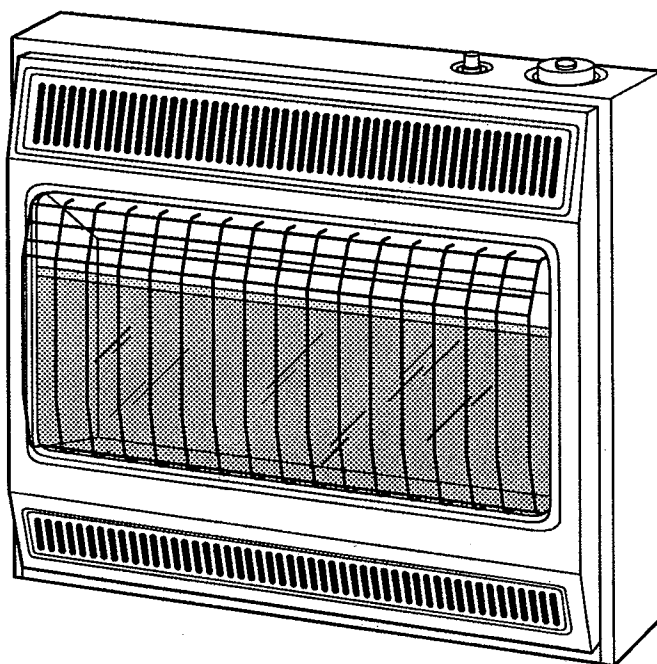


VANGUARD®

VENT-FREE NATURAL GAS HEATER

OWNER'S OPERATION AND INSTALLATION MANUAL



Models: VN2000B, VN2000BT, and VN2800BT

FOR YOUR SAFETY

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

FOR YOUR SAFETY

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.

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.



Save this manual for future reference.

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SAFETY INFORMATION

WARNINGS

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 fire, explosion, electrical shock, electrocution, and carbon monoxide poisoning.

DANGER

Carbon monoxide poisoning may lead to death!

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

1. Use only natural gas.
2. 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.
3. Never install the heater
 - in sleeping quarters, a mobile home, or a recreational vehicle
 - where curtains, furniture, clothing, or other flammable objects are less than 36 inches from the front, top, or sides of the heater
 - as a fireplace insert
 - in high traffic areas
 - in windy or drafty areas
4. Open window to admit fresh, outside air when using heater. Open window one (1) or two (2) inches. When used without fresh, outside air, heater may give off carbon monoxide gas.
5. Never run heater in small, closed room. Open door into next room to help ventilate.
6. If heater shuts off, do not relight until you provide fresh, outside air. If heater keeps shutting off, have it serviced.
7. Do not run heater
 - where flammable liquids or vapors are used or stored
 - under dusty conditions
8. Never place any objects on the heater.
9. Surface of heater becomes very hot when running heater. Keep children and adults away from hot surface. Heater will remain hot for a time after shut-down. Allow surface to cool before touching.
10. Make sure grill guard is in place before running heater.
11. Do not alter heater or its controls. Any change may create a safety hazard.
12. Make sure heater is turned off, unplugged, and cool before servicing.

PRODUCT IDENTIFICATION

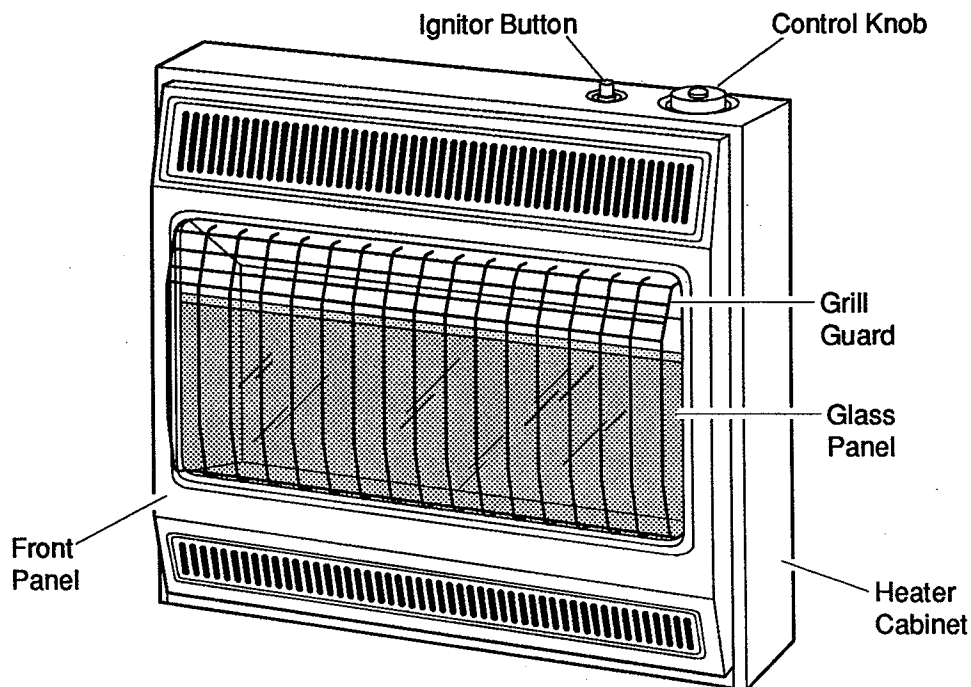


Figure 1 - Vent-Free Natural Gas Heater (Model VN2800BT Shown)

LOCAL CODES

Install and use heater with care. Follow all local codes. In the absence of local codes, refer to The National Fuel Gas Code ANSI Z223.1-1984 and ADDENDA Z223.1a-1987 also known as 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

UNPACKING

1. Remove heater from carton.
2. Remove all protective packaging that has been applied to heater for shipment.
3. Check heater for any shipping damage. If damage is found, promptly inform dealer where heater was purchased.

PRODUCT FEATURES

Safety Device

This heater has a pilot with an Oxygen Depletion Sensor Shutoff System (ODS). 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

(Models VN2000BT and VN2800BT Only)

This heater has a thermostat sensing bulb and a control valve. This results in the greatest heater comfort. This can also result in lower gas bills.

INSTALLING TO WALL

NOTICE

Be sure heater is installed by a qualified service person. All local codes must be followed.

CHECK GAS TYPE

Use only natural gas. If your gas supply is not natural gas, do not install. Call dealer where heater was purchased for proper type heater.

INSTALLATION ITEMS

Before installing heater, make sure all items below are at hand.

- piping (check local codes)
- sealant (resistant to propane gas)
- manual shutoff valve *
- union
- test gauge connection * (see Figure 11, page 11)
- drip leg
- tee joint
- pipe wrench

* An AGA approved manual shutoff valve with 1/8" NPT tap is an acceptable alternative to test gauge connection. The optional AGA approved manual shutoff valve can be purchased from your dealer. See ACCESSORIES, page 26.

LOCATING HEATER

This heater is designed to be mounted on a wall.

WARNING

Maintain the minimum clearances shown in Figure 2 (page 6). If you can, greater clearances should be provided from floor, ceiling, and joining wall.

You can locate heater on floor, away from a wall. An optional floor mounting stand is needed. The floor mounting stand can be purchased from your dealer. See ACCESSORIES, page 26.

WARNING

Never install the heater

- in sleeping quarters, a mobile home, or a recreational vehicle
- where curtains, furniture, clothing, or other flammable objects are less than 36 inches from the front, top, or sides of the heater
- as a fireplace insert
- in high traffic areas
- in windy or drafty areas

CAUTION

If you install the heater in a home garage

- heater pilot and burner must be at least 18 inches above floor
- locate heater where it will not be hit by moving vehicle

For convenience and efficiency, install heater

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

An optional fan kit can be purchased from your dealer. See ACCESSORIES, page 26. If planning to use fan, locate heater near an electrical outlet.

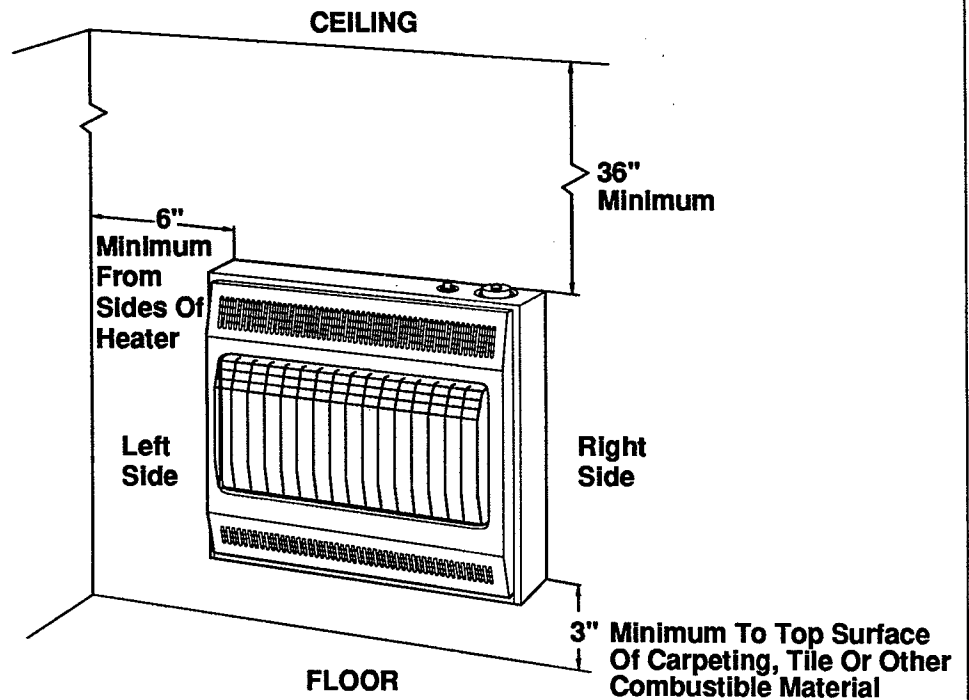


Figure 2 - Mounting Clearances As Viewed From Front of Heater

THERMOSTAT SENSING BULB

(Models VN2000BT and VN2800BT Only)

The thermostat sensing bulb has been placed inside the heater for protection during shipping.

Locating Thermostat Sensing Bulb

1. Remove front panel of heater (see Figure 4, page 7).
2. Thermostat sensing bulb is located just under burner assembly.

IMPORTANT: Thermostat sensing bulb must be attached to back of heater for proper operation.

Attaching Thermostat Sensing Bulb

1. Remove thermostat sensing bulb from holders inside heater. Route through slot opening in bottom of heater.
2. Place clamp on thermostat sensing bulb as shown in Figure 3. Clamp is provided in hardware package. Thermostat sensing bulb must be located on outside edge of heater.
3. Snap clamp into upper mounting hole as shown in Figure 3. Mounting hole is located on lower left edge on back of heater. Make sure the thermostat sensing bulb is pointing up.

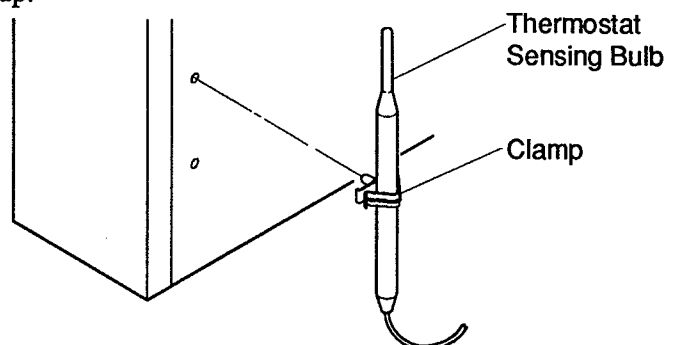


Figure 3 - Attaching Thermostat Sensing Bulb

INSTALLING HEATER TO WALL

Removing Front Panel Of Heater

1. Remove two screws near bottom corners of front panel.
2. Lift straight up on grill guard until it stops. Grill guard will slide up about 1/4".
3. Pull bottom of front panel forward, then downward.

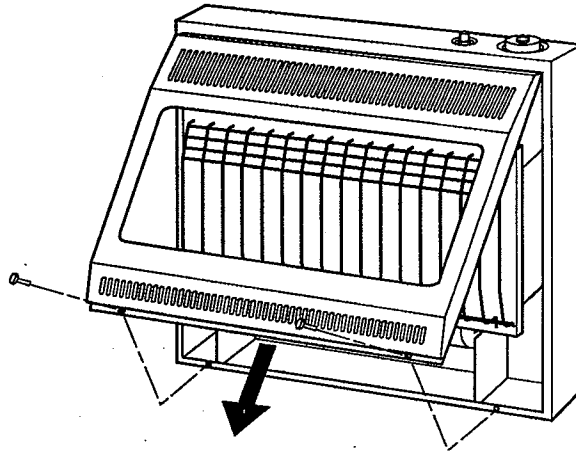


Figure 4 - Removing Front Panel Of Heater

Mounting Bracket

The mounting bracket is located on top of baffle. It has been taped there for shipping. Remove mounting bracket from baffle.

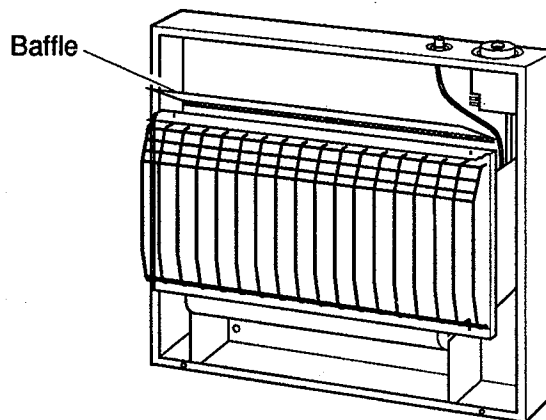


Figure 5 - Baffle Location

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 16 inches apart from their centers. The mounting bracket can be attached 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. The mounting screws are inserted 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 6. If you can, greater clearances should be provided from floor and joining wall.

2. Mark screw locations on wall (see Figure 6).

Note: Only mark last hole on each end of mounting bracket. Mounting screws will be inserted through these holes only.

3. Remove tape and mounting bracket from wall.

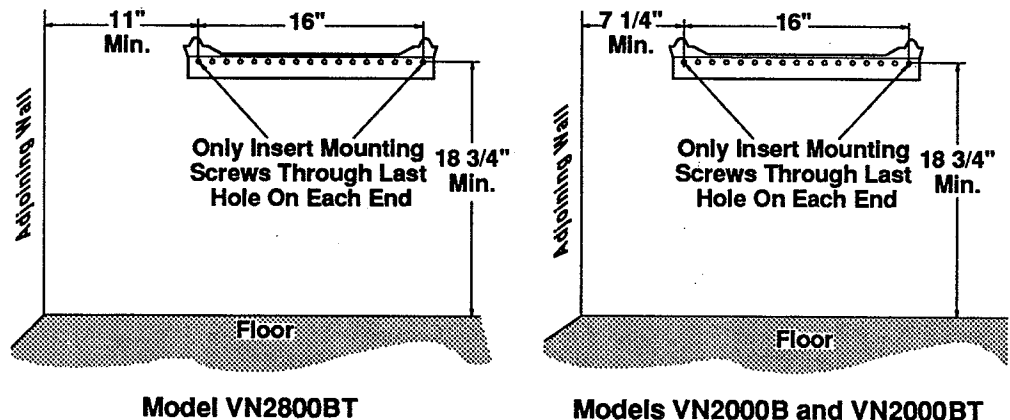


Figure 6 - Mounting Bracket Clearances

Attaching Mounting Bracket To Wall

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

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.
4. Tighten screws until mounting bracket is firmly fastened to wall.

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" deep.
2. Fold wall anchor as shown in Figure 7.

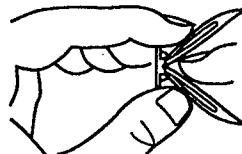


Figure 7 - Folding Anchor

3. Insert wall anchor (wings first) into hole. Tap anchor flush to wall. *Continued*

- For thin walls (1/2" or less), insert red key into wall anchor. Push red key to "pop" open anchor wings. **IMPORTANT:** Do not hammer key!
For thick walls (over 1/2" thick) or solid walls, do not pop open wings.

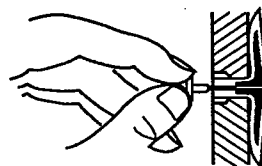


Figure 8 - Popping Open Anchor Wings For Thin Walls

- Place mounting bracket onto wall. Line up last hole on each end of bracket with wall anchors.
- Insert mounting screws through bracket and into wall anchors.
- Tighten screws until mounting bracket is firmly fastened to wall.

Placing Heater On Mounting Bracket

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

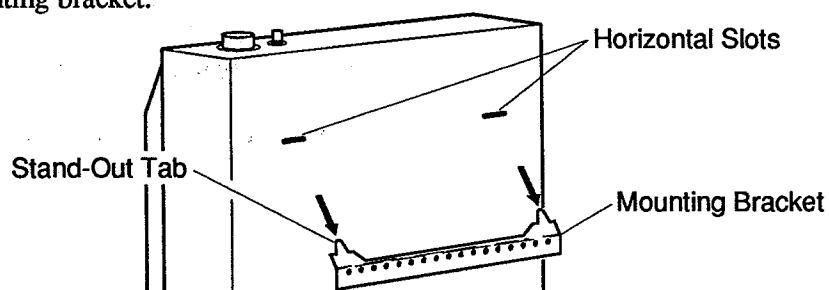


Figure 9 - Mounting Heater Onto Mounting Bracket

Installing Bottom Mounting Screws

- Locate two bottom mounting holes. These holes are near bottom on back panel of heater (see Figure 10).
- Mark screw locations on wall.
- Remove heater from mounting bracket.
- If installing bottom mounting screws into hollow or solid wall, install wall anchors. Follow steps 1 thru 4 under *Attaching To Wall Anchor Method*, page 8. If installing bottom mounting screw into wall stud, drill holes at marked locations using 9/64" drill bit.
- Replace heater onto mounting bracket.
- Place spacers between bottom mounting holes and wall anchor or drilled hole.
- 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.
- 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.

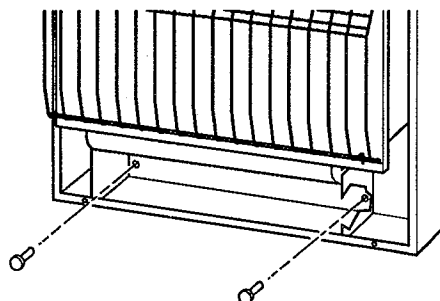


Figure 10 - Installing Bottom Mounting Screws

CONNECTING TO GAS SUPPLY

NOTICE

Be sure heater is connected to gas supply by a qualified service person. All local codes must be followed.

CAUTION

Use only new, black iron or steel pipe. Copper tubing may be acceptable 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 pressure will occur.

Typical Pipe Diameters

VN2000B or VN2000BT	3/8" or greater
VN2800BT	1/2" or greater

Installation must include a manual 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 11, page 11).

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

CAUTION

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

Install drip leg (trap) in supply line as shown in Figure 11. Locate drip leg where it is within reach for cleaning. Locate drip leg where trapped matter is not likely to freeze. A drip leg traps moisture and contaminants. This keeps them from going into heater controls. If drip leg is not installed or installed wrong, heater may not run properly.

IMPORTANT: The pressure regulator must be held with a wrench when connecting it to gas piping and/or fittings.

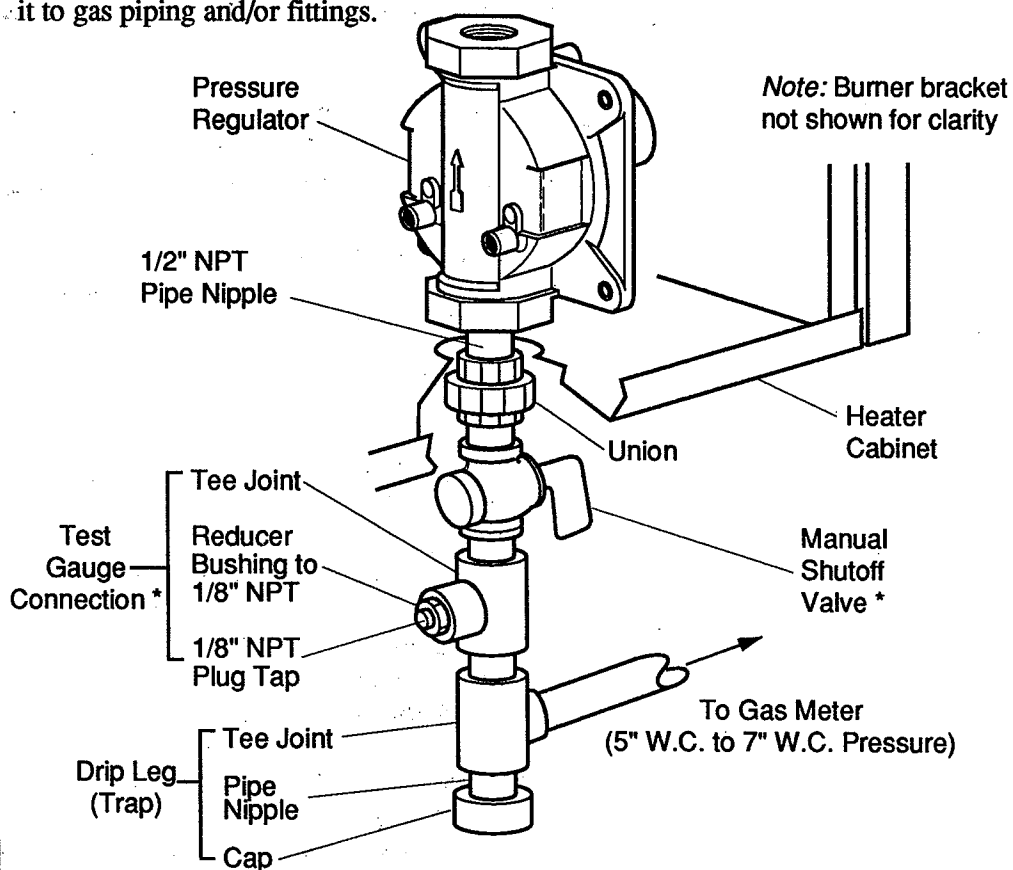


Figure 11 - Gas Connection

* An AGA approved manual shutoff valve with 1/8" NPT tap is an acceptable alternative to test gauge connection. The optional AGA approved manual shutoff valve can be purchased from your dealer. See ACCESSORIES, page 26.

CHECKING GAS CONNECTIONS

⚠ WARNING

All gas piping and connections must be tested for leaks after installation or servicing. All leaks must be corrected at once.

⚠ WARNING

Never use an open flame to check for a leak. Apply a mixture of liquid soap and water to all joints. Bubbles forming show a leak that must be corrected.

PRESSURE TESTING GAS SUPPLY PIPING SYSTEM

Test Pressures In Excess Of 1/2 PSIG

1. Disconnect heater and its individual manual shutoff valve from gas supply piping system.
2. Cap off open end of gas pipe where manual shutoff valve was connected.
3. Pressurize supply piping system by either using compressed air or opening main gas valve located on or near gas meter.

Continued

4. Check all joints of gas supply piping system. Apply mixture of liquid soap and water to gas joints. Bubbles forming show a leak that must be corrected.
5. Correct any leak.

Test Pressures Equal To or Less Than 1/2 PSIG

1. Close manual shutoff valve (see Figure 12).
2. Pressurize supply piping system by either using compressed air or opening main gas valve located on or near gas meter.
3. Check all joints from gas meter to manual shutoff valve (see Figure 13). Apply mixture of liquid soap and water to gas joints. Bubbles forming show a leak that must be corrected.
4. Correct any leak.

PRESSURE TESTING HEATER GAS CONNECTIONS

1. Open manual shutoff valve (see Figure 12).
2. Open main gas valve located on or near gas meter.
3. Make sure control knob of heater is in the OFF position.
4. Check all joints from manual shutoff valve to thermostat gas valve (models VN2000BT and VN2800BT) or control valve (model VN2000B) (see Figure 13). Apply mixture of liquid soap and water to gas joints. Bubbles forming show a leak that must be corrected.
5. Correct any leak.
6. Light heater (see OPERATING HEATER, pages 13 thru 18). Check the rest of the internal joints for leaks.
7. Turn off heater (see TO TURN OFF GAS TO APPLIANCE, page 15 [models VN2000BT and VN2800BT] or page 18 [model VN2000B]).
8. Replace front panel.

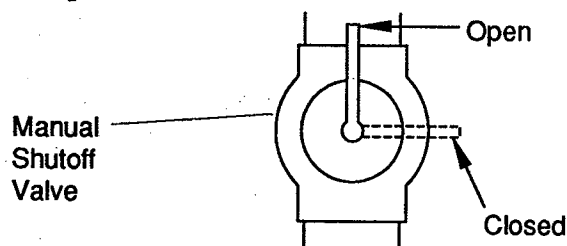


Figure 12 - Manual Shutoff Valve

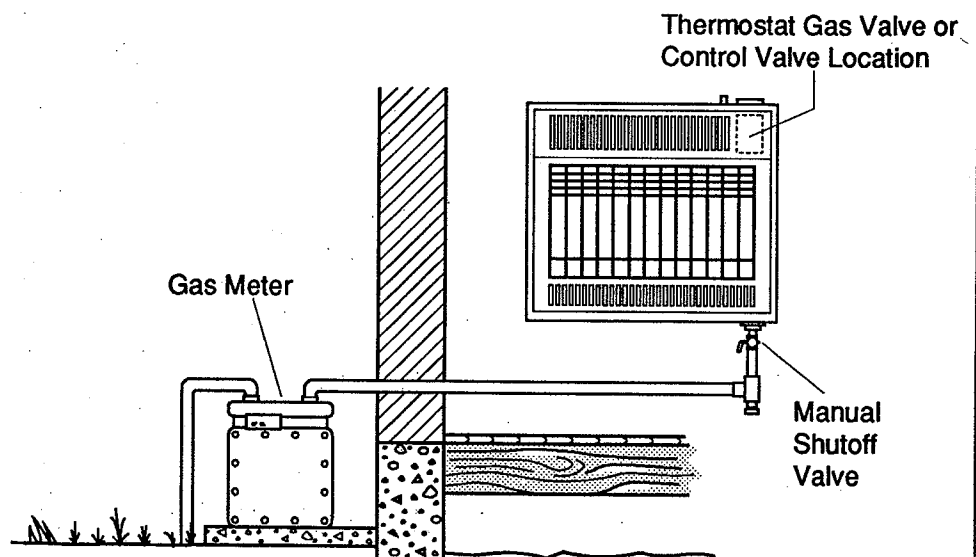


Figure 13 - Checking Gas Joints

OPERATING HEATER

Models VN2000BT
and VN2800BT

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 manual shutoff valve is fully open.
3. Turn control knob clockwise  to the OFF position.

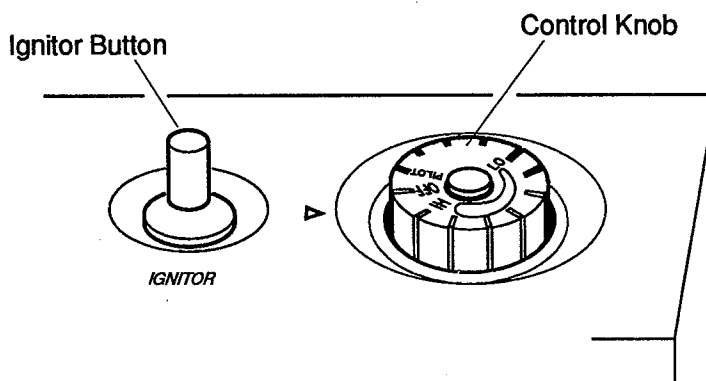



Figure 14 - Control Knob In The OFF Position

4. Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! Follow "B" in the safety information at the top of page 13. If you don't smell gas, go to next step.

5. Turn control knob counterclockwise  to the PILOT position. Press in control knob for five (5) seconds (see Figure 14).

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. This will allow air to bleed from the gas system.

- If control knob does not pop up when released, contact a qualified service person for repairs.

6. With control knob pressed in, push down and release ignitor button. This will light pilot. The pilot is attached to the front of burner. The pilot can be seen through the glass panel. If needed, keep pressing ignitor button until pilot lights.

Note: If pilot does not light, refer to TROUBLESHOOTING, pages 20 thru 23. Also contact a qualified service person. Until repairs are made, light pilot with match. To light pilot with match, see MANUAL LIGHTING PROCEDURE, page 15.

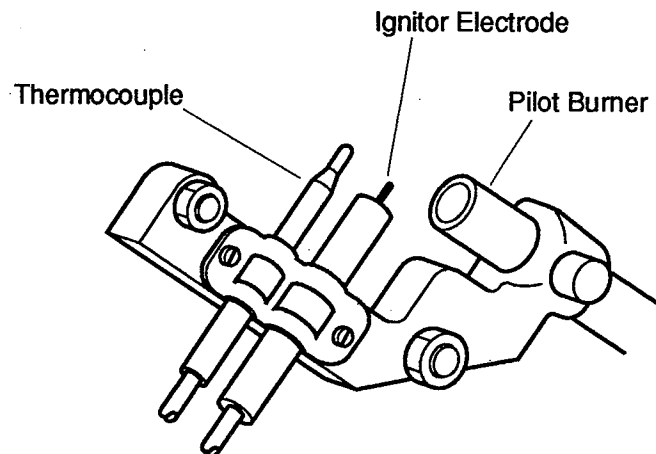



Figure 15 - Pilot

7. Keep control knob pressed in for 30 seconds after pilot is lit. After 30 seconds, release control knob.

Note: If pilot goes out, repeat steps 3 thru 7. This heater has a safety interlock system. Wait one (1) minute before lighting pilot again.

8. Turn control knob counterclockwise  to desired heating level. The main burner should light. Heater can be set anywhere between the HI and LO positions.

CAUTION


Do not try to adjust heating levels by using the manual shutoff valve.

TO TURN OFF GAS TO APPLIANCE

Shutting Off Heater

1. Turn control knob clockwise  to the OFF position.

Shutting Off Burner Only (pilot stays lit)

1. Turn control knob clockwise  to the PILOT position.

THERMOSTAT CONTROL OPERATION (Models VN2000BT and VN2800BT Only)

The thermostatic control used on these models differs from standard thermostats. Standard thermostats simply turn on and off the burner. The thermostat used on this heater senses the room temperature. The thermostat adjusts the amount of gas flow to the burner. This increases or decreases the burner flame height. At times the room may exceed the set temperature. If so, the burner will shut off. The burner will cycle back on when room temperature drops below the set temperature. The control knob can be set to any heat level between HI and LO.

Note: Since the thermostat sensing bulb measures the temperature of air near the heater cabinet, this may not always agree with room temperature (depending on housing construction, installation location, room size, open air temperatures, etc.). Frequent operation of your heater will enable you to determine your own comfort levels.

MANUAL LIGHTING PROCEDURE

1. Remove front panel (see Figure 4, page 7).
2. Follow steps 1 thru 5 under LIGHTING INSTRUCTIONS, pages 13 and 14.
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 pilot is lit. After 30 seconds, release control knob.
5. Replace front panel.

OPERATING HEATER Model VN2000B

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 manual shutoff valve is fully open.
3. Turn control knob clockwise  to the OFF position.

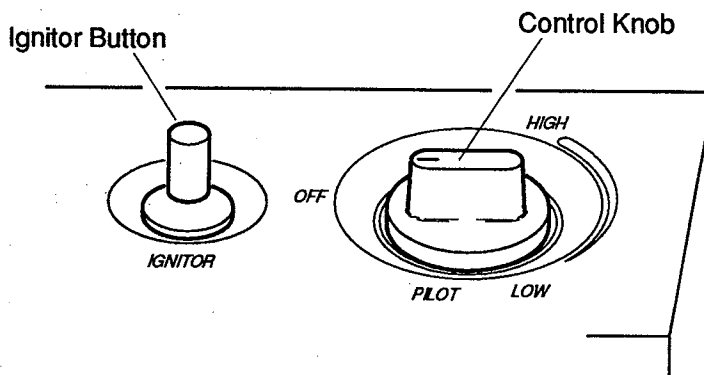



Figure 16 - Control Knob In The OFF Position

4. Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! Follow "B" in the safety information at the top of page 16. If you don't smell gas, go to next step.

5. Press in control knob and turn counterclockwise  to the PILOT position. Keep control knob pressed in for five (5) seconds (see Figure 16).

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. This will allow air to bleed from the gas system.

- If control knob does not pop up when released, contact a qualified service person for repairs.

6. With control knob pressed in, push down and release ignitor button. This will light pilot. The pilot is attached to the front of burner. The pilot can be seen through the glass panel. If needed, keep pressing ignitor button until pilot lights.

Note: If pilot does not light, refer to TROUBLESHOOTING, pages 20 thru 23. Also contact a qualified service person. Until repairs are made, light pilot with match. To light pilot with match, see MANUAL LIGHTING PROCEDURE, page 18.

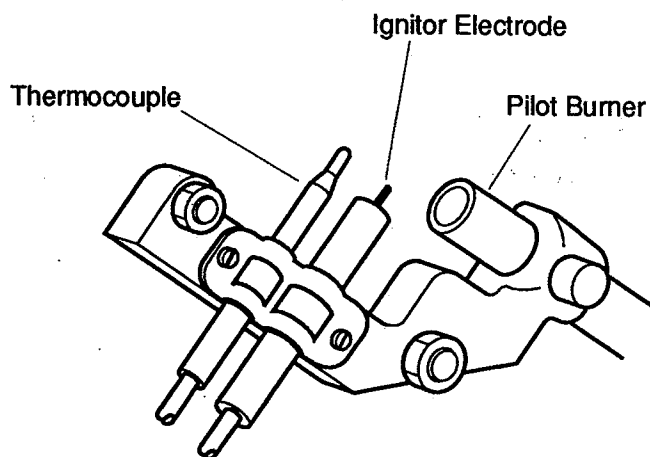




Figure 17 - Pilot

7. Keep control knob pressed in for 30 seconds after pilot is lit. After 30 seconds, release control knob.

Note: If pilot goes out, repeat steps 3 thru 7.

8. Turn control knob counterclockwise  to the LOW position. The main burner should light. Heater can be set anywhere between HIGH and LOW. To turn control knob from LOW to a higher setting, press in the control knob and turn counterclockwise .

Note: Both HIGH and LOW are locked positions. The control knob must be pressed in before turning from these positions.

CAUTION

Do not try to adjust heating levels by using the manual shutoff valve.


INSPECTING BURNER

TO TURN OFF GAS TO APPLIANCE

Shutting Off Heater

1. Turn control knob clockwise  to the PILOT position.
2. Press in control knob and turn clockwise  to the OFF position.

Shutting Off Burner Only (pilot stays lit)

1. Turn control knob clockwise  to the PILOT position.

MANUAL LIGHTING PROCEDURE

1. Remove front panel (see Figure 4, page 7).
2. Follow steps 1 thru 5 under LIGHTING INSTRUCTIONS, pages 16 and 17.
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 pilot is lit. After 30 seconds, release control knob.
5. Replace front panel.

The pilot flame pattern and burner flame pattern should be checked often.

PILOT FLAME PATTERN

Figure 18 shows a correct pilot flame pattern. Figure 19 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.

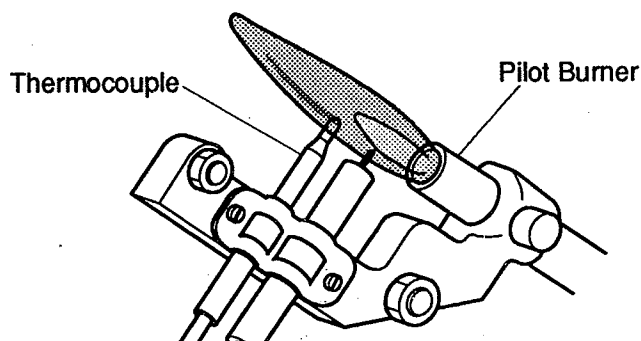


Figure 18 - Correct Pilot Flame Pattern

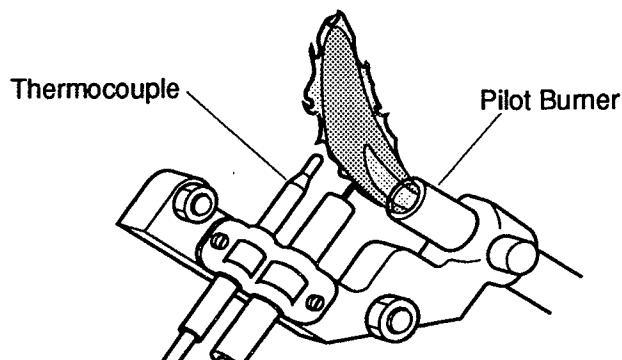


Figure 19 - Incorrect Pilot Flame Pattern

Continued

If pilot flame pattern is incorrect, as shown in Figure 19

- turn heater off (see TO TURN OFF GAS TO APPLIANCE, page 15 [models VN2000BT and VN2800BT] or page 18 [model VN2000B])
- see TROUBLESHOOTING, pages 20 thru 23

BURNER FLAME PATTERN

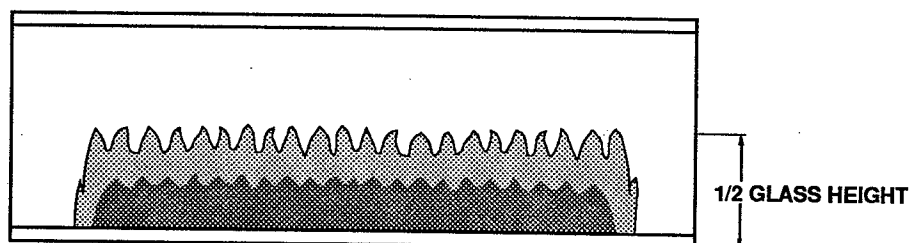
Figure 20 shows a correct burner flame pattern. Figure 21 shows an incorrect burner flame pattern. The incorrect burner flame pattern shows yellow tipping of the flame. It also shows the flame higher than 1/2 the glass panel height.

WARNING

If yellow tipping occurs, your heater could produce increased levels of carbon monoxide. If burner flame pattern shows yellow tipping, follow instructions at bottom of this page.

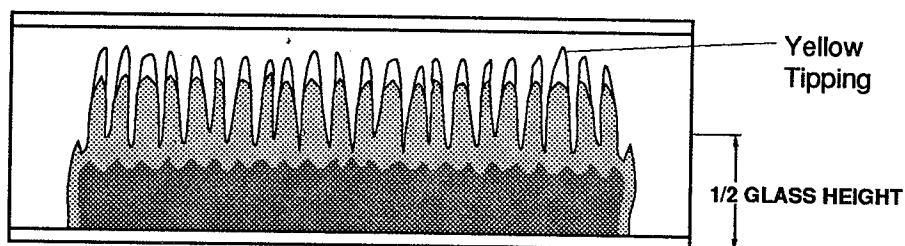
NOTICE

Do not mistake orange flames with yellow tipping. Brief patches of orange flames occur when dust or other fine particles are pulled into the heater and burned.



**CORRECT FLAME PATTERN
AT HIGH POSITION**

Figure 20 - Correct Burner Flame Pattern



**INCORRECT FLAME PATTERN
AT HIGH POSITION**

Figure 21 - Incorrect Burner Flame Pattern

If burner flame pattern is incorrect, as shown in Figure 21

- turn heater off (see TO TURN OFF GAS TO APPLIANCE, page 15 [models VN2000BT and VN2800BT] or page 18 [model VN2000B])
- see TROUBLESHOOTING, pages 20 thru 23

CLEANING AND MAINTENANCE

WARNING

Be sure heater is turned off and cool before cleaning.

CAUTION

Control areas, burner, and circulating air passageways of heater must be kept clean. Inspect these areas of heater before each use. Have heater inspected yearly by a qualified service person. More frequent cleaning may be needed due to excessive lint from carpeting, bedding material, etc.

ODS/PILOT AND BURNER

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

CABINET

Air Passageways

- Use a vacuum cleaner or pressurized air to clean.

Exterior

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

TROUBLE- SHOOTING

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

WARNING

Make sure heater is turned off, unplugged, and cool before servicing. All service and repairs should be done by a qualified service person.

CAUTION

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

OBSERVED PROBLEM	POSSIBLE CAUSE	REMEDY
When ignitor button is pressed, there is no spark at ODS/pilot	1. Ignitor electrode positioned wrong	1. Replace ignitor
	2. Ignitor electrode broken	2. Replace ignitor
	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. Piezo ignitor nut is loose	5. Tighten nut holding piezo ignitor to heater cabinet. Nut is located inside heater cabinet at top
	6. Broken ignitor cable	6. Replace ignitor cable
	7. Bad piezo ignitor	7. Replace piezo ignitor

**OBSERVED
PROBLEM****POSSIBLE
CAUSE****REMEDY**

When ignitor button is pressed, there is spark at ODS/pilot but no ignition

1. Gas supply turned off or manual shutoff valve closed
2. Control knob not in PILOT position
3. Control knob not pressed in while in PILOT position
4. Air in gas lines when installed
5. ODS/pilot is clogged
6. Gas regulator setting is not correct

1. Turn on gas supply or open manual shutoff valve
2. Turn control knob to PILOT position
3. Press in control knob while in PILOT position
4. Continue holding down control knob. Repeat igniting operation until air is removed
5. Clean ODS/pilot (see **CLEANING AND MAINTENANCE**, page 20) or replace ODS/pilot assembly
6. Replace gas regulator

ODS/pilot lights but flame goes out when control knob is released

1. Control knob not fully pressed in
2. Control knob not pressed in long enough
3. Safety interlock system has been triggered (models VN2000BT and VN2800BT only)
4. Manual shutoff valve not fully open
5. Thermocouple connection loose at control valve
6. 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
7. Thermocouple damaged
8. Control valve damaged

1. Press in control knob fully
2. After ODS/pilot lights, keep control knob pressed in 30 seconds
3. Wait one (1) minute for safety interlock system to reset. Repeat ignition operation
4. Fully open manual shutoff valve
5. Hand tighten until snug, then tighten 1/4 turn more
6. A) Contact local natural gas company

B) Clean ODS/pilot (see **CLEANING AND MAINTENANCE**, page 20) or replace ODS/pilot assembly
7. Replace thermocouple
8. Replace control valve

Continued

OBSERVED PROBLEM	POSSIBLE CAUSE	REMEDY
Burner does not light after ODS/pilot is lit	<ol style="list-style-type: none"> 1. Burner orifice is clogged 2. Burner orifice diameter is too small 3. Inlet gas pressure is too low 	<ol style="list-style-type: none"> 1. Clean burner (see CLEANING AND MAINTENANCE, page 20) or replace burner orifice 2. Replace burner orifice 3. Contact local natural gas company
Delayed ignition of burner	<ol style="list-style-type: none"> 1. Manifold pressure is too low 2. Burner orifice is clogged 	<ol style="list-style-type: none"> 1. Contact local natural gas company 2. Clean burner (see CLEANING AND MAINTENANCE, page 20) or replace burner orifice
Burner backfiring during combustion	<ol style="list-style-type: none"> 1. Burner orifice is clogged or damaged 2. Burner damaged 3. Gas regulator defective 	<ol style="list-style-type: none"> 1. Clean burner (see CLEANING AND MAINTENANCE, page 20) or replace burner orifice 2. Replace burner 3. Replace gas regulator
Yellow flame during burner combustion	<ol style="list-style-type: none"> 1. Not enough air 2. Gas regulator defective 	<ol style="list-style-type: none"> 1. Check burner for dirt and debris. If found, clean burner. See CLEANING AND MAINTENANCE, page 20 2. Replace gas regulator
Slight smoke or odor during initial operation	<ol style="list-style-type: none"> 1. Residues from manufacturing processes 	<ol style="list-style-type: none"> 1. Problem will be eliminated after a few hours of operation
Heater produces a whistling noise when burner is lit	<ol style="list-style-type: none"> 1. Turning control knob to HI position when burner is cold 2. Air in gas line 3. Air passageways on heater blocked 4. Dirty or partially clogged burner orifice 	<ol style="list-style-type: none"> 1. Turn control knob to LO position and let warm up for a minute 2. Operate burner until air is removed from line. Have gas line checked by local natural gas company 3. Observe minimum installation clearances (see Figure 2, page 6) 4. Clean burner (see CLEANING AND MAINTENANCE, page 20) or replace burner orifice

⚠ 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.

OBSERVED PROBLEM	POSSIBLE CAUSE	REMEDY
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 common with most heaters. If noise is excessive, contact qualified service person
Heater produces unwanted odors	1. Odors can be caused by odors brought into room by paint, hair spray, glues, etc. 2. Gas leak. See Warning statement at top of page	1. Ventilate room and stop using odor causing products while heater is running 2. Locate and correct all leaks. See CHECKING GAS CONNECTIONS, page 11
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 gas company 3. Clean ODS/pilot. See CLEANING AND MAINTENANCE, page 20
Gas odor even when control knob is in OFF position	1. Gas leak. See Warning statement at top of page 2. Control valve defective	1. Locate and correct all leaks. See CHECKING GAS CONNECTIONS, page 11 2. Replace control valve
Gas odor during combustion	1. Foreign matter between control valve and burner 2. Gas leak. See Warning statement at top of page	1. Take apart gas tubing and remove foreign matter 2. Locate and correct all leaks. See CHECKING GAS CONNECTIONS, page 11

TECHNICAL SERVICE

You may have further questions about installation, operation, or troubleshooting. If so, contact DESA International's Technical Service Department at 1-800-323-5190.

SPECIFICATIONS

	VN2000B/VN2000BT	VN2800BT
B.T.U (Variable)	9,000/18,000	14,000/28,000
Type Gas	Natural Only	Natural Only
Ignition	Piezo	Piezo
Pressure Regulator Setting	3" W.C.	3" W.C.
Burner Orifice Diameter	.084" (drill size 45/.082)	.102" (drill size 38/.1015)
Inlet Gas Pressure (in. of water)		
Maximum	7"	7"
Minimum	5"	5"
Dimensions, Inches (H x W x D)		
Heater	23.5 x 18.5 x 8.0	23.5 x 25.9 x 8.0
Carton	25.8 x 21.3 x 10.1	25.8 x 28.7 x 10.1
Weight (pounds)		
Heater	22	30
Shipping	27	35

SERVICE HINTS

When gas pressure is too low

- pilot will not stay lit
- burner will have delayed ignition
- heater will not produce specified heat

When gas quality is bad

- pilot will not stay lit
- burner will produce flames and soot
- heater will backfire when lit

You may feel your gas pressure is too low or gas quality is bad. If so, contact your local natural gas supplier.

SERVICE PUBLICATIONS

A service manual may be purchased from the address listed on the back page of this manual. Send a check for \$5.00 payable to DESA International.

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 International's Technical Service Department at 1-800-323-5190.

When calling DESA International, have ready

- your name
- your address
- model number of your heater
- how heater was malfunctioning
- type of gas used (propane or natural gas)
- purchase date

In most cases, we will ask you to return the defective part to the factory.

Parts Not Under Warranty

Contact authorized dealers of this product. If they can't supply original replacement part(s), call DESA International's Parts Department at (502) 781-9600.

When calling DESA International, have ready

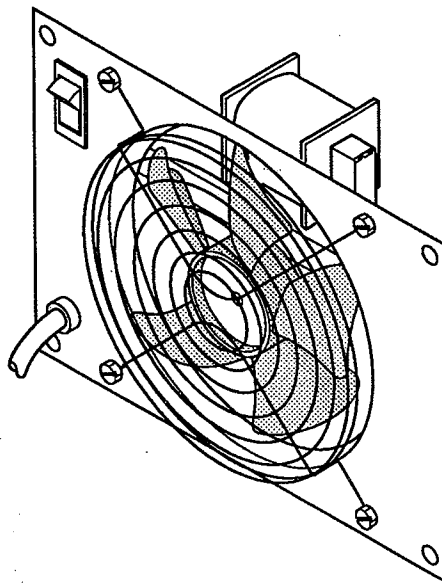
- model number of your heater
- the replacement part number

ACCESSORIES

These heater accessories can be purchased from your local dealer. If they can not supply these accessories, call DESA International's Parts Department at (502) 781-9600. You can also write to the address listed on the back page of this manual to receive these accessories.

FAN KIT - GA2100A

For all models. Provides better heat distribution. Makes heater more efficient.

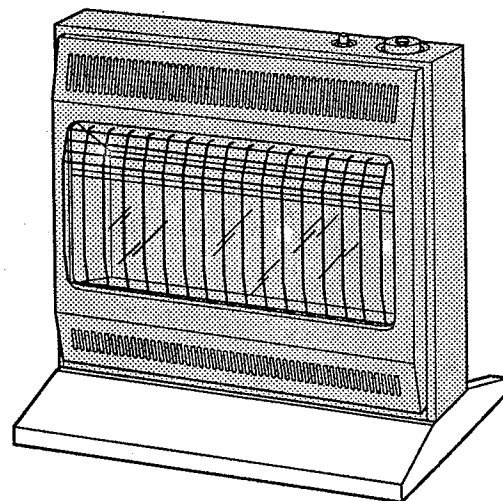


FLOOR MOUNTING STAND

Models VN2000B & VN2000BT - GA4000

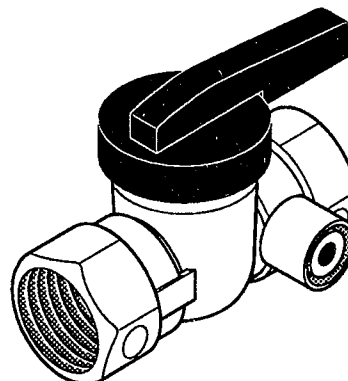
Model VN2800BT - GA4010

For locating heater on the floor, away from a wall.



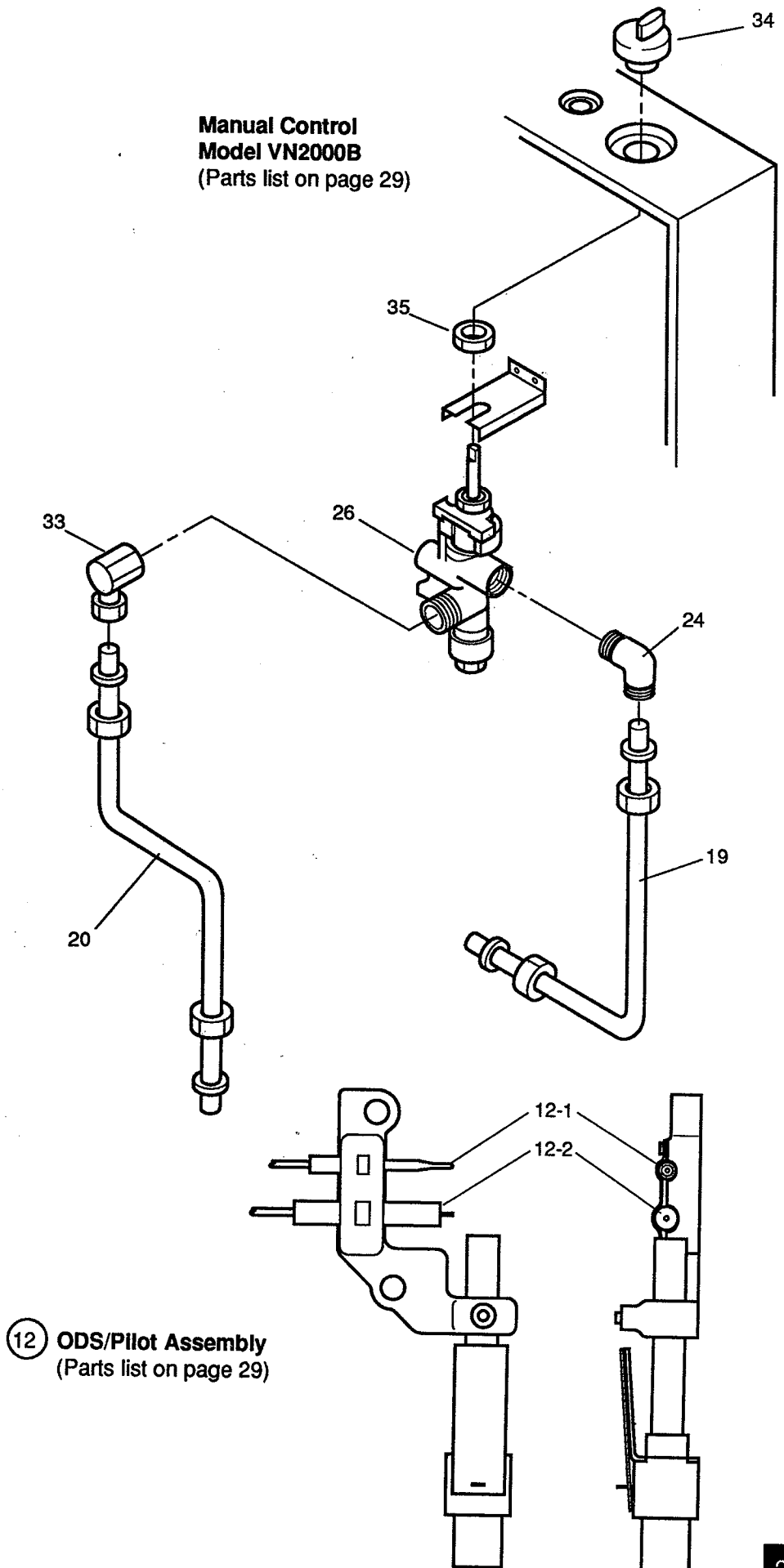
MANUAL SHUTOFF VALVE - GA5010

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

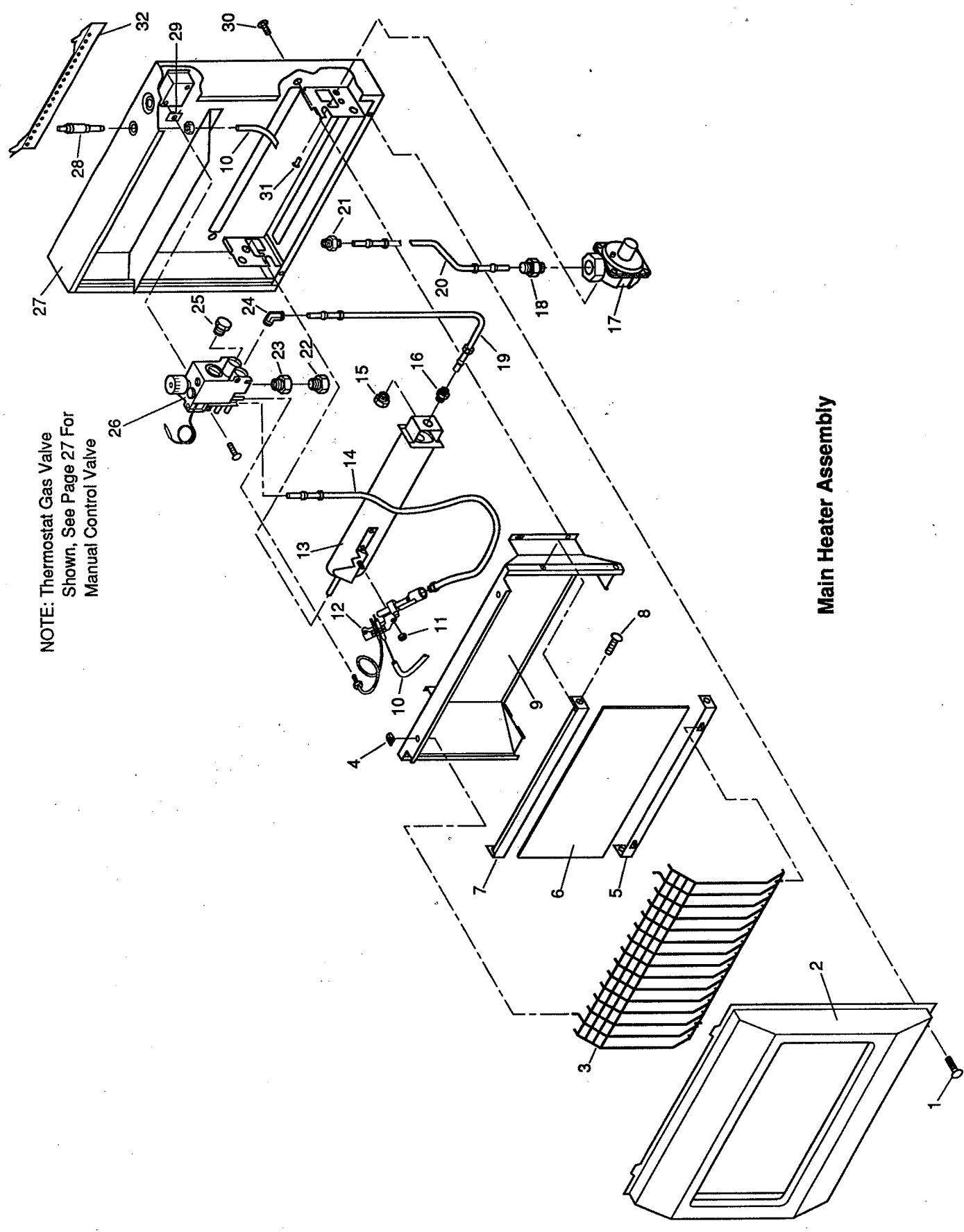


ILLUSTRATED PARTS LIST

**Manual Control
Model VN2000B**
(Parts list on page 29)



Main Heater Assembly



NOTE: Thermostat Gas Valve
Shown, See Page 27 For
Manual Control Valve

PARTS LIST

This list contains replaceable parts used in your heater. When ordering parts, follow the instructions listed under REPLACEMENT PARTS on page 25 of this manual.

KEY NO.	PART NUMBER FOR			DESCRIPTION	QTY.
	VN2000B	VN2000BT	VN2800BT		
1	098304-01	098304-01	098304-01	Screw, #10 x 3/8"	2
2	098742-01	098742-01	098742-02	Front Panel	1
3	098197-01	098197-01	098197-02	Grill Guard	1
4	098342-01	098342-01	098342-01	Clip, Grill Guard	2
5	098533-01BR	098533-01BR	098533-02BR	Bottom Glass Retainer	1
6	098260-01	098260-01	098260-02	Glass Panel	1
7	098532-01BR	098532-01BR	098532-02BR	Top Glass Retainer	1
8	M11084-26	M11084-26	M11084-26	Screw, #10 x 3/8"	4
9	098352-01BR	098352-01BR	098352-02BR	Deflector Unit	1
10	098271-02	098271-02	098271-02	Ignitor Cable	1
11	098249-01	098249-01	098249-01	Nut, M5	2
12	098244-01	098244-01	098244-01	ODS/Pilot Assembly	1
12-1	098514-01	098514-01	098514-01	Thermocouple	1
12-2	098515-01	098515-01	098515-01	Ignitor Electrode	1
13	098242-01	098242-01	098243-01	Burner	1
14	098517-01	098517-01	098517-01	3/16" Pilot Tubing	1
15	098251-02	098251-02	098251-04	Injector	1
16	098250-01	098250-01	098250-01	Injector Holder	1
17	098924-01	098924-01	098924-01	Pressure Regulator Kit	1
18	098274-01	098274-01	098274-01	1/2" NPT Male Connector	1
19	098519-01	098518-01	098518-01	3/8" Outlet (Burner) Tubing	1
20	098521-01	098520-01	098520-01	3/8" Inlet Tubing	1
21	—	098264-01	098264-01	3/8" NPT Male Connector	1
22	—	098276-01	098276-01	1/8" NPT Plug	1
23	—	098277-01	098277-01	3/8" to 1/8" NPT Bushing	1
24	098265-01	098265-01	098265-01	3/8" NPT Male Elbow	1
25	—	098275-01	098275-01	3/8" NPT Plug	1
26	—	098522-03	098522-04	Thermostat Gas Valve	1
26	098246-02	—	—	Control Valve	1
27	098529-01	098530-01	098531-01	Cabinet	1
28	097159-01	097159-01	097159-01	Piezo Ignitor	1
29	—	098319-01	098319-01	Fastener, "U" Nut	2
30	M11084-26	M11084-26	M11084-26	Screw, #10 x 3/8"	2
31	M11084-38	M11084-38	M11084-38	Screw, #8 x 3/8"	2
32	099066-01	099066-01	099066-01	Mounting Bracket	1
33	098268-01	—	—	1/2" NPT Female Elbow	1
34	098354-01	—	—	Control Knob	1
35	098508-01	—	—	Valve Retainer Nut	1

NOTES

NOTES

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 WARRANTY VANGUARD VENT-FREE NATURAL GAS HEATERS

DESA International warrants this product to be free from defects in materials and components for two (2) years from the date of first purchase, provided that the product has been properly installed, operated and maintained in accordance with all applicable instructions. To make a claim under this warranty the Bill of Sale or cancelled check must be presented.

This warranty is extended only to the original retail purchaser. This warranty covers only the cost of part(s) required to restore this heater to proper operating condition. Warranty part(s) MUST be obtained through authorized dealers of this product and/or DESA International 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 FROM THE DATE OF FIRST PURCHASE; AND DESA INTERNATIONAL'S LIABILITY IS HEREBY LIMITED TO THE PURCHASE PRICE OF THE PRODUCT AND DESA INTERNATIONAL 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[®]
INTERNATIONAL

P.O. Box 90004
2701 Industrial Drive
Bowling Green, KY 42102-9004