

Always Inspect Incoming Rigging

I have been in the crane and rigging industry for over 43 years. During that time, I have managed two full-service rigging fabrication facilities in addition to instructing users on how to use, inspect, and care for rigging.

In my experience, one of the most common inspection mistakes companies make is not conducting a thorough initial inspection when they receive brand new rigging products.

You'd expect something new that comes directly from a manufacturer or dealer to be perfect. Most times it is, but not always.

Slings, shackles, swivels, links, hooks, wire rope, and other rigging components are too important *not* to inspect upon arrival. Lives depend on them being right.

Here are the types of inspections identified in the ASME B30 standards, and the criteria for each type.

Initial Inspection: Prior to use, each new, altered, modified, or repaired sling shall be inspected to verify compliance with the applicable provisions of its particular standard.

Frequent Inspection: Each shift, before the rigging is used, a visual inspection for damage shall be performed. Rigging used in severe or special service should be inspected before each use. Rigging found with conditions such as those listed in the applicable standard shall be removed from service immediately. Rigging shall not be returned to service until approved by a qualified person.

Periodic Inspection: A complete inspection of the rigging shall be performed. Inspection shall be conducted on the entire length, including splices and fittings or hardware. Rigging found with conditions such as those listed in their respective standard shall be removed from service. Rigging shall not be returned to service until approved by a qualified person. Periodic inspection frequency shall not exceed one year. Shorter

Common Rigging Items to Check



frequency of periodic inspections should be based on frequency of sling/hardware use, severity of service conditions, nature of lifts being made, and experience gained in the service life of slings/hardware used in similar circumstances.

Again, the most overlooked inspection in our industry is the initial inspection. Most companies either fail to complete initial inspections or fail to train their people who receive rigging how to properly complete an initial inspection.

Damaged fittings, improper tagging, and factory defects are the items most often overlooked when receiving new rigging gear.

Recommended Knowledge and Aids for Inspectors

The inspector should be able to recognize all sling types, rigging hardware, and lifting devices that their company uses. As

Mike Riggs is president of Rigging Institute LLC, author of *The Complete Rigger's Reference Handbook*, and a past president of the Association of Crane and Rigging Professionals. He has worked in the crane and rigging industry since 1977. He can be reached at mriggs@rigginginstitute.com.

SLINGMAX®
SPECIALTY SLINGS

Twin-Path® Extra Check-Fast® Sling
US Patent #7,008,806, #7,061,737, #7,068,333 CA #2,547,832
EP #1,998,026 JP #2,684,180 China ZL20060017963.5

TPXCF These slings have overlaid indicators, Covermax® covers for superior abrasion resistance and inner net covers. They are used worldwide in place of steel rigging for heavy lifts. They are approximately 10% of the weight of a steel sling and products are repairable. The Twin-Path patented design provides the rigger with two independent connections between the hook and the load for protection assurance. These slings have less than 1% elongation at rated capacity. If ergonomics, productivity and safety are important, then these slings are your best choice. Independent testing shows that K-Spec® is the longest lasting load bearing cord yarn in any sling.

NOTE: Capacities include both ends set up for use as a complete sling. Sling ratings based on commercial fittings of equal or greater capacity. (Refer to ASME B30.26 and B30.27 for more information.) Higher capacity slings are available. CAPACITIES ARE IN POUNDS (LBS.).
Factor 0.75, but only after 10' set up to be fabricated. Higher capacity slings are available. CAPACITIES ARE IN POUNDS (LBS.).

Twin-Path® Sling Break No.	Vertical	Choker	Vertical Basket	Basket Hitches	Horizontal	Approximate Weight (lb.) (including fitting)	Standard Wire Size (Diameter)
TPXCF/TPXCF 1000	10,000	5,000	20,000	17,250	14,140	40	1.5"-1"
TPXCF/TPXCF 1500	15,000	7,500	30,000	25,880	21,210	40	1.5"-1"
TPXCF/TPXCF 2000	20,000	10,000	40,000	34,480	28,280	40	1.5"-1"
TPXCF/TPXCF 2500	25,000	12,500	50,000	43,080	35,380	40	2.0"-1"
TPXCF/TPXCF 3000	30,000	15,000	60,000	51,680	42,480	40	2.0"-1"
TPXCF/TPXCF 4000	40,000	20,000	80,000	69,680	56,480	40	2.0"-1"
TPXCF/TPXCF 5000	50,000	25,000	100,000	87,680	70,480	40	2.5"-1"
TPXCF/TPXCF 6000	60,000	30,000	120,000	105,680	84,480	40	2.5"-1"
TPXCF/TPXCF 7000	70,000	35,000	140,000	123,680	98,480	40	2.5"-1"
TPXCF/TPXCF 8000	80,000	40,000	160,000	141,680	112,480	40	3.0"-1"
TPXCF/TPXCF 10000	100,000	50,000	200,000	177,280	141,480	40	3.0"-1"
TPXCF/TPXCF 12000	120,000	60,000	240,000	212,880	170,480	40	4.0"-1"
TPXCF/TPXCF 15000	150,000	75,000	300,000	268,480	214,480	40	4.0"-1"
TPXCF/TPXCF 17500	175,000	87,500	350,000	304,080	243,480	40	4.0"-1"
TPXCF/TPXCF 20000	200,000	100,000	400,000	339,680	272,480	40	5.0"-1"
TPXCF/TPXCF 25000	250,000	125,000	500,000	425,280	338,480	40	5.0"-1"
TPXCF/TPXCF 30000	300,000	150,000	600,000	510,880	403,480	40	6.0"-1"
TPXCF/TPXCF 40000	400,000	200,000	800,000	670,480	528,480	40	6.0"-1"
TPXCF/TPXCF 50000	500,000	250,000	1,000,000	830,080	653,480	40	7.0"-1"
TPXCF/TPXCF 60000	600,000	300,000	1,200,000	989,680	778,480	40	7.0"-1"
TPXCF/TPXCF 80000	800,000	400,000	1,600,000	1,345,280	1,034,480	40	8.0"-1"
TPXCF/TPXCF 100000	1,000,000	500,000	2,000,000	1,699,680	1,289,480	40	8.0"-1"

*Dimensions can vary according to the hardware or bearing points the slings are used with.
Minimum is "squared" with. Maximum is the "flat" facing with.
METRIC SLINGS AVAILABLE

WARNING
Sling can fail if damaged, overloaded or unattended. Inspect before use. Damaged sling should not be used.
Use only rated. Do not exceed rated capacity. Protect from sharp edges, heat, acids, alkalis, oils, solvents, and other hazardous materials. Do not use for lifting people. Do not use for lifting loads over 100% of rated capacity. Do not use for lifting loads over 100% of rated capacity. Do not use for lifting loads over 100% of rated capacity.

Sling manufacturer's load chart

needed, have pictures to identify all sling and hardware types used.

The inspector should also have a basic knowledge of fabrication requirements to help identify defective rigging gear. Unique or complicated gear, such

as special lifting devices and lifting and spreader beams, may require an initial inspection by a person qualified for that piece of equipment.

Rigging identification (tagging) reference material, such as manufacturer's load charts and/or ASME B30 or Web Sling & Tie Down Association identification requirements should be available for the inspector's reference.

Recommended Inspection Process

Compare the rigging gear received to the purchase order to verify they are both the same type and configuration as was ordered.

Verify that rigging gear identification is correct.

Verify that sling/hardware fabrication looks correct. When an inspector knows how a piece of gear *should* look, it is much easier for them to recognize rigging gear that appears out of the ordinary.

Common Defects Found in New Gear

The most common defects on wire rope slings include:

Incorrect identification – Clients have shown me two-, three-, and four-leg wire rope bridle slings that were ordered at the same time. The fabricator had put the wrong tags on the assemblies. The two-leg assemblies had four-leg tags on them. The three-leg bridles had the two-leg identification attached. And the four-leg bridles had the three-leg identification on them.

I have inspected slings made from cable-laid wire rope with a load rating based on 6x19 class wire rope (which has a greater capacity than a cable-laid sling of the same size).

Improperly pressed or nonpressed fittings – A new training client of ours recently bought new 1/2" wire rope slings with Flemish Eye splices. They learned too late that one sleeve had not been pressed. The sling fabricator that made the sling sold it to an industrial reseller, then the industrial reseller sold it to our client.

No initial inspection was completed on the sling. It went straight into service. The error was not discovered until after the lift was completed. The sleeve had slid

Common Errors to Check For



down the body of the sling exposing the eye splice.

Incorrect fabrication – Some sleeves are noticeably pressed incorrectly onto the sling. Incomplete pressing of sling's sleeves may not be noticeable without measuring them.

The most common defects on new alloy-chain slings include:

Non-alloy chain sling fittings – I have seen new alloy-chain slings in use that had improper fittings on them. Most of those improper fittings are alloy hooks designed for purposes other than a lifting sling. Unknowledgeable fabricators use them on slings because of low price and ease of attachment to the chain. Just because a fitting is an alloy grade does not mean it is designed for use in a sling.

Incomplete tag identification – I suspect the most common issue for chain assemblies is insufficient identification. Most commonly missing is the chain grade. The tag usually identifies the sling as an alloy, but the grade of alloy must also be identified.

The most common defects on new synthetic web slings are:

Incorrect tag on sling – If you have ever seen web slings being sewn, you will recognize how easy it can be to put on an incorrect tag. On slings that are 2" or more wide, the tags are all generally the same size, so mislabeling is fairly common.

The example of wrong tagging shown above is not as dangerous as it could be. The tag sewn on this sling is for a 2" two-ply sling, but it is sewn on a 3" two-ply sling.

Another frequent identification issue is that the tag may identify the wrong material that the sling is made from. When I see this, it usually is a tag identifying a sling as being nylon when the sling is, in fact, made of polyester. This becomes a concern when the slings are used in a chemical or radioactive environment.

The most common defects on new synthetic roundslings include:

Incorrect cover identification – Usually, cover misidentification happens when a polyester roundsling has what might be identified as a heavy-duty cover. Heavy-duty covers are usually made from nylon. Standard covers are made from polyester. ASME B30.9 says, "...cover material [should be identified], if different from core material." Once again, this is important when the sling will be used in a chemical environment.

Defects found on rigging hardware and other lifting devices generally show up as incomplete identification or broken or cracked components.

My best recommendation to users of rigging gear is twofold. First, appoint and train personnel to perform proper initial inspection of all new and repaired rigging gear.

Second, buy rigging gear from a supplier that has a good quality control system and participates in rigging-manufacturer organizations like the Association of Wire Rope Fabricators, the Web & Sling Tie Down Association, the Cordage Institute, or ASME.

When your rigging supplier is part of your inspection process, you will have safer outcomes. ■