



WIRE ROPE INSPECTION CHECKLIST

This structured wire rope maintenance checklist serves as a practical, step-by-step framework that operators and inspectors can reference before and during operations. It must always be used alongside applicable federal and industrial safety standards.

OVERALL ROPE CONDITION

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COUNT BROKEN WIRES

Inspect the active length of the cable to systematically count the number of broken wires per individual strand and within a single lay length.

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ASSESS HEAT DAMAGE

Inspect the steel for discoloration, localized heat patterns, or a total loss of internal wire rope lubrication caused by extreme thermal exposure.

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LOOK FOR CORROSION

Check the exterior surface for signs of wire rope corrosion, pitting, or rust, and inspect internal layers where accessible.

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MEASURE DIAMETER

Use a technician's caliper to measure the outer diameter across its widest opposite points. Compare this to the nominal diameter, checking for a wire rope diameter reduction exceeding 1/64 inch or any clear evidence of localized core failure.

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CHECK FOR GEOMETRICAL DISTORTION

Examine the entire body for severe structural flaws, including wire rope kinking, wire rope birdcaging, or any permanent structural distortion that alters the rope's original geometry.

WEAR AND ABRASION

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EVALUATE WIRE PROFILES

Inspect the crown of the outer wires for flat spots, peening, or a significant loss of wire cross-section driven by continuous wire rope wear and surface-to-surface abrasion.

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IDENTIFY LOCALIZED WEAR PATTERNS

Note whether severe abrasion is concentrated in a specific zone, because localized wear often indicates underlying sheave damage or drum misalignment issues.

FATIGUE AND MECHANICAL DAMAGE

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MONITOR BENDING ZONES

Look for individual broken wires concentrated near end fittings or clustered within critical zones subjected to repeated bending stress.

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CHECK FOR COMPRESSION

Inspect the assembly for physical wire rope crushing, flattening, or ovalization of the cross-section, which severely impacts overall flexibility and load-bearing capacity.

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SPOT PROTRUDING ELEMENTS

Look for displaced or protruding wires (often called popped wires), which serve as an immediate indicator of severe internal damage or historical overloading events.

END FITTINGS AND TERMINATIONS

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INSPECT CONNECTIONS

Examine all swaged fittings, socketed connections, and clipped terminations for structural cracks, physical distortion, or material deformation.

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CHECK LOAD-BEARING THIMBLES

Evaluate heavy-duty thimbles for cracking, symmetry loss, or excessive wear at the precise contact points where the rope bears load.

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VERIFY CLIP PLACEMENT

Ensure all wire rope clips are properly installed (the U-bolt must always rest on the dead end of the cable, with correct spacing intervals and proper torque applied to the nuts).

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CHECK FOR TRAPPED MOISTURE

Look closely for rust or pitting concentrated at termination points, as moisture frequently accumulates at rigid fittings.

SHEAVES AND DRUMS (WHERE ACCESSIBLE)

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EVALUATE SHEAVE GROOVES

Inspect the contour of sheave grooves for excessive wear, deeper ridges, or micro-cracks.

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ANALYZE DRUM GROOVES

Check the drum grooves to ensure smooth spooling and identify identical wear patterns across the drum face.

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CHECK ALIGNMENT

Look for misalignment that forces the running wire rope cable to rub aggressively against sheave flanges.



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WHEN SHOULD WIRE ROPE BE REMOVED FROM SERVICE?

Adhering to strict wire rope removal from service criteria is essential for ensuring site safety and maintaining regulatory compliance. According to ASME B30 standards and Wire Rope Technical Board guidance, an industrial cable must be removed from active service immediately if it exhibits any of the following rejection conditions:

DAMAGE CATEGORY	SPECIFIC REMOVAL CRITERIA
Broken Wires	Six or more randomly distributed broken wires in one lay length, or three or more broken wires in a single strand within one lay length (refer to ASME B30.9 or specific regulatory criteria for your application).
Diameter Reduction	Any wire rope diameter reduction exceeding 1/64 inch from nominal diameter, or any clear indication of core failure such as a reduction in diameter greater than 3/64 inch.
Heat Damage	Clear evidence of thermal damage, including steel discoloration, blueing of the wires, or completely melted internal lubrication.
Corrosion	Advanced evidence of corrosion, particularly pitting or suspected internal corrosion that cannot be fully assessed externally.
Structural Distortion	Any permanent kinking, birdcaging, or structural distortion that alters the uniform rope geometry.
Wire Displacement	The physical displacement or protrusion of individual wires or strands from the main rope body.
Overloading	Any operational evidence indicating that the cable has been subjected to a sudden shock load or a severe overload event.
Termination Issues	Visible damage, structural cracking, or rope slippage at end fittings or terminations.

LEXCO'S WIRE ROPE EXPERTISE

Maintaining safe operations requires high-quality industrial cable assemblies and reliable inspection practices. At Lexco Cable, we specialize in offering custom wire rope assemblies tailored to your exact project specifications. Beyond supplying superior galvanized wire rope, aircraft cable, and stainless steel wire rope, our technical capabilities include precision wire rope cutting, professional swaging and crimping, and rigorous proof loading and pull testing to verify safety and compliance.

Contact Lexco today to discuss your technical specifications and secure the reliable hardware your project demands.

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