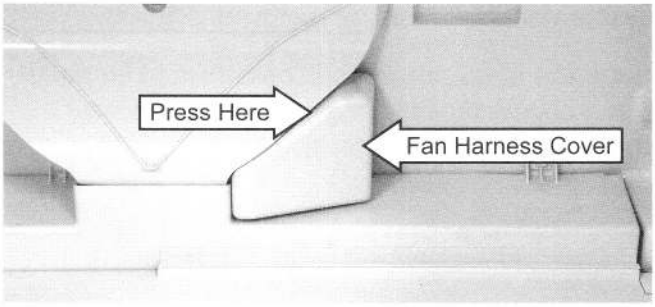
Fresh Food Evaporator Cover

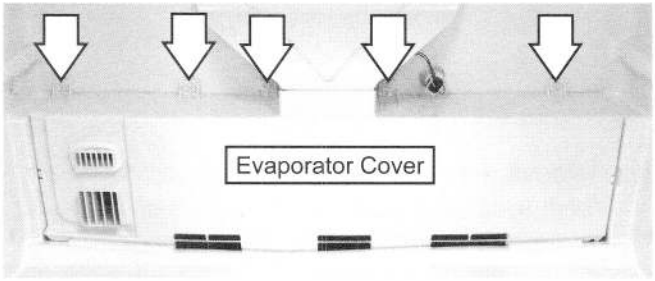
The fresh food evaporator cover is held to the back wall of the refrigerator with five 1/4-in. hex-head screws.

To remove the fresh food evaporator cover:

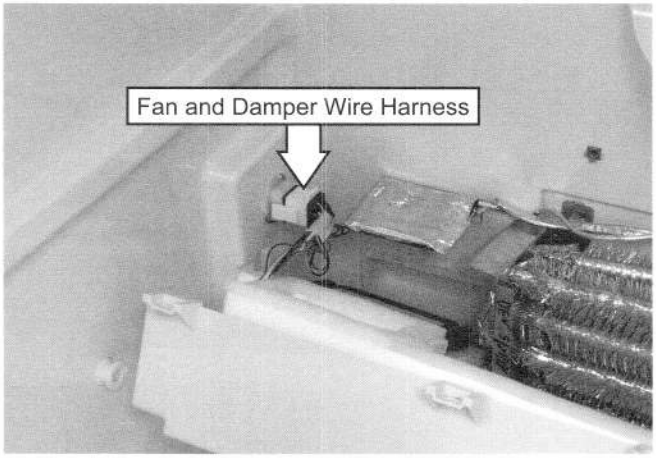
1. Remove the 2 fruit and vegetable drawers, climate control shelf, and deli pan that are in front of the evaporator cover.
2. Remove the deli pan covers and deli pan slides. (See ***Deli Pan Assembly***.)
3. Press down and remove the fan harness cover.



4. Remove the five 1/4-in. hex-head screws from the top of the evaporator cover.



5. Tilt the top of the evaporator cover out and disconnect the deli pan fan and damper wire harness. Remove the cover.



Fresh Food Defrost Heater

The defrost heater is a single-tube, glass-enclosed radiant heater. It is held in place by 2 tabs on the evaporator (1 on each side) and by a ceramic and wire support.

The defrost heater has an approximate resistance value of 31 Ω.

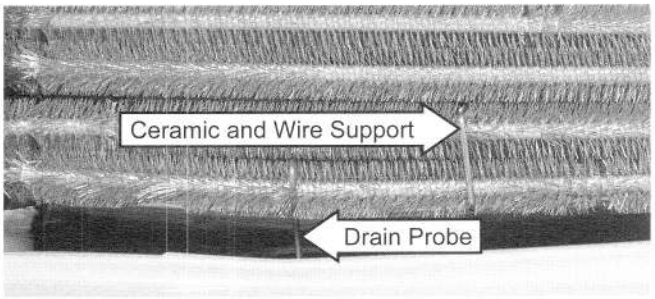
To remove the defrost heater:

1. Remove the fresh food evaporator cover. (See ***Fresh Food Evaporator Cover***.)

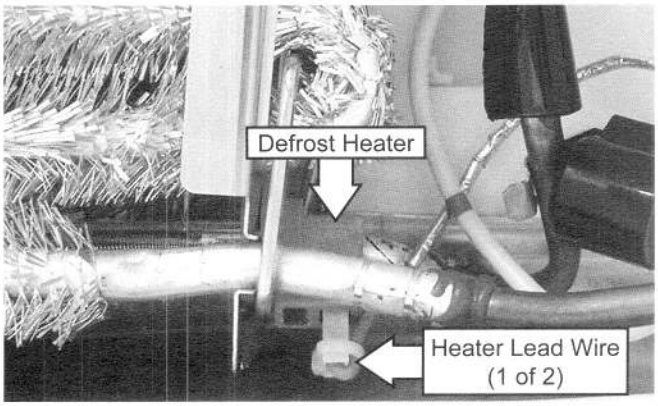
Note

- During defrost, the drain probe assists in preventing the drain from icing closed. During assembly, the probe must be installed on the evaporator and inserted in the drain to prevent drain freeze-up.
- A ceramic and wire support prevents the heater from sagging and touching the metal drain trough if the glass is broken.

2. Remove the ceramic and wire support, and the drain probe from the evaporator.



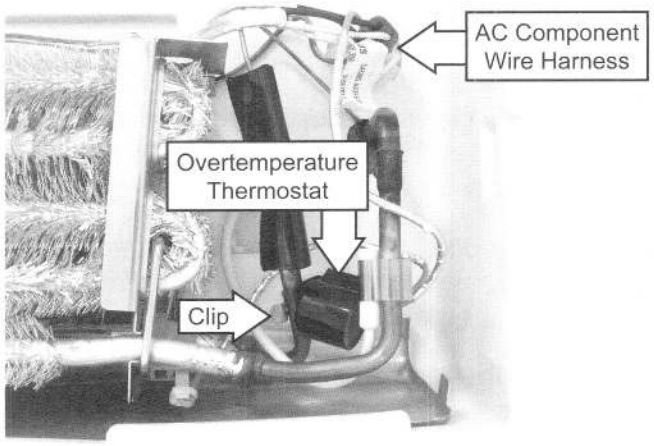
3. Bend the aluminum tabs back (located at each end of the defrost heater) and lower the heater out of the evaporator.
4. Disconnect 2 lead wires and remove the heater.



Fresh Food Overtemperature Thermostat

The fresh food overtemperature thermostat will open its contacts and de-energize the heater whenever the evaporator temperature reaches approximately 140°F. The thermostat contacts will close at approximately 110°F.

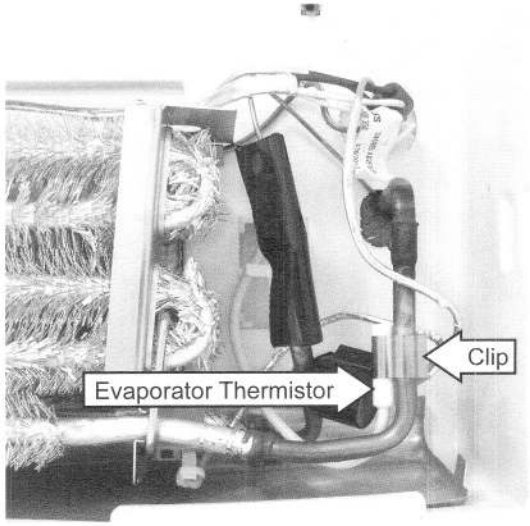
The fresh food overtemperature thermostat is attached to the evaporator inlet tube with a metal clip and is connected to the AC component wire harness.



Fresh Food Evaporator Thermistor

To access the fresh food evaporator thermistor the fresh food evaporator cover must be removed. (See ***Fresh Food Evaporator Cover***.)

The fresh food evaporator thermistor is attached to the evaporator inlet tube with a metal clip.



Fresh Food Fan

The fresh food fan is inserted in a recess in the bottom of the fresh food air duct.

The fresh food fan will operate at 3 speeds with RPM feedback to the control. Approximate fan speeds are:

Low Speed = 2700 RPM*

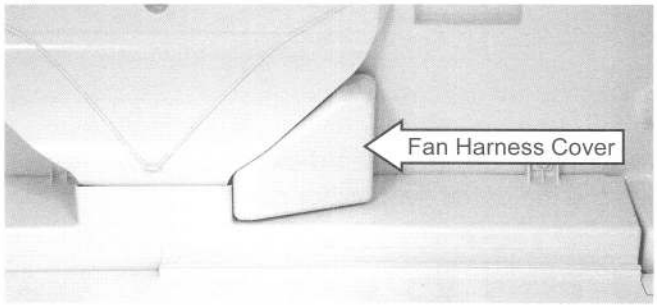
Medium Speed = 3000 RPM*

High Speed = 3300 RPM*

*A fan-speed range of 1500 to 4100 RPM is acceptable.

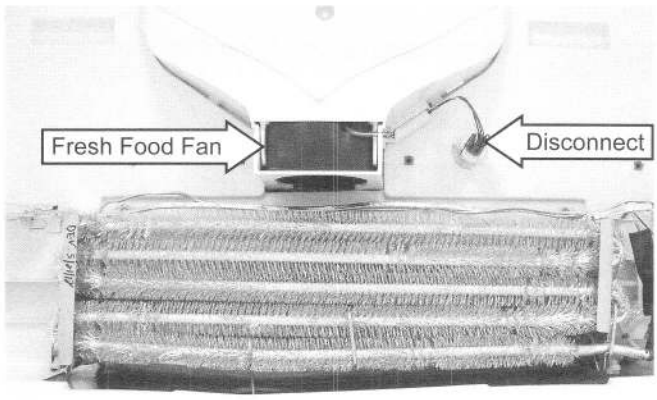
To replace the fresh food fan, the fresh food evaporator cover must be removed.

Note: The fan connector can be accessed for multi-meter checks by removing only the fan harness cover from the evaporator cover.



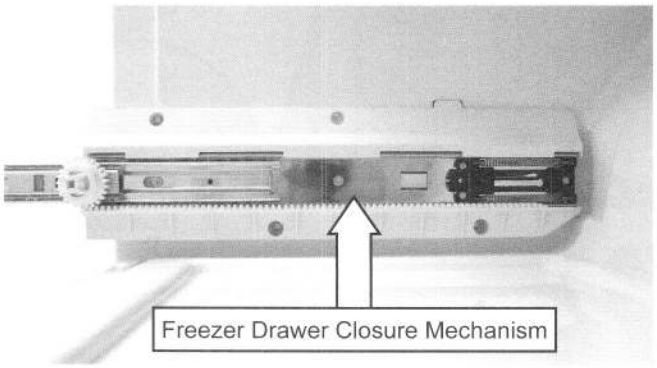
To remove the fresh food fan:

1. Remove the fresh food evaporator cover. (See ***Fresh Food Evaporator Cover***, follow steps 1 thru 5.)
2. Disconnect the fresh food fan wire harness.
3. Pull the fresh food fan out from the air duct.



Freezer Drawer Slide Assemblies

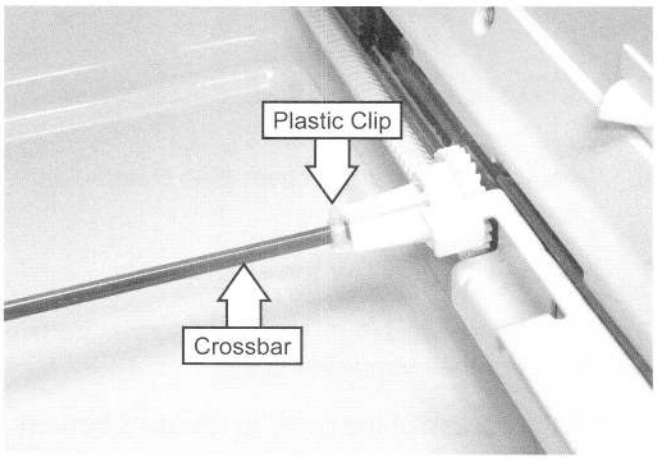
The freezer drawer utilizes 2 closure mechanisms that automatically pull the drawer shut when it is within 1 inch of the closed position. The mechanisms are built into the 2 freezer drawer slide assemblies and are not replaceable as a separate part.



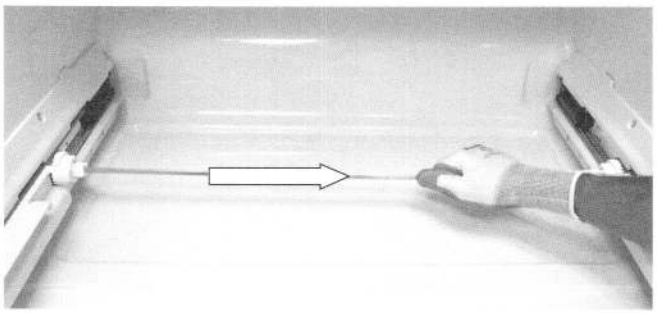
The freezer drawer is inserted into alignment slots (1 on each side) and attached to the slide assemblies with 6 bolts (3 on each side).

To remove the freezer drawer slide assemblies:

1. Remove the freezer drawer front. (See ***Freezer Drawer Front***.)
2. Remove the plastic clip from the crossbar.

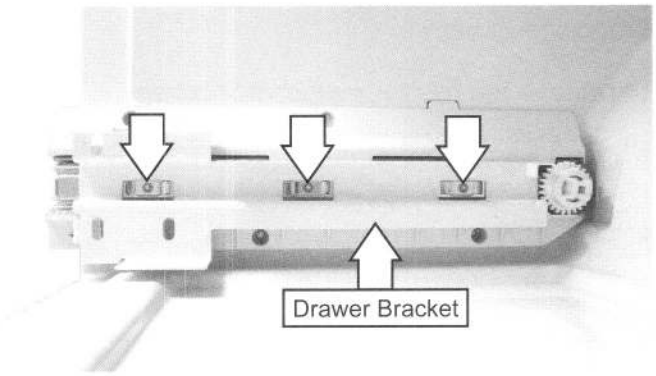


3. Pull the crossbar to the right then remove it from the right-side drawer gear.

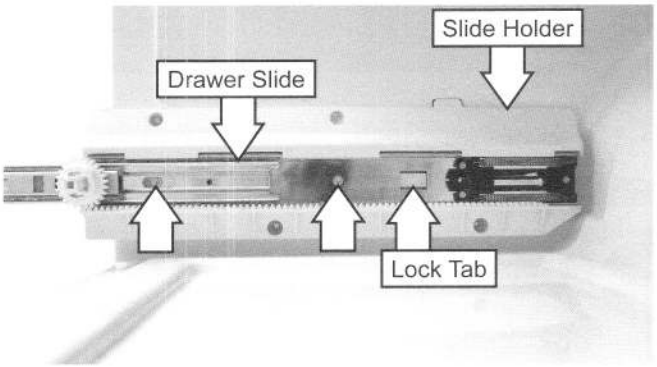


Note: The procedure to remove both drawer slide assemblies is similar.

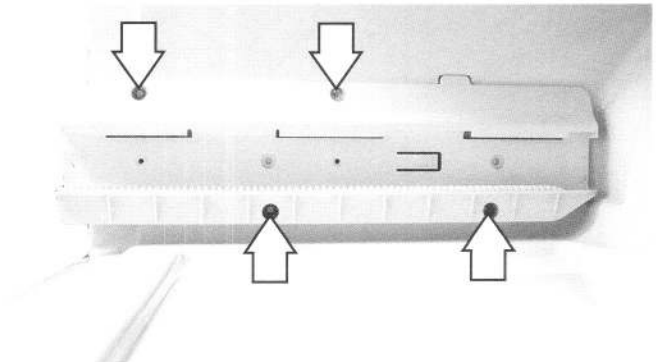
4. Remove the three T-20 Torx screws from the drawer bracket.



5. Lift the drawer bracket from the slide assembly.
6. Pull the drawer slide out to the stop position.
7. Remove the two T-20 Torx screws from the drawer slide.
8. Press in the lock tab and pull the drawer slide straight out from the slide holder.



9. Remove the 4 recessed 1/4-in. hex-head screws from the slide holder.
10. Pull the slide holder out from the freezer wall.

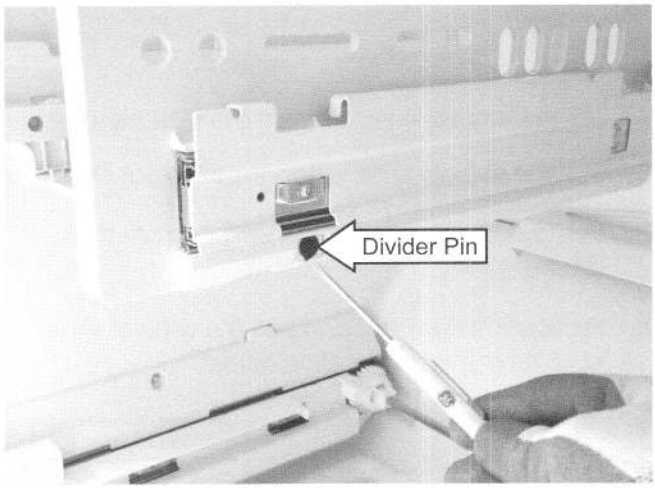


Freezer Evaporator Cover

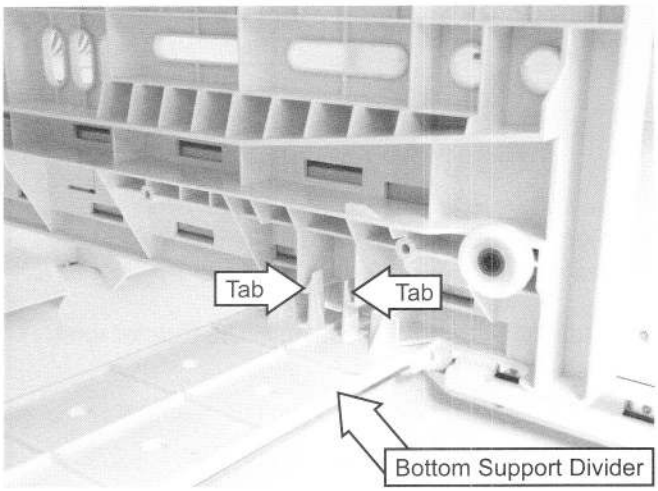
The freezer evaporator cover is held to the back wall of the freezer with two 1/4-in. hex-head screws. It is necessary to remove the freezer divider support and the freezer fan when removing the freezer evaporator cover.

To remove the freezer evaporator cover:

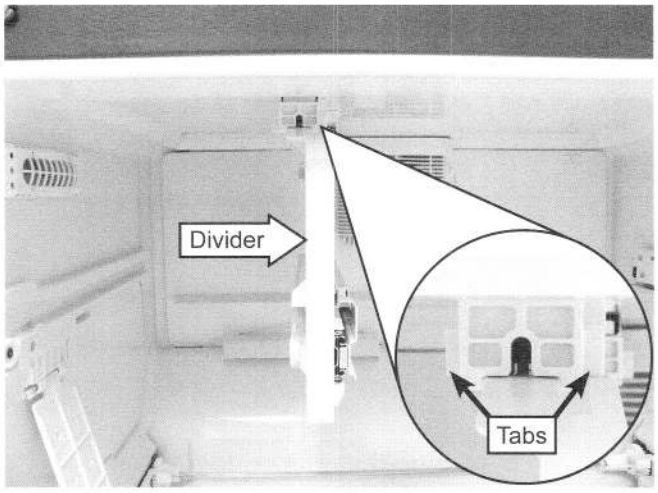
1. Remove the freezer drawer slide assemblies. (See ***Freezer Drawer Slide Assemblies***.)
2. Using a small flat blade screwdriver, pry out the bottom support divider pin.



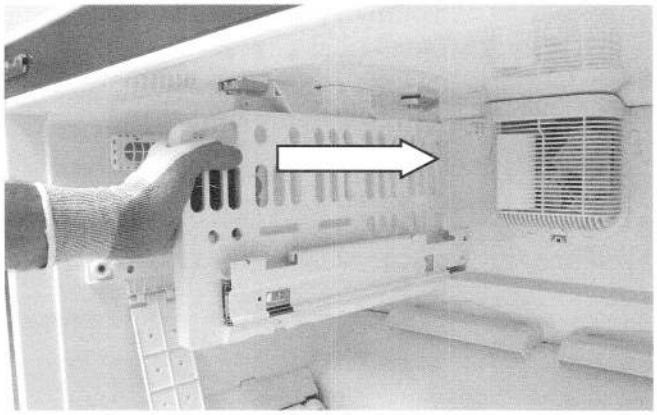
3. Squeeze inward both bottom support divider tabs and release support from divider.



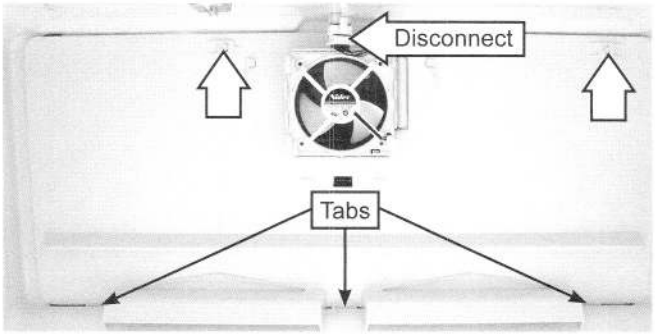
4. Expand both tabs and pull out the front and rear divider stoppers.



5. To release the divider from the ceiling, sharply push the divider toward the evaporator cover.



6. Remove the freezer fan cover. (See ***Freezer Fan***, follow steps 2 and 3.)
7. Disconnect the freezer fan wire harness.
8. Remove the two 1/4-in. hex-head screws from the top of the evaporator cover.
9. Lift the bottom of the cover to release 3 bottom tabs, then pull cover out from the back wall.



Freezer Fan

The freezer fan is attached to the evaporator cover and utilizes a fan cover to direct airflow.

The freezer fan will operate at 3 speeds with RPM feedback to the control. Approximate fan speeds are:

Low Speed = 2200 RPM

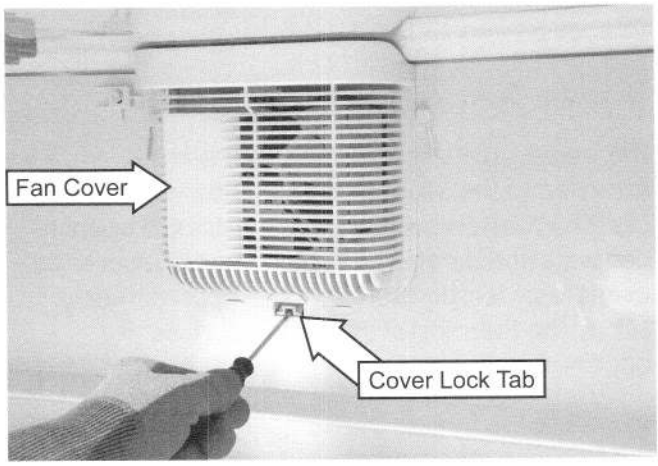
Medium Speed = 2400 RPM

High Speed = 2500 RPM

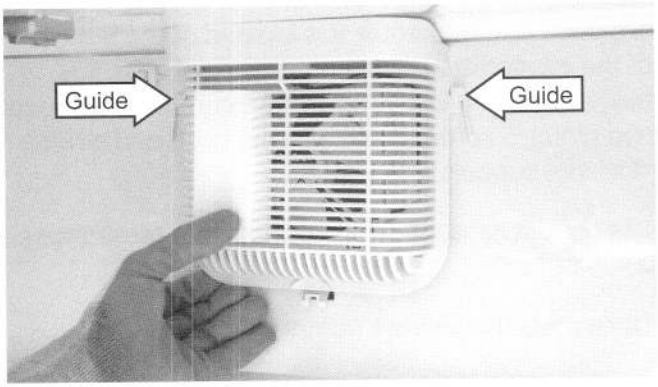
Note: The fan connector can be accessed for multimeter checks by removing only the fan cover.

To remove the freezer fan:

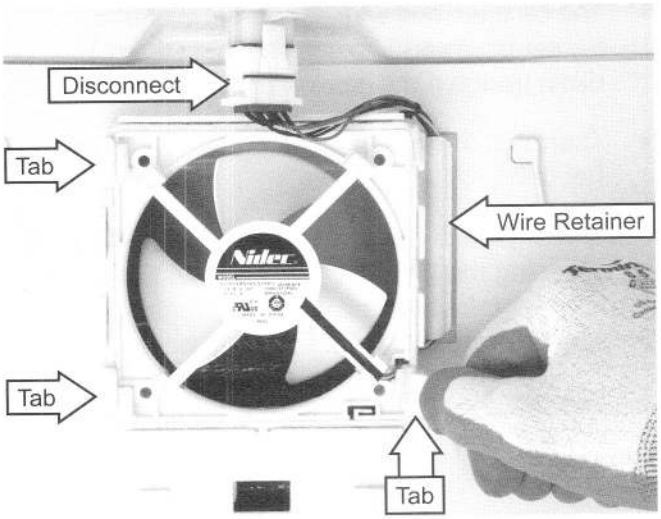
1. Remove the freezer drawer front. (See ***Freezer Drawer Front***.)
2. Using a flat blade screwdriver, pry up the fan cover lock tab.



3. Slide the fan cover down from the guides on the evaporator cover.



4. Disconnect the fan wire harness and remove the wires from the wire retainer.
5. Flex the bottom right tab, then release the right side of the fan from the evaporator cover.
6. Slide the fan to the right to disengage the 2 left-side tabs.



Freezer Defrost Heater

The defrost heater is a 420-watt, single-tube, glass-enclosed radiant heater. It is located at the bottom of the evaporator between the rows of coils. It is held in place by 2 tabs on the evaporator (1 on each end plate), a ceramic and wire support, and a right-side wire support.

The defrost heater has an approximate resistance value of 32 Ω.

To remove the defrost heater:

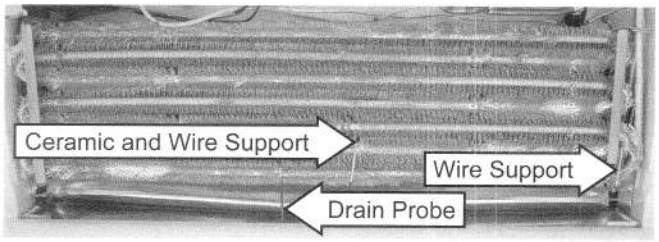
1. Remove the freezer evaporator cover. (See ***Freezer Evaporator Cover***.)

Note

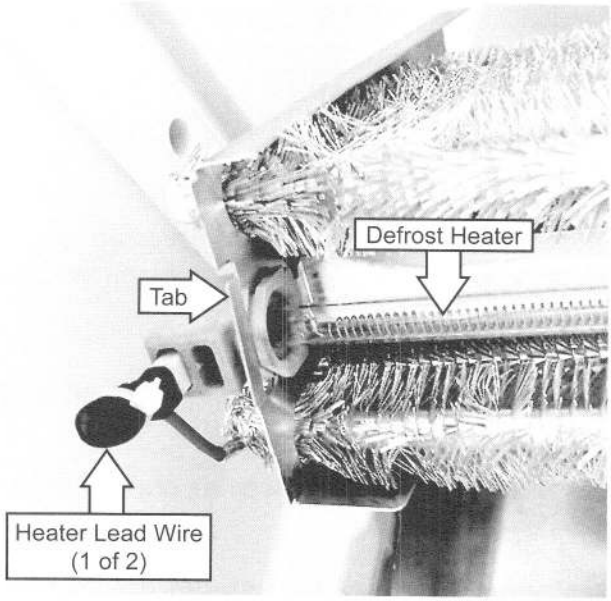
- During defrost, the drain probe assists in preventing the drain from icing closed. During assembly, the probe must be installed on the evaporator and inserted in the drain to prevent drain freeze-up.
- The ceramic and wire support prevents the heater from sagging and touching the metal drain trough if the glass is broken.
- There is a drip shield located just above the heater.

Note: The following procedures can be made easier by loosening the 2 Phillips-head screws (1 on each top corner of the evaporator) and tilting the bottom of the evaporator out from the drain trough.

2. Remove the ceramic and wire support, right-side wire support, and the drain probe from the evaporator.



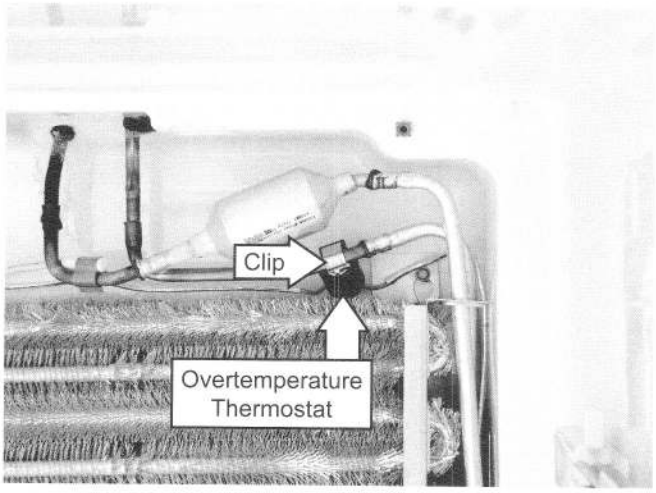
3. Bend the aluminum tabs back (located at each end of the defrost heater) and lower the heater from the evaporator.
4. Disconnect 2 lead wires and remove the heater.



Freezer Overtemperature Thermostat

The freezer overtemperature thermostat is attached to the evaporator inlet tube with a metal clip. The overtemperature thermostat will open its contacts and de-energize the heater whenever the evaporator temperature reaches approximately 140°F. The thermostat contacts will close at approximately 110°F.

To access the freezer overtemperature thermostat the freezer evaporator cover must be removed. (See ***Freezer Evaporator Cover***.)



Freezer Evaporator Thermistor

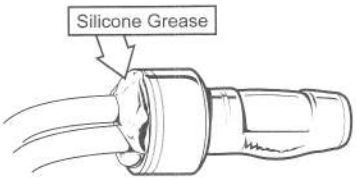
The freezer evaporator thermistor is attached to the suction line with a metal clip. The purpose of the thermistor is to monitor the evaporator temperature for defrost control.

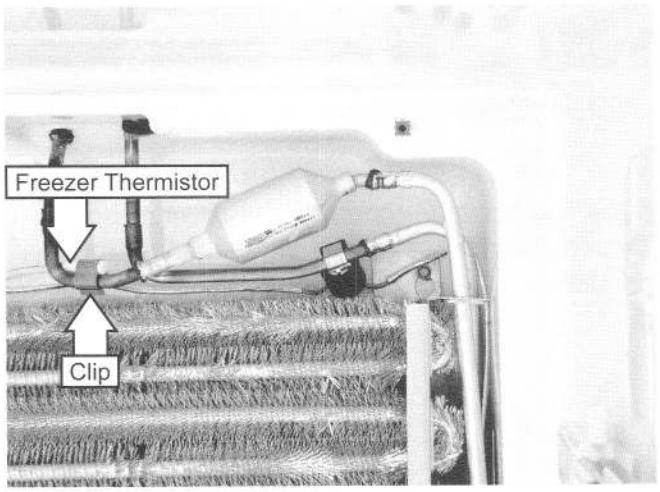
To access the freezer evaporator thermistor the freezer evaporator cover must be removed. (See ***Freezer Evaporator Cover***.)

Note: The ice box fan wire connector also contains the freezer evaporator thermistor connections. The freezer evaporator thermistor can be replaced separately (Part #WR55X10025).

When replacing the freezer thermistor:

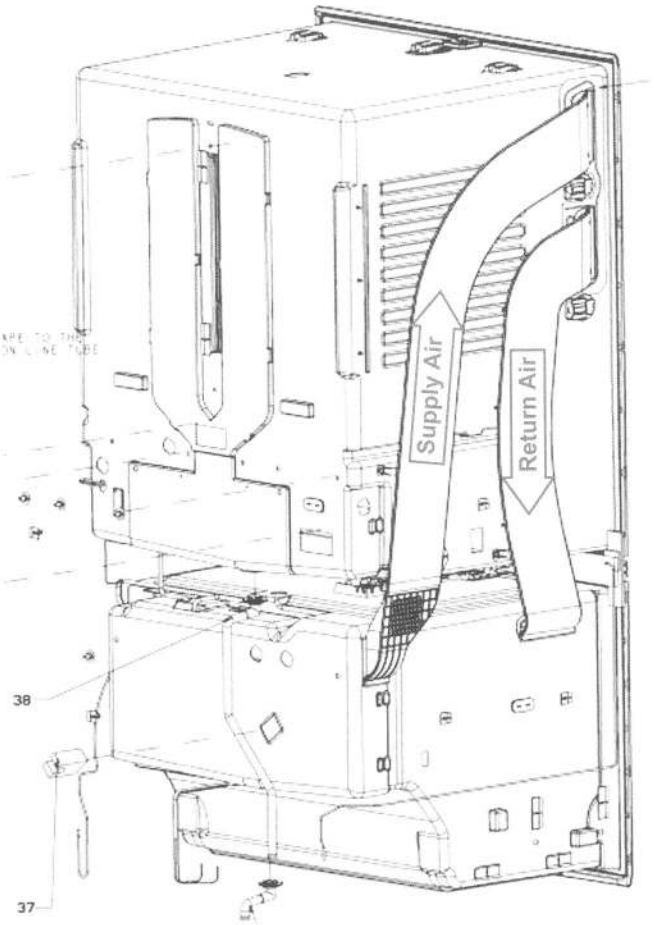
1. Place the replacement thermistor next to the original thermistor.
2. Cut the wiring at a location that will match the original length when the replacement thermistor is spliced to it.
3. Use plastic bell connectors (Part # WR01X10466). Fill each connector with silicone grease then splice a new thermistor into the harness as shown in the illustration.

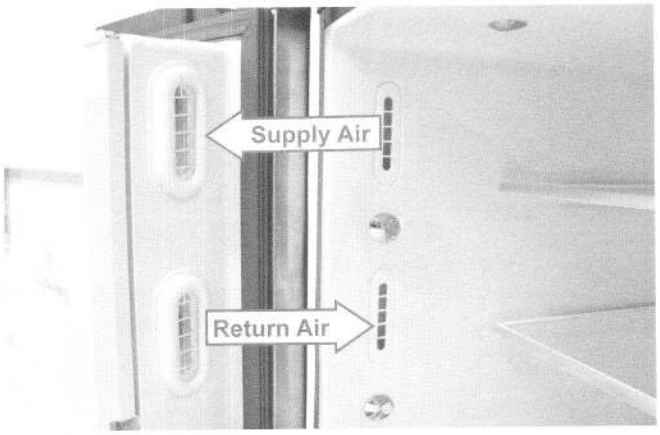




Ice Box Fan

The ice box fan is located at the top left rear of the freezer compartment above the evaporator. The ice box fan circulates air into the left fresh food door ice box via duct work foamed into the case.





The fan will operate at 3 speeds with RPM feedback to the control. Speeds selected depend on the ice box cooling temperature and are controlled by the main board. Approximate fan speeds are:

Low Speed = 1500 RPM
Medium Speed = 1800 RPM
High Speed = 1800 RPM

(*Continued next page*)

To remove the ice box fan:

1. Remove the freezer evaporator cover. (See ***Freezer Evaporator Cover***.)

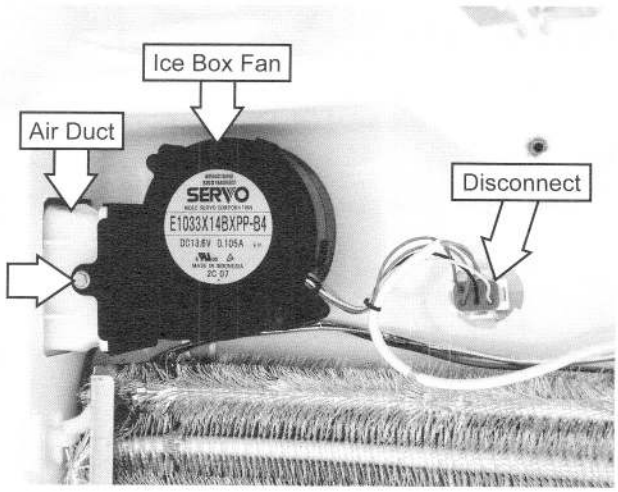
2. Disconnect the ice box fan wire harness.

Note: The ice box fan wire connector also contains the freezer evaporator thermistor connections.

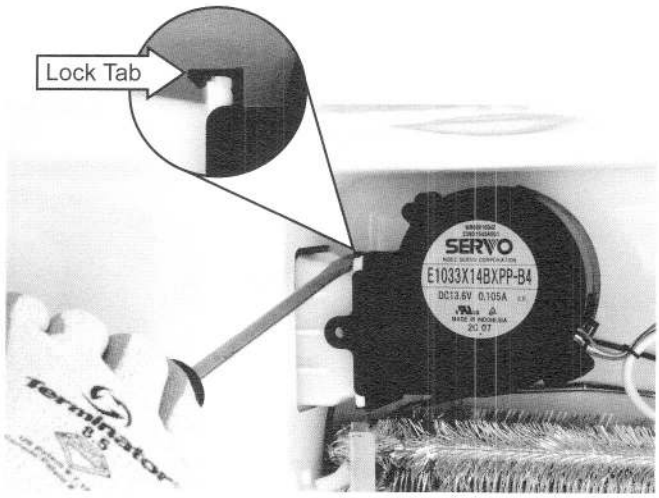
3. Remove the evaporator thermistor from the thermistor clip attached to the evaporator.

Note: In the following steps, the ice box fan is attached to the air duct with a screw and 4 lock tabs.

4. Remove the 1/4-in. hex-head screw from the ice box fan.



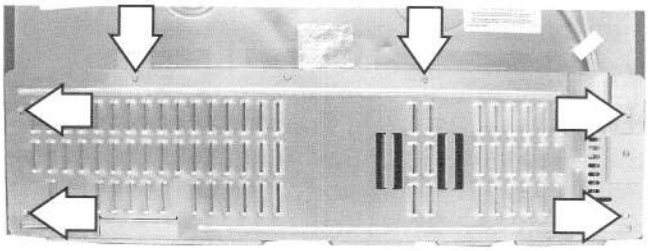
5. Using a flat blade screwdriver, pry the top 2 lock tabs up, lower the fan, and release the bottom 2 lock tabs from the air duct.



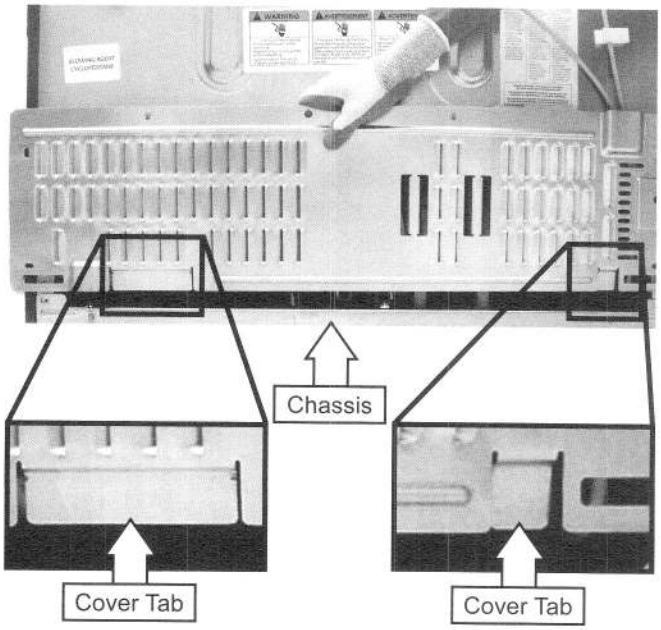
Caution: To prevent damage, make sure the freezer evaporator thermistor is installed under the thermistor clip attached to the evaporator.

Machine Compartment Cover

The machine compartment cover is held to the rear of the refrigerator with six 1/4-in. hex-head screws. After removing the screws, the cover can then be lifted from the 2 bottom tabs.



Note: When installing the machine compartment cover, be sure to place the 2 cover tabs behind chassis before installing screws.



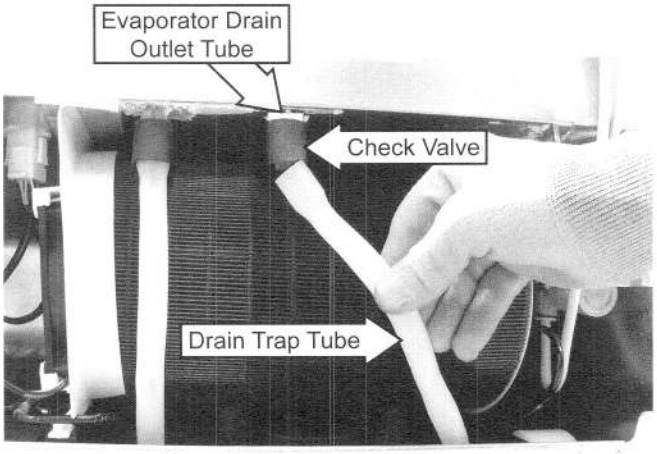
Note: The machine compartment cover must be properly installed to ensure air passes thru the condenser.

Freezer and Fresh Food Drain Trap Tubes

The freezer and fresh food drain trap tubes are identical. As viewed from the back, the freezer drain trap tube is closest to the condenser fan. The fresh food drain trap tube is located to the right of the freezer drain trap tube. (See ***Component Locator Views***.)

A check valve is located between each evaporator drain outlet tube and each drain trap tube.

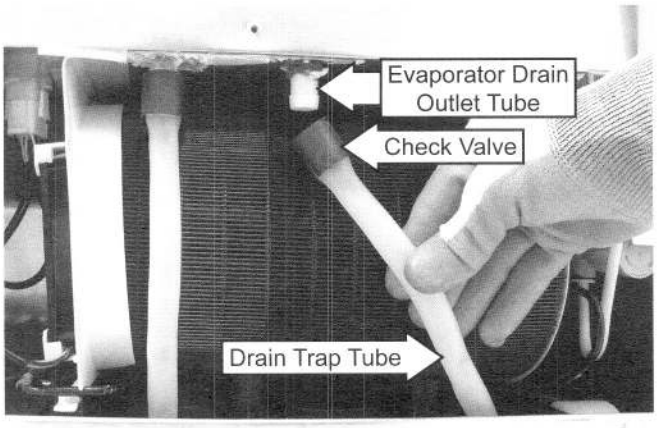
Each drain trap tube can be removed by pulling it down and off the check valve. The check valve can then be pulled off the evaporator drain tube.



Caution: An improperly assembled drain trap tube and check valve can result in a distorted check valve resulting in water overflowing the evaporator drain trough. To ensure the check valve functions properly, the check valve must be installed onto the drain trap tube first, and then attached to the evaporator drain outlet tube at the bottom of the cabinet.

Damaged Check Valve

Good Check Valve



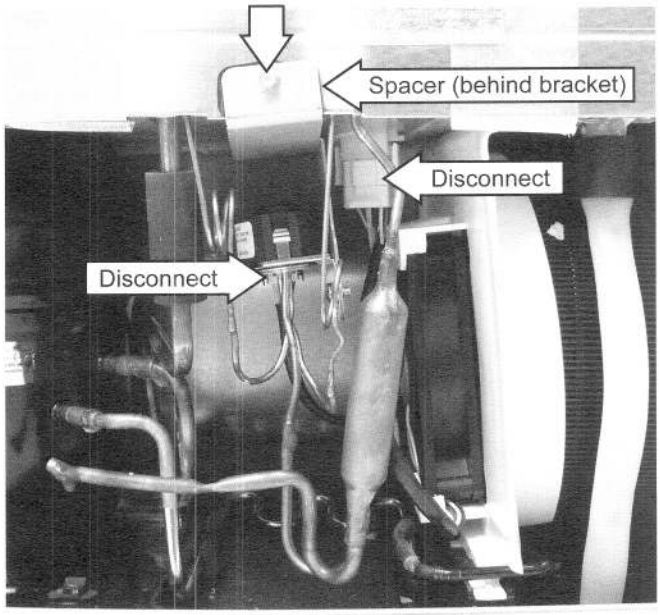
Condenser Fan

The condenser fan is located in the machine compartment between the 3-way valve and the condenser.

The condenser fan will operate at 1000–2100 RPM with RPM feedback to the control.

To remove the condenser fan:

1. Remove the machine compartment cover. (See ***Machine Compartment Cover***.)
2. Remove the 1/4-in. hex-head screw that attaches the 3-way valve bracket and spacer to the refrigerator.
3. Carefully reposition 3-way valve and drier to gain better access to the condenser fan and valve wire harnesses.
4. Disconnect the wire harness attached to the back of the 3-way valve coil.
5. Disconnect the fan and valve wire harness from the cabinet.



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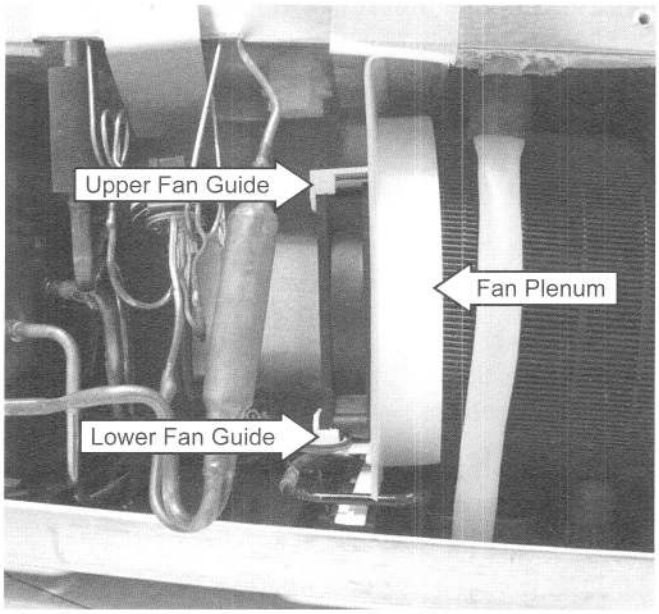
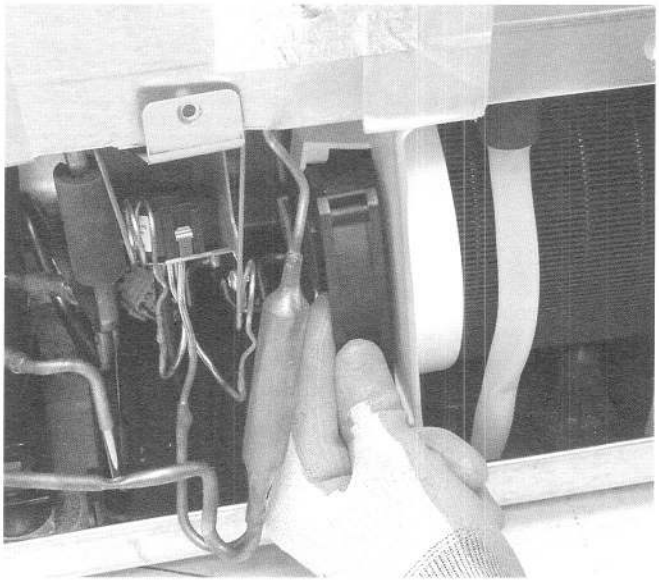
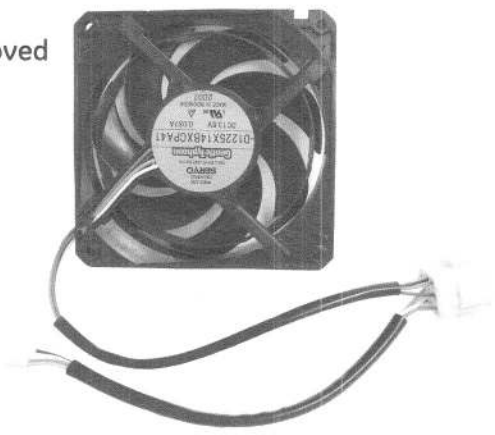
Note: In the following step, the upper and lower fan guides in the fan plenum will expand when the condenser fan is pulled out.



6. Grasp and pull the condenser fan straight out from guides in the fan plenum.



Fan Removed

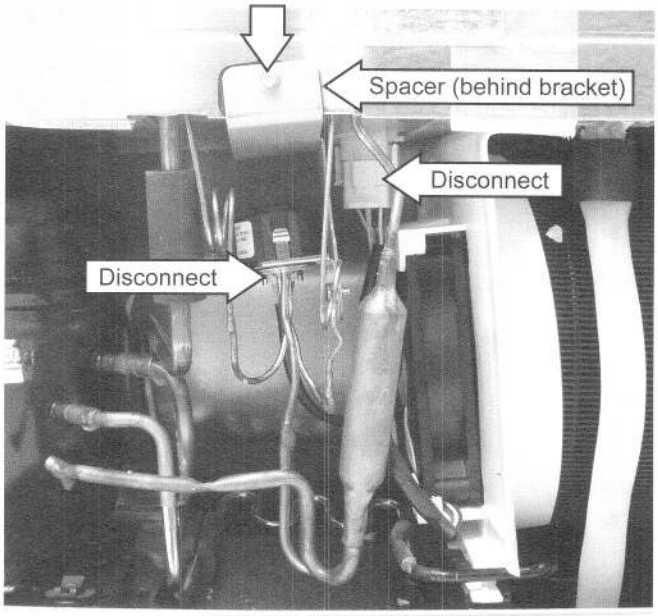


3-Way Valve Coil

The 3-way valve coil is attached to the top of the 3-way valve.

To remove the 3-way valve coil:

1. Remove the machine compartment cover. (See ***Machine Compartment Cover***.)
2. Remove the 1/4-in. hex-head screw that attaches the 3-way valve bracket and spacer to the refrigerator.
3. Carefully reposition 3-way valve and drier to gain better access to the condenser fan and valve wire harnesses.
4. Disconnect the wire harness attached to the back of the 3-way valve coil.
5. Disconnect the fan and valve wire harness from the cabinet.
6. Using a flat blade screwdriver, simultaneously pry out the tab and lift the 3-way coil from the valve assembly.



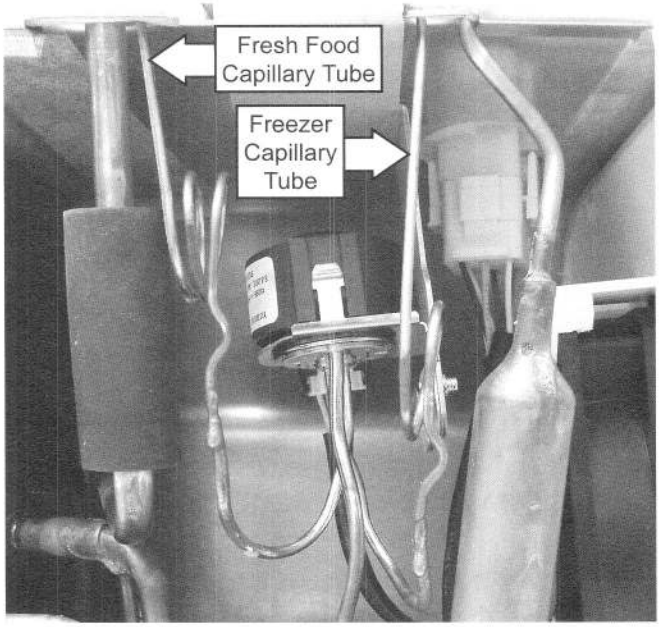
3-Way Valve

The 3-way valve is located in the machine compartment between the compressor and the condenser fan.

The capillary tubes on the refrigerator are color coded on the tubing.

The fresh food capillary tube is on the left and color coded with RED.

The freezer capillary tube is on the right and is color coded with BLUE.



The 3-way valve is used to direct refrigerant flow.

The valve has 4 different positions.

They are referred to by the letters A, B, C, and D.

A = Open to the fresh food and freezer evaporators in series (Refrigerant flows thru the fresh food evaporator and then into the freezer evaporator.)

B = Open to the freezer evaporator only

C = Open to both the fresh food and freezer evaporators via the individual capillary tubes (This position is not currently used on these models for cooling.)

D = Closed to both fresh food and freezer evaporators during the off cycle (This is also called the home position.)

Inverter

The inverter controls compressor speed by frequency variation and by Pulse Width Modulation (PWM). Changing frequency and PWM will cause an effective voltage between 80 and 240 VAC to be received at the compressor. Frequency will vary from 40Hz low speed up to 151Hz at high speed.

The inverter receives commands from the main control board. The main control board will send a PWM run signal from the J9 connector pins 7 to 8 of 2-3 VDC (effective voltage) to the inverter (all wires must be connected). The inverter will select compressor speed (voltage output) based on this signal. The PWM run signal voltage can also be checked at the inverter harness. The main control board will only send a run signal to the inverter when the compressor should be on.

Note: When measuring signal voltage (from the main control board) at the inverter, a reading of 4-6 VDC will be measured with all wires connected. If the inverter wiring is disconnected, the board output will measure between 4-5 VDC.

The inverter will monitor compressor operation and if the compressor fails to start or excessive current draw (4 amps maximum) is detected, the inverter will briefly stop voltage output. The inverter will then make 12 consecutive compressor-start attempts (once every 12 seconds). After 12 attempts, if the compressor has not started, an 8-minute count will initiate. After the 8-minute count, the inverter will attempt to start the compressor again. If the compressor starts, normal operation will resume. If the compressor fails to start, this process will be repeated. Removing power to the unit will reset the inverter count. When power is restored, the inverter will attempt to start the compressor within 8 minutes.

The inverter has built-in circuit protection to guard against damage from a failed or shorted compressor. However, if a failed compressor is diagnosed, order a new compressor and inverter. Replace the inverter first. If the compressor fails to start after inverter replacement, replace the compressor.

(*Continued next page*)

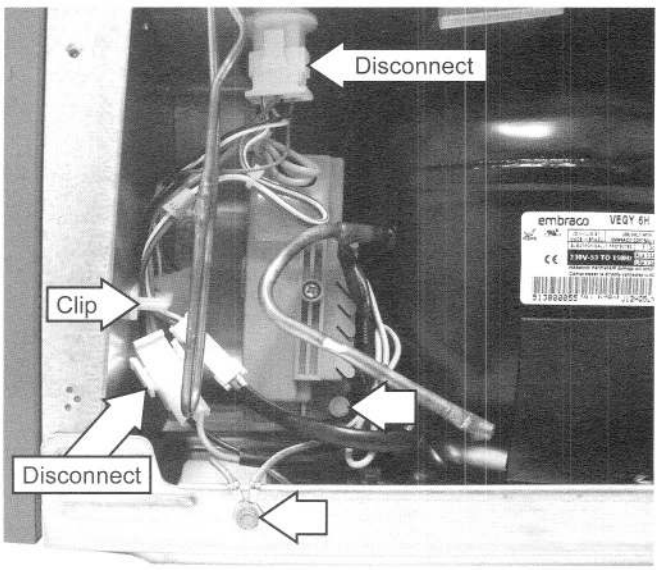
The inverter is accessed from the back of the refrigerator and is located on the left side of the compressor.

To remove the inverter:

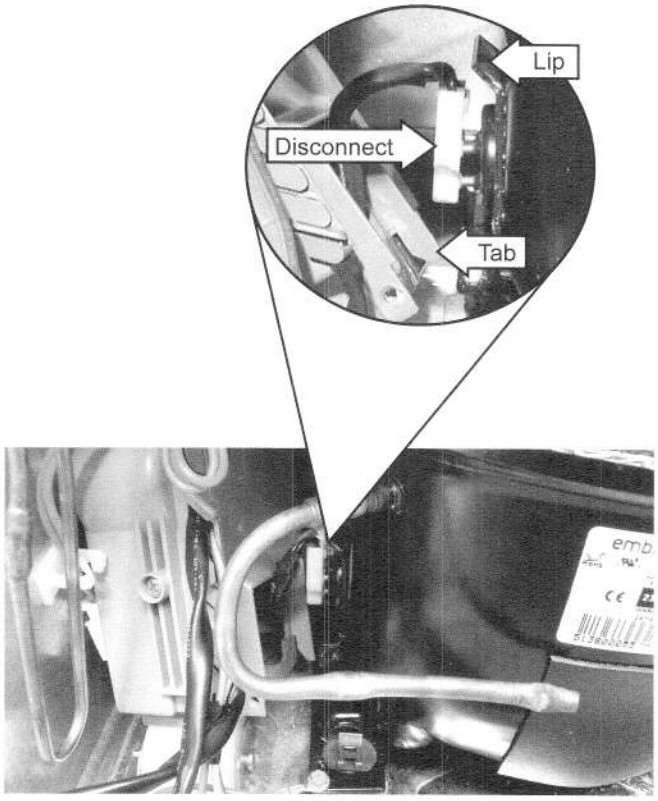
1. Remove the machine compartment cover. (See ***Machine Compartment Cover***.)
2. Disconnect the inverter wire harnesses from the top of the machine compartment.
3. Remove the 2-wire inverter harness from the retainer clip and disconnect the 3-wire harness.
4. Remove the 1/4-in. hex-head screw that attaches the inverter ground screw from the chassis.
5. Remove the 1/4-in. hex-head screw from the inverter.

Note: The inverter is attached to the compressor by a lip above the compressor terminals, a tab (located at the bottom rear corner), and a 1/4-in. hex-head screw.

6. Remove the 1/4-in. hex-head screw from the inverter.



7. Lift the inverter off the compressor.
8. Disconnect the compressor harness from the compressor terminals.



WARNING: When the refrigerator connected to power, 120 VAC is always present at the inverter.

Compressor Replacement

This process applies to both variable speed and single speed compressors.

1. Recover refrigerant.
2. Remove all electrical components.
3. Disconnect suction and discharge lines.
4. Remove the 4 compressor mounting clips.
5. Loosen the compressor from the 4 grommets, it is not necessary to remove the grommets.
6. Move the compressor to the left off of the mounting studs.
7. Rotate the compressor with the base facing out and refrigerant lines facing up.
8. Pull the compressor out from its enclosure.
9. Reverse process to install compressor. Tip: lubricate the compressor grommet with a soap solution or refrigerant leak detect solution for easier grommet installation to compressor base.