

R-01: Adjust Machine Shocks

SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- A machine must be locked out while installing a machine shock.

EQUIPMENT

- machine shock test fixture
- Maintenance Mechanic hand tools
- spanner wrench
- Allen wrench

RESOURCES

- Machine Operator

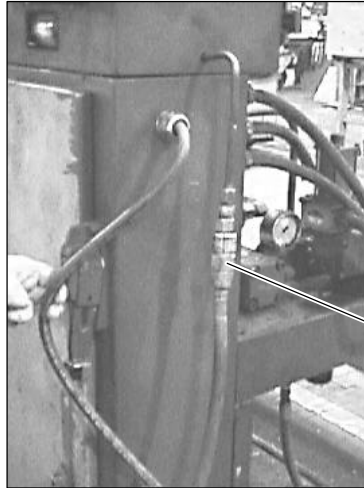
Adjust Machine Shocks

Part A: Testing a rebuilt machine shock for satisfactory operation and adjustment capability.

1. Mount the machine shock in the test fixture.
 - Bolt the machine shock mounting flange securely to the test fixture.
 - Connect the hydraulic hose to the machine shock and tighten the connections.

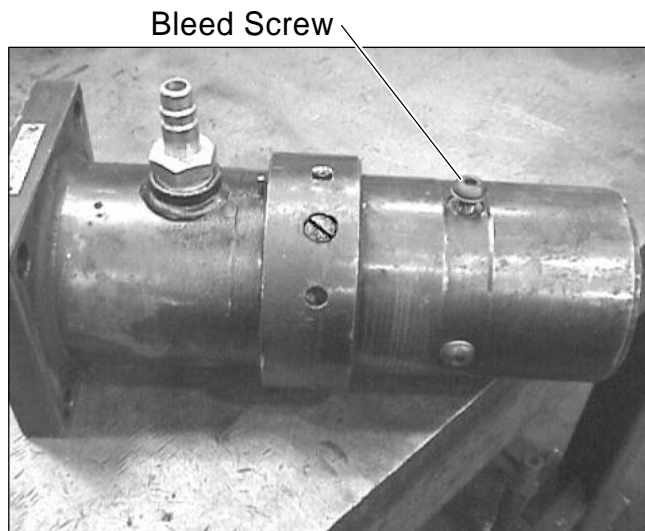
2. Fill the machine shock with oil.

- Connect the air source to the machine.



External Air Source

- Loosen the bleed screw that is on top of the machine shock body, as shown below.

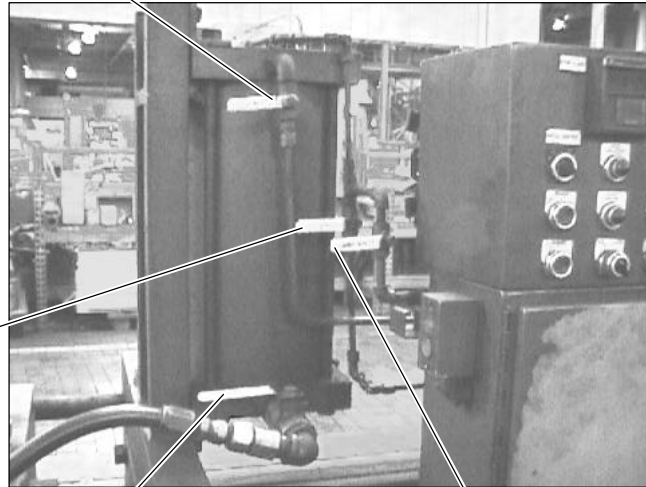


- Open the air supply valve to the pressure reservoir.
- Close the air bleed valve.



Oil Fill Valve for Reservoir

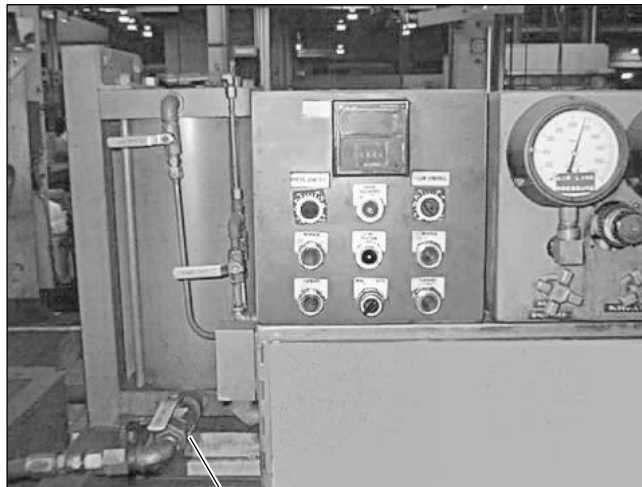
Air Supply Valve



Oil Supply Valve

Air Bleed Valve

- Wait for the air pressure gauge on the machine to stabilize.
- Apply low air pressure to the reservoir cylinder.
- Open the oil supply valve slowly to allow oil to run into the machine shock and air to vent from the shock through the top bleed screw, as shown below.



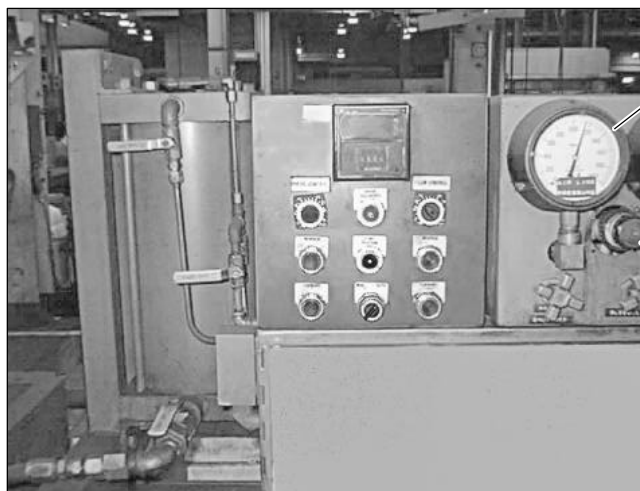
Oil Supply Valve

- Close the oil supply valve when oil with no bubbles runs out the vent.
 - Replace the bleed screw.
3. Open the oil supply valve.
 4. Verify that there is oil in the air/oil reserve cylinder, as shown below.

Air/Oil Reserve
Cylinder

Oil Level

5. At the control panel apply full line air pressure to the air/oil reserve cylinder, as shown below.



Pressure Gage

Regulator

6. Turn on the hydraulic power unit, as shown below.

First, Move Control
Power Lever Up



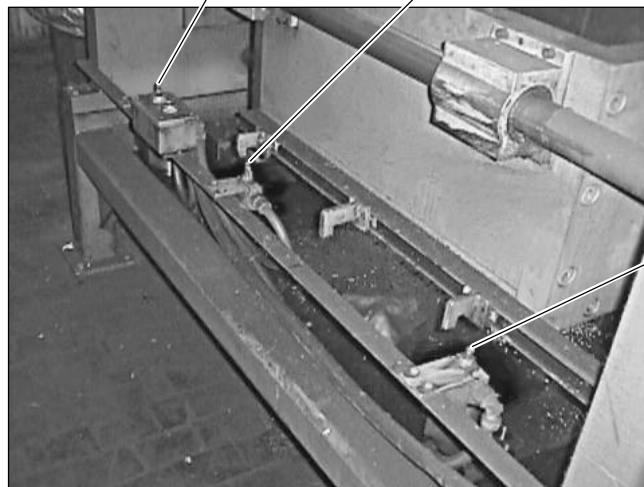
Second, Push Hydraulic
Power Switch On

7. Set pressure and flow to provide reasonable force and speed to the test fixture.
8. Set the test fixture limit/position switches appropriately for the mounted machine shock, as shown below.

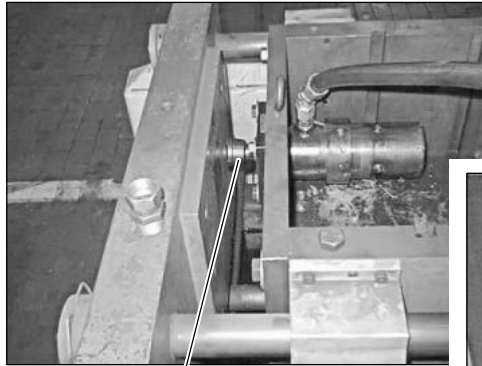
Left Switch

Middle Switch

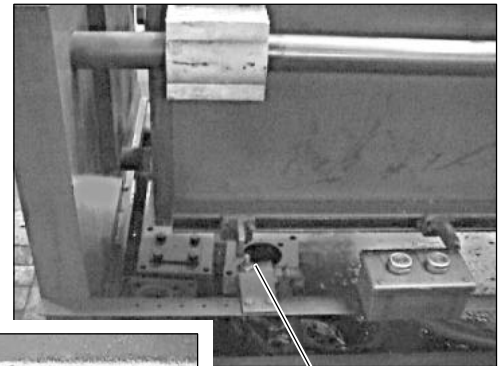
Right Switch



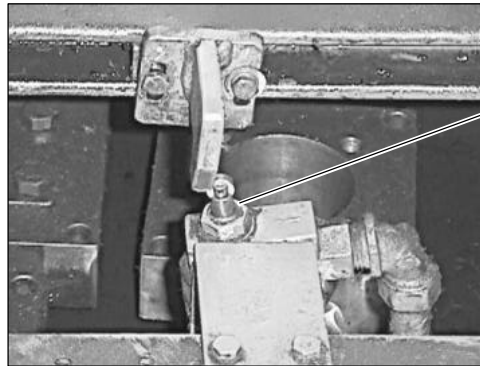
- ❑ Set the left switch to activate when the machine shock is almost fully collapsed, as shown below.



Machine Shock
(Shown Almost
Fully Collapsed)



Left Switch



- ❑ Set the middle switch to activate when the machine shock has just started to move from its fully extended position.
 - ❑ Set the right switch to activate when the test fixture has returned far enough to the right to allow the machine shock to fully extend and provide enough clearance to work.
9. Retract the test fixture until the right limit switch activates.
 10. Use the spanner wrench to turn the adjusting ring on the machine shock clockwise or counter-clockwise until it stops.
 11. Set to AUTO operation, and press both Forward buttons to test the machine shock.
 12. When the test fixture stops, note the time displayed on the Control Panel readout.



13. Retract the test fixture to the right. The test fixture should be fully retracted.
14. Verify that the machine shock has fully extended.
15. Repeat steps 11 through 14 several times to verify that the time readout stays approximately the same.
16. Use the spanner wrench to turn the adjusting ring on the machine shock in the opposite direction until it stops.

Note: If the adjusting ring was turned clockwise in step 10 then turn the adjusting ring counter-clockwise.

17. Press both Forward buttons to test the machine shock.
18. When the test fixture stops, note the time displayed on the Control Panel readout.
19. Confirm that the time readouts from step 12 and 18 are different by a factor of at least two.
20. Retract the test fixture to the right. The test fixture should be fully retracted.
21. Set the adjusting ring on the machine shock approximately in the center of its travel.
22. Repeat steps 11 through 14 to test the machine shock several times and to verify consistent machine operation.
23. Shut down the test fixture.
 - Turn off the hydraulic power unit.
 - Turn off the air source.
 - Relieve air pressure from the air/oil cylinder.
 - Close the oil supply valve to the machine shock.
24. Remove the machine shock from the test fixture.
 - Close the air supply valve.



- Open the air bleed valve to relieve the pressure after the testing is done.
- Using a container, catch any oil that might leak from the shock before disconnecting the supply hose.
- Install a pipe plug in the machine shock to keep it full of oil and to exclude dirt.
- Unbolt the machine shock from the test fixture frame.

25. Complete the repair tag and other paperwork for the machine shock.

Part B: Adjusting a machine shock under load on an operating machine.

1. Bleed the air from the machine shock first.
2. Adjust a new, rebuilt, or other replacement machine shock that has been installed.
 - Operate the machine.
 - Observe the shock absorbing function.
 - Using an Allen wrench, loosen the adjusting ring lock screw.
 - Turn the adjusting ring with a spanner as necessary to provide appropriate shock absorbing function.
 - Using an Allen wrench, tighten the adjusting ring lock screw.
3. Adjust a machine shock that performs inadequate shock absorbing during operation.
 - Inspect the machine shock for hydraulic leaks.
 - Using an Allen wrench, loosen the adjustment ring lock screw.
 - Use a spanner wrench to rotate the adjustment ring.
 - Test the operating machine under load.
 - If the shock absorbing function is less, stop the machine and adjust the ring the other direction.
 - Adjust the operating ring by trial and error to provide appropriate shock absorbing during operation under typical load.
 - Using an Allen wrench, tighten the adjusting ring lock screw.