



## Web Sling Inspection Criteria

It is important to inspect your web slings after purchase.

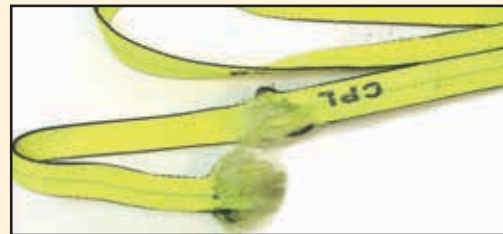
### Types of inspection

- A. **Initial Inspection** - Before any new or repaired web sling is placed in service, it shall be inspected by a designated competent person to ensure that the correct web sling is being used, as well as to determine that the web sling meets the applicable requirements.
- B. **Frequent Inspection** - This inspection should be conducted by the person handling the sling each time the sling is used.
- C. **Periodic Inspection** - This inspection shall be conducted by the designated staff. Frequency of inspection should be based on frequency of web sling use, severity of service conditions and experience gained on the service life of web slings used in similar applications. Inspections should be conducted at least annually.

Often riggers confuse a cut sling for a broken sling. View the pictures below to see the difference. The cut sling has come into contact with something sharp that has sliced the sling in half. (You can tell by the clean edge). The broken sling has been pulled to destruction on our test bed. The ends are frayed and melted from heat friction.



Cut sling



Broken sling



Cut Eye



Snag



Illegible Tag

### Remove the sling from service if any of the following is visible:

- ✓ If sling rated capacity or sling material identification is missing or not legible
- ✓ Acid or alkaline burns
- ✓ Melting, charring or weld spatters on any part of the web sling
- ✓ Holes, tears, cuts, snags or embedded particles
- ✓ Broken or worn stitching in load bearing splices
- ✓ Excessive abrasive wear
- ✓ Knots in any part of the web sling
- ✓ Excessive pitting, or corrosion, or cracked, or distorted, or broken fittings
- ✓ Any other visible damage that causes doubt as to the strength of the sling

### Inspection Records

Written inspection records, utilizing the identification for each sling as established by the user, should be kept on file for all web slings. These records should show a description of the sling and its condition on each periodic inspection.

### Repair of Web Slings

Web slings with structural damage shall never be repaired. Web slings utilizing hardware may be rewbedded. The fittings must be visually inspected and proof tested before they can be used.



## **WARNING!**

These pages contain important safety information about the use of synthetic slings. However, it DOES NOT contain all the information you need to know about handling, lifting and manipulating materials and loads safely. Sling use is only one part of a lifting system and it is your responsibility to consider all risk factors prior to using any rigging device or product. Failure to do this may result in severe INJURY or DEATH due to sling failure and/or loss of load.

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**Read and follow all use and safety information** provided with sling. Failure to do so may result in severe INJURY or DEATH due to sling failure and/or loss of load.

The following six points briefly summarize some important safety issues:

1. **All users must be trained** in sling selection, use and inspection, cautions to take, environmental effects and rigging practices.
2. **Inspect slings for damage** regularly, if the sling is damaged, remove it from service.
3. **Protect slings from damage.** ALWAYS protect slings in contact with edges, corners, protrusions, or abrasive surfaces with materials of sufficient strength, thickness and construction to prevent damage.
4. **Do not exceed a sling's rated capacity.** Always consider the effect of sling angle and tension on the sling's rated capacity.
5. **Do not stand on, under or near a load** with the sling under tension. All the staff should be alert to danger of falling and/or uncontrolled load, sling tension and the potential for snagging.
6. **Maintain and store slings properly.** Slings should be protected from mechanical, chemical and environmental damage.

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### **1. ALL SLING USERS MUST BE TRAINED AND KNOWLEDGEABLE**

All sling users must be trained on the proper use of slings.

It is important that all sling users be trained and knowledgeable about the safe and proper use and application of slings and be thoroughly familiar with the manufacturer's recommendations and safety materials provided with each product. In addition, all sling users need to be aware of their responsibilities as outlined in all applicable standards and regulations. (Please see The American Society of Mechanical Engineers; Safety standards for slings (ASME B30.9))

If you are unsure whether you are properly knowledgeable or trained, or if you are unsure of what the standards and regulations require of you, ask your employer for information and/or training-DO NOT use slings until you are absolutely sure of what you are doing. Remember, when it comes to using slings, lack of skill, knowledge and care can result in severe INJURY or DEATH to you and others.

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### **2. SLINGS MUST BE REGULARLY AND PROPERLY INSPECTED**

Even seemingly "minor" damage to a sling can significantly reduce its capacity to hold or lift objects and increases the risk that the sling will fail during use. Therefore, it is very important that slings are regularly and properly inspected. In reality, there simply is no such thing as "minor" damage. If you are not sure whether a sling is damaged, DO NOT USE IT!

Generally, damage to slings can be detected visually. In some instances, internal damage can occur and not be visible. To detect possible damage, you should perform a visual inspection of the entire sling and also feel along its entire length, as some damage may be felt more than seen. You should look and feel for any of the types of conditions listed in Table 1 (page 94).

A three-stage procedure is recommended to help ensure that slings are inspected with appropriate frequency.

**Initial Inspection** - Whenever a sling is initially received, it must be inspected by a designated person to help ensure that the correct sling has been received and is undamaged, and that the sling meets applicable requirements for its intended use.

**Frequent Inspection** - The entire sling must be inspected before each shift or day in normal service and before each use in severe service applications.

**Periodic Inspection** - Every sling must be inspected "periodically" by a qualified and designated person. In order to validate the frequent level of inspection, the periodic inspection should be performed by someone other than the individual(s) who most commonly performs the frequent inspection. The frequency of periodic inspections is based on the sling's actual or expected frequency of use, severity of service conditions, the nature of the work performed with the sling and experience gained during the inspection of other slings used in similar circumstances. General guidelines for the frequency of periodic inspections are: Normal service is yearly, Severe service is monthly to quarterly, and Special service is as recommended by qualified person. **Periodic inspections must not exceed one year.**



**TABLE 1: Sling removal criteria**

The entire sling must be inspected regularly and it shall be removed from service if ANY of the following are detected:

- If sling identification tag is missing or not readable.
- Holes, tears, cuts, embedded materials, excessive abrasive wear, or snags that expose the core yarn of the sling.
- Broken or damaged core yarn.
- Knots in any part of the sling.
- Acid or alkaline burns on the sling.
- Melting, charring or weld spatter of any part of the sling.
- Distortion, excessive pitting, corrosion or other damage to fitting(s),
- Broken or worn stitching
- Excessive, abrasive wear or crushed webbing.
- Signs of ultraviolet (UV) light degradation.
- If provided, exposed red core yarn. However, if damage is present and red yarns are not exposed DO NOT USE the sling.
- Any conditions which cause doubt as to the strength of the sling.

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### **3. SLINGS MUST BE ADEQUATELY PROTECTED FROM DAMAGE**

You should always avoid any action that causes the types of damage identified in the previous section, including (but not limited to):

- Dropping or dragging slings on the ground, floor or over abrasive surfaces.
- Pulling slings from under loads when the load is resting on the sling; place blocks under the load if feasible.
- Shortening or adjusting sling using methods not approved by the sling manufacturer or qualified person.
- Twisting, kinking, or knotting the sling.
- Exposing slings to damaging acids or alkalis.
- Exposing slings to sources of heat damage or weld spatter.
- Using slings or allowing exposure to temperatures above the recommended temperatures listed on slings warning tags.
- "Tip loading" a sling on a hook instead of centering it in the base or "bowl" of the hook.
- Using hooks, shackles or other hardware that have edges or surfaces that could damage the sling.
- Running/driving over slings with a vehicle or other equipment.
- Synthetic slings are affected by some chemicals ranging from little to total degradation. Time, temperature and concentration factors affect the degradation. For specific applications, consult the manufacturer.

Synthetic slings can be damaged, abraded or cut by tension and compression between the sling, the connection points and the cargo develops. Surfaces in contact with the sling do not have to be very abrasive or have "razor" sharp edges in order to create the conditions for sling failure. Therefore, slings must ALWAYS be protected from being cut or damaged by corners, protrusions, or from contact with edges that are not smooth or well-rounded with materials sufficient for the intended purpose.

There are many ways to protect slings from such damages. A qualified person might select and use appropriately engineered protectors/softeners-commercially available products (e.g., sleeves, wear pads, corner protectors, etc.) specifically designed to protect slings from damage. A qualified person might also design and construct their own methods of protection as long as the sling is adequately protected and/or kept off of the damaging edge surface.

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### **4. ALWAYS USE SLINGS PROPERLY**

When lifting loads, a trained, qualified and knowledgeable user must take into consideration the factors and issues addressed into these recommendations, as well as considering any other relevant factors not addressed herein. Among the factors related specifically to slings, users must perform several activities, including (but not limited to) those discussed in the following subsections.

Determine the weight of the load and make sure it does not exceed the sling's rated capacity or the capacity of any of the components of the rigging system. Users must also determine the load's center of gravity (CG) to make sure the rigging system used will be able to retain and control the load once lifted.



Select a sling having suitable characteristics for the type, size and weight of the load, the type of hitch and the environment. The sling must be securely attached to the load and rigged in a manner to provide load control to prevent slipping, sliding and/or loss of the load. A trained, qualified and knowledgeable user must determine the most appropriate method of rigging to help ensure a safe lift and control of the load.

Avoid accelerating or decelerating the load too quickly (i.e. "shock loading"). Do not use slings to pull on stuck or snagged objects and do not use slings for towing purposes. A sling should only be used for lifting loads.

Categories	Issues/ Factors to Consider		
Environment	Wind Weather Visibility	Environmental temperature Object temperature Chemical conditions & Exposure	Ground stability Underground installations
Load	Weight Dimensions Center of Gravity	Attachment point integrity Susceptibility to crushing/ compression Loose parts that could fall from load	Combination loads Damaging surfaces / edges Structural stability (Bend / flex)
Equipment/ Lift	Single/ Multiple Cranes / Hoists Maximum / planned operating radius Allowable load Ratio of lift to allowable load.	Clearance to surrounding facilities Power lines and other environmental hazards Clearance between boom & lift Emergency/ contingency set down area	Equipment inspection Ensure a clear load path
Rigging	Sling selection Load control Lift point (over CG) Positive sling-to-load engagement	Coefficient of friction: sling to load Appropriate hitch for (CG and load control) Load is free to move and is not snagged Coordination of multiple slings	Suitable wear protection Sling capacity is adequate for angle and tension
Staff	Area clear of unnecessary staff Staff are trained and qualified	Signals: Visual, audible, electronic, etc. Staff away from load and other dangers	Pre-lift plan and meeting Tag lines / spotter requirements

## 5. MAKE SURE THE STAFF IS CLEAR OF LOADS AND ALERT TO RISKS

Even if the factors/issues discussed into these pages are taken into consideration, things can still go wrong.

Therefore, all the staff must stand clear of the lifted loads and never be under, on or near suspended loads.

When using slings, no part of the body should be placed between the sling and load, or between the sling and lifting hook. In addition, the staff must be alert to the potential for the sling to become snagged during lifting, never use a sling to pull on objects in a snagged or constrained condition.

## 6. PROPERLY STORE AND MAINTAIN SLINGS

In order to prevent damage to slings when not in use, you should store slings in a cool, dry and dark location. Slings should be stored in an area free from environmental or mechanical sources of damage, such as: weld spatter, splinters from grinding or machining, heat sources, chemical exposure, etc. Also, keep slings clean and free of dirt, grime and foreign materials.

If slings are cleaned, use only mild soap and water. Rinse slings thoroughly and allow to dry completely before placing the slings back into storage or use. Do not machine wash slings. Machine washing results in significant loss of sling strength.

## Where to Find Additional Information

This bulletin does not provide you with all the information you need to know in order to be considered trained and knowledgeable about rigging and lifting loads, but it does provide important information about the use of slings within a rigging system. If you need more information about slings and rigging practices or your responsibilities according to regulations and standards, talk to your employer. You and your employer can consult a number of sources of information to help ensure that you are properly trained and knowledgeable when using slings, including (but not limited to):

- WSTDA-WS-1 – Recommended Standard Specification for Synthetic Slings
- ASME B30.9 – Synthetic Webbing Slings: Selections, use and maintenance
- OSHA 29 CFR 1910.184 – Slings
- OSHA Guidance on safe sling use (<http://www.osha.gov.dsg/guidance/slings/synth-web.html>)
- Manufacturer's Catalogue, manual, website, bulletins, rigging handbooks etc.
- Formal training provided by manufacturers or other outside entities.





## Round Sling Inspection criteria

It is important to inspect your round slings after purchase.

### Types of inspection

- A. **Initial Inspection** - Before any new or repaired round sling is placed in service, it shall be inspected by a designated competent person to ensure that the correct web sling is being used, as well as to determine that the web sling meets the applicable requirements.
- B. **Frequent Inspection** - This inspection should be conducted by the person handling the sling each time the sling is used.
- C. **Periodic Inspection** - This inspection shall be conducted by the designated staff. Frequency of inspection should be based on frequency of web sling use, severity of service conditions and experience gained on the service life of web slings used in similar applications. Inspections should be conducted at least annually.

### Remove the sling from service if any of the following is visible:

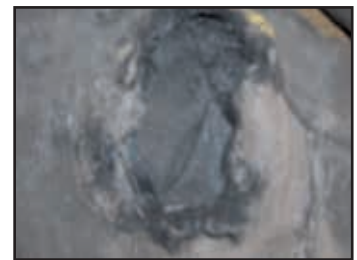
- ✓ If sling rated capacity or sling material identification is missing or not legible
- ✓ Acid or alkaline burns
- ✓ Melting, charring or weld spatters on any part of the round sling
- ✓ Holes, tears, cuts, snags or embedded particles
- ✓ Broken or worn stitching in the cover, that exposes core yarns
- ✓ Core yarns are broken or damaged during use
- ✓ Knots in any part of the round sling
- ✓ Excessive pitting, or corrosion, or cracked, or distorted, or broken fittings
- ✓ Any other visible damage that causes doubt as to the strength of the sling



Exposed load bearing yarns



Seam of cover opening



Melted or Charred areas

### Inspection Records

Written inspection records, utilizing the identification for each sling as established by the user, should be kept on file for all round slings. These records should show a description of the sling and its condition on each periodic inspection.

### Repair of Round Slings

There shall be no repairs of load bearing fibers. Repairs to the protective covers will be done by the original manufacturer. All repaired polyester round slings shall be proof tested to a minimum of 2 times rated vertical capacity.



## Chain Sling Inspection criteria

It is important to inspect your chain slings after purchase.

### Types of inspection

- A. **Initial Inspection** - Before any new or repaired chain sling is placed in service, it shall be inspected by a designated competent person to ensure that the correct web sling is being used, as well as to determine that the web sling meets the applicable requirements.
- B. **Frequent Inspection** - This inspection should be conducted by the person handling the sling each time the sling is used.
- C. **Periodic Inspection** - This inspection shall be conducted by the designated staff. Frequency of inspection should be based on frequency of web sling use, severity of service conditions and experience gained on the service life of web slings used in similar applications. Inspections should be conducted at least annually.

**Remove the sling from service if any of the following is visible:**

- ✓ If sling rated capacity or sling material identification is missing or not legible
- ✓ Cracks or breaks
- ✓ Excessive wear, nicks, or gouges
- ✓ Stretched chain links or components
- ✓ Bent, twisted, or deformed chain links or components
- ✓ Evidence of heat damage
- ✓ Excessive pitting, or corrosion
- ✓ Lack of ability of chain or components to hinge freely
- ✓ Weld splatter
- ✓ Any other visible damage that causes doubt as to the strength of the sling



Pitting & corrosion



Deformed components

### Inspection Records

Written inspection records, utilizing the identification for each sling as established by the user, should be kept on file for all chain slings. These records should show a description of the sling and its condition on each periodic inspection.

### Repair of Chain Slings

Cracked, broken, or bent chain links shall not be repaired, they shall be replaced. All repaired chain slings must be proof tested to twice the Vertical rated capacity.