



DIAGNOSTIC SERVICE MANUAL

ELITE 2 + 2 REFRIGERATOR

RM1350 & RME1350

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Foreword

This service manual is the result of the dedication of Dometic Corporation technical staff and its engineers in giving service people the necessary instruction for making accurate analyses of certain conditions. Provided is a diagnostic chart leading a qualified mechanic into the service manual pages to locate and solve symptoms which may occur. Dometic has continued its commitment in providing service people with this, the most up-to-date information about servicing Dometic RV accessories.

SAFETY INSTRUCTIONS

This manual has safety information and instructions to help users eliminate or reduce the risk of accidents and injuries.

RECOGNIZE SAFETY INFORMATION



This is the safety-alert symbol. When you see this symbol in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating instructions.

UNDERSTAND SIGNAL WORDS

A signal word, **WARNING** OR **CAUTION** is used with the safety-alert symbol. They give the level of risk for potential injury.

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

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided may result in minor or moderate injury.

CAUTION When used without the safety alert symbol indicates, a potentially hazardous situation which, if not avoided may result in property damage.

Read and follow all safety information and instructions.

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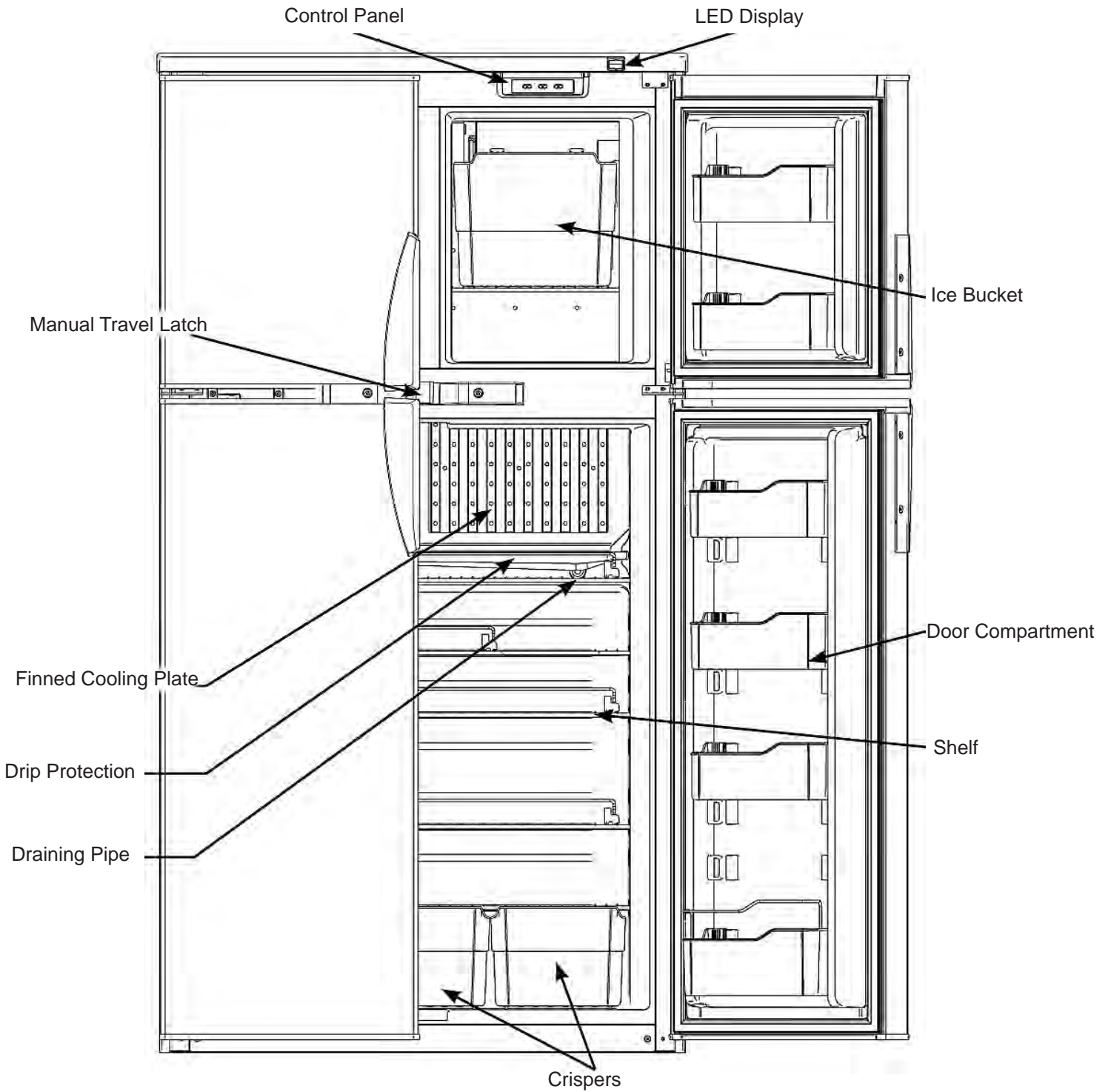
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SECTION 1

1.1 Refrigerator Overview

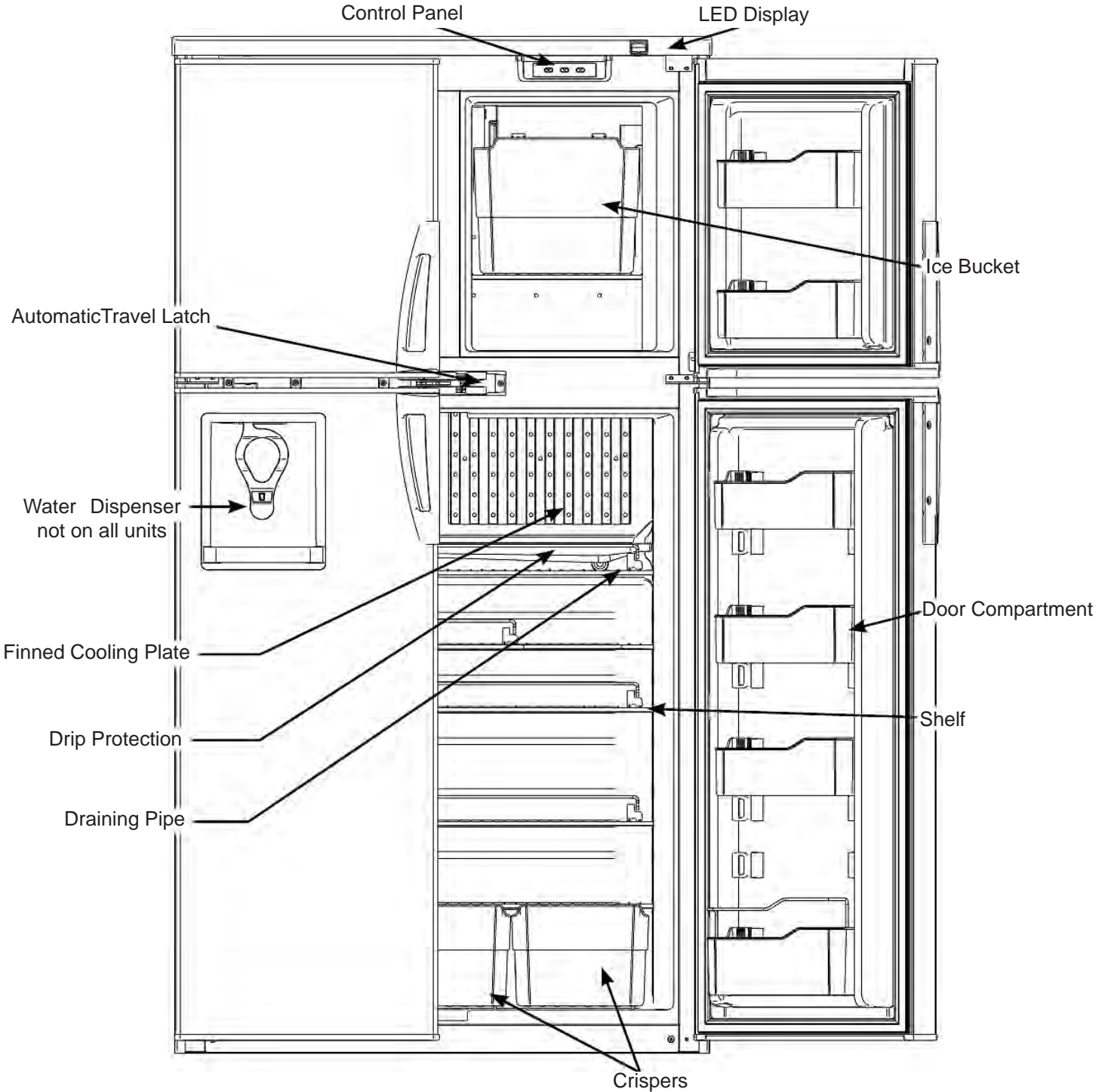
MODELS WITH MANUAL DOOR LOCKING SYSTEMS



This is a general view of the appliance. The Model shown is equipped with ice maker. The number of shelves and door compartments may vary according to the model.

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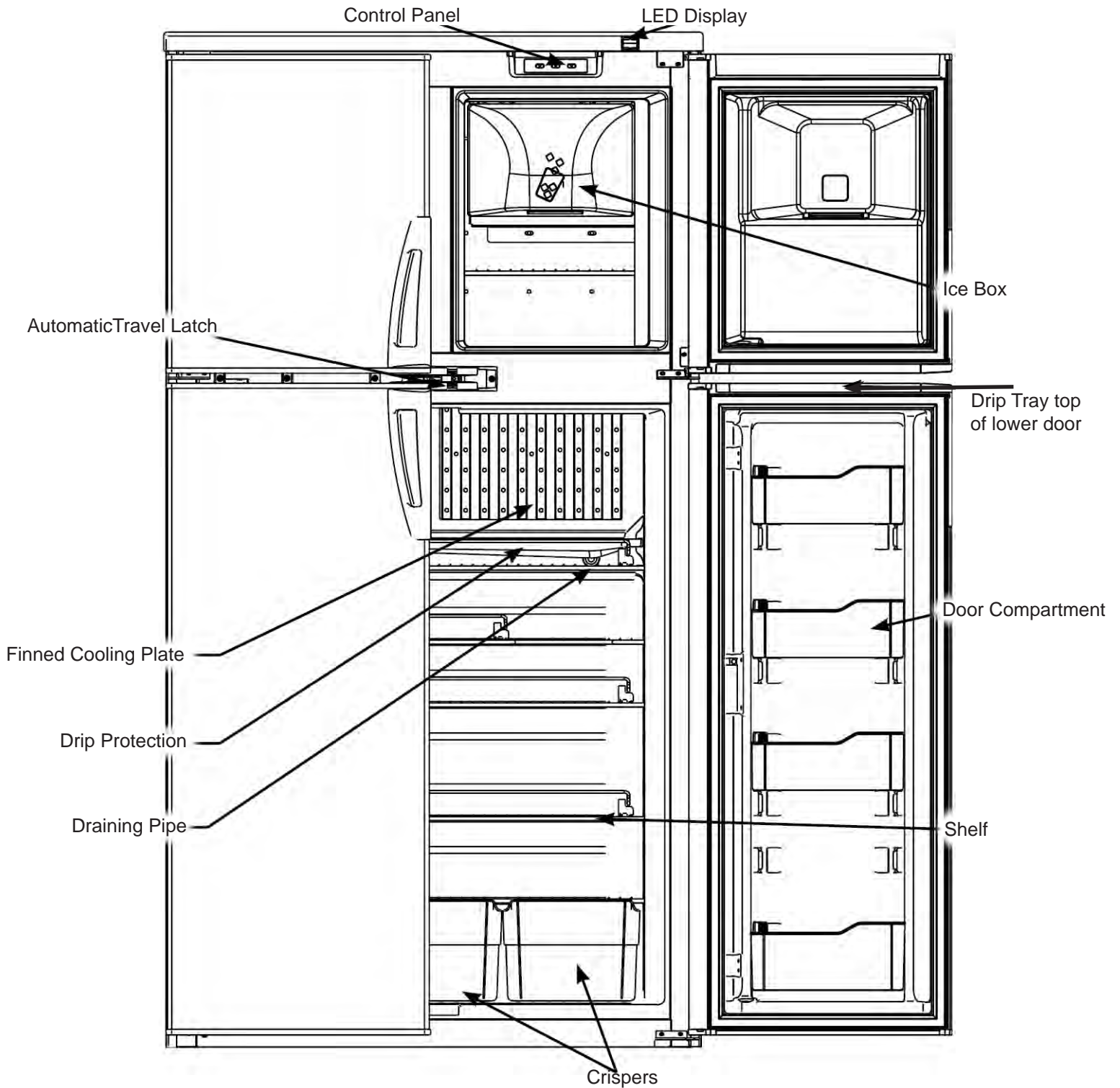
MODELS WITH THE AUTOMATIC DOOR LOCKING SYSTEM AND EQUIPPED WITH WATER DISPENSER



This is a general view of the appliance. The Model shown is equipped with ice maker and water dispenser. The number of shelves and door compartments may vary according to the model.

SECTION 1

MODELS WITH THE AUTOMATIC DOOR LOCKING SYSTEM AND EQUIPPED WITH ICE AND WATER DISPENSER

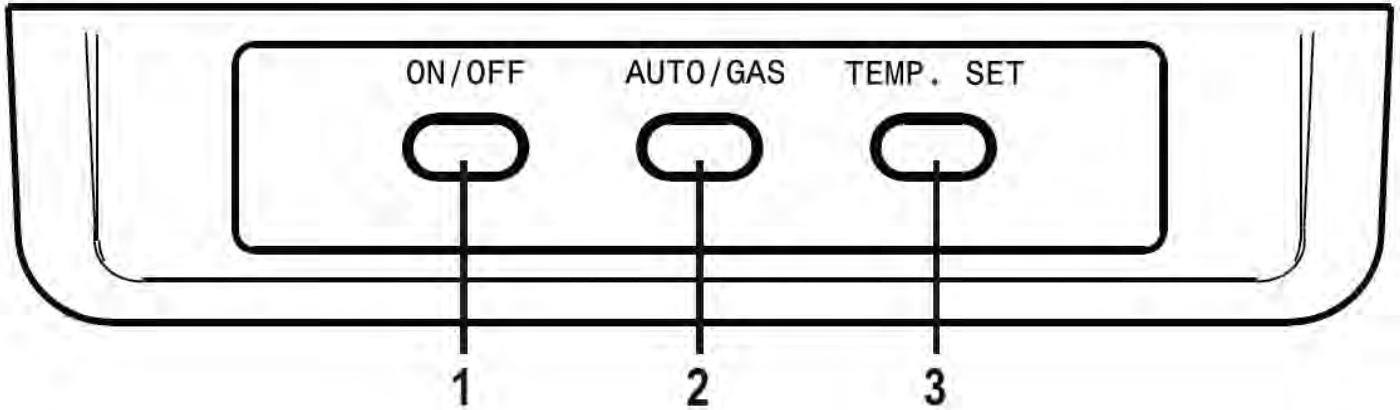


This is a general view of the appliance. The number of shelves and door compartments may vary according to model.

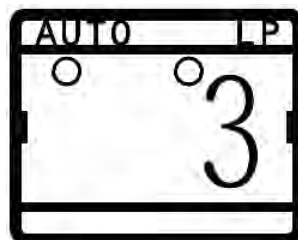
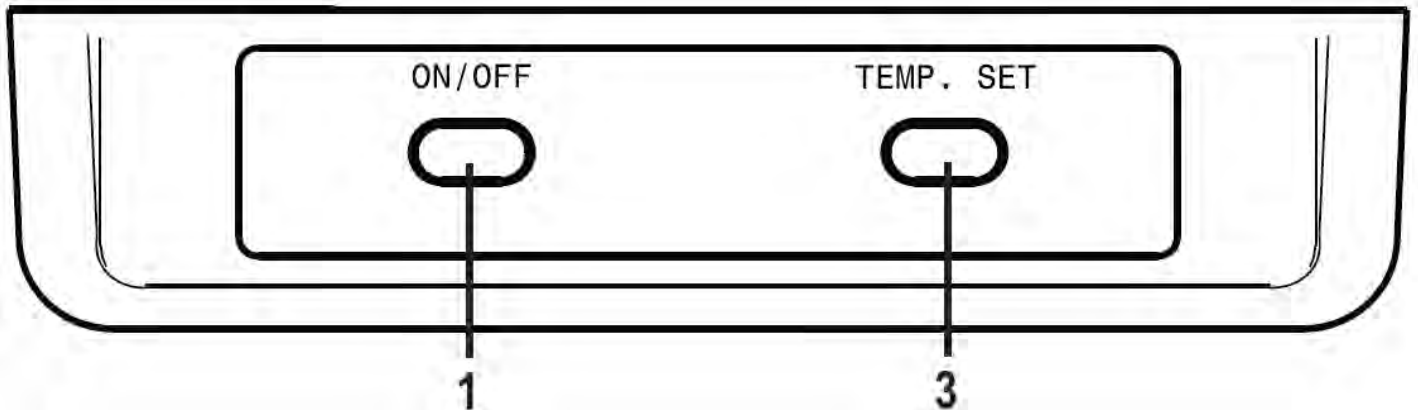
DISPLAY PANEL RM1350 & RME1350

Refrigerator Control Panels

RM1350 Display




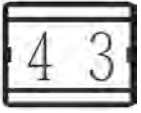
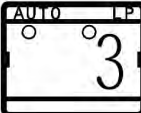
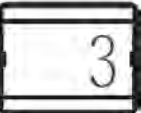
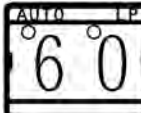
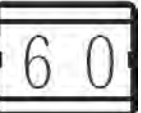
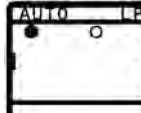
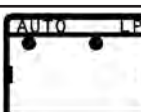



RME1350 Display



1. Main Power Button ON/OFF
Press the button to turn the refrigerator on or off.
2. AUTO/GAS Mode Selector Button
Press the button to turn the auto mode on or off.
3. TEMP. SET Button
The thermostat has 5 settings where 1 indicates the warmest and 5 the coldest temperature setting. Press the button repeatedly until the desired setting, e.g. 3, is shown in LED display. This value is shown for about 5 seconds and then the temperature is displayed again, e.g. 43.

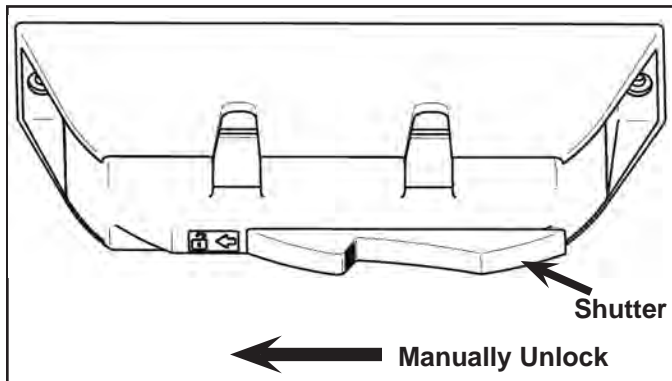
LED Display Panel

The LED display panel provides a quick visual indicator of the temperature of the food in the fresh food cabinet, status messages, and alarm conditions. For RM1350XXX, the AUTO and LP mode indication lamps show the mode of operation.

| LED PANEL INDICATIONS | | STATUS INFORMATION |
|---|---|--|
| RM1350M, RM1350IM & RM1350WID | RME1350WIM | |
|  |  | Fresh food temperature |
|  |  | Thermostat range setting indication (1-5). Temporary during setting. The thermostat settings are stored automatically after 5 sec. of inactivity |
|  |  | 60 is displayed. Indicates that the temperature is above measurement range |
|  | ---- | AUTO mode is lit. Indicates AUTO mode and AC operation |
|  | ---- | AUTO and LP mode lamps are lit. Indicates AUTO mode and GAS operation |
|  | ---- | LP mode lamp is lit. Indicates manual gas operation mode |
|  | ---- | LP is flashing (message alternates between LP and the temperature). Indicates gas operation lockout. Check gas |
|  | ---- | AUTO mode lamp is lit and LP mode lamp is flashing. Indicates temporary gas operation lockout |

Models With Automatic Door Locking System

The refrigerator is equipped with a travel latch that automatically locks the refrigerators doors when the RV's engine is running. When the RV's engine is off, the travel latch unlocks the doors.



To open one of the refrigerator doors while the engine is running, the travel latch must be manually unlocked. To unlock, simply push the shutter to the left. The doors will automatically lock again after 5 seconds.

Note: If the Refrigerator Has Been Turned Off

When the engine is turned on, a signal through the alternator, (D+) activates the travel latch, which in turn locks the refrigerator doors. When turning off the engine, the doors will not open automatically as usual because the refrigerator is turned off. In order to switch on the refrigerator, the doors must be manually unlocked.

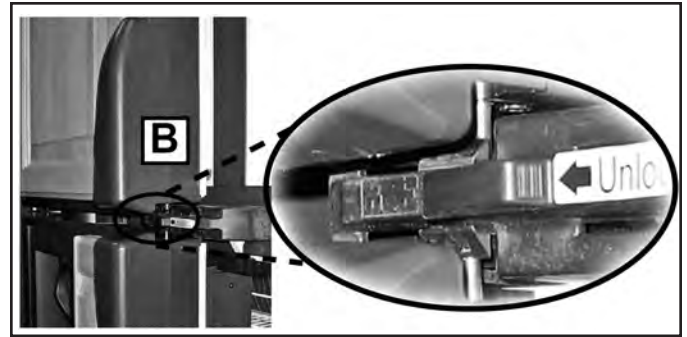
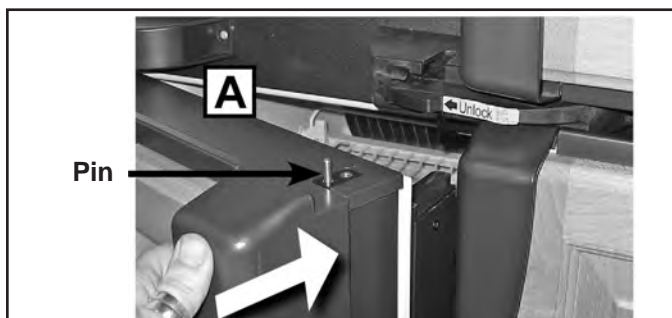
Airing Position

When the refrigerator is turned off for a period of time it is recommended that the refrigerator is emptied, defrosted, cleaned and that the doors are left ajar and leveled. To ensure the doors stay ajar, use the automatic travel latch's airing position function.

1. Open the refrigerator doors. Slide the shutter to the right. The automatic travel latch is locked.



2. Gently close the doors (A) until the pins click into position (B).



3. Verify that a small spacing has been created between the cabinet and the doors and that the doors have not been closed completely. If so, unlock the latch and close the doors again.

4. In order to open the doors again the travel latch must be unlocked. Push (to close the doors completely) and then slide the shutter to the left to unlock the latch.

Models With The Manual Door Locking System

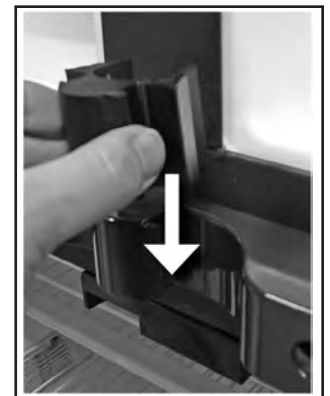
The refrigerator is equipped with a manual locking system. The doors are automatically locked when closed. To unlock, simply open the doors as usual.

Airing Position

When the refrigerator is turned off for a period of time it is recommended that the refrigerator is emptied, defrosted, cleaned and that the doors are left ajar and leveled. Use the detachable airing position device to ensure the doors stay ajar.



1. Open the door and slide the device in place.



2. Close the refrigerator doors. These will immediately hook to the front edge of the airing position device creating a small spacing between the cabinet and the doors.

3. To detach, open the doors and slide the device upward. Remove and keep in a safe place. Close the doors.



ABSORPTION COOLING SYSTEM

In an absorption refrigerator system, ammonia is liquefied in the finned condenser coil at the top rear of the refrigerator. The liquid ammonia then flows into the evaporator (inside the freezer section) and is exposed to a circulating flow of hydrogen gas, which causes the ammonia to evaporate, creating a cold condition in the freezer. When starting this refrigerator for the very first time, the cooling cycle may require up to four hours of running time before the cooling unit is fully operational. The tubing in the evaporator section is specifically sloped to provide a continuous movement of liquid ammonia, flowing downward by gravity through this section. Sodium chromate is used for corrosion protection (less than 2 % weight of the coolant).

LEVELING THE REFRIGERATOR

Leveling is one of the requirements for proper operation with absorption refrigerators. To ensure proper leveling the vehicle needs to be leveled only so it is comfortable to live in (no noticeable sloping of floor or walls). Any time the vehicle is parked for several hours with the refrigerator operating, the vehicle should be leveled to prevent this loss of cooling. If the refrigerator is operated when it is not level and the vehicle is not moving, liquid ammonia will accumulate in sections of the evaporator tubing. This will slow the circulation of hydrogen and ammonia gas, or in severe cases, completely block it, resulting in a loss of cooling. When the vehicle is moving, the leveling is not critical, as the rolling and pitching movement of the vehicle will pass the liquid to either side of level, keeping the liquid ammonia from accumulating in the evaporator tubing. Leveled at all times - even in storage.

Automatic Cooling Unit Cycling System

The refrigerator has been designed with an automatic cooling unit cycling system that helps reduce frost build up in the fresh food compartment. The first automatic frost reduction cooling unit cycle begins 60 hours after turning "on" the refrigerator (for best operational results the refrigerator should be turned on anytime between 4 and 10 PM), and will last for approximately 120 minutes. Thereafter, the cycle will automatically repeat every 48 hours for as long as the refrigerator continues to run.

Low Ambient Control

The automatic Low Ambient Control (LAC) ensures trouble free operation in low ambient temperatures (e.g. below 50° F). In colder weather, the temperature inside the absorption refrigerator food storage compartment box tends to hold the temperature inside for a very long period of time. With very long periods in between ON/OFF cycling of the heat source; this is OK for any food product inside the refrigerator cabinet, but is not OK for the freezer compartment (if it happens to have perishable product inside). Because of the long time in between cycling ON/OFF, there is a chance that the temperature may rise above freezing in the freezer compartment, resulting in food spoilage.

This is why we have a low ambient control. If it so happens that the temperature in the refrigerator has satisfied the thermostat setting, and the CUT-OUT threshold has been reached, the refrigerator cycles OFF. If the temperature remains at lower than the CUT-IN threshold for 35 minutes or longer, the LAC output will be activated; this output is typically, connected to the interior lamp situated inside the refrigerator compartment. The warmth generated by the lamp slowly raises the temperature inside the refrigerator cabinet to the CUT-IN threshold; when CUT-IN is achieved, the refrigerator cycles back ON again. At this point, the LAC output is de-activated, and the interior lamp turns OFF. The refrigerator will now assume normal operation, and will continue to cool until thermostat is satisfied once more. If it should so happen that CUT-IN is not achieved again within 35 minutes, the LAC process will be initiated once more (and any time thereafter) as required.

WARNING

Most LP gas appliances used in recreational vehicles are vented to the outside of the vehicle. When parked close to a gasoline pump, it is possible that the gasoline fumes could enter this type of appliance and ignite from the burner flame, CAUSING A FIRE OR AN EXPLOSION.

FOR YOUR SAFETY, when refueling, shut off all LP gas appliances which are vented to the outside.

AUTOMATIC ENERGY SELECTOR CONTROL SYSTEM

The refrigerator is equipped with an automatic energy selector control system. The user turns the refrigerator on, selects the desired temperature, and then the refrigerator automatically selects the most suitable energy source available (either 120 VAC or LP gas operation). The system can be set by the user to be fully automatic (AUTO mode is selected) or to operate on LP gas only (AUTO mode is off). The refrigerator controls will work down to 9.6 volt DC.

MODES OF OPERATION - AUTO AND GAS

AUTO MODE

When the refrigerator is in AUTO mode, it automatically uses the most efficient energy source that is available for operation. Should a more efficient energy source become available during operation, the refrigerator controls change from the current energy source to the more efficient energy source as follows:

1. AC operation (if 120V AC is available). AC operation is only possible in AUTO mode.
2. GAS operation (if 120V AC is not available).

GAS MODE (manual LP gas operation)

When AUTO mode is turned off, the refrigerator uses GAS as energy source - even if AC is available.

Startup

Before starting the refrigerator:

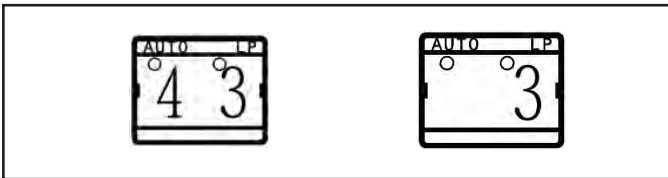
- Check that all manual gas valves are in the on position.
- Make sure that a continuous 12V DC supply is available for the electronic control to function.

To start the refrigerator:

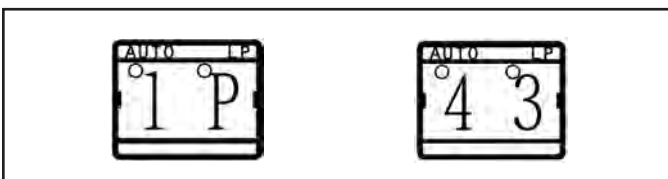
1. Press the ON/OFF button.
2. Select operation mode:
 - AUTO mode (AC and GAS)
Press the AUTO/GAS mode selector button (if not already on).
 - GAS mode (gas operation only).
Press the AUTO/GAS mode selector button to turn off the AUTO mode (if not already off).

Adjusting The Thermostat

The thermostat has 5 settings where 1 indicates the warmest and 5 the coldest temperature setting. Press the button repeatedly until the desired setting, e.g. 3, is shown in the LED display. This value is shown for about 5 seconds and then the temperature is displayed once again.



NOTE: Do not continue to reset GAS operation if the LP is flashing in the display after several tries. LP flashing (message alternates between LP and the temperature) indicates gas operation lockout (Flame Failure).



Turning Off The Refrigerator

The refrigerator may be shut off while in any mode of operation by pressing the main power ON/OFF button (OFF position). This shuts off all DC power to the refrigerator, including the interior light. If the refrigerator will not be in operation for a period of weeks, it should be emptied, defrosted, cleaned and the doors left ajar and leveled.

1.2 Refrigerator Operation

Before starting the refrigerator, check that all the manual gas valves are in the ON position. DO NOT forget the manual shutoff valve on the rear of the refrigerator. This refrigerator is equipped with a control system, which can be set to automatically select either 120 volt AC or LP gas operation (AUTO mode), or if desired LP gas only (GAS mode).

Description Of Operating Modes

Auto Mode

When operating in the AUTO mode, the AUTO mode indicator dot is lit. The control system will automatically select between AC and GAS operation with AC having priority over GAS. If the control system is operating with AC energy and it then becomes unavailable, the system will automatically switch to GAS. As soon as AC becomes available, the control will switch back to AC operation again.

Gas operation (when 120 volts AC is not available). The control system will activate the ignition system and will make three attempts to light the burner for a period of approximately 45 seconds with two minutes rest (purge) interval. If unsuccessful, LP will be flashing (the message alternates between LP and the temperature) in the display. To restart an ignition attempt with LP flashing in the display: turn unit off wait a few seconds and turn back on. The control system will attempt a new ignition sequence. If 120 volts AC becomes available while LP is flashing, the refrigerator will operate on AC but the LP flashing will not turn off until the main power ON/OFF button is pressed to the OFF then ON position.

Gas Mode

When operating in the GAS mode, the AUTO indication dot is off and the LP indication dot is lit. This mode provides LP gas operation only. The control system will activate the ignition system and will make three attempts to light the burner for a period of approximately 45 seconds with two minute (purge) intervals after each trial. If unsuccessful, the display will flash LP. To restart GAS operation, press the main power ON/OFF button to the OFF and then ON position. The control system will attempt a new ignition sequence. If the refrigerator has not been used for a long time or the LP tanks have just been refilled, air may be trapped in the supply lines. Purging the air from the lines may require resetting the main power ON/OFF button three or four times. If repeated attempts fail to start the LP gas operation, check to make sure that the LP gas supply tanks are not empty and the manual shutoff valves in the lines are turned on.

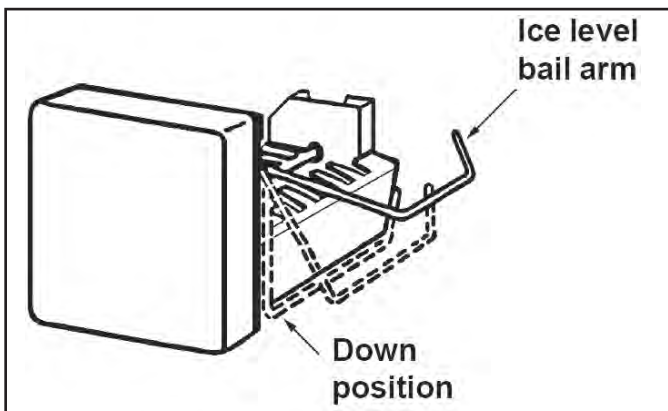
Temporary Gas Lockout

In the Auto mode the gas operation will automatically be locked out for a period of 15 minutes when the engine is switched off (D+ terminal). This will prevent gas operation e.g. when stopping at a refueling station. Note that the temporary gas lockout feature does not work when the AUTO mode is turned off! Consequently, when parking close to a gasoline pump all LP gas appliances vented to the outside of the vehicle must be turned off. Otherwise gasoline fumes from gasoline pumps might enter LP gas appliance and these can then ignite from the burner flame and cause a fire or an explosion.

1.3 Ice Maker Operation

Before the ice maker can operate, make sure that:

- the refrigerator is cooled down.
- the refrigerator/icemaker is connected to 120 V AC.
- the water valve supplying the refrigerator is turned on.
- the ice level bail arm is in its fully down position.



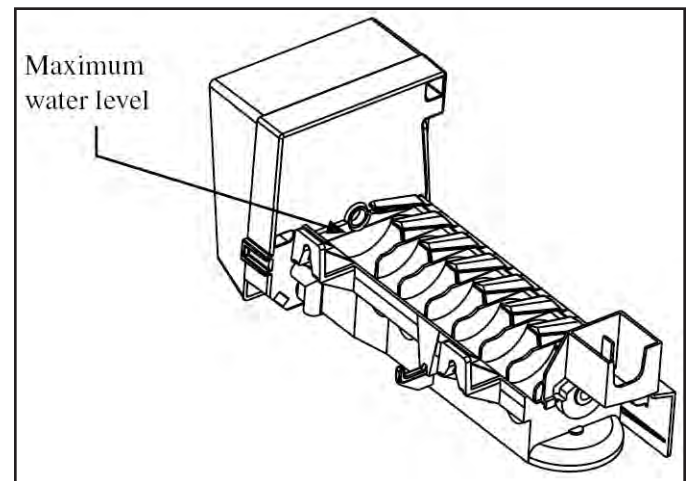
When the ice maker thermostat senses the preset temperature for the ejection of the ice cubes, the fingers will start to rotate, dumping any ice cubes and filling the mold with water. When the storage container is full, the bail arm will come in contact with the ice cubes. The bail arm cannot return to the full down position and the ice production is stopped until the bin is emptied or the ice cubes are removed. To prevent water from splashing out of the mold assembly when your recreational vehicle is moving, raise the bail arm to the full "UP/OFF" position about 1-1/2 hours before departing. This will allow the water in the mold to freeze.

Water Supply

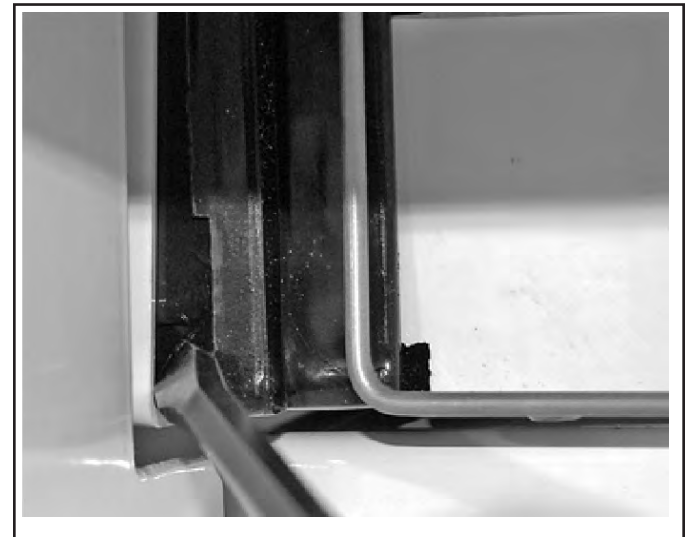
The water supply system must have a minimum/maximum pressure of 15/50 pounds per square inch gauge (psig). A 1/4" diameter water line to the water valve should be used at the rear of the refrigerator. The water line must have a manual shutoff valve placed where it is easily accessible.

Adjusting The Size Of Cubes

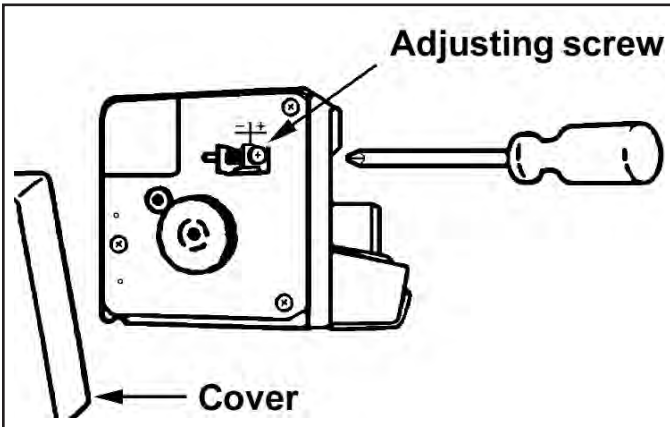
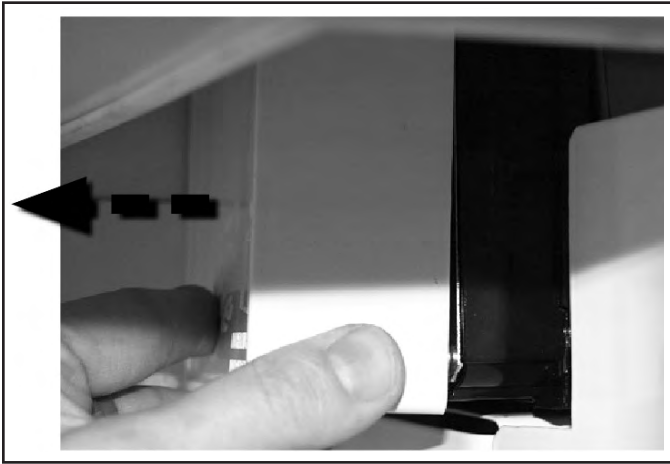
If the ice maker was cleaned and drained, no ice cubes will be dumped into the bin during the first cycle. The first few cycles may have small cubes due to air trapped in the water lines. The first container of ice cubes should be dumped if the water system has been winterized or has not used for several weeks. Once the ice maker has run through several cycles and if cubes are too small or sticking together, adjustment is necessary to the amount of water entering the mold. The maximum water level is represented by a thin line. It is essential that the water level does not exceed this line!



Remove the protective cover from the ice maker mechanism. Using a flat-head screwdriver, place the tip of the screwdriver in the slot. Twist the screwdriver blade gently to loosen the cover.



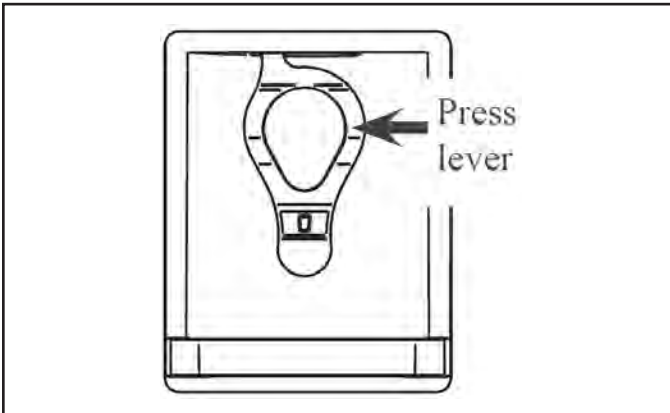
Locate the adjusting screw under the protective cover. Turn the screw counterclockwise to increase the size of the cubes. Turn the screw clockwise to decrease the cube size, if the mold is over filling or the cubes are stuck together.



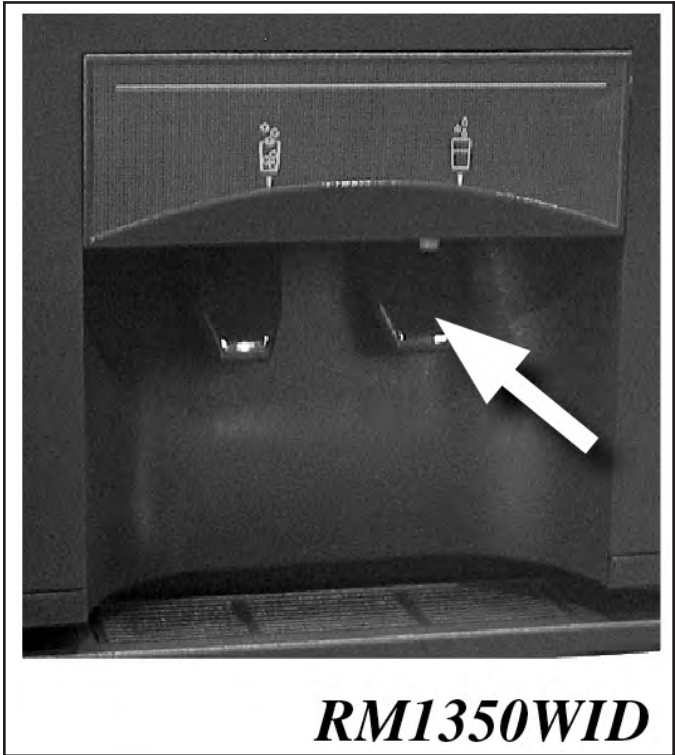
Do not turn the adjustment screw more than one revolution at a time. Allow the ice maker to cycle several times before another adjustment is made. Be sure to replace the protective cover on the ice maker after the adjustments are complete.

Water Dispenser

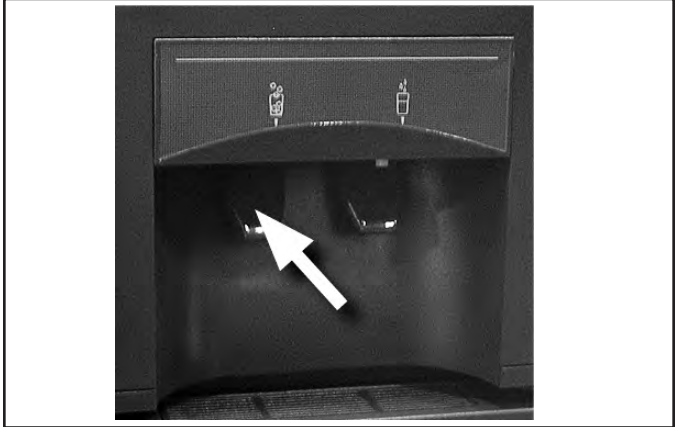
Verify that the water valve supplying the refrigerator is turned on. To dispense water at the door, simply press the lever. This will activate a switch which turns on an electric water valve at the back of the refrigerator. Water will flow through a separate tube and out of the dispenser. To keep the water fresh, it is recommended to use the dispenser every day. If new installation, or used infrequently, dispense numerous glasses of water before use.



Ice & Water Dispenser



TO DISPENSE ICE, FOLLOW THESE STEPS:

1. Insert a glass in the dispensing cavity and press the left lever.
- 
2. The ice maker has previously produced ice that is stored in a large bin. When the lever is pressed, a switch is activated. It turns on a motor which rotates the auger. When the auger rotates, it pushes ice out of the bin, through a chute and into the glass.
 3. To stop dispensing, pull glass away from dispensing arm before the glass is full.

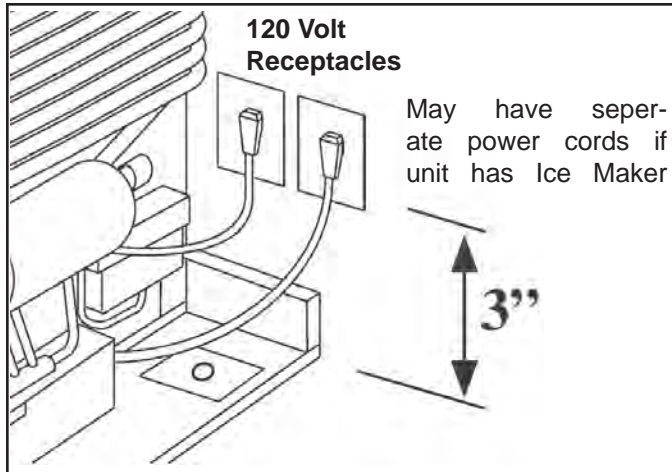
SECTION 2 AC VOLTAGE

AC VOLTAGE REQUIREMENTS

⚠ WARNING

This is an energized circuit. Shock can occur if not tested properly. Testing is to be done by a qualified service technician.

The refrigerator is a 120 volt AC, 60 Hz appliance. The proper operating range is 100 to 132 volts. If voltage drops below 100 volts, cooling efficiency will decrease relative to voltage decrease. Check the AC volts at the receptacle where the refrigerator is attached. If voltage is outside of the proper operating range, correct the power source problem.



The refrigerator is equipped with a three-prong (grounding) plug for your protection against shock hazards and should be plugged directly into a properly grounded three prong receptacle. **Do not cut or remove the grounding prong from this plug!** The free length of the cord is 3 feet. It is recommended that the receptacle is located to the right side of the refrigerator (viewed from the rear). The receptacle should be 3" (from the bottom of the plastic receptacle) above the refrigerator mounting floor. This allows easy access through the vent door. The cord should be routed to avoid direct contact with components that could damage the cord insulation. The refrigerator will not switch to another mode of operation until all AC power is lost.

SECTION 3 AC COMPONENTS

3.1 Heating Elements

The heating element is designed to deliver a predetermined amount of heat to the cooling unit. To check a heating element, remove the heater leads from the printed circuit board and measure for proper resistance across the two leads with a properly calibrated ohm meter. This check is to be done with the heating element at room temperature. You should obtain the following readings $\pm 10\%$:

| Model | Watts | Ohms | Amps |
|--------|-------|------|------|
| RM1350 | 420 | 34.3 | 3.5 |

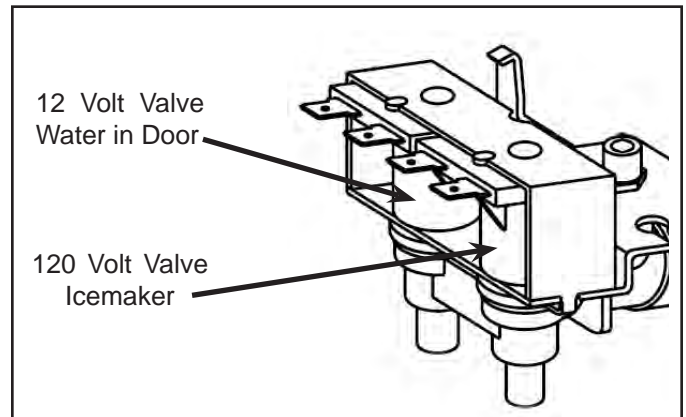
The RM1350 uses two AC heaters wired in series. The ohms resistance should be 34.3 ohms $\pm 10\%$.



Note: Never over or under size the AC heater.

3.2 AC Icemaker Water Valve

This valve is solenoid operated. When it is open it releases water from the source to the mold. The amount of water is proportional to the length of time the water valve switch is held closed by the timing cam. Disconnect power to the appliance, remove the wires to the water valve solenoid coil, and check for continuity between the two terminals. The ohms reading should be 200 $\pm 10\%$. If you have continuity, the solenoid is good. It takes 10-15 watts to energize the solenoid coil. The mold heater and coil are in series. When the mold heater is activated, this causes the voltage to drop to about 105 VAC at the coil. The valve has a flow washer inside which acts as a pressure regulator. A strainer is installed to prevent dirt, rust, etc from entering the valve. Check for any debris which might obstruct the flow of water or prevent the valve from closing completely when the circuit is not energized. Remove any obstructions. If the valve still fails to operate properly, replace it. If the valve has been cracked from freezing this would not be a warrantable item.



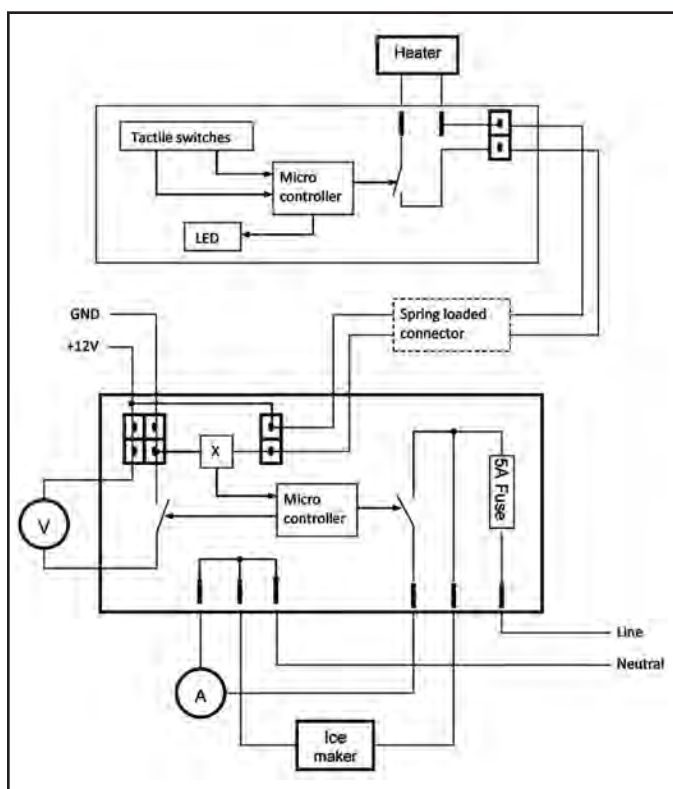
3.3 Control Module for Water & Auger

The control module is used for two reasons:

- To shut off the 120 volt AC & 12 volt DC supply to the door dispenser and icemaker auger when the freezer door is opened (for safety reasons)
- To shut off the 120 volt AC & 12 volt DC supply to the door dispenser and ice maker when the refrigerator is switched "OFF" by means of the ON/OFF button on the upper display panel

The function of this additional module is very simple. It has a fuse (5 amp) for incoming 120 volt AC line voltage and a relay that switches the line voltage ON/OFF. The relay is driven by a circuit that senses the voltage at the node between the door switch and the interior lamp. This relay is controlled by the wires in the P1 connector on the interface module. These wires are hooked on the wires coming from the power module to the lamp and door switch. The black wire is ground (- virtual), the white wire is 12 volt DC (+) and the yellow wire is going to the connection point between the lamp and door switch. If the door is opened, the yellow wire should be 12 volt DC (+) and if the door is closed, the reading should be 0 volts DC. If the lamp is lit or if 12 volt DC is absent, the relay will drop out and 120 volt AC will not be supplied to the ice maker auger or the door water dispenser.

Control module wiring diagram



Troubleshooting control module

Problem 1

The water paddle is pushed but nothing happens, the LED light is off.

Action

1. Remove the front cover of the dispenser and check that the paddle mechanism activates the tactile switch. The switch can also be checked by pushing it with a finger.
2. Remove the 2-pole Molex connector in the dispenser and check the voltage. It should be slightly lower than the battery voltage. If power is there, but still no function, replace front control unit.
3. Check the voltage on the copper tabs in the spring-loaded connector on the hinge side of the door.
4. Check the voltage at the 2-pin connector on the back control unit.
5. Check the system supply voltage at the 4-pin connector on the back control unit.

Problem 2

The water paddle is pushed but nothing happens, the LED light is on.

Action

1. Check the heater connection in the dispenser. The resistance of the heater should be 68 ohms +/- 10%.
2. Check the voltage on the water valve. If no voltage, replace the back control unit. If still no function, replace the front control unit.

Problem 3

The ice paddle is pushed but nothing happens, the LED light is off.

Action

See actions for problem 1.

Problem 4

The ice paddle is pushed but nothing happens, the LED light is on.

Action

1. Check the heater connection in the dispenser. The resistance of the heater should be 68 ohms +/- 10%.
2. Check the 5 amp fuse in the back control unit.
3. If fuse is OK replace the back control unit. If still no function replace front control unit.

Problem 5

The icemaker is not working

Action

1. Check the 5 amp fuse in the back control unit.

3.4 Auger

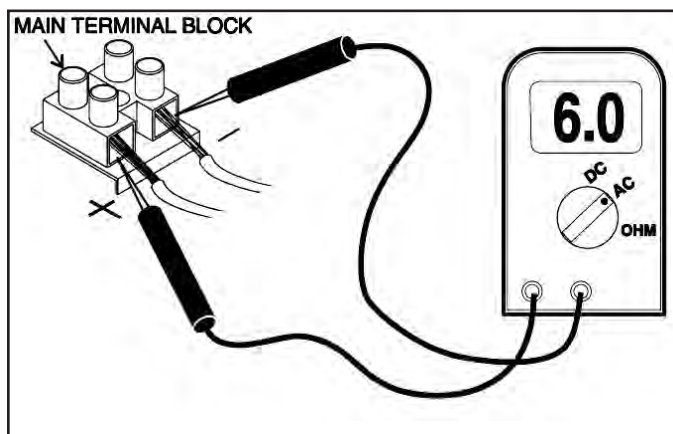
When the paddle on the door dispenser is depressed to call for ice, a switch will be closed sending a signal to the interface module to send AC voltage via the yellow wire. This contact on the interface module is a bridged set of terminals that internally send the AC voltage to the auger motor. As the auger motor rotates, the auger pushes the ice forward in the ice bin and down through a chute to the door dispenser. To check the motor, disconnect the 120 volt AC supply to the interface module. Measure the resistance between the wires on terminals (J6) and (J3) of the interface module.

The resistance should be 4.0 Ohms +/- 10%. The resistance can also be checked directly at the motor assembly. This will require removal of the plate along the back wall of the freezer just behind the ice bin.

SECTION 4 DC VOLTAGE

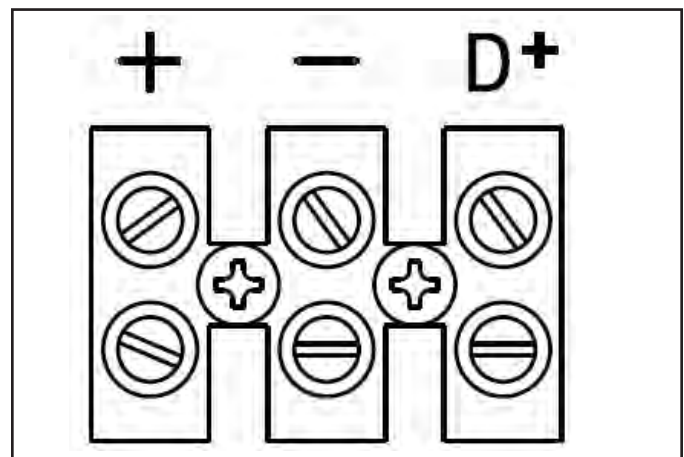
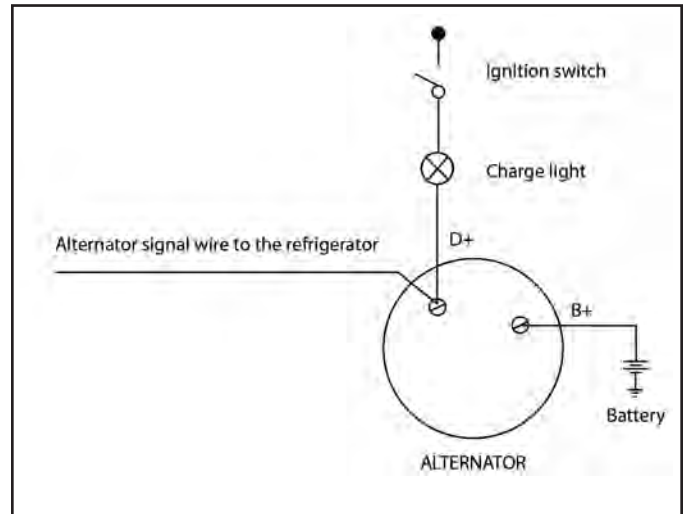
Clean Direct Current (DC) power is mandatory for high-tech circuits to operate as designed. A battery will provide straight line DC power. The converter and alternator produce DC power by a series of diodes that rectify alternating current to DC. The Dometic control system will only tolerate up to 6 AC volts on the DC line. AC ripple can be measured by a digital voltmeter set on the AC and measure at the main DC terminal block connections. Six volts AC or less is acceptable. If AC volts exceed 6 on the DC incoming line, the power source should be cleaned up. AC voltage in excess of 6 volts will affect the processor and create erratic operation. When testing for AC ripple on the DC line, always put a load on the converter. The operational range of the unit is a minimum of 9.6 volt DC to a maximum of 22 volts DC. The unit will automatically shut down at 22 DC volts or greater, and come back on when voltage has decreased to 18 volts DC. The refrigerator requires at least 9.6 volts DC for proper operation, however the panel lights will continue to be illuminated until voltage has dropped to 4 volts DC or below. Do not use the body or chassis of the RV as a substitute for either of the two conductors. The refrigerator must be connected to the battery circuit with two wires of adequate capacity to avoid voltage drop. Proper polarity is crucial for refrigerator operation. No other electrical equipment or lighting should be connected to the refrigerator circuit. Just because you can read volts, does not mean you have the amps to operate the control system. If relays buzz or lights go dim or out during operation, this could indicate there is a loose connection somewhere. As a last test, use a battery and run wires directly to DC terminal block. If the unit works ok on direct DC volts from a battery, the problem is in the coach not the refrigerator control system.

Main Terminal Block



12 V DC Alternator (D+) Connection

The refrigerator requires a continuous 12 V DC supply to maintain operation of the control system. Furthermore, for models equipped with the automatic door lock, it requires the connection of a signal wire from the alternator (D+) to maintain the automatic door travel latch and the temporary gas lockout function. The vehicle's alternator (D+) is connected to D+ on the terminal block.



Grounds

The operation of the Dometic refrigerator is also dependent on good, clean ground connections. Loose or corroded ground terminals create an unknown resistance factor that can effect the voltage detected by the Power Module. A loose negative DC wire will create a negative millivolt signal that the control board will pick up and create erratic operation. Check the integrity of the grounds from the refrigerator all the way to the power source/battery. Clean or tighten any suspicious looking connections.

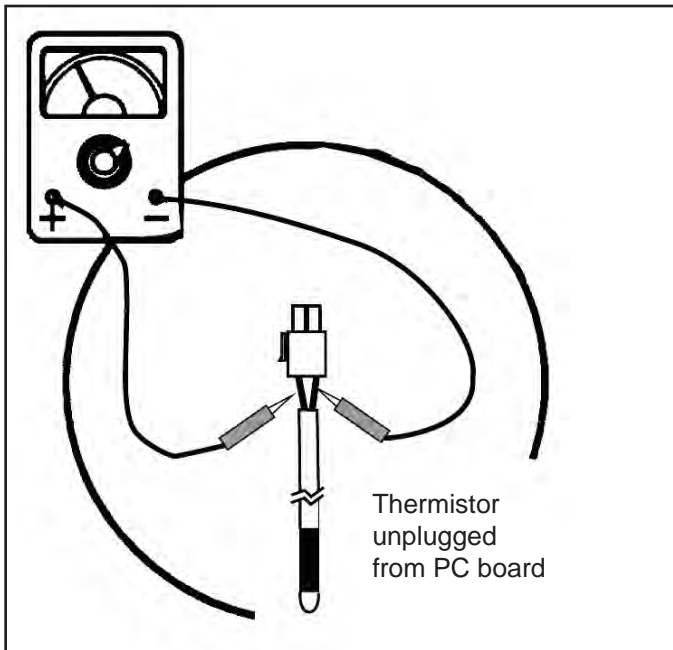
NOTE: The DC terminal block below the control boards should be cleaned and tighten at all 6 wires.

SECTION 5 DC COMPONENTS

5.1 Thermistor

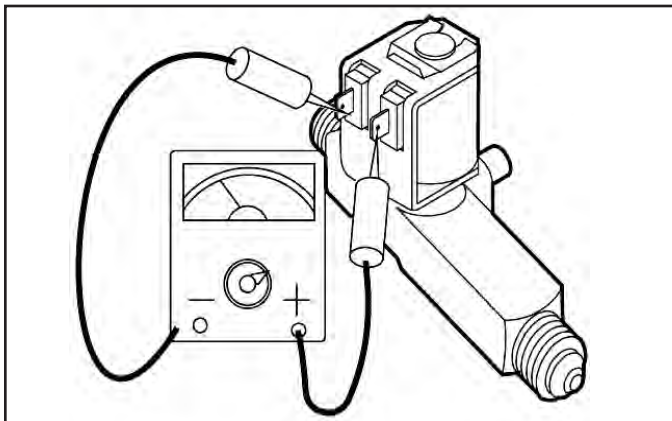
Disconnect the thermistor harness from the P2, 2-pin terminal on the lower circuit board. Place the thermistor in a glass of ice water (more ice than water), approximately 33° F to 35° F. Wait 8 to 10 minutes. You should get a reading of approximately 8,000 to 10,000 ohms. Always test from the wire side as shown below as not to create a connection problem at the P2 connector.

NOTE: The RM1350 will not run constantly when the thermistor is unplugged or becomes an open circuit, because the RM1350 has a water tank in the refrigerator to provide chilled water for the dispenser. Failure of the thermistor will cause the unit to stop cooling.



5.2 Solenoid

Check the solenoid coil with a properly calibrated Ohm meter. Remove the connectors from the solenoid and measure the resistance across the terminals and to chassis ground. The proper reading would be 49 ohms with a tolerance range of ten percent. Failure of the solenoid is very unlikely.



Next, hook up a manometer at the test port. Then check for DC volts at gas valve terminals (Yellow + White -) while the unit is in trial-for-ignition. If DC volts are present and pressure is low, replace the valve. If DC volts are not present at the valve while the unit is in trial-for-ignition, verify that the wires at Plug 3, Terminals 2 and 1 (on lower circuit board) have DC volts (9 or more). If the igniter is sparking and you have no volts at the valve, check the harness. The control board sends voltage to the solenoid and the igniter on the same wire.

5.3 Igniter

The igniter used on Dometic model refrigerators operates on 12 volts DC. During gas operation the igniter senses the resistance through the flame between the electrode and burner. When there is no flame at the burner, the resistance is high and the igniter begins sparking to light the burner. As soon as the flame is lit, the resistance between the electrode and burner drops and the igniter stops sparking. The resistance is monitored by the igniter, and, if for any reason the flame goes out, the igniter begins sparking until the burner is lit. The resistance between the electrode and burner drops and the igniter stops sparking.

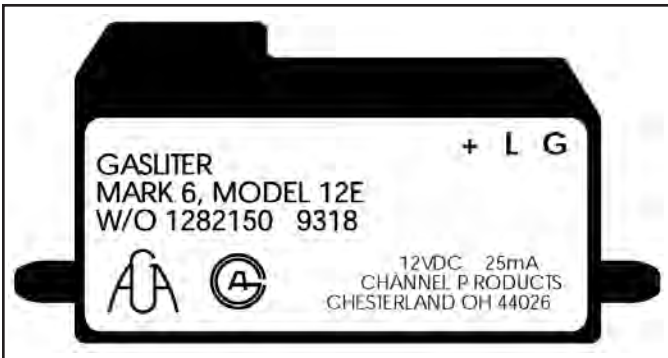
⚠ WARNING

This is an energized circuit. Shock can occur if not tested properly. Testing is to be done by a qualified service technician.

This insures that the flame will always be lit when desired. First verify proper voltage at the positive (Yellow +) and ground (Black -) terminals of the igniter. The reading should be within 1.5 volts of incoming voltage at the main terminal block during trial-for-ignition. Next, remove the high voltage cable from the igniter. The igniter should produce a sparking sound, during trial-for-ignition. If not, replace the igniter. While operating in the gas mode, the power module and igniter are constantly monitoring the presence of flame. If the flame is blown out, the igniter will immediately start sparking. When the power module senses the loss of flame (thermocouple voltage below 13 MVDC), the 45 seconds trial for ignition period is started. The igniter installed on the refrigerators as original equipment is part number 2931132019 (RV Gas Model 679). This igniter is rated 50 MA. This igniter may also be used on any other model. When replacing the igniter, always provide the product number for proper replacement. **DO NOT** install the Channel Mark 6, Model 12 E igniter (as shown) as a service replacement part. Installation of the Channel Products, Inc., Gasliter Mark 6, Model 12 E, will VOID the warranty on the refrigerator. The Dometic refrigerator could use a few different igniters. To acquire the proper igniter always provide the product number from the unit you are working on.



Do not use the Channel Mark 6, Model 12 E igniter.

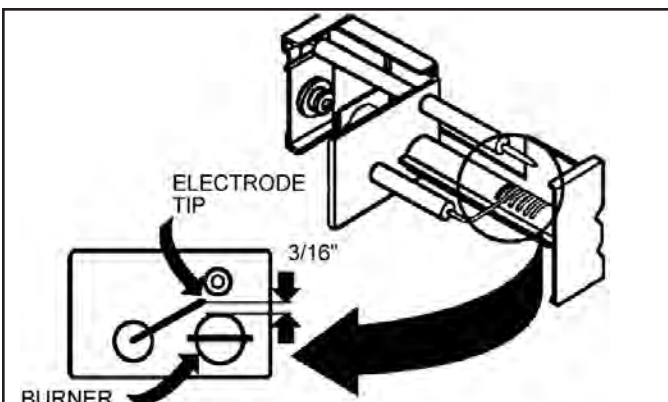


5.4 High Voltage Cable

If sparking starts during trial-for-ignition, the cable is good. If there is no sparking during trial-for-ignition disconnect DC power at the refrigerator terminal block or switch unit off. Disconnect high voltage cable from the electrode. Reconnect DC power. If there is a sparking sound from the igniter during trial-for-ignition, then replace the high voltage cable and/or electrode. On newer units, the electrode and high voltage cable are integrated into one component.

5.5 Electrode

Do a visual check for cracks or breaks on the ceramic insulator. A hair line crack can be hard to see on the electrode. The spark gap must be set at three sixteenths (3/16") of an inch and tip of the electrode should be above the slots in the burner. When adjusting, always loosen the screw and move into place. Never try to move without loosening the screw. On newer units the electrode and high voltage cable are integrated into one component. To acquire the proper part always provide the product number.

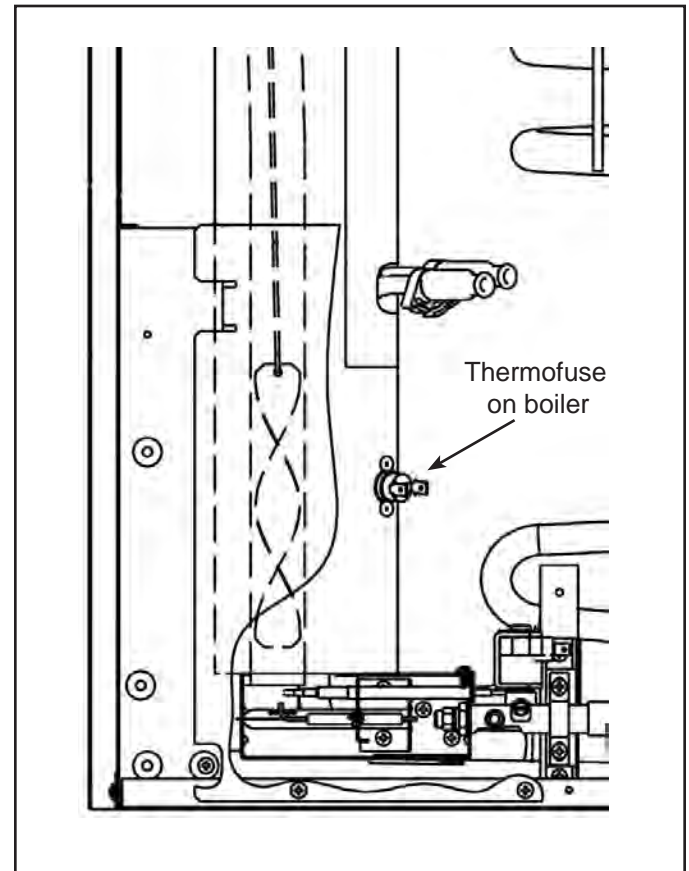


5.6 Climate Control Heater

The climate control heater is located behind the metal frame between the doors. The heater helps to reduce sweating on the metal frame during periods of high humidity. The heater is on any time the refrigerator is turned on. Follow wire from J3 (Red Lower Control Board) to the terminal block with a light green wire and a red wire. Disconnect the light green wire and measure for proper ohms resistance from the light green wire to ground, the reading should be 24 ohms +/- 10%.

5.7 Thermofuse

The RM1350 cooling unit has a thermofuse located on the boiler. The function of the thermofuse is to shut down the control system in the event of a cooling unit problem. On certain units the fuse can be reset by pushing the button in the center. The thermofuse is a non-replaceable component of the cooling unit. When the fuse pops it is normally an indication the cooling unit has a problem and the cooling unit will have to be replaced. To test the thermofuse, check for continuity. Lack of continuity would indicate a faulty (open) thermofuse.



5.8 Door Switches

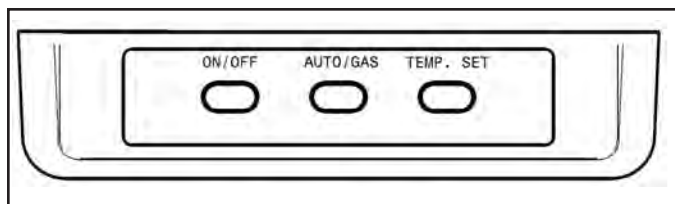
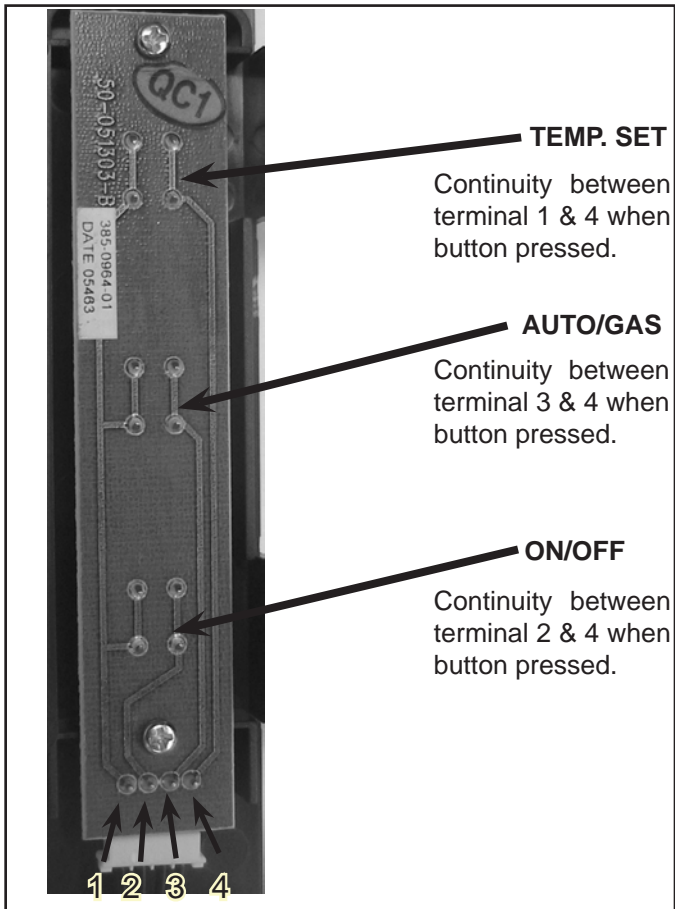
The door switch is an open switch when the switch arm is depressed (interior light should be off). When the refrigerator door is open the switch is closed (interior light should be on). Check that the switch assembly is properly aligned and that it is not broken. Check the switch assembly for continuity. To do a continuity check, first be sure all power is disconnected or OFF to the refrigerator.

Second, remove all wires from the switch assembly, then check the switch. When the switch is depressed, there should not be continuity. When the switch is NOT depressed, there should be continuity. If any of these checks are incorrect, replace the switch. After the check, be sure the switch assembly is wired properly per the wiring diagram.



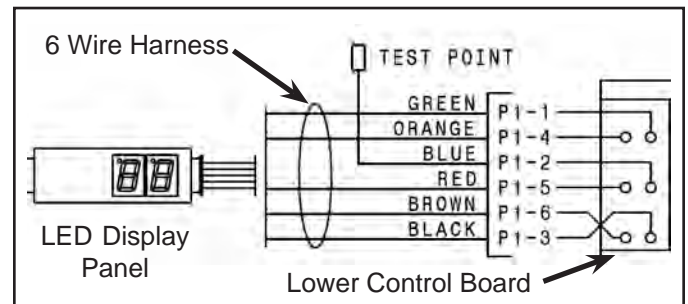
5.9 Control Panel

Check for continuity between the solder joints when the button is held down. If the control panel has continuity it is ok. From the 4 pin connection at the control panel continuity can be tested for proper operation also.



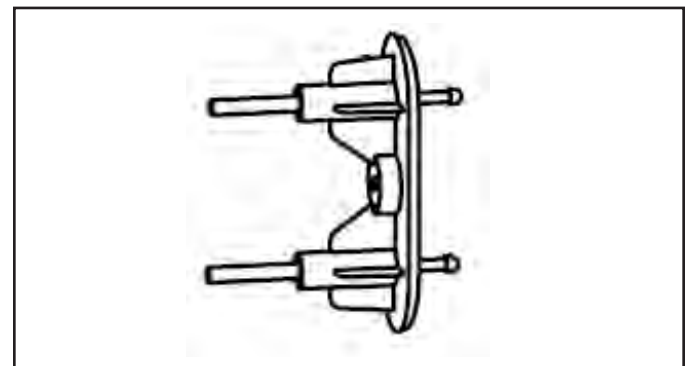
5.10 LED Display Panel

With the control panel in the OFF position, check for DC voltage at Plug 1, Terminal 4 (orange wire) positive and terminal 5 (red wire and or coach ground) negative, for DC volts at the lower circuit board. If no voltage from lower control to upper control, then check for input DC volts between J1 positive and J10 negative terminals on the lower circuit board. If no voltage into lower control check 12 volt power supplied to control system. If DC volts at J1 (positive) and J10 (negative) and no volts on orange wire to upper control and fuse test OK, replace the lower board. Next, with control panel in the ON position, check for DC voltage at the upper circuit board between terminal P1-4 (orange) positive input from lower control, P1-3 (black wire) positive output to lower control, P1-5 (green) positive output to lower control and P1-1 (red) negative and or chassis ground. If no voltage and your previous check verified voltage on the orange wire at the lower board the upper display board or wire harness would be at fault. The orange wire sends power to upper control and when turned on the upper control sends DC volts back down the green and black wire. The red wire in the harness is the upper display ground (12 volt negative).



5.11 Flap Heater Wire

The climate control heater is located in the flap on the left hand refer door. The heater helps to reduce sweating between the doors during periods of high humidity. The heater is on any time the refrigerator is turned on. At the bottom of the door near the hinge there is a two pin contact that provides power for the heater. At the two pin connection take an ohms resistance reading. The Ohms should be 29 +/- 10%.

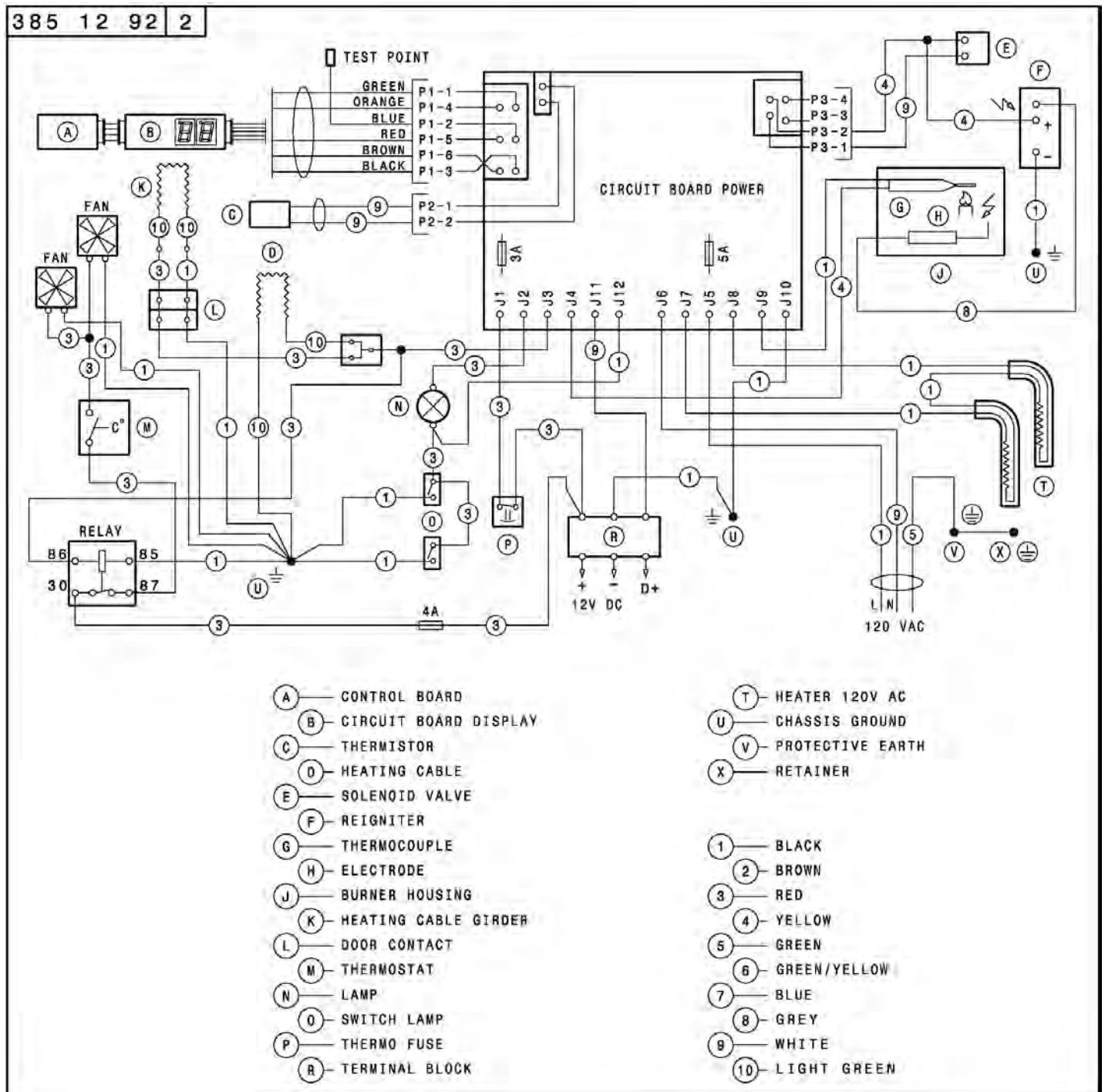


5.12 Lower Board

- P1** To upper control / display board
- P2** Thermistor
- P3** To gas valve and igniter
- J1** Positive 12V DC from thermofuse / terminal block
- J2** To interior light (switched)
- J3** To climate control heating cables (switched)
To Door ignition lock
To activate 12 Volt relay to power
Water dispenser light & valve
Ice Maker water line heater
Ventilator fans

- J4** Negative lead from thermocouple
 - J11** To D+ terminal (TAG Line)
 - J12** To activate interior light for low ambient control
 - J6** AC neutral (White)
 - J7** AC heater
 - J5** AC Hot (Black)
 - J8** AC heater
 - J9** Positive wire from thermocouple
 - J10** Negative to Chassis ground at control board
- NOTE: Terminals 9 and 10 could be reversed as both terminals are chassis ground on control board.

Typical RM1350M Wiring Diagram



Lower Board Testing

NOTE: All tests are to be done with refrigerator on and in the cooling mode. Place the thermistor in a glass of warm water (75 to 80 degrees F.) to assure the unit is calling for cooling.

DC Volts

Measure volts between terminal J1 positive and J10 ground. Voltage should be the same as at the positive (+) and negative (-) on DC input terminal block. The operating range is 9.6 min to 22 max. Refer to wiring diagram on the product number unit you are currently working on. If voltage outside the 9.6 to 22, check power supply, terminal block, thermofuse and correct power source before going on with the test.

AC Mode

⚠ WARNING

This is an energized circuit. Shock can occur if not tested properly. Testing is to be done by a qualified service technician.

Before testing the lower board for AC operation, test upper control panel ON/OFF switches, LED display control and wiring harness between upper and lower controls. Next check that incoming AC voltage is present at terminals J5 (black) and J6 (white) on the circuit board. With unit in AC mode, check for voltage at the heating element connection terminals J7 and J8 on the circuit board. If no voltage is present and 5 amp AC fuse, 3 amp DC fuse, wiring harness and upper controls test ok, change the lower control board. The AC voltage detection circuit is damaged.

Gas Mode

Note: The Dometic control board used in the RM1350 is a 3 try system in the gas mode. There is a 2 minute purge cycle between each 45 sec. trial for ignition. Flame failure could take 6 to 7 minutes.

Verify that the following components are good: upper control panel ON/OFF switches, LED display control and wiring harness between upper and lower controls and 3-amp DC fuse. First, check for voltage during trial-for-ignition (45 sec.) at Plug 3, Terminals 1 (white wire negative) and terminal 2 (yellow wire positive) to the igniter and solenoid. If no voltage is present change the circuit board. If voltage is present, check for voltage at the igniter and solenoid. If no voltage is present, check the wires from P3. To check the flame sense circuit of the lower circuit board, operate the refrigerator on GAS and measure the millivolts between J4 (NEGATIVE) terminal and J10 (POSITIVE) connection from the thermocouple. The thermocouple should produce 20 millivolts DC minimum. Anything less than 20 millivolts will cause erratic gas operation. The meter should read between 25 to 35 millivolts with the gas flame burning. When the power module senses the loss of flame (thermocouple millivolts below 13 MVDC) the 45 seconds trial for ignition period is started. A brief interruption of DC power (loose positive or negative wire) may cause check LP to come on. A brief interruption of DC power (loose

positive or negative wire) may cause check LP to come on.

Erratic/no gas operation tips

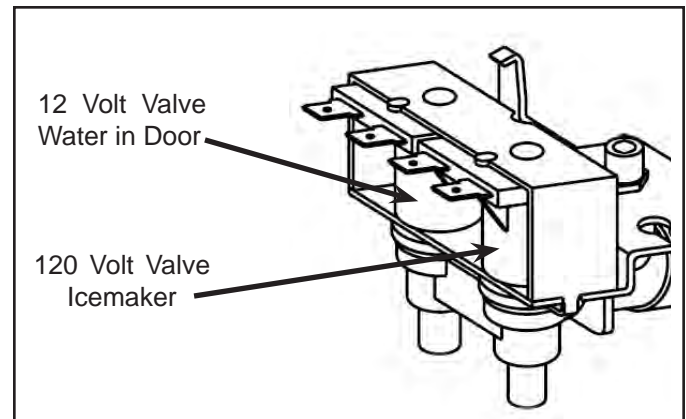
1. Apply straight line voltage to unit from a battery. This will eliminate any problems with converter voltage, bad grounds at the converter and other components on the same DC line.
2. Unplug the coach from shore power. Other components in the coach can send out RF that might interfere with operation.

NOTE: The fail safes of the gas system are active all the time the unit is on. If the unit is operating on AC and detects a problem on the gas side the E1 error code or the LP flashing in the display can come up. The unit will still be operating on AC but gas operation will not be allowed until turned off and back on.

5.13 Fuses

The main control board has two fuses. The 3 amp DC fuse is designed to protect the circuit board from internal/external DC shorts. The 5 amp AC fuse is designed to protect the integrity of the AC detection and heater circuit from shorts. There is also a wire with a 4 amp fuse from the terminal block to an external relay for the fans and water line heater. All fuses can be checked for continuity. If a fuse blows don't replace it until the problem has been found. If a fuse blows there is a short or component that has created the problem.

5.14 DC Water Dispenser Valve

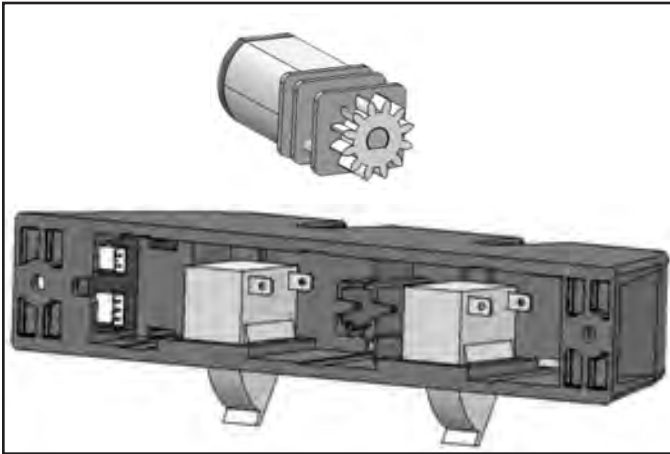


This valve is solenoid operated. When it is open, it releases water from the source to the dispenser. The amount of water is proportional to the length of time the water valve switch is held closed by the lever. Disconnect power to the appliance, remove the wires to the water valve solenoid coil, and check for continuity between the two terminals. The Ohms value should be 14.4 +/- 10%. If you have continuity, normally the solenoid is good. The valve has a flow washer inside which acts as a pressure regulator. A strainer is installed to prevent dirt, rust, etc, from entering the valve. Check for any debris which might obstruct the flow of water, or prevent the valve from closing completely when the circuit is not energized. Remove any obstructions. If the valve still fails to operate properly, replace it. If the valve has been cracked from freezing this would not be a warranty item.

5.15 AUTOMATIC DOOR LOCK

The locking function is performed by means of a locking piston that is moved in either direction by a small electrical motor with an integrated gearbox. The piston has slots so that locking pins on the doors may move in and out when the lock is de-activated, but are hooked up when the lock is activated. The pins on the doors are spring actuated to permit closing of a door after the lock is activated.

- * It locks the doors when the engine is started and unlocks again when the engine is stopped.
- * It is possible to override the lock manually so that the doors may be opened even if the engine is running. After such a manual unlocking, the lock is activated again after a short delay.
- * The lock is controlled from the D+ voltage from the alternator on the vehicle's engine. This voltage is typically +14 V DC when the engine is running and 0 V DC when stopped.
- * If the lock is actuated when a door is open, the mechanical design of the lock still permits the door to be closed and it will then be locked after closing.



The electronic unit is a part of the lock assembly. It operates on the vehicle's +12 V DC and the D+ voltage from the alternator. The lock is activated when D+ goes high and de-activated when D+ goes low. The motor current is monitored to check when the lock piston has reached the end positions and motor is stalling. There is also a limitation of the time that the motor voltage is allowed to be on. In addition, an optical sensor is used to check if the lock piston is fully at the locked position. This information is used to re-lock the doors after a short delay if the lock is deactivated manually when the vehicle's engine is running. This function is also used to detect a failed locking. New locking attempts will then be made.

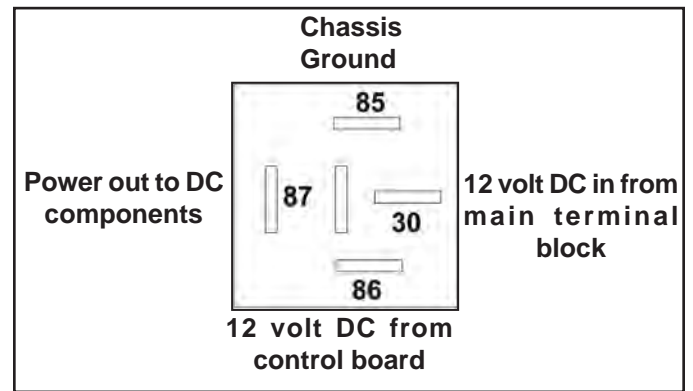
Three wires to the automatic door lock.

1. Black Chassis Ground
2. White from D+ terminal (signal to lock doors)
3. Red from J3 lower control board (refrigerator on)

5.16 DC Relay

The relay controls the circuits to the Ventilator fans, Ice-maker water line heater and 12 volt water valve. The load

(amps) of the components is handled through the relay.

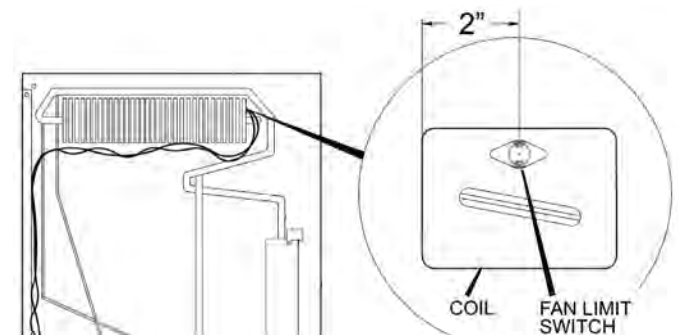


Terminal 86 12 volt DC in from control board J3 (coil)
 Terminal 85 Chassis ground.
 Terminal 30 12 volt DC in from terminal block (supply)
 Terminal 87 12 volt DC out to components

If you have DC voltage to terminals 86 (positive from control board) and good ground on terminal 85, but no continuity between 30 & 87 the relay will need to be changed. Refer to wiring diagram on the back of the product or check parts list for proper diagram. To acquire the proper wiring diagram always use the product number.

5.17 Ventilator Fans

The RM1350 use two ventilator fans mounted to the back of the refrigerator (exterior). The purpose is to assist required air movement across the refrigerator condenser to ensure optimum performance. The fans are powered from DC current and are controlled from a limit switch, mounted on the end plate to the condenser fins just above the flue. The limit switch is normally open and will close at 149° F +/- 9° F and re-open at 122° F +/- 9° F. The switch can be checked for continuity. If the fans fail to run, check all wiring, the inline 3 amp fuse and the limit switch. If these checks are good, replace the fan(s).

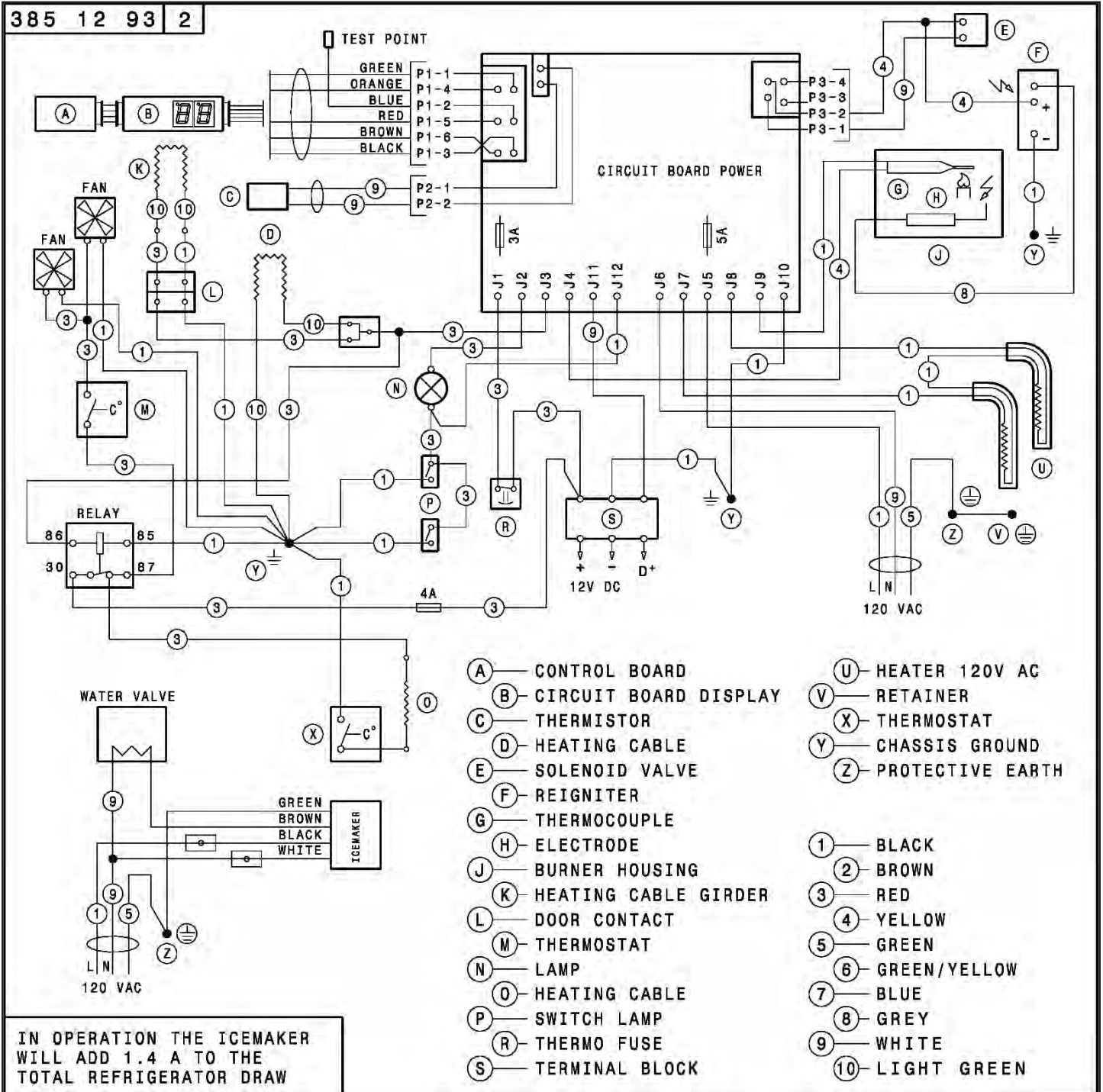


SECTION 6 WIRING

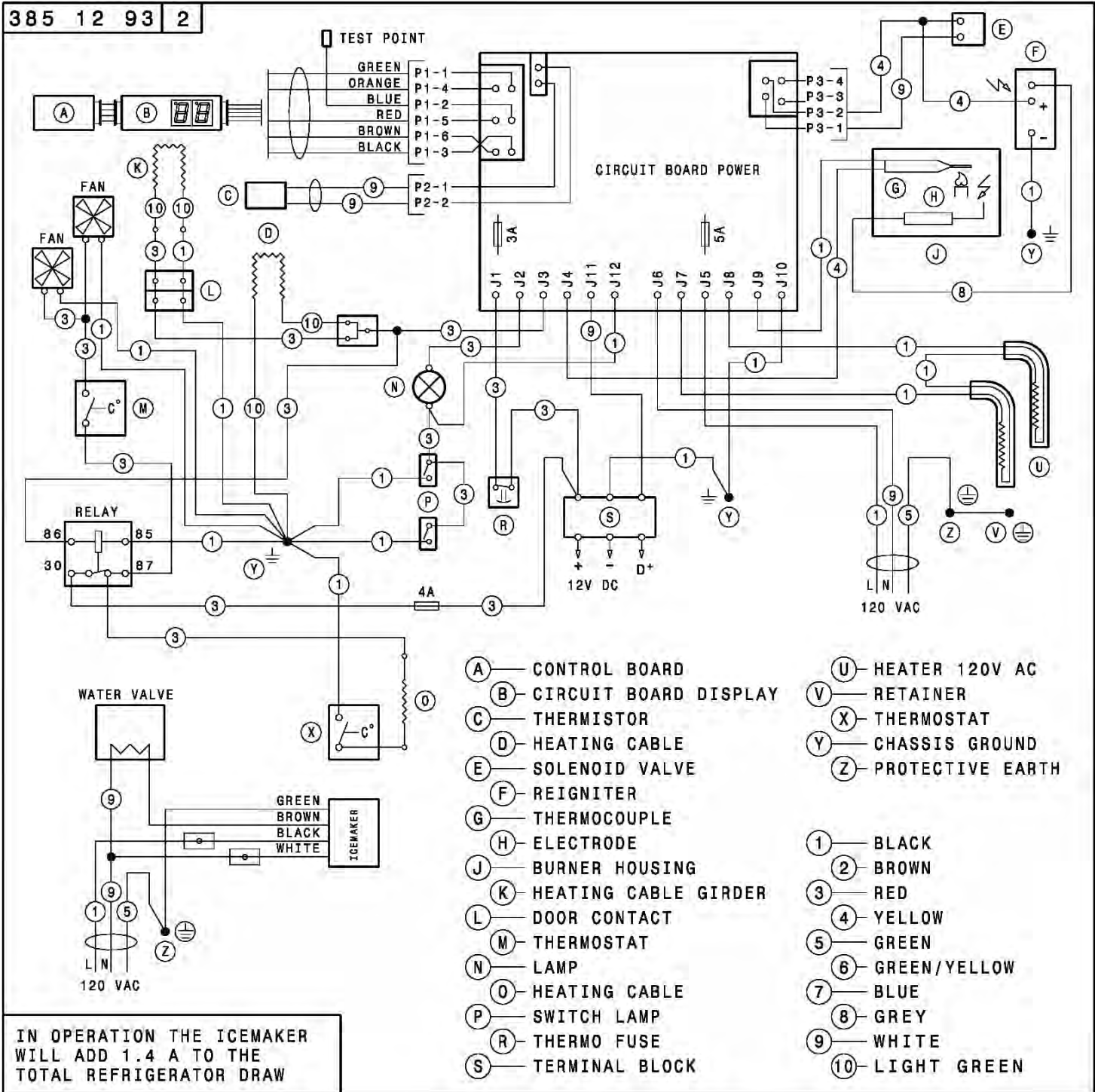
6.1 Internal Wiring

Check all wires, harnesses and the connectors to ensure a proper and tight connection. Harness between upper and lower control boards. Also verify the refrigerator is wired per the wiring diagram for the model you are working on. (See applicable wiring diagrams for your model refrigerator) A loose connection can create erratic operation. Always check the wires at the DC terminal block, two (2) wires in and two (2) wires out.

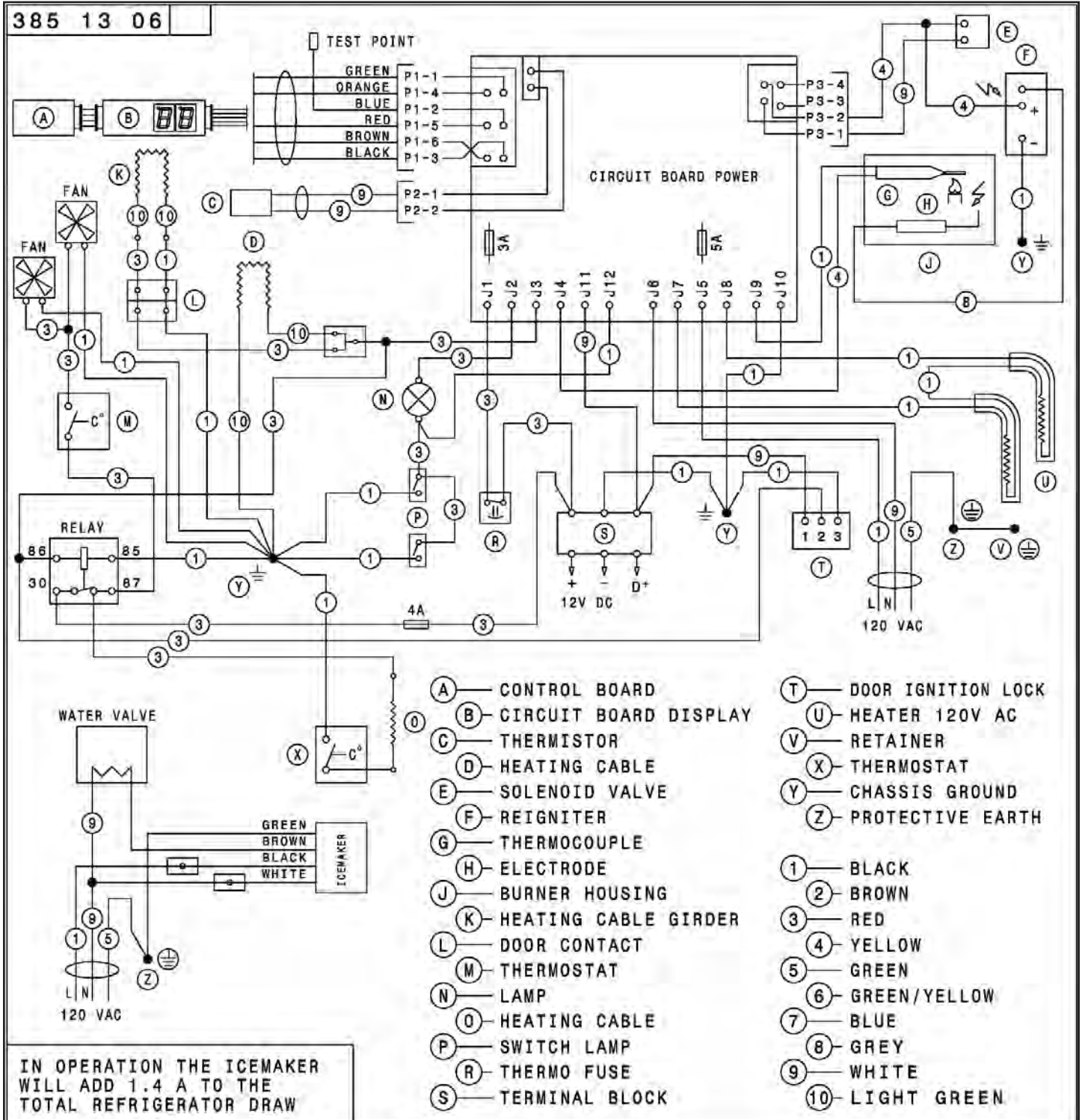
Typical RM1350M Wiring Diagram



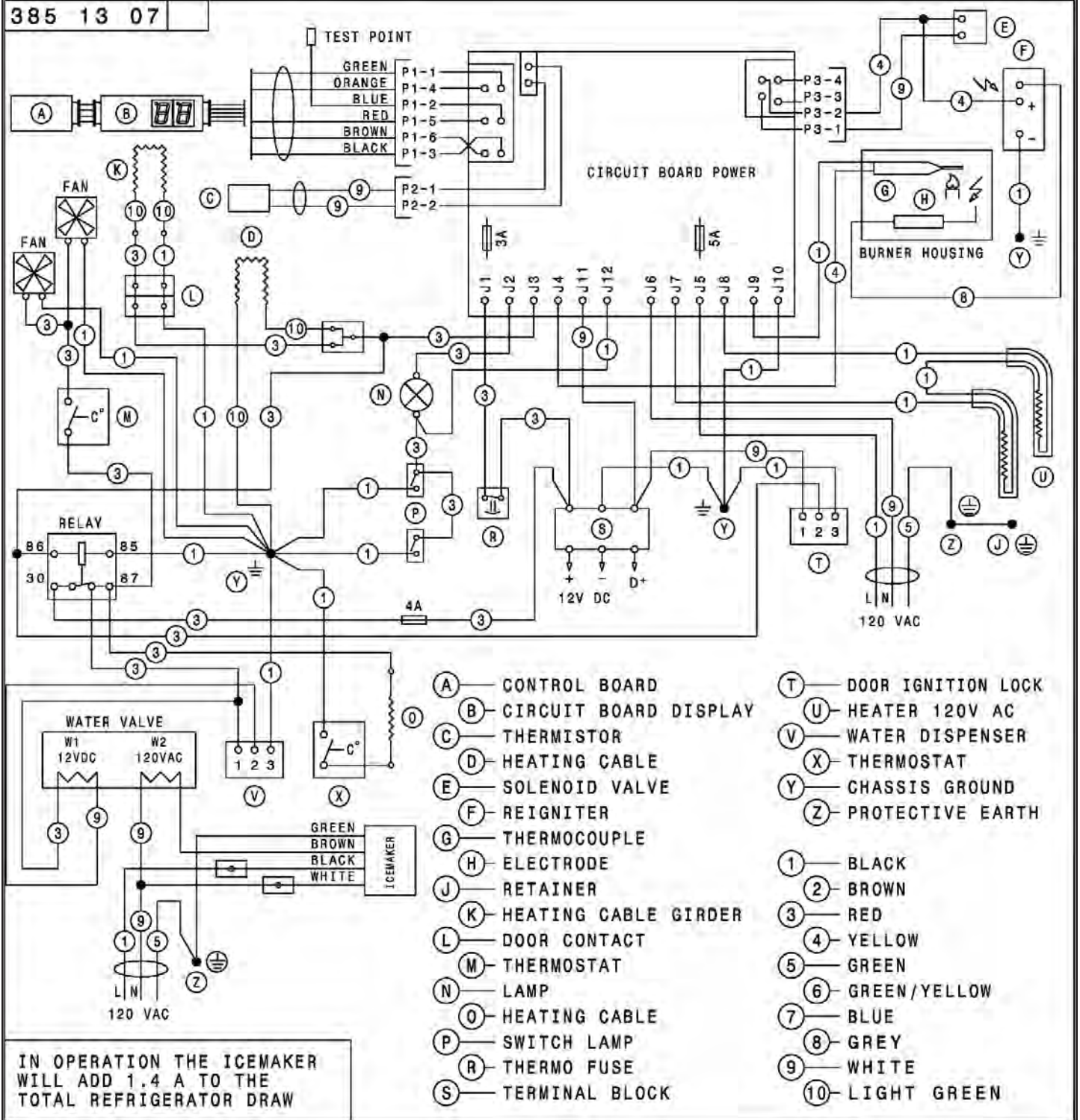
Typical RM1350MIM Wiring Diagram



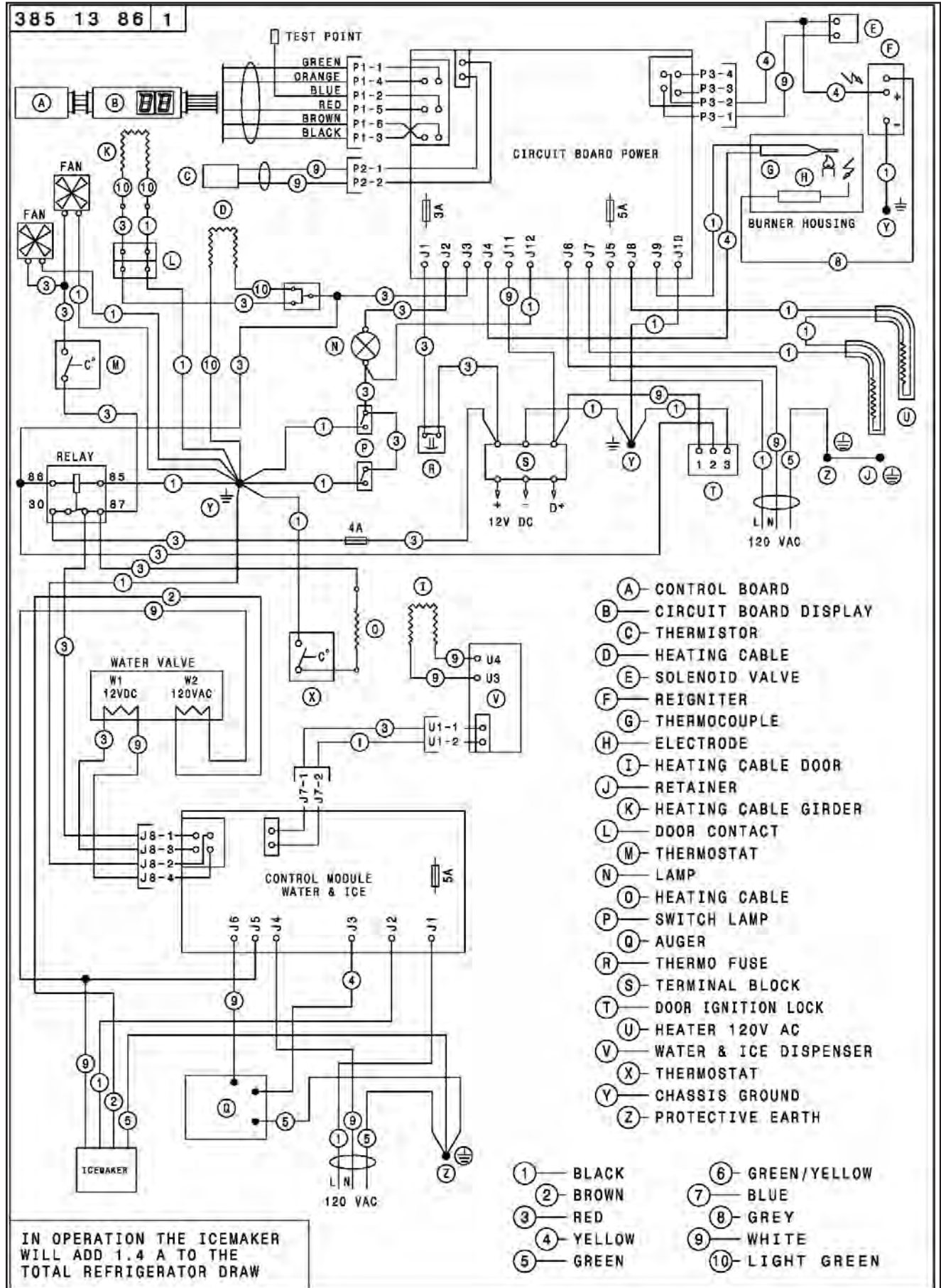
Typical RM1350IM Wiring Diagram



Typical RM1350WIM Wiring Diagram

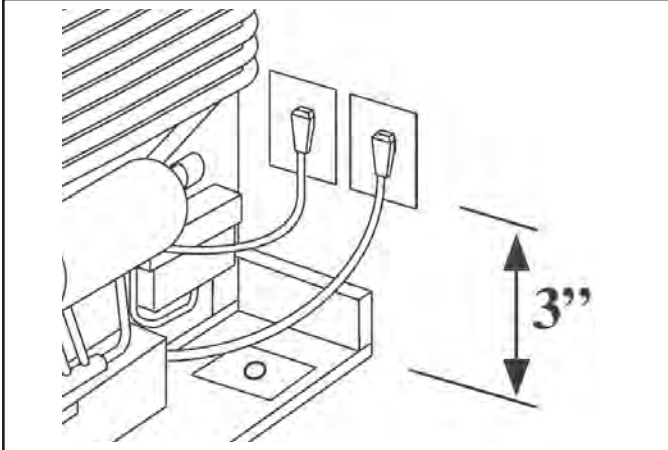


Typical RM1350WID Wiring Diagram

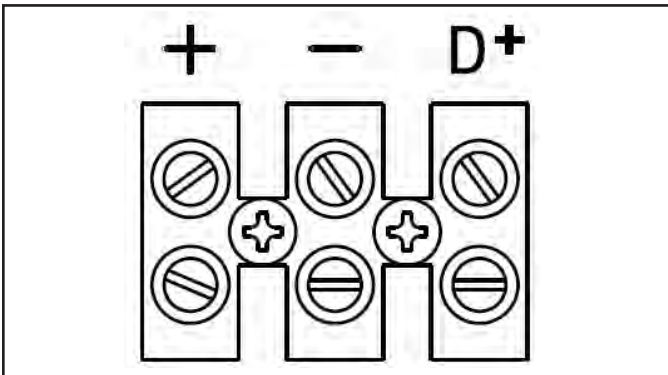


6.2 External Wiring

120 Volts AC Connection(s): The refrigerator is equipped with a three prong (grounded) plug for protection against shock hazards and should be plugged directly into a properly grounded three prong receptacle. DO NOT cut or remove the grounding prong from this plug. Units with icemaker may have a separate plug.

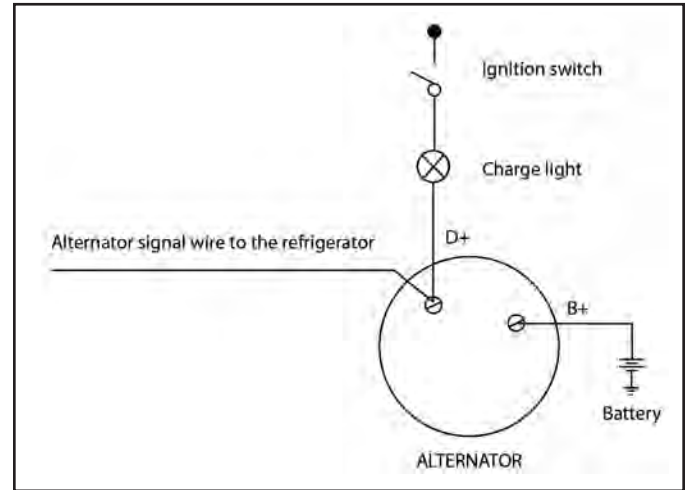


12 Volt DC Connection(s): The connection is made to the terminal block marked 12 volts DC. The control system is connected to a battery/converter circuit and could draw up to 5 amps at 12 volts DC. The refrigerator must be connected to the battery circuit with two wires of adequate capacity to avoid voltage drop. Proper polarity is crucial for refrigerator operation. Don't use the chassis for the ground circuit. A loose connection will create erratic operation on gas and AC. The wires to the power source must/should be a dedicated circuit. No other electrical equipment or lighting should be connected to refrigerator circuit.



For models equipped with the automatic lock:

The refrigerator requires the connection of a signal wire from the alternator (D+) in order to maintain the automatic door travel latch and temporary gas lockout function. The vehicle's alternator (D+) is connected to D+ on the terminal block.



SECTION 7 LP GAS REQUIREMENTS

⚠ WARNING

DO NOT use a flame to check for gas leaks.

The LP gas pressure to the refrigerator should be 11 inches water column with half of all BTU's of the RV turned on. With all other appliances off, the pressure to the refrigerator should not exceed 12 inches water column. To check the gas pressure when the refrigerator is operating, there is a pressure test port below the solenoid valve assembly.

SECTION 8 LP GAS COMPONENTS

8.1 Manual Gas Shutoff Valve

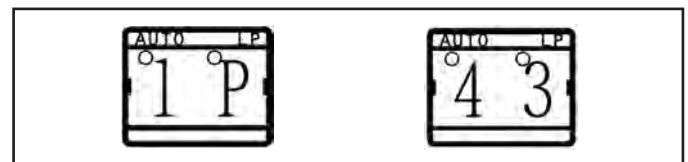
The manual shutoff valve is a non-serviceable part. The valve is part of the solenoid valve assembly. It is rare to have problems with the manual shutoff or the solenoid assemblies. If you have checked gas pressure and it is low, check pressure at input line. If pressure is 11 inches at input and low at the pressure test port change solenoid valve assembly. The valve is not opening all the way.

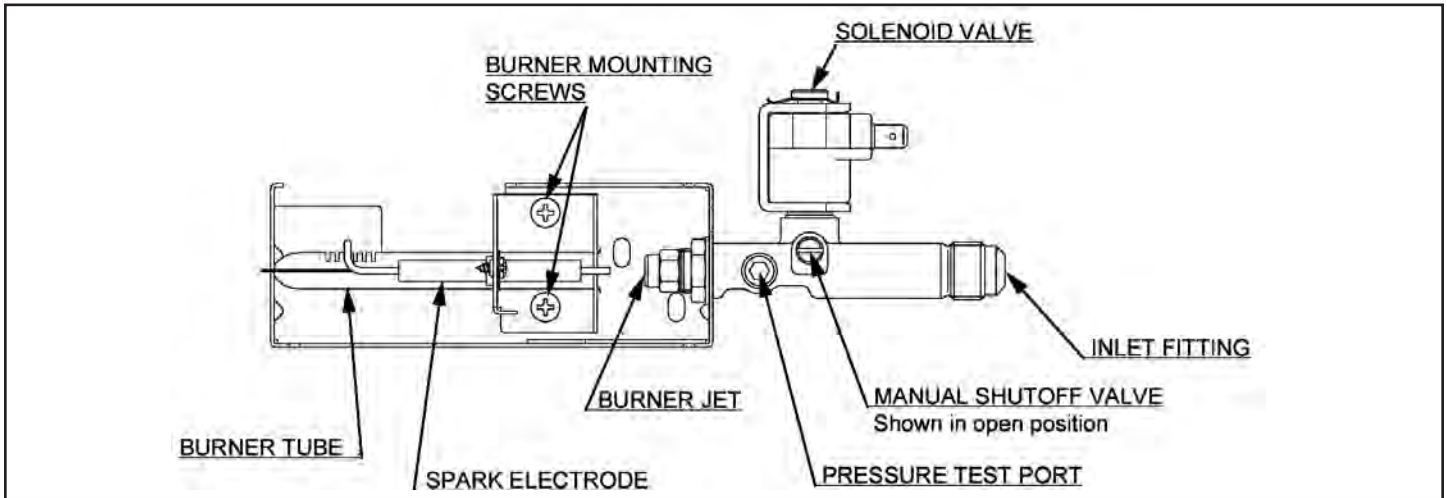
TESTING LP GAS SAFETY SHUTOFF

The gas safety shutoff must be tested after the refrigerator is connected to the LP gas supply.

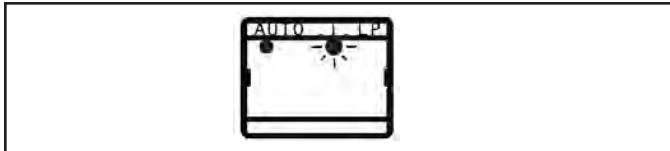
To test the gas safety shutoff, proceed as follows:

1. Start the refrigerator according to the instructions, and switch to GAS mode.
2. Check that the gas flame is lit and the GAS mode indicator lamp is on.
3. Close the manual gas shutoff valve at the back of the refrigerator.
4. Wait for six to seven minutes for unit to go into flame failure after three tries. LP is flashing (message alternates between LP and the temperature). Indicates gas operation lockout.





AUTO mode lamp is lit and LP mode lamp is flashing. Indicates temporary gas operation lockout.



5. Remove protection cover from burner and open the manual gas shutoff valve. Do not change any button positions on the control panel. Apply a non-corrosive commercial bubble solution to the burner jet orifice.
6. No bubbles should appear at the opening of the burner jet orifice. The presence of bubbles indicates a defective gas safety shutoff, and service is required.
7. If no bubbles were present at the burner jet orifice, it should be rinsed with fresh water. Be careful not to damage the burner jet orifice. Replace cover and press the main power ON/OFF button OFF and back ON. Normal operation of the burner should return. Allow the burner to operate for a minimum of five minutes.

8.2 Orifice

The Dometic orifice is a brass alloy with a man-made ruby pressed in the center that has been laser-beam drilled in a spiral pattern. The orifice is cleaned by using an alcohol based solvent. Soak the orifice for approximately 1 hour and allow to air dry. Don't insert anything in the center of the orifice because it will harm the man-made ruby. Do not use an air nozzle to blow thru the orifice as the ruby could be moved. Never over or under size the orifice on a Dometic refrigerator. The cooling unit is designed to work with a predetermined amount of heat and modifying the orifice size will decrease cooling. If there is a lack of cooling on gas operation, verify the orifice is the proper size per the chart.

⚠ WARNING

DO NOT use a wire or pin when cleaning the burner jet as damage can occur to the precision opening. This can cause damage to the refrigerator or create a fire hazard.

| MODEL | JET SIZE |
|--------|----------|
| RM1350 | #76 |

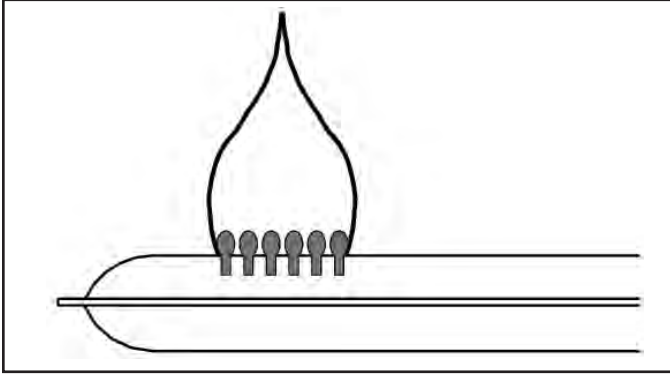
Always check the parts list with the model and product number to assure the right jet size.

8.3 Thermocouple

The Thermocouple is a component that extends over the burner assembly so its tip is in the path of the flame. During normal gas operation, the thermocouple should produce 25 to 35 millivolts DC when connected to the lower circuit board. Any reading below 20 millivolts DC could cause erratic gas operation. **NOTE:** A reading of 20 or less could be caused by low gas pressure, carbon build up or improper thermocouple location. The thermocouple should be centered over the burner and extend over 3 slots. The control board reads negative millivolts DC from the thermocouple and the positive lead goes to the ground terminal on the control board. The lower control has built-in delay when the unit is first turned on. If the lower control reads millivolts in excess of 6 MVDC the control will go into a 30 second gas delay before attempting to light on gas. To test the thermocouple set the meter to DC millivolts. Put the black lead from the meter to terminal J4 and the red lead from the meter to J10 or ground (other lead from thermocouple). Start the unit on gas and measure the DC millivolts produced by the thermocouple. The thermocouple should produce 22 to 36 millivolts DC within 45 seconds. If the millivolts are 20 or below erratic operation will occur. Anything below 10 to 13 the control board will not keep the gas valve energized and turn on the check light after the third trial-for-ignition. Approx 6 to 7 minutes.

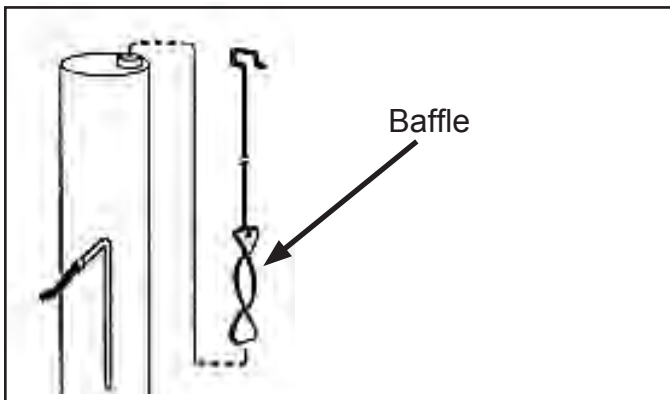
8.4 Burner

The slots in the burner should be directly below the flue tube. The burner should be cleaned periodically, at least once a year. Soak the burner in an alcohol based solvent and allow to air dry. If the burner does not have a good ground it can/will cause erratic gas operation. The electrode should spark to the burner not the flue tube or thermocouple.



8.5 Flue Baffle

The flue baffle (spiral baffle) is a twisted piece of metal that hangs in the flue tube to slow the heat from the flame to the proper location on the cooling unit. If the flue baffle is too high or low the heat will not be transferred to the cooling unit properly. Low cooling on gas operation.

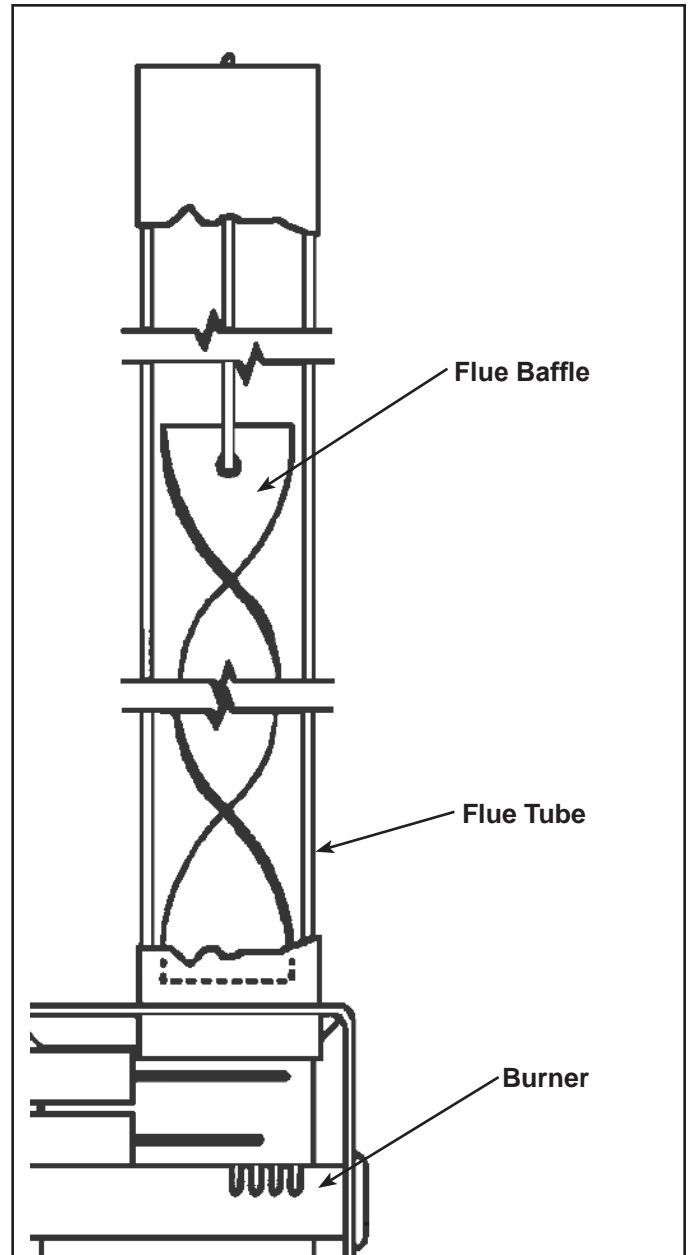


Lack of heat transfer to the cooling unit will cause low cooling performance in the gas mode. It should be cleaned periodically, at least once a year. The proper length and position of the baffle above the burner should be as shown in the chart : **Always Refer to parts list on the model/ product number unit you are currently working on.**

| MODEL | A B O V E BURNER | SIZE |
|--------|---------------------|-------------|
| RM1350 | 1-1/4" | 6" X 15/16" |

8.6 Flue Tube

The flue tube is welded to the boiler of the cooling unit. As heat travels up the flue tube and slows at the flue baffle it transfers heat to the cooling unit. Carbon build up will not allow the heat transfer to the cooling unit and cause lack of cooling on gas. In a rough riding coach there have been rare cases where the flue will separate and create lack of heat transfer to the cooling unit. The flue tube must be cleaned periodically, at least once a year. Clean by using flue brush, Dometic Part no. 0151404001.



SECTION 9 COOLING UNIT

9.1 Leveling

Leveling is one of the requirements for proper operation of absorption refrigerators. The absorption design utilizes no mechanical pumps or compressors to circulate the refrigerant within the system, so proper leveling must be maintained to provide the correct refrigerant flow. Without proper leveling, refrigerant within the cooling unit will collect and stagnate at certain areas. Without proper refrigerant flow, the cooling process will stop. Absorption refrigerators have a type of cooling unit that utilizes an enclosed pump tube surrounded by a solution to protect the assembly. To ensure proper leveling, the vehicle needs to be leveled so it is comfortable to live in. (No noticeable sloping of floor or walls). When the vehicle is moving, leveling is not critical as the rolling and pitching movement of the vehicle will pass to either side of level, keeping the refrigerant from accumulating in the piping.



**PERFECTLY LEVEL NOT REQUIRED
MORE LEVEL = BETTER COOLING**

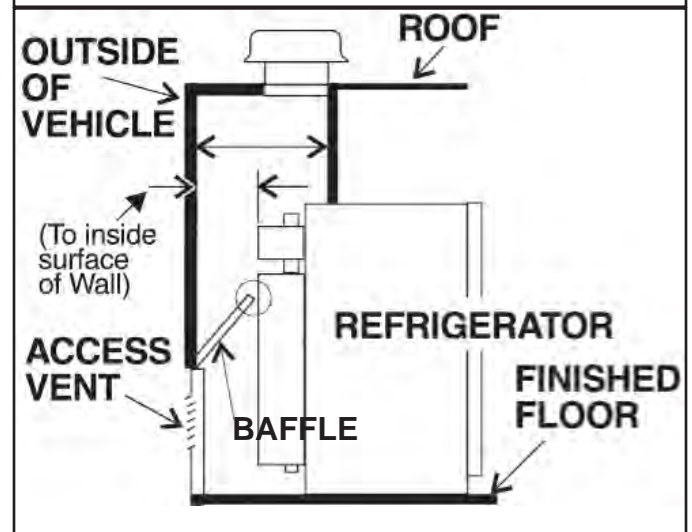
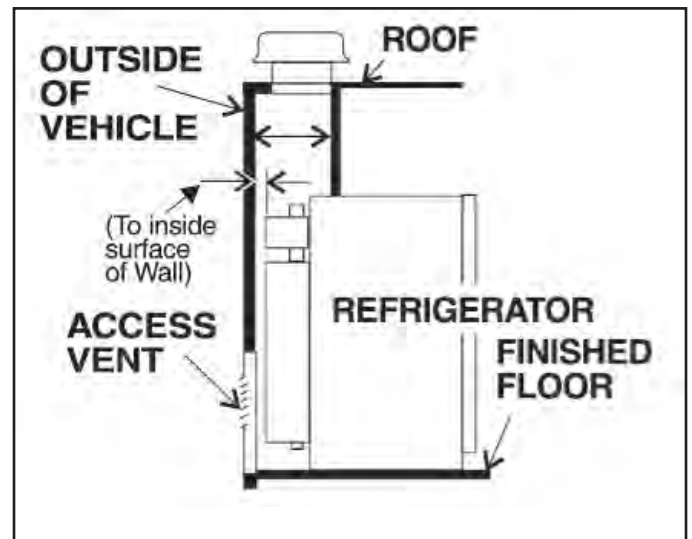
9.2 Ventilation

The installation shall be made in such a manner as to separate the combustion system from the living space of the mobile home or recreational vehicle. Openings for air supply or for venting of combustion products shall have a minimum dimension of not less than 1/4 inch. Ventilation is a critical requirement for proper cooling unit operation. The coach vent system must be able to provide a way to direct the hot air, produced by the action of the cooling unit, out away from the installation of the refrigerator. The refrigerator extracts heat from the interior of the refrigerator cabinet and dissipates the heat out through the vent system. In a proper installation there should be zero (0") clearance surrounding the sides and top of the refrigerator to achieve proper air flow. Clearance from the refrigerator to the outside wall must be no greater than 1.5 inch. All potential dead air pockets should be blocked or baffled to ensure that heat won't be trapped in these spaces and reduce efficiency.

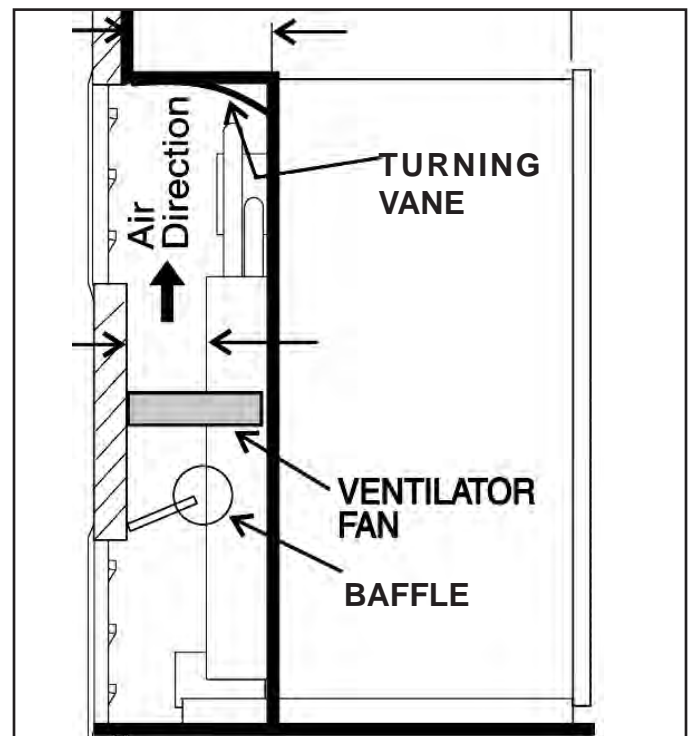
NOTE: Refrigerators should be installed in accordance with appropriate installation instructions received with the refrigerator.

FOR MORE UPDATED INFORMATION ON UNIQUE VENTILATION REQUIREMENTS, refer to Vent Installation Instructions, Form No. 3308666.XXX.

Typical Roof Vent and Side Wall Vent



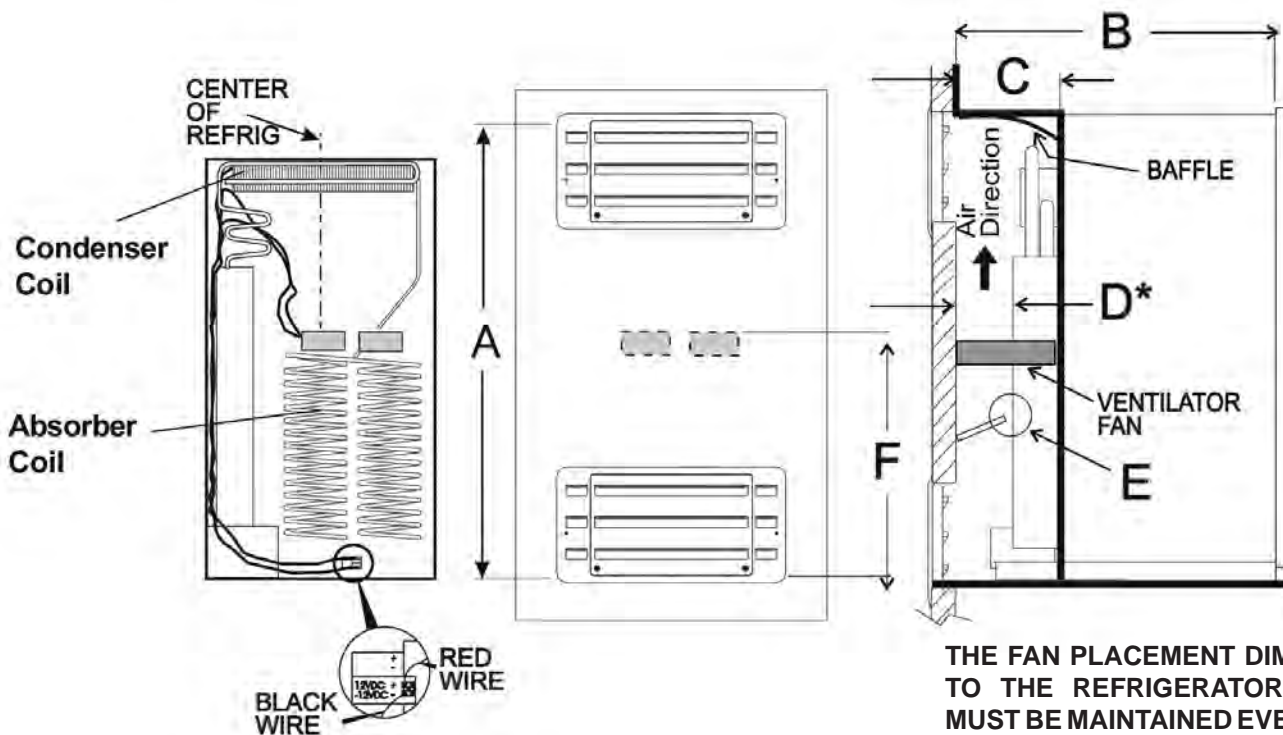
Typical Two Side Wall Vents



Typical Two Side Wall Vent Application. Always Refer To Vent Instructions 3308666.xxx

(Dimensions are in inches)

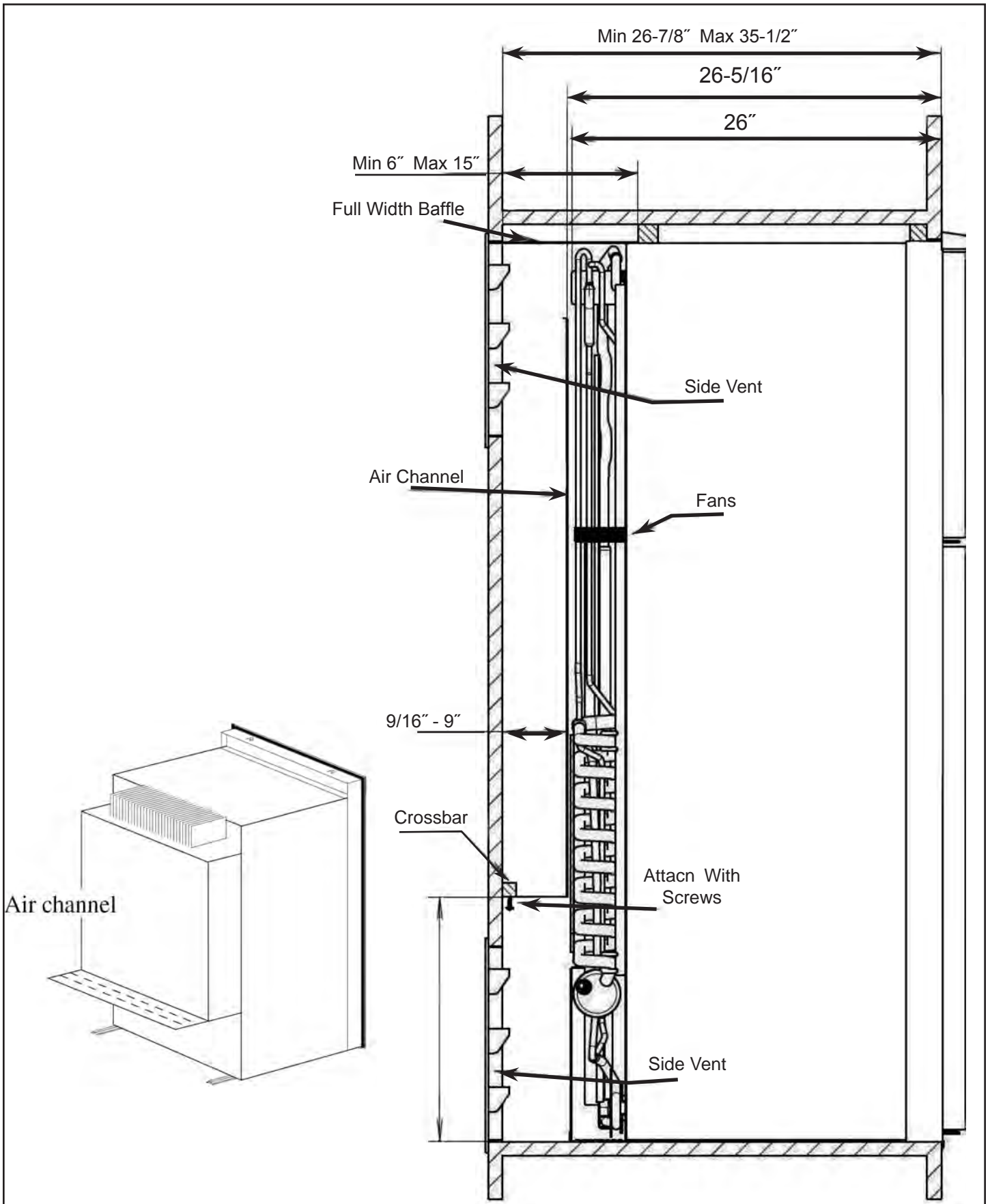
| Model No. | Min. Vent Height | Min Dim. +1/4, -0 | Min Dim. | Max Dim. | Min Dim. | Max Dim. | |
|-----------|------------------|-------------------|----------|----------|----------|----------|----------|
| | A | B | C | C | D* | E | F |
| RM 1350 | 63 | 27 - 1/16 | 5 - 1/8 | 8 | 4 - 5/8 | 1 | 44 - 1/2 |



THE FAN PLACEMENT DIMENSION TO THE REFRIGERATOR FLOOR MUST BE MAINTAINED EVEN WHEN THE UPPER VENT IS LOCATED HIGHER THAN DIMENSION "A"

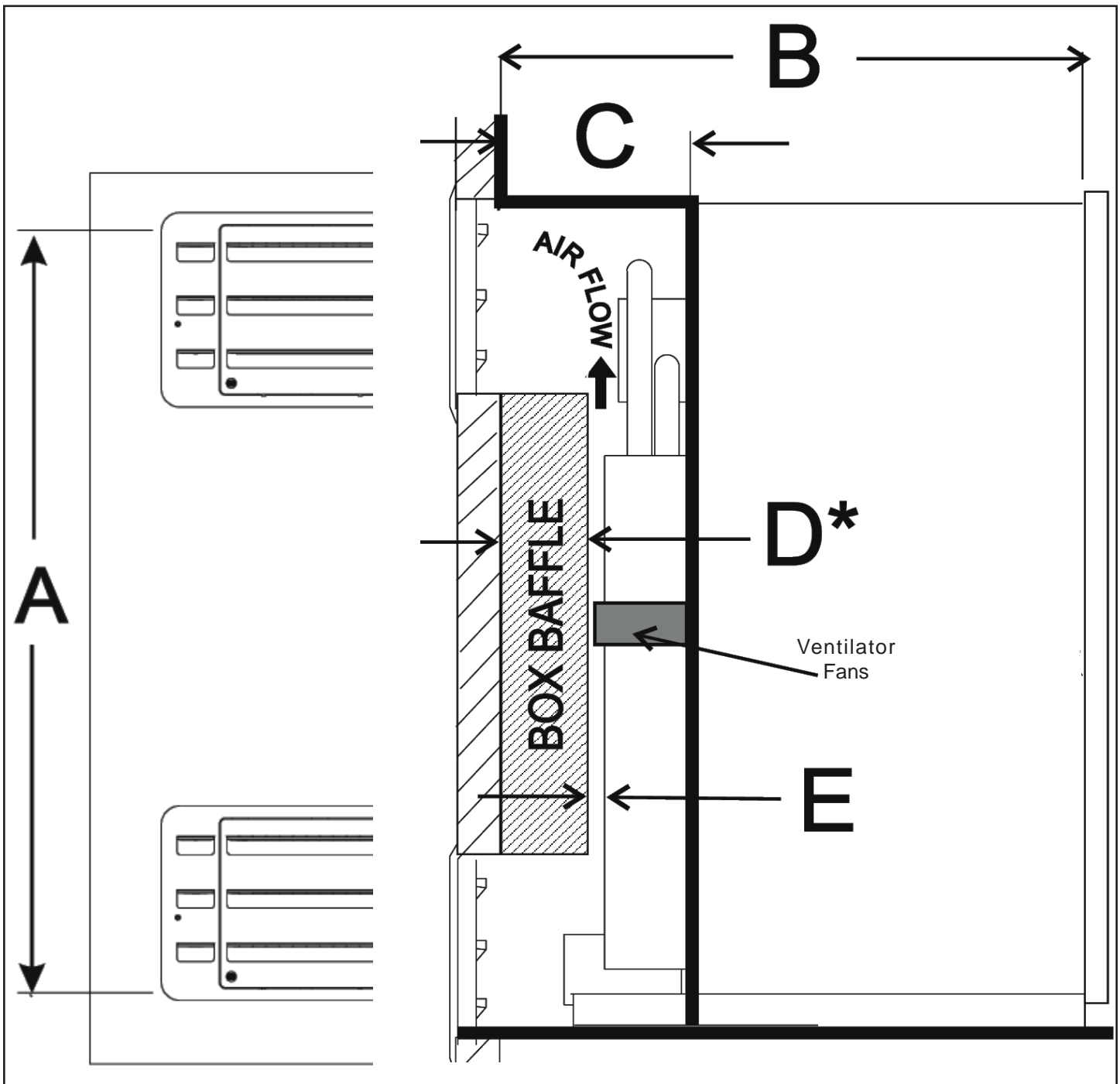
* When dimension "D" exceeds "1", it is necessary to add baffle (E) above lower access vent as shown, for more efficient operation in warm temperatures.

**REFRIGERATOR
VENTILATION AIR CHANNEL
KIT 3312270.XXX**



Unique Two Side Wall Vent Application.

| Model Number | Minimum Vent Height A | Minimum Dimension + 1/4" -0 B | Maximum Dimension + 1/4" -0 B | Minimum Dimension C | Maximum Dimension C | Maximum Dimension D | Maximum Dimension E |
|--------------|--------------------------|----------------------------------|----------------------------------|------------------------|------------------------|------------------------|------------------------|
| RM1350 | 63 3/16" | 27 1/16" | 33 1/16" | 5 1/8" | 14" | 6" | 1" |



9.3 Air Leaks

Check the gasket on the doors to be sure of a positive air seal. A simple method to check gaskets is to close the door on a dollar bill, then pull the dollar bill out. If no resistance is felt, the gasket in that place is not sealing properly. This should be done on all four sides of the door in several places. If a gasket is not sealing properly, warm the gasket material with a hair dryer. Then close the door and the magnetic strip should pull the gasket to the metal frame. Leave door closed until the material has cooled. Then recheck for a positive seal. If a positive seal cannot be achieved, replace the door gasket. Also check that the cooling unit is installed properly. The cooling unit's foam block, the portion that surrounds the evaporator coils, must be flush to the cabinet at the back of the refrigerator and have a positive seal. If the cooling unit is not installed properly, remove and install properly.

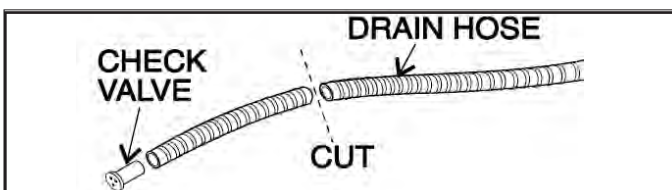
NOTE: Air leaks will cause insufficient cooling as well as rapid formation of frost.



⚠ CAUTION

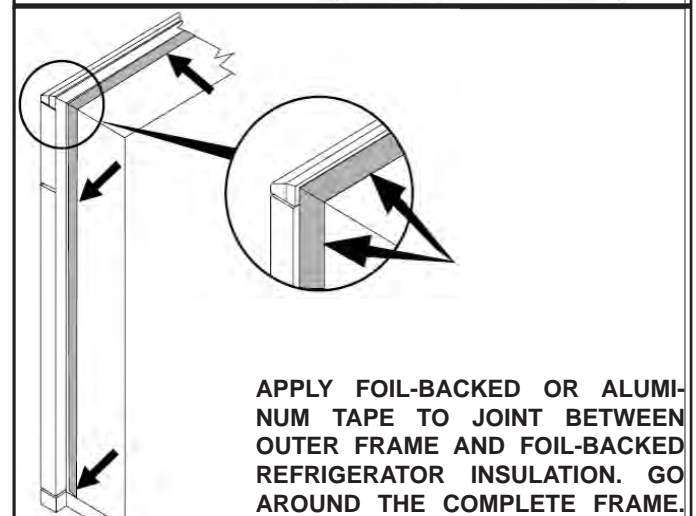
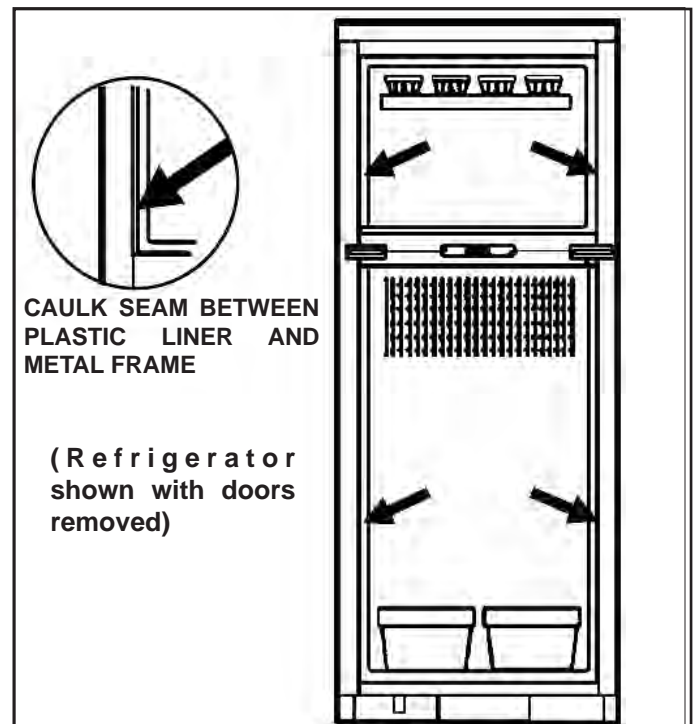
**DO NOT OVERHEAT
AS YOU CAN MELT THE MATERIAL**

Another source for an air leaks could be the drain hose. When units are installed at the end of the drain is a check valve. At install the hose might be shortened and the check valve must be moved to the end of drain hose. Any time lack of performance or excessive frost is experienced, look for the check valve at the end of hose. If the drain hose is cracked or not attached at discharge, performance or frost could be a problem.



9.4 Interior Liner Seal To Frame

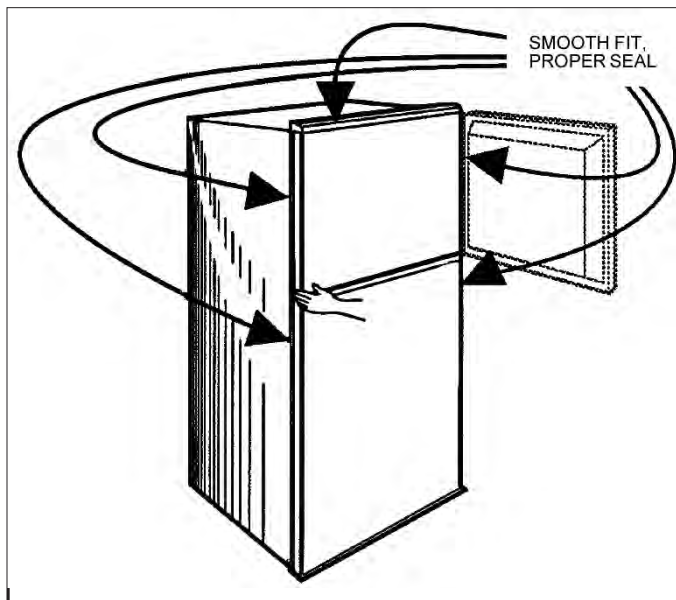
There is a seal that is applied to the liner in the area where the metal frame makes contact with the interior liner. If this seal is incomplete, cold air can migrate out to the metal frame. If this happens, condensation could form on the frame and could promote rapid formation of frost. If you suspect an improper seal, apply a small bead of silicone all the way around the perimeter where the frame meets the interior liner. Next remove all screws securing the refrigerator into the cabinet and slide the refrigerator out approximately 2–4 inches. Clean the metal frame and foil-backed insulation around the refrigerator. Apply a foil-backed adhesive tape to the joint between outer frame and foil-backed refrigerator insulation. Make sure the refrigerator is dry and that the surface temperatures are above 50° F. Use a clear silicon caulking compound and seal the seam between the refrigerator's plastic liner and the metal frame. Apply the silicon in a continuous bead around both the refrigerator freezer and food compartments.



Note: To form a proper seal, it is important not to leave any gaps.

9.5 Door Position

If the upper or lower doors are closing too high or low against the frame, cold air leakage can occur. Adding or deleting a flat thin washer on top of the lower or middle hinge pin can raise or lower the door position. To correct the door alignment, loosen the hinge screws slightly and reorient the door in the proper position. Hold the door in its new position and carefully retighten the hinge screws.



9.6 Ambient Temperature

This is the temperature surrounding the recreational vehicle, as well as the temperature of air at the back of the refrigerator. As the ambient temperature increases, the air temperature in the area of the cooling unit increases. Improper venting at this point will cause the cooling unit to have reduced efficiency. A refrigerator that chases the outside temperature is improperly vented or has a weak cooling unit.

9.7 Cooling Unit

The cooling unit is a self-contained, hermetically sealed set of coils where the refrigeration process takes place. The chemicals involved in the cooling process include hydrogen, ammonia, water and a rust inhibiting agent. There are no repairs recommended on the cooling unit. If it is defective, replace with a new cooling unit. To check the cooling unit, first verify the AC heating elements are good, proper ohms at room temperature, proper venting and unit is level. If the RM1350 has water thru the door the bladder must be drained before the cooling unit is tested. Then place approximately one gallon of water inside the refrigerator in a few containers and place a thermometer in one of the containers of water. Next, unplug the original thermistor from the lower control board, and plug up a new thermistor and let it hang outside the lower vent.

This will cause the cooling unit to run constant. Turn unit onto AC and make sure the fans are running. Operate for at least 12 hours and check the temperature on the thermometer in the container of water. It should be at 43 degrees or lower depending on test conditions. If so, the cooling unit is good. If the temperature of the water is above 43 degrees, replace the cooling unit. The outside temperature will affect the cooling capacity of the unit. There is that rare occasion when the cooling unit will work OK for the first 12 hours and start to warm up. If the customers' complaint is "works OK for 2 to 5 days and then warms up" the unit may have an internal problem. To test this it would be necessary to operate the cooling unit for up to 24 to 48 hours in the test mode.

9.8 Food Storage

Proper refrigeration requires free air circulation within the food storage compartment. Restricted air circulation within this compartment will cause higher cabinet temperatures. To remedy this situation, simply rearrange your foodstuffs. It is also essential that the shelves are not covered with paper or large storage containers. Always remember to allow for proper air circulation. Odorous or highly flavored foods should always be stored in covered dishes, plastic bags or wrapped in foil or waxed paper to prevent food odors. Vegetables, lettuce, etc., should be covered to retain their crispness.

Note: NEVER PUT HOT FOOD INTO THE REFRIGERATOR.

To reduce frost formation in and on the freezing compartment, cover stored liquids and moist foods and do not leave the door open longer than necessary. When the refrigerator is heavily loaded, it takes a longer time for refrigerator temperatures to lower, also increasing the ice making time. A very heavy load may also cause excessive frosting. Defrosting every 7 to 21 days would be normal, depending on the humidity level.

9.9 High Humidity

High humidity may cause a small amount of condensation to form on the frame of the refrigerator. In some cases it can develop to such a degree that it will run off the frame. As the humidity is reduced, the sweating will decrease. High humidity can also be a factor in rapid formation of frost. If the frame between the doors is sweating the climate control heater(s) should be tested. Section 5.6.

The Absorption System

The continuous absorption type of cooling unit is operated by the application of a limited amount of heat furnished by gas, electricity or kerosene. No moving parts are employed.

The unit consists of four main parts—the boiler, condenser, evaporator and absorber.

The unit can be run on either electricity, kerosene or gas. When the unit operates on kerosene or gas the heat is supplied by a burner which is fitted underneath the central tube (A) and when the unit operates on electricity the heat is supplied by a heating element inserted in the pocket (B).

The unit charge consists of a quantity of ammonia, water and hydrogen at a sufficient pressure to condense ammonia at the room temperature for which the unit is designed.

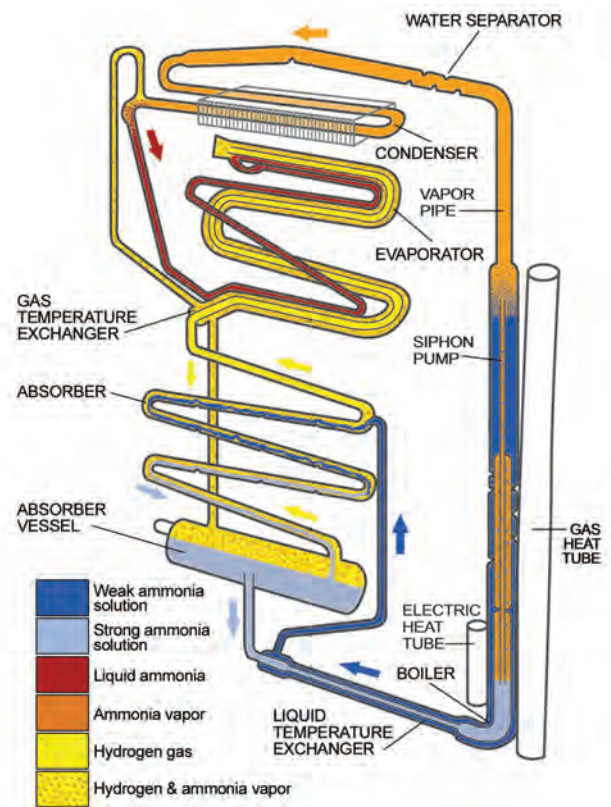
When heat is supplied to the boiler system, bubbles of ammonia gas are produced which rise and carry with them quantities of weak ammonia solution through the siphon pump (C). This weak solution passes into the tube (D), while the ammonia vapor passes into the vapor pipe (E) and on to the water separator. Here any water vapor is condensed and runs back into the boiler system leaving the dry ammonia vapor to pass to the condenser.

Air circulating over the fins of the condenser removes heat from the ammonia vapor to cause it to condense to liquid ammonia in which state it flows into the evaporator.

The evaporator is supplied with hydrogen. The hydrogen passes across the surface of the ammonia and lowers the ammonia vapor pressure sufficiently to allow the liquid ammonia to evaporate. The evaporation of the ammonia extracts heat from the evaporator which in turn extracts heat from the food storage space, as described above, thereby lowering the temperature inside the refrigerator.

The mixture of ammonia and hydrogen vapor passes from the evaporator to the absorber.

Entering the upper portion of the absorber is a continuous trickle of weak ammonia solution fed by gravity from the tub (D). This weak solution, flowing down through the absorber, comes into contact with the mixed ammonia and hydrogen gases which readily absorbs the ammonia from the mixture, leaving the hydrogen free to rise through the absorber coil and to return to the evaporator.



The hydrogen thus circulates continuously between the absorber and the evaporator.

The strong ammonia solution produced in the absorber flows down to the absorber vessel and then to the boiler system, thus completing the full cycle of operation.

The liquid circulation of the unit is purely gravitational.

Heat is generated in the absorber by the process of absorption. This heat must be dissipated into the surrounding air. Heat must also be dissipated from the condenser in order to cool the ammonia vapor sufficiently for it to liquefy. Free air circulation is therefore necessary over the absorber and condenser.

The whole unit operates by the heat applied to the boiler system and it is of paramount importance that this heat is kept within the necessary limits and is properly applied.

 **Dometic**

SECTION 10 Error Codes

The codes are displayed flashing (alternating between temperature and message) on the display.

E 0

No communication between display and power modules. The control system will revert to full automatic operation selecting the best energy source available with AC first and GAS being second priority. The temperature setting will be maintained at the mid position. The power module will continually attempt to reestablish operation of the display module. Test control cable between upper and lower control, control (on-off) panel and lower board, clean all grounds, and try a **different DC power source**. If problem still exists change lower control board.

E 1

Hardware fault in the gas operation system. Test Upper and lower controls, solenoid, wire harness, clean all grounds and try a **different DC power source**. If problem still exist change lower control board.

E 2

A failure of the temperature sensor device or associated electronic circuitry has occurred. If the connection to the temperature sensor is faulty or the circuit to the thermistor is open. The cooling unit will shut down to keep from freezing the water tank in the refrigerator. Test Thermistor. There has been a rare occasion where the lower control board will not detect the thermistor.

Error Code Tips.

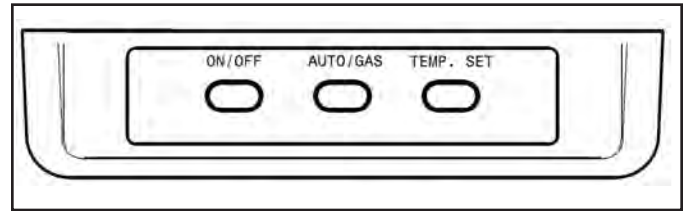
The DC line to the refrigerator should be a dedicated line. Other components on the DC line could cause the voltage to vary. Changes in voltage could/will/may create an error code. It is possible for flame failure to occur even on AC operation. When on AC operation the flame failure safety checks are running constant. It does not mean the unit is not operating on AC; just the unit has detected a problem or glitch and shut down the gas side. Turning the unit off and back on should eliminate the gas failure.

SECTION 11 Diagnostic Mode

11.1 Diagnostic Test

To perform a diagnostic test:

1. Turn off the refrigerator. (press ON/OFF button)
2. Press and hold the TEMP. SET button and then, press the ON/OFF button.
3. Release the TEMP. SET button. Press it again to toggle the list of functions step by step.

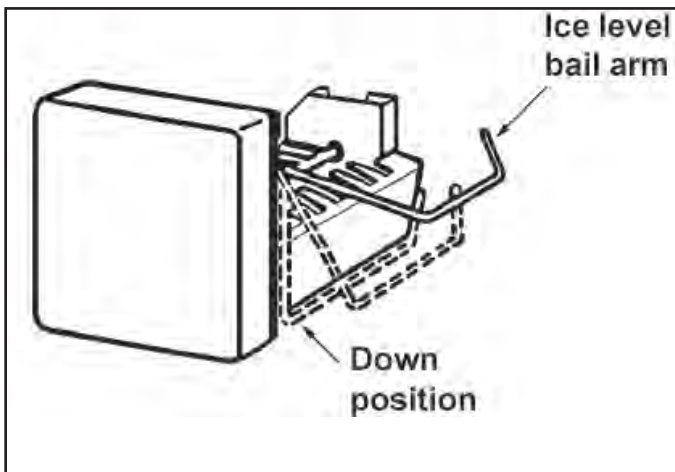


| Number | Test Function | Test Indication | Test Results Indication |
|--------|--|-----------------|--|
| 1 | All outputs off | F | E 0 Communication Fault E 2 Temperature sensor fault The actual temperature at the sensor (°F). |
| 2 | Turn LAC heater on | L H | E 0 Communication Fault 0 N LAC heater on Press the lamp switch. The lamp should still be on. |
| 3 | Turn AC heater on | A C | E 0 Communication Fault 0 N AC heater on " " AC heater off, AC not available |
| 4 | D+ status (if D+ is connected) Not available on all models | D P | E 0 Communication Fault 0 N D+ high " " D+ low |
| 5 | Run gas (one attempt only) | L P | E 0 Communication Fault E 1 Igniter & valve off, gas hardware fault 0 N Igniter & valve on F L Igniter off & valve on flame detected " " Igniter & valve off, gas problem (check gas) (If flame is not ignited within 45 seconds) |

SECTION 10 ICE MAKER

12.1 Operation

The refrigerator must be allowed to pre-cool before starting the ice maker. The refrigerator has to be connected to 120 volts AC before the ice maker can operate. The water line manual shutoff valve (not part of Dometic unit) must be open. To start making ice, move the ice level bail arm to DOWN position.

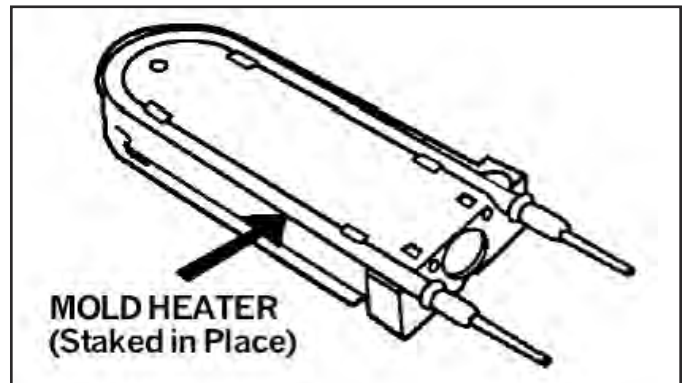


When the ice maker mold thermostat senses the preset temperature for ejection of the ice cubes, the fingers will start to rotate dumping any ice cubes and filling the mold with water. When the storage container is full of ice, the ice level bail arm cannot return to the DOWN position. This will stop further production of ice until the container is emptied and the bail arm is returned to the down position. The absorption system will keep the compartment at the proper temperature for storage of ice. Ice making is accelerated if the thermostat is set to the coldest position. It is a good idea to do this a few hours before you anticipate a need for ice. The first few cycles may have small cubes due to air trapped in the water lines. The first container of ice cubes should be dumped if the water system has been winterized or not used for several weeks.

NOTE: IF THE ICE MAKER WAS CLEANED AND DRAINED, NO ICE CUBES WILL BE DUMPED INTO THE STORAGE CONTAINER DURING THE FIRST FEW CYCLES.

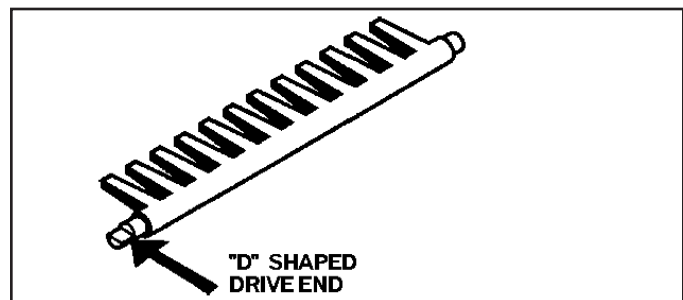
12.2 Mold Heater

The mold heater uses 165 watts to thaw the ice free from the mold. It is wired in series with the thermostat which also acts as a safety device. With power to the appliance off, check for resistance between the two leads to the heater element. You should obtain a reading of approximately 80 ohms +/- 10%. If the heater is found to be defective, the manufacturer recommends replacement of the entire ice making unit for proper operation.



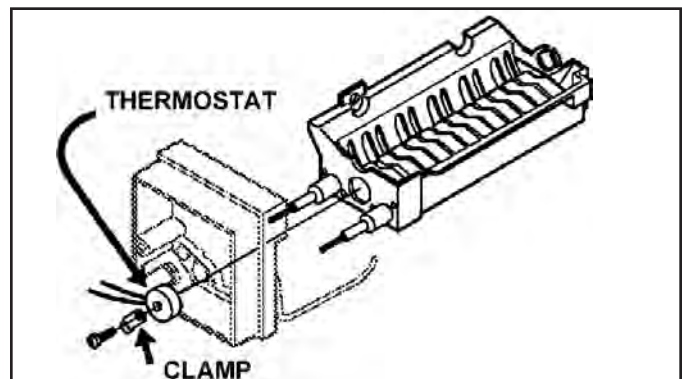
12.3 Ice Ejector

The ice ejector blades sweep the ice from the mold cavities during the ejection cycle. The drive end of the ejector is "D" shaped for positive coupling. The bearings at both ends are lubricated with silicone grease. If the ejector blades are frozen into the ice, defrost the ice maker and manually cycle the ice making unit, making sure the ejector stops at the right location.



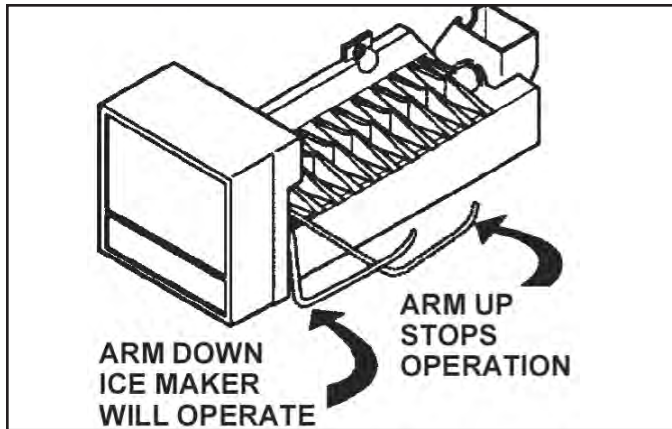
12.4 Mold Thermostat

This is a single-pole, single-throw, bimetal switch. It starts an ejection cycle by closing at $15^{\circ}\text{F} \pm 5^{\circ}$. The reset temperature is $50^{\circ}\text{F} \pm 5^{\circ}$. The thermostat is in series with the mold heater and acts as a safety against overheating in case of a mechanical failure. If the thermostat is defective, replace it. The mold thermostat starts the ice ejection cycle. The freezer must be down to proper temperature for the mold thermostat to start the cycle. The cycle can be started by turning the large gear clockwise $1/8$ to $1/4$ of a turn.



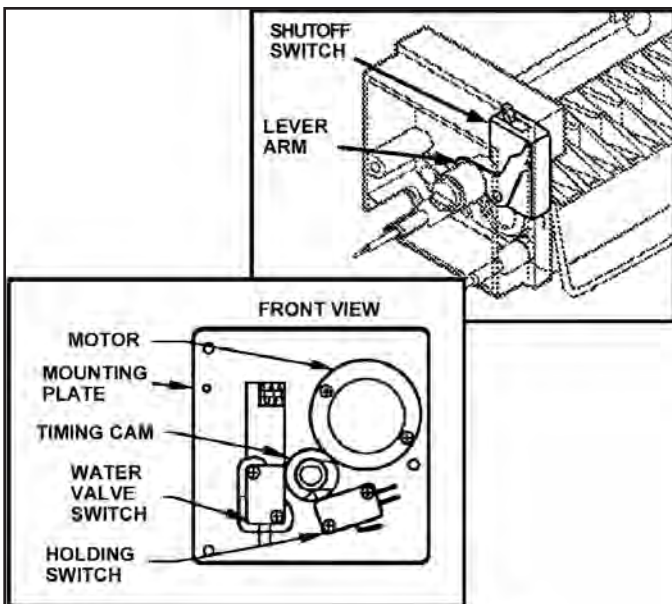
12.5 Shut Off Arm

The shutoff arm is cam driven. It operates a switch to control the quantity of ice produced. During the ejection cycle the arm is raised and lowered during each of the two revolutions of the timing cam. If the shutoff arm comes to rest on top of the ice in the storage bin during either revolution, the switch will remain open and stop the ice maker at the end of that revolution. The arm has a manual shutoff built into the linkage; by raising the arm as high as possible, it will lock in that position until forced down. If the arm and switch do not operate properly, check for damage and repair or replace parts as necessary.



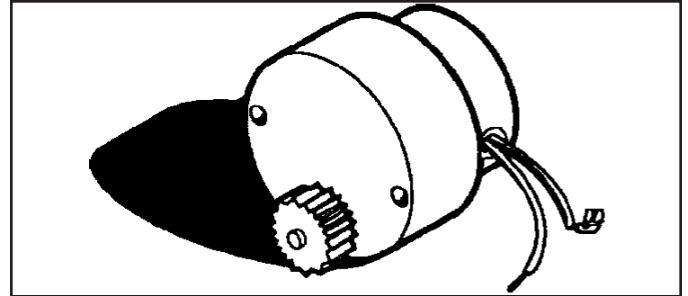
12.6 Mold Switches

The three switches are single-pole, double-throw style. They are identical and interchangeable. The holding switch assures completion of a revolution once a cycle has started. The water valve switch opens the water valve during the fill stage of the cycle. NOTE: This is the only adjustable component of the ice maker. If you use a double throw switch, DO NOT use the N.O. terminal. The shutoff switch stops the ice maker's operation when the storage bin is full.



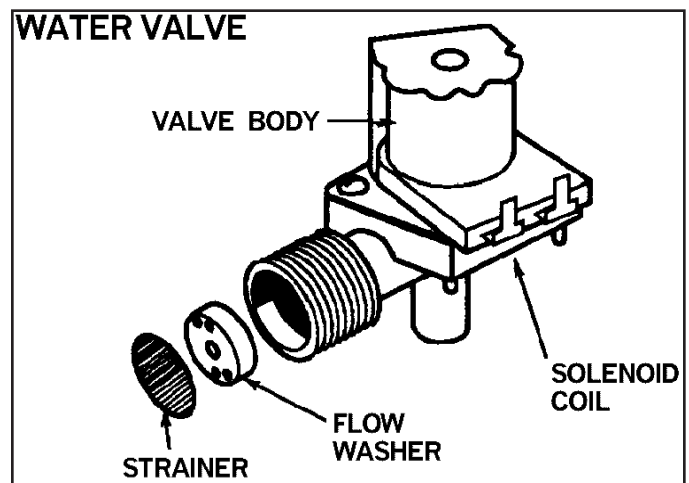
12.7 Timing Motor

This is a low-wattage, stall-type motor which is geared to the timing cam and ice ejector. It is a one RPM motor. To check the motor, disconnect power to the appliance and test for continuity between the two leads. If you DO NOT have continuity, replace the motor. If you have continuity and the motor runs, DO NOT replace.



12.8 Water Valve

This valve is solenoid operated. When it is open, it releases water from the source to the mold. The amount of water is proportional to the length of time the water valve switch is held closed by its timing cam. Disconnect power to the appliance, remove the wires to the water valve solenoid coil, and check for continuity between the two terminals. The ohms should be between 200 to 500. If you have continuity, the solenoid is good. It takes 10-15 watts to energize the solenoid coil. The mold heater and coil are in series. When the mold heater is activated, this causes the voltage to drop to about 105 VAC at the coil. The valve has a flow washer inside which acts as a pressure regulator. A strainer is installed to prevent dirt, rust, etc, from entering the valve. Check for any debris which might obstruct the flow of water, or prevent the valve from closing completely when the circuit is not energized. Remove any obstructions. If the valve still fails to operate properly, replace it. If the valve has been cracked from freezing this would not be a warranty item.



12.9 Ice Maker Replacement

⚠ WARNING

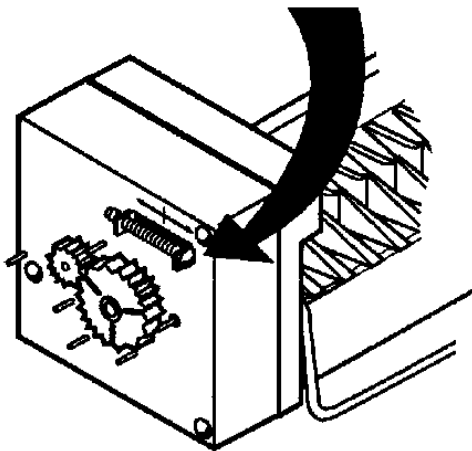
This is an energized circuit. Shock can occur if not tested properly. Testing is to be done by a qualified service technician.

It may be necessary to replace the entire ice maker assembly. Disconnect power to the appliance. Disconnect the 4 pin connector from the ice maker unit. Check each wire for continuity to make sure the wiring is good before replacing the ice maker unit. If there is no continuity on any of these wires, replace or repair them as necessary and recheck the ice maker unit to determine whether the problem was in the wiring or the unit itself. Remove the three screws holding the unit to the plate. Before replacing the ice maker check the temperature in the freezer. For the unit to cycle it should be 12 degrees or cooler as the mold thermostat starts the cycle.

12.10 Water Fill Adjustment

The correct water level in the mold is important for the proper production of ice. The size of the ice cubes depends on the amount of water which enters the mold. The cubes should be approximately 1/2" wide, 3/4" high and 2-1/2" long. If the water overflows in the mold, first check to see if the ice maker unit is level in the appliance. Next ensure that the appliance is installed level in the RV. If there is still water overflow, adjustment of the water fill screw is necessary. Locate the screw on the ice maker assembly. Turn the screw as necessary toward the "+" or "-" side. One full turn of the screw will make an 18 cc change in the amount of water. DO NOT turn the screw more than one full turn at a time. If the water level is too high, it can also cause the ejector blades to become frozen in the ice. Follow the procedures above to correct the problem.

WATER FILL ADJUSTING SCREW 1 FULL TURN = 18 cc's CHANGE



12.11 Water Supply

To operate properly, the water pressure in the water supply line must be between 15 and 50 PSI. Lower water pressure, water turned off, or obstructions or air in the water line can cause low or no ice production. First check to see that the water supply is fully turned on. Visually check the line for kinks, etc. which might obstruct the flow of water. To remove trapped air, loosen the connection at the water solenoid valve of the appliance. Ensure that pressurized water is reaching this point, and bleed off any air in the line. Retighten the connection, making sure there are no leaks.

12.12 Wiring

⚠ WARNING

This is an energized circuit. Shock can occur if not tested properly. Testing is to be done by a qualified service technician.

Refer to the wiring diagram supplied with the unit you are working on, and make sure all wiring connections are correct and tight. There are 4 wires coming from the ice maker.

BLACK: Connected to incoming hot from AC power source. This could be split wire at the AC BLACK at the circuit board or on a separate power cord.

WHITE: Connected to either side of the water valve and will split at the valve and hook-up to the incoming **WHITE** from the power source or separate cord.

GREEN: Connected to chassis ground.

BROWN: Connected to either side of water valve.

Ice and Water in Door.

Refer to the wiring diagram supplied with the unit you are working on, and make sure all wiring connections are correct and tight. There are 4 wires coming from the ice maker.

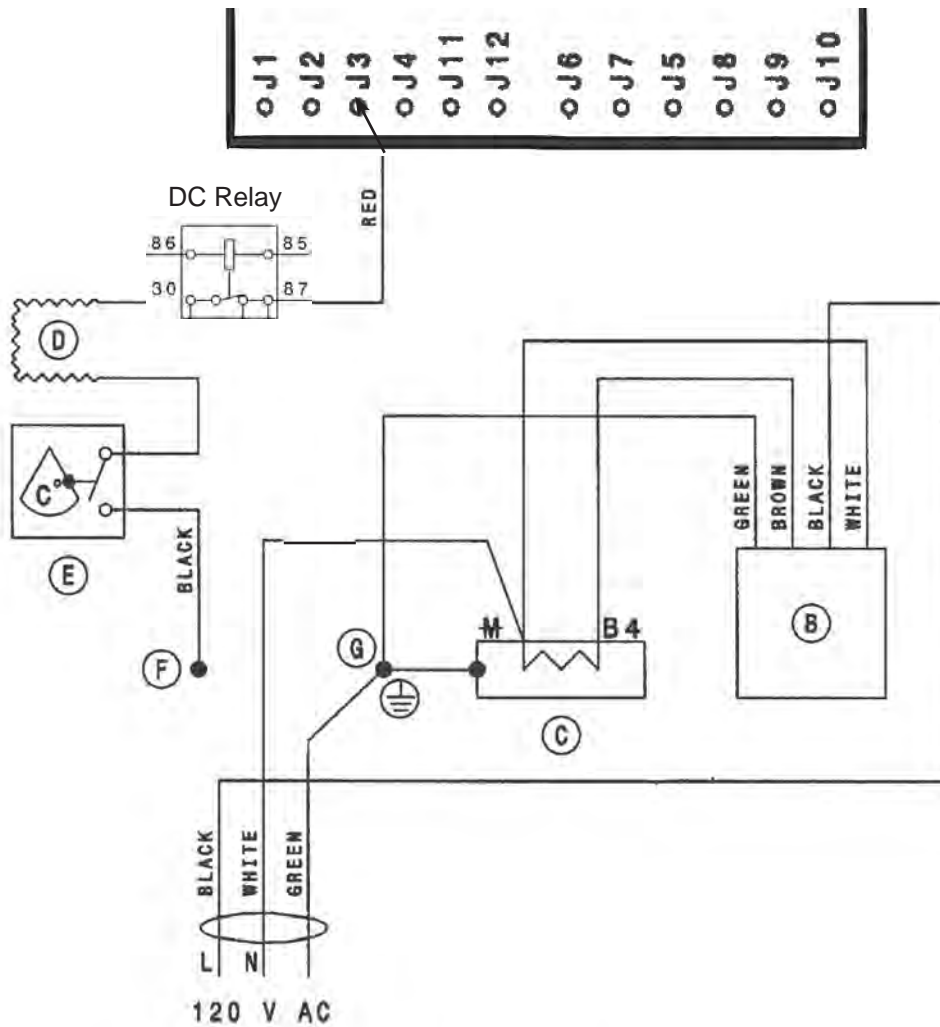
BLACK: Connected to J2 on water & ice control module.

WHITE: Connected to one side of the water valve and J5 on water & ice control module.

GREEN: Connected to chassis ground.

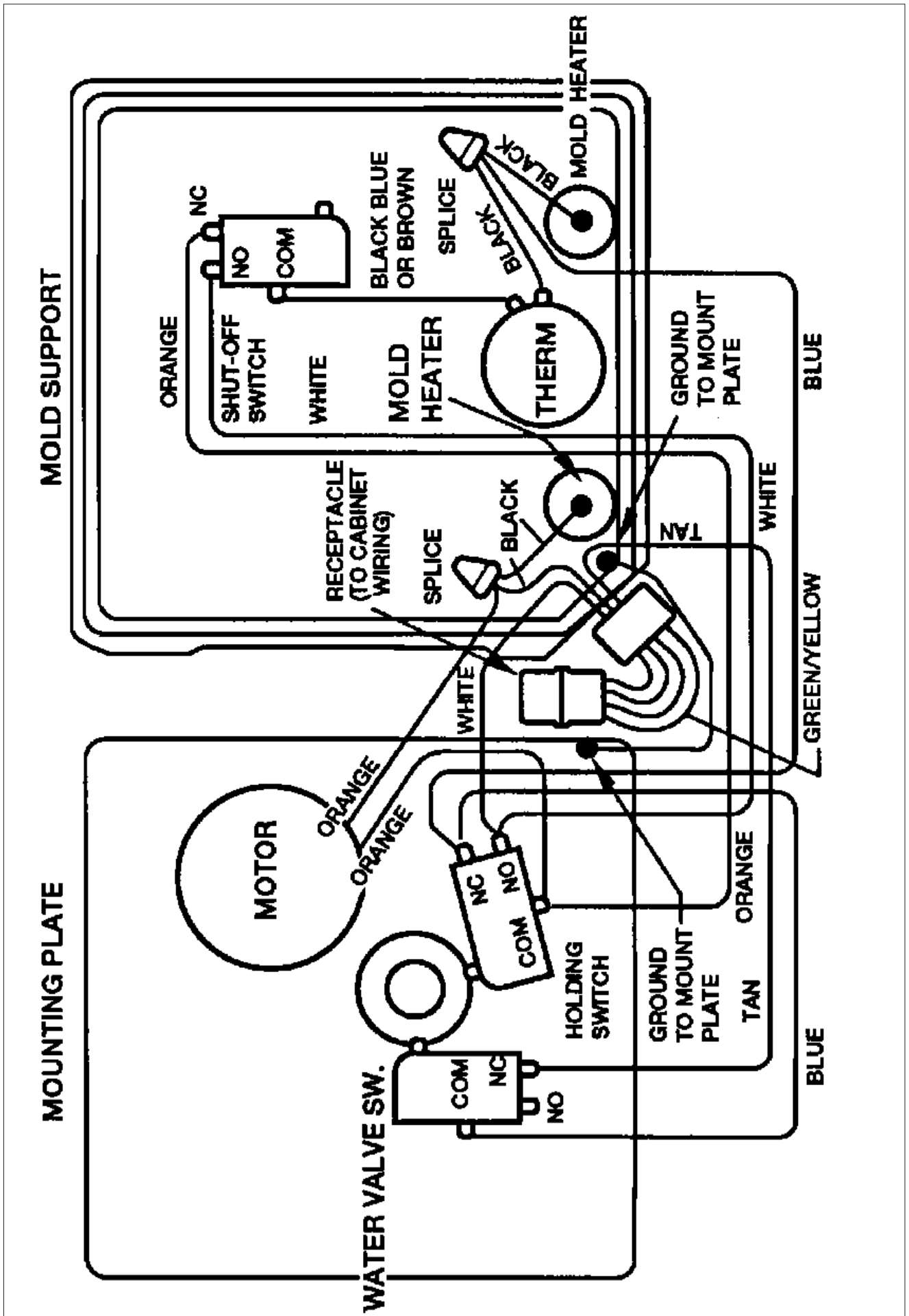
BROWN: Connected to either side of water valve.

- (A) — CIRCUIT BOARD POWER
- (B) — ICEMAKER
- (C) — WATER VALVE
- (D) — HEATING CABLE
- (E) — THERMOSTAT
- (F) — CHASSIS GROUND
- (G) — PROTECTIVE EARTH

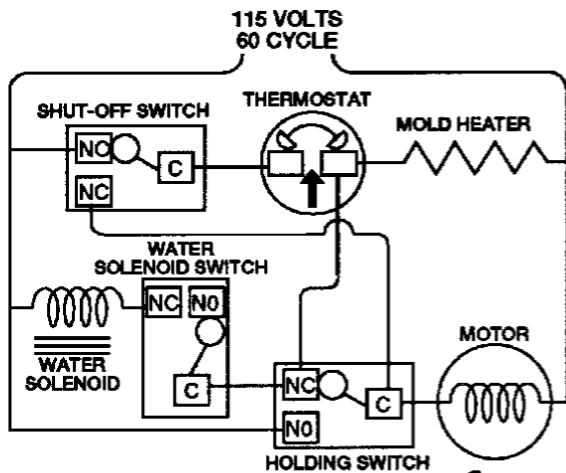
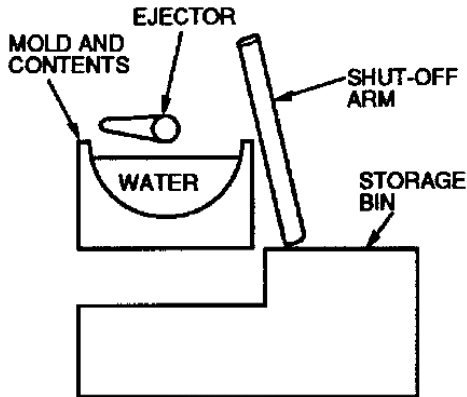


IN OPERATION THE ICE-MAKER
WILL ADD 1.4 AMPS TO THE
TOTAL REFRIGERATOR DRAW

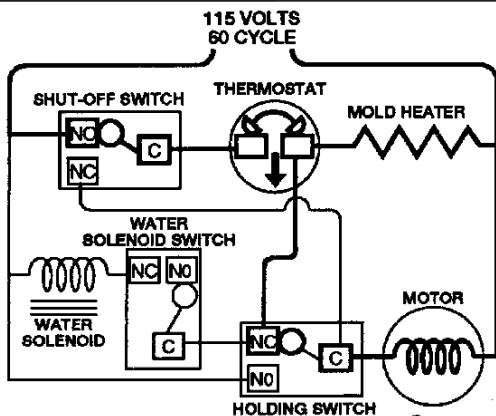
ICE MAKER TYPICAL WIRING DIAGRAM



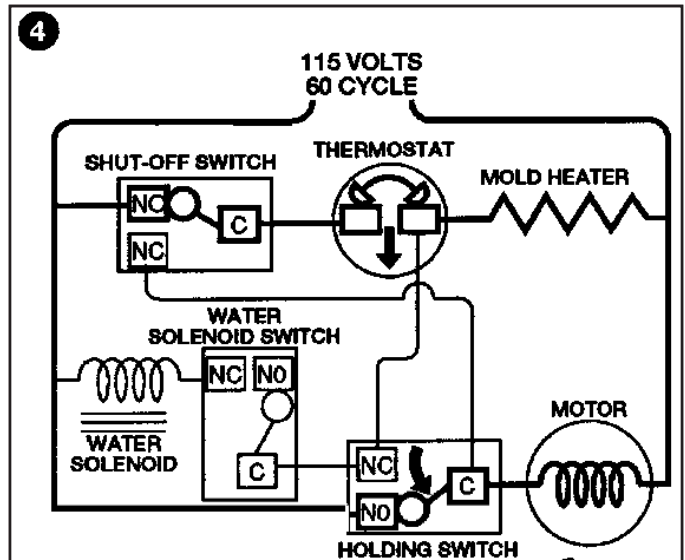
NOTE THE RELATIVE POSITION OF THESE COMPONENTS IN THE FOLLOWING SCHEMATICS



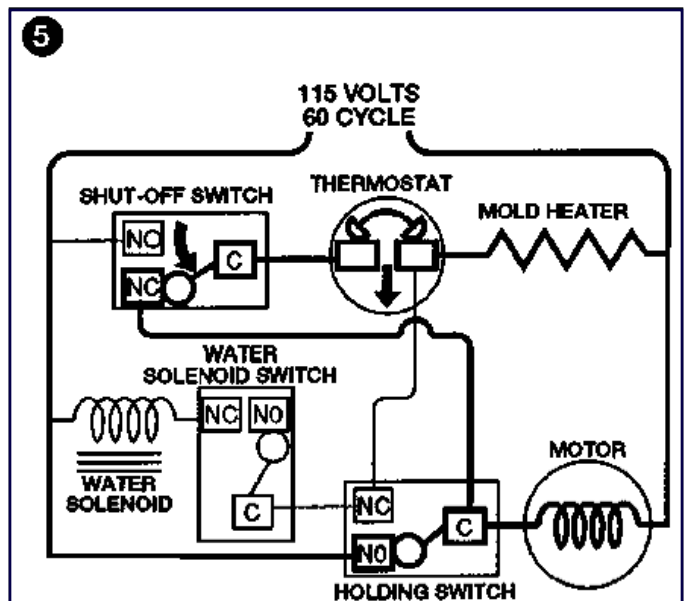
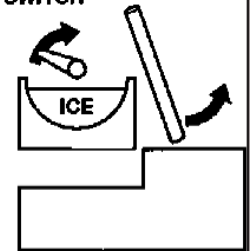
This is a freeze cycle. The mold is filled with water. The thermostat is open. All components are de-energized.



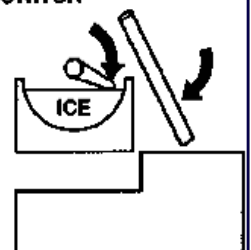
This is the start of an ejection cycle. The thermostat switches to its closed position after being sufficiently cooled by the ice in the mold. The mold heater and motor are now energized. The ejector blades begin to turn.



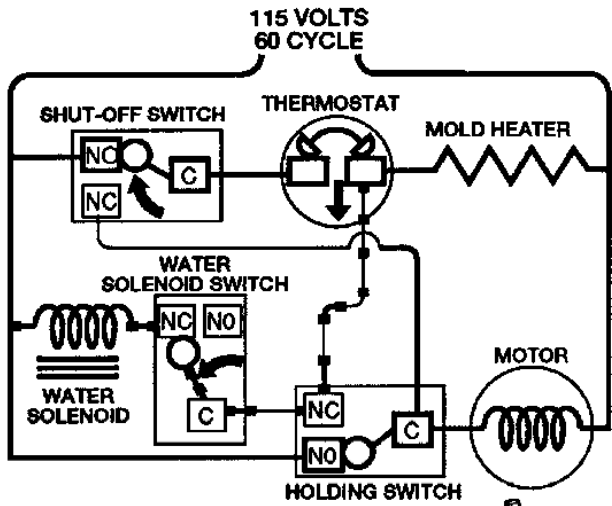
After a few degrees of motor rotation, the timing cam switches the holding switch to its normally open position; this assures completion of the cycle. The mold heater remains energized through the thermostat circuit. During the first half of the cycle, the shut-off arm is raised and lowered by the timing cam and operates the shut-off switch.



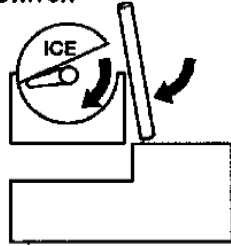
When the ejector blades reach the ice in the mold, the motor will stall. It will remain in this position until the ice has thawed loose. During this time the mold heater remains energized.



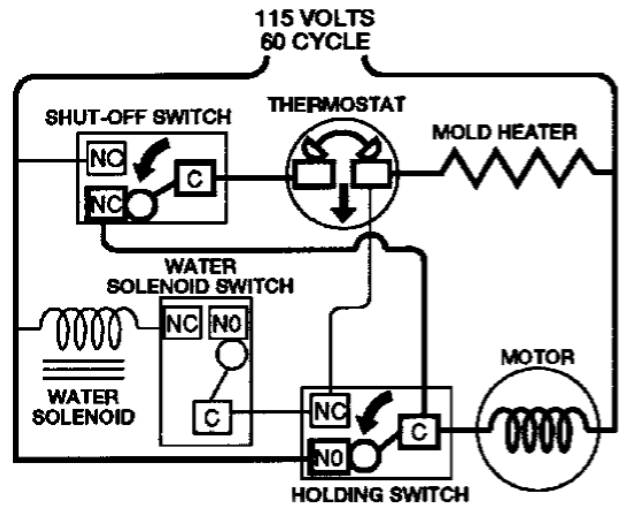
6



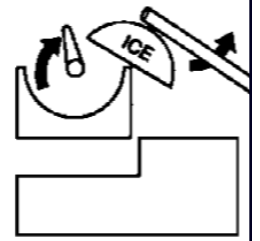
Near the completion of the first revolution, the timing cam closes the water valve switch. However since the thermostat is still closed the mold heater circuit is energized. Current will not pass through the water valve solenoid and its switch. (Electrical current follows the path of least resistance.)



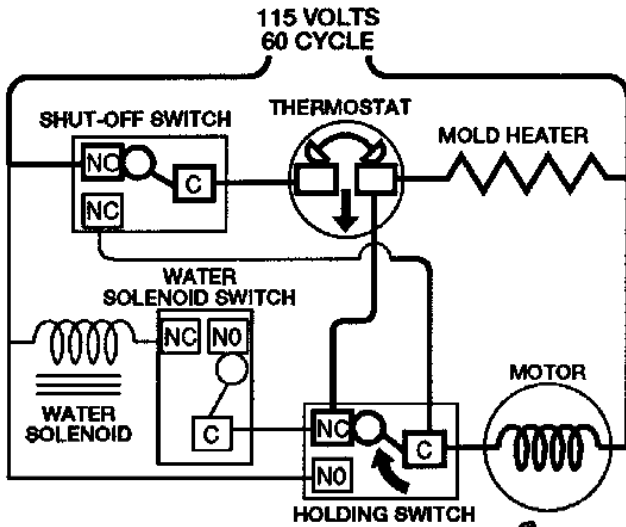
8



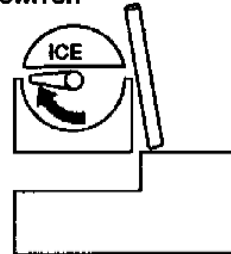
Once again after a few degrees of rotation the timing cam closes the holding switch providing a circuit to the motor that will assure completion of this revolution. The mold heater remains energized. The shut-off arm will raise and lower again operating its switch. The ice that was ejected during the first revolution is dumped into the storage bin.



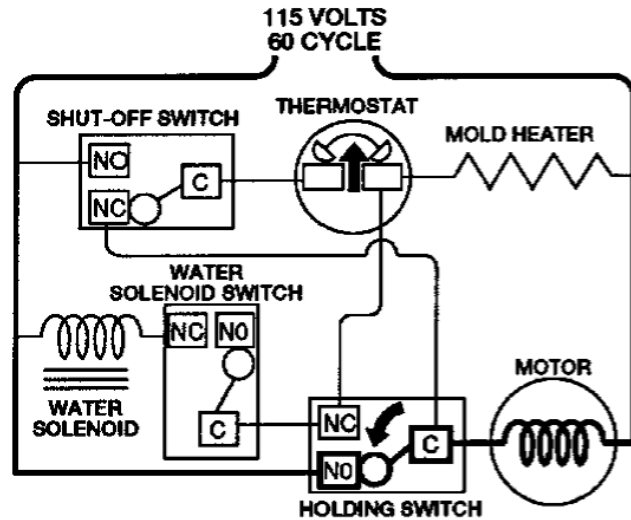
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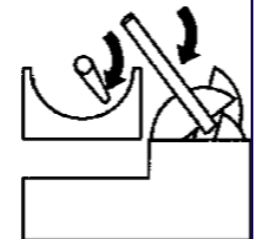
At the end of the first revolution the timing cam opens the holding switch. However, since the thermostat is still closed a second revolution begins.



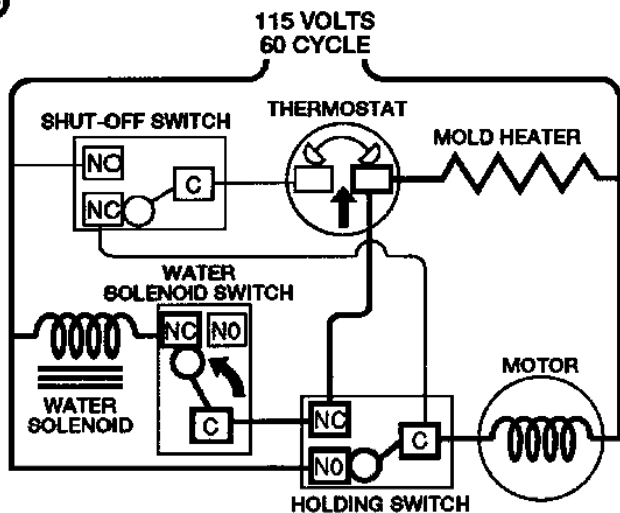
9



Sometime during the second revolution the mold heater resets the thermostat. At this time, the mold heater is de-energized. If the storage bin is full, the shut-off arm will remain in a raised position.



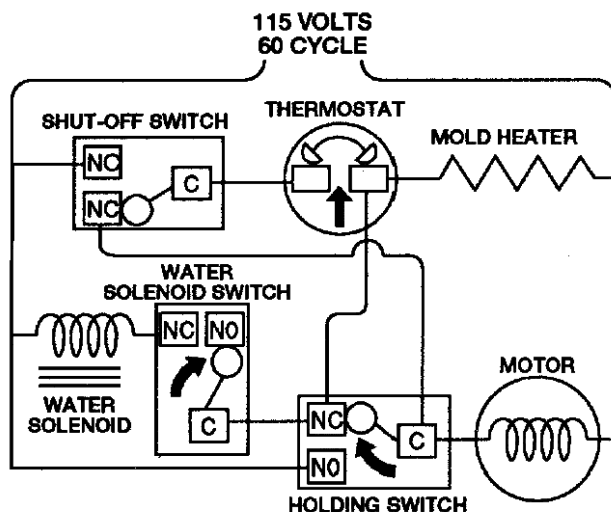
10



Near the completion of the second revolution the timing cam again closes the water valve switch. This time a circuit is completed through the water valve solenoid, its switch and mold heater. The water valve solenoid received about 105 volts. The remaining 10 volts to the mold heater are not noticeable. When the water valve solenoid is energized, the valve opens and water refills the mold.



11



The ejection cycle ends the moment that the holding switch is closed by the timing cam. The water valve switch is also opened. If the storage bin is full, as shown here, additional cycles will not start until sufficient ice is used to lower the shut-off arm, thus operating its switch.

