U-01a: Troubleshoot Feedback Device (Farrand Scale)

SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Although the machine is not powered up during the replacement and continuity check steps of the procedure, the machine is powered up during the alignment process. Remain clear of moving components and pinch points.
- Exercise caution when working in the control cabinet because high voltage is present.

EQUIPMENT

- open/box 7/16" wrench
- screwdriver
- analog Triplett meter
- DVM
- needle nose pliers
- scale alignment tool
- scale

RESOURCES

- electrical print

Troubleshoot Feedback Device (Farrand Scale)

Note: This troubleshooting procedure was performed on the Lucas, MD 3249.

1. Identify the axis causing the fault message.

- Access the fault screen to identify the axis that has stopped providing feedback information. Ask the Operator for help, if needed.
- Loss of feedback usually results from an open circuit or ground problem in the slider or scales.

2. Obtain the electrical print for the machine.

- Identify the linear scale system components, and trace the wiring connections on the print.

3. Check the continuity from the inductosyn preamp to the scales.

- Power down the machine.
- Remove the scale cover.
- Disconnect the two wires leading to the scales at the inductosyn preamp box.
- Check continuity through the entire scale system at the two disconnected preamp wires.
- If a continuity problem is identified, go to step 4.
- If no continuity problem exists, go to step 6.

4. Test each scale.

- Start with the scale that the slider is centered on when the axis is on the reference limit switch.

Caution: Exercise care when removing the wires from the scale terminals. Repair may be difficult if a connector or wire breaks. There is little slack in the wiring available for repairing a break. The connection at the scale is tight.

- When you find a bad scale (fails the individual continuity test), disconnect the wires. Using needle nose pliers, grasp the wire connector and gently rotate the connector clockwise or counterclockwise until you feel the connector break loose from the scale.
- Pull the connector out of the scale, and perform the continuity check.

5. If the scale fails the continuity check, remove the scale and set the mounting screws aside.

6. Check the system to ground.

- Replace the scale segments that are faulty, if the scale is grounded.
- Check between the scale connections and ground using an analog Triplett meter set for the 1K ohms scale. A ground can result from coolant corroding the scale's protective covering or from dirt and debris buildup.
- Disconnect each scale before checking for ground problems. Scales must be checked separately.