

AF-01: Change and Set Counterbalance Valve

SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Moving equipment hazard exists when blocking the head.

EQUIPMENT

- Allen wrench
- Adjustable wrench
- basic Maintenance Mechanic hand tools

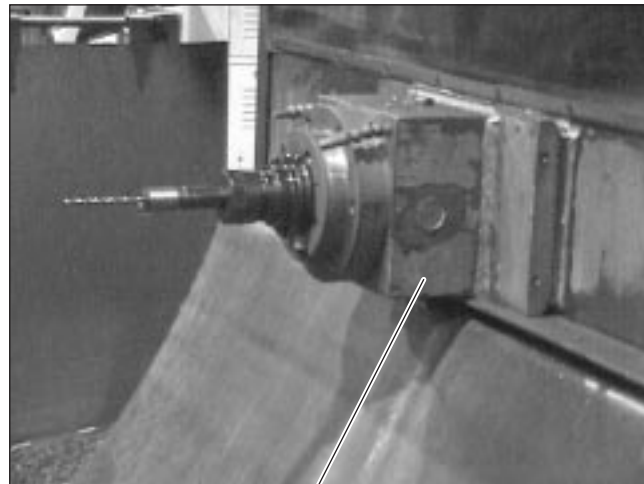
RESOURCES

- Sundstrand Operating Manual
- Experienced Maintenance Personnel

Change Counterbalance Valve (Sundstrand Series 60)

1. **Block the head.**

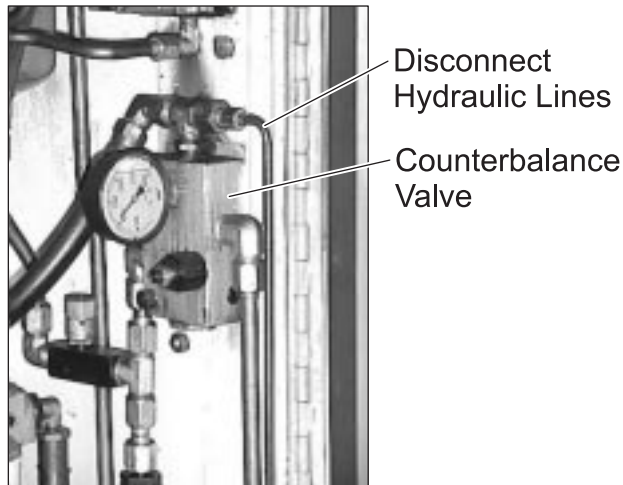
- Lower the head to rest on a block.



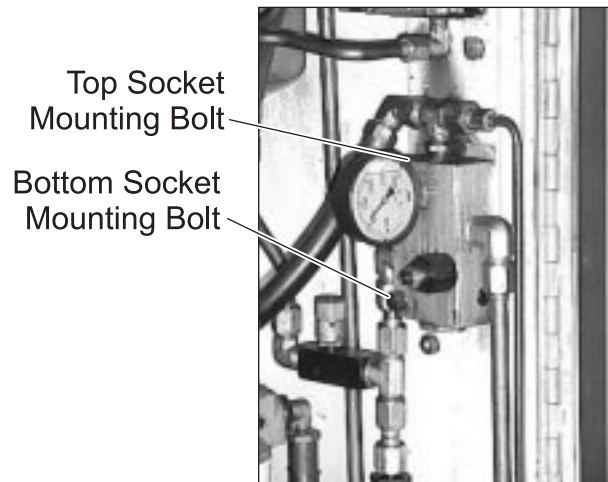
Block the Head to Prevent Injury

2. **Perform a lockout/tagout on the machine.**

- Make sure the machine meets the ZMS standards.

3. Disconnect the hydraulic lines from the counterbalance valve.**4. Remove the counterbalance valve from the cabinet.**

- Remove both socket mounting bolts.

**5. Replace the counterbalance valve.**

- Make sure the replacement valve meets the specifications of the valve you are replacing.

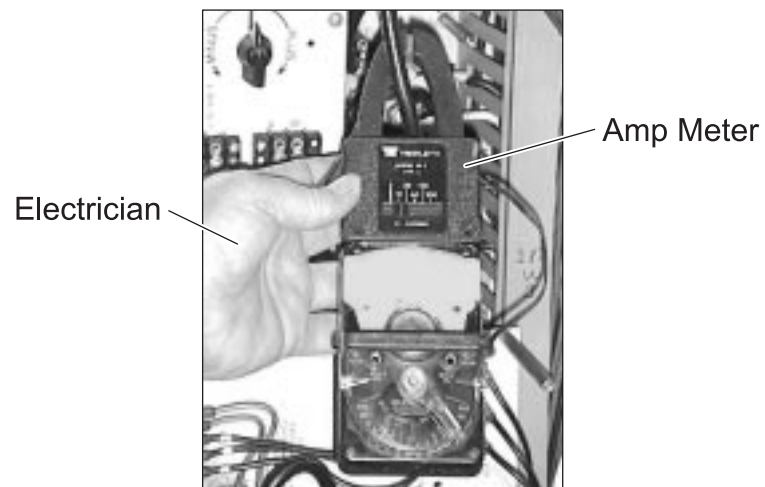
6. Wrench-tighten the bolts and hydraulic lines to the new valve.

7. Remove lockout/tagout and restore power.

- Make sure there are no leaks from the hydraulic lines.

Set Counterbalance Valve**8. Ask an Electrician to check the amperage draw of the Y-axis motor.**

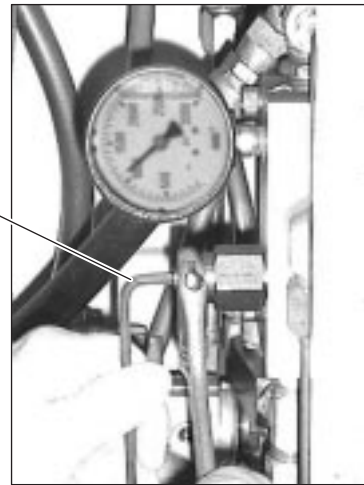
- Current readings must show even amperage when raising and lowering the head.



9. **Adjust the counterbalance valve if the current readings are out of balance.**
- Use an adjustable wrench and correctly sized Allen wrench.
 - Turn the counterbalance adjustment clockwise to increase the pressure and counterclockwise to release the pressure.



Turn Allen Wrench
Clockwise to Increase,
or Counterclockwise
to Decrease Pressure



10. **Ask the Electrician to verify the current draw of the Y-axis motor again.**
11. **Continue adjusting the counterbalance valve until the current draw is within the expected range when raising and lowering the head.**