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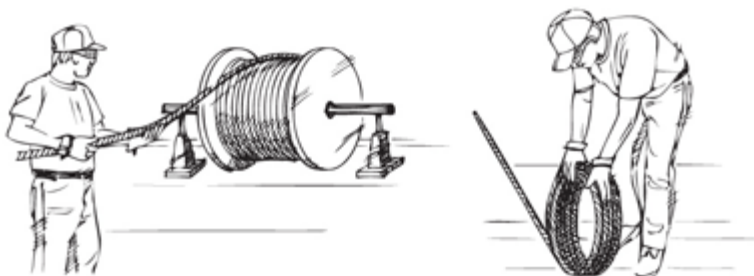
Guidelines for Wire Rope Installation

Shown here is the preferred installation technique for cranes and hoists.

1. UNLOAD ROPE PROPERLY AND RELIEVE ANY TWISTS.

Normal spooling and handling can induce twist in a rope. If a twist becomes trapped in the rope it can cause spooling problems or a kink resulting in permanent damage and/or operational problems with spooling or block rotation.

One method to assure release of trapped twist is to remove the rope from the shipping reel and pull it straight out on the ground. Mount the reel on a shaft supported by two jacks, a roller payoff or unreeling stand. Remove the rope from the spool by grasping the end and, keeping the rope straight, walk it away. This will allow any trapped twist to work itself out as the rope is pulled onto the drum.



In areas of limited space it can be necessary to install directly from the shipping reel to the drum. This may result in a twist being trapped in the rope on the crane. Mounting the reel on a shaft supported by two jacks on the ground will allow for a direct transfer. Prevent over-rotation of the reel by applying a brake to the spool flange of the shipping reel while spooling rope onto the crane's drum. Never apply a brake against the spooled rope itself or pass the rope between a pair of blocks used as a caliper brake. This will damage the rope and may make it unusable.

Install the rope on the drum focusing on keeping twist out of the rope and on thread laying the rope on the drum.

Before proceeding with reeving, make a final check for twists that may still be trapped in the rope (this is particularly important with direct-from-shipping reel installation). Pull enough rope off the drum to allow it to hang slack from a horizontal position. If the rope wraps together and does not form a smooth "U" shape, there is a twist trapped in the rope.



To remove any twist found in a single part line, extend the boom to

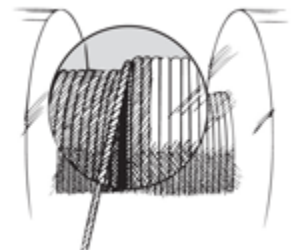
maximum length and raise it to its highest point. Pay out the rope with only the overhaul ball attached and let it hang, just off the ground, fully extended until the twist works itself out. Twist may also be removed by pulling the rope straight off the drum onto the ground. If this method is used, the end of the rope must be completely straight. Cut off any dogleg present from an end termination. Allow the end of the rope to rotate as twist comes out when the rope is spooled back onto the crane's drum.

2. ATTACH ROPE'S END TO DRUM. Pull the rope over the point sheave and attach the end to the drum. Before making any end attachment, be sure the rope strands are free to adjust. (In other words, make sure the end of the rope is not welded together.)

3. WIND ROPE ONTO DRUM SLOWLY AND CAREFULLY. At this point, it isn't necessary to provide additional load other than the weight of the rope being pulled across the ground.

4. MAINTAIN PROPER TENSIONING ON DRUM. All wire ropes work better on grooved drums. The grooves guide the rope for proper spacing of the wraps. Smooth-faced drums always present a problem. Small variation in rope diameter from one rope to another affects the position of the last wrap on the base layer and results in varying space between the last wrap and the flange. This allows the bottom layer to slide on the smooth drum face when the second layer spools over it. It also leads to loss of thread lay at the change of layer point. It is essential to establish correct spooling and proper tension on the lower layers of rope on smooth-faced drums to prevent their displacement as upper layers are spooled over them.

Regardless of the type of drum, to assure tight spooling, a brief, but thorough breaking-in period is required. This training or breaking-in period has important benefits for length of service and proper spooling. Breaking in a rope removes the constructional stretch. This slightly reduces the rope's diameter and makes it more dense which increases resistance to crushing in multiple layer spooling. This is especially important for the lower layers on a drum that may not bear a significant load during normal operations. The break-in period also assures that the rope is spooled on the drum under tension. Again, it is very important lower layers are spooled under tension to reduce "pull-down" or "suck-in" of tensioned upper wraps. If this condition occurs, the lower layers should be re-installed under greater tension.



5. SPOOL MULTIPLE LAYERS WITH SUFFICIENT TENSION. It's very important to apply a tensioning load to the ropes during the rope breaking-in process. (If not, the lower layers may be loose enough that the upper layers become wedged into the lower layers under load, which can seriously damage the rope.) The tensioning load should range from 2 to 3% of the rope's minimum breaking force.

FOR ROPES IN MULTI - PART SYSTEMS: Reeve the traveling block and boom tip sheaves so the rope spacing is maximized and the traveling (hook) block hangs straight and level to help assure block stability. Avoid dead-ending the rope at the traveling block if possible.

