



Overview

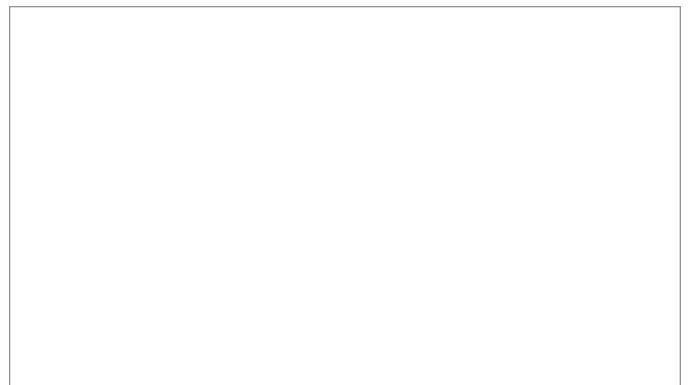
A complete chain sling inspection program should include maintaining a recorded inspection history for each serialized chain sling.

OSHA and other state entities require a written record of inspections be documented at least once a year. Best practices call for visual inspection of all chain components, hardware and equipment before each use.



General Inspection Notes

- All chain slings must include an affixed tag with a unique serial number
- No mechanical couplings are to be used in the middle of a chain leg
- Chain damage and overloading are usually localized in the lower portion of the sling near the load.
- Frequent inspection:
 - Visual inspection shall be performed daily before use, by the user.
- Periodic inspection:
 - Chain slings should be cleaned prior to inspection so defects are easier to identify.
 - A complete link-by-link inspection of all components shall be carried out by a qualified person.
 - Time between inspections is best determined by severity of the service conditions, but should not exceed 12 months.
 - Lay the chain sling out without any twist and verify the links all face the same direction.
 - Measure and verify the length of the sling legs to the reach stated on the identification tag. Reject the chain assembly if there is any noticeable stretch.
 - Annual inspection results should be recorded on an inspection form for each serialized sling.

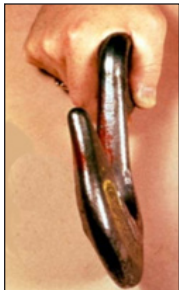


5 Important Chain Inspection Areas

Twists or Bends



Original Opening Distorted Opening



Bent, Twisted Hook

There is no short-cut method that will disclose all types of chain damage. Safety can only be achieved through proper inspection procedures. There is no adequate substitute for careful link-by-link scrutiny.

Chain

Twisted and bent links can affect chain performance significantly. These typically result from use of slings around sharp corners without padding, use of links with grab hooks under certain adverse conditions, and from loading chain that is twisted, knotted or kinked.

Bent or twisted links alter the normal loading pattern and introduce stress on the inner link. For this reason all chain containing twisted or bent links must be removed from service.

Hooks

- Discard hooks when:
 - They are worn more than 10% of the original dimension, or beyond a specific dimension or tolerance as provided in a manufacturer wear allowance table
 - They have an increase in throat or slot opening more than 10% of the original opening
 - They are bent or twisted more than 10° from the plane of the unbent hook
- Replace load pins that are permanently distorted with pins obtained from the manufacturer of the hook
- Replace damaged cotter pins
- Replace damaged hook latches

Nicks and Gouges



The unique geometry of a chain link tends to protect or shield the areas under the greatest tensile stress, specifically the inside of the link. The outsides of the link barrels are often exposed to contact and damage from foreign objects. These surfaces are under compressive stresses so small nicks and gouges present minimal potential harm. However, gouges can cause localized increases in the link stress, particularly if located inside or at the ends of a link. Good workmanship calls for filling-out severe nicks and gouges to remove potential stress riser effects. The remaining cross-section should be measured and evaluated for acceptability by applying the criterion for worn chain from the manufacturer. (See sample wear allowance table on next page.)

5 Important Chain Inspection Areas (cont.)

Excessive Wear at Bearing Points

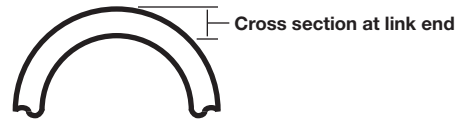


Wear results in a reduction of link cross-section and will occur in any portion of a link that is subject to rubbing contact with another surface. The natural shape of a strand of chain confines wear at the bearing points of interlink contact. Wear will also occur on the outsides of the straight side barrels which may be abraded from dragging chains along hard surfaces or from under loads. **Check for excessive wear by collapsing the chain to separate each link from its neighbors.** When excessive wear is observed the question arises as to whether the amount is within tolerances. This can be determined by making a caliper measurement across the worn section and comparing this with the minimum allowable dimension from the manufacturer.

Wear Allowances of Herc-Alloy® 800 and 1000 Chain

Measure cross section at link ends to determine wear. If chain is worn to less than the minimum allowable thickness, remove from service.

Dia. (Inches)	Dia. (mm)	Minimum (INches)	Minimum (mm)
7/32	5.5	0.189	4.8
9/32	7.0	0.239	6.1
3/8	10.0	0.342	8.7
1/2	13.0	0.443	11.3
5/8	16.0	0.546	13.7
3/4	20.0	0.687	17.5
7/8	22.0	0.750	19.1
1	26.0	0.887	22.5
1-1/4	32.0	1.091	27.7



NOTE: For sizes not listed, the minimum allowable thickness can be calculated as 87% of the original material diameter.

Elongation



A stretched chain indicates overloading.

A visual link-by-link inspection is the best way to detect dangerously stretched links. The least sign of binding or loss of clearance at the juncture points of links indicates collapse in sides of links due to stretch. Any amount of stretch indicates overloading, and the chain should be removed from service.

Note that a significant degree of stretch in a few individual links may be hidden by the apparent acceptable length gage of the overall chain. This highlights the importance of link-by-link inspection.

There is an acceptable amount of wear but not an acceptable amount of stretch!

5 Important Chain Inspection Areas (cont.)

Corrosion or Other Obvious Damage



Corrosion will generally be exhibited in the form of rusting and pitting. A rusted chain with a smooth unpitted surface finish may be continued in service provided that the minimal section dimensions or wear allowances published by the chain manufacturer are complied with. The same applies for chain damaged from welding spatter.

However, visually discernable pitting should be carefully inspected using the technique outlined for **Nicks and Gouges**, paying particular attention to areas of tensile stress.

Sample Chain Inspection Forms
 (customer created)

Chain Sling Record		
Manufacturer: _____		Grade: _____
Size: _____	Reach: _____	Type: _____ Serial No.: _____
Size Master Link: _____		Attachments: _____
Working Load Limit (WLL): _____		Drawing No.: _____
Date Placed In Service: _____		Date of Discard: _____
Repaired (date)	Reason and Nature of Repairs	Date Returned to Service

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Chain Sling Inspection Record					
Date	By	Condition and Disposition	Date	By	Condition and Disposition

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