



**ELECTROMECHANICAL AND  
ELECTRONIC ICE CUBER  
SERVICE MANUAL**

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*A Tradition of Excellence In Ice Equipment.*

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# Key to Model Numbers-Electronic Cubers

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**GB**

**4**

**01**

**W**

**HK**

**Cube Size**

C = Full Cube (1-1/4" x 1-1/4" x 1-1/4")  
HK = Half Cube (5/8" x 1-1/4" x 1-1/4")  
K = Cubelet (5/8" x 5/8" x 1-1/4")

**Condenser Type**

A = Air Cooled Condenser-Self Contained  
W = Liquid Cooled Condenser-Self Contained  
R = Remote Air Cooled Condenser

**Electrical Characteristics/Refrigerant**

01 = 115 Volt-60 Hz.-1 Ph. (R-12)  
02 = 115-208/230 Volt-60 Hz.-1 Ph. (3-Wire) (R-12)  
03 = 208/230 Volt-60 Hz.-1 Ph. (R-12)  
04 = 208/230 Volt-60 Hz.-1 Ph. (R-502)  
05 = 208/230 Volt-60 Hz.-3 Ph. (3-Wire) (R-502)  
06 = 200 Volt-60 Hz.-1 Ph. (R-12)  
07 = 230 Volt-50 Hz.-1 Ph. (R-12)  
08 = 380/230 Volt-50 Hz.-3 Ph. (5-Wire) (R-502)

**Electronic Cuber Series**

3 = 300 Series (3/4 HP)  
4 = 400 Series (3/4 HP)  
5 = 500 Series (1 HP)  
6 = 600 Series (1-1/2 HP)  
10 = 1000 Series (2 HP Nominal)  
12 = 1200 Series (2 HP Nominal)

**Cabinet Width**

GB = Horizontal Unit (42" Wide)  
GT = Slimline Unit (28-1/2" Wide)

# Key to Model Numbers-Electro-Mechanical Cubers

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**GB 1 A N 4 HK E**

|  
**Electronic**  
**Cube Size**

C = Full Cube (1-1/4" x 1-1/4" x 1-1/4")  
 HK = Half Cube (5/8" x 1-1/4" x 1-1/4")  
 KK = Half Cube (5/8" x 1-1/4" x 1-1/4")  
 K = Cubelet (5/8" x 5/8" x 1-1/4")

**Ice Production Per 24 Hours (Nominal)**

64 = 75 lbs. w/40 lb. Storage Bin Included		
1 = 110 lbs. w/65 lb. Storage Bin Included		
2 = 200 lbs.	6 = 600 lbs.	10 = 1000 lbs.
3 = 300 lbs.	7 = 700 lbs.	11 = 1000 lbs.
4 = 400 lbs.	8 = 800 lbs.	12 = 1200 lbs.
5 = 500 lbs.	9 = 900 lbs.	16 = 1600 lbs.
		20 = 2000 lbs.

**Code Letter**

NSF = National Sanitation Foundation Listed  
 D = 115/230 Volt-60 Hz.,-3-wire, NSF Listed  
 5 = 500 Series (1 HP)

**Condenser Type**

A = Air Cooled Condenser-Self Contained  
 W = Liquid Cooled Condenser-Self Contained  
 R = Remote Air Cooled Condenser-Precharged  
 X = Remote Air Cooled Condenser

**Compressor Horsepower Rating**

0 = No Condensing Unit	3 = 1/3 HP	6 = 1/5 HP
1 = 1 HP	4 = 14,000 BTU	7 = 3/4 HP
2 = 11,000 BTU	5 = 1/2 HP	8 = 3/4 HP

**Machine Type**

GB = Horizontal Unit, Mounts on a Bin (42" Wide)  
 GT = Slimline Unit, Mounts on a Bin (28-1/2" Wide)  
 GY = Self Contained Compact Unit (30" Wide)  
 GS = Self Contained Compact Unit (24" Wide)  
 IS = Self Contained Dispenser (31-1/4" Wide)

# Installation Specifications

## 60 Hertz Electronic Cubers

MODEL	HP	MINIMUM CIRCUIT AMPACITY	MINIMUM INCOMING WIRE SIZE	FUSE/HACR BREAKER SIZE (AMPS)	
				NORMAL	MAXIMUM
GT301A	3/4	22.7	10	25	35
GT301W	3/4	17	12	20	25
GT401A/GB401A	3/4	25	10	25	40/35
GT401W/GB401W	3/4	18	12	20	25
GT401R/GB401R	3/4	20.9	10	25	35
GT402A/GB402A	3/4	16	12	20	20
GT402W/GB402W	3/4	15	14	15	20
GT402R/GB402R	3/4	16.9	12	20	25
GB503A	1	14.4	14	15	20
GT503W/GB503W	1	13.3	14	15	20
GT503R/GB503R	1	12.2	14	15	20
GB603A	11,000 BTU	20	12	20	30
GT603W/GB603W	11,000 BTU	15	14	15	20
GT603R/GB603W	11,000 BTU	18.9	12	20	30
GB903/1003W	14,000 BTU	17	12	20	25
GB903/1003R	14,000 BTU	19.3	12	20	30
GB1204W	27,600 BTU	28.2	10	30	45
GB1204R	27,600 BTU	28.2	10	30	45
GB1205W	22,500 BTU	17.8	12	20	30
GB1205R	22,500 BTU	17.9	12	20	30
IS401A	3/4	30	10	30	40
IS401W	3/4	23	10	25	30
IS503W	1	15	14	15	20
GY3A	1/3	15	14	15	15
GY3W	1/3	15	14	15	15
GT7A	3/4	22.7	10	25	35
GT7W	3/4	17	12	20	25

**NOTE:** Maximum Branch Circuit Fuse or HACR type Circuit Breaker size is dependent on the size of the conductors supplying the Ice Maker. They must be no less than the minimum ampacity rating and no more than "Maximum" rating on the nameplate.

Supplement fuses (installed on the Ice Maker) do NOT provide primary protection and may be sized as required for continuous operation without nuisance blowing, up to the indicated nameplate "Maximum" rating to compensate for ambient conditions.

**SPECIAL NOTE:** Wire sizes on this chart are good up to 80 feet.  
 Anything 80 feet to 150 feet increase wire 1 size.  
 Any runs 150 feet to 250 feet increase the wire 2 sizes.

## Installation Specifications

### Water Levels, Pressures, Cycles and Charges (higher than average temperatures increase pressures and cycle times)

Model Cube Size	GB1200			GB903/GB1000			GB600/GT600		
	C	HK	K	C	HK	K	C	HK	K
Full Water Level Distance below top of tank	2-5/8"	2-3/4"	3-1/2"	2-5/8"	2-3/4"	3-1/2"	2-5/8"	2-3/4"	3-1/2"
Suction Pressure after Defrost	55-60 psig			20 psig			20 psig		
Suction Pressure before Defrost	10-15 psig			0-2 psig			0-2 psig		
Defrost Pressure	70 psig max. with CPR valve		100-110 psig	55 psig max. with CPR valve		40-60 psig	40-60 psig		
Cycle Times (approximate)	19 min.	17 min.	11 min.	27 min.	22 min.	15 min.	21 min.	17 min.	12 min.
Refrigerant Charge <b>Remotes (R)</b> see note below	3 lbs.			3 lbs.			3 lbs.		
Refrigerant Type	R-502			R-12			R-12		
Approximate lbs. of ice per batch	15 lbs.	14 lbs.	8 lbs.	15 lbs.	14 lbs.	8 lbs.	7-1/2 lbs.	7 lbs.	4 lbs.
Compressor Size	GB1205: 22,500 BTU TXV controlled GB1204: 27,600 BTU TXV controlled			14,000 BTU TXV controlled			11,000 BTU TXV controlled		

Model Cube Size	GB500/GT500/IS500			GB400/GT400/IS400			GT300		
	C	HK	K	C	HK	K	C	HK	K
Full Water Level Distance below top of tank	2-5/8"	2-3/4"	3-1/2"	2-5/8"	2-3/4"	3-1/2"	2"		3"
Suction Pressure after Defrost	15-20 psig			20-25 psig			11-13 psig		
Suction Pressure before Defrost	0			3 psig			0		
Defrost Pressure	40-60 psig			40-60 psig			40 psig		
Cycle Times (approximate)	26 min.	20 min.	13 min.	28 min.	25 min.	14 min.	28 min.	21 min.	15 min.
Refrigerant Charge <b>Remotes (R)</b> see note below	3 lbs.			3 lbs.			13 oz. GT301A 10 oz. GT301W		
Refrigerant Type	R-12			R-12			R-12		
Approximate lbs. of ice per batch	7-1/2 lbs.	7 lbs.	4 lbs.	7-1/2 lbs.	7 lbs.	4 lbs.	3-3/4 lbs.	3-1/2 lbs.	2 lbs.
Compressor Size	9,800 BTU TXV controlled			6,800 BTU TXV controlled			6,800 BTU cap. tube controlled		

**NOTE:** Remote condenser application cubers require a total minimum charge of 10-1/2 lbs. GB1200 series cubers use R-502, all others use R-12.

◆ For maximum fuse size check electrical rating plate on left rear of cuber.

# Operational Components

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## Kold-Draft® Electronic Cuber Construction

### Skins

The skins consist of the top, left end, back, right end panels and front inspection panel.

### Condensing Units

Varies with each model. For compressor size and charge, refer to the **Water Levels, Pressures, Cycles and Charges** Chart on the previous page.

### Evaporator

The GB series Full Cube (C) evaporator is made up of 108 cells, 1-1/4" each way. The Cubelet (K) evaporator is made up of 216 cells, 1-1/4" x 1-5/8" x 5/8" deep. The Half Cube (HK) evaporator is made up of 216 cells, 5/8" x 1-1/4" x 1-1/4" deep. The material is copper and the entire assembly is tinned, preventing corrosion and making its use acceptable to any sanitary board. A seal is not required between the evaporator and water plate, normally there is an approximately 1/32" clearance between them. Refer to Water Plate-Evaporator Alignment for adjustments.

**Note:** GT300 evaporators contain 1/2 the number of cells of a GB evaporator.

### Refrigerant Control

1. Thermostatic expansion valves are used on all GB and IS models and GT400, GT500 and GT600 models. For replacement of the valve, consult the Parts Price List for type of expansion valve. It has been regulated properly on test before being shipped, to give minimum superheat and maximum flooding of the evaporator and should not require adjustment.

Sometimes after shipping or storage, the expansion valve sticks and allows **more refrigerant to pass than necessary, increasing the low side pressure and** temperature, thus excessive frostback and a long cycle. If this condition does not correct itself during the second cycle, it will be necessary to adjust the superheat on the expansion valve, closing the valve clockwise 1/8 to 1/4 turn to increase superheat, reducing the suction pressure and preventing frostback. If valve hunts (varies suction pressure up and down) more than 2 to 3 lbs. when suction pressure is below 13 lbs., it indicates that the valve should be opened more.

2. The GT300 series are capillary systems and do not have an expansion valve.

### Water Plate

The water plate is made of approved plastics and is used to distribute the water through jet holes into the freezing cells of the evaporator, and also to return water through two drain holes in each cell in the water plate. On the front of the water plate is a control stream, that should be set at the base of the dam once the water fill is complete. Backing the screw out increase the flow. At the end of a cycle when cubes are virtually frozen there is an increasing water pressure in the system causing the stream to rise and go over the dam dumping dreg water.

### Circulation Tank

The circulation tank is secured to the bottom of the water plate. It serves as a reservoir to hold enough water to make one batch of ice.

## Operational Components

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### **Circulation Strainer**

The circulation strainer has a large screen inserted in the tank outlet to prevent dirt or particles of precipitated mineral from clogging the jet holes or the control stream. It also protects the pump impeller. If the screen becomes clogged with precipitated minerals, it is advisable to clean the whole circulation system with ice machine cleaner.

### **Water Pump**

The water pump is a centrifugal type, direct with sealed bearings that require no lubrication. The inlet tube is at the bottom of the water circulation tank, and the outlet at the top of the pump is connected to the header of the water plate.

### **Water Level Probe Assembly (GBR-03170)**

This probe is connected to the main water circulation tank by means of flexible tubing. The height of water in the probe assembly indicates the height of water in the circulation tank. Thermistor probes determine water valve on/off levels. Refer to the **Water Levels, Pressures, Cycles and Charges** chart for the correct setting per model for the upper probe. The bottom probe is positioned so that 15-30 seconds after the water flows over the dam on the control stream box on the water plate, the water level is below the glass tip and harvest is initiated.

### **Pump and Defrost Switch**

A spring loaded switch is mounted in the control box. It controls the defrost circuit and water pump, and is operated by an adjustable screw in the lift plate attached to the water plate. As the water plate closes after defrost, the adjustable screw lifts up and makes contact with the pump switch to cut one connection to the defrost circuit and start the circulation water pump.

### **Water Inlet Valve**

The water inlet valve is mounted in front left of the freezing compartment and controls the rate of flow of water into the water tank when the cuber is filling. It is a constant flow type requiring a minimum 15 psi. An external "Y" type strainer is used with the valve. For pressures over 100 psi or if there is water hammering, a pressure regulator should be used.

### **Actuator Motor and Cam Assembly**

The assembly is located just to the right and front of the evaporator. The actuator motor drives the cam shaft directly and is reversible. A cam on each end of the shaft forces the water plate down, separating the water plate from the ice in the evaporator. The two springs on the cams pull the water plate up at the end of the defrost cycle, and hold the water plate against the bottom of the cams during the freeze cycle. To prevent the water plate from opening after current has stopped flowing to the actuator motor, a drift stop spring with a plastic end (GBR-00965) presses against the actuator motor shaft, on the front of the motor. If the drift stop is not aligned with the motor shaft it can be removed easily and bent into shape.

### **Evaporator Probe (GBR-03176)**

Resistance values of the probe change due to temperature changes on the evaporator. These changes are transmitted to the printed circuit card and allows one probe to perform three functions; 'cold water control', 'actuator control' and 'overheated evaporator cut out'.

1. COLD WATER CONTROL opens the hot gas valve during the fill cycle when the evaporator cools to 45° F. (red L.E.D. shines bright on P.C. card). The hot gas



## Operational Components

will shut-off when the water fill is complete or when the evaporator warms to 50° F. (red L.E.D. off or dimly lit).

2. ACTUATOR CONTROL resets cold when the evaporator reaches 26° F. (orange L.E.D. shines bright) and will send power through the actuator toggle switch to the actuator motor at harvest. It also sends power to the actuator motor when the evaporator warms to 40° F. after harvest, to return the water plate (orange L.E.D. off).
3. OVERHEAT TEMPERATURE FUNCTION shuts the cuber down when the evaporator temperature reaches 140° F., should the hot gas valve stick open. It will re-energize the cuber when the evaporator cools to 120° F.

### Bin Probe (GBR-03177)

The bin probe is mounted to a flexible probe holder on the ice chute or through a bracket in the bin. Its resistance values change with temperature fluctuations at the probe tip due to the proximity of ice. These changes are transmitted to the Bin Control on the P.C. card and turn the ice maker on or off.

#### To Set Bin Control

1. Do not attempt to set the Bin Control while the unit is filling with water. The P.C. card has a circuit to fill the water tank before shutting off on "Full Bin Condition".
2. Once the water fill is complete, hold ice to the tip of the probe. The ice maker should shut off in 15-30 seconds. If longer, adjust the bin potentiometer on the P.C. card slowly counter-clockwise until the unit shuts off.
3. After the ice maker stops, remove the cubes from the probe tip. The ice maker should start within one minute, if the ambient air is above 50° F.

The bin probe is a standard length, but when stacking units check the chart below to determine whether a stacked cuber will require a bin probe extension (GBR-03240) in addition to the bin probe (GBR-03177) to reach into the bin.

GBR-03177 Probe & GBR-03240 Extension
GBR-03177 Probe & GBR-03240 Extension
GBR-03177 Probe & GBR-03240 Extension
GBR-03177 Probe
GBR-03177 Probe
Any Kold-Draft® Bin

GBR-03177 Probe & GBR-03240 Extension
GBR-03177 Probe & GBR-03240 Extension
GBR-03177 Probe & GBR-03240 Extension
GBR-03177 Probe
T-100 Crusher
Any Kold-Draft® Bin

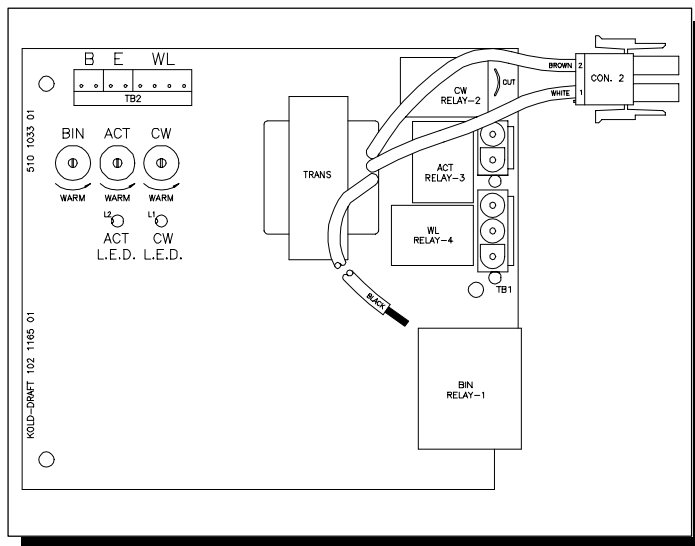
# Operational Components

## Printed Circuit Card

GBR-03135-02 type P.C. cards have been used since August, 1980. Refer to Engineering Bulletin #10-80 for pre-August, 1980 details, but note that all of the older P.C. cards should have been updated with retrofit kits offered by the factory after August, 1980.

GBR-03135-02-E P.C. cards replaced the GBR-03135-02 from October, 1982 through December, 1990.

Since January, 1991, we have been providing 102 1165 01 as a replacement for both GBR-03135-02 and GBR-03135-02-E P.C. cards. To replace a GBR-03135-02 card, a GBR-03122 wiring adapter kit is required.

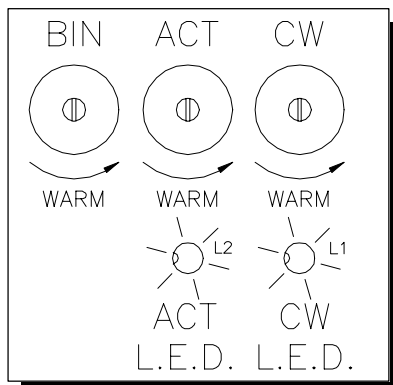


### TB2 (upper left of P.C. Card)

1. B: Pins 1 and 2, location of bin probe which turns the cuber on and off according to ice demand.
2. E: Pins 3 and 4, location to connect evaporator probe which relays evaporator temperature to P.C. card, allowing card to set to the cold or warm side, the cold water control, actuator control and thermal over temperature protector.

3. WL: Pins 5, 6, 7 and 8, location to connect water level probes, which turn the water inlet valve on and off (W). It initiates harvest when water falls below the lower probe (L) when actuator control is set cold.

### Adjustable Potentiometers and L.E.D.'s (located beneath TB2)



1. Bin Potentiometer: Adjustment to turn unit off on contact of bin probe with ice in 15-30 seconds, provided the water fill is satisfied.
2. Actuator Potentiometer: Adjust to raise water plate 15-30 seconds after ice harvest.
3. Cold Water Potentiometer: Adjustment to open hot gas valve should evaporator cool to 45° F. during water fill cycle.

## **Operational Components**

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4. Cold Water L.E.D. (red): Illuminates when the evaporator is colder than 45° F. Off when CW control is set at 50° F. or above.
5. Actuator L.E.D. (orange): Illuminates when the evaporator temperature is colder than 26° F. Off when actuator control is set warm at 40° F. or above.

### **Bin Relay (lower right corner of P.C. Card)**

On P.C. cards made since January, 1984, this relay is replaceable, should it ever fail.

### **Output Sockets and Relays 2, 3 & 4 (upper right corner of P.C. Card)**

The connections for output supply from the P.C. card to the small motors and valves when sequenced by the relays.

### **Transformer (upper center of P.C. Card)**

The same P.C. card is used on all Electronic cubers. The transformer has 2 leads (brown and white) attached to a plug which mates to a plug from the front wire channel. On 115 volt ice makers, the plugs mate white-to-white (brown open on transformer plug). On 208/230 and 115/230 (3 wire) volt ice makers, the plug mate brown-to-brown (white open on transformer plug).

## Sequence of Operation

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With the Electronic cuber mounted to a bin, the water turned on, the electricity connected and the wash switch in the 'ON' position, we can follow through one complete cycle.

The bin, actuator and cold water controls are set to the warm side (L.E.D.'s 'OFF'-dimly lit). The water plate is in the 'UP' position. The pump and defrost switch is held up by the lift bolt on the water plate energizing the pump. The water inlet valve is open and the evaporator is cooling. The water level in the main water tank is rising and the corresponding water level is indicated in the water level probe assembly. Water is being pumped from the bottom of the circulation tank into the header at the left end of the water plate, through the lateral tubes under each row of cells, through the squirt holes in the center of each cell. The water stream hits the top of each cell then cascades down the 4 sides of each cell and returns to the main water tank through drain holes on each side of the squirt hole. When enough water to make one batch is in the main water tank and the water level probe assembly, water will touch the upper thermistor probe and the water inlet valve shuts off. The control stream at the front left corner of the water plate should be flowing at the base of the dam. The screw at the inlet of the control stream may be adjusted to obtain a proper setting.

When the evaporator temperature reaches 45° F. the evaporator thermistor probe signals the P.C. card to set the cold water control 'cold' (red L.E.D. 'ON'-comes on bright).

The evaporator continues to cool, at 32° F. minute layers of ice form on the top and the 4 sides of each cell. As this process continues, the water level will decrease in the main water tank and the water level probe assembly.

**NOTE:** When the circulating water reaches a temperature of 32° F., it MAY be supercooled and it MAY partially crystallize in the water tank. If this occurs, the flow of water in the control stream nozzle will stop or fluctuate considerably and most of the circulation will stop for about 30 seconds. This is STRICTLY A NORMAL OPERATION AND THE CONTROL STREAM SHOULD NOT BE ADJUSTED AT THIS TIME.

When the evaporator temperature reaches 26° F., the evaporator thermistor probe signals the P.C. card to set the actuator control 'cold' (orange L.E.D. 'ON'-comes on bright).

The water continues to freeze until each cell is almost completely full of ice. As the ice comes closer to the jet stream in the center of each cell, the head pressure in the water plate increases, causing the control stream to rise and flow over the dam in the control stream box. This water will be dissipated to the drain pan, lowering the level in the water level probe assembly. Within 15-30 seconds the water will leave the bottom thermistor probe and expose it to air.

The harvest cycle is initiated, every circuit in the system is simultaneously engaged. The hot gas valve opens sending hot gas to warm the evaporator. The water inlet valve opens and the water rinses the water plate. The actuator circuit is energized through the actuator control, through the actuator toggle switch to the actuator motor, causing the actuator motor to turn counter-clockwise and separate the water plate from the evaporator. When the water plate opens approximately one inch the pump and defrost switch drops, turning the water pump off. The pump switch now completes a second

## Sequence of Operation

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circuit to the defrost valve to keep it open during the harvest cycle. The actuator motor shaft continues to turn a 1/2 turn revolution until the trip lever on the actuator motor snaps the actuator toggle to the right and breaks the actuator circuit stopping the actuator motor in the down position.

As the evaporator warms, the cubes on the left edge of the evaporator slide out of the evaporator and rest on the water plate. There is a small fin connecting the bottom of the cubes together so that they will come down in unison and clearing the water plate, slide into the bin where they will break apart.

After the ice is out of the evaporator, the evaporator and the evaporator thermistor probe warm up rapidly. When the evaporator probe senses a temperature between 40°-45° F., its resistance change signals the P.C. card and the actuator control sets 'warm' (orange L.E.D. 'OFF'-dimly lit) and completes the circuit from the defrost circuit to the reversing side of the actuator toggle switch and actuator motor.

**NOTE:** The actuator control does not start the defrost cycle; it only ends it after the ice falls out. The motor revolves clockwise raising the water plate. When the water plate is almost closed, the lift bolt on the water plate pushes up the pump and defrost switch lever starting the pump and breaking one circuit to the hot gas valve. The water plate continues to the full 'UP' position when the actuator toggle arm will snap the actuator toggle to the left causing the actuator motor to stop. When the evaporator temperature reaches 50° F., the cold water control will switch to the warm side shutting off the hot gas valve (red L.E.D. 'OFF'-dimly lit). When the water level is high enough to touch the upper thermistor probe, it breaks the circuit to the water plate.

**NOTE:** Should some ice cubes be left on the water plate, keeping it partially open when the water plate comes up, the actuator motor will continue to operate and the springs will stretch to allow the cams to take their vertical position and snap the actuator toggle switch. Since the lift plate cannot push up the defrost switch, the circuit is complete through this switch to the stop 'up' side of the actuator toggle switch. When the actuator toggle arm snaps the actuator toggle switch to the stop 'up', the actuator motor will immediately reverse itself and open the plate allowing the captive ice to fall off. When the plate is in the open position, the actuator toggle arm will again reverse the actuator toggle switch and the actuator motor and cause the plate to close. This will continue until the water plate is clear and the lift plate can push up the defrost switch, breaking the circuit through this switch to the stop 'up' side of the actuator toggle switch, so that the motor will stop with the cams up when the actuator toggle arm pushes the actuator toggle to the stop 'up' position.

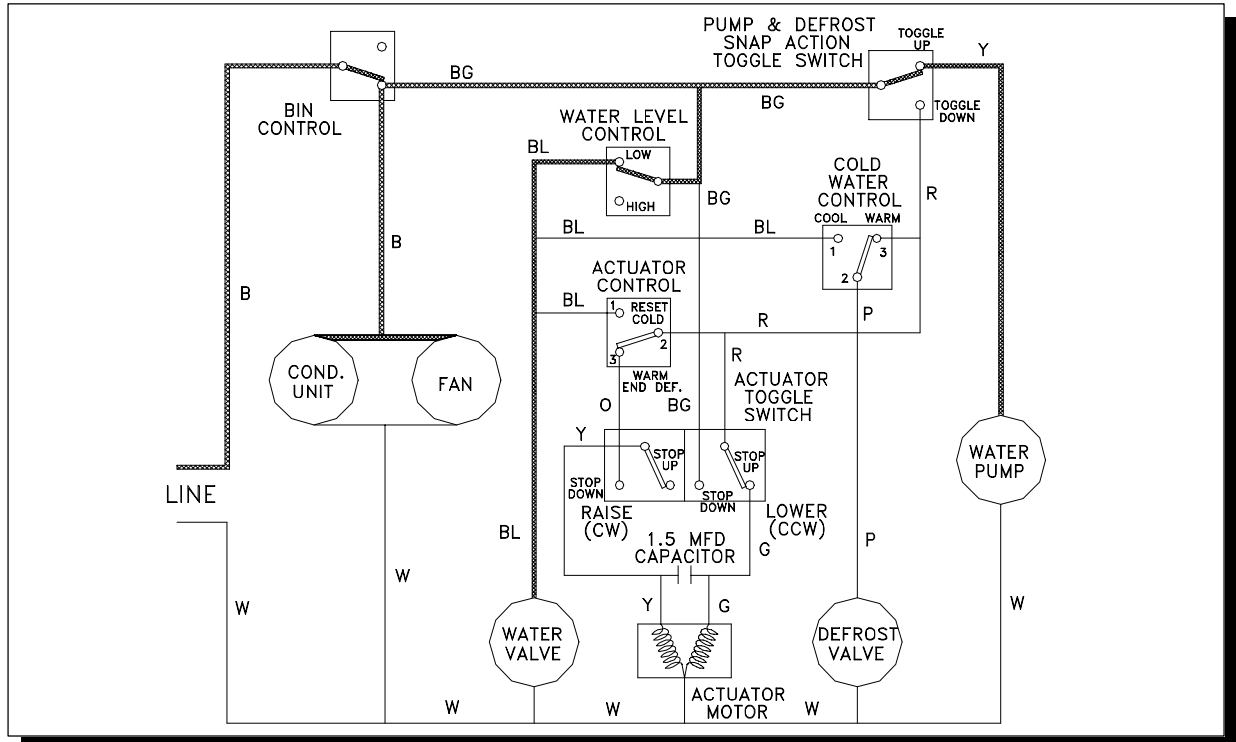
The ice maker has now completed its full cycle and started another freezing cycle. This will be regularly repeated until the bin is full and the bin control shuts off the ice maker automatically. When some ice is removed from the bin, the ice maker will start up and refill the bin.

# Electrical Circuits

The schematic wiring diagrams, provided on these pages, show the flow of electric current at several steps in the operation of the ice maker. The **dark** lines show current flow on all wiring diagrams. Following the diagrams is a description of the operation specifically related to the circuits that are used at each step. These circuits apply to all electronic and electromechanical ice makers built since 1964 and to those ice makers in the field which have been revised to the 1964 wiring.

'EC' refer to Thermostatically controlled ice makers

'EEC' refer to Electronically controlled ice makers

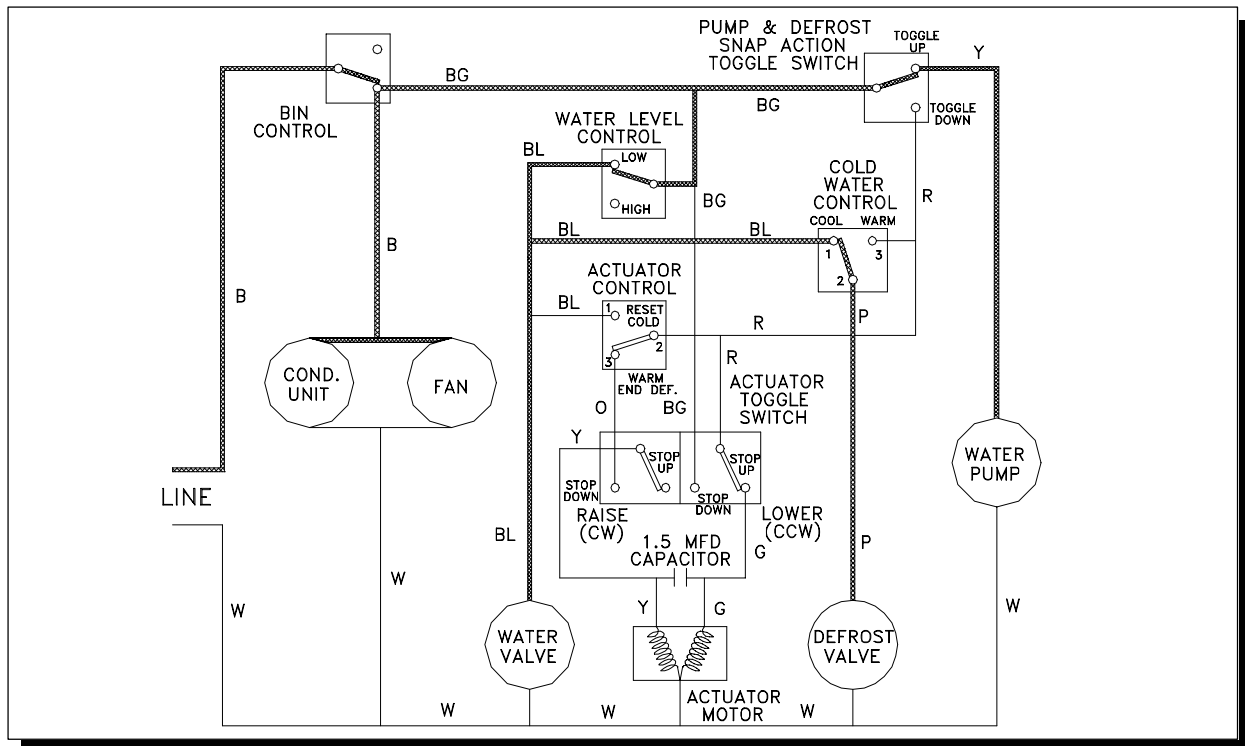


## Water Fill

**EC1:** Water fill (circulating water above 45° F.) - Current to condensing unit, water pump and water valve. Water filling circulation tank and control tank. Water pump circulating water through water header, distribution laterals and jet holes to individual evaporator cells. Evaporator is cooling water (approximately 2 minutes).

**EEC1:** Water fill (circulating water above 45° F.) - Current to condensing unit, water pump and water valve. Water filling circulation tank and water level probe assembly. Water pump circulating water through water header, distribution laterals and jet holes to individual evaporator cells. Evaporator is cooling water (approximately 2 minutes).

## Electrical Circuits



### Water Fill

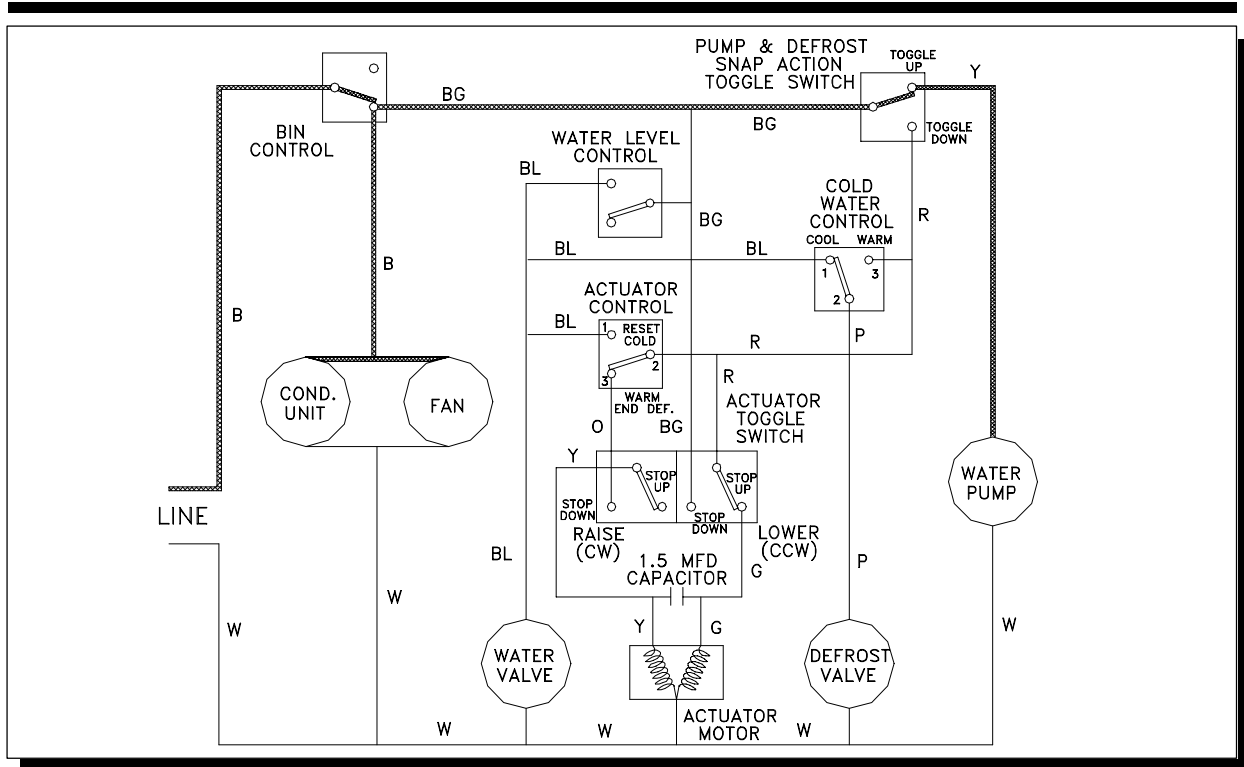
**EC2:** Water fill (ice maker with cold water thermostat-circulating water below 40° F.) - Current to condensing unit, water pump, water valve and through blue circuit through cold water thermostat, pink circuit to defrost valve. When the incoming water is cold and the compressor can cool the water below 40° F. during the 'Fill Cycle', the cold water thermostat will switch to the cool side connecting the pink and blue circuits giving power to the defrost valve allowing hot gas from the compressor to go through the evaporator warming up the circulating water. GS models have no cold water thermostat.

**EC2a:** Water fill (ice maker with cold water thermostat-circulating water warms up to 50° F.) - If the water warms up to 50° F. before the water fill is complete and the weight control switch drops, the cold water thermostat will switch to the warm side shutting the defrost valve and the compressor will start to cool the water again.

**EEC2:** Water fill control (circulating water below 40 to 45° F.) - Current to condensing unit, water pump, water valve and through blue circuit through cold water thermostat, pink circuit to defrost valve. When the incoming water is cold and the compressor can cool the water below 40° F. during the 'Fill Cycle', the cold water thermostat will switch to the cool side connecting the pink and blue circuits giving power to the defrost valve allowing hot gas from the compressor to go through the evaporator warming up the circulating water.

**EEC2a:** Water fill control (circulating water warms up to 50 to 55° F.) - If the water warms up to 50° F. before the water fill is complete and water touches the top thermistor water level probe, the cold water control will switch to the warm side shutting the defrost valve, and the compressor will start to cool the water again. A red L.E.D. is mounted on the printed circuit card below the cold water control potentiometer as a service aid. It is on (bright) when the cold water control is in the cold position.

# Electrical Circuits



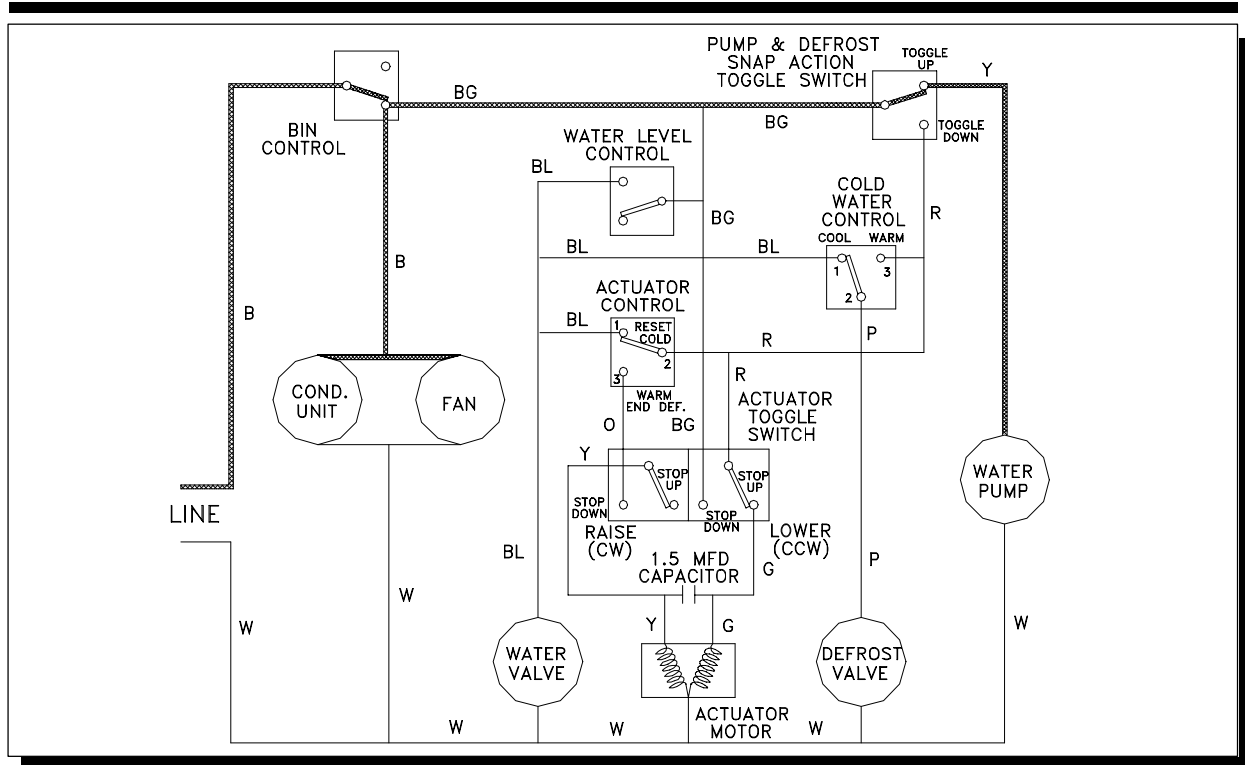
## Start of Freeze Cycle

**EC3:** Tanks full, weight switch drops (freeze cycle evaporator above 20° F.) - Sufficient water is in the circulation tank and control tank so that the weight of the water in the control tank pulls the weight control switch down shutting the water valve. If the cold water thermostat is still on the cool side and the circulating water is still being warmed as the weight control switch drops, this switch cuts off power to the blue circuit and through the cold water thermostat to the defrost valve shutting the defrost valve. Water level should settle in the control tank at a preset distance below the top of the main circulation tank. (Refer to the **Water Levels, Pressures, Cycles and Charges** chart.) Current to condensing unit and water pump. Water freezing in cells. Springs hold water plate edges against bottom of cams. Cams and hinge leaves hold water plate approximately 1/32" from evaporator to adequate fin between the cubes.

**EEC3:** Tank and water level probe assembly full-freeze cycle evaporator above 26° F. - Sufficient water is in the circulation tank and water level probe assembly so that water touches the top thermistor probe and the water valve shuts off.



# Electrical Circuits

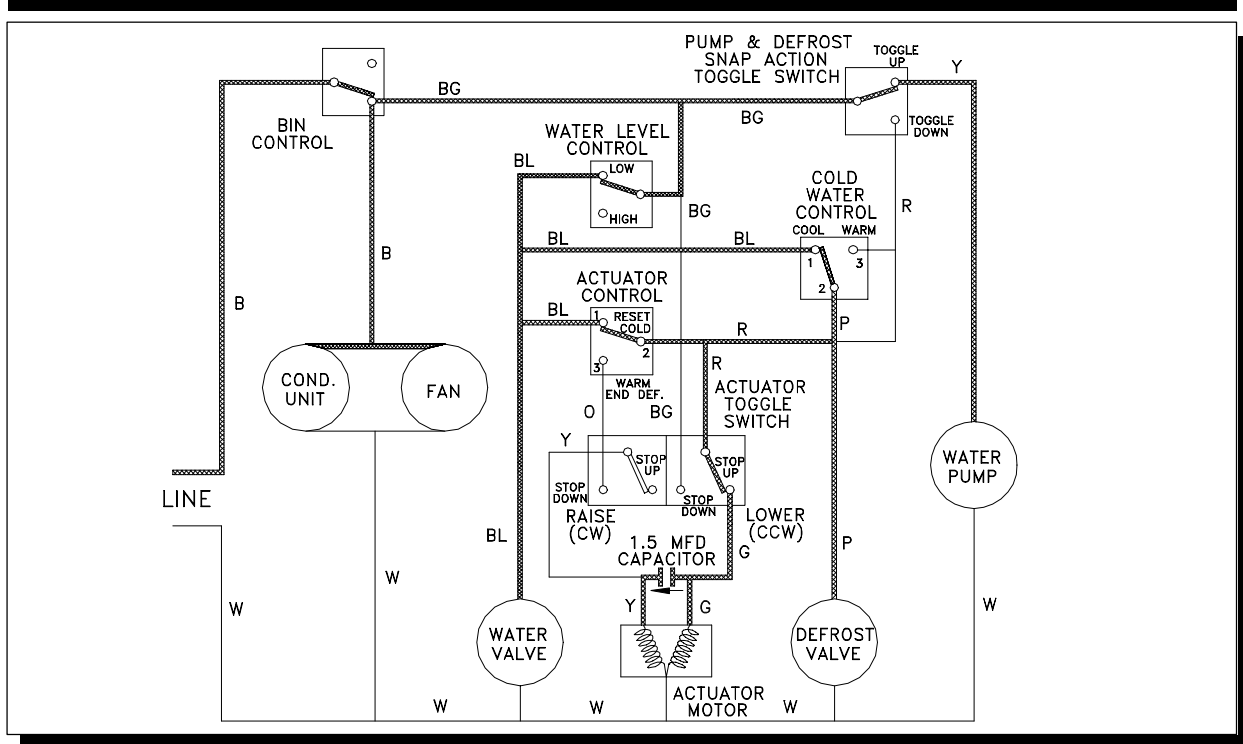


## Freeze Cycle

**EC4:** Freeze cycle with evaporator below 20° F. - During the freeze cycle, the evaporator and the actuator thermostat get cold enough (approximately 20° F.) to reset the actuator control ready for the next defrost cycle. The particular time when this happens is unimportant since the water control stays off and prevents defrost until the cubes are full and the water is used up, and there is no change in the current flow at this step. During this period the water is being used up in the formation of ice and the water level drops slowly in the circulation tank and the water level probe tube.

**EEC4:** Freeze cycle with evaporator below 26° F. - During the freeze cycle, the evaporator and the thermistor probe get cold enough (approximately 26° F.) to reset the actuator control ready for the next defrost cycle. The particular time when this happens is unimportant since the water control stays off and prevents defrost until the cubes are full and the water is used up, and there is no change in the current flow at this step. During this period the water is being used up in the formation of ice and the water level drops slowly in the circulation tank and the water level probe tube. An orange L.E.D. is mounted on the printed circuit card below the actuator control potentiometer as a service aid. It is on (bright) when the actuator control is in the cold position.

# Electrical Circuits

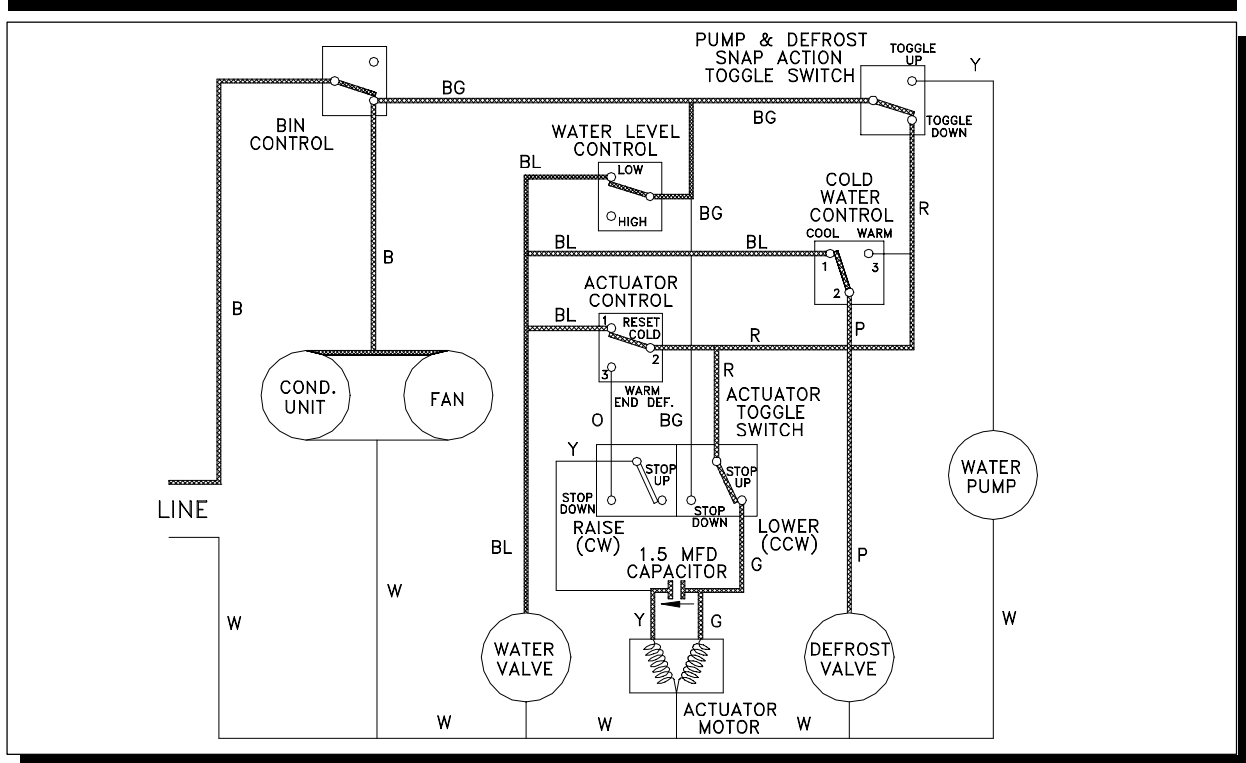


## End of Freeze Cycle- Start of Defrost

**EC5:** Start of defrost - Cubes are full and some have almost frozen over jet holes forcing some of the remaining water faster through the control stream over the control stream dam, lowering the water level rapidly in the control tank until it is light enough for the weight control switch to snap up. Current flows to condensing unit, water pump, through the weight control switch and the blue circuit to the water valve, also from blue through the actuator thermostat, first connection is complete to the red defrost circuit. From red, current flows through the actuator toggle switch giving 115 volts on the gray actuator motor circuit; current through the capacitor which changes phase and boosts the voltage to 200 volts on the yellow actuator motor circuit giving counter-clockwise rotation. Current from the blue circuit flows through the cold water thermostat to the pink circuit and defrost valve. Cams start rotating counter-clockwise pressing on the cam brackets on the water plate to release it from the ice (approximately 15 seconds). The open defrost valve allows hot refrigerant gas from the compressor to go through the evaporator coil to start releasing the cubes.

**EEC5:** Start of defrost - Cubes are full and some have almost frozen over jet holes forcing some of the remaining water faster through the control stream over the control stream dam, lowering the water level rapidly in the water level probe assembly until the bottom thermistor probe is exposed to air and trips the water level control on in 5-20 seconds. Current flows to condensing unit, water pump, through the weight level control and the blue circuit to the water valve, also from blue through the actuator control, first connection is complete to the red defrost circuit. From red, current flows through the actuator toggle switch giving 115 volts on the gray actuator motor circuit; current through the capacitor which changes phase and boosts the voltage to 200 volts on the yellow actuator motor circuit giving counter-clockwise rotation. Current from the blue circuit flows through the cold water control to the pink circuit and defrost valve. Cams start rotating counter-clockwise pressing on the cam brackets on the water plate to release it from the (approximately 15 seconds). The open defrost valve allows hot refrigerant gas from the compressor to go through the evaporator coil to start releasing the cubes.

# Electrical Circuits

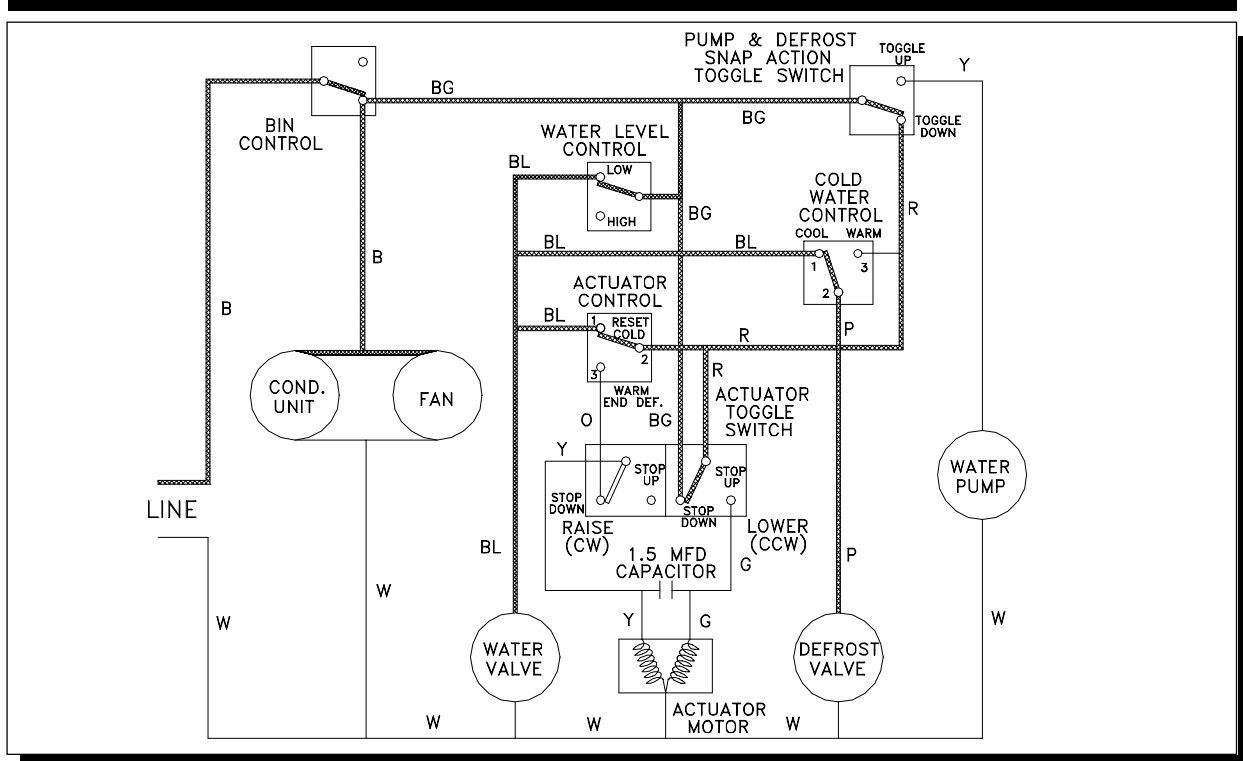


## Defrost

**EC6:** Water plate lowering - The pump and defrost switch lever drops, stopping the pump and completing the second connection to the red defrost circuit. The actuator motor and cams continue to rotate counter-clockwise lowering the water plate. The open water valve allows water to begin rinsing off the water plate. Current to the condensing unit, actuator motor, water valve and defrost solenoid (approximately 20 seconds).

**EEC6:** Same as EC6

# Electrical Circuits

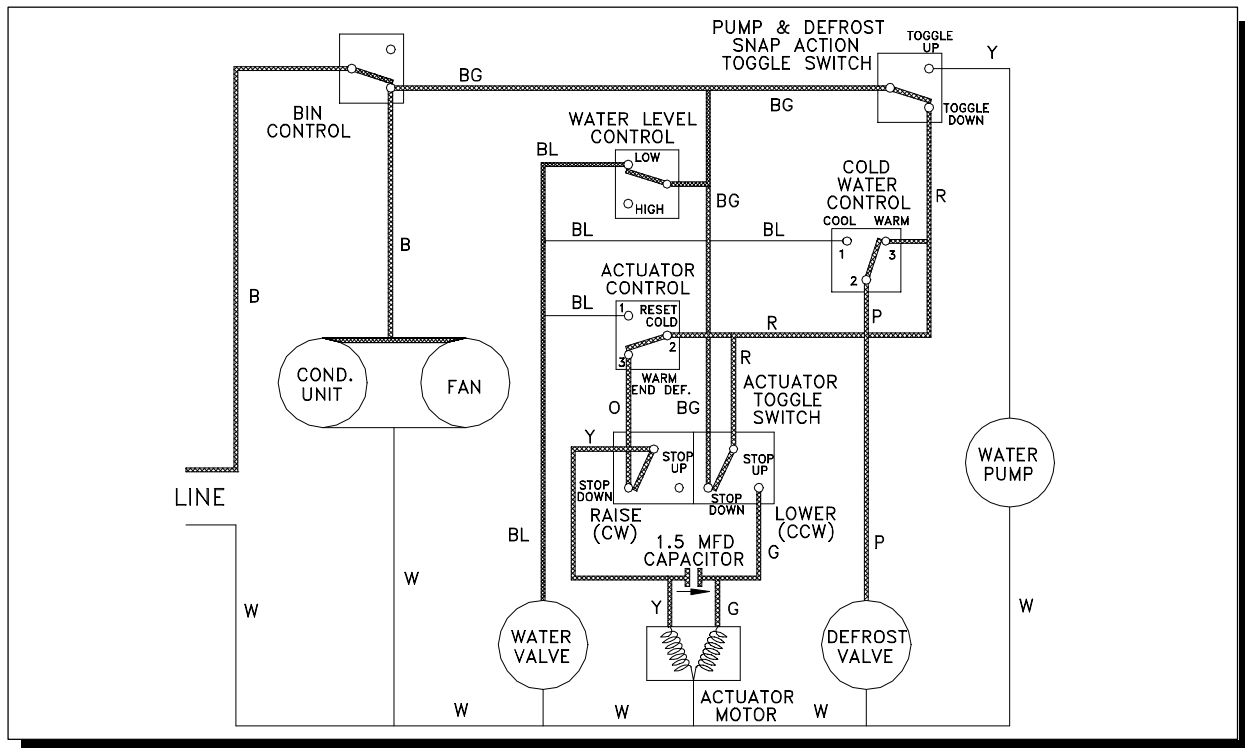


## Defrost

**EC7:** Defrost - Water plate is wide open and actuator toggle rod on the actuator motor coupling pushes the actuator toggle switch to the left, stopping the motor with the water plate in the 'down' position and completing the third connection to the red defrost circuit. Current to the condensing unit, water valve and defrost solenoid. Excess water concentrated with minerals, drains from the water tank. Freshes water washes water plate and tank. Hot refrigerant gas continues flowing through the evaporator releasing the ice slowly. Edge of the evaporator and actuator thermostat bulb remain cool (32 to 35° F.) as long as ice remains in the evaporator (approximately 2 to 4 minutes depending on ambient and hot gas temperature). Ice releases on the left side first and rests on the water plate, then the ice falls out substantially all at one time as the fin between cubes tends to hold them together until they drop into the bin. After ice falls out, the side of the evaporator warms up rapidly to 45° F. (approximately 30 seconds). The actuator toggle pushed left also completes yellow/orange circuit but with no power in the orange circuit, the actuator motor gets no power during the defrost period.

**EEC7:** Defrost - Water plate is wide open and actuator toggle lever on the actuator motor rear shaft pushes the actuator toggle switch to the right, stopping the motor with the water plate in the 'down' position and completing the third connection to the red defrost circuit. Current to the condensing unit, water valve and defrost solenoid. Excess water concentrated with minerals, drains from the water tank. Freshes water washes water plate and tank. Hot refrigerant gas continues flowing through the evaporator releasing the ice slowly. Edge of the evaporator and evaporator probe remain cool (32 to 35° F.) as long as ice remains in the evaporator (approximately 2 to 4 minutes depending on ambient and hot gas temperature). Ice releases on the left side first and rests on the water plate, then the ice falls out substantially all at one time as the fin between cubes tends to hold them together until they drop into the bin. After ice falls out, the side of the evaporator warms up rapidly to 45° F. (15-30 seconds). The actuator toggle pushed right also completes yellow/orange circuit but with no power in the orange circuit, the actuator motor gets no power during the defrost period.

# Electrical Circuits

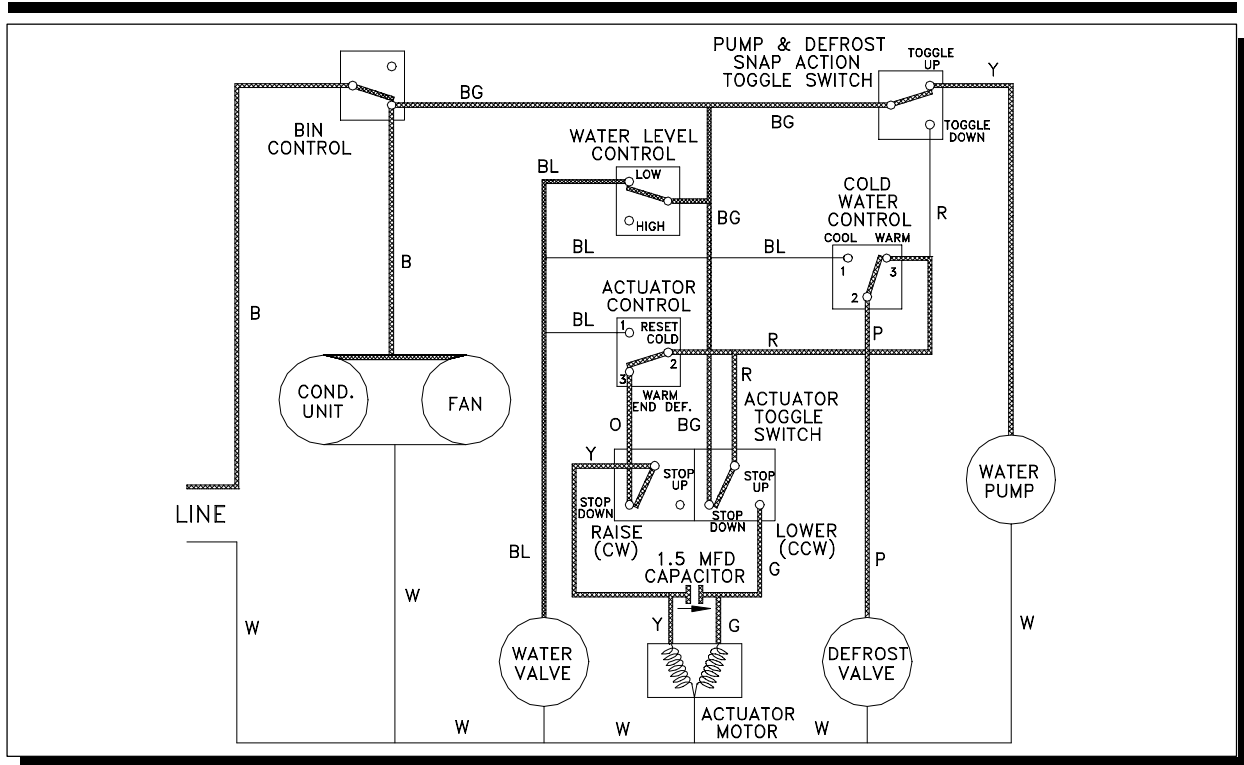


## End of Defrost-Water Plate Starts Closing

**EC8:** Water plate starts closing - Warm actuator thermostat bulb on the side of the evaporator switches actuator thermostat from cold position disconnecting the first circuit to red; the current from black/green to the red circuit continues through the actuator toggle and pump toggle switches. The actuator thermostat switching to the warm position completes the red/orange circuit and through the actuator toggle gives 115 volts to the yellow winding on the actuator motor. The capacitor changes the phase and boosts the voltage to 200 volts to the gray winding of the motor to give clockwise rotation. Cams rotating clockwise pull up the springs and water plate. Current to condensing unit, defrost water valve and actuator motor (approximately 20 seconds). The cold water thermostat bulb on the edge of the evaporator will warm up at about this time or during closing and switch the cold water thermostat to the warm side connecting the red to the pink circuit; since red is energized, the defrost valve stays open.

**EEC8:** Water plate starts closing - Warm evaporator probe on the side of the evaporator switches actuator control from cold position disconnecting the first circuit to red; the current from black/green to the red circuit continues through the actuator toggle and pump toggle switches. The actuator control switching to the warm position completes the red/orange circuit and through the actuator toggle gives 115 volts to the yellow winding on the actuator motor. The capacitor changes the phase and boosts the voltage to 200 volts to the gray winding of the motor to give clockwise rotation. Cams rotating clockwise pull up the springs and water plate. Current to condensing unit, defrost water valve and actuator motor (approximately 20 seconds). The cold water control will warm up at about this time or during closing and switch to the 'warm' side turning off the red L.E.D. Models with GBB-03135-02-E P.C. cards will turn off the hot gas valve at this time, regardless of the water plate position. Refer to model wiring diagrams for circuit details.

# Electrical Circuits

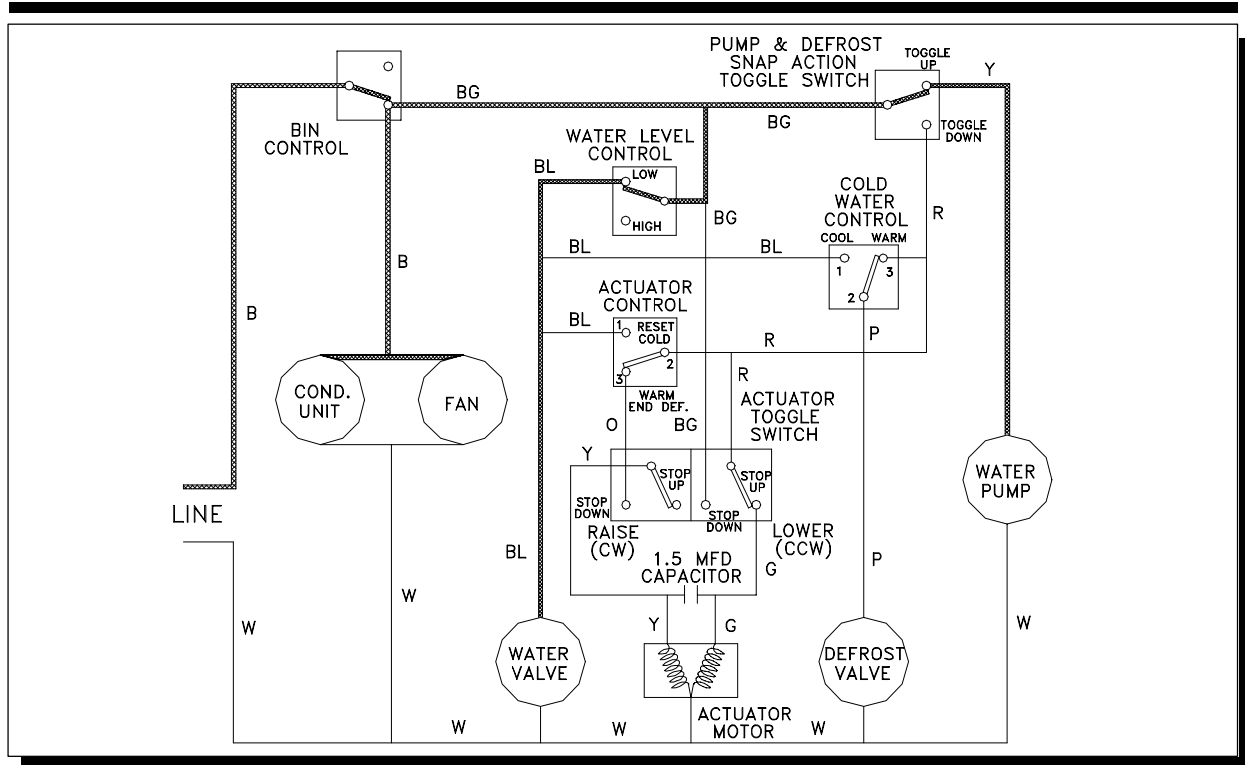


## End of Defrost-Water Plate Finishes Closing

**EC9:** Water plate almost closed - Lift plate pushes up the pump and defrost toggle switch, starting pump and disconnecting the second circuit to red, but current from black/green to red continues through actuator toggle switch. Current to all operating parts of the cuber. Water starting to fill the tank. Hot gas from the defrost valve keeps the evaporator warm to melt any small piece of ice that may be left on the water plate as it closes. Cams continue rotating to upright position (approximately 5 seconds).

**EEC9:** Same as EC9

# Electrical Circuits



## Start of New Cycle

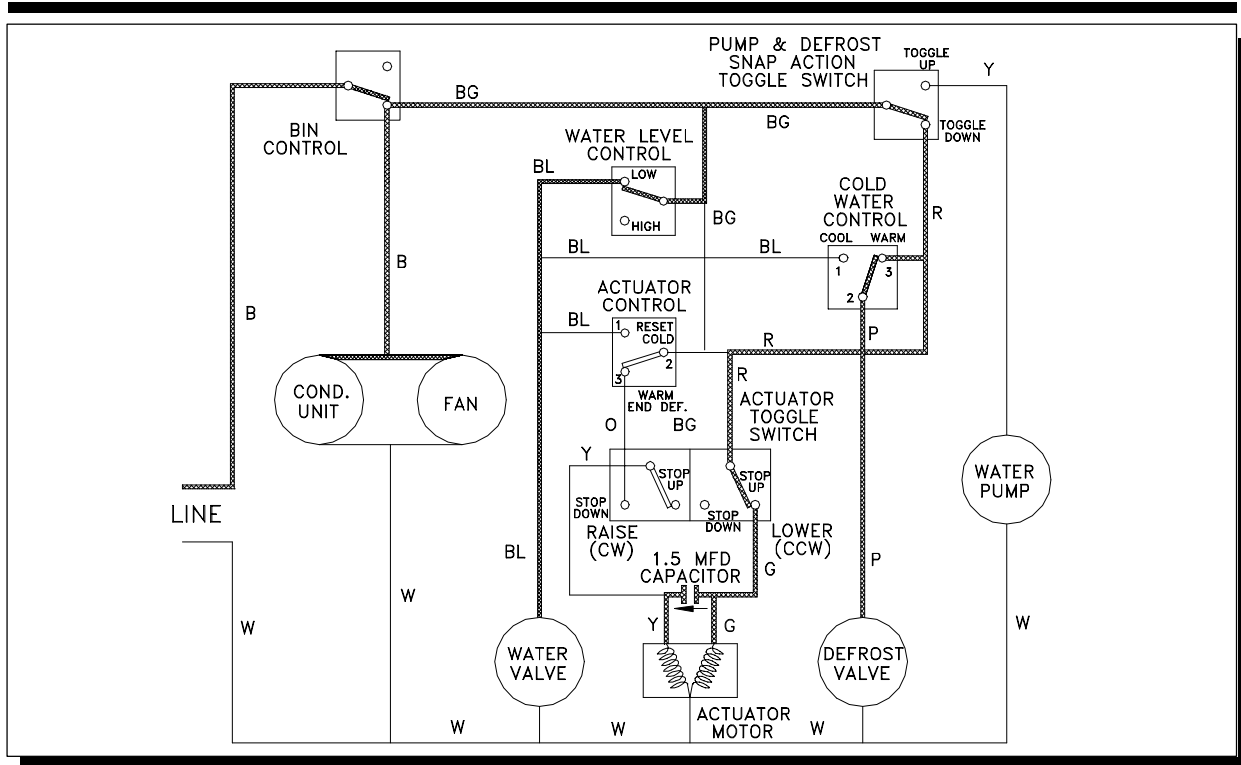
**EC10:** Water plate closed - End Defrost - Front cam in upright position pushes actuator toggle switch to the right disconnecting the third and final circuit to red, stopping the actuator motor with the water plate up and closing the defrost valve (cycle completed-same circuit as EC1 - Water fill). Current to condensing unit, water pump and water valve, cycle starts.

**EC11:** (Circuit not shown) - Bin full - Ice against bin thermostat tube opens bin thermostat shutting off all parts of the ice maker. When ice is removed, bin thermostat closes; ice maker will start up and operate regardless of what part of the cycle it was in when it was shut off.

**EEC10:** Water plate closed - End Defrost - Front cam in upright position pushes actuator toggle switch to the left disconnecting the third and final circuit to red, stopping the actuator motor with the water plate up and closing the defrost valve (cycle completed-same circuit as EC1 - Water fill). Current to condensing unit, water pump and water valve, cycle starts.

**EEC11:** (Circuit not shown) - Bin full - Ice against bin probe after water fill cycle is completed, opens bin control relay shutting off all parts of the ice maker. When ice is removed, bin control relay closes; ice maker will start up and operate regardless of what part of the cycle it was in when it was shut off.

# Electrical circuits



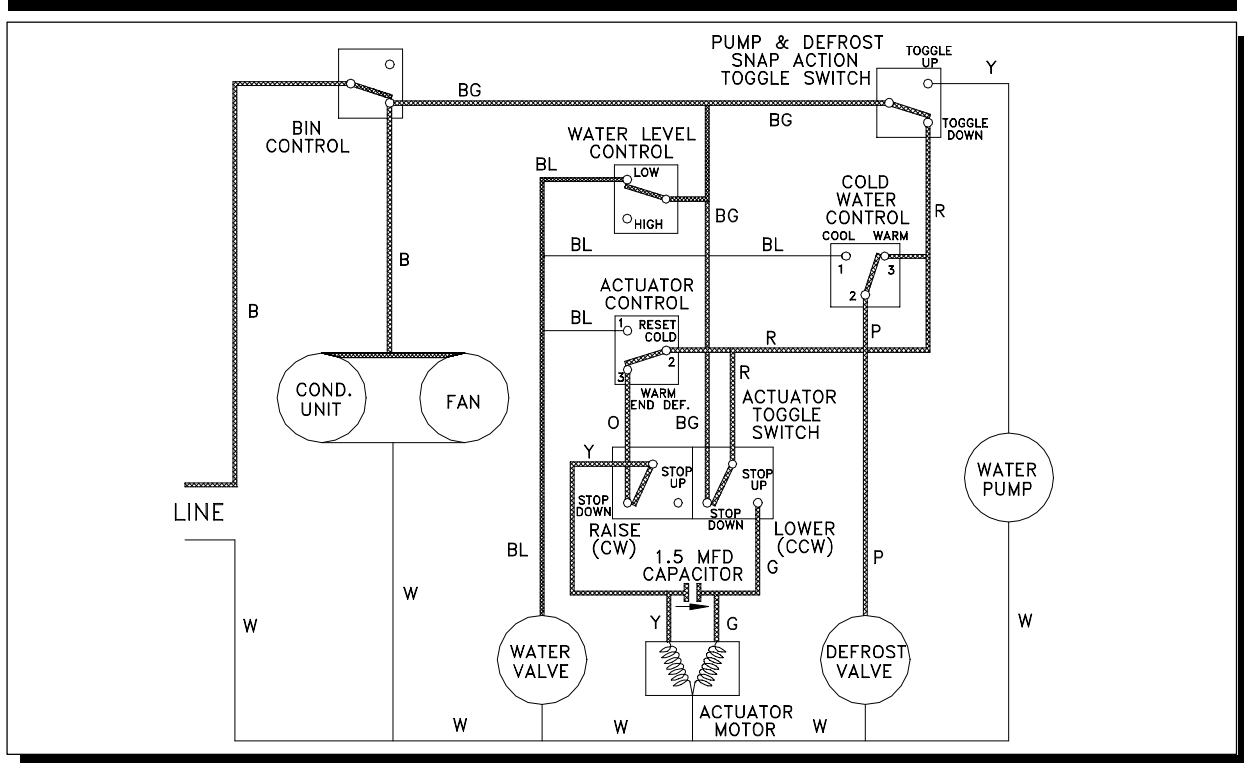
## Abnormal Opening of Water Plate

**EC12:** Abnormal opening of water plate - Sometimes a cube may stick to the water plate while it is closing (EC8) and by stretching the springs, prevents the water plate from closing enough to push the pump and defrost toggle switch up as it normally does (EC9). The circuit through the pump and defrost toggle switch will remain complete to the defrost 'red' circuit to the lowering (counter-clockwise) side of the actuator toggle switch so that, when the front cam pushes the actuator toggle switch to the right, the actuator motor will immediately reverse and, with cams rotating counter-clockwise, the water plate will re-open. Current to condensing unit, water valve and through the pump and defrost toggle switch to the actuator motor. Any other obstruction between the water plate and the evaporator can cause the same effect as a cube on the water plate. If the collar on the pump and defrost switch lift rod is set incorrectly so the switch will not go all the way up, abnormal opening will occur. Further, if the water level is set much too high and/or spring is unhooked, allowing the water plate to sag during the water fill so that the defrost switch goes down, the circuit will be completed to the actuator motor and the plate will open. Likewise, abnormal opening can be created during the water fill or the beginning of the freeze cycle if the water plate is pulled down by hand, stretching the springs until the pump and defrost switch goes down, completing the circuit to the actuator motor. This is done to rinse the ice machine after using ice machine cleaner. Opening by hand is also used to observe the jet streams by allowing the cams to go down to horizontal, then pushing up on the pump toggle rod. Further opening by hand allows a quick partial check of the weight control switch as the water drains from the control tank and the switch snaps up with a small amount of water left in the tank (during this check the the control tank tube, it must be a full 11" long to prevent binding between the control tank and the control stream box on the water plate).

**EEC12:** Same as EC12



# Electrical Circuits



## Water Plate Closing After Abnormal Opening

**EC13:** Water plate closing after abnormal opening - Since the evaporator and actuator control are warm during abnormal opening, a circuit is complete through the actuator control to the orange circuit of the actuator toggle switch. As soon as the water plate is wide open and the actuator toggle rod on the motor coupling pushes the actuator toggle switch to the left, the motor will immediately reverse and with cams turning clockwise, close the water plate.

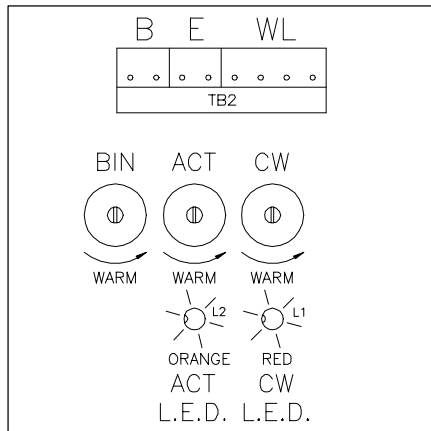
**EEC13:** Same as EC13

If the obstruction remains, EC12 and EC13 will repeat. If the obstruction is removed, such as the cube falling out, EC13 will be followed by EC9 and EC10 and normal operation will resume.

## Speedy Functional Tests

Without the use of special tools or testers, these tests can quickly determine any major faults with the control module P.C. card, probes, or functional components. A small screwdriver is required to fit the slots on the potentiometers.

**Before starting the test, be sure that there is power to the ice maker and check the fuses in the control module box and the supplemental line fuses (if installed).**



- A "Open" terminals simulate a 'Cold' signal to the P.C. card.
- B "Short" terminals simulate a 'Hot' signal to the P.C. card.
- C **Turn the wash switch to "Wash" to prevent compressor short cycling during tests.** To perform a speedy test, induce the following conditions on TB2.
- D A screwdriver may be used to short the pins.

B	E	W	L	H**	
Open	Open	Open	Open	Open	Cuber stops, Orange and Red L.E.D.'s ON bright
Short	Open	Open	Open	Open	Cuber runs, Orange and Red L.E.D.'s ON bright
Short	Short	Open	Open	Open	Cuber stops, Orange and Red L.E.D.'s OFF (may glow dimly)
Short	Open	Open	Short	Open	Harvest begins (allow plate to open fully), both L.E.D.'s ON bright
Open	Short	Open	Open	Open	Press relay #1 plunger*, water plate closes, both L.E.D.'s OFF or dim

\* If Relay #1 plunger is not accessible, **CAREFULLY** jumper the **CONTACTS** (B to B/G)

\*\* Used only with optional Status Indicator. See text for details if necessary.

### To Test Probes

- A The nominal resistance of all probes at +32° F is 5650 ohms. The only practical accurate method is to test resistance of the probe in ice water (as near to +32° F as possible). The ranges of acceptable resistances are :

Probe	Acceptable Range
Bin (GBR-03177)	5400-5900 OHMS
Evaporator (GBR-03176)	5530-5770 OHMS
Water Level (GBR-03170)	4650-6650 OHMS

- B To **ROUGHLY** test probes using the P.C. card, connect each probe in turn to the 'E' pins with all other pins left open. Turn the cold water potentiometer to mid-range (12 O'clock). A warm probe will turn BOTH L.E.D.'s 'OFF'. Submerging the probe in ice water will turn the RED L.E.D. 'ON'. Reaction time is 5-20 seconds. Be sure to return the cold water potentiometer to its original position after the probe tests.

## Trouble, Cause & Remedy

**Note:** Common to Electronic and thermostatically controlled cubers (regular type)  
 Electronic only (**bold type**)  
 Thermostatically controlled cuber only (*italicized type*)

TROUBLE	CAUSE/SYMPTOM	REMEDY
Cuber will not start	Line fuse blown	Check circuit for short or ground. Replace fuse.
	Bin full of ice	
	Open circuit in cord or feed wires.	Repair or replace.
	No money in meter if meter is used.	
	Room too cold (below 45 deg. F.)	Warm room. Consult factory for cold room application.
	Overheated evaporator.	Check defrost circuit.
	<b>Blown fuse on PC card.</b>	<b>Replace fuse.</b>
	<b>Bin probe disconnected or loose.</b>	<b>Install bin probe properly.</b>
	<b>Bin potentiometer in full counter-clockwise position.</b>	<b>Adjust clockwise (colder)</b>
	<b>Defective bin probe</b>	<b>Check probe resistance.</b>
	<b>Shorted evaporator probe.</b>	<b>Check probe resistance.</b>
	<b>Bin relay coil</b>	<b>A good coil has 100 ohms resistance. Replace if defective. Check wiring.</b>
Condensing fan operating but not the compressor.	<b>Defective PC card.</b>	<b>Test PC card.</b>
	Compressor stuck or defective.	Jar with mallet. Replace if defective.
	Defective capacitors or relay.	Replace capacitor or relay.
	Defective overload switch.	Replace overload switch or if internal, replace compressor.
	Open wash switch.	Switch to "Ice" position or replace if defective.
Compressor operating but not the condenser fan.	Open high or low pressure cut-out.	Check charge and condenser.
	Circuit not complete.	Check wiring.
Condenser fan operating, but the condensing unit is operating intermittently during the freeze cycle. Determine if the unit returns to normal operation at the end of the defrost cycle.	Fan motor defective.	Replace motor.
	Dirty condenser coil.	Clean coil.
	Low Voltage	Correct to proper voltage, not less than 5% below that stated on nameplate.
	Refrigerant overcharge	Reduce the charge
	<b>Fuse blown one leg of 3-wire electronic system.</b>	<b>Replace fuse.</b>

## Trouble, Cause & Remedy

TROUBLE	CAUSE/SYMPTOM	REMEDY
Compressor cuts out.	Defective run capacitor.	Run capacitor should draw 1 to 3 amps. GB2 & GB4, 4 amps.
	Open high or low pressure cutout.	Check refrigeration system pressure.
Water plate opens and closes constantly. Water plate closes all the way when cams are up, but defrost valve stays open and pump does not run.	Maladjusted pump & defrost switch.	<b>Adjust lift bolt on water plate to push switch lever up, closing the hot gas valve and starting the pump when the water plate is up.</b>
		<i>Adjust the lift rod collar to push the pump switch up, closing the hot gas valve and starting the pump when the waterplate is up</i>
	Water plate does not close all the way.	Remove any obstruction. Adjust hinge for proper water plate gap. Confirm that water plate brackets are tight against cams. Ckeck springs.
Water plate opens before water probe assembly tube or weight control tank is full.	Spring missing or springs weak, allowing water plate to lower slightly, as water fills tank, until the pump switch drops and the plate opens under power.	Replace springs.
	Drift stop not adjusted. Cams drift counter-clockwise until the water plate lowers enough to drop the pump switch.	Remove drift stop from the front of the actuator motor. Bend the spring for more tension on the motor shaft.
	Slow water fill.	Improve water supply. Clean strainer.
	<b>Orange and Red L.E.D.s bright on PC card.</b>	<b>Adjust cold water control on PC card. Test evaporator probe and PC card.</b>
	<i>Actuator thermostat out of adjustment or defective.</i>	<i>Adjust or replace actuator thermostat.</i>
Water plate will not completely close.	Obstruction between the evaporator and water plate.	Remove obstruction. Check clearance between the water plate and evaporator.
	<b>Lift bolt, for pump toggle on water plate, is too high, holding the water plate away from the cams.</b>	<b>Adjust lift bolt so the water plate comes up against the cams while the lift bolt holds the pump switch up.</b>
	<i>Collar on lift rod too low, holding the water plate away from the cams.</i>	<i>Adjust collar so the water plate comes up against the cams while the lift rod holds the pump switch up.</i>

## Trouble, Cause & Remedy

TROUBLE	CAUSE/SYMPTOM	REMEDY
Water plate closes before cubes drop.	<b>Actuator pot on PC card adjusted too cold.</b>	<b>Adjust to warmer position (ccw). Waterplate should remain down 10 to 30 seconds after ice drops.</b>
	<b>Faulty evaporator probe.</b>	<b>Test probe resistance.</b>
	<b>Faulty PC card.</b>	<b>Test PC card</b>
	<i>Actuator thermostat adjusted too cold.</i>	<i>Adjust to a warmer position (ccw). Water plate should remain down 10 to 30 seconds after ice drops.</i>
	Bent evaporator fins.	Straighten fins.
Water plate stays wide open after defrost and all ice is out of the evaporator	<b>Orange L.E.D. stays lit on PC card.</b>	<b>Adjust the actuator control slightly clockwise. Test the evap. probe and PC card.</b>
	<b>Orange L.E.D. is off, but no voltage to the yellow actuator motor lead.</b>	<b>Check wiring. Replace actuator toggle switch.</b>
	<i>No voltage to #3 (orange lead) of actuator thermostat.</i>	<i>Actuator thermostat adjusted too warm or bulb has lost charge.</i>
	<i>Voltage to #3 (orange lead) of actuator thermostat, but no voltage to yellow actuator motor lead.</i>	<i>Wiring loose or defective actuator toggle switch.</i>
Water plate open, but evaporator will not defrost.	Refrigerant charge low.	Check for leaks and recharge.
	Inadequate hot gas volume.	Check for tube obstruction or cold condenser.
	Defective hot gas valve.	Replace valve or coil.
	<b>Red L.E.D. is on.</b>	<b>Check voltage at defrost valve coil. If not 115 V. test PC card.</b>
	<b>Red L.E.D. is off.</b>	<b>Check evaporator probe and PC card.</b>
	<i>Cold water thermostat not making contact.</i>	<i>Tap cold water thermostat or short across pink and red leads. If defrost valve opens, change thermostat.</i>
Water pump does not operate.	Fuse blown in transformer box or in control module box.	Replace fuse
	Pump bearings defective.	Replace pump motor.
	Pump windings burned out or off on thermal overload.	Allow to cool, or replace motor. Check for 115 V., plus or minus 10%
	Circuit incomplete between water pump and pump-defrost switch.	Check circuit and switch.

## Trouble, Cause & Remedy

TROUBLE	CAUSE/SYMPTOM	REMEDY
Water pump motor running but not pumping water.	Impeller loose.	Replace impeller.
	Clogged strainer in tank outlet.	Clean or replace strainer.
	Impeller broken.	Replace impeller.
Most cubes not fully formed.	Water pump pressure too low	Check bearings. Check voltage. Replace pump.
	Clogged strainer in tank outlet.	Clean or replace strainer.
	Leak in water circulation system	Fix leak or replace water plate.
	Waterplate not aligned with evaporator.	Correct alignment.
A few cloudy cubes, others OK	Some holes in waterplate clogged.	Open holes with 1/16" drill. Flush laterals.
Holes in left side cubes.	Superheat too low.	Close TXV in 1/8 turn increments until corrected.
Holes in right side cubes.	Superheat too high.	Open TXV in 1/8 turn increments until corrected.
Holes in all cubes sometimes but solid cubes most of the time.	Power shut off while water is filling tank or temporary power loss near the end of the freeze cycle.	Correct power source.
	<b>Bin control turns cuber off during water fill.</b>	<b>Interlock between water fill control and bin control not operating. Check PC card.</b>
	<i>Bin thermostat turns cuber off during water fill.</i>	<i>This condition can happen occasionally on any cuber, but the frequency can be reduced by adjusting the bin thermostat warmer (counter-clockwise). The machine will then turn off more quickly when ice contacts the bulb. Test by applying ice cubes to the bulb tube. The machine should restart within five minutes.</i>
Holes in cubes all of the time. Control stream does not go over the dam at the end of the freeze cycle.	Water level too low.	Measure from the top edge of the water tank down to the water level in the water level control tube. Sight carefully across the water in the control tube. See "Chart of Water Levels, etc." Increase water level if required.
	<b>Lower water level probe too high.</b>	<b>Adjust water level probe to remain immersed in water in control tube at least 10 seconds after the control stream starts going over the dam.</b>

## Trouble, Cause and Remedy

TROUBLE	CAUSE/SYMPTOM	REMEDY
Holes in cubes all of the time. Control stream does not go over the dam at the end of the freeze cycle. (Continued from previous page.)	Leak in water system	Water dripping steadily off the circulation tank indicates a leak which should be located and repaired. Make sure all lateral plugs are in place.
Holes in all cubes. Control stream does go over the dam.	Control stream too high allowing water to splash over the dam during the freeze cycle.	Lower control stream. Turn adjusting screw clockwise.
Cubes will not harvest. Water plate will not come down.	Control stream obstructed.	Loosen adjusting screw to flush out foreign matter.
	Actuator motor problem.	Check motor and circuit.
	Warm air infiltration from compressor compartment or room.	A. Secure all skin panels. B. Skin gaskets must seal. C. All panels must seal to prevent air from the compressor compartment getting into the ice making compartment. Check top cover over the partition especially.
	<b>Orange L.E.D. does not come on.</b>	<b>Check evaporator probe resistance.</b>
	<b>Orange L.E.D. does not come on, but probe is good.</b>	<b>Test PC card.</b>
	<b>Inoperative lower probe.</b>	<b>Check water level probe connections. Test probe resistance. Test PC card.</b>
	<i>Control tank will not snap up</i>	<i>Adjust switch differential.</i>
	<i>Actuator thermostat out of adjustment.</i>	<i>Adjust slightly counter clockwise.</i>
	<i>Defective actuator toggle switch.</i>	<i>Replace switch.</i>
<i>Power supply has failed.</i>	<i>Restore power.</i>	
Cubes do not harvest in a slab. Some cubes hang up in the evaporator and become distorted.	Fin too thin.	Adjust waterplate hinges to 1/32" fin thickness.
	Deformed evaporator cells.	Straighten cells with smooth jaw pliers.
Slab does not break up into individual cubes.	Fin too thick.	Adjust hinges up or evaporator down. Leave 1/32" space between the waterplate and evaporator.

## Trouble, Cause and Remedy

TROUBLE	CAUSE/SYMPATOM	REMEDY
Unusually long cycles.	Voltage below required potential at the cuber.	Check power source for full voltage. Run minimum 12 GA. wire directly to the cuber to prevent line loss.
	Dirty condenser.	Clean condenser.
	Hot air leaks between condensing unit compartment and freezing compartment.	All skin panels must be tightly sealed.
	Expansion valve too far open.	Close TXV in 1/8 turn increments so that there is no frost back to the compressor and pressures are according to the "Chart of Water Levels, etc."
	Expansion valve too far closed with large holes in right side cubes.	Open TXV in 1/8 turn increments. Recheck to see that there is no frostback to the compressor at the end of the freeze cycle.
	Water level too high.	Adjust water level according to "Chart of Water Levels, etc."
	Refrigerant low.	Check for and repair leak. Add refrigerant as required.
	Compressor defective.	Replace compressor.
	Control stream too low.	Adjust control stream.
	Fan not operating.	Check fan wires, replace motor if necessary.
Some cubes do not form in the right side corners of the evaporator.	Spray holes at the ends of the laterals are frozen shut and will not thaw because of very low incoming water temperature.	Thaw out by shutting off unit and adjust the cold water control warmer (CCW). Adjust expansion valve 1/8 turn closed.
Ice freezes to water plate causing shear pins to break.	Water fill level too high.	Adjust fill level per "Chart of Water Levels, etc."
	Incorrect clearance between the water plate and evaporator.	Adjust water plate and/or evaporator as required.
	Misadjusted control stream.	Adjust control stream.
	Control stream will not go over dam at the end of the freeze cycle.	Cracked water plate causing pressure loss. Repair or replace water plate.
Water plates out of synchronization on GB4, GB903, GB1003 or GB1205 cubers.		See GB900/GB1000 section.



## Trouble, Cause and Remedy

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TROUBLE	CAUSE/SYMPTOM	REMEDY
Water valve stays closed.	Water level probe connector loose or dirty.	Clean connector and install properly. Low probe lead to right. Use NC123 or any electrical contact cleaner.
	Defective water probe assembly.	Check probe resistance.
	Circuits okay, 115 volts to water valve. Coil open. Flow control jammed or cockeyed.	Replace coil, clear valve passages or replace valve.
	Defective PC card.	Test PC card.
Water valve stays open after water covers the upper probe tip. Will not shut off.	Water level probe connector loose or dirty.	Clean connector and install properly. Low probe lead to right. Use NC123 or any electrical contact cleaner.
	Defective water probe assembly.	Check probe resistance.
	Defective PC card.	Test PC card.
	Water pressure below 15 P.S.I.	Increase water pressure to ice machine.
	Defective water valve.	Replace water valve.
Water valve stays open more than 5 seconds after water covers the upper probe tip.	Upper probe covered with scale.	Clean cuber with ice machine cleaner. If necessary, remove and clean probe carefully.

# Service and Troubleshooting

## GB900/GB1000/GB1200/GB4

These ice makers differ from other **Kold-Draft**<sup>®</sup> ice makers in that two ice making sections are refrigerated by one condensing unit. GB900/GB1000/GB1200 series are electronic versions of the GB4.

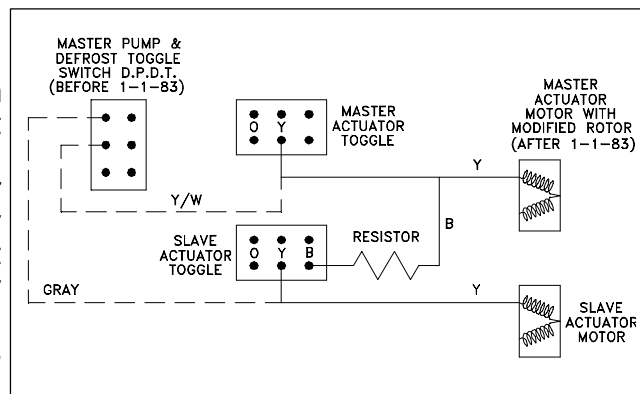
The upper ice making section, also known as the "master," contains the controls necessary to operate both sections simultaneously, while the lower or "slave" section contains only those switches required to operate the actuator motor and water pump, and to provide synchronization between the two water plates.

The GB4 uses an electrical synchronization system to ensure that both water plates are fully closed before the freeze cycle begins, and to prevent repeated false harvesting caused by "out of time" actuator motors.

There are two key parts in the synchronization system. A modified rotor in the top actuator motor to slow the motor by 5 seconds, and a resistor between the upper and lower actuator toggle switches to stall the lower motor in the closed position at the end of harvest.

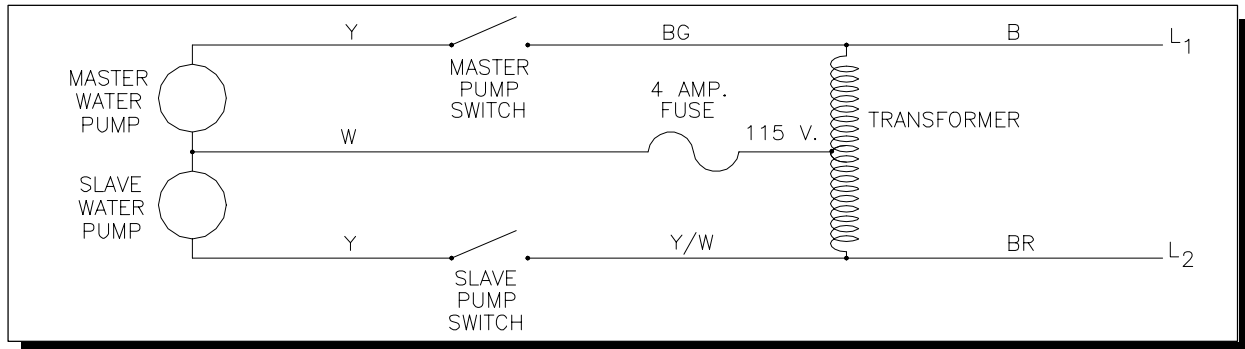
Synchronization is achieved by the lower actuator motor running slightly faster than the upper motor, stalling upon direction reversal in the full upright (12 O'clock) position, thus allowing the upper motor to catch up and synchronize. Upon upper motor direction reversal, both motors continue to the end of the travel limit in the other direction and repeat the same synchronization procedure. With ice in the evaporators, both plates go down and stop together in the full down position automatically synchronized. When dry cycling the cuber without ice, the lower actuator motor trips the lower actuator toggle switch and raises ahead of the upper actuator motor. Synchronization occurs when the lower actuator motor stalls after raising to the 12 O'clock position and waits for the upper actuator motor to catch up.

This diagram shows the synchronization circuit. The dotted lines indicate an interim sub-circuit which was used from 9-81 until 1-83. To update any GB4, cut the yellow/white in the upper channel, tape the ends and install a modified rotor kit (GBR-03110-01) in the upper actuator motor. Cubers made before 9-81 do not have the yellow/white wire in the upper channel (unless they have been field modified) and only the modified rotor is required for updating.



## Service and Troubleshooting

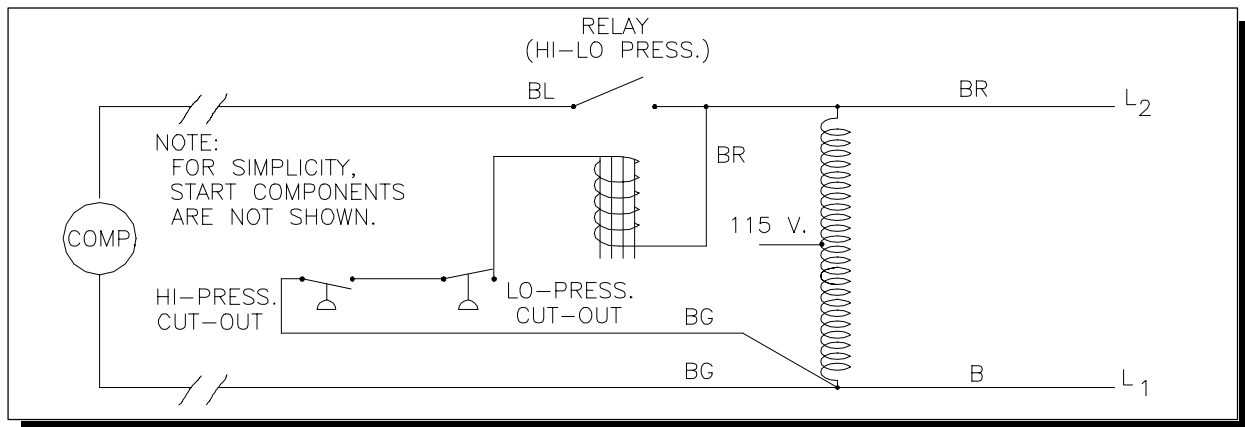
The ice maker use two water pumps and they are connected to the transformer independently to decrease the load on the 115 v. tap.



As can be seen from the above diagram, the 4-amp fuse protects the transformer as it does in all GB series ice makers, but the pumps will continue to operate if the fuse opens as the pumps are actually connected in Series across the line taps of the transformer.

To allow the water pumps to operate independently, a D.P.D.T. pump & defrost toggle switch is used in the lower channel. The left contacts power the pump when the water plate is closed, and the right contacts permit caught-cube false harvesting through the red circuit.

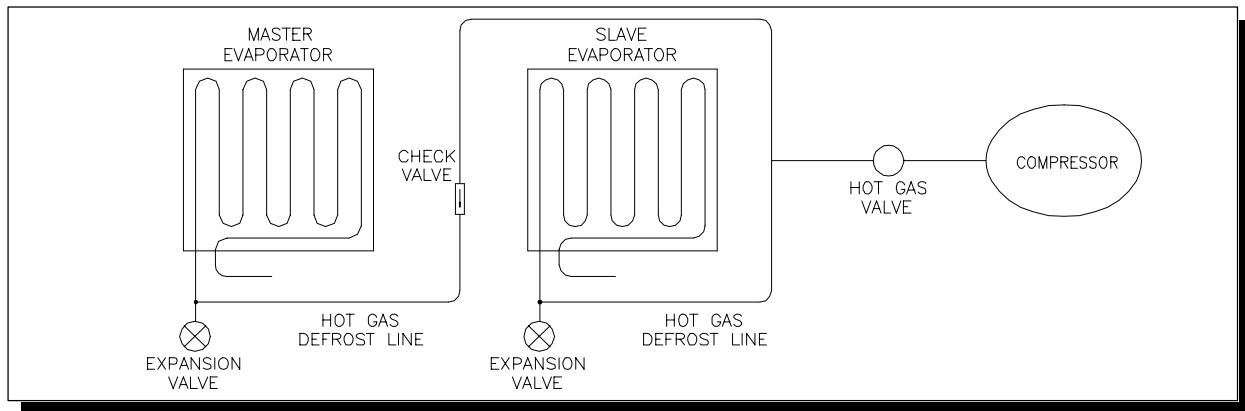
The transformer box contains high and low pressure cut-outs, as do all 1 H.P. and larger **Kold-Draft**® cubers, and also a high and low cut-out relay.



The above diagram illustrates the cut-out circuitry, and shows that compressor current is controlled by a heavy-duty relay rather than the cut-out contacts which are not heavy enough to reliably handle the amperage required of the GB4 compressor. The high and low pressure cut-outs supply voltage only to the coil of the control relay, which will open if either of the cut-outs open due to excessively high or low refrigerant pressure.

## Service and Troubleshooting

The ice maker contains two evaporators and therefore two expansion valves, but only one hot gas defrost valve.



As can be seen by the simplified refrigeration diagram above, the hot gas defrost tubing from each evaporator is joined at the hot gas valve, and provides a refrigeration circuit (during the freeze cycle) between the evaporators. As the evaporator inlet pressures are never exactly equal, refrigerant can flow from one evaporator inlet to the other through the hot gas tubing, causing frost on the tubing. To the service man not familiar with the GB4, this can be a startling phenomenon (hot gas lines are not supposed to be cold), but is perfectly normal and has little or no effect on the operation of the cuber. To minimize frost on the hot gas tubing (which turns to water during the defrost cycle) a ball check valve was added 8-82 to the hot gas line feeding the upper evaporator. During harvest, the check valve opens fully and allows unrestricted hot gas to both evaporators. During the freeze cycle the upper evaporator expansion valve, which is set at a slightly lower superheat than the lower expansion valve, will cause the check valve to close and block refrigerant flow through the hot gas tubing.

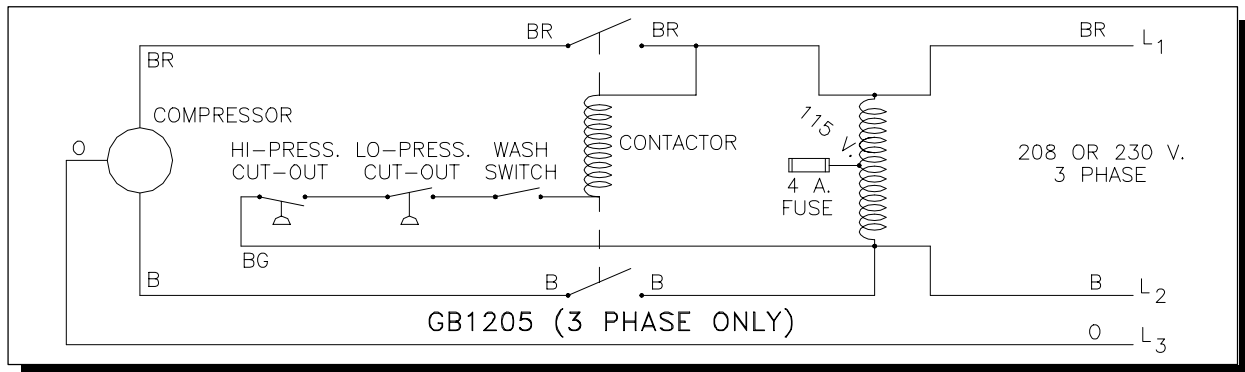
Theoretically, both expansion valves can be set at the same superheat, as the gravity-operated ball check valve requires approximately 1/4 p.s.i. to unseat. Hot gas line frost will not occur as long as the inlet pressure in the upper evaporator is equal to or greater than the inlet pressure in the lower evaporator.

# Service and Troubleshooting

## GB1204/GB1205

The GB1200 series cubers are derived from the GB903/GB1003 series ice makers, and therefore share the same synchronization circuits, water pump control wiring and refrigeration circuit.

The compressor used in the GB1205 series is 208/230 volt-60 hz.-3 phase. The GB1204 series uses a 208/230 volt-60 hz.-1 phase, and therefore uses a line contactor for compressor operation. The following diagram illustrates the contactor circuit, and also shows the transformer connection to provide single phase 115 volt power for the water pumps and solenoid valves.



Although the refrigeration circuit is identical to the GB4/GB903/GB1003, the compressors in the GB1200 series use R-502 refrigerant along with R-502 expansion valves.

# Service and Troubleshooting

## Actuator Motor Electrical Tests

The following tests are for troubleshooting the actuator motor and related circuits: Use an AC voltmeter set for proper range. Voltages in the tables are measured across the motor reversing capacitor (between the colored motor lead wires).

> If there is no ice in the evaporator(s) and the water plate(s) is (are) not fully closed with the pump(s) running AND the actuator switch(es) tripped UP, the actuator motor(s) should be running. If not, be sure that there is power to the motor(s) and that it (they) is (are) not off due to high temperature (NEW STYLE). **Always refer to the proper wiring diagram when troubleshooting.**

> In dual evaporator models if only one motor appears to be running as it should, be sure that you understand the synchronization circuit (see text).

> For OLD STYLE motors in 208-230/60 or 220-240/50 *CLASSIC* cubers, the voltage between the white motor lead (connected to the voltage reduction capacitor) and the colored lead (gray or yellow) being powered by the actuator switch must be 90 to 130 volts. This varies with line voltage, and if not within these limits the motor(s) may not provide adequate performance. Be sure that the proper capacitor is installed (see text).

> Motor winding resistance's at 75° F out of the circuit are as follows:

All OLD STYLE motors, white to gray or yellow, approximately 450 ohms.

NEW STYLE 115 volt motors, white to black or yellow, approximately 95 ohms.

NEW STYLE 230 volt motors, white to red or yellow, approximately 400 ohms.

Actuator Motor Style	Voltage for test table below	
	"A"	"B"
OLD STYLE, ALL	180-240	90-130
NEW STYLE, 115 VOLT	180-240	LINE
NEW STYLE, 230 VOLT	290-370	LINE

Voltage Reading	Capacitor	Motor	Remedy
"A" from table	Good	Good	Tap gearcase to align bearings; check cam shaft for binding; check drift stop tightness. Change motor if all OK.
"B" from table	Open	Good	Change capacitor.
"B" from table in one actuator switch position. 0 v. in the other position	Open AND>	One Motor Winding open	Change both motor and capacitor.
"A" from table in one actuator switch position. 0 v. in the other position	Good	One Motor Winding open	Change motor.
0 v. in both positions EXCEPT DUAL EVAP. SLAVE DURING NORMAL STALL. Be sure there is power to the motor ("B" from table) by leaving one probe on either capacitor lead and placing the other probe on the white motor lead. If power is OK:	Shorted OR>	Both Motor Windings open	Disconnect motor from circuit and test winding resistance's (see text). If normal, change the capacitor, and if erratic change the motor.

## Testing C/R-C Network GB-3244 (electronic cubers only)

CAUTION: To protect your meter, short all terminals together before testing.

- 1- Set ohm meter on R x 1000 (1k) scale.
- 2- W to G- Connect test leads. Reverse test leads and the meter should deflect. A good component will cause the meter to drop to about 200k ohms and then climb back to infinity.
- 3- G to Y- Connect test leads and then reverse. The meter should drop to about 150k ohms and then climb back to infinity.
- 4- If the meter goes to the approx. ohm readings listed above and stays there, the capacitor is shorted and should be replaced.
- 5- If the meter doesn't deflect at all, the capacitor is open and should be replaced.

# Service and Troubleshooting

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## Pump Intake Hose - Collapsing

1. If hose is too long or has been twisted, the tubing will collapse. These two conditions can be corrected very easily by checking the length so that the tubing is approximately 3-3/8" long, or by twisting the tubing to make certain it is straight.
2. Dirty water tank outlet screen - In this instance, the tubing will collapse and remain collapsed until the screen is cleaned. This could cause cloudy cubes, because not enough water is being circulated.
3. Occasionally at the beginning of a cycle, if the water is super-cooled and crystalization occurs in the water, the crystals would plug up the screen and cause a collapse of the hose. This condition would last for less than a minute until the crystals thaw and the ice maker would begin functioning properly. This condition is not serious and would not damage any of the ice maker components. The condition cures itself and is of short duration.
4. The hose may also collapse due to aging. The hose should be replaced and a spring (GBR-00212-01) installed.

## Water Plate Problems

1. Improper setting of the fin thickness- Under tolerance fin thickness may cause icing of injection and return holes, on the water plate surface. Refer to the alignment page.
2. If the injection holes on the water plate become blocked, some of the freezing cells will be devoid of ice at time of harvest. The blockage can be removed by using a 1/16" drill bit to clean the injection holes. **Note- Freezing cells void of ice may collapse due to expansion of ice in surrounding cells.**
3. If the injection holes are cleaned and water is still not flowing, then the laterals have become clogged. To clean the laterals, remove the rubber plugs at the end of the water plate. Run a small brush through the laterals and flush out all debris. Place **new** plugs in the holes using an allen wrench or similar blunt end tool. This stretches the plug so it will be tight when the tool is removed.
4. A crack in the lateral strips on the underside of the water plate may prevent the control stream from rising up over the dam at the end of the freeze cycle. This will extend the cycle and cause water to freeze into the surface of the water plate. If the laterals are cracked, the water plate should be replaced.
5. Water plate silicone treatment- In certain areas, where water is unusually pure, with practically no dissolved solids, the water plate must have fairly frequent applications of silicone to prevent excessive ice adherence. Application of silicone treatment is recommended every three months, or whenever the cuber is serviced, where water conditions cause ice to stick to the water plate.

# Service and Troubleshooting

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## To Apply Silicone Treatment

Defrost the unit by lifting up on the control tank or pulling down on the water plate. Place unit in the wash mode, allow the tank to refill to melt off any accumulated ice. Open the water plate to dump out the tank.

Turn off the power with the water plate down. Wipe the water off the evaporator and water plate surface.

Apply Kold-Draft water plate spray to the surface of the water plate except for the last half-inch on the right side. This will keep water from running over the edge and into the ice bin during defrost. Return unit to normal operation.

**Note- Use Kold-Draft silicone water plate spray. Others may contain substances detrimental to the water plate surface.**

## Removal of Water Plate and Tank

1. Turn off the water and allow the water plate to close. Turn off the power.
2. Remove the control stream drain hose.
3. Electronic cubers:

Remove the water level probe assembly by sliding it to the right, beyond the control stream box and lifting it off. Disconnect the tube from the water tank.

Electro-mechanical cubers:

Remove the water control tank from the wire hanger. Disconnect the tube from the water tank.

4. Remove the pump mounting screw holding the water plate brace. Remove the inlet and outlet hoses from the pump.
5. Separate the hinge brackets from the water plate.
  - a. Cubers with plastic hinge brackets, pry the brackets away from the plate.
  - b. Cubers with metal brackets (prior to 1977), remove the four lower screws and lock washers holding the water plate to the pump bracket and rear hinge. Remove the nuts and lock washers holding the top of the water plate to the pump bracket and rear hinge (5/16" socket).
6. Run the cam down to the nine o'clock position, by hand or with power. Unhook the springs from the water plate.



# Service and Troubleshooting

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## 7. Electronic cubers:

Remove the screws that mount the control module box. Pull the module forward to disconnect the front cam. Rotate the module up for clearance.

## Electro-mechanical cubers:

Remove the cotter pin from the pump toggle switch and remove the lift rod and collar assembly.

## 8. Slide the water plate and tank to the right, without turning, and slide it forward out of the machine.

### **Water Plate Assembly to Water Tank**

#### 1. Remove the spring bosses, water plate brace, water deflector, teflon brackets and the four screws holding the water tank to the water plate.

Electronic cubers: Remove the pump and defrost actuation plastic bolt from the water plate and assemble it to the new plate.

#### 2. Attach the water tank to the water plate with four screws. Assemble the teflon brackets, water deflector, water plate brace and spring bosses. Bosses should be tight but care should be taken not to strip out the plastic threads.

Electro-mechanical cubers: Install the hinge screws and plates.

### **Reinstallation of Water Plate and Tank Assembly**

#### 1. With the open end of the water plate to the right, slide it back into the cuber and to the left of its normal position.

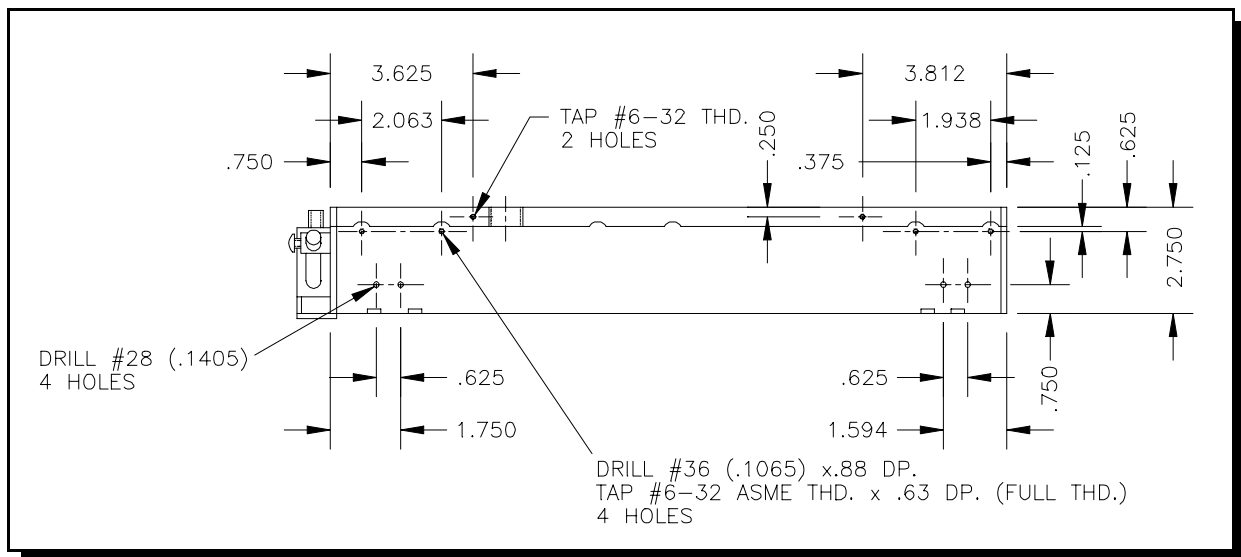
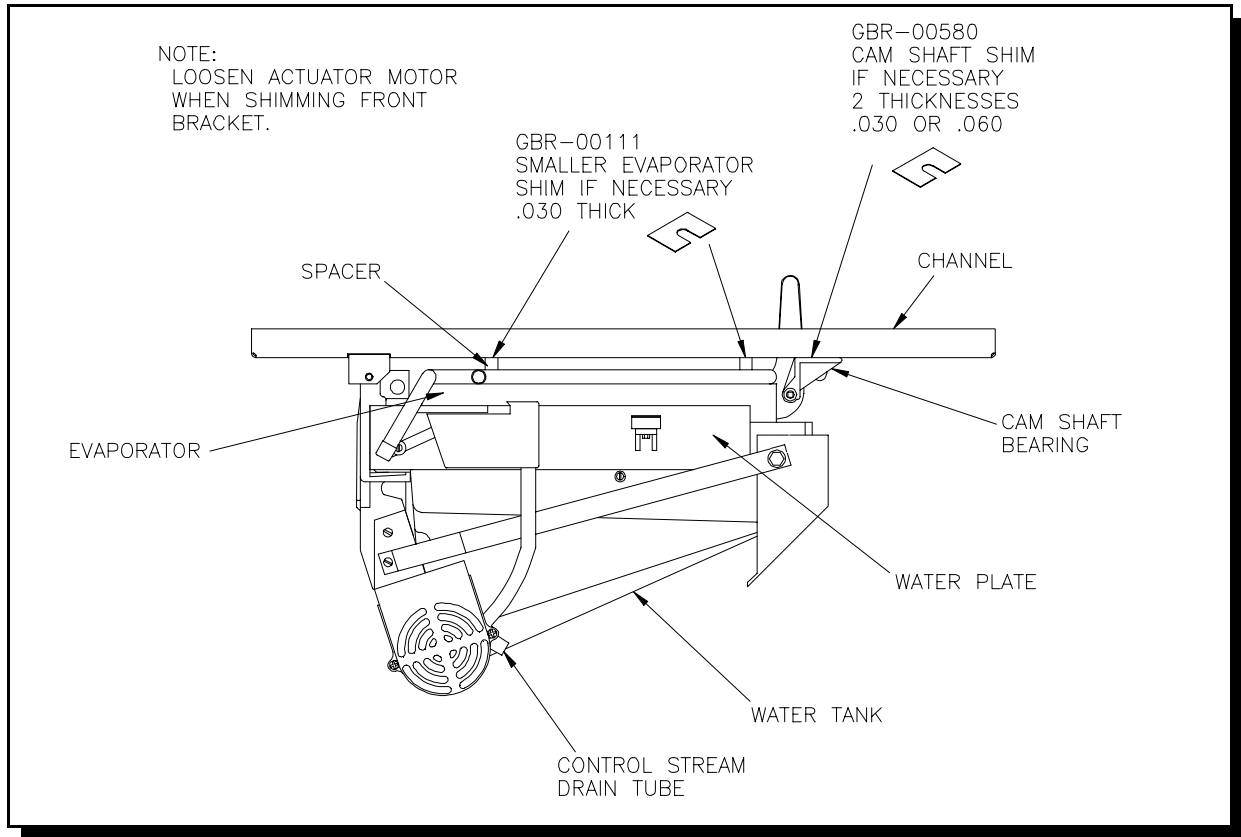
Electro-mechanical cubers: Install the lift rod, cotter pin and collar assembly with the small end of the crook to the right of the pump toggle switch.

#### 2. Hook up the springs to the water plate. Rear spring first.

#### 3. Plastic hinge brackets are hooked on and snapped in place.

For metal hinge brackets, holes must be drilled and tapped per drawing. Run the top screws through the hinges, assemble the lock washers and nuts loosely. Run the bottom screws through the hinges and into the plate, then tighten the nuts and screws. It may be easier to reach the rear screws if the if the cams are run up to the twelve o'clock position. See the following illustrations.

# Service and Troubleshooting



- Secure the pump mounting screw holding the water plate brace. Install the inlet and outlet hoses to the pump. Note: When installing the pump to tank hose, it is usually easier to put it on the tank first, with one finger inside the hose, then slip it onto the pump connection. Avoid any twist or kink. The hoses will slide on easier if wet.

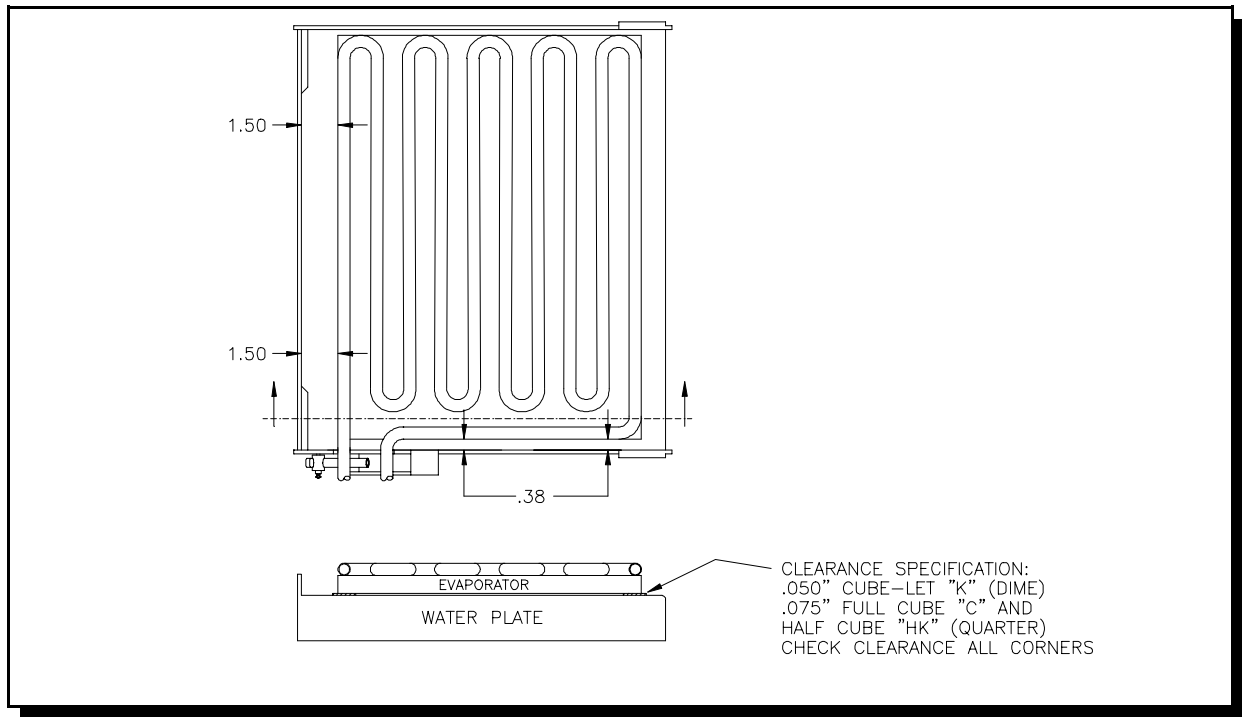
## Service and Troubleshooting

### 5. Secure the water control assembly.

Electronic cubers: Mount the water level probe assembly and relocate the control stream drain tube. Locate and secure the control module box to the mounting bracket. Check adjustment of the lift bolt.

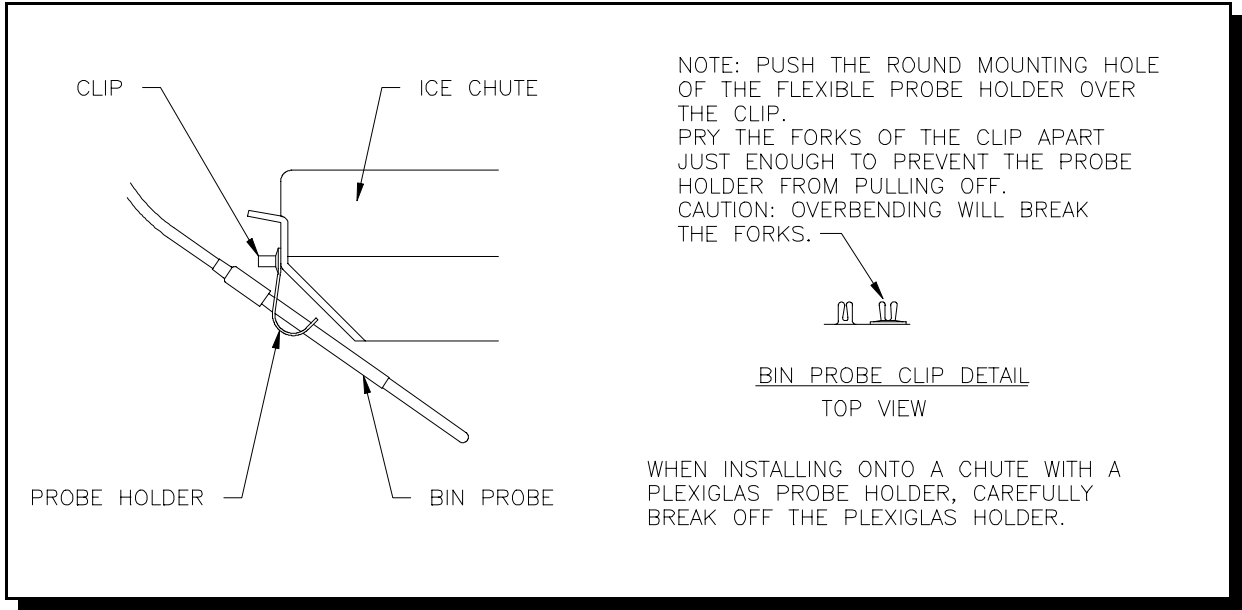
Electro-mechanical cubers: Reconnect the control stream drain tube and water control tank.

### 6. Water plate must be properly aligned with the evaporator. Refer to the alignment information provided. Adjust hinge plates and/or shim evaporator and cam shaft bearing brackets to meet alignment specifications.

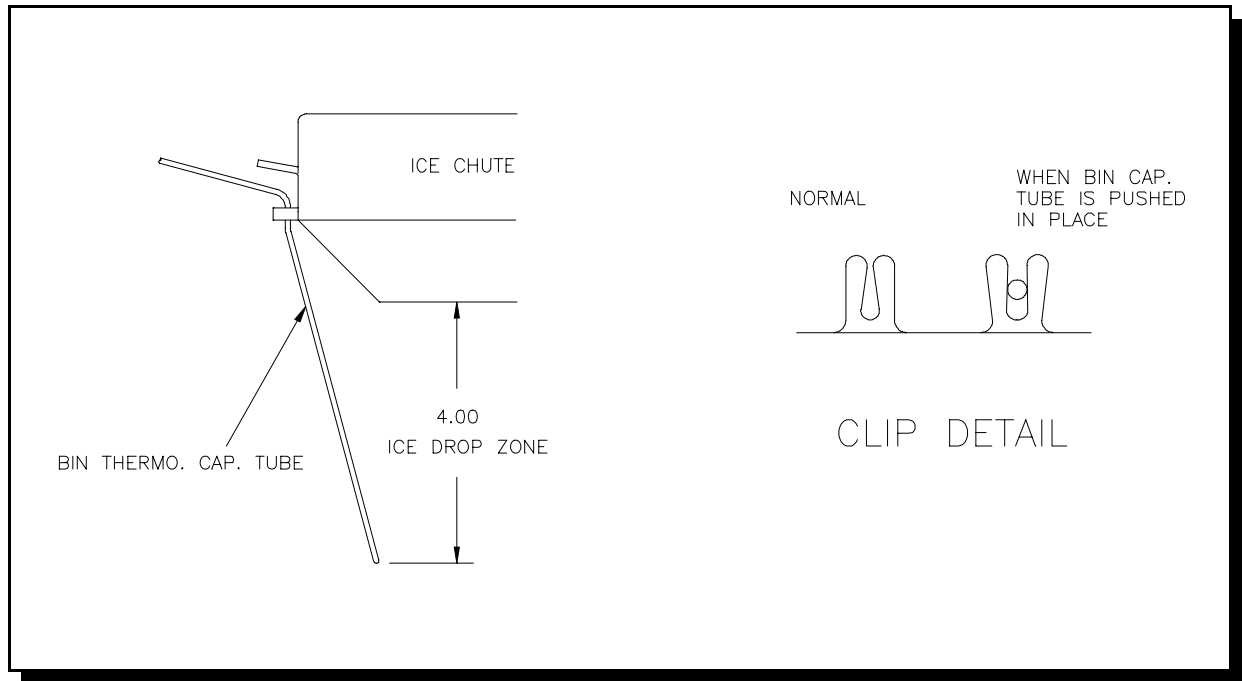


# Installation and Adjustments

## Bin Probe Placement-Electronic Cubers



## Bin Probe Placement-Electro-mechanical Cubers



# Installation and Adjustments

## Air Cooled Condensers

1. Maintain adequate ventilation around the cuber. It is also important to prevent re-circulation of the hot condenser air from the side to the back. This would occur particularly if the condenser end were placed in a corner of a room. If this must be the location, then an external air block should be built to prevent the hot outlet air from returning to the inlet of the condenser.
2. Cleaning an air cooled condenser - The air cooled condenser should be cleaned weekly with a stiff brush and a vacuum cleaner to remove dust and dirt for efficient operation of the ice maker. To determine that the condenser is clean, a light which is held to one side of the condenser will be clearly visible from the other side.

## Water Cooled Condensers

1. Are factory set for 115 pounds pressure on all but GB1200 series (R-502) which is set at 230-235 pounds head pressure. To reduce water consumption, head pressure can be increased but ice capacity will be slightly reduced.
2. If head pressure is excessive and water usage is higher than normal, the condenser must be cleaned.
3. Cleaning a water cooled condenser - Halstead Mitchell condensers have end plates which may be removed for mechanical cleaning if necessary.

Water cooled condensers without end plates can be cleaned by flushing with a condenser cleaning solution. Acid re-circulating pumps and solution are available at refrigeration supply houses.

COOLING TOWER APPLICATION						
MODEL #	AVERAGE COOLING TOWER LOAD			MAXIMUM COOLING TOWER LOAD		
	B.T.U. PER HOUR	G.P.M.	PRESSURE DROP P.S.I.	B.T.U. PER HOUR	G.P.M.	PRESSURE DROP P.S.I.
42" FRAME						
GB401W	4372	.8	6.5	9655	1.42	17.75
GB402W	4372	.8	6.5	9655	1.42	1.5
GB500W	5543	1.0	.5	11359	1.72	1.5
GB600W	6558	1.2	.8	15619	2.4	2.5
GB903W	11713	1.89	.8	25559	3.05	5.79
GB1204W	14056	1.97	2.42	39475	4.91	15.22
GB1205W	14056	1.97	2.7	31949	4.91	15.22
GB1208W	14056	1.97	2.42	39475	4.91	15.22
28-1/4" FRAME						
GT7W	2342	.7	6.0	9655	1.42	17.75
GT300W	3090	.7	6.0	9655	1.42	17.75
GT401W	4372	.8	6.5	9655	1.42	17.75
GT402W	4372	.8	6.5	9655	1.42	17.75
GT500W	5543	1.0	.5	11359	1.72	1.5
GT600W	6558	1.2	.8	15619	2.4	2.5

ABOVE TABLE: INCOMING WATER 85° F. (FROM COOLING TOWER)  
WATER OUT 100° F. (R12; 117 PSIG+; R502; 215 PSIG+)

# Installation and Adjustments

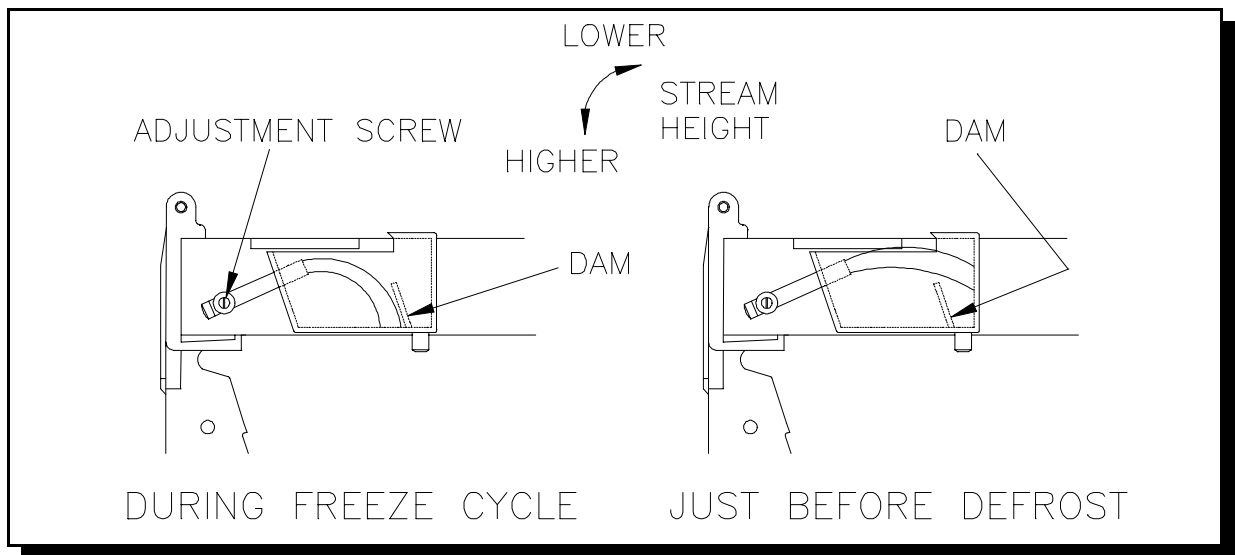
## Control Stream

When the cubes are fully frozen, they freeze over the drain holes in the water plate surface. This increases the water pressure in the circulation system causing the control stream to rise and then go over the dam. This water is drained off (15-30 seconds) until the level drops below the tip of the low probe. This causes the probe's resistance to change which is the signal to the card to initiate the harvest cycle.

## Adjustment of the Control Stream

After the circulating water is cold, note the control stream and compare with the following diagram. Adjust the stream to flow as in the illustration. (Note- As the water cools it may actually sub-cool and form ice crystals in the water tank. This may last a minute or two, temporarily stopping water plate circulation and the control stream. Do not adjust the control stream at this time.)

If the control stream adjusting screw is changed at the end of the freeze cycle, to make the stream go over the dam, recheck it at the early part of the next freeze cycle. Make sure no water is flowing over the dam until all the cubes are ready for harvest.



## Cube Quality

1. If the cubes are full with only small dimples (1/8"-3/16" deep), the amount of water taken in at the start of the cycle is correct.
2. If the water level drops below the low probe and initiates the harvest cycle before the control stream goes over the dam, then there was insufficient water taken in at the beginning of the cycle, or there is a leak in the system. Cubes with large holes are an indication of this problem. Adjust the high water level probe up to increase the water intake on the next cycle or eliminate the leak. Note: The leak may be internal such as a cracked lateral under the water plate.

## Installation and Adjustments

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3. If the control stream goes over the dam for more than one minute before the water clears the low probe and cubes are found to have large holes, then the control stream is set too high. Set the control stream slightly lower at the start of the next freeze cycle. If ice is frozen to the water plate, adjust the lower water level probe up slightly so the harvest is initiated within 15-30 seconds of the control stream rising over the dam.
4. Holes, in the cubes on only one side of the evaporator, indicate a refrigerant flow problem.

Expansion valve models:

Holes in the left side cubes indicate the expansion valve is open too much. Adjust the valve closed at 1/8 turn increments.

Holes in the right side cubes indicate the expansion valve is closed too much. Adjust the valve open at 1/8 turn increments.

Capillary tube models:

Holes in the left side cubes indicate overcharge.

Holes in the right side cubes indicate undercharge.

### **Water Level Probe Assembly (GBR-03170)**

This assembly is connected to the main water circulation tank by means of flexible tubing. The level of water in the probe assembly indicates the level of the water in the circulation tank. Thermister probes determine water valve on-off levels. Refer to the chart of water levels for the correct position for the upper probe. The bottom probe is positioned so that 15-30 seconds after the water flows over the dam, harvest is initiated. Initially the tip of the probe should be set at approximately 1/2" to 3/4" from the bottom of the tube.

## Preventative Maintenance

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**Cleaning:** Usually at 3 to 6 months intervals, depending on water conditions.

**Inspections:** During cleaning - at least twice a year.

**Service:** All such equipment will require service at some time. Service requirements will be minimized with faithful preventative maintenance including good housekeeping at the installation site. A CALL FOR SERVICE AS SOON AS A POSSIBLE PROBLEM IS NOTICED MAY AVOID EXTENSIVE REPAIRS.

### Ice Cuber Cleaning Instructions

**Use rubber gloves and eye protection. An apron is recommended.**

1. **GB & GT400, 500 and 600 series:** Mix one bag of **Kold-Draft®** ice machine cleaner (55R-01000) in (2) quarts, or **GS, GY or GT300:** Mix 1/2 bag of **Kold-Draft®** ice machine cleaner (55R-01000) in (1) quart of clean, warm water (180° F. MAX.) for each evaporator/water plate assembly to be cleaned.
2. If the cuber is operating, wait until a harvest cycle occurs then trip the 'WASH' switch to 'WASH' as soon as the water plate begins to close.
3. Empty all ice from the storage bin and shut off other ice makers on the same bin.
4. After the water fill is completed, remove the cap from the water level control and pour about half of the mixed cleaner into the control tank or tube tube. **Caution: In electronic cubers, do not remove the water level probe assembly completely, or lower the control tube far enough to overflow.** Replace the cap, then pour the remaining cleaner into the control stream box.
5. Allow the cleaner to circulate for approximately 15 minutes, then pull the right side of the water plate down until the pump stops and hold it until the pump will not re-start when released.
6. The water plate will open and dump the cleaner then close immediately, and the water system will refill. Repeat this dumping and refilling three (3) times to rinse out all of the cleaning solution.
7. Mix a sanitizing solution of two (2) oz. 5-1/4% sodium hypochlorite (household bleach or equivalent) and one (1) quart clean water.
8. As in step #4, pour about half of the sanitizing solution into the water level control tank or tube and the remaining sanitizer into the control stream box.
9. Allow the sanitizing solution to circulate **AT LEAST 15 MINUTES**, then dump and rinse two (2) times as described above. If necessary, reset the water level probes to the proper levels.
10. While the cleaning and sanitizing solutions are circulating, clean, rinse and sanitize all accessible parts of the ice-making compartment of the cuber with clean cloths. Use a cleaning solution of 8 tablespoons (1/2 cup) baking soda per gallon of warm water, and a sanitizing solution of no less than 1 teaspoonful (5 ml.) 5-1/4% sodium hypochlorite per quart of clean water.
11. After cleaning has been completed, trip the 'WASH' switch to 'ON' and check to be sure that the cuber is operating properly, particularly the water level probes. Then re-assemble and secure all cabinet enclosure panels.



# Preventative Maintenance

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## Ice Bin Cleaning Instructions

The bin should be cleaned periodically. If bin drain has any horizontal run, remove ice from left side of bin and flush with two (2) quarts of hot water monthly. (Long drain lines should be flushed weekly.)

1. Clean exterior of bin frequently.
2. To clean the interior, follow the instructions provided with bin.
3. Empty the storage area and disconnect the electrical power supply to the ice maker(s).
4. Remove the ice maker inspection panel, top, left and right end panels, and drain pan. Sliding bin doors may be removed by lifting them up, then pulling out from the bottom.
5. When cleaning the ice maker, follow the ice maker cleaning instructions and clean the bin last.
6. Replace all enclosure panels and drain pan before re-connecting the electrical supply.

## Winter Conditioning

Ice cubers that are idle in the winter months require preparation to prevent damage from freezing. The following procedure should insure the safety of the cuber so that it can be started easily the following year.

1. Shut off and detach the water supply to the ice cuber.
2. If the cuber is a combination water and air or a straight water-cooled condenser, the cuber must be running while air is introduced through the condenser water inlet connection to blow the water out of the condenser coils.
3. The cuber should then be run into defrost to drain the water tank and air should be introduced into the water inlet to blow out the water solenoid.

Note: If the condensing unit is not warm enough to open the condenser water valve on a combination air/water cooled machine, then the air cooled condenser must be blocked to raise the pressure, or the machine should be run long enough to open the condenser water valve. **Extreme care must be used to ensure all the water is blown out.**

# Operational Components

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## Construction of Electro-Mechanical Cubers

These cubers are similar in construction to the electronic models except they are thermostatically controlled.

### Refrigerant Control

A thermostatic expansion valve is used on GB, IS, GT (except GT3) and GT8 models.

GT3, GY and GS models are capillary tube systems.

### Control Tank and Switch

A control tank is mounted on a weight switch and is connected to the main water circulation tank by a flexible tube. The water level in the control tank is the same as the water level in the main circulation tank. When the proper amount of water is taken in, at the beginning of the cycle, the weight of the control tank will pull down on the switch lever to end the fill cycle.

### Actuator Motor and Cam Assembly

The actuator motor drives the front cam, cam shaft and rear cam to open and close the water plate, which is attached to the cams by extension springs. At the beginning of the harvest cycle, the cams start to turn counter-clockwise separating the water plate from the evaporator. As they continue to turn, the water plate is opened fully allowing for harvest of the ice cubes (cams at the seven o'clock position). At the end of the harvest cycle, the cams rotate clockwise returning the waterplate to the closed position (cams at the twelve o'clock position). A drift stop spring is used to prevent the actuator motor from drifting back, after the water plate is closed and power is cut off. The spring has a plastic contact point that rests against the motor shaft. New style replacement actuator motors have an internal brake.

### Actuator Thermostat

This thermostatic switch has its control bulb tube in a well on the front side of the evaporator. This switch must be in the cold position in order for the actuator motor to lower the water plate at the beginning of the harvest cycle. At the end of the harvest cycle, the switch will change to the warm position. This will cause the water plate to close and start the next cycle. The switch should be adjusted so that the water plate starts to close approximately 10 to 30 seconds after the ice drops out of the evaporator.

### Cold Water Thermostat

This thermostatic switch also has its control bulb tube in a well on the front side of the evaporator. The function of this switch is to prevent a false harvest cycle during the water fill due to low water flow (low water pressure, clogged supply line, etc.) or cold inlet water. These conditions could cause the actuator thermostat to change to the cold position before the weight control tank drops.

## Operational Components

---

When the circulating water drops to 40 degrees F. the cold water thermostat opens the hot gas valve, warming the evaporator and the water thereby preventing the actuator thermostat from switching cold before the water fill is completed. The hot gas valve will close when the evaporator warms up or the control tank drops.

### **Bin Thermostat**

This thermostatic switch has its control bulb tube near the ice drop zone. The function of this switch is to turn off the entire cuber when the storage bin is full of ice. Hold ice against the bin stat cap tube and adjust it so the cuber shuts off in one to two minutes. Do not try to adjust the bin thermostat during the water fill portion of the cycle. If the unit shuts off while filling, it may not have sufficient water to form full cubes on the next cycle. However, subsequent cycles will be normal.

# Operational Components

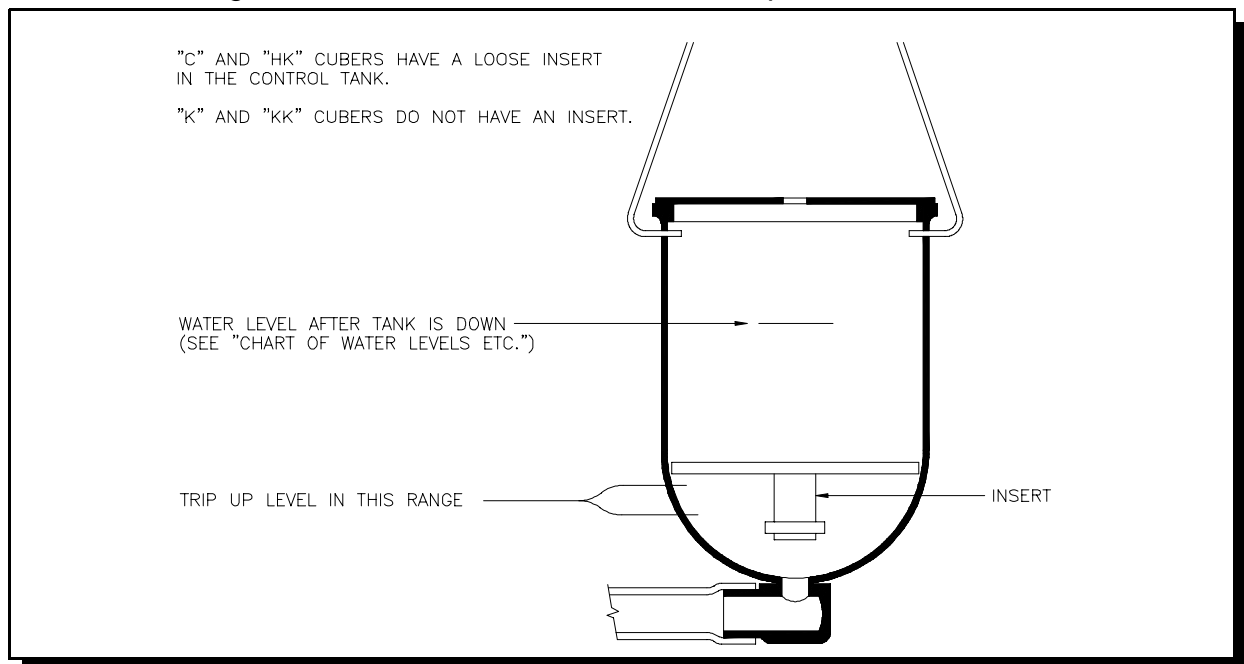
## Weight Control Switch Setting and Adjustment

Water level- After the water fill, when the control tank has dropped turning off the inlet water valve, the water level between the circulation tank and the control tank will equalize. Measure from the top edge of the main circulation tank down to the water level in the control tank. Sight the water level carefully to see that it is as listed for your model in the "Chart of water levels, etc." The external screw, at the bottom of the weight control switch, adjusts the water level. Counter-clockwise increases, clockwise decreases the water level of subsequent fill cycles. Adjust only in 1/8 turn increments.

The following procedure can be used to adjust the differential and trip-up point, after the trip-down level is properly set with the range screw. Turn off the inlet water and put the unit into defrost by pulling down on the water plate or, if it is near the end of the freeze cycle, raise the control tank. Make sure most of the water drains out of the circulation tank. Repeat this process holding down on the control tank until the circulation is empty. Allow the water plate to close. Put a one ounce check weight on the control tank. \$1.50 in coins, no pennies or nickles, is close to one ounce. While turning the differential screw slowly clockwise, push down and release the control tank until it stays down because of the check weight. Then slowly turn the differential screw counter-clockwise until the control tank snaps up. Remove the check weight and turn on the water. The control tank will now snap up normally at the end of the cycle when the water level is about halfway between the insert disc and the bottom of the tank.

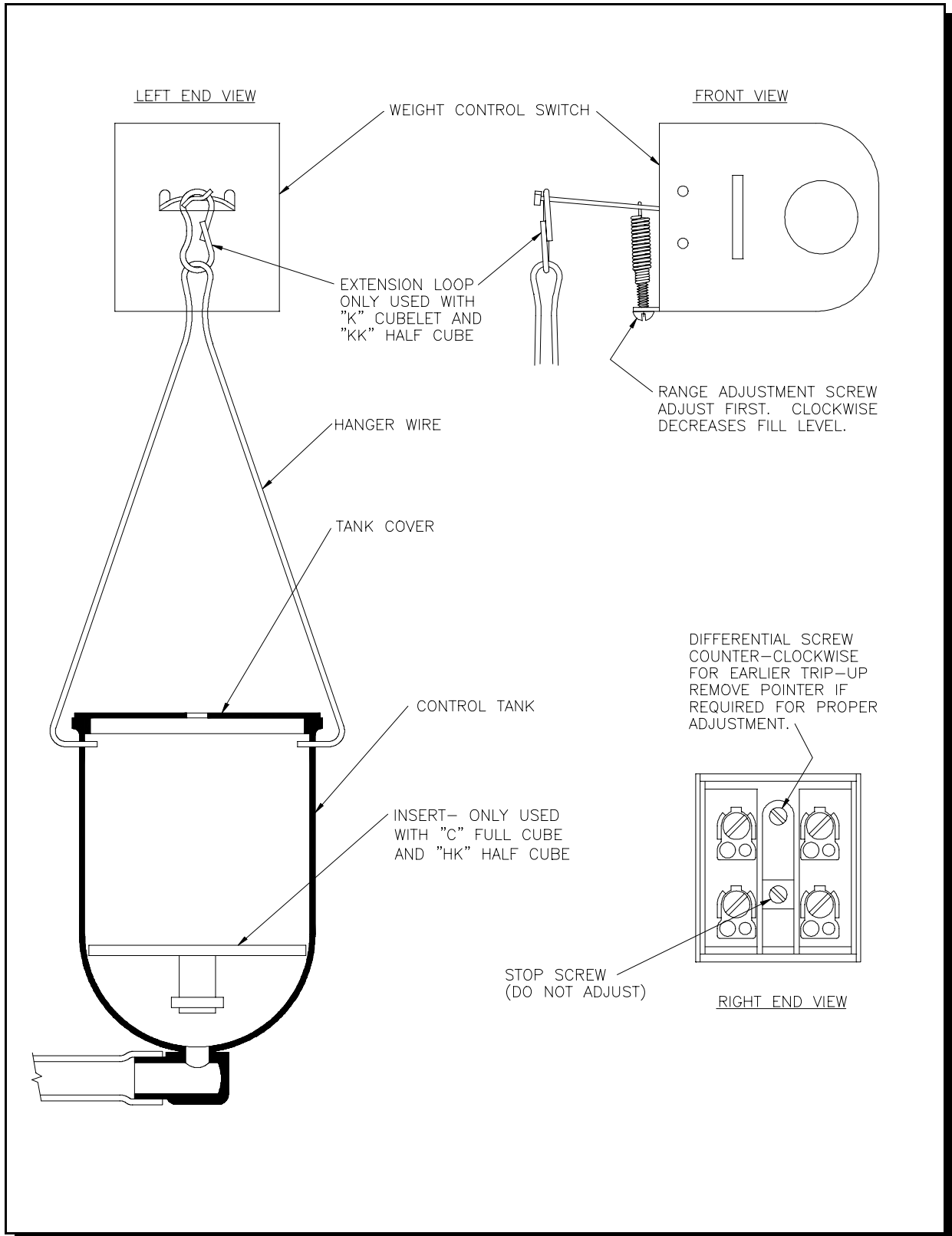
The water level, after the cubes are frozen, will normally be near or below the top of the control tank insert for "C" and "HK" machines. Refer to the "Chart of Water Levels, etc." If the level is above this point, when the control stream rises, and if the control stream flows over the dam for more than one minute, it is an indication that the water level can be lowered to shorten the cycle time. Turn the weight switch screw 1/8 turn clockwise.

See the following illustrations for clarification and component identification.



# Operational Components

## Water Level Control Components



# Installation Specifications

## Water Levels, Pressures, Cycles and Charges (higher than average temperatures increase pressures and cycle times)

Model Cube Size	GB4				GB2	GB1, GT1, IS1, MD1			
	C	HK	K	KK	HK	C	HK	K	KK
Full Water Level Distance below top of tank	2-5/8"	2-3/4"	3-1/2"			2-5/8"	2-3/4"	3-1/2"	
Tank Insert or Extension Loop	Insert		Loop		Insert	Insert		Loop	
Approximate Trip-up Level Above Tank Bottom	1/2"				1/2"	1/2"			
Suction Pressure after Defrost	20 psig				20 psig	15-20 psig			
Suction Pressure before Defrost	0-2 psig				0-2 psig	0 psig			
Defrost Pressure	40-60 psig				40-60 psig	40-60 psig			
Cycle Times (approximate)	32	28	19	23	21 min.	28	26	15	18
Refrigerant Charge <b>Remotes (R)</b> see note below	3 lbs.					3 lbs.			
Refrigerant Type Approximate lbs. of ice per batch	15	14	8	9-1/2	7	7-1/2	7	4	4-3/4
Compressor Size	14,000 BTU TXV Controlled				11,000 BTU TXV	1 HP. TXV Controlled			

Model Cube Size	GB5, IS5, MD5,				GB7, GT8, IS7			
	C	HK	K	KK	C	HK	K	KK
Full Water Level Distance below top of tank	2-5/8"	2-3/4"	2-1/2"		2-5/8"	2-3/4"	3-1/2"	
Tank Insert or Extension Loop	Insert		Loop		Insert	Loop		
Approximate Trip-up Level Above Tank Bottom	1/2"				1/2"			
Suction Pressure after Defrost	30 psig				15-20 psig			
Suction Pressure before Defrost	3-7	5-9	3-7	5-9	3 psig			
Defrost Pressure	40-60 psig				40-60 psig			
Cycle Times (approximate)	44	40	27	32	40	33	20	23
Refrigerant Charge <b>Remotes (R)</b> see note below	3 lbs.				3 lbs.			
Refrigerant Type Approximate lbs. of ice per batch	7-1/2	7	4	4-3/4	7-1/2	7	4	4-3/4
Compressor Size	1/2 HP. TXV Controlled				3/4 HP. TXV Controlled			

# Installation Specifications

Model Cube Size	GT7				GY3				GS6
	C	HK	K	KK	C	HK	K	KK	HK
Full Water Level Distance below top of tank	2"		3"		2"		3"		1-5/8"
Tank Insert or Extension Loop	Insert		Loop		Insert		Loop		
Approximate Trip-up Level Above Tank Bottom	1/2"				1/2"				
Suction Pressure after Defrost	11-13 psig				27 psig				25 psig
Suction Pressure before Defrost	0 psig				3-6 psig		4-7 psig		4-8 psig
Defrost Pressure	40-60 psig				40-60 psig				40-60 psig
Cycle Times (approximate)	30	26	15	18	61	58	32	38	48
Refrigerant Charge <b>Remotes (R)</b> see note below	Air Cooled 13 oz. Water Cooled 10 oz.				Air Cooled 15-1/2 oz. Water Cooled 10 oz.				10 oz.
Refrigerant Type	R-12				R12				
Approximate lbs. of ice per batch	3-3/4	3-1/2	2	2-3/8	3-1/4	3-1/2	2	2-3/8	2-1/3
Compressor Size	3/4 HP. Cap Tube Controlled				1/3 HP. Cap Tube Controlled				1/5 HP. Cap Tube

**NOTE:** Remote condenser application cubers require a total minimum charge of 10-1/2 lbs. GB1200 series cubers use R-502, all others use R-12.

◆ For maximum fuse size check electrical rating plate on left rear of cuber.

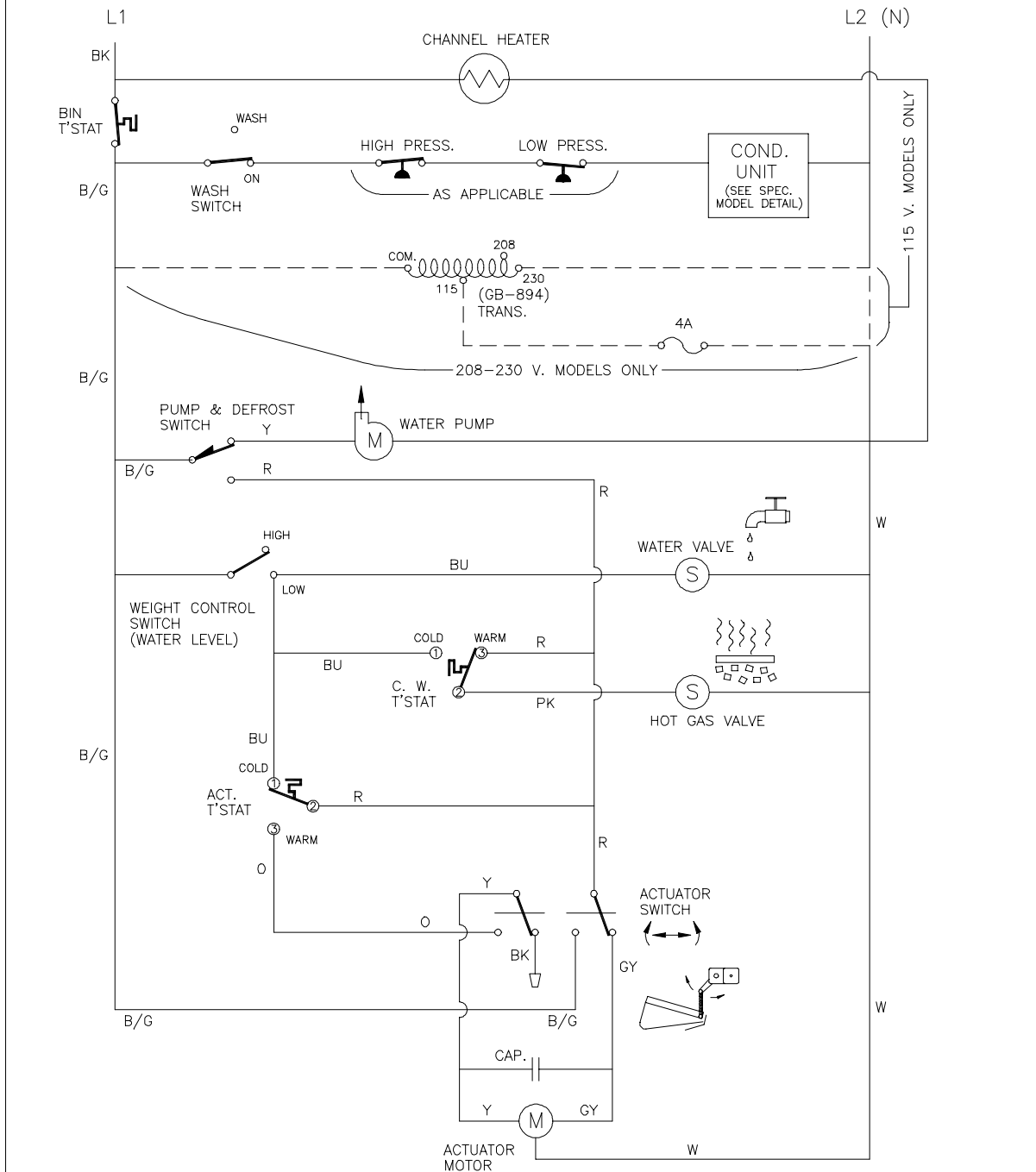
# KOLD-DRAFT ELECTRO-MECHANICAL ICE CUBER

## GENERIC SCHEMATIC WIRING DIAGRAM

(S) = SOLENOID  
 (K) = COIL  
 (M) = MOTOR

WIRING DIAGRAM  
 KOLD DRAFT ELECTROMECHANICAL ICE CUBE MAKER  
 60 HERTZ

COLOR CODE	
BK	BLACK
B/G	BLACK/GREEN
BU	BLUE
GY	GRAY
O	ORANGE
PK	PINK
R	RED
W	WHITE
Y	YELLOW





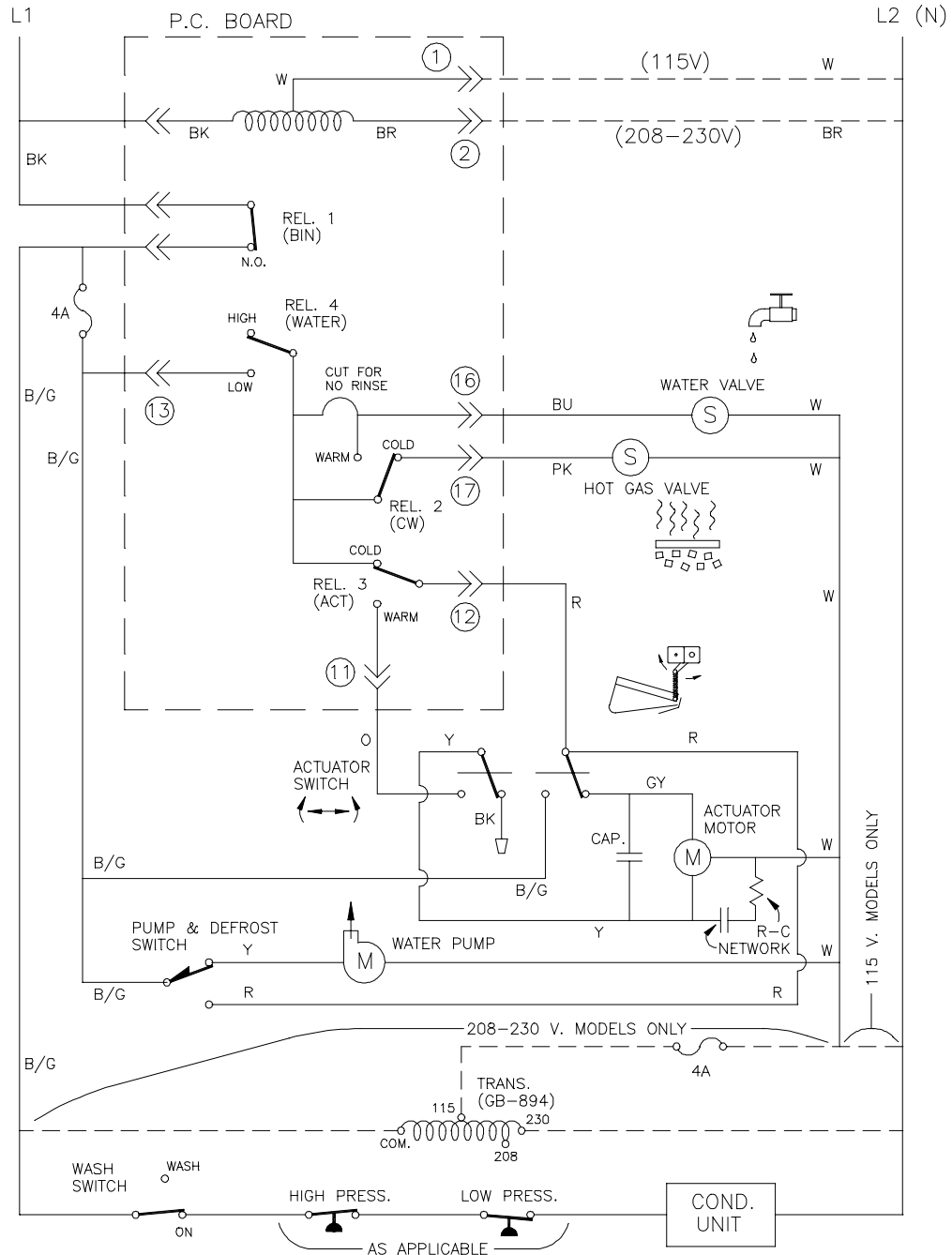
# KOLD-DRAFT ELECTRONIC ICE CUBER

## GENERIC SCHEMATIC WIRING DIAGRAM

(S) = SOLENOID  
 (K) = COIL  
 (M) = MOTOR

WIRING DIAGRAM  
 KOLD DRAFT ELECTRONIC ICE CUBE MAKER  
 60 HERTZ

COLOR CODE	
BK	BLACK
B/G	BLACK/GREEN
BU	BLUE
GY	GRAY
O	ORANGE
PK	PINK
R	RED
W	WHITE
Y	YELLOW



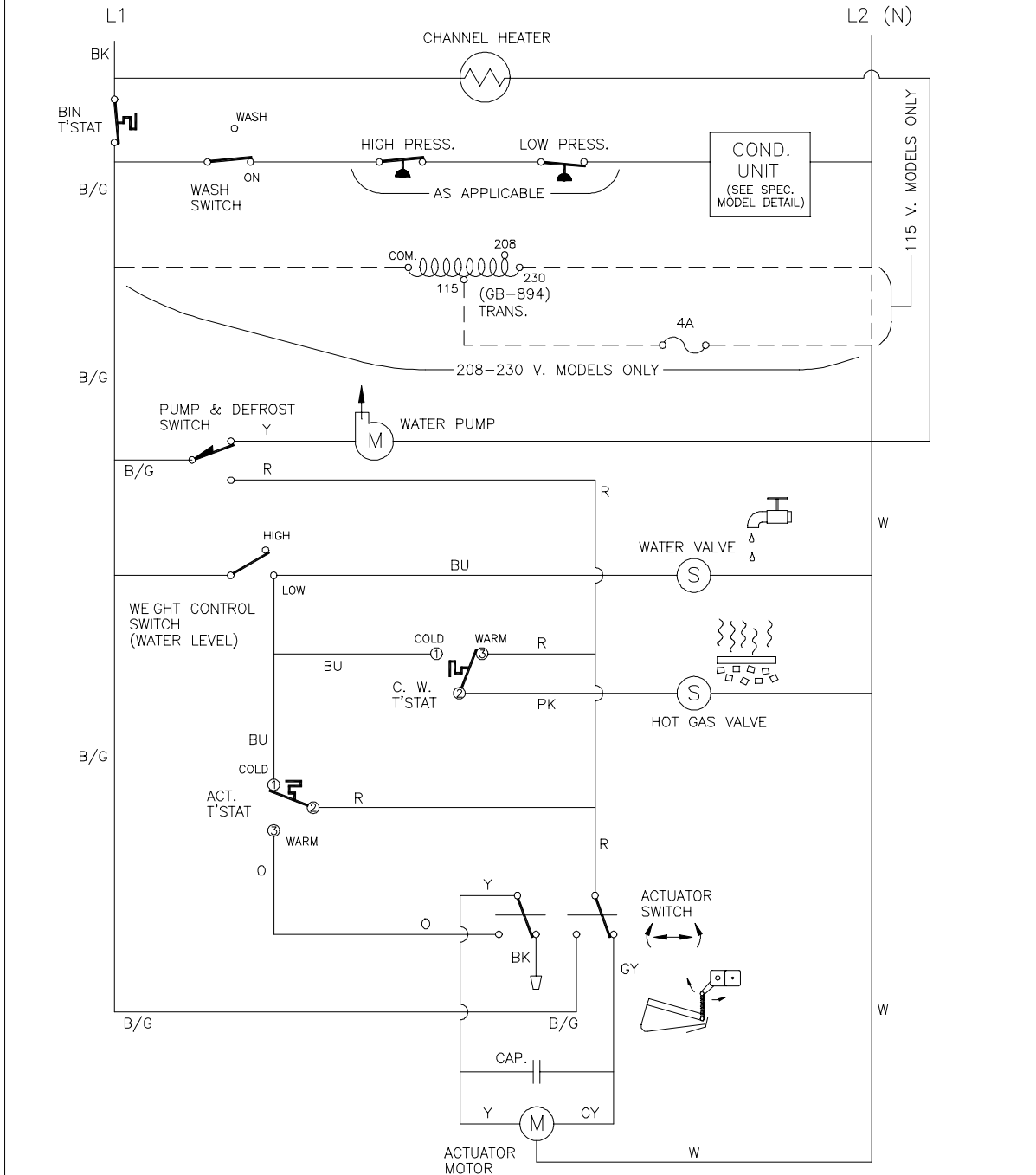
# KOLD-DRAFT ELECTRO-MECHANICAL ICE CUBER

## GENERIC SCHEMATIC WIRING DIAGRAM

(S) = SOLENOID  
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WIRING DIAGRAM  
 KOLD DRAFT ELECTROMECHANICAL ICE CUBE MAKER  
 60 HERTZ

COLOR CODE	
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B/G	BLACK/GREEN
BU	BLUE
GY	GRAY
O	ORANGE
PK	PINK
R	RED
W	WHITE
Y	YELLOW



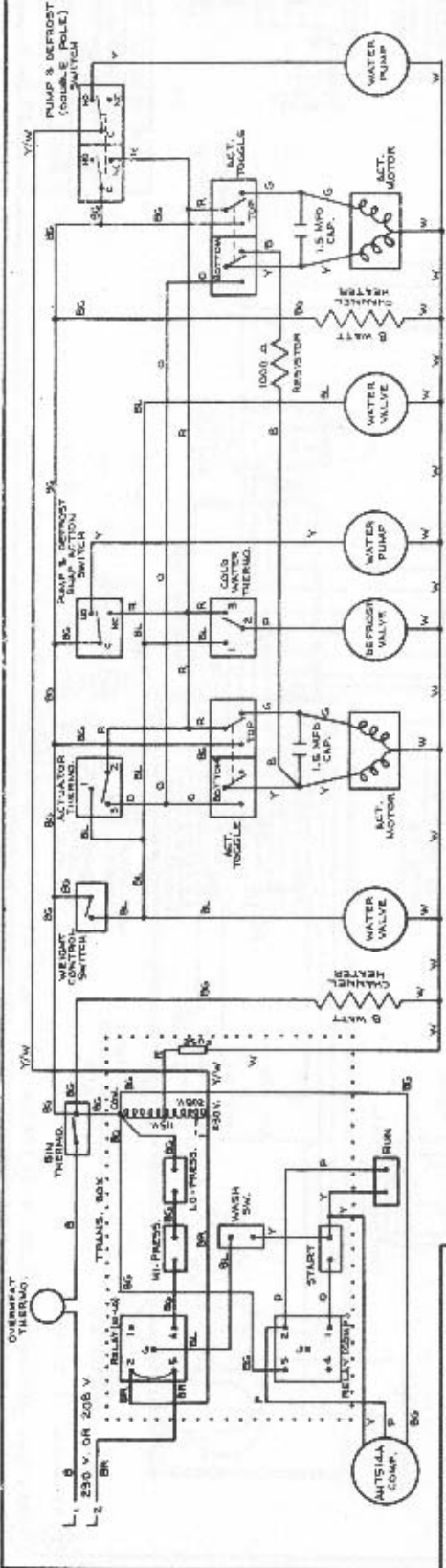
WIRE COLOR CODE	
B	BLACK
BL	BLUE
BR	BROWN
BG	BLACK/GREEN
C	GRAY
O	ORANGE
P	PINK
R	RED
W	WHITE
Y	YELLOW
Y/W	YELLOW/WHITE

NOTE: FOR 208 V.-60 HZ. MOVE BROWN LEAD FROM 250 V. TO 208 V. TRANS. TERM.

NOTE: IF GBB-01416-01 FUSE OPENS, CUBER WILL OPERATE UNTIL SLAVE WATER PUMP STOPS AS WATER PLATE STARTS TO OPEN. THEN THIS COMPRESSOR WILL OPERATE UNTIL LO-PRESS. SWITCH OPENS RELAY.

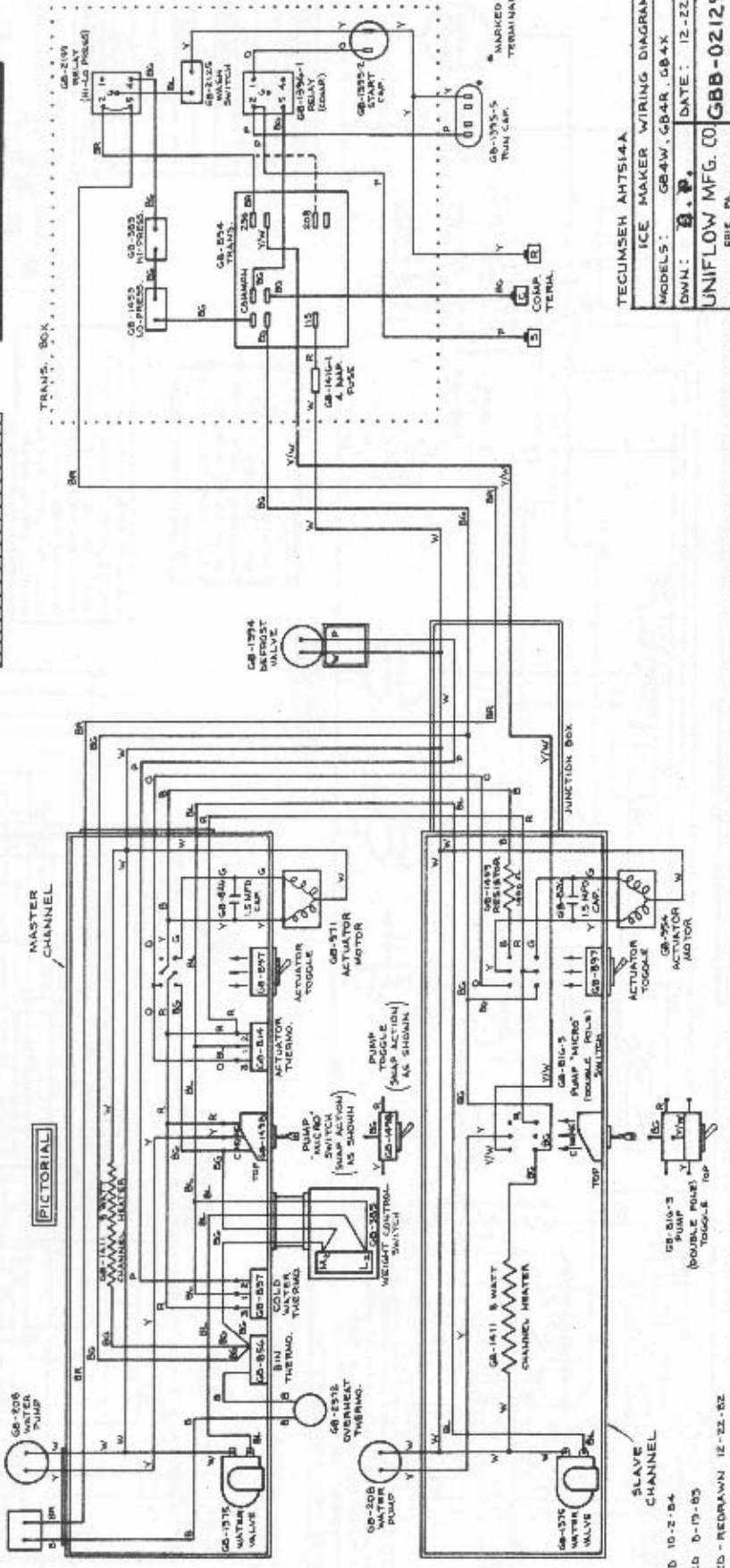
THIS DIAGRAM APPLIES TO GBB CUBERS MANUFACTURED BEFORE 3-81 AND AFTER 12-82. SEE DIAGRAM GBB-02129-J FOR CUBERS MANUFACTURED BETWEEN 10-81 AND 11-82.

**SCHEMATIC**



JUNCTION BOX FOR INCOMING LINE BEHIND LEFT END PANEL. CONNECT WITH #2 WIRE TO 250 V.-60 HZ. (OR 208 V.-60 HZ. SEE NOTE) DISCONNECT SWITCH. MINIMUM AMPCACITY 20 MAX. FUSE SIZE 20 AMP

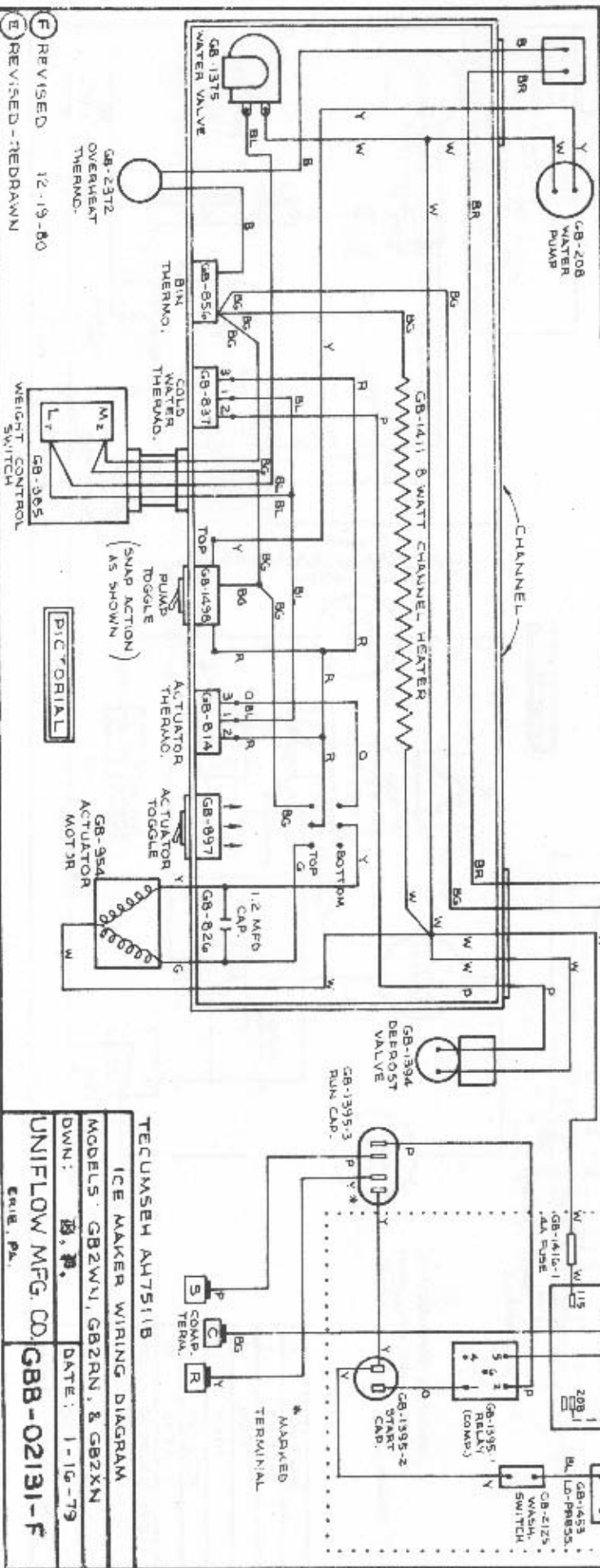
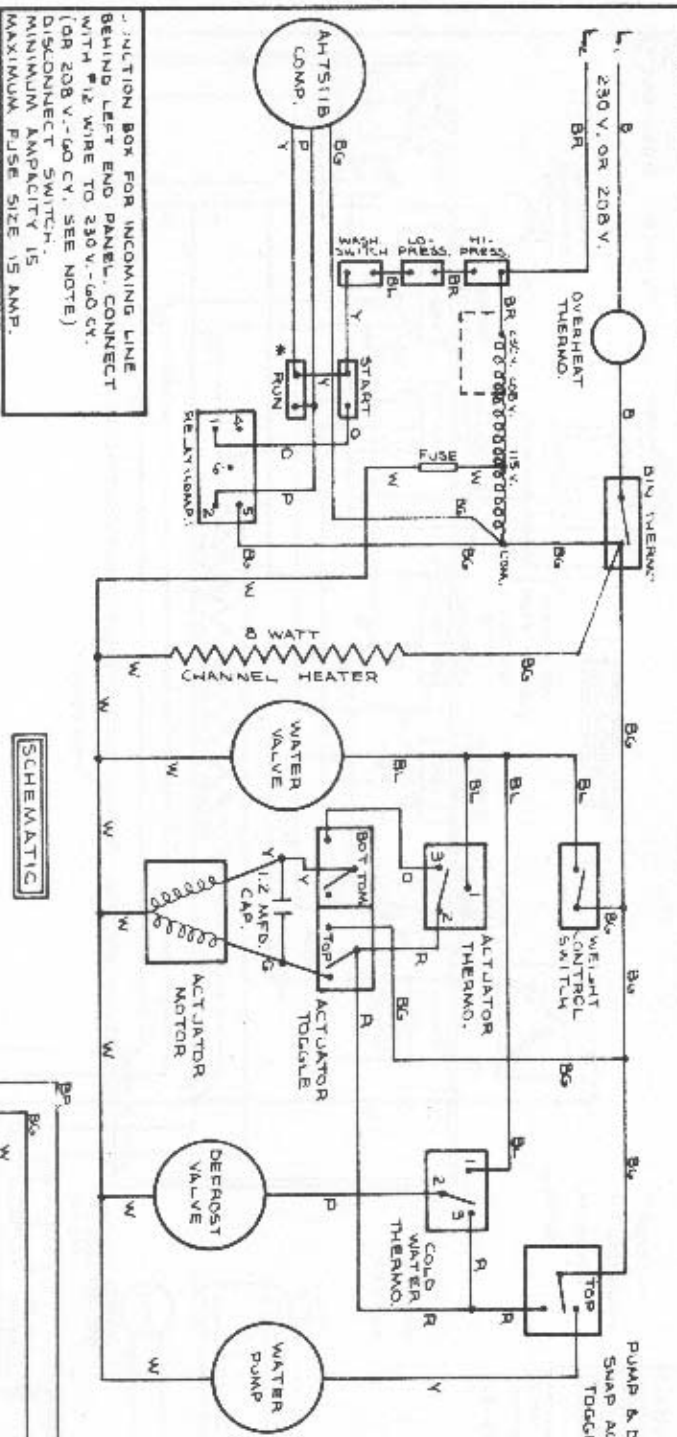
**PICTORIAL**



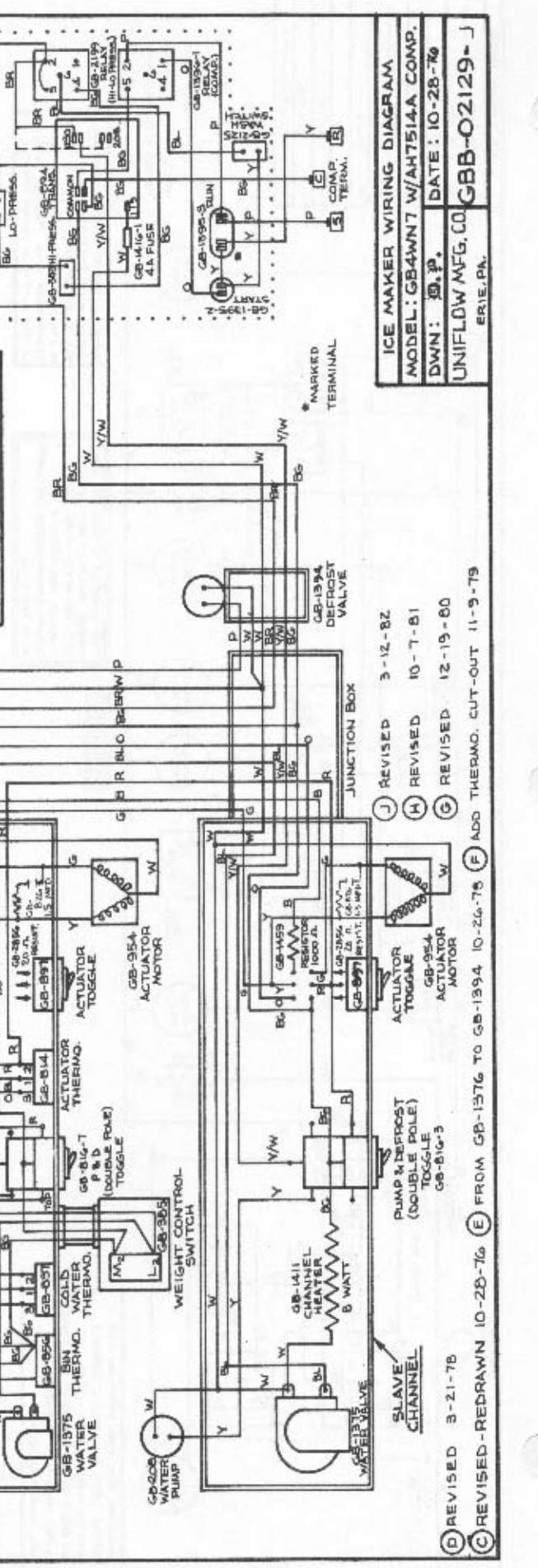
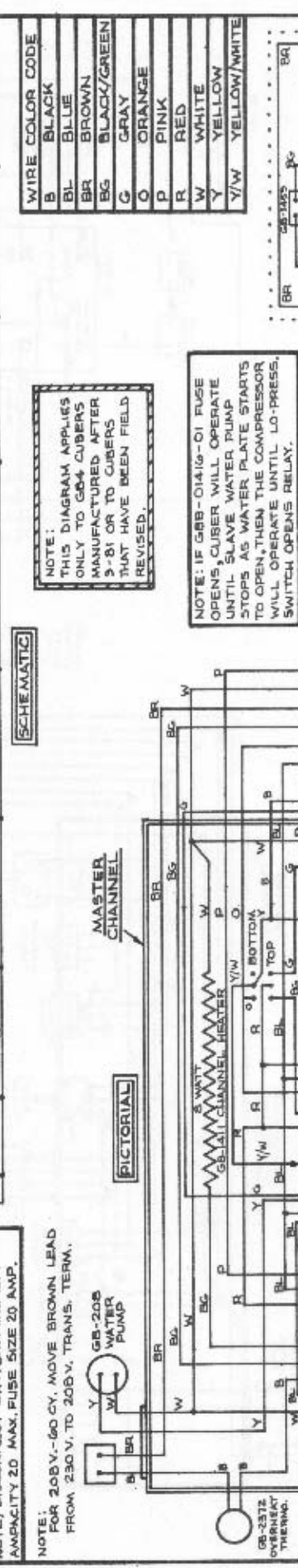
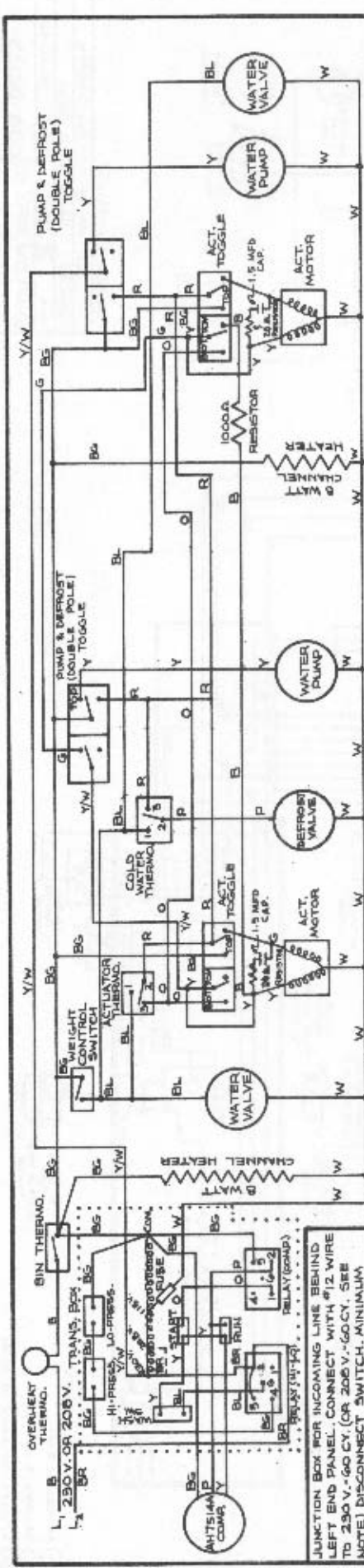
REVISIONS:  
 1. REVISED 10-12-84  
 2. REVISED 5-19-85  
 3. REVISED - REDRAWN 12-22-82

TECUMSEH ARTS144  
 ICE MAKER WIRING DIAGRAM  
 MODELS: GBAW, GB4R, GB4X  
 DWH: G.B.  
 UNIFLOW MFG. CO.  
 GBB-02129-M  
 EPH, PA.  
 DATE: 12-22-82

WIRE COLOR CODE	
B	BLACK
BL	BLUE
BR	BROWN
BG	BLACK/GREEN
G	GRAY
O	ORANGE
P	PINK
R	RED
W	WHITE
Y	YELLOW



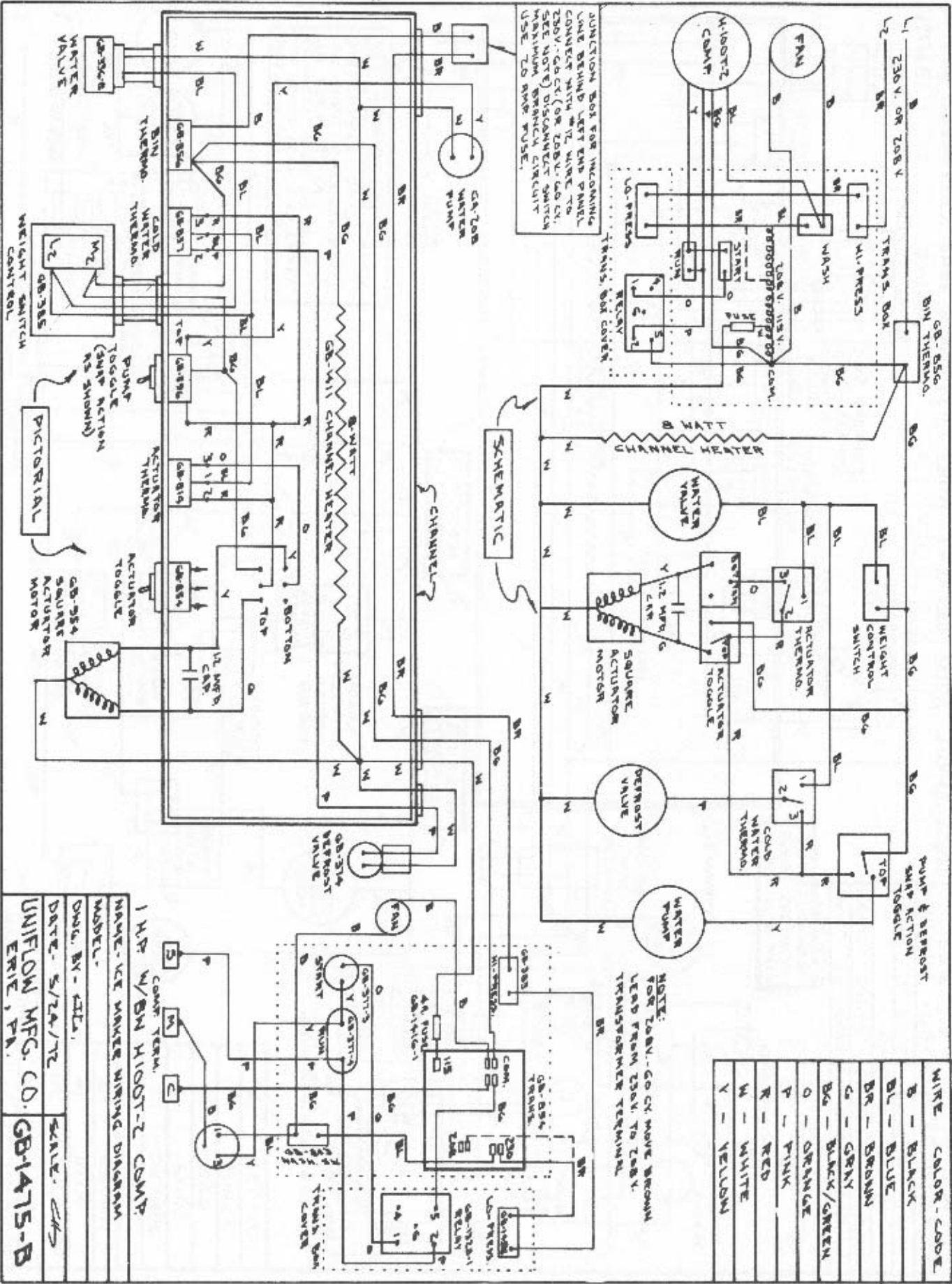
REVISED 12-19-80  
 REVISED - REDRAWN





WIRE	COLOR	CODE
B	BLACK	
BL	BLUE	
BR	BROWN	
G	GRAY	
BG	BLACK/GREEN	
O	ORANGE	
P	PINK	
R	RED	
W	WHITE	
Y	YELLOW	

NOTE:  
FOR 208V.-60 CY. WAVE BROWN  
LEAD FROM 250V. TO 208V.  
TRANSFORMER TERMINAL



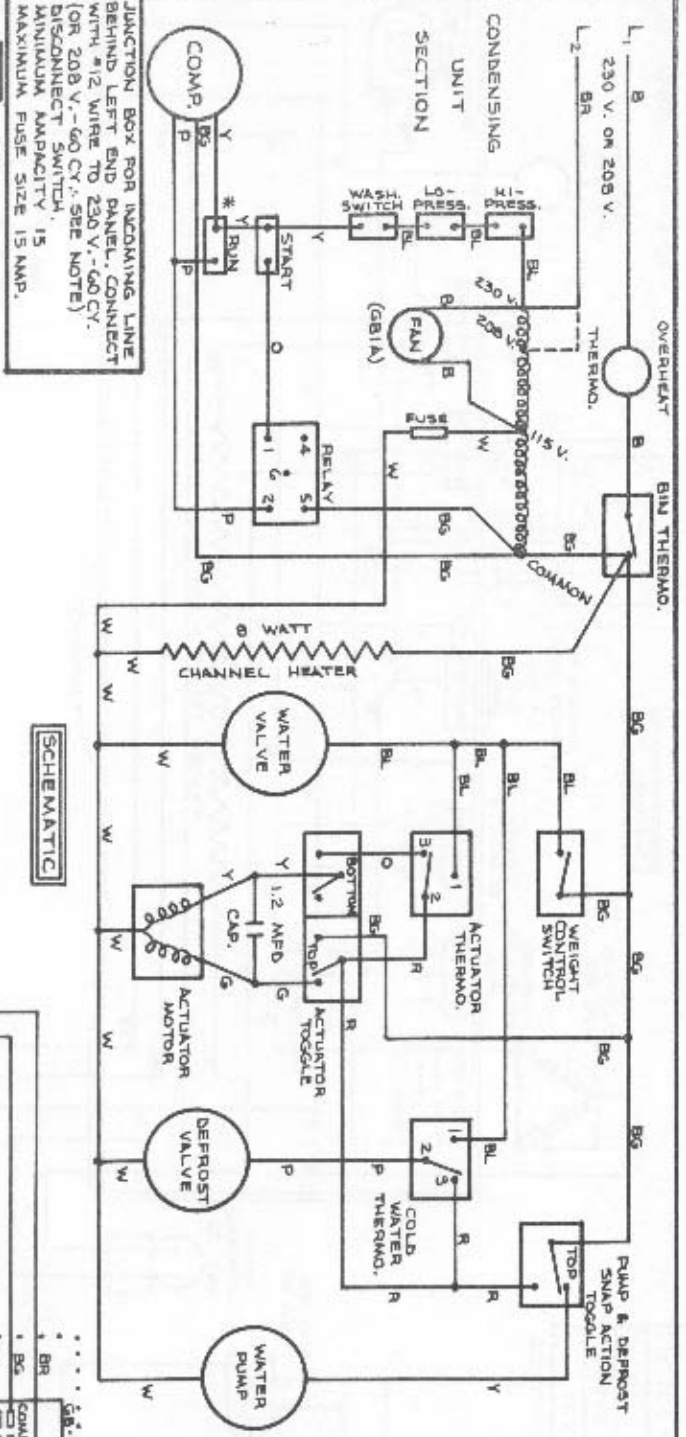
1 HP W/DW HI-DIST-2 COMP  
NAME-ICE MAKER WIRING DIAGRAM  
MODEL-  
DATE-5/24/72  
UNIFLOW MFG. CO.  
EMIE, PA.

SCALE-CHS

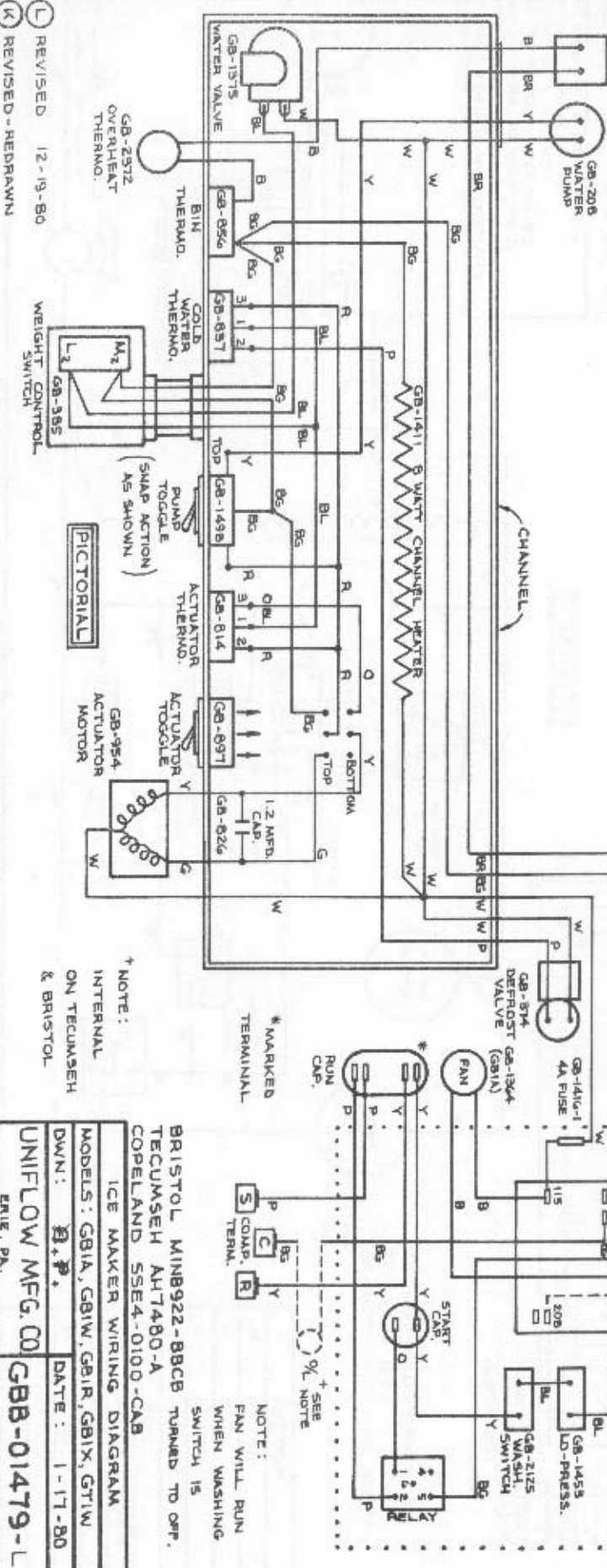
GB-1475-B



WIRE	COLOR	CODE
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BL	BLUE	
BR	BROWN	
BG	BLACK/GREEN	
G	GRAY	
O	ORANGE	
P	PINK	
R	RED	
W	WHITE	
Y	YELLOW	



JUNCTION BOX FOR INCOMING LINE BEHIND LEFT END PANEL. CONNECT WITH #12 WIRE TO 230 V. - 60 CY. (OR 208 V. - 60 CY. SEE NOTE) DISCONNECT SWITCH. MINIMUM AMPACITY 15. MAXIMUM FUSE SIZE 15 AMP.



REVISIONS:

- (L) REVISED 12-19-80
- (K) REVISED - REDRAWN

NOTE:

FOR 208 V. - 60 CY. MOVE BROWN LEAD FROM 230 V. TO 208 V. TRANSFORMER TERMINAL.

BRISTOL MINB922-BB8B TURNED TO OFF. TECUMSEH AH7480-A COPELAND SSE4-0100-CAB ICE MAKER WIRING DIAGRAM

MODELS: GB1A, GB1W, GB1R, GB1X, GT1W

DWN: [Signature]

DATE: 1-17-80

UNIFLOW MFG. CO. ERIE, PA.

G88-01479-L

NOTE: FAN WILL RUN WHEN WASHING SWITCH IS

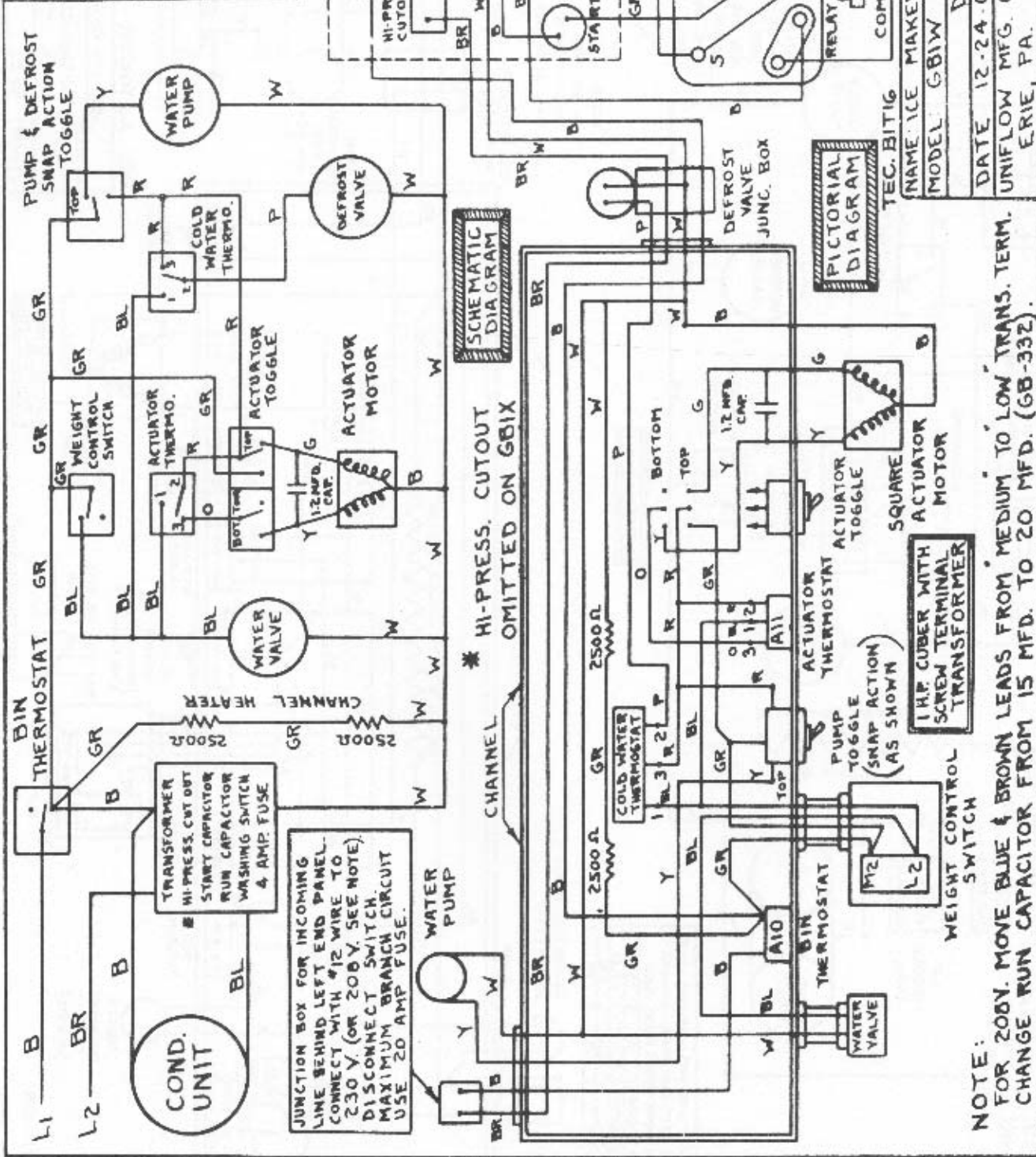
MARKED TERMINAL

\* SEE NOTE

NOTE: FAN WILL RUN WHEN WASHING SWITCH IS

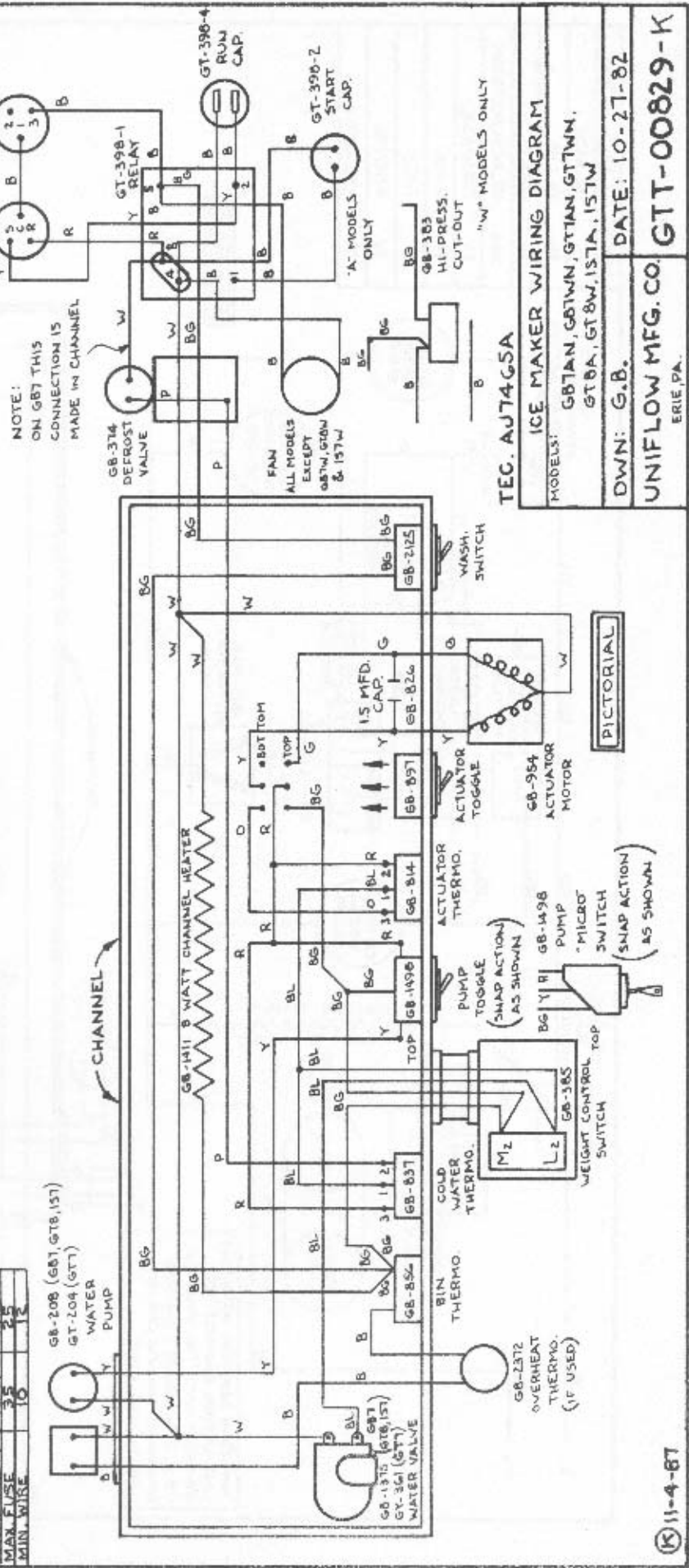
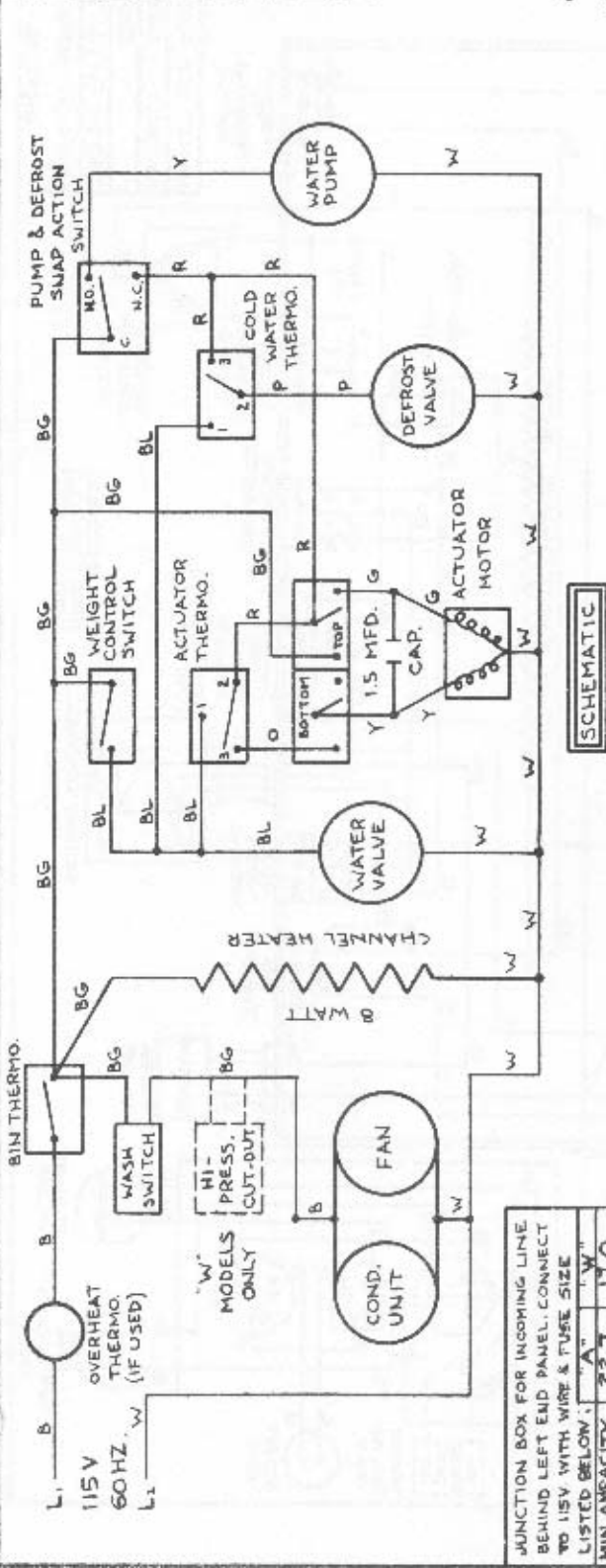


WIRE COLOR CODE	
B	— BLACK
BL	— BLUE
BR	— BROWN
G	— GRAY
GR	— GREEN
O	— ORANGE
P	— PINK
R	— RED
W	— WHITE
Y	— YELLOW



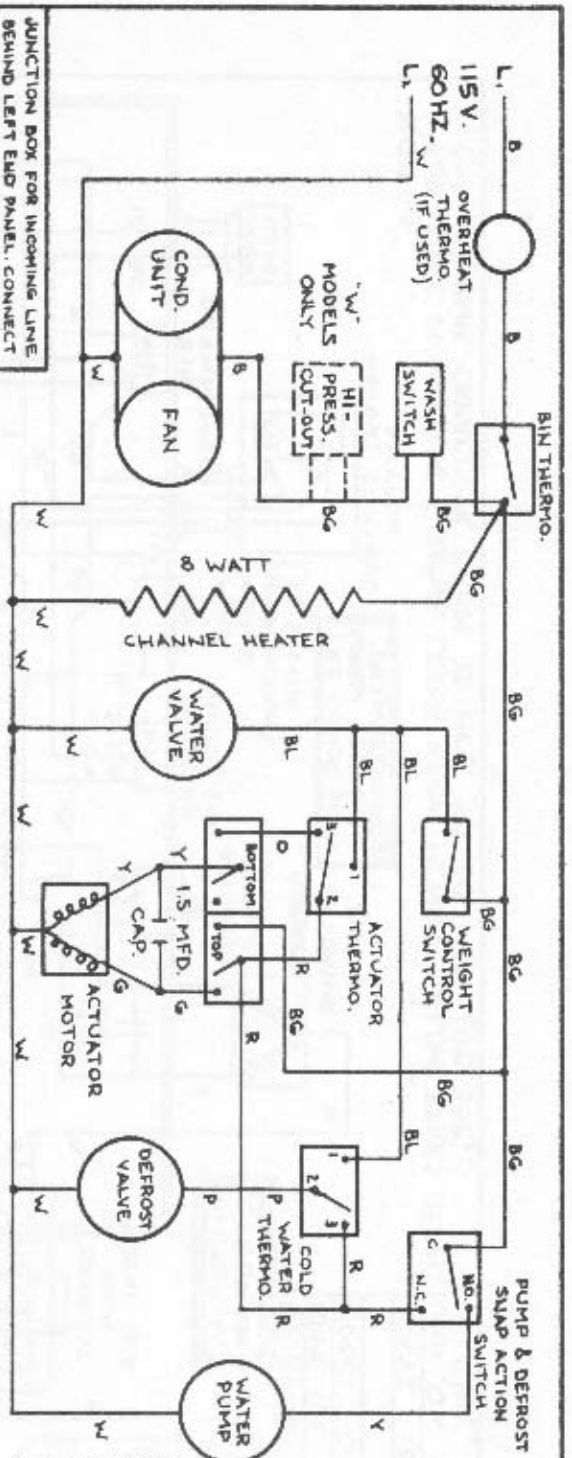
**NOTE:**  
 FOR 200V. MOVE BLUE & BROWN LEADS FROM MEDIUM TO LOW TRANS. TERM.  
 CHANGE RUN CAPACITOR FROM 15 MFD. TO 20 MFD. (GB-332).

WIRE COLOR CODE	
B	BLACK
BL	BLUE
BR	BROWN
BG	BLACK/GREEN
G	GRAY
O	ORANGE
P	PINK
R	RED
W	WHITE
Y	YELLOW



JUNCTION BOX FOR INCOMING LINE BEHIND LEFT END PANEL. CONNECT TO 18V. WITH WIRE & FUSE SIZE LISTED BELOW:

MIN. CAPACITY	2 1/2"
MAX. FUSE	15
MIN. WIRE	12

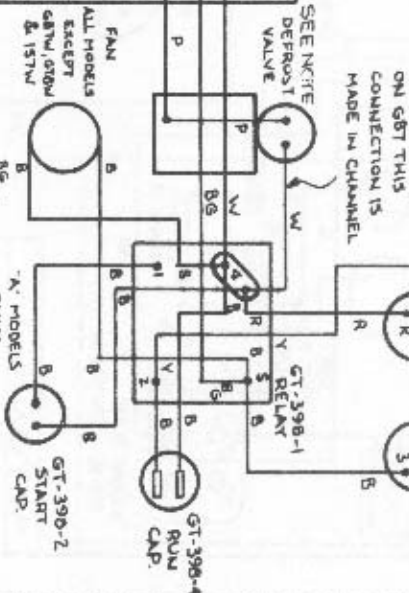
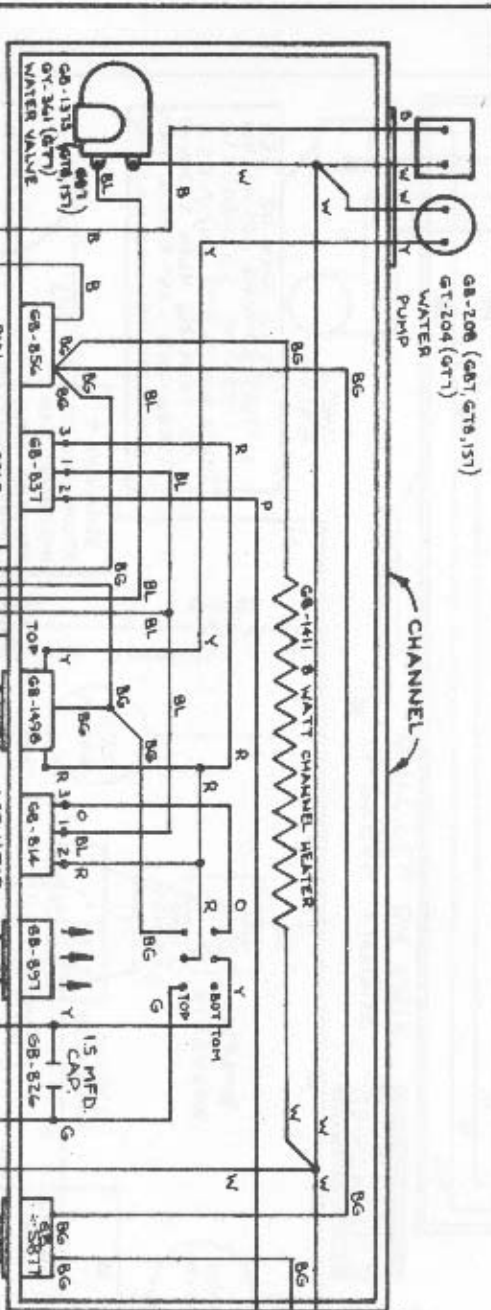


SCHEMATIC

WIRE COLOR CODE

B	BLACK
BL	BLUE
BR	BROWN
BG	BLACK/GREEN
G	GRAY
O	ORANGE
P	PINK
R	RED
W	WHITE
Y	YELLOW

NOTE: ON GT7 MODELS ONLY-MADE BEFORE SEPT. 1, 1987, THE DEFOST VALVE IS A GB-374 (LARGER WAVE BODY); ON THE SAME MODELS AFTER SEPT. 1, 1987 THE DEFOST VALVE IS A GT-1325 (SMALLER, WELDED VALVE BODY).



TEC. AUTACSA

ICE MAKER WIRING DIAGRAM

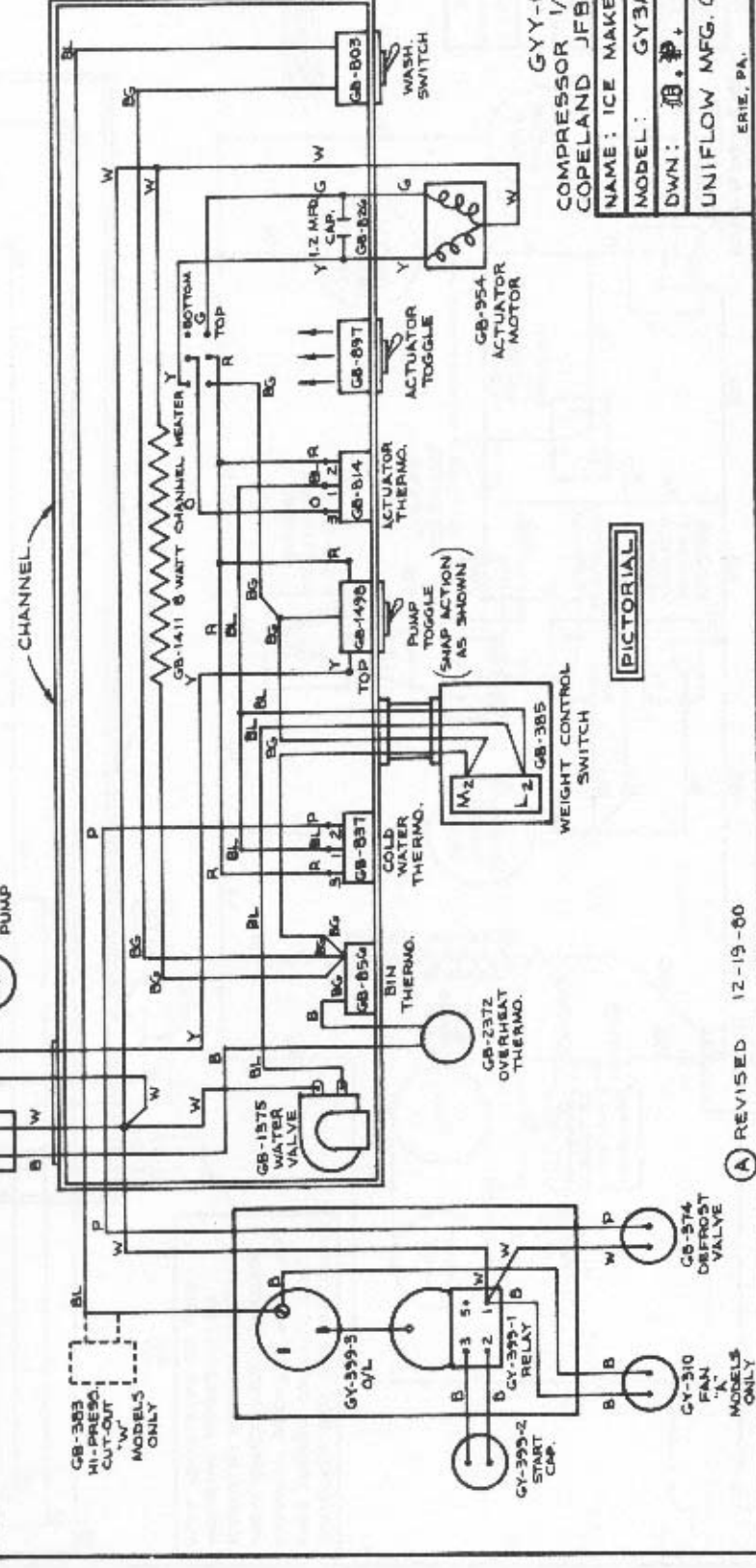
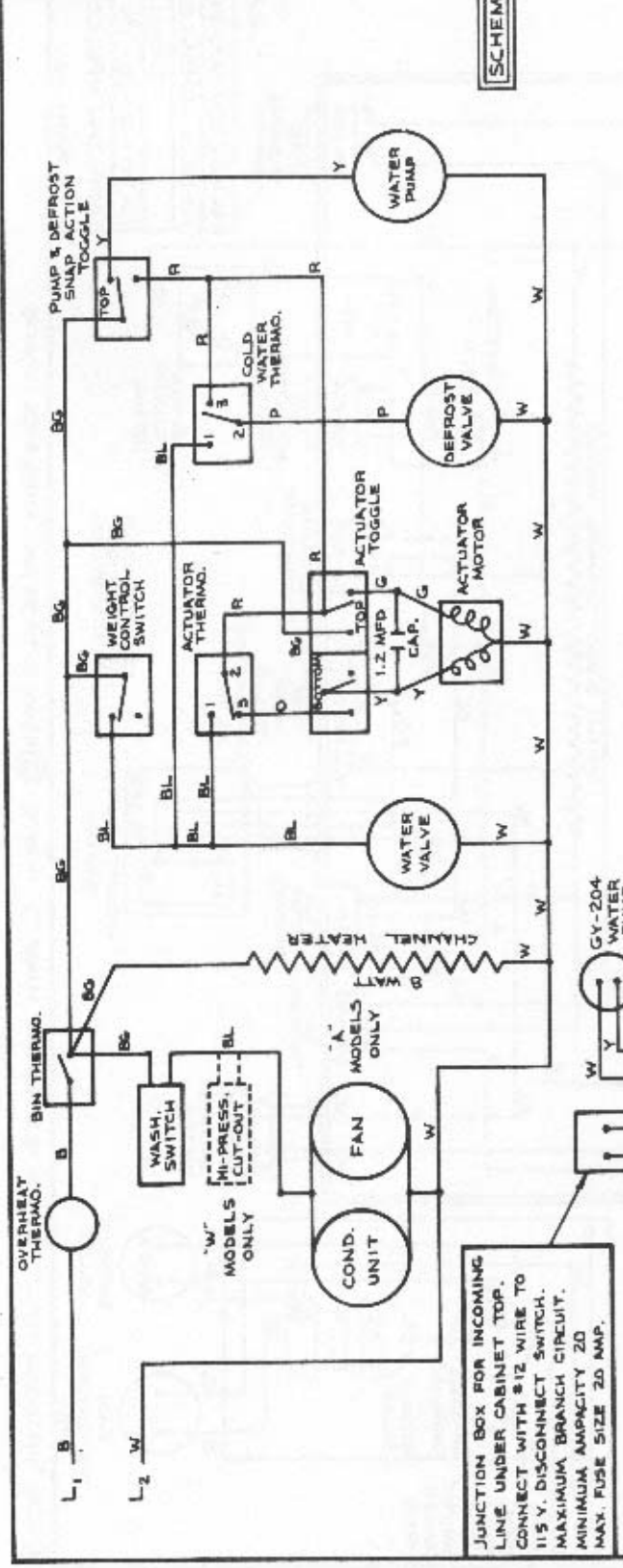
MODELS: GB1AN, GB1WN, GT1AN, GT1WN, GT6A, GT6W, 15TA, 15TW

DWN: G.B. DATE: 10-27-82

UNIFLOW MFG. CO. GTT-00829-M ERIE, PA.

- (M) 7-11-88
- (L) 3-21-88
- (K) 11-4-87

WIRE COLOR CODE	
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BL	BLUE
BG	BLACK/GREEN
G	GRAY
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P	PINK
R	RED
W	WHITE
Y	YELLOW

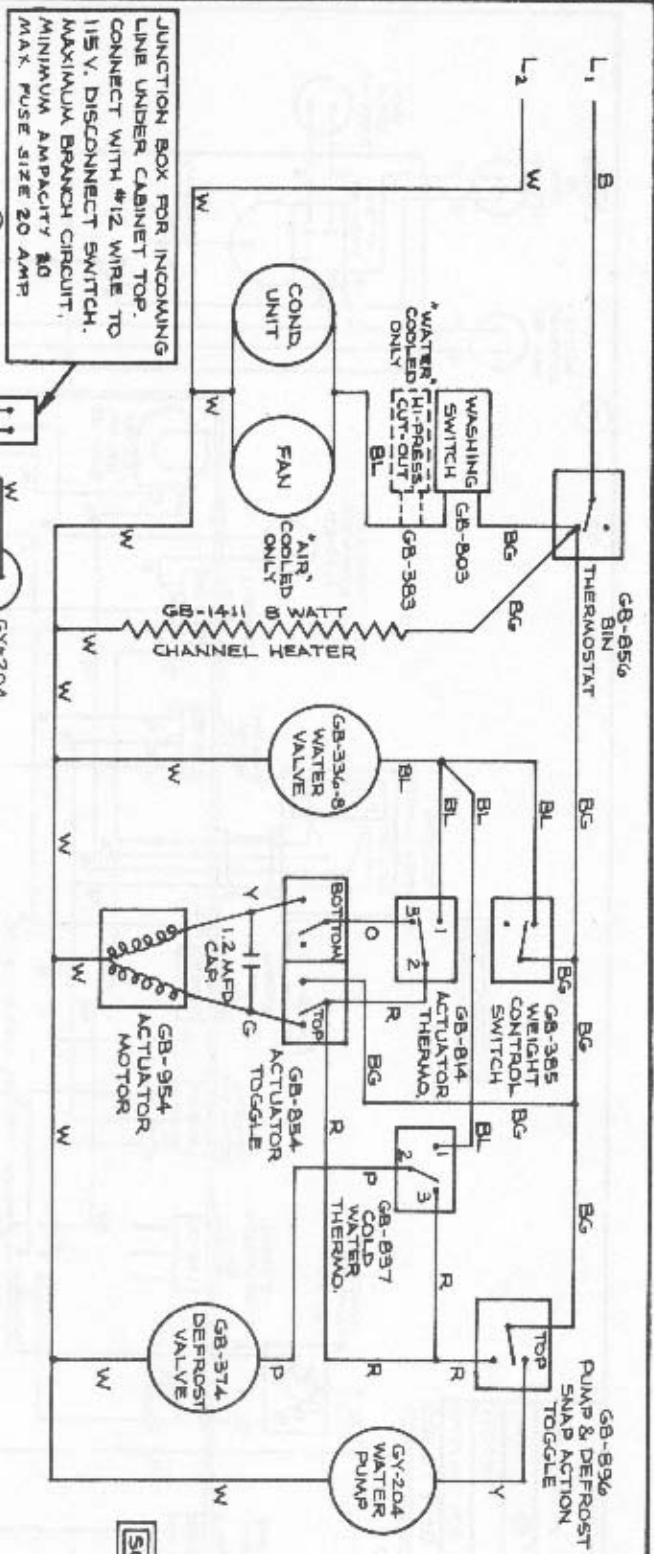


GYY-00399  
 COMPRESSOR 1/3 H.P. 115 V./60 CY.  
 COPELAND JFBI-003-IAA-214  
 NAME: ICE MAKER WIRING DIAGRAM  
 MODEL: GY3A1 & GY3W1  
 DWN: *JB*  
 DATE: 12-10-79  
 UNIFLOW MFG. CO.  
 ERIE, PA.

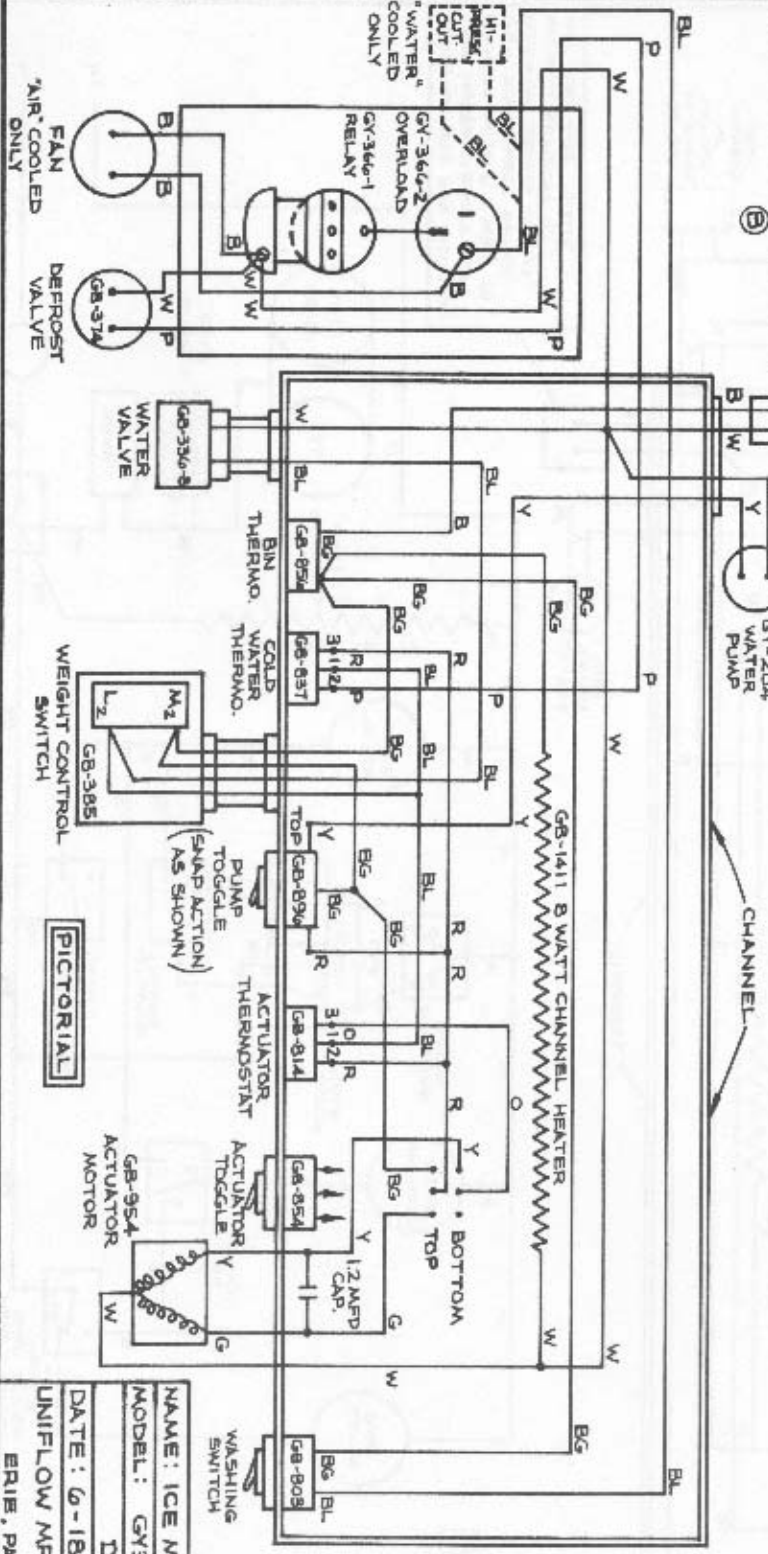
(A) REVISED 12-19-80



WIRE COLOR CODE	
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BL	BLUE
G	GRAY
BG	BLACK/GREEN
O	ORANGE
P	PINK
R	RED
W	WHITE
Y	YELLOW



**[SCHEMATIC]**



**[PICTORIAL]**

GY-366  
COMPRESSOR  
HUPP ATCH33-1

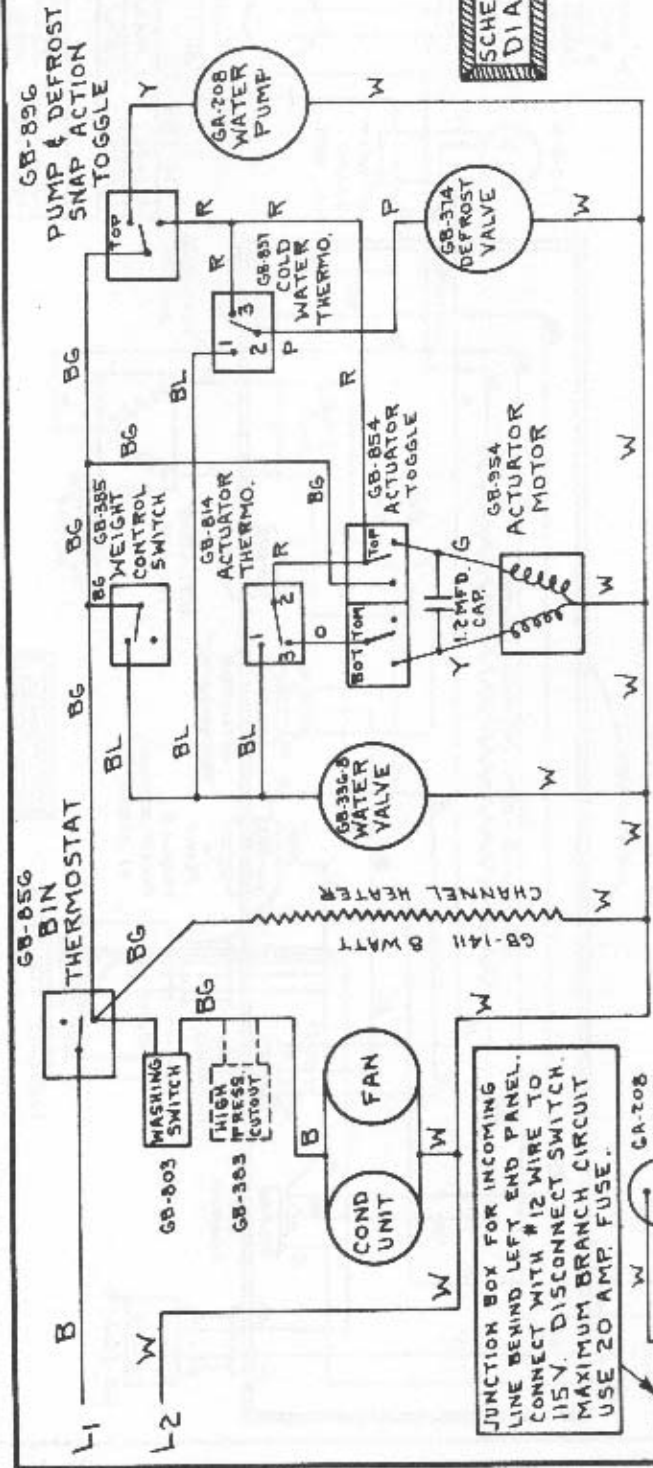
NAME: ICE MAKER WIRING DIAGRAM  
 MODEL: GY3A1 & GY3W1  
 DWN: J.P.  
 DATE: 6-18-75 SCALE: 4/7  
 UNIFLOW MFG. CO. GYY-00824-B  
 ERIE, PA.

Ⓐ ADD "WARNING ETC.", Ⓑ FROM 15 TO 20 MIN. CAPACITY 11-19-75 Ⓒ FROM 15 TO 20 AMP FUSE SIZE 11-19-75



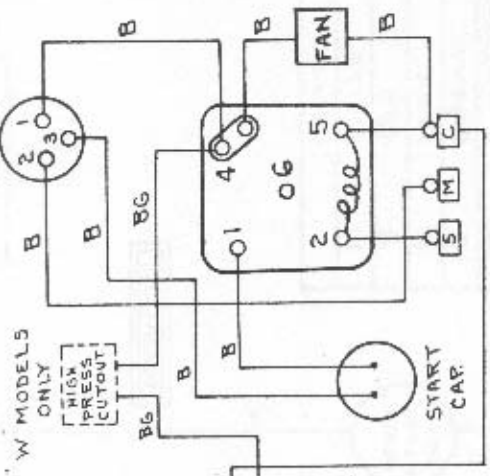
WIRE COLOR CODE	
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G	GRAY
BG	BLACK/GREEN
O	ORANGE
P	PINK
R	RED
W	WHITE
Y	YELLOW

SCHEMATIC  
DIAGRAM



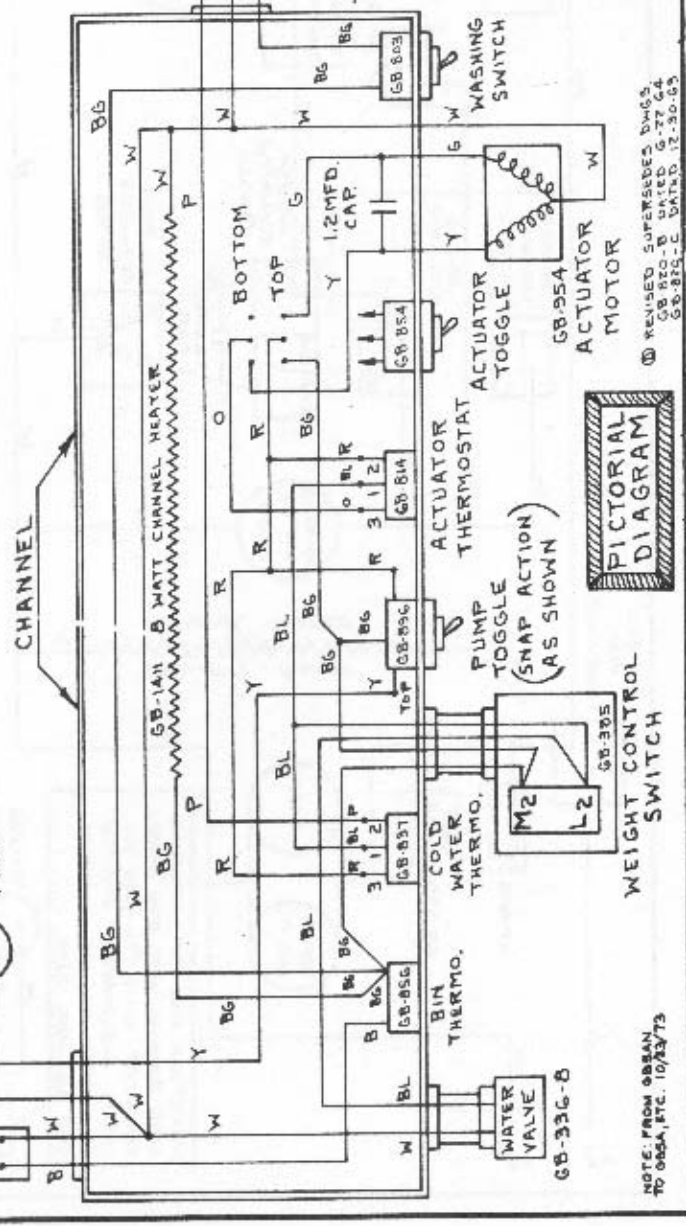
JUNCTION BOX FOR INCOMING LINE BEHIND LEFT END PANEL. CONNECT WITH #12 WIRE TO 115 V. DISCONNECT SWITCH. MAXIMUM BRANCH CIRCUIT USE 20 AMP. FUSE.

THERM. OVERLOAD PROT.



W MODELS ONLY  
HIGH PRESS. CUTOUT

PICTORIAL  
DIAGRAM



NOTE: FROM ORSAN TO ORSA, ETC. 10/23/73

NAME: ICE MAKER WIRING DIAGRAM

MODEL: GB5A & GB5W

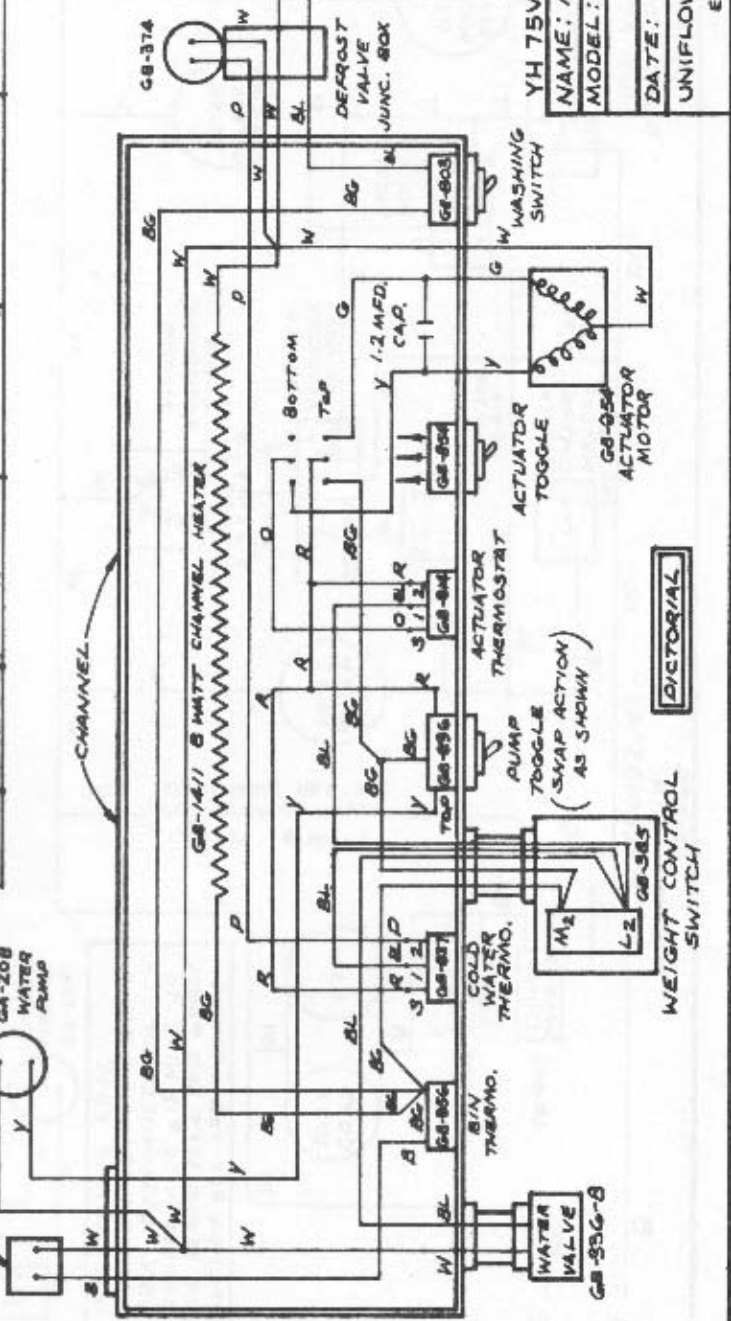
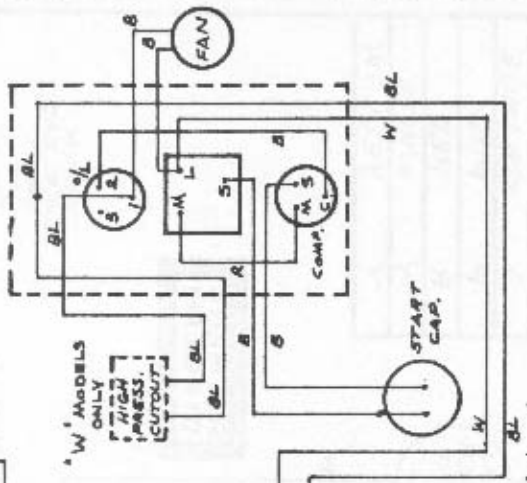
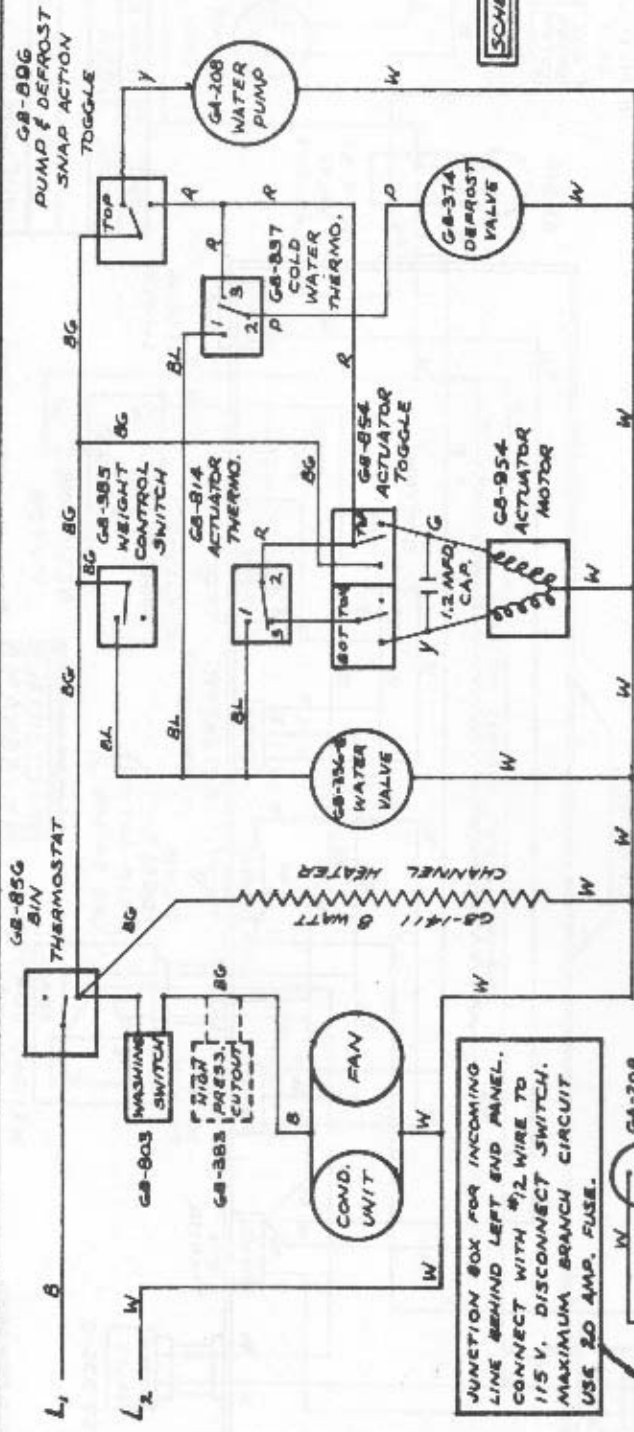
DATE: 9-22-71 DWG. BY: D.E.M.

SCALE: C4D

UNIFLOW MFG. CO. ERIE, PA. **GB-820-D**

REVISIONS: DWG. 9-27-64  
GB-820-B  
GB-825-C DATED 12-30-65

WIRE COLOR CODE	
B	BLACK
BL	BLUE
G	GRAY
BG	BLACK/GREEN
O	ORANGE
P	PINK
R	RED
W	WHITE
Y	YELLOW



YH 75V-1

NAME: ICE MAKER WIRING DIAGRAM  
 MODEL: GB5AJ & GB5WJ  
 DATE: 6-27-73  
 UNIFLOW MFG. CO. ERIE, PA.

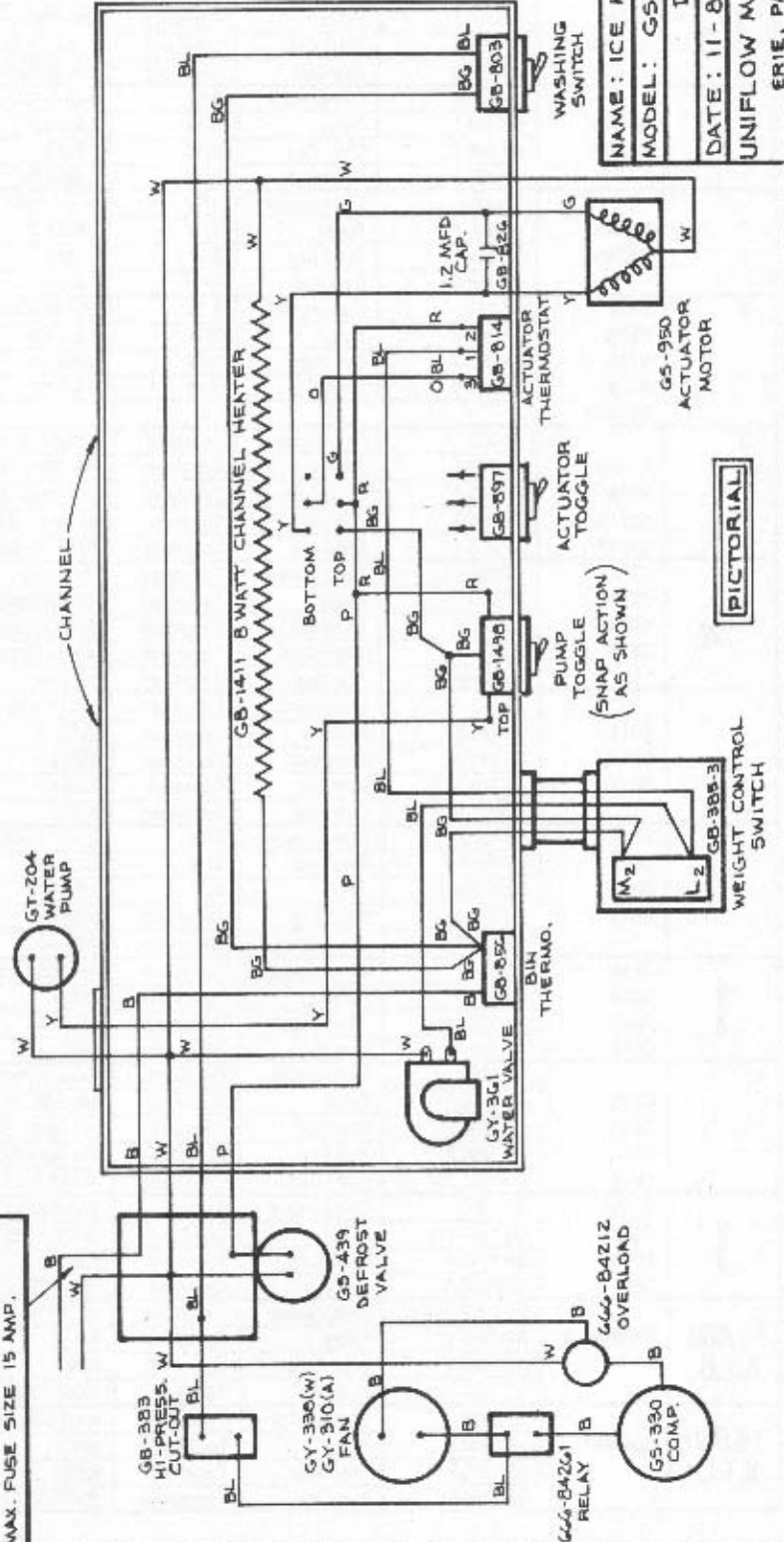
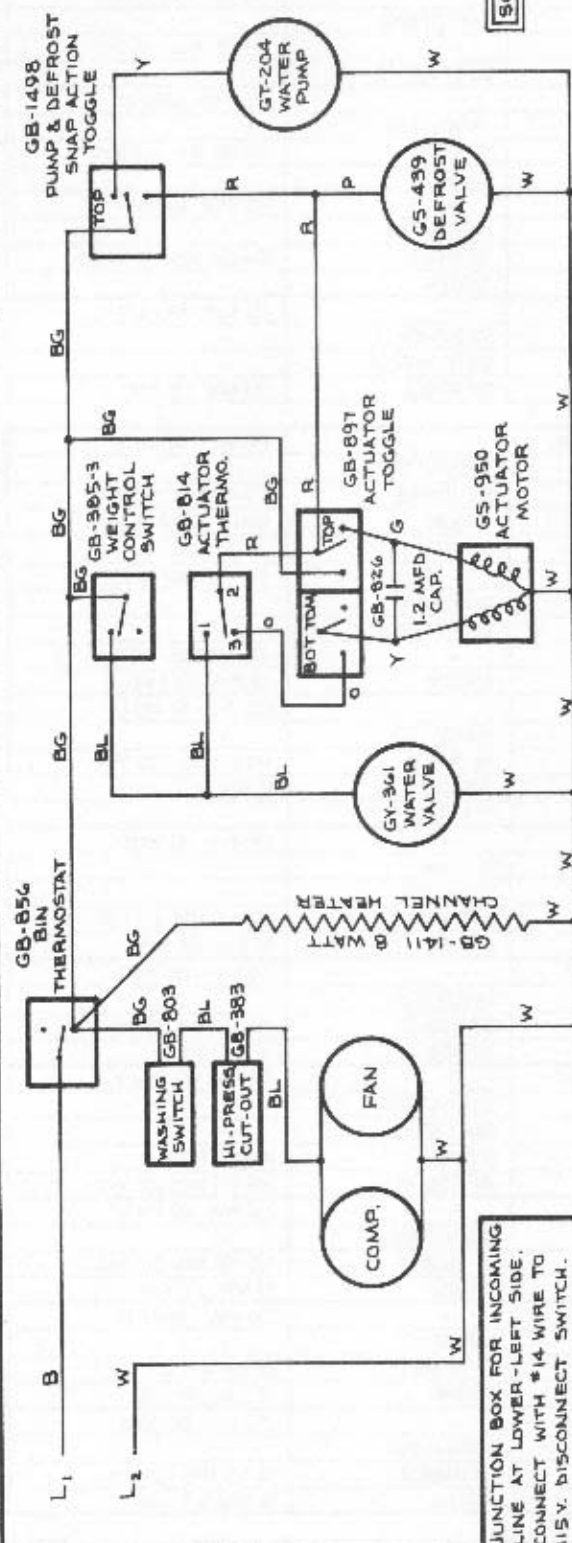
DWN: D.P.  
 SCALE: 4/8

GB-1858



WIRE COLOR CODE	
B	BLACK
BL	BLUE
G	GRAY
BG	BLACK/GREEN
O	ORANGE
P	PINK
R	RED
W	WHITE
Y	YELLOW

SCHEMATIC



PICTORIAL

GS-330  
COMPRESSOR  
TEC. AE3425A

NAME: ICE MAKER WIRING DIAGRAM  
 MODEL: G5GAG4HK & G5GW64HK  
 DATE: 11-8-78 SCALE: 1/4"  
 UNIFLOW MFG. CO. ERIE, PA.  
 DWN: *[Signature]*  
**G55-00850**

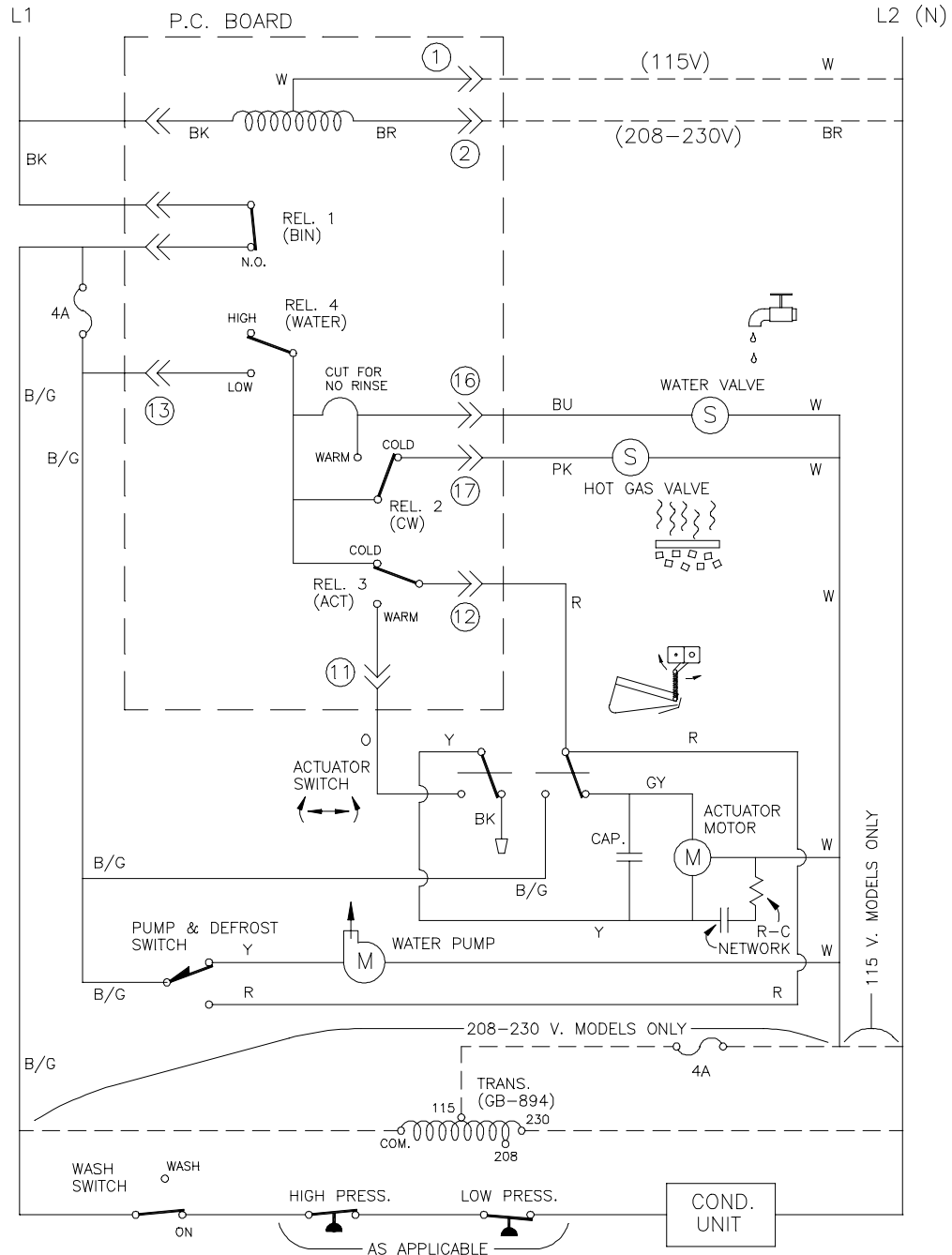
# KOLD-DRAFT ELECTRONIC ICE CUBER

## GENERIC SCHEMATIC WIRING DIAGRAM

(S) = SOLENOID  
 (K) = COIL  
 (M) = MOTOR

WIRING DIAGRAM  
 KOLD DRAFT ELECTRONIC ICE CUBE MAKER  
 60 HERTZ

COLOR CODE	
BK	BLACK
B/G	BLACK/GREEN
BU	BLUE
GY	GRAY
O	ORANGE
PK	PINK
R	RED
W	WHITE
Y	YELLOW

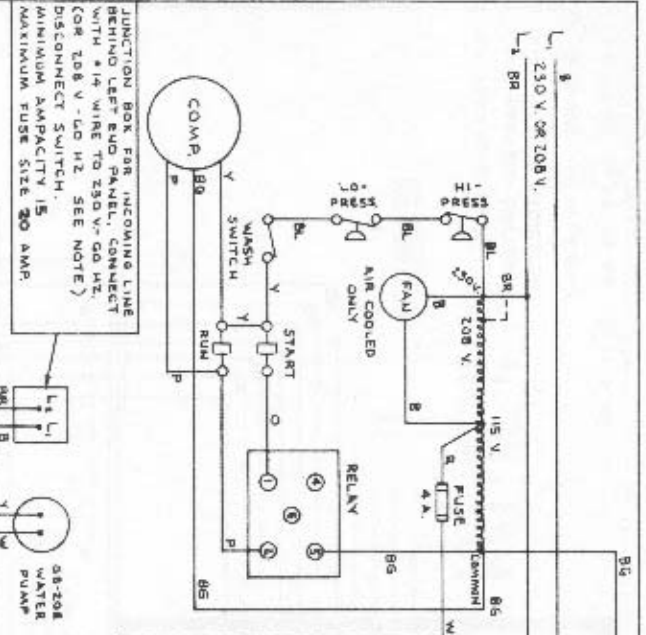


WIRE COLOR CODE	
B	BLACK
BL	BLUE
BR	BROWN
BG	BLACK/GREEN
G	GRAY
O	ORANGE
P	PINK
R	RED
W	WHITE
Y	YELLOW

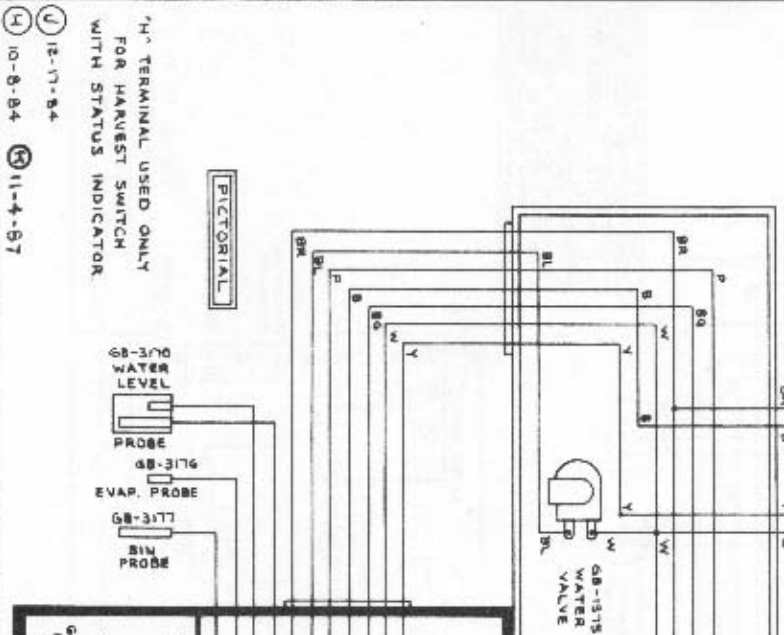
NOTE:  
PARTS ARE SHOWN CURRENT AT THE INDICATED REVISION DATE. REFER TO PARTS MANUAL FOR CHANGES.

NOTE:  
FOR 208 V.-60 HZ. MOVE BROWN LEAD FROM 230 V. TO 208 V. TRANSFORMER TERMINAL

NOTE:  
FAN WILL RUN WHEN WASHING SWITCH IS TURNED TO OFF.



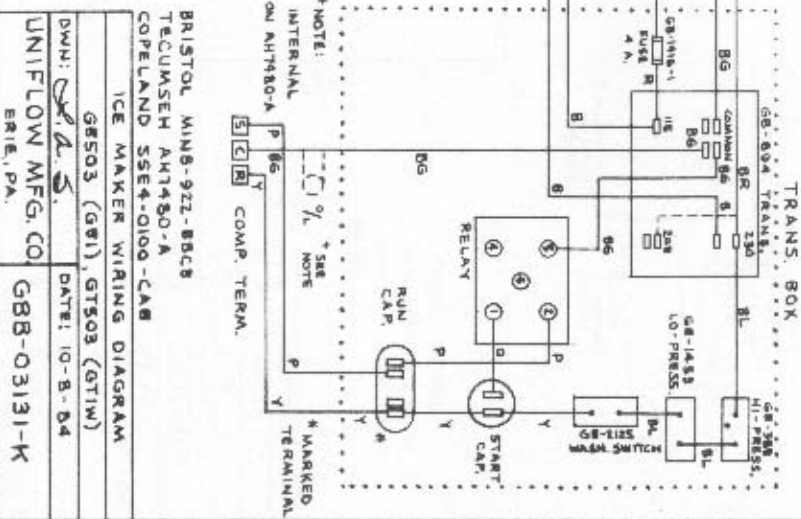
**SCHEMATIC**



**PICTORIAL**

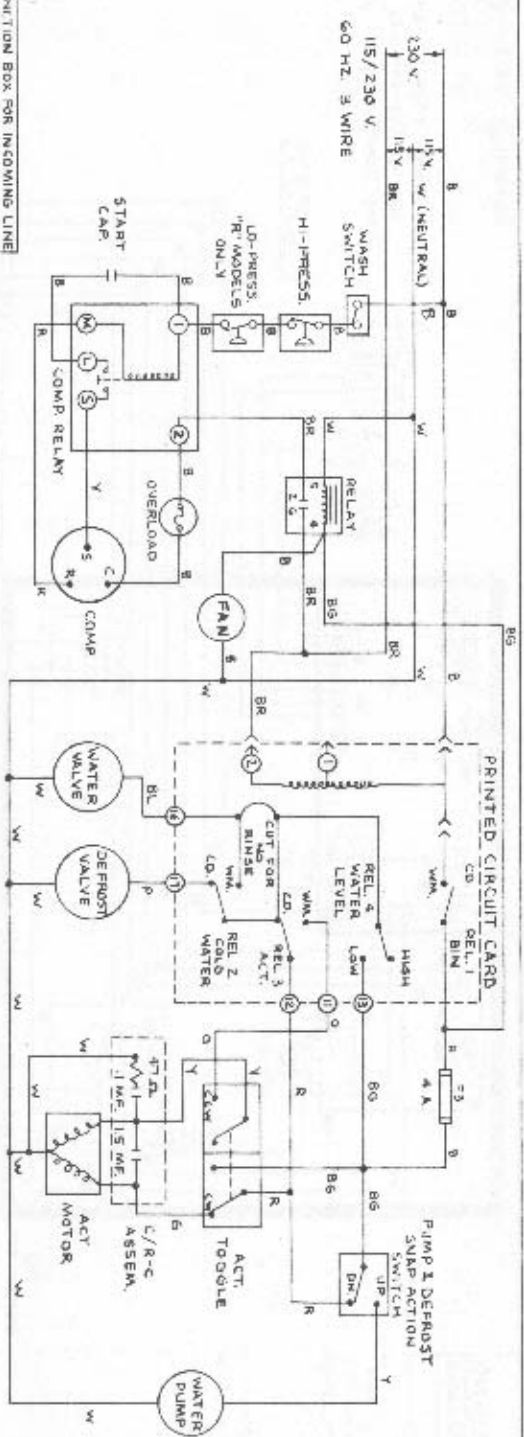
\*H<sup>1</sup> TERMINAL USED ONLY FOR HARVEST SWITCH WITH STATUS INDICATOR

- ① 12-17-84
- ② 10-8-84
- ③ 11-4-87



BRISTOL M1N8-922-B8C8  
TECUMSEH AH7480-A  
COPELAND S5E4-0100-CAB  
ICE MAKER WIRING DIAGRAM  
G8503 (G81), G1503 (G1W)  
DWN: *S.A.S.* DATE: 10-8-84  
UNIFLOW MFG. CO. GBB-03131-K  
ERIE, PA.

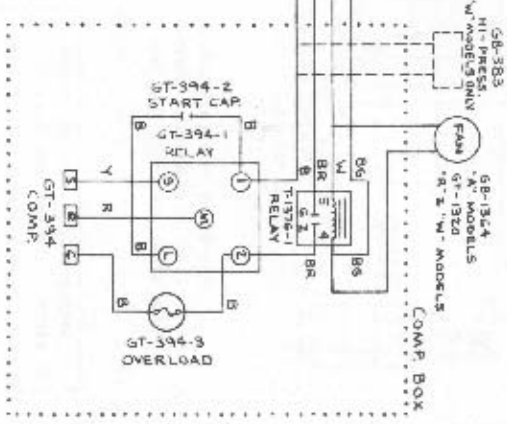
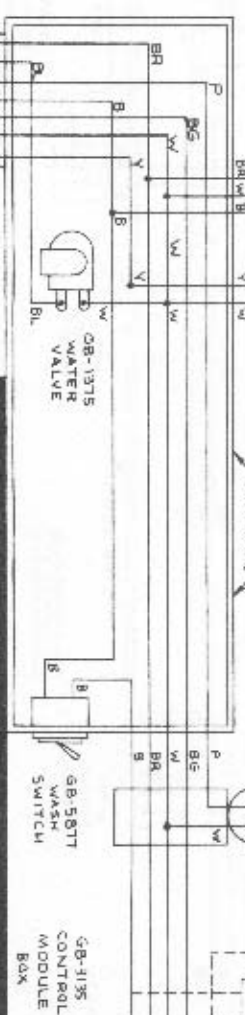
WIRE COLOR CODE	
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BL	BLUE
BR	BROWN
BG	BLACK/GREEN
G	GRAY
O	ORANGE
P	PINK
R	RED
W	WHITE
Y	YELLOW



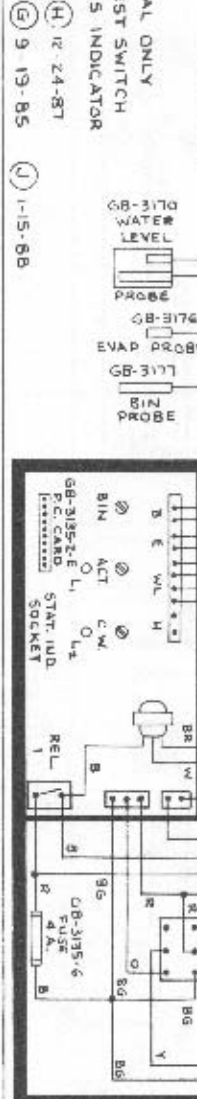
NOTE:  
FAN WILL RUN WHEN WASHING SWITCH IS TURNED TO OFF

UNIFLOW BOX FOR INCOMING LINE BEHIND LEFT END PANEL. CONNECT TO 115/230 V. 60 HZ. 3 WIRE SUPPLY. WIRE GAUGE AND FUSE SIZE LISTED BELOW:

MIN. AMP.	"A"	"W"	"R"
MIN. FUSE	10	12.5	16
MIN. WIRE #12	#14	#12	#10



PICTORIAL



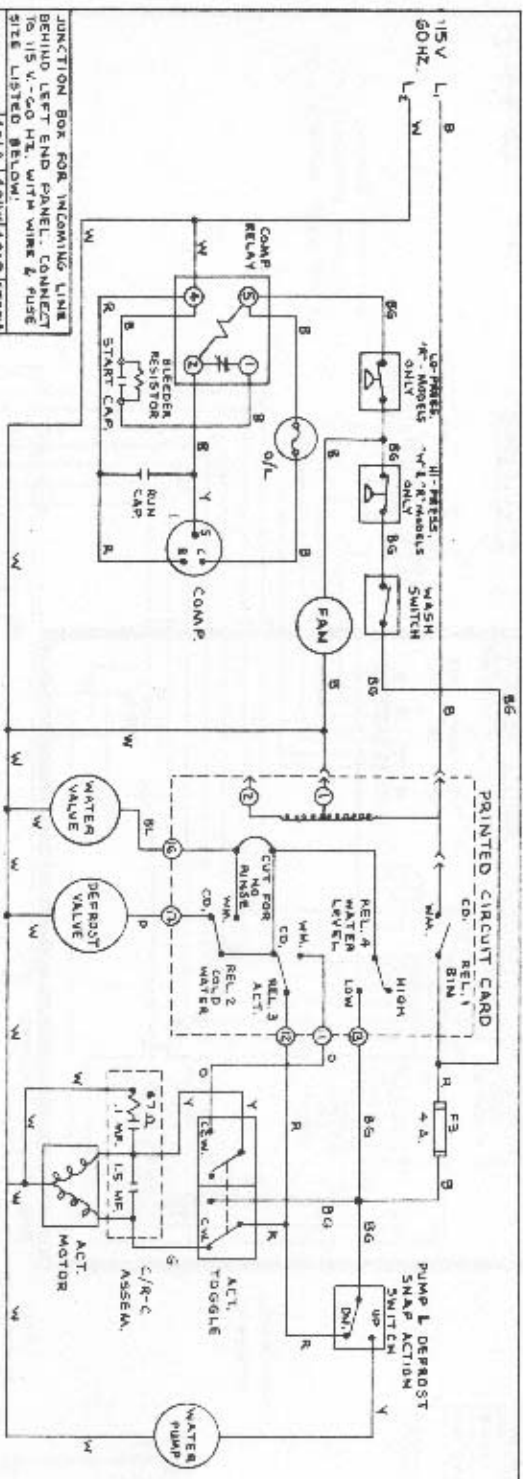
NOTE  
PARTS ARE SHOWN CURRENT AT THE INDICATED REVISION DATE. REFER TO PARTS MANUAL FOR CHANGES

"H" TERMINAL ONLY FOR HARVEST SWITCH WITH STATUS INDICATOR

- F 3-29-85
- G 3-29-85
- H 12-24-87
- I 9-19-85
- J 1-15-88

TEC. A1745B 115-208/230V-60HZ 3WIRE  
ICE MAKER WIRING DIAGRAM  
GB402, G1402  
DATE: 3-29-85  
UNIFLOW MFG. CO. G88-03201-J  
CRIL, PA.

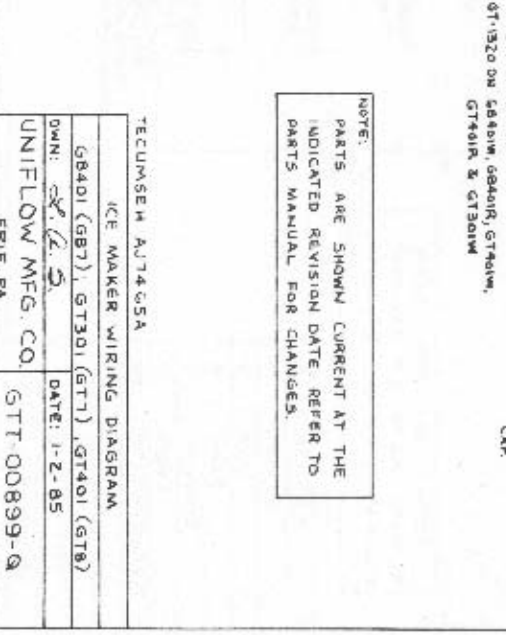
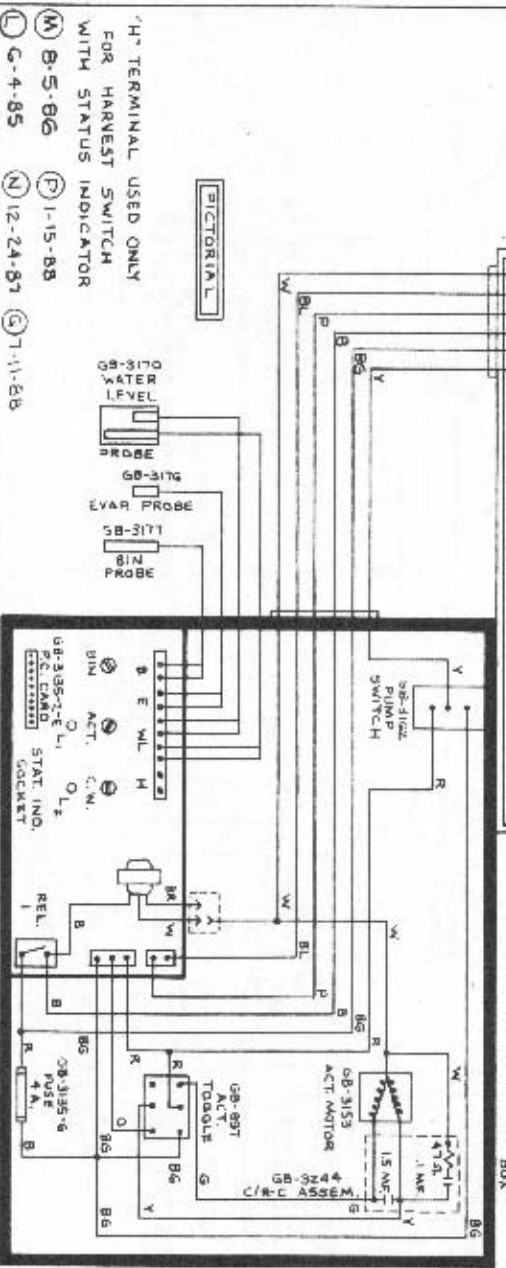
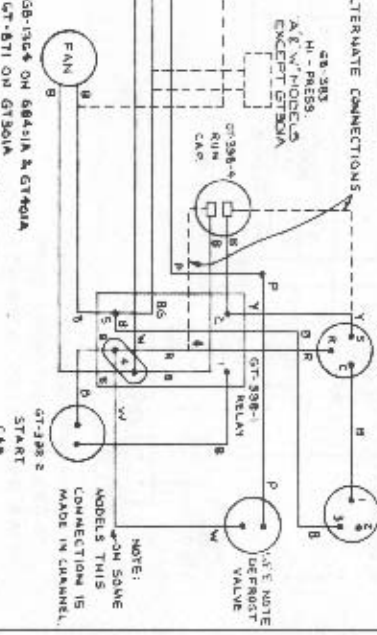
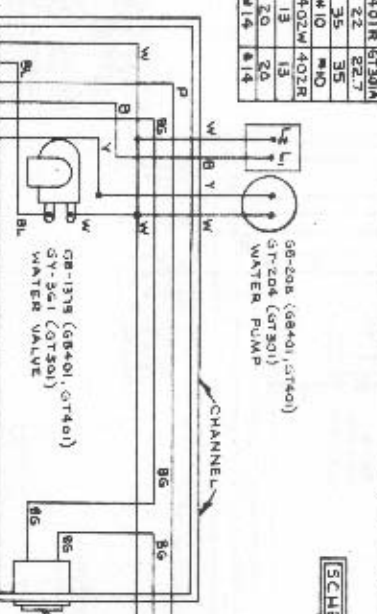
WIRE	COLOR	CODE
B	BLACK	
BL	BLUE	
BR	BROWN	
BG	BLACK/GREEN	
G	GRAY	
O	ORANGE	
P	PINK	
R	RED	
W	WHITE	
Y	YELLOW	



JUNCTION BOX FOR INCOMING LINE BEHIND LEFT END PANEL. CONNECT TO 115 V.-60 HZ. WITH WIRE & FUSE SIZE LISTED BELOW.

MIN. AMP	401A	401W/401R	GT301A
MAX. FUSE	25	18	22
MIN. WIRE #10	12	15	35
MIN. WIRE #12	10	12	30
MIN. AMP	GT301W/402A	402W/402R	
MAX. FUSE	25	16	13
MIN. WIRE #12	10	10	20
MIN. WIRE #14	12	14	14

**SCHEMATIC**



- ① H<sup>+</sup> TERMINAL USED ONLY FOR HARVEST SWITCH WITH STATUS INDICATOR
- ② B-5-B6
- ③ P-1-15-B8
- ④ C-4-85
- ⑤ 12-24-87
- ⑥ 7-1-1-88

NOTE:  
PARTS ARE SHOWN CURRENT AT THE INDICATED REVISION DATE REFER TO PARTS MANUAL FOR CHANGES.

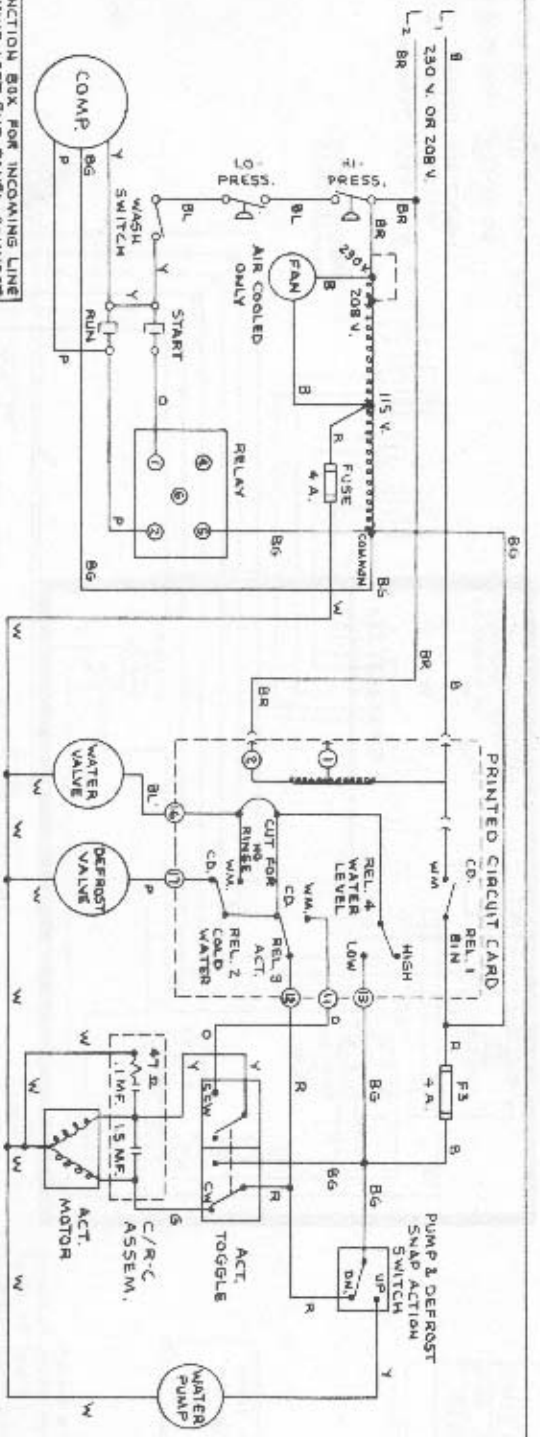
TECUMSEH AJ74 USA  
ICE MAKER WIRING DIAGRAM  
OWN: *[Signature]*  
UNIFLOW MFG. CO.  
ERIE, PA.  
DATE: 1-2-85  
GTT-00899-Q



WIRE COLOR CODE	
B	BLACK
BL	BLUE
BR	BROWN
BG	BLACK/GREEN
G	GRAY
O	ORANGE
P	PINK
R	RED
W	WHITE
Y	YELLOW

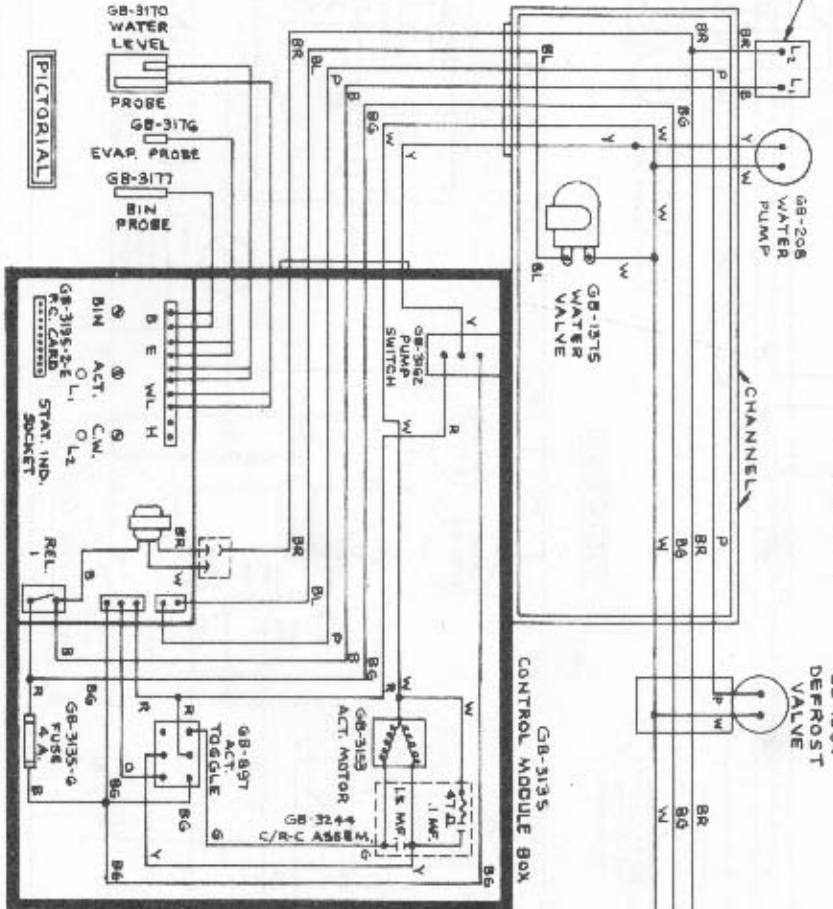
NOTE:  
PARTS ARE SHOWN CURRENT AT THE INDICATED REVISION DATE. REFER TO PARTS MANUAL FOR CHANGES.

NOTE:  
FOR 208 V. - GQ HT. MOVE BROWN LEAD FROM 250 V. TO 208 V. TRANSFORMER TERMINAL.



JUNCTION BOX FOR INCOMING LINE BEHIND LEFT END PANEL. CONNECT TO 208 OR 230 V. - 60 HZ. WITH WIRE & FUSE SIZE LISTED BELOW.

MIN. AMP.	MIN. WIRE	MAX. FUSE	MIN. WIRE
20	#14	30	#12
15	#16	20	#14
10	#18	15	#16
5	#20	10	#18



"H" TERMINAL USED ONLY FOR HARVEST SWITCH WITH STATUS INDICATOR

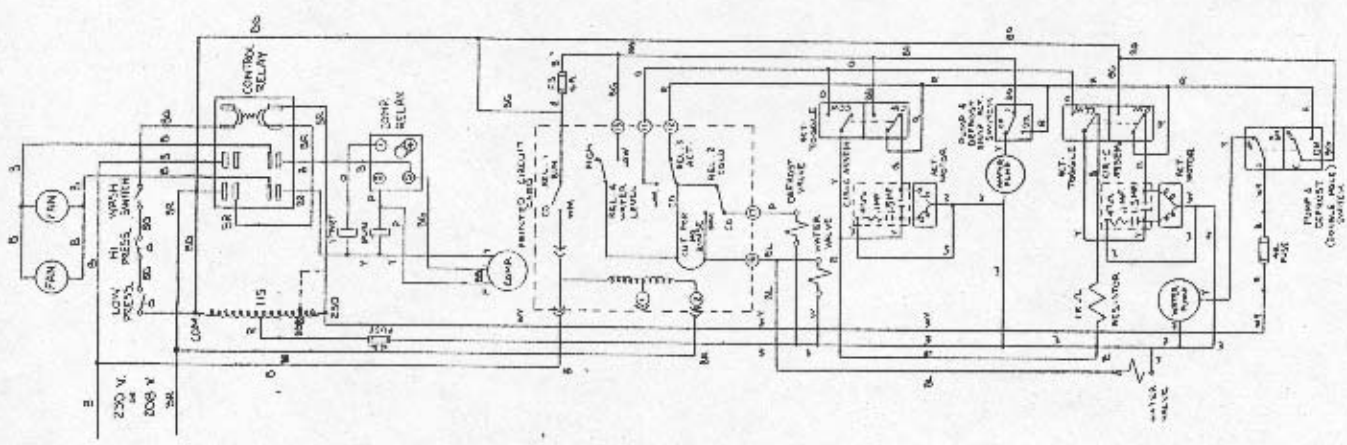
11-4-87  
G-19-85

TECUMSEH AH7511B  
ICE MAKER WIRING DIAGRAM  
G6603A, G6603W, G6603R, G7603W, G7603R  
DWN: Q.S.  
UNIFLOW MFG. CO.  
ERIE, PA.  
DATE: G-19-85  
G88-03200-J

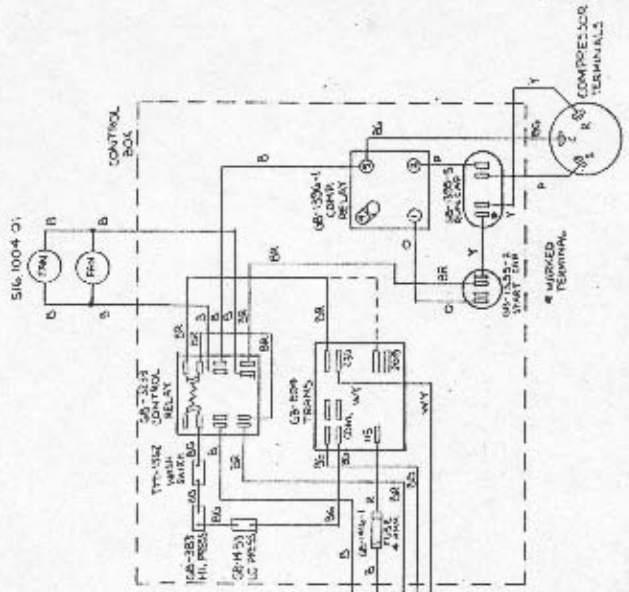
ECN	SYM	DESCRIPTION	DWN	CHK	APR	DATE
		RELEASE FOR TOOLING	06720	DL P		11-85
		(C-2)(J-6) REVISE START CAP CONNECTIONS	JFW	Dm		11-85
		(4-4) W/SH SWITCH FROM GA-3077 TO TIT-1362				
		RELEASE FOR PRODUCTION				

WIRE COLOR CODE	
B	BLACK
BL	BLU
BR	BROWN
BS	BLACK/GRYEN
G	GRY
D	ORANGE
P	PINK
R	RED
W	WHITE
WT	WHITE/YELLOW
Y	YELLOW

JUNCTION BOX FOR WIRING  
LINE BONDING LEFT END PANEL  
CONNECT WITH 6" WIRE TO  
240 V 60 Hz OR 208 V W/30  
VCE NOTE) DISCONNECT SWITCH  
MINIMUM AMPACITY IS 3  
MAXIMUM FUSE SIZE 30 C.



NOTE:  
FOR 100V-60HZ W/VE  
BROWN LEAD FROM 350V  
TO 208 V TRANS TERM



NOTE:  
ON SLAVE PUMP SWITCH  
RED CIRCUIT MUST OPEN  
BEFORE YELLOW CIRCUIT  
IS CLOSED

NOTE:  
IF SERVO MOTOR FAILS IN TRANS  
SLAVE WATER PUMP WILL OPERATE  
UNTIL WATER PUMP STOPS ON WATER  
TEMPERATURE SENSOR WILL OPERATE UNTIL  
W/TEMPERATURE SENSOR SWITCH

PICTOR 101

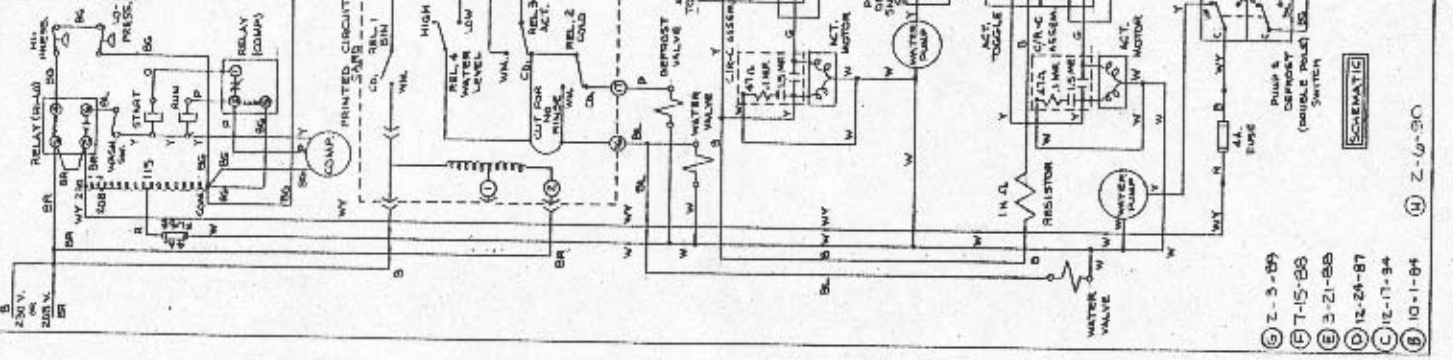
PICTOR 102

ITEM	PART NO.	QTY.	UNIT	DESCRIPTION
	GE-1500-1			RELAY
	GE-1500-2			RELAY
	GE-1500-3			RELAY
	GE-1500-4			RELAY
	GE-1500-5			RELAY
	GE-1500-6			RELAY
	GE-1500-7			RELAY
	GE-1500-8			RELAY
	GE-1500-9			RELAY
	GE-1500-10			RELAY
	GE-1500-11			RELAY
	GE-1500-12			RELAY
	GE-1500-13			RELAY
	GE-1500-14			RELAY
	GE-1500-15			RELAY
	GE-1500-16			RELAY
	GE-1500-17			RELAY
	GE-1500-18			RELAY
	GE-1500-19			RELAY
	GE-1500-20			RELAY
	GE-1500-21			RELAY
	GE-1500-22			RELAY
	GE-1500-23			RELAY
	GE-1500-24			RELAY
	GE-1500-25			RELAY
	GE-1500-26			RELAY
	GE-1500-27			RELAY
	GE-1500-28			RELAY
	GE-1500-29			RELAY
	GE-1500-30			RELAY
	GE-1500-31			RELAY
	GE-1500-32			RELAY
	GE-1500-33			RELAY
	GE-1500-34			RELAY
	GE-1500-35			RELAY
	GE-1500-36			RELAY
	GE-1500-37			RELAY
	GE-1500-38			RELAY
	GE-1500-39			RELAY
	GE-1500-40			RELAY
	GE-1500-41			RELAY
	GE-1500-42			RELAY
	GE-1500-43			RELAY
	GE-1500-44			RELAY
	GE-1500-45			RELAY
	GE-1500-46			RELAY
	GE-1500-47			RELAY
	GE-1500-48			RELAY
	GE-1500-49			RELAY
	GE-1500-50			RELAY
	GE-1500-51			RELAY
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	GE-1500-71			RELAY
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	GE-1500-75			RELAY
	GE-1500-76			RELAY
	GE-1500-77			RELAY
	GE-1500-78			RELAY
	GE-1500-79			RELAY
	GE-1500-80			RELAY
	GE-1500-81			RELAY
	GE-1500-82			RELAY
	GE-1500-83			RELAY
	GE-1500-84			RELAY
	GE-1500-85			RELAY
	GE-1500-86			RELAY
	GE-1500-87			RELAY
	GE-1500-88			RELAY
	GE-1500-89			RELAY
	GE-1500-90			RELAY
	GE-1500-91			RELAY
	GE-1500-92			RELAY
	GE-1500-93			RELAY
	GE-1500-94			RELAY
	GE-1500-95			RELAY
	GE-1500-96			RELAY
	GE-1500-97			RELAY
	GE-1500-98			RELAY
	GE-1500-99			RELAY
	GE-1500-100			RELAY

SOB 1004 01

JUNCTION BOX FOR INCREASING LINE BENDING LEFT FROM PANEL CONNECT TO 230V. 50 AMP. 208V-0-208V. WITH WIRE 3. FUSE SIZE LISTED BELOW:

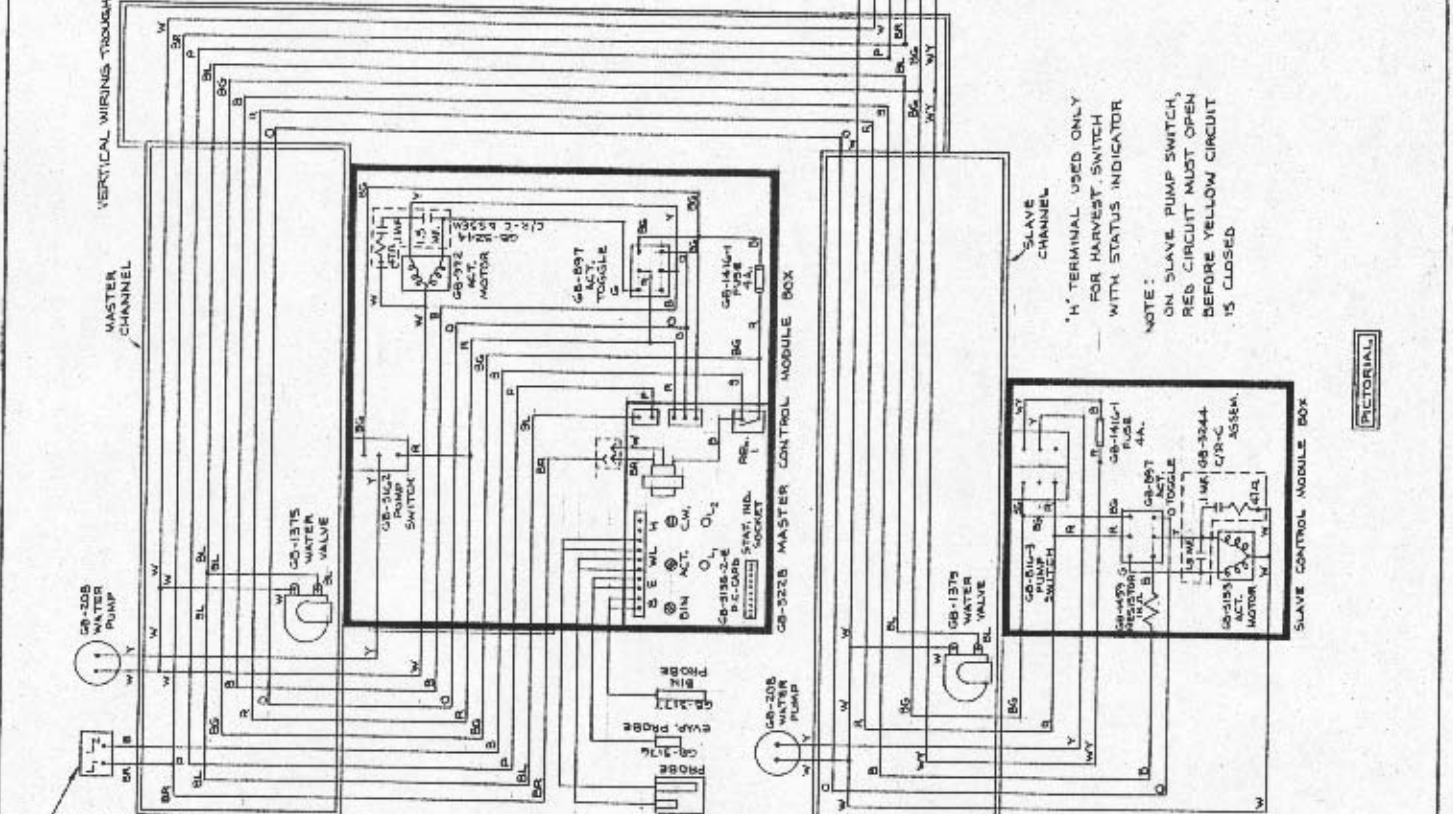
WIRE	1	2	3	4	5	6	7	8	9	10	11	12
MIN. AMP.	15	15	15	15	15	15	15	15	15	15	15	15
MAX. FUSE	15	15	15	15	15	15	15	15	15	15	15	15
MIN. WIRE	12	12	12	12	12	12	12	12	12	12	12	12



- (G) Z-3-89
- (F) T-15-88 (copy)
- (E) 3-21-88
- (D) 12-28-87
- (C) 12-17-84
- (B) 10-11-84

SCHEMATIC

Z-6-80



"H" TERMINAL USED ONLY FOR HARVEST SWITCH WITH STATUS INDICATOR

NOTE: ON SLAVE PUMP SWITCH, RED CIRCUIT MUST OPEN BEFORE YELLOW CIRCUIT IS CLOSED

PICTORIAL

SCHEMATIC

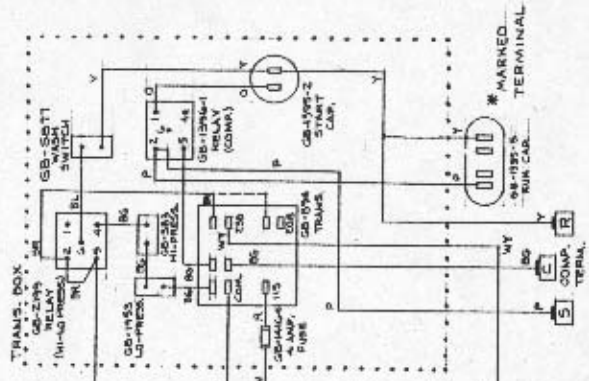
Z-6-80

WIRE COLOR CODE

B	BLACK
BL	BLUE
BR	BROWN
BG	BLACK/GREEN
G	GRAY
O	ORANGE
P	PINK
R	RED
W	WHITE
WY	WHITE/YELLOW
Y	YELLOW

NOTE: PARTS ARE SHOWN CURRENT AT THE INDICATED REVISION DATE. REFER TO PARTS MANUAL FOR CHANGES.

NOTE: FOR 208V-0-208V BROWN LEAD FROM 230 V. TO 208 V. TRANS. TERM.



NOTE: IF GB-0141G-01 FUSE IN TRANS. BOX OPENS, CLUSER WILL OPERATE UNTIL SLAVE WATER PUMP STOPS AS WATER PLATE STARTS TO OPEN. THEN THE COMPRESSOR WILL OPERATE UNTIL LO-PRESS. SWITCH OPENS RELAY.

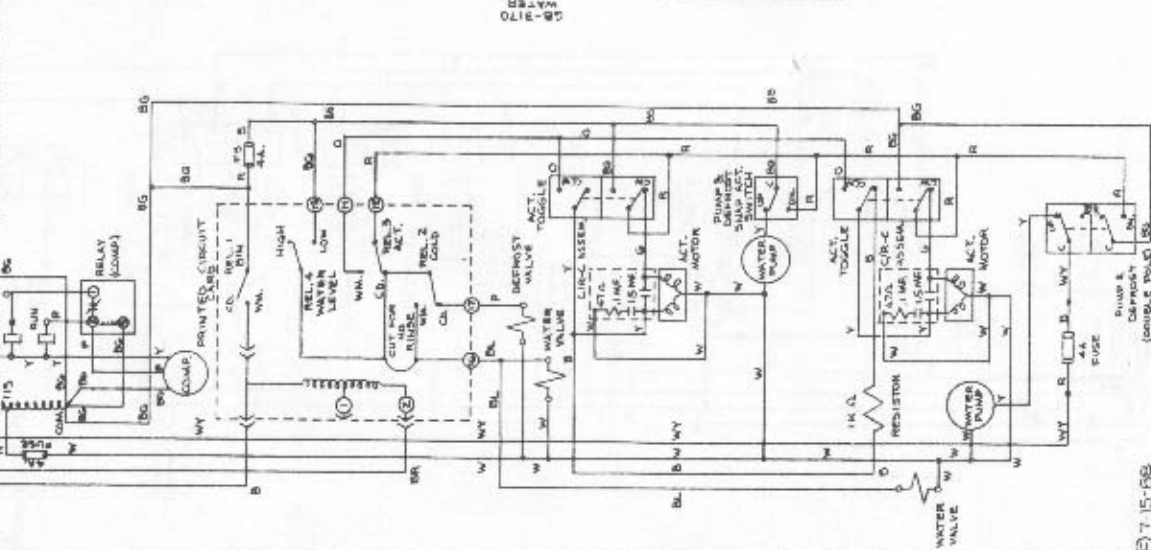
TECUMSEH AHT514A  
ICE MAKER WIRING DIAGRAM  
DWN: GB303W & GB303R  
DATE: 11-10-83  
UNIFLOW MFG. CO. GBB-03207-H  
BRIE, PA.



250 V.  
200 V.  
200 V.

JUNCTION BOX FOR INCOMING LINE BEHIND LEFT END PANEL. CONNECT TO 250V., 60 HZ., OR 200V., 60 HZ. WITH WIRE & FUSE SIZE LISTED BELOW:

MIN. AMP.	MIN. WIRE	REL. 1	REL. 2
15	14	17	19
20	16	20	22
25	18	22	24
30	20	24	26
35	22	26	28
40	24	28	30
45	26	30	32
50	28	32	34
60	36	40	42



- (7) 15-BS
- (8) 3-21-BS
- (9) 12-24-8T
- (10) 11-84
- (11) 10-1-B4

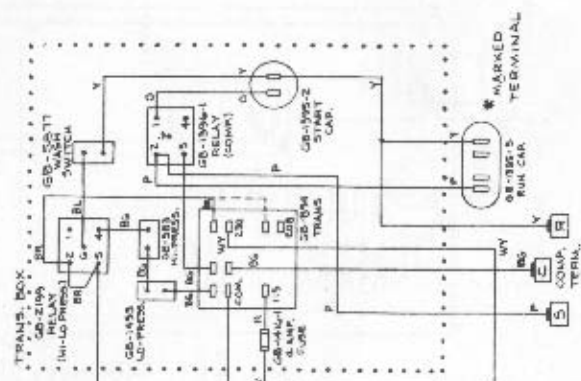
SCHEMATIC

WIRE COLOR CODE

B	BLACK
BL	BLUE
BR	BROWN
BS	BLACK/GREEN
G	GRAY
O	ORANGE
P	PINK
R	RED
W	WHITE
WY	WHITE/YELLOW
Y	YELLOW

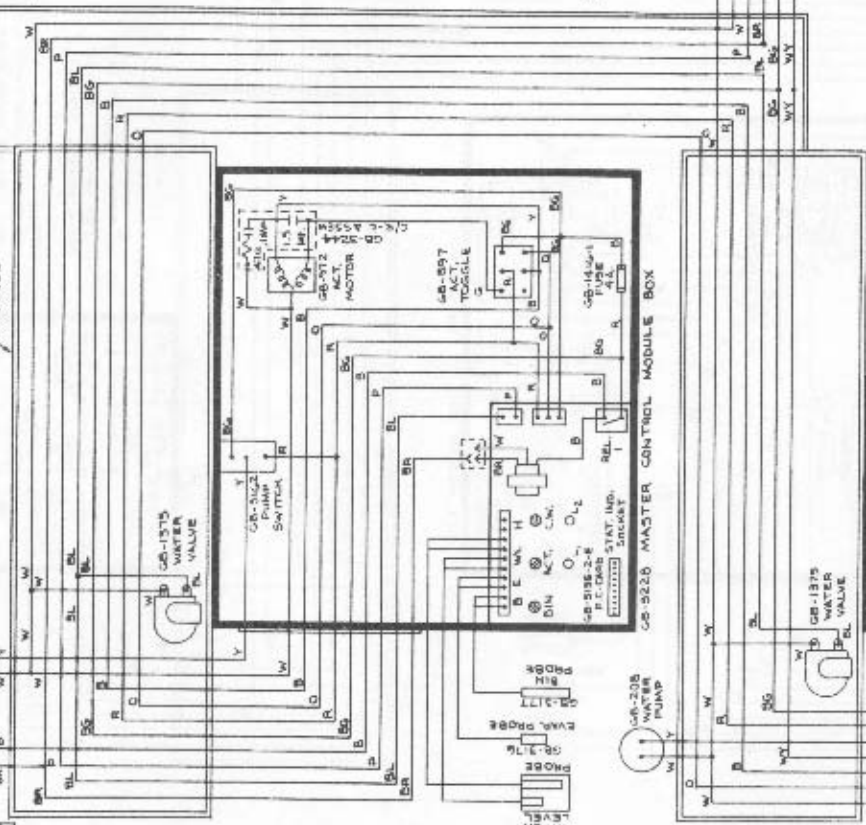
NOTE:  
PARTS ARE SHOWN CURRENT AT THE INDICATED REVISION DATE. REFER TO PARTS MANUAL FOR CHANGES.

NOTE:  
FOR 208 V.-60 HZ. MOVE BROWN LEAD FROM 250 V. TO 208 V. TRANS. TAP.



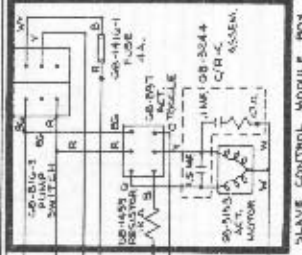
NOTE: IF GBB-0141(1) FUSE IN TRANS. BOX OPENS, COMPRESSOR WILL OPERATE UNTIL SLAVE WATER PUMP STOPS AS WATER PLATE STARTS TO OPEN, THEN THE COMPRESSOR WILL OPERATE UNTIL LO-PRESS. SWITCH OPENS RELAY.

VERTICAL WIRING THROUGH MASTER CHANNEL



W TERMINAL USED ONLY FOR HARVEST SWITCH WITH STATUS INDICATOR

NOTE:  
ON SLAVE PUMP SWITCH, RED CIRCUIT MUST OPEN BEFORE YELLOW CIRCUIT IS CLOSED



PICTORIAL

TECUMSEH 4HT5144

ICE MAKER WIRING DIAGRAM

GB1003(GB4)

DWN: 11-10-83

UNIFLOW MFG. CO. GBB-03207-F  
BITE, PA.

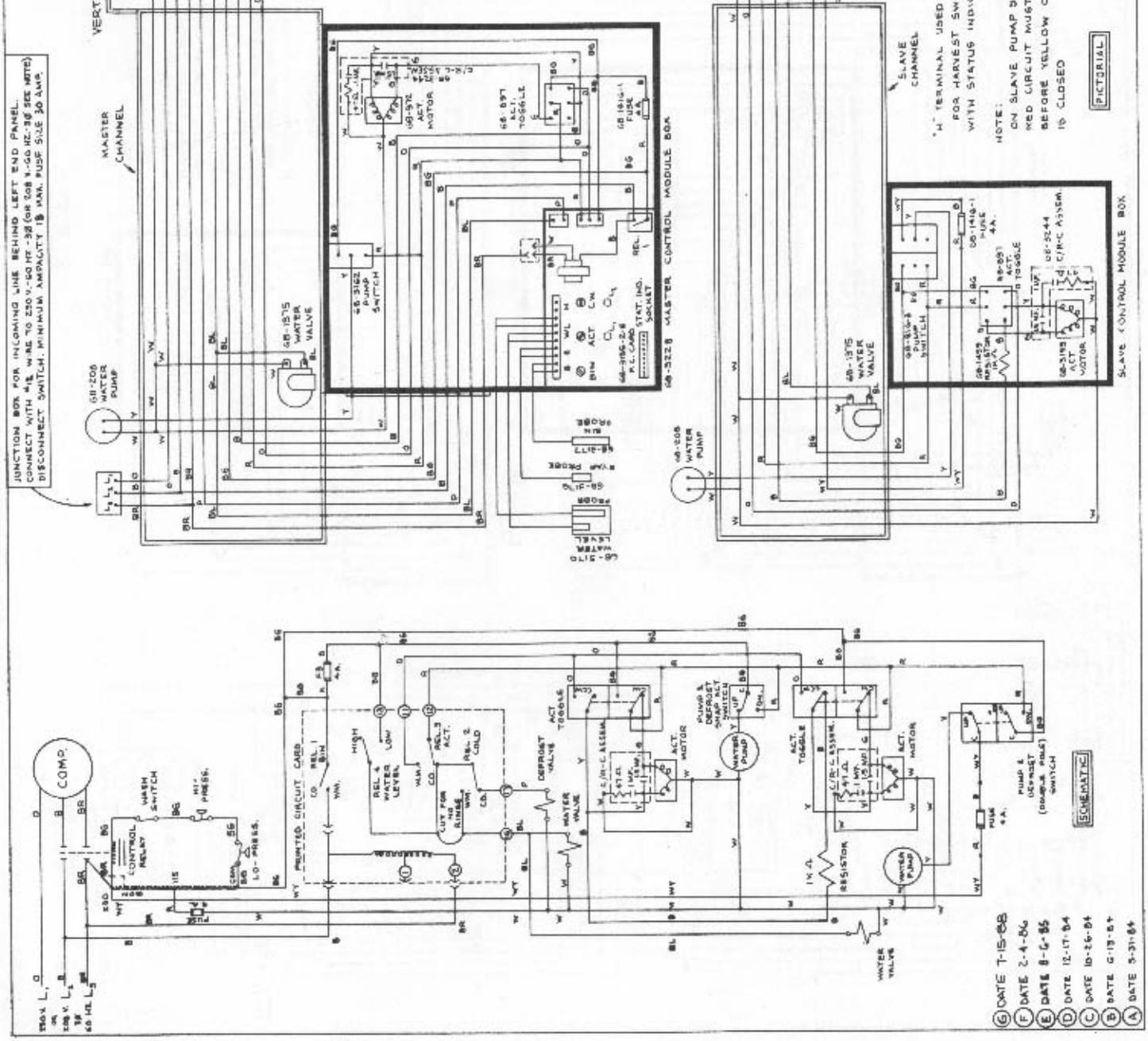
WIRE COLOR CODE	
B	BLACK
BL	BLUE
BR	BROWN
BS	BLACK/GREEN
G	GRAY
O	ORANGE
P	PINK
R	RED
W	WHITE
WY	WHITE/YELLOW
Y	YELLOW

NOTE:  
PARTS ARE SHOWN CURRENT AT THE INDICATED REVISION DATA. REFER TO PARTS MANUAL FOR CHANGES.

VERTICAL WIRING THROUGH

JUNCTION BOX FOR INCOMING LINE BEHIND LEFT END PANEL. CONNECT WITH #12 WIRE TO 250 V.-50 Hz. 30 (OR 30B 1-GD Hz. 30) AMP. DISCONNECT SWITCH. MINIMUM AMPACITY 15 MAX. FUSE SIZE 30 AMP.

NOTE:  
FOR 508 V.-60 Hz. MOTOR 508TH BROWN LEADS FROM 230 V. TO 208 V. TRANS. TERNAL.



NOTE: IF 508-01416-01 FUSE IN TRANS. BOX OPENS, CUBER WILL OPERATE UNTIL SLAVE WATER PUMP STOPS AS WATER PLATE STARTS TO OPEN. THEN THE COMPRESSOR WILL OPERATE UNTIL LO-PRESS SWITCH OPENS RELAY.

COMPRESSOR IS INTERNALLY PROTECTED UNDER PRIMARY SINGLE PHASING CONDITIONS.

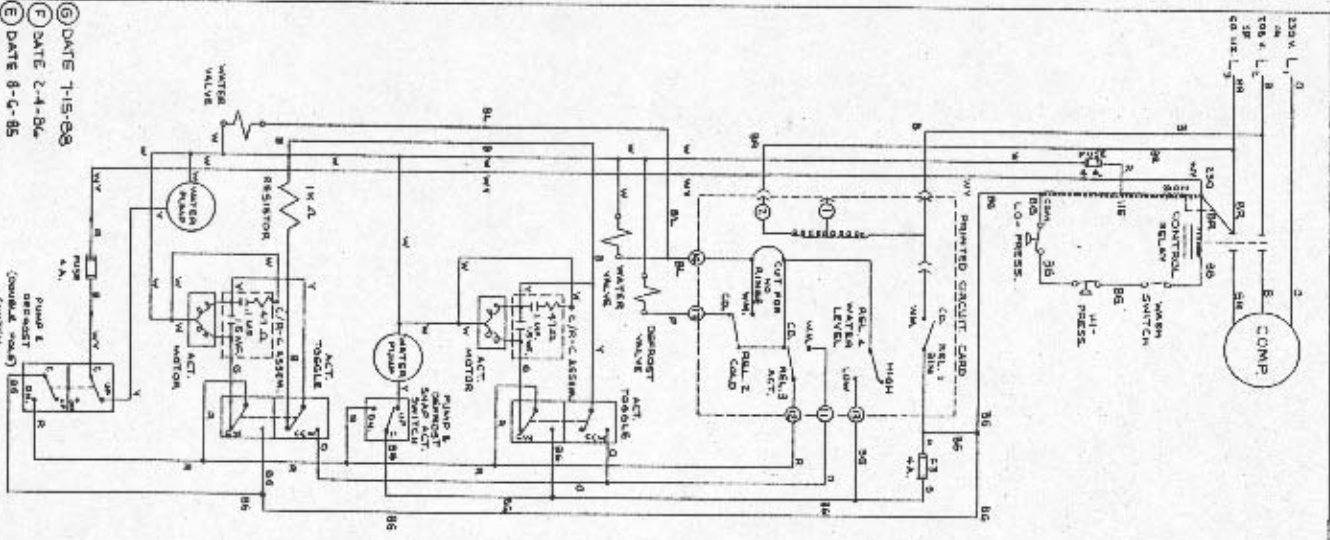
NOTE: "A" TERMINAL USED ONLY FOR HARVEST SWITCH WITH STATUS INDICATOR

NOTE:  
ON SLAVE PUMP SWITCH, RED CIRCUIT MUST OPEN BEFORE YELLOW CIRCUIT IS CLOSED

PICTORIAL

- (G) DATE 7-15-88
- (F) DATE 2-4-86
- (E) DATE 8-6-85
- (D) DATE 12-17-84
- (C) DATE 10-26-84
- (B) DATE 6-19-84
- (A) DATE 5-31-84

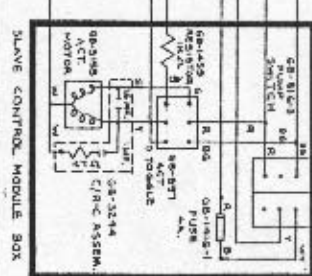
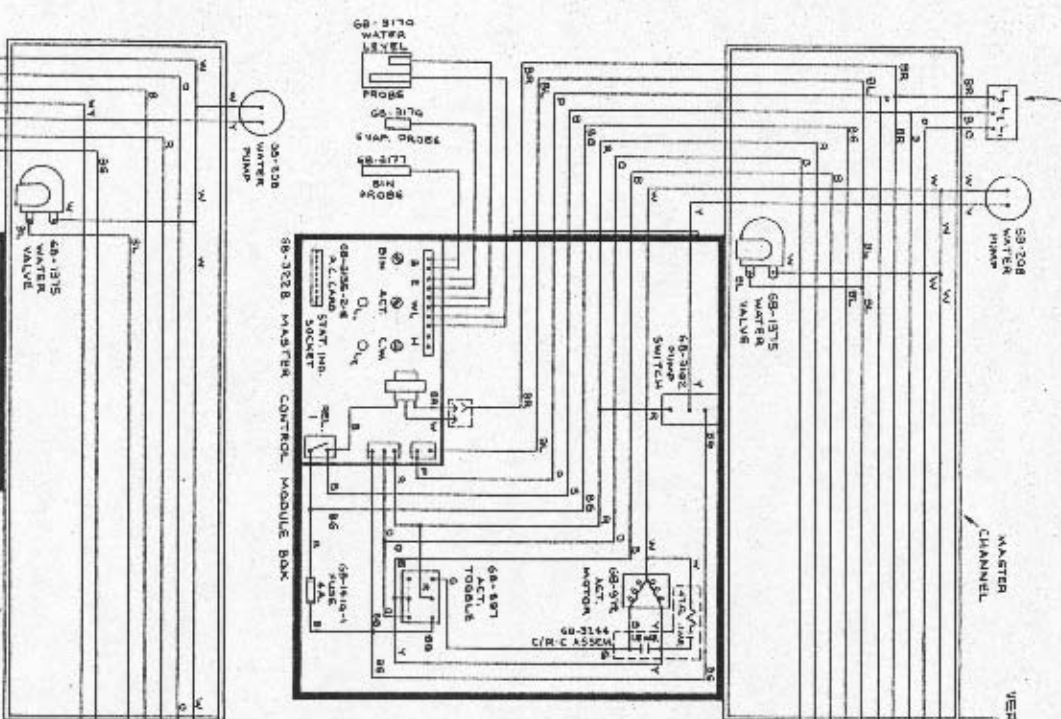
RECUMBECH AH7524J  
ICE MAKER WIRING DIAGRAM  
GB1205 (GB4 3/8)  
UNIFLOR MFG. CO. DATE: 12-19-83  
UNIFLOR, PA. GBB-03208-G



- (G) DATE 7-15-88
- (F) DATE 2-4-86
- (E) DATE 8-C-85
- (D) DATE 12-17-84
- (C) DATE 10-26-84
- (B) DATE 5-13-84
- (A) DATE 5-31-84

(II) DATE 3-21-89

JUNCTION BOX FOR INCOMING LINE BEHIND LEFT END PANEL.  
CONNECT WITH #12 WIRE TO 230V-60 HZ. 3Ø (6000 3Ø 4-50 WTS SEE NOTE)  
DISCONNECT SWITCH MINIMUM AMPLACITY 18 KVA, FUSE SIZE 50 AMP



NOTE:  
ON SLAVE PUMP SWITCH,  
RED CIRCUIT MUST OPEN  
BEFORE YELLOW CIRCUIT  
IS CLOSED

NOTE:  
"V" TERMINAL USED ONLY  
FOR HARVEST SWITCH  
WITH STATUS INDICATOR

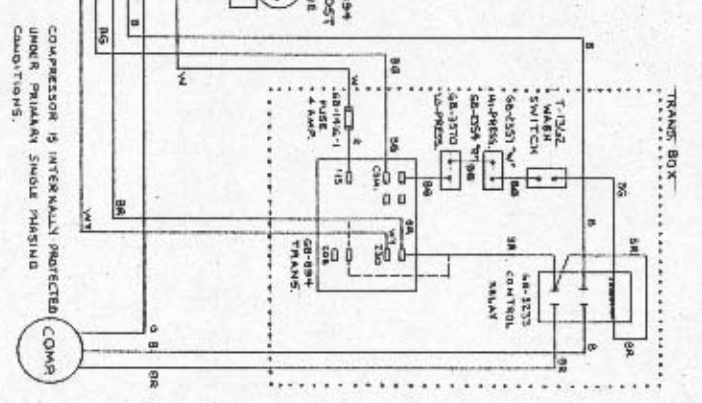
NOTE:  
IF 68B-0416-01 FUSE IN TRANS.  
BOX OPENS, CUBEN WILL OPERATE UNTIL  
SLAVE WATER PUMP STOPS AS WATER  
PLATE STAYS TO OPEN, THEN THE  
COMPRESSOR WILL OPERATE UNTIL  
CO-PRESS. SWITCH OPENS RELAY.

TECUMSEH AH7824J  
ICE MAKER WIRING DIAGRAM  
G81205 (G84 3Ø)  
DWN: R. & S. DATE: 12-19-83  
UNIFLOW MFG. CO. G8B-03208-H  
BEE, PA.

NOTE:  
PARTS ARE SHOWN CURRENT AT THE  
INDICATED REVISION DATE; REFER  
TO PARTS MANUAL FOR CHANGES.

WIRE COLOR CODE
B BLACK
BL BLUE
BR BROWN
BG BLACK / GREEN
G GRAY
O ORANGE
P PINK
R RED
W WHITE
WY WHITE /YELLOW
Y YELLOW

NOTE:  
FOR 108 V. - 60 HZ. WIRE BOTH  
BROWN LEADS FROM 230 V.  
TO 108 V. TRANS. TERM.



NOTE:  
COMPRESSOR IS INTERNALLY PROTECTED  
UNDER PRIMARY SINGLE PHASING  
CONDITIONS.



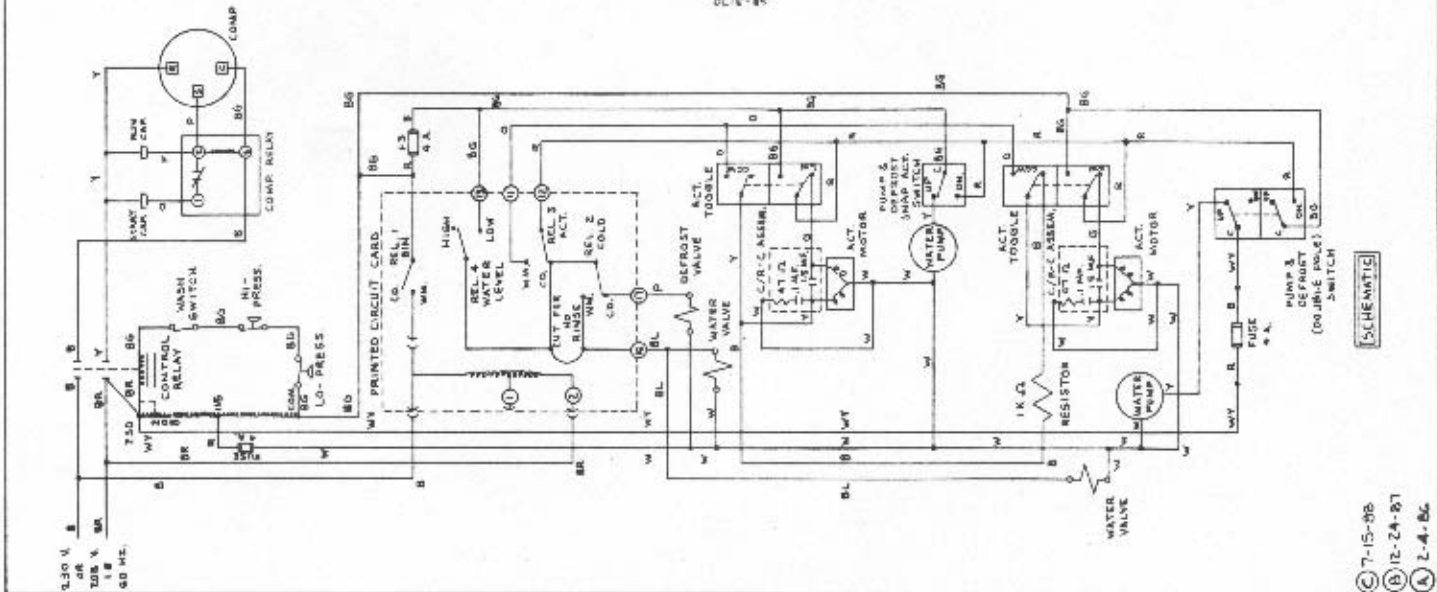
FUNCTION BOX FOR INCOMING LINE BEHIND LEFT END PANEL.  
CONNECT WITH #10 WIRE TO 230 V - 60 Hz. (SEE NOTE)  
DISCONNECT SWITCH. MINIMUM AMPACITY 20 MAX. FUSE SIZE 45 AMP

WIRE COLOR CODE	
B	BLACK
BL	BLUE
BR	BROWN
BG	BLACK / GREEN
GR	GRAY
O	ORANGE
P	PINK
R	RED
W	WHITE
WY	WHITE / YELLOW
Y	YELLOW

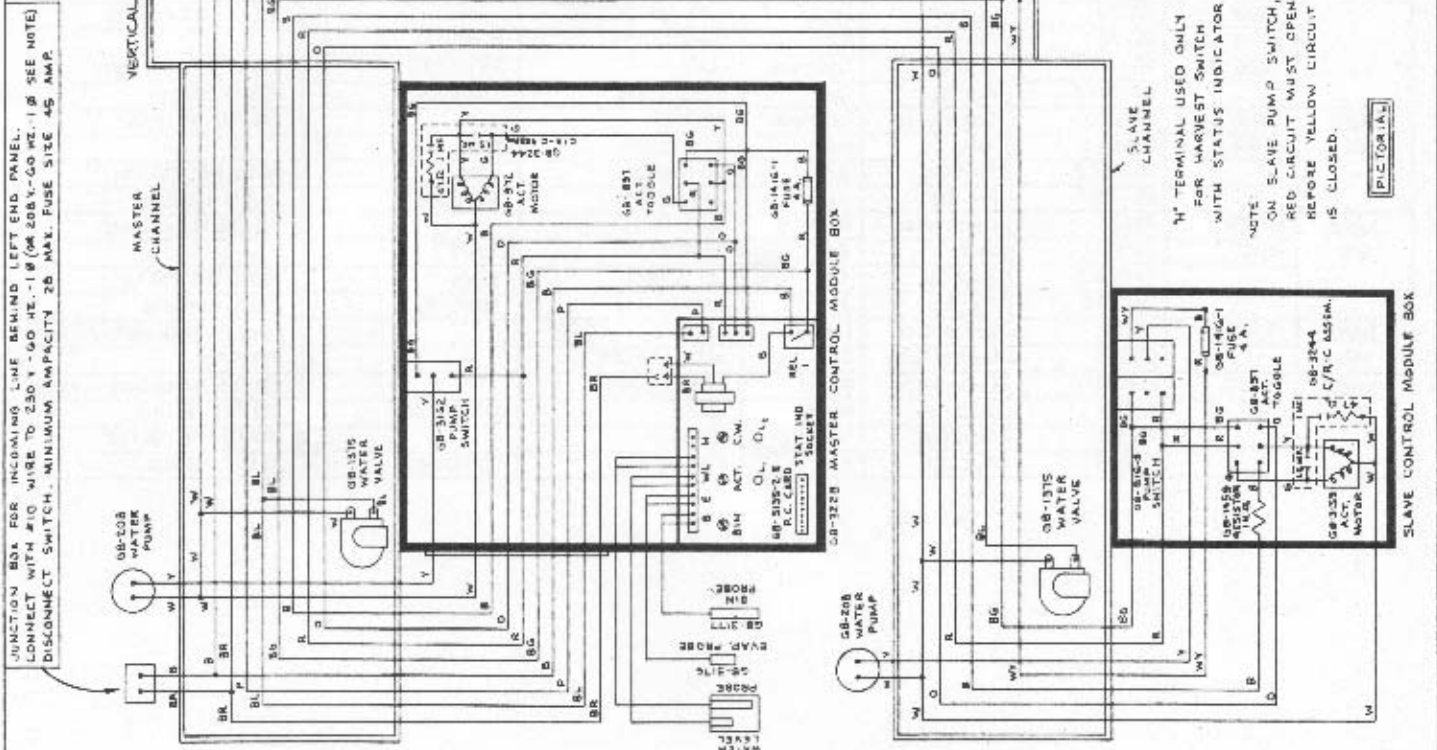
NOTE:  
FOR 230 V - 60 Hz. MOVE BOTH  
BROWN LEADS FROM 230 V.  
TO 208 V. TRANS. TERM.

VERTICAL WIRING TROUGH

MASTER CHANNEL



C 7-15-95  
B 12-24-97  
A 2-4-98



NOTE:  
N<sup>o</sup> TERMINAL USED ONLY  
FOR HARVEST SWITCH  
WITH STATUS INDICATOR

NOTE:  
ON SLAVE PUMP SWITCH,  
RED CIRCUIT MUST OPEN  
BEFORE YELLOW CIRCUIT  
IS CLOSED.

NOTE: IF GB-01616-01 FUSE IN TRANS.  
BOX OPENS, CUBER WILL OPERATE UNTIL  
SLAVE WATER PUMP STOPS AS WATER  
PLATE STARTS TO OPEN. THEN THE  
COMPRESSOR WILL OPERATE UNTIL  
LO-PRESS. SWITCH OPENS RELAY.

BR-STOL-MS0A213B8CA  
ICE MAKER WIRING DIAGRAM  
DWG. NO. 12-3-84  
DATE 12-3-84  
UNIFLOW MFG. CO.  
ERIE, PA.  
GBB-032711-C

PICTORIAL

SCHEMATIC