

Q-01b

ELECTRICIAN TRAINING

TRAINER'S GUIDE

Duty Q: Cranes and Hoists

Q-01b: PM/Troubleshoot/Repair Crane (15 Ton)

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Instructions To The Trainer

1. The Learner will contact you when ready to practice performing a preventive maintenance, troubleshooting, and repairing a crane.
2. Be prepared to demonstrate the steps for this task.
3. Ask the Learner to contact the Evaluator when ready for the Skill Check.



Skill Objective

Given a Crane Preventive Maintenance Checklist, perform a preventive maintenance, troubleshoot, and repair a crane.

Task Standards

1. The main hoist, trolley, and bridge brakes must show no visible signs of wear.
2. The minimum thickness of the main hoist, trolley, and bridge brakes must not be less than 3/16-inch.
3. The air gap must be approximately the thickness of a nickel.
4. The oil level in the dashpot overload relay must be within 1/8-inch from the top of the oil basin, just below the threads.
5. The up/down limit switches must operate as specified.
6. The collector mechanical components must be in good condition, and the shoes must display no visible signs of wear.
7. The Main Control Panel connections must be snug; wiring and terminals must show no signs of damage
8. All required safe practices must be demonstrated.

What The Learner Will Need

This section contains the safety information, tools, and resources you will need before performing a preventive maintenance, troubleshooting or repairing a crane.

SAFETY FIRST

**DON'T TAKE
CHANCES**

- Follow all Caterpillar facility safety standards when performing this task.
- The electrical power to the crane must be locked and tagged after the power on checks have been completed during the PM check. An electrical hazard exists inside the electrical cabinet and at the power connection.
- A tripping hazard exists when moving around catwalk. Pay attention while moving around and inspecting the various components and when getting in and out of the cab.
- A heat hazard exist during the summer months when working within 10-20 feet of the ceiling. Be sure to drink plenty of water before spending an extended amount of time in the area.



- flashlight
- Electrician's hand tools
- lock and tag
- replacements parts
- feeler gauge (nickel)



- Crane Preventive Maintenance Checklist



Practice Set-Up

The Learner may perform the following practice to help prepare for the Skill Check. Set up the practice for the Learner. Assist the Learner during the practice, if necessary; answer any questions concerning the task; and be prepared to demonstrate the task to the Learner. Make sure the Learner follows safe work practices while practicing the task.

Practice

You will designate a crane for the PM. During the practice the Learner will:

- Perform an operational check on the bridge, trolley, and hoist controls.
- Check the main hoist.
- Check the auxiliary hoist (50 and 60-ton cranes) if applicable.
- Check the trolley (north/south motion).
- Check the bridge (east/west motion).
- Check the power bars.

You will observe the Learner as the Learner inspects the hook, the main and auxiliary hoist, trolley, and bridge to ensure that this task is performed properly. The Learner is required to follow all the recommended safe practices.

Practice Objective

The major components will be inspected for serviceably, signs of wear, cracks, or breakage. The main hoist, trolley, and bridge brakes must show no visible signs of wear. The minimum thickness of the main hoist, trolley, and bridge brakes must be 3/16-inch. The air gap must be approximately the thickness of a nickel. The oil level in the dashpot overload relay must be within 1/8-inch from the top of the oil basin, just below the threads. The up and down limit switches must be operate as specified. The collector mechanical components must be in good condition, and the shoes must display no visible signs of wear. The Main Control Panel connections must be snug, and wiring and terminals must show no signs of damage. All safe practices must be demonstrated.

Next Step

Allow the Learner to continue practicing and developing skills needed to demonstrate the task. The Learner should ask the Evaluator to schedule a Skill Check when ready to demonstrate the task unaided and meet all the task standards and safe work practices.