

O-05: PM Press and Control

SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Working around a forge press is extremely hazardous. Presses include many rotating and moving components energized by line voltage and air pressure. Forged parts are hot. The press environment is noisy. Problems in the control system can cause the press to trip unexpectedly. Use extreme caution.

EQUIPMENT

Forge press equipped with:

- crankshaft resolver
- transfer bar resolver
- controls operated by an Allen Bradley PLC-5

RESOURCES

- Press Operator
- PM checkoff list

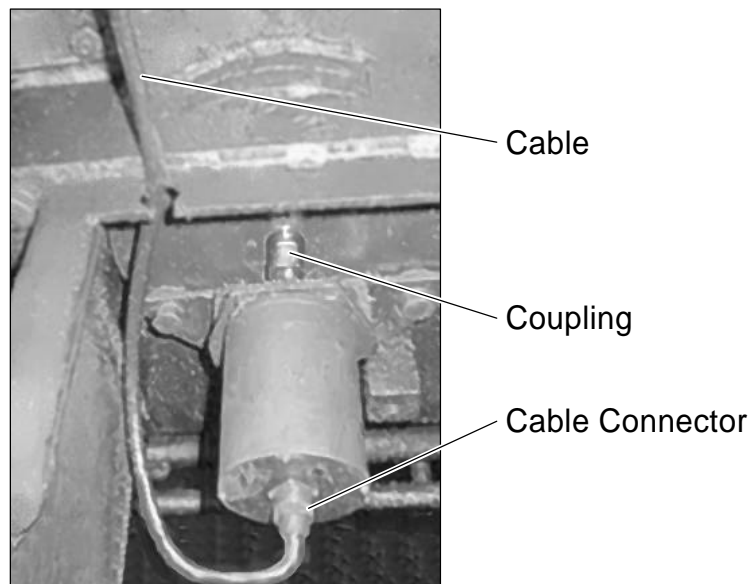


PM Press and Control

1. Inspect the transfer bar resolver for:

- loose mounting.
- loose coupling.
- loose cable connector.
- chafed, overheated, or damaged cable.

See the figure below.

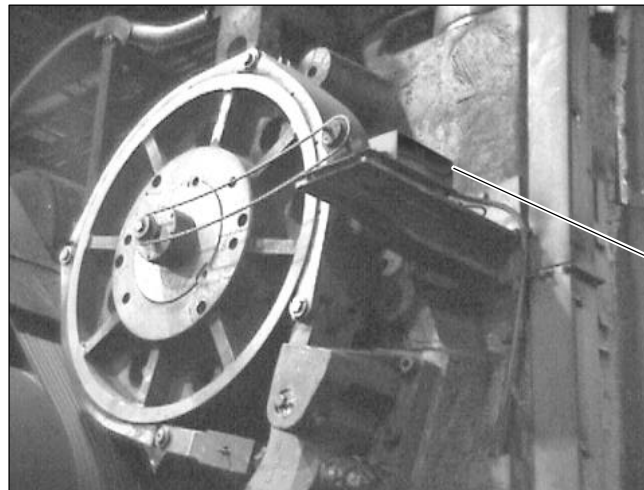


Transfer Bar Resolver

2. Check off the above items as acceptable, make needed repairs, or report needed repairs to the appropriate personnel.

3. Using a ladder or manlift and harness, inspect the crankshaft resolver for:
- loose mounting.
 - loose coupling.
 - loose cable connector.
 - chafed, overheated, or damaged cable.
 - excessive slack in the chain drive (open the chain drive cover, if necessary).

See the figure below.



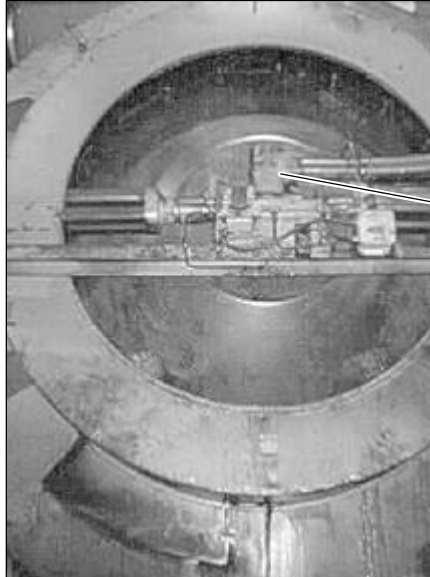
Crankshaft Resolver

Crankshaft Resolver

4. Check off the above items as acceptable, make needed repairs, or report needed repairs to the appropriate personnel.

5. Inspect the clutch air valve for:
- hot solenoid.
 - loose cable connector.
 - chafed, overheated, or damaged cable.

See the figure below.

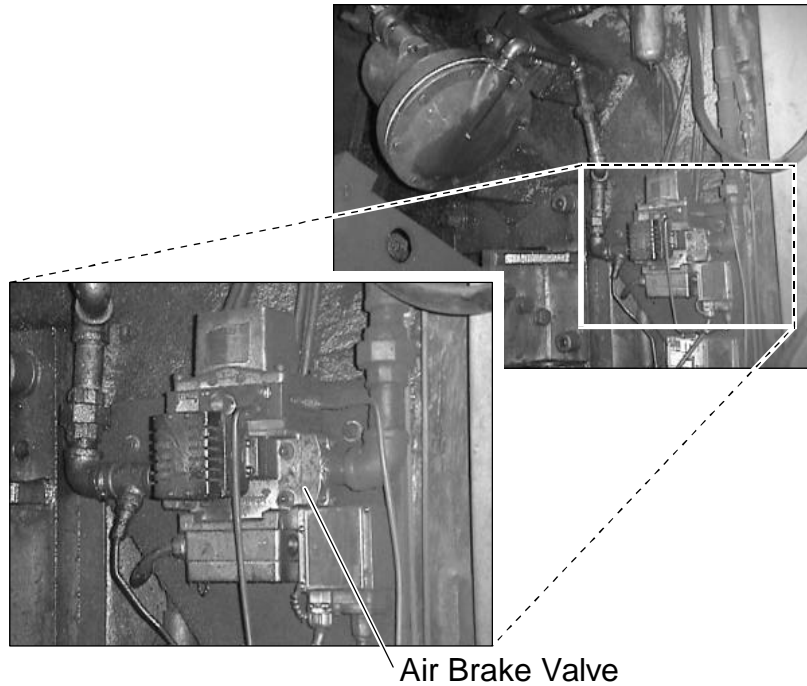


Air Valve

Clutch Air Valve

6. Check off the above items as acceptable, make needed repairs, or report needed repairs to the appropriate personnel.

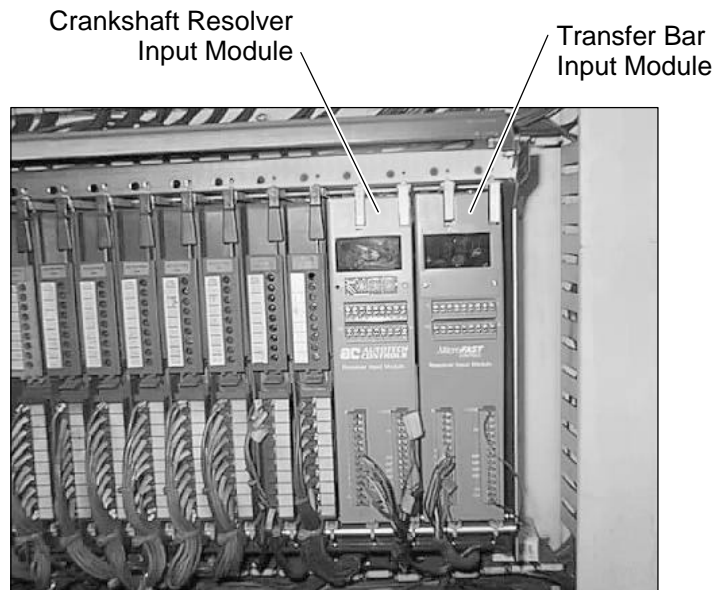
7. Inspect the brake air valve for:
- hot solenoid.
 - loose cable connector.
 - chafed, overheated, or damaged cable.



8. Check off the above items as acceptable, make needed repairs, or report needed repairs to the appropriate personnel.

9. Inspect the transfer bar resolver input module for:
- secure mounting in the PLC rack.
 - display readout that reliably corresponds to the transfer bar motion.
 - display readout of 0 to +10 degrees when the press ram trips.

See the figure below.



Resolver Input Modules

10. Check off the above items as acceptable, make needed repairs, or report needed repairs to the appropriate personnel.
11. Inspect the crankshaft resolver input module for:
- secure mounting in the PLC rack.
 - display readout that reliably corresponds to the transfer bar motion.
 - display readout 10 +/- 5 degrees when the press ram stops.
12. Check off the above items as acceptable, make needed repairs, or report needed repairs to the appropriate personnel.



13. Inspect the control panel for:
 - loose rack-mounted modules or other components.
 - chafed, unsupported, pinched, overheated, or otherwise damaged cables.
 - loose connectors.
14. Check off the above items as acceptable, make needed repairs, or report needed repairs to the appropriate personnel.
15. Observe press operation carefully, checking that the:
 - press ram trips when the transfer bar has positioned the billet correctly.
 - press ram rises promptly.
 - press ram stops at or slightly past center.
 - billet is forged correctly.
16. Check off the above items, make needed corrections, such as retiming the clutch or brake. Refer to the procedures for timing brakes and timing clutches, or report needed corrections.