

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

Twin-Path® Extra Check-Fast® Sling
 US Patent #7,009,485; #7,061,737; #7,068,353 CA #2,547,832
 EP #1,898,508 Japan #4,861,885 China #2,538,888/2,796,515

TPXCF These slings have overload indicators, Covermax® covers for superior abrasion resistance and inner rail 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 reusable. 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 core yarn in any sling.

NOTE: Capacities shown include both ends and are for one complete sling. Sling ratings based on commercial fittings of equal or greater capacity. Capacities for 100,000 PSI and higher 100,000 PSI are not shown. Higher capacity slings are available. CAPACITIES ARE IN POUNDS (LBS.).

Twin-Path® Sling Size (ft.)	Vertical	Choker	Vertical Basket	Basket Hitches	Approximate Weight (lb.) (including fitting)	Rated Capacity (lb.) (Shackles)
TPXCF-TPXCF 1000	10,000	5,000	20,000	17,000	14,148	40
TPXCF-TPXCF 1500	15,000	7,500	30,000	25,500	21,210	60
TPXCF-TPXCF 2000	20,000	10,000	40,000	34,000	28,284	80
TPXCF-TPXCF 2500	25,000	12,500	50,000	42,500	35,350	100
TPXCF-TPXCF 3000	30,000	15,000	60,000	51,000	42,426	120
TPXCF-TPXCF 3500	35,000	17,500	70,000	60,000	49,497	140
TPXCF-TPXCF 4000	40,000	20,000	80,000	69,000	56,568	160
TPXCF-TPXCF 4500	45,000	22,500	90,000	78,000	63,639	180
TPXCF-TPXCF 5000	50,000	25,000	100,000	87,000	70,710	200
TPXCF-TPXCF 5500	55,000	27,500	110,000	96,000	77,781	220
TPXCF-TPXCF 6000	60,000	30,000	120,000	105,000	84,852	240
TPXCF-TPXCF 6500	65,000	32,500	130,000	114,000	91,923	260
TPXCF-TPXCF 7000	70,000	35,000	140,000	123,000	98,994	280
TPXCF-TPXCF 7500	75,000	37,500	150,000	132,000	106,065	300
TPXCF-TPXCF 8000	80,000	40,000	160,000	141,000	113,136	320
TPXCF-TPXCF 8500	85,000	42,500	170,000	150,000	120,207	340
TPXCF-TPXCF 9000	90,000	45,000	180,000	159,000	127,278	360
TPXCF-TPXCF 9500	95,000	47,500	190,000	168,000	134,349	380
TPXCF-TPXCF 10000	100,000	50,000	200,000	177,000	141,420	400
TPXCF-TPXCF 11000	110,000	55,000	220,000	195,000	155,536	440
TPXCF-TPXCF 12000	120,000	60,000	240,000	213,000	169,652	480
TPXCF-TPXCF 13000	130,000	65,000	260,000	231,000	183,768	520
TPXCF-TPXCF 14000	140,000	70,000	280,000	249,000	197,884	560
TPXCF-TPXCF 15000	150,000	75,000	300,000	267,000	211,999	600
TPXCF-TPXCF 16000	160,000	80,000	320,000	285,000	226,115	640
TPXCF-TPXCF 17000	170,000	85,000	340,000	303,000	240,231	680
TPXCF-TPXCF 18000	180,000	90,000	360,000	321,000	254,347	720
TPXCF-TPXCF 19000	190,000	95,000	380,000	339,000	268,463	760
TPXCF-TPXCF 20000	200,000	100,000	400,000	357,000	282,579	800
TPXCF-TPXCF 21000	210,000	105,000	420,000	375,000	296,695	840
TPXCF-TPXCF 22000	220,000	110,000	440,000	393,000	310,811	880
TPXCF-TPXCF 23000	230,000	115,000	460,000	411,000	324,927	920
TPXCF-TPXCF 24000	240,000	120,000	480,000	429,000	339,043	960
TPXCF-TPXCF 25000	250,000	125,000	500,000	447,000	353,159	1,000
TPXCF-TPXCF 26000	260,000	130,000	520,000	465,000	367,275	1,040
TPXCF-TPXCF 27000	270,000	135,000	540,000	483,000	381,391	1,080
TPXCF-TPXCF 28000	280,000	140,000	560,000	501,000	395,507	1,120
TPXCF-TPXCF 29000	290,000	145,000	580,000	519,000	409,623	1,160
TPXCF-TPXCF 30000	300,000	150,000	600,000	537,000	423,739	1,200
TPXCF-TPXCF 31000	310,000	155,000	620,000	555,000	437,855	1,240
TPXCF-TPXCF 32000	320,000	160,000	640,000	573,000	451,971	1,280
TPXCF-TPXCF 33000	330,000	165,000	660,000	591,000	466,087	1,320
TPXCF-TPXCF 34000	340,000	170,000	680,000	609,000	480,203	1,360
TPXCF-TPXCF 35000	350,000	175,000	700,000	627,000	494,319	1,400
TPXCF-TPXCF 36000	360,000	180,000	720,000	645,000	508,435	1,440
TPXCF-TPXCF 37000	370,000	185,000	740,000	663,000	522,551	1,480
TPXCF-TPXCF 38000	380,000	190,000	760,000	681,000	536,667	1,520
TPXCF-TPXCF 39000	390,000	195,000	780,000	699,000	550,783	1,560
TPXCF-TPXCF 40000	400,000	200,000	800,000	717,000	564,899	1,600

*Dimensions can vary according to the hardware or bearing points the slings are used with. Minimum is "legged" width. Maximum is "legged" width. The "leg" width is the "leg" width.

WARNING
 Sling can fail if damaged, misused or overloaded. Inspect before use. Damaged sling shall not be used. Use only as intended. Do not use under shock loading. Protect sling from burning heat, sharp edges, projections and abrasive surfaces. Avoid exposure to acids, alkalis and temperatures over 180°F. SLINGS OR SLINGS CAN BE DAMAGED FROM IMPROPER USE OR MISUSE.

METRIC SLINGS AVAILABLE

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

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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. ■