8.6 Vacuum Pump Alarm

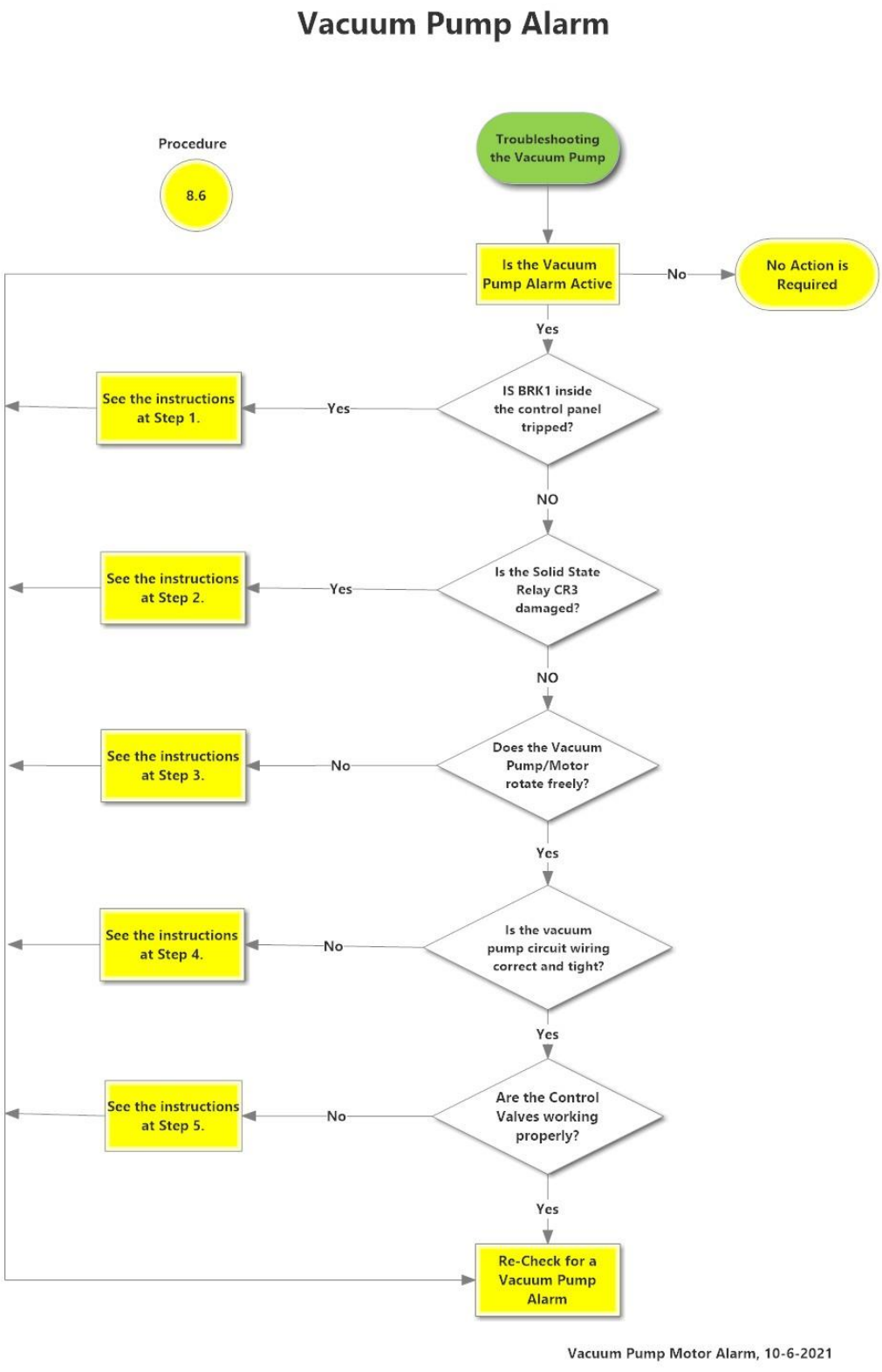

Figure 8-16: Vacuum Pump Troubleshooting Procedures

8.6.1 Vacuum Pump Alarm: Troubleshooting Steps

Steps	Procedures

1. Check to see if the Vacuum Pump breaker (BRK1) in the Control Panel has tripped. See Figure 8-21.

a) Enter the Maintenance screen using the code 878 to disable the GREEN MACHINE.

b) Open the Control Panel front door

c) Check the breaker BRK1 to see if it tripped:

- If the breaker lever is up and the window is RED, the breaker has not tripped.
- If the breaker lever is down and the window is GREEN, the breaker has tripped.

d) If the breaker has not tripped, go to Step 2.

e) If the Vacuum Pump breaker has tripped, move the lever up to reset the breaker.

f) Push the Clear Motor Alarm button so the alarm resets. **See Figure 8-17.**

g) Push the Home button to go back to the Main Screen and the alarm will be cleared.

h) The GREEN MACHINE is now in a Normal Operating Mode and will operate if the UST pressure is above 0.2 IWC.

i) NOTE: IF THE VACUUM PUMP BREAKER CONTINUES TO TRIP, GO TO STEP 2.

Troubleshooting Procedures, continued

Steps	Procedures

2. Check to see if the Vacuum Pump Solid State Relay is damaged.

a) Enter the Maintenance screen using the code 878 to disable the GREEN MACHINE.

b) Open the Control Panel front door.

c) **CAUTION: You are now working in a hot panel**

d) Push the Clear Motor Alarm button to reset the motor alarm. Without resetting the alarm, you will not be able to do the next step.

e) Push the Run Tests button. Then push the Functionality Test button. **See Figure 8-18.** This button runs the GREEN MACHINE which allows you to check the voltage on each of the terminals of the solid-state relay. See the table below for expected voltage values of each terminal.

Solid State Relay CR3 – Vacuum Pump Circuit			
Wire Number	**Test Probe 1 Location**	**Test Probe 2 Location**	**Expected Voltage**
02053	Top Left	120 VAC ground	~120 VAC
02054	Top Right	120 VAC ground	~120 VAC
03030	Bottom Left	Bottom Right	~24 VDC
05010	Bottom Right	24 VDC ground	~24 VDC

f) If any of the voltages are not correct, check the associated breakers, fuses, and wiring for proper connections.

g) If the wiring connections are all tight, replace the relay. Note the wire numbers and location. **See Chapter 9**: Replacement Procedure

h) After the relay is replaced, close the Control Panel front door.

i) Push the Clear Motor Alarm button so the alarm resets. **See Figure 8-17.**

j) Push the Home button to go back to the Main Screen and the Alarm will be cleared.

k) The GREEN MACHINE is now in a Normal Operating Mode and will operate if the UST pressure is above 0.2 IWC.

l) NOTE: IF THE VACUUM PUMP CONTINUES TO ALARM, GO TO STEP 3

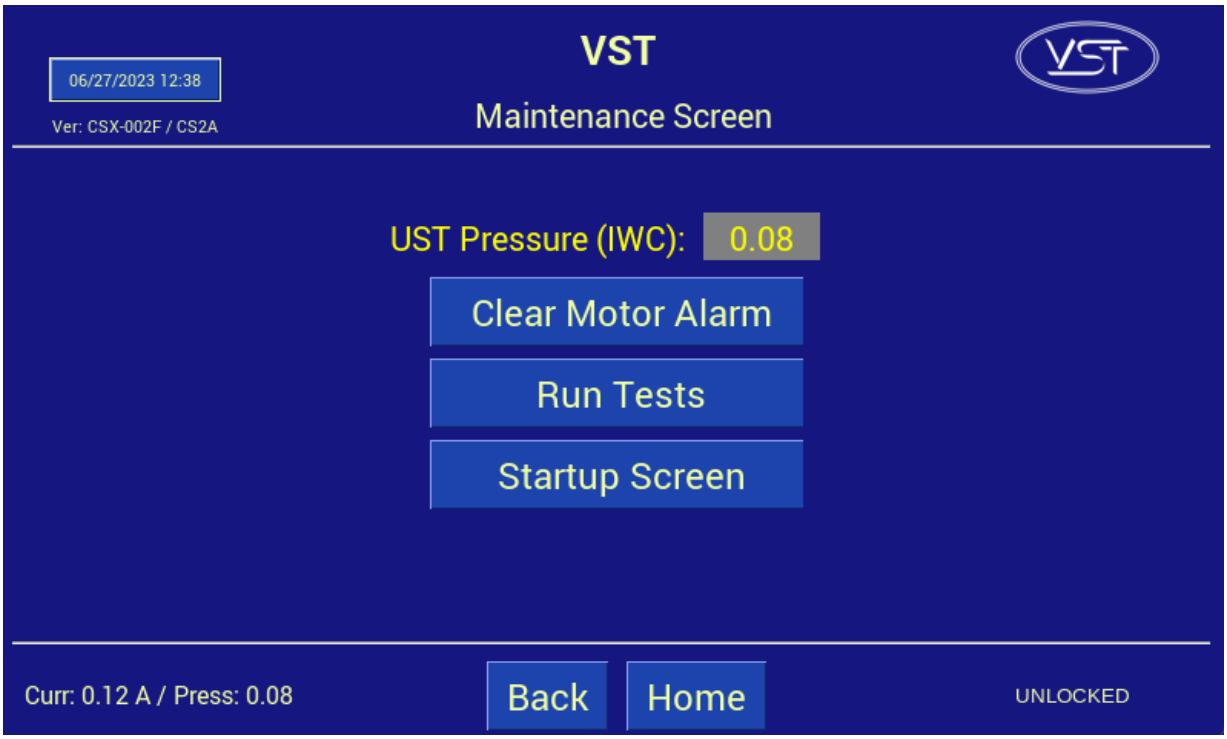

Figure 8-17: Maintenance Screen

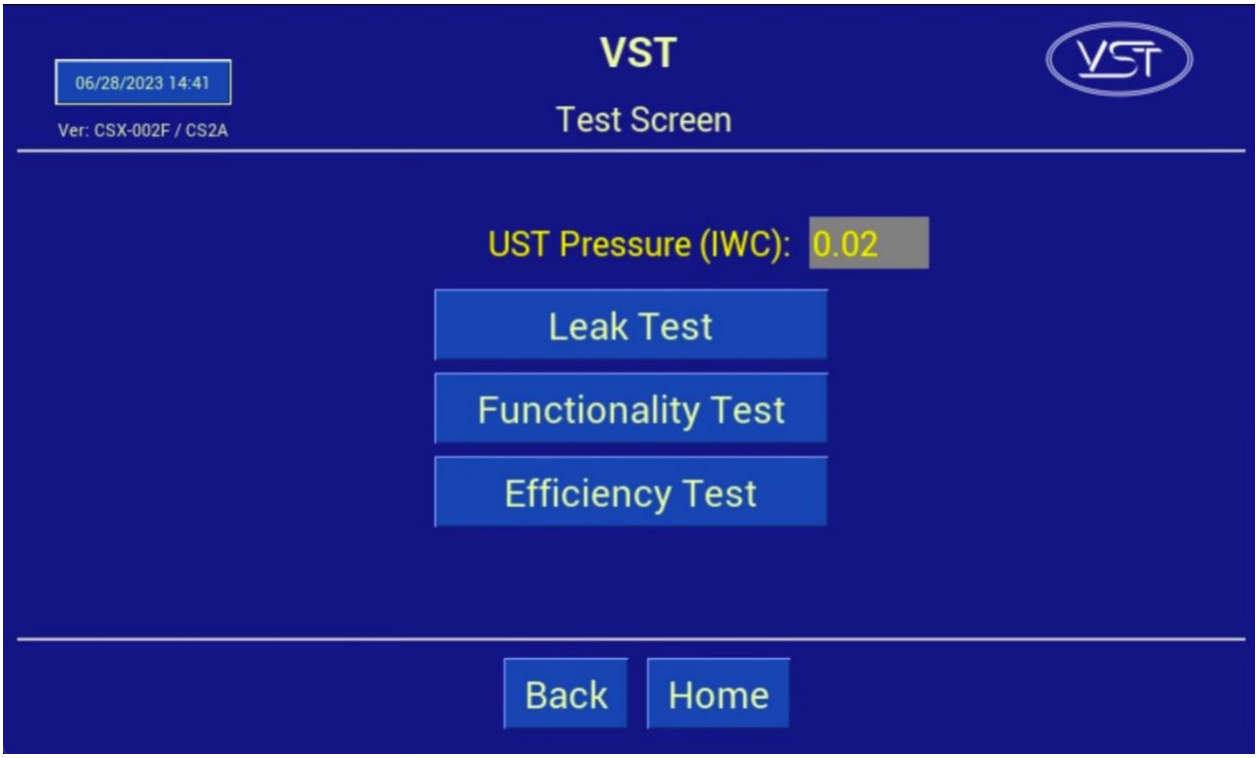

Figure 8-18: Test Screen

Vacuum Pump Alarm: Troubleshooting Steps, continued…

Steps	Procedures

3. Check to see if the Vacuum Pump/motor rotates freely.

- Physically check the Vacuum Pump to make sure the pump, motor, and drive couplings are functioning correctly.

a) Turn off the GREEN MACHINE breaker in the main electrical distribution panel.

b) Use Lockout/Tagout Safety procedure.

c) Remove the cover on the GREEN MACHINE.

d) Remove the fan guards over the Vacuum Pump / motor drive coupling.

e) Turn the motor/Vacuum Pump by hand to see if it is seized (cannot rotate). If you cannot turn the shaft between the pump and the motor, loosen the set screws on the motor side of the rubber flange sleeve and slide the coupling towards the motor.

f) Turn both the motor and Vacuum Pump sides of the shaft.

g) If the Vacuum Pump is seized, REPLACE THE VACUUM PUMP.

h) If the motor is seized, REPLACE THE VACUUM PUMP MOTOR.

i) If the drive coupling rubber flange sleeve is damaged or jammed, or if you replace either the Vacuum Pump or the Vacuum Pump motor, REPLACE THE RUBBER FLANGE SLEEVE.

j) See Chapter 9 for Replacement Parts Procedures.

k) Push the Clear Motor Alarm button so the alarm resets.

Vacuum Pump Alarm: Troubleshooting Steps, continued…

Steps	Procedures

4. **Check the Vacuum Pump wiring circuit inside the VST Control Panel. See Figure 8-20.**
   - Physically check the Vacuum Pump wiring connections at the Vacuum Pump junction box and at the VST Control Panel to make sure the connections are tight and wired correctly.

5. **Check the Control Valves**
   - Control Valve Operation Check – **See Figure 8-19.**
   - Check the operation of the control valves (A thru E) to see if any of the control valves have malfunctioned. A malfunctioned control valve may cause the Vacuum Pump motor to trip out on thermal overloads.
   - **Purpose of the Test**
     - The purpose of this test is to check to see if there is power at the control valves and the control valves are working properly.
     - This test is also used for the Leak Test.
   - **Preparation**
     - Make sure power is ON to the VST Control Panel.
     - At the Main Screen, push the Maintenance button to access the Password Screen.
     - Enter the password 878 to access the Maintenance Screen.
     - The GREEN MACHINE is now in the OFF mode and will not operate.
     - Push the Clear Motor Alarm button to reset the motor alarm. Without resetting the alarm, you will not be able to do the next step.

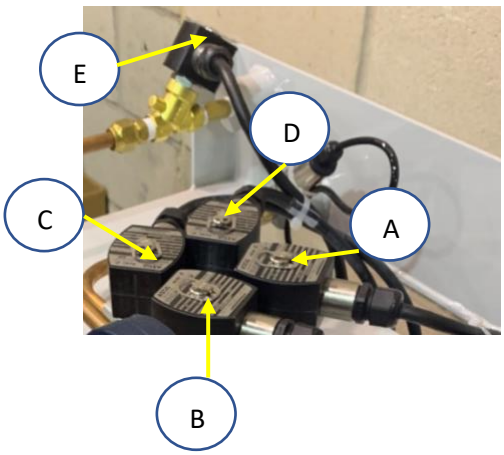

Figure 8-19: Control Valves

Vacuum Pump Alarm: Troubleshooting Steps, continued…

- **Procedure**
  1. To start the test, push the Run Tests button on the Maintenance Screen. **See Figures 8-17 and 8-18**. Then press the Leak Test button.

  2. Check for a magnetic field at the retaining clip in the center of the valve operator.
     a) Take a small non-magnetized screwdriver that will be drawn to the magnetic field, if one is present, and see if the screwdriver is drawn to the general location of the retainer clip.
     b) If a valve is not energized, the screwdriver will not be drawn to the retainer clip. **See Figure 8-21** for fuse location**.**
        - If valve A or C and fuse FU2 are not receiving 120 VAC power, check relay CR1 for damage and replace if necessary.
        - If valve A or C and fuse FU2 has 120 VAC power and is not energized, replace the bad valve core.
        - If valve B or D and fuse FU2 are not receiving 120 VAC power, check relay CR2 for damage and replace if necessary.
        - If valve B or D and fuse FU2 has 120 VAC power and is not energized, replace the bad valve core.
        - If valve E and fuse FU2 are not receiving 120 VAC power, check relay CR5 for damage and replace if necessary.
        - If valve E and fuse FU2 has 120 VAC power and is not energized, replace the bad core assembly.
     c) If the magnetic fields are present, listen for any of the control valves making a chattering sound. If chattering is heard, replace the valve core assembly.
     d) Replace the valve core using the Core Rebuilt Kit as shown in the Replacement Parts Section. See Chapter 9 for Replacement Parts Procedures.

  3. After checking and replacing the Control Valves, push the Home button to return to the Main Screen.

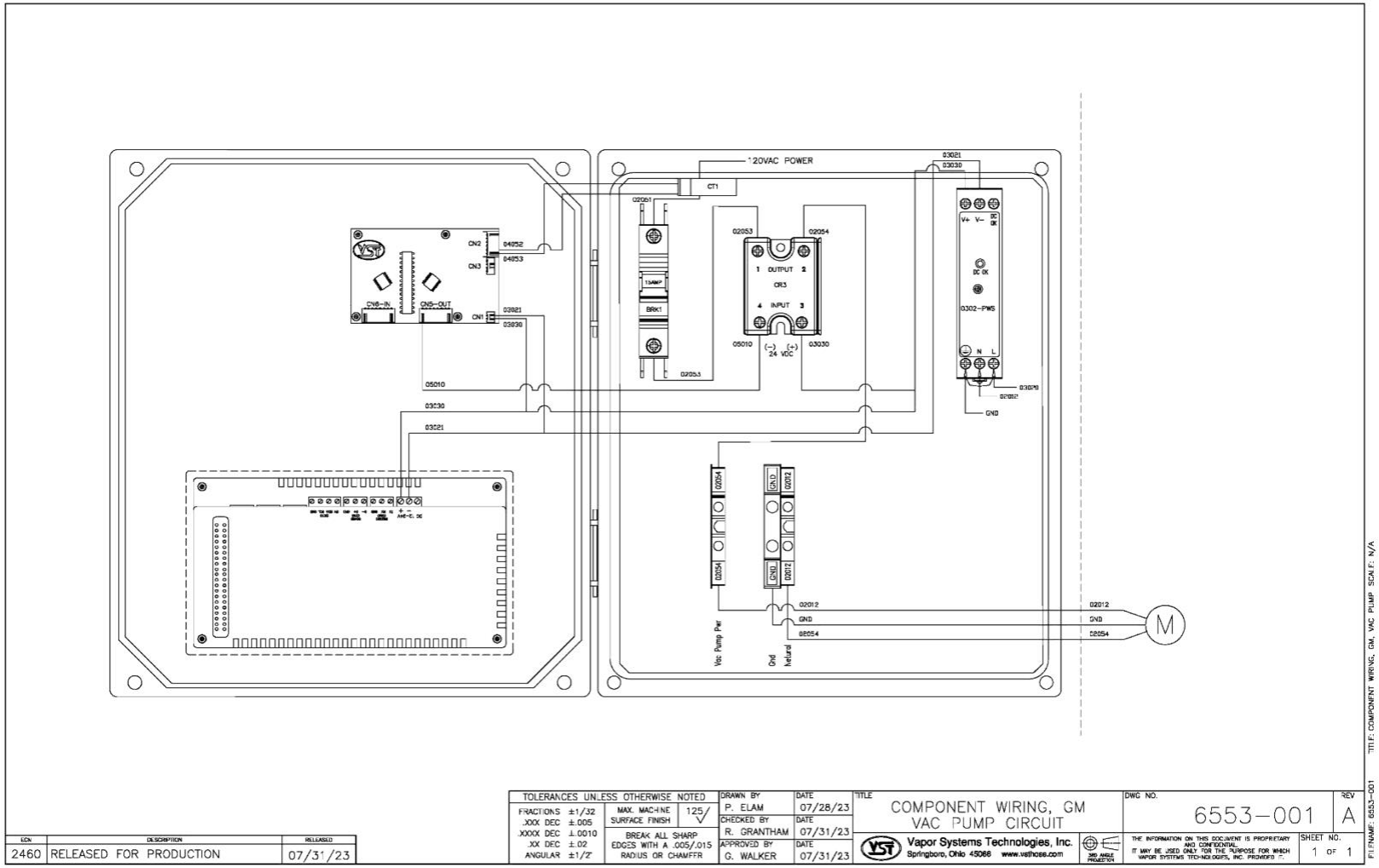

Figure 8-20: Vacuum Pump Circuit

(NOTE: Control Panel Component may not be in the position as shown depending on the Control Panel revision. Always refer to the wire numbers.)

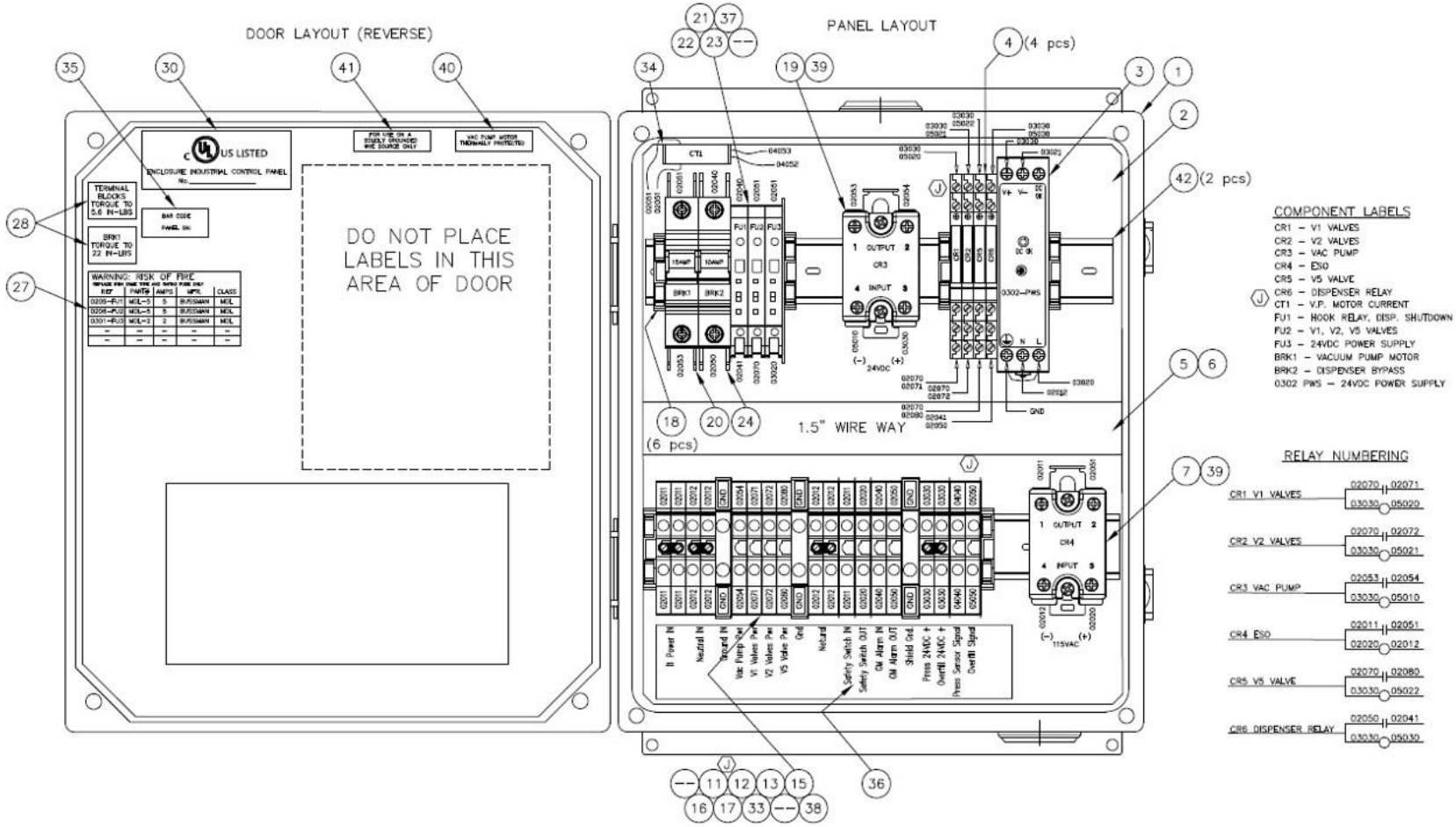

Figure 8-21: VST Control Panel Electrical Components

(NOTE: Control Panel Component may not be in the position as shown depending on the Control Panel revision. Always refer to the wire numbers.)