

**WARNING**

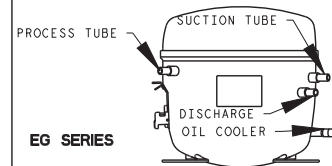
Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

• Normal operating conditions are viewed when the air and temperature controls are at mid-sitting, freezer section 0 to -5°F and unit is cycling.

NOTE: Watt and pressure readings will vary and are influenced by the existing condition of the appliance, such as iced-up evaporator, condition of condenser, defrost cycle, pull-down time and customer use.

PERFORMANCE DATA (NORMAL OPERATING CONDITIONS)			
AMB	WATTS	SYSTEM PRESSURE (PSIG)	
		HIGH SIDE	LOW SIDE
70°	140±20	95 ± 20	-7 TO 3
90°	150±20	135 ± 20	-4 TO 3
110°	170±20	185 ± 20	-2 TO 4

(OIL COOLER IS OPTIONAL)
EMBRACO

**SERVICE INFORMATION (W11089365 A)**

1. COMPRESSOR SUCTION AND PROCESS STUBS MAY NOT BE INTERCHANGED UNLESS INDICATED BY **.
2. REFRIGERANT CHARGE MUST BE APPLIED TO HIGH SIDE ONLY.
3. ICE MAKER AND WATER VALVE NOT ORIGINAL EQUIPMENT ON ALL MODELS.
4. NOTE: ICE MAKER CYCLE MUST BE INITIATED ELECTRICALLY. DO NOT TRY TO MANUALLY START CYCLE.
5. SERVICE DEFROST BI-METALS -50°F OPEN.
6. PART NUMBER CAN BE FOUND ON THE COMPONENT.

SERVICEABLE ELECTRICAL PARTS MATRIX (COMPONENTS BY CUBIC FOOT SIZE)			
SERVICEABLE PARTS	28 CUBIC FOOT	WATTAGE	RESISTANCE Ω
	115V - 127V / 60 HZ		
COMPRESSOR	VEGD7H		
	W10653004		
RUN WINDINGS	—		7.69 ±8% @77°F
START WINDINGS	—		7.69 ±8% @77°F
START DEVICE, OVERLOAD	See Note 6		
RUN CAPACITOR (IF EQUIPPED)	See Note 6		
THERMISTOR	See Note 6		2.7K AT 77°F(25°C)
MAIN CONTROL (Back Panel)	See Note 6		
USER INTERFACE	See Note 6		
ELECTRIC AIR BAFFLE ASSY	See Note 6	4	
ADAPTIVE DEFROST ** (OPT)	See Note 6		
DEFROST HEATER	See Note 6	441-488	28-31 @70°F
DEFROST BI-METAL	See Note 6		
EVAPORATOR FAN	See Note 6	4.2	
CONDENSER FAN	See Note 6	1.6-3.6	
** PRIMARY SOURCE PART NUMBER			

ELECTRONIC CONTROL FEATURES

The dispenser user interface in this appliance controls both the product cooling and the dispensing systems. The product cooling diagnostics are first (see this page) followed by the dispensing diagnostics (see back of this page). The cooling portion of the electronic control in this appliance controls the temperatures in the refrigerator and freezer compartments independently, delays the operation of the evaporator fan, and pulses the defrost heater. The fan delay and pulsed defrost features are controlled in the following manner:

1. Evaporator Fan Delay - The electronic control delays the evaporator fan from coming on for 60 seconds after the compressor has turned on, and the evaporator fan stays on for 90 seconds after the compressor has turned off.
2. Pulsed Defrost Heat - During the defrost cycle the heater is energized continuously for the first 5 minutes. It is then cycled off for 60 seconds and on for 120 seconds. This on/off cycle is repeated until the bi-metal opens or the maximum defrost time (21 minutes) is reached.

SERVICE DIAGNOSTICS MODE

To **ENTER SERVICE DIAGNOSTICS Mode**: Press SW1 and SW2 simultaneously for 3 seconds. Release both buttons when you hear the CHIME indicator.

Unit must not be in Lockout prior to entering SERVICE DIAGNOSTIC MODE.

The display will show 01 to indicate the control is in step 1 of the diagnostics routine.

To **EXIT SERVICE DIAGNOSTICS Mode**, do one of the following 3 options:

- 1) Press SW1 and SW2 simultaneously for 3 seconds.
- 2) Disconnect the product from power.
- 3) Allow 20 minutes to pass.

Following the exit of the diagnostic mode, the controls will then resume normal operation.

Each step must be manually advanced. Press SW5 to move to the next step in the sequence. Press SW4 to back up in the sequence to the previous step. Diagnostics will begin at Step 1. Each step is displayed in the two digits of the dispenser user interface display. The step results are displayed in the two digits on dispenser user interface display 2 seconds after the step number is displayed. An amber LED will be shown to designate that the step number is being displayed and a red LED will be shown to designate that the status of the step is being displayed. All button and pad inputs shall be ignored and all inputs shall be off, except as described in the actions for each step.

Note: The ice door motor cycles 1 minute after an ice dispensing.

Service Tip: If the control does not respond, remove power from the entire appliance for 10 seconds. Re-apply power, wait 10 seconds, and perform the service diagnostics routine.

Step No.	Component Tested	Suggested Diagnostics Routine: COOLING system steps 1-7. DISPENSING system steps 8-48.	Component Status Indicator
1	FC thermistor	This is an internal board test. The board will check the resistance value of the thermistor and display the results on the RC Temp Display.	O1=Pass O2=Open O3=Short
2	RC thermistor	This is an internal board test. The board will check the resistance value of the thermistor and display the results on the RC Temp Display.	
3	Evaporator fan motor and Air baffle motor	Verify air flow from the evaporator fan. Check to see if the baffle opens and closes. NOTE: RC tower lighting will turn ON if the door is opened in step 3.	O1=Turn both Evap Fan Off O3=Turn on RC Evap Fan O2=Turn on FC Evap Fan O4=Turn both ON
4	Compressor and condenser fan motor (non-VCC and non-Dual Evap models) or Condenser fan motor (VCC models) or Valve and Compressor (Dual Evap models)	Control the Compressor and Condenser Fan Motor using the Change Setting keys. For Dual Evap Models Only: At start of this step, the fans are turned off if they were turned on from previous step. There will be a delay of 3 seconds before start of sub step 01. Each step is timed and will automatically step to the next step. If during any time technician try to change the setting, invalid chime is produced. At end of sub step 5, technician can exit this step by either incrementing or decrementing to the next step. Note: For Dual Evap Models, the dual evap valve will always open to both sides until step 4 when it is requested to drive to different positions. At initial entry, the UI will send digital "1" to output of dual evap valve drives.	O1 = ON O2 = OFF For Dual Evap Models Only: Note: Steps are timed and will automatically advance to next step. O1 - initialize Dual Evap valve in home position (4 min) O2 - close both RC & FC Dual Evap valve (1 min) O3 - turn compressor on (1 min) O4 - keep compressor on, drive the valve to RC pos. & turn the RC fan on (2 min) O5 - keep compressor on, drive the valve to FC pos. & turn the FC fan on (technician confirm before advance to next step; compressor off, fans off, drive dual evap valve to home position at advance of next step).
5	Compressor (VCC models)	- Entering in this Step, the VCC driver shall be set to minimum speed. Exiting this Step, the VCC driver shall be set to 0 RPM (or VCC driver OFF) - Short press on "CHANGE SETTING KEY", shall ramp the compressor from minimum speed to maximum speed within 480 RPM/second (1GHz/second). - Short pressing again "CHANGE SETTING KEY", shall ramp the compressor from maximum speed to minimum speed within 480 RPM/second (1GHz/second)	O1= Compressor at maximum speed; O2= Compressor at minimum speed; O3= Compressor speed is ramping-up from minimum to maximum speed; O4= Compressor speed is ramping-down from maximum to minimum speed;
6	Defrost heater/Bi-metal	Line voltage switched to components from board, verify 120VAC between line and neutral at heater. Under some conditions, the Bi-metal can take a few minutes to close the circuit. Note: If Bi-metal is open, it will need to be by-passed for heater to operate. See Note below.	Blank Until get a valid reading O1 = Bimetal Closed O2 = Bimetal Open
7	Defrost Mode	The Defrost Mode can be set by using SW3. In ADC Mode the product will automatically defrost after a minimum of 8 hours of compressor runtime and up to maximum of 96 hours of compressor runtime, depending upon product usage. In Basic Mode the product will automatically defrost after 8 hours of compressor runtime. The Defrost Mode must be set to ADC ON before exiting the Service Diagnostic Mode. Press SW5 to indicate the completion of this step and to continue with dispenser service routine.	O1 = ADC ON O2 = Basic Mode ON (8 hour timer)

ATTENTION: IF BI-METAL IS BY-PASSED FOR TESTING (IF APPLICABLE), DO NOT OVERHEAT EVAPORATOR AREA.

SERVICE SHEET



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DISPENSER USER INTERFACE DISPLAY DIGITS

Digit 1 Digit 2



Amber LED-Order filter
Red LED-Replace filter

NOTE: The step number is shown first, followed by the status of the step 2 seconds after the step number is displayed. When the step number is being shown, the amber LED will be on. When the status of the step is being shown, the red LED will be on.

SERVICE INFORMATION (W10649499 A)

SWITCH DIAGRAM

SW1 SW2 SW3 SW4 SW5 SW6

Step #	Component Tested	Suggested Diagnostics Routine: COOLING system steps 1-7. DISPENSING system steps 8-48.	Component Status Indicator
8	All UI indicators	Verify that all LED indicators and UI display digits turn on automatically.	All indicators ON
9	UI Button and Pad Test	Displays the User Interface Buttons and Ice and Water Pads status as described in the Component Status Indicator column. NOTE: Do not use SW4 and SW5 as these are used only to navigate through the Service Diagnostics.	Digit 1 Digit 2 1 0 = SW1 Pressed 2 0 = SW2 Pressed 3 0 = SW3 Pressed 6 0 = SW6 Pressed 0 1 = Ice Pad Pressed 0 2 = Water Pad Pressed 0 3 = Ice and Water Pads Pressed NOTE: SW4 and SW5 ARE USED FOR NAVIGATION AND ARE NOT DISPLAYED.
10	N/A	N/A (This step is bypassed automatically)	N/A
11	Dispenser Lighting	Pressing SW3 will change the dispenser lighting setting from OFF(0%) to ON(100%) To DIM(50%)	Blank
12	Accent Lighting	Turn ON all Light Modules (ice bucket light/Pad light). Bypassed in some models	Blank
13	Dispenser Housing Heater Status	Displays the Dispenser Housing Heater status on the UI display. Press SW3 to change status.	O1 = ON O2 = OFF
14	N/A	N/A (This step is bypassed automatically)	N/A
15	N/A	N/A (This step is bypassed automatically)	N/A
16	RC Door Switch Input	Displays the RC Door status in realtime on the UI display. Verify that the open and close status display correctly	O1 = RC Door Open O2 = RC Door Closed
17	FC Door Switch Input	Displays the FC Door status in realtime on the UI display. Verify that the open and close status display correctly.	O1 = FC Door Open O2 = FC Door Closed
18	Ice Door Motor	Displays the Ice Door stepper motor state on the UI display. Initiate ice dispense and verify that the mechanical operation of the ice door corresponds to the component status indicator. NOTE: Ice door will have a delay in closing after an ice dispense is initiated.	O1=Closed, O2=Opening, O3=Open, O4=Closing
19	Fill tube heater status	If this feature is available on the product, this step will allow the fill tube heater to be toggled on and off through the use of SW3.	O1=ON, O2=OFF
20	Water Filter Usage Rating	Displays in two sequential flashes the total water usage rating in gallons for the water filter on the UI display. Wait until dash is displayed which means end of the number.	00/0- to 99/9-
21	Water Filter Time Rating	Displays in two sequential flashes the total time rating in days for the water filter on the UI display. Wait until dash is displayed which means end of the number.	00/0- to 99/9-
22	Water Filter Usage	Displays in two sequential flashes the current water filter status in gallons used since last reset on the UI display. Wait until dash is displayed which means end of the number.	00/0- to 99/9-
23	Water Filter Time	Displays in two sequential flashes the current water filter status in days since last reset on the UI display. Wait until dash is displayed which means end of the number.	00/0- to 99/9-
24	Water Filter Reset	Display in two sequential flashes the current times the Water Filter was reset on the UI display. Wait until dash is displayed which means end of the number.	00/0- to 99/9-
25	N/A	N/A (This step is bypassed automatically)	N/A
26	Main Control Software Version	Displays in three sequential flashes the Main Control software version on the UI display. Note: This is repeated displayed during all time in this step.	00/00/00 to 99/99/99
27	Dispenser UI Control Software Version	Displays in three sequential flashes the Dispenser UI Control software version on the UI display. Note: This is repeated displayed during all time in this step.	00/00/00 to 99/99/99
28-30	N/A	N/A (This step bypassed automatically)	N/A
31	Main UI Cypress SW Version	Reads the EEPROM Map Version.	XX XX XX
28-30	N/A	N/A (This step bypassed automatically)	N/A
38	Forced Defrost mode	Set the Forced Defrost Mode by selecting on the "CHANGE SETTING KEY". The Forced Defrost command shall be sent at the exit of Service Mode. No Forced Defrost = Defrost does not resume after exit from SVC; Short Defrost = minimum TTD; Long Defrost = maximum TTD; Note: "No Forced Defrost" is the default	OF = No Forced Defrost Sh = Short Defrost Lo = Long Defrost
39	Dual Evap Thermistor	Read the current temperature of the Evap thermistor from ACU and compare this value. This information shall be Dynamically updated (every 1 second). Value Read (VR): - COLD_LOWER_LIMIT ≤ VR ≤ HOT_UPPER_LIMIT ⇒ Pass - VR > HOT_UPPER_LIMIT ⇒ Short - VR < COLD_LOWER_LIMIT ⇒ Open	O1 = Pass O2 = Open O3 = Short
40-41	N/A	N/A (This step is bypassed automatically)	N/A
42	UI EEPROM Map Version	Reads the EEPROM Map Version.	XX XX XX
43	UI FLASH Map Version	Reads the FLASH Map Version.	XX XX XX
44	Sankyo Ice maker Harvesting Test	At entry of this step turn OFF a harvesting cycle. Use the "CHANGE SETTING KEY" to start the harvest cycle. Note :- Make the bucket to not full state to initiate the harvesting. The system should not come out of this step unless harvest cycle is completed.	Digit 1: 1 = Ice maker harvesting cycle is ON 2 = Ice maker harvesting cycle is OFF Digit 2: 1 = Ice bucket full detected 2 = Ice bucket not full 3 = Switch faulty or motor (Time out = 20 seconds) Blank = Until get a valid reading.
45	Sankyo and LPIM Ice maker Water Fill Test	Upon entry to this step there will be a 3 second delay, and then the ice tray will be moved to home position. After the tray has reached home position, the "CHANGE SETTING KEY" can be used to start or to toggle between "ON" and "PAUSE" on ice maker fill. NOTE: Water filling time is based on the flash map setting. At step entry the water fill cycle default to OFF. NOTE: The "CHANGE SETTING KEY" will be ignored if the DISPLAY = O1. NOTE: For LPIM, ignore homing of the motor. NOTE: Prior entry of this step run step 44 to make sure the ice tray is empty before proceeding with water fill, otherwise double fill will occur. NOTE: Make sure to proceed with step 44 after water fill test to leave tray empty when finishing service.	O1 = Ice tray moving to home position O2 = Water fill OFF O3 = Water fill ON O4 = Water fill Paused
46	Water dispensing	Pressing the Water Pad will initiate the water dispense	O0 = Water Dispensing Valve OFF O1 = Water Dispensing Valve ON
47	Sankyo Ice maker Ice Tray Thermistor	Read the current temperature of the Ice maker tray thermistor and compare this value. This information shall be Dynamically updated every second. Value Read (VR): - Ice maker temp start threshold < VR ≤ HOT_UPPER_LIMIT ⇒ Valid warmer - COLD_LOWER_LIMIT < VR ≤ Ice maker temp start threshold ⇒ Valid cooler. - VR > HOT_UPPER_LIMIT ⇒ Short - VR < COLD_LOWER_LIMIT ⇒ Open Note : Harvest temp range defined in the flash map	Blank = Until get a valid reading. O1 = Valid temp warmer than harvest temp O2 = Valid temp cooler than harvest temp O3 = Open O4 = Short
48	Ice maker - Ice Bucket Detection Switch	Read the ice bucket detection switch status . Note:- In case of Sankyo IM with no switch present, the display will always show "2" (Ice Bucket present even if the bucket is removed/absent)	O1 = Ice bucket absent O2 = ice bucket present

- NOTES:
1. IW SOLENOID GROUNDED THROUGH MOUNTING.
 2. EVAP COVER GROUNDED HEAT SHIELD.
 3. POLARITY ON THE DISPENSER IS ACCOMPLISHED USING A RELAY ON THE MAIN BOARD. THE BU AND THE GY/OR WIRE SWITCH POLARITY DEPENDING ON THE CRUSH/CUBE POSITION. SEE TABLE BELOW.

WIRING DIAGRAM

GY/OR BU
CRUSH CUBE
+ -



⚠ WARNING

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WIRE COLOR CODE
W/B/GN = WHITE/GREEN TRACER
O/B/BN = ORANGE/BLACK TRACER
Y/L/BD = YELLOW/BLUE TRACER
B/BN = BLUE/BLACK TRACER
WV/BU = WHITE/BLUE TRACER
BK/YL = BLACK/YELLOW TRACER
WV/BD = WHITE/BLACK TRACER
RD/BN = RED/BLACK TRACER
YL/BN = YELLOW/BLACK TRACER
P/B/BN = PINK/BLACK TRACER
BR/BN = BROWN/BLACK TRACER
OR/BU = ORANGE/BLUE TRACER
RD/BN = RED/WHITE TRACER
LT/BN = LIGHT BLUE/BLACK TRACER
TN/BN = TAN/BLACK TRACER
RD/YL = RED/YELLOW TRACER

WIRE COLOR CODE
V/WH = VIOLET/WHITE TRACER
B/YL = BLUE/YELLOW TRACER
BU = BLUE
BK = BLACK
RD = RED
WH = WHITE
YL = YELLOW
OR = ORANGE
BR = BROWN
GY = GRAY
PK = PINK
V = VIOLET
TN = TAN

**MANUFACTURED UNDER ONE OR MORE
OF THE FOLLOWING UNITED STATES PATENTS**

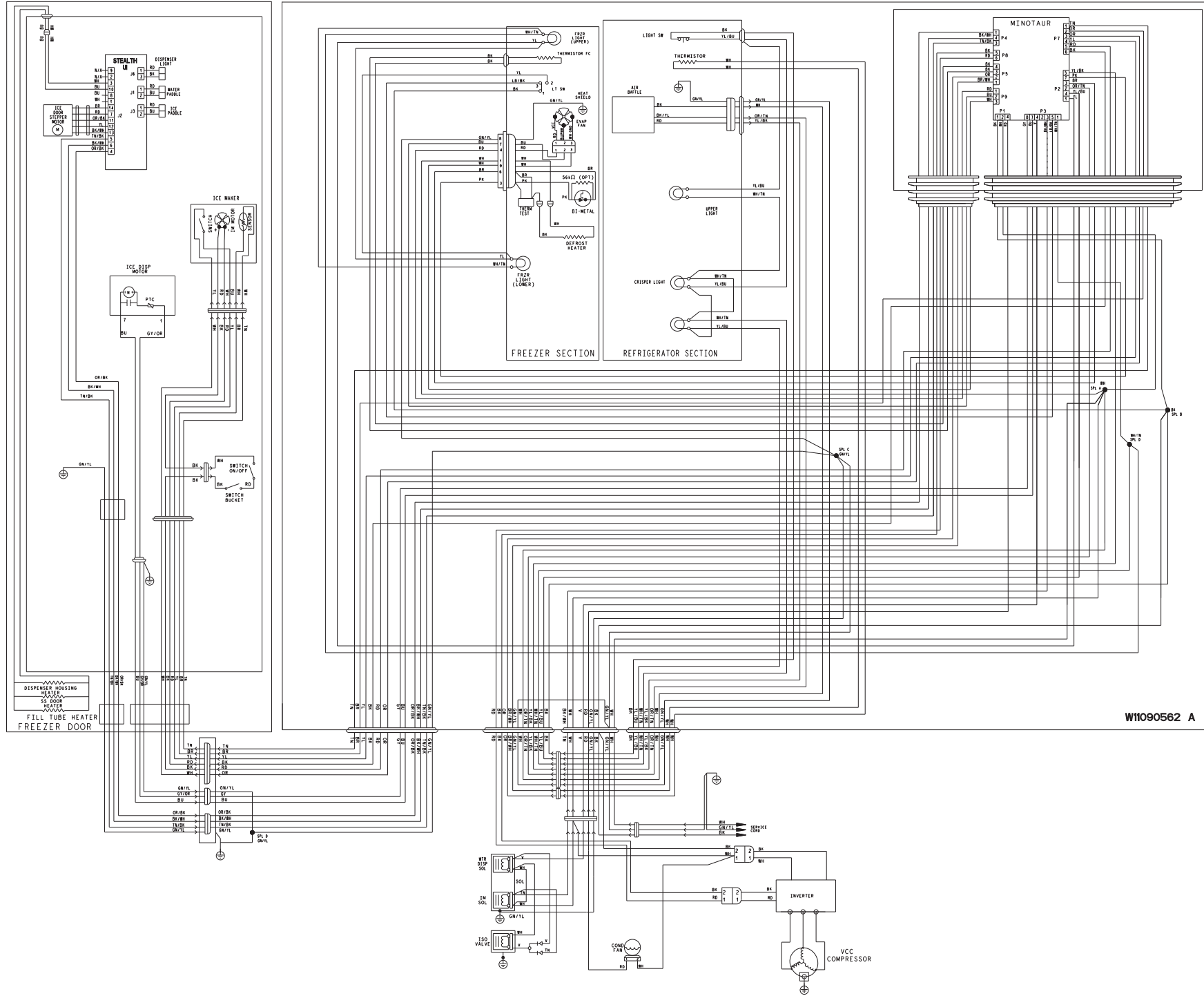
3,960,631	4,659,157	4,765,696	4,908,544	5,011,101
4,084,725	4,665,708	4,767,896	4,911,508	5,033,182
4,090,641	4,694,253	4,768,525	4,914,928	5,033,273
4,102,660	4,706,169	4,776,178	4,920,758	5,042,398
4,327,557	4,707,401	4,787,216	4,924,680	5,044,104
4,330,310	4,709,556	4,799,362	4,934,341	5,050,777
4,640,432	4,715,512	4,800,335	4,936,641	5,070,708
4,649,712	4,728,759	4,801,181	4,944,566	5,077,985
4,649,712	4,745,656	4,833,894	4,958,890	5,099,461
4,649,718	4,745,775	4,862,577	4,996,848	

OTHER PATENTS PENDING

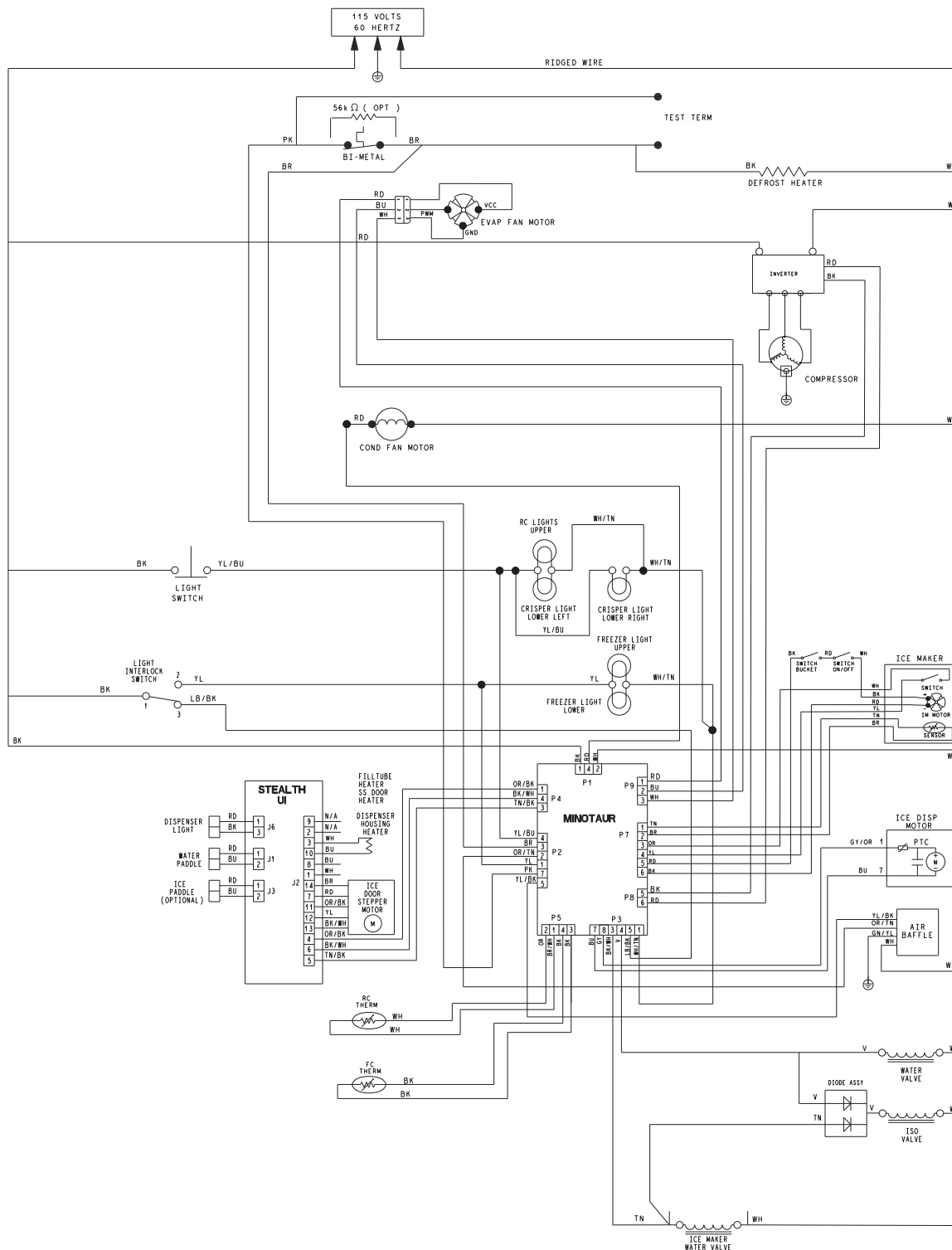
SYMBOL CODE

- : CONNECTOR - SCREW ON
- ⊙ : CONNECTOR - CLOSED END
- : DISCONNECT TERMINAL
- : PERMANENT CONNECTION
- : PLUG CONNECTOR
- ⏏ : GROUND (CHASSIS)

WIRING SHEET NO. W11090560 A



W11090562 A



VOLTAGE TEST POINTS MINOTAUR				
	FROM	COLOR	TO	COLOR
P1	P1-1	BK	P1-2	WH
	P1-2	WH	P1-4	RD
	P2-1	YL	P1-1	BK
	P2-2	OR/TN	P1-2	WH
	P2-3	BR	P1-2	WH
	P2-4	YL/BU	P1-1	BK
	P2-5	YL/BK	P1-2	WH
P2	P2-6	RD/WH	P1-2	WH
	P2-7	PK	P1-2	WH
	P3-1	WH/TN	P1-1	BK
	P3-3	BK/WH	P1-1	BK
	P3-4	V	P1-1	WH
	P3-5	LB/BK	P1-2	BK
	P3-7	BU	P3-8	GY
P3	P4-1	OR/BK	P4-4	BK/WH
	P4-3	COMMUNICATION		
P4	P5-1	BR/WH	P5-2	OR
	P5-3	BK	P5-4	BK
P5	P7-1	TN	P7-2	BR
	P7-3	OR	P7-4	YL
P7	P7-5	OR	P7-6	BK
	P8-5	BK	P8-6	RD
P8	P9-2	RD	P9-3	BK
P9	14 VDC WHEN FAN IS RUNNING IN MAX SPEED.			

VOLTAGE TEST POINTS STEALTH				
J1	J1-1	RD	J1-2	BU
J2	J2-1	WH	J2-8	BU
	J2-3	BU	J2-10	WH
	J2-4	OR/BK	J2-6	BK/WH
	J2-5	TN/BK	COMMUNICATION (NOT TESTED)	
	J3-1	RD	J3-2	BU
J6	J6-1	RD	J6-3	BK
14 VDC OUTPUT DISPENSER LIGHT				