

# QuikCAT

## Maintenance and Trouble Shooting

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# Maintenance

DriQuik™ has designed the QuikCAT 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.

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 in horseplay in the work area. Many avoidable accidents occur due to operator negligence.



Warning:

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

maintenance.



procedures.

Note: Only qualified and trained personnel must perform maintenance

## **Preventive Maintenance**

Periodic preventive maintenance is required to ensure prolonged and reliable operation of you QuikCAT oven.

- Inspect the control panel for loose terminations and damaged or failing components.
- Clean the control panel and the fresh air inlet filter.
- Inspect the heater and blowers for excessive contaminate buildup and loose bolts.
- Verify incoming and zone gas pressures and adjust as necessary.

Refer to the Maintenance Checklist below for recommended intervals.

## **Heavy Maintenance**

Your QuikCAT oven requires intermittent heavy maintenance and should be performed per the recommended schedule below.

- Clean all stainless steel reflective surfaces with a non-abrasive cloth and an appropriate cleaning compound. Extreme care should be taken not to mechanically damage or spill cleaning compound on the surface heaters.
- Inspect the oven frame for loose bolts, struts, etc.
- Check all gas fittings and components for leaks using soapy water

## Gas Heater Care

If the oven is not ran at or near 100%, a 30 to 60 minute burn off period of 100% is recommended weekly to prevent residue or contaminant build up.



Caution: Do not disrupt or remove the catalyst pad material behind the screen of the gas heater.

- **Never** blow emitters off with pressurized air.
- **Never** wash emitter faces with flowing water.
- **Never** vacuum the emitter face.
- **Never** physically brush the emitter faces.
- **Do Not** use pneumatic tools inside the oven.
- **Do Not** use harsh chemicals inside the oven.
- **Do Not** use tools that create debris inside the oven.

## 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.

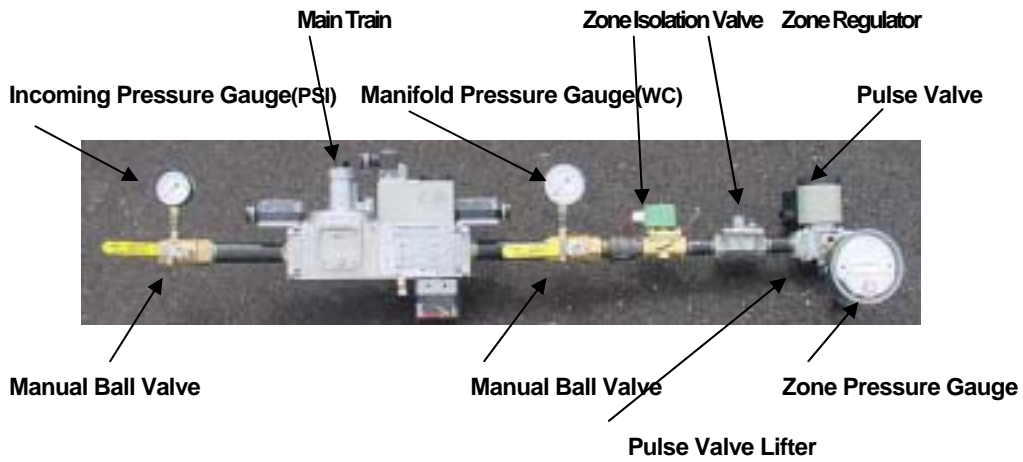
**Maintenance Checklist  
Semiannual Schedule**  
Initiation Date \_\_\_/\_\_\_/\_\_\_

Action	Date Performed		Performed By		Notes
Inspect the control panel <b>monthly</b>	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____	
Clean the control panel <b>monthly</b>	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____	
Inspect heaters and blowers <b>monthly</b>	_____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____	
Clean the reflectors <b>Semi-annually</b>					
Check the oven frame for loose bolts, struts, etc. <b>semi-annually</b>					
Verify and adjust gas pressures <b>monthly</b>					
Check all gas fittings and components for leaks <b>semi-annually</b>					
Burn heater off <b>weekly</b> at 100% for 30 to 60 minutes if not ran at or near 100%	_____	_____	_____	_____	
	_____	_____	_____	_____	
	_____	_____	_____	_____	
	_____	_____	_____	_____	

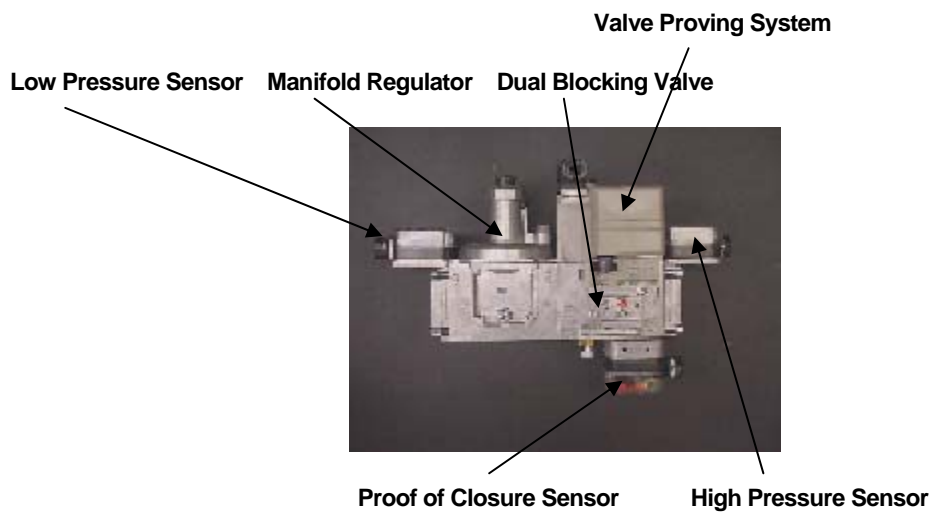


Note: This is a recommended maintenance schedule. You may need to alter this schedule depending upon the conditions of your plant. It is important that you design the schedule that best suites plant conditions.

# Troubleshooting



**Picture 1 ▲ Complete gas train with zone train**



**Picture 2 ▲ Main train**

## **Valve Adjustments**

### **Main Gas Train**

Verify no gas leaks are present. Verify all ball valves are open to supply gas to the oven. In order for the oven to work properly, the following gas pressures must be maintained at all times.

### **Gas Pressure at Heaters**

Periodic valve adjustments are critical to ensuring optimum performance of your QuikCAT™ oven. To determine the appropriate pressures refer to table 1.1. The MAN PRESS parameter is stamped on the specification tag located on the rear of each Cata-Dyne™ heater.

<b>MAN PRESS</b>	<b>Manifold Pressure</b>	<b>High Fire Pressure</b>	<b>Standby Pressure</b>
3.5" W.C.	15" W.C.	3.5" W.C.	1" W.C.
7" W.C	15" W.C.	7" W.C	2" W.C
11" W.C.	15" W.C.	11" W.C.	3" W.C.

Table 1.1

- **Manifold adjustment:**
  - Ensure both manual ball valves are open and incoming gas pressure is between 2 & 5 P.S.I.
  - Remove the dust cap located on the top of the Manifold Regulator by turning CCW.(refer to picture 5.2)
  - With the oven in “High Fire” adjust the Manifold Regulator with a screwdriver (CW to increase, CCW to decrease) to achieve the appropriate manifold pressure at the Manifold Pressure Gauge (refer to table 5.1.1).
  - Reinstall the dust cap.
- **High Fire adjustment:**
  - Remove the dust cap located on the top of the Zone Regulator by turning CCW. (refer to picture 5.1)
  - With the oven in “High Fire” adjust the Zone Regulator with a screwdriver (CW to increase, CCW to decrease) to achieve the

appropriate zone pressure at the Zone Pressure Gauge (refer to table 5.1.1).

- Reinstall the dust cap.
- Repeat for all zones.

- **Standby adjustment:**

- Remove the black plastic cap located on the Pulse Valve Lifter by turning CCW. (refer to picture 5.1)
- Invert the cap and insert the socket over the exposed brass stud.
- With the oven in “Standby” adjust the Pulse Valve Lifter with the cap (CW to increase, CCW to decrease) to achieve the appropriate zone pressure at the Zone Pressure Gauge (refer to table 5.1.1).
- Repeat for all zones.

## Faults

<b>CAUSE</b>	<b>SOLUTION</b>
<p><b><u>Exhaust fault</u></b> Overload on motor starter is tripped or flow switch is not made</p>	Check motor wiring, etc. Reset overload if necessary
<p><b><u>Low gas pressure fault</u></b> Incoming plant gas pressure is too low.</p>	Insure that the incoming plant pressure is between 2 and 5 PSI, and then manually reset the low gas pressure sensor on the incoming side of the main gas valve.
<p><b><u>High gas pressure fault</u></b> Gas pressure after the main gas valve is too high</p>	Reduce the gas pressure after the main gas valve by adjusting the pressure regulator bolted to the front of the main gas valve to 15IN. W.C. Then manually reset the high gas sensor on the outgoing side of the main gas valve.
<p><b><u>Leak detected fault</u></b> Main gas valve is not passing the valve proving system (VPS) test</p>	Close the ball valve upstream of the main gas valve and call DriQuik™ immediately.

<p><b><u>Preheat fail</u></b> One or more of the gas heaters are not up to critical temperature after 60 minutes of electric preheat.</p> <p><b><u>Preheat fail continued</u></b></p>	<p>Isolate which heaters are not up to temperature by monitoring the heater status screen(s). Verify with a thermometer that the problem heater(s) are not up to critical temperature.</p> <ul style="list-style-type: none"> <li>• Heaters that are not up to temperature indicate a problem with the preheat circuits.</li> <li>• Check for continuity (with the wire removed) through the heater terminal and for proper voltage to the terminals.</li> <li>• Heaters that are up to temperature but trigger a fault indicate a problem with the thermo-switch/thermocouple circuit. Replace the thermo-switch/thermocouple.</li> </ul>
<p><b><u>Operate fail</u></b> One or more heater(s) have dropped below critical temperature while the oven was operating.</p> <p><b><u>Operate fail continued</u></b></p>	<p>Isolate which heater(s) are not up to temperature by monitoring the heater status screens. Verify with a thermometer that the problem heater(s) are not up to temperature.</p> <ul style="list-style-type: none"> <li>• Heaters that are not up to temperature indicate a problem with gas flow or plugged heater surfaces, restricting oxygen flow into the catalyst. Check gas pressures at the pulse valves and the orifices(s) in the back of the heater(s).</li> <li>• Heaters that are up to temperature indicate a problem with thermo switch/thermocouple circuit. Replace thermo switch/thermocouple.</li> </ul>
<p><b><u>Proof of closure fault</u></b> Main gas valve has failed to make proof of closure when the main gas valve is de-energized.</p>	<p>Close the ball valve upstream of the main gas valve and call DriQuik™ immediately.</p>
<p><b><u>Self test fault</u></b> Processor has failed to acknowledge critical input failures.</p>	<p>Remove gas and electric from the system and call DriQuik™ immediately.</p>

## **Fault Descriptions**

### **Exhaust Air Flow Fault**

This condition occurs if the oven exhaust relay is “on” and the airflow signal is lost for 15 continuous seconds. Silence the horn by pressing the blinking “Silence Alarm” button and reset the oven fault by pressing the “Fault Reset” button.

### **Preheat Fault**

This condition occurs if any one of the heater status indicators does not turn on steady with a 1 hour period. Silence the horn by pressing the blinking “Silence Alarm” button and reset the oven fault by pressing the “Fault Reset” button

### **Operate Fail Fault**

This condition occurs if any one of the heater status indicators does not stay on for 10 seconds after the preheat is complete. Silence the alarm horn by pressing the blinking “Silence Alarm” button and reset the oven fault by pressing the “Fault Reset” button.

### **Self Test Fault**

This condition occurs if any one of the inputs are high when the PLC disconnects all inputs mechanically from the input card. Silence the alarm horn by pressing the blinking “Silence Alarm” button, and reset the oven fault by pressing the “Fault Reset” button.

### **Low Gas Pressure Fault**

This condition occurs if the gas pressure at the inlet of the main gas train drops below 1 PSI. A red LED on the switch itself will turn “on” and the switch must be manually reset by pressing on the red plastic dot located near the center of the switch. Silence the alarm horn by pressing the blinking “Silence Alarm” button and reset the oven fault by pressing the “Fault Reset” button.

### **High Gas Pressure Fault**

This condition occurs if the gas pressure at the outlet of the main gas train rises above 20"of W.C. A red LED on the switch itself will turn “on” and the switch must be manually reset by pressing on the red plastic dot located near the center of the switch. Silence the alarm horn by pressing the blinking “Silence Alarm” button and reset the oven fault by pressing the “Fault Reset” button.

### **Gas Leak Detected Fault**

This condition occurs if after a 26 second self –diagnostic test on the two gas valve located within the main gas train detect a leak between the valves. A gas leak detect fault is not a gas leak in the system. It is isolated between the main valves. Pressure is applied and monitored between the valves, which are closed, to determine if a valve is not fully closed. Silence the alarm horn by pressing the blinking “Silence Alarm” button and reset the oven fault by pressing the “Fault Reset” button.

### **Proof of Closure Fault**

This condition occurs if the downstream valve closest to the outlet of the main gas train does not close within 3 seconds after the gas valves were turned “off”. A green LED on the switch located on the bottom of the valve indicates the valve is open. An orange LED indicates the valve is closed. Silence the alarm horn by pressing the blinking “Silence Alarm” button and reset the oven fault by pressing the “Fault Reset” button.

### **High Limit Temperature Fault**

This condition occurs when the high limit temperature controller has indicated an exhaust or oven over temperature condition. Oven shuts down automatically when an over temperature conditions 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 oven 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 3.5.
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 following page.
4. On the touch screen, press the “Fault Reset” button after the fault has been evaluated and fixed.