

U-01b: Troubleshoot Feedback Device (Resolver)

SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Rotating machine hazard and electrical hazard exist anytime a machine is worked on when power is not locked out and tagged.

EQUIPMENT

- oscilloscope
- DVM

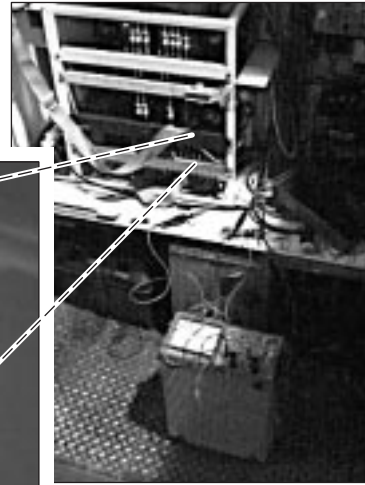
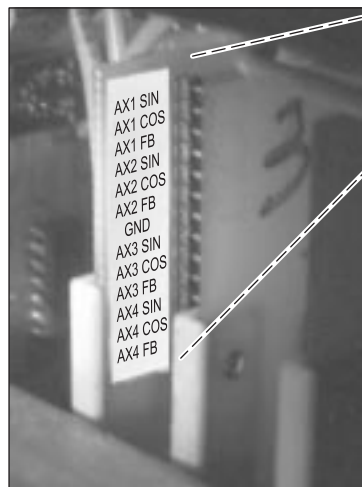
RESOURCES

- machine setup manual
- resolver manufacturer's manual
- machine electrical print with detail of the resolver

Note: The data in this task is specific to the Sundstrand. Troubleshooting procedures for resolvers may vary on other machines.

Troubleshoot Feedback Device (Resolver)

1. **Communicate with the Operator to identify the problem.**
2. **Determine the axis experiencing feedback problems.**

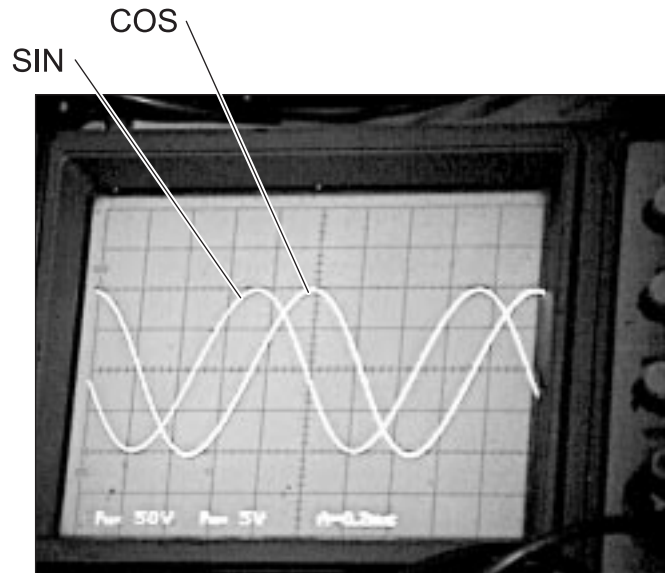
3. Locate the test points card for the resolver.**4. Set up the scope to measure the SIN wave.**

- Using the print, check for the displayed SIN waveform at the appropriate test points.
- Perform step 7 if the SIN wave is not correctly displayed.

5. Set up the scope to measure the COS wave using a second scope probe.

- Using the print, check for the displayed COS waveform at the appropriate test points.

- Phase shift between SIN and COS must be exactly 90 degrees.

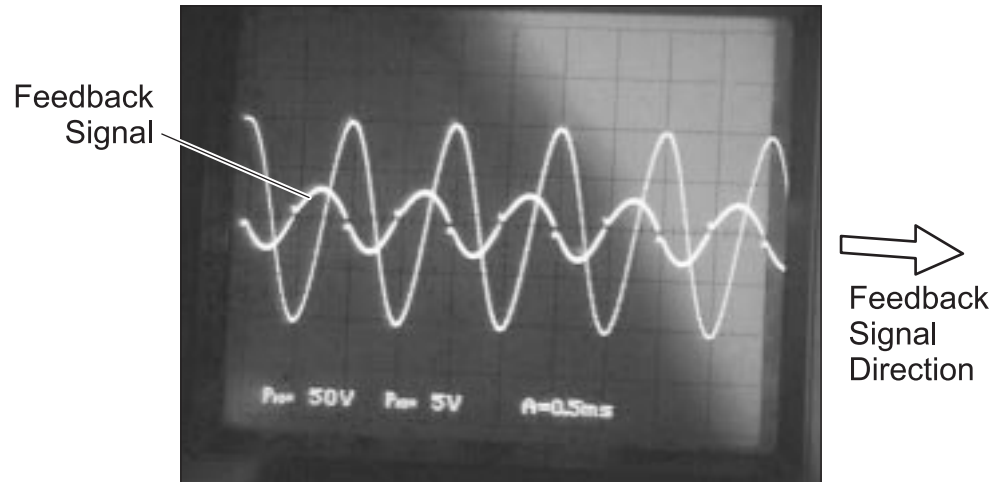


- SIN and COS peak-to-peak voltage should be equal.
- Perform step 7 if the waveforms are not correctly displayed.

6. Set up the scope to measure the Feedback waves for the affected axis.

- Using the print, check between each test point for the Feedback wave.
- Turn on the Axis.
- Turn the feed rate switch to the lowest setting.
- Turn the axis jog rate to the slowest setting.
- Move the axis while watching the scope.

- If the axis moves and the signal on the scope does not move while synched on SIN or COS, check and tighten the coupling on the resolver.



- During axis motion, feedback waveform amplitude should not vary.
- Perform step 7 if no wave is read.

7. Remove the endcap from the resolver and check with the scope.



- If the resolver is bad, the SIN and COS waveforms on the scope will read correctly when the cap is removed.

8. Perform the task U-02b: Replace Feedback Device (Resolver) if the resolver tests bad.

9. **Remove all test equipment.**
 - Make sure to remove the scope probes.
10. **Set the home position.**
11. **Cycle the machine to verify proper operation.**

