

SAFETY ALERT

INSPECTING CRANE HOOKS

In a recent incident, a tower crane was hoisting a load weighing approximately 4,000 kilograms (8,800 pounds). The hook assembly on the load block failed, causing the load to fall. It narrowly missed hitting two workers below.

After the incident, the threads on the hook and nut were found to be corroded and excessively worn. The damage was not invisible when the load block was assembled. This type of wear and corrosion could be found on any crane hook with a threaded shank.

INSPECTING THE LOAD HOOK ASSEMBLY – NINE STEPS

Inspect the load hook assembly to ensure that these critical components are in good condition for safe hoisting. If the manufacturer or relevant standard does not specify the inspection frequency, it is safe work practice to disassemble the load hood and inspect the components annually.

1. Remove the hook from the load hook assembly and clean the threads on the hook and the nut.
2. Examine the threads for cracks using magnetic particle or dye penetrate test methods. The first three threads for the bottom and the thread relief area are the most critical areas to inspect. If a crack is found in one of these areas, remove the hook from the service.
3. Examine the threads for wear and corrosion. The threaded area may appear tapered from top to bottom if corrosion has rounded the thread profile over time. If the threads are badly deformed and /or corroded for a total length that is more than 20% of the thread length, remove the hook from the service.
4. Examine the hook. If a hook has any of the following signs of damage or excessive wear, remove the hook from service:
 - The throat opening, measured at the narrowest point, has increased by more than 15% of the original opening
 - The hook has twisted more than 10 degrees from the original plane of the hook.
 - The hook has lost 10% or more of its cross-sectional area.
 - The hook is cracked or otherwise defective.
 - Wear or damage exceeds any criteria specified by the manufacturer.
5. Check that the nut retaining pin, set screw, or key prevents relative movement between the hook and the nut.
6. Examine the hook pivot and the axial and cross pin bearings. Look for wear, and ensure the pivot and bearings provide a freely rotating support for the hook.
7. Examine the block bearing plate for cracks, wear, or other damage. Damage affecting safe use must be repaired before returning the block to service.
8. Before reassembling the load hook, grease the bearings as required and then coat the clean threads on the hook and nut with a commercial thread sealant to provide corrosion resistance.
9. When reassembling, check that the length of threads engaged between the hook and the nut is at least equal to the hook thread diameter. Check that the nut retaining pin, set screw, or key that prevents the nut from backing off the hook is properly in place and secure.

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