
Overhead Bridge Crane Pre-Shift Sling and Hoist Inspection

1.0 Maintenance Objective & Frequency

The objective of this procedure is to perform a systematic pre-shift inspection of the overhead bridge crane, focusing on the hoist mechanism, wire rope, and lifting slings. This inspection identifies wear, deformation, or damage that could lead to catastrophic failure during operation. The inspection is required at the start of each shift or prior to first use of the crane that day.

2.0 Lockout/Tagout (LOTO) & Safety

- **Electrical Isolation:** Disconnect main power to the crane bridge and hoist at the disconnect switch. Apply personal lock and tag.
- **Pneumatic Isolation:** Not applicable for standard electric overhead cranes. If equipped with pneumatic controls, isolate and bleed air supply.
- **Hydraulic Isolation:** Not applicable for standard electric overhead cranes. If equipped with hydraulic systems, isolate and relieve pressure.
- **Mandatory PPE:** Hard hat, safety glasses, steel-toed boots, high-visibility vest, and cut-resistant gloves.
- **Fall Protection:** If inspection requires accessing the crane bridge or elevated platforms, use a full-body harness with lanyard attached to a certified anchor point.
- **Area Barricade:** Erect barricades or cones below the crane to prevent personnel from walking under the load path during inspection.

3.0 Required Tools, Parts & Lubricants

- Crane inspection checklist or digital tablet with ServiceGrid app
- Wire rope diameter gauge (caliper or dedicated gauge)
- Wire rope break detection tool (e.g., magnet or magnifying glass)
- Sling inspection gauge (e.g., synthetic sling wear gauge)
- Flashlight (high-lumen, rechargeable)
- Torque wrench (0-150 ft-lb range)
- Allen key set (metric and imperial)
- Replacement slings (various capacities as per crane rating)
- Replacement wire rope clips and thimbles
- Lubricant: Wire rope lubricant (e.g., Mobilgrease XHP 462 or equivalent)
- Lubricant: General-purpose grease for sheave bearings
- Clean rags and solvent (non-chlorinated)

4.0 Step-by-Step Maintenance Procedure

1. Perform LOTO: Isolate electrical power to the crane at the main disconnect switch. Apply personal lock and tag. Verify zero energy state by attempting to operate the pendant or remote control.
2. Visually inspect the crane bridge and runway rails for any obstructions, debris, or signs of structural damage. Check for loose bolts, cracks, or corrosion on the bridge beams and end trucks.
3. Inspect the hoist drum and wire rope. Run the wire rope through your gloved hand (with cut-resistant gloves) to feel for broken wires, kinks, or birdcaging. Measure the rope diameter at three points along the length using a wire rope gauge. Reject if diameter reduction exceeds 5% of nominal diameter or if more than 6 broken wires are found in one rope lay.
4. Inspect the wire rope termination at the drum and the load block. Check that the rope is properly seated in the drum grooves and that the dead-end anchor is secure. Verify that the rope clips are torqued to manufacturer specification (typically 15-25 ft-lb for 1/2 inch rope).
5. Inspect the hoist load block and hook. Check for cracks, deformation, or wear on the hook throat. Measure hook throat opening with a caliper; reject if opening has increased by more than 15% of original dimension. Verify the hook latch operates freely and is not damaged.
6. Inspect all lifting slings (wire rope, synthetic web, chain). For synthetic slings: check for cuts, abrasions, broken stitching, UV degradation, and chemical damage. Use a sling wear gauge to measure thickness. For chain slings: measure link diameter and check for elongation, cracks, or nicks. For wire rope slings: inspect for broken wires, kinks, and corrosion. Reject any sling that does not meet ASME B30.9 criteria.
7. Inspect the sheaves (pulleys) on the load block and bridge. Rotate each sheave by hand to check for smooth rotation. Look for wear grooves, cracks, or chips on the sheave flanges. Measure groove depth with a sheave gauge; reject if groove depth exceeds 1/8 inch or if flange thickness is reduced by 20%.
8. Inspect the trolley and bridge drive systems. Check the gearboxes for oil leaks and proper oil level. Inspect the brake linings on the trolley and bridge drives for wear. Verify that the brake pads are at least 1/4 inch thick and not contaminated with grease.
9. Inspect the electrical system: pendant cord, control box, limit switches, and collector bars. Look for frayed wires, loose connections, or signs of arcing. Test the emergency stop button for proper function (with power off, press and release to ensure it resets).
10. Lubricate the wire rope using a brush or spray applicator with approved wire rope lubricant. Apply a light coat to the full length of the rope, avoiding over-application that could drip onto the floor. Lubricate sheave bearings with a grease gun (2-3 pumps per bearing).
11. Document all findings on the inspection checklist or in ServiceGrid. Note any defects found, measurements taken, and corrective actions required. If any critical defect is identified (e.g., broken wire rope, cracked hook), tag the crane out of service immediately and notify the maintenance supervisor.

5.0 Verification & Return to Service

1. Remove LOTO devices and restore electrical power to the crane. Verify that the disconnect switch is in the ON position and that the control pendant or remote is functional.
2. Perform a no-load test cycle: operate the hoist up and down through its full travel range, then move the trolley and bridge in both directions. Listen for unusual noises (grinding, squealing, clicking) and feel for smooth operation. Verify that all limit switches stop motion at the correct endpoints.
3. Perform a load test using a certified test weight (or a known load within the crane's rated capacity). Lift the load approximately 6 inches off the ground and hold for 30 seconds. Check for any drift, slippage, or abnormal deflection. Lower the load and inspect the slings and hook for any new deformation.
4. Verify that the brake holds the load securely. With the load suspended, engage the hoist brake and release the hoist control. The load must not drift more than 1 inch in 10 minutes. If drift is observed, adjust or replace the brake before returning to service.

5. Complete the inspection report in ServiceGrid, including all measurements, pass/fail status for each component, and any corrective actions taken. Sign off on the PM work order. If the crane passed all checks, return it to production with a green tag. If defects were found but corrected, note the repairs and re-test before releasing.

Regulatory Disclaimer: This document is a generic maintenance template provided for educational and informational purposes only. It does not constitute professional engineering or reliability advice. The end-user assumes all liability for validating all step sequences, torque specs, and LOTO protocols against specific machinery OEM manuals before deployment to a live production floor.