



Ice Maker - Dispensers

# Technical Training



# Presentation Topics

- Topic 1: Nugget Ice Maker Dispensers
  - MDT5N, MDT6N
- Topic 2: Flaked Ice Maker Dispensers
  - MDT3F, MDT4F
- Topic 3: Cubelet Ice Maker Dispenser
  - MDT2

# Model Number Scheme

- Example: MDT5N40A-1J
  - MD = ice Maker Dispenser
  - T = Touch Free
  - 5 = the approximate ice making capacity, in hundreds of pounds
  - N = ice type; F for Flaked or N for Nugget or C for Cubelet
  - 40 = the calculated storage capacity

# MDT5N25

- MDT Nugget Dispenser
  - MDT5N40 taller



# MDT6N90

- Large Capacity Touch Free
- Best for filling pitchers



# MDT5 and MDT6

- There are two dispensing stations
  - Ice
  - Water



# MDT5

- Dispensing
  - Place a container in front of the sensor & under the spout to dispense



# Touch Free

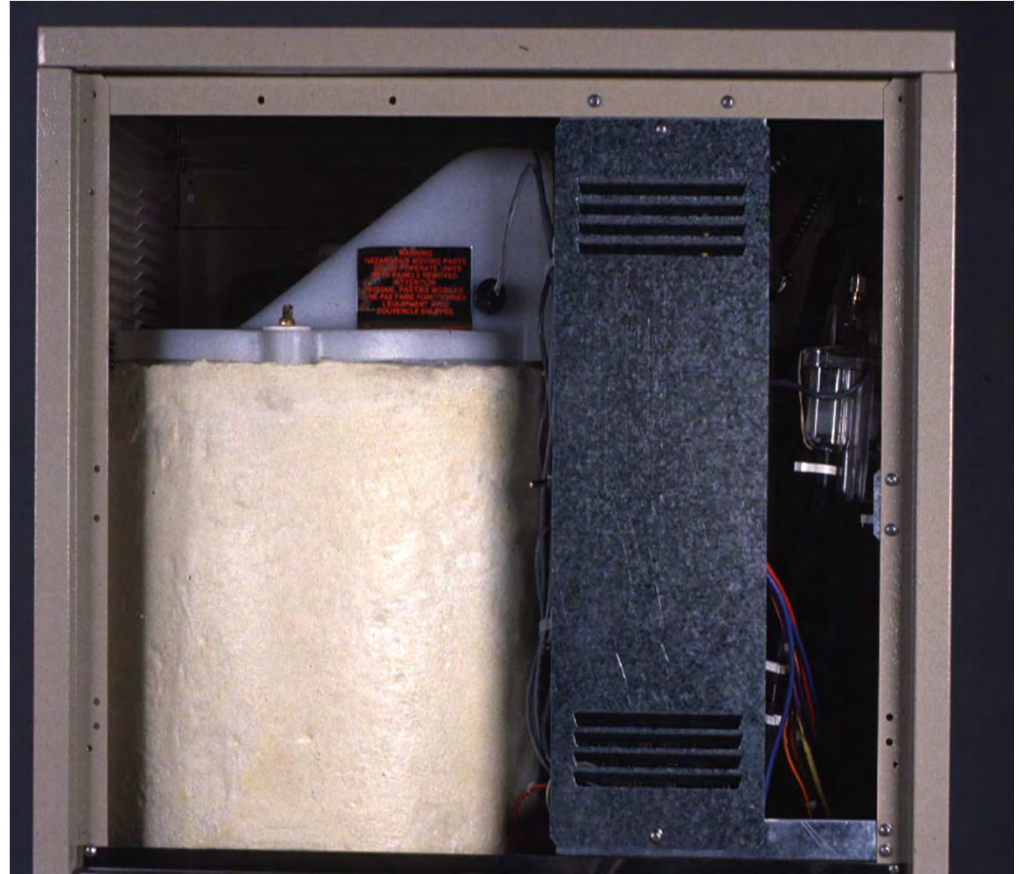
- What is Touch-Free?
  - An "infrared triangulation" position control
    - Infrared beam goes out
    - No reflection, no action
    - Reflected infrared light triggers sensors & dispensing





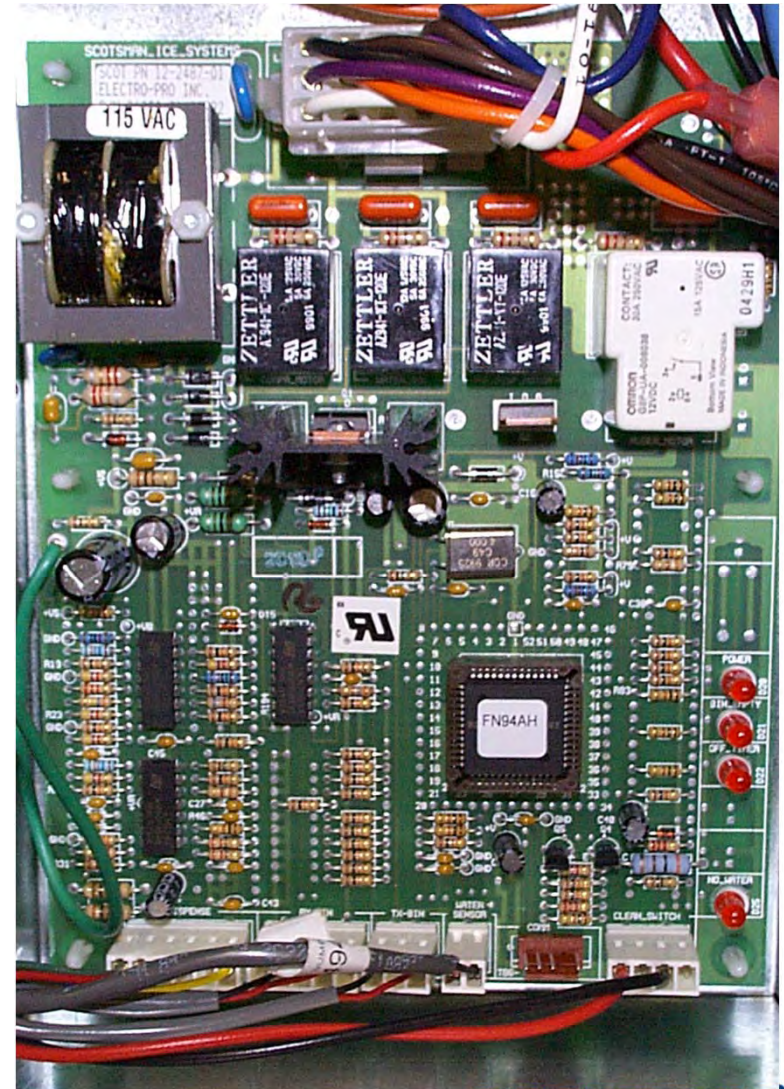
# MDT5

- Behind the upper front panel
  - Control box
  - Reservoir
  - Ice storage bin



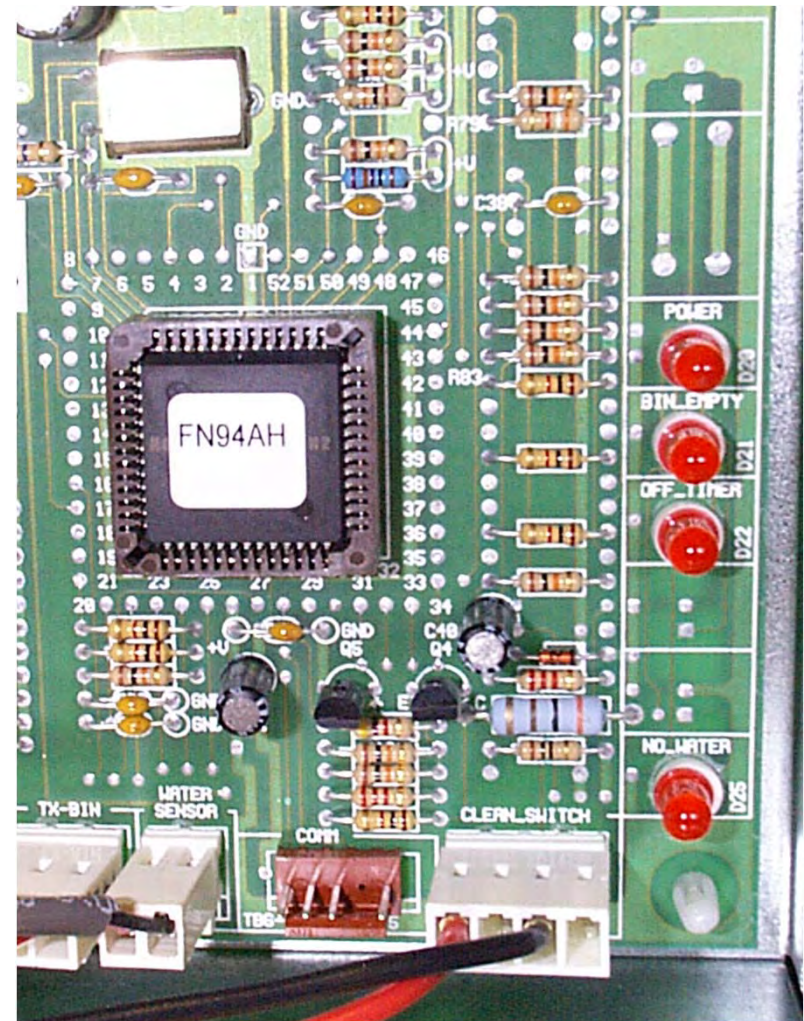
# MDT5 Control Box

- Contactor
- Compressor relay
- Control Board
  - Operates all loads
  - Contains transformer
  - Operates the Touch-Free system



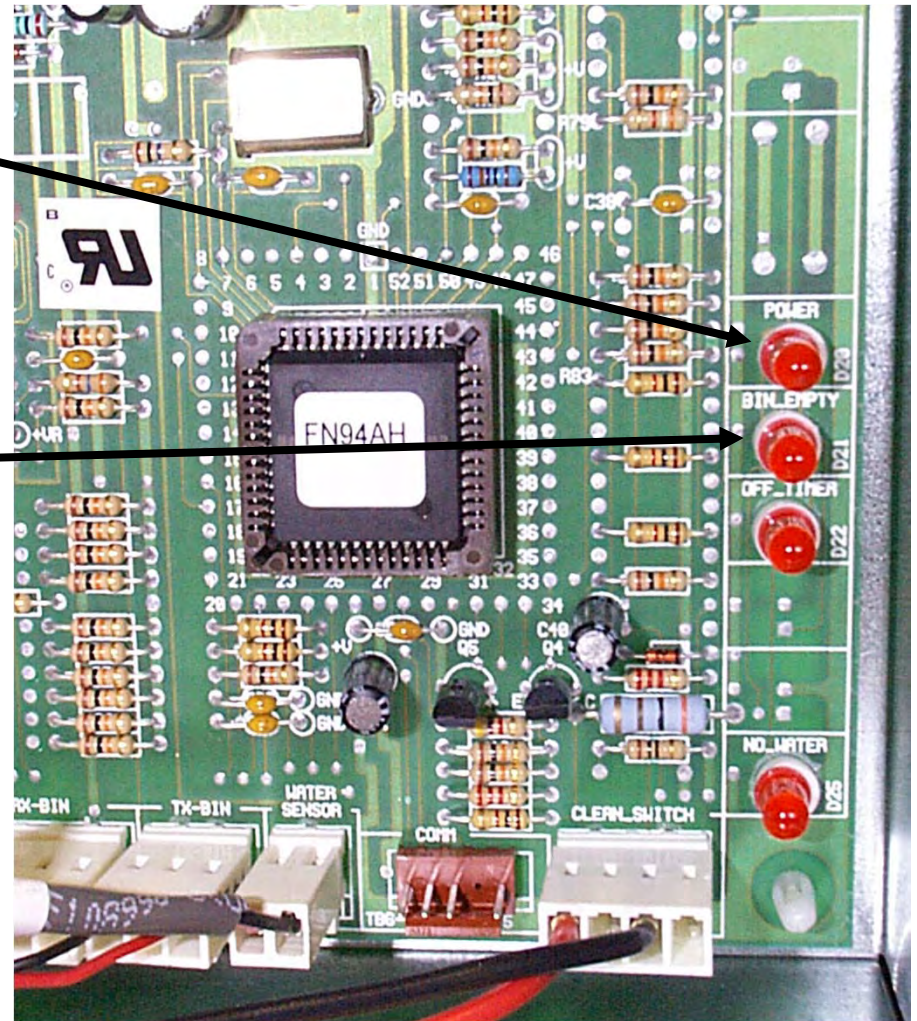
# Touch Free Control Board

- Indicator Lights
  - Power
  - Bin Empty
  - Off Timer
  - No Water



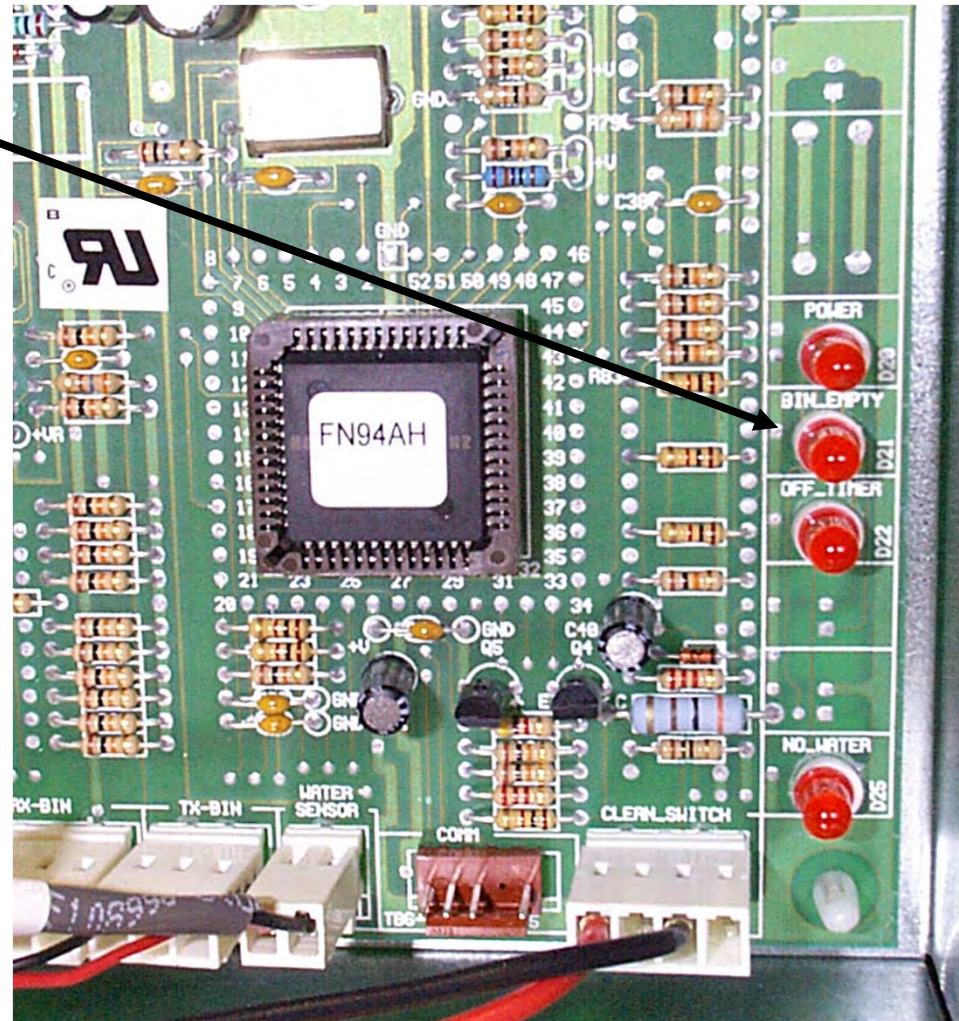
# Touch Free Control Board

- Power Light
  - On whenever there is power to the board
- Bin Empty Light
  - On whenever the bin is NOT FULL



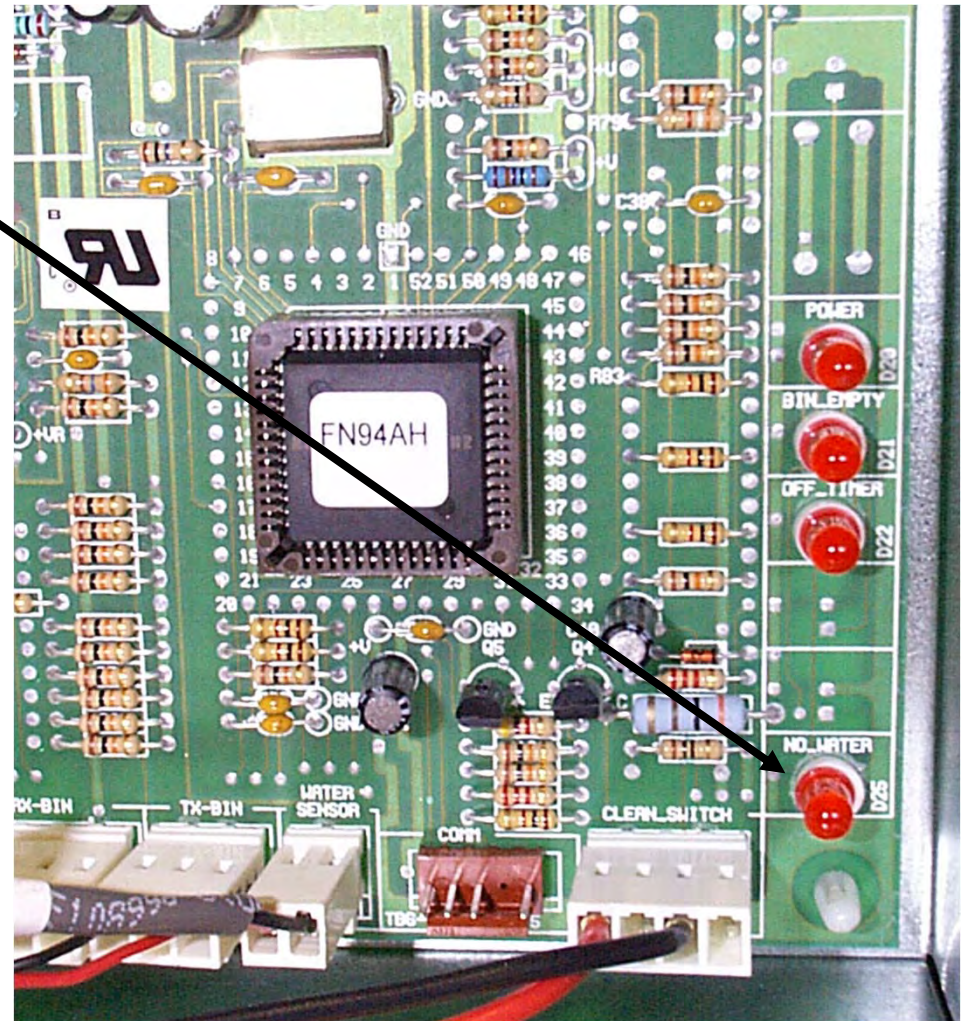
# Touch Free Control

- OFF Timer Light
  - ON when unit shuts off
  - Unit will not restart for 6 minutes



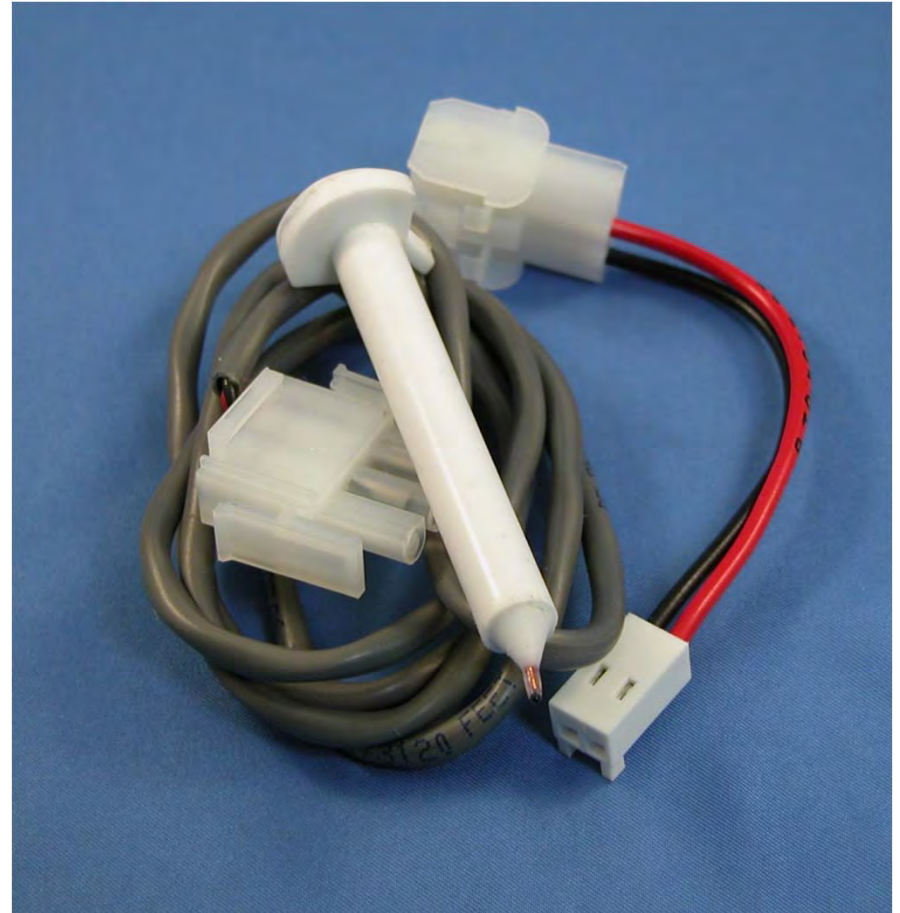
# Touch Free Control

- No Water Light
  - ON when the water sensor is dry



# Touch Free

- Water Level Sensor
  - Thermistor Type

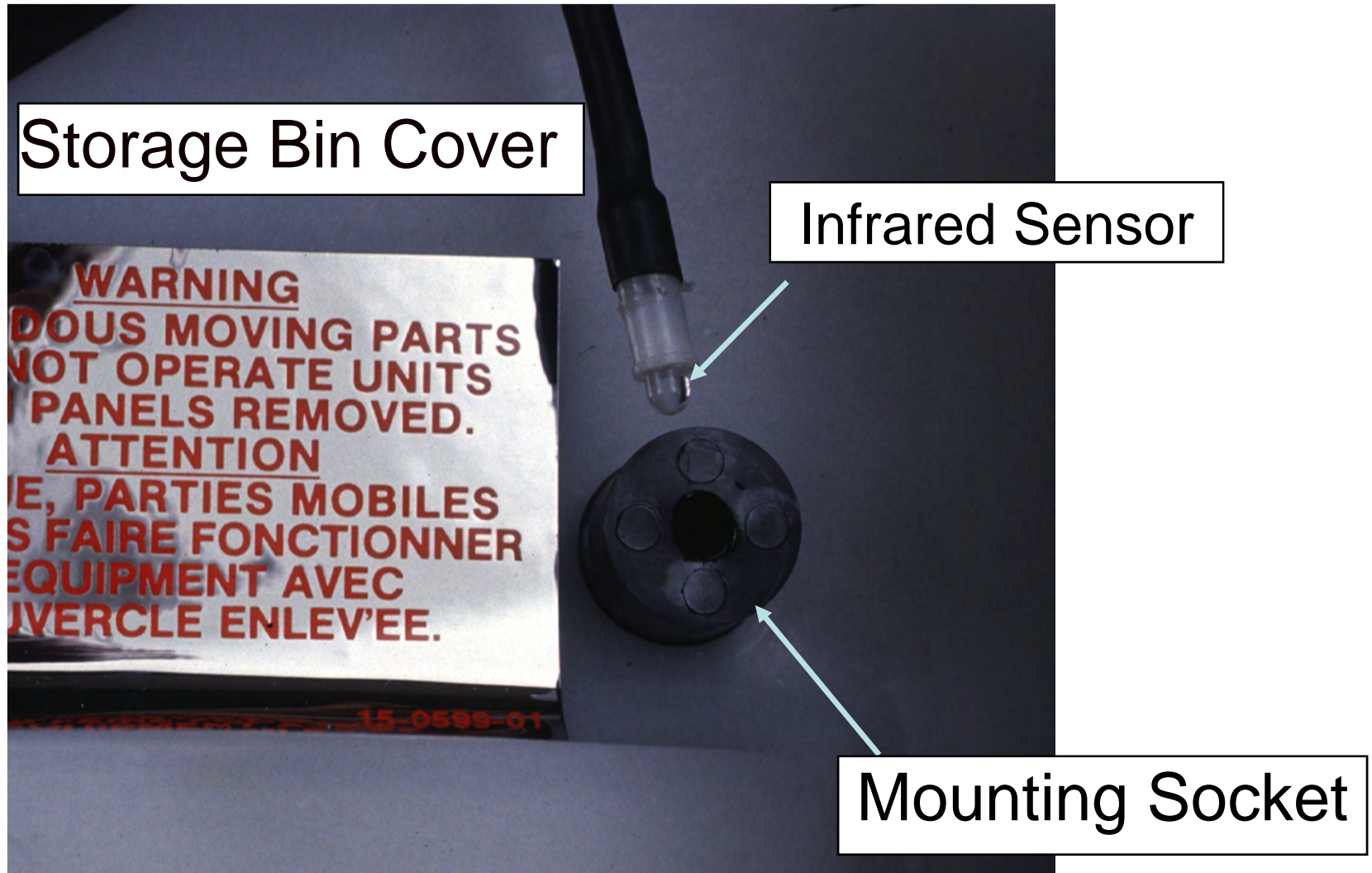


# MDT

- The bin level control is an electric eye
  - Infrared Sender & Receiver
    - Light blocked by ice signals control to shut down
    - Compressor stops
      - Auger motor continues to operate for 2 min.
  - After shut down, restart will be delayed for:
    - 6 minutes

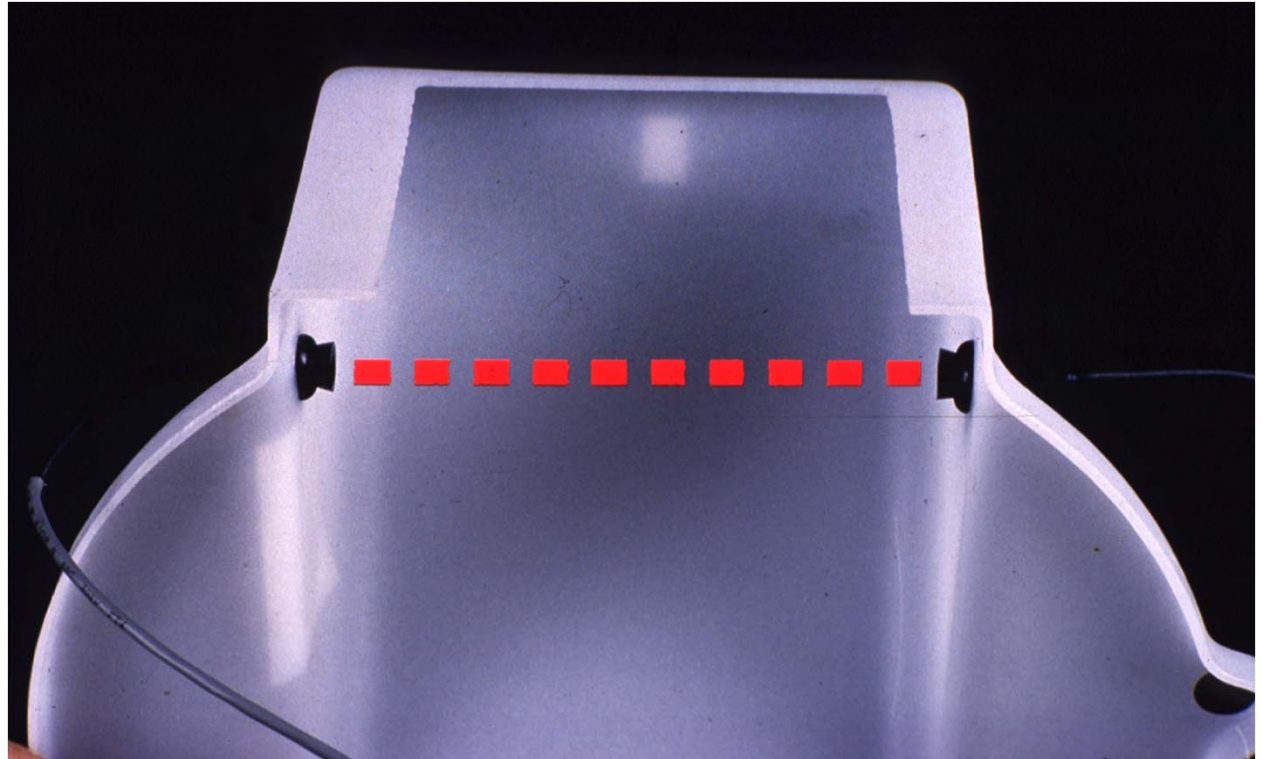


# MDT5



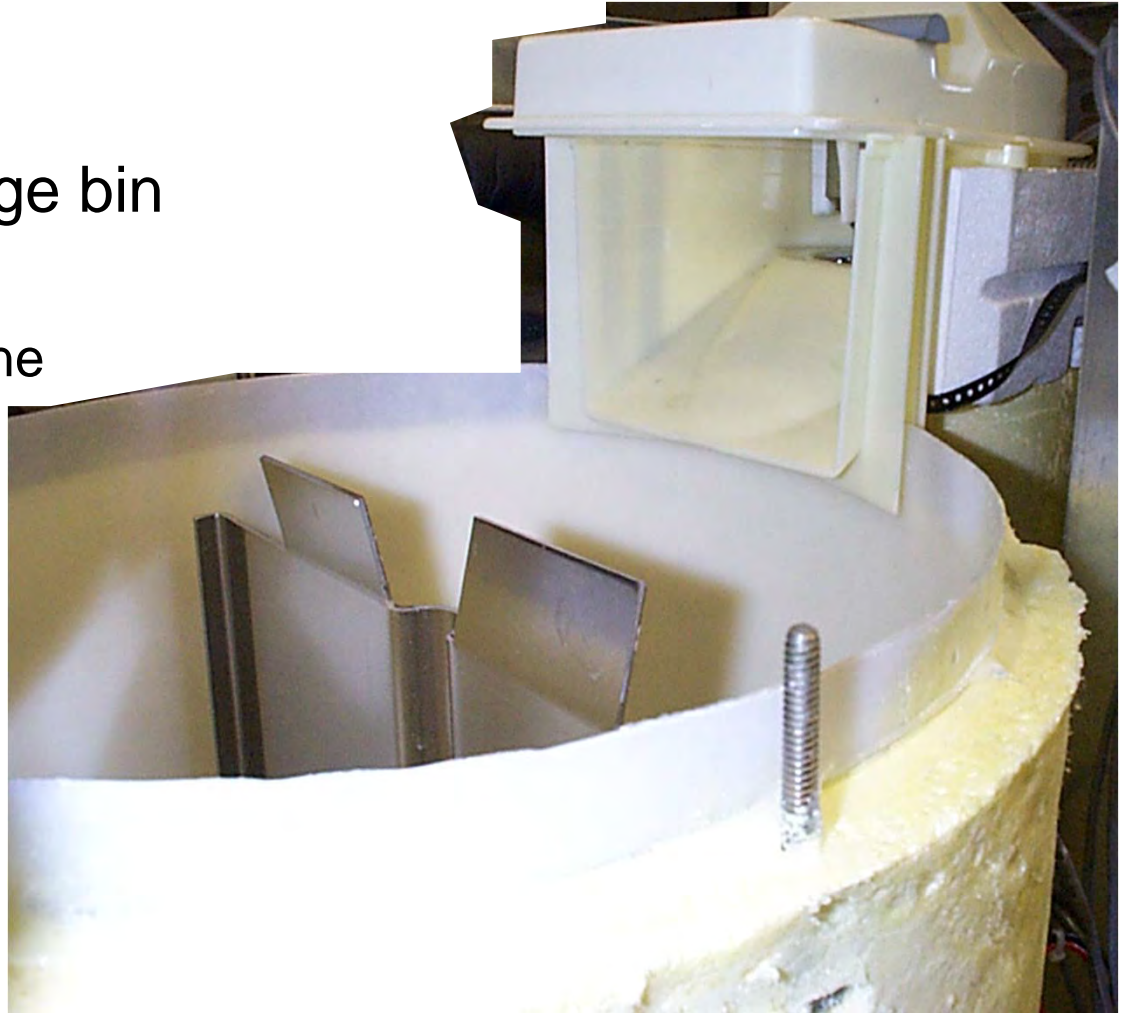
# MDT5

- MDT5
  - The photo-electric eyes are in the bin cover

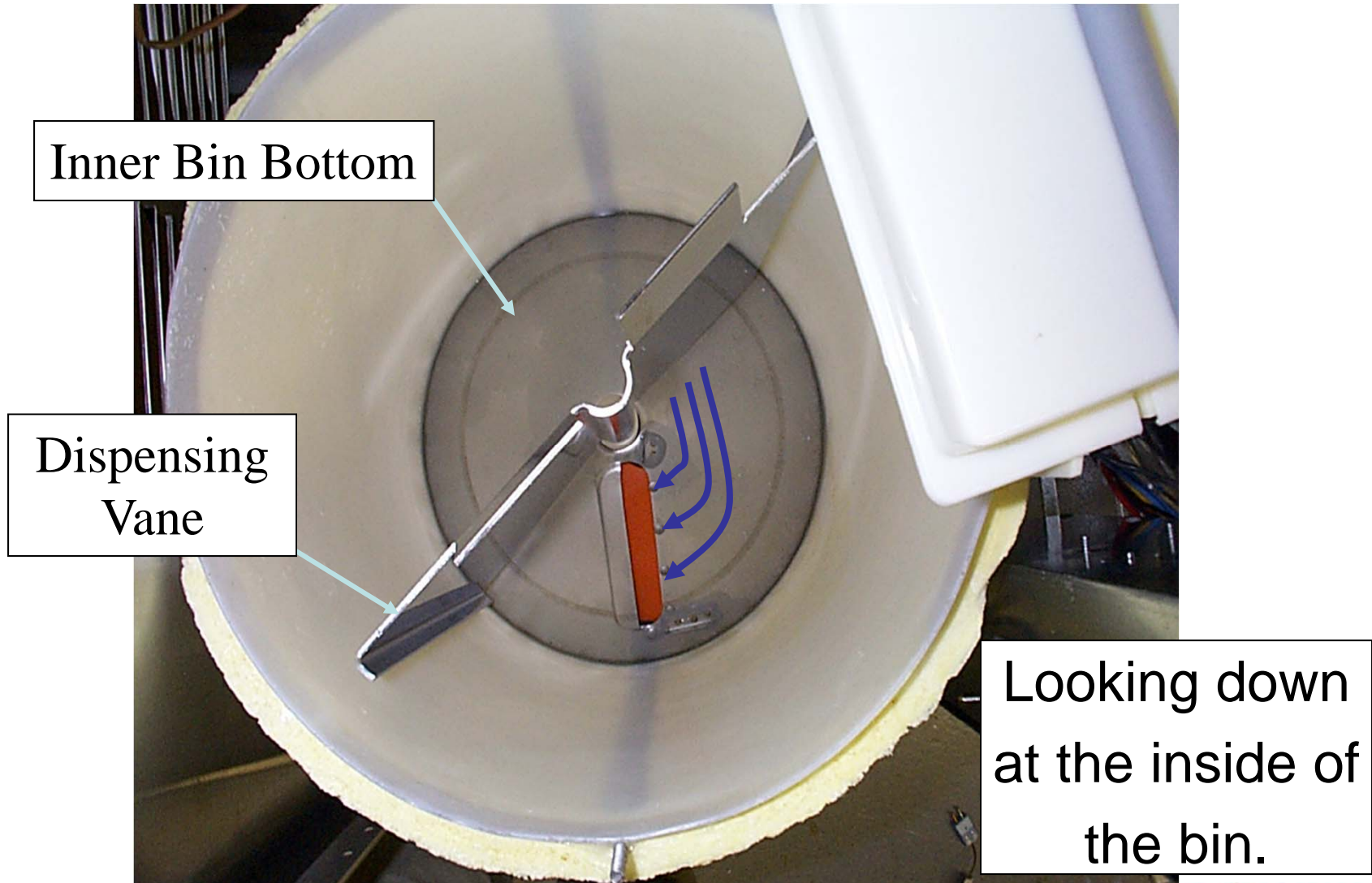


# Under the Cover

- Inside the ice storage bin
  - Ice delivery chute
  - Ice dispensing vane
  - Bin bottom

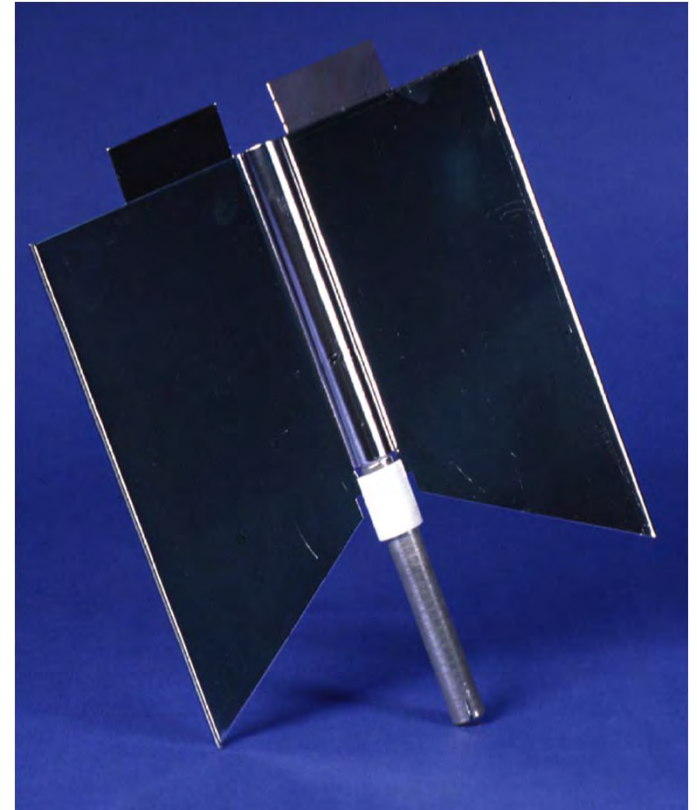


# MDT, TDE & NDE



# Dispensing

- The ice dispensing vane moves all the ice every time ice is dispensed.
  - Electro-polished stainless steel
  - Rests on plastic bushing
    - No thrust on drive motor
    - Pull up to remove



# MDT5

- Bin Bottom is Removable for Sanitizing



View with vane removed.

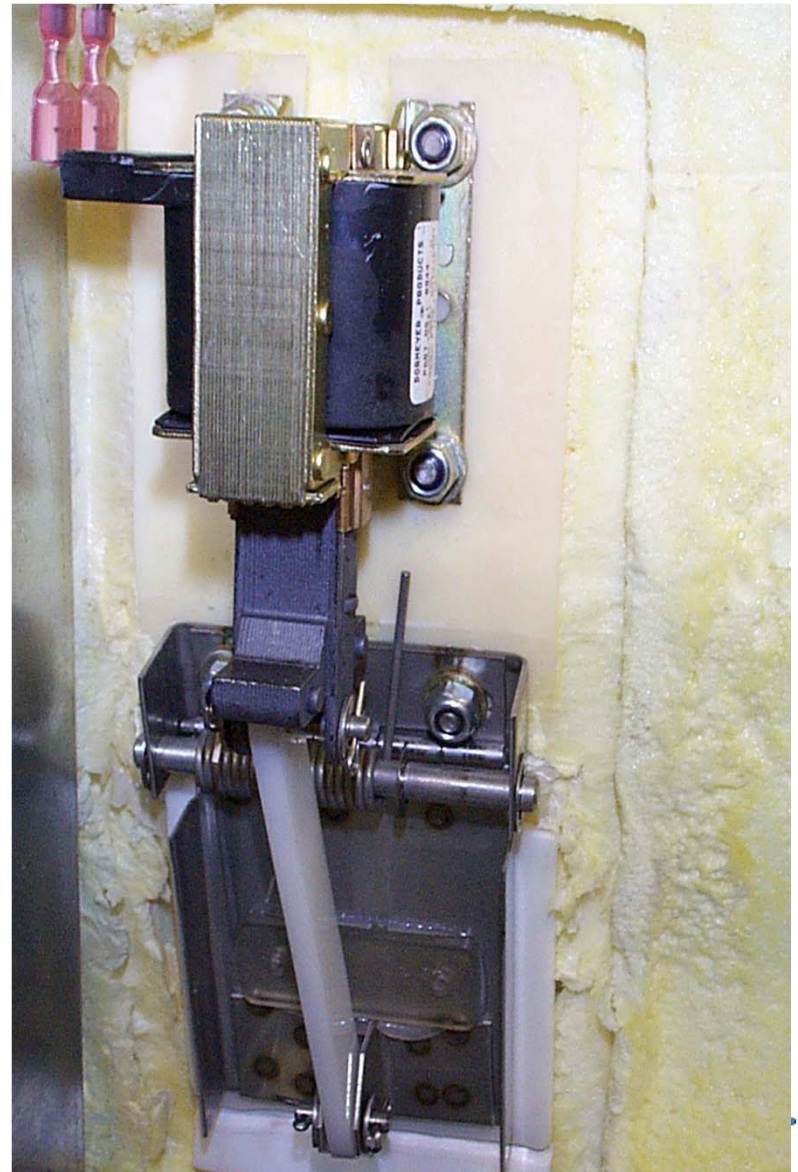
# MDT5

- View with Inner Bin Bottom removed.



# MDT6

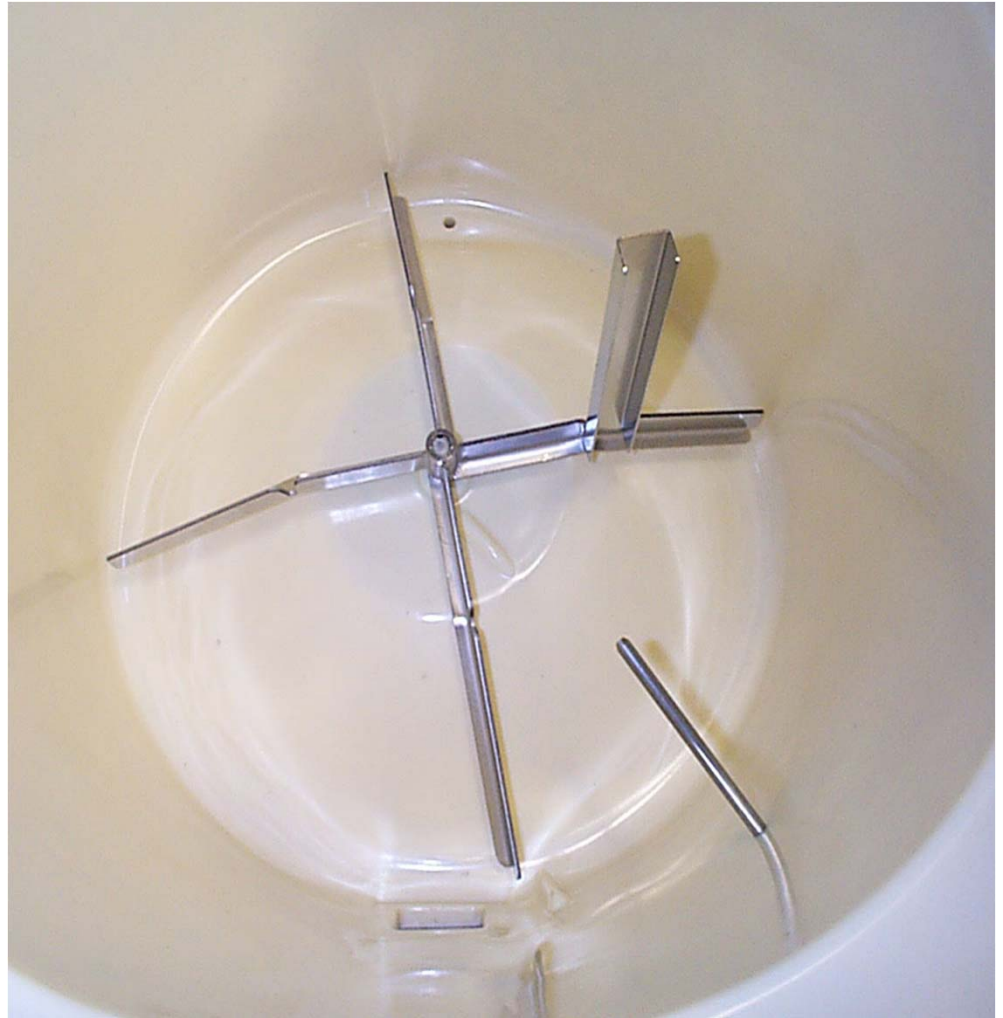
- The only model with a Solenoid Operated Dispensing Door





# MDT6

- Top View of Hopper



# MDT

- The reservoir contains
  - Float valve
    - Water flows out to the evaporator
  - Water level sensor
    - MDT, TDE - Thermistor
  - Overflow connection to the drain



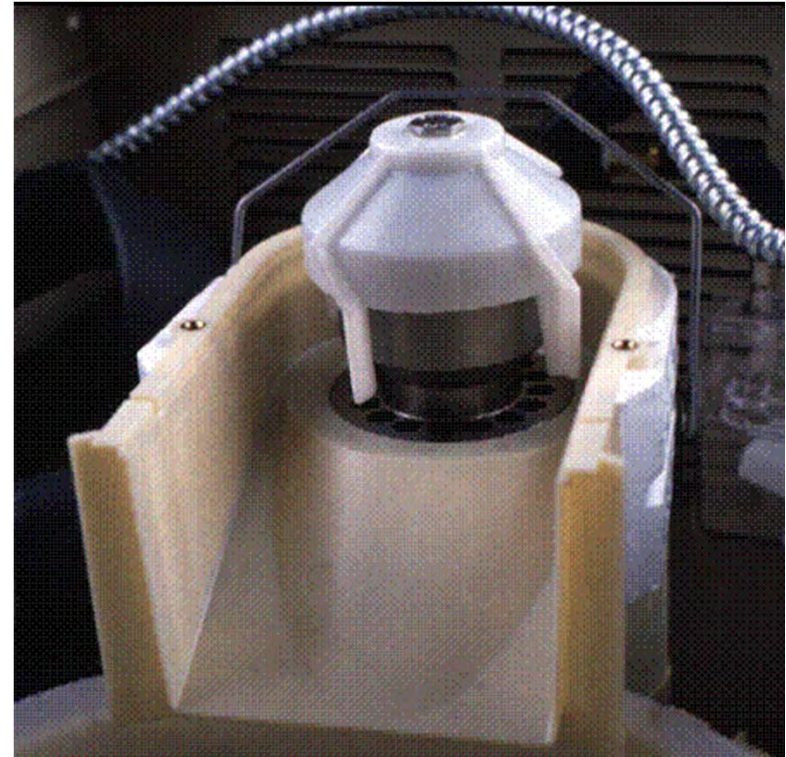
# Ice Making Components

- Same ice making section as modular nugget ice makers.
  - Stainless steel evaporator, ice extruder (breaker), and auger
  - Double row spherical, self-aligning top bearing



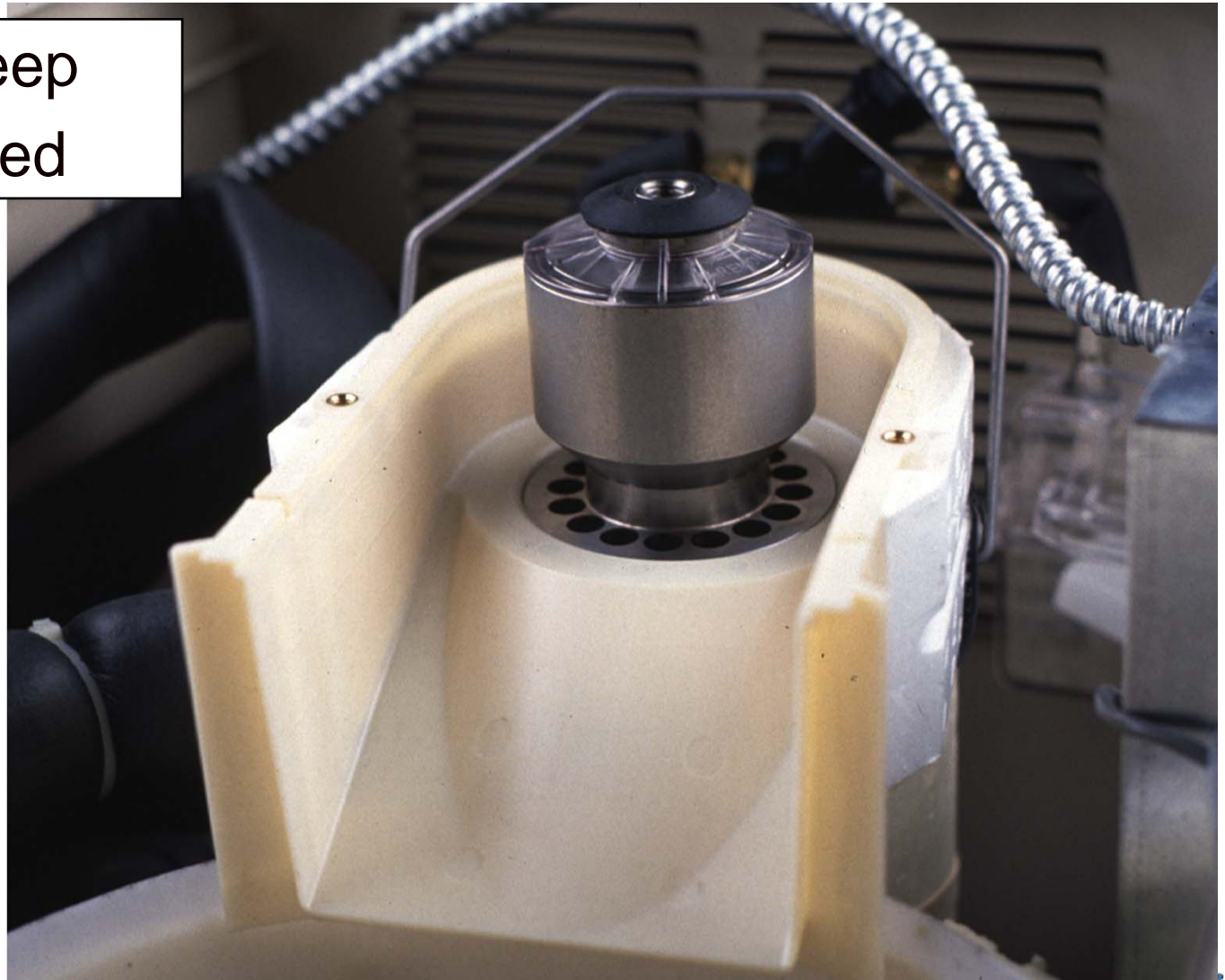
# Auger Removal

- Begin at the top.
  - Push bail clip back and remove chute cover.
  - Unscrew ice sweep
  - Remove breaker cover
    - Left hand threads



# MDT5 or MDT6

Ice Sweep  
Removed



## MDT5 or MDT6

- Check top bearing for proper lubrication



Bearing Cover removed (left hand threads)

# MDT5 or MDT6

- Remove chute.
  - Breaker is now visible
  - Hex head bolts hold breaker to evaporator
  - Remove cover, loosen auger stud
  - Remove the 4 bolts
    - Auger and breaker can be lifted out of evaporator



## MDT5 or MDT6

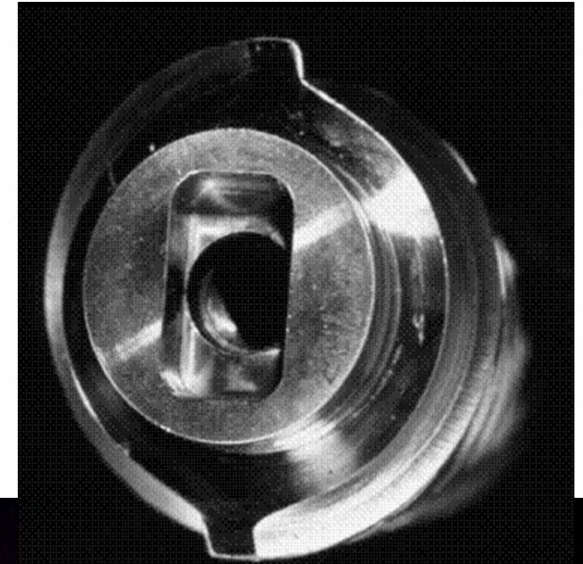
- Pull UP to remove Auger





# MDT5 or MDT6

- Auger Construction
  - Double-spiral
  - Segmented flight edges
  - Double flats in base for output shaft



# MDT

- Auger Water Seal

- Face Type

- Top half rotates with auger
    - Bottom half is stationary
    - Sealing occurs where the "faces" of the two seals meet

Top Half



Bottom Half

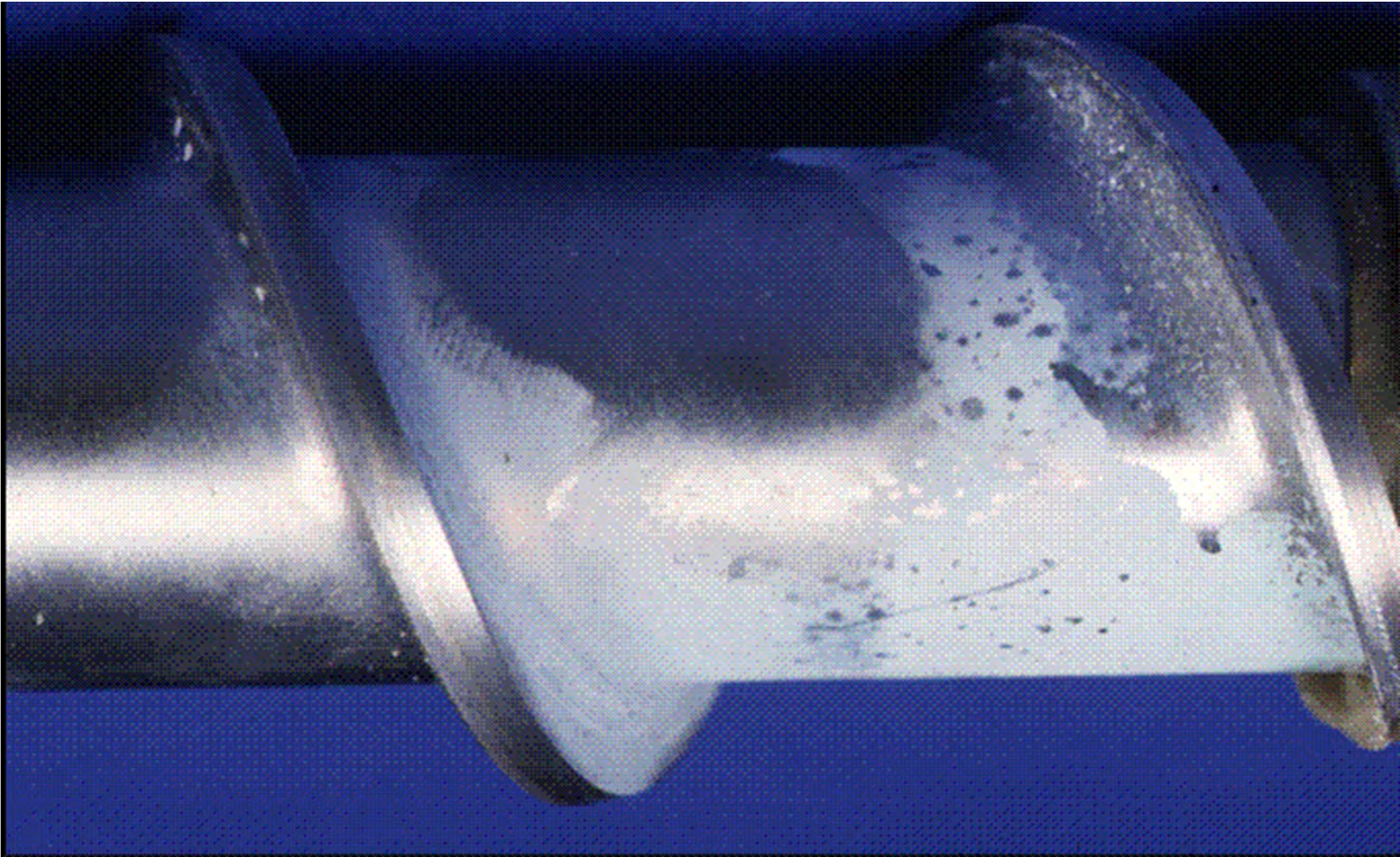
# MDT5 or MDT6

- Top Bearing Construction
  - Takes up thrust of ice making
  - Seated in stainless steel housing
  - Double row
  - Two seals below it
  - Cap and seal above it

# Maintenance

- Check top bearing
- Sanitize
  - Water system/Evaporator
  - Ice storage bin
- De-Scale with ice machine cleaner
  - Evaporator, Breaker & Auger
- Clean air cooled condenser

# Auger Service

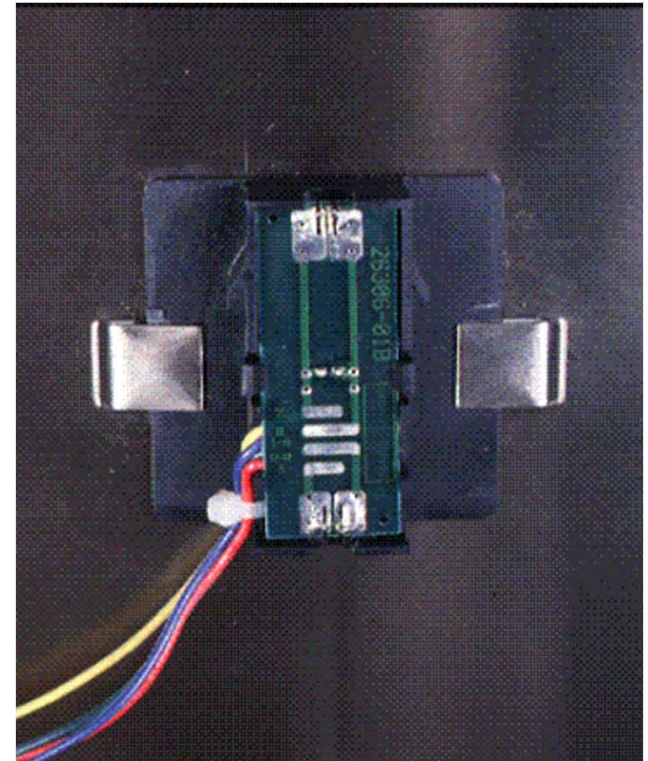


Scale on Auger

# MDT

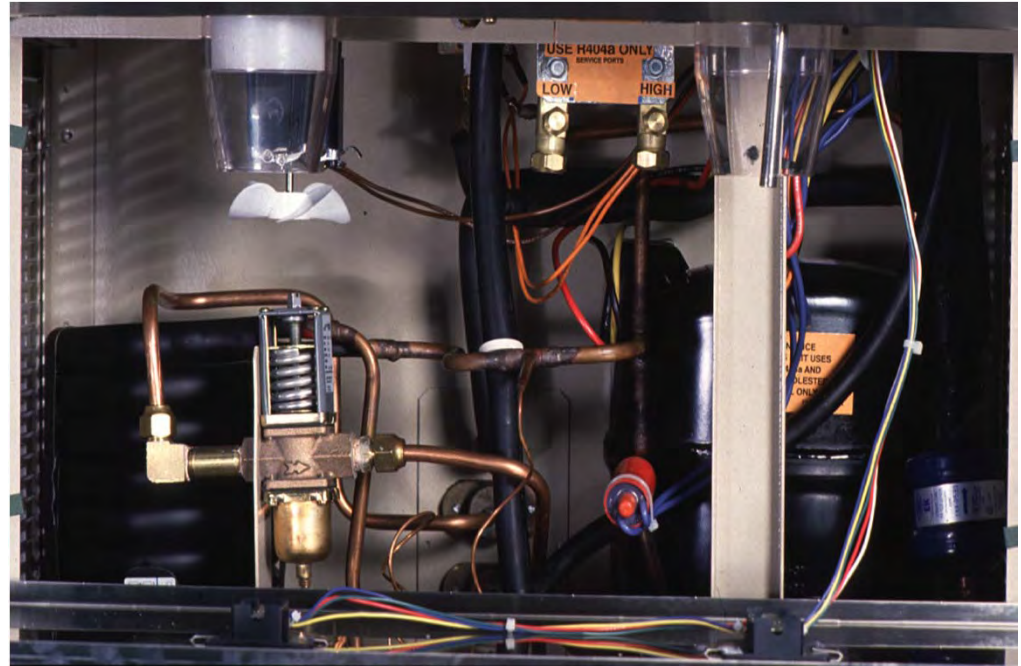
- Touch Free Sensors

- Attached to splash panel
  - Have foam cover
- Replaced as a set
- Can be switched off for cleaning of splash panel
  - Switch is between ice & water outlets



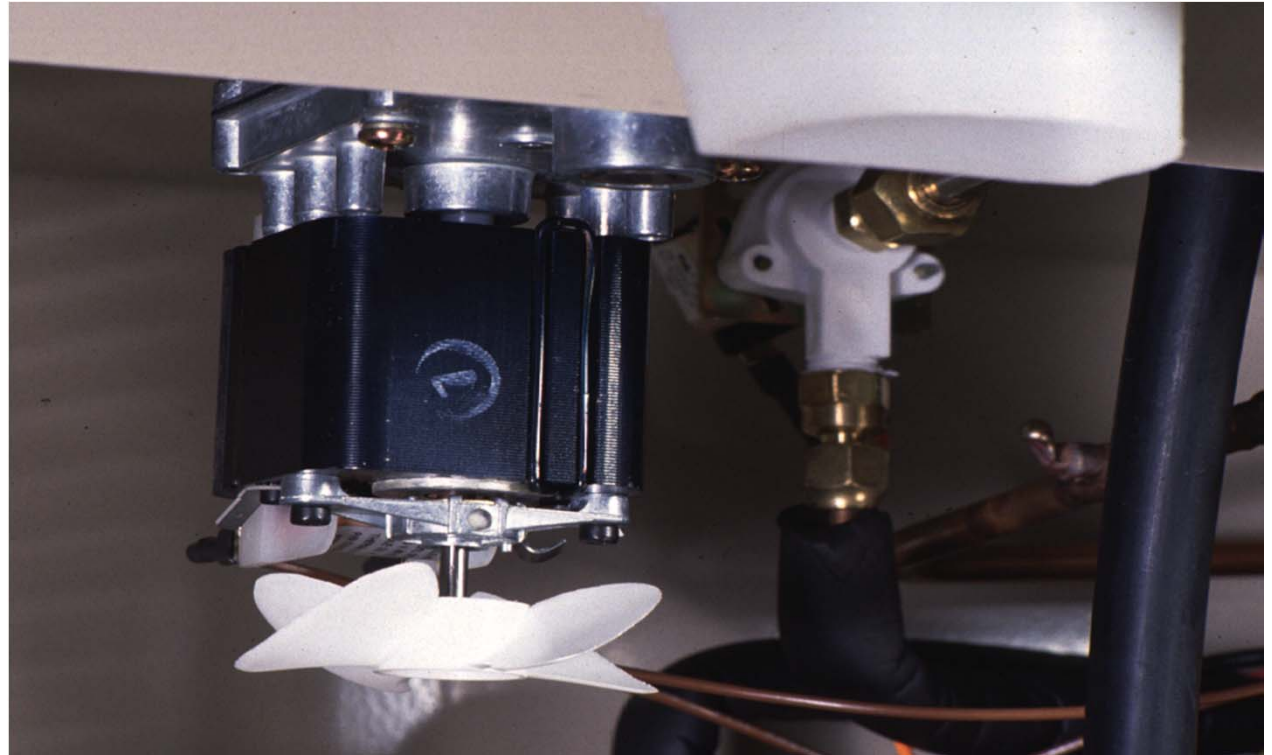
# MDT5 or MDT6

- Accessible Parts when splash panel removed:
  - Condensing unit
  - Access valves
  - Bin drive motor



# MDT5

- Dispense Drive Motor





# MDT5 or MDT6

- Refrigeration

- All models use R-404A
- Typical low side pressure:
  - 38 PSIG
- Typical air cooled discharge pressure
  - 240 PSIG
- Water cooled discharge pressure
  - 245 PSIG

# Update


- New compressor late 2010
  - MDT5 and MDT6
- New ice chute Nov 2010
  - MDT5



# MDT

- Summary

- MDT and prior TDE are Touch Free actuated
- Prior models NDE554, NDE654 and NDE754 are lever actuated systems
- All use electric eye bin control
- All have stainless steel evaporator components
- All make nugget ice



Flake Ice Maker - Dispensers  
MDT3F12  
MDT4F12

# Topic 2:

## MDT3F and MDT4F

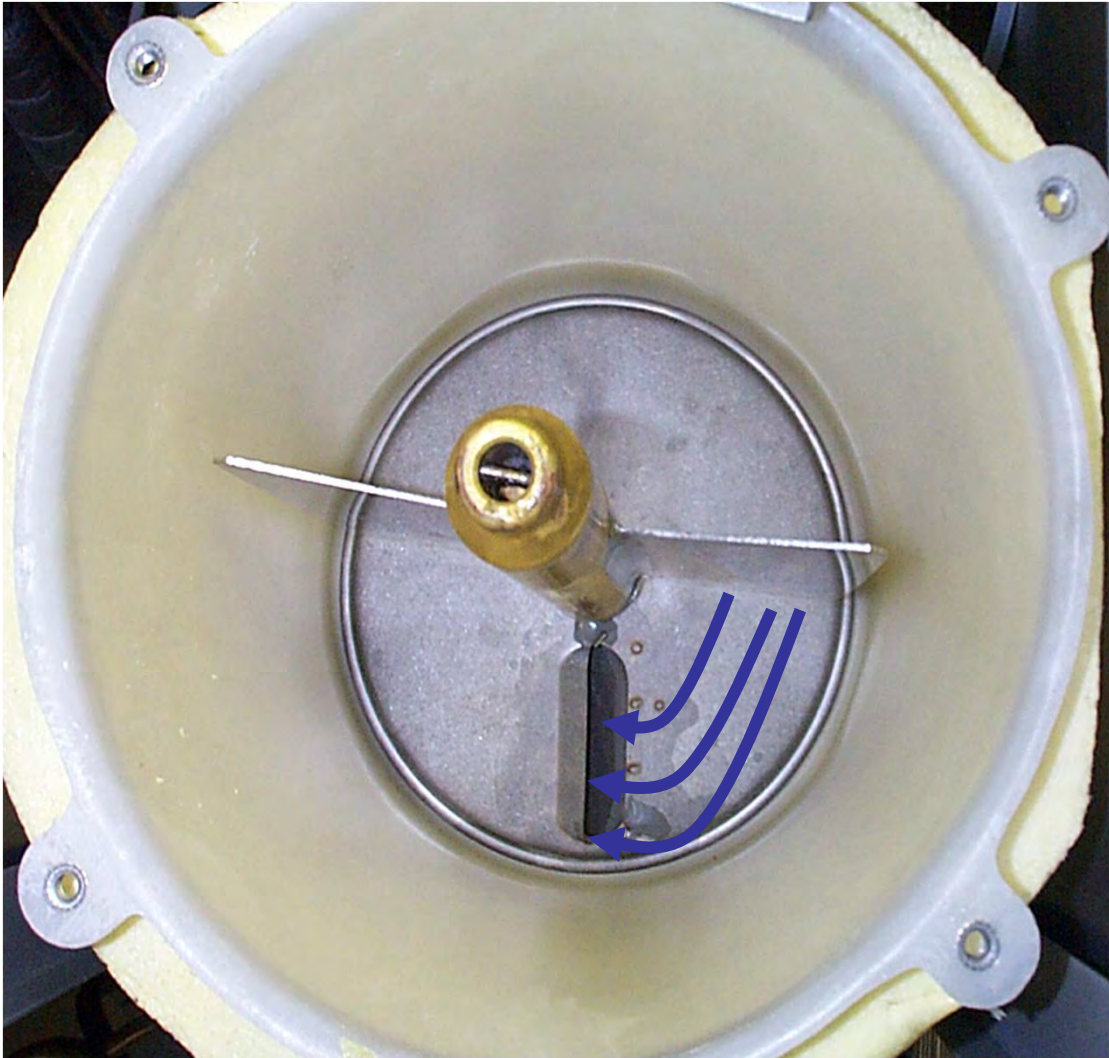
- Compact Flaker Dispenser
- Touch Free Dispensing
- Taller cabinet for easier dispensing
- Quieter operation



# Models

- MDT2, MDT3F and MDT4F
- Use R-134a for a refrigerant
  - Have electric eye bin controls
  - Make and dispense ice, MDT2 makes cubelet ice, all others are flaked ice makers
    - MDT are Touch-Free

# Ice Dispensing



# MDT3 and MDT4

- MDT3F, MDT4F
- Compact ice maker - dispensers
  - Designed to be counter-mounted
    - Cabinets have a sealing gasket at the base
      - A wall mount kit is available

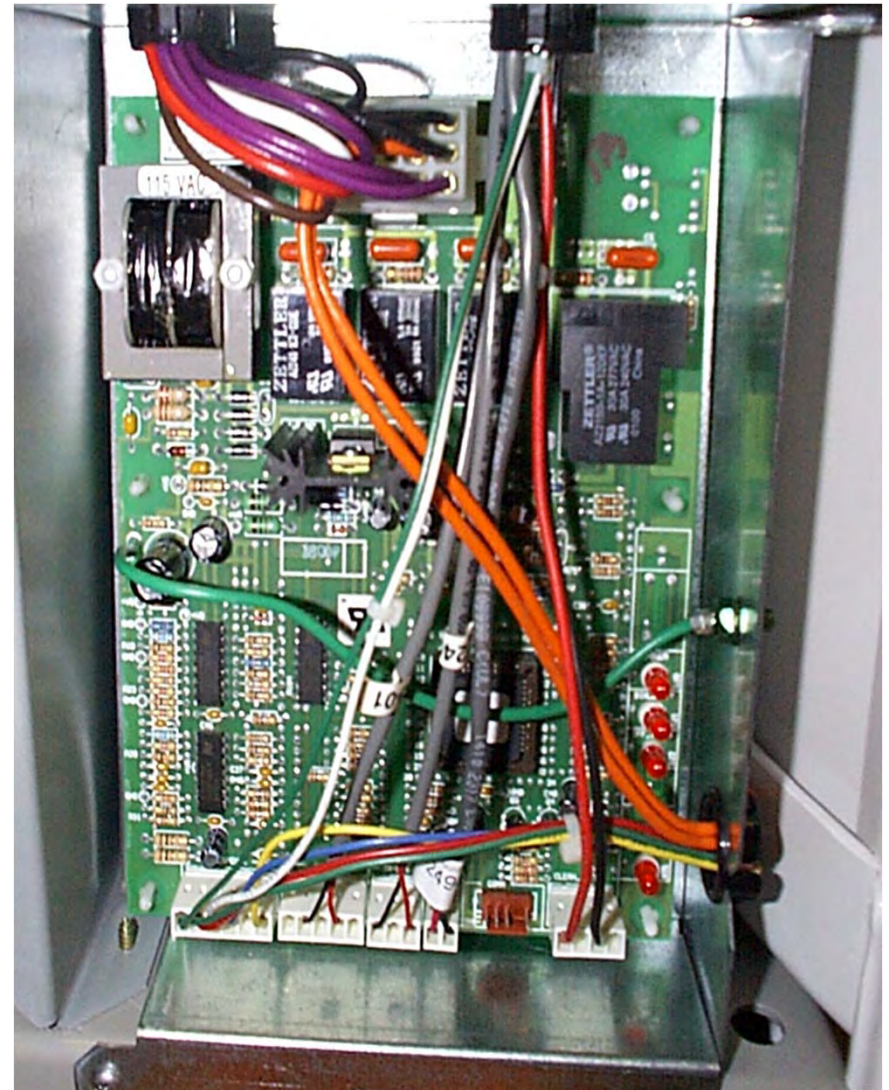


# MDT3 and MDT4



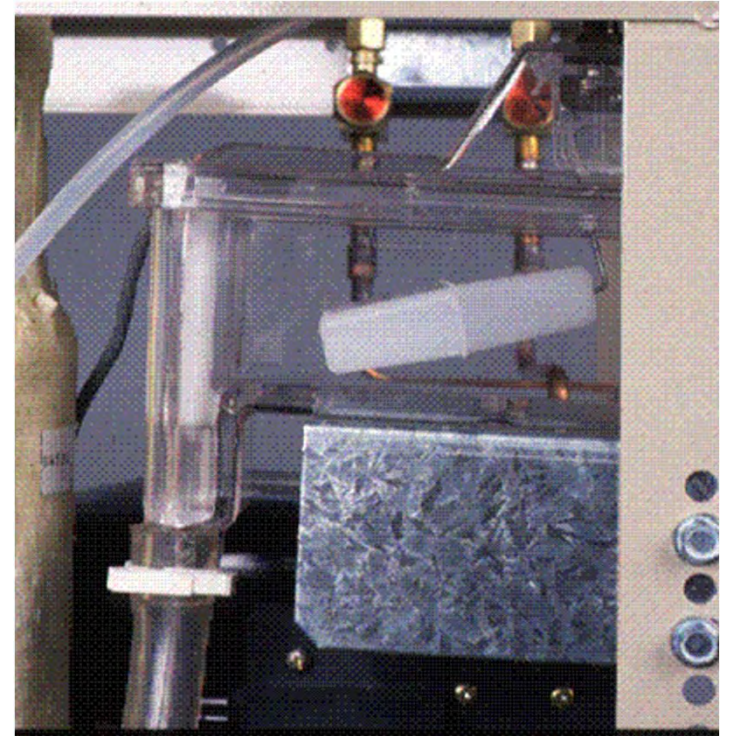
# Touch Free Control

- Control Board
  - Controls Ice Making
  - Controls Ice Dispensing
  - Controls Water Dispensing



# MDT3 and MDT4

- Water control
- Float valve
  - All contain water level sensor
    - MDT - Thermistor



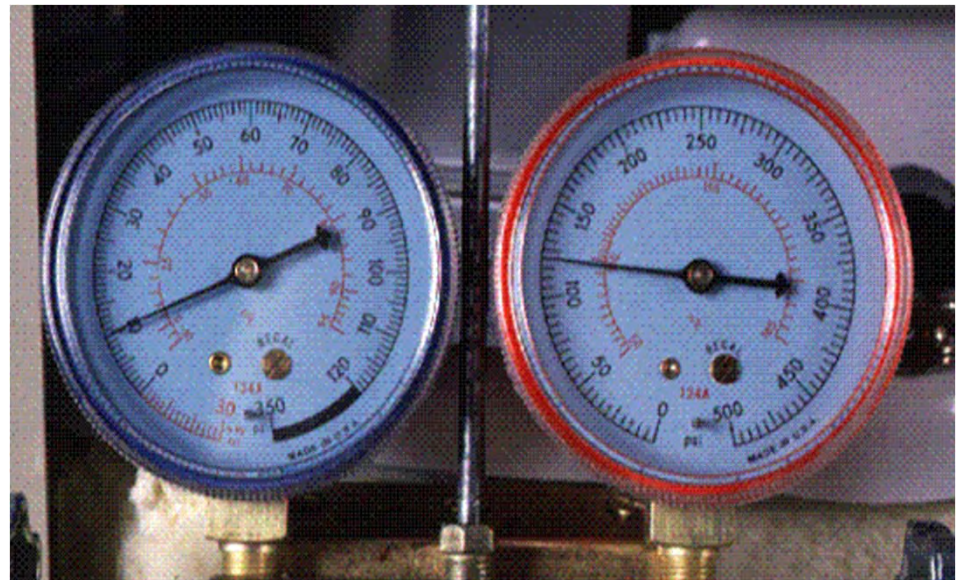
# MDT3 and MDT4

- All use a R-134a compressor
  - It is a Tecumseh
- Service access valves
  - Located at the top of the cabinet



# MDT3 and MDT4

- System Pressures - R-134a
  - Suction will be about
    - 11 - 13 PSIG
  - Discharge will be about
    - 120 - 135 PSIG



# Maintenance

- Cleaning

- Auger - must be clean and shiny
- Evaporator - no build up of scale

- Sanitizing

- Water reservoir/Evaporator & Ice storage bin

- Mechanical

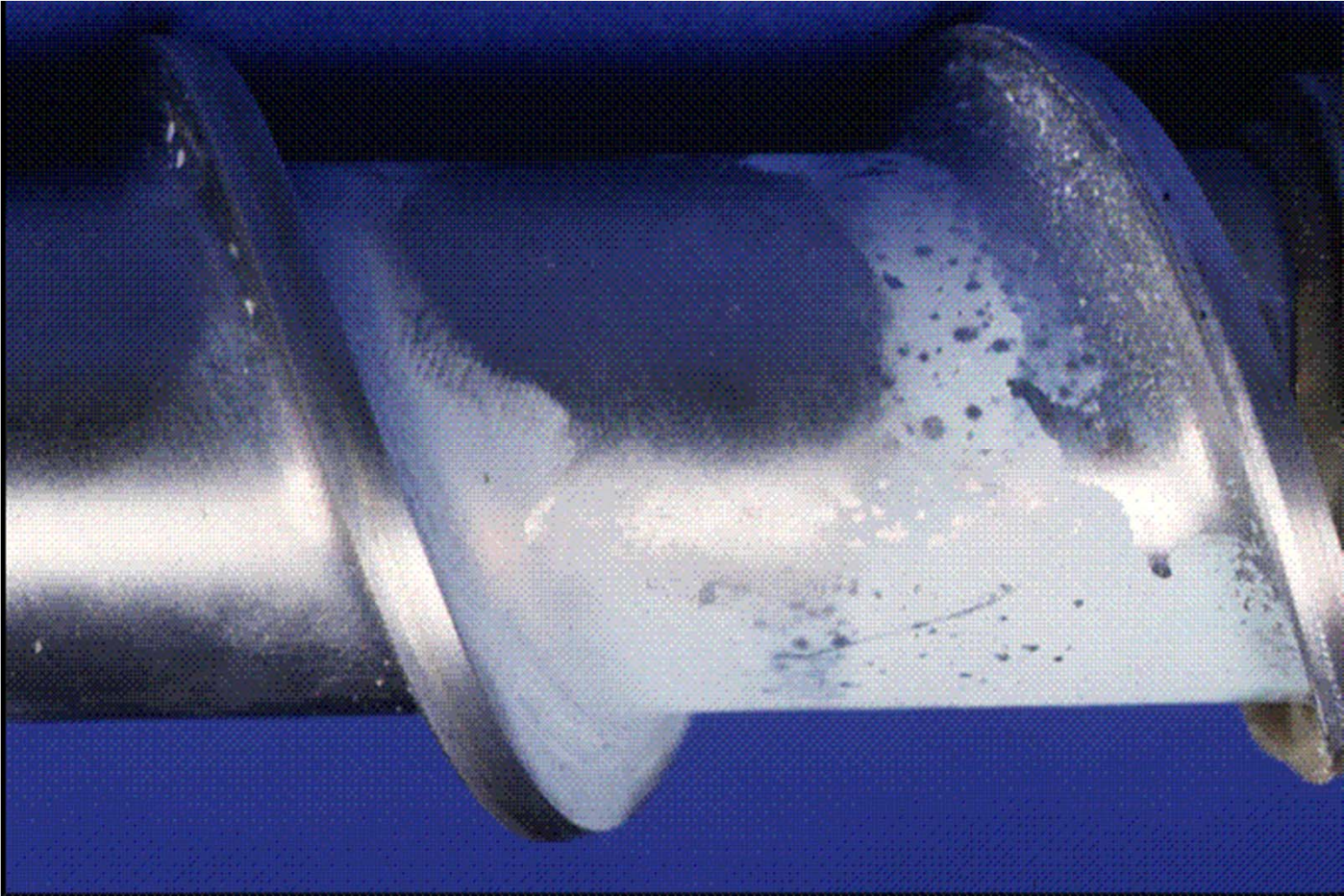
- Clean air cooled condenser
- Check top bearing
- Grease coupling

# Flaker Service



Scale on inside of Evaporator.

# Flaker Service





# Update

- New top bearing design
  - Stainless steel thrust and alignment bearing
  - New water seal
    - Ceramic rotating half
  - Stainless steel bottom bearing
  - Auger kit developed
  - Production change in May 2010





Cubelet Ice Maker - Dispenser

MDT2C12

**Topic 3:**

# MDT2C12

- Cubelet ice maker dispenser
  - Cubelet ice form
  - Portion Controlled Dispensing
  - Touch Free Operation
  - Air cooled only, air exhausts out the top



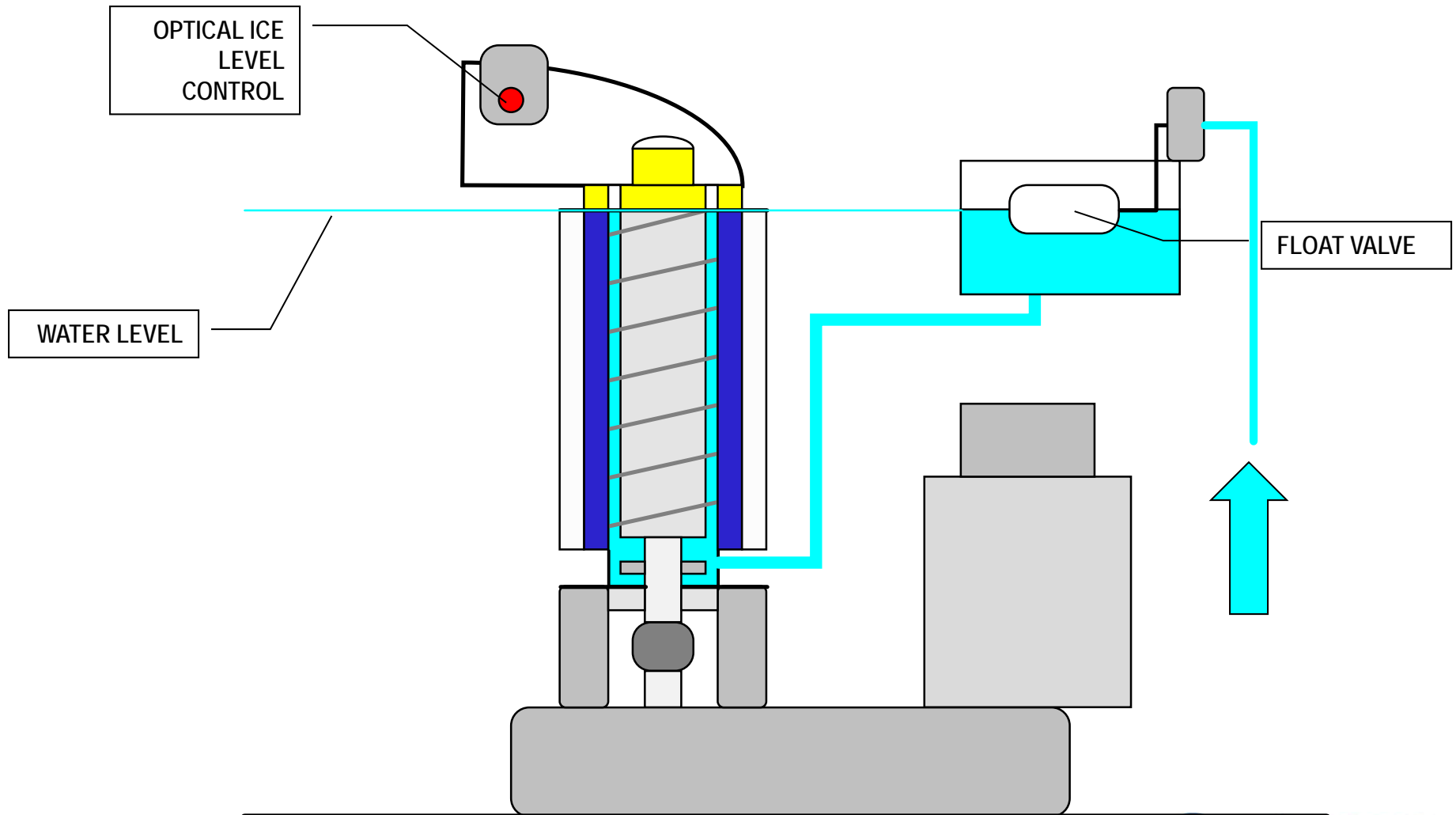
# Cubelet Ice



# Operation

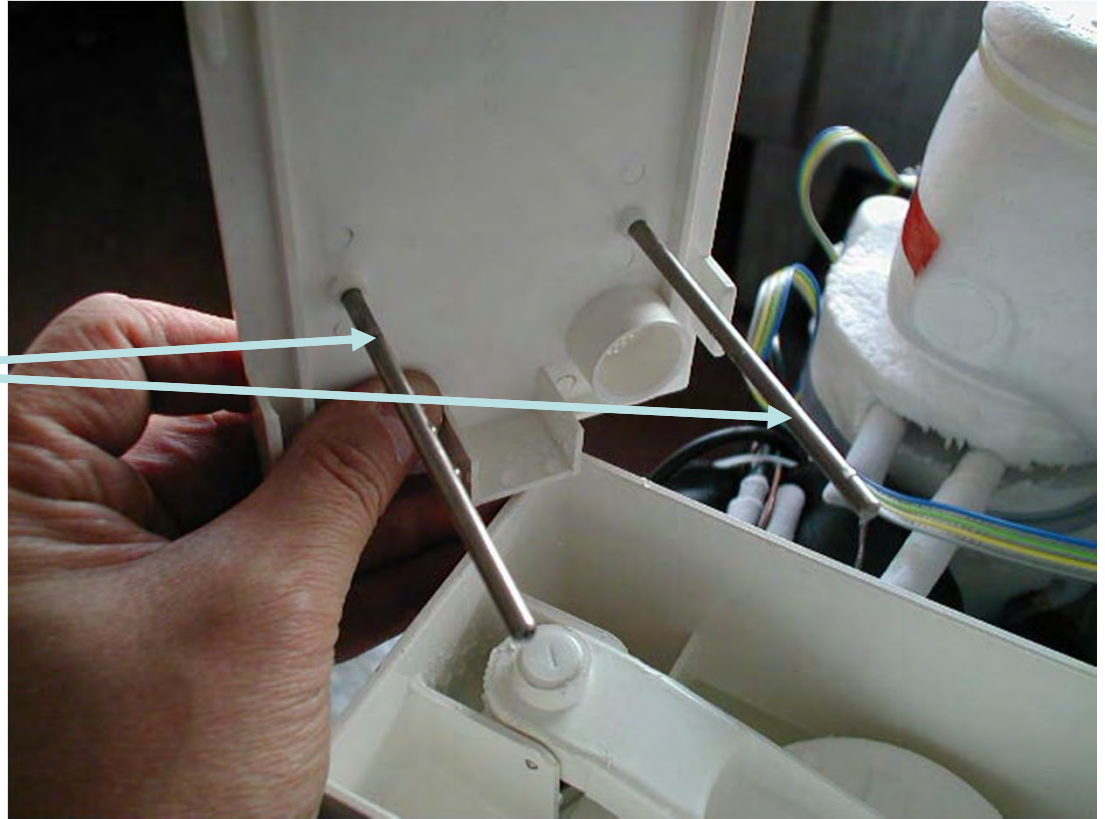
- Electronic Board Controls Ice Making
- Sensors
  - Ice Level - in bin
  - Water Level - in reservoir
  - Condenser Temp - in condenser
    - Controls fan operation
  - Evaporator Temp - on suction line
  - Auger Motor - on top of motor
    - Senses rotation and rotation direction

# MDT2 Water Schematic



## MDT2 Controls

- **WATER LEVEL SENSOR**
- **Conductivity Probes**



# Ice Level Sensor

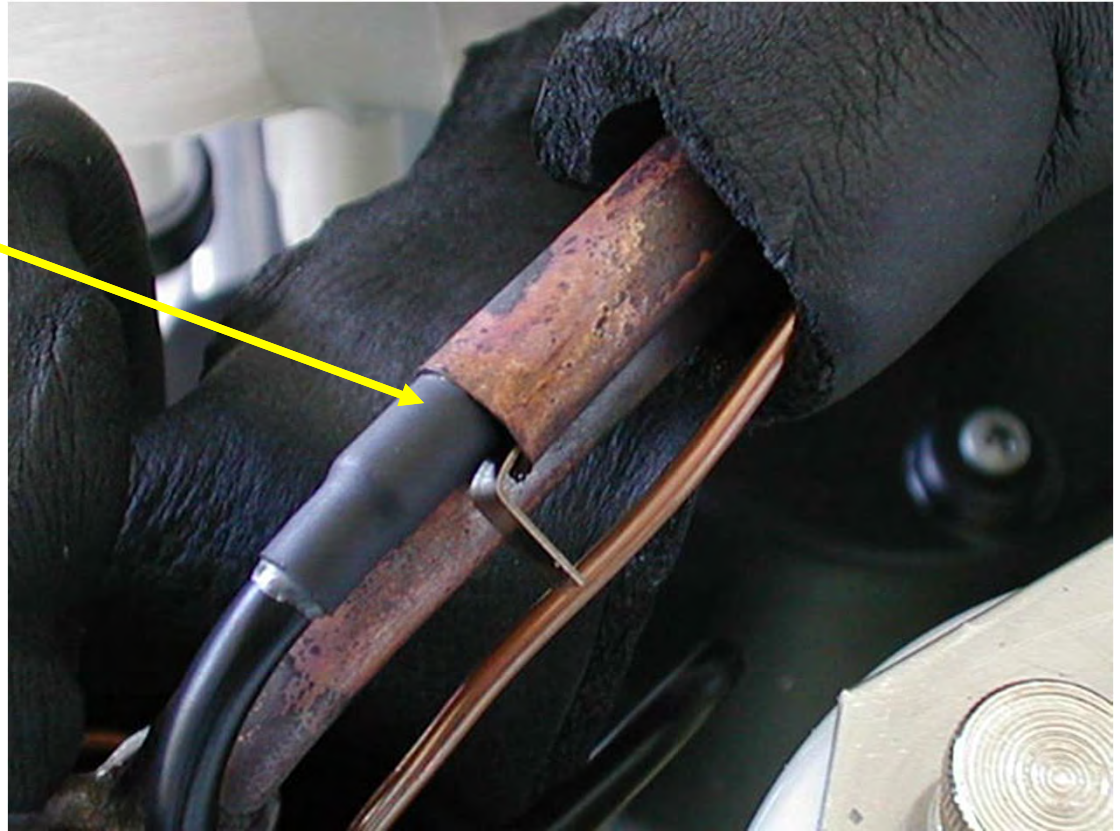
Infrared Sensors Viewed from Below





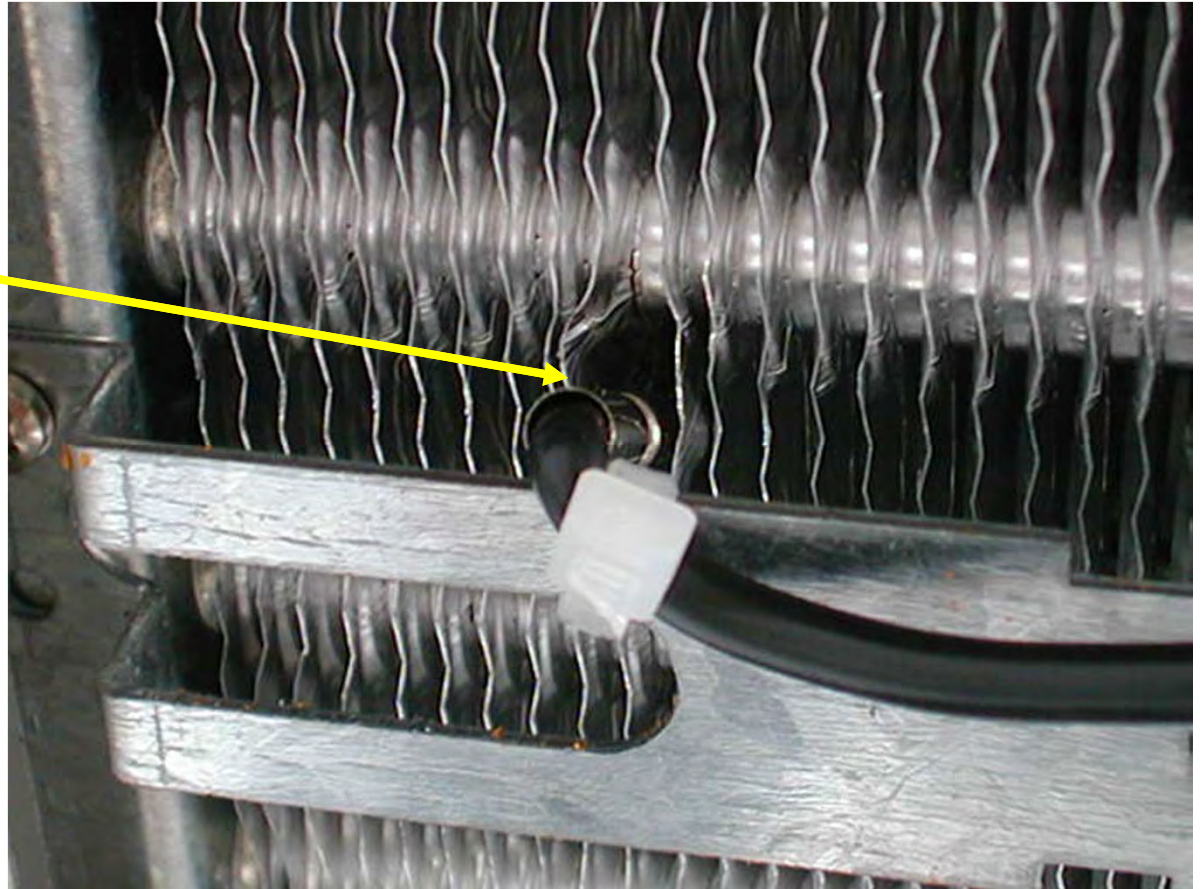
## MDT2 Controls

- **EVAPORATOR  
SENSOR**



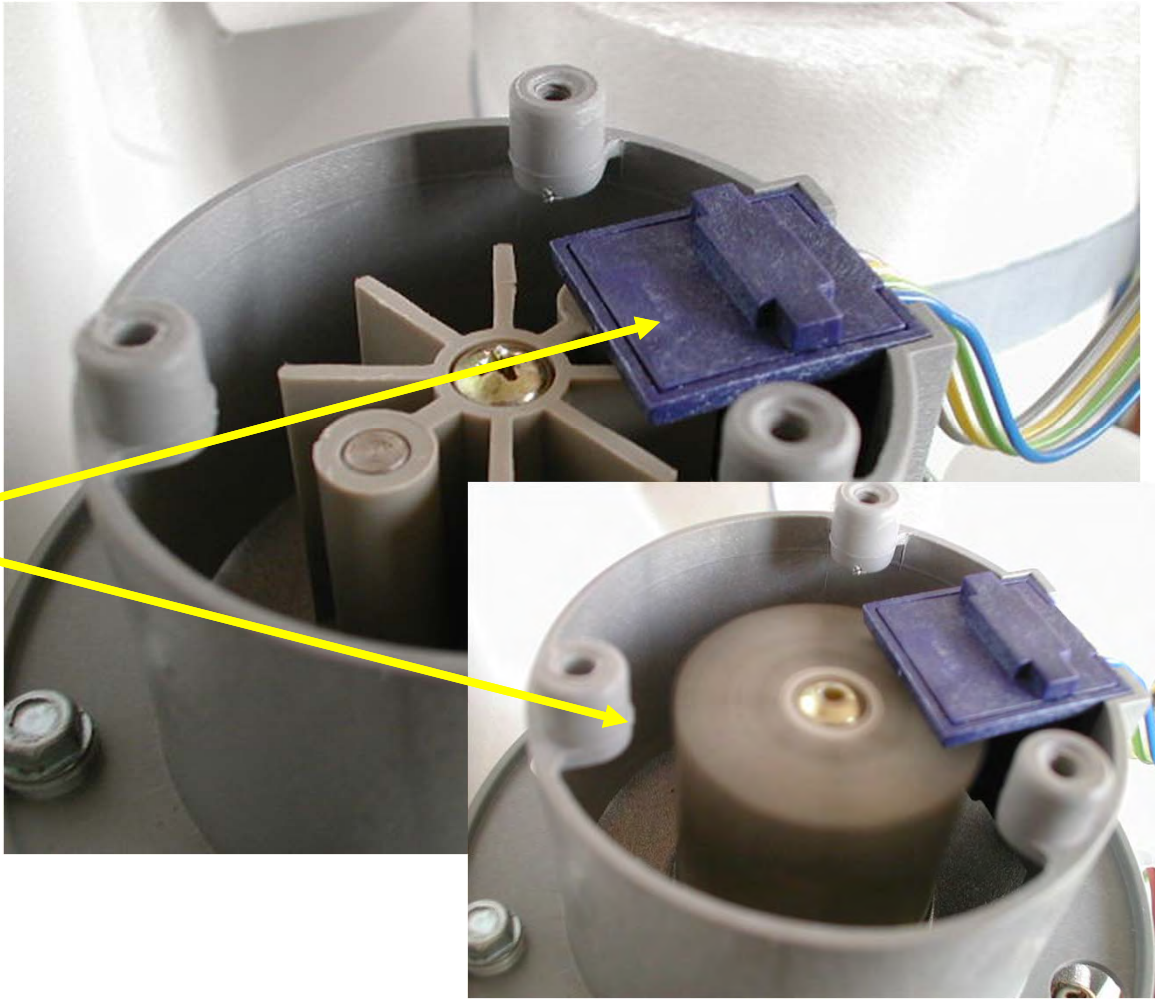
## MDT2 Controls

- **CONDENSER  
SENSOR**



# MDT2 Controls

- **MAGNETIC SENSOR**

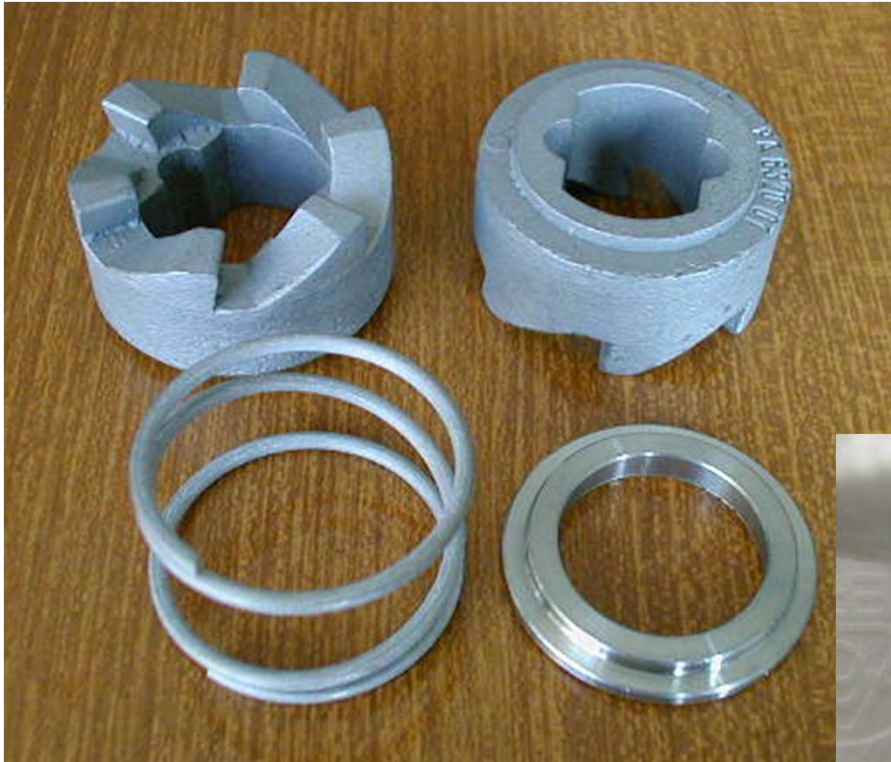


# Water System

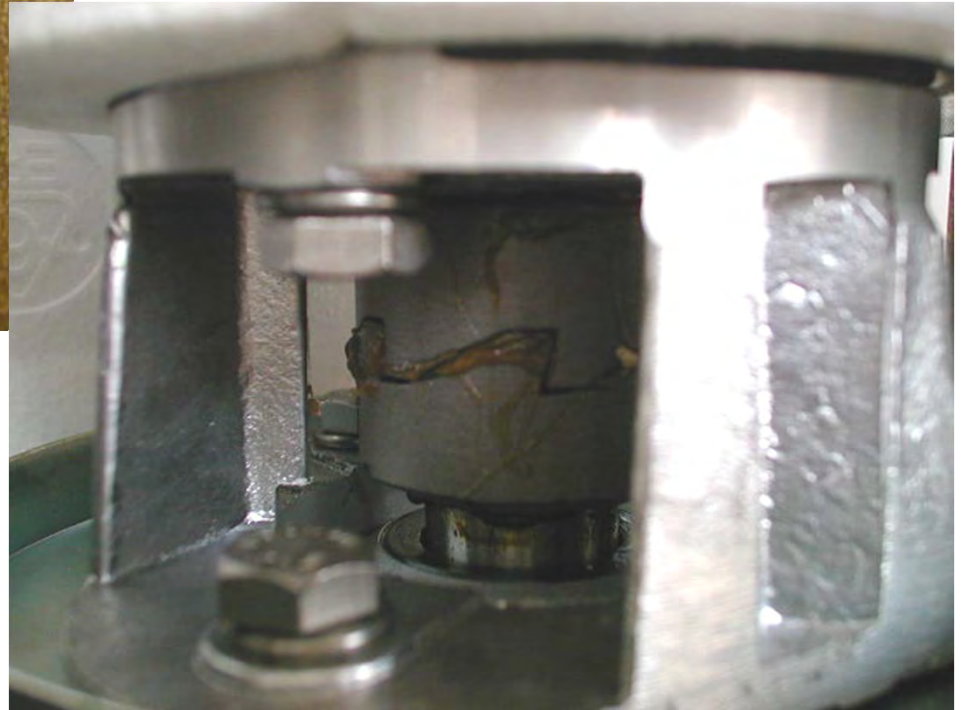
- Water Reservoir
  - Float valve
  - Water level sensor



## MDT2 Mechanical



- Auger Coupling - slips when motor runs backwards



# MDT2 Bearings



# MDT2 Auger

- Auger
  - Stainless steel
  - Shown attached to breaker

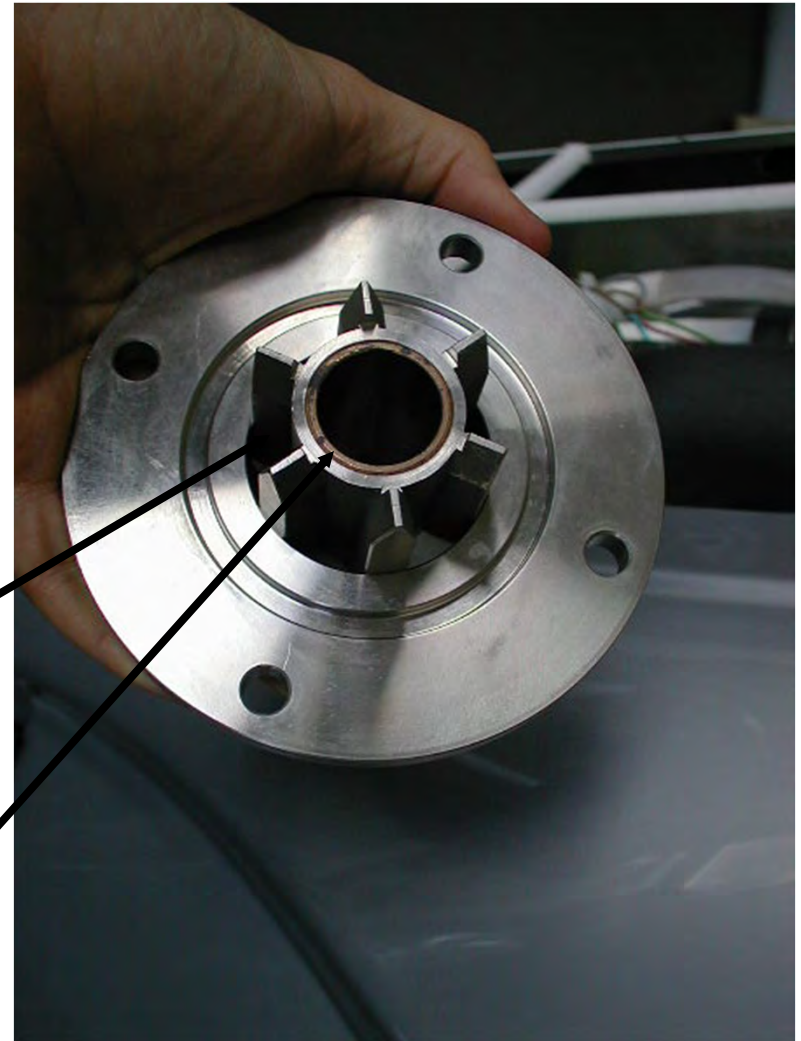


# MDT2 Breaker

- Breaker
  - Ice extrudes through slots
  - Contains top bearing
  - Alignment bushing for auger

Slots

Bushing



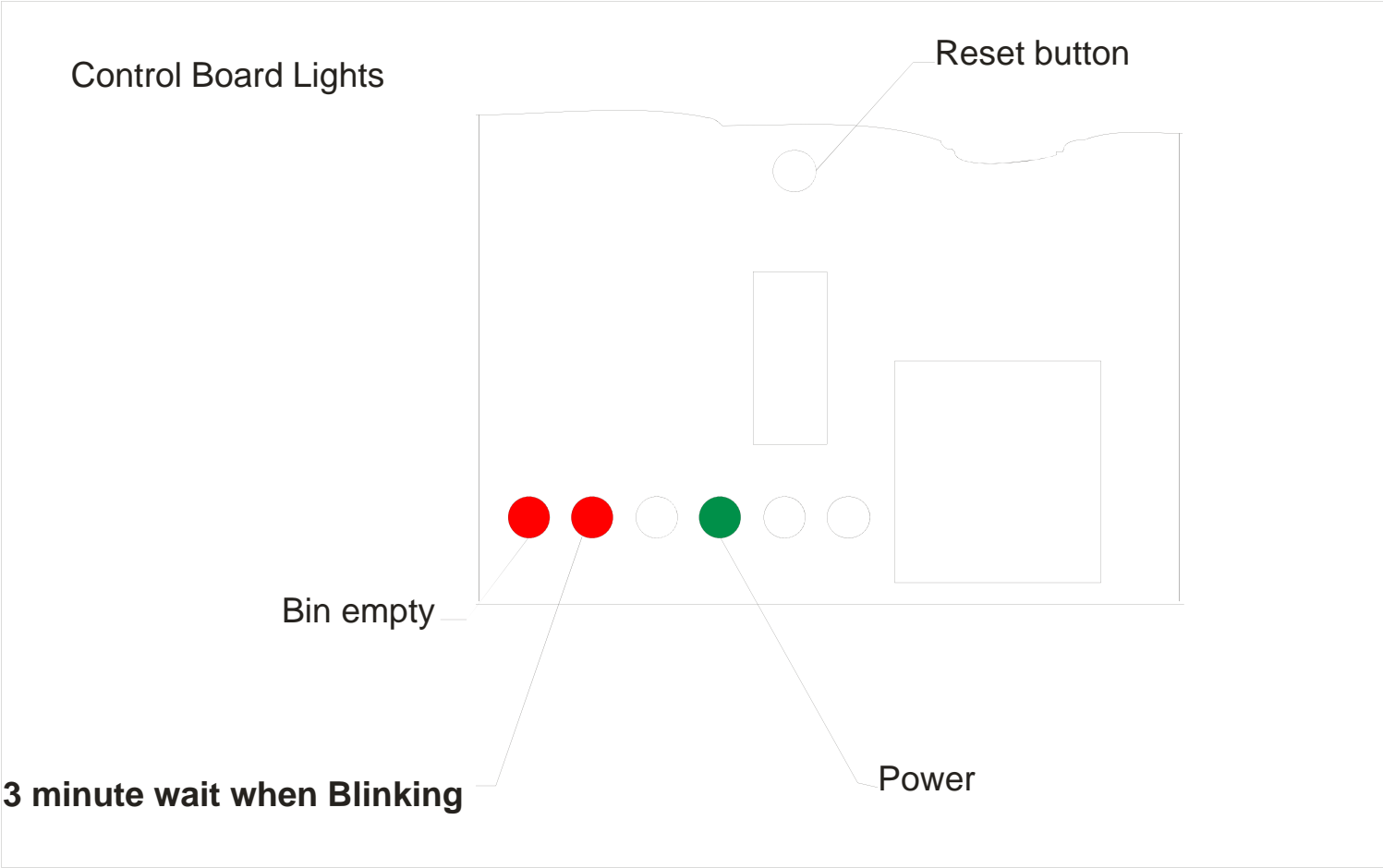


# MDT2 Control Board

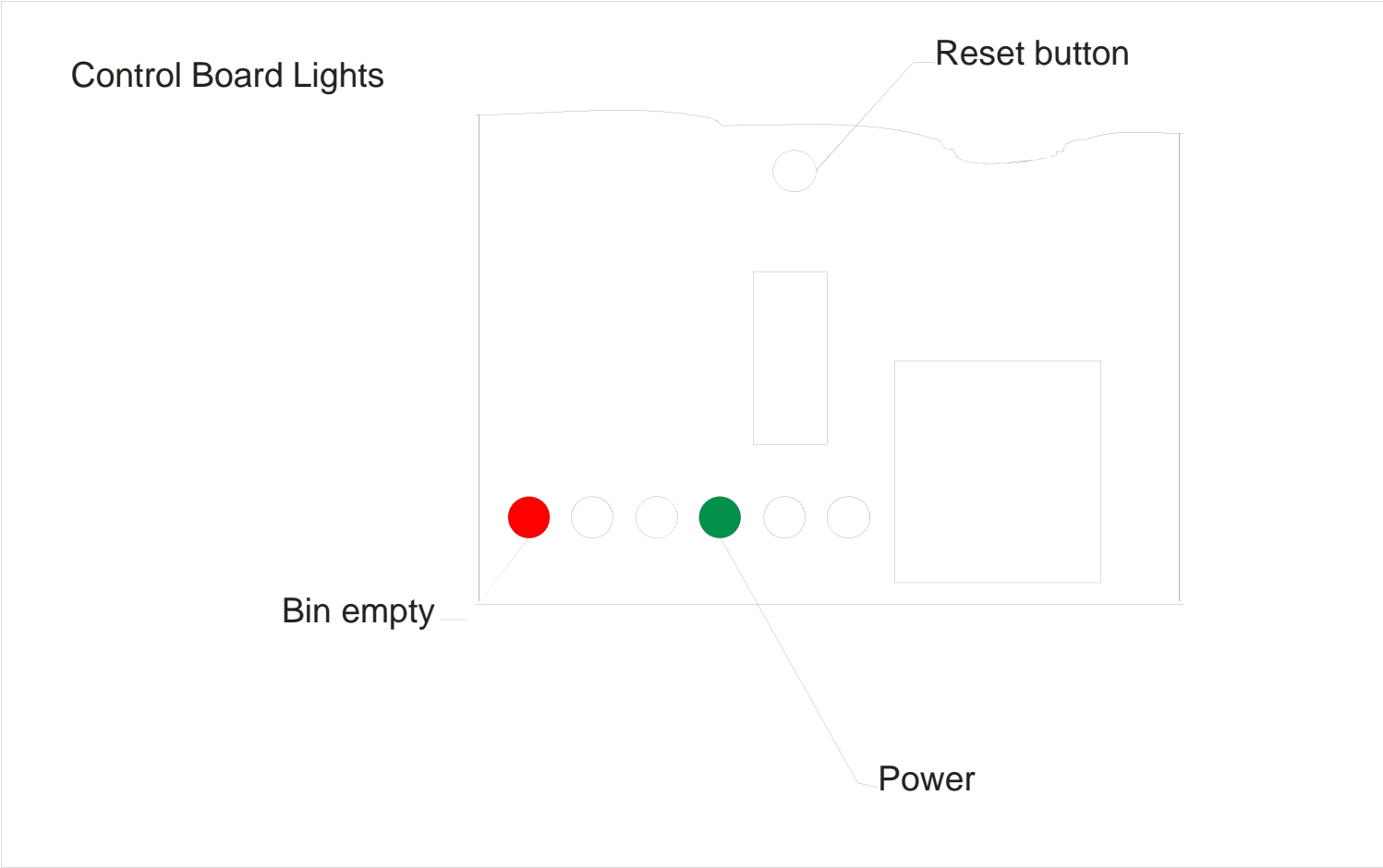
- Six lights
  - Bin Empty
  - Start up or High Condenser Temp Alert
  - Auger Motor or High Evap Temp Alert
  - Power
  - No Water
  - Bin Full



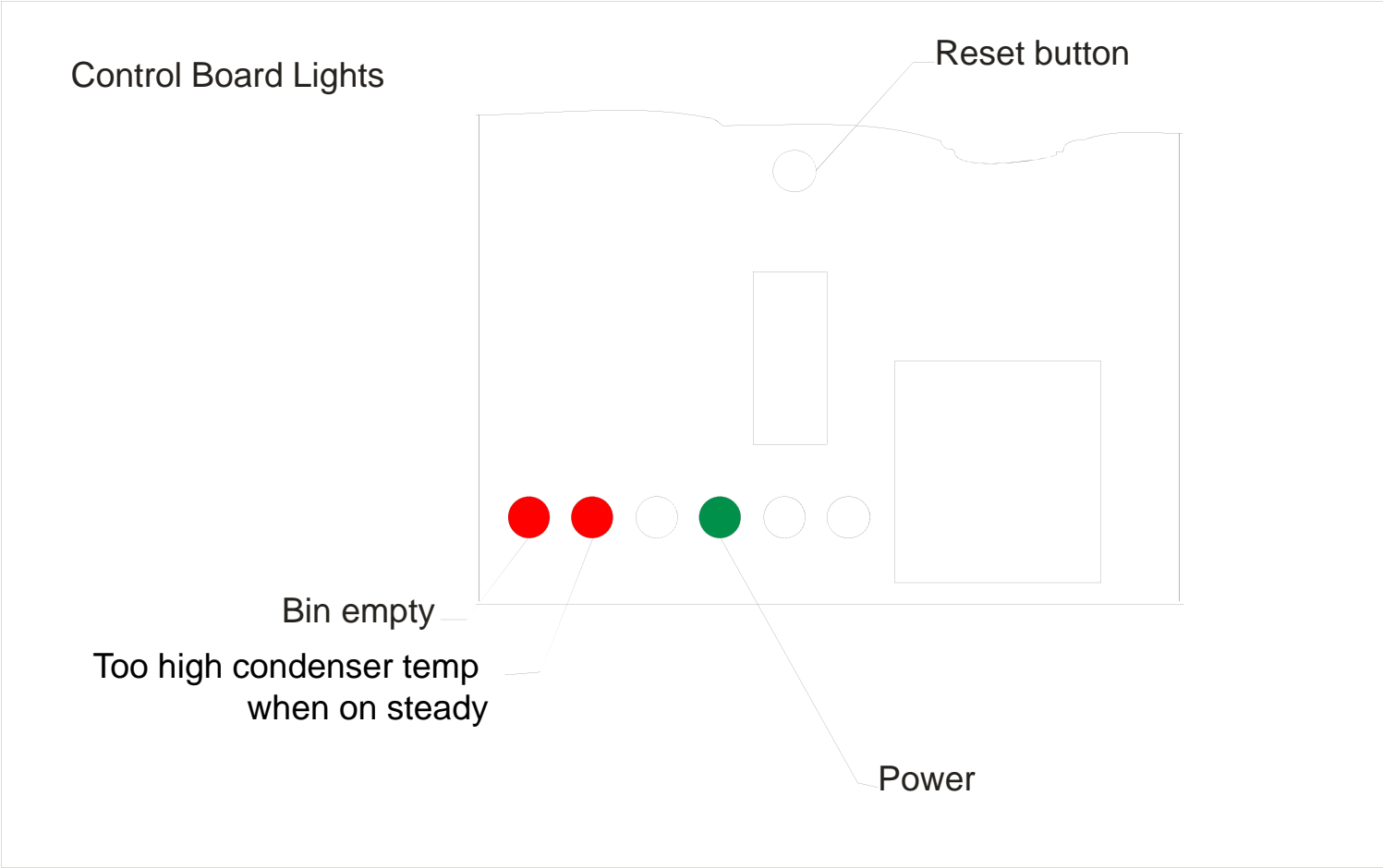
# MDT2 Power Up



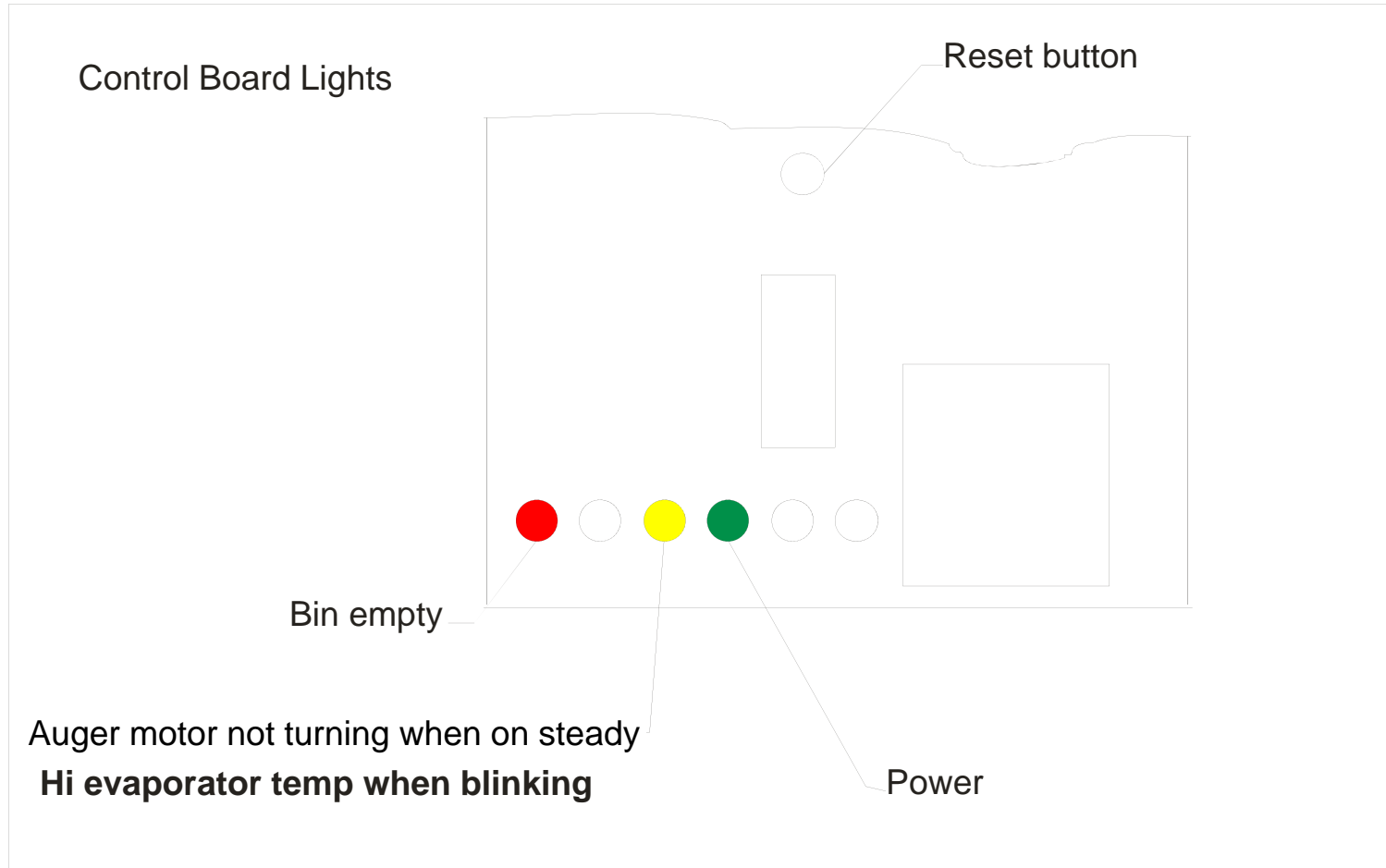
# MDT2 Normal Operation



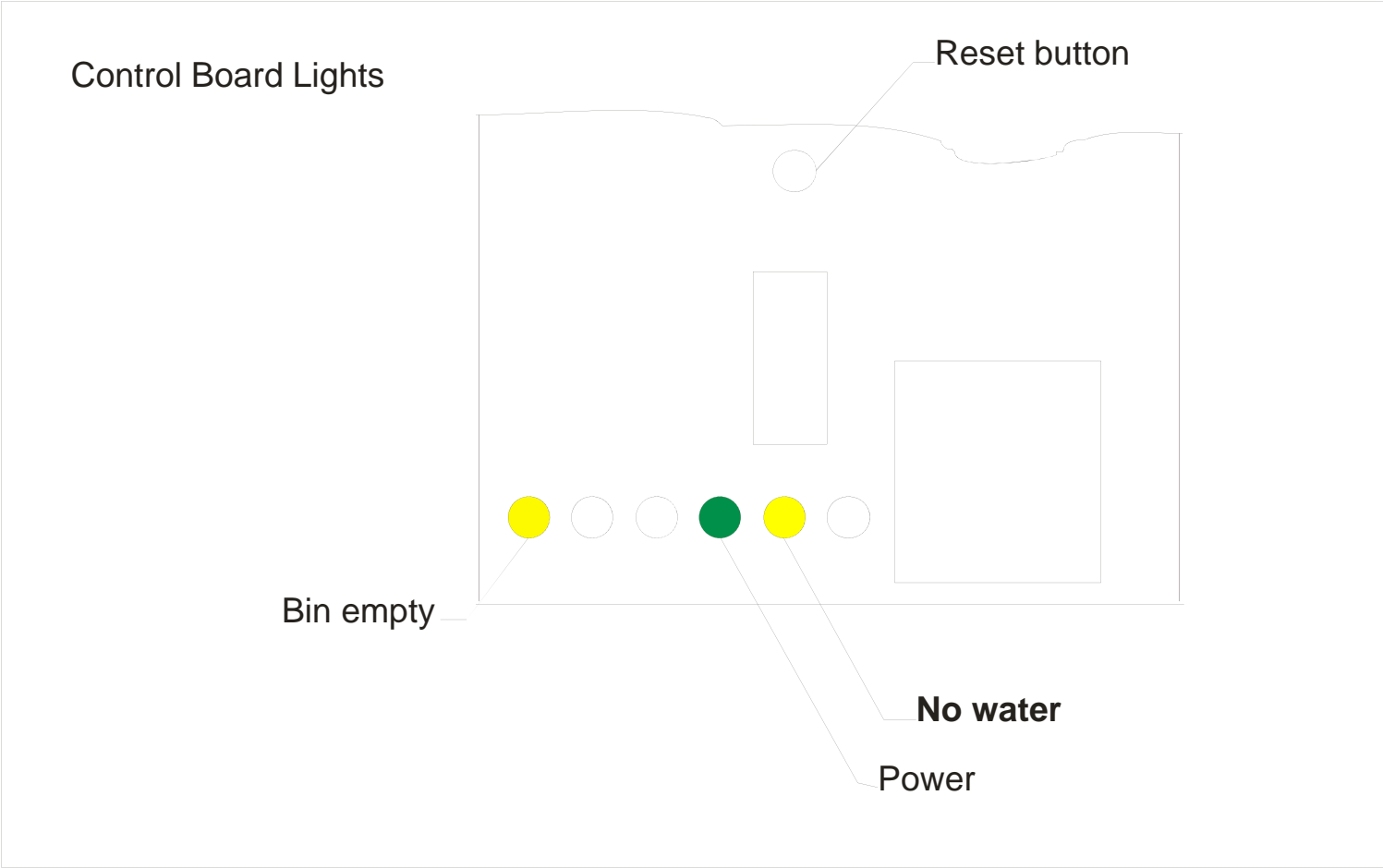
# MDT2 Error



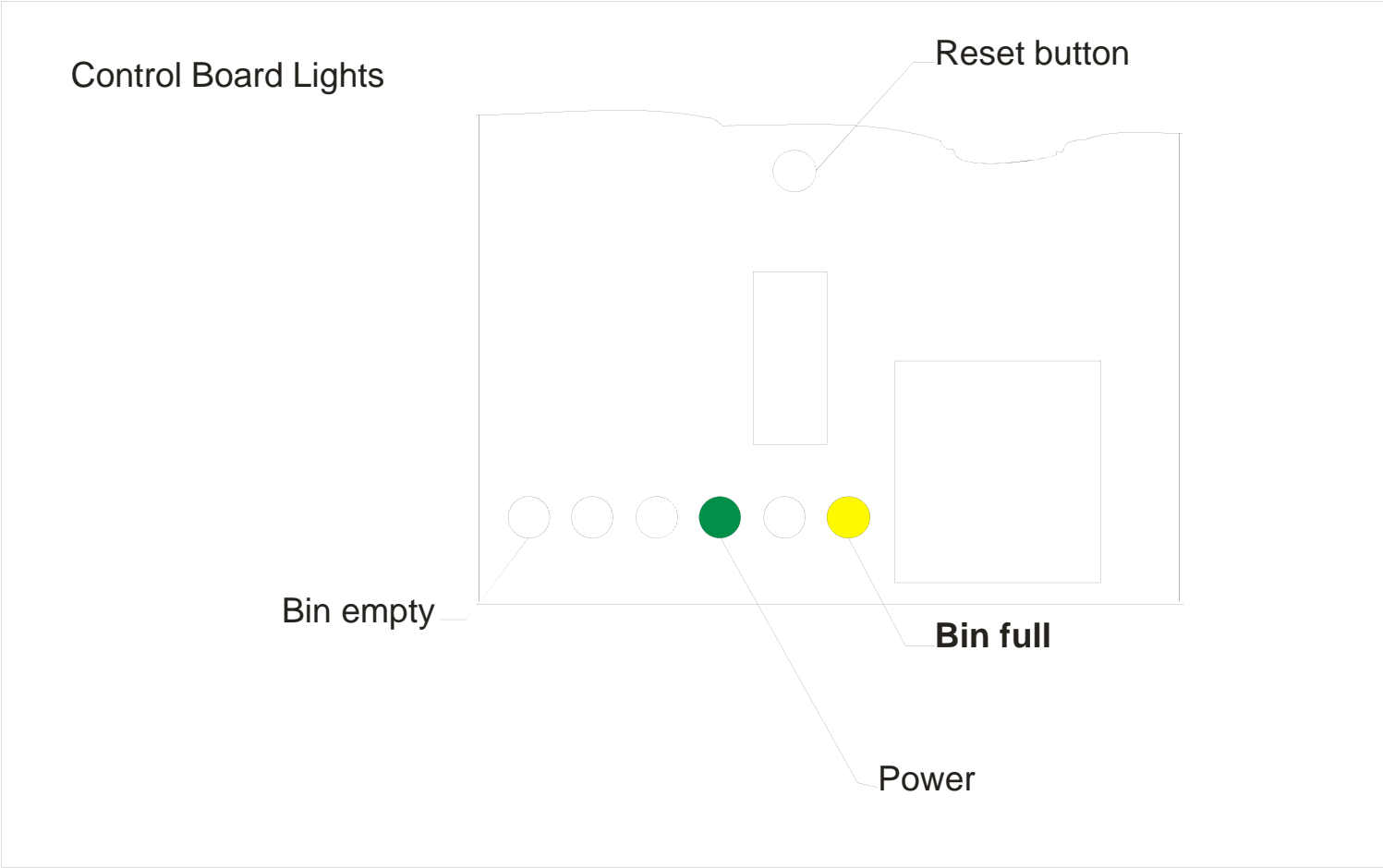
# MDT2 Error



# MDT2 No Water



# MDT2 Bin Full



# Scotsman Ice Systems

- Modular & Self Contained Cubers
- Modular & Self Contained Flakers
- Hotel Dispensers
- Ice Storage Bins
- Ice Maker Dispensers