MACHINERY & EQUIPMENT: 7 Key Elements of the Lifting Device Requirements

Cranes, hoists and other lifting devices are used in many industries, such as manufacturing, to safely move materials around the workplace. But if used incorrectly, they can endanger both the workers who operate the equipment as well as co-workers in the area. For example, lifting devices can drop their loads or run over workers in their paths. So we'll explain the seven key elements of the OHS requirements for such equipment and what you need to do to comply with these requirements.

Defining Our Terms

The OHS regulations use various terms for cranes, hoists, winches and similar devices. For simplicity's sake, we'll use the term 'lifting devices' throughout to refer to this type of equipment. In addition, this article covers only the general requirements for such equipment in the OHS regulations, not any specific requirements for particular types of lifting devices.

7 KEY ELEMENTS

The OHS regulations in all Canadian jurisdictions include requirements on the use of lifting devices. Some jurisdictions have entire sections of their regulations devoted to this equipment, while others address their use in sections that

cover materials handling. You must obviously ensure you comply with the requirements in the applicable OHS regulations for your workplace. But although there are differences between jurisdictions, the lifting device requirements have a lot in common. So here are the seven key elements of the lifting device requirements:

1. Design and Construction

Lifting devices can either be:

- Commercially made’that is, made by a manufacturer for use by anyone in need of such equipment and available at retail; or
- Not commercially made’that is, made specifically for a company or a site based on the specific needs, requirements and/or challenges of the work for which it’s going to be used.

In either case, the OHS regulations generally require all lifting devices to be designed, constructed, erected, maintained, etc. in accordance with certain standards, such as:

- CSA Standard Z150-98, *Safety Code for Mobile Cranes*;
- CSA Standard Z248-2004, *Code for Tower Cranes*;
- CSA Standard Z256, *Safety Code for Material Hoists*; and
- ANSI Standard ANSI/ASME B30.22-2005*, Articulating Boom Cranes*.

In addition, if a lifting device isn’t commercially made, the OHS regulations typically require a professional engineer to design or inspect the equipment and certify that it complies with the applicable standard.

2. Load Capacities & Load Charts

Different types of lifting devices are better suited for different tasks. Which type you should use will depend on

several factors, the most important of which may be the size and weight of the materials to be moved by it. That’s because lifting devices have specified load capacities, which are the maximum amount they can safely lift. Because a device’s load capacity is so critical, the OHS regulations generally require lifting devices to have this information posted on them on either a plate or waterproof label. The load capacity information must be permanently affixed to the device and legible.

In addition, a lifting device’s load capacity may vary depending on how it’s used, such as the length or angle of the boom. So many types of these devices also come with load charts that show the rated load capacity for the equipment for all permitted uses and working positions. For such lifting devices, employers must ensure that the load charts are available to operators of such equipment, such as by conspicuously and permanently affixing it to those devices (usually in their cabs). As with load capacity information, load charts must be legible.

3. Inspections of Devices

The OHS regulations require lifting devices to be inspected to ensure that they’re safe to be operated as designed. You should generally ensure that lifting devices are inspected:

- Before they’re used for the first time;
- By the operator each shift before they’re used; and
- After any safety incident involving the devices in which they could’ve been damaged in any way. (If a device was damaged, it should be taken out of use immediately until it can be properly repaired.)

In addition, some jurisdictions also require regular inspections of lifting devices, such as once a month or annually

4. Log Books

The results of the above inspections must generally be noted in the logbooks many jurisdictions require employers to maintain for their lifting devices. The logbook, which must be kept with the device and made available to its operators and to OHS inspectors on demand, must typically include:

- The date and time when any work was performed on the lifting device;
- Length of time in service;
- Any defects or deficiencies and when they were detected;
- Inspections, including examinations, checks and tests, that were performed on the device;
- Repairs or modifications performed on it;
- Records of any required certifications;
- Any matter or incident that may affect the device's safe operation; and
- Any other operational information specifically identified by the employer.

5. Training of Device Operators

Ensuring the lifting device itself is in good condition and safe to use is only half the battle'you must also ensure that the workers operating such equipment are properly trained to safely do so. In some jurisdictions and for certain types of lifting devices (usually mobile cranes and boom trucks), operators must be certified or hold a valid operator's certificate for such devices. Otherwise, employers must simply ensure that workers are qualified or 'competent' to operate the assigned lifting device. (See, '[Compliance 101: What Makes a Worker a 'Competent Person' under OHS Laws']' Sept. 2008, p. 11.) In this context, a worker who's competent to operate a designated lifting device:

- Can demonstrate the device's proper operation;
- Is knowledgeable about its load capacity and load chart; and
- Understands the system of hand signals to be used when

operating the device.

***Insider* Says:** The workers who'll operate lifting devices aren't the only ones who must be trained on them. For example, workers who may serve as signalers for the operators of such devices should be trained on the use of the hand signal system. And *all* workers who must work in the vicinity of this equipment must be trained on how to safely do so, such as staying out of the way and not walking or standing underneath elevated loads being lifted by these devices.

6. Use of Devices

To ensure the safe use of lifting devices, you should have detailed safe work practices and rules in place. The safe work practices should cover all aspects related to the use of lifting devices, most notably:

Load calculations. As noted above, lifting devices can only safely lift loads up to certain weight limits. If workers overload a lifting device, the load could fall, part of the device could collapse or the whole thing could fall over.

Example: A twenty-two-year-old worker was crushed when his crane toppled over as he tried to lift more weight than his machine could handle. WorkSafeBC initially imposed $233,000 in penalties on the worker's employer and the prime contractor for the incident, but on appeal the employer's fine was cut in half and the prime contractor's fine was cancelled [*SNC-Lavalin Constructors (Pacific) Inc. and Rizzani de Eccher*, Govt. News Release, Feb. 23, 2011].

So it's important that workers properly calculate the weight of the load that needs to be lifted to determine the appropriate device to use. To do so, you must ensure that they have the information necessary to accurately determine the load's *total* weight, which includes the weight of:

- The load itself;

- The hook and block; and
- Any slings or other lifting attachments.

If the weight exceeds the device's rated load capacity, workers shouldn't use that device to lift it. They'll have to either modify the load to decrease its weight or use a different lifting device that can safely lift a load that size. Note that in some jurisdictions, if the load's weight *can't* be accurately determined, the lifting device used to move it must have a load weight indicator, load limiting device or a system that prevents overloads.

Signallers. In most jurisdictions, unless the operator of a lifting device has an unobstructed and clear view of its operation, you must designate a worker to give signals to the operator for the safe operation of the device. Without a signaller, the operator is working blind, which can have tragic results.

Example: A worker was using a boom crane to unload a truck when the boom contacted an overhead power line, fatally electrocuting him. His employer was convicted of several safety violations, including failing to ensure that a competent worker designated as a signaller was in place, and was fined $85,000 [*Evans Lumber and Builders Supply Ltd.*, Govt. News Release, July 23, 2013].

Generally, the signaller will use a system of hand signals to communicate with the operator, although some jurisdictions also permit the use of other systems, such as two-way radios, if the use of hand signals isn't practical or safe. Signallers should be readily identifiable to lifting device operators. And operators should act only on the signals from signallers'not gestures made by other workers.

Loads over work areas. Workers in the vicinity of lifting devices in use are at risk in many ways, especially if the devices carry loads over areas where they're working. That's

why the OHS regulations generally say that if it's reasonably practicable, loads *should not* pass over workers. But the laws recognize that doing so can't always be avoided. So you may be permitted to use a lifting device to move a load over workers provided certain conditions are met, such as:

- There's no other practical alternative under the circumstances; and
- The workers who'll be under the load are effectively warned of the danger, such as through an audible signal.

In addition, instruct workers that they shouldn't stand or walk under elevated loads unless it's necessary and the device operator knows that they're under the load.

***Insider* Says:** See the box below for 10 basic rules for the safe use of lifting devices that you should include in your safe work practices.

7. Repair & Maintenance of Devices

As with all equipment, lifting devices must be properly maintained in order to operate effectively and safely. Under the OHS regulations, you should typically implement a maintenance schedule for this equipment based on the manufacturer's specifications or the applicable CSA or other standard'whichever is more stringent. Maintenance should be performed only by qualified workers. And all maintenance work performed on a lifting device should generally be noted in its logbook.

These devices must also be properly repaired when necessary. Because of the complexity of these devices, the OHS regulations often require repairs on them to be performed by or under the direction of a professional engineer. In addition, such repairs should also be noted in the device's logbook.

BOTTOM LINE

The key purpose of lifting devices is to move materials that workers can't safely move on their own. So it's especially tragic when workers get hurt'or worse'by equipment essentially intended to protect them. That's why it's crucial that you implement measures to ensure the safe operation of lifting devices in your workplace. Taking all reasonable steps to address the key elements identified above will help you prevent safety incidents involving this equipment and avoid fines or other penalties for violating the requirements for them in the OHS regulations.

10 Rules for Safe Use of Lifting Devices

Here are 10 basic rules for the safe use and operation of lifting devices, such as cranes and hoists:

1. Operators shouldn't leave a lifting device unattended when a load is suspended from it.

2. Ensure that safe work procedures for work around overhead power lines are followed when there's a risk a lifting device could come into contact with such lines. (See, 'Electrical Safety: Take 4 Steps to Protect Workers Around Overhead Power Lines,' May 2013, p. 1.)

3. When the movement of a load could endanger others, use tag lines, guide ropes or clamps to control it.

4. When traveling with a load, the operator should ensure it's carried as close to the ground as possible.

5. Workers shouldn't ride on a load, hook, rigging or bucket attached to a lifting device.

6. Make sure to implement appropriate traffic safety measures, such as signs, barricades or flaggers.

7. Ensure lifting devices have audible warning signals to alert workers to lifting operations.

8. Ensure that the wind or other weather conditions won’t impact the lifting of a load or make it hazardous.

9. Protect the operators of lifting devices from hazards, such as falling or flying objects or material and extreme cold or heat.

10. The load must be safely landed and supported *before* it’s unhooked from the lifting device.