SCOR

SAFETY COMPLIANCE FOR OSHA REGULATIONS

A Cottingham & Butler Program

Overhead Cranes & Hoists

29 CFR 1910.179

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LEARNING OBJECTIVES

The objective is to increase attendees knowledge to more effectively manage the hazards associated with overhead cranes and hoists.

- General requirement
- Inspection requirements
- Slings and other lifting devices/equipment

COVERED EQUIPMENT

- **Overhead Bridge Cranes**
- Gantry Cranes
- Jib Cranes
- Hoists

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NOT COVERED

- Overhead hoist inspection and testing requirements, specifically for under hung overhead hoists, are not found in an OSHA standard.
- The standard that most specifically addresses the requirements of overhead hoists is an ASME/ANSI consensus standard, B30.16 for overhead hoists (underhung).
- https://www.asme.org/

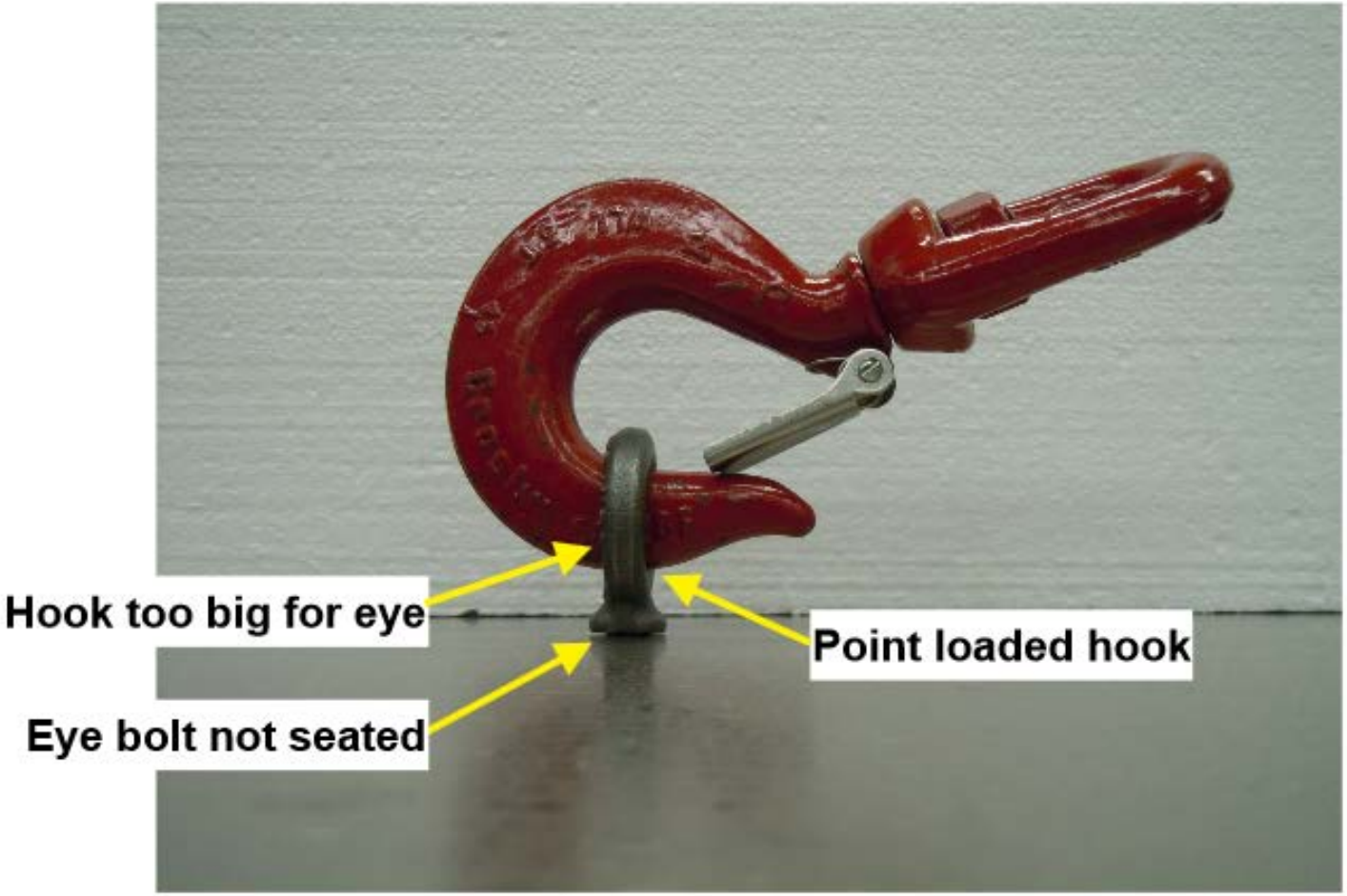
GENERAL REQUIREMENTS

- Do not overload the crane or hoist. Make sure the combined weight of the rigging, lifting device and load does not exceed the rated load capacity of the crane or hoist.
- Refuse to make lift if you are unsure of any issues. Do not proceed until all issues are resolved.

GENERAL REQUIREMENTS

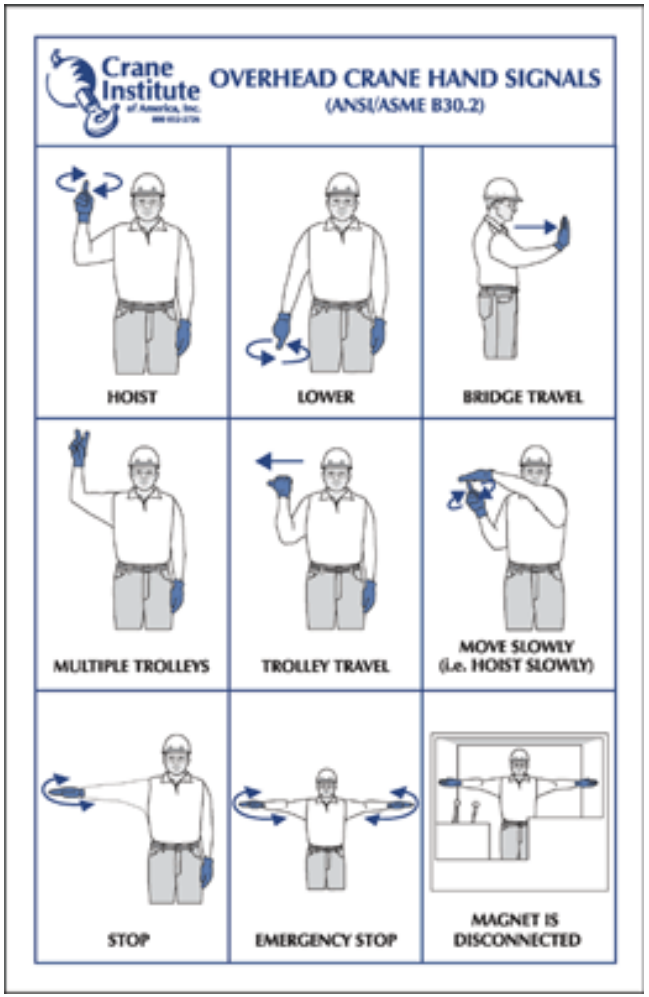
- Slings, load chains, and other lifting devices must be securely seated in the hook before moving a load
- Remove slack from the sling, chain, or cable before lifting a load

GENERAL REQUIREMENTS



GENERAL REQUIREMENTS

- Take instructions only from the person designated to give signals.
- Do not ride or allow other people to do so.



GENERAL REQUIREMENTS

- To pick up a load, move the crane and hoist/hook directly above the load to eliminate the possibility of side loading and minimize load swing.

POLL QUESTION #1

True or False

Before a lift is conducted, proper measurements shall be taken to ensure everyone is clear of any pinch or crush zones by the lifts.

A. True
B. False

GENERAL REQUIREMENTS

- Before lifting, ensure that everyone is clear of any pinch or crush zones.
- When lifting loads at or near capacity, test the hoist brakes by returning the master switch or push button to the “OFF” position after raising the load a few inches off the floor.
- If the brakes do not hold, lower the load to the floor slowly and do not operate the crane. Report the situation immediately and DO NOT USE until repaired.

GENERAL REQUIREMENTS

- Make sure the rigging is in good condition and that safe rigging practices are applied.
- Ensure rigging is appropriate for the load size, shape and weight.

GENERAL REQUIREMENTS

- Always maintain a clear view of the crane path so you can observe any obstacles or personnel in your path.
- Use one continuous motion when traveling. Try not to start/stop (plug) as this will result in load swing.

GENERAL REQUIREMENTS

- Never leave a suspended load unattended. If you must leave the area, lower the load to the ground before doing so.
- When the crane is not in use, always raise the crane hook above head level.

POLL QUESTION #2

Multiple Choice

What is/are the requirement(s) set by OSHA for inspection of Cranes and Hoists?

A. Pre-use
B. Frequent and Periodic
C. Monthly
D. A and C

GENERAL REQUIREMENTS

- Disconnect power to a hoist that is unsafe or in need of repair.
- Arrange to have the disconnect switch locked and the control panel tagged with and “Out of Order” or “Do Not Operate” tag.
- Never operate a hoist that has been tagged with an “Out of Order” or “Do Not Operate” tag, or is your opinion, UNSAFE TO OPERATE…

INSPECTION REQUIREMENTS

Inspection procedure for cranes in regular service is divided into two general classifications.

- “Frequent“ (daily)
- “Periodic“ (1- to 12-month intervals)

INSPECTION REQUIREMENTS – DAILY

- Check for any loose or missing parts.
- Check end stops. End stops prevent the trolley from running off the beam.
- Know the location of disconnect switch that will cut the power off only to the hoist or crane. Be sure it is readily accessible and not blocked.

INSPECTION REQUIREMENTS – DAILY

- Controls must be labeled and must be operational
- Check upper hoist limit switch by slowly raising the block to trip the switch.
- Lower the hoist block to activate the lower limit switch if the hoist is so equipped, leaving at least one turn of rope on the take-up drum.

INSPECTION REQUIREMENTS – DAILY

- Make sure wire rope is properly seated in its drum and sheave grooves without any slack or overlapping.
- Operate the crane or hoist several feet in each direction that it travels. Listen for any unusual noises. Look for any jerky movements.

INSPECTION REQUIREMENTS – DAILY

- Check all hooks. Hooks should not be cracked, stretched, bent, or twisted.
- Each hook must have a safety latch that automatically closes the throat of the hook.
- If the latch is bent, spring is broken, or is otherwise damaged the latch must be repaired before use.
- Hooks should rotate freely in block assembly without any “grinding” felt or heard.

INSPECTION REQUIREMENTS – DAILY

- Check the block assembly for structural damage or cracks in any components.
- Sheaves should rotate freely without any grinding felt or heard coming from the bearings.
- The sheave guard must be unbroken and intact. No part of the sheave guard should be in contact with the wire rope or sheave.

INSPECTION REQUIREMENTS – DAILY

- Check the wire rope by lowering the block to the lowest level and looking for the following conditions. If any of these conditions are observed, they should be reported immediately.
  - Reduced diameter of the rope. This may indicate the rope has been stretched, has lost its inner core support, or has worn outside wires.
  - Any number of broken strands of wires.
  - Kinked, crushed, cut, or “bird caged” wiring, or wiring with heat damage.

INSPECTION REQUIREMENTS – DAILY

- Check the condition and capacity of nylon or synthetic web slings.
- Capacity ratings must be legible on the manufacturer's label.
- The capacity of the sling being used must be adequate for the load and attachment method.
- Replace slings immediately if excessive wear occurs.

INSPECTION REQUIREMENTS – PERIODIC

ASME B30.2 Service Class	Number of Shifts Operated per Day		
	1 Shift	2 Shifts	3 Shifts
	Frequency of Inspection		
Normal	ANNUAL	ANNUAL	ANNUAL
Heavy	ANNUAL	SEMI-ANNUAL TO ANNUAL	SEMI-ANNUAL
Severe	QUARTERLY	QUARTERLY	QUARTERLY

INSPECTION REQUIREMENTS – PERIODIC

- Deformed, cracked or corroded members
- Loose bolts or rivets
- Cracked or worn sheaves and drums
- Worn, cracked or distorted parts, such as pins, bearings, gears, rollers, etc.
- Excessive wear on brake-system parts

POLL QUESTION #3

Multiple Choice

Lifting devices such as slings and chains should be reviewed for what before use?

A. Capacity of web slings are legible
B. No knots, twists, or joined by knotting
C. Protection from sharp corners or sharp edges
D. All of the above

INSPECTION REQUIREMENTS – PERIODIC

- Inaccuracies in load, wind and other indicators
- Electric or fossil fuel motors
- Excessive wear of chain drive sprockets and chain
- Deteriorated electrical components, such as pushbuttons, limit switches or contactors

PREVENTATIVE MAINTENANCE

Employers must establish and maintain a preventive maintenance program based on manufacturer's recommendations

- Monthly
- Documented
- Third Party (Recommended)

SLINGS/CHAINS AND LIFTING DEVICES

- Check the condition and capacity of web slings
- Capacity ratings must be legible on the manufacturer's label
- The capacity of the sling must be adequate for the load and attachment method
- Replace slings immediately if excessive wear occurs

SLINGS/CHAINS AND LIFTING DEVICES

- Protect from being cut by sharp corners, sharp edges, protrusions or abrasive surfaces
- Do not twist or tie into knots, or join by knotting
- Do not pull from under loads if the load is resting on the sling
- Do not drop slings equipped with metal fittings
- Personnel, including portions of the body, shall be kept from between the sling and the load, and from between the sling and the crane hook or hoist hook

OSHA UPDATE

Nov. 10, 2018

Construction:

- Operators must hold a certification by crane type and lifting capacity.

New final rule wont be complete but by this date but OSHA will except operator certifications issued by type only or type and capacity.

ADDITIONAL RESOURCES

- Crane Manufacturers
- Crane Institute of America
- ANSI
- Third Party Service Vendors

SUMMARY

- Inspect cranes daily
- Document Preventative Maintenance
- Train your employees to inspect
- Train your employees safe operations
- Observe employee performance.

QUESTIONS?

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