X-12: Replace Capacitors (Induction Holding)

SAFETY FIRST

- ☐ Follow all Caterpillar facility safety standards when performing this task.
- ☐ A key and locking mechanism is built into the capacitor cabinet.
- ☐ The capacitor weighs approximately 100 pounds. Practice safe lifting techniques when replacing the unit.

EQUIPMENT

- ☐ Electrician hand tools
- ☐ flashlight
- ☐ grounding cables
- ☐ Digital Volt Meter (DVM)
- ☐ high voltage gloves
- ☐ high voltage tester

RESOURCES

- ☐ none

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Notes: The keys on the key block are color coded and correspond with the different locks on the cabinet doors. The capacitors are located in the cabinet with, a yellow mark just above the lock.

1. See the procedures for preparing a cabinet for entry.

2. Retrieve the grounding cables from the cabinet outside capacitor vault.

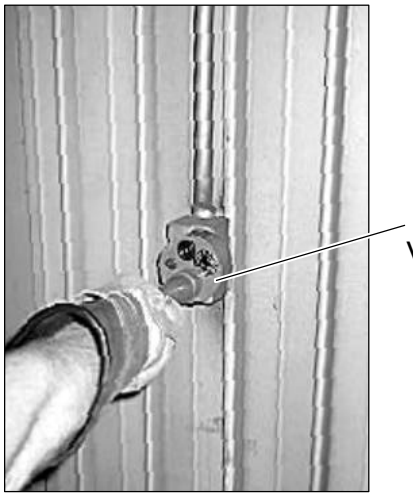
3. Remove the yellow marked key from the key block.

4. Remove the dust cover from the lock, at the capacitor cabinet, and unlock the cabinet.

5. Test the high voltage tester.

   - ☐ Turn the voltage select knob counterclockwise to the lowest voltage level indicated on the tester. A low voltage level ensures that the tester is set at the most sensitive setting.
   - ☐ Test the tester at a known power source (110 outlet).

Note: If the tester is operational, the red light will illuminate.



6. Verify that the power is disconnected.

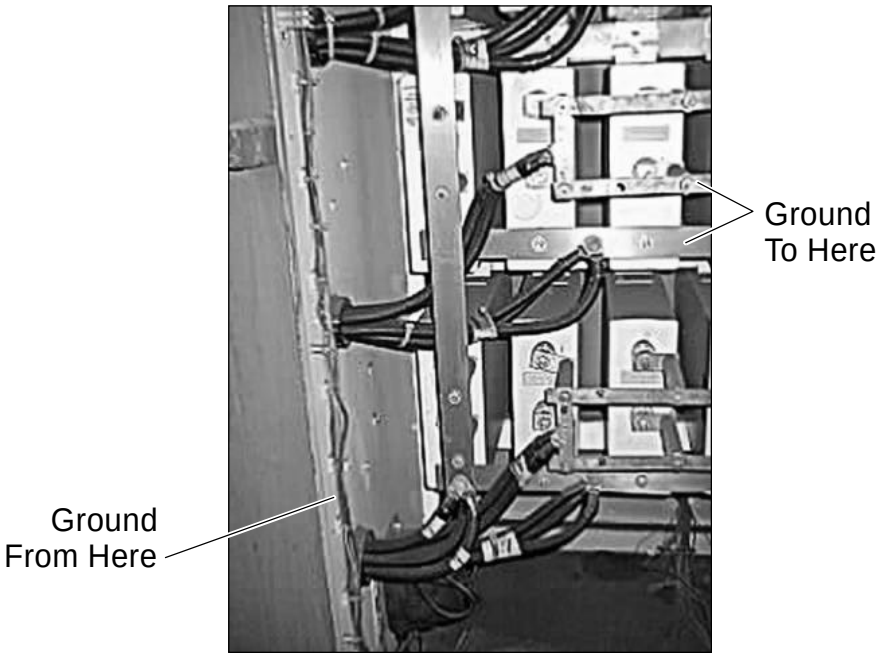
- ☐ Wear high voltage gloves while testing each capacitor to ensure that the power is off.

Note: If the red light does not illuminate the power is off.

- ☐ Check the tester again to ensure that it still functions properly at the known power source (110 outlet).

Note: If the red light illuminates at the power source, the power is off at the interrupter panel.

7. Ground the bank of capacitors. See the figure below.



Note: The grounding cable has a clamp on one end and two clamps on the opposite end.

- ☐ Ground the cabinet first with the end of the grounding cable that has only one clamp.
- ☐ Touch each bank of capacitors with the opposite end of the ground cables discharging the static buildup.
- ☐ Ground the bank of capacitors in two places with the end.

8. Locate the blown capacitor.

- ☐ Using a DVM, check the capacitors.
- ☐ Visually check the outside appearance of the capacitor. If the case is bulging, the capacitor is defective.
- ☐ Use the DVM to check the continuity of the fuses. If no continuity, change the fuse.

9. Remove the defective capacitor.

- ☐ Notify the maintenance repair crew to turn the water off and remove the hoses.
- ☐ Remove the bolts that connect the fuse to the capacitor and the power bar using an adjustable wrench and channel lock pliers.
- ☐ Remove the fuse.
- ☐ Remove the strap that attaches to the top connector of the capacitor to the power bar.
- ☐ Remove the bolts, both top and bottom, that hold the capacitor to the rack.

Caution: The capacitor weighs approximately 100 pounds. Practice safe lifting techniques when handling the unit.

- ☐ Pull the capacitor out of the rack.

10. Install the new capacitor.

- ☐ Push the new capacitor into the appropriate space in the capacitor bank.
- ☐ Install the top and bottom bolts wrench-tight to secure the capacitor to the rack.
- ☐ Install the strap to the capacitor's top connector and the power bar.
- ☐ Install the fuse.
- ☐ Install the bolts wrench-tight that connect the fuse to the capacitor and the power bar.
- ☐ Notify the maintenance repair crew to install the hoses and turn on the water.

11. Remove the grounding cables.

12. Close and lock the cabinet door and remove the key.

13. Return the key to the key block.

14. Return the grounding cables to their designated storage place.