



Operating Practices

Recovery Straps & Slings

NYLON vs. POLYESTER

The most popular material for web recovery straps and web slings is nylon. The tough, long wearing properties of nylon make it the best choice for general use. Nylon should never be used where acid or acid fumes are present. Where acid conditions are present, polyester slings should be used. Nylon web recovery straps and web slings will stretch under load which protects both the sling and the load from sudden shocks. This stretch can be reduced by using slings with larger work loads or by using polyester slings. Polyester slings should never be used where alkalis are present.

RED CORE YARNS

all-grip® web recovery straps and web slings have red core yarns within the web material. When these red yarns become visible, it is evident that the sling is damaged and must be removed from service.

NOTE: Evidence of red core yarns is not the only gauge for which web slings must be removed from service. Please see page 94, 95 & 96 for additional criteria.

TAGS

Each **all-grip®** recovery strap, web sling and polyester round sling manufactured has a legible tag sewn to the sling body. Each is serial numbered and has the date of manufacture.

WARNING

- Failure to read, understand and follow these instructions may cause death or serious injury.
- Read and understand these instructions before using recovery straps and slings.
- Nylon recovery straps and slings should never be used where acid or acid fumes are present. (see chemical data below)
- Polyester recovery straps and slings should never be used where alkalis are present. (see chemical data below)



U.V. LIGHT

Environments in which web recovery slings, web slings and round slings are continuously exposed to ultra-violet light can affect the strength of these slings in varying degrees ranging from slight to total degradation. To minimize these effects, store slings not being used in a cool, dry and dark place. Visual indications of ultra-violet degradation are bleaching out of the color, increased stiffness and surface abrasion at points not normally in contact with the load.

REINFORCED EYES

In many lifting applications, the eyes of the web sling may wear from constant and severe use. Abrasive resistant material is sewn into the eyes of **all-grip®** recovery straps and slings for added sling life. PLEASE SEE PAGE 21 and 70 for additional information on corner protectors.

CHEMICAL DATA

The chemical data included below should be used only as a guide. Please consult with Western Sling and Supply prior to using for specific information regarding chemicals.

	ACIDS	ALCOHOLS	ALDEHYDES	STRONG ALKALIS	BLEACHING AGENTS	DRY CLEANING SOLVENTS	ETHERS	HALO GENATED HYDRO-CARBONS	HYDRO-CARBONS	KETONES	OILS CRUDE	OILS LUBRICATING	SOAP & DETERGENTS	WATER & SEA-WATER	WEAK ALKALIS
NYLON	NO	OK	OK	OK	NO	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
POLYESTER	*	OK	NO	**	OK	OK	NO	OK	OK	OK	OK	OK	OK	OK	OK



EFFECT OF LEG ANGLE ON SLING WORKING LOAD LIMIT (W.L.L.)

When recovery straps and slings are used at an angle (i.e. two slings or one sling in a basket attached to only one winch hook), sling capacity is reduced. How much it is reduced depends on the degree of the angle. You can determine whether a sling will be rated high enough if you know the angle between the sling leg and the horizontal. Once you know this angle, multiply the sling's rating by the appropriate factor in table A. This will give you the sling's reduced rating.

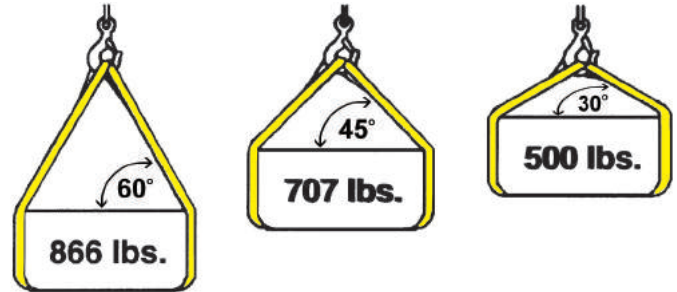
Horizontal sling angles less than 30° shall not be used.

Angle Degrees	Factor
90	1.0000
85	0.9962
80	0.9848
75	0.9659
70	0.9397
65	0.9063
60	0.8660
55	0.8192

Angle Degrees	Factor
50	0.7660
45	0.7071
40	0.6428
35	0.5736
30	0.5000

TABLE A

SLING CAPACITY DECREASES AS THE HORIZONTAL ANGLE DECREASES.



A sling capable of lifting 1,000 lbs. in a 90° horizontal basket hitch, can only lift 866 lbs. at 60° angle, 707 lbs. at a 45° angle and 500 lbs. at a 30° angle.

These calculations apply to all types of slings, web slings, polyester round slings, chain slings and wire rope slings.

INSPECTIONS (all types of slings)

Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer.

Additional inspections shall be performed during sling use, where service conditions warrant. A complete inspection for damage to the sling shall be periodically performed by a designated person. Each sling and component shall be examined individually, taking care to expose and examine all surfaces. The sling shall be examined for conditions such as those listed below for the type of sling used and a determination made as to whether they constitute a hazard. These type of periodic inspections shall not exceed one year. The frequency of periodic inspections should be based on:

- (1) frequency of sling use
- (2) severity of service conditions
- (3) nature of lifts being made
- (4) experience gained on the service life of slings used in similar circumstances

Guidelines for the time intervals are:

- (1) normal service - yearly
- (2) severe service - monthly to quarterly
- (3) special service - as recommended by a qualified person.

Written records of the most recent periodic inspection shall be maintained.

REMOVAL CRITERIA WEB RECOVERY STRAPS, WEB SLINGS AND POLYESTER ROUND SLINGS:

shall be removed from service if conditions such as the following are present:

- (1) missing or illegible sling tag
- (2) acid or caustic burns
- (3) melting or charring of any part of the sling or weld splatter that exposes core yarns
- (4) holes, tears, cuts or snags or exposed core yarns.
- (5) broken or worn stitching in load bearing splices
- (6) excessive abrasive wear
- (7) knots in any part of the sling
- (8) discoloration and brittle or stiff areas on any part of the sling; Which may mean chemical or ultraviolet/sunlight damage.
- (9) other conditions, including visible damage, that cause doubt as to the continued use of the sling



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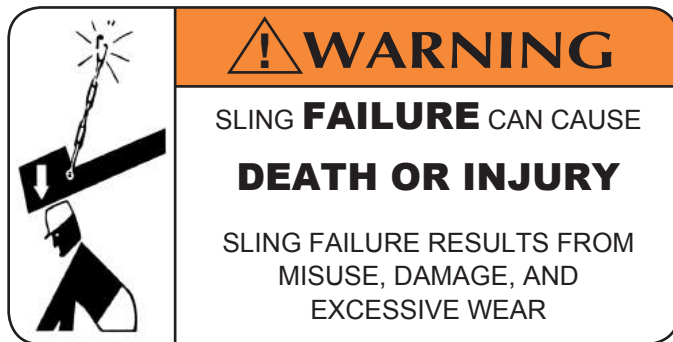
Recovery Straps & Slings

REMOVAL CRITERIA WIRE ROPE

SLINGS:

A wire rope sling shall be removed from service if conditions such as the following are present:

- (1) missing or illegible sling tag
- (2) broken wires:
 - (a) for strand laid slings, 10 randomly distributed broken wires in one rope lay, or 5 broken wires in one strand in one rope lay.
- (3) severe localized abrasion or scraping
- (4) kinking, crushing, birdcaging, or any other damage resulting in damage to the rope structure
- (5) evidence of heat damage
- (6) end attachments that are cracked, deformed, or worn to the extent that the strength of the sling is substantially affected
- (7) severe corrosion of the rope, end attachments, or fittings
- (8) other conditions, including visible damage, that cause doubt as to the continued use of the sling



WARNING

- Failure to read, understand, and follow these instructions may cause death or serious injury.
- Read and understand these instructions before using recovery straps and slings.
- Determine that the weight of the load is within the working load limit of the sling.
- Select a sling having suitable characteristics for the type of load, hitch and environment.
- Slings shall not be shortened or lengthened by knotting or other unapproved methods.
- Damaged slings shall not be used.
- Slings shall be hitched in a manner providing control of the load.
- Edges in contact with slings should be padded.
- Keep all portions of the human body from between the sling and the load, and from between the sling and the lifting hook.
- Personnel should stand clear of the suspended load.
- It is dangerous if personnel are in line with a rope under tension. Rope failure can result in a deadly recoil force. Never have personnel between the load and the take up device.
- Personnel shall not ride the sling.
- Shock loading should be avoided.
- Slings should not be pulled from under a load when the load is resting on the sling.
- Web slings and recovery straps should be stored in an area where they will not be subjected to mechanical damage, moisture, extreme heat or ultraviolet light.
- Twisting of slings shall be avoided.
- Loads applied to the hook should be centered in the base of the hook to prevent point loading on the hook.
- Before lifting, make certain that the sling, attachments, or load shall not snag. Personnel shall be continuously alert to avoid snagging or bumping.
- In a basket hitch, the lifting hook should be above the center of gravity and the load balanced to prevent slippage out of the sling.
- When making a multiple leg lift, or a basket lift, the capacity rating of each sling must be down graded in accordance with the Effect of Leg Angle Chart found on page 95.
- Slings should not be dragged on the floor or over an abrasive surface.
- In a choker hitch, slings with hardware shall be long enough so that the choker fitting chokes on the webbing and never on the triangle.
- Nylon & polyester slings shall not be used at temperatures in excess of 194° F or below -40° F.
- Exposure to sunlight or ultraviolet light degrades the strength of synthetic web slings and polyester round slings.
- Inspect slings for damage and defects prior to each use.
- Each sling shall be tagged to show working load limits for each type of hitch.
- Web slings and polyester round slings shall not be constricted or bunched between the ears of a shackle or hook.