



Product BULLETIN

Wire Rope Corporation of America

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Powered Scaffold Hoist Ropes — Swivels

“Never use a swivel that allows the rope to rotate under load.”

Wire ropes used on powered scaffold hoists are not designed to be used with a swivel. A swivel that allows a rope to rotate can cause a reduction in rope breaking strength, an unbalance in the rope, and unpredictable service life.

A rope that is properly handled and installed will have no torque in it before the rope is loaded. As a load is applied, the wires and strands try to align themselves with the axis of the wire rope — thus creating a torque in the rope. This load-created torque is normal and the rope is designed to operate in this condition.

If a rope is attached to a swivel and allowed to rotate to relieve this load-created torque, the rope will not operate as designed. The rotation while under load will be in the direction to unlay the strands from the rope — thus lengthening the rope lay. Because wires and strands are at different distances from the wire rope axis, when a wire rope is allowed to rotate, the wires and strands change length at different rates. Thus, each wire and strand no longer carries its designed share of the load, but more or less load depending on its position in the wire rope. This causes the wires and strands that carry more of the load to wear out more rapidly and may result in loading them to the point that they fail. Wires and strands that carry less load can become loose and create an unbalanced condition in the wire rope. **A rope in this condition is susceptible to “milking” of the strands leading to a “birdcage” when operated through a traction drive scaffold hoist. As the hoist climbs, the partially unlayed rope section is passed through the traction system accumulating some of the looseness above the hoist. Permanent deformation can occur to the partially unlayed rope from the forces exerted by the traction drive system as the rope passes through it. Once this happens, the potential for “milking” and “birdcaging” of the rope exists above and below the powered scaffold hoist.**

Because of these problems, we recommend that swivels that allow the rope to rotate under load not be used with wire ropes that we manufacture.

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