

AA-01: Change Arc Lamp (Haas-Yag Laser)

SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Follow all Caterpillar and manufacturer's Laser Safety Requirements. YAG specific laser safety glasses must be worn when the laser is energized.

EQUIPMENT

- Basic Electrician hand tools
- clean shop towels
- bucket or retainer for water (when removing the cartridge)

RESOURCES

- Haas-Laser Manual (HL4006)

Change Arc Lamp (Haas-Yag Laser)

Warning: Different laser machines have different safety requirements. Follow any specific safety regulations specified for the machine you are working on. Failure to follow safety requirements may result in injury or possible fatality to personnel.

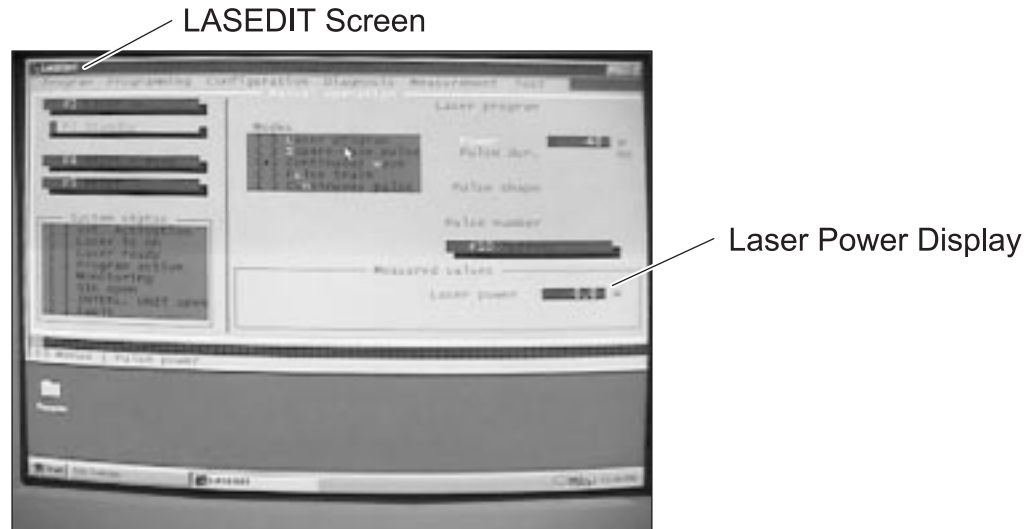
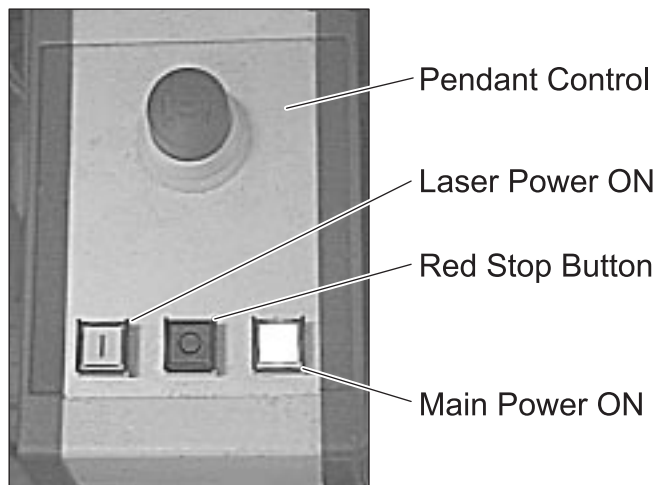
Warning: Wear only YAG laser specific safety goggles.

1. Obtain a replacement lamp.

- Fill out the required inventory sheet to restore stock.

2. Verify the Measured Value on the LASEDIT Screen.

- Power should read 0.0W.

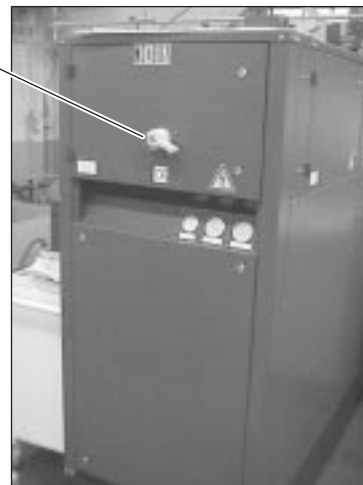
**3. Press the red stop button on the pendant control.**

4. Turn off and lockout/tagout the main power to the laser.

Locked Out and
Tagged Laser
Disconnect

**5. Turn off the chiller main power.**

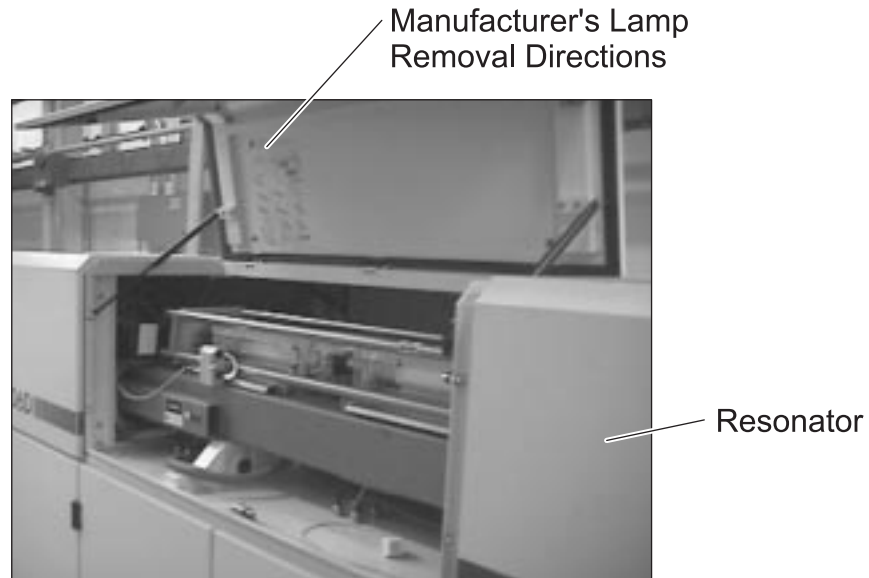
Chiller Disconnect

**6. Set up a work area for the lamp cartridge.**

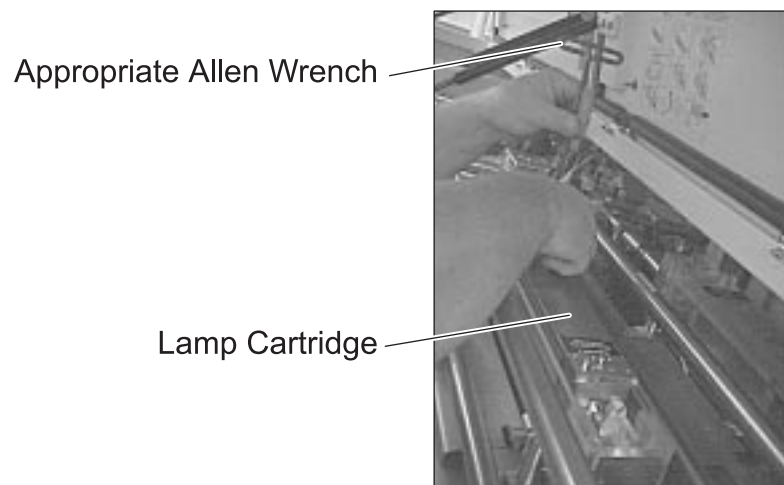
- Arrange clean shop towels to place the cartridge and lamps on while changing the lamp.
- Obtain a bucket or retainer for water when removing the cartridge.

7. Open front and back resonator covers.

- Locate the key on top of the resonator.

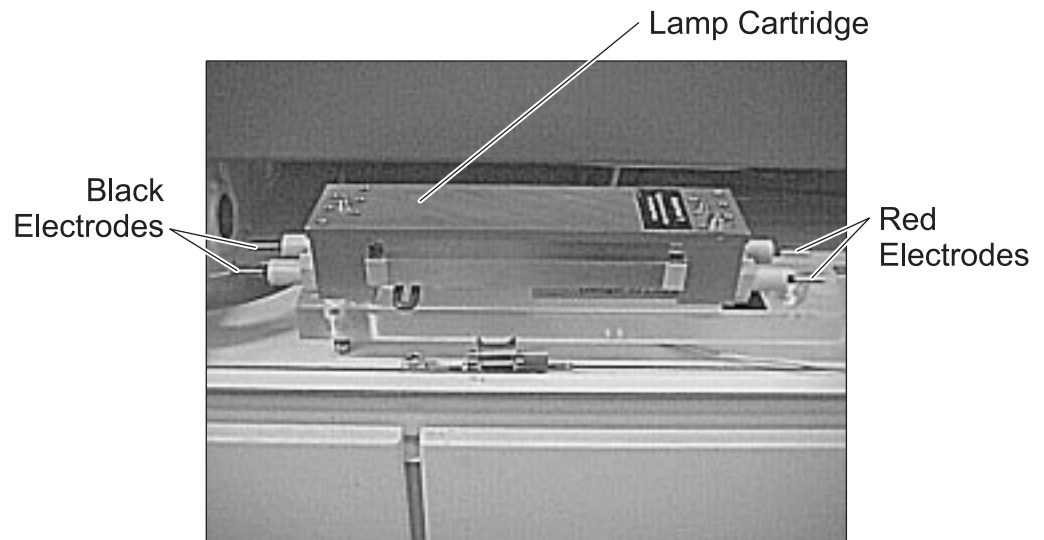


Note: See the directions for lamp removal on the inside of the resonator cover for additional reference.

8. Remove the lamp cartridge cover with the appropriate Allen wrench.

9. Remove the lamp cartridge with the appropriately sized Allen wrench.

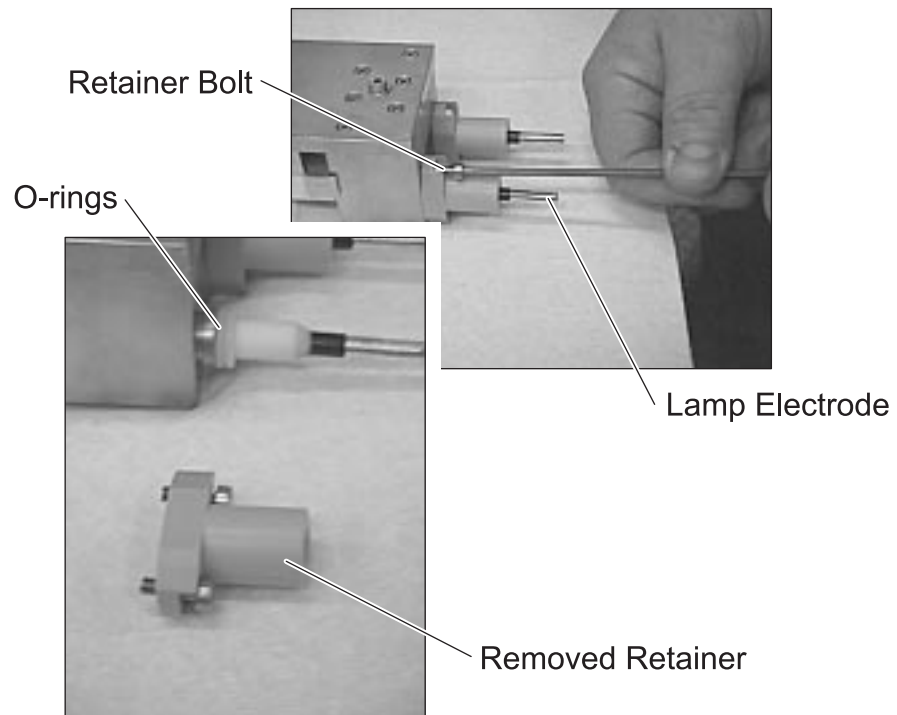
- Tilt the cartridge from side to side to drain water from half of the cartridge into the bucket or retainer.
- Note which end has black electrodes and which has red.



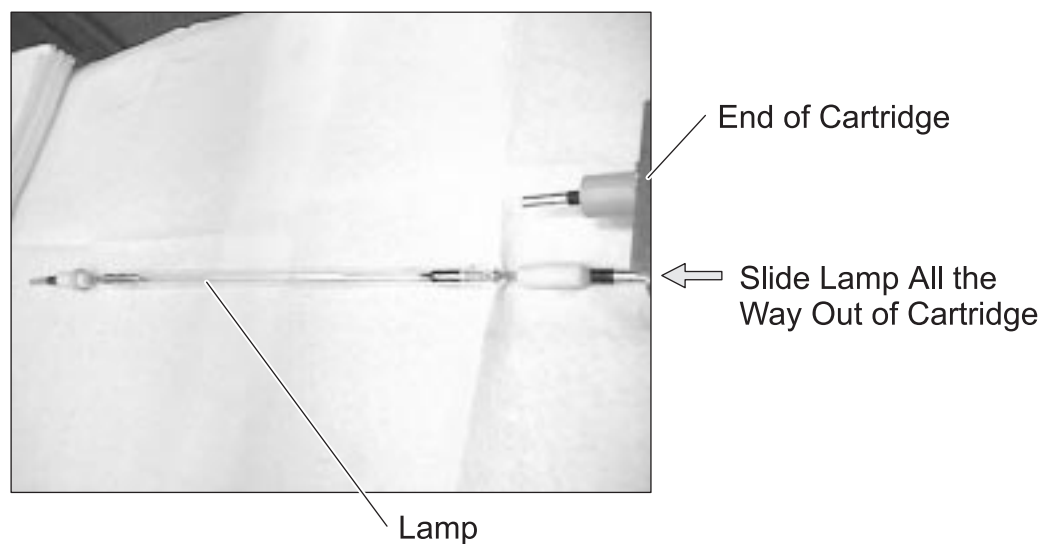
Caution: Remove the cartridge as smoothly and squarely from the resonator as possible to prevent water from draining inside the resonator or damaging the laser.

10. Place the cartridge on the clean shop towels set up in step 6.

- To prevent contamination, replace the cover over the removed cartridge opening.

11. Loosen the retainer bolts from both ends and slide the retainers off.**12. Remove one lamp at a time.**

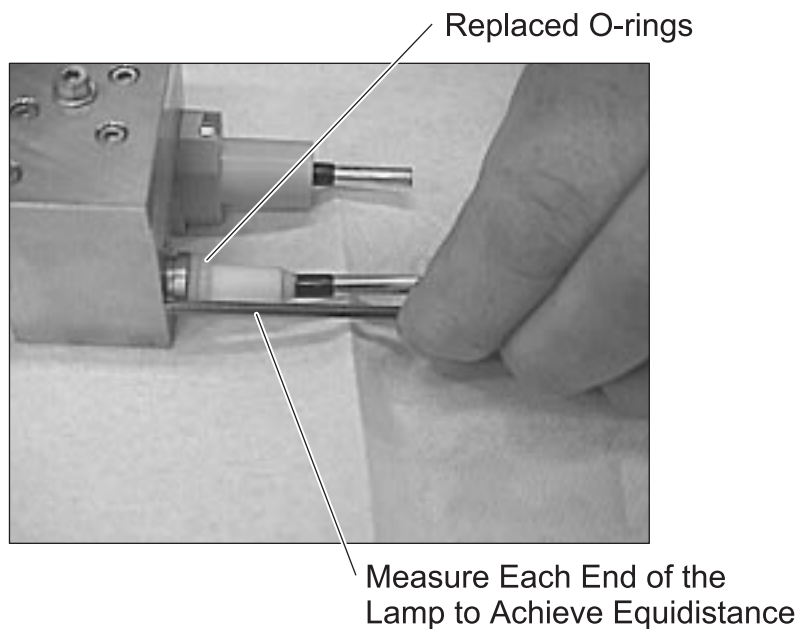
- Slide the lamp out of one end, allowing the o-rings to slide off the end.



13. Remove the other lamp.
14. Inspect the reflector for foreign objects, water, or defects.
15. Install replacement lamps.

Caution: Do not touch Quartz of the lamp; handle the lamp by electrodes.

- Slide in the lamps equidistant at each electrode.



- Install new o-rings.
- Reinstall the retainers hand tight (over tightened retainers can crack, under tightened retainers will leak water).
- Repeat steps 12-15 to replace the other lamp.

16. Reinstall the cartridge.

- Wipe up any water that may have spilled in the cartridge and resonator.
- Use methanol to clean up the area, if available.
- If any debris is found, check the associated filter.
- Check for proper polarity.
- Verify there are no foreign objects in the reflector area.
- Carefully set the cartridge in place, allowing each electrode to properly seat into the groove.
- Tighten the cartridge screws.

17. Replace the cartridge cover.

- Make sure the cartridge cover screws are hand tightened with the Allen wrench.

18. Remove lockout/tagout and turn the resonator main power ON.**19. Turn the chiller Main Power ON.****20. Press the pendant start button (left).**

- Wait for two minutes or follow error message directions.

Warning: YAG specific glasses MUST be worn from this point on as the laser will be turned on. Do not allow anyone in the area who is not protected.



Yag Specific
Safety Glasses

21. Check for leaks.

- See figure 19 of the manufacturer's direction on the resonator cover.
- Press and hold W50 pushbutton.
- After holding W50 for five seconds, turn water on.
- Continue holding the W50 pushbutton while checking for leaks.

22. Check the lamp operation.

- Insert interlocks in the resonator cover's safety switch to allow testing of the laser.



Install Interlock
Here

Interlock

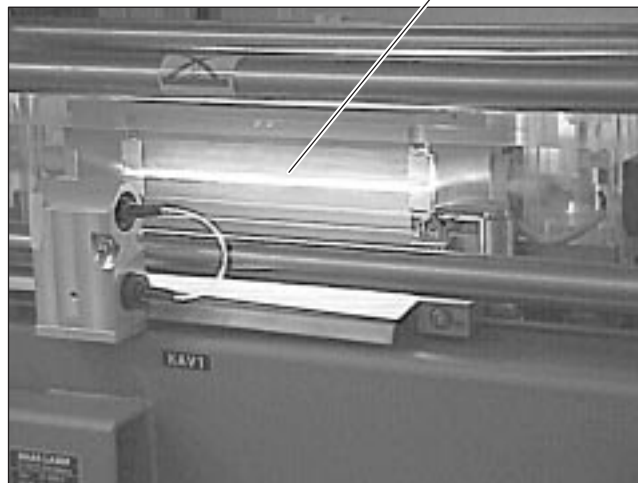


- Press <F5> (reset) on the PC to reset the error message, wait one minute, then press <F2> to turn on the laser.



Energized Laser

- Verify that the lamps are ON.



Verify Lamps Turn On

- Press <F2> on the PC to turn OFF the laser.
- Press the red stop button on the pendant.
- Remove the interlocks.

23. Close the resonator doors.

- Lock the resonator doors and remove the key.



24. Press the pendant start button to restart the laser.

- Wait for the laser on the <F2> bar to turn green.

25. Press <F2> to turn on the Laser from the PC.

- Wait for System Status to acknowledge laser ON.

26. Press <F10> to verify the VW1 and VW2 values.

- VW1 should be 1; change the value if necessary.
- VW2 should be 1; change the value if necessary.

Caution: Do not press <F4> if VW1 or VW2 has a value of zero (0).

27. Press <F3> for standby.

- Wait for the System Status to acknowledge laser READY.

28. Select the “Continuous Wave” option under the Modes menu.

29. Change the Power value to 1000W.

30. Press <F4> to start.

- Check that the Measured Value is approximately 1000W for the laser power value, then press <F4> again to stop.

31. Press <F3> and wait one minute.

32. Press <F2> and wait one minute before turning off the laser.