

P-05: Troubleshoot Steam System

SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Heat hazard exists when working with steam. Temperatures range over 200°F. Wear gloves and long sleeves to protect your skin from burning.

EQUIPMENT

- basic Maintenance Mechanic hand tools
- pyrometer or heat sensing gun

RESOURCES

- none

Troubleshoot Steam System

1. Identify the steam system problem symptoms.

- Read the job ticket, if available.
- Talk to the Operator about problems and symptoms.

2. Check the pipes for heat.

Warning: Steam temperatures can range over 200°F. Be careful when touching hot pipes.

- Quickly touch a section of pipe for heat, or use a pyrometer or heat sensing gun.
- Compare temperatures between two locations to verify a consistent temperature. This method will help identify an area that is not being heated by steam.

3. Check the process controller.

- Verify that there is input air to the controller.
- Feel the input line to verify steam presence.



Process Controller



Input Line

4. Check the steam valve operation.

- Move the temperature control to actuate the process controller.

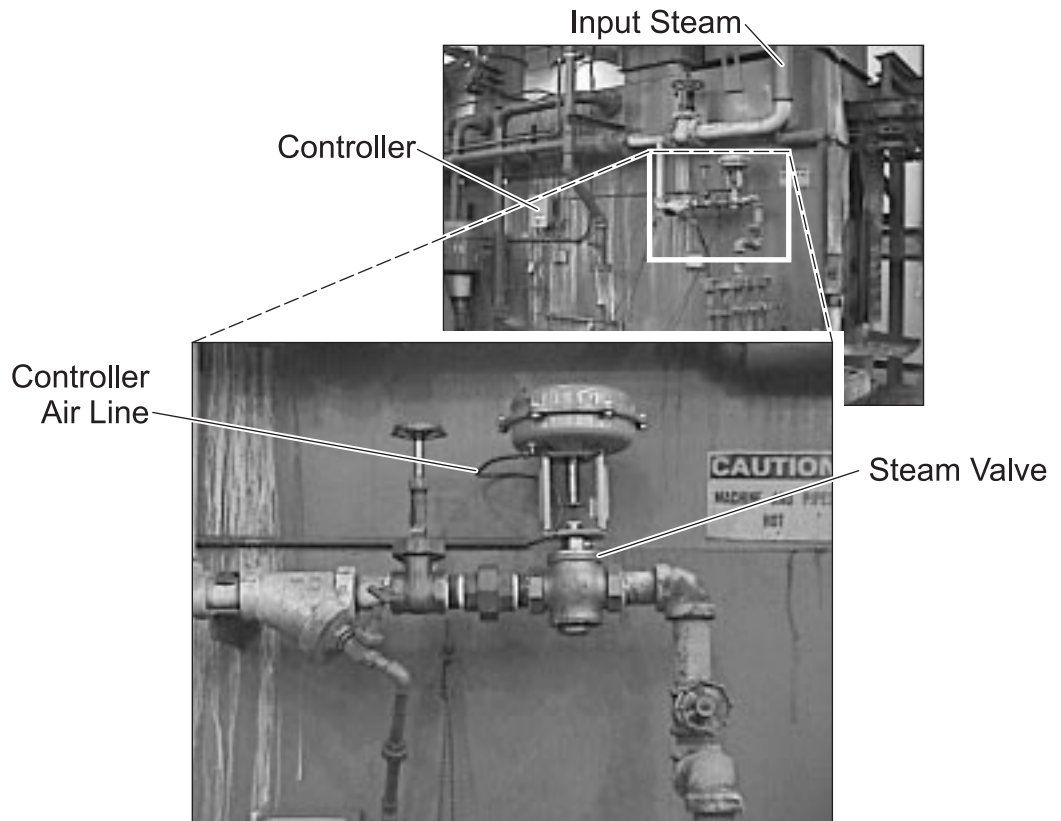
Process Controller



Temperature Control

Steam Valve Manipulation with the Temperature Controller

- Open the controller and verify that the temperature control screws have not vibrated loose if the controller fails to operate.
- Observe the steam valve while the controller actuates.



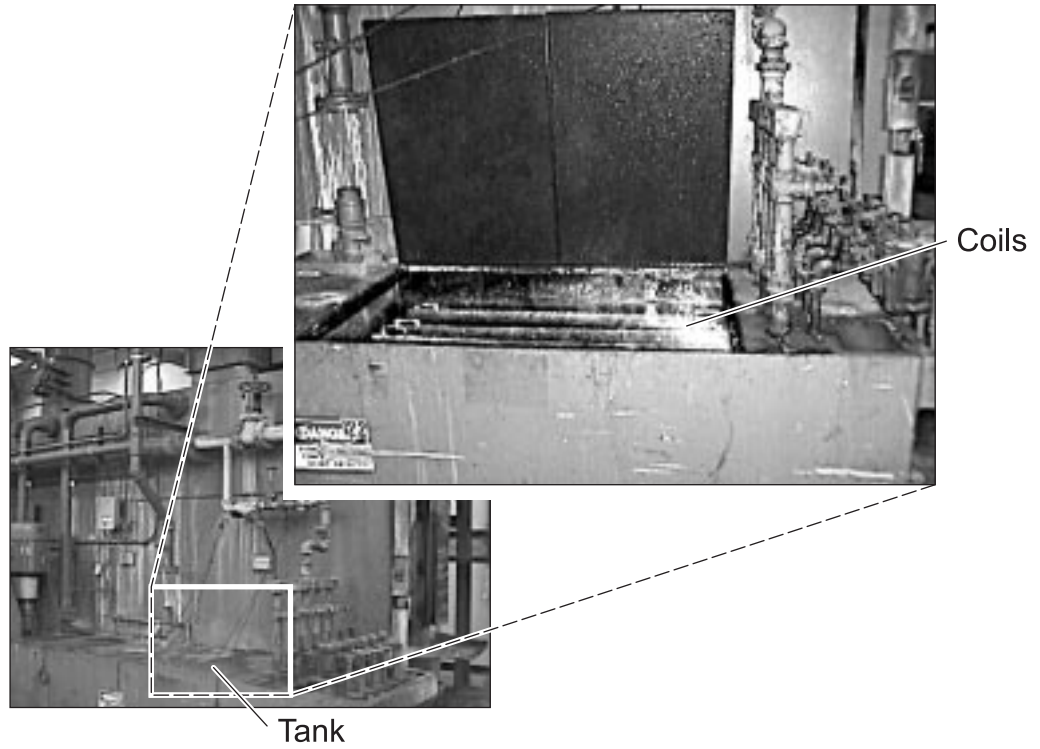
- The controller air must open the steam valve.
- Inspect the steam valve if the controller fails to open the valve.

5. Inspect the steam valve.

- Open the input line from the controller to the steam valve.
- Verify that there is air from the controller air line.
- Replace the controller air line if no air is present.
- Open the steam valve and inspect the diaphragm on the valve for leaks.
- Check the diaphragm as necessary.
- Inspect the steam valve mechanical components for proper valve seating.

6. Check the coil for leaks.

- Open the tank and observe the coils, if possible. Look for leaks in the coil.

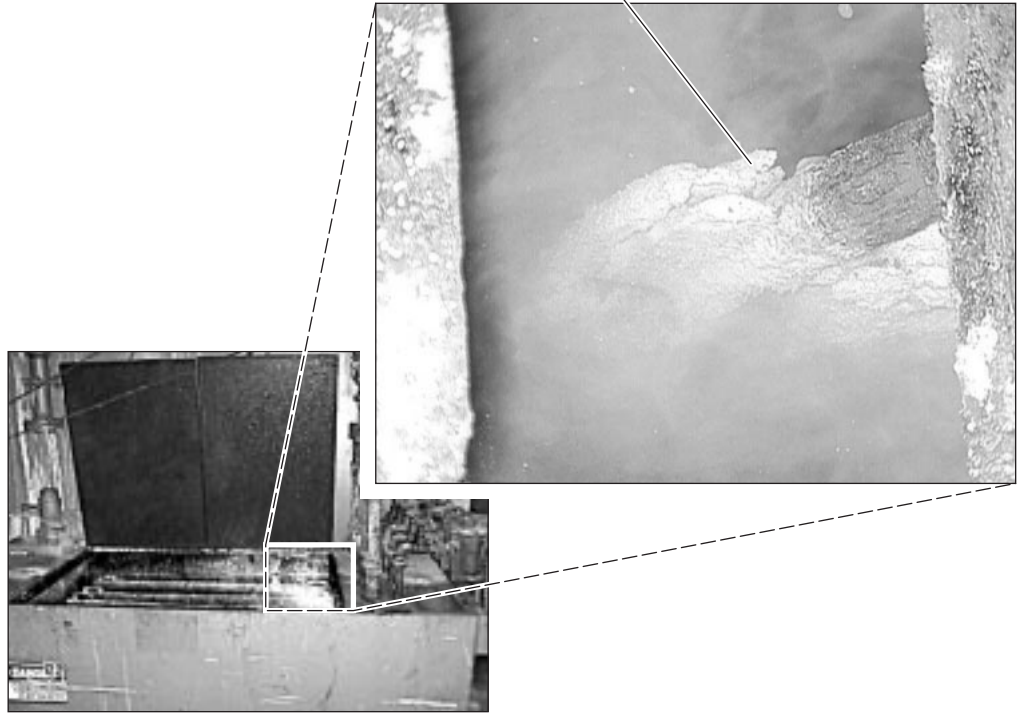


7. Check the coil for insulation buildup.

- Look for corrosion buildup on the coils.



Corrosion Buildup on Coil

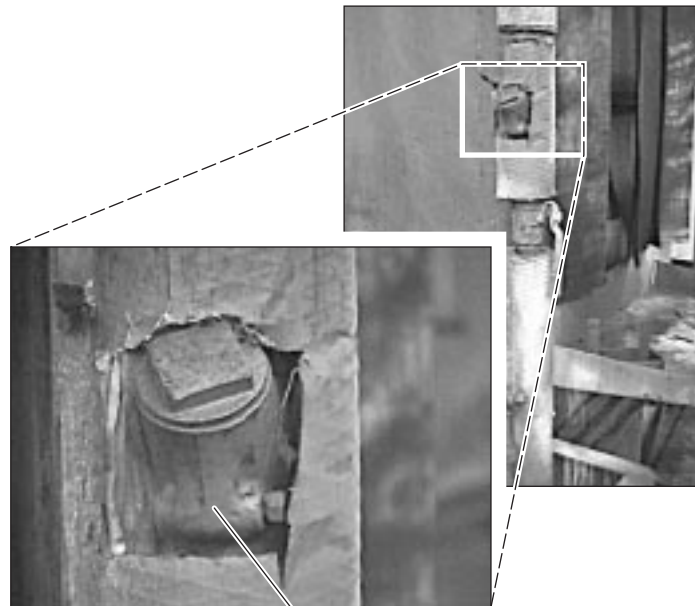


8. Check the steam trap.

- Verify that the steam trap is operating according to the manufacturer's specifications.

9. Inspect the check valve.

- Verify that the check valve is operating according to the manufacturer's specifications.



Check Valve

10. **Inspect the thermocouple if the system is functioning, but the heat level is not accurate.**



Thermocouple



- s11. **Clean up the work area.**