DESA™

INDOOR/OUTDOOR PRODUCTS

UNVENTED (VENT-FREE) INFRARED REMOTE CONTROL GAS HEATER
SAFETY INFORMATION AND INSTALLATION MANUAL

We recommend that our products be installed and serviced by professionals who are certified in the U.S. by NFI (National Fireplace Institute). www.nficertified.org

Actual heater may vary from illustration.

MODELS

NZ100, NZ101, NZ102, NZ103
NZ104, NZ105, NZ106, NZ107
NZ116, NZ117, NZ118, NZ119

WARNING: If the information in this manual 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.

For more information, visit www.desatech.com

TABLE OF CONTENTS

SAFETY INFORMATION

WARNING: Improper installation, adjustment, alteration, service or maintenance can cause injury or property damage. Refer to this manual for correct installation and operational procedures. For assistance or additional information consult a qualified installer, service agency or the gas supplier.

WARNING: This is an unvented gas-fired heater. It uses air (oxygen) from the room in which it is installed. Provisions for adequate combustion and ventilation air must be provided. Refer to *Air for Combustion and Ventilation* section on page 5 of this manual.

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.

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

*** Aftermarket: Completion of sale, not for purpose of resale, from the manufacturer**

⚠ WARNING: This product contains and/or generates chemicals known to the State of California to cause cancer or birth defects or other reproductive harm.

IMPORTANT: Read this owner's manual carefully and completely before trying to assemble, operate or service this heater. Improper use of this heater can cause serious injury or death from burns, fire, explosion, electrical shock and carbon monoxide poisoning.

⚠ DANGER: Carbon monoxide poisoning may lead to death!

Carbon Monoxide Poisoning: Early signs of carbon monoxide poisoning resemble the flu, with headaches, dizziness or nausea. If you have these signs, the heater may not be working properly. **Get fresh air at once!** Have heater serviced. Some people are more affected by carbon monoxide than others. These include pregnant women, people with heart or lung disease or anemia, those under the influence of alcohol and those at high altitudes.

SAFETY INFORMATION
Continued

Natural and Propane/LP Gas: Natural and Propane/LP gases are odorless. An odor-making agent is added to these gases. The odor helps you detect a gas leak. However, the odor added to the gas can fade. Gas may be present even though no odor exists.

Make certain you read and understand all warnings. Keep this manual for reference. It is your guide to safe and proper operation of this heater.

⚠ WARNING: Any change to this heater or its controls can be dangerous.

⚠ WARNING: Do not use a blower insert, heat exchanger insert or other accessory not approved for use with this heater.

Due to high temperatures, the appliance should be located out of traffic and away from furniture and draperies.

Do not place clothing or other flammable material on or near the appliance. Never place any objects on the heater.

Surface of heater becomes very hot when running heater. Keep children and adults away from hot surface to avoid burns or clothing ignition. Heater will remain hot for a time after shutdown. Allow surface to cool before touching.

Carefully supervise young children when they are in the same room with heater.

Make sure grill guard is in place before running heater.

Keep the appliance area clear and free from combustible materials, gasoline and other flammable vapors and liquids.

1. 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.
2. Do not place propane/LP supply tank(s) inside any structure. Locate propane/LP supply tank(s) outdoors.
3. This heater shall not be installed in a bedroom or bathroom.
4. If you smell gas
   - Shut off gas supply
   - 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
5. Always run heater with plaque control knob at the locked positions. Never set control knob between locked positions. Poor combustion and higher levels of carbon monoxide may result.
6. This heater needs fresh, outside air ventilation to run properly. This heater has an Oxygen Depletion Sensing (ODS) safety shutoff system. The ODS shuts down the heater if not enough fresh air is available. See *Air for Combustion and Ventilation,* page 5.
7. Keep all air openings in front and bottom of heater clear and free of debris. This will insure enough air for proper combustion.
8. If heater shuts off, do not relight until you provide fresh, outside air. If heater keeps shutting off, have it serviced.
9. Do not run heater
   - where flammable liquids or vapors are used or stored
   - under dusty conditions
10. Do not use heater if any part has been under water. Immediately call a qualified service technician to inspect the room heater and to replace any part of the control system and any gas control which has been under water.

SAFETY INFORMATION
Continued

11. Turn off and unplug heater and let cool before servicing. Only a qualified service person should service and repair heater.
12. Operating heater above elevations of 4,500 feet (1,371 m) could cause pilot outage.
13. To prevent performance problems, do not use propane/LP fuel tank of less than 100 lbs. (45 kg) capacity.
14. Before using furniture polish, wax, carpet cleaner or similar products, turn heater off. If heated, the vapors from these products may create a white powder residue within burner box or on adjacent walls or furniture.
15. Provide adequate clearances around air openings.

LOCAL CODES

Install and use heater with care. Follow all local codes. In the absence of local codes, use the latest edition of *The National Fuel Gas Code, ANSI Z223.1/NFPA 54**.

*Available from:

American National Standards Institute, Inc.
1430 Broadway
New York, NY 10018
National Fire Protection Association, Inc.
Batterymarch Park
Quincy, MA 02269

State of Massachusetts: The installation must be made by a licensed plumber or gas fitter in the Commonwealth of Massachusetts.

Sellers of unvented propane or natural gas-fired supplemental room heaters shall provide to each purchaser a copy of 527 CMR 30 upon sale of the unit.

Vent-free gas products are prohibited for bedroom and bathroom installation in the Commonwealth of Massachusetts.

UNPACKING

1. Remove heater from carton.
2. Remove all protective packaging applied to heater for shipment.
3. Check heater for any shipping damage. If heater is damaged, promptly return to where you bought heater.

PRODUCT IDENTIFICATION

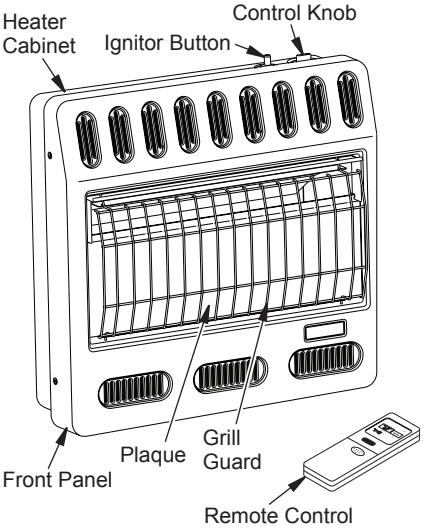


Figure 1 - Vent-Free Gas Heater

PRODUCT FEATURES

SAFETY DEVICE

This heater has a pilot with an Oxygen Depletion Sensing (ODS) safety shutoff system. The ODS/pilot is a required feature for vent-free room heaters. The ODS/pilot shuts off the heater if there is not enough fresh air.

PIEZO IGNITION SYSTEM

This heater has a piezo ignitor. This system requires no matches, batteries or other sources to light heater.

THERMOSTATIC HEAT CONTROL

This heater is operated thermostatically by the remote control. This results in the greatest heater comfort. This can also result in lower gas bills.

AIR FOR COMBUSTION AND VENTILATION

⚠ WARNING: This heater shall not be installed in a confined space or unusually tight construction unless provisions are provided for adequate combustion and ventilation air. Read the following instructions to insure proper fresh air for this and other fuel-burning appliances in your home.

Today's homes are built more energy efficient than ever. New materials, increased insulation and new construction methods help reduce heat loss in homes. Home owners weather strip and caulk around windows and doors to keep the cold air out and the warm air in. During heating months, home owners want their homes as airtight as possible.

While it is good to make your home energy efficient, your home needs to breathe. Fresh air must enter your home. All fuel-burning appliances need fresh air for proper combustion and ventilation.

Exhaust fans, fireplaces, clothes dryers and fuel burning appliances draw air from the house to operate. You must provide adequate fresh air for these appliances. This will insure proper venting of vented fuel-burning appliances.

PROVIDING ADEQUATE VENTILATION

The following are excerpts from *National Fuel Gas Code, ANSI Z223.1/NFPA 54, Section 5.3, Air for Combustion and Ventilation.*

All spaces in homes fall into one of the three following ventilation classifications:

1. Unusually Tight Construction
2. Unconfined Space
3. Confined Space

The information on pages 5 through 7 will help you classify your space and provide adequate ventilation.

Unusually Tight Construction

The air that leaks around doors and windows may provide enough fresh air for combustion and ventilation. However, in buildings of unusually tight construction, you must provide additional fresh air.

Unusually tight construction is defined as construction where:

a. walls and ceilings exposed to the outside atmosphere have a continuous water vapor retarder with a rating of one perm ($6x10^{-11}$ kg per pa-sec-m^2) or less with openings gasketed or sealed and

b. weather stripping has been added on openable windows and doors and

c. caulking or sealants are applied to areas such as joints around window and door frames, between sole plates and floors, between wall-ceiling joints, between wall panels, at penetrations for plumbing, electrical and gas lines and at other openings.

If your home meets all of the three criteria above, you must provide additional fresh air. See *Ventilation Air From Outdoors*, page 7.

If your home does not meet all of the three criteria above, proceed to *Determining Fresh-Air Flow For Heater Location*, page 6.

Confined and Unconfined Space

The *National Fuel Gas Code, ANSI Z223.1/NFPA 54* defines a confined space as a space whose volume is less than 50 cubic feet per 1,000 Btu per hour (4.8 m^3 per kw) of the aggregate input rating of all appliances installed in that space and an unconfined space as a space whose volume is not less than 50 cubic feet per 1,000 Btu per hour (4.8 m^3 per kw) of the aggregate input rating of all appliances installed in that space. Rooms communicating directly with the space in which the appliances are installed*, through openings not furnished with doors, are considered a part of the unconfined space.

* Adjoining rooms are communicating only if there are doorless passageways or ventilation grills between them.

AIR FOR COMBUSTION AND VENTILATION

Continued

DETERMINING FRESH-AIR FLOW FOR HEATER LOCATION

Determining if You Have a Confined or Unconfined Space

Use this work sheet to determine if you have a confined or unconfined space.

Space: Includes the room in which you will install heater plus any adjoining rooms with doorless passageways or ventilation grills between the rooms.

1. Determine the volume of the space (length x width x height).

   Length x Width x Height =_____cu. ft. (volume of space)

   Example: Space size 20 ft. (length) x 16 ft. (width) x 8 ft. (ceiling height) = 2560 cu. ft. (volume of space)

   If additional ventilation to adjoining room is supplied with grills or openings, add the volume of these rooms to the total volume of the space.

2. Multiply the space volume by 20 to determine the maximum Btu/Hr the space can support.

   _____(volume of space) x 20 = (Maximum Btu/Hr the space can support)

   Example: 2560 cu. ft. (volume of space) x 20 = 51,200 (maximum Btu/Hr the space can support)

3. Add the Btu/Hr of all fuel burning appliances in the space.

Vent-free heater	_____	Btu/Hr
Gas water heater*	_____	Btu/Hr
Gas furnace	_____	Btu/Hr
Vented gas heater	_____	Btu/Hr
Gas fireplace logs	_____	Btu/Hr
Other gas appliances* +	_____	Btu/Hr
Total =	_____	Btu/Hr

   * Do not include direct-vent gas appliances. Direct-vent draws combustion air from the outdoors and vents to the outdoors.

   Example:

Gas water heater	40,000	Btu/Hr
Vent-free heater +	20,000	Btu/Hr
Total =	60,000	Btu/Hr

4. Compare the maximum Btu/Hr the space can support with the actual amount of Btu/Hr used.

   _____ Btu/Hr (maximum can support)

   _____ Btu/Hr (actual amount used)

   Example:

   51,200 Btu/Hr (maximum can support)

   60,000 Btu/Hr (actual amount used)

The space in the above example is a confined space because the actual Btu/Hr used is more than the maximum Btu/Hr the space can support. You must provide additional fresh air. Your options are as follows:

A. Rework worksheet, adding the space of an adjoining room. If the extra space provides an unconfined space, remove door to adjoining room or add ventilation grills between rooms. See *Ventilation Air From Inside Building*, page 7.

B. Vent room directly to the outdoors. See *Ventilation Air From Outdoors*, page 7.

C. Install a lower Btu/Hr heater, if lower Btu/Hr size makes room unconfined.

If the actual Btu/Hr used is less than the maximum Btu/Hr the space can support, the space is an unconfined space. You will need no additional fresh air ventilation.

⚠ WARNING: If the area in which the heater may be operated is smaller than that defined as an unconfined space or if the building is of unusually tight construction, provide adequate combustion and ventilation air by one of the methods described in the *National Fuel Gas Code, ANSI Z223.1/NFPA 54 Section 5.3* or applicable local codes.

AIR FOR COMBUSTION AND VENTILATION
Continued

VENTILATION AIR

Ventilation Air From Inside Building

This fresh air would come from an adjoining unconfined space. When ventilating to an adjoining unconfined space, you must provide two permanent openings: one within 12" of the ceiling and one within 12" of the floor on the wall connecting the two spaces (see options 1 and 2, Figure 2). You can also remove door into adjoining room (see option 3, Figure 2). Follow the *National Fuel Gas Code, ANSI Z223.1/NFPA 54, Section 5.3, Air for Combustion and Ventilation* for required size of ventilation grills or ducts.

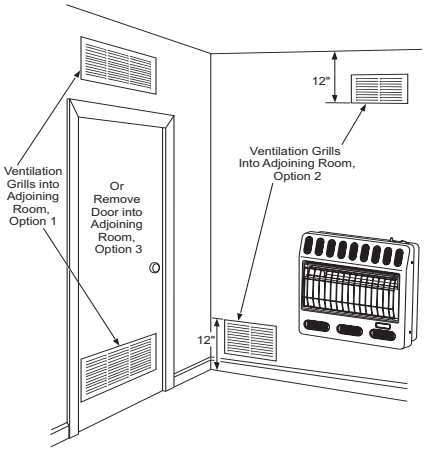


Figure 2 - Ventilation Air from Inside Building

Ventilation Air From Outdoors

Provide extra fresh air by using ventilation grills or ducts. You must provide two permanent openings: one within 12" of the ceiling and one within 12" of the floor. Connect these items directly to the outdoors or spaces open to the outdoors. These spaces include attics and crawl spaces. Follow the *National Fuel Gas Code, ANSI Z223.1/NFPA 54, Section 5.3, Air for Combustion and Ventilation* for required size of ventilation grills or ducts.

IMPORTANT: Do not provide openings for inlet or outlet air into attic if attic has a thermostat-controlled power vent. Heated air entering the attic will activate the power vent.

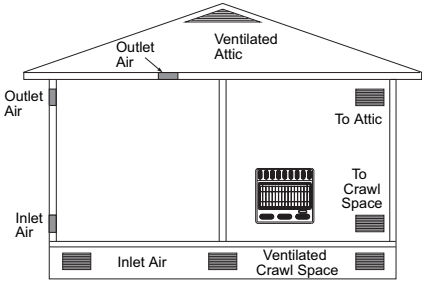


Figure 3 - Ventilation Air from Outdoors

INSTALLATION

NOTICE: This heater is intended for use as supplemental heat. Use this heater along with your primary heating system. Do not install this heater as your primary heat source. If you have a central heating system, you may run system's circulating blower while using heater. This will help circulate the heat throughout the house. In the event of a power outage, you can use this heater as your primary heat source.

⚠ WARNING: A qualified service person must install heater. Follow all local codes.

CHECK GAS TYPE

Use only the correct type of gas (natural or propane/LP). If your gas supply is not the correct gas type, do not install heater. Call dealer where you bought heater for proper type heater.

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.

⚠ WARNING: This appliance is equipped for natural or propane/LP gas. Field conversion is not permitted.

INSTALLATION
Continued

INSTALLATION ITEMS

Before installing heater, make sure you have the items listed below.

- for propane/LP gas, external regulator (supplied by installer)
- piping (check local codes)
- sealant (resistant to propane/LP gas)
- equipment shutoff valve *
- ground joint union
- sediment trap
- tee joint
- pipe wrench
- for natural gas, test gauge connection*

* A CSA design-certified equipment shutoff valve with 1/8" NPT tap is an acceptable alternative to test gauge connection. The optional CSA design-certified equipment shutoff valve can be purchased from your dealer. See *Accessories*, page 30.

LOCATING HEATER

This heater is designed to be mounted on a wall.

⚠ WARNING: Maintain the minimum clearances shown in Figure 4. If you can, provide greater clearances from floor, ceiling and joining wall.

You can locate heater on floor, away from a wall. An optional floor mounting stand is needed. Purchase the floor mounting stand from your dealer. See *Accessories*, page 30.

⚠ WARNING: Never install the heater

- **in a bedroom or bathroom**
- **in a recreational vehicle**
- **where curtains, furniture, clothing or other flammable objects are less than 36" (91.5 cm) from the front, top or sides of the heater**
- **as a fireplace insert**
- **in high traffic areas**
- **in windy or drafty areas**

⚠ CAUTION: This heater creates warm air currents. These currents move heat to wall surfaces next to heater. Installing heater next to vinyl or cloth wall coverings or operating heater where impurities (such as, but not limited to, tobacco smoke, aromatic candles, cleaning fluids, oil or kerosene lamps, etc.) in the air exist, may discolor walls or cause odors.

IMPORTANT: Vent-free heaters add moisture to the air. Although this is beneficial, installing heater in rooms without enough ventilation air may cause mildew to form from too much moisture. See *Air for Combustion and Ventilation,* page 5. If high humidity is experienced, a dehumidifier may be used to help lower the water vapor content in the air.

⚠ CAUTION: If you install the heater in a home garage

- **heater pilot and burner must be at least 18" (45.7 cm) above floor**
- **locate heater where moving vehicle will not hit it**

For convenience and efficiency, install heater

- where there is easy access for operation, inspection and service
- in coldest part of room

To use fan, locate heater near an electrical outlet.

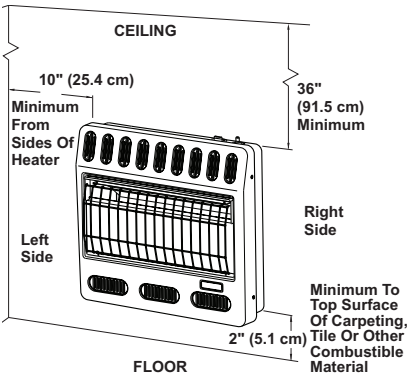


Figure 4 - Mounting Clearances As Viewed From Front of Heater

INSTALLATION
Continued

INSTALLING HEATER TO WALL

Mounting Bracket

Locate mounting bracket in heater carton. Remove mounting bracket from heater carton.

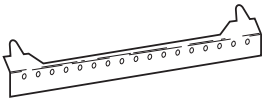


Figure 5 - Mounting Bracket

Removing Front Panel Of Heater

1. Remove the four painted screws, two on each side of front panel.
2. Pull bottom of front panel forward, then out.
3. Remove any remaining packaging materials.

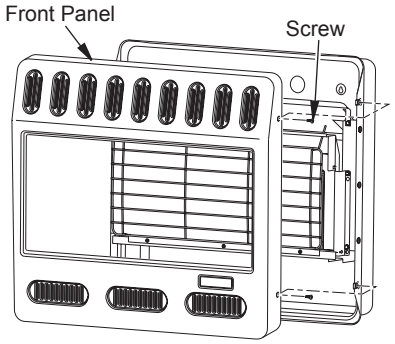


Figure 6 - Removing Front Panel Of Heater

Methods For Attaching Mounting Bracket To Wall

Only use last hole on each end of mounting bracket to attach bracket to wall. These two holes are 14" (35.6 cm) apart from their centers. Attach mounting bracket to wall in one of two ways:

1. Attaching to wall stud
2. Attaching to wall anchor

Attaching to Wall Stud: This method provides the strongest hold. Insert mounting screws through mounting bracket and into wall studs.

Attaching to Wall Anchor: This method allows you to attach mounting bracket to hollow walls (wall areas between studs) or to solid walls (concrete or masonry).

Decide which method better suits your needs. Either method will provide a secure hold for the mounting bracket.

Marking Screw Locations

1. Tape mounting bracket to wall where heater will be located. Make sure mounting bracket is level.

⚠ WARNING: Maintain minimum clearances shown in Figure 7. If you can, provide greater clearances from floor and joining wall.

2. Mark screw locations on wall (see Figure 7).
   Note: Only mark last hole on each end of mounting bracket. Insert mounting screws through these holes only.
3. Remove tape and mounting bracket from wall.

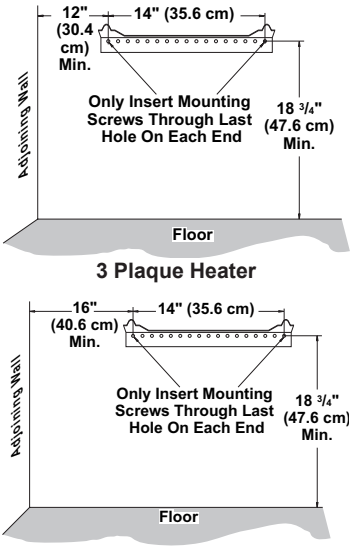


Figure 7 - Mounting Bracket Clearances

Attaching Mounting Bracket To Wall

Note: Wall anchors, mounting screws and spacers are in hardware package. The hardware package is provided with heater.

INSTALLATION
Continued

Attaching To Wall Stud Method

For attaching mounting bracket to wall studs

1. Drill holes at marked locations using 9/64" drill bit.
2. Place mounting bracket onto wall. Line up last hole on each end of bracket with holes drilled in wall.
3. Insert mounting screws through bracket and into wall studs.
4. Tighten screws until mounting bracket is firmly fastened to wall studs.

Attaching To Wall Anchor Method

For attaching mounting bracket to hollow walls (wall areas between studs) or solid walls (concrete or masonry)

1. Drill holes at marked locations using 5/16" drill bit. For solid walls (concrete or masonry), drill at least 1" (2.5 cm) deep.
2. Fold wall anchor as shown in Figure 8.
3. Insert wall anchor (wings first) into hole. Tap anchor flush to wall.
4. For thin walls [1/2" (1.3 cm) or less], insert red key into wall anchor. Push red key to "pop" open anchor wings (see Figure 9). *IMPORTANT:* Do not hammer key! For thick walls [over 1/2" (1.3 cm) thick] or solid walls, do not pop open wings.
5. Place mounting bracket onto wall. Line up last hole on each end of bracket with wall anchors.
6. Insert mounting screws through bracket and into wall anchors.
7. Tighten screws until mounting bracket is firmly fastened to wall.

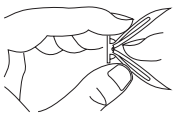


Figure 8 - Folding Anchor

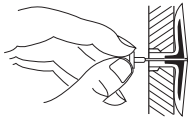


Figure 9 - Popping Open Anchor Wings For Thin Walls

Placing Heater On Mounting Bracket

1. Locate two horizontal slots on back panel of heater.
2. Place heater onto mounting bracket. Slide horizontal slots onto stand-out tabs on mounting bracket.

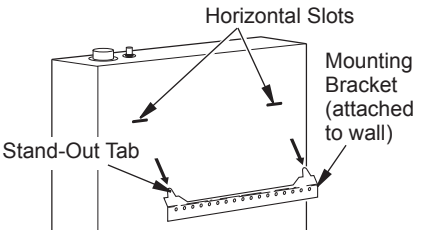


Figure 10 - Mounting Heater Onto Mounting Bracket

Installing Bottom Mounting Screws

1. Locate two bottom mounting holes. These holes are near bottom on back panel of heater (see Figure 11).
2. Mark screw locations on wall.
3. Remove heater from mounting bracket.
4. If installing bottom mounting screws into hollow or solid wall, install wall anchors. Follow steps 1 through 4 under *Attaching To Wall Anchor Method*.

   If installing bottom mounting screw into wall stud, drill holes at marked locations using 9/64" drill bit.
5. Replace heater onto mounting bracket.
6. Place spacers between bottom mounting holes and wall anchor or drilled hole.
7. Hold spacer in place with one hand. With other hand, insert mounting screw through bottom mounting hole and spacer. Place tip of screw in opening of wall anchor or drilled hole.
8. Tighten both screws until heater is firmly secured to wall. Do not over tighten.

   Note: Do not replace front panel at this time. Replace front panel after making gas connections and checking for leaks (see page 12).

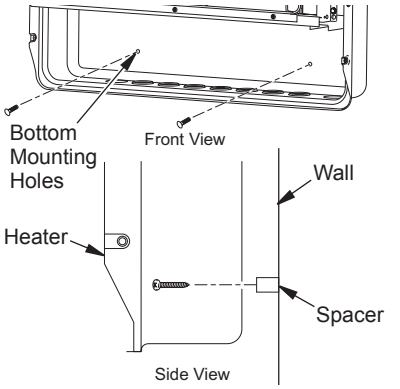


Figure 11 - Installing Bottom Mounting Screws

INSTALLATION
Continued

MOUNTING HEATER TO FLOOR WITH OPTIONAL FLOOR KIT

Mounting Base Feet to Heater

1. Lay heater cabinet on its back on a table with the heater bottom overhanging the table edge.
2. Align holes in base foot with mounting holes on bottom of cabinet (see Figure 12).
3. Secure base foot to heater using sheet metal screws.
4. Repeat for other side.

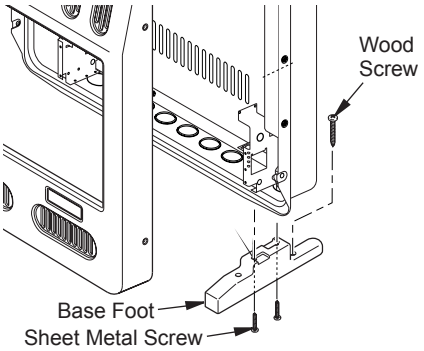


Figure 12 - Installing Base Feet (actual heater may vary from illustration)

Mounting Base Feet to Floor (Where required by local code)

1. Remove front panel (see *Removing Front Panel of Heater,* page 9).
2. Position heater with base feet in desired location. Mark holes for drilling. Remove heater with base.
3. For carpeted floors, make a small cut with a sharp knife at marked locations prior to drilling. If mounting base to a wood floor, drill 1/8" diameter hole, 3/4" deep. (Do not use anchors in wood floors).
   If mounting base to a concrete floor, drill with 1/4" diameter concrete drill bit, $1^{3}/_{8}$" into floor. Insert anchors completely into holes.
4. Reposition heater with base feet over holes. Secure base to floor with wood screws. See Figure 12.

INSTALLING REMOTE CONTROL RECEIVER

Remote control receiver must be installed to operate the remote control.

1. Locate two packages of AA batteries, remote receiver and hook and loop strip in hardware bag included with your heater.
2. Remove battery cover on receiver and install batteries as shown in Figure 13. Replace battery cover.
3. Remove adhesive backing on hook and loop strip and attach to receiver in location shown in Figure 14.
4. Place receiver with hook and loop strip's sticky side down in approximate location on inside of heater shown in Figure 14.
5. Connect wires from receiver to wires on control valve solenoid.

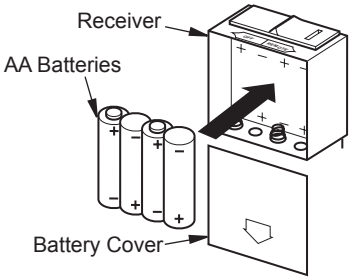


Figure 13 - Installing Batteries in Receiver

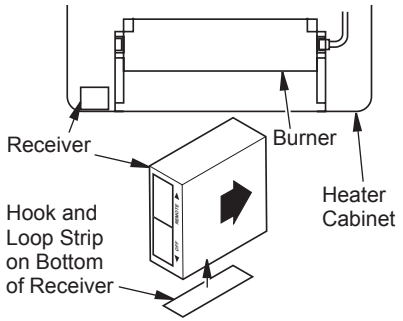


Figure 14 - Installing Remote Receiver

INSTALLING BATTERIES INTO REMOTE

1. Locate hand-held remote control in hardware bag included with your heater.
2. Remove battery cover and insert supplied batteries into remote control as shown in Figure 15.
3. Replace battery cover.

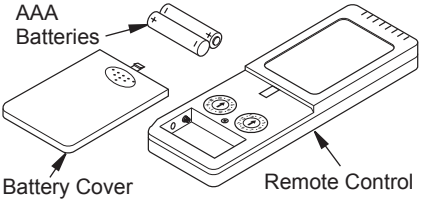


Figure 15 - Installing Batteries in Hand-Held Remote Control

INSTALLATION
Continued

CONNECTING TO GAS SUPPLY

⚠ WARNING: This appliance requires a 3/8" NPT (National Pipe Thread) inlet connection to the pressure regulator.

⚠ WARNING: A qualified service person must connect heater to gas supply. Follow all local codes.

⚠ WARNING: For natural gas, never connect heater to private (non-utility) gas wells. This gas is commonly known as wellhead gas.

IMPORTANT: For natural gas, check gas line pressure before connecting heater to gas line. Gas line pressure must be no greater than 10.5" of water. If gas line pressure is higher, heater regulator damage could occur.

⚠ CAUTION: For propane/LP gas, never connect heater directly to the propane/LP supply. This heater requires an external regulator (not supplied). Install the external regulator between the heater and propane/LP supply.

For propane/LP gas, the installer must supply an external regulator. The external regulator will reduce incoming gas pressure. You must reduce incoming gas pressure to between 11" and 14" of water. If you do not reduce incoming gas pressure, heater regulator damage could occur. Install the external regulator with the vent pointing down as shown in Figure 16. Pointing the vent down protects it from freezing rain or sleet.

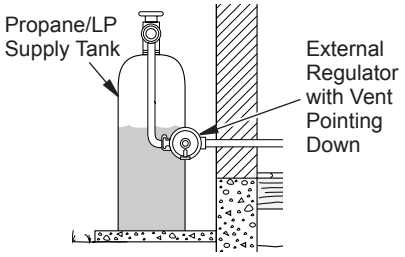


Figure 16 - External Regulator With Vent Pointing Down

⚠ CAUTION: Use only new, black iron or steel pipe. Internally-tinned copper tubing may be used in certain areas. Check your local codes. Use pipe of large enough diameter to allow proper gas volume to heater. If pipe is too small, undue loss of volume will occur.

Typical Inlet Pipe Diameters

16-18,000 Btu/hr models - 3/8" or greater
26-30,000 Btu/hr models - 1/2" or greater

Installation must include equipment shutoff valve, union and plugged 1/8" NPT tap. Locate NPT tap within reach for test gauge hook up. NPT tap must be upstream from heater (see Figure 17).

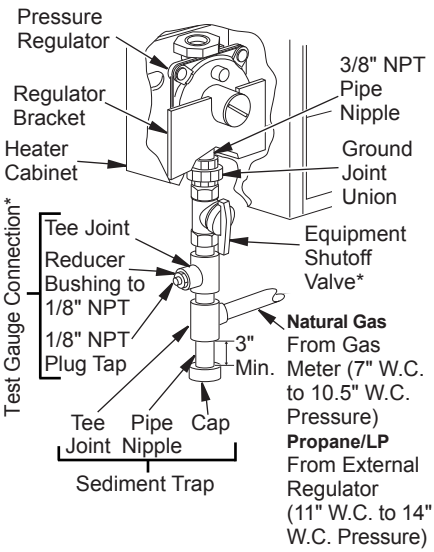


Figure 17 - Gas Connection

* A CSA design-certified equipment shutoff valve with 1/8" NPT tap is an acceptable alternative to test gauge connection. Purchase the optional CSA design-certified equipment shutoff valve from your dealer. See *Accessories*, page 30.

INSTALLATION
Continued

IMPORTANT: Install an equipment shutoff valve in an accessible location. The equipment shutoff valve is for turning on or shutting off the gas to the appliance.

Apply pipe joint sealant lightly to male NPT threads. This will prevent excess sealant from going into pipe. Excess sealant in pipe could result in clogged heater valves.

⚠ WARNING: Use pipe joint sealant that is resistant to liquid petroleum (LP) gas.

Install sediment trap in supply line as shown in Figure 17, page 12. Locate sediment trap where it is within reach for cleaning. Locate sediment trap where trapped matter is not likely to freeze. A sediment trap traps moisture and contaminants. This keeps them from going into heater controls. If sediment trap is not installed or is installed wrong, heater may not run properly.

IMPORTANT: Hold the pressure regulator with wrench when connecting it to gas piping and/or fittings. Do not over tighten pipe connection to regulator. The regulator body could be damaged.

CHECKING GAS CONNECTIONS

⚠ WARNING: Test all gas piping and connections, internal and external to unit, for leaks after installing or servicing. Correct all leaks at once.

⚠ WARNING: Never use an open flame to check for a leak. Apply a noncorrosive leak detection fluid to all joints. Bubbles forming show a leak. Correct all leaks at once.

⚠ CAUTION: For propane/LP gas, make sure external regulator has been installed between propane/LP supply and heater. See guidelines under *Connecting to Gas Supply*, page 12.

PRESSURE TESTING GAS SUPPLY PIPING SYSTEM

Test Pressures In Excess Of 1/2 PSIG (3.5 kPa)

1. Disconnect appliance with its appliance main gas valve (control valve) and equipment shutoff valve from gas supply piping system. Pressures in excess of 1/2 psig will damage heater regulator.
2. Cap off open end of gas pipe where equipment shutoff valve was connected.
3. Pressurize supply piping system by either opening propane/LP supply tank valve for propane/LP gas or opening main gas valve located on or near gas meter for natural gas or using compressed air.
4. Check all joints of gas supply piping system. Apply a noncorrosive leak detection fluid to all joints. Bubbles forming show a leak.
5. Correct all leaks at once.
6. Reconnect heater and equipment shutoff valve to gas supply. Check reconnected fittings for leaks.

Test Pressures Equal To or Less Than 1/2 PSIG (3.5 kPa)

1. Close equipment shutoff valve (see Figure 18).
2. Pressurize supply piping system by either opening propane/LP supply tank valve for propane/LP gas or opening main gas valve located on or near gas meter for natural gas or using compressed air.
3. Check all joints from gas meter for natural gas (see Figure 19) or propane/LP supply tank for propane/LP gas, to equipment shutoff valve (see Figure 20). Apply a noncorrosive leak detection fluid to all joints. Bubbles forming show a leak.
4. Correct all leaks at once.

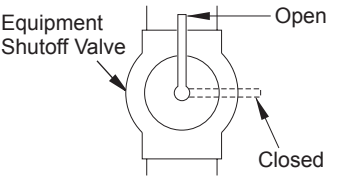


Figure 18 - Equipment Shutoff Valve

INSTALLATION
Continued

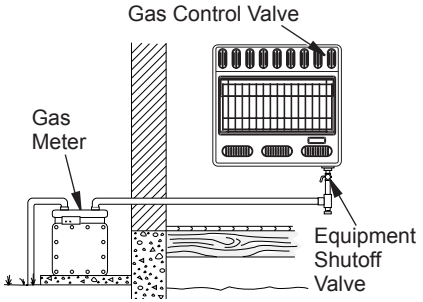


Figure 19 - Checking Gas Joints for Natural Gas

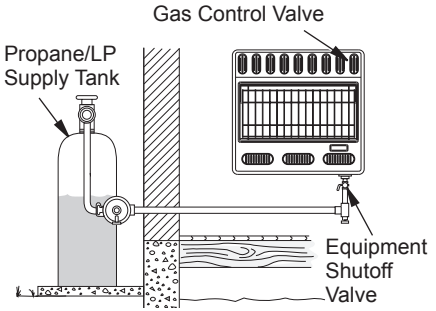


Figure 20 - Checking Gas Joints for Propane/LP Gas

PRESSURE TESTING HEATER GAS CONNECTIONS

1. Open equipment shutoff valve (see Figure 18, page 13).
2. For natural gas open main gas valve located on or near gas meter. For propane/LP gas open propane/LP supply tank valve.
3. Make sure control knob of heater is in the OFF position.
4. Check all joints from equipment shutoff valve to thermostat gas valve (see Figure 19 or 20). Apply a noncorrosive leak detection fluid to all joints. Bubbles forming show a leak.
5. Correct all leaks at once.
6. Light heater (see *Operating Heater,* page 15). Check all other internal joints for leaks.
7. Turn off heater (see *To Turn Off Gas to Appliance*, page 15).
8. Replace front panel.

CONNECTING TO ELECTRICAL SUPPLY

⚠ WARNING: Fan accessory must be grounded. Fan comes with a three-prong, grounding plug as shown in Figure 21. The plug is your protection against electrical shock. Plug it into a standard, three-hole, grounded, outlet. If cord needs replacing, use only a cord with a three-prong, grounding plug.

⚠ CAUTION: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation (see page 29).

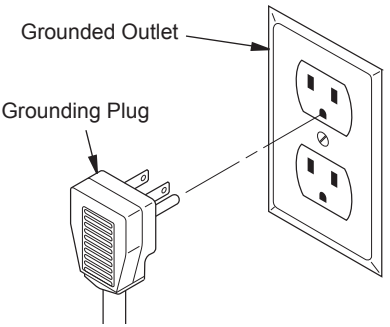


Figure 21 - Grounding Plug

EXTENSION CORD

Use extension cord if needed. The cord must have a three-prong, grounding plug and a three-hole receptacle. Make sure cord is in good shape. It must be heavy enough to carry the current needed. An undersized cord will cause a drop in line voltage. This will result in loss of power and overheating. Use a No. 16 AWG cord for lengths less than 50 feet (15.24 m) .

⚠ CAUTION: Verify proper operation after servicing.

OPERATING HEATER

FOR YOUR SAFETY READ BEFORE LIGHTING

⚠ WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

A. This appliance has a pilot which must be lighted by hand. When lighting the pilot, follow these instructions exactly.

B. BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

WHAT TO DO IF YOU SMELL GAS

- **Do not try to light any appliance.**
- **Do not touch any electric 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.**

C. Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

D. 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.

LIGHTING INSTRUCTIONS

1. STOP! Read the safety information above.
2. Make sure equipment shutoff valve is fully open.
3. Turn off any electric power to the appliance if service is to be performed.
4. Turn pilot knob clockwise ↷ to the OFF position.
5. Wait five minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information, column 1. If you don't smell gas, go to the next step.
6. Press in pilot knob and turn control knob counterclockwise ↶ to the PILOT position. Keep pilot knob pressed in for five (5) seconds (see Figure 22).
7. With pilot knob pressed in, push down and release ignitor button. This will light pilot. The pilot is attached to the front of burner.

   Note: You may be running this heater for the first time after hooking up to gas supply. If so, the control knob may need to be pressed in for 30 seconds or more. This will allow air to bleed from the gas system.

   If needed, keep pressing ignitor button until pilot lights. If ignitor does not light pilot, refer to *Troubleshooting,* page 22 or contact a qualified service person or gas supplier for repairs. Until repairs are made, light pilot with match. See *Manual Lighting Procedure*.
8. Keep pilot knob pressed in for 30 seconds after lighting pilot. After 30 seconds, release pilot knob.
   - If control knob does not pop up when released, contact a qualified service person or gas supplier for repairs.

   Note: If pilot goes out, repeat steps 4 through 7.
9. Turn control knob on heater counterclockwise ↶ to ON. Press button on remote to turn on manually or use remote to activate thermostat function.
10. To shut off burner only and leave pilot lit, turn control knob clockwise ↷ to the PILOT position.

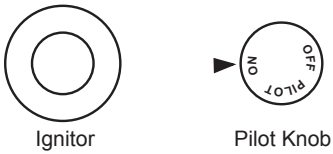


Figure 22 - Pilot Knob In The ON Position

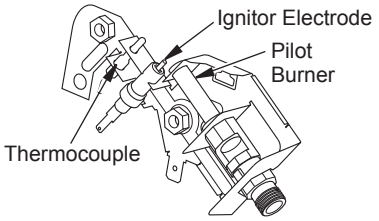


Figure 23 - Pilot (actual pilot may vary)

OPERATING HEATER
Continued

⚠ WARNING: Always operate manual control heaters at the locked positions. Operation between these positions may create a possible health hazard if used in a poorly ventilated room. Read owner's manual for complete instructions.

⚠ CAUTION: Do not try to adjust heating levels by using the equipment shutoff valve.

TO TURN OFF GAS TO APPLIANCE

To Shut Off Heater:

1. Turn control knob clockwise to the OFF position.
2. Turn off all electric power to the appliance if service is to be performed.

MANUAL LIGHTING PROCEDURE

1. Remove front panel (see Figure 6, page 9).
2. Follow steps 1 through 7 under *Lighting Instructions*, page 16.
3. With control knob pressed in, strike match. Hold match to pilot until pilot lights.
4. Keep control knob pressed in for 30 seconds after lighting pilot. After 30 seconds, release control knob. Now follow step 9, under *Lighting Instructions*, page 16.
5. Replace front panel.

HAND-HELD REMOTE OPERATION

The remote control transmits signals to receiver. This remote control system was developed to provide a safe, reliable and user friendly remote control system for gas heating appliances. The system can be operated manually from the remote control. The system operates on one of 255 security codes on the remote control and receiver. Security codes can be set by the user.

IMPORTANT: The remote control will only operate heater if pilot light is lit and control knob is in the ON position.

Remote Control

The remote control has ON, OFF, THERMOSTAT, and PROGRAM functions. This is part of the system's design. If the LCD screen is not working check the position of the remote control's battery.

The remote control has two code switches located on the back that will need to be set when installation is complete, see *Code Setting* page 19.

The remote control operates on 2 AAA 1.5V size batteries (included) that powers the RF signal and LCD screen. Before using the remote control, batteries must be installed into the battery compartments. See *Installing Batteries Into Remote*, page 11.

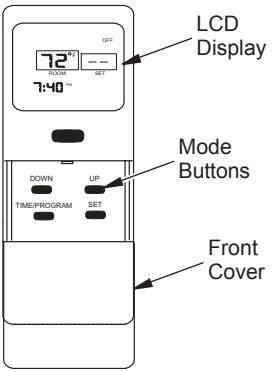


Figure 24 - Remote Control

LCD Display

1. LOW - Battery power is low. Replace batteries within two weeks.
2. PROGRAM - Indicates when unit is functioning in one of the preset program settings.
3. MODE - Indicates operation MODE of system. ON indicates system is on either manually or thermostatically. OFF indicates entire system is turned off. THERMO indicates system will automatically cycle on and off depending on program.
4. SET - Indicates desire set room temperature for THERMO operation.
5. FLAME - Indicates burner and valve in operation.
6. CLOCK - Indicates current time in AM or PM.
7. ROOM - Indicates CURRENT room temperature.
8. °F indicates degrees Fahrenheit (°C indicates degrees Celsius).

OPERATING HEATER
Continued

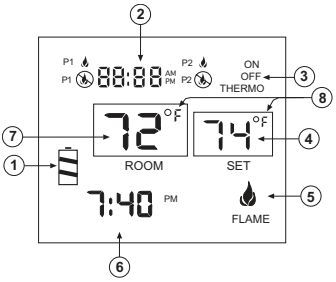


Figure 25 - LCD Display

Buttons

MODE - Changes modes from ON, THERMO and OFF.

DOWN - Lowers set temperature in THERMO mode.

UP - Increases set temperature in THERMO mode

TIME/PROGRAM - Activates time setting and activates PROGRAM mode.

SET - Used to set clock and timer.

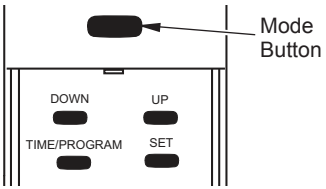


Figure 26 - Mode Buttons

Setting the Clock

Slide open plastic cover on front of remote control to expose setting buttons.

The cover protects buttons from being changed accidentally. Close cover after completing the following settings and programming.

1. Press and hold TIME/PROGRAM button on remote control for more than 2 seconds. Hour digit(s) will begin flashing.
2. Press UP or DOWN button until desired hour is displayed in AM or PM.
3. Press and release TIME/PROGRAM button again and minute digits will begin flashing.
4. Press UP or DOWN button until desired minutes are displayed.
5. Press and release SET button on remote control to stop time digits from flashing and set the time.

Note: Flashing numbers on display indicate system is awaiting user input, such as using UP and DOWN buttons to program a new setting. If no change is made to flashing digits within 15 seconds, system will complete procedure last programmed and reset the display to its normal state.

Setting Fahrenheit and Celsius Scale

Factory setting for temperature is 0° F. To change this setting to 0° C, press UP button and DOWN button on remote control at the same time to change from 0° F to 0° C. Follow this same procedure to change from 0° C back to 0° F.

Manual Function

To operate system in ON manual mode, press MODE button. The flame icon will come on. The word ON and the flame icon will appear on LCD screen in ON mode.

To operate system in OFF manual mode, press MODE button again. The FLAME icon will shut off. The word OFF will appear on LCD screen. The flame icon will not appear on LCD screen in OFF mode.

Thermostat Function

This remote control system can be thermostatically controlled when remote control is in THERMO mode (THERMO must be displayed on the screen). To set desired room temperature, press MODE button to place remote control into THERMO mode, then press UP or DOWN button to select desired room temperature. Within 5 seconds appliance will turn on or off. The highest SET temperature is 99° F (37° C). The lowest SET temperature is 45° F (8° C). The factory set number will be 45° F (8° C).

If room temperature is higher than 99° F, the word HI will display on the room temperature window frame. If room temperature is lower than 32° F, the word LO will display on the room temperature window frame.

Operational Note: To conserve battery power, changes in room temperature are automatically updated every 2 minutes to remote control. Mode button will operate ON-THERMO-OFF in series that will cycle from ON to THERMO to OFF.

Setting Programs

In Program Mode, remote control will allow heater to automatically turn on and off at specific times. Two on and off segments per day may be set, or settings previously programmed at the factory may be used. On and off times are available in 15 minute increments.

OPERATING HEATER

Continued

To Activate the Program Mode

A short push (press and release) on TIME/PROGRAM button will activate or deactivate program mode.

A long push (press and hold for more than 5 seconds) on TIME/PROGRAM button will enter into setting of program.

When the program mode is activated, the P-1 and P-2 icons and the word OFF will display on the screen. This means that unit turns off manual mode and enters into program mode. The unit will automatically check if current time is within pre-programmed ON time.

If current time is within program on time, unit will enter into thermo mode automatically and the word THERMO and set temperature digit(s) will display on screen.

When room temperature is below set temperature, unit will turn on and the word ON will replace the word OFF on the screen. The flame icon will also show on the screen. Unit will continue to operate in thermo mode until program off time is reached. When program off time is reached, unit will turn off and stay off until next program on time is reached or until user turns program mode off and turns unit on in manual or thermo mode.

If current time is not within program on time, unit will stay off until pre-programmed turn on time is reached. Pre-programmed time (P-1 and P-2 icons) will continue to display on screen indicating that unit is in program mode until set time is reached.

When program mode is deactivated, P-1 and P-2 icons and set temperature digit(s) will disappear from screen.

Factory Settings

The program function is preset at the following on and off times. These times will apply to every day of the week.

Program 1 (P1): Turn on at 7:00 AM. Turn off at 9:00 AM.

Program 2 (P2): Turn on at 5:00 PM. Turn off at 8:00 PM.

Setting a New Program

To change Program from the factory settings to new settings:

1. Press and hold TIME/PROGRAM button for more than 5 seconds to enter Set Program Mode.
2. P1 ON will flash. Push UP or DOWN button until desired on time for Program 1 is reached. Press SET button.
3. P1 OFF will flash. Push UP or DOWN button until desired off time for Program 1 is reached. Press SET button.
4. P2 ON will flash. Push UP or DOWN button until desired on time for Program 2 is reached. Press SET button.
5. P2 OFF will flash. Push UP or DOWN button until desired off time for Program 2 is reached. Press SET button.

The new program is now set and unit is in program mode. To take unit out of program mode, press and release TIME/PROGRAM button.

Note: In set program mode, set times will flash for 15 seconds. If the UP, DOWN or SET button is not pressed within 15 seconds, system will automatically complete set up process and LCD Screen will revert to normal readouts. The first factory set temperature is at 45° F. Appliance will not turn on if room is not below the set temperature. If set temperature is at 70° F, appliance will come on only if room temperature is below 70° F.

Low Battery Indicator

A low BATTERY ICON on left side of LCD screen will appear when battery power has dropped significantly. At this time, approximately two weeks of battery power remains until remote control may experience partial or complete loss of functions.

Childproof "Lock Out" – (CP)

This remote control includes a childproof lock out feature that allows the user to "lock out" operation of appliance from remote control.

1. To activate lock out feature, press and hold UP and TIME/PROGRAM buttons together for 5 seconds. Letters CP will appear in room temp window frame on LCD screen.
2. To disengage lock out, press and hold UP and TIME/PROGRAM buttons together for 5 seconds or more. Letters CP will disappear from LCD screen and remote control will return to its normal operating condition.

Note: If appliance is already operating in on or thermo modes engaging lock out will not cancel the operating mode. Engaging lock out only prevents manual operation of remote control. If in auto modes, the thermo operation will continue to operate normally. To totally lock out operation of remote control's operating signals, remote control's mode must be set to off.

OPERATING HEATER
Continued

Note: When lock-out mode is activated letters CP will appear in room temp window. After activation is complete room temp window will default back to displaying room temperature. If any buttons are pressed room temp window will then display CP indicating remote control is in lock-out mode.

Remote Receiver (located inside heater)
The remote receiver operates on 4 AA 1.5V batteries (included). *IMPORTANT:* New or fully charged batteries are essential for proper operation of the remote receiver.

The remote receiver houses the microprocessor that responds to commands from remote control to control system operation. The remote receiver has a 2 position slide switch for selecting the mode of operation: REMOTE/OFF

- With slide switch in REMOTE position, system will only operate if remote receiver receives commands from remote control.
- With slide switch in OFF position, system is off.
- It is suggested that slide switch be placed in OFF position if you will be away from your home for an extended period of time. Placing slide switch in OFF position also functions as a safety lock out by both turning system off rendering remote receiver inoperative.

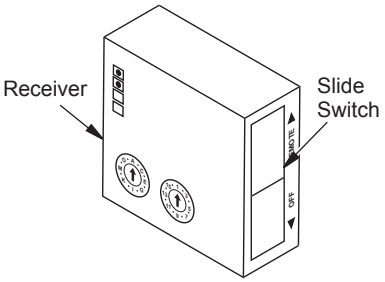


Figure 27 - Receiver

General Information
Operation

- This remote control will operate gas valves latching solenoid to open gas flow to full ON.
- When ON button is pressed the remote control sends a RF signal to the receiver. The receiver then sends a pulse of 6 volts of power to the solenoid. The solenoid then opens gas flow to burner then to full ON.
- When OFF button is pressed the remote control sends a RF signal to the receiver. The receiver then sends a pulse of 6 volts of power to the solenoid. The solenoid then closes gas flow to burner then to full OFF.
- Heater will only work with hand held remote control. Receiver slide switch is only for positive OFF or REMOTE operation.
- The remote control will only operate heater when pilot is lit and control knob is in the ON position.

Note: Extensive use of latching solenoid (ON/OFF) will reduce receiver's battery life significantly.

Code Setting
IMPORTANT: All units are shipped from factory with code switch preset to same codes. These switches must be reset to different codes during installation to prevent interference from another remote.

Each transmitter can use one of 255 security codes that can be reset. It WILL be necessary to set remote control and receiver code switches to a matching security code upon initial use. If a replacement remote control or receiver is purchased from your dealer or factory, code switches must be set to match receiver and remote control code switches. When setting code switches, set A through P switch on remote control to same setting as A through P switch on receiver. Then set 1 through 16 switch on remote control to same setting as 1 through 16 switch on receiver.

Note: A small screwdriver can be used to change these code switches.

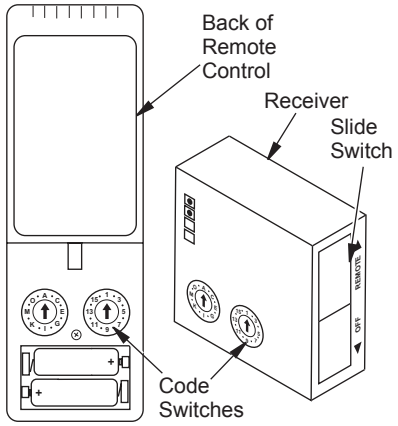


Figure 28 - Receiver and Remote Control Setup

OPERATING HEATER

Continued

OPERATING BLOWER

This heater has a thermostatic blower that will automatically turn ON or OFF.

Note: Your heater and thermostat blower will not turn on and off at the same time. The heater may run for several minutes before the blower turns on. After the heater modulates to the pilot position, the blower will continue to run. The blower will shut off after the heater cabinet temperature decreases.

Note: It is safe to operate heater with blower turned off. However, the blower helps distribute heated air from the heater.

INSPECTING HEATER

Check pilot flame pattern and burner flame pattern often.

PILOT FLAME PATTERN

Figure 29 shows a correct pilot flame pattern. Figure 30 shows an incorrect pilot flame pattern. The incorrect pilot flame is not touching the thermocouple. This will cause the thermocouple to cool. When the thermocouple cools, the heater will shut down.

If pilot flame pattern is incorrect, as shown in Figure 30

- turn heater off (see *To Turn Off Gas to Appliance*, page 16)
- see *Troubleshooting*, page 22

Note: The pilot flame on natural gas units will have a slight curve, but flame should be blue and have no yellow or orange color.

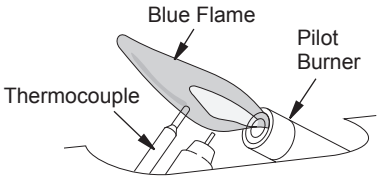


Figure 29 - Correct Pilot Flame Pattern

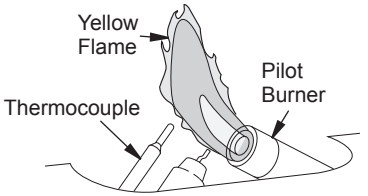


Figure 30 - Incorrect Pilot Flame Pattern

BURNER FLAME PATTERN

Figure 31 shows the burners in the ON and OFF positions. Burners will come on and go off when the remote control is set in the manual on mode or thermostat mode.

Figure 32 shows a correct burner flame pattern. Figure 33 shows an incorrect burner flame pattern.

If burner flame pattern is incorrect, as shown in Figure 33

- turn heater off (see *To Turn Off Gas to Appliance,* page 16)
- see *Troubleshooting*, page 22

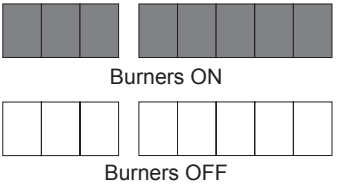


Figure 31 - Burner Patterns

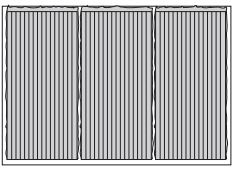


Figure 32 - Correct Burner Flame Pattern

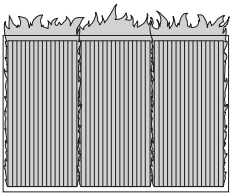


Figure 33 - Incorrect Burner Flame Pattern

CLEANING AND MAINTENANCE

⚠ WARNING: Turn off heater and let cool before cleaning.

⚠ CAUTION: You must keep control areas, burner and circulating air passageways of heater clean. Inspect these areas of heater before each use. Have heater inspected yearly by a qualified service person. Heater may need more frequent cleaning due to excessive lint from carpeting, bedding material, pet hair, etc.

⚠ WARNING: Failure to keep the primary air opening(s) of the burner(s) clean may result in sooting and property damage.

ODS/PILOT AND BURNER

Use a vacuum cleaner, pressurized air or small, soft bristled brush to clean.

BURNER PILOT AIR INLET

The primary air inlet holes allow the proper amount of air to mix with the gas. This provides a clean burning flame. Keep these holes clear of dust, dirt and lint. Clean these air inlet holes prior to each heating season. Blocked air holes will create soot. We recommend that you clean the unit every three months during operation and have heater inspected yearly by a qualified service person.

We also recommend that you keep the burner tube and pilot assembly clean and free of dust and dirt. To clean these parts we recommend using compressed air no greater than 30 PSI. Your local computer store, hardware store or home center may carry compressed air in a can. If using compressed air in a can, please follow the directions on the can. If you don't follow directions on the can, you could damage the pilot assembly.

1. Shut off the unit, including the pilot. Allow the unit to cool for at least thirty minutes.
2. Inspect burner, pilot for dust and dirt.
3. Blow air through the ports/slots and holes in the burner.
4. Never insert objects into the pilot tube.

Clean the pilot assembly also. A yellow tip on the pilot flame indicates dust and dirt in the pilot assembly. There is a small pilot air inlet about two inches from where the pilot flame comes out of the pilot assembly (see Figure 34). With the unit off, lightly blow air through the air inlet. You may blow through a drinking straw if compressed air is not available.

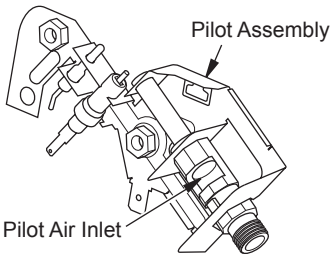


Figure 34 - Pilot Air Inlet

CABINET

Air Passageways
Use pressurized air to clean.

Exterior
Use a soft cloth dampened with a mild soap and water mixture. Wipe the cabinet to remove dust.

SERVICE HINTS

When Gas Pressure Is Too Low

- pilot will not stay lit
- burner will have delayed ignition
- heater will not produce specified heat
- propane/LP gas supply may be low

You may feel your gas pressure is too low. If so, contact your local natural or propane/LP gas supplier.

TECHNICAL SERVICE

You may have further questions about installation, operation or troubleshooting. If so, contact DESA Heating Products' Technical Service Department at 1-866-672-6040. When calling please have your model and serial numbers of your heater ready.

You can also visit DESA Heating Products' technical service web site at **www.desatech.com.**

TROUBLESHOOTING

⚠ WARNING: Turn off and unplug heater and let cool before servicing. Only a qualified service person should service and repair heater.

⚠ CAUTION: Never use a wire, needle or similar object to clean ODS/pilot. This can damage ODS/pilot unit.

Note: All troubleshooting items are listed in order of operation.

OBSERVED PROBLEM	POSSIBLE CAUSE	REMEDY
When ignitor button is pressed in, there is no spark at ODS/pilot	1. Ignitor electrode positioned wrong	1. Replace pilot assembly
	2. Ignitor electrode broken	2. Replace pilot assembly
	3. Ignitor electrode not connected to ignitor cable	3. Reconnect ignitor cable
	4. Ignitor cable pinched or wet	4. Free ignitor cable if pinched by any metal or tubing. Keep ignitor cable dry
	5. Broken ignitor cable	5. Replace ignitor cable
	6. Bad ignitor	6. Replace ignitor
	7. Piezo ignitor nut is loose	7. Tighten nut holding piezo ignitor. Nut is located inside heater cabinet at top
When ignitor button is pressed in, there is a spark at ODS/Pilot but no ignition	1. Gas supply turned off or equipment shutoff valve closed	1. Turn on gas supply or open equipment shutoff valve
	2. Control knob is not in pilot position	2. Turn control knob to pilot position
	3. Control knob not fully pressed in while pressing ignitor button	3. Turn to PILOT/IGN position. Fully press in control knob while pressing ignitor button
	4. Air in gas lines when installed	4. Continue holding down control knob. Repeat igniting operation until air is removed
	5. Depleted gas supply (propane/LP gas)	5. Contact local propane/LP gas company
	6. ODS/pilot is clogged	6. Clean ODS/pilot (see *Cleaning and Maintenance*, page 21) or replace ODS/pilot assembly
	7. Gas regulator setting is not correct	7. Replace gas regulator
Moisture/condensation noticed on windows	1. Not enough combustion/ventilation air	1. Refer to *Air for Combustion and Ventilation* requirements (page 5)

TROUBLESHOOTING

Continued

OBSERVED PROBLEM	POSSIBLE CAUSE	REMEDY
ODS/pilot lights but flame goes out when control knob is released	1. Control knob not fully pressed in	1. Press in control knob fully
	2. Control knob not pressed in long enough	2. After ODS/pilot lights, keep control knob pressed in 30 seconds
	3. Equipment shutoff valve not fully open	3. Fully open equipment shut-off valve
	4. Thermocouple connection loose at control valve	4. Hand tighten until snug, then tighten 1/4 turn more
	5. Pilot flame not touching thermocouple, which allows thermocouple to cool, causing pilot flame to go out. This problem could be caused by one or both of the following: A) Low gas pressure B) Dirty or partially clogged ODS/pilot	5. A) Contact local natural or propane/LP gas company B) Clean ODS/pilot (see *Cleaning and Maintenance*, page 21) or replace ODS/pilot assembly
	6. Thermocouple damaged	6. Replace pilot assembly
	7. Control valve damaged	7. Replace control valve
	8. Safety interlock system has been triggered (thermostat models only)	8. Wait one minute for safety interlock system to reset. Repeat ignition operation
Burner(s) does not light after ODS/pilot is lit	1. Burner orifice(s) is clogged	1. Clean burner orifice(s) (see *Cleaning and Maintenance*, page 21) or replace burner orifice(s)
	2. Inlet gas pressure is too low	2. Contact local natural or propane/LP gas company
Delayed ignition of burner(s)	1. Manifold pressure is too low	1. Contact local natural or propane/LP gas company
	2. Burner orifice(s) is clogged	2. Clean burner orifice(s) (see *Cleaning and Maintenance*, page 21) or replace burner orifice(s)
Burner backfiring during combustion	1. Burner orifice(s) is clogged or damaged	1. Clean burner orifice(s) (see *Cleaning and Maintenance*, page 21) or replace burner orifice(s)
	2. Burner damaged	2. Replace burner
	3. Gas regulator defective	3. Replace gas regulator

TROUBLESHOOTING

Continued

OBSERVED PROBLEM	POSSIBLE CAUSE	REMEDY
Burner plaque(s) does not glow	1. Plaque damaged 2. Inlet gas pressure is too low 3. Control knob set between locked positions	1. Replace burner 2. Contact local natural or propane/LP gas company 3. Turn control knob until it locks at desired setting
Slight smoke or odor during initial operation	1. Residues from manufacturing processes	1. Problem will stop after a few hours of operation
Heater produces a clicking/ticking noise just after burner is lit or shut off	1. Metal expanding while heating or contracting while cooling	1. This is normal with most heaters. If noise is excessive, contact qualified service person
Remote does not function	1. Pilot light not lit or control knob in wrong position 2. Batteries not installed correctly. Batteries not installed. Battery power is low 3. Code settings on receiver and remote control do not match 4. Receiver and remote control too far apart	1. Check pilot light. Make sure control knob is in the ON position 2. Check battery placement in receiver and remote control. Replace batteries in receiver and remote control 3. Verify code settings 4. Be sure reciever and remote control are within 20'-25' operating range
White powder residue forming within burner box or on adjacent walls or furniture	1. When heated, vapors from furniture polish, wax, carpet cleaner, etc., may turn into white powder residue	1. Turn heater off when using furniture polish, wax, carpet cleaners or similar products
Heater shuts off in use (ODS operates)	1. Not enough fresh air is available 2. Low line pressure 3. ODS/pilot is partially clogged	1. Open window and/or door for ventilation 2. Contact local natural or propane/LP gas company 3. Clean ODS/pilot (see *Cleaning and Maintenance*, page 21)

TROUBLESHOOTING

Continued

⚠ WARNING: If you smell gas

- **Shut off gas supply.**
- **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.**

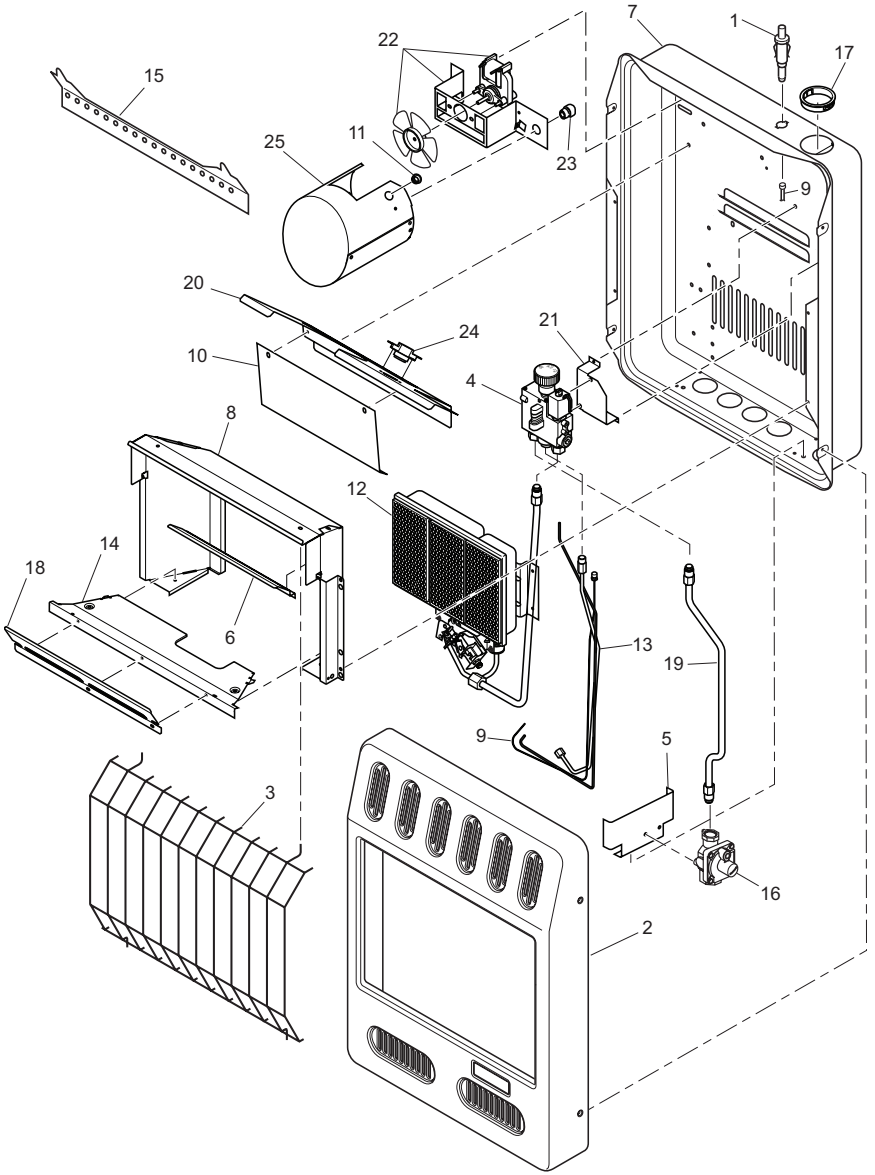
IMPORTANT: Operating heater where impurities in air exist may create odors. Cleaning supplies, paint, paint remover, cigarette smoke, cements and glues, new carpet or textiles, etc., create fumes. These fumes may mix with combustion air and create odors.

OBSERVED PROBLEM	POSSIBLE CAUSE	REMEDY
Heater produces unwanted odors	1. Heater burning vapors from paint, hair spray, glues, etc. See *IMPORTANT* statement above	1. Ventilate room. Stop using odor causing products while heater is running
	2. Low fuel supply (propane/LP gas only)	2. Refill supply tank
	3. Gas leak. **See Warning statement at top of page**	3. Locate and correct all leaks (see *Checking Gas Connections*, page 13)
Gas odor even when control knob is in OFF position	1. Gas leak. **See Warning statement at top of page**	1. Locate and correct all leaks (see *Checking Gas Connections*, page 14)
	2. Control valve defective	2. Replace control valve
Gas odor during combustion	1. Foreign matter between control valve and burner	1. Take apart gas tubing and remove foreign matter
	2. Gas leak. **See Warning statement at top of page**	2. Locate and correct all leaks (see *Checking Gas Connections*, page 15)
Heater produces a whistling noise when burner is lit	1. Air in gas line	1. Operate burner until air is removed from line. Have gas line checked by local natural or propane/LP gas company
	2. Air passageways on heater blocked	2. Observe minimum installation clearances (see Figure 4, page 8)
	3. Dirty or partially clogged burner orifice	3. Clean burner (see *Cleaning and Maintenance*, page 21) or replace burner orifice

ILLUSTRATED PARTS BREAKDOWN

MODELS

NZ100, NZ101, NZ102, NZ103, NZ104, NZ105, NZ106, NZ107, NZ116, NZ117, NZ118 AND NZ119



PARTS LIST

This list contains replaceable parts used in your heater. When ordering parts, follow the instructions listed under *Replacement Parts* on page 30 of this manual.

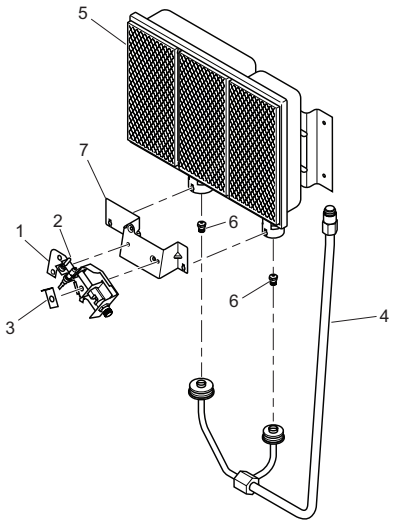
KEY NO.	PART NO.	DESCRIPTION	NZ100	NZ101	NZ102	NZ103	NZ104	NZ105	NZ106	NZ107	NZ116	NZ117	NZ118	NZ119	QTY.
1	097159-04	Piezo Ignitor	•	•	•	•	•	•	•	•	•	•	•	•	1
2	107673-01	Front Panel	•	•											1
	107676-01	Front Panel			•	•									1
	107672-01	Front Panel					•	•							1
	107675-01	Front Panel							•	•					1
	107673-06PP	Front Panel									•	•			1
	107676-06PP	Front Panel											•	•	1
3	103476-01	Grill Guard	•	•			•	•			•	•			1
	103476-02	Grill Guard			•	•			•	•			•	•	1
4	118623-01	Remote Gas Control Valve	•	•	•	•	•	•	•	•	•	•	•	•	1
5	104819-02	Regulator Bracket	•	•	•	•	•	•	•	•	•	•			1
6	098211-13	Burner Deflector	•	•			•	•			•	•			1
	098211-15	Burner Deflector			•	•			•	•			•	•	1
7	**	Cabinet	•	•	•	•	•	•	•	•	•	•	•	•	1
8	104103-07	Reflector	•	•			•	•			•	•			1
	104103-09	Reflector			•	•			•	•			•	•	1
9	098271-09	Ignitor Cable	•	•	•	•	•	•	•	•	•	•	•	•	1
10	119099-01	Lower Baffle	•	•	•	•	•	•	•	•	•	•	•	•	2
11	M50104-03	Shorty Bushing	•	•	•	•	•	•	•	•	•	•	•	•	1
12	———	Burner Assembly, see page 28	•	•	•	•	•	•	•	•	•	•	•	•	1
13	099387-03	Pilot Tubing			•	•			•	•			•	•	1
	099387-11	Pilot Tubing	•	•			•	•			•	•			
14	104635-01	Apron	•	•			•	•			•	•			1
	104635-03	Apron			•	•			•	•			•	•	1
15	099066-02	Mounting Bracket	•	•	•	•	•	•	•	•	•	•	•	•	1
16	099415-19	Gas Regulator	•		•		•		•		•		•		1
	099415-18	Gas Regulator		•		•		•		•		•		•	1
17	111421-01	Snap Bushing	•	•	•	•	•	•	•	•	•	•	•	•	1
18	107896-01	Heat Shield	•	•			•	•			•	•			1
	107896-02	Heat Shield			•	•			•	•			•	•	1
19	118626-01	Inlet Tube	•	•	•	•	•	•	•	•	•	•	•	•	1
20	118721-01	Upper Baffle	•	•			•	•			•	•			1
	118721-02	Upper Baffle			•	•			•	•			•	•	1
21	118633-01	Control Bracket	•	•	•	•	•	•	•	•	•	•	•	•	1
22	119283-01	Fan Kit	•	•	•	•	•	•	•	•	•	•	•	•	1
23	099038-01	Strain Relief Bushing	•	•	•	•	•	•	•	•	•	•	•	•	1
24	103972-02	Thermal Limit Switch	•	•	•	•	•	•	•	•	•	•	•	•	1
25	118661-01	Housing Duct	•	•	•	•	•	•	•	•	•	•	•	•	1
		PARTS AVAILABLE — NOT SHOWN													
	098219-41	Power Cord	•	•	•	•	•	•	•	•	•	•	•	•	1
	118625-01	Remote Receiver	•	•	•	•	•	•	•	•	•	•	•	•	1
	118624-01	Remote Transmitter	•	•	•	•	•	•	•	•	•	•	•	•	1
	100642-03	Hardware Assembly	•	•	•	•	•	•	•	•	•	•	•	•	1
	107888-03	Control Position Label	•	•	•	•	•	•	•	•					1
	107888-06	Control Position Label									•	•	•	•	1
	117103-03	Lighting Instruction Booklet	•	•	•	•	•	•	•	•					1
	117103-04	Lighting Instruction Booklet									•	•	•	•	1
	097555-01	Warning Label	•	•	•	•	•	•	•	•	•	•	•	•	1

** Not a field replaceable part.

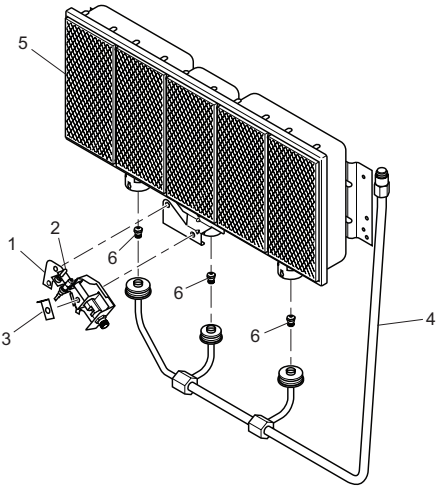
ILLUSTRATED PARTS BREAKDOWN AND PARTS LIST

BURNER ASSEMBLY

This list contains replaceable parts used in your heater. When ordering parts, follow the instructions listed under *Replacement Parts* on page 30 of this manual.



Burner Assembly for Models NZ100, NZ101, NZ104, NZ105, NZ116 and NZ117



Burner Assembly for Models NZ102, NZ103, NZ106, NZ107, NZ118 and NZ119

KEY NO.	PART NO.	DESCRIPTION	NZ100, NZ104, NZ116	NZ101, NZ105, NZ117	NZ102, NZ106	NZ103, NZ107	NZ118	NZ119	QTY.
1	110803-03	ODS/Pilot	•		•		•		1
	110803-02	ODS/Pilot		•		•		•	1
2	110186-01	Thermocouple Kit	•	•	•	•	•	•	1
3	109121-01	Pilot Shield	•	•	•	•	•	•	1
4	118628-01	Outlet Tube	•	•					1
	118628-02	Outlet Tube			•	•	•	•	
5	099218-07	Burner Assembly, 5 Plaque			•	•	•	•	1
	099218-06	Burner Assembly, 3 Plaque	•	•					1
6	099056-01	Injector, NG		•		•		•	1
	099056-02	Injector, LP	•		•		•		1
	099056-24	Injector, NG	•		•		•		1-2
	099056-25	Injector, LP		•		•		•	1-2
7	105527-01	Pilot Mounting Bracket	•	•					1

SPECIFICATIONS

NZ100, NZ104, NZ116

- Natural Gas
- 18,000 Btu/hr
- Piezo Ignition
- Pressure Regulator Setting: 6" W.C.
- Inlet Gas Pressure* (in. of water): Maximum - 10.5", Minimum - 7"
- Average Heater Weight: 22 lb (10 kg)
- Average Shipping Weight: 25.5 lb (11.6 kg)

NZ102, NZ106, NZ118

- Natural Gas
- 30,000 Btu/hr
- Piezo Ignition
- Pressure Regulator Setting: 6" W.C.
- Inlet Gas Pressure* (in. of water): Maximum - 10.5", Minimum - 7"
- Average Heater Weight: 29 lb (13.2 kg)
- Average Shipping Weight: 33 lb (15 kg)

NZ101, NZ105, NZ117

- Propane/LP Gas
- 16,000 Btu/hr
- Piezo Ignition
- Pressure Regulator Setting: 8" W.C.
- Inlet Gas Pressure* (in. of water): Maximum - 14", Minimum - 11"
- Average Heater Weight: 22 lb (10 kg)
- Average Shipping Weight: 25.5 lb (11.6 kg)

NZ103, NZ107, NZ119

- Propane/LP Gas
- 26,000 Btu/hr
- Piezo Ignition
- Pressure Regulator Setting: 8" W.C.
- Inlet Gas Pressure* (in. of water): Maximum - 14", Minimum - 11"
- Average Heater Weight: 29 lb (13.2 kg)
- Average Shipping Weight: 33 lb (15 kg)

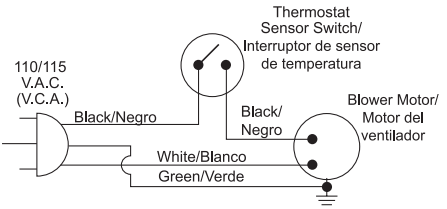
Note: Dimensions listed are outer most points on the heater (includes control knobs and grill).

* For purposes of input adjustment.

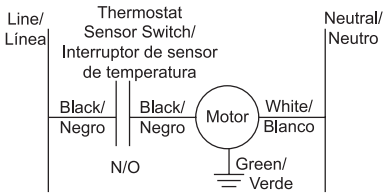
WIRING DIAGRAMS

⚠ WARNING: Never attempt to service heater while it is plugged in, operating, or hot. Burns and electrical shock could result. Only a qualified service person should service or repair heater.

⚠ CAUTION: Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.



Wiring Diagram



* If any of the original wire as supplied with the appliance must be replaced, it must be replaced with type 105°C wire or its equivalent.
* En caso que se deba reemplazar alguno de los cables suministrados originalmente con el calentador, utilice únicamente cable tipo 105°C u otro equivalente.

Electrical Ladder Diagram

REPLACEMENT PARTS

Note: Use only original replacement parts. This will protect your warranty coverage for parts replaced under warranty.

PARTS UNDER WARRANTY

Contact authorized dealers of this product. If they can't supply original replacement part(s), call DESA Heating Products' Technical Service Department at 1-866-672-6040.

When calling DESA Heating Products, have ready

- your name
- your address
- model and serial numbers of your heater
- how heater was malfunctioning
- type of gas used (propane/LP or natural gas)
- purchase date

Usually, we will ask you to return the part to the factory.

PARTS NOT UNDER WARRANTY

Contact authorized dealers of this product. If they can't supply original replacement part(s), either contact your nearest Parts Central (see page 31) or call DESA Heating Products at 1-866-672-6040 for referral information.

When calling DESA Heating Products, have ready

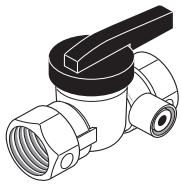
- model number of your heater
- the replacement part number

SERVICE PUBLICATIONS

You can purchase a service manual from the address listed on the back page of this manual. Send a check for $5.00 payable to DESA Heating Products.

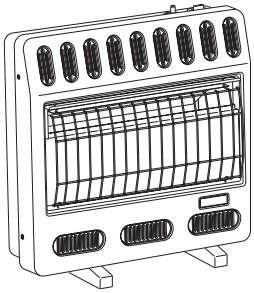
ACCESSORIES

Purchase these heater accessories from your local dealer. If they can not supply these accessories, either contact your nearest Parts Central (see page 31) or call DESA Heating Products at 1-866-672-6040 for referral information. You can also write to the address listed on the back page of this manual.



EQUIPMENT SHUTOFF VALVE GA5010

For all models. Equipment shutoff valve with 1/8" NPT tap.



BASE KIT - GA4550

For locating heater on the floor, away from a wall. Complete installation and operating instructions included.

ELECTRONIC IGNITOR KIT - GA435 Not Shown

For all models. Provides easier lighting of the pilot.

PARTS CENTRAL

These Parts Centrals are privately owned businesses. They have agreed to support our customer's needs by providing original replacement parts and accessories.

Tool & Equipment Co.
5 Manila Ave
Hamden, CT 06514-0322
1-800-397-7553
203-248-7553

Portable Heater Parts
342 N. County Rd. 400 East
Valparaiso, IN 46383-9704
219-462-7441
1-888-619-7060
www.portableheaterparts.com
sales@portableheaterparts.com
techservice@portableheaterparts.com

FBD
1349 Adams Street
Bowling Green, KY 42103-3414
270-846-1199
1-800-654-8534
Fax: 1-800-846-0090
franktalk@aol.com

Master Parts Dist.
1251 Mound Ave. NW
Grand Rapids, MI 49504-2672
616-791-0505
1-800-446-1446
www.nbmc.com

Washer Equipment Co.
1715 Main Street
Kansas City, MO 64108-2195
KS, MO, AR
816-842-3911
www.washerparts.com

East Coast Energy
707 Broadway
W. Long Branch, NJ 07764-1501
732-870-8809
1-800-755-8809
www.njplaza.com/ecep

21st Century
2950 Fretz Valley
Perkasie, PA 18944-4034
215-795-0400
800-325-4828

Laporte's Parts & Service
2444 N. 5th Street
Hartsville, SC 29550-7704
843-332-0191
Parts Department

Cans Unlimited
P.O. Box 645
Taylor, SC 29687-0013
803-879-3009
1-800-845-5301
cuisales@aol.com

WARRANTY INFORMATION
KEEP THIS WARRANTY

Model _____

Serial No. _____

Date Purchased _____

Always specify model and serial numbers when communicating with the factory.

We reserve the right to amend these specifications at any time without notice. The only warranty applicable is our standard written warranty. We make no other warranty, expressed or implied.

LIMITED WARRANTIES FOR NEW AND FACTORY RECONDITIONED PRODUCTS

New Products: DESA Heating Products warrants this heater and any parts thereof, to be free of defects in materials and workmanship for two (2) years from the date of first purchase, when operated and maintained in accordance with the manufacturer's instructions. These warranties are extended only to the original retail purchaser, when proof of purchase is provided.

Factory Reconditioned Heaters: DESA Heating Products warrants this factory reconditioned heater and any parts thereof, to be free of defects in materials and workmanship for thirty (30) days from the date of first purchase, when operated and maintained in accordance with the manufacturer's instructions. These warranties are extended only to the original retail purchaser, when proof of purchase is provided.

This warranty is extended only to the original retail purchaser. This warranty covers the cost of part(s) required to restore this heater to proper operating condition and an allowance for labor when provided by a DESA Heating Products Authorized Service Center. Warranty part(s) MUST be obtained through authorized dealers of this product and/or DESA Heating Products who will provide original factory replacement parts. Failure to use original factory replacement parts voids this warranty. The heater MUST be installed by a qualified installer in accordance with all local codes and instructions furnished with the unit.

This warranty does not apply to parts that are not in original condition because of normal wear and tear or parts that fail or become damaged as a result of misuse, accidents, lack of proper maintenance or defects caused by improper installation. Travel, diagnostic cost, labor, transportation and any and all such other costs related to repairing a defective heater will be the responsibility of the owner.

TO THE FULL EXTENT ALLOWED BY THE LAW OF THE JURISDICTION THAT GOVERNS THE SALE OF THE PRODUCT; THIS EXPRESS WARRANTY EXCLUDES ANY AND ALL OTHER EXPRESSED WARRANTIES AND LIMITS THE DURATION OF ANY AND ALL IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE TO TWO (2) YEARS ON ALL COMPONENTS FROM THE DATE OF FIRST PURCHASE; AND DESA HEATING PRODUCTS' LIABILITY IS HEREBY LIMITED TO THE PURCHASE PRICE OF THE PRODUCT AND DESA HEATING PRODUCTS SHALL NOT BE LIABLE FOR ANY OTHER DAMAGES WHATSOEVER INCLUDING INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Some states do not allow a limitation on how long an implied warranty lasts or an exclusion or limitation of incidental or consequential damages, so the above limitation on implied warranties or exclusion or limitation on damages may not apply to you.

This warranty gives you specific legal rights and you may also have other rights that vary from state to state.

For information about this warranty write:

DESA™
INDOOR/OUTDOOR PRODUCTS
2701 Industrial Drive
P.O. Box 90004
Bowling Green, KY 42102-9004
www.desatech.com

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