Installation Instructions and Users' Operating Guide Model 3163

WARNING

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

FOR YOUR SAFETY

If you smell gas:

1. **Open windows**
2. **Do not touch any electrical switches**
3. **Extinguish any open flame**
4. **Immediately call your gas supplier**

FOR YOUR SAFETY

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

Contents

Specifications

LP Gas Operation - Specified Fuel: Propane; Gas Supply Pressure: 11" W.C.;
12 volt DC: 15.4 volts max. 10.5 volts min. (for flame ignition and ventilation fan).

120 Volts AC Operation - 132 volts AC max. 108 volts min. 60 Hz.;
AC current draw: 1.3 amps @ 110 volts AC - 1.4 amps @ 120 volts AC

12 Volts DC Operation - 15.4 volts max. - 11.5 volts min.; DC current draw: 11.7 amps @ 12 volts DC - 13.6 amps @ 14 volts DC

Operation where these specifications are exceeded may cause damage and will void the warranty.

Model No.: _____ Serial No.: _____

Part No.: 617950H (97-01)

Safety Precautions

Read this manual and become thoroughly acquainted with it before installing or starting the refrigerator. The following safety precautions and recommendations contained herein are for your protection.

Improper installation, adjustment, or operation can cause injury or property damage.

The safety symbols used in this manual contain Safety Alert information. Understand their meanings and be safety conscious.

DANGER	**Indicates the presence of a hazard that will cause severe personal injury, death, or substantial property damage if ignored.**
WARNING	**Indicates the presence of a hazard that can cause severe personal injury, death, or substantial property damage if ignored.**
CAUTION	**Indicates the presence of a hazard that will or can cause a minor personal injury or substantial property damage if ignored.**

General

- **Keep the refrigerator and surrounding area clean. Never use the area behind the refrigerator for storage; in particular, storing flammable materials (oily rags, paper, aerosol cans, and chemicals.). Stored materials not only present a safety hazard but could block the ventilation to the cooling unit.**
- **Provide appropriate fire extinguishers installed in convenient locations. Consult your local fire department for the correct type to use. Do not use foam or water on electrical fires. Use an extinguisher rated by NFPA.**
- **Make sure all fasteners, supports, seals, electrical covers are secure.**

LP Gas System

- **LP gas is highly flammable. Gas connections must be leak tight. Do not smoke, create sparks or use an open flame when checking gas connections. Do not ignore the "rotten egg" smell of gas fumes.**
- **Protect all gas lines from physical damage, vibration, or excessive heat.**
- **Insure that the supply gas pressure is within the tolerance specified on the front cover of this manual. The gas controls are designed for safety. Never tamper with the adjustment or function of the controls other than as directed by the Lighting and Shutdown Instructions. All repairs must be done by a qualified service person.**

Exhaust Gases

- **Proper ventilation to remove exhaust gases is extremely important. These gases, generated in the GAS mode at the left side and top of the refrigerator, replace the oxygen in the air and in extreme cases can produce dangerous levels of carbon monoxide. This manual contains installation instructions to safely remove the exhaust gases and seal the zone from the living area. The installation instructions are certified by American Gas Association and Canadian Gas Association and must be followed.**
- **Check the burner for proper flame characteristics at the initial start-up and at least twice every year. The information for this check is located in this manual and must be performed by a qualified service person.**

Safety Precautions - continued

Electrical Circuits - AC and DC

- **The 120 volt AC circuit must be properly grounded. Never cut or remove the round grounding prong from the refrigerator's AC cord. Do not use a two-prong adapter. Do not use an extension cord to connect to the approved AC receptacle.**
- **Protect all wiring from physical damage, vibration, or excessive heat.**
- **Always disconnect both AC and DC sources of power when working on either circuit (This should be done only by a qualified service person).**
- **Insure all terminating connections are clean and tight to prevent arcing or overheating.**
- **Never allow Leak Detecting fluids or any other liquids to spill on electrical connections. Many liquids are electrically conductive and could cause serious arcing damage and, in some cases, fires.**

Refrigerant System (Cooling Unit)

- **Never physically bend, drop, drill, weld, or hammer the cooling unit. Doing so could cause the cooling unit to rupture and release dangerous chemicals which can cause severe burns to the eyes or skin. If ignited, these chemicals will burn with intense flame. A leaking cooling unit can release certain chromium compounds which, if inhaled, may cause cancer.**
- **Never apply direct heat in excess of 240° F to the cooling unit. Because the refrigerant is hermetically sealed under pressure, a temperature sensitive safety device opens to protect the cooling unit from erupting under excessive pressure. However, the expelled refrigerant could ignite and burn if an ignition source were near.**
- **Never attempt to repair or recharge the cooling unit. If defective, it must be replaced.**

Child Entrapment

- **Never install door locks or other restraints which could entrap small children within the refrigerator. The Travel Latch system must not be modified.**

Handling the Refrigerator

- **Never lift the refrigerator without assistance. Protect yourself from body strain.**
- **Avoid hot surfaces at the rear of the refrigerator when operating. The absorption type refrigerator produces several hot areas at the rear of the unit. This is true whether in GAS or ELECTRIC mode.**
- **Take care to avoid brushing against the irregular shapes and sheet metal parts at the rear of the refrigerator. Cuts or abrasions could result.**

⚠ WARNING

This refrigerator is not intended to be operated as a free standing unit (i.e. where the products of combustion are not isolated from the living area) or to be installed in such a way as to conflict with these installation instructions. Unapproved installations can result in personal injury or property damage.

General Information

The model 3163 is designed for built-in installation and operates on propane gas, 110 volts AC or 12 volts DC.

The propane gas mode of operation is that of a sealed combustion unit. A sealed combustion installation utilizes a single vent-air intake/exhaust assembly to supply fresh air to the burner and to remove the products of combustion. This insures the products of combustion are isolated from the living area of the vehicle. The vent-air intake/exhaust assembly is routed through the vehicle's outside wall and is connected to the refrigerator's burner assembly by flexible piping.

The vent-air intake/exhaust assembly used for this installation has been certified for this refrigerator and *must not* be modified.

Installation Instructions

WARNING

Improper location, installation, adjustment, alteration, or modifications can cause injury or property damage. Refer to this manual for proper instructions. For assistance or additional information consult a qualified installer, service agency, or Norcold.

Requirements

Installation must be made in accordance with these installation instructions for the Norcold factory warranty to be in effect.

This appliance is design certified under the latest edition of ANSI Z21.19 standards by the American Gas Association and is approved by the Canadian Gas Association.

Installation must conform with local codes or, in the absence of local codes with the following Standards as applicable.

In the United States:

a. National Fuel Gas Code, ANSI Z223.1.
b. Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 32-80.
c. Standard for Recreational Vehicles, ANSI A119.2.

When an external electrical source is utilized, the refrigerator, when installed, must be electrically grounded in accordance with local codes or, in the absence of local codes, the National Electrical Code, ANSI/NFPA 70.

In Canada:

a. Current CGA B149.1 and 2 installation code for Propane Appliances and Equipment.
b. Current CSA Z240.4 Gas Equipped Recreational Vehicles and Mobile Housing or the current CSA Z240.4.2 Installation Requirement for Propane Appliances and Equipment in Recreational Vehicles.
c. Current CSA Z240.6.2/C22.2 No. 148 Electrical Requirement for Recreational Vehicles.

When installed, the refrigerator must be electrically grounded in accordance with current Canadian Electrical Code C22.2 Parts 1 and 2.

Refrigerator Enclosure Dimensions

The following dimensions will allow the installation and removal of the refrigerator. Also, the dimensions provide the necessary clearances for air circulation around the refrigerator cooling system.

Refrigerator Enclosure Cut-Out Dimensions		
Height	Width	Depth
24 1/8"	25 5/8"	16 7/8"

The refrigerator must be placed on a solid and level floor away from heat generating sources. The floor must be strong enough to support the combined weight of the refrigerator and food.

Notice: Never install the refrigerator directly on carpeting. To protect carpeting, the refrigerator must be placed on a metal or wood panel extending at least the full width and depth of the refrigerator.

WARNING

Hazardous vapors! The burner or spark from the refrigerator's ignitor can ignite vapors causing fire or explosion resulting in property damage, serious personal injury or loss of life. Never store gasoline, combustible materials and other flammable vapors and liquids in the vicinity of the refrigerator.

Direct Vent Requirements

Interior Ventilation

An inlet and exhaust vent is required to insure adequate air flow. The refrigerator is equipped with an inlet vent located at the bottom front of the refrigerator. The installer is required to provide the exhaust vent which must have a cross sectional area of 30 square inches minimum. The exhaust vent is to be installed above the top surface of the refrigerator so as not to trap hot air generated by the cooling unit. The refrigerator is equipped with a DC ventilation fan to assist the air flow across the refrigerator's cooling system while operating the refrigerator in the Gas mode.

Installing the Vent-Air Intake/Exhaust Assy.

WARNING

Improper location and installation can cause injury or property damage. This refrigerator and it's vents are design certified by the American Gas Association and the Canadian Gas Association. Any deviation or substitution will void the agencies' certifications and the Norcold warranty. Refer to this manual for proper instructions. Install the refrigerator and vents as directed by Norcold without modification.

The clearance from the refrigerator's left side (facing the front of the refrigerator) to the vehicles exterior wall is important. This is the area in which the inlet and outlet flexible piping will be connected to the vent terminal housing during installation. Provisions must be made to access gas burner observation port for service and for visual check of the burner flame. *Refer to Figures 3 and 4 for maximum clearances from refrigerator cabinet to vehicles exterior wall.*

The wall thickness the vent terminal housing will accommodate is .030" minimum to 1.250" maximum. Figure 2 below illustrates the configuration of the opening for the vent terminal housing. *Do not make the opening in the vehicle wall larger than required.* The clearance should be enough for the terminal housing to pass through the opening. If the opening is too large, the outer gasket will not cover the vent housing opening.

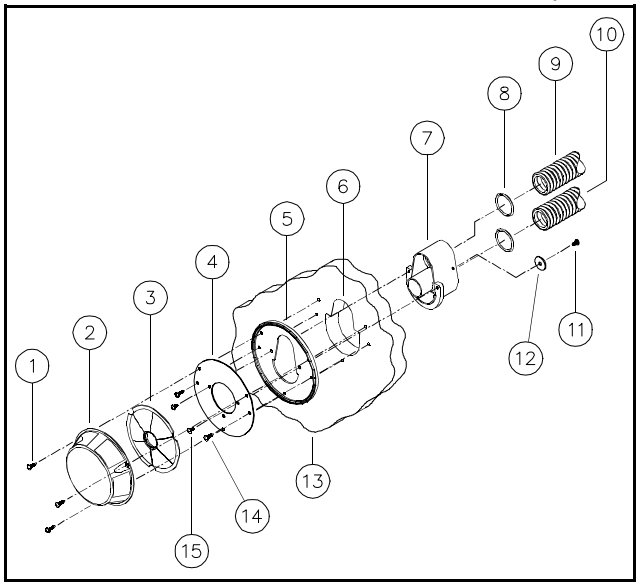


Figure 2 Air Intake/Exhaust Assembly

1. Mounting Screw
2. Vent Cover
3. Outer Disk
4. Inner Disk
5. Rubber Gasket
6. Vent Terminal Housing Cut-Out
7. Vent Terminal Housing
8. O Rings
9. Intake Piping
10. Exhaust Piping
11. Locking Washer Screw
12. Locking Washer
13. Vehicle Exterior Wall
14. Mounting Screw
15. Mounting Screw

It is imperative that the wall opening for the vent terminal housing not be too low. The flexible piping (inlet and outlet pipes) must rise from the refrigerator to the terminal housing. There are two specific vent-air intake assembly kits available to accommodate most installations. *Figures 3 and 4 illustrate two installations with the maximum flexible piping lengths and the vent terminal housing locations.*

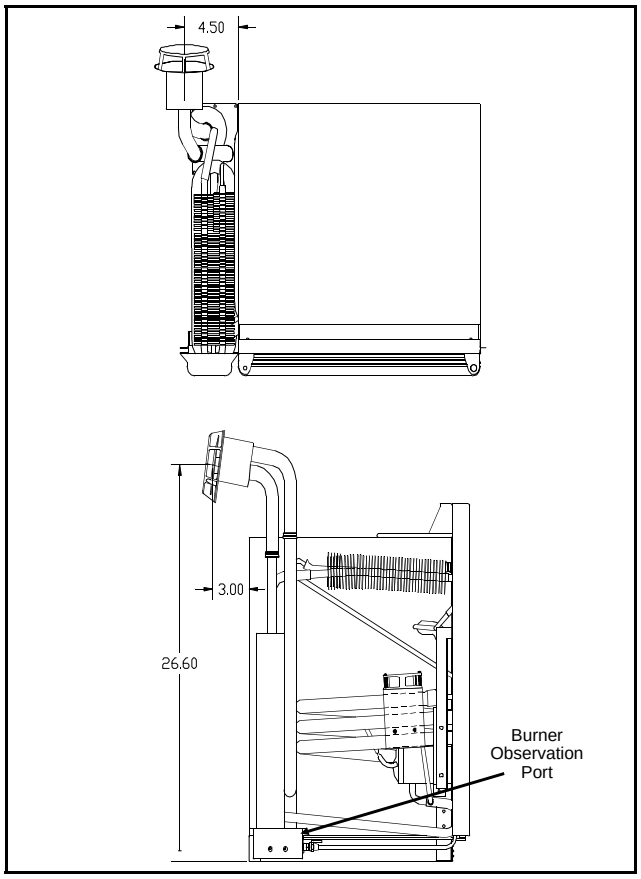


Figure 3-Kit# 617941 Flexible Pipe and Vent Location

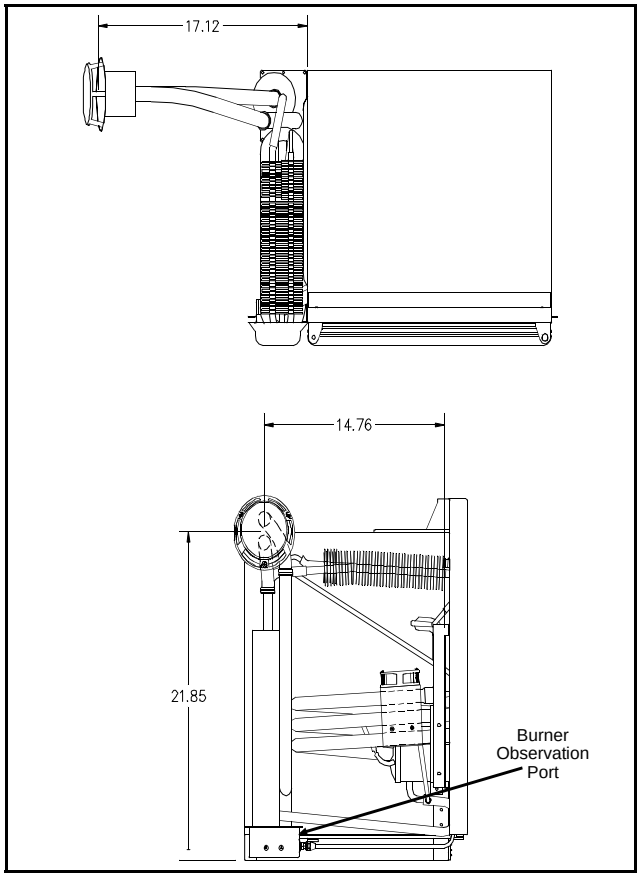


Figure 4-Kit# 617943 Flexible Pipe and Vent Location

Propane Gas Pressure and Connection

⚠ WARNING

Hazardous vapors! Propane gas can cause an explosion and result in property damage, personal injury or death. Use extreme care when working with or near a propane system. Do not smoke. Do not create sparks or use an open flame to check supply piping and fittings for leaks.

This refrigerator is designed to operate on propane gas with a supply pressure to the refrigerator of 11 inches water column. A pressure regulator is required between the refrigerator and the main gas tank to maintain the supply pressure of 11 inches water column. *Do not connect the refrigerator directly to the main tank without a pressure regulator in line.*

Use supply piping and fittings that comply with NFPA 501C, as well as local, state, and national codes governing type and size. Also, refer to NFPA 501C for routing and testing. The gas should be supplied by a 3/8" diameter copper piping or other approved piping of sufficient diameter to prevent gas pressure loss to the refrigerator. The gas connection located at the top of the refrigerator is a 3/8 inch SAE (UNF 5/8"-18) male flare connection.

The gas piping should be routed in a manner to limit the possibility of vibration and abrasion. The gas supply piping should enter at the vicinity of the gas connection located at the top of the refrigerator. The hole through which the gas piping enters should be of sufficient size (approximately 1/2" diameter) to provide adequate clearance. Once the gas piping is installed, apply a sealant around the piping at its point of entry to minimize abrasion, vibration, and to serve as a barrier from external moisture.

To prevent gas leaks and damage to the gas supply piping, use two wrenches, one to hold the fitting of the manual gas valve the other to tighten the supply piping to the refrigerator.

Electrical Connections

120 Volts AC

⚠ WARNING

This refrigerator is designed to operate on a 120 volt AC, 60 Hertz grounded circuit. The refrigerator AC power cord is equipped with a three-prong grounding plug which must mate with a three-prong grounding receptacle to protect against possible shock hazards. Operating the refrigerator without proper ground can cause property damage, severe personal injury or loss of life. It is the owners/installers personal responsibility and obligation to provide a properly grounded circuit to the refrigerator in accordance with local codes or, in the absence of local codes, the National Electrical Code, ANSI/NFPA 70. Do not cut or remove the grounding prong from the refrigerator's AC power cord. Do not use a two-prong adapter or extension cord.

The free length of the AC power cord is 36 inches. It is recommended that the three-prong grounded receptacle be located within reach of the cord. The cord must be routed so as not to come in contact with the burner, flue pipe, or any other component that could cause damage to the cord insulation.

12 Volt DC Connection

12 volts DC is required for flame ignition and the mechanical fan in the gas mode and to power the DC heater in the DC mode. The refrigerator receives its DC power source from the vehicle's 12 volt system; either an auxiliary (house) battery or the engine battery. The battery system not only supplies the refrigerator, but also supplies power to other DC components of the vehicle.

The DC supply connects to the refrigerator at the terminal block located at the top of the refrigerator. One lead is marked positive (+) and the other is marked negative (-). Correct polarity must be observed when connecting the DC supply. *Do not use the chassis or vehicle frame as one of the conductors. Connect supply wires at the battery and route to the refrigerator.*

The distance the current travels from the battery to the refrigerator dictates the AWG wire size to be used. Undersized wire for the distance can result in a voltage drop. A voltage drop will affect the wattage output of the DC heater and resultant refrigerator performance.

⚠ WARNING

Use of undersized wire and/or inadequate fuses can result in an electrical fire in the event of a circuit overload. To prevent a possible electrical fire, follow Norcold's wire and fuse size requirements, or any applicable state and local codes.

It is recommended to install a fuse between the battery and the refrigerator to protect the supply wiring. For optimum protection, install the fuse as close to the battery as possible.

Recommended wire and fuse size:

	minimum wire size	maximum fuse size
0 - 20'	12 AWG	20 Amp
over 20'	10 AWG	30 Amp

When a wire size is installed which is larger than the minimum size indicated above, the wire must be fused in accordance with the requirements of the R.V.I.A. A119.2 Standards or local governing codes.

Reversing Door Swing

Your refrigerator is equipped with convertible door hinges. The hinging of the door can be changed to the opposite side anytime you wish.

1. Remove all items of food, juices, etc., from the door.
2. Using a slotted screwdriver, remove the top hinge pin.
3. Remove the travel latch by lifting out of the door.
4. Remove the door by opening slightly and pulling the top of the door away from the refrigerator. Lift the door up and off the lower hinge pin.
5. Remove the lower hinge pin.
6. Using a Phillips screwdriver, remove the travel latch bracket.
7. Remove the bottom hinge bracket and reposition to the location where the travel latch bracket was removed.
8. Remove the top hinge and reposition at the bottom on the opposite side.
9. Mount the travel latch bracket to the opposite side from which it was removed.
10. Replace the bottom hinge pin bracket and relocate the bottom of the door on the hinge pin and close door.
11. Replace the top hinge pin.
12. Replace travel latch in door.
13. Open and close the door several times to insure proper door seal. Adjustments, if needed, can be accomplished by loosening both hinge brackets and repositioning.

Insulating the Flexible Exhaust Piping

The flexible exhaust pipe must be insulated prior to installation into the vent terminal housing. The flexible exhaust pipe connects to the flue tube of the refrigerators cooling unit and routes to the bottom opening of the vent terminal housing. Use the non-combustible insulation material supplied with the vent-air intake/exhaust kit. *Do not insulate the Air Intake pipe.*

Installing Refrigerator into the Enclosure

Set refrigerator into enclosure and slide it back enough to connect gas supply piping to manual shut-off valve located at top of the refrigerator. Connect 12 volt DC supply to terminal block also located at top of refrigerator. Connect AC power cord to receptacle. Place the "O" rings onto ends of both flexible pipes. Bend flexible pipes so they clear top of enclosure Connect piping as follows:

Exhaust Pipe - This pipe is insulated and connects to the flue tube of the cooling unit. Route and connect to the bottom opening of the vent terminal housing.

Intake Pipe - This pipe is *not* insulated and connects to the burner cover. Route and connect to the top opening of the vent terminal housing.

Secure both flexible pipes to vent terminal housing with locking washer and screw. Slide refrigerator completely into enclosure.

Testing of the Vehicle's Gas Supply Piping

When installation is complete, the propane gas supply piping must be inspected and tested for leaks from the refrigerator to the main gas supply tank. Use a leak detection solution. *Do not test for leaks with an open flame.*

If compressed air is used for leak testing, the pressure must not exceed 1/2 psig (14 inches water column).

The appliance and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressure in excess of 1/2 psig (14 inches water column).

The appliance must be isolated from the gas supply piping system by closing its manual shutoff valve during any pressure testing of the gas supply piping system at test pressure less than or equal to 1/2 psig (14 inches water column).

Check the gas pressure to the refrigerator without other gas appliances operating. The pressure should not exceed 11 inches water column. With other appliances operating the pressure should not be less than 10.5 inches water column.

Check Out of Flame Failure Safety Device

1. To verify operation of the flame failure safety device, start the refrigerator in the gas mode (refer to lighting instructions on page 8) and verify the presence of a flame.
2. Turn off the gas at the manual shut-off valve or at the main gas supply tank.
3. The flame will go out and within 3 minutes the flame safety device will automatically close (an audible click will be heard as this device closes).
4. Turn the gas on at the manual shut-off valve.
5. Attempt to light the burner by placing the mode selection button to the gas mode. *Do not push in the safety valve.*
6. Without holding the safety valve in, the burner flame will not re-light. This indicates the flame failure safety device is functioning.
7.

Securing the Refrigerator

The refrigerator can be secured into the enclosure by screws through the mounting holes provided at the front of the refrigerator. This will prevent the refrigerator from moving in transit.

Hypot Tests

A Dielectric Strength test (Hypot) has been conducted at the factory and the refrigerator does not require an additional test. If Hypot tests are to be conducted on the 12 volt circuit, the 12 volts must be disconnected from the refrigerator to protect the flame ignition circuit.

Location of Operating Controls

The refrigerators operating controls are located in a cluster above the refrigerator door.

Description of Controls

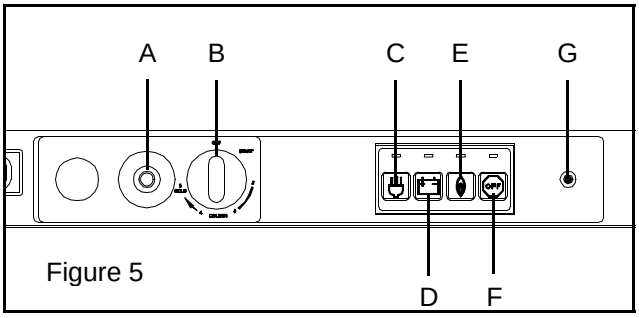


Figure 5

(A) Safety Valve

The safety valve is designed so that any loss of flame will stop gas flow to the burner. It is controlled by means of a thermocouple that is positioned in the flame. As long as a flame is detected by thermocouple, the valve will remain open. Upon flame failure, the valve closes, shutting off gas flow to burner. During gas ignition process, the safety valve button must be held in until a flame is established at burner.

(B) Thermostat

The thermostat controls both the gas and the AC electric operations, thereby eliminating the necessity of resetting each time a different power source is selected. Rotate the thermostat knob clockwise to make refrigerator cabinet colder.

(C) 120 Volts AC Operation

Pressing button (C) selects AC mode of operation. When AC mode is selected and AC voltage is supplied to refrigerator, the refrigerator will operate on 120 volts AC.

(D) 12 Volts DC Operation

Pressing button (D) selects DC mode of operation. When DC is selected and DC is available to refrigerator, the refrigerator will operate at full cooling power. The DC operation is a continuous run (no thermostat control) mode.

(E) Gas Operation

Pressing button (E) selects Gas mode of operation. The refrigerator is equipped with electronic ignition. When gas mode is selected, the electronic ignition is energized and sparking is generated at burner (Note: Push safety valve button in and hold until flame is present at burner). Sparking will continue until a flame is present at burner. When a flame is sensed by the electronic ignition module, the sparking ceases and flame indicator (G) illuminates indicating refrigerator is operating on gas.

(F) Off

Pressing button (F) will interrupt all power sources and cease operation of refrigerator.

Lighting and Start-Up Instructions

The Lighting and Start-Up Instructions are located on the top portion of the interior door liner.

Refer to Figure 5 for location of the operating controls.

Notice: When warm humid weather conditions are observed, operate the refrigerator on either AC or DC electric for a minimum of five (5) minutes before attempting to follow the Start-Up Instructions for Gas operation.

Gas Operation

WARNING

Do not hold gas valve in more than 30 seconds. If the flame is not indicated within this time, press selector switch (F), wait 2 minutes, and retry. Continuing to hold the gas valve in will cause gas to build up in the burner area and can result in an explosion which can cause property damage or severe personal injury.

1. Set thermostat (B) to the start setting.
2. Press mode selector button (E). Ignition spark will be present at the burner.
3. Push and hold the safety valve button (A) until the indicator lamp (G) glows steady. Continue to hold the safety valve button in for 15 seconds and then release. The indicator lamp should remain a steady glow. If the lamp turns off, wait 2 minutes, repeat this step.

Notice: On initial start-up, it may take longer for the burner to light because of air being purged from the gas supply line.

Important Note: Altitude above 4000 feet affects the performance of the gas burner, could reduce cooling performance of the refrigerator, and may cause nuisance burner outages. Norcold recommends that the refrigerator be switched to AC or DC electric at an altitude above 4000 feet. An optional high altitude kit is available through your dealer for gas operation at altitudes up to 10,000 feet.

4. Set thermostat to desired temperature setting.

***Notice*: Cleaning vehicle exterior by a power (car) wash may allow water to enter the refrigerator's burner area through the vent cap. Operate the refrigerator on gas to ensure evaporation of any mositure that may have entered the burner area.**

AC Operation

1. Press mode selection button (C).
2. Set the thermostat (B) to the coldest setting. Allow to operate at coldest setting for 6 to 8 hours before adjusting.

DC Operation

1. Press mode selection button (D). There is no need to set thermostat to any setting. The DC operation is a continuous run (no thermostat control) mode.

Shut-Down: All Modes

1. Place the mode selector button to the off position. This will interrupt all AC and DC power and stop operation of the refrigerator.

Users Operating Guide

This appliance has been designed for storage of foods.

About Your Refrigerator

Storage Volume

1.8 cu. ft.

Leveling

The Norcold refrigerator does not require critical leveling. Normal vehicle leveling to provide comfort for the vehicle occupants is satisfactory for refrigerator operation.

Operation in Transit

While the refrigerator should be level when the vehicle is stationary, performance during transit is not normally affected.

Ventilation Fan

A thermostat controlled mechanical fan is used to move air across the refrigerator's cooling system. The thermostat is calibrated to activate the fan whenever the vehicle's interior temperature reaches 85 degrees or higher.

When leaving the vehicle unattended, it is advisable to leave windows or roof exhaust vents open to maintain the vehicle's interior temperature below 85 degrees. This will allow the refrigerator to operate efficiently, minimize fan operation, and limit current draw from the battery.

Information Regarding Battery Drain

A 12 volt DC source is required for the gas and DC modes of operation and the mechanical fan which assists the air flow across the refrigerator's cooling system. For gas operation, the DC power source supplies voltage for electronic ignition (100 milliamps) and to the mechanical fan (240 milliamps). The current draw is 340 milliamps. This indicates that drain on the battery is very low and has little effect on "battery run down". For DC operation, the DC power source supplies voltage for the cartridge heating element. The DC operation draws approximately 11.7 amps at 12 VDC and 13.6 amps at 14 VDC. It is evident that current draw for DC operation is high, therefore, the refrigerator should not be operated for long periods of time from a battery only without a means of recharging the battery. The DC voltage should be checked while operating the refrigerator in the DC mode. The voltage at the refrigerator should never be below 11.5 volts DC.

Fresh Food Compartment

This compartment is designed to store and cool foods. Refrigeration requires air circulation within the fresh food compartment. Restriction of air circulation will cause inadequate refrigerator temperatures and possible food spoilage. *Do not cover the refrigerator shelf with paper or plastic.*

To prevent food odors, store highly flavored foods in covered dishes, plastic bags or wrap in foil. Cover vegetables to retain crispness.

To reduce frost formation on the cooling fin, cover liquids and moist foods. *Do not put hot foods into the refrigerator or let door remain open longer than necessary.*

Allow the refrigerator to operate for a minimum of eight hours or overnight before loading the refrigerator with food. Loading a warm refrigerator with warm foods will

require a longer period of time for the refrigerator temperature to lower.

Refrigerator Care

Owner's Check list

Your refrigerator is designed for years of trouble free operation when a few simple steps are performed on a schedule; three to six month intervals. Use the following as guide and a reminder.

1. Visual inspection of the vent-air intake assembly to insure the vent is not obstructed and free of debris.
2. Keep the internal vents unobstructed to insure proper air circulation around refrigerator's cooling unit.
3. Insure your LP gas is propane, not other types such as Butane or Butane mixtures.
4. Insure your 12 volt DC supply is properly charged.
5. Allow adequate time (6-8 hours or overnight) before loading the refrigerator with foods.
6. Insure the refrigerator's wire shelf is not covered with paper or plastic.

Defrosting the Refrigerator

After a period of operation, it is normal for frost to gradually accumulate on the cooling fins, eventually impairing cooling.

To defrost the refrigerator, place the mode selector to "Off" position. Empty the refrigerator and leave the door open. When the frost has melted, wipe the moisture with a clean dry cloth. Replace all foods and restart the refrigerator. Set the thermostat to its maximum setting for several hours before returning to the mid-range setting.

Cleaning the Interior of Refrigerator

It is important to keep the refrigerator interior clean to minimize food odors. The best time to clean the refrigerator interior is after defrosting. Add a small quantity of dishwater detergent to lukewarm water and wash the refrigerators interior. *Do not use abrasive cleaners to clean the interior of the refrigerator. Abrasive cleaners can harm the refrigerators interior surface.*

Rinsing the interior in a solution of baking soda and water (a tablespoon of baking soda to a quart of water) will freshen and neutralize odors. Wipe refrigerator interior with a soft dry cloth to prevent water spots.

The door gasket can be cleaned in the same manner as the refrigerator interior. After cleaning, apply a thin layer of petroleum jelly to the gasket on the hinge side. This will keep the gasket soft and prevent it from rolling, insuring a proper door seal.

Checking Door Seal

The door gasket must seal completely around entire length of the door. This will insure cooling efficiency and prevent frost formation. Frequent frost or reduced cooling are indications of air leaks.

To check for proper door seal, lay a long strip of paper (dollar bill) between the gasket and the refrigerator. Close the door and withdraw the paper. A frictional drag should be observed. Repeat all around the door. If the paper does not have a noticeable frictional drag, the gasket is not sealing. Contact your service agency for assistance.

Refrigerator Servicing Requirements

⚠ WARNING

Unauthorized or improper servicing of this refrigerator can cause severe personal injury, property damage or both. All required service and maintenance must be performed by your dealer or a Norcold authorized service center. Norcold will not accept responsibility for improper installation, adjustment, alteration, service or maintenance performed by anyone other than a qualified dealer or a Norcold Service Center. Costs and consequential problems resulting from unauthorized or improper servicing of this refrigerator are the refrigerator owner's responsibility.

Note: The refrigerator information packet supplied with your refrigerator includes a Norcold Service Center location booklet.

Servicing Requirements Check list

In addition to the Check list items under refrigerator care, a safety and performance schedule is to be made by a qualified service facility. The schedule is to include the following:

1. Check and adjustment (twice a year) of gas supply pressure.
2. Inspection and leak test (twice a year) of gas supply piping and fittings.
3. Inspection of exhaust and intake piping of the vent-air intake assembly. Insure proper connections to the burner and the vent.
4. Clean burner, burner orifice, and flue tube.
5. Check and adjust the ignition electrode gap. Insure the thermocouple is clean and secure in the burner bracket.
6. Inspection of the operating controls and wiring to insure they are in good condition.

Gas Burner Flame

The gas operation of your refrigerator is controlled by the correct burner flame which supplies the heat input to the refrigerator's cooling system. The correct burner flame is dependent upon correct input gas pressure and the burner and burner orifice being clean. The propane gas piping and the supply pressure must be inspected and tested at least twice a year. All inspections and tests must be performed by the propane gas supplier or a qualified service agency.

A visual check of the burner flame should be made regularly. The burner flame can be observed through the observation port on the left side of the burner box.

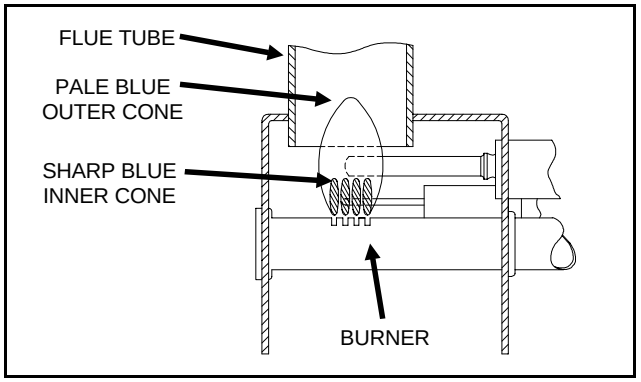


Figure 7

The flame should be sharp blue as illustrated in Figure 7 with a stable burning appearance. When there is a constant yellow component observed or if the flame appears erratic and unstable, contact your dealer, gas supplier, or a Norcold authorized service center. Also observe the position of the flame; it must be centered under the flue tube without touching the inner wall of the tube. Norcold strongly recommends that any required adjustments be performed by your dealer or a Norcold authorized service center.

Burner Orifice Removal and Cleaning Procedure

1. Turn off the gas supply at the main tank.
2. Turn refrigerator off.
3. Turn off refrigerator's manual shut-off valve.
4. Remove refrigerator from the enclosure.
5. Remove the screw located on the right front of the burner box.
6. Remove the two screws securing the heat shield to the refrigerator's support brackets.
7. Remove the burner box from the cooling unit.
8. Remove the flare nut from the orifice assembly.
9. Remove the orifice assembly from the burner.

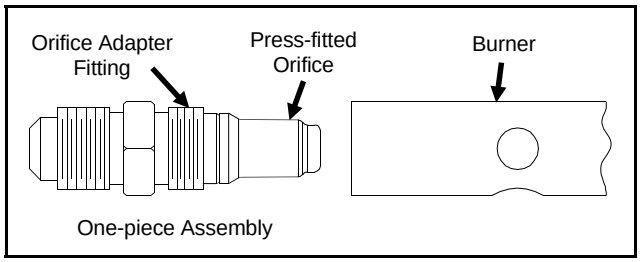


Figure 8

⚠ WARNING

Do not attempt to remove the orifice from the orifice adapter fitting when cleaning. Removing the orifice will cause serious damage to the orifice and it's press-fit seal and may create propane gas leakage. Leaking propane gas, if ignited, could cause an explosion resulting in severe personal injury or death.

10. Clean the orifice assembly with alcohol and air pressure. *Do not clean the orifice with a pin or similar object.*
11. Clean the burner with alcohol and air pressure. Make sure the slots of the burner are unobstructed.
12. Re-install the orifice assembly. Insure orifice is wrench tight in burner.
13. Reconnect flare nut to orifice assembly.
14. Re-install the burner box. Insure the burner box gasket seal is in good condition before reinstalling. If damaged, contact your dealer or a Norcold Service Center.
15. Leak test refrigerator fittings.
16. Re-install the refrigerator and leak test main supply piping at the manual shut-off valve.

Removing and Replacing the Refrigerator

To remove the refrigerator, interrupt both the AC and DC power sources to the refrigerator. Turn off the propane gas at the main supply tank. Remove the screws at the front securing the refrigerator to the enclosure. Slide the refrigerator forward enough to disconnect gas supply piping at the manual shutoff valve located at the top of the refrigerator. Disconnect the 12 volts DC at the terminal block. Disconnect the AC power cord from the receptacle. Remove the intake and exhaust piping from the vent terminal housing. The refrigerator is now ready for removal. When reinstalling the refrigerator, make certain that the connections of the intake and exhaust piping is properly sealed. If damage occurs to the "O" ring seals of the flexible piping, contact your dealer or a Norcold Service Center to obtain new "O" ring seals. After reinstalling, check the gas fitting connections for leaks. *Do not check for leaks with an open flame.*

Failure of Refrigeration

Failure of refrigeration does not necessarily indicate that the cooling system is defective. Other factors governing its operation must be checked.

If the refrigerator is operating on gas and loss of cooling is noticed, switch the refrigerator to the AC mode of operation. If the refrigerator has been operating on electric, switch to gas operation. After the refrigerator has been switched from one power source to the other allow several hours to assure the refrigerator is cycling properly. This will determine if a component failure in the electric or gas controls is causing the cooling fault. If no cooling is evident after eight hours (or overnight), the cause of failure may be the cooling unit. To determine the actual cause, contact your dealer or a Norcold authorized service center.

Replacement Parts

The following is a list of parts which can be replaced by the owner and are obtainable by contacting a Norcold Service Center.

Description	Part Number
System Cover - Taupe	617904
System Cover - Gray	617905
Thermostat Knob	617971
Door Gasket	617906
Travel Latch Assembly	617916
Air Inlet Grille	617938
Owner's Manual	617950

Information About LP Gas

⚠ WARNING

Hazardous vapors! Propane gas can cause an explosion and result in property damage, sever personal injury, or loss of life. Use extreme care when working with or near a propane system. Do not smoke. Do not create sparks or use an open flame to check supply piping and fittings for leaks.

Every precaution is taken by fuel producers, tank manufacturers, and LP gas dealers in keeping moisture out of the fuel, this problem does at time exist causing regulator freeze-ups. Suggestions that you may want to follow to help prevent this moisture are:

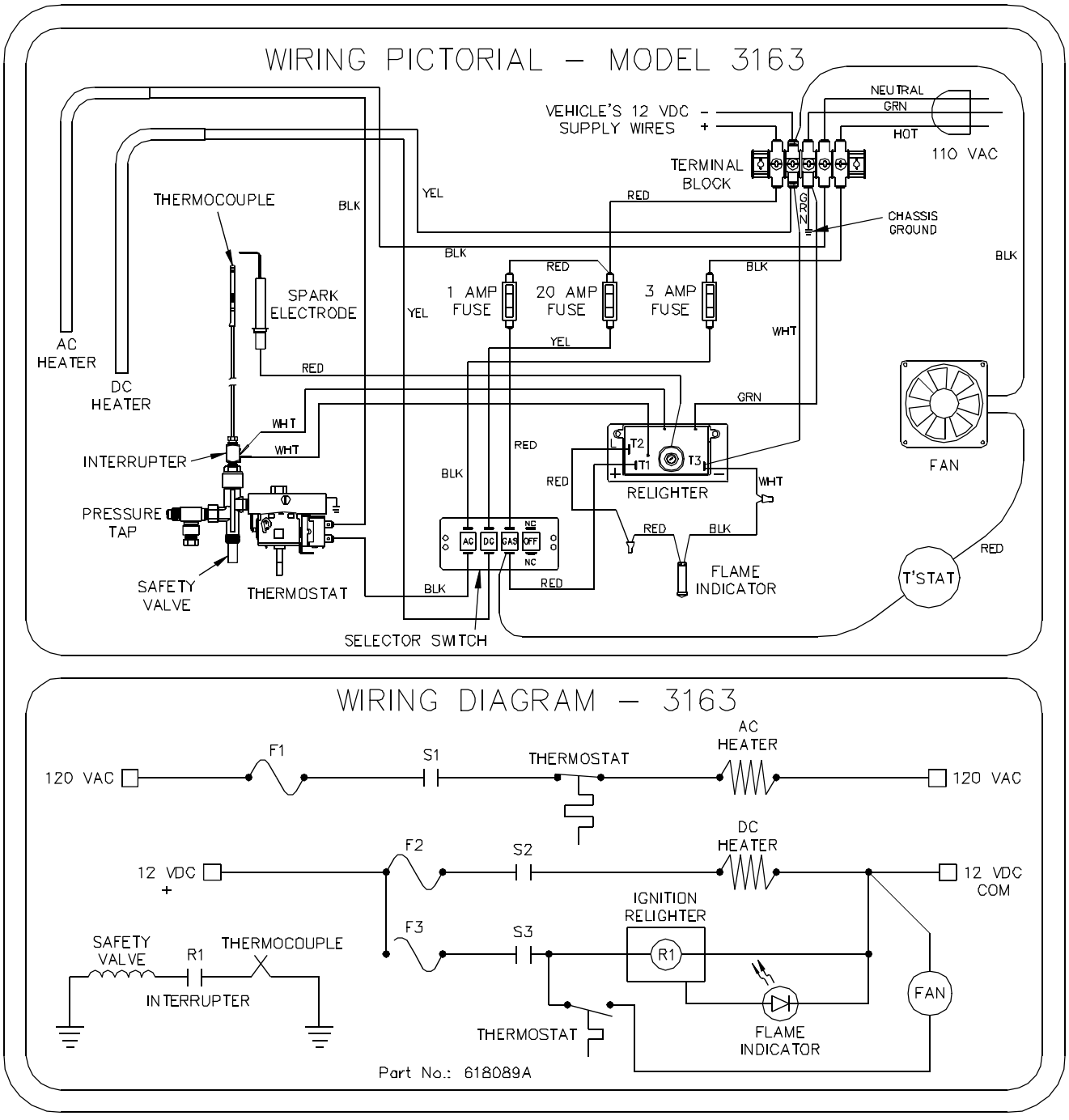
1. Keep the main tank valve closed during periods that the gas will not be used and if the tank is empty.
2. Contact your LP dealer about the addition of methyl alcohol into your tank. There will be a minimal charge but it will help prevent freeze-up.

Notice: The refrigerator operates on propane, do not use Butane or Butane mixtures.

Basic Practices to Assure Safety

1. Do not allow your tank to be overfilled beyond the legal level capacity indicated by the liquid level stop fill gauge.
2. When closing the main valve on your tank, never use a wrench or pliers These valves are designed to be closed (leak-tight) by hand, if wrenches are necessary to stop a leak, the valve must be replaced.
3. When tightening the left hand thread nut on the service valve, draw it up just snug with a wrench. *Do not over tighten or jam the valve.* This is a machined brass fitting which seats securely against a female seat in the valve and requires no pipe joint compound.
4. When you are ready to use your tank, open the valve all the way.
5. Periodically check the tank and line connections for leaks using a soapy solution. In transit vibration may create leaks. *Do not check for leaks with a open flame. Do not allow leak detection solution to come in contact with electrical components.*
6. Make certain your tank is securely fastened in place.
7. On travel trailer installations utilizing dual tanks, turn the tanks so that the open part of the tank guard is facing the trailer. This will help to protect the valve and regulator.
8. If you remove your tank for transport to a dealer for filling, transport the tank in the same position as it is installed and with the valve closed. Secure the tank against falling or rolling.
9. Always practice safety. LP gas can be dangerous. If you have questions about the operation of your gas appliances or the LP gas system, contact your local LP gas dealer.

Wiring Pictorial and Diagram



Notes

Limited Warranty

Models 3163T & 3163G

NORCOLD
P O BOX 4248
SIDNEY OH 45365-4248

This Limited Warranty is given by NORCOLD, Inc. ("Company") to the original consumer-purchaser of any new refrigerating equipment ("Equipment") supplied by the Company, excluding glassware, electric light bulbs, replaceable fuses, and will be effective for a period of two years from date of original purchase. The Company warrants, provided that the Equipment shall at all times have been in possession of and used by the original consumer-purchaser, that:

A. The Company will provide free service and replacement of defective parts at no charge at all authorized Norcold Service Centers for a period of two years from the date of original purchase. In the event of a cooling unit failure, Norcold has the option of replacing the cooling unit assembly or the entire refrigerator. This Limited Warranty covers labor costs incurred in removing and re-installing the refrigerator only when necessary to replace a defective part. The Company will pay inbound and outbound transportation costs of any defective part, for a 2-year period commencing with date of purchase. The original consumer-purchaser must pay all expenses incurred in making the equipment available at one of the Norcold Service Centers.

B. The following procedure shall be followed by any original consumer-purchaser desiring to obtain performance under the terms of this Limited Warranty. The refrigerator must be brought to any of the Norcold Service Centers and the original consumer-purchaser must present evidence (1) to identify the original consumer-purchaser: and (2) that the item claimed to be defective is still within the warranty coverage. If the original consumer-purchaser is unable to accomplish this task, written notice should be immediately directed to Norcold and advice will be promptly given concerning the manner in which warranty service may be obtained. Inability to physically bring the refrigerator to a Norcold Service Center will not void the warranty, but any additional costs thereby incurred are solely for the account of the original consumer-purchaser.

C. The Company will not be liable under this Limited Warranty for any of the following:
   (1) Defects which arise by reason of transit damage, misuse, neglect or accident.
   (2) Manufacturing defects found at the time of purchase, and associated labor, which are not communicated to the Company within 30 days.
   (3) Labor performed without need for parts replacements which is not communicated to the Company within 30 days.
   (4) Replacement of blown fuses.
   (5) Defects arising from improper installation or adjustment of the Equipment.
   (6) The need for normal maintenance of this refrigerator according to the guidelines specified in the Installation and Operating Instructions.
   (7) Defects arising from the improper use of parts or parts not manufactured or supplied by the Company in the course of repairs or replacements to the Equipment.

D. Employees and agents of the Company, and its authorized service representatives, have no authority to vary the terms of the Limited Warranty, which applies only to Equipment purchased and installed in the United States of America and the Dominion of Canada. The Company reserves the right to make any improvements or changes in parts or models without notice to any original consumer-purchaser.

E. The Company shall not be liable or in any way responsible for any loss or damage to person or property, or lost profits or other similar loss or damage that may result or be claimed to have resulted from a defect in any parts of the Equipment covered by this Limited Warranty. Some states do not allow the exclusion or limitations of any incidental or consequential damages, so the above limitation or exclusion may not apply to you.

F. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE;
   (1) APPLICABLE TO A PART OR PARTS OF THE REFRIGERATOR IS LIMITED TO A PERIOD OF TWO YEARS FROM DATE OF PURCHASE.
   (2) SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS. THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

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