

## B-04: Install Bus Plug

### SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Operating a JLG involves an overhead hazard. Place the overhead safety sign as required.
- Improper bus plug installation could result in an explosion.
- High voltage gloves may be required if the bus plug must be changed while voltage is applied to the bus duct.

### EQUIPMENT

- basic Electrician hand tools
- JLG man lift
- digital volt-ohm meter (DVM)
- overhead safety sign
- conduit cutter and dies

### RESOURCES

- electrical print
- manufacturer's specifications, if available
- bus plug data plate information

### Install Bus Plug

#### 1. Sign in for the bus plug ticket.

- Follow your facility instructions for signing in for a job.

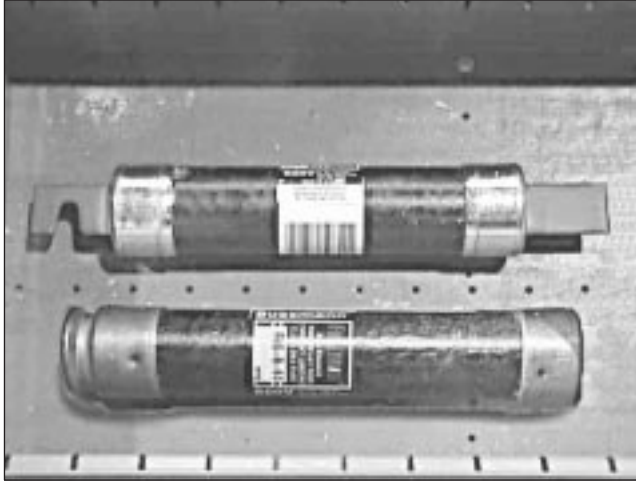
#### 2. Obtain the tools and equipment.

- Use a JLG or other man lift device to reach the bus plug.
- Follow all facility safety procedures when operating the man lift and working overhead.

**Warning:** Remember to check the oil and fuel in the JLG. Verify JLG operation before moving to the work site. Wear the required safety harness and remember to attach the harness to the basket. Mark the work area with the required overhead work safety sign.



- Locate the replacement or new bus plug for installation.
- Locate the required fuses for the bus plug.



### Examples of Fuse Types

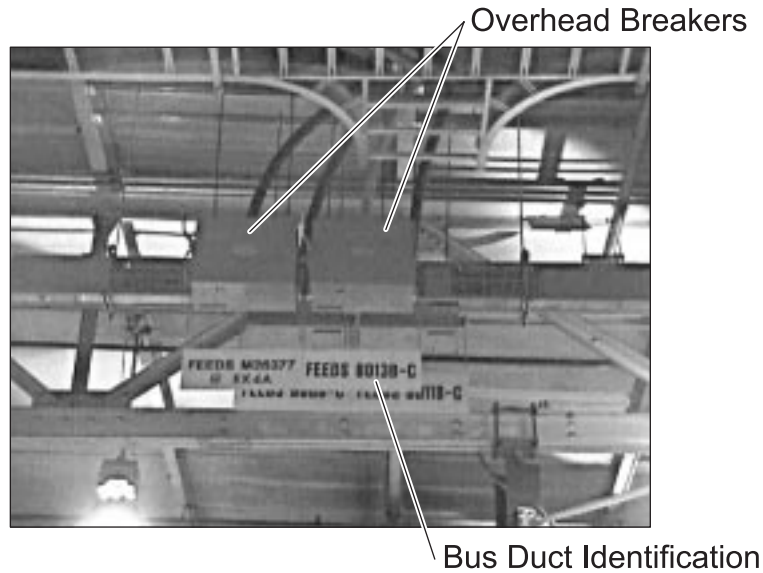
- Verify that the fuses are at least capable of handling 115% of the full load capacity of the machine it is protecting.
- Acquire the required conduit and wiring if the bus plug is a new installation.

### 3. Move the lift to the job site and check out the job.

- Bring the new (or replacement) parts.
- Place the overhead-work safety sign so that it is clearly visible.

**4. Lockout/tagout the bus duct power according to plant procedures.**

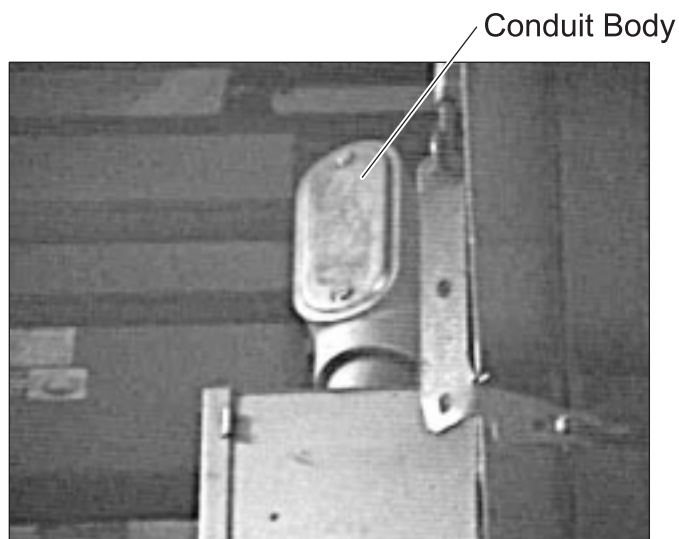
- Lockout and tag the power supply at an overhead breaker, if available.



- Lockout and tag at the substation breaker, if necessary.

**5. Remove the existing bus plug wiring and conduit, if applicable.**

- Remove the wiring from the bus plug terminals.
- Open the conduit body and pull the wiring out of the way.

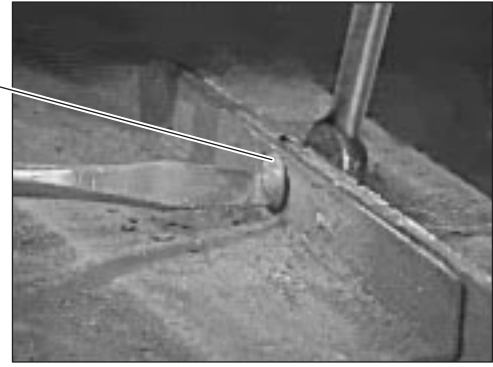
**Wiring Access**

- Remove the conduit nut and move the conduit to the side.

**6. Unfasten the bus plug from the bus duct.**

- Remove the four mounting bolts and remove the bus plug.

Mounting Bolts



Bus Plug

**7. Open an access hole to the bus duct, if necessary, for a new installation.**

Access Hole

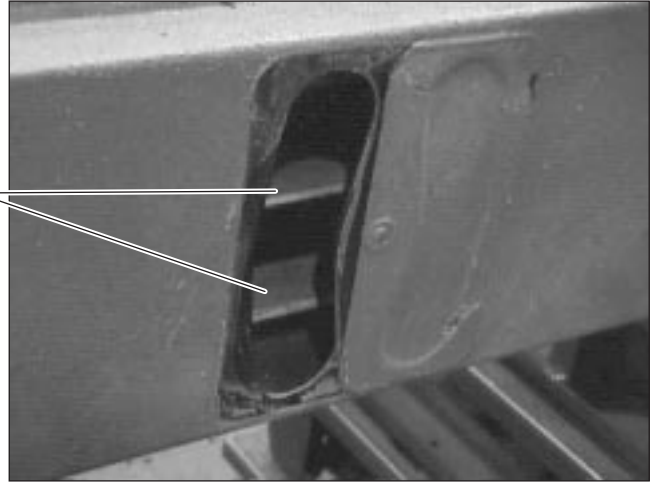
Strike Away  
From Bus Duct

Access Cover

- Verify that there is no open access opening on the opposite side of the bus duct.

**8. Inspect the bus duct conductors.**

- Look for corroded, burned, or damaged conductors.

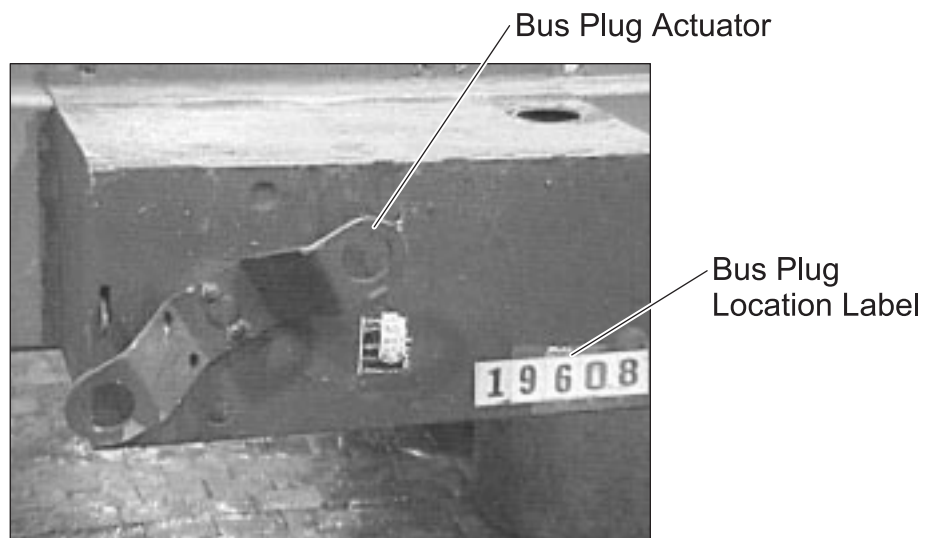


Bus Duct Conductors

### Inspection of the Bus Duct

#### 9. Verify the operation of the new bus plug.

- Open and close the bus plug actuator.
- Label the bus plug according to the required location.

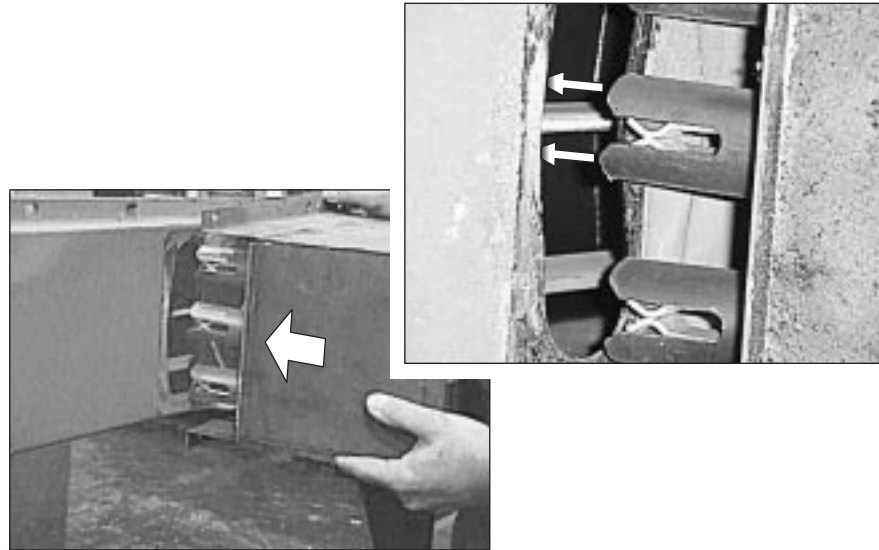


### Bus Plug Operation

- Verify the DVM operation, use the ohmmeter setting to verify that there are no shorts on the grounds in the bus plug.

**10. Attach the new bus plug to the bus duct.**

- Do not force the bus plug onto the bus bar.
- The bus plug should snap onto the bus bar without needing excessive force.

**Bus Plug Installation**

- Attach the bus plug using new washers, lock washers, nuts and bolts.

**11. Install the conduit.**

- Route conduit for a new installation from the bus plug to the machine.
- Attach conduit to the bus plug.
- If replacing the bus plug, attach the existing conduit.

**12. Route and attach the wiring.**

- Route wiring for a new installation from the bus plug to the machine.
- Attach the wiring to the corresponding terminals of the bus plug.

**13. Install the fuses.**

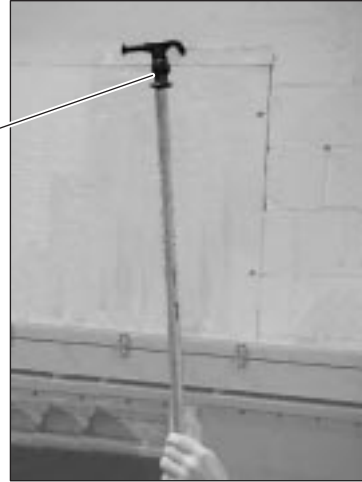
- Verify that the fuses are the ones you calculated for in step 2.
- Double check the fuse size with the manufacturer's specification on the bus plug.

**14. Turn the bus plug to the ON position.**

15. **Verify resistance on the machine.**
  - Verify that there are no shorts and that the power supply is not grounded.
16. **Turn the bus plug off.**
  - Use the pole switch to switch the power supply off.



Pole Switch



- Verify that all bus bar openings are closed.
17. **Restore power to the bus duct and turn the bus plug on.**
  18. **Verify that the bus plug is providing the required voltage at the machine.**
  19. **Clean up the work area and sign off on the job.**