

## L-10: Remove/Replace Robot Cable

### SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Perform lockout/tagout on electrical power and ZMS on the pneumatic air.
- Operate the robot arm with caution, it has many pinch points that could injure personnel.

### EQUIPMENT

- Allen wrenches
- basic Maintenance Mechanic hand tools

### RESOURCES

- manufacturer's specifications



## Remove/Replace Robot Cable

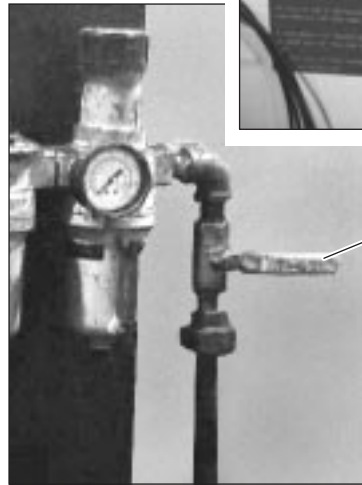
1. **Obtain the replacement cable/air line from the crib.**
  - Match the manufacturer's numbers.
2. **Position the robot to allow access to the cable access holes.**



Robot Positioned for Access to Cable

**3. Lockout/tagout power and perform ZMS.**

Lockout/Tagout



Air Supply Turned Off

- Be sure power is locked out and tagged at the Operator's panel and the air supply is turned off.

**4. Remove the back cover.**

Back Cover

- Remove and retain all eight mounting bolts.

**5. Remove the bottom cover.**

Bottom Cover

- Remove all six mounting bolts holding the cover in place.
- While an assistant supports the cover, unplug terminal X51 to disconnect the warning strobe from the cover.



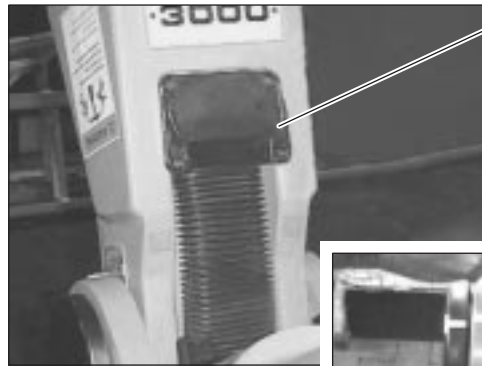
X51 Connector

Bottom Cover

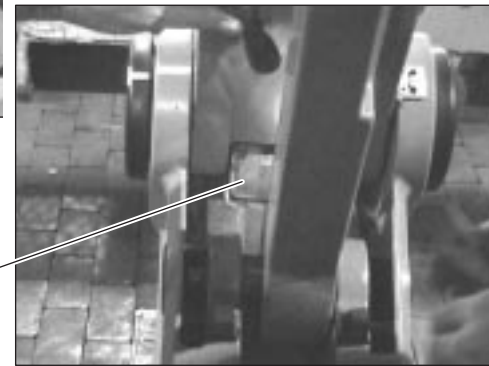
Warning Strobe Connection

- Place the cover to the side with the mounting bolts.

**6. Remove the bolts from the upper and lower support covers.**



Upper Support Cover



Lower Support Cover

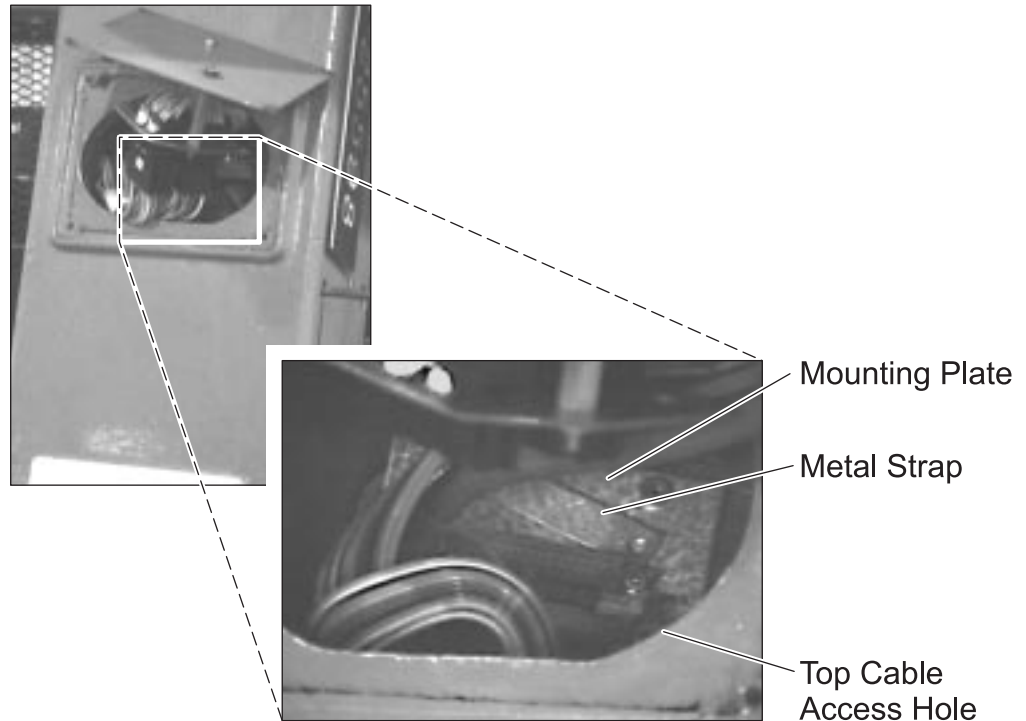
**7. Open the top cable access hole.**

Top Cable Access Hole



## 8. Disconnect wiring from the top cable access-hole.

**Note:** Because the access hole is so small, it is hard to maneuver cables and tools inside the hole. An assistant is necessary to hold wires, the cover, etc. Use extreme caution to avoid dropping hardware or tools inside the robot body.



- Verify cable markings.
- Unplug the X40 and X41 jacks.
- Remove the metal strap over the X45 and X46 cables.
- Unplug the X45 and X46 ribbon cables.
- Remove the three bolts from the mounting plate.

9. **Ask a Maintenance Mechanic to disconnect the air line in the top cable access hole.**

Air Line



10. **Ask the Maintenance Mechanic to disconnect the other end of the air line at the right bottom access.**

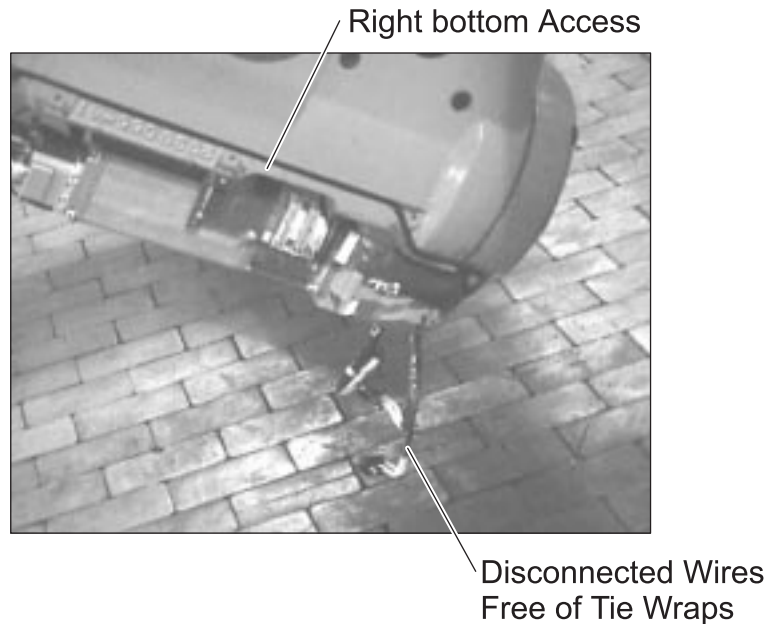
Right Bottom Access

Air Line



**11. Disconnect the wiring at the right bottom access.**

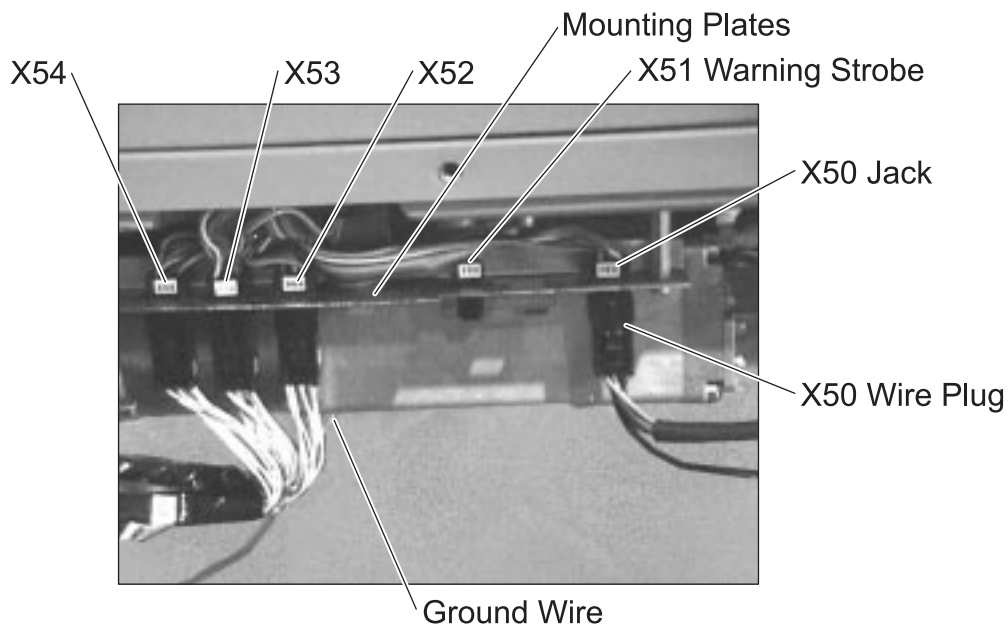
- Disconnect ribbon cables X55, X56, and X57.
- Make sure the ribbon cables are free of tie wraps and can be pulled out of the robot.

**12. Disconnect the wiring at the left bottom access.**

- Unplug wires X50, X52, X53, and X54.
- Remove the jacks from the mounting plate for X50, X52, X53, and X54.

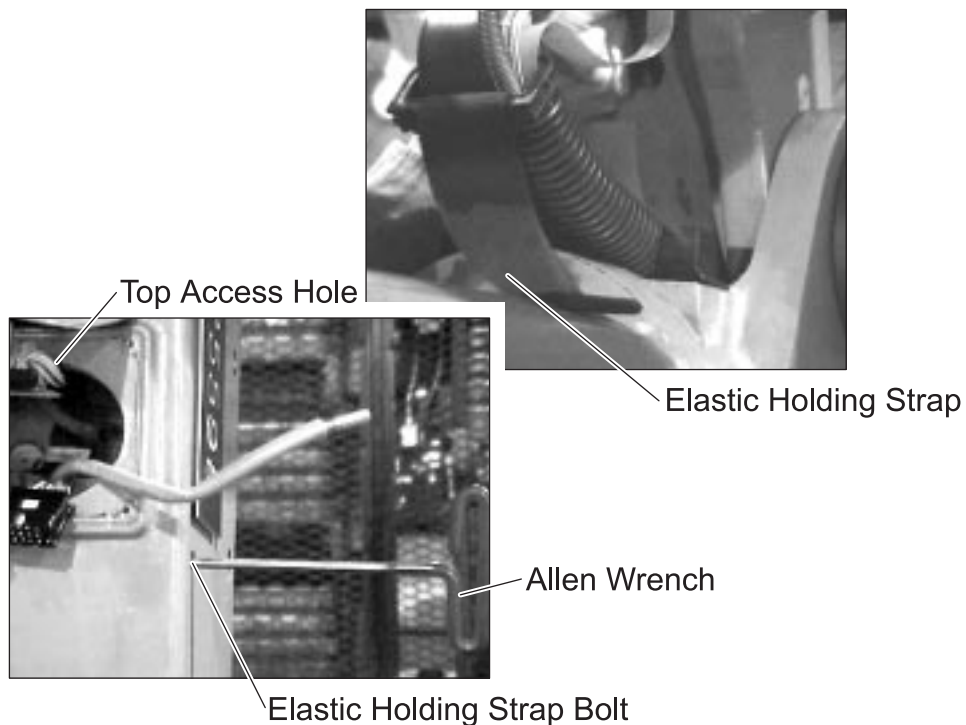


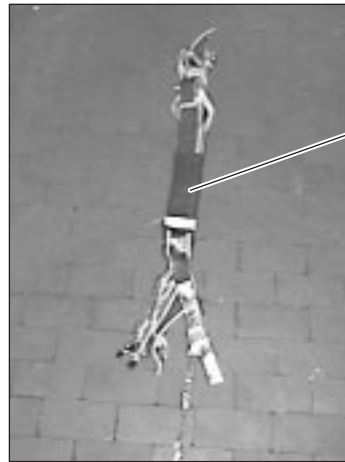
- Remove the ground wire from the mounting plate.



**13. Remove the elastic cable holding strap from the top access hole.**

- Remove the holding strap bolt using an appropriately sized Allen wrench.



**14. Remove the cable and air line.**

- Starting from the top access hole, carefully pull the cable out of the robot body.
- Work slowly with an assistant to pull the entire cable from the robot body.
- Do not use excessive force.

**15. Install the new cable and air line in the top access hole.**

- Make sure the cable is facing in the right direction, with the left and right access wires oriented to the sides to which they connect.
- Feed the upper end of the replacement cable into the robot body.



- Ask an assistant to feed the cable up while you reach through the top access hole and grab the cable.



- Make sure that wires X45, X46, X40, X41, and the air line are all the way to the access hole.
- Connect the mounting plate into the back of the top access hole.
- Ask your assistant to feed the elastic holding strap to your hand.
- Insert the elastic holding strap bolt.
- Reconnect the X45 and X46 cables.
- Reconnect the ground terminal.
- Replace the metal strap over the X45 and X46 cable.
- Ask the Maintenance Mechanic to reconnect the air line in the top access hole.
- Plug in wires X40 and X41.

**16. Install the new cable and air line to the right and left access holes.**

**Note: All wiring and the air line must be fed in at the same time.**

- Feed the X55, X56, and X57 wires and air line to the right bottom access.
- Feed the X50, X52, X53, and X54 jacks to the left access.
- Plug in the connectors.
- Ask a Maintenance Mechanic to reconnect the air line in the right bottom access hole.

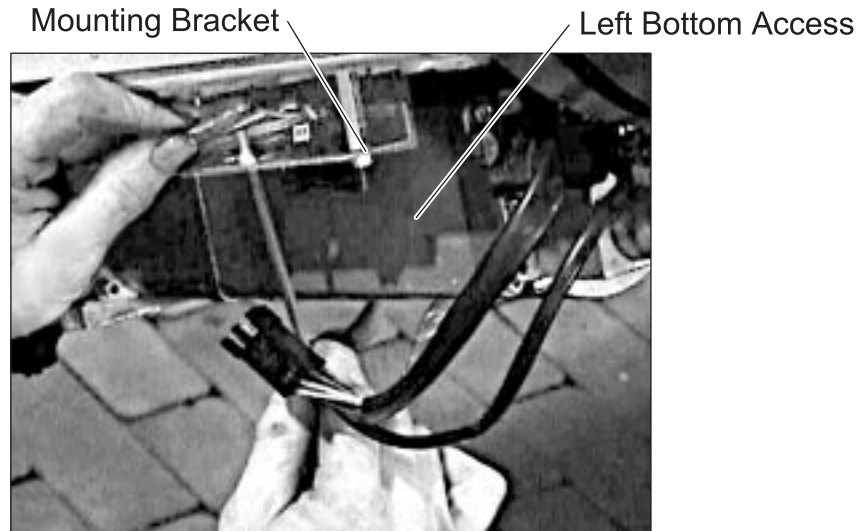
Reconnected Air Line

Right Bottom Access



**Air Line Reconnection**

- Reconnect the ground wire.
- Snap the jacks back in the mounting bracket, in the left bottom access hole.



- Plug the wires into the respective jacks.
17. **Ask a Maintenance Mechanic to test the air line.**
    - Turn the air supply on and verify that there are no leaks.
  18. **Replace the covers.**
    - Reconnect the warning strobe light (X51) on the bottom cover.
  19. **Clean up the work area.**
  20. **Remove lockout/tagout and restore power.**
  21. **Ask the Operator to cycle the robot to verify proper operation.**