

QuikCONE

Maintenance and Trouble Shooting

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Maintenance

DriQuik™ has designed the QuikCONE oven as well as all other equipment to operate with very low preventive and heavy maintenance.

Scheduled preventive maintenance is necessary to prolong the life of major components. In terms of costs, scheduled preventive maintenance provides for reduced down time for emergency repairs, and longer, more reliable equipment life.

The best way to schedule preventive maintenance is through an ongoing program, utilizing a scheduling chart or a computerized tracking system.

This guide includes descriptions of maintenance on some purchased parts. Not all purchased parts are described here, for many require no preventive maintenance. If there is a question regarding maintenance instructions on a purchased component, please contact DriQuik™ or the maintenance manuals of the component manufacturer.

Safety

Maintenance and repair require close contact with the oven, therefore safety precautions must be observed.

1. Remove and loose objects such as trash and rags from the work area. If you always remember to keep the work area clean, this should take little time.
2. Do not work on any equipment until it has finished cycling, and is shut down.
3. Turn the oven power off before beginning any maintenance procedure. "Always lock it out".
4. Wear eye protection. Eye protection is critical when preventive maintenance is performed in many areas of the system.
5. Neither engage nor tolerate horseplay in the work area. Many avoidable accidents occur due to operator negligence.



maintenance.

Warning: Always turn off and lock out the power before performing any type of



procedures.

Note: Only qualified and trained personnel must perform maintenance

Preventive Maintenance

QuikCONE Reflector Cleaning

Due to dirt and other residue build up on reflectors, it may be necessary to clean them. Frequency of cleaning is dependent on the oven application, efficiency of the exhaust system, cleanliness of the work area, etc. Typically, cleaning reflectors every four months is sufficient. The following steps should be followed to clean the reflectors.

1. Be sure oven Power has been Turned Off and Locked Out.
2. Apply a small amount of ammonia cleaning solution to a lint free cloth.
3. With the cloth in hand, wipe the reflector around the emitter.
4. When all residue has been loosened, use a clean lint free cloth to wipe away excess.



Warning: QuikCONES are very hot. The operator or maintenance person must never touch a element while it is on or cooling down. Doing so may result in severe skin burns.

Infrared Element Replacement

Do to failure or filament breakage, it may be necessary to replace an element. Proceed to change the elements in the following manner.

1. Be sure the **Power** has been **Turned Off** and **Locked Out**.
2. Remove the sheet metal screws from the wire channel cover. The wire channel cover is a vented cover.
3. Unwire the element that needs replaced.
4. Remove the two bolts holding the element and plate to the section

5. Pull the element and plate away from the section.
6. Unscrew the two bolts holding the element to the plate.
7. Remove the elements from the plate.
8. Reverse these steps to install the new elements.



Warning: Keep all reflectors clean. Replace infrared elements as required. Do not operate ovens for an extended period of time without all elements working properly.

Ovens

Keep all reflectors clean.

- Remove dust and dirt from the reflectors by using an air hose blow-off and/or a non-abrasive mild cleaner with a soft cloth.
- Remove paint with paint thinner, using a soft non-abrasive cloth, as specified in the coating safety data sheet.
- Check the terminal block connections and replace brittle or cracked terminal blocks as needed.

Control Panel Cabinets

The control panel should be kept free of dust. Blow out dust from the panel using compressed air monthly. Check the wires to ensure they are securely attached to the components. Look for any frayed or otherwise damaged wires and replace them if needed. Check the vent filters on the cabinet and clean them if necessary.



Warning: Always Lock Out power when performing any maintenance on the control panel.

Blowers and Exhausters

The blower and exhausters should be inspected regularly. Follow these guidelines:

- The blowers are factory checked and serviced before installation.
- After the first 8 hours of running time add 3 shots of high temperature Lithium grease to the grease fittings on the blowers and exhausters. Periodically check the blowers and exhausters and add grease as needed. Since the blowers and exhausters run at very high temperatures, they should be monitored closely.
- Repeat these maintenance procedures every 30 days (rated for 6 days a week, 2 shifts).
- Semiannually check the blowers and exhausters for loose bolts, loose squirrel cage, etc.

Guidelines

In order to ensure a long oven life, the following guidelines should be followed.

- No infrared oven element is designed for continuous operation at 100% capacity for longer than the recommended 30 minute initial warm-up period described in the previous chapter.
- If you choose to run at 100% capacity beyond warm-up time, it is especially important to establish a routine maintenance program.
- If your production makes it necessary to run at 100% capacity, you may need to consider expanding your oven system. To explore this option, contact your DriQuik™ representative, or contact the DriQuik™ factory directly at (812) 663-4141.

To help get the best performance from your oven, keep these points in mind.

- **Only** use the oven while parts are ready to go through the oven cycle.
- **Only** use the portion of the oven specific parts require.
- **Never** run the oven at higher power settings than absolutely necessary.

Summary

As previously stated, not all purchased parts are described here, for many require no preventive maintenance. If there is a question regarding maintenance instructions on a purchased component, please contact DriQuik™ or the maintenances manuals of the component manufacturer.

Maintenance Checklist Semiannual Schedule Initiation Date ___/___/___

Action	Date Performed		Performed By		Notes
Inspect the control panel monthly	_____	_____	_____	_____	
Clean the control panel monthly	_____	_____	_____	_____	
Inspect emitters and blowers monthly	_____	_____	_____	_____	
Clean the reflectors Semi-annually					
Check the oven frame for loose bolts, struts, etc. semi-annually					



Note: This is a recommended maintenance schedule. You may need to alter this schedule depending upon the conditions of your plant. It is important that you design the schedule that best suites plant conditions.

Troubleshooting

What's Wrong?	What to do
A single emitter stops operating, or is not operation properly.	<ul style="list-style-type: none">• Check for a burned out element by performing a standard continuity check on each individual element in the section.• Check for loose connections at the terminal block.
A complete circuit or zone is not operating.	<ul style="list-style-type: none">• Check for blown fuses or a bad contactor.• If the contactor is activated (pulled in), check for voltage from top to bottom.• If voltage is not present on the bottom, replace the contactor.• If contactor is not activated, check for voltage at the contactor coil.• If voltage is not present at the coil, proceed to the next step.• Double check low voltage fuses, if they are good, and replace any bad fuses.• Check for loose connections in the control cabinet.
The entire oven is not operating.	<ul style="list-style-type: none">• Check the conveyor interlock• Check the exhaust (interlock) for a bad relay.• Check the master switch for proper voltage continuity in on position.• Check the main disconnect for proper voltage on "bottom side" in on position.• If all else fails, call the DriQuik™ factory for assistance. (812) 663-4141.

Component Descriptions

Main Disconnect/Circuit Breaker

The main disconnect source of your system is located at the control panel. It supplies power to the system when the switch is closed. It also provides a point of protection for lockout when oven maintenance is required.

High Limit Temperature Controller

The high limit temperature controller, located on the control panel door is a safety device built into your system to let the operator know that a high temperature limit has been reached in the exhaust system or oven. The controller is designed to override all other devices built into the system and completely shuts the whole system down. The oven cannot be restarted until the temperature fall below the preset limit. Once the temperature falls below the preset limit, the temperature controller will have to be manually reset. This is done by press the “Reset” button on the temperature controller. The high limit is preprogrammed into the controller by DriQuik™, and should never be changes without written consent by DriQuik™. This is an NFPA requirement.

Operator Interface

The operator interface located on the door of the main control panel, allows the operator to choose a recipe and change its respective settings. A recipe is a customized output percent level setting for each of the heating zones. The higher the output percent level for a specific zone, the hotter the zone will operate. The range is 0 percent to 100 percent output. When the system has power applied for the first time, the operator interface performs a self diagnostics test. After that is complete, the operator interface can be changed into one of two modes. The modes are status and program. To toggle between the modes, simply press the blue “ESC” key. When in status mode, the PLC message “led” light is “on”. When in program mode, the PLC message “led” light is “off”.

- **Status Mode-** In status mode, the PLC sends various messages to the operator interface to communicate the system status. Examples are “Oven Turned Off”, “Oven Preheating”, “Oven Operating”, “Oven in Standby”, “Oven in Phase Down”, “Oven Faulted”.
- **Program Mode-** In program mode, the operator enters the desired recipe and the respective zone output percent settings for those recipes. Once in the program mode, navigation is accomplished using the blue buttons on the right of the display. The display is similar to Microsoft windows folders. If the folder or text has a “+” in front of it, pressing the blue enter key will open the folder or move the blinking cursor to the value field. Once in the value field, use the blue “UP” and “DOWN” arrow keys to change the value of the setting. When

the value is correct, press the blue “ENTER” key to save the value. The blinking cursor will jump back to the front side of the text where the operator can use the “UP” and “DOWN” arrow keys to navigate by scrolling to the next data field description. Pressing the blue “ESC” key will minimize the folder and exit the program mode.

- **Select Oven Recipe**- Within the program mode on the operator interface, you can select 10 different recipes. Each recipe can be programmed to control the heating pattern and heat intensity. The range is 1 through 10. Simply use the “UP” or “DOWN” arrow keys to make your selection and press the “ENTER” key to store the value. Press the “ESC” key to exit.
- **Recipe Settings**- Within the program mode on the operator interface, you can change the respective zone output percent settings for 0 to 100 percent for any recipe. Use the “UP” and “DOWN” arrow keys to select the Recipe you want to change. When the blinking cursor is on the recipe desired, press the “ENTER” key. Move the blinking cursor using the “UP” and “DOWN” arrow keys to the zone output percent you want to change and press the “ENTER” key again. Now use the “UP” and “DOWN” arrow keys again to change the value and press “ENTER” to save. Press the “ESC” key to exit.
- **Phase Down and Preheat**-Within the program mode on the operator interface, you can change the phase down output percent setting from 0 to 100 percent. Also, you can change the phase down duration setting from 1 to 60 minutes, and the preheat duration from 1 to 10 minutes. Use the “UP” and “DOWN” arrow keys to move the cursor to the parameter value you want to change and press the “ENTER” key. Now use the “UP” and “DOWN” arrow keys to adjust the selected parameter and press the “ENTER” key to store the value. Press the “ESC” key to exit.
- **Help**- Within the program mode on the operator interface, you can view helpful notes about different oven conditions and control operations. Simply use the “UP” and “DOWN” arrow keys to move the cursor to the desired topic and press the “ENTER” key. Press the “ESC” key to exit.

Local Messages

- **(+) Panel Operation**
 - **(+) Display**- Display is similar to “Windows” folders. If a message has a “+” press enter to maximize. Press “Escape” to minimize and exit. Up/Down arrows navigate and scroll data values.
 - **(+) Zone L.E.D.’s**- When the L.E.D. associated with a zone is illuminated, the zone selected is “on”.

- **(+) Control Pushbuttons**- Blue buttons function as control buttons. “ESC” exits messages and folders. “Enter” is used to open messages and folders. “Up/Down” arrows are used to navigate and scroll data values.
- **(+) System Operation**- System operates by pulsing power to the zones on a 30 second cycle. At start up the exhaust(s) will be energized and all zones selected to “On” will be energized continuously for a preheat cycle. At the end of the preheat cycle, the plc will monitor conveyor status and control outputs accordingly. If the conveyor is running, the oven will run selected recipe from “Oven Output Control”. When the conveyor stops, all zones will go to standby (0 percent) unless “Phase Down” is enabled. If “Phase Down” is enabled, all zones selected “On” will run at “Phase Down” output level until conveyor restarts. If the conveyor does not restart before “Phase Down” duration times out, system will automatically shut down.
- **(+) Recipes**- Recipes allow the operator to save zone output settings for products. 0 to 100 percent represents zone output levels. Entering a value of 0 percent selects a zone “Off”.
- **(+) Help**- You can view helpful notes about different oven conditions and control operations.
- **(+) Status Descriptions**
 - **(+) System Off**- System is “Off”. “Start” will initiate start sequence.
 - **(+) System Preheating**- System is in a mandatory 5 minute preheat cycle. Exhaust(s) are on, and all zones selected “On” are operating at 100 percent output level.
 - **(+) System On**- Conveyor is on, exhaust(s) are on, and all zones selected “On” are operating at selected output level.
 - **(+) System in Phase Down**- Conveyor is stopped and “Phase Down” is enabled. Exhaust(s) are on, and all zones selected “On” are operating at “Phase Down” output level. If the conveyor does not restart before “Phase Down” duration has timed out, the system will automatically shut down.
 - **(+) System in Standby**- Conveyor is stopped and “Phase Down” is not enabled. Exhaust(s) are on, and all zones are at 0 percent output level.

- **(+) Oven Output Control**
 - **(+) Recipe Management-** Recipe 1, set zone(s) output from a minimum of 0 percent to a maximum of 100 percent. Repeat this process for recipe 1 through 10. This allows different output for different products.
 - **(+) Phase Down Control-**
 - Output is set at a minimum of 0 percent to a maximum of 100 percent.
 - Duration is set at a minimum of 1 minute to a maximum of 60 minutes.
 - Preheat is set at a minimum of 1 minute to a maximum of 10 minutes.

Fault Descriptions

System Faulted- A critical fault has occurred and system has automatically shut down.

Entrance Exhaust Fault

Entrance Exhaust motor overload or airflow switch (optional) has indicated a problem with entrance exhaust. Oven shuts automatically when loss of air flow in the entrance exhaust is detected for more than 15 seconds. Fault is reset by pressing the Master E-Stop push button.

Exit Exhaust Fault

Exit exhaust motor overload or airflow switch (optional) has indicated a problem with exit exhaust. Oven shuts down automatically when loss of air flow in the exit exhaust is detected for more than 15 seconds. Fault is reset by pressing the Master E-Stop push button.

High Limit Temperature Fault

High limit temperature controller has indicated an exhaust or oven over temperature condition. Oven shuts down automatically when an over temperature condition is detected for more than 15 seconds. Press the manual "RESET" button located on the temperature controller on the control panel door. (This fault cannot be reset until the oven temperature falls below the preset limit.

Fault Reset

To reset any fault follow the instructions below:

1. Silence alarm horn. (If any)
2. View the touch screen for fault condition, location, and prognosis. Physically locate the faulty device, assess the situation, and fix the fault as described in section 3.4.
3. If fault requires you to come into contact with an electrical component, such as a blower, exhaust, or any electrical component inside the control panel, press the Master E-Stop button on the control panel door and follow the lock out procedures provided in this manual. The oven will then have to go through the sequence of operation again to restart oven. The sequence of operation is provided on the followings page.