

# 10 MINUTE CHECKOUT PROCEDURES

## Basic Check Out Procedure for E & H Boards

The 10 minute checkout procedure is a sequence check that can be used at unit startup or for system diagnosis. Using this checkout procedure will allow you to diagnose electrical system and component failures in approximately 10 minutes 9 under normal operating conditions of 70°F or warmer air and 50°F or warmer water temperatures.

Before conducting a 10 minute checkout, check for:

1. Correct installation and proper supply voltage.
2. Adequate water supply and clean evaporators & condenser.
3. Control board dips 7&8 in correct position.

As you go through the procedure, check to assure the components energize and de-energize correctly in proper sequence. If not, those components and controls are suspect.

## 10 MINUTE KM CHECK OUT PROCEDURE

1. Turn power OFF - gain access to unit control box.
2. Turn power ON – place control switch in ICE position.

**Note:** A 5 second delay occurs before Power OK LED starts for units with “E” control board.

- A) 1 Minute Fill Cycle** begins –**Water Valve** energized. After 1 minute, control board checks **Float Switch**. If **Float Switch** is closed...unit cycles to Harvest. Continue to (B). If **Float Switch** is open, unit repeats 1 minute fill cycle until water enters and Float Switch closes (low water safety protection during initial startup and at the end of each harvest)

**Diagnosis:** If **Water Valve** does not open, check for no supply voltage at terminals, bad coil, or plugged water valve screen or external filter (no water flow). If unit fails to start harvest, check for open Float Switch or bad 1 minute timer in board.

- B) Initial Harvest Cycle** – **Water Valve** remains energized, **Contact** energizes to start **Compressor**, **Hot Gas Valve**, & (**Fan Motor** on **Remote** model) energize. Evaporator warms... thermistor senses 48°F... turns operation of harvest to control board defrost completion timer. Timer completes counting (1~3 minutes)... Unit cycles to freeze. On H models, **Water Valve** stops and pump starts for last 30~50 seconds of harvest.

**Diagnosis:** Check if **Compressor** is running, **Hot Gas Valve** is open, **Water Valve** is still open. Average harvest cycle at factory setting is 2 ~ 3 minutes. How long does initial harvest last? 1.5 minutes after initial harvest begins, touch compressor discharge line. Is it hot? If not check refrigerant pressures and Compressor operation. If it is hot, touch inlet line to the evaporator. Is it hot? If it is hot and unit is not starting freeze cycle, check defrost completion timer adjustment, thermistor (for open circuit), discharge line temp, **compressor** efficiency, and if **hot gas valve** is fully open.

- (C) Freeze Cycle** – **Compressor** remains energized, **Pump Motor**, (**Line Valve** on remote model), and **Fan Motor** energize...**Water Valve** & **Hot Gas Valve** de-energize. Unit is held in freeze by 5 minute short cycle protection timer. After 5 minutes in freeze cycle, operation is transferred to Float Switch for freeze termination

## 10 MINUTE KM CHECK OUT PROCEDURE continued...

During first 5 minutes of freeze, confirm that Evaporator temperature drops. After 7 minutes in freeze, remove black Float Switch lead from K5 connector, Unit should immediately switch to pump out cycle.

**Diagnosis:** If evaporator is not cold, check for **Hot Gas Valve** still open, **Thermostatic Expansion Valve** not opening properly, **Water Valve** continuing to fill reservoir, improper unit pressures, and inoperative **Compressor**. If unit remains in freeze with the **Float Switch** removed replace board. \* Normal freeze cycle will last 20 ~ 40 minutes depending on model and conditions. Cycle times and pressures should follow performance data provided in Tech –Specs.

- D) Pump Out Cycle** – In this 10/20 second pump out, **Compressor** remains energized, **HGV** energizes, **Fan Motor** de-energizes, **Pump Motor** stops for 2 seconds and starts in reverse rotation for 10/20 seconds. This removes contaminants from the water reservoir through check valve and down the drain and allows for power flush of Float Switch. Check clear tubing at check valve housing or unit drain for water flow.

**Diagnosis:** If Pump motor does not reverse, check Pump motor circuit and capacitor. If water does not pump out, remove housing and check/clean valve assembly.

- E) Normal Harvest Cycle**– This is the same as Initial Harvest Cycle – Return to **B)**... \* Unit continues to cycle through **B)...****C)**...& **D)** until bin control is satisfied or power is switched OFF.

**Note:** (Setting can be adjusted to skip **D** until every 2, 5, of 10 cycles)... **Also, Unit always restarts at A).**

## INLET WATER LINE SIZE:

The inlet water line size, filter size, and flow rates are critical to proper operation especially for KM which has water assisted harvest.

### Inlet Water Line Size Chart

Engineering has chosen to use nominal ID for inlet supply recommendations for future models.

Model	Line Size	Fitting Size
AM-50/C-100	3/8" OD = 1/4"ID	1/2" FPT
KM-61~KM-900	3/8" OD = 1/4"ID	1/2" FPT
All KML	3/8" OD = 1/4"ID	1/2" FPT
KM-1300~KM-2400	1/2" OD = 3/8"ID	1/2" FPT
KMS models	1/2" OD = 3/8"ID	1/2" FPT
All F/DCM	3/8" OD = 1/4"ID	1/2" FPT

**Note:** Filter Headers should equal recommended line size. Minimum Filter Flow Rate “rule of thumb” is 1.5 GPM for AM/ C-100 & KM-61~280, 3 GPM flow rate for KML & KM-500~900, and 5 GPM for KM-1300 or larger.

## DRAIN LINE SIZE:

AM-50/C-100 1/2" FIP  
ALL KM / F / DCM 3/4" FIP

**Note:** Drain line cannot be reduced or restricted and should be run in hard pipe with a vent tee for improved flow.