wood, then the appliance must be installed on a metal or wood panel extending the full width and depth of the appliance.
- This appliance discharges a large volume of warm air next to the floor. Any particles in the air such as cigarette smoke could cause discoloration in nylon carpets containing dyes or vinyl surfaces.
- This appliance is not designed to built in.
- This appliance is only for use with the type of gas indicated on the rating plate. This appliance is not convertible for use with other gases unless a certified kit is used. If conversion of the unit is needed, conversions must be performed by a qualified service provider at the owner's expense.
- This appliance must not be connected to a chimney flue serving a separate solid-fuel burning appliance.
- Rinnai suggests that a dedicated electrical circuit with a 120VAC, 60 hz, 10 amp power source be used.
- Two 1/8 in test plugs are provided for testing of manifold differential pressure. They are located on the modulating gas valve and on the burner manifold.
- The appliance should be correctly sized for the space it is required to heat.
- Follow the installations instructions and those in *Care and Maintenance* for adequate combustion and ventilation air.
- The flow of combustion and ventilation air shall not be obstructed.
- Clearances to access the appliance during servicing are 2 inches (50 mm) from the sides, 40 inches (1 m) from the front, and 9 inches (225 mm) from the top.

NOTICE

If installation is at a location above 2001 ft (610 m), then follow the Adjust Gas Pressure Settings procedure in the Conversion Manual.

If installation is at or below 2000 ft (610 m) then the pressure settings do not need to be adjusted.

Safety Features

- **Overheat:** The appliance will automatically shut down when the appliance exceeds a predetermined temperature.
- **Flame Failure:** The appliance will automatically shut down if the burner flame is extinguished.
- **Power Failure:** The appliance will cut off the gas if it loses electrical power.
- **Power Surge Fuse:** A glass fuse on the PC board protects against overcurrent. If the fuse blows then all indicator lamps will be off.
- **Spark Detector:** The appliance automatically shuts down if there is an abnormal spark at ignition.
- **Fusible Link:** In case the overheat feature prevents the temperature from rising then the fusible link will break shutting off the appliance.

Specifications

Appliance Specifications

Application	For manufactured home (USA only) or mobile home or residential installation convertible for use with natural gas and liquefied petroleum gases (propane / LPG) when provision is made for the simple conversion from one gas to the other. For commercial setting. For installation at altitudes up to 10,200 feet (3109 m).
General Description	Forced combustion, forced convection, flued gas furnace
Operation	Push button electronic
Gas Connection	1/2 in NPT
Gas Control	Electronic
Burners	Stainless steel Bunsen burner
Temperature Control	Electronic thermostat
Ignition System	Electronic spark ignition
Flue System	The flue must be terminated to atmosphere with only flue components listed with the appliance's certification. Warranty will be voided if non listed components are installed.
Humidifier Tray	Capacity - 3 pints (1300 cc)
Electrical Connection	AC 120V; 60 Hz; ES17: 45 watts; ES22: 50 watts
Weight	53 lbs (24 kg)
Noise Level	ES17: 32-42 dB; ES22: 32-39 dB
AFUE Rating	Natural Gas: 81% Propane: 80%

Rinnai is continually updating and improving products. Therefore, specifications are subject to change without prior notice.

The efficiency rating of this appliance is a product thermal efficiency rating determined under continuous operating conditions and was determined independently of any installed system.

Appliance Specifications

	Natural Gas	Propane Gas
Minimum supply gas pressure	3.5 in (89 mm) W.C.	8.0 in (203 mm) W.C.
Maximum supply gas pressure	10.5 in (267 mm) W.C.	13.0 in (330 mm) W.C.

ES17		
	Natural Gas	Propane Gas
BTU/hour input	Low 8200 High 16700	Low 8200 High 16700
BTU/hour output	Low 6560 High 13400	Low 6560 High 13400

ES22		
	Natural Gas	Propane Gas
BTU/hour input	Low 8200 High 21500	Low 8200 High 20700
BTU/hour output	Low 6560 High 17200	Low 6560 High 16560

Features

- Restarts automatically when ignition or combustion fails.
- Clean Heating Forced Flue Type
- Easy Operation One-Touch Ignition
- Sensible Temperature Control Feature
- Comfortable Room Temperature Control and Display
- Warm Air Outlet at Floor Level (keeps your feet warm)
- Function Lock
- Room Temperature Setting Memory
- Clean the Air Filter - Indicator Lamp
- Energy Saving Economy Setting
- Humidifier Tray
- Air Flow Directional Louvers
- Direct Vent Easily Installed
- Proportional Heating Variable Capacity
- Hush! Quiet Operation
- Modern Design Minimizes Floor Space Requirements
- Fault Code Message Display

Installation Instructions

General Instructions

WARNING

Do not use substitute materials.

Use only parts certified with the appliance.

- A qualified service technician should install the appliance and inspect it before use.
- If you move, check the gas type in your new area. The local gas authority will be able to advise on local regulations.
- The installation must conform with local codes or, in the absence of local codes, with the *National Fuel Gas Code, ANSI Z223.1/NFPA 54*, or the *Natural Gas and Propane Installation Code, CSA B149.1*.
- A manufactured home (USA only) or mobile home OEM installation must conform with the *Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280*, or, when such a standard is not applicable, the standard for *Manufactured Home Installations, ANSI/NCSCBS A225.1*, or the standard for *Gas Equipped Recreational Vehicles and Mobile Housing, CSA Z240.4*.
- The appliance, when installed, must be electrically grounded in accordance with local codes or, in the absence of local codes, with the *National Electrical Code, ANSI/NFPA 70*, or the *Canadian Electrical Code, CSA C22.1*.
- Appliance input ratings are based on sea level operation and need not be changed for operation up to 2000 ft (609.9 m) elevation. For operation at elevations above 2000 ft (609.9 m), refer to the Conversion Manual.
- The appliance and its appliance main gas valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.5 kPa).
- The appliance must be isolated from the gas supply piping system by closing its equipment shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.5 kPa).
- If the flooring is carpet, tile, or other combustible material other than wood, then the appliance must be installed on a metal or wood panel extending the full width and depth of the appliance.
- This appliance discharges a large volume of warm air next to the floor. Any particles in the air such as cigarette smoke could cause discoloration in nylon carpets containing dyes or vinyl surfaces.
- This appliance is not designed to built in.
- This appliance is only for use with the type of gas indicated on the rating plate. This appliance is not convertible for use with other gases unless a certified kit is used. If conversion of the unit is needed, conversions must be performed by a qualified service provider at the owner's expense.
- This appliance must not be connected to a chimney flue serving a separate solid-fuel burning appliance.
- Rinnai suggests that a dedicated electrical circuit with a 120VAC, 60 hz, 10 amp power source be used.
- Two 1/8 in test plugs are provided for testing of manifold differential pressure. They are located on the modulating gas valve and on the burner manifold.
- The appliance should be correctly sized for the space it is required to heat.
- Follow the installations instructions and those in *Care and Maintenance* for adequate combustion and ventilation air.
- The flow of combustion and ventilation air shall not be obstructed.
- Clearances to access the appliance during servicing are 2 inches (50 mm) from the sides, 40 inches (1 m) from the front, and 9 inches (225 mm) from the top.

NOTICE

If installation is at a location above 2001 ft (610 m), then follow the Adjust Gas Pressure Settings procedure in the Conversion Manual.

If installation is at or below 2000 ft (610 m) then the pressure settings do not need to be adjusted.

Gas Connection

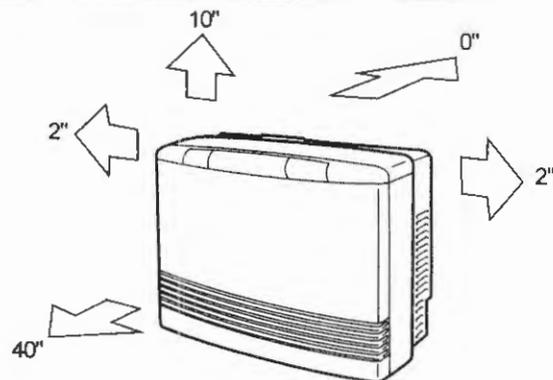
⚠ WARNING

When connecting the gas valve or other gas components in the gas line, use a backup wrench to ensure the connection is gas tight.

- The gas supply line shall be gas tight, sized and so installed as to provide a supply of a gas sufficient to meet the maximum demand of the heater without loss of pressure.
- A shut off valve and appliance connector valve should be installed in the upstream of the gas line to permit servicing.
- Flexible pipe and any appliance connector valve used for gas piping shall be types approved by nationally recognized agencies.
- Any compound used on the threaded joint of the gas piping shall be a type which resists the action of liquefied petroleum gas (propane / LPG).
- After completion of gas pipe connections all joints including the heater must be checked for gas tightness by means of leak detector solution, soap and water, or an equivalent nonflammable solution, as applicable. (Since some leak test solutions, including soap and water, may cause corrosion or stress cracking, the piping shall be rinsed with water after testing, unless it has been determined that the leak test solution is non-corrosive.)
- Check the gas supply pressure immediately upstream at a location provided by the gas company. Supplied gas pressure must be within the limits shown in the Specifications section.
- Refer to an approved pipe sizing chart if in doubt about the size of the gas line.
- Install manual gas cut-off valve so that it can be accessed for easy operation. Do not conceal manual cut-off valve behind back spacer.

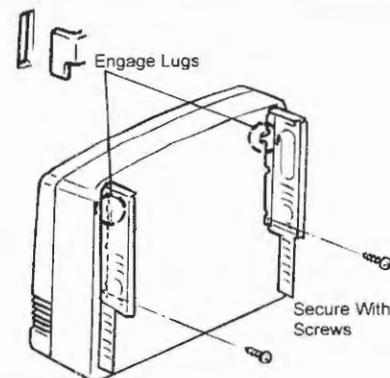
Clearances to Combustibles

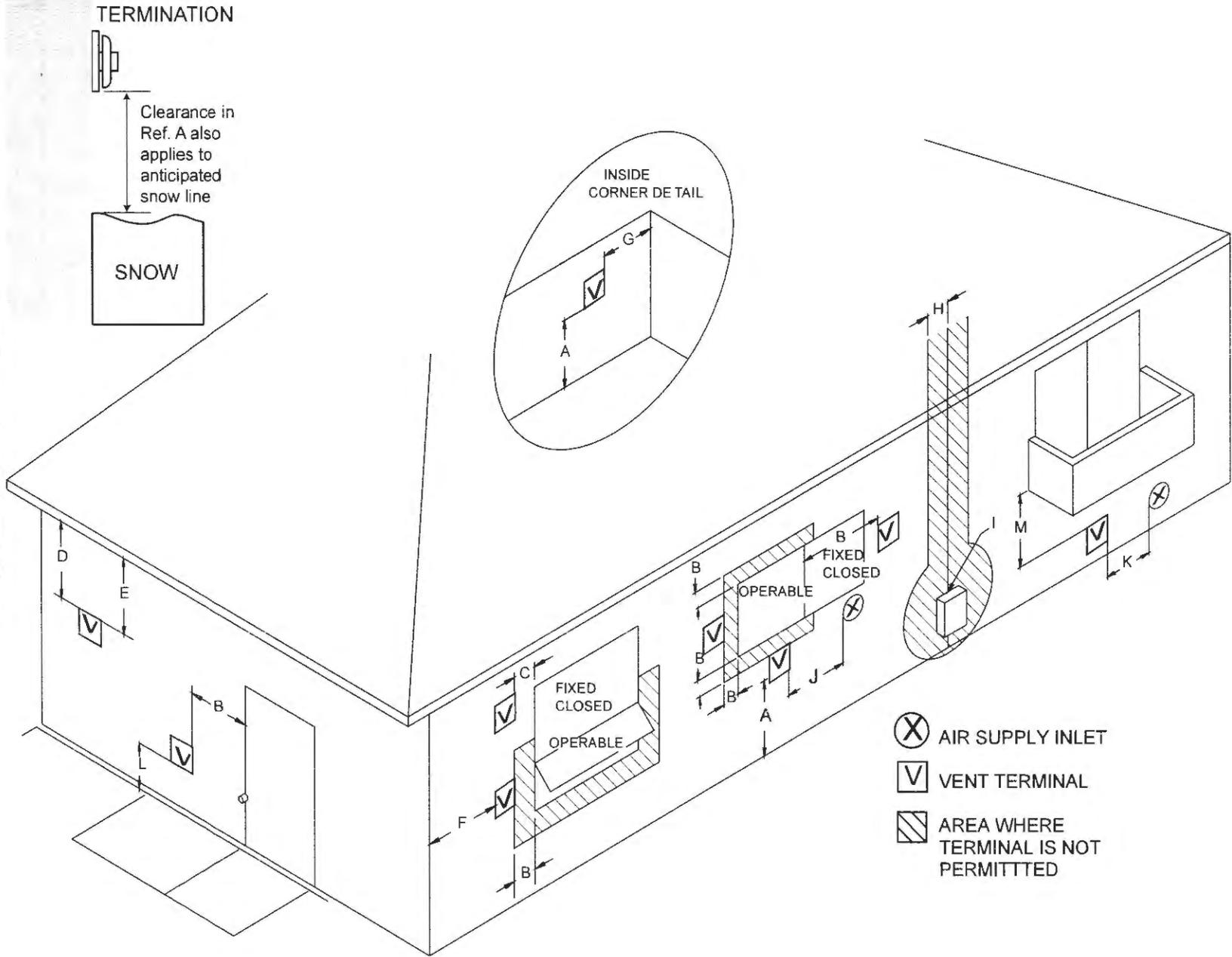
When determining where to install the appliance the clearances to combustibles shown in the figure must be followed. Also refer to the Safety Behaviors and Practices section. The clearance to combustibles from the top is zero.



Attach Back Covers (Sides Only)

Attach back covers as shown.





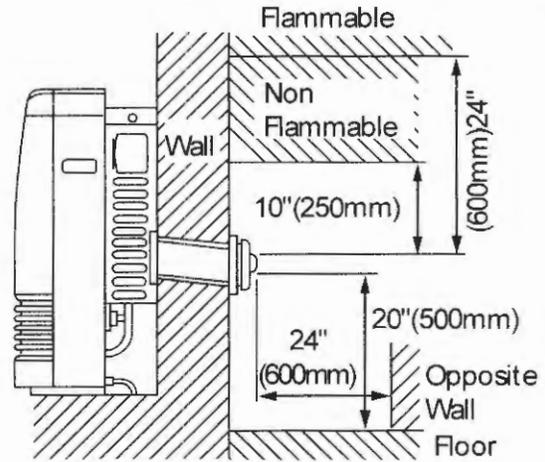
Ref	Description	Canadian Installations	US Installations
A	Clearance above grade, veranda, porch, deck, or balcony. (Take into account the anticipated snow line)	6 inches (15 cm) for appliances ≤ 10,000 BTUh; 9 inches (23 cm) for appliances > 10,000 BTUh and ≤ 50,000 BTUh, 12 inches (30 cm) for appliances > 50,000 BTUh	6 inches (15 cm) for appliances ≤ 10,000 BTUh; 9 inches (23 cm) for appliances > 10,000 BTUh and ≤ 50,000 BTUh, 12 inches (30 cm) for appliances > 50,000 BTUh
B	Clearance to window or door that may be opened	12 inches (30 cm)	9 inches (23 cm)
C	Clearance to permanently closed window	*	*
D	Vertical clearance to ventilated soffit, located above the terminal within a horizontal distance of 2 feet (61 cm) from the center line of the terminal	*	*
E	Clearance to unventilated soffit	*	*
F	Clearance to outside corner	*	*
G	Clearance to inside corner	20 inches (50 cm)	20 inches (50 cm)
H	Clearance to each side of center line extended above meter/regulator assembly	3 feet (91 cm) within a height 15 feet (4.5 m) above the meter/regulator assembly	*
I	Clearance to service regulator vent outlet	3 feet (91 cm)	*
J	Clearance to nonmechanical air supply inlet to building or the combustion air inlet to any other appliance	12 inches (30 cm)	9 inches (23 cm)
K	Clearance to a mechanical air supply inlet	6 feet (1.83 m)	3 feet (91 cm) above if within 10 feet (3 m) horizontally
L	Clearance above paved sidewalk or paved driveway located on public property	7 feet (2.13 m) ①	*
M	Clearance under veranda, porch, deck, or balcony	12 inches (30 cm) to non-flammables ② 24 inches (60 cm) to flammables ②	12 inches (30 cm) to non-flammables ② 24 inches (60 cm) to flammables ②

- ① A vent shall not terminate directly above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.
- ② Permitted only if veranda, porch, deck, or balcony is fully open on a minimum of two sides beneath the floor.
- * For clearances not specified in *ANSI Z223.1/NFPA 54* or *CSA B149.1*, clearances are in accordance with local installation codes and the requirements of the gas supplier.

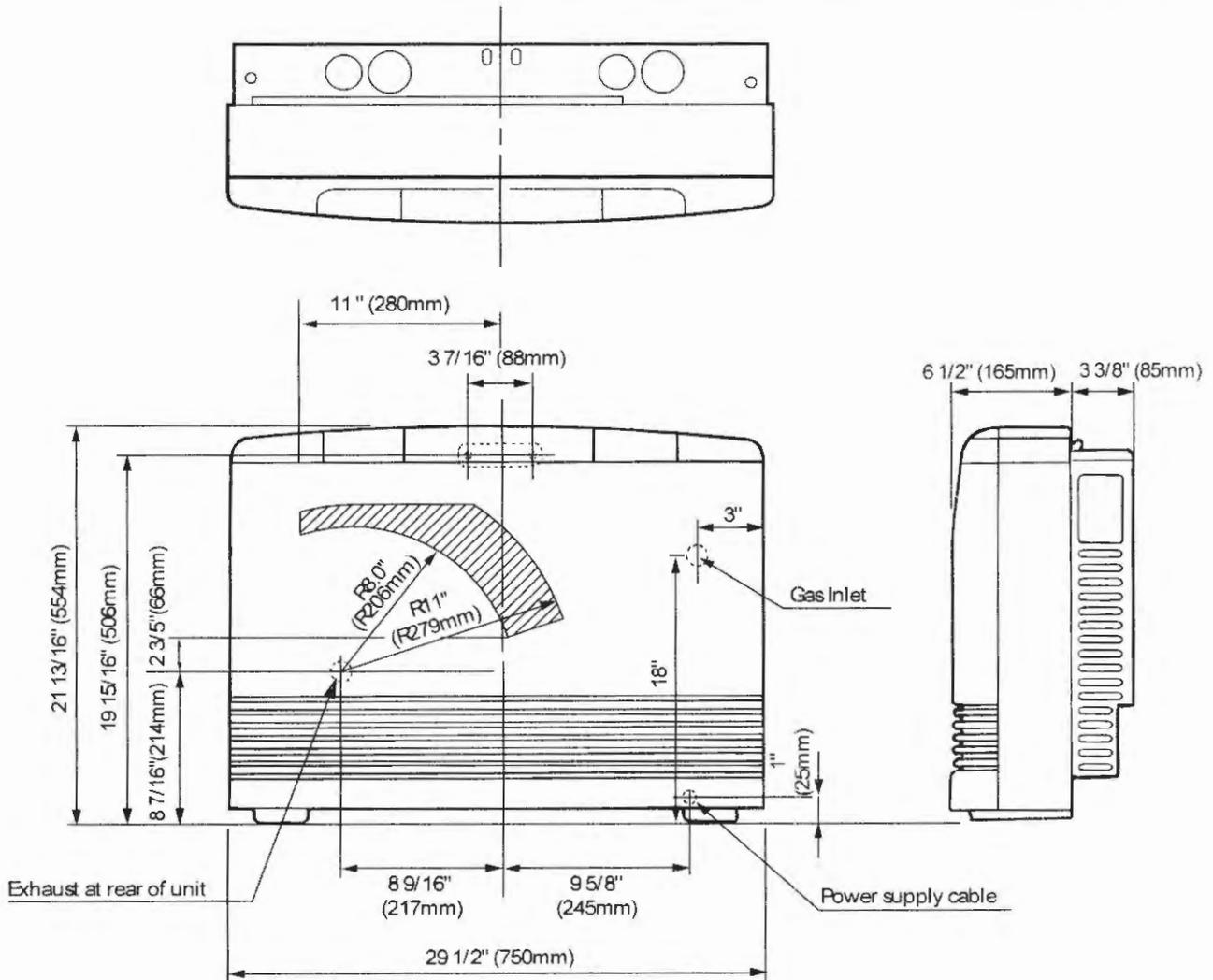
Flue Terminal Clearances

Minimum clearances and distances from obstructions are shown.

Follow local codes and regulations.



Dimensions



Extension Kit Installation

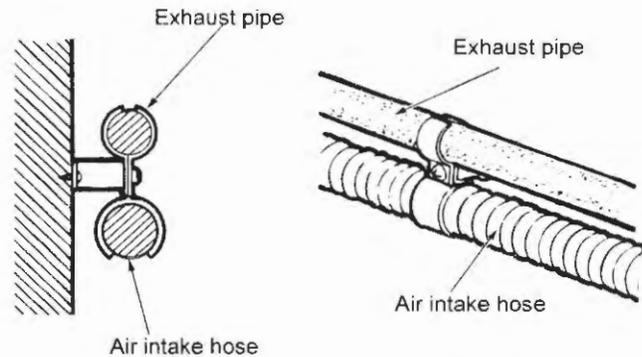
CAUTION Use the pipe stoppers, connectors, clamps, and screws according to these instructions in order to ensure no leakage of exhaust gases.

Clearances	exhaust pipe to combustibles	1 inch (25.4 mm)
	exhaust pipe to non-combustibles	zero

Clamps

Both the exhaust line and air intake hose are supported by clamps which are attached to the wall. A wall fixture can be used to offset the clamp from the wall. Use Screw B to attach the wall fixture to the wall. If the wall fixture is not used then use Screw A and the nut to attach the clamp to the wall.

The air intake hose should always be underneath the exhaust line so that in case the air intake hose sags it will not come into contact with the exhaust line.



Installing the Exhaust Line

The exhaust line is connected between the bent pipe at the rear of the heater and the exhaust port on the flue manifold.

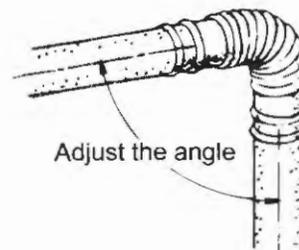
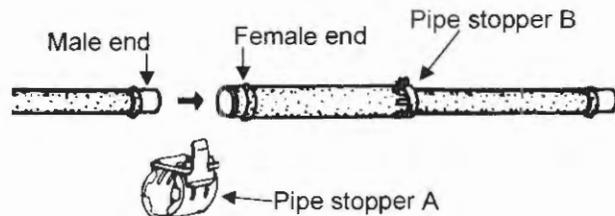
To connect exhaust pipes with other straight pipes or bends, fit the male end into the female end. Use pipe stopper A to clamp the connection.

Use pipe stopper B to fix the length on the adjustable exhaust pipes. Do not extend these pipes beyond the red line.

Do not cut the exhaust pipe. Use the adjustable pipes if necessary.

To bend the elbow, insert exhaust pipes into both ends for additional leverage. Bend to desired angle.

Do not straighten the bent pipe attached to the appliance.



Connecting the Air Intake Hose

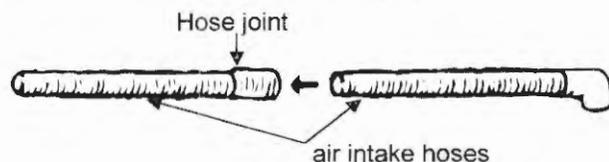
The air intake hose is connected between the air connection at the rear of the heater and the air intake port on the flue manifold.

Push the air intake hose onto the flue manifold and secure with the plastic cable tie.

Join air intake hoses by screwing the hose joint half of its length into the air intake hose and then screwing another air intake hose into the hose joint.

The lengths of the air intake hose and the exhaust pipe must be the same in order for the appliance to operate properly. The hose can be cut to the required length. Deburr all rough edges. Do not cut the hose attached to the appliance.

Support the air intake hose with pipe clamps.



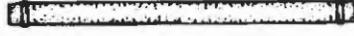
NOTICE Do not cut the intake hose. Cutting the intake hose may result in noise.

Extension Kit Installation

Extension Kits and Parts



① EXHAUST PIPE (ADJUSTABLE)



② EXHAUST PIPE (NON ADJUSTABLE)



③ AIR INTAKE HOSE



④ BENT ELBOW



⑤ LONG BENT ELBOW



⑥ HOSE JOINT



⑦ PIPE STOPPER A



⑧ PIPE STOPPER B



⑨ PIPE CLAMP



⑩ WALL-FIXTURE



⑪ NUT



⑫ SCREWA



⑬ SCREWB

Item	Description	FOT-219	FOT-220	FOT-221	FOT-158	FOT-222
1	Exhaust Pipe (adjustable) 11.4-20.3 in (290-515 mm)	1				
1	Exhaust Pipe (adjustable) 21.0-39.6 in (533-1005 mm)		1	1		
2	Exhaust Pipe - 40 in (1016 mm)			1		
3	Air Intake Hose - 29.5 in (750 mm)	1				
3	Air Intake Hose - 49.2 in (1.25 m)		1			
3	Air Intake Hose - 90.6 in (2.3 m)			1		
4	Bent Elbow				1	
5	Long Bent Elbow					
6	Hose Joint	1	1	1		
7	Pipe Stopper A	1	1	2	1	
8	Pipe Stopper B	1	1	1		
9	Pipe Clamp	3 sets	4 sets	5 sets		1 set
10	Wall Fixture	2	3	4		1
11	Nut	3	4	5		1
12	Screw A	3	4	5		1
13	Screw B	4	6	8		2