

CME1056
Modular Cuber

Technical Training

- Product Information
- Installation Details
- Operation
- Maintenance
- Service Diagnosis



CME1056 Modular Cuber

- 30" wide by 24" deep platform
- Replaces CME1002 and CME1000
 - Air Cooled - Louvered Side Panels
 - Water Cooled - No louvers
 - Remote Air Cooled - No louvers
 - Remote uses ERC311 condenser

- CM³ Technology
 - AutoIQ Controller
 - Adaptive Harvest
 - No seasonal adjustments
 - Automatic restarts

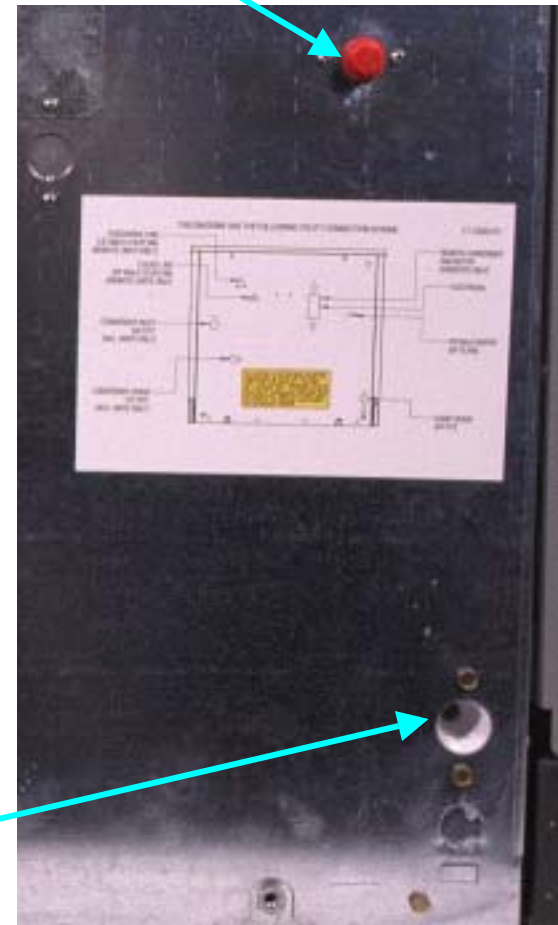


- The **Recipe for Ice** has 3 ingredients:
 - Electricity
 - Water
 - Refrigeration
- When properly mixed together by the ice machine, the bin fills with ice. If one or more of the ingredients is shorted, performance will suffer!

- Fits all Scotsman 30" wide bins
- Fits competitive 30" wide bins
 - Baffle needed
- Fits Scotsman Bins
 - BH800 with Bin Top KBT23
 - BH900 with Bin Top KBT22
- Fits many 30" wide Ice & Beverage Dispensers

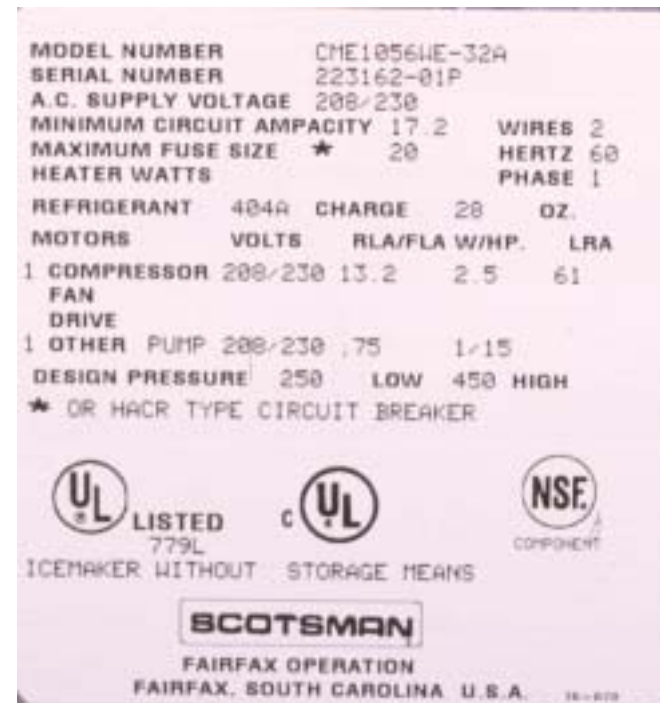
- Supply cold, potable water.
- Connect rigid tubing to drain fitting and VENT it.
 - 12" standpipe

3/8" male flare
water inlet






3/4" FPT drain fitting, do
not overheat!

- Electrical junction box in back panel
 - External 4 x 4 extension box can be added to Remotes or
 - Use standard internal junction box
- Supply proper power
 - Check the nameplate!



MODEL NUMBER CME1056HE-32A
SERIAL NUMBER 223162-01P
A.C. SUPPLY VOLTAGE 208/230
MINIMUM CIRCUIT AMPACITY 17.2 WIRES 2
MAXIMUM FUSE SIZE * 20 HERTZ 60
HEATER WATTS PHASE 1
REFRIGERANT 404A CHARGE 28 OZ.
MOTORS VOLTS RLA/FLA W/HP. LRA
1 COMPRESSOR 208/230 13.2 2.5 61
FAN
DRIVE
1 OTHER PUMP 208/230 .75 1/15
DESIGN PRESSURE 250 LOW 450 HIGH
* OR HACR TYPE CIRCUIT BREAKER

 LISTED 779L   COMPONENT

ICE MAKER WITHOUT STORAGE MEANS

SCOTSMAN
FAIRFAX OPERATION
FAIRFAX, SOUTH CAROLINA U.S.A. 28-619

- Air Cooled
 - Need cool air supply
- Baffle included for in-corner installations
 - Reduces hot air re-circulation



Attach baffle to back corner.

hd=

horizontal
distance

rd=

rise distance x 1.7

dd=

drop distance x
6.6

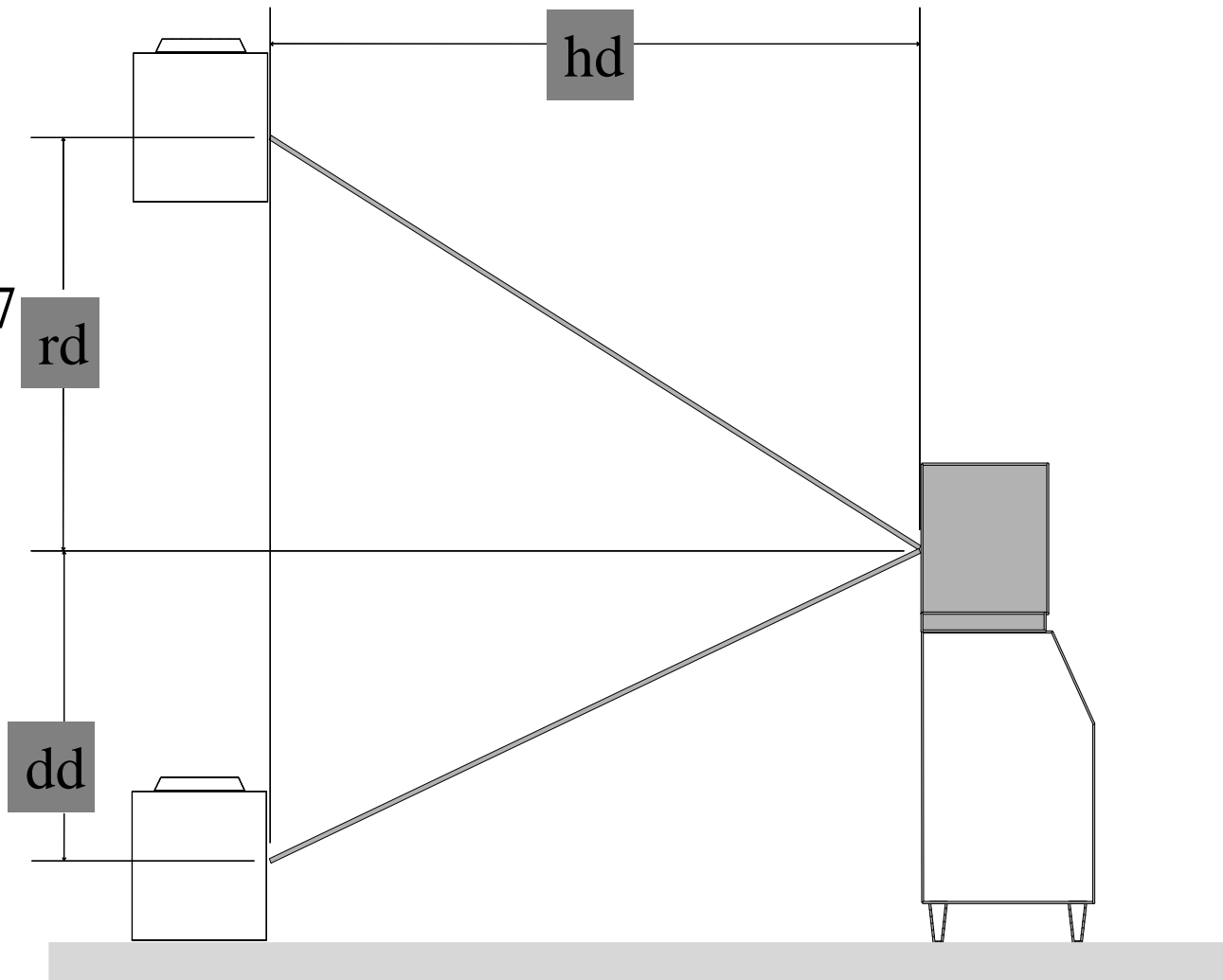
$hd+rd+dd=\text{total}$

Total ≤ 150

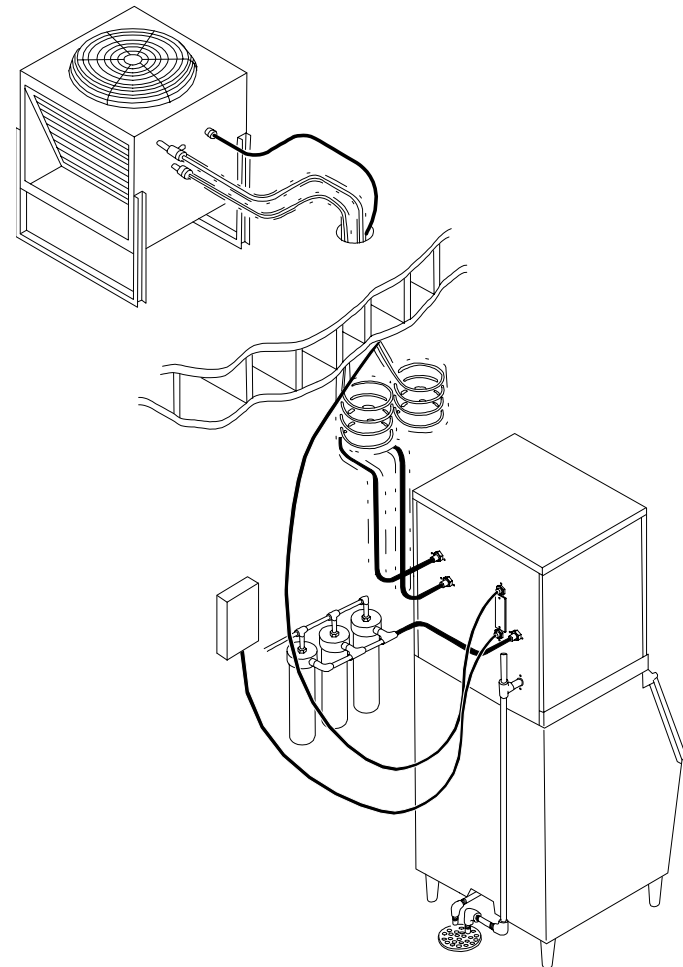
Total Drop

Cannot Exceed

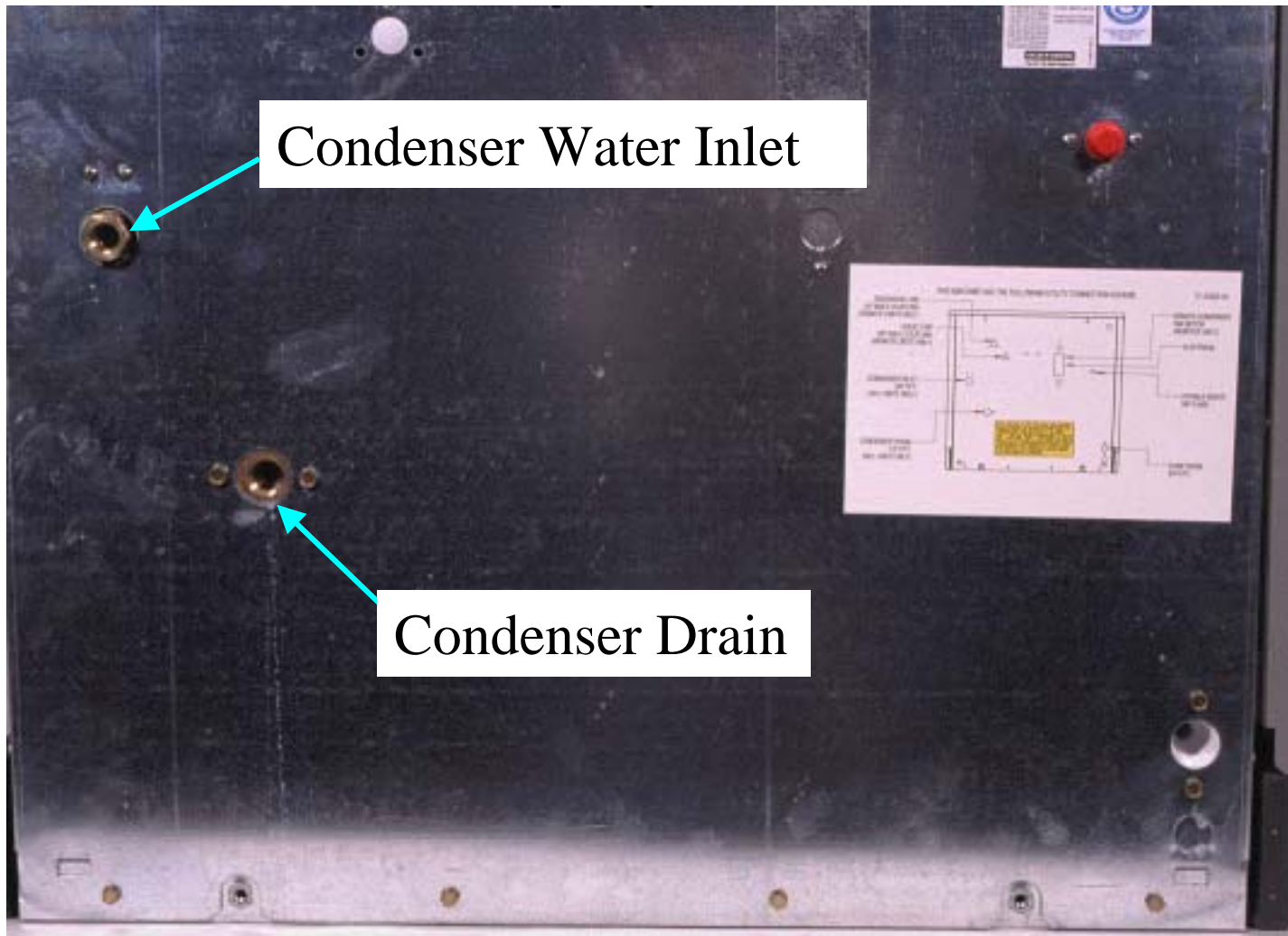
15 feet



- Best Practices:
 - Condenser ABOVE ice machine
 - Shortest distance possible between condenser and ice machine
 - Control excess tubing



- CME1056R uses ERC311 remote condenser
 - Headmaster in the condenser
 - RCKCME6GX headmaster kit must be added to McDonald's installations when using their MAC condenser

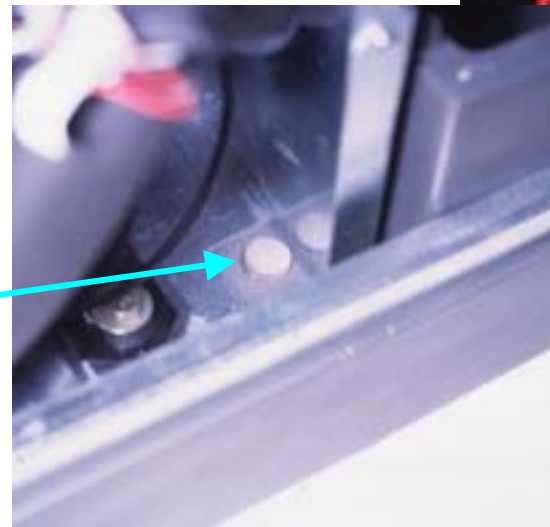
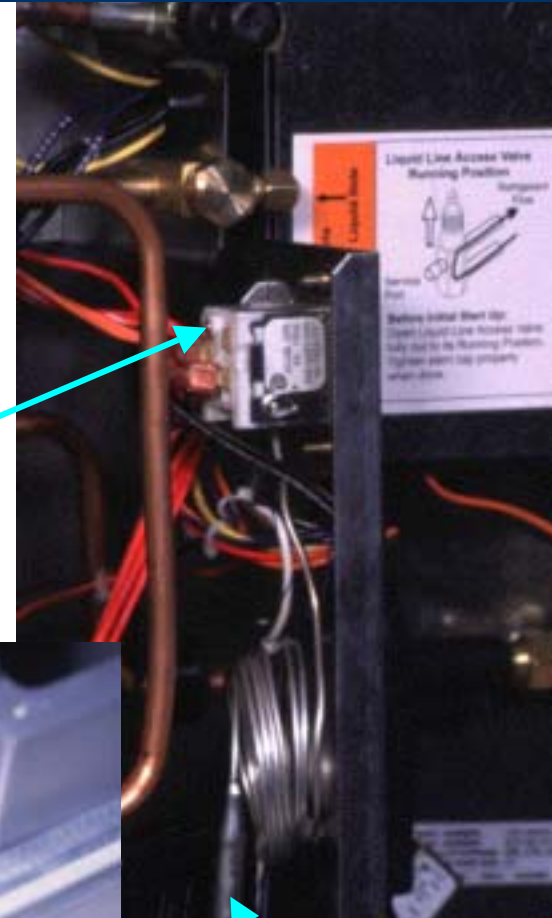


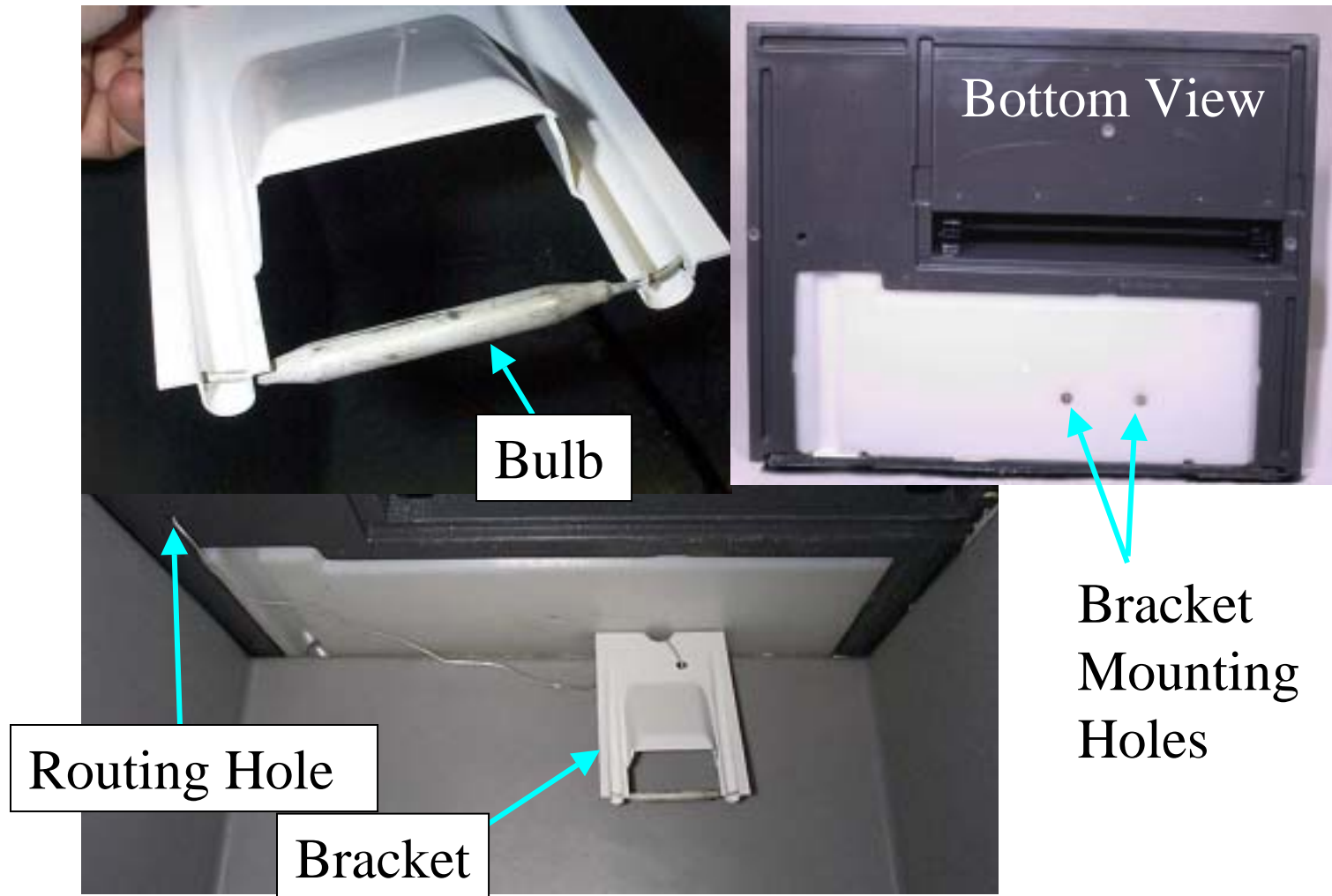
- Route Thermostat Bulb through routing hole

Thermostat

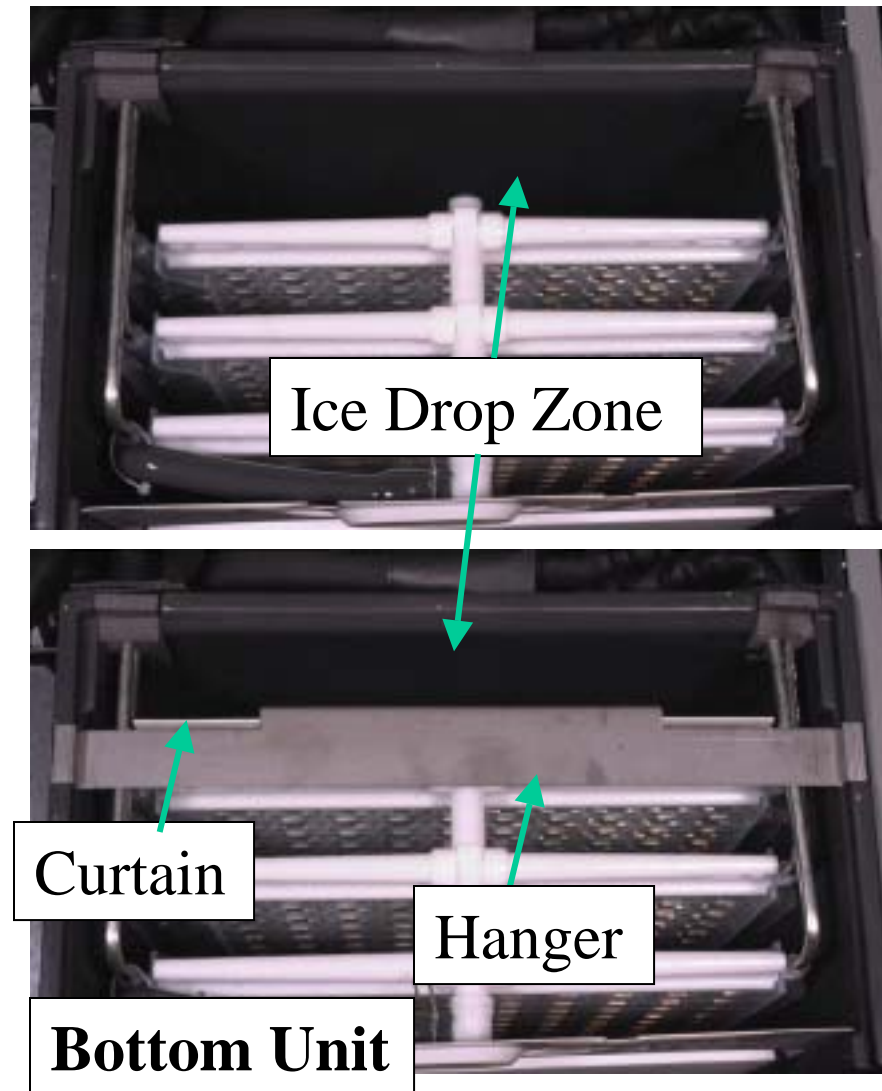
Routing Hole

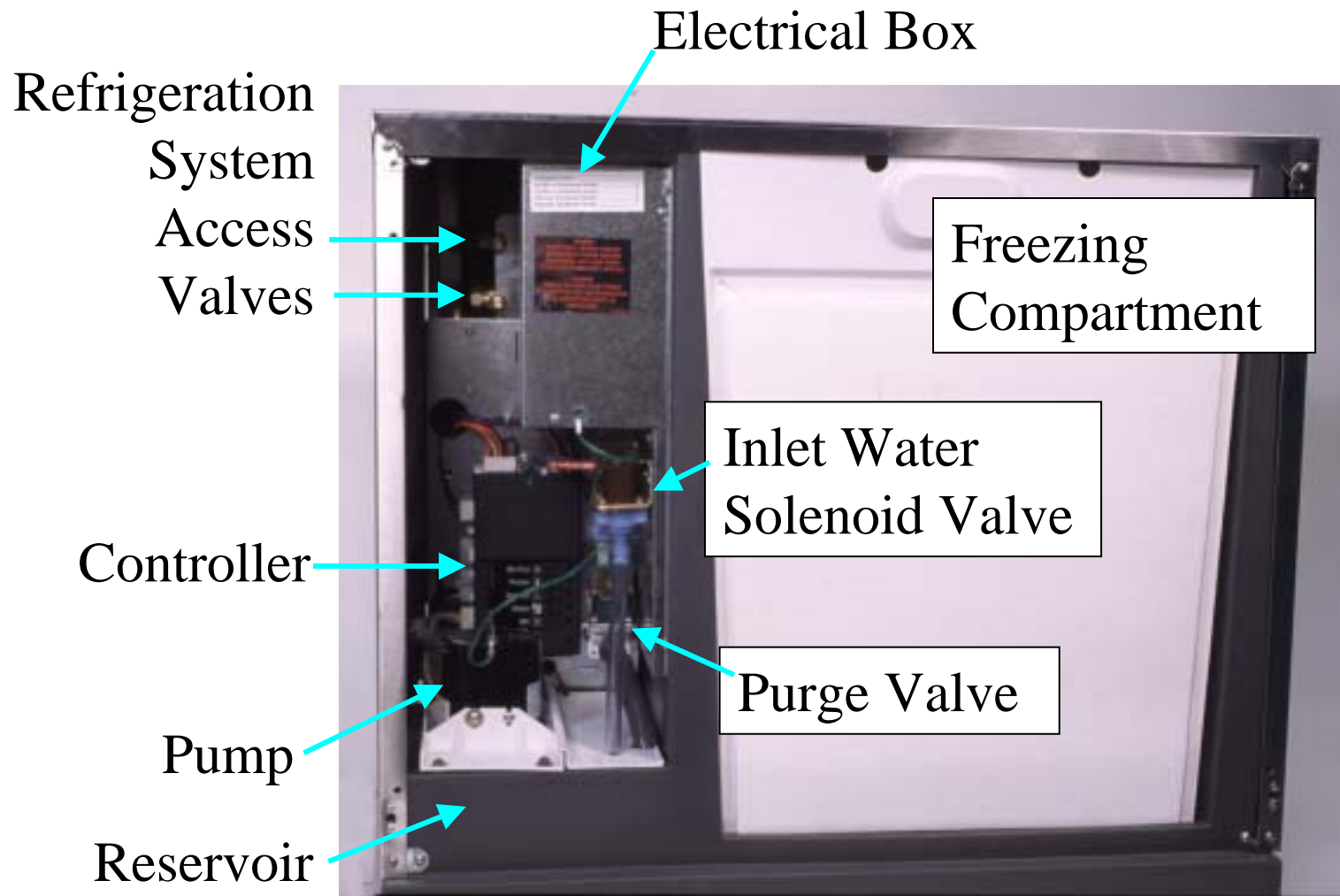
Bulb



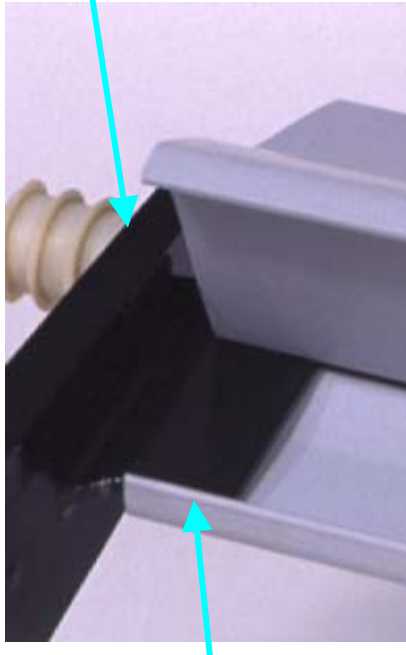


- Can only stack with another CME1056
- Stacking kit
 - Includes curtain, hanger, gasket and wire harness
 - Remove cascading shield from lower unit

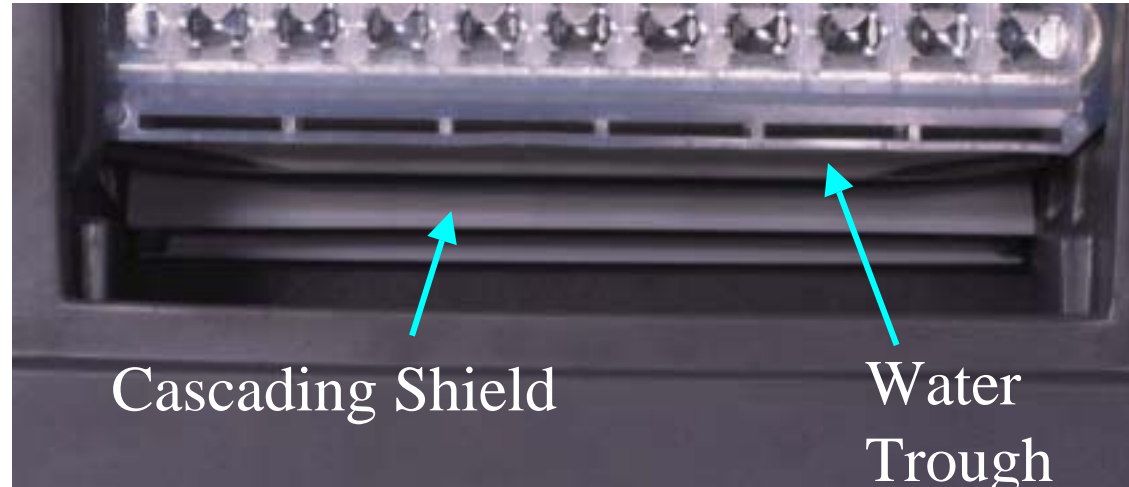




Ice Sensor

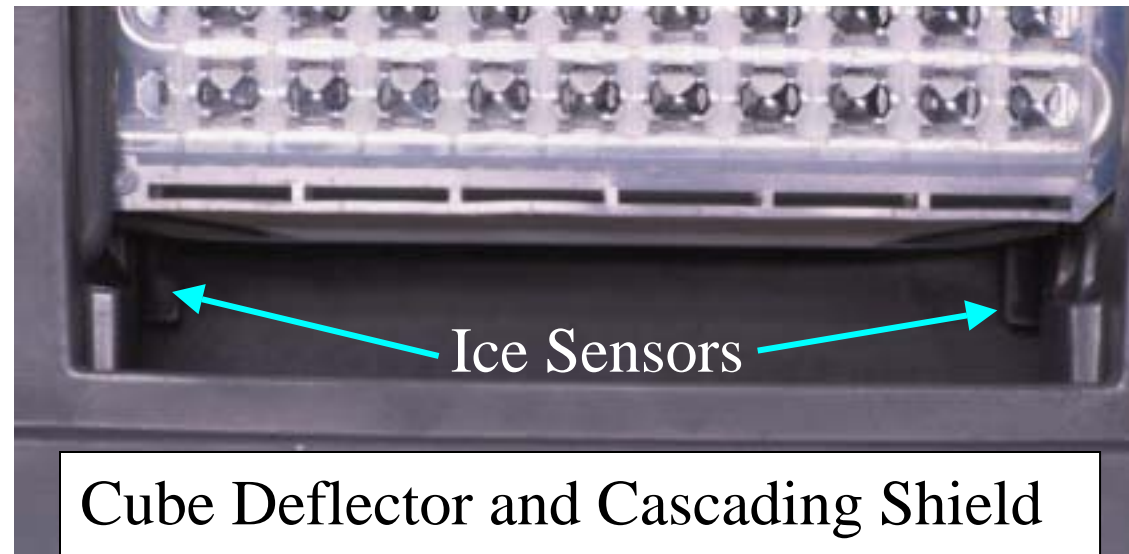


Cascading Shield
Snapped Over
Tab of Ice Sensor



Cascading Shield

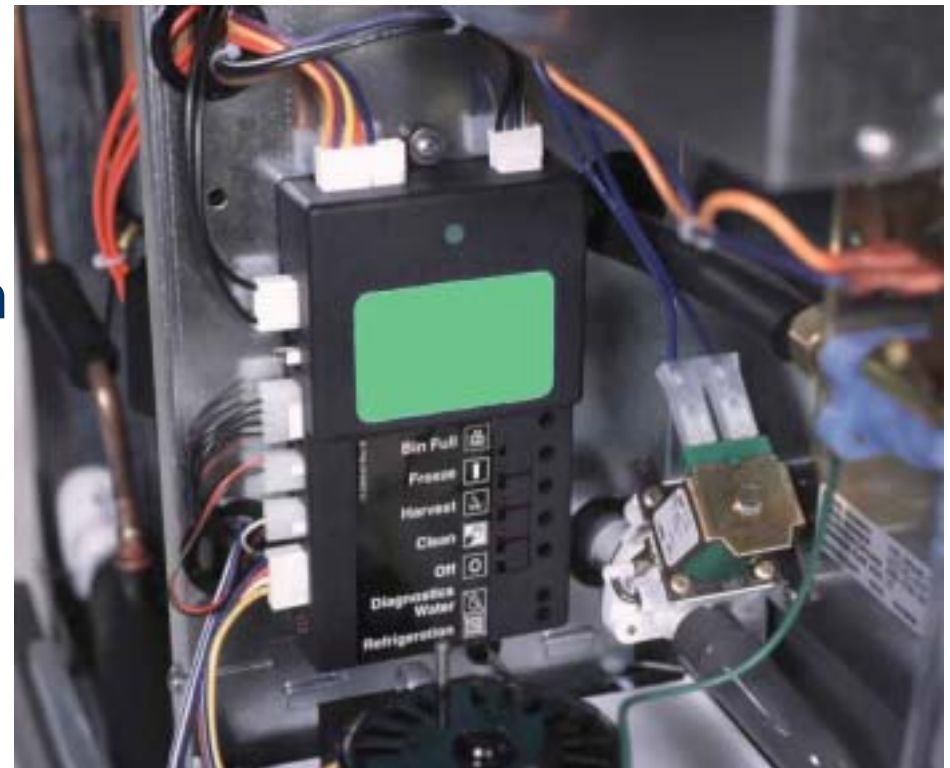
Water
Trough



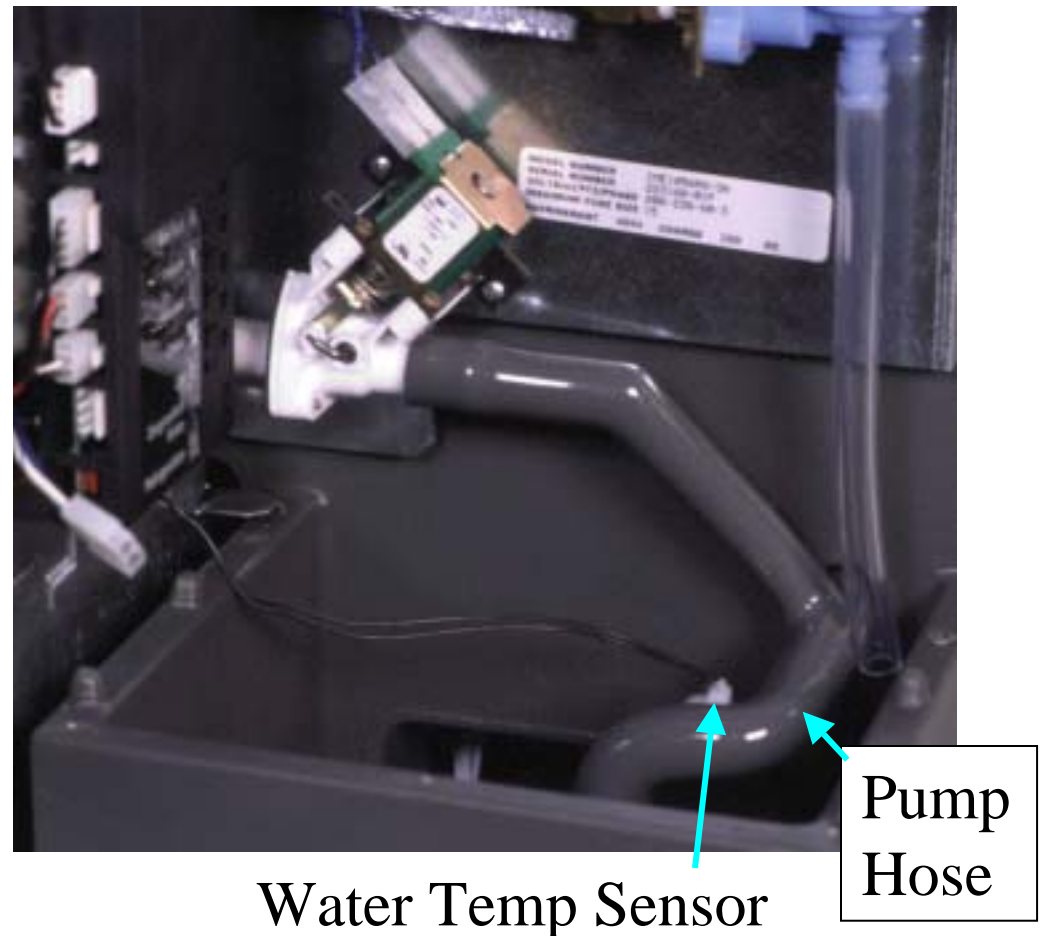
Ice Sensors

Cube Deflector and Cascading Shield
Removed - Trough Still on Back Plate

- Similar to CME1356
 - Purge Valve System
 - Remote has Harvest Bypass Valve System

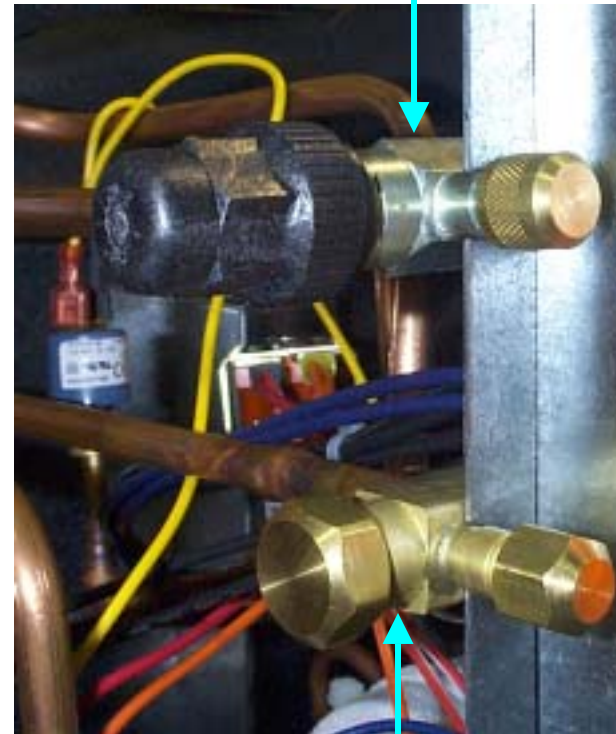


- Water Temp Sensor
 - Only used for diagnostics
 - Confirms if system is refrigerating the water
- There's also a Discharge Temp Sensor



- Turn on the water
- Switch on the power
- Air and Water Cooled:
 - Push Freeze
- Remote:
 - Wait 4 hours and open the liquid line valve
 - Push Freeze

Liquid Line Valve

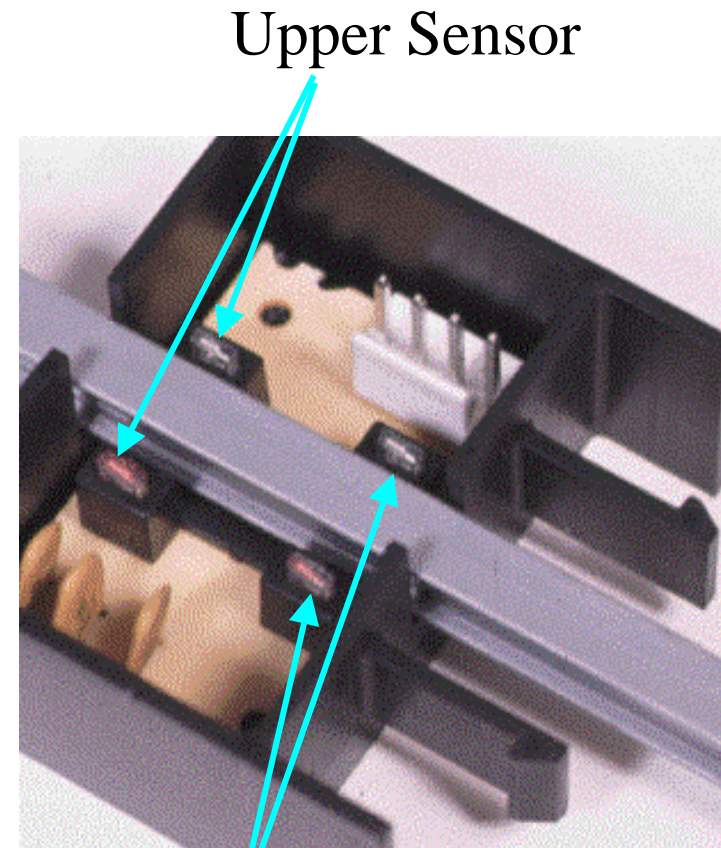


Low Side Access

- Purge Valve Opens for a short time then closes
- Water Valve Opens, fills reservoir
- When reservoir is full, compressor starts



- Water Level Sensor
 - Two infrared sensors
 - Bottom one indicates reservoir full when blocked
 - Top one indicates reservoir needs water OR to terminate freeze when it is blocked



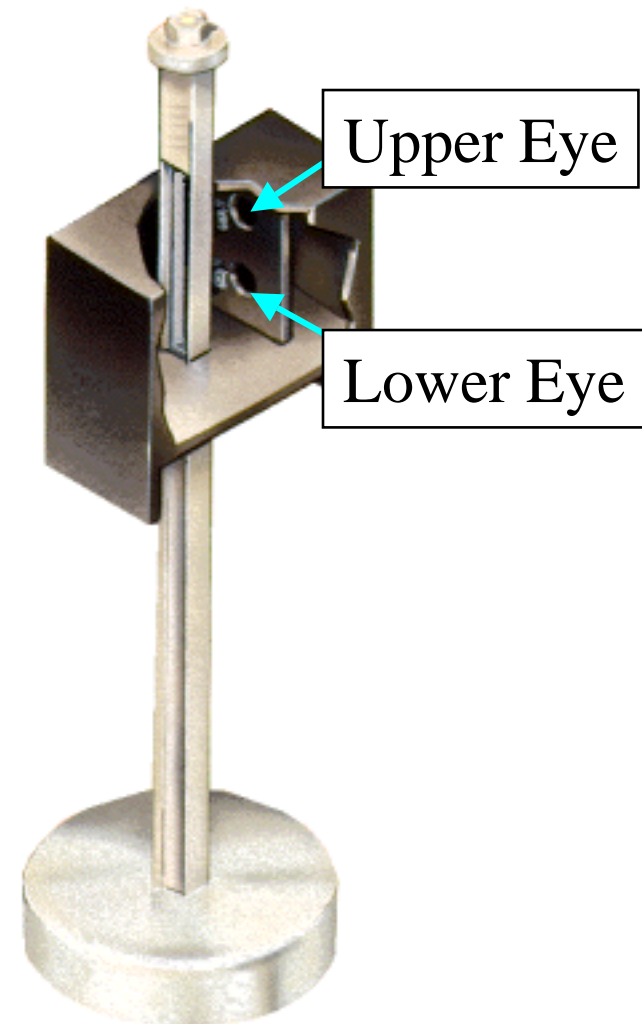
Upper Sensor

Lower Sensor

- Air Cooled Fan Motor
 - Powered from Controller
 - Shuts off before Harvest
 - Off during Harvest
 - Cycles on & off during Freeze if discharge temp is low (<125°F.)
- Remote Fan Motor
 - Powered by Contactor
 - Fan is On whenever Compressor is On

- Water level determines length of freeze cycle/cube size
 - Water reservoir tops off at the beginning of freeze
 - Water reservoir fills once more during freeze
 - The second time the top sensor is blocked stops the freeze cycle

- The controller uses the water level sensor to sense changes in water quantity
 - Upper electric eye indicates when water falls
 - Lower electric eye indicates when water rises



- First harvest after any restart
 - 5 minutes long to establish a base line
- All harvests
 - Pump stops
 - Hot gas valve opens
 - Purge valve timer energized
 - Purge valve opens for 40 seconds
 - Nothing draining - pump is OFF

- Remotes open their Harvest Bypass Valve for a few seconds
 - Time varies depending upon discharge temperature,
 - Colder discharge = more valve open time
- All Models: Pump restarts, water drains, purge valve closes
 - Inlet water valve opens for 9 seconds
 - Only for harvest assistance, does not fill reservoir



Scotsman[®] Ice Sensing / Harvest Control

Harvest Begins

Harvest Ends

Total Current Harvest Cycle Time
(prior cycle actual + a % of actual)

Actual Time to Release Ice
(prior cycle)

Percent of Actual

Last Cube
Fell

Harvest
Began

Harvest
Ended

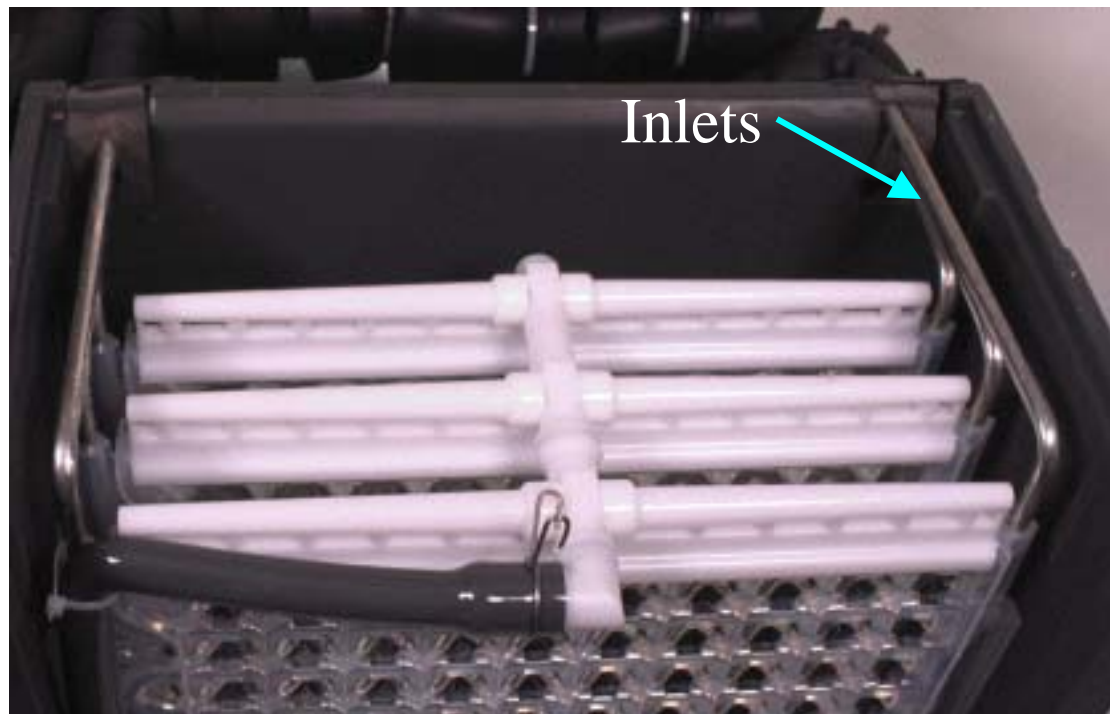
- Time expired
 - Either the unit returns to freeze or
 - It shuts off on Bin Full - when the bin thermostat contacts are closed
 - If ice was not “seen” by the ice sensors
 - Will make one more cycle
 - If it happens again, the unit shuts down
 - Will automatically restart for another try in 50 minutes

- Ice Formation
 - Refrigerant enters the evaporators at the top

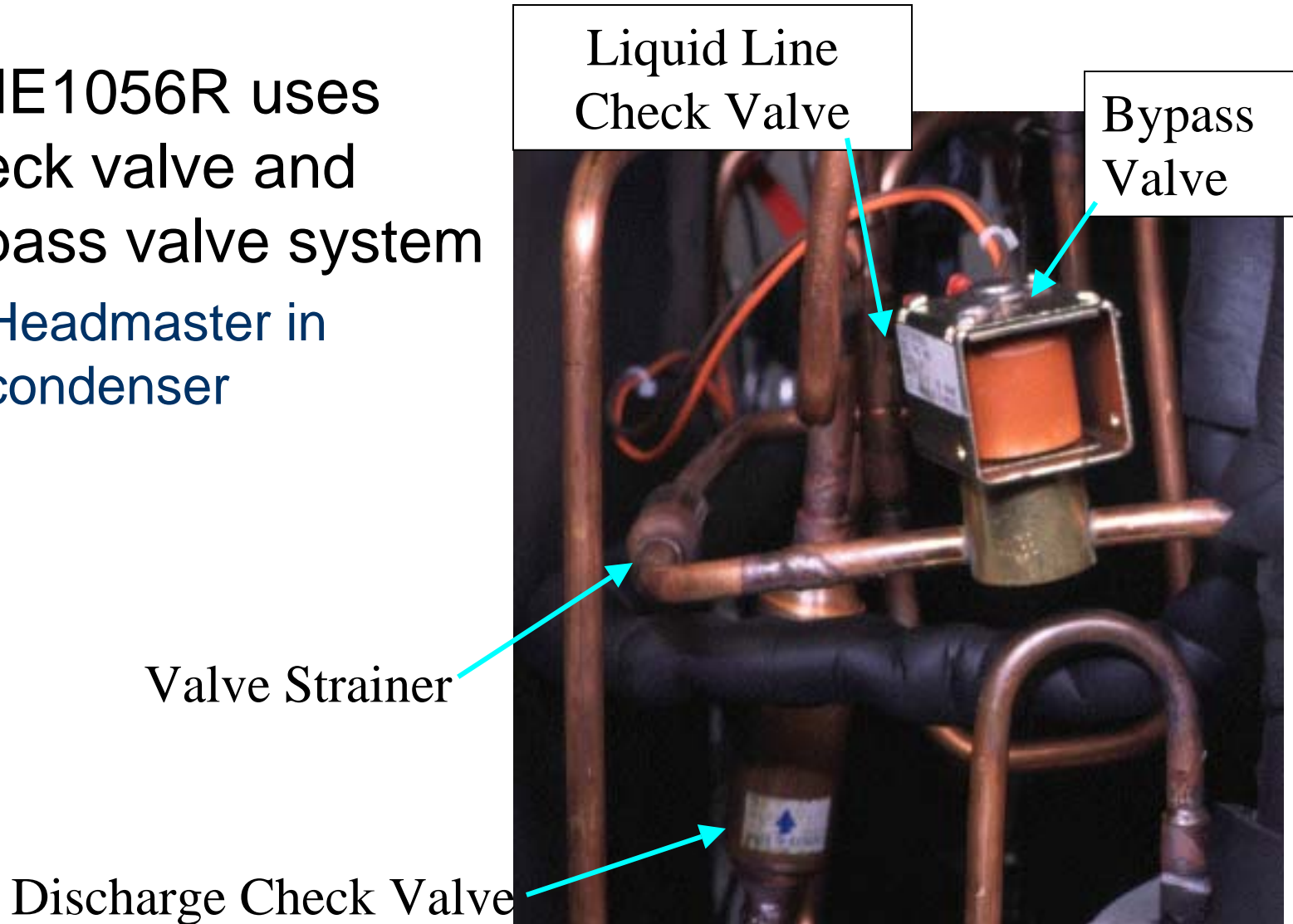
Cubes form at top first

Ice Harvests in vertical strips

Strips break when impacting the cube deflector



- CME1056R uses check valve and bypass valve system
 - Headmaster in condenser

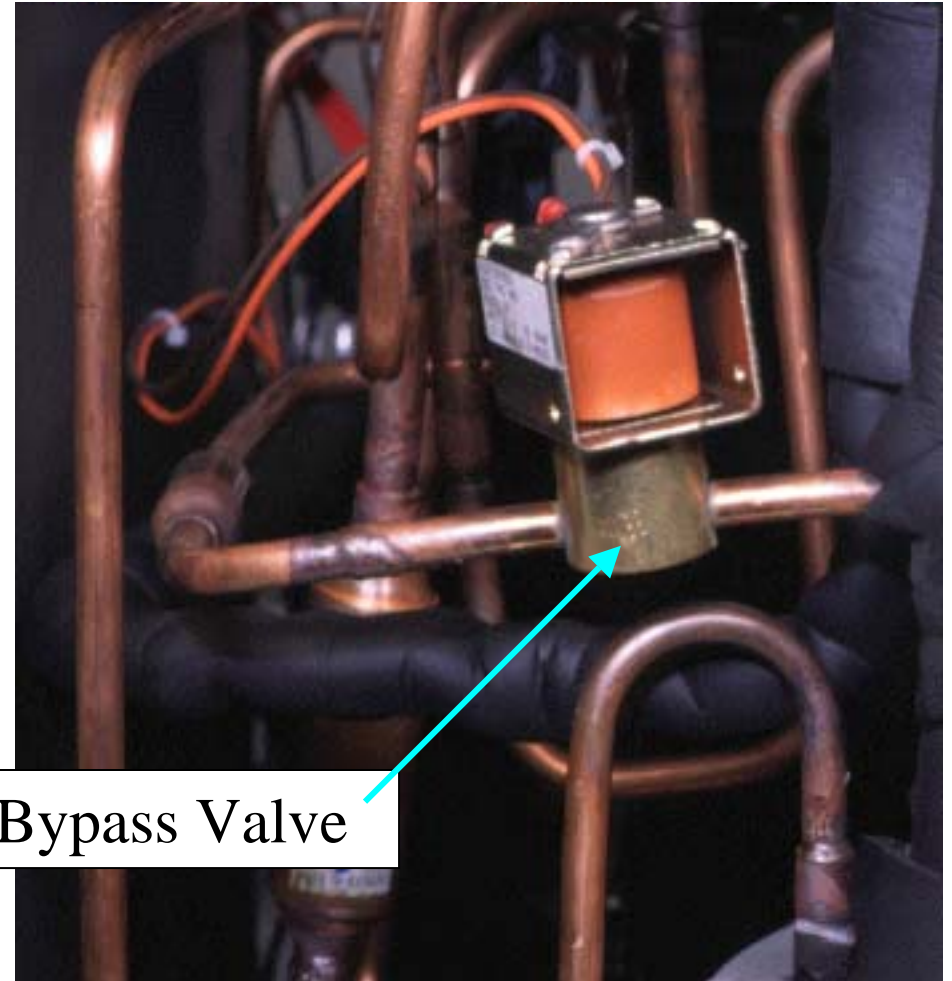


- Discharge line check valve seals off condenser during harvest
 - Isolates charge



Discharge Line
Check Valve

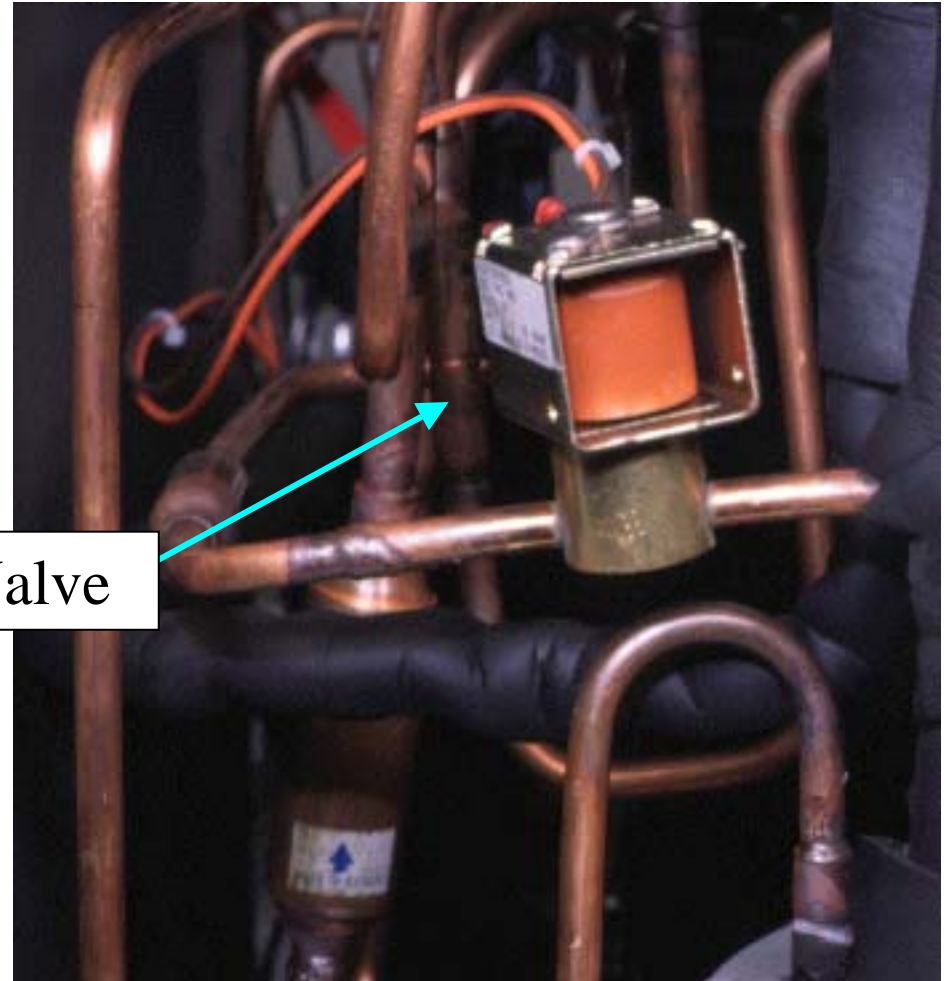
- Opens a path between condenser and low side during harvest to meter in just enough refrigerant



Harvest Bypass Valve

- Prevents liquid migration to condenser during OFF cycle

Liquid Line Check Valve



- Controls liquid flow out of the receiver
 - Use allows two point recovery from the front of the machine
 - From low side
 - From liquid side
 - Liquid flow direction is same as freeze - check valves are open



- An attached gauge will show Liquid Pressure
 - Connection is between Receiver and Heat Exchanger
 - Gauge reading is accurate during Freeze, but not Harvest
 - Discharge line check valve separates condenser
 - Gauge pressure in Harvest reads too high
 - Discharge pressure reading in Harvest only accurate at discharge line quick connect

- Electrical Power Interruption
 - Automatic restart
 - Open the hot gas valve for 20 seconds
 - Open the purge valve
 - Start the pump
 - Shut the purge valve
 - Fill the reservoir
 - Start the compressor, freeze for 30 seconds
 - Harvest for 6 minutes

- Water supply interruption
 - Automatic shut off and restart
 - Shuts off when float does not rise enough during water fill
 - Controller checks for water by opening the inlet water valve every 20 minutes
 - Will restart when the float rises far enough to break the bottom beam in the water level sensor

- There are 5 levels
 - Maximum
 - Heavy
 - Standard - the factory setting
 - Moderate
 - Minimum
- Number of green lights indicates purge level





Cleaning and Sanitation

Push Harvest to release any ice and warm up the evaporators

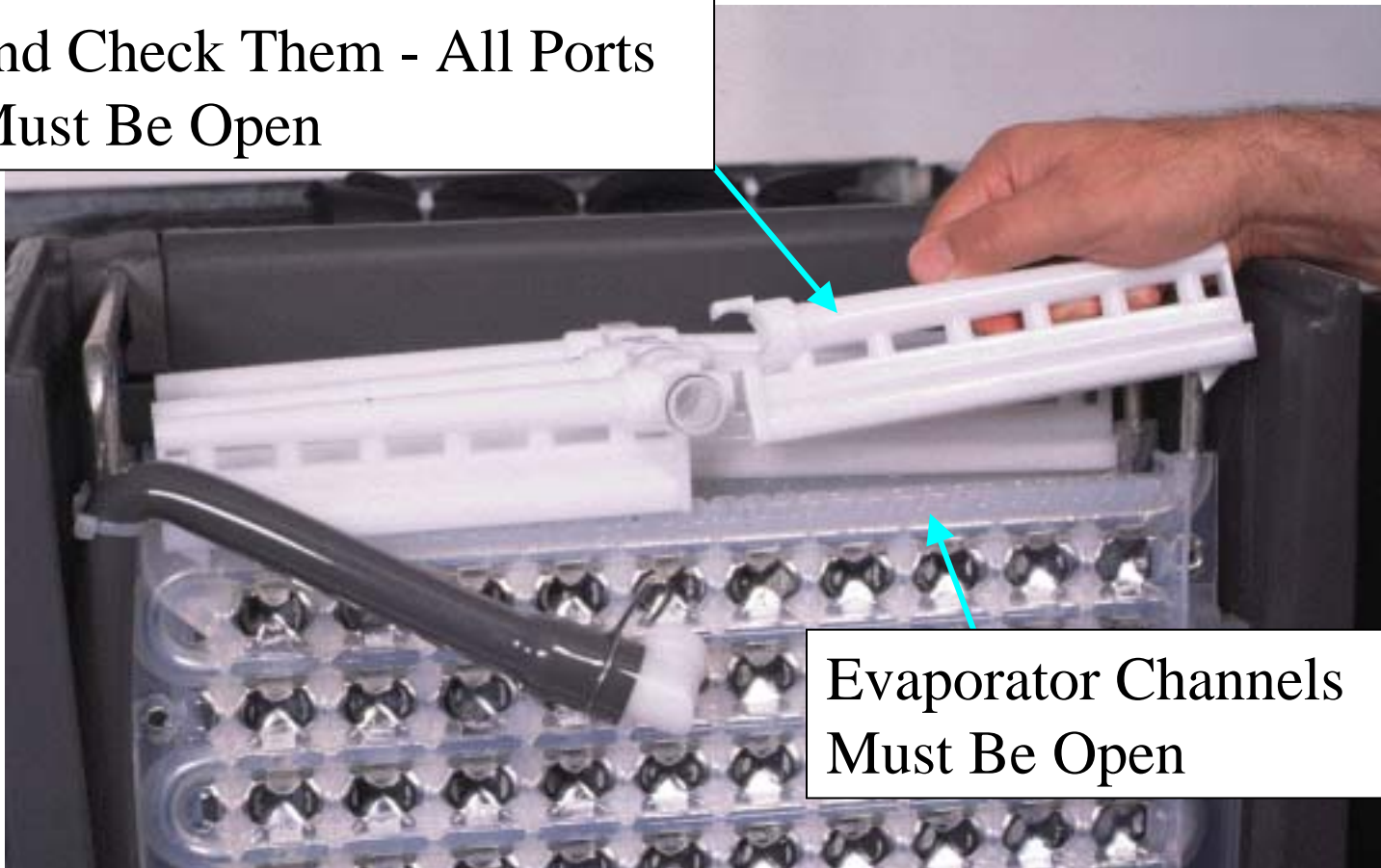
Push Clean and add 24 ounces of Scotsman Ice Machine Cleaner

After 10 minutes push Clean again to flush out the Cleaner

After 20 minutes push Off to stop



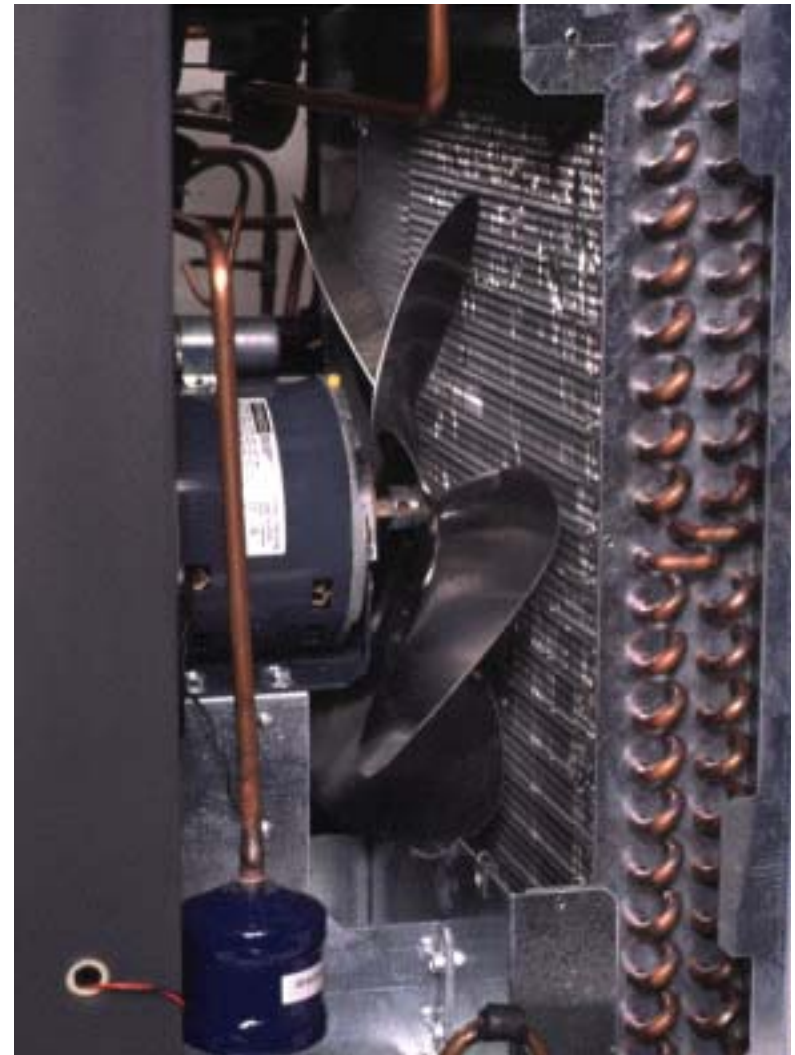
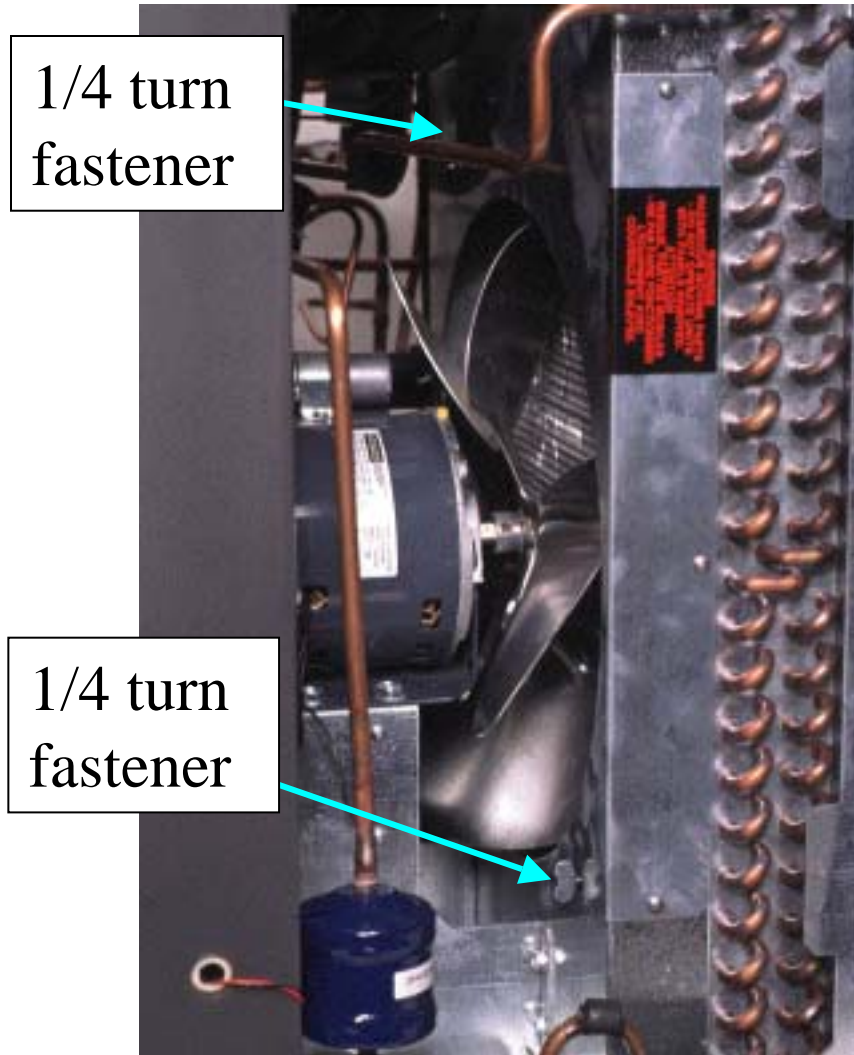
Remove Water Distributors
and Check Them - All Ports
Must Be Open



Evaporator Channels
Must Be Open

- Change Air Filters
 - Disposable
 - 20 x 20 x 1
 - One on each side

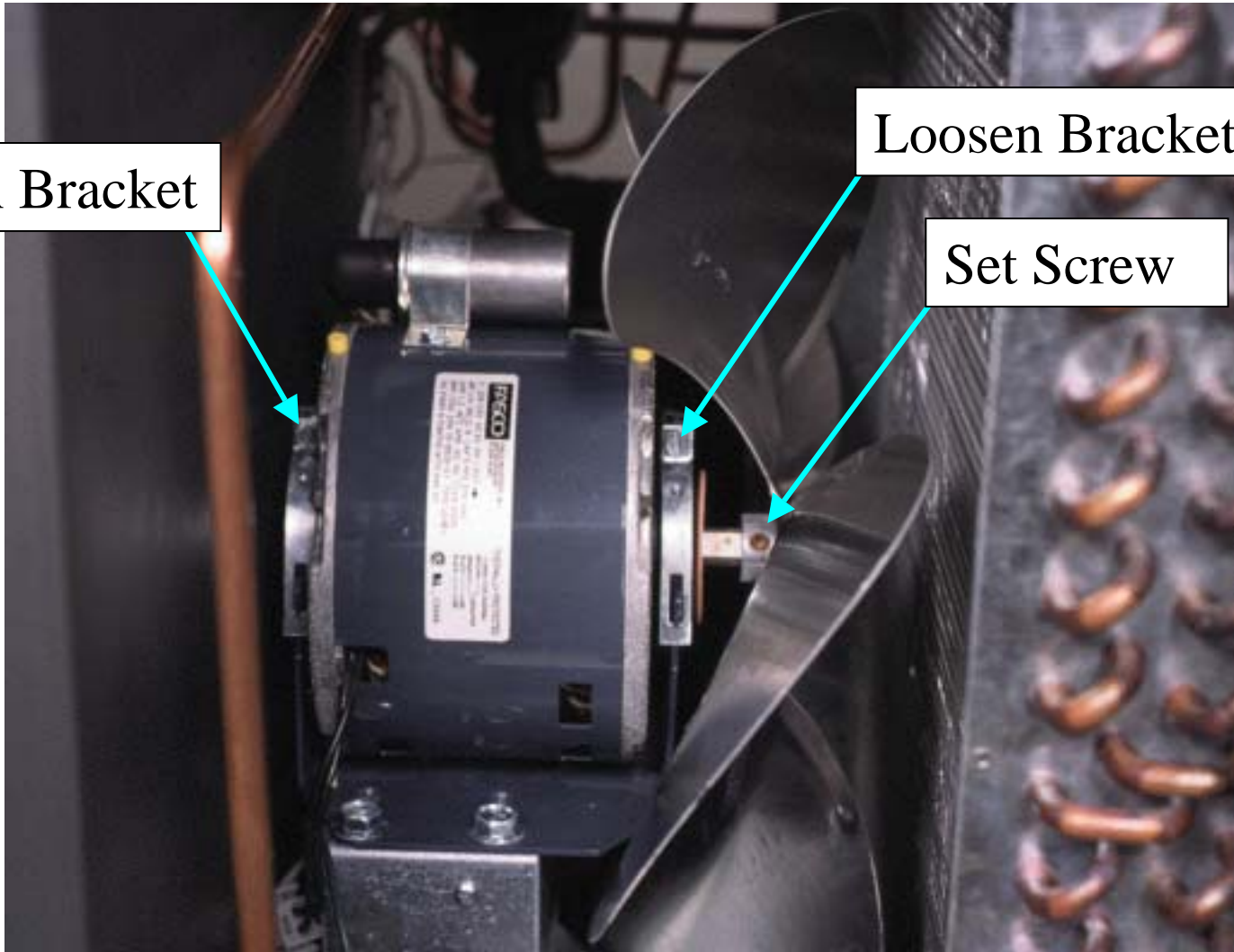




Loosen Bracket

Loosen Bracket

Set Screw



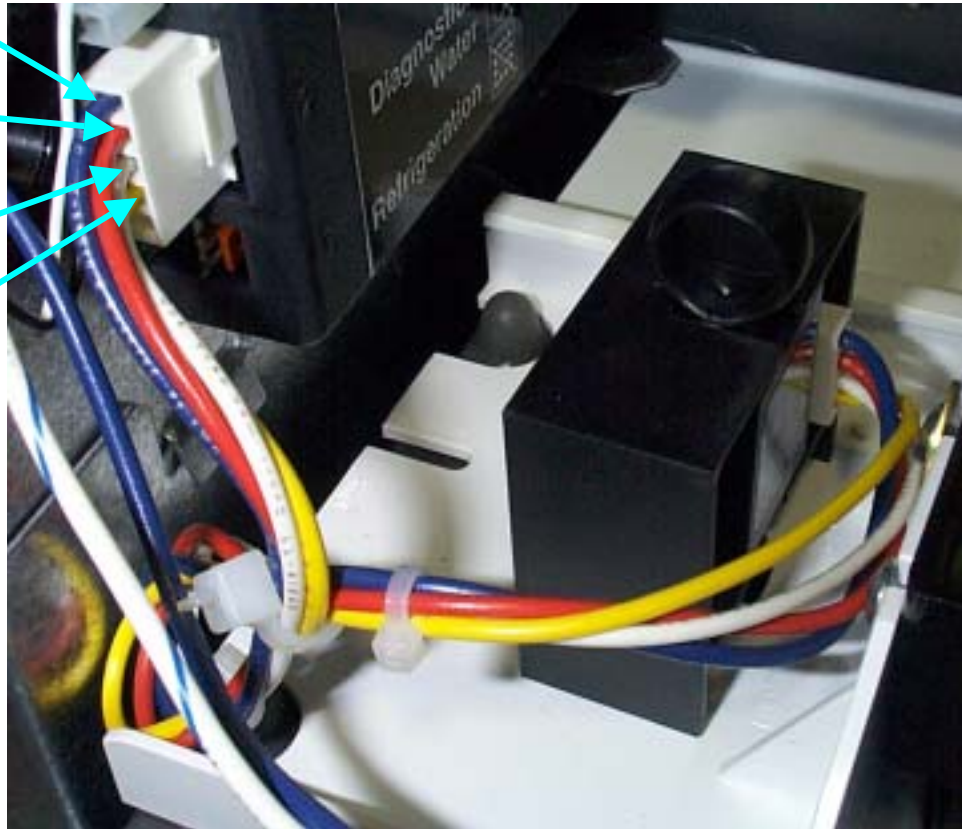
- No ice, machine is off
 - Check the controller for lights
 - No lights = no power to controller
 - Check for power to machine
 - Check for transformer output



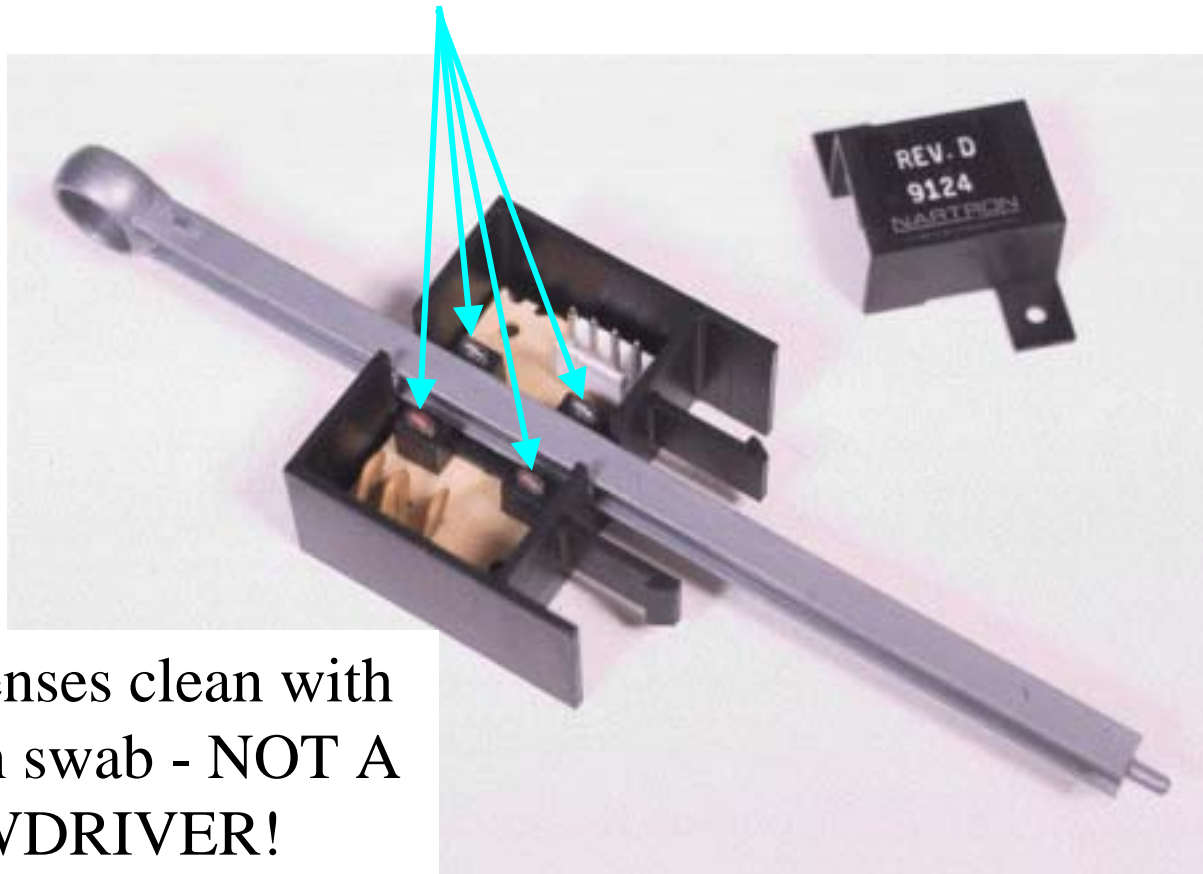
- If there are lights - which ones are on?
 - Off light means the machine was switched off by someone
 - A Diagnostic light means a machine malfunction
 - Bin Full light means something has triggered either
 - the bin thermostat (closed) or
 - the ice sensors are blocked

- Water Diagnostic Light
 - Blinks once and repeats
 - Water pump may not be working
 - Blinks twice and repeats
 - Water flow into machine too slow
 - Is ON without blinking
 - Inlet water valve leaking thru rapidly
 - If both the Water AND Refrigeration lights are on, check the thermistor set

Power
Water Fill
Freeze Termination
Ground or Negative



Lenses



Wipe lenses clean with
a cotton swab - NOT A
SCREWDRIVER!

- Refrigeration Light
 - Blinks once and repeats
 - Ice release very slow, took maximum length harvest
 - Blinks twice and repeats
 - No ice sensed during maximum length harvest
 - Blinks three times and repeats
 - High discharge temperature



- Refrigeration Light
 - Is ON without blinking
 - Low discharge temperature OR
 - Maximum length freeze cycle OR
 - Water cooled or remote may have cut out on high discharge pressure
 - Control resets automatically, but the controller may have timed out, depending upon when in the freeze cycle the control reset

- Bin Full light is ON
 - Bin may be full
 - 4 minute delay
 - Thermostat may be closed
 - is bin very cold?
 - Ice sensors may be blocked
 - Could need cleaning





**I worked
until I got
this dirty.

Clean Me!**



- Remove cascading shield
 - Used on all two evaporator models
- Reach in and twist cascading shield's top forward to release it from its snap-on mounts
- Push-pull sensors out of the machine



- Clean sensors
 - Two types - tunnel mounted and module mounted
 - Eyes either in the back of the tunnel or on the module
 - Clean both with cotton swab or soft cloth



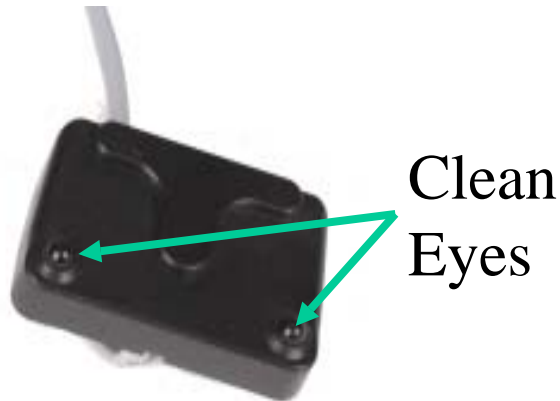
Tunnel Type



Module Mounted



Remove Module



Clean
Eyes

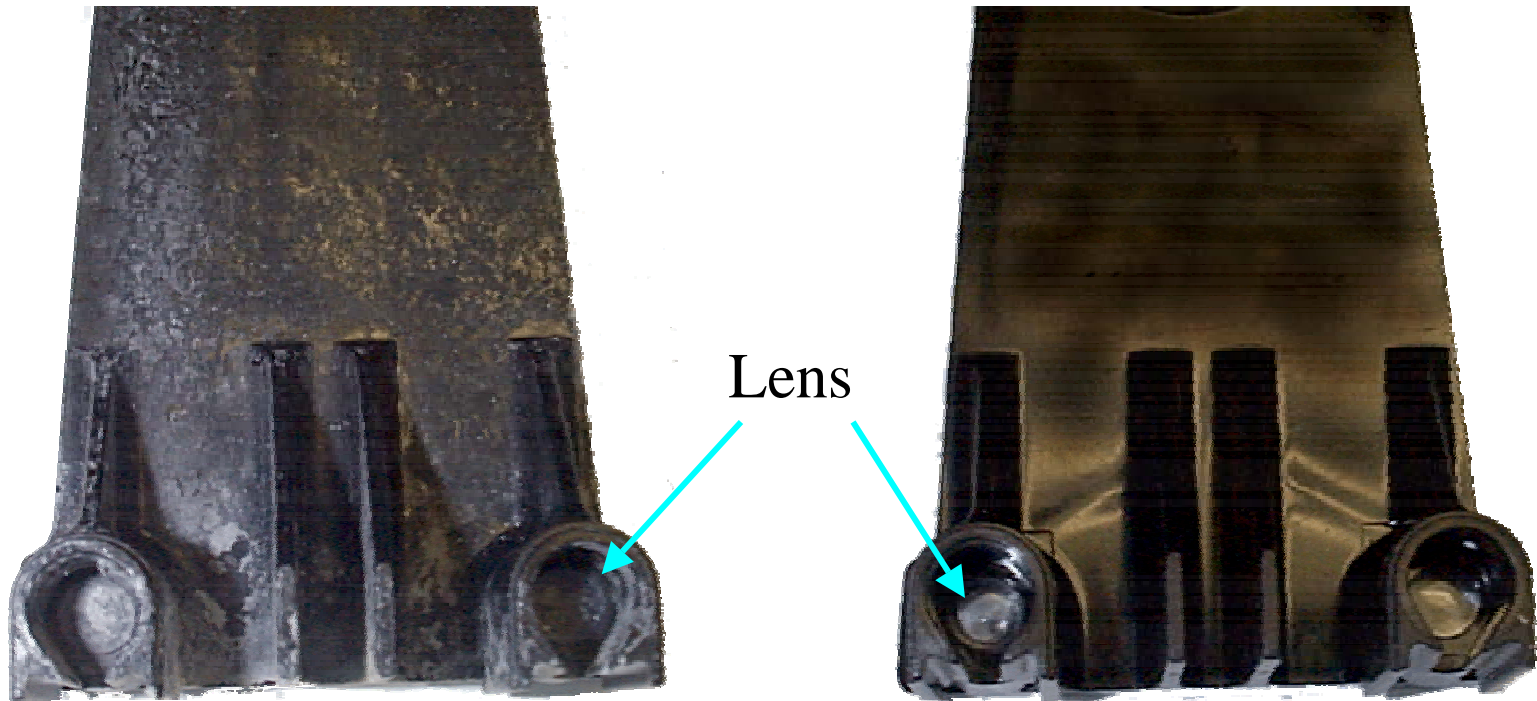


Reassemble



Check
Wire

Clean Sensor Lenses with old soft toothbrush,
NOT A SCREWDRIIVER!

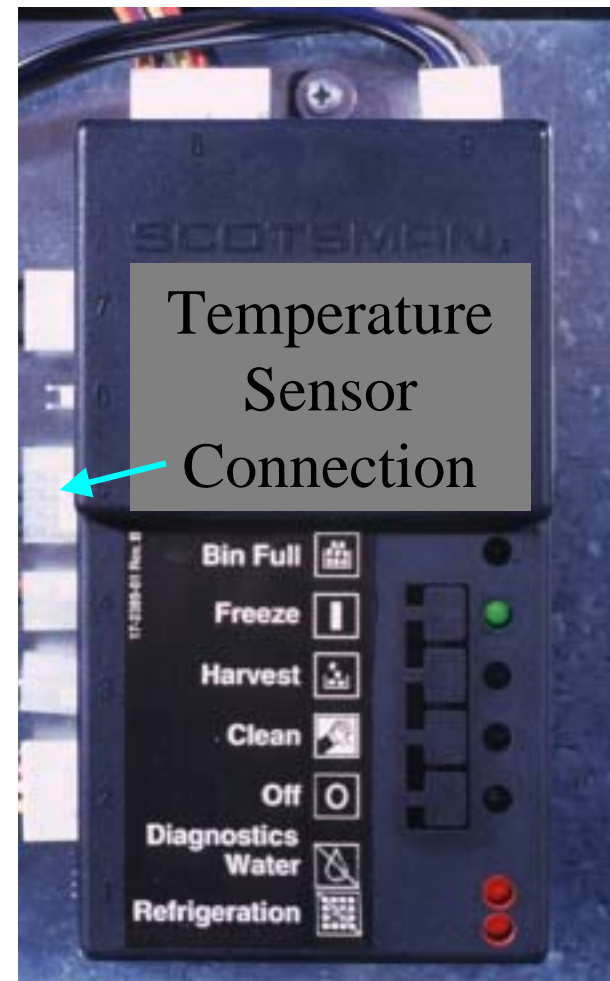


Ugly and Dirty! Clean Me!

Good to Go!

Note: Wet parts may appear clean, dry them to check.

- Unit is running but both Diagnostic lights are ON
 - Check if temperature sensor (thermistor) set is plugged into the controller
 - If it is, replace the temperature sensor set
 - Thermistors can also be checked by putting either probe in ice water
 - 32,649 ohms @ 32°F.

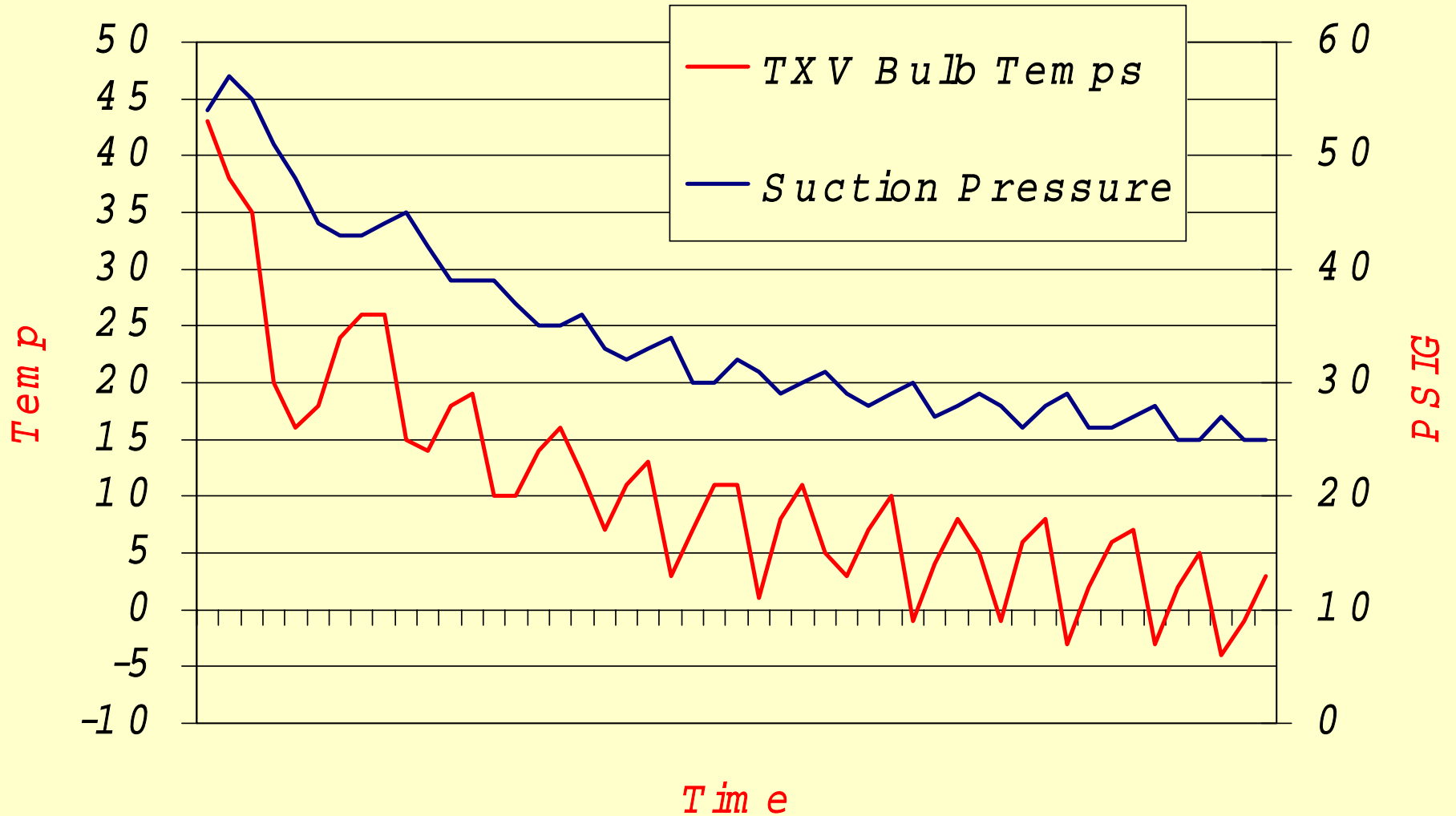


- Normal Cycle Time
 - 15 to 17 minutes at 70/50
 - 16 to 19 minutes at 90/70
- Longer than normal times can be caused by
 - Dirty condenser
 - Low charge
 - Leaky inlet water valve
 - Inefficient compressor

- Low Charge - Air or Water Cooled
 - Check by measuring suction line temperature at TXV bulb
 - Typical minimum for CME1056
 - 0 to -5°F.
- Low Charge - Remote
 - Will run until receiver is “dry”
 - Controller will shut unit down on max freeze time

- To confirm low charge, recover and weigh OUT the charge
- Headmaster will modulate when controlling pressure
 - Can only check at lower condensing temperatures < 70 - 75°F.
 - May not modulate at beginning of freeze - when heat load is high

Freeze Cycle Data

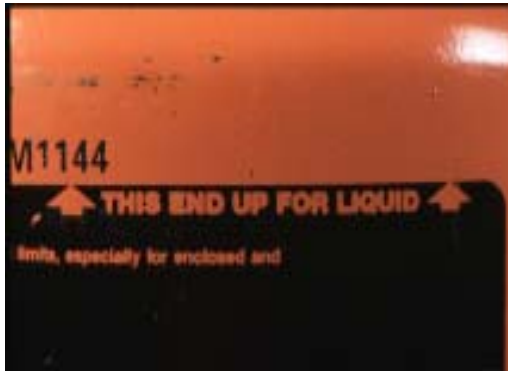


- TXV failure vs. Low Charge
 - High superheat is the symptom
 - Check by adding 10% of the charge
 - If no change, TXV is at fault
 - If superheat declines, charge is low and there is a leak
 - End of Freeze superheat maximums should be between 8°F. and 12°F.

- Electrical
 - Starting
 - Check starting components & windings
 - Confirm capacitor PN & MFD
 - Check start relay
 - Use hard start kit
 - Impact shell
 - Overheating
 - TXV or Charge may be at fault

- Confirm inefficient compressor
 - Process of elimination
 - TXV, Charge, Valves (water, hot gas) more likely to be at fault
 - Amp draw may be low if cannot pump to capacity
 - Normal amps:
 - 10, single phase;
 - 7 three phase

- A hot gas valve is closed during a Freeze Cycle
 - If it leaks through, the heat from the discharge line will flow through it
 - Outlet will be hot - same as inlet
 - Frost at the evaporator connection is **NORMAL**
 - No frost also indicates a leak through



Liquid Charge



Evacuate to 300 microns

Enodis

R-404A



Weigh In Charge



HFC Leak Detectors



Use Nitrogen Purge

- CME1056
 - Air Cooled
 - Water Cooled
 - Remote Air Cooled
- CM³ technology
- 30" wide
- R-404A

