

T-01b: Troubleshoot Drive (DC Full Range)

SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Electrical hazard exists when working inside electrical cabinets.

EQUIPMENT

- DVM
- basic Electrician hand tools

RESOURCES

- GE Valutrol Drive Alignment Procedure

Troubleshoot Drive (DC Full Range)

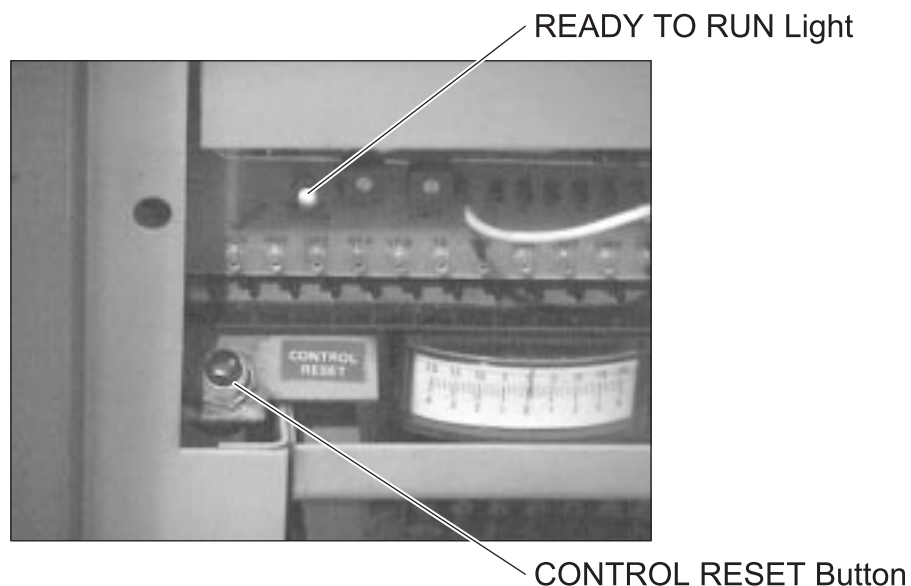
1. Communicate with the Operator about the spindle problem.

- Eliminate other possible causes for the problem (such as a bound spindle or bad motor) before troubleshooting the drive.

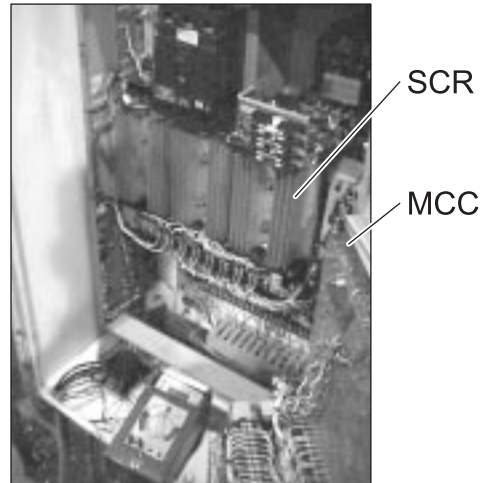
2. Perform the Electrician procedure G-02: Troubleshoot DC Wound Field Motor.

3. Check the READY TO RUN light.

- Press the Control Reset button if the light is not lit.



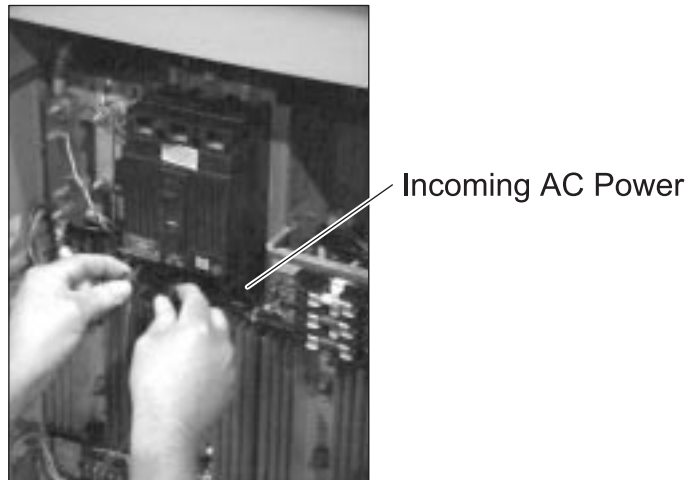
- Check for shorted SCRs if the light continues to drop out.



- Replace the Main Control Card (MCC) if the SCRs are operating correctly and the READY TO RUN light fails to stay lit.

4. Check incoming power.

- Check all three AC phases, expecting to read 480 VAC.

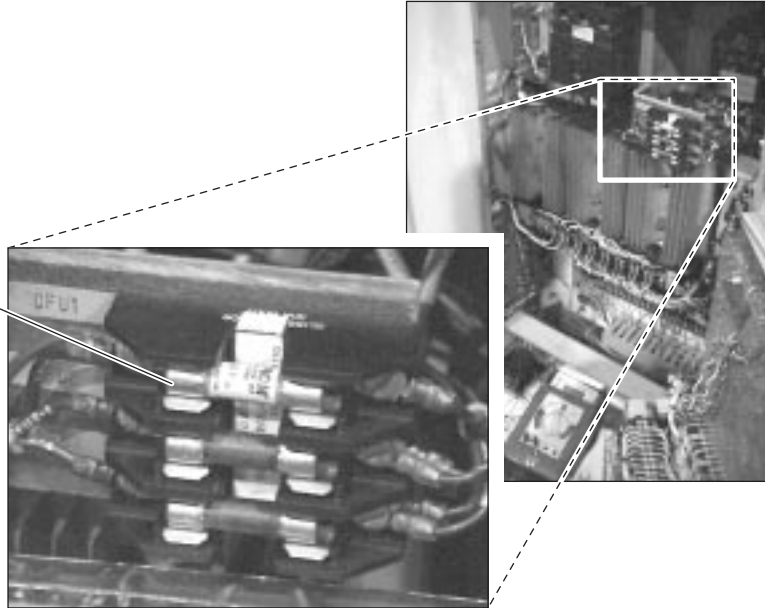


5. Check the control voltage fuses.

- Check points CFU1, CFU2, and CFU3, expecting to read 480 VAC.



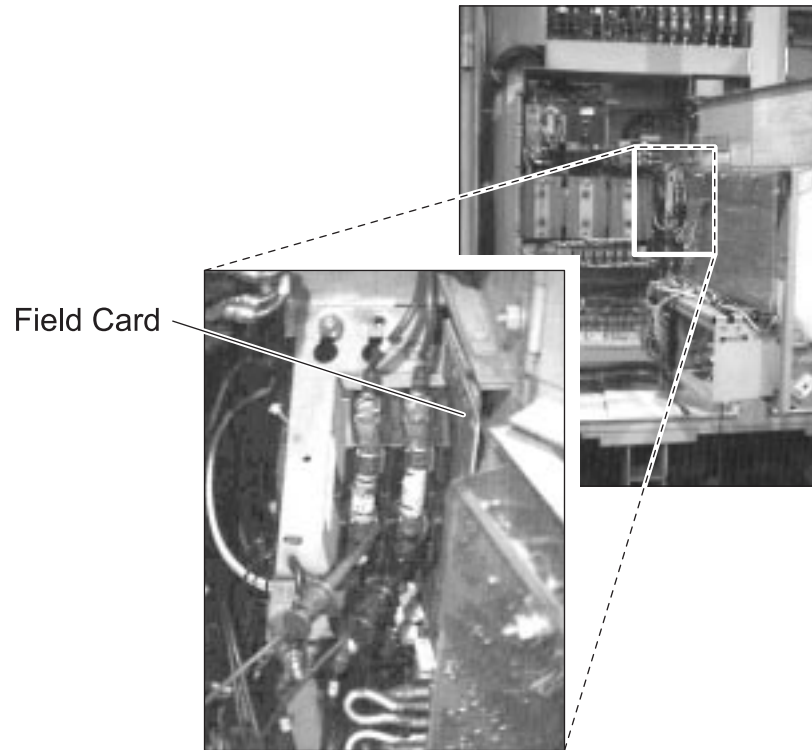
Control Voltage Fuses

**6. Check the DC field voltage and current.**

DC Field Fuses

- Voltage ranges vary depending upon drive setup and motor temperature.
- Check the motor nameplate for proper field current.

7. If the DC wound field readings are correct, replace the field card.



8. Check the power supply voltage.

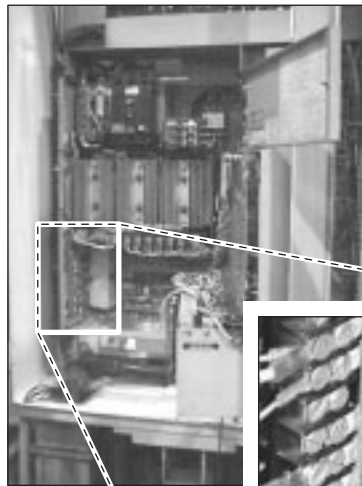
- Check the DC voltage level and AC ripple voltage between the ground test point (COM) and the +20V test point.

+20V Test Point COM Test Point



- Check the DC voltage level and AC ripple voltage between the ground test point (COM) and the -20V test point.
- Check the voltage between the ground test point (COM) and the +30V test point. This test point is unregulated and can run +30 percent higher than the expected voltage.
- Check fuses and wiring to any test points not measuring the expected voltage.

9. **If the expected voltage is not found on any point, and the fuses and wiring all check out okay, replace the power supply board.**



Power Supply Board