Monogram™

Service Handbook

Monogram Refrigerators

1986 - 1990 Two Piece Units
1991 One Piece Assembly
1992 - 1994 New Design

IMPORTANT SAFETY NOTICE

Major appliances are complex electromechanical devices. This Service Handbook is intended for use by individuals possessing adequate backgrounds of electrical, electronic and mechanical experience. Any attempt to repair a major appliance may result in personal injury and property damage. GE Appliances cannot be responsible for the interpretation of its service publications, nor can it assume any liability in connection with their use.

SAFE SERVICING PRACTICES

To preclude the possibility of resultant personal injury* and/or property damage,** it is important that safe servicing practices be observed. The following are examples, but without limitation, of such safe practices.

1 Before servicing, always disconnect the product from its electrical power source by removing the product's electrical plug from the wall receptacle, or by removing the fuse (or tripping the circuit breaker to OFF) in the branch circuit serving the product.

NOTE: If a specific diagnostic check requires electrical power be applied (e.g., a voltage or amperage measurement, etc.) reconnect electrical power only for the time required for such a check, and disconnect it immediately thereafter. During any such check, ensure no other conductive parts (panels, etc.) - or yourself - come in contact with any exposed current-carrying metal parts.

2 Never interfere with or bypass the proper operation of any feature, part or device engineered into the product.

3 If a replacement part is required, use the specified GE Appliances part, or an equivalent which will provide comparable performance.

4 Prior to reconnecting the electrical power source to the refrigerator or freezer, be sure that:

a all electrical connections within the product are correctly and securely connected,

b all electrical harness leads are properly dressed and secured away from sharp edges, high-temperature components (e.g. resistors, heaters, etc.) and moving parts,

c any uninsulated current-carrying metal parts are secure and adequately spaced from all non-current-carrying metal parts,

d all electrical grounds - both internal and external to the product - are correctly and securely connected,

e all water connections are properly tightened on refrigerators with automatic icemakers or dispensers,

f all panels and covers are properly and securely reassembled.

5 Read the SAFETY PRACTICES section beginning on Page G-1 in this Book for additional SAFE SERVICING PRACTICES.

6 Don't attempt a product repair if you have any doubts as to your ability to complete it in a safe and satisfactory manner.

*PERSONAL INJURY, in the form of electrical shock, burns, cuts or abrasions, etc., can occur spontaneously to the individual while attempting to repair or service the product; or may occur at a later time to any individual in the household who may come in contact with the product 0- unless safe servicing practices are observed.

**PROPERTY DAMAGE, resulting from fire, flood, etc., can occur immediately or at a later time as a result of attempting to repair or service the product - unless safe servicing practices are observed.

PREFACE

This HANDBOOK contains information and service procedures to assist the service technician in correcting conditions that are not always obvious. Service procedures considered obvious are intentionally omitted.

Using the information in this HANDBOOK in conjunction with the Mini Manuals, which are included with refrigerator, will provide comprehensive information on these models.

All electrical data, schematics and pictorial wiring diagrams are in the Mini Manuals with the product.

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RATING PLATE

On two piece model Monogram refrigerators, produced from **1987-1990** two rating plates were used.

The refrigeration units rating plate is affixed to the right side of the evaporator housing.

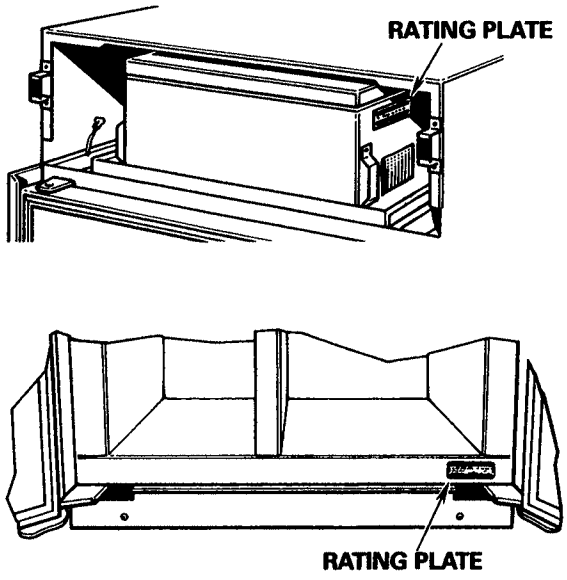


Figure 1 - Rating Plate Location

The rating plate on the cabinet section is located on the lower right front flange of the cabinet, near the right hinge. The door must be opened to locate the rating plate. On models produced after mid **1990** and referred to as "One Piece", had only one rating plate. The rating plate for these models is located on the lower right front flange of the cabinet, near the right hinge.

The rating plate specifies the following attributes:

- Voltage and Frequency
- Amperage
- Refrigerant Type and Quantity
- Model Number
- Serial Number

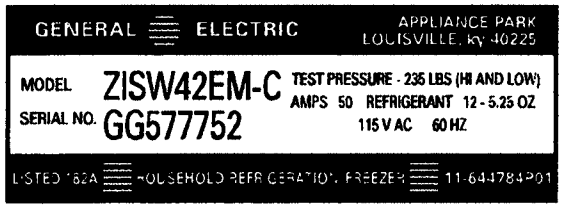


Figure 2 - Typical Rating Plate

Voltage and Frequency

The Monogram refrigerators are designed to operate at 115 Volts AC, 60 Hertz. Although some have been tested and operate efficiently at 100 Volts AC, 50 Hertz, the rating plate does not specify this voltage or frequency.

Amperage

The amperage rating is the amount of electrical current the household branch circuit must withstand. The actual current draw will vary, depending upon whether the compressor is running, has just started running, or is near the end of the running cycle. Therefore, the amperage rating should neither be used to determine the current draw of the product nor to calculate the energy consumption.

Refrigerant Type and Quantity

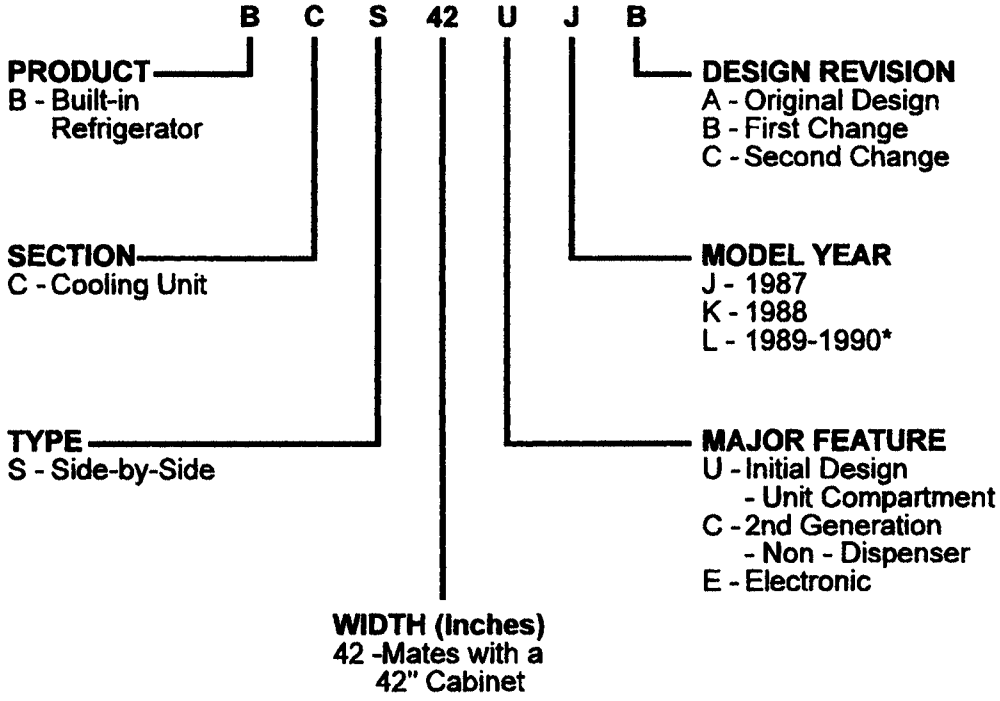
The refrigerant type is specified and the amount of the charge installed at the factory is stated in ounces. The same type and quantity should be used to recharge the refrigeration system unless otherwise specifically directed (such as instructions included with a replacement component).

Installation Clearances

Due to the uniqueness of the Monogram refrigerators there are no installation clearances required at the top, sides or rear. The initial design of the Monogram was to achieve a built-in look to blend with the surrounding cabinetry. In Jan. 1992 the design was further improved to give the consumer a built-in and flush appearance to totally blend with the cabinetry.

The Monogram Refrigerator was originally designed to be a two (2) piece unit that required assembly at the site to make it a functioning refrigerator. The two (2) pieces shipped in separate cartons contained the Refrigeration Unit in one carton and the Cabinet Section in the other. Each section had its own unique model number identification. Following is a break down of the model number identification for each section.

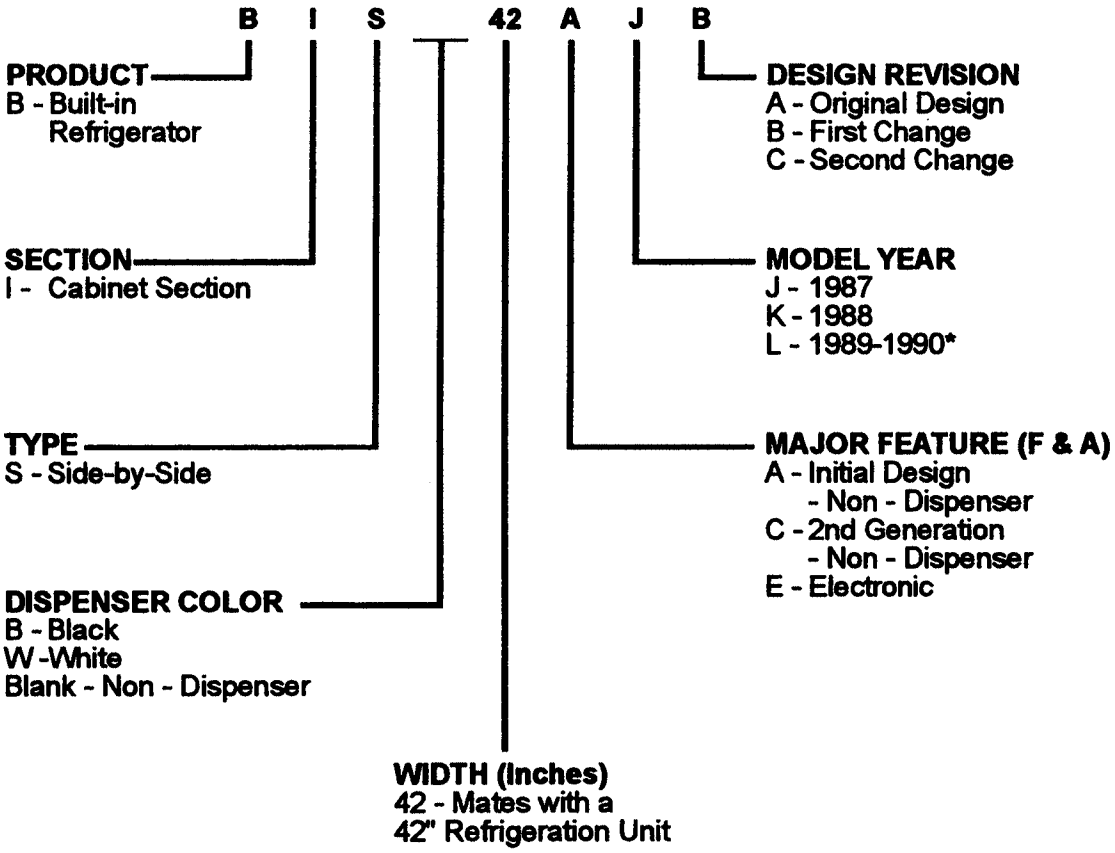
REFRIGERATOR SECTION - 1987-1990



(*After 1990, the Refrigerator Unit and Cabinet Section was assembled as a one piece unit.)

Figure 3 - Refrigeration Unit

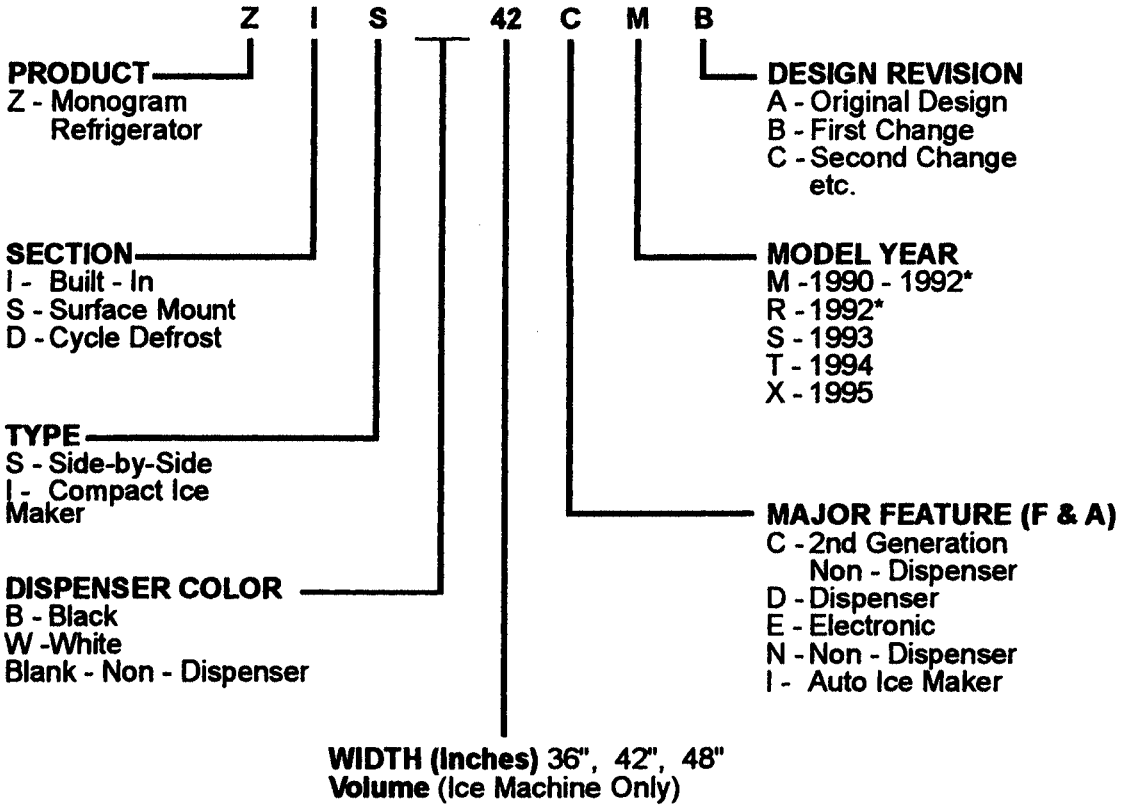
CABINET SECTION - 1987-1990



(*After 1990, the Refrigerator Unit and Cabinet Section was assembled as a one piece unit.)

Figure 4 - Cabinet Section

ONE PIECE ASSEMBLY 1990 - PRESENT



(In 1992 the Monogram Line was redesigned to a ONE Piece 36", 42" and a 48" model and at the end of 1992 production stopped on the old product. - Model Year designation was changed to an R designator to identify the new ONE piece design.)

Figure 5 - ONE PIECE Design

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1987	AV	DV	FV	GV	HV	LV	MV	RV	SV	TV	VV	ZV
1988	AZ	DZ	FZ	GZ	HZ	LZ	MZ	RZ	SZ	TZ	VZ	ZZ
1989	AA	DA	FA	GA	HA	LA	MA	RA	SA	TA	VA	ZA
1990	AD	DD	FD	GD	HD	LD	MD	RD	SD	TD	VD	ZD
1991	AF	DF	FF	GF	HF	LF	MF	RF	SF	TF	VF	ZF
1992	AG	DG	FG	GG	HG	LG	MG	RG	SG	TG	VG	ZG
1993	AH	DH	FH	GH	HH	LH	MH	RH	SH	TH	VH	ZH
1994	AL	DL	FL	GL	HL	LL	ML	RL	SL	TL	VL	ZL
1995	AM	DM	FM	GM	HM	LM	MM	RM	SM	TM	VM	ZM
1996	AR	DR	FR	GR	HR	LR	MR	RR	SR	TR	VR	ZR
1997	AS	DS	FS	GS	HS	LS	MS	RS	SS	TS	VS	ZS
1998	AT	DT	FT	GT	HT	LT	MT	RT	ST	TT	VT	ZT
1999	AV	DV	FV	GV	HV	LV	MV	RV	SV	TV	VV	ZV

Figure 6 - Serial Prefix - Month and Year Code

MINI-MANUAL

All refrigerators and freezers are produced with a Mini-Manual which provides the most frequently needed technical reference data, diagrams and replacement parts for a specified model

On the Monogram refrigerator the Mini-Manual can be located in various places depending on when the model was produced. On models produced in **1987** the Mini-Manual was a two piece document (each 11" x 17") with valuable technical information printed on the front and back of the sheets. One sheet contained information about the refrigeration unit while the other contained information about the cabinet. The sheets were folded and inserted into envelops and attached to their respective units. The refrigeration Mini-Manual was attached to the right side of the cooling unit and the Cabinet Mini-Manual was attached to the top of the unit at the right front.

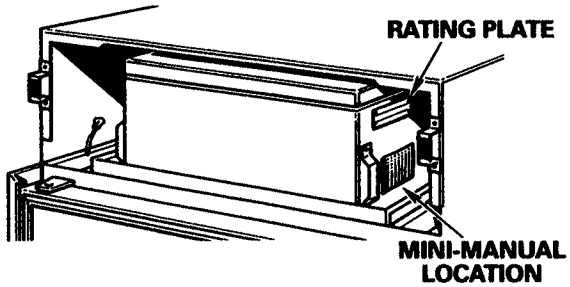


Figure - 7 Mini-Manual Location

On models produced from **1988 through part of 1990** the Mini-Manuals were still 11" x 17" sheets and attached to the individual units. The location was changed because of the configuration of the refrigeration unit and the Mini-Manual was attached to the right side of the cooling unit. The cabinet Mini-Manual was attached to the top of the cabinet at the right front.

On models produced from **mid 1990 through 1992** the two sheets were folded and inserted in the same envelop and attached to the left side of the cooling unit.

After servicing a refrigerator the Mini-Manual should always be left with the product for future use.

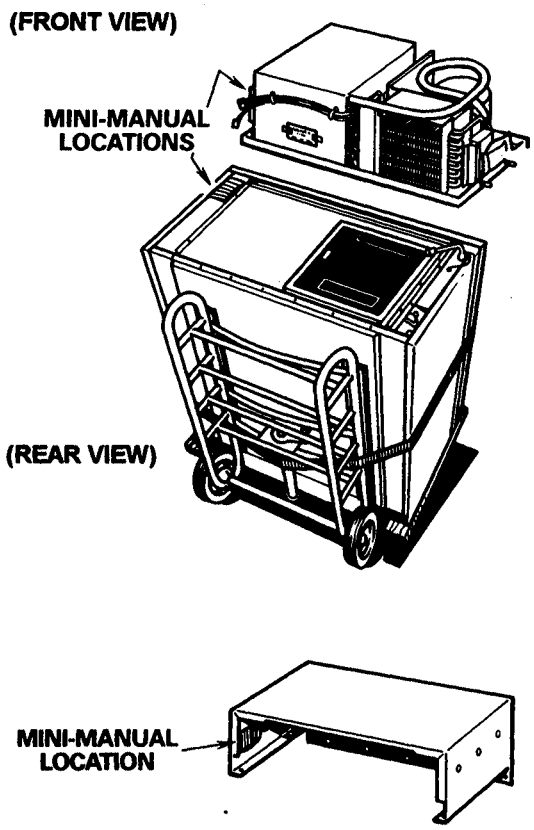


Figure 8 - Mini-Manual Location

SERVICE MANUAL

ZIS-36, 42 and 48" MODELS

In **1993** a newly designed Monogram was introduced. The new design was a truly ONE piece refrigerator and therefore required only a single sheet Mini-Manual. Due to the complexity and newness of the model a SERVICE MANUAL was written and included with each product produced. The Service Manual along with the Mini-Manual are inserted in an 8 1/2" x 11" envelop and tucked behind the sound insulation on the right side of the refrigeration hood. The Service Manual along with the Mini-Manual should be returned to the envelope for future use.

INSTALLATION

Proper installation of the Monogram is an important factor in its operation.

Location

The location is usually determined by the design of the kitchen. However, the customer should be advised if the location is detrimental to the efficient operation of the appliance.

If possible, a Monogram refrigerator should never be placed immediately next to a range, in direct sunlight or near a heat vent.

A Monogram refrigerator should not be installed in a location where the ambient temperature will be lower than 60°F, because the compressor will not run frequently enough to maintain proper temperature,

Clearance

NO clearance is required at the top, sides and rear of a Monogram refrigerator but if built in correctly a 1/2-inch space will remain between the cabinet and wall unless decorative side panels are used. The dimensions required for a Monogram installation is covered it its **Installation Manual**, close adherence should be made to the instructions for that particular model for a properly installed refrigerator.

Assembly

After the product is delivered to the consumer's kitchen, some assembly is required on models produced from **1987** through mid **1990**. An accessory bag containing assembly parts is located either on the top of the cabinet on the right side next to right guide rail, or in the lower vegetable bin depending on the model.

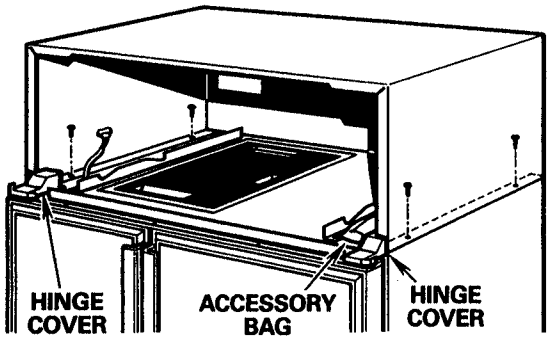


Figure 9 - Hood Assembly

The hood for the refrigeration unit is assembled to the top of the cabinet. Bolts, screws and washers are supplied in the accessory bag. The cabinet is then rolled into position, leveled and permanently built-in.

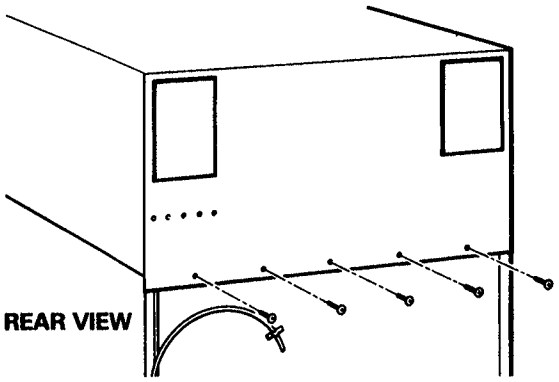


Figure 10 - Rear View Hood Asm.

Leveling

A Monogram refrigerator should be firmly positioned on a solid floor. The Monogram refrigerator requires that it not only be level side to side but also level front to back and plumb with the adjacent cabinetry. Once the refrigerator is rolled into position the front leveling legs should be lowered to stabilize the unit. Early models required shims at the rear to level the unit while models produced after **1993** had four point leveling capabilities. The door closing mechanism on the Monogram refrigerator is designed to give unassisted door closing from various angles depending on the model.

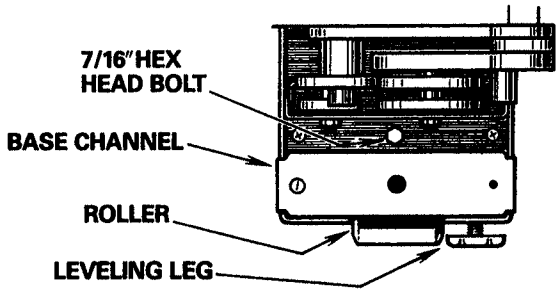


Figure 11 - Leveling

CONTROL SETTINGS

All Monogram refrigerators are shipped from the factory with the temperature controls set at the mid positions. At these settings, satisfactory temperatures should be expected. Colder or warmer temperatures can be obtained by changing the control settings. Each setting represents approximately 2°F. change. After any control setting is made, 24-hours should be allowed for temperatures to stabilize before making any additional control setting change.

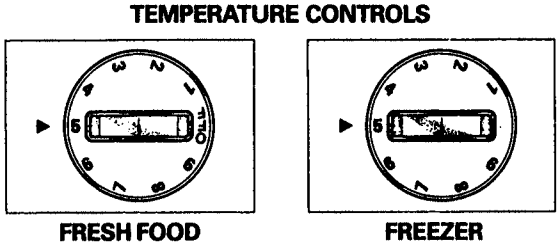


Figure 12 - Control Setting

The Monogram refrigerators are produced with two temperature controls which are independent. The "Fresh Food" control regulates the amount of air diverted into the fresh food compartment by means of an automatic regulating damper. The damper is controlled by a capillary and bellows arrangement. The cap-

illary senses the air temperature and opens and closes the damper to allow more or less air to enter the fresh food. The Freezer control regulates the compressor operation. On models produced from **1987-1992**, the controls were located in their respective compartments. **1993-1994** both controls are located in the "Fresh Food" compartment, (as shown in Fig. 13) although the freezer capillary extends to the freezer compartment and senses freezer air temperature. Both controls are numbered controls and should be set on the mid setting or position 5/5.

When the Fresh Food control is positioned at any position, the control **calibration** determines the interval that the control damper is open or closed. As the control capillary senses the temperature of the air entering the fresh food compartment, the control bellows actuates a push rod. The push rod contacts a spring loaded damper that is pushed open or allowed to close automatically as the temperature rises or falls. The action of the control damper maintains the temperature as demanded by the controls calibration. The "Freezer" control is an electro-mechanical control that uses a capillary to sense the temperature in the freezer compartment to regulate the compressor run time.

When the freezer control is positioned on position 1, shorter compressor operation cycles are observed. Conversely, when this control is positioned on position 9, longer compressor operation cycles are observed as well as colder freezer temperatures.

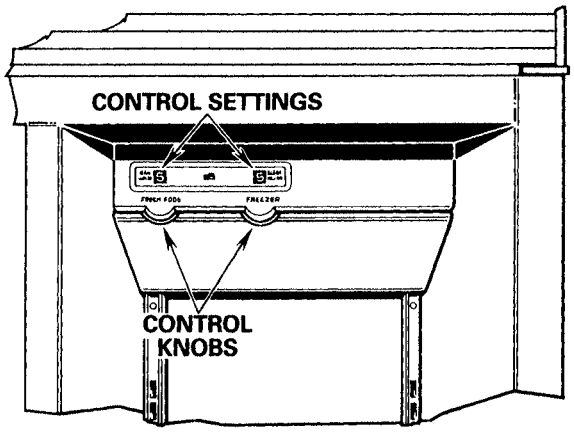


Figure 13 - Temperature Controls

FOOD STORAGE

Although the primary function of a refrigerator or freezer is to preserve perishable foods, refrigeration does not preserve foods indefinitely. Holding food at a low temperature merely reduces the rate at which deterioration takes place.

Fresh Food

Milk will freeze if chilled below 31°F. If milk is permitted to reach room temperature, spoilage may occur quickly even when held at temperatures near 32 °F.

Fresh meat should be stored at temperatures as near 32 °F. as is possible without freezing the meat. Bacteria growth in fresh meat, indicated by discoloration, is more rapid when stored at warmer temperatures.

Lettuce will freeze if chilled below 31°F., but will retain good quality for considerable longer periods at 32°F. than at 38°F. to 45°F. Lettuce stored with apples, pears or cantaloupes may develop russet spotting.

Frozen Food

Only top quality foods should be frozen, freezing cannot improve quality.

Proper packaging is essential to successful freezing of foods. Only wrapping materials that are designed for freezing should be used. Even then, the package must be tightly sealed to prevent "freezer burn" (dehydration).

Meat or poultry that has thawed completely should not be refrozen. However, in Home Garden Bulletin No. 69, the United States Department of Agriculture says: "If foods have thawed only partially and there are still ice crystals in the package, they may be safely refrozen. Refrozen foods, however, should be used as soon as possible. If foods have slowly thawed and have warmed gradually to a temperature of 40°F., they are not likely to be fit for refreezing. Under these conditions, meats, poultry, most vegetables and some prepared foods may become unsafe to eat".

Ice Cream

The composition of ice cream varies from one brand to another, and from one flavor to another depending upon the butter fat content, sugar content and ingredients. Ice cream is a difficult food to store in a freezer to everyone's satisfaction. The various brands, types, flavors and compositions will react differently at a given temperature. Fine quality ice cream, with a high cream content, will normally require slightly lower temperatures than brands with a low cream content. However, at 0°F., most ice cream is considered hard. The ideal serving temperature is 5° to 10 °F., again depending on the brand, type, flavor or composition. At 12° to 14 °F., the flavor of ice cream is appreciated by more people that at a lower temperature.

If ice cream is allowed to melt and is then refrozen, ice crystals will form, giving it a coarse, rough texture.

USAGE CONDITIONS

Performance data stated in the Minimanual, under no load conditions and at ambient of 70° and 90 °F., should be used only as a guide. "No Load Performance" simply means no door openings and no food load. These laboratory data closely simulate the performance expected in the home after approximately 8-hours of no usage, such as would be found first-thing-in-the-morning. With usage, and/or operating in a room ambient other than 70° or 90 °F., the measured performance of the product will not equate the data shown.

Light Usage

This condition is not as prevalent on Monogram refrigerators as with other style refrigerators.

During periods of time when the kitchen is cool, especially in the winter months and when the refrigerator doors are opened less frequently, compressor operation cycles will be shorter than normal. Consequently, the air in both compartments becomes stratified (warm air at the top and cold air at the bottom). This may cause one or more of the following symptoms to develop:

- Fresh food too cold
- Vegetables freezing
- Slow ice making rate
- Soft ice cream
- Frost on freezer shelves

Under these light conditions, the "Freezer" control should be set to a higher number for a colder freezer compartment temperature. This will allow slightly longer compressor operation cycles and thus diminish the air stratification. If freezing in the fresh food compartment occurs, the "Fresh Food" control should be set to a lower number.

Heavy Usage

During the summer months, higher than normal kitchen ambients will exist in some homes. Higher ambient, in conjunction with a greater demand for ice, and an increase in the number and duration of door openings can result in fresh food temperatures peaking at 45° to 50 °F. late in the afternoon and during the dinner hour.

Door openings should be kept to a minimum. Everything needed from the refrigerator before a meal should be taken out with one door opening. Likewise, after a meal, foods should be gathered and placed in the refrigerator with one door opening.

RUN TIME

For a combination refrigerator freezer such as the Monogram refrigerator, to maintain a 0°F. freezer and 38°F. fresh food temperature, the compressor will usually run more than 50% of the time. In most cases, depending on the usage, the run time will range from 75% to 90%, particularly in the summertime. In extremely hot, humid areas, run time may approach 100%.

Door openings contribute significantly to the run time of any refrigerator. When the door is opened, some of the heavy cold air slides out of the cabinet, pulling warm air in at the top. Keeping door openings to a minimum will help reduce run time.

Loading the refrigerator with a large amount of food especially hot food, will also add to the run time. Hot foods should be allowed to cool before being placed in the refrigerator.

Another significant factor that contributes to run time is an empty or lightly loaded freezer. Air alone does not retain cold. An empty refrigerator must run more to maintain temperatures low enough to satisfy the temperature control and cycle the compressor off. A freezer should be at least three-fourths full to maintain proper temperature and reduce compressor run time.

ENERGY CONSUMPTION

It is difficult to determine the actual operating cost of a refrigerator due to various operating conditions, such as: usage, location and climate. The energy consumption rating, stated in the Mini-Manual, is the amount of energy consumed by that particular product in kilowatt hours per month (30 days), under laboratory test conditions prescribed by the United States Department of Energy. This test is performed under the following conditions:

- 90°F ambient
- No door openings
- No icemaker operation
- Power/Energy Saver set to "Dry" and "Humid"
- 3/4 freezer load
- Automatic defrost operation
- Controls set to obtain specified temperatures

To estimate the energy consumption under various usage conditions, the energy consumption rating must be multiplied by a usage factor.

USAGE	MULTIPLIER
Minimum	0.8
Moderate	1.0
Heavy	1.2
Extremely Heavy	1.6

Figure 14 - Usage Multipliers

For example, it the energy consumption stated is 120 KWH/mo. and the refrigerator is operating under "Extremely Heavy" usage, multiply by 1.6(120x1.6=192 KWH/mo.). The estimated cost for one month is then determined by multiplying this amount (192 KWH/mo.) by the local cost per kilowatt hour for electricity.

ENERGY SAVER

Many of the Monogram models are equipped with an energy saver switch that is set to the "Normal" (off) position when the refrigerator is shipped from the factory. This turns off the mullion heaters. With the heaters turned off, moisture may form on the exterior of the cabinet - especially when the humidity is high. The humidity is most likely to be high in the summer, during the early morning hours, in homes that are not air conditioned or where natural ventilation is used rather than using the air-conditioner. If moisture does form on the exterior of the cabinet, the energy saver switch should be turned on. Over an extended period of time, moisture that forms on the cabinet may cause deterioration of the paint finish.

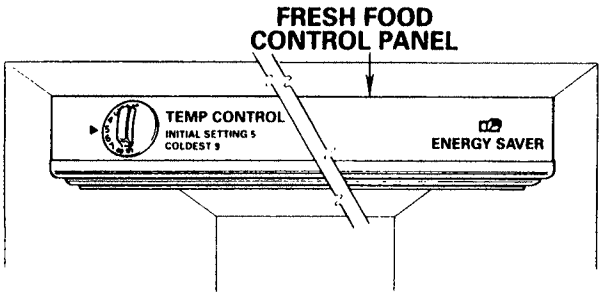


Figure 15 - Energy Saver Switch (early models)

SWEATING

All atmospheric air contains moisture. Sweating (condensation of moisture from the air) will occur on any object slightly cooler than room temperature under certain temperature and humidity conditions. We notice this every day especially during the hot summer months when moisture forms on cold beverage glasses. Moisture condenses from the air because the glass is at or below the dew point temperature of the surrounding air. Dew point temperature is that temperature at which moisture will begin to condense from the air. For example, if the room temperature is 85 °F. at 80% relative humidity, any object as little as 6.5 °F. cooler than room temperature will sweat. If, however, at 85°F. the relative humidity is 60% the object must be 15.5 °F. cooler than room temperature to sweat.

The Monogram refrigerators are designed so that under normal climatic conditions they will not sweat. However, since no insulation material is perfect, it can be expected that the surface temperature of the refrigerator will always be somewhat cooler than the surrounding air. If sweating is experienced and is considered to be abnormal, several checks can be made to determine if any corrections or adjustments are necessary.

GENERAL

1 Check the position of the Energy Saver Switch. If turned off, advise the consumer that the switch must be set to the on position when moisture is present.

2 Check for an abnormally cold freezer compartment temperature. Adjust the controls accordingly.

3 Check gaskets to make sure they are sealing properly (especially at the lower bottom corner).

4 Check the cabinet heaters for operation and be sure they are in complete contact with the cabinet. If heaters are inoperative connect the auxiliary heaters.

Also refer to the Field Corrections Section in this manual for application of the **Monogram Moisture Kit** on some models.

The location of the refrigerator also has a direct bearing on external sweating. A Monogram refrigerator located next to a range or in the vicinity of a clothes dryer may sweat at certain times due to increased humidity from these appliances. If located in a basement, garage, outside or in another damp location, may also cause sweating to occure.

Under high humidity conditions, sweating can be expected if the cabinet surface temperature is more than 5°F. cooler than the room temperature.

CLEANING

The Monogram refrigerator is a truly built-in refrigerator and as such has very little exterior surface area exposed. The upper panel, doors, case flanges and trim will require periodic cleaning. If decorative panels are used on the refrigerator, this feature will reduce the area to be cleaned and also the method.

To keep the exposed areas new-looking and provide protection for the finish, a coat of appliance polish wax should be applied soon after installation and then at least twice a year. Proper care of the paint finish will help maintain the new look and provide protection against rusting. **WR97X0216** Appliance Polish Wax cleans, polishes, and waxes in one application and gives the exposed areas a hard lustrous finish for long-lasting protection against rusting.

Figure 16 - Appliance Polish Wax

NOTE:

If decorative panels are used on the refrigerator, the proper care and cleaning for those panels should come from the designer and manufacturer or the panels.

Between waxing, soils on the exposed areas should be wiped off with a clean cloth lightly dampened with appliance polish wax or mild household detergent. A clean soft cloth should be used to dry and polish the cleaned surface. A soiled dishwashing cloth should never be used to wipe the exposed areas.

Use of scouring pads, powdered cleaners, bleach, or cleaners containing bleach will damage the exposed areas.

Cabinet Interior

The cabinet interior-fresh food and freezer compartments - should be cleaned at least once a year, using a solution of baking soda and warm - water (one tablespoon af baking soda per quart of water). Cleansing powders or other abrasive cleaners must never be used for this purpose. After cleaning, the interior should be rinsed with a clean cloth or sponge and wiped dry. Excess moisture should be wrung out of the cloth or sponge when cleaning in the vicinity of switches, lights or controls.

Caution: To avoid a potential electrical shock hazard, the power cord should be disconnected before cleaning.

Machine Compartment

For most efficient operation, the condenser should be cleaned periodically. For best results, use a long handle brush **(WX14X0051)** to loosen the dust and lint which can then be vacuumed up.

Caution: To prevent accidental contact with the condenser fan, tubing or other electrical components in the machine compartment, the power cord should be disconnected while cleaning.

The defrost water drain pan should be cleaned at least once a year with warm sudsy water containing a mild household detergent.

FOOD ODORS

Food odors of one kind or another are responsible for most odor complaints. As soon as food is stored in a refrigerator, the cabinet interior absorbs a "natural food odor". Excessive or unusual odors can result from various conditions such as uncovered food containers, highly seasoned food and citrus fruits all blended together by circulating air inside the cabinet. In some instances, odors originate from decayed food overlooked or spilled in an unnoticed area of the cabinet.

When an excessive or unusual odor of unrecognizable origin develops, the consumer should be advised to clean both the fresh food and freezer compartments thoroughly. All shelves, pans and loose items should be removed from the cabinet, and should be washed with warm sudsy water containing a mild household detergent. Cleansing powders or other abrasive cleaners must not be used. All parts should then be rinsed with warm water containing baking soda and wiped dry with clean cloths.

Care should be taken to prevent water from entering the cabinet or door insulation, or door switched. Likewise, the defrost water pan should be washed, rinsed and dried.

The consumer can prevent most food odors by following good user habits:

1 Keep all foods covered or tightly wrapped.

2 Each week, take inventory of the contents in the fresh food compartment. Dispose of any food that is beginning to spoil.

3 Wipe up spillage's immediately with a clean, damp cloth.

4 At least once a year, clean both fresh food and freezer compartments and the defrost water pan. Use warm water and baking soda.

5 Keep an open box of baking soda inside the fresh food compartment. Each month, replace the baking soda with a new box.

SOUND LEVEL

Modern-day refrigerators have many features that refrigerators of just a decade ago did not have. One result of these features is additional complex components which contribute to the higher sound level than older refrigerators. Some of these components operate at the same time and some operate independently.

Different sounds may be heard at various times that are unfamiliar to the consumer, yet they are perfectly normal sounds. The more a refrigerator runs, the more the sound is noticed. With the compressor running, inspect for vibrating parts or components, rattling tubes, or any source of sound transmission. Use your hand to help detect vibration and to determine where isolation and dampening is required.

When the sound level produced by the refrigerator is determined to be normal, the consumer should be so advised. Replacing a compressor or any other component under such circumstances will only mislead the consumer to believe there really is a noise problem.

INDEX

DOOR CONSTRUCTION

Monogram refrigerator doors consist primarily of an outer door panel, inner door panel, door trim, extruded aluminum handle, insulation and a door gasket. The doors are insulated with urethane foam which provides rigidity to the door.

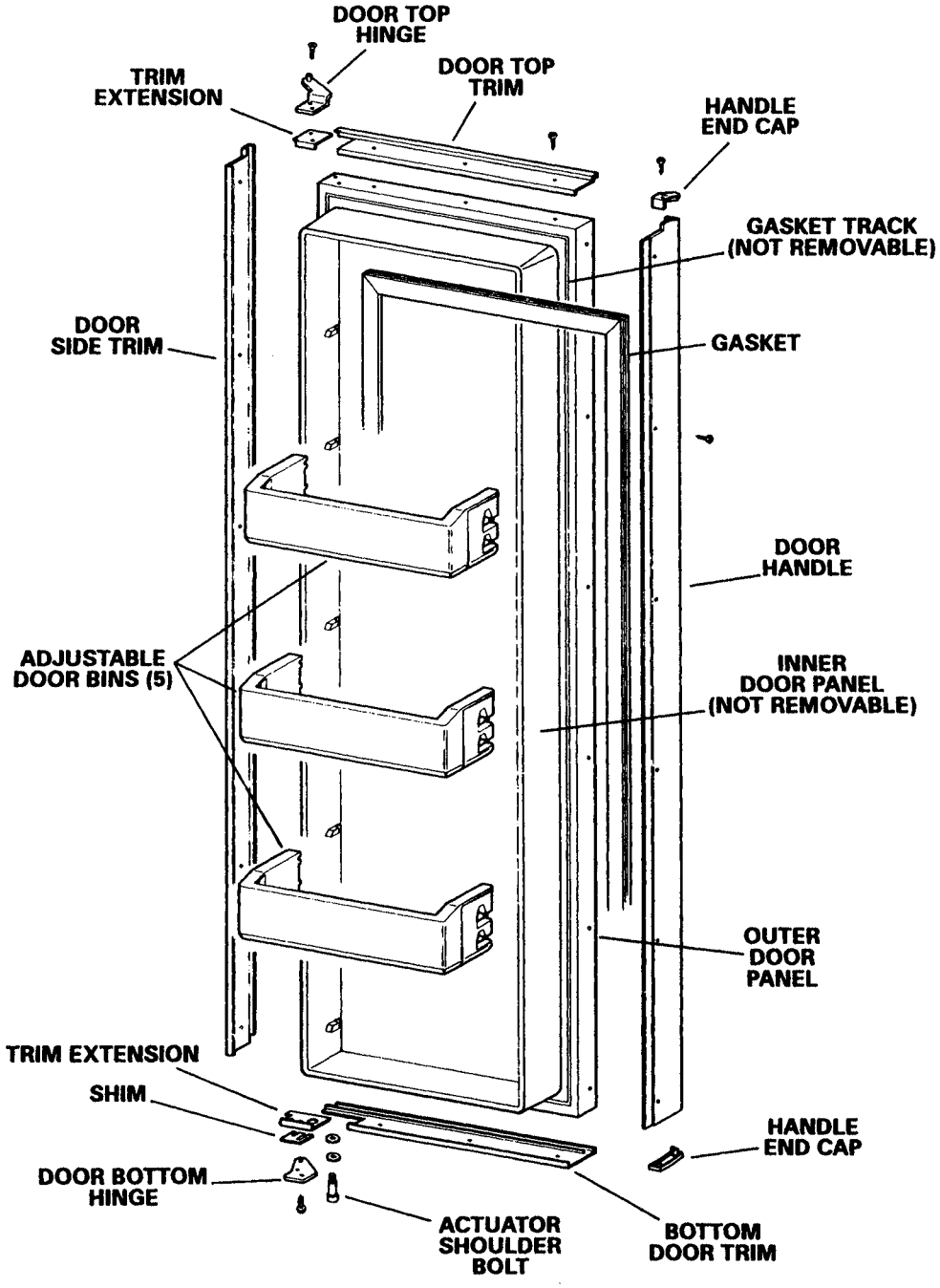


Figure 1 - Typical Door Component

OUTER DOOR PANEL

The outer door panel is made of pre-painted galvanized steel. A high gloss enamel paint is used, and although the completed door may be used with its initial painted finish, it is usually covered with decorative panels. The

door has holes punched to accommodate the door handle and side trim before the edges are folded and toggle-locked (not welded).

INNER DOOR PANEL

The inner door panel is a plastic molded part that becomes an integral part of the door assembly once attached to the outer door panel. The inner door is foamed-in-place on the outer door and is therefore **not removable**. Plastic retainer strips used to hold the door gaskets are also foamed-in-place and are **not removable**.

DOOR TRIMS

The door trim used on the Monogram doors is a functional part of the door construction. The trim which is extruded aluminum, is used to frame decorative panels that slide under the edge of the trim. The trim is attached to the outer door with screws. The trim frame could accommodate limited variations in panel thickness and therefore limited the consumer to design variation. In **1993** the newly designed Monogram refrigerator was introduced. With this model introduction, an extensive trim kit package was developed to allow the consumer various options in outer panels and handle arrangements to best suit their needs. As a result, no two Monogram refrigerators, once built-in, may look alike.

On models produced prior to 1993, the side trim was individually fitted to the door and replacement trim may not fit exactly. The old trim should be used as a template for hole locations.

DOOR HANDLES

Handles on all Monogram refrigerators that are shipped from the factory are extruded aluminum.

The handles have an aluminum brush finish and extend the full length of the freezer and fresh food doors. The handle as received from the factory also serves to hold the decorative panels in place when installed by the consumer.

Decorative handles that match the decor of the kitchen can also be used. On models produced after **1992**, handle installation options are included with the Trim Kits.

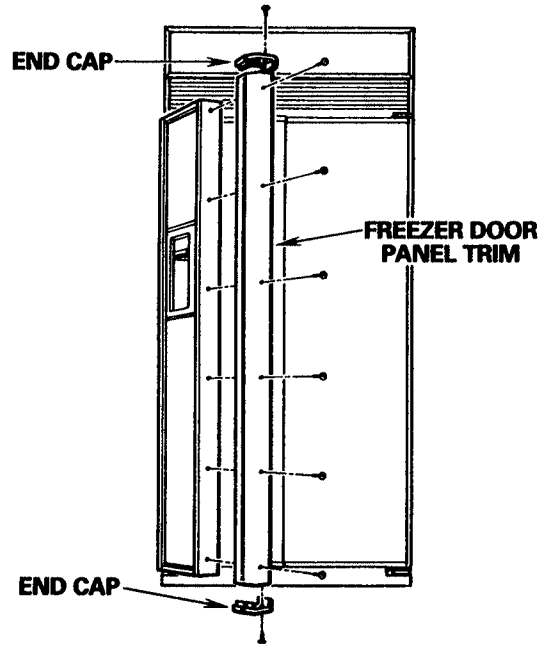


Figure 2 - Typical Handle

To remove the door handles that are shipped from the factory, first remove the end caps (if present), then remove the trim screws along the face of the handle. Hold the handle securely while removing the screws to avoid damage to the aluminum finish. Once the handle has been removed the decorative panels can be installed.

- Insert the panels into the door frame channels and push firmly to make sure the panels slide all the way in.

- If panels are less than 1/4" thick, foam filler pads will be needed to assure proper fit.

- If panels are more than 1/4" thick, they must be routed to a 1/4" thickness (1/4" wide at the top, bottom, and hinge side, 1/2" wide at the handle side) in order to fit into the channels.

- Reinstall the door handles and secure them with screws removed earlier.

On models produced prior to **1993**, additional routing may be required when decorative raised door panel inserts more than 1/4"- thick are used — on the hinge side to clear cabinet side trim and/or an adjacent cabinet and countertop, and on the handle side to provide room, for a comfortable handle grip.

DOOR GASKET

Magnetic door gaskets are used on all Monogram refrigerators on both the freezer and fresh food doors. The gaskets are push in type and are held in place by plastic retainers that are foamed-in-place on the outer door. A rib (dart) molded into the gasket, anchors the gasket to the door at all 4 sides.

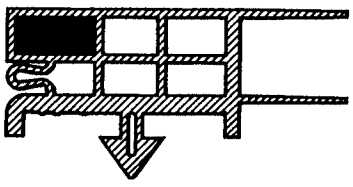


Figure 3 - Magnetic Gasket

To remove the gasket, simply grasp it at one corner and pull it from the retainer channel.

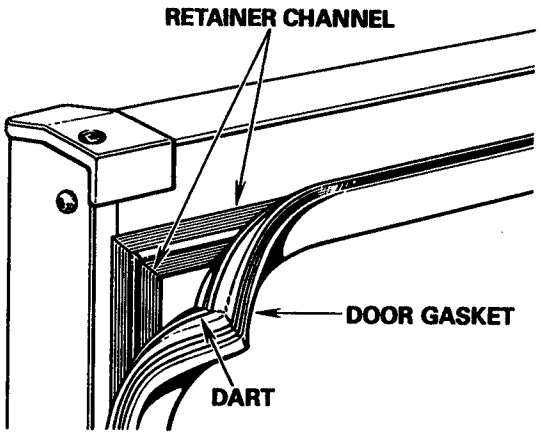


Figure 4 - Gasket Removal

To ease the installation of a replacement gasket, rub paraffin wax into the groove of the retainer channel. Position the replacement gasket on the inner door and beginning approximately 6 inches from one corner, press the gasket rib (dart) firmly into the retainer channel. Installation of the gasket is easier if heat is applied to the back of the gasket while it is being pressed into the retainer channel. Care should be taken to prevent tucks from occurring as the gasket is pressed into the channel that will result in an uneven appearance.

After installing a new door gasket, a thin film of wax should be applied along the hinge side to prevent the gasket from scrubbing the cabinet as the door is opened and closed. Rub the sealing surface of the gasket with a piece of pure paraffin wax once or twice, from top to bottom, to uniformly coat the gasket sealing surface.

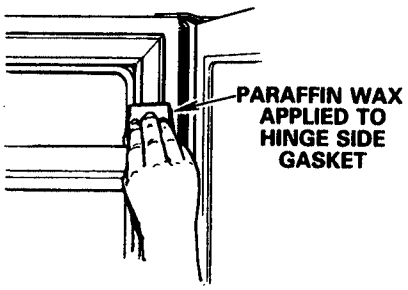


Figure 5 - Apply Paraffin Wax

Door Seal Inspection

Checking the gasket seal is especially difficult on Monogram refrigerators because the unit is completely built-in. Therefore, the hinge side gasket is not exposed for visual inspection. A door gasket that does not seal properly will allow warm, moisture-laden air to enter the cabinet and increase compressor run time.

Use of a dollar bill is not recommended for checking the door gasket seal because of inconsistency and again it is difficult due to limited access to the hinge side gasket.

The only sure method for checking the door gasket seal is to use a 150 watt outdoor flood lamp (GE150 PAR/FL) placed inside the cabinet. Direct the light toward one area of the gasket. Close the door and subdue the room lighting as much as possible. Check for light showing between the cabinet front flange and the gasket. Placing a mirror just under the bottom door hinge will allow inspection of the gasket on the hinge side. Repeat this procedure until the entire door seal area has been checked.

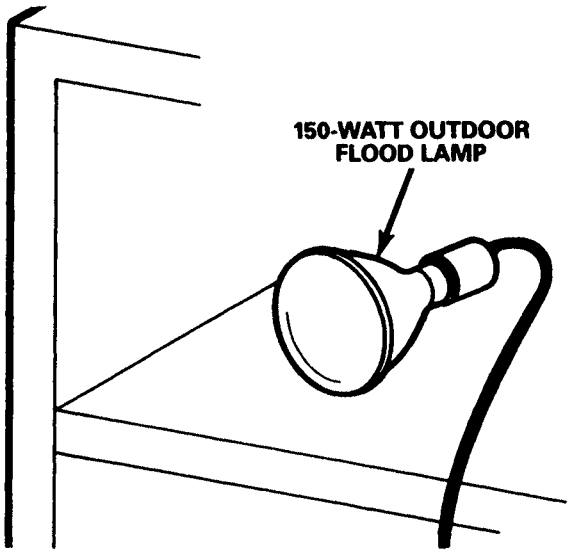


Figure 6 - Door Seal Inspection

It is especially important on Monogram refrigerators to check the door seal at the lower front corners. One method to check the bottom door seal of both the freezer and the fresh food door, is to place a mirror under the door edge and look up along the length of the gasket. A flashlight can be used to light the gasket by directing the light beam into the mirror and reflecting the light onto the gasket. Any gap in the gasket will be observed using this method. To correct the gap at the bottom of the door, order a replacement gasket.

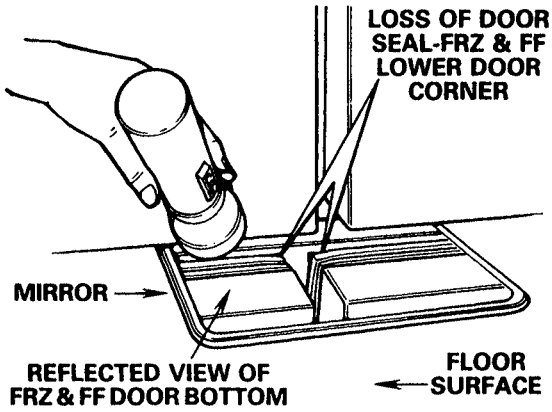


Figure 7 - Door Seal Inspection

DOOR HINGES

Monogram door hinges have changed with each model introduction. A hinge system different than most refrigerators is required due to the complexity of having a refrigerator built-in and still provide sufficient door opening and closing operation.

The Monogram refrigerator, when built-in, must be level front-to-back and side-to-side, therefore the doors must be able to self-close from a specified angle. Several variations of hinges and closure systems have been used on Monogram models.

BIS 42A

Hinges on the first production models, referred to as **BIS 42A** models,

were "L" shaped and attached to the case flange.

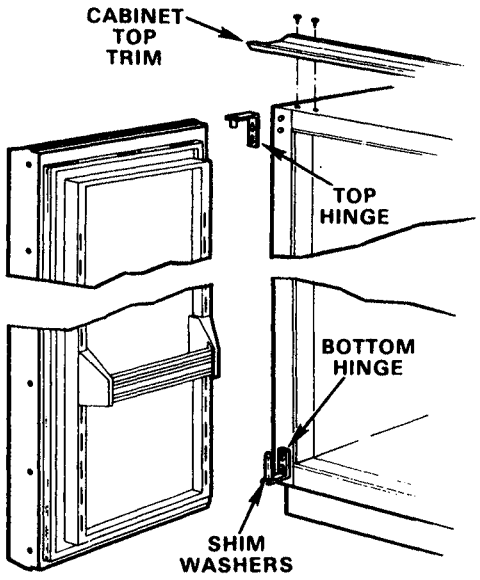


Figure 8 - Door Hinges and Closure Mechanism - BIS 42A

DOOR REMOVAL

To remove either door, first remove the grille and the cabinet top trim. Two screws are used to secure the top trim at each end. Next, open the door and loosen the top hinge screws. Remove the top hinge. Then, close the door and lift it off of the bottom hinge. The bottom hinge pin has a hexagon-shape that engages a torsion spring inside the closure mechanism.

The door closure mechanism is located in the bottom of the door. After removing 2 screws, the closure mechanism can be removed. With the hinges and doors in place, if the door is opened slightly, the spring inside the closure mechanism, engages a detent to hold the door in the open position. When the consumer closes the door, the spring inside the closure mechanism aids in closing the door.

BIS 42C & E AND ZIS 42C & E

With the introduction of an electronic dispenser model in **1988 (BIS42E)**, the hinge design had to be revised to accommodate wires and a water line through the door.

A hinge and closure design similar to that used on side-by-side models was used on the Monogram dispenser and non-dispenser models.

Fresh Food Door

To remove the fresh food door, first remove the grille. Next, remove the upper hinge cover, and loosen the top hinge screws. Remove the top hinge and then open and lift the door off the bottom hinge.

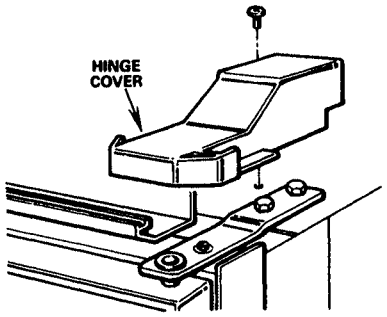


Figure 9 - Hinge Cover

Freezer Door

On the freezer door of dispenser models, the water dispensers tubing cover and connections must be prepared before the door is lifted off the lower hinge. Loosen the tubing clamps and disconnect the coupling nut. Remove the left tubing nut from the fill tubing, Remove the tubing cover attached to the bottom of the lower hinge. Pull the tubing forward so it will pass through the hinge thimble as the door is being removed.

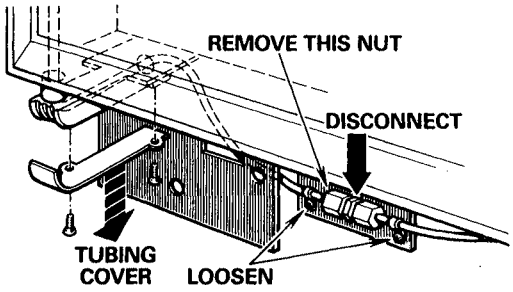


Figure 10 - Lower Hinge Tubing

The freezer door is removed the same as the fresh food door on non-dispenser models, but on dispenser models wiring harnesses at the top hinge must be disconnected. With the door closed, remove the top hinge cover, disconnect the wiring harnesses and remove the top hinge screws. Lift the door off the bottom hinge and pull the water tubing through the hinge pin.

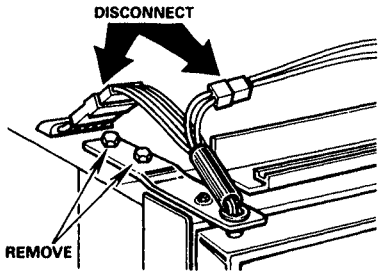


Figure 11 - Upper Hinge Wiring

Door Closure Cams

The closure cams used on the Monogram are similar to the ones used on standard side-by-side models. The lower hinge cam is riveted onto the lower hinge, accordingly if it is to be replaced the rivet must be drilled out of the hinge. The upper closure cam fits over the lower hinge thimble and inserts into the door flange.

Door Stops

The door stop bracket is mounted on the bottom of the upper cam riser and into the bottom of the door flange. The door stop is part of the door hinge and stops the door opening at approximately 130 degrees.

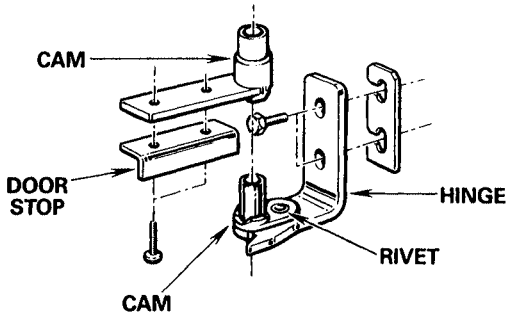


Figure 12 - Lower Hinge Assembly

ZIS 36, 42 & 48D & N Models

In **1993,** a newly designed Monogram model was introduced into the GE line. The model family included both dispenser and non-dispenser models, in three different sizes, 36",42" & 48". A totally flush appearance could be achieved with this model, and thus, the hinges and door closure mechanism was redesigned to allow this feature.

Outboard Hinges

"Outboard " hinges allow the doors to open outward, away from adjacent cabinets and therefore, the refrigerator can be fully built-in or flush.

Door Stops

Door stops built into the lower hinge brackets, limit the door opening to 140 degrees.

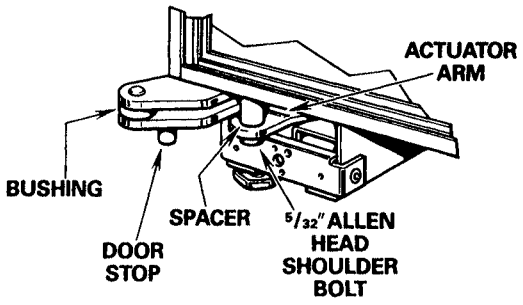


Figure 13 - Lower Door Hinge

DOOR CLOSURE MECHANISMS

The door closure mechanism uses a torsion spring to provide positive door closure from 30 degrees. The actuator arm has a spring attached to the rear and when the door is opened the spring applies tension. When the door is being closed the spring helps to pull the door shut from 30 degrees.

The actuator arm is supported by guide rollers on either side of the base channel. The roller circumferences and the actuator arm detents are matched for smooth operation. The arm is attached to the door with an Allen head bolt in the front. The closure mechanism, allows easy opening to approximately 90 degrees, where the arm has a detent to permit the door to remain open at 90 degrees. With minimal tension, once the door is opened beyond 90 degrees, the closure mechanism pulls the door open until the closure arm engages the door stop at approximately 140 degrees. The reverse action occurs when the door is closed.

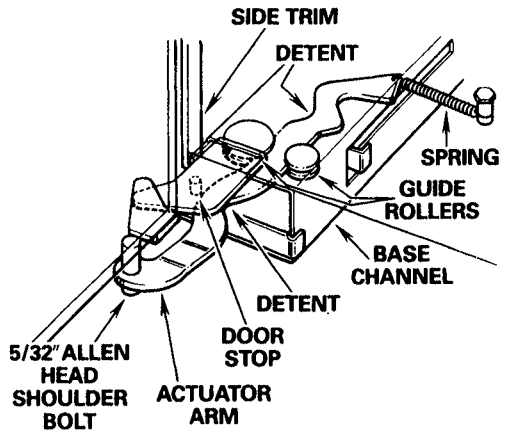


Figure 14 - Closure Mechanism

Door Adjustment

Nonadjustable torx head screws and screw holes are used in the hinge system. Accordingly, the hinges are nonadjustable.

Door Removal

Hinge plates, both upper and lower are part of the door assembly on models produced after **1992.** To remove either door on non-dispenser models, first remove the top panel, grille, and hinge cover. Open the door 90 degrees, and remove the 5/32 inch Allen head shoulder bolt from the door closure actuator arm, attached to the bottom of the door.

The actuator arm is spring loaded, carefully release, keeping the plastic spacer in the actuator arm. Close the door, and remove the three T-20 Torx head screws in the upper hinge plate (case). Lift hinge plate off the door hinge pin, (pin will stay with the door). Next, open the door slightly to relieve the gasket seal and lift the door out of the bottom hinge bushing, Again the hinge pin will stay with the door.

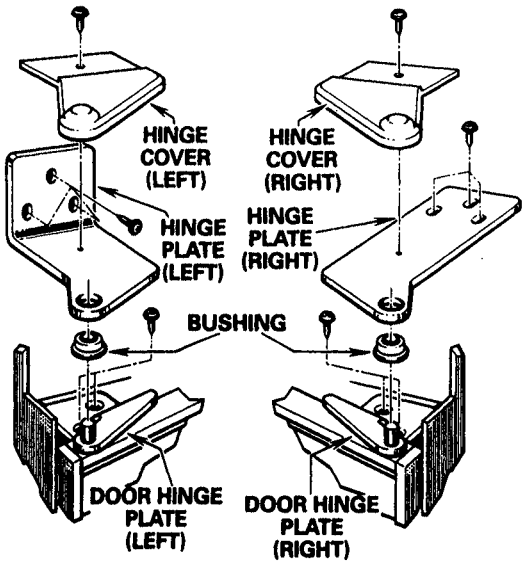


Figure 15 - Upper Hinge Assembly

An umbilical type system is used at the bottom of the freezer door on dispenser models to allow electrical wires and water tubing to enter the door. The dispenser wiring and fill tube are routed beneath the unit through a PVC tube that engages a retaining ring and then mates with a PVC tube in the freezer door. The tubing is designed to rotate in the retaining ring and slide on the guide bracket and housing as the door is opened or closed. Some noise problems have been associated with this arrangement and usually a light coat of Vaseline or grease applied to the umbilical tube where it enters the retaining ring will eliminate the problem. See **Field Corrections section.**

To remove the freezer door on dispenser models, follow the procedure above except, disconnect the water dispenser tubing that is routed through the bottom of the freezer door. Before removing the door, disconnect the power cord from the wall receptacle (located behind the upper panel at the rear of the unit compartment). Remove the tubing retaining clip and loosen the coupling nut. Pull the tubing from the coupling.

Disconnect the wiring connector and as the door is being removed, pull the fill tubing and wiring out from under the cabinet. The door will lift out of the bottom hinge bracket. To reinstall the door, use the procedure in the reverse order.

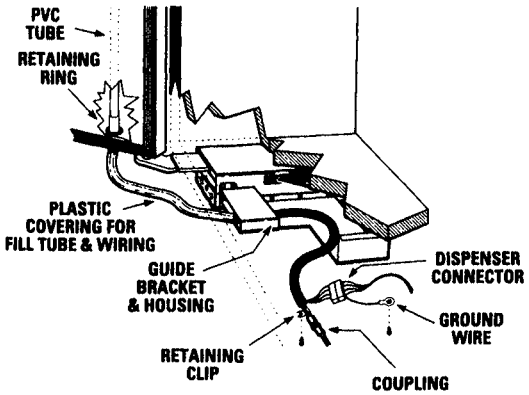


Figure 16 - Umbilical System

DOOR SHELVES AND BINS

Cantilever Door Bins

Cantilever door shelf tracks were part of the door construction on models produced from **1987-1992.** Porta Bins were supplied with the refrigerator as the door storage compartments and were supported by the shelf tracks mounted to the inner door panel.

The metal hook-brackets used on the bins can be removed by pressing the lower hook inward - to disengage the tab - and then downward. To reinstall the hook-bracket into the bin, engage it into the slot and - while pulling out on the upper hook press upward at the lower end.

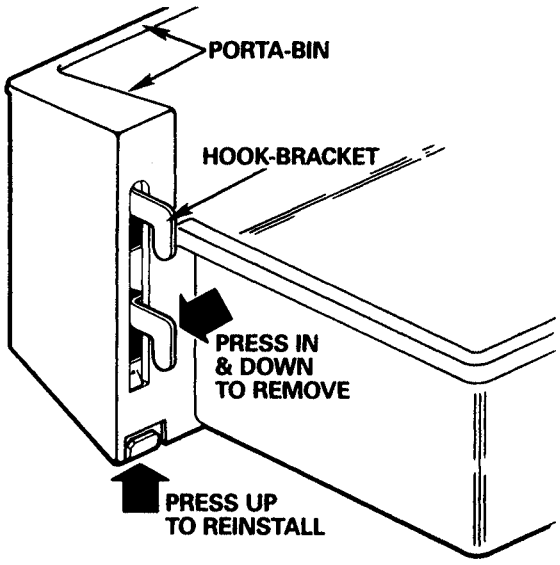


Figure 17 - Porta Bin

To remove the door shelf track, remove the screws that secures it to the inner door panel. The screws thread into stiffeners that are positioned on the back side of the inner panel to increase its rigidity. Since the inner panel is foamed-in-place it is not removable.

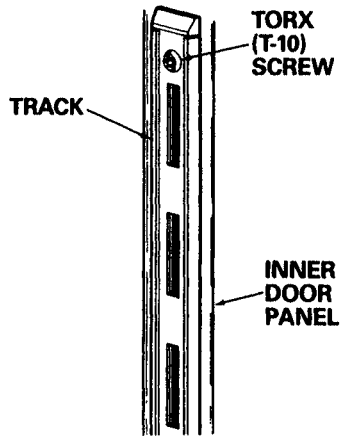


Figure 18 - Track Mounting

Door Modules

Starting with production of the redesigned model in **1993,** the inner door was molded with individual nodes to accommodate door modules.

Early production door modules were assembled from three molded parts. The sides of the modules are snapped into place and provide the means necessary for height adjustment. A right and left section is positioned on the base piece and is held in place with two tabs and a screw. Later models were assembled in the same manner but the sides were sonic welded, eliminating the screw. Each module has two mounting grooves for height adjustment.

The assembled module can be adjusted 1 1/2 inches by selecting the mounting groove provided in the module.

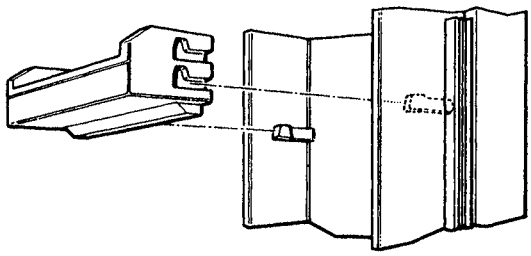


Figure 19 - Door Module

CABINET CONSTRUCTION

The Monogram refrigerator consist basically of an outer case, liners and insulation. The outer case is painted steel. The liners (one for each compartment) are steel with a baked enamel finish. The outer case and liners are assembled and then urethane foam insulation is injected between the case and liners.

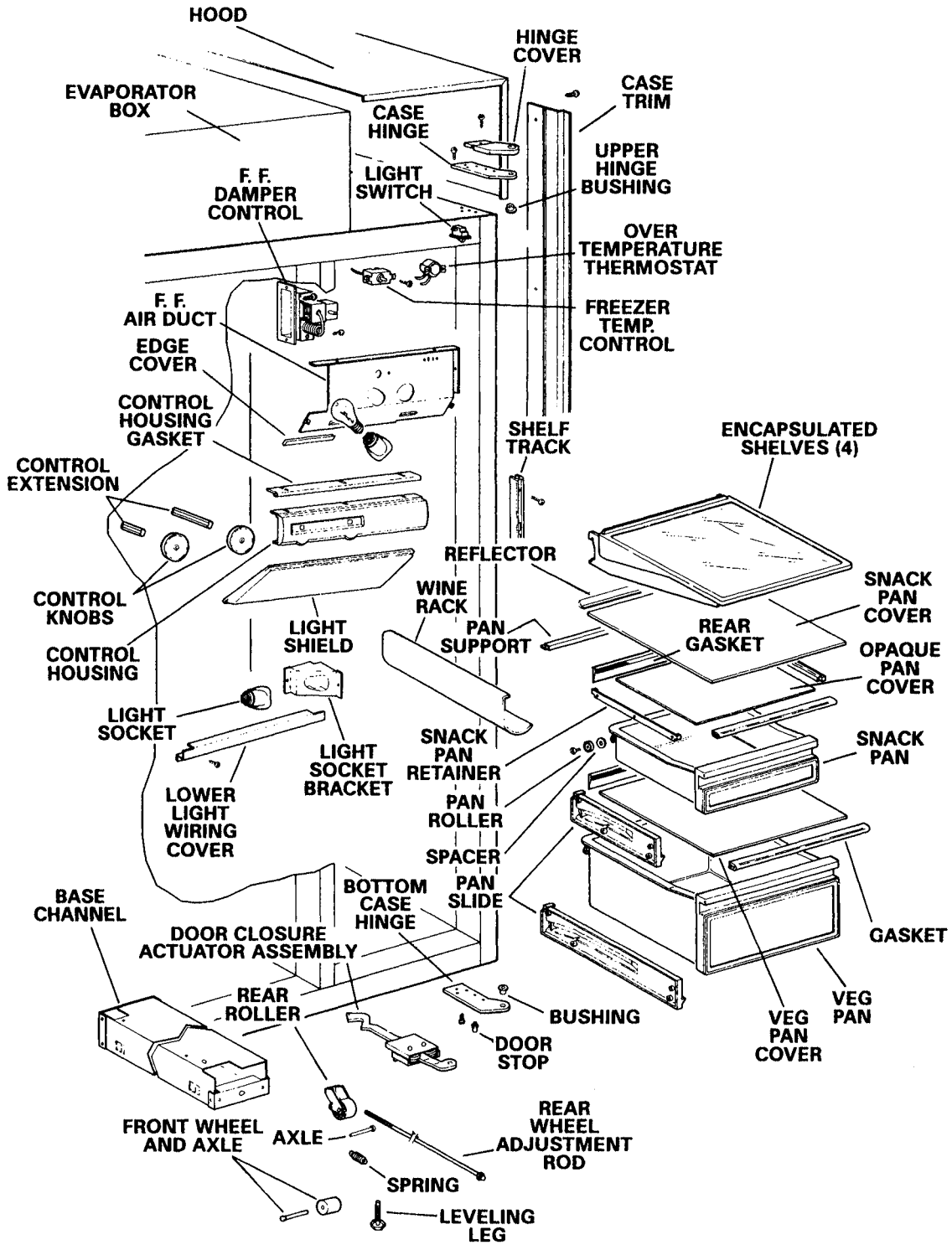


Figure 20 - Typical Monogram Cabinet Components

LEVELING LEGS & ROLLERS

The floor on which a Monogram is installed should be solid and capable of supporting the product when fully loaded. The cabinet must be level front-to-back and side-to side, and solidly positioned on the floor. This will help the doors to swing closed automatically and will keep them in proper alignment to ensure a good door seal.

Monogram refrigerators come with leveling legs and rollers for ease of installation. On models produced prior to **1993**, the front rollers were adjustable and the rear rollers were stationary. After **1993,** the rear rollers are adjustable and the front rollers are not.

Prior to **1993**, rollers near each front corner of the refrigerator are adjustable. Turn the roller adjusting screws clockwise to raise the refrigerator, counterclockwise to lower it. Use an adjustable wrench, 3/8 inch ratchet and socket, or pliers. After the rollers have been adjusted, lower the leveling legs at each front corner of the cabinet until the legs start to support the weight of the cabinet. Use a crescent wrench or 1 1/4 inch open end wrench.

If the floor is significantly uneven at the rear of the cabinet, it may be necessary to use wood or tile shims to compensate.

On models produced after **1993,** a roller and door closure base channel assembly is used to house the roller assemblies and also to support part of the door closure mechanism. The base channels are attached to the bottom of the cabinet and support the weight of the cabinet. The front roller is stationary and the rear roller is adjustable.

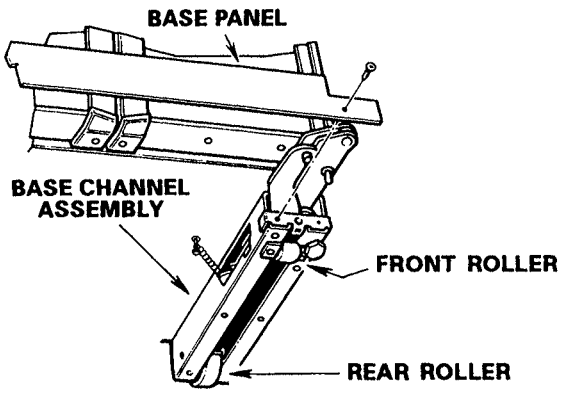


Figure 21 Base Channel Assembly

A base shaft with a 7/16 inch hex-head bolt head, extends to the rear of the base channel and engages a pivotal plate on the rear roller assembly. As the bolt head is turned, the shaft pushes on the plate lowering the roller and raising the rear of the cabinet. Four full turns clockwise will raise the rear of the cabinet approximately 3/16 inch

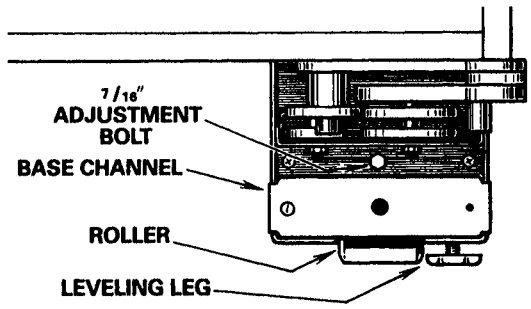


Figure - 22 Roller Adjustment

PRIMARY BREAKER CHANNEL

Attached to the liner sections are plastic strips that serve a dual purpose. The Primary Breaker Channels connect the front mullion and

case flanges to the liner sections and provides a means to install the secondary breaker strips. The breaker channel has grooves along the edges that accommodates the breaker strip tabs as well as the mullion and case heaters in some models.

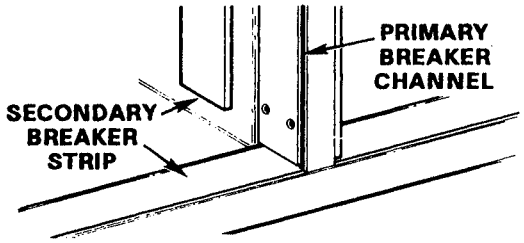


Figure 23 - Primary Breaker Channel

BREAKER STRIPS

Breaker strips are used on refrigerators that have metal liners to minimize direct heat transfer from the outer case to the liner. On Monogram refrigerators produced from **1987-1992**, removable breaker strips were used. After **1992,** the breakers are not removable.

Breakers strips become brittle when cold and can easily be broken while removing. Before attempting to remove a breaker, soften the plastic material with a hot towel. A putty knife is useful tool for removing breakers. However, the end of the blade should be wrapped with tape to prevent scratching the outer case.

To remove a breaker strip, carefully cut through the RTV sealer at the end of the breaker strip. On models produced in **1988,** cut through at the top and bottom of the breaker, after **1988** the top only. Then, using a plastic scrapper or putty knife, disengage the front edge, beginning at one end. When the strip is fully released along the front edge, insert the scrapper behind the strip from the inside and pry it out of the channel at the rear. Slide the breaker out of the bottom corner bracket, if present.

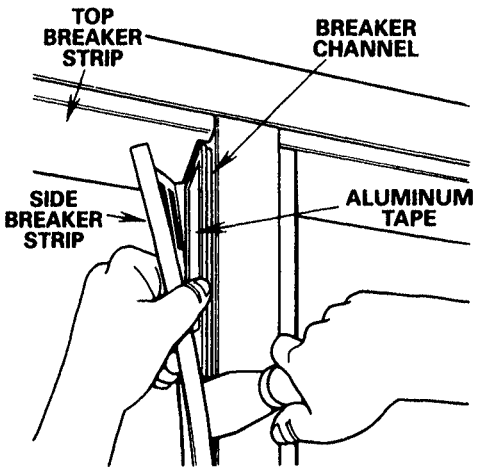


Figure 24 - Breaker Strip Removal

CORNER TRIM

Plastic corner trim was used starting in **1988,** to help conceal the edge of the breaker strip and to allow the breaker to expand and contract as the refrigerator cycled. Located in the freezer and fresh food compartments on Monogram refrigerators produced from **1988-1992,** at the bottom corners of the breaker strip. The corner trim pieces have plastic retaining tabs which engage the case flange and the primary breaker channel.

To remove the corner trim, first remove the breaker strips and then disengage the lower retaining tab from the breaker channel. Slide the corner trim up on the side channel approximately 3 inches and then disengage the retaining tabs from the breaker channel. Reinstall in reverse order, and seal the edges with RTV sealer.

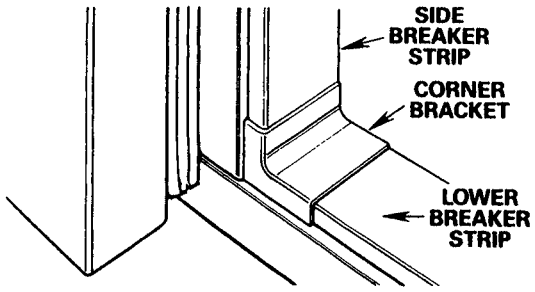


Figure 25 - Corner Trim

AIR DUCTS AND DAMPERS

All no-frost model refrigerators have an evaporator fan that forces cold air from the evaporator into the freezer and fresh food compartments. The Monogram refrigerator is no exception, but the design makes it somewhat unique to the refrigerator line. As a **two piece** unit, the cooling system which includes the evaporator fan, is placed on top of the refrigerator (cabinet) and various gaskets, ducts air baffles, and diffusers are used to direct the air flow. The **two piece** design was used from **1987** until mid **1990** when the two pieces were assembled at the factory. All components of the air flow system must be correctly installed to provide a proper air flow pattern.

Any air leak can change the balance of the temperatures between the two compartments and cause a temperature performance complaint.

The air duct gasket glued to the top of early Monogram models could sometimes be damaged when the cooling unit was installed. The gasket provides a seal between the two sections and mates the air distribution channels (ducts). Four bolts are used to secure the cooling unit to the refrigerator section.

BIS-42A MODELS

Cold air from the cooling unit is forced into the refrigerator cabinet by the evaporator fan. The air is forced directly down into the freezer compartment and down the rear duct. Louvers in the rear duct cover permits air to escape into the freezer compartment in a uniform pattern.

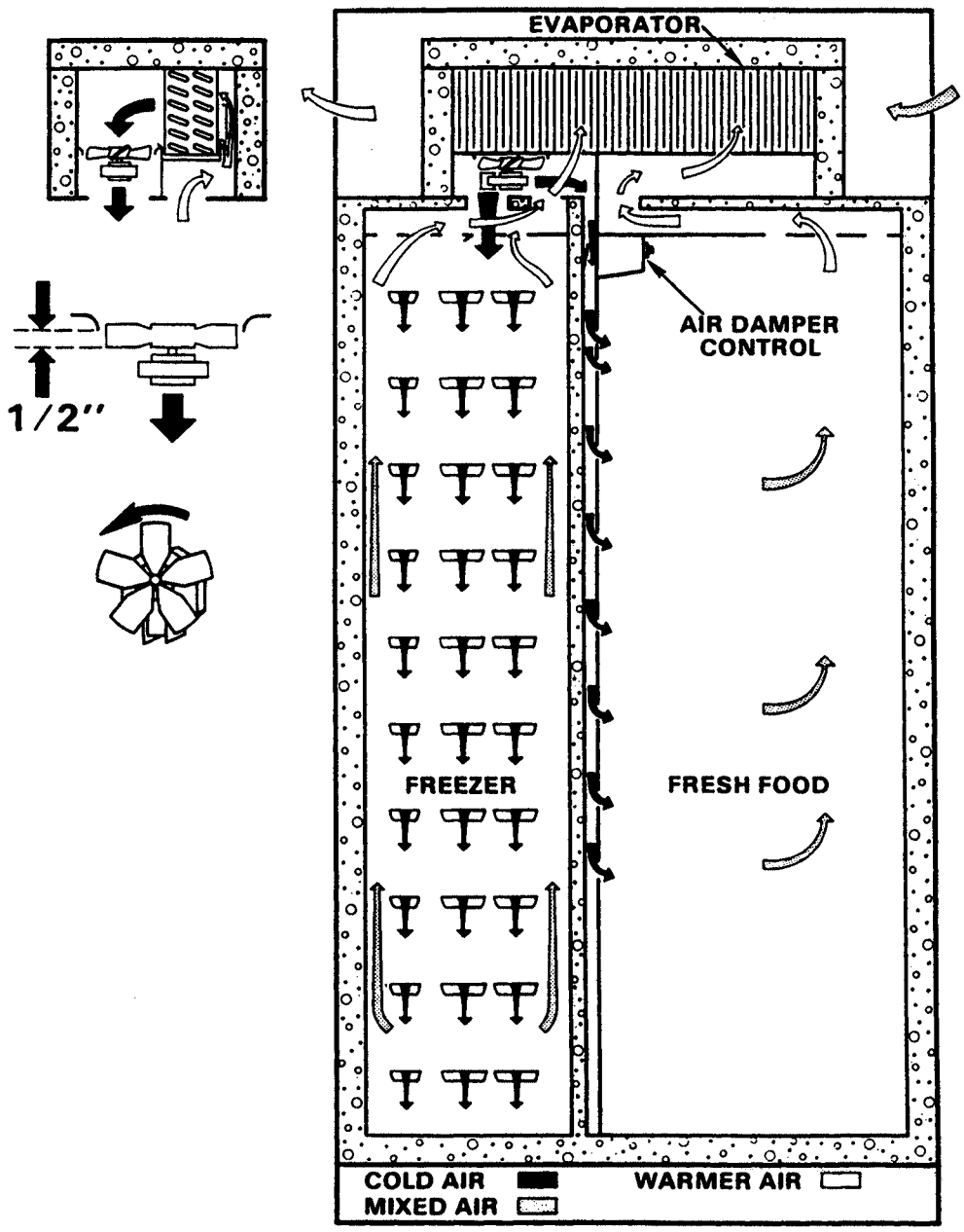


Figure 26 - Air Flow Distribution

BIS - A Models

Warmer air is returned to the evaporator through a duct, behind the light shield, at the top front of the freezer compartment. The temperature control capillary is located in the return air duct. Accordingly, the compressor run time is regulated by the freezer return air temperature.

To remove the freezer temperature control on the **BIS42A** model: remove the light shield, lamp, control knob and control housing. Then, remove the control from the bracket. Loosen the screw at the left end of the return air cover and remove the screw at the right end.

Cut through the RTV sealer and pull the cover down at the right end. Remove the wiring leads from the control terminal. Then, disengage the control capillary from the plastic clips and push it out of the opening in the return air cover.

In the fresh food compartment, cold air passes through the thermostatically controlled air damper and is distributed through louvers in the duct cover at the left side of the fresh food liner. Extremely cold air enters the fresh food compartment from the upper louvers and therefore, foods should not be stored against the side wall.

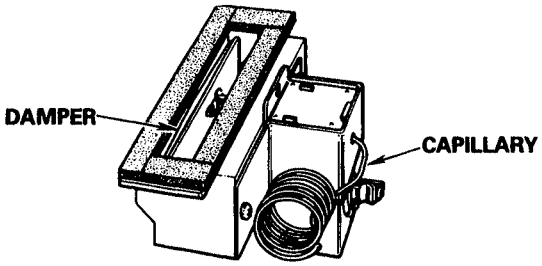
Warmer air is returned to the evaporator through a duct, behind the light shield, at the top front of the fresh food compartment.

The air damper control capillary is located in the return air duct. The damper responds to temperature changes in the fresh food compartment and supplies cold air upon demand. The damper is operated by a capillary and bellows assembly that reacts to changes in the air temperature.

Upon temperature rise in the fresh food compartment - sensed by the control capillary - the damper gradually opens. If the temperature continues to rise, the damper will continue to open - providing a supply of cold air upon demand. The control knob enables the consumer to select fresh food temperatures as desired. The automatic air damper control is used on all Monogram models starting with the early **BIS42A** through present **ZIS** models.

NOTE:

Various calibrations and capillary configurations are used to accommodate the changes in the various models. Refer to the Mini-Manual for the correct replacement control.



AIR DAMPER CONTROL

Figure 27 - Automatic Air Control

To remove the fresh food air damper control; remove the light shield, lamps, control knob and control housing. Then, loosen the screw at the right end of the return air cover and remove the screw at the left end. Disengage the control capillary from the plastic clip and pull it out of the return air duct. Remove the air diffuser, mounted to the liner, below the damper control. Remove one screw at each side of the bracket that secures the damper control to the liner.

Pull the control straight out from the liner.

BIS - C & E Models

ZIS - C & E Models

Air distribution for the above models was changed considerably from the earlier BIS42A models due to changes in the refrigeration unit.

Freezer Air

Cold air is distributed into the freezer compartment at the front above the freezer temperature control.

The control capillary is located in the freezer supply air path, therefore; the control calibration for these models will be radically different than previous models. The compressor run time is regulated by the freezer supply air temperature. Freezer return air is directed back to the evaporator through an opening at the bottom rear of the freezer compartment and partition in the back of the freezer compartment.

Fresh Food Air

Some freezer air enters the fresh food compartment through a channel at the top of the cabinet assembly. Cold air passes through the thermostatically controlled air damper and is directed to the rear of the compartment. Warm air is returned to the evaporator through a duct between the fresh food and freezer liner walls. The return air enters the duct through 6 louvers located in the lower left liner wall.

For access to the fresh food air damper control, remove the fresh food light shield and the energy saver switch bracket screw. The screw, located behind the front control panel on the right side, is attached to the liner top. Then, remove the fresh food control knob and the control panel by removing the two screws holding it in place. The control panel snaps into a channel at the rear edge and must be pried free. Place a screw driver in the hole where the control knob was removed and pry the control panel forward. Allow the control panel to be suspended by the wiring to the energy saver switch or disconnect the leads.

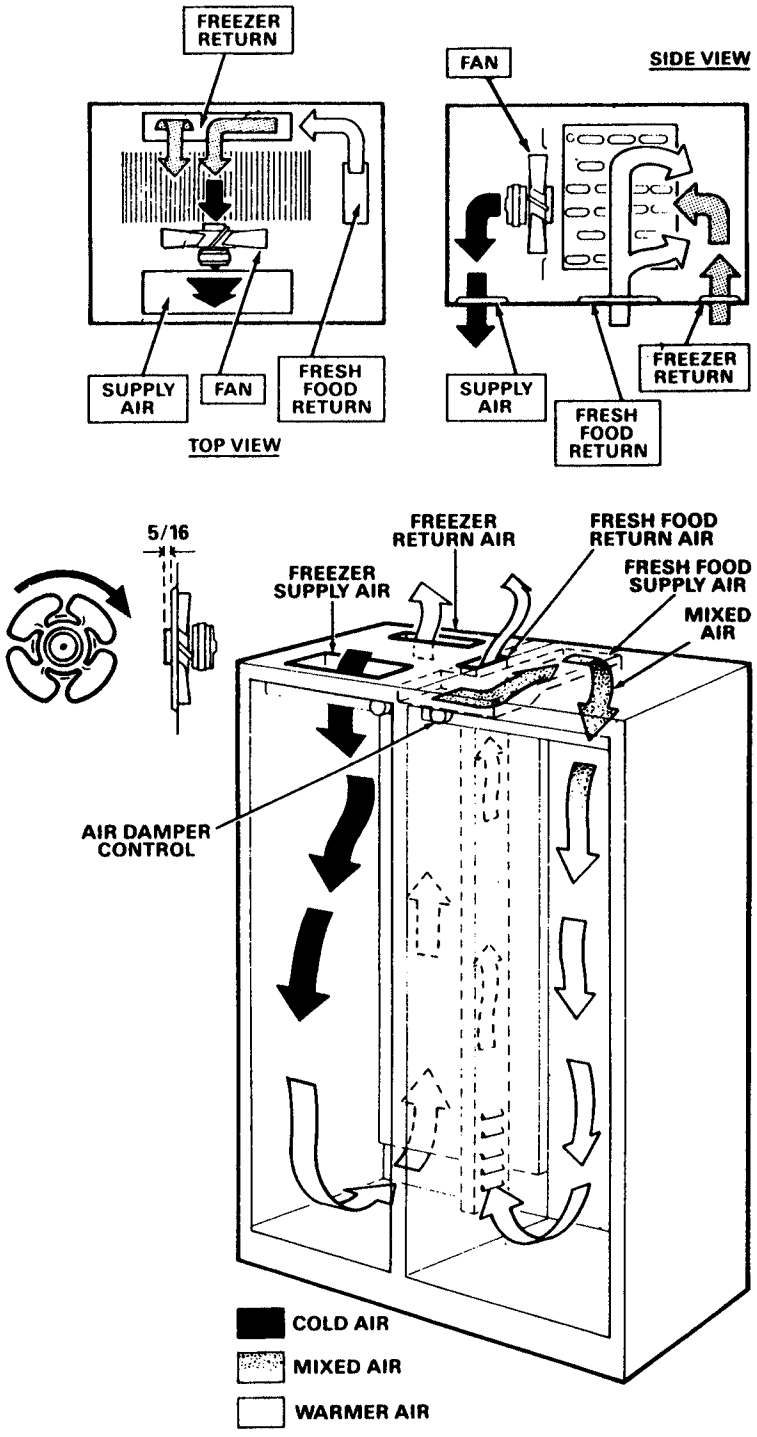


Figure 28 - Air Flow Diagram BIS C&E, ZIS C&E

ZIS 36, 42 & 48 inch MODELS

Air Distribution on Monogram refrigerators produced from **1993** to present is very different than previous models. The new design configuration is a truly **ONE piece** design model.

Freezer Air

The evaporator and evaporator fan are located in the freezer compartment and therefore no ducting is needed to channel the air into the freezer. The evaporator fan, located at the top rear of the freezer compartment, circulates cold air from the

evaporator while the compressor is running. Cold air from the evaporator, forced downward into the plenum by the fan, is discharged into the freezer compartment at the rear. Freezer return air is directed back to the evaporator through openings in the light shield (on non-dispenser models) and the evaporator fan diffuser at the upper front of the freezer compartment.

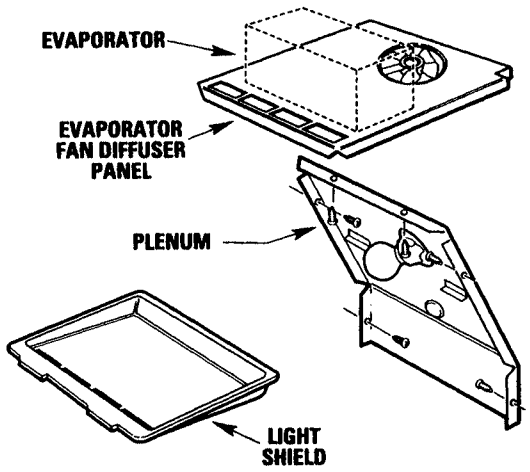


Figure 29 - Exploded View Diffuser

PANEL and PLENUM

Fresh Food Air

Some cold air from the evaporator fan, is diverted to the fresh food compartment through a duct in the compartment divider. The air passes through the fresh food air damper control and enters the fresh food compartment behind the control panel. Warm air entering louvers at the lower left side of the liner, passes through a duct in the compartment divider and is returned to the evaporator.

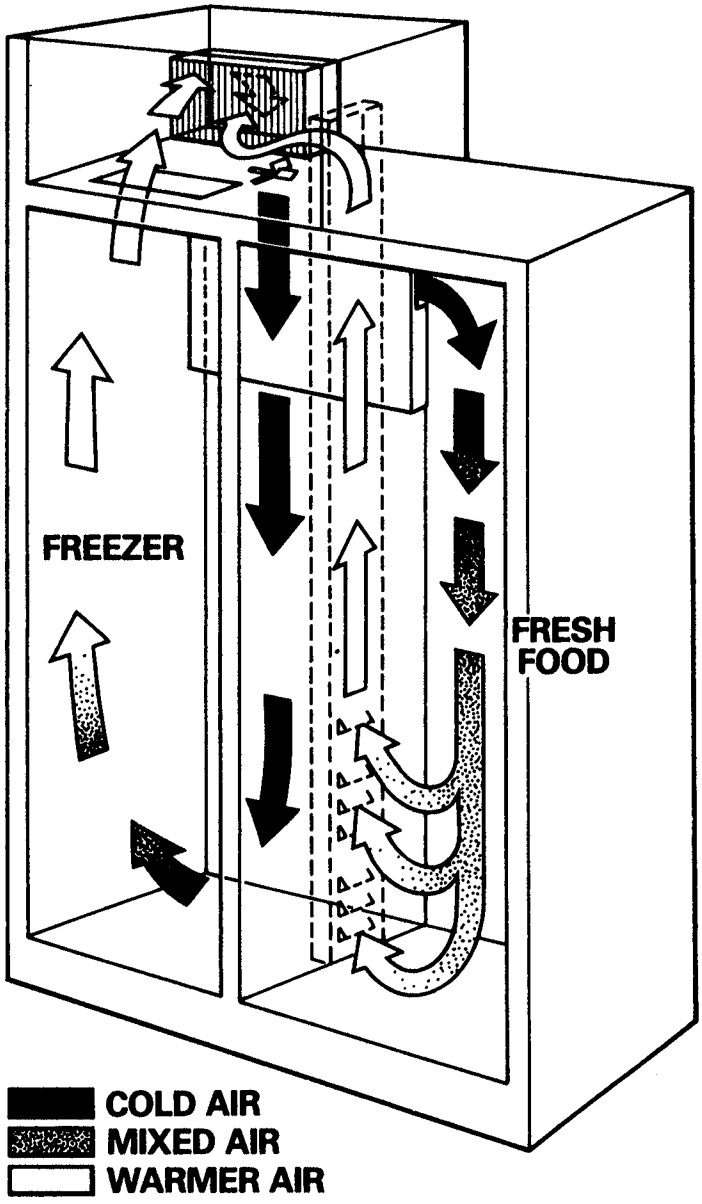


Figure 30 - Compartment Air Flow

The freezer temperature control is located behind the fresh food control console in the fresh food compartment but the capillary extends to the freezer compartment through a duct in the compartment divider. The capillary senses freezer air and regulate compressor running time.

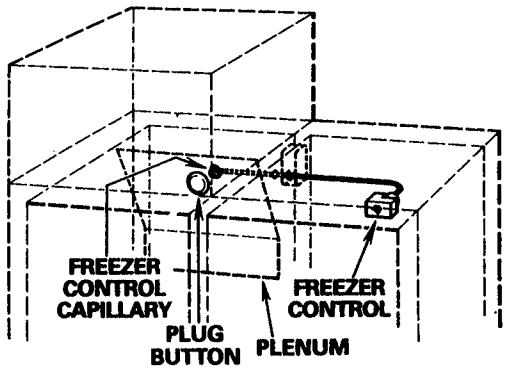
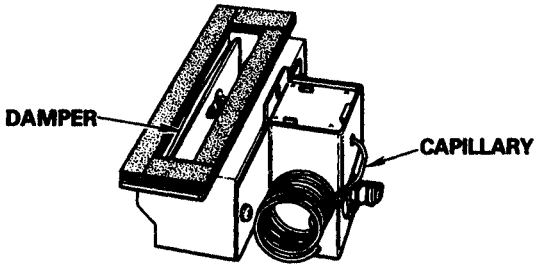


Figure 31 - Freezer Control

The fresh food control is located behind the fresh food control console in the fresh food compartment and is an automatic air damper control. The control capillary senses cold freezer air that is forced into the fresh food compartment through a duct in the compartment wall.

For access to the controls; first remove the light shield, control console, knobs, and extensions. Then, remove the screws that secure the control panel to the liner. Remove the foam strip and cut through the RTV sealer around the damper housing and then, remove the screws holding the damper housing to the compartment divider.



AIR DAMPER CONTROL

Figure 32 - Air Damper Assembly

SHELF SUPPORTS

Cantilever type shelves are used on Monogram refrigerators produce from **1987-1992** in both the freezer and fresh food compartment as well as on the doors. The shelves are supported by shelf tracks (perforated metal channels), mounted to the sides and/or rear of the liner with screws. The tracks permit the consumer to position the shelves as desired.

Starting with production in **1993**, the door shelf arrangement was changed to a modular type. Reference the Door Section for more information.

CABINET HOOD

On models produced from **1987-1992** a full hood was attached to the cabinet to cover the refrigeration section.

After 1992 only a partial hood was needed to cover the refrigeration because the evaporator and its components were housed above the freezer compartment.

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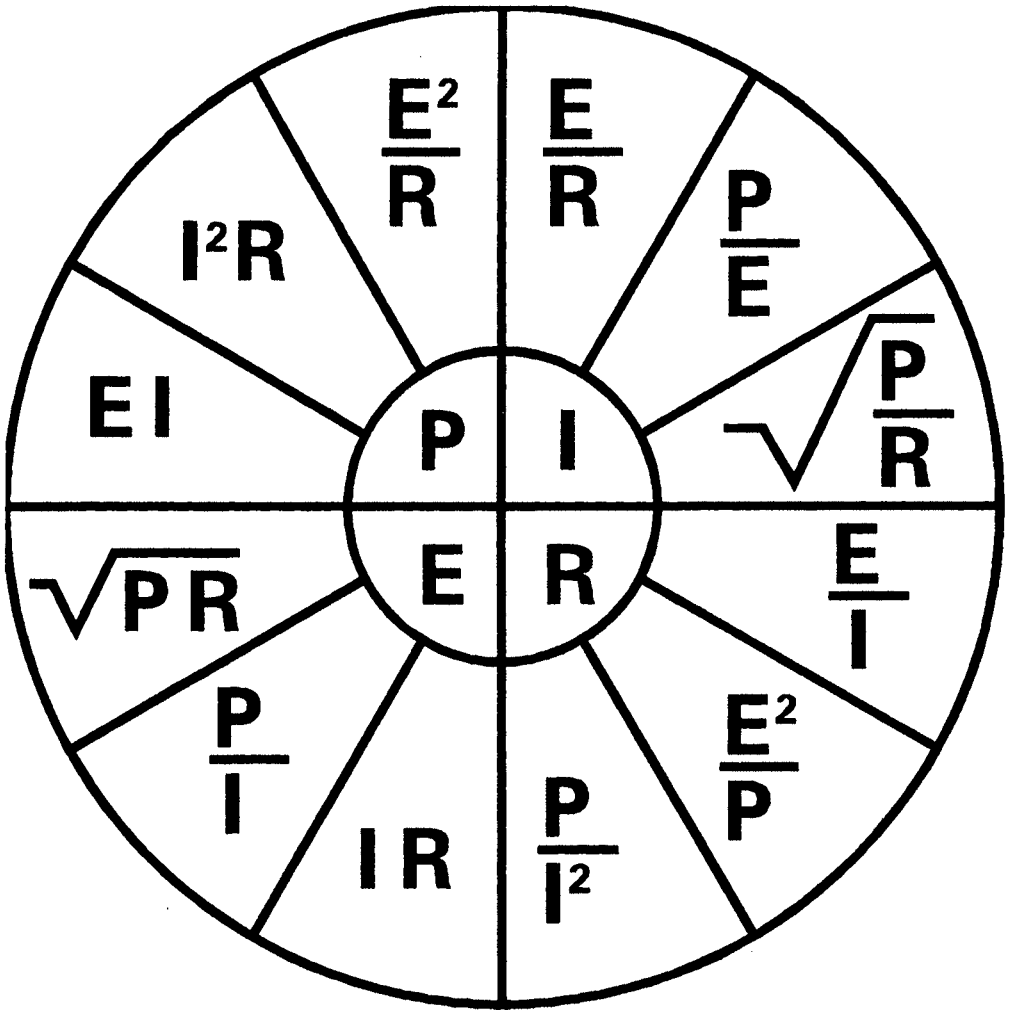


P = WATTS **E = VOLTS**

I = AMPS **R = OHMS**

(DMG0047)

POWER SOURCE

A separate branch circuit outlet should be provided for the refrigerator and be located behind the refrigeration compartment. Refer to the installation instructions for the proper placement of the electrical outlet. The circuit should be protected with a fuse or circuit breaker having a rating that conforms to the local electrical code and capable of carrying 15 amperes minimum. The wall receptacle should be properly polarized and grounded to minimize the possibility of electrical shock hazard.

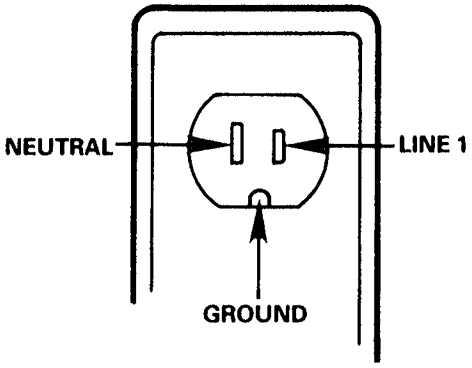


Figure 1 - Polarized Receptacle

Because the monogram refrigerators are designed to fit flush against the rear wall, the use of extension cords must be avoided. However, if an extension cord is absolutely necessary, it should be UL listed, three-wire, grounding type, properly polarized and capable of carrying 15 amperes minimum.

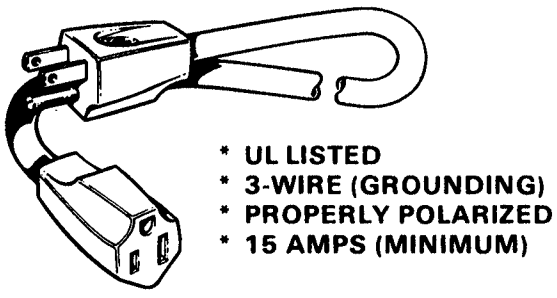


Figure 2 - Extension Cords

Most refrigerators and freezers are designed to operate on either 115 Volts AC, 60 Hertz or 100 Volts AC, 50 Hertz. Monogram refrigerators do not have a 100 Volt AC, 50 Hertz rating, and therefore should not be operated under these conditions.

The amperage rating is the amount of electrical current the household branch circuit must withstand. The actual current draw will vary, depending upon whether the compressor is running, has just started running, or is near the end of the running cycle. Therefore, the amperage rating should neither be used to determine the current draw of the product nor to calculate the energy consumption.

The energy consumption rating is stated in the Mini-manual for each model. This rating gives an approximation of the amount of energy the product is expected to consume under moderate operating conditions. (See GENERAL section - Energy Consumption.)

POWER CORD

The three-wired grounding type power cord is polarized to connect with a properly polarized and grounded wall receptacle. The round pin terminal of the plug mates with the earth ground supplied to the wall receptacle and is connected to the green center conductor of the power cord, which is attached to the product forming a chassis ground. The two flat blade terminals of the power cord mate with the Line 1 ("hot") and neutral terminals of the wall receptacle to provide a voltage source circuit for the product. The neutral conductor of the power cord is identified by either molded ribs or dashed lines on the insulation covering the conductor.

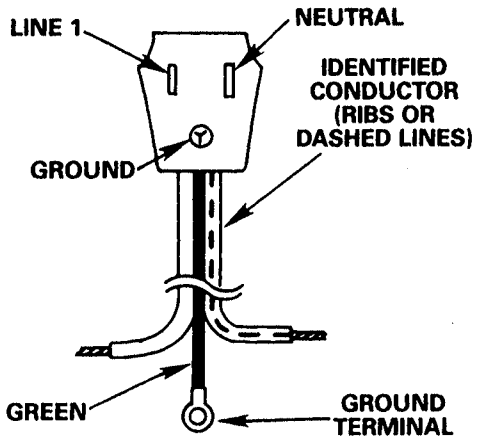


Figure 3 - Grounded Power Cord

When replacing a power cord, connect the conductors so that correct polarity is maintained and attach the ground wire to the original location. A potential safety hazard exists if polarity is reversed or the ground conductor is not properly connected.

GROUNDING

A case bonding ground system effectively grounds all electrical components and conductive surfaces which could inadvertently become electrically energized. These parts, made electrically common through a network of grounding paths, are connected to earth ground through the green conductor of the power cord.

For the most part, the grounding system is accomplished through metal-to-metal contact inherent to the construction of the product. Some electrical components, however, have ground wires that are connected to metal surfaces.

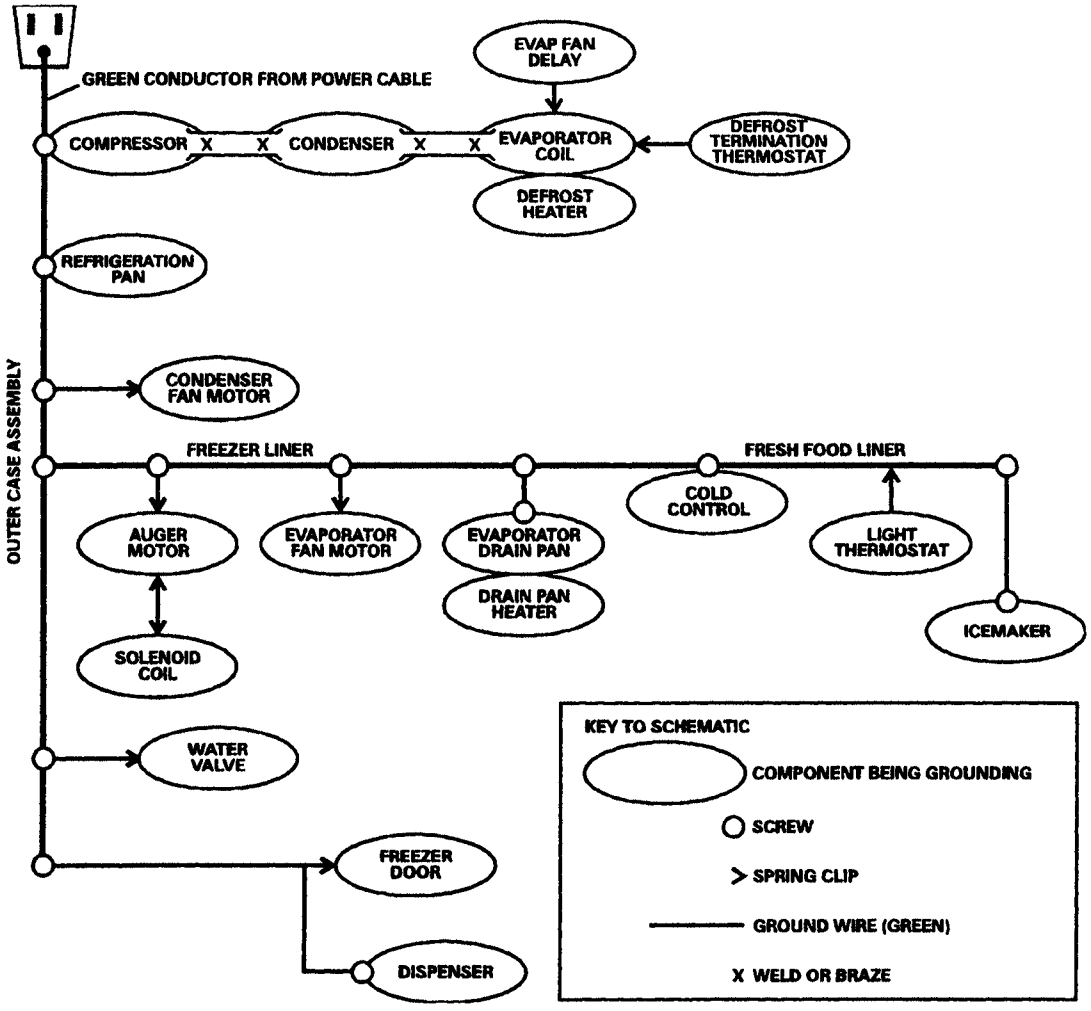


Figure 4- Typical Ground Paths - ZIS

NOTE: If ground wires, screws, straps, clips, nuts or washers used to complete a path to ground are removed for service or for any reason, they must be reconnected to their original position and properly fastened. Failure to do so could create a possible electrical shock hazard.

COMPRESSOR MOTOR

The compressor motor, mounted directly to the compressor and located inside a sealed steel case, has two windings. One is a start winding and the other a run winding. The windings are connected together internally, forming a common connection. A lead is connected to each of the windings, and to the common connection. These three leads are then connected to glass-sealed terminals that extend through the compressor case. On most compressors, the terminals are clustered in a triangle (pyramid) pattern and , reading from left to right, are identified: Start, Common and Run.

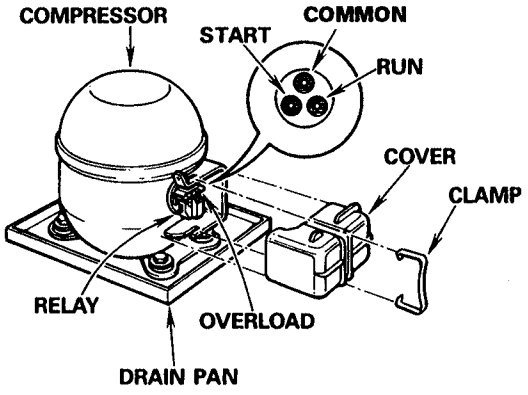


Figure 5 - Compressor Terminal

To check the start and run windings, first disconnect the power cord and remove the relay from the compressor terminals. Using an ohmmeter, measure the resistance between any two terminals, then change one lead to another terminal and measure this resistance, next change the first lead to the last terminal and measure this resistance. This will give you three different readings. The highest reading will be between the start and run terminals, which is the two windings in series. The lowest will be between the run and common terminals for the run winding. The intermediate reading will be between the start and common terminals for the start winding (which is usually more than two times greater than the run winding resistance).

When the compressor is warm, the resistance readings of both windings will be somewhat higher than the values shown on the schematic wiring diagram. Also, check between each terminal and ground with the ohmmeter set to the highest range. If a winding is found to be either open or shorted to ground, the compressor has failed.

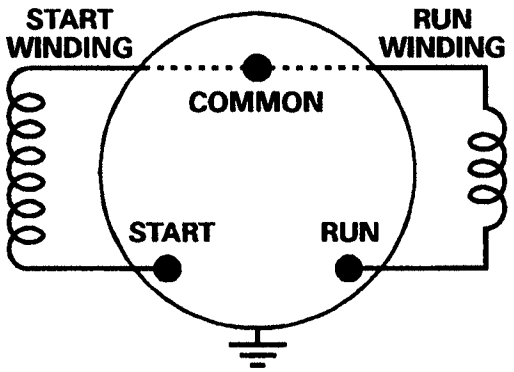


Figure 6 - Compressor Windings

(To direct start the compressor, see DIAGNOSIS section - Direct Start Test).

RELAY

The relay momentarily energizes the start winding to start the rotation of the compressor motor. On early Monogram refrigerators a current-sensing type relay was used that consisted of an armature, a solenoid coil and a set of contacts. The armature is positioned partially inside the solenoid coil and the normally open contacts are suspended below the armature.

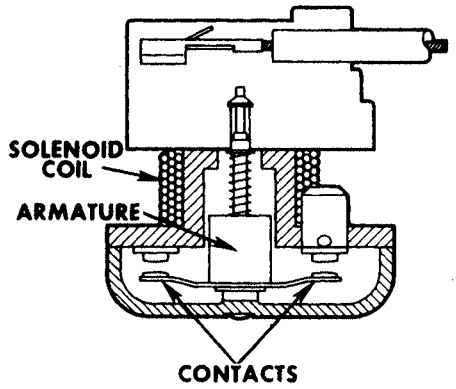


Figure 7 - Relay Construction

One side of the solenoid coil is connected to one side of the contacts at the "L" (line) terminal. The "M" (main) terminal connects to the run winding and the "S" (start) terminal connects to the start winding. Thus, the relay coil is in series with the run winding and the contacts are in series with the start winding.

When line voltage is applied to the "L" (line) terminal of the relay and the "C" (common) terminal of the compressor motor, a heavy current surges through the run winding and relay coil. This creates a strong magnetic field in the coil, lifting the armature, which closes the contacts and energizes the start winding. As the motor accelerates to approximately 75% of full speed, the run winding current diminishes, thus reducing the magnetic field of the coil. This allows the armature to "drop-out" by the force of gravity, opening the contacts, which de-energizes the start winding. The motor, then continues to operate on the run winding only.

The relay coil and contacts can be checked for continuity using an ohmmeter.

Place one probe on the "L" terminal and the other probe in the "M" terminal to test the coil. A zero-ohm reading indicates continuity through the coil. Then, place one probe on the "L" terminal and the other probe on the "S" terminal to test the contacts. With the relay in the upright position, the contacts should be open and the reading should be infinity. With the relay turned upside down, the contacts should be closed and the reading should be zero-ohm. Even though a relay has continuity through the coil and contacts, it may still fail to operate properly due to burned contacts or a binding armature. Therefore, the best test for a suspected inoperative relay is to install a new one having the same specifications.

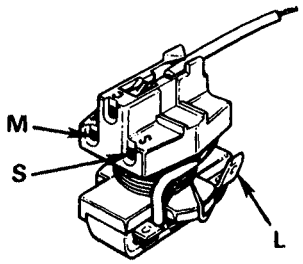


Figure 8 - Relay Terminals

When removing and replacing a relay that is mounted directly to the compressor terminals, pull it straight off and push it straight on. Avoid wiggling the relay side-to-side or up-and-down to prevent damage to the relay and/or compressor terminals. Some replacement relays have a lead wire welded to a terminal that is not required in most applications. If not needed, the lead should be snipped off close to the terminal.

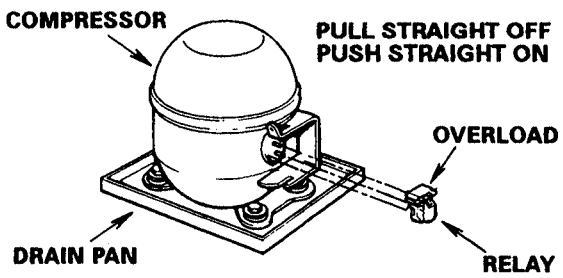


Figure 9 - Relay Replacement

Most later model Monogram refrigerators, use a solid state type relay. Some are mounted directly to the compressor terminals.

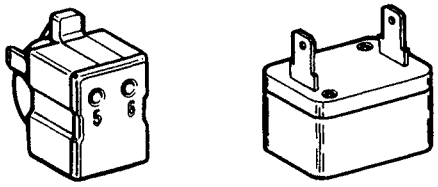


Figure 10 - Solid State Relays

Unlike the mechanical type relay, the solid state relay has no coil and no moving contacts. This relay consists of a small solid state wafer that has a low resistance (from 5 to 25 ohms) at room temperature. The wafer is positioned between electrical terminals that connect to the compressor terminals.

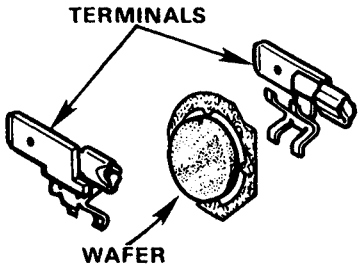


Figure 11 - Relay Components

As voltage is initially applied to the compressor circuit, current flows through the run winding and, in parallel, through the relay and start winding. Initially, the resistance of the relay is low enough to pass sufficient current through the start winding and permit the compressor to start. Then, instantaneously, the resistance of the relay goes high,in effect, reducing the current flow through the relay to a trickle. This trickle current causes the resistance of the relay to remain high, thus keeping the relay "open". This type of relay is called a PTC (positive temperature coefficient) relay because the resistance goes high as the temperature increases.

The solid state relay can be tested for continuity, using an ohmmeter. The measured resistance of the relay, at room temperature, should be within 10% of the value stated on the schematic wiring diagram for the particular model.

OVERLOAD

The overload provides protection to the compressor motor by responding to both temperature and current. The overload consists primarily of a bimetal element and a set of normally closed contacts.

The overloads used on the monogram refrigerators also have an auxiliary heater for faster response in the event the motor stalls. Lead wires may be welded to the overload terminals. However, the terminals may be spade type, screw type or some combination thereof.

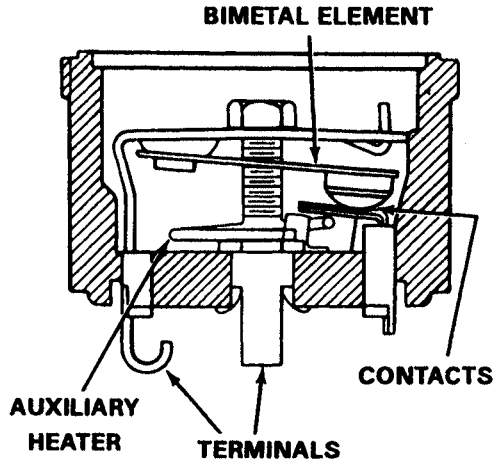


Figure 12 - Overload Construction

The overload, mounted externally and in direct contact with the compressor case, is connected in series with both windings of the motor. If the motor fails to start for any reason, the heavy locked rotor current will cause the bimetal element to heat which then quickly flexes, snapping

the contacts open and interrupting the current flow through the motor. Likewise, if the motor overheats to an unsafe level, the combination of current and temperature will cause the bimetal to snap the contacts open. Upon cooling, the bimetal flexes back and snaps the contacts closed. The motor will continue to cycle on the overload so long as the original reason for tripping persists.

The overload can be tested for continuity with an ohmmeter probe placed on each terminal. If the overload has tripped, allow it to cool in the room ambient before checking. Even though continuity is observed, it is difficult to determine if the overload is operating within the specification limits. If there is any doubt, replace it. Keep in mind, however, that what may seem to be "nuisance tripping" usually is dependable overload operation, protecting the compressor motor from outside causes. (See DIAGNOSIS section-Line Voltage Test).

NOTE: An overload should NEVER be bypassed in the circuit, not even as a temporary measure until the proper replacement can be installed.

When replacing an overload that has lead wires welded to the terminals, cut the wires allowing for splices outside of the terminal cover. Use closed-end or "bell-type" connectors to splice the wires. Where more than two wires are connected to the overload, care must be taken to properly reconnect the overload in the circuit.

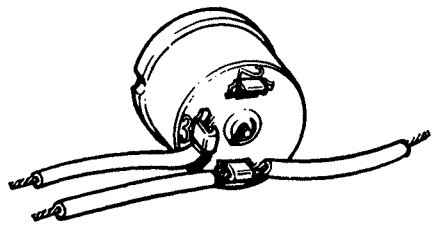


Figure 13-Overload Leads Welded

NOTE: Do not attempt to solder wires to the overload terminals. Excess solder flowing into the overload will result in fusing the contacts closed.

The overload must be held in close contact with the compressor case in order to properly sense the compressor case temperature. The terminal cover has a recessed "pocket" that secures the overload in position. Make sure the overload is held against the compressor case and the terminal cover is positioned securely.

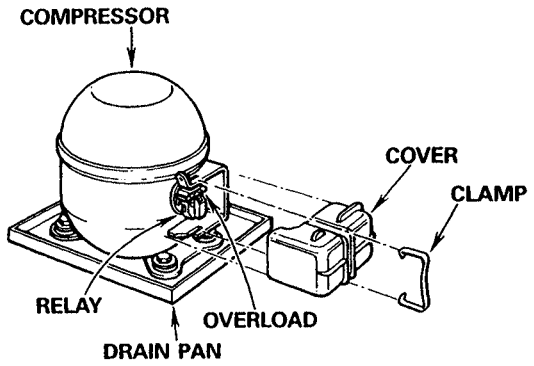


Figure 14 - Cover Installation

CAPACITORS - START AND RUN

Start capacitors are sometimes used to increase the motor starting torque. Run capacitors are used with specially constructed compressor motors to increase the running efficiency. Early monogram refrigerators used a start capacitor while current models use a running capacitor. Although both types are connected in series with the start winding, each requires a special relay in order to provide for proper electrical connections to the circuit. The start capacitor, connected in series with the relay contacts, is utilized only for motor starting - while the relay contacts are closed. Whereas, the run capacitor is connected in parallel with the relay contacts, and is shunted while the relay contacts are closed for starting, but is utilized along with the start

winding after the relay contacts open and so long as the motor operation continues. The compressor will start and run without the run capacitor being in the circuit, but will not run as efficiently.

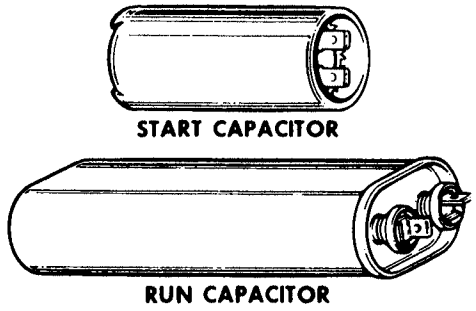


Figure 15 - Start & Run Capacitors

The capacitor can be checked by using an analog ohmmeter set to the highest range (RX 10K or higher). First, disconnect the power cord, remove the leads from the capacitor and, as a precaution, discharge it by shorting the terminals with an insulated screw driver. Then, place the ohmmeter probes on the capacitor terminals and observe the ohmmeter reaction.

Reverse the probes, to reverse the polarity, and again observe the ohmmeter reaction, the ohmmeter should register zero-ohms and then deflect slowly back toward infinity when the capacitor is in good condition. The ohmmeter should register zero-ohms if the capacitor is shorted, and infinity if it is open. If the capacitor has a metal case, check for continuity from each terminal to the case. If the capacitor is shorted to ground, it must be replaced. Even though the capacitor checks good with an ohmmeter, it may still fail to operate properly due to internal leakage. Therefore, the best test for a suspected inoperative capacitor is to install a new one having the same voltage and capacitance specifications.

TEMPERATURE CONTROL

A temperature control is used to regulate the operation of the compressor and thus maintain desired food temperatures. The temperature control consists primarily of a capillary tube and bellows assembly, a set of normally closed contacts, and a mechanical linkage.

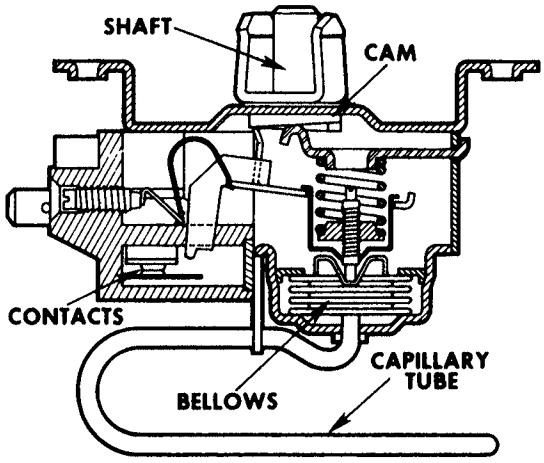


Figure 16 - Temperature Control

Pressure within the gas-charged capillary tube and bellows assembly responds to temperature sensed at the coldest point along the length of the capillary tube.

Rising temperature causes the pressure to increase and expand the accordion-type bellows. The expanded bellows actuates the linkage which allows the contacts to close. When the temperature drops, the bellows contracts due to a decrease in pressure and the snap-action of the linkage opens the contacts.

On early models, the control was physically located in the freezer compartment and sensed the freezer return air. On later models (ZIS 36, 42 & 48N or D) the control body is located in the fresh food compartment but the capillary extends to the freezer compartment and senses the freezer primary air.

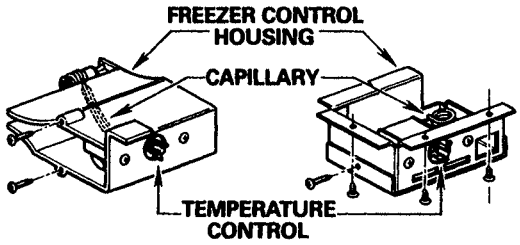


Figure 17 - Capillary Location - Old

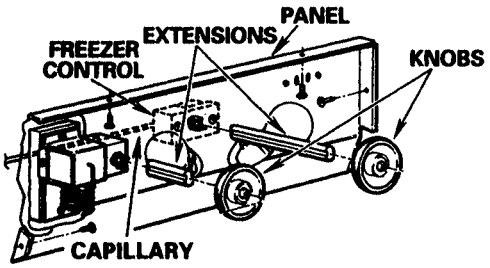


Figure 18 - Capillary Location - New

Since the control has the capillary tube in the freezer air stream the calibration will be much lower than a standard control which is located in the fresh food air stream. Accordingly, the proper control must be used. Reference Mini-Manual for correct replacement control.

All temperature controls are carefully calibrated at the factory for use at altitudes from sea level up to 1400 feet above sea level. The lower barometric pressure at higher altitudes causes the control to cycle at a colder temperature than at sea level. Therefore, it may be necessary to calibrate the control for higher altitude installations. If a control is accidentally dropped on a hard surface, the calibration can shift. Likewise, replacement controls for some models require recalibration for proper operation.

The calibration adjustment screw is accessible through a hole in the front of the control. An arrow, on the control front, indicates the direction to turn the screw for a colder calibration.

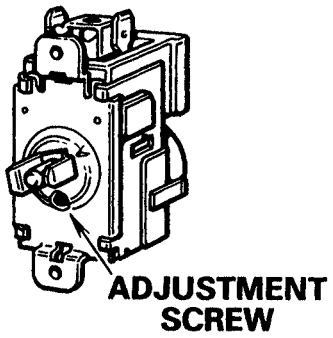


Figure 19 - Control Recalibration

To calibrate the control, disconnect the power cord and, using a narrow (1/8-inch wide) blade screwdriver, turn the adjustment screw only in the direction and to the extent necessary.

Adjusting the screw 1/8-turn will result in approximately 1.5 °F. Calibration shift

Altitude	Adjustment
1400 - 3200 FT.	**1/8-Turn CW**
3200 - 5000 FT.	**1/4-Turn CW**
5000 - 7000 FT.	**3/8-Turn CW**
OVER 7000 FT.	**1/2-Turn CW**

Figure 20 - Altitude Settings

The temperature control contacts can be tested for continuity, using an ohmmeter. With one probe placed on each control terminal, turn the control to the "off" setting and back on to check for contacts opening and closing.

The calibration can be checked with a remote sensing thermometer (temperature tester). Clamp the thermocouple to the control capillary at the point most likely to sense the coldest temperature. Refer to the "Electrical Specification" in the Mini-Manual for the temperature control limits and compare the data with the temperature measurements as the control cycles off and on.

If the contacts fail to open and/or close, or if the calibration has shifted more than 4 °F., the control should be replaced.

When replacing the temperature control, proper placement and mounting of the capillary is of utmost importance. Also, if sleeving is positioned on the capillary of the original control, it must be used on the replacement and positioned in the same location. The following capillary locations are used on various Monogram generations.

Capillary on Thermal Mass - Prior to October 1988, on non-dispenser models and December 1988, on dispenser models, a plastic control housing is used and located in the freezer compartment. The control and housing incorporated a thermal mass at the rear of the housing and the capillary is wound around the thermal mass. The capillary must be tightly wound on the thermal mass. To ensure a tight fit, remove the thermal mass by removing the holding screw. Wrap the capillary clockwise on the mass 4 turns.

Slip the coiled capillary off of the mass and tighten the turns by twisting to reduce the coil diameter slightly. Reinsert the thermal mass into the coil by twisting the mass in the counter-clockwise direction. Be sure it fits into the coil tightly. Then, reinstall the thermal mass on the control housing.

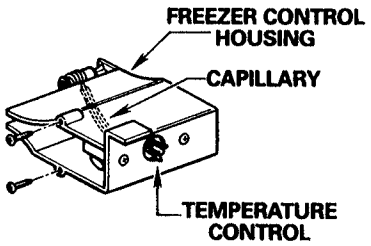


Figure - 21 Wound on Thermal Mass

Capillary suspended in air - On models produced after 1988 through 1992, the freezer temperature control located in the freezer compartment is mounted in a metal housing. The capillary is coiled and suspended in air. The capillary should be formed and located in the same manner as originally installed. The capillary should be sensing only air temperature; therefore the capillary should not be touching any surface.

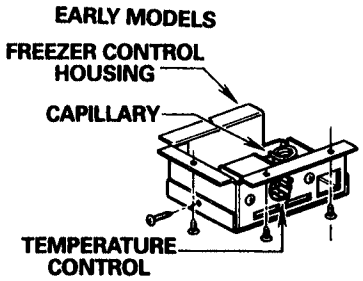


Figure - 22 Suspended in Air

After 1992, the 36,42, and 48-inch models, both dispenser and non-dispenser have the temperature controls located in the fresh food compartment on a control console. The freezer control senses freezer air and operates the compressor running time. The capillary of the freezer control is routed through the fresh food divider wall and attached to the back liner in the freezer compartment.

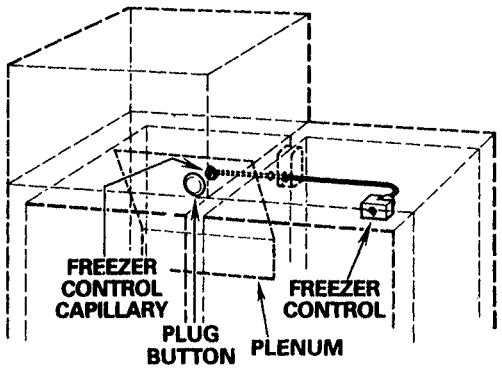


Figure 23 - Extended Thru Wall

CONDENSER FAN

All monogram models are equipped with a condenser fan to provide forced draft cooling needed for the condenser and compressor. The condenser fan is mounted in various locations depending on the model generation being serviced. All monogram models condenser fans are located in the refrigeration compartment at the top of the refrigerator. On the first generation models - model number BCS42AJ, the condenser and the condenser fan are mounted at the rear of the compartment behind the evaporator housing. Therefore, to service the condenser fan, the refrigeration unit must be removed. 4-Bolts hold the refrigeration unit in place after assembly.

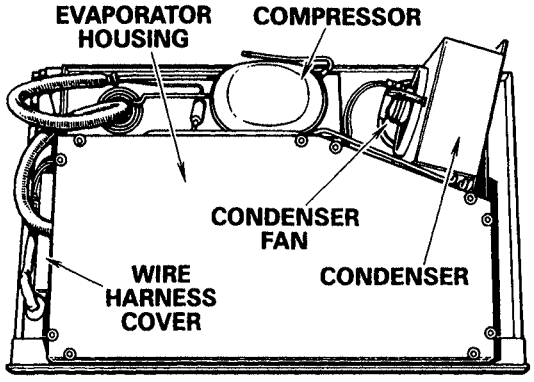


Figure 24 - BCS42AJ Condenser Fan

On models manufactured from 1988 to 1992 (BCS42CK, EK, EL and ZIS42EM) the refrigeration unit was redesigned and the condenser was moved to the front of the unit. The condenser fan is mounted to the rear of the condenser. The refrigeration unit must be removed to access the condenser fan motor shroud. On these models, 5-bolts hold the refrigeration unit to the cabinet section.

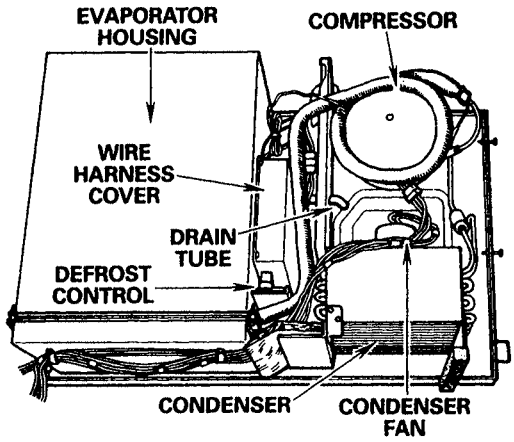


Figure 25 - BCSCK, EK, EL AND ZIS42EM Condenser Fan.

On models produced after 1992 to present (ZIS36, 42, 48N & D's), the refrigeration unit and cabinet assembly were redesigned to accommodate a one piece design. The refrigeration components are mounted to a slide out chassis for serviceability. The condenser and condenser fan are located to the left rear of the compressor in the compartment. To access the fan shroud the refrigeration chassis must be extended. 1-Bolt holds the chassis in position.

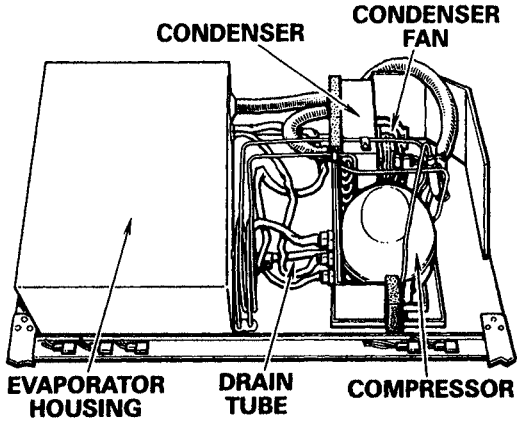


Figure 26 - ZIS36,42,48 N & D's Condenser Fan

CONDENSER AIR FLOW

Room ambient air, being drawn by the fan, enters the refrigeration compartment through the front grille at the top of the cabinet. It then circulates over and through the condenser, picking up heat.

On the earliest models, the air is drawn in at the right side and discharged over the drain pan and expelled through the front grille at the left side. On the next generation of models, from 1988 through 1992, the air is drawn through the condenser, over the drain pan, around the compressor and expelled out the right front. On models from 1992 to present, the room air is drawn in at the center, channeled to the rear of the compartment, and through the condenser. The air then moves around the compressor, across the drain pan and exits the refrigeration compartment on the right side.

NOTE: Baffles that are used to channel and direct the air flow must be correctly positioned to insure proper air flow over and through the condenser.

In time, condenser fan operation will deposit household lint and dust on the condenser which will impede air flow through the condenser, unless it is cleaned periodically.

Likewise the condenser fan blade will become coated with dust, reducing its efficiency.

When servicing the condenser fan, accumulated dust on the fan blade should be cleaned off to improve efficiency of the fan. Also, any wiring near the blade should be properly dressed to avoid obstructing the fan blade.

The condenser fan motor is mounted to a plastic shroud with three Torx (#25) screws. The fan and blade can be removed after removing the refrigeration unit, disconnecting the harness, and removing the mounting screws. Rotate the motor and fan assembly, remove the nut from the blade, then remove the motor. The shroud may have been modified on some models.

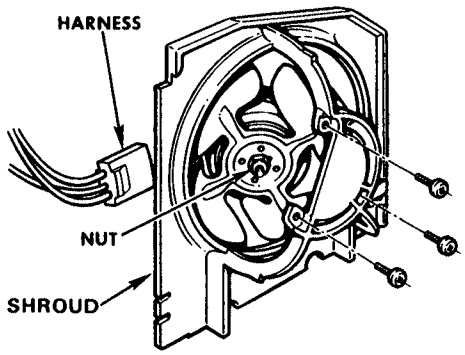


Figure 27 - Fan Motor Removal

EVAPORATOR FAN

An evaporator fan is used to circulate air through the evaporator and within the fresh food and freezer compartments. Cold air from the evaporator is drawn through the fan and discharged into the freezer and fresh food compartments. After circulating throughout both compartments, picking up heat from the food, the warmer air is returned to the evaporator.

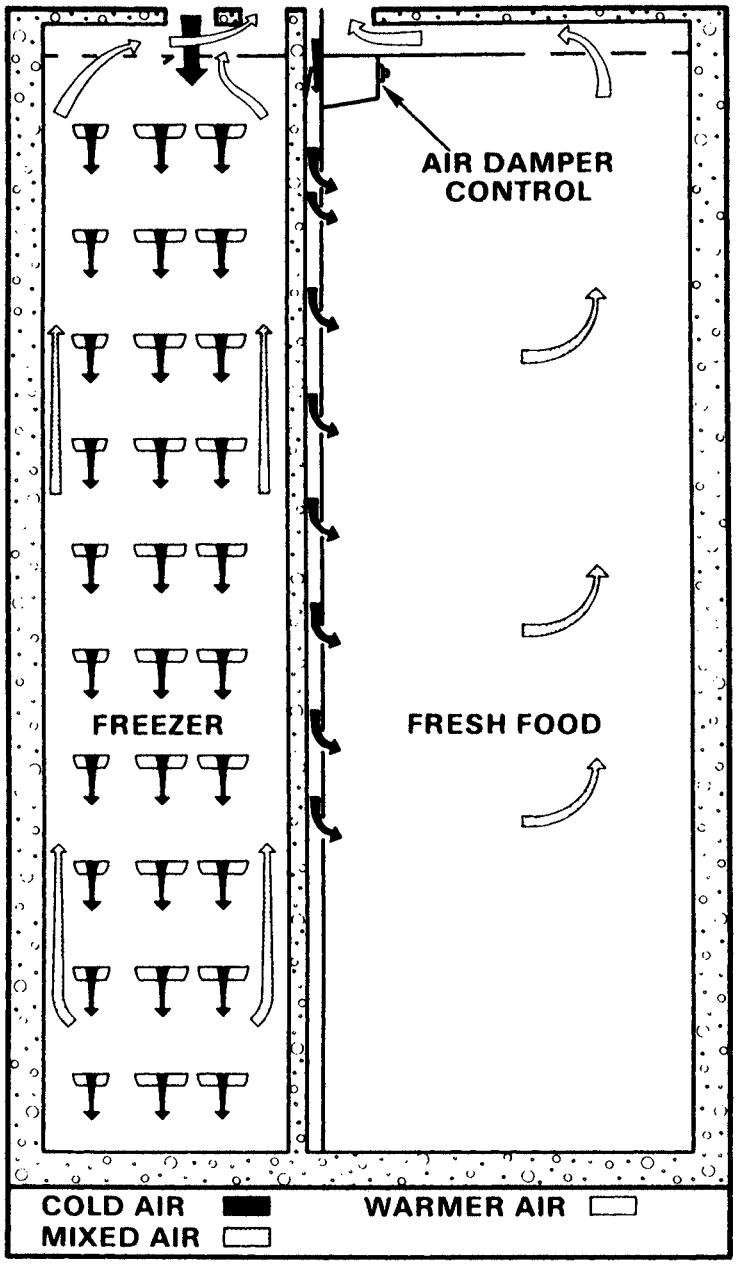


Figure 28 - Typical Evaporator Air Flow, AJ Models

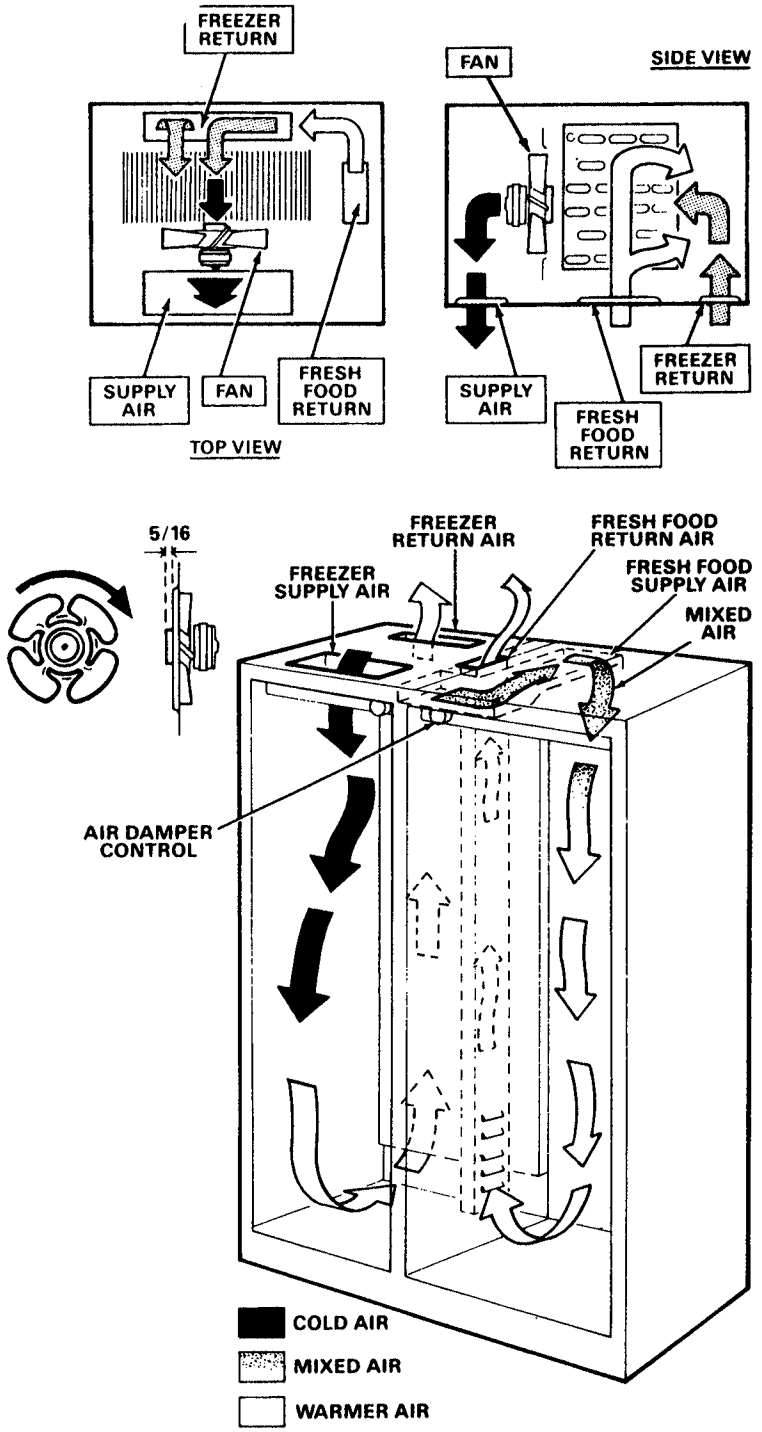


Figure 29 - Typical Evaporator Air Flow, CK, EK, EL, etc. Models

(DMG0063)

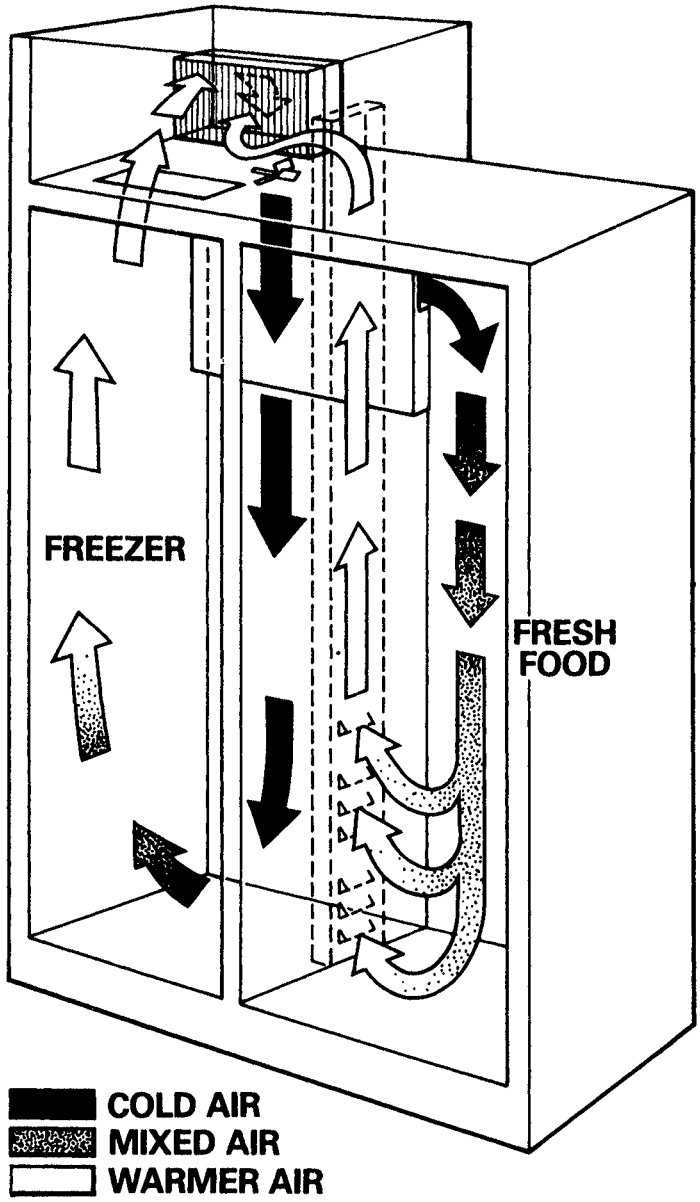


Figure 30 - Typical Evaporator Air Flow, ZIS 36, 42, 48 Models

When replacing or servicing the evaporator fan motor or blade, it is very important that the blade be correctly positioned on the motor shaft. If the blade is reversed (installed backwards) or positioned too far in either direction on the motor shaft, it will not properly propel the air. Generally, the blade should be positioned so that one-third of its depth (or approximately 1/4-inch) protrudes through the fan orifice in the direc-

tion of air flow. However, on some models, the proper position of the fan blade in relation to the orifice is different. Accordingly, the air flow diagram in the Mini-Manual (describing the proper dimensions for the blade position) should be consulted for a particular model. The current production motor is mounted horizontally.

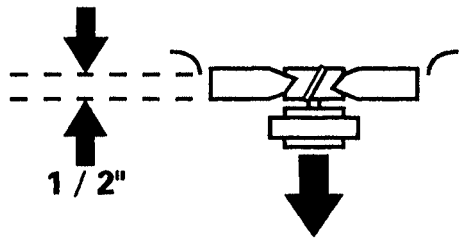


Figure 31 - Fan Blade Positioning, BCS 42 UJ Models

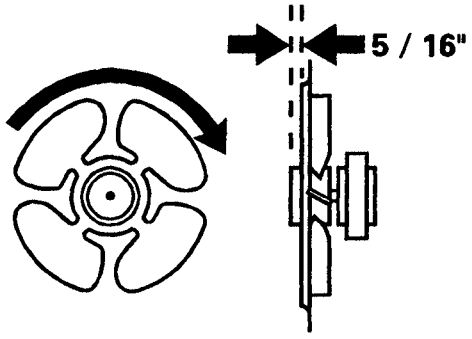


Figure 32 - Fan Blade Positioning, BCS, CK, EK, EL, ZIS, EM Models

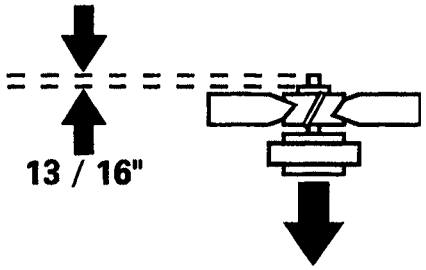


Figure 33 - Fan Blade Positioning, ZIS 36, 42, 48 Models

FAN MOTOR TESTING

Since the condenser fan and the evaporator fan are electromechanical devices, they are subject to both electrical and mechanical failures To test the motor winding, use an ohmmeter and refer to the schematic wiring diagram for the resistance value. However, if the motor has been previously replaced, its resistance may be slightly different than the value shown on the schematic wiring diagram.

Fan motors, used on monogram refrigerators seldom fail due to an open winding. Although, if intermittent operation is isolated to the motor, it should be replaced.

More commonly, the motor will stall due to an obstruction of the fan blade. Because condenser fan and evaporator fan motors are designed to withstand a prolonged stalled condition, if should not be necessary to replace the motor after the obstruction is removed.

Rotate the fan blade slowly by hand with the motor shaft in the extreme positions (in and out) to check for a distorted blade or internal motor binding condition. Then, to check for worn bearings in the motor, spin the blade briskly and observe whether it turns freely or is sluggish. Also, listen for noise from the bearings and inspect for an unbalanced blade while the motor is energized. If the motor binds, or the bearings are rough or noisy, replace the motor. If the blade is unbalanced, it should be replaced. However, don't suspect that a fan blade is unbalanced because it appears to be "deformed" near the tip of one or more blades. These raised, irregular shaped areas on the back (low pressure side) of the fan blade are molded into the blade to dynamically balance it and thus provide for quieter, smoother operation.

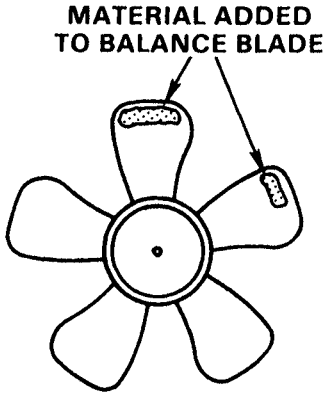


Figure 34 - Balanced Fan Blade

To access the evaporator fan on early monogram models BCS42AJ, the refrigeration unit is removed from the top of the cabinet section.

The evaporator housing cover is removed by removing screws at the top of the cover and then the evaporator fan assembly can be removed after removing the blade and disconnecting the wiring leads. It may be helpful to tip the unit up on its front for access to the wiring leads; however, before doing so, make sure the defrost water pan is dry. The fan blade should be positioned as shown in the Mini-Manual, so that 1/2-inch of the blade depth extends below the edge of the fan orifice.

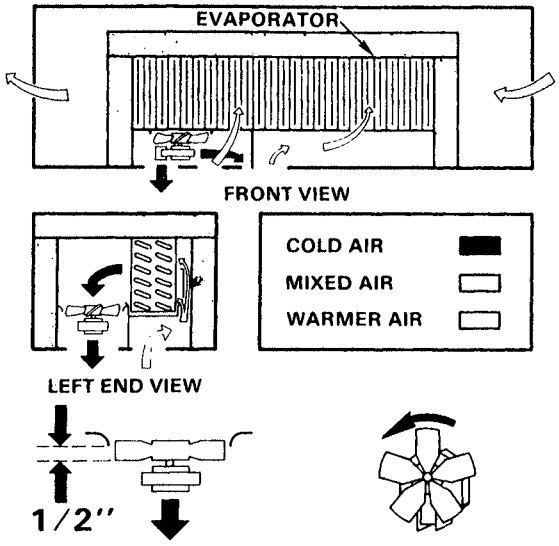


Figure 35 - BCS42AJ Evaporator Fan Housing

On monogram models produced from 1988 through 1992 (BCS42CK ,EK,EL AND ZIS42EM), the evaporator fan and other components to the low side are accessed from the front of the refrigeration unit on top of the cabinet section. The refrigeration unit is not removed to replace the evaporator fan. Four (4) bolts secure the evaporator housing front cover to the housing. The bolts extend through brackets on the front cover and are attached to brackets on the evaporator housing. Spacers are used between the brackets to maintain the proper spacing of the front cover to the evaporator housing. If upon reassemble, the gasket compression is not enough to provide a good seal, remove the spacers and tighten the bolts slightly to seal the gasket to the housing flange.

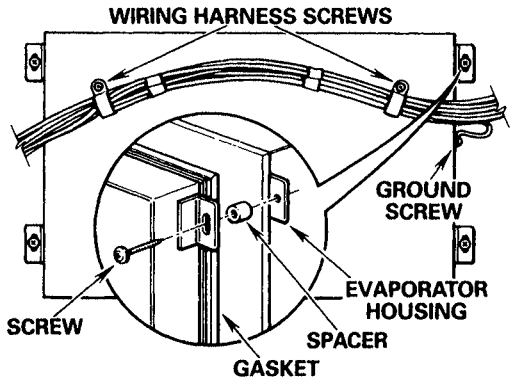


Figure 36 - Evaporator Front Cover-1988 - 1992

When the housing cover is removed a styrofoam plenum covers the evaporator fan assembly. Two screws hold the evaporator fan assembly to the fan orifice plate.

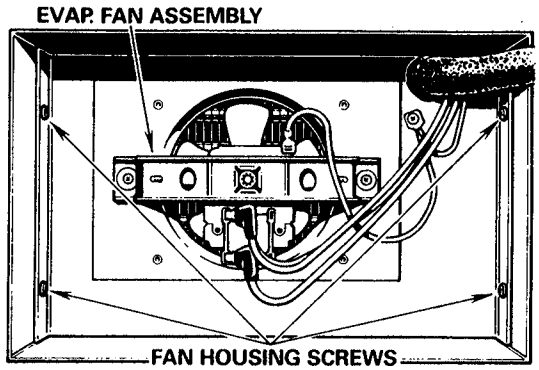


Figure 37 - Evaporator Fan Assembly (BCS42CK,EK,EL AND ZIS42EM)

The current production models evaporator fan is located in the freezer compartment, mounted horizontally on the evaporator fan diffuser panel. To access the evaporator fan bracket, the light shield must be removed and then the plenum. If the model is a dispenser, the icemaker and ice shelf must also be removed.

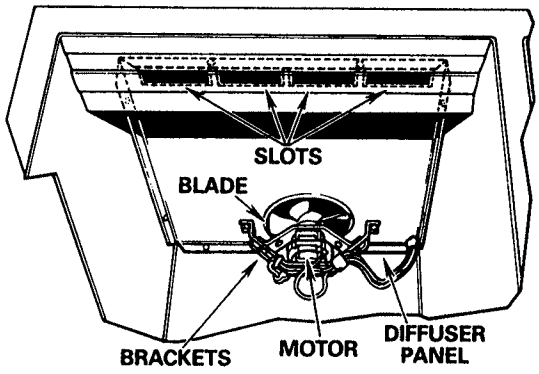


Figure 38 - Evaporator Fan Location ZIS42N AND D MODELS

DEFROST CONTROL

The defrost control consists of a clock motor attached to an insulated housing that contains a cam and a single pole, double throw switch.

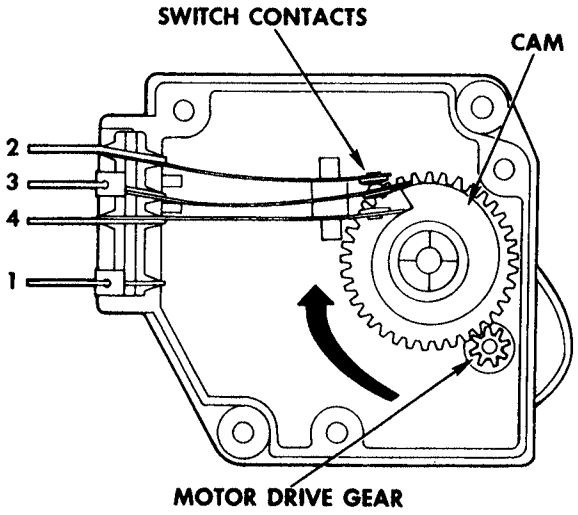


Figure 39 - Defrost Control

The purpose of the defrost control is to regulate the frequency of defrost cycles and the duration of each cycle. This is accomplished by energizing the clock motor to drive a set of gears that, in turn, rotates the cam which operates the switch. The defrost cycle begins when the cam has rotated to the position where terminal 4 switch blade drops off the edge of the cam. This opens the first set of contacts (terminals 3 and 4) and closes the second set of contacts (terminals 3 and 2). As the cam continues to rotate, terminal 3 switch blade will drop off the edge of the cam. This opens the second set of contacts (terminals 3 and 2) and closes the first set of contacts (terminals 3 and 4) thus, ending the defrost cycle. An audible "SNAP" can be heard each time a switch blade drops off the edge of the cam (at the beginning and ending of the defrost cycle.

To test the control electrically, use an ohmmeter and refer to the schematic wiring diagram for the proper terminals and resistance value of the control motor. Advance the cam manually to check continuity of the con-

tacts for the compressor as well as for the defrost heater. The contacts should open and close for each circuit. Check the resistance of the control motor also.

However, if the defrost control has been previously replaced, the resistance of the motor may be different than the value shown on the schematic wiring diagram. Refer to the Mini-Manual for the particular model to verify resistance values. Defrost controls used on some later models - have a small capacitor in series with control motor. Thus, when the motor is tested, the ohmmeter reading will be infinity (open) - unless the meter is set at the highest scale to observe the reaction of the capacitor.

An operational test can be made which will check both the mechanical and electrical aspects of the defrost control. First, make sure the compressor is running, then manually advance the cam to the beginning of the defrost cycle. When the mark on the cam aligns with the mark on the control housing, an audible "SNAP" will be heard. Observe that the compressor stops.

NOTE: If marks do not exist on the face of the motor - a scribe mark made next to the cam mark when the compressor is cycled off can be used to test the operation.

Continue to advance the cam, while counting the number of "clicks" as the cam is rotated, until the second "SNAP" is heard. Advance the cam around to the beginning of the defrost cycle where the marks align and the "SNAP" is heard. Continue to advance the cam, counting the "clicks" until only one "click" remains before the end of the defrost cycle. Wait approximately ten minutes to allow the control to advance through the remainder of the defrost cycle. Observe heater operation while listening for the second "SNAP" and for the compressor to resume operation. If the defrost control does not advance, it should be replaced.

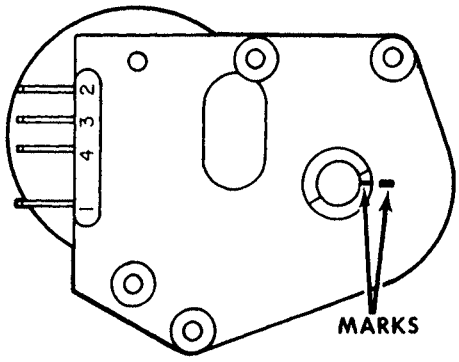


Figure 40- Defrost cycle Marks

DEFROST THERMOSTAT

The defrost thermostat consists of a single pole switch, a bimetal disc, and transfer pin within a metal and plastic case that is sealed with epoxy. Lead wires, welded to the internal terminals, extend through the case.

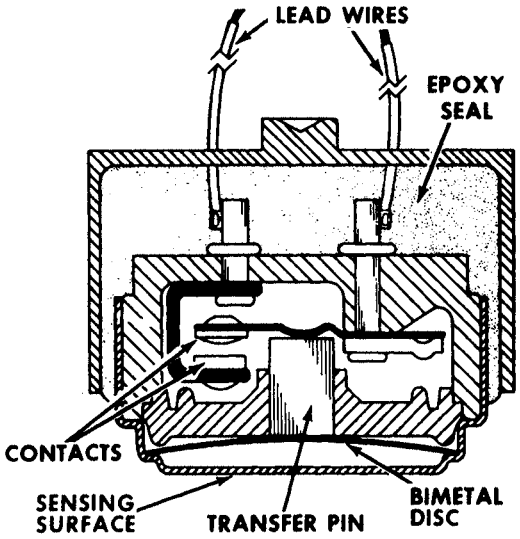


Figure 41 - Thermostat Construction

The purpose of the defrost thermostat is to de-energize the heater, during the defrost cycle, when the frost has melted from the evaporator. After all frost has been completely removed from the evaporator, the temperature of the evaporator begins to rise rapidly. When the limit temperature of the thermostat is sensed, the

bimetal disc warps and pushes the transfer pin against a switch blade which opens the switch contacts. Conversely, when the temperature of the evaporator has cooled sufficiently, the bimetal disc warps in the opposite direction. Then, the spring-loaded switch blade pushes the transfer pin out of the way and closes the contacts.

The only practical method for testing the thermostat is to check it for continuity with an Ohmmeter while it is mounted to a cold evaporator. Since the contacts should be closed except during the later part of the defrost cycle, and for the first few minutes thereafter, if the evaporator is cold and the contacts are found to be open, the thermostat has failed.

NOTE: If a thermostat has failed, it should NEVER be bypassed in the circuit. Such action would cause overheating of the defrost heater and surrounding surfaces which could result in sever damage to the product.

NOTE: A defrost thermostat failure usually results in a frost blocked evaporator. Due to the abnormal amount of frost accumulated, the evaporator must be completely defrosted to prevent a subsequent residual icing condition. If a heat gun is used, care must be taken to prevent melting foam and plastic parts adjacent to the evaporator.

When replacing a defrost thermostat, it must be mounted firmly in contact with the evaporator plate in order to properly sense the evaporator temperature. A clamp type bracket is used to mount the thermostat to the evaporator plate. On early models the bracket was held in place with two screws. On later models a clip holds the thermostat to the evaporator plate. By applying pressure on one side of the clip and rotating to the rear, the clip and thermostat can be removed.

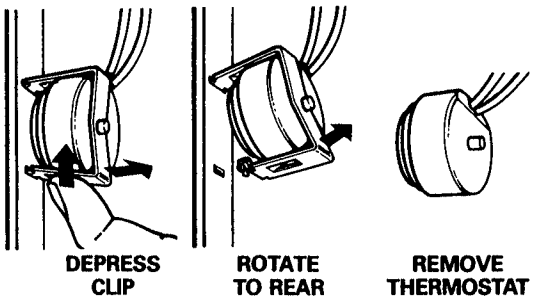


Figure 42 - Thermostat Clip

FAN DELAY THERMOSTAT

All monogram models use a fan delay thermostat in series with the evaporator fan to delay operation of the fan after the defrost cycle has completed. The fan delay thermostat is mounted to the evaporator plate just below the defrost thermostat and is held in place by a clip. The purpose of the fan delay is to allow the evaporator to refrigerate for a short period of time without the evaporator fan blowing or pulling air across it. This condition prevents the evaporator fan from pushing warm air from the defrost cycle into the freezer and fresh food compartments.

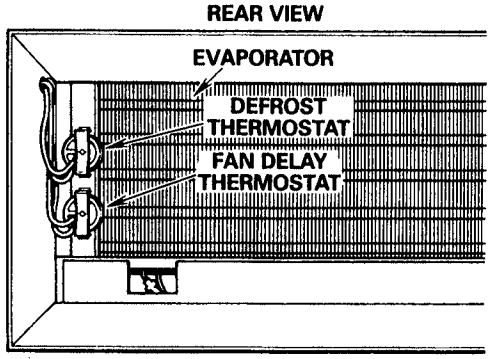


Figure 43 - Thermostat Locations

EVAPORATOR FAN RELAY

On some early monogram models, CK and EL, a fan relay is located behind the center baffle and in the electrical enclosure in the refrigeration unit, but is not connected. The relay is used to bypass wiring and to provide continuous evaporator operation except during the defrost cycle. Instructions are provided in the electrical enclosure on these models for proper connection.

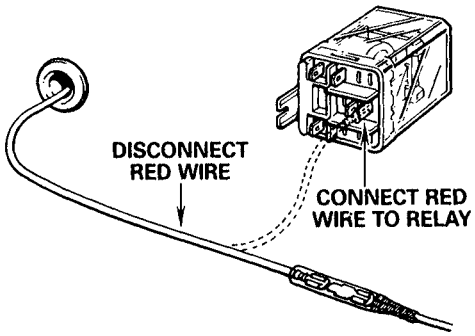


Figure 44 - Fan Relay

DEFROST HEATER

The defrost heater used on the monogram refrigerators is a calrod type heater. The purpose of the defrost heater, located within the fins of the evaporator, is to melt the frost that has accumulated on the evaporator, and to warm the drain trough during the defrost cycle.

Defrost heaters should be tested for proper resistance as indicated on the schematic wiring diagram, using an ohmmeter.

NOTE: A defrost heater failure usually results in a frost blocked evaporator. Due to the abnormal amount of frost accumulated, the evaporator must be completely defrosted to prevent a subsequent residual icing condition. If a heat gun is used, care must be taken to prevent melting foam and plastic parts adjacent to the evaporator.

On early models, (BCS42UJ) the heater is secured to the front of the evaporator and wedged between the fin rows. To remove the defrost heater, remove the refrigeration unit from the machine compartment. Remove the evaporator housing cover. Disconnect the defrost heater wiring connectors. Remove the two mounting screws at each upper front corner of the evaporator.

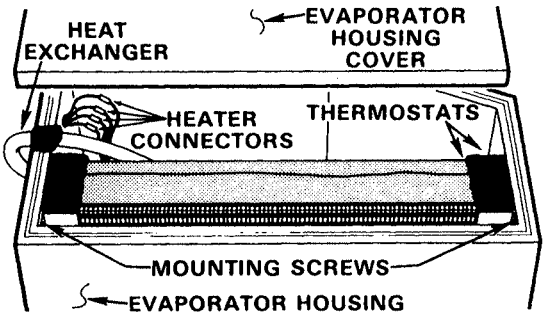


Figure 45 - Remove BCS42UJ Cover

Grasp the evaporator at each end and lift it straight up and out of the evaporator housing. Place it on a protective surface. Remove the end brackets from the front of the evaporator. Remove the stainless steel wire that secures the defrost heater to the front of the evaporator. Pull the inoperative heater out of the evaporator front.

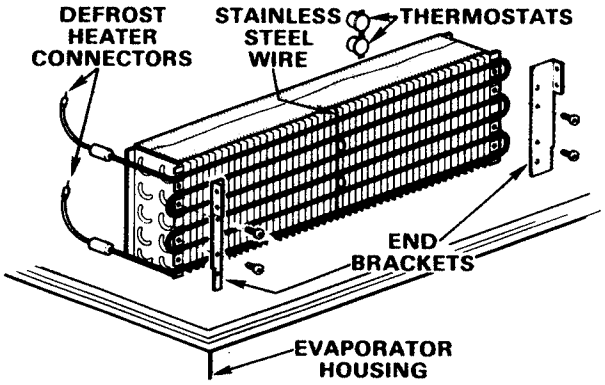


Figure 46 - Remove BCS42UJ Heater

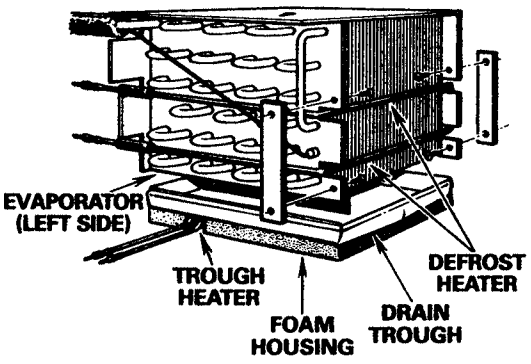


Figure 47- Calrod Heater Location

Install the defrost heater in reverse order. Use a wood block and small hammer to gently tap the heater into the front of the evaporator. Secure the defrost heater with stainless steel wire, near the center of the evaporator.

On later monogram models, (BCS 42CK,EK,EL AND ZIS42EM) the defrost heater is positioned toward the bottom of the evaporator on two sides. The heater is secured to the evaporator with brackets. On these models the evaporator can be removed without removing the entire refrigeration unit.

On models produced after 1992, the evaporator is in the upper portion or the freezer compartment and the evaporator must be dropped down to remove the defrost heater. Care must be taken when dropping the evaporator down not to bend the tubing or break it.

CABINET HEATERS

Heaters, placed behind the outer case flange (at the front of the freezer compartment) and behind the mullion (at the front between the compartments) are used to prevent sweating on the exterior of the cabinet in these areas. On early models, (BIS 42AJ) the freezer case and fresh food mullion heaters are readily replaceable after removing the breaker strips in the respective compartments.

The connections for the heaters are located behind the foil tape at the top of the inner mullion breakers.

On later production monograms, (BIS 42CK, EK, EL & ZIS 42EM) the case heater and mullion heaters are foamed in place and are therefore not removable. Replacement heaters can be installed in the breaker channels after the breakers are removed, if a heater should fail.

On current production models, (ZIS 36, 42 & 48N & D's) a condenser loop is used to provide heat to the mullion and around the freezer case flange. A case flange and mullion heater is also provided and controlled through the energy saver switch. An auxiliary heater is also provided if a heater failure occurs because the breaker strips are not removable.

Electrical connections for both heaters are located behind the fresh food control console on current production models. Two wire grommets will be visible at the top of the liner. To connect the auxiliary heater - replace the brown wire extending from the 4 wire grommet to the energy saver switch with the orange wire from the same grommet. Disconnect the black wire connector and connect the black wire from the two wire grommet to the white wire from the four wire grommet. The case flange/mullion heaters are foamed in place and therefore, are not replaceable.

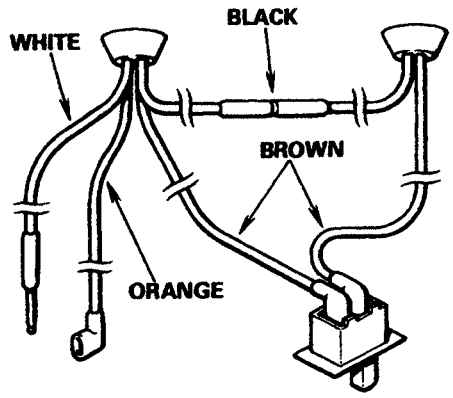


Figure 48 - Heater Connections

Sweating on the exterior of the cabinet or doors may be due to causes other than a burned-out heater, such as:

- Excessively high humidity
- Abnormally cold compartment temperatures.
- Energy Saver Switch positioned "dry" or "normal"
- Door gasket not sealing to case, or to door, or to inner door.
- Defrost thermostat contacts not fully closed.
- Insulation mis-positioned or not in direct contact with metal at some point.
- Heater mis-positioned or not in direct contact with metal at some point.

DRAIN TROUGH HEATER

A drain trough heater is used on all defrost systems of the monogram models. Early production models used a calrod type heater attached to the drain trough. To remove the drain trough heater on these models, remove the evaporator from the evaporator housing and place it on a protected surface. Disconnect the drain trough heater leads. Bend the retainer tabs only as necessary to release the heater from the drain trough. Lift the heater out of the drain trough.

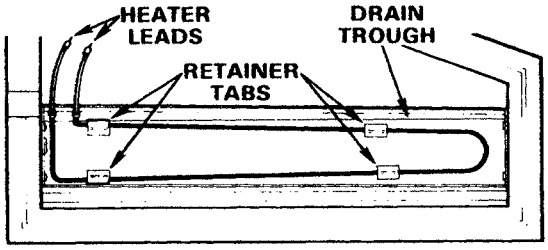


Figure 49 - Calrod Type Trough Heater

On later production models the drain trough heater is applied to the bottom of the drain trough with adhesive backed aluminum foil.

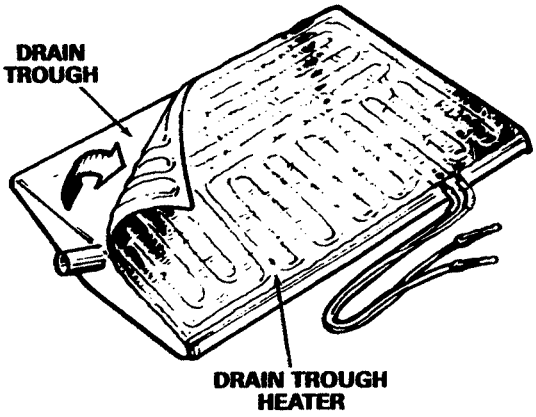


Figure 50 - Drain Trough Heater

For access to the drain trough heater on BCS42CK, EK, EL AND ZIS42EM models, remove the evaporator front cover panel. Then remove the evaporator fan plate and the evaporator and drain trough.

On models produced after 1992, the drain trough heater is the same aluminum foil type as was used previously. But, to access this heater, located in the upper freezer compartment, the ice service shelf, if dispenser, icemaker, light shield, plenum, evaporator fan diffuser, and foam housing must be removed.

Heater kits are available for some models to correct a freeze-up condition. (refer to the FIELD CORRECTIONS section - Moisture Kit).

INTERIOR LIGHTS

All monogram refrigerators have an interior light in both the freezer and fresh food sections, with a switch that is automatically operated when the corresponding door is opened. The interior light consists of a lamp that is inserted into a socket and a switch.

NOTE: Extreme care should be taken when removing a lamp that has a broken glass bulb to prevent cuts from the glass and, more importantly, electrical shocks from the live filament wires. As a precaution, the power cord should always be disconnected before replacing a burned-out lamp - whether the glass is broken or not.

Molded plastic type lamp sockets are easily removed by prying the end out the mounting opening. A variety of lamp sockets and bulbs have been used on the monogram refrigerators. Early models used a small socket and bulb arrangement that is similar to a freezer socket and bulb. The socket snapped into the opening and the bulb inserted into the socket.

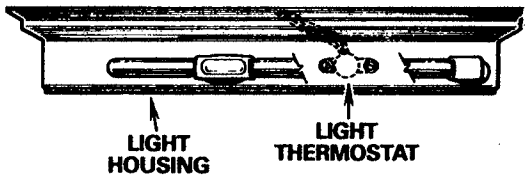


Figure 51 - Early Socket and Lamp

Later models, starting in 1993, because of the orientation of the light sockets use a special rubberized socket. The socket seals against the lamp shaft to prevent moisture from getting into the socket. The socket accommodates a regular light bulb. Some models produced used 60 watt lamps, but were later changed to 40 watts. To remove the lamp socket, remove the lamp, pry out at the bottom of the socket until the bottom is free from the opening. Pull downward on the socket until the smaller section at the top is free from the opening. Install in reverse order.

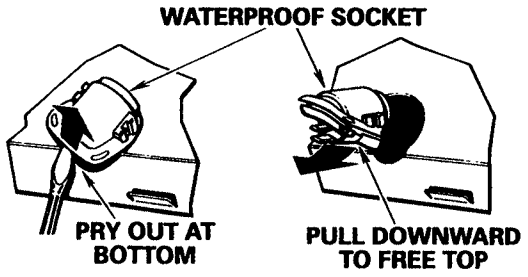


Figure 52 - Waterproof Socket

While interior lights provide a convenience to the consumer in illuminating the cabinet interior, they can be a source of "poor refrigeration" if the lamp remains energized while the door is closed. Failure of the lamp to be de-energized may be due to an inoperative switch or improper switch actuation.

On some models produced, the lamp load amperage was in excess of the switch rating and would cause intermittent, premature failure of the switch, depending on the use. A replacement switch WR23X0411 should be used whenever a switch is needed.

This condition can be easily checked by peeping into the compartment while slowly opening and closing the door. If the light remains on when the door is closed, but the switch functions properly when manually operated, check improper engagement of the switch by the door.

Rocker Switches

Door operated light switches on all monogram model are rocker type switches. Rocker type switches can be removed from the front by first prying the left side out slightly, then prying the right side out fully. Use a putty knife having the blade wrapped with tape to prevent scratching the finish surrounding the switch.

On early monogram models the rocker light switches were mounted in the upper case flange. On later models the switches are mounted in the upper trim channel and can be accessed from the top, once the upper panel has been removed.

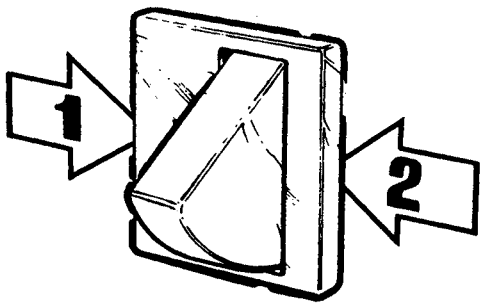


Figure 53 - Rocker Switch Removal

WIRING HARNESS REPAIRS

The wiring harness is color coded to aid identification of individual conductors. Correspondingly, the wire colors are indicated on the schematic and pictorial wiring diagrams. On all of the monogram models, brown and orange are the wire colors used to designate the hot (brown) and neutral (orange) conductors.

Because the wiring harness in the machine compartment is partially exposed to the consumer, and to protect it from compressor heat, heavier insulation is used for the machine wiring than for the cabinet wiring. On early models, the machine compartment separated from the cabinet compartment and the machine wiring harness physically separates from the cabinet wiring harness at the main connector. The connector on early models was at the upper left corner of the cabinet section. On later models the connector is located at the top center. Cabinet wiring harness is either within the structure of the cabinet or encased by metal channels or covers externally and , thus, heavy insulation is not required. However, in instances where the cabinet wiring extends into the machine compartment, or is otherwise exposed to the consumer, an additional sleeve type covering or tape wrapping is used.

Complete wiring harnesses are not available as replacement parts for any model. Accordingly, if a wiring fault should occur, the harness must be repaired. For splicing of wires closed end connectors are the only type recommended. When the splices are located in the vicinity of the evaporator or in other moist areas, the open ends of the connectors must be filled with RTV sealant (WX6X0200) and the open end posi-

tioned downward to prevent moisture from entering the connection.

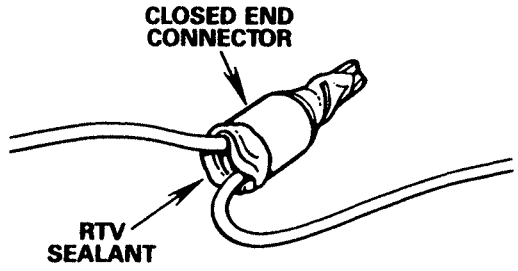


Figure 54 - Sealed Connector

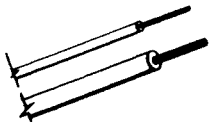
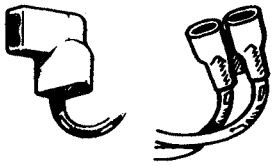
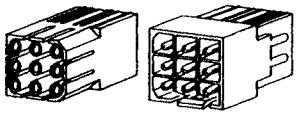
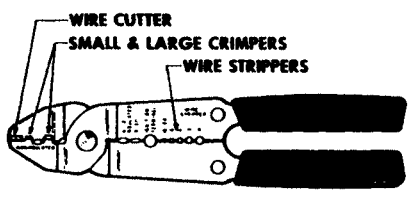
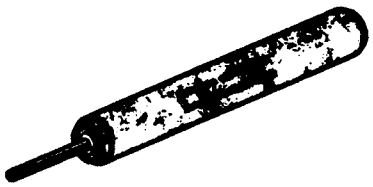
 BULK WIRE KITS (STRANDED, 18GA.)	WR97X181 — STANDARD INSULATION FOR CABINET HARNESSES 4 — 10' LENGTHS: BROWN, ORANGE, BLACK, WHITE
	WR97X182 — HEAVY INSULATION FOR MACHINE HARNESSES 3 — 6' LENGTHS: BROWN, ORANGE, BLACK
 WIRE CONNECTORS (CRIMP TYPE)	WR2X4330 — CLOSED END, SHORT SLEEVE FOR 4 WIRES
	WR2X4686 — CLOSED END, LONG SLEEVE FOR 5 WIRES
 PUSH ON LEADS (1/4" TERMINALS)	WR2X3294 — SINGLE, ANGLE INSULATED TERMINAL 4" LEAD WITH STANDARD INSULATION
	WR2X3338 — DOUBLE, STRAIGHT INSULATED TERMINALS 22" LEADS WITH HEAVY INSULATION
 CONNECTOR KIT	WR49X233 — MALE AND FEMALE CONNECTORS 9 EACH MALE AND FEMALE TERMINALS INCLUDED

Figure 55 - Wiring Harness Parts and Kits

Only two (2) special tools are required for safe and effective wiring harness repairs.



TERMINAL TOOL



EXTRACTOR TOOL WX5X19

Figure 56 - Special Tools

INDEX

CRESCENT CUBE ICEMAKER

INTRODUCTION

The crescent cube style icemaker was introduced with the "G" 1985 GE refrigerator line and is currently used on all refrigerators that have a factory-installed icemaker.

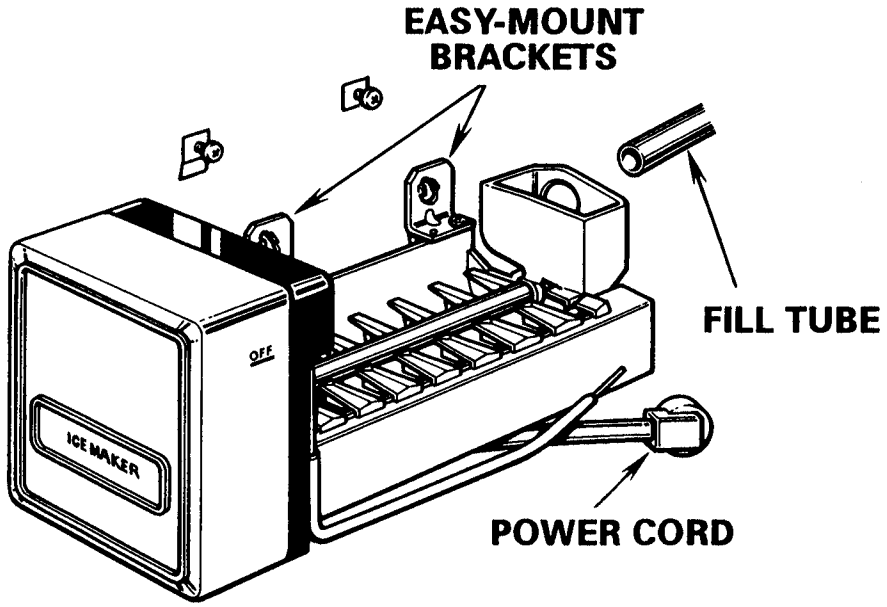


Figure 1 - Crescent Cube Icemaker

IDENTIFICATION

Each icemaker is identified by catalog number. An identification label is affixed to the icemaker as shown in Figure 1. The catalog number of the icemaker must be specified when ordering replacement parts.

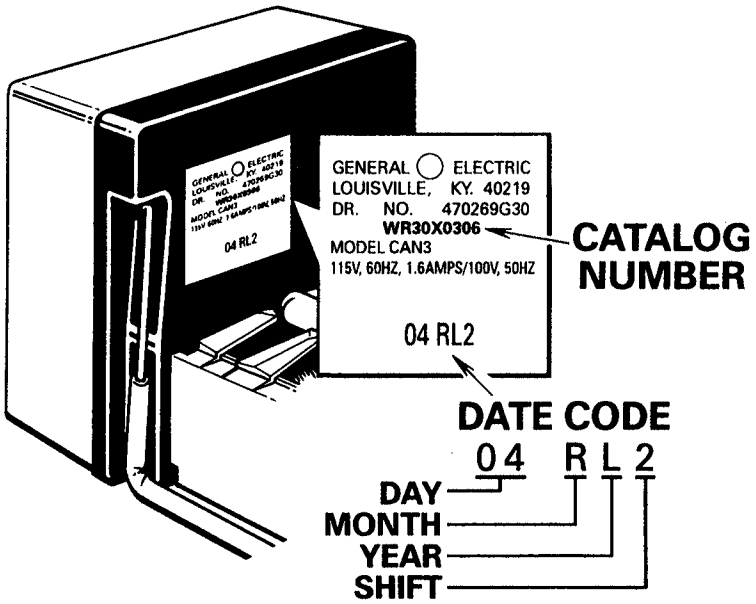


Figure 2 - Location of identification Label

WATER LINE INSTALLATION

If the refrigerator is to be operated before the water connection has been installed, the icemaker on-off lever must be kept in the "OFF" position,

A cold water supply line, with pressure between 15 and 120 PSIG, must be available for proper ICEMAKER operation. Copper tubing, 1/4 inch OD, should be used to connect the refrigerator to the cold water line, plastic tubing or plastic fittings should not be used because the water supply line is under constant pressure. Certain types of plastic tubing may become brittle with age and crack, resulting in water leakage. Instruction are furnished with the installation kits.

On earlier monogram models due to the uniqueness of the installations, and location of the water valve, several methods can be used to install the tubing for the ICEMAKER. One method is to route the tubing from the rear of the refrigerator, at the same height as the water valve and connect to the water value located in the upper refrigeration compartment. Another method is to route the inlet copper tubing from the floor just to the left of the right front leg of the refrigerator and couple it with a piece of copper tubing routed down from the top in the rear channel of the cabinet. The important thing to remember when installing the water line, is to make the shut off valve accessible and to avoid routing the copper tubing behind the refrigerator unless it is in the channel provided. **All installations must be in accordance with local plumbing code requirements.**

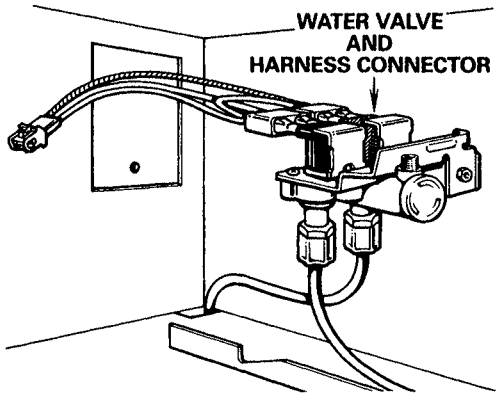


Figure 3 - Typical Installation

(BCS42, AND ZIS42EM MODELS)

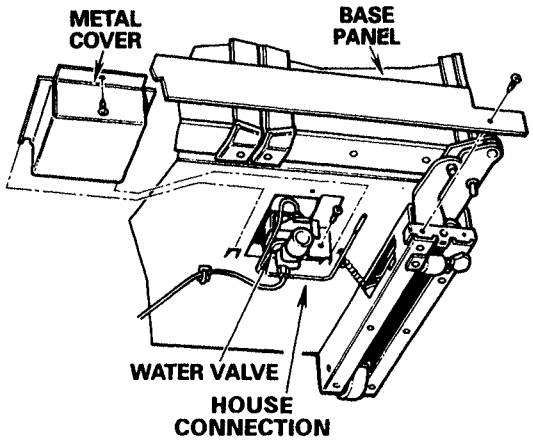


Figure 4 - Typical Installation

(ZIS 36,42, AND 48-INCH MODELS)

The copper tubing should be connected to the closest frequently used drinking water line, through a shut-of valve having a minimum inside diameter of 5/32 inch. Shut-off valves with a smaller inside diameter, especially the self-piercing type, should not be used because mineral deposits collecting inside the valve will reduce the water flow to the icemaker after only a few months' operation. The valve should be located in an easily accessible spot and preferably into the side of a vertical water pipe. When connected to a horizontal wa-

ter pipe, the connection should be to the top or side of the pipe, rather than the bottom, to avoid drawing off any sediment from the pipe.

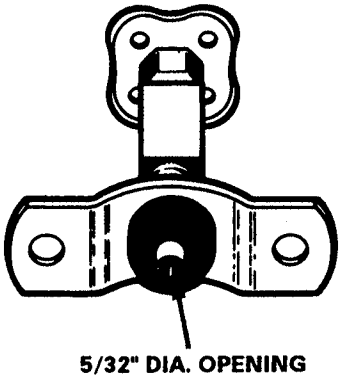


Figure 5 - Shut-Off Valve

The copper tubing should be routed through a hole in the floor or wall. Sufficient extra tubing should be provided to allow for proper hookup. If the connection is to be made from the upper wall to the refrigeration compartment, approximately 30 inches of extra tubing will be needed. If the connection is to be made by the right front leg - approximately 9 feet of tubing will be needed to route up the back of the refrigerator is the upper water valve. If the unit is a ZIS36,42 or 48 inch model, the water value is located at the bottom of the refrigerator near the center. A copper extension has been provided and will connect to the supply line tubing.

The copper tubing should be connected to the water valve with a 1/4 inch S.A.E. flare nut or a compression nut depending on the model being installed. Early models used a flare nut while later models used a compression fitting.

Some localities may have sand or sediment present in the water supply in such quantities that collect in the screen of the valve and tend to reduce the water flow to the icemaker. Where such conditions exists, it is recommended that a filter be installed in the line near the refrigerator. Instructions for installing the water filter in a variety of locations are furnished with the filter.

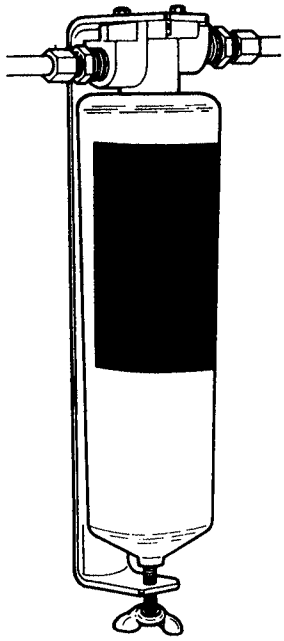


Figure 6 - Water Filter

ICEMAKER MOUNTING

All monogram refrigerators, both dispenser and non-dispenser are shipped from the factory with an icemaker. All of the icemakers have an easy-mount bracket with keyhole slots that hooks over two screws located in the side of the freezer liner.

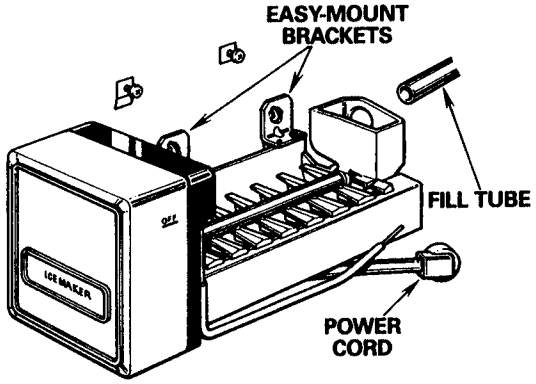


Figure 7 - Icemaker Mounting

Before mounting the icemaker, the power cord plug should be connected and firmly seated, and the opening of the fill cup positioned over the end of the fill tube. To prevent water from spraying out of the fill cup and/or freezing in the fill tube, the end of the fill tube should not rest against the inner surface of the fill cup either in the front or on the bottom of the fill cup.

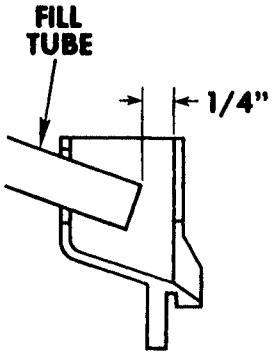


Figure 8 - Fill Tube Position

WATER VALVE MOUNTING

The water valve is mounted inside the refrigeration compartment at the top of the refrigerator. On early models the water valve is attached to the refrigeration unit but can be removed without removing the unit. On later models the water valve is located in the refrigeration compartment and is attached to the compartment hood on the right rear corner. On current production models the water valve is located on the bottom of the refrigerator in the center front. A protective metal cover prevents the water valve from being damaged during shipping. If the cover appears damaged - check the water valve for possible damage prior to installing the unit.

The wiring harness lead wires have push-on terminals that connect to the water valve solenoid terminals. A 1/4 inch S.A.E. flare fitting is provided for connecting a copper water supply line to the inlet of the water valve on some models. Others may have a compression fitting.

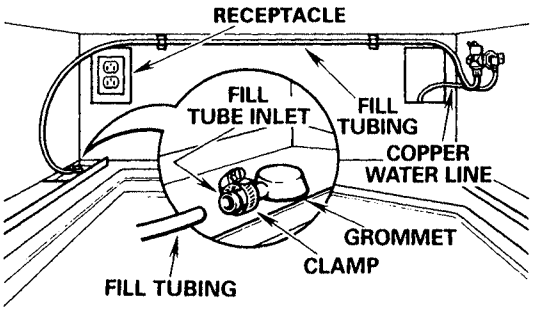


Figure 9 - Water Valve Mounting

Plastic fill tubing is connected to the outlet of the water valve by means of a plastic compression type fitting. The compression nut should only require "hand-tightening" when connecting the fill tubing to the water valve outlet. The fill tubing, routed at the rear of the refrigeration compartment on early models and later around the front of the compartment was changed on current production. The fill tubing is inserted into the fill grommet and the grommet extends from the top of the refrigerator, through the cabinet insulation and into the freezer compartment.

On current production the fill tube is routed up the back of the refrigerator in a channel and then inserted into the fill tube grommet and secured with a small hose clamp. A small brass fitting is inserted into the grommet to help hold the hose clamp securely without collapsing the grommet. On early models due to the fill tube and grommet arrangement, the water valve would "weep" allowing a few drops of water to enter the fill cup without the water valve being energized. These drops of water would freeze and cause the fill grommet to

fill with ice. When the next fill cycle would occur, the fill tube was blown out of the grommet and could possibly leak onto the floor. This condition was later corrected by adding a brass nipple connector, or fitting to the fill grommet and tightening the clamp around the connector or fitting.

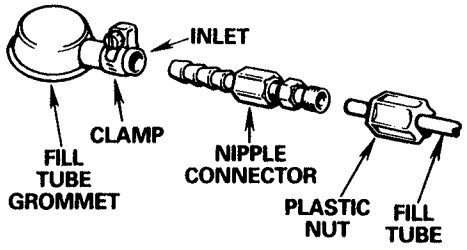


Figure 10 - Nipple Connector in Grommet

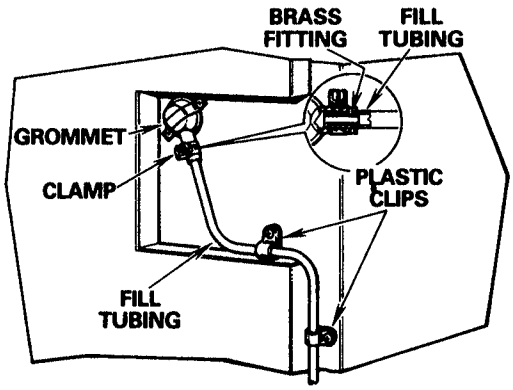


Figure 11 - Current Production With Brass Fitting

OPERATION

The convenience of "automatic ice" is accomplished by means of an ice making cycle which is a combination of electrical and mechanical operations. The complete ice making cycle consists of two (2) revolutions of the ejector and is divided into six (6) phases - **FREEZE, RELEASE, EJECTION, SWEEP, WATERFILL, and TERMINATION.**

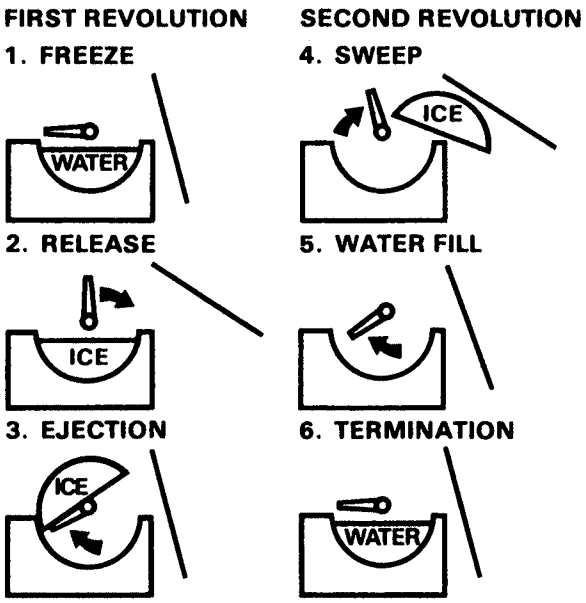


Figure 12 - Ice making Cycle

A description of the cycle of operation begins with the icemaker installed in a refrigerator that is operating and with water in the icemaker mold:

Freeze

Heat is gradually removed from the water in the mold and the water eventually becomes frozen. During this time, the feeler arm may be either up or down (icemaker either "off" or "on") the icemaker will not begin operation until the thermostat senses a temperature of 15 F and closes.

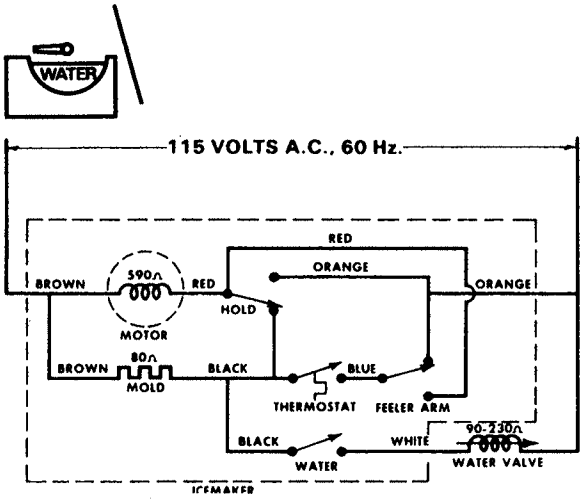


Figure 13 - Freeze

Release

With the closing of the thermostat, a series-parallel circuit is completed thorough the thermostat and feeler arm switch to energize the motor and the mold heater. After the motor has rotated the ejector (clockwise) a few degrees, the hold switch breaks from red to black and makes from red to orange, thus completing a holding circuit around the thermostat and feeler arm switch. As the motor continues to rotate, the mold heater begins to release the ice cubes from the mold. During this time, the feeler arm raises and the switch breaks from the blue to red. This action instantaneously provides a new path for mold heater current flow.

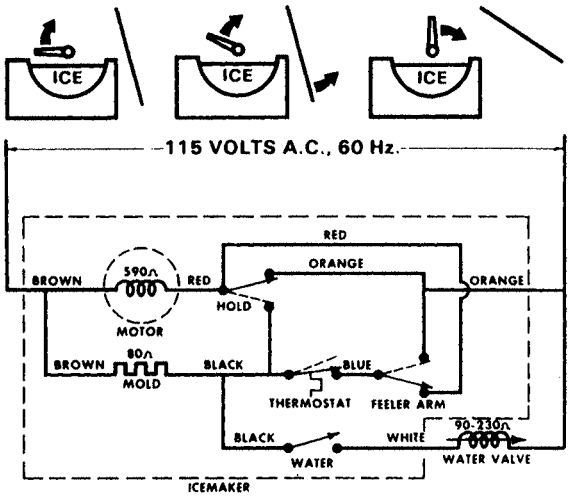


Figure 14 - Release

Ejection

When the ejector has rotated approximately 180 degrees, the feeler arm lowers, then the switch breaks from blue to red and makes from blue to orange. This action again instantly changes the path for mold heater current flow. As the ejector contacts the ice in the mold, the motor stalls for several seconds - until the mold has warmed sufficiently for the ice cubes to be released. The motor then resumes operation and the ejector pushes the cubes out of the mold. During this time, the water switch closes for 71/2 seconds. However, the water valve is not energized because the thermostat remains closed during the first revolution, providing a path of least resistance for the mold heater. After the ejector has completed one full revolution, the cubes are fully ejected out of the mold and are balanced on the top of the ejector.

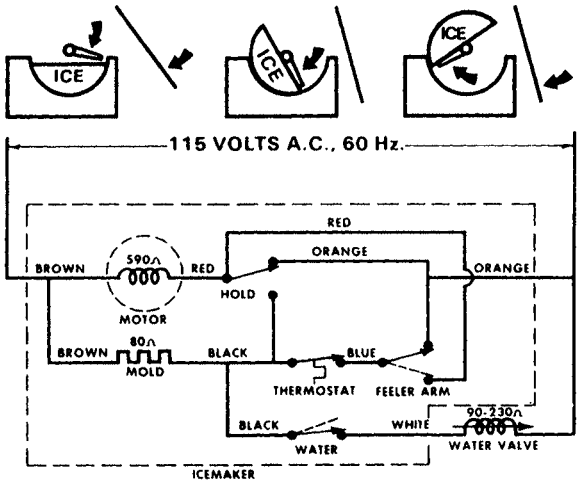


Figure 15 - Ejection

Sweep

Upon completing one full revolution, the hold switch breaks from red to orange and makes from red to black. However, the motor and mold heater continue to be energized because the thermostat remains closed throughout the first revolution. Thus, a second revolution begins and the hold switch again completes the holding circuit for the motor to continue. As the ejector continues to rotate, the feeler arm raises while the ice cubes are swept from the icemaker and fall into the ice bucket. At some time during the second revolution, the thermostat opens due to the continued operation of the mold heater.

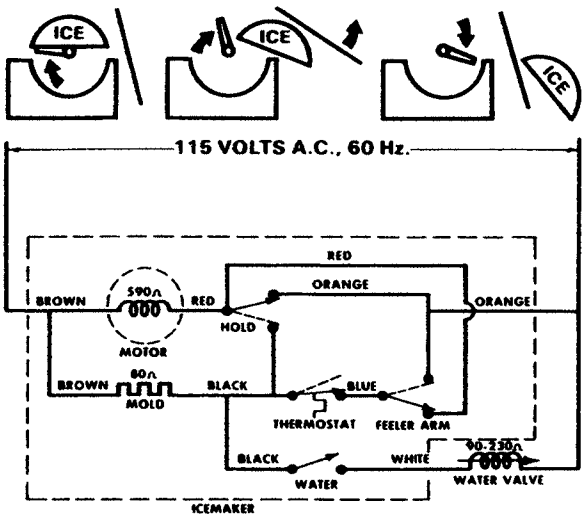


Figure 16 - Sweep

Water Fill

Just before the ejector completes the second revolution, the water switch closes. With the thermostat now open, the water switch energizes the water valve in series with the mold heater. The mold heater drops approximately 35 volts, accordingly, the water valve solenoid operates on approximately 80 volts (from a 115 volt AC. line). The water switch remains closed for 71/2 seconds to fill the mold with water.

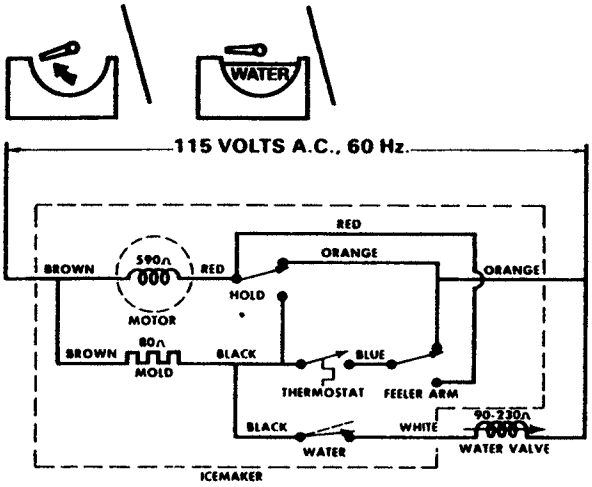


Figure 17 - Water Fill

Termination

When the hold switch again breaks, from red to orange and makes from red to black, the motor ceases operation due to the open thermostat. Accordingly, the icemaker has completed its cycle. Total cycle time is 6 minutes - excluding the stall time.

The icemaker will resume operation again when the thermostat closes. However, if the feeler arm comes to rest on ice cubes accumulated in the bucket, the icemaker will not begin another cycle - even when the thermostat closes - until sufficient ice has been removed form the bucket to allow the feeler arm to lower.

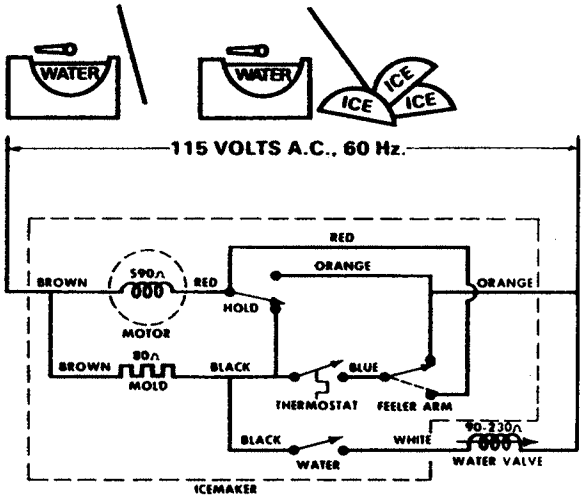


Figure 18 - Termination

DIAGNOSIS

Visual Inspection

Before making any test of the icemaker or related components, a visual inspection should be made while the icemaker is installed in the refrigerator. This will provide the factual information necessary to determine what test (if any) should be made and thus serve in rendering an accurate diagnosis.

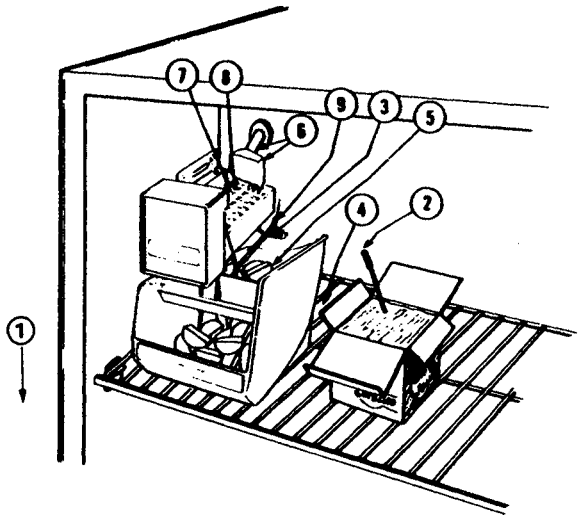


Figure 19 - Visual Inspection

1 Check for WATER ON THE TOP OF THE CABINET SECTION on older monograms and ON THE FLOOR, on ZIS36,42,48-inch models. Any water found may indicted a leak at the water valve or connections. A leak at the outlet of the water valve will cause a low water fill at the icemaker.

2 Check the FREEZER TEMPERATURE. Optimum frozen food temperature is 0 to 8 F. A temperature colder than 0 F can cause:

- The ice cubes to crack, resulting in broken ice cubes in the ice bucket.
- The operating thermostat to close prematurely, resulting in "ice shells" with water remaining in the mold; or ice cubes cracking open in the ice bucket, resulting in frozen lumps of ice and hollow cubes.
- A temperature warmer than 8 F may cause:
- Ice cube "lumping" or "fusing" in the ice bucket, especially when the freezer compartment is lightly loaded or subjected to frequent door openings.
- A "poor ice rate" or "not enough ice" due to long periods between cycles.

3 Check that the icemaker POWER CORD is fully connected. A loose power cord can cause an intermittent or "no operation" condition.

4 Check for ICE CUBES OUT OF THE BUCKET. Any cubes found out of the ice bucket may be due to:

- A mis-positioned ice bucket or a missing bucket support.
- The feeler arm bent or the switch inoperative.

5 Examine the ICE IN THE BUCKET. All cubes should be approximately 3/4 inch in height, solid and with no "lumping", "fusing" or "ice sheeting" in the bucket.

- Ice cubes either oversize or under-size may indicate an incorrect water fill quantity.
- Ice cubes "lumping" or "fusing" may be due to either long storage time, or the ice bucket being removed form the freezer compartment for long periods of time.
- "Ice sheeting" may be due to spillage of water as a result of overfilling of the mold or leaks from the fill tube or fill cup.

6 Check the FILL TUBE AND FILL CUP. The fill tube should be positioned in the fill cup. The fill tube and fill cup should be free of ice.

- Ice in the fill tube may be due to the fill tube grommet not seated in the cabinet top on early models. On later models the grommet is secured with a clamp and two screws.
- Ice in the fill tube or fill cup may be due to the water valve not fully closing, or a weep condition, where only a few drops of water "weep'

from the valve. This condition can cause the fill tube to be blown away from the grommet.

- Ice in the fill cup may be due to a restriction of the fill cup outlet.

7 Check the WATER OR ICE LEVEL IN THE MOLD. The water or ice level should be approximately 1/8 inch over the cube spillways.

- A water or ice level higher than normal may indicate hardening of the rubber parts inside the water valve or water fill screw out of adjustment.

- A water or ice level lower than normal may indicate a clogged saddle valve, clogged water valve screen, or a leak at the outlet of the water valve or tubing.

8 Examine the EJECTOR. The ejector should be at the 9 o'clock position with no excessive play.

- The ejector at the 4 o'clock position may indicate an inoperative mold heater.

- The ejector at any position other than 9 o'clock or 4 o'clock may indicate an inoperative motor.

- Excessive play in the ejector indicates a broken or missing part inside the icemaker.

9 Check the FEELER ARM AND SWITCH.

- The feeler arm switch movement should be free from binding when raised and lowered. A binding feeler arm can result in "no ice". A distorted or bent feeler arm can cause overfilling of the ice bucket. Interference of the feeler arm movement by shelves or food packages can cause the motor to stall.

- The feeler arm switch should "click" when the feeler arm is raised and lowered. If the switch is inoperative or the linkage is broken or missing, the icemaker may either overfill the ice bucket or fail to operate.

Electrical Testing

Most electrical testing can be accomplished while the icemaker is installed in the freezer compartment after removing the ice bucket, icemaker front cover and screws securing the plate to the housing. It is important, however, that the icemaker power cord be disconnected. A wiring diagram is located inside the cover for ready reference.

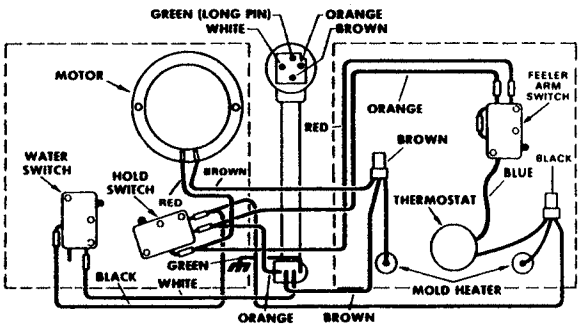


Figure 20 - Wiring Diagram

1 To check for proper VOLTAGE at the icemaker receptacle, use a voltmeter to measure line voltage.

- Between the brown and orange terminals - line and neutral.

- Between the brown and white terminals - line and neutral through the water valve solenoid.

- Between the brown and green - line and ground.

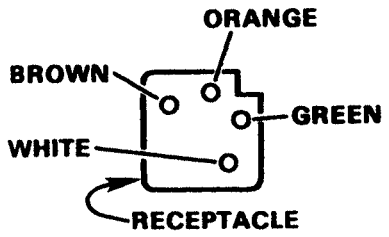


Figure 21 - Icemaker Receptacle

2 To check the THERMOSTAT, the mold temperature must be below 15 F, and the feeler arm down ("on"). Use an ohmmeter to measure continuity between the blue and black leads of the thermostat.

3 To check the FEELER ARM SWITCH, use an ohmmeter to measure continuity:

- Between the blue and orange terminals while the feeler arm is down ("on").
- Between the blue and red terminals while the feeler arm is up ("off").

4 To check the HOLD SWITCH, use an ohmmeter to measure continuity:

- Between the red and black terminals while the cam is in the "off" position, and no continuity between the red and orange terminals.
- Between red and orange terminals while the cam is in the "on" position, and no continuity between the red and black terminals.

5 To check the WATER SWITCH, use an ohmmeter to measure continuity between the black and white terminals while the cam is rotated to the water fill position, and no continuity when the cam is rotated beyond the water fill position.

6 To check the MOTOR, disconnect one lead form the motor and use an ohmmeter to measure approximately 590 ohms.

7 To check the MOLD HEATER, use an ohmmeter to measure between the two heater leads approximately 80 ohms.

Mechanical Testing

In order to test-cycle the icemaker, it must first be removed from the freezer compartment and the water or ice emptied from the mold. If water is in the mold when the icemaker is test-cycled, the mold will overfill. If ice is in the mold and the thermostat is open, the mold heater will not be energized. Accordingly, the motor will stall due to the ice in the mold. To remove the ice from the mold, hold the icemaker upside down, over the sink, while running hot tap water over the bottom of the mold. While warming the mold, water must not enter the housing area.

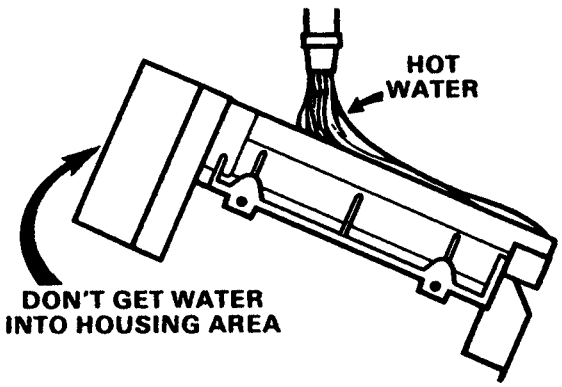


Figure 22 - Ice Removal

1 To initiate a TEST-CYCLE, connect the icemaker power cord, remove the front cover and, with a small blade screwdriver, rotate the motor shaft counterclockwise approximately 1/8 turn to engage the hold switch. Attempting to turn the motor shaft while the motor is energized will likely result in gear stripping, either inside the motor, or externally. After the motor begins operation the cycle will continue, approximately 3 minutes until the ejector completes one (1) revolution.

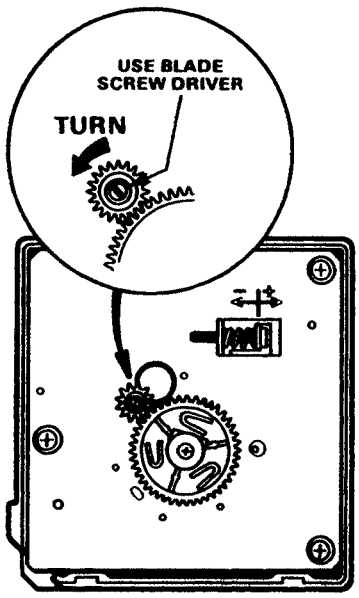


Figure 23 - Cycle Initiation

2 To check the WATER FILL QUANTITY, it is not necessary to empty the water or ice form the mold. Dismount the icemaker, disconnect the power cord and remove the front cover. Rotate the motor shaft clockwise approximately 1/2 turn or until the ejector contacts the top of the ice. Hold a bottle, graduated in cubic centimeters (cc's) under the fill tube and connect the icemaker power cord. The icemaker will begin operation and, after only a few seconds of operation, advance to the water fill phase of the cycle. The water fill quantity should be at least 100 cc's but not more than 150 cc's.

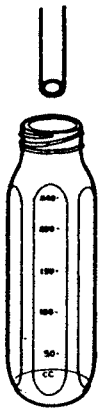


Figure 24 - Water Fill Check

To either increase of decrease the water fill quantity, turn the adjustment screw in the direction indicated on the plate. One (1) full turn of the adjustment screw will change the water fill quantity by approximately 20 cc's.

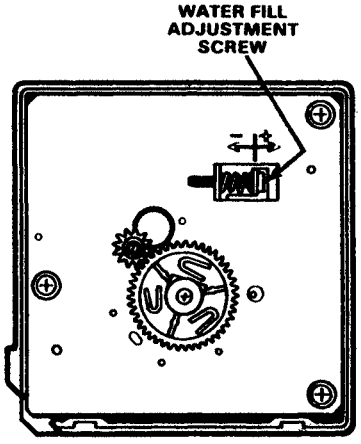


Figure 25 - Water Fill Adjustment

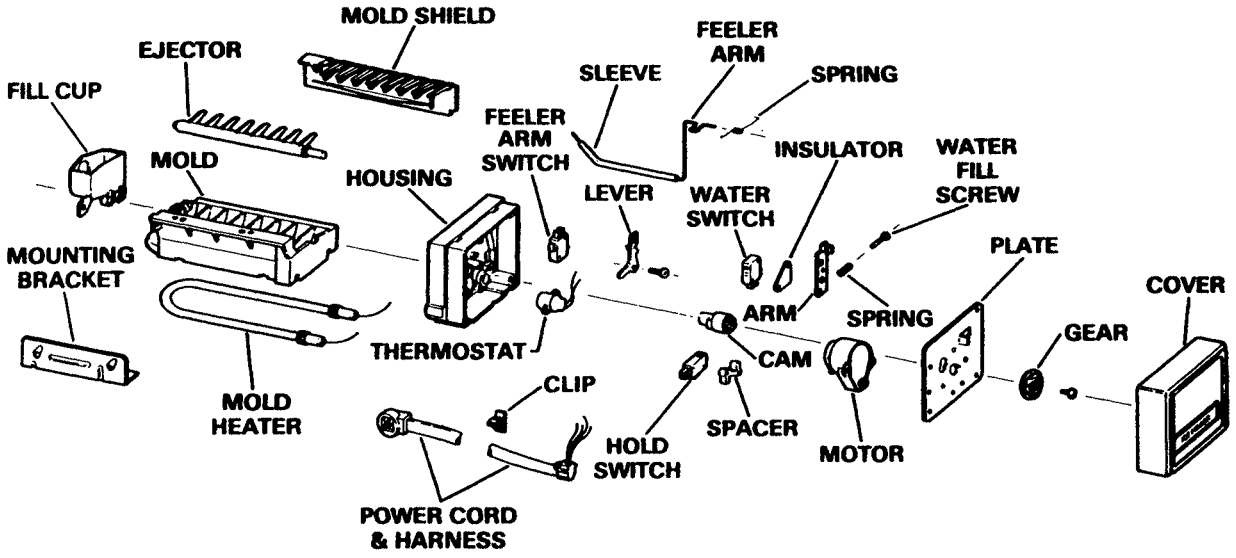


Figure 26 - Icemaker Assembly

DISASSEMBLY & REASSEMBLY

No special tools or test equipment are required to service the icemaker. WR97X0163 Silicone lubricant (tool item) should be readily available for use, as required.

Mold Shield

When reinstalling the mold shield apply a heavy film of silicone lubricant (WR97x0163) to the top surface of the mold that is covered by the mold shield. The purpose of the silicone lubricant is to prevent water from wicking over the mold.

Fill Cup

When reinstalling the fill cup, apply a thin film of silicone lubricant to the end (bearing surface) of the ejector. The silicone lubricant, in addition to lubricating the ejector, will help prevent , moisture from entering and freezing the ejector to the fill cup.

Ejector

When reinstalling the ejector, apply a thin film of silicone lubricant to the bearing surfaces at each end of the ejector.

Cover

Two (2) notches are provided at the bottom of the housing to enable the use of a coin or a large blade screwdriver to pry the cover partially from the housing. A wiring diagram is inside the cover.

Cam & Gear

When reinstalling the cam and gear, apply a coating of silicone lubricant to the bearing surface of the cam that protrudes through the plate and to the front surface of the plate surrounding the hole for the cam. Make sure the gear is installed so that the three (3) points on the back of the gear are in contact with the front of the plate.

Feeler Arm, spring & Lever

Do not bend or distort the feeler arm in the process of removing it. Apply a thin film of silicone lubricant to the feeler arm hole in the housing and to the pivot hole in the lever.

Thermostat

When reinstalling the thermostat, scrape off all old thermal mastic and wipe the mating surfaces of the thermostat and end of the mold to re-

move all dust particles. Apply a thin film of thermal mastic (furnished with the replacement thermostat) to the sensing surface of the thermostat.

SERVICE NOTES

Cube Discoloration

Under certain circumstances. ice cubes may be discolored, usually appearing with a green-bluish hue. The cause of this unusual discoloration is due to a combination of factors such as water characteristics, household plumbing, and the accumulation of copper salts in an inactive water supply line which feeds the icemaker. Certain things can be done to help alleviate this condition:

1 Check for an adequate ground at the wall receptacle and at the copper water line connection to the refrigerator cabinet.

2 Replace the existing 1/4 inch copper tubing water line connecting the icemaker to the household plumbing with new copper tubing.

3 Reconnect the new copper tubing to a more frequently used water line. Use the shortest length possible. Attach the water valve to a vertical water line.

4 Instruct the customer that low usage aggravates this condition. Empty the ice bucket once a week.

5 Install a filter (WR97X0214) in the icemaker water line as close to the refrigerator as possible.

Small Cubes or No Ice

When servicing an icemaker for "small cubes" or "no ice", determine the true cause of the problem rather than just increasing the fill time. If the icemaker appears to be cycling normally, the problem is MOST likely caused by the water line saddle valve (if used) having an inlet port restricted by mineral deposits. Replace this valve with an approved saddle valve (WX08X0005) having an inlet of 5/32 inch ID.

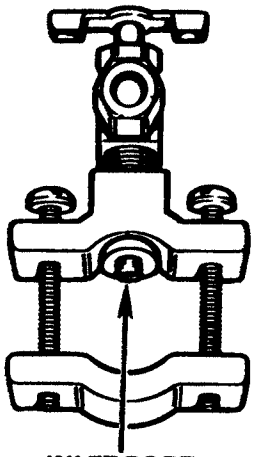


Figure 27- Saddle Valve

Never use a self-piercing saddle valve or one with an inlet post smaller than 5/32 inch ID. These types are subject to early failure due to mineral buildup at the inlet which restricts the water flow and results in "small cubes".

Improved Ice Cube Production

Monograms operating under "light usage" conditions - especially energy-efficient models - have short spans of compressor running time and long off cycles. Accordingly, cold air is circulated only during the brief intervals that the compressor and evaporator fan are running. This condition results in slow freezing of ice even though the freezer temperature is 5°F.

Setting the freezer temperature control to a colder setting will reduce the time required to freeze ice. This is primarily due to the longer run time rather than the resulting colder freezer temperature. In most instances, setting the freezer temperature control colder will satisfy the consumer.

If setting the temperature control to a colder setting fails to satisfy the consumer, a WR49X0300 Temperature Control compensator can be installed to improve this condition. The compensator is a small 3 1/2 watt heater that is attached to the back of the temperature control and connected to the control terminals. Accordingly, when the control cycles off, the heater provides a bias effect on the control bellows which results in more frequent run cycles of shorter duration. Under moderate or heavy usage conditions, the compensator has little or no effect on the operation of the refrigerator due to the small amount of wattage involved.

White Particles In Ice Cubes

The source of "white particles" observed in melting ice cubes (even when the tap water shows no evidence of these particles) is the water.

All water contains some dissolved mineral, primarily calcium carbonate. When the water contains a considerable amount of minerals (particularly dissolved calcium carbonate) it is often referred to as "hard" water. There is, however, a limit to how much of a substance water will hold in solution. For calcium carbonate in water, at ordinary temperatures, the limit is only a small fraction of a percent. Further, **most** solubility limits are **lower** at **lower** temperatures. For example, it is a common observation that it is more difficult to dissolve sugar in iced tea than in hot tea.

Here's what happens when hard water is used to make ice cubes. First, as tap water is cooled, the limit on how much mineral contents can remain dissolved decreases. Second, as ice crystals form, less remains to hold the minerals and the solution becomes more concentrated. The solubility limit is reached and dissolved minerals precipitate as solid particles. These particles become trapped in the ice as freezing continues.

An originally dissolved mineral has merely been converted to a visible form. Most frequently, these particles are calcium carbonate, a common ingredient in products intended for internal use and contained in antacid preparations, pill coatings and tooth paste.

In summary, when hard water is used for making ice cubes, these particles should be expected.

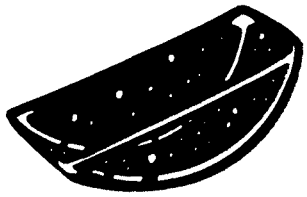


Figure 28 - White Particles in Ice Cubes

Fill Tube Icing

Occasionally, icemaker fill tubes become clogged with ice which is generally caused by a "drip leak" or "weep" through the water valve or by cabinet insulation missing around the fill tube grommet. An intermittent fill tube icing condition will sometimes cause erratic or very low ice rates.

Check the water valve by disconnecting the plastic tubing at the valve outlet, drying the area and watching for small droplets passing through the valve. Observation will reveal the cabinet insulation condition in the fill tube grommet area.

A special kit has been developed for monogram refrigerators, that incorporates a fill tube heater. (Refer to the Field Corrections Sections in this manual).

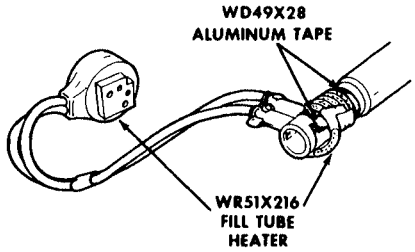


Figure 29 - Fill Tube Heater

Switch Icing

Moisture entering the housing of a crescent cube icemaker can cause ice crystals to form on or around one or more of the switches. The icing condition prevents the switch plunger from operating and results in erratic operation or icemaker failure.

Switch icing is not always easy to diagnose because the ice crystals dissipate very quickly when exposed to room temperature and in some cases, the motor or mold heater will generate enough heat to clear the switches temporarily.

In extreme cases, where the switch icing condition persists, install a WR29X5143 Auxiliary Heater inside the icemaker housing. Complete instructions are furnished with the heater.

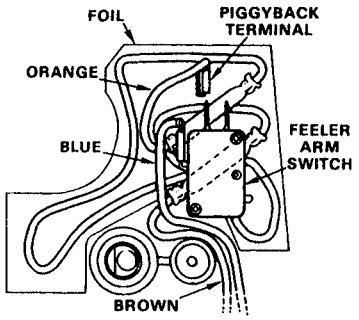


Figure 30 - Heater Installation

Ice Cubes Lumping and Jamming

Ice cubes accumulating under the icemaker in close proximity to the mold heater, will fuse together forming lumps of ice that can jam the dispenser ice bucket. The condition may either:

prevent the flow of ice in the bucket and delivery through the dispenser - resulting in a "no" ice complaint on dispenser model refrigerators - or,

prevent the feeler arm from raising and stall the icemaker - resulting in a "**CI**" appearing on the console of electronic dispenser model refrigerators.

Also, ice cubes that become trapped between the icemaker mold shield and the feeler arm may prevent the icemaker from operation - resulting in a "no ice" complaint.

These conditions can be corrected by reshaping the feeler arm to extend its effective length. Using pliers, straighten the feeler arm and re-bend it 3/4 inch lower.

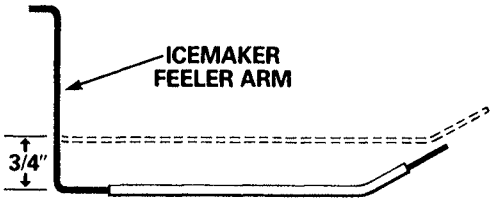


Figure 31 - Feeler Arm Reshaped

Replacement Icemaker Kit

A WR30X0259 Icemaker Kit can be used to replace the icemaker.

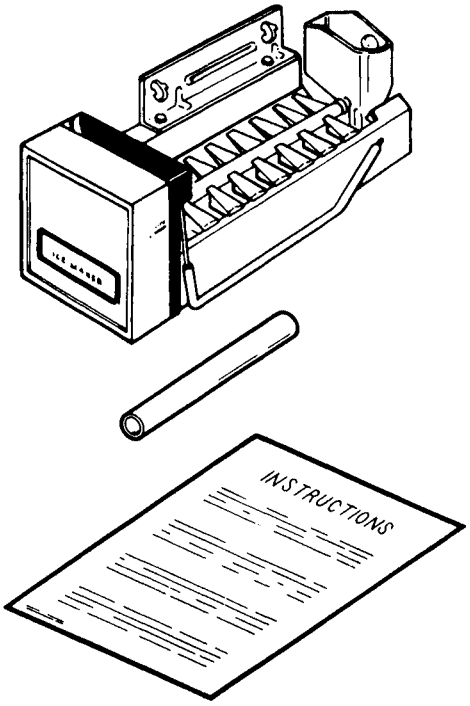


Figure 32 - WR30X0259 Icemaker Kit

The WR30X0259 Icemaker Kit consists of a crescent cube style icemaker, a fill tube extension and instructions. The original water valve (if operational) is acceptable for use with this kit. If the original water valve is not operational, it should be replaced with a WR57X0090 (single) water valve or a WR57X0092 (dual) water valve.

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INDEX

ICE AND WATER DISPENSERS

The ice and water dispenser is a convenience feature on some Monogram refrigerators starting with the EK models in 1989. Before this time, only non-dispenser models were available. The early dispenser models included the electronic monitor feature and dual cradles to offer the consumer, cubed and crushed ice with one cradle and water dispensing with the other. With the introduction of the new monogram line in 1993, the dispenser model no longer includes the electronics feature and offers one cradle with a manual slide switch selection for cubes, crushed ice, or water.

Although there are variation in the external appearance of the dispenser recess on the freezer door, the basic dispenser components are essentially the same for all models.

ICE DISPENSER OPERATION

The major components of the ice dispenser are:

3 Ice maker - located in the freezer compartment.

4 an auger motor assembly - located behind the ice bucket and

5 an ice bucket assembly - located on a shelf below the icemaker.

7 a recess assembly - located on the freezer door.

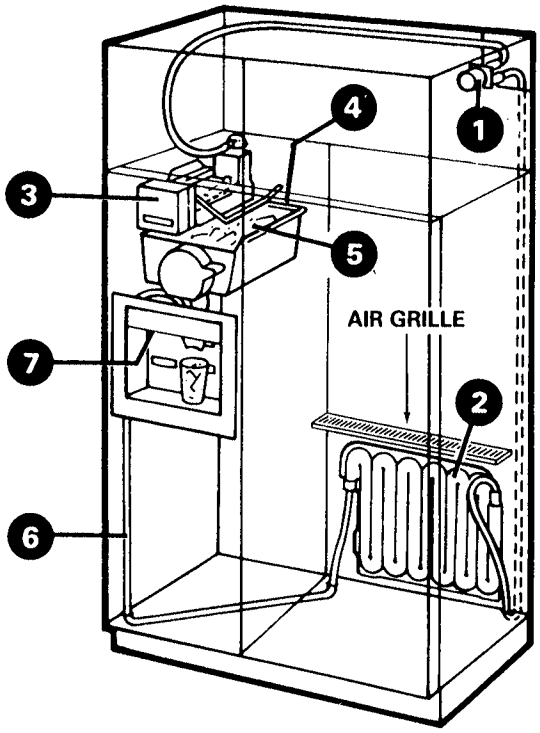


Figure 1 - Ice Dispenser

Ice cubes produced by the icemaker are stored in the ice bucket assembly. Thus the icemaker is a separate feature - upon which the ice dispenser operation is dependent (See ICEMAKER section).

Since the monogram refrigerators have been produced with both manual and electronic dispenser, lets first start with manual dispensers and then explain electronic operation. Much of the basic operation is the same whether manual or electronic.

Ice Cube Dispensing

To dispense ice cubes, on most dispenser models, the selection must be made for "Ice Cubes". This closes the switch to the cube solenoid. When the cradle is initially pressed, a plunger extending from the rear of the cradle actuates a crank. As the crank is actuated, a lanyard (small cable), connected to the crank and up to the duct door pulley, is pulled

Then, as the cradle is fully depressed, a tab on the rear of the cradle sleeve actuates the switch which energizes the auger motor and cube solenoid.

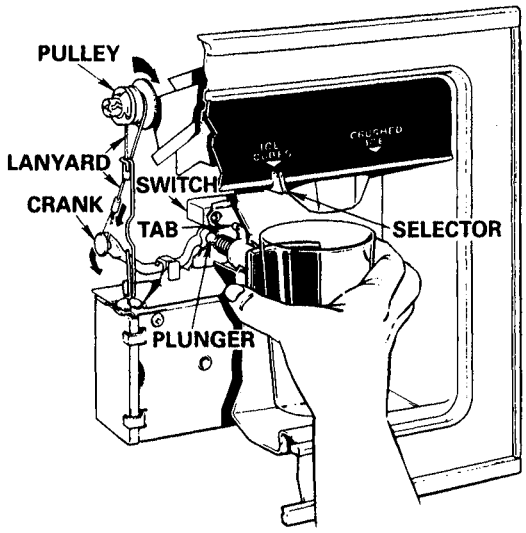


Figure 2 - Dispenser Recess

The auger motor is coupled to the auger in the ice bucket. Thus, the auger motor, when energized, rotates the auger and pushes the cubes forward in the ice bucket.

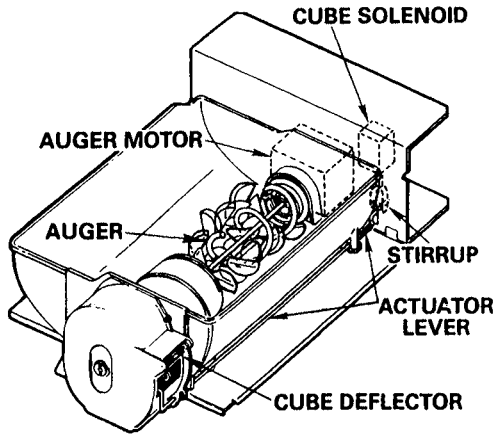


Figure 3 - Ice Bucket Assembly

The cube solenoid lifts a stirrup which engages an actuator lever (long rod) - located at the lower right side of the ice bucket. The actuator lever operates the cube deflector inside the front housing of the ice bucket. This action pulls the deflector back against the housing to clear the path for ice cube delivery.

As the auger continues to rotate, ice cubes are pushed out of the bucket into the front housing. The cubes then fall down the ice chute, through the open duct door and into the glass at the cradle.

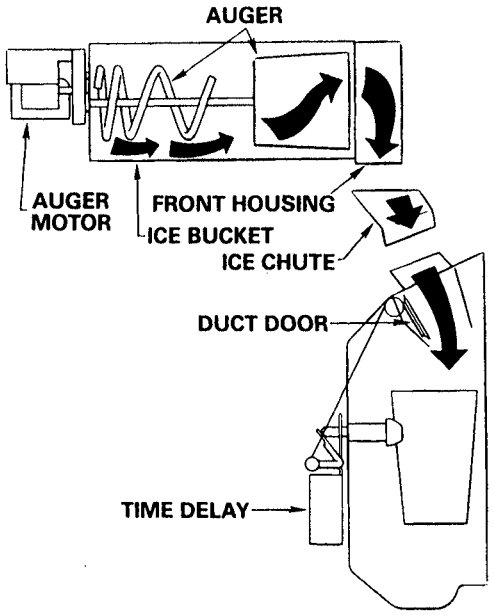


Figure 4 - Ice Dispensing

Releasing the cradle de-energizes the auger motor and cube solenoid. This stops the flow of ice. The time delay then, pulling the lanyard, slowly closes the duct door. This delayed action allows cubes that are in the ice chute to pass through before the duct door closes.

Crushed Ice Dispensing

To dispense crushed ice, the selection must first be made for "Crushed Ice". This opens the switch to the cube solenoid. When the cradle is fully depressed, the same actions occur as when dispensing cubes - except the solenoid is not energized. Thus, the cube deflector remains in position - blocking the path for ice cube delivery through the front housing of the ice bucket.

Then, as ice cubes are pushed into the front housing, the rotating blades pick the cubes up form the right side

of the housing and moves them to the left side, The stationary blades, at the left side of the front housing, prevent the cubes from falling down the ice chute. Thus, the trapped cubes are crushed by the blades and crushed ice is delivered through the ice chute, the open duct door and into the glass at the cradle.

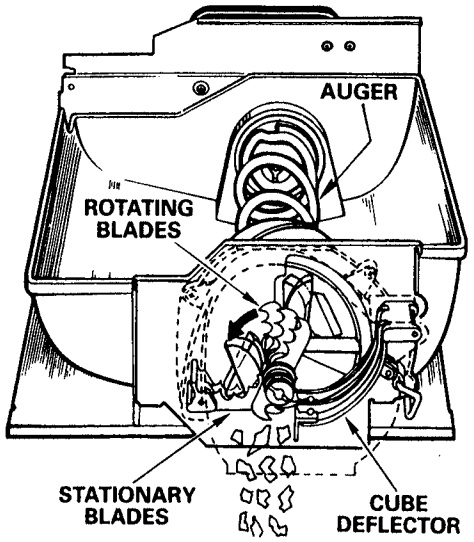


Figure 5 - Crusher Mechanism

Pieces of crushed ice may occasionally spray over the rim of the glass when using a small diameter glass, or if the glass is held too far below the ice funnel. After dispensing crushed ice, slight dripping may occur due to melting of finely crushed ice remaining in the funnel and on the duct door. Ice cubes that are trapped between the crusher blades, will be crushed immediately after the auger rotation resumes - even though the selector is changed to dispense ice cubes. Some broken ice is also in the bottom of the ice bucket and may be delivered to the glass as cubes are being pushed forward. Also an intermittent cube may "bounce" to the left side of the crusher housing and be crushed even while dispensing only cubes. Thus, it should be assumed that some crushed ice can be delivered even when only cubed ice is selected, this is a normal occurrence.

WATER DISPENSER OPERATION

The major components of the water dispenser are:

1 a water valve - located in the machine compartment on early models and under the cabinet section on later models,

2 a water reservoir - located in the fresh food compartment and

6 PVC tubing routing water tubing to dispenser recess.

7 a recess assembly - located on the freezer door.

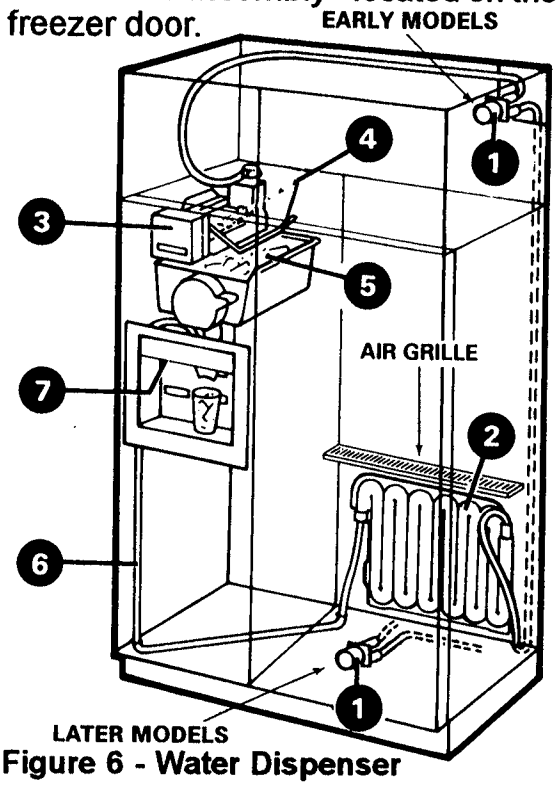


Figure 6 - Water Dispenser

The water line that supplies the icemaker also supplies the water dispenser. Although the water valve has a common inlet connection, it has separate outlets for the icemaker and water dispenser. Each outlet is independently controlled by a solenoid.

The dispenser water tubing, connected to the water valve and routed down the back of earlier models and across the bottom on current models, enters the fresh food compart-

ment and connects to the water reservoir inlet. The tubing connected to the outlet of the water reservoir, passes through a conduit within the foam insulation at the bottom of the cabinet and is routed forward to the cabinet front angle. The tubing enters the freezer door through the bottom hinge on earlier models and through the bottom of the door on later production models. An umbilical tube is used to route the tubing and wiring to the dispenser recess on later models, (ZIS36, 42, 48 models). The tubing is routed through a conduit, then up to the top of the recess - above the water dispenser cradle.

Water Dispensing

On some models, the selector must first be positioned for "Chilled Water". This opens the switches to the auger motor and cube solenoid and closes the switch to the dispenser water valve in preparation for chilled water dispensing.

Pressing the cradle actuates the switch which energizes the water valve solenoid. The solenoid will remain energized so long as the cradle is depressed and the switch contacts are closed.

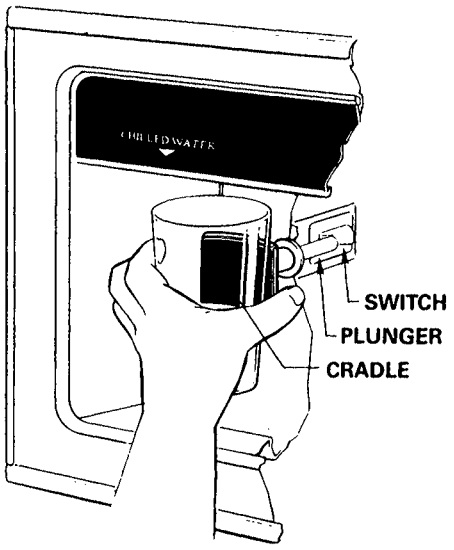


Figure 7 - Dispenser Recess

The water dispenser switch, is a micro switch operated by a tab on the cradle sleeve- similar to the ice dispenser switch.

NOTE: On models which dispense ice and water by means of a single cradle, the duct door opens anytime the cradle is pressed - whether dispensing ice or water.

As the valve opens, water flows in the reservoir, air is forced out until the serpentine chamber is completely filled with water. A small passage across the sloping top of the reservoir allows air to escape as the water enters. To completely fill the reservoir takes only about one minute. After the water remains in the reservoir for about 24 hours, it will become chilled to a temperature somewhat warmer than the fresh food temperature.

Chilled water then flows from the reservoir, through the connecting tubing, to the recess in the freezer door and into the glass at the cradle.

When the glass is withdrawn from the cradle, the switch opens - de-energizing the water valve solenoid - and the water flow stops. However, as many as 3 drops of water may continue after the solenoid is de-energized.

The temperature of the first glass of water will be warmer than succeeding glasses due to the approximately 4 ounces of water that is in the tubing back to the reservoir that has not been chilled. Water from the dispenser may have a plastic taste - from the polyethylene tubing and reservoir - when the refrigerator is initially installed. This will become less pronounced in time, as the inner surfaces of the tubing and reservoir become coated with mineral deposits from the water.

ELECTRICAL OPERATION

The electrical circuits are essentially the same for all dispenser models - although with slight variation among the many models that have been produced. Therefore, the appropriate wiring diagram should be consulted for a particular model.

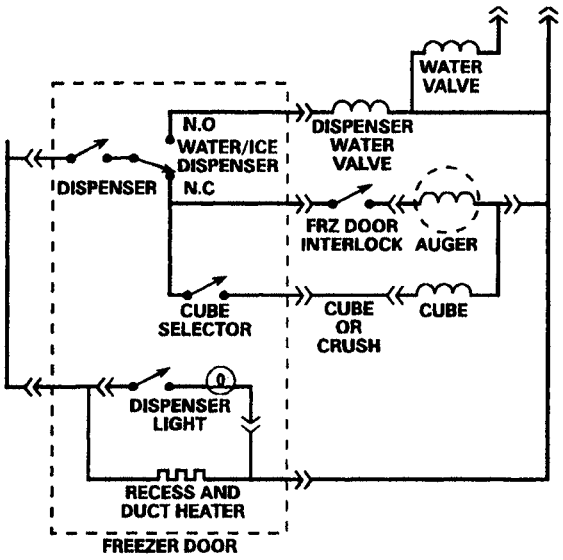


Figure 8 - Dispenser Schematic

An interlock switch, operated by the freezer door, is connected electrically in series with the water and ice dispenser switches. The interlock switch is closed when the freezer door is closed. This prevents inadvertent operation of either the water or ice dispenser while the freezer door is open.

Some models have a dispenser light and switch located behind the left side of the recess escutcheon. Pressing the switch button turns the light on. A second press of the button turns the light off.

A recess and duct heater, connected electrically across the line, is energized full-time. This heater, located on the back of the recess and surrounding the duct door opening, prevents sweating of the recess and frosting of the duct door. If moisture does appear around the recess on models produced prior to 1990 a moisture kit can be ordered to eliminate the moisture. (See FIELD CORRECTION for Kit number) After 1990, production fixes were implemented to eliminate the moisture problem.

DISPENSER DIAGNOSIS

The Systematic Testing and Evaluation Procedure (STEP) is a quick and easy diagnosis method for the dispenser feature. If all of the dispenser components are functioning properly, a complete evaluation can be made in less than one minute - with out using any tools or test equipment. By using only the natural senses of looking, feeling and listening, any abnormal condition will be detected and the cause isolated. Then, only common hand tools and a volt-ohmmeter will be required for testing the components and the circuitry to pinpoint the cause of the abnormal condition.

The procedure consist of only six steps for the most deluxe dispenser models. Accordingly, for models which do not have certain functions such as crushed ice or chilled water, the corresponding steps are not required.

Use the Systematic Testing and Evaluation Procedure for any complaint relating to the dispenser feature. The STEP diagnosis method will facilitate the systematic testing and evaluation of all dispenser components in the shortest possible time. Begin with STEP 1 and proceed through the sequence of steps until an abnormal condition is found. Do not skip any steps. After isolating an abnormal condition, determine the cause and make the repair. Then,

begin with STEP 1 and proceed through the entire sequence as an operational check to confirm that all components are functioning properly.

Step 1 - Icemaker Operation

To dispense ice into the glass at the cradle, the icemaker must be functioning properly. Therefore, the first step is to evaluate the condition of the icemaker and to determine if it is producing suitable ice to be dispensed.

If all ice cubes in the ice bucket are normal size, solid and with no lumping of cubes or ice sheeting in the bottom of the bucket, the icemaker is performing normally. Proceed directly to STEP 2.

Figure 9 - Examine Ice Cubes

If abnormal ice is found in the bucket, such as cubes significantly smaller than normal, or a sheet of ice in the bucket, check: the water shut-off valve clogged or water filter clogged; the water valve screen clogged or mineral encrusted; the icemaker seal leaking; water wicking from the mold or spillage from the fill cup.

Some lumping of cubes may be the result of infrequent use. This is usually accompanied by small sublimated cubes in a lumped form. Sublimated cubes are cubes that are smaller in size due to evaporation - not from low water fills.

If no ice is in the bucket, check for ice in the icemaker mold. When normal ice is in the mold, check for: the icemaker on-off lever in the off position; the icemaker power cord disconnected; the cabinet harness open; the icemaker thermostat, heater or motor inoperative. When no ice is in the icemaker mold, check for: the water supply shut-off valve closed or clogged, the water filter clogged or tubing crimped; the water valve screen clogged or solenoid open; the plastic water tubing crimped or disconnected; the fill tube clogged with ice.

With Ice In Mold Check
1. Icemaker On-Off Lever
2. Icemaker Power Cord
3. Cabinet Harness
4. Icemaker Thermostat
5. Heater or Motor Inoperative
6. Fill Tube Clogged
With No Ice In Mold Check
1. Water Valve Shut-Off Valve
2. Water Filter
3. Tubing Crimped
4. Water Valve Screen
5. Solenoid
6. Plastic Tubing Crimped or Disconnected

Figure 10 - Causes

Step 2 - Recess Heater Operation

The primary purpose of the recess heater is to prevent sweating of the recess or frosting of the duct door. The heater is connected across-the-line and energized full-time. The second step is to determine if the heater is operative.

If the back of the recess is warmer than the sides, the recess heater is

performing normally. This not only qualifies the heater but also verifies that the wiring harness connector within the cabinet are all connected together so that line voltage is being supplied to the components located inside the freezer door. Proceed directly to STEP 3.

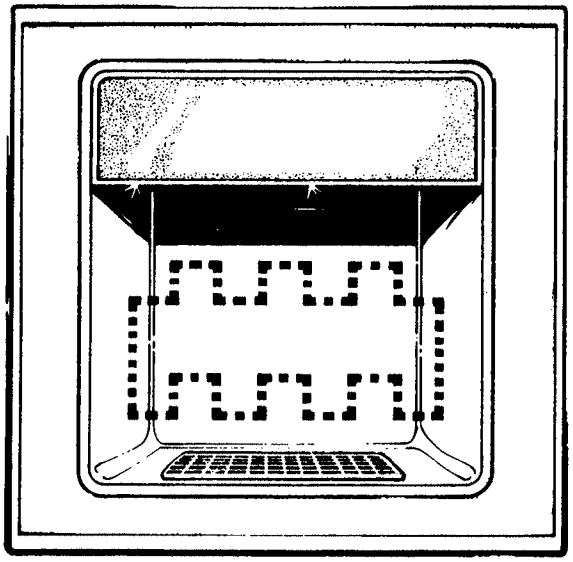


Figure 11 - Feel For Heat

If no heat is felt at the recess back, check for AC power at the door hinge wiring on models produced prior to 1993 and at the lower umbilical connection at the bottom of the cabinet on models produced after 1992. Line voltage should be measured between the brown and orange conductors of the cabinet wiring harness.

CAUTION: When checking for voltage at the wiring connector, exercise care to avoid an electrical shock and to prevent shorting the probes together which could cause a blinding arc. Do not insert the voltmeter probes into the socket terminals. In most cases, the probes will be larger than the terminals. Forcing the probes into the terminals will distort them and cause a poor connection when the connector is reconnected. Perform the test at the rear of the connector.

When normal AC power is measured, check for: the door wiring harness open or the recess heater inoperative. When no AC power is measured, check for: the cabinet wiring harness open.

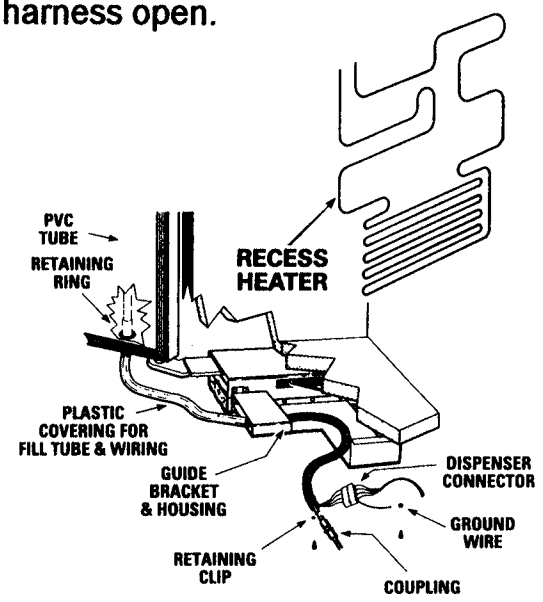


Figure 12 - No Heat Causes

Step 3 - Auger Motor Operation

The auger motor provides the driving force for the dispensing of ice. The third step is to qualify the auger motor, related switches and wiring harness.

If a normal motor sound is heard and normal crushed ice (or cubes) is delivered, the auger motor and related components are performing normally. Proceed directly to STEP 4.

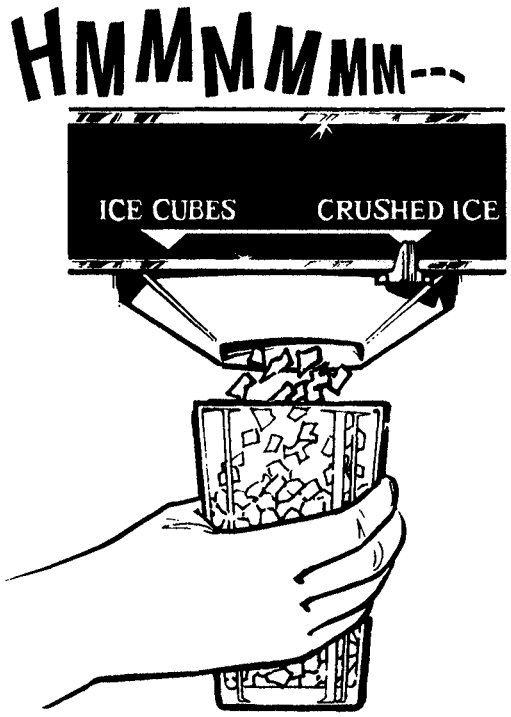


Figure 13 - Listen For Auger Motor

If a normal motor sound is heard but no ice is delivered, check for: the auger drive stripped or broken; the ice bucket mis-positioned; the ice bucket jammed with ice lumps and the auger frozen; the motor frozen or inoperative; the duct door frozen and the lanyard broken; the cradle plunger broken; the duct door pulley or crank stripped or loose; the duct door centripetal wheel sluggish and duct door fails to open and close normally.

If no motor sound is heard and no ice is delivered, check for AC power at the door hinge wiring connector or at the umbilical wiring connector. Line voltage should be measured between the brown and black conductors of the cabinet wiring harness. When normal AC power is measured, check for: the interlock switch inoperative; the ice dispenser switch inoperative; the door wiring harness open. When no AC power is measured, check for: the auger motor winding open or the auger motor wiring harness open.

Step 4 - Cube Solenoid Operation

The purpose of the cube solenoid is to open the cube deflector in the front housing of the ice bucket assembly when dispensing ice cubes. Crushed ice will be dispensed if the cube solenoid is inoperative. The fourth step is to determine if the cube solenoid is operative after having established that the auger motor is functioning properly.

If a normal solenoid sound is heard and normal ice cubes are delivered, the solenoid and related components are performing normally. Proceed directly to STEP 5.

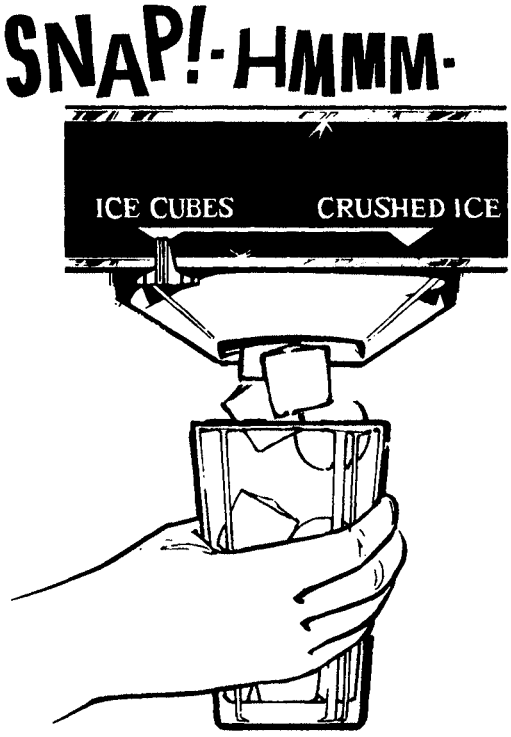


Figure 14 - Listen For Solenoid

If a normal solenoid sound is heard but no cubes are delivered (some crushed ice is normal), check for: the cube deflector broken or binding; the ice bucket improperly secured or mispositioned; the actuator lever not positioned in the stirrup or bent.

If no solenoid sound is heard and no cubes are delivered (crushed ice is delivered), check the AC power at the

door hinge wiring connector or the lower umbilical connector. Line voltage should be measured between the brown and purple conductors of the cabinet wiring harness. When normal AC power is measured and no solenoid sound is heard, check for: the cube selector switch inoperative; the selector switch lever broken or loose; the door wiring harness open or the lower umbilical harness open; the solenoid frozen or jammed; or the electronic system inoperative (on models with the electronic feature). When no AC power is measured, check for: the solenoid open or the solenoid wiring harness open.

Step 5 - Water Valve Operation

The fifth step is to evaluate all components of the chilled water dispenser.

If a normal water valve sound is heard and normal chilled water is delivered, the chilled water feature is performing normally. Proceed directly to STEP 6.

Figure 15 - Listen for Valve

If a normal water valve sound is heard but no water is dispensed, check for: the water reservoir frozen or leaking; the water tubing frozen, restricted or disconnected. (If a new installation, be sure all air has been purged from the reservoir.) Hold dispenser plunger in for several minutes to make sure all air is purged from the reservoir.

If no water valve sound is heard and no water is dispensed, check for AC power at the door hinge wiring connector. Line voltage should be measured between the brown and blue conductors of the cabinet wiring harness, or the umbilical connector. When normal AC power is measured, check for: the water dispenser switch inoperative or the door wiring harness open. When no AC power is measured, check for: the water valve solenoid open or the cabinet wiring harness open, or the umbilical harness open.

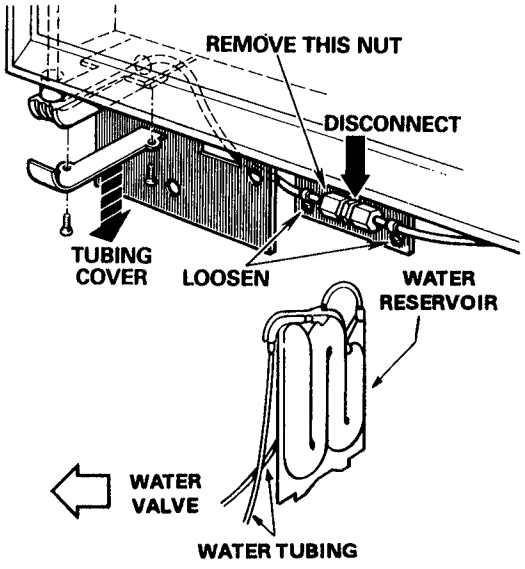


Figure 16 - No Water Causes

Step 6 - Dispenser Light Operation

The dispenser light is a feature on all monogram dispenser models. Since this is the last remaining feature of the dispenser, this is the final step in the diagnosis procedure.

If the lamp lights, this feature is performing normally. At this point, if all steps have indicated normal condi-

tions, all components of the dispenser are functioning properly.

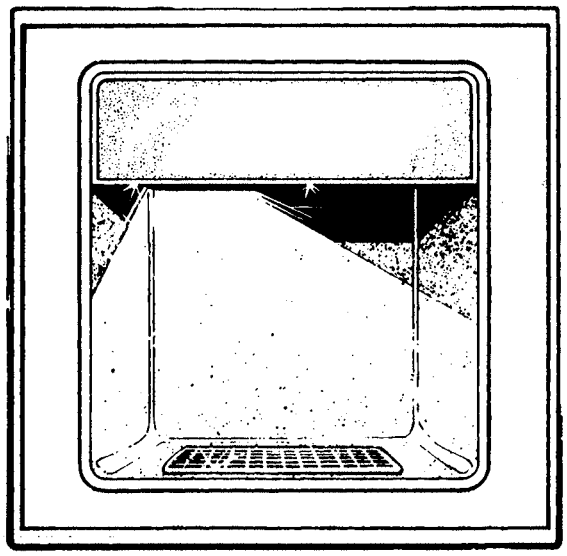


Figure 17 - Look For Light

If no light appears, check for: the lamp burned out or loose; the light switch inoperative; the door wiring harness open or the electronic system (on models with the electronic feature).

Diagnosis Guide

Will not dispense ice

— Dispenser switch open
— Auger motor inoperative
— Wiring open

Will not dispense ice cubes

— Selector set for crushed ice
— Selector lever not attached
— Selector switch inoperative
— Bucket improperly positioned
— Actuator not engaged by stirrup
— Solenoid frozen
— Solenoid inoperative
— Wiring open

Dispenses ice after glass removed

— Glass removed too quickly
— Cradle sleeve sticking

Ice misses glass when dispensed

— Glass positioned too low
— Glass diameter too small
— Funnel torn or distorted

Cradle hard to depress

— Cradle sleeve binding
— Time delay binding
— Duct door frozen or binding

Ice cubes out of the bucket

— Icemaker overfilling bucket
— Duct door not opening
  — cradle plunger broken
  — crank broken or missing
  — lanyard broken or worn
  — pulley or crank stripped
— Time delay inoperative
— Auger motor continues operation
  — dispenser switch shorted
— Ice chute jammed

Will not dispense water

— Water valve solenoid open
— Reservoir leaking or frozen
— Water tubing leaking or frozen
— Dispenser switch not actuated
— Wiring open

Dispenses water after glass is removed

— Water valve not closing
— Wiring to solenoids crossed
— Cradle sleeve sticking
— Dispenser switch shorted
— Dispenser switch over sensitive
— Reservoir restricted, trapped air

Water not cold enough

— First glassful warm - normal
— Temperature control set too warm
— Heavy usage of dispenser
— Heavy usage of refrigerator

REPAIR AND ADJUSTMENTS

Freezer Door Removal

Wiring enters the freezer door through the top hinge on models produced through 1992, and through the bottom of the door after 1993. A wiring harness connector is located under the hinge cover on early models and next to the water valve cover on models produced after 1993.

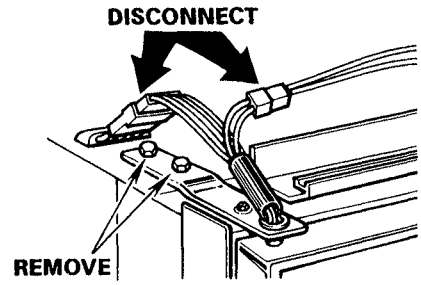


Figure 18 - Wiring Connector

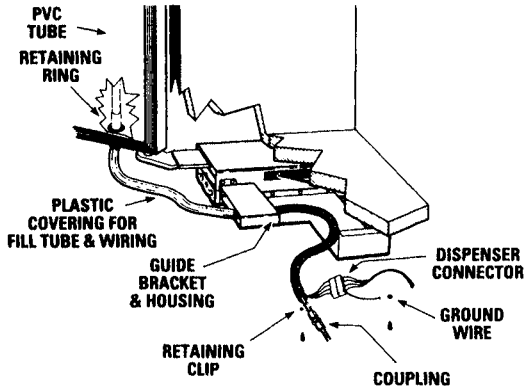


Figure 19 - Wiring Connector next to water valve

On models that have a water dispenser, plastic tubing enters the freezer door through the bottom hinge on models produced prior to 1993 and through the bottom of the door after 1993.

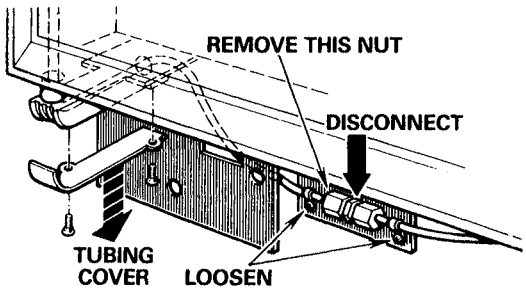


Figure 20 - Water Connections

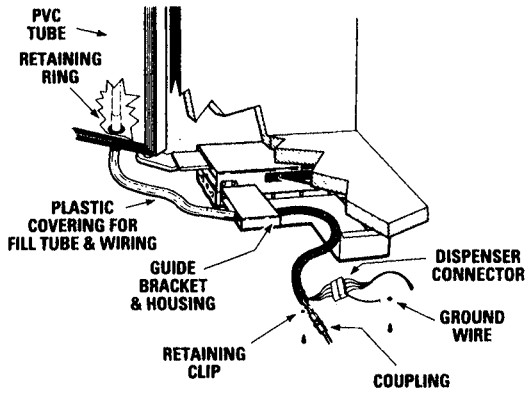


Figure 21 - Water Connections after 1993

Before removing the door, remove the upper panel and disconnect the power cord from the wall receptacle. Remove the grille. Remove the tubing clamp and loosen the coupling nut. Pull the tubing from the coupling. With the door closed, remove the top hinge cover, disconnect the wiring connector and remove the top hinge screws on models produced prior to 1993. On models produced after 1993, remove the top door hinge screws. Then, hold the door closed and remove the bottom hinge screws on models prior to 1993 and the bottom door hinge screws after 1993. Also on models produced after 1993, the umbilical cord will have to be disconnected and the door actuator arm shoulder bolt (5/16 inch Allen head bolt) will have to be removed. To remove the actuator shoulder bolt, the door should be opened 90 degrees and then the bolt removed. Remove the door together with both hinges to avoid damage to the wiring harness or water tubing.

When reinstalling the door, dress the wiring at the top hinge and the bottom umbilical to prevent pinching the wires by the hinge cover and the umbilical slide.

Recess Service Cover

Most of the components mounted to the rear of the recess assembly are accessible after removing the service cover from the inner door panel. The service cover has tabs at the top and hooks along the bottom that engage the inner door panel. When removing the cover, care must be taken to avoid breaking the tabs and/or hooks. On models produced prior to 1993, press upward on the inner door panel, just above the cover, while pulling outward on the top of the cover with fingertips. This will flex the inner door panel enough to disengage the tabs. Then, the cover can be removed by lifting upwards to disengage the hooks.

After the cover has been removed it will be necessary to cut the Styrofoam housing that surrounds the recess to expose the components. On models produced after 1993 the rear recess must be pried out from the sides and then disengaged from the upper tabs and lifted out of the opening.

NOTE: It is extremely important to seal the foam housing after repairs have been made to prevent cold air from reaching the back of the recess.

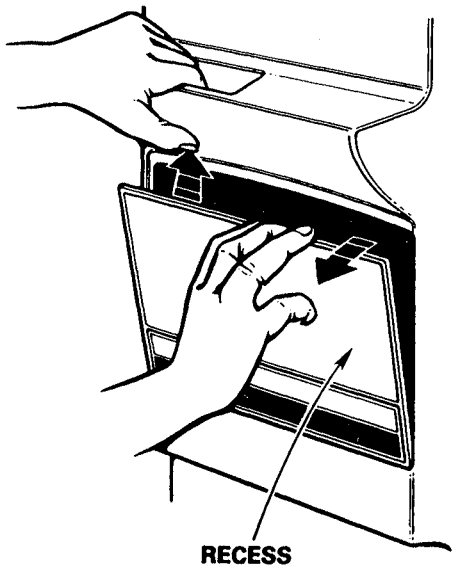


Figure 22 - Cover Removal

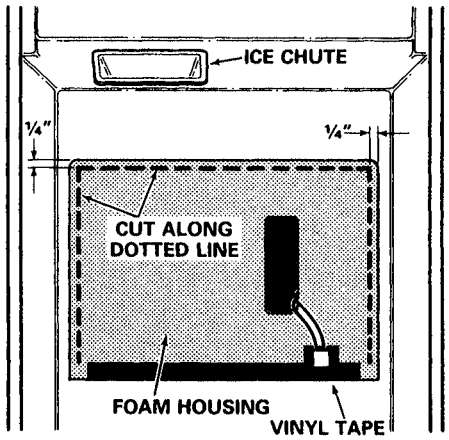


Figure 23 - Foam Housing Cut Lines

Lanyard

To remove the lanyard, first unhook it from the clip. Then, unwind the lanyard from the pulley and disengage the loop from the crank.

The lanyard should be replaced if it is broken or frayed.

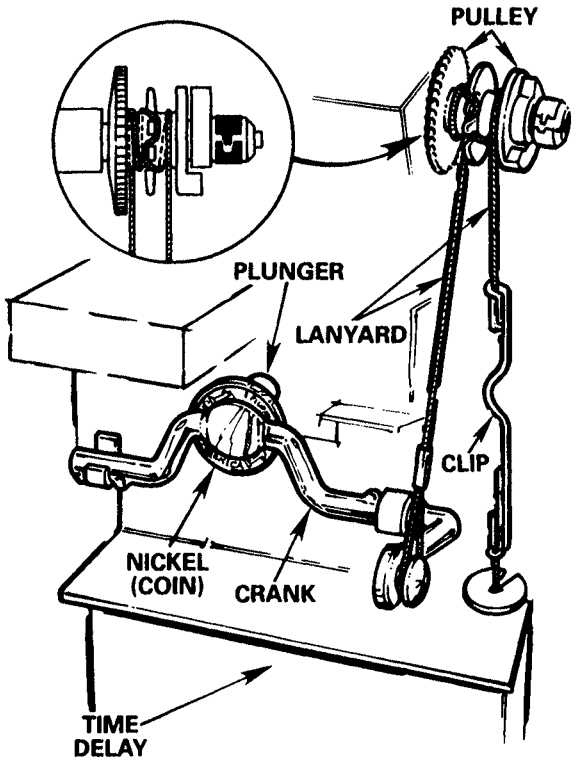


Figure 24 - Lanyard Installation

To reinstall the lanyard:

1 Hook the loop of the lanyard over the end of the crank.

2 Thread the lanyard behind the pulley and wind it 1 1/2 turns on the left side.

3 Place a nickel (coin) between the crank and the plunger to set the proper tolerance.

4 Rotate the serrated hub of the pulley to firmly close the duct door.

5 While holding the duct door closed and the nickel in position, pull tension on the lanyard and engage it into the notched hub of the pulley - in a zigzag (right, left, right) pattern.

6 Wind the lanyard around the right side of the pulley one full turn and hook the end of the lanyard into the clip.

7 Remove the nickel and check the lanyard to make sure the end connected to the crank has a slight amount of slackness.

8 With the freezer door open, press the ice cradle two or three times and observe the operation of the duct door. Make sure the duct door closes fully.

Time Delay Operation

To check for an inoperative time delay, open the freezer door and press the ice cradle slowly about ten times. If, at any time, the duct door closes immediately after releasing the cradle, the time delay should be replaced.

To replace the time delay, first unhook the lanyard from the clip. Then, remove the two screws that secure the time delay to the bracket and slide the time delay to the right side of the service opening.

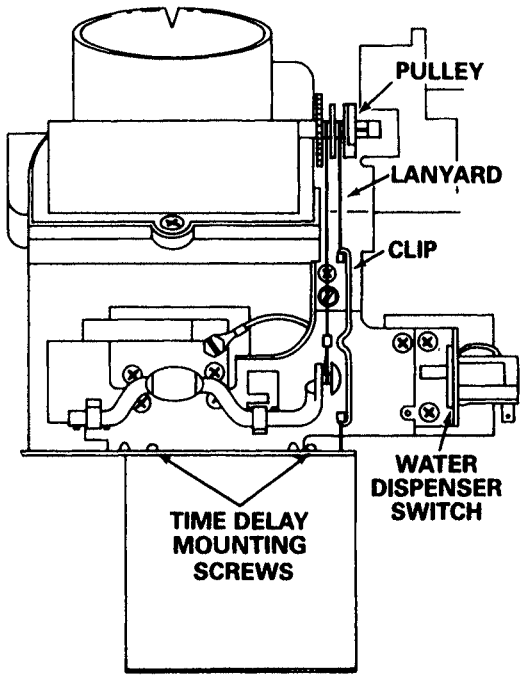


Figure 25 - Time Delay Replacement

After installing the time delay, press the ice cradle about ten times while observing the duct door closing action. Also, make sure the duct door closes fully. If the duct door fails to close fully, the lanyard must be rethreaded to ensure a slight amount of slackness in the end of the lanyard connected to the crank.

Cramer Time Delay

In 1991 a new compact time delay mechanism replaced the older more complex time delay on the dispenser recess. Although the appearance is drastically different, the function of the compact time delay is essentially the same as the previous design (i.e., to slowly close the duct door when the ice cradle is released).

The time delay is riveted to an angle bracket and mounted to the bearing plate at the right end of the crank. A pin, extending from the end of the creak, engages a slot in the actuator lever to operated the time delay. Thus, the lanyard does not connect to the time delay.

The WR09X0462 Time Delay, furnished as an assembly (with the bracket attached), is a like-for-like replacement for the current production models. The compact time delay **is not** a direct replacement for the previous design.

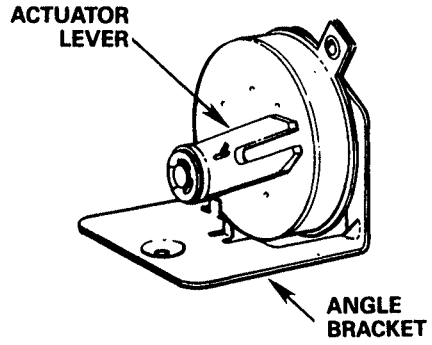


Figure 26 - Cramer Time Delay

To replace the time delay: Remove the screw that secures the angle bracket to the bearing plate. Rotate the time delay downward and to the right to disengage the actuator lever from the pin at the end of the crank.

When installing the time delay, position the angle bracket under the bearing plate and engage the crank pin into the actuator lever slot. Align the mounting holes and drive the screw.

Then, open the freezer door and press the ice cradle two or three times while observing the operation of the duct door to make sure the duct door closes fully.

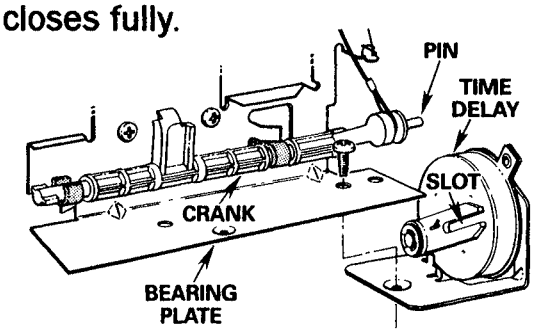


Figure 27 - Replacing Cramer Time Delay

The WR02X8441 Lanyard for this recess is longer than the WR02X8447 lanyard for the older recess. Both lanyards have a loop at one end that connects to the crank and an eyelet at the other end that connects to the spring.

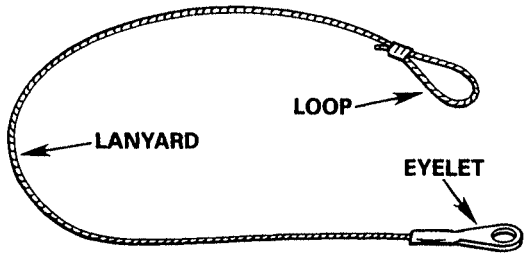


Figure 28 - Cramer Time Delay Lanyard

The procedure for replacing the lanyard is essentially the same as for the previous design. Although, a dime (rather than a nickel) is required as a gauge (to set the proper tolerance between the crank and the cradle plunger) due to differences in the design of the crank (plastic versus metal).

To replace the lanyard: Disengage the lanyard form the spring and unwind the lanyard from the pulley. Disengage the crank form the bearing support at the right end and remove the lanyard from the crank.

To reinstall the lanyard, position the

loop over the end of the crank and engage the crank into the bearing support— making sure the crank pin (at the end of the crank) is engaged into the actuator lever slot. Position the loop of the lanyard between the hubs (near the end) of the crank. Thread the lanyard behind the pulley and wind it 1 1/2 turns on the left side. Place a dime (coin) between the crank and the plunger to set the proper tolerance. Rotate the serrated hub of the pulley to firmly close the duct door. While holding the duct door closed and the dime in position, pull tension on the lanyard and engage it into the notched hub of the pulley — in a zig zag (right, left, right) pattern. Wind the lanyard around the right side of the pulley one full turn and hook the spring into the eyelet (at the end of the lanyard).

Remove the dime (coin) and check the lanyard to make sure the end connected to the crank has a slight amount of slackness. Open the freezer door and press the ice cradle two or three times while observing the operation of the duct door. Make sure the duct door closes fully.

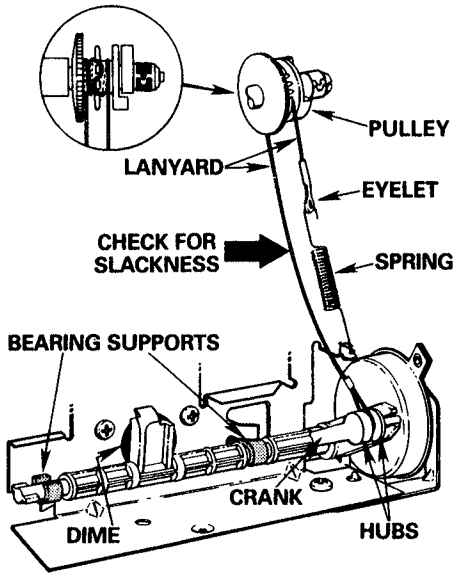


Figure 29 - Installing Lanyard on Cramer Time Delay

Switches & Cradles

The water dispenser switch, on models that offer this feature is a rocker type. If can be pressed out of its mounting bracket after removing the push-on leads from the terminals. When installing an identical replacement switch (WR23X0192) into the mounting bracket, make sure the bracket is straight, so that there is clearance between the plunger and the switch rocker. As an alternate, a micro switch (WR23X0177) can be used as a replacement.

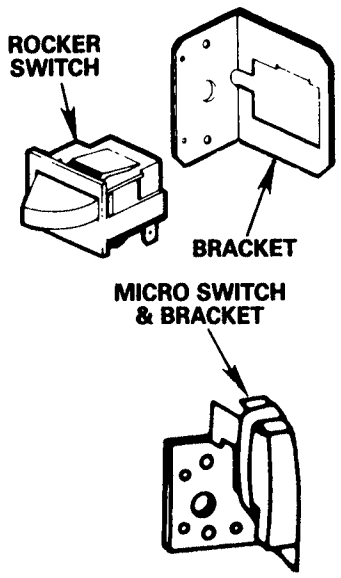


Figure 30 - Water Dispenser Switch

To remove the micro switch used for the ice dispenser, the bracket to which the time delay is mounted must first be loosened. Then, remove the screws securing the switch bracket to the back of the recess and disconnect the push-on leads. Upon installing the switch, make sure the spring is in position and use care to prevent damaging the spring.

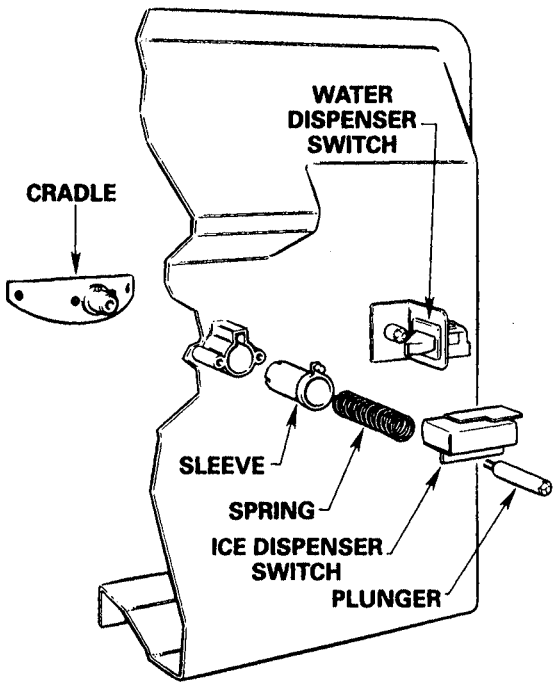


Figure 31 - Switches and Cradle

The micro switch (WR23X0318), can be replace without removing the mounting plate form the back of the dispenser recess. Remove the screw that secures the housing to the plate, then unhook the housing at the opposite end and release the two locking tabs that secure the switch to the housing.

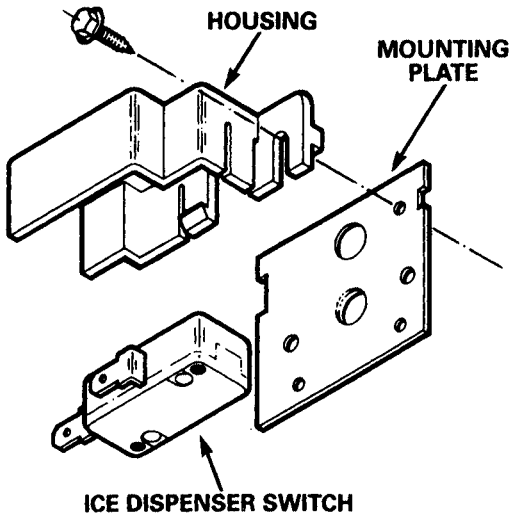


Figure 32 - Switch Assembly

To remove the cradle, sleeve and plunger, use a 1/4 inch nut driver to remove the plunger. A thread retaining compound used on the plunger threads may offer some initial resistance in removing the plunger.

Duct Door

The duct door is removable from the front of the recess without further disassembly. With the freezer door open (or the power cord disconnected), depress the ice dispenser cradle to fully open the duct door. Reach up through the funnel and behind the open duct door and press forward at the top of the duct door to disengage the clips from the actuator. Rotate the duct door 1/4 turn counterclockwise to disengage the tabs form the actuator. Then, withdraw the duct door from the funnel.

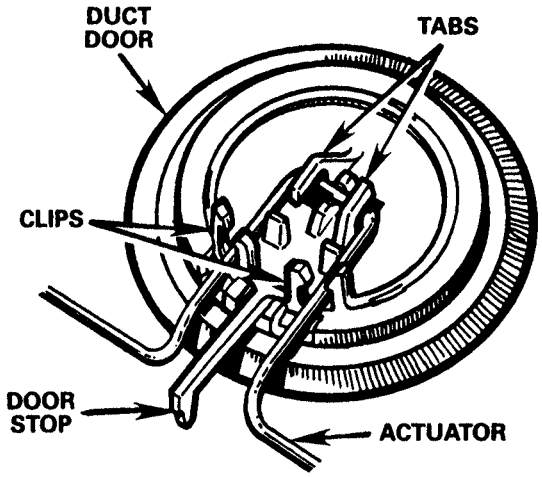


Figure 33 - Duct Door Assembly

When replacing the duct door, reverse the procedure. However, to prevent breaking the door stop, the duct door must be held in the fully open position while engaging the clips over the actuator.

Escutcheon & Selector Button

The escutcheon, at the top of the recess, covers the selector switch (or switches) and the lamp assembly on applicable models.

To remove the escutcheon, first slide the selector button to the center position and disengage the selector switch lever by reaching behind the

escutcheon and pushing the lever to the rear. Then, remove the mounting screw near the lower edge of the escutcheon. Pull the escutcheon down and to the side to disengage the metal trim from the slot. When reassembling the escutcheon, remember to slide the selector button to the center and reattach the selector switch lever to the selector button.

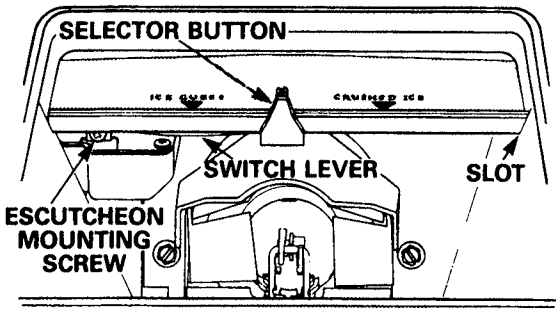


Figure 34 - Escutcheon Removal

NOTE: On some later models, the recess trim must be removed before the escutcheon can be removed.

To remove the selector button, first slide the metal trim partially off the escutcheon. Then, slide the button off of the escutcheon at the center (notched) area.

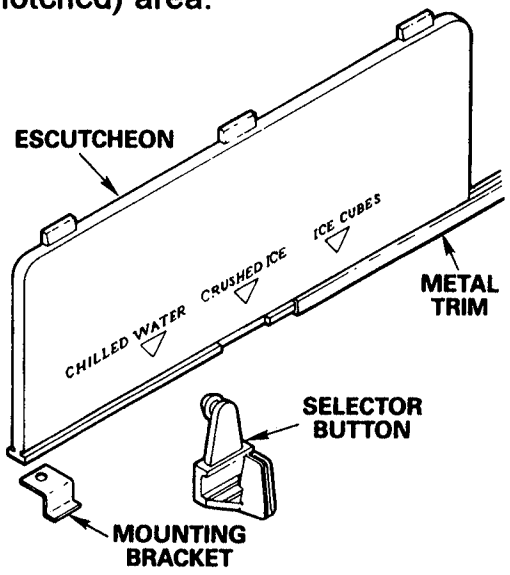


Figure 35 - Switches & Lever

After removing the escutcheon, the selector switch (or switches) and lever are accessible. Two selector switches are used on models that dispense chilled water, ice cubes and crushed ice by mean of a single cradle. The upper switch is a SPDT type for selecting either water or ice. The lower switch is a SPST type for selecting ice cubes.

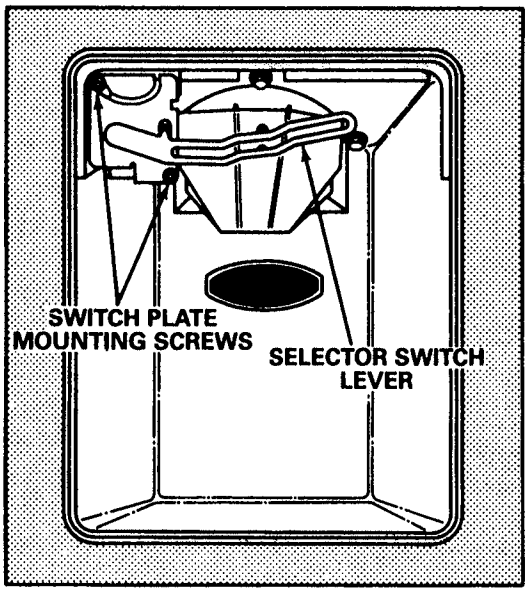


Figure 36 - Switch Plate Removal

To remove the selector switch (or switches), first remove the two screws holding the switch cover and insulator. Pull the switch off of the mounting pins that position it inside the housing. Then, disconnect the push-on leads from the switch terminals.

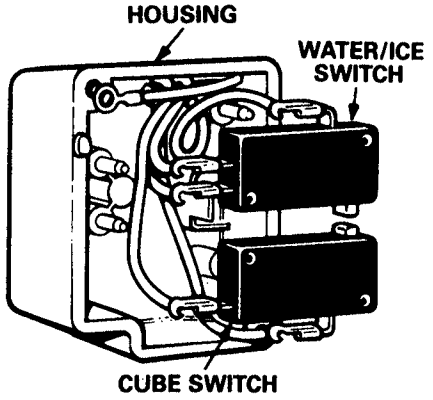


Figure 37 - Selector Switches

Recess Trim

Although some monogram refrigerators may have custom trim kits in-

stalled the basic assembly has the following trim: The recess trim is a molded plastic part that surround the dispenser recess and is held in place by two brackets and double-back tape.

To remove the dispenser recess on early models, the door handle which serves as a trim and insert panel rail must be removed. The handle is held in place with 8 Phillips head screws.

After removing the handle, the recess trim must be pried loose from the outer door, due to the double-back tape. Using a putty knife, pry the trim forward away from the door, work down the inside of the trim, pushing back the double-back tape. The trim also has guide posts which slide out easily. After the trim has been pried loose from the tape, it is still held in place by the door side trim and the upper and lower insert panel guide rails. Slide the upper insert panel out of the rails, and set it aside.

To remove the recess trim from the side rail, remove three (3) screws from the upper support rail starting from the hinge side. Leave the last screw in place. Disconnect the terminal block connector behind the trim, and while holding the recess trim, rotate the support rail up and away from the recess trim. Lift up on the recess trim and rotate it forward and out of the side trim. Reassemble in reverse order.

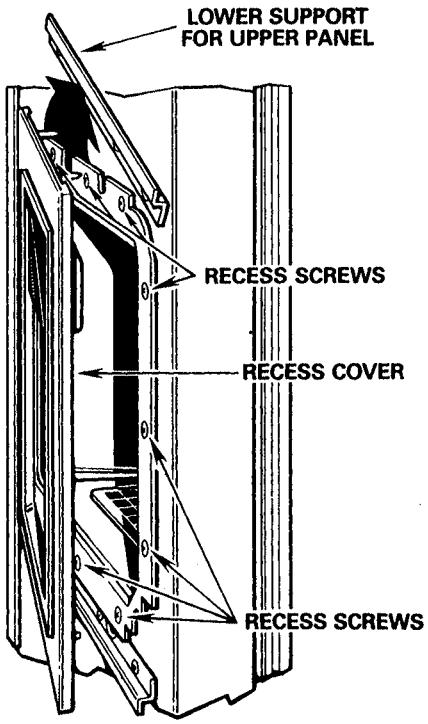


Figure 38 - Recess Trim Removal

On later models the recess trim is removed in a similar manner except the top and bottom support rails must be removed and then the trim screw removed to release the trim.

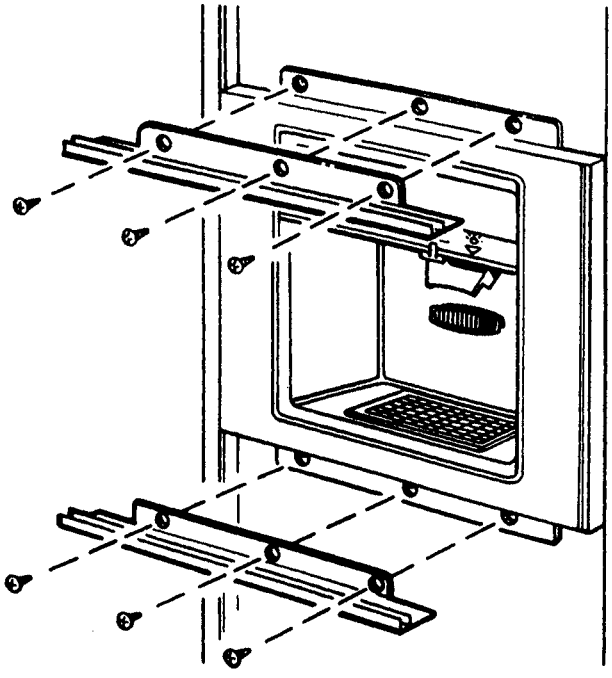


Figure 38a - Support Rail Removal

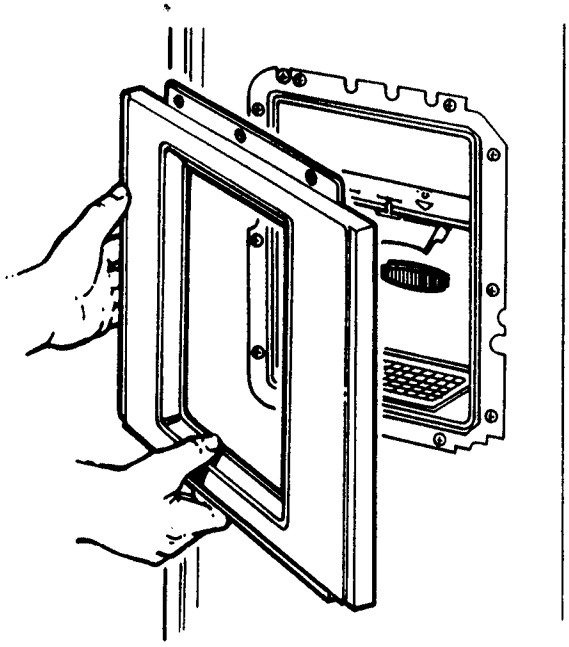


Figure 39 - Recess Trim Removal - Later Models

Ice Bucket Assembly

On earlier models, a spring-loaded latch is used to secure the ice bucket to the shelf at the lower front. To remove the bucket, press upward on the latch while pulling the bucket forward. The latch is held to the bucket front plate by two retainers. After removing one retainer, the spring and catch can be removed. The coils of the spring must be positioned over the catch pivots and the ends of the spring positioned above the flange of the front plate before installing the retainer. Later models, the bucket is molded with a retaining tab that fits into a slot. Lifting up on the bucket while removing will disengage the slot.

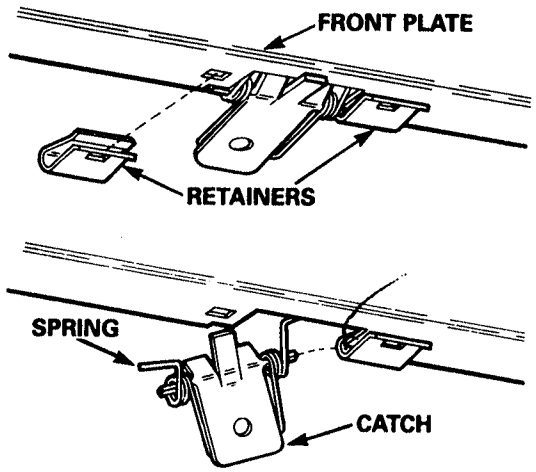


Figure 40 - Bucket Latch Assembly

The ice bucket can be disassembled after removing the screws at the bottom of the front plate and at the actuator lever bracket.

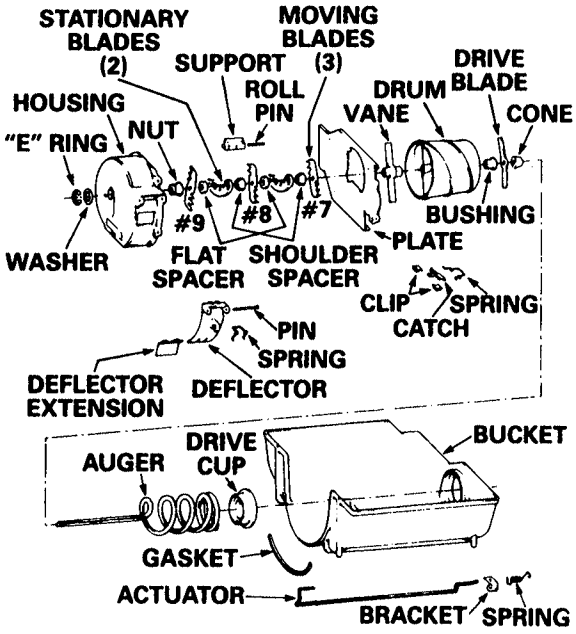


Figure 41 - Ice Bucket Assembly

To disassemble the auger components, begin by removing the large "E" ring, the front housing, and the nut (bushing) at the front. Then, the crusher blades and spacers can be removed. To keep the blades and spacers in proper sequence for reassembly, slide these components off of the auger shaft and onto a screwdriver blade held against the end of the auger shaft.

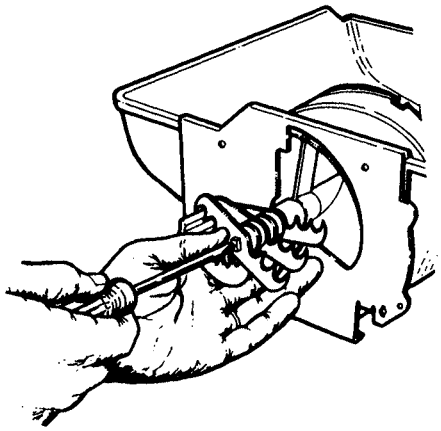


Figure 42 - Remove Crusher Blades

Upon reassembly, make sure the three moving crusher blades - stamped "7", "8", and "9" - are assembled in proper sequence (first 7, then 8, then 9) with the numbers facing forward

Auger Motor & Cube Solenoid

The auger motor and cube solenoid are mounted at the rear of the ice bucket shelf assembly. To gain access to the motor and solenoid, the ice shelf assembly must be dismounted from the freezer compartment.

To remove the auger motor, unscrew the fork from the motor shaft and remove the screws securing the motor to the rear of the shelf assembly.

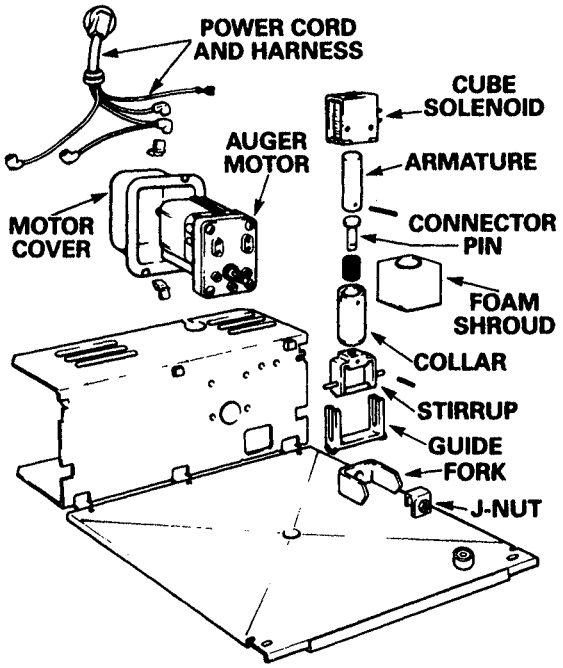


Figure 43 - Ice Shelf Assembly

To remove the solenoid, remove the screws securing it to the rear of the shelf assembly. The solenoid can then be lifted off of the armature. The armature is attached to a collar and connector pin which, in turn, are attached to the stirrup with press-fitted pins. The stirrup rests in a guide which maintains the position and alignment of the stirrup. A foam shroud, attached to the bottom of the solenoid prevents frosting or icing of the armature. When reassembling the solenoid, the armature should be lubricated with a light coating of silicone grease to further ensure against frosting or icing. However, make sure no lubricant is applied to the top of the armature which could cause it to stick in the up position.

Water Reservoir & Tubing

Earlier models have a 38 ounce water reservoir. Beginning with models produced in 1993, a 32 ounce reservoir is used. Although both types are secured in a similar manner, with supports at the bottom and clips or a

catch at the top, they are not interchangeable.

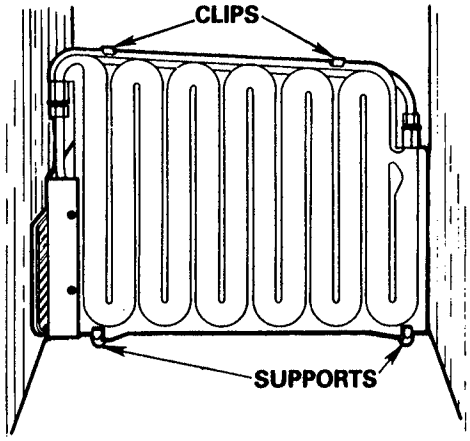


Figure 44 - Earlier Models

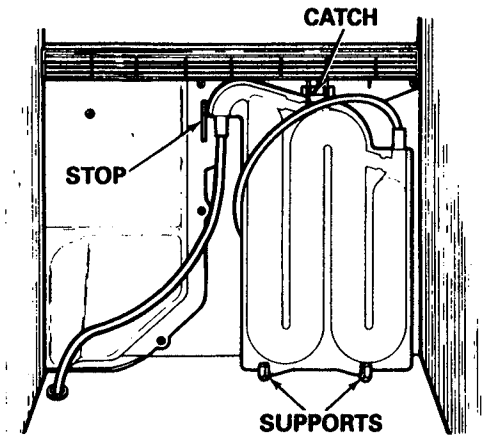


Figure 45 - Later Models

On earlier models, the polyethylene water tubing is connected to the reservoir with compression type fittings. On later models the tubing connections are welded to the reservoir.

When removing the reservoir, it is not necessary to shut off the water supply (the reservoir is not under pressure except when the water valve is energized). However, when the tubing is separated form the reservoir, some water may spill by gravity.

The water tubing from the reservoir is routed through a conduit (between the liner and outer case) to the front angle. A coupling (union) connects the tubing that enters the freezer door through the lower hinge. The tubing is routed behind a cover before it passes through the hinge and into the door.

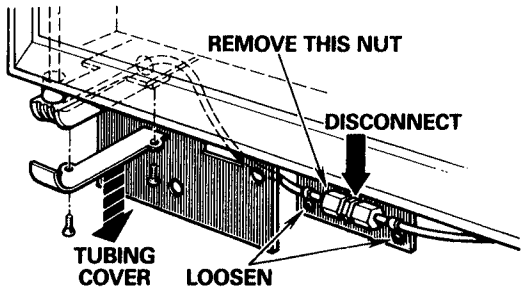


Figure 46 - Tubing Connection Early Models

Before removing the water tubing, place a few drops of warm mineral oil or liquid soap in the conduit to lubricate the tubing. Then, gently pull the tubing out of the conduit so as to avoid stretching or breaking the tubing inside the conduit. When replacing the tubing, first lubricate the outside surfaces of the tubing to ease the installation.

On later models an umbilical tube arrangement is used to route the tubing. The coupling is similar and must be disconnected. The tubing does not enter the door through the lower hinge but is away from the hinge about 2 inches.

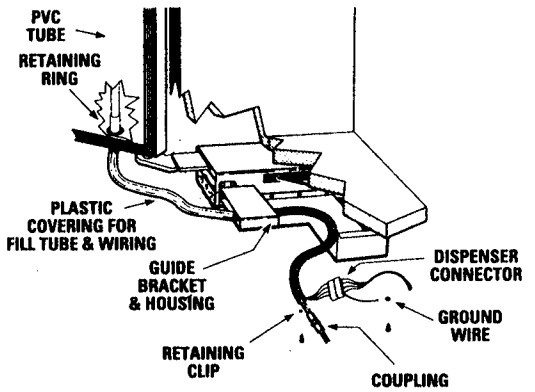


Figure 47 - Tubing Connection - Later Models

SERVICE NOTES

Water Continues Flowing

If water continues to flow from the chilled water dispenser after the cradle is released, check for trapped air in the water reservoir. Normally, all air is purged from the reservoir when it is initially filled with water. However, if the passage across the top of the reservoir is plugged, some air will be trapped. The trapped air will be compressed by the water pressure while dispensing. Then, when the cradle is released, the water valve closes but water continues to flow momentarily - until the compressed air is equalized. To correct this condition, replace the reservoir.

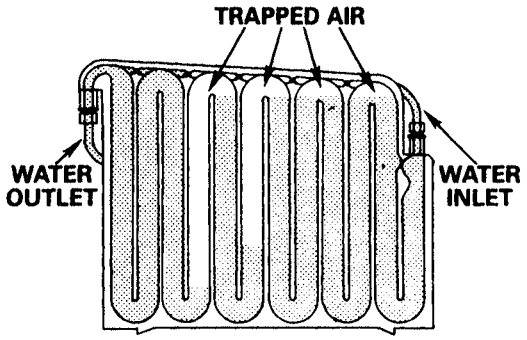


Figure 48 - Air in The Reservoir

If water flows from the chilled water dispenser when the cradle is not depressed, check for an over sensitive water dispenser switch. To correct this condition, replace the switch.

Water Reservoir Freezing

Freezing of water in the reservoir may occur due to light usage of the refrigerator, or control set too cold. To correct this condition.

If the condition is due to light usage;

1 Install a WR49X0300 Temperature Control Compensator on the back of the temperature control.

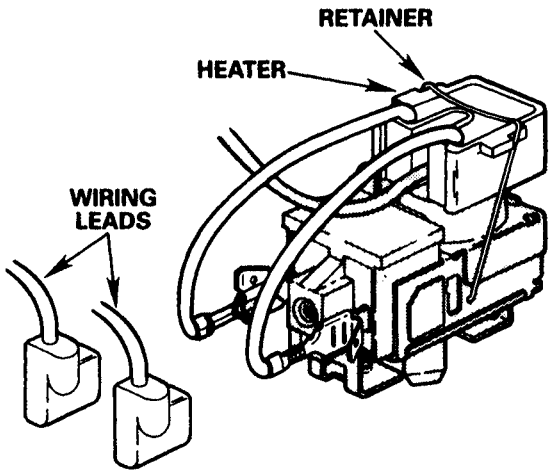


Figure 49 - Control Compensator

2 Add a piece of tape on the inside of the louvered grille above the reservoir.

3 Set the meat/vegetable damper control to the "vegetable" setting.

If the condition is due to the Temperature control setting:

1 Set the control to the proper setting for the fresh food compartment - position 5, or lower is necessary.

2 Add a piece of tape on the inside of the louvered grille above the reservoir.

3 Set the meat/vegetable damper control to the "vegetable" setting.

Replacement Water Tubing

On most models the water tubing is electronically bonded (welded) to the water reservoir inlet and outlet. If the tubing should break, it is not necessary to replace the reservoir (unless the break is within approximately 6 inches. of the inlet or outlet). Instead, use a WR17X1483 Water Tubing Kit to make the repair. Cut the tubing approximately 6 inches back from the reservoir and make a splice using the new tubing and coupling (union) furnished in the kit.

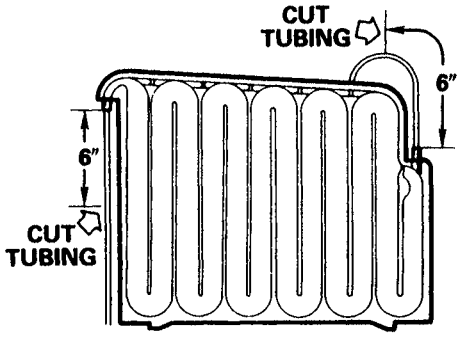


Figure 50 - 38 oz. Water Reservoir

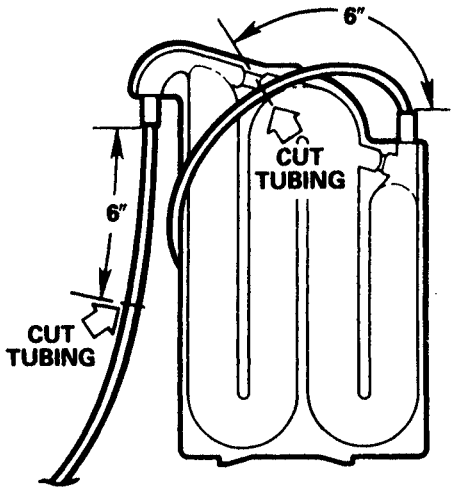


Figure 51 - 32 oz. Water Reservoir

Ice Dispenser Switch Failure

A consumer complaint of "ice will not dispense" may be due to a failure of the ice dispenser switch. If moisture-laden air enters the freezer door, it may condense and form frost or ice in the switch mounted behind the ice cradle. Moisture contamination of the switch contacts may cause a high resistance condition resulting in overheating and eventual failure of the switch.

The WR23X0144 Ice Dispenser Switch was used on Monogram dispenser models during the months of September, 1988 through October, 1989. When servicing one of these models with a serial prefix "SZ" through "TA" - regardless of the reason for service - remove the service cover from the freezer inner door panel and examine the ice dispenser switch. If the switch has a white plastic case, it should be replaced as a precaution against a possible switch failure and further inconvenience to the consumer. The replacement switch (WR23X0318) has a brown plastic case.

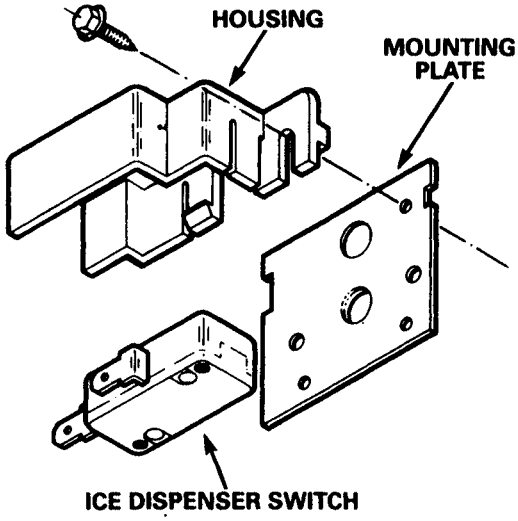


Figure 52 - Switch Assembly

Intermittent Ice/Water Dispensing

Intermittent or repeat occurrences of "no ice or water dispensing" may be due to:

1 The freezer door wiring harness connector not firmly connected.

2 The freezer door interlock switch not fully actuated when the door is closed, or

3 Ice formed on the dispenser switch, plunger and/or tab of the cradle sleeve - thus preventing the switch from closing.

If ice forms on the dispenser switch, plunger or sleeve tab, check for air leakage into the recess area. The insulation around the dispenser switch may be insufficient.

After removing any ice accumulation from around the dispenser switch, install a WR14X0327 Insulation. An

instruction sheet is included with the special notched insulation. Do not use any other insulation to avoid blocking movement of the time delay or lanyard.

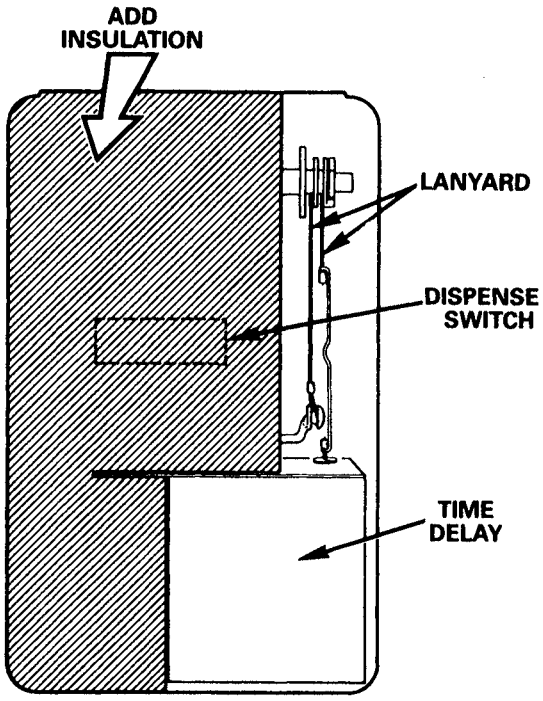


Figure 53 - Insulation Installed

Duct Door Not Closing

The duct door not fully closing can be caused by an improperly installed lanyard or a loose pulley.

Duct Door Held Open

If the duct door fails to close (remains open), examine the funnel for a warped flap, excess flashing at the edges of the flaps, or some of the flaps webbed together. Excess flash should be trimmed off to allow approximately 1/32 inch space between the flaps. If a funnel flap is warped (bent inward and trapping the duct door), replace the funnel.

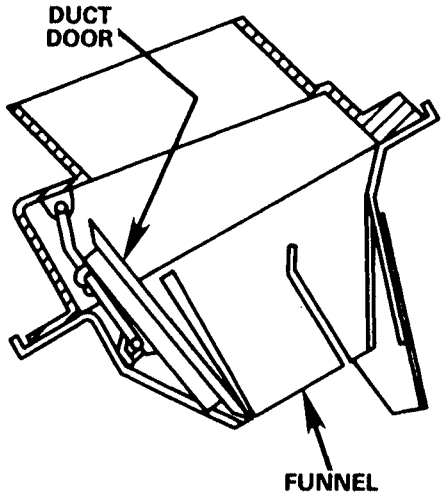


Figure 54 - Duct Door Trapped

Also, check for a friction bind of the duct door stop against the bottom of the chute flange. To correct this condition, remove the duct door and file the tip of the stop to remove any burrs at the point of contact with the chute flange.

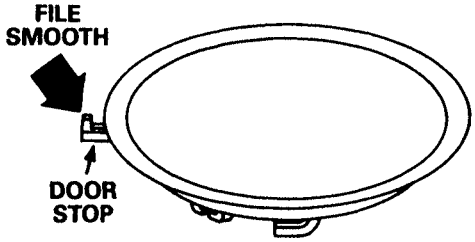


Figure 55 - Duct Door

Duct Door Frozen

An intermittent time delay can cause the duct door to close too soon, thus trapping ice in the chute. As ice is melted by the heater, the duct door may become frozen shut. To check for an inoperative time delay, open the freezer door and press the ice dispenser cradle slowly about ten times. If, at any time, the duct door closes immediately after releasing the cradle, the time delay should be replaced.

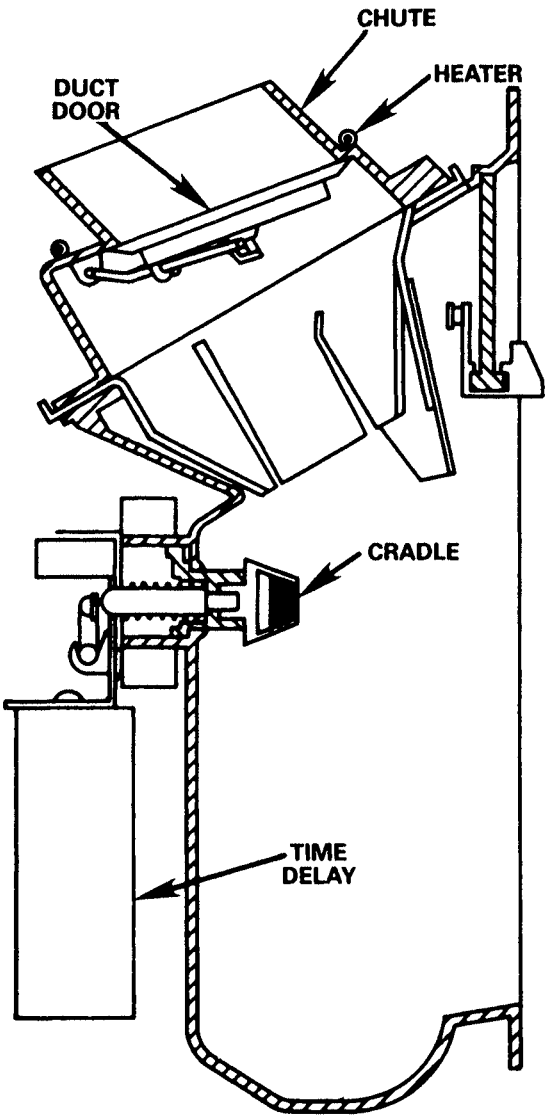


Figure 56 - Dispenser Recess

Ice Jamming in Funnel

Ice cubes jamming in the funnel and blocking the flow of ice may be due to either stiff funnel flaps or slits omitted from the funnel. This condition can be corrected by slitting the funnel to increase its flexibility. First - to prevent a possible electrical shock hazard - disconnect the power cord or remove the dispenser lamp. Then, using scissors or shears, cut slits in the sides and back of the funnel. The slits should extend upward as far as possible to achieve maximum flexibility.

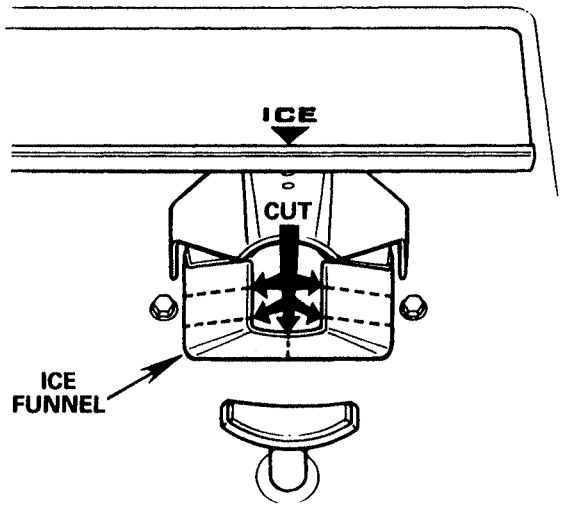


Figure 57 - Cut Slits in Funnel

Auger Drive J-Nut Broken

A broken auger drive J-nut may be due to an incorrect hole size in the drive fork. To Correct this condition, replace the drive fork (WR02X4854) and J-nut (WR01X1547)

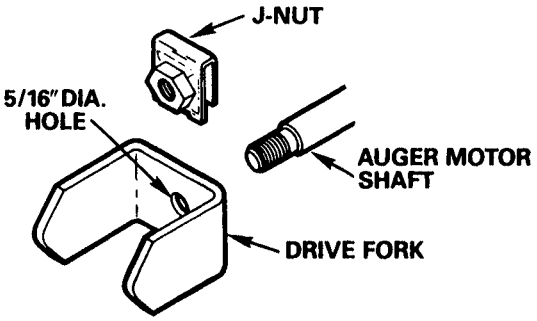


Figure 58 - Auger Drive

Crushed Ice Only

Dispensing of crushed ice when the selector button is positioned for "Ice Cubes" may be due to:

- a mis-positioned ice bucket
- jammed ice deflector
- bent actuator lever
- selector switch lever loose
- inoperative solenoid
- open wiring

Also, do not overlook binding of the cube solenoid - primarily caused by frosting or icing. To correct this condition:

1 Remove the solenoid assembly and check for rough spots or burrs on the armature and sand accordingly. Do not remove the foam shroud. It must be secured to the bottom of the solenoid. If it is missing or moisture saturated, replace the shroud (WR17X1063).

2 Apply a light film of silicone lubricant (WR97X0163) to the sides of the armature. Do not apply lubricant to the top of the armature because it will cause the armature to hang up.

3 Reinstall the solenoid assembly and manually raise the armature and let it drop. If it does not drop freely, disassemble the solenoid and remove some of the lubricant.

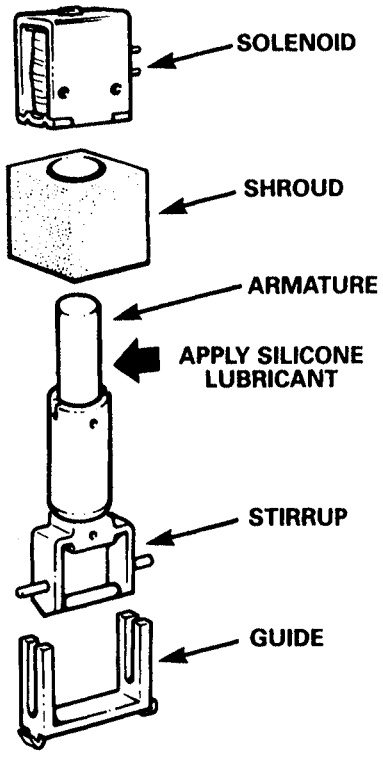


Figure 59 - Solenoid Assembly

Ice Bucket Overflowing

Icicles forming on food packages stored in the shelf below the ice bucket shelf may be caused by ice cubes overflowing the bucket. To correct this condition, install a WR49X0260 Ice Cube Overflow Kit. This kit consists of a rear bucket spacer, a stabilizer rivet, side bucket deflectors and instructions.

Ice Bucket Latch Kit

The ice bucket latch, located at the bottom front, holds the bucket in position on the shelf. If one of the retainers used to secure the catch pops off, the retainer, catch and spring are usually lost, A catch spring and two retainers are included in the WR49X0247 Bucket Latch Kit.

ELECTRONIC SYSTEM

An electronic system is featured on some of the Monogram Refrigerators. The control console is located above the dispenser recess on the freezer door.

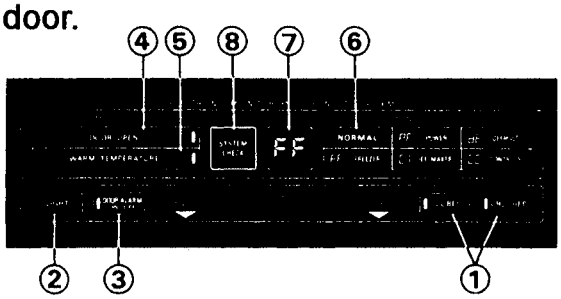


Figure 60 - Control Console Front

Operation

1 A selection of either ice cubes or crushed ice is made by touching either the "cubes" or "crushed" pad on the control console. A green signal light indicates the selection that has been made. A beep will be sounded each time either pad is touched.

2 The dispenser recess light is operated by touching the "light" pad on the control console. A single touch turns the light on or off. A beep will

be sounded each time the pad is touched.

3 The door alarm can be enabled by touching the "door alarm on/off" pad on the control console. The beeper will then sound after either the fresh food or freezer door has been open for thirty seconds. The beeper will continue to sound until both doors are closed or the alarm is disabled. A green signal light indicates the alarm is enabled. A beep will be sounded each time the pad is touched.

4 A red signal light on the control console will flash anytime either the fresh food or freezer door is open or ajar more than 1/4-inch. The signal will be extinguished when both doors are closed.

5 A red signal light on the control console will appear when the freezer temperature is above normal. The signal will be extinguished when the temperature is reduced to normal.

6 A lighted word "normal" on the control console indicates that no failure has been detected by the electronic system.

7 A flashing green diagnostic code will be displayed on the control console when a failure has been detected by the electronic system. The first six flashes will be accompanied by a beep. If more than one coded function requires attention at the same time, the one with the highest priority will be displayed until erased. The following codes are in order of priority:

FF - check frozen food thawing

PF - power has been interrupted

CI - check icemaker operation

dE - defrost system has failed

CC - check temperature controls

8 The "system check" reset provides a review of all five diagnostic codes. Touching the reset pad will advance the review sequence of codes. If no failure is detected, the review sequence will continue until the system is reset.

By touching the reset pad will not erase all of the diagnostic codes that are displayed. The electronic board is programmed to prevent the FF and dE codes from being erased by touching the reset pad - unless the condition has been corrected. The FF code can be erased by touching the reset pad only when the freezer door temperature is below 35 F. The dE code will automatically be erased when defrost current is detected by the electronic system.

Handling Electronic Components

Care must be exercised when handling electronic circuit boards to prevent damage from electrostatic discharge. Handle circuit boards by the edges. Do not touch the connector pins or circuit paths. Leave the conductive pad on the replacement board until just before connecting the wiring harness.

Power Module Assembly

The power module, together with the transformer, is mounted to the back of the dispenser recess. The assembly can be removed through the service opening in the inner door. After loosening the lower mounting screw, remove the other mounting screw at the left side, then gently move the lanyard aside as the assembly is with-

drawn. Reassembly is in reverse order, however, care must be taken to prevent trapping the lanyard behind the power module housing. Also, it is imperative that the green ground wire and the white/green ground wire are both attached to the metal cover upon reassembly.

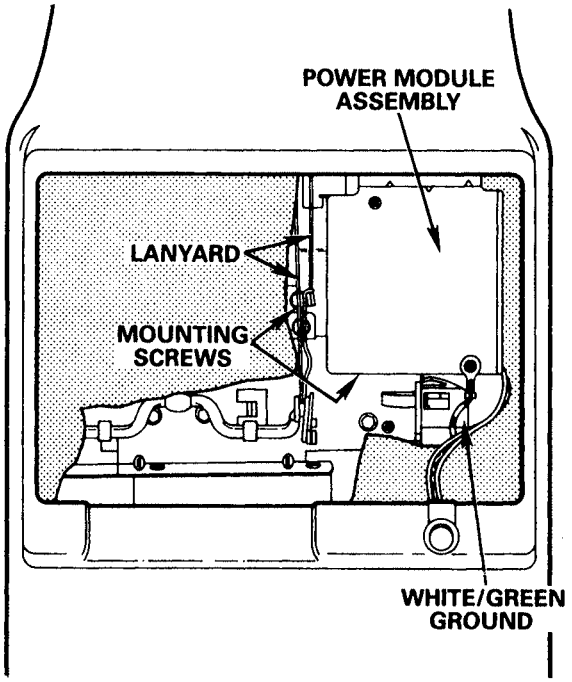


Figure 61 - Power Module Location

Remove the two screws securing the metal cover to the housing for access to the power module circuit board, the transformer connector and the temperature sensor connector. The power module circuit board contains the relays, for the dispenser recess light and the cube solenoid, and the power supply circuits to rectify and filter the voltage source. The transformer, power module board and temperature sensor are replaceable separately.

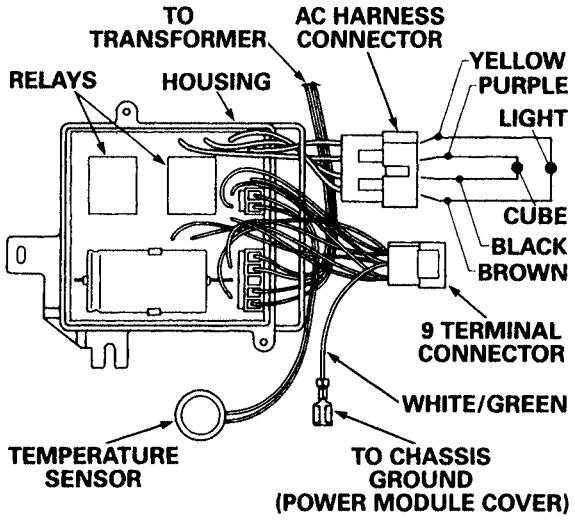


Figure 62 - Power Module Assembly

Transformer

The transformer supplies low voltage to the power module. A surge protector (metal oxide varistor) is connected across the primary leads to prevent damage to the electronic system from voltage surges on the line. The transformer has two secondary windings. One winding supplies approximately 8 to 12 volts to operate the electronic system. The other winding supplies approximately 14 to 20 volts to drive the light and cube relays on the power module.

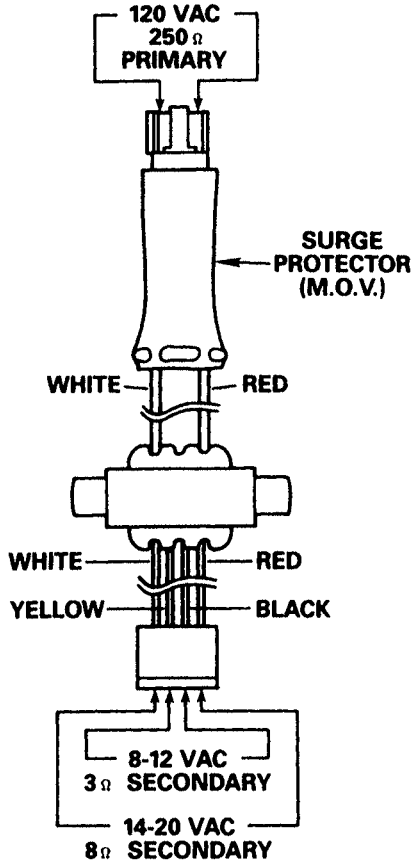


Figure 63 - Transformer Assembly

Temperature Sensor

The temperature sensor, located on the freezer door, senses air temperature. The sensor consists of a negative temperature coefficient thermistor (having a high resistance at a low temperature and a low resistance at a high temperature).

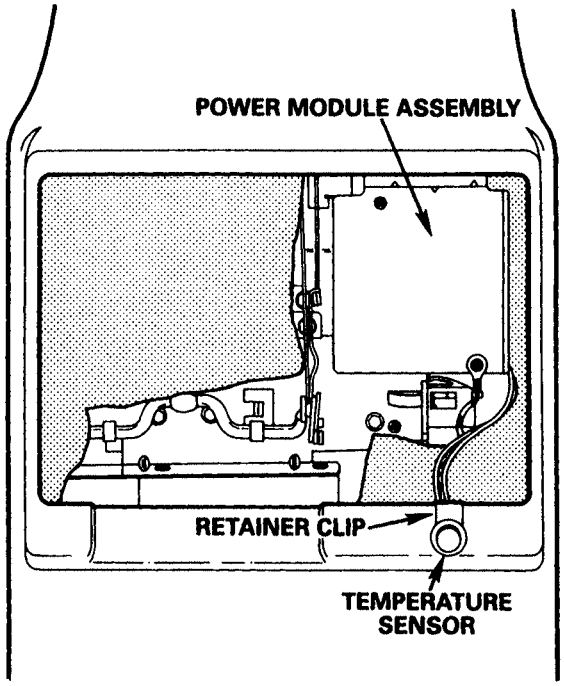


Figure 64 - Sensor Location

Door Alarm Sensor

The door alarm sensor consists of a reed switch and a magnet. The reed switch, mounted on the right edge of the freezer door, is normally open. The magnet, mounted on the left edge of the fresh food door opposite the reed switch, operates the switch. When both doors are closed, the magnet closes the switch. The reed switch and magnet are both replaceable separately.

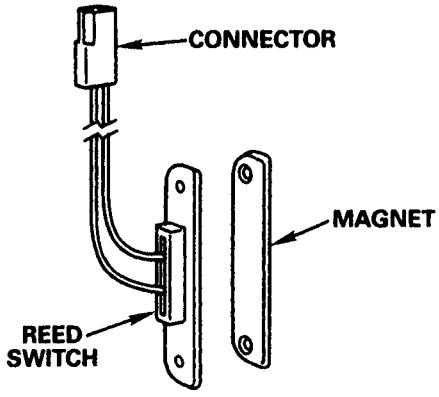


Figure 65 - Door Alarm Sensor

Current Sensors

Sensors are used to detect current flow through the icemaker and defrost heater circuits. The voltage (current) signal from each sensor is supplied to the electronic control board.

Both sensors are located in the refrigeration compartment. Replacement sensors are furnished with a segment of the wiring harness attached.

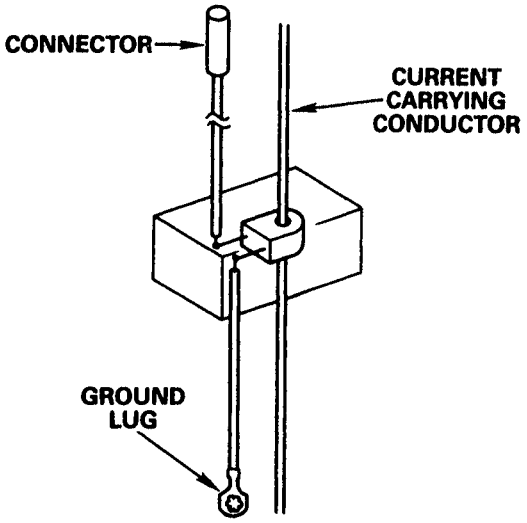


Figure 66 - Typical Current Sensor

A current sensor is also required for the icemaker due to the low current consumption. It is necessary to monitor the current draw in the unlikely event of a motor stall. This sensor consists of a small transformer.

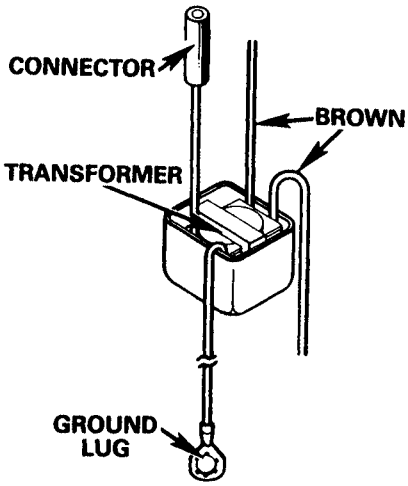


Figure 67 - Icemaker Current Sensor

Control Console Assembly

The control console can be dismounted by carefully inserting a small blade screwdriver at the lower edge and gently prying downward at two places. The electronic control circuit board can be removed by disconnecting the wiring harness connector at the back of the board.

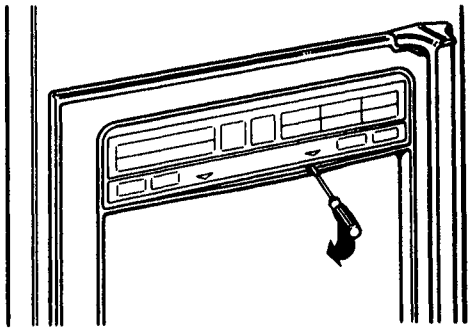


Figure 68 - Control Console Removal

The circuit board is replaceable separately. To remove the circuit board from the housing , place the console facedown on a soft work surface and remove the screws at the back. Avoid lifting the housing, after removing the board, to prevent the switch buttons from falling out of position in the housing.

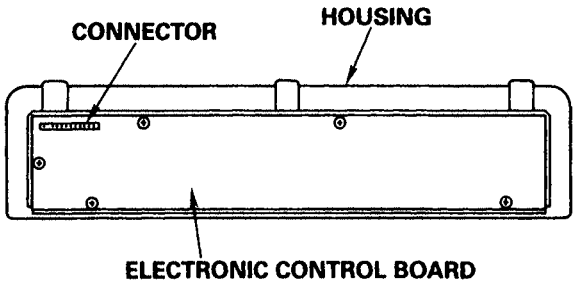


Figure 69 - Control Console Rear

Diagnosis

The electronic system is designed so that if a total electronic system failure should occur, the only effect on the refrigerator would be:

- loss of the dispenser recess light and,
- inability to dispense ice cubes (only crushed ice will be dispensed).

Obviously, the electronic system (including the monitor and diagnostic functions) would also be affected.

NOTE: To diagnose a specific failure of the electronic system on a particular model, refer to the diagnosis chart in the Mini-Manual. (See GENERAL section for the location of the Mini-Manual)

Any visual or audible response from the control console is an indication that the transformer and a major portion of the power module are functioning. If the light and cube relays can be heard opening and closing, as the respective control console pads are touched, this indicates the relay coils are being energized.

The electronic system also provides a means for checking icemaker and defrost current flow by touching and holding the reset pad and the "cubes" pad simultaneously. If current is detected in either the icemaker or defrost circuits, the corresponding diagnostic code can be observed on the display. If icemaker current is detected, the C code will be displayed. If defrost current is detected, the d code will be displayed. The dC code will be displayed when current is flowing in both the icemaker and defrost circuits.

Voltage & Resistance Measurements

Voltage measurements can be made at the control board wiring harness connector to verify the power supply voltages from the power module assembly. Also, from this connector, resistance measurements can be made of all of the sensors.

Remove the control console and disconnect the wiring harness connector. Use the meter lead probes that have a needle point. Refer to the Mini-manual for the proper voltage and resistance measurements of a particular model.

NOTE: The electronic system has two separate grounds. One is DC ground and the other is chassis ground. When making voltage or resistance measurements, make sure the appropriate ground is probed.

To check the light and cube relay contacts, disconnect the four-wire AC harness connector (containing the brown, yellow, black and purple wires) form the power module. This short harness, extending from the power module, connects directly to the relay contacts and does not have a voltage potential when the harness connector is separated. Using an ohmmeter, place the probes on the male terminals for the appropriate (light or cube) relay contacts. Then, touch the respective pad (light or cube) on the control console to operated the relay while observing the ohmmeter response.

CAUTION: This test is made while voltage is applied to the refrigerator. Accordingly, care must be taken to make sure the ohmmeter is not connected to the female terminals in the wiring harness that supplies line voltage.

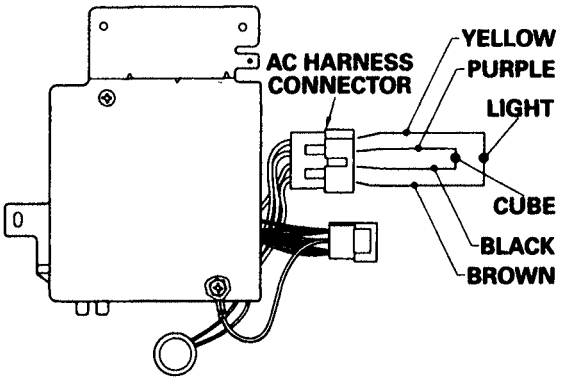


Figure 70 - Power Module

Power UP Reset

The electronic system provides a means for simulating a power up routine without disconnecting the power cord. The power up routine demonstrates that the power module, microprocessor and the timing functions (on the control board) are operative by providing a visual check of the display (the five indicator lights and the "normal" light) plus an audible check of the beeper.

NOTE: A power up reset will erase all diagnostic codes and reset the timing function of the electronic system — simulating the effect resulting from disconnecting and reconnecting the power cord.

To initiate the power up reset, touch the reset pad and the "crushed" pad simultaneously. Then observe the following:

One beep will be sounded, then for five seconds, the "normal" indicator and all other red and green indicators will be illuminated and the display will show 8E.

After five seconds, the display will show a flashing PF, the "normal", "door alarm" and "crushed" indicators will remain illuminated. The "warm temperature" indicator will remain illuminated — if the freezer temperature is above 55 F. The dispenser recess light will not be illuminated.

INDEX

INTRODUCTION

Diagnosis is briefly defined as "a careful investigation of the facts to determine the nature of a problem". Basic facts are often overlooked simply because a careful investigation was not made. Make a thorough investigation of all of the facts to determine the true cause of a consumer's complaint.

If the consumer complains of poor temperature performance, a preliminary examination should be made. Many complaints require only customer education or reassurance that the refrigerator is operating according to specifications.

Preliminary Examination

1 Food Temperatures - Are the fresh food and freezer temperatures normal?

2 Control Settings - Are the controls set for the desired temperatures?

3 Usage - Is the consumer usage heavy, or light?

4 Room Ambient - Is the room too warm or too cool?

5 Frost Accumulation - Does the evaporator have a heavy frost accumulation?

6 Condenser - Is it clogged with dust?

7 Condenser Fan - Is it operating?

8 Evaporator Fan - Is it operating?

9 Light Switch - Is the light off when the door is closed?

10 Door Gasket - Is it sealing completely?

TEMPERATURE MEASUREMENTS

Proper temperature measurements are very important in determining if the refrigerator and freezer are operating properly. However, it must be remembered that consumer usage greatly influences the temperature within the cabinet.

Temperature measurements in either the fresh food or freezer compartment should never be made of the air. Air temperature fluctuates drastically from the end of one cycle to the beginning of the next and any time the door is opened. The proper method is to measure the temperature of a food that has been in the center of the fresh food and freezer compartments for at least 24 hours. Thoroughly clean the thermometer then place it in the food (or between two food packages). Wait at least four minutes before reading the thermometer. In the mornings, temperatures will usually be lower than in the afternoons - especially with heavy usage during the day.

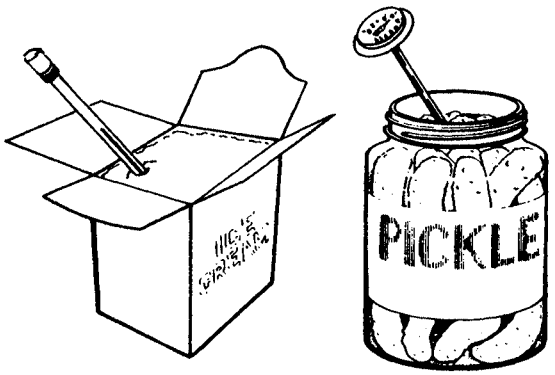


Figure 1 - Measure Temperature

The temperature measurements should be compared to the no load performance data in the Mini-Manual (see the GENERAL section for the location and description of the Mini-manual). But remember, no load performance means no door openings and no food load. However, no load performance closely simulates

the condition in the home after approximately 8-hours of no usage - such as would exist first-thing-in-the-morning. With usage, obviously the measured temperatures will not equate the no load performance data.

ELECTRICAL MEASUREMENT

Multi-Circuit Connectors

Many components can be diagnosed by measuring the resistance of the component and comparing this to the value on the Mini-Manual (Refer to GENERAL section for Mini-Manual Locations). Using the multi-circuit connector terminals the resistance can be measured.

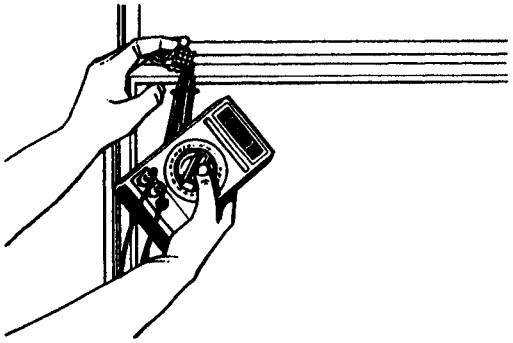


Figure 2 - Connector Locations

The terminals within a multi-circuited connector are indicated on the schematic diagram and component circuits by an arrow and a number. The point of the arrow indicates a male terminal and the tail of the arrow indicates a female terminal. The number identifies the terminal location in the connector.

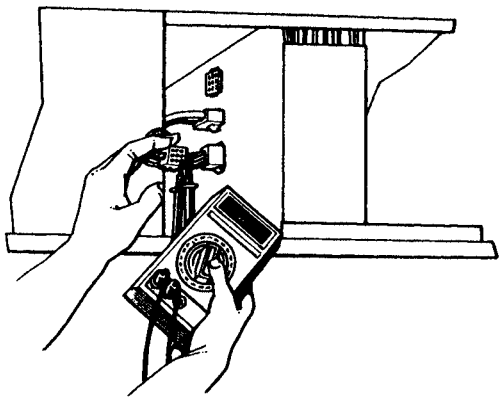


Figure 3 - Multi-Circuit Connectors

Many resistance values can be obtained by using the multi-circuit connector. Combining the resistance values given on the Mini-Manual a component can be diagnosed. The resistance values of all components have a tolerance of plus-or-minus 5%. When two or more components are in series in a single component circuit, the resistance values of all the components should be added together. When two or more components are in parallel (e.g., case and mullion heaters), a rule of thumb for the combined resistance is: the resistance value measured will be smaller than the smallest resistance in the circuit. A resistance calculation must be made to determine if the value measured is the same as the true value.

REFRIGERATION SYSTEM DIAGNOSIS

Proper performance of a refrigeration system is dependent upon proper operation of all components in the system.

If the compressor will not start - obviously, no refrigeration will occur. Failure of the compressor to start may be the fault of the compressor or it may be the result of a fault other than the compressor. It is important to pinpoint the fault in order to prevent condemning the compressor unnecessarily.

Use the LINE VOLTAGE TEST to determine if the branch circuit is adequate. If an adequate circuit is provided, use the DIRECT START TEST.

If the compressor will run - but poor refrigeration or no refrigeration occurs, look for a cause other than the refrigeration system. Check for:

- poor door seal,
- interior light remaining on,
- evaporator fan not running,
- condenser fan not running,
- defrost system problem,
- heat exchanger separation,
- dirty condenser,
- machine compartment baffle missing or mispositioned.

If a cause other than the refrigeration system is not found, check the suction pressure. If the suction pressure is zero or above, use the COMPRESSOR CAPACITY TEST. If the suction pressure is in a vacuum, use the LEAK-RESTRICTION TEST.

LINE VOLTAGE TEST

Failure of the compressor to start may be due to insufficient voltage. Generally, "normal" line voltage is between 115 and 120 volts. Some variations from this range can be expected and, within reasonable limits, does not adversely affect the ability of the compressor to start. However, the voltage can become too low to permit the compressor to start. Where overload tripping occurs, the voltage should be tested under a load.

1 Insert the voltmeter probes into the vacant side of the duplex wall receptacle to which the refrigerator or freezer power cord is connected.

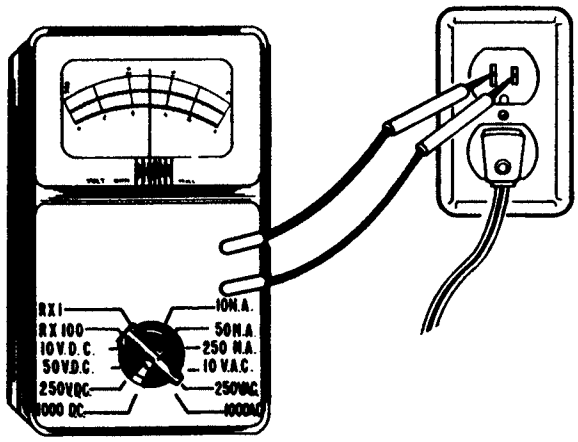


Figure 4 - Voltage Test

2 If the compressor is running, disconnect the power cord and immediately reconnect it to load the circuit. (Usually, the compressor will not restart until the system internal pressure equalizes.)

3 Read the voltage while the compressor is trying to start and before the overload trips.

If the voltage is between 98 and 105 volts, a low voltage start kit can compensate for the inadequate voltage supply and permit proper operation of the compressor.

If the voltage is above 130 volts or below 98 volts, the consumer should be notified to contact the electric utility or an electrician accordingly.

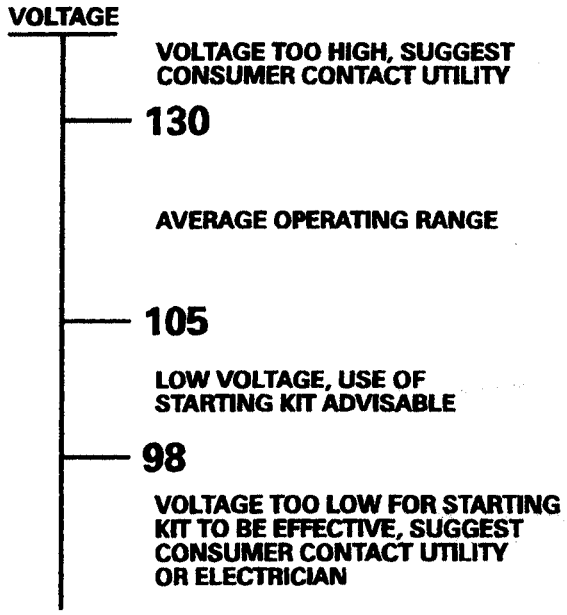


Figure 5 - Voltage Scale

DIRECT START TEST

If a compressor fails to start, any of the following may be the cause:

- compressor too hot,
- line voltage too low,
- relay inoperative,
- overload inoperative,
- refrigeration system restricted,
- motor windings open or shorted,
- compressor mechanically stalled.

Only a compressor fault necessitates a Hi-Side replacement. Attempt to direct start the compressor, using a properly fused test harness (WX5X0142 Robinair 12507) and a terminal adapter (WX5X0226 Robinair 12940).

1 Disconnect the power cord and remove the relay, or wiring harness connector, form the compressor terminals.

2 Plug the terminal adapter directly onto the compressor terminals.

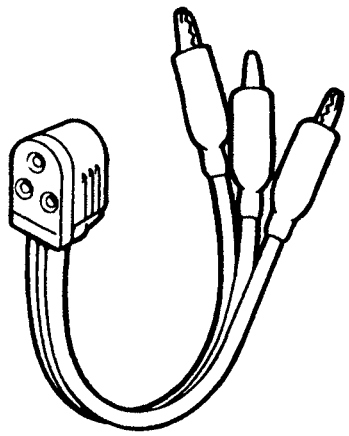


Figure 6 - Terminal Adapter

3 Identify the start, common and run terminals by referring to the machine wiring diagram in the Mini-Manual (see the GENERAL section for the location and description of the Mini-Manual).

4 Connect the test harness leads to the appropriate terminals of the terminal adapter. A capacitor should not be used when attempting to direct start the compressor.

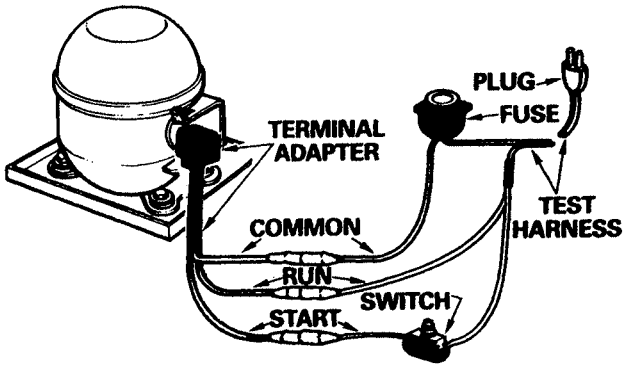


Figure 7 - Direct Start Harness

5 Plug the test harness into the wall receptacle and momentarily close the switch to the start winding. If the compressor does not start within 5-seconds, immediately disconnect the test harness from the power source.

If the compressor starts - replace the relay and overload.

If the compressor does not start - cool the compressor case, utilizing the condenser fan (or an auxiliary fan). For about ten minutes. If the compressor then starts, look for poor air circulation through the machine compartment (e.g., dirty condenser, missing air baffles, inoperative condenser fan).

If the compressor will not start after being cooled, check for a restriction in the refrigeration system. A capillary restriction may result in the condenser being filled with a mixture of oil and refrigerant. In attempting to force the remaining refrigerant vapor into the condenser, the compressor can build up a very high pressure and draw excessive current which will cause the overload to trip. Once the overload has tripped, the compressor may not restart - even on direct test - until the high pressure in the condenser has been relieved.

The high pressure can be relieved without releasing the refrigerant charge by connecting a temporary bypass to the low pressure side of the system. Using self-piercing valves, connect a charging hose from the high pressure process tube or the condenser inlet tube to the low pressure process tube or charging valve. Open both valves to allow the pressures to equalize. As the valve on the high pressure side is opened, a refrigerant boiling sound should be observed if the system is restricted.

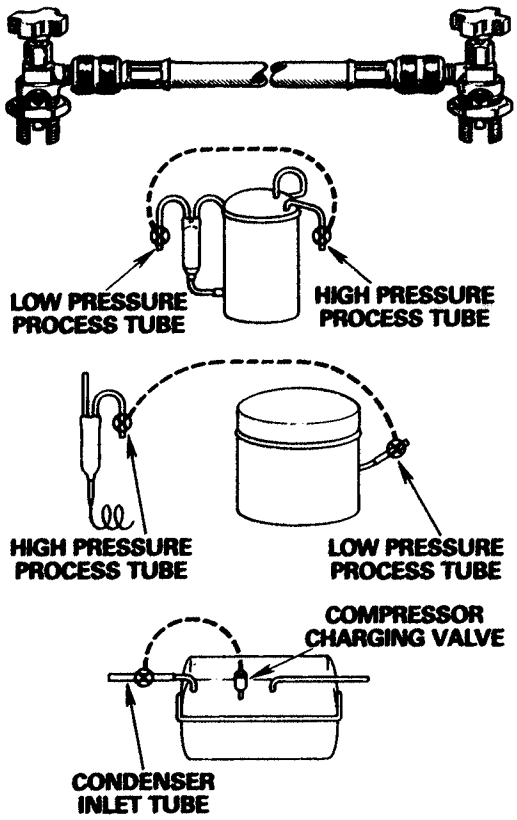


Figure 8 - Temporary Bypass

Wait a couple of minutes for the system pressures to equalize, then attempt to direct start the compressor.

If the compressor starts, replace the dryer, remove the self-piercing valves and braze the holes in the tubes. Do not replace the compressor.

If the compressor fails to start, it must be condemned.

COMPRESSOR CAPACITY TEST

The compressor capacity test is a quick and accurate method for testing the performance of compressors to prevent unnecessary condemnations for low capacity. A capacity test must be performed before replacing a compressor for low capacity. The test will only distinguish between a good compressor and one that is low capacity - it will not identify other faults. Use the test only when symptoms indicate a possible low capacity compressor.

Tools Required

To perform the test, the suction tube is pinched closed with a special pinch-off tool (WX5X0299 Imperial 105FF or Robinair 14416).

NOTE: The pinch-off tool must be capable of completely closing the suction tube - otherwise, the compressor will invariably fail the test.

A standard compound gauge is used to read the vacuum at the low pressure side of the compressor while the suction tube is pinched closed.

A watch or clock (preferably one with a sweep second hand) is needed to time the test.

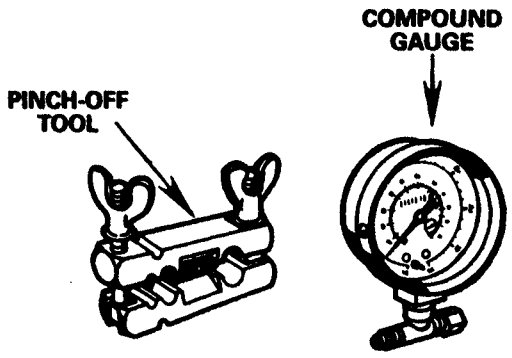


Figure 9 - Tools Required

Test Procedure

1 Remove the upper front panel from the refrigeration compartment, but leave the power cord connected to the wall receptacle. The compressor must be running to perform the test.

NOTE: The refrigeration unit may have to be removed to access the compressor on some models. If the refrigeration unit must be removed, adapter plugs are available to run the unit as a bench test. Plug are as follows:

MODEL BCS42EK - WR97X0240

MODEL BCS42CK, EL AND ZIS42CM & EM - WR97X0241.

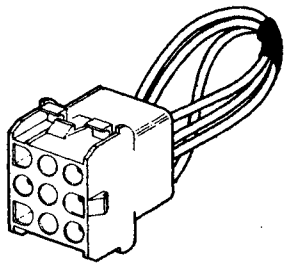


Figure 10 - Adapter Plug

2 Attach the compound gauge to the charging valve. If the compressor is not equipped with a charging valve, a service valve must be installed (see REFRIGERATION SYSTEM ACCESS). Be certain that all connections are tight. When the compressor begins to pull a vacuum, if air is drawn into the compressor, it will cause the compressor to fail the test and may also cause the compressor to stall.

3 Open the charging valve and observe the suction pressure. If the pressure is zero or above, proceed with the test. If the pressure is below zero (in vacuum), discontinue the test and look elsewhere for the fault.

4 Select a place on the copper suction tube to install the pinch-off tool - between the compressor and the heat exchanger. The location should allow space to reopen the tube after the test.

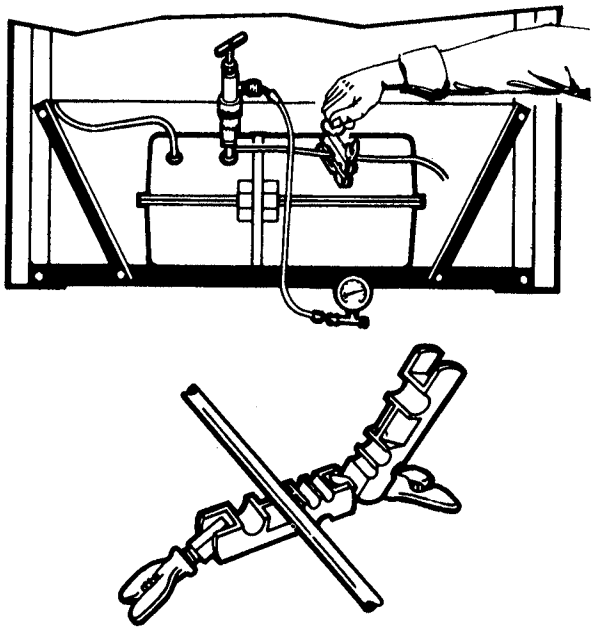


Figure 11 - Pinch Tube Closed

5 Tighten the wing nuts on the pinch-off tool and observe the time when the suction pressure begins to drop. If the gauge reading remains constant after a few seconds, tighten the wing nuts more. Time the test for two minutes from the moment the suction pressure first beings to drop.

6 At the end of two minutes, observe the gauge and compare the reading with the test data in the Mini-Manual (see GENERAL section for the location and description of the Mini-Manual).

7 Remove the tool from the suction tube and reposition it with the pinched suction tube in the proper size hole. Tighten the wing nuts as tight as possible by hand to reopen the tube.

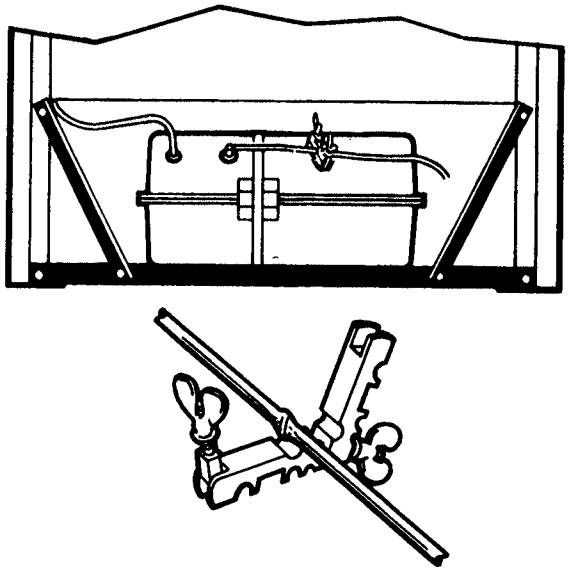


Figure 12 - Reopen Pinched Tube

If the vacuum reading is not as good as the specified test data, replace the compressor - it is low capacity. If the vacuum reading is as good as or better than the specified test data, the compressor is performing normally, and must not be replaced. Look for the cause of the complaint elsewhere - such as:

- dirty condenser,
- inoperative condenser fan,
- heavy usage conditions,
- improper control settings,
- need for customer education

LEAK-RESTRICTION TEST

The leak-restriction test is a quick and positive means of distinguishing between a refrigerant leak and a restriction. The symptoms produced by a refrigerant leak and a restriction are similar. Either condition will cause the suction pressure to be lower than normal.

A leak-restriction test should not be performed unless all other possibilities have been explored and the cause of the complaint narrowed down to the refrigeration system.

DIAGNOSIS

Several things can cause food temperatures to be warmer than normal:

- heavy usage,
- high ambient temperature,
- improper control settings,
- dirty condenser,
- inoperative condenser fan,
- interior light remaining on,
- poor door gasket seal,
- icemaker stalled,
- hold down bolts missing
- top gasket torn

Two things, other than a refrigerant leak or a restriction, that can cause the suction pressure to be in a vacuum are:

- defrost system problem
- evaporator fan inoperative

Test Procedure

1 Remove the upper front panel from the refrigeration compartment, but leave the power cord connected to the wall receptacle. The compressor must be running to perform the test.

NOTE: The refrigeration unit may have to be removed to access the compressor on some models. If the refrigeration unit must be removed, adapter plugs are available to run the unit as a bench test. Plugs are as follows:

MODEL BCS42EK - WR97X0240

MODEL BCS42CK, EL AND ZIS42CM & EL - WR97X0241.

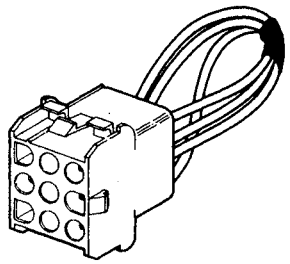


Figure 13 - Adapter Plug

2 Attach the compound gauge to the charging valve. If the compressor is not equipped with a charging valve, a service valve must be installed (see REFRIGERATION SYSTEM ACCESS). Be certain that all connections are tight.

3 Open the charging valve and observe the suction pressure. If the pressure is below zero (in a vacuum), proceed with the test. If the pressure is above zero, discontinue the test and look elsewhere for the fault.

4 Add refrigerant to the system. Add 6 -ounces to system. Then wait four minutes.

5 Observe the performance of the condenser after four minutes.

If the entire condenser is warm throughout, the system has a leak (see CHECKING FOR LEAKS).

If the lower two-thirds of the condenser remains at room temperature - although the first pass increases in temperature but soon cools to room temperature - the system is restricted. Examine the last pass of the condenser, the dryer and the capillary. A cold or sweating condition of any of these components is caused by a pressure drop and indicates the location of a partial restriction.

When a restriction is diagnosed, install a new dryer and recharge the system.

CHECKING FOR REFRIGERANT LEAKS

When searching for the location of a leak, the refrigeration system should be overcharged to elevate the pressures.

CAUTION: To prevent a possible safety hazard, never overcharge a refrigeration system by more than 50% of the original charge quantity.

The compressor should be running and the condenser fan stopped while looking for leaks in the high pressure side of the system. While checking for leaks in the low pressure side of the system, the compressor should be stopped and the defrost heaters energized.

Check all tubing joints, including the closed ends of process tubes, and charging valve.

Leak Detection Methods

Soap Solution - The method most commonly used to check for leaks is liquid soap or household dishwashing liquid in undiluted form. A flashlight and a dental type mirror are also required for inspection.

NOTE: The soap solution can be drawn into low side leaks and contaminate the system if the compressor is running.

Halide Torch - Success in using a halide torch depends upon the condition of the copper reactor plate which produces a blue flame. When refrigerant is detected, the flame will change from blue to green. Minute changes in the color of the flame, caused by a very small leak, may be difficult to distinguish.

Electronic Leak Detector - Electronic leak detectors are very sensitive to halogen gasses in the atmosphere. Urethane foam, used for cabinet insulation, contains R-11 that can be detected. Thus, the electronic leak detector requires considerable practice to become skilled in its use.

NOTE: If either a halide torch or an electronic leak detector is used, always keep the area in and around the machine compartment clear of refrigerant by use of a small fan. Turn the fan off when testing for a leak.

REFRIGERATION SYSTEM ACCESS

When a compressor is not equipped with a charging valve, a service valve must be installed to access the low pressure side of the refrigeration system. The recommended method is to permanently install a WR86X0010 Service Valve on the low pressure process tube.

To install the valve without losing refrigerant from the system:

1 Pinch the low pressure process tube closed approximately 4-inches from the end.

2 Cut off the closed end of the process tube.

3 Install the valve either with a Lok-Ring or by brazing. The valve must be open while brazing.

4 Close the valve tightly.

5 Open the pinched tube.

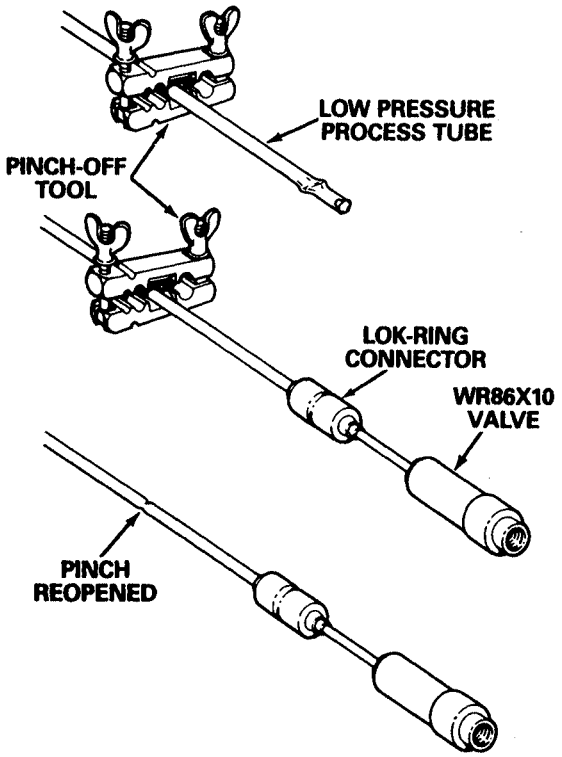


Figure 14 - Valve Installation

After servicing the refrigeration system, the service valve must be positioned to prevent rattles due to vibration.

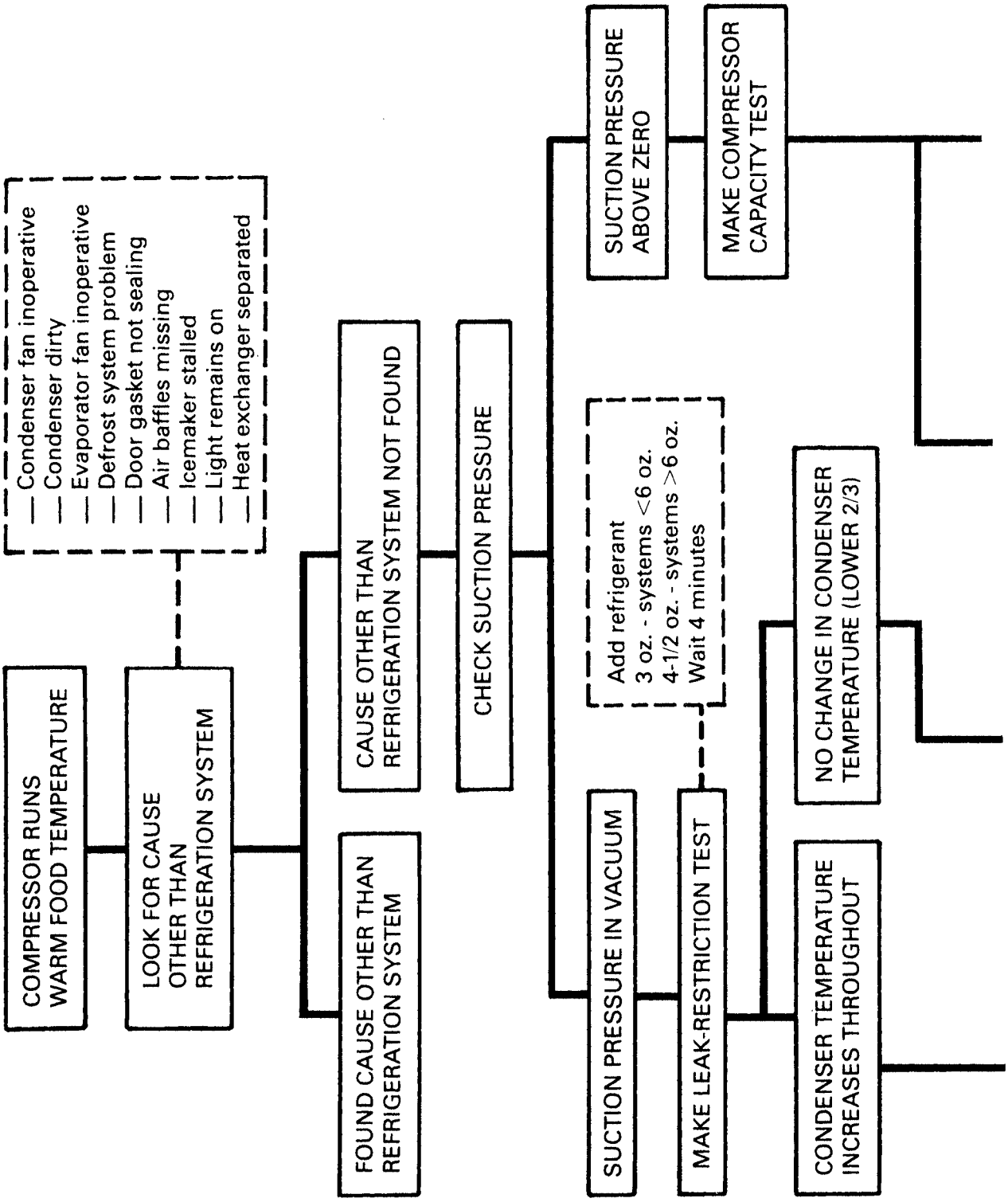
NOTE: If a self-piercing valve is used as an alternate method for accessing the system, it must be removed and the process tube brazed closed.

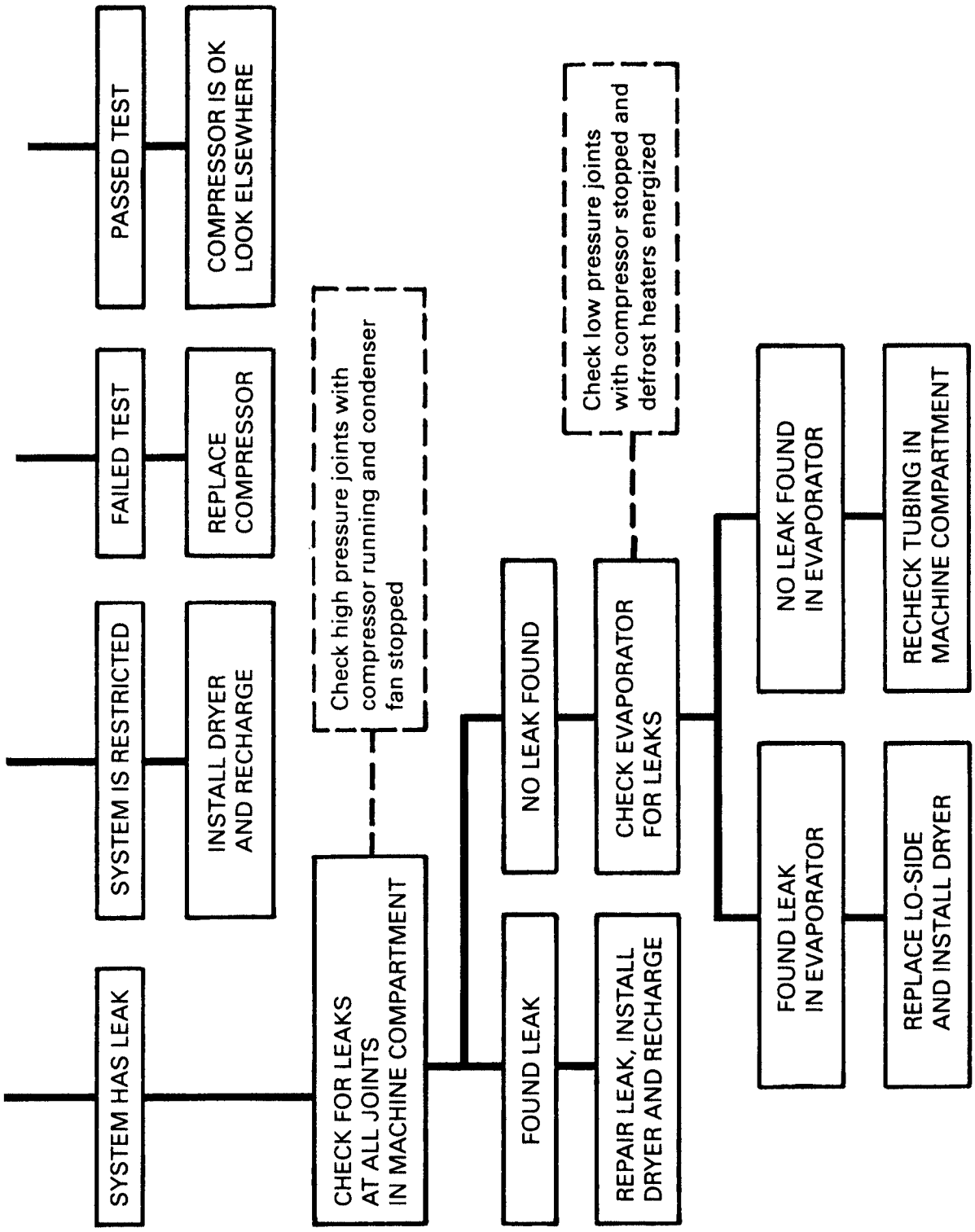
DIAGNOSIS GUIDE

The recommended procedure for refrigeration system diagnosis is outlined on the chart that follows.

DIAGNOSIS GUIDE

The recommended procedure for refrigeration system diagnosis is outlined on the chart that follows.


COMPRESSOR RUNS WARM FOOD TEMPERATURE
LOOK FOR CAUSE OTHER THAN REFRIGERATION SYSTEM
— Condenser fan inoperative
— Condenser dirty
— Evaporator fan inoperative
— Defrost system problem
— Door gasket not sealing
— Air baffles missing
— Icemaker stalled
— Light remains on
— Heat exchanger separated
FOUND CAUSE OTHER THAN REFRIGERATION SYSTEM
CAUSE OTHER THAN REFRIGERATION SYSTEM NOT FOUND
CHECK SUCTION PRESSURE
SUCTION PRESSURE IN VACUUM
Add refrigerant
3 oz. - systems <6 oz.
4-1/2 oz. - systems >6 oz.
Wait 4 minutes
MAKE LEAK-RESTRICTION TEST
CONDENSER TEMPERATURE INCREASES THROUGHOUT
NO CHANGE IN CONDENSER TEMPERATURE (LOWER 2/3)
SUCTION PRESSURE ABOVE ZERO
MAKE COMPRESSOR CAPACITY TEST


SYSTEM HAS LEAK
SYSTEM IS RESTRICTED
INSTALL DRYER AND RECHARGE
FAILED TEST
REPLACE COMPRESSOR
PASSED TEST
COMPRESSOR IS OK LOOK ELSEWHERE
CHECK FOR LEAKS AT ALL JOINTS IN MACHINE COMPARTMENT
Check high pressure joints with compressor running and condenser fan stopped
FOUND LEAK
REPAIR LEAK, INSTALL DRYER AND RECHARGE
NO LEAK FOUND
CHECK EVAPORATOR FOR LEAKS
Check low pressure joints with compressor stopped and defrost heaters energized
FOUND LEAK IN EVAPORATOR
REPLACE LO-SIDE AND INSTALL DRYER
NO LEAK FOUND IN EVAPORATOR
RECHECK TUBING IN MACHINE COMPARTMENT

INDEX

ELECTRICAL

Electrical Safety Responsibilities

Monogram refrigerators are designed, engineered, manufactured and tested in adherence to the requirements of established safety codes, standards and specifications. One important segment Of this effort deals with the potential hazards of electrical shock during both service and use of the electrical products involved.

The service technicians' responsibility must include the safety of the product. It is very important that the technician:

1 Honor all built-in safety features and other safety related requirements of the product.

2 Be continually alert for defeated or non-honored safety features or safety requirements.

3 Be immediately responsive to all recognized safety hazards and reported incidents of electrical shock.

Electrical Safety Test Procedures

General Electric Company makes leakage-current training available to improve the effectiveness of the technicians' safety related responsibilities.

Information about safety training, test procedures and product test specifications is available from any Consumer Service Region of the General Electric Company.

Test procedures and measurement specifications which are related to leakage-current include the following:

- Electrical-service tests
- Ground-Path continuity (bonding) tests
- Leakage-current test
- Resistance (insulation) test

Grounding

For personal safety, all appliances equipped with a three prong power cord must be properly grounded. These three prong power cords mate with a standard three prong (grounding) wall receptacle. See figure 1.

DO NOT, UNDER ANY CIRCUMSTANCES, CUT OR REMOVE THE THIRD (GROUND) PRONG FROM THE POWER CORD.

Wall receptacles can be and sometimes are miswired such that the polarity is incorrect and their grounds are inadequate or nonexistent. IF THERE IS ANY DOUBT AS TO WHETHER THE WALL RECEPTACLE IS MISWIRED OR IMPROPERLY GROUNDED, THE CUSTOMER SHOULD HAVE IT CHECKED BY A QUALIFIED ELECTRICIAN.

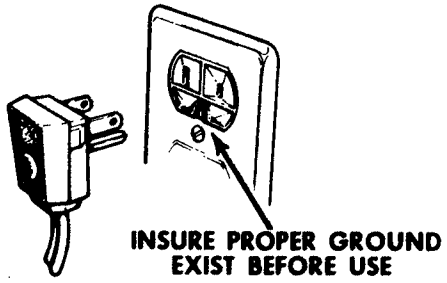


Figure 1 - Three Prong Receptacle

Where a standard two-prong wall receptacle is encountered, it is the personal responsibility of the customer to have it replaced with a properly grounded three-prong wall recep-

tacle. The customer should be advised of this by the service technician.

When local codes permit, however, a TEMPORARY CONNECTION may be made to a properly grounded two-prong wall receptacle by the use of a UL listed adapter which is available at most local hardware stores. See Figure 2. The larger slot in the adapter must be aligned with the larger slot in the receptacle. **NOT PERMITTED IN CANADA.**

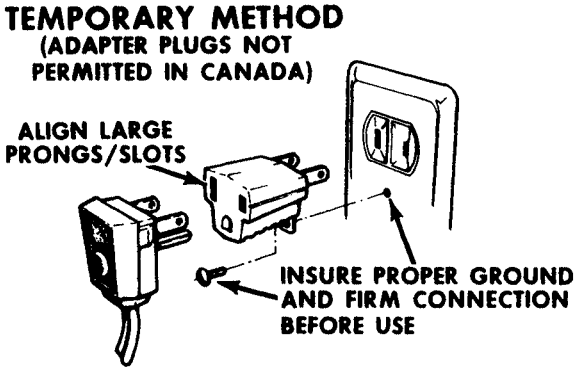


Figure 2 - Temporary Connection

CAUTION: Attaching the adapter ground terminal to the wall receptacle cover screw does not ground the appliance unless the wall receptacle is grounded through the house wiring.

When disconnecting the power cord from the adapter, hold the adapter with one hand, If this is not done, the adapter ground terminal will very likely break with repeated use. Should this happen, either REPLACE THE ADAPTER or DO NOT USE the appliance.

Appliance Grounding

Any part of a refrigerator or freezer that is capable of conducting en electrical current is grounded.

If any ground wire, screw, strap, nut etc., is removed for service, or for any reason, it must be reconnected to its original position with the original fastener before the appliance is put in operation again. Failure to do so will create a possible shock hazard and an unsafe condition. (See ELECTRICAL SERVICE Section - Grounding)

Circuit

Separate branch circuits should be provided for the refrigerator and freezer. Extension cords should not be used. If use of an extension cord is unavoidable, it should be a UL listed, three-wire, grounding type properly polarized and capable of carrying 15 amperes minimum. (See ELECTRICAL SERVICE Section - Power Source.)

Circuit Protection

Only fuses or circuit-breakers with ratings that conform to the local electrical code should be used to protect the refrigerator circuit. If they are found to be rated too high, the customer should be advised of a potential fire hazard. The correct fuses or circuit-breakers should be installed, before the refrigerator is operated.

Electrical Cords

Repair or replace immediately all electric service cords that have become frayed or otherwise damaged. Do not use a cord that shows cracks or abrasion damage along its length or at either the plug or connector end. Never unplug the cord by pulling on the wire. Always grip the plug firmly and pull straight out from the receptacle.

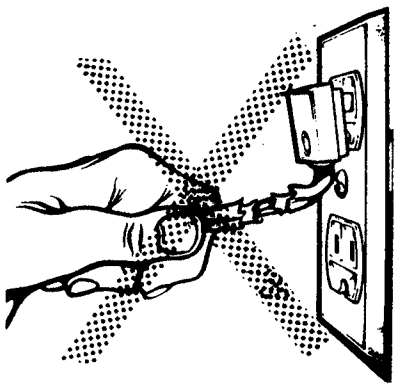


Figure 3 - Improper Cord Removal

Splicing Electrical Wires

When it is necessary to cut and splice electrical wires, the splice should be staggered rather than side by side. All splices should be made with bell type connectors. Position the open end down after filling the connector with RTV sealer (WX6X0200) to seal out moisture.

SERVICE PRACTICES

Disconnect Electrical Power

Power should be disconnected from the refrigerator when service is to be performed which will involve contact or near contact with electrical devices or wiring. Sometimes it is necessary to conduct tests with power on - as is the case when using the compressor direct start test. In such instances, use extreme caution to prevent electrical shock, Read and follow the safety labels applied to the compressor. Keep your head clear of the compressor terminals when testing. Be sure the consumer's children do not touch any parts, wires or tools that might be energized. Always ask the customer to remove the children from the work area.

Tools

It is important to have and use proper tools. The tool box and its contents should be checked periodically to be sure they are clean and in good working condition. Worn or broken tools are a cause of accidents and should be replaced.

All test equipment and electrical tools should be in good working order and free from electrical shock hazards. All electric power tools must be properly grounded or safety insulated to prevent the danger of electric shock

Door Removal

Some dispenser models have electrical wires that pass from the cabinet to the door. Refer to the DISPENSER MODELS section for removal instructions.

CUSTOMER/USER PRACTICES

Combustible Material Storage

Combustible material such as gasoline, hexane, naphtha, benzene, butane, propane, alcohol's, benzol, lacquer solvent, etc. SHOULD NOT BE stored in a refrigerator. Normal electrical arcing of the temperature control, light and fan switches, defrost control, relay and overload may ignite the vapors emitted from these materials.

Litter

Litter, including paper should not be allowed to accumulate in the area of the compressor compartment. Often rags, paper towels, etc., will be saturated with combustible cleaning solvents. Such material should not be allowed near the normally warm compressor or in proximity to the electrical wires or the compressor. Relay, overload and switches. This would be unlikely on the monogram since the compressor compartment is on the top of the cabinet section. Condensers should be periodically cleaned with a long handled brush (WX14X0051) and a vacuum cleaner.

SAFETY PRACTICES

Refrigerators Unused

An unused or abandoned refrigerator is hazardous to children because of the possibility of entrapment. To prevent this possibility, REMOVE THE DOORS on any refrigerator not being used. In many areas, this is a law. It requires only a few minutes to make the unused unit safe.

Icemaker

All monogram refrigerators are equipped with automatic icemakers. Do not place fingers or hands on the icemaker mechanism while it is operating. This will prevent contact with the moving parts of the ejector mechanism or with the heating element that releases the cubes.

Replacing Light Bulbs

A burned out light bulb might break when being replaced. In order to avoid contact with a live wire, the refrigerator should be unplugged. On the monograms produced after 1992 - **ALWAYS** replace the light bulbs or leave the old bulb in the socket. **NEVER** leave the socket open. Moisture could collect in the socket and cause an electrical hazard.

NOTE: Turning the temperature control to the "OFF" position does not remove power to the light. A cloth should be used to remove and replace the light bulb as a precaution against glass breakage.

REFRIGERATION SYSTEM

Refrigerant Charge Removal

Before cutting the refrigerant tubes, always remove the refrigerant from the system. Never release refrigerant into the room. Do not release refrigerant in the presence of an open flame. Use the proper recovery equipment for the type refrigerant to be removed.

Dryer Removal

When cutting open a tube containing molecular sieve dryer material, catch the dryer material and do not allow it to fall on the floor. The dryer material may be oil soaked and may damage some types of vinyl floor covering.

Brazing Torch Use

Only use a torch that is in good working order. When using acetylene fuel, be sure the fuel tank is equipped with the proper pressure control valves. The fuel tank should always be used form the upright position. Be sure there are no leaks from the shut off valve, control valves, torch or hose.

Torch fuels have a strong odor. If a leak is detected in any brazing apparatus, immediately discontinue use and remove the apparatus to a safe area until repairs are effected. Always discharge the refrigerant from the refrigeration system and make certain the service valves are open before applying heat to any part of the system.

Use of a brazing torch requires extreme caution. Careless or thoughtless handling of a torch could cause personal injury or property damage. Do not touch a heated tube until it has cooled. When the joint to be brazed is near electrical wiring, painted surfaces, plastic parts, fiberglass or foam insulation, a heat shield should be used to isolate such parts from the torch flame.

Evacuation, Purging and Charging

Purge valves are located on replacement Hi-sides in the exhaust (discharge) tube and also on replacement dryers. These valves should be opened with a spline wrench while holding the valve body with pliers. Do

not attach valves or other fittings to the purge valve.

When the purge valve is opened for evacuation and purging, place a cloth over the valve to catch any oil spray form the valve.

Many replacement Hi-sides are equipped with a charging valve. On compressors that do not have a charging valve, if a tube piercing valve is installed, it must be removed and the tube brazed closed following service.

Handling Refrigerants

Refrigerants are for industrial use only and should not be used by persons who are unfamiliar with the potential safety hazards involved in handling and using refrigerants.

Refrigerants in closed containers are under pressure. Never puncture a refrigerant container.

Refrigerant containers should be stored where the temperature does not exceed 125F. Never apply heat from any source to a container of refrigerant. Heat will increase the pressure in the container and could cause the container to rupture. Refrigerant containers (even empty ones) should not be incinerated.

Never point the nozzle of a refrigerant container toward any person.

Use of Goggles

As a safety precaution, when handling or working with refrigerants, goggles for eye protection are strongly recommended.

Comfortable, ventilated goggles are available under catalog number WX5X0105 which can be worn with most prescription eye glasses and meets ANSI-Z-87-1 specifications. (NOTE: The lenses are impact resistant but NOT unbreakable.

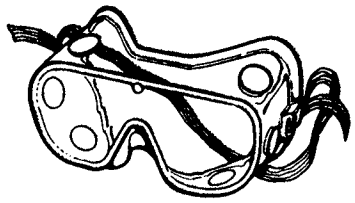


Figure 4 - WX5X0105 Goggles

Brazing Tubing Stubs

The tubes of an inoperative compressor should be brazed closed to prevent oil spilling in the customer's home or while transporting.

Nitrogen Use

When using nitrogen in the service shop to detect leaks, the following safety precautions should be practiced:

The nitrogen supply should be equipped with a proper pressure regulator. Its hoses and fittings should be free of leaks.

Pressure in the refrigeration system being tested should not exceed 200 p.s.i.g.

INDEX

FIELD CORRECTIONS - The field corrections section has been organized into model families. Starting with the earliest models and continuing in chronological order. The last section titled All Models is just that. The field correction could apply to any Monogram that has been manufactured. If the field repair is associated with a given model - refer to the serial tag and then reference that model in the index to see if a field correction has been included.

PAGE

BIS42AJ & BCS42UJ MODELS

ADAPTER PLUG - Bench Testing

To bench test the refrigeration unit, once removed from the cabinet assembly, an adapter plug will be needed. The adapter plug for the **BCS42UJ is (WR97X0236)** The plug is wired so the refrigeration unit will operate independently of the temperature control, therefore the compressor will run continuously while the unit is under power.

The adapter plug connects to the refrigeration unit wiring harness located on the left side of the refrigeration unit. The power cord should then be plugged into a 115 VAC outlet. No other appliance should be in the circuit.

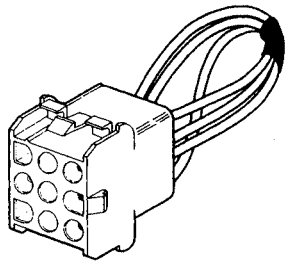


Figure 1 - Adapter Plug

FRESH FOOD FREEZING - AJ MODELS

Models produced in 1986 and 1987 have an air distribution system unlike later models. The primary air being supplied by the evaporator fan is directed to the fresh food compartment and is discharged down the left wall partition through vents. The air that is being supplied is extremely cold since it is coming directly from the evaporator through a duct into the fresh food compartment. The vents are arranged in such a manner that the top shelf on the left side can reach a freezing condition, therefore; items placed under these vents will freeze.

A field service repair that is successful in redistributing the air in a more uniform manner is to seal off vent number 4 and 8. Permagum or RTV sealant can be used to fill the vent and block the air. This will not eliminate the freezing condition and the customer should be advised that this is a **"cold zone"** and items that have a tendency to freeze easily, such as lettuce, apples, etc., should not be stored in this area.

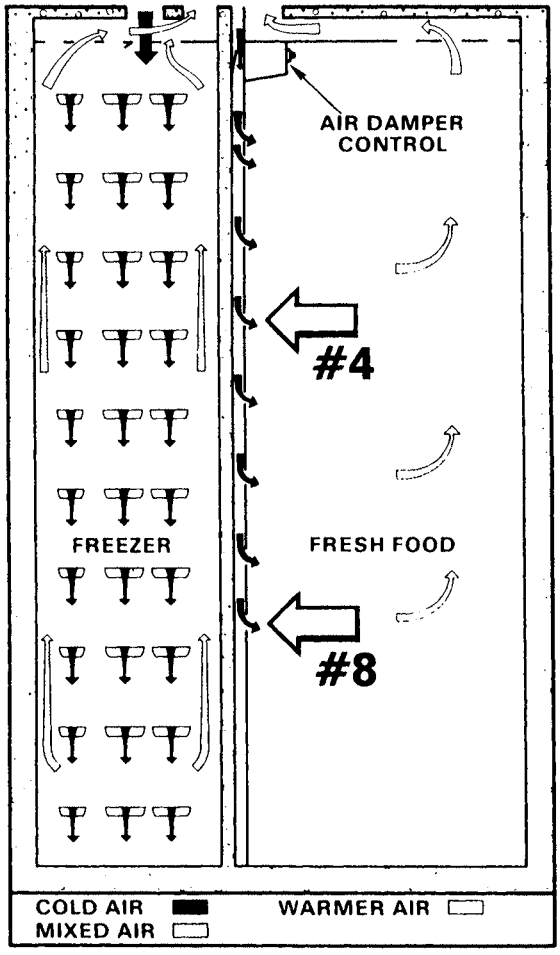


Figure 2 - Airflow Vents - BIS 42 AJ

DOOR HINGE REPLACEMENT - AJ MODELS

The hinge and closure system on the earlier Monogram models - AJ was unique, in that a spring inside the door worked in conjunction with the hinge pin to close the door. No Replacement parts are available for this hinge and closure system but with minor

modification the **WR49X0347** Reinforcement Kit for the fresh food door and the **WR49X0348** Reinforcement Kit for the freezer door can be used.

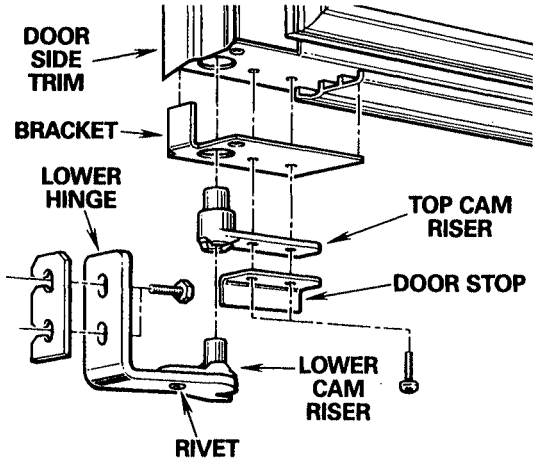


Figure 3 - Hinge Kit

DRAIN TROUGH HEATER - AJ MODELS - HIGHER WATTAGE

A combination of problems involving the drain system on early Monogram models (BCS42UJ) resulted in poor performance and customer complaints. The first problem identified and contributing to drain tube freeze up and poor performance was the drain extension and drain spout misalignment (see FIELD CORRECTIONS drain tube freeze-up - AJ models).

The second problem involved the drain trough calrod heater. It was found that the drain trough heater was not heating the entire length and therefore; not heating the trough enough to allow the drain water to clear the pan before it froze. After the water in the trough froze it would block the drain spout and the remaining defrost water would back up in the trough.

A higher wattage drain trough heater (WR51X0339) and a full heater is now available for replacement on BCS42 UJ refrigeration unit.

For access to the drain trough heater, first remove the evaporator housing cover. Then, after removing 2 screws at each upper front corner of the evaporator, grasp the evaporator at each end and lift it straight up out of the housing.

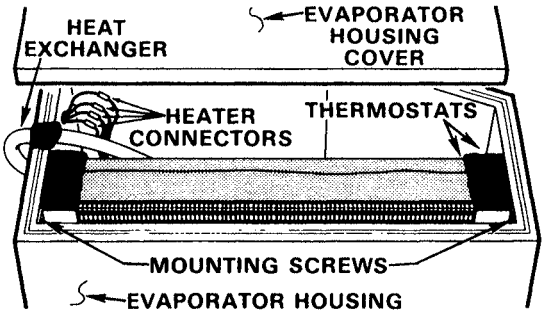


Figure 4 - Evaporator Cover Removal - AJ Models

The drain trough heater is positioned into the bottom of the drain trough and held securely with retainer tabs. To remove the heater, bend the tabs up only as necessary to release the heater from the drain trough. Disconnect the heater leads and remove.

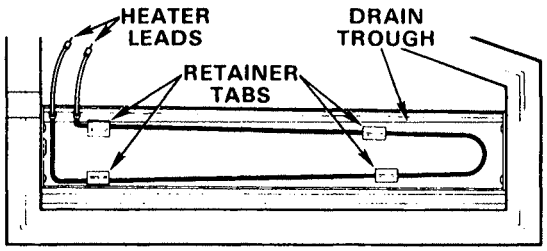


Figure 5 - Drain Trough Heater - AJ MODELS

When installing the new heater, position it as far to the left in the drain trough as possible. Reinstall the evaporator, and reapply permagum at the heat exchanger entry to form an air seal. Reinstall the evaporator cover.

DRAIN TUBE FREEZE-UP - AJ MODELS

A condition existed on early monogram models where the drain tube extension and the drain spout were not on the same plane and the drain sloped up rather than down. A piece of rubber hose connects the drain spout to the drain extension and is used as a sump to prevent warm air from entering the evaporator area. The bracket that holds the drain extension is higher than the drain spout and would not allow the defrost water to drain properly. A simple fix is involved:

Wedge a small block above the drain extension bracket and tap the wedge with a small hammer until the bracket is forced down. This will allow the defrost water to drain into the drain pan.

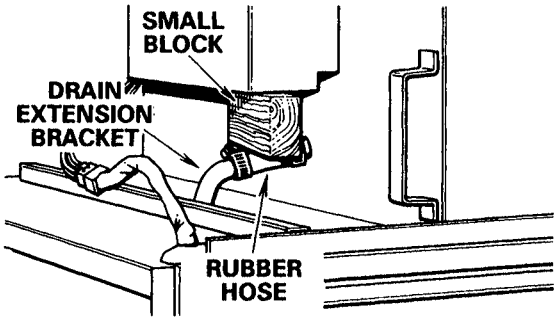


Figure 6 - Forcing the Drain Extension Down

BIS42CK,EK,EL,ZIS42CM,EM

BCS42CK,EK,EL,ZIS42CM,EM

ADAPTER PLUGS - Bench Testing

To bench test the refrigeration unit, once removed from the cabinet assembly, an adapter plug will be needed. Adapter plugs for the various models are: **BCS42EK — (WR97X0240), BCS42CK & EL AND ZIS42CM & EM — (WR97X241).**

The plug is wired so the refrigeration unit will operate independently of the temperature control, therefore the compressor will run continuously while the unit is under power.

The adapter plug connects to the refrigeration unit wiring harness located on the left side of the refrigeration unit. The power cord should then be plugged into a 115 VAC outlet. No other appliance should be in the circuit.

Since the wiring is different on the above models, the adapter plug must only be used on the models specified.

BCS 42UJ	WR97X236 & 239
BCS 42EK	WR97X240
BCS 42CK & EL	WR97X241
ZIS 42CM & EM	WR97X241

Figure 7 - Adapter Plugs

ADAPTER PLUG - MOISTURE KIT

An adapter plug is provided in the Moisture Kit and should be used on **EK** models **ONLY**. The plug is designed to energize the freezer case heaters only when the compressor is running.

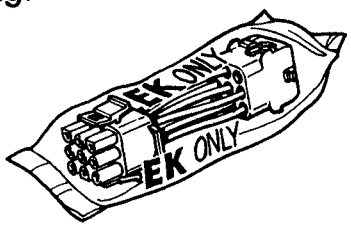


Figure 8 - Moisture Kit - Adapter Plug - EK MODELS

WIRING FOR MIS-WIRED MOISTURE KIT ADAPTER PLUG

NOTE: On some Moisture Kits, the adapter plug may be wired incorrectly. A symptom of a mis-wired connector would be an inoperative compressor and components.

The plug should be wired according to the following diagram.

LEGEND
RB = RED WITH BLACK JUMPER
B = BLACK JUMPER
O = ORANGE
P = PURPLE
BR = BROWN
W = WHITE

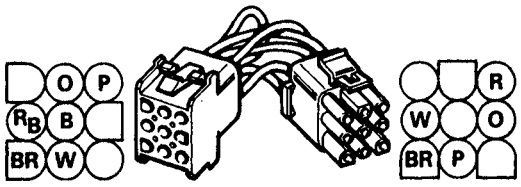


Figure 9 - Wiring for EK Adapter Plug

CONDENSER TILT - POOR REFRIGERATION

A mysterious, poor refrigeration complaint on some Monogram, **BCS42 EL** and **ZIS42 EM** model refrigerators, produced prior to August 1990, may be due to the size of the condenser and the air circulating through the condenser. Good indicators that this is the problem are: (1) the top passes of the condenser will be abnormally cool, and (2) the refrigeration system low side pressure will be in a slight vacuum (giving the symptom of a leak, restriction).

To confirm the diagnosis, unplug the condenser fan. Within two to three minutes the top passes of the condenser should begin to feel warm and the system pressure should begin to rise. On these models, include this test as part of the sealed system diagnosis and try this first. It could save considerable time and prevent misdiagnosis.

To correct this condition, the condenser must be raised approximately 1/2 inch at the right side, resulting in a tilted position.

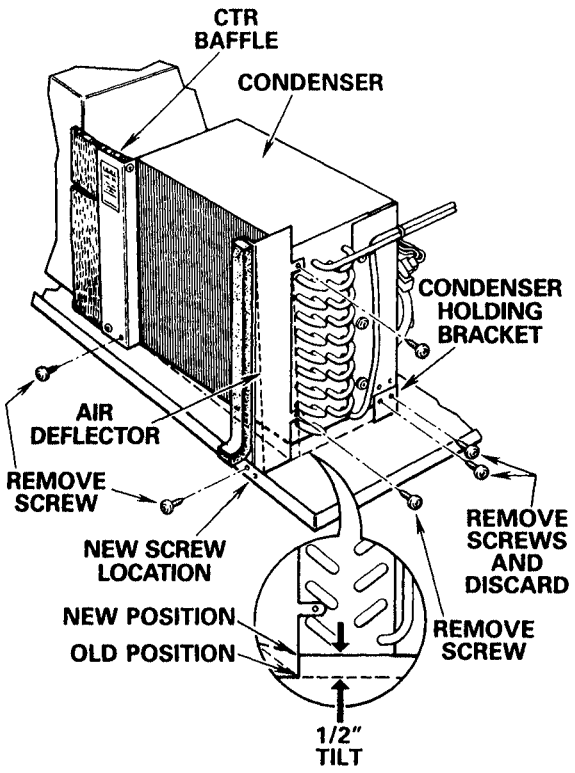


Figure 10 - Tilted Condenser

First, remove the air deflection bracket located on the right side of the condenser. Then remove the two screws from the condenser holding bracket at the right rear of the condenser, and discard it. Next, remove the lower right screw from the center access baffle. This allows the condenser to be tilted upward at the right side. Then, rotate the air deflection bracket 180 degrees (top to bottom) and reinstall the two side screws. The bracket will hold the condenser approximately 1/2 inch

Finally, drill a 3/32 inch hole through the base and the air deflection bracket and install a screw into this hole to secure the condenser.

EVAPORATOR FAN RELAY

Early **non-dispenser CK-B and dispenser EL-B&C models**, could be wired to allow the evaporator fan to run continuously. By connecting a relay in series with the evaporator fan and fan delay, the evaporator fan will run continuously except during the defrost cycle. The relay, although not connected, is included inside the wiring enclosure of the refrigeration unit. The relay is only needed if a warm temperature complaint should arise on these models. A special in-line wire connector is provided to change the wiring to accommodate the relay. The replacement part number for the relay is **WR07X0193**. To connect the relay, the refrigeration unit must be removed from the cabinet assembly.

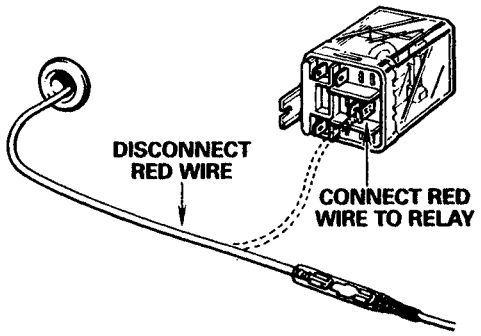


Figure 11 - Evaporator Fan Relay

DAMPER CONTROL BRACKET

A cold temperature complaint on **BISB/W42 EK or EL** models may be due to the fresh food damper control not sensing the correct temperature. To correct this problem install a **WR09X0445** control and/or a **WR02X8253** bracket. If the control capillary tip is embedded in the liner wall install the **WR02X8253** bracket. Remove the fresh food light shield and disengage the capillary tube from the liner wall by removing the grommet holding it in place. The capillary has a slight bend at the end to keep it inside the grommet. The grommet can be removed by depressing the tabs and then pulling it out of the hole. Discard the grommet. Install the bracket per the instructions provided in the kit.

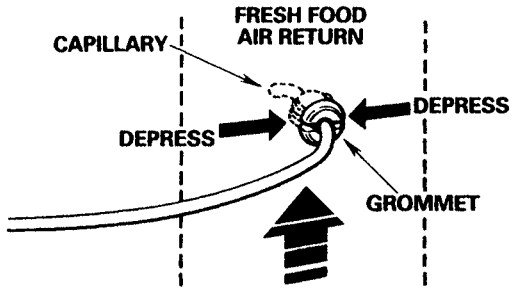


Figure 12 - Capillary In Return Air Duct

If the original control is being reused, allow the bent end of the capillary to extend out of the bracket.

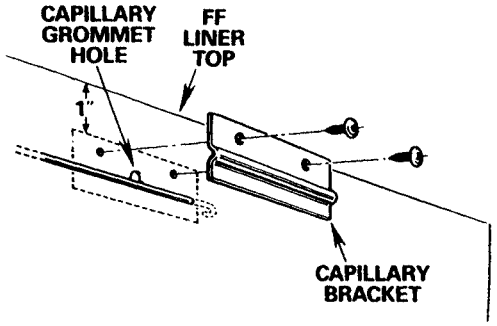


Figure 13 - Capillary Under Bracket

DAMPER CONTROL REPLACEMENT

To replace the damper control, remove the fresh food light shield. Remove the energy saver switch bracket screw and the fresh food control knob. Remove the control panel. The control panel snaps into a channel at the rear edge and must be pried free. Place a screw driver in the hole where the control knob was removed and pry the control panel forward. Let the control panel hang free on the right side of the compartment or disconnect the leads to the energy saver switch and place the panel aside while replacing the control.

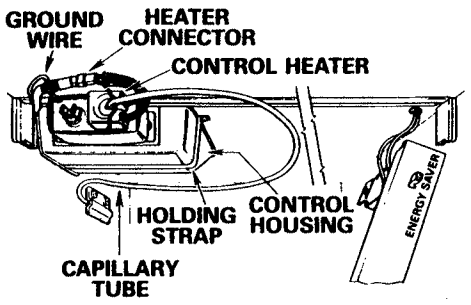


Figure 14 - Damper Control Replacement

Remove the holding strap from around the damper control foam housing, and carefully cut through the RTV sealer around the foam housing. Disconnect the heater connector and the ground wire from the control. Grasp the foam housing and work it loose from the control by moving it back and forth in a rocking motion while pulling downward. **Care must be taken when removing the foam housing, to avoid breaking the foam.** Remove the control screws and disengage the capillary from the liner wall. When installing the control, follow the instruction included with the control. The control heater should be reinstalled on the new control. Install a capillary bracket in place of the grommet to secure the capillary to the liner wall. Seal all contact points of the air duct with the liner, and around the control and air duct with RTV sealer. Reinstall the control panel and light shield.

DISPENSER RECESS FOAM HOUSING

A dispenser recess foam housing is used on models in production after August, 1990. The housing completely surrounds the dispenser mechanism inside the freezer inner door to help eliminate moisture problems in this area. Component parts are not accessible with the rear access cover removed without cutting a window in the foam housing. Cut the housing as shown below, using a utility knife and limit the penetration of the foam to 1/4-inch in depth. Pull the panel forward and allow it to hang by the vinyl tape. Reseal the foam housing window with masking tape.

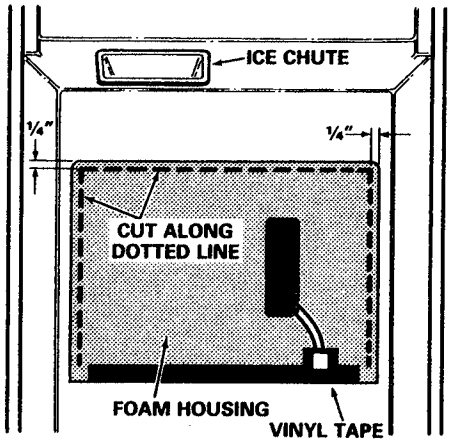


Figure 15 - Cutting Recess Foam Housing

DOORS POPPING OPEN - Vent Tube

One door may pop open due to pressure in the compartment when the other door is closed. To help solve this problem, on non-dispenser models, install a **WR02X8472 Vent Tube**. Remove the vegetable pans and behind the upper pan, drill a 1/2 inch hole completely through the cabinet. Insert the vent tube and, before fully seating, apply RTV sealant around the tube. After fully inserting the vent tube, wipe off any excess sealant.

On dispenser models, remove the RTV sealant from the water reservoir tubing holes. The holes are located in the fresh food compartment floor near the reservoir. Pull up on the tubing and the RTV sealant will pull out of the holes. Install a **WR02X8472 Vent Tube** behind the upper vegetable pan, above the water dispenser reservoir. Seal around the vent tube with RTV sealant, before seating the tube in the hole.

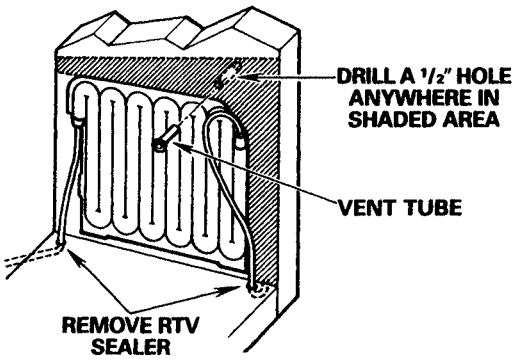


Figure 16 - Vent Tube

DOOR CAMS BREAKING

The upper door cam on the fresh food door is likely to be broken if the door is beginning to deform in the hinge area. A replacement cam is available but before changing the cam be sure to inspect the bottom of the door carefully for signs of damage. The replacement cam part number is **WR02X7878**.

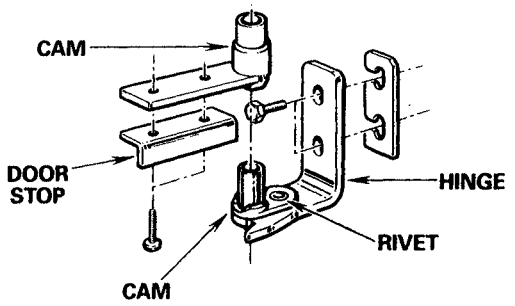


Figure 17 - Door Cam Replacement

DOOR HINGE SQUEAK - TRIM RUBBING

A loud squeaking noise can be caused by the fresh food door side trim rubbing against the lower hinge on early models BIS42 EK,CK,EL, & ZIS42EM. To correct this problem the door must be removed and the side trim filed off at the bottom in order to increase the distance between the door side trim and the hinge.

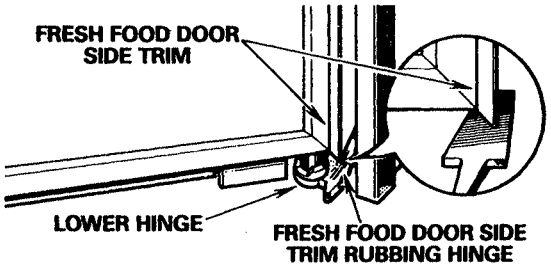


Figure 18 - Door Hinge Squeak

CONDENSER UPGRADE KIT

After replacing a compressor on some "Older" monogram models, especially **BCS42 CK, EK, EL** and **ZIS42, CM** and **EM'S**, the system will not refrigerate properly. Symptoms exhibited by the replacement compressor are similar to a restriction or low charge - cool condenser and a partial vacuum, sometimes referred to as **"the mystery refrigeration problem"**.

The problem has been identified to exist primarily with an Americold replacement compressor. Tilting the condenser or adding more charge on these particular models does not solve the problem. A Condenser Upgrade Kit **(WR49X0370)** was developed and successfully tested to eliminate the problem.

The kit contains a smaller one bank condenser, **WR84X0161**, two baffle extension to retrofit the model being serviced, armaflex tube insulation, and an instruction sheet.

It is suggested that whenever changing a compressor on any of the "older" Monogram models listed above, for any reason, to also install the Condenser Upgrade Kit.

GASKET SEAL - GASKET REPLACEMENT

On models produced prior to August 1990, door gaskets were used that sealed the door when first assembled

but under load conditions sometimes lose seal at the lower front corners. One method to check the bottom door seal of both the freezer and the fresh food door, is to place a mirror under the door edge and look up along the length of the gasket.

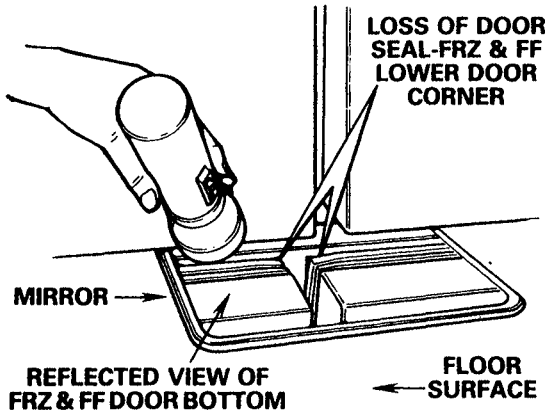


Figure 19 - Inspecting the Gasket

A flashlight can be used to light the gasket by directing the light beam into the mirror and reflecting the light onto the gasket. A gap in the gasket will be observed using this method. To correct the gap at the bottom of the door, order a replacement gasket (**WR24X0492 freezer** door gasket, **WR24X0493 fresh food** door gasket). When a new gasket is installed, heat should be applied to the gasket to make it more pliable to push into the breaker channel. A light coat of paraffin wax should also be applied to the hinge side of the gasket to prevent gasket scrub.

FILL TUBING BLOW OFF KIT

Under light usage of the refrigerator and over an extended period of time, the icemaker fill tube may freeze over. When this occurs and the icemaker cycles, the water pressure from the incoming fill may cause the fill tubing to be blown out of the fill tube grommet. On any additional icemaker fills, the water will be sprayed where ever the fill tubing is pointed. To correct this condition an Icemaker Fill Tube Kit **WR49X0333** should be installed.

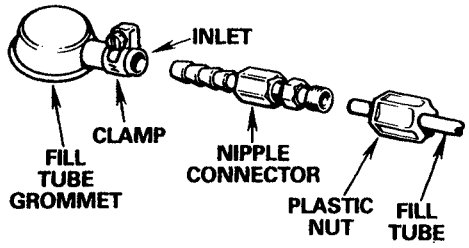


Figure 20 - Fill Tube Grommet Brass Nipple Connector

The kit includes a brass nipple connector which inserts in the fill tube grommet inlet and is held with a screw clamp. A plastic nut fits over the end of the fill tubing and is attached to the nipple connector.

FILL TUBE HEATER KIT

To prevent fill tube freezing, a fill tube heater can be installed. A **WR49X0339** Fill Tube Heater Kit is available and complete instructions for installing the parts are included in the kit.

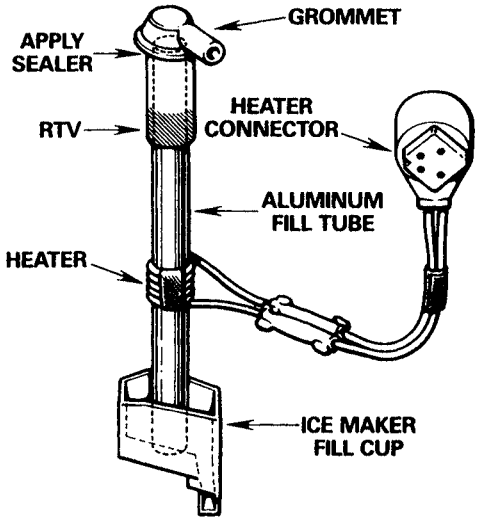


Figure 21 - Fill Tube Heater WR49X0339

On dispenser models, the electronic current sensor must be disabled when installing the fill tube heater. The connection for the sensor is behind

the freezer partition and can be located and disconnected after removing the freezer light shield, freezer light bulb, and light socket. Reach into the light socket hole and pull out the white wire. The icemaker current sensor is connected to this white wire. Disconnect the sensor connector, tape over the ends with electrical tape, reinsert the wire behind the partition and reinstall the other components that were disassembled.

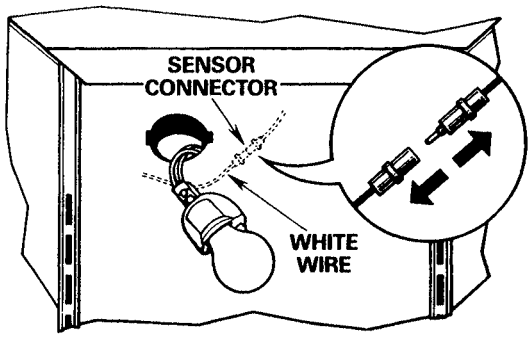


Figure 22 - Sensor Location

MOISTURE - EXTERIOR

Moisture accumulation (sweating) on the exterior and in the fresh food compartment of Monogram Refrigerators can be attributed to several causes. Before attempting to correct a sweating condition, several areas of the refrigerator should be inspected as follows:

Mullion and Case Flanges - especially the bottom flanges.

Evaporator Housing - front and left side.

Top of Cabinet Assembly - on the left side of the refrigeration unit.

Top Trim piece - of the cabinet assembly.

Door gaskets -

Left side of the refrigerator -

Front of freezer door - around dispenser recess area.

If moisture (sweating) occurs in any of these areas, the **WR49X0321 Moisture Kit** should be installed. It is also important that all of the part be installed to eliminate a repeat service call. A video is also available **(Pub. No. 31-5228)** showing detailed instruction on how to install the moisture kit.

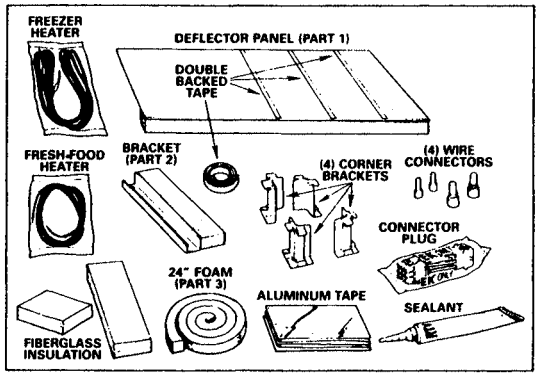


Figure 23 - Moisture Kit Contents

EVAPORATOR HOUSING - GASKET SEAL

The evaporator housing cover has a gasket that seals the area inside the housing from the outside air. The cover is held in place by four brackets on the door which mate with four brackets on the housing. Plastic spacers are used between the brackets to ensure the proper spacing. If the cover is removed, occasionally the gasket will not seal properly when the cover is reinstalled. A longer than normal run time can be expected and moisture will accumulate on the evaporator housing at the source of the leak. To correct this problem, remove the spacers and tighten the screws down until the leak is stopped. Be sure to tighten the screws equally to uniformly seat the gasket.

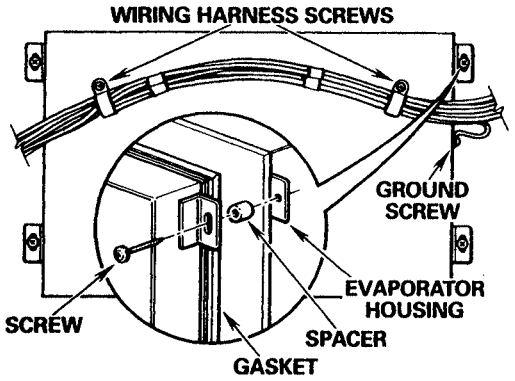


Figure 24 - Evaporator Housing Front Cover Seal

A water reservoir freezing problem can usually be attributed to an abnormally cold fresh food compartment. Adjusting the control to the proper setting should correct the problem. Tape can be applied across the top of the grille covering the water reservoir to prevent air from passing over it. This will raise the temperature of the reservoir enough to prevent freezing.

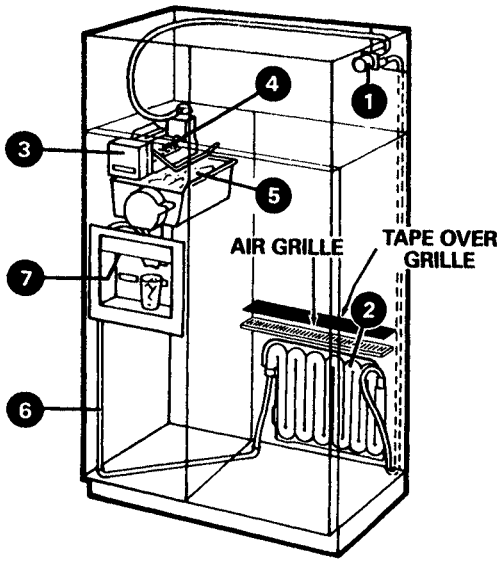


Figure 25 - Applying Seal to Prevent Reservoir Freeze-ups.

TEMPERATURE COMPLAINT - BIS42EL & EK

Reference Bulletin Number REF 3-88, TEMPERATURE COMPLAINT.

The above model Monogram Refrigerator has a different circuit for the evaporator fan. The fan cycles **"off"** and **"on"** with the compressor. Under extreme operating conditions this may cause a temperature complaint. If this occurs, the evaporator fan wiring can be changed by following the instructions that have been placed in the cooling unit mini-manual pouch. (See GENERAL section for Mini-Manual location.)

SEALING RECESS ON BIS42 EK & EL MODELS

Moisture accumulation (sweat) around the top of the dispenser recess, may appear on some of the early production (1987 - May 1989) on BISB/W42EK, AND BISB/W42 EL Monogram models. This sweat condition is caused by cold air migrating to the interior and exterior metal surfaces of the freezer door and causing lower than normal temperatures on these surfaces. The above condition is due to:

- Voids in the insulation around the chute, inside the inner door at the dispenser recess.
- The dispenser recess not sealing completely in its orifice. The recess is buckled in places and the foam gasket sealer around the recess is inadequate to seal the recess.

To correct these conditions, the following procedure must be carefully observed.

Material Needed:

- Bagged insulation - WR82X0064
- RTV 102 Sealant - WX06X0200
- Double backed Tape - WR02X6141

Remove the plastic ice chute from the inner door and inspect the insulation. If there are visible voids, then open the bag of insulation WR82X0064 and remove the sheet

of insulation. Cut small strips of insulation from the sheet, approximately 1 X 2" to fill the voids (see figure 26). Do not compress the insulation as this tends to make the insulation lose its insulating properties.

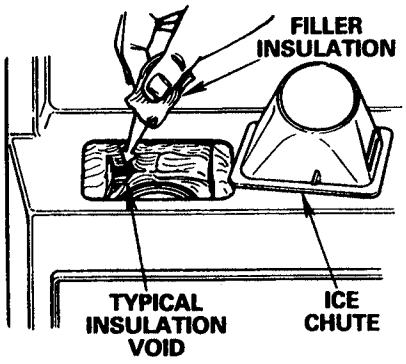


Figure 26 - Typical Insulation Void

Cut a 3 1/2 X 8 inch rectangular piece out of the sheet of insulation. Insert this piece around the inside cavity at the back of the ice chute location. Do not block the ice chute. (See figure 27 for a correctly insulated cavity.).

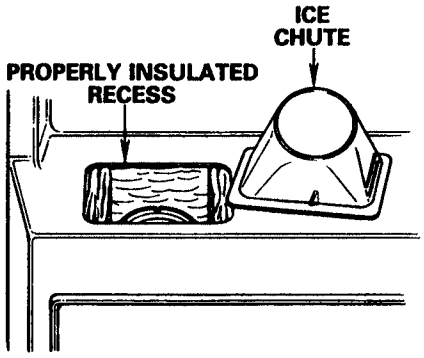


Figure 27 - Properly Insulated Recess

Replace the ice chute and check the dispenser mechanism to determine if it is still operative and insulation is not blocking the chute.

Remove the front recess trim. Care must be taken when removing the front recess trim because it is held in place with double backed tape and is very hard to pry loose.

To remove the front recess trim you must first remove the freezer door handle trim. Pull out on the recess trim from the edge and using a putty knife loosen the double backed tape as you work around the trim. Once the cover is loose, disconnect the panel display wiring. The front recess should now swing freely. Remove the top panel by sliding it to the right. Remove the lower panel trim screws starting on the hinge side until the trim can be rotated. This will free the front access trim. Moisture can be stopped around the recess by:

Sealing around the recess with a thin bead of WR06X022 white RTV sealant. Spread the sealant with your finger to ensure a good seal.

Seal all holes, especially the front trim guide post holes. (See holes numbered in four places)

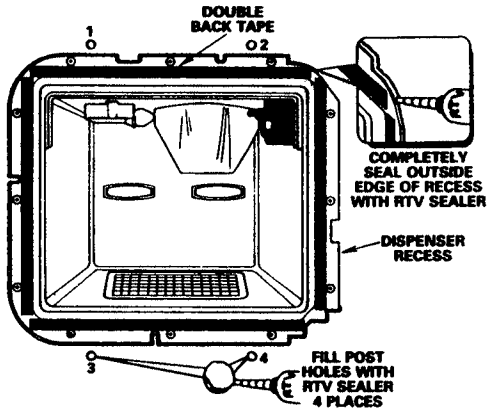


Figure 28 - Applying RTV Sealant on Recess

Replace the double back tape, WR02X6141, on the front of the recess as shown in the illustration. Then reinstall the recess, trim and handle in the reverse order of disassembly. Plug the unit back into the power receptacle and set controls to normal operating positions 5/5.

DOOR REINFORCEMENT KITS - FRZ & FF

On some BIS & ZIS 42 Monogram Refrigerators built prior to November 1991, a condition may exist where the bottom of the door bends due to excessive loading and causes the door closure (cam riser) to break. This condition can be easily corrected on the fresh food door by installing a WR49X0347 Reinforcement Kit and on the freezer door by installing a WR49X0348 Reinforcement Kit.

The kit consists of a bottom hinge with the cam riser attached, a top cam riser, a reinforcement metal bracket and an instruction sheet.

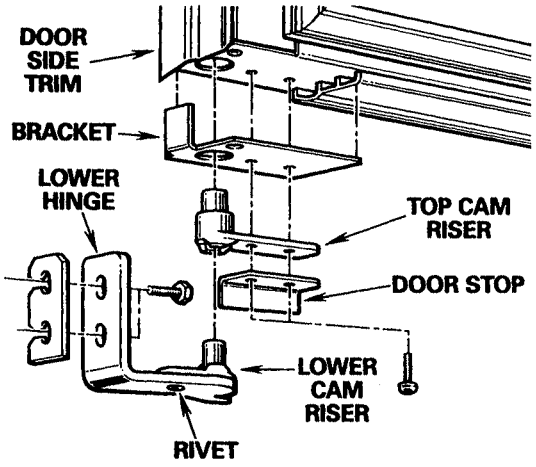


Figure 29 - Exploded View - Door Reinforcement

Several door related problems in addition to the cam riser breaking may be due to the door bending. Problems associated with the door bending are:

1 Door trim rubbing bottom hinge - can also cause a loud squeaking noise.

2 Metal shavings under and around the hinge area.

3 Door misalignment.

4 Loss of door seal at the bottom

5 Moisture problem due to loss of door seal.

6 Door hard to close.

7 Door Closer inoperative.

Installing the Reinforcement Kit will reinforce the bottom of the door and eliminate the problem.

ZIS36,42,& 48 D & N MODELS

RECESS MOISTURE - FOAM HOUSING BROKEN

On Some ZISB/W36D Dispenser models built prior to August 1992, moisture may appear on the dispenser recess, to the left and right of the sump area and along the sides of the recess.

During initial installation of the dispenser rear access cover, and if the recess has been serviced, the lower tabs of the cover push against the foam housing that surrounds the recess. Small breaks occur in the foam due to the pressure of the tabs.

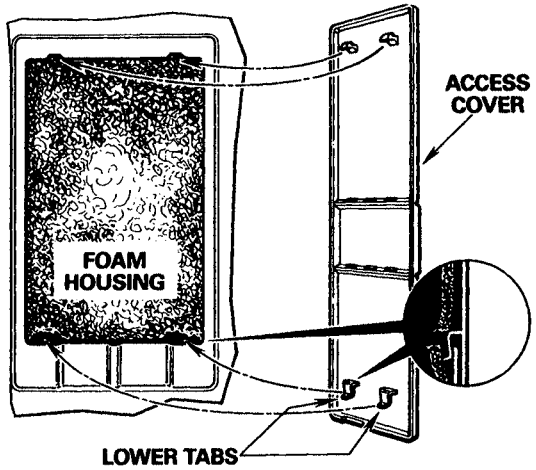


Figure 30 - Area Where Breaks Occur in the Foam

Cold air enters the foam housing through the breaks in the foam and migrates to the back side of the recess.

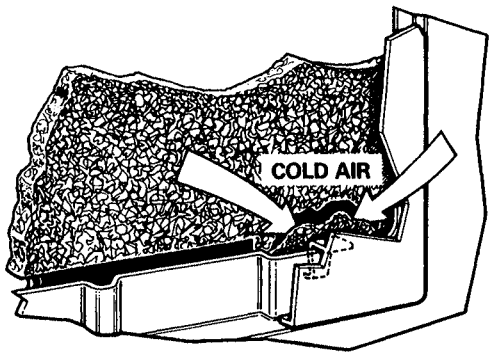


Figure 31 - Cold Air Penetrates the Foam Housing

Moisture forms on the front of the recess after the cold air cools the surface to below dew point.

To correct this condition:

1 Remove the dispenser rear access cover.

2 Seal between the inner door and the foam housing with RTV Sealant, especially the lower portion of the opening where the recess cover tabs have pushed against the housing. The slot at the bottom of the opening should be completely sealed with RTV.

3 Reinstall the access cover.

DISPENSER RECESS FOAM HOUSING

A dispenser recess foam housing is used on models in production after August, 1990. The housing completely surrounds the dispenser mechanism inside the freezer inner door to help eliminate moisture problems in this area. Component parts are not accessible with the rear access cover removed without cutting a window in the foam housing. Cut the housing as shown below, using a utility knife and limit the penetration of the foam to 1/4-inch in depth. Pull the panel forward and allow it to hang by the vinyl tape. Reseal the foam housing window with masking tape.

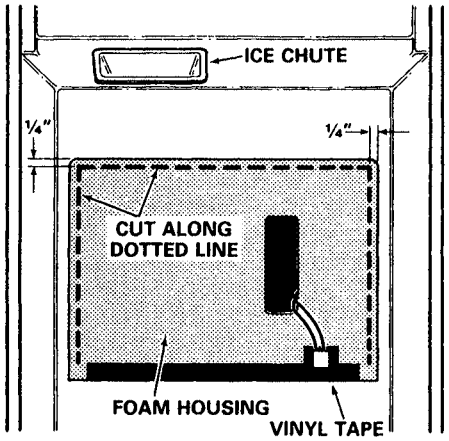


Figure 32 - Cutting Recess Foam Housing

ICE BUILDUP AROUND EVAPORATOR FAN & FREEZER MOISTURE - PERFORMANCE COMPLAINTS

The potential exists for all Monogram **ZIS-36, 42,and 48-inch** dispenser and non-dispenser models produced after 1992 and prior to October 1994, to have ice buildup around the evaporator fan and ice blockage of the drain trough and spout. The problem has several contributing factors but is primarily due to moisture laden air entering the evaporator compartment through an air leak at the heat exchanger. A loss of seal in the permagum ring around the heat exchanger (suction line-cap tube) allows air to enter the compartment.

The moist air condenses on the cold surfaces, then freezes. During the defrost cycle the ice is melted and runs down and around the evaporator fan orifice. The water can run into other areas and is noticeable by the consumer and will usually cause a complaint. The water that runs around the fan orifice, freezes when the defrost cycle is complete and over time builds into a mass of ice.

If sufficient ice accumulates, the fan blades may strike the ice, causing a clicking sound or may even stop the fan blade rotation, resulting in poor performance.

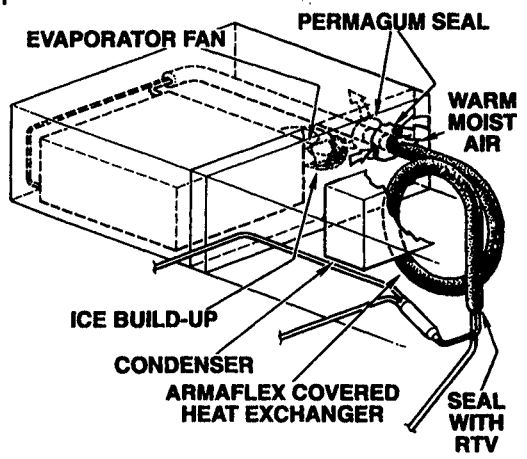


Figure 33 - Air Leak Around Heat Exchanger

A kit has been designed to address all of the contributing factors and to help eliminate this problem. All of the steps in the kit must be followed for this kit to be effective. The kit number is **WR49X0395** and includes the following items:

1 Drain Pan Foam Housing

1 Drain Tube and Clamp

1/2 Bar of Permagum

1 Tube of RTV Sealant

1 Drain Pan and Heater Assembly

1 10 hour 35 minute Defrost Timer

1 Elut Extension (Piece of Foam)

2 Closed Cell Moisture Barrier

1 Jumper Wire - with female bullet connector on one end and stack terminal on the other.

A complete instruction sheet is included in the kit also.

The basic service required is:

1 Make sure the permagum seal is around the heat exchanger and the drain spout.

2 To remove the drain pan/heater assembly and foam housing and replace with the one provided in the kit.

3 Add the jumper wire so it is connected to the evaporator fan terminal to supply a power source to the drain pan heater during the full defrost cycle.

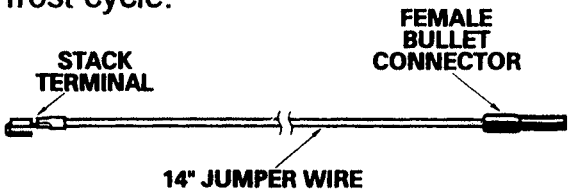


Figure 34 - Jumper Wire

NOTE: the drain pan heater will **NOT** be terminated by the defrost thermostat and **WILL** be energized 100% of the time during defrost. This will allow the drain pan to warm up enough to clear the pan of any water before the refrigeration cycle begins again.

4 Follow all of the steps and apply the permagum seal as the illustrations show.

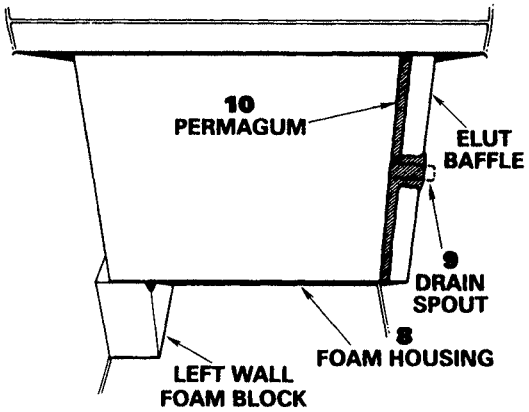


Figure 35 - Adding Permagum to Bottom

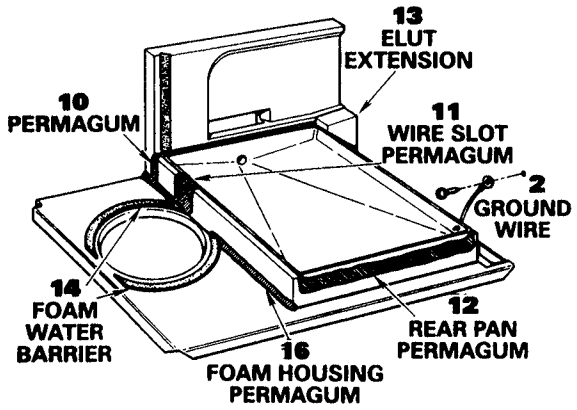


Figure 36 - Top View of Sealing Areas

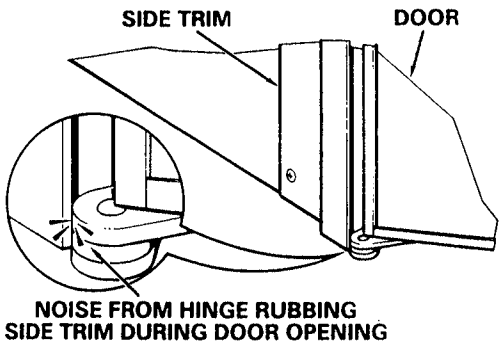


Figure 37 - Hinge Rubbing Case Trim

DOOR OPENING NOISES

Customer complaints of door opening noises on either the fresh food door, freezer door, or both on Monogram 36, 42 and 48-inch models produced prior to May 1994, may be due to several factor. Some door opening noises involve the case side trim and hinges, while others are associated with the umbilical tube, and actuator arm springs.

Door Hinge Noise

Door hinge rubs the case side trim upon opening the door and produces a loud screeching sound. This is usually the result of improper handling and the side trim has been bent or jammed against the hinge.

If the opening for the refrigerator is too small, abnormal force can be applied to the side trim forcing it to hit the hinge. This can happen on either door and the same repair applies.

To correct this problem, bend the side trim out slightly so the trim is not touching the hinge when the door is opened. Or, if possible, remove the side trim and file out the area where the trim rubs the hinge. Apply a small amount of petroleum jelly or lubricant to the hinge area to avoid further noises.

Umbilical Noise

Freezer door noises are usually associated with the gray plastic tube (umbilical) that is used to route the water line and electrical wires into the freezer door. Two problems have been identified and corrected in the factory.

1 Prior to April 1993, the molded umbilical tubes were slightly out of round where they protruded into the door bottom through the umbilical grommet. This out of roundness produces a rubbing noise as the door is opened.

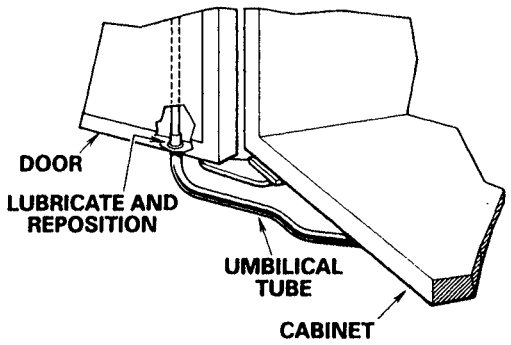


Figure 38 - Area Where Umbilical Rubs Grommet

To correct, lubricate around the umbilical tube where it enters the umbilical grommet. Force some of the lubricant up around the tube.

2 On some installations, the umbilical may be found to be pushed up into the door bottom too far. The angle of the umbilical as it enters the bottom can cause it to bind on the umbilical grommet and produce a rubbing sound.

To correct, grasp the umbilical near the bottom of the door and pull downward with a sharp motion. This should relieve the bind and allow the umbilical to rotate in the grommet. Lubricate the tube and force some of the lubricant up inside the grommet.

Actuator Spring Noise

On models produced prior to May 1993, a noise complaint of a **"spring ring"** type noise at the bottom of the cabinet, may be caused from the hole in the actuator arm where the spring attaches being too large.

To correct this condition, replace the actuator arm.

Fresh Food - **WR02X8925**

Freezer - **WR02X8926**

Lubricate the hole with hinge grease or petroleum jelly.

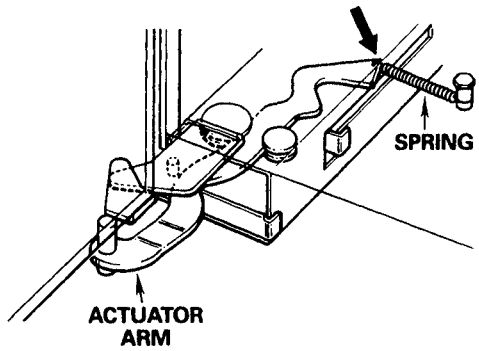


Figure 39 - Actuator Arm - Spring

SWITCH - FAILURE - FRESH FOOD LIGHT

A complaint of high fresh food temperatures, may be caused by a faulty or underrated light switch.

All Monograms, **ZIS 36,42 & 48-inch** dispenser and non-dispenser models manufactured prior to December 1993 have a fresh food light switch that is underrated for the lamp load under heavy usage (many door openings)-(see models affected below).

Under heavy usage conditions, the contacts of the switch can stick closed allowing the fresh food lights to remain on with the door closed, thus; raising the temperature of the fresh food compartment. This can be an intermittent occurrence and by pushing the rocker arm of the switch in and letting it spring out, the contacts can be temporarily separated and appears to fix the problem. Continued use without replacement, will result in total failure. A new switch **WR23X0411** was implemented into production in December 1993.

An underrated switch can be identified by the color of the back cover. The underrated switch will have a white back. The replacement switch WR23X0411 will have a green back.

It is recommended on every service call on a Monogram Refrigerator that

the fresh food light switch be inspected and replaced with the new switch.

MODELS AFFECTED:

ZISB36DR,DS,DT

ZISW36,DR,DS,DT

ZIS36NR

ZISB42DS

ZISW42DS

ZIS42NS

ZISB48DR,DS

ZISW48DR,DS

ZIS48NS

DRAIN TUBE SLOPE

The slope on the drain tube from the drain pan spout to the evaporation pan is 2 degrees and must be maintained for the defrost water to drain properly. If for some reason, the drain system loses its ability to drain the defrost water, it will back up in the drain pan and freeze. After a short while, the defrost water will spill over the drain pan into the freezer compartment. An iceberg will form in the freezer and could also block the evaporator fan.

It is very important that the drain tube clips be installed properly to hold the drain tube down and maintain the 2 degree slope.

After doing service on the freezer components, test the drain system by running 10 ounces of water through the drain tube. This can be done by using a squeeze bottle with a flexible neck and putting the neck up through the freezer air return slot and squeezing the water into the drain pan. Be sure to observe the water going into the evaporation pan.

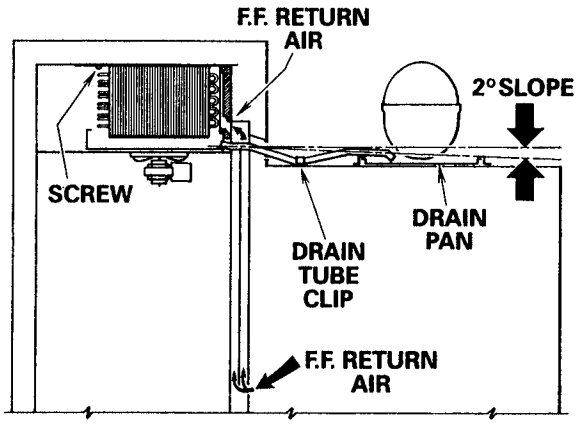


Figure 40 - Slope Of Drain Tube

HINGE KIT - FRESH FOOD DOOR

Door hard to close, door dragging, hinges hitting etc., on 36,42 & 48-inch Monogram Model Refrigerators built prior to October 1994 (serial prefix TL), may be caused by the fresh food door collapsing in the lower hinge area and excessive play between the hinge pin and the hinge bushing.

This problem is greatly aggravated by the installation of heavy door panels that exceed the weight specifications and limits of the door design. A hinge kit has been designed that will strengthen the bottom of the door and along with the new hinge bushing align the door for proper operation.

The hinge kit can be used on all new design Monogram Refrigerators produced after 1992 through September 1994. After this date, changes were made in the design and assembly process to prevent this problem. The kit number is WR49X0401 and includes the following items:

1 Fresh Food Hinge with Four (4) mounting holes

4 Door Hinge Screws (thread cutting) - WR01X1754

1 3/16 inch Drill Bit

1 Hinge Pin Bushing

4 Shims - (Optional use)

2 Washers

1 Instruction Sheet

To install the kit, first remove the fresh food door. Remove the old hinge and install the new hinge. Drill 2 holes through the hinge using the open holes as a guide. Install the two new screws.

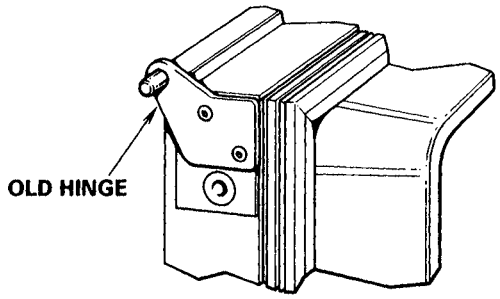


Figure 41 - Old Hinge

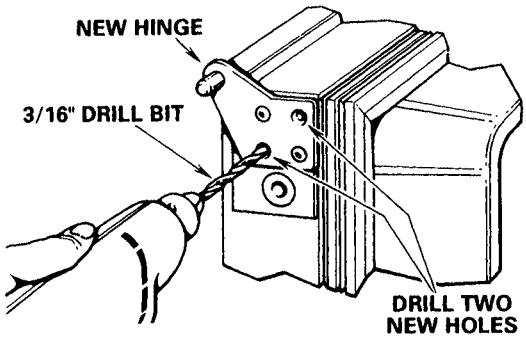


Figure 42 - Drilling Two Additional Holes

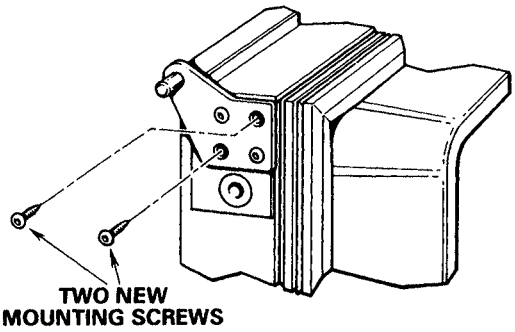


Figure 43 - Adding Two New Screws

If, upon inspection of the new hinge , it appears that it is not square with the door, shims have been provided to move the hinge up slightly.

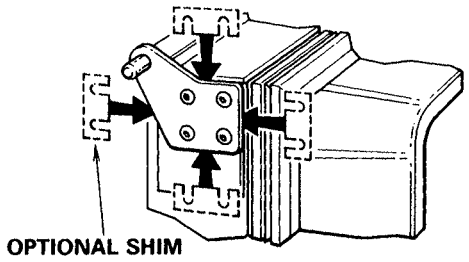
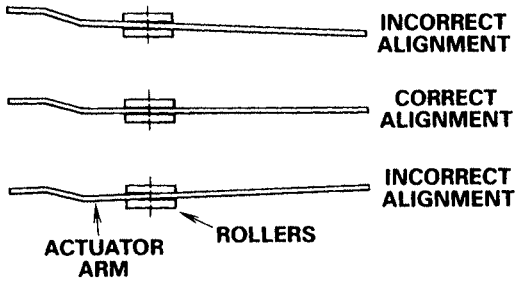


Figure 44 - Adding Optional Shims

CAUTION: Since the door has been elevated by the new bushing, make sure that the actuator arm is level with the case and guide rollers, and that it does not strike the case hinge when closing. This may require removing or adding additional washers either above or below the spacers.



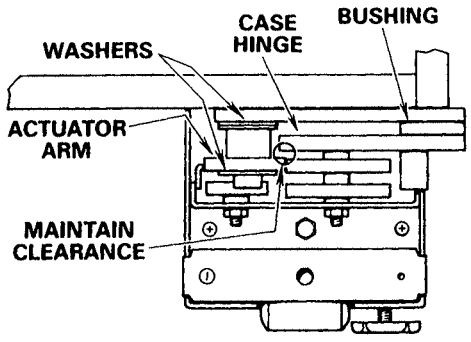


Figure 45 - Actuator Arm Alignment

FRESH FOOD MOISTURE 36, 42 and 48"- MODELS

A potential moisture droplet / ice droplet problem exists on all Monogram Refrigerators produced after

1992 through November 1994 (serial prefix **VL**), especially in high humidity areas. The moisture droplets are caused from condensation on an extremely cold fresh food rear air duct. The air duct is cold because the fresh food supply air is distributed to the compartment from behind the air duct. The air being pushed into the fresh food compartment is air that has just passed through the evaporator coils and is very cold. Although performance is not affected by the moisture, consumers may perceive the condition as a faulty design.

A kit has been designed to eliminate the fresh food moisture droplets under normal conditions. Under abnormal usage or heavy usage, droplets will still form, but should sublime after doors have been closed for an extended period of time.

The kit contains a new grille and switch assembly with additional switches that control the operation of the evaporator fan. When either door (freezer or fresh food) is opened, the circuit to the evaporator fan is interrupted and the fan is prevented from pulling warm moist air into the compartments.

Parts included in to the kit are:

- Grille Channel and Switch Assembly
- Fresh Food Insulated Air Duct
- Complete Installation Instructions

Because of the variation in the model configuration (width of units), several different kit numbers were needed. The following list gives the model number and the kit associated with that model.

ZISB/W48 D - WR49X0396

ZISB/W42 D - WR49X0397

ZISB/W36 D - WR49X0398

ZIS42 N - WR49X0399

ZIS36 N - WR49X0400

ZIS48 N - WR49X0402 - (AIR DUCT ONLY)

Grille Channel Installation

To install the kit, remove the upper panel frame and the louvered grill.

Note: If the grille channel is difficult to remove, open the freezer door and press down on the corner of the grille channel just below the upper hinge. (See figure 1) Lift the louvered grille up and off the grille channel.

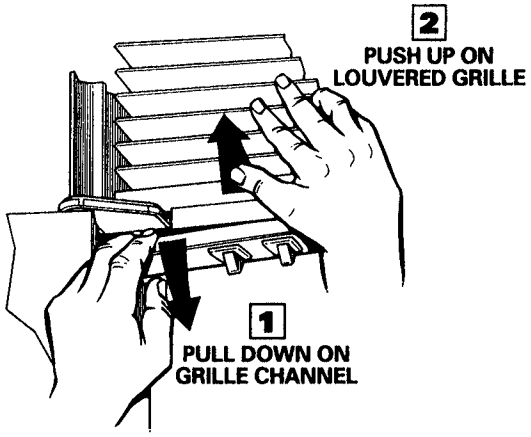


Figure 46 - Removing the Old Grille Channel

Next: Install the new grille channel with the added switches using the harness connector provided with the channel. Reinstall the louvered grille and the top panel frame.

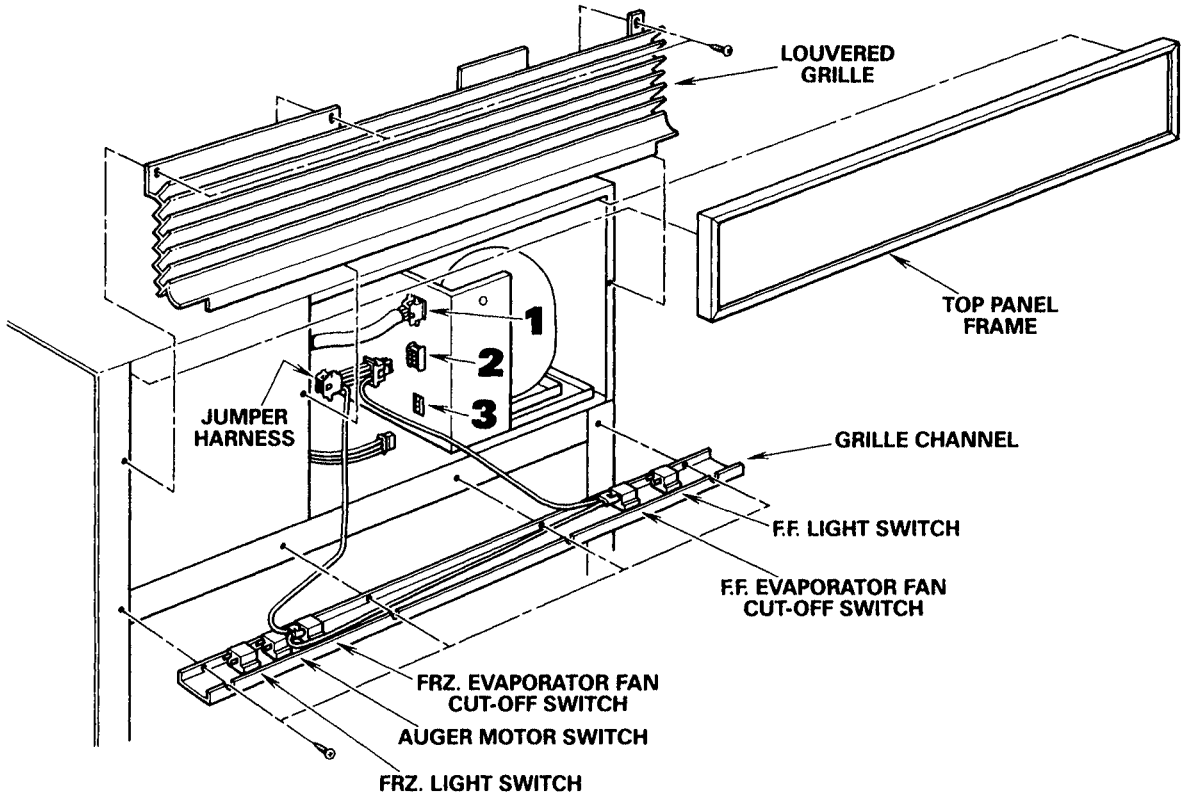


Figure 47 - Installing New Grille Channel

Insulated Air Duct Installation

To help eliminate moisture build up on the cold surface of the rear air duct, a new air duct is included in the kit that has been insulated on the back side. Follow the steps in the installation instructions to install.

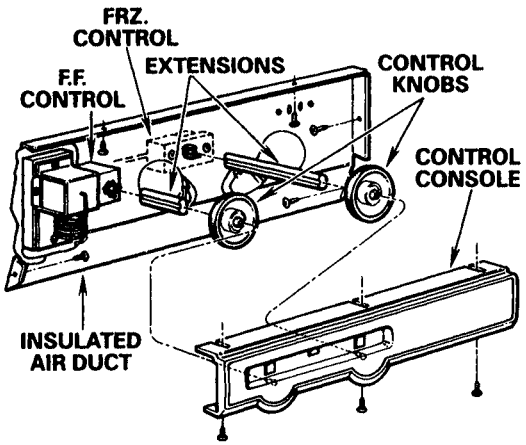


Figure 48 Exploded View - Insulated Air Duct

Wrapping The Temperature Control

Before installing the New insulated air duct, using electrical tape, wrap the temperature control body. This will help prevent moisture from migrating into the control body.

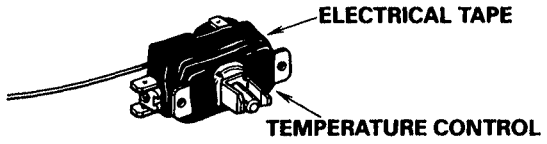


Figure 49 - Wrapped Temperature Control

GENERAL INFORMATION - BULLETINS PENDING

BREAKER STRIP REPAIR

The bottom breaker strip may be repaired / replaced on ALL Monogram Models; however it is difficult and requires considerable time and effort to remove the breaker on **ZIS36, 42, & 48 D or N models** because they

are foamed in place. (Refer to CABINET section for breaker strip removal on earlier models). The damaged breaker strip must be cut out and removed, including the flange under the metal liner. The surface must be cleaned of all RTV residue to prepare for the new breaker strip.

The new bottom breaker strip needs the two rear flaps removed. RTV is applied to this surface when installed to form a seal to the rear case flange. Tuck the breaker in at the front and RTV the rear to hold it in place. To insure that the breaker strip remains in place after being installed, the entire length of breaker must be clamped or taped down to allow the RTV to dry. Curing time for RTV is approximately 24 to 48 hours. After removing the clamps or tape, fill in any void in the RTV with fresh RTV.

ACTUATOR (CLOSURE) ARM FALLS OFF

The actuator arm shoulder bolt may become loose and interfere with the door closing function of the door mechanism. Retighten the bolt but use caution not to overtighten.

If the shoulder bolt will not tighten, the rivnut is probably turning inside the door flange. To repair, a set screw must be installed to stop the rivnut from turning. Procedure:

1 Remove the shoulder bolt and then remove the door and lay on a flat surface.

2 Drill a 3/16 inch hole through the inside door flange and into the rivnut. (Care must be taken to align the drilled hole into the rivnut).

3 A set screw is then tightened into the pilot hole and into the rivnut.

4 Install the door and then reassemble the closure mechanism.

If the above fix does not solve the problem - the entire door will have to be ordered.

CLOSURE SPRING BREAKS

During the production period of February 1992 through May 1992, an assembly error occurred involving the closure spring which could cause an eventual failure. The assembly operator pinched the end of the tempered spring on **ZIS36-inch models** with the tool they were using and this could adversely affect the strength and durability of the spring.

If a spring is found broken on these models, it is recommended to order a **WR02X8804** spring as replacement.

DOORS HARD TO OPEN

Doors that are unusually hard to open, especially the fresh food door immediately after opening and closing the freezer door, is a natural phenomena and requires customer education. The doors become harder to open after closing because during the open time cold air is allowed to escape from the compartment and fill with warm air. When the door is closed the warm air is attracted to the cold surfaces and cools extremely fast. As the air is cooled, the air volume shrinks and causes a vacuum to occur. The vacuum in the compartment is what is making the door hard to open, because you are pulling against this inside pressure. There is no way to alleviate this vacuum in a short period of time. The vacuum will decay over time and usually requires about 30 seconds to decay. Several things can be done to help eliminate this problem.

1 More food load in the refrigerator and freezer compartment will help to reduce the vacuum, mainly because the food will take up more

space and less air will be cooled.

2 Add an air vent, similar to the one used on older Monogram models. (See FIELD CORRECTION section Door popping open.)

PANEL TILT

If the consumer complains that the upper panel is setting at angle, bumpers can be added to the bottom of the panel frame to hold it away from the trim frame.

A side tilt condition is usually an installation fault. The panel can be positioned into the top slot on one side and the bottom on the other side causing a tilt. Repositioning the panel into the brackets correctly will solve this problem. Also, the top of the trim frame is adjustable 1 1/2 inches to match the soffit. The panel moves with this section since the brackets holding the panel are attached to the adjustable section. If the panel appears slanted slightly, the top of the trim frame can be adjusted accordingly.

TOP TRIM FRAME - BLACK PLASTIC

Black plastic was added to the top trim frame starting with production in June 1993 to cover the galvanized metal and other parts that are visible at the top above the panel. Part number WR49X0360 for 42 inch and part number WR49X0361 for the 48-inch models are available. No part is available for early 36 inch models but black tape can be added to the top of unit to cover the galvanized area.

UPPER PANEL - TOP GAP - 1 1/2 inch

A gap at the top of the upper panel is required for all **ZIS36,42, & 48-INCH** models due to the airflow pattern through the condenser and across the compressor. If a condition exists where the consumer has had decorative panels made especially for the product which disturbs or restricts the air movement, serious damage could occur to the compressor. It is recommended that the consumer be made aware of this condition.

HINGES - FIXED CASE

All case hinges are fixed and set with fixture gages. Accordingly, the **hinges** are not adjustable. Although the hinges are not adjustable, the **nutstrip** holding the hinges in place can be moved slightly. The only thing holding the nutstrip in place is the foam. Therefore, the bottom FF/FRZ and top FF hinges can be forcibly adjusted slightly. To adjust, loosen front 3 screws and 1 rear screw, and tap the hinge to move the nutstrip, tighten screws. Tighten the screws to 55-75 in lbs torque.

DOOR NOISE - 1/4" PANEL SPACERS

A consumer complaint of door noises or a rattling front panel may be due to the installer not putting in the door spacers. The doors should have adhesive backed spacers added to the doors before the panels are put into place. The spacers are needed to hold the Lexan/Plywood panels securely. The spacers must be evenly spaced on the door surface prior to sliding in the panels. (See Installation Instructions for details.) Without the spacers the panels will vibrate. The spacers are shipped from the factory in the vegetable pan. The 36 inch model has 20 spacers, the 42 inch models has 24 spacers, and the 48-inch model uses 28 spacers.

WATER VALVE - INLET TUBE LEAK

The water valve comes with a copper tube attached to the water valve for connection to the inlet supply line.

It has a wire tie to keep the installer from moving the tube connection at the nut. If the wire tie is removed and the tube allowed to hang free, it will become loose at the connection and possibly leak. Water valve leaks are a major problem due to the floor damage that occurs. The technician should always check the water valve and connection prior to replacing the valve.

NOISE - GURGLE

Occasionally a gurgle noise can be heard after the freezer door has been opened for about 15-45 seconds and then closed. The warm air is cooling as explained in DOORS HARD TO OPEN paragraph and creates a vacuum. The vacuum that is created not only pulls on the door but also any opening to the atmosphere. The drain tube is a natural place to pull air but since it has a water barrier, the vacuum pulls against the water and as it is being released, produces the gurgling sound. This is not a functional problem but the consumer may complain that the sound is objectionable . This will require an explanation to customer that this is a normal sound. Again, this will be diminished as the food load in the refrigerator increases.

TEMPERATURES - FREEZER BASKET LOWER PART OF FREEZER WARM.

This condition is usually caused from a package or packages pushed to the rear of the freezer just below the freezer air outlet and blocking the air. The blockage will result in a short cycle of the temperature control aggravating the problem. Advise the consumer to move packages away from the air vent or raise the shelf just above the vent so packages will not be pushed underneath it.

This also applies to the fresh food section. All of the shelves have a vertical barrier at the rear of the shelf to prevent items from being pushed to the extreme rear and closing off the airflow space.

ALL MODELS

DAMPER CONTROL OPERATION

The operation of the damper control can be tested by holding an ice cube in contact with the exposed end of the capillary. The damper should slowly close in response to the cold temperature of the ice cube. Then, by grasping the end of the capillary by hand, the damper should open.

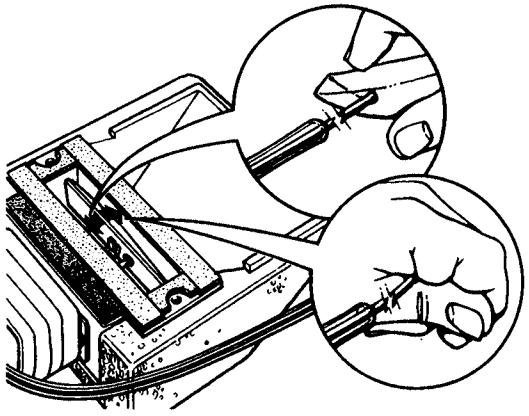


Figure 50 - Testing Movement of Damper

DRAIN TUBE MISALIGNMENT

An unusual amount of water in the bottom of the fresh food compartment may be due to a loose or misaligned drain tube. The defrost water will drip down the fresh food air return duct rather than into the drain pan. Very clear, clean water will accumulate at the bottom of the fresh food air return louvers and on the compartment floor. After several defrost cycles, this drain water will accumulate and drain out the bottom of fresh food liner and onto the floor. Reposition the drain tube on the drain spout and seal around it with permagum.

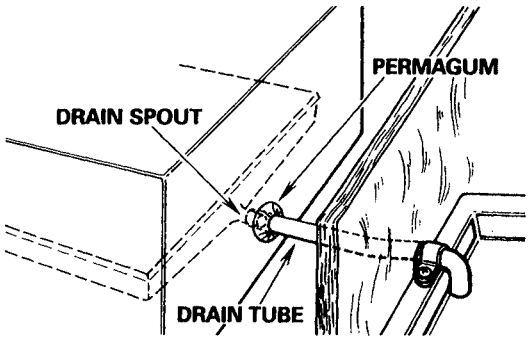


Figure 51 - Drain Tube Location

DOOR GASKET SCRUBBING

Doors staying open, can sometimes be caused by a door gasket scrub condition on the hinge side of the door. Door gasket scrubbing at the hinge side can be corrected with an application of paraffin wax. Rub a piece of pure paraffin on the sealing surface of the gasket - from top to bottom (once or twice) - to uniformly coat the gasket with a film of wax.

Paraffin wax is preferred over petroleum jelly, because it lasts longer between applications and is less noticeable when applied.

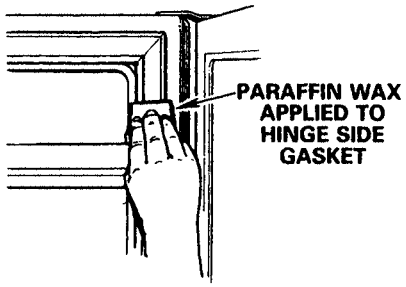


Figure 52 - Applying Paraffin Wax

A scrubbing condition can eventually cause the sealing surface of the gasket to fold over and bind the door - preventing it from closing and/or sealing. If this occurs:

1 Warm the entire length of the gasket with a heat gun. (Due to the intense heat from the heat gun, care must be taken to avoid melting the gasket.)

2 Reform the gasket to its original position while it is warm.

3 After the gasket has cooled, coat the gasket sealing surface with paraffin wax.

4 Check for a smooth wiping action as the door is closed and opened.

5 Advise the customer that the wax is necessary to keep the gasket from binding and should not be removed.

DOOR MITERS

Occasionally, the door miter will not be sealed completely or the door gasket may have pulled away from the corner slightly. In either case, the area should be sealed with RTV sealer. Using WX06X0101 Clear, or WX06X0200 white sealer, seal around the corners of the door gaskets and in the corner miters of the door.

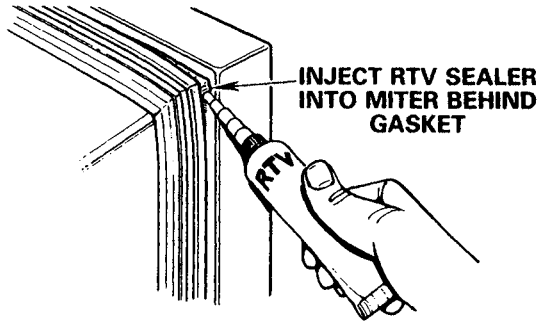


Figure 53 - Sealing the Door Miters

GRILLE SCRATCHES - TOUCH-UP PAINT

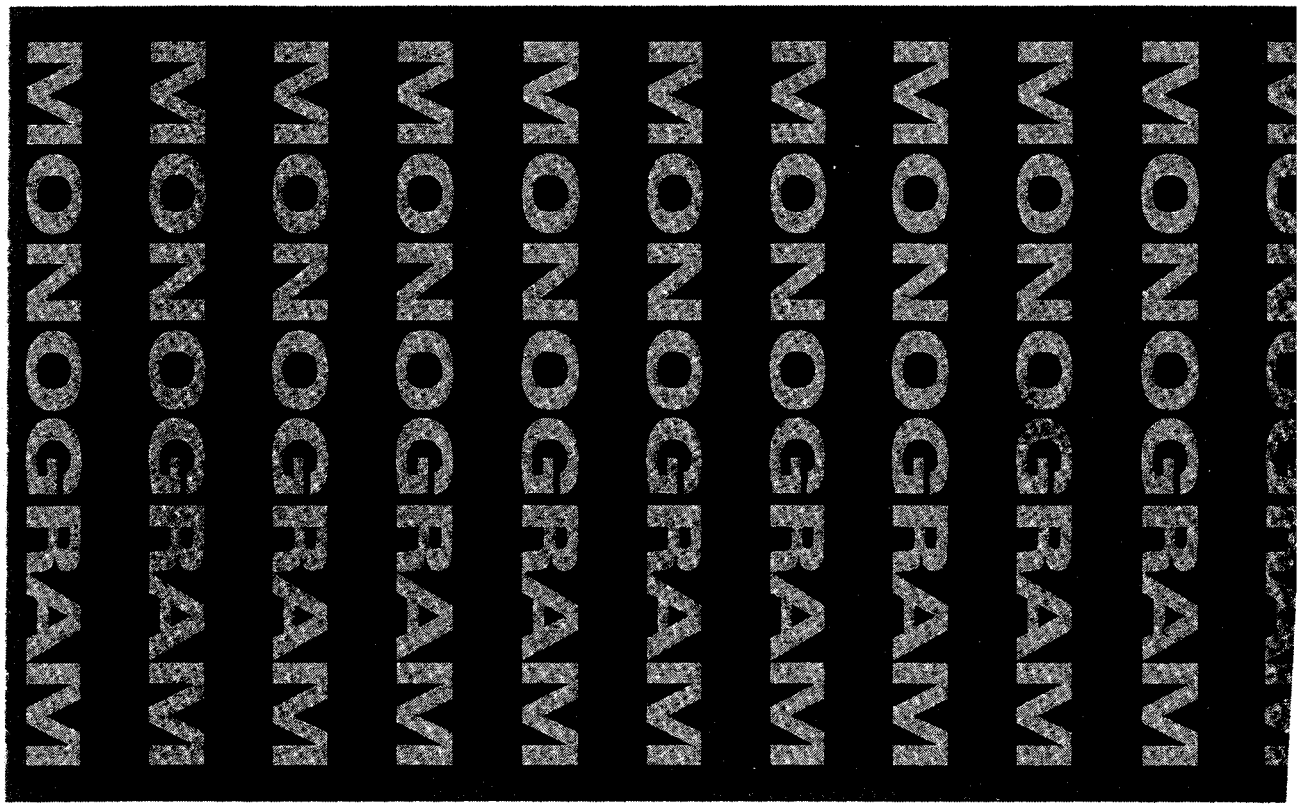
Touch-up paint which matches the gray color of the Monogram Front Grille is available in a small applicator bottle.

The **WR97X0242** touch-up paint is packaged in a bottle with a thin brush applicator cap. Clean and dry the area where the paint is to be applied for proper adherence to the surface. Vigorously shake the bottle before

opening to mix the paint thoroughly. Once the cap is removed, the paint can be applied directly to the surface of the grille.

Figure 54 - WR97X0242 Grille Touch-up Paint

NOTES



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