

HOISTS AND CRANES

(For assistance, please contact EHS at (402) 472-4925, or visit our web site at <http://ehs.unl.edu/>)

This SOP is limited in scope to overhead and gantry cranes and hoists, which are regulated by the Occupational Safety and Health Administration (OSHA) (29 CFR 1910.179). Fundamental aspects of crane and hoist safety involve: 1) appropriate equipment selection and installation; 2) regular inspection to ensure good condition of the crane/hoist and accessories, and; 3) adherence to safe operating procedures.

Equipment Selection and Installation

The crane, hoist, and all ancillary equipment (e.g., hooks, slings, etc.) must meet ANSI design standards and have sufficient rated capacity for the intended load. The load must not exceed the lowest rated capacity of any single component. A thorough inspection by a professional engineer or manufacturer representative of the crane/hoist and its supporting structure must be performed after installation and following modification.

Equipment Maintenance and Inspection

The crane, hoist, and all ancillary equipment (e.g., hooks, slings, etc.) must be maintained in accordance with manufacturer recommendations. Defective or damaged components must be removed from service. Replacement of defective or damaged components is often advised (rather than repair).

Daily inspections by operators prior to use should include the following:

- Verification that the crane or hoist has not been removed from service.
- Testing to confirm that control devices, limit switches, and brakes are functional. At the beginning of each operator's shift, the upper limit switch of each hoist shall be tried out under no load. Extreme care shall be exercised; the block shall be "inched" into the limit or run in at slow speed. If the switch does not operate properly, notify a supervisor and do not use the crane/hoist.
- Visual inspection that guards are secured in place.
- Visual inspection of hooks for damage, cracks, nicks, gouges, deformations of the throat opening, wear on saddle or load bearing point, and twist. If a hook latch is required, check for proper operation.
- Visual inspection of ropes and chains for frays, broken strands, kinks, nicks, gouges, stretching, or other deformation or damage. Verify proper seating.
- Verify proper lubrication, as applicable. Check for signs of motor failure, or oil leakage on the crane and on the floor beneath the crane.
- Check for any unusual sounds from the crane or hoist mechanism.
- Check that warning and other safety labels are not missing and are legible.

- Check area for other hazards that may affect safe loading/operation.

These daily inspections are to be supplemented with monthly and annual inspections. Monthly inspections can be conducted by qualified persons designated by the department. Monthly inspections should be documented; include all items described for the daily inspections.

EHS strongly encourages annual inspections by qualified, outside contractors (which is coordinated through UNL Facilities Management and Planning). Cranes that are used infrequently must adhere to the inspection criteria established by OSHA, which considers if the crane has been idle for less than or greater than 6 months.

Operator Qualification

All crane operators must be appropriately trained in the use, controls, limitations, inspection, proper rigging/loading, and maintenance of the specific crane/hoist that they are assigned to use. This is the responsibility of the employing department. EHS encourages verification that the requisite skills have been established through observation by an experience operator.

Procedural Considerations

- A load must be well secured and properly balanced in the sling or lifting device before it is lifted more than a few inches. Lift loads slowly to take up slack, ensure that the load is balanced and holding action is secure, and that everything is seated and operating properly and smoothly.
- Before moving a load, test the brake by raising the load a few inches and applying the brake.
- Avoid sudden acceleration or deceleration.
- Do not allow people under or near loads. Verify the absence of other nearby hazards and obstructions.
- Lift loads vertically. Do not use a side pull
- Do not use the hoist's travel limits to stop operation. Approach end stops slowly and carefully to avoid load swings.
- Do not swing loads.
- Do not leave a load suspended.
- DO NOT use lift, support, or transport people.
- Pad loads with sharp edges to prevent them from cutting the sling.
- Do not shorten slings with knots, bolts, or other makeshift devices.
- Do not lower a load below the point where less than two full wraps of rope remain on the hoisting drum.
- The hoist limit switch which controls the upper limit of travel of the loadblock shall never be used as an operating control.