

Recovery — Straps & Slings

all-grip® Recovery Straps, commonly known as rollover straps, are the premier straps in the industry. Made from Class 7-9800 nylon webbing, they offer the best in strength, yet the soft, pliable webbing conforms and supports the load, making your recovery job easier. Eyes are reinforced with a heavy abrasive resistant material and are tapered to accept web shackles. We offer the widest selection and special fabrication is available on request. Each recovery strap and sling is tagged with the working load limits per O.S.H.A. and D.O.T.



1 Ply



The standard of the industry, **all-grip** single ply Recovery Straps offer versatility and economy. 15 standard models. Specials are also available.



2 Ply



Heavy duty double ply Recovery Straps average 30% - 40% increased work loads over standard single ply straps. Ideal for those larger recoveries.

3 Ply



These 3 ply Recovery Straps are for Extra Heavy Recovery. Three layers of webbing are sewn together resulting in the strongest straps in the industry.



Recovery Straps & Slings

Standard Single Ply Recovery Straps								
PART#	BODY PLYS	BODY WIDTH	LENGTH	WORKING LOAD LIMITS (lbs.)			EYE WIDTH	WEIGHT
				Vertical	Choker	Basket*		
TS1-980220	1	2"	20'	3,200	2,400	6,400	2"	2.8 lbs.
TS1-980226	1	2"	26'	3,200	2,400	6,400	2"	3.5 lbs.
TS1-980420	1	4"	20'	6,400	4,800	12,800	2"	5.8 lbs.
TS1-980426	1	4"	26'	6,400	4,800	12,800	2"	7.2 lbs.
TS1-980430	1	4"	30'	6,400	4,800	12,800	2"	8.2 lbs.
TS1-980616	1	6"	16'	9,600	7,200	19,200	3"	7.6 lbs.
TS1-980620	1	6"	20'	9,600	7,200	19,200	3"	9.0 lbs.
TS1-980626	1	6"	26'	9,600	7,200	19,200	3"	11.1 lbs.
TS1-980816	1	8"	16'	12,800	9,600	25,600	4"	9.7 lbs.
TS1-980820	1	8"	20'	12,800	9,600	25,600	4"	11.4 lbs.
TS1-980826	1	8"	26'	12,800	9,600	25,600	4"	14.0 lbs.
TS1-980832	1	8"	32'	12,800	9,600	25,600	4"	16.6 lbs.
TS1-981216	1	12"	16'	19,200	14,400	38,400	6"	16.4 lbs.
TS1-981220	1	12"	20'	19,200	14,400	38,400	6"	19.3 lbs.
TS1-981226	1	12"	26'	19,200	14,400	38,400	6"	23.6 lbs.

Two-Ply Recovery Straps								
PART#	BODY PLYS	BODY WIDTH	LENGTH	WORKING LOAD LIMITS (lbs.)			EYE WIDTH	WEIGHT
				Vertical	Choker	Basket*		
TS2-980220	2	2"	20'	6400	4800	12800	2"	7.0 lbs.
TS2-980420	2	4"	20'	11500	8600	23000	2"	10.9 lbs.
TS2-980426	2	4"	26'	11500	8600	23000	2"	14.0 lbs.
TS2-980620	2	6"	20'	16300	12200	32600	3"	17.8 lbs.
TS2-980626	2	6"	26'	16300	12200	32600	3"	21.7 lbs.
TS2-980820	2	8"	20'	19200	14400	38400	4"	21.4 lbs.
TS2-980826	2	8"	26'	19200	14400	38400	4"	27.3 lbs.
TS2-981220	2	12"	20'	26900	20100	53800	6"	39.6 lbs.
TS2-981226	2	12"	26'	26900	20100	53800	6"	45.2 lbs.

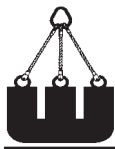


Three-Ply Recovery Straps								
PART#	BODY PLYS	BODY WIDTH	LENGTH	WORKING LOAD LIMITS (lbs.)			EYE WIDTH	WEIGHT
				Vertical	Choker	Basket*		
TS3-980420	3	4"	20'	16,000	12,000	32,000	2"	16.5 lbs.
TS3-980426	3	4"	26'	16,000	12,000	32,000	2"	21.5 lbs.
TS3-980620	3	6"	20'	23,000	17,200	46,000	3"	27.0 lbs.
TS3-980626	3	6"	26'	23,000	17,200	46,000	3"	33.0 lbs.
TS3-980820	3	8"	20'	30,700	23,000	61,400	4"	32.5 lbs.
TS3-980826	3	8"	26'	30,700	23,000	61,400	4"	41.5 lbs.
TS3-981220	3	12"	20'	44,000	33,000	88,000	6"	58.5 lbs.
TS3-981226	3	12"	26'	44,000	33,000	88,000	6"	69.0 lbs.

*See page 8 for definition of Working Load Limit (W.L.L.)

** See "Effect of Leg Angle" on page 11 for basket lifts that are not 90° vertical lifts

Always use Corner Protectors!








Recovery Straps & Slings

Round Slings

These polyester round slings are an endless type available in multiple capacities. They are made of polyester fibers encased in a double thick web sleeve. They are extremely handy for many types of hoisting and recovery work. A valuable item to have in your tool box.

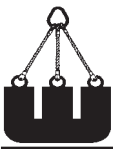


PART#	COLOR	LENGTH	WORKING LOAD LIMITS (lbs.)*			WEIGHT
			Vertical	Choker	Basket**	
VR1X1CS	Black	1'	2,600	2,100	5,200	.25 lbs.
VR1X3	Purple	3'	2,600	2,100	5,200	.67 lbs.
VR1X4	Purple	4'	2,600	2,100	5,200	.90 lbs.
VR1X6	Purple	6'	2,600	2,100	5,200	1.1 lbs.
VR1X8	Purple	8'	2,600	2,100	5,200	1.4 lbs.
VR1X10	Purple	10'	2,600	2,100	5,200	1.7 lbs.
VR2X3	Green	3'	5,300	4,240	10,600	.85 lbs.
VR2X4	Green	4'	5,300	4,240	10,600	1.1 lbs.
VR2X6	Green	6'	5,300	4,240	10,600	1.7 lbs.
VR2X8	Green	8'	5,300	4,240	10,600	2.3 lbs.
VR2X10	Green	10'	5,300	4,240	10,600	2.6 lbs.
VR2X12	Green	12'	5,300	4,240	10,600	3.3 lbs.
VR3X3	Yellow	3'	8,400	6,720	16,800	1.0 lb.
VR3X4	Yellow	4'	8,400	6,720	16,800	2.0 lbs.
VR3X6	Yellow	6'	8,400	6,720	16,800	3.0 lbs.
VR3X8	Yellow	8'	8,400	6,720	16,800	4.0 lbs.
VR3X10	Yellow	10'	8,400	6,720	16,800	5.0 lbs.
VR3X12	Yellow	12'	8,400	6,720	16,800	6.0 lbs.
VR3X20	Yellow	20'	8,400	6,720	16,800	10.0 lbs.
VR5X4	Red	4'	13,200	10,560	26,400	3.2 lbs
VR5X6	Red	6'	13,200	10,560	26,400	4.8 lbs
VR5X8	Red	8'	13,200	10,560	26,400	6.3 lbs.
VR5X10	Red	10'	13,200	10,560	26,400	8.0 lbs
VR5X12	Red	12'	13,200	10,560	26,400	9.5 lbs
VR7X8	Blue	8'	21,200	17,000	42,400	10.4 lbs
VR7X10	Blue	10'	21,200	17,000	42,400	13.0 lbs
VR7X12	Blue	12'	21,200	17,000	42,400	15.6 lbs
VR7X15	Blue	15'	21,200	17,000	42,400	19.5 lbs
VR7X20	Blue	20'	21,200	17,000	42,400	26.1 lbs
 VR10X8	Orange	8'	40,000	32,000	80,000	16.2 lbs.
 VR10X10	Orange	10'	40,000	32,000	80,000	20.0 lbs.
 VR10X12	Orange	12'	40,000	32,000	80,000	23.2 lbs.
 VR10X16	Orange	16'	40,000	32,000	80,000	31.2 lbs.
 VR10X20	Orange	20'	40,000	32,000	80,000	38.9 lbs.

*See page 8 for definition of Working Load Limit (W.L.L.)

** See "Effect of Leg Angle" on page 11 for basket lifts that are not 90° vertical lifts

Always use Corner Protectors!



Recovery Straps & Slings

Endless Round Sling Kit

Part# HSK This heavy round sling kit consists of 12 polyester round slings. This selection of slings has proven to be a good kit choice for heavy recovery work. The kit consists of 2 each of 6 different slings detailed below. High strength polyester fibers are encased in a double jacketed cover and are color coded for ease of selection. Weight is 113 lbs.



QTY	LENGTH	COLOR	WORKING LOAD LIMITS (lbs.)		
			VERTICAL	CHOKER	BASKET
2 ea.	4'	Yellow	8,400	6,720	16,800
2 ea.	6'	Yellow	8,400	6,720	16,800
2 ea.	8'	Red	13,200	10,560	26,400
2 ea.	12'	Red	13,200	10,560	26,400
2 ea.	12'	Blue	21,200	17,000	42,200
2 ea.	16'	Blue	21,200	17,000	42,200

Eye & Eye Round Slings

Eye & Eye Round Slings are made more durable by the addition of a heavy cordura jacket which forms an eye at each end. This jacket gives the sling greater resistance to abrasion. Color coded eyes. Available in same sizes and lengths as our round slings.



NEW!



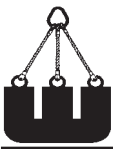
PART#	EYE COLOR	TYPE	WORKING LOAD LIMITS (lbs.)*		
			Vertical	Choker	Basket**
EEVR1X [†]	Purple	Eye & Eye	2,600	2,100	5,200
EEVR2X [†]	Green	Eye & Eye	5,300	4,240	10,600
EEVR3X [†]	Yellow	Eye & Eye	8,400	6,720	16,800
EEVR5X [†]	Red	Eye & Eye	13,200	10,560	26,400
EEVR7X [†]	Blue	Eye & Eye	21,200	17,000	42,400

[†]Specify Length. Available lengths are the same as our standard round slings.

*See page 8 for definition of Working Load Limit (W.L.L.) Other sizes and capacities available.

** See "Effect of Leg Angle" on page 11 for basket lifts that are not 90° vertical lifts

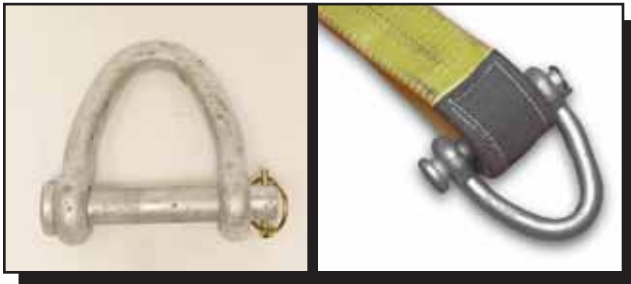
Always use Corner Protectors!



Recovery Straps & Slings

Web Shackles

Manufactured from heat treated carbon steel with alloy pins, these shackles have a galvanized finish. The pin easily pulls for quick insertion into the eye of your recovery straps. Please note that some two-ply recovery straps can exceed the working load limit of its equivalent sized web shackle.



Part #	Webbing Eye Width	Working Load Limit	Weight
70237125	2"	8,050 lbs.	1.7 lbs.
70337127	3"	13,050 lbs.	2.8 lbs.
70437129	4"	10,800 lbs.	3.1 lbs.
70537131	5"	18,000 lbs.	4.8 lbs.
70637133	6"	18,000 lbs.	6.8 lbs.
70637135	6"	23,850 lbs.	9.8 lbs.

WARNING

- Consideration must be given to the working load limit of the web shackle as well as the sling to which it is attached.
- Do not exceed the lower of the two working load limits.
- Slings and attachments are only as strong as the weakest component in the assembly.

Round Sling Hooks

These forged hooks are ideal for quick connections to round slings. Simply opening the hook latch and installing within the slings bearing area provides an instant hook attachment. They are color coded and rated to the equivalent round sling color.



PART#	COLOR	WORKING LOAD LIMIT	OVERALL LENGTH	WEIGHT
ASH1	Purple	2,600 lbs.	7"	1.5 lbs.
ASH2	Green	5,300 lbs.	6½"	3.5 lbs.
ASH3	Yellow	8,400 lbs.	5"	5 lbs.
ASH5	Red	13,200 lbs.	8½"	8.5 lbs.

Crosby Sling Saver®

Sling Shackles & Web Connectors

The increased radius of the bow and or spool gives wider sling bearing surface resulting in an increased area for load distribution, thus:

- Increasing Synthetic Sling efficiency by at least 15% as compared to standard anchor and chain shackle bows and conventional hooks. This allows 100% of the slings rated Working Load Limit to be achieved.
- Allows better load distribution on internal fibers.

Screw Pin Shackles



Part #	Web Sling Eye Width (in.)	Round Sling Size (no.)	Working Load Limit (Tons)	Weight Each (lbs.)
20575	1	1 & 2	3-1/4	1.4
20584	1.5	3 & 4	6-1/2	2.2
20593	2	5 & 6	8-3/4	3.8
20602	3	7 & 8	12-1/2	7.3
20611	4	9 & 10	20-1/2	15.2
20620	5	11 & 12	35	30.8
20629	6	13	50	52.0

Web Connector

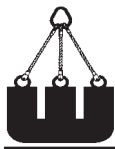


Note: Spool cover cannot be used with reinforced eyes.

Part #	Round Sling Size (No.)	Web Slings			Working Load Limit (Tons)	Weight Each (lbs.)
		Webbing Width (in.)	Eye Width (in.)	Ply		
21681	1 & 2	2	2	2	3-1/4	1.5
21690	3	3	1.5	2	4-1/2	1.9
21700	4	4	2	2	6-1/4	2.9
21709	5 & 6	6	3	2	8-1/2	5.1

*See page 8 for definition of Working Load Limit (W.L.L.)

Always use Corner Protectors!



Recovery Straps & Slings

Nylon Slings

These flat nylon web slings work well in a variety of hoisting applications including undecking and trailer loading. These are the heavy duty two ply slings made for the towing industry.



Part #	Width	Length	Working Load Limits (lbs)*			Weight
			Vertical	Choker	Basket**	
EE2-9802 x 4	2"	4'	6,400	4,800	12,800	1.0 lbs.
EE2-9802 x 6	2"	6'	6,400	4,800	12,800	1.5 lbs.
EE2-9802 x 8	2"	8'	6,400	4,800	12,800	2.0 lbs.
EE2-9802 x 10	2"	10'	6,400	4,800	12,800	2.5 lbs.
EE2-9802 x 12	2"	12'	6,400	4,800	12,800	3.0 lbs.
EE2-9803 x 6	3"	6'	8,600	6,500	17,200	2.0 lbs.
EE2-9803 x 8	3"	8'	8,600	6,500	17,200	2.5 lbs.
EE2-9803 x 10	3"	10'	8,600	6,500	17,200	3.0 lbs.
EE2-9803 x 12	3"	12'	8,600	6,500	17,200	3.5 lbs.
EE2-9803 x 16	3"	16'	8,600	6,500	17,200	5.0 lbs.
EE2-9804 x 8	4"	8'	11,500	8,600	23,000	3.0 lbs.
EE2-9804 x 10	4"	10'	11,500	8,600	23,000	3.5 lbs.
EE2-9804 x 12	4"	12'	11,500	8,600	23,000	4.0 lbs.
EE2-9804 x 16	4"	16'	11,500	8,600	23,000	6.5 lbs.
EE2-9804 x 20	4"	20'	11,500	8,600	23,000	9.0 lbs.

Wire Rope Slings

Wire rope slings, commonly known as wire rope chokers are strong and less susceptible to damage from edges. Flemish spliced eyes at each end. Popular sizes shown.



PART #	WIRE ROPE DIAMETER	LENGTH	W.L.L.
			VERTICAL HITCH
11110602P	3/8"	2'	2,800
11110603P	3/8"	3'	2,800
11110604P	3/8"	4'	2,800
11110605P	3/8"	5'	2,800
11110606P	3/8"	6'	2,800
11110608P	3/8"	8'	2,800
11110610P	3/8"	10'	2,800
11110612P	3/8"	12'	2,800
11110615P	3/8"	15'	2,800
11110620P	3/8"	20'	2,800
11110802P	1/2"	2'	5,000
11110803P	1/2"	3'	5,000
11110804P	1/2"	4'	5,000
11110806P	1/2"	6'	5,000
11110808P	1/2"	8'	5,000
11110810P	1/2"	10'	5,000
11110812P	1/2"	12'	5,000
11110815P	1/2"	15'	5,000
11110820P	1/2"	20'	5,000
11111004P	5/8"	4'	7,800
11111006P	5/8"	6'	7,800
11111008P	5/8"	8'	7,800
11111010P	5/8"	10'	7,800
11111012P	5/8"	12'	7,800
11111015P	5/8"	15'	7,800
11111020P	5/8"	20'	7,800

Riggers Card

A handy accordion fold plastic laminated card full of useful information for riggers, towing professionals and anyone who makes their living with slings, straps, chains and wire rope. Fits in the pocket or wallet.

Riggers Handbook

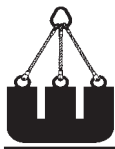
A pocket sized useful guide full of detailed information and facts that all riggers, whether novice or expert, will find helpful. Just what the heavy recovery pro needs..



Part# RiggerCard



Part# RiggerBook



Recovery Straps & Slings

Corner Protectors

all-grip® corner protectors are a must for all straps that contact loads. A seemingly dull edge can become a knife when the strap is put in tension. Always use corner protectors.



Cordura Sleeve (Light Duty)

This sleeve is made of tubular cordura nylon. Protects against abrasive wear. Light duty use. Slides and positions easily. Sold by the foot.

PART #	FITS WEBBING	WEIGHT
206WC3124	2"	.15 lbs.
0325CTT	3"	.20 lbs.
0425CTT	4"	.25 lbs.



Fire Hose (Medium Duty)

This tubular sleeve is actual fire hose without the rubber liner. It is heavy woven polyester and is sold by the foot.

PART #	FITS WEBBING	WEIGHT
980224	2"	.17 lbs.



Synthetic Leather with Velcro Closure (Heavy Duty)

This heavy-duty Synthetic Leather sleeve can be placed anywhere on the web body. It is 3/16" thick and is available for our widest straps. 24" long. Velcro Closure.

PART #	FITS WEBBING	WEIGHT
980424LV	4"	1.5 lbs.
980624LV	6"	2.3 lbs.
980824LV	8"	3.0 lbs.
981024LV	10"	4.5 lbs.
981224LV	12"	5.5 lbs.



Nylon Web Sleeve with Velcro Closure (Heavy Duty)

This heavy-duty nylon web sleeve can be attached or removed at any point on the sling by utilizing the velcro closure. 3/16" thick, 24" long, except 980212V which is 12" long.

PART #	FITS WEBBING	WEIGHT
980212V	2"	.4 lbs.
980312V	3"	.5 lbs.
980424V	4"	1.6 lbs.
980624V	6"	2.5 lbs.
980824V	8"	3.3 lbs.
981024V	10"	4.8 lbs.
981224V	12"	5.9 lbs.



Poly Pad (Heavy Duty)

This pad is made of reinforced rubber sheet, .20" thick. It contours to the load and distributes corner stress evenly. 12" long.

PART #	FITS WEBBING	WEIGHT
4625212	2"	.50 lbs.
4625412	4"	.80 lbs.

Always use Corner Protectors!



Recovery Hook

Part# 92900 Weight 15.2 lbs.



This heavy duty hook is made from 1 1/8" Alloy Steel and is the right tool for winching and recovery work. It is 26" long. Not to be used for truck recovery. Working Load Limit is 4,600 lbs.

ClevLok™ Recovery Hook

Part# 94288 Weight 4.1 lbs.



This new Grade 80 recovery hook is load rated at 7,100 lbs. when used with grade 80 3/8" chain. Load pin is captivated by spiral roll pin. Self colored.

Shackle Kit

This kit consists of 6 drop forged anchor shackles with alloy screw pins and galvanized finish. Imported. Weight is 64 lbs.



PART# SPAKIT

QTY	DESCRIPTION	WORKING LOAD LIMIT
2	1" Screw pin shackle	17,000 lbs.
2	1 1/4" Screw pin shackle	24,000 lbs.
2	1 1/2" Screw pin shackle	34,000 lbs.

Shackle Kit

by **Crosby**

This kit consists of 6 drop forged anchor shackles with alloy screwpins and 2 alloy master links. Made in USA. Weight is 125 lbs.



PART# ASPSK

QTY	DESCRIPTION	WORKING LOAD LIMIT
2	1 1/4" Alloy master link	36,200 lbs.
2	1" Screw pin shackle	17,000 lbs.
6	1 1/4" Screw pin shackle	24,000 lbs.
2	1 1/2" Screw pin shackle	34,000 lbs.

Shackle Kit

This kit consists of 6 drop forged anchor shackles with alloy screw pins and 2 alloy master links. Imported. Weight is 125 lbs.



PART# SPAKIT2

QTY	DESCRIPTION	WORKING LOAD LIMIT
2	1 1/4" Alloy master link	36,200 lbs.
2	1" Screw pin shackle	17,000 lbs.
6	1 1/4" Screw pin shackle	24,000 lbs.
2	1 1/2" Screw pin shackle	34,000 lbs.



The Terminator™ from Crosby



PART #	SIZE	WEIGHT
35000	3/8" wire rope	2.83 lbs.
35009	1/2" wire rope	6.15 lbs.
35018	5/8" wire rope	8.90 lbs.
35027	3/4" wire rope	14.5 lbs.

Terminator™ assembly includes socket, wedge, pin and wire rope clip.

See page 25 for instructions.

Shackles

Drop forged, quenched and tempered. Painted and supplied with screw pins. Size listed is body diameter. Pins are always one fractional size larger for any given body size.

Crosby brand.



PART #	SIZE	WORKING LOAD LIMIT	WEIGHT
18428	3/8"	2,000 lbs.	.31 lbs.
18446	7/16"	3,000 lbs.	.38 lbs.
18464	1/2"	4,000 lbs.	.63 lbs.
18482	5/8"	6,500 lbs.	1.38 lbs.
18507	3/4"	9,500 lbs.	2.25 lbs.
18525	7/8"	13,000 lbs.	3.38 lbs.
18543	1"	17,000 lbs.	5.32 lbs.
18561	1 1/8"	19,000 lbs.	6.75 lbs.
18589	1 1/4"	24,000 lbs.	9.06 lbs.
18605	1 3/8"	27,000 lbs.	13.33 lbs.
18623	1 1/2"	34,000 lbs.	17.20 lbs.
18641	1 3/4"	50,000 lbs.	27.78 lbs.

See page 8 for definition of Working Load Limit (W.L.L.)

Weld-On Anchor Hooks

from Crosby

Part #	W.L.L.	Wgt.
29123	6,600 lbs.	2.6 lbs.
29141	11,000 lbs.	5.6 lbs.
29150	17,600 lbs.	7.3 lbs.
29169	22,000 lbs.	11.0 lbs.



These hooks provide for a strong anchor point for chains, wire rope and web slings.

IMPORTANT INFORMATION

⚠ WARNING

- Loads may disengage from hook if proper procedures are not followed.
- A falling load may cause serious injury or death.
- Hook must always support the load. The load must never be supported by the latch.
- Never apply more force than the hook's assigned Working Load Limit (WLL) rating.
- Read and understand these instructions before welding on, or using hook.
- Never repair, alter, rework, or reshape a hook by welding, heating, burning, or bending.
- Always make sure the hook supports the load. The load is to be applied within the range shown in Figure 2. The latch must never support the load (See Figure 3).
- Never side load (See Figure 4), or tip load (See Figure 5) a hook.

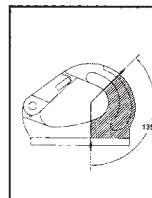


Figure 2



Figure 3

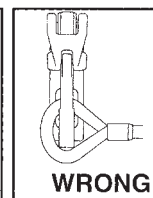


Figure 4



Figure 5

- The strength of the weld-on hook depends upon the method of attachment. Extreme care must be used in choice of support as well as during the attachment process.
- The support structure that the hook is attached to must be of suitable size, composition and quality to support the anticipated loads of all operating positions. Minimum plate thickness required to support the welds are shown in Table 1.

TABLE 1

Working Load Limit (t)	Minimum Plate Thickness (in.)	Minimum Fillet Size All Around (in.)
3	5/16	5/16
5	3/8	3/8
8	1/2	1/2
10	1/2	1/2

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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 9, 10 & 11 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 18 and 62 for additional information on corner protectors.

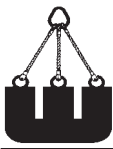
CHEMICAL DATA

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	HALOGENATED HYDRO-CARBONS	HYDRO-CARBONS	KETONES	OILS CRUDE	OILS LUBRICATING	SOAP & DETERGENTS	WATER & SEAWATER	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

* Disintegrated by concentrated sulfuric acid

** Degraded by strong alkalis at elevated temperatures



Operating Practices

Recovery Straps & Slings

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.

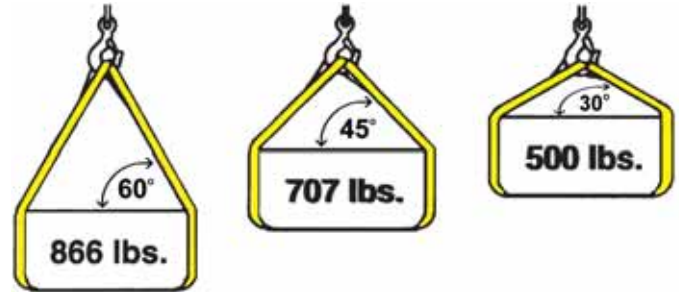
Horizontal sling angles less than 30° shall not be used.

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 ANGLE INCREASES.



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:

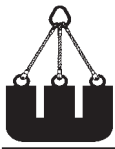
- (1) normal service - yearly
 - (2) severe service - monthly to quarterly
 - (3) special service - as recommended by a qualified person.
- Written records of the most recent periodic inspection shall be maintained.

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

(additional Removal Criteria is found on the next page)



Operating Practices

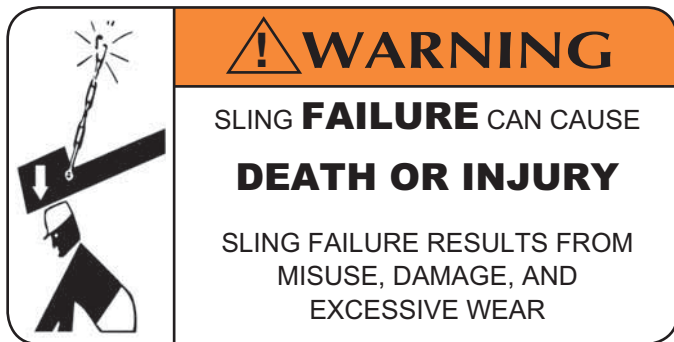
Recovery Straps & Slings

REMOVAL CRITERIA WIRE ROPE

SLINGS:

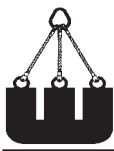
A wire rope sling shall be removed from service if conditions such as the following are present:

- (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.
- 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 10.
- 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.



Operating Practices ▬ Recovery Hardware

SHACKLES

WARNING

- Failure to read, understand and follow these instructions may cause death or serious injury.
- Read and understand these instructions before using shackles.
- Screw pin shall be fully engaged.
- If designed for a cotter pin, it shall be used and maintained.
- Applied load should be centered in the bow to prevent side loading.
- Multiple sling legs should not be applied to the pin.
- If side loaded, the rated load shall be reduced according to Table 1 found below.

Angle loads must be applied in the plane of the bow.

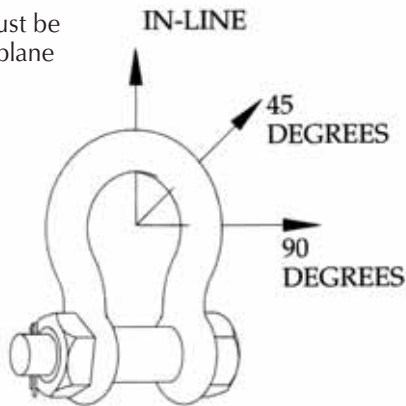


Table 1

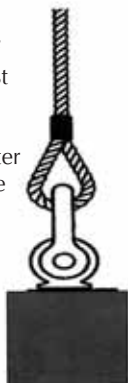
Side Loading Reduction Chart For Screw Pin and Bolt Type Shackles Only +	
Angle of Side Load from Vertical In-Line of Shackle	Adjusted Working Load Limit
0° In-Line*	100% of Rated Working Load Limit
45° from In-Line*	70% of Rated Working Load Limit
90° from In-Line*	50% of Rated Working Load Limit

* In-Line load is applied perpendicular to pin.

+ DO NOT SIDE LOAD ROUND PIN SHACKLE

CONNECTION OF SLINGS TO SHACKLES

Diameter of shackle must be greater than wire rope diameter if no thimble in eye.



Shackle must be large enough to avoid pinching of synthetic slings.

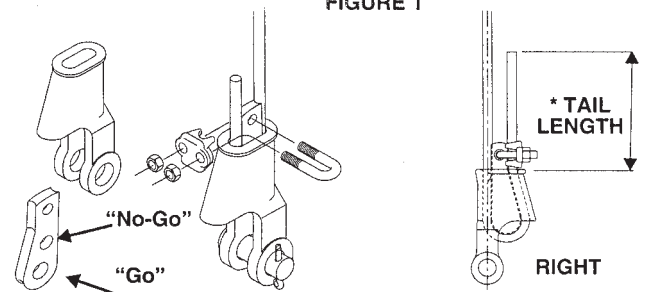


WEDGE SOCKET

WARNING

- Loads may slip or fall if the Wedge Socket is not properly installed.
- A falling load can seriously injure or kill.
- Read and understand these instructions before installing the Wedge Socket.
- Do not side load the Wedge Socket.
- Apply first load to fully seat the Wedge and Wire Rope in the socket. This load should be of equal or greater weight than loads expected in use.

FIGURE 1

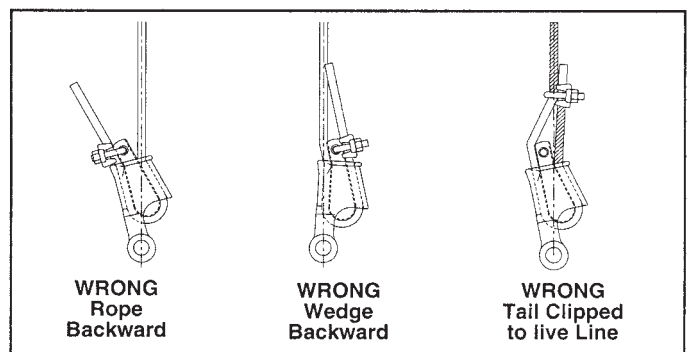


*Tail Length	
Standard 6 to 8 strand wire rope A minimum of 6 rope diameters, but not less than 6"	Rotation Resistant Wire Rope A minimum of 20 rope diameters, but not less than 6".

TABLE 1

Rope Size	3/8	1/2	5/8	3/4	7/8	1	1 1/8
Clip Size	3/8	1/2	5/8	3/4	7/8	1	1 1/8
*Torque Ft./lbs.	45	65	95	130	225	225	225

* The tightening torque values shown are based upon the threads being clean, dry, and free of lubrication.



OPERATING PRACTICES

- Apply first load to fully seat the Wedge and Wire rope in the socket. This load should be of equal or greater weight than loads expected in use.
- Efficiency rating of the Wedge Socket termination is based upon the catalog breaking strength of Wire Rope. The efficiency of a properly assembled Wedge Socket is 80%.
- During use, do not strike the dead end section with any other elements of the rigging (called two blocking).



HOIST, WINCH & RECOVERY HOOKS



WARNING

- Loads may disengage from hook if proper procedures are not followed.
- A falling load may cause serious injury or death.
- Threads may corrode and/or strip and drop the load.
- Hook must always support the load. The load must never be supported by the latch.
- Never apply more force than the hook's assigned Working Load Limit (WLL rating.)
- Never shock load a hook.
- Read and understand these instructions before using hook.
- Always visually inspect hook before using.
- Never use a hook whose throat opening has been increased, or whose tip has been bent more than 10 degrees out of plane from the hook body, or is in any other way distorted or bent. **Note: A latch will not work properly on a hook with a bent or worn tip.**
- Remove from service any hook with a crack, nick, or gouge.
- Never repair, alter, rework, or reshape a hook by welding, heating, burning, or bending.
- Never side load, back load, or tip load a hook. (see figure 2)
- Eye hooks, shank hook and swivel hooks are designed to be used with wire rope or chain.
- Do not swivel a swivel hook while it is supporting a load.
- Always make sure the hook supports the load. (see figure 3)
- The latch must never support the load. (see figure 4)
- See ASME B30.10 "Hooks" for additional information.
- Do not stand between disabled vehicle and recovery vehicle.

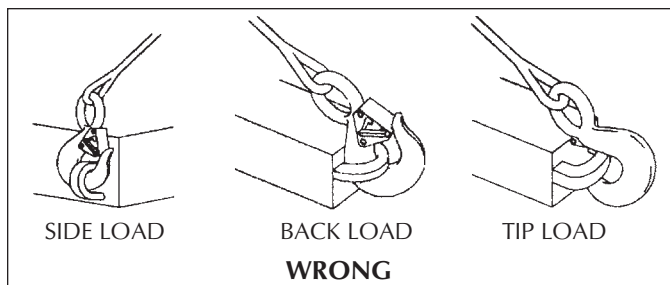


FIGURE 2

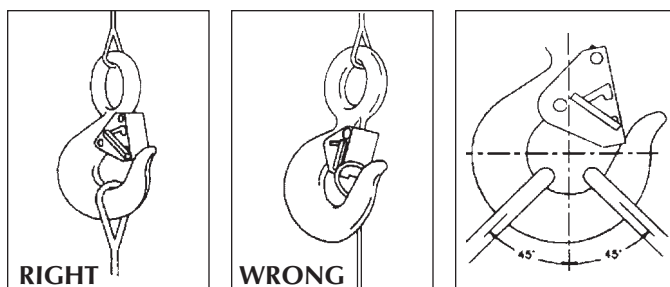


FIGURE 3

FIGURE 4

FIGURE 5