

HEALTH & SAFETY ADVISORY

Safe Guarding Around Powered Trolley Hoists

A large part of roofing work involves moving supplies and equipment with hoisting systems. The most popular materials-handling system for this task is a conventional powered trolley hoist. Not only is it a low-cost option but also it can work in areas where space is so limited that a crane could not be used to lift equipment onto the roof.



Hazard

Workers who operate a trolley hoist must handle two lever clutches and a brake system. Critical injuries and damage to property and roofing equipment can occur if the hoist system or hoist drum are not set up or designed properly.

Crush or pinch injuries

Crush or pinch injuries can occur if the cable drums of the trolley are not properly guarded (see Figure 1). A crush or pinch injury occurs when the body or a part of the body is trapped, pinched, or jammed under or between the cables and the rotating cylinder. The high pressure of the contact between the trolley drum and cables can damage skin, muscles, nerves, or bones.

Poor design of the trolley hoist (e.g., improper guarding around the cable drum) can cause fingers, hands, and lower arms to be drawn into the rotating cylinder. The hoist operator or those working near the hoist can also be drawn in between the cable and the hoist drum if their hands or clothes are in contact with the rotating cables or drum.

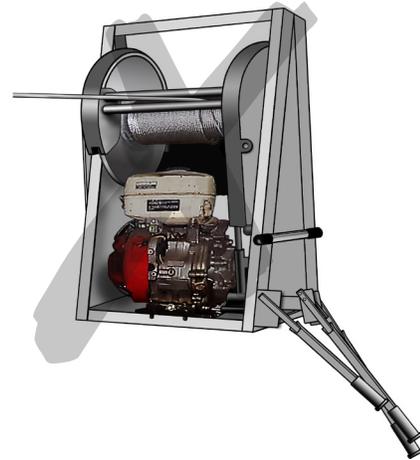


Figure 1: A trolley hoist with no guard cover around the cable drum can cause crush or pinch injuries

Legislative Requirements

The employer has a legal duty to identify this hazard to workers and their supervisors as per the following requirement under the *Occupational Health and Safety Act*:

An employer shall acquaint a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent. (OHSA, s.25(2)(d))

MOL inspectors will actively enforce proper guarding on trolley hoists to prevent crush or pinch injuries to workers.

In addition, the Construction Projects regulation requires guards or fencing over the hoist to prevent workers from coming into contact with the cable as it wraps around the hoist drum.

In these situations, guards are used to prevent workers from being exposed to hazards from moving parts on the machines:

Every gear, pulley, belt, chain, shaft, flywheel, saw and other mechanically-operated part of a machine to which a worker has access shall be guarded or fenced so that it will not endanger a worker. (O. Reg. 213/91, s.109)

Protective Measures

Installing a guard in front of the cable drum area can prevent the operator and workers near the machines from being drawn into the wheel drum area. Barrier guards around the cable drum area must have the following features:

- They must be constructed to withstand operational forces and environmental conditions.
- They must be free of sharp edges and projections and not create any additional hazards themselves.
- They must be a metal mesh or Plexiglas shield that covers the entire drum area when the machine is in operation. This will allow the operator to observe the cable as it wraps around the drum. (See Figure 2.)
- They must have the ability to be bolted shut, locked shut with a key, or interlocked when the machine is in operation.
- The cable wire opening cannot be more than 49 mm (1.875") in diameter to prevent fingers and hands from being drawn into the machine when in operation (as per CSA Z432: *Safeguarding of Machinery*).

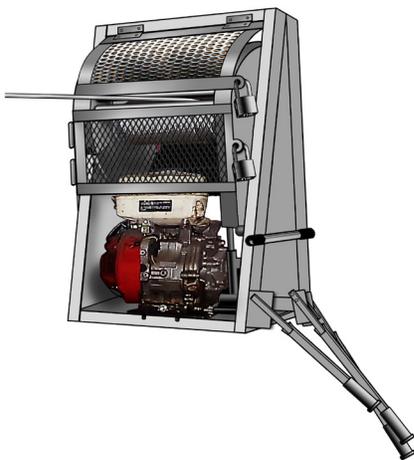


Figure 2: Guarding around the cable wire drum can be metal mesh or Plexiglas

- Covers must have a means of secure attachment (i.e., a latch) and allow access to the machine when it's not in operation. For example, Figure 3 shows a metal mesh guard cover that is hinged on the opposite side from the operator, which allows them to access the fuel tank and do maintenance on the spool and cables when the equipment is not in operation. The latch is on the same side as the operator for easy reach. Note the two metal rollers near the top, which makes winding the cable easier.

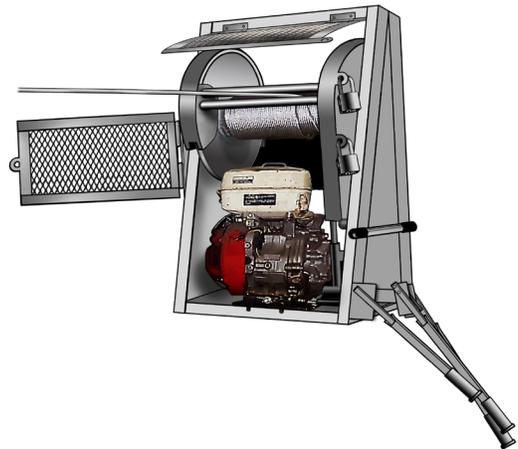


Figure 3: Cover with latch on the same side as the operator and hinge on opposite side

Additional Resources

For more information on the hoist system setup and other requirements by the Ontario Ministry of Labour (MOL), refer to the following documents:

1. MOL Alert: *Unguarded Rotating Trolley Track Hoist Drums* – contains additional solutions to protect operators and those working near trolley hoists.
labour.gov.on.ca/english/hs/pubs/alerts/c26.php
2. IHSA's *Low-Slope Roofing Health and Safety Manual* (M070) – available to order or download from the ihsa.ca website

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