

WIRE ROPE SLING INSPECTION

Broken wires, wear and tear



Initial Inspection (prior to initial use)

Best practice is to inspect the wire rope sling upon receiving it from the manufacturer. Double-check the sling tag to make sure it's what you ordered and that the rated capacity meets all of your project specifications and lifting requirements.

Frequent (daily or prior to use):

Designate a Competent Person to perform a daily visual inspection of slings and all fastenings and attachments for damage, defects, or deformities. The inspector should also make sure that the wire rope sling that was selected meets the specific job requirements it's being used for.

Users can't rely on a once-a-day inspection if the wire rope sling is used multiple times throughout the day. Damage to wire rope can occur on one lift and best practice is to perform a visual inspection before any shift change or changes in lifting application. Because shock loads, severe angles, sharp edges, and excessive heat can quickly cause damage to a lifting sling, the user should inspect the sling prior to each lift.

Periodic Inspection:

A periodic inspection is performed by either a professional service provider, or by a Qualified Person, every 12 months (at a minimum) and monthly to quarterly in more severe service conditions. The following are all determining factors in scheduling the frequency of a periodic inspection:

- Frequency of use
- Severity of service conditions
- Nature of the lifts being performed
- Experience gained on the service life of wire rope slings used in similar applications

ASME provides these additional periodic inspection guidelines based on the service of the wire rope sling:

- Normal Service – Yearly
- Severe Service – Monthly to Quarterly
- Special Service – As recommended by a Qualified Person

What's Required on a Wire Rope Sling Identification Tag?

Per ASME B30.9, the wire rope sling tag on all new slings shall be marked by the manufacturer to include:

- Rated load for the types of hitches (single-leg vertical, choker, and basket) and the angle upon which they are based
- The diameter or size
- Name and trademark of the manufacturer
- Number of legs, if more than one

If the tag is missing or illegible, the inspector should remove the sling from service and send it to the manufacturer for current or updated certification, tagging, and testing.



Basic Inspection Criteria for Wire Rope Slings

The goal of a sling inspection is to evaluate remaining strength in a sling which has been used previously to determine if it is suitable for continued use. When inspecting wire rope slings, daily visual inspections are intended to detect serious damage or deterioration which would weaken the sling.

This inspection is usually performed by the person using the sling in a day-to-day job. The user should look for obvious things, such as broken wires, kinks, crushing, broken attachments, severe corrosion, etc. Any deterioration of the sling which could result in appreciable loss of original strength should be carefully noted and determination made on whether further use would constitute a safety hazard.

ASME B30.9 Standards Specify That a Wire Rope Sling Shall Be Removed from Service Immediately if Any of the Following Conditions Are Present:



KINKING



DOGLEGS



BIRDCAGING



SEVERE WEAR



BROKEN WIRES



CORROSION



DAMAGED FITTINGS



ILLEGIBLE TAG / ID

- 1. Missing or illegible sling identification.** If the tag is missing or illegible, the inspector should remove the sling from service and send it to the manufacturer for current or updated certification, tagging, and testing.
- 2. Broken Wires:** For strand-laid grommets and single-part slings, ten randomly distributed broken wires in one rope lay, or five broken wires in one strand in one rope lay.
- 3. Distortion:** Kinking, crushing, birdcaging or other damage which distorts the rope structure. The main thing to look for is wires or strands that are pushed out of their original positions in the rope.
- 4. Heat Damage:** Any metallic discoloration, fusing of wires or loss of internal lubricant caused by exposure to heat.
- 5. Damaged End Attachments:** Cracked, bent or broken end fittings caused by abuse, wear or damage.
- 6. Bent Hooks:** No more than 5 percent over the normal throat openings, measured at the narrowest point from the plane of the unbent hook (see ASME B30.10 Hooks).
- 7. Corrosion:** Severe corrosion of the rope or end attachments which has caused pitting or binding of wires should be cause for replacing the sling. Light surface rust does not substantially affect strength of a sling.



8. Pulled Eye Splices: Any evidence that eye splices have slipped, tucked strands have moved or pressed sleeves show serious damage may be sufficient cause to reject a sling.

9. Unbalance: A very common cause of damage is the kink which results from pulling through a loop while using a sling, thus causing wires and strands to be deformed and pushed out of their original position. This unbalances the sling, reducing its strength.

10. Kinks: Are tightened loops with permanent strand distortion that result from improper handling when a rope is being installed or while in service. A kink happens when a loop is permitted to form and then is pulled down tight, causing permanent distortion of the strands. The damage is irreparable and the sling must be taken out of service.

11. Doglegs: Are permanent bends caused by improper use or handling. If the dogleg is severe, the sling must be removed from service. If the dogleg is minor, (exhibiting no strand distortion) and cannot be observed when the sling is under tension, the area of the minor dogleg should be marked for observation and the sling can remain in service.

All inspections are carried out in accordance to ASME standard B30.9