

## EARLY GENERATION CONTROLLER DIAGNOSTICS AND SETUP PROCEDURE

IF THE CONTROL BOARD LOOKS LIKE THIS



### I. Doesn't turn on (nothing on display screen)

### II. Turns on but works erratically

### III. Turns on but doesn't count volume

### IV. Display screen is scrambled

### V. Counts but doesn't shut off

### VI. Calibration procedure

### VII. Flow diagnostics procedure

### VIII. Hard Reset

### IX. Set Procedure

#### I) Doesn't turn on (nothing on screen)

- Check the fuse.
- Check and charge battery (Controller must have a minimum of 10.5 vdc under load to function properly)
- Check and clean all connections coming from the battery
- Contact service

#### II) Turns on but works erratically

- Check and charge battery (Controller must have a minimum of 10.5 vdc under load to function properly)
- Check and clean all connections coming from the battery
- Contact service

#### III) Turns on but doesn't count volume ("Feed" or "Fill")

- Be sure that the calibration number is greater than "0"
- If the calibration number is wrong run a "Calibration procedure" (See VI below)
- Run a "Flow diagnostics procedure" (See VII below)
- Contact service

#### IV) Display screen is scrambled

- Check and charge battery (Controller must have a minimum of 10.5 vdc under load to function properly)
- Check and clean all connections coming from the battery
- Do a "Hard Reset" (See VII below)
- Contact service

#### V) Counts but doesn't shut off

- Be sure that "Set" number is correct. (Occasionally the set number gets set high by mistake)
- If the "Set" number is incorrect, run a "Set Procedure" (See below)
- Set the Automatic Switch to "Off" and make sure that 12 vdc is being delivered to the valve. (*When the Automatic switch selector is moved from "Automatic" to "Off" you should be able to hear the solenoid valve snap. When it is in "Off", you should be able to test at the valve connector for 12 vdc with a voltmeter or test light*)

- D. Check all wires and connectors for open circuits.
- E. If you can hear the valve operating, but it still is not shutting off completely, disassemble and clean the valve.
- F. Contact service

## **VI) Calibration procedure**

The purpose of the "Calibration Procedure" is to calibrate the flow meter to the controller. Even though the face plate reads "Gal" on the key pad, most of you will calibrate your controller to quarts. If the system is not calibrated, it will not count the volume correctly. Normally the system comes calibrated and you will not have to change it, but occasionally you will need to calibrate. The following procedure will help you to accomplish that task.

***Note: The calibration number is set by holding the "CAL" button for the row you are calibrating, (a=Feed, b=Fill) than using the "Inc/Dec" switch on the left side of the controller to achieve the desired number.***

- A. You will need a clean, accurate 20 quart (5 gal) measuring container
- B. The tank needs adequate water to run several calibrations of 20 quarts.
- C. Start the pump and make sure the lines are purged of air.
- D. Turn on and zero the volume displayed on the controller, than set the switches to "Manual", "Feed".
- E. Set the "Calibration" Number to 20
- F. Now, using the feed nozzle, manually dispense 20 quarts of liquid into the measuring container.
- G. You should see that the display will have changed from zero. Enter that new number as the calibration number for this function.
- H. Set the controller to "Automatic, Feed" and check to be sure the controller is dispensing correctly, *(you can fine tune the calibration by raising or lowering the calibration number slightly until you are satisfied with its accuracy)*
- I. You can use the same Procedure to calibrate "Fill" but try using the same "Cal" number as "Feed" first. Most often this works just fine.

## **VII) Flow diagnostics procedure**

- A. Be sure that the controller is "On" and set for "Manual / Feed",
- B. Zero the volume buttons in row "A" (Feed) by holding the button until the display reads zero "0".
- C. Make sure that the calibration number is greater than 20. *(You should not have to check this if the controller has been working)*
- D. Disconnect the connector from the flow meter and, using a wire; intermittently make contact between the two leads on the control side connector several times.
- E. Look at the display to see if the number has changed from zero.
  - 1. If the number has changed, then the circuit forward to the controller is OK. Go to step 6)
  - 2. If the number has not changed, then the problem is in that circuit. Go to step 7
- F. Since we know that the forward circuit is good we can concentrate on the flow meter.
  - 1. Remove the green screw in sensor from the flow meter and plug it back into the lead wire from the controller
  - 2. Take a magnet and pass the end of the sensor back and forth next to the magnet. If the controller counts, the sensor is OK
  - 3. Remove and disassemble the flow meter to check for contamination obstructing the turbine in the flow meter.
  - 4. Contact Service
- G. Since we know that the forward circuit is bad we can concentrate on it.
  - 1. Check all wiring and connectors for open circuits.
  - 2. You can narrow down "open" by running step 4 forward up the circuit at each connector.
  - 3. Contact Service

## **VIII) Hard Reset**

- A. Occasionally, like any computer, the controller will lock up. When this happens, you can perform a "Hard Reset" by holding the "Gal" button in row "C" until it flashed off and back on.
- B. Remember that this resets all settings back to Factory original. "Set" and "Cal" numbers will need to be reset

## **IX) Set Procedure**

*Adjusting the "Set" amount is accomplished by holding the "Set" button in the desired row (A=Feed, B=Fill) and using the "Inc / Dec" switch at the left of the screen to adjust the number to the desired amount.*

# CONTROLLER DIAGNOSTICS AND SETUP PROCEDURE

## Generation IV Controller



- I. Doesn't turn on (nothing on display screen)
  - II. Turns on but works erratically
  - III. Turns on but doesn't count volume
  - IV. Display screen is scrambled
  - V. Counts but doesn't shut off
  - VI. Calibration procedure
  - VII. Flow diagnostics procedure
  - VIII. Hard Reset
  - IX. Set Procedure
- I) Doesn't turn on (nothing on screen)
- A. Check the fuse.
  - B. Check and charge battery (Controller must have a minimum of 11.5 vdc under load to function properly)
  - C. Check and clean all connections coming from the battery
  - D. Contact service
- II) Turns on but works erratically
- A. Check and charge battery (Controller must have a minimum of 11.5 vdc under load to function properly)
  - B. Check and clean all connections coming from the battery
  - C. Contact service
- III) Turns on but doesn't count volume ("Feed" or "Fill")
- A. Be sure that the calibration number is greater than "0"
  - B. If the calibration number is wrong run a "Calibration procedure" (See VI below)
  - C. Run a "Flow diagnostics procedure" (See VII below)
  - D. Contact service
- IV) Display screen is scrambled
- A. Check and charge battery (Controller must have a minimum of 11.5 vdc under load to function properly)
  - B. Check and clean all connections coming from the battery
  - C. Do a "Hard Reset" (See VIII below)
  - D. Contact service
- V) Counts but doesn't shut off
- A. Be sure that "Set" number is correct. (Occasionally the set number gets set high by mistake)
  - B. If the "Set" number is incorrect, run a "Target Set Procedure" (See IX below)
  - C. Check all wires and connectors for open circuits.
  - D. If you can hear the valve operating, but it still is not shutting off completely, disassemble and clean the valve.

E. Contact service

## VI) Calibration procedure

The purpose of the "Calibration Procedure" is to calibrate the flow meter to the controller. If the system is not calibrated, it will not count the volume correctly. Normally the system comes calibrated for quarts and you will not have to change it, but occasionally you will need to calibrate. The following procedure will help you to accomplish that task.

**Note:** *The controller can be calibrated to any volume designator desired, (quarts, liters, pounds, etc) and must be set for both fill and feed separately. The following describes setting to gallons, but the same applies to other volume designators*

- A. Set the "Fill/ Feed" switch on "Feed".
- B. You will need a clean, accurate 20 quart (5 gal) measuring container
- C. The tank needs adequate water to run several calibrations of 20 quarts.
- D. Start the pump and make sure the lines are purged of air.
- E. Turn on and zero the volume displayed on the controller, than set the switches to "Manual", "Feed".
- F. Set the "Calibration" Number to 20
- G. Now, using the feed nozzle, manually dispense 20 quarts of liquid into the measuring container.
- H. You should see that the display will have changed from zero. Enter that new number as the calibration number for this function.
- I. Set the controller to "Automatic, Feed" and check to be sure the controller is dispensing correctly, *(you can fine tune the calibration by raising or lowering the calibration number slightly until you are satisfied with its accuracy)*
- J. You can use the same Procedure to calibrate "Fill" but try using the same "Cal" number as "Feed" first. Most often this works just fine.

## VII) Flow diagnostics procedure

- A. Be sure that the controller is "On" and set for "Manual / Feed",
- B. Zero the Screen to "0" by turning the power off than on again. Screen should read "0"
- C. Make sure that the calibration number is greater than 20. *(You should not have to check this if the controller has been working)*
- D. Disconnect the connector from the flow meter and, using a wire; intermittently make contact between the two leads on the control side connector several times.
- E. Look at the display to see if the number has changed from zero.
  1. If the number has changed, then the circuit forward to the controller is OK. Go to step 6)
  2. If the number has not changed, then the problem is in that circuit. Go to step 7
- F. Since we know that the forward circuit is good we can concentrate on the flow meter.
  1. Remove the green screw in sensor from the flow meter and plug it back into the lead wire from the controller
  2. Take a magnet and pass the end of the sensor back and forth next to the magnet. If the controller counts, the sensor can generally be considered OK
  3. Remove and disassemble the flow meter to check for contamination obstructing the turbine in the flow meter.
  4. Contact Service
- G. Since we know that the forward circuit is bad we can concentrate on it.
  1. Check all wiring and connectors for open circuits.
  2. You can narrow down "open" by running step 4 forward up the circuit at each connector.
  3. Contact Service

## VIII) Hard Reset

- A. Simply turn the power off and back on.
- B. This will set your volume counters back to zero.

## IX) Target Set Procedure

*Adjusting the "Set" or "Target" amount is accomplished by hitting button "A" while the "Fill/Feed" switch is in the position you desire to set (Fill or Feed). Now simply enter the desired target with the key pad. Remember that you must enter the decimal target, even if it is zero.*

# CONTROLLER DIAGNOSTICS AND SETUP PROCEDURE

## Generation V Controller

### I. Doesn't turn on (nothing on display screen)

#### II. Turns on but works erratically

#### III. Turns on but doesn't count volume

#### IV. Display screen is scrambled

#### V. Counts but doesn't shut off

#### VI. Calibration procedure

#### VII. Flow diagnostics procedure

#### VIII. Hard Reset

#### IX. Set Procedure

### I) Doesn't turn on (nothing on screen)

- A. Check the fuse.
- B. Check and charge battery (Controller must have a minimum of 11.5 vdc under load to function properly)
- C. Check and clean all connections coming from the battery
- D. Contact service

### II) Turns on but works erratically

- A. Check and charge battery (Controller must have a minimum of 11.5 vdc under load to function properly)
- B. Check and clean all connections coming from the battery
- C. Contact service

### III) Turns on but doesn't count volume ("Feed 1" or "Feed 2")

- A. Be sure that the calibration number is greater than "0"
- B. If the calibration number is wrong run a "Calibration procedure" (See VI below)
- C. Run a "Flow diagnostics procedure" (See VII below)
- D. Contact service

### IV) Display screen is scrambled

- A. Check and charge battery (Controller must have a minimum of 11.5 vdc under load to function properly)
- B. Check and clean all connections coming from the battery
- C. Do a "Hard Reset" (See VIII below)
- D. Contact service

### V) Counts but doesn't shut off

- A. Be sure that "Set" number is correct. (Occasionally the set number gets set high by mistake)
- B. If the "Set" number is incorrect, run a "Target Set Procedure" (See IX below)
- C. Check all wires and connectors for open circuits.
- D. If you can hear the valve operating, but it still is not shutting off completely, disassemble and clean the valve.
- E. Contact service

### VI) Calibration procedure

The purpose of the "Calibration Procedure" is to calibrate the flow meter to the controller. If the system is not calibrated, it will not count the volume correctly. Normally the system comes calibrated for quarts and you will not have to change it, but occasionally you will need to calibrate. The following procedure will help you to accomplish that task.

**Note: The controller can be calibrated to any volume designator desired, (quarts, liters, pounds, etc) and must be set for both Feed 1 and Feed 2 separately. The following describes setting to gallons, but the same applies to other volume designators**

- A. Set the "Feed 1/Feed 2" switch on "Feed 1".
- B. You will need a clean, accurate 20 quart (5 gal) measuring container
- C. The tank needs adequate water to run several calibrations of 20 quarts.
- D. Start the pump and make sure the lines are purged of air.
- E. Turn on and zero the volume displayed on the controller, than set the switches to "Manual", "Feed 1 or 2".
- F. Set the "Calibration" Number to 20
- G. Now, using the feed nozzle, manually dispense 20 quarts of liquid into the measuring container.
- H. You should see that the display will have changed from zero. Enter that new number as the calibration number for this function.
- I. Set the controller to "Automatic, Feed 1 or 2" and check to be sure the controller is dispensing correctly, *(you can fine tune the calibration by raising or lowering the calibration number slightly until you are satisfied with its accuracy}*
- J. You can use the same Procedure to calibrate "F" but try using the same "Cal" number as "Feed 1" first. Most often this works just fine.

### **VII) Flow diagnostics procedure**

- A. Be sure that the controller is "On" and set for "Manual / Feed 1 or 2",
- B. Zero the Screen to "0" by turning the power off than on again. Screen should read "0"
- C. Make sure that the calibration number is greater than 20. *(You should not have to check this if the controller has been working)*
- D. Disconnect the connector from the flow meter and, using a wire; intermittently make contact between the two leads on the control side connector several times.
- E. Look at the display to see if the number has changed from zero.
  1. If the number has changed, then the circuit forward to the controller is OK. Go to step 6)
  2. If the number has not changed, then the problem is in that circuit. Go to step 7
- F. Since we know that the forward circuit is good we can concentrate on the flow meter.
  1. Remove the green screw in sensor from the flow meter and plug it back into the lead wire from the controller
  2. Take a magnet and pass the end of the sensor back and forth next to the magnet. If the controller counts, the sensor can generally be considered OK
  3. Remove and disassemble the flow meter to check for contamination obstructing the turbine in the flow meter.
  4. Contact Service
- G. Since we know that the forward circuit is bad we can concentrate on it.
  1. Check all wiring and connectors for open circuits.
  2. You can narrow down "open" by running step 4 forward up the circuit at each connector.
  3. Contact Service

### **VIII) Hard Reset**

- A. Simply turn the power off and back on.
- B. This will set your volume counters back to zero.

### **IX) Target Set Procedure**

*Adjusting the "Set" or "Target" amount is accomplished by hitting button "A" while the "Feed 1/Feed 2" switch is in the position you desire to set (Feed 1 or Feed 2). Now simply enter the desired target with the key pad. Remember that you must enter the decimal target, even if it is zero.*