



HALO

Handling and Storing- Reeling, Unreeling, and Drum Winding

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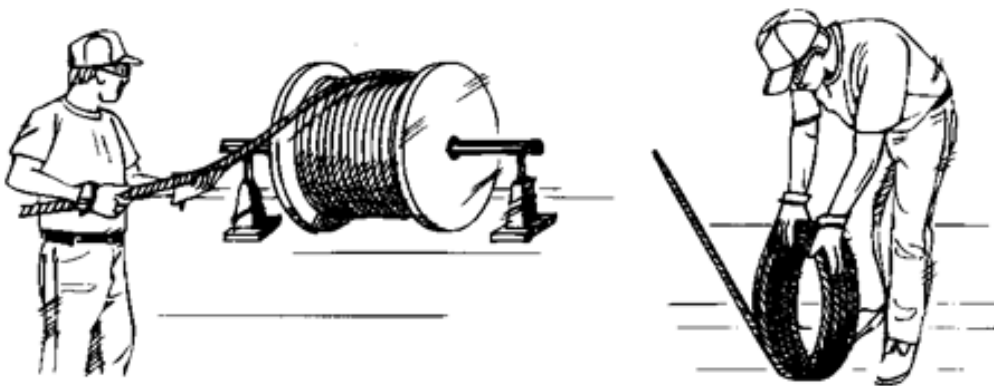


Handling and Storing - How to Reel & Unreel

Wire rope is shipped in cut lengths, either in coils or on reels. Great care should be taken when the rope is removed from the shipping package since it can be permanently damaged by improper unreeling or uncoiling.

You should mount a reel on jacks or a turntable so that it will revolve as you pull the rope off. Apply sufficient tension by means of a board acting as a brake against the reel flange to keep slack from accumulating.

With a coil, stand it on edge and roll it in a straight line away from the free end. You may also place a coil on a revolving stand and pull the rope as you would from a reel on a turntable.



Looping the rope over the head of the reel or pulling the rope off a coil while it is lying on the ground, will create loops in the line. Pulling on a loop will, at the very least, produce imbalance in the rope and may result in open or closed kinks. Once a rope is kinked, the damage is permanent. To correct this condition, the kink must be cut out, and the shortened pieces used for some other purpose.

The three stages of kinking:

1. The start: A rope should never be allowed to accumulate twist as shown here because it will loop and eventually form a kink. If this loop is removed before being pulled down tight, you can normally avoid the kink.
2. The kink. By now, the damage is done, and the rope must not be used.
3. The result: Even if the wires do not appear badly damaged, the rope is still damaged and must be replaced.



If a twist develops, remove the twist from the rope before a kink can form.

Handling and Storing - Drum Winding

Drum spooling: a tight situation for crane operators.

When you're installing a new rope onto a crane, there's a primary objective: spool the rope onto the equipment tightly without trapping any twist in the rope on the drum. (See installation guidelines for details.)

For multiple-layer spooling, it's essential to get the first layers of rope spooled with sufficient tension. Particularly with smooth-faced drums, the first layers must be tight with each wrap snug against the preceding wrap. Since the first layer provides the "grooving" for upper layers, wraps must be placed tightly together. If not, wraps in upper layers will pull down between wraps already on the drum, which can cause crushing damage and reduced rope strength and service life.

When you encounter spooling problems, check the following list to identify the possible cause. If any of these are incorrect, the result can include open (or loose) spooling, random spooling or stacking of rope against drum flanges.

Drum alignment.

Before spooling, make sure the drum is level and at right angles to the boom. Many drums are mounted on the frame so that adjustment can be made in alignment.

Drum Winding:

Drums are the means by which power is transmitted to the rope and then to the object to be moved. For the wire rope to pick up this power efficiently and to transmit it properly to the working end, installation must be carefully controlled.

Grooved

If the drum is grooved, the winding conditions should be closely supervised to assure adherence to the following recommended procedures:

1. The end of the rope must be secured to the drum by such means as will give the end termination at least as much strength as is specified by the equipment manufacturer.
2. Adequate tension must be maintained on the rope while it is being wound so that the winding proceeds under continuous tension.
3. The rope must follow the groove.
4. It is preferable to have at least three dead wraps remaining on the drum when the rope is unwound during normal operation. Two dead wraps are mandatory requirements in many codes and standards.

Plain (Smooth)

Installation of a wire rope on a plain (smooth) face drum requires a great deal of care. The starting position should be at the correct drum flange so that each wrap of the rope will wind tightly against the preceding wrap. Here too, close supervision should be maintained during installation. This will help make certain that:

1. the rope is properly attached to the drum,
2. appropriate tension on the rope is maintained as it is wound on the drum,
3. each wrap is guided as close to the preceding wrap as possible, so that there are no gaps between turns,
4. and that there are at least two dead wraps on the drum when the rope is fully unwound during normal operating cycles.

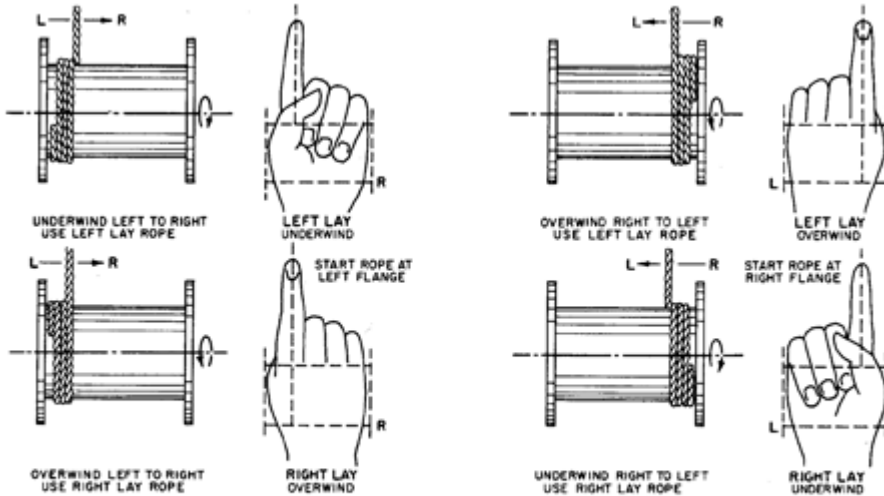


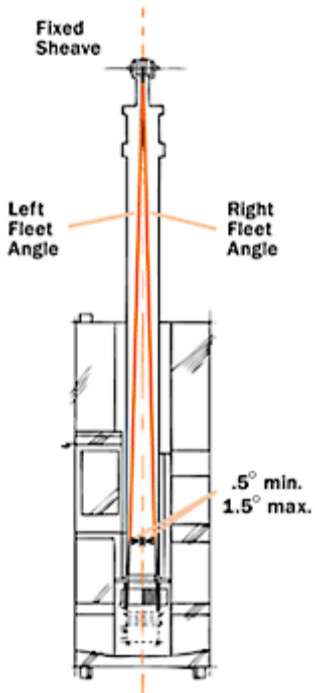
Figure 32. By holding the right or left hand with index finger extended, palm up or palm down, the proper procedure for applying left-and right-lay rope on a smooth drum can be easily determined.

Use of a swivel.

Except for Category 1 rotation-resistant ropes and XLT⁴, a swivel end termination will let the rope lay lengthen when loaded. As the rope spools onto a drum, the unladen rope travels over the point sheave and accumulates between the drum and point sheave. This leads to block rotation, erratic spooling, unbalancing and decreased rope service. Category 1 rotation resistant ropes and XLT⁴ may be used with a swivel without these concerns.

Fleet angle.

One of the most important factors in proper winding of rope on drums. For smooth-faced drums, this angle should be between 1/2° and 1-1/2". For grooved drums, it should be between 1/2" and 2". Fleet angles larger than these can cause spooling problems and the rope to rub against the flanges of the sheave - plus may lead to rope crushing and abrasion on the drum. Fleet angles smaller than these may cause the rope to pile up at the flanges.



Point sheave.

When more than one sheave is in use at the boomtip, make sure the lead line presents the optimum fleet angle to the drum.

Grooved drums.

Groove spacing must be adequate to prevent the rope from crowding out adjacent wraps as the rope spools across the drum. In addition, groove spacing must not be excessive, which can allow wraps of the next layer to pull down between wraps of the previous layer, causing abrasion and crushing.

Drum flanges.

Flanges should be perpendicular to the drum face and not worn, deformed or spread outward. These conditions can cause spooling problems at the change-of-layer point as additional layers are spooled.

Improper installation.

When a rope has been installed in such a way that twist has been introduced into the rope, spooling problems can result. (See installation guidelines for details.)

Riser strips and kick plates.

If spooling problems persist after you've considered the above conditions, try using riser strips and kick plates. For details on these accessories, check with your crane manufacturer or call WRCA for technical service.