

Materials Handling

Materials Handling - Crane Maintenance

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What should you do when performing maintenance of a crane?

Organize

- Use and follow maintenance checklists that include critical safety components as specified by the manufacturer, professional engineer and/or your company's requirements.
- Inspect the crane as often as required – pre-operation, daily, weekly, monthly, annually and/or periodically as specified by the manufacturer.
- Document all findings clearly in the maintenance logbook, including all tests, repairs, modification and maintenance.
- Keep the logbook with the crane.
- Have the crane certified by a professional engineer as required, including the structural, mechanical and control systems.
- Perform the inspection while the engine is off and then again when the engine is on. Engine off checks helps to find any obvious problems and correct them before starting the engine and possibly harming others.

What should you check for?

Wire Rope

- Check all sides of the wire for reduction in diameter, broken wires, kinking, cutting, crushing, or other damage.
- Lower hoist to unload rope sheaves.
- Unwind all wire rope from the hoist drum to expose all parts of the rope, making sure that the rope does not rewind in the reverse direction.
- Inspect sheaves, sockets, dead-ends, thimble joints, and all wire rope hardware.
- Check that the sheaves rotate freely and smoothly. Look for worn bearings, broken flanges, proper groove size, smoothness, and contour.
- Inspect all parts of the cable, cleaning wire rope only as required to complete an inspection. Excessive removal of lubrication will lead to damage.
- Re-lubricate rope to prevent corrosion, wear, friction, and drying out of the core.
- Check for ropes that may have been operated dry (unlubricated). Replace dry ropes. There may be hidden damage that is not detected by visual inspection.
- Compare the rope length and diameter with the original dimensions. Lengthening accompanied by diameter reduction is often an indication of interior core defects.
- Check the hook for wear, bending, twisting, or cracks. Safety catches should be in place, operate properly, and the hook nuts are tight. Replace when there is more than 10% wear on the hook.

Establish a schedule of rope replacement to change wire rope before it breaks and according to manufacturer's specifications. Periodic replacements do not take the place of inspections. If rope breaks or inspections reveal abnormal wire breakage or defects, reduce the time between replacements. Do not make wire rope slings from used wire rope.

Crane Structure and accessories

- Visually, ultrasonically, or by other methods examine the crane structure for deformed, cracked or corroded members in the structure and boom.
- Check that the capacity markings are present.
- Check for loose bolts or rivets.
- Check for excessive wear on brake and clutch system parts.
- Check for deformed wedges.
- Check for defective cotter keys, pins and guardrails.
- Ensure all mechanical components of the crane is in good working order (gear box, hydraulics, etc.).

Hydraulic systems

- Check for deterioration or leakage in air or hydraulic systems.
- Check for safe and effective operation on hoses, pumps and motors.
- Check levels of fluid.
- Check air cleaners for replacement or cleaning.

Control Mechanisms and Monitoring Devices

- Check all control mechanisms such as cables, brakes and levers for poor adjustment or excessive wear.
- Check accuracy of marking on the load/radius indicator over full range.
- Check for proper operation of load moment indicator, boom angle indicator, boom length indicator and anti two-block system according to the manufacturer's manual.

What are some things to remember when repairing a crane?

- Enter all service inspections and repairs in a crane logbook.
- Ensure that all controllers are placed in the "off" position, and the main switches are open and locked. Use [lockout/tag out](#) procedures as appropriate, including to:
- Use fall protection equipment if working at heights.
- Do not carry anything in your hands when going up and down ladders. Items that are too large to go into pockets or belts should be lifted to or lowered separately.
- Prevent loose parts or tools from falling to the floor or on other workers.
- The area below the crane must be cleared and a barrier erected to prevent injury from a falling object.
- Replace all guards and other safety devices before placing the crane back in service.
- Remove all stops, tools, loose parts and other material as you complete the repair job.
- Keep your equipment clean including batteries, cab and windows, wheels and tracks, deck and car body.

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