

TB286 (Rev1) – Troubleshooting the Drive Motor Voltage (VM) Supply

This document focuses on how to troubleshoot systems that are not receiving any drive power to the motor voltage terminals (or VM). (Seen in label 9 of figure 2 on the next page).

Signs that you might not have any motor supply voltage includes errors such as “410 X axis(1) position error”, “SV_STALL ERROR Reported”, “411 X axis(1) full power without motion.”, “Stall: job canceled”, etc as seen below in Figure 1.



Figure 1

(Continued on next page)

Explanation of Centroid systems

All Centroid systems have the same basic set-up as seen in the picture below:

1. **AC Power** Single phase, two phase, or three phase AC power enter the system.
2. **Rectifier** AC power enters a AC-to-DC converter known as a rectifier. Sometimes the rectifier is called the “Cap board” because it contains an extremely large reservoir capacitor.
3. **Contactor** The high voltage DC power goes through an E-stop contactor. The E-stop contactor can stop the machine by removing the motor voltage from the drive in the event of an emergency or fault. The E-stop contactor is normally open, requiring power to close the contactor.
4. **E-Stop** During an emergency, an E-stop switch is used by the operator to stop the machine. A double pole single throw (DPST) twist to release E-Stop switch is used. The switch is wired so that it is normally closed when the machine is in it's operational state. That way if a wire brakes, the E-stop is tripped.
5. **E-Stop Input** All systems with a PLC will have a E-stop input to tell the software when E-stop has been pressed. On newer systems this is input 11, on older systems this is input 1.
6. **Fault Relay** All Centroid systems have at least one fault relay. If the drive or PLC detects a fault, it is able to stop the machine by removing power from the motors. Depending on your system the fault relays are located on the drive (drive fault relays), PLC (PLC fault relays), or both. If you have multiple products with a fault relay, ALL fault relays are wired in series allowing ANY device with a fault relay to stop the machine.
7. **Contactor Power Supply** The contactor power supply provides the contactor with power. Usually in the form of a step-down AC transformer. 24VAC typical.
8. **DC Input Power Supply** DC Input Power Supply. An external power supply is needed to power the I/O on the PLC. This power supply can be 5, 12, or 24.
9. **VM** The high voltage enters the drive though the motor voltage input or VM. This includes the VM+ and VM- terminals. On some systems VM- may be just labeled “GND” or “Ground”.

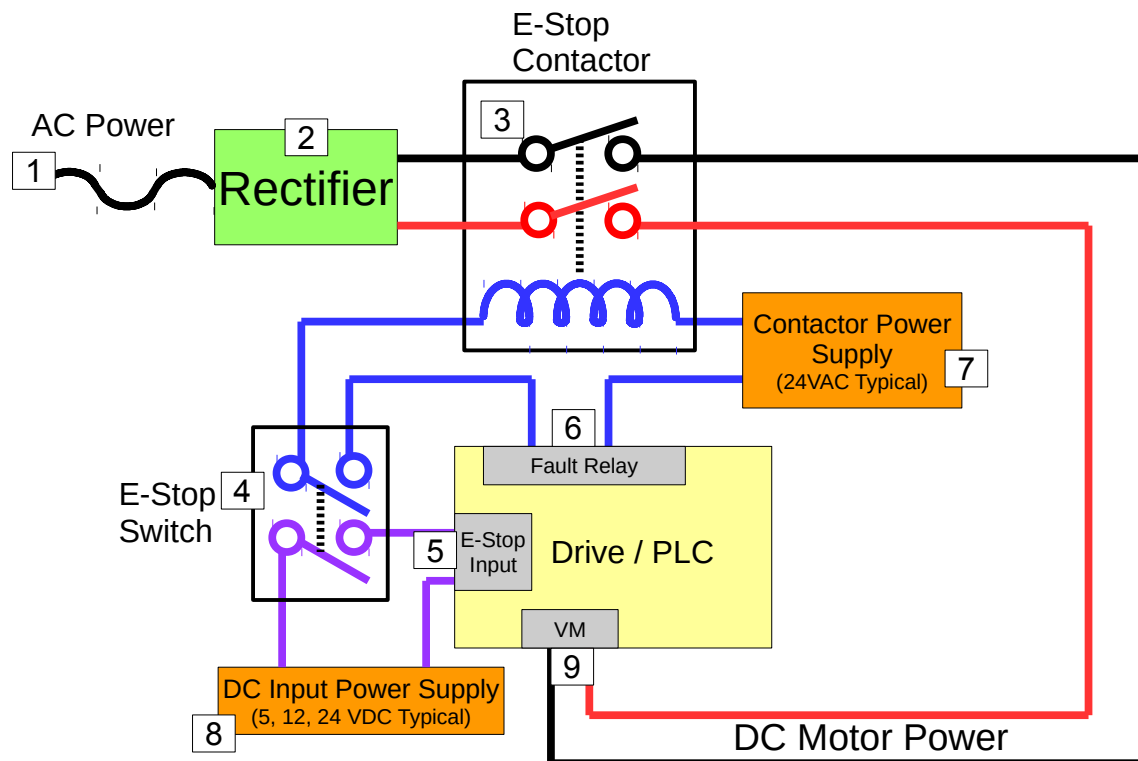


Figure 2

Numbered boxes correspond to the diagram on the previous page.

VM Troubleshooting Flow Chart

Start Here

Check for blown fuses before starting!
Start the control software, then follow this flow chart.

