U-01e: Troubleshoot Feedback Device (Tachometer)

SAFETY FIRST

- ☐ Follow all Caterpillar facility safety standards when performing this task.

EQUIPMENT

- ☐ basic Electrician hand tools
- ☐ DVM

RESOURCES

- ☐ tachometer manufacturer's specifications
- ☐ machine print
- ☐ drive manufacturer's specifications

Troubleshoot Feedback Device (Tachometer)

1. Communicate with the Operator to identify the symptoms.

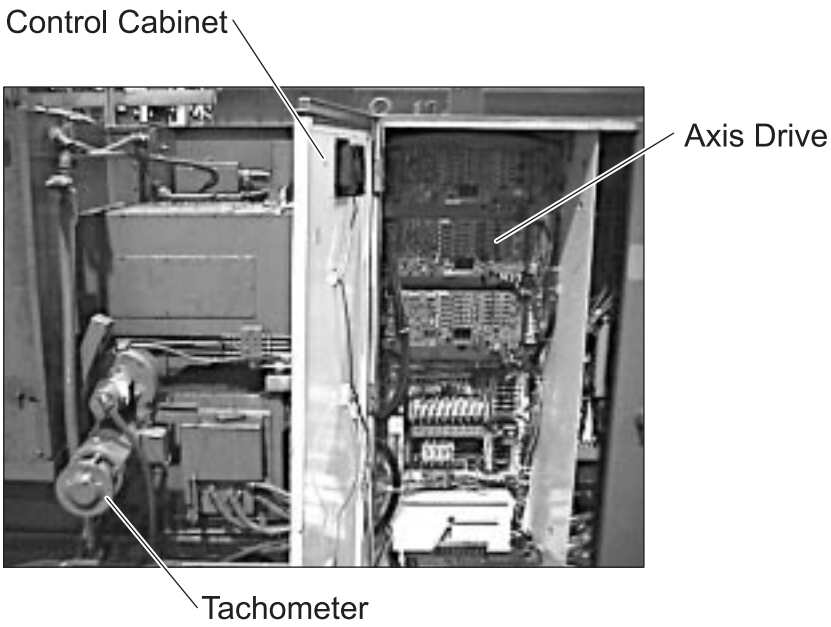
- ☐ Symptoms for a tachometer problem include: motor runaway, jerky motor operation, an axis motor not feeding smoothly, or a spindle motor running but no rpm displaying on the control panel.

2. Check for loose or broken couplings on externally mounted tachometers.

- ☐ Repair as required, then go to step 3, if necessary.

3. Lockout/tagout the machine.

4. Check the resistance of the tachometer at the drive.



- ☐ Identify the tachometer wires on the machine print.
- ☐ Measure resistance of the tachometer wires. Resistance should read nearly zero (0) to 80 ohms on the typical tachometer. Infinite resistance readings indicate a problem in the tachometer or the wires feeding the tachometer.
- ☐ Perform step 5 if the tachometer readings indicate open.

- ☐ Remove the tachometer cover, disconnect the wires, and read resistance of the tachometer.

Tachometer Cover Removal

- ☐ Troubleshoot, repair, and / or replace the wiring as necessary, if resistance readings are correct at the tachometer.

5. Check the resistance of the tachometer while slowly rotating the motor shaft.

- ☐ Perform step 7 if the readings indicate open.
- ☐ Perform step 6 if the readings indicate normal or high readings.

6. Inspect the tachometer components.

- ☐ Visually inspect the components for damage or excessive wear.

Note: AC tachometers consist of an armature and stator. DC tachometers consist of an armature, brushes, and a magnet.

- ☐ Perform step 7 if any components are worn.

7. Follow the procedure to replace the tachometer.

8. Remove lockout / tagout and restore power.

9. Ask the Operator to cycle the machine and monitor for proper tachometer operation.