CM^3 CONTROL SYSTEM CHECK OUT PROCEDURE

For Blue Controllers

All readings should be a Yes. If they are, there is NOTHING WRONG with the control system.

Start with a clean machine. Be sure voltage is correct, check both active and idle voltage. Be sure all electrical components have good connections.

Record any existing diagnostic light codes here.

- **Last: _____ 2nd from last: _____**

Diagnostic codes indicate machine problems, not controller faults. See potential causes for codes at the end of this check out procedure.

Step 1: Check EEPROM code. Push and hold the off button till the unit shuts off. Unplug the connection at number 8 and reconnect it. Check lights.			
Check out	Y	N	If N
All lights blink on and then off.			If all the green lights are on AND the bin full light is flashing, the controller needs to be replaced. If no lights come on, check the power to the controller. If the voltage is correct, replace the controller.
Both red lights blink for 20 seconds.			May be a black controller, if it is, this check out procedure does not apply. Blue controllers have a "Control Products" sticker on an edge.
While the red lights are blinking, check which green lights, if any, are on. Compare to chart on ice machine or to table on page 8. Correct code?			If the green light code is wrong, and the controller was a replacement, check the selector switch position. If the code is wrong with an original equipment controller, replace it.
After 20 seconds, bin full light and off light are on for 5 seconds.			Continue with check out.
At the end of the power up process, only the off light is on, unless the bin is full or the thermostat is closed.			If the bin full light stays on, check the thermostat or the ice sensors.

Step 2: Check water level sensor. Check out procedure must not be done in direct light.			
Check out	Y	N	If N
Wire colors match between sensor and controller. Same color on top of each?			Correct wire harness connections
Confirm float stem. Check by color and part number. Correct?			Install correct float stem
Check if unit is level.			Level unit
Check standpipe (where used) at correct setting.			Adjust standpipe
Use DC voltmeter. Unplug harness. Check voltage at controller top and bottom pins of number 2: List here:_____ Between .2 and 5 volts DC?			Check power supply to controller. If that is OK (between 22 and 27 VAC) replace the controller.
Reconnect harness. Recheck voltage. List Here: _____Is it between .4 and 2?			Replace sensor
Connect negative probe on bottom terminal. Put positive probe on the one above. Note reading. Move float up and down all the way and note changes. Is the voltage when the stick is all the way down very near to 5?			Replace sensor
Is the voltage when the float has the slot in the sensor less than 5? Should be about 4.5.			Replace sensor
Connect positive probe to next higher terminal. Repeat process. Are the results the same?			Replace sensor

Step 3: Check temperature sensor calibration			
Check out	Y	N	If N
Indicator lights on controller, are both red lights off?			Check to see if temperature sensors are plugged in, if they are and the machine is switched off, replace the sensors. If the machine is operating, let it finish the cycle to determine if the indicator lights change. If when the machine shuts off both lights are still on, change the sensors.
Measure sump water temperature. Record here. _____Measure resistance of water sensor. Record here._____ Compare to chart. Reading within 2°F of correct temperature?			Change sensor
Measure discharge line temperature. Record here. _____Measure resistance of discharge sensor. Record here. _____Compare to chart. Reading within 3°F of correct temperature?			Change sensor

Step 4: Check ice sensor operation			
Check out	Y	N	If N
Ability to sense ice. Disconnect thermostat if used. Drop 10 – 20 cubes in a bunch onto the ice deflector so they slide into the bin. Did the bin full light blink? If no ice, hold something in between ice sensors in ice drop zone. Bin full light should blink or glow unblinking.			Unplug terminal 4. Bin full light should come on. If not, replace controller. If OK, clean sensors and recheck.
Recheck above with clean sensors			Replace sensors
Bin full light. With the bin thermostat disconnected and the ice level low, is the bin full light off?			Check sensors for mineral scale build up. Clean as required and retest. If the bin full light is always on with clean sensors and no thermostat, replace the sensors.

Assuming the control system checks out, the operation of the machine can be checked. This procedure follows the normal operational sequence of a self contained model that is not full of ice.

Step 4: Overall Machine Operation			
Check out	Y	N	If N
From Off, push freeze to start the machine. If the sump is empty overflow drain models begin to fill the reservoir, while purge valve models open the purge valve, drain water and then fill the reservoir. Does the inlet water valve open and fill the sump?			Check voltage at inlet water valve coil. If roughly 24 volts, check coil for continuity. If coil is open, replace valve. Recheck float stick. Check water pressure. Check for voltage at controller water valve pins. If no voltage, replace controller. If voltage is at controller but not valve, check/replace harness.
Does the water pump start?			Check voltage to the pump. If normal, check the pump motor for continuity or the impellor for a foreign object or binding. Remove any foreign object. Replace if motor is open or impellor stuck. If no power at pump, check voltage at controller pump pins. If none and there are no water diagnostic lights on, replace controller. If there is a two-blink water diagnostic indicator, the water sensor did not sense a full sump of water. See water sensor.

The freeze light is now on continuously. Does the compressor start?			Check contactor for voltage to it. If none, check for voltage at controller contactor pins. If none, replace controller. If there was voltage, check contactor coil. If contactor closes and compressor does not start, check starting components. Check voltage at compressor. Check windings, go through normal compressor check out procedure.
If the unit is air cooled does the fan motor start?			Check voltage at fan motor. If correct, change fan motor. If none, check voltage at controller fan motor pins, if none, replace controller. If voltage is correct at controller but not fan motor, change high voltage harness.
Does the sump water temperature begin to fall?			Check refrigeration system
Does the pump stop for 30 seconds within the first 5 minutes of the freeze cycle?			Sump temperature is not falling to anti-slush point. Check for inlet water valve leak through or lack of refrigeration effect.
Are cubes forming at about the same speed on all evaporator plates?			Check refrigeration system
When the cubes are full sized, does the unit go into a harvest cycle?			Check for light shining on the water level sensor or an inlet water valve leaking through

When the unit goes into the harvest cycle, does the hot gas valve open fully? A partially open hot gas valve results in lower than expected suction pressure in harvest, and a slow harvest.			Check for loose connection to hot gas valve coil, check voltage at coil. If roughly 24, check coil for continuity, replace coil if open. If no power to coil when harvest light is on, check for power at controller hot gas valve pins. If none, replace controller. If there is power, replace harness between controller and hot gas valve.
Do the fan and water pump stop during the harvest cycle?			Pump will restart, self contained fan stays off, if not, replace controller.
As ice is harvested, does the bin full light blink?			Repeat ice sensor test.
Does all the ice release from the evaporators during the first harvest cycle?			Check for mineral scale on the evaporators or an external environmental cause.
On purge valve models, does the purge valve open?			Check voltage at purge valve coil, if line voltage, check coil for continuity and valve flap for binding. Replace as needed. If no voltage, check purge valve timer for input voltage. If it has input voltage and no output voltage, change purge valve timer.
As ice is harvested, does the water inlet valve refill (overflow models) or partially refill (purge valve models) the sump?			Check position of the float stem, if all the way down water valve may not refill.
Check bin thermostat operation by connecting the leads at the thermostat together. Unit should shut down at the end of the harvest cycle.			Check harness to controller.
Simulate bin full by removing the sensor wire from terminal 4 on the controller. Does the unit shut down at the end of harvest?			Check for jumper on low voltage harness, if not a remote there should be no jumper between #6 and #7.

Diagnostic Code Causes:

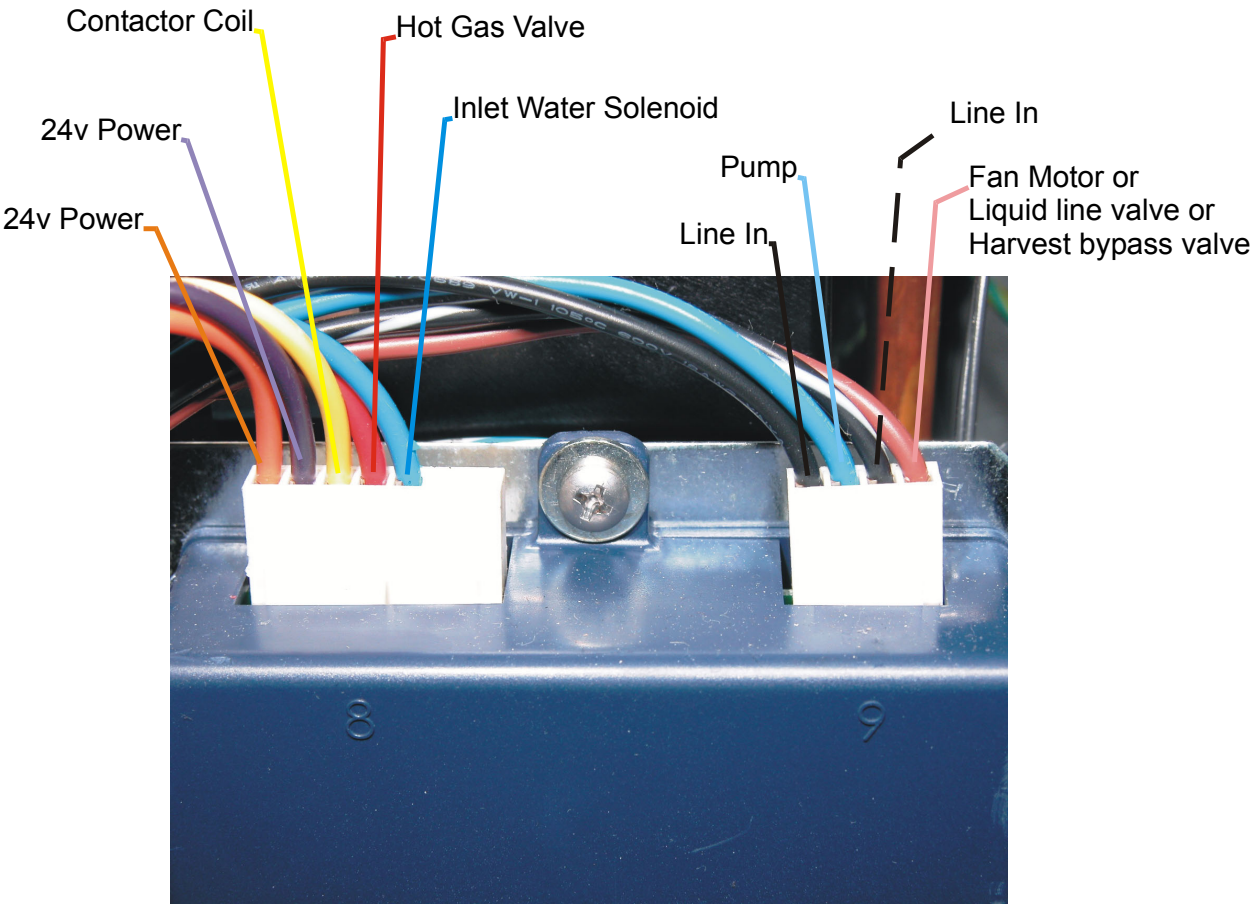
Water Section:

Indicator Light:	Possible Cause
Blinks once and repeats	Water level not falling, pump failure or hose off, or unit not level, or standpipe height incorrect
Blinks two times and repeats	Water level not rising fast enough. Lack of water supply, filters restricted, low pressure, standpipe height incorrect, purge valve leaks thru, water leaks out of sump.
Is ON without blinking	Water level rises at wrong time, water valve may be leaking through
Both on without blinking	Temperature sensor set unplugged or failed.

Refrigeration Section:

Indicator Light	Possible Cause
Blinks once and repeats	Maximum harvest time limit. Slow ice release during harvest, ice sensors working
Blinks two times and repeats	Maximum harvest time limit. No ice release or ice sensors not working.
Blinks three times and repeats	High discharge temperature
Is on without blinking	Two potential related causes. 1. Maximum freeze time limit reached. This is typically caused by a condensing unit failure – lack of refrigeration effect. Check cycle time. 2. Low discharge temperature. If it's known that the unit shut off early in the freeze cycle and this diagnostic is on, the controller diagnosed a lack of refrigeration early in the cycle. Check cycle time.

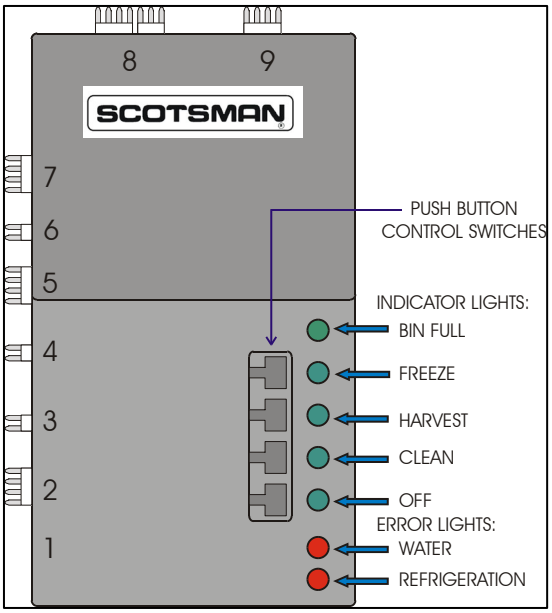
Controller Connection Reference



EEPROM Table

Code = Green Lights On	= Controller Programmed for Model
None	CME256, CME506, CME656
Clean	CME806
Harvest	CME1056A, CME1056R
Clean and Harvest	CME1056W
Freeze	CME1356, CME1656
Freeze and Clean	CME1856, CME2006
Freeze and Harvest	CME306
Freeze, Harvest and Clean	CME456
Bin Full	SCE275
Bin Full and Clean	European Model CM450SL
Bin Full and Harvest	CME810
Bin Full, Harvest and Clean	CME686
Bin Full and Freeze	CME1386
Bin Full, Freeze and Clean	CME1686
Bin Full, Freeze and Harvest	CME2086

Controller Connections



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